Return to INDEX

700H Crawler Dozer Repair

TECHNICAL MANUAL
700H Crawler Dozer

TM1859 14JUL04 (ENGLISH)

For complete service information also see:

700H Crawler Dozer Operation and Test . . .	TM1858
Alternators and Starting Motors.	CTM77
POWERTECH™ 4.5L and 6.8L Diesel Engines Base Engine	CTM104
4000S Winches	CTM166
POWERTECH™ 4.5L and 6.8L Diesel Engines Mechanical Fuel Systems.	CTM207
POWERTECH™ 4.5L and 6.8L Diesel Engines Level 12 Electronic Fuel System with DE10 Pump	CTM331
120 Series Hydraulic Cylinders	TM-H120A
SERVICE ADVISOR™ System Computer Connection.	T133991
Undercarriage Appraisal Manual	SP326

Worldwide Construction And Forestry Division
U.S.A.

Introduction

Foreword

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.

This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Technical manuals are divided in two parts: repair and operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Technical Manuals are concise guides for specific machines. They are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

TX,INTR,MB52 –19–12SEP97–1/1

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THANK YOU!

TX,TM,FAX –19–03JUL01–1/1

Contents

SECTION 00—General Information
Group 0001—Safety
Group 02—General Specifications
Group 03—Torque Values
Group 04—Fuels and Lubricants

SECTION 01—Tracks
Group 0130—Track System

SECTION 02—Axles and Suspension Systems
Group 0201—Drive Axle Housing and Support
Group 0250—Axle Shaft, Bearings, and Reduction Gear

SECTION 03—Transmission
Group 0300—Removal and Installation
Group 0315—Controls Linkage
Group 0360—Hydrostatic System

SECTION 04—Engine
Group 0400—Removal and Installation

SECTION 05—Engine Auxiliary Systems
Group 0505—Cold Weather Starting Aids
Group 0510—Radiator and Fan Shroud
Group 0515—Engine Speed Control
Group 0520—Intake System
Group 0530—External Exhaust System
Group 0540—Mounting Frame
Group 0560—External Fuel Supply System

SECTION 07—Dampener Drive
Group 0752—Elements

SECTION 11—Park Brake
Group 1100—Removal and Installation
Group 1115—Control Linkage
Group 1160—Hydraulic System

SECTION 15—Equipment Attaching
Group 1511—Drawbar

SECTION 16—Electrical System
Group 1671—Batteries, Support, and Cables
Group 1672—Alternator, Regulator and Charging System Wiring
Group 1674—Wiring Harness and Switches
Group 1675—System Controls
Group 1676—Instruments and Indicators
Group 1677—Motors and Actuators

SECTION 17—Frames, Chassis, or Supporting Structure
Group 1740—Frame Installation
Group 1749—Chassis Weights

SECTION 18—Operator's Station
Group 1800—Removal and Installation
Group 1810—Operator's Enclosure
Group 1821—Seat and Seat Belt
Group 1830—Heating and Air Conditioning

SECTION 19—Sheet Metal and Styling
Group 1910—Hood and Engine Enclosure
Group 1921—Grille and Grille Housing

SECTION 20—Safety, Convenience and Miscellaneous
Group 2004—Horn and Warning Devices

SECTION 21—Main Hydraulic System
Group 2160—Hydraulic System

SECTION 32—Bulldozer
Group 3201—Blades
Group 3215—Control Linkage
Group 3240—Frames
Group 3260—Hydraulic System

SECTION 99—Dealer Fabricated Tools
Group 9900—Dealer Fabricated Tools

All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

00
01
02
03
04
05
07
11
15
16

17
18
19
20
21
32
99
INDX

Section 00
General Information

Contents

Page

Group 0001—Safety 00-0001-1

Group 02—General Specifications
700H Crawler Dozer Dimensions 00-02-1
700H Crawler Dozer Specification. 00-02-3
700H Crawler Dozer Weights 00-02-4
700H Other Information. 00-02-5
700H Dozer Drain and Refill Capacities 00-02-6
4000S Winch. 00-02-6

Group 03—Torque Values
Hardware Torque Specifications 00-03-1
Keeping ROPS Installed Properly 00-03-1
Checking Track Shoe Cap Screw Torque 00-03-2
Unified Inch Bolt And Cap Screw Torque Values 00-03-3
Metric Bolt And Cap Screw Torque Values 00-03-5
Additional Metric Cap Screw Torque Values . . .00-03-7
Check Oil Lines And Fittings. 00-03-8
O-Ring Groove Connections 00-03-9
Service Recommendations For Flat Face O-Ring Seal Fittings. 00-03-10
Service Recommendations For O-Ring Boss Fittings. 00-03-11
Service Recommendations for Inch Series Four Bolt Flange Fittings 00-03-12
Service Recommendations For Metric Series Four Bolt Flange Fittings. 00-03-13

Group 04—Fuels and Lubricants
Diesel Fuel 00-04-1
Low Sulfur Diesel Fuel Conditioner 00-04-1
Diesel Fuel Storage. 00-04-2
Fuel Tank 00-04-2
Diesel Engine Oil 00-04-3
Track Rollers, Front Idler, and Carrier Roller Oil 00-04-4
Transmission and Hydraulic Oil. 00-04-4
Winch Oil 00-04-5
Inner and Outer Final Drive Oil 00-04-6
Grease 00-04-7
Lubricant Storage 00-04-7
Alternative and Synthetic Lubricants 00-04-8
Mixing of Lubricants 00-04-8
Diesel Engine Coolant. 00-04-9

Handle Fluids Safely—Avoid Fires

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.

TS227 –UN–23AUG88

DX,FLAME –19–04JUN90–1/1

Prevent Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).

Specification

Battery—Warm ..... 16°C (60°F)

TS204 –UN–23AUG88

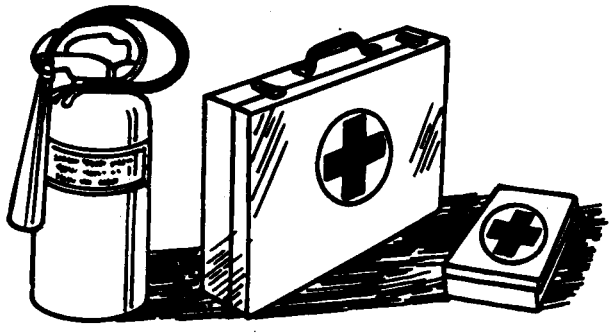
DX,SPARKS –19–03MAR93–1/1

Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 –UN–23AUG88

DX,FIRE2 –19–03MAR93–1/1

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Prevent Acid Burns

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

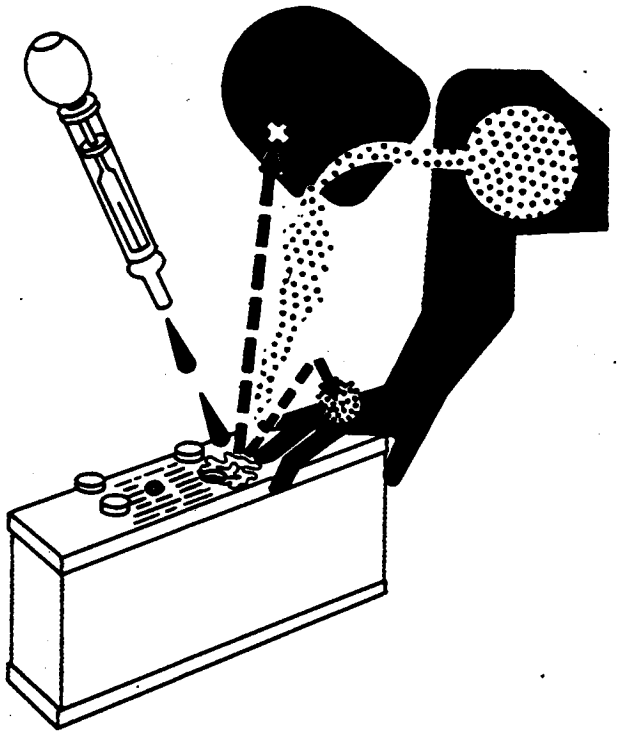
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

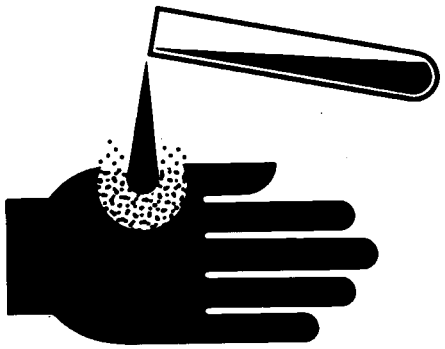
1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2 L (2 quarts).
3. Get medical attention immediately.



TS203 –UN–23AUG88

DX,POISON –19–21APR93–1/1

Handle Chemical Products Safely



TS272 –UN–23AUG88

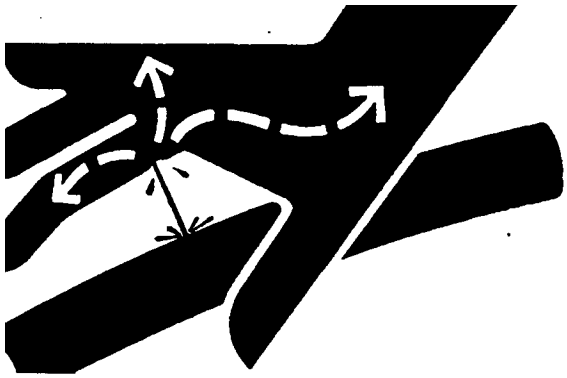
Direct exposure to chemical products can cause severe skin irritation and injury. Hazardous fumes can be generated when handling the chemicals.

Wear close fitting clothing and a face mask when handling chemicals. Dispose of chemical waste and packaging material properly.

A Material Safety Data Sheet provides specific details on chemical products and physical dangers, safety procedures, and emergency response techniques. User awareness and training is required under U.S. workplace and environmental laws. See your John Deere dealer for information on chemical products used with John Deere equipment.

DX,MSDS –19–28SEP90–1/1

Avoid High-Pressure Fluids



X9811 –UN–23AUG88

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.

DX,FLUID –19–03MAR93–1/1

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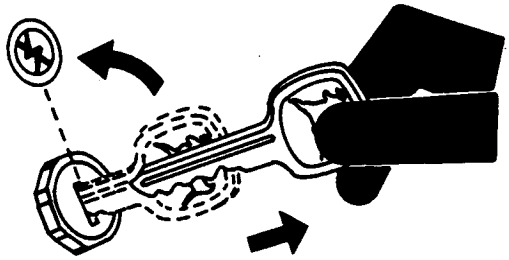
Park Machine Safely

Before working on the machine:

- Lower all equipment to the ground.
- Stop the engine and remove the key.
- Disconnect the battery ground strap.
- Hang a "DO NOT OPERATE" tag in operator station.



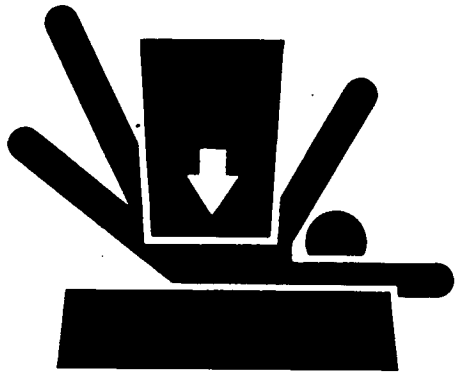
TS230 –UN–24MAY89

DX,PARK –19–04JUN90–1/1

Support Machine Properly

Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



TS229 –UN–23AUG88

DX,LOWER –19–04JUN90–1/1

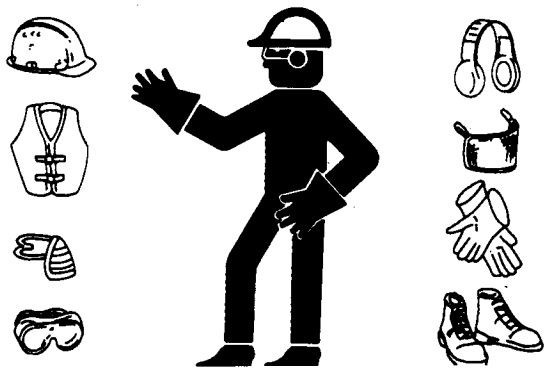
Wear Protective Clothing

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



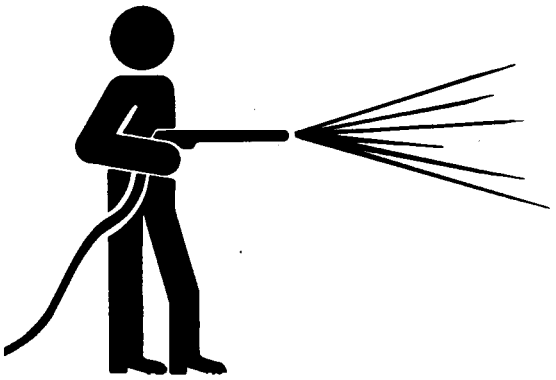
TS206 –UN–23AUG88

DX,WEAR –19–10SEP90–1/1

Work In Clean Area

Before starting a job:

- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



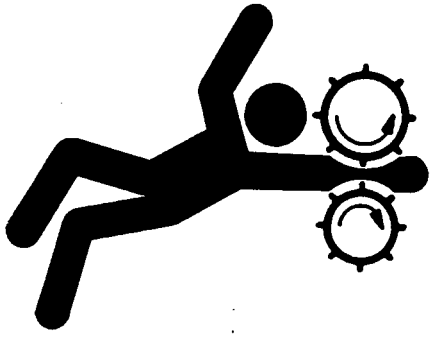
T6642EJ –UN–18OCT88

DX,CLEAN –19–04JUN90–1/1

Service Machines Safely

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



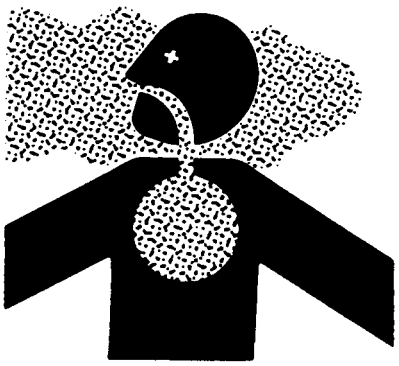
TS228 –UN–23AUG88

DX,LOOSE –19–04JUN90–1/1

Work In Ventilated Area

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.

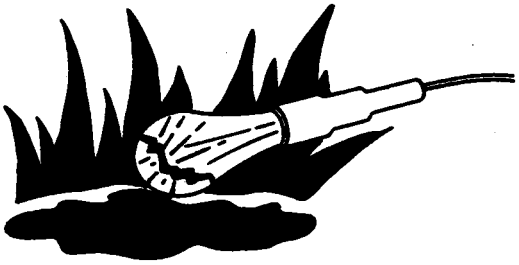


TS220 –UN–23AUG88

DX,AIR –19–04JUN90–1/1

Illuminate Work Area Safely

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.



TS223 –UN–23AUG88

DX,LIGHT –19–04JUN90–1/1

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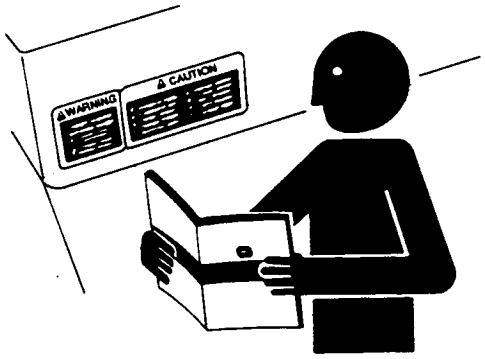
Replace Safety Signs

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.



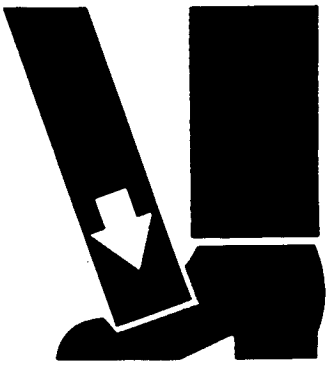
TS201 –UN–23AUG88

DX,SIGNS1 –19–04JUN90–1/1

Use Proper Lifting Equipment

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.



TS226 –UN–23AUG88

DX,LIFT –19–04JUN90–1/1

Remove Paint Before Welding or Heating

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly.

Remove paint before welding or heating:

- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

TS220 –UN–23AUG88

DX,PAINT –19–03MAR93–1/1

Avoid Heating Near Pressurized Fluid Lines

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.

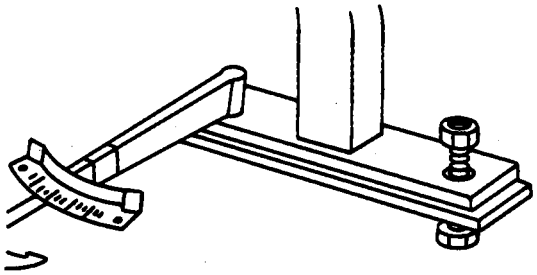
TS953 –UN–15MAY90

DX,TORCH –19–03MAR93–1/1

Keep ROPS Installed Properly

Make certain all parts are reinstalled correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting. A damaged ROPS should be replaced, not reused.



TS212 –UN–23AUG88

DX,ROPS3 –19–03MAR93–1/1

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Practice Safe Maintenance

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet , and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

TS218 –UN–23AUG88

DX,SERV –19–03MAR93–1/1

Dispose of Waste Properly

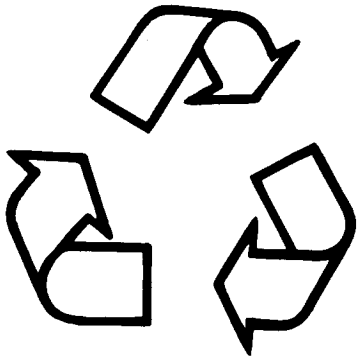
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.



TS1133 –UN–26NOV90

DX,DRAIN –19–03MAR93–1/1

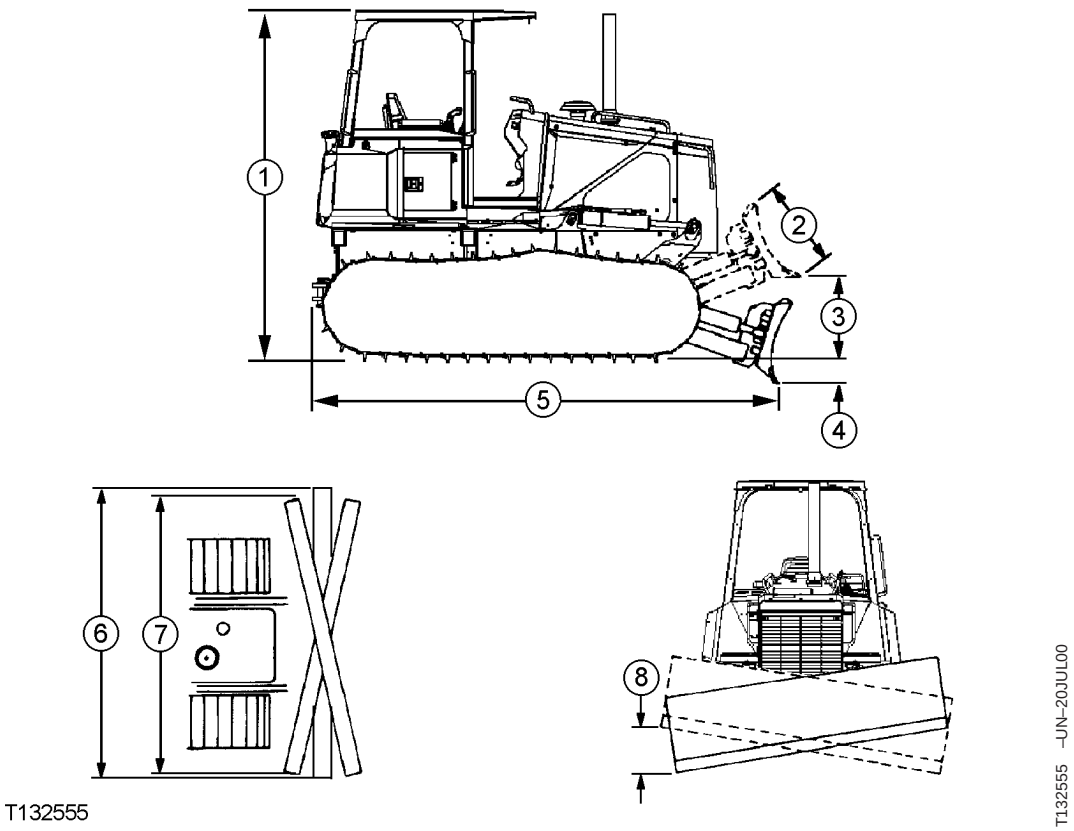
Live With Safety

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.

TS231 –19–07OCT88

DX,LIVE –19–25SEP92–1/1

700H Crawler Dozer Dimensions



NOTE: Specifications and design subject to change without notice. Whenever applicable, specifications are in accordance with ICED and SAE standards. Except where otherwise noted, these specifications are based on a unit with roll-over protective structure, full fuel tank, 80 kg (175 lb) operator, and standard equipment.

Item	Measurement	Specification
1—Overall Height—ROPS or Cab	Height	2986 mm (9 ft 10 in.)
2—(120 in. Standard Blade)	Height	933 mm (3 ft 0.7 in.)
3—Blade Lift LT	Height	910 mm (35.8 in.)
—Blade Lift LGP	Height	980 mm (38.6 in.)
4—Digging LT	Depth	500 mm (19.7 in.)
—Digging LGP	Depth	540 mm (21.3 in.)
5—Overall (Without Winch) LT	Length	4508 mm (14 ft 9.5 in.)
6—Blade Width (LT Blade)	Width	3048 mm (120 in.)

Continued on next page

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Item	Measurement	Specification
Blade Width (LGP Blade)	—Width	3353 mm (132 in.)
7—Blade Angle (LT Standard Blade)	Width	2768 mm (109 in.)
—Blade Angle (LGP Blade)	Width	3048 mm (120 in.)
8—Blade Tilt		
LT Standard Blade	Distance	424 mm (16.7 in.)
—LGP Blade	Distance	467 mm (18.4 in.)
LT Standard Blade Capacity	Capacity	2.63 m^3 (3.44 yd^3)
LGP Blade Capacity	Capacity	2.87 m^3 (3.75 yd^3)
Machine Ground Clearance	Clearance	381 mm (15 in.)

CED,TX03768,2784 –19–12JUN00–2/2

700H Crawler Dozer Specification

Item	Measurement	Specification
John Deere PowerTech® 6068T 6-Cylinder Diesel Engine		
Rated Power at 2100 rpm	Power	86 kW (115 hp) SAE net horsepower
Piston	Displacement	6.785 L (414 cu in.)
Maximum Net Torque at 1200 rpm	Torque Rise	N•m (lb-ft)
Engine Slow Idle	rpm	900
Engine Fast Idle	rpm	2275
Batteries	Voltage	24-volt
Alternator	Amperage	55 amp
Hydrostatic Transmission	Speed	Infinite from 0—8.85 km/h (0—5.5 mph) forward and reverse
Hydraulic System (Open Center)	Pressure Flow Rate	22063 kPa (220.6 bar)(3200 psi) 94.6 L/min (25 gpm) @ 2200 rpm
Undercarriage		
Track Shoes (Each Side)	Quantity	40 LT Machine 42 LGP Machine
Ground Contact Area (with 20 in. Shoes)	Area	24516 cm^2 (3800 sq in.) LT Machine 28952 cm^2 (4488 sq in.) LGP Machine
Length of Track on Ground	Area	2413 mm (95 sq in.) LT Machine 2591 mm (102 sq in.) LGP Machine
Track Pitch	Pitch	176 mm (6.9 in.)
Track Gauge		1778 mm (70 in.) LT Machine 1981 mm (78 in.) LGP Machine

PowerTech is a registered trademark of Deere & Company

Continued on next page

Item	Measurement	Specification
Ground Pressure	Pressure	45.37 kPa (0.45 bar) (6.58 psi) LT Machine 41.9 kPa (0.42 bar) (6.08 psi) LGP Machine
Standard Grouser	Width	508 mm (20 in.) LT Machine 560 mm (22 in.) LGP Machine
Track Rollers	Quantity	6 LT Machine 7 LGP Machine
Final Drive	Type	Double Gear Reduction

CED,TX03768,2783 –19–12JUN00–2/2

700H Crawler Dozer Weights

Item	Measurement	Specification
SAE Operating Weight for LT	Weight	11476 kg (25300 lb)
SAE Operating Weight for LGP	Weight	12383 kg (27300 lb)
Optional Equipment		
4000S Winch	Weight	653 kg (1437 lb)
Winch Fairlead, Four Roller	Weight	85 kg (187 lb)
Radial Ripper	Weight	335 kg (738 lb)

CED,TX03768,2782 –19–12JUN00–1/1

700H Other Information

- **Lubrication:** Pressure system with full-flow spin-on filter and oil-to-water cooler.
- **Air Cleaner:** Dual stage dry-type with safety element, pre-cleaner, and dash mounted restriction indicator.
- **Cooling Fan:** Blower-type.
- **Transmission:** Dual-path, electronic-controlled, hydrostatic drive; load-sensing feature automatically adjusts speed and power to match changing load conditions; each individual track is powered by a variable-displacement piston pump and a variable displacement motor combination; decelerator controls speed from holding to 8.85 km/h (5.5 mph). Operating pressure is max. 41989 kPa (420 bar)(6090 psi) with charge pump @ 1.51 sec./(24 gpm).
- **Final Drives:** Heavy-duty double-reduction final drives attach directly to the main frame and are isolated from track frame and dozer frame loads.
- **Steering:** Single-lever steering and direction control; full power turns, counter-rotation, and infinitely variable track speeds provide unlimited maneuverability and optimum control; hydrostatic steering eliminates steering clutches and brakes.
- **Brakes:** Hydrostatic (dynamic), wet multi-disk braking stops the machine whenever the direction-control lever is moved to neutral, whenever the decelerator is depressed to the end of travel, or whenever the brake pedal is depressed.
- **Automatic Park Brake:** Exclusive safety feature engages wet, multiple-disk brakes automatically whenever the engine stops, whenever the operator applies the brake pedal, or whenever the neutral start lever lock is in stop position; machine cannot be driven with brake applied, reducing wear out or need for adjustment.
- **Undercarriage:** John Deere Dura-Trax™ features large deep-heat treated components; pins and bushings are sealed for life; rollers and idlers are permanently sealed and lubricated; full-length track frame covers reduce material build up and ease cleaning.

CED,TX03768,2779 –19–12JUN00–1/1

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700H Dozer Drain and Refill Capacities

Item	Measurement	Specification
Drain and Refill Capacities		
Radiator Coolant	Capacity	19.4 L (20 qt)
Fuel Tank	Capacity	227 L (60 gal)
Engine Oil (Including Filter)	Capacity	13.2 L (20 qt)
Final Drive (Each Side)	Capacity	13.2 L (14 qt)
Hydraulic Reservoir (Including Filter)	Capacity	51 L (13.5 gal)
Transmission Reservoir (Including Filter)	Capacity	65 L (17.2 gal)
Winch-If Equipped	Capacity	37 L (10 gal)

CED,TX03768,2778 –19–12JUN00–1/1

4000S Winch

Maximum Cable Capacities	
Cable Size	**Winch Capacity**
15.88 mm (0.625 in.)	77.4 m (254 ft)
19.05 mm (0.75 in.)	54.6 m (179 ft)
22.23 mm (0.875 in.)	39.3 m (129 ft)

TX,115,RR2763 –19–12JAN93–1/1

Hardware Torque Specifications

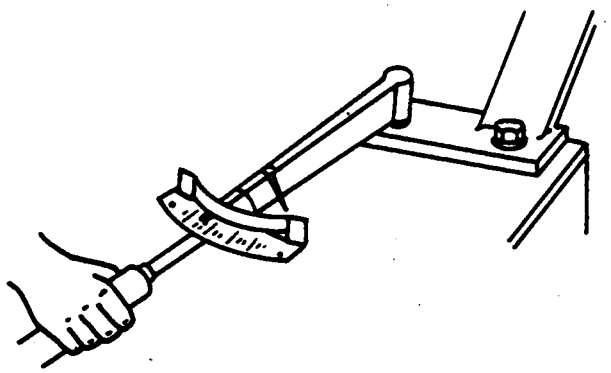
Check cap screws and nuts to be sure they are tight. If hardware is loose, tighten to torque shown on the following charts unless a special torque is specified.

TX,9000,BD2408 –19–02DEC96–1/1

Keeping ROPS Installed Properly

CAUTION: Make certain all parts are reinstalled correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered. A damaged ROPS should be replaced, not reused.



TS176 –UN–23AUG88

When installation of equipment on a machine necessitates loosening or removing Roll-Over Protective Structure, mounting bolts must be tightened to 410 ± 82 N•m (300 ± 60 lb-ft).

Specification	
Mounting Bolts—Torque.....	410 ± 82 N•m (300 ± 60 lb-ft)

TX,90,RR2484 –19–03AUG92–1/1

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Checking Track Shoe Cap Screw Torque

Track shoe cap screw torque should be periodically checked. If the cap screws do not meet the minimum torque specifications of 380 N.m (280 lb-ft), remove the shoes and clean the mating surfaces of the shoes and links before tightening the cap screws.

If machine is operated with loose track shoes, the cap screw holes in the shoes and links will wear and it may be difficult to keep the track shoes tight. Loose shoes can also cause hardware failure and loss of track shoes.

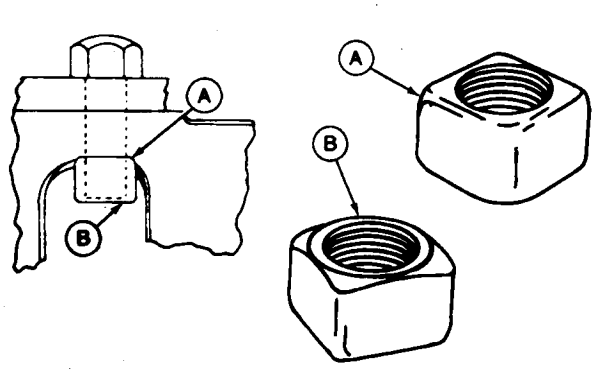
Install all track shoe nuts with rounded edges (A) against the link and chamfered edges (B) away from the link. Be sure nut is properly positioned in the link so there is full contact area between the nut and the link.

Specification

Cap Screw—Torque ..... 163 N•m (120 lb-ft) plus 1/3 turn (120°)
Master Link Cap Screw—Torque ..... 163 N•m (120 lb-ft) plus 1/3 turn (180°)

NOTE: Replacement hardware should be lubricated and tightened to above specification.

T82862 –UN–08NOV88



T6794AM –UN–23FEB89

A—Rounded Edge
B—Chamfered Edge

CED,TX03768,2794 –19–08AUG00–1/1

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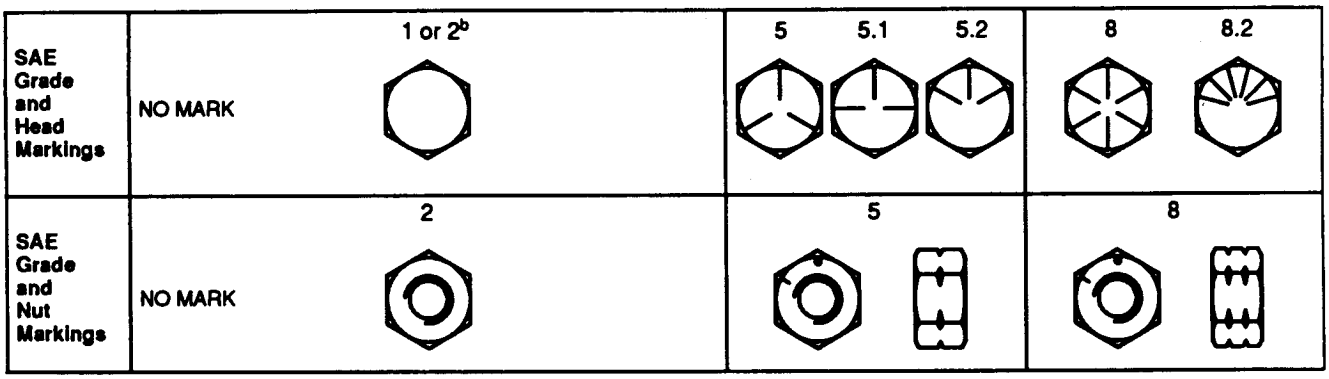
Unified Inch Bolt And Cap Screw Torque Values



TS1162 –19–04MAR91

	Grade 1				Grade 2 [b]				Grade 5, 5.1, or 5.2				Grade 8 or 8.2			
Size	Lubricated [a]		Dry [a]		Lubricated [a]		Dry [a]		Lubricated [a]		Dry [a]		Lubricated [a]		Dry [a]	
	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
1/4	3.7	2.8	4.7	3.5	6	4.5	7.5	5.5	9.5	7	12	9	13.5	10	17	12.5
5/16	7.7	5.5	10	7	12	9	15	11	20	15	25	18	28	21	35	26
3/8	14	10	17	13	22	16	27	20	35	26	44	33	50	36	63	46
7/16	22	16	28	20	35	26	44	32	55	41	70	52	80	58	100	75
1/2	33	25	42	31	53	39	68	50	85	63	110	80	120	90	150	115
9/16	48	36	60	45	75	56	95	70	125	90	155	115	175	130	225	160
5/8	67	50	85	62	105	78	135	100	170	125	215	160	240	175	300	225
3/4	120	87	150	110	190	140	240	175	300	225	375	280	425	310	550	400
7/8	190	140	240	175	190	140	240	175	490	360	625	450	700	500	875	650
1	290	210	360	270	290	210	360	270	725	540	925	675	1050	750	1300	975
1-1/8	400	300	510	375	400	300	510	375	900	675	1150	850	1450	1075	1850	1350
1-1/4	570	425	725	530	570	425	725	530	1300	950	1650	1200	2050	1500	2600	1950
1-3/8	750	550	950	700	750	550	950	700	1700	1250	2150	1550	2700	2000	3400	2550
1-1/2	1000	725	1250	925	990	725	1250	930	2250	1650	2850	2100	3600	2650	4550	3350

[a]" Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

[b] Grade 2 applies for hex cap screws (not hex bolts) up to 152 mm (6-in.) long. Grade 1 applies for hex cap screws over 152 mm (6-in.) long, and for all other types of bolts and screws of any length.

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Continued on next page

DX,TORQ1 –19–21OCT96–1/2

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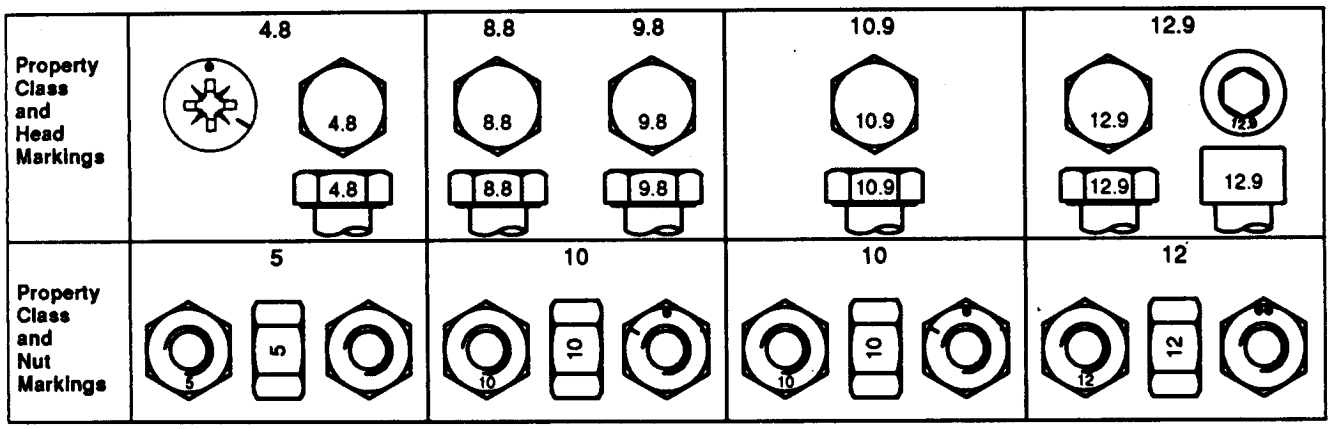
Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head.

Tighten toothed or serrated-type lock nuts to the full torque value.

DX,TORQ1 –19–21OCT96–2/2

Metric Bolt And Cap Screw Torque Values



TS1163 –19–04MAR91

	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
Size	Lubricated [a]		Dry [a]		Lubricated [a]		Dry [a]		Lubricated [a]		Dry [a]		Lubricated [a]		Dry [a]	
	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	255	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

[a]" Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Continued on next page

DX,TORQ2 –19–16APR92–1/2

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Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head.

Tighten toothed or serrated-type lock nuts to the full torque value.

DX,TORQ2 –19–16APR92–2/2

Additional Metric Cap Screw Torque Values

CAUTION: Use only metric tools on metric hardware. Other tools may not fit properly. They may slip and cause injury.

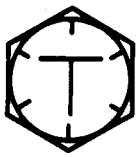
Check tightness of cap screws periodically. Torque values listed are for general use only. Do not use these values if a different torque value or tightening procedure is listed for a specific application.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Make sure fastener threads are clean and you properly start thread engagement. This will prevent them from failing when tightening.

Tighten cap screws having lock nuts to approximately 50 percent of amount shown in chart.



T6873AA

T6873AA –UN–18OCT88

T6873AB

T6873AB –UN–18OCT88

T6873AC

T6873AC –UN–18OCT88

METRIC CAP SCREW TORQUE VALUE *						
Nominal	T-Bolt		H-Bolt		M-Bolt	
Dia	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
8	29	21	20	15	10	7
10	63	46	45	33	20	15
12	108	80	88	65	34	25
14	176	130	137	101	54	40
16	265	195	206	152	78	58
18	392	289	294	217	118	87
20	539	398	392	289	167	125
22	735	542	539	398	216	159
24	931	687	686	506	274	202
27	1372	1012	1029	759	392	289
30	1911	1410	1421	1049	539	398
33	2548	1890	1911	1410	735	542
36	3136	2314	2401	1772	931	687

*Torque tolerance is ±10 %.

TX,9000,BD1903 –19–01AUG94–1/1

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Check Oil Lines And Fittings

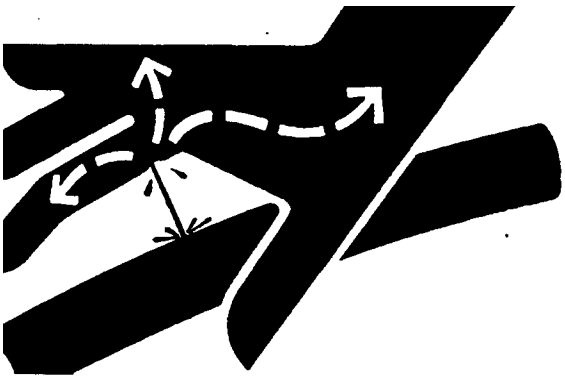
CAUTION: To avoid injury from escaping fluid under pressure, stop engine, and relieve the pressure in the system before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Check all oil lines, hoses, and fittings regularly for leaks or damage. Make sure all clamps are in position and tight. Make sure hoses are not twisted or touching moving machine parts. If abrasion or wear occurs, replace immediately.

Tubing with dents may cause the oil to overheat. If you find tubing with dents, install new tubing immediately.

IMPORTANT: Tighten fittings as specified in torque chart.

When you tighten connections, use two wrenches to prevent bending or breaking tubing and fittings.



X9811 –UN–23AUG88

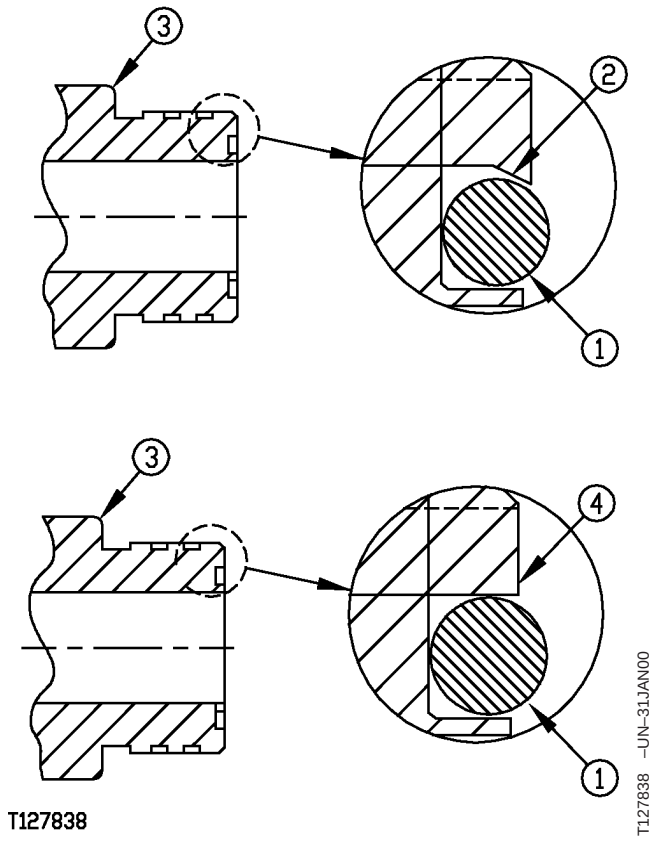
T85401 –UN–24JAN89

TX,90,DH1559 –19–20FEB97–1/1

O-Ring Groove Connections

Face seal grooves (2 and 4) on fittings (3) should be identified before the O-ring (1) is installed into the fitting (use a O-ring pick to feel for the dovetail edge). Applying petroleum jelly on an O-ring to install it in a Standard Groove is appropriate. However, do not use petroleum jelly or grease on an O-ring to install it into a Half Dovetail Groove (Captive O-ring Groove). If petroleum jelly is used in a Half Dovetail groove, the jelly could push the O-ring out of the groove before the fitting is tighten.

1—O-Ring
2—Half Dovetail Groove
3—Fitting
4—Standard Groove



Face Seal Groves

CED,TX03768,2691 –19–01FEB00–1/1

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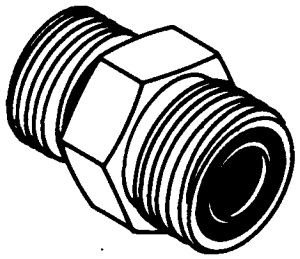
Service Recommendations For Flat Face O-Ring Seal Fittings



T6243AD –UN–18OCT88

1. Inspect the fitting sealing surfaces. They must be free of dirt or defects.
2. Inspect the O-ring. It must be free of damage or defects.
3. Lubricate O-rings and install into groove using petroleum jelly to hold in place.
4. Push O-ring into the groove with plenty of petroleum jelly so O-ring is not displaced during assembly.
5. Index angle fittings and tighten by hand pressing joint together to insure O-ring remains in place.
6. Tighten fitting or nut to torque value shown on the chart per dash size stamped on the fitting. Do not allow hoses to twist when tightening fittings.

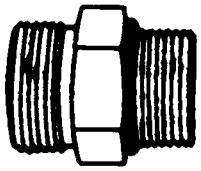
FLAT FACE O-RING SEAL FITTING TORQUE *							
Nominal Tube O.D.				Swivel Nut		Bulkhead Nut	
mm	in.	Dash Size	Thread Size in.	N•m	lb-ft	N•m	lb-ft
6.35	0.250	-4	9/16-18	16	12	5.0	3.5
9.52	0.375	-6	11/16-16	24	18	9.0	6.5
12.70	0.500	-8	13/16-16	50	37	17.0	12.5
15.88	0.625	-10	1-14	69	51	17.0	12.5
19.05	0.750	-12	1 3/16-12	102	75	17.0	12.5
22.22	0.875	-14	1 3/16-12	102	75	17.0	12.5
25.40	1.000	-16	1 7/16-12	142	105	17.0	12.5
31.75	1.250	-20	1 11/16-12	190	140	17.0	12.5
38.10	1.500	-24	2-12	217	160	17.0	12.5
* Torque tolerance is +15 -20%.							

04T,90,K67 –19–21JAN92–1/1

Service Recommendations For O-Ring Boss Fittings

STRAIGHT FITTING

1. Inspect O-ring boss seat for dirt or defects.
2. Lubricate O-ring with petroleum jelly. Place electrical tape over threads to protect O-ring. Slide O-ring over tape and into O-ring groove of fitting. Remove tape.
3. Tighten fitting to torque value shown on chart.

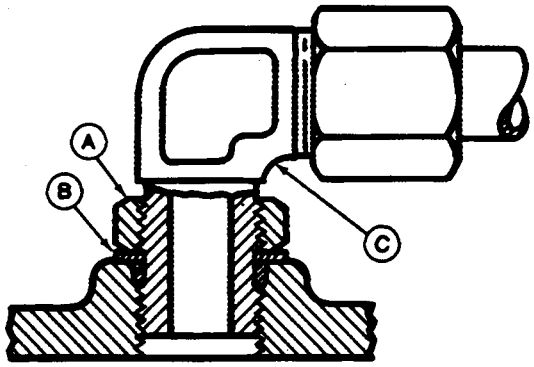


T6243AE –UN–18OCT88

Straight Fitting

ANGLE FITTING

1. Back-off lock nut (A) and back-up washer (B) completely to head-end (C) of fitting.
2. Turn fitting into threaded boss until back-up washer contacts face of boss.
3. Turn fitting head-end counterclockwise to proper index (maximum of one turn).
4. Hold fitting head-end with a wrench and tighten locknut and back-up washer to proper torque value.



T6520AB –UN–18OCT88

Angle Fitting

NOTE: Do not allow hoses to twist when tightening fittings.

TORQUE VALUE *		
Thread Size	**N•m**	**lb-ft**
3/8-24 UNF	8	6
7/16-20 UNF	12	9
1/2-20 UNF	16	12
9/16-18 UNF	24	18
3/4-16 UNF	46	34
7/8-14 UNF	62	46
1-1/16-12 UN	102	75
1-3/16-12 UN	122	90
1-5/16-12 UN	142	105
1-5/8-12 UN	190	140
1-7/8-12 UN	217	160
* Torque tolerance is ± 10%		

04T,90,K66 –19–09DEC93–1/1

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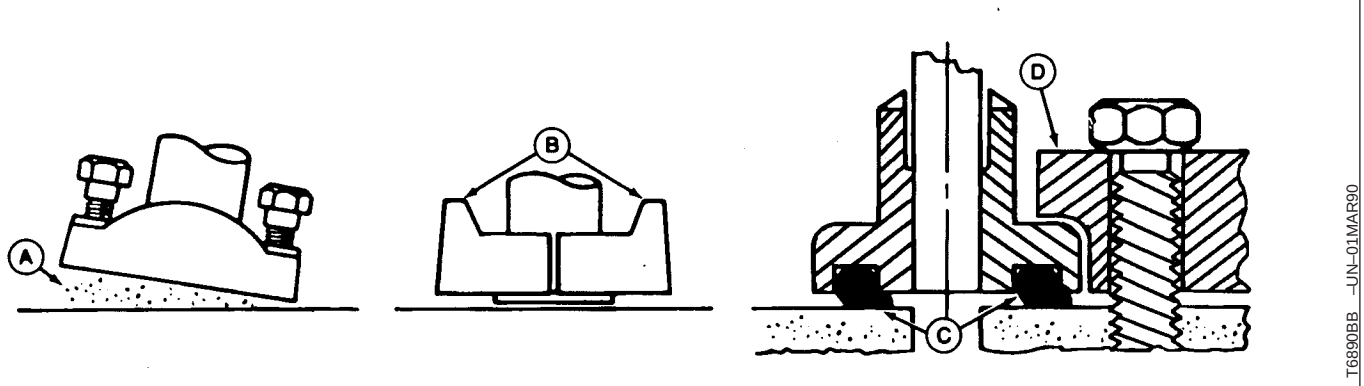
Service Recommendations for Inch Series Four Bolt Flange Fittings



T6890BB –UN–01MAR90

A—Sealing Surface **B—Split Flange** **C—Pinched O-Ring** **D—Single Piece Flange**

1. Clean sealing surfaces (A). Inspect. Scratches cause leaks. Roughness causes seal wear. Out-of-flat causes seal extrusion. If defects cannot be polished out, replace component.

2. Install O-ring (and backup washer if required) into groove using petroleum jelly to hold it in place.

3. Split flange: Loosely assemble split flange (B) halves. Make sure split is centrally located and perpendicular to port. Hand tighten cap screws to hold parts in place. Do not pinch O-ring (C).

4. Single piece flange (D): Place hydraulic line in center of flange and install cap screws. Flange must be centrally located on port. Hand tighten cap screws to hold flange in place. Do not pinch O-ring.

5. Tighten one cap screw, then tighten the diagonally opposite cap screw. Tighten two remaining cap screws. Tighten all cap screws as specified in the chart below.

   DO NOT use air wrenches. DO NOT tighten one cap screw fully before tightening the others. DO NOT over tighten.

TORQUE CHART [a]

		N•m		lb-ft	
Nominal Flange Size	**Cap Screw Size**	**Min**	**Max**	**Min**	**Max**
1/2	5/16-18 UNC	20	31	15	23
3/4	3/8-16 UNC	28	54	21	40
1	3/8-16 UNC	37	54	27	40
1-1/4	7/16-14 UNC	47	85	35	63
1-1/2	1/2-13 UNC	62	131	46	97
2	1/2-13 UNC	73	131	54	97
2-1/2	1/2-13 UNC	107	131	79	97
3	5/8-11 UNC	158	264	117	195
3-1/2	5/8-11 UNC	158	264	117	195
4	5/8-11 UNC	158	264	117	195
5	5/8-11 UNC	158	264	117	195

[a]Tolerance ± 10%. The torques given are enough for the given size connection with the recommended working pressure. Torques can be increased to the maximum shown for each cap screw size if desired. Increasing cap screw torque beyond this maximum will result in flange and cap screw bending and connection failures.

TX,9000,BG380 –19–14JAN97–1/1

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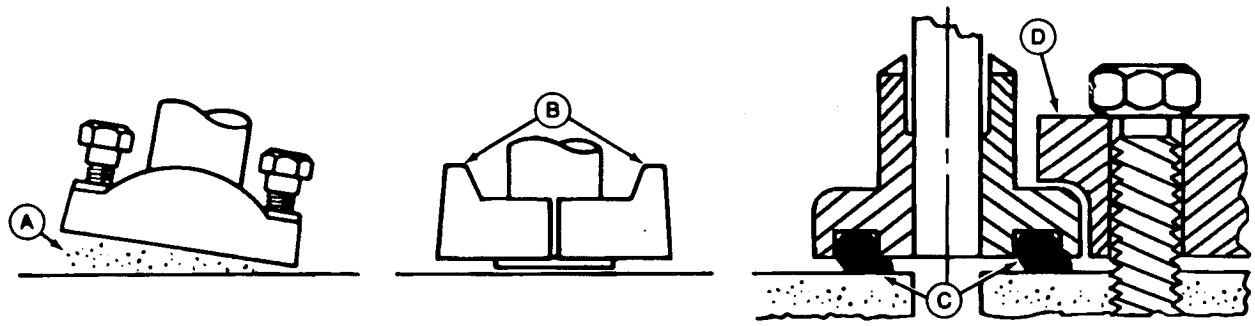
Service Recommendations For Metric Series Four Bolt Flange Fittings



T6890BB –UN–01MAR90

A—Sealing Surface **B—Split Flange** **C—Pinched O-Ring** **D—Single Piece Flange**

1. Clean sealing surfaces (A). Inspect. Scratches cause leaks. Roughness causes seal wear. Out-of-flat causes seal extrusion. If defects cannot be polished out, replace component.

2. Install the correct O-ring (and backup washer if required) into groove using petroleum jelly to hold it in place.

3. Split flange: Loosely assemble split flange (B) halves. Make sure split is centrally located and perpendicular to the port. Hand tighten cap screws to hold parts in place. Do not pinch O-ring (C).

4. Single piece flange (D): Place hydraulic line in center of flange and install four cap screws. Flange must be centrally located on port. Hand tighten cap screws to hold flange in place. Do not pinch O-ring.

5. After components are properly positioned and cap screws are hand tightened, tighten one cap screw, then tighten the diagonally opposite cap screw. Tighten two remaining cap screws. Tighten all cap screws as specified in the chart below. DO NOT use air wrenches. DO NOT tighten one cap screw fully before tightening the others. DO NOT over tighten.

TORQUE CHART *		
Thread **	**N•m**	**lb-ft**
M6	12	9
M8	30	22
M10	57	42
M12	95	70
M14	157	116
M16	217	160
M18	334	246
M20	421	318
*****Tolerance ±10%. The torques given are enough for the given size connection with the recommended working pressure. Increasing cap screw torque beyond these amounts will result in flange and cap screw bending and connection failures.		
******Metric standard thread.		

04T,90,K175 –19–21JAN92–1/1

Diesel Fuel

Consult your local fuel distributor for properties of the diesel fuel available in your area.

In general, diesel fuels are blended to satisfy the low temperature requirements of the geographical area in which they are marketed.

Diesel fuels specified to EN 590 or ASTM D975 are recommended.

In all cases, the fuel shall meet the following properties:

Cetane number of 40 minimum. Cetane number greater than 50 is preferred, especially for temperatures below -20°C (-4°F) or elevations above 1500 m (5,000 ft).

Cold Filter Plugging Point (CFPP) below the expected low temperature OR **Cloud Point** at least 5°C (9°F) below the expected low temperature.

Fuel lubricity should pass a minimum of 3100 gram load level as measured by the BOCLE scuffing test.

Sulfur content:

- Sulfur content should not exceed 0.5%. Sulfur content less than 0.05% is preferred.
- If diesel fuel with sulfur content greater than 0.5% sulfur content is used, reduce the service interval for engine oil and filter by 50%.
- DO NOT use diesel fuel with sulfur content greater than 1.0%.

Bio-diesel fuels may be used ONLY if the fuel properties meet DIN 51606 or equivalent specification.

DO NOT mix used engine oil or any other type of lubricant with diesel fuel.

DX,FUEL1 –19–17FEB99–1/1

Low Sulfur Diesel Fuel Conditioner

When possible, use existing fuel formulations for engines used off-highway. This fuel will not require any additives to provide good performance and engine reliability. However, many local fuel distributors will not carry both low and regular sulfur diesel fuels.

If the local fuel distributor will supply only low sulfur fuel, order and use John Deere PREMIUM DIESEL FUEL CONDITIONER. It provides lubricating properties along with other useful benefits, such as cetane improver, anti-oxidant, fuel stabilizer, corrosion inhibitor and others. John Deere PREMIUM DIESEL FUEL CONDITIONER is specifically for use with low sulfur fuels. Nearly all other diesel fuel conditioners only improve cold weather flow and stabilize long-term fuel storage. They do not contain the lubrication additives needed by rotary fuel injection pumps.

TX,45,JC2126 –19–15AUG97–1/1

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Diesel Fuel Storage

Proper fuel storage is critically important. Use clean storage and transfer tanks. Periodically drain water and sediment from bottom of tank. Store fuel in a convenient place away from buildings.

IMPORTANT: DO NOT store diesel fuel in galvanized containers. Diesel fuel stored in galvanized containers reacts with zinc coating on container to form zinc flakes. If fuel contains water, a zinc gel will also form. The gel and flakes will quickly plug fuel filters, damage injection nozzles and injection pump.

DO NOT use brass-coated containers for fuel storage. Brass is an alloy of copper and zinc.

Store diesel fuel in plastic, aluminum, and steel containers specially coated for diesel fuel storage.

Avoid storing fuel over long periods of time. If fuel is stored for more than a month prior to use, or there is a slow turnover in fuel tank or supply tank, add a fuel conditioner such as John Deere PREMIUM DIESEL FUEL CONDITIONER or equivalent to stabilize the fuel and prevent water condensation. John Deere PREMIUM DIESEL FUEL CONDITIONER is available in winter and summer formulas. Fuel conditioner also reduces fuel gelling and controls wax separation during cold weather.

Consult your John Deere engine distributor or servicing dealer for recommendations and local availability. Always follow manufacturer's directions on label.

TX,45,JC1772 –19–08JAN97–1/1

Fuel Tank

CAUTION: Handle fuel carefully. If the engine is hot or running, do not fill the fuel tank. Do not smoke while you fill fuel tank or work on fuel system.

To avoid condensation, fill the fuel tank at the end of each day's operation.

Specification

Fuel Tank—Capacity	227 L (60 gal)

TS185 –UN–23AUG88

CED,TX03768,2786 –19–13JUN00–1/1

Diesel Engine Oil

Use oil viscosity based on the expected air temperature range during the period between oil changes.

The following oil is preferred:

- John Deere PLUS-50®

The following oil is also recommended:

- John Deere TORQ-GARD SUPREME®

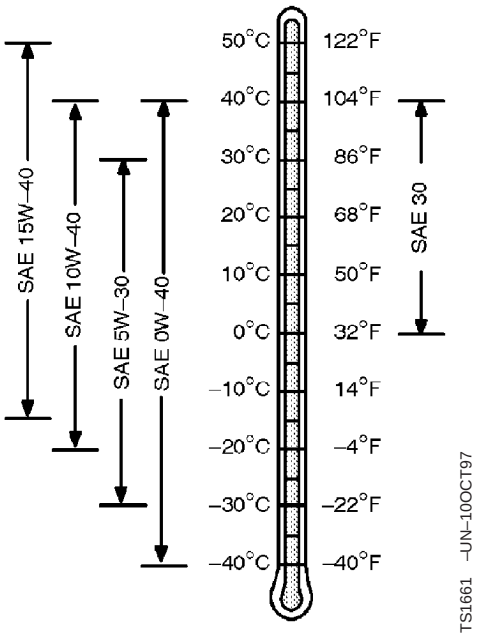
Other oils may be used if they meet one or more of the following:

- API Service Classification CG-4
- API Service Classification CF-4
- ACEA Specification E3
- ACEA Specification E2

Multi-viscosity diesel engine oils are preferred.

If diesel fuel with sulfur content greater than 0.5% is used, reduce the service interval by 50%.

Extended service intervals may apply when John Deere preferred engine oils are used. Consult your John Deere dealer for more information.



PLUS-50 is a registered trademark of Deere & Company.
TORQ-GARD SUPREME is a trademark of Deere & Company

DX,ENOIL –19–10OCT97–1/1

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Track Rollers, Front Idler, and Carrier Roller Oil

Use oil viscosity based on the expected air temperature range during the period between oil changes.

The following oils are preferred:

- John Deere GEAR LUBRICANT (SAE 80W90)
- John Deere EXTREME-GARD

The following oils are recommended:

- API Service Classification GL-5 gear oil (SAE 80W90)
- Arctic oils such as (MIL-L-10324A) may be used at temperatures below –30°C (–11°F).

TX,45,RR5122 –19–12JUL95–1/1

Transmission and Hydraulic Oil

Use oil viscosity based on the expected air temperature range during the period between oil changes.

The following oils are preferred:

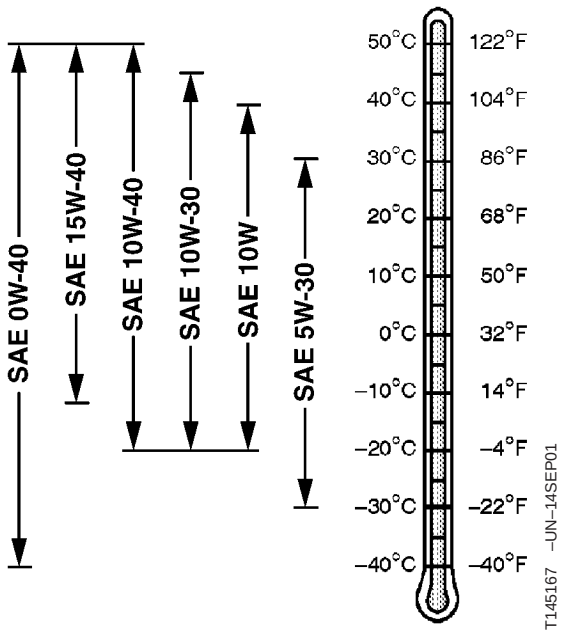
PLUS-50®

TORQ-GARD SUPREME®

Other oils may be used if they meet one or more of the following:

API Service Classification CG-4

API Service Classification CH-4



PLUS-50 is a trademark of Deere & Company
TORQ-GARD SUPREME is a trademark of Deere & Company

TX03768,0000B8E –19–27SEP01–1/1

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Winch Oil

Use oil viscosity based on expected air temperature range during period between oil changes.

The following oils are preferred:

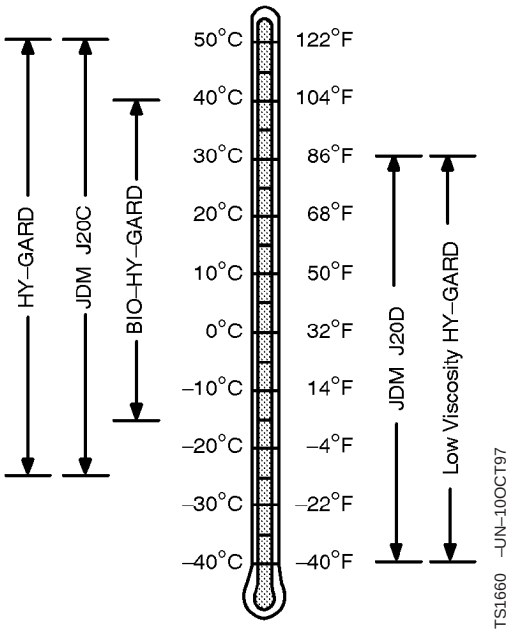
- John Deere HY-GARD®
- John Deere Low Viscosity HY-GARD®

Other oils may be used if they meet one of the following:

- John Deere Standard JDM J20C
- John Deere Standard JDM J20D

Use the following oil when a biodegradable fluid is required:

- John Deere BIO-HY-GARD™
  Engine oils may be used if they meet both Caterpillar TO-2 test AND one or more of API Service Classifications CE, CD or CC.
  Other oils may be used if they meet John Deere Standard JDM J20C or J20D.
  Oils meeting Military Specification MIL-L-46167A may be used as arctic oils.



HY-GARD is a trademark of Deere & Company
BIO-HY-GARD is a trademark of Deere & Company

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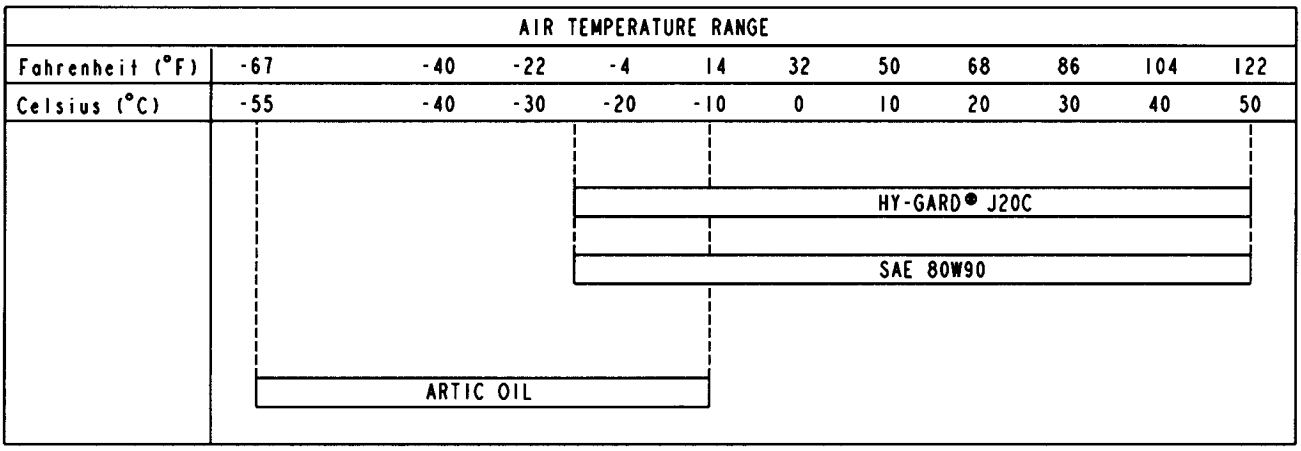
Inner and Outer Final Drive Oil



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T8448AT –19–26JUN95

Depending on the expected air temperature range between oil changes, use oil viscosity shown on the chart above.

John Deere HY-GARD® is preferred.

Other oils may be used if they meet the following:

- John Deere API GL-5 Gear Oil (SAE 80W90)

Arctic oils (such as Military Specifications MIL-L-46167B) may be used at temperatures below —30°C (—22°F).

HY-GARD is a registered trademark of Deere & Company.

CED,TX03768,2689 –19–25JAN00–1/1

Grease

Use grease based on NLGI consistency numbers and the expected air temperature range during the service interval.

The following greases are preferred:

- John Deere SD POLYUREA GREASE

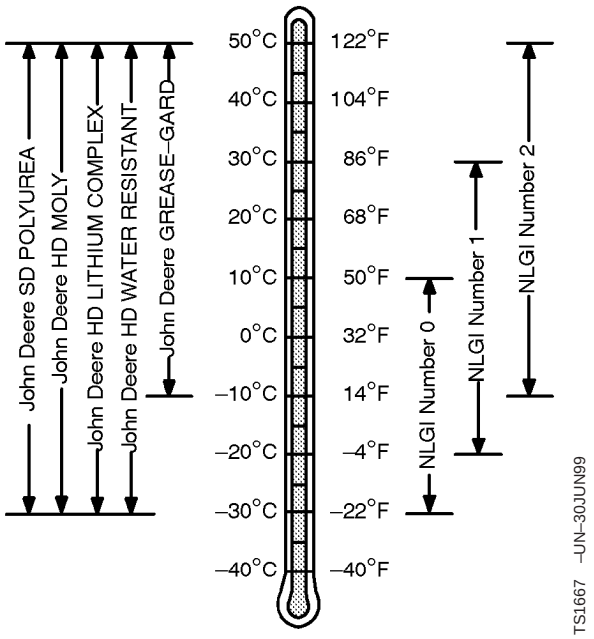
The following greases are also recommended:

- John Deere HD MOLY GREASE
- John Deere HD LITHIUM COMPLEX GREASE
- John Deere HD WATER RESISTANT GREASE
- John Deere GREASE-GARD

Other greases may be used if they meet the following:

- NLGI Performance Classification GC-LB

IMPORTANT: Some types of grease thickener are not compatible with others.



DX,GREA1 –19–07JUL99–1/1

Lubricant Storage

Your equipment can operate at top efficiency only when clean lubricants are used.

Use clean containers to handle all lubricants.

Whenever possible, store lubricants and containers in an area protected from dust, moisture, and other contamination. Store containers on their side to avoid water and dirt accumulation.

Make certain that all containers are properly marked to identify their contents.

Properly dispose of all old containers and any residual lubricant they may contain.

DX,LUBST –19–18MAR96–1/1

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Alternative and Synthetic Lubricants

Conditions in certain geographical areas may require lubricant recommendations different from those printed in this manual.

Some John Deere brand coolants and lubricants may not be available in your location.

Consult your John Deere dealer to obtain information and recommendations.

Synthetic lubricants may be used if they meet the performance requirements as shown in this manual.

The temperature limits and service intervals shown in this manual apply to both conventional and synthetic oils.

Re—refined base stock products may be used if the finished lubricant meets the performance requirements.

DX,ALTER –19–18MAR96–1/1

Mixing of Lubricants

In general, avoid mixing different brands or types of oil. Oil manufacturers blend additives in their oils to meet certain specifications and performance requirements.

Mixing different oils can interfere with the proper functioning of these additives and degrade lubricant performance.

Consult your John Deere dealer to obtain specific information and recommendations.

DX,LUBMIX –19–18MAR96–1/1

Diesel Engine Coolant

The engine cooling system is filled to provide year-round protection against corrosion and cylinder liner pitting, and winter freeze protection to -37°C (-34°F).

The following engine coolant is preferred for service:

- John Deere COOL-GARD Prediluted Coolant

The following engine coolant is also recommended:

- John Deere COOL-GARD Coolant Concentrate in a 40 to 60% mixture of concentrate with quality water.

Other low silicate ethylene glycol base coolants for heavy-duty engines may be used if they meet one of the following specifications:

- ASTM D5345 (prediluted coolant)
- ASTM D4985 (coolant concentrate) in a 40 to 60% mixture of concentrate with quality water

Coolants meeting these specifications require use of supplemental coolant additives, formulated for heavy-duty diesel engines, for protection against corrosion and cylinder liner erosion and pitting.

A 50% mixture of ethylene glycol engine coolant in water provides freeze protection to -37°C (-34°F). If protection at lower temperatures is required, consult your John Deere dealer for recommendations.

Water quality is important to the performance of the cooling system. Distilled, deionized, or demineralized water is recommended for mixing with ethylene glycol base engine coolant concentrate.

IMPORTANT: Do not use cooling system sealing additives or antifreeze that contains sealing additives.

Coolant Drain Intervals

Drain the factory fill engine coolant, flush the cooling system, and refill with new coolant after the first 3 years or 3000 hours of operation. Subsequent drain intervals are determined by the coolant used for service. At each interval, drain the coolant, flush the cooling system, and refill with new coolant.

When John Deere COOL-GARD is used, the drain interval may be extended to 5 years or 5000 hours of operation, provided that the coolant is tested annually AND additives are replenished, as needed, by adding a supplemental coolant additive.

If COOL-GARD is not used, the drain interval is reduced to 2 years or 2000 hours of operation.

DX,COOL3 –19–05FEB99–1/1

Section 01
Tracks

Contents

Page

Group 0130—Track System

Essential Tools 01-0130-1
Service Equipment and Tools 01-0130-2
Other Material 01-0130-5
Specifications 01-0130-6
Rock Guards
  Remove and Install 01-0130-10
Carrier Roller
  Measure Wear 01-0130-11
  Remove and Install 01-0130-12
  Disassemble and Assemble 01-0130-13
  Inspect Metal Face Seals 01-0130-15
  Oil Leakage Test 01-0130-17
Track Roller
  Measure Wear 01-0130-18
  Remove and Install 01-0130-19
  Disassemble and Assemble 01-0130-21
  Leakage Test 01-0130-27
  Adding Oil To The Roller 01-0130-27
Track Shoe
  Measure Grouser Wear 01-0130-28
  Remove and Install 01-0130-29
Lubricated Track Chain
  Measure Llink Height 01-0130-31
  Measure Bushing Outside Diameter 01-0130-31
  Measure Track Pitch 01-0130-32
  Remove and Install 01-0130-32
  Disassemble to Turn Bushings and
    Lubricate Chain 01-0130-35
  Assemble to Turn Bushings and
    Lubricate Chain 01-0130-38
  Disassemble and Assemble to Turn
    Pins and Bushings and Not
    Lubricate 01-0130-45
Adjust Track Sag 01-0130-52
Front Idler
  Measure Wear 01-0130-53
  Remove and Install 01-0130-54
  Disassemble, Inspect, and Assemble 01-0130-56
  Inspect Metal Face Seals 01-0130-58
  Adjustment Procedure 01-0130-59
  Test for Oil Leakage 01-0130-61
Track Tension Adjuster
  Remove and Install 01-0130-62
Track Idler Recoil Spring
  Remove and Install 01-0130-63

Page

  Disassemble and Assemble 01-0130-64
Welding Procedure 01-0130-67
Track Frame
  Remove and Install 01-0130-68
  Remove and Install Wear Strips 01-0130-70
Sprocket Segment
  Remove and Install 01-0130-71
Sprocket
  Remove and Install 01-0130-72

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

CED,TX03399,6184 –19–11AUG00–1/8

Seal Installation Tool JDG204

Used to install carrier roller metal face seal. Used to install metal face seal in track rollers and front idlers.

CED,TX03399,6184 –19–11AUG00–2/8

Front Idler Lube Nozzle Kit JD313A

To inject oil into track roller and front idler.

CED,TX03399,6184 –19–11AUG00–3/8

Stopper Installer JDG188

Used to install stopper in lubricated track pins.

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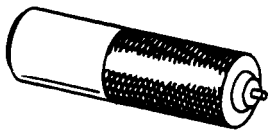

CED,TX03399,6184 –19–11AUG00–4/8

Plug Installer JDG190

Used to install rubber plug in lubricated track pins.

CED,TX03399,6184 –19–11AUG00–5/8

Press A2656-141

Used to remove track shoes.

CED,TX03399,6184 –19–11AUG00–6/8

Track Shoe Gauge 23058

Used to gauge track shoes to assure proper assembly.

Continued on next page

CED,TX03399,6184 –19–11AUG00–7/8

Track Spring Compressor Kit. JD314B

Used to remove and install track spring.

CED,TX03399,6184 –19–11AUG00–8/8

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Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

CED,TX03399,6188 –19–11AUG00–1/12

Undercarriage Inspection Service Tool Kit JT05518A

For inspection of undercarriage components

CED,TX03399,6188 –19–11AUG00–2/12

200 mm Ruler[1] JT05521

Used to measure undercarriage wear.

[1]Included in the Undercarriage Inspection Service Tool Kit.

CED,TX03399,6188 –19–11AUG00–3/12

Right Angle Attachment[1] JT05534

Used to measure undercarriage wear.

[1]Included in the Undercarriage Inspection Service Tool Kit.

Continued on next page

CED,TX03399,6188 –19–11AUG00–4/12

300 mm Ruler[1] D05231ST

Used to measure undercarriage wear.

[1]Included in the Undercarriage Inspection Service Tool Kit.

CED,TX03399,6188 –19–11AUG00–5/12

Undercarriage Inspection Service Tool Kit . . . JT05518 or JT05523

Used to mmeasure undercarriage wear.

CED,TX03399,6188 –19–11AUG00–6/12

Track Nut Removal Tool. DFT1041

To remove nuts and cap screws.

CED,TX03399,6188 –19–11AUG00–7/12

Lubed Track Tool Set. A2656-141

Used with track press to disassemble and assemble track chain.

CED,TX03399,6188 –19–11AUG00–8/12

Seal Tester and Lubricator for S.A.L.T. Crawler Equipment 61119

Used to add oil to test and lubricate track pins.

CED,TX03399,6188 –19–11AUG00–9/12

Lubed Track Tool Set. 2656-141

Used to remove track shoes.

Continued on next page

CED,TX03399,6188 –19–11AUG00–10/12

Recoil Spring Guard Tool . . . . . DFT1087[1]

Used to guard spring while compressing.

[1]Dealer Fabricated Tool. See Section 99 for instructions to make tool.

CED,TX03399,6188 –19–11AUG00–11/12

Recoil Spring Tool. . . . . ST4920[1]

Used to assemble recoil spring.

[1]Dealer Fabricated Tool. See Section 99 for instructions to make tool.

CED,TX03399,6188 –19–11AUG00–12/12

Other Material

Number	Name	Use
T43512 (U.S.) TY9473 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Use on rock guard cap screws without spacers. Apply to threads of sprocket segment cap screws.
PT569 (U.S.)	NEVER-SEEZ® Lubricant	Apply to threads and bearing surfaces under head for split master link and shoe. Apply to mating surface of master link. Apply to Special Bolt for Idler Recoil Spring.
TY16285 (U.S.) CXTY16285 (Canadian) 7649 (LOCTITE®)	Cure Primer	Apply prior to application of adhesives, threadlock, and sealants.
TY15934 (Canadian) (LOCTITE®)	John Deere Gasket Maker #3	Applied to track link bore.
	Low carbon AWS-ASTM, E7018 electrode (5/32 in. diameter)	Weld wears strips on track frame.

LOCTITE is a trademark of Loctite Corp.
NEVER-SEEZ is a registered trademark of Emhart Chemical Group

CED,TX03399,6189 –19–14AUG00–1/1

Specifications

Item	Measurement	Specification
Rock Guard		
Rock Guard	Weight	58 kg (129 lb) Approximate
Rear Rock Guard	Weight	24 kg (53 lb) Approximate
Carrier Roller		
New Carrier Roller	OD	165.1 mm (6.50 in.)
100 Percent Worn Carrier Roller	OD	148.4 mm (5.84)
Carrier Roller with Bracket	Weight	52 kg (114 lb)
Carrier Roller Retainer Plate Cap Screws	Torque	47 N•m (35 lb-ft)
Carrier Roller Oil	Capacity	356 mL (12 oz)
Carrier Roller Cover Cap Screws	Torque	47 N•m (35 lb-ft)
Carrier Roller Leakage Test	Air Pressure	117 ± 10 kPa (1 ± 0.2 bar) (17 ± 3 psi)
Track Roller Tread Diameter		
New	OD	203.0 mm (7.99 in.)
100 Percent Worn	OD	184.2 mm (7.25 in.)
Track Roller		
Track Roller-to-Track Frame Cap Screw	Torque	320 N•m (235 lb-ft)
Track Roller Leakage Test	Air Pressure	117 ± 10 kPa (1 ± 2 bar) (17 ± 3 psi)
Track Shoe		
Single Bar Grouser New Shoe	Height	54.0 mm (2.12 in.)
Single Bar Grouser 100% Worn	Height	22.5 mm (0.89 in.)

Continued on next page

CED,TX03399,6190 –19–14AUG00–1/4

Item	Measurement	Specification
Track Shoe Cap Screw		
(5/8 in.)	Torque Turn	163 N•m (120 lb-ft) + 1/3 Turn (120°)
(5/8 in.) with Swamp Shoe	Torque Turn	163 N•m (120 lb-ft) + 1/2 Turn (180°)
Split Master Link Shoe Cap Screw		
(5/8 in.)	Torque Turn	163 N•m (120 lb-ft) + 1/2 Turn (180°)
(5/8 in.) with Swamp Shoe	Torque Turn	163 N•m (120 lb-ft) + 1/2 Turn (180°)
Track Shoe Cap Screws 50—100 Hour Check		
Track Shoe 50—100 Hour Check	Minimum Torque	380 N•m (280 lb-ft)
Chain Link		
Chain Link New	Height	103.9 mm (4.09 in.)
Chain Link 100% Worn	Height	94.5 mm (3.72 in.)
Track Bushing Outer Diameter		
New Bushing	OD	62.2 mm (2.45 in.)
100 Percent Worn Bushing (High Shock Impact)	OD	55.3 mm (2.18 in.)
100 Percent Worn Bushing (Normal Impact)	OD	52.8 mm (2.08 in.)
Track Pitch		
Pitch Wear Limit (Single Joint)	Length	175.5 mm (6.9 in.)
Lubricated Track		
Split Link Cap Screw (5/8 in.)	Torque	163 N•m (120 lb-ft) Second Pass—Additional 1/2 (180°) turn

Continued on next page

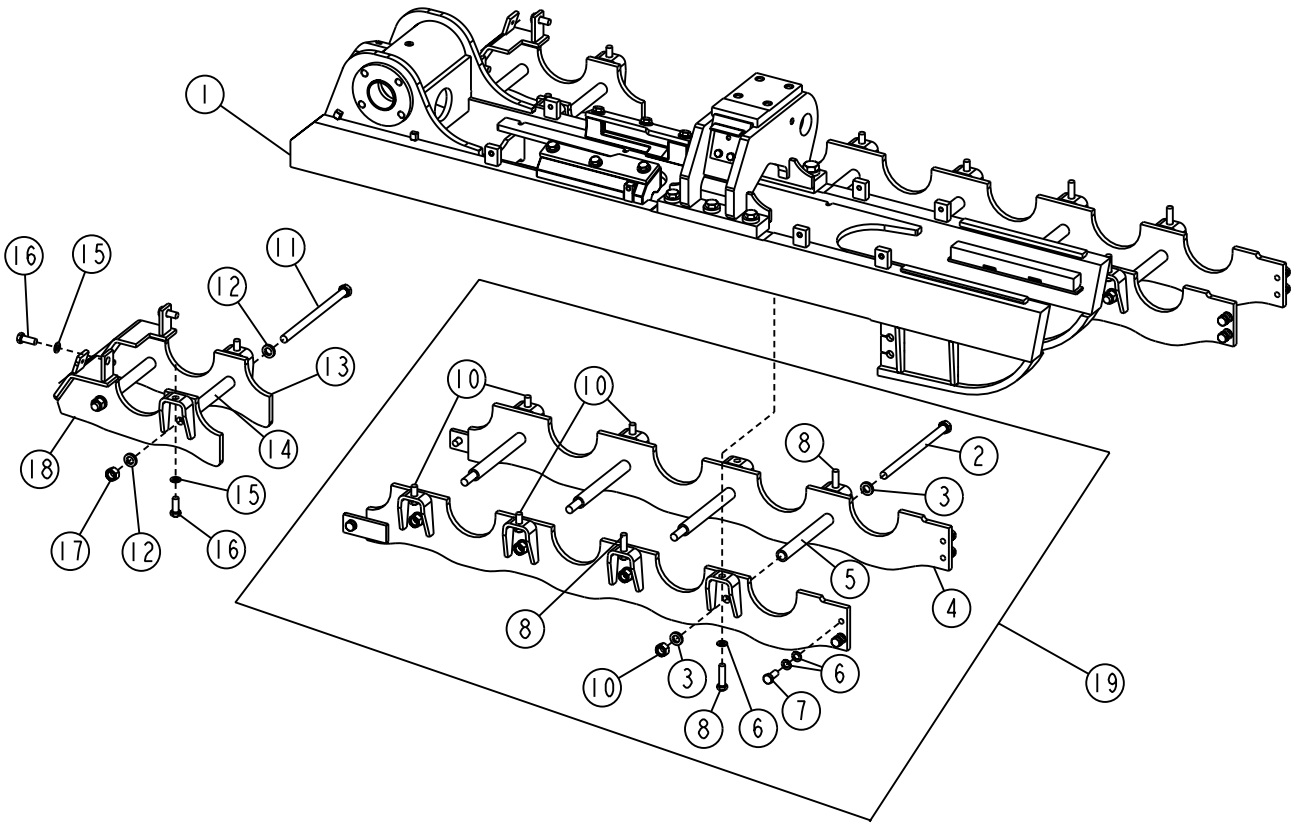
Item	Measurement	Specification
Pin	Chamfer	3 mm (0.12 in.) x 15°
Pin	Chamfer	4 mm (0.16 in.) x 30°
Pressure Relief Valve Setting	Force (Maximum)	378 080 N (85 000 lb force)
Bushing Protection	Distance	3.02 ± 0.25 mm (0.119 ± 0.010 in.)
Lubricated Track Chain Seal Test	Vacuum	68—102 kPa (2—30 in. Hg)
Lubricated Track Chain Oil	Pressure	140—205 kPa (1.4—2.05 bar (20—30 psi)
Lubricated Track Pin End	Chamfer	3 mm (0.12 in.) x 15°
Track Press Relief Valve	Force	378 080 N (85,000 lb force) Maximum
Track Pin Bushing	Projection	3.02 ± 0.25 mm (0.119 ± 0.010 in.)
Lubricated Track Chain	Track Sag	51 ± 6 mm (2 ± 1/4 in.)
Front Idler		
700H Flange New	Height	20.0 mm (0.79 in.)
700H Flange 100% Worn	Height	26.4 mm (1.04 in.)
Idler Cap Screw (Vertical)	Torque	170 N•m (125 lb-ft)
Wear plate vertical clearance.	Clearance	2 mm (0.079 in.) maximum
Wear plate horizontal clearance.	Clearance	2 mm (0.079 in.) maximum
Oil Level Plug	Torque	41 ± 4 N•m (30 ± 3 lb-ft)
Track Recoil Spring		
Recoil Spring	Free Length	582 mm (22.9 in.) Approximate
Sprocket Segments		
Segments	Torque	285 N•m (210 lb-ft)

Continued on next page

Item	Measurement	Specification
Sprocket		
Sprocket Cap Screws	Torque	407 N•m (300 lb-ft)
Sprocket Guards		
Guards	Torque	129 N•m (95 lb-ft)

CED,TX03399,6190 –19–14AUG00–4/4

Remove and Install Rock Guards



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Rock Guards and Rear Rock Guards—One Side Shown

Continued on next page

CED,TX03399,5935 –19–24MAR00–1/2

1—Track Frame Assembly
2—Cap Screw (4 used)
3—Washer (8 used)
4—Rock Guard
5—Spacer (4 used)
6—Washer (13 used)
7—Cap Screw (6 used)
8—Cap Screw (3 used)
9—Nut (4 used)
10—Cap Screw (4 used)
11—Cap Screw (2 used)
12—Washer (4 used)
13—Rear Rock Guard
14—Spacer (2 used)
15—Washer (4 used)
16—Cap Screw (4 used)
17—Nut (2 used)
18—Rear Rock Guard
19—Rock Guard Assembly

CAUTION: The approximate weight of standard rock guard is 58 kg (129 lb) and rear rock guard is 24 kg (53 lb).

Rock Guard—Specification

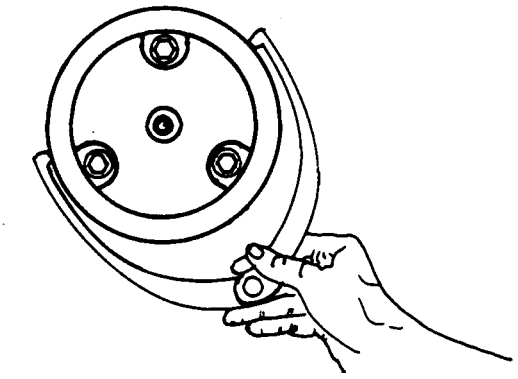
Rock Guard—Weight	58 kg (129 lb) Approximate
Rear Rock Guard—Weight	24 kg (53 lb) Approximate

1. Use a chain and hoist when removing rock guards. Inspect parts, replace if necessary.
2. Apply thread lock and sealer (medium strength) to all cap screws except (2 and 11). Tighten cap screws.

CED,TX03399,5935 –19–24MAR00–2/2

Measure Carrier Roller Wear

NOTE: See Undercarriage Appraisal Manual SP326 for additional information.



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Item	Measurement	Specification
Carrier Roller		
New Carrier Roller	OD	171.5 mm (6.75 in.)
100 Percent Worn Carrier Roller	OD	158.5 mm (6.24 in.)

1. Position an outside calipers over the most worn area of roller running surface, and close until caliper tips just touch tread surface.
2. Measure caliper tip spread using the scale to the nearest 0.5 mm (0.002 in.).
3. Check for flat spots on carrier roller thread, which indicate roller is not free to turn.

CED,TX03399,5936 –19–03APR01–1/1

Remove and Install Carrier Roller

CAUTION: Grease in track adjustment cylinder is under high pressure. Slowly loosen check valve nut to release grease from track tension adjuster.

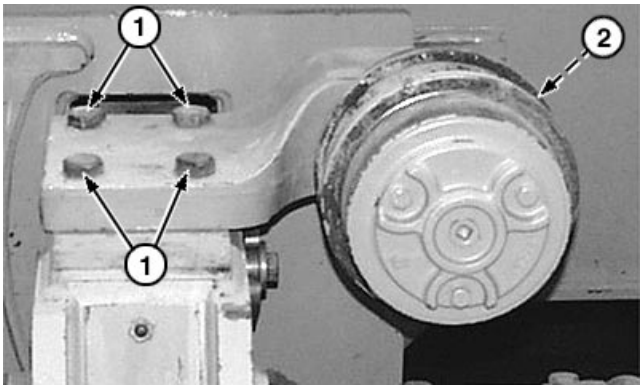
1. Slowly turn check valve nut about one turn to release track tension. (See Adjust Track Sag in this group.)
2. Raise and support track chain using a chain and hoist.

CAUTION: The approximate weight of carrier roller with bracket is 52 kg (114 lb).

Carrier Roller—Specification

Carrier Roller with Bracket—Weight	52 kg (114 lb)

3. Loosen cap screws (1) to remove carrier roller with bracket or loosen cap screws (2) on bracket and just remove carrier roller.
4. Install carrier roller and bracket. Tighten cap screws.



T131574B –UN–12JUN00

1—Carrier Roller Bracket Cap Screw-to-Cross Bar Support (4 used)
2—Bracket Cap Screws-to-Carrier Roller (2 used)

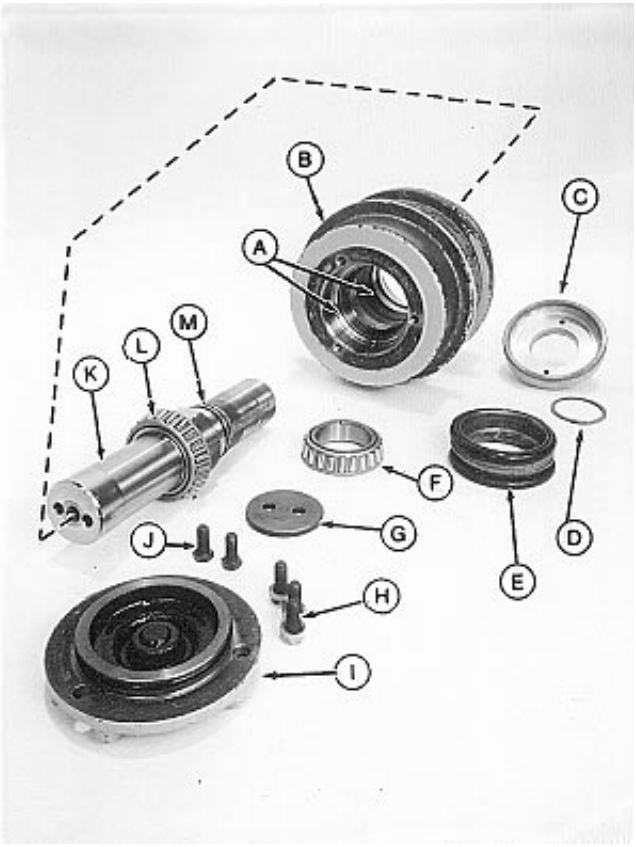
CED,TX03399,5937 –19–24MAR00–1/1

Disassemble and Assemble Carrier Roller

1. Remove bracket from carrier roller (if removed).
2. Remove cap screws (H) and cover (I).
3. Drain oil from housing.
4. Remove cap screws (J) and retainer plate (G) from shaft (K).
5. Press outer bearing cone (F) and shaft (K) out of roller shell (B) using a press.
6. Press inner bearing cone (L) from shaft. Bearing is a press fit.

IMPORTANT: Metal face seals can be reused if they are not worn or damaged. A used seal must be kept together as a set because of wear patterns on seal ring face.

7. Remove snap ring (D), seal retainer (C) and metal face seals (E). Keep seal rings together as a matched set with faces together to protect lapped surfaces. Inspect metal face seal. (See Inspect Metal Face Seals in this group.)
8. Remove bearing cups (A). Inspect roller shell for grooved, burred or galled condition.
9. Replace parts as necessary.



T8401AB –UN–20MAY95

A—Bearing Cup (2 used)
B—Roller Shell
C—Seal Retainer
D—Snap Ring
E—Metal Face Seal
F—Bearing Cone
G—Retainer Plate
H—Cap Screw (3 used)
I—Cover
J—Cap Screw (2 used)
K—Shaft
L—Bearing Cone
M—O-Ring

Continued on next page

CED,TX03399,5938 –19–24MAR00–1/3

10. Install bearing cups (A) into roller shell, install tight against shoulders.

11. Install inner bearing cone (L) tight against shoulder on shaft. Bearing is a press fit.

12. Install shaft (K) in roller shell.

13. Press outer bearing cone (F) on shaft so bearing is even with end of the shaft.

14. Install retainer plate (G) and cap screws (J). Tighten cap screws to specification.

Carrier Roller—Specification

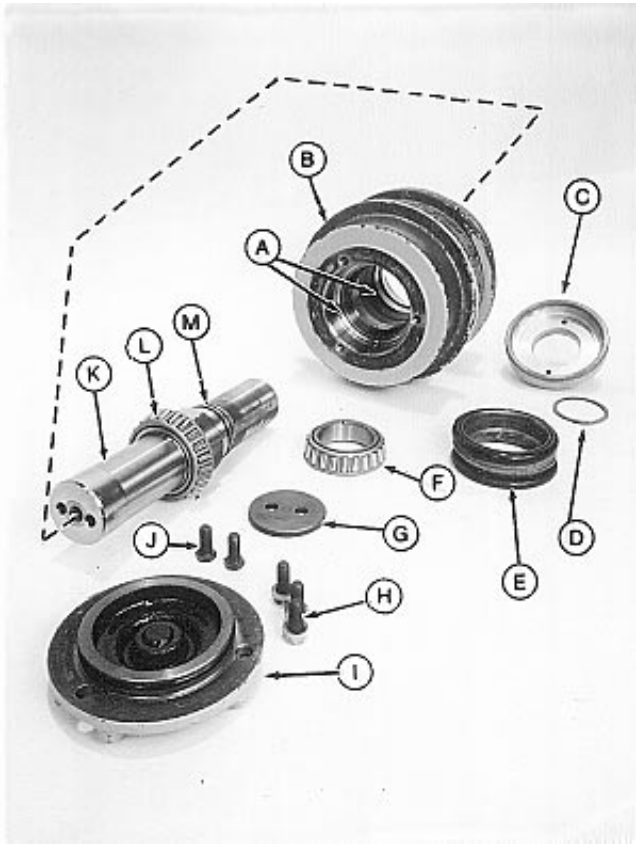
Carrier Roller Retainer Plate Cap Screws—Torque	47 N•m (35 lb-ft)

IMPORTANT: O-ring and seat surfaces must be clean, dry and oil free so O-rings do not slip when roller is turning.

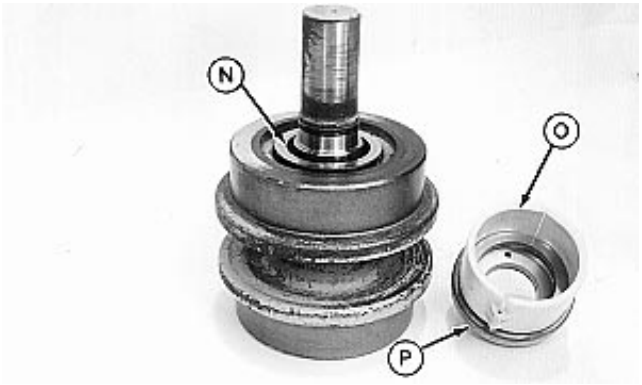
15. Thoroughly clean the O-rings and seat surfaces in roller, seal retainer and seal rings using a volatile, non-petroleum base solvent and lint-free tissues.

16. Install one half of metal face seal using JDG204 Seal Installation tool (O) into seal retainer (P). Install other half of seal (N) into roller shell.

17. Apply equal pressure with the fingers at four equally spaced points on seal ring face. O-ring and seal ring should seat squarely in bore.



T8401AB –UN–20MAY95



T8401AC –UN–22MAY95

A—Bearing Cup (2 used)
B—Roller Shell
C—Seal Retainer
D—Snap Ring
E—Metal Face Seal
F—Bearing Cone
G—Retainer Plate
H—Cap Screw (3 used)
I—Cover
J—Cap Screw (2 used)
K—Shaft
L—Bearing Cone
M—O-Ring
N—Seal
O—JDG204 Seal Installation Tool
P—Seal Retainer

Continued on next page

NOTE: A volatile, non-petroleum base solvent or talcum powder may be used as a lubricant.

18. Wipe both metal seal ring faces dry with a lint-free tissue.

19. Apply a thin film of oil, as used in the roller, to the shiny sealing area on both metal seal rings.

20. Install seal retainer (C) and snap ring (D) on roller shaft.

21. Fill roller with clean oil. (See Opertor's Manual.)

Carrier Roller—Specification

Carrier Roller Oil—Capacity	356 mL (12 oz)

22. Install cover (I) and cap screws (H). Tighten cap screws to specification.

Carrier Roller—Specification

Carrier Roller Cover Cap Screws—Torque	47 N•m (35 lb-ft)

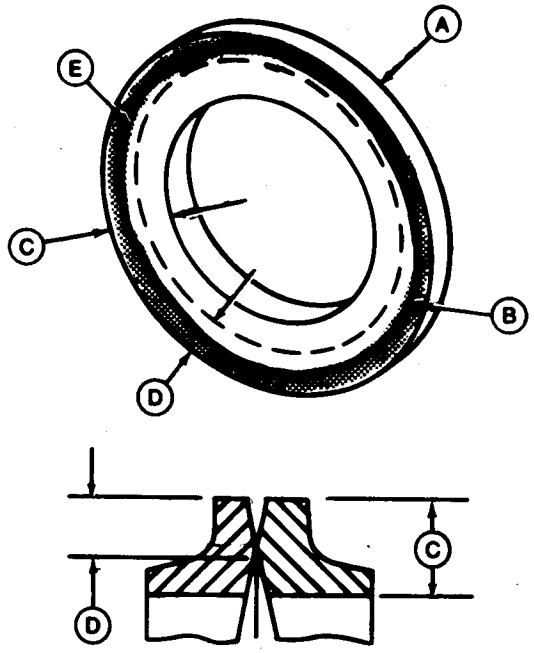
CED,TX03399,5938 –19–24MAR00–3/3

Inspect Metal Face Seals

1. Inspect for the following conditions to determine if seals can be reused:

   - The narrow, highly polished sealing area (E) must be in the outer half of seal ring face (D).
   - Sealing area must be uniform and concentric with the ID and OD of seal ring (A).
   - Sealing area must not be chipped, nicked, or scratched.

A—Seal Ring
B—Worn Area (shaded area)
C—Seal Ring Face
D—Outer Half of Seal Ring Face
E—Sealing Area (dark line)



T85079 –UN–24AUG93

Continued on next page

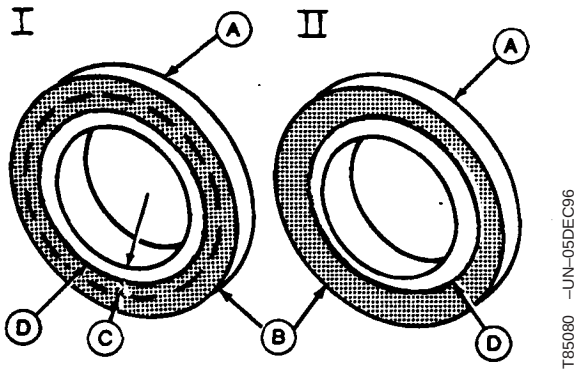
T47,0130,5939HQ –19–25AUG93–1/3

2. Illustration shows examples of worn seal rings (A).

   I—Sealing area (D) is in inner half of seal ring face (C).

   II—Sealing area (D) not concentric with ID and OD of seal ring.

A—Seal Ring
B—Worn Area (shaded area)
C—Inner Half of Seal Ring Face
D—Sealing Area (dark line)



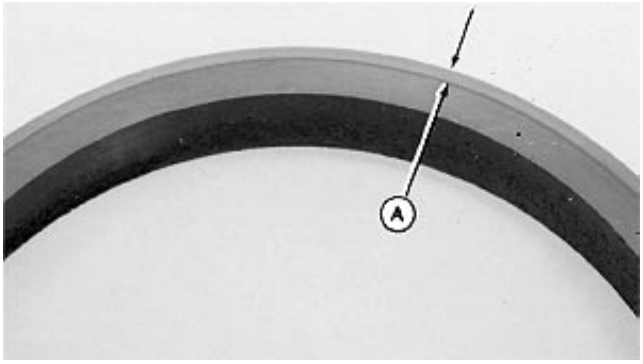
T85080 –UN–05DEC96

T47,0130,5939HQ –19–25AUG93–2/3

3. Clean reusable seals by removing all foreign material from seal rings, except seal face (A), using a scraper or a stiff bristled fiber brush.

4. Wash seal rings and O-rings using a volatile, non-petroleum base solvent to remove all oil. Thoroughly dry parts using a lint-free tissue.

   Apply a thin film of oil to seal ring face. Put face of seal rings together and hold using tape.



T82840 –UN–23FEB89

T47,0130,5939HQ –19–25AUG93–3/3

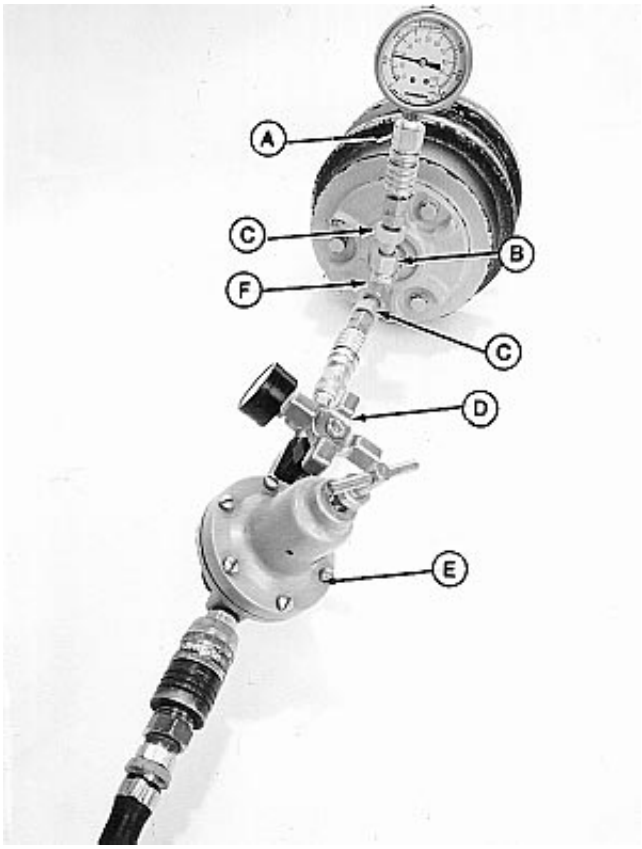
Test Carrier Roller for Oil Leakage

1. Turn roller several times to seat metal face seals.
2. Install parts (A—F).
3. Pressurize roller to specification using air pressure.

Specification

Carrier Roller Leakage Test—Air Pressure ..... 117 ± 10 kPa (1 ± 0.2 bar) (17 ± 3 psi)

4. Close valve and wait for two minutes. Make sure roller maintains air pressure and oil does not leak past O-ring or metal face seals.
5. If roller leaks oil or does not maintain pressure, check O-ring or seals. Repair as necessary and recheck for leaks.
6. Install and tighten plug.



T8402AB –UN–20MAY95

A—Pressure Gauge 0—689 kPa (0—6.89 bar) (0—100 psi)
B—38H1338 Straight Male Connector (-6 M ORFS x -12 M ORB)
C—JT03456 O-Ring Face Seal (2 used) (17/16 -20 M JIC x 11/16-16 F ORFS)
D—Shut-Off Valve
E—Regulator
F—38H1030 Tee (-6 F ORFS x -6 M ORFS x-6 M ORFS) Parker No. (6R6LOS)

TX,0130,SS2405 –19–11MAR96–1/1

Measure Track Roller Wear

Item	Measurement	Specification
Track Roller Tread Diameter		
New	OD	203.0 mm (7.99 in.)
100 Percent Worn	OD	184.2 mm (7.25 in.)

NOTE: Minimum used is the maximum allowable wear for rebuilding roller tread.

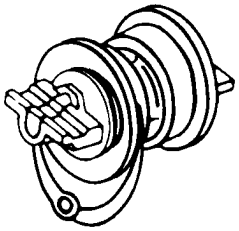
Under some conditions roller wear can be uneven.If wear is uneven, the single flange rollers may be interchanged with other single flange rollers to even out wear. Double flange rollers may be interchanged with other double flange rollers.

1. Raise unit off the ground and support it using shop stands.
2. Release track tension by turning the check valve nut approximately one turn counterclockwise to allow grease to escape.

CED,TX03399,5941 –19–24MAR00–1/2

3. Measure roller tread diameter using a caliper such as JT07193 Special Roller Caliper from JT05518A Undercarriage Inspection Kit.

NOTE: See Undercarriage Appraisal Manual SP326 for additional information.



T6813AM –UN–29JAN98

CED,TX03399,5941 –19–24MAR00–2/2

Remove and Install Track Roller

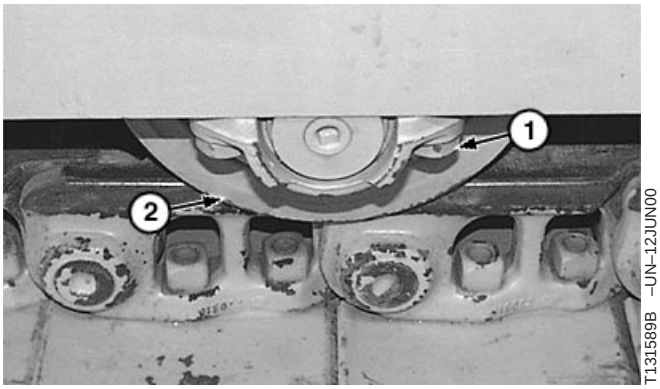
CAUTION: Grease in track adjuster cylinder is under extreme pressure. DO NOT remove grease fittings to release track tension.

1. Turn check valve nut (1) one turn counterclockwise to release grease from track adjuster.
2. Put a piece of pipe between the sprocket and the track chain and rotate track to retract the adjusting cylinder if required.

1—Track Tension Check Valve Nut

CED,TX03399,5942 –19–24MAR00–1/4

3. Remove inner and outer rock guards and rear. (See Remove and Install Rock Guards in this group.)
4. Raise crawler high enough to remove rollers. Put shop stands under machine.



1—Track Roller Cap Screw (4 used)
2—Track Roller

Continued on next page

CED,TX03399,5942 –19–24MAR00–2/4

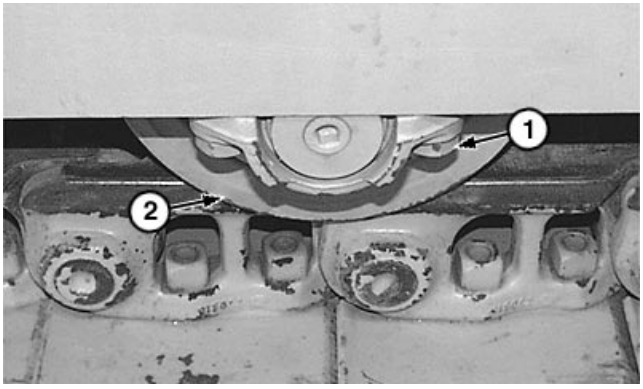
CAUTION: The approximate weight of track rollers is 59 kg (129 lb).

5. Remove cap screws (1) to remove roller (2).
6. Install track roller (2) with oil fill plug toward outside of unit.
7. Carefully lower crawler until roller cap screws can be installed.
8. Tighten cap screws (1) to specification.

Track Roller—Specification

Track Roller-to-Track Frame Cap Screw—Torque	320 N•m (235 lb-ft)

9. Apply thread lock and sealer to rock guard cap screws before installing guards.



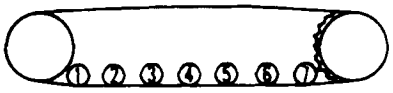
T131589B –UN–12JUN00

1—Track Roller Cap Screw (4 used)
2—Track Roller

CED,TX03399,5942 –19–24MAR00–3/4

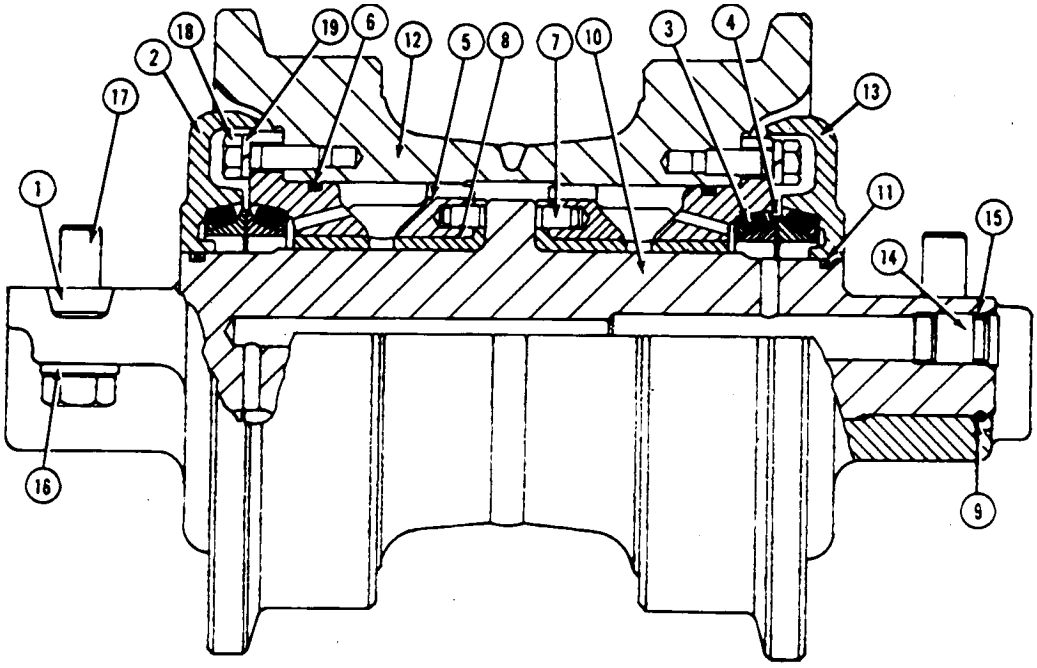
T82634 –UN–26OCT88

10. LGP machines have seven track rollers. Single and double flange rollers are used alternately starting at the idler with a single flange roller. The LT machines have six track rollers and starting at the idler with a single, then double, single, double, double, single.
11. Install rock guards. (See Remove and Install Rock Guards in this group.)
12. Adjust track sag. (See Adjust Track Sag in this group.)



CED,TX03399,5942 –19–24MAR00–4/4

Disassemble and Assemble Track Roller



T6018BE –UN–26OCT88

1—Lock
2—Inner Collar
3—O-Ring
4—Metal Face Seal
5—Bushing Case
6—O-Ring
7—Dowel Pin
8—Bushing
9—Snap Ring
10—Roller Shaft
11—O-Ring
12—Roller
13—Outer Collar
14—Plug
15—O-Ring
16—Lock Washer
17—Cap Screw
18—Cap Screw
19—Lock Washer

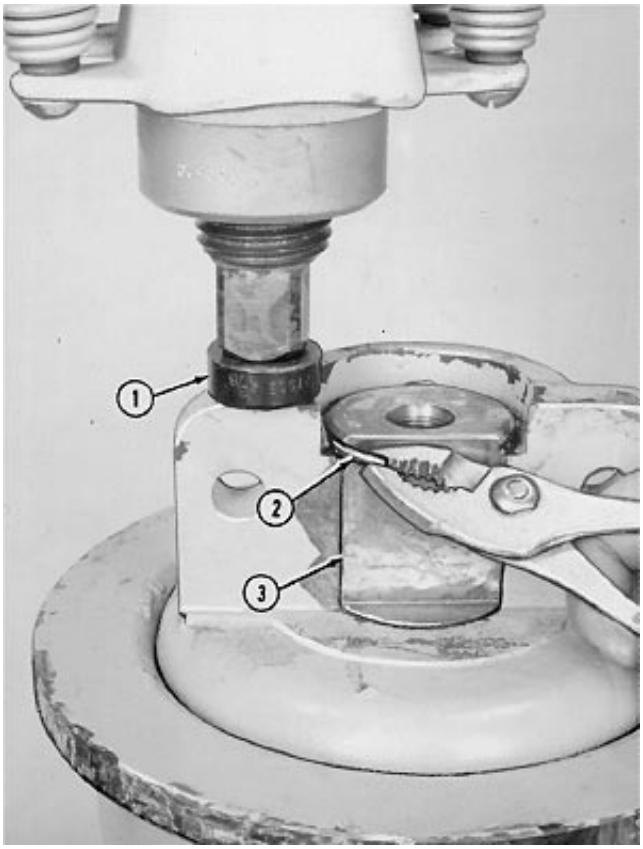
Continued on next page

CED,TX03399,5943 –19–24MAR00–1/12

NOTE: Single and double flange rollers are of the same design. Disassembly procedures are the same for both types of rollers.

1. Remove plug with O-ring to drain oil from roller.
2. Remove lock from inner collar before putting roller assembly in press.
3. Use a 35 mm disk (1) and press to compress the metal face seals slightly. Remove the snap ring (2) from both sides of roller shaft (3).

1—Disk
2—Snap Ring (2 used)
3—Roller Shaft



T80426 –UN–26OCT88

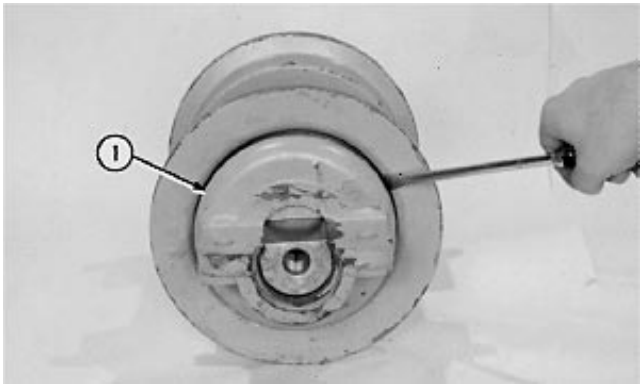
CED,TX03399,5943 –19–24MAR00–2/12

4. Remove outer and inner covers (1), if damaged replace roller.

NOTE: Metal face seals are a matched set. Seals are not interchangeable with other seals.

5. Remove metal face seal from inner and outer covers.

1—Outer and Inner Cover



T80427 –UN–26OCT88

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CED,TX03399,5943 –19–24MAR00–3/12

NOTE: Metal face seals are matched sets. Seals are not interchangeable with other seals.

6. Remove and inspect metal face seals. (See Inspect Metal Face Seals in this group.)

7. Remove O-rings (2) from both ends of shaft.

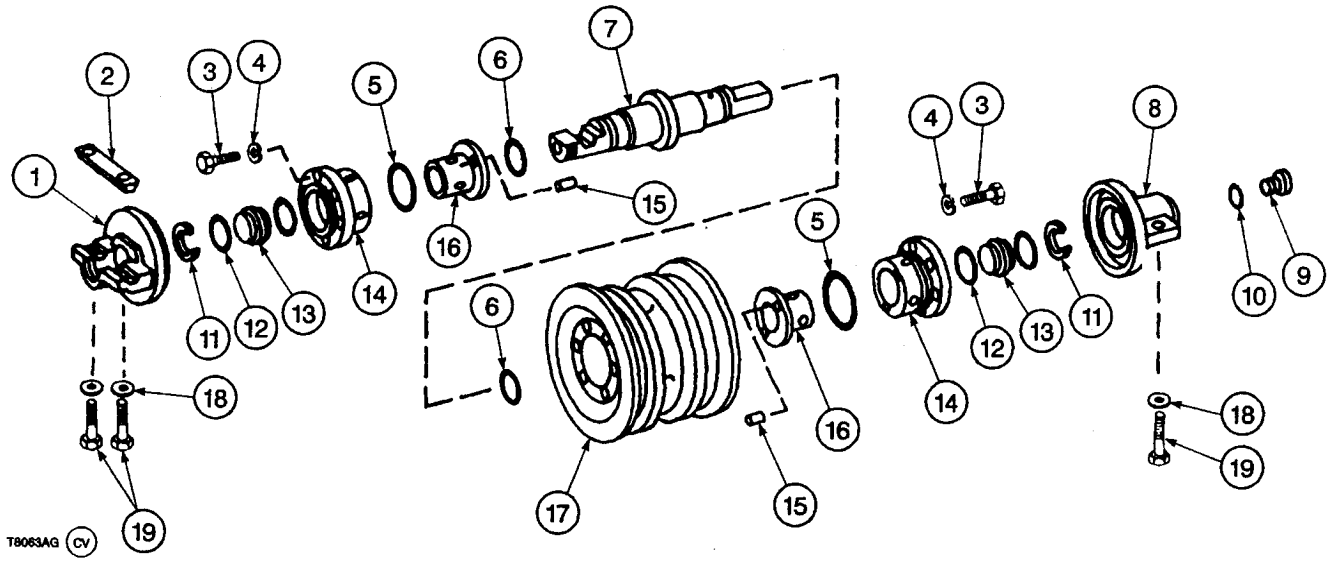
NOTE: Shaft, bushings and bushing case are not service, replace with roller assembly.

8. Inspect shaft, bushings and bushing case, replace with roller assembly.

T6018BC –UN–26OCT88

1—Cap Screw (12 used)
2—O-Rings

CED,TX03399,5943 –19–24MAR00–4/12



T8063AG –UN–08SEP93

Double Flange Track Roller Shown

1—Inner Collar
2—Lock
3—Cap Screw (12 used)
4—Lock Washer (12 used)
5—O-Ring (2 used)
6—O-Ring (2 used)
7—Shaft
8—Outer Collar
9—Plug
10—O-Ring
11—Snap Ring (2 used)
12—O-Ring (4 used)
13—Metal Face Seal (2 used)
14—Bushing Case (2 used)
15—Pin (2 used)
16—Bushing (2 used)
17—Roller
18—Washer (4 used)
19—Cap Screw (4 used)

9.

Assembly of single and double flange roller is the same. Single flange shown.

Continued on next page

CED,TX03399,5943 –19–24MAR00–5/12

10. Install new O-ring on shaft groove (1).

11. Clean seal bore in bushing case, inner collar, and outer collar using a volatile, non-petroleum base type solvent. Make sure seal bores are clean and dry.

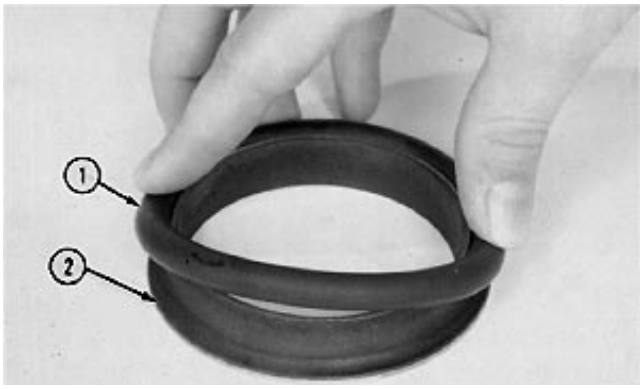
1—O-Rings

T6018BA –UN–26OCT88

CED,TX03399,5943 –19–24MAR00–6/12

IMPORTANT: The metal face seal must be extremely clean during assembly. Use a volatile, non-petroleum base type solvent to clean the metal seal ring (2) and rubber seal (1). DO NOT keep the rubber seal in a volatile, non-petroleum base type solvent for more than one minute. Wipe the seals dry with lint-free tissue to remove finger prints and foreign material.

12. Install rubber seal (1) on the metal seal ring (2). Make sure the rubber seal sits evenly on metal seal ring.



T80574 –UN–26OCT88

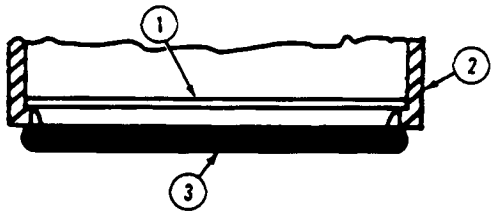
1—Rubber Seal
2—Metal Seal Ring

CED,TX03399,5943 –19–24MAR00–7/12

NOTE: A volatile, non-petroleum base solvent or talcum powder may be used as a lubricant. Solvent MUST NOT damage the O-rings or leave an oil residue.

13. Install seal assembly in the JDG204 Seal Installation Tool (2) so tool lip is between seal ring flange (1) and O-ring (3).

1—Seal Ring Flange
2—JDG204 Seal Installation Tool
3—O-Ring



T6077AV –UN–26OCT88

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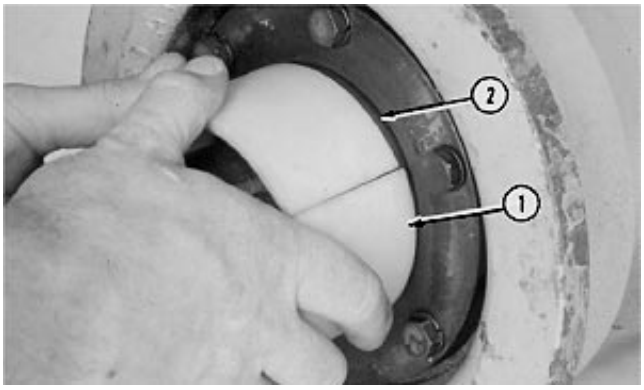
CED,TX03399,5943 –19–24MAR00–8/12

14. Push seal ring and O-ring into bore using tool (1). After O-ring (2) is pushed past retainer lip, turn tool clockwise and counterclockwise to seat O-ring uniformly. Install seal rings and O-rings in the outer and inner collars using the same procedure.

15. Check to make sure seal ring is sitting squarely in bore. Make sure rubber seal is seated uniformly in seal bore below the retainer lip.

1—JDG204 Seal Installation Tool
2—O-Ring



T80577 –UN–26OCT88

CED,TX03399,5943 –19–24MAR00–9/12

16. Wipe metal seal rings dry with a lint free tissue.

17. Apply a thin film of oil, as used in the roller, to the shiny sealing area on metal seal rings.

18. Be sure the rubber seals are free of oil.

T80578 –UN–26OCT88

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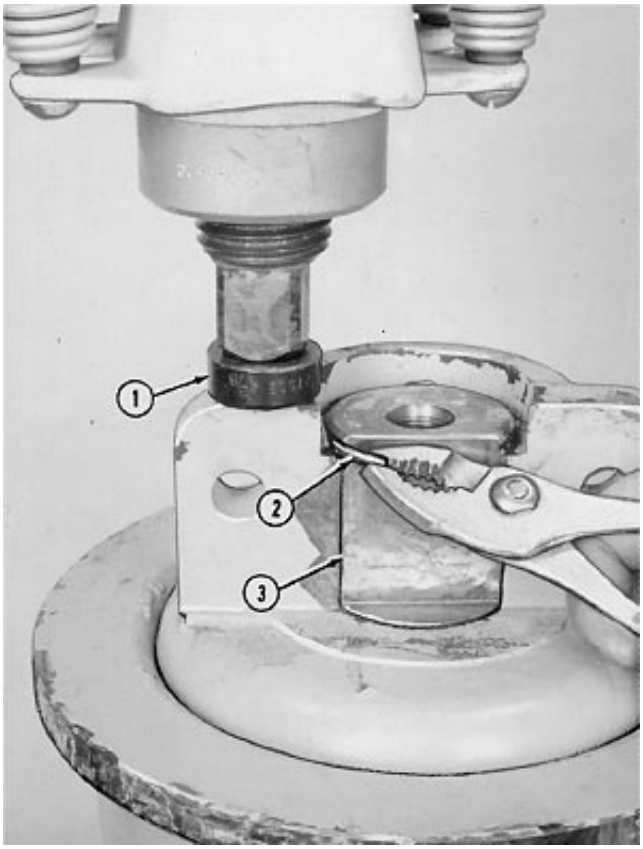
CED,TX03399,5943 –19–24MAR00–10/12

19. Install outer collar.
20. Compress metal face seals slightly using a 35 mm disk (1) and press.
21. Install snap ring (2) on shaft (3).
22. Remove roller from press. Install inner collar and snap ring using same procedure.

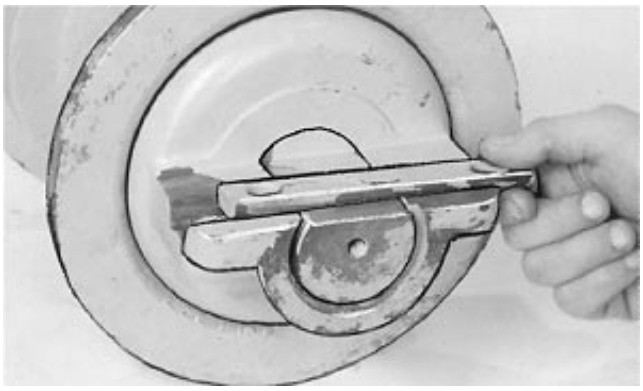
1—35 mm Disk
2—Snap Ring
3—Shaft



T80426 –UN–26OCT88

CED,TX03399,5943 –19–24MAR00–11/12

23. Test track roller for leakage. (See Test Track Roller for Leakage in this group.)
24. Install new O-ring and tighten plug.
25. Install lock.
26. Install track roller.(See Remove and Install Track Roller in this group.)



T80580 –UN–26OCT88

CED,TX03399,5943 –19–24MAR00–12/12

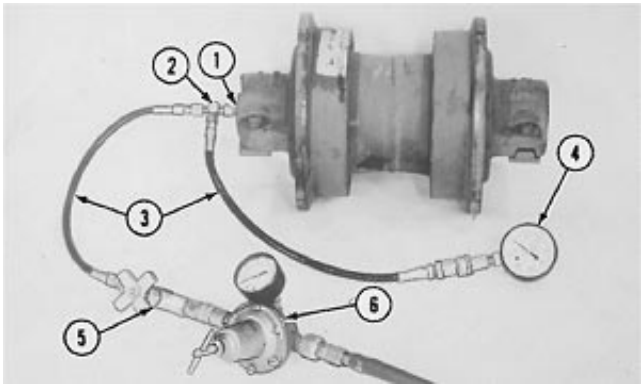
Test Track Roller for Leakage

1. Remove plug from track roller.
2. Fill track roller with recommended oil. (See Operator's Manual.)
3. Turn roller several times to seal metal face seals.
4. Assemble parts (1—6) as shown.
5. Pressurize roller with compressed air to specification and close valve (5).

Specification

Track Roller Leakage Test—Air Pressure ..... 117 ± 10 kPa (1 ± 2 bar) (17 ± 3 psi)

6. Track roller must maintain air pressure for two minutes. Oil must not leak past metal seals or O-ring. If oil leaks past seals, repair as necessary.
7. Install O-ring and tighten plug.



T80613 –UN–26OCT88

1—JTO5494 O-Ring Fitting (7/16 -20 M 37° x 3/4 -16 M ORB)
2—JTO3001 Tee Fitting (7/16 -20 M 37° x 7/16 -20 F 37° Sw x 7/16 -20 M 37°)
3—JTO3017 Pressure Hose
4—Pressure Gauge 689 kPa (6.89 bar) (0—100 psi)
5—JTO3087 Snubber Valve
6—Regulator with Gauge

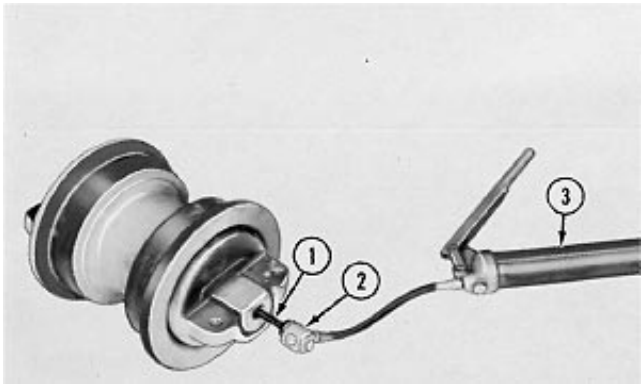
TX,0130,SS2438 –19–13JUN95–1/1

Adding Oil To The Roller

1. Thoroughly clean nozzle (1), from JD313A Front Idler Lube Nozzle Kit, and around the plug end of track roller shaft.
2. Insert nozzle in roller shaft with flat side up, as far as possible. This will allow bleeding of air from housing.

NOTE: Track roller shaft oil capacity is approximately 378.5 mL (12.8 oz).

3. Slowly pump recommended oil into shaft. (See Operator's Manual.) Use adapter (2) and grease gun (3) until oil without air bubbles is seen leaking past the flat on nozzle.



T6090AI –UN–26OCT88

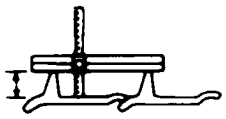
1—JD313-1 Lube Nozzle
2—JD313-2 Adapter
3—Grease Gun

CED,TX03399,5945 –19–24MAR00–1/1

Measure Track Shoe Grouser Wear

100 percent worn is the maximum allowable wear for rebuilding grouser bars with weld.

Measure grouser height of several track shoes to find an average using a depth gauge such as the JT05521 200 mm Ruler, JT05534 Right Angle Attachment and D05231ST 300 mm Ruler from JT05518 or JT05523 Undercarriage Inspection Service Tool Kit.



T6813AN –UN–29JAN98

NOTE: See Undercarriage Appraisal Manual SP326 for additional information.

Item	Measurement	Specification
Track Shoe		
Single Bar Grouser New Shoe	Height	54.0 mm (2.12 in.)
Single Bar Grouser 100% Worn	Height	22.5 mm (0.89 in.)

CED,TX03399,5946 –19–24MAR00–1/1

Remove and Install Track Shoe

NOTE: Cap screws hold the master shoe and split master link together. Link side of master shoe has machined surfaces.

CAUTION: The approximate weight of swamp shoe is 25 kg (54 lb).

1. Remove nuts and cap screws using DFT1041 track nut removal tool to remove shoes. (See Section 99 for instructions to make tool.)

2. Before installing shoes, clean paint, dirt, and debris from mounting surfaces of shoes and links.

3. For all cap screws except those for split master links and shoe, apply oil (SAE 30) to threads and bearing surface under head.

   For split master link and shoe cap screws, apply John Deere NEVER-SEEZ® Lubricant or an equivalent to threads and bearing surface under head.

NEVER-SEEZ is a registered trademark of Emhart Chemical Group

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CED,TX03399,5947 –19–24MAR00–1/2

IMPORTANT: Never use an impact wrench to start cap screws in split master link to avoid cross-threading.

4. Install new cap screws and nuts. Install new nuts using DFT1041 tool. (See DTF1041 Track Nut Removal Tool in section 99.

5. Install nuts with rounded edges (A) against link and chamfered edges (B) away from link.

6. Tighten cap screws to the initial torque using a crisscross sequence. Then repeat sequence for the additional turn.

   Track Shoe Cap Screw:

Track Shoe Cap Screw—Specification

(5/8 in.)—Torque Turn	163 N•m (120 lb-ft) + 1/3 Turn (120°)
(5/8 in.) with Swamp Shoe—Torque Turn	163 N•m (120 lb-ft) + 1/2 Turn (180°)

Split Master Link Shoe Cap Screw:

Split Master Link Shoe Cap Screw—Specification

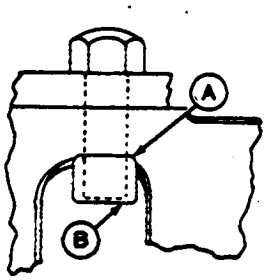
(5/8 in.)—Torque Turn	163 N•m (120 lb-ft) + 1/2 Turn (180°)
(5/8 in.) with Swamp Shoe—Torque Turn	163 N•m (120 lb-ft) + 1/2 Turn (180°)

7. Check torque after 50—100 hours of operation to make sure cap screws are tightened to minimum torque.

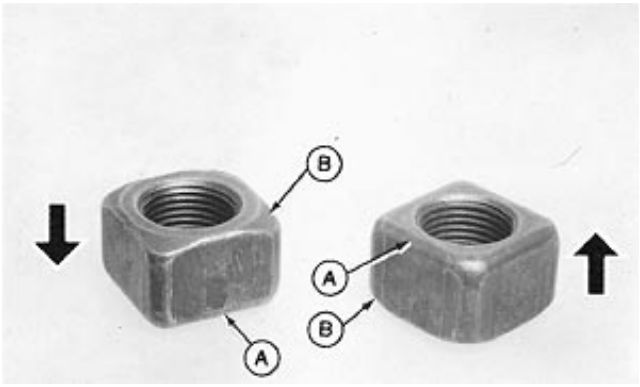
Track Shoe Cap Screws 50—100 Hour Check—Specification

Track Shoe 50—100 Hour Check—Minimum Torque	380 N•m (280 lb-ft)

A—Nut Rounded Edges
B—Nut Chamfered Edges



T96291 –UN–23FEB89



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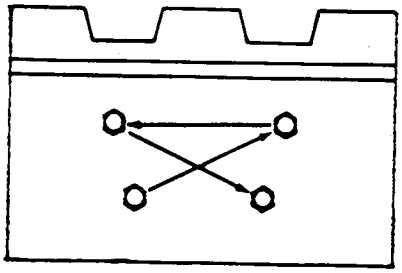


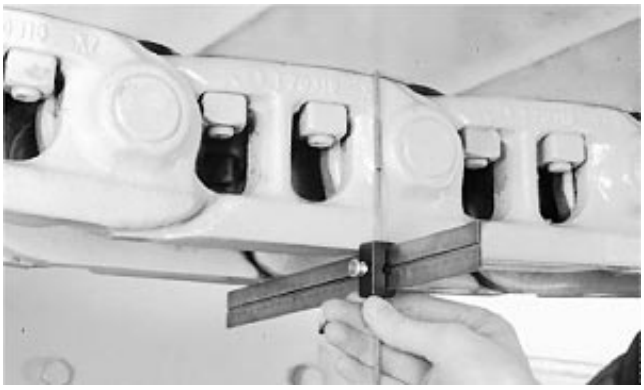
T6352AH –UN–23FEB89

CED,TX03399,5947 –19–24MAR00–2/2

Measure Link Height

NOTE: See Undercarriage Appraisal Manual SP326 for additional information.

Measure link height to nearest 0.5 mm (0.020 in.) using a depth gauge from undercarriage inspection service tool kit. Put the depth gauge on outside of track link against pin boss as shown. Measure several links to the nearest 0.5 mm (0.020 in.).



Chain Link—Specification

Chain Link New—Height	103.9 mm (4.09 in.)
Chain Link 100% Worn—Height	94.5 mm (3.72 in.)

CED,TX03399,5948 –19–24MAR00–1/1

Measure Bushing Outside Diameter

NOTE: Lubricated track chain bushings are measured for vertical wear only using calipers. Bushing vertical wear can be measured using the depth gauge method only after bushing turn procedure is used. (See Undercarriage Appraisal Manual, SP326).

1. Clean surfaces to be measured of two adjacent bushings and underside of track shoe in the area between bushings.

2. Measure reverse drive side wear (A) and forward drive side wear (B) of the bushing using a caliper and scale from undercarriage inspection tool kit.

   Position the caliper so that as it is passed back and forth over the bushing, one tip will slide parallel along with worn surface. Close caliper until the opposite tip just touches the unworn side of the bushing.

   Measure several bushings to the nearest 0.5 mm (0.020 in.).

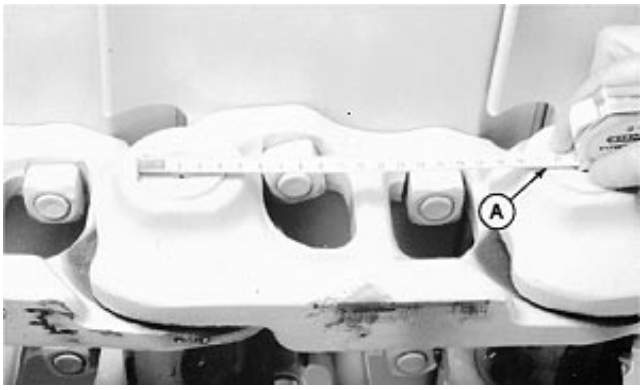
Track Bushing Outer Diameter—Specification

New Bushing—OD	62.2 mm (2.45 in.)
100 Percent Worn Bushing (High Shock Impact)—OD	55.3 mm (2.18 in.)
100 Percent Worn Bushing (Normal Impact)—OD	52.8 mm (2.08 in.)

CED,TX03399,5949 –19–24MAR00–1/1

Measure Track Pitch

NOTE: Track pitch does not extend unless there is lubrication leakage, which causes a dry joint. Measure pitch only when there is a lubrication leakage or a visible extension of a joint.



T96311 –UN–02NOV88

A—Measurement

Item	Measurement	Specification
Track Pitch		
Pitch Wear Limit (Single Joint)	Length	175.5 mm (6.9 in.)

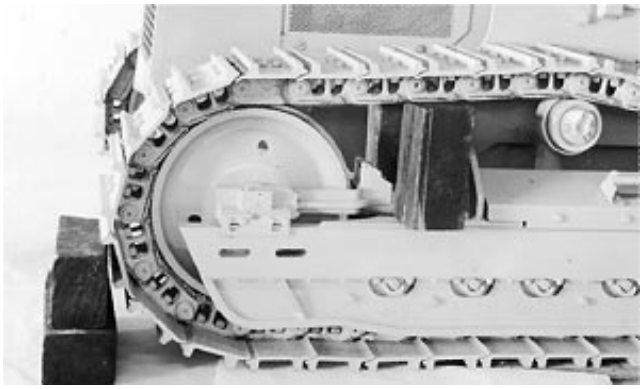
Track pin may be operated with a dry joint until it reaches wear limit specified. Then it must be repaired. A dry joint will not hold lubrication until it is repaired. Track pin may break if joint is not repaired after it reaches wear limit.

1. Place a pin or block between sprocket and chain. Then move unit in reverse until chain is tight.
2. Measure from left side of pin in dry joint (A) to left side of next pin.

CED,TX03399,5950 –19–24MAR00–1/1

Remove and Install Lubricated Track Chain—Saw Tooth Master Split Link

1. Rotate track until split link is at the top of front idler.
2. Block track at front idler.
3. Put a block on top of track tension adjuster, near front idler to keep chain supported.



T8055BG –UN–29JUL93

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CED,TX03399,5951 –19–10NOV00–1/4

CAUTION: Grease for track adjuster cylinder is under high pressure. Never remove special high pressure grease fitting (2) to release the grease.

If grease does not escape immediately from vent hole (3), the check valve is open. Slowly drive machine forward and reverse until grease escapes; then close check valve nut.

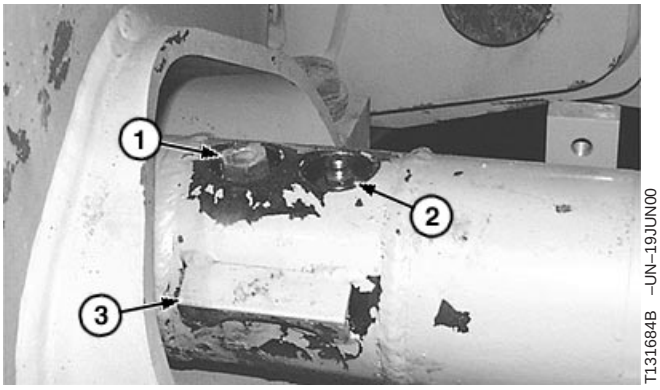
4. Release track tension:

   a. Turn check valve nut (1) one to three turns counterclockwise to release grease through vent hole (3). DO NOT loosen special grease fitting (2).

   b. Tighten valve nut.

CAUTION: Track chain will fall to the ground when removing cap screws from shoe to separate master link. DO NOT stand at end of track.

5. Remove track shoe at master split link. (See Remove and Install Track Shoe in this group.)



T131684B –UN–19JUN00

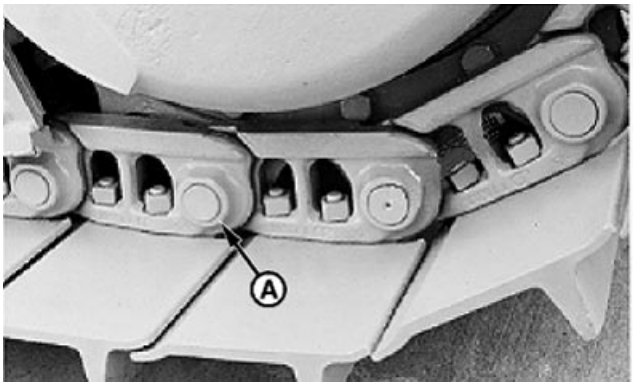
1—Check Valve Nut
2—Grease Fitting
3—Vent Hole

Continued on next page

CED,TX03399,5951 –19–10NOV00–2/4

IMPORTANT: Track chain MUST be installed under track frame with wide end of links (A) toward rear of machine or accelerated wear to track chain will occur.

6. To join master link, locate master link pin end at the top of the front idler. Put a block at the front of the idler.
7. Apply John Deere NEVER-SEEZ® Lubricant to mating surfaces of master link.
8. Use a come-along device to bring master link halves together.
9. Using new cap screws apply John Deere NEVER-SEEZ® Lubricant to cap screw threads.
10. Install track shoe and new cap screws. (See Remove and Install Track Shoe in this group.) Start cap screws by hand to avoid cross-threading.



T118611 –UN–23NOV98

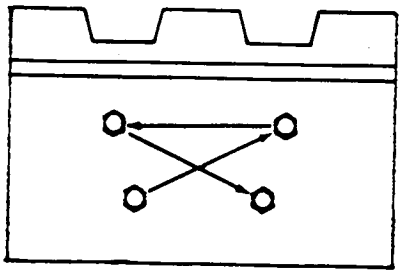
Drive Sprocket End Shown

A—Wide end of Link

NEVER-SEEZ is a registered trademark of Emhart Chemical Group.

CED,TX03399,5951 –19–10NOV00–3/4

IMPORTANT: Tighten cap screws to the initial torque using a criss-cross pattern. Repeat pattern for a second time. Finally, turn each cap screw the additional turn using the same pattern.



T6352AH –UN–23FEB89

Item	Measurement	Specification
Lubricated Track		
Split Link Cap Screw (5/8 in.)	Torque	163 N•m (120 lb-ft) Second Pass—Additional 1/2 (180°) turn

CED,TX03399,5951 –19–10NOV00–4/4

Disassemble Lubricated Track Chain to Turn Bushings and Lubricate Chain

NOTE: The following procedure is for disassembly of track chain to inspect, clean, replace damaged or worn parts, turn bushings, and lubricate chain again.

If track chain is disassembled only to turn pins and bushings and no parts will be replaced. See Disassemble and Assemble Lubricated Track Chain to Turn Pins and Bushings and Not Lubricate, in this group.

1. Remove track shoes.(See Remove and Install Track Shoes in this group.)

2. Remove track chain. (See Remove and Install Track Chain in this group.)

NOTE: A clean track is necessary for proper disassembly.

3. Wash chain with high pressure water. It will not be necessary to wash links before reassembly if chain is thoroughly cleaned.

4. Use the following track press tool sets and saddle:

   - Tooling Set A2656-141

Continued on next page

CED,TX03399,5952 –19–10NOV00–1/5

IMPORTANT: Track press disassembly tools must be in proper alignment with links to prevent broaching of pin and bushing. Damaged link bores cannot be reused.

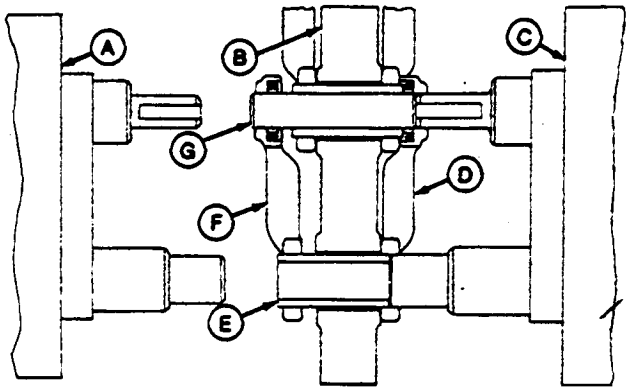
5. Start disassembly at pen-end half of split link. Check for proper alignment of tools with pin and bushing.

6. Make an index mark on bushings to aid in reassembly, when turning bushings 1/2 turn (180°) to expose a new wear surface.

CAUTION: Always wear safety glasses when operating the press. Parts may break or chip, which could create a risk of personal injury.

7. Extend right ram (C) to push pin (G) and bushing (E) from the right link (D). The right link is forced against the side of saddle (B) as pin and bushing are pushed out.

8. Retract right ram. The right link, with seals and thrust ring, will stay on the ram tools.



T96266 –UN–27OCT88

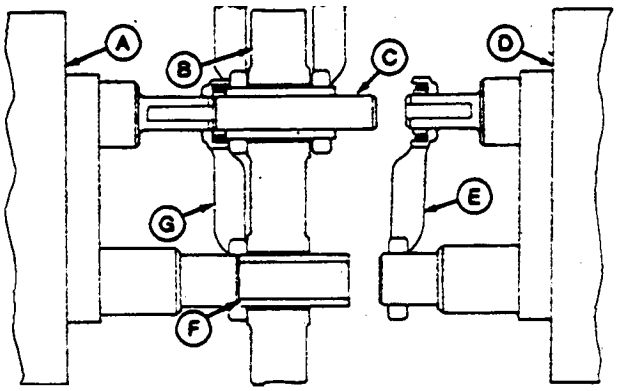
A—Left Ram
B—Saddle
C—Right Ram
D—Right Link
E—Bushing
F—Left Link
G—Pin

CED,TX03399,5952 –19–10NOV00–2/5

9. Extend left ram (A) to push the pin (C) and bushing (F) from left link (G). The left link is forced against the side of saddle (B) as pin and bushing are pushed out.

10. Retract left ram. The left link, with seal and thrust ring, will remain on the ram tools.

11. Remove links, bushing, and thrust rings from press.



T96267 –UN–27OCT88

A—Left Ram
B—Saddle
C—Pin
D—Right Ram
E—Right Link
F—Bushing
G—Left Link

Continued on next page

CED,TX03399,5952 –19–10NOV00–3/5

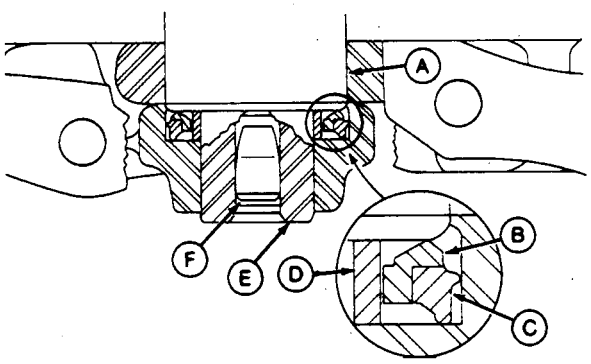
12. Inspect parts as they are disassembled to determine which ones can be reused.

    If there is internal wear at any joint, replace seal ring, pin, bushing, thrust ring, and load ring. These parts must be replaced to successfully lubricate chain again.

13. If pin and bushing contains oil when disassembled, new pins, seal rings, bushings, thrust ring and load rings are not necessary. Do not remove usable seals from link counterbore. Do not remove any dirt from around seals.

14. Repeat steps 4—12 to disassemble rest of chain.

15. Remove rubber stopper (F) from pins using a drill.



T6682AJ –UN–01NOV88

A—Bushing
B—Seal Ring
C—Load Ring
D—Thrust Ring
E—Pin
F—Stopper

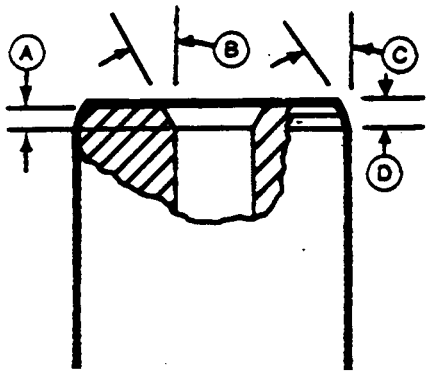
CED,TX03399,5952 –19–10NOV00–4/5

16. Inspect pin ends. If the chamfer is missing due to wear, grind a 3 mm (0.12 in.) x 15° chamfer on pin. If chamfer is missing in stopper hole, add new 4 mm (0.16 in.) x 30° chamfer.

Lubricated Track—Specification

Pin—Chamfer	3 mm (0.12 in.) x 15°
Pin—Chamfer	4 mm (0.16 in.) x 30°

17. Clean pins, bushings, and thrust rings in solvent.



T96269 –UN–27OCT88

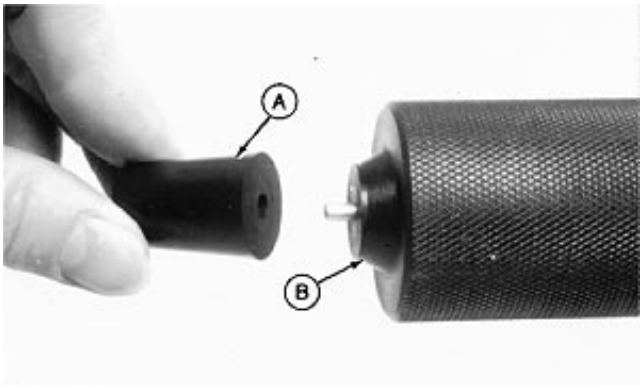
A—4 mm (0.16 in.)
B—30°
C—15°
D—3 mm (0.12 in.)

CED,TX03399,5952 –19–10NOV00–5/5

Assemble Lubricated Track Chain to Turn Bushings and Lubricate Chain

CAUTION: Prevent possible injury from unexpected machine movement. Make sure all control levers of press are in the NEUTRAL position.

1. Assemble track using following track press tool sets.
   - Tooling Set A2656-141
2. Apply a mixture of 50% alcohol and 50% water to stopper (A) and install using JDG188 Stopper Installer (B).



A—Stopper
B—Stopper Installer

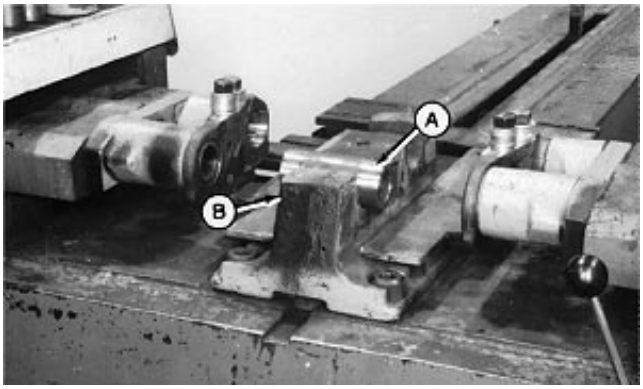
CED,TX03399,5953 –19–24MAR00–1/14

3.

NOTE: The pin end halves of master split link must be temporarily assembled to bushing end halves of link for proper positioning on plungers. Pin end halves will have to be separated later for installation at end of chain. Split links are a matched set and must be assembled as a set.

Assemble master split link halves using master shoe bolts and washers (as required). Tighten bolts just enough to hold links together.

4. Install assembled split links on ram plungers.
5. Install bushing (A) in front seat of saddle (B) so the mark is 180° opposite original location to expose a new wear surface.



A—Bushing
B—Saddle

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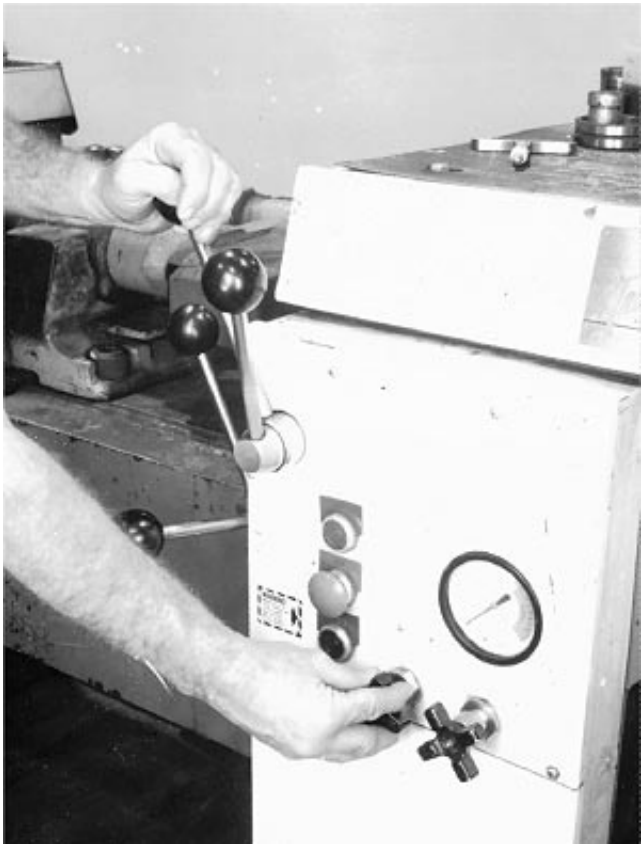
CED,TX03399,5953 –19–24MAR00–2/14

6. Adjust track press pressure relief valve setting.

Lubricated Track—Specification

Pressure Relief Valve Setting—
Force (Maximum) ..... 378 080 N (85 000 lb force)

7. Advance left ram until left split link contacts saddle. Advance right ram until it stops to press split link and bushing assembly together.



T96274 –UN–27OCT88

CED,TX03399,5953 –19–24MAR00–3/14

8. Measure bushing projection from shoulder of link using a depth micrometer. Bushing projection determines clearance between overlapping links and proper spacing of link bolt holes.

Lubricated Track—Specification

Bushing Protection—Distance..... 3.02 ± 0.25 mm (0.119 ± 0.010 in.)

9. If bushing projection does not meet specification, check pressure setting or adjust shim packs behind plungers. Only first two joints must be checked for proper bushing projection.

T96275 –UN–27OCT88

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CED,TX03399,5953 –19–24MAR00–4/14

10. Apply track chain lubricant to bushing ends before next set of links are installed.

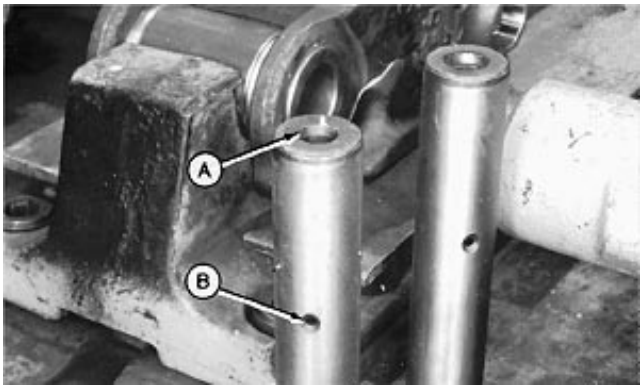
T96276 –UN–27OCT88

CED,TX03399,5953 –19–24MAR00–5/14

IMPORTANT: Pins must be installed so cross-drilled hole is toward link wear surface or they may break when chain is used. To make assembly easier, install all pins so holes in end are toward same side of chain.

11. Install pin in bushing so cross-drilled hole (B) is toward link wear surface. Install all pins so hole (A) in end is toward same side of chain, either left or right.

A—Cross-Drilled Hole
B—Cross-Drilled Hole



T96277 –UN–27OCT88

CED,TX03399,5953 –19–24MAR00–6/14

12. Install a thrust ring on each end of pin.

13. Move completed split link assembly to rear seat of saddle.

T96278 –UN–27OCT88

Continued on next page

CED,TX03399,5953 –19–24MAR00–7/14

14. Apply LOCTITE® gasket maker to link bore. The sealant prevents loss of vacuum or lubricant leakage through pin to link joint.

T96279 –UN–27OCT88

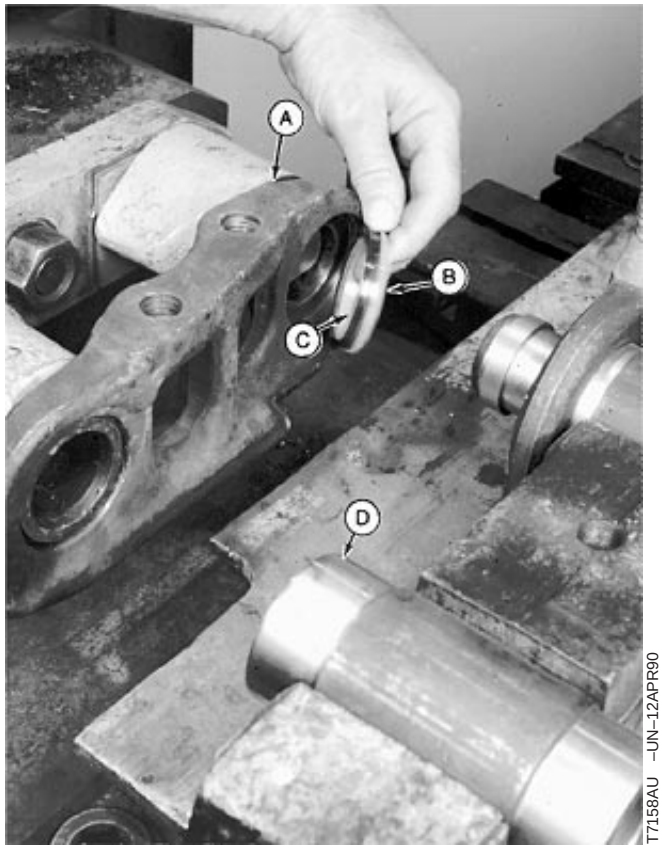
LOCTITE is a registered trademark of Loctite Corp.

CED,TX03399,5953 –19–24MAR00–8/14

15. Install bushing (D) in front saddle seat. Install left link (A) and right link on ram plungers.

    Assemble load ring (C) and seal ring (B). Install assembly into link (A) counterbore so pointed lip of seal ring is toward bushing (D).

A—Link Counterbore
B—Seal Ring
C—Load Ring
D—Bushing



T7158AU –UN–12APR90

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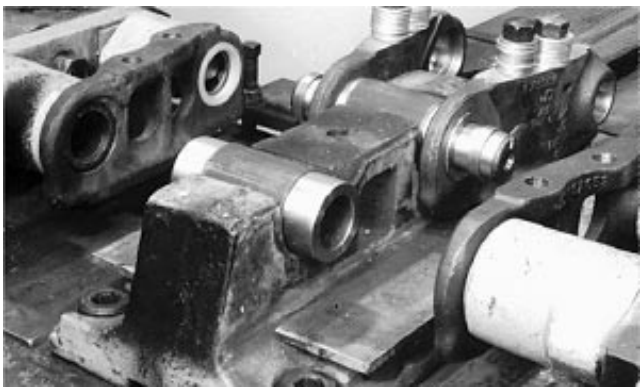
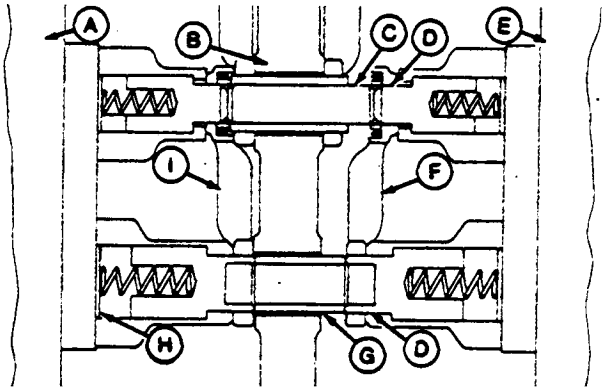
CED,TX03399,5953 –19–24MAR00–9/14

16. Advance left ram until left link contacts saddle. Advance right ram until it stops (plungers in both rams against shim pack).

A—Left Ram
B—Saddle
C—Pin
D—Plunger
E—Right Ram
F—Right Link
G—Bushing
H—Shims
I—Left Link



T96282 –UN–27OCT88



T96283 –UN–27OCT88

CED,TX03399,5953 –19–24MAR00–10/14

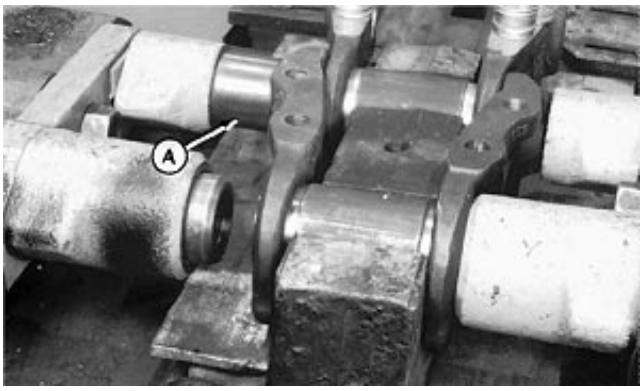
NOTE: To ensure zero end play in joint, special spacers must be fabricated using a section of bushing.

17. Retract left ram. Install special spacer (A) between the joint in rear seat of saddle and ram.

IMPORTANT: Too much pressure will crush the thrust rings.

18. Advance left ram using only minimum force required to push joint tight. Pressure must be approximately one-half the relief valve setting. Remove spacer.

A—Special Spacer



T96284 –UN–27OCT88

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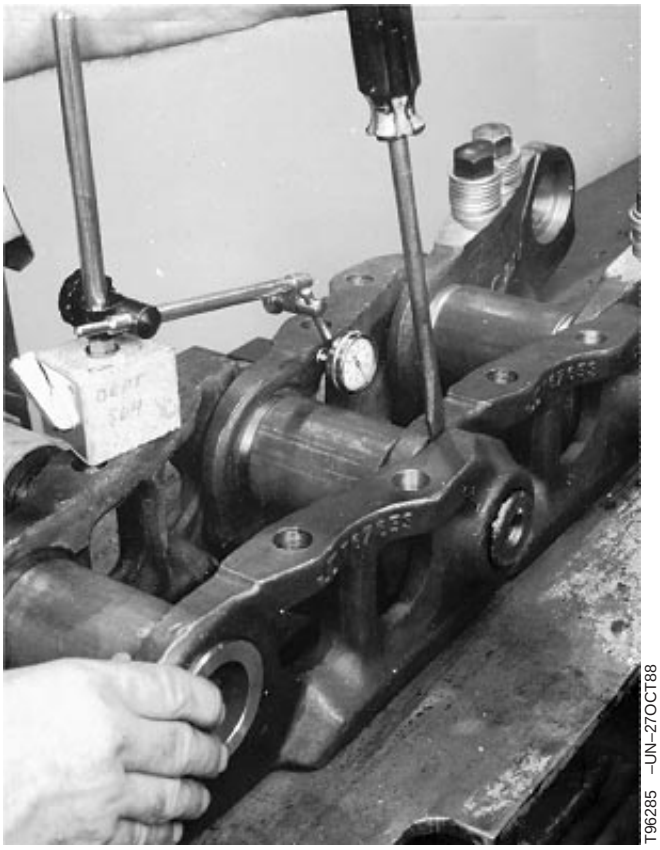
CED,TX03399,5953 –19–24MAR00–11/14

19. After one complete joint has been assembled, check end play of track links to make sure bushing, thrust rings, and link counterbore faces are pressed solid against each other. Position base of dial indicator on one link assembly and pointer against the other link assembly.

20. Pry link assemblies in one direction then in opposite direction to measure the amount of end play. End play must be zero.

21. As track chain is being further assembled, end play may be checked by flexing each joint after each link assembly is pressed together. End play is correct if links cannot be rotated by hand.



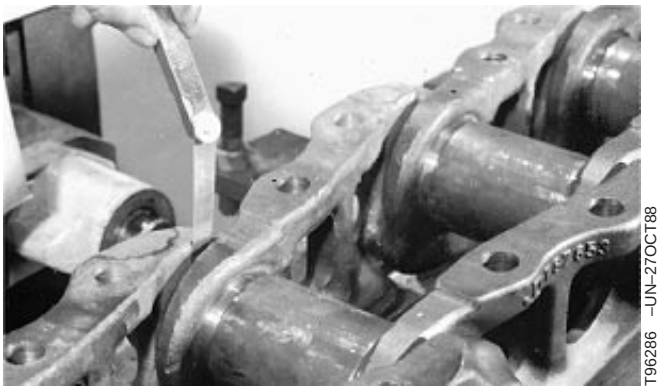
T96285 –UN–27OCT88

CED,TX03399,5953 –19–24MAR00–12/14

22. As chain is being assembled, check to make sure there is some clearance between the overlapping face of links, using a feeler gauge. If links contact each other, check bushing projection.

Lubricated Track—Specification

Bushing Protection—Distance..... 3.02 ± 0.25 mm (0.199 ± 0.010 in.)



T96286 –UN–27OCT88

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CED,TX03399,5953 –19–24MAR00–13/14

23. Add oil (SAE 80W 90) using a Seal Tester and Lubricator for S.A.L.T. Crawler Equipment. Push nozzle through plug all the way into pin. Depress control lever on the handle enough to draw specified vacuum as indicated on the gauge.

Specification

Lubricated Track Chain Seal Test—Vacuum ..... 68—102 kPa (2—30 in. Hg)

24. Release lever. If there is no decrease in vacuum for a minimum of five seconds, the joints are sealed. If there is a vacuum decrease, seals are not sealing and the joint must be taken apart and repaired.

25. Add oil by depressing the second lever. Oil pressure (read on the same gauge) must be to specification after both levers are released.

Specification

Lubricated Track Chain Oil—Pressure ..... 140—205 kPa (1.4—2.05 bar (20—30 psi)

26. For pins using rubber plug and plastic plug, immediately install plug using JDG190 Plug Installer after adding oil.

    For pins using self-sealing plug, slowly pull nozzle (C) out to allow any compressed air to escape through nozzle from first hole (A) to second hole (B).

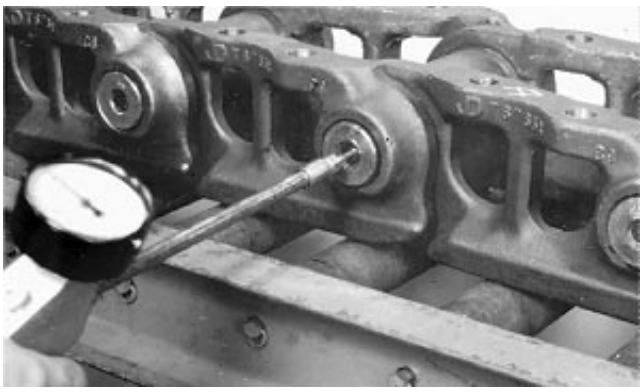
    Add oil to each joint after assembling so only one joint would have to be disassembled if a vacuum leak occurs.

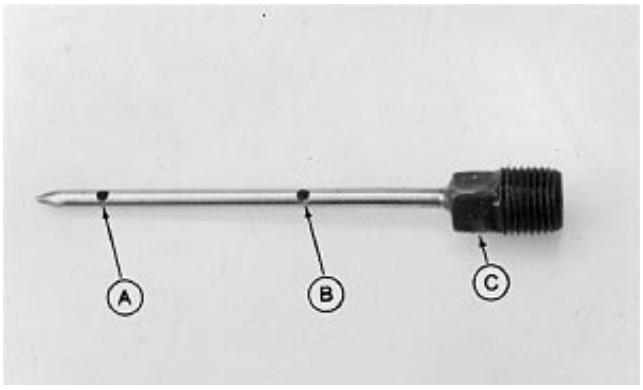
27. Repeat step 10—26 for all joints.

28. Install assembled split links on ram plungers, and advance rams to press split links together.

29. Install lubricated track. chain. (See Remove and Install Lubricated Track Chain in this group.)

30. Install track shoes. (See Remove and Install Track Shoes in this group.)


T96287 –UN–01NOV88



T6465AY –UN–01NOV88


T96288 –UN–27OCT88

A—Nozzle First Hole
B—Nozzle Second Hole
C—Nozzle

CED,TX03399,5953 –19–24MAR00–14/14

Disassemble and Assemble Lubricated Track Chain to Turn Pins and Bushings and Not Lubricate

NOTE: The following procedure is for disassembly of track chain only to turn pins and bushings. (Chain is not lubricated after assembly.)

If this procedure does not apply to the repair job, see Disassemble Lubricated Track Chain to Turn Bushings and Lubricate Chain in this group.

1. Remove track shoes. (See Remove and Install Track Shoes in this group.)

2. Use the following track press tool sets:

   - Tooling Set A2656-141

Continued on next page

CED,TX03399,5954 –19–24MAR00–1/11

IMPORTANT: Track press disassembly tools must be in proper alignment with links to prevent broaching of pin and bushing. Damaged links cannot be reused.

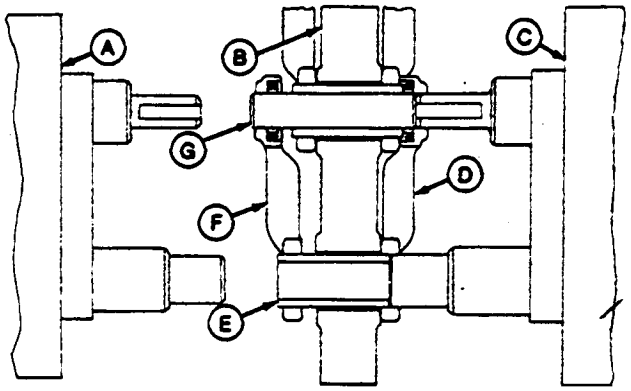
3. Check for proper alignment of tools with pin and bushing.

4. Make an index mark on bushings and pins to aid in reassembly, when turning bushings 1/2 turn (180°) to expose a new wear surface.

CAUTION: Always wear safety glasses when operating the press. Parts may break or chip, which could create a risk of personal injury.

5. Extend right ram (C) to push pin (G) and bushing (E) from the right link (D). The right link is forced against the side of saddle (B) as the pin and bushing are pushed out.

6. Retract right ram. The right link, with seals and thrust ring, will stay on the ram tools.



T96266 –UN–27OCT88

A—Left Ram
B—Saddle
C—Right Ram
D—Right Link
E—Bushing
F—Left Link
G—Pin

Continued on next page

CED,TX03399,5954 –19–24MAR00–2/11

7. Extend left ram (A) to push the pin (C) and bushing (F) from left link (G). The left link is forced against the side of saddle (B) as pin and bushing are pushed out.

8. Retract left ram. The left link, with seal and thrust ring, will remain on the ram tools.

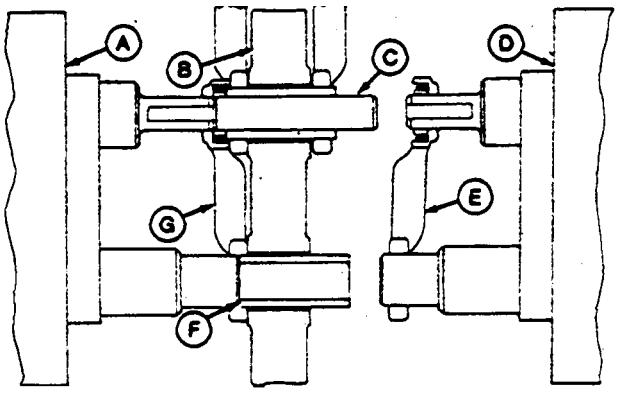
9. Remove links and bushing from press.

10. Repeat steps 4—9 to disassemble rest of chain.

IMPORTANT: Pins must be installed so cross-drilled hole is toward link wear surface or they may break when chain is used.

11. All pins, bushings, seals, and thrust rings are used for reassembly, because chain is not lubricated. Do not remove rubber plug and plastic plug from pins. Do not remove seals from track links.

    Turn pin end-for-end to get a new wear surface, then install it into bushing so cross-drilled hole is toward link wear surface. Install all pins so hole in end of pin is toward the same side of chain, either left or right side.



T96267 –UN–27OCT88

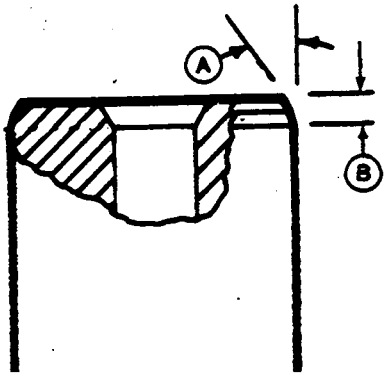
A—Left Ram
B—Saddle
C—Pin
D—Right Ram
E—Right Link
F—Bushing
G—Left Link

CED,TX03399,5954 –19–24MAR00–3/11

12. Inspect pin ends for wear. If there is no chamfer (A and B), grind a new chamfer to specification.

Specification	
Lubricated Track Pin End—Chamfer	3 mm (0.12 in.) x 15°

A—15°
B—3 mm (0.12 in.)



T5798AJ –UN–26OCT88

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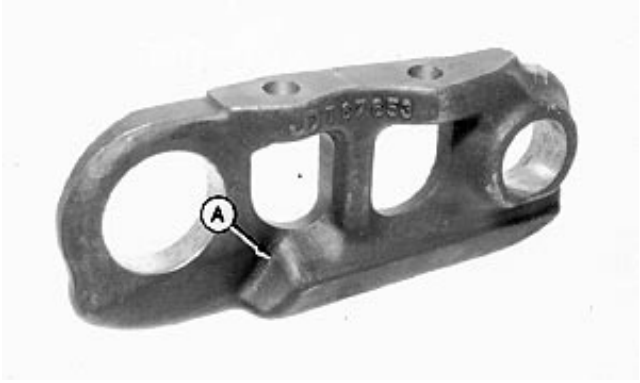
CED,TX03399,5954 –19–24MAR00–4/11

13. Smooth area of track link wear (A) using a grinder, if necessary.

A—Track Link



T96289 –UN–27OCT88

CED,TX03399,5954 –19–24MAR00–5/11

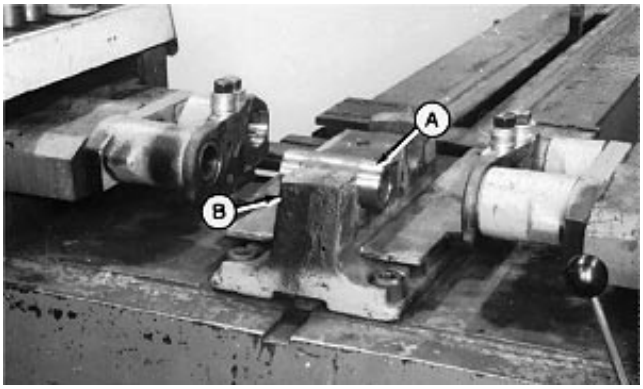
14. Assemble track links using the following track press tool sets.

NOTE: The pin end halves of master split link must be temporarily assembled to bushing end halves of link for proper positioning of plungers. Pin end halves will later have to be separated for installation at end of chain.

15. Assemble master split link halves using master shoe bolts and washers (as required). Tighten bolts just enough to hold link together.

16. Install assembled split links on ram plungers.

17. Install bushing (A) in front seat of saddle (B) so the mark is 180° opposite original location to expose a new wear surface.



T96273 –UN–27OCT88

A—Bushing
B—Saddle

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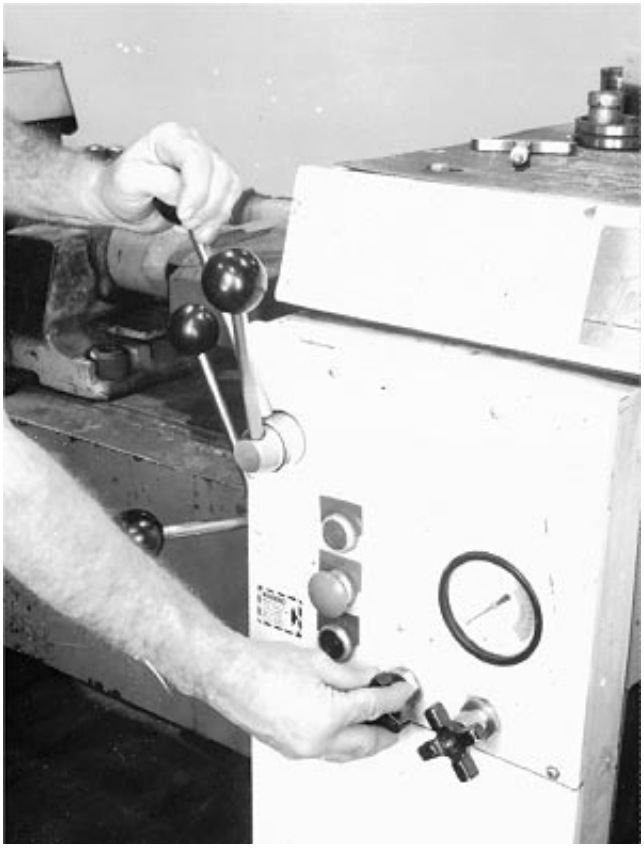
CED,TX03399,5954 –19–24MAR00–6/11

18. Adjust track press pressure relief valve setting.

Specification

Track Press Relief Valve—Force..... 378 080 N (85,000 lb force) Maximum

19. Advance rams to press split links together until the correct bolt spacing is obtained for the master shoe.



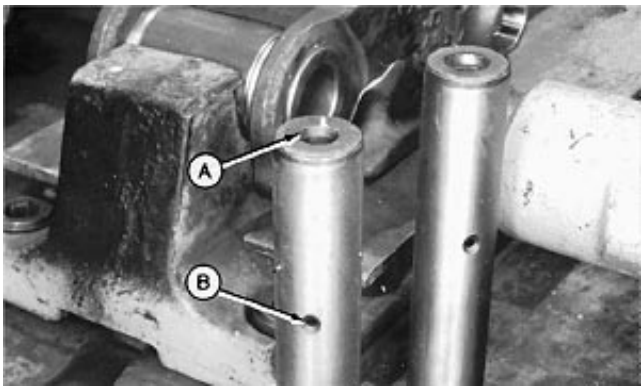
T96274 –UN–27OCT88

CED,TX03399,5954 –19–24MAR00–7/11

IMPORTANT: Pins must be installed so cross-drilled hole is toward link wear surface or they may break when chain is used.

20. Turn pin end-for-end to get a new wear surface, then install it into bushing so cross-drilled hole (B) is toward link wear surface. Install all pins so hole (A) in end of pin is toward the same side of chain, either left or right side.

A—Pin End Hole
B—Cross-Drilled Hole



T96277 –UN–27OCT88

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CED,TX03399,5954 –19–24MAR00–8/11

21. Install a thrust ring on each side of pin.

22. Move completed link assembly to rear seat of saddle.

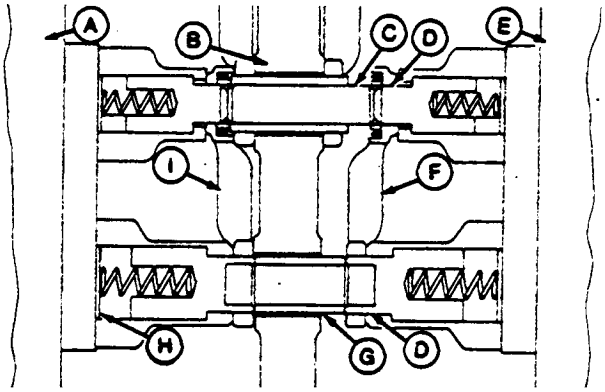
T96278 –UN–27OCT88

CED,TX03399,5954 –19–24MAR00–9/11

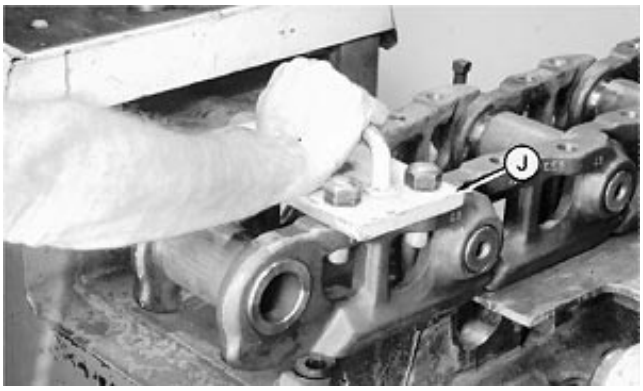
23. Install bushing (G) in front saddle seat. Install right and left links (E and I) on ram plungers (D).

24. Advance left ram (A) until left link contacts the saddle (B). Advance right ram until link is pressed together and bolts can be installed through 23058 Track Shoe Gauge (J).

A—Left Ram
B—Saddle
C—Pin
D—Plunger
E—Right Ram
F—Right Link
G—Bushing
H—Plunger Shims
I—Left Link
J—23058 Track Shoe Gauge



T96283 –UN–27OCT88



T96290 –UN–27OCT88

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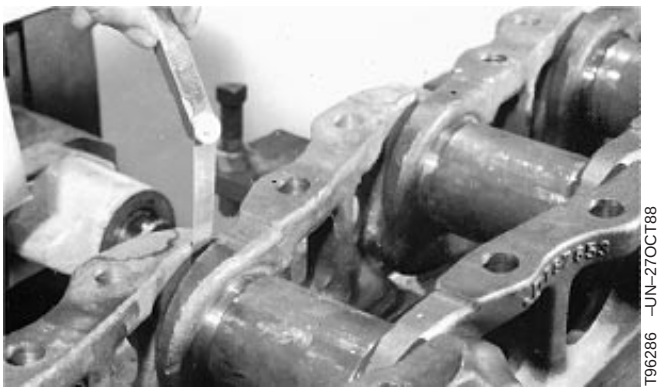
CED,TX03399,5954 –19–24MAR00–10/11

25. As chain is being assembled, check to make sure there is some clearance between the overlapping face of links using a feeler gauge. If links contact each other, check bushing projection.

Specification

Track Pin Bushing—Projection ..... 3.02 ± 0.25 mm (0.119 ± 0.010 in.)



T96286 –UN–27OCT88

26. Repeat steps 14—25 to assemble rest of chain.

27. The last link assembled is the split link pin ends. Assemble a set of extra "slave" split link bushing ends to pin ends using bolts and washers used in step 15. Tighten bolts just enough to hold together link.

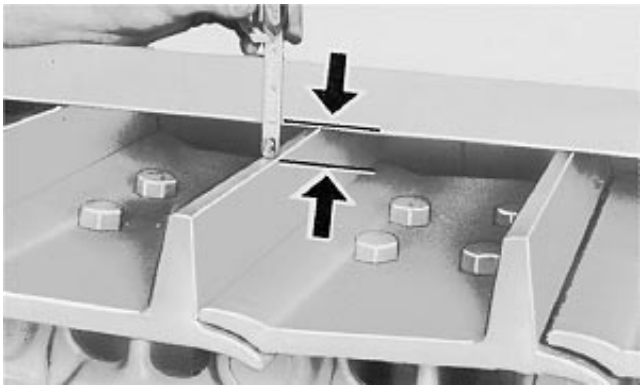
28. Install assembled split links on ram plungers and advance rams to press split links together.

29. Install track shoes. (See Remove and Install Track Shoes in this group.)

30. Install lubricated track chain. (See Remove and Install Lubricated Track Chain in this group.)

CED,TX03399,5954 –19–24MAR00–11/11

Adjust Track Sag


T6044CJ –UN–23FEB89

NOTE: Check sag after a short period of operation when changing from one ground condition to another or when operating in extreme soil packing conditions.

01
0130
52

Specification

Lubricated Track Chain—Track Sag ..... 51 ± 6 mm (2 ± 1/4 in.)

1. Allow machine to slowly roll to a stop in the forward direction. For the most accurate measurement, a link pin must be centered on carrier roller.

2. Measure track sag between carrier roller and front idler at the lowest point. (See "Track Sag" decal on machine. Decal located next to right engine compartment access door.)

IMPORTANT: Grease fitting on track adjuster head is used for track sag adjustment only. Fitting on cylinder barrel adjuster housing is used to fill cavity between cylinder barrel and adjuster housing to keep water out.

Piston must move using a 22 500 kPa (550 bar) (8000 psi) maximum capacity grease gun or seals may be damaged. If piston does not move, check for seized track adjuster parts. (See Disassemble and Assemble Track Adjuster Cylinder in this group.)

3. To decrease sag, apply grease to fitting (A) using a 55 200 kPa (550 bar) (8000 psi) maximum capacity grease gun.

   After adding grease, operate machine to allow track adjuster cylinder to fully adjust and then check sag again. Each time track is adjusted apply grease to grease fittings on cylinder barrel adjuster housing until grease escapes past wiper seal.

Continued on next page

CED,TX03399,5955 –19–24MAR00–1/2

CAUTION: Grease for track adjuster cylinder is under high pressure. Never remove grease fitting to release the grease. If grease does not escape immediately from vent hole, slowly drive machine in forward and reverse, then close check valve (B).

4. To increase sag, turn check valve (B) 1—3 turns counterclockwise to release grease through vent hole (C). Turn check valve clockwise to close it. After releasing grease, operate machine to allow track adjuster cylinder to fully adjust and then check sag again.

CED,TX03399,5955 –19–24MAR00–2/2

Measure Front Idler Wear

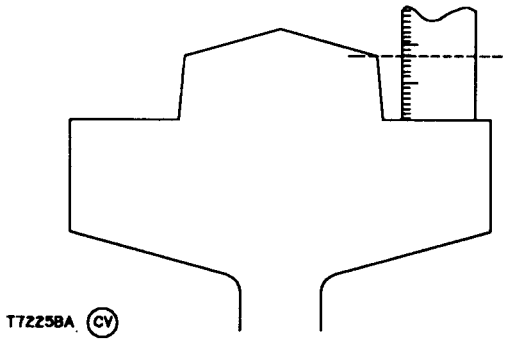
NOTE: See Undercarriage Appraisal Manual SP326 for additional information.

100% worn is the maximum allowable height of flange for rebuilding wear surface.

Measure height of flange using a depth gauge such as JT05521 200 mm Ruler, JT05534 Right Angle Attachment, and D05231ST 300 mm Ruler from JT05518 or JT05523 Undercarriage Inspection Service Tool Kit.

Front Idler—Specification

700H Flange New—Height	20.0 mm (0.79 in.)
700H Flange 100% Worn—Height	26.4.0 mm (1.04 in.)



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CED,TX03399,5956 –19–24MAR00–1/1

Remove and Install Front Idler

NOTE: Front idler can be removed with or without track tension adjuster.

1. Disconnect track chain. (See Remove and Install Lubricated Track Chain in this group.)
2. Remove cap screws (1) from both sides, if removing idler with brackets only.

CAUTION: The approximate weight of idler with bracket is 181 kg (400 lb).

Front Idler—Specification

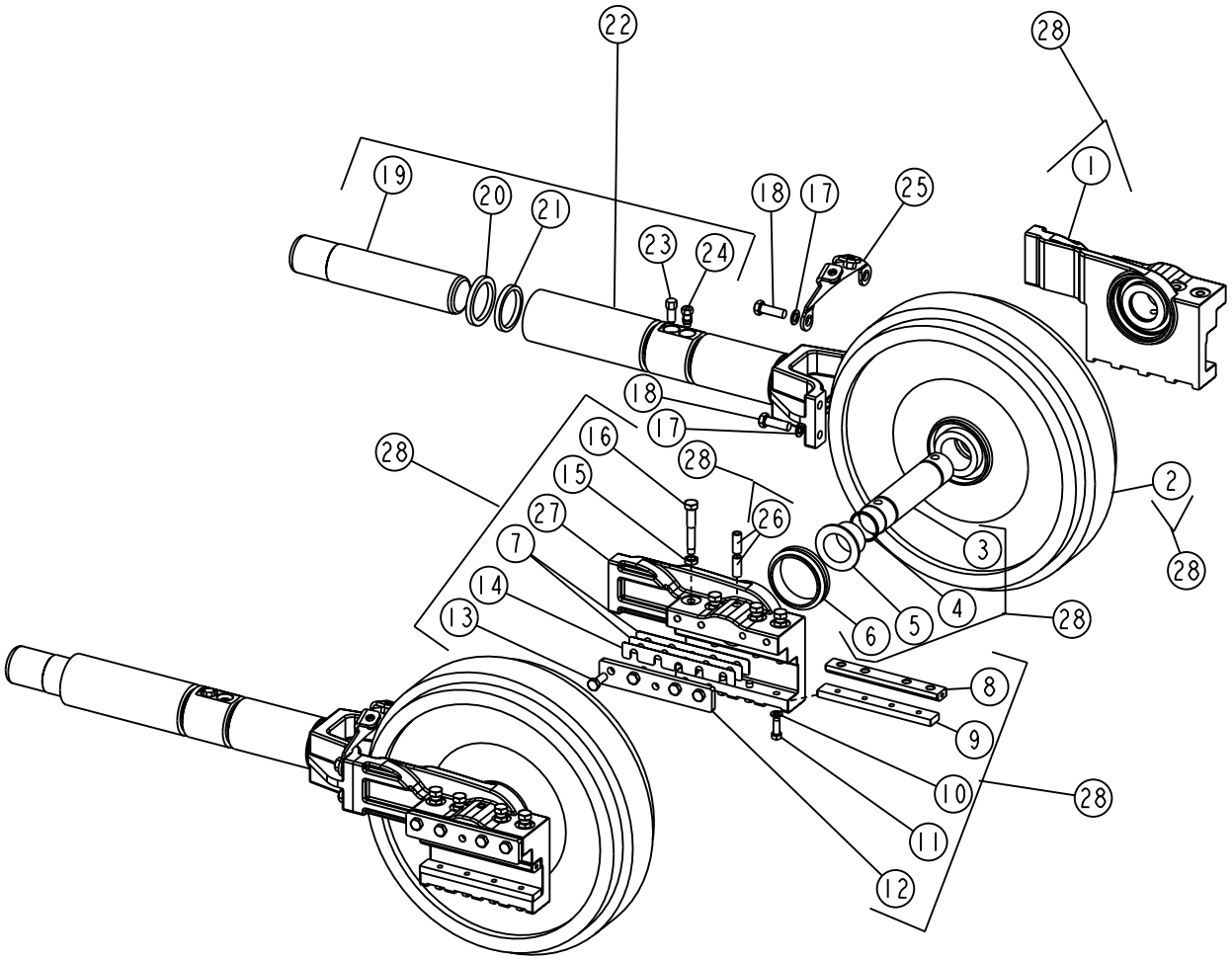
Front Idler—Weight ..... 181 kg (400 lb) Approximate

3. Attach lifting fork and hoist.
4. Raise and slide front idler or front idler and track tension adjuster forward to remove from track frame.
5. Position upper wear plates and install front idler on track frame or front idler with track tension adjuster.
6. Install and tighten four cap screws and washers (1) if front idler only.
7. Adjust front idler. (See Front Idler Adjustment Procedure in this group).
8. Connect track chain. (See Remove and Install Lubricated Track Chain in this group.)

1—Cap Screw (4 used)

CED,TX03399,5957 –19–24MAR00–1/1

Disassemble, Inspect, and Assemble Front Idler



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T130822 –UN–19JUN00

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CED,TX03399,5958 –19–24MAR00–1/2

1—Left Hand Bracket
2—Idler
3—Shaft
4—O-Ring (2 used)
5—Bushing (2 used)
6—Metal Face Seal (2 used)
7—Shim (as required)
8—Top Wear Plate
9—Bottom Wear Plate
10—Washer (8 used)
11—Cap Screw (8 used)
12—Side Wear Plate (2 used)
13—Cap Screw (8 used)
14—Shim (as required)
15—Nut (8 used)
16—Cap Screw (8 used)
17—Washer (8 used)
18—Cap Screw (8 used)
19—Piston
20—Wiper Seal
21—Seal
22—Yoke with Tube
23—Check Valve with Nut
24—Grease Fitting and Check Valve
25—Bracket
26—Spring Locking Pin (4 used)
27—Right Hand Bracket
28—Bracket and Idler Shaft Assembly

1. Remove cap screws and washers (13) to remove side wear plates (12) and shims (7).
2. Remove cap screws (11) and wear plate (9).
3. Drive pins (26) out.

IMPORTANT: Keep metal face seals (6) lubricated and together at all times while disassembled.

4. Remove brackets (1 and 27), O-rings (4) and metal face seals (6).
5. Remove shaft (3) and inspect bushings (5). Replace if necessary.
6. Install new bushings. Drive in bushings until bottomed.

IMPORTANT: Lubricate idler bushings with oil before installing shaft.

7. Apply clean hydraulic oil to bushings (5).
8. Inspect metal face seals. (See Inspect Metal Face Seals in this group.)
9. Install new metal face seals (6), if necessary.
10. Install shaft (3), O-rings (4), and brackets (1 and 27).
11. Drive in spring pins (26).
12. Install wear plate (9), side wear plates (12) and shims (7).
13. Adjust front Idler. (See Front Idler Adjustment Procedure in this group.)
14. Fill idler with oil. (See Check Front Idler Oil Level in this group.)

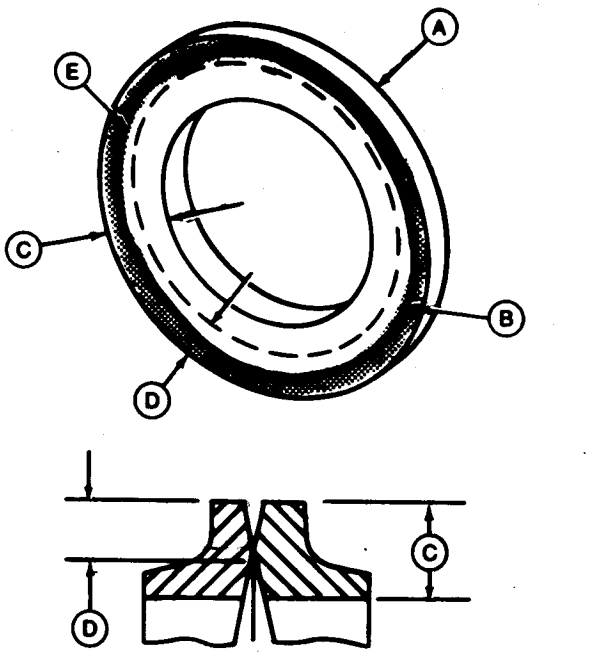
CED,TX03399,5958 –19–24MAR00–2/2

Inspect Metal Face Seals

1. Inspect for the following conditions to determine if seals can be reused:

   - The narrow, highly polished sealing area (E) must be in the outer half of seal ring face (D).
   - Sealing area must be uniform and concentric with the ID and OD of seal ring (A).
   - Sealing area must not be chipped, nicked, or scratched.

A—Seal Ring
B—Worn Area (shaded area)
C—Seal Ring Face
D—Outer Half of Seal Ring Face
E—Sealing Area (dark line)



T85079 –UN–24AUG93

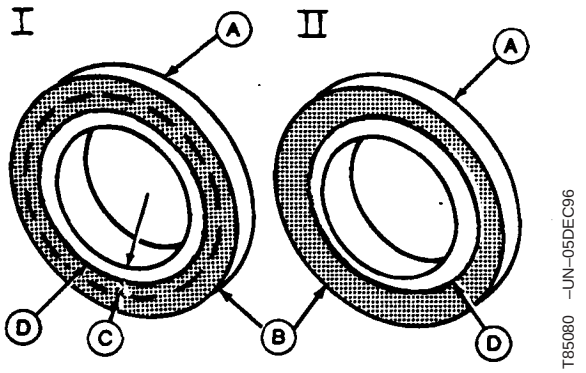
CED,TX03399,5968 –19–24MAR00–1/3

2. Illustration shows examples of worn seal rings (A).

   I—Sealing area (D) is in inner half of seal ring face (C).

   II—Sealing area (D) not concentric with ID and OD of seal ring.

A—Seal Ring
B—Worn Area (shaded area)
C—Inner Half of Seal Ring Face
D—Sealing Area (dark line)



T85080 –UN–05DEC96

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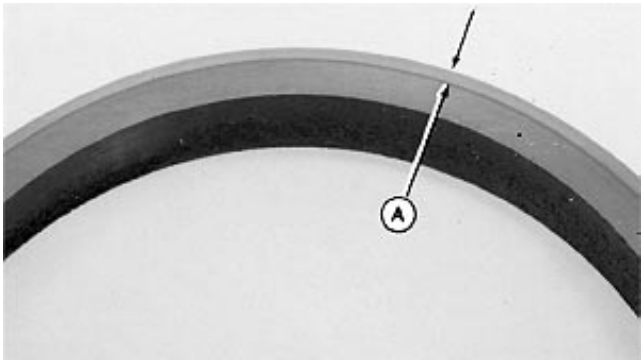
CED,TX03399,5968 –19–24MAR00–2/3

3. Clean reusable seals by removing all foreign material from seal rings, except seal face (A), using a scraper or a stiff bristled fiber brush.

4. Wash seal rings and O-rings using a volatile, non-petroleum base solvent to remove all oil. Thoroughly dry parts using a lint-free tissue.

   Apply a thin film of oil to seal ring face. Put face of seal rings together and hold using tape.



CED,TX03399,5968 –19–24MAR00–3/3

Front Idler Adjustment Procedure

1. Remove track chain. (See in this Remove and Install Lubricated Track Chain group).

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CED,TX03399,5959 –19–24MAR00–1/2

2. If lower wear plate (7) or shims (8) are required. Remove front idler. (See Remove and Install Front Idler in this group).

NOTE: If operating conditions require roller to be raised shims maybe added to lower wear bar to raise roller.

4. Install front idler if removed. (See Remove and Install Front Idler in this group).

5. Loosen jam nut (2) and cap screw (1).

6. Tighten cap screws (1) until bottom out.

7. Loosen cap screws (1) equally one turn to obtain clearance at (4).

Specification

Wear plate vertical clearance.—
Clearance ..... 2 mm (0.079 in.) maximum

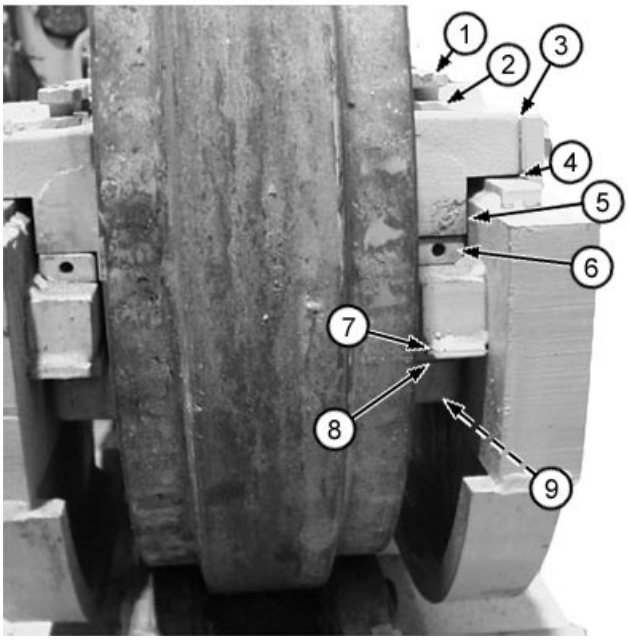
8. Tighten jam nuts.

9. Add shims equally to each side at (3) to obtain horizontal clearance (5).

Specification

Wear plate horizontal
clearance.—Clearance ..... 2 mm (0.079 in.) maximum

10. Install track chain. (See Remove and Install Lubricated Track Chain in this group).



T132047B –UN–28JUN00

1—Cap Screw (8 used)
2—Jamb Nut (8 used)
3—Shim
4—Vertical Clearance
5—Horizontal Clearance
6—Upper Wear Plate (2 used)
7—Lower Wear Plate (2 used)
8—Shim
9—Cap Screw (4 used)

CED,TX03399,5959 –19–24MAR00–2/2

Check Front Idler Oil Level

Removing the idler oil level plug (1) does not always indicate oil level. Possible vacuum in the oil cavity can keep oil from flowing out. Idlers that appear low or out of oil may have sufficient oil. Applying a small amount of low volume forced air into the idler will overcome the vacuum and allow a small amount of oil to flow from idler.

NOTE: The oil fill hole should be on outside of idler on the right side of machine. The oil fill hole should be on the inside of idler on the left hand side of the machine.

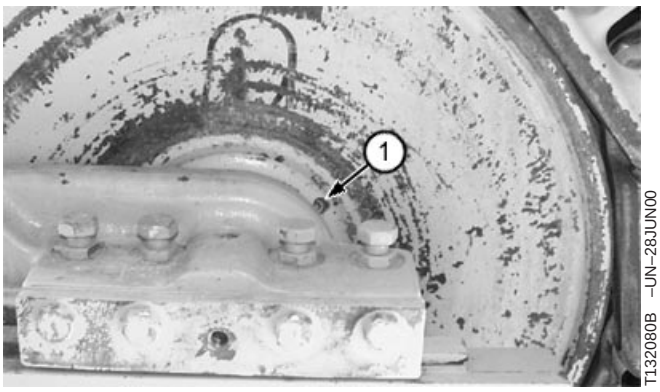
1. Rotate plug opening (1) to a 45° angle.
2. Remove the oil level fill plug (1).

   If oil flows out, oil level is correct.

   If oil does not flow, insert the nozzle of a plastic bottle into the hole and squeeze air pressure into idler. A slight amount of pressure inside the idler will relieve any vacuum and allow oil to flow from fill hole.
3. Add proper oil slowly using oil can.
4. Add oil until oil flows from oil level hole.
5. Apply pipe sealant or TEFLON® tape to new plug. Install and tighten oil level plug.

Front Idler—Specification

Oil Level Plug—Torque ..... 41 ± 4 N•m (30 ± 3 lb-ft)



T132080B –UN–28JUN00

1—Oil Level Plug

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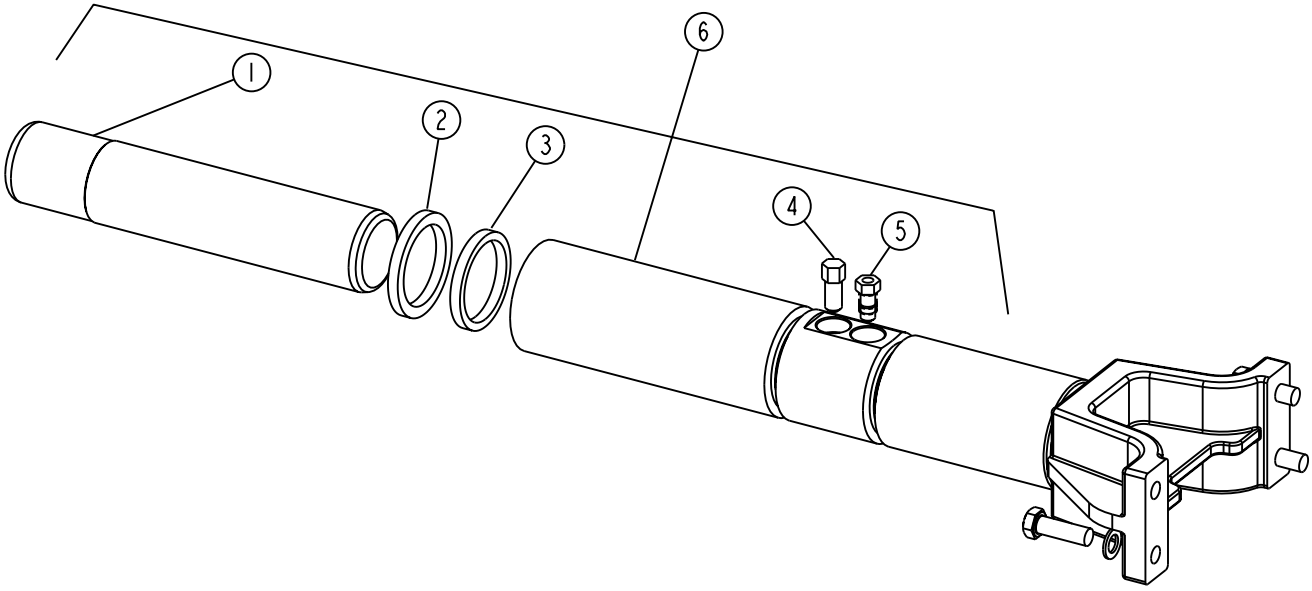
CED,TX03399,5960 –19–24MAR00–1/1

Remove and Install Track Tension Adjuster



T131778
(eval00251)

T131778 –UN–19JUN00

1—Piston
2—Scraper Seal
3—Yoke Seal
4—Relief Valve and Nut
5—Grease Valve (Fitting)
6—Track Tension Adjuster Assembly (2 used)

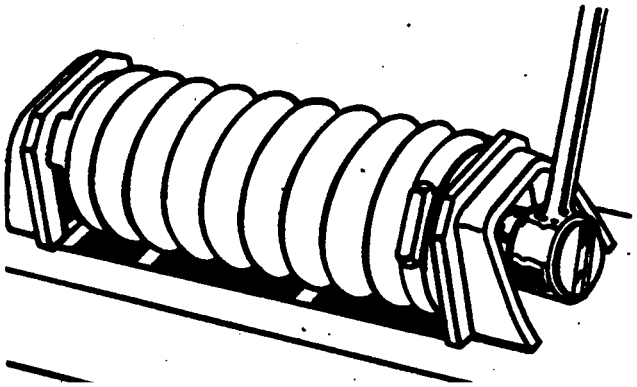
1. Remove front idler. (See Remove and Install Front Idler in this group.)
2. Remove adjuster assembly from track frame.

IMPORTANT: Do not pull piston from track adjusting yoke unless seal and piston seal are to be replaced or seals will be damaged.

3. To aid disassembly, remove grease valve (5) to prevent suction.
4. Pull track adjusting piston (1) from yoke (6).
5. Remove and discard scraper seal (2) and yoke seal (3).
6. Inspect and clean all parts.
7. Fold yoke seal (3) and install into yoke. Install seal with sealing lip toward yoke.
8. Install scraper seal (2) with sealing lip toward spring.
9. Install piston.
10. Install track adjuster in track frame.
11. Install idler and tighten cap screws.

CED,TX03399,5961 –19–24MAR00–1/1

Remove and Install Track Idler Recoil Spring



IMPORTANT: When sliding idler assemble forward, do not pull track adjusting piston from yoke as scraper seal may damage piston seal.

1. Remove and slide front idler with hydraulic track tension adjuster assembly forward. (See Remove and Install Front Idler in this group.)
2. Remove cover.

CAUTION: Always use the special bolt to prevent accidental release of idler recoil spring.

3. Thoroughly clean threads on JD314-2B or JD314-2C screw and in spring adapter. Apply John Deere NEVER-SEEZ® to threads and contact area between cap screw head, washer and positioning guide.
4. Install JD314B Track Spring Compressor Kit (as shown in photo) through track adjuster housing and thread into spring adapter.

CAUTION: Spring or rod may break if dropped while handling, transporting or disassembling. Nicks or weld craters in spring and rod assembly can cause stress concentration resulting in a weak spot that may result in immediate or eventual failure creating a risk of personal injury. Put a heavy protective covering around spring assembly when handling, transporting or disassembling.

A compression tool must be used for disassembly and assembly because of the extreme preload on spring.

5. Remove spring retainer plate cap screws and remove spring.
6. Release compression on track spring immediately after removal.(See Disassemble and Assemble Track Idler Recoil Spring in this group.)

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Continued on next page

7. Install spring, spring retainer plates and cap screws. Tighten spring retainer plate cap screws.

8. Install cover.

9. Install front idler. Slide hydraulic track tension adjuster back, aligning spring housing with piston. (See Remove and Install Front idler in this group.)

CED,TX03399,6112 –19–16JUN00–2/2

Disassemble and Assemble Track Idler Recoil Spring

CAUTION: Spring or rod may break if dropped while handling, transporting or disassembling. Nicks or weld craters in spring and rod assembly can cause stress concentration resulting in a weak spot that may result in immediate or eventual failure creating a risk of personal injury. Put a heavy protective covering around spring assembly when handling, transporting or disassembling.

A compression tool must be used for disassembly and assembly because of the extreme preload on spring.

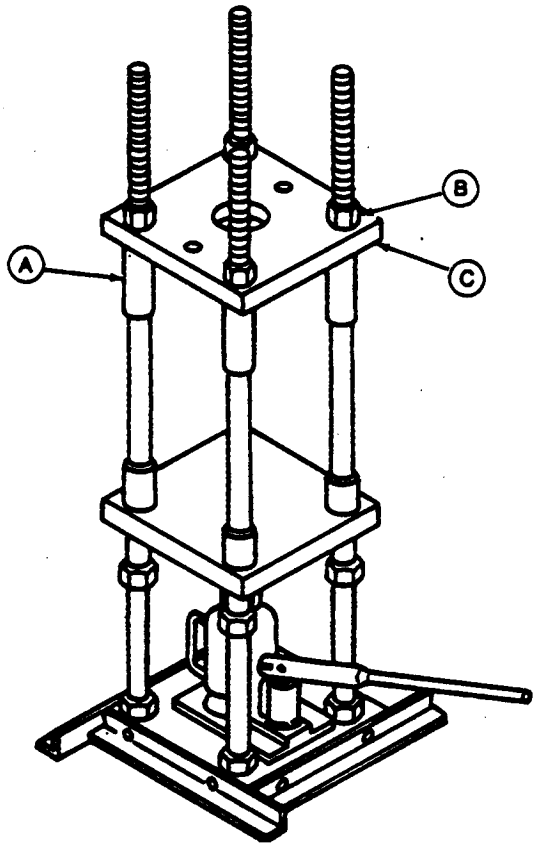
1. Use ST4920 Track Recoil Spring Disassembly and Assembly Tool (A) with a 20-ton jack placed under tool. (See Section 99 for instructions to make tool.)

   Remove nuts (B) and top plate (C).

2. Put recoil spring in compression tool.

Track Recoil Spring—Specification

Recoil Spring—Free Length..... 582 mm (22.9 in.) Approximate



T6557DY –UN–25OCT88

A—ST4920 Compression Tool
B—Nut (4 used)
C—Top Plate

Continued on next page

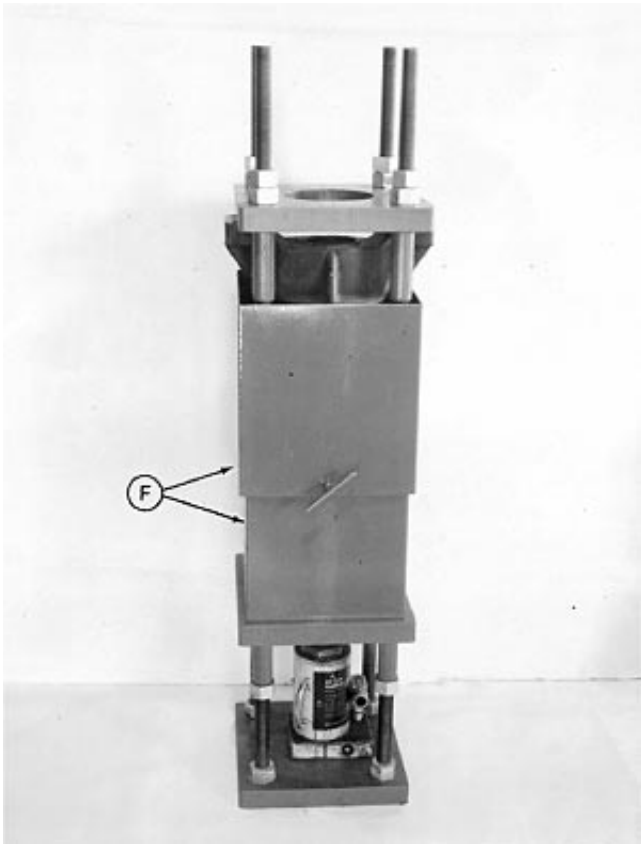
CED,TX03399,5963 –19–10NOV00–1/4

3. Install DFT1087 Recoil Spring Guard Tool (F). (See Section 99 for instructions to make tool.)
4. Install plate (A) and nuts (B) from ST4920 Recoil Spring Tool to secure spring.
5. Be sure cap screw head (C) fits through hole in plate.

IMPORTANT: Cap screw head MUST be centered through hole in plate for proper operation of tool.

6. Compress spring until cap screw (C) fully extends through hole in plate.
7. Remove cap screw (C).
8. Slowly release jack pressure.
9. Remove nuts and plate.
10. Remove spring.

A—Plate
B—Nut (4 used)
C—Cap Screw Head
D—Recoil Spring
E—Hole in Plate
F—DFT1087 Recoil Spring Guard Tool



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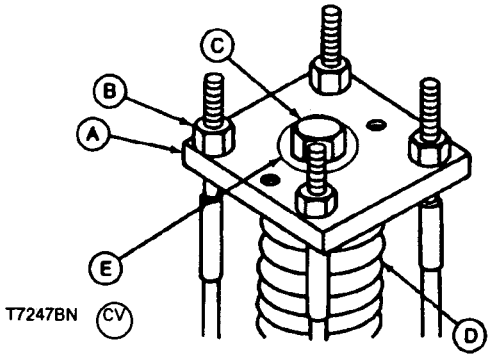
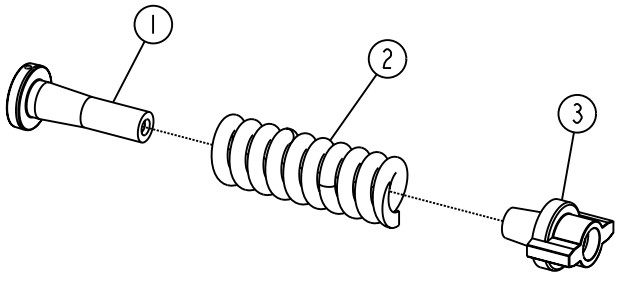


T7247BN –UN–09APR90

CED,TX03399,5963 –19–10NOV00–2/4

11. Remove parts.
12. Check spring for nicks or weld craters. Replace as necessary.
13. Install parts.

1—Adapter
2—Spring
3—Housing



T130823 –UN–31MAY00

T130823

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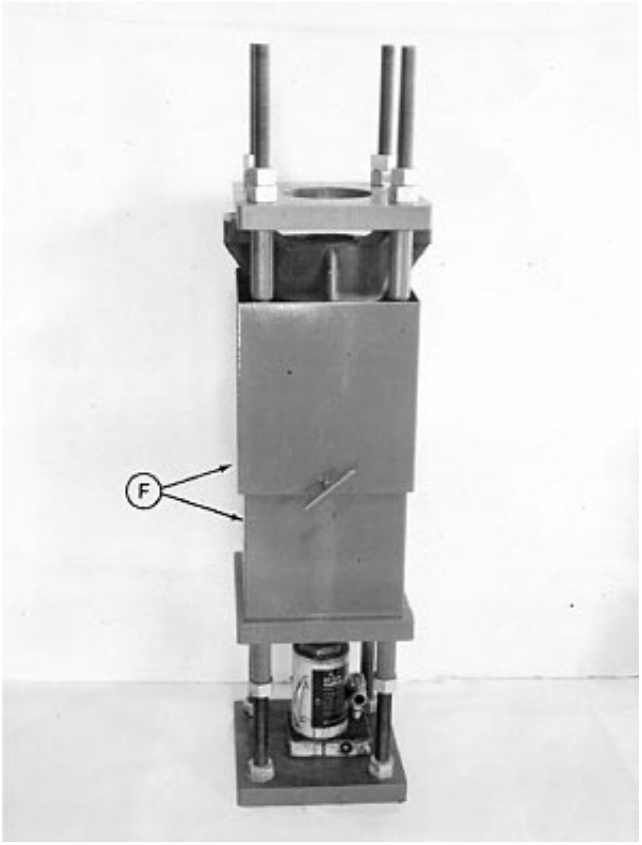
CED,TX03399,5963 –19–10NOV00–3/4

14. Install 20-ton jack on bottom of compression tool.
15. Put adapter, recoil spring and housing (D) in compression tool so spring is centered.
16. Install DFT1087 Recoil Spring Guard Tool (F). (See Section 99 for instructions to make tool.)
17. Install plate (A) and nuts (B) to secure spring.
18. Operate jack to compress spring.
19. Apply John Deere NEVER-SEEZ® Lubricant to threads of special cap screw (C). Install special cap screw through hole (E). Be sure cap screw threads fully engage end cap.
20. Slowly release jack and remove nuts and plate.
21. Install recoil spring assembly. (See Remove and Install Track Idler Recoil Spring in this group.)

A—Plate
B—Nut (4 used)
C—Cap Screw Head
D—Recoil Spring
E—Hole in Plate
F—DFT1087 Recoil Spring Guard Tool



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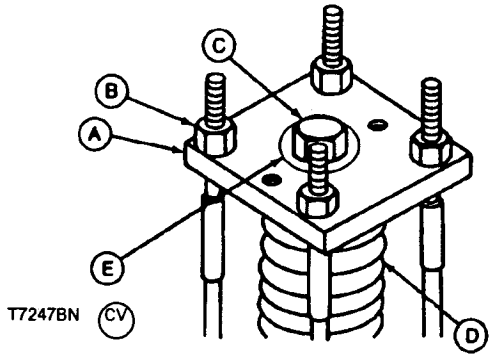

T7247BN –UN–09APR90

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CED,TX03399,5963 –19–10NOV00–4/4

Welding Procedure

IMPORTANT: Before welding on this machine: To avoid electronic component damage, turn the electrical (battery) disconnect switch off.

- Turn (S2) electrical (battery) disconnect switch OFF.
- Clamp the welding ground clamp as close to the point of welding as possible.
- Never attach welding ground clamp to a track pad.
- Remove dirt, oil and paint from areas to be welded.
- Use 5/32 inch diameter low hydrogen AWS-ASTM E-7018 covered electrode.

NOTE: Flux covering on low hydrogen electrodes readily takes on moisture which causes welding problems. Be sure electrodes are dry. Electrodes stored in open containers should be suspected of containing excessive moisture and may require baking prior to use.

Use AC or DC reversed polarity welding current ELECTRODE POSITIVE (+). The suggested amperage is 100—115 amps.

CED,TX03399,5965 –19–24MAR00–1/1

Remove and Install Track Frame

1. Raise crawler using a 9072 kg (10 ton) floor jacks and support machine using shop stands. Machine must be high enough so track rock guards will clear chain when removed.
2. Disconnect track chain. (See Remove and Install Lubricated Track Chain in this group.)
3. Remove two sprocket segments. (See Remove and Install Sprocket Segment in this group.)

CAUTION: The approximate weight of track frame is 968 kg (2 134 lb).

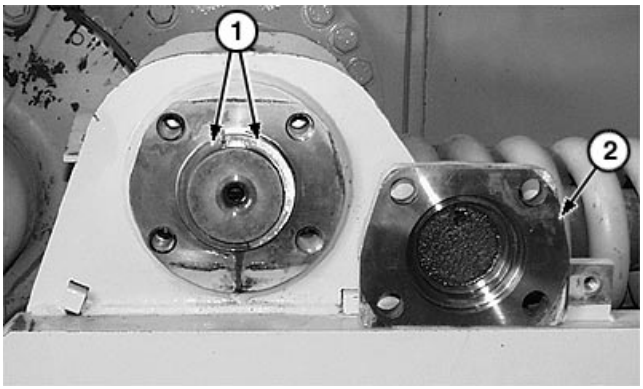
4. Connect a chain and hoist to track frame.

CED,TX03399,5964 –19–14NOV03–1/3

5. Remove pivot cover (2).
6. Remove retainers (1).
7. Remove pivot shaft cover and disconnect lube line.
8. Remove crossbar pin.
9. Carefully remove track frame.(See Remove and Install Track Frame in this group.)
10. Install track frame. (See Remove and Install Track Frame in this group.)
11. Connect lube line and crossbar pin.
12. Install retainers. Clean cap and mating surfaces. Install plastic gasket to cap.
13. Install pivot shaft cover. Tighten to specifications.

Remove and Install Track Frame—Specification

Pivot Shaft Cover Cap Screws—	
Torque	675 N•m (500 lb-ft)



T131868B –UN–19JUN00

1—Cover
2—Retainer (2 used)

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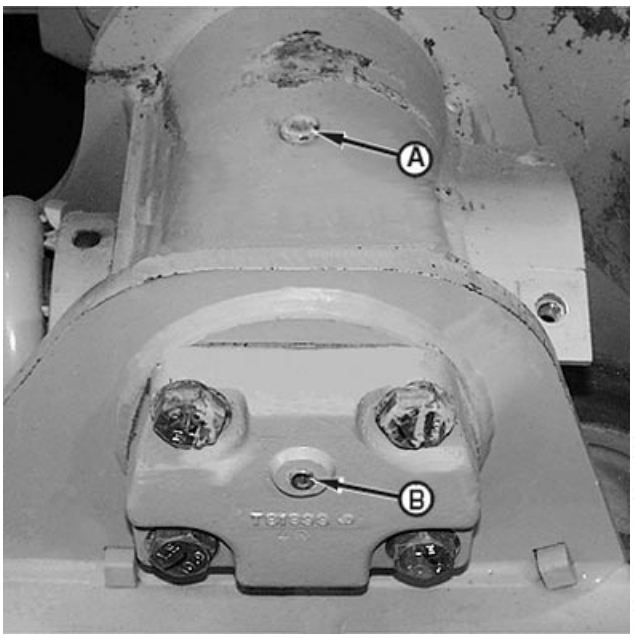
CED,TX03399,5964 –19–14NOV03–2/3

14. Remove oil fill plug (A) and oil level inspection plug (B).
15. Add recommended oil at oil fill opening (A) until oil is visible at oil level inspection plug opening (B).
16. Install plugs.
17. Install sprocket segments. (See Remove and Install Sprocket Segment in this group.)
18. Connect track chain. (See Remove and Install Lubricated Track Chain in this group.)
19. Lower machine to ground and adjust track sag. See Adjust Track Sag in this group.

A—Oil Fill Plug
B—Oil Level Inspection Plug

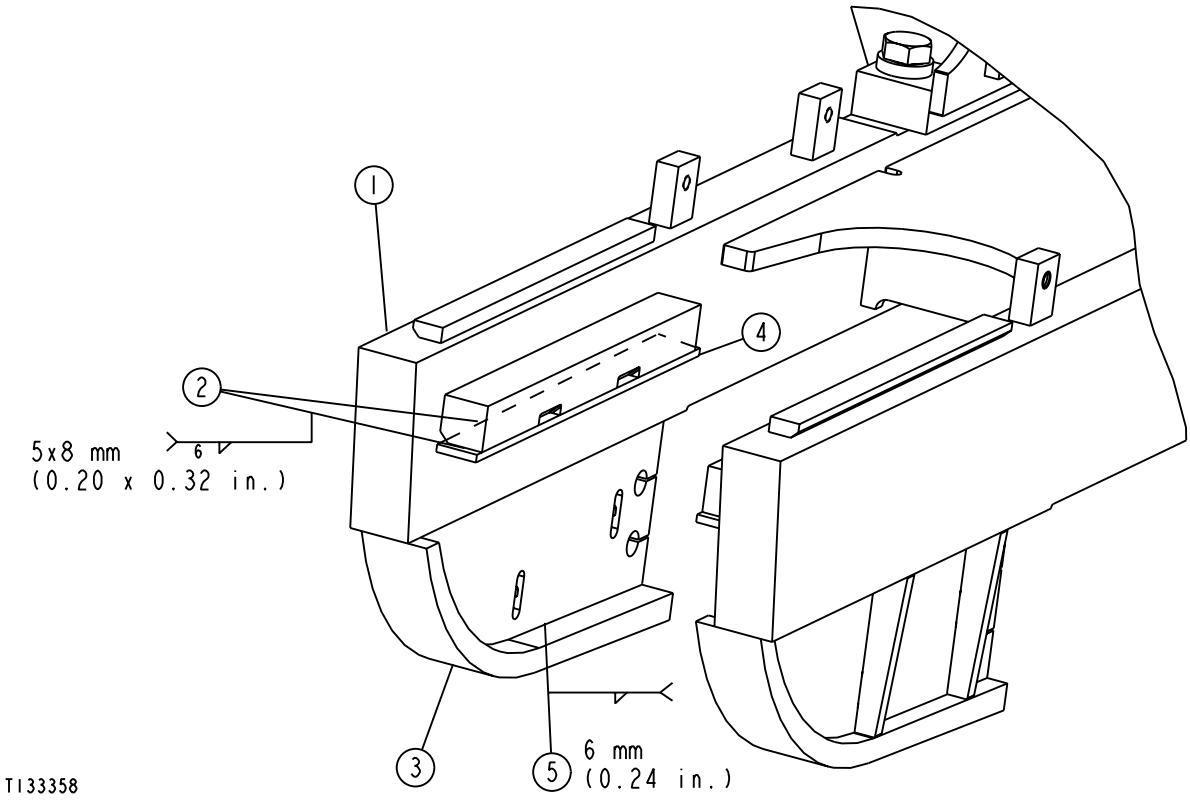


T133454B –UN–28AUG00

Pivot Shaft Oil Fill and Oil Inspection Plugs

CED,TX03399,5964 –19–14NOV03–3/3

Remove and Install Track Frame Wear Strips and Slide Guides.



T133358 –UN–21NOV00

1—Track Frame
2—5 x 8 mm (0.20 x 0.32 in.) Bevel Weld
3—Track Front Chain Guide Slide
4—Idler Wear Strip
5—6 mm (0.24 in) Fillet Weld

1. Remove front idler. (See Remove and Install Front Idler in this group.)
2. Remove wear strips (4).
3. Grind track frame wear strip surfaces smooth. Area must be free of any weld spatter.
4. If removing chain guide slide remove track frame. (See procedure in this group.)
5. Remove slide (3).
6. Grind area surface smooth.

IMPORTANT: Good welds are important. Have only a qualified welder do the procedure. Use E7018 electrodes.

Before welding, clean all dirt and paint from the weld areas and turn battery disconnect switch to OFF. Connect the welder ground clamp close to each weld area so electrical current does not pass through any bearings.

7. If track frame is still on machine, make sure the battery disconnect switch is turned to the OFF position.
8. Clamp wear strip or guide slide in position.
9. Weld each wear strip or guide slide as indicated using E7018 electrodes.

Continued on next page

10. Install track frame, if removed. (See Remove and Install Track Frame in this group.)
11. Install front idler. (See Remove and Install Front Idler in this group.)
12. Adjust front idler. (See Remove and Install Front Idler in this group.)

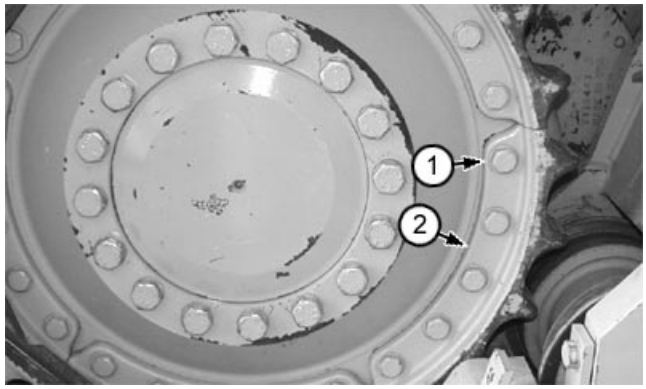
CED,TX03399,5966 –19–10NOV00–2/2

Remove and Install Sprocket Segment

1. Move machine forward to locate sprocket segment to be removed.
2. Lower equipment to the ground and stop engine.
3. Remove guards.
4. Remove cap screws (1) and remove sprocket segment (2).
5. Remove all paint, oil, grease or other foreign material from the mounting surface of the sprocket.
6. Install sprocket segment. Apply cure primer and threadlock sealer (medium strength) to threads of cap screws. Tighten cap screws.

Sprocket Segments—Specification

Segments—Torque	285 N•m (210 lb-ft)



T132231B –UN–07JUL00

1—Cap Screw (5 used)
2—Segment (5 used)

CED,TX03399,5967 –19–24MAR00–1/1

Remove and Install Sprocket

1. Lower equipment to the ground and stop engine.
2. Remove track chain. (See Remove and Install Lubricated Track Chain in this group.)
3. Remove sprocket guard.
4. Remove rock guard. (See Remove and Install Rock Guards in this group.)
5. Raise rear of machine using a 9072 kg (10 ton) floor jack and block securely.

CAUTION: The approximate weight of sprocket is 86 kg (190 lb)

6. Install lifting brackets, chain and hoist. Remove sprocket.
7. Install sprocket.
8. Lubricate cap screws with oil and install and tighten cap screws.

Sprocket—Specification

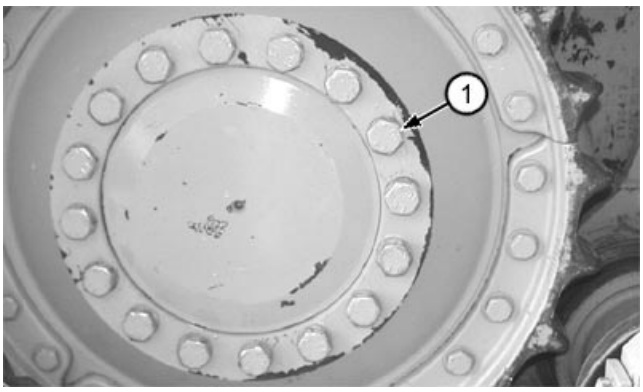
Sprocket Cap Screws—Torque	407 N•m (300 lb-ft)

9. Install sprocket guards. Tighten cap screws.

Sprocket Guards—Specification

Guards—Torque	129 N•m (95 lb-ft)

10. Install track chain. (See Remove and Install Lubricated Track Chain in this group.)



1—Sprocket Cap Screws (16 used)

CED,TX03399,6114 –19–10NOV00–1/1

Section 02
Axles and Suspension Systems

Contents

Page

Group 0201—Drive Axle Housing and Support
Service Equipment and Tools 02-0201-1
Other Material 02-0201-2
Specifications 02-0201-2
Final Drive
  Remove and Install 02-0201-2

Group 0250—Axle Shaft, Bearings, and Reduction Gear
Other Material 02-0250-1
Specifications 02-0250-1
Final Drive
  Disassemble and Assemble. 02-0250-2

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

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TX03399,000186D –19–06OCT00–1/5

Final Drive Lifting Frame. DF1063

To remove and install final drive.

TX03399,000186D –19–06OCT00–2/5

Final Drive Lifting Frame Adapter DF1065

To be used with DF1063 to remove and install final drive

TX03399,000186D –19–06OCT00–3/5

Final Drive Lifting Bracket Adapter DFT1211

To be used with JT01748 to remove and install final drive.

TX03399,000186D –19–06OCT00–4/5

Lifting Bracket JT01748

To be used with DFT1211 to remove and install final drive.

TX03399,000186D –19–06OCT00–5/5

Other Material

Number	Name	Use
TY16285 (U.S.) TY9485 (Canadian) 7649 (LOCTITE®)	Cure Primer	Apply to final drive housing sealing surface and cap screws.
T43514 (U.S.) TY9475 (Canadian) 277 (LOCTITE®)	Plastic Gasket	Apply to surface of final drive and cap screws.

02
0201
2

LOCTITE is a registered trademark of Loctite Corp.

TX03399,000186E –19–06OCT00–1/1

Specifications

Item	Measurement	Specification
Final Drive		
Sprocket	Weight	86 kg (190 lb) Approximate
Final Drive	Weight	470 kg (1036 lb) Approximate
Final Drive Mounting Cap Screws	Torque	320 N•m (235 lb ft)

TX03399,0001870 –19–06OCT00–1/1

Remove and Install Final Drive

1. Remove rear cover.
2. Remove track chain. (See Remove and Install Lubricated Track Chain in Group 0130.)
3. Remove hydrostatic motor. (See Remove and Install Hydrostatic Motor in Group 0300).
4. Raise rear of machine using a 89 000 N (10-ton) floor jack and block securely. Height of rear frame edge should be 609 mm (24 in.).

Continued on next page

CED,TX03399,5969 –19–10NOV00–1/8

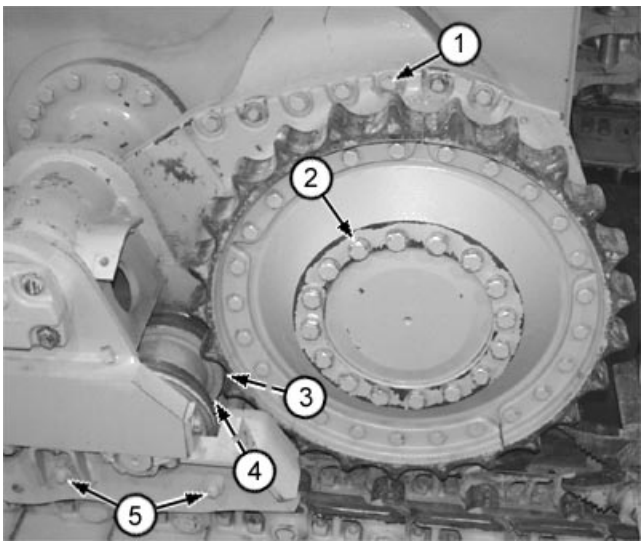
5. Remove cap screws (3 and 5).
6. Remove inner rock guard (4). (See Remove and Install Rock Guards in Group 0130.)

CAUTION: The approximate weight of sprocket with segments is 86 kg (190 lb).

Final Drive—Specification

Sprocket—Weight..... 86 kg (190 lb) Approximate

7. Remove cap screws (2).
8. Remove sprocket. (See Remove and Install Sprocket in Group 01-0130.)
9. Remove cap screw (1).



T133491B –UN–27SEP00

Final Drive Sprocket (LT Shown)

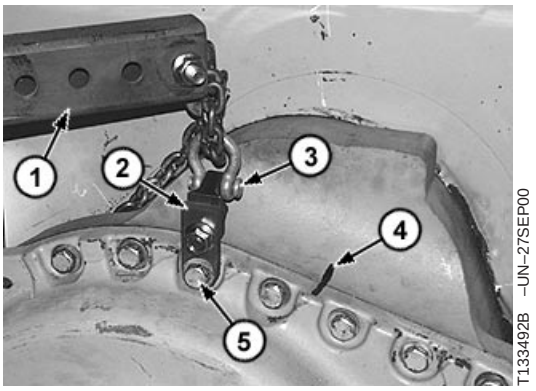
1—Cap Screw
2—Cap Screw
3—Inner Rock Guard Cap Screw
4—Inner Rock Guard
5—Long Cap Screws

02
0201
3

CED,TX03399,5969 –19–10NOV00–2/8

10. Attach DF1063 Final Drive Lifting Frame. to hoist. (See DF1063 Final Drive and Pump Lifting Bracket in Section 99 for instructions to make tools.)
11. Install DF1065 Final Drive Lifting Frame Adapter. to DF1063. (See DF1065 Final Drive and Pump Adapter Bracket in Section 99 for instructions to make tools.)
12. Install DFT1211 Final Drive Lifting Bracket (2). to final drive. (See DFT1211 Final Drive Lifting Bracket Adapter in Section 99 for instructions to make tools.)
13. Attach JT01748 Lifting Bracket on DFT1211 with cap screw (5) .

1—DF1063 Final Drive Lifting Frame and DF1065 Final Drive Lifting Frame Adapter
2—DFT1211 Lifting Bracket Adapter
3—JT01748 Lifting Bracket
4—Final Drive Alignment Mark
5—Cap Screw



T133492B –UN–27SEP00

Final Drive

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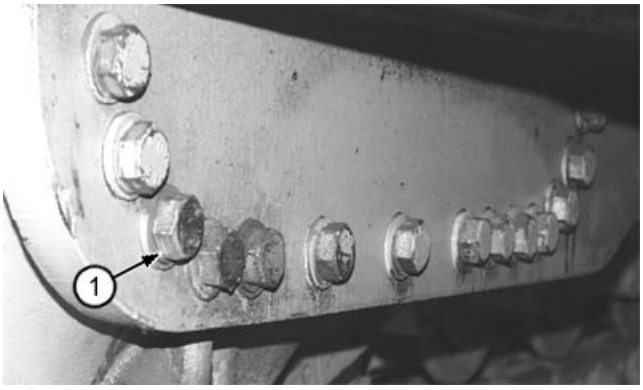
CED,TX03399,5969 –19–10NOV00–3/8

14. Remove cap screws (1).

1—Cap Screw (14 used)



CED,TX03399,5969 –19–10NOV00–4/8

15. Disconnect fitting (1) and remove fitting (2) (if necessary).

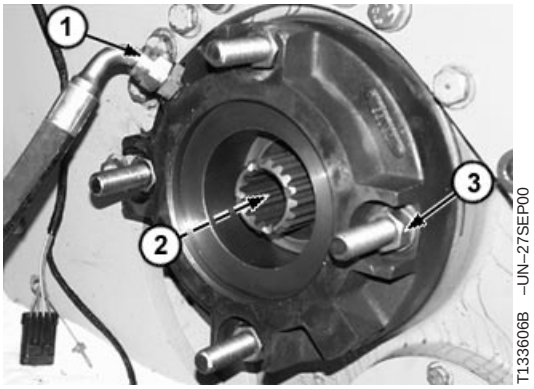
CAUTION: The approximate dry weight of final drive is 470 kg (1036 lb).

Final Drive—Specification

Final Drive—Weight..... 470 kg (1036 lb) Approximate

16. Remove cap screws (3) and remove final drive assembly.

1—Fitting
2—Fitting
3—Cap Screw (10 used)



Park Brake Hose and Fitting

CED,TX03399,5969 –19–10NOV00–5/8

17. Clean all mating surfaces of final drive.

18. Apply cure primer and form in place gasket to surface of final drive and attaching hardware.

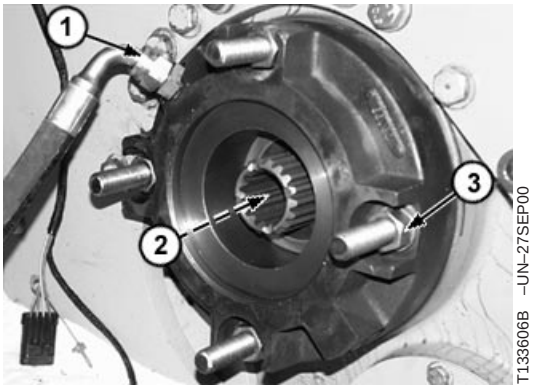
19. Install final drive assembly.

20. Tighten cap screws (3) to specification.

Final Drive Mounting—Specification

Final Drive Mounting Cap Screws—Torque..... 320 N•m (235 lb ft)

21. Install fitting (2) and connect fitting (1).



Park Brake Hose and Fitting

1—Fitting
2—Fitting
3—Cap Screw (10 used)

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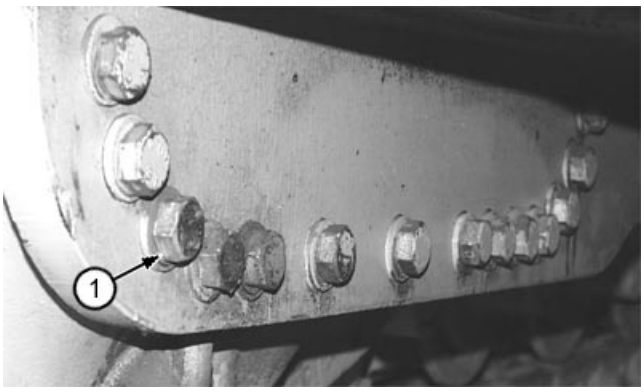
CED,TX03399,5969 –19–10NOV00–6/8

22. Install cap screws (1) and tighten to specification.

Final Drive Mounting—Specification

Final Drive Mounting Cap Screws—Torque ..... 320 N•m (235 lb ft)

1—Cap Screw (14 used)



CED,TX03399,5969 –19–10NOV00–7/8

02 0201 5

23. Install sprocket with cap screws (2). (See Remove and Install Sprocket in Group 01-0130.)

24. Install inner rock guard (4). (See Remove and Install Rock Guards in Group 0130.)

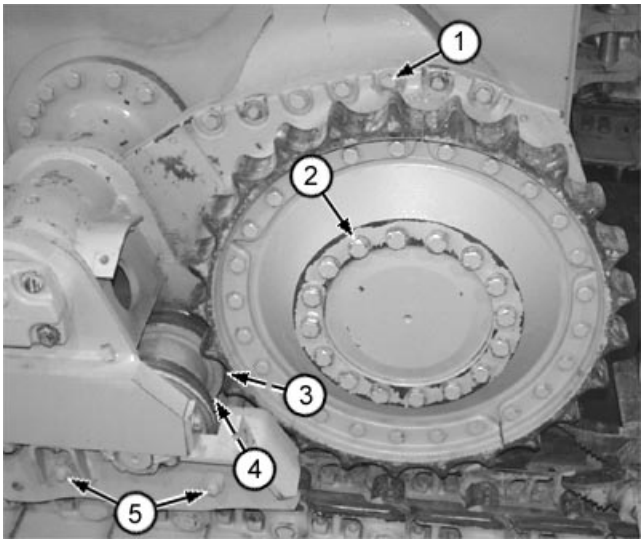
25. Install cap screws (3 and 5).

26. Install rear rock cover.

27. Install hydrostatic motor. (See Remove and Install Hydrostatic Motor.)

28. Install track chain. (See Remove and Install Lubricated Track Chain in Group 0130.)

1—Cap Screw
2—Cap Screw
3—Inner Rock Guard Cap Screw
4—Inner Rock Guard
5—Long Cap Screws



Final Drive Sprocket (LT Shown)

CED,TX03399,5969 –19–10NOV00–8/8

Other Material

Number	Name	Use
TY16285 (U.S.) TY9485 (Canadian) 7649 (LOCTITE®)	Cure Primer	Apply to final drive housing sealing surface, axle shaft retaining plate and cover and brake housing surfaces. Apply to final drive axle retainer cap screw.
T43514 (U.S.) TY9475 (Canadian) 277 (LOCTITE®)	Plastic Gasket	Apply to final drive housing sealing surface, axle shaft retaining plate and cover and brake housing surfaces.

LOCTITE is a registered trademark of Loctite Corp.

TX03399,0001873 –19–06OCT00–1/1

Specifications

Item	Measurement	Specification
Final Drive		
Input Shaft	End Play	0.076—0.432 mm (0.003—0.017 in.)
Final Drive First Idler Cluster Gear	End Play	0—0.241 mm (0—0.0095 in.)
Final Drive Housing Cap Screws	Initial Torque Final Torque	135 N•m (100 lb-ft) 320 N•m (235 lb-ft)
Final Drive Pinion Shaft	Preload-End Play	0.076 mm (0.003 in.) preload—0.076 mm (0.003 in.) end play
Final Drive Secondary Pinion Shaft Cover Cap Screws	Torque	73 N•m (54 lb-ft)
Axle Retainer Cap	Torque	319 N•m (235 lb-ft)
Axle Shaft	Preload	0—0.127 mm (0.0—0.005 in.)
Axle Cover Plate	Torque	73 N•m (54 lb-ft)

TX03399,0001874 –19–06OCT00–1/1

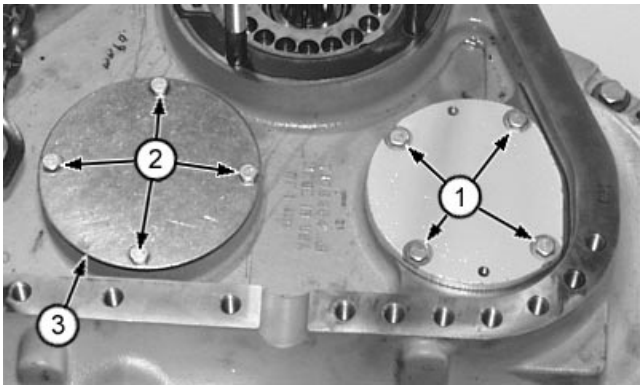
Disassemble and Assemble Final Drive

1. Remove park brake and hub if not removed. (See Disassemble and Assemble Park Brake in Group 1160.)

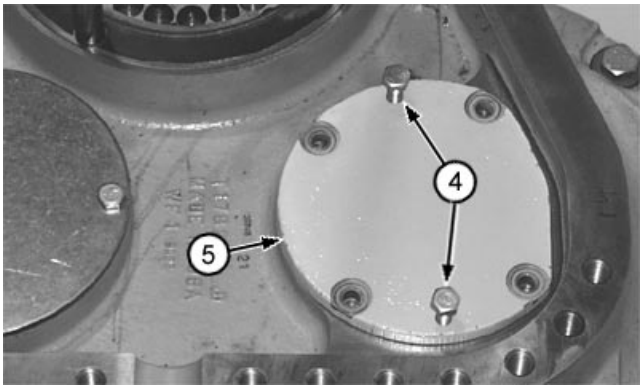
CED,TX03399,5970 –19–24MAR00–1/26

2. Remove cap screws (1). Use two for cover jack screw (4).
3. Tighten jack screws evenly to remove second pinion cover (5).
4. Remove cap screws (2) to remove axle bearing cover (3).

1—Cap Screws
2—Cap Screws
3—Axle Bearing Cover
4—Jack Screw
5—Second Pinion Gear Bearing Cover and Shims



T133186B –UN–17AUG00

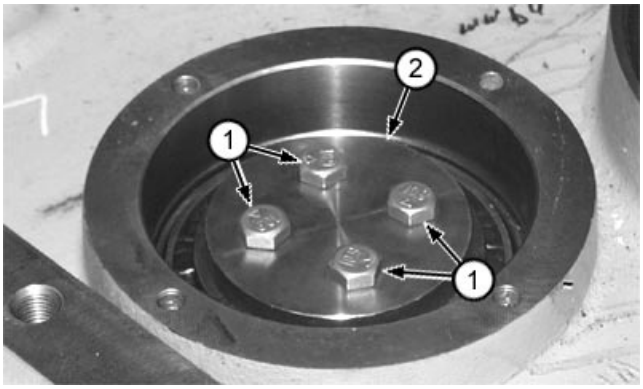


T133146B –UN–17AUG00

CED,TX03399,5970 –19–24MAR00–2/26

5. Remove cap screws (1) to remove cover (2) and shims.

1—Cap Screws
2—Axle Bearing Cover and Shims



T133149B –UN–17AUG00

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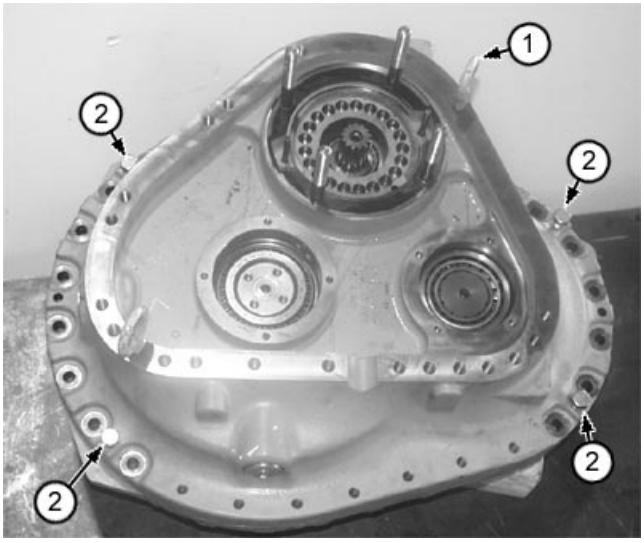
CED,TX03399,5970 –19–24MAR00–3/26

6. Remove housing cap screws and use four for jack screws (2).

7. Install lifting eyes (1) and attach hoist with chains.

1—M16 Lifting Eyes
2—Jack Screws



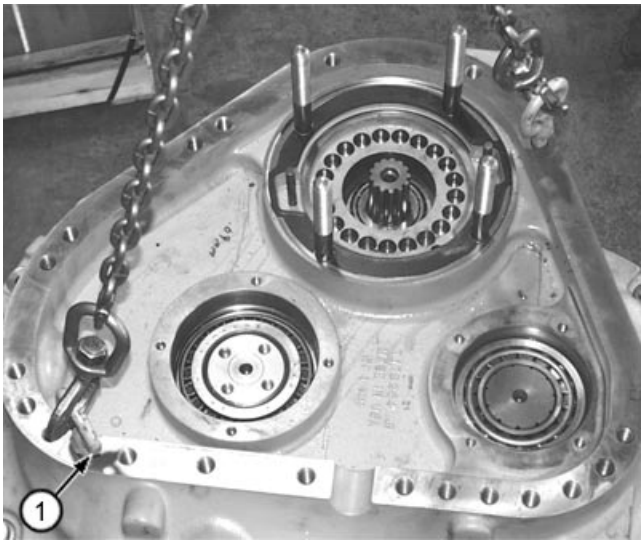
T133192B –UN–17AUG00

CED,TX03399,5970 –19–24MAR00–4/26

NOTE: The axle shaft inner bearing is pressed into the housing. Jack screws are needed to pull housing with bearing cone from shaft. Turn jack screws equally while separating housing halves.

8. Tighten jack screws equally and lift cover slowly to remove housing.

1—M16 Lifting Eye

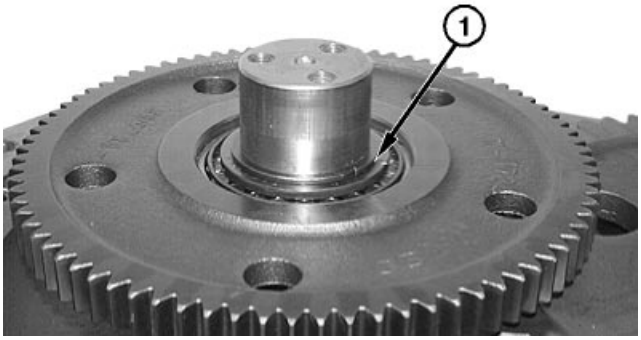


T133150B –UN–17AUG00

CED,TX03399,5970 –19–24MAR00–5/26

9. Remove snap ring (1) from axle.

1—Snap Ring



T118848B –UN–11DEC98

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CED,TX03399,5970 –19–24MAR00–6/26

10. Remove first idler cluster gear (1) with bearing.

1—First Idler Cluster Gear

T118849B –UN–23DEC98

CED,TX03399,5970 –19–24MAR00–7/26

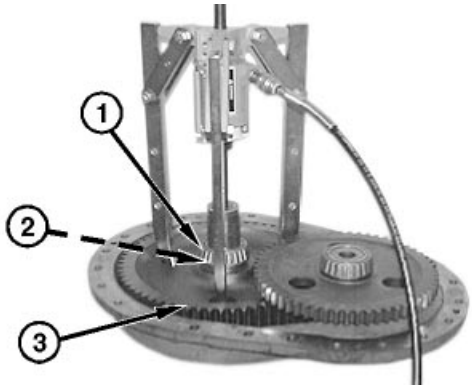
NOTE: Remove second idler ring and pinion gear assembly with final drive gear partially pulled up axle shaft.

11. Remove final drive gear (3) with bearing (1) and spacer (2).

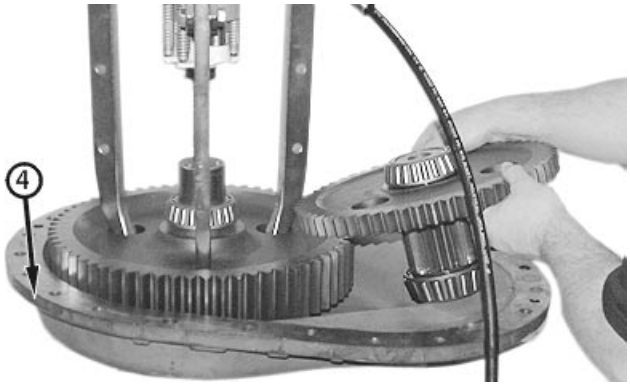
12. Remove final drive gear spacer from axle shaft.

13. Lift housing half (4) off of axle shaft.

1—Bearing
2—Spacer
3—Gear
4—Housing Half



T118850B –UN–11DEC98



T119800B –UN–22JAN99

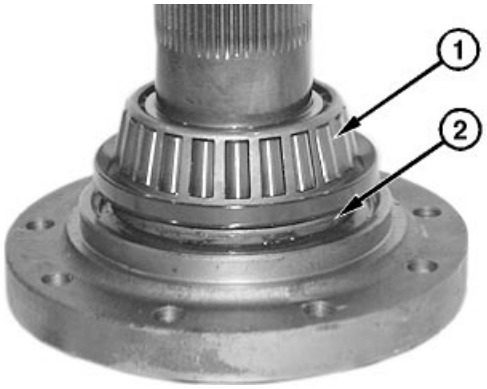
CED,TX03399,5970 –19–24MAR00–8/26

14. Remove bearing (1) from axle shaft.

15. Remove and discard double seal assembly (2).

16. Clean and inspect housing and parts.

1—Bearing
2—Double Seal



T118852B –UN–11DEC98

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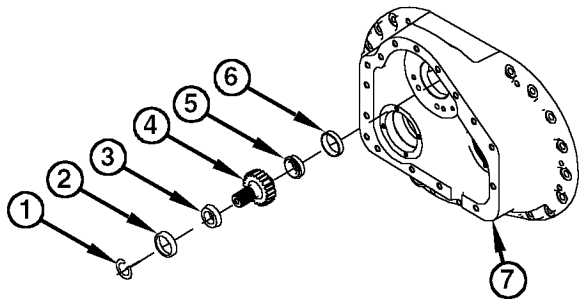
CED,TX03399,5970 –19–24MAR00–9/26

17. Remove parts (1—6) as shown.
18. Inspect final drive input gear (4) and bearing cones (3 and 5). Replace as necessary.
19. Install bearing cup (6) into housing half (7).
20. Install bearing cones (3 and 5) onto final drive input gear (4).
21. Install bearing cup (2) and snap ring into housing. Check end play.

Final Drive—Specification

Input Shaft—End Play	0.076—0.432 mm (0.003—0.017 in.)



T133151

T133151 –UN–18AUG00

1—Snap Ring
2—Bearing Cup
3—Bearing Cone
4—Final Drive Input Gear
5—Bearing Cone
6—Bearing Cup
7—Housing

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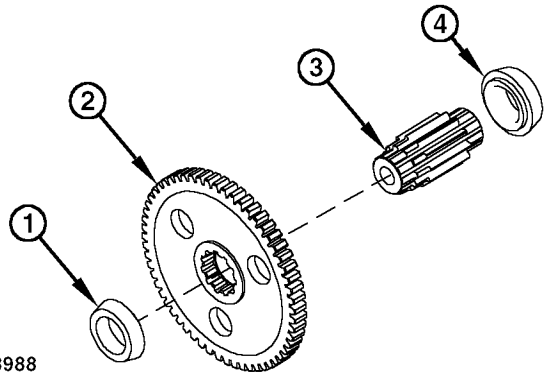
CED,TX03399,5970 –19–24MAR00–10/26

22. Remove parts (1—4) as shown.
23. Inspect second idler pinion gear (3) and bearing cones (1 and 4). Replace as necessary.
24. Install bearing cones (1 and 4) onto second idler pinion gear (3).

1—Bearing Cone
2—Second Idler Ring Gear
3—Second Idler Pinion Gear
4—Bearing Cone



T118988

T118988 –UN–14DEC98

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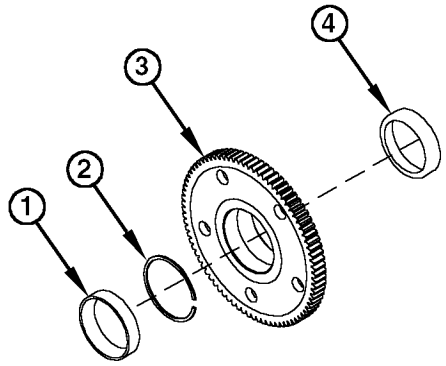
CED,TX03399,5970 –19–24MAR00–11/26

NOTE: A snap ring, located in the center of the cluster gear bore, is used to provide proper spacing for bearing cups in assembly.

25. Remove bearing cups (1 and 4) from first idler cluster gear (3).

26. Install bearing cups (1 and 4) into the first idler cluster gear (3). Seat bearing cups on snap ring.

1—Bearing Cup
2—Snap Ring
3—First Idler Cluster Gear
4—Bearing Cup



T118989

T118989 –UN–14DEC98

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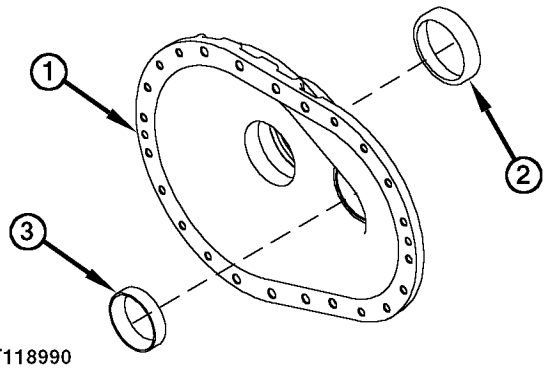
CED,TX03399,5970 –19–24MAR00–12/26

27. Remove final drive axle bearing cup (2) and second pinion outer bearing cup (3) from final drive housing (1).

28. Install final drive axle bearing cup (2) and second pinion outer bearing cup (3) into final drive housing (1). Fully seat bearing cups in bottom of bores.

1—Housing
2—Final Drive Axle Bearing Cup
3—Second Pinion Outer Bearing Cup



T118990

T118990 –UN–14DEC98

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CED,TX03399,5970 –19–24MAR00–13/26

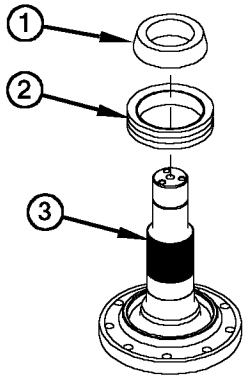
IMPORTANT: BOTH halves of the seal must be installed on the axle shaft before outer bearing cone. Leave plastic retainer band on seal.

29. Clean seal rubber rings and all surfaces that contact rubber rings with a non-petroleum based solvent. Thoroughly dry parts and surfaces using a lint-free tissue.

30. Install seal assembly (2) onto axle shaft (3).

31. Install bearing cone (1) onto axle shaft (3), tight against shoulder.

32. Place axle shaft assembly (2) on level surface.



T118986 –UN–14DEC98

T118986

1—Bearing Cone
2—Seal
3—Axle Shaft

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CED,TX03399,5970 –19–24MAR00–14/26

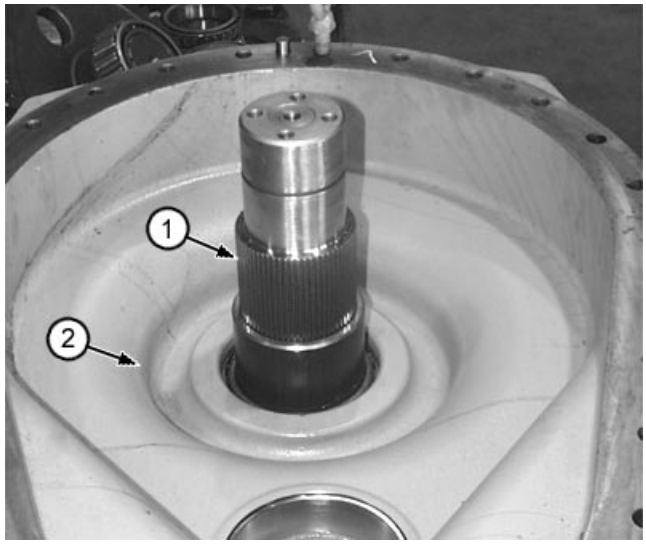
33. Lower housing (2) onto axle shaft assembly (1).

NOTE: Axle shaft and housing must be square and level for assembly.

34. With the weight of the housing on the axle flange, block and support housing using a level.

35. Install pinion bearing cup (3), if removed.

1—Axle Shaft
2—Housing
3—Bearing Cup

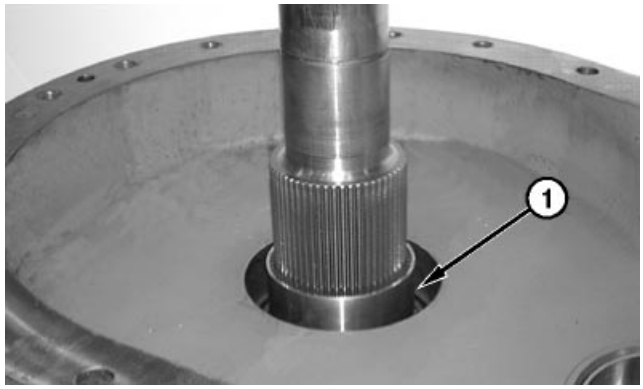


T133361B –UN–21AUG00

CED,TX03399,5970 –19–24MAR00–15/26

36. Install final drive gear spacer (1) onto axle shaft.

1—Final Drive Gear Spacer



T118854B –UN–11DEC98

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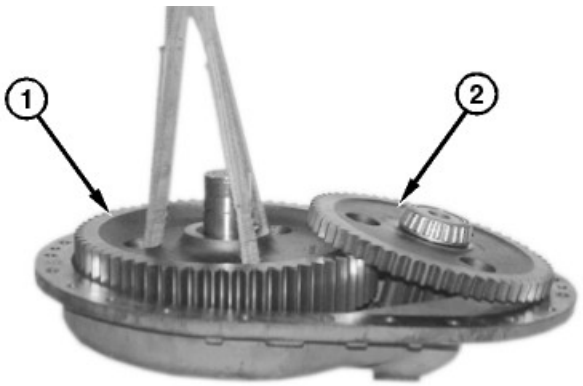
CED,TX03399,5970 –19–24MAR00–16/26

NOTE: Install second idler pinion gear assembly (2) after final drive gear (1) is lowered halfway into position.

37. Install final drive gear (1).

1—Final Drive Gear
2—Second Idler Pinion Gear Assembly



T118855B –UN–11DEC98

CED,TX03399,5970 –19–24MAR00–17/26

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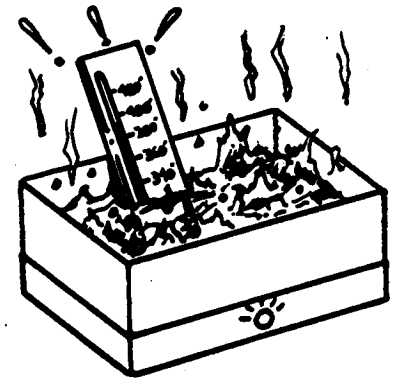
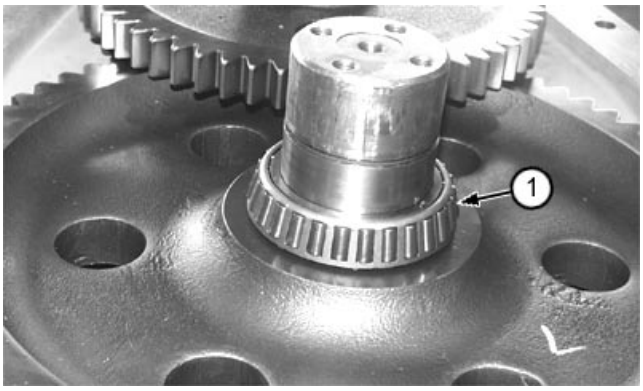
CAUTION: DO NOT heat oil over 182°C (360°F). Oil fumes or oil can ignite above 193°C (380°F). Use a thermometer. DO NOT allow flame or heater element to come in direct contact with the oil. Heat oil in a well ventilated area.

38. Heat bearing cone (1) and install.

1—Bearing Cone



T81191 –UN–23FEB89



T133210B –UN–21AUG00

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CED,TX03399,5970 –19–24MAR00–18/26

39. Install first idler cluster gear (1).

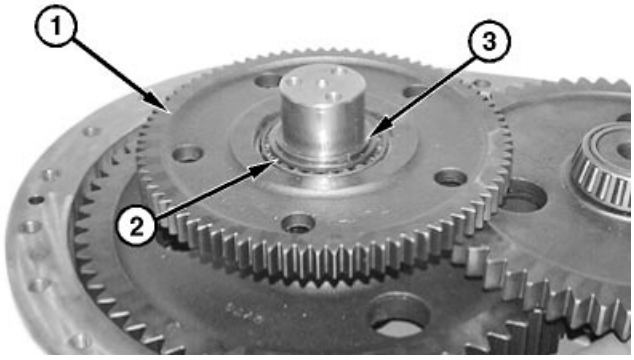
    Heat bearing cone (2) and install onto axle shaft.

40. Install snap ring (3) onto axle shaft.

    Select the appropriate snap ring (3) by checking end play on first idler cluster gear and compare to following specifications.

Final Drive—Specification

Final Drive First Idler Cluster Gear—End Play	0—0.241 mm (0—0.0095 in.)



T118857B –UN–11DEC98

1—First Idler Cluster Gear
2—Bearing Cone
3—Snap Ring

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CED,TX03399,5970 –19–24MAR00–19/26

41. Install housing alignment dowel pins (1) in housing half.

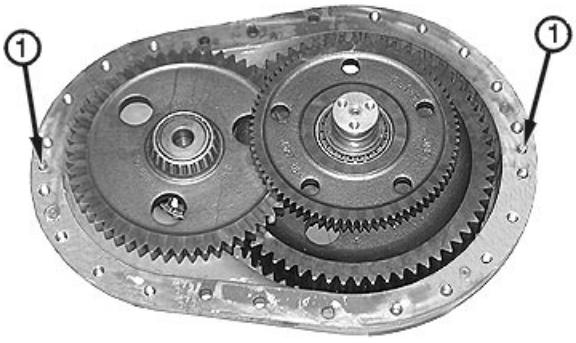
42. Apply cure primer and plastic gasket to housing sealing surface.

43. Join housing halves.

44. Install cap screws and tighten evenly to specifications.

Final Drive—Specification

Final Drive Housing Cap Screws—Initial Torque	135 N•m (100 lb-ft)
Final Torque	320 N•m (235 lb-ft)



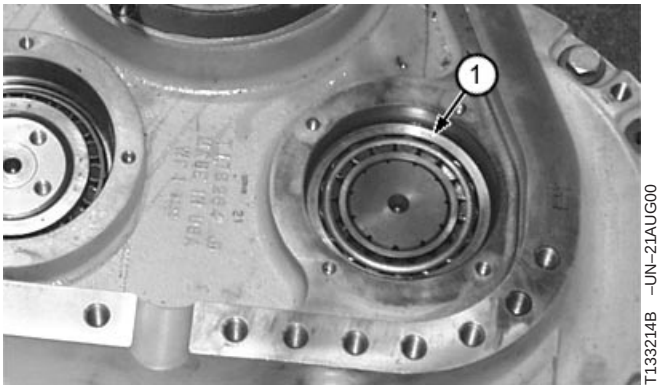
T119802B –UN–25JAN99

1—Dowel Pins (2 used)

CED,TX03399,5970 –19–24MAR00–20/26

45. Seat bearing cup (1) onto bearing cone.

1—Bearing Cup



T133214B –UN–21AUG00

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CED,TX03399,5970 –19–24MAR00–21/26

46. Measure cover bearing surface height.

47. Measure distance between housing and bearing cone. Subtract bearing cone height from cover height. Select shims to achieve specified preload.

Final Drive—Specification

Final Drive Pinion Shaft—	
Preload-End Play	0.076 mm (0.003 in.) preload—0.076 mm (0.003 in.) end play

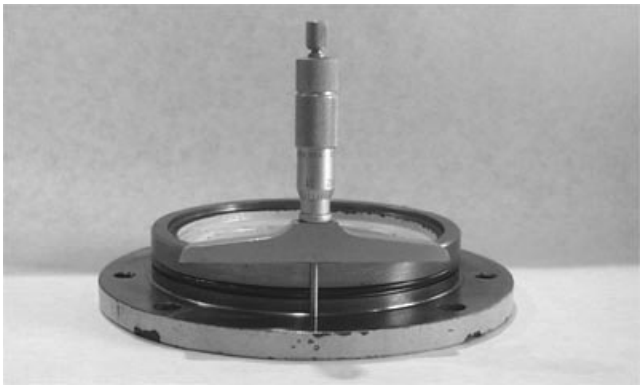
48. Install O-ring .

49. Install cover (1) with cap screws (2) and tighten to specifications.

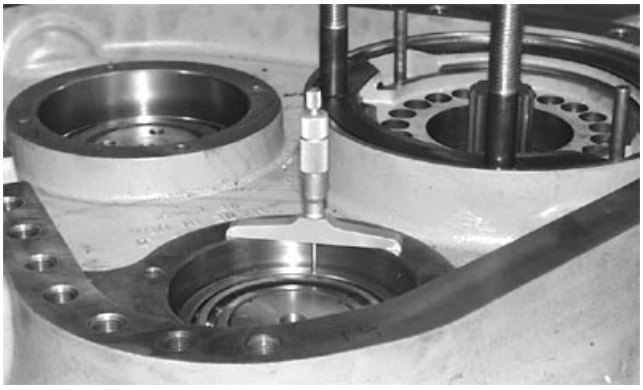
Final Drive—Specification

Final Drive Secondary Pinion Shaft Cover Cap Screws—Torque	73 N•m (54 lb-ft)

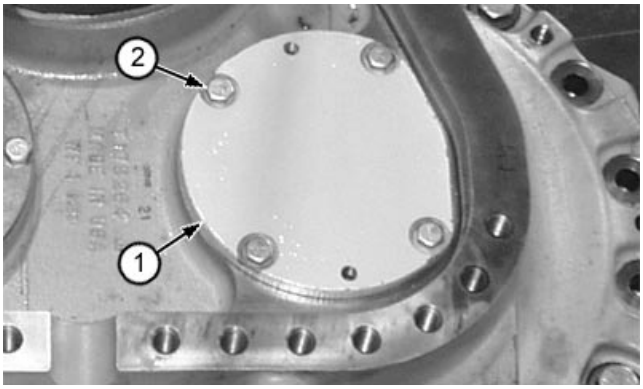
1—Cover
2—Cap Screw (4 used)



T133328B –UN–21AUG00



T133329B –UN–21AUG00



T133330B –UN–21AUG00

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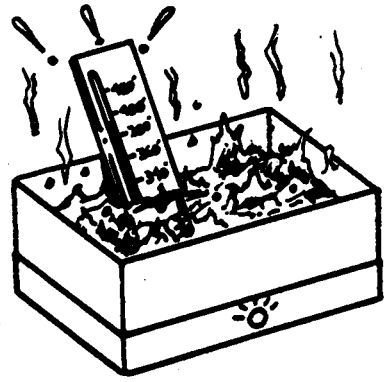
CED,TX03399,5970 –19–24MAR00–22/26

CAUTION: DO NOT heat oil over 182°C (360°F). Oil fumes or oil can ignite above 193°C (380°F). Use a thermometer. DO NOT allow flame or heater element to come in direct contact with the oil. Heat oil in a well ventilated area.



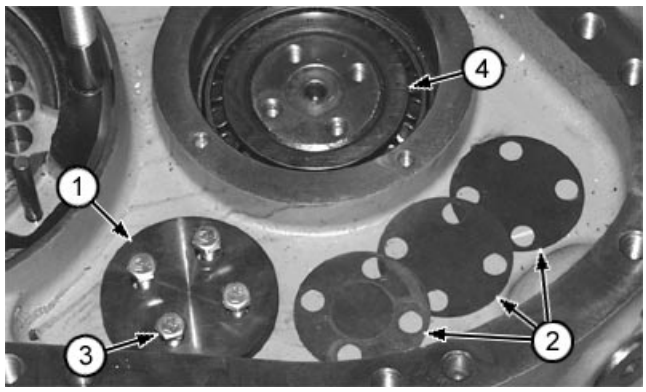
T81191 –UN–23FEB89

NOTE: Housing and axle shaft flange must be level, with weight of housing on axle flange.

50. Heat bearing (4) and install onto axle shaft.

51. Install shims (2) removed initially, and add an additional shims to provide an end play on axle shaft.

1—Retaining Plate
2—Shims
3—Cap Screw
4—Bearing



T133362B –UN–21AUG00

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CED,TX03399,5970 –19–24MAR00–23/26

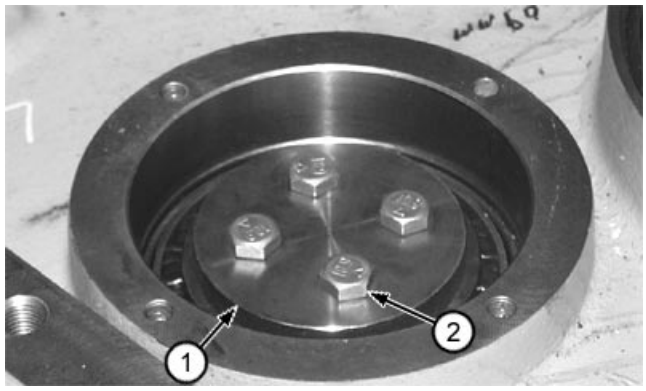
52. Tighten retaining plate cap screws to specification.

Final Drive—Specification

Axle Retainer Cap—Torque	319 N•m (235 lb-ft)

53. Lift final drive and rotate axle and tap on retaining cap with hammer and punch. Torque cap screws again to specification. Repeat this step until cap screws do not turn when tightened after tapping retainer plate.

1—Retaining Plate
2—Cap Screws



T133336B –UN–21AUG00

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CED,TX03399,5970 –19–24MAR00–24/26

54. Place dial indicator at the center of retaining cap and adjust to zero.

55. Lower final drive so axle shaft flange is level with weight of drive on axle flange. Stabilize final drive with wood blocks.

56. Dial indicator will show amount of axle shaft end play.

57. Remove retaining plate and enough shims to eliminate measured end play. Then remove additional shims to provide the specified preload.

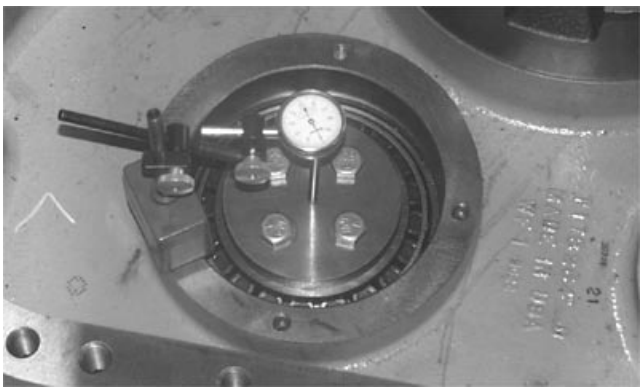
Final Drive—Specification

Axle Shaft—Preload ..... 0—0.127 mm (0.0—0.005 in.)

58. Apply cure primer and thread lock to retainer cap screws. Tighten cap screws to specification.

Final Drive—Specification

Axle Retainer Cap—Torque ..... 319 N•m (235 lb-ft)



T133338B –UN–21AUG00

CED,TX03399,5970 –19–24MAR00–25/26

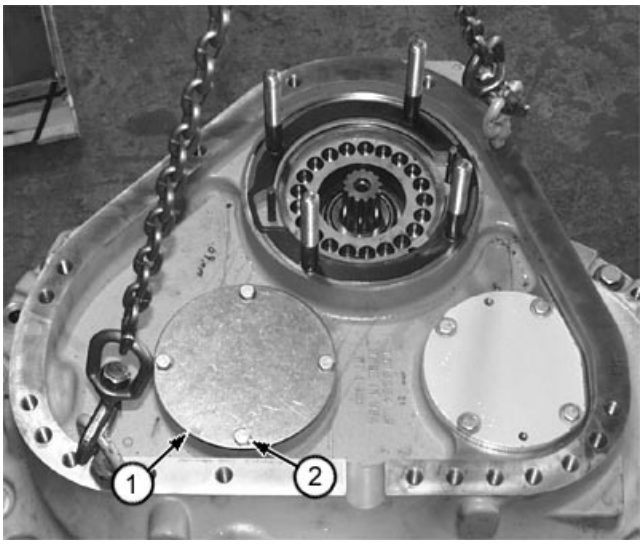
59. Apply threadlock to axle cover (1) and cap screws (2). Tighten cap screws to specification.

Final Drive—Specification

Axle Cover Plate—Torque..... 73 N•m (54 lb-ft)

60. Install park brake and hub. (See Remove and Install Park Brake in Group 1160.)

1—Axle Cover Plate
2—Cap Screw



T133335B –UN–21AUG00

CED,TX03399,5970 –19–24MAR00–26/26

Section 03
Transmission

Contents

Page

Group 0300—Removal and Installation
Essential Tools 03-0300-1
Service Equipment and Tools 03-0300-1
Other Material 03-0300-2
Specifications 03-0300-3
Hydrostatic Component Location 03-0300-4
Hydrostatic Pump
Remove and Install 03-0300-7
Hydrostatic Motor
Remove and Install 03-0300-16

Group 0315—Controls Linkage
Essential Tools 03-0315-1
Other Material 03-0315-3
Specifications 03-0315-4
Single Lever Control With Speed In Grip
Exploded View 03-0315-6
Remove and Install 03-0315-8
Disassemble and Assemble 03-0315-9

Group 0360—Hydrostatic System
Essential Tools 03-0360-1
Service Equipment and Tools 03-0360-2
Other Material 03-0360-2
Specifications 03-0360-3
Hydrostatic Pump
Exploded View 03-0360-6
Disassemble 03-0360-7
Charge Pump and Pump Control
Exploded View 03-0360-18
Charge Pump, Disassemble and
Assemble 03-0360-19
Displacement Control Valve, Disassemble
and Assemble 03-0360-24
Multi-Function Valve, Disassemble and
Assemble 03-0360-26
Neutral Charge Relief Valve, Disassemble
and Assemble 03-0360-29
Assemble 03-0360-29
Hydrostatic Motor
Speed Sensor, Remove and Install 03-0360-38
Speed Sensor, Adjust 03-0360-39
Disassemble 03-0360-40
Assemble 03-0360-51
Oil Cooler Thermal Bypass Valve
Remove and Install 03-0360-60

Page

Disassemble and Assemble 03-0360-61
Hydrostatic Filter
Remove and Install 03-0360-62
Disassemble and Assemble 03-0360-64
Remove and Install Hydrostatic
Reservoir 03-0360-66
Remove and Install Diagnostic Plumbing
(S.N. —899613) 03-0360-68
Diagnostic Plumbing
Remove and Install 03-0360-69

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

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TX03399,0001868 –19–06OCT00–1/2

Hydrostatic Motor Removal and Installation Tool DFT1132

Used to remove and install hydrostatic motor.

TX03399,0001868 –19–06OCT00–2/2

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

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TX03399,0001869 –19–06OCT00–1/3

Lifting Bracket DFT1063

Remove hydrostatic tandem pump assembly.

TX03399,0001869 –19–06OCT00–2/3

Adapter DFT1130

Use with DF1063 Lifting Bracket to remove hydrostatic tandem pump assembly.

TX03399,0001869 –19–06OCT00–3/3

Other Material

Number	Name	Use
TY16285 (U.S.) TY9485 (Canadian) 7649 (LOCTITE®)	Cure Primer	Cure surface prior to application of adhesives or sealants.
T43512 (U.S.) TY9473 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to threads of dampener hub set screws. Apply to flywheel housing cover plate cap screws.
T43514 (U.S.) TY9475 (Canadian) 277 (LOCTITE®)	Plastic Gasket	Apply to threads of hydrostatic motor mounting nuts and washers.

LOCTITE is a registered trademark of Loctite Corp.

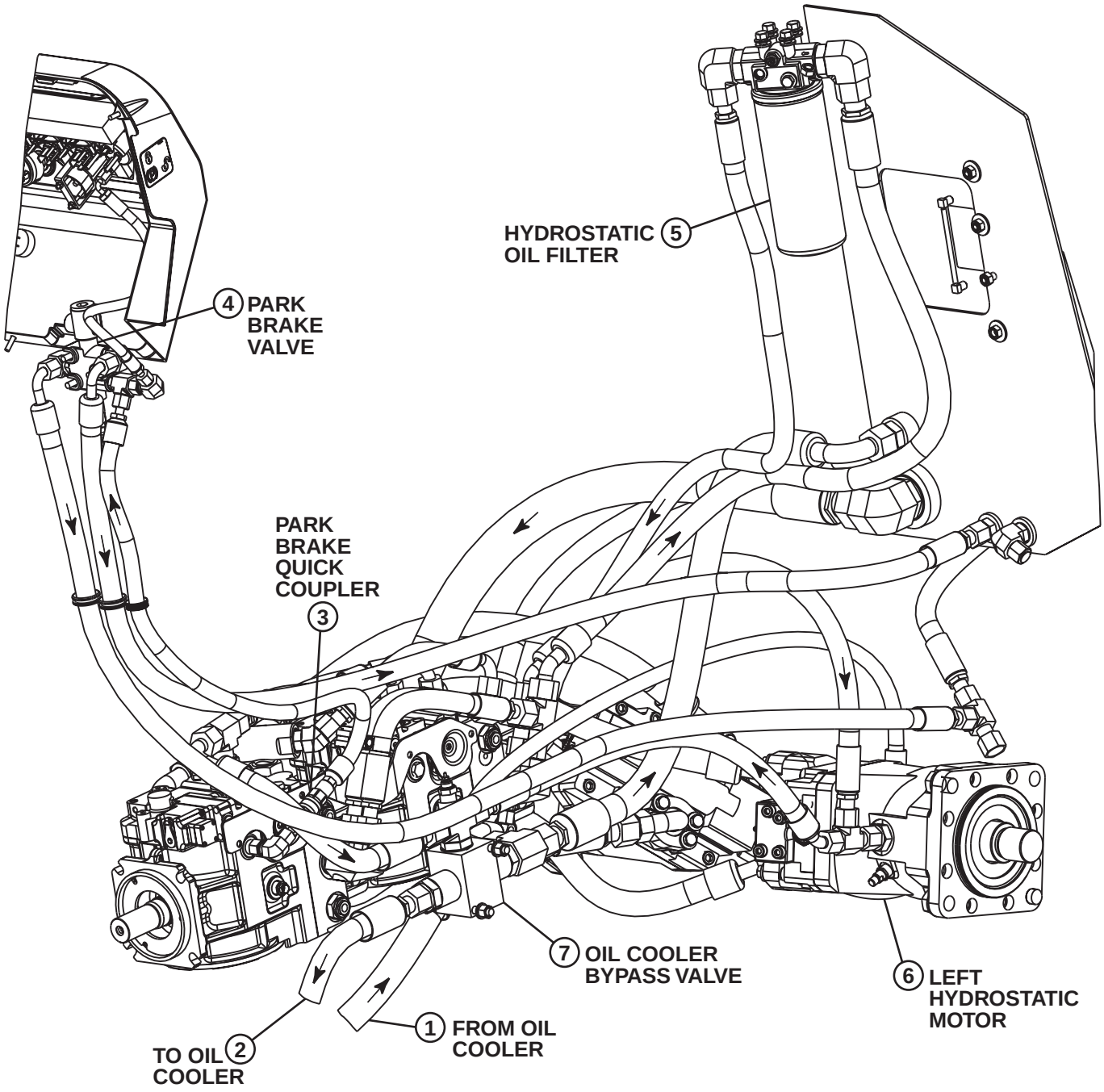
TX03399,000186A –19–06OCT00–1/1

Specifications

Item	Measurement	Specification
Hydrostatic Pump		
Dual Hydrostatic Pump Assembly	Weight	120 kg (265 lb) (Approximate)
Hydrostatic Pump-to-Flywheel Housing Plate	Torque	150 N•m (115 lb-ft)
Dampener Hub-to-Hydrostatic Pump Shaft Set Screws	Torque	50 N•m (37 lb-ft)
Flywheel Housing Cover Plate	Torque	57 N•m (42 lb-ft)
Hydraulic Pump Mounting Cap Screws	Torque	140 N•m (103 lb-ft)
Hydrostatic Reservoir	Capacity	65.1 L (17.2 gal) (Approximate)
Engine Coolant	Capacity	19.4 L (20.5 qt) (Approximate)
Hydrostatic Motor Mounting Cap Screws	Torque	210 N•m (155 lb-ft)

TX03399,000186B –19–06OCT00–1/1

Hydrostatic Component Location



T134165

T134165 –19–10OCT00

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CED,TX03399,5972 –19–24MAR00–1/3

1—From Oil Cooler
2—To Oil Cooler
3—Park Brake Quick Coupler
4—Park Brake Valve
5—Hydrostatic Filter
6—Left Hydrostatic Motor
7—Oil Cooler Bypass Valve

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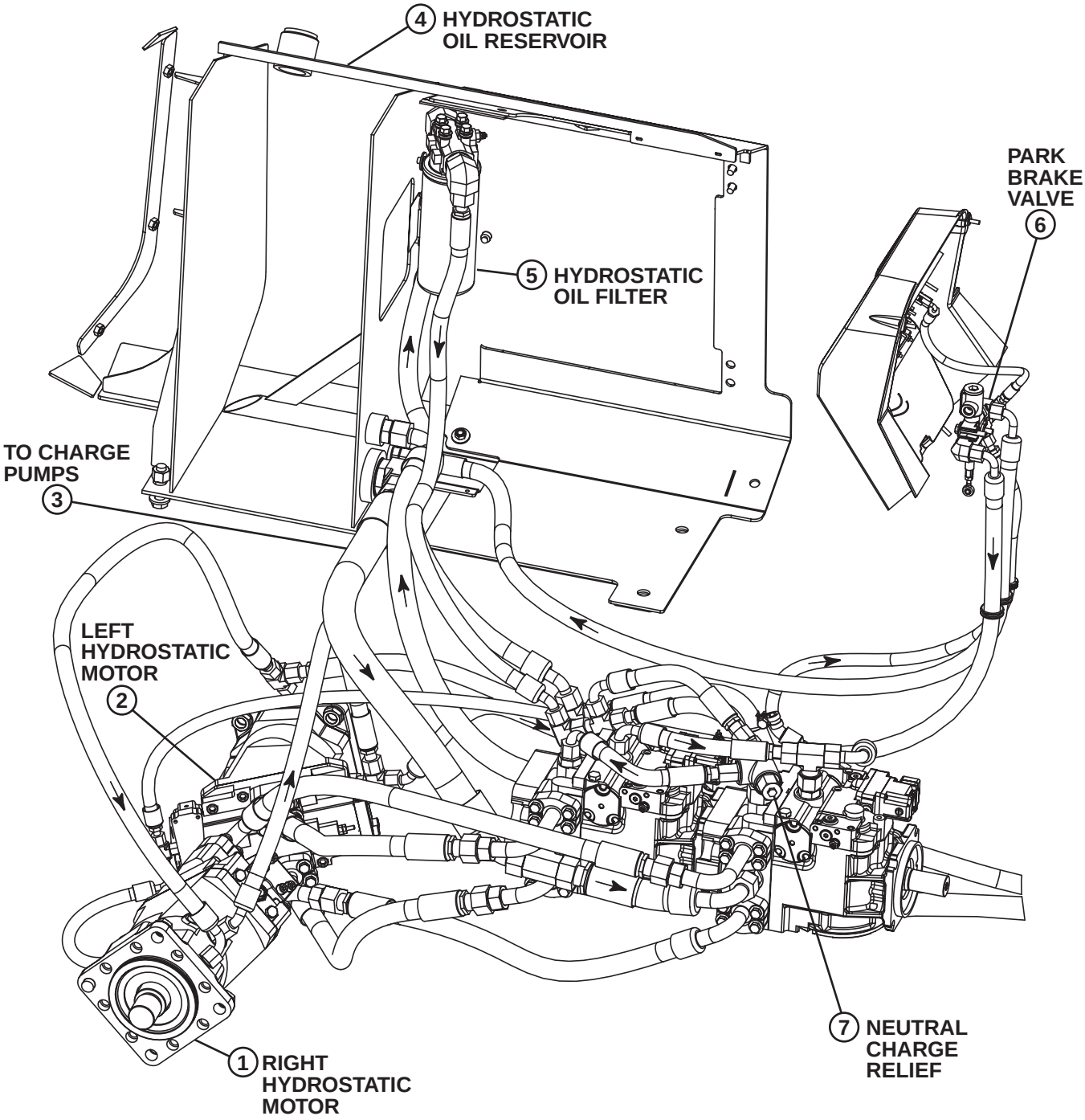
CED,TX03399,5972 –19–24MAR00–2/3



1—Right Hydrostatic Motor
2—Left Hydrostatic Motor
3—To Charge Pumps
4—Hydrostatic Oil Reservoir
5—Hydrostatic Oil Filter
6—Park Brake Valve
7—Neutral Charge Relief

CED,TX03399,5972 –19–24MAR00–3/3

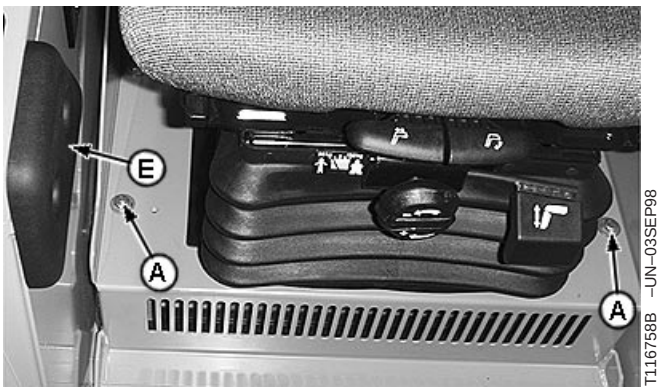
Remove and Install Hydrostatic Pump

CAUTION: Prevent possible injury from unexpected track movement. Raise the machine off the ground and support with blocks. Tracks MUST be free to rotate in either direction to perform Hydrostatic Pump Initial Startup Procedure and Pump Displacement Control Valve Neutral (Null) Adjustment.

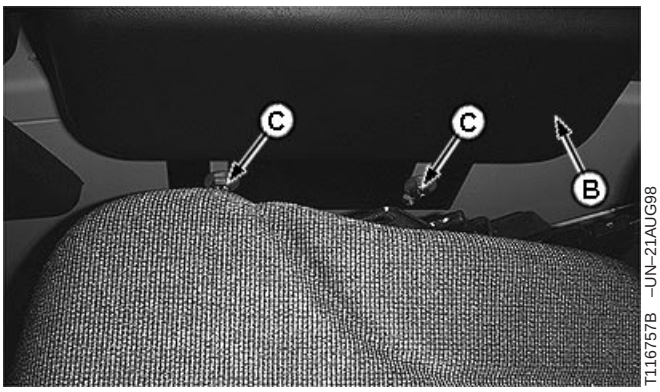
1. Raise machine off the ground and support with floor stands. Lower blade to ground. Tracks MUST be free to rotate in either direction.
2. Turn battery disconnect switch to OFF.
3. Remove access plate from bottom of hydrostatic reservoir compartment and drain reservoir. The approximate capacity of hydrostatic reservoir is 65.1 L (17.2 gal).
4. If equipped with heater, drain engine coolant. The approximate capacity of engine coolant is 19.4 L (20.5 qt).
5. Remove floor mat and floor access plate.
6. For machines with toolbox, pull out drawer and remove cap screw holding toolbox in place. Remove toolbox from machine.
7. Remove four cap screws (A) from around seat box bottom.
8. Remove shoulder cap screws (C) from seat box under armrest (B) on both sides of seat.
9. Remove two cap screws from knee pad (E) on both sides of seat.

IMPORTANT: Observe control levers as seat is being raised or lowered for possible interference.

10. Loosen jam nut on hydraulic control lever tee handle and index handle 90° to provide clearance for seat when tilting.



T116758B –UN–03SEP98



T116757B –UN–21AUG98

A—Cap Screws Around Seat Box Bottom (4 used)
B—Armrest
C—Shoulder Cap Screws (2 used)
E—Knee Pad

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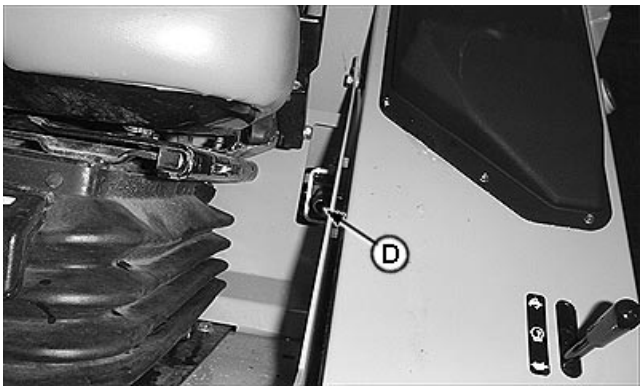
CED,TX03399,5973 –19–24MAR00–1/15

11. On units equipped with rear screen or cab, tilt back of seat forward.

CED,TX03399,5973 –19–24MAR00–2/15

12. Tilt seat up as far as possible with jack screw (D) located in left rear corner of seat box.

D—Jack Screw



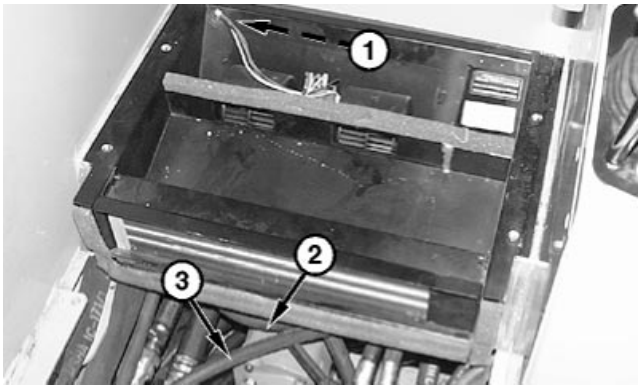
T116728B –UN–21AUG98

CED,TX03399,5973 –19–24MAR00–3/15

13. Disconnect blower harness connector (1) and heater hoses (2 and 3).

14. Remove heater assembly.

1—Blower Harness Connector
2—Heater Hose
3—Heater Hose



T118838B –UN–10DEC98

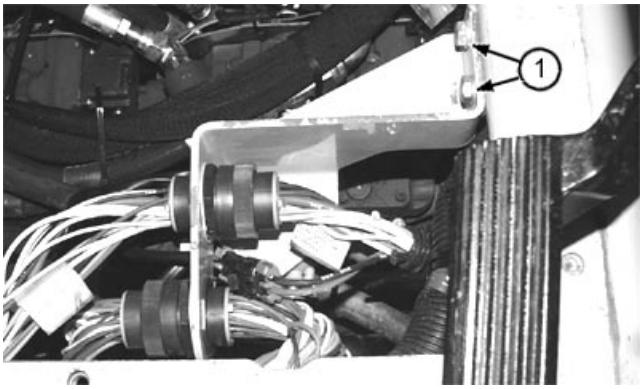
CED,TX03399,5973 –19–24MAR00–4/15

15. Remove tie bands on heater hose bracket.

16. Loosen hose clamps from water valve and disconnect water valve from bracket. (Do not disconnect hoses from water valve).

17. Remove cap screws (1) from bracket and move bracket, wiring and hoses off to side.

1—Cap Screw (2 used)



T130901C –UN–09JUN00

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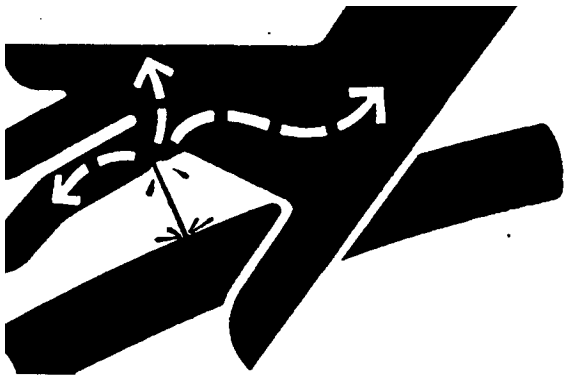
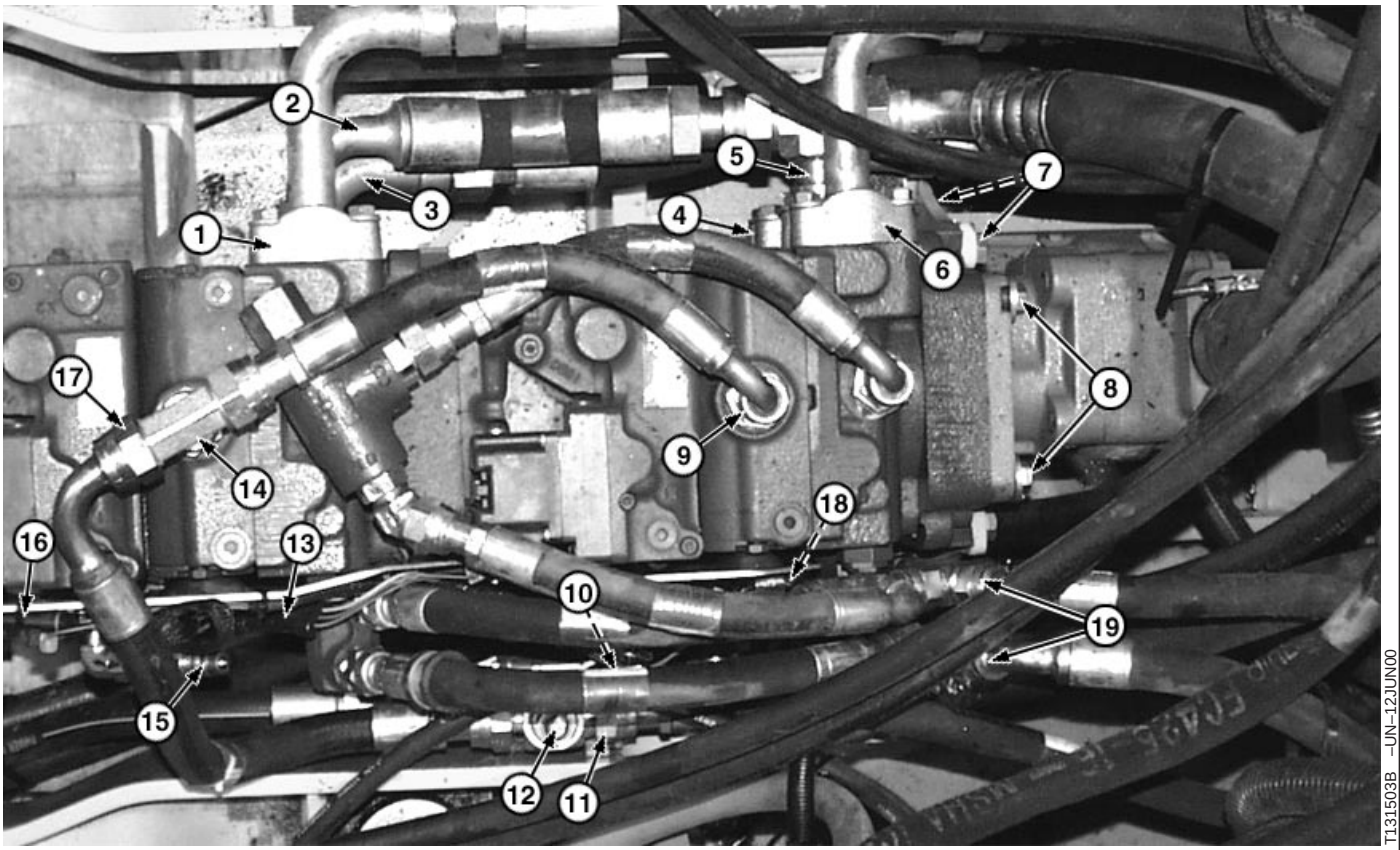
CED,TX03399,5973 –19–24MAR00–5/15



X9811 –UN–23AUG88



T131503B –UN–12JUN00

1—Line (Front Pump Forward Outlet Port-to-R.H. Motor Forward Port)
2—Line (Front Charge Pump-to-Rear Charge Pump Tee Fitting)
3—Line (Front Pump Reverse Outlet Port to R.H. Motor Bottom Port)
4—Line (Rear Pump Reverse Outlet Port-to-L.H. Motor Bottom Port)
5—Tee Fitting-to-Reservoir
6—Line (Rear Pump Forward Outlet Port-to-L.H. Motor Top Port)
7—Rear Pump Mount Bracket-to-Frame Cap Screw (4 used)
8—Hydraulic Pump Mounting Cap Screw (4 used)
9—Line Fitting (Rear Pump)
10—Line (Oil Cooler Bypass Valve-to-Reservoir)
11—Line (L.H. Motor Tee Fitting-to-Oil Cooler Bypass Valve)
12—Oil Cooler Bypass Valve Wire Terminal
13—Speed Sensor Wiring Connector
14—Tee Fitting (Front Pump)
15—Line (Park Brake)
16—Front Pump Pressure Control Pilot PCP Connector
17—Line (Front Pump Tee Fitting-to-Cooler Bypass Valve)
18—Rear Pump Pressure Control Pilot PCP Connector
19—Reservoir Return Lines

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CED,TX03399,5973 –19–24MAR00–6/15

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

18. Disconnect line (17). Close all openings using caps and plugs.
19. Disconnect lines and remove fittings (14 and 9).
20. Disconnect wire terminal (12).
21. Disconnect lines (10, 11, and 15). Remove by-pass valve cap screws and set control valve aside.
22. Disconnect wiring connectors (16, 13 and 18).
23. Disconnect lines (1—6).
24. Disconnect return lines (19).
25. Remove cap screws (8) from hydraulic pump and remove pump. Set pump aside.

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CED,TX03399,5973 –19–24MAR00–7/15

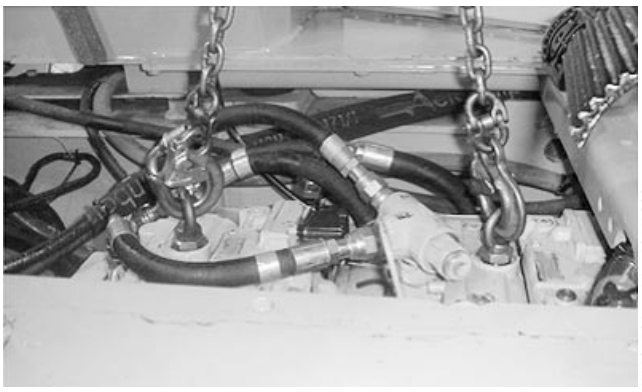
26. Drill and tap two 1-1/16 plugs to accommodate a 1/2 in. eye bolt.

27. Install eyebolts as shown.

28. Connect hydrostatic pumps to hoist using chains and DF1063 Final Drive and Pump Lifting Bracket. (See Group 099 for instructions to make tool.)

29. Attach DFT1130 Adapter to DF1063. (See Group 0399 for instructions to make tools.)

30. Remove cap screws (7).


T118456A –UN–10DEC98

CAUTION: The approximate weight of the hydrostatic pump assembly is 120 kg (265 lb).

Hydrostatic Pump—Specification

Dual Hydrostatic Pump Assembly—Weight	120 kg (265 lb) (Approximate)

31. Remove flywheel housing cover cap screws and pull pumps back far enough for dampener hub to clear flywheel dampener.

    Place a wood block under rear pump and lower pumps to rest on frame.

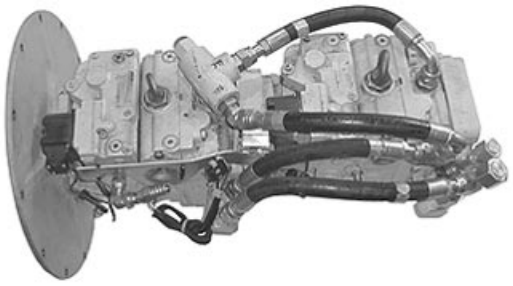
    Disconnect rear chain, shorten and reconnect to lift pumps out at approximate 30 degree angle.

32. Carefully remove pumps from left side of machine, flywheel housing plate first. The best clearance is achieved close to the floor, passing through the recess in console frame.

CED,TX03399,5973 –19–24MAR00–8/15

33. Remove hydraulic lines and fittings from pumps.

    Tag lines and mark orientation of fittings to aid in reassembly.


T118254B –UN–17NOV98

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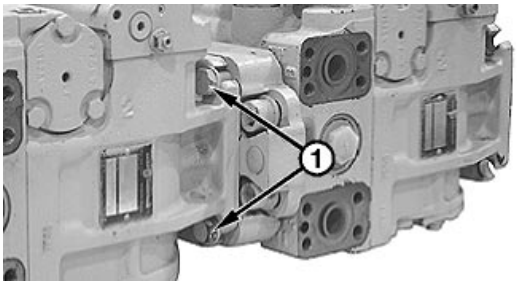
CED,TX03399,5973 –19–24MAR00–9/15

34. Remove cap screws (1) joining the two pumps and separate pumps.

1—Cap Screw (4 used)



T118271B –UN–08JAN99

CED,TX03399,5973 –19–24MAR00–10/15

35. Remove set screws (2) and dampener hub (3) from pump drive shaft.

36. Remove four pump mounting cap screws and flywheel housing plate (1).

37. Install flywheel housing plate on pump. Tighten cap screws to specifications.

Hydrostatic Pump—Specification

Hydrostatic Pump-to-Flywheel Housing Plate—Torque	150 N•m (115 lb-ft)

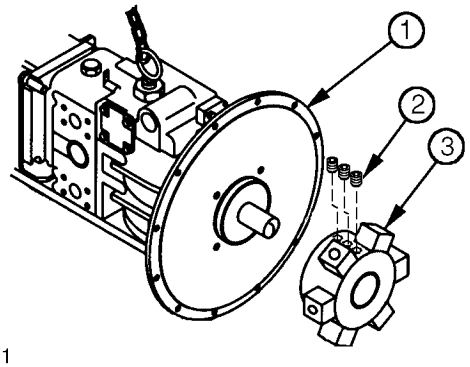
38. Install dampener hub with tangs away from pump, and using a straightedge, install hub flush with edge of shaft.

39. Clean set screws. Apply cure primer and thread lock and sealer (medium strength) to set screws.

40. Install set screws (2). Tighten set screws to specifications beginning with the screw closest to the pump, then working outward. Torque all set screws again, beginning with screw closest to pump.

Hydrostatic Pump—Specification

Dampener Hub-to-Hydrostatic Pump Shaft Set Screws—Torque	50 N•m (37 lb-ft)



T118491 –UN–11DEC98

T118491

1—Flywheel Housing Plate
2—Set Screws (3 used)
3—Dampener Hub

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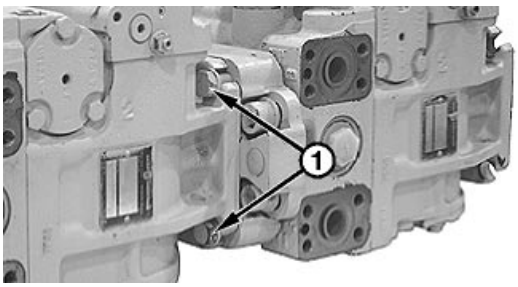
CED,TX03399,5973 –19–24MAR00–11/15

41. Assemble pumps using four cap screws (1).

1—Cap Screw (4 used)



T118271B –UN–08JAN99

CED,TX03399,5973 –19–24MAR00–12/15

42. Install hydraulic lines as shown.

43. Install hydrostatic pumps.

    Adjust chains as necessary when installing pumps to align dampener hub with dampener.

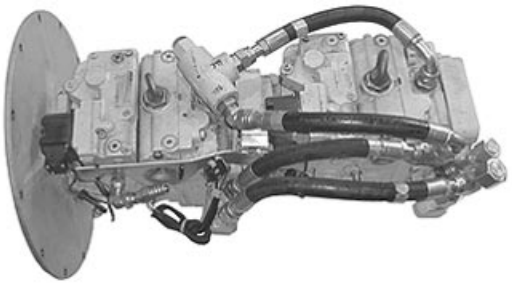
    Clean threads of flywheel housing cover plate cap screws. Apply cure primer and thread lock and sealer (medium strength) to threads of cap screws and install. Tighten cap screws to specifications.

Hydrostatic Pump—Specification

Flywheel Housing Cover Plate—Torque	57 N•m (42 lb-ft)

44. Install rear pump mount bracket and tighten cap screws.

45. Remove lifting eyes from pumps and install fittings.



T118254B –UN–17NOV98

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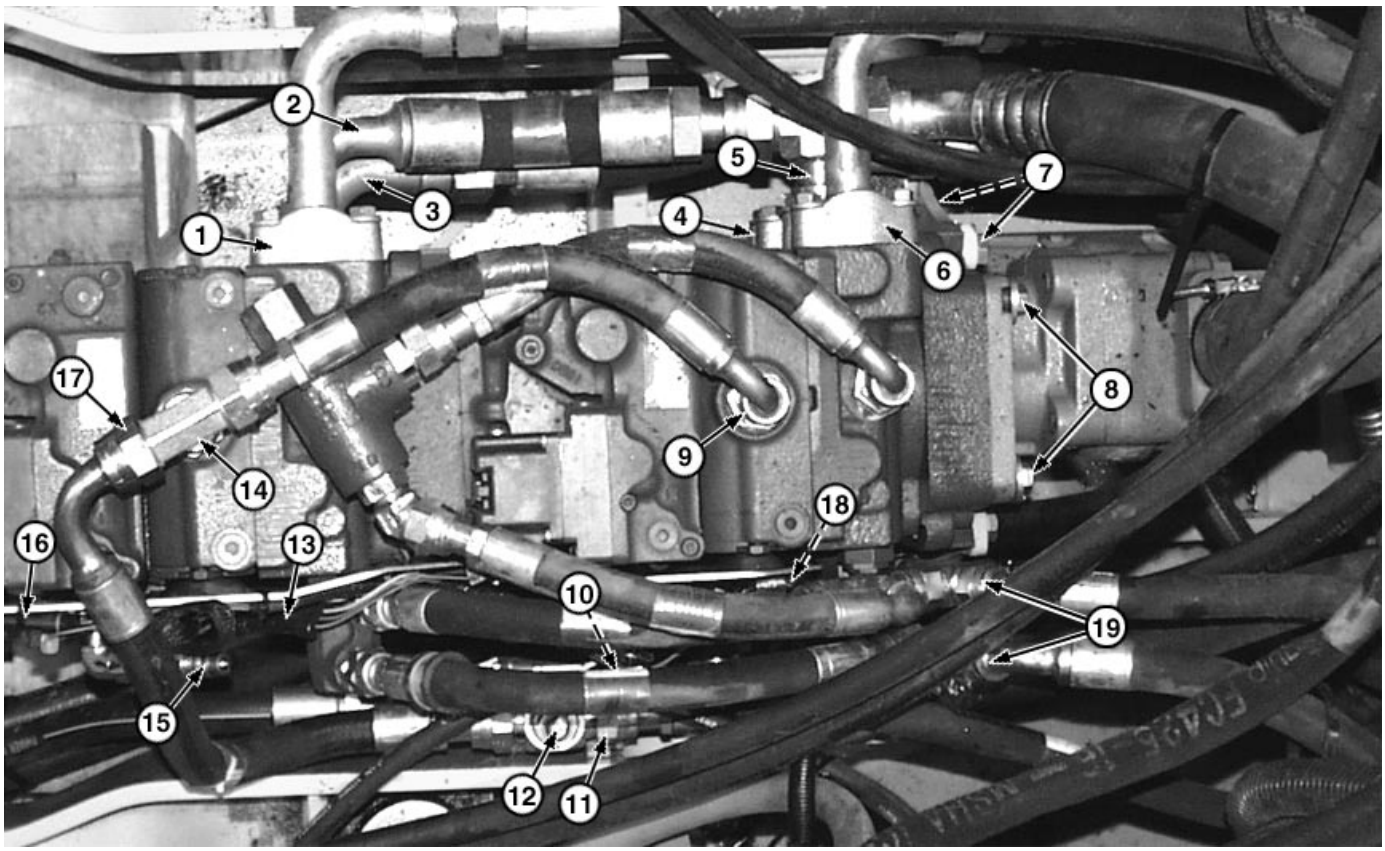
CED,TX03399,5973 –19–24MAR00–13/15



1—Line (Front Pump Forward Outlet Port-to-R.H. Motor Forward Port)
2—Line (Front Charge Pump-to-Rear Charge Pump Tee Fitting)
3—Line (Front Pump Reverse Outlet Port to R.H. Motor Bottom Port)
4—Line (Rear Pump Reverse Outlet Port-to-L.H. Motor Bottom Port)
5—Tee Fitting-to-Reservoir
6—Line (Rear Pump Forward Outlet Port-to-L.H. Motor Top Port)
7—Rear Pump Mount Bracket-to-Frame Cap Screw (4 used)
8—Hydraulic Pump Mounting Cap Screw (4 used)
9—Line Fitting (Rear Pump)
10—Line (Oil Cooler Bypass Valve-to-Reservoir)
11—Line (L.H. Motor Tee Fitting-to-Oil Cooler Bypass Valve)
12—Oil Cooler Bypass Valve Wire Terminal
13—Speed Sensor Wiring Connector
14—Tee Fitting (Front Pump)
15—Line (Park Brake)
16—Front Pump Pressure Control Pilot PCP Connector
17—Line (Front Pump Tee Fitting-to-Cooler Bypass Valve)
18—Rear Pump Pressure Control Pilot PCP Connector
19—Reservoir Return Lines

46. Install rear pump mount bracket cap screws (7) and tighten cap screws.

47. Install hydraulic pump. Tighten cap screws (8) to specifications.

Hydrostatic Pump—Specification

Hydraulic Pump Mounting Cap Screws—Torque	140 N•m (103 lb-ft)

48. Connect return lines (19).

49. Connect lines (1—6)

50. Connect wiring connectors (16, 13 and 18).

51. Connect lines (10, 11, and 15). Remove by-pass valve cap screws and set control valve aside.

52. Connect wire terminal (12).

53. Connect lines and remove fittings (14 and 9).

54. Connect line (17).

Continued on next page

CED,TX03399,5973 –19–24MAR00–14/15

55. Install bracket and cap screws (1).

56. Connect heater hose and water valve to bracket with tie bands.

57. Tighten all clamps.

58. Install heater and connect heater hoses.

59. Install access plate on bottom of hydrostatic reservoir.

60. Fill hydrostatic reservoir. (See Operator's Manual.)

Hydrostatic Pump—Specification

Hydrostatic Reservoir—Capacity..... 65.1 L (17.2 gal) (Approximate)

61. Fill radiator with coolant (See Operator's Manual.)

Hydrostatic Pump—Specification

Engine Coolant—Capacity ..... 19.4 L (20.5 qt) (Approximate)

62. Turn battery disconnect switch to ON.

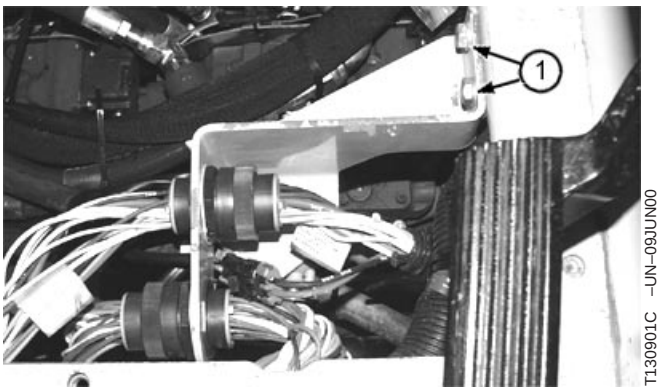
63. Perform hydrostatic pump start-up procedure. (See Hydrostatic Pump and Motor Initial Start-Up Procedure in Operation and Test Manual, Group 9026-25.)

64. Lower seat and secure floor plate.

65. Install tool box (if equipped), knee pads and armrests.

66. Install floor access plate and mat.

67. Calibrate transmission controller. (See Calibrate Transmission Controller in Operation and Test Manual, Group 9015-20).



1—Cap Screw (2 used)

CED,TX03399,5973 –19–24MAR00–15/15

Remove and Install Hydrostatic Motors

1. Lower all equipment to ground.
2. Stop engine. Operate all hydraulic controls to release pressure in hydraulic system.
3. Turn battery disconnect switch to OFF.

NOTE: Reservoir capacity is approximately 65.1 L (17.2 gal).

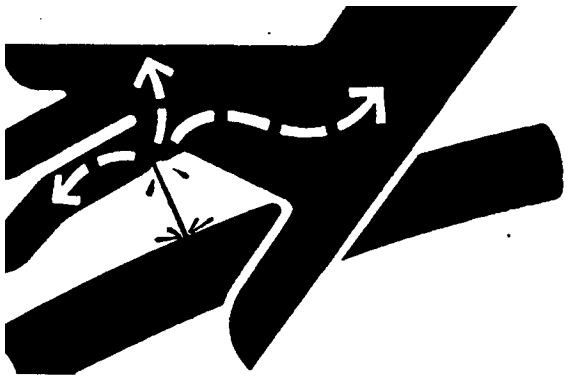
4. Drain reservoir or remove hydrostatic reservoir check valve and attach vacuum pump to elbow.
5. Remove rear access cover or rear mounted optional equipment and hydrostatic motor bottom access plates, if necessary.

Continued on next page

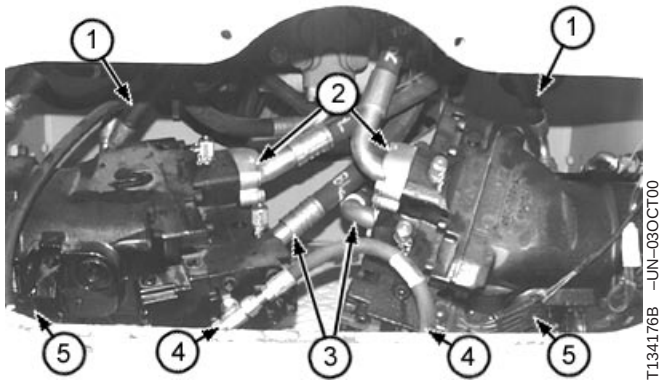
CED,TX03399,5974 –19–24MAR00–1/4

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

6. Tag and mark hose locations to aid in assembly.
7. Disconnect case drain hoses (1) and PCP pressure hoses (4).
8. Disconnect forward and reverse hoses (2 and 3).
9. Close all openings using caps and plugs.
10. Disconnect wire connector from PCP and motor speed sensor (5).



X9811 –UN–23AUG88



T134176B –UN–03OCT00

1—Case Drain Hoses
2—Forward Hoses
3—Reverse Hoses
4—PCP Hoses
5—Electrical Connectors

Continued on next page

CED,TX03399,5974 –19–24MAR00–2/4

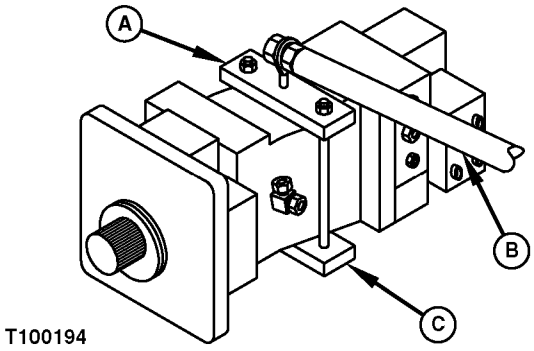
CAUTION: The approximate weight of hydrostatic motor is 85.3 kg (188 lbs).

NOTE: DFT1137 Hydrostatic Motor Removal and Installation Tool will need to be updated. A threaded hole is added to remove right side motor. (See Dealer Fabricated Tool DFT1137 Hydrostatic Motor Removal and Installation Tools in Group 099.

11. Attach DFT1132 Hydrostatic Motor and Hydraulic Pump Removal and Installation Tool to hoist with sling. (See Dealer Fabricated Tools in Group 099.)
12. Attach DFT1137 Hydrostatic Motor Removal and Installation Tools to motor. (See Dealer Fabricated Tools in Group 099.)
13. Attach DFT1132 to eyebolt in DFT1137.
14. Remove four nuts and washers from motor-to-mounting flange.

NOTE: Make sure coupler from final drive to hydrostatic motor shaft remains fully engage in park brake disks to allow clearance for hydrostatic motor removal.

15. Carefully pry motor away from mounting flange keeping coupler in position.
16. Remove through hole in rear of machine.
17. Clean threads of mounting studs and nuts.
18. Repair or replace motor.
19. Apply petroleum jelly to new O-ring and install on transmission motor flange.
20. Install hydrostatic motor through frame opening.
21. Position motor on studs and align splines in coupler and slide motor into position.
22. Apply cure primer and plastic gasket to threads of nuts and tighten to specification.



T100194 –19–09FEB96

A—DFT1137 Hydrostatic Motor Removal and Installation Tool
B—DFT1132 Hydrostatic Motor Removal and Installation Tool
C—DFT1137 Hydrostatic Motor Removal and Installation Tool

03 0300 18

Continued on next page

CED,TX03399,5974 –19–24MAR00–3/4

Specification	
Hydrostatic Motor Mounting Cap Screws—Torque	210 N•m (155 lb-ft)

23. Remove hydrostatic motor removal and installation tools.

24. Connect hydrostatic lines and wiring connector.

25. Adjust Hydrostatic Motor Speed Sensor, if removed. (See Adjust Hydrostatic Motor Speed Sensor in this group.

26. Fill reservoir if drained. (See Transmission, Hydraulic, and Winch (If Equipped) Oil in Group 004 Fuels and Lubricants.)

27. Turn battery disconnect switch to ON.

28. Do Hydrostatic Pump and Motor Initial Start-Up Procedure. (See Hydrostatic Pump and Motor Initial Start-Up Procedure in Operation and Test Manual, Group 9026-25.)

29. Calibrate transmission controller. See Calibrate Transmission Controller in group 9015-20 in Operation and Test Manual.)

30. Install rear access plate or rear mounted optional equipment.

31. Replace bottom access plates if removed.

CED,TX03399,5974 –19–24MAR00–4/4

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

TX03399,0001875 –19–06OCT00–1/6

Bearing Driver Kit JDG1303

Remove and install steer shaft and detent shaft bearings.

Bearing Driver . . . . . .JDG1303-1[1]

Remove and install steer shaft and detent shaft bearings.

Sleeve . . . . . .JDG1303-3[1]

Remove and install detent shaft bearings.

Sleeve . . . . . .JDG1303-2[1]

Remove and install steer shaft bearings.

[1]*Included in JDG1303 Bearing Driver Kit.*

TX03399,0001875 –19–06OCT00–2/6

Driver Disk . . . . . .JDG1303-4[1]

Install yoke pivot pin bearings.

Driver Rod . . . . . .JDG1303-5[1]

Install yoke pivot pin bearings.

[1]*Included in JDG1303 Bearing Driver Kit.*

Continued on next page

TX03399,0001875 –19–06OCT00–3/6

Driver Disk. . . . . .JDG1303-7[1]

Install yoke seals.

[1]*Included in JDG1303 Bearing Driver Kit.*

TX03399,0001875 –19–06OCT00–4/6

Driver Rod . . . . . .JDG1303-5[1]

Install yoke seals.

[1]*Included in JDG1303 Bearing Driver Kit.*

TX03399,0001875 –19–06OCT00–5/6

Driver Disk. . . . . .JDG1303-6[1]

Install steer shaft seals.

[1]*Included in JDG1303 Bearing Driver Kit.*

TX03399,0001875 –19–06OCT00–6/6

Other Material

Number	Name	Use
TY16285 (U.S.) TY9485 (Canadian) 7649 (LOCTITE®)	Cure Primer	Apply to threads of forward/reverse and steer rods.
T43512 (U.S.) TY9473 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to threads of forward/reverse and steer rods.

LOCTITE is a registered trademark of Loctite Corp.

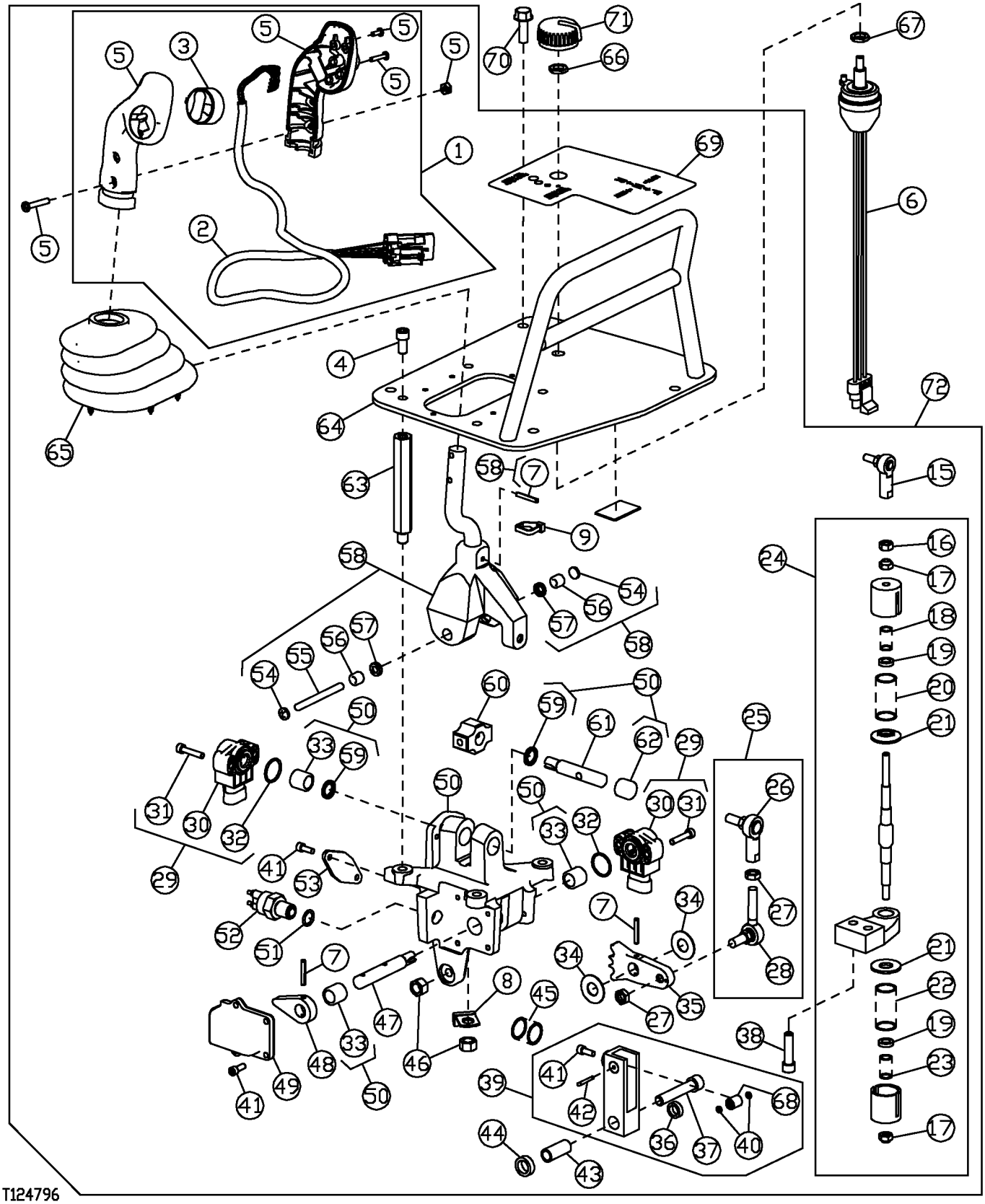
TX03399,0001877 –19–06OCT00–1/1

Specifications

Item	Measurement	Specification
Single Lever Control		
Detent Plate Rod Ball Joint Nut	Torque	19 N•m (14 lb-ft) (168 lb-in.)
Forward/Reverse Rod Ball Joint Nut	Torque	14 N•m (10 lb-ft) (124 lb-in.)
Steer Rod Ball Joint Nut	Torque	9 N•m (7 lb-ft) (84 lb-in.)
Steer Sensor Mounting Cap Screws	Torque	5 N•m (4 lb-ft) (48 lb-in.)
Forward/Reverse Sensor Mounting Cap Screws	Torque	5 N•m (4 lb-ft) (48 lb-in.)
Neutral Start Switch	Torque	14 N•m (10 lb-ft) (124 lb-in.)
Neutral Start Switch Cover Cap Screws	Torque	5 N•m (4 lb-ft) (48 lb-in.)
Detent Lever Socket Head Cap Screw and Nut	Torque	19 N•m (14 lb-ft) (168 lb-in.)
Detent Spring Retaining Plate Cap Screws	Torque	5 N•m (4 lb-ft) (48 lb-in.)
Steer Shaft Spring End Lock Nuts	Torque	8 N•m (6 lb-ft) (72 lb-in.)
Steer Shaft Assembly Mounting Cap Screws	Torque	34 N•m (25 lb-ft)
Single Lever Control Top Plate Cap Screws	Torque	19 N•m (14 lb-ft) (168 lb-in.)
Single Lever Control Handle Lock Nut	Torque	34 N•m (25 lb-ft)

TX03399,0001878 –19–06OCT00–1/1

Single Lever Control (SLC) Exploded View With Speed In Grip



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CED,TX03399,5975 –19–24MAR00–1/2

1—SLC With Speed In Grip Assembly
2—Speed In Grip Harness, Switch and Cover
3—Boot Cover For Switch
4—Cap Screw (4 used)
5—Screw kit For Handle
6—Reverse Speed Ratio Switch
7—Spring Pin (3 used)
8—Cable Clamp
9—Tie Band
10—Not Used
11—Not Used
12—Not Used
13—Not Used
14—Not Used
15—Ball Joint
16—Nut
17—Nut (2 used)
18—Spring
19—Spacer (2 used)
20—Spring
21—Stepped Washer (2 used)
22—Spring
23—Spring
24—Spring Pack Assembly
25—Linkage
26—Ball Joint
27—Nut (2 used)
28—Ball Joint
29—Rotary Sensor Kit
30—Rotary Sensor
31—Cap Screw (2 used)
32—O-Ring
33—Bearing (3 used)
34—Washer (2 used)
35—Plate
36—Washer
37—Socket Head Screw
38—Cap Screw (2 used)
39—Detent Lever Assembly
40—O-Ring (2 used)
41—Cap Screw (6 used)
42—Socket Head Cap Screw
43—Spacer
44—Spacer
45—Spring
46—Nut (2 used)
47—Detent Shaft
48—Neutral Cam
49—Cam Cover
50—SLC Body
51—O-Ring
52—Neutral Start Switch
53—Spring Plate
54—Seal Plug (2 used)
55—Shaft
56—Needle Bearing (2 used)
57—Lip Seal (2 used)
58—Bracket Assembly
59—Lip Seal (2 used)
60—Bearing Block
61—Shaft
62—Needle Bearing
63—Mounting Post (4 used) Longer Threaded Post Shown
64—Mounting Plate
65—Boot Assembly
66—Jam Nut
67—Washer
68—Bearing
69—Decal
70—Screw (4 used)
71—Knob
72—“SLC” Single Lever Assembly

CED,TX03399,5975 –19–24MAR00–2/2

Remove and Install Single Lever Control (SLC) With Speed In Grip

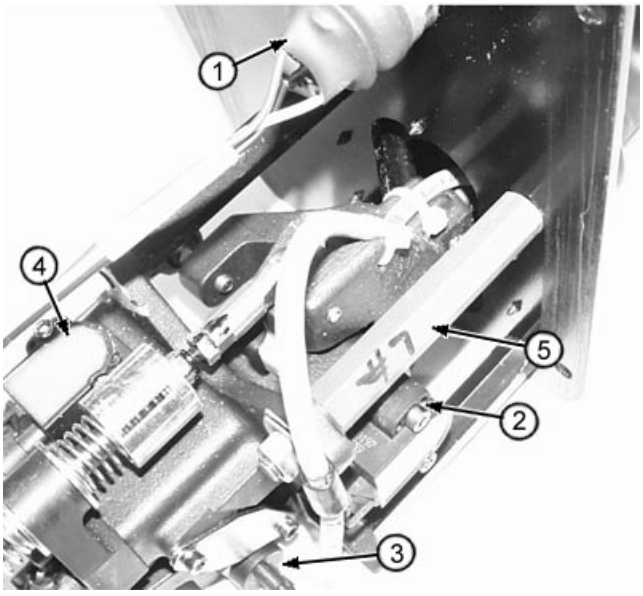
1. Turn battery disconnect switch to the OFF position.

NOTE: Mark electrical connectors to aid in assembly.

2. Disconnect rotary sensors (2 and 4) and neutral start switch (3).
3. Disconnect reverse ratio switch (1) connector.
4. Disconnect harness connectors (5) to transmission speed control switch and horn button.
5. Remove four cap screws and single lever control assembly.
6. Install single lever control using four cap screws.
7. Connect reverse ratio switch connector.
8. Connect rotary sensors (2 and 4) and neutral start switch (3).
9. Turn battery disconnect switch to the ON position.
10. Adjust single lever control. (See Single Lever Control (SLC) Adjustment in Operation and Test Manual, Group 9026-20.)
11. Calibrate transmission controller. (See Calibrate Transmission Controller in Operation and Test Manual, Group 9015-20.)

T124637B –UN–17SEP99

SLC With Speed In Grip Shown



T124610B –UN–17SEP99

SLC with speed in grip shown

1—Reverse Ratio Switch
2—Steer Sensor
3—Neutral Start Switch
4—F-N-R Sensor
5—Harness to Transmission Speed Switch and Horn

CED,TX03399,5976 –19–24MAR00–1/1

Disassemble and Assemble Single Lever Control With Speed In Grip

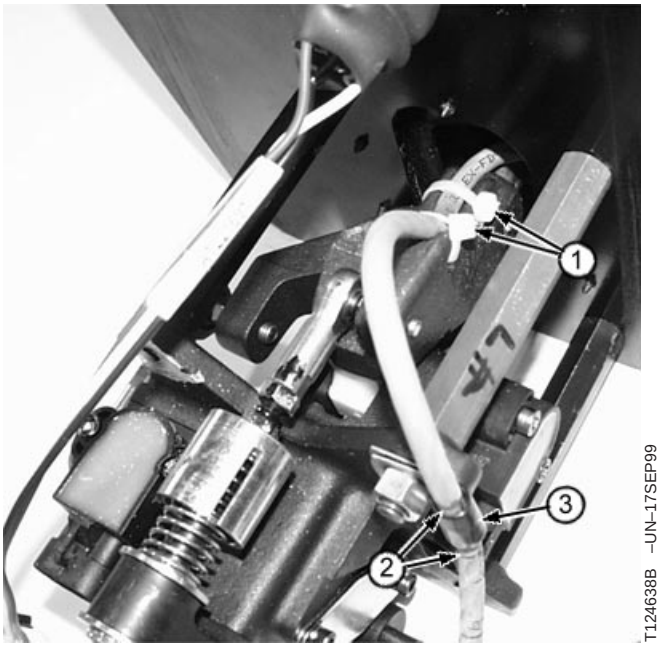
1. **SLC (With Speed In Grip)**

   - Separate boot from plate using a screwdriver.
   - Remove tie bands (1).
   - Put identification marks (2) on both sides of wire lead to aid in assembly.
   - Remove clamp (3) from wire lead.

1—Tie Bands
2—Identification Marks
3—Clamp

T124637B –UN–17SEP99

SLC With Speed In Grip Shown



T124638B –UN–17SEP99

SLC With Speed In Grip Shown

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CED,TX03399,5977 –19–24MAR00–1/28

- Remove screws (1, 2 and 3) and boot from SLC.

1—Screw (2 used)
2—Screw
3—Screw with nut (2 used)

T124645B –UN–17SEP99

SLC Assembly With Speed In Grip Shown

CED,TX03399,5977 –19–24MAR00–2/28

- Split grip halves (1) to remove switch (2). Boot (3) on switch can be replaced, if necessary.

1—Grip
2—Switch
3—Boot

T124646B –UN–17SEP99

Speed In Grip Switch

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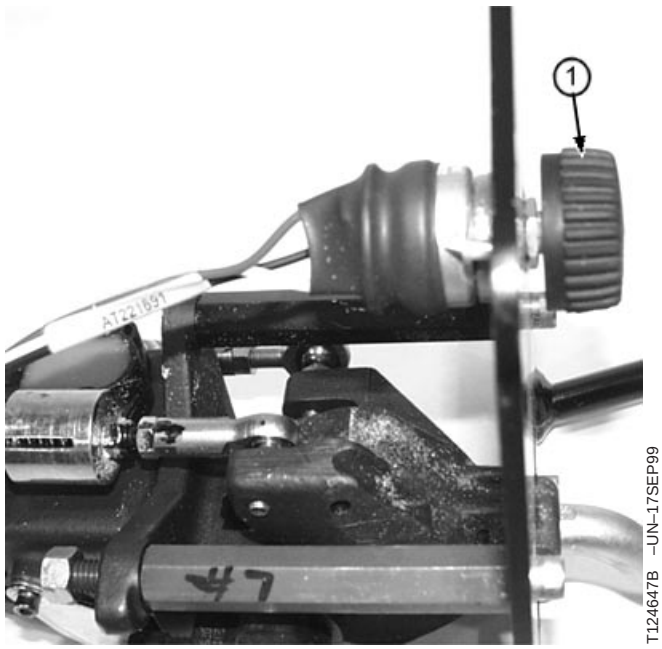
CED,TX03399,5977 –19–24MAR00–3/28

- Remove reverse ratio switch (1) if replacement is necessary.



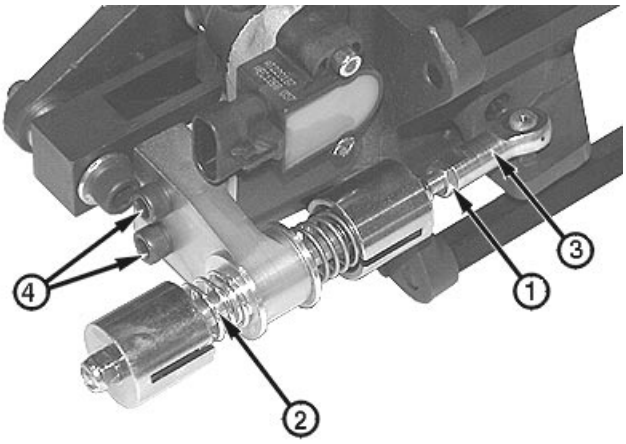
T124647B –UN–17SEP99

Reverse Ratio Switch

CED,TX03399,5977 –19–24MAR00–4/28

2. Loosen lock nut (1).
3. Remove steer shaft (2) from rod end (3).
4. Remove two socket head cap screws (4) and remove steer shaft assembly from body.

1—Lock Nut
2—Steer Shaft
3—Rod End
4—Socket Head Cap Screw (2 used)



T119639B –UN–19JAN99

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CED,TX03399,5977 –19–24MAR00–5/28

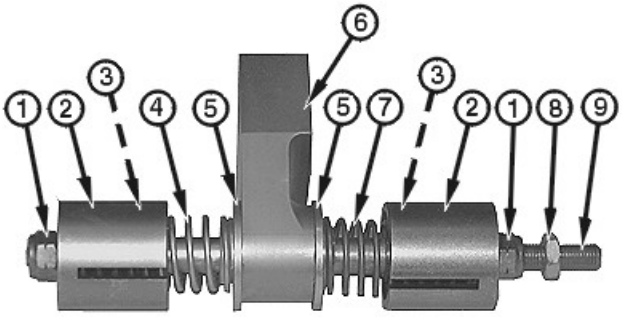
5. Remove rod end lock nut (8).

NOTE: Use two wrenches to loosen spring end lock nuts (1).

NOTE: Springs are color coded to aid in assembly.

6. Remove one spring end lock nut (1), spring guide (2), spacer (3), spring (4) or (7) and spring seat (5) from one side of steering plate (6).

7. Place steer shaft (9) in soft jaw vise and remove spring end lock nut (1), spring guide (2), spacer (3), spring (4) or (7) and spring seat (5) from other side of steering plate.



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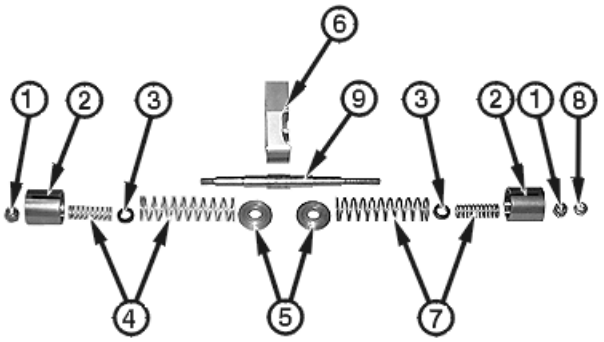


T119642B –UN–19JAN99

1—Spring End Lock Nut (2 used)
2—Spring Guide (2 used)
3—Spacer (2 used)
4—Springs (Chrome)
5—Spring Seat (2 used)
6—Steering Plate
7—Springs (Gold)
8—Rod End Lock Nut
9—Steer Shaft

Continued on next page

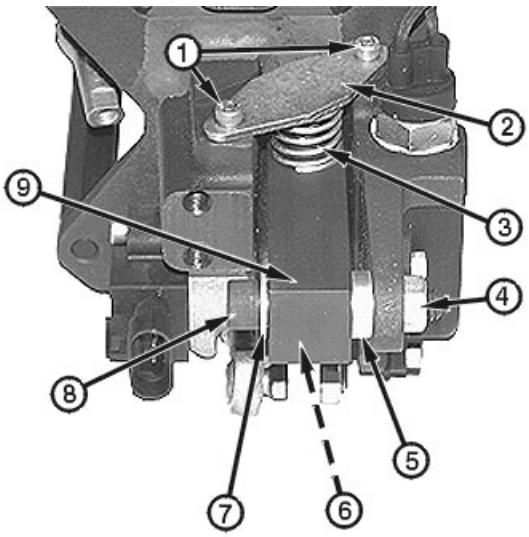
CED,TX03399,5977 –19–24MAR00–6/28

8. Remove two socket head cap screws (1), retaining plate (2) and detent spring (3).

9. Remove nut (4), socket head cap screw (8), spacer (5), washer (7) and detent lever (9).

10. Remove tube (6) from detent lever.

1—Socket Head Cap Screws (2 used)
2—Retaining Plate
3—Detent Spring
4—Nut
5—Spacer
6—Tube
7—Washer
8—Socket Head Cap Screw
9—Detent Lever



T119643B –UN–19JAN99

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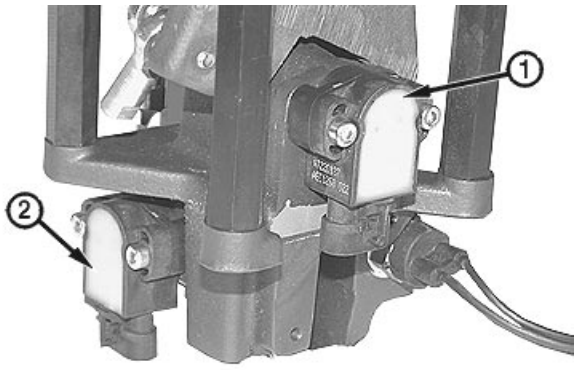
CED,TX03399,5977 –19–24MAR00–7/28

11. Remove socket head cap screws from steer sensor (1) and forward/reverse sensor (2).

    Remove sensors and O-rings.

12. Remove cover (3) and neutral start switch (4).

1—Steer Sensor
2—Forward/Reverse Sensor
3—Cover
4—Neutral Start Switch



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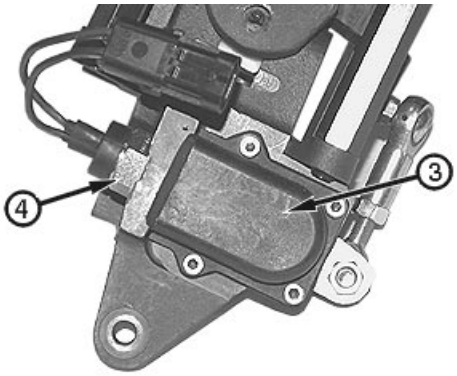

T119645B –UN–19JAN99

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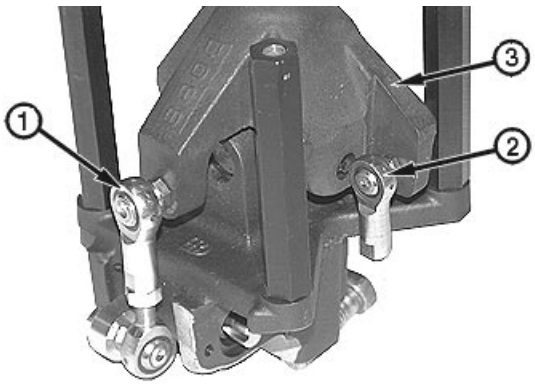
CED,TX03399,5977 –19–24MAR00–8/28

13. Disconnect forward/reverse rod end (1) and remove steer rod end (2) from bracket assembly (3).

1—Forward/Reverse Rod
2—Steer Rod
3—Bracket Assembly



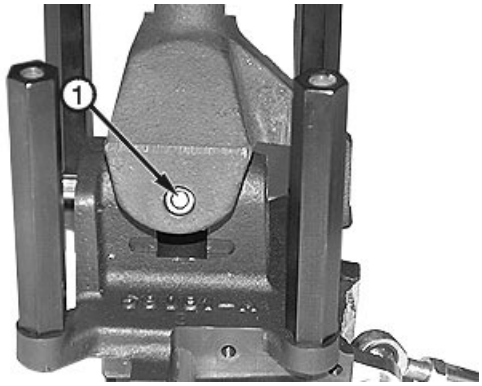
T119646B –UN–19JAN99

CED,TX03399,5977 –19–24MAR00–9/28

NOTE: Care should be taken to avoid damaging bearing block, bearings and seals.

14. Remove two seal plugs and using a 1/4 in. punch with rounded edges, drive pivot pin (1) from bracket assembly. Remove bracket.

1—Pivot Pin



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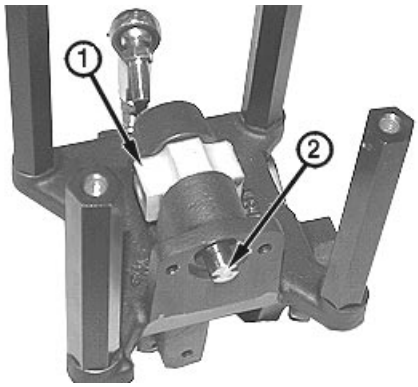
CED,TX03399,5977 –19–24MAR00–10/28

15. Remove steer sensor shaft (2) and bearing block (1).

1—Bearing Block
2—Steer Sensor Shaft



T119650B –UN–19JAN99

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CED,TX03399,5977 –19–24MAR00–11/28

NOTE: When driving pin out of detent plate, support assembly to prevent damage to bearings and seals.

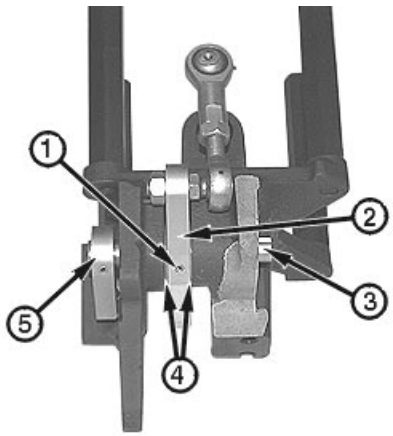
16. With the detent placed at the furthest reverse position, drive spring pin (1) out until detent plate (2) can be rotated around detent shaft (3).

17. Remove detent shaft (3) by pulling on cam (5). Be sure to catch detent plate (2) with rod end assembly and two spacers (4) when removing detent shaft.

18. Remove rod end assembly from detent plate, if replacement is required.

19. Remove cam (5) from detent shaft (3) by driving out spring pin, if replacement is required.

20. Remove pin (1) from detent plate.



T119651B –UN–18JAN99

1—Spring Pin
2—Detent Plate
3—Detent Shaft
4—Spacers (2 used)
5—Cam

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CED,TX03399,5977 –19–24MAR00–12/28

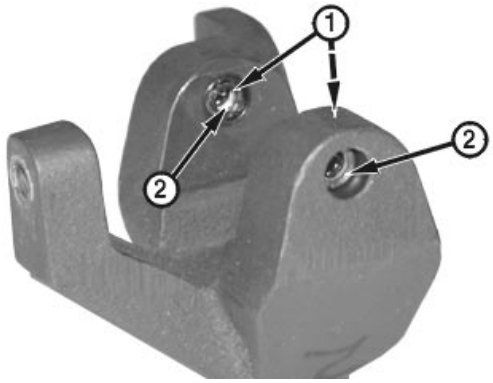
21. Remove yoke pivot pin seals (1) and steer shaft seals (3) using a pick.

22. Remove yoke pivot pin bearings (2) using a punch.

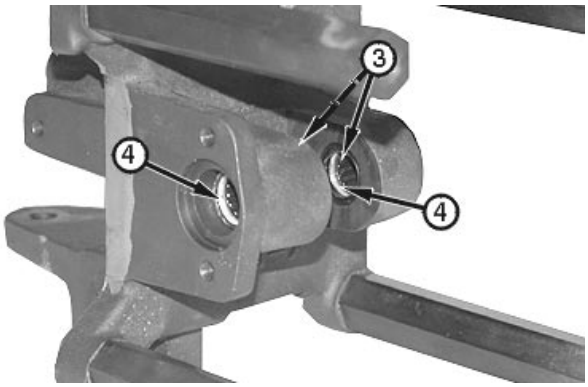
23. Remove steer shaft bearings (4) and detent shaft bearings (5) using JDG1303-1 Bearing Driver and JDG1303-2 or JDG1303-3 Sleeve from JDG1303 Bearing Driver Kit.

24. Clean and inspect parts.

1—Yoke Pivot Pin Seal (2 used)
2—Yoke Pivot Pin Bearing (2 used)
3—Steer Shaft Seal (2 used)
4—Steer Shaft Bearing (2 used)
5—Detent Shaft Bearing (2 used)



T121377B –UN–11MAY99



T121378B –UN–11MAY99

T121379B –UN–11MAY99

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CED,TX03399,5977 –19–24MAR00–13/28

IMPORTANT: Drive bearing from lettered side of bearing only.

25. Install yoke pivot pin bearing (3) using JDG1303-4 Driver Disk and JDG1303-5 Driver Rod. Drive bearing until driver disk is fully seated on yoke, this will set bearing to proper depth.

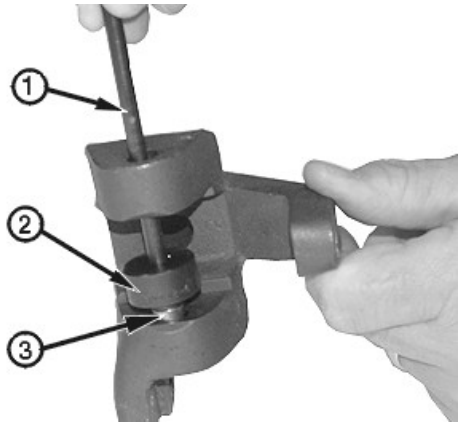
26. Repeat step 28 for installing other yoke pivot pin bearing.

IMPORTANT: Lip side of seal must face away from bearing.

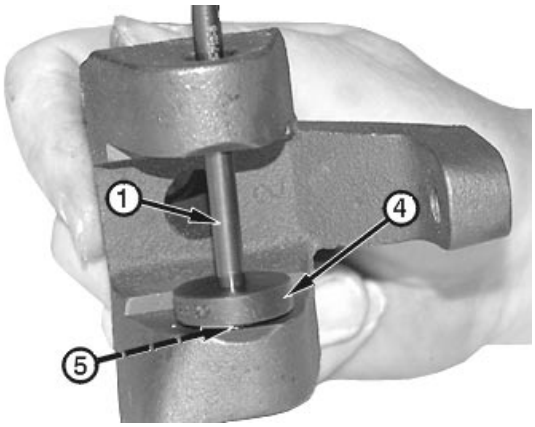
27. Apply petroleum jelly to seal and install seal (5) on JDG1303-7 Driver Disk (4) with lip of seal facing toward driver disk.

28. Place seal and driver disk square on yoke. Insert JDG1303-5 Driver Rod and drive seal until driver disk is fully seated on yoke.

29. Repeat steps 30 and 31 for installing other yoke pivot pin seals.



T121380B –UN–11MAY99



T121381B –UN–11MAY99

1—JDG1305-5 Driver Rod
2—JDG1303-4 Driver Disk
3—Yoke Pivot Pin Bearing (2 used)
4—JDG1303-7 Driver Disk
5—Yoke Pivot Pin (2 used)

Continued on next page

CED,TX03399,5977 –19–24MAR00–14/28

IMPORTANT: Drive bearing from lettered side of bearing only.

30. Install steer shaft cap bearing (3) using JDG1303-1 Bearing Driver (1) and JDG1303-3 Sleeve (2). Drive bearing until driver is fully seated, this will set bearing to proper depth.

31. Install steer shaft bearing (4) using JDG1303-1 Bearing Driver. Drive bearing until driver is fully seated, this will set bearing to proper depth.

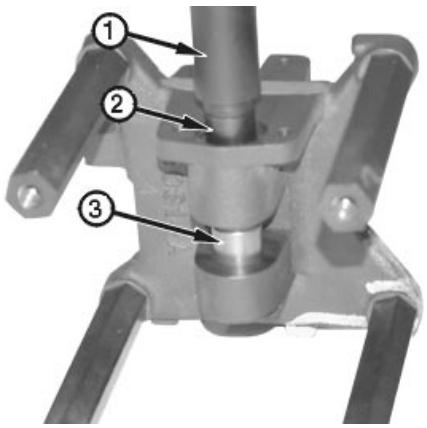
IMPORTANT: Lip side of seal must face away from bearing.

32. Apply petroleum jelly to seals install seal (5) on JDG1303-6 Driver Disk with lip of seal facing toward driver disk.

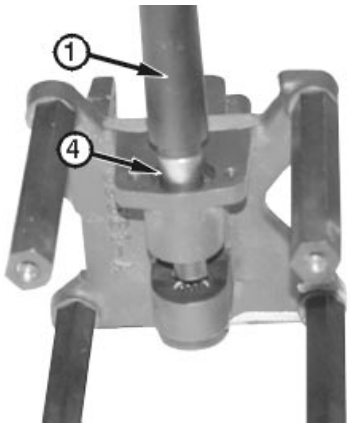
33. Place seal and driver disk square in opening and firmly press with finger pressure to install seal. Press disk driver until fully seated.

34. Repeat step 35 and 36 to install other steer shaft seals.

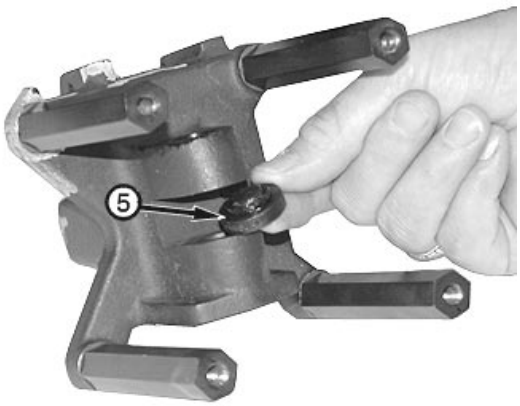
1—JDG1303-1 Bearing Driver
2—JDG1303-3 Sleeve
3—Steer Shaft Cap Bearing
4—Steer Shaft Bearing
5—Steer Shaft Seal (2 used)



T121382B –UN–11MAY99



T121383B –UN–11MAY99



T121384B –UN–11MAY99

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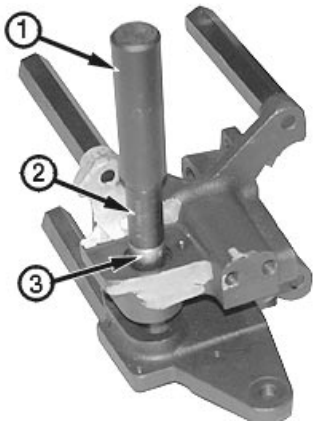
CED,TX03399,5977 –19–24MAR00–15/28

IMPORTANT: Drive bearing from lettered side of bearing only.

35. Install detent shaft bearing (3) from the stepped recess side (yellow) opening. Using JDG1303-1 Bearing Driver (1) and JDG1303-2 Sleeve (2), drive bearing through until bearing driver is fully seated. This will set bearing to proper depth.

36. Install detent shaft bearing (4) using JDG1303-1 Bearing Driver. Drive bearing until bearing driver is fully seated, this will set bearing to proper depth.

1—JDG1303-1 Bearing Driver
2—JDG1303-2 Sleeve
3—Detent Shaft Bearing
4—Detent Shaft Bearing



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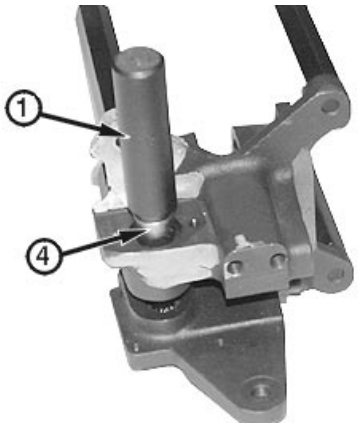

T121386B –UN–11MAY99

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CED,TX03399,5977 –19–24MAR00–16/28

37.

Install rod on detent plate, if removed. Tighten nut to specifications.

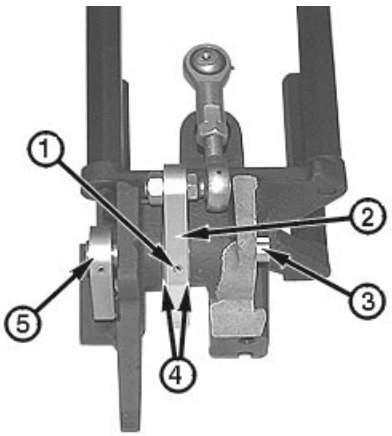
Single Lever Control—Specification

Detent Plate Rod Ball Joint Nut—
Torque ..... 19 N•m (14 lb-ft) (168 lb-in.)

38. Install cam (5) on detent shaft and install spring pin.

NOTE: When driving pin in detent plate, support assembly to prevent damage to bearings and seals.

39. While holding detent plate (2) and spacers (4) in place, install detent shaft (3) as shown with spring pin holes for plate and cam in line. Install spring pin (1) in detent plate.



T119651B –UN–18JAN99

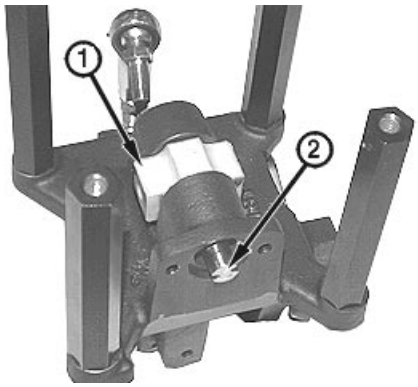
1—Spring Pin
2—Detent Plate
3—Detent Shaft
4—Spacers (2 used)
5—Cam

CED,TX03399,5977 –19–24MAR00–17/28

NOTE: Align pin bore in bearing block and sensor shaft.

40. Install bearing block (1) and steer sensor shaft (2).

1—Bearing Block
2—Steer Sensor Shaft



T119650B –UN–19JAN99

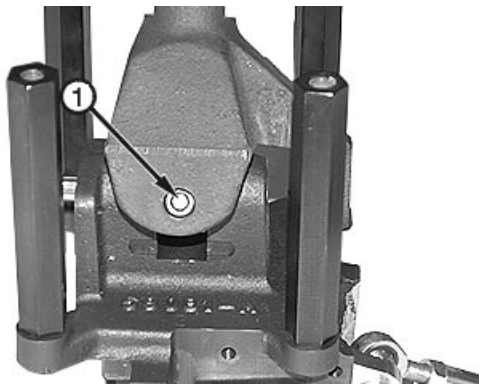
CED,TX03399,5977 –19–24MAR00–18/28

NOTE: Care should be taken to avoid damaging bearing block, bearings and seals.

41. Install lever assembly, and using a 1/4 in. punch with rounded edges, drive pivot pin (1) into bracket assembly. Pin should protrude equally on both ends.

42. Install seal plugs.

1—Pivot Pin



T119649B –UN–19JAN99

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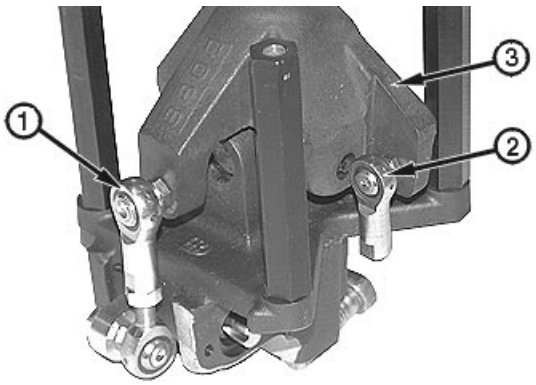
CED,TX03399,5977 –19–24MAR00–19/28

43. Apply cure primer and thread lock and sealer (medium strength) to threads of rod ends. Connect forward/reverse rod end (1) and install steer rod end (2) on bracket assembly (3). Tighten ball joint nuts to specifications.

Single Lever Control—Specification

Forward/Reverse Rod Ball Joint Nut—Torque ..... 14 N•m (10 lb-ft) (124 lb-in.)
Steer Rod Ball Joint Nut—Torque..... 9 N•m (7 lb-ft) (84 lb-in.)



T119646B –UN–19JAN99

1—Forward/Reverse Rod
2—Steer Rod
3—Bracket Assembly

03
0315
21

CED,TX03399,5977 –19–24MAR00–20/28

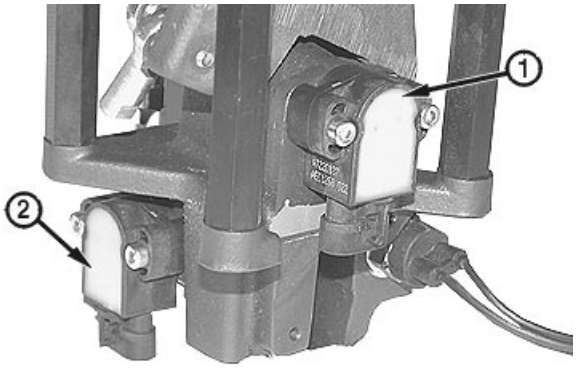
NOTE: Steer sensor and forward/reverse sensors are interchangeable.

44.

Install sensors (1 and 2) and O-rings. Tighten cap screws to specifications.

Single Lever Control—Specification

Steer Sensor Mounting Cap Screws—Torque ..... 5 N•m (4 lb-ft) (48 lb-in.)
Forward/Reverse Sensor Mounting Cap Screws—Torque ..... 5 N•m (4 lb-ft) (48 lb-in.)



T119644B –UN–19JAN99

45. Install neutral start switch (4) and tighten to specifications.

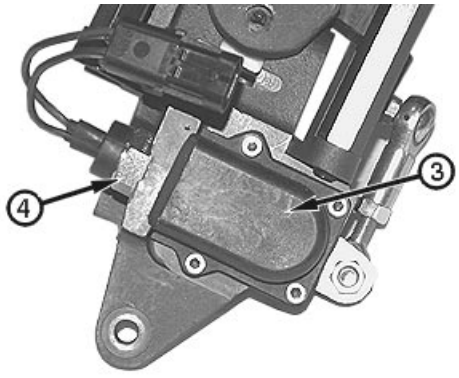
Single Lever Control—Specification

Neutral Start Switch—Torque..... 14 N•m (10 lb-ft) (124 lb-in.)

46. Install cover (3) and tighten cap screws to specifications.

Single Lever Control—Specification

Neutral Start Switch Cover Cap Screws—Torque ..... 5 N•m (4 lb-ft) (48 lb-in.)



T119645B –UN–19JAN99

1—Steer Sensor
2—Forward/Reverse Sensor
3—Cover
4—Neutral Start Switch

Continued on next page

CED,TX03399,5977 –19–24MAR00–21/28

47.

Install tube (6), washer (7), spacer (5), socket head cap screw (8) and nut (4). Tighten cap screw first and then nut, to specifications.

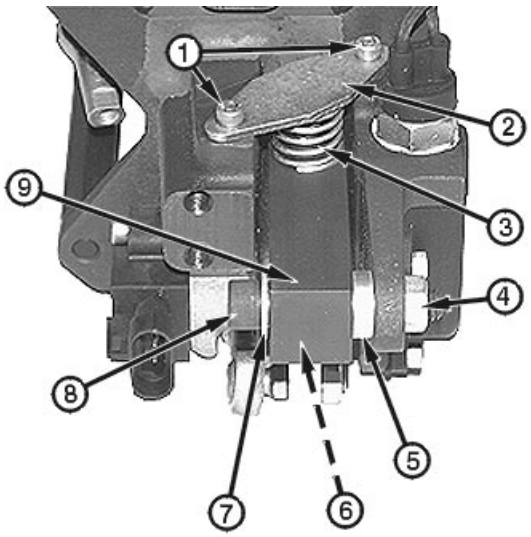
Single Lever Control—Specification

Detent Lever Socket Head Cap Screw and Nut—Torque..... 19 N•m (14 lb-ft) (168 lb-in.)

48. Install detent spring (3), retaining plate (2) and socket head cap screws (1). Tighten cap screws to specifications.

Single Lever Control—Specification

Detent Spring Retaining Plate Cap Screws—Torque..... 5 N•m (4 lb-ft) (48 lb-in.)



T119643B –UN–19JAN99

1—Socket Head Cap Screws (2 used)
2—Retaining Plate
3—Detent Spring
4—Nut
5—Spacer
6—Tube
7—Washer
8—Socket Head Cap Screw
9—Detent Lever

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0315
22

Continued on next page

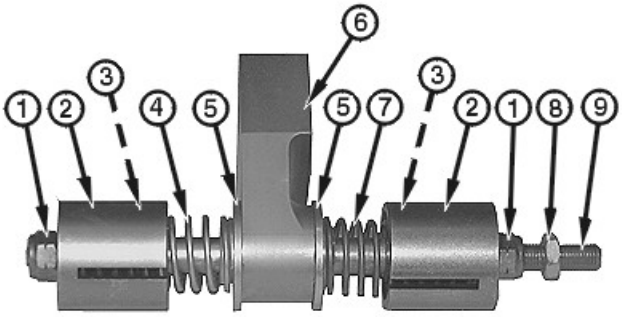
CED,TX03399,5977 –19–24MAR00–22/28

NOTE: Steering plate (6) must be installed so that the flat side faces chrome spring (4).

49. Place steering shaft in soft jaw vise. Install steering plate (6), spring seat (5), spring (4) or (7), spacer (3) spring guide (2) and spring end lock nut (1). Repeat steps for opposite end, then tighten spring end lock nuts (1) to specifications.

Single Lever Control—Specification

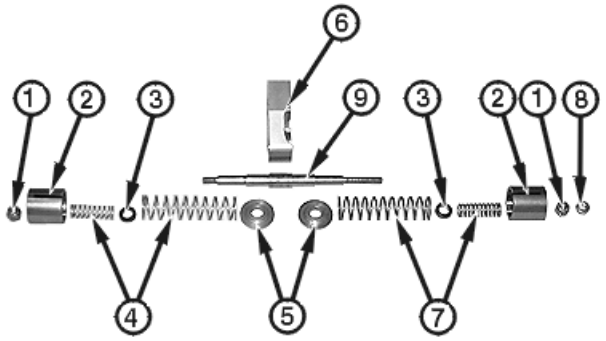
Steer Shaft Spring End Lock Nuts—Torque ..... 8 N•m (6 lb-ft) (72 lb-in.)



T119641B –UN–19JAN99

50. Install rod end lock nut (8).

1—Spring End Lock Nut (2 used)
2—Spring Guide (2 used)
3—Spacer (2 used)
4—Springs (Chrome)
5—Spring Seat (2 used)
6—Steering Plate
7—Springs (Gold)
8—Rod End Lock Nut
9—Steer Shaft



T119642B –UN–19JAN99

CED,TX03399,5977 –19–24MAR00–23/28

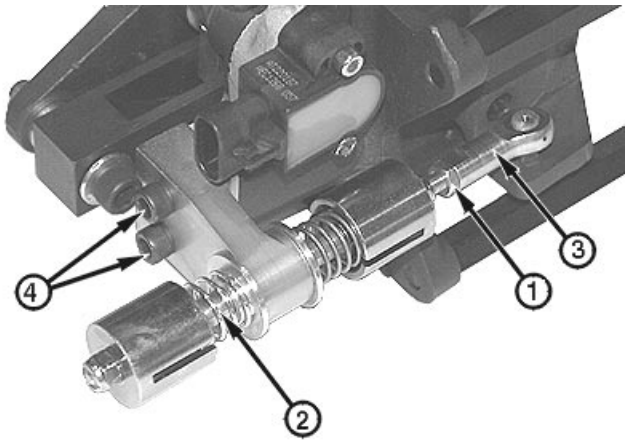
51. Install steer shaft assembly and two socket head cap screws (4). Tighten cap screws to specifications.

Single Lever Control—Specification

Steer Shaft Assembly Mounting Cap Screws—Torque ..... 34 N•m (25 lb-ft)

52. Screw steer shaft into rod end (3) and tighten lock nut (1).

1—Lock Nut
2—Steer Shaft
3—Rod End
4—Socket Head Cap Screw (2 used)



T119639B –UN–19JAN99

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CED,TX03399,5977 –19–24MAR00–24/28

53. If removed, install boot (3) and switch (2) in grip (1).

T124646B –UN–17SEP99

CED,TX03399,5977 –19–24MAR00–25/28

54. Install and tighten screws (1—3).

T124645B –UN–17SEP99

Continued on next page

CED,TX03399,5977 –19–24MAR00–26/28

IMPORTANT: Tie bands MUST be installed and wire lead MUST be positioned in clamp between assembly marks to provide a loop in wiring harness for steering.

55. Install tie bands (1) on wire harness.

56. Install clamp (3).

T124638B –UN–17SEP99

CED,TX03399,5977 –19–24MAR00–27/28

57. Install four socket head cap screws (3) and tighten to specifications.

Single Lever Control—Specification

Single Lever Control Top Plate
Cap Screws—Torque ..... 19 N•m (14 lb-ft) (168 lb-in.)

58. Install boot (2).

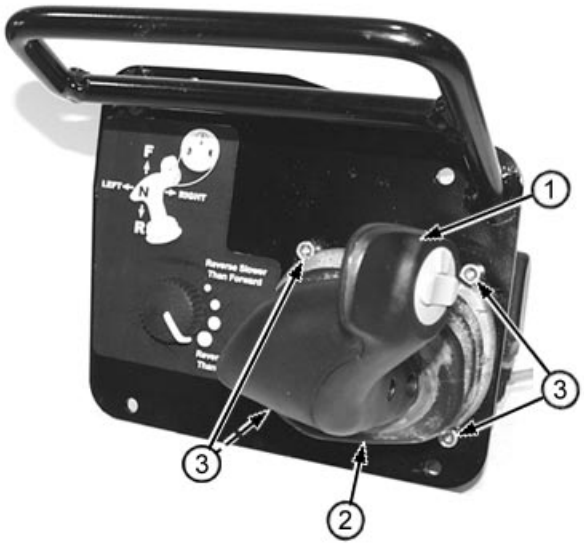
59. Install handle (1) and tighten lock nut to specifications.

Single Lever Control—Specification

Single Lever Control Handle Lock
Nut—Torque ..... 34 N•m (25 lb-ft)

60. Adjust single lever control. (See Single Lever Control "SLC" Adjustment in Operation and Test Manual, Group 9026-20.)

61. Recalibrate transmission controller. (See Calibrate Transmission Controller in Operation and Test Manual, Group 9015-20.)



T124637C –UN–27OCT99

1—Handle
2—Boot
3—Socket Head Cap Screw (4 used)

CED,TX03399,5977 –19–24MAR00–28/28

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

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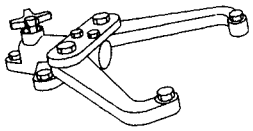
TX03399,0001879 –19–06OCT00–1/7

RW25125 –UN–14APR94

Bench-Mounted Holding Fixture . . . . . D01006AA[1]

Hold components during disassembly and assembly.



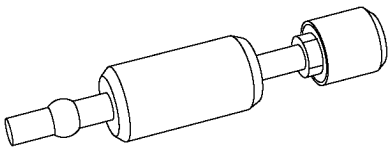
[1]Recommended Tool

TX03399,0001879 –19–06OCT00–2/7

RW25715 –UN–07JUN97

Journal Bearing Sizing Tool JDG1072

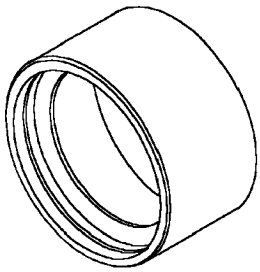
To size journal bearing in pump or motor end cap.



TX03399,0001879 –19–06OCT00–3/7

Speed Ring Installation Tool JDG1264

Install and seat speed ring.



T119373

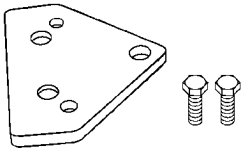
T119373 –UN–08JAN99

TX03399,0001879 –19–06OCT00–4/7

RW25706 –UN–20JUN97

Leveling Plate JDG1094

Set swashplate angle position during pump assembly.



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TX03399,0001879 –19–06OCT00–5/7

Driver Set JT01800

Pull shaft assembly out of hydrostatic motor main housing

TX03399,0001879 –19–06OCT00–6/7

Speed Ring Installer JDG1332

Used to install speed ring on hydrostatic pump cylinder block.

TX03399,0001879 –19–06OCT00–7/7

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

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TX03399,000187A –19–06OCT00–1/3

Blind-Hole Puller D01061AA

Remove bearings from end cap of hydrostatic pump.

TX03399,000187A –19–06OCT00–2/3

17-1/2 Ton Puller Set. D01173AA

Pull shaft assembly out of hydrostatic motor main housing

TX03399,000187A –19–06OCT00–3/3

Other Material

Number	Name	Use
TY6304 (U.S.) TY9484 (Canadian) 515 (LOCTITE®)	Flexible Form-In-Place Gasket	Apply to outer diameter of hydrostatic motor shaft seal.

LOCTITE is a trademark of Loctite Corp.

TX03399,000187B –19–06OCT00–1/1

Specifications

Item	Measurement	Specification
Hydrostatic Pump		
Hydrostatic Pump	Weight	60 kg (133 lb) Approximate
End Cap Journal Bearing	Depth	Flush-to-0.50 mm (0.020 in.)
Swashplate Leveler-to-Side Cover Lock Nuts	Torque	23 N•m (17 lb-ft) (204 lb-in.)
Swashplate Servo Arm Cap Screw	Torque	32 N•m (24 lb-ft)
Swashplate Feedback Link Cap Screw	Torque	32 N•m (24 lb-ft)
Charge Pump Retaining Plate Cap Screws	Torque	14 N•m (120 lb-in.)
Flange Adapter/End Cap-to-Hydrostatic Pump	Torque	298 N•m (220 lb-ft)
EDC Valve Spool Caps	Torque	11 N•m (96 lb-in.)
Electronic Displacement Control-to-Control Valve Cap Screws	Torque	5.4 N•m (48 lb-in.)
Displacement Control Valve-to-Hydrostatic Pump Cap Screws	Torque	16 N•m (144 lb-in.)
Multi-Function Valve Lock Nut	Torque	16.3 N•m (144 lb-in.)
Multi-Function Valves	Torque	79 N•m (58 lb-ft)
Swashplate Bearing Cap Screws	Torque	14 N•m (120 lb-in.)
Servo Cylinder Cap Screws	Torque	33 N•m (24 lb-ft)
Side Cover-to-Pump Housing Blind Hole Cap Screws	Torque	33 N•m (24 lb-ft)
Side Cover-to-Pump Housing Through (Top Two) Hole Cap Screws	Torque	33 N•m (24 lb-ft)

Continued on next page

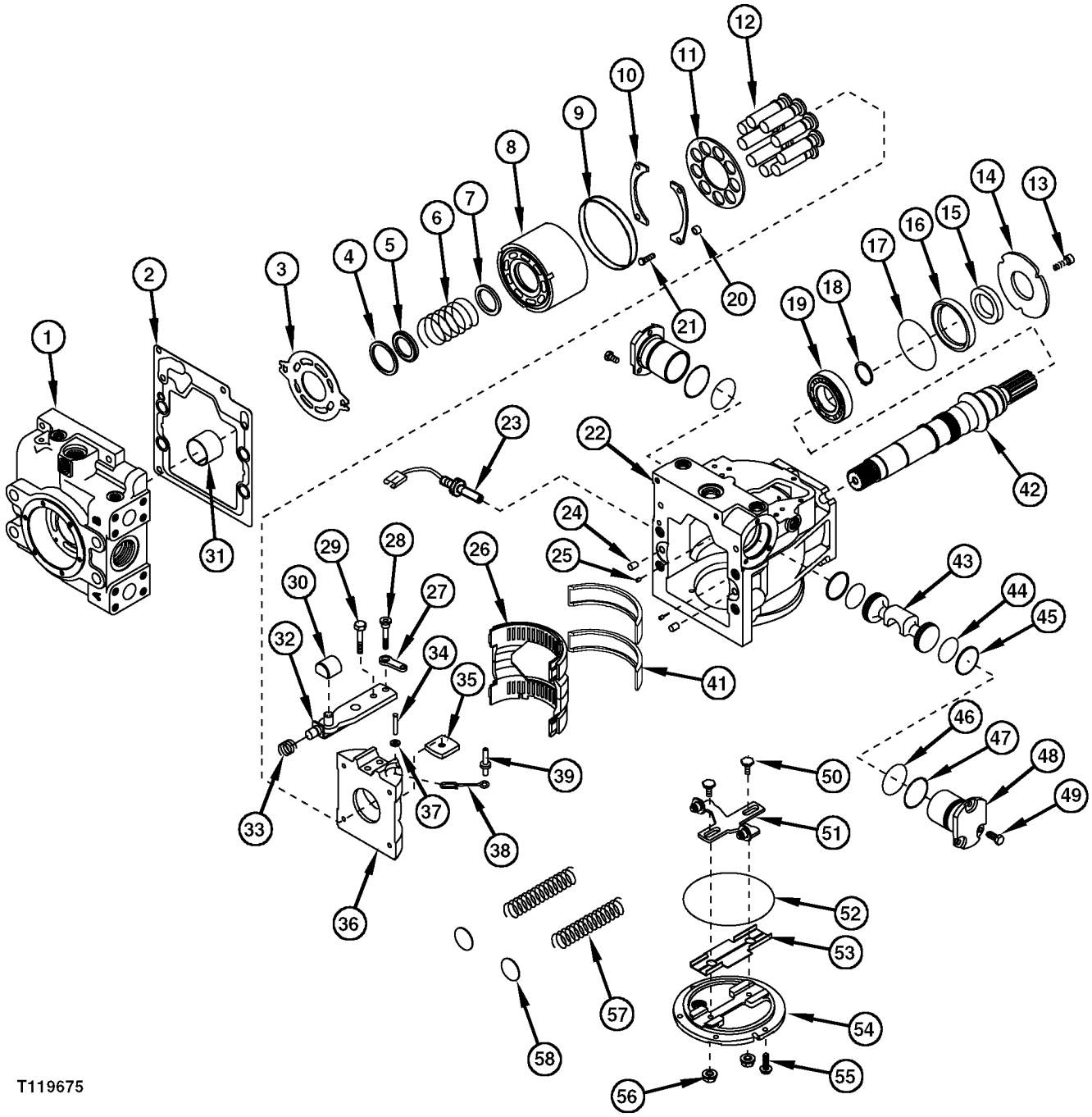
Item	Measurement	Specification
End Cap/Adapter-to-Pump Cap Screws (Large)	Torque	298 N•m (220 lb-ft)
End Cap-to-Pump Cap Screws (Small)	Torque	33 N•m (24 lb-ft)
Input Shaft Seal Carrier Retaining Cap Screw	Torque	16 N•m (144 lb-in.)
Swashplate		
Swashplate Leveling Outer Springs	Free Length Test Length	88.2 mm (3.5 in.) (Approximate) 83.3 mm at 160 N (3.3 in. at 36 lb force)
Swashplate Leveling Inner Springs	Free Length Test Length	81 mm (3.2 in.) (Approximate) 76.2 mm at 78 N (3.0 in. at 17.5 lb force)
Swashplate Hold-Down Spring	Free Length Test Length	21.6 mm (0.85 in.) (Approximate) 19.8 mm at 613 N (0.78 in. at 138 lb force)
Hydrostatic Motor		
Hydrostatic Motor End Cap Cover Cap Screws	Torque	110 N•m (81 lb-ft)
Flushing Valve Plug	Torque	41 N•m (30 lb-ft)
Shaft Adjusting Nut	Torque	20 N•m (15 lb-ft)
Servo Piston Cone Point Set Screw	Torque	5 N•m (44 lb-in.)
Valve Segment Spindle	Torque	36 N•m (27 lb-ft)
Valve Segment Spindle Dimension “A”	Length	39.4—39.6 mm (1.55—1.56 in.)
Cylinder Block Bearing Dimension “B”	Depth	14.5—15.0 mm (0.57—0.59 in.)
Flange-to-Motor Housing Cap Screw—	Torque	110 N•m (81 lb-ft)

Continued on next page

Item	Measurement	Specification
Motor End Cap-to-Housing Screw—	Torque	135 N•m (100 lb-ft)
Shuttle Ball Seat	Torque	40—49 N•m (30—36 lb-ft)
Shuttle Ball Plug	Torque	37 N•m (27 lb-ft)
Adjusting Screw	Distance Torque	10 mm (0.399 in.) 16 N•m (142 lb-in.)
Displacement Control Valve-to-End Cap	Torque	110 N•m (81 lb-ft)
Oil Cooler Thermal Bypass Valve		
Oil Cooler Thermal Bypass Valve Mounting Cap Screws	Torque	80 N•m (60 lb-ft)
Hydrostatic Reservoir	Capacity	65.1 L (17.2 gal) (Approximate)
Thermal Bypass Valve Cover-to-Housing	Torque	12 N•m (102 lb-in.)
Hydrostatic Filter		
Hydrostatic Reservoir-to-Filter Base Cap Screws	Torque	50 N•m (37 lb-ft)
Hydrostatic Filter Plug	Torque	43 N•m (32 lb-ft)
Hydrostatic Reservoir		
Reservoir	Weight	176 kg (388 lb) (Approximate)
Main Frame-to-Reservoir Cap Screws	Torque	319 N•m (235 lb-ft)
Access Cleanout Cover Nuts	Torque	30 N•m (22 lb-ft)

TX03399,000187C –19–06OCT00–3/3

Hydrostatic Pump Exploded View



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CED,OUO1004,520 –19–13APR99–1/2

1—Charge Pump Housing/End Cap
2—Gasket
3—Valve Plate
4—Retaining Ring[1]
5—Spring Retainer[1]
6—Spring[1]
7—Spring Seat[1]
8—Cylinder Block[1]
9—Speed Sensor Ring
10—Slipper Guide Bearing (2 used)
11—Slipper Guide[1]
12—Piston Assembly[1]
13—Socket Head Cap Screw (3 used)
14—Retaining Plate
15—Lip Seal
16—Seal Carrier
17—O-Ring
18—Retaining Ring
19—Bearing
20—Spacer (4 used)
21—Cap Screw (4 used)
22—Pump Housing
23—Speed Sensor
24—Alignment Pin (2 used)
25—Alignment Pin (2 used)
26—Bearing Cage
27—Slider Block
28—Socket Head Cap Screw
29—Cap Screw
30—Slider Block
31—Bearing
32—Servo Arm Assembly
33—Swashplate Hold-Down Spring
34—Spring Pin
35—Guide
36—Swashplate
37—Washer
38—Cage Locator Link
39—Bearing Cage Link Pin
40—Not Used
41—Bearing Race (2 used)
42—Pump Shaft
43—Servo Piston
44—O-Ring (2 used)
45—Seal Ring (2 used)
46—O-Ring (2 used)
47—O-Ring (2 used)
48—Servo Cylinder (2 used)
49—Cap Screw (6 used)
50—Cap Screw (2 used)
51—Lever Assembly
52—O-Ring
53—Side Cover Insert
54—Side Cover
55—Cap Screw (6 used)
56—Nut (2 used)
57—Swashplate Lever Spring (2 used)
58—Shim (2 used)

[1]*Serviced as an assembly.*

CED,OUO1004,520 –19–13APR99–2/2

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0360
7

Disassemble Hydrostatic Pumps

CAUTION: The weight of the hydrostatic pump is approximately 60 kg (133 lb). Use proper lifting equipment and safety precautions. Failure to do so may cause personal injury.

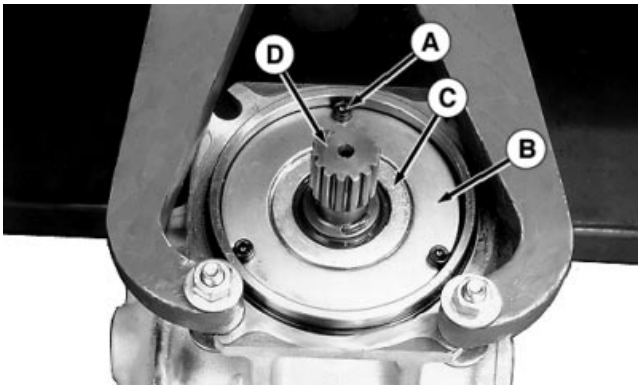
Hydrostatic Pump—Specification

Hydrostatic Pump—Weight ..... 60 kg (133 lb) Approximate

IMPORTANT: Absolute cleanliness is essential when working on hydraulic components.

NOTE: Orientate double boss of pump housing on holding fixture as shown.

1. Mount the hydrostatic pump on a D01006AA Bench-Mounted Holding Fixture.
2. Remove displacement control valve assembly.
3. Remove speed sensor (front pump only).



RW25727 –UN–09JUN97

A—Socket Head Cap Screw (3 used)
B—Retaining Plate
C—Seal Carrier
D—Shaft

Continued on next page

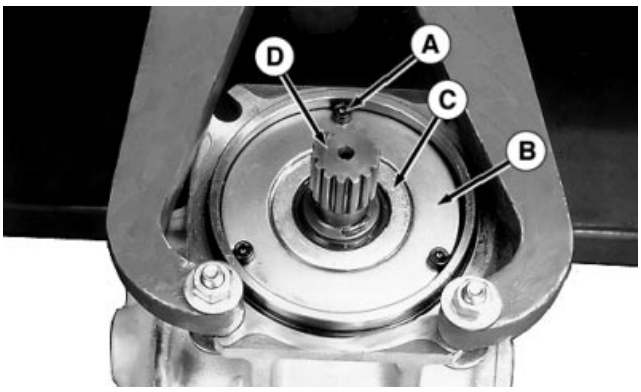
CED,OUTX547,110 –19–28JUN02–1/22

4. Remove socket head cap screws (A) and retaining plate (B).

NOTE: The bearings on shaft (D) are slip fit in the housing bore.

5. Remove seal carrier (C) and shaft (D) with bearings. Lightly tap on opposite end of shaft to aid in removal.

A—Socket Head Cap Screw (3 used)
B—Retaining Plate
C—Seal Carrier
D—Shaft



RW25727 –UN–09JUN97

CED,OUTX547,110 –19–28JUN02–2/22

6. Inspect bearing assembly (B).

7. Remove retaining ring (A) and remove outer bearing assembly (B) from inner bearing race.

8. Remove inner bearing race from shaft using a press.

9. Install new inner bearing race onto shaft using a press.

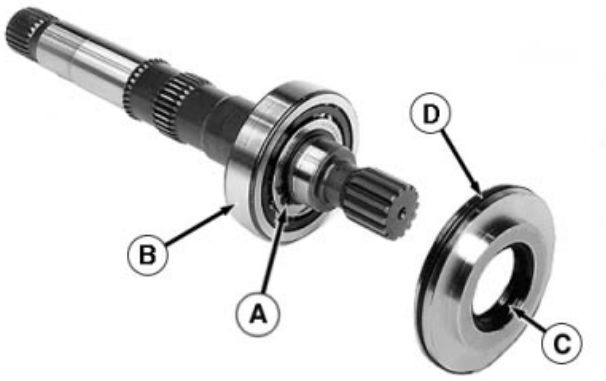
10. Install new outer bearing assembly (B) and retaining ring (A) onto shaft.

IMPORTANT: Cover shaft splines with shim stock to protect lip seal.

11. Wrap the spline or key end of shaft with thin plastic (shim stock) to prevent damage to the shaft seal lip during installation. Lubricate the inside diameter of the new seal with petroleum jelly. Install new shaft lip seal (C) in seal carrier with spring side of seal toward pump housing.

12. Install O-ring (D) on seal carrier.

13. Rotate pump 180°.



RW25728 –UN–11JUN97

A—Retaining Ring
B—Bearing Assembly
C—Lip Seal
D—O-Ring

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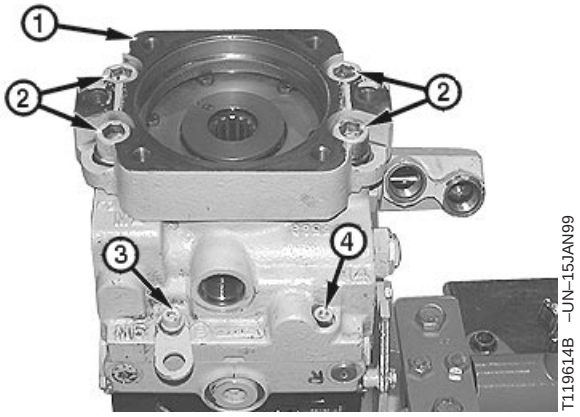
CED,OUTX547,110 –19–28JUN02–3/22

14. Remove the two small socket head cap screws (3 and 4) and socket head cap screws with washers (2).

NOTE: Leveler spring shims may dislodge during end cap removal.

15. Remove adapter plate and O-ring from end cap. Remove end cap and gasket from pump housing.

1—Adapter Plate
2—Socket Head Cap Screw with Washer (4 used)
3—Socket Head Cap Screw with Lift Bracket
4—Socket Head Cap Screw



T119614B –UN–15JAN99

CED,OUTX547,110 –19–28JUN02–4/22

IMPORTANT: Do not damage the end cap surface when removing or installing bearing (A).

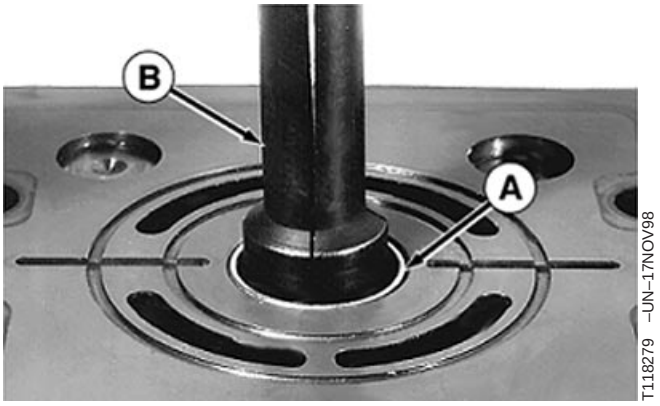
16. Inspect journal bearing (A).

17. Carefully remove the bearing using D01061AA Blind-Hole Puller (B).

18. Lightly lubricate the new journal bearing and install into end cap using a press.

Hydrostatic Pump—Specification

End Cap Journal Bearing—Depth..... Flush-to-0.50 mm (0.020 in.)



T118279 –UN–17NOV98

A—Journal Bearing
B—Blind Hole Puller

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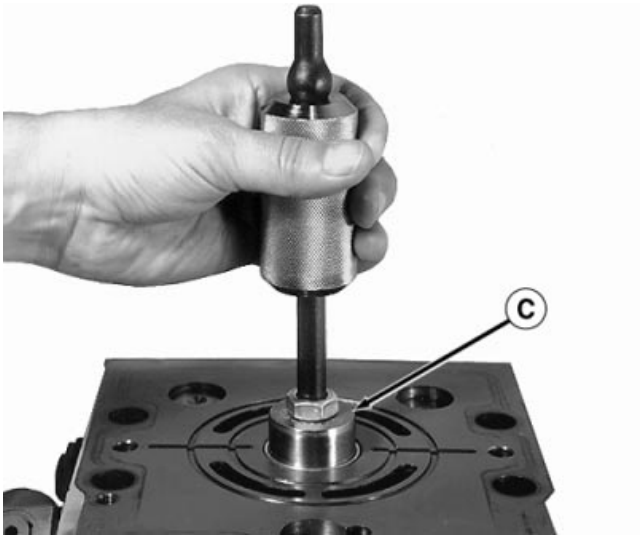
CED,OUTX547,110 –19–28JUN02–5/22

IMPORTANT: New journal bearing MUST be sized using a JDG1072 Journal Bearing Sizing Tool. DO NOT use the pump shaft. This will cause inadequate lubrication and shortened bearing life.

19. Size the journal bearing using a JDG1072 Journal Bearing Sizing Tool (C).

C—Journal Bearing Sizing Tool



RW25782 –UN–21JUN97

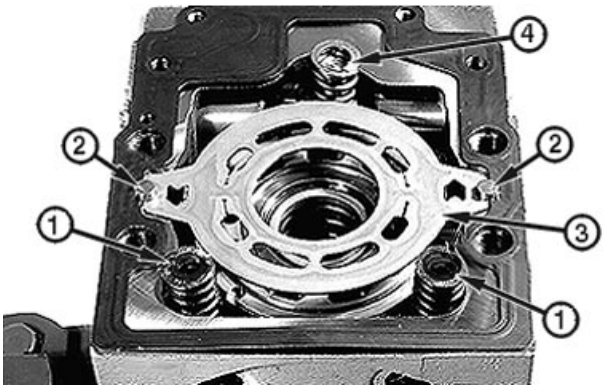
CED,OUTX547,110 –19–28JUN02–6/22

NOTE: Shims for springs (1) may stay with the end cap during end cap removal.

20. Remove and inspect springs (1 and 4) and shims.

Swashplate—Specification

Swashplate Leveling Outer Springs—Free Length	88.2 mm (3.5 in.) (Approximate)
Test Length	83.3 mm at 160 N (3.3 in. at 36 lb force)
Swashplate Leveling Inner Springs—Free Length	81 mm (3.2 in.) (Approximate)
Test Length	76.2 mm at 78 N (3.0 in. at 17.5 lb force)
Swashplate Hold-Down Spring—Free Length	21.6 mm (0.85 in.) (Approximate)
Test Length	19.8 mm at 613 N (0.78 in. at 138 lb force)



T156798B –UN–27JUN02

1—Spring (2 used)
2—Alignment Pin (2 used)
3—Valve Plate
4—Hold Down Spring

IMPORTANT: Note the direction of arrows stamped on valve plate and mark housing accordingly.

21. Remove valve plate (3).

22. Remove alignment pins (2).

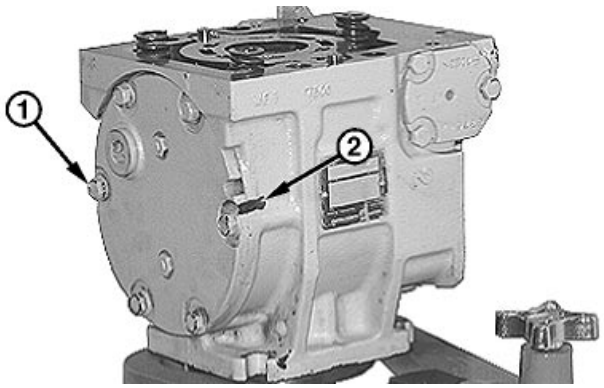
Continued on next page

CED,OUTX547,110 –19–28JUN02–7/22

23. Put alignment marks (2) on the side cover and pump housing.

24. Remove and discard the six cap screws (1).

1—Cap Screw (6 used)
2—Alignment Marks



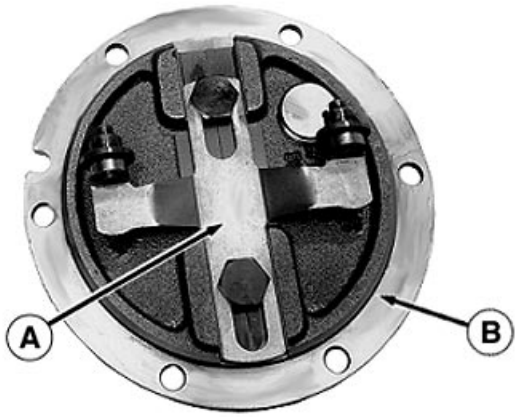
T118259B –UN–08JAN99

CED,OUTX547,110 –19–28JUN02–8/22

25. Remove leveler assembly (A) by removing two lock nuts on outside of cover.

26. Discard O-ring (B).

A—Leveler Assembly
B—O-Ring



T118277 –UN–22APR99

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CED,OUTX547,110 –19–28JUN02–9/22

27. Inspect parts (A—D). Replace as required.

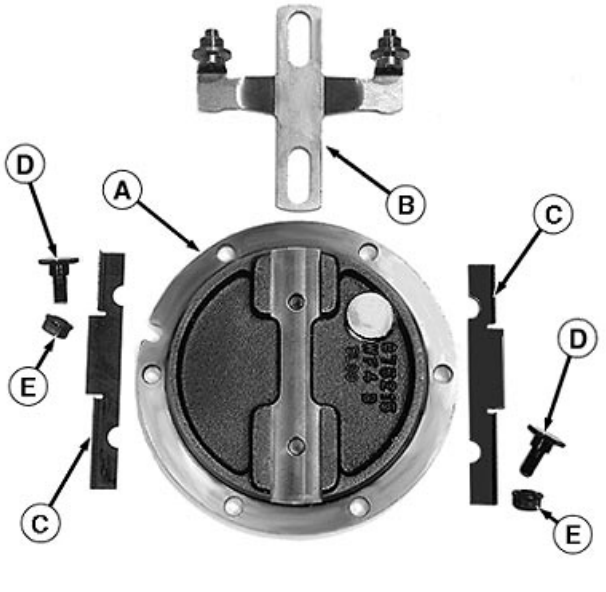
28. Assemble side cover using new lock nuts (E). Tighten nuts to specifications.

Hydrostatic Pump—Specification

Swashplate Leveler-to-Side Cover
Lock Nuts—Torque..... 23 N•m (17 lb-ft) (204 lb-in.)

29. Install O-ring on side cover (A).

A—Side Cover
B—Leveler
C—Insert (2 used)
D—Cap Screw (2 used)
E— Lock Nut (2 used)



T118278 –UN–22APR99

CED,OUTX547,110 –19–28JUN02–10/22

IMPORTANT: Wear patterns develop between servo pistons and servo cylinders. Servo cylinders must be installed in original positions.

30. Tag or identify servo cylinders (A) for assembly into the bore from which the cylinders were removed.

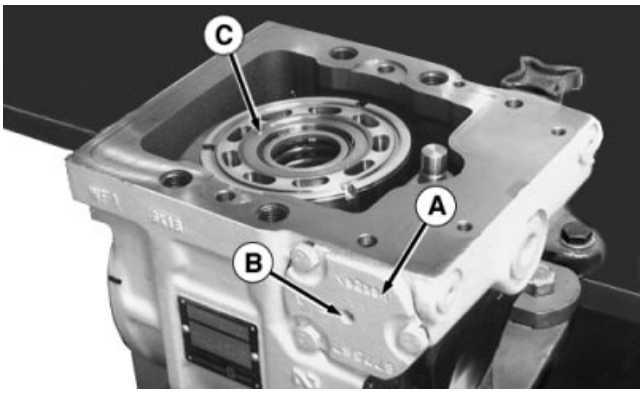
31. Remove capscrews and remove cylinders (A) using a slide hammer and 8 mm screw in threaded hole (B).

IMPORTANT: Wear patterns develop between cylinder block bores and pistons. Pistons must be installed in original cylinder block bores.

32. Tag or identify pistons and cylinder block bores to aid in proper assembly.

33. Remove cylinder block assembly (C).

34. Inspect pump speed ring for damage. Replace as necessary.



RW25735 –UN–20JUN97

A—Servo Cylinder (2 used)
B—Threaded Hole
C—Cylinder Block Assembly

Continued on next page

CED,OUTX547,110 –19–28JUN02–11/22

35. Place cylinder block on a clean non-abrasive surface to replace speed ring. Be careful not to damage sealing surface of cylinder block.

36. Remove speed ring from cylinder block by gently tapping on ring using a hammer and brass drift.

T110327B –UN–26JAN98

CED,OUTX547,110 –19–28JUN02–12/22

37. Place new speed ring on chamfered edge of cylinder block.

T110328B –UN–26JAN98

CED,OUTX547,110 –19–28JUN02–13/22

38. Carefully install stepped side of JDG1264 Speed Ring Installation Tool over speed ring. Seat speed ring using a press or by alternately tapping around the edge of tool with a rubber mallet. Speed ring will be located correctly when tool is bottomed on cylinder block.

T119063B –UN–21DEC98

CED,OUTX547,110 –19–28JUN02–14/22

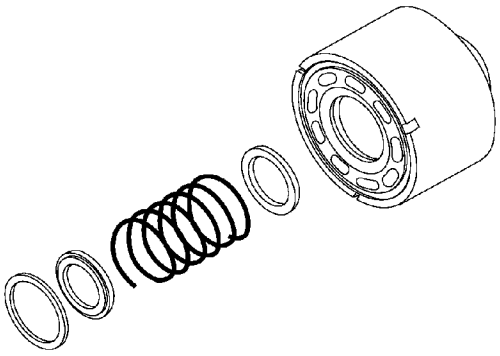
39. Compress the cylinder block spring using a press and remove the spiral retaining ring.

40. Remove retainer.

41. Remove spring and spring seats.

42. Clean cylinder block and components.

43. Assemble cylinder block.



T8492AA –UN–14JUN95

T8492AA

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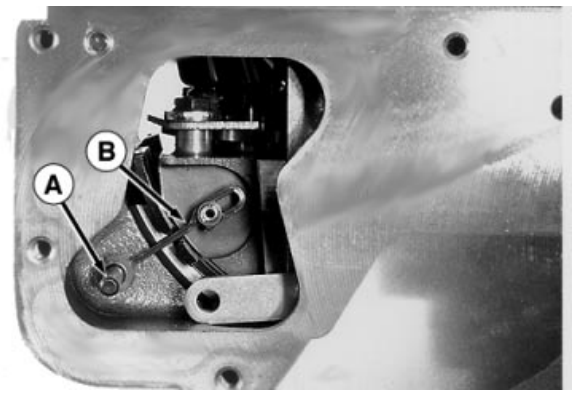
CED,OUTX547,110 –19–28JUN02–15/22

44. Remove bearing cage link pin (A) and locator link (B).

A—Cage Link Pin
B—Locator Link



RW25736 –UN–09JUN97

CED,OUTX547,110 –19–28JUN02–16/22

03
0360
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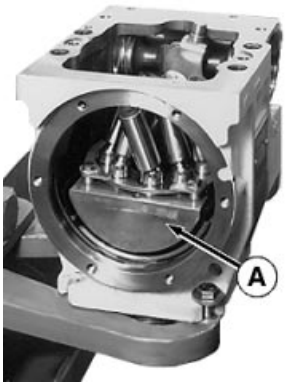
45. Remove the swashplate and piston assembly (A) through the housing side cover opening.

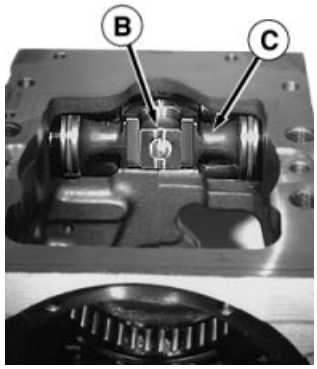
IMPORTANT: Wear patterns develop between servo pistons and servo cylinders. Servo piston must be installed with original orientation.

46. Tag or identify servo piston orientation to aid in proper assembly.

47. Remove the servo piston (C) and slider block (B).



RW25737 –UN–20JUN97



RW25738 –UN–09JUN97

A—Swashplate and Piston Assembly
B—Slider Block
C—Servo Piston

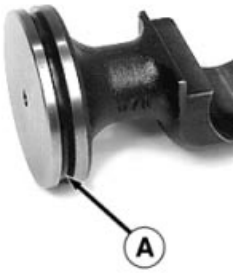
CED,OUTX547,110 –19–28JUN02–17/22

NOTE: Do not stretch seal rings (B) any more than necessary when installing.

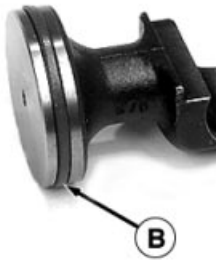
48. Replace expander O-ring (A) on each end of servo piston.

49. Install seal ring (B) over O-ring on each end of piston.

A—O-Ring
B—Seal Ring



RW25739 –UN–09JUN97



RW25740 –UN–09JUN97

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CED,OUTX547,110 –19–28JUN02–18/22

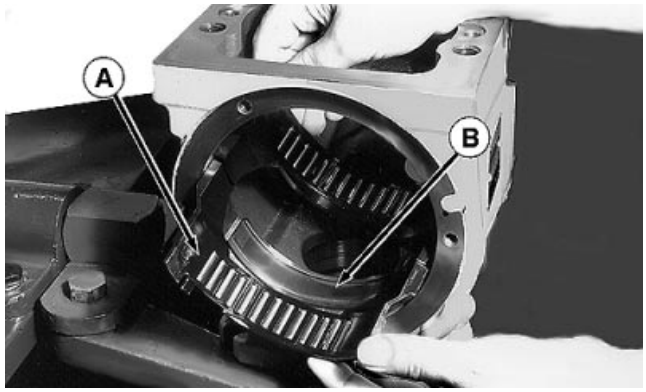
IMPORTANT: Bearing cage wears patterns in bearing race and swashplate. Components must be installed in proper position with original orientation.

50. Tag or identify swashplate bearing cage positions to aid in proper assembly.

51. Remove and inspect swashplate bearing cage (A). Replace as required.

52. Tag or identify bearing race positions to aid in proper assembly.

53. Remove and inspect the two bearing races (B). Replace as required.



RW25741 –UN–20JUN97

A—Bearing Cage (2 used)
B—Bearing Race (2 used)

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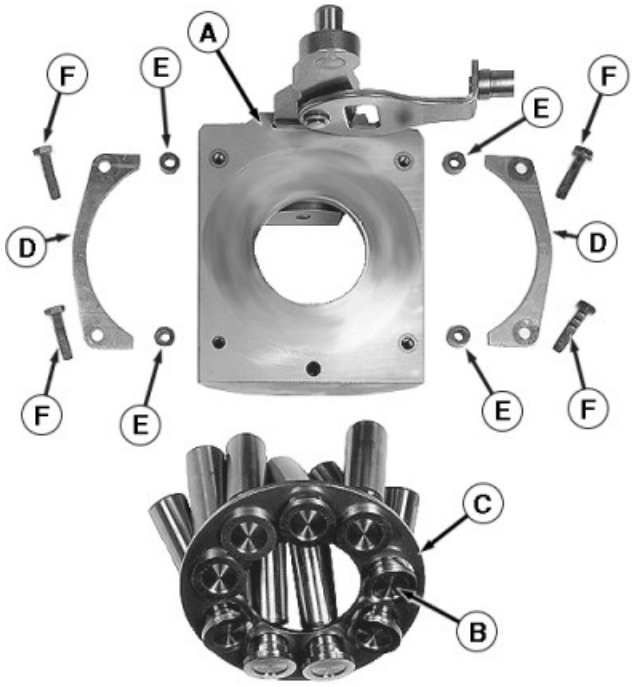
CED,OUTX547,110 –19–28JUN02–19/22

IMPORTANT: Parts have critical, high tolerance surfaces which require careful handling to prevent damage.

54. Disassemble and inspect parts (A—E) discarding cap screws (F).

A—Swashplate
B—Piston Assembly (9 used)
C—Slipper Guide
D—Slipper Guide Bearing (2 used)
E—Spacer (4 used)
F—Cap Screw (4 used)



T121170 –UN–17APR99

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CED,OUTX547,110 –19–28JUN02–20/22

IMPORTANT: Servo arm alignment is critical. Do not remove servo arm (A) from swashplate unless replacing.

55. Remove feedback link (C) by removing socket head cap screw (D).

56. Inspect swashplate guide (B).

57. Remove cap screw (E) only if replacement of servo arm is needed.

NOTE: Servo arm is a press fit.

58. Install new servo arm carefully aligning the slot and threaded holes in swashplate. Arm must be pressed completely into swashplate slot.

59. Install servo arm cap screw (E) and tighten to specifications.

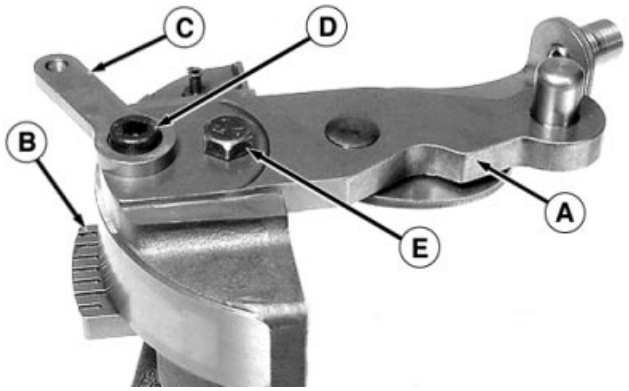
Hydrostatic Pump—Specification

Swashplate Servo Arm Cap Screw—Torque ..... 32 N•m (24 lb-ft)

60. Install feedback link (C) and swashplate guide (B). Tighten socket head cap screw (D) to specifications.

Hydrostatic Pump—Specification

Swashplate Feedback Link Cap Screw—Torque ..... 32 N•m (24 lb-ft)



RW25742 –UN–11JUN97

A—Servo Arm
B—Swashplate Guide
C—Feedback Link
D—Socket Head Cap Screw
E—Cap Screw

03 0360 16

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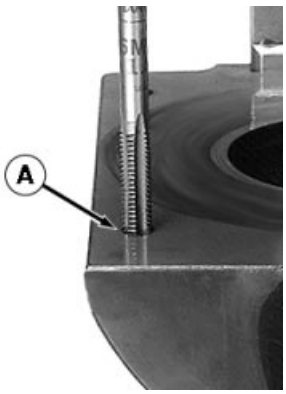
CED,OUTX547,110 –19–28JUN02–21/22

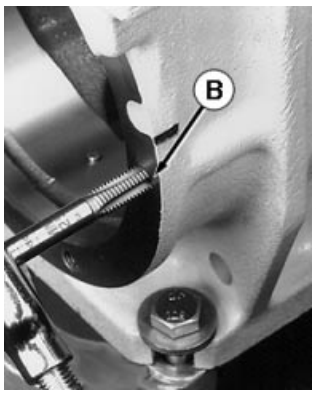
IMPORTANT: Threaded holes in swashplate and pump housing side cover opening must be cleaned of old locking compound prior to reassembly.

61. Clean the threaded holes in the swashplate (A) and pump housing side cover opening (B) using the correct tap.

IMPORTANT: Pump housing must be clear of any contamination before assembling pump.

62. Clean inside of pump housing eliminating any excess thread locking compound or other contamination.





A—M6 Threaded Holes in Swashplate
B—M8 Threaded Holes in Housing

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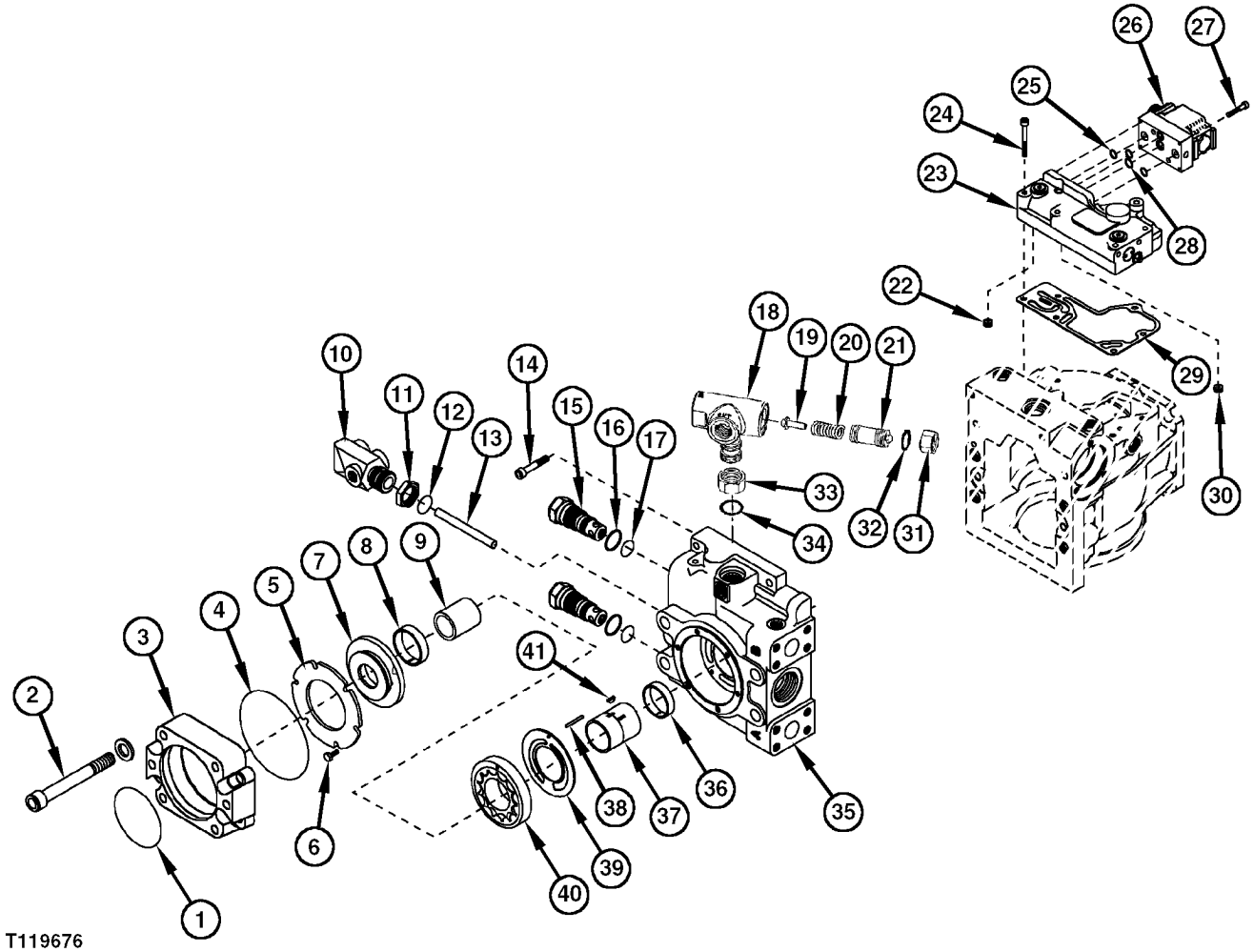
CED,OUTX547,110 –19–28JUN02–22/22

Charge Pump and Pump Controls Exploded View



T119676 –UN–22JAN99

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CED,OUO1008,147 –19–17DEC98–1/2

1—O-Ring
2—Socket Head Cap Screw (4 used)
3—Flange Adapter
4—O-Ring
5—Retaining Plate
6—Cap Screw (6 used)
7—Charge Pump Cover
8—Bushing
9—Coupling
10—Manifold
11—Nut
12—O-Ring
13—Tube
14—Socket Head Cap Screw (2 used)
15—Multi-Function Valve (2 used)
16—O-Ring
17—O-Ring
18—Charge Relief Valve Housing
19—Charge Relief Poppet
20—Spring
21—Adjustment Screw
22—Orifice
23—Pump Displacement Control Valve
24—Socket Head Cap Screw (6 used)
25—O-Ring (3 used)
26—Electronic Displacement Control (EDC)
27—Socket Head Cap Screws (4 used)
28—O-Ring
29—Gasket
30—Orifice
31—Nut
32—O-Ring
33—Nut
34—O-Ring
35—Charge Pump Housing/End Cap
36—Bushing
37—Charge Pump Shaft
38—Alignment Pin
39—Port Plate[1]
40—Charge Pump Gear Set[1]
41—Key

[1]*Serviced as an assembly.*

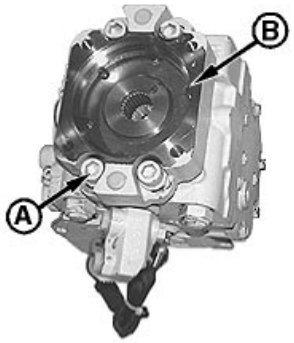
CED,OUO1008,147 –19–17DEC98–2/2

Disassemble and Assemble Hydrostatic Charge Pump

IMPORTANT: Absolute cleanliness is essential when working on hydrostatic components.

1. Remove socket head cap screws (A), adapter (B) and O-ring.

A—Socket Head Cap Screw (4 used)
B—Adaptor Plate



T118269B –UN–20NOV98

CED,OUO1008,146 –19–13APR99–1/10

2. Remove cap screws (C) and retaining plate (D).

C—Cap Screw (6 used)
D—Retaining Plate

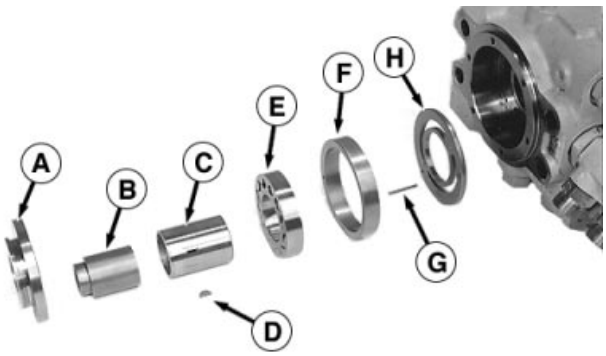
T118256B –UN–20NOV98

Continued on next page

CED,OUO1008,146 –19–13APR99–2/10

IMPORTANT: Wear patterns develop between pump gerotor assembly (E) and eccentric ring (F). Components must be installed in proper position with original orientation.

3. Tag or identify visible side of pump gerotor assembly (E) and eccentric ring (F) to aid in proper assembly.
4. Remove and inspect parts (A—H) and replace as required.
5. Remove bushing from charge pump cover (A).
6. Clean all parts and lightly apply clean hydraulic oil.



RW25723 –UN–23JUN97

A—Charge Pump Cover
B—Auxiliary Drive Coupling
C—Charge Pump Shaft
D—Key
E—Charge Pump Gerotor Assembly[1]
F—Eccentric Ring[1]
G—Alignment Pin
H—Port Plate

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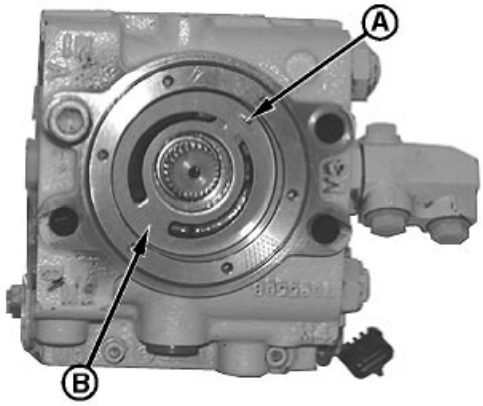
[1]Serviced as an assembly

CED,OUO1008,146 –19–13APR99–3/10

IMPORTANT: Charge pump rotation is determined by the orientation of eccentric ring in the gerotor assembly, and the location of the alignment pin (A). Incorrect assembly will not provide charge oil to the pump and will result in damage to the pump.

NOTE: One of the large socket head cap screws and four washers must be installed in the end cap, as illustrated, before assembling the charge pump.

7. Install charge pump alignment pin (A) in the right rotation hole as illustrated.
8. Install port plate (B).



T118257B –UN–20NOV98

A—Alignment Pin
B—Port Plate

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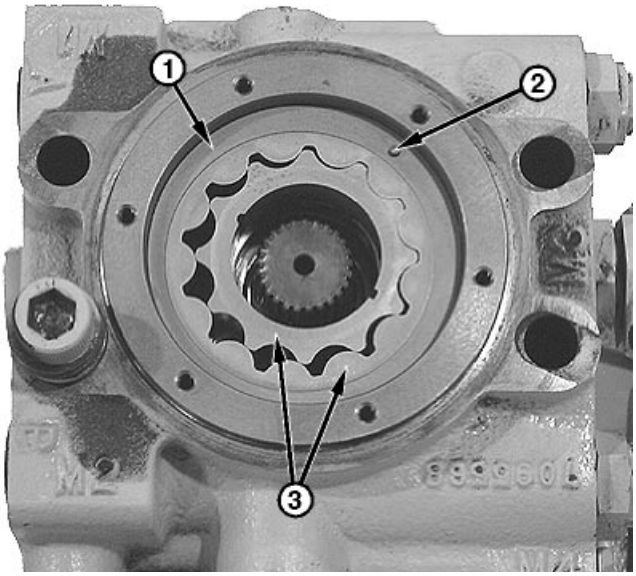
CED,OUO1008,146 –19–13APR99–4/10

IMPORTANT: Wear patterns develop between pump gerotor gears (3) and eccentric ring (1). Components must be installed in proper position with original orientation.

9. Install the eccentric ring (1) making sure alignment pin (2) is correctly installed.

10. Install the gerotor gears (3).

1—Eccentric Ring
2—Alignment Pin
3—Gerotor Gears

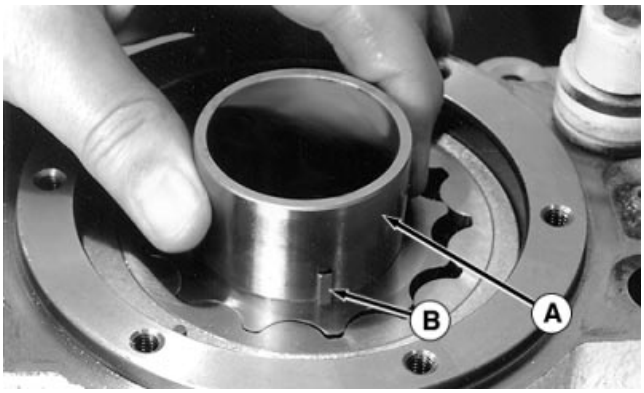


T119171B –UN–07JAN99

CED,OUO1008,146 –19–13APR99–5/10

11. Install charge pump shaft (A) with key (B) aligning with slot in gerotor gear.

A—Pump Shaft
B—Key



RW25771 –UN–20JUN97

CED,OUO1008,146 –19–13APR99–6/10

12. Install auxiliary drive coupling (1).

1—Auxiliary Drive Coupling

T119593B –UN–15JAN99

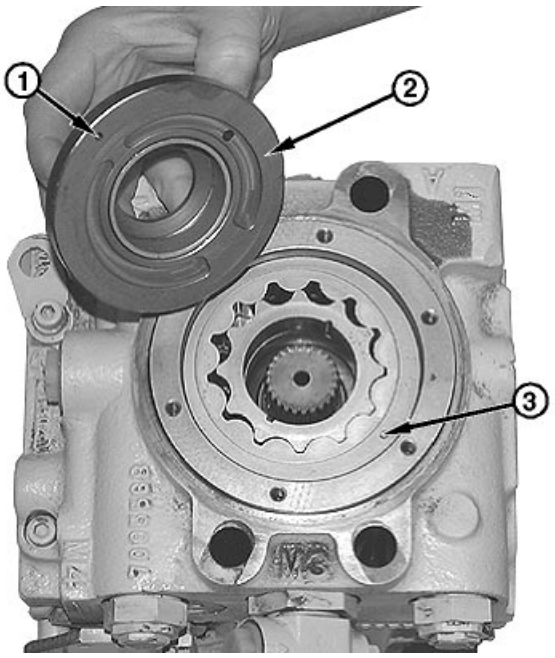
Continued on next page

CED,OUO1008,146 –19–13APR99–7/10

13. Install bushing in charge pump cover.

14. Install charge pump cover (2) making sure hole (1) in cover aligns correctly with alignment pin (3).

1—Hole in Cover
2—Charge Pump Cover
3—Alignment Pin



T119172B –UN–07JAN99

CED,OUO1008,146 –19–13APR99–8/10

15. Install retaining plate (1) and cap screws (2). Tighten to specifications.

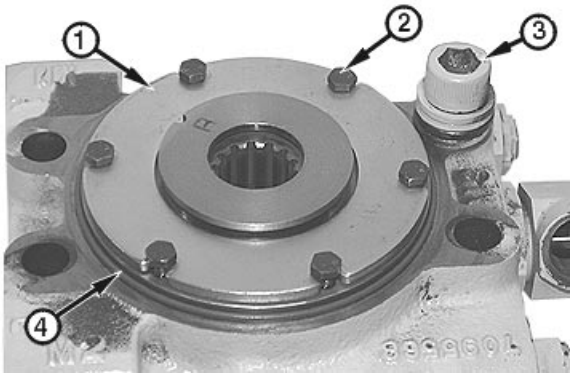
Hydrostatic Pump—Specification

Charge Pump Retaining Plate	
Cap Screws—Torque	14 N•m (120 lb-in.)

16. Lubricate O-ring (4) with petroleum jelly and install.

17. Remove socket head cap screw and washers (3).

1—Retaining Plate
2—Cap Screw (6 used)
3—Socket Head Cap Screw and Washers
4—O-Ring



T119594B –UN–22JAN99

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CED,OUO1008,146 –19–13APR99–9/10

18. Install flange adapter (B).

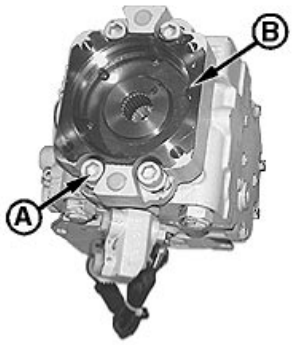
19. Install socket head cap screws and washers (A). Tighten to specifications.

Hydrostatic Pump—Specification

Flange Adapter/End Cap-to-Hydrostatic Pump—Torque ..... 298 N•m (220 lb-ft)

20. Install hydrostatic pumps. (See Remove and Install Hydrostatic Pump in this group.)

21. Calibrate transmission controller. (See Calibrate Transmission Controller in Operation and Test Manual, Group 9015-20.)

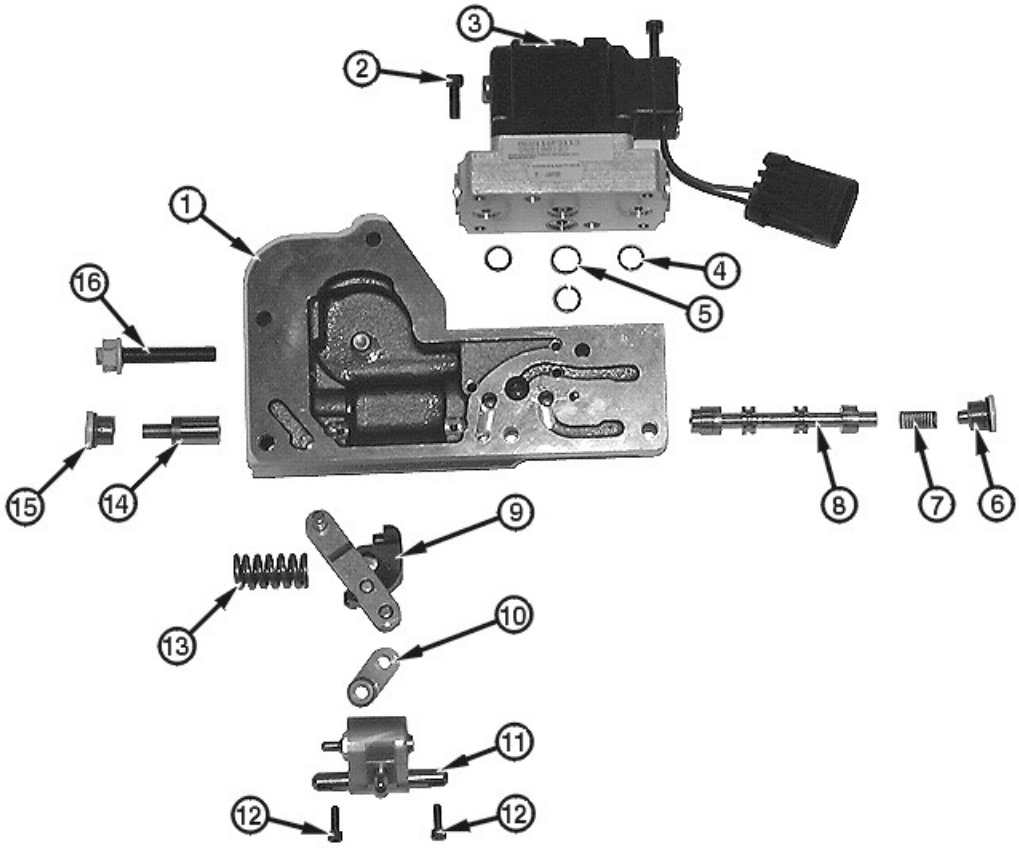


T118269B –UN–20NOV98

A—Socket Head Cap Screw and Washer (4 used)
B—Flange Adapter

CED,OUO1008,146 –19–13APR99–10/10

Disassemble and Assemble Displacement Control Valve



T119680B –UN–19JAN99

1—Control Valve Housing
2—Cap Screw (4 used)
3—Pressure Control Pilot (PCP)
4—O-Ring (3 used)
5—O-Ring (1 used)
6—Cap
7—Spring
8—Valve Spool
9—Feedback Link
10—Link Arm
11—Override Linkage Assembly
12—Cap Screw (2 used)
13—Spring
14—Valve Spool
15—Cap
16—Adjustment Screw

IMPORTANT: Hydrostatic pump displacement control valve is serviced as an assembly. Replace if damaged. Disassemble for cleaning purposes only.

Absolute cleanliness is essential when working on hydraulic components.

1.

Remove the six socket head cap screws and displacement control valve (1) from the pump housing.

NOTE: The Pressure Control Pilot (PCP) (3) is serviced as an assembly. DO NOT disassemble.

2. Remove cap (15) and valve spool (14). Replace O-ring.

3. Remove cap (6), spring (7), and valve spool (8). Replace O-ring.

4. Loosen adjusting screw (16) to release tension on spring (13).

5. Remove caps screws (12).

Continued on next page

CED,OUO1008,149 –19–13APR99–1/3

6. Lift linkage assembly (9, 10 and 11) with spring from housing.

NOTE: Override linkage assembly (11) is not repairable. Do not disassemble.

7. Clean and inspect parts.

8. Assemble parts (9—13).

9. Install valve spools, spring, O-rings and caps. Tighten caps to specifications.

Hydrostatic Pump—Specification

EDC Valve Spool Caps—
Torque..... 11 N•m (96 lb-in.)

10. Install new O-rings and Pressure Control Pilot (PCP). Tighten cap screws (2) to specifications.

Hydrostatic Pump—Specification

Electronic Displacement
Control-to-Control Valve Cap
Screws—Torque ..... 5.4 N•m (48 lb-in.)

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CED,OUO1008,149 –19–13APR99–2/3

11. Install gasket (A).

IMPORTANT: Linkage pin (C) must be installed correctly into link (D) or swash plate will not move.

12. Install displacement control valve (B) to pump making sure neutral feedback linkage pin (C) installs correctly into feedback link (D).

13. Install and tighten the six cap screws to specifications.

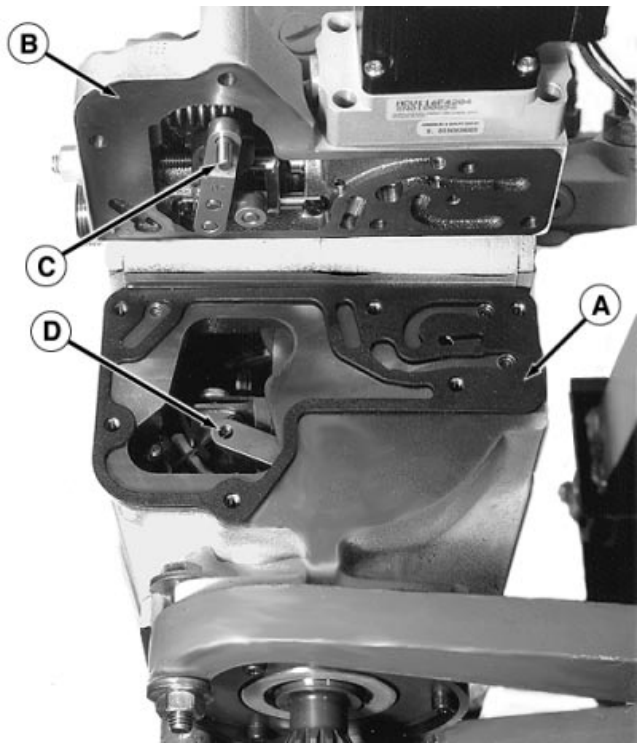
Hydrostatic Pump—Specification

Displacement Control Valve-to-Hydrostatic Pump Cap Screws—Torque ..... 16 N•m (144 lb-in.)

CAUTION: After the displacement control valve has been disassembled, the tracks could rotate when park lock lever is lowered until null adjustment is preformed.

14. Perform Pump Displacement Control Valve Neutral (Null) Adjustment. (See Pump Displacement Control Valve Neutral (Null) Adjustment in Operation and Test Manual, Group 9026-25.)

15. Calibrate transmission controller. (See Calibrate Transmission Controller in Operation and Test Manual, Group 9015-20.)



RW25726 –UN–20JUN97

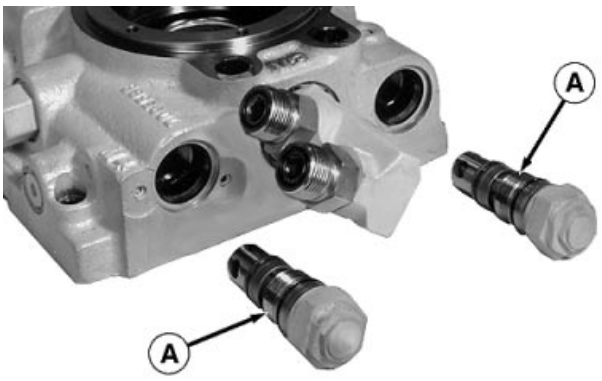
A—Gasket
B—Displacement Control Valve
C—Feedback Linkage Pin
D—Feedback Link

CED,OUO1008,149 –19–13APR99–3/3

Disassemble and Assemble Multi-Function Valve

1. Remove multi-function valves (A) from end cap.

A—Multi-Function Valve (2 used)



RW25776 –UN–21JUN97

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CED,OUO1004,521 –19–26MAR99–1/3

CAUTION: Multi-function valves contain springs under compression. Release spring tension by turning adjusting screw counter clockwise.

2. Use a small screw driver to separate multi-function valve body from poppet assembly.

T118409B –UN–17NOV98

Continued on next page

CED,OUO1004,521 –19–26MAR99–2/3

3. Carefully loosen cap (2) to release pressure on springs (7 and 12). Disassemble valve as shown.

4. Clean valve components and check for any contamination.

NOTE: Other than O-rings, multi-function valve components are not serviceable.

5. If any valve components are damaged, replace the entire valve.

6. Lubricate valve components with clean hydraulic oil.

7. Assemble multi-function valve. Use a vise to carefully press poppet assembly onto valve body. Tighten lock nut (1) to specification.

Specification

Multi-Function Valve Lock Nut—
Torque ..... 16.3 N•m (144 lb-in.)

8. Check valve poppet movement in end of the multi-function valves.

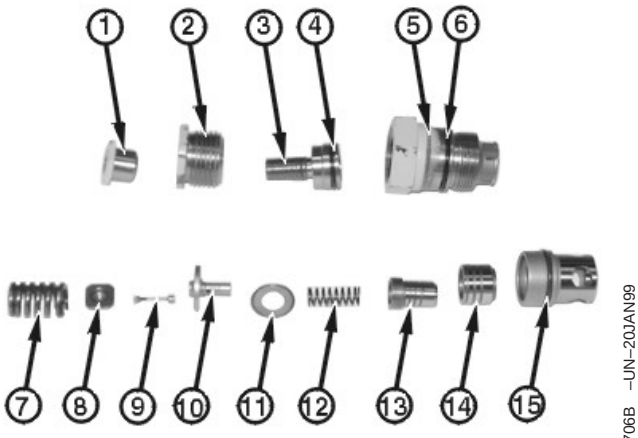
9. Install and tighten multi-function valves to specifications.

Hydrostatic Pump—Specification

Multi-Function Valves—Torque ..... 79 N•m (58 lb-ft)

10. Perform multi-function relief valve test. (See Multi-Function Relief Valve Test in Operation and Test Manual, Group 9026-25.)

11. Calibrate transmission controller. (See Calibrate Transmission Controller in Operation and Test Manual, Group 9015-20.)



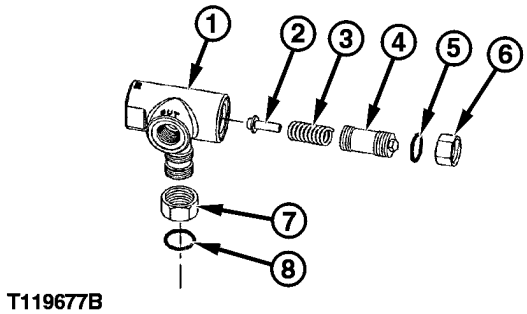
T119706B –UN–20JAN99

1—Lock Nut
2—Cap
3—Bypass Piston
4—O-Ring
5—Valve Housing
6—O-Ring
7—Spring
8—Spring Guide
9—Pressure Limiter Poppet
10—Guide
11—Washer
12—Spring
13—High Pressure Relief Valve Poppet
14—Check Valve Poppet
15—O-Ring

CED,OUO1004,521 –19–26MAR99–3/3

Disassemble and Assemble Neutral Charge Relief Valve

1. Disconnect lines and remove relief valve from top of front hydrostatic pump. Note orientation of valve to aid in assembly.
2. Remove parts (2—8). Clean and inspect all parts for wear or damage.
3. Install new O-rings and assemble valve.
4. Perform neutral charge relief valve pressure test. (See Neutral Charge Relief Valve Pressure Test in Operation and Test Manual, Group 9026-25.)



T119677B

T119677B –UN–19JAN99

1—Valve Housing
2—Poppet
3—Spring
4—Adjusting Screw
5—O-Ring
6—Lock Nut
7—Lock Nut
8—O-Ring

03
0360
29

CED,OUO1004,523 –19–19JAN99–1/1

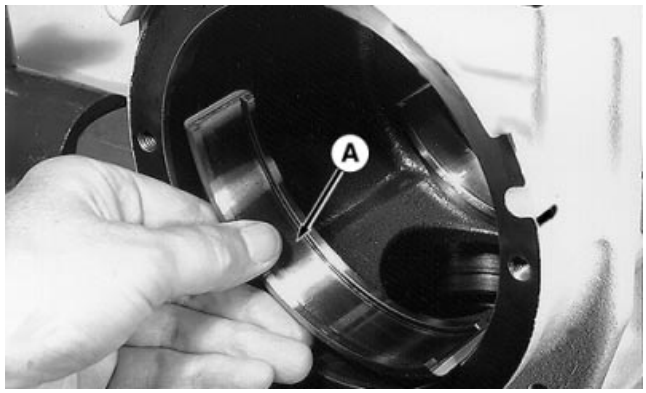
Assemble Hydrostatic Pump

NOTE: Apply clean hydrostatic oil to all internal parts before assembly

IMPORTANT: Bearing cage wears patterns in bearing race and swashplate. Components must be installed in proper position with original orientation.

IMPORTANT: Bearing races must be completely seated in housing.

1. Install bearing races (A) in housing.
2. Lubricate and install bearing cage on the bearing races.



RW25758 –UN–16JUN97

A—Bearing Race (2 used)

Continued on next page

RX16216015,17A –19–28JUN02–1/15

3. Clean slipper guide bearing screw holes on swashplate surface using correct tap.

4. Clean and lubricate slipper running surfaces on swashplate.

IMPORTANT: Slipper guide bearings (C) must be correctly installed. Bronze side of bearing plate is visible during assembly.

5. Position the slipper guide and piston assemblies on the swashplate.

6. Assemble the spacers (B) and the slipper guide bearings (C) as illustrated on one side of the swashplate.

7. Install two new cap screws (D) finger tight.

8. Assemble the other spacers, slipper guide bearing and two new cap screws (D).

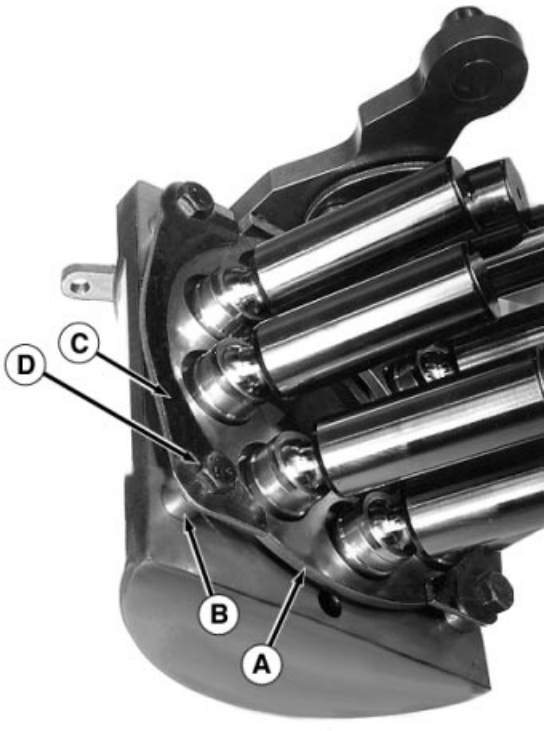
IMPORTANT: The slipper guide and piston slippers must be able to slide freely on the swashplate.

9. Tighten four cap screws (D) to specifications.

Hydrostatic Pump—Specification

Swashplate Bearing Cap Screws—Torque	14 N•m (120 lb-in.)

10. Lubricate the pistons and cylinder block bores in clean hydraulic oil.



T121169 –UN–17APR99

A—Slipper Guide
B—Spacer (4 used)
C—Slipper Guide Bearing (2 used)
D—Cap Screw (4 used)

Continued on next page

RX16216015,17A –19–28JUN02–2/15

IMPORTANT: Wear patterns develop between cylinder block bores and pistons. Pistons must be installed in original cylinder block bores.

11. Align pistons with original cylinder block bores and install assembly (A) in cylinder block (B).

A—Swashplate and Piston Assembly
B—Cylinder Block

RW25746 –UN–12JUN97

RX16216015,17A –19–28JUN02–3/15

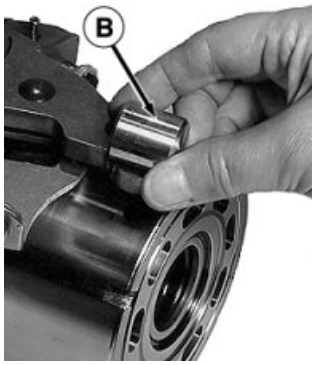
IMPORTANT: Wear patterns develop between servo pistons and servo cylinders. Servo piston must be installed with original orientation.

12. Install servo piston (A) into pump housing.

13. Install bronze slider block (B) onto servo arm of swashplate assembly.

A—Servo Piston
B—Slider Block

RW25747 –UN–11JUN97



RW25748 –UN–11JUN97

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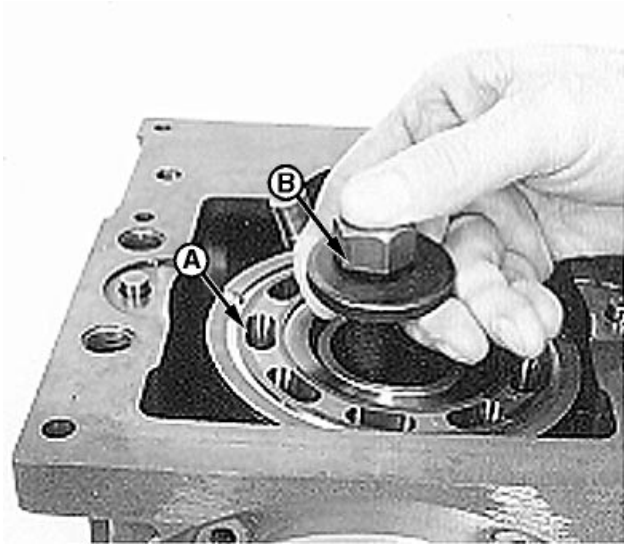
RX16216015,17A –19–28JUN02–4/15

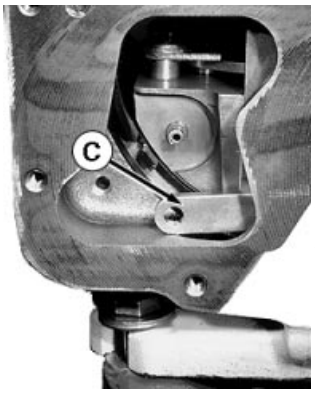
NOTE: A second person will be needed to help align the slider block into the servo piston during swashplate installation.

NOTE: A cap screw (approximately 9 in. long), two flat washers (2-1/2 OD) and nut should be used to assist in lowering cylinder block into housing.

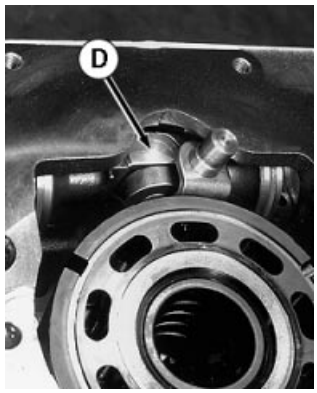
14. Lower swashplate and piston assembly partially into the pump housing.
15. Hold the assembly above the cradle bearings to correctly position the feedback link (C) in the control opening.
16. Align slider block (D) into the servo piston and continue to lower swashplate assembly into position on the bearings.
17. Remove the cap screw and washer used for cylinder block installation.
18. Check for clearance between the servo arm and slider block (D). If no clearance exists, recheck the assembly of the bearing cage and races.
19. Check to make sure swashplate assembly and servo piston slide freely.
20. Lubricate each of the internal bores of the servo cylinder with clean hydraulic oil.
21. Install O-rings on servo cylinder.



T118276 –UN–20NOV98



RW25754 –UN–12JUN97



RW25755 –UN–12JUN97

A—Piston Assembly
B—Assembled Cap Screw Tool
C—Feedback Link
D—Bronze Slider Block

Continued on next page

RX16216015,17A –19–28JUN02–5/15

IMPORTANT: Wear patterns develop between servo pistons and servo cylinders. Servo cylinders must be installed in original positions.

22. Hold the servo piston in position and install the servo cylinders (A) into original bores.

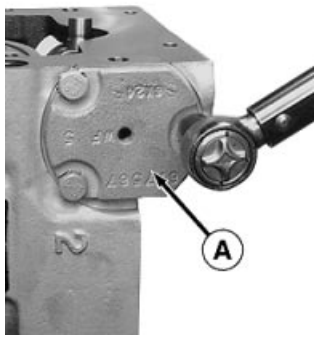
23. Tighten the servo cylinder cap screws to specifications.

Hydrostatic Pump—Specification

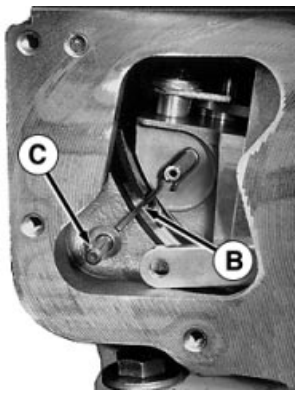
Servo Cylinder Cap Screws—
Torque ..... 33 N•m (24 lb-ft)

24. Move the swashplate to align the spring pin in the swashplate with the slot in the swashplate bearing cage and the pin hole in the housing.

25. Install cage locator link (B) and locator link pin (C).



RW25756 –UN–12JUN97



RW25757 –UN–12JUN97

A—Servo Cylinder
B—Locator Link
C—Locator Link Pin

RX16216015,17A –19–28JUN02–6/15

IMPORTANT: T-Bar must be positioned on top of swashplate.

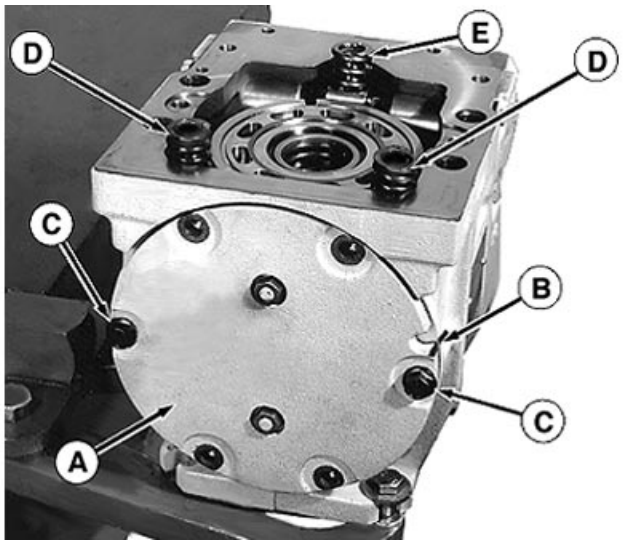
26. Install O-ring on side cover.

27. Install side cover (A) to pump housing making sure O-ring is not damaged during installation.

28. Align side cover and pump housing with mark (B).

29. Install two new cap screws (C) as illustrated to hold cover. Do not fully tighten the cap screws.

30. Install leveling springs (D) and swashplate hold-down spring (E).



T156777B –UN–27JUN02

A—Side Cover
B—Alignment Mark
C—Cap Screw (2 used)
D—Swashplate Leveling Spring (2 used)
E—Swashplate Hold-Down Spring

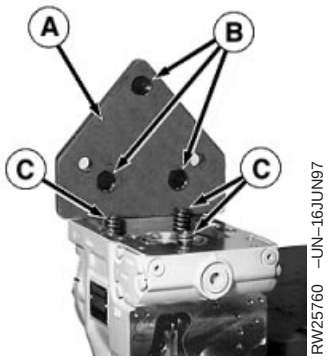
Continued on next page

RX16216015,17A –19–28JUN02–7/15

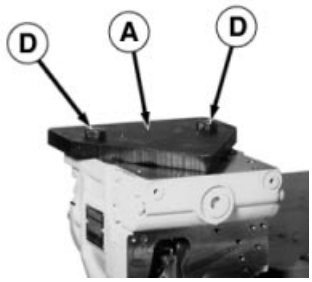
31. Install JDG1094 Leveling Plate (A) to pump housing making sure spring pockets (B) are correctly aligned with springs (C).

32. Install and tighten cap screws (D).

A—JDG1094 Leveling Plate
B—Spring Pocket (3 used)
C—Leveling Spring (3 used)
D—Cap Screw (2 used)



RW25760 –UN–16JUN97



RW25761 –UN–16JUN97

RX16216015,17A –19–28JUN02–8/15

IMPORTANT: The base of the depth micrometer must be positioned on top of the JDG1094 Leveling Plate when measuring zero angle position of the swashplate.

The rod must be located on the swashplate and NOT on the piston retainer plate.

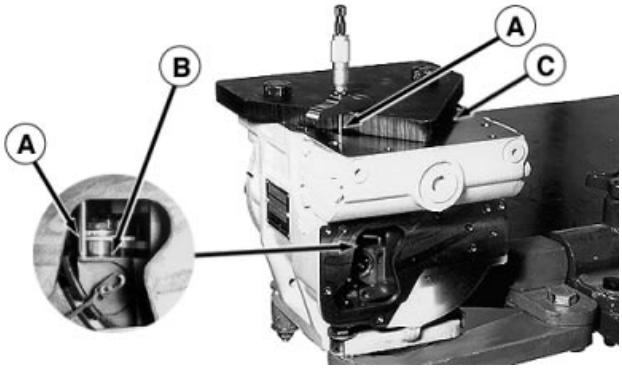
NOTE: Depth gauge must have capability of measuring approximately 100—127 mm (4—5 in.).

33. Measure the zero angle position of the swashplate using a depth micrometer as illustrated making sure the end of the micrometer rod (A) is contacting the swashplate flat surface (B).

34. Measure the other side of swashplate at (C).

IMPORTANT: Measurements must not vary more than 0.025 mm (0.001 in.) on either side of the swashplate.

35. Take a second measurement on each side.



RW25762 –UN–16JUN97

A—Depth Micrometer
B—Swashplate Flat Surface
C—Opposite Measuring Location

Continued on next page

RX16216015,17A –19–28JUN02–9/15

36. Rotate the side cover at location (D) as necessary to obtain zero angle position of swashplate.

37. Once zero angle position has been established. Tighten the two side cover screws (E) to specifications.

Hydrostatic Pump—Specification

Side Cover-to-Pump Housing
Blind Hole Cap Screws—Torque ..... 33 N•m (24 lb-ft)

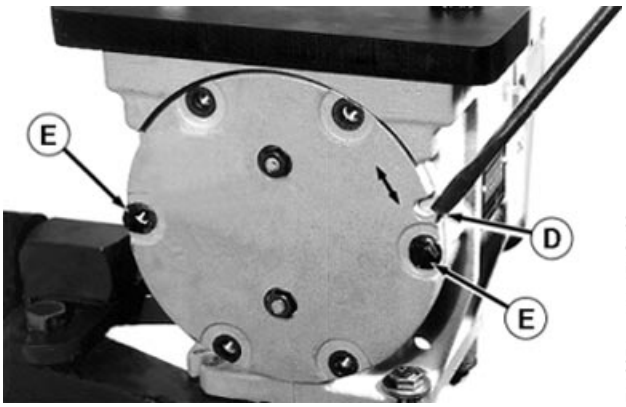
38. Install the remaining new four side cover cap screws to specifications.

Hydrostatic Pump—Specification

Side Cover-to-Pump Housing
Through (Top Two) Hole Cap
Screws—Torque..... 33 N•m (24 lb-ft)

39. Recheck zero angle position to verify side cover did not move while torquing the four side cover cap screws (E).

40. Remove leveling plate.



T118274 –UN–17NOV98

D—Side Cover Rotation
E—Cap Screw (4 used)

RX16216015,17A –19–28JUN02–10/15

41. Install two alignment pins (A).

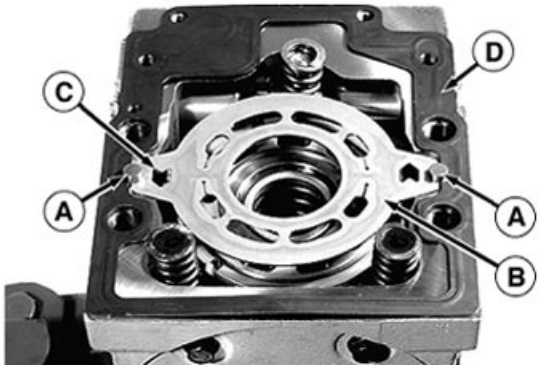
42. Lubricate the running surface of the cylinder block.

NOTE: Make sure valve plate (B) and gasket (D) do not get caught on alignment pins (A) during installation.

NOTE: The arrow cut-outs in the valve plate must point in the direction of pump rotation when viewed from the shaft end.

43. Install valve plate (B) making sure the direction arrows (C) stamped in the valve plate are correctly positioned.

44. Install gasket (D).



T156793B –UN–27JUN02

A—Alignment Pin (2 used)
B—Valve Plate
C—Directional Arrow (2 used)
D—Gasket

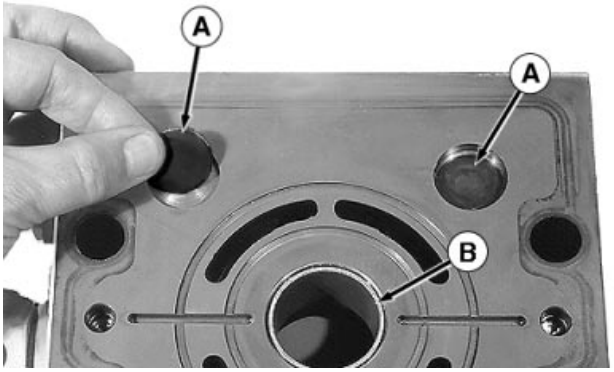
Continued on next page

RX16216015,17A –19–28JUN02–11/15

IMPORTANT: Use hardened swashplate leveler spring shims only. Using other materials for shims may result in damage to pump.

45. Install the leveler spring shims (A) in the end cap pockets using petroleum jelly to hold shims.

46. Lubricate the end cap journal bearing (B) with clean hydraulic oil.



RW25765 –UN–20JUN97

A—Leveler Spring Shim (2 used)
B—End Cap Journal Bearing

RX16216015,17A –19–28JUN02–12/15

47. Install the end cap to the pump housing making sure springs align with the end cap pockets.

48. Install O-ring and adapter (1) on end cap.

49. Install four washers and socket head cap screws (2). Tighten cap screws to specifications.

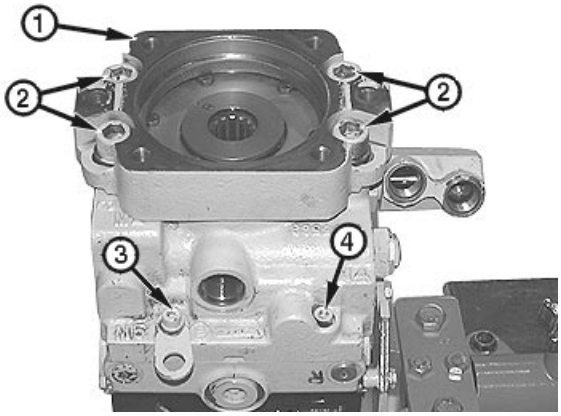
Hydrostatic Pump—Specification

End Cap/Adapter-to-Pump Cap Screws (Large)—Torque ..... 298 N•m (220 lb-ft)

50. Install socket head cap screw (3) with spacer and lifting bracket and cap screw (4). Tighten to specifications.

Hydrostatic Pump—Specification

End Cap-to-Pump Cap Screws (Small)—Torque ..... 33 N•m (24 lb-ft)



T119614B –UN–15JAN99

1—Adapter Plate
2—Socket Head Cap Screws (4 used)
3—Socket Head Cap Screw with Spacer and Lift Bracket
4—Socket Head Cap Screw

Continued on next page

RX16216015,17A –19–28JUN02–13/15

51. Turn the pump 180° to install the shaft.
52. Install the shaft and bearing assembly.
53. Rotate the shaft to insure the rotating assembly turns freely.

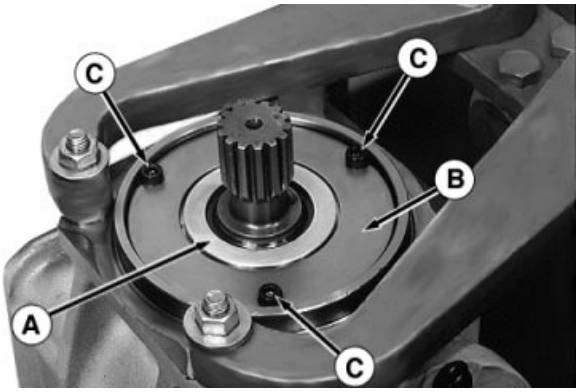
RX16216015,17A –19–28JUN02–14/15

54. Carefully install seal carrier (A) with lip seal.
55. Install retaining plate (B) and socket head cap screws (C). Tighten to specifications.

Hydrostatic Pump—Specification

Input Shaft Seal Carrier Retaining Cap Screw—Torque ..... 16 N•m (144 lb-in.)

56. Install displacement control valve assembly. (See Disassemble and Assemble Displacement Control Valve in this group.)
57. Install speed sensor (front pump only).



A—Seal Carrier
B—Retaining Plate
C—Socket Head Cap Screw (3 used)

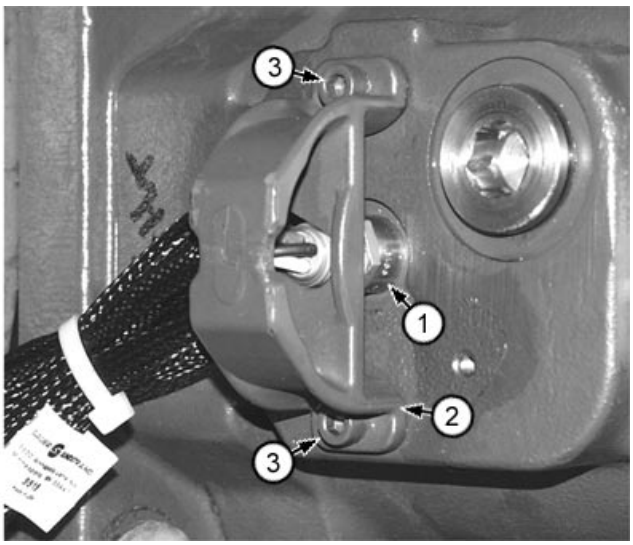
RX16216015,17A –19–28JUN02–15/15

Remove and Install Hydrostatic Motor Speed Sensor

1. Remove rear access plate from machine.
2. Note position sensor guard to aid in assembly.
3. Disconnect speed sensor harness connector.
4. Remove socket head cap screws (3) and sensor guard (2).
5. Loosen sensor lock nut (1) and remove speed sensor.

NOTE: Speed sensor must be adjusted during installation.

6. Install and adjust motor speed sensor. (See Adjust Hydrostatic Motor Speed Sensor in this group.)



1—Sensor and Lock Nut
2—Sensor Guard
3—Cap screw (2 Used)

CED,TX03399,5989 –19–14NOV00–1/1

Adjust Hydrostatic Motor Speed Sensor

NOTE: The speed sensors provide speed and direction information to the transmission controller. It is IMPORTANT that the air gap be adjusted as specified. The speed sensor has two sensing components. The relative position of these two components in relation to the magnetic segments on the speed ring is extremely important. The transmission controller must know machine direction to function properly. It gets this information from the relative phasing of the two outputs from the sensor.

1. Remove sensor guard and disconnect sensor from harness.

NOTE: It may be necessary to use a O-ring pick or turn sensor out several turns to access O-ring.

2. Loosen sensor lock nut and turn out (counterclockwise) until O-ring is free from seat. Back lock nut out and move O-ring until it is at upper position on sensor.

3. Turn sensor in (clockwise) until contact is made with speed ring (FINGER TIGHTEN ONLY).

4. Turn sensor out (counterclockwise) 1/2 turn. Install bracket on sensor and continue to turn out (counterclockwise) until holes in bracket align with housing.

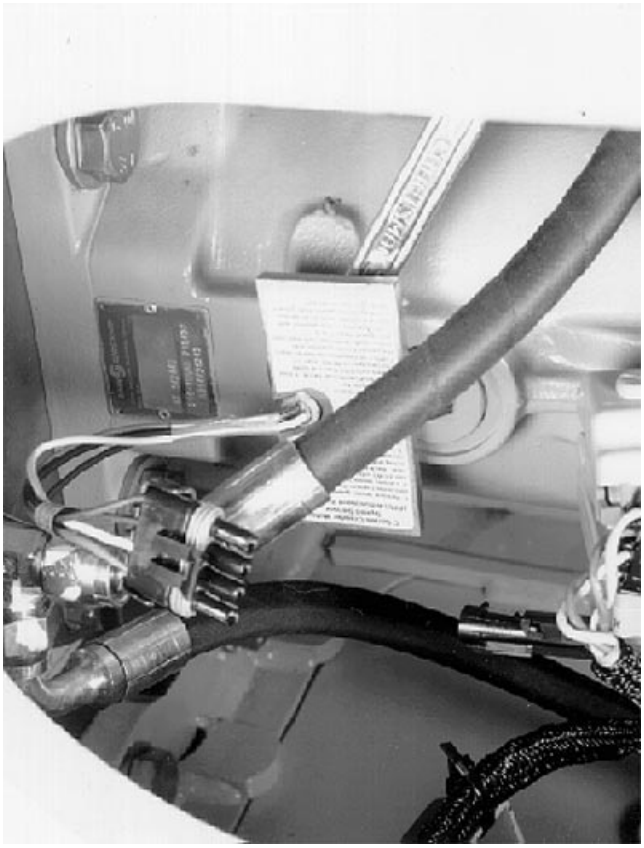
NOTE: Sensor MUST NOT be turned out (counterclockwise) more than one full turn total. If necessary, reposition bracket to keep sensor within 1/2 to 1 full turn out from speed ring.

5. Install sensor guard.

6. Tighten lock nut on sensor.

7. Connect sensor wire harness connector to guard with a tie band.

8. Test left track motor speed sensor. (See Left Hydrostatic Motor Speed Sensor Test Group 9015-15.)



T109073 –UN–15APR97

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CED,TX03399,5990 –19–15NOV00–1/2

9. Test right track motor speed sensor. (See Right Hydrostatic Motor Speed Sensor Test Group 9015-15.)

10. Route all wiring harnesses back to their original location and replace all tie bands that were removed.

NOTE: Recalibrate whenever sensors are adjusted or replaced.

CED,TX03399,5990 –19–15NOV00–2/2

Disassemble Hydrostatic Motor

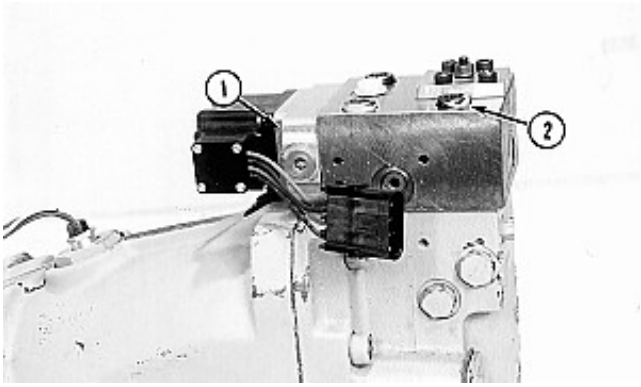
1. Thoroughly clean external surface of motor prior to disassembly.

2. Remove four internal hex screws (1) and pressure control pilot (PCP) from displacement control valve.

IMPORTANT: PCP is serviced as an assembly. DO NOT disassemble.

3. Remove four internal hex screws (2) and motor displacement control valve from housing.

4. Remove motor speed sensor housing and sensor.



T8512AD –UN–27JUN95

1—Internal Hex Screw
2—Internal Hex Screw

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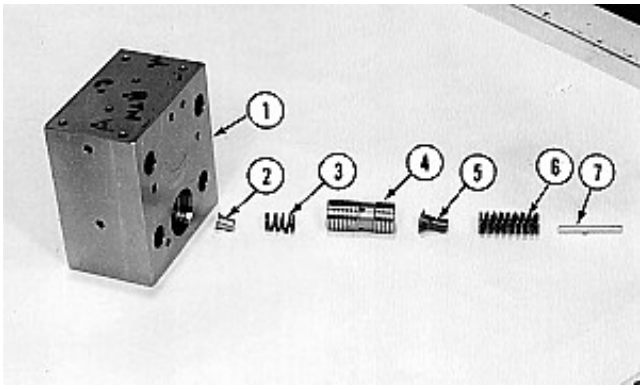
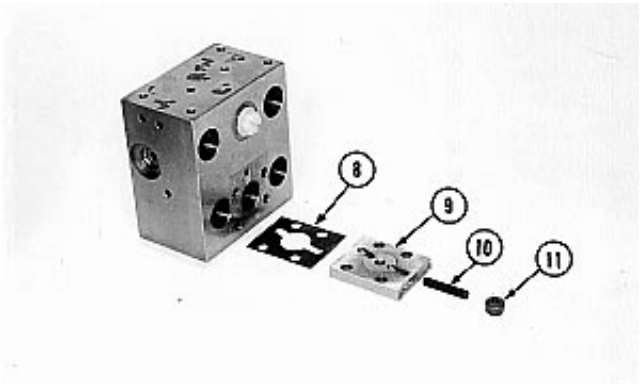
CED,TX03399,5991 –19–28JUN02–1/11



T8512AE –UN–27JUN95



T8512AG –UN–27JUN95

5. Disassemble displacement control valve as shown.
6. Remove plug (12), shuttle ball seat (13) and ball (14).
7. Remove four internal hex screws and parts (8—11).

T8512AI –UN–27JUN95

1—Valve Block
2—Spring Seat
3—Spring
4—Spool
5—Spring Seat
6—Spring
7—Pin
8—Gasket
9—Cover
10—Adjusting Screw
11—Nut
12—Plug
13—Shuttle Ball Seat
14—Ball

Continued on next page

CED,TX03399,5991 –19–28JUN02–2/11

8. Remove four internal hex screws (9) and cover (7) from end cap.

9. Remove flushing valve components (1—4).

NOTE: If plug on either end of flushing valve is replaced, use the same length as removed. Early machines used a longer plug.

10. Remove operating charge relief valve (8).

11. Replace O-rings (1, 5, 6 and 10).

12. Install cover and screws. Tighten screws to specification.

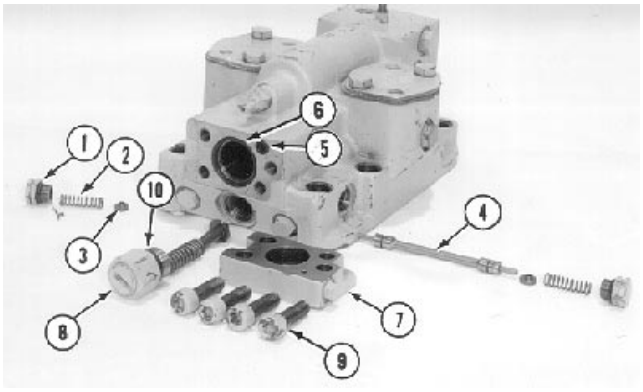
Specification

Hydrostatic Motor End Cap Cover
Cap Screws—Torque ..... 110 N•m (81 lb-ft)

13. Install flushing valve components (1—4). Tighten plugs to specification.

Specification

Flushing Valve Plug—Torque..... 41 N•m (30 lb-ft)



T8517AF –UN–10JUL95

1—O-Ring
2—Spring
3—Spring Seat
4—Spool
5—O-Ring
6—O-Ring
7—Cover
8—Operating Charge Relief Valve
9—Screw (4 used)
10—O-Ring

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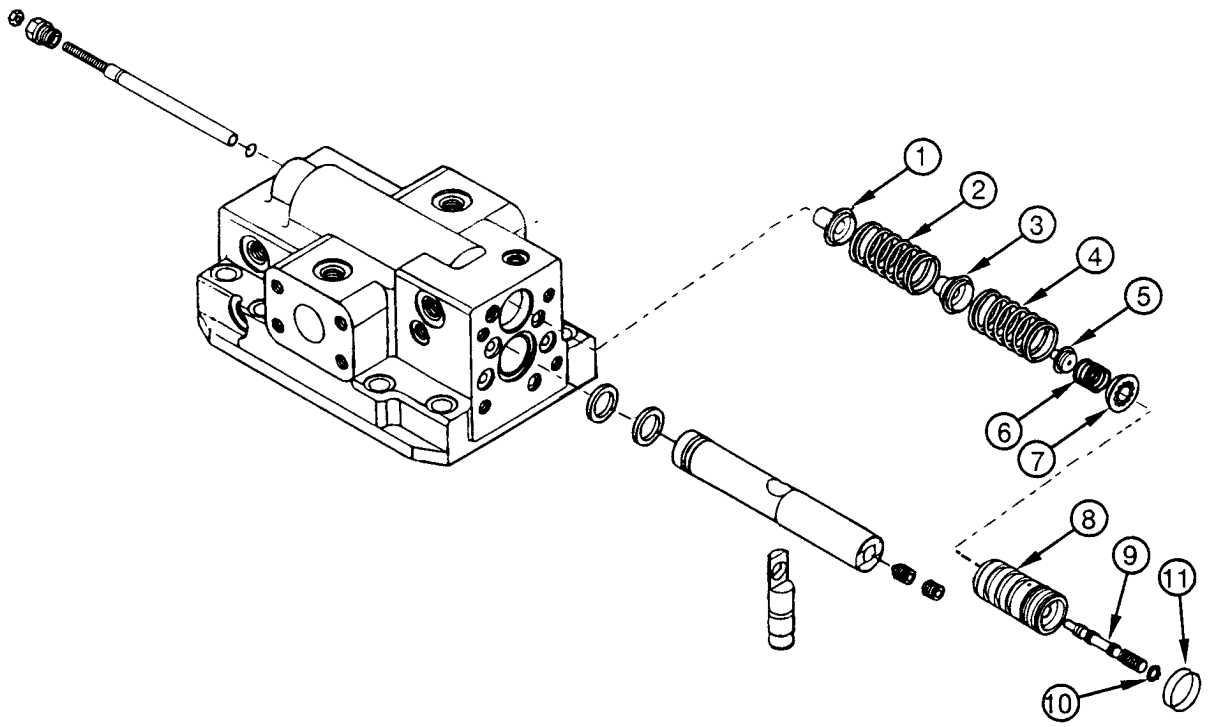
CED,TX03399,5991 –19–28JUN02–3/11



T100264

T100264 –UN–07FEB96

1—Spring Guide
2—Spring
3—Spring Guide
4—Spring
5—Spring Guide
6—Spring
7—Spring Guide
8—Valve Body
9—Valve Spool
10—O-Ring
11—Bushing

14. Remove end cap components (1—11).

Continued on next page

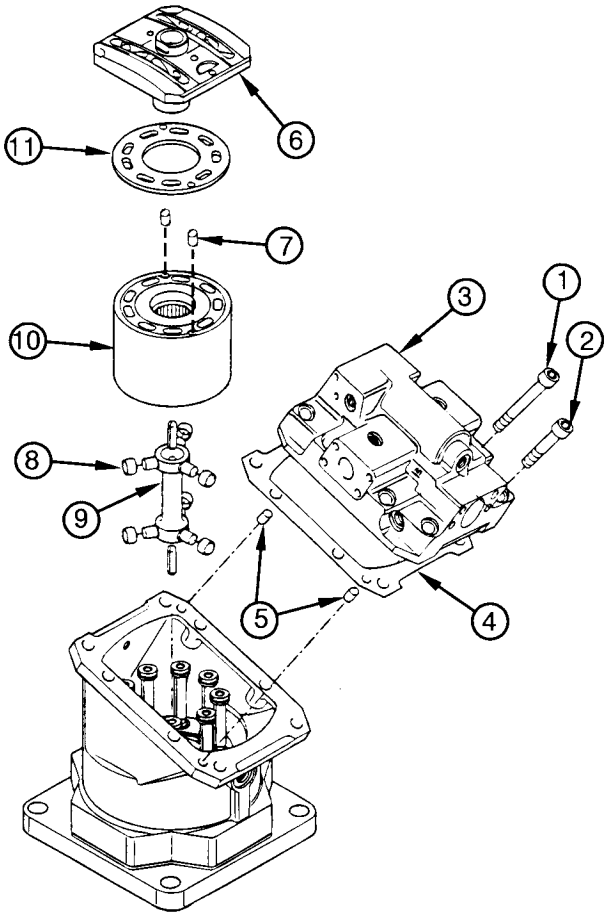
CED,TX03399,5991 –19–28JUN02–4/11

15. Scribe a line between end cap and housing to aid in assembly. Remove screws (1 and 2) retaining end cap assembly to motor housing. Remove end cap (3), gasket (4) and alignment pins (5).

IMPORTANT: Special attention should be given to the orientation of the segment (6) with end cap and housing, alignment pins (7), rollers (8) with synchronizing shaft (recess faces the center-line of the shaft) and synchronizing shaft (9) with cylinder block (10) and output shaft.

16. Remove hydrostatic motor parts (6—11) as shown.

1—Cap Screw (4 used)
2—Cap Screw (4 used)
3—End Cap
4—Gasket
5—Alignment Pin (2 used)
6—Segment
7—Alignment Pins (2 used)
8—Rollers
9—Synchronizing Shaft
10—Cylinder Block
11—Bearing Plate



T8506AC (CV)

T8506AC –UN–10JUL95

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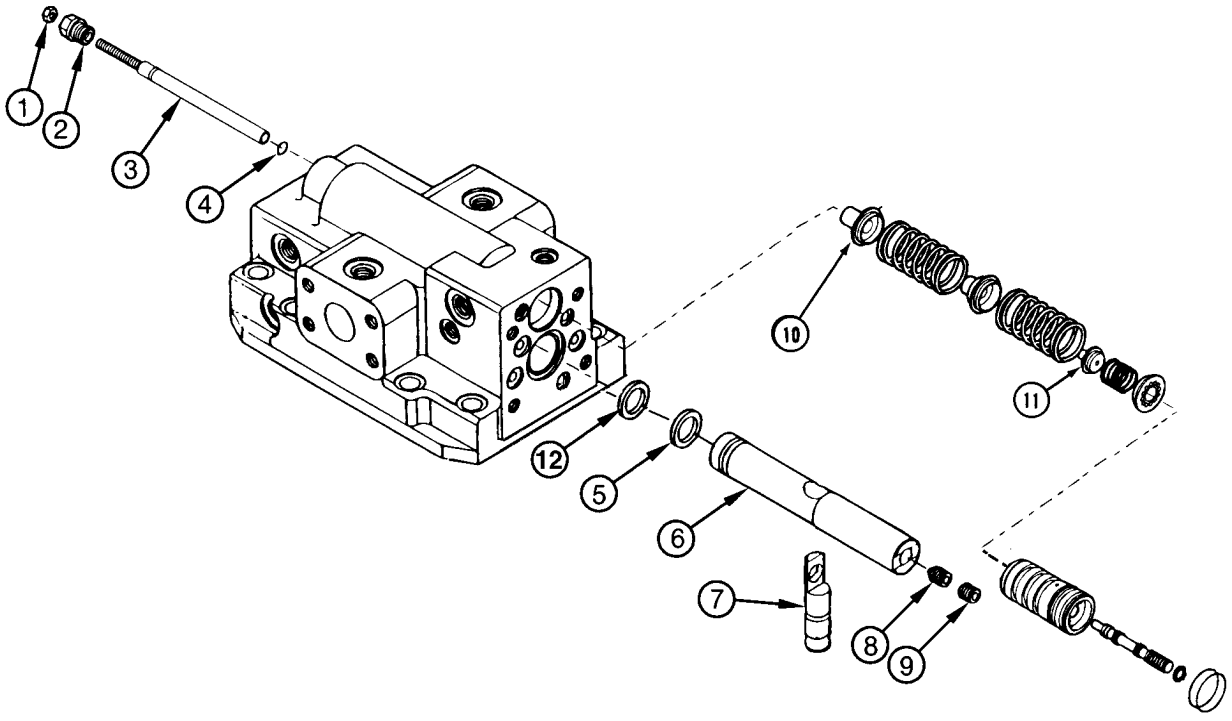
CED,TX03399,5991 –19–28JUN02–5/11



T100265

T100265 –UN–07FEB96

1—Lock Nut	**4—O-Ring**	**7—Setting Lug**	**10—Spring Guide**
2—Nut	**5—Glide Ring**	**8—Cone Point Set Screw**	**11—Spring Guide**
3—Shaft	**6—Servo Piston**	**9—Lock Screw**	**12—O-Ring**

17. Remove shaft (3) with lock nut (1) as an assembly. Replace O-ring (4).

18. Remove lock screw (9) and cone point set screw (8) from servo piston (6).

19. Remove setting lug (7) and servo piston from end cap. Inspect glide ring (5) for wear or damage and replace if necessary.

20. Carefully install a new O-ring (12) and a new glide ring (5) on the servo piston (6). Lubricate the glide ring with clean hydrostatic oil and install the servo piston into the end cap.

21. Install the setting lug (7) into the servo piston from inside the end cap. The offset of the setting lug must be located away from the control end of the end cap. Install spring guide (10) through setting lug.

22. Install the cone point set screw (8) so that the point enters the groove of the setting lug. DO NOT tighten set screw at this time.

NOTE: If shaft with adjusting nut was disassembled, it MUST be adjusted when end cap is completely assembled. Loosen lock nut (1) and adjust shaft (3) by turning internal hex on end of shaft clockwise until shaft bottoms. Turn shaft counterclockwise four turns and tighten lock nut.

23. Install shaft with adjusting nut through setting lug and spring guide. Tighten to specifications.

Specification

Shaft Adjusting Nut—Torque..... 20 N•m (15 lb-ft)

Continued on next page

24. Tighten cone point set screw to specification. Install and tighten lock screw to specification.

Specification

Servo Piston Cone Point Set Screw—Torque	5 N•m (44 lb-in.)
Valve Segment Spindle—Torque	36 N•m (27 lb-ft)

25. Scribe a line on housing and flange to aid in assembly. Remove six internal hex screws (1) from flange. Install two M12 x 50 mm screws into flange holes (7). Alternately tighten screws to remove flange from housing.

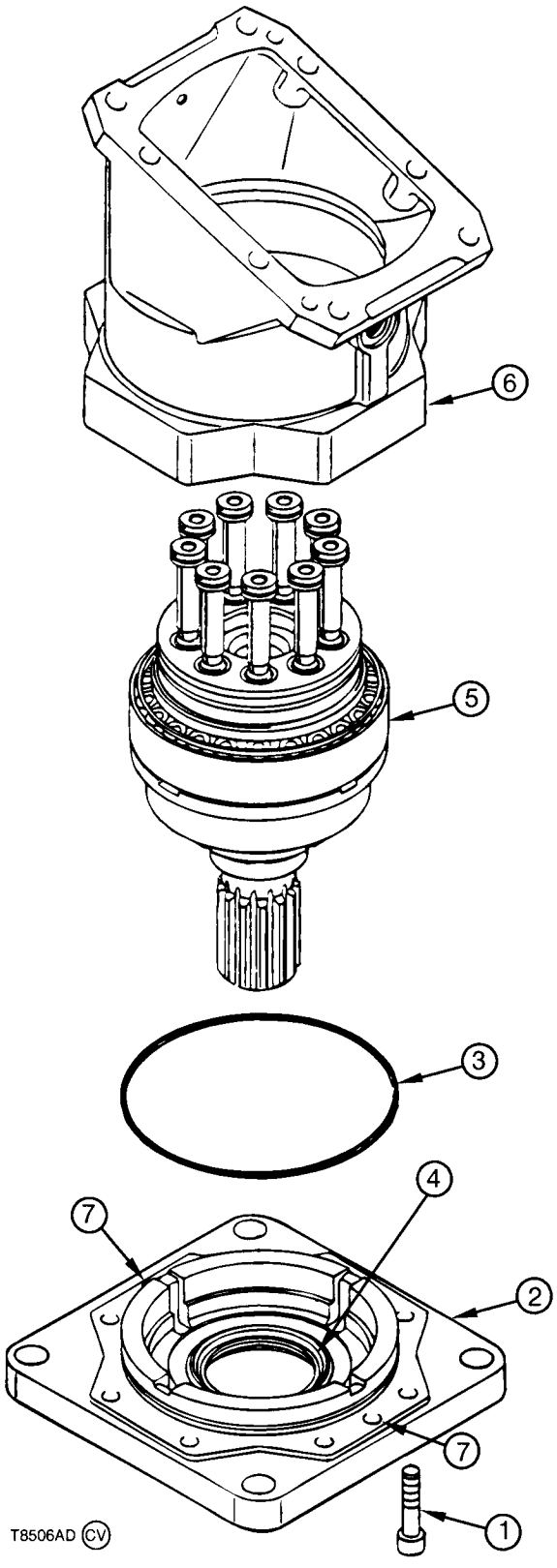
26. Remove old seal (4) from flange. Once removed, the seal is not reusable.

27. Inspect seal area for any damage or nicks.

28. Apply flexible sealant to outer diameter of new seal. Use a press to install new seal into flange until seal bottoms in flange. Be careful not to damage seal.

29. Install new O-ring (3) on flange.

1—Cap Screw (6 used)
2—Flange
3—O-Ring
4—Shaft Seal
5—Shaft Assembly
6—Housing
7—Flange Holes



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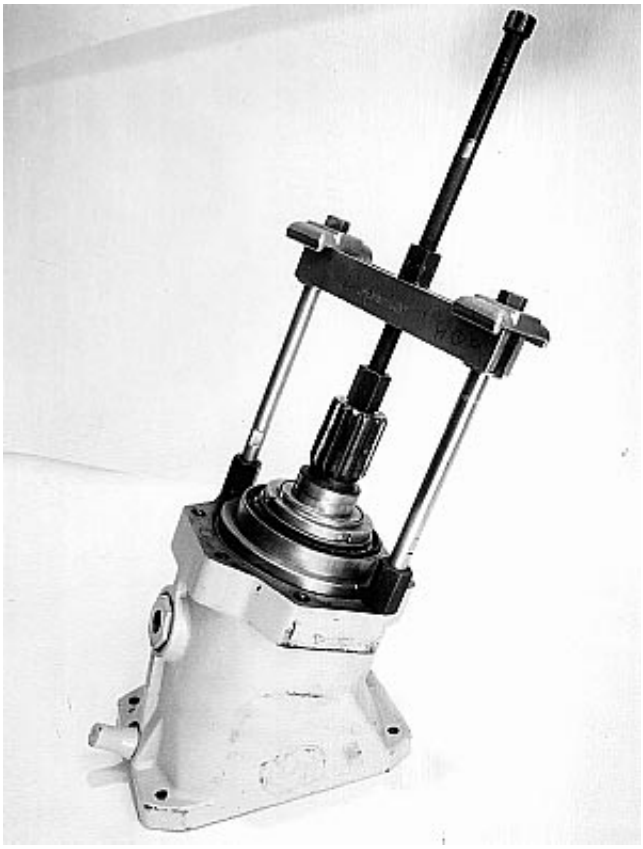
30. Pull shaft assembly out of main housing, taking care to not damage the shaft and speed sensor ring. DO NOT damage piston sockets. Use attachments from the D01173AA 17-1/2 Ton Puller Set and JT01800 Driver Set.



T8514AB –UN–30JUN95

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CED,TX03399,5991 –19–28JUN02–8/11

31. Remove piston rings (1) from pistons (4) using a small pair of retaining ring pliers and an O-ring pick.

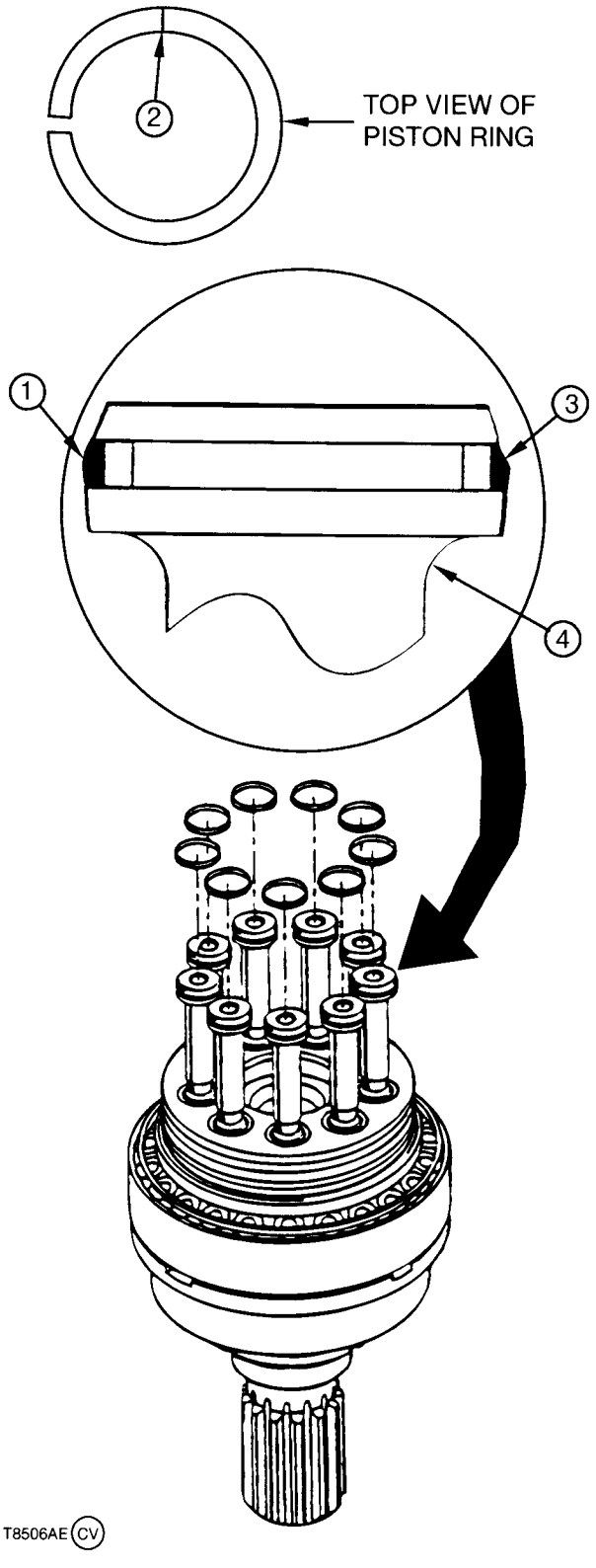
IMPORTANT: When installing new spherical piston rings, the spherical surface (3) MUST conform to the shape of the piston.

A radial identification mark (2) is provided on the outer edge of the piston ring.

32. Install new piston rings on pistons. The ends of each piston ring MUST NOT overlap each other.

NOTE: Shaft assembly with exception to the piston rings is serviced as an assembly.

1—Piston Ring
2—Identification Mark
3—Spherical Surface
4—Piston



T8506AE –19–10JUL95

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CED,TX03399,5991 –19–28JUN02–9/11

33. Inspect the bronze surface of the bearing plate (1) for damage and excessive wear. The sealing surfaces must be free from scratches and nicks. The locating pin holes must not be worn. Replace the bearing plate if damaged or worn.

34. Inspect the valve segment (2) sealing surfaces and spindle (3) for damage or wear. Check that the spindle is located correctly in the valve segment by measuring dimension “A”. If this dimension is not within the specification, the spindle has moved in the valve segment and the assembly must be replaced.

Specification

Valve Segment Spindle
Dimension “A”—Length ..... 39.4—39.6 mm (1.55—1.56 in.)

35. Inspect cylinder block (4) for wear or damage. The piston bores must be smooth. The bearing plate surface must be free from scratches or nicks, and the holes for the bearing plate locating pins must not be worn. The races for the synchronizing shaft rollers must not be worn.

IMPORTANT: Remove speed ring ONLY if replacement is necessary.

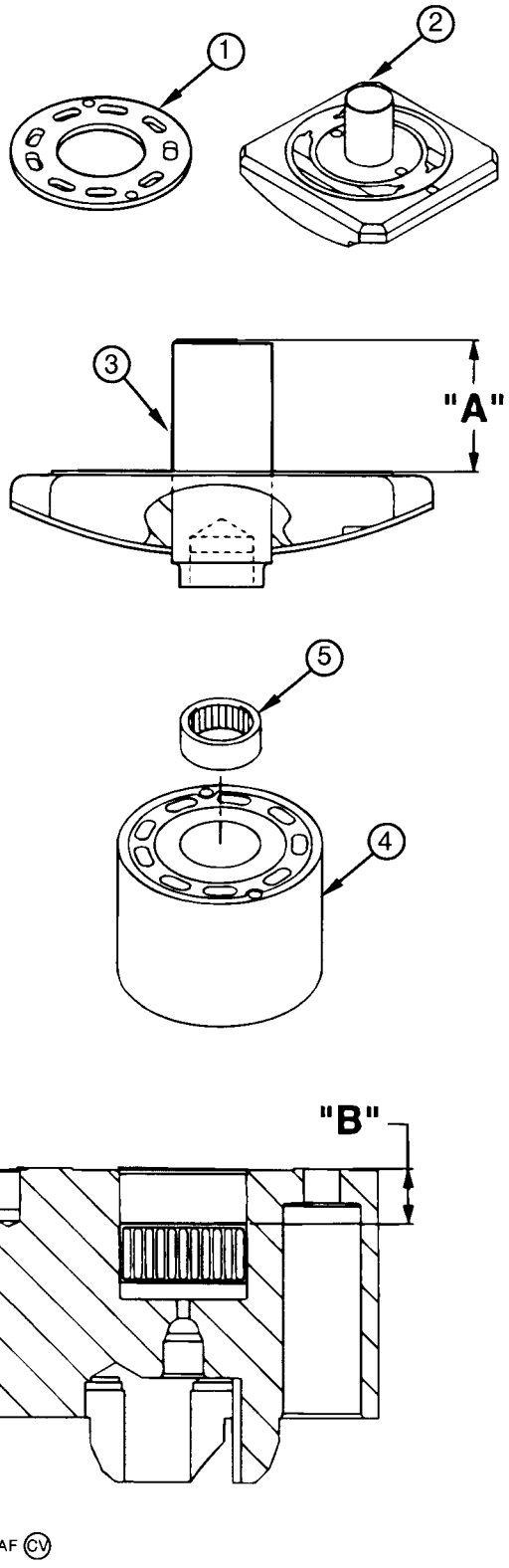
DO NOT damage sealing surface of cylinder block.

36. Place cylinder block on a clean soft surface (cardboard or shop towel) to replace speed ring. Be careful NOT to damage sealing surface of cylinder block.

37. Remove speed ring from cylinder block by gently tapping on ring using a hammer and brass drift.

38. Place new speed ring on chamfered edge of cylinder block.

1—Bearing Plate
2—Valve Segment
3—Spindle
4—Cylinder Block
5—Cylinder Block Bearing



T8506AF CV

T8506AF –UN–12JUL95

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CED,TX03399,5991 –19–28JUN02–10/11

IMPORTANT: To prevent damage to speed ring use installation tool JDG1332 Speed Ring Installer.

39. Carefully place JDG1332 Speed Ring Installer over speed ring and cylinder block. Alternately tap edge of installer using a rubber mallet to seat speed ring. Speed ring will be located correctly when installer is bottomed on cylinder block.

40. Inspect cylinder block bearing (5). If it requires replacement, remove bearing using a suitable puller. DO NOT damage the bearing plate surface of the cylinder block.

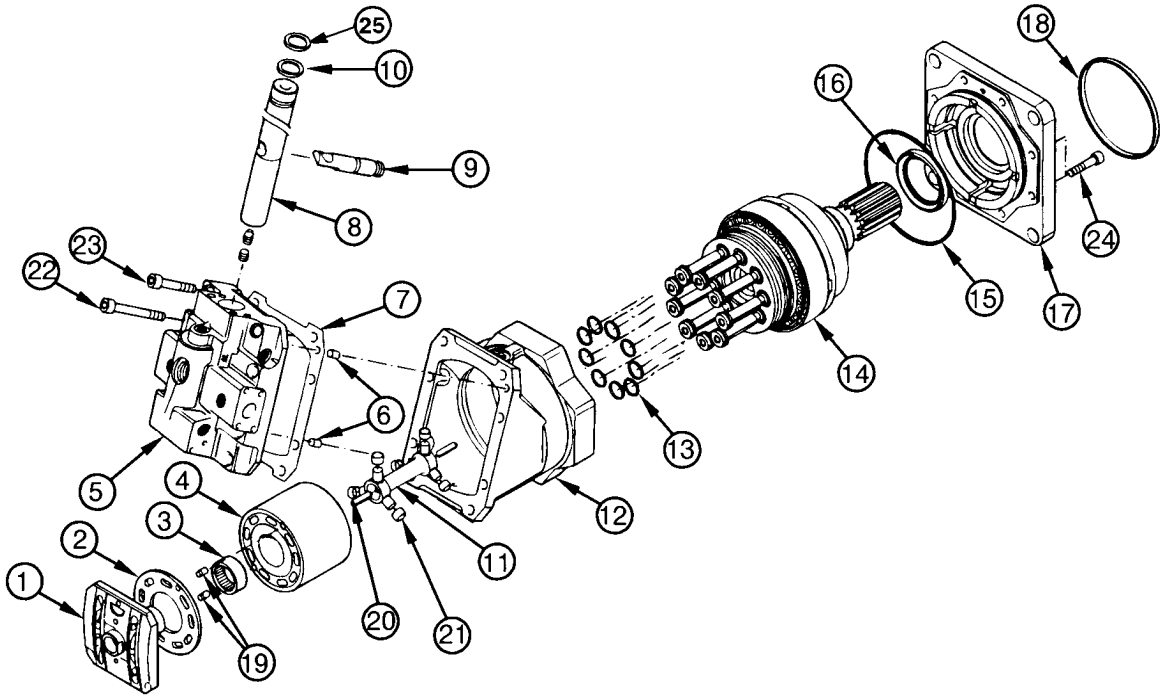
    Press a new bearing (if removed) into the cylinder block until it is located the proper distance (dimension “B”) below the bearing plate.

Specification

Cylinder Block Bearing Dimension
“B”—Depth..... 14.5—15.0 mm (0.57—0.59 in.)

CED,TX03399,5991 –19–28JUN02–11/11

Assemble Hydrostatic Motor



T100266

T100266 –UN–07FEB96

1—Segment
2—Bearing Plate
3—Bearing
4—Cylinder Block
5—End Cap
6—Dowel Pin (2 used)
7—Gasket
8—Servo Piston
9—Setting Lug
10—Glide Ring
11—Synchronizing Shaft
12—Housing
13—Piston Ring (9 used)
14—Shaft Assembly
15—O-Ring
16—Shaft Seal
17—Flange
18—O-Ring
19—Alignment Pin (2 used)
20—Synchronizing Shaft Support Pin (2 used)
21—Roller (6 used)
22—Set Screw
23—Cone Point Set Screw
24—Screw (8 used)
25—O-Ring

Continued on next page

CED,TX03399,5995 –19–14JUL04–1/9

NOTE: Apply clean hydrostatic oil to all internal parts prior to assembly.

1. Position shaft assembly (1) in housing (2). Align scribe mark between housing and flange (5). Install flange over shaft assembly as far as possible.

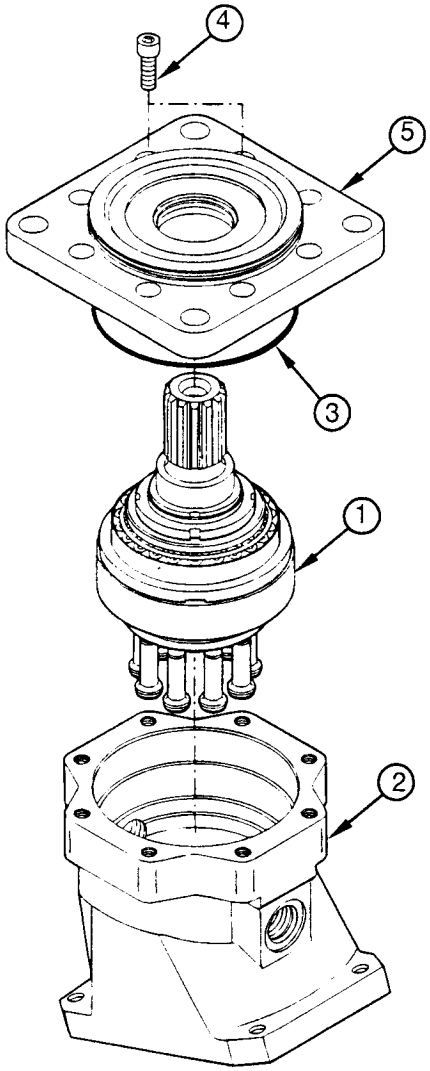
   Install two screws (M12 x 65 mm) 180° apart on flange. Alternately tighten screws until bottomed to seat flange and shaft assembly. Remove two 65 mm screws and repeat procedure using 50 mm screws. Remove screws.

   Install eight screws (4). Alternately tighten screws to seat shaft assembly and flange against housing. Torque screws to specification.

Specification

Flange-to-Motor Housing Cap Screw——Torque ..... 110 N•m (81 lb-ft)

1—Shaft Assembly
2—Housing
3—O-Ring
4—Screw (8 used)
5—Flange



T8506AG

T8506AG –UN–30JUN95

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CED,TX03399,5995 –19–14JUL04–2/9

2. Install synchronizing shaft support pin (1) into the motor shaft assembly (5) and retain with petroleum jelly.

IMPORTANT: The recess (3) on each roller MUST be positioned to face the center-line of the synchronizing shaft.

3. Install the synchronizing shaft rollers (2) on the journals of the synchronizing shaft and retain with petroleum jelly. Position each roller with its outside edge even with the end of the synchronizing shaft journal.

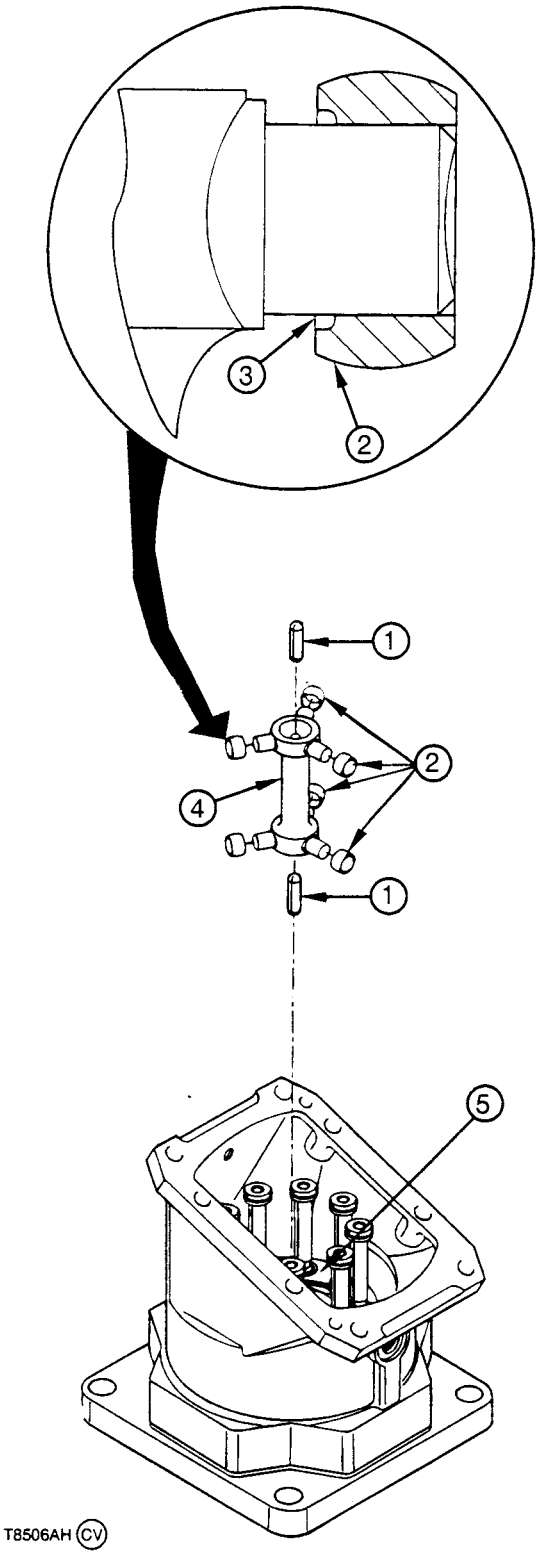
4. Install the second synchronizing shaft support pin (1) into the recess of the synchronizing shaft and retain with petroleum jelly.

5. Install the synchronizing shaft and rollers into the motor shaft (5). The cylinder block end of the shaft is larger than the motor shaft end.

6. The rollers must enter the races in the motor shaft insert, and the recess in the end of the synchronizing shaft must engage the support pin.

   Tip and rotate the synchronizing shaft in all directions to check for binding. The synchronizing shaft rollers must move freely in the races in the motor shaft insert.

1—Support Pin
2—Rollers
3—Recess
4—Synchronizing Shaft
5—Motor Shaft Assembly



T8506AH CV

T8506AH –UN–10JUL95

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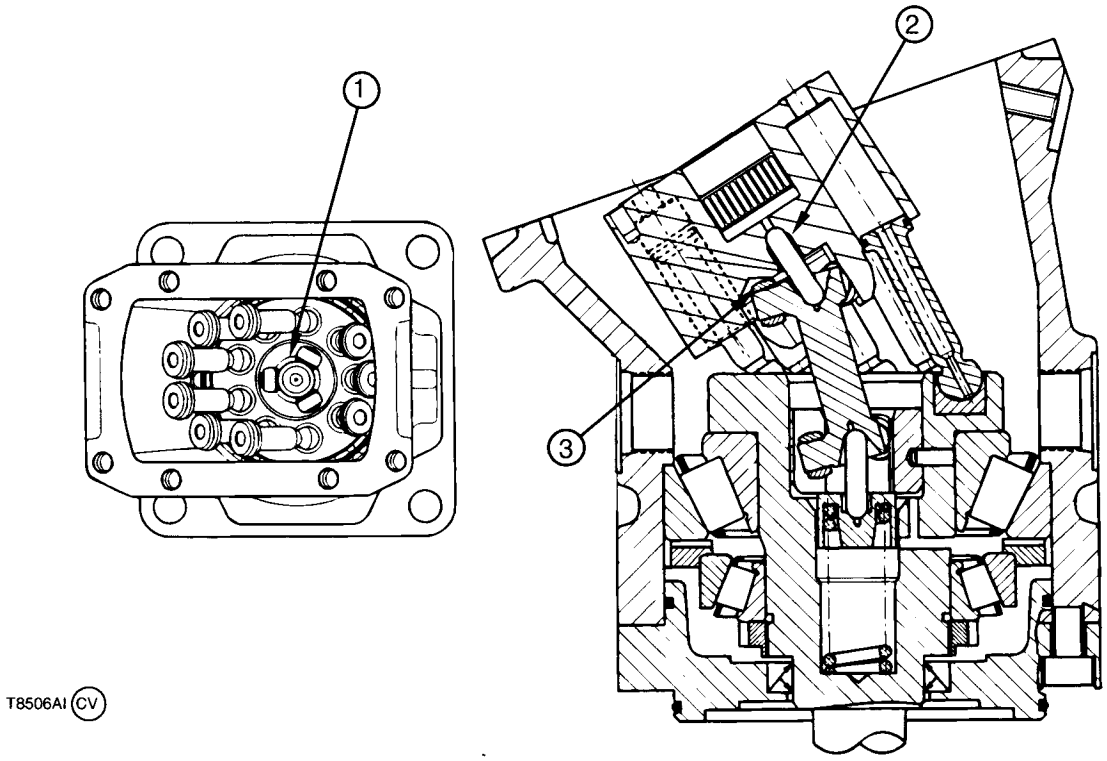
CED,TX03399,5995 –19–14JUL04–3/9



1—Motor Shaft **2—Synchronizing Shaft Support Pin** **3—Synchronizing Shaft Rollers**

7. Position the motor shaft (1) in the housing as shown. Tip the three pistons closest to the highest side of housing.

8. With the synchronizing shaft supported in the motor shaft, install the cylinder block and its synchronizing shaft support pin (2) onto the pistons and synchronizing shaft. The cylinder block must be positioned so the synchronizing shaft rollers will enter their races in the block, while each piston enters its corresponding bore in the block.

NOTE: A brass rod may be inserted through the cylinder block to guide the pistons into position.

9. Start with the six pistons closest to the lower part of the end cap mounting surface. After the six pistons enter their bores, tilt the cylinder block so the synchronizing shaft rollers (3) enter their races in the cylinder block, and the support pin enters its recess in the synchronizing shaft.

NOTE: Apply clean hydrostatic oil to all cylinder block bores.

10. Lift the cylinder block slightly and guide the three remaining pistons into their bores.

    After the last piston is in position, check the position of the rollers at highest side of housing. Maintain an inward force on the cylinder block and carefully push it toward the highest part of the housing to check that all synchronizing shaft rollers are in position.

    If cylinder block is properly assembled, there will be very little (if any) rotational free-play between the block and the motor shaft.

Continued on next page

11. Install the bearing plate alignment pins (1) into cylinder block. The longer end of each shouldered pin is installed into block.

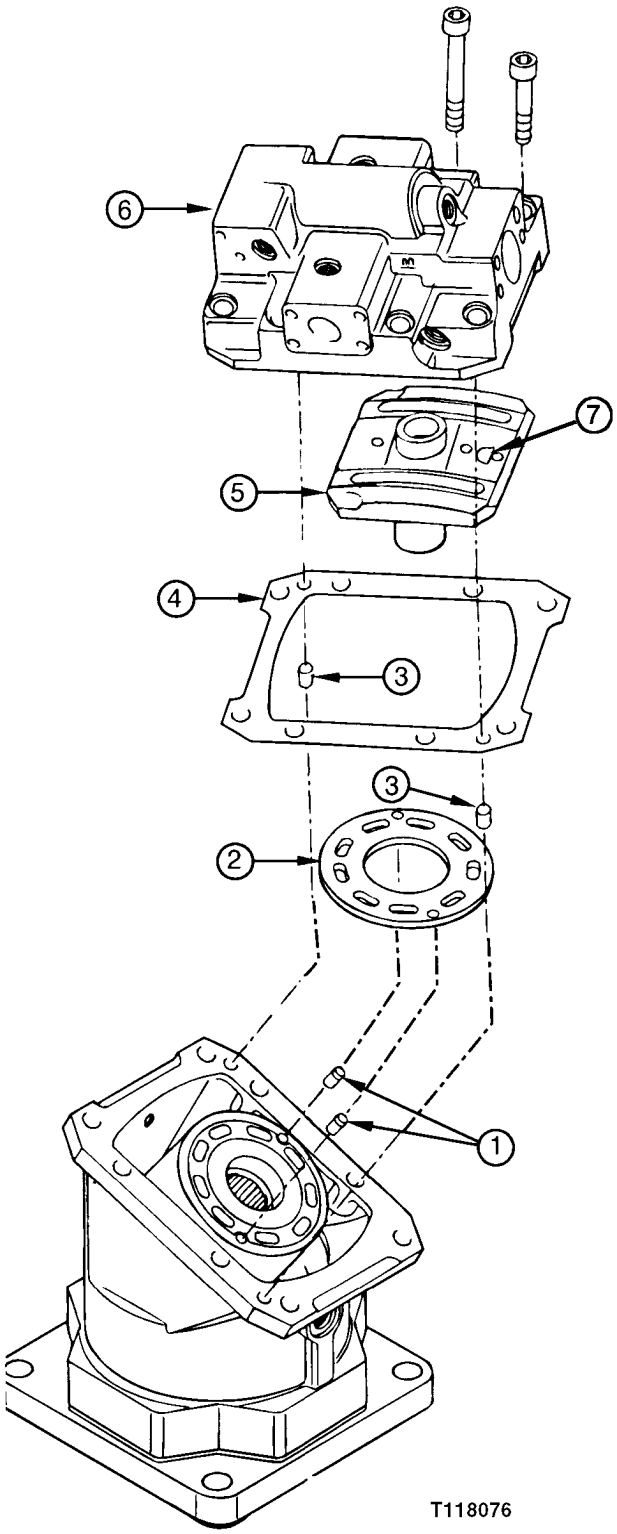
12. Install the bearing plate (2) on the cylinder block with the steel side facing toward the block. Lubricate the bronze side of the plate with clean hydrostatic oil.

13. Install end cap alignment pins (3) and gasket (4). Carefully locate the cylinder block against highest part of housing.

IMPORTANT: DO NOT allow the pistons or synchronizing shaft rollers to fall out of position.

14. Apply petroleum jelly to mating surfaces of valve segment and end cap. Install the valve segment (5) with hole (7) on opposite side of speed sensor, into the end cap (6) so the spindle engages the setting lug in the servo piston. Locate the valve segment and servo piston in the approximate center of its travel.

1—Alignment Pin (2 used)
2—Bearing Plate
3—Alignment Pin (2 used)
4—Gasket
5—Valve Segment
6—End Cap
7—Hole



T118076 –UN–28OCT98

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CED,TX03399,5995 –19–14JUL04–5/9

15. Apply clean hydrostatic oil to valve segment and bearing plate mating surfaces. Install end cap assembly and valve segment. The spindle must engage the bearing in the cylinder block.

IMPORTANT: DO NOT allow the pistons or synchronizing shaft rollers to fall out of position.

16. Install correct length screws in corresponding locations.

NOTE: The internal spring in the motor shaft should hold the end cap away from the housing a short distance.

17. Tighten the screws by hand in the sequence shown (1—8) while rotating the motor shaft to ensure proper positioning of the synchronizing shaft rollers.

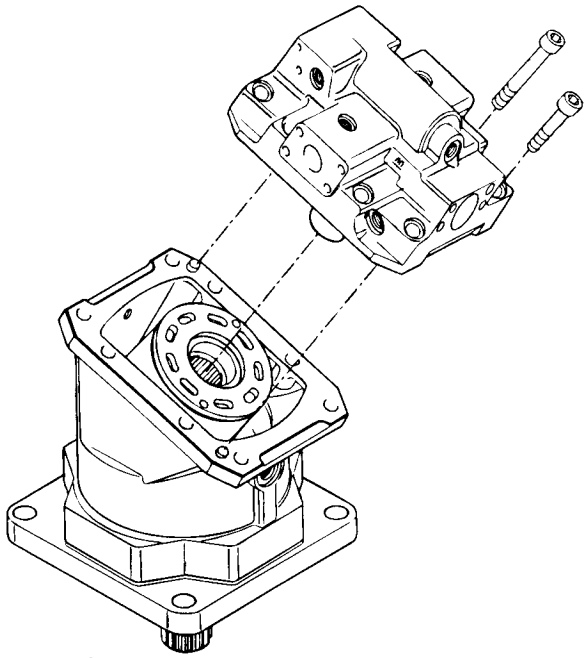
IMPORTANT: DO NOT force the end cap into position on the housing.

18. Tighten screws using sequence shown to approximately 1/2 final torque value. Repeat sequence and tighten to final torque.

Specification

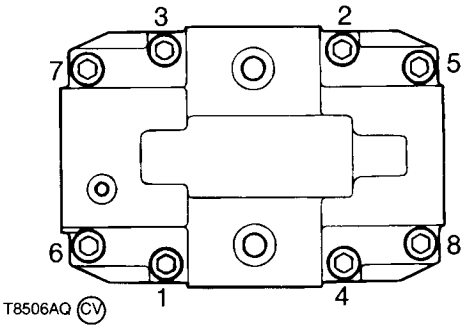
Motor End Cap-to-Housing Screw——Torque ..... 135 N•m (100 lb-ft)

19. Rotate shaft 360° to check final assembly.



T8506AP (CV)

T8506AP –UN–10JUL95



T8506AQ (CV)

T8506AQ –UN–10JUL95

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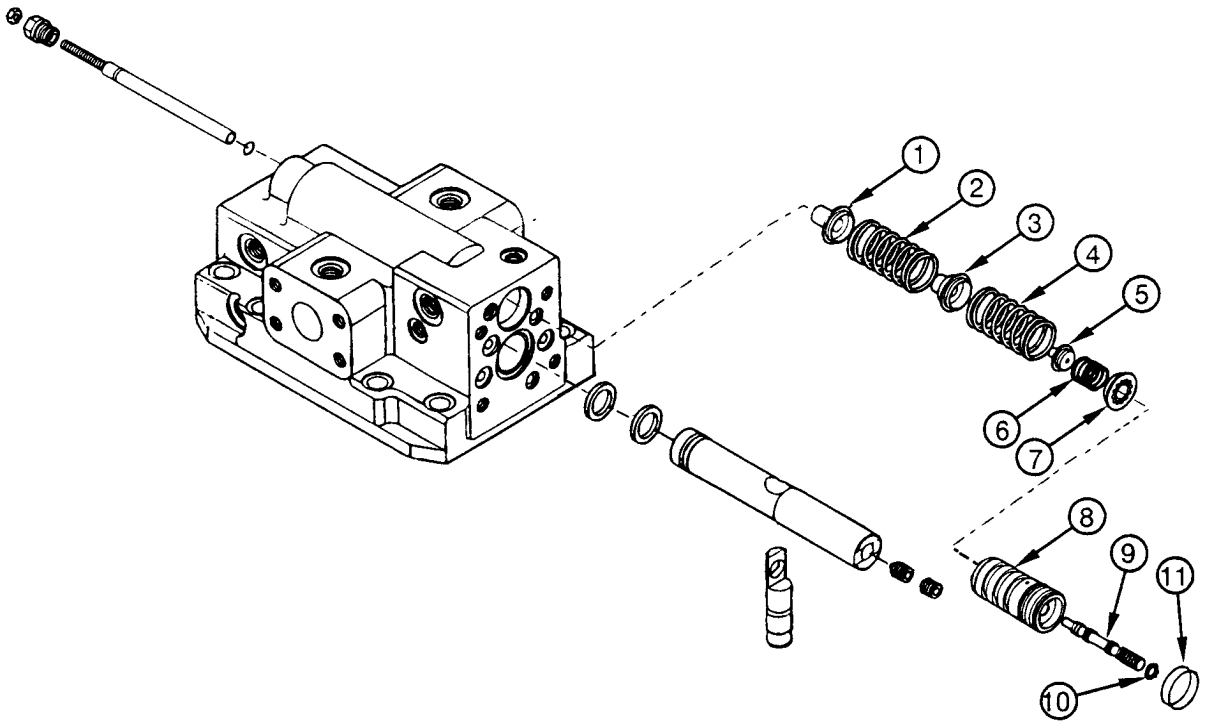

T100264

T100264 –UN–07FEB96

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0360
57

1—Spring Guide
2—Spring
3—Spring Guide
4—Spring
5—Spring Guide
6—Spring
7—Spring Guide
8—Valve Body
9—Valve Spool
10—O-Ring
11—Bushing

NOTE: Spring guide (1) was installed earlier in assembly.

20. Install parts (2—11).

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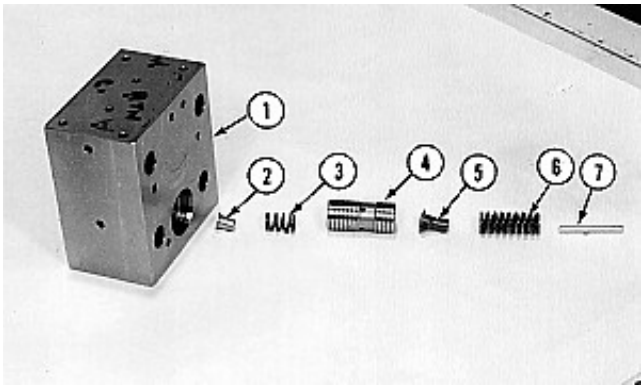
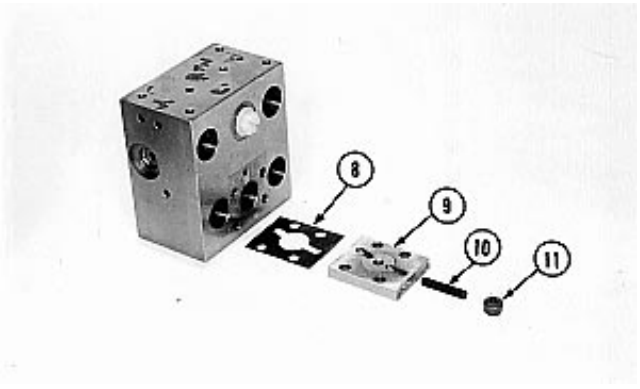
CED,TX03399,5995 –19–14JUL04–7/9



T8512AE –UN–27JUN95



T8512AG –UN–27JUN95

21. Install ball (14) and shuttle ball seat (13). Tighten seat to specification. Install and tighten plug (12) to specification.

Specification

Shuttle Ball Seat—Torque	40—49 N•m
	30—36 lb-ft
Shuttle Ball Plug—Torque	37 N•m
	27 lb-ft

22. Install adjusting screw (10) into cover (9) until end of screw is specified distance from exterior surface of cover. Install new nut (11) on adjusting screw and tighten. Install new gasket (8), cover and screws. Alternately tighten screws to specification.

Specification

Adjusting Screw—Distance	10 mm (0.399 in.)
Torque	16 N•m (142 lb-in.)

23. Assemble displacement control valve parts (1—7) as shown.

T8512AI –UN–27JUN95

1—Valve Block
2—Spring Seat
3—Spring
4—Spool
5—Spring Seat
6—Spring
7—Pin
8—Gasket
9—Cover
10—Adjusting Screw
11—Nut
12—Plug
13—Shuttle Ball Seat
14—Ball

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CED,TX03399,5995 –19–14JUL04–8/9

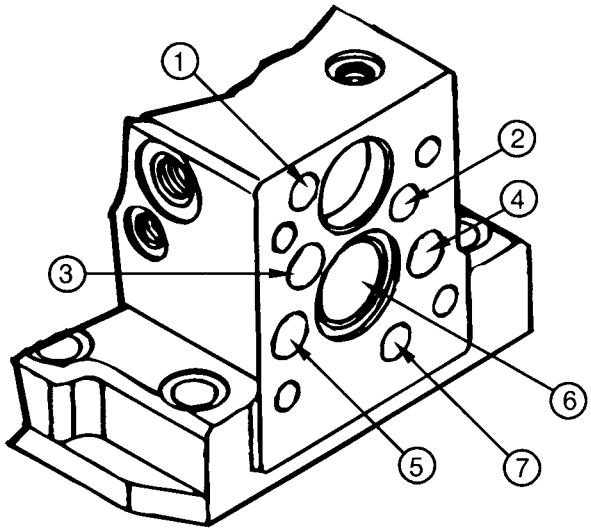
24. (S.N. —907274) Install new O-rings (1—7) on end cap as shown.

    (S.N. 907275—) Install O-ring gasket on end cap.

25. Install displacement control valve and four screws. Tighten screws to specification.

Specification

Displacement Control
Valve-to-End Cap—Torque ..... 110 N•m (81 lb-ft)



T8516AI (CV)

T8516AI –UN–10JUL95

CED,TX03399,5995 –19–14JUL04–9/9

Remove and Install Oil Cooler Thermal Bypass Valve

NOTE: Hoses removed for clarity.

1. Drain or apply a vacuum to hydrostatic reservoir. The approximate capacity of the hydrostatic reservoir is 65.1 L (17.2 gal).
2. Disconnect temperature sensor wire (3).
3. Disconnect hoses (1, 5, 6, 9, and 11).
4. Remove cap screws (8) and nuts (2).
5. Remove oil cooler thermal bypass valve (7).
6. Disassemble and assemble thermal bypass valve as required. (See Disassemble and Assemble Oil Cooler Thermal Bypass Valve in this group.)
7. Install oil cooler thermal bypass valve (7) using cap screws (8) and nuts (2). Tighten cap screws to specification.

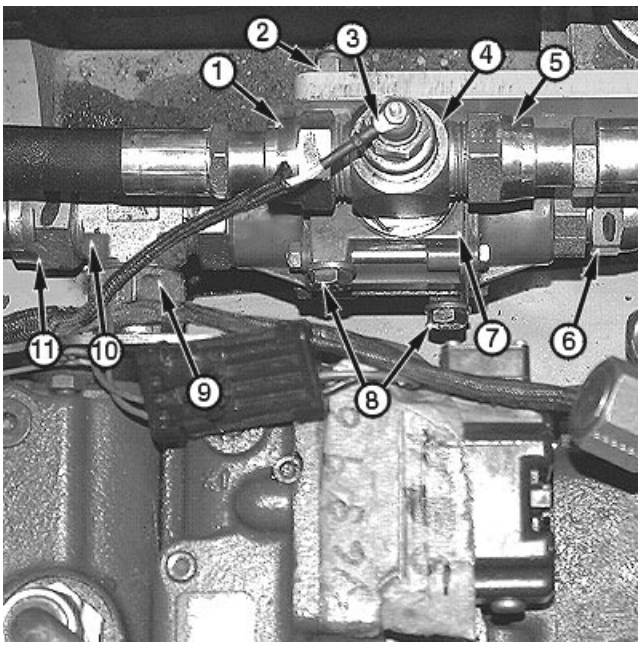
Specification

Oil Cooler Thermal Bypass Valve
Mounting Cap Screws—Torque ..... 80 N•m (60 lb-ft)

8. Install hoses (1, 5, 6, 9, and 11).
9. Install temperature sensor wire (3).
10. Fill reservoir if drained. (See Operator's Manual.)

Specification

Hydrostatic Reservoir—Capacity..... 65.1 L (17.2 gal) (Approximate)



T120828B –UN–10APR99

1—Left Hydrostatic Motor Tee Fitting-to-Oil Cooler Thermal Bypass Valve
2—Nut (2 used)
3—Temperature Sensor Wire
4—Tee Fitting
5—Oil Cooler Thermal Bypass Valve-to-Front Hydrostatic Pump Tee Fitting
6—Oil Cooler Thermal Bypass Valve-to-Oil Cooler Inlet
7—Oil Cooler Thermal Bypass Valve
8—Cap Screws (2 used)
9—Oil Cooler Outlet-to-Oil Cooler Thermal Bypass Valve
10—Tee Fitting
11—Oil Cooler Thermal Bypass Valve-to-Reservoir

CED,TX03399,5996 –19–15NOV00–1/1

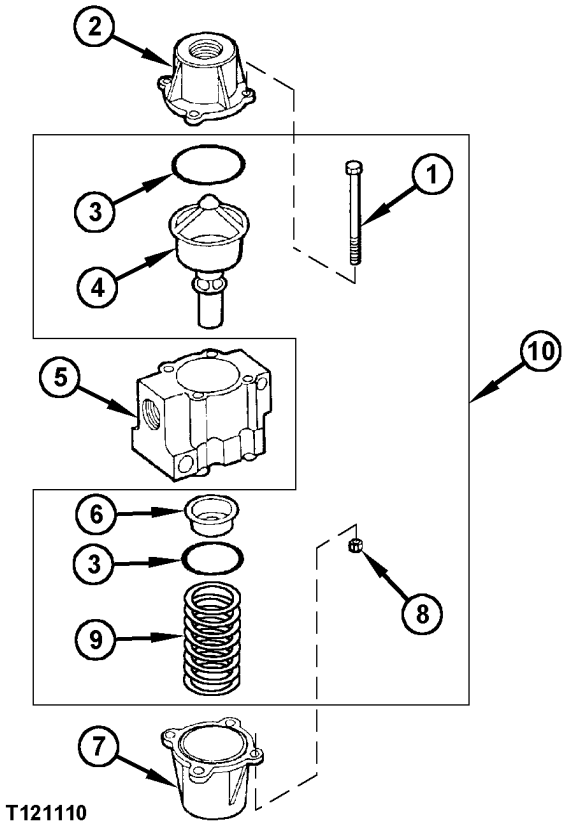
Disassemble and Assemble Oil Cooler Thermal Bypass Valve

1. Remove cap screws (1) and nuts (8).
2. Disassemble and replace components as required.
3. Assemble components. Torque cap screw (1) to specification.

Specification

Thermal Bypass Valve
Cover-to-Housing—Torque..... 12 N•m (102 lb-in.)

1—Cap Screw (4 used)
2—Cover
3—O-Ring
4—Thermostat
5—Housing
6—Seal Assembly
7—Cover
8—Nut (4 used)
9—Spring
10—Thermal Bypass Kit



T121110

T121110 –UN–03APR01

CED,TX03399,5997 –19–15NOV00–1/1

Remove and Install Hydrostatic Filter

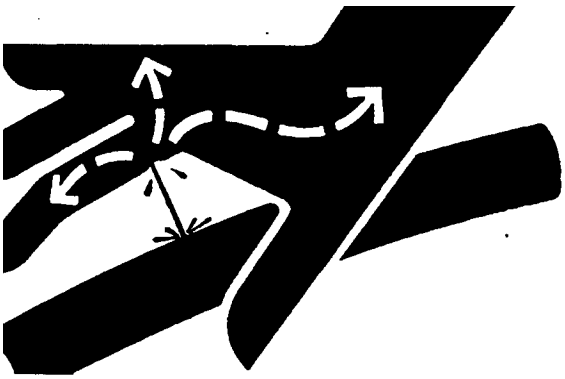
CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

1. Loosen filler plug on reservoir to release pressure.
2. Tag and disconnect hoses (1 and 2). Close all openings with caps or plugs.
3. Disconnect hydrostatic filter wiring lead (3).
4. Loosen cap screws (4) on top of filter base and slide cap screws through slots to remove filter.
5. Install filter and tighten cap screws.

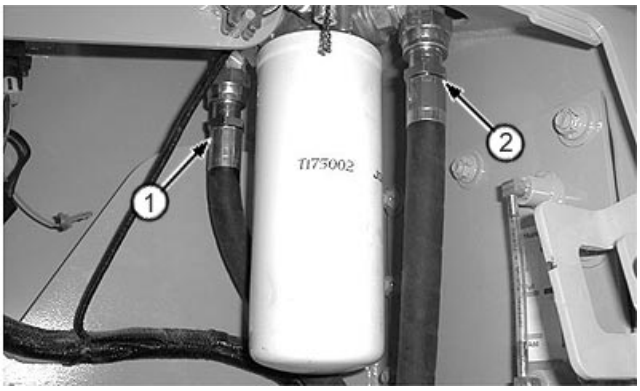
Hydrostatic Filter—Specification

Hydrostatic Reservoir-to-Filter Base Cap Screws—Torque	50 N•m (37 lb-ft)

6. Connect hoses and wiring lead to filter.



X9811 –UN–23AUG88

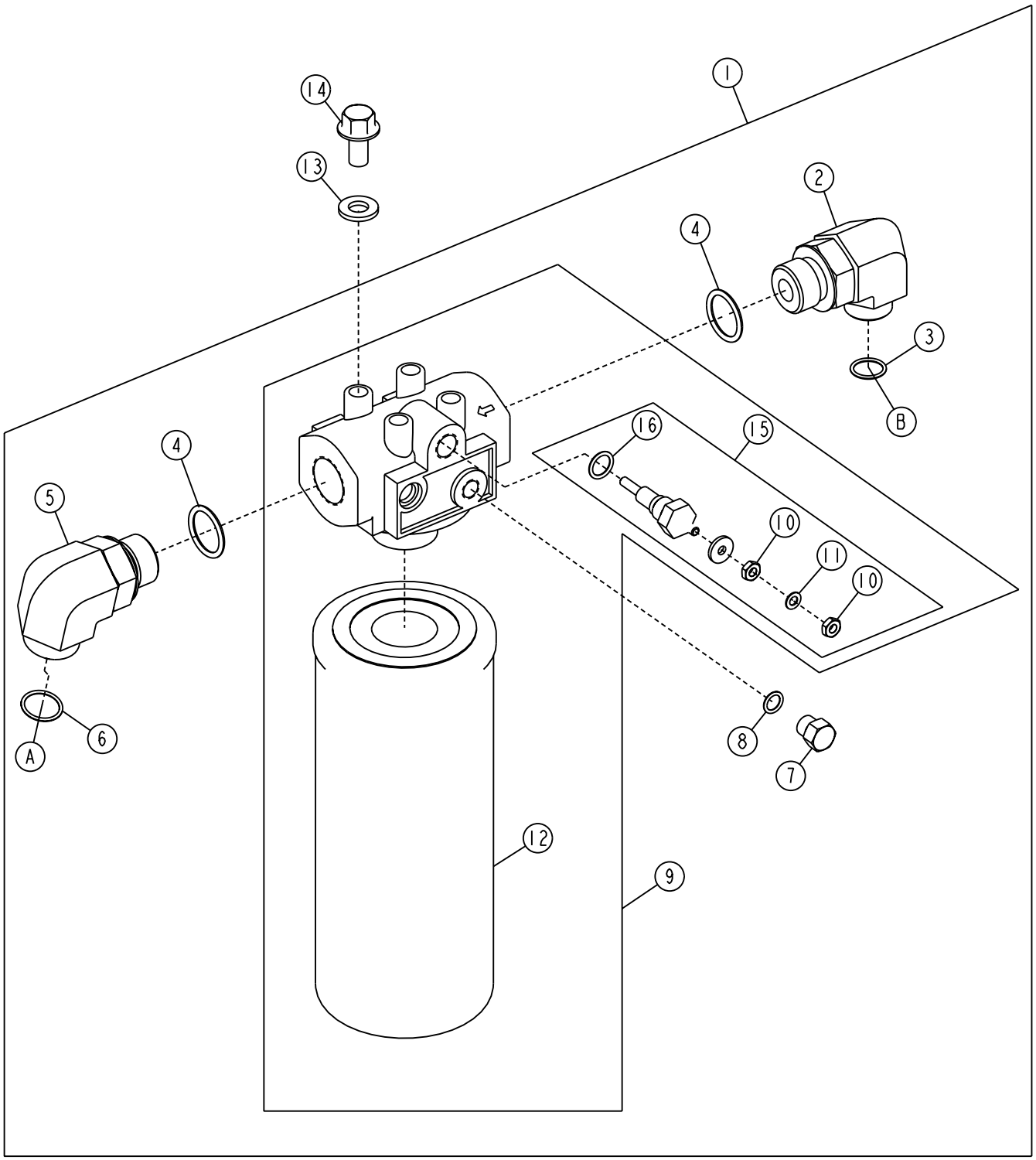


T118008B –UN–15JAN99

1—Hydrostatic Filter-to-Hydrostatic Pump Hose
2—Hydrostatic Pump-to-Hydrostatic Filter Hose
3—Wire Lead
4—Cap screw (4 used)

CED,TX03399,5998 –19–24MAR00–1/1

Disassemble and Assemble Hydrostatic Filter



T130832

T130832 –UN–06OCT00

Continued on next page

CED,TX03399,5999 –19–24MAR00–1/2

1—Hydrostatic Filter Assembly
2—Fitting
3—O-Ring
4—O-Ring
5—Fitting
6—O-Ring
7—Plug
8—O-Ring
9—Filter Base and Filter
10—Nut (2 used)
11—Washer
12—Filter
13—Washer (4 used)
14—Cap Screw (4 used)
15—Restriction Indicator Switch
16—O-Ring
A—Filter Output Hose
B—Filter Inlet Hose

Remove and inspect parts. Replace if necessary.

Tighten plug (7) to specification.

Hydrostatic Filter—Specification

Hydrostatic Filter Plug—Torque ..... 43 N•m (32 lb-ft)

CED,TX03399,5999 –19–24MAR00–2/2

Remove and Install Hydrostatic Reservoir

1. Remove cab or ROPS. (See Remove Cab or ROPS in Group 1800.)
2. Drain reservoir. The approximate capacity of hydrostatic reservoir is 65.1 L (17.2 gal).
3. Disconnect hose from hydrostatic filter. Close all openings using caps and plugs.
4. Disconnect wiring lead on top of filter.
5. Loosen cap screws on filter and slide through slot to remove filter.

6. Remove 24 volt power converter, cover and resisters.
7. Disconnect cables and remove batteries.
8. Disconnect battery shutoff cable.
9. Remove inlet and return hoses from tank.
10. Remove necessary tie bands and route transmission wiring harness and hoses through reservoir frame.

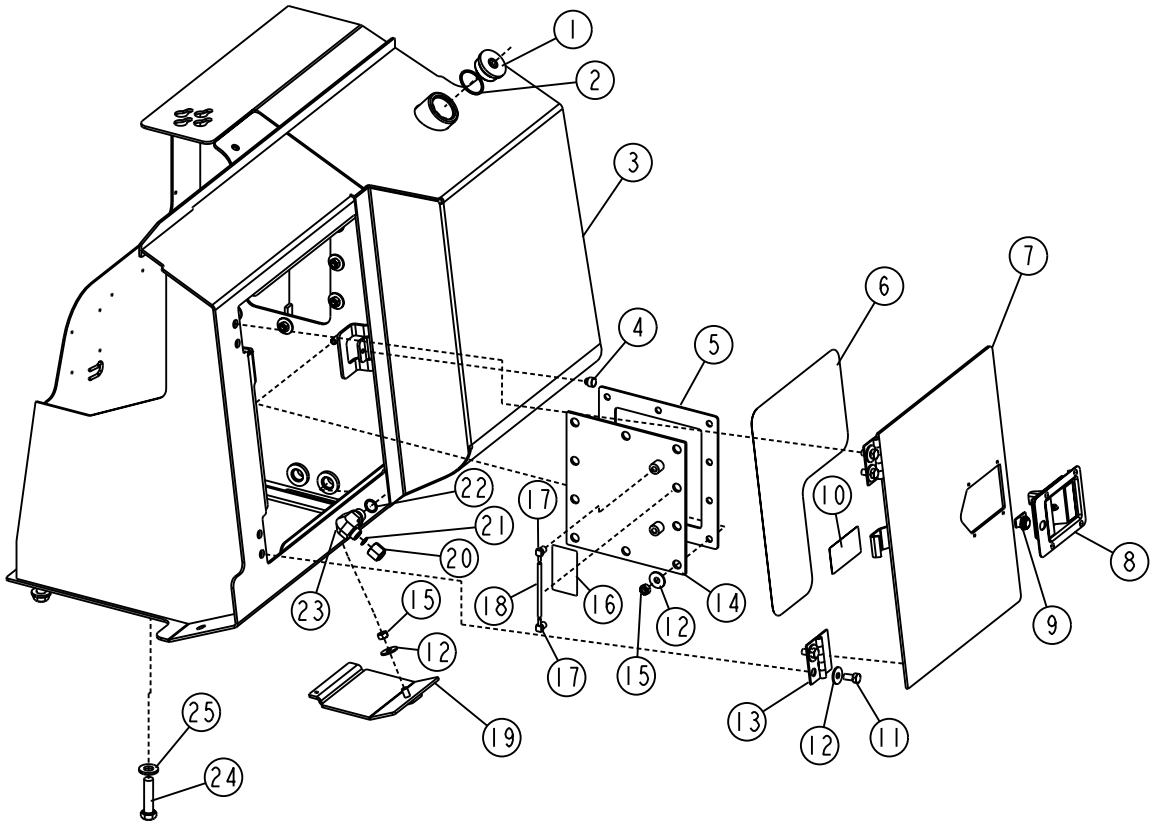
CAUTION: The approximate weight of hydrostatic reservoir is 176 kg (388 lb).

Hydrostatic Reservoir—Specification

Reservoir—Weight	176 kg (388 lb) (Approximate)

11. Install chain and hoist.
12. Remove cap screws and remove reservoir.

Continued on next page



T130833 –UN–05JUN00

1—Plug
2—O-Ring
3—Reservoir (S.N. —925917) Reservoir (S.N. 925918—) (not shown)
4—Grommet
5—Gasket (S.N. —925917)
6—Decal
7—Door
8—Latch
9—Lock
10—Label
11—Cap Screw (4 used)
12—Washer (15 used)
13—Hinge (2 used)
14—Cover Plate (S.N. — 925917)
15—Nut (11 used) (S.N. — 925917)
16—Label
17—Elbow (2 used) (S.N. — 925917)
18—Tube (S.N. —925917)
19—Access Cover Plate
20—Plug
21—O-Ring
22—O-Ring
23—Fitting
24—Cap Screw (4 used)
25—Washer (4 used)

NOTE: Cleanout cover plate (14) shown in illustration applies to reservoirs (S.N. —925917). For cleanout cover repair procedure on machines (S.N. 925918—) see Hydraulic and Hydrostatic Reservoir Cleanout Cover Remove and Install (S.N. 925918—). (Group 2160.)

13. Install reservoir and cap screws.

Hydrostatic Reservoir—Specification

Main Frame-to-Reservoir Cap Screws—Torque	319 N•m 235 lb-ft
Reservoir Cleanout Cover Nuts (S.N. —925917)—Torque	30 N•m 22 lb-ft
Reservoir Cleanout Cover Cap Screw (S.N. 925918—)—Torque	47 N•m 35 lb-ft

14. Route filter hoses and wiring harness through reservoir frame. Route all wiring harnesses back to their original location and replace all tie bands that were removed.

15. Install filter and connect hydrostatic filter hoses and wiring lead.

16. Install 24 volt power converter, cover and resisters.

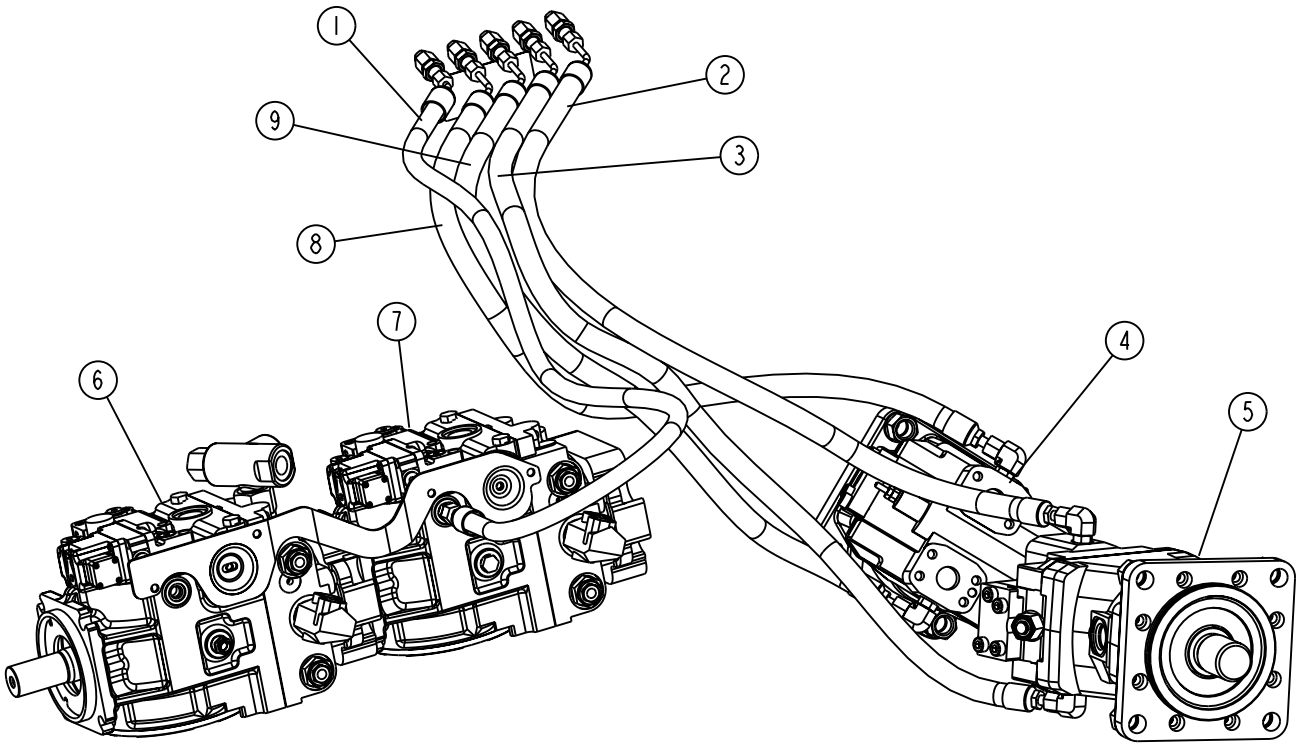
Continued on next page

CED,TX03399,6000 –19–05MAR04–2/3

17. Connect inlet and return hoses.
18. Install batteries and connect cables and battery shutoff cable.
19. Install cab or ROPS.(See Install Cab or Rops in Group 1800.)

CED,TX03399,6000 –19–05MAR04–3/3

Remove and Install Diagnostic Plumbing (S.N. —899613)

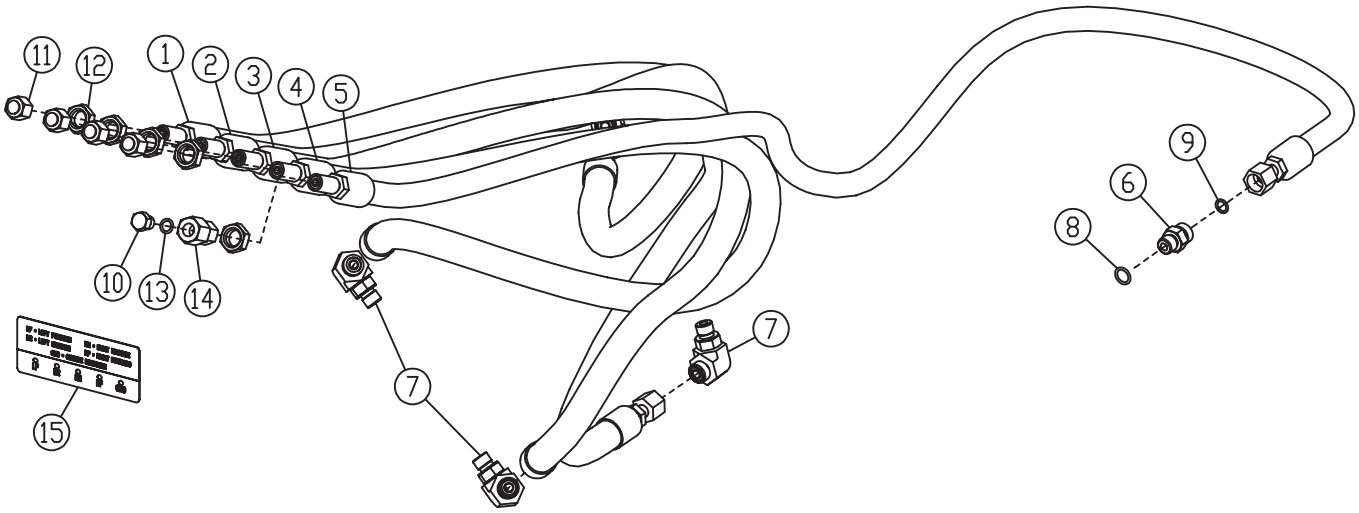


T130503 –UN–19MAY00

1—Charge Pressure (Hydraulic Reservoir-to-Rear Hydrostatic Pump Hose)
2—Left Forward (Hydraulic Reservoir-to-Left Hydrostatic Motor Hose)
3—Left Reverse (Hydraulic Reservoir-to-Left Hydrostatic Motor Hose)
4—Right Hydrostatic Motor
5—Left Hydrostatic Motor
6—Front Hydrostatic Pump
7—Rear Hydrostatic Pump
8—Right Forward (Hydraulic Reservoir-to-Right Hydrostatic Motor Hose)
9—Right Reverse (Hydraulic Reservoir-to-Right Hydrostatic Motor Hose)

BT40170,000001D –19–18JUN02–1/1

Remove and Install Diagnostic Plumbing (S.N. 899614—)



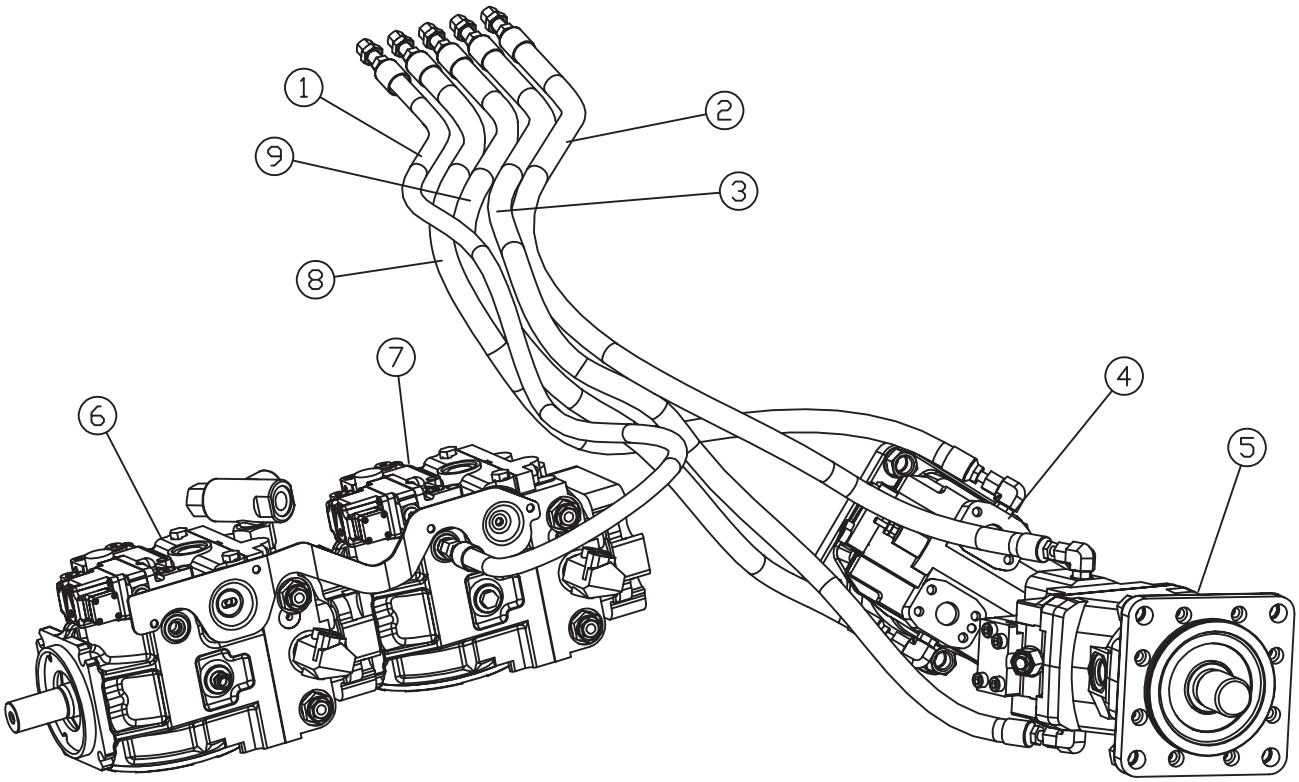
T142361

T142361 –UN–06JUN01

1—Hose (Hydraulic Reservoir Bulkhead Plate-to-Left Hydrostatic Motor Forward Port)
2—Hose (Hydraulic Reservoir Bulkhead Plate-to-Left Hydrostatic Motor Reverse Port)
3—Hose (Hydraulic Reservoir Bulkhead Plate-to-Right Hydrostatic Motor Reverse Port)
4—Hose (Hydraulic Reservoir Bulkhead Plate-to-Right Hydrostatic Motor Forward Port)
5—Hose (Hydraulic Reservoir Bulkhead Plate-to-Rear Transmission Charge Pressure Port)
6—Fitting (5 used)
7—Elbow Fitting (4 used)
8—O-Ring (5 used)
9—O-Ring (10 used)
10—Plug
11—Cap Fitting
12—Nut (5 used)
13—O-Ring
14—Adapter
15—Label

Continued on next page

CED,TX03399,6001 –19–18JUN02–1/2



1—Charge Pressure (Hydraulic Reservoir-to-Rear Hydrostatic Pump Hose)
2—Left Forward (Hydraulic Reservoir-to-Left Hydrostatic Motor Hose)
3—Left Reverse (Hydraulic Reservoir-to-Left Hydrostatic Motor Hose)
4—Right Hydrostatic Motor
5—Left Hydrostatic Motor
6—Front Hydrostatic Pump
7—Rear Hydrostatic Pump
8—Right Forward (Hydraulic Reservoir-to-Right Hydrostatic Motor Hose)
9—Right Reverse (Hydraulic Reservoir-to-Right Hydrostatic Motor Hose)

Remove and install parts as required.

CED,TX03399,6001 –19–18JUN02–2/2

Section 04
Engine

Contents

Page

Group 0400—Removal and Installation
Service Equipment and Tools 04-0400-1
Other Material 04-0400-2
Specifications 04-0400-2
PowerTech 6.8L (6068) John Deere
  Engine 04-0400-3
Engine
  Remove and Install 04-0400-3
Oil Pan
  Remove and Install 04-0400-13
Bleed Fuel System 04-0400-13

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

CED,TX03399,6107 –19–26MAY00–1/4

Pump Support Bracket JT07184

To support hydrostatic pumps when removing engine.

CED,TX03399,6107 –19–26MAY00–2/4

Pump Support . . . . . DFT1119[1]

To support hydrostatic pumps when removing engine.

[1]*Dealer Fabricated Tool. See Group 0499 for instructions to make tool.*

CED,TX03399,6107 –19–26MAY00–3/4

Lifting Sling JDG23

To support and lift engine.

CED,TX03399,6107 –19–26MAY00–4/4

Other Material

Number	Name	Use
T43512 (U.S.) TY9473 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to flywheel ring cap screws.
515 (LOCTITE®)	Flange Sealant	Apply to jointed edges created by the flywheel housing, front plate and timing gear cover.

LOCTITE is a trademark of Loctite Corp.

CED,TX03399,6130 –19–11AUG00–1/1

04 0400 2

Specifications

Item	Measurement	Specification
Engine		
Engine	Weight	580 kg (1279 lb) (Approximate)
Pump Flywheel Ring-to-Flywheel Housing Cap Screws	Torque	57 N•m (42 lb-ft)
Pump Flywheel Cover-to-Flywheel Housing Cap Screws	Torque	73 N•m (54 lb-ft)
Bleed Fuel System		
Fuel Return Line	Torque	16 N•m (12 lb-ft) (142 lb-in.)

CED,TX03399,6129 –19–11AUG00–1/1

PowerTech® 6.8L (6068) John Deere Engine—Use CTM104

For additional engine information, the component technical manual (CTM) is also required.

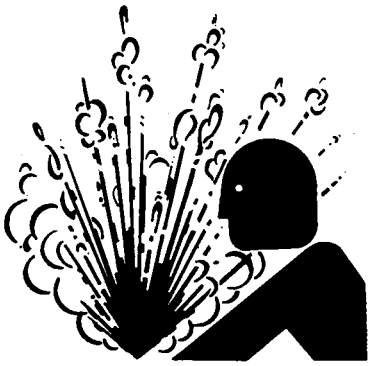
Use the CTM in conjunction with this machine manual.

M44215 –UN–07SEP88

PowerTech is a registered trademark of Deere & Company

TX,05,SS3179 –19–13APR99–1/1

Remove and Install Engine



TS281 –UN–23AUG88

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

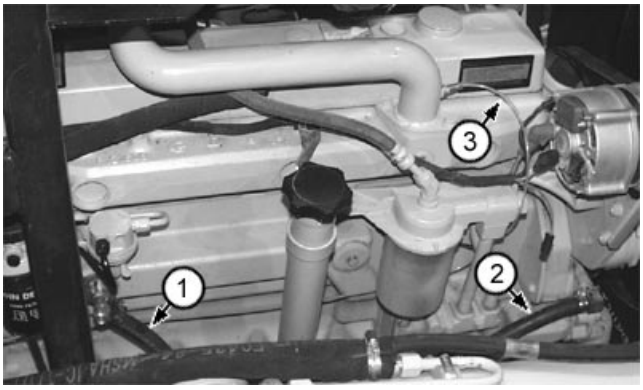
1. Remove grille. (See Remove Grille and Remove Grille Housing., in Group 1921.)
2. Drain engine coolant. The approximate capacity of engine coolant is 19.4 L (20 qt).
3. Remove hood.(See Remove and Install Hood, Group 1910.)
4. Remove hood support and engine side shields. (See Remove and Install Hood Support and Engine Side Shields in Group 1910.)
5. Turn battery disconnect switch to OFF and disconnect battery positive cable.
6. Remove grille housing. (See Remove Grille and Remove Grille Housing., in Group 1921.)
7. Remove fan blade, pulley and shroud. (See Remove and Install Fan Blade, Pulley and Shroud, in Group 0510.)
8. Remove fan belt.

Continued on next page

CED,TX03399,6007 –19–15NOV00–1/20

9. Disconnect heater hoses (1 and 2) and start aid line (3). Close all openings using caps and plugs.

1—Supply Heater Hose
2—Return Heater Hose
3—Start Aid Line

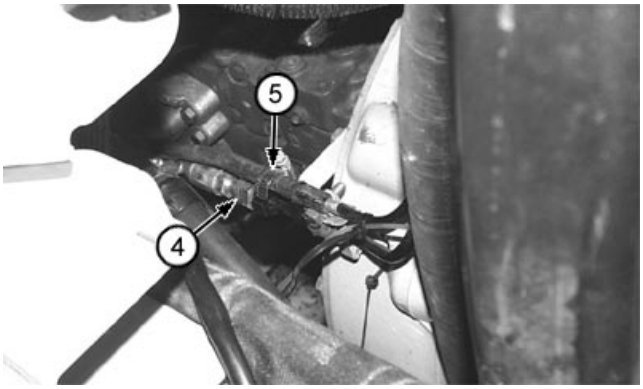


T131161B –UN–24MAY00

CED,TX03399,6007 –19–15NOV00–2/20

10. Disconnect fuel lines (4 and 5). Close all openings using caps and plugs.

4—Fuel Inlet Line
5—Fuel Return Line

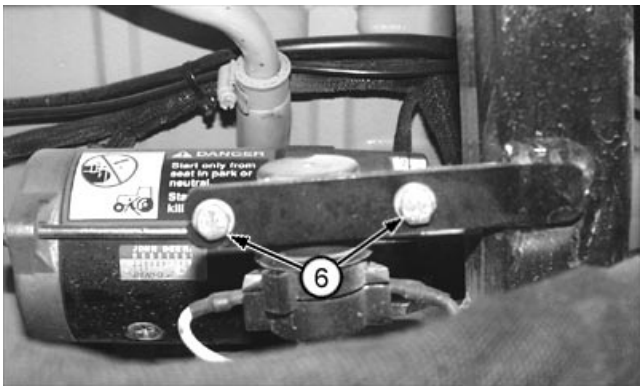


T131162B –UN–24MAY00

CED,TX03399,6007 –19–15NOV00–3/20

11. Remove neutral start switch cap screws (6).

6—Neutral Start Switch Cap Screws (2 used)



T131163B –UN–18AUG00

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CED,TX03399,6007 –19–15NOV00–4/20

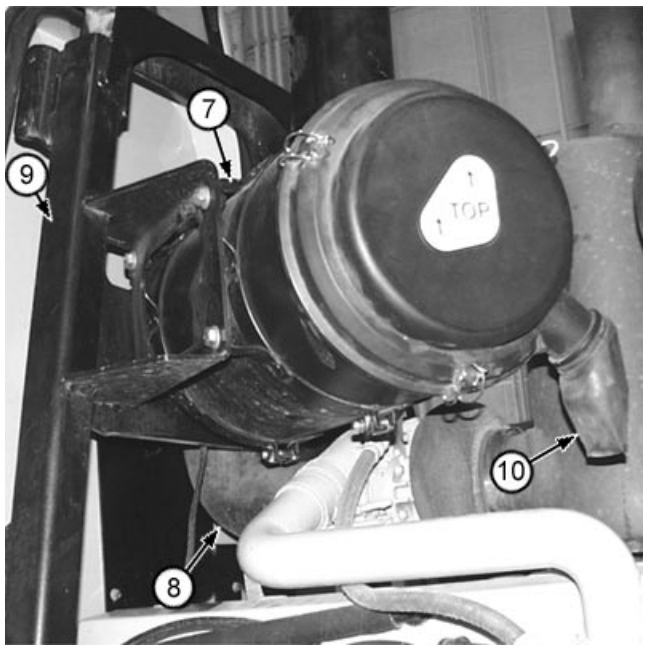
12. Remove muffler (10).

13. Disconnect air restriction indicator connector (7) and air cleaner hose (8).

CAUTION: The approximate weight of hood support with air cleaner is 45 kg (100 lb).

14. Install lifting straps and a hoist and remove cap screws to remove hood support (9).

7—Air Restriction Indicator Connector
8—Air Cleaner Hose
9—Hood Support
10—Muffler



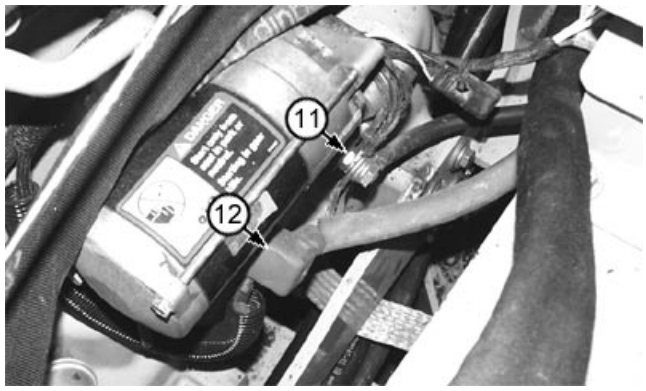
T131164B –UN–24MAY00

CED,TX03399,6007 –19–15NOV00–5/20

15. Disconnect battery ground cable (11) with ground strap.

16. Disconnect start solenoid positive cable (12).

11—Battery Ground Cable
12 —Start Solenoid Positive Cable



T131170B –UN–24MAY00

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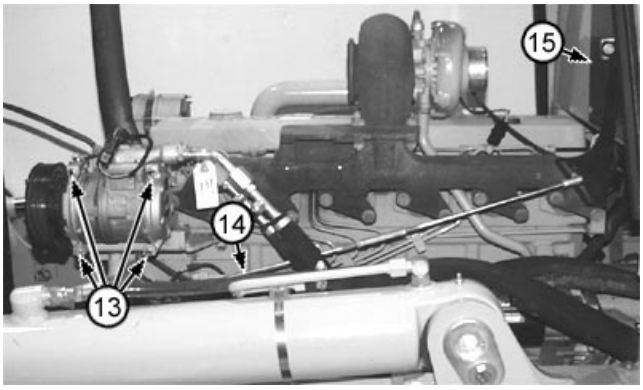
CED,TX03399,6007 –19–15NOV00–6/20

17. Remove cap screws (13), lay compressor off to the side (if equipped).
18. Disconnect speed control linkage rod (14).
19. Remove two cap screws and remove speed control bracket (15).

13—Compressor Cap Screws (4 used) (If Equipped)
14—Speed Control Linkage Rod
15—Speed Control Bracket

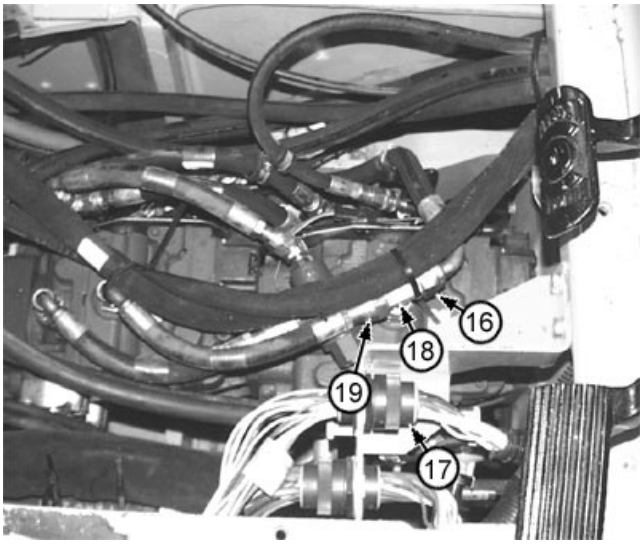


T131173B –UN–24MAY00

CED,TX03399,6007 –19–15NOV00–7/20

20. Remove floor plate.
21. Disconnect engine wiring harness connector (17).
22. Disconnect hoses (16 and 19) and remove tee (18).
23. Remove twelve cap screws from pump flywheel cover to engine.

16—Tee-to-Cooler Bypass Valve Hose
17—Engine Harness Connector
18—Front Pump Tee
19—Rear Pump-to-Front Pump Tee Hose



T131179B –UN–24MAY00

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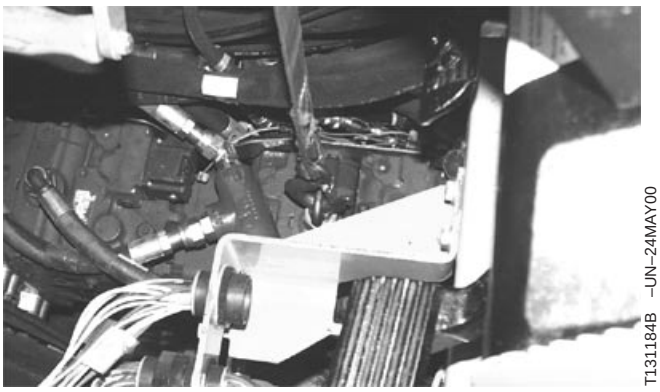
CED,TX03399,6007 –19–15NOV00–8/20

24. Drill and tap a 1-1/16 in. plug to accommodate a 1/2 in. shouldered lift eyebolt. Install plug and eyebolt in pump case drain port. Trim end of eyebolt so it is even with end of plug.

25. Support hydrostatic pumps using JT07184 Pump Support Bracket. DFT1119 Pump Support, and a small winch hoist may also be used. (See Section 99 for instructions to make pump support tool.)



T131184B –UN–24MAY00

T131185B –UN–24MAY00

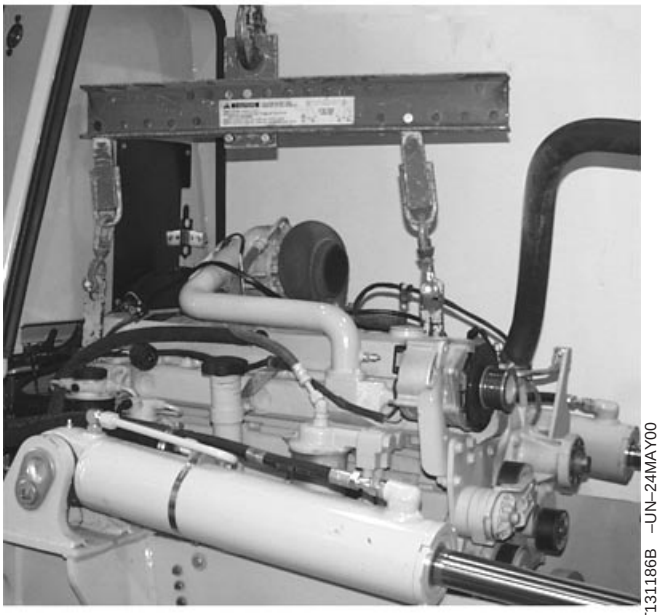
CED,TX03399,6007 –19–15NOV00–9/20

CAUTION: The approximate weight of engine is 580 kg (1279 lb).

Engine—Specification

Engine—Weight	580 kg (1279 lb) (Approximate)

26. Attach JDG23 Lifting Sling and a hoist to engine.



T131186B –UN–24MAY00

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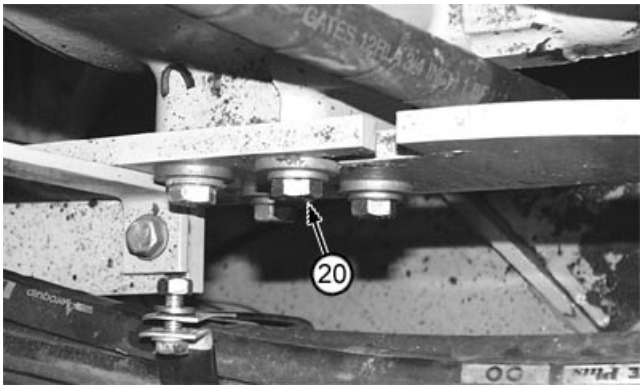
CED,TX03399,6007 –19–15NOV00–10/20

27. Remove rear side rail to engine cap screws EXCEPT loosen cap screw (20) in slotted area of frame rail on each side. This is used to guide the engine out and in.

20—Cap Screw in Slotted Frame Rail (2 used)



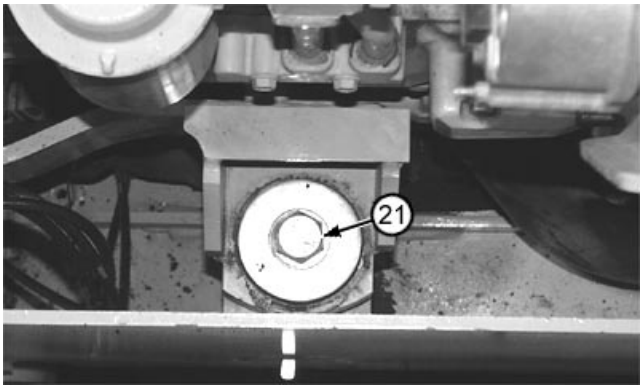
CED,TX03399,6007 –19–15NOV00–11/20

28. Remove front engine support cap screw (21) on each side of engine.

29. Lift engine forward and up between frame rails.

30. Remove wiring if necessary. (See Engine Harness Component Location in Group 1674.)

21—Front Engine Support Cap Screw (2 used)



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CED,TX03399,6007 –19–15NOV00–12/20

31. If equipped with winch with a hydraulic pump with drive through shaft the flywheel will have a flywheel ring (3), cap screws (1) and washers (2).

    Apply thread lock and sealer (medium strength) to threads of cap screws (1). Tighten cap screws (1).

Engine—Specification

Pump Flywheel Ring-to-Flywheel Housing Cap Screws—Torque ..... 57 N•m (42 lb-ft)

32. Install engine using side rail cap screws to guide engine in through slots aligning pump drive.

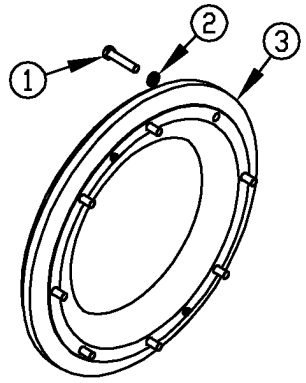
33. Install approximately four pump flywheel housing cap screws before removing pump support.

34. Remove pump support.

35. Install the remaining flywheel housing cap screws. Tighten cap screws.

Engine —Specification

Pump Flywheel Cover-to-Flywheel Housing Cap Screws—Torque ..... 73 N•m (54 lb-ft)



T128308 –UN–15FEB00

T128308

1—Cap Screw (8 used)
2—Washer (8 used)
3—Flywheel Ring

04 0400 9

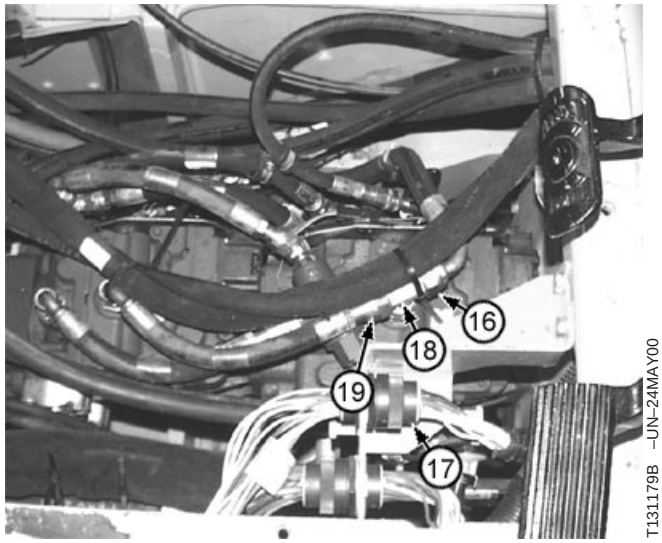
CED,TX03399,6007 –19–15NOV00–13/20

36. Connect engine wiring harness connector (17).

37. Install tee (18) and connect hoses (16 and 19).

38. Install floor plate.

16—Tee-to-Cooler Bypass Valve Hose
17—Engine Harness Connector
18—Front Pump Tee
19—Rear Pump-to-Front Pump Tee Hose



T131179B –UN–24MAY00

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CED,TX03399,6007 –19–15NOV00–14/20

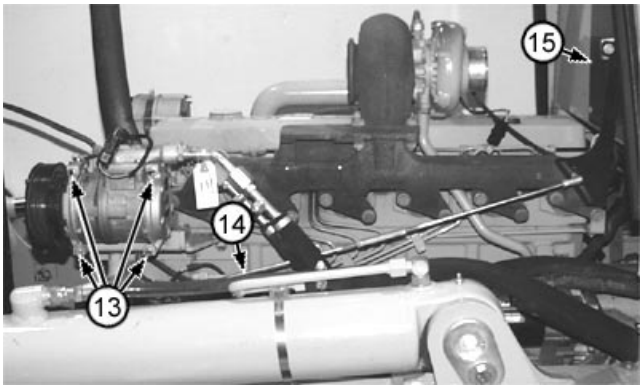
39. Install compressor and tighten cap screws (13) (if equipped).

40. Install speed control bracket (15). Tighten cap screws.

NOTE: Engine speed control linkage must be adjusted when bracket has been removed.

41. Connect speed control linkage rod (14).

13—Compressor Cap Screws (4 used) (If Equipped)
14—Speed Control Linkage Rod
15—Speed Control Bracket



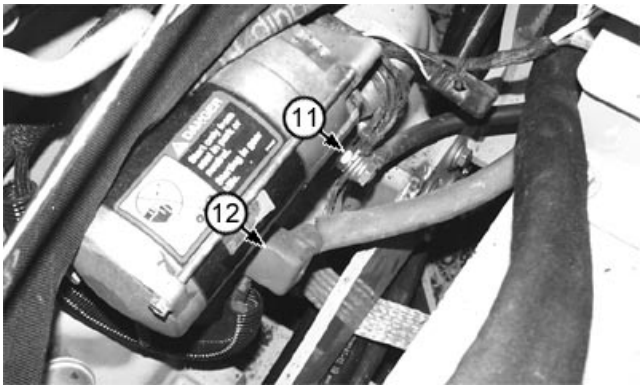
T131173B –UN–24MAY00

CED,TX03399,6007 –19–15NOV00–15/20

42. Connect battery ground cable (11) with ground strap.

43. Connect start solenoid positive cable (12).

11—Battery Ground Cable
12 —Start Solenoid Positive Cable



T131170B –UN–24MAY00

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CED,TX03399,6007 –19–15NOV00–16/20

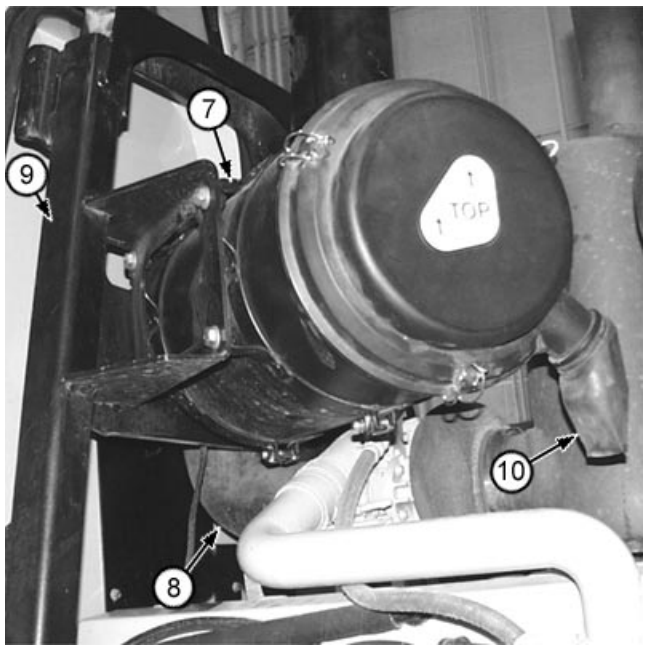
CAUTION: The approximate weight of hood support with air cleaner is 45 kg (100 lb).

44. Install hood support (9).

45. Connect air restriction indicator connector (7) and air cleaner hose (8).

46. Install muffler (10).

7—Air Restriction Indicator Connector
8—Air Cleaner Hose
9—Hood Support
10—Muffler

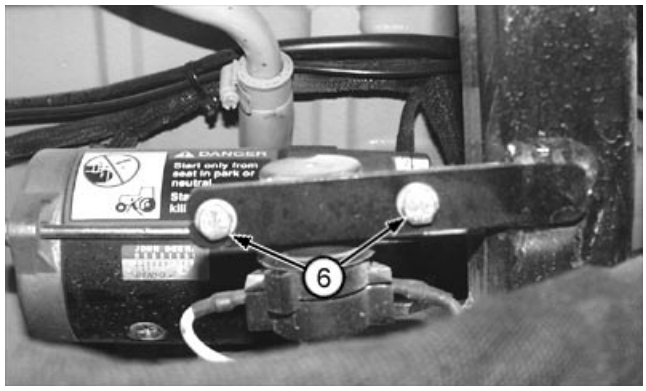


T131164B –UN–24MAY00

CED,TX03399,6007 –19–15NOV00–17/20

47. Install neutral start switch cap screws (6).

6—Neutral Start Switch Cap Screws (2 used)

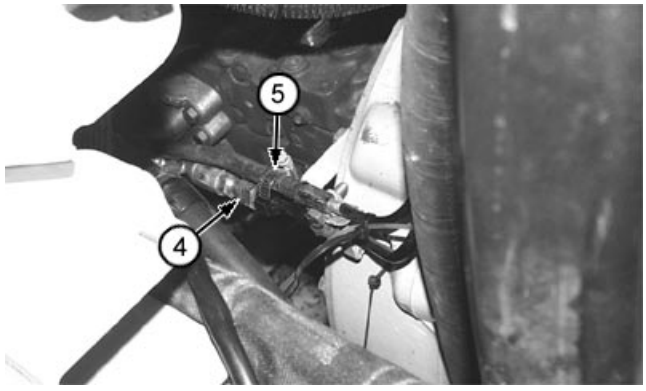


T131163B –UN–18AUG00

CED,TX03399,6007 –19–15NOV00–18/20

48. Connect fuel lines (4 and 5).

4—Fuel Inlet Line
5—Fuel Return Line



T131162B –UN–24MAY00

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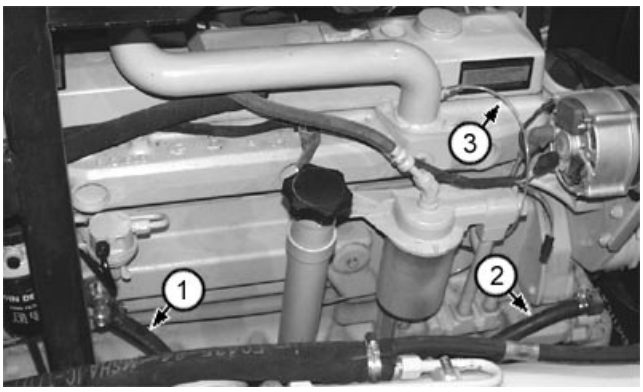
CED,TX03399,6007 –19–15NOV00–19/20

49. Connect heater hoses (1 and 2) and start aid line (3).
50. Install fan belt.
51. Install pulley, fan, blade and shroud. (See Remove and Install Fan Blade, Pulley and Shroud, in Group 0510.)
52. Install grille and grille housing. (See Remove Grille and Remove Grille Housing., in Group 1921.)
53. Connect battery positive cable and turn battery disconnect switch to ON.
54. See Engine Speed Control Linkage Adjustment (S.N. —920838) or Engine Speed Control Linkage Adjustment (S.N. 920839—). (Group 9010-20.)
55. Install hood support and engine side shields. (See Remove and Install Hood Support and Engine Side Shields in Group 1910.)
56. Install hood. (See Remove and Install Hood, Group 1910.)
57. Fill radiator with coolant. The approximate capacity of engine coolant is 19.4 L (20 qt). (See Operator's Manual.).



T131161B –UN–24MAY00

1—Supply Heater Hose
2—Return Heater Hose
3—Start Aid Line

CED,TX03399,6007 –19–15NOV00–20/20

Remove and Install Oil Pan

CAUTION: The approximate weight of front bottom guard is 35 kg (77 lb).

1. Support front bottom guard using a jack.
2. Carefully lower front bottom guard. See remove and install
3. Drain engine oil. The approximate capacity of engine oil is 13.2 L (20 qt).
4. Remove cap screws and remove oil pan.
5. Make engine repairs as necessary. (See procedure in engine component technical manual.)
6. Apply form-in-place gasket to jointed edges created by the flywheel housing, front plate and timing gear cover.
7. Install new oil pan gasket.
8. Install oil pan. Tighten cap screws.

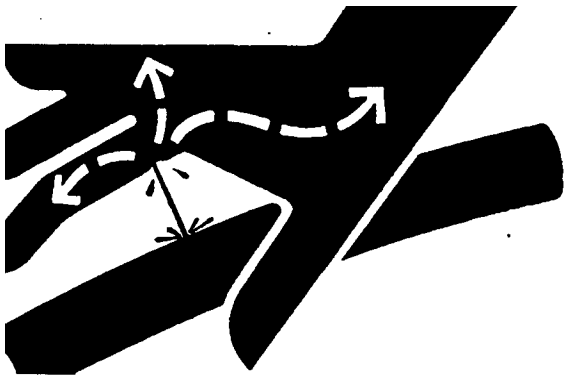
Oil Pan-to-Engine Block Cap Screws—Specification

Cap Screws—Torque	47 N•m (35 lb-ft)

CED,TX03399,6195 –19–22AUG00–1/1

Bleed Fuel System

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.



X9811 –UN–23AUG88

Any time the fuel system has been opened up for service (lines disconnected or filters removed), it will be necessary to bleed air from the system.

The fuel system may be bled at one of several locations. On some engine applications it may be necessary to consult you operator's manual and choose the location best for your engine/machine application.

Continued on next page

CED,TX03399,6008 –19–24MAR00–1/2

1. Open air bleed vent screw (A) two full turns by hand.
2. Pump the hand primer on filter mounting base until a noticeable amount of fuel and air comes out of vent opening. Continue pumping and close vent screw when fuel starts to flow.
3. Pump the hand primer several times until resistance is felt. Continue pumping and open air bleed vent screw again.
4. Close air bleed vent screw and pump the hand primer several times until resistance is felt again.
5. If there is air in the supply line to injection pump, loosen fuel return line at fuel injection pump.
6. Operate fuel supply pump primer lever.
7. As soon as fuel flow is free from air bubbles, tighten fuel return line.

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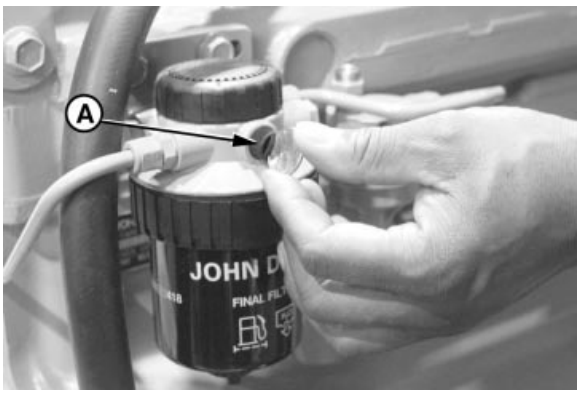
Bleed Fuel System—Specification

Fuel Return Line—Torque..... 16 N•m (12 lb-ft) (142 lb-in.)

8. Bleed the fuel system.(See CTM104 Bleed the Fuel System.)



RG7947 –UN–13NOV97

A—Bleed Screw

CED,TX03399,6008 –19–24MAR00–2/2

Section 05
Engine Auxiliary Systems

Contents

Page

Group 0505—Cold Weather Starting Aids
Specifications 05-0505-1
PowerTech 6.8L (6068) John Deere
  Engine 05-0505-1
Engine Coolant Heater
  Remove and Install 05-0505-2
Starting Aid
  Remove and Install 05-0505-4
Starting Aid Solenoid
  Remove and Install 05-0505-5

Group 0510—Radiator and Fan Shroud
Specifications 05-0510-1
Fan Blade and Shroud
  Remove and Install 05-0510-1
Radiator and Oil Cooler
  Remove 05-0510-4
  Install 05-0510-6
Sand Shield
  Remove and Install 05-0510-8

Group 0515—Engine Speed Control
Other Material 05-0515-1
Specifications 05-0515-1
Engine Speed Control and Decelerator
  Remove and Install 05-0515-2

Group 0520—Intake System
Specifications 05-0520-1
Air Cleaner with Turbocharger
  Remove and Install 05-0520-2

Group 0530—External Exhaust System
Muffler
  Remove and Install 05-0530-1

Group 0540—Mounting Frame
Specifications 05-0540-1
Engine and Power Train Mounting Parts 05-0540-2

Group 0560—External Fuel Supply System
Specifications 05-0560-1
Fuel Tank
  Remove and Install 05-0560-1

Specifications

Item	Measurement	Specification
Engine Coolant Heater		
Engine Coolant Heater Element Nut	Torque	34 N•m (25 lb-ft)

CED,TX03399,6134 –19–11AUG00–1/1

PowerTech® 6.8L (6068) John Deere Engine—Use CTM

For additional engine information, the component technical manual (CTM) is also required.

Use the CTM in conjunction with this machine manual.

M44215 –UN–07SEP88

PowerTech is a registered trademark of Deere & Company

TX,05,SS3179 –19–14APR99–1/1

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0505
1

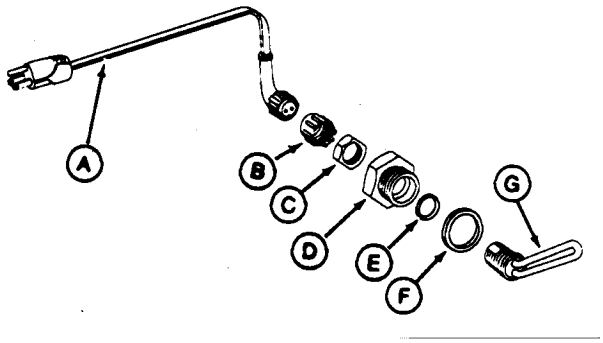
Remove and Install Engine Coolant Heater


TS281 –UN–23AUG88

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

1. Remove grille and drain radiator. The approximate radiator coolant capacity is 19.4 L (20 qt).
2. Remove engine right side shield.
3. Drain coolant from engine block. The approximate engine coolant capacity is 19.4 L (20 qt).

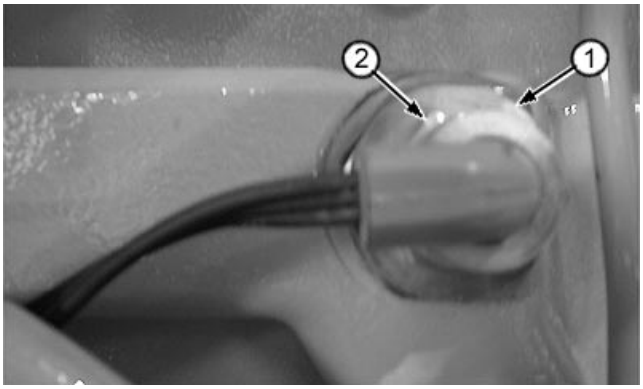


T6427AO –UN–21OCT88

A—Wiring Lead
B—Cap
C—Nut
D—Adapter
E—Gasket
F—O-Ring
G—Heater Element

CED,TX03399,6009 –19–24MAR00–1/3

4. Disconnect cord from heater. Loosen nut (2). Remove adapter (1) to remove heater element from cylinder block.



T117492B –UN–01OCT98

1—Adapter
2—Nut

Continued on next page

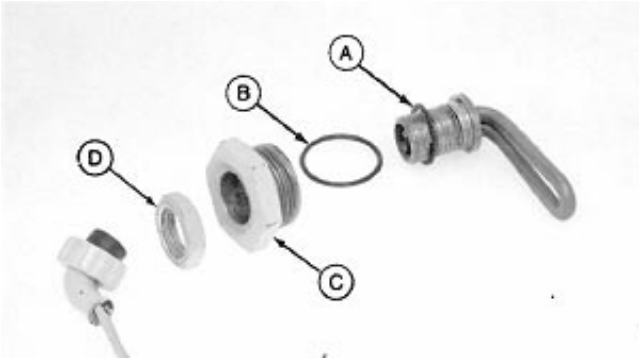
CED,TX03399,6009 –19–24MAR00–2/3

5. Install new gasket (A) on heater element and a new O-ring (B) on adapter (C). Install heater element through adapter, and install nut (D), but do not tighten.
6. Install heater into cylinder block with element pointing to the flywheel.
7. Tighten adapter (C).
8. Turn element clockwise and then counterclockwise until element contacts casting. Move element midway between contact points.
9. Hold element with a wrench and tighten lock nut (D) to specification.

Engine Coolant Heater—Specification

Engine Coolant Heater Element
Nut—Torque ..... 34 N•m (25 lb-ft)

10. Connect cord to heater. Install engine side shield.
11. Fill radiator and engine block with coolant. (See Fuel and Lubricants in Operator's Manual.)



T87072 –UN–21OCT88

A—Gasket
B—O-Ring
C—Adapter
D—Nut

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CED,TX03399,6009 –19–24MAR00–3/3

Remove and Install Starting Aid—If Equipped

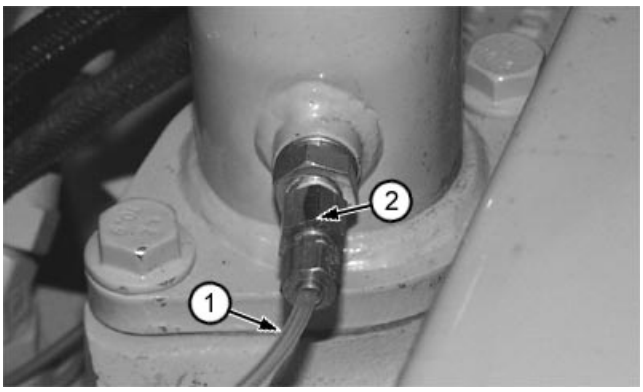
1. Remove right hand side shield.
2. Disconnect starting aid tube (1).

NOTE: When removing nozzle note the location of red dot when removing.

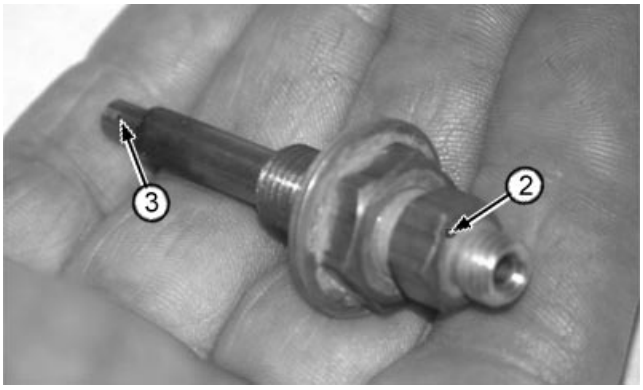
3. Remove nozzle (2) from holder in air inlet.
4. Clean or replace nozzle holder as required.

NOTE: Red dot (2) on nozzle holder must be installed at the 12 o'clock position, facing the incoming air flow. Nozzle orifice (3) needs to be in the path of the air flow to disperse fluid for quick start of engine.

5. Install nozzle and connect starting aid tube.
6. Install engine side shield.



T131016B –UN–16MAY00



T117496B –UN–13OCT98

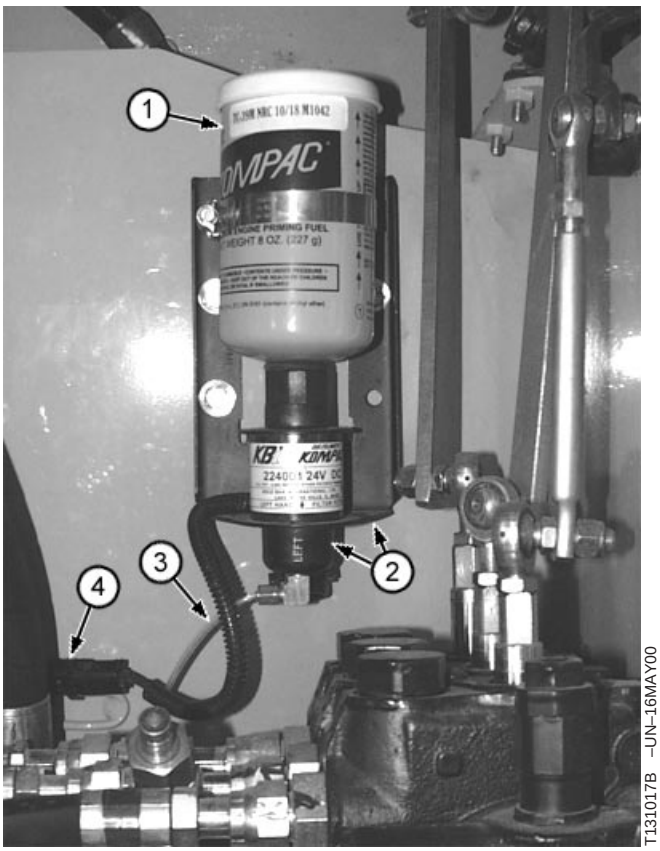
1—Starting Aid Tube
2—Red Dot for Nozzle Installation
3—Orifice

CED,TX03399,6010 –19–24MAR00–1/1

Remove and Install Starting Aid Solenoid—If Equipped

1. Open access door on right side.
2. Remove starting fluid can (1).
3. Disconnect wiring lead connector (4) and starting aid tube (3).
4. Remove bracket and solenoid (2).
5. Install solenoid and bracket.
6. Connect starting aid tube and wiring lead connector.

1—Starting Fluid Can
2—Bracket and Solenoid
3—Starting Aid Tube
4—Wiring Lead Connector



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CED,TX03399,6011 –19–24MAR00–1/1

05 0505 5

Specifications

Item	Measurement	Specification
Fan Blade and Shroud		
Shroud Cap Screws	Torque	37 N•m (27 lb-ft)
Fan Blade Cap Screws	Torque	73 N•m (54 lb-ft)
Fan Guard Cap Screws	Torque	16—19 N•m (142—168 lb-in.)
Radiator and Oil Cooler		
Radiator and Oil Cooler	Weight	102 kg (225 lb) (Approximate)
Lower Radiator/Oil Cooler Cap Screws	Torque	50 N•m (37 lb-ft)
Bracket-to-Radiator and Oil Cooler Cap Screws	Torque	73 N•m (54 lb-ft)
Bracket-to-Oil Cooler Cap Screws	Torque	129 N•m (95 lb-ft)
Shroud Cap Screws	Torque	37 N•m (27 lb- ft)
Upper Radiator/Oil Cooler Bracket-to-Grille Housing Cap Screw	Torque	50 N•m (37 lb-ft)
Fan Guard Cap Screws	Torque	37 N•m (27 lb- ft)
Sand Shield		
Sand Shield	Torque	37 N•m (27 lb-ft)

CED,TX03399,6138 –19–11AUG00–1/1

Remove and Install Fan Blade, Pulley and Shroud

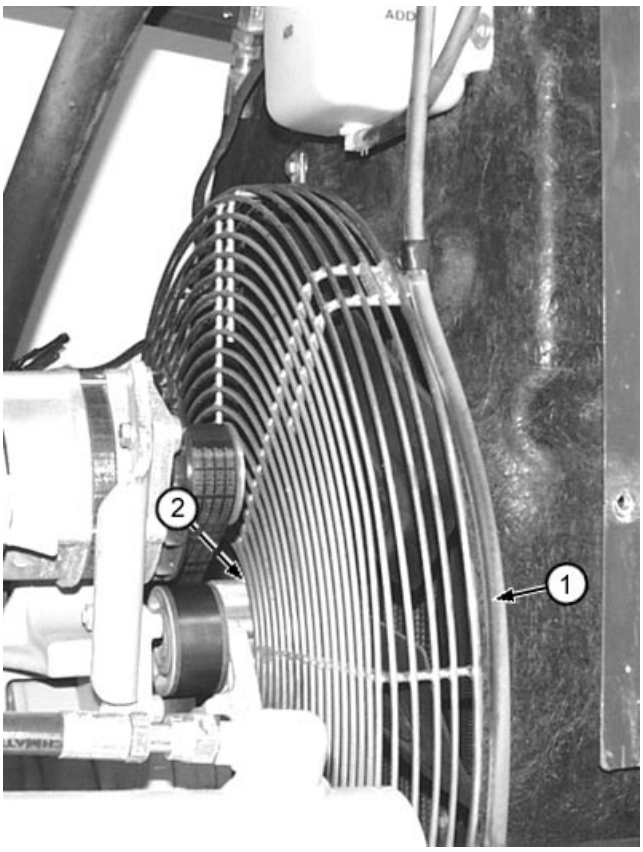
1. Remove engine side shields and hood.

Continued on next page

CED,TX03399,6013 –19–24MAR00–1/5

2. Remove fan guard (1).
3. Remove fan blade and spacer (2).

1—Fan Guard
2—Fan Blade and Spacer

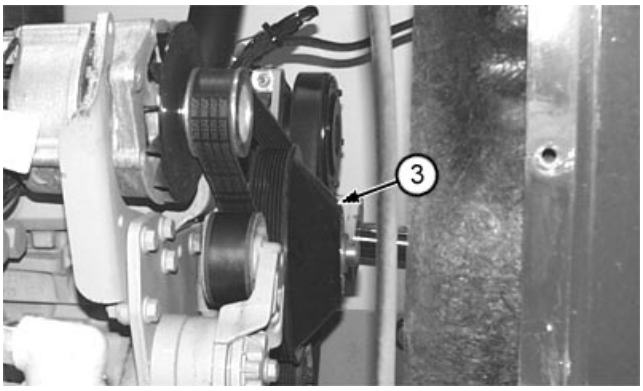


T130810B –UN–04MAY00

CED,TX03399,6013 –19–24MAR00–2/5

4. Remove fan belt and pulley (3).
5. Remove Grille and Remove Grille Housing. and drain coolant. The approximate radiator capacity is 19.4 L (20 qt).
6. Drain coolant. The approximate radiator capacity is 19.4 L (20 qt).
7. (See Remove Grille and Remove Grille Housing. in Group 1921.)

3—Fan Belt and Pulley



T130811B –UN–04MAY00

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CED,TX03399,6013 –19–24MAR00–3/5

8. Disconnect upper oil cooler hoses (1), upper radiator hose (3) and coolant over flow tube (2) from coolant tank.

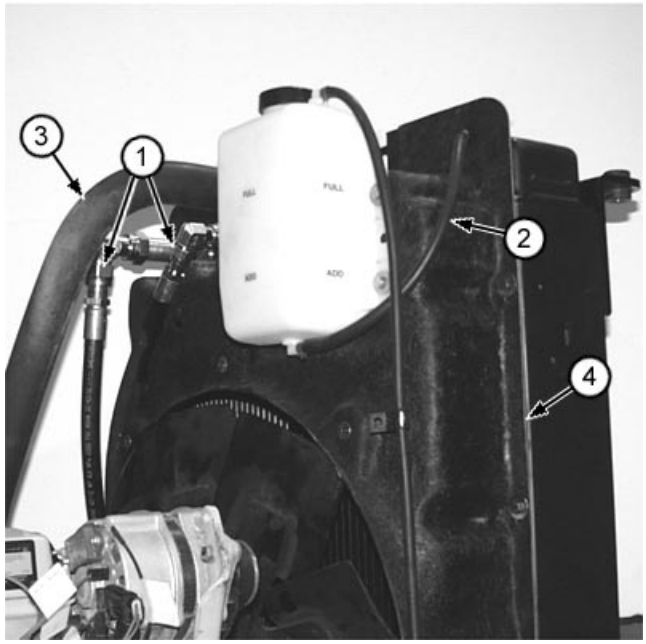
9. Remove shroud (4), with over flow tank.

10. Install shroud with over flow tank.

Fan Blade and Shroud—Specification

Shroud Cap Screws—Torque ..... 37 N•m (27 lb-ft)

1—Radiator-to-Hydrostatic Pump Hose, Radiator-to-Control Valve Tee Hose
2—Over Flow Tube From Coolant Tank
3—Upper Radiator Hose
4—Shroud



T130966B –UN–15MAY00

CED,TX03399,6013 –19–24MAR00–4/5

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11. Connect upper cooler hoses (1), upper radiator hose (3) and over flow tube (2).

12. Install fan belt and pulley.

13. Install fan spacer and fan. Tighten fan cap screws.

Fan Blade and Shroud —Specification

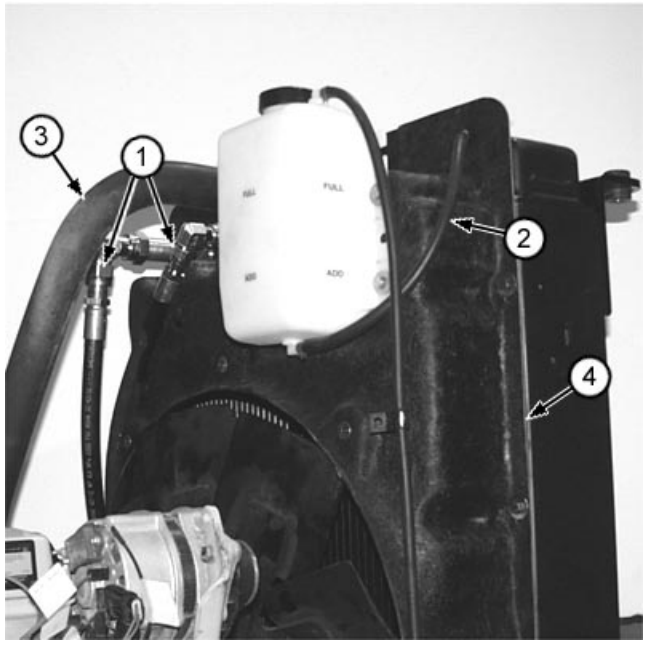
Fan Blade Cap Screws—Torque ..... 73 N•m (54 lb-ft)

14. Install fan guard. Tighten cap screws.

Fan Blade and Shroud —Specification

Fan Guard Cap Screws—Torque ..... 16—19 N•m (142—168 lb-in.)

1—Radiator-to-Hydrostatic Pump Hose, Radiator-to-Control Valve Tee Hose
2—Over Flow Tube From Coolant Tank
3—Upper Radiator Hose
4—Shroud



T130966B –UN–15MAY00

CED,TX03399,6013 –19–24MAR00–5/5

Remove Radiator and Oil Cooler

TS281 –UN–23AUG88

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

1. Remove Hood and Engine Side Shields. (See Remove Hood in Group 1910 and Remove Hood Support and Engine Side Shields in Group 1910.)
2. Remove wiring clamp and fan guard. (See Remove and Install Fan Blade, Pulley and Shroud in this group.)
3. Remove grille and grille housing. (See Remove Grille and Remove Grille Housing. in Group 1921.)

CED,TX03399,6014 –19–24MAR00–1/3

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TS281 –UN–23AUG88

CAUTION: Explosive release of fluids from pressurized cooling system can cause serious burns.

Shut off engine. Only remove filler cap when cool enough to touch with bare hands. Slowly loosen cap to first stop to relieve pressure before removing completely.

4. Drain radiator coolant. The approximate capacity of engine coolant is 19.4 L (20 qt).
5. Pull a vacuum on hydrostatic reservoir.

Continued on next page

CED,TX03399,6014 –19–24MAR00–2/3

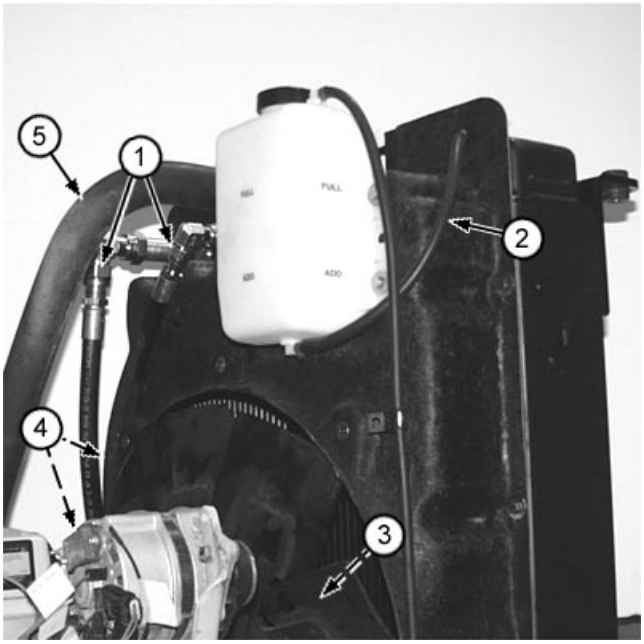
6. Disconnect upper cooler hoses (1) and lower cooler hoses (4). Close all openings using caps and plugs.
7. Disconnect lower radiator hose (3) at engine.
8. Disconnect upper radiator hose (5) and over flow tube (2).
9. Remove fan blade.
10. Remove cap screws and shroud with reservoir.
11. Install strap and hoist.

CAUTION: The approximate weight of radiator and oil cooler with shroud is 102 kg (225 lb).

Radiator and Oil Cooler—Specification

Radiator and Oil Cooler—Weight..... 102 kg (225 lb) (Approximate)

12. Remove four bottom mount cap screws.
13. Raise radiator/oil cooler slightly and remove rubber mounts from bottom of radiator to clear frame and remove radiator and oil cooler as assembly.



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1—Radiator-to-Hydrostatic Pump Hose, Radiator-to-Control Valve Tee Hose
2—Over Flow Tube
3—Lower Radiator Hose
4—Radiator-to-Hydrostatic Pump Hose, Radiator-to-Control Valve Hose
5—Upper Radiator Hose

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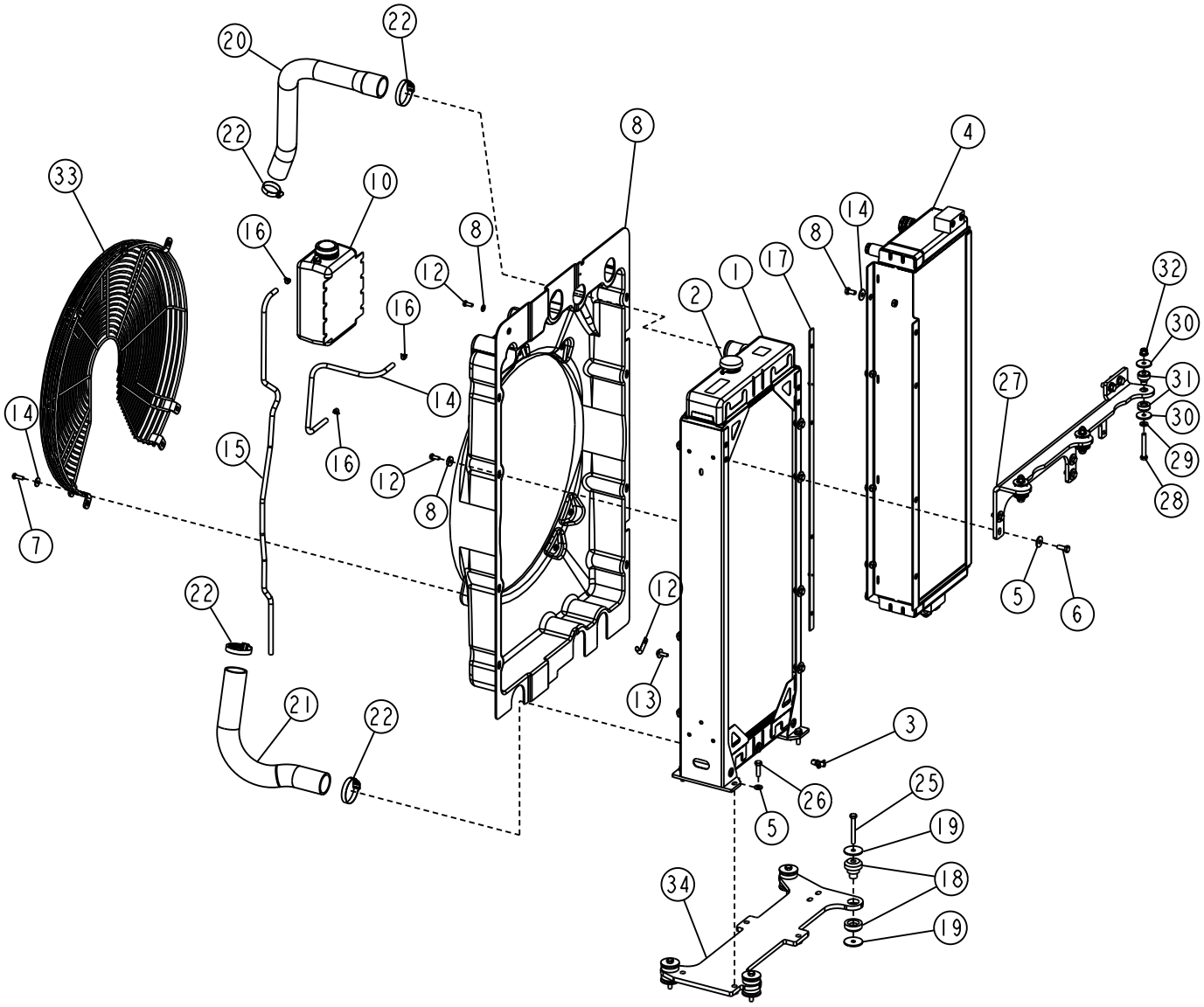
CED,TX03399,6014 –19–24MAR00–3/3

Install Radiator and Oil Cooler



T130797

T130797 –UN–07JUL00

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CED,TX03399,6015 –19–24MAR00–1/2

1—Radiator
2—Radiator Cap
3—Drain Valve
4—Oil Cooler
5—Washer (14 used)
6—Cap Screw (8 used)
7—Cap Screw (8 used)
8—Shroud
9—Washer (8 used)
10—Recovery/Overflow Tank
11—Screw (12 used)
12—Clip (3 used)
13—Cap Screw (3 used)
14—Radiator Recovery Tube
15—Radiator Overflow Tube
16—Clamp (3 used)
17—Strip
18—Rubber Mount (4 used)
19—Washer (8 used)
20—Radiator Upper Hose
21—Radiator Lower Hose
22—Clamp (4 used)
23—Washer (7 used)
24—Cap Screw (7 used)
25—Cap Screw (4 used)
26—Cap Screw (4 used)
27—Bracket
28—Cap Screw (3 used)
29—Washer (3 used)
30—Cap Screw (6 used)
31—Rubber Mount (3 used)
32—Nut (3 used)
33—Fan Guard
34—Mounting Bracket

1. Install lower rubber mounts (18) on radiator and oil cooler.
2. Using chain and hoist install radiator and oil cooler.
3. Install washers (19) and cap screw (25). Tighten cap screws to specification.

Radiator and Oil Cooler—Specification
Lower Radiator/Oil Cooler Cap Screws—Torque ..... 50 N•m (37 lb-ft)

4. If removed, tighten cap screws (6).

Radiator and Oil Cooler—Specification
Bracket-to-Radiator and Oil Cooler Cap Screws—Torque..... 73 N•m (54 lb-ft)

Radiator and Oil Cooler—Specification
Bracket-to-Oil Cooler Cap Screws—Torque ..... 129 N•m (95 lb-ft)

5. Install shroud with reservoir.

Radiator and Oil Cooler—Specification
Shroud Cap Screws—Torque..... 37 N•m (27 lb- ft)

6. Connect upper and lower radiator hoses (20 and 21). Connect cooler hoses and coolant over flow tube (15).
7. Install grille housing. Remove Grille and Remove Grille Housing.
8. Install radiator/oil cooler bracket-to-grille housing using hardware (29—32). Tighten cap screw (29) to specification.

Radiator and Oil Cooler—Specification
Upper Radiator/Oil Cooler Bracket-to-Grille Housing Cap Screw—Torque ..... 50 N•m (37 lb-ft)

9. Install spacer, fan and fan guard (33). Tighten cap screws.

Radiator and Oil Cooler—Specification
Fan Guard Cap Screws—Torque..... 37 N•m (27 lb- ft)

10. Fill radiator with coolant. (See Fuel and Lubricants in Section 00, Group 04.)

CED,TX03399,6015 –19–24MAR00–2/2

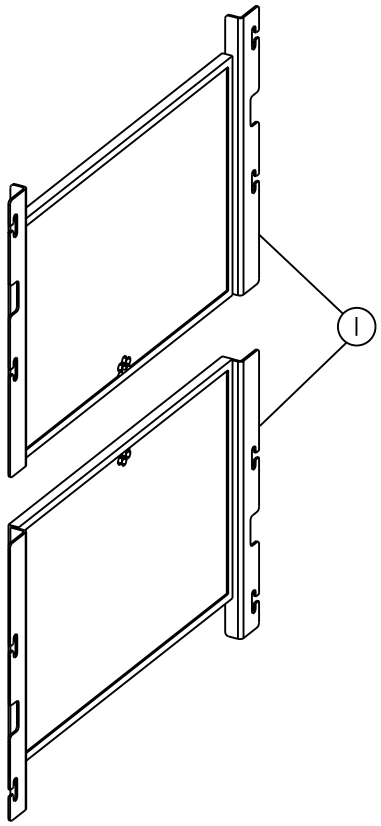
Remove and Install Sand Shield—If Equipped

1. Loosen four cap screws attaching shroud to radiator.
2. Remove four cap screws attaching shroud to oil cooler. Pull back shroud towards engine and remove sand shield. Install shield until it engages loosened cap screws. Install and tighten cap screws.

Sand Shield—Specification

Sand Shield—Torque	37 N•m (27 lb-ft)

1—Sand Shields



T130798 –UN–31MAY00

CED,TX03399,6016 –19–24MAR00–1/1

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Other Material

Number	Name	Use
TY21517 (U.S.) NA (Canadian) 454 (LOCTITE®)	Instant Gel Adhesive	Apply on throttle lever to hold grip.

LOCTITE is a registered trademark of Loctite Corp.

CED,TX03399,6141 –19–11AUG00–1/1

Specifications

Item	Measurement	Specification
Speed Control Lever		
Lever to Initiate Movement in Forward Direction	Force	67—76 N (15—17 lb)
Speed Control Ball Stud Nut	Torque	11.1 N•m (98 lb-in.)

CED,TX03399,6142 –19–11AUG00–1/1

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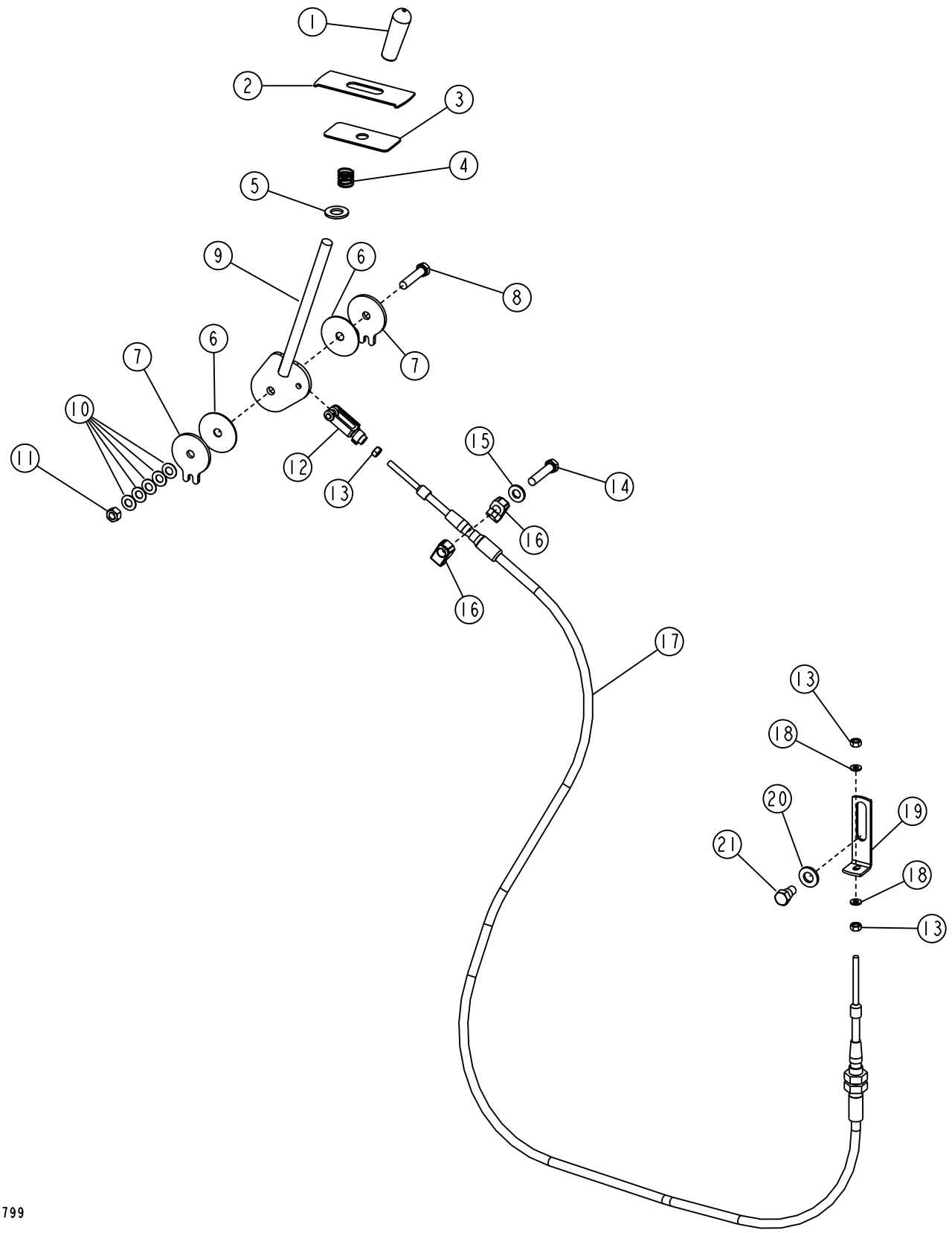
Remove and Install Engine Speed Control and Decelerator



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CED,TX03399,6017 –19–24MAR00–1/4

1—Grip
2—Upper Slider Plate
3—Lower Slider Plate
4—Spring
5—Washer
6—Friction Disk Washer (2 used)
7—Notched Metal Washer (2 used)
8—Cap Screw
9—Throttle Lever
10—Spring Washer (5 used)
11—Lock Nut
12—Yoke with Locking Collar
13—Nut (3 used)
14—Cap Screw
15—Washer
16—Clamp (2 used)
17—Cable
18—Washer (2 used)
19—Angle Bracket
20—Washer
21—Cap Screw

1. Lower equipment to the ground.
2. Remove left engine side shields.
3. Remove dash and foot rest.
4. Remove parts as required.
5. Install parts.
6. Install spring washers (10) with concave side toward notched metal washer (7).
7. Apply instant gel adhesive to throttle lever (9) and install grip (1).
8. Tighten nut (11) to initiate a 67—76 N (15—17 lb) (force) movement on lever in the forward direction.

Speed Control Lever—Specification

Lever to Initiate Movement in Forward Direction—Force..... 67—76 N (15—17 lb)

9. Adjust linkage. (See Engine Speed Control Linkage Adjustment in Operation and Test Manual, Group 9010-20.)
10. Tighten ball stud nuts to specification.

Speed Control Lever—Specification

Speed Control Ball Stud Nut—Torque..... 11.1 N•m (98 lb-in.)

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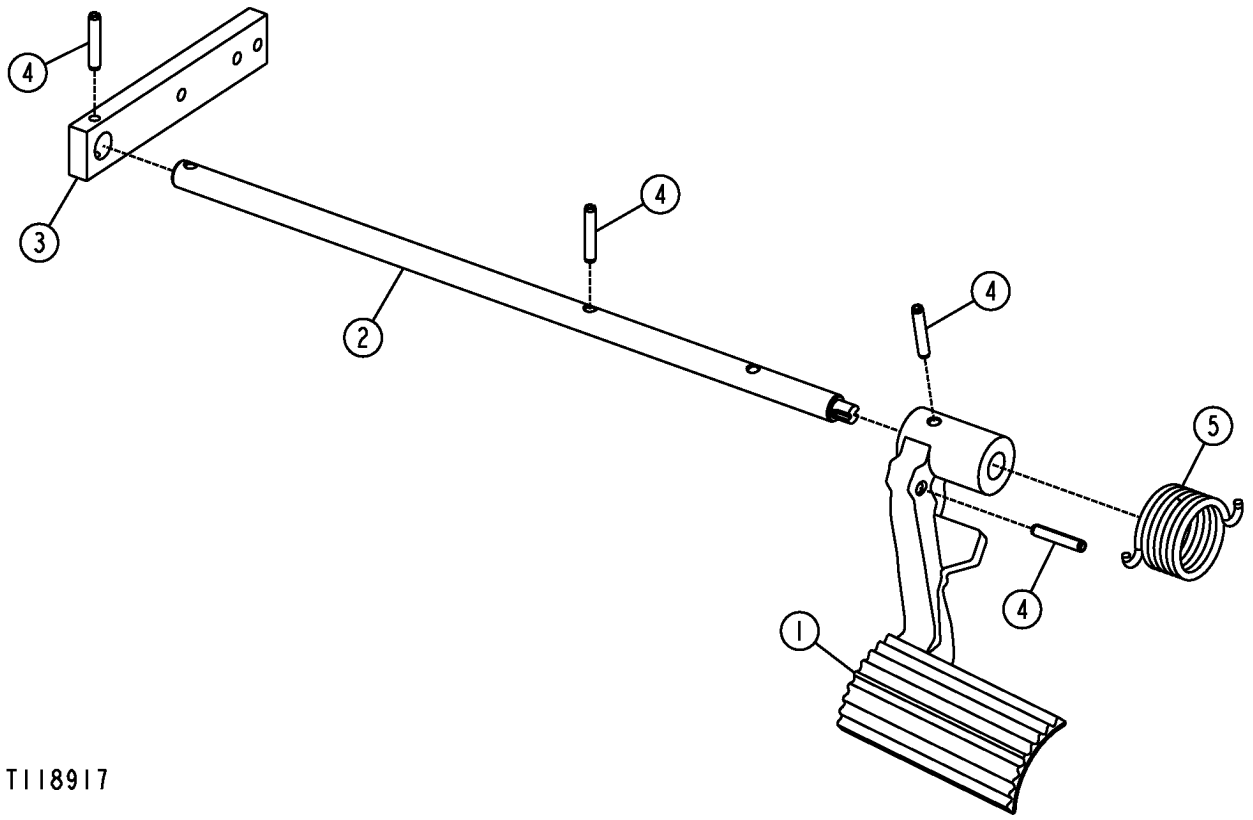

T118917 –UN–21DEC98

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0515
4

1—Decelerator Pedal **3—Bellcrank** **4—Spring Pin (4 used)** **5—Torsion Spring**
2—Shaft

11. Remove and install parts as necessary.

12. Adjust. (See Engine Speed Control Linkage Adjustment in Operation and Test Manual, Group 9010-20.)

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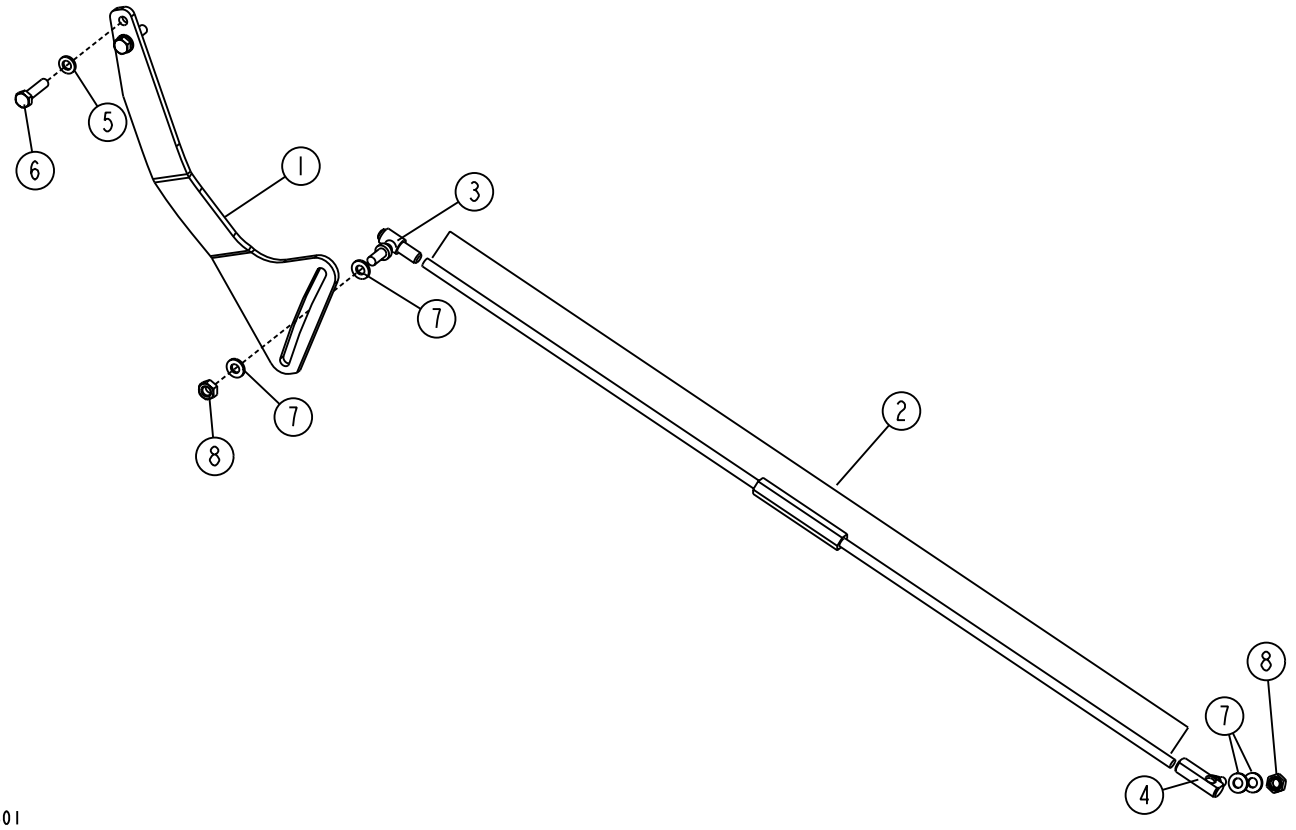
CED,TX03399,6017 –19–24MAR00–3/4



1—Speed Control Lever
2—Speed Control Rod Linkage
3—Ball Joint
4—Ball Joint
5—Washer (2 used)
6—Cap Screw (2 used)
7—Washer (3 used)
8—Nut (2 used)

13. Remove and install parts as necessary.

14. Adjust. (See Engine Speed Control Linkage Adjustment in Operation and Test Manual, Group 9010-20.)

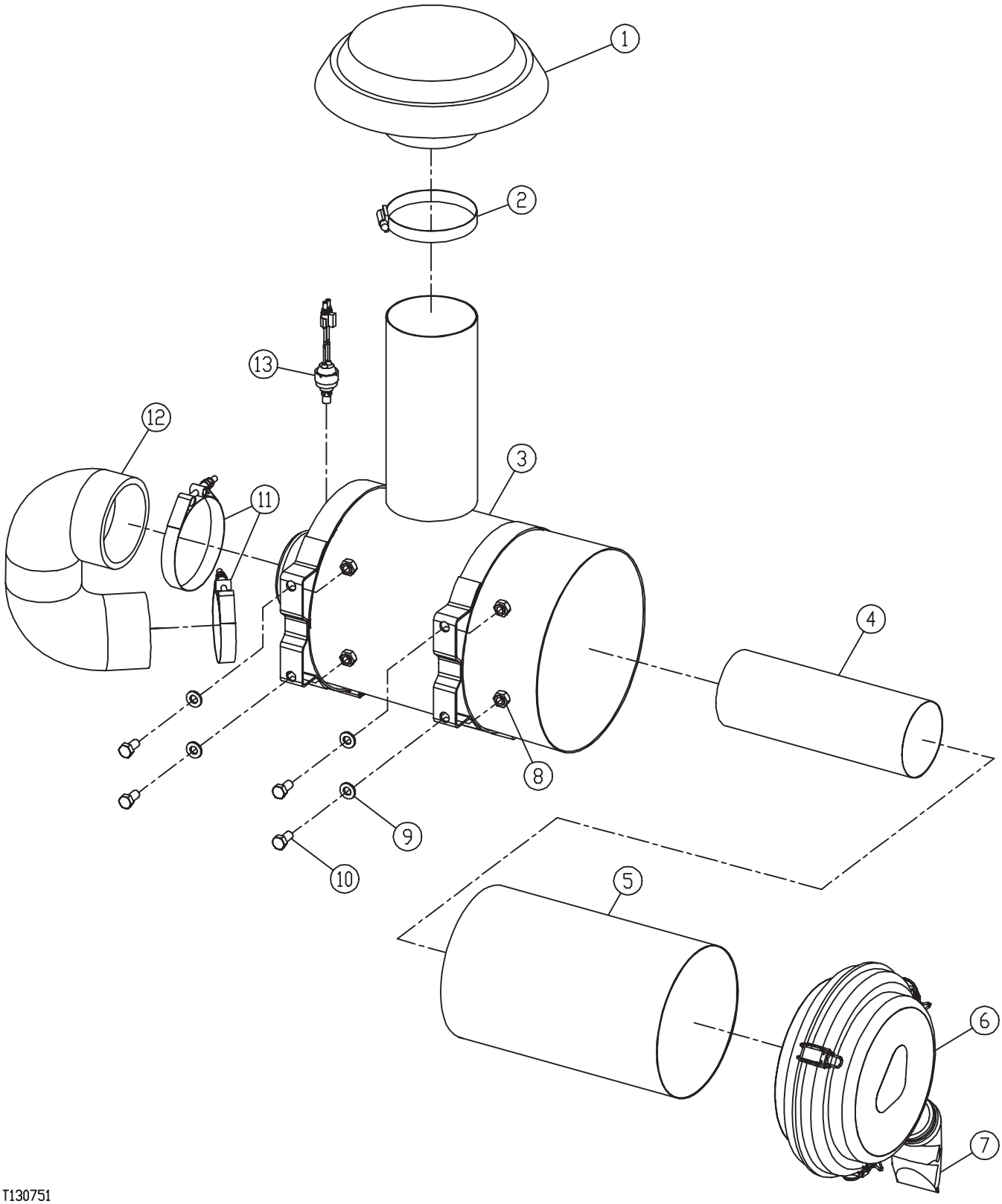
CED,TX03399,6017 –19–24MAR00–4/4

Specifications

Item	Measurement	Specification
Air Cleaner		
Air Cleaner Clamps	Torque	3.5 N•m (31 lb-in.)

CED,TX03399,6144 –19–11AUG00–1/1

Remove and Install Air Cleaner with Turbocharger



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CED,TX03399,6018 –19–24MAR00–1/2

1—Precleaner (Cap)
2—Clamp
3—Air Cleaner Housing
4—Secondary Filter Element
5—Primary Filter Element
6—Cover
7—Dust Unloader Valve
8—Nut (4 used)
9—Washer (4 used)
10—Cap Screw (4 used)
11—Clamp (2 used)
12—Hose
13—Sensor

1. Remove precleaner (1) and hood.
2. Remove and install parts as needed.
3. Inspect elements (4 and 5) for wear or damage and replace as necessary.
4. Install parts.
5. Tighten all clamps and band cap screws.
6. Install hood and precleaner.(See Remove and Install Hood, Group 1910.)
7. Test air intake. (SeeAir Intake System Leakage Test in Operation and Test Manual, Group 9010-25.)

Air Cleaner—Specification

Air Cleaner Clamps—Torque	3.5 N•m (31 lb-in.)

CED,TX03399,6018 –19–24MAR00–2/2

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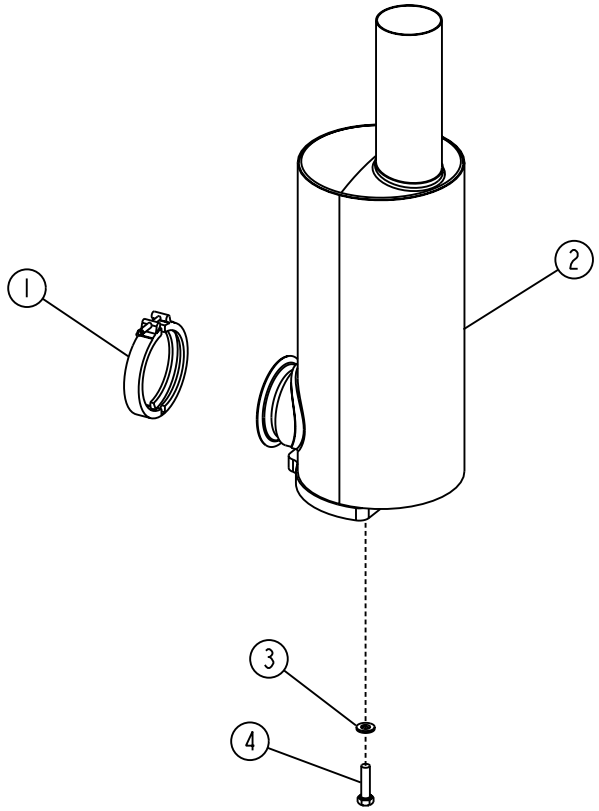
Remove and Install Muffler



T130804 –UN–31MAY00

1—Clamp **2—Muffler** **3—Washer (3 used)** **4—Cap Screw (3 used)**

1. Remove engine side shields.
2. Remove hood.
3. Remove muffler.
4. Install muffler, hood and side shields.

CED,TX03399,6019 –19–24MAR00–1/1

Specifications

Item	Measurement	Specification
Engine and Power Train Mounting Parts		
Side Rails-to-Engine Cap Screws	Torque	130 N•m (96 lb-ft)
Pump-to-Flywheel Cover Cap Screws	Torque	112 N•m (83 lb-ft)
Flywheel Cover to Engine Flywheel Cap Screws	Torque	73 N•m (54 lb-ft)
Rear Pump Support Bracket-to-Side Rails Cap Screws	Torque	140 N•m (103 lb-ft)
Rear Support Bracket-to-Rear Hydrostatic Pump Cap Screws	Torque	140 N•m (103 lb-ft)
Side Rails to Main Frame Cap Screws	Torque	800 N•m (590 lb-ft)

CED,TX03399,6145 –19–11AUG00–1/1

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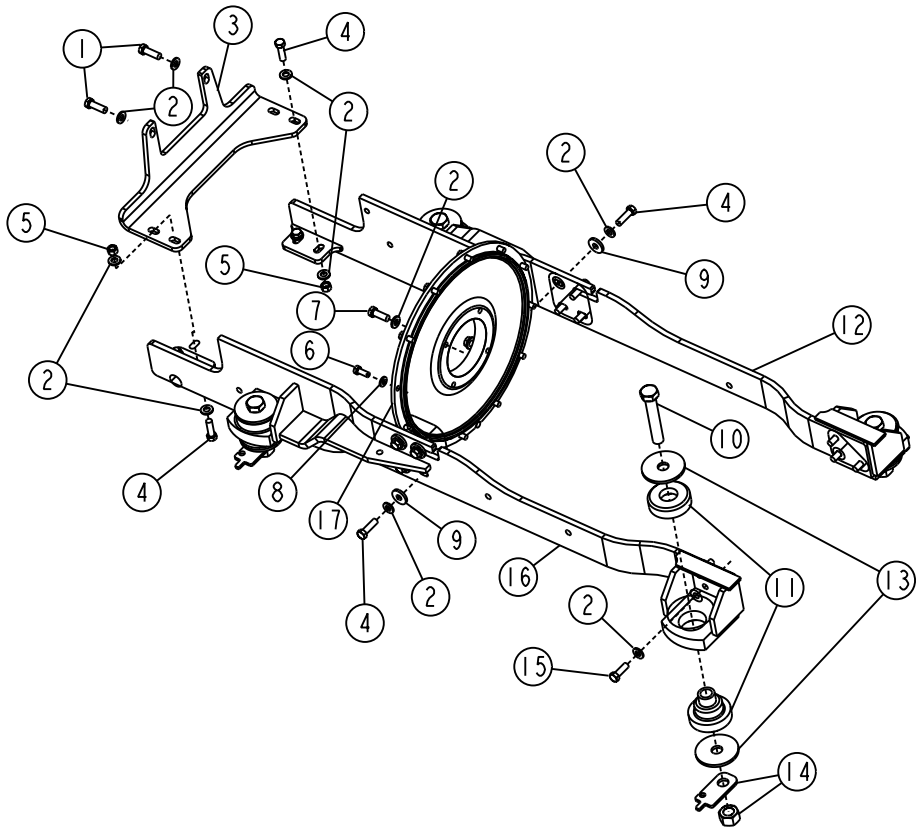
1

Engine and Power Train Mounting Parts



T130806 –UN–07JUL00

T130806

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2

1—Rear Support Bracket-to-Rear Hydraulic Pump Cap Screw (2 used)
2—Washer (24 used)
3—Rear Support Bracket
4—Rear Support Bracket and Rear Side Rails-to-Engine Cap Screw (12 used)
5—Nut (4 used)
6—Flywheel Cover-to Engine Flywheel Cap Screw (12 used)
7—Pump-to-Flywheel Cover Cap Screw (4 used)
8—Washer (12 used)
9—Washer (8 used)
10—Side Rails-to-Main Frame Cap Screw (4 used)
11—Rubber Mounts (4 sets)
12—Left Side Rail Frame
13—Washer (8 used)
14—Retainer Plate and Nut Assembly (4 used)
15—Left and Right Front Rails-to-Engine Cap Screws (6 used)
16—Right Side Rail Frame
17—Flywheel Cover

Item	Measurement	Specification
Engine and Power Train Mounting Parts		
Side Rails-to-Engine Cap Screws	Torque	130 N•m (96 lb-ft)
Pump-to-Flywheel Cover Cap Screws	Torque	112 N•m (83 lb-ft)
Flywheel Cover to Engine Flywheel Cap Screws	Torque	73 N•m (54 lb-ft)
Rear Pump Support Bracket-to-Side Rails Cap Screws	Torque	140 N•m (103 lb-ft)

Continued on next page

CED,TX03399,6020 –19–24MAR00–1/2

Mounting Frame

Item	Measurement	Specification
Rear Support Bracket-to-Rear Hydrostatic Pump Cap Screws	Torque	140 N•m (103 lb-ft)
Side Rails to Main Frame Cap Screws	Torque	800 N•m (590 lb-ft)

CED,TX03399,6020 –19–24MAR00–2/2

Specifications

Item	Measurement	Specification
Fuel Tank		
Fuel Tank	Weight	141 kg (310 lb) (Approximate)
Fuel Tank Cap Screws	Torque	285 N•m (210 lb-ft)

CED,TX03399,6146 –19–11AUG00–1/1

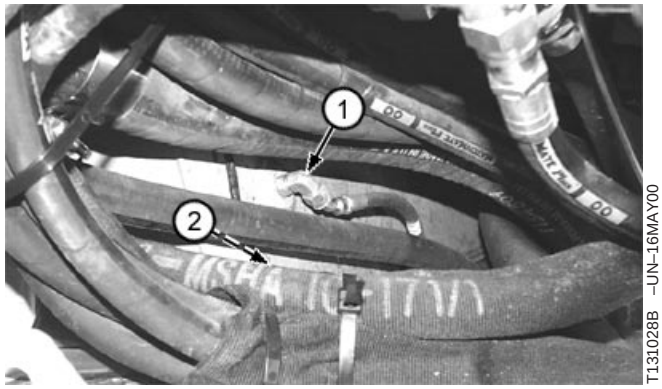
Remove and Install Fuel Tank

1. Remove rear access cover on rear of machine.
2. Drain fuel tank. The approximate capacity of fuel tank is 227 L (60 gal).
3. Disconnect fuel supply line, located by the fuel shut-off drain cock.
4. Remove fuel shut-off drain cock.

CED,TX03399,6021 –19–24MAR00–1/6

5. Disconnect fuel return hose (1) and fuel sender connector (2) through hydraulic reservoir access door.
6. Remove rear right and left side corner panels.

1—Fuel Return Hose
2—Fuel Sender Connector



T131028B –UN–16MAY00

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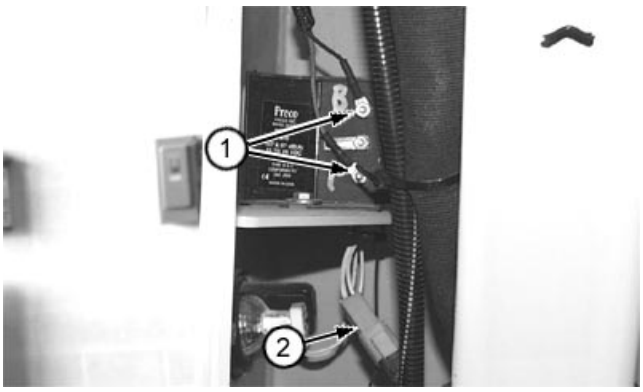
CED,TX03399,6021 –19–24MAR00–2/6

7. Disconnect backup alarm wiring leads (1) and rear work light connector (2).

1—Backup Alarm Wiring Leads
2—Rear Work Light Connector



CED,TX03399,6021 –19–24MAR00–3/6

CAUTION: The approximate weight of fuel tank is 141 kg (310 lb).

Fuel Tank—Specification

Fuel Tank—Weight..... 141 kg (310 lb) (Approximate)

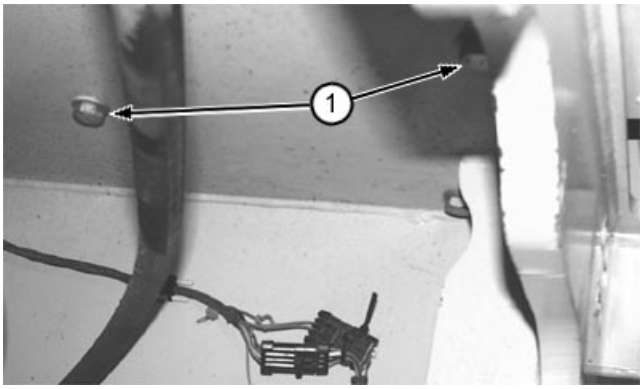
8. Install lifting brackets and remove cap screws (1) on both sides.

9. Remove fuel tank.

10. Install tank and tighten four cap screws.

Fuel Tank—Specification

Fuel Tank Cap Screws—Torque..... 285 N•m (210 lb-ft)

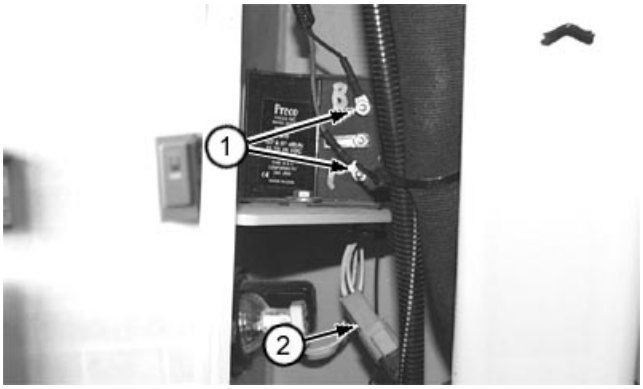


1—Cap Screw (4 used)

CED,TX03399,6021 –19–24MAR00–4/6

11. Connect backup alarm wiring leads (1) and rear work light connector (2). Install rear right and left side panels.

1—Backup Alarm Wiring Leads
2—Rear Work Light Connector



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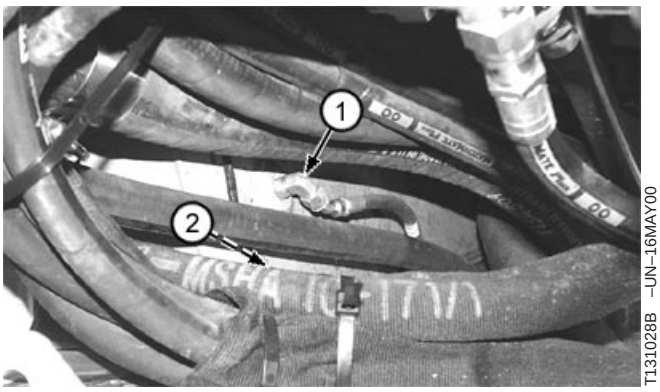
CED,TX03399,6021 –19–24MAR00–5/6

12. Connect fuel return hose (1) and fuel sender connector (2) through hydraulic reservoir access door.
13. Install fuel shut-off drain cock.
14. Connect fuel supply line, located by the fuel shut-off drain cock.
15. Install rear access cover.
16. Fill fuel tank. SeeDrain and Refill Capacities in Operator's Manual.



T131028B –UN–16MAY00

1—Fuel Return Hose
2—Fuel Sender Connector

CED,TX03399,6021 –19–24MAR00–6/6

05
0560
3

Section 07
Dampener Drive

Contents

Page

Group 0752—Elements
Other Material 07-0752-1
Specifications 07-0752-1
Dampener Drive
  Remove and Install 07-0752-2

Other Material

Number	Name	Use
TY16285 (U.S.) TY9485 (Canadian) 7649 (LOCTITE®)	Cure Primer	Cure surface prior to application of adhesives or sealants.
TY9370 (U.S.) TY9477 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength) Products	Apply to threads of dampener hub set screws.

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CED,TX03399,6147 –19–11AUG00–1/1

Specifications

Item	Measurement	Specification
Dampener Drive		
Dampener Hub-to-Hydrostatic Pump Shaft Set Screws	Torque	50 N•m (37 lb-ft)
Dampener-to-Flywheel Cap Screws	Torque	57 N•m (42 lb-ft)

CED,TX03399,6148 –19–11AUG00–1/1

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0752
1

Remove and Install Dampener Drive

1. Remove hydrostatic pumps. (See Remove and Install Hydrostatic Pumps in Group 0300.)
2. Remove set screws (E) from hub (D).
3. Remove hub (D). If necessary, use a puller to remove.
4. Remove cap screws (A) and dampener (C) from flywheel.
5. Install dampener hub with tangs away from the pump, and using a straightedge, install hub flush with edge of shaft.
6. Clean set screws. Apply cure primer and thread lock and sealer (medium strength) to set screws.
7. Install set screws (1). Using an ALLEN HEAD® wrench, hand tighten set screws beginning with the set screw closest to the pump.

   Tighten set screws to specifications beginning with the set screw closest to the pump. Torque all set screws again, to specifications beginning with the set screw closest to pump.

Dampener Drive—Specification

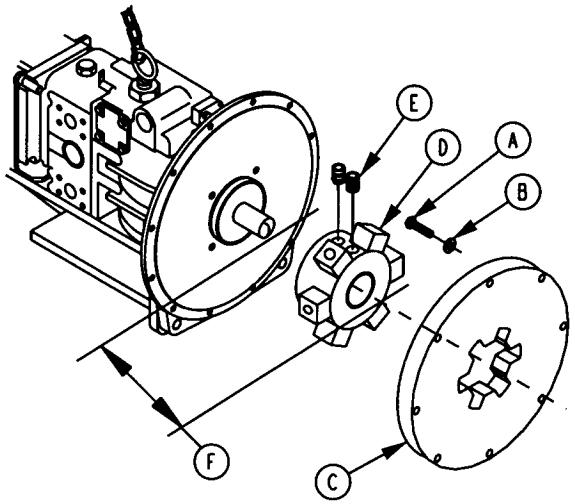
Dampener Hub-to-Hydrostatic Pump Shaft Set Screws—Torque	50 N•m (37 lb-ft)

8. Install new dampener with the largest offset side of dampener away from flywheel. Clean threads and apply cure primer and thread lock and sealer (medium strength) to threads of cap screws (A).
9. Install cap screws (A) and washers (B). Tighten cap screws to specifications.

Dampener Drive—Specification

Dampener-to-Flywheel Cap Screws—Torque	57 N•m (42 lb-ft)

10. Install hydrostatic pumps. (See Remove and Install Hydrostatic Pumps in Group 0300.)



T8545AB (CV)

T8545AB –UN–12SEP95

A—Cap Screw (8 used)
B—Washer (8 used)
C—Dampener (Element)
D—Hub
E—Set Screw (2 used)
F—Dimension: 53 mm (2.09 in.)

07 0752 2

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TX,0752,SS2306 –19–13APR99–1/1

Section 11
Park Brake

Contents

Page

Group 1100—Removal and Installation
Brake Valve
Remove and Install 11-1100-1
Park Brake
Remove and Install 11-1100-3

Group 1115—Control Linkage
Other Material 11-1115-1
Specifications 11-1115-1
Brake Pedal Control Linkage
Remove and Install 11-1115-2
Park Lock Linkage
Remove and Install 11-1115-3

Group 1160—Hydraulic System
Brake Valve
Disassemble and Assemble. 11-1160-1
Park Brake
Disassemble and Assemble. 11-1160-3

Remove and Install Brake Valve

1. Lower all equipment to ground and stop engine.
2. Place park lock lever in UP (locked) position.
3. Turn battery disconnect switch off.

CED,TX03399,6022 –19–28MAR00–1/3

4. Remove four cap screws (1) and instrument panel (2).
5. Remove lower dash panel (3).

1—Cap Screw (4 used)
2—Instrument Panel
3—Lower Dash Panel

T118806B –UN–09DEC98

Continued on next page

CED,TX03399,6022 –19–28MAR00–2/3

6.

7. Disconnect hoses (1) and (3 and 6).

8. Disconnect harness connector (2).

9. Disconnect chain link (4) from brake valve spool ball joint.

10. Remove cap screws (5) and brake valve.

11. Install brake valve and tighten cap screws (5).

12. Connect chain link (4) to brake valve spool ball joint.

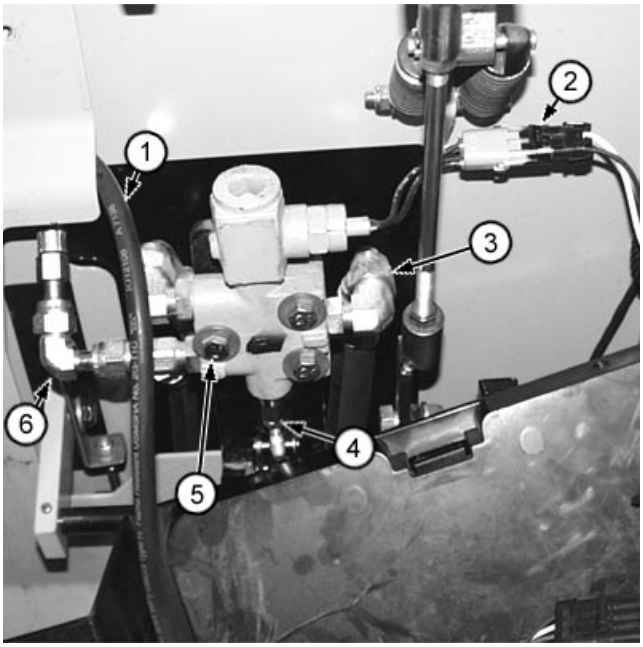
13. Adjust brake valve linkage. (See Brake Pedal-to-Brake Valve Linkage Adjustment in Operation and Test Manual, Group 9026-20.)

14. Connect harness connector (2).

15. Connect lines (1) and (3 and 6).

16. Install lower dash panel and instrument panel.

17. Turn battery disconnect switch to ON.



T132330B –UN–11JUL00

1—Brake Valve Hose-to-Reservoir
2—Harness Connector
3—Brake Valve Hose-to-Left Park Brake Tee Fitting
4—Chain Link
5—Cap Screw (3 used)
6—Brake Valve Hose-to-Transmission Charge Pressure Gauge

CED,TX03399,6022 –19–28MAR00–3/3

11
1100
2

Remove and Install Park Brake

1. Lower all equipment to ground.
2. Stop engine. Operate all hydraulic controls to release pressure in hydraulic system.
3. Turn battery disconnect switch to OFF.

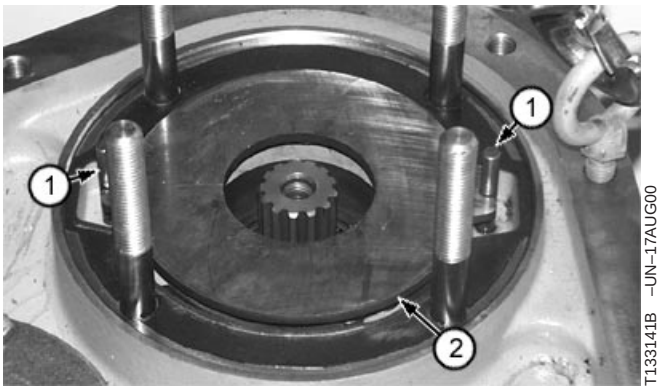
NOTE: Reservoir capacity is approximately 65.1 L (17.2 gal).

4. Drain reservoir or remove hydrostatic reservoir check valve and attach vacuum pump to elbow.
5. Remove hydrostatic motors. (See Remove and Install Hydrostatic Motors in Group 03-0300.)
6. Remove hub from park brake if not removed.
7. Remove brake assembly nuts and washers (1).
8. Remove park brake housing (2).

OUO1065,0000459 –19–15NOV00–1/5

9. Remove park brake disks, plates and pressure plate (2).
10. Remove springs (3) and dowel pins (1).
11. Remove park brake piston and piston seals.
12. Apply clean oil on seals and install seals on piston.
13. Install piston in housing.

1—Dowel pins
2—Park Brake Pressure Plate
3—Springs (20 used)



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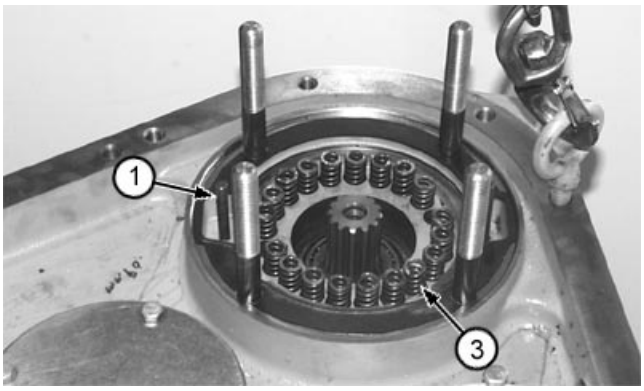

T133145B –UN–17AUG00

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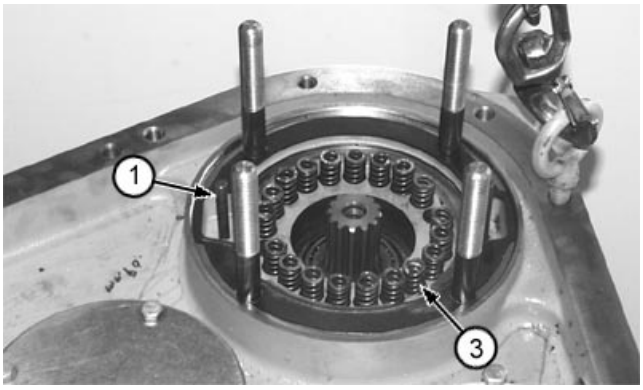
OUO1065,0000459 –19–15NOV00–2/5

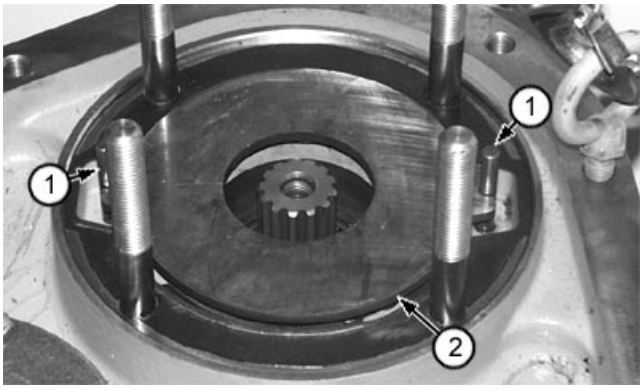
14. Install springs (3) and dowel pins (1).

15. Install park brake pressure plate (2) and hub.

1—Dowel Pins
2—Park Brake Pressure Plate
3—Springs (20 used)



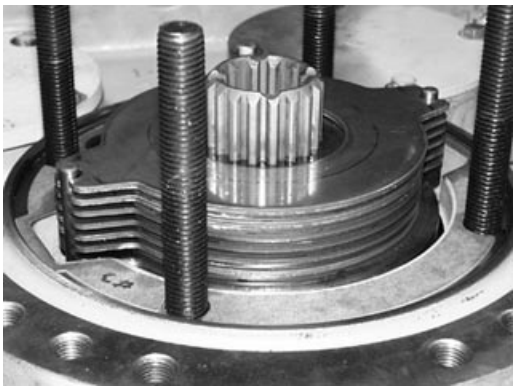
T133145B –UN–17AUG00



T133141B –UN–17AUG00

OUO1065,0000459 –19–15NOV00–3/5

16. Start with park brake disk and alternating install six disks and plates.



T134060B –UN–27SEP00

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OUO1065,0000459 –19–15NOV00–4/5

17. Use DFT1212 to compress and hold park brake plates, disks and springs in place. (See Dealer Fabricated Tools.)

18. Install park brake housing (2) and tighten nuts with washers (1) to specification.

Specification

Park Brake Housing—Torque ..... 352 N•m (260 lb-ft)

19. Remove DFT1212 tool.

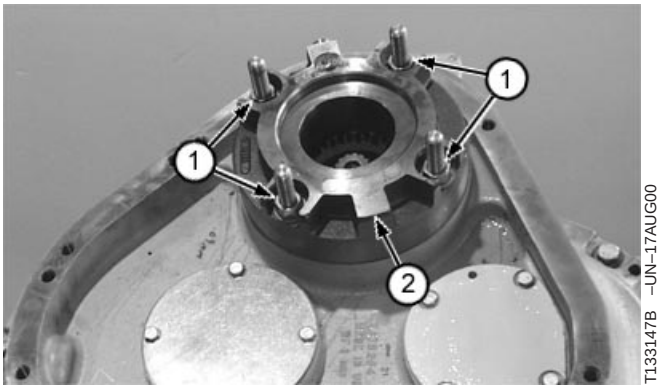
20. Install hydrostatic motor. (See Remove and Install Hydrostatic Motors.)

21. Fill reservoir if drained. (See Transmission, Hydraulic, and Winch (If Equipped) Oil in Group 004 Fuels and Lubricants.)

22. Turn battery disconnect switch to ON.

23. Install rear access plate or rear mounted optional equipment.

24. Install and Bottom Covers if removed. (See Remove and Install Frame and Bottom Covers in group 17.)



T133147B –UN–17AUG00

1—Nuts and Washers
2—Park Brake Housing

OUO1065,0000459 –19–15NOV00–5/5

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Other Material

Number	Name	Use
TY6347 (U.S.) (U.S.)	Multi-Purpose Grease	Apply to bearings brake pedal and brake pedal support.
TY16285 (U.S.) TY9485 (Canadian) 7649 (LOCTITE®)	Cure Primer	Cure surface prior to application of adhesives or sealants.
T43512 (U.S.) TY9473 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to rotary sensor cap screws. Apply to lever up stop and down stop boss cap screws.

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CED,TX03399,6149 –19–11AUG00–1/1

Specifications

Item	Measurement	Specification
Brake Pedal		
Bearings	Distance	Flush to 1 mm (0.04 in.) recessed
Pedal Support		
Left Pedal Support Bearing	Distance	Flush to 1 mm (0.04 in.) recessed from outer surface of left ear
Right Support Pedal Bearing	Distance	Flush to 1 mm (0.04 in.) recessed from the inner surface of right ear

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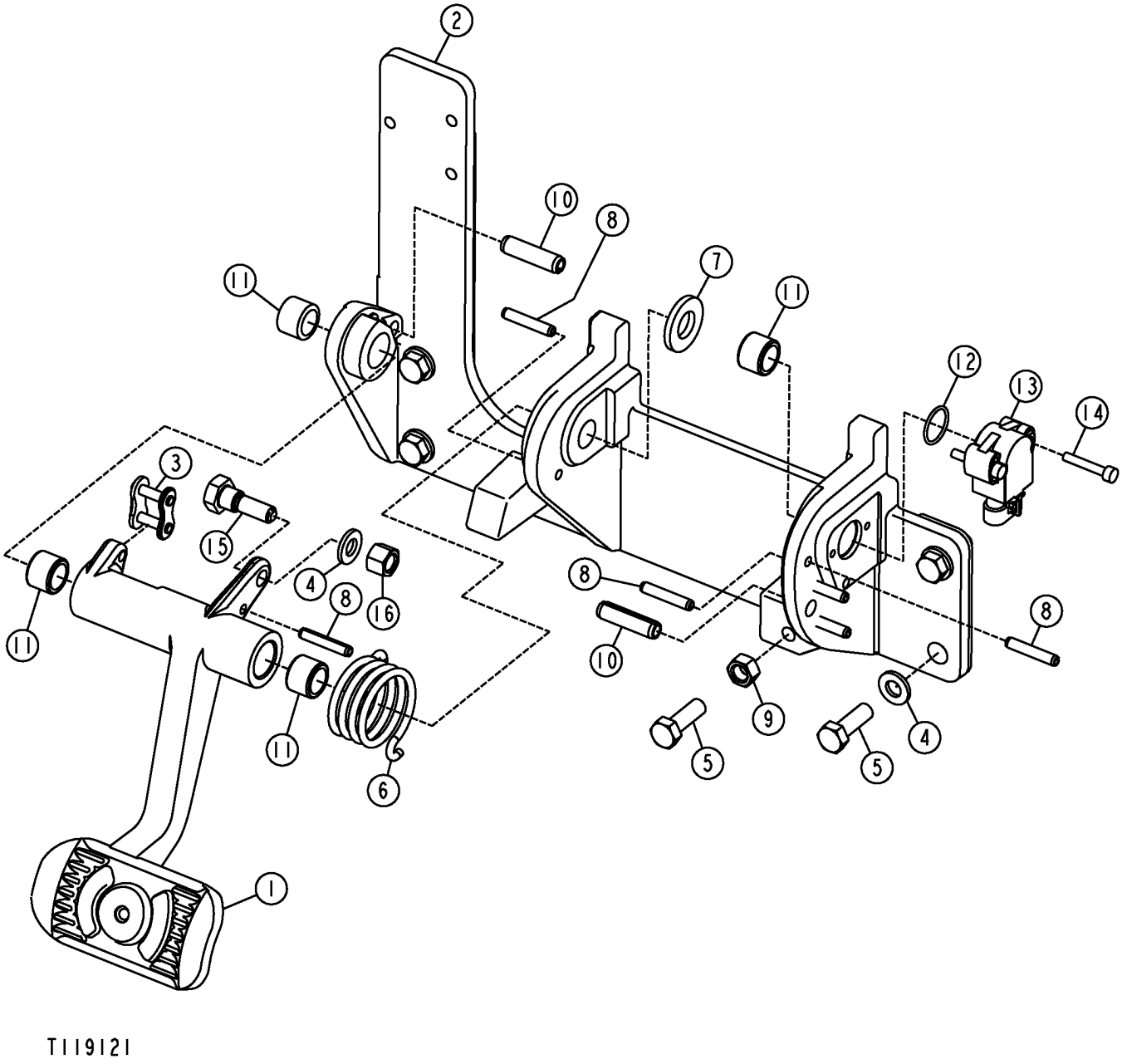
1

CED,TX03399,6150 –19–11AUG00–1/1

Remove and Install Brake Pedal Control Linkage



T119121

T119121 –UN–06JAN99

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CED,OUTX547,129 –19–08APR99–1/2

1—Brake Pedal
2—Needle Roller Bearing (4 used)
3—Chain Link
4—Shoulder Bolt
5—Washer (5 used)
6—Nut
7—Spring Pin
8—Torsion Spring
9—Brake Support
10—Spring Pin
11—Washer
12—O-Ring
13—Rotary Sensor
14—Cap Screw (2 used)
15—Cap Screw (5 used)
16—Nut

1. Disassemble and assemble replace parts as necessary.
2. Apply grease to all bearings before installing.
3. Press bearings (2) into each end of brake pedal (1) until flush to 1 mm (0.04 in.) recessed.

Brake Pedal—Specification

Bearings—Distance	Flush to 1 mm (0.04 in.) recessed

4. Press bearing (2) into left ear of pedal support (9) flush to 1 mm (0.04 in.) recessed from outer side of casting.

Pedal Support—Specification

Left Pedal Support Bearing—Distance	Flush to 1 mm (0.04 in.) recessed from outer surface of left ear

IMPORTANT: If right hand bearing on the pedal support is pressed flush with "outer" surface the rotary sensor (13) will not be able to assemble correctly. Install bearing on the "inner" surface of the pedal support.

5. Press bearing (2) into the right ear of the pedal support (9) with bearing flush to 1 mm (0.04 in.) recessed from the "inner" surface of ear.

Pedal Support—Specification

Right Support Pedal Bearing—Distance	Flush to 1 mm (0.04 in.) recessed from the inner surface of right ear

6. Apply thread lock and sealer (medium strength) to threads of cap screws (14). Tighten cap screws.
7. Adjust pedal to brake valve linkage. (See Brake Pedal to Brake Valve Linkage Adjustment in Operation and Test Manual, Group 9026-20.

CED,OUTX547,129 –19–08APR99–2/2

Remove and Install Park Lock Linkage

1. Lower all equipment to ground and stop engine.
2. Turn battery disconnected switch off.
3. Remove four cap screws (1) and instrument panel (2).
4. Remove lower dash panel (3).

1—Cap Screw (4 used)
2—Instrument panel
3—Lower Dash Panel

T118806B –UN–09DEC98

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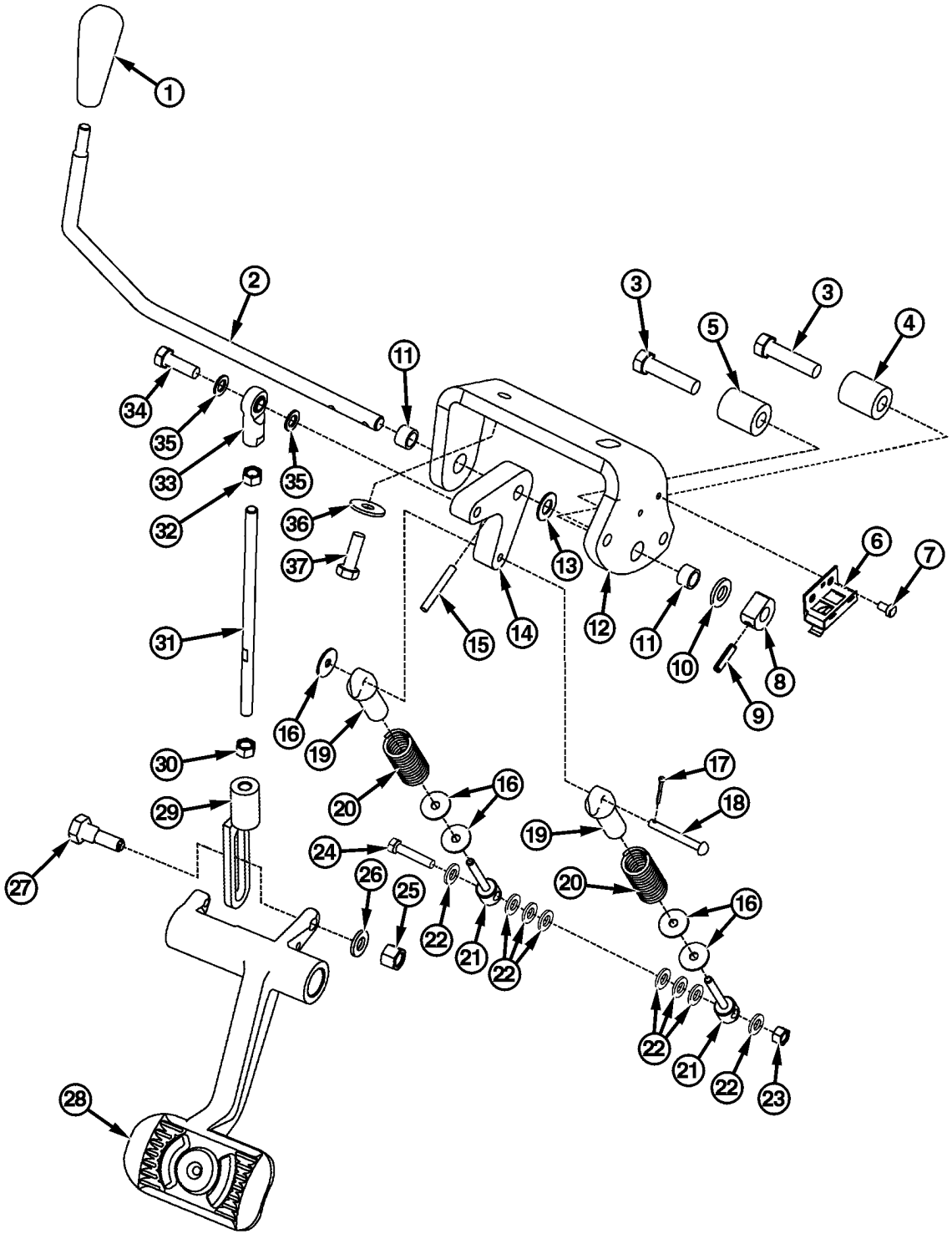
CED,TX03399,6025 –19–28MAR00–1/4



T119803

T119803 –UN–25JAN99

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CED,TX03399,6025 –19–28MAR00–2/4

1—Knob
2—Lever
3—Cap Screw (2 used)
4—Lever Upper Stop (Boss)
5—Lever Down Stop (Boss)
6—Switch
7—Socket Head Cap Screw (2 used)
8—Cam
9—Spring Pin
10—Nylon Washer
11—Needle Bearing (2 used)
12—Bracket
13—Nylon Washer
14—Bellcrank
15—Groove Pin
16—Washer (5 used)
17—Cotter Pin
18—Pin
19—Pin Guide (2 used)
20—Spring (2 used)
21—Pin (2 used)
22—Washer (8 used)
23—Lock Nut
24—Cap Screw
25—Lock Nut
26—Washer
27—Shoulder Cap Screw
28—Brake Pedal
29—Yoke
30—Nut
31—Linkage Rod
32—Nut
33—Ball Joint
34—Cap Screw
35—Washer (2 used)
36—Washer (2 used)
37—Cap Screw (2 used)

NOTE: Before disassembly, mark the position of cam (8) and bellcrank (14) in relation to lever (2) to aid in assembly.

5. Position park lock lever (2) in the unlocked position (down) and remove shoulder cap screw (27), washer (26) and lock nut (25) to disconnect brake pedal (28) from yoke (29).

   Remove cap screw (34), washers (35) and linkage rod assembly.

6. Remove cap screw (3) to remove lever upper stop (4). Rotate park brake lever up and remove cap screw (3) and lever down stop (5).

NOTE: Park brake lock lever should be in the unlocked position (down) to relieve tension on springs (20).

8. With park lever down, loosen cap screws (37).

9. Rotate right side of park lock assembly toward the operator and remove springs (20) and washers (16) by lifting springs and washers off of pins (21).

10. Remove cap screws (37), washers (36) and park lock linkage assembly.

11. Remove parts (21—24) from firewall anchor.

12. Remove switch (6).

IMPORTANT: Support assembly so needle bearings (11) do not receive an impact when driving out pins (9 and 15).

13. Remove pin (9) to remove cam (8) and nylon washer (10).

14. Remove pin (15).

15. Slide lever (2) out of bracket (12), removing washer (13) and bellcrank (14).

16. Remove bearings (11) from bracket (12).

17. Remove yoke (29) and ball joint (33) from linkage rod, if required. Count and record number of turns to aid in reassembly or replacement.

18. Clean and inspect all parts. Replace as required.

19. Install yoke (29) and ball joint (33) on linkage rod (31). Step of yoke (29) should face as shown.

20. Install bearings (11) flush into bracket (12) adding grease during assembly.

21. Clean cap screw (3) and apply cure primer. Apply thread lock and sealer (medium strength) to cap screw and install lever upper stop (4).

22. Install lever (2) through smaller side of bracket, bellcrank (14), nylon washer (13) and opposite side of bracket.

23. Install nylon washer (10) onto lever.

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1115
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Continued on next page

CED,TX03399,6025 –19–28MAR00–3/4

IMPORTANT: Support assembly so needle bearings (11) do not receive an impact when driving in pins (9 and 15).

24. Install cam (8) using pin (9) in orientation shown on illustration or as marked in disassembly.
25. Install bellcrank (14) using pin (15) in orientation shown in illustration or as marked in disassembly. Install pin flush in center of bellcrank.
26. Clean threads of lever (2) and apply cure primer. Apply thread lock and sealer (medium strength) to threads and install knob (1) with symbols facing outward.
27. Install parts (16—19). Install pin guides (19) and pin (18) in direction shown.
28. Install switch (6) using socket head cap screws (7).
29. Install parts (21—24) on firewall anchor. Tighten nut and then back off 1/2 turn.
30. Loosely install park lock assembly in machine using cap screws (37) and washers (16).
31. With the park lock lever in the unlocked position (down) and the right side of the park lock assembly rotated toward the operator, place washers (16) and spring (20) over pin (21). Install opposite end of spring over pin guide (19). Repeat steps for other side.
32. Rotate park lock lever to the locked position (up), while working pins (21) into pin guides (19). Rotate park lock assembly forward to the firewall and tighten cap screws (37).
33. Apply cure primer to threads of cap screw (3). Apply thread lock and sealer (medium strength) and install lever down stop (5) onto bracket (12).
34. Rotate park lock lever to unlocked position (down) and install park lock linkage rod by connecting ball joint (33) to left side of bellcrank assembly (14) and yoke (29) to brake pedal as shown. Make sure step of yoke (29) faces as shown.
35. Adjust park lock linkage assembly. (See Park Lock Linkage Adjustment in Operation and Test Manual, Group 9026-20.)
36. Test switch (6) using a continuity tester hooked up to the black and green wires of switch. Starting with park brake lock lever in the unlocked position (down), slowly move lever to the locked position (up). The switch should go from an “open” to “closed” state before the lever is in the locked position (up).
37. Install lower dash panel and instrument panel.
38. Turn battery disconnect switch to ON.

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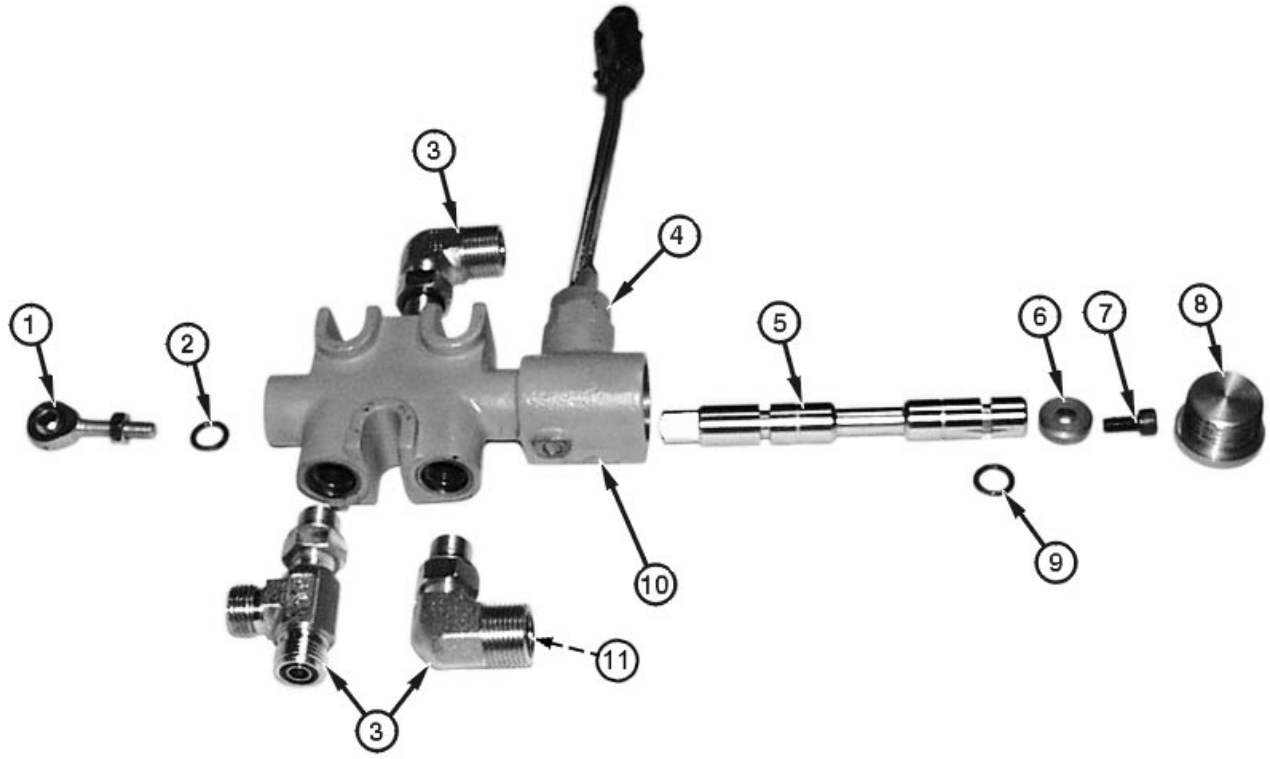
CED,TX03399,6025 –19–28MAR00–4/4

Disassemble and Assemble Brake Valve



T119469C –UN–11JUL00

1—Ball Joint
2—O-Ring
3—Fitting (3 used)
4—Ball Switch
5—Spool Valve
6—Washer
7—Socket Head Cap Screw
8—End Cap
9—O-Ring
10—Brake Valve Housing
11—Orifice

1. Mark position of hydraulic fittings (3) to aid in assembly, and remove. Inspect orifice (11).
2. Remove ball switch (4).
3. Loosen lock nut on ball joint (1) and remove joint from housing.
4. Remove spool end cap (8).
5. Remove spool (5) from housing.
6. Remove socket head cap screw (7), washer (6) and O-rings (9) and (2) from spool.
7. Clean and check spool and valve for nicks or scratches.
8. Lubricate parts with clean hydraulic oil.
9. Install O-ring (9) on spool (5).
10. Install washer (6).
11. Clean threads of socket head cap screw (7). Apply cure primer and thread lock and sealer (medium strength) to threads of socket head cap screw (7). Install into spool and tighten.

Brake Valve—Specification

Spool Socket Head Cap Screw—Torque	9.5 N•m (84 lb-in.)

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1160
1

Continued on next page

CED,TX03399,6026 –19–28MAR00–1/2

IMPORTANT: Valve spool O-rings can be damaged during installation if allowed to travel beyond edges of valve ports. After installing O-ring (9) on valve, install spool into housing only until groove for O-ring (2) passes edge of housing.

12. Install spool into valve housing from end cap side, until groove for O-ring (2) just clears housing.
13. Install O-ring (2) onto spool and insert spool until O-ring enters bore of valve housing.
14. Install end cap (8) and tighten.
15. Install ball joint (1) approximately 13 turns into spool and tighten lock nut.
16. Install ball switch (4) and tighten.

Brake Valve'—Specification

End Cap on Valve Housing—
Torque..... 45 N•m (33 lb-ft)

17. Install fittings (3) in position as marked during removal.

CED,TX03399,6026 –19–28MAR00–2/2

Disassemble and Assemble Park Brake

NOTE: Park brake disks and plates can be removed without removing final drive. DFT1212 will compress spring tension and hold disks and plates to remove park brake housing.

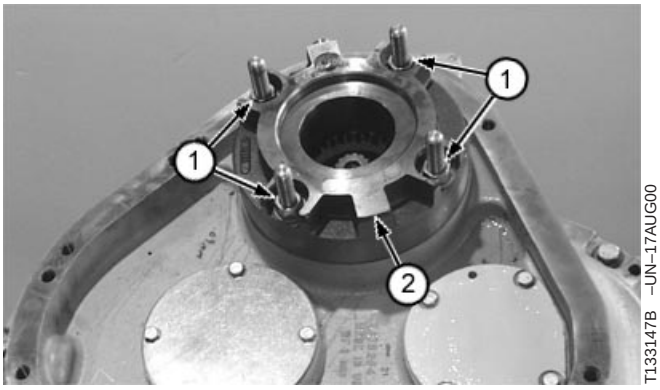
1. If final is to be removed, drain oil from final drive. The approximate capacity of final drive is 13.2 L (14 qt.).

CAUTION: Final drive assembly weighs approximately 470 kg (1036 lbs). Use proper lifting equipment and safety precautions. Failure to do so may cause personal injury.

Final Drive—Specification

Final Drive Assembly—Weight..... 470 kg (1036 lb) Approximate

2. Block and support final drive on heavy-duty bench (if removed).
3. Remove hub from park brake if not removed.
4. Install DFT1212 to compress springs and hold park brake disks and plates. (See DFT1212 Park Brake Spring Compressor in Section 99 for instructions to make tool.
5. Remove brake assembly nuts and washers (1).
6. Remove park brake housing (2).



T133147B –UN–17AUG00

1—Park Brake

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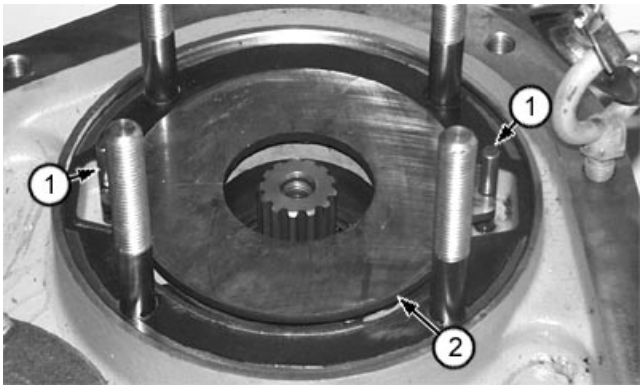
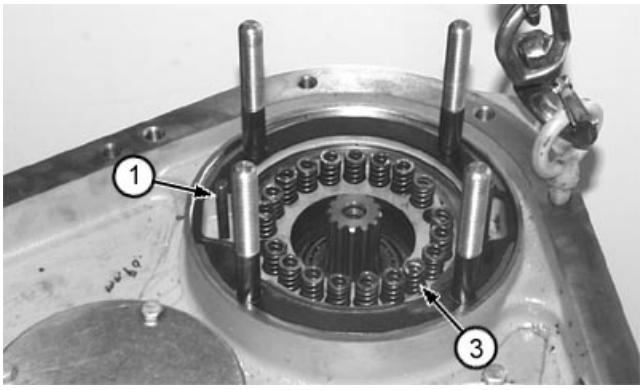
CED,TX03399,6027 –19–15NOV00–1/5

7. Remove park brake disks, plates and pressure plate (2).
8. Remove springs (3) and dowel pins (1).
9. Remove park brake piston and piston seals.
10. Apply clean oil on seals and install seals on piston.
11. Install piston in housing.

1—Dowel pins
2—Park Brake Pressure Plate
3—Springs (20 used)



T133141B –UN–17AUG00

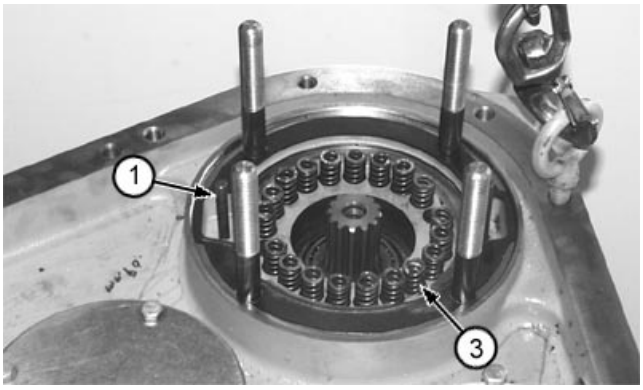


T133145B –UN–17AUG00

CED,TX03399,6027 –19–15NOV00–2/5

12. Install springs (3) and dowel pins (1).
13. Install park brake pressure plate (2) and hub.

1—Dowel Pins
2—Park Brake Pressure Plate
3—Springs (20 used)



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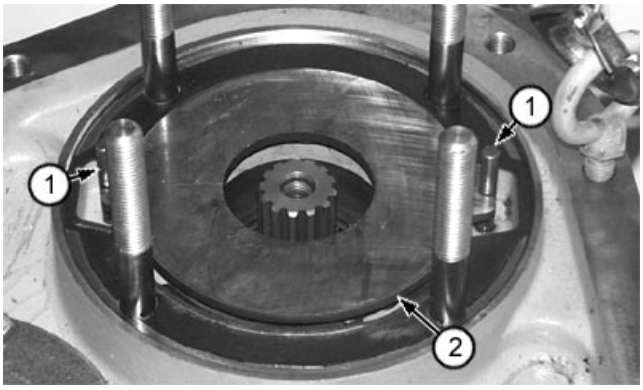

T133141B –UN–17AUG00

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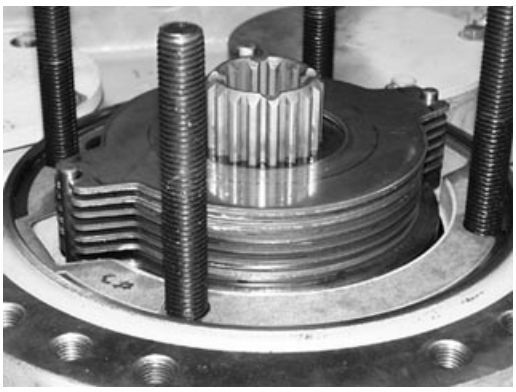
CED,TX03399,6027 –19–15NOV00–3/5

14. Start with park brake disk and alternating install six disks and plates.



CED,TX03399,6027 –19–15NOV00–4/5

15. Use DFT1212 to compress and hold park brake plates, disks and springs in place. (See DFT1212 Park Brake Spring Compressor in section 99 for instructions to make tools.)

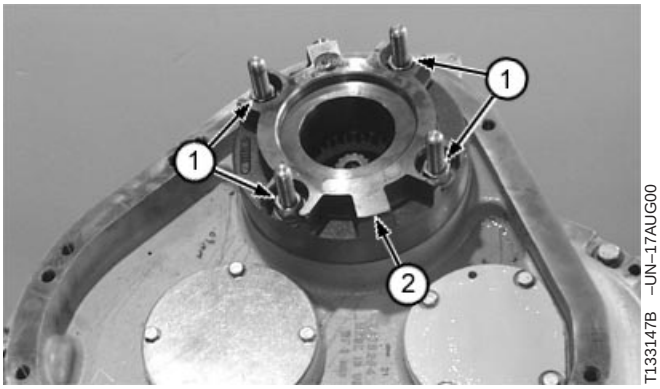
16. Install park brake housing (2) and tighten nuts with washers (1) to specification.

Specification

Park Brake Housing—Torque ..... 352 N•m (260 lb-ft)

17. Remove DFT1212 tool.

18. Install hydrostatic motor. (See Remove and Install Hydrostatic Motors in Group 0300.)



1—Nuts and Washers
2—Park Brake Housing

CED,TX03399,6027 –19–15NOV00–5/5

11
1160
5

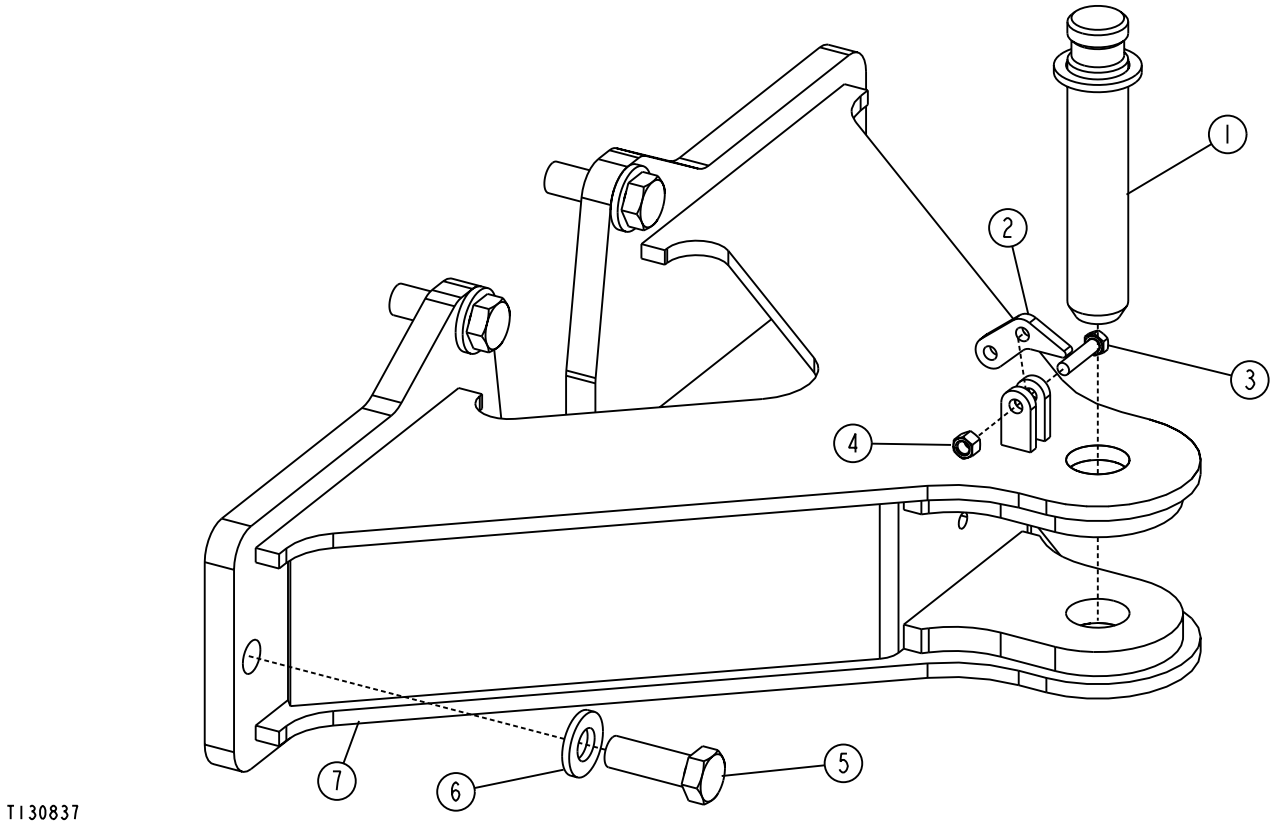
Section 15
Equipment Attaching

Contents

Page

Group 1511—Drawbar
Drawbar
Remove and Install 15-1511-1
Tow Hook
Remove and Install 15-1511-2

Remove and Install Drawbar



T130837 –UN–31MAY00

1—Pin
2—Pin Lock
3—Cap Screw
4—Nut
5—Cap Screw (6 used)
6—Washer (6 used)
7—Drawbar

CED,TX03399,6028 –19–28MAR00–1/1

15
1511
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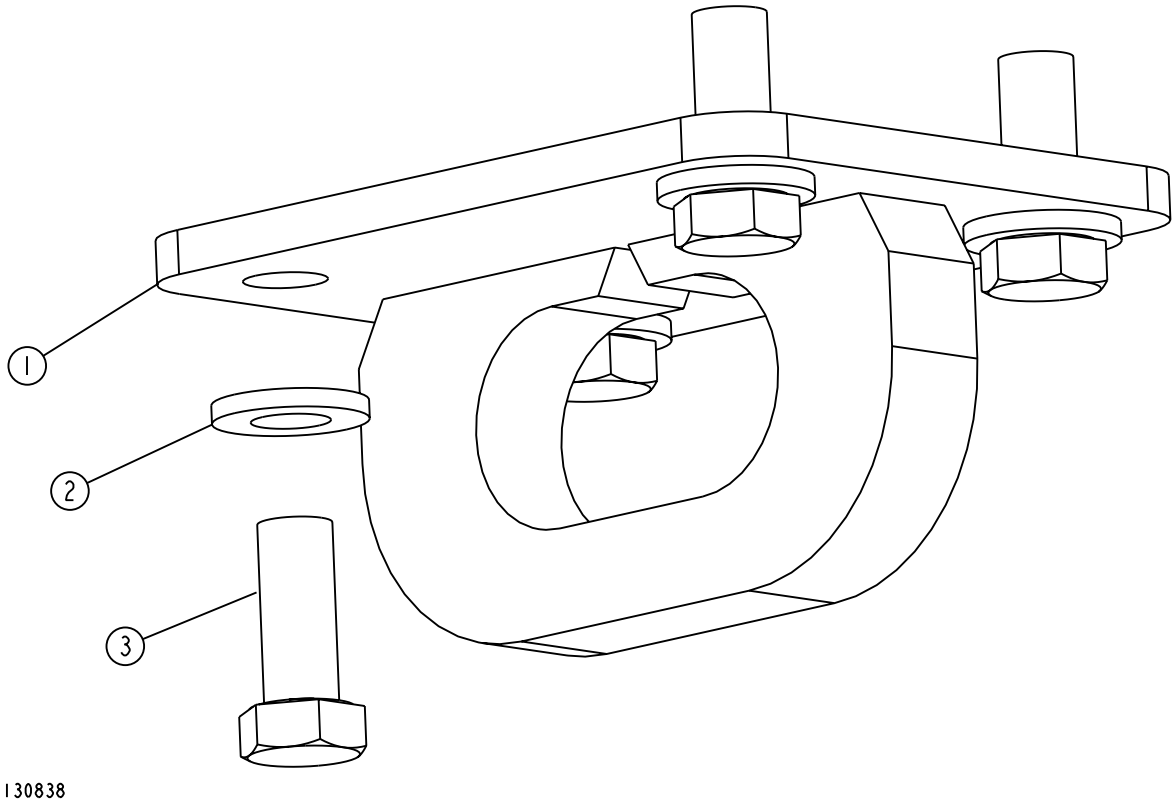
Remove and Install Tow Hook



T130838 –UN–31MAY00

1—Tow Hook **2—Washer (4 used)** **3—Cap Screw (4 used)**

CED,TX03399,6029 –19–28MAR00–1/1

15
1511
2

Section 16
Electrical System

Contents

Page

Group 1671—Batteries, Support, and Cables
Service Equipment and Tools 16-1671-1
Specifications 16-1671-2
Battery
  Safety 16-1671-3
Batteries
  Specifications. 16-1671-4
  Service Carefully 16-1671-4
  Procedure For Testing 16-1671-6
  Check Electrolyte Specific Gravity 16-1671-8
  Check Electrolyte Level And
    Terminals 16-1671-10
Using Booster Batteries—24 Volt
  System 16-1671-12
Batteries
  Remove and Install 16-1671-12

Group 1672—Alternator, Regulator and Charging System Wiring
Specifications 16-1672-1
Alternators and Starting Motors—Use
  CTM77. 16-1672-1
Alternator
  Remove and Install 16-1672-2

Group 1674—Wiring Harness and Switches
Essential Tools 16-1674-1
Component Location
  Cab and ROPS Harness 16-1674-2
  Engine Harness 16-1674-3
  Transmission Harness 16-1674-3
  Radio Harness. 16-1674-3
  A/C and Heater Harness, See Group
    1830. 16-1674-3
Explanation Of Wire Markings. 16-1674-4
Fuse (Blade-Type) Color Codes 16-1674-5
Fuse Specifications
  Cab 16-1674-6
  Rops 16-1674-8
Replace DEUTSCH™ Connector. 16-1674-9
Install DEUTSCH™ Contact. 16-1674-11
Replace WEATHER PACK™
  Connectors 16-1674-12
Install WEATHER PACK™ Contact 16-1674-13
Replace (Pull Type) Metri-Pack™
  Connectors 16-1674-15

Page

Replace (Push Type) Metri-Pack™
  Connectors 16-1674-16
Remove Connector Body from Blade
  Terminals. 16-1674-16

Group 1675—System Controls
Specifications 16-1675-1
Welding Procedure 16-1675-1
Transmission Controller
  Remove and Install 16-1675-2
Display Monitor
  Remove and Install 16-1675-2

Group 1676—Instruments and Indicators
Dash, Switches and Gauges
  Remove and Install 16-1676-1

Group 1677—Motors and Actuators
John Deere Starting Motor—Use CTM77 . . .16-1677-1
Starting Motor
  Remove and Install 16-1677-1

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

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CED,TX03399,6152 –19–11AUG00–1/4

Battery Post/Clamp Cleaner JT05838

Clean battery post and clamp.

CED,TX03399,6152 –19–11AUG00–2/4

Coolant/Battery Tester JT05460

Check specific gravity of electrolyte in batteries.

CED,TX03399,6152 –19–11AUG00–3/4

Battery Load Tester JT05832

Check battery capacity.

CED,TX03399,6152 –19–11AUG00–4/4

16
1671
1

Specifications

Item	Measurement	Specification
Batteries		
Battery	Temperature	16°C (60°F)
Heavy Duty Battery	Voltage	12 Volts
	Cold Cranking Power	950 amps at -18°C (0°F)
	Reserve Capacity	190 minutes at 25 amps
	BCI Group Size	31H
	Fully Charged Specific Gravity	1.265—1.280
Hydrometer Test	Specific gravity	1.225—1.280 Fully charged
	Specific gravity	Under 1.225 Discharged
Battery	Fully charged electrolyte specific gravity	1.265—1.280

CED,TX03399,6154 –19–11AUG00–1/1

Battery Safety

TS204 –UN–23AUG88

Prevent Battery Explosions:

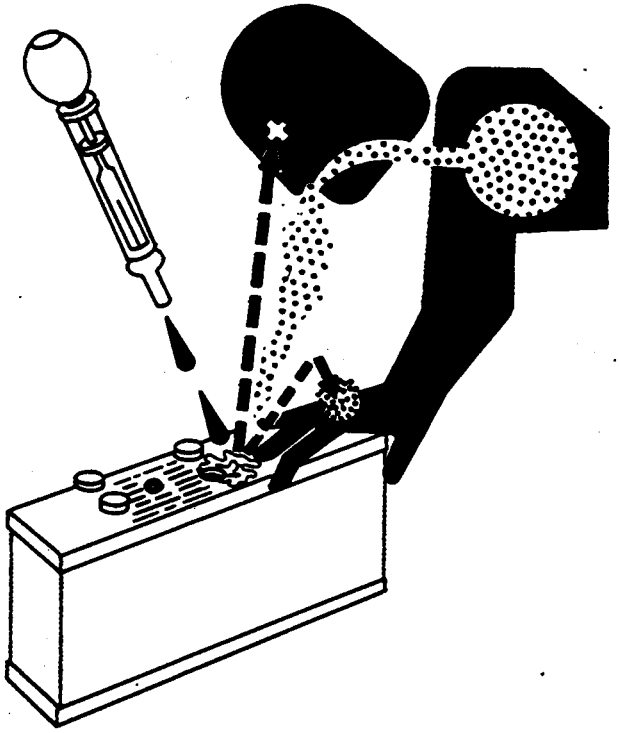
Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).

Batteries—Specification

Battery—Temperature	16°C (60°F)



TS203 –UN–23AUG88

Prevent Acid Burns:

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

To avoid battery related hazards:

1. Fill batteries in a well-ventilated area.
2. Wear eye protection and rubber gloves.
3. Do not breath fumes when electrolyte is added.
4. Do not spill or drip electrolyte.
5. Use proper jump start procedure.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 10—15 minutes. Get medical attention immediately.

If acid is swallowed:

1. Drink large amounts of water or milk.
2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
3. Get medical attention immediately.

16
1671
3

TX,16,DY49 –19–16DEC98–1/1

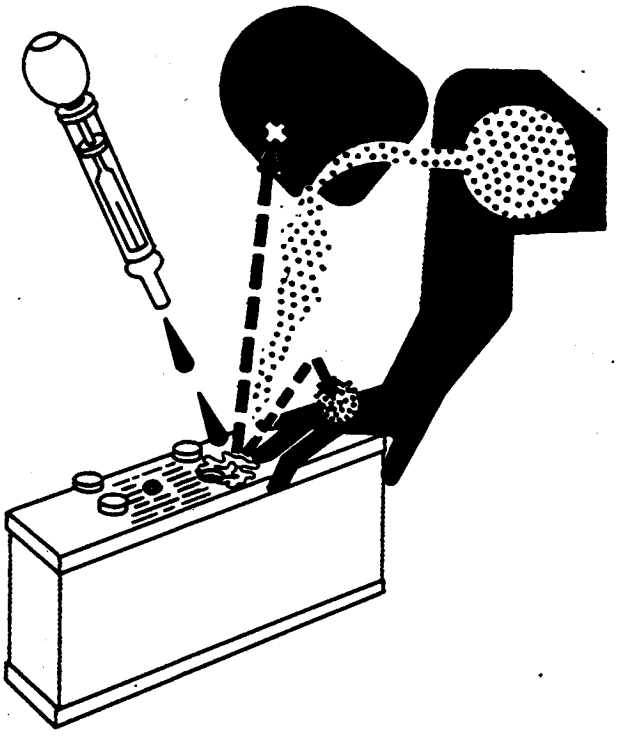
Battery Specifications

Specification	
Heavy Duty Battery—Voltage	12 Volts
Cold Cranking Power	950 amps at -18°C (0°F)
Reserve Capacity	190 minutes at 25 amps
BCI Group Size	31H
Fully Charged Specific Gravity	1.265—1.280

CED,TX14826,12309 –19–14MAR00–1/1

Service Batteries Carefully

TS204 –UN–23AUG88



TS203 –UN–23AUG88

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CED,OUTX547,134 –19–14APR99–1/2

CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove grounded (-) battery clamp first and replace it last.

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

1. **Filling batteries in a well-ventilated area.**
2. **Wearing eye protection and rubber gloves.**
3. **Avoiding breathing fumes when electrolyte is added.**
4. **Avoiding spilling or dripping electrolyte.**
5. **Use proper jump start procedure.**

If you spill acid on yourself:

1. **Flush your skin with water.**
2. **Apply baking soda or lime to help neutralize the acid.**
3. **Flush your eyes with water for 15—30 minutes. Get medical attention immediately.**

If acid is swallowed:

1. **Do not induce vomiting.**
2. **Drink large amounts of water or milk, but do not exceed 1.9 L (2 quarts).**
3. **Get medical attention immediately.**

IMPORTANT: Electrolyte can damage paint and metal surfaces of your machine. Do not overfill the battery cells.

If electrolyte spills on the floor, use one of the following mixtures to neutralize the acid: 0.5 kg (1 lb) baking soda in 4 L (1 gal) water, or 0.47 L (1 pt) household ammonia in 4 L (1 gal) water.

16
1671
5

CED,OUTX547,134 –19–14APR99–2/2

Procedure for Testing Batteries

Visual Check

1. Check for damage such as cracked or broken case and electrolyte leakage.

   If damage is seen, replace battery.

2. Check electrolyte level. (See Check Battery Electrolyte Level in this group)

   If low, add distilled water to specified level and charge battery.

3. Check terminals for corrosion.

   If corroded, clean using a wire brush or battery post cleaner such as JT05838 Battery Post/Clamp Cleaner.

4. Check posts for looseness.

   If posts are loose, replace battery.

Hydrometer Test

1. Check specific gravity with a hydrometer or battery tester such as JT05460 Coolant/Battery Tester.

2. Record specific gravity reading for each cell.

   If high and low readings vary LESS than 0.050 and average specific gravity is between 1.225 and 1.280, battery is fully charged, go to LOAD TEST.

   If high and low readings vary LESS than 0.050 and average specific gravity is LESS than 1.225, charge battery and repeat test. If average specific gravity is still LESS than 1.225, replace both batteries.

   If high and low readings vary MORE than 0.050, charge battery and repeat test. If high and low readings still vary MORE than 0.050, replace both batteries.

Batteries—Specification

Hydrometer Test—Specific gravity	1.225—1.280 Fully charged
Specific gravity	Under 1.225 Discharged

16
1671
6

Continued on next page

CED,OUTX547,135 –19–20OCT98–1/2

Load Test

1. Check battery capacity with a load tester such as JT05832 Battery Load Tester. Follow tester manufacturer's instructions for proper load test procedures.

2. If one battery fails load test, replace both batteries.

CED,OUTX547,135 –19–20OCT98–2/2

Check Battery Electrolyte Specific Gravity

TS204 –UN–23AUG88

CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove grounded (-) battery clamp first and replace it last.

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

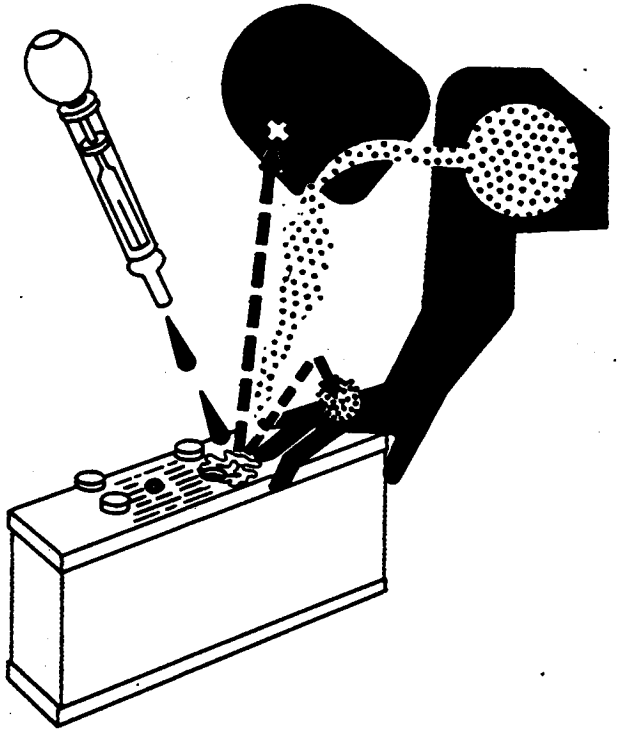
1. **Filling batteries in a well-ventilated area.**
2. **Wearing eye protection and rubber gloves.**
3. **Avoiding breathing fumes when electrolyte is added.**
4. **Avoiding spilling or dripping electrolyte.**
5. **Use proper jump start procedure.**

If you spill acid on yourself:

1. **Flush your skin with water.**
2. **Apply baking soda or lime to help neutralize the acid.**
3. **Flush your eyes with water for 15—30 minutes. Get medical attention immediately.**

If acid is swallowed:

1. **Do not induce vomiting.**
2. **Drink large amounts of water or milk, but do not exceed 1.9 L (2 quarts).**
3. **Get medical attention immediately.**



TS203 –UN–23AUG88

Check the specific gravity of electrolyte in each battery cell using a battery and coolant tester such as JT05460 Battery/Coolant Tester.

T85402 –UN–10NOV88

Follow directions included with the tester.

16
1671
8

Continued on next page

CED,OUTX547,136 –19–14APR99–1/2

A fully charged battery will have a corrected specific gravity reading of 1.260. If the reading is below 1.200, charge the battery.

Batteries—Specification

Battery—Fully charged electrolyte specific gravity	1.265—1.280

NOTE: In tropical areas, use 1.225 for the full charge reading. In cold areas, use 1.280 for the full-charge reading.

CED,OUTX547,136 –19–14APR99–2/2

16
1671
9

Check Battery Electrolyte Level

CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove grounded (-) battery clamp first and replace it last.

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:

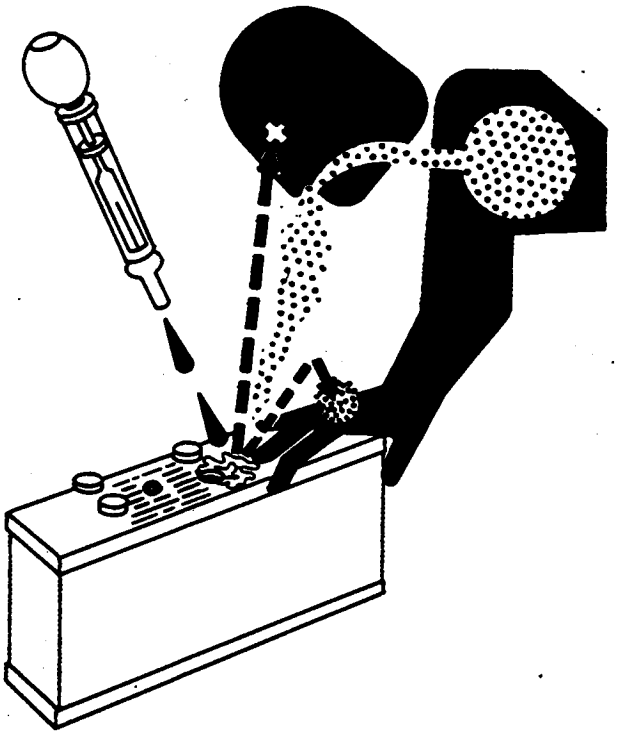
1. **Filling batteries in a well-ventilated area.**
2. **Wearing eye protection and rubber gloves.**
3. **Avoiding breathing fumes when electrolyte is added.**
4. **Avoiding spilling or dripping electrolyte.**
5. **Use proper jump start procedure.**

If you spill acid on yourself:

1. **Flush your skin with water.**
2. **Apply baking soda or lime to help neutralize the acid.**
3. **Flush your eyes with water for 10—15 minutes. Get medical attention immediately.**

If acid is swallowed:

1. **Drink large amounts of water or milk.**
2. **Then drink milk of magnesia, beaten eggs, or vegetable oil.**
3. **Get medical attention immediately.**



TS203 –UN–23AUG88

1. Remove hold-down clamps.

2. Remove battery covers.

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1671
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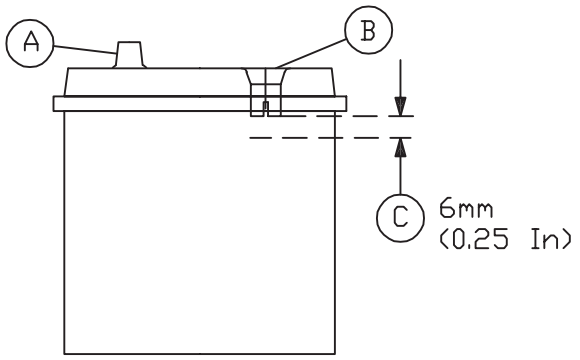
Continued on next page

CED,OUTX547,137 –19–14APR99–1/2

IMPORTANT: During freezing weather, batteries must be charged after water is added to prevent battery freezing. Charge battery using a battery charger or by running the engine.

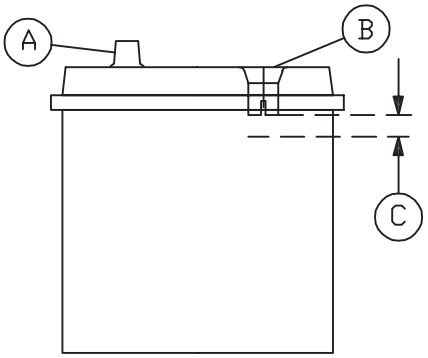
3. Fill each cell to within specified range with distilled water. DO NOT overfill.

A—Battery Post
B—Fill Tube
C—Electrolyte Level Range



T6996DB –UN–09SEP03

Single Level Fill Tube Application



T6996DA –UN–09SEP03

Dual Level Fill Tube Application

CED,OUTX547,137 –19–14APR99–2/2

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1671
11

Using Booster Batteries—24 Volt System

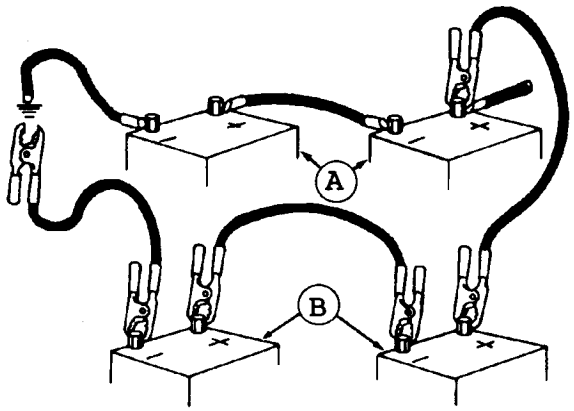
Before boost starting, machine must be properly shut down and secured to prevent unexpected machine movement when engine starts.

CAUTION: An explosive gas is produced while batteries are in use or being charged. Keep flames or sparks away from the battery area. Make sure the batteries are charged in a well ventilated area.

IMPORTANT: The machine electrical system is a 24 volt negative (–) ground. Connect two 12 volt booster batteries together as shown for 24 volts.

Make last booster cable connection to frame.

A—Machine Batteries
B—Booster Batteries



T6713AH1 –UN–24OCT91

T6713AH1 CV

Two Battery Application

CED,TX14826,12287 –19–10MAR00–1/1

Remove and Install Batteries

1. Turn battery disconnect switch to "OFF".

Continued on next page

CED,TX03399,6035 –19–29MAR00–1/2

2.

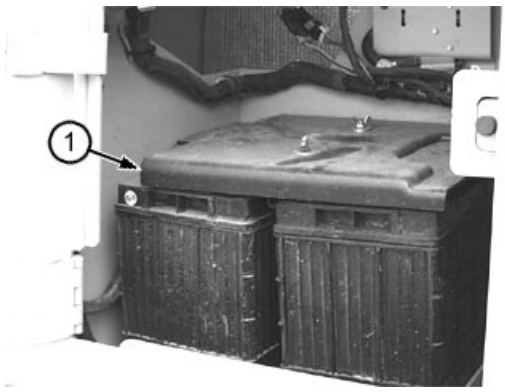
CAUTION: Prevent possible injury from exploding battery. Always remove grounded (-) battery clamp first and replace it last.

Remove battery cover.

3. Disconnect negative (-) battery cables first, then positive (+) cables.

4. Remove battery hold down frame and remove battery(ies).

TS204 –UN–23AUG88



1—Battery Cover

T133120B –UN–11AUG00

CED,TX03399,6035 –19–29MAR00–2/2

16
1671
13

Specifications

Item	Measurement	Specification
Alternator		
Battery Terminal Nut Wire Lead (B+)	Torque	7.75 ± 0.8 N•m (69 ± 7 lb-in.)
Battery Terminal Nut Wire Lead (D+)	Torque	2.75 ± 0.3 N•m (24 ± 3 lb-in.)

CED,TX03399,6158 –19–11AUG00–1/1

Alternators and Starting Motors—Use CTM77

For complete repair information, the Component Technical Manual (CTM) is also required.

Use the CTM in conjunction with this machine manual.

TS225 –UN–17JAN89

TX,1672,DV2829 –19–30JUN94–1/1

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1672
1

Remove and Install Alternator

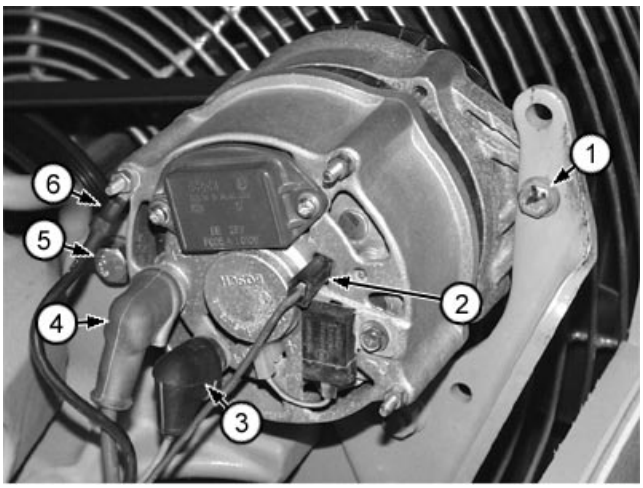
IMPORTANT: Turn battery disconnect switch to "OFF" to prevent accidental grounding of alternator wiring leads.

1. Turn battery disconnect switch to "OFF" position.
2. Remove right side engine shield. Release tension on fan belt and remove fan belt from alternator pulley.
3. Disconnect wire leads (2, 3, 4 and 6) from alternator.
4. Remove cap screws (1 and 5).
5. Remove alternator and make necessary repairs (See CTM77, Alternator).
6. Install alternator. Install and tighten cap screws (1 and 5).
7. Connect wire leads (2, 3, 4 and 6). Tighten battery terminal nut wire lead (3) and (4).

Alternator—Specification

Battery Terminal Nut Wire Lead (B+)—Torque	7.75 ± 0.8 N•m (69 ± 7 lb-in.)
Battery Terminal Nut Wire Lead (D+)—Torque	2.75 ± 0.3 N•m (24 ± 3 lb-in.)

8. Install fan belt on alternator pulley.
9. Install right side engine shield.
10. Turn battery disconnect switch to "ON" position.



T130847B –UN–21JUL00

1—Cap Screw
2—Terminal W
3—Terminal D+
4—Terminal B+
5—Cap Screw
6—Ground Terminal

CED,TX03399,5013 –19–14APR99–1/1

16
1672
2

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

CED,TX03399,6159 –19–11AUG00–1/8

Extractor Tool. . . . . JDG361[1]

To remove 12 to 14 gauge wire.

[1]Included with JDG359 Electrical Tool Kit

CED,TX03399,6159 –19–11AUG00–2/8

Extractor Tool. . . . . .JDG362[1]

To remove 16 to 18 gauge wire.

[1]Included with JDG359 Electrical Tool Kit

CED,TX03399,6159 –19–11AUG00–3/8

Extractor Tool. . . . . .JDG363[1]

To remove 20 gauge wire.

[1]Included with JDG359 Electrical Tool Kit

Continued on next page

CED,TX03399,6159 –19–11AUG00–4/8

T6606AB –UN–23AUG88

Crimper. . . . . JDG360[1]

To crimp wire while installing contacts.

[1]*Included with JDG359 Electrical Tool Kit*

CED,TX03399,6159 –19–11AUG00–5/8

Crimper. JDG360

To crimp wire while installing contacts.

CED,TX03399,6159 –19–11AUG00–6/8

Extraction Tool JDG364

To pull wire from connector body.

CED,TX03399,6159 –19–11AUG00–7/8

Terminal Applicator JDG783

To secure cable seal and contact to wire.

CED,TX03399,6159 –19–11AUG00–8/8

Cab and ROPS Harness Component Location

Repair components of cab and ROPS harness. (See Cab and ROPS Component Location in Operation and Test Manual in Group 9015-10.)

CED,TX03399,6036 –19–29MAR00–1/1

16
1674
2

Engine Harness Component Location

Repair components of engine harness. (See Engine Harness Component Location in Operation and Test Manual in Group 9015-10.)

CED,TX03399,6037 –19–29MAR00–1/1

Transmission Harness Component Location

Repair components of transmission harness. (See Transmission Harness Component Location in Operation and Test Manual in Group 9015-10.)

CED,OUTX547,146 –19–01APR99–1/1

Radio Harness Component Location

Repair components of radio harness. (See Radio Harness Component Location in Operation and Test Manual in Group 9015-10.)

CED,TX03399,2317 –19–16DEC98–1/1

Air Conditioning and Heater/Blower Harness

Repair components of air conditioning and heater harness. (See Heater Blower Circuit Schematic in Operation and Test Manual in Group 9015-10.)

CED,TX03399,2318 –19–16DEC98–1/1

Explanation Of Wire Markings

Circuit Type Identifier: The (A) denotes what type of a circuit any given wire is a part of. In the example the “G” denotes the wire is part of a ground circuit.

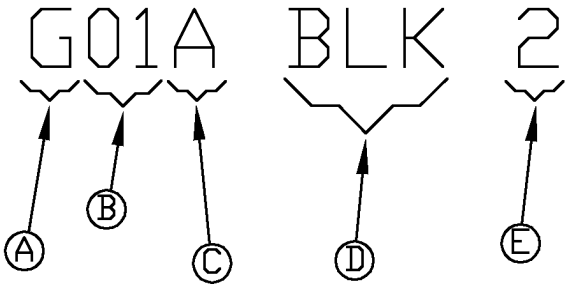
Circuit Number: The Circuit Number (B) (two digit number) identifies a unique circuit when used in conjunction with a Circuit Type Identifier (A). In the example, “G01” is a single unique circuit. G10, G20, or B01 would denote a entirely different circuit.

Circuit Segment Identifier: The Circuit Segment Identifier (C) identifies a segment of a circuit, it DOES NOT indicate a different circuit. This character is used in the design of the harnesses, but can also be used for trouble shooting when using the System Functional Schematic and Wiring Diagram By Harness. The circuit segment identifier (C) will remain the same until the circuit encounters either a splice, connector, or component. The circuit segment identifier WILL NOT be on the actual wire harness on machine, only ON the System Functional Schematic and Wiring Diagram By Harness.

Wire Color: The Wire Color (D) (three character code) is simply an abbreviation of the wire color.

Wire Gauge: The Wire Gauge (E) (number 2) indicates the wire gauge in millimeters. The wire gauge WILL NOT be on the actual wire harness on machine, only ON the System Functional Schematic and Wiring Diagram By Harness.

Wire Information	
Gauge	Milimeter
20	0.5
18	0.8
16	1
14	2
12	3
10	4
8	8
6	13
4	19



T117531 –19–01OCT98

A—Circuit Type Identifier
B—Circuit Number
C—Circuit Segment Identifier
D—Wire Color
E—Wire Gauge (millimeter “mm2”)

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1674
4

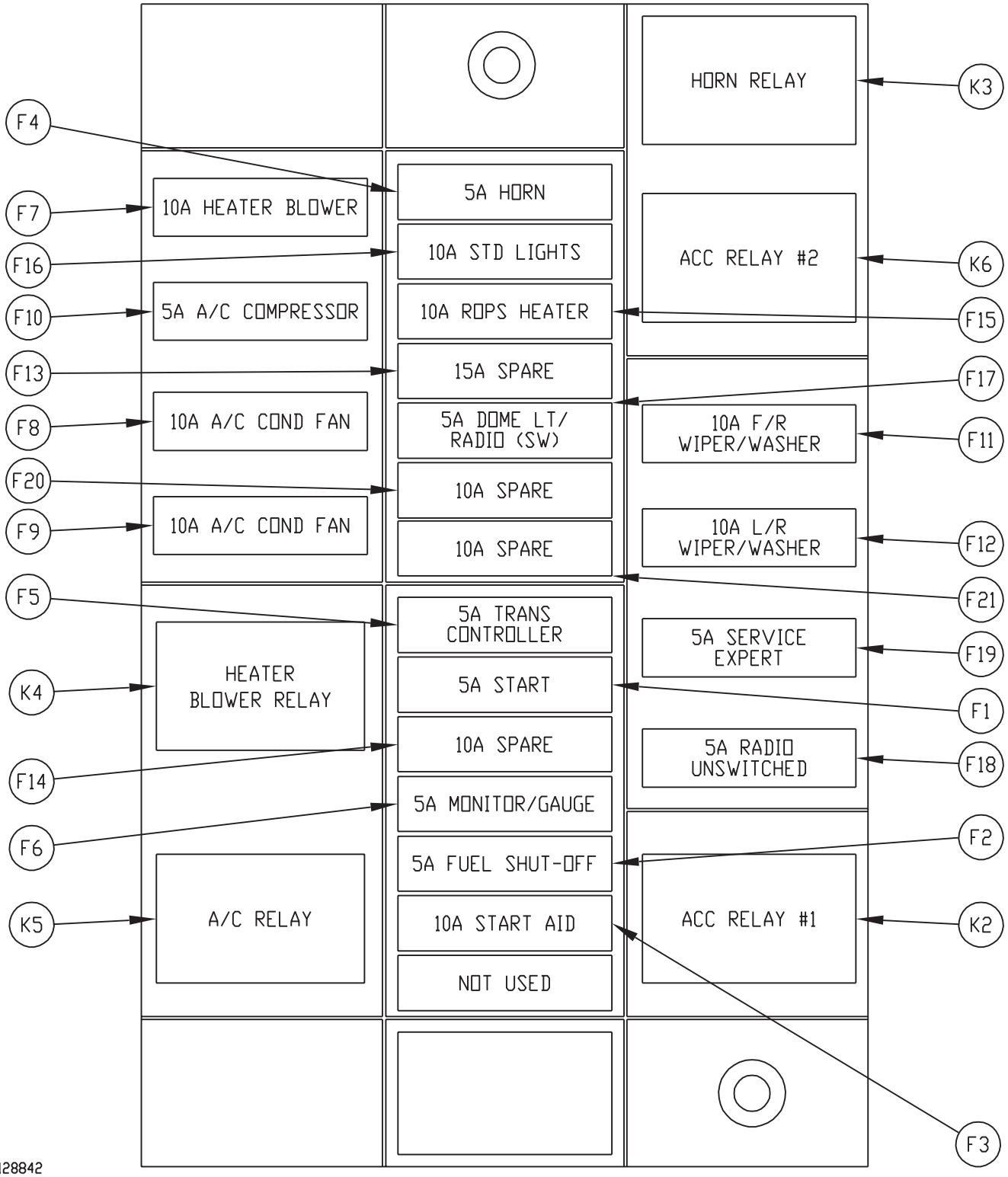
CED,TX03399,6038 –19–29MAR00–1/1

Fuse (Blade-Type) Color Codes

Amperage Rating	Color
1	Black
3	Violet
4	Pink
5	Tan
7-1/2	Brown
10	Red
15	Light Blue
20	Yellow
25	Natural (White)
30	Light Green

CED,TX03399,6039 –19–29MAR00–1/1

Fuse Specifications For Cab



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CED,TX03399,6040 –19–29MAR00–1/2

K5—A/C Relay
F2—5A Fuel Shut-Off Alternator Excitation Fuse
F6—5A Monitor/Gauge Fuse
K4—Heater Blower Relay
F5—5A Transmission Controller Fuse
F21—10A Spare Fuse
F9—10A A/C Condenser Fan Fuse
F8—10A A/C Condenser Fan Fuse
F13—15A Spare Fuse Auxiliary Light/CB
F10—5A A/C Compressor Fuse
F16—10A Standard Lights
F7—10A Heater Blower Fuse
K3—Horn Relay
F4—5A Horn Fuse
F15—10A Rops (Under Seat) Heater Fuse
F17—5A Dome Light, Radio Fuse (Switched)
F11—10A Front/Rear Wiper Washer Fuse
F20—10A Spare Fuse
F12—15A Left/Right Wiper Washer Fuse
F19—5A Service Expert Fuse
F1—5A Start Fuse
F14—10A Spare Fuse
F18—5A Radio Fuse (Unswitched)
K2—Accessory Relay #1
F3—10A Start Aid Fuse

IMPORTANT: Install fuse with correct amperage rating to prevent electrical system damage from overload.

The fuse block is located on right side of machine through access cover.

CED,TX03399,6040 –19–29MAR00–2/2

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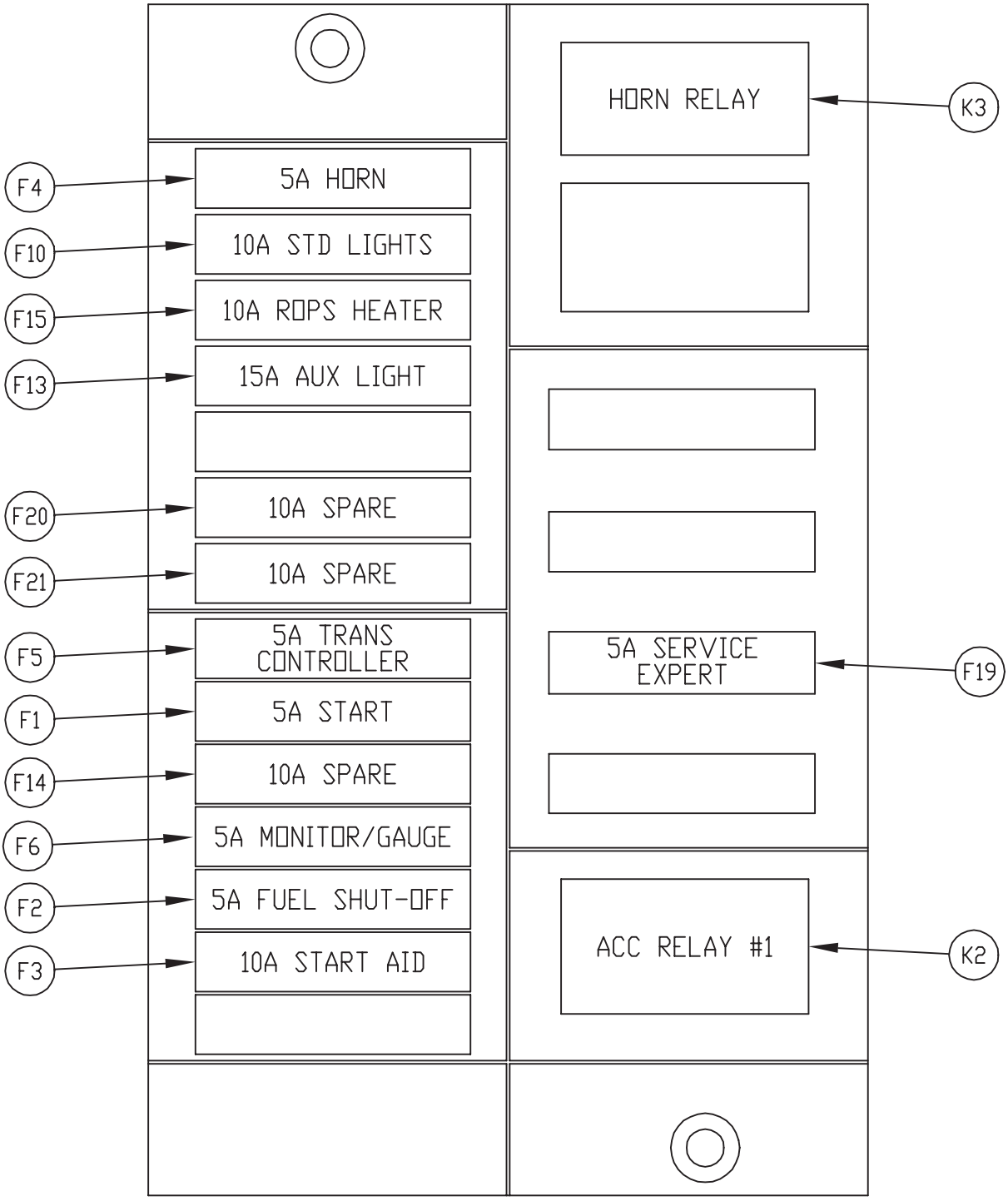
Fuse Specifications For Rops



T128841 –UN–14MAR00

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CED,TX03399,6041 –19–29MAR00–1/2

F3—10A Start Aid Fuse
F2—5A Fuel Shut-Off Alternator Excitation Fuse
F6—5A Monitor/Gauge Fuse
F14—10A Spare Fuse
F1—5A Start Fuse
F5—5A Transmission Controller Fuse
F21—10A Spare Fuse
F20—10A Spare Fuse
F13—15A Spare Fuse Auxiliary Light/CB
F15—10A Rops (Under Seat) Heater Fuse
F16—10A Standard Lights
K4—Heater Blower Relay
K3—Horn Relay
F19—5A Service Expert Fuse
K2—Accessory Relay #1

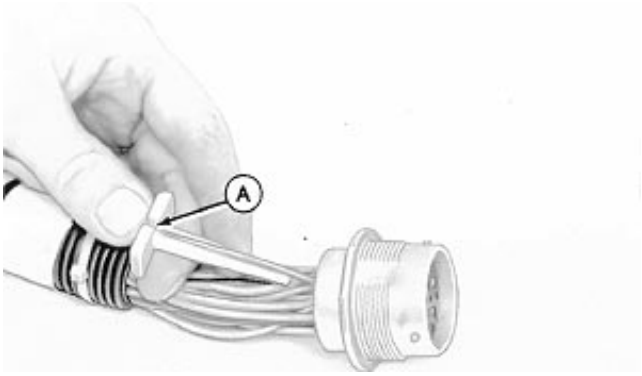
IMPORTANT: Install fuse with correct amperage rating to prevent electrical system damage from overload.

The fuse block is located on right side of machine through access cover.

CED,TX03399,6041 –19–29MAR00–2/2

Replace DEUTSCH™ Connector

1. Select correct size extractor tool for size of wire to be removed:
   - JDG361 Extractor Tool for 12 to 14 gauge wire.
   - JDG362 Extractor Tool for 16 to 18 gauge wire.
   - JDG363 Extractor Tool for 20 gauge wire.
2. Start correct size extractor tool over wire at handle (A).

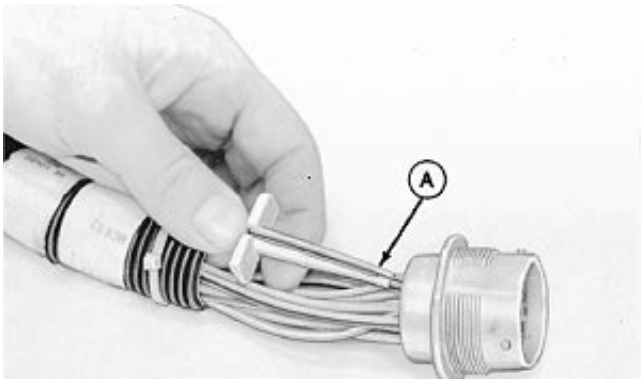


TS0124 –UN–23AUG88

DEUTSCH is a trademark of Deutsch Co.

CED,OUTX547,149 –19–14APR99–1/5

3. Slide extractor tool rearward along wire until tool tip (A) snaps onto wire.



TS0125 –UN–23AUG88

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CED,OUTX547,149 –19–14APR99–2/5

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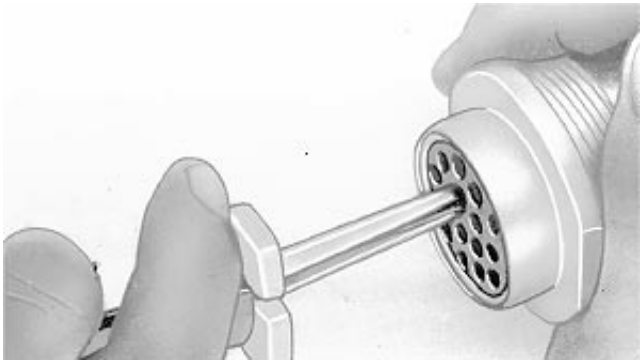
IMPORTANT: Do NOT twist tool when inserting in connector.

4. Slide extractor tool along wire into connector body until it is positioned over terminal contact.



TS120 –UN–23AUG88

CED,OUTX547,149 –19–14APR99–3/5

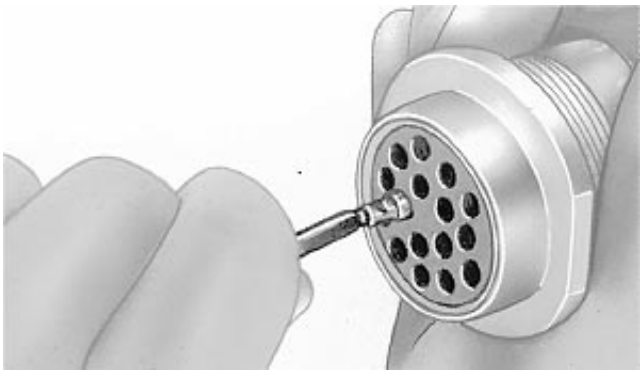
5. Pull wire, with extractor tool, out of connector body.

TS0126 –UN–23AUG88

CED,OUTX547,149 –19–14APR99–4/5

IMPORTANT: Install contact in proper location using correct size grommet.

6. Push contact straight into connector body until positive stop is felt.
7. Pull on wire slightly to be certain contact is locked in place.
8. Transfer remaining wires to correct terminal in new connector.

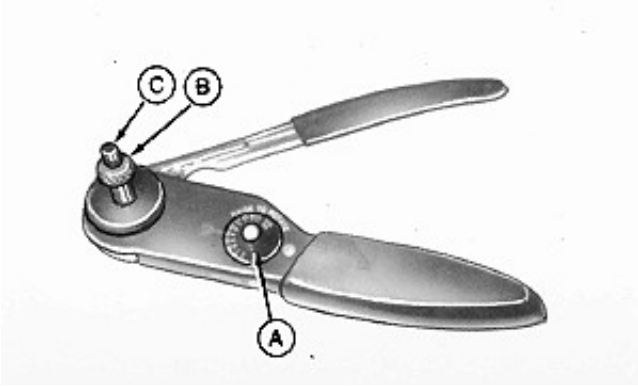


TS122 –UN–23AUG88

CED,OUTX547,149 –19–14APR99–5/5

Install DEUTSCH™ Contact

1. Strip 6 mm (1/4 in.) insulation from wire.
2. Adjust selector (A) on JDG360 Crimper for correct wire size.
3. Loosen lock nut (B) and turn adjusting screw (C) in until it stops.



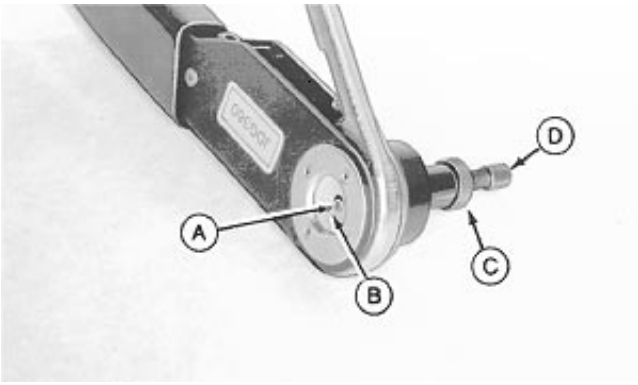
TS117 –UN–23AUG88

DEUTSCH is a trademark of Deutsch Co.

CED,OUTX547,150 –19–14APR99–1/4

IMPORTANT: Select proper size contact "sleeve" or "pin" to fit connector body.

4. Insert contact (A) and turn adjusting screw (D) until contact is flush with cover (B).
5. Tighten lock nut (C).

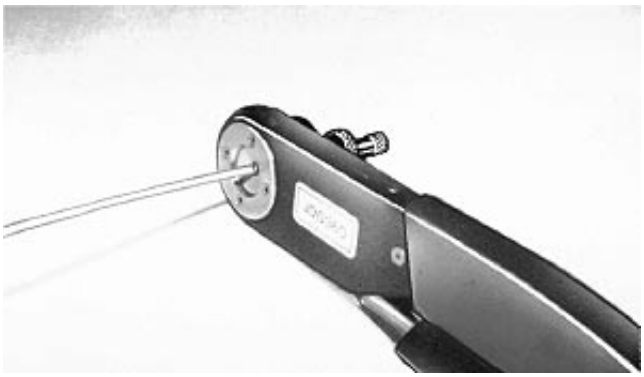


TS0134 –UN–23AUG88

CED,OUTX547,150 –19–14APR99–2/4

IMPORTANT: Contact must remain centered between indentors while crimping.

6. Insert wire in contact and crimp until handle touches stop.
7. Release handle and remove contact.



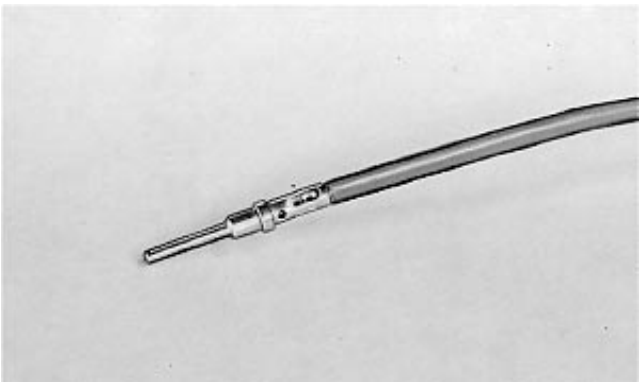
TS118 –UN–23AUG88

CED,OUTX547,150 –19–14APR99–3/4

IMPORTANT: If all wire strands are not crimped into contact, cut off wire at contact and repeat contact installation procedure.

NOTE: Readjust crimping tool for each crimping procedure.

8. Inspect contact to be certain all wires are in crimped barrel.



TS0135 –UN–23AUG88

CED,OUTX547,150 –19–14APR99–4/4

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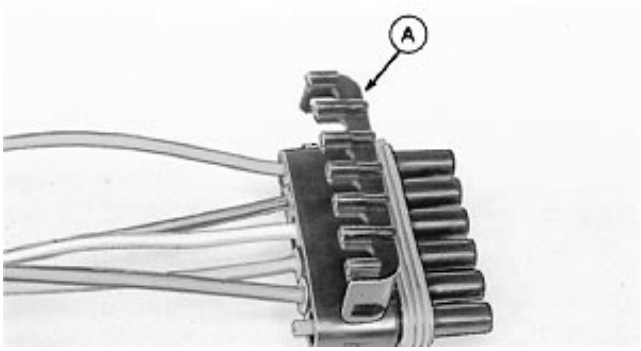
Replace WEATHER PACK™ Connectors

IMPORTANT: Identify wire color locations with connector terminal letters.

1. Open connector body (A).



TS0127 –UN–23AUG88

WEATHER PACK is a trademark of Packard Electric.

TX,1674,QQ1181 –19–14APR99–1/4

2. Insert JDG364 Extraction Tool over terminal contact in connector body.

TS0128 –UN–23AUG88

TX,1674,QQ1181 –19–14APR99–2/4

3. Hold extractor tool fully seated and pull wire from connector body.

NOTE: If terminal can not be removed, insert wire or nail through extractor tool handle and push terminal contact from connector.

TS0129 –UN–23AUG88

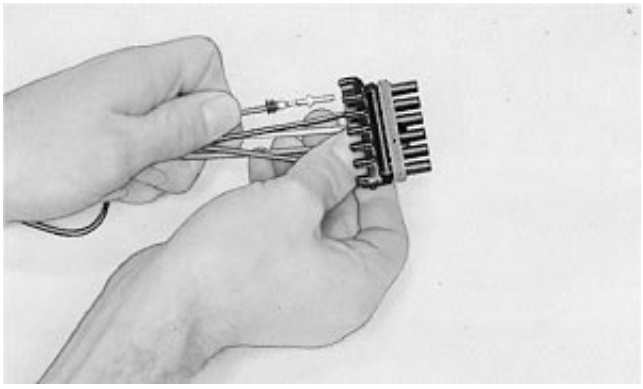
Continued on next page

TX,1674,QQ1181 –19–14APR99–3/4

IMPORTANT: Carefully spread contact lances to assure good seating in connector body.

NOTE: Connector bodies are "keyed" for proper contact mating. Be sure contacts are in proper alignment.

4. Push contact into new connector body until fully seated.
5. Pull on wire slightly to be certain contact is locked in place.
6. Transfer remaining wires to correct terminal in new connector.
7. Close connector body.



TS0130 –UN–23AUG88

TX,1674,QQ1181 –19–14APR99–4/4

Install WEATHER PACK™ Contact

NOTE: Cable seals are color coded for three sizes of wire:

- *Green — 18 to 20 gauge wire*
- *Gray — 14 to 16 gauge wire*
- *Blue — 10 to 12 gauge wire*

1. Slip correct size cable seal on wire.
2. Strip insulation from wire to expose 6 mm (1/4 in.) and align cable seal with edge of insulation.

TS0136 –UN–23AUG88

WEATHER PACK is a trademark of Packard Electric.

Continued on next page

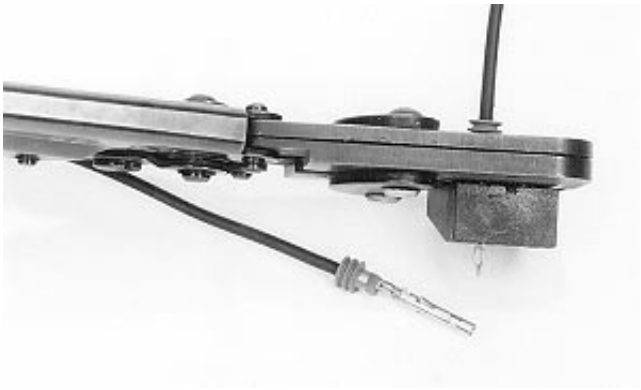
053,ECONN,AA –19–14APR99–1/3

NOTE: Contacts have numbered identification for two sizes of wire:

- *#15 for 14 to 16 gauge wire*
- *#19 for 18 to 20 gauge wire*

3. Put proper size contact on wire and crimp in place with a "W" type crimp, using JDG783 Terminal Applicator.

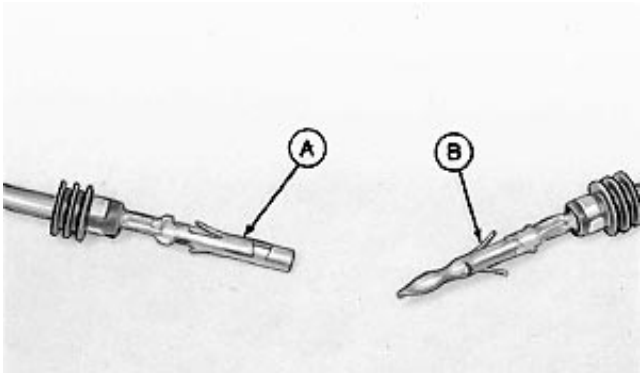
4. Secure cable seal to contact as shown, using JDG783 Terminal Applicator.



TS1623 –UN–02NOV94

053,ECONN,AA –19–14APR99–2/3

IMPORTANT: Proper contact installation for "sleeve" (A) and "pin" (B) is shown.



TS0139 –UN–02DEC88

053,ECONN,AA –19–14APR99–3/3

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Replace (Pull Type) Metri-Pack™ Connectors

Disconnect the Metri-Pack[1] connector (A). Remove tie bands and tape.

Insert a “T” pin (B) 6.4 mm (1/4 in.) into connector body socket (C).

NOTE: Use JDG777[2] Terminal Extraction Tool or “T” pin to remove terminals.

Angle “T” pin so pin tip slides close to the plastic socket edge pushing terminal locking tab (D) inward.

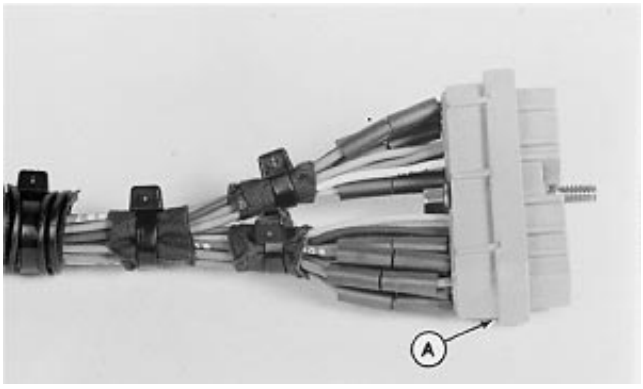
Remove “T” pin and push terminal (E) out of socket.

Remove terminal, cut strip and crimp wire through connector.

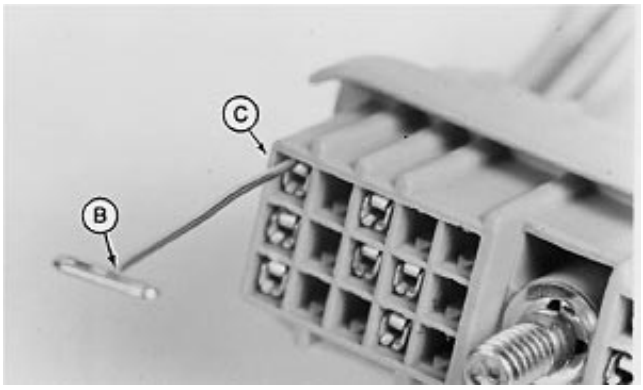
Check to make sure locking tab on new terminal is in outward position, then pull on wire until terminal locks in connector body socket.

NOTE: Terminal will seat only one way. If terminal does not pull into the connector body socket, check to make sure terminal is aligned correctly.

A—Connector
B—“T” Pin
C—Body Socket
D—Locking Tab
E—Push Terminal



RW16933 –UN–26APR89



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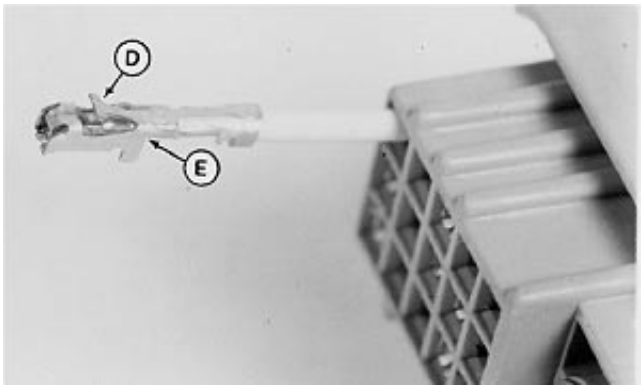

RW16935 –UN–26APR89

[1]*Metri-Pack is a trademark of Packard Electric*

[2]*Included in JT07195A Electrical Repair Kit*

CED,OUO1032,1347 –19–16MAR99–1/1

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Replace (Push Type) Metri-Pack™ Connectors

Disconnect the Metri-Pack[1] connector. Remove the tie bands and tape.

Remove the connector lock (A), and mark wire colors for identification.

Identify wire color locations with connector terminal letters.

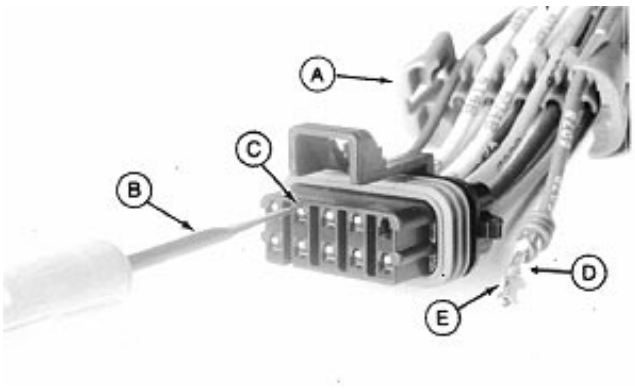
Insert JDG776 or JDG777[2] Terminal Extraction Tool (B) into connector body socket (C) pushing the terminal locking tab inward.

NOTE: Use JDG776 Extraction Tool with 56, 280 and 630 series METRI-PACK terminals. Use JDG777 Extraction Tool with 150 series METRI-PACK terminals.

Remove extraction tool and pull terminal (D) out of the socket.

Replace terminal. Make sure locking tab (E) on the new terminal is in the outward position.

Push terminal into connector body socket until terminal locks.



RW21325 –UN–29JUN92

A—Connector Lock
B—Extraction Tool JDG777
C—Connector Body Socket
D—Terminal
E—Locking Tab

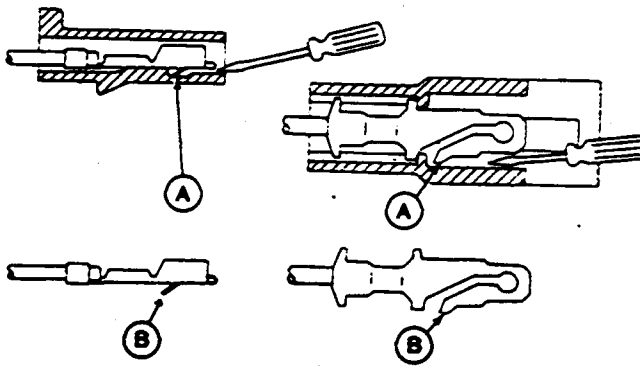
[1]Metri-Pack is a trademark of Packard Electric

[2]Included in JT07195A Electrical Repair Kit

CED,OUO1032,1348 –19–16MAR99–1/1

Remove Connector Body from Blade Terminals

1. Use a small screw driver to depress locking tang (A) on terminal. Slide connector body off.
2. Be sure to bend locking tang back to its original position (B) before installing connector body.



RW4218 –UN–23AUG88

CED,OUTX547,153 –19–21OCT98–1/1

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Specifications

Item	Measurement	Specification
Transmission Controller		
Controller Mounting Cap Screws and Ground Strap-to-Controller Cap Screws	Torque	6.8 N•m (60 lb-in.)
Ground Strap-to-Boss on Tank Cap Screw	Torque	15.3 N•m (135 lb-in.)

CED,TX03399,6194 –19–18AUG00–1/1

Welding Procedure

IMPORTANT: Before welding on this machine: To avoid electronic component damage, turn the electrical (battery) disconnect switch off.

Turn (S2) electrical (battery) disconnect switch OFF.

Clamp welding ground clamp as close to point of welding as possible.

Never attach welding ground clamp to track pad.

CED,OUTX547,155 –19–21OCT98–1/1

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1

Remove and Install Transmission Controller

1. Turn battery disconnect switch to "OFF".
2. Remove transmission controller cover.
3. Disconnect connectors (1 and 2).
4. Remove four cap screws (3).
5. Install controller, strap and four cap screws. Tighten cap screws.

Transmission Controller—Specification

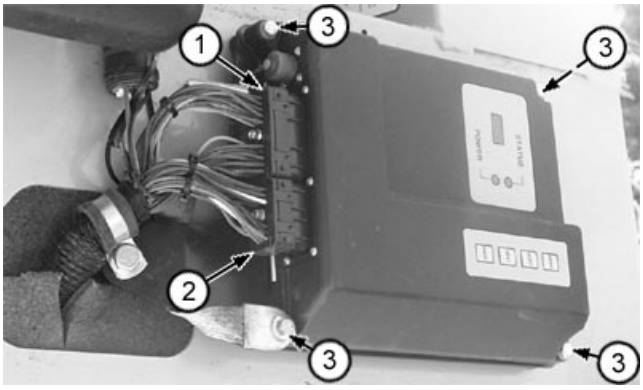
Controller Mounting Cap Screw and Ground Strap-to-Controller Cap Screws—Torque ..... 6.8 N•m (60 lb-in.)

6. If ground strap-to-tank boss was removed, tighten cap screws to specification.

Transmission Controller—Specification

Ground Strap-to-Boss on Tank Cap Screw—Torque ..... 15.3 N•m (135 lb-in.)

7. Connect connectors. Install cover and turn battery disconnect switch to "ON".
8. Calibrate controller. (See Calibrate Transmission Controller in Operation and Test Manual in Group 9015-20.)



T133148B –UN–11AUG00

1—Connector
2—Connector
3—Cap Screw (4 used)

CED,TX03399,6042 –19–29MAR00–1/1

Remove and Install Display Monitor

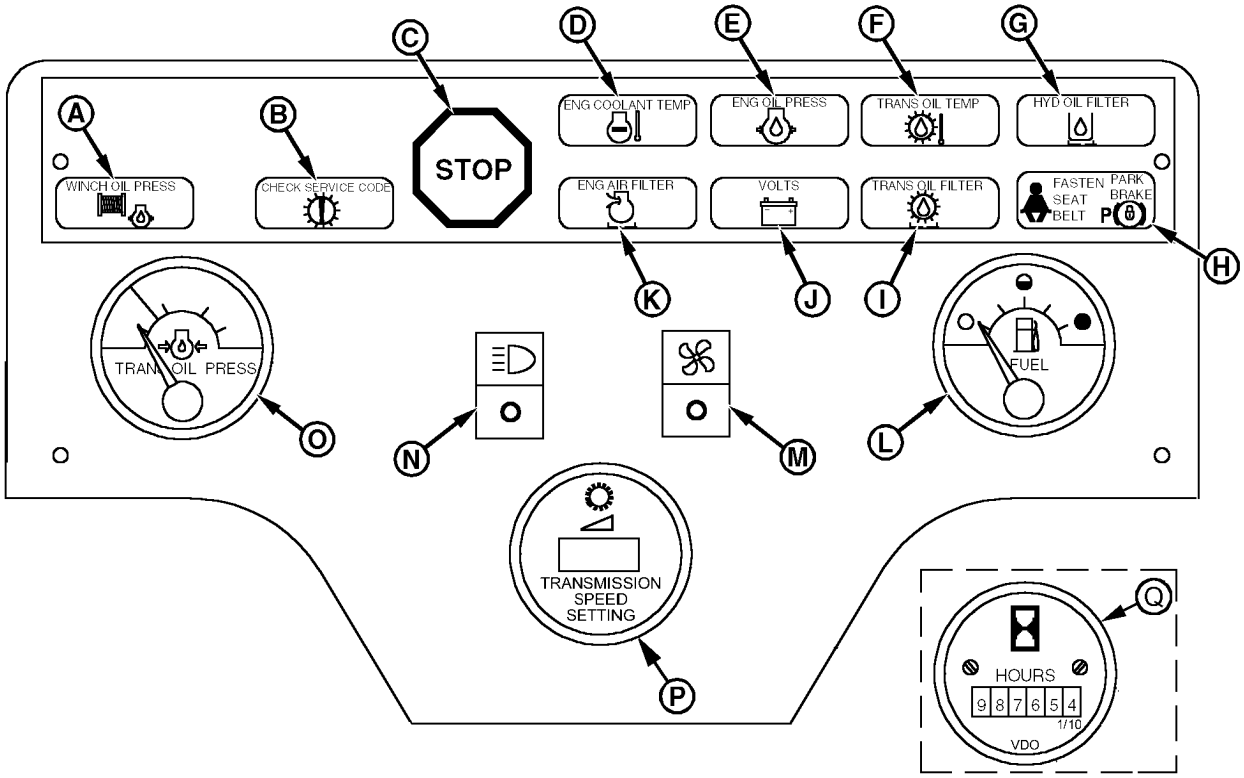
1. Turn battery disconnect switch to "OFF".
2. Remove two screws (1).
3. Remove monitor and disconnect two wire connectors .
4. Connect wire connectors and install monitor.
5. Install screws and tighten.

1—Screw

T132320B –UN–21JUL00

CED,TX03399,6043 –19–29MAR00–1/1

Remove and Install Dash, Switches and Gauges



T128893

T128893 –UN–10MAR00

A—Winch Oil Pressure Indicator—If Equipped (Red)
B—Check Service Code Indicator (Clear)
C—STOP-Engine Indicator (Red)
D—Engine Coolant Temperature Indicator (Red)
E—Engine Oil Pressure Indicator (Red)
F—Transmission Oil Temperature Indicator (Red)
G—Hydraulic Oil Filter Restriction Indicator (Yellow)
H—Fasten Seat Belt/Park Lock On Indicator (Clear)
I—Transmission Oil Filter Indicator (Yellow)
J—Voltage Indicator (Yellow)
K—Engine Air Filter Restriction Indicator (Yellow)
L—Fuel Gauge
M—Under-Seat Heater ON/OFF Switch
N—Front and Rear Work Lights Switch
O—Transmission Oil Pressure Gauge
P—Transmission Speed Setting display
Q—Hour Meter is located on right side of front cowl.

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CED,TX03399,6044 –19–29MAR00–1/2

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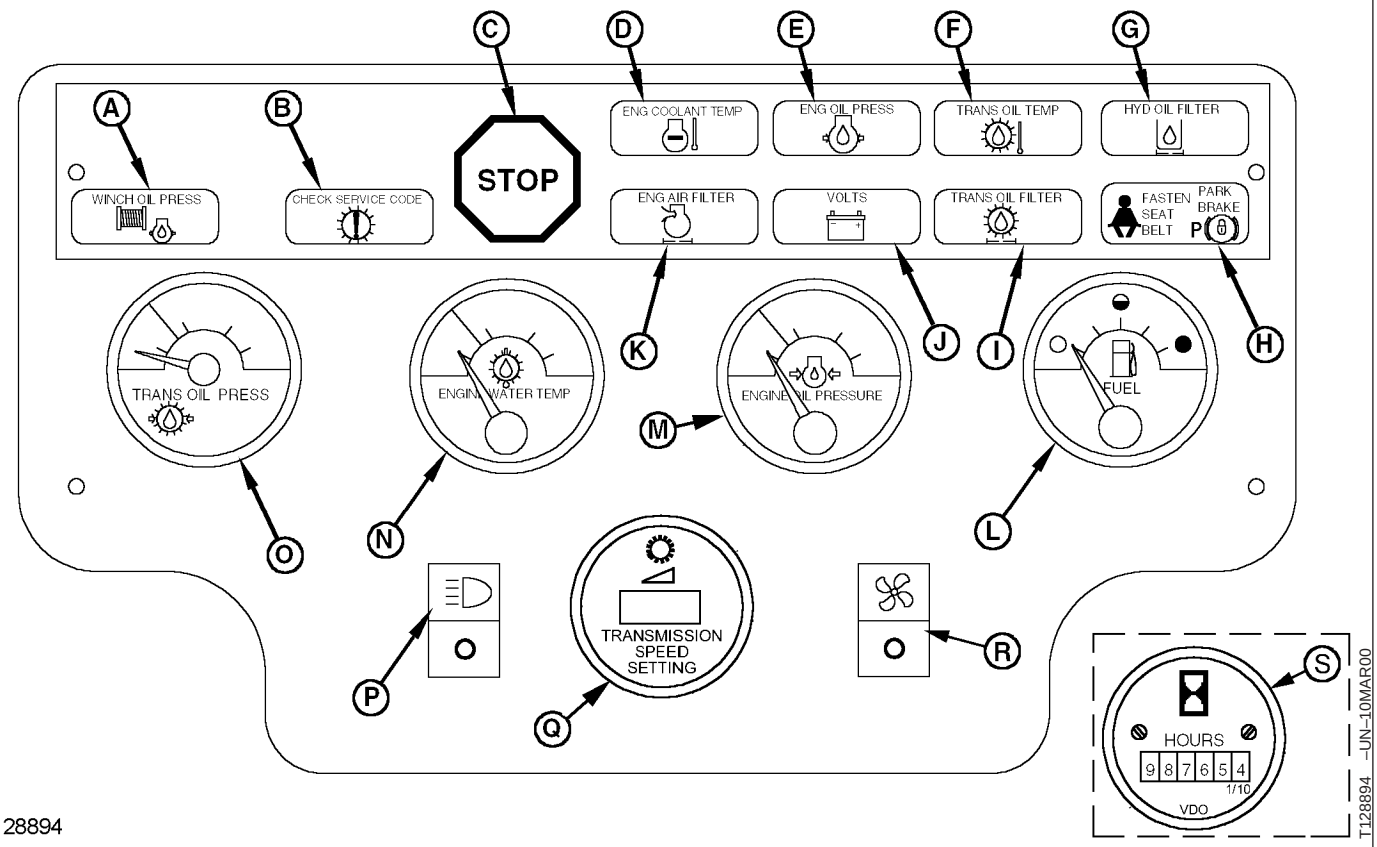

T128894

A—Winch Oil Pressure Indicator—If Equipped (Red)
B—Check Service Code Indicator (Clear)
C—STOP-Engine Indicator (Red)
D—Engine Coolant Temperature Indicator (Red)
E—Engine Oil Pressure Indicator (Red)
F—Transmission Oil Temperature Indicator (Red)
G—Hydraulic Oil Filter Restriction Indicator (Yellow)
H—Fasten Seat Belt/Park Lock On Indicator (Clear)
I—Transmission Oil Filter Indicator (Yellow)
J—Voltage Indicator (Yellow)
K—Engine Air Filter Restriction Indicator (Yellow)
L—Engine Oil Pressure Gauge
M—Engine Water Temperature Gauge
N—Fuel Gauge
O—Transmission Oil Pressure Gauge
P—Front and Rear Work Lights Switch
Q—Transmission Speed Setting display
R—Under-Seat Heater ON/OFF Switch
S—Hour Meter is located on right side of front cowl.

NOTE: Display monitor is service as an assembly only.

Remove and install switches and gauges as necessary.

CED,TX03399,6044 –19–29MAR00–2/2

John Deere Starting Motor—Use CTM77

For complete repair information on the John Deere Starting Motor, CTM77 is also required.

Use the component manual in conjunction with this machine manual.

TS225 –UN–17JAN89

055,1677,AA1 –19–02AUG94–1/1

Remove and Install Starting Motor

1. Turn battery ground disconnect switch to "OFF" position, or disconnect negative (-) ground battery cable.
2. Remove left engine side shield.
3. Disconnect cables and wires.
4. Remove cap screws and ground strap from starting motor.
5. Remove starting motor and make necessary repairs (See CTM77, Starter Motor).
6. Install starting motor.
7. Connect all cables, wires and ground strap to solenoid and starting motor.
8. Turn battery ground disconnect switch to "ON" position or connect negative (—) ground battery cable.

T130846B –UN–21JUL00

CED,TX03399,6045 –19–29MAR00–1/1

16
1677
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Section 17
Frames, Chassis, or Supporting Structure

Contents

Page

Group 1740—Frame Installation
Essential Tools 17-1740-1
Service Equipment and Tools 17-1740-1
Other Material 17-1740-2
Specifications 17-1740-3
Welding Repair of Major Structure. 17-1740-4
Remove and Install RIVNUT® (KREMNUT)
  Fasteners 17-1740-5
Frame and Bottom Covers
  Remove and Install 17-1740-7
Pivot Shafts
  Remove and Install 17-1740-8
Crossbar Lube
  Remove and Install 17-1740-10
Crossbar
  Disassemble and Assemble. 17-1740-11

Group 1749—Chassis Weights
Counterweight
  Remove and Install 17-1749-1

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

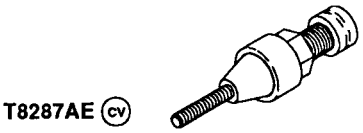
SERVICEGARD is a trademark of Deere & Company

CED,TX03399,6163 –19–11AUG00–1/2

T8287AE –UN–19JUL94

RIVNUT® Installation Tool JDG894

Install RIVNUT® fasteners.



RIVNUT is a registered trademark of The BF Goodrich Co.

CED,TX03399,6163 –19–11AUG00–2/2

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

CED,TX03399,6164 –19–11AUG00–1/3

Torque Adapter. DFT1203

Use to torque pivot shaft cap screws which cannot be reached by torque wrench.

CED,TX03399,6164 –19–11AUG00–2/3

Bushing, Bearing and Seal Driver Set D01045AA

Use to install bushings and seals in crossbar.

CED,TX03399,6164 –19–11AUG00–3/3

Other Material

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1740
2

Number	Name	Use
TY16285 (U.S.) CXTY16285 (Canadian) 7649 (LOCTITE®)	Cure Primer	Apply prior to using adhesives and sealants.
TY6304 (U.S.) TY9484 (Canadian) 515 (LOCTITE®)	Flexible Form-In-Place Gasket	Apply to pivot shaft cover.
TY9375 (U.S.) TY9480 (Canadian) 592 (LOCTITE®)	Pipe Sealant	Apply to pivot shaft cover pipe plug threads.
T43512 (U.S.) TY9473 (Canadian) 242 (LOCTITE®)	Thread Lock and Sealer (Medium Strength)	Apply to threads of sprocket segment cap screws.

LOCTITE is a trademark of Loctite Corp.

CED,TX03399,6165 –19–11AUG00–1/1

Specifications

Item	Measurement	Specification
Welding Repair of Major Structure		
Tensile Strength	Pressure	482.6 mPa (70,000 psi)
Yield Strength	Pressure	413.7 mPa (60,000 psi)
Elongation	Percent	22
Structural Assemblies	Minimum Temperature	38°C (100°F)
Ground Engaging Tools	Temperature	177°C (350°F)
Fastener		
RIVNUT® (KREMNUT) Fastener	Torque	68—74 N•m (50—55 lb-ft)
Pivot Shaft		
Pivot Shaft Cap Screws	Torque	624 N•m (460 lb-ft)
Sprocket		
Sprocket Segment	Torque	258—312 N•m (190—230 lb-ft)

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CED,TX03399,6166 –19–11AUG00–1/1

Welding Repair of Major Structure

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1740
4

CAUTION: Avoid potentially toxic fumes and dust. Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Do all work outside or in a well ventilated area. Dispose of paint and solvent properly. Remove paint before welding or heating:

- **If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.**
- **If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.**

IMPORTANT: Disconnect battery ground strap or turn battery disconnect switch to "OFF" to prevent voltage spikes through alternator or monitor.

Have only a qualified welder do this job. Connect welder ground clamp close to each weld area so electrical current does not pass through any bearings.

Remove or protect all parts that can be damaged by heat or weld splatter.

Connect welder ground clamp close to each weld area so electrical current does not arc inside any bearings.

Use one of the following weld processes:

- AWS-E-7018 covered electrode with shielded metal arc welding (SMAW) process
- AWS-ER-70S-3 wire electrode with gas metal arc welding (GMAW) process
- AWS-E70T-1 or E71T-1 wire electrode with flux core arc welding (FCAW) process.

Preheat area to be repaired to allow better weld penetration.

To repair weld metal failure, remove failed weld metal using arc or grinding equipment.

Welding Repair of Major Structure—Specification

Tensile Strength—Pressure	482.6 mPa (70,000 psi)
Yield Strength—Pressure	413.7 mPa (60,000 psi)
Elongation—Percent	22

Thoroughly clean area to be welded. Preheat structural assemblies to a minimum of 38°C (100°F).

Welding Repair of Major Structure—Specification

Structural Assemblies—	
Minimum Temperature	38°C (100°F)

Preheat ground engaging tools (cutting edges, skid shoes, and teeth shanks) to 177°C (350°F).

Welding Repair of Major Structure—Specification

Ground Engaging Tools—	
Temperature	177°C (350°F)

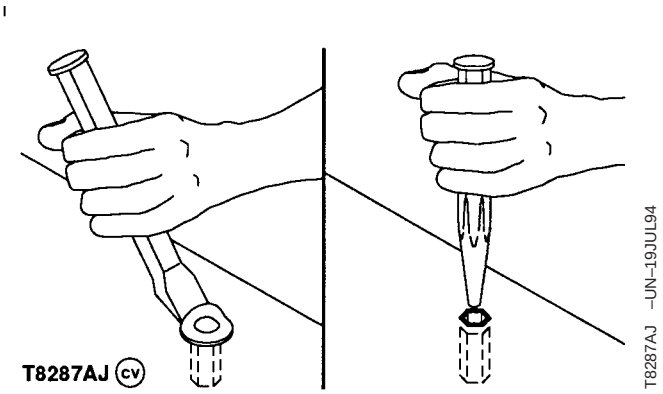
To repair base metal failure remove enough material to allow weld to penetrate to the bottom of crack. Preheat structural assemblies to a minimum of 38°C (100°F). Preheat ground engaging tools (cutting edges, skid shoes, and teeth shanks) to 177°C (350°F).

CED,OUTX547,160 –19–21OCT98–1/1

Remove and Install RIVNUT® (KREMNUT) Fasteners

1. Remove flange of RIVNUT® using a hammer and chisel. Use care not to damage equipment's surface under the flange or the hexagon hole.

   Use a punch to remove threaded portion of fastener.



RIVNUT is a registered trademark of The BF Goodrich Co.

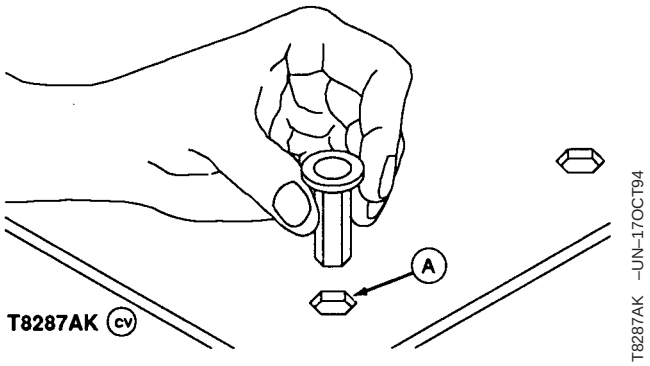
TX,17,QQ9355 –19–17OCT94–1/4

2. Select the proper length fastener for the thickness of the material where the fastener will be installed. Fasteners are color-coded as well as stamped on the flange surface. (Coding indicates the nominal plate thickness for which the fastener can be used.)

RIVET NUT LENGTH SELECTION		
Material Thickness	**Flange Stamp**	**Color Code**
4.25—5.60 mm (0.167—0.220 in.)	4.5	Silver
5.74—7.09 mm (0.226—0.279 in.)	6	Yellow
7.75—9.09 mm (0.305—0.358 in.)	8	Red
9.75—11.10 mm (0.384—0.437 in.)	10	Black
11.73—13.08 mm (0.462—0.515 in.)	12	Olive Drab

IMPORTANT: DO NOT force or drive fastener into hole. Fastener can be damaged and will not hold securely.

3. Make sure the new fastener fits easily into the existing hexagon hole (A). If necessary, use a small file to clean the edges of the hole.



A—Hexagon Hole

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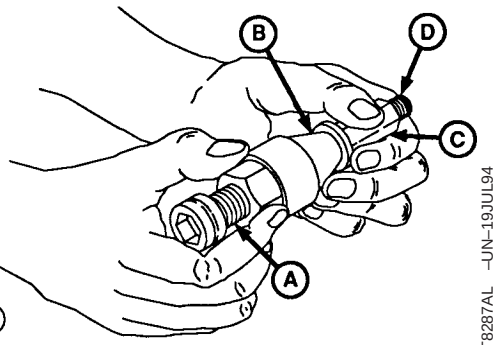
TX,17,QQ9355 –19–17OCT94–2/4

4. Lubricate the large threads (A) of the JDG894 Installation Tool.

5. Install RIVNUT® fastener (C) on tool:

   - Small threads (D) of installation tool must extend past fastener.
   - Flange of fastener must contact shoulder (B) of tool.

A—Large Threads
B—Tool Shoulder
C—Rivnut Fastener
D—Small Threads



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RIVNUT is a registered trademark of The BF Goodrich Co.

TX,17,QQ9355 –19–17OCT94–3/4

6. Install fastener with installation tool in hexagon hole. Make sure flange (C) is flat against mounting surface.

IMPORTANT: NEVER turn or tighten JDG894 Installation Tool socket head screw. Damage to threads of fastener can occur.

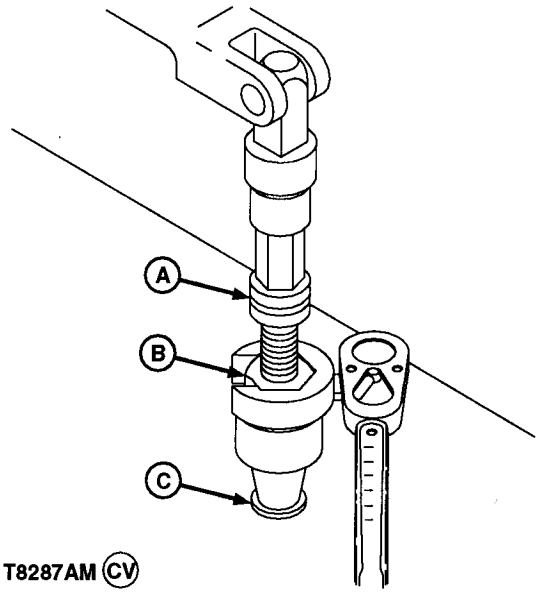
7. While holding socket head screw (A) stationary, tighten large (1-1/16 in.) nut (B) to specifications using a crowsfoot wrench.

Fastener—Specification

RIVNUT® (KREMNUT)
Fastener—Torque..... 68—74 N•m (50—55 lb-ft)

8. Loosen large nut to remove tool.

A—Socket Head Screw
B—Nut
C—Flange



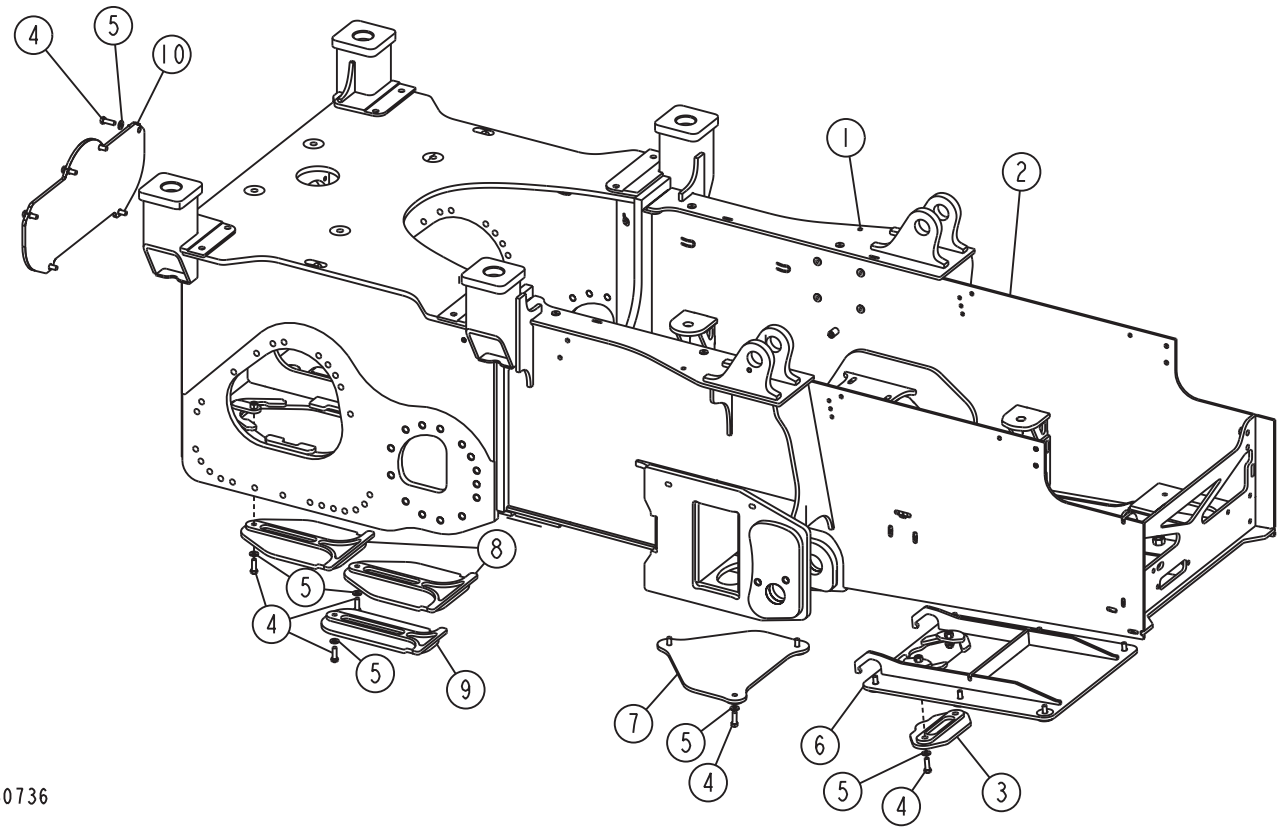
T8287AM CV

T8287AM –UN–17OCT94

RIVNUT is a registered trademark of The BF Goodrich Co.

TX,17,QQ9355 –19–17OCT94–4/4

Remove and Install Frame and Bottom Covers



T130736 –UN–08MAY00

1—Nut (16 used)
2—Main Frame
3—Cover
4—Cap Screw (20 used)
5—Washer (20 used)
6—Oil Pan Bottom Cover
7—Middle Bottom Cover
8—Transverse Case Bottom Side Cover (2 used)
9—Transverse Case Bottom Middle Cover
10—Rear Cover Plate

CAUTION: Components are heavy, use proper lifting device.

CED,TX03399,6030 –19–28MAR00–1/1

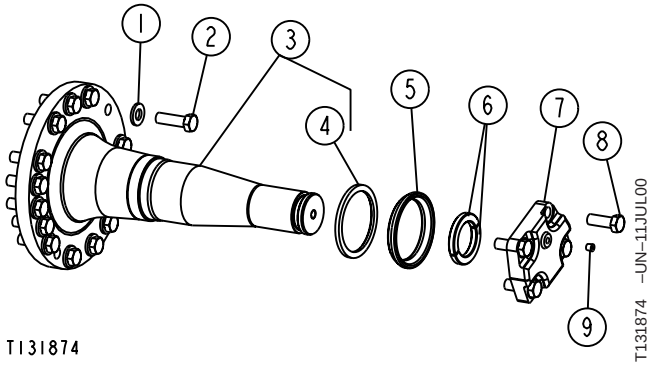
Remove and Install Pivot Shafts

1. Raise crawler using a 9072 kg (10 ton) floor jack and support machine using shop stands. Machine must be high enough to clear rock guards.
2. Disconnect track chain. (See Remove and Install Lubricated Track Chain in Group 0130.)
3. Remove two sprocket segments.
4. Remove track frame. (See Remove and Install Track Frame in Group 0130.)

CED,TX03399,6032 –19–15NOV00–1/4

5. Remove sealing ring (4) and seal (5).

   Inspect bushings, with split in upward position, in pivot shaft housing. Replace if necessary.
6. Install bushings flush with bore edge.
7. Heat sealing ring (4) to 149° C (300° F) for approximately a half hour. Press sealing ring with chamfer towards direction of pivot shaft cap screws.
8. Install seal (5) with smaller diameter toward sealing ring.



1—Washer (14 used)
2—Cap Screw (14 used)
3—Shaft
4—Sealing Ring
5—Seal
6—Retainer (2 used)
7—Cap
8—Cap Screw (4 used)
9—Pipe Plug

Continued on next page

CED,TX03399,6032 –19–15NOV00–2/4

IMPORTANT: Install cap screw (1) before install pivot shaft on frame. Cap screw (1) cannot be installed after installation of shaft.

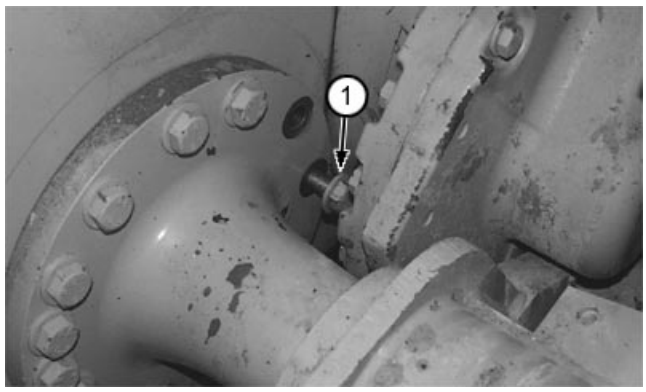
9. Install cap screw (1) before installing shaft. Install pivot shaft and cap screws. Tighten cap screws.

Pivot Shaft—Specification

Pivot Shaft Cap Screws—Torque ..... 624 N•m (460 lb-ft)

For cap screws which cannot be reach with torque wrench, use DFT1203 Torque Adapter. (See DFT1203 Torque Adapter For Pivot Shaft in Section 99 for instructions to make tool.)

10. Install track frame. (See Remove and Install Track Frame in Group 0130.)



1—Cap Screw

CED,TX03399,6032 –19–15NOV00–3/4

11. Install retainer (6).

12. Apply cure primer and formed-in-place gasket to cap (7). Install cap screws (8) and tighten.

13. Apply pipe sealant to threads of pipe plug (9).

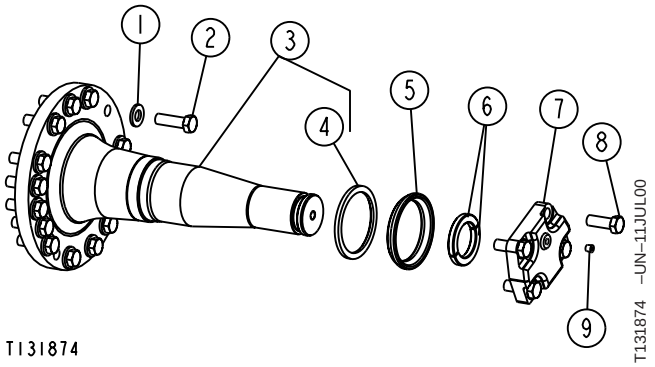
14. Install two sprocket segments. Apply thread lock and sealer (medium strength) to threads of cap screws.Tighten cap screws.

Sprocket—Specification

Sprocket Segment—Torque ..... 258—312 N•m (190—230 lb-ft)

15. Install track chain.

(See Remove and Install Lubricated Track Chain in Group 0130.)



1—Washer (14 used)
2—Cap Screw (14 used)
3—Shaft
4—Sealing Ring
5—Seal
6—Retainer (2 used)
7—Cap
8—Cap Screw (4 used)
9—Pipe Plug

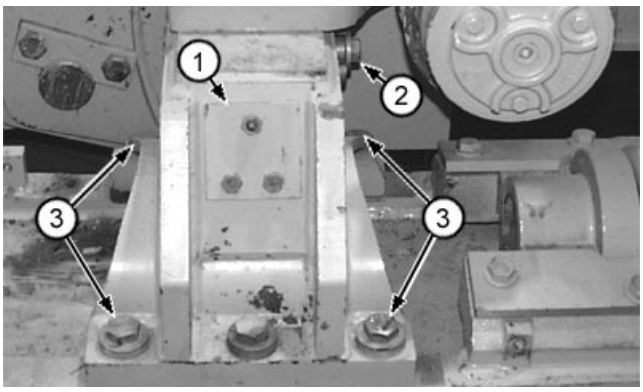
CED,TX03399,6032 –19–15NOV00–4/4

Remove and Install Crossbar and Lube Lines

1. Remove necessary covers.
2. Block and remove track chain. (See Remove and Install Lubricated Track Chain in Group 0130.)
3. Raise crawler just enough to relieve weight on pin crossbar using a 9072 kg (10 ton) floor jack. Put shop stands under main frame.
4. Remove cover (1) to disconnect lube line on both sides.
5. Remove pin (2) on both sides and center.
6. Remove cap screws (3) on one side and remove crossbar support.

CAUTION: The approximate weight of crossbar is 177 kg (390 lb).

7. Attach a chain and hoist to crossbar and remove out the side.
8. Install crossbar and pins.
9. Install crossbar support, connect lube line and install cover. Tighten cap screws.
10. Install track chain. (See Remove and Install Lubricated Track Chain in Group 0130.)

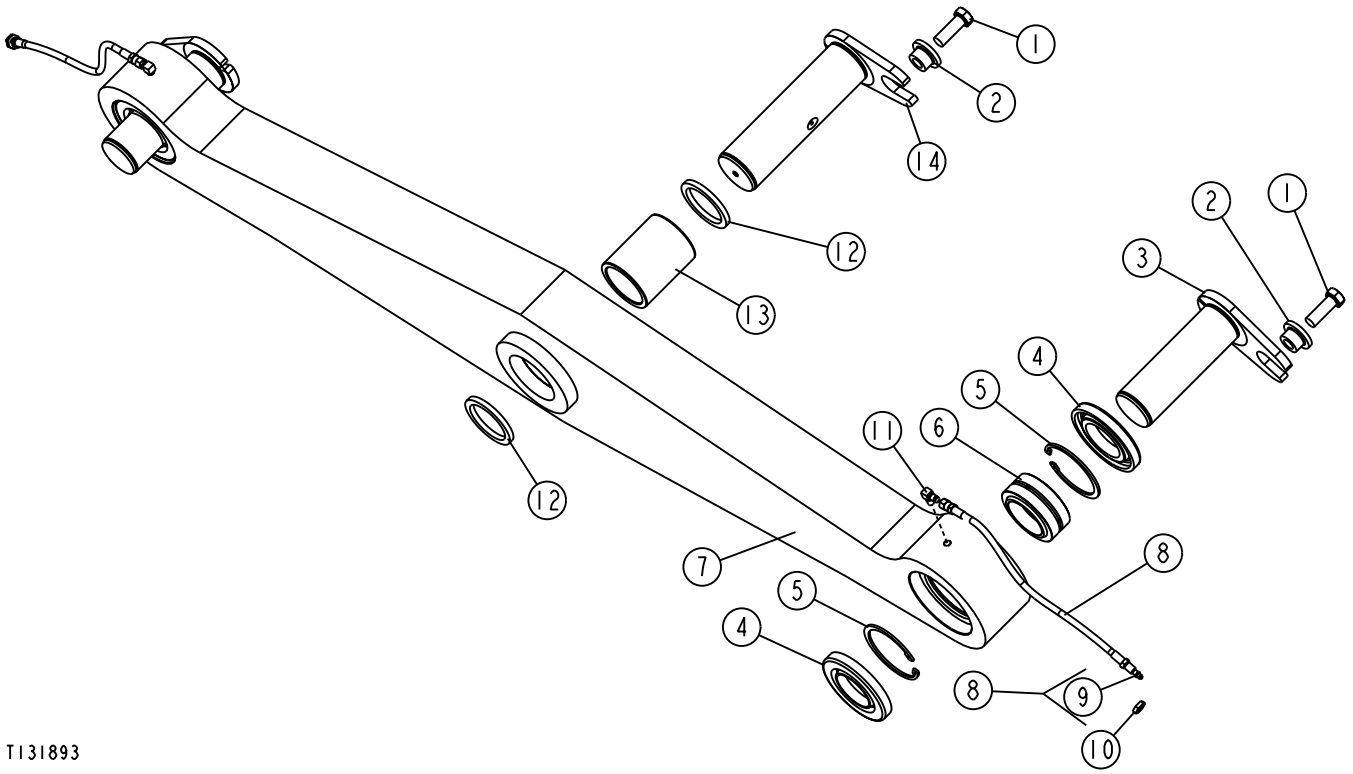


T131910B –UN–20JUN00

1—Cover
2—Crossbar Side Pins (2 used) and Center Pin
3—Cap Screw (5 used)

CED,TX03399,6033 –19–15NOV00–1/1

Disassemble and Assemble Crossbar



T131893 –UN–05JUL00

1—Cap Screw (3 used)
2—Bushing (3 used)
3—Pin (2 used)
4—Seal (4 used)
5—Snap Ring (4 used)
6—Self-Aligning Bushing (2 used)
7—Crossbar
8—Hose (2 used)
9—Lubrication Fitting (2 used)
10—Nut (2 used)
11—Elbow (2 used)
12—Seal (2 used)
13—Bushing
14—Pin

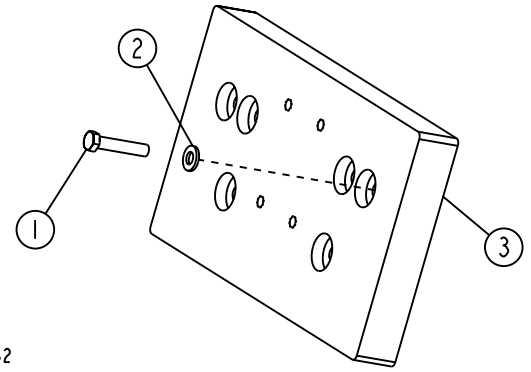
1. Inspect bushings (6) and (13). Replace if necessary using bushing, bearing and seal driver set.
2. Install new seals using a seal drive set.
3. Install seals with lip facing outward.
4. Inspect all parts for wear or damage, replace if necessary.

CED,TX03399,6113 –19–20JUN00–1/1

Remove and Install Counterweight

CAUTION: Components are heavy, use proper lifting device.

1—Cap Screw (6 used)
2—Washer (6 used)
3—Front Counterweight



T130782 –UN–31MAY00

CED,TX03399,6034 –19–28MAR00–1/1

Section 18
Operator's Station

Contents

Page

Group 1800—Removal and Installation
Service Equipment and Tools 18-1800-1
Specifications 18-1800-1
Cab or ROPS
Remove 18-1800-2
Cab/ROPS
Install 18-1800-9

Group 1810—Operator's Enclosure
Slide Glass
Remove and Install 18-1810-1
Stationary Glass
Remove and Install 18-1810-3
Remove and Install Window 18-1810-4
Windowpanes
Remove and Install 18-1810-5
Front Window Wiper
Remove and Install 18-1810-8
Door Window Wipers
Remove and Install 18-1810-10
Front Window Wipers
Remove and Install 18-1810-11

Group 1821—Seat and Seat Belt
Standard Seat
Remove and Install 18-1821-1
Deluxe Seat
Remove and Install 18-1821-6
Air Suspension Seat
Remove and Install 18-1821-17

Group 1830—Heating and Air Conditioning
Essential Tools 18-1830-1
Service Equipment and Tools 18-1830-4
Other Material 18-1830-5
Specifications 18-1830-6
R134a
Theory of Operation 18-1830-8
Proper Refrigerant Handling 18-1830-9
R134a Refrigerant Cautions 18-1830-10
R134a
Compressor Oil Charge Check 18-1830-11
Compressor Oil Removal 18-1830-12
Component Oil Charge 18-1830-13

Page

Refrigerant Recovery, Recycling and Charging Station Installation Procedure 18-1830-15
Recover System 18-1830-16
Evacuate System 18-1830-17
Charge R134a System 18-1830-19
Air Conditioner
Leakage Test 18-1830-20
System Cleaning Procedures 18-1830-21
Purge System 18-1830-22
Flush System 18-1830-23
Air Conditioning
Electrical and Component Location 18-1830-25
Compressor
Remove and Install 18-1830-26
Disassemble and Assemble Clutch 18-1830-28
Check Clutch Hub Clearance 18-1830-29
Inspect Manifold 18-1830-30
Disassemble, Inspect and Assemble 18-1830-31
Receiver-Dryer
Remove and Install 18-1830-34
Evaporator or Heater Core
Remove and Install 18-1830-34
Expansion Valve
Remove and Install 18-1830-37
Condenser
Remove and Install 18-1830-38
Remove and Install A/C Freeze Switch 18-1830-39
Remove and Install Upper Cab Heater Blower Motor or Heater Blower Resistor 18-1830-39
Cab Heater (Upper)
Disassemble and Assemble 18-1830-40
Cab/ROPS Heater (Under Seat)
Disassemble and Assemble 18-1830-42

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

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CED,TX03399,6168 –19–11AUG00–1/2

Lifting Eyebolts JT05552

Install to top of cab or ROPS.

CED,TX03399,6168 –19–11AUG00–2/2

Specifications

Item	Measurement	Specification
Cab/ROPS		
Cab	Weight	817 kg (1800 lb) (Approximate)
ROPS	Weight	535 kg (1180 lb) (Approximate)
Cab/ROPS Mounting 30 mm Socket Cap Screws	Torque	624 N•m (460 lb-ft)
Transmission Controller Clamp Cap Screw	Torque	73 N•m (54 lb-ft)
Reservoir		
Hydraulic Reservoir	Capacity	53.4 L (14.1 gal) (Approximate)

CED,TX03399,6170 –19–11AUG00–1/1

Remove Cab or ROPS

1. Drain engine coolant. The approximate capacity of engine coolant is 19.4 L (20.5 qt).
2. Remove side shields. (See Remove and Install Hood Support and Engine Side Shields in group 1800.
3. Remove side shields and precleaner.
4. Remove hood. (See Remove and Install Hood, Group 1910.)
5. **For Cabs Equipped With Air Conditioning System:**

   Recover R134a System. (See Recover R134a System in Group 1830.)

   Evacuate R134a System. (See Evacuate R134a System in Group 1830.)

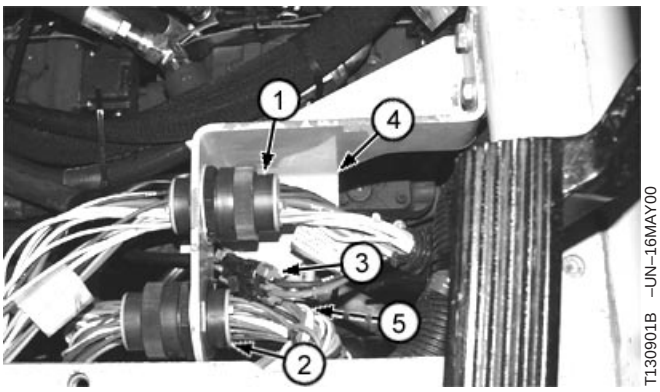
   Charge R134a System. (See Charge R134a System in Group 1830.)
6. Remove floor mat and floor plate.
7. Remove rear access cover.

Continued on next page

CED,TX03399,6046 –19–29MAR00–1/12

8. Disconnect transmission and engine main wiring harness connectors (1 and 2) and wire connectors (3 and 5).
9. Disconnect ground strap (7) at right side of frame
10. Remove tie bands on heater hose at bracket (4).
11. Remove heater hose clamp (6).

1—Transmission Main Wiring Harness Connector
2—Engine Main Wiring Harness Connector
3—Fuel Fired Heater Wire Connector (If equipped)
4—Bracket
5—Cab Heater Flow Control Valve Connector
6—Heater Hose Clamp
7—Ground Strap



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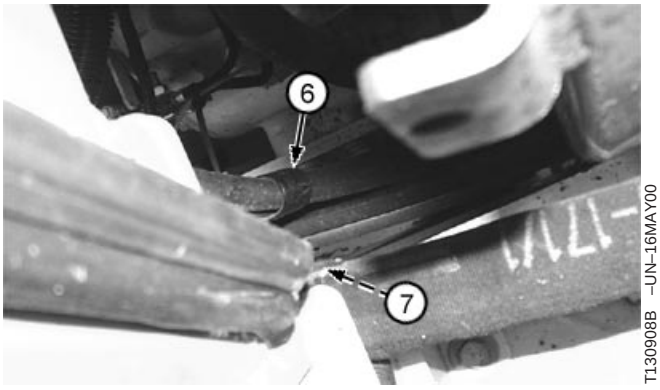
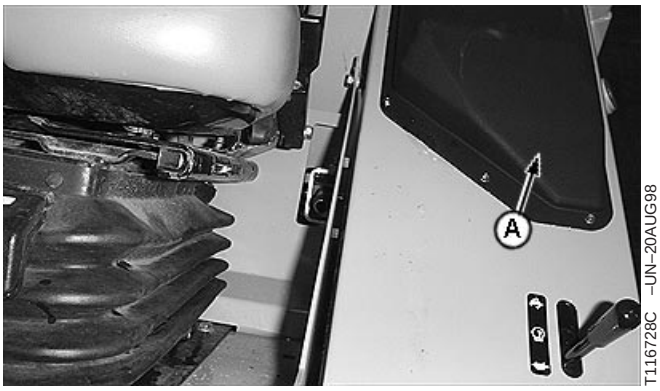


T130908B –UN–16MAY00

CED,TX03399,6046 –19–29MAR00–2/12

12. Remove transmission controller cover (A).
13. Disconnect wiring harnesses (B) from transmission controller (C).
14. Remove clamp (D).

A—Transmission Controller Cover
B—Wiring Harnesses
C—Transmission Controller
D—Clamp



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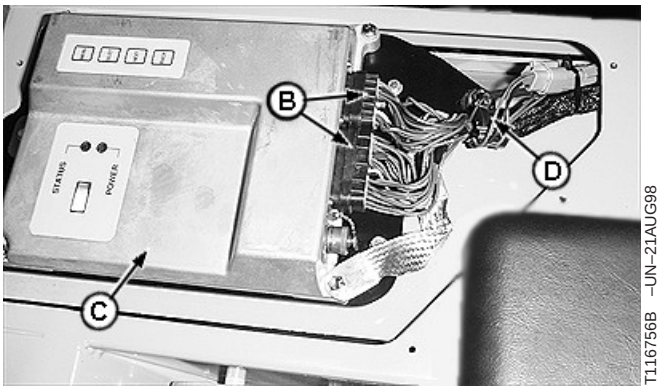

T116756B –UN–21AUG98

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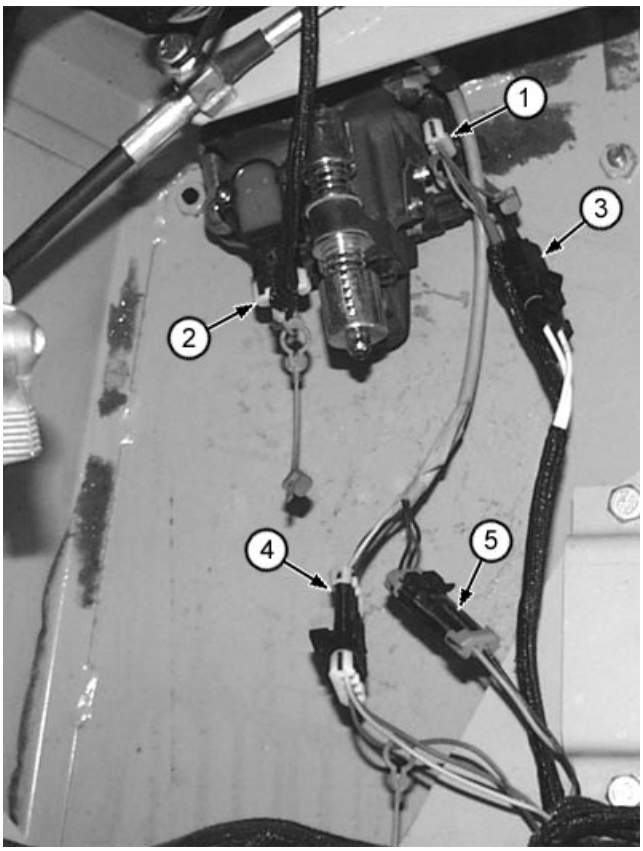
CED,TX03399,6046 –19–29MAR00–3/12

15. Disconnect five wire connectors (1—5) from single lever controller (SLC). To aid in assembly, tag wires for proper location.

1—B5 Left And Right Steer Sensor. (Marked BLUE on housing below sensor.) T10 Blue, T11 Blue, Z05 Gray Wires
2—B2 FNR Sensor. (Marked YELLOW on housing below sensor.) T01 Blue, T02 Blue, Z01 Gray Wires
3—S3 Neutral Start Switch. E09B White Wire, E03B White Wire
4—B4 Transmission Speed Control Sensor. T07 Blue, T04 Blue, Z04 Gray Wires
5—Horn Connector



T130917B –UN–16MAY00

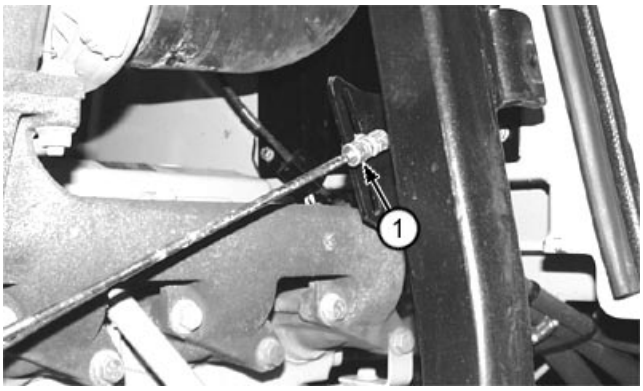
CED,TX03399,6046 –19–29MAR00–4/12

16. Remove hydraulic control tee handle.

17. Disconnect throttle linkage (1).

18. Remove reverse ratio knob (2) and nut (3). Place switch with wires connected in battery compartment.

1—Throttle Linkage
2—Reverse Ratio Knob
3—Reverse Ratio Switch Nut



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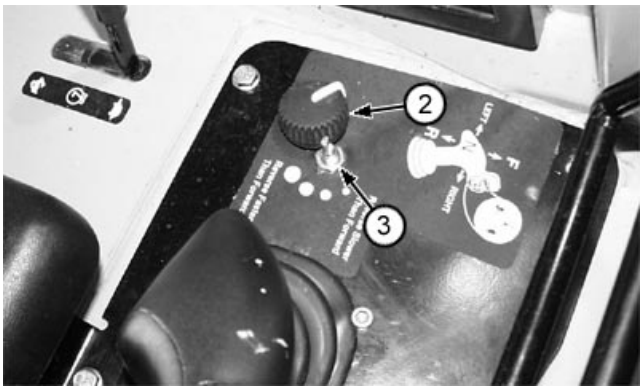

T130902B –UN–16MAY00

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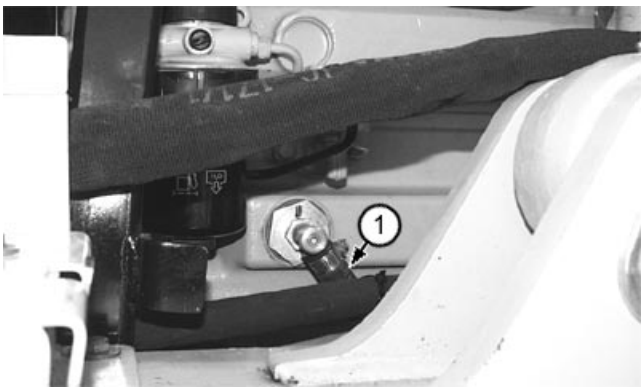
CED,TX03399,6046 –19–29MAR00–5/12

19. Disconnect hoses (1) and (2) from engine.

1—Engine-to-Block Hose
2—Engine-to-Water Pump Hose



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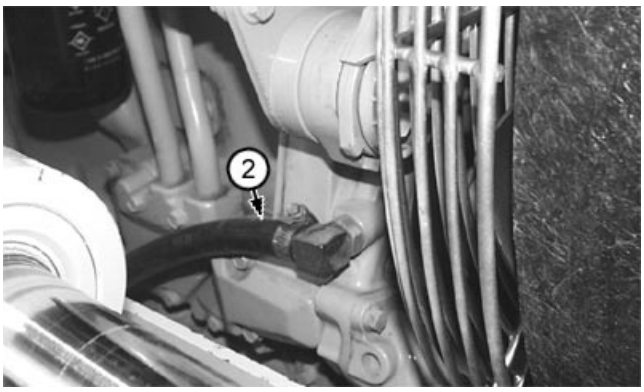


T132292B –UN–07JUL00

CED,TX03399,6046 –19–29MAR00–6/12

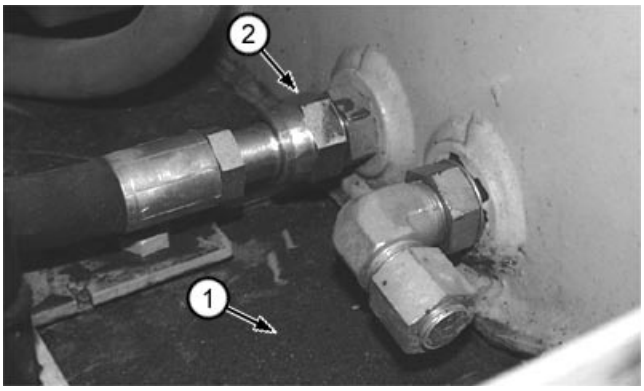
20. Drain or apply vacuum to hydraulic reservoir. Approximate capacity of hydraulic reservoir is 53.5 L (14.1 gal).

21. Remove cover (1).

22. Disconnect brake valve return hose (2) from reservoir. Close all openings using caps and plugs.

23. Remove cap screw and clamp to disconnect brake valve charge pressure hose (3) from pump quick coupler.

1—Cover
2—Brake Valve-to-Reservoir Hose
3—Hydraulic Pump-to-Brake Valve Hose



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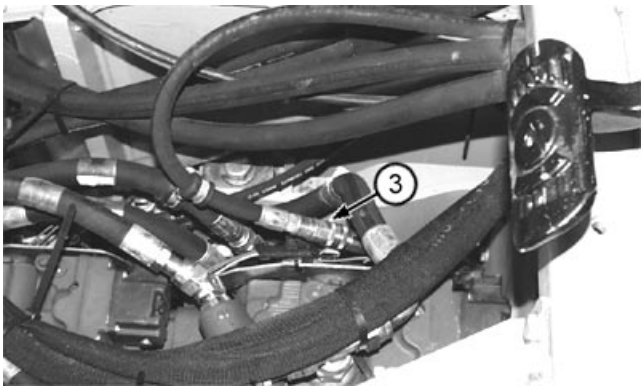

T130906B –UN–16MAY00

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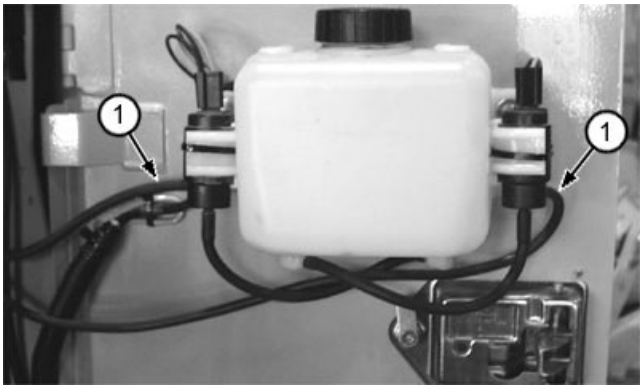
CED,TX03399,6046 –19–29MAR00–7/12

24. Disconnect windshield washer hoses (1) at washer pump.

1—Windshield Washer Hose (2 used)

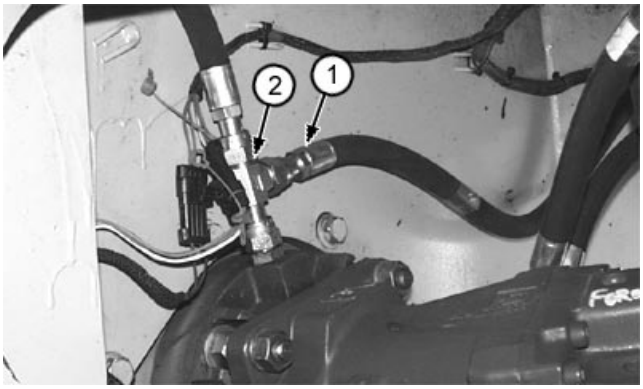


T130915C –UN–16MAY00

CED,TX03399,6046 –19–29MAR00–8/12

25. Disconnect brake valve pressure-to-left park brake hose (1) from tee fitting (2) on left park brake. Close all openings using caps and plugs.

1—Brake Valve Pressure-to-Left Park Brake Hose
2—Tee Fitting



T130916B –UN–16MAY00

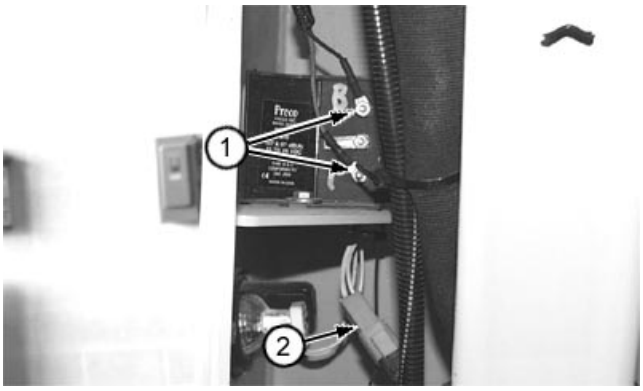
CED,TX03399,6046 –19–29MAR00–9/12

26. **For Cabs Equipped With Air Conditioning System:**

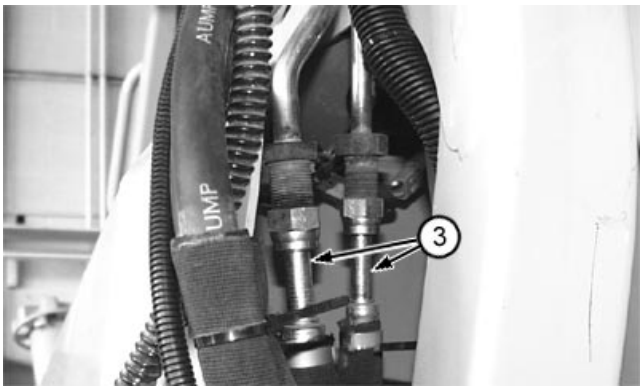
27. Remove right and left rear corner panels. Disconnect wiring at lower work light connector (2) and backup alarm (1).

28. Disconnect air conditioning compressor hoses (3). Close all openings using caps and plugs.

1—Backup Alarm
2—Lower Work Light Connector
3—Air Conditioning Compressor Hose (2 used)



T130910B –UN–16MAY00



T130909B –UN–16MAY00

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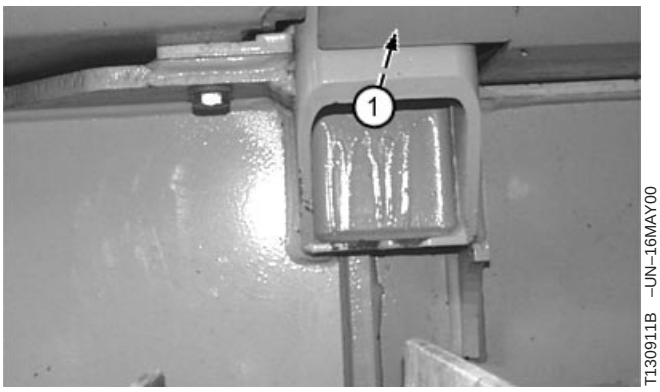
CED,TX03399,6046 –19–29MAR00–10/12

29. Remove four mounting 30 mm socket cap screws (1) and rubber mounts.

1—Mounting Cap Screw (4 used)



T130911B –UN–16MAY00

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CED,TX03399,6046 –19–29MAR00–11/12

CAUTION: The approximate weight of cab is 817 kg (1800 lb). The approximate weight of ROPS is 535 kg (1180 lb).

Cab/ROPS—Specification

Cab—Weight	817 kg (1800 lb) (Approximate)
ROPS—Weight	535 kg (1180 lb) (Approximate)

IMPORTANT: Cab/ROPS should be removed with front end slightly higher than rear end to avoid damaging rear of fuel tank.

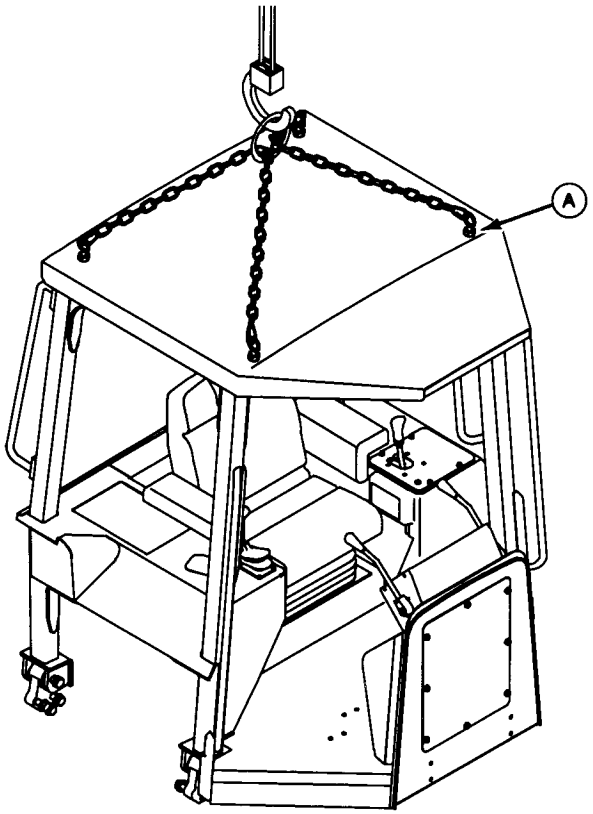
30. Install four JT05552 16 mm Lifting Eyebolts (A) in top of cab/ROPS.

NOTE: Guide cab/ROPS rear legs to avoid damage to tanks.

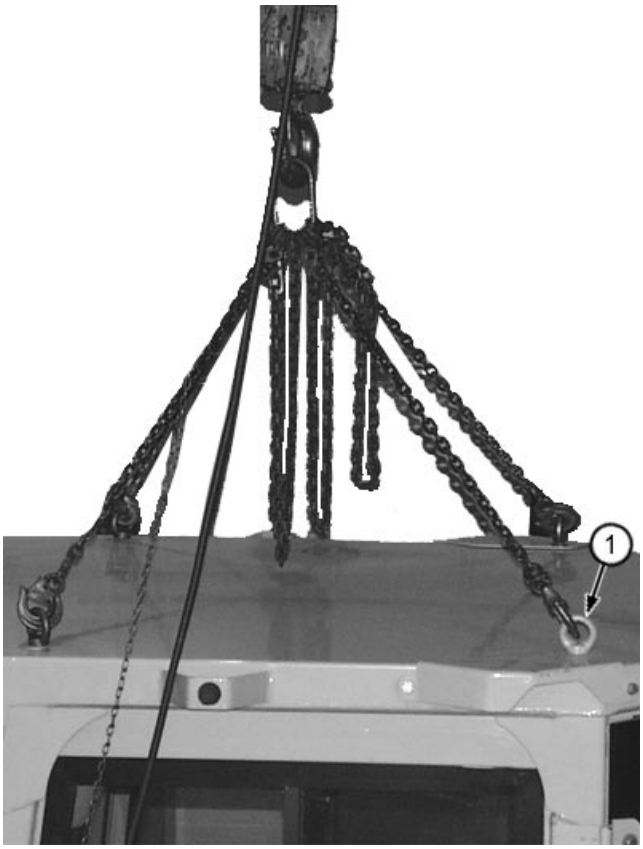
31. Attach chain and slowly raise cab/ROPS. Guide cab/ROPS rear legs to avoid damage to tanks.

32. Remove cab or ROPS.

A—JT05552 16 mm Lifting Eyebolts (4 used)



T8388AH –UN–12JUN95



T130924B –UN–16MAY00

Lifting Cab/ROPS (Cab Shown)

CED,TX03399,6046 –19–29MAR00–12/12

Install Cab or ROPS

CAUTION: The approximate weight of cab is 817 kg (1800 lb). The approximate weight of ROPS is 535 kg (1180 lb).

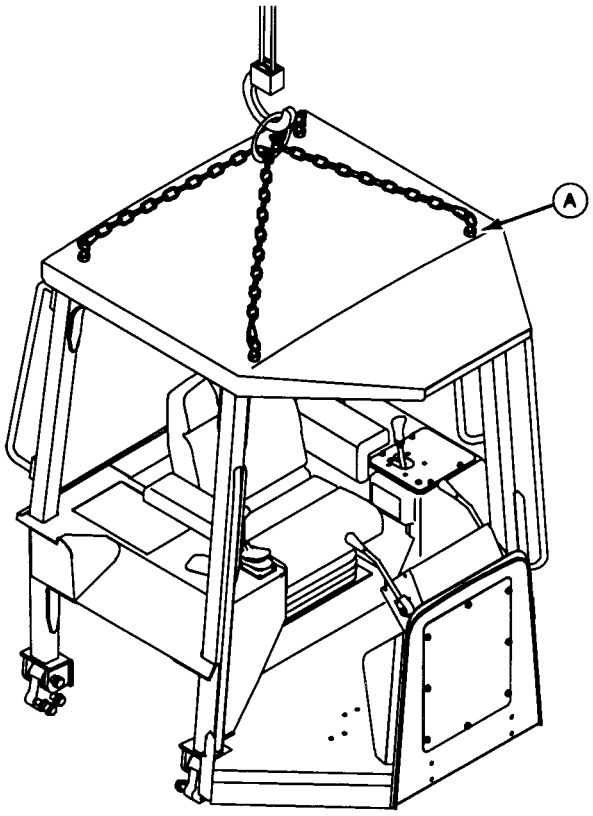
Cab/ROPS—Specification

Cab—Weight	817 kg (1800 lb) (Approximate)
ROPS—Weight	535 kg (1180 lb) (Approximate)

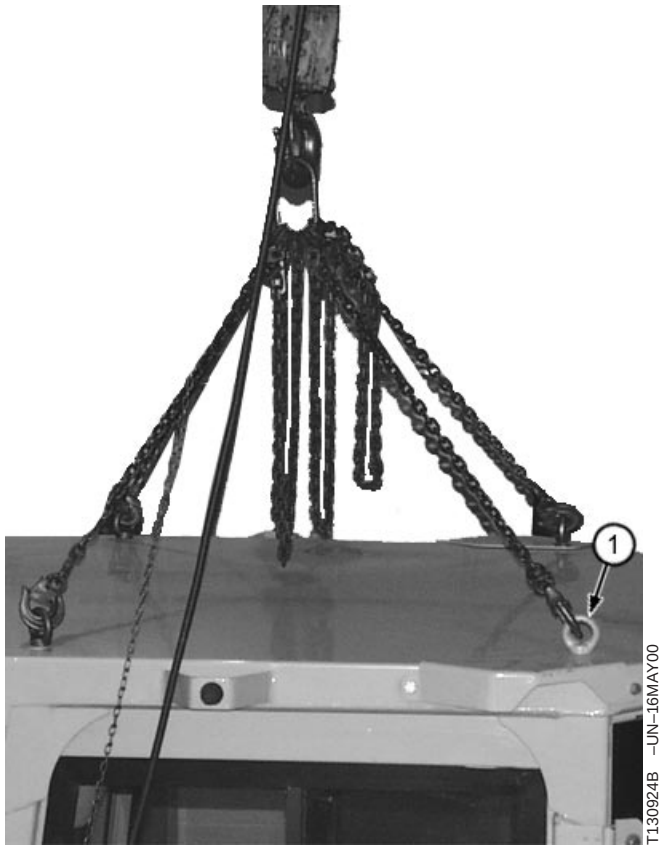
IMPORTANT: Cab/ROPS should be removed with front end slightly higher than rear end to avoid damaging rear of fuel tank.

1. Install four JT05552 16 mm Lifting Eyebolts (A) in top of cab/ROPS. Install chain and hoist.
2. Slowly begin to lower cab/ROPS into place.
3. When installing cab/ROPS, route all wiring harnesses and hoses back to their original location and replace all tie bands that were removed.

A—JT05552 16 mm Lifting Eyebolts (4 used)



T8388AH –UN–12JUN95



T130924B –UN–16MAY00

Lower Cab/ROPS (Cab Shown)

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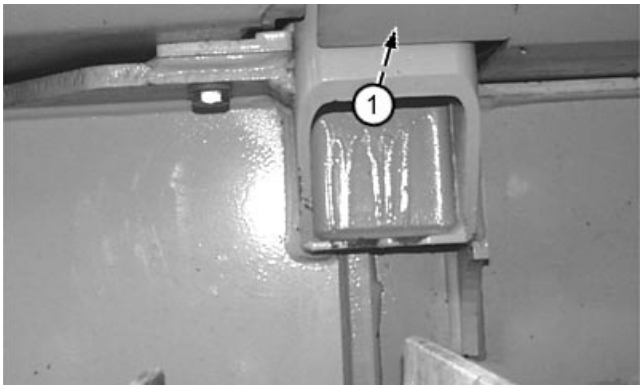
CED,TX03399,6047 –19–14APR03–1/11

4. Install cab/ROPS to machine with four mounting socket cap screws (1) and rubber boots. Tighten cap screws to specification.

Cab/ROPS—Specification

Cab/ROPS Mounting 30 mm
Socket Cap Screws—Torque ..... 610 N•m (451 lb-ft)

1—Mounting Cap Screw (4 used)



T130911B –UN–16MAY00

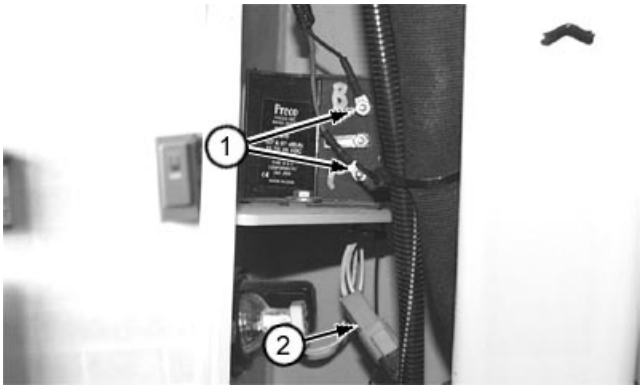
CED,TX03399,6047 –19–14APR03–2/11

5. **For Cabs Equipped With Air Conditioning System:**

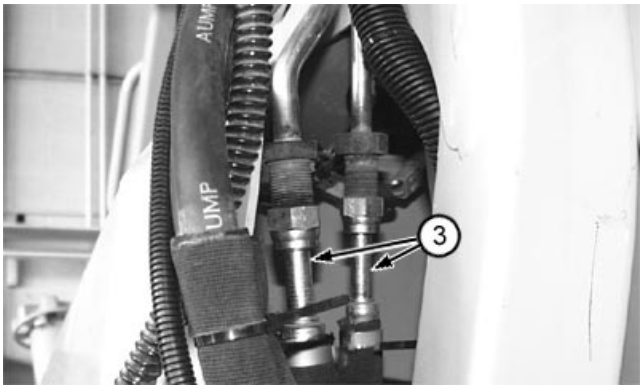
6. Connect air conditioning compressor hoses (3). The larger low pressure hose goes to evaporator outlet. The smaller high pressure hose goes to expansion valve.

7. Connect wiring at lower work light connector (2) and backup alarm (1).

1—Backup Alarm
2—Lower Work Light Connector
3—Air Conditioning Compressor Hose (2 used)



T130910B –UN–16MAY00

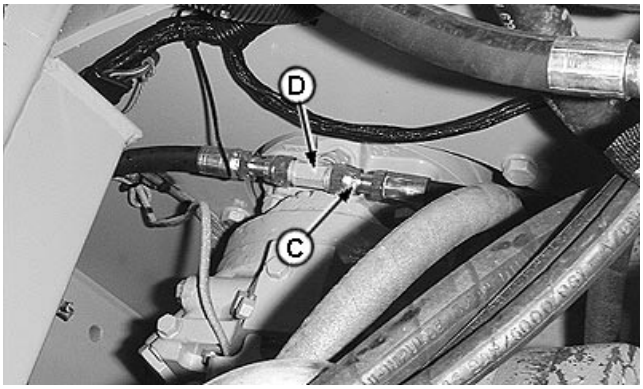


T130909B –UN–16MAY00

CED,TX03399,6047 –19–14APR03–3/11

8. Connect brake valve pressure-to-left park brake hose (3) from tee fitting (4) on left park brake.

3—Brake Valve Pressure-to-Left Park Brake Hose
4—Tee Fitting



T117189B –UN–14SEP98

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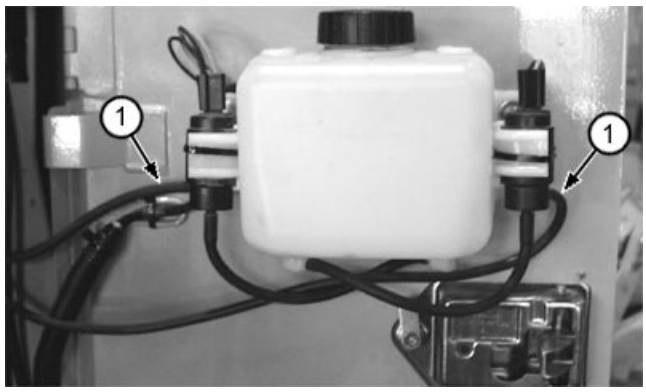
CED,TX03399,6047 –19–14APR03–4/11

9. Connect windshield washer hoses (1) at washer pump.

1—Windshield Washer Hose (2 used)



T130915C –UN–16MAY00

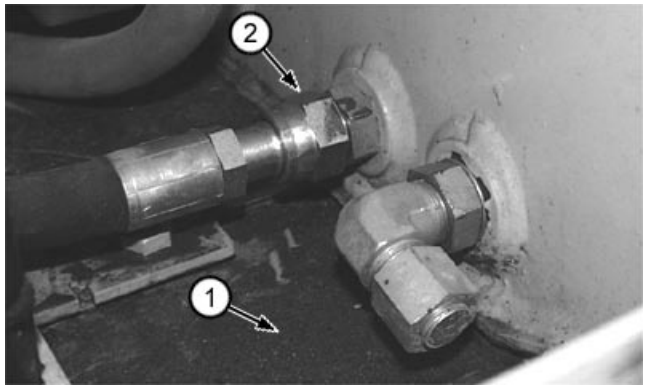
CED,TX03399,6047 –19–14APR03–5/11

10. Connect brake valve return hose (2) to reservoir.

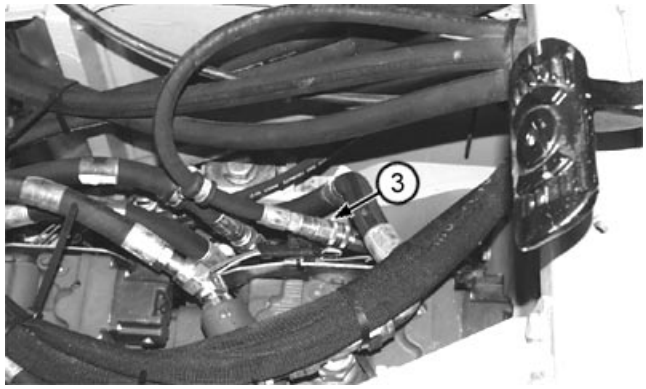
11. Connect brake valve charge pressure hose (3) at quick coupler and install clamp with cap screw.

12. Install cover (1).

1—Cover
2—Brake Valve-to-Reservoir Hose
3—Hydraulic Pump-to-Brake Valve Hose



T130905B –UN–16MAY00



T130906B –UN–16MAY00

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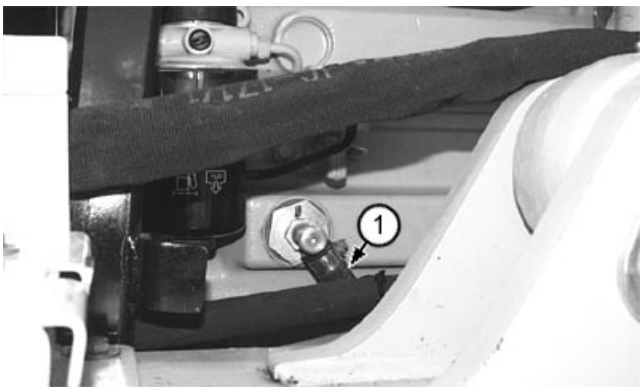
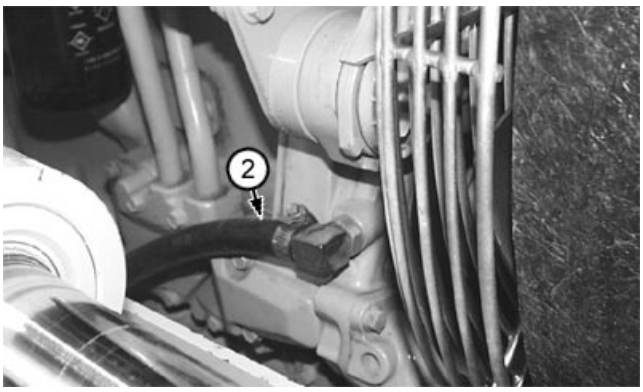
CED,TX03399,6047 –19–14APR03–6/11

13. Connect hoses (1) and (2) to engine.

1—Engine-to-Block Hose
2—Engine-to-Water Pump Hose



T132291B –UN–07JUL00



T132292B –UN–07JUL00

CED,TX03399,6047 –19–14APR03–7/11

14. Install hydraulic control tee handle.

NOTE: When throttle linkage or linkage lever is disconnected engine speed adjustment should be done. (See Engine Speed Control Linkage Adjustment in Operation and Test Manual, Group 9010-20.)

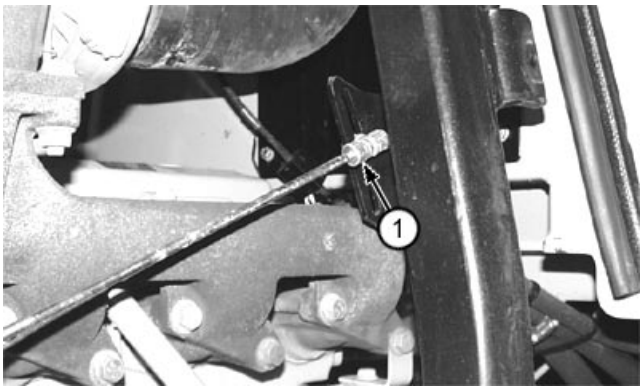
15. Connect throttle linkage (1).

16. See Engine Speed Control Linkage Adjustment (S.N. —920838) or Engine Speed Control Linkage Adjustment (S.N. 920839—). (Group 9010-20.)

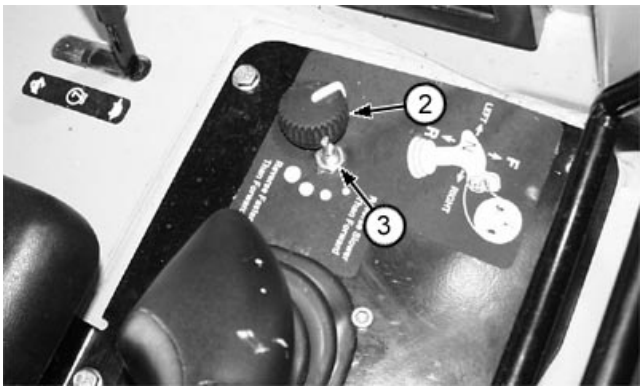
17. Install reverse ratio switch with nut (3).

18. Install reverse ratio switch knob (2).

1—Throttle Linkage
2—Reverse Ratio Knob
3—Reverse Ratio Switch Nut



T130903B –UN–16MAY00



T130902B –UN–16MAY00

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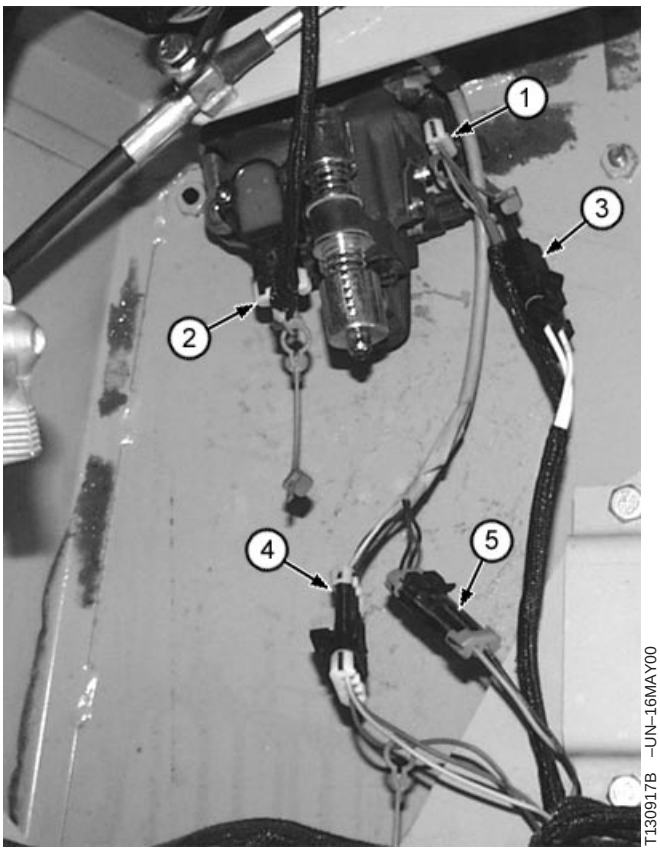
CED,TX03399,6047 –19–14APR03–8/11

19. Connect five wire connectors (1—5) to single lever controller (SLC).

1—B5 Left And Right Steer Sensor. (Marked BLUE on housing below sensor.) T10 Blue, T11 Blue, Z05 Gray Wires
2—B2 FNR Sensor. (Marked YELLOW on housing below sensor.) T01 Blue, T02 Blue, Z01 Gray Wires
3—S3 Neutral Start Switch. E09B White Wire, E03B White Wire
4—B4 Transmission Speed Control Sensor. T07 Blue, T04 Blue, Z04 Gray Wires
5—Horn Connector



T130917B –UN–16MAY00

CED,TX03399,6047 –19–14APR03–9/11

20. Connect wiring harnesses (B) to transmission controller (C).

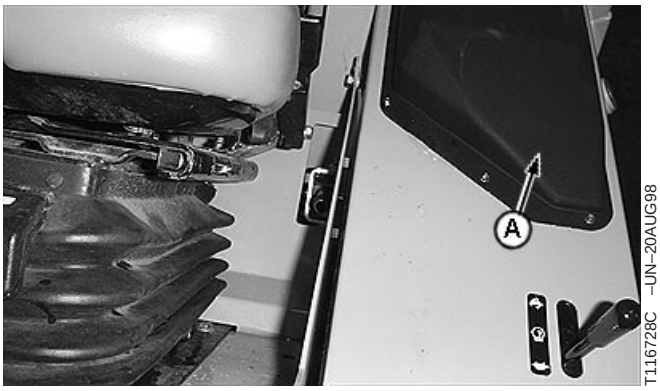
21. Install clamp (D). Tighten cap screw to specification.

Cab/ROPS—Specification

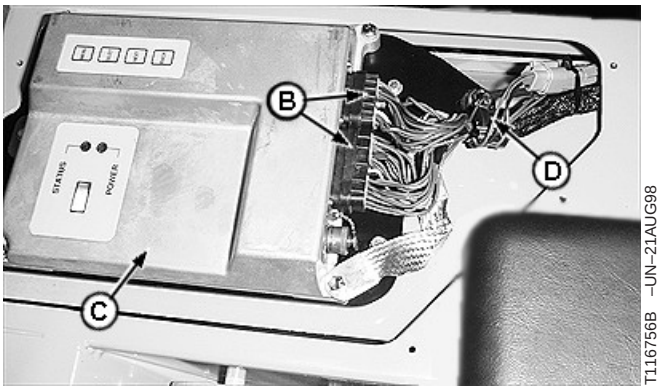
Transmission Controller Clamp Cap Screw—Torque	73 N•m (54 lb-ft)

22. Install transmission controller cover (A).

A—Transmission Controller Cover
B—Wiring Harnesses
C—Transmission Controller
D—Clamp



T116728C –UN–20AUG98



T116756B –UN–21AUG98

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CED,TX03399,6047 –19–14APR03–10/11

23. Connect transmission and engine main wiring harness connectors (1 and 2) and wire connectors (3 and 5).
24. Connect ground strap (7) at right side of frame.
25. Install heater hose clamp (6).
26. Install tie bands on heater hose at bracket (4).
27. Install rear access cover.
28. Install floor plate and floor mat.
29. Install side shields and precleaner.
30. Install hood. (See Remove and Install Hood, Group 1910.)
31. Fill radiator with coolant. (See Operator's Manual.) The approximate capacity of engine coolant is 19.4 L (20.5 qt).
32. Fill hydraulic reservoir if drained. (See Operator's Manual.) The approximate capacity of hydraulic reservoir is 53.4 L (14.1 gal).

Specification

Hydraulic Reservoir—Capacity..... 53.4 L (14.1 gal) (Approximate)

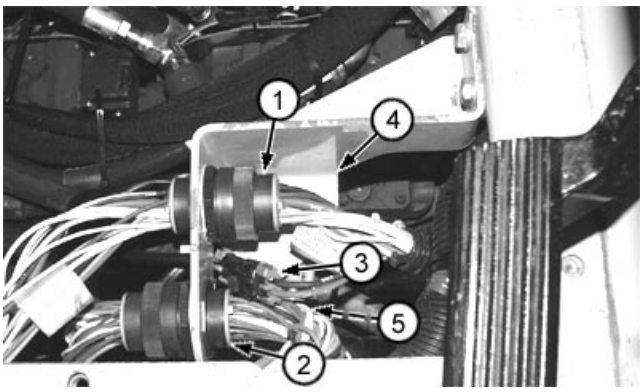
NOTE: If air conditioning system is being turned on for the first time, set engine rpm at slow idle to avoid possible high pressure discharge of extra refrigerant oil that is in all new compressors.

33. **For Cabs Equipped With Air Conditioning System:**

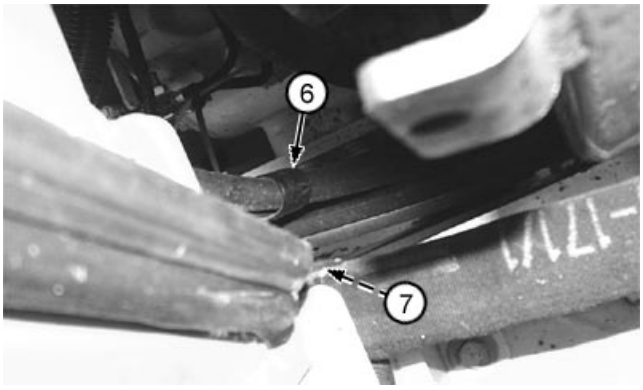
    Charge air conditioning system. (See Charge R134a System in Group 1830.)

    Evacuate air conditioning system. (See Evacuate R134a System in Group 1830.)

    See Engine Speed Control Linkage Adjustment (S.N. —920838) or Engine Speed Control Linkage Adjustment (S.N. 920839—). (Group 9010-20.)



T130901B –UN–16MAY00

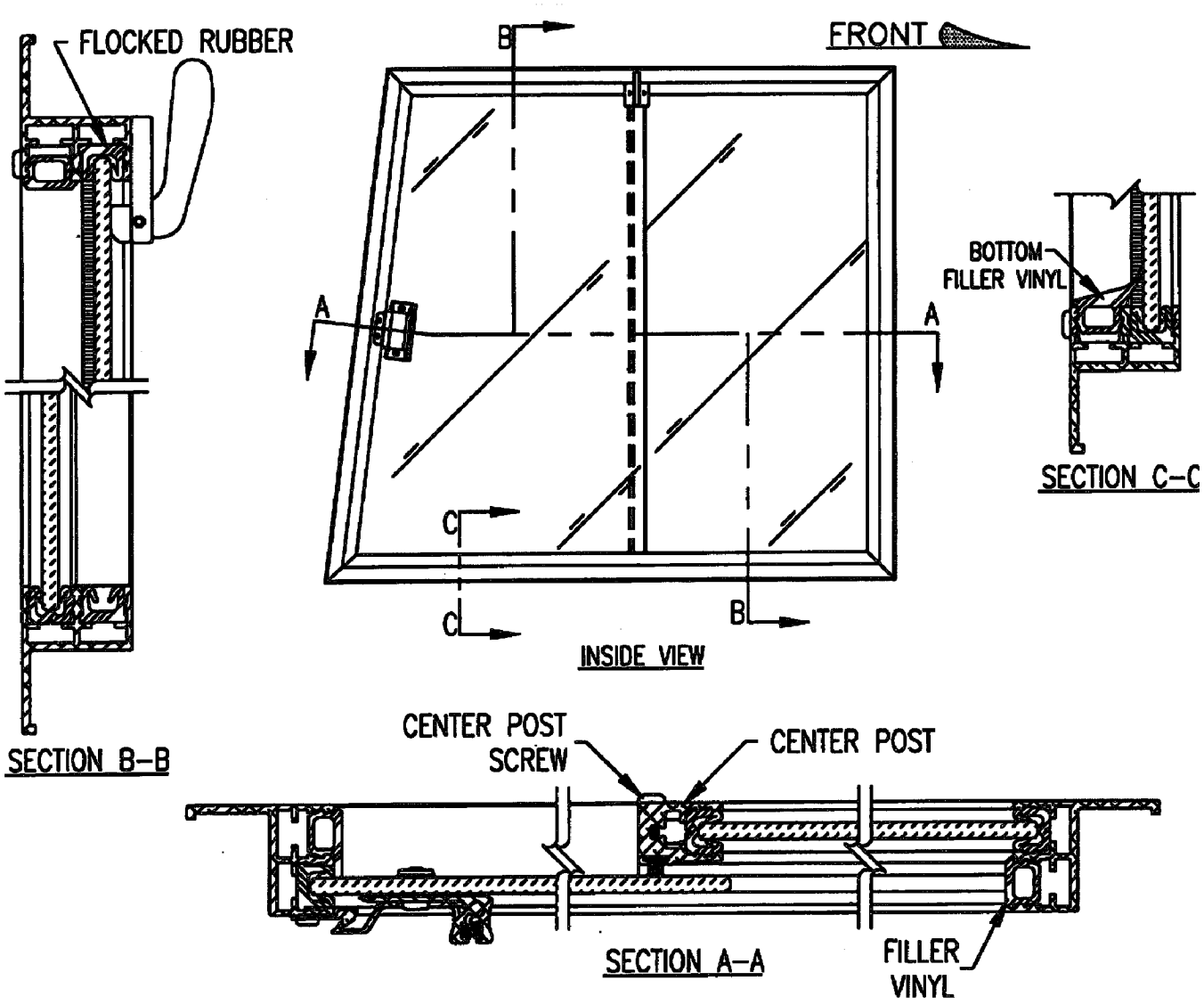


T130908B –UN–16MAY00

1—Transmission Main Wiring Harness Connector
2—Engine Main Wiring Harness Connector
3—Fuel Fired Heater Wire Connector (If equipped)
4—Bracket
5—Cab Heater Flow Control Valve Connector
6—Heater Hose Clamp
7—Ground Strap

CED,TX03399,6047 –19–14APR03–11/11

Remove and Install Slide Glass



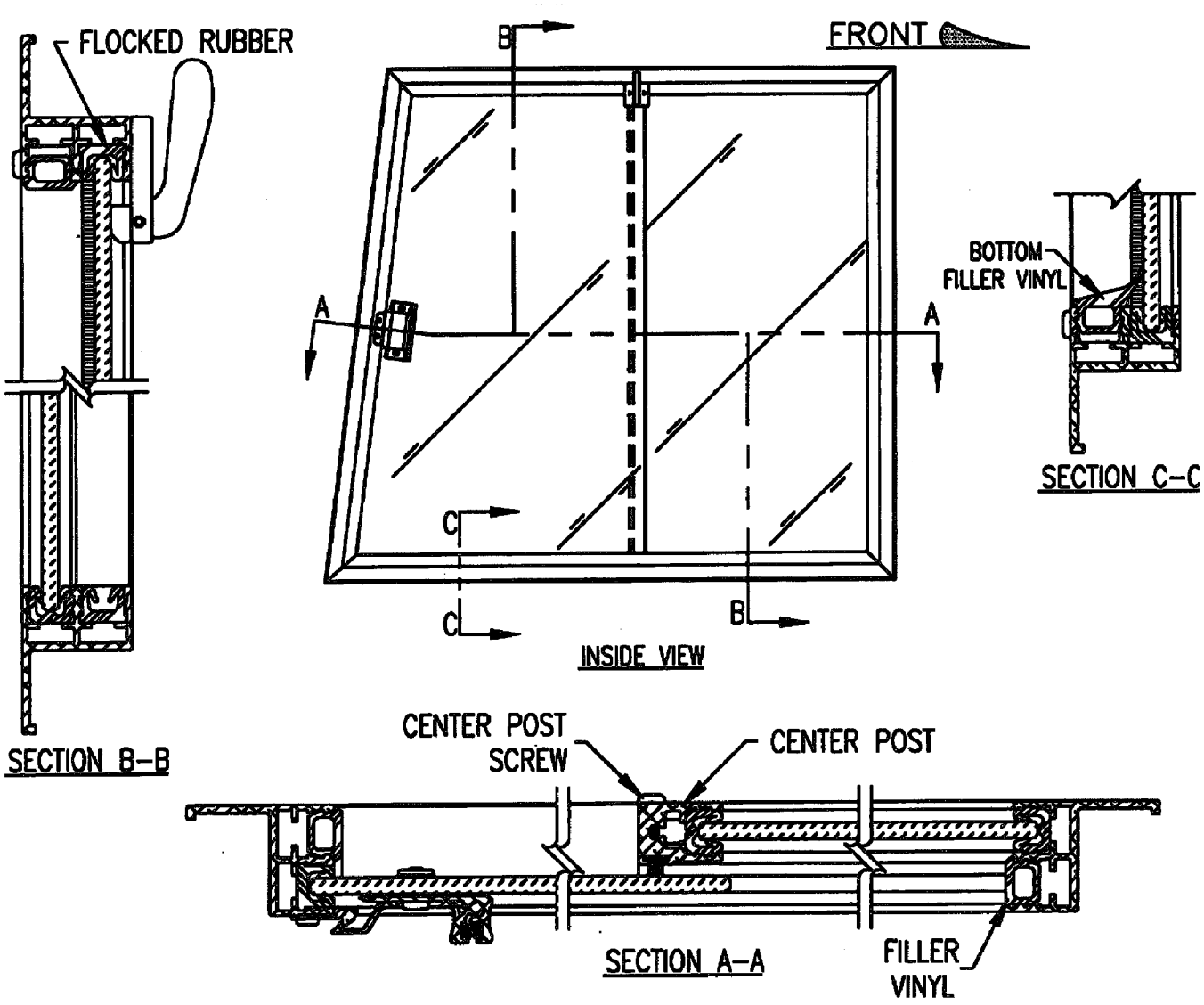
1. Move the slide glass to the closed position.
2. Starting at the front of the window, begin removing the flocked rubber from the channel behind the glass at the top front of the window (approximately 76 mm (3 in.) of this section of rubber extends under the glass). Slide this portion out in order to completely remove flocked rubber section.
3. Slide the glass to the front of the window and lift it up into the open channel left by removing the flocked rubber. This will allow the glass to clear the bottom channel and be removed by tilting the bottom toward the inside of the window.
4. Install new glass with the bottom of the glass tilted toward the inside of window. Lift window up into the open channel at the top of the window until the bottom of the glass can be inserted into the bottom channel.
5. Slide the glass into the rear section of flocked rubber still in the frame and move it to the closed position.

Continued on next page

6. Reinstall the front section of the flocked rubber by first working it in between the top of he glass and the channel until it meets up with the rear section (coating the end of the rubber with soapy water will aid in installing the flock).
7. Insert the opposite end of the rubber into the end of the channel. Push in and smooth out the middle portion.

CED,TX03399,6048 –19–29MAR00–2/2

Remove and Install Stationary Glass



1. From the outside of the window and using a screwdriver, remove the filler vinyl and center post screws (the filler vinyl is held into the channel by compression only). The two center post screws are located on the outside face of the frame at both ends of the center post.
2. With the screws removed, pull back on the center post to remove it from the glass.
3. Slide the glass back until it clears the flocked rubber in the frame channel. Lift the glass up into the now open channel of the frame until the bottom of the glass can be swung clear.
4. To install new glass, tilt bottom of glass toward the outside of window, lift it up into the open channel behind the flocked rubber at the top of the window until the bottom of glass can be inserted into the bottom channel.
5. Slide the glass into the flocked rubber until it is fully seated in the front channel.

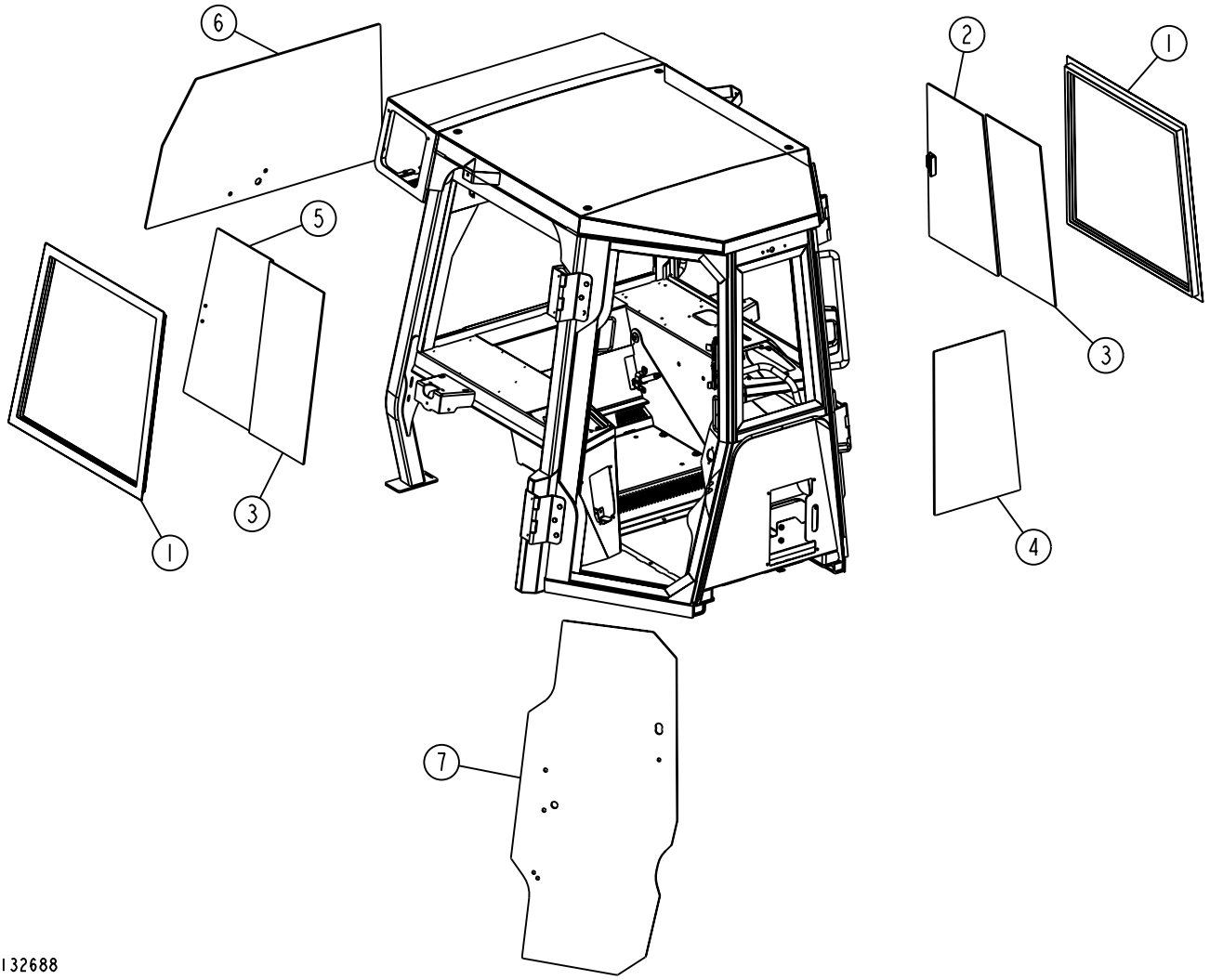
Continued on next page

CED,TX03399,6049 –19–29MAR00–1/2

6. Reinstall the center post assembly by tilting it until the milled ends can be inserted into the channel behind the glass and push it on to the glass. (The screw holes in the frame will align with the holes in the center post when stationary glass and center post have been properly installed.)
7. Fasten the center post screws and push filler vinyls back into the channels. Press vinyl in at both ends and then the middle (vinyls may appear to be too long, but is important not to cut them.)

CED,TX03399,6049 –19–29MAR00–2/2

Remove and Install Window



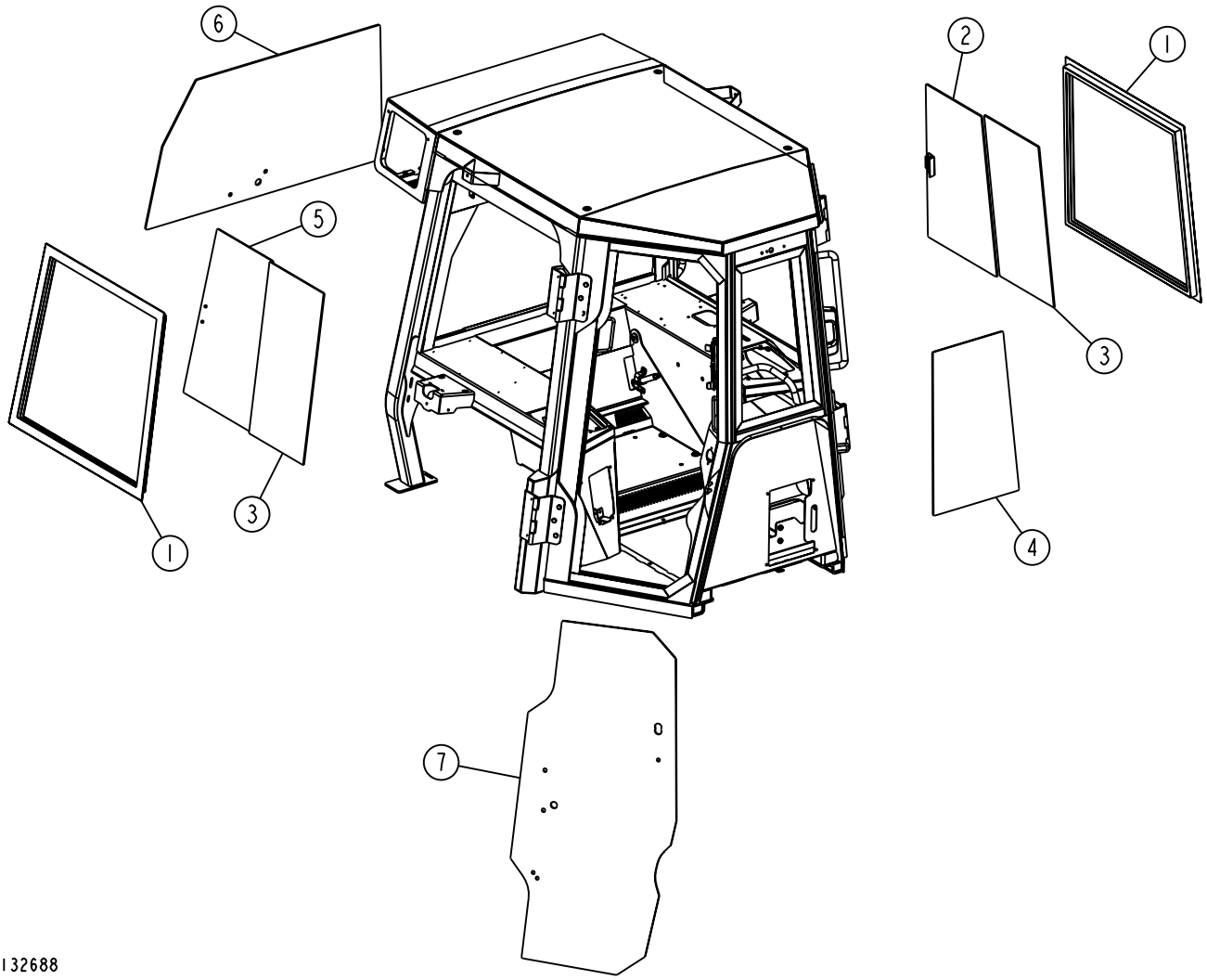
T132688 –UN–16AUG00

1—Sliding Window Frame
2—Left Side Slide Window
3—Stationary Side Window
4—Front Window Pane
5—Right Side Slide Window
6—Rear Window Pane
7—Door Window Pane

Remove and install windows as shown.

TX,1810,RR5410 –19–23APR96–1/1

Remove and Install Windowpanes



T132688 –UN–16AUG00

1—Sliding Window Frame
2—Left Side Slide Window
3—Stationary Side Window
4—Front Window Pane
5—Right Side Slide Window
6—Rear Window Pane
7—Door Window Pane

NOTE: Use this procedure to replace all door windowpanes and rear/front windowpanes.

Use a Urethane Auto Glass Adhesive Sealant to hold windowpanes in place. Also use the primers, which are recommended for the adhesive formulation which has been selected. DO NOT use any other type of adhesive other than a urethane. It is also recommended that an auto glass dealer install the windowpanes.

IMPORTANT: Windowpanes must have an ultraviolet barrier around the edge of the glass since ultraviolet rays will deteriorate the adhesive. Windowpanes ordered through John Deere Parts have the ultraviolet barrier. If the windowpane is purchased through a glass dealer, the dealer must put an ultraviolet barrier on the glass. DO NOT apply paint to the border of the glass.

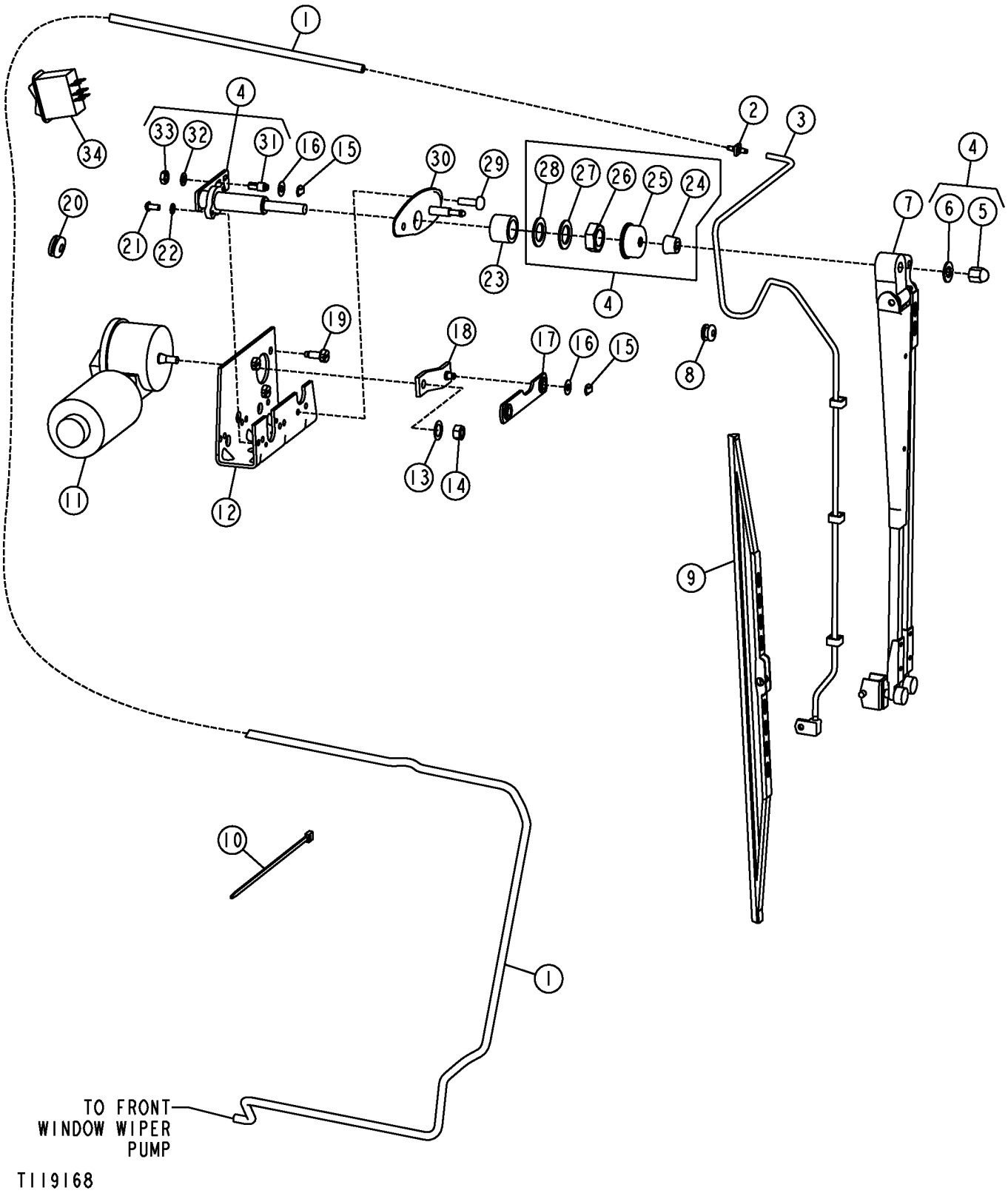
If an auto glass dealer is not installing the windowpanes, use the following procedure:

Continued on next page

1. Purchase urethane adhesive and appropriate primers from your local auto glass dealer.
2. If window frame is removable, remove frame from cab.
3. Scrape broken glass off existing adhesive. DO NOT remove adhesive from window frame or cab.
4. Trim existing adhesive so it has a smooth surface.
5. Inspect and clean both replacement glass and window frame. Use water with a mild detergent and allow to dry.
6. Apply primers per adhesive manufacturer's recommendations
7. Apply a 12.5 mm (1/2 in.) bead of adhesive on top of the existing adhesive. Bead must be high enough to fill gap between frame and installed window.
8. Put the new windowpane into position. Use light hand pressure to force windowpane down around the edges until even with metal frame. DO NOT over press adhesive.
9. If windowpane is installed directly on cab, use tape to hold it in place while adhesive cures.
10. Allow adhesive to cure for 24 hours before operating machine.

CED,TX03399,6051 –19–29MAR00–2/2

Remove and Install Front Window Wiper



T119168 –UN–21JAN99

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CED,TX03399,6052 –19–29MAR00–1/2

Operator's Enclosure

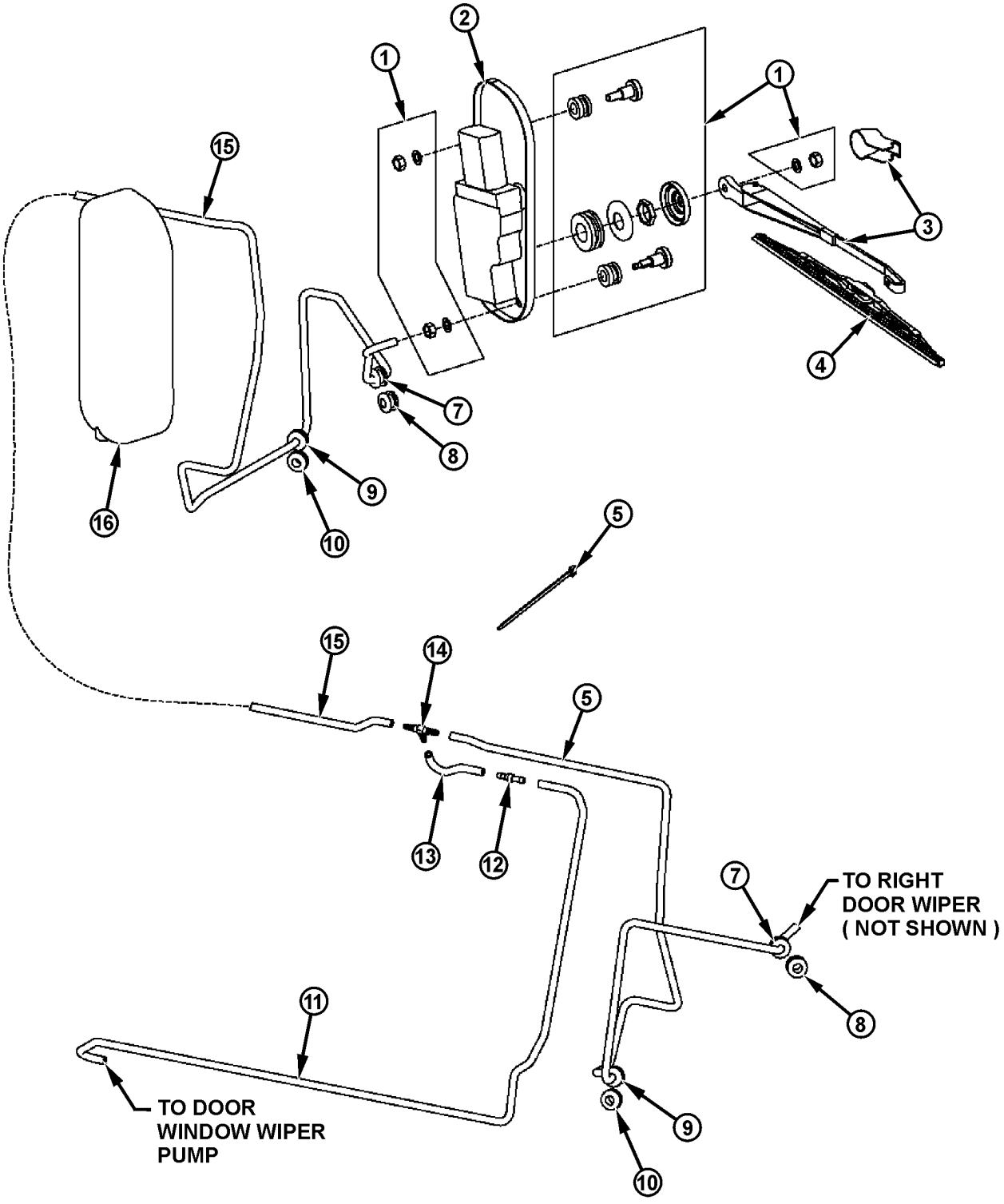
1—Hose
2—Reducer
3—Hose
4—Shaft Assembly
5—Nut
6—Lock Washer
7—Wiper Arm
8—Grommet
9—Wiper Blade
10—Tie Band (As Required)
11—Wiper Motor
12—Bracket
13—Washer
14—Lock Nut
15—Clip (2 used)
16—Washer (2 used)
17—Link Assembly
18—Arm
19—Screw (3 used)
20—Grommet (3 used)
21—Screw (2 used)
22—Washer (2 used)
23—Bushing
24—Nut
25—Cap
26—Nut
27—Washer
28—Washer
29—Screw (2 used)
30—Pivot Plate
31—Pin
32—Washer
33—Jam Nut
34—Switch

18
1810
9

CED,TX03399,6052 –19–29MAR00–2/2

18
1810
10

Remove and Install Door Window Wipers (Left Shown)



T120997

T120997 –19–09APR99

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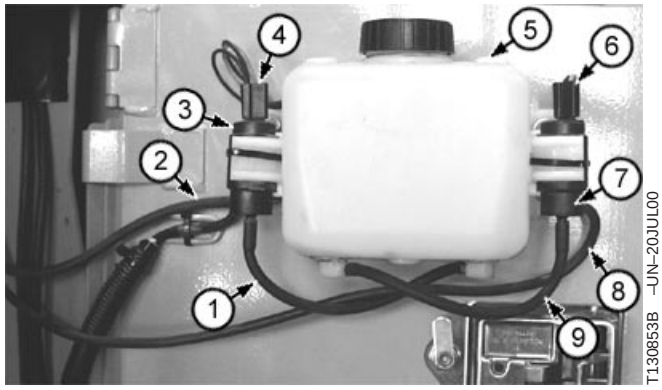
CED,TX03399,6053 –19–29MAR00–1/2

1—Screw and Washer Kit
2—Wiper Motor (Left Shown)
3—Wiper Arm (2 used)
4—Wiper Blade (2 used)
5—Tie Band (As Required)
6—Hose
7—Grommet (2 used)
8—Grommet (2 used)
9—Grommet (2 used)
10—Windowpane Grommet
11—Hose
12—Valve
13—Hose
14—Tee Fitting
15—Hose
16—Wiper Cover

CED,TX03399,6053 –19–29MAR00–2/2

Remove and Install Window Washer Pumps

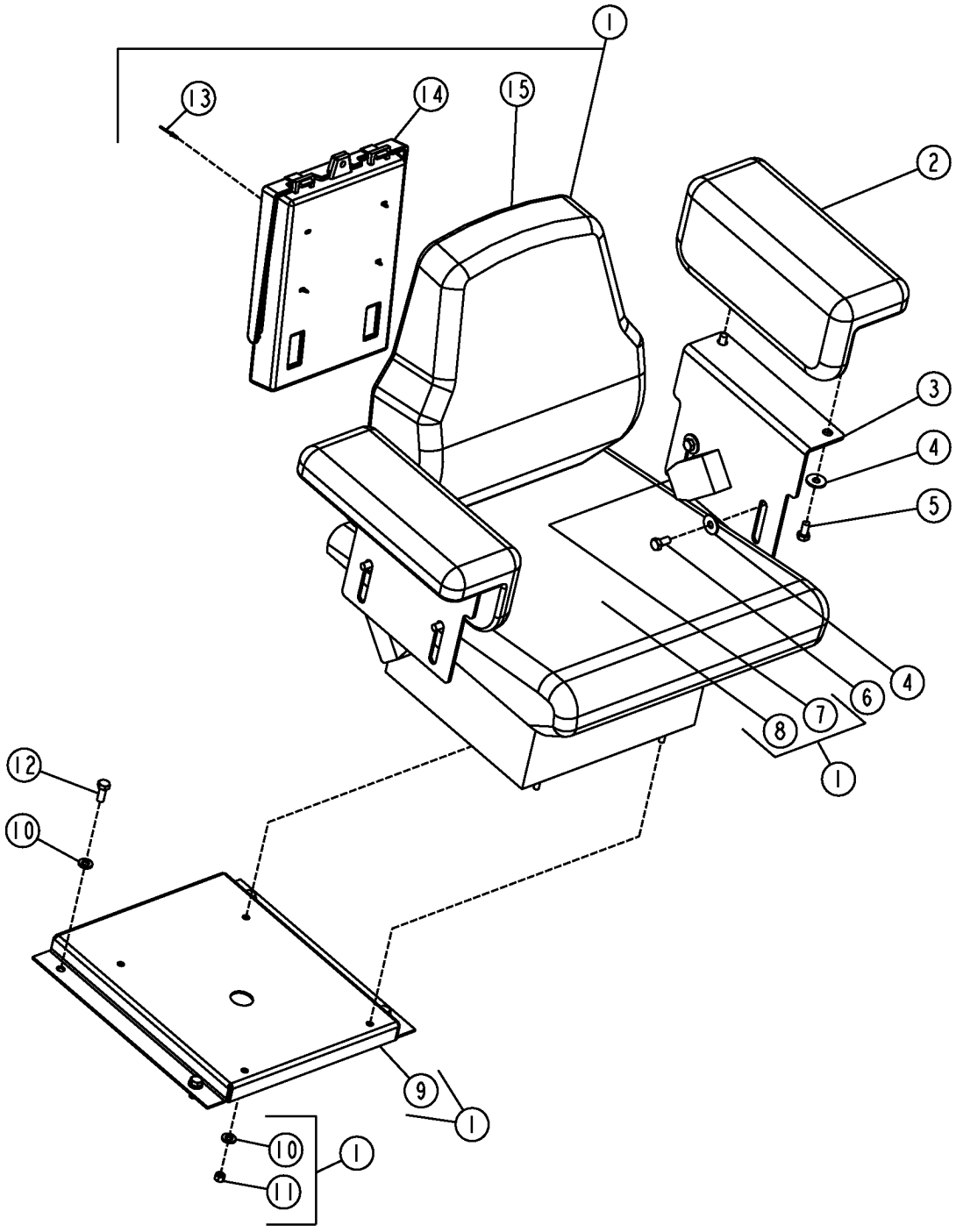
1. Drain window washer reservoir (5).
2. Disconnect window washer pump inlet and outlet hose .
3. Disconnect window washer pump harness .
4. Remove window washer pump .
5. Install window washer pump.
6. Connect window washer pump inlet and outlet hoses.
7. Connect window washer pump harness.
8. Fill window washer reservoir (5).



1—Hose (Washer Pump Outlet-to-Left/Right Door Windows)
2—Hose (Window Washer Reservoir to Left/Right Door Window Washer Pump Inlet)
3—Left/Right Window Washer Pump
4—Left/Right Window Washer Pump Harness
5—Window Washer Reservoir
6—Front/Rear Door Window Washer Pump Harness
7—Front/Rear Door Window Washer Pump
8—Hose (Window Washer Reservoir to Front/Rear Window Washer Pump Inlet)
9—Hose (Washer Pump Outlet-to-Front/Rear Windows

CED,TX03399,6054 –19–29MAR00–1/1

Remove and Install Standard Seat



TP52109 –UN–16JAN99

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CED,OUTX547,168 –19–12APR99–1/5

Seat and Seat Belt

1—Standard Seat Suspension Assembly
2—Armrest (2 used)
3— Armrest Bracket (2 used)
4—Washer (8 used)
5—Cap Screw (4 used)
6—Cap Screw (4 used)
7—Seat Belt
8—Seat Pad
9—Bracket
10—Washer (8 used)
11—Lock Nut (4 used)
12—Cap Screw (4 used)
13—Rivet (4 used)
14—Holder
15—Back Pad

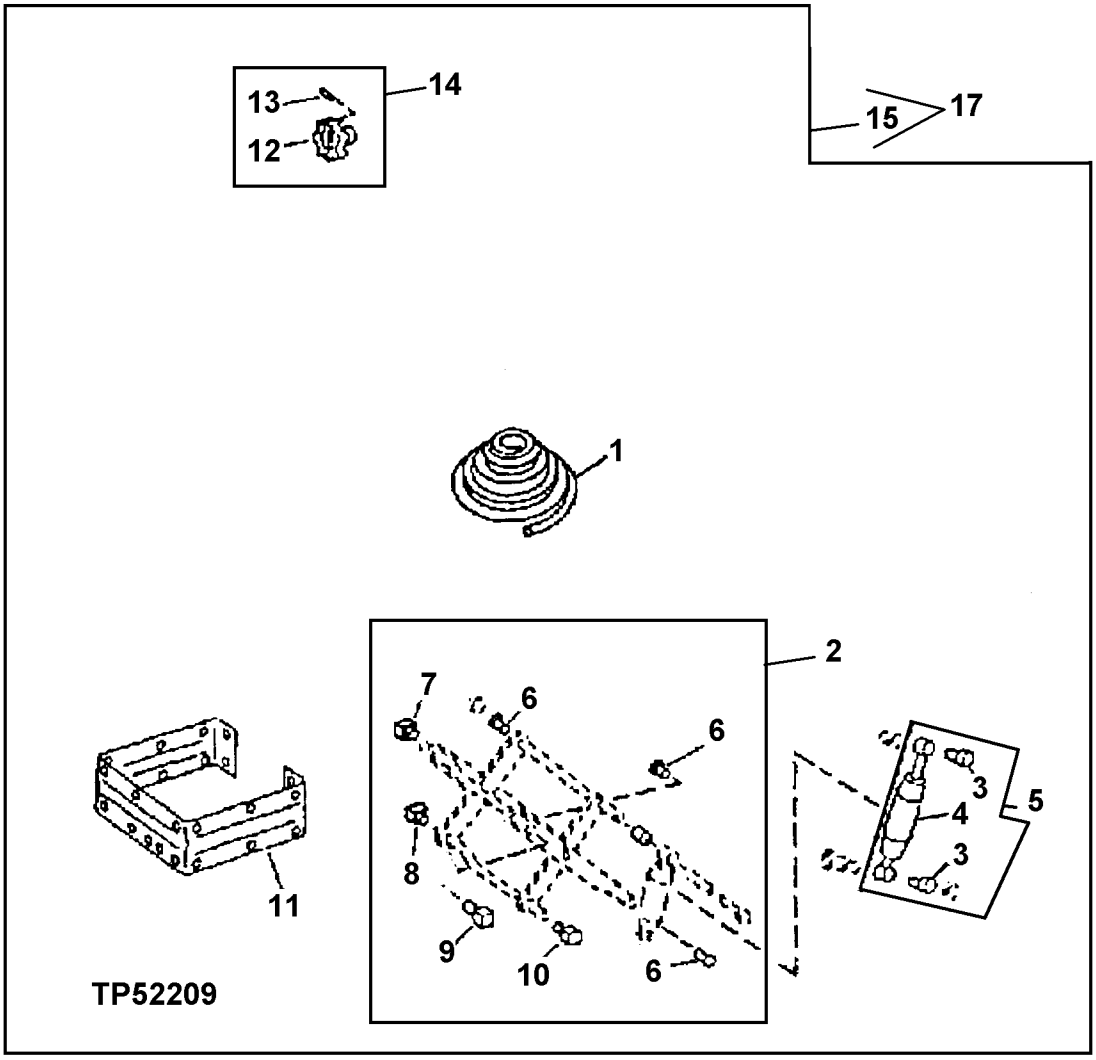
CAUTION: Use a lifting device for heavy components.

Remove and install parts as necessary.

18
1821
2

Continued on next page

CED,OUTX547,168 –19–12APR99–2/5



TP52209 –UN–14JAN99

Standard Seat Suspension

1—Spring
2—Suspension Bearing Kit
3—Bushing (2 used)
4—Absorber
5—Shock Absorber Kit
6—Bushing (4 used)
7—Bar
8—Bar
9—Bar
10—Bar
11—Boot with Plugs
12—Knob
13—Spring Pin
14—Height and Weight Adjustable Knob Kit
15—Guard Suspension Assembly
16—Not Used
17—Standard Seat Suspension Assembly

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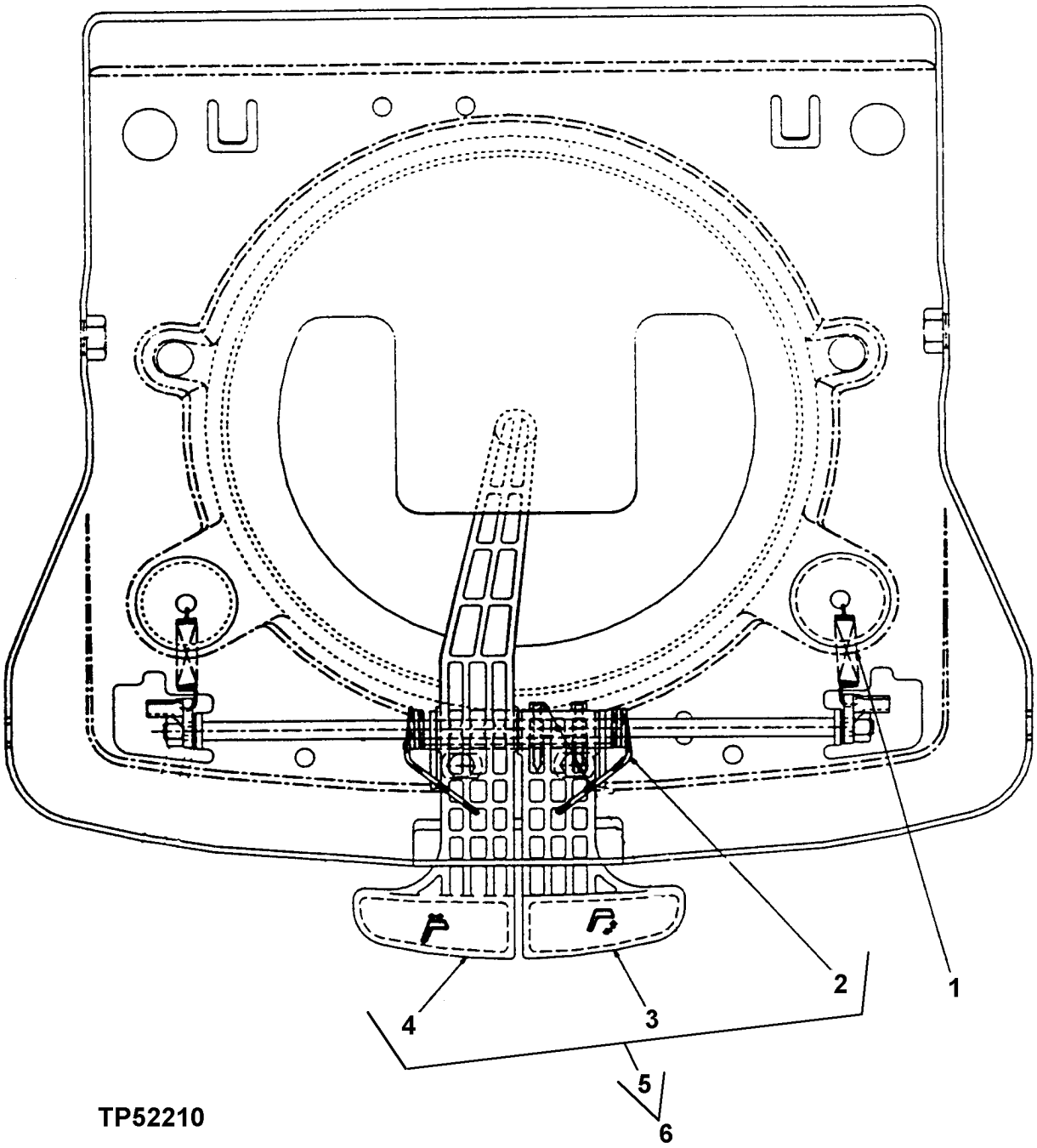
CED,OUTX547,168 –19–12APR99–3/5



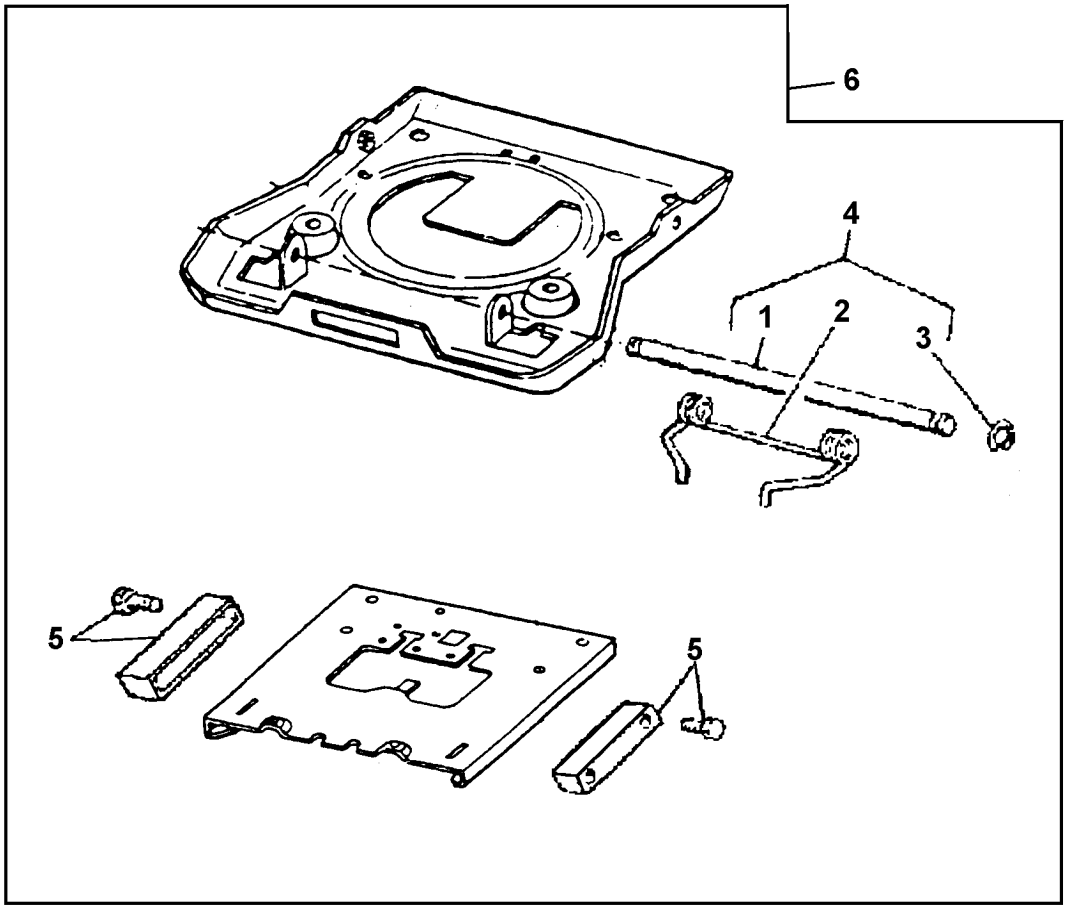
TP52210 –UN–14JAN99

Seat Slide and Tilt Control (Standard or Deluxe Seat)

1—Spring (2 used)
2—Torsion Spring
3—Seat Tilt Control
4—Fore-Aft Control
5—Slide/Seat Tilt Control Kit
6—Standard or Deluxe Seat Suspension Assembly

Continued on next page

CED,OUTX547,168 –19–12APR99–4/5



TP52211

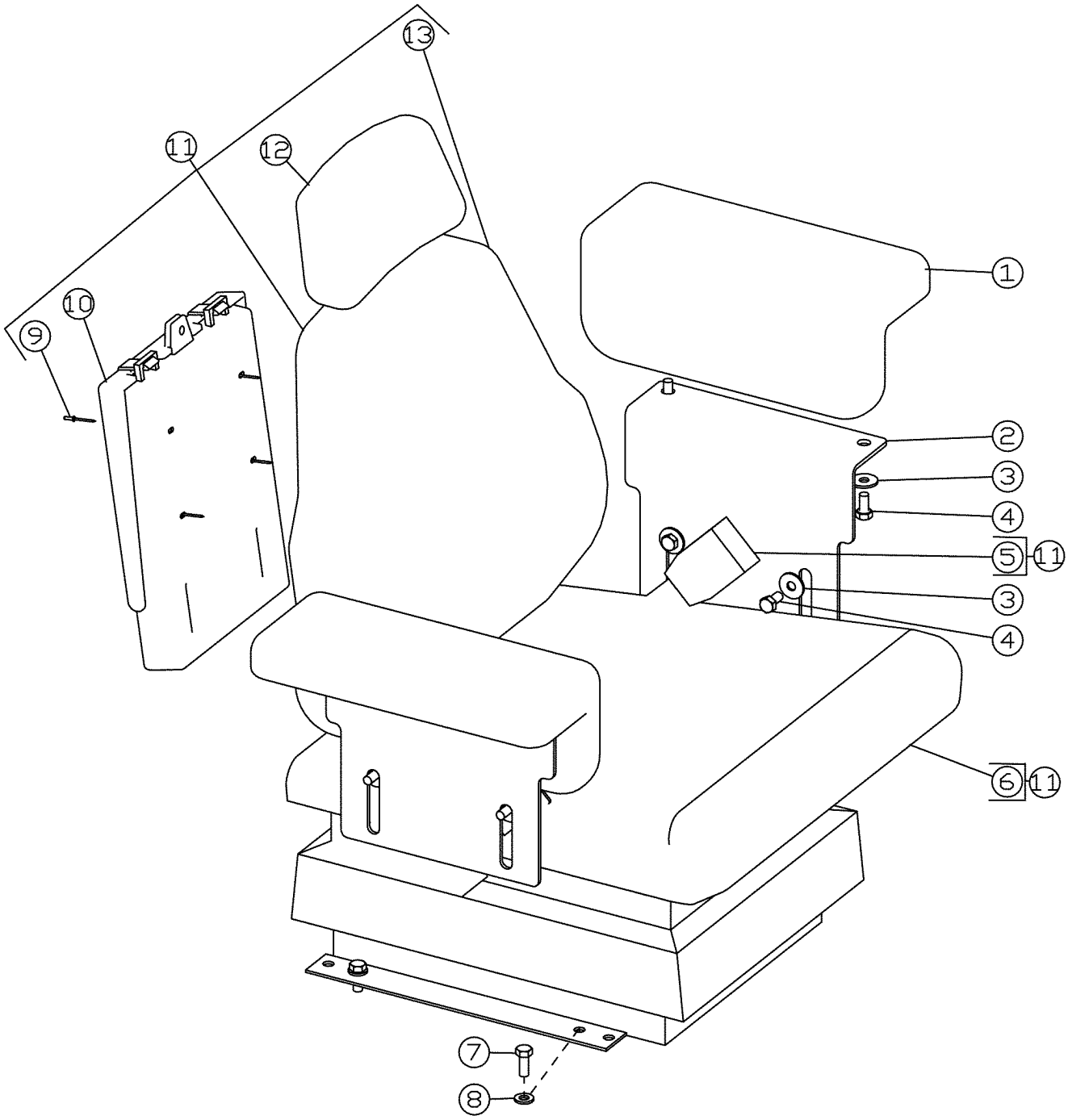
TP52211 –UN–14JAN99

Seat Slide Spring (Standard or Deluxe Seat)

1—Shaft
2—Spring
3—Snap Ring
4—Slide Latch Spring Kit
5—Slide Puck Kit
6—Standard or Deluxe Seat Suspension Assembly

CED,OUTX547,168 –19–12APR99–5/5

Remove and Install Deluxe Seat



Deluxe Seat Suspension

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CED,OUO1066,274 –19–12APR99–1/11

Seat and Seat Belt

1—Armrest (2 used)
2—Armrest Bracket (2 used)
3—Washer (8 used)
4—Cap Screw (8 used)
5—Seat Belt
6—Seat Pad
7—Cap Screw (4 used)
8—Washer (4 used)
9—Rivet (As Required)
10—Holder
11—Deluxe Seat Suspension Assembly
12—Cushion
13—Back Pad

CAUTION: Use a lifting device for heavy components.

Remove and install parts as necessary.

18
1821
7

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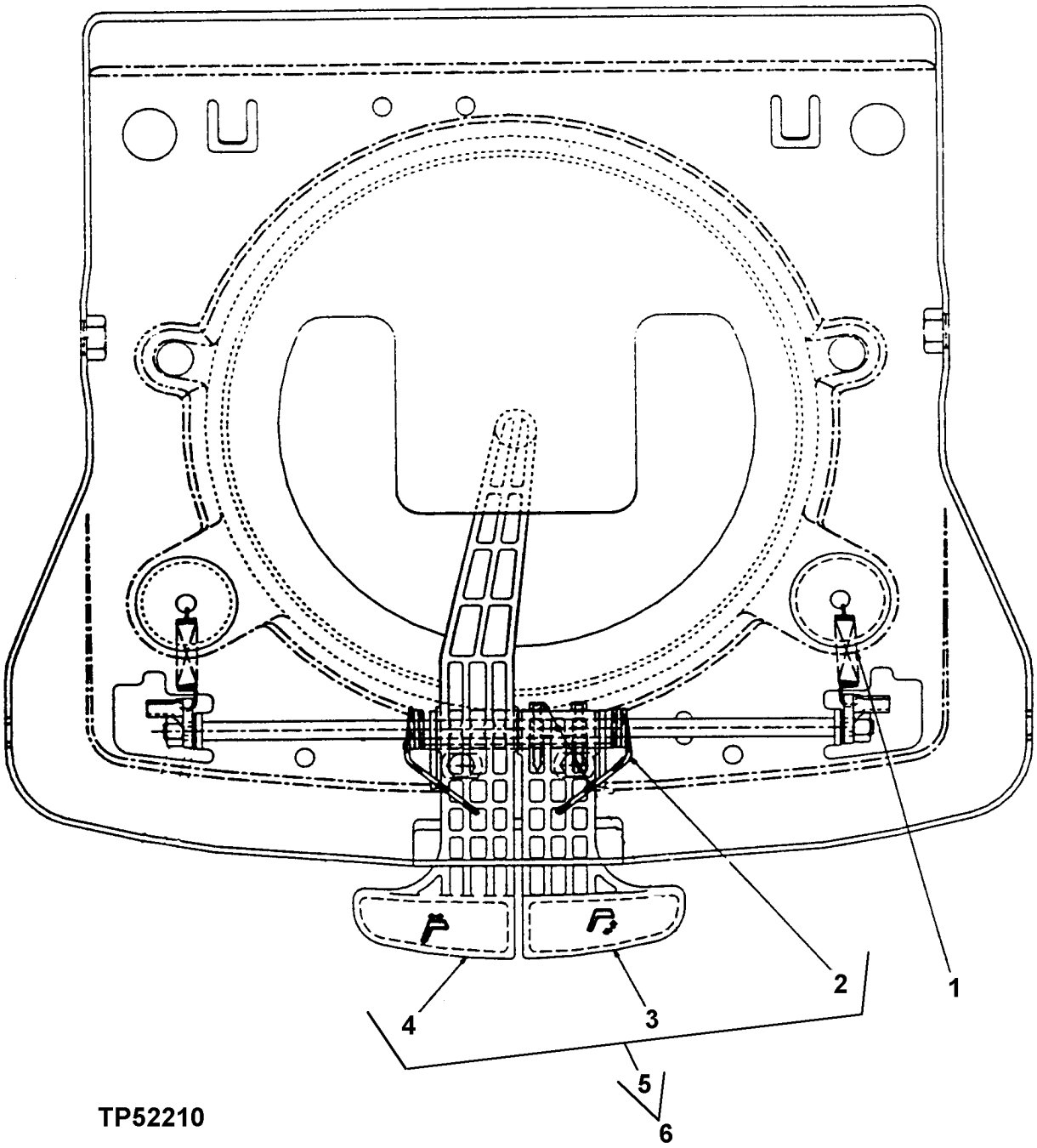
CED,OUO1066,274 –19–12APR99–2/11



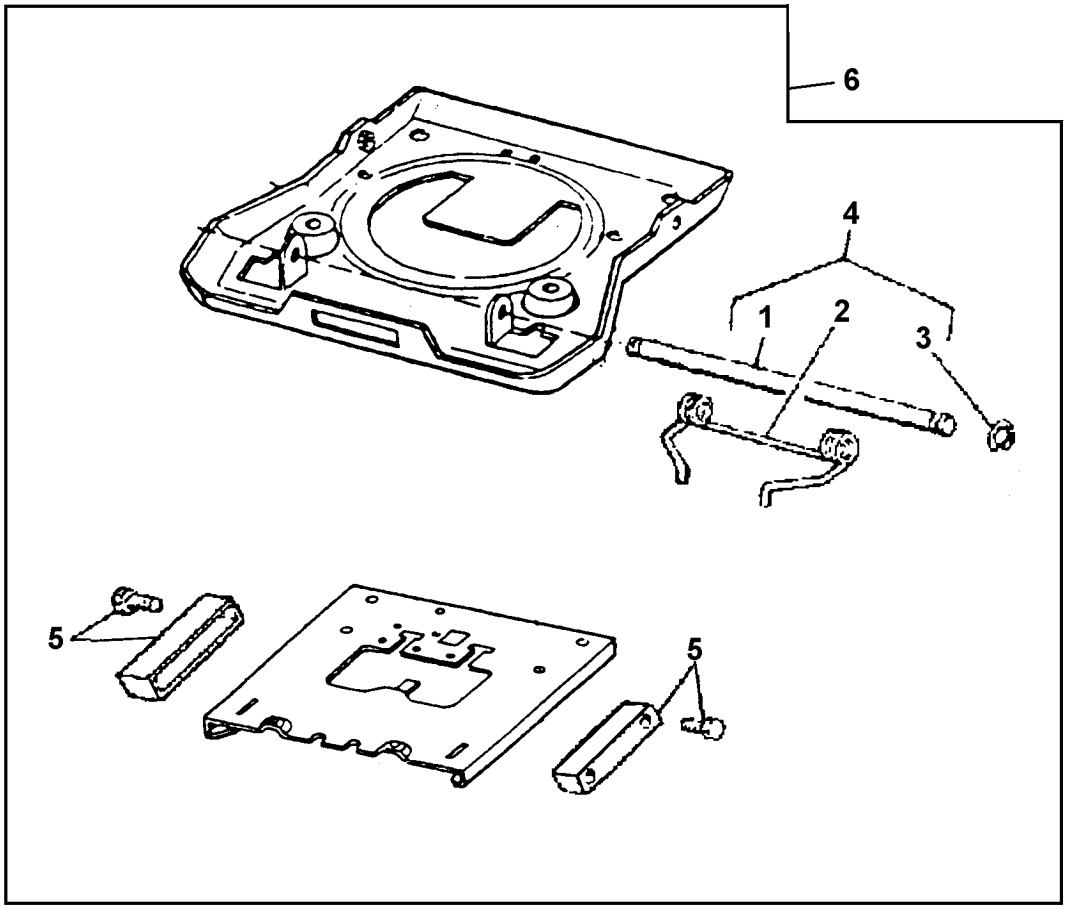
TP52210 –UN–14JAN99

Seat Slide and Tilt Control (Standard or Deluxe Seat)

1—Spring (2 used)
2—Torsion Spring
3—Seat Tilt Control
4—Fore-Aft Control
5—Slide/Seat Tilt Control Kit
6—Standard or Deluxe Seat Suspension Assembly

Continued on next page

CED,OUO1066,274 –19–12APR99–3/11



TP52211

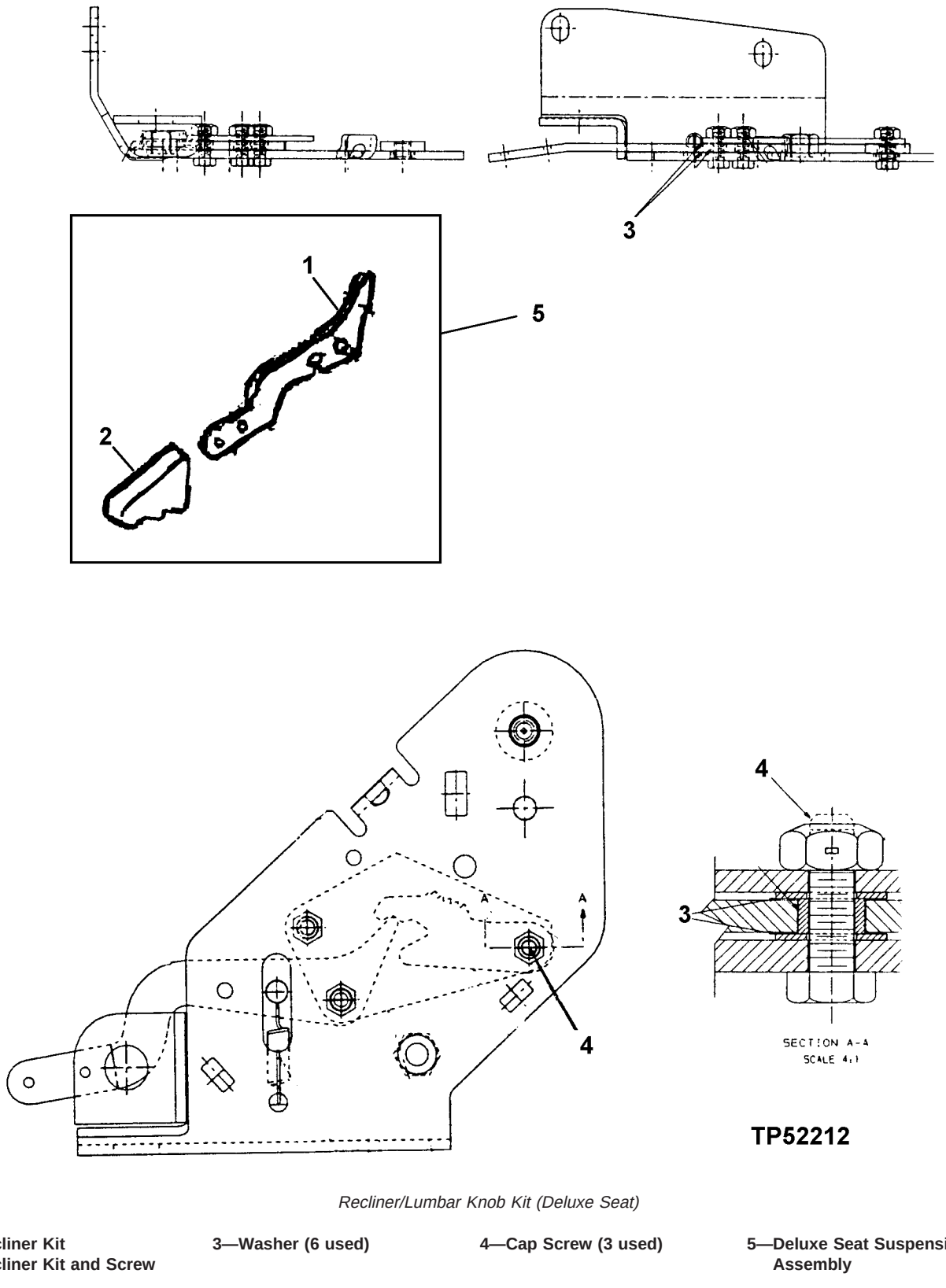
TP52211 –UN–14JAN99

Seat Slide Spring (Standard or Deluxe Seat)

1—Shaft
2—Spring
3—Snap Ring
4—Slide Latch Spring Kit
5—Slide Puck Kit
6—Standard or Deluxe Seat Suspension Assembly

Continued on next page

CED,OUO1066,274 –19–12APR99–4/11



Recliner/Lumbar Knob Kit (Deluxe Seat)

1—Recliner Kit
2—Recliner Kit and Screw
3—Washer (6 used)
4—Cap Screw (3 used)
5—Deluxe Seat Suspension Assembly

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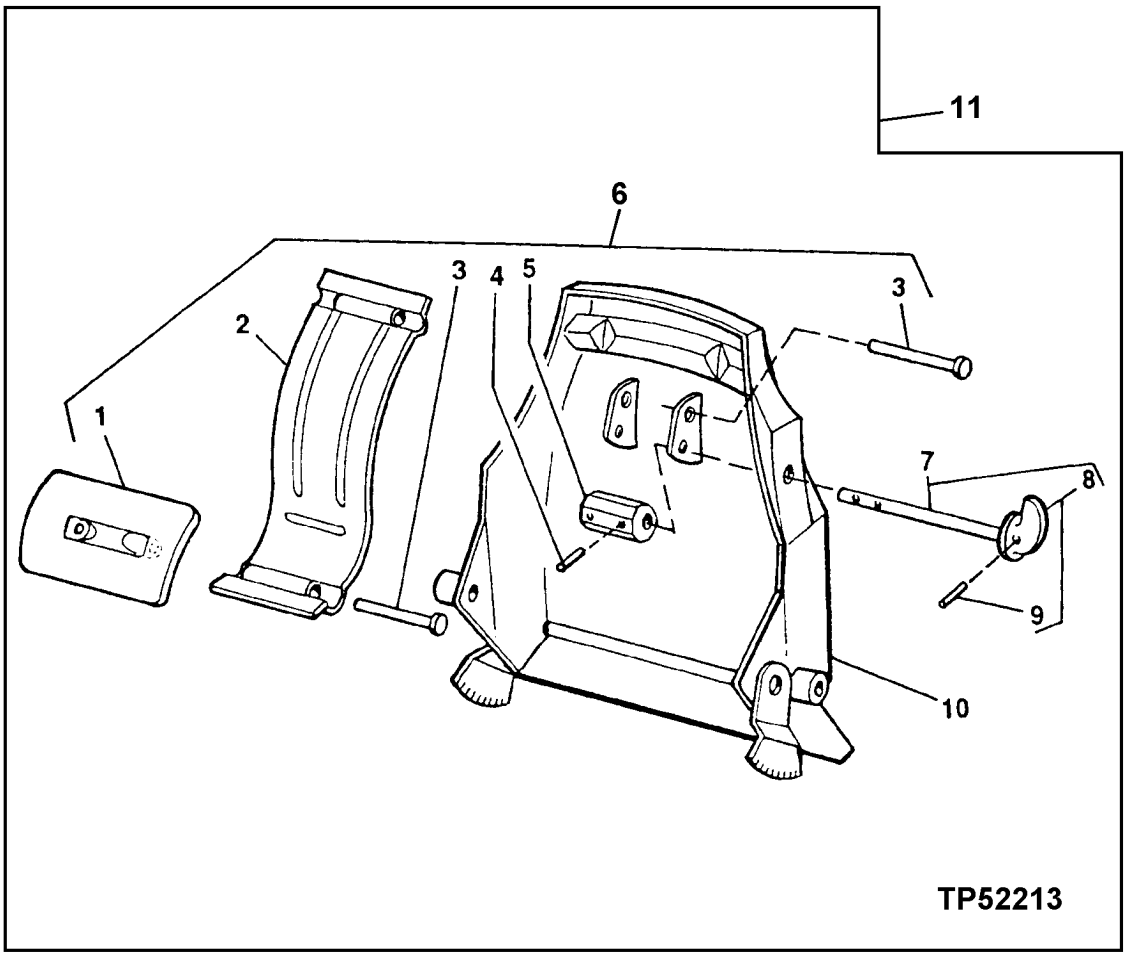
CED,OUO1066,274 –19–12APR99–5/11



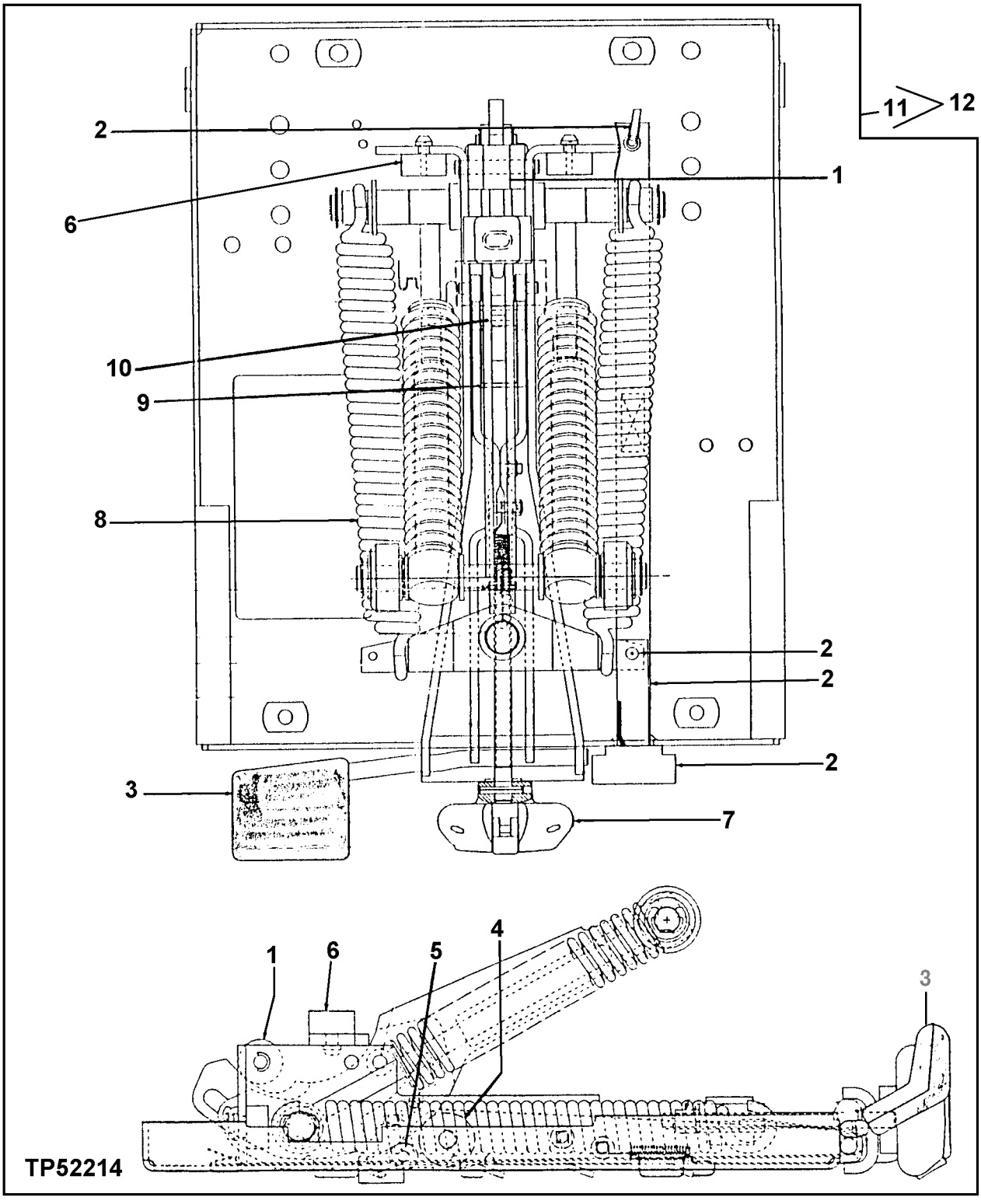
TP52213 –UN–14JAN99

Lumbar Support and Control (Deluxe Seat)

1—Isolator
2—Support
3—Pin (2 used)
4—Spring Pin
5—Cam
6—Lumbar Kit
7—Knob with Shaft
8—Lumbar Knob Kit
9—Spring Pin
10—Seat Back
11—Deluxe Seat Suspension Assembly

Continued on next page

CED,OUO1066,274 –19–12APR99–6/11



TP52214 –UN–14JAN99

Seat Suspension Kits (Deluxe Seat)

Continued on next page

CED,OUO1066,274 –19–12APR99–7/11

1—Cam Kit—Cam Follower and Pin
2—Weight Kit—Tape, Guide, Cable Tie and Pop Rivet
3—Knob Kit—Height Adjust Knob Upper and Lower
4—Cam Kit—Cam Follower and Pin
5—Actuator Kit—Idler roller (2 used) and cam roller
6—Bumper Kit—Bumpers (3 used)
7—Weight Adjust Knob Kit—Knob, Fixture, Spacer, Shaft
8—Spring Kit—Bushings (2 used) and Springs (2 used)
9—Cam Kit—Cam Follower, Pin
10—Actuator Kit—Idler Roller (2 used), Cam Roller
11—Seat Suspension Sub-Assembly
12—Deluxe Seat Suspension

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1821
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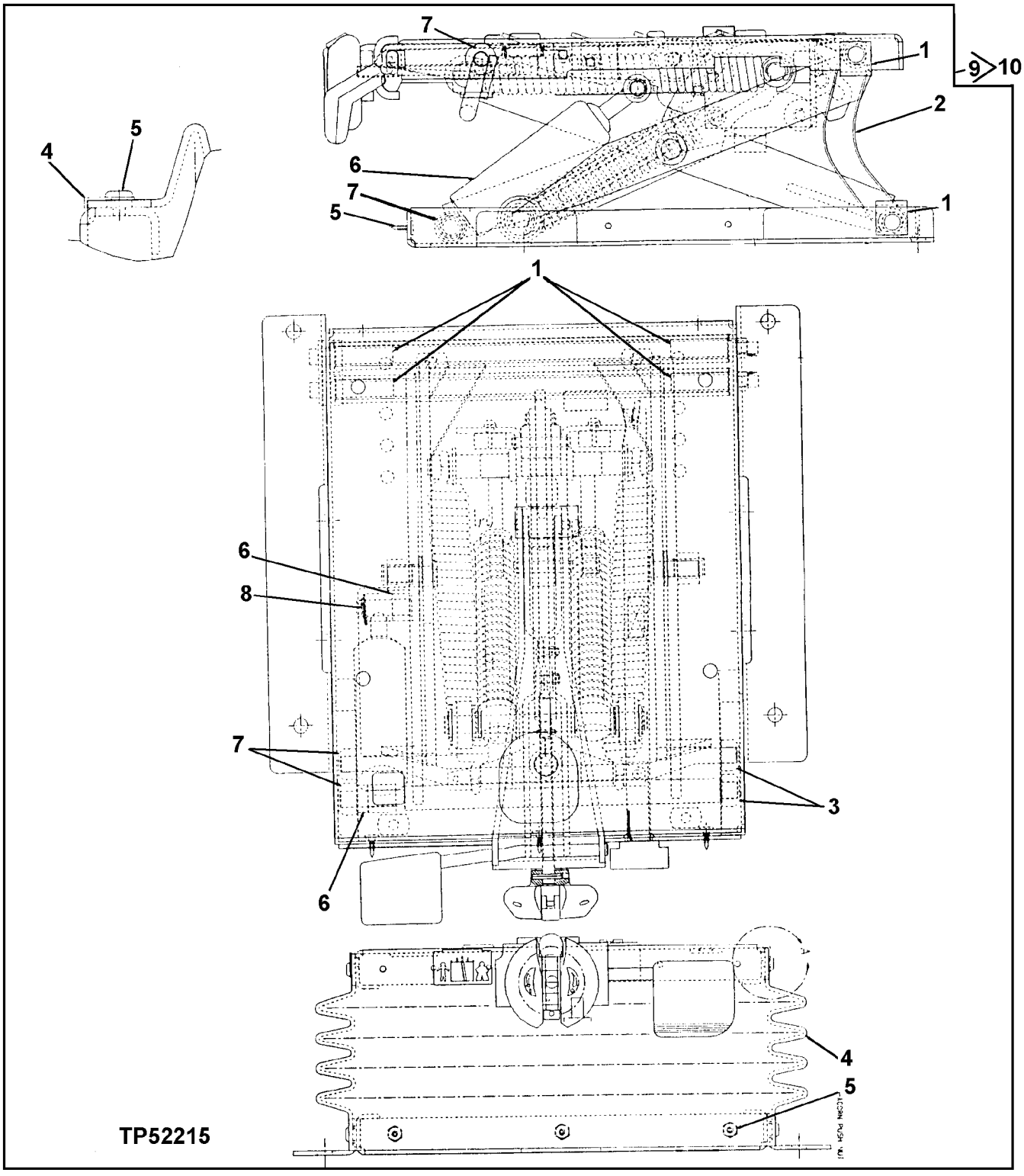
CED,OUO1066,274 –19–12APR99–8/11



TP52215 –UN–14JAN99

Seat Suspension Kits (Deluxe Seat)

Continued on next page

CED,OUO1066,274 –19–12APR99–9/11

1—Universal Driveshaft Kit—Bearings (4 used), Bearing Shaft Weldment (2 used)
2—Tether Belt Kit—Tether Belt (2 used)
3—Roller Kit—Roller (4 used)
4—Boot Kit—Clip (23 used), Male Fastener (3 used), Female Fastener (3 used), Boot, Boot Retainer (2 used)
5—Boot Clip Kit—Clip (23 used), Male Fastener (3 used), Female Fastener (3 used)
6—Shock Kit—Push Nut, Shock, Bearing (2 used)
7—Roller Kit—Roller (4 used)
8—Height Adjust Kit—Spring Bushing (2 used), Spring (2 used), Retainer ring (4 used), Push Nut (2 used)
9—Deluxe Seat Sub-Assembly
10—Deluxe Seat Suspension

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1821
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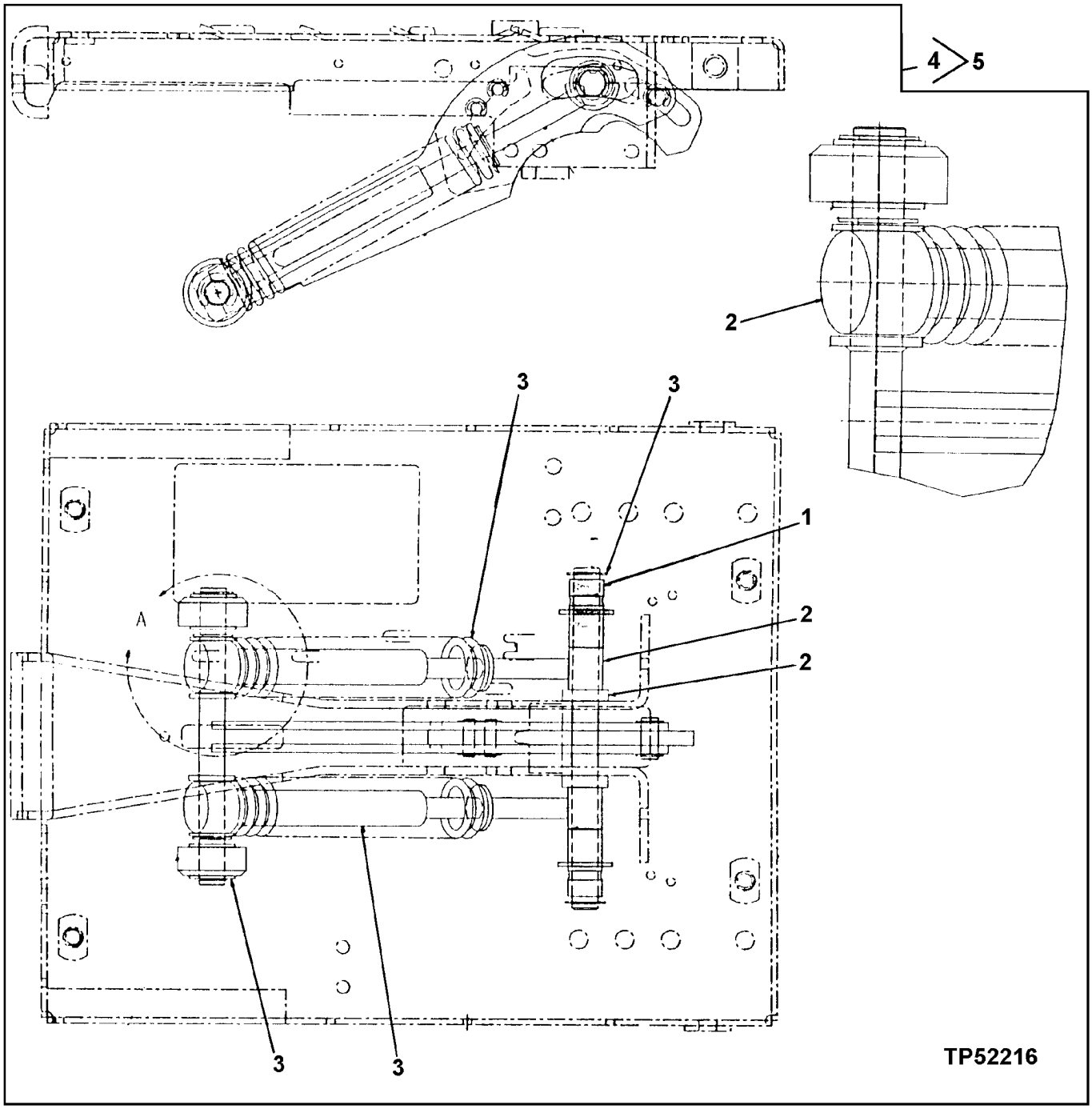
Continued on next page

CED,OUO1066,274 –19–12APR99–10/11



TP52216 –UN–14JAN99

Seat Suspension Kits (Deluxe Seat)

1—Spring Kit—Spring Shaft Bushing (2 used), Spring (2 used)

2—Spring Kit—Height Adjust Spring Rod Weldment (2 used), Spring Guide Bushing (2 used), Spring (2 used), Spacer (2 used)

3—Height Adjust Kit—Bushing (4 used), Spring (4 used), Retainer Ring (4 used), Push Nut (2 used), Spacer (2 used), Spring Rod Weldment (2 used)

4—Deluxe Sub-Assembly

5—Deluxe Suspension Seat

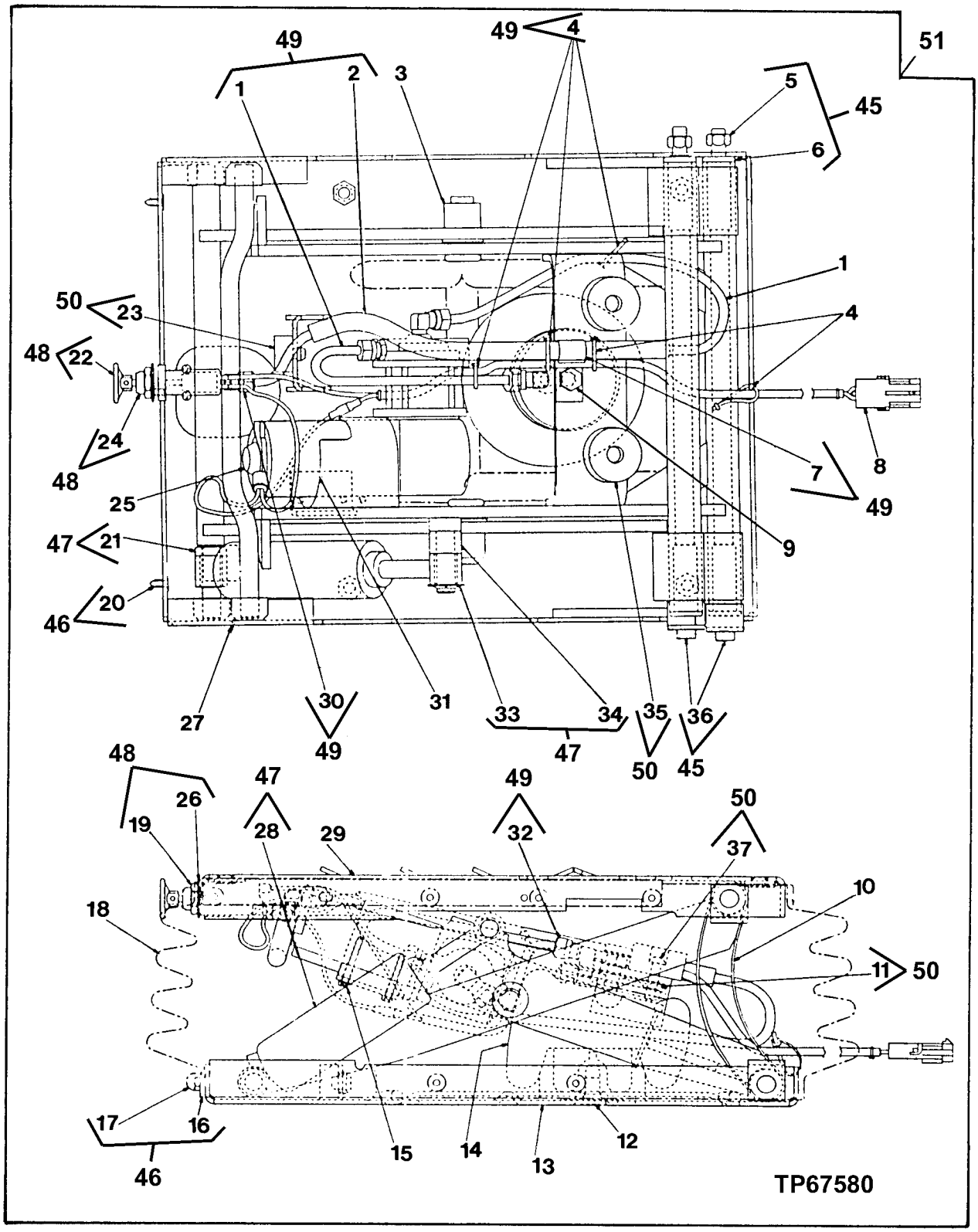
CED,OUO1066,274 –19–12APR99–11/11

Remove and Install Air Suspension Seat

CAUTION: Use a lifting device for heavy components.

Remove and install parts as necessary.

Continued on next page



TP67580 –UN–19AUG99

Seat Suspension Kits (Deluxe Air Seat)

Continued on next page

CED,TX03399,6055 –19–29MAR00–2/3

Seat and Seat Belt

1—Line (3 used)
2—Air Line Tube
3—Arm
4—Tie Band (5 used)
5—Lock Nut (2 used)
6—Suspension Shaft (2 used)
7—Clip
8—Wire Harness
9—Cap Screw
10—Tether Belt Kit
11—Lock Nut
12—Screw
13—Housing
14—Spring
15—Screw (2 used)
16—Clip (23 used)
17—Push Nut (3 used)
18—Boot Kit
19—Nut
20—Clip (3 used)
21—Bearing
22—Knob
23—Bumper
24—Control Valve
25—Compressor
26—Lock Washer
27—Roller
28—Absorber
29—Housing
30—Connector (2 used)
31—Bracket
32—Elbow Fitting (2 used)
33—Bolt
34—Bearing
35—Bumper
36—Bearing (2 used)
37—Screw
38—Not Used
39—Not Used
40—Not Used
41—Not Used
42—Not Used
43—Not Used
44—Air Suspension Assembly
45—Universal Suspension Driveshaft
46—Boot Clip
47—Shock Absorber Kit
48—Air Control Valve
49—Air Line Fitting
50—Bumper
51—Seat and Air Suspension Assembly

18
1821
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CED,TX03399,6055 –19–29MAR00–3/3

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

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CED,TX03399,6172 –19–11AUG00–1/17

R134a Refrigerant Recovery/Recycling and Charging Station[1] JT02045

Removes the refrigerant from the system, recycles it and recharges it.

[1]JT02046 and JT02050 recovery and charging stations can be substituted for the JT02045 station.

CED,TX03399,6172 –19–11AUG00–2/17

Air Conditioning Flusher JT02075

Used to flush air conditioning systems

CED,TX03399,6172 –19–11AUG00–3/17

Fitting Kit. JT02098

Used to adapt flusher to components

CED,TX03399,6172 –19–11AUG00–4/17

Cap . . . . . JT02099 and JT02100 with JT03194

Plug compressor ports

CED,TX03399,6172 –19–11AUG00–5/17

Adapter. JT02102

Connect flusher hose to compressor

Continued on next page

CED,TX03399,6172 –19–11AUG00–6/17

RW19932 –UN–19MAY92

A/C Compressor Clutch Spanner JDG747

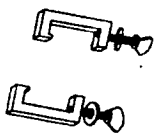
Used to remover compressor clutch.

CED,TX03399,6172 –19–11AUG00–7/17

RW19935 –UN–19MAY92

Puller JDG220

Used for removing compressor pulley (used with JDG748 Jaws and JDG771 Forcing Screw).



Jaws. JDG748

Used for removing compressor pulley (used with JDG220 Puller and JDG771 Forcing Screw).

Forcing Screw JDG771

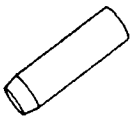
Used for removing compressor pulley (used with JDG220 Puller and JDG748 Jaws).

CED,TX03399,6172 –19–11AUG00–8/17

RW19943 –UN–19MAY92

Lip Seal Protector JDG746

Used to install seal on compressor.

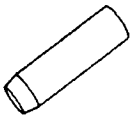


CED,TX03399,6172 –19–11AUG00–9/17

RW19943 –UN–19MAY92

Lip Seal Protector JDG746

Used to install seal on compressor.



CED,TX03399,6172 –19–11AUG00–10/17

Air Conditioning Flusher JT02075

Used to flush air conditioning systems

CED,TX03399,6172 –19–11AUG00–11/17

Fitting Kit. JT02098

Used to adapt flusher to components

Continued on next page

CED,TX03399,6172 –19–11AUG00–12/17

Cap . . . . . JT02099 and JT02100 with JT03194

Plug compressor ports

CED,TX03399,6172 –19–11AUG00–13/17

Adapter. JT02102

Connect flusher hose to compressor

CED,TX03399,6172 –19–11AUG00–14/17

RW19932 –UN–19MAY92

A/C Compressor Clutch Spanner JDG747

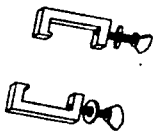
Used to remover compressor clutch.

CED,TX03399,6172 –19–11AUG00–15/17

RW19935 –UN–19MAY92

Puller JDG220

Used for removing compressor pulley (used with JDG748 Jaws and JDG771 Forcing Screw).



Jaws. JDG748

Used for removing compressor pulley (used with JDG220 Puller and JDG771 Forcing Screw).

Forcing Screw JDG771

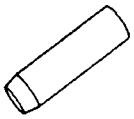
Used for removing compressor pulley (used with JDG220 Puller and JDG748 Jaws).

CED,TX03399,6172 –19–11AUG00–16/17

RW19943 –UN–19MAY92

Lip Seal Protector JDG746

Used to install seal on compressor.



CED,TX03399,6172 –19–11AUG00–17/17

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

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CED,TX03399,6173 –19–11AUG00–1/6

Electronic Leak Detector JT02081

Used to detect refrigerant leaks.

CED,TX03399,6173 –19–11AUG00–2/6

Adapter JT03188

Used to connect flusher outlet hose to receiver/dryer

CED,TX03399,6173 –19–11AUG00–3/6

Adapter JT02101

Used to connect aerator nozzle to compressor inlet line

CED,TX03399,6173 –19–11AUG00–4/6

Bench Mounted Holding Fixture D01006AA

Used to hold compressor during repair.

CED,TX03399,6173 –19–11AUG00–5/6

Compressor Holding Fixture . . . . . .DFRW20[1]

Used to hold compressor during repair.

[1]*See Section 99 for instructions to make tool.*

CED,TX03399,6173 –19–11AUG00–6/6

Other Material

Number	Name	Use
TY16134 (U.S.)	R134a Flushing Solvent	Flush R134a air conditioning system.
TY22025 (U.S.)	R134a Compressor Oil (8.5 oz)	Lubricate R134a air conditioning system.

CED,TX03399,6174 –19–11AUG00–1/1

Specifications

Item	Measurement	Specification
Compressor Oil	Volume	6 mL (0.2 fl oz) minimum
Oil, New Compressor Installation, Complete System Flushed	Volume Volume	230 ± 20 mL (7.7 ± .7 fl oz) supplied by parts depot 32.5 mL (1.1 fl oz) additional amount required
Oil, Used Compressor Installation, Complete System Flushed	Volume	260 mL (8.8 fl oz)
Oil, New Compressor Installation, Complete System Not Flushed	Volume	Drain and return 45 mL (1.5 fl oz)
Oil, Used Compressor Installation, Complete System Not Flushed, Oil Drained	Volume	Add 45 mL (1.5 fl oz)
Oil, Used Compressor Installation, Complete System Not Flushed, Oil Drained, Flushed	Volume	Add 60 mL (2.0 fl oz)
Evaporator	Oil Charge	32.5 mL (1.1 fl oz)
Condenser	Oil Charge	32.5 mL (1.1 fl oz)
Receiver/Dryer	Oil Charge	30 mL (1.0 fl oz)
Hoses	Oil Charge	121.2 mL (4.1 fl oz) (Approximate)
Vacuum	Pressure at Sea Level Pressure Above Sea Level	98 kPa (980 mbar) (29 in. Hg) Subtract 3.4 kPa (34 mbar) (1 in. Hg) from 98 kPa (980 mbar) (29 in. Hg) for each 300 m (1000 ft) elevation
Refrigerant	Weight	1.5 Kg (3.5 lbs)
Refrigerant	Weight	2.3 kg (5 lbs)
Nitrogen Purge	Pressure	275 kPa (40 psi) (2.75 bar) for two minutes
Compressor Flushing Solvent	Quantity Quantity	240 mL (8 fl oz) In Suction Port 120 mL (4 fl oz) In Discharge Port
Flusher Tank	Capacity	4 L (1 gal)

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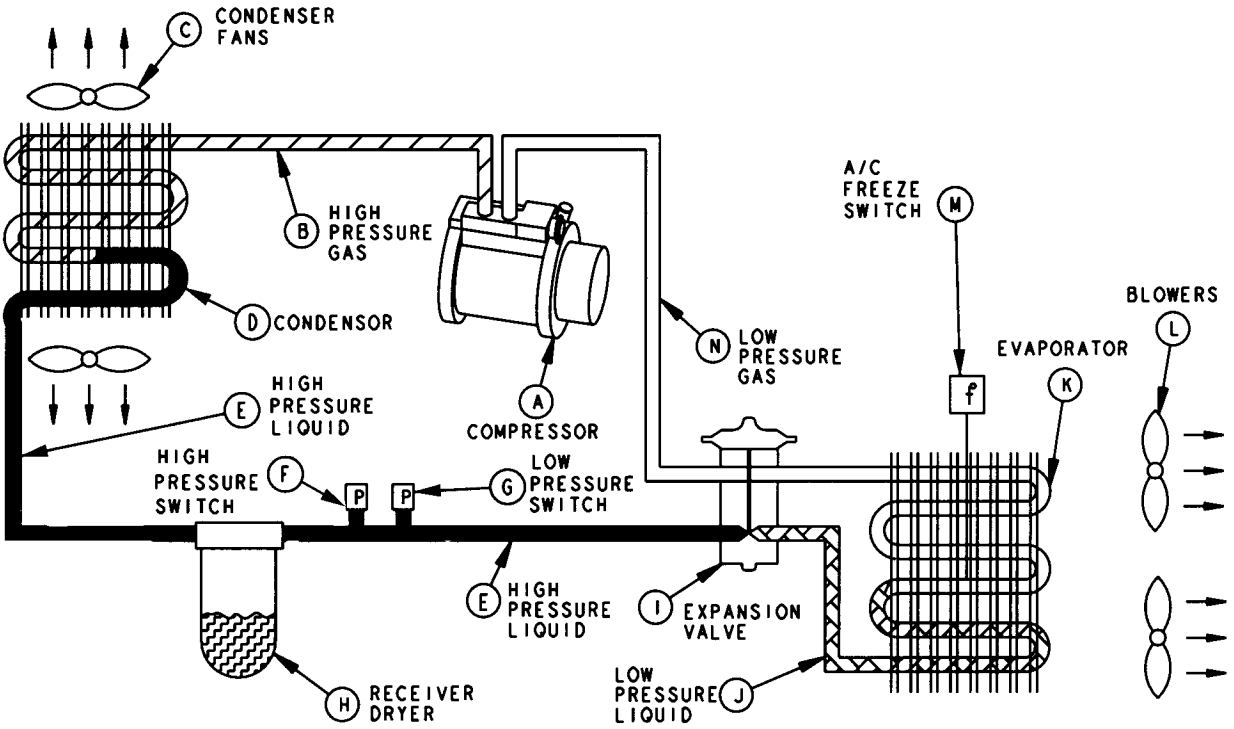
Item	Measurement	Specification
Regulated Air	Pressure	620 kPa (6.2 bar) (90 psi) Minimum
Condenser Purging	Time	10—12 Minutes
Air Conditioning Compressor Remove and Install		
Compressor-to-Bracket Cap Screws	Torque	35 N•m (26 lb-ft)
Support Bracket-to-Engine Block Cap Screw	Torque	120 N•m (89 lb-ft)
Compressor Bracket to Engine Block Cap Screws	Torque	70 N•m (52 lb-ft)
Idler pulley-to-fan drive cap screw	Torque	50 N•m (37 lb-ft)
Compressor Hub Retaining Nut	Torque	14 N•m (124 lb-in.)
Air Conditioning Clutch Hub-to-Pulley	Clearance	0.35—0.65 mm (0.014—0.026 in.)
Air Conditioning Clutch Shaft Bolt	Torque	14 N•m (124 lb-in.)
Manifold Through Bolt	Torque	26 N•m (19 lb-ft)
Air Conditioning Compressor Through Bolt	Torque	26 N•m (230 lb-in.)
Engine Coolant	Capacity	19.4 L (20.5 qt) (Approximate)

CED,TX03399,6175 –19–11AUG00–2/2

R134a Refrigerant Theory of Operation



T117311

T117311 –19–21SEP98

A—Compressor
B—High Pressure Gas
C—Condenser Fans
D—Condenser
E—High Pressure Liquid
F—High Pressure Switch
G—Low Pressure Switch
H—Receiver/Dryer
I—Expansion Valve
J—Low Pressure Liquid
K—Evaporator
L—Blowers
M—A/C Freeze Switch
N—Low Pressure Gas

The compressor (A) draws low pressure gas (N) from the evaporator (K) and compresses it into high pressure gas (B). Increasing the pressure of the R134a refrigerant causes its boiling point to rise to a temperature higher than the outside air temperature.

High pressure gas (B) leaves the compressor (A) and passes through the condenser (D), the condenser fans (C) draws air through the condenser core which cools the R134a refrigerant. Cooling the refrigerant causes it to condense and it leaves the condenser (D) as a high pressure liquid (E).

The refrigerant flows from the receiver/dryer (H) to the expansion valve (I). The expansion valve (I) is a variable orifice used to cause a pressure and temperature drop in the refrigerant causing refrigerant to vaporize. The expansion valve (I) is one of the dividing lines between the high side and low side of the air conditioning system. At this point in the system, the high pressure/high temperature liquid R134a is sprayed into the evaporator (K) where it changes and becomes a gas.

The high pressure liquid passes through two switches (F and G). These switches monitor R134a refrigerant pressure. Should the pressure become too great or too small, either the high or low pressure switch will open and stop the compressor, interrupting the cycle. From the switches the high pressure liquid flows into the receiver/dryer (H) where moisture and contaminants are removed.

Continued on next page

TX03399,0001853 –19–16NOV00–1/2

The expansion valve diaphragm is activated by sensing temperature and pressure within the valve body. The internal bulb senses the evaporator outlet or discharge temperature and pressure of R134a as it passes through the valve back to the low pressure or suction side of the compressor. See Expansion Operation. (See Expansion Operation in Operation and Test Manual Group 9031-05. for additional information on theory of operation.

If too much refrigerant is flowing into evaporator, the liquid refrigerant will still be evaporating as it leaves the evaporator, causing a low temperature at the evaporator outlet. The low temperature causes the expansion valve variable orifice to decrease in size, restricting refrigerant flow. If the evaporator outlet temperature is too warm, the orifice will increase in size, allowing more refrigerant into evaporator.

If evaporator (K) temperature becomes too low, the A/C freeze switch (M) will interrupt current flow to the compressor clutch coil, stopping system operation until the temperature becomes normal, between 31° and 40°.

TX03399,0001853 –19–16NOV00–2/2

Proper Refrigerant Handling

The U.S. Environmental Protection Agency prohibits discharge of any refrigerant into the atmosphere, and requires that refrigerant be recovered using the approved recovery equipment.

IMPORTANT: To meet government standards relating to the use of refrigerants, R134a is used in the air conditioning system. Because it does not contain chlorine, R134a is not detrimental to the ozone in the atmosphere. However, it is illegal to discharge any refrigerant into the atmosphere. It must be recovered using the appropriate recovery stations.

IMPORTANT: Use correct refrigerant recovery, recycling and charging stations. DO NOT use refrigerant, hoses, fittings, components or refrigerant oils intended for use with R12 refrigerant.

Recovery, recycling and charging stations for R12 and R134a refrigerants MUST NOT be interchanged. Systems containing R12 refrigerant use a different oil than systems using R134a. Certain seals are not compatible with both types of refrigerants.

TX,18,RB744 –19–20APR98–1/1

R134a Refrigerant Cautions

CAUTION: DO NOT allow liquid refrigerant to contact eyes or skin. Liquid refrigerant will freeze eyes or skin on contact. Wear goggles, gloves and protective clothing.

If liquid refrigerant contacts eyes or skin, DO NOT rub the area. Splash large amounts of COOL water on affected area. Go to a physician or hospital immediately for treatment.

DO NOT allow refrigerant to contact open flames or very hot surfaces such as electric welding arc, electric heating element and lighted smoking materials.

DO NOT heat refrigerant over 52°C (125°F) in a closed container. Heated refrigerant will develop high pressure which can burst the container.

Keep refrigerant containers away from heat sources. Store refrigerant in a cool place.

DO NOT handle damp refrigerant container with your bare hands. Skin may freeze to container. Wear gloves.

If skin freezes to container, pour COOL water over container to free the skin. Go to a physician or hospital immediately for treatment.

CED,OUTX547,172 –19–21OCT98–1/1

R134a Compressor Oil Charge Check

If R134a leakage was detected and repaired. Remove compressor. (See Remove and Install Compressor in this group.)

Drain oil from the compressor and record the amount. (See R134a Compressor Oil Removal in this group.)

NOTE: Drain oil and save if this is a new compressor.

If the oil drained from a compressor removed from operation is very black or the amount of oil is less than 6 mL (0.2 fl oz), perform the following:

Specification

Compressor Oil—Volume ..... 6 mL (0.2 fl oz) minimum

1. Remove and discard the receiver-dryer. (See Remove and Install Receiver-Dryer in this group.)
2. Remove, clean, but do not disassemble the expansion valve. (See Remove and Install Expansion Valve in this group.
3. Purge the complete system. (See Purge Air Conditioner System in this group.)
4. Flush the complete system with TY16134 air conditioning flushing solvent. (See Flush Air Conditioner System in this group.)
5. If the compressor is serviceable, pour flushing solvent in the manifold ports and internally wash out the old oil.
6. Install a new receiver-dryer. (See Remove and Install Receiver-Dryer in this group.)
7. Install required amount of TY22025 refrigerant oil in the compressor. (See R134a Component Oil Charge in this group.)
8. Connect all components.
9. Evacuate the system. (See Evacuate R134a System in this group.)
10. Charge the system. (See Charge R134a System in this group.)

CED,OUTX547,173 –19–16NOV00–1/1

R134a Compressor Oil Removal

1. Remove compressor. (See Remove and Install Compressor in this group.)
2. Remove inlet/outlet manifold. (See Inspect Compressor Manifold in this group.)
3. Remove clutch dust cover.
4. Drain oil into graduated container while rotating compressor shaft.
5. Record measured oil and discard oil properly.
6. Install new oil. (See R134a Component Oil Charge in this Group.
7. Install compressor. (See Remove and Install Compressor in this group.)

CED,OUTX547,174 –19–16NOV00–1/1

R134a Component Oil Charge

CAUTION: All new compressors are charged with a mixture of nitrogen, R134a refrigerant and TY22025 (R134a) refrigerant oil. Wear safety goggles and discharge the compressor slowly to avoid possible injury.

Compressors can be divided into three categories when determining the correct oil charge for the system.

- New compressor from parts depot
- Used compressor removed from operation
- Compressor internally washed with flushing solvent

Use the following procedure to determine the amount of system oil charge prior to installation of compressor on a machine.

1. **System Flushed**

   When the complete system, lines, and components were flushed add the correct amount of oil as described.

   - New compressor from parts depot contains the amount of new oil of 230 ± 20 mL (7.7 ± .7 fl oz). System requires an additional amount of new oil of 32.5 mL (1.1 fl oz) of new oil.

Specification

Oil, New Compressor	
Installation, Complete System	
Flushed—Volume	230 ± 20 mL (7.7 ± .7 fl oz) supplied by parts depot
Volume	32.5 mL (1.1 fl oz) additional amount required

   - Used compressor removed from operation, oil drained, and flushed requires 260 mL (8.8 fl oz) of new oil.

Specification

Oil, Used Compressor	
Installation, Complete System	
Flushed—Volume	260 mL (8.8 fl oz)

2. **System not Flushed**

   When the complete system was not flushed add the correct amount of oil for the compressor plus the amount of oil for each component that was serviced.

   - New compressor from parts depot, drain and return oil. (See R134a Compressor Oil Removal in this group.) Refill new compressor with 45 mL (1.5 fl oz) of oil.

Specification

Oil, New Compressor	
Installation, Complete System	
Not Flushed—Volume	Drain and return 45 mL (1.5 fl oz)

   - Used compressor removed from operation, drain oil. (See R134a Compressor Oil Removal procedure in this group.) Refill used compressor with 45 mL (1.5 fl oz) of new oil.

Specification

Oil, Used Compressor	
Installation, Complete System	
Not Flushed, Oil Drained—Volume	Add 45 mL (1.5 fl oz)

3. **Used Compressor Flushed (System Not Flushed)**

   - Used compressor removed from operation, oil drained and flushed. (See R134a Compressor Oil Removal in this group.) Refill 60 mL (2.0 fl oz) of new oil.

Specification

Oil, Used Compressor	
Installation, Complete System	
Not Flushed, Oil Drained, Flushed—Volume	Add 60 mL (2.0 fl oz)

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1830
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Continued on next page

CED,OUTX547,175 –19–16NOV00–1/2

NOTE: Hoses = 3 mL per 0.3 m (0.1 fl oz per ft). Approximate total length equals 12.5 m (41.0 ft).

4. If any section of hose is removed and flushed or replaced, measure the length of hose and use the formula to determine the correct amount of oil to be added.

CAUTION: DO NOT leave the system or R134a compressor oil containers open. This oil easily absorbs moisture. DO NOT spill R134a compressor oil on acrylic or ABS plastic. This oil will deteriorate these materials rapidly. Identify R134a oil containers and measures to eliminate accidental mixing of different oils.

Components listed below which have been removed, drained or flushed, require the removal of the compressor to determine the correct oil charge. Use the following chart as a guide for adding oil to components:

Item	Measurement	Specification
Evaporator	Oil Charge	32.5 mL (1.1 fl oz)
Condenser	Oil Charge	32.5 mL (1.1 fl oz)
Receiver/Dryer	Oil Charge	30 mL (1.0 fl oz)
Hoses	Oil Charge	121.2 mL (4.1 fl oz) (Approximate)

CED,OUTX547,175 –19–16NOV00–2/2

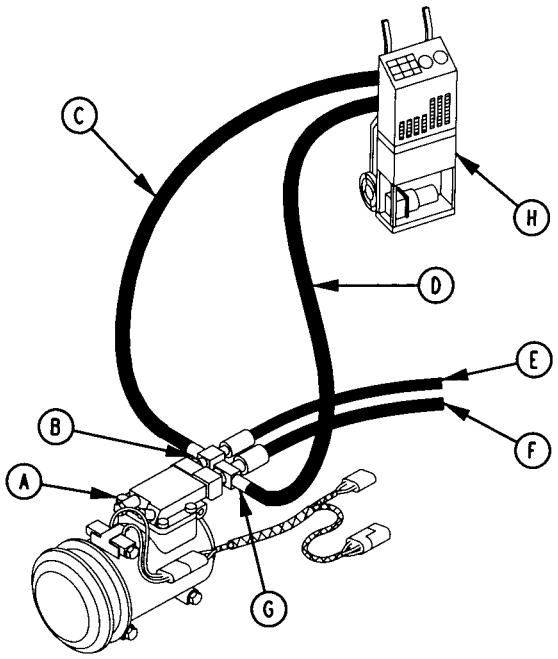
R134a Refrigerant Recovery, Recycling and Charging Station Installation Procedure

ESSENTIAL TOOLS
JT02045R134a Refrigerant Recovery/Recycling and Charging Station [a]
[a]JT02046 and JT02050 recovery and charging stations can be substituted for the JT02045 station.

CAUTION: Do not remove high pressure relief valve (A). Air conditioning system will discharge rapidly causing possible injury.

IMPORTANT: Use correct refrigerant recovery, recycling and charging stations. DO NOT mix refrigerant, hoses, fittings, components or refrigerant oils.

1. Close both high and low pressure valves on refrigerant recovery, recycling and charging station (H).
2. Remove cap from low pressure test port (G).
3. Connect low pressure blue hose (D) from refrigerant recovery, recycling and charging station (H) to low pressure test port (G) on compressor.
4. Connect high pressure red hose (C) to high pressure quick disconnect (B).
5. Follow the manufacturer's instructions when using the refrigerant recovery, recycling and charging station.



T8422AC CV

T8422AC –19–22FEB95

A—High Pressure Relief Valve
B—High Pressure Test Port
C—Red Hose
D—Blue Hose
E—High Pressure Hose
F—Low Pressure Hose
G—Low Pressure Test Port
H—Refrigerant Recovery/Recycling and Charging Station

CED,OUTX547,176 –19–21OCT98–1/1

Recover R134a System

ESSENTIAL TOOLS
JT02045R134a Refrigerant Recovery/Recycling and Charging Station [a]
[a]JT02046 and JT02050 recovery and charging stations can be substituted for the JT02045 station.

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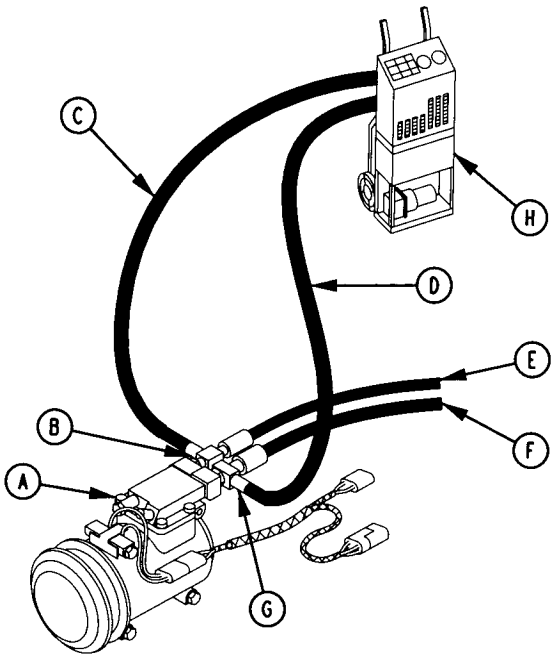
CAUTION: Do not remove high pressure relief valve (A). Air conditioning system will discharge rapidly causing possible injury.

IMPORTANT: Use correct refrigerant recovery, recycling and charging stations. DO NOT mix refrigerant, hoses, fittings, components or refrigerant oils.

NOTE: Run the air conditioning system for three minutes to help in the recovery process. Turn air conditioning system off before proceeding with recovery steps.

1. Connect refrigerant recovery, recycling and charging station. (See installation procedure in this group.)
2. Follow the manufacturer's instructions when using the refrigerant recovery, recycling and charging station.



T8422AC CV

T8422AC –19–22FEB95

A—High Pressure Relief Valve
B—High Pressure Test Port
C—Red Hose
D—Blue Hose
E—High Pressure Hose
F—Low Pressure Hose
G—Low Pressure Test Port
H—Refrigerant Recovery/Recycling and Charging Station

CED,OUTX547,177 –19–21OCT98–1/1

Evacuate R134a System

SPECIFICATIONS	
Vacuum Pressure at Sea Level	98 kPa (980 mbar) (29 in. Hg)
Vacuum Pressure Above Sea Level	Subtract 3.4 kPa (34 mbar) (1 in. Hg) from 98 kPa (980 mbar) (29 in. Hg) for each 300 m (1000 ft) elevation

ESSENTIAL TOOLS
JT02045 R134a Refrigerant Recovery/Recycling and Charging Station [a]
[a]JT02046 and JT02050 recovery and charging stations can be substituted for the JT02045 station.

CAUTION: Do not remove high pressure relief valve (A). Air conditioning system will discharge rapidly causing possible injury.

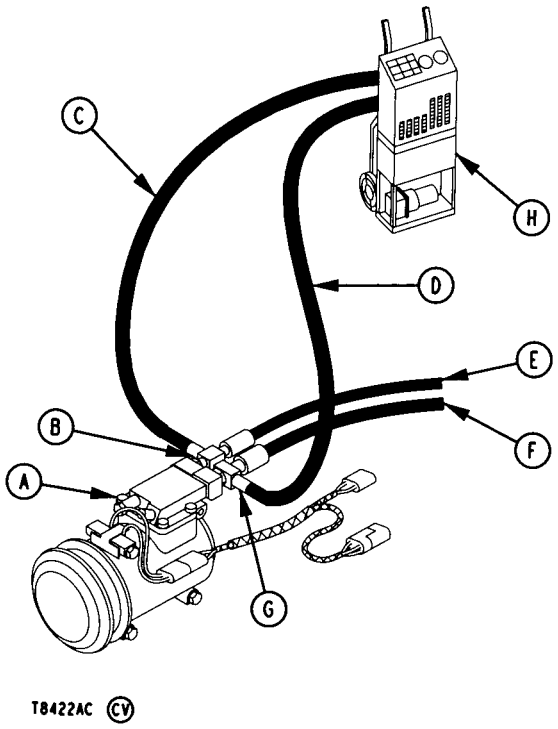
IMPORTANT: Use correct refrigerant recovery, recycling and charging stations. DO NOT mix refrigerant, hoses, fittings, components or refrigerant oils.

Do not run compressor while evacuating.

1. Connect refrigerant recovery, recycling and charging station. (See R134a Refrigerant Recovery, Recycling and Charging Station Installation Procedure in this group.)
2. Open low and high pressure valves on refrigerant recovery, recycling and charging station.
3. Follow the manufacturer's instructions and evacuate the system. (See Evacuate R134a System in this group.)

NOTE: The vacuum specifications listed are for sea level conditions. Subtract 3.4 kPa (34 mbar) (1 in. Hg) from 98 kPa (980 mbar) (29 in. Hg) for each 300 m (1000 ft) elevation above sea level.

4. Evacuate system until low pressure gauge registers 98 kPa (980 mbar) (29 in. Hg) vacuum.



T8422AC CV

T8422AC –19–22FEB95

A—High Pressure Relief Valve
B—High Pressure Test Port
C—Red Hose
D—Blue Hose
E—High Pressure Hose
F—Low Pressure Hose
G—Low Pressure Test Port
H—Refrigerant Recovery/Recycling and Charging Station

Continued on next page

CED,OUTX547,178 –19–21OCT98–1/2

If 98 kPa (980 mbar) (29 in. Hg) vacuum cannot be obtained in 15 minutes. Test the system for leaks. (See Leak Testing, 9031-25.) Correct any leaks.

Specification

Vacuum—Pressure at Sea Level	98 kPa (980 mbar) (29 in. Hg)
Pressure Above Sea Level	Subtract 3.4 kPa (34 mbar) (1 in. Hg) from 98 kPa (980 mbar) (29 in. Hg) for each 300 m (1000 ft) elevation

18
1830
18

5. When vacuum is 98 kPa (980 mbar) (29 in. Hg), close low-side and high-side valves. Turn vacuum pump off.
6. If the vacuum decreases more than 3.4 kPa (34 mbar) (1 in. Hg) in 5 minutes, there is a leak in the system.
7. Repair leak. (See Leak Testing, 9031-25).
8. If the vacuum can be held without a 3.4 kPa (34 mbar) (1 in. Hg) decrease. Open low-side and high-side valves.
9. Evacuate system for 30 minutes after 98 kPa (980 mbar) (29 in. Hg) vacuum is reached.
10. Close low-side and high-side valves. Stop evacuation.
11. Charge the system. (See Charge R134a System procedure in this group.)

CED,OUTX547,178 –19–21OCT98–2/2

Charge R134a System

SPECIFICATIONS	
Refrigerant Weight	1.5 Kg (3.5 lbs)

ESSENTIAL TOOLS
JT02045 R134a Refrigerant Recovery/Recycling and Charging Station[a]
[a]JT02046 and JT02050 recovery and charging stations can be substituted for the JT02045 station.

CAUTION: Do not remove high pressure relief valve (A). Air conditioning system will discharge rapidly causing possible injury.

IMPORTANT: Use correct refrigerant recovery, recycling and charging stations. DO NOT mix refrigerant, hoses, fittings, components or refrigerant oils.

1. Connect refrigerant recovery, recycling and charging station. (See R134a Refrigerant Recovery, Recycling and Charging Station Installation Procedure in this group.)

2. Evacuate the system. (See Evacuate R134a System in this group.)

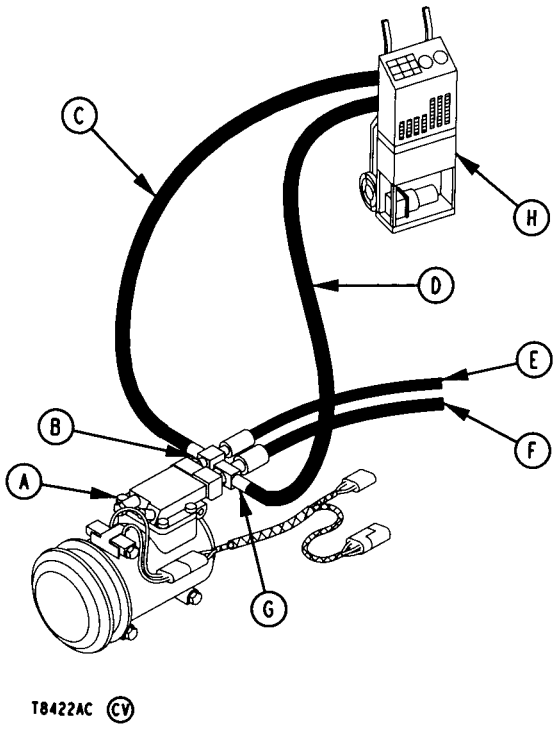
NOTE: Before beginning to charge air conditioning system, the following conditions must exist: Engine STOPPED, the pump must be capable of pulling at least 28.6 in. Hg vacuum (sea level). Subtract 3.4 kPa (34 mbar) (1 in. Hg) from 98 kPa (980 mbar) (29 in. Hg) for each 300 m (1000 ft) elevation above sea level.

3. Follow the manufacturer's instructions and charge the system.

4. Add refrigerant until system is charged with 1.5 Kg (3.5 lbs).

Specification

Refrigerant—Weight ..... 1.5 Kg (3.5 lbs)



T8422AC (CV)

T8422AC –19–22FEB95

A—High Pressure Relief Valve
B—High Pressure Test Port
C—Red Hose
D—Blue Hose
E—High Pressure Hose
F—Low Pressure Hose
G—Low Pressure Test Port
H—Refrigerant Recovery/Recycling and Charging Station

Continued on next page

5. Do air conditioner checks and tests in Operation and Test Manual, Groups 9005-10 and 9031-25.

CED,TX14826,12325 –19–04MAY00–2/2

Leak Testing

SPECIFICATIONS	
Leak Detector Probe Rate	25 mm (1 in.) per Second

SERVICE EQUIPMENT AND TOOLS
JT02081 Electronic Leak Detector

1. Inspect all lines, fittings, and components for oily or dusty spots. When refrigerant leaks from the system, a small amount of oil is carried out with it.
2. A soap and water solution can be sprayed on the components in the system to form bubbles at the source of the leak.
3. If a leak detector is used, move the leak detector probe under the hoses and around the connections at a rate of 25 mm (1 in.) per second.
4. Some refrigerant manufacturers add dye to refrigerant to aid in leak detection.

CED,OUO1066,309 –19–30MAR00–1/1

Air Conditioner System Cleaning Procedures

Flushing: Flushing the system or component is a cleaning process using a liquid solvent to remove oil and debris. Purging is always necessary after flushing to remove solvent from the system or component.

Following is a list of situations that require a flushing procedure be done:

1. The compressor has an internal failure.
2. No oil remains in used compressor.
3. Oil drained from compressor appears or smells overheated.
4. System was contaminated with a mixture of refrigerant oils.
5. System was left open to the atmosphere long enough for dirt, moisture, or debris to enter the tubing or components.
6. System has an internal blockage.

The following solvent is recommended for flushing air conditioner systems. Use only solvents with an equivalent MSDS.

- TY16134 Air Conditioning System Flushing Solvent

Purging: Purging the system or a component is a cleaning process using a gas to force liquid from the system. Purging alone will not remove refrigerant oil from the system.

Following is a list of situations that require a purging procedure be done:

- After flushing system with solvent, to prevent oil dilution.
- System was contaminated with nitrogen or two refrigerants.
- System was left open to the atmosphere and flushing could not be performed.
- Installation of new lines, condenser, or evaporator was required.

Evacuating: Evacuating the system is a process to remove air and moisture from the system, creating a vacuum.

CED,TX03399,2291 –19–09DEC98–1/1

Purge Air Conditioner System

SPECIFICATIONS	
Nitrogen Purge Pressure.	275 kPa (40 psi) (2.75 bar) for two minutes

IMPORTANT: Air compressors used for purging systems require a water separator. Purging without a separator adds moisture, creating hydrofluoric acid when combined with refrigerant oil. Acid is corrosive to metal tubing.

1. Connect dry nitrogen hose to gauge manifold center hose.
2. Connect gauge manifold suction hose to compressor suction port, and open valves.
3. Connect gauge manifold discharge hose to compressor discharge post, and open valve. Disconnect discharge hose from gauge manifold to allow purging nitrogen to atmosphere.
4. Open nitrogen tank valve and adjust regulator to Specification. Purge system for two minutes. Disconnect nitrogen supply.

Specification

Nitrogen Purge—Pressure..... 275 kPa (40 psi) (2.75 bar) for two minutes

5. Evacuate the system. (See Evacuate R134a System in this group.)

CED,TX03399,2292 –19–09DEC98–1/1

Flush Air Conditioner System

SPECIFICATIONS	
Compressor Flushing Solvent Quantity	240 mL (8 fl oz) In Suction Port
Compressor Flushing Solvent Quantity	120 mL (4 fl oz) In Discharge Port
Flusher Tank Capacity	4 L (1 gal)
Regulated Air Pressure	620 kPa (6.2 bar) (90 psi) Minimum
Condenser Purging Time	10—12 Minutes
Evaporator Purging Time	12—15 Minutes

ESSENTIAL TOOLS
JT02075 Air Conditioning Flusher
JT02098 Fitting Kit
JT02099 and JT02100 with JT03194 Cap
JT02102 Adapter

SERVICE EQUIPMENT AND TOOLS
JT03188 Adapter
JT02101 Adapter

Add flushing solvent to system with JT02075 Air Conditioning Flusher and JT02098 Fitting Kit.

NOTE: Flushing can be performed on vehicle.

1. Recover refrigerant. (See Recover R134a System procedure in this group.)
2. Remove compressor. (See Remove and Install Compressor in this group.)
3. Drain and measure oil drained from manifold ports. (See R134a Compressor Oil Removal in this group.)
4. Clean compressor as follows:
   a. Pour specified amount of flushing solvent into suction port and specified amount of flushing solvent into discharge port. Plug both ports in compressor manifold, using caps.

Specification	
Compressor Flushing Solvent— Quantity	240 mL (8 fl oz) In Suction Port
Quantity	120 mL (4 fl oz) In Discharge Port

   b. Turn compressor end for end and roll it side to side.
   c. Remove both plugs from manifold ports and drain solvent from compressor.
   d. Connect battery power to compressor clutch coil. Rotate pulley at least five revolutions to move solvent out of cylinders.
   e. Invert compressor, roll end for end, and side to side. Drain thoroughly.
   f. Let compressor sit inverted for three to five minutes.
   g. Repeat previous two steps at least three times.
5. Remove and discard receiver-dryer.
6. Divide system into two circuits:
   a. Condenser, including inlet and outlet hoses. (Steps 6—12)
   b. Evaporator, including inlet and outlet hoses. (Steps 13—26)

IMPORTANT: DO NOT attempt to flush through compressor or receiver-dryer. Flushing through expansion valve is acceptable if refrigerant oil has normal odor and appearance.

7. **To Flush/Purge Condenser:**

   Connect flusher outlet hose to inlet end of compressor discharge line using JT02102 Adapter.

Continued on next page

8. Attach a return hose and aerator nozzle to outlet end of receiver/dryer inlet hose using JT03197 Adapter. Put nozzle in container to collect flushing solvent.

9. Fill flusher tank with 4 L (1 gal) of solvent and fasten all connections.

Specification

Flusher Tank—Capacity ..... 4 L (1 gal)

NOTE: Air pressure must be at least 620 kPa (6.2 bar) (90 psi) for flushing and purging.

10. Connect a supply line of moisture-free compressed air or dry nitrogen to flusher air valve. Adjust regulator to specification.

Specification

Regulated Air—Pressure ..... 620 kPa (6.2 bar) (90 psi) Minimum

11. Open air valve to force flushing solvent into condenser circuit. Flusher tank is empty when hose pulsing stops. Additional flushing cycles are required if system is heavily contaminated with burned oil or metal particles.

NOTE: Purging the condenser circuit takes 10—12 minutes to thoroughly remove solvent.

Specification

Condenser Purging—Time ..... 10—12 Minutes

12. Disconnect hose from aeration nozzle to check circuit for solvent. Hold hose close to a piece of cardboard; continue purging until cardboard is dry.

13. Go to Step 13 to flush evaporator. Go to Step 22 if evaporator does not require flushing.

14. **To Flush Evaporator:**

    If system is contaminated with burned refrigerant oil or debris, remove and bench flush evaporator. Go to Step 18 to flush evaporator through expansion valve, if oil appears normal. Remove evaporator. (See Remove and Install Evaporator or Heater Core in this group.)

15. Force flushing solvent through evaporator inlet with compressed air.

16. Purge system until dry. (See Purge Air Conditioner System in this group.)

17. Install evaporator.

18. Go to Step 22.

19. **To Flush Evaporator Through Expansion Valve:**

    Connect flusher outlet hose to connection of receiver/dryer outlet hose using JT03188 Adapter.

20. Attach a hose and aerator nozzle to compressor inlet line using JT02101 Adapter. Put nozzle in a container to collect solvent.

21. Repeat Steps 8, 9 and 10 to flush evaporator.

NOTE: Purging the evaporator circuit takes 12—15 minutes to thoroughly remove solvent.

22. Disconnect hose from aeration nozzle to check circuit for solvent. Hold hose close to a piece of cardboard. Continue purging until cardboard is dry.

23. Install a new receiver-dryer compatible with R134a refrigerant. (See Remove and Install Receiver-Dryer in this group.) Tighten connections and mounting bracket.

24. Add required oil. (See R134a Component Oil Charge in this group.)

25. Install compressor, and connect refrigerant lines to manifold.

26. Connect clutch coil wire. Install drive belt.

27. Purge system. (See procedure in this group.)

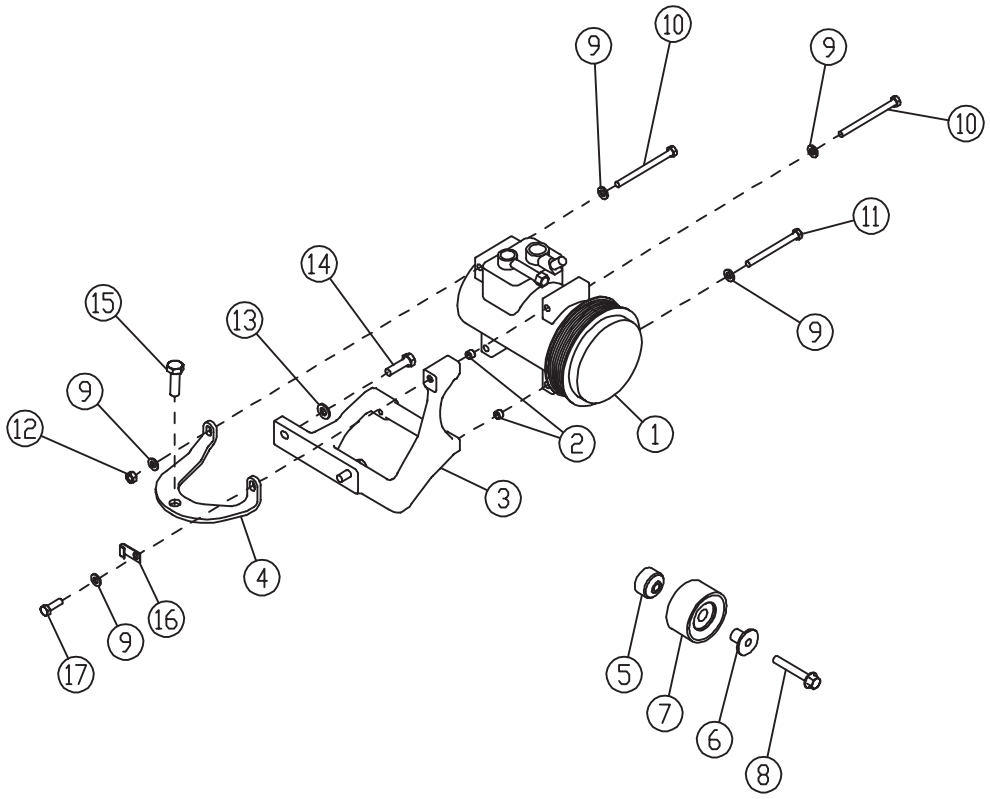
CED,TX03399,2293 –19–16APR99–2/2

Air Conditioning Component Location

See Air Conditioning Component Location. (Go to Operation and Test Manual, Group 9031-10.)

CED,TX03399,6063 –19–30MAR00–1/1

Remove and Install Compressor



1—Compressor
2—Spring Pin (2 used)
3—Bracket
4—Support
5—Spacer
6—Sleeve
7—Pulley
8—Cap Screw
9—Washer (6 used)
10—Cap Screw
11—Cap Screw (2 used)
12—Nut (3 used)
13—Washer (2 used)
14—Cap Screw (2 used)
15—Cap Screw
16—P-Clamp
17—Cap Screw

1. Remove refrigerant from the system. (See procedure in this group.)
2. Loosen belt adjuster and remove belt.
3. Disconnect wiring lead, suction and discharge lines.
4. Remove four cap screws and compressor.
5. Repair or replace compressor. (See procedure in this group.)
6. Install compressor and tighten cap screws.

Air Conditioning Compressor Remove and Install—Specification

Compressor-to-Bracket Cap Screws—Torque	35 N•m (26 lb-ft)
Support Bracket-to-Engine Block Cap Screw—Torque	120 N•m (89 lb-ft)
Compressor Bracket to Engine Block Cap Screws—Torque	70 N•m (52 lb-ft)
Idler pulley-to-fan drive cap screw—Torque	50 N•m (37 lb-ft)

7. Connect suction and discharge lines and wiring lead.
8. Install belt.
9. Install a new receiver/dryer.
10. Evacuate and charge the system. (See procedure in this group.)

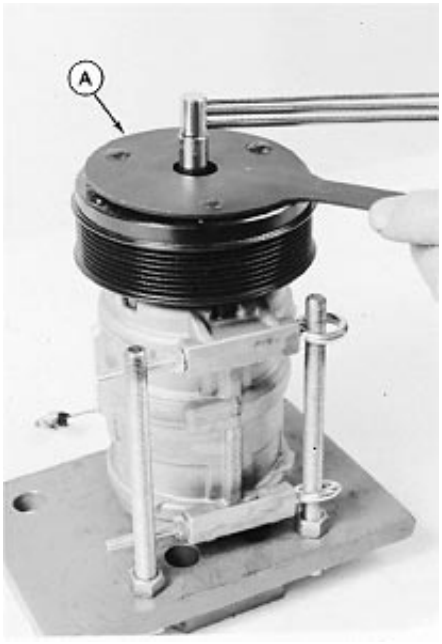
Continued on next page

CED,TX03399,5020 –19–14JUN02–1/2

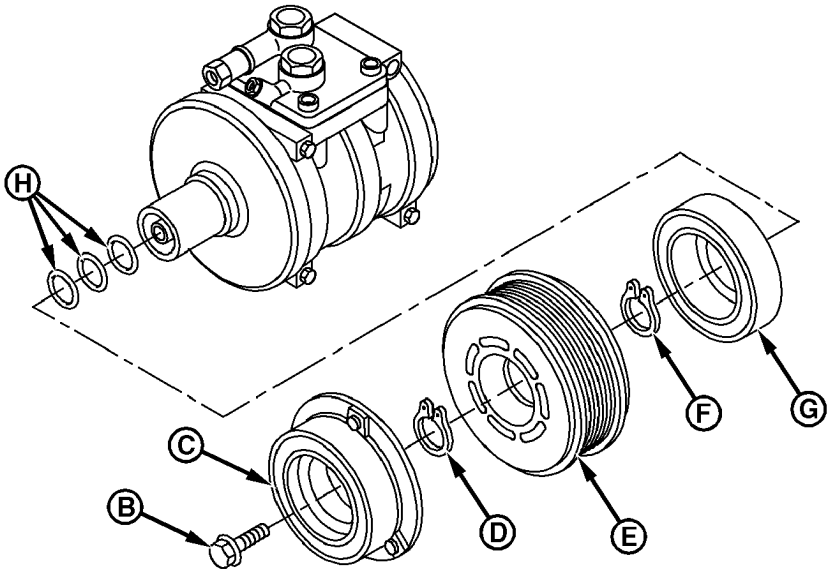
IMPORTANT: When turning air conditioning on for the first time, set the engine rpm at slow idle to avoid possible high pressure discharge of extra refrigerant oil that is in all new compressors.

CED,TX03399,5020 –19–14JUN02–2/2

Disassemble and Assemble Compressor Clutch



RW21157 –UN–24JUN92



T114965

T114965 –UN–29APR98

A—JDG747 Compressor Clutch Spanner
B—Clutch Shaft Bolt
C—Clutch Hub
D—Pulley Snap Ring
E—Pulley
F—Clutch Coil Snap Ring
G—Clutch Coil
H—Shims

1. Mount compressor on D01006AA Bench Mounted Holding Fixture or DFRW20 Compressor Holding Fixture using two 6 in. x 1/4 in. eye bolts with nuts as illustrated. (See Section 99 for instructions to make tool.)

Continued on next page

TX,18,RB761 –19–21JUN00–1/2

2. Remove dust cover.

3. Hold the clutch hub using JDG747 Compressor Clutch Spanner (A) and remove the clutch shaft bolt (B).

4. Remove the clutch hub (C). Remove the shims (H) from the clutch hub and save for installation.

5. Remove and discard snap ring (D). Remove the pulley (E) using a plastic hammer or JDG220 Puller, JDG748 Jaws and JDG771 Forcing Screw.

6. Disconnect the clutch coil lead wire. Remove and discard the snap ring (F) and remove the clutch coil (G).

NOTE: The bearing in the pulley is NOT serviceable.

7. Check pulley bearing operation. Replace pulley and bearing as required.

8. Install the clutch coil and new snap ring with flat side of the snap ring down. Connect the clutch coil lead wire.

9. Install the pulley and new snap ring with the flat side of the snap ring down. Apply grease to the shims (H) and install to the clutch hub.

10. Install clutch hub and shaft bolt and tighten.

Specification

Compressor Hub Retaining Nut—Torque	14 N•m (124 lb-in.)

TX,18,RB761 –19–21JUN00–2/2

Check Clutch Hub Clearance

NOTE: The clutch coil is NOT polarity sensitive.

1. Check pulley-to-clutch hub clearance using a dial indicator. Mount the gauge to the pulley as illustrated and connect a set of jumper wires from the compressor to a 12V battery.

2. Rotate the pulley and check clearance in three equally spaced locations around the clutch hub. Correct clearance is 0.35—0.65 mm (0.014—0.026 in.). Add or remove shims as required.

Specification

Air Conditioning Clutch Hub-to-Pulley—Clearance	0.35—0.65 mm (0.014—0.026 in.)

3. Tighten clutch shaft bolt to specification after correct clearance is obtained.

Specification

Air Conditioning Clutch Shaft Bolt—Torque	14 N•m (124 lb-in.)

RW21159 –UN–24JUN92

TX,18,RB762 –19–23APR99–1/1

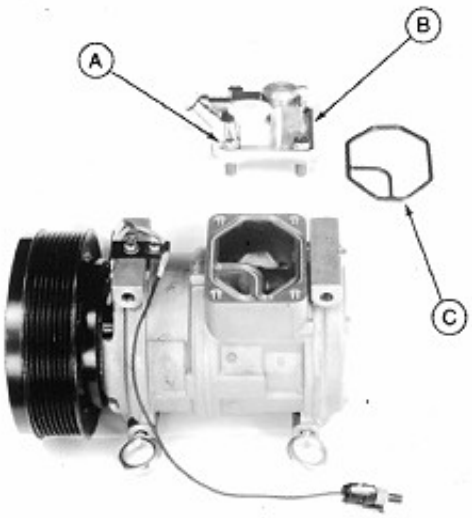
Inspect Compressor Manifold

1. Remove cap screws (A) and the manifold (B).
2. Remove and discard seal (C). Inspect porting surfaces.
3. Lubricate and install a new seal (C).
4. Install manifold and tighten cap screws.

Specification

Manifold Through Bolt—Torque ..... 26 N•m (19 lb-ft)

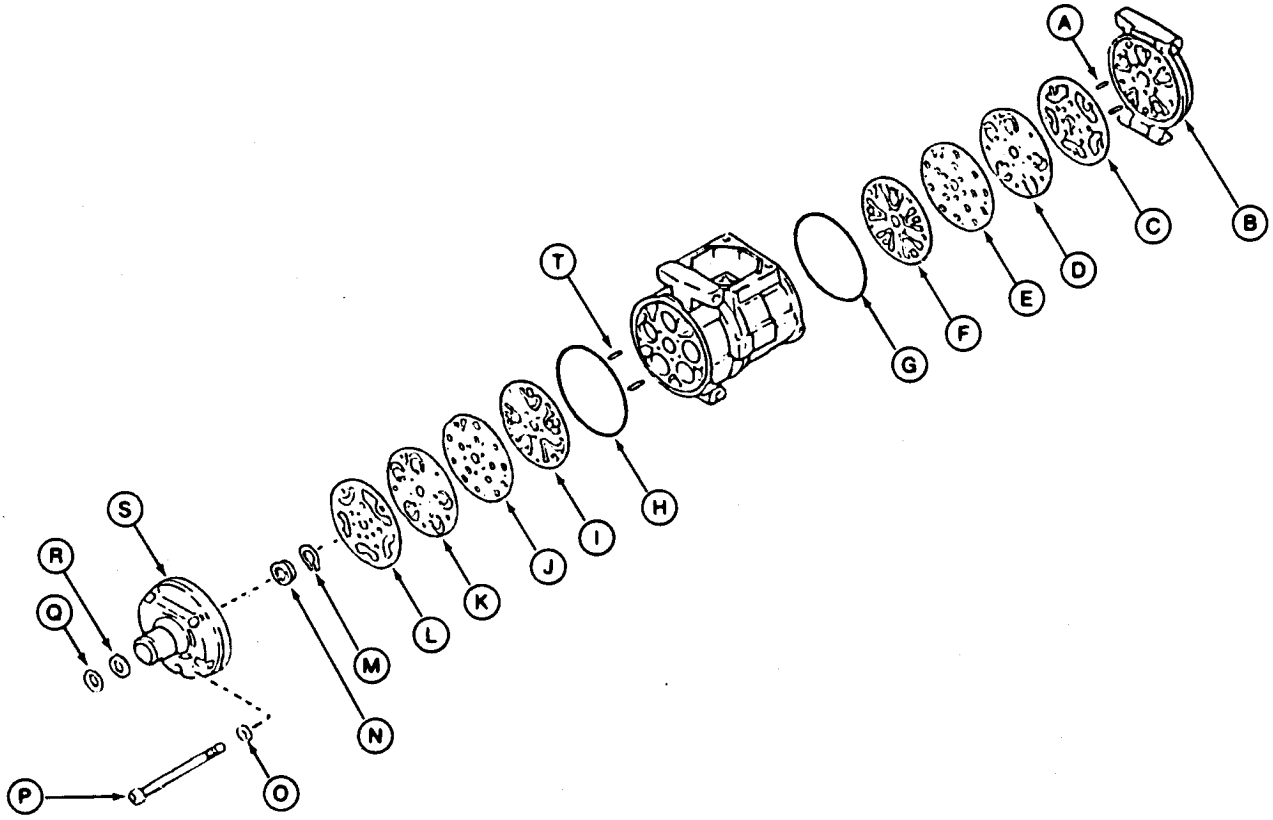
A—Manifold Cap Screw
B—Manifold
C—Manifold Seal



RW21160 –UN–24JUN92

TX,18,RB763 –19–23APR99–1/1

Disassemble, Inspect and Assemble Compressor



RW21161 –UN–24JUN92

A—Rear Pins
B—Rear Housing
C—Rear Gasket
D—Rear Discharge Reed Valve
E—Rear Valve Plate
F—Rear Suction Reed Valve
G—Rear O-Ring
H—Front O-Ring
I—Front Suction Reed Valve
J—Front Valve Plate
K—Front Discharge Reed Valve
L—Front Gasket
M—Snap Ring
N—Lip Seal
O—Washer
P—Through Bolt
Q—Felt Holder
R—Felt
S—Front Housing
T—Front Pins

Continued on next page

TX,18,RB764 –19–23APR99–1/3

1. Clean the compressor using solvent before disassembly. Mount compressor on holding fixture and remove clutch. (See procedure in this group.)

IMPORTANT: When removing front and rear housing, be careful NOT to damage the sealing surfaces.

2. Disassemble the compressor as illustrated and discard the O-rings, gaskets, lip seal, snap ring, and through bolt washers. Replace parts from service kits.

NOTE: The valve plates, reed valves, cylinders, and cylinder housings are NOT serviceable. Some cylinder scuffing (light scratches) is normal.

3. Inspect the valves for an even wear pattern and the cylinders for scoring or excessive wear. Replace compressor as required.

4. Remove the shaft seal snap ring (M). Turn the housing over and remove the felt holder (Q) and felt (R) from the front housing (S).

5. Remove the shaft lip seal (N) from the front housing (S) using a small tool with 5/8 in. OD.

6. Wash all parts in clean solvent and dry before assembly.

IMPORTANT: Lubricate O-rings, gaskets, and lip seal using only TY22025 (R134a) refrigerant oil during assembly. Other oils could damage the compressor.

7. Apply R134a oil to the bore of the front housing and install new lip seal (N) to the bottom of the bore using a socket. Install new snap ring (M) flat side down.

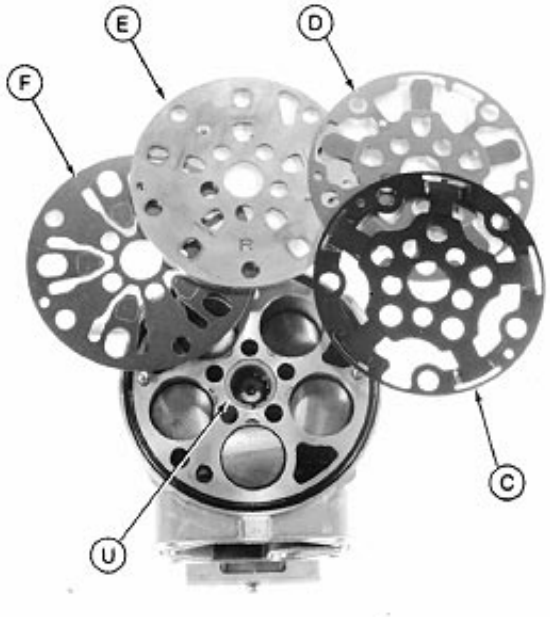
IMPORTANT: Bushing spacer (U) must be in position before assembling the compressor.

8. Install pins (A) and new O-ring (G) in the rear cylinder.

NOTE: The rear valve plate is marked with an "R" and is installed face up.

9. Install parts (F—D) over the pins on the rear cylinder.

RW21162 –UN–24JUN92



RW21163 –UN–24JUN92

C—Rear Gasket
D—Rear Discharge Reed Valve
E—Rear Valve Plate
F—Rear Suction Reed Valve
U—Pump Body

Continued on next page

TX,18,RB764 –19–23APR99–2/3

10. Install a new gasket (C) flat side down and the rear housing (B) on the rear cylinder. Mount the compressor onto the holding fixture.

11. Install pins (T) and new O-ring (H) in the front cylinder.

NOTE: The front valve plate is marked with an "F" and is installed face up.

12. Install parts (I—K) over the pins on the front cylinder.

13. Install a new gasket (L) flat side down. Put JDG746 lip seal protector on the shaft and lubricate with R134a oil.

14. Install the front housing (S) on the front cylinder and remove the lip seal protectors. Install through bolts (P) and new washers (O).

15. Partially tighten the through bolts and then tighten to 26 N•m (19 lb-ft).

Specification

Air Conditioning Compressor
Through Bolt—Torque ..... 26 N•m (230 lb-in.)

16. Install the felt (R) and felt holder (Q) using the clutch hub.

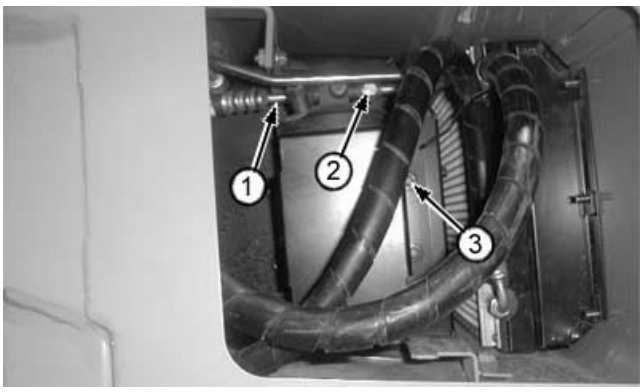
17. Install the pulley-clutch hub and check clearance. (See procedure in this group.)

TX,18,RB764 –19–23APR99–3/3

Remove and Install Receiver-Dryer

NOTE: Anytime air conditioning system is discharged, a new receiver-dryer must be installed.

1. Remove left hand side cover.
2. Do recovery of the air conditioning system. (See procedure in this group.)
3. Disconnect hoses (1 and 3) and remove four cap screws (2) and remove receiver-dryer.
4. Install new receiver-dryer, and bracket. Tighten cap screws.
5. Apply refrigerant oil to new O-rings and immediately connect lines.
6. Add oil. (See R134a Component Oil Charge in this group.)
7. Evacuate and charge the air conditioning system. (See procedure in this group.)



T118142B –UN–02NOV98

1—Receiver/Dryer Hose-to-Condenser
2—Receiver/Dryer Hose-from-Evaporator
3—Receiver/Dryer Bracket Cap Screw (4 used)

CED,OUTX547,181 –19–16APR99–1/1

Remove and Install Evaporator or Heater Core

NOTE: Anytime air conditioning system is discharged, a new receiver/dryer must be installed.

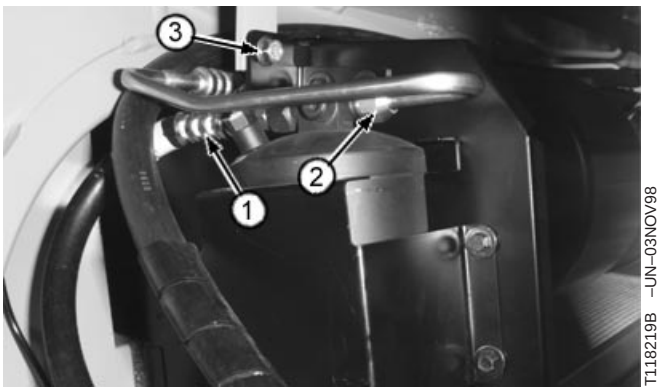
1. Remove cap screws to remove access cover to air conditioning and heater assembly.
2. Do recovery of the air conditioning system. (See procedure in this group.)

Continued on next page

CED,OUTX547,182 –19–16APR99–1/4

3. Disconnect (1, 2, 4—6, 8 and 9).
4. Remove cap screw (3) on both sides.
5. Remove eight cap screws (7) and remove A/C and heater assembly.

1—Receiver-Dryer Hose-to-Condenser
2—Receiver-Dryer Hose from Evaporator
3—Cap Screw (2 used)
4—Two Heater Hoses-to-Under the Seat Heater Core
5—A/C Harness Connector-to-Cab Harness Connector
6—Expansion Valve Hose-to-Compressor
7—Cap Screw (8 used)
8—A/C Blower Fans and Switch Connector
9—Low Pressure Switch Connector



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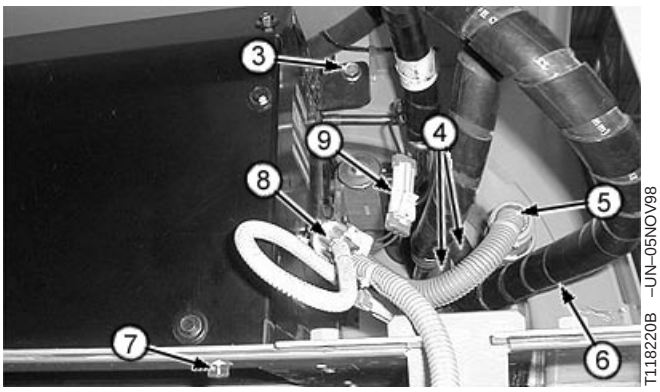
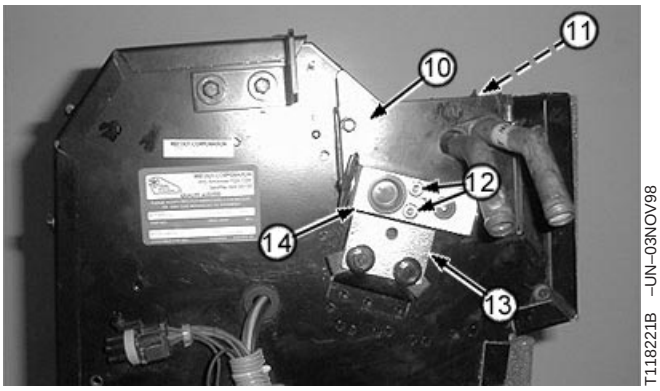


T118220B –UN–05NOV98

CED,OUTX547,182 –19–16APR99–2/4

6. Disconnect lines and bracket from expansion valve (14).
7. Remove two screw (12) and remove expansion valve
8. Remove bracket (13).
9. Remove two cap screw and remove plate (10).
10. Remove cover (11) and remove evaporator or heater core.



T118221B –UN–03NOV98

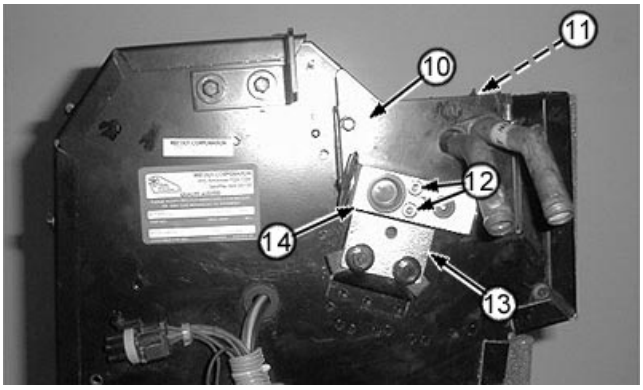
10—Plate
11—Evaporator/Heater Core Cover
12—Cap Screw (2 used)
13—Bracket
14—Expansion Valve

Continued on next page

CED,OUTX547,182 –19–16APR99–3/4

11. Install evaporator or heater core.
12. Install (11, 10, 13, and 14). Tighten cap screws.
13. Connect (4—6, 8 and 9). Tighten cap screws (3 and 7).
14. Connect hoses (1 and 2).
15. Install access cover and tighten cap screws.
16. Install new receiver/dryer.
17. Apply refrigerant oil to new O-rings and immediately connect lines.
18. Add oil. (See R134a Component Oil Charge in this group.)
19. Evacuate system. (See Evacuate R134a System in this group.)
20. Charge the air conditioning system. (See Charge R134a System in this group.)

1—Receiver-Dryer Hose-to-Condenser
2—Receiver-Dryer Hose from Evaporator
3—Cap Screw (2 used)
4—Two Heater Hoses-to-Under the Seat Heater Core
5—A/C Harness Connector-to-Cab Harness Connector
6—Expansion Valve Hose-to-Compressor
7—Cap Screw (8 used)
8—A/C Blower Fans and Switch Connector
9—Low Pressure Switch Connector
10—Plate
11—Evaporator/Heater Core Cover
12—Cap Screw (2 used)
13—Bracket
14—Expansion Valve



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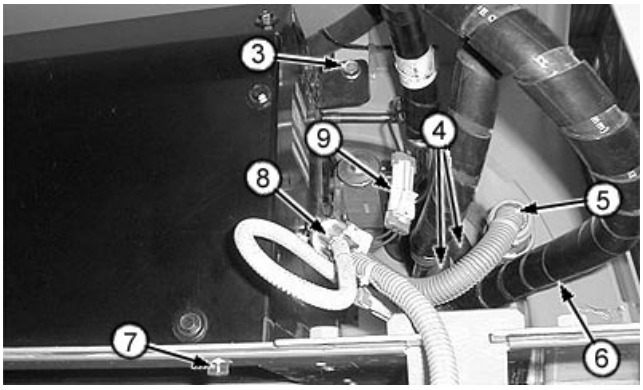
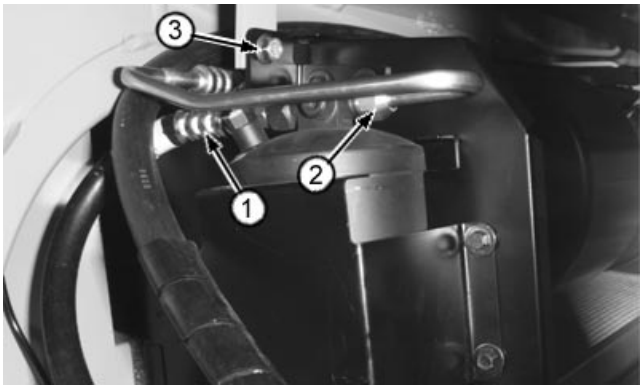


T118220B –UN–05NOV98



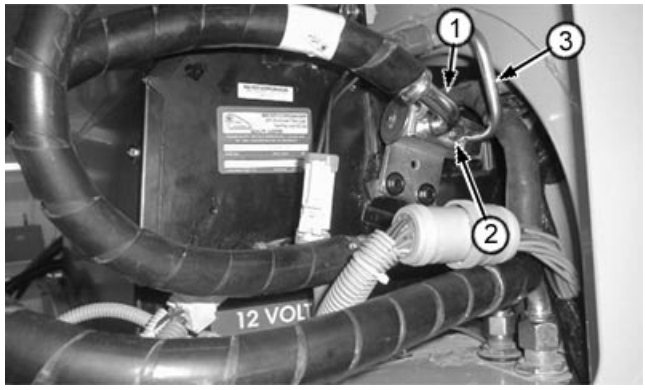
T118219B –UN–03NOV98

CED,OUTX547,182 –19–16APR99–4/4

Remove and Install Expansion Valve

NOTE: Anytime air conditioning system is flushed or purged, a new receiver-dryer must be installed.

1. Open access cover.
2. Recover air conditioning system. (See R134a Refrigerant Recovery, Recycling and Charging Station Installation Procedure in this group.)
3. Disconnect (1 and 3). Close all openings using caps and plugs.
4. Remove cap screw and bracket (2).
5. Remove two screws on expansion valve and remove valve.
6. Install valve, bracket and connect hoses.
7. Install new receiver-dryer if system is purged or flushed. (See Remove and Install Receiver-Dryer in this group.)
8. Apply refrigerant oil to new O-rings and immediately connect lines.
9. Add oil. (See R134a Component Oil Charge in this group.)
10. Evacuate air conditioning system. (See Evacuate R134a System in this group.)
11. Charge the air conditioning system. (See Charge R134a System in this group.)



T118238B –UN–07DEC98

1—Expansion Valve Hose-to-Compressor
2—Cap Screw and Bracket
3—Expansion Valve Hose-to-Receiver/Dryer

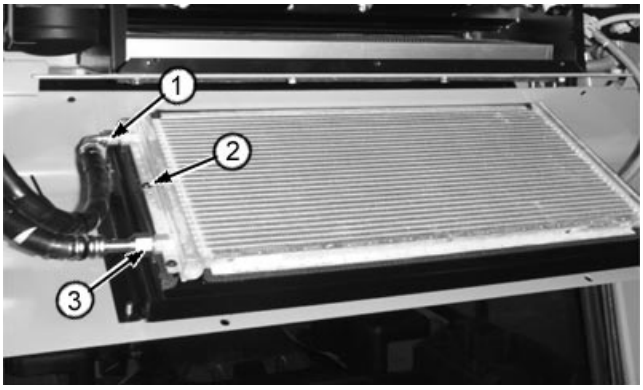
CED,TX03399,5065 –19–16APR99–1/1

Remove and Install Condenser

NOTE: Anytime air conditioning system is discharged, a new receiver-dryer must be installed.

If servicing the condenser fans do not disconnect condenser hoses. Remove condenser and lay to the side.

1. Remove bottom cover.
2. Recover air conditioning system. (See R134a Refrigerant Recovery, Recycling and Charging Station Installation Procedure in this group.)
3. Disconnect hoses (1 and 3) and remove six cap screws (2) and remove condenser. Close all openings using caps and plugs.
4. Install condenser. Tighten cap screws.
5. Connect lines (1 and 3).
6. Install new receiver-dryer if system is purged or flushed. (See Remove and Install Receiver-Dryer in this group.)
7. Apply refrigerant oil to new O-rings connect lines.
8. Add oil. (See R134a Component Oil Charge in this group.)
9. Evacuate air conditioning system. (See Evacuate R134a System in this group.)
10. Charge the air conditioning system. (See Charge R134a System in this group.)



T118149B –UN–02NOV98

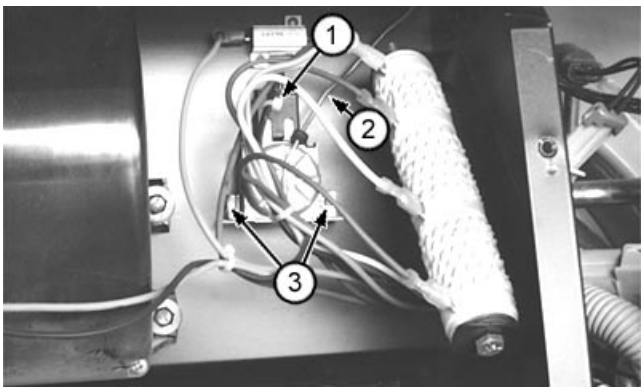
1—From Receiver-Dryer-to-Condenser Hose
2—Cap Screw (6 used)
3—Condenser-to-Compressor Hose

CED,OUTX547,183 –19–16APR99–1/1

Remove and Install A/C Freeze Switch

1. Disconnect connector (1).
2. Remove sensor (2) from evaporator.
3. Remove cap screws (3).

1—Connector
2—Sensor
3—Cap Screw (2 used)

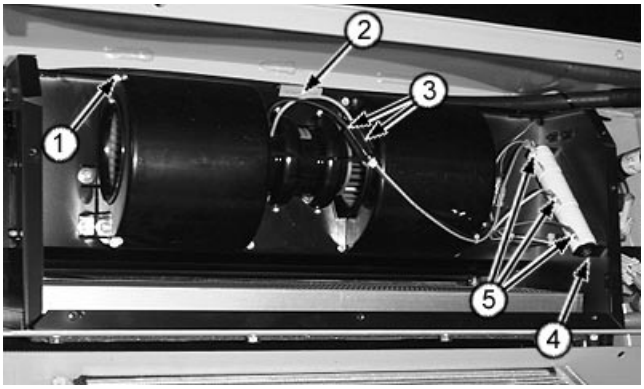


T131949B –UN–22JUN00

CED,TX03399,5071 –19–16APR99–1/1

Remove and Install Upper Cab Heater Blower Motor or Heater Blower Resistor

1. Remove A/C and heater access cover.
2. Remove blower motor cover (for blower motor only).
3. Disconnect blower motor connectors (3). Remove cap screws (1 and 2).
4. Remove blower motor.
5. Disconnect leads (5) and cap screw (4) to remove heater resistor.
6. Install new resistor and connect leads and install cap screw (4).
7. Install blower motor and connect connectors.
8. Install covers.

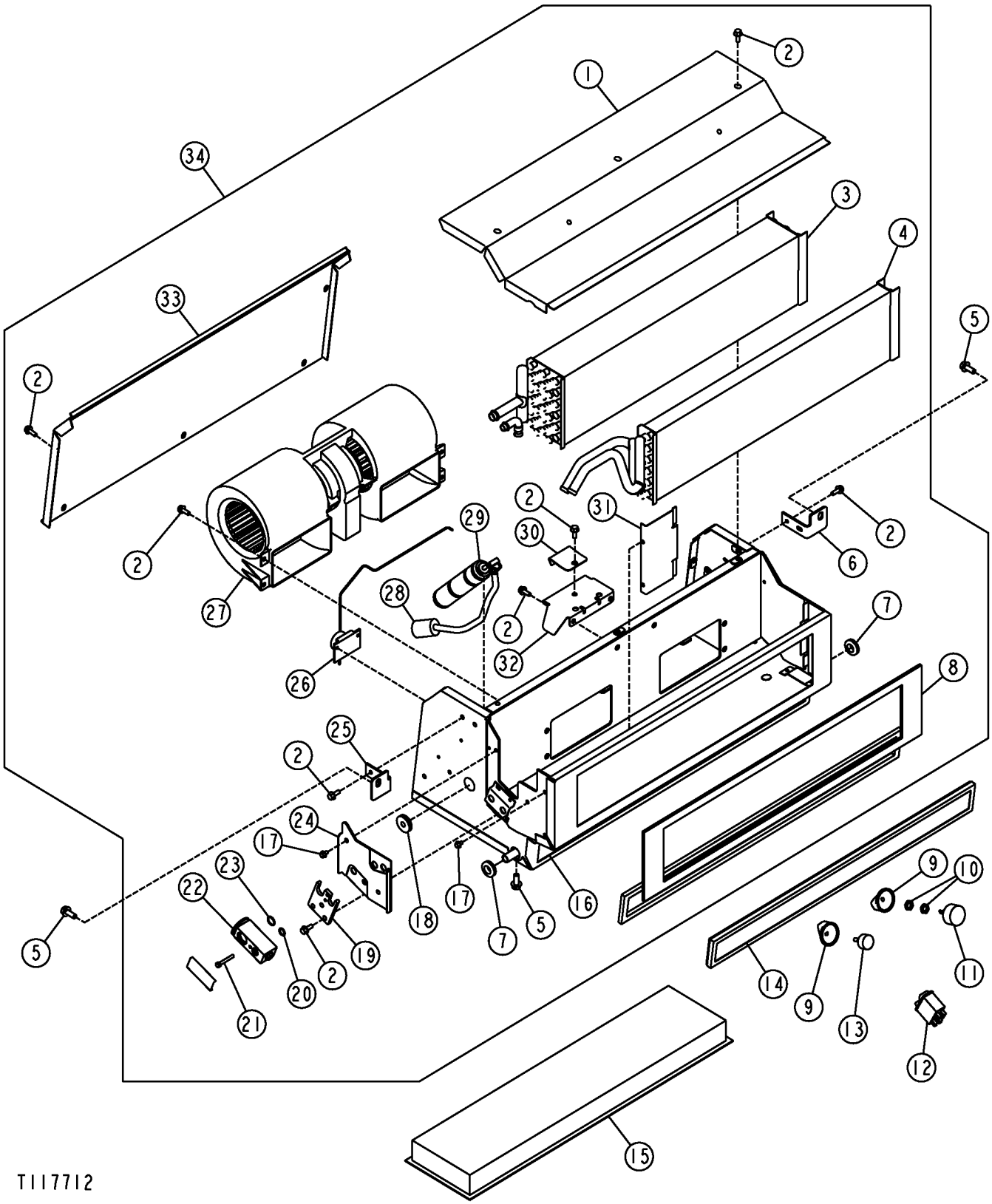


T118407B –UN–16NOV98

1—Cap Screw (4 used)
2—Cap Screw
3—Blower Motor Connector (2 used)
4—Resistor Cap Screw
5—Resistor Wire Lead (4 used)

CED,TX03399,5066 –19–16APR99–1/1

Disassemble and Assemble Cab Upper Heater



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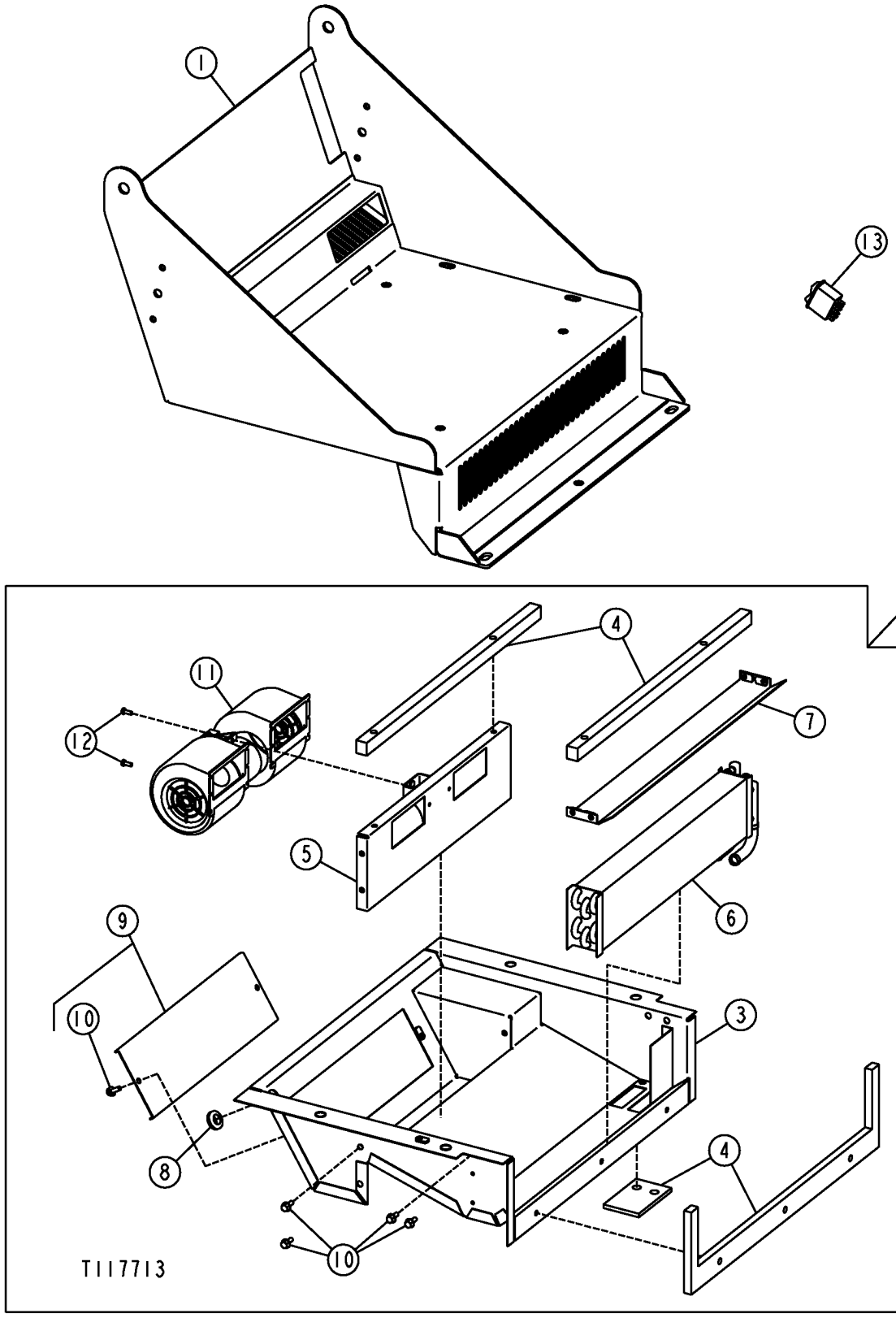
CED,TX03399,5025 –19–16NOV00–1/2

1—Top Cover
2—Cap Screw (24 used)
3—Evaporator Core
4—Heater Core
5—Cap Screw (10 used)
6—Bracket
7—Grommet (2 used)
8—Gasket Kit
9—Switch Knob (2 used)
10—Nut (2 used)
11—Rotary Switch
12—Heater Switch
13—Heater Control Switch
14—Recirculation Filter
15—Fresh Air Filter
16—Main Housing
17—Cap Screw (4 used)
18—Grommet
19—Mount Plate
20—O-Ring
21—Cap Screw (2 used)
22—Thermal Expansion Valve
23—O-Ring
24—Plate
25—Bracket
26—Freeze Control Switch
27—Blower Fan
28—Wiring Harness
29—Resistor
30—Motor Support Retainer
31—Motor Retainer
32—Bracket
33—A/C Back Cover
34—Upper Heater Assembly

1. Drain engine coolant. The approximate capacity of engine coolant is 19.4 L (20.5 qt).
2. Disassemble and assemble. Replace parts as necessary.
3. Fill engine coolant. (See Operator's Manual.)

CED,TX03399,5025 –19–16NOV00–2/2

Disassemble and Assemble Cab or ROPS Under Seat Heater



T117713 –UN–03DEC98

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CED,TX03399,5024 –19–16NOV00–1/3

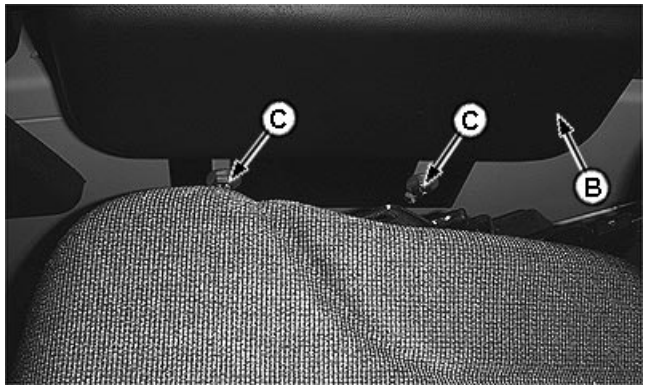
1—Heater Base
2—Heater Assembly
3—Heater Tray
4—Gasket Kit
5—Blower Motor Bulkhead
6—Heater Core
7—Support
8—Wiring Harness (Not Shown) with Grommet
9—Backing Plate
10—Cap Screw (10 used)
11—Blower
12—Cap Screw (2 used)
13—Switch

1. Drain engine coolant. The approximate capacity of engine coolant is 19.4 L (20.5 qt).
2. Remove floor mat and floor access plate.
3. For machines equipped with a toolbox, pull out drawer and remove cap screw holding toolbox in place. Remove toolbox.

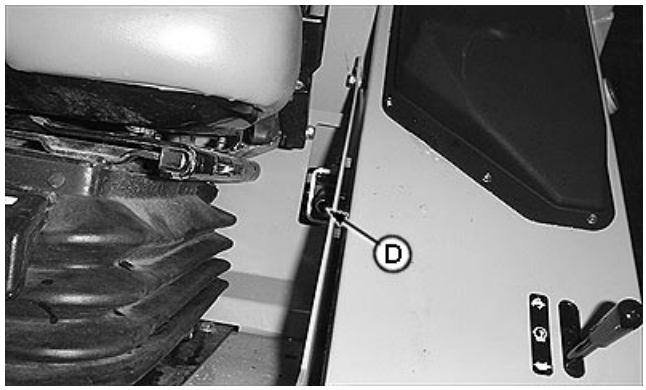
CED,TX03399,5024 –19–16NOV00–2/3

4. Remove four cap screws (A) from around seat box bottom.
5. Remove shoulder cap screws (C) from seat box under armrest (B) on both sides of seat.
6. Remove two cap screws from knee pad (E) on both sides of seat (if equipped).
7. On units equipped with rear screen or cab, tilt back of seat forward.
8. Tilt seat up as far as possible with jack screw (D) located in left rear corner of seat box.
9. Disconnect blower wire connector and heater hoses.
10. Remove heater/blower assembly
11. Remove parts as necessary.
12. Assemble parts and lower seat.
13. Install floor access plate and floor mat.
14. Fill engine coolant. (See Operator's Manual.) The approximate capacity of engine coolant is 19.4 L (20.5 qt).

T116758B –UN–03SEP98



T116757B –UN–21AUG98



T116728B –UN–21AUG98

A—Cap Screws Around Seat Box Bottom (4 used)
B—Armrest
C—Shoulder Cap Screws (2 used)
D—Jack Screw
E—Knee Pad

CED,TX03399,5024 –19–16NOV00–3/3

Section 19
Sheet Metal and Styling

Contents

Page

Group 1910—Hood and Engine Enclosure
Specifications 19-1910-1
Hood
  Remove and Install 19-1910-2
Hood Support and Engine Side Shields
  Remove and Install 19-1910-4

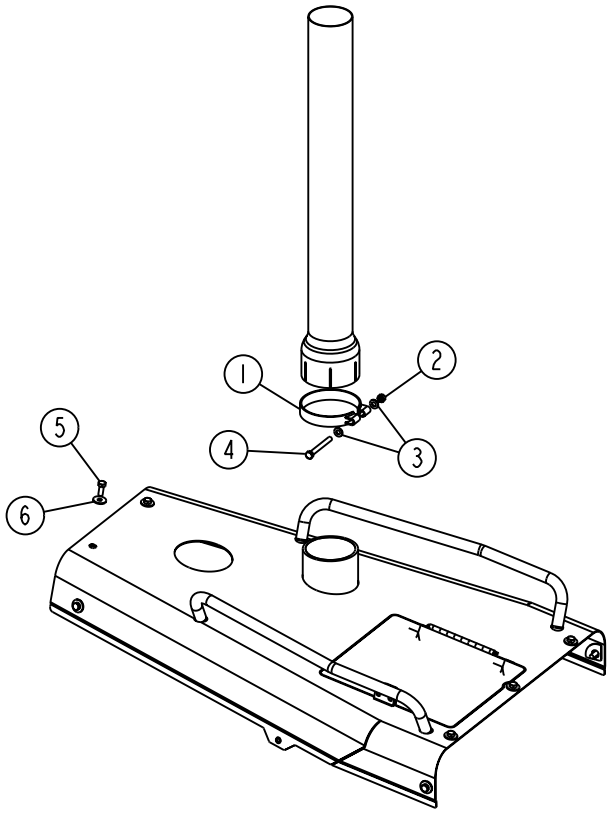
Group 1921—Grille and Grille Housing
Specifications 19-1921-1
Grille and Grille Housing
  Remove 19-1921-1
  Install 19-1921-4

Specifications

Item	Measurement	Specification
Hood		
Hood	Weight	36 kg (80 lb) (Approximate)
Hood Support		
Hood Support	Weight	36 kg (80 lb) (Approximate)

CED,TX03399,6178 –19–11AUG00–1/1

Remove and Install Hood



T130786

T130786 –UN–31MAY00

1—Clamp
2—Nut
3—Washer (2 used)
4—Cap Screw
5—Cap Screw (9 used)
6—Washer (9 used)

1. Remove engine side shields. (See Remove and Install Hood Support and Engine Side Shields in this group.)

CAUTION: The approximate weight of hood is 36 kg (80 lb).

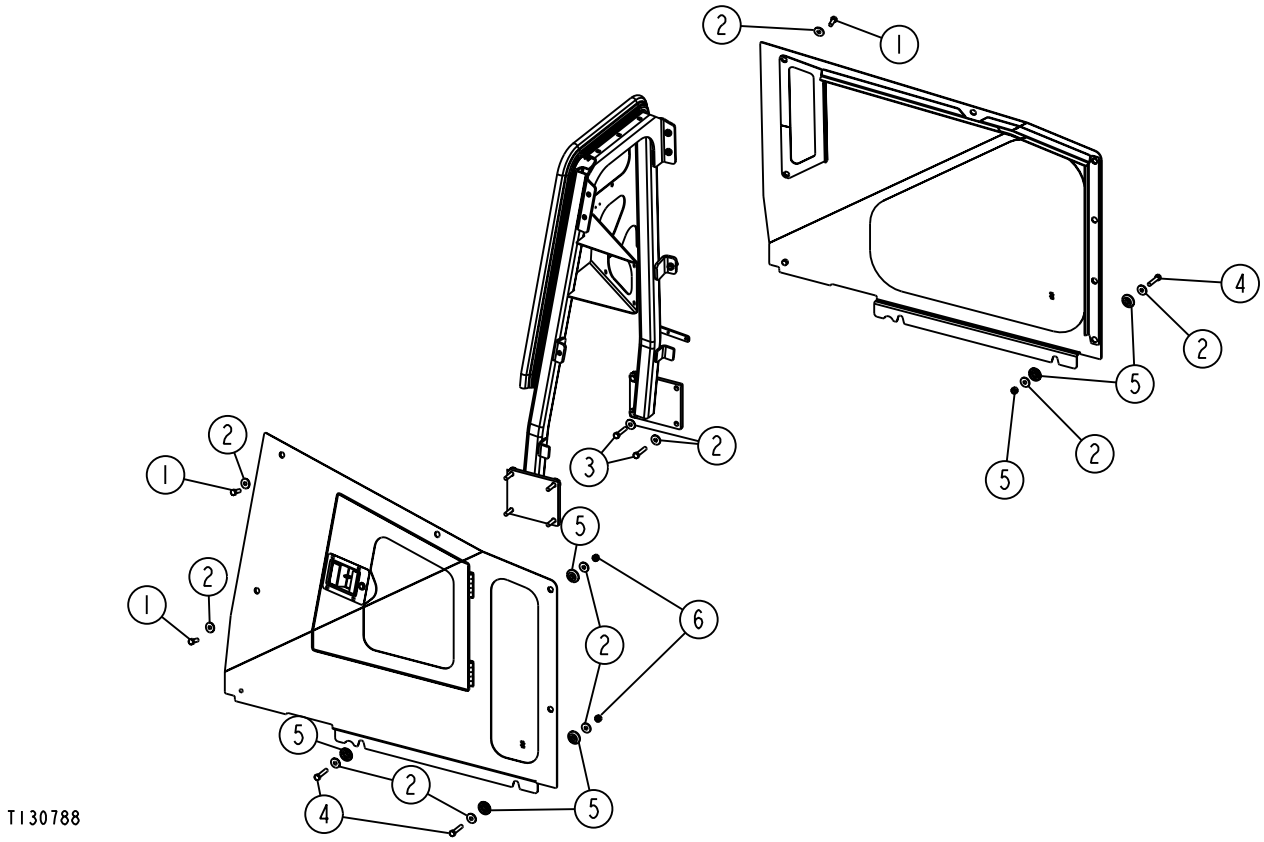
Hood—Specification

Hood—Weight..... 36 kg (80 lb) (Approximate)

2. Install strap and hoist and remove hood.
3. Install hood. Tighten cap screws.
4. Install engine shields. (See Remove and Install Hood Support and Engine Side Shields in this group.)

CED,TX03399,6056 –19–30MAR00–1/1

Remove and Install Hood Support and Engine Side Shields



T130788 –UN–31MAY00

1—Cap Screw (10 used)
2—Washer (22 used)
3—Cap Screw (4 used)
4—Cap Screw (4 used)
5—Guide (8 used)
6—Nut (4 used)

1. Remove side shields and hood.

CAUTION: The approximate weight of hood support is 36 kg (80 lb).

Hood Support—Specification

Hood Support—Weight..... 36 kg (80 lb) (Approximate)

2. Remove hood support.
3. Install hood support, hood and side shields.

CED,TX03399,6057 –19–30MAR00–1/1

Specifications

Item	Measurement	Specification
Grille		
Grille	Weight	43 kg (95 lb)
Grille Housing		
Grille Housing	Weight	70 kg (155 lb) (Approximate)

CED,TX03399,6179 –19–11AUG00–1/1

Remove Grille and Grille Housing

1. Lower all equipment to the ground. Operate hydraulic controls to relieve pressure in the system.
2. Remove side shields and hood. (See Remove and Install Hood Support and Engine Side Shields in this group.)

CED,TX03399,6058 –19–30MAR00–1/5

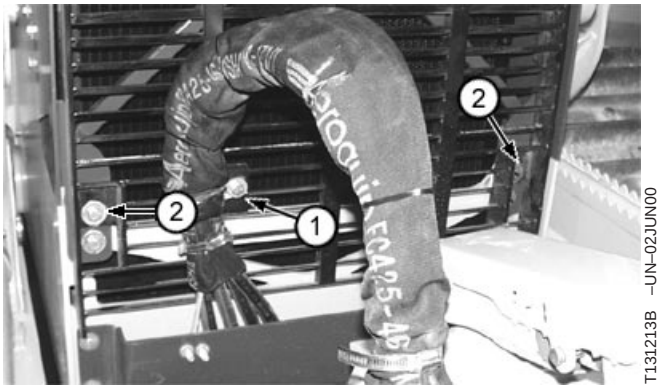
3. Disconnect hose guard.
4. Remove clamp (1).

CAUTION: Caution: The approximate weight of grille is 43 kg (95 lb).

Grille—Specification

Grille—Weight..... 43 kg (95 lb)

5. Connect grille to hoist. Remove lower and upper cap screws (2) and remove grille.



T131213B –UN–02JUN00

1—Hose Clamp
2—Cap Screw (4 used)

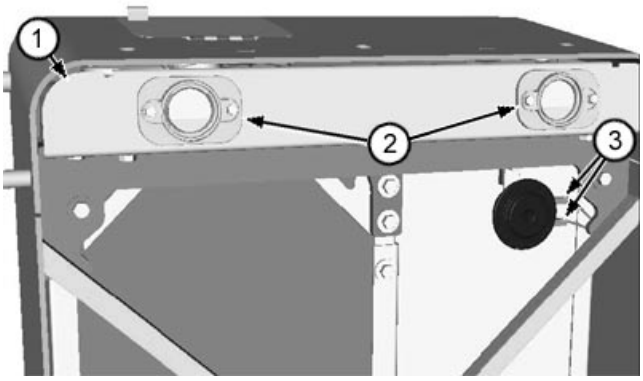
Continued on next page

CED,TX03399,6058 –19–30MAR00–2/5

6. Remove light panel (1).

7. Disconnect light connectors (2) and horn connectors (3).

1—Light Panel
2—Light (2 used)
3—Horn Connector (2 used)



T131214B –UN–24MAY00

CED,TX03399,6058 –19–30MAR00–3/5

19
1921
2

8. Remove cap screws and rubber mounts (1).

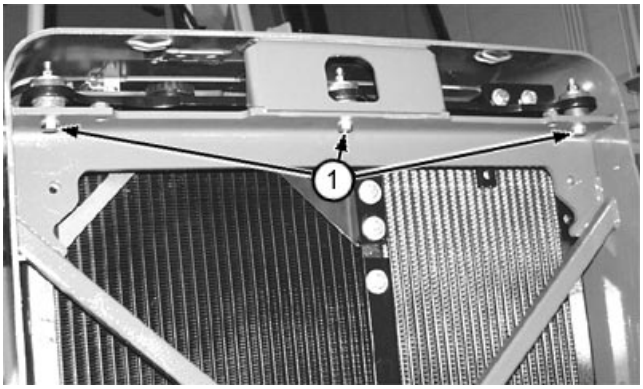
CAUTION: The approximate weight of grille housing is 70 kg (155 lb).

Grille Housing—Specification

Grille Housing—Weight	70 kg (155 lb) (Approximate)

9. Install lifting straps and a hoist.

1—Grille Housing Cap Screws and Rubber Mounts

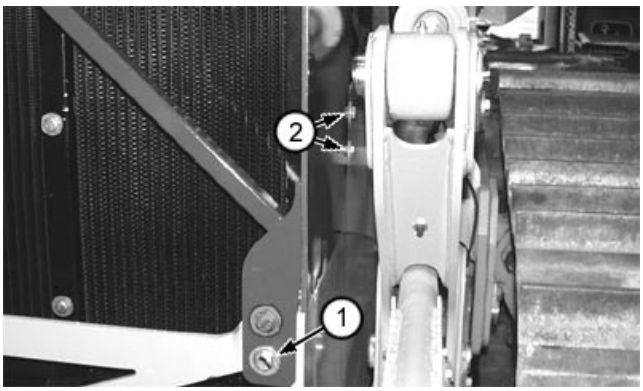


T131215B –UN–24MAY00

CED,TX03399,6058 –19–30MAR00–4/5

10. Remove cap screw (1) and cap screws (2) on both sides. Remove grille housing.

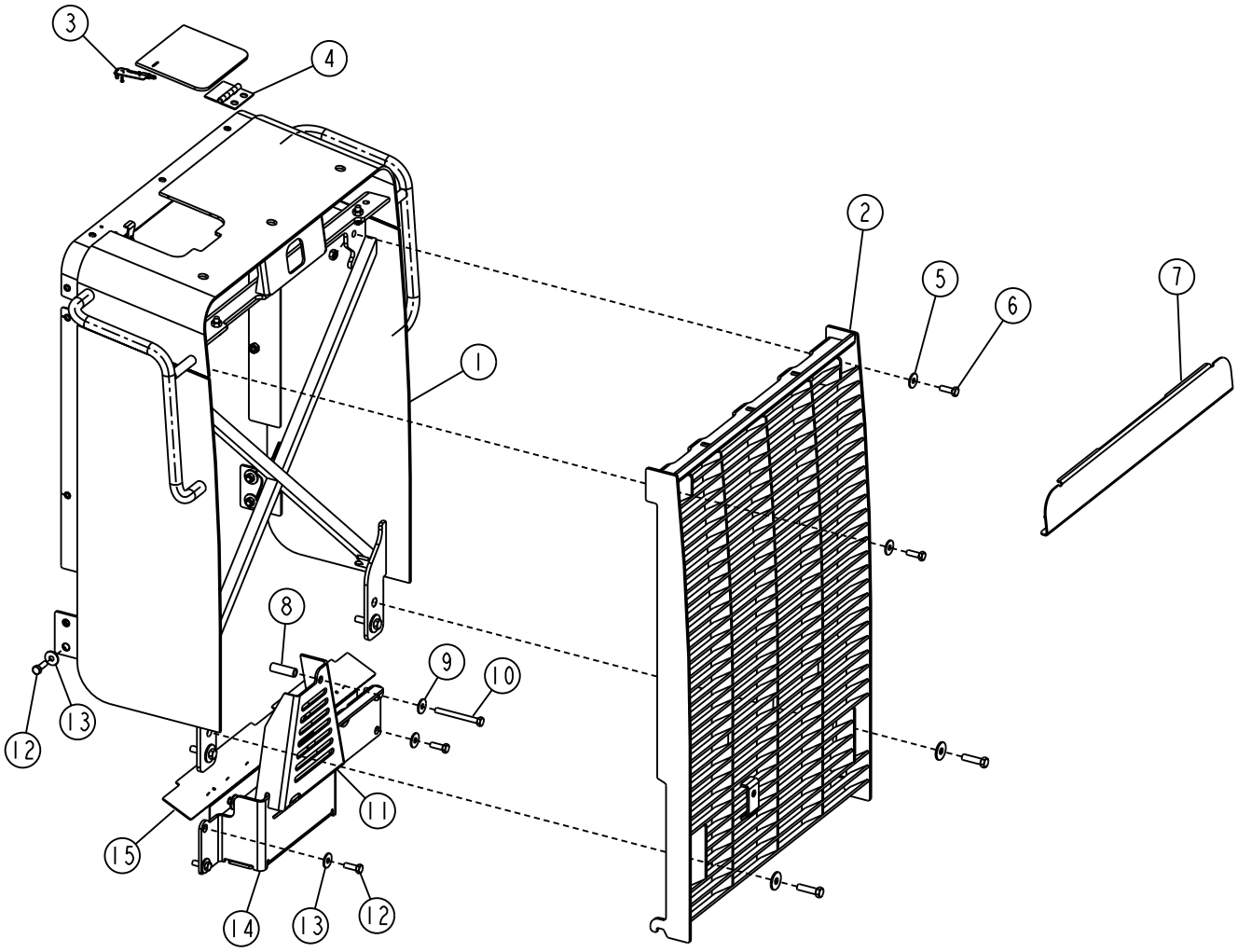
1—Cap Screw (2 used)
2—Cap Screw (4 used)



T131216B –UN–24MAY00

CED,TX03399,6058 –19–30MAR00–5/5

Install Grille and Grille Housing



T130784

T130784 –UN–09JUN00

Grille Housing and Standard Grille

Continued on next page

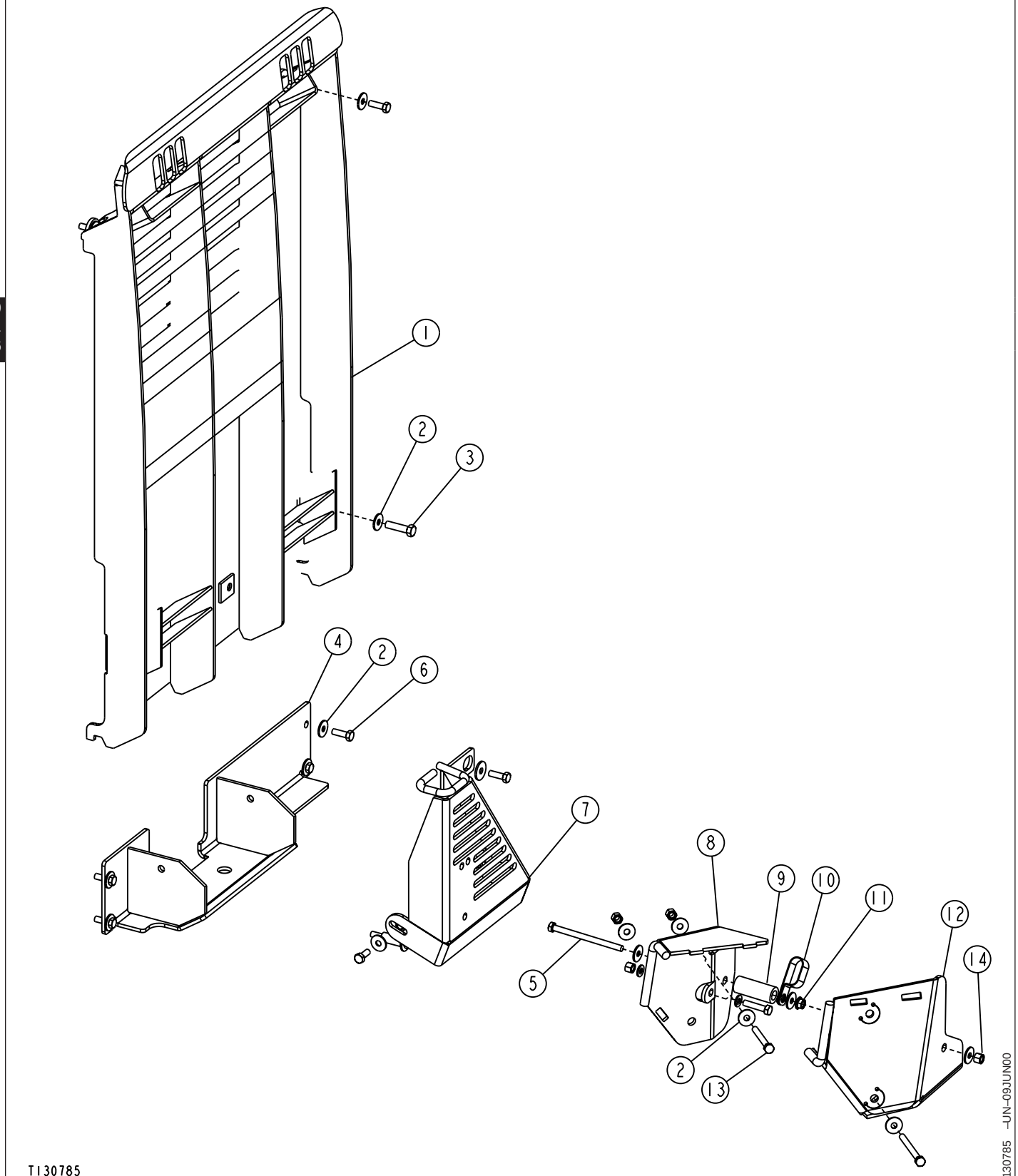
CED,TX03399,6059 –19–30MAR00–1/7

Grille and Grille Housing

1—Grille Housing
2—Standard Grille
3—Spring Pin Latch
4—Hinge
5—Washer (4 used)
6—Cap Screw (4 used)
7—Light Panel
8—Spacer
9—Washer
10—Cap Screw
11—Hose Guard
12—Cap Screw (8 used)
13—Washer (20 used)
14—Hose Guard
15—Cooling Flap

Continued on next page

CED,TX03399,6059 –19–30MAR00–2/7



Heavy Duty Grille and Extreme Duty Hose Guard

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CED,TX03399,6059 –19–30MAR00–3/7

1—Heavy Duty Grille
2—Washer (19 used)
3—Cap Screw (4 used)
4—Hose Guard
5—Cap Screw
6—Cap Screw (14 used)
7—Hose Guard
8—Extreme Duty C-Frame Hose Guard
9—Spacer
10—Hose Clamp
11—Nut
12—Extreme Duty C-Frame Hose Guard
13—Cap Screw (2 used)
14—Nut (5 used)

CAUTION: Caution: The approximate weight of grille housing is 70 kg (155 lb).

Grille Housing—Specification

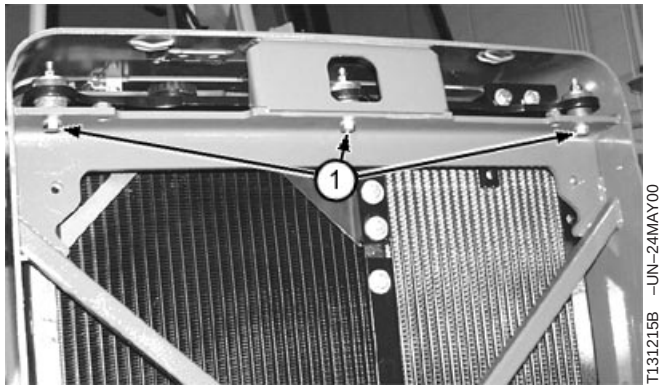
Grille Housing—Weight ..... 70 kg (155 lb) (Approximate)

1. Connect grille housing to hoist using lifting straps around handles.

CED,TX03399,6059 –19–30MAR00–4/7

2. Install grille housing and upper rubber mounts. Tighten cap screws.

1—Grille Housing Cap Screws and Rubber Mounts

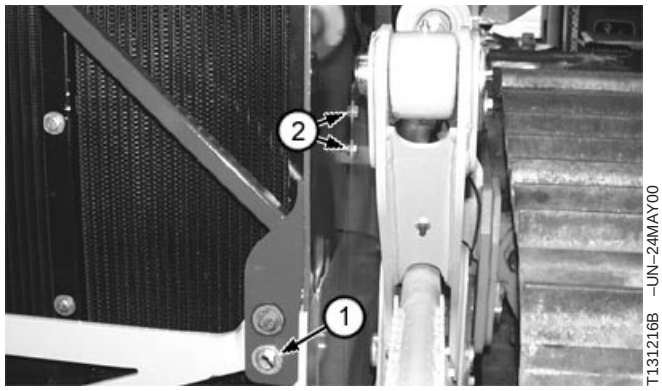


T131215B –UN–24MAY00

CED,TX03399,6059 –19–30MAR00–5/7

3. Install cap screw (1) and cap screws (2) on both sides. Tighten cap screws

1—Cap Screw (2 used)
2—Cap Screw (4 used)



T131216B –UN–24MAY00

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CED,TX03399,6059 –19–30MAR00–6/7

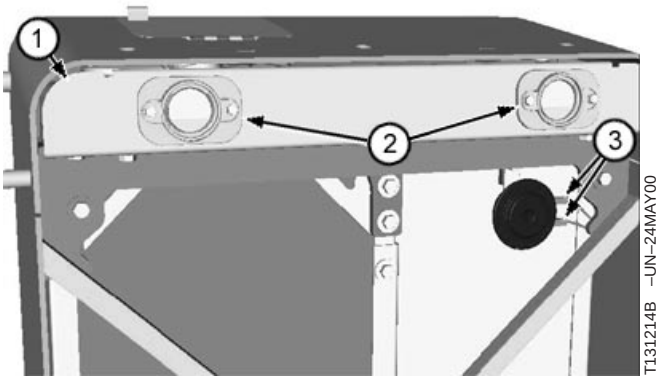
4. Connect horn (3) and light (2) connectors. Install light panel (1).

CAUTION: Caution: The approximate weight of grille is 43 kg (95 lb).

Grille—Specification

Grille—Weight..... 43 kg (95 lb) (Approximate)

5. Install grille and hose guard.



T131214B –UN–24MAY00

1—Light Panel
2—Light (2 used)
3—Horn Connector (2 used)

CED,TX03399,6059 –19–30MAR00–7/7

Section 20
Safety, Convenience and Miscellaneous

Contents

Page

Group 2004—Horn and Warning Devices
Reverse Warning Alarm
Remove and Install 20-2004-1
Adjust Volume 20-2004-1

Remove and Install Reverse Warning Alarm

1. Remove cab corner panel.
2. Disconnect wire leads (1).
3. Remove cap screws and remove alarm.

1—Wire Leads

T130910C –UN–17MAY00

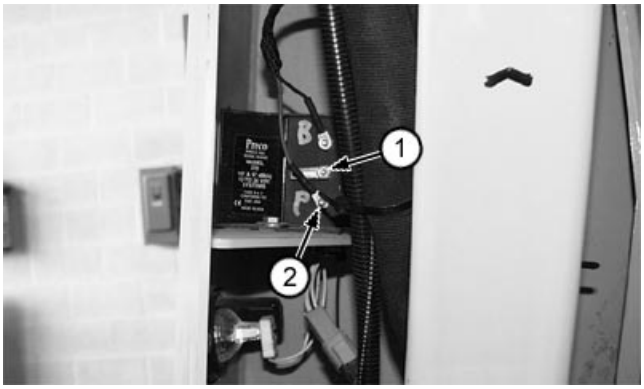
CED,TX03399,6064 –19–30MAR00–1/1

Adjust Reverse Warning Alarm Volume

IMPORTANT: The reverse warning alarm is set on high volume at the factory. It may be necessary to adjust the volume to meet local regulations.

1. 1. To change alarm to low volume, remove nut and disconnect wire from "POS HI" (1) terminal.
2. Attach wire to "POS LOW" (2) terminal. Install nut and tighten.

1—High Position
2—Low Position



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CED,TX03399,6065 –19–30MAR00–1/1

Section 21
Main Hydraulic System

Contents

Page

Group 2160—Hydraulic System
Service Equipment and Tools 21-2160-1
Specifications 21-2160-2
Hydraulic Pump
  Remove and Install 21-2160-3
Disassemble and Assemble Hydraulic
  Pump (With Winch Option) 21-2160-7
Disassemble and Assemble Hydraulic
  Pump (Without Winch Option) 21-2160-13
Hydraulic Reservoir
  Remove and Install 21-2160-15
Hydraulic and Hydrostatic Reservoir
  Cleanout Cover Remove and Install (S.N. 925918—
). 21-2160-18
Disassemble and Assemble Hydraulic
  Reservoir 21-2160-22
Hydraulic Filter
  Remove and Install 21-2160-23
  Disassemble and Assemble. 21-2160-24

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

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CED,TX03399,6181 –19–11AUG00–1/2

Hydraulic Pump Removal and Installation
Tool . . . . . DFT1132[1]

Remove and install hydraulic pump.

[1]Dealer Fabricated Tool. See Section 99 for instructions to make tool.

CED,TX03399,6181 –19–11AUG00–2/2

Specifications

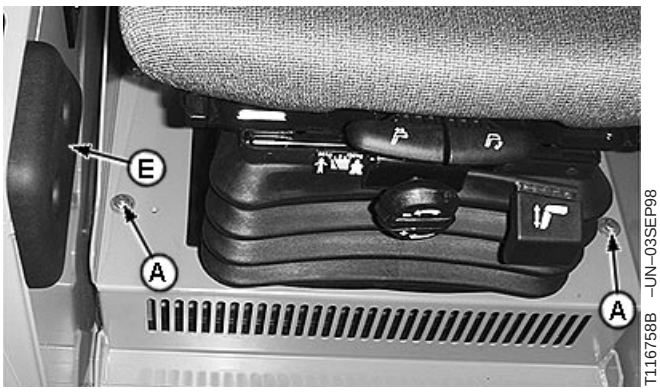
Item	Measurement	Specification
Hydraulic Pump		
Hydraulic Pump	Weight	36 kg (79 lb) (Approximate)
Hydraulic Pump Mounting Cap Screws	Torque	113 N•m (83 lb-ft)
Hydraulic Pump Housing Studs and Cap Screws (With Winch Option)	Torque	399 N•m (294 lb-ft)
Hydraulic Pump Housing Cap Screws (Without Winch Option)	Torque	399 N•m (294 lb-ft)
Hydraulic Reservoir		
Hydraulic Reservoir	Weight	132 kg (290 lb) (Approximate)
Hydraulic Reservoir-to-Main Frame Cap Screws	Torque	285 N•m (210 lb-ft)
Hydraulic Filter Nuts-to-Studs on Hydraulic Reservoir	Torque	31 N•m (23 lb-ft)
Clean Out Cover Nuts	Torque	27—35 N•m (20—25 lb-ft)
Hydraulic Filter		
Filter Mounting Bracket-to-Tank Stud Nuts	Torque	31 N•m (23 lb-ft)
Bracket-to Filter Base Cap Screws	Torque	50 N•m (37 lb-ft)
Fittings-to-Filter Head	Torque	71 N•m (52 lb-ft)
Plug-to-Filter Head	Torque	23 N•m (17 lb-ft)

CED,TX03399,6183 –19–11AUG00–1/1

Remove and Install Hydraulic Pump

1. Lower all equipment to ground.
2. Stop engine and operate all hydraulic controls to release pressure in the hydraulic system.
3. Turn battery disconnect switch to OFF.
4. Drain hydraulic reservoir.The approximate capacity of hydraulic reservoir is 51 L (13.5 gal).
5. If equipped with heater, drain engine coolant. The approximate capacity of engine cooling system is 19.4 L (20 qt).
6. Remove floor mat and floor access plate.
7. For machines with toolbox, pull out drawer and remove cap screw holding toolbox in place. Remove toolbox from machine.
8. Remove four cap screws (A) from around seat box bottom.
9. Remove shoulder cap screws (C) from seat box under armrest (B) on both sides of seat.
10. Remove two cap screws from knee pad (E) on both sides of seat.
11. Tilt seat up as far as possible with jack screw (D) located in left rear corner of seat box.

A—Cap Screws Around Seat Box Bottom (4 used)
B—Armrest
C—Shoulder Cap Screws (2 used)
D—Jack Screw
E—Knee Pad



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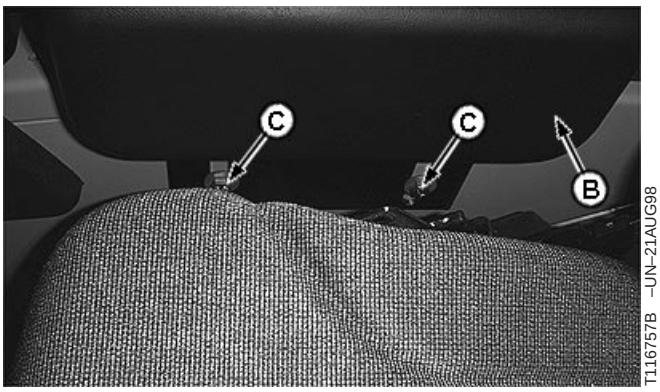

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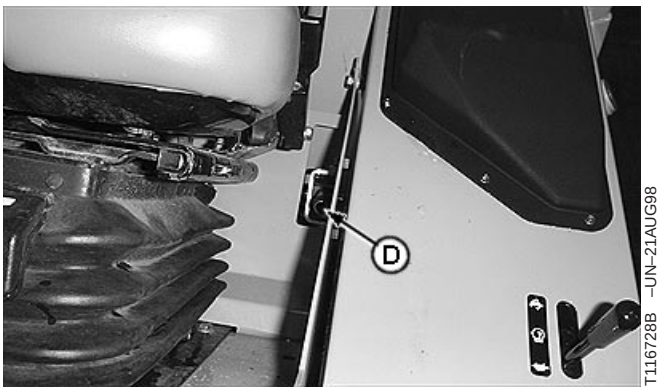

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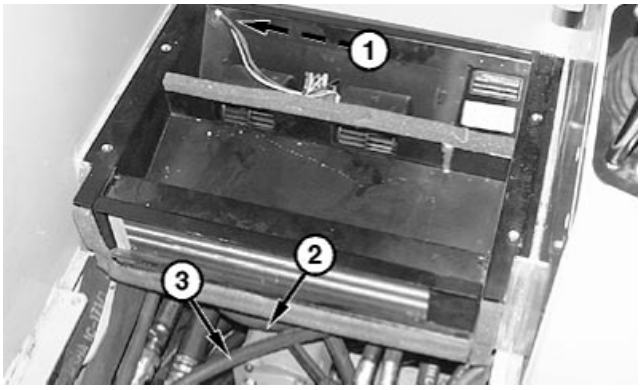
CED,TX03399,6066 –19–16NOV00–1/4

12. Disconnect blower harness connector (1) and heater hoses (2) and (3).

13. Remove heater assembly—if equipped.

1—Blower Harness Connector
2—Heater Hose
3—Heater Hose



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CED,TX03399,6066 –19–16NOV00–2/4

14. Cut tie band from hydraulic lines, if necessary for access.

15. Disconnect lines (1 and 2). Close all openings using caps and plugs.

16. Install lifting strap around pump.

    Connect strap to the end of DFT1132 Removal and Installation Tool. (See DFT1132 Hydrostatic Motor and Hydraulic Pump Removal and Installation Tool in Section 99 for instruction to make tool.)

CAUTION: The approximate weight of the hydraulic pump with drive thru approximately 36 kg (79 lb).

Hydraulic Pump—Specification

Hydraulic Pump—Weight	36 kg (79 lb) (Approximate)

17. Remove four mounting cap screws (3) and carefully remove hydraulic pump from left side of machine.

18. Install hydraulic pump and tighten mounting cap screws to specifications.

Hydraulic Pump—Specification

Hydraulic Pump Mounting Cap Screws—Torque	140 N•m (103 lb-ft)

19. Connect inlet and outlet lines to hydraulic pump.

20. Return any lines moved for access to original position, and install tie bands.

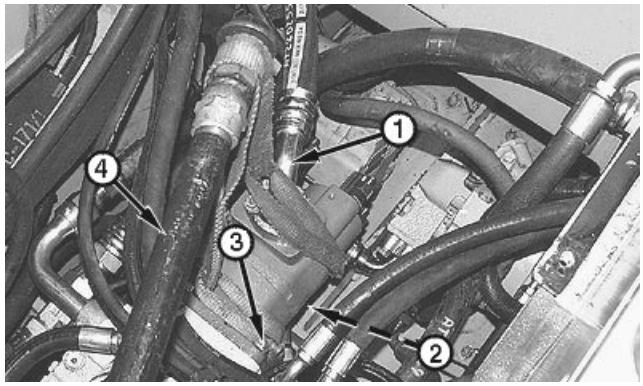
21. Install heater and connect heater hoses, if equipped.

22. Lower seat and secure floor plate.

23. Install tool box (if equipped), knee pads and armrests.

24. Install floor access plate and mat.

25. Fill hydraulic reservoir. The approximate capacity of hydraulic reservoir is 51 L (13.5 gal). (See Operator's Manual.)



T119661B –UN–19JAN99

1—Input Line (Hydraulic Pump-to-Reservoir)
2—Line (Hydraulic Pump-to-Hydraulic Control Valve Inlet)
3—Cap Screws (4 used)
4—DFT1132 Tool

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2160
5

Continued on next page

CED,TX03399,6066 –19–16NOV00–3/4

26. Fill radiator with coolant. The approximate capacity of engine cooling system is 19.4 L (20 qt). (See Operator's Manual.)

27. Turn battery disconnect switch to ON.

28. Operate machine and check for leaks.

CED,TX03399,6066 –19–16NOV00–4/4

Disassemble and Assemble Hydraulic Pump (With Winch Option)

IMPORTANT: When replacing pump seal kits, machines (S.N —894371) will be converted to seal arrangement as shown in machines (S.N. 894372—).

NOTE: Machines (S.N. 894372—) entire pump assembly must be replaced to switch from a pump without winch PTO shaft to a pump with winch PTO shaft.

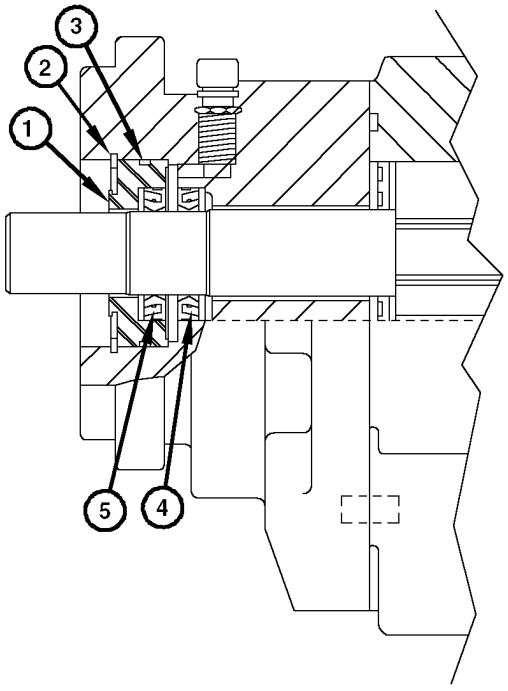
NOTE: For replacement of input shaft seals (4 and 5) do steps 1—6 only.

1. Remove retainer ring (2) and seal retainer (1).
2. Remove seals (4 and 5).
3. Install seal (4) flush with face of recess in housing with lip toward gear.
4. Install seal (5) flush with counterbore in retainer (1) with lip away from counterbore.
5. Install O-ring (3) on seal retainer (1). Apply petroleum jelly to lip of seals and O-ring.

IMPORTANT: For seal kit replacements, seal retainer must be installed with counterbore facing away from pump housing.

6. Install seal retainer and retainer ring (2).

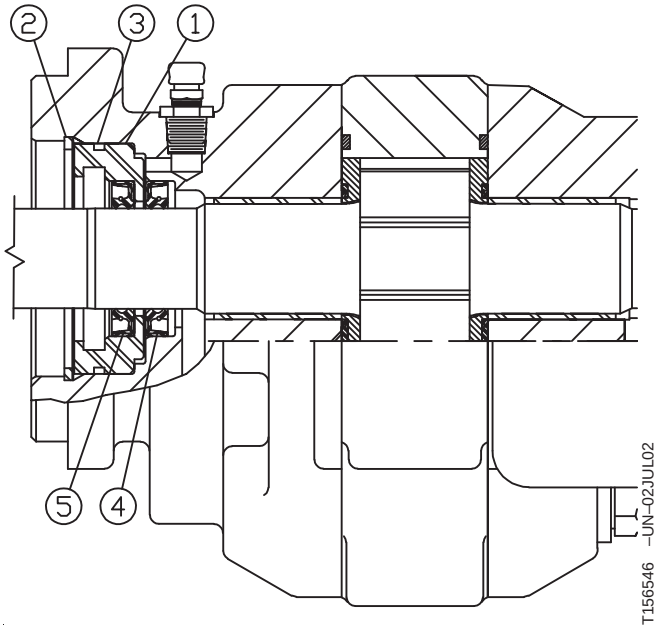
1—Seal Retainer
2—Retainer Ring
3—O-Ring
4—Seal
5—Seal



T119609 –UN–19JAN99

T119609

Pump Seal Assembly (S.N. —894371)



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Pump Seal Assembly (S.N. 894372—)

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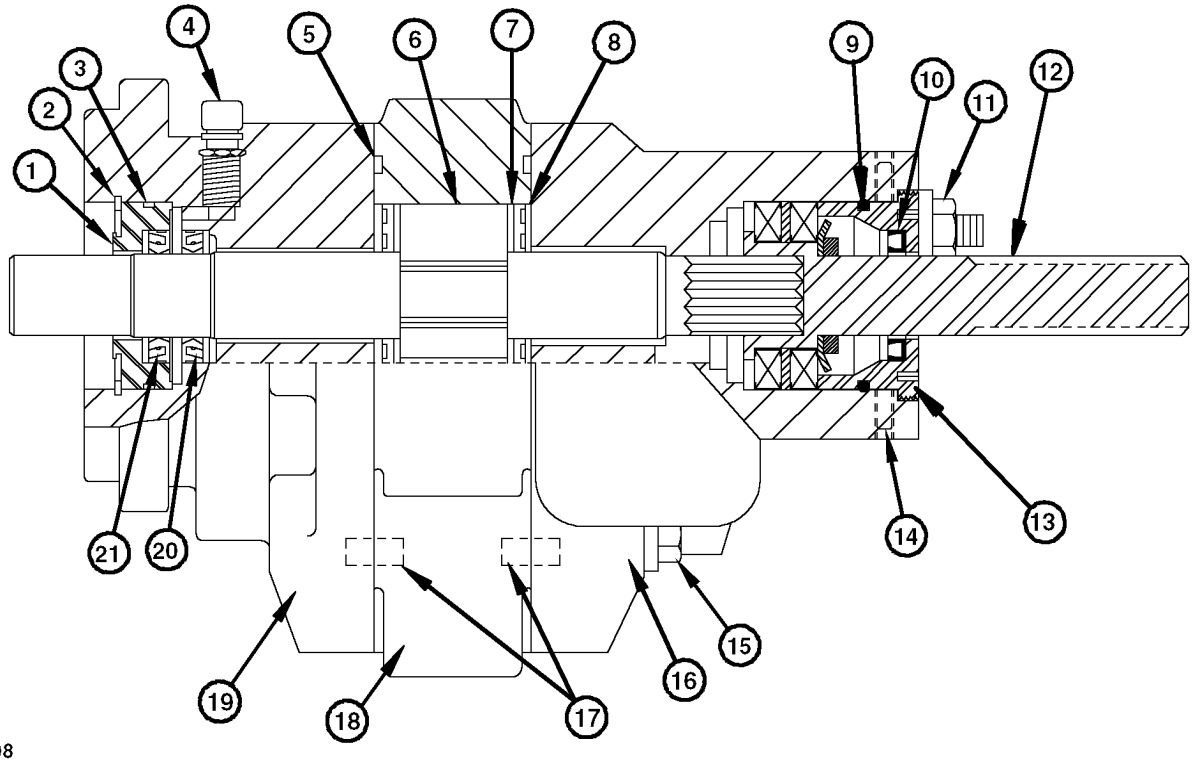
TX,3260,SS2327 –19–22JUL02–1/7



T119608

T119608 –UN–19JAN99

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Thru Drive Pump (S.N. —894371)

1—Seal Retainer
2—Retainer Ring
3—O-Ring
4—Vent
5—Square Seal (2 used)
6—Gear Shaft Set
7—Thrust Plate (2 used)
8—Channel Seal (2 used)
9—O-Ring
10—Seal
11—Nut (6 used)
12—Stub Shaft Assembly
13—Threaded Seal Retainer
14—Set Screw (2 used)
15—Cap Screw
16—Stub Shaft Housing
17—Alignment Pin (4 used)
18—Gear Housing
19—Front Housing
20—Seal
21—Seal

7.

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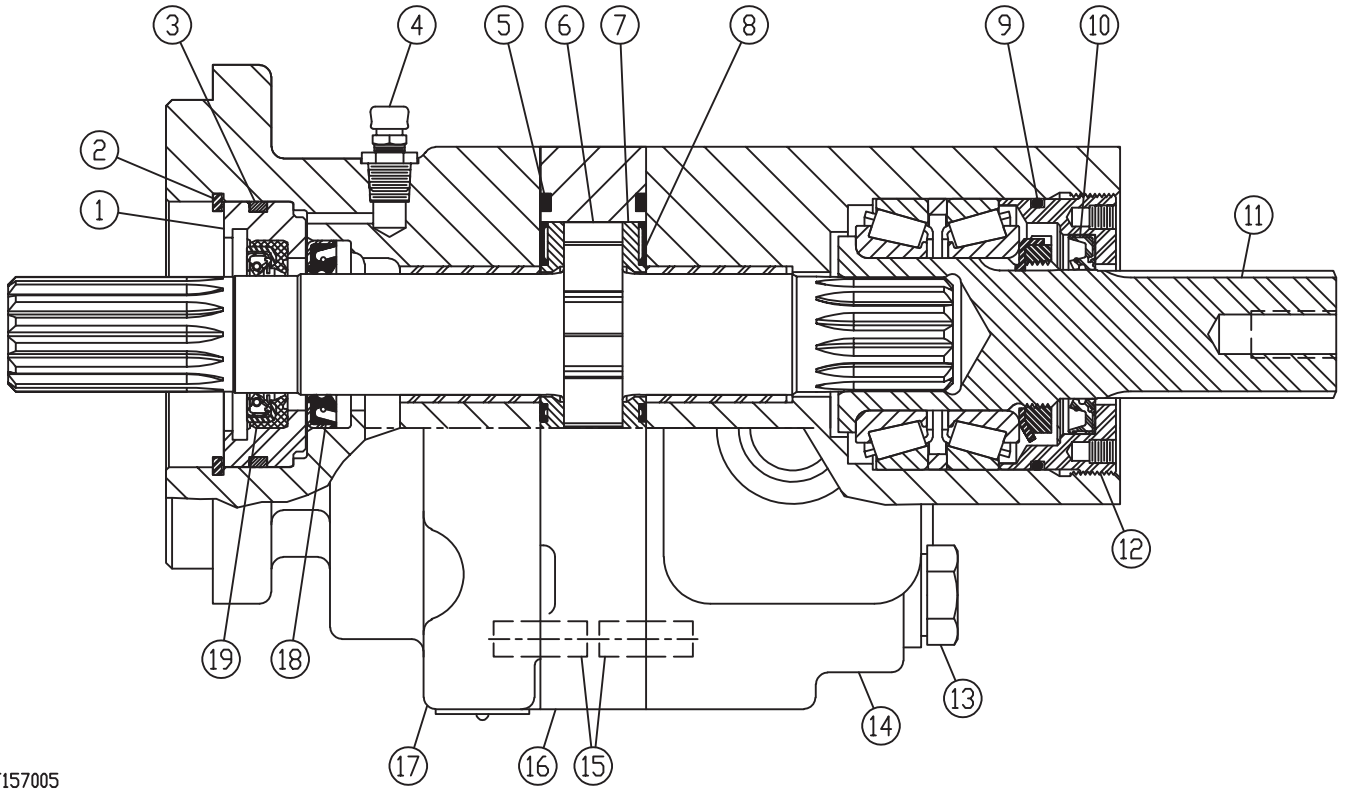
TX,3260,SS2327 –19–22JUL02–2/7



T157005 –UN–09JUL02

Thru Drive Pump (S.N. 894372—)

1—Seal Retainer
2—Retainer Ring
3—O-Ring
4—Vent
5—Square Seal (2 used)
6—Gear Shaft Set
7—Thrust Plate (2 used)
8—Channel Seal (2 used)
9—O-Ring
10—Seal
11—Stub Shaft Assembly
12—Threaded Seal Retainer
13—Cap Screw
14—Stub Shaft Housing
15—Alignment Pin (4 used)
16—Gear Housing
17—Front Housing
18—Seal
19—Seal

Put a mark across housings (16, 18 and 19 **(S.N. — 894371)**) or (14, 16 and 17 **(S.N. 894372—)**) to aid in assembly.

IMPORTANT: The assembly of gear shaft set, thrust plates, and channel seals is critical. For correct assembly, identify location of parts.

8. Remove cap screws, nuts and washers and separate housings. Remove gear shaft set (6) and thrust plates (7).

NOTE: Gear shaft set, and pump housings are not serviceable. If any of these parts are worn or damaged, replace pump.

Continued on next page

TX,3260,SS2327 –19–22JUL02–3/7

9. Remove set screws (1) from stub shaft housing.

10. Remove stub shaft retainer (3) from stub shaft housing (4).

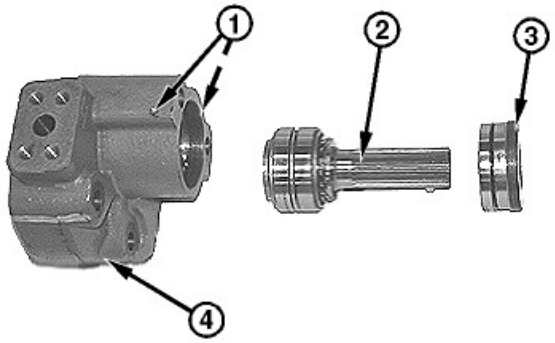
11. Remove stub shaft assembly (2) from stub shaft housing using a spanner wrench.

NOTE: Stub shaft assembly is not serviceable. If worn or damaged, replace.

12. Inspect parts for wear or damage. Replace parts as necessary.

13. Replace seal (5) and O-ring (6) on stub shaft retainer.

1—Set Screws (2 used)
2—Stub Shaft Assembly
3—Stub Shaft Retainer
4—Stub Shaft Housing
5—Seal
6—O-Ring



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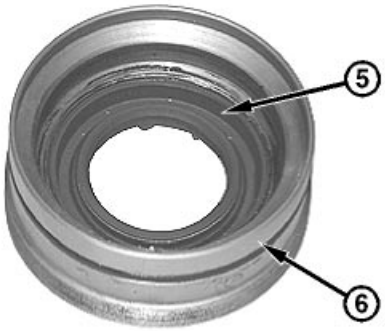

T119315B –UN–07JAN99

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TX,3260,SS2327 –19–22JUL02–4/7

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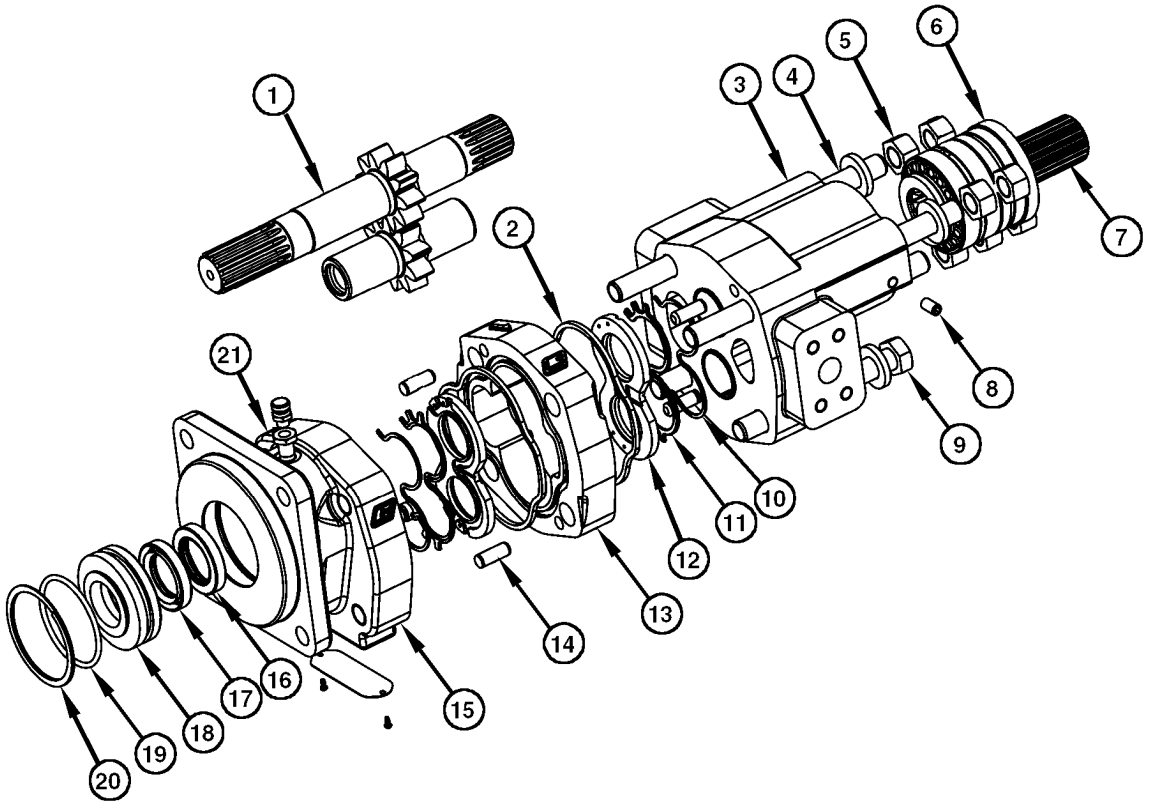

T119603

T119603 –UN–18JAN99

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2160
11

Thru Drive Hydraulic Pump (S.N. —894371)

1—Matched Gear Set	**6—Stub Shaft Retainer**	**11—Channel Seal (2 used)**	**16—Seal**
2—Gasket Seal (2 used)	**7—Stub Shaft Assembly**	**12—Thrust Plate (2 used)**	**17—Seal**
3—Stub Shaft Housing	**8—Set Screw (2 used)**	**13—Center Gear Housing**	**18—Seal Retainer**
4—Stud (3 used)	**9—Cap Screw**	**14—Alignment Pin (4 used)**	**19—O-Ring**
5—Nut (6 used)	**10—Backing Seal (2 used)**	**15—Lower Gear Housing**	**20—Retainer Ring**

14.

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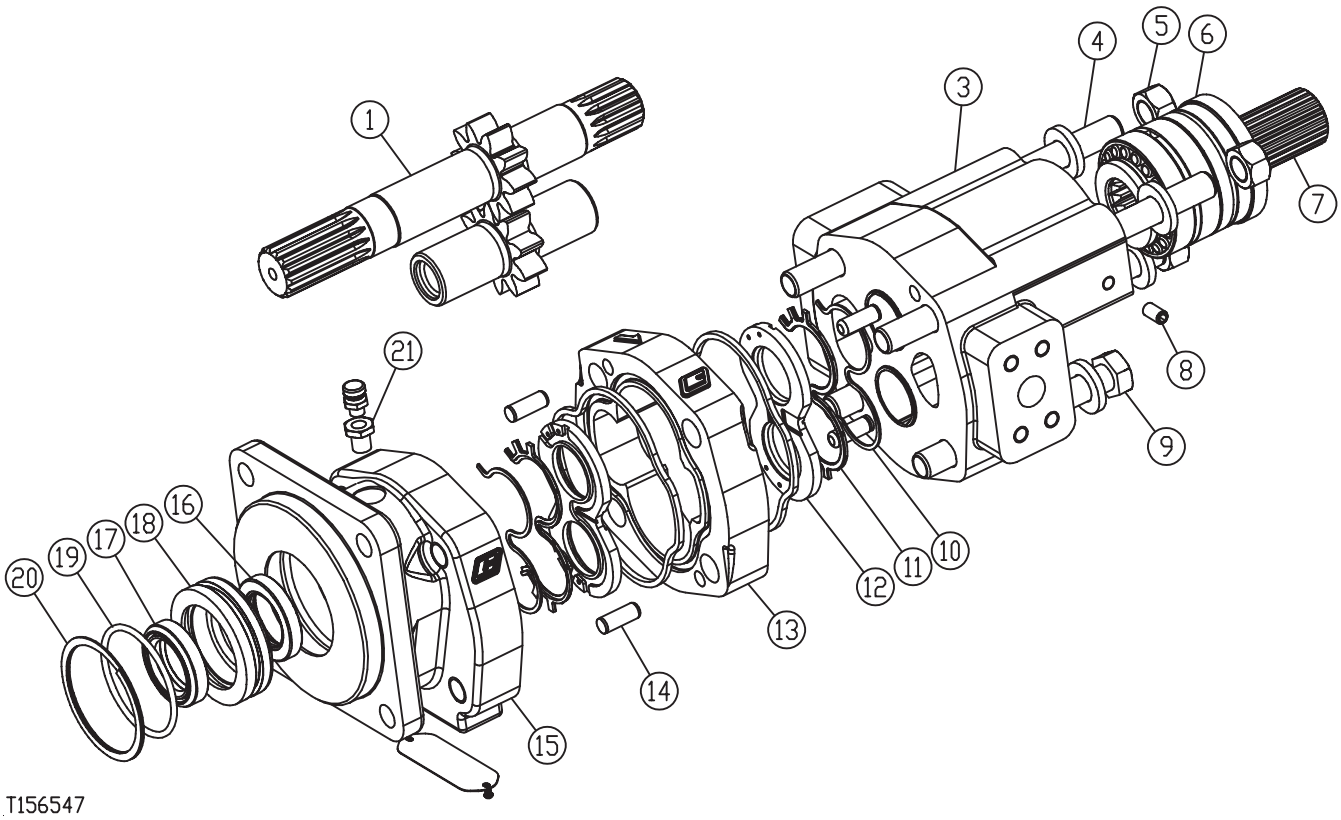
TX,3260,SS2327 –19–22JUL02–5/7



Thru Drive Hydraulic Pump (S.N. 894372—)

1—Matched Gear Set
2—Gasket Seal (2 used)
3—Stub Shaft Housing
4—Stud (3 used)
5—Nut (6 used)
6—Stub Shaft Retainer
7—Stub Shaft Assembly
8—Set Screw (2 used)
9—Cap Screw
10—Backing Seal (2 used)
11—Channel Seal (2 used)
12—Thrust Plate (2 used)
13—Center Gear Housing
14—Alignment Pin (4 used)
15—Lower Gear Housing
16—Seal
17—Seal
18—Seal Retainer
19—O-Ring
20—Retainer Ring

Apply clean hydraulic oil on all internal parts.

15. Install stub shaft assembly (7) in housing (3), seating the bearing in the bottom of housing.

16. Install stub shaft retainer (6) in housing and tighten so there is zero end play on stub shaft assembly.

17. Install and tighten set screws (8).

18. Install matched gear set (1) in center housing (13).

19. Install channel seals (11) in thrust plates (12). Install backing seals (10) into step of channel seals.

20. Install thrust plate/seal assemblies on the matched gear set with the seals facing away from the gear and sealing toward the pressure side of the pump as shown.

21. Assemble center gear housing (13), and lower gear housing (15).

22. Assemble stub shaft housing (3) to center and lower gear housings.

23. Install studs with nuts and cap screws and tighten to specification.

Continued on next page

TX,3260,SS2327 –19–22JUL02–6/7

Hydraulic Pump—Specification	
Hydraulic Pump Housing Studs and Cap Screws (With Winch Option)—Torque	399 N•m 294 lb-ft

TX,3260,SS2327 –19–22JUL02–7/7

Disassemble and Assemble Hydraulic Pump (Without Winch Option)

IMPORTANT: When replacing pump seal kits, machines (S.N —893323) will be converted to seal arrangement as shown in machines (S.N. 893324—).

NOTE: Machines (S.N. 893323—) entire pump assembly must be replaced to switch from a pump without winch PTO shaft to a pump with winch PTO shaft.

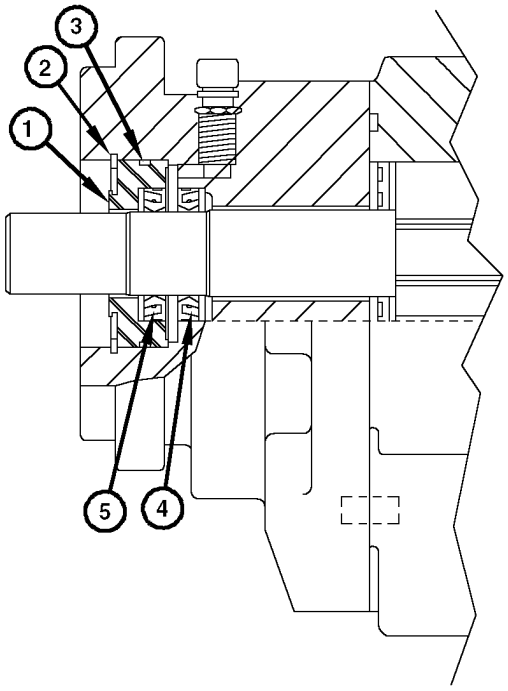
NOTE: For replacement of input shaft seals (4 and 5) do steps 1—6 only.

1. Remove retainer ring (2) and seal retainer (1).
2. Remove seals (4 and 5).
3. Install seal (4) flush with face of recess in housing with lip toward gear.
4. Install seal (5) flush with counterbore in retainer (1) with lip away from counterbore.
5. Install O-ring (3) on seal retainer (1). Apply petroleum jelly to lip of seals and O-ring.

IMPORTANT: For seal kit replacements, seal retainer must be installed with counterbore facing away from pump housing.

6. Install seal retainer and retainer ring (2).

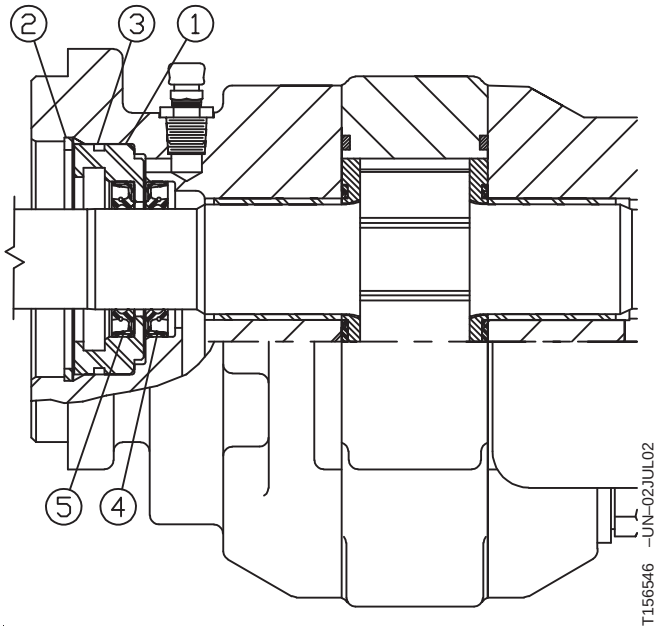
1—Seal Retainer
2—Retainer Ring
3—O-Ring
4—Seal
5—Seal



T119609 –UN–19JAN99

T119609

Pump Seal Assembly (S.N. —893323)



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Pump Seal Assembly (S.N. 893324—)

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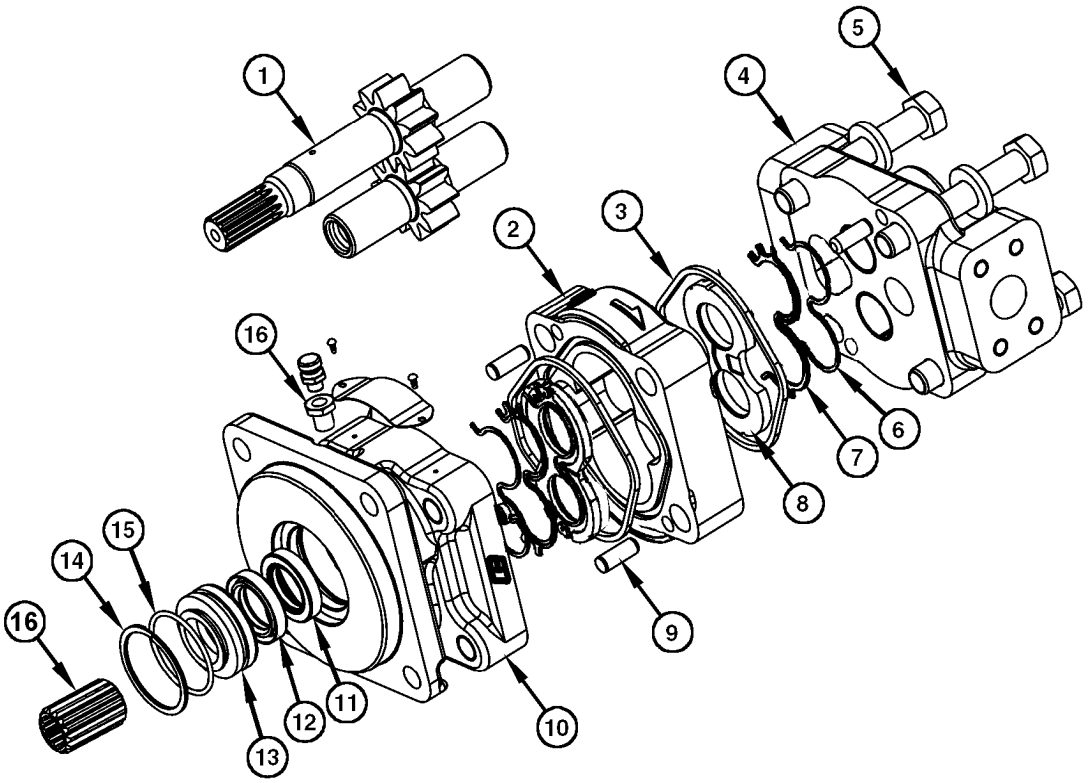

T132767

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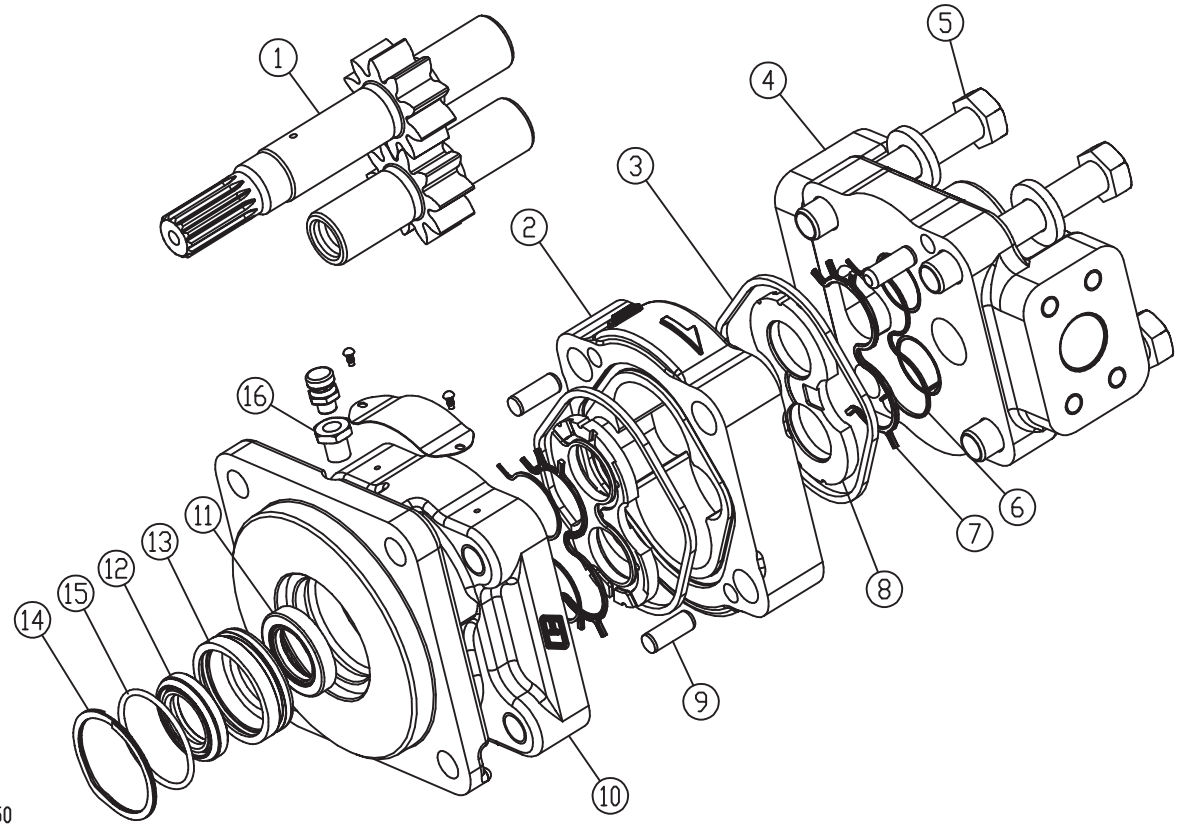
Standard Hydraulic Pump (S.N. —893323)



T156550

T156550 –UN–02JUL02

Standard Hydraulic Pump (S.N. 893324—)

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TX03399,00018DB –19–17MAR04–2/3

1—Matched Gear Set
2—Center Gear Housing
3—Gasket Seal (2 used)
4—Upper Gear Housing
5—Cap Screw (4 used)
6—Backing Seal (2 used)
7—Channel Seal (2 used)
8—Thrust Plate (2 used)
9—Alignment Pin (4 used)
10—Lower Gear Housing
11—Seal
12—Seal
13—Seal Retainer
14—O-ring
15—Retainer Ring
16—Coupler

7. Put a mark across housings (2, 4, and 10) to aid in assembly.

IMPORTANT: The assembly of gear shaft set, thrust plates, and channel seals is critical. For correct assembly, identify location of parts.

8. Remove cap screws, and washers and separate housings.

9. Remove matched gear set (1) and thrust plates with seals (6—8).

NOTE: Pump parts (1, 2, 4, 8 and 10) are not serviceable. If any of these parts are worn or damaged, replace pump.

10. Inspect parts for wear or damage. Replace parts as necessary.

11. Apply clean hydraulic oil on all internal parts.

12. Install matched gear set (1) in center housing.

13. Install channel seals (7) in thrust plates (8). Install backing seals (6) into step of channel seals.

14. Install thrust plate/seal assemblies on the matched gear set with the seals facing away from the gear and sealing toward the pressure side of the pump as shown.

15. Assemble center gear housing (2), and lower gear housing (10).

16. Install upper gear housing and cap screws. Tighten to specification.

Hydraulic Pump—Specification

Hydraulic Pump Housing Cap Screws (Without Winch Option)—Torque	399 N•m 294 lb-ft

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2160
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TX03399,00018DB –19–17MAR04–3/3

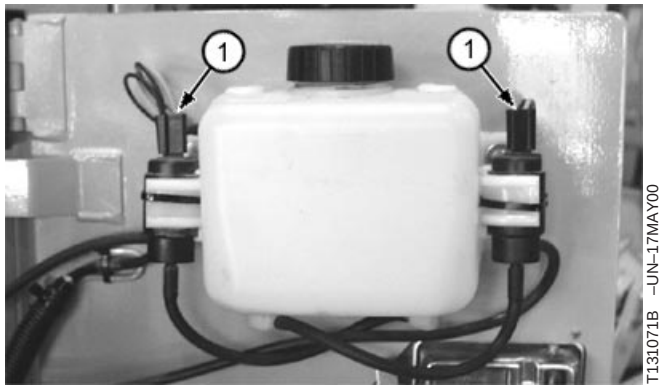
Remove and Install Hydraulic Reservoir

1. Remove cab or ROPS. (See Remove Cab or ROPS in Group 1800.)

2. Drain reservoir. The approximate capacity of hydraulic reservoir is 51 L (13.5 gal).

3. Disconnect windshield washer pump wire connectors (1).

1—Windshield Washer Pump Wire Connectors



T131071B –UN–17MAY00

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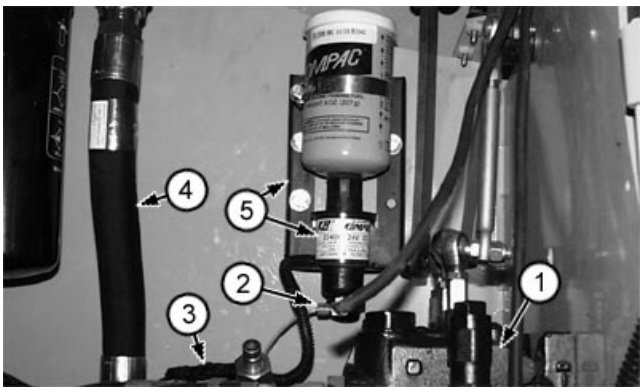
CED,TX03399,6067 –19–17NOV00–1/8

4. Disconnect (2 and 3). Remove solenoid and bracket (5).
5. Disconnect linkage at control valve.
6. Remove control valve (1) with hoses attached.
7. Remove hydraulic filter hose (4). Close all openings using caps and plugs.

1—Control Valve
2—Start Aid Tube
3—Start Aid Wire Connector
4—Hydraulic Filter Hose
5—Solenoid and Bracket



T131074B –UN–17MAY00

CED,TX03399,6067 –19–17NOV00–2/8

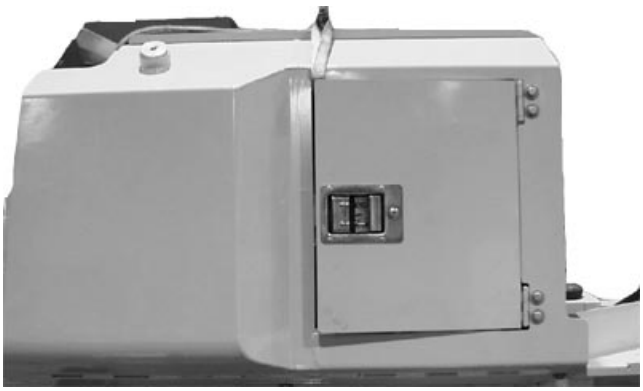
8. Disconnect wire lead (1) and remove filter and base (2).
9. Remove primary fuel filter (water separator) (3) with hoses attached and set in frame area.
10. Remove right side step.
11. Remove control valve levers and linkage and bellcrank if necessary.

1—Hydraulic Filter Restriction Indicator Lead
2—Hydraulic Filter and Base
3—Primary Fuel filter and Water Separator

T131075B –UN–17MAY00

CED,TX03399,6067 –19–17NOV00–3/8

12. Attach lifting strap and hoist.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CED,TX03399,6067 –19–17NOV00–4/8

CAUTION: The approximate weight of hydraulic reservoir is 132 kg (290 lb).

Hydraulic Reservoir—Specification

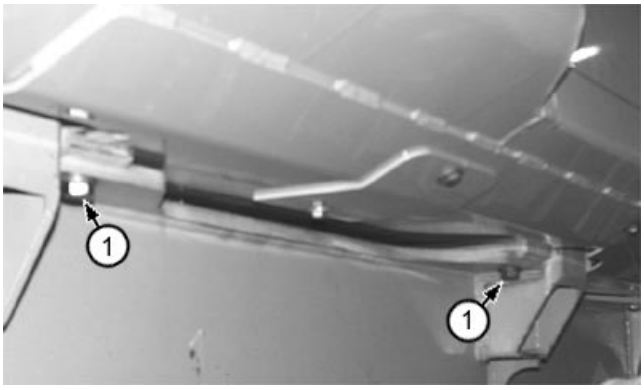
Hydraulic Reservoir—Weight ..... 132 kg (290 lb) (Approximate)

13. Remove cap screws (1) and remove reservoir.
14. Remove control valve with hoses attached from tank as tank is lifted from frame.
15. Install reservoir tank.
16. Place control valve with hoses attached in tank as reservoir is lowered. Tighten cap screws (1).

Hydraulic Reservoir—Specification

Hydraulic Reservoir-to-Main
Frame Cap Screws—Torque..... 285 N•m (210 lb-ft)

17. Install right side step.



T131087B –UN–23MAY00

1—Cap Screws (4 used)

21
2160
17

CED,TX03399,6067 –19–17NOV00–5/8

18. Install filter and base (2) and connect hydraulic filter restriction indicator lead (1).

Hydraulic Reservoir—Specification

Hydraulic Filter Nuts-to-Studs on
Hydraulic Reservoir—Torque ..... 31 N•m (23 lb-ft)

19. Install primary fuel filter and water separator (3).
20. Install control valve using four cap screws.

1—Hydraulic Filter Restriction Indicator Lead
2—Hydraulic Filter and Base
3—Primary Fuel filter and Water Separator

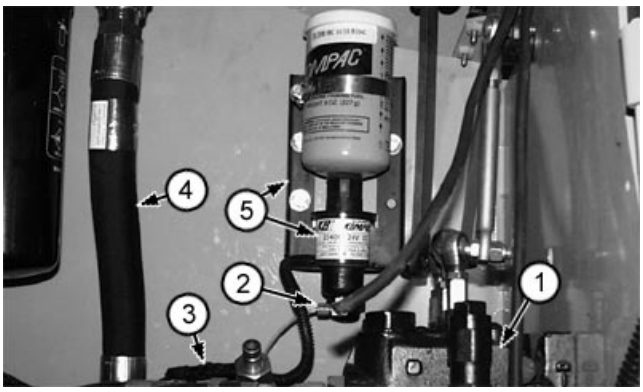
T131075B –UN–17MAY00

Continued on next page

CED,TX03399,6067 –19–17NOV00–6/8

21. Install control valve, linkage and bellcrank, if removed.
22. Install hydraulic filter hose (4).
23. Install tube (2), bracket and solenoid (5). Tighten cap screws.
24. Connect start aid wire connector (3), start aid tube (2).

1—Control Valve
2—Start Aid Tube
3—Start Aid Wire Connector
4—Hydraulic Filter Hose
5—Solenoid and Bracket

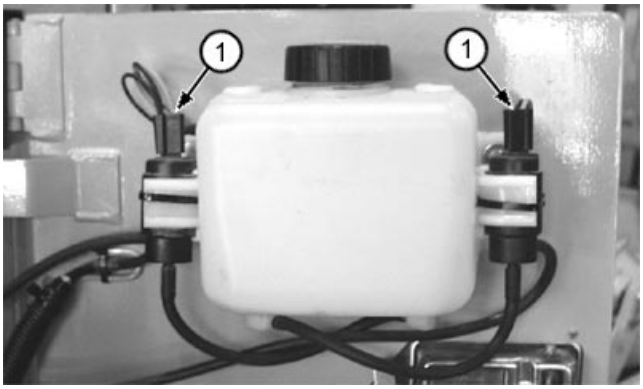


T131074B –UN–17MAY00

CED,TX03399,6067 –19–17NOV00–7/8

25. Connect windshield washer pump wire connectors (1).
26. Install cab or ROPS. (See procedure in Group 1800.)
27. Fill hydraulic reservoir. The approximate capacity of hydraulic reservoir is 51 L (13.5 gal). (See Transmission, Hydraulic, and Winch (If Equipped) Oil in Fuels and Lubricants Section 00, Group 04.)

1—Windshield Washer Pump Wire Connectors



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CED,TX03399,6067 –19–17NOV00–8/8

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18

Hydraulic and Hydrostatic Reservoir Cleanout Cover Remove and Install (S.N. 925918—)

1. Drain reservoir. See 700H Dozer Drain and Refill Capacities. (Operator's Manual.)
2. Remove components as necessary to adequately access cleanout cover.

Continued on next page

BT40170,000000A –19–05MAR04–1/5

IMPORTANT: Prevent fluid contamination. Remove paint and debris from sealing edge of cleanout cover prior to removal.

3. Remove paint from sealing edge of hydraulic reservoir cleanout cover (3).

NOTE: Do not fully remove cap screw (2) from inner plate.

4. Loosen cap screw (2) enough to remove cleanout cover assembly.

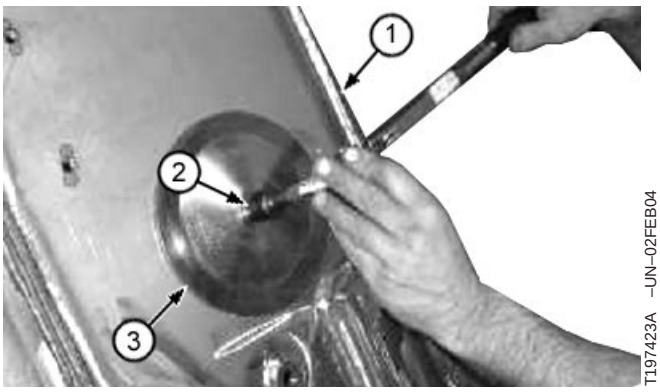
IMPORTANT: Avoid fluid contamination. Paint may be chipped if cleanout cover drops into reservoir. Clean all debris from reservoir before installing cleanout cover.

5. Inspect gasket and cover plates for any cuts or loose material that could lead to contamination. Repair or replace parts as necessary.

IMPORTANT: Avoid fluid contamination. Do not allow paint or debris to enter reservoir. Thoroughly clean if debris enters reservoir.

6. Inspect and remove paint build-up and debris from reservoir exterior wall.

   Inspect locator tabs in reservoir to verify that they are perpendicular to reservoir wall.



Hydraulic Reservoir Cleanout Cover

1—Hydraulic Reservoir
2—Cap Screw
3—Hydraulic Reservoir Cleanout Cover

21
2160
19

Continued on next page

BT40170,000000A –19–05MAR04–2/5

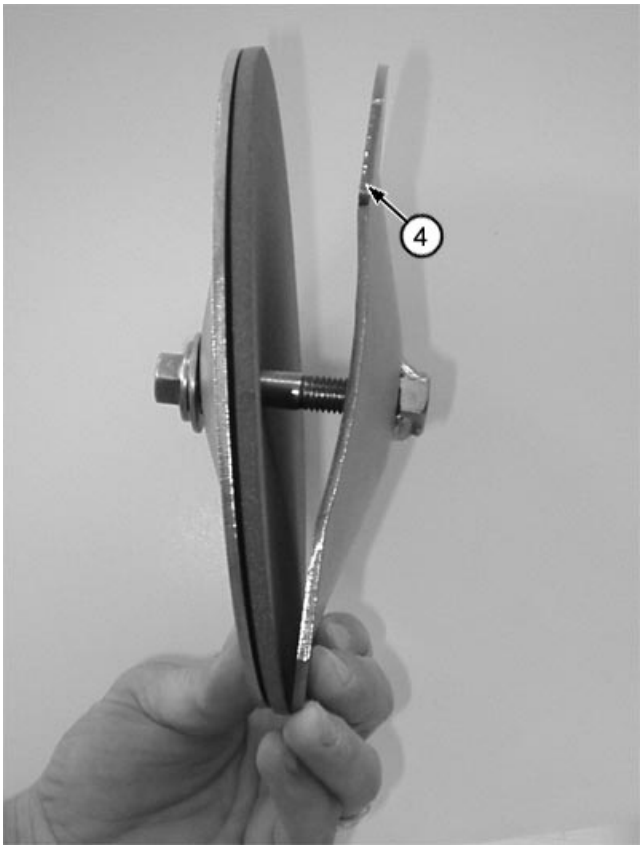
NOTE: Cap screw should turn into weld nut without resistance. If resistance is felt, inspect weld nut for debris in threads and clean as necessary.

IMPORTANT: Avoid possible fluid leak. Verify O-ring is installed under head of cap screw before assembly.

7. Loosely assemble cleanout cover with gasket and inner plate.

NOTE: To ease installation, do not thread cap screw all the way into weld nut. Orient as shown.

4—Inner Plate Tabs



T198245B –UN–02MAR04

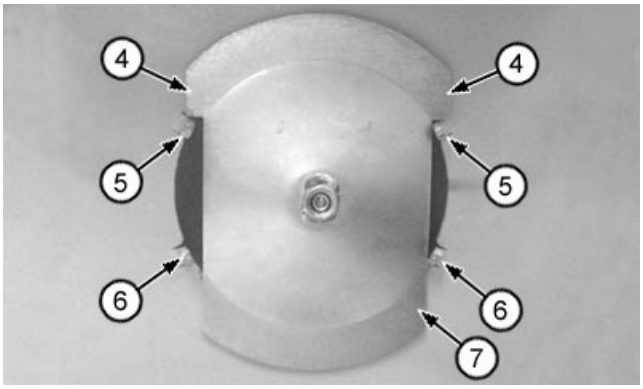
BT40170,000000A –19–05MAR04–3/5

IMPORTANT: Inner plate must seat flush against reservoir wall. Damage will result to locator tabs (5 and 6) if inner plate is installed incorrectly.

NOTE: Install inner plate with tabs (4) facing towards top of reservoir. Inner plate must be located **between** *upper (5) and lower (6) locator tabs.*

8. Install cleanout cover assembly starting with one corner of inner plate upper tabs.

   Rest one tab of inner plate on locator tab (5) and rotate inner plate around until entirely inside reservoir. Pull back on cap screw to seat inner plate against reservoir wall **between** locator tabs (5 and 6).



T198238B –UN–02MAR04

4—Inner Plate Tab (2 used)
5—Upper Locator Tab (2 used)
6—Lower Locator Tab (2 used)
7—Inner Plate

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BT40170,000000A –19–05MAR04–4/5

9. Hand tighten cap screw (2) while prying out on gasket and outer plate as shown to ensure that inner plate stays seated between locator tabs (5 and 6).

IMPORTANT: Do not use impact gun to tighten cap screw. Damage will result to cleanout cover assembly.

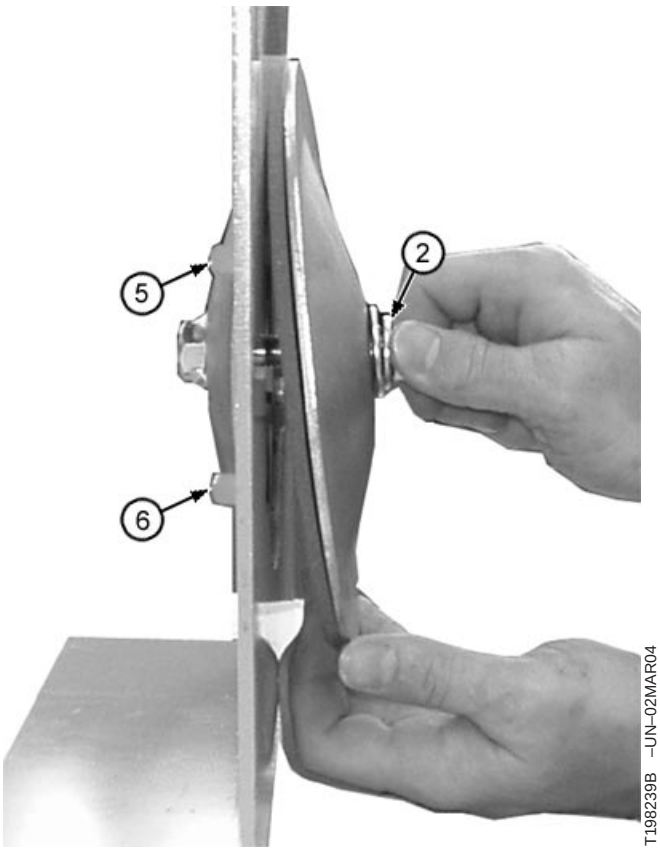
10. Tighten cap screw to specification.

Specification	
Hydraulic Reservoir Cleanout Cover Cap Screw—Torque	47 N•m 35 lb-ft

11. Paint affected areas using TY6522 spray paint.

12. Install components removed to access cleanout cover.

13. Fill reservoir. See 700H Dozer Drain and Refill Capacities. (Operator's Manual.)

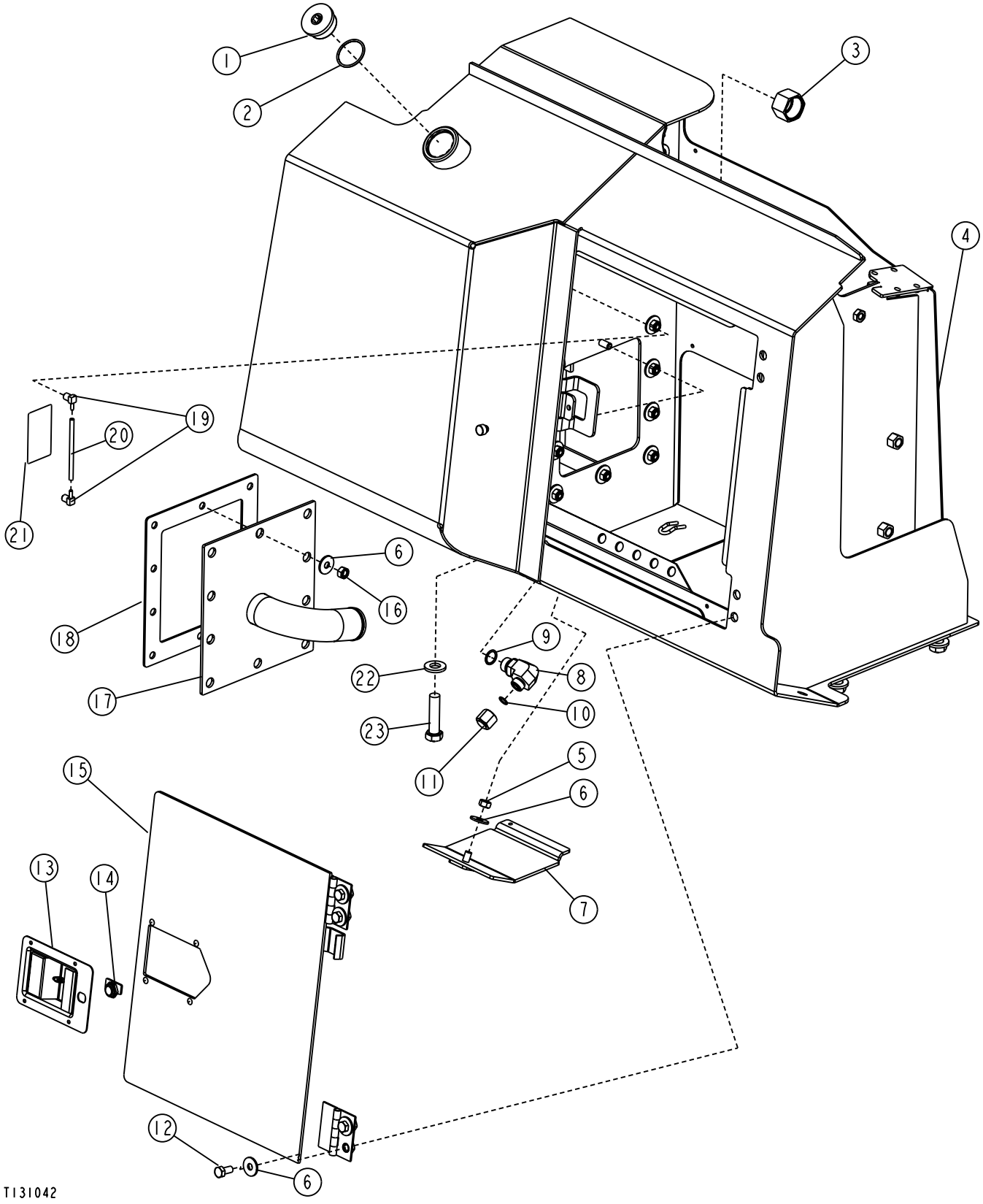


T198239B –UN–02MAR04

2—Cap Screw
5—Upper Locator Tab (2 used)
6—Lower Locator Tab (2 used)

BT40170,000000A –19–05MAR04–5/5

Disassemble and Assemble Hydraulic Reservoir



T131042 –UN–12JUN00

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CED,TX03399,6068 –19–05MAR04–1/2

1—Plug
2—O-Ring
3—Plug
4—Reservoir (S.N. —925917) Reservoir (S.N. 925918—) (not shown)
5—Nut (11 used)
6—Washer (15 used) (S.N. —925917)
7—Cover
8—Elbow
9—O-Ring
10—O-Ring
11—Plug
12—Cap Screw (4 used)
13—Latch
14—Lock
15—Door
16—Nut (11 used) (S.N. —925917)
17—Cleanout Cover (S.N. —925917)
18—Gasket (S.N. —925917)
19—Union Fitting (2 used) (S.N. —925917)
20—Tube (S.N. —925917)
21—Label
22—O-Ring
23—Fitting
24—Cap Screw (4 used)
25—Washer (4 used)

NOTE: Cleanout cover (17) shown in illustration applies to reservoirs (S.N. —925917). For cleanout cover repair procedure on machines (S.N. 925918—) see Hydraulic and Hydrostatic Reservoir Cleanout Cover Remove and Install (S.N. 925918—). (Group 2160.)

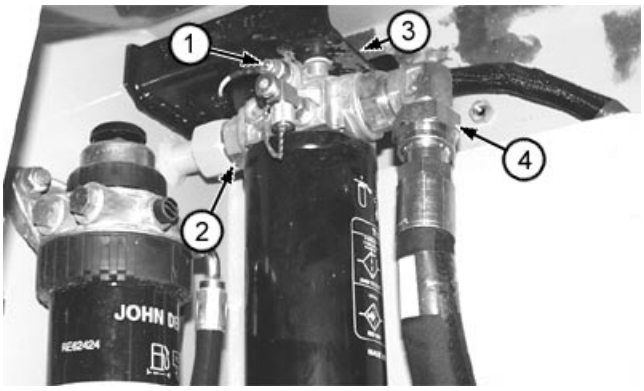
Item	Measurement	Specification
Hydraulic Reservoir		
Reservoir Cleanout Cover Nuts (S.N. —925917)	Torque	27—35 N•m 20—25 lb-ft
Reservoir Cleanout Cover Cap Screw (S.N. 925918—)	Torque	47 N•m 35 lb-ft

21
2160
23

CED,TX03399,6068 –19–05MAR04–2/2

Remove and Install Hydraulic Filter

1. Open right side access door.
2. Loosen oil fill plug on reservoir to release pressure.
3. Disconnect hose (4) and fitting (2). Close all openings using caps and plugs.
4. Disconnect hydraulic filter wiring lead (1)
5. Remove four cap screws (3) and remove hydraulic filter.
6. Install hydraulic filter. Tighten cap screws.
7. Connect hose (4) and fitting (2). Connect hydraulic filter wiring lead (4).

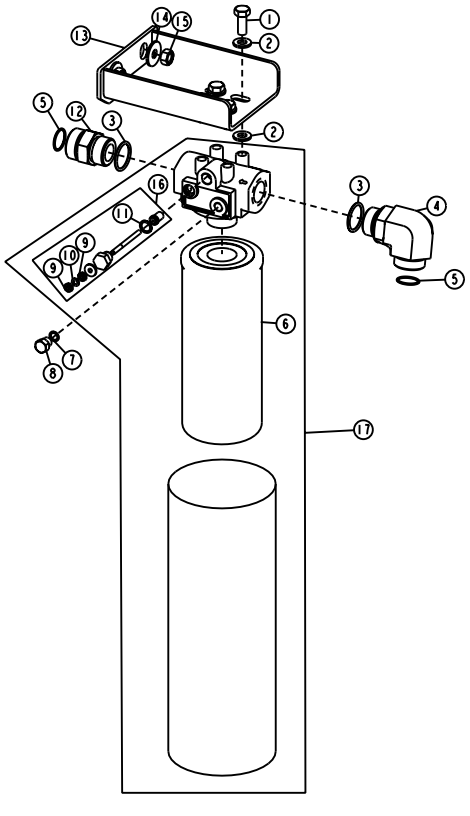


T131476B –UN–06JUN00

1—Hydraulic Filter Wiring Lead
2—Hydraulic Filter-to-Hydraulic Reservoir Fitting
3—Cap Screw (4 used)
4—Control Valve Tee-to-Hydraulic Filter Hose

CED,TX03399,6069 –19–30MAR00–1/1

Disassemble and Assemble Hydraulic Filter



T131443 –UN–05JUN00

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CED,TX03399,6110 –19–05JUN00–1/2

1—Cap Screw (4 used)
2—Washer (8 used)
3—O-Ring (2 used)
4—Elbow Fitting
5—O-Ring (2 used)
6—Filter
7—O-Ring
8—Plug
9—Nut (2 used)
10—Washer
11—O-Ring
12—Adapter
13—Bracket
14—Washer (2 used)
15—Nut (2 used)
16—Switch Assembly
17—Filter Head Assembly

1. Remove parts if necessary.

2. Install parts. Tighten nuts (15) and cap screws (1).

Hydraulic Filter—Specification

Filter Mounting Bracket-to-Tank Stud Nuts—Torque	31 N•m (23 lb-ft)
Bracket-to Filter Base Cap Screws—Torque	50 N•m (37 lb-ft)

3. Tighten fittings (4 and 12) and plug (8).

Hydraulic Filter—Specification

Fittings-to-Filter Head—Torque	71 N•m (52 lb-ft)
Plug-to-Filter Head—Torque	23 N•m (17 lb-ft)

CED,TX03399,6110 –19–05JUN00–2/2

21
2160
25

Section 32
Bulldozer

Contents

Page

Group 3201—Blades
Specifications 32-3201-1
Dozer Blade
Remove and Install 32-3201-2
Cutting Edges and End Bits
Remove and Install 32-3201-4

Group 3215—Control Linkage
Specifications 32-3215-1
T-Bar Control Linkage
Remove and Install 32-3215-2
Auxiliary Control Linkage
Remove and Install Fourth Function 32-3215-4
Remove and Install Fifth Function 32-3215-5

Group 3240—Frames
Specifications 32-3240-1
Dozer C--Frame
Remove and Install 32-3240-1

Group 3260—Hydraulic System
Essential Tools 32-3260-1
Service Equipment and Tools 32-3260-1
Other Material 32-3260-2
Specifications 32-3260-3
Hydraulic System Component Location 32-3260-6
Hydraulic Control Valve
Remove and Install 32-3260-8
Disassemble and Assemble 32-3260-9
Wiper Seals and Seals, Replace 32-3260-10
Disassemble and Assemble Auxiliary Section 32-3260-15
Disassemble and Assemble Angle Section 32-3260-17
Disassemble and Assemble Tilt Section 32-3260-19
Disassemble and Assemble Lift Section 32-3260-21
Disassemble and Assemble System Relief Valve 32-3260-23
Cylinders
Tilt Cylinder Component Location 32-3260-24
Remove and Install Tilt 32-3260-25
Angle Cylinder Component Location 32-3260-26
Remove and Install Angle 32-3260-27
Lift Cylinder Component Location 32-3260-30

Page

Remove and Install Lift 32-3260-31
Disassemble and Assemble Angle and Lift and Tilt Cylinders (John Deere 120 Series Cylinders) 32-3260-32

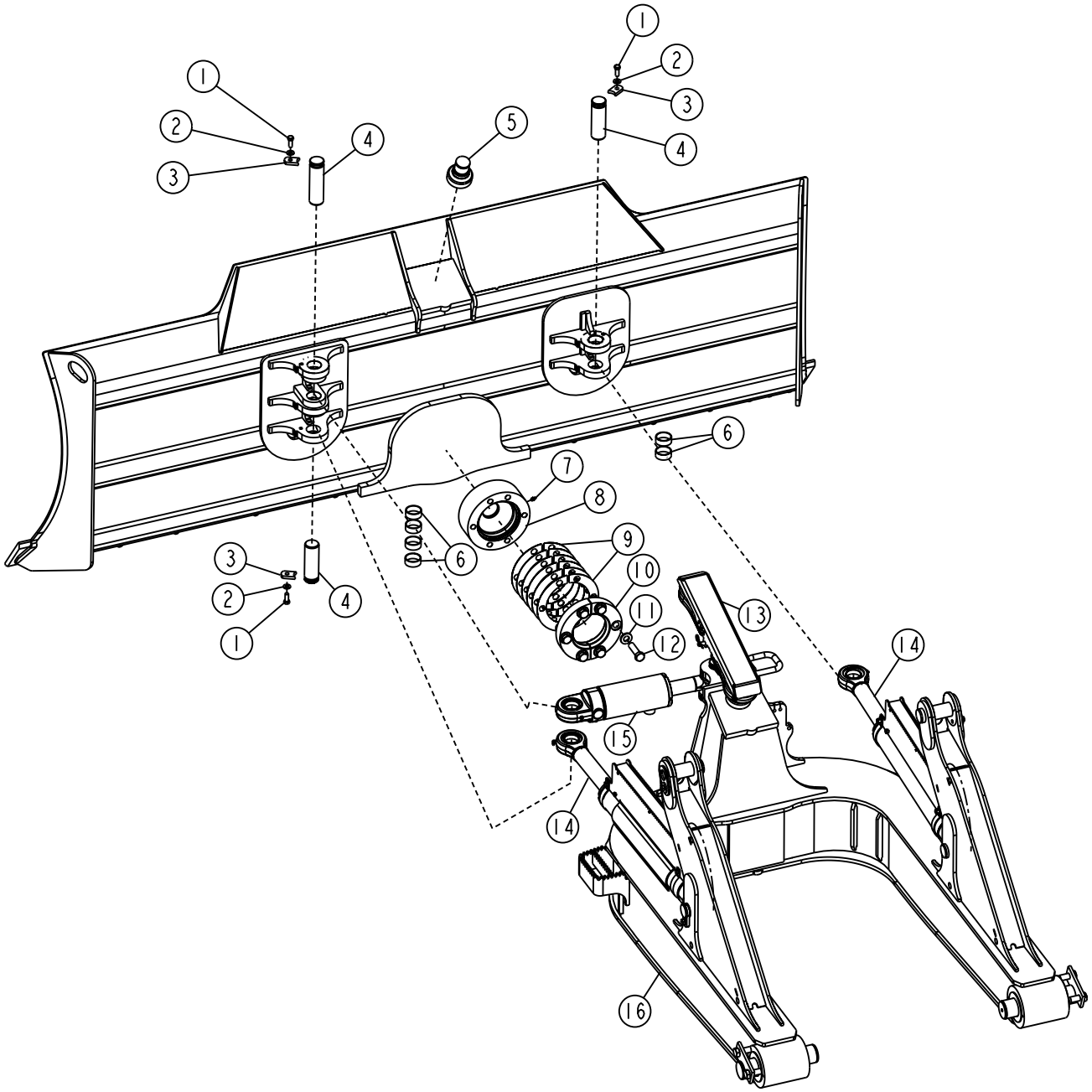
32

Specifications

Item	Measurement	Specification
Blade		
Blade	Weight	755 kg (1666 lb) (Approximate)
Pivot Cap Screws	Torque	624 N•m (460 lb-ft)

CED,TX03399,6119 –19–08AUG00–1/1

Remove and Install Dozer Blade



T131502
(eval00254)

T131502 –UN–20JUL00

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CED,TX03399,6070 –19–17JUL02–1/2

1—Cap Screw (3 used)
2—Washer (3 used)
3—Retainer (3 used)
4—Pin (3 used)
5—Pin (Welded On)
6—Bushing (6 used)
7—Lubrication Fitting (2 used)
8—Socket
9—Shim (14 used)
10—Cap (2 used)
11—Washer (6 used)
12—Cap Screw (6 used)
13—Pitch Link Cover
14—Angle Cylinder (2 used)
15—Tilt Cylinder
16—C-Frame

1. Lower all equipment to the ground.
2. Stop engine and operate control valves to relieve pressure in the hydraulic system.
3. Attach lifting chain to blade.
4. Remove cap screw (1) and retainer (3) on left side. Drive upper and lower pins (4) out of tilt head end and angle cylinder rod end.
5. Remove rubber bushings.
6. Remove retainer (3) and cap screw (1) on right side on angle cylinder rod end
7. Remove rubber bushings.

CAUTION: The approximate weight of blade is 755 kg (1666 lb).

Blade—Specification

Blade—Weight	755 kg (1666 lb) (Approximate)

8. Install a chain and hoist to blade.
9. Remove pitch link cover (13) and cap screw, remove link from pin.
10. Remove cap screws from pivot cap (12) and remove shims (9).
11. Remove blade.
12. Install blade, rubber bushings and pins.

IMPORTANT: When installing shims, install the ball socket retainer without shims. Tighten cap screws and measure gap. Install enough shims to fill gap plus one extra shim.

13. Install pivot cap, cap screws. When tightening cap screws for pivot cap, angle blade to maximum on both sides. Tighten cap screw.

Blade—Specification

Pivot Cap Screws—Torque	624 N•m (460 lb-ft)

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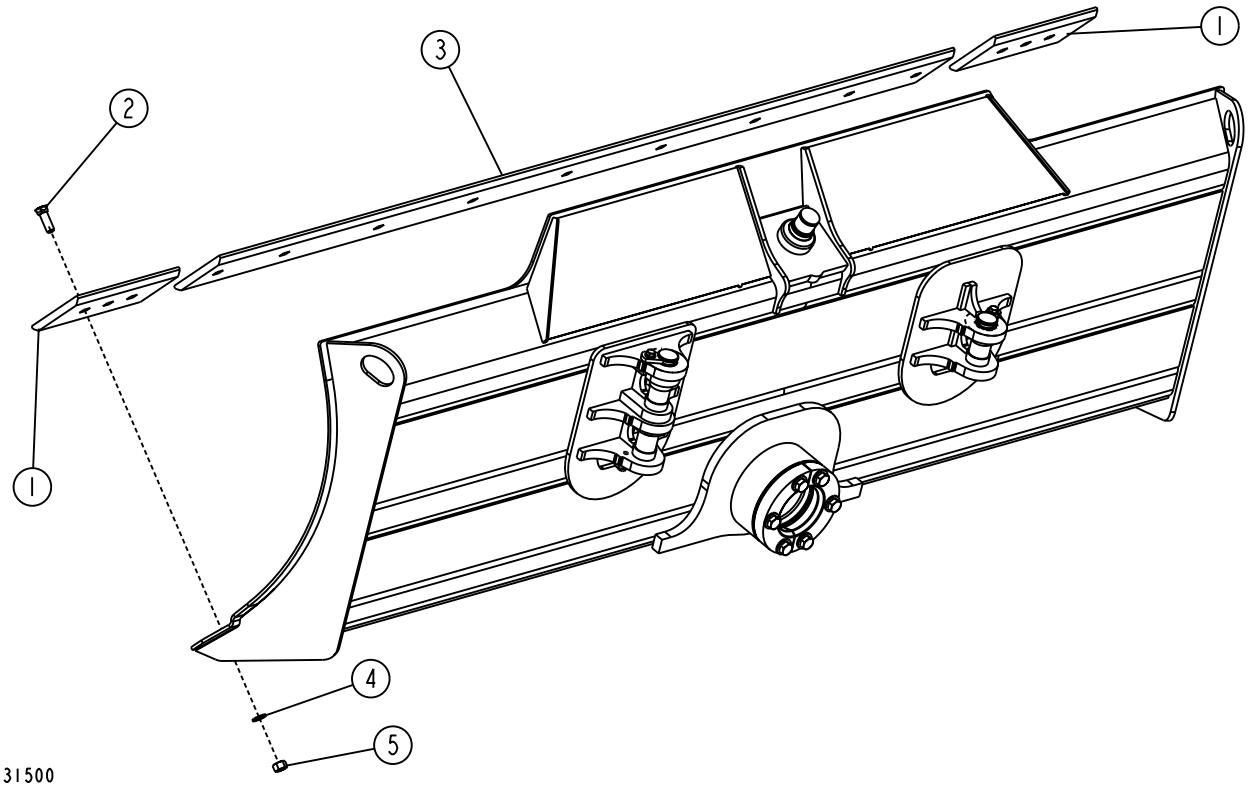
3201
3

CED,TX03399,6070 –19–17JUL02–2/2

Remove and Install Cutting Edges and End Bits



T131500
(eval00254)

T131500 –UN–20JUL00

32
3201
4

1—End Bit (2 used) **3—Cutting Edge** **4—Washer (15 used)** **5—Nut (15 used) 9**
2—Bolt (15 used)

1. Block frame with cutting edge above ground level.
2. Remove parts (1—5).
3. Inspect parts and replace as necessary.
4. Install parts (1—5). Tighten nuts.

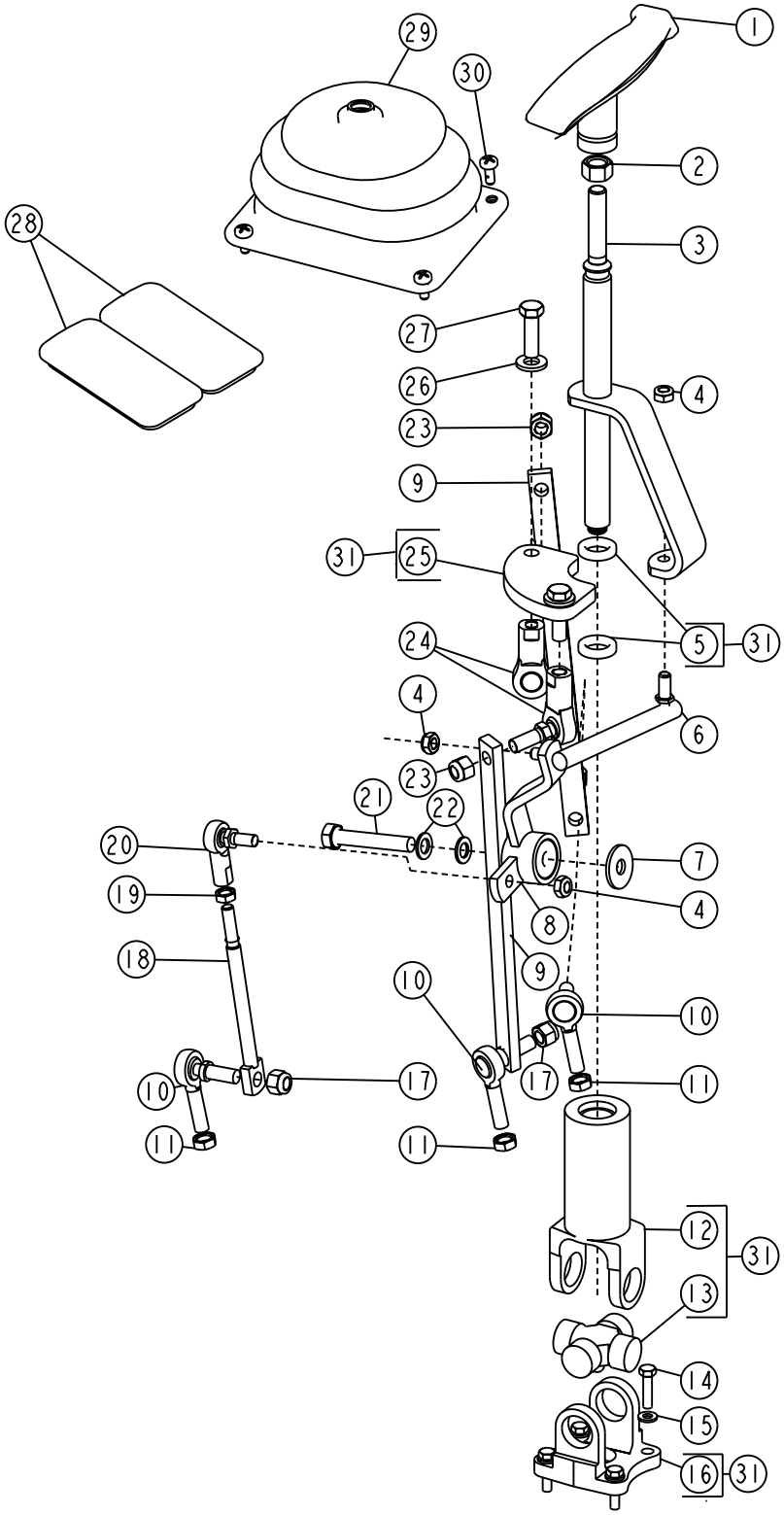
CED,TX03399,6071 –19–30MAR00–1/1

Specifications

Item	Measurement	Specification
T-Bar Control Valve Linkage		
Mount T-Bar Linkage-to-Hydraulic Tank Cap Screws	Torque	37 N•m (27 lb-ft)
Bellcrank-to-Tank Mounting Cap Screws	Torque	73 N•m (54 lb-ft)
3/8 Jam Nut on Ball Joints	Torque	24 N•m (18 lb-ft) (212 lb-in.)
5/16 Jam Nut	Torque	13.5 N•m (10 lb-ft) (120 lb-in.)
3/8 Lock Nut	Torque	41 N•m (30 lb-ft)
Auxiliary Linkage Fourth Function		
Lever-to-Bracket Cap Screw	Torque	50 N•m (37 lb-ft)
Auxiliary Linkage Fifth Function		
Lever-to-Bracket Cap Screw	Torque	50 N•m (37 lb-ft)

CED,TX03399,6123 –19–08AUG00–1/1

Remove and Install T-Bar Control Linkage



T132165 –UN–17AUG00

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CED,TX03399,6072 –19–17NOV00–1/2

1—Handle
2—Nut
3—Shaft with Arm
4—Lock Nut (3 used)
5—Ball Bearing
6—Ball Joint
7—Washer
8—Bellcrank
9—Link (2 used)
10—Ball Joint (3 used)
11—Nut (3 used)
12—Sleeve
13—U-Joint
14—Cap Screw (4 used)
15—Washer (4 used)
16—U-Joint
17—Lock Nut
18—Rod
19—Nut
20—Ball Joint
21—Cap Screw
22—Washer (2 used)
23—Lock Nut (2 used)
24—Ball Joint (2 used)
25—Plate
26—Washer (2 used)
27—Cap Screw (2 used)
28—Grommet (2 used)
29—Boot
30—Self-Locking Screw (4 used)
31—U-Joint Control Housing Kit

1. Open access door to control valve.
2. Disconnect ball joints (10) at valves.
3. Remove cap screw (21) and washer (7).
4. Remove cap screws (14).
5. Remove cap screws (30) from boot (2). Remove assembly.
6. Disassemble and assemble parts as required.
7. Install assembly.
8. Tighten cap screws (14) and (21) to specification.

T-Bar Control Valve Linkage—Specification
Mount T-Bar Linkage-to-Hydraulic Tank Cap Screws—Torque ..... 37 N•m (27 lb-ft)

T-Bar Control Valve Linkage—Specification
Bellcrank-to-Tank Mounting Cap Screws—Torque ..... 73 N•m (54 lb-ft)

9. Connect ball joints (10) at valves.
10. Install boot and cap screws (30).
11. Tighten lock nuts (11) to specification.

T-Bar Control Valve Linkage—Specification
3/8 Jam Nut on Ball Joints—Torque..... 24 N•m (18 lb-ft) (212 lb-in.)

12. Tighten lock nuts (19) and (23) to specification.

T-Bar Control Valve Linkage—Specification
5/16 Jam Nut—Torque ..... 13.5 N•m (10 lb-ft) (120 lb-in.)

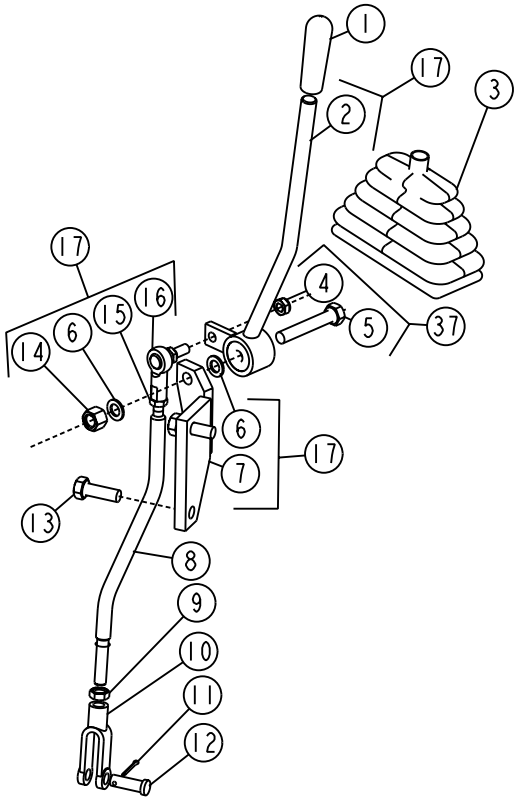
T-Bar Control Valve Linkage—Specification
3/8 Lock Nut—Torque ..... 41 N•m (30 lb-ft)

13. Adjust T-bar linkage. (See T-Bar Linkage Adjustment in Operation and Test Manual, Group 9025-20.)

32
3215
3

CED,TX03399,6072 –19–17NOV00–2/2

Remove and Install Auxiliary Fourth Function Linkage



T132690

T132690 –UN–21SEP00

Auxiliary Control Valve Linkage Fourth Function

32
3215
4

1—Grip
2—Shifter Rod
3—Boot
4—Lock Nut
5—Cap Screw
6—Washer (2 used)
7—Bracket
8—Rod (2 used)
9—Nut
10—Yoke
11—Cotter Pin
12—Pin
13—Cap Screw (2 used)
14—Lock Nut
15—Nut
16—Ball Joint
17—Linkage Assembly

1. Open access cover to control valve.
2. Remove pin (12).
3. Remove cap screw (5).
4. Remove boot (3).
5. Remove auxiliary linkage assembly.
6. Disassemble parts as required.
7. Assemble parts and install auxiliary linkage assembly.
8. Install parts (12, 5, and 3). Tighten cap screw (5) to specification.

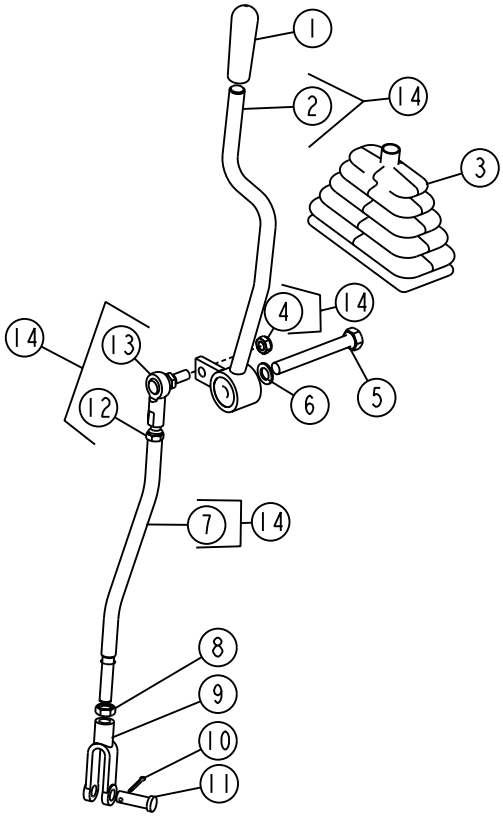
Auxiliary Linkage Fourth Function—Specification

Lever-to-Bracket Cap Screw—
Torque..... 50 N•m (37 lb-ft)

9. Adjust Auxiliary Fourth Function Lever Linkage Adjustment. (See Auxiliary Forth Function Lever Linkage Adjustment in Operation and Test Manual, Group 9025-20.)

CED,TX03399,6073 –19–17NOV00–1/1

Remove and Install Auxiliary Fifth Function Linkage



T132691

T132691 –UN–11AUG00

1—Grip
2—Shifter Rod
3—Boot
4—Lock Nut
5—Cap Screw
6—Washer
7—Rod
8—Nut
9—Yoke
10—Cotter Pin
11—Pin
12—Nut
13—Ball Joint
14—Lever Assembly

32
3215
5

1. Open access cover to control valve.
2. Remove pin (11).
3. Remove cap screw (5).
4. Remove boot (3).
5. Remove auxiliary linkage assembly.
6. Disassemble parts as required.
7. Assemble parts and install auxiliary linkage assembly.
8. Install parts (11, 5, and 3). Tighten cap screw (5) to specification.

Auxiliary Linkage Fifth Function—Specification

Lever-to-Bracket Cap Screw—
Torque..... 50 N•m (37 lb-ft)

9. Adjust auxiliary fifth function lever control linkage. (See Auxiliary Fifth Function Lever Linkage Adjustment in Operation and Test Manual, Group 9025-20.)

CED,TX03399,6115 –19–17NOV00–1/1

Specifications

Item	Measurement	Specification
C-Frame		
C-Frame with Blade	Weight	1360 kg (3000 lb) (Approximate)
C-Frame	Weight	635 kg (1400 lb) (Approximate)

CED,TX03399,6124 –19–10AUG00–1/1

Remove and Install Dozer C-Frame

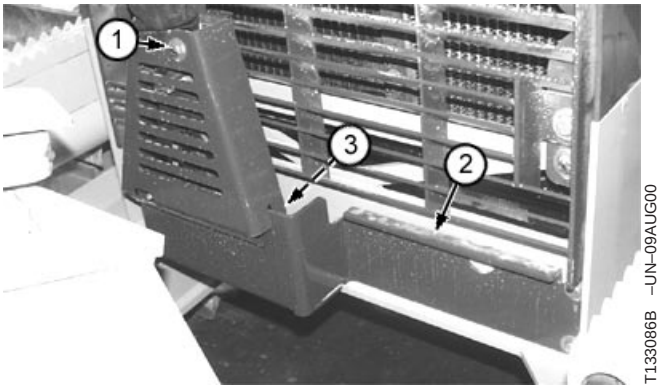
NOTE: C-Frame can be removed with blade attached.

1. Lower all equipment to the ground.
2. Stop engine. Operate all control valves to release pressure in hydraulic system.
3. Remove blade if necessary. (See Remove and Install Dozer Blade in Group 3201.)

CED,TX03399,6074 –19–30MAR00–1/5

4. Remove cap screw (1) to remove hose clamp and guard.
5. Remove hose guard (2).

1—Cap Screw
2—Hose Guard
3—Hoses (4 used)



T133086B –UN–09AUG00

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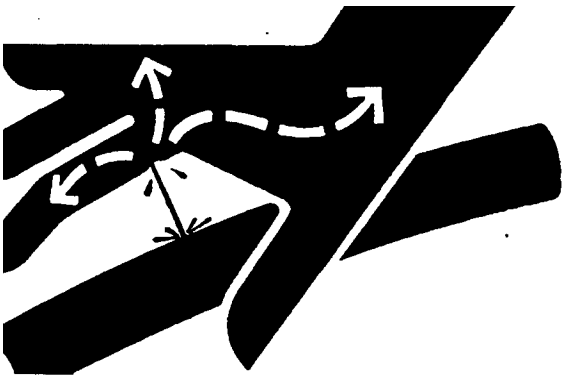
CED,TX03399,6074 –19–30MAR00–2/5

CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury should reference a knowledgeable medical source. Such information is available from Deere & Company Medical Department in Moline, Illinois, U.S.A.



X9811 –UN–23AUG88

6. Disconnect four hoses (3). Close all openings using caps and plugs.

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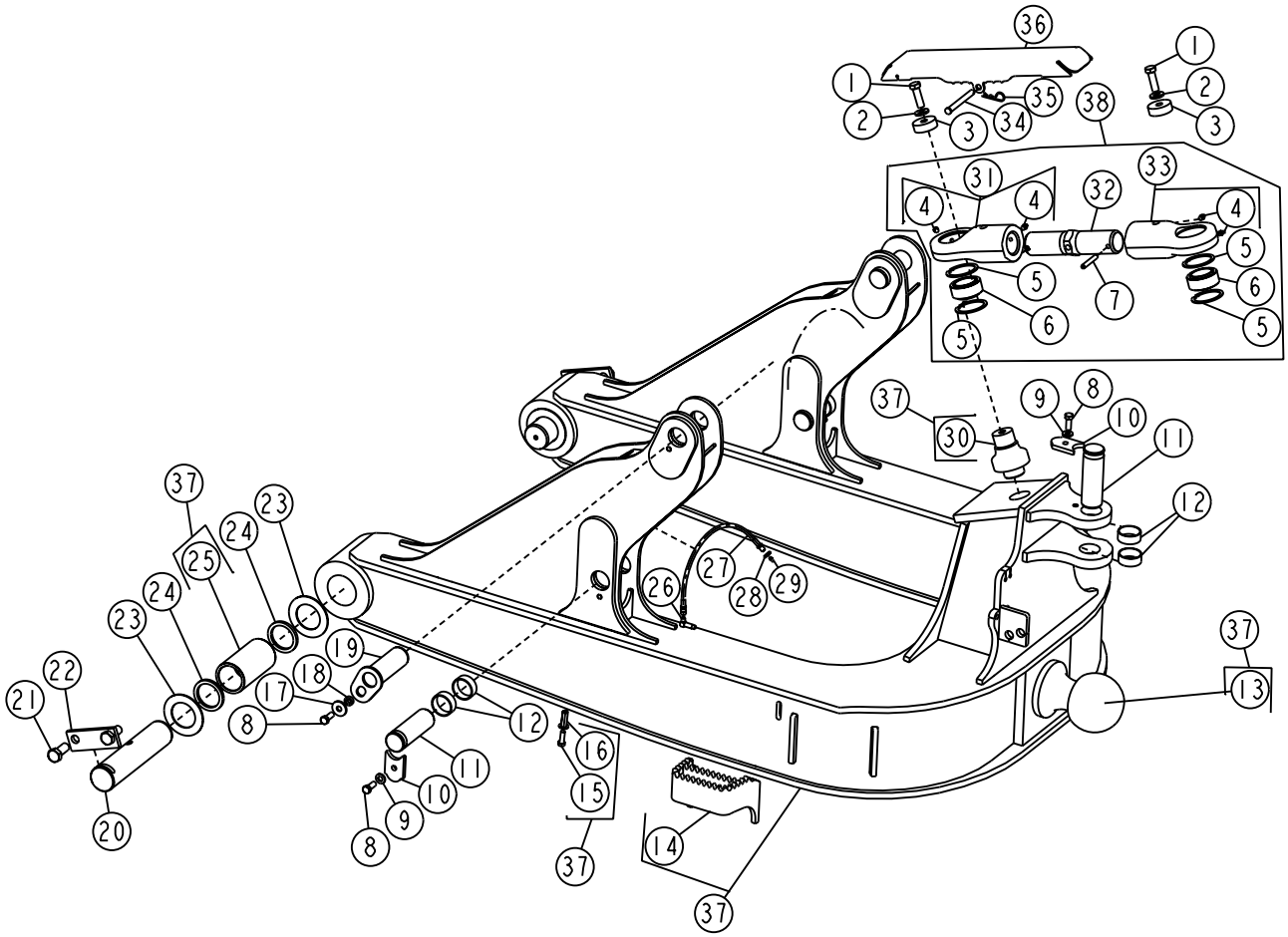
CED,TX03399,6074 –19–30MAR00–3/5



T131501 –UN–17AUG00

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CED,TX03399,6074 –19–30MAR00–4/5

1—Cap Screw (2 used)
2—Washer (2 used)
3—Washer (2 used)
4—Lubrication Fitting (4 used)
5—Snap Ring (4 used)
6—Self-Aligning Bushing (2 used)
7—Spring Pin (2 used)
8—Cap Screw (5 used)
9—Washer (3 used)
10—Retainer (3 used)
11—Pin (3 used)
12—Bushing (6 used)
13—Ball
14—Step (Right or Left)
15—Cap Screw (3 used)
16—Nut (3 used)
17—Washer (2 used)
18—Washer (2 used)
19—Pin (2 used)
20—Pin (2 used)
21—Cap Screw (4 used)
22—Retainer (2 used)
23—Washer (4 used)
24—Seal (4 used)
25—Bushing (2 used)
26—Fitting (2 used)
27—Lube Hose
28—Nut (2 used)
29—Lubrication Fitting (2 used)
30—Pin (Pitch)
31—Yoke (Left Hand)
32—Turnbuckle
33—Yoke (Right Hand)
34—Pin
35—Spring Locking Pin
36—Cover (Pitch Link)
37—Frame Assembly
38—Link (Pitch Link) Assembly

7. Remove lift cylinder pins from rod end of lift cylinders.

CAUTION: The approximate weight of C-Frame with blade is 1360 kg (3000 lb), without blade is 635 kg (1400 lb).

C-Frame—Specification

C-Frame with Blade—Weight	1360 kg (3000 lb) (Approximate)
C-Frame—Weight	635 kg (1400 lb) (Approximate)

8. Install chains around C-frame or C-frame and blade. Attach a hoist.
9. Remove pins (20 and 19) and remove C-frame or blade and C-frame.
10. Inspect all parts. Replace if necessary.
11. Install C-frame, C-frame pins, and lift cylinder rod end pins. Tighten cap screws.
12. Install lift cylinder hoses, if removed.
13. Install blade, if removed. See Remove and Install Dozer Blade in Group 3201.

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CED,TX03399,6074 –19–30MAR00–5/5

Essential Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC).

SERVICEGARD is a trademark of Deere & Company

CED,TX03399,6125 –19–10AUG00–1/2

Seal Installation Tool JDG734

Used to install lip and wiper seals.

CED,TX03399,6125 –19–10AUG00–2/2

Service Equipment and Tools

NOTE: Order tools according to information given in the U.S. SERVICEGARD™ Catalog or from the European Microfiche Tool Catalog (MTC). Some tools may be available from a local supplier.

SERVICEGARD is a trademark of Deere & Company

CED,TX03399,6126 –19–10AUG00–1/2

Hydraulic Cylinder Service Stand JT30043

To disassemble and assemble hydraulic cylinder.

CED,TX03399,6126 –19–10AUG00–2/2

Other Material

Number	Name	Use
TY16285 (U.S.) TY9485 (Canadian) 7649 (LOCTITE®)	Cure Primer	Clean threads of spool, spool end screws on control valve sections. Clean threads of cylinder rod on lift cylinder equipped with cylinder rod lock nut. Clean threads of spanner nut. Cure surface prior to application of adhesives or sealants.
T43513 (U.S.) TY9474 (Canadian) 271 (LOCTITE®)	Thread Lock and Sealer (High Strength)	Apply to threads of control valve spool and spool end screws. Apply to threads of cylinder rod on lift cylinder equipped with cylinder rod lock nut. Apply to threads of spanner nut.

LOCTITE is a registered trademark of Loctite Corp.

CED,TX03399,6127 –19–10AUG00–1/1

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Specifications

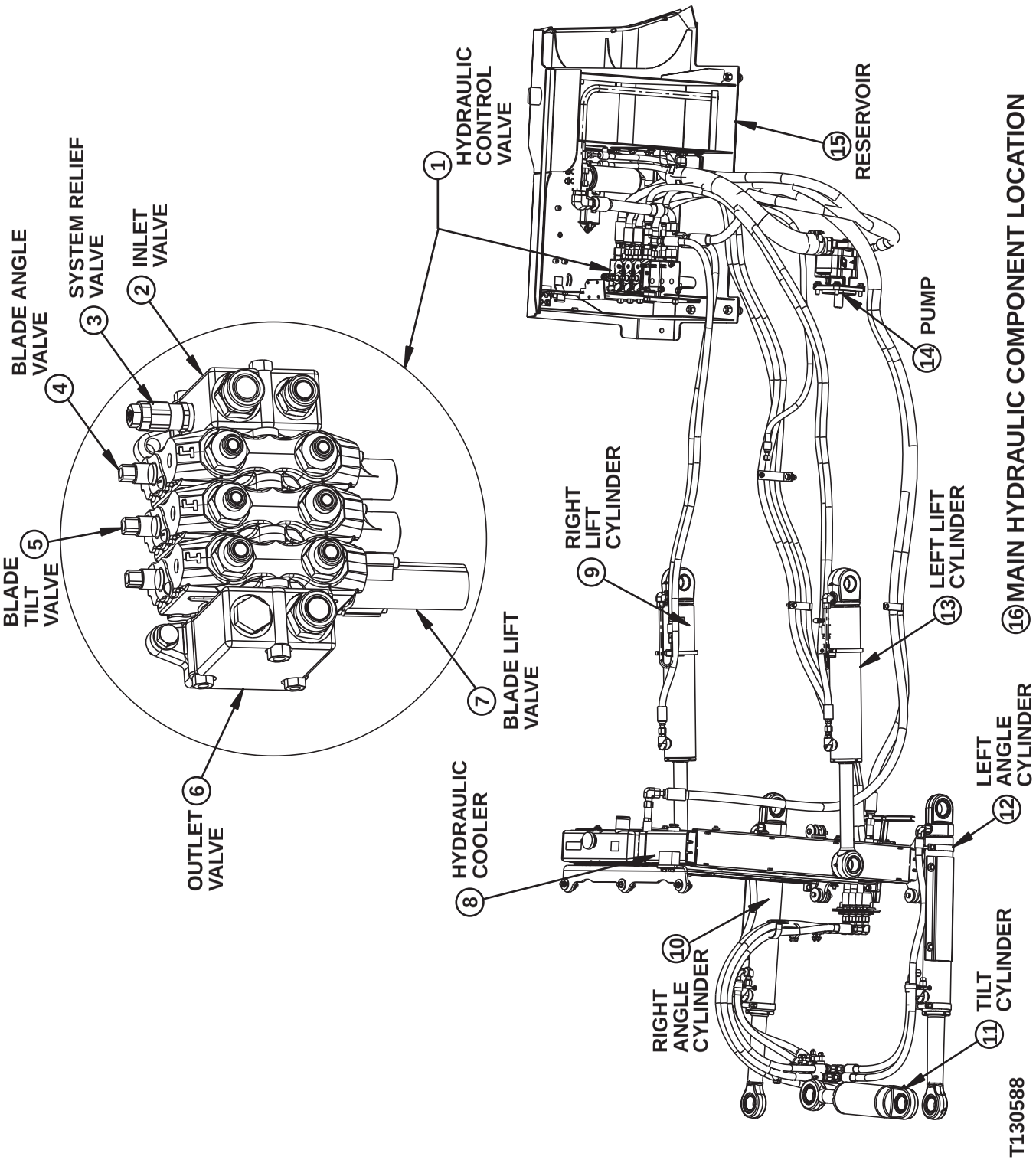
Item	Measurement	Specification
Hydraulic Control Valve		
Control Valve Assembly 7/16-20 in. Tie Rod Nuts	Torque	65 ± 5 N•m (576 ± 42 lb-in.)
Control Valve Assembly 1/2-20 in. Tie Rod Nuts	Torque	100 ± 6 N•m (888 ± 60 lb-in.)
Hydraulic Control Valve		
Auxiliary Valve Spool End Screw	Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Auxiliary Valve Spool Cap Socket Head Screws	Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Auxiliary Valve Retainer Plate Screws	Torque	5.5 ± 0.1 N•m (48 ± 12 lb-in.)
Auxiliary Valve Shut-Off Plugs	Torque	65 ± 5 N•m (576 ± 42 lb-in.)
Angle Valve Spool End Screw	Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Angle Valve Spool Cap Socket Head Screws	Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Angle Valve Retainer Plate Screws	Torque	5.5 ± 0.1 N•m (48 ± 12 lb-in.)
Tilt Valve Spool End Screw	Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Tilt Valve Spool Cap Socket Head Screws	Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Tilt Valve Retainer Plate Screws	Torque	5.5 ± 0.1 N•m (48 ± 12 lb-in.)
Lift Valve Spool End Screw	Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Lift Valve Spool Cap Socket Head Screws	Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Lift Valve Retainer Plate Screws	Torque	5.5 ± 0.1 N•m (48 ± 12 lb-in.)

Continued on next page

Item	Measurement	Specification
Cylinders		
Lift Cylinder Piston Nut	Torque Turn	190 N•m (140 lb-ft) plus 45° turn
Angle and Tilt Cylinder Piston Cap Screw	Torque Turn	200 N•m (147 lb-ft) plus 90° turn
Lift and Tilt Cylinder Spanner Nut	Torque	720—840 N•m (531—620 lb-ft)
Angle Cylinder Spanner Nut	Torque	580—670 N•m (428—494 lb-ft)

CED,TX03399,6128 –19–10AUG00–2/2

Hydraulic System Component Location



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CED,TX03399,6075 –19–30MAR00–1/2

Hydraulic System

1—Hydraulic Control Valve
2—Inlet Cover
3—System Relief Valve
4—Blade Angle Valve Section
5—Bale Tilt Valve Section
6—Outlet Cover
7—Blade Lift Valve Section
8—Hydraulic Oil Cooler
9—Right Lift Cylinder
10—Right Angle Cylinder
11—Tilt Cylinder
12—Left Angle Cylinder
13—Left Lift Cylinder
14—Hydraulic Pump
15—Hydraulic Reservoir
16—Main Hydraulic Component Location

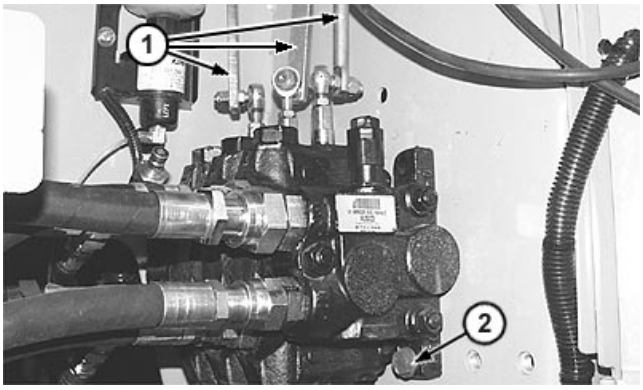
CED,TX03399,6075 –19–30MAR00–2/2

Remove and Install Hydraulic Control Valve

1. Lower all equipment to the ground and stop engine.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

2. Operate control valves to release pressure in the hydraulic system.
3. Turn battery disconnect switch to OFF.
4. Apply a vacuum to hydraulic reservoir.
5. Disconnect linkage rods (1).
6. Mark and disconnect hoses (3—11). Close all openings using caps and plugs.
7. Remove three cap screws (2) and control valve.
8. Install control valve using three cap screws (2).
9. Connect lines (3—11).
10. Connect linkage rods (1).
11. Remove vacuum from reservoir and check and fill reservoir as needed.
12. Turn battery disconnect switch to ON.
13. Start machine and check for leaks.



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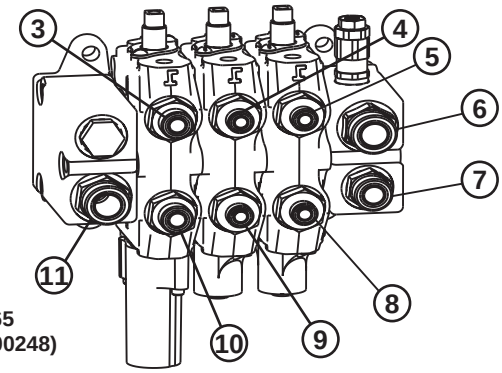

T132565
(EVA100248)

T132565 –UN–20JUL00

1—Control Valve Linkage (3 used) (4 used with Auxiliary Section Installed)
2—Cap Screw (3 used)
3—Hose—Lift Valve Section Top Port-to-Lift Cylinder Right and Left Rod End Port
4—Hose—Tilt Valve Section Top Port-to-Tilt Cylinder Rod End Port
5—Hose—Angle Valve Section Top Port-to-Right Angle Cylinder Rod End and Left Angle Cylinder Head End Port
6—Hose—Inlet Valve Cover Top Port-to-Hydraulic Oil Cooler Top Port
7—Hose—Inlet Valve Cover Bottom Port-to-Hydraulic Pump Bottom Port
8—Hose—Angle Valve Section Bottom Port-to-Left Angle Cylinder Rod End and Right Angle Cylinder Head End Ports
9—Hose—Tilt Valve Section Bottom Port-to-Tilt Cylinder Head End Port
10—Hose—Lift Valve Section Bottom Port-to-Lift Cylinder Right and Left Head End Ports
11—Hose—Outlet Valve Cover Bottom Port-to-Hydraulic Filter Port

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CED,TX03399,6076 –19–30MAR00–1/1

Disassemble and Assemble Hydraulic Control Valve

IMPORTANT: Keep all components for each valve section together as a set.

1. To aid in assembly, identify each section with a mark.
2. Remove nuts (1).
3. Place valve in a vertical position having the inlet section down and supported by wood blocks.
4. Remove tie rods (2).
5. Carefully remove sections (3—8) so as not to lose or damage O-rings (11), load checks (10), and springs (9). Keep load checks and valve sections together as a set.

IMPORTANT: Use care not to damage or score mating surfaces of valve sections.

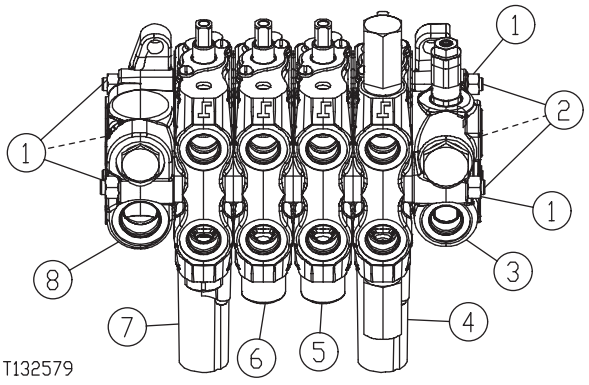
6. Inspect O-rings between each section for wear or damage. Replace as necessary.
7. Inspect springs and load checks for scoring, wear, or damage. Replace as necessary.
8. Apply clean hydraulic oil to all internal parts.
9. Install load check, spring, and O-ring into each spool section.
10. Assemble sections (3—8), making sure load checks, springs, and O-rings remain in position.

IMPORTANT: Tighten tie rod and nuts evenly to prevent valve spool binding or leakage between sections.

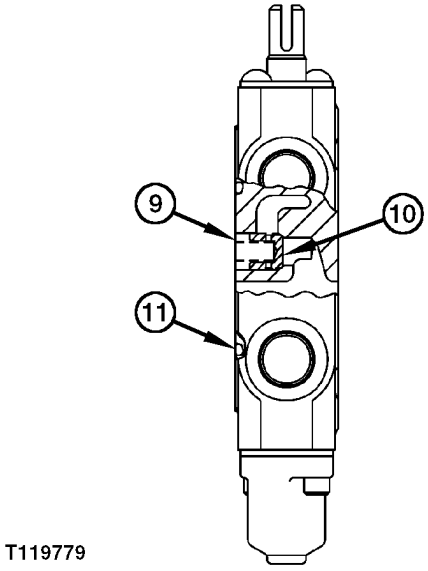
11. Tighten tie rod nuts (1) to specifications.

Hydraulic Control Valve—Specification

Control Valve Assembly 7/16-20 in. Tie Rod Nuts—Torque	65 ± 5 N•m (576 ± 42 lb-in.)
Control Valve Assembly 1/2-20 in. Tie Rod Nuts—Torque	100 ± 6 N•m (888 ± 60 lb-in.)



T132579 –UN–19JUL00



T119779 –UN–22JAN99

1—Nut (6 used)
2—Control Valve Tie Rod (3 used)
3—Inlet Valve Cover
4—Auxiliary Valve Section
5—Blade Angle Valve Section
6—Blade Tilt Valve Section
7—Blade Lift Valve Section
8—Outlet Valve Cover
9—Spring (1 in each spool section)
10—Load Check (1 in each spool section)
11—O-Ring (1 between each section)

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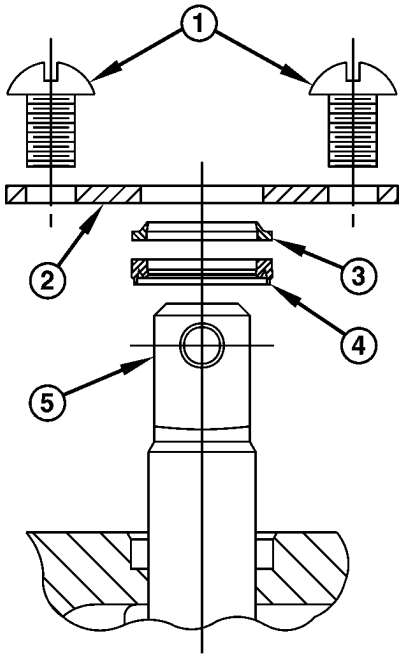
CED,TX03399,6077 –19–31MAR00–1/1

Remove and Install Wiper Seals on Hydraulic Control Valve Sections

NOTE: Do cap ends first and the tang ends second. Before doing cap ends, hold tang ends together by placing a rod/screwdriver through tang ends connecting linkage holes.

1. Remove screws (1) to remove retainer plate (2) from valve section.
2. Use an O-ring pick to remove wiper seal (3) and lip seal (4).

1—Screw (2 used)
2—Retainer Plate
3—Wiper Seal
4—Lip Seal
5—Spool



T118812

T118812 –UN–10DEC98

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CED,TX03399,6078 –19–31MAR00–1/5

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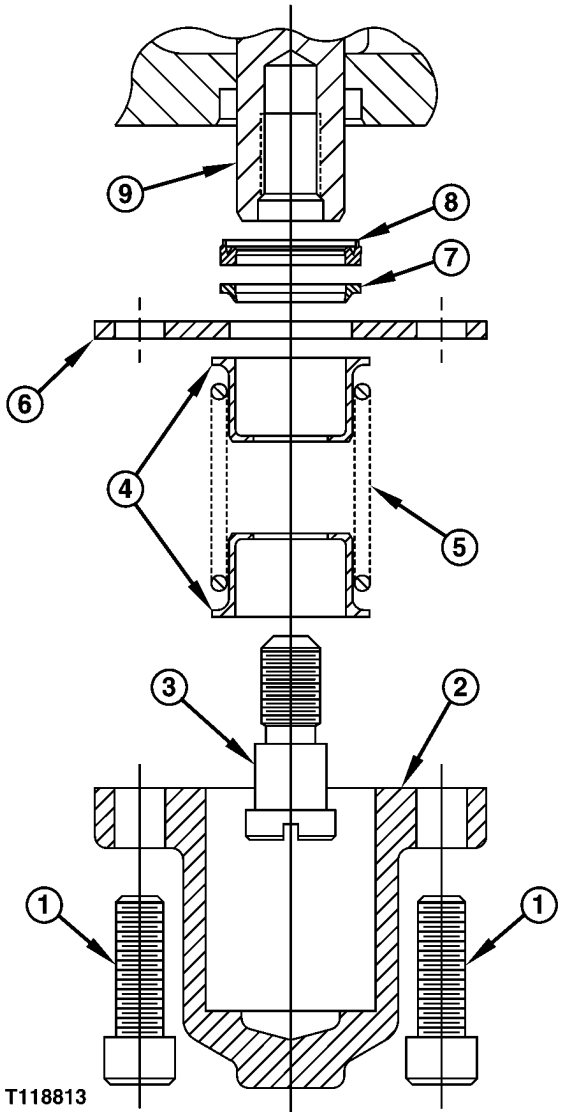
3. Remove cap screws (1) to remove cap (2) from valve section.
4. Remove spool end screw (3) to remove spring seats (4), centering spring (5), and retainer plate (6).
5. Use an O-ring pick to remove wiper seal (7) and lip seal (8).

1—Cap Screw (2 used)
2—Cap
3—Spool End Screw
4—Spring Seat (2 used)
5—Centering Spring
6—Retainer Plate
7—Wiper Seal
8—Lip Seal
9—Spool



T118813 –UN–10DEC98

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CED,TX03399,6078 –19–31MAR00–2/5

IMPORTANT: DO NOT damage OD or ID of new lip seal during installation. Installation Tool MUST be used to install lip seal and wiper seal.

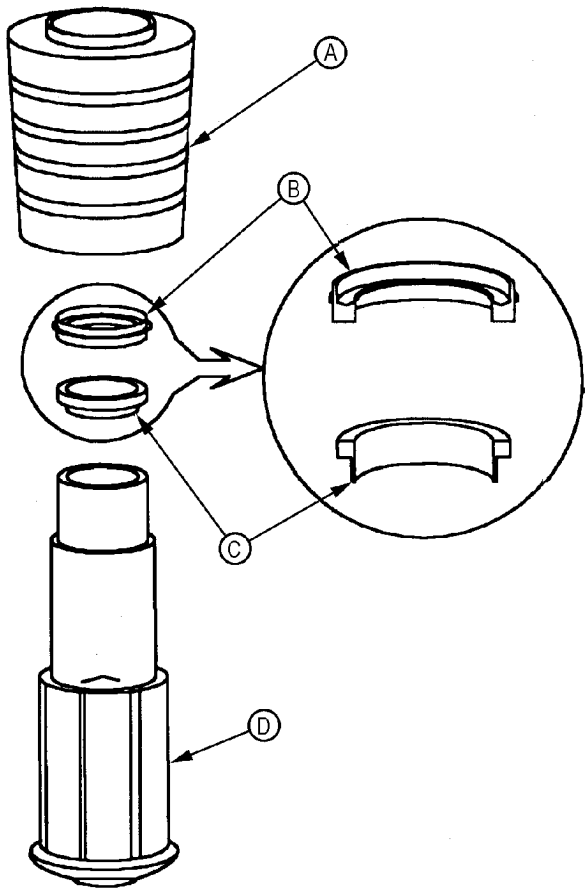
6. Use JDG734 Seal Installation Tool to install new lip seal and wiper seal at each end of spool.

   - Install wiper seal (C) on end of tool driver (D) with smaller OD of wiper into driver.
   - Put lip seal (B) on wiper seal with open side of seal away from wiper.

NOTE: Lip end of tool sleeve ID is cone shaped to compress lip seal and wiper.

   - Carefully slide sleeve (A) over lip seal, wiper seal, and driver with raised lip of sleeve away from driver. DO NOT push lip seal through sleeve.
   - Put tool assembly over end of spool with raised lip into counterbore of valve section.
   - Push driver to install lip seal and wiper seal into valve housing.
   - Once the seal is installed, turn the pusher handle 180° to ensure the wiper and lip seal are evenly placed in bore.

A—Tool Sleeve
B—Lip Seal
C—Wiper Seal
D—Tool Driver



T7677AA

T7677AA –UN–27JAN97

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CED,TX03399,6078 –19–31MAR00–3/5

7. Install retainer plate (6), spring seats (4), and centering spring (5).

8. Clean threads of spool (9) and spool end screw (3) and apply cure primer. Apply thread lock and sealer (high strength) to threads of spool end screw (3). Install and tighten screw to specifications.

Hydraulic Control Valve—Specification

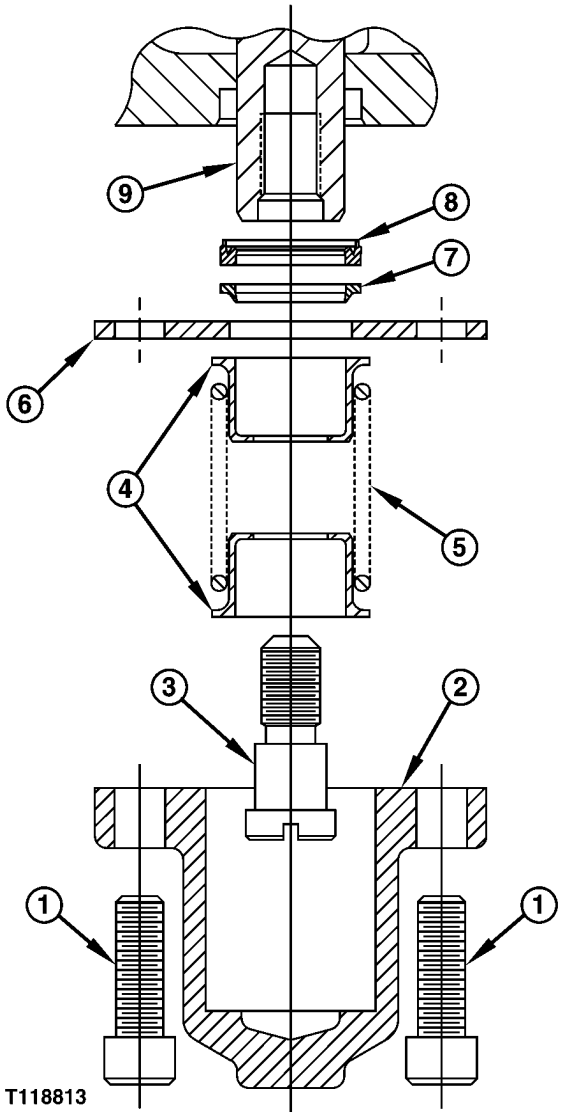
Valve Spool End Screw—Torque ..... 9.5 ± 0.1 N•m (84 ± 12 lb-in.)

9. Install cap (2) and cap screws (1). Tighten cap screws to specifications.

Hydraulic Control Valve—Specification

Valve Spool Cap Socket Head Screws—Torque ..... 9.5 ± 0.1 N•m (84 ± 12 lb-in.)

1—Cap Screw (2 used)
2—Cap
3—Spool End Screw
4—Spring Seat (2 used)
5—Centering Spring
6—Retainer Plate
7—Wiper Seal
8—Lip Seal
9—Spool



T118813 –UN–10DEC98

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CED,TX03399,6078 –19–31MAR00–4/5

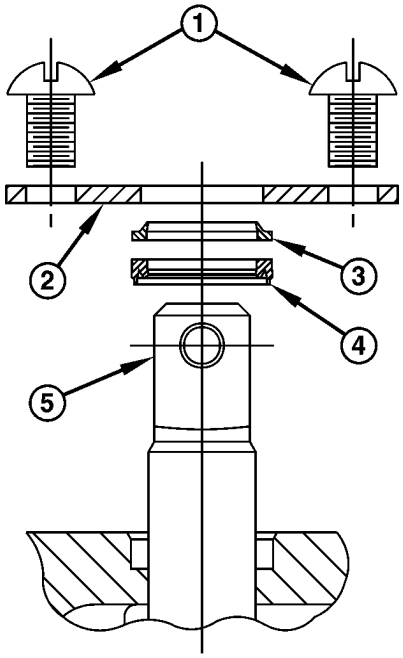
10. Install retainer plate (2) and screws (1). Tighten screws to specifications.

Hydraulic Control Valve—Specification

Valve Spool Retainer Plate
Screws—Torque ..... 5.5 ± 0.1 N•m (48 ± 12 lb-in.)

11. Check for correct installation of seals by pushing down on spool (5). Spool must return to neutral position.

1—Screw (2 used)
2—Retainer Plate
3—Wiper Seal
4—Lip Seal
5—Spool



T118812

T118812 –UN–10DEC98

CED,TX03399,6078 –19–31MAR00–5/5

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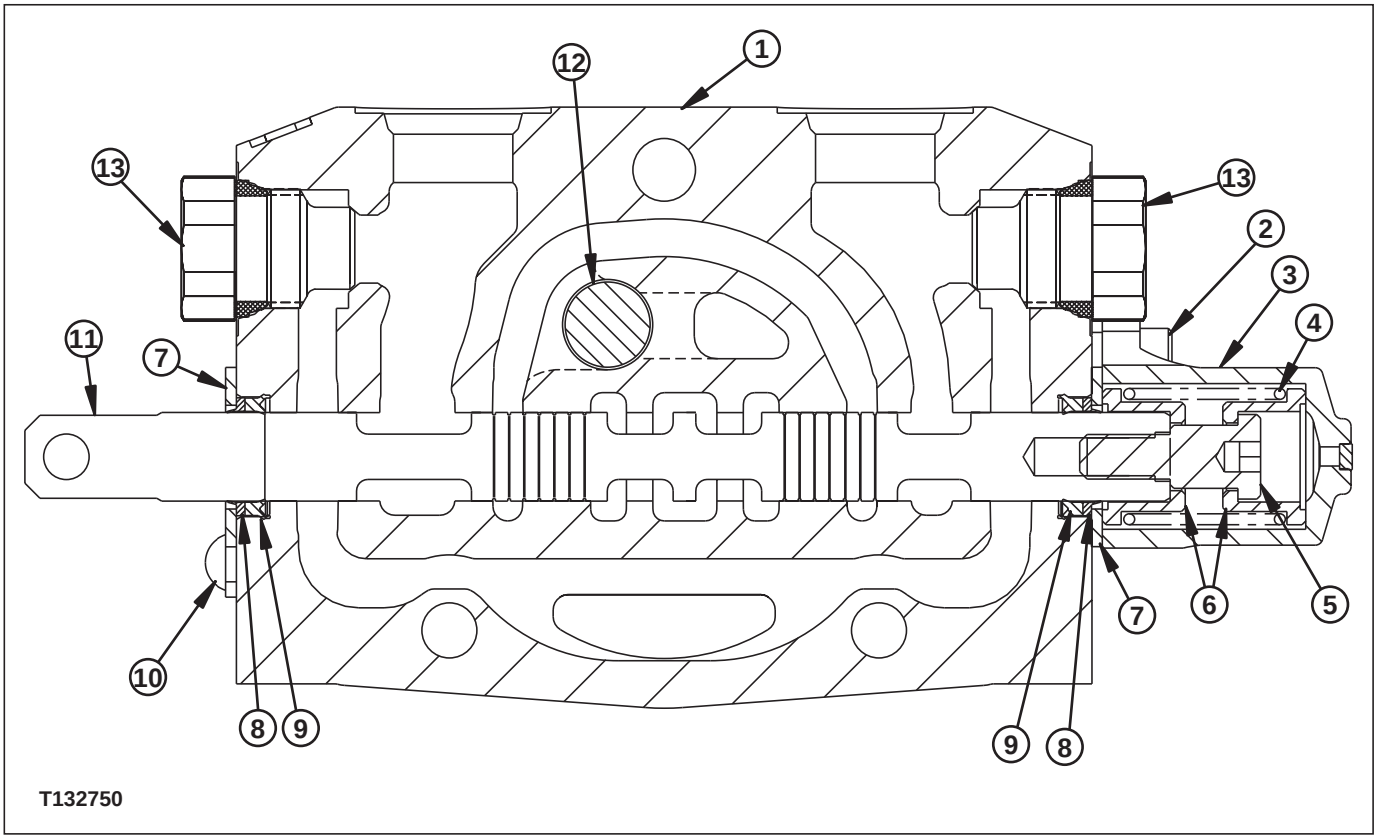
Disassemble and Assemble Auxiliary Control Valve Section



1—Valve Housing
2—Cap Screw (2 used)
3—Cap
4—Centering Spring
5—Spool End Screw
6—Spring Seat (2 used)
7—Retaining Plate (2 used)
8—Wiper Seal (2 used)
9—Lip Seal (2 used)
10—Screw (2 used)
11—Spool
12—Load Check and Spring
13—Shut-Off Plug (2 used)

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IMPORTANT: Spool MUST be installed into the valve housing the same way it was removed for proper operation of the hydraulic function.

1. Remove parts (2, 3, 7 and 10) to remove spool (11) from valve housing (1).
2. Using a protective cover or wooden blocks, put spool in vise. Remove spool end screw (5), spring (4), and spring seats (6).
3. Inspect parts for wear or damage. Replace all O-rings and seals.
4. Put clean hydraulic oil on spool and install spool into valve housing. Install lip seals (9) and wiper seals (8) using JDG734 Seal Installation Tool. (See Remove and Install Wiper Seals and Lip Seals on Hydraulic Control Valve Sections in this group.)
5. Install parts (4—7) on spool. Clean threads of spool (11), and spool end screw (5) and apply cure primer. Apply thread lock and sealer (high strength) on spool end screw. Install and tighten to specifications.

Hydraulic Control Valve—Specification

Auxiliary Valve Spool End Screw—Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)

6. Coat spring (4) with grease.
7. Assemble remaining parts. Tighten cap screws (2), screws (10) and plugs (13) to specifications.

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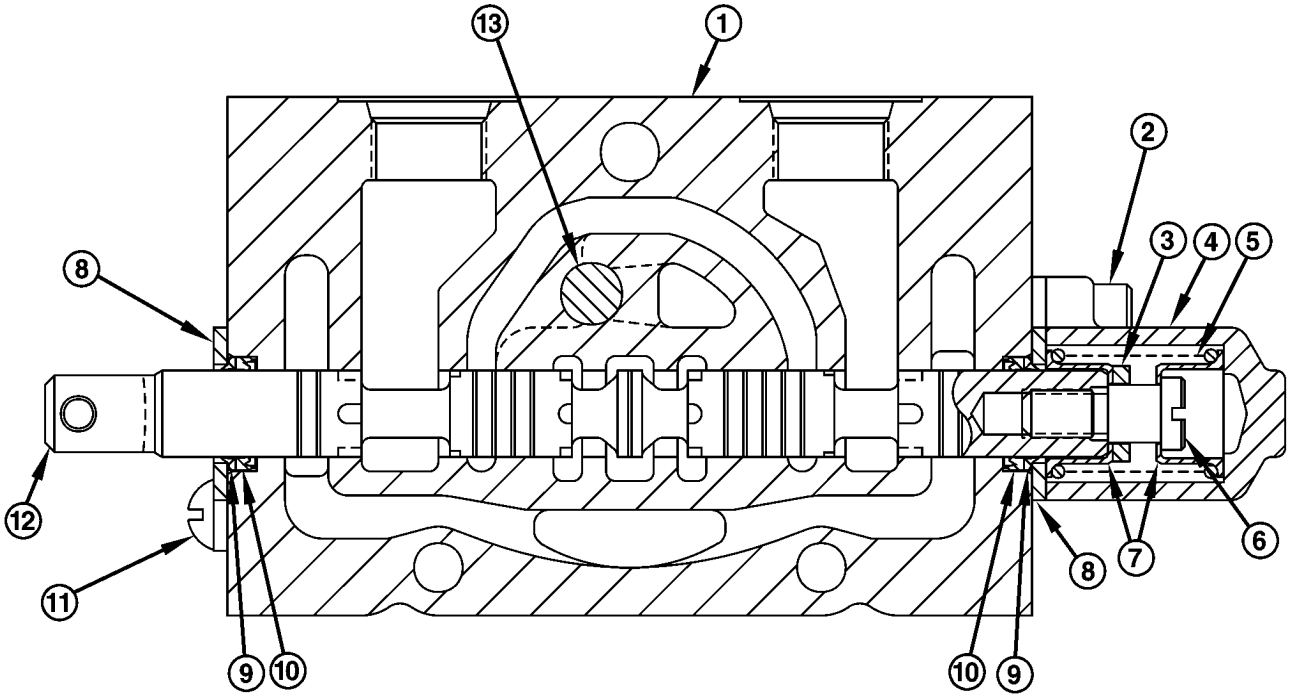
CED,TX03399,6079 –19–31MAR00–1/2

Hydraulic Control Valve—Specification

Auxiliary Valve Spool Cap Socket Head Screws—Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Auxiliary Valve Retainer Plate Screws—Torque	5.5 ± 0.1 N•m (48 ± 12 lb-in.)
Auxiliary Valve Shut-Off Plugs—Torque	65 ± 5 N•m (576 ± 42 lb-in.)

CED,TX03399,6079 –19–31MAR00–2/2

Disassemble and Assemble Angle Control Valve Section



T118815

T118815 –UN–14DEC98

1—Valve Housing
2—Cap Screw (2 used)
3—Spacer
4—Cap
5—Centering Spring
6—Spool End Screw
7—Spring Seat (2 used)
8—Retaining Plate (2 used)
9—Wiper Seal (2 used)
10—Lip Seal (2 used)
11—Screw (2 used)
12—Spool
13—Load Check and Spring

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IMPORTANT: Spool MUST be installed into the valve housing the same way it was removed for proper operation of the hydraulic function.

1. Remove parts (2, 4, 8 and 11) to remove spool (12) from valve housing (1).
2. Using a protective cover or wooden blocks, put spool in vise. Remove spool end screw (6), spacer (3), spring (5), and spring seats (7).
3. Inspect parts for wear or damage. Replace all O-rings and seals.
4. Put clean hydraulic oil on spool and install spool into valve housing. Install lip seals (10) and wiper seals (9) using JDG734 Seal Installation Tool. (See Remove and Install Wiper Seals and Lip Seals on Hydraulic Control Valve Sections in this group.)
5. Install parts (3, 5—8) on spool. Clean threads of spool (12), and spool end screw (6) and apply cure primer. Apply thread lock and sealer (high strength) on spool end screw. Install and tighten to specifications.

Hydraulic Control Valve—Specification

Angle Valve Spool End Screw—Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)

6. Coat spring (5) with grease.
7. Assemble remaining parts. Tighten cap screws (2) and screws (11) to specifications.

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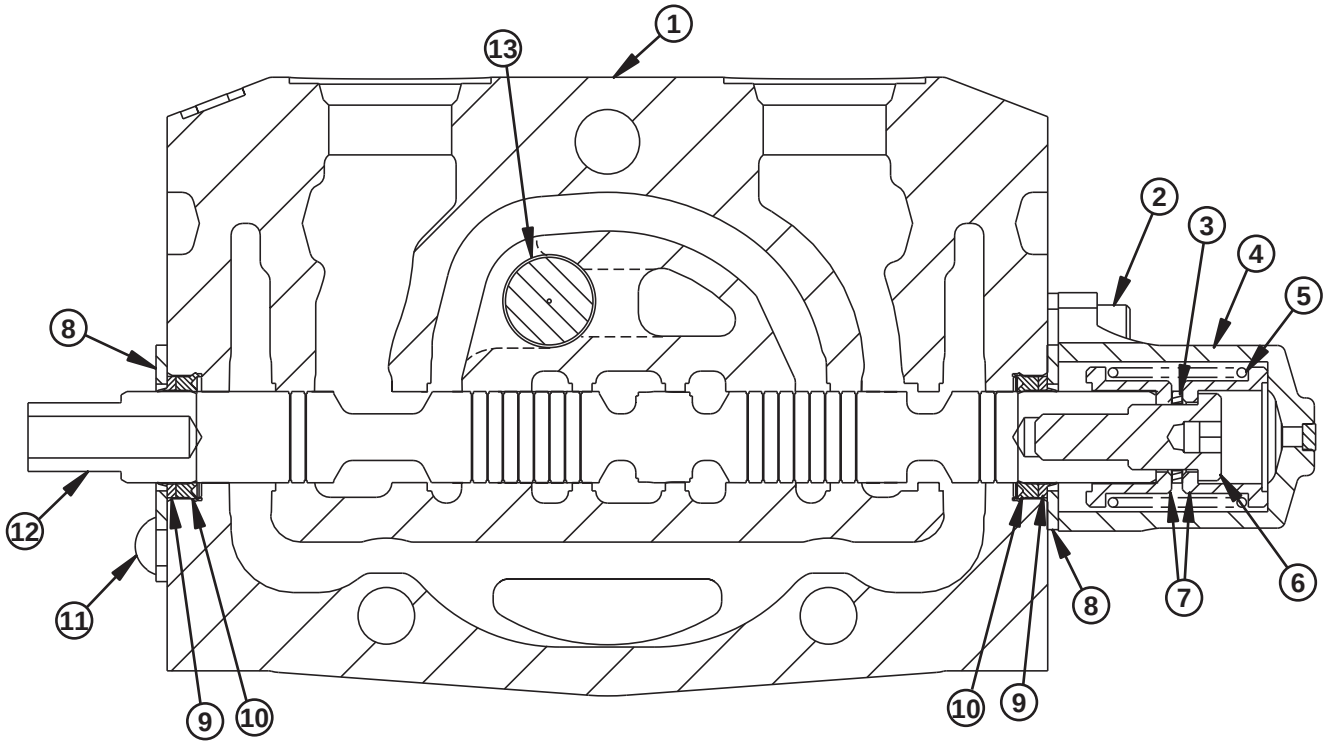
CED,TX03399,6080 –19–31MAR00–1/2

Hydraulic Control Valve—Specification

Angle Valve Spool Cap Socket Head Screws—Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Angle Valve Retainer Plate Screws—Torque	5.5 ± 0.1 N•m (48 ± 12 lb-in.)

CED,TX03399,6080 –19–31MAR00–2/2

Disassemble and Assemble Tilt Control Valve Section



T132771

T132771 –UN–21NOV00

1—Valve Housing
2—Cap Screw (2 used)
3—Spacer
4—Cap
5—Centering Spring
6—Spool End Screw
7—Spring Seat (2 used)
8—Retaining Plate (2 used)
9—Wiper Seal (2 used)
10—Lip Seal (2 used)
11—Screw (2 used)
12—Spool
13—Load Check and Spring

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IMPORTANT: Spool MUST be installed into the valve housing the same way it was removed for proper operation of the hydraulic function.

1. Remove parts (2, 4, 8 and 11) to remove spool (12) from valve housing (1).
2. Using a protective cover or wooden blocks, put spool in vise. Remove spool end screw (6), spacer (3), spring (5), and spring seats (7).
3. Inspect parts for wear or damage. Replace all O-rings and seals.
4. Put clean hydraulic oil on spool and install spool into valve housing. Install lip seals (10) and wiper seals (9) using JDG734 Seal Installation Tool.
5. Install parts (3, 5—8) on spool. Clean threads of spool (12), and spool end screw (6) and apply cure primer. Apply thread lock and sealer (high strength) on spool end screw. Install and tighten to specifications.

Hydraulic Control Valve—Specification

Tilt Valve Spool End Screw—Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)

6. Coat spring (5) with grease.
7. Assemble remaining parts. Tighten cap screws (2) and screws (11) to specifications.

Continued on next page

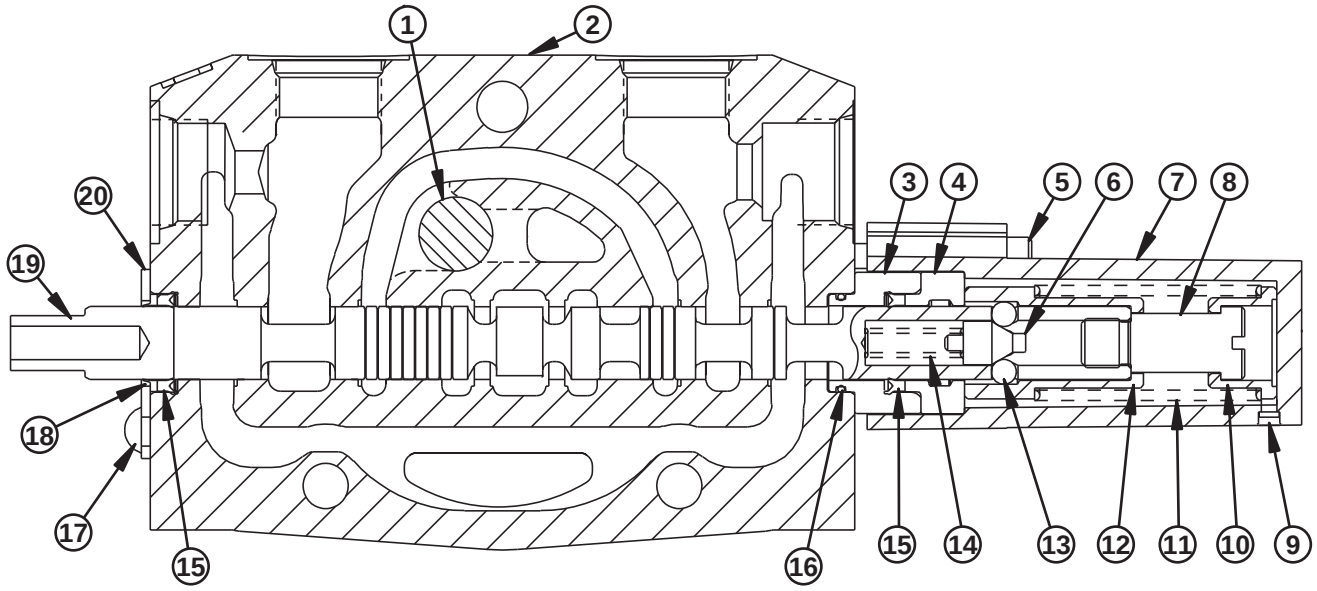
CED,TX03399,6081 –19–31MAR00–1/2

Hydraulic Control Valve—Specification

Tilt Valve Spool Cap Socket Head Screws—Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Tilt Valve Retainer Plate Screws—Torque	5.5 ± 0.1 N•m (48 ± 12 lb-in.)

CED,TX03399,6081 –19–31MAR00–2/2

Disassemble and Assemble Lift Control Valve Section



T133072 –UN–18AUG00

T133072

1—Check Valve and Spring	6—Ball Cam	11—Centering Spring	16— O-Ring
2—Valve Section Body	7—Cap	12—Spring Seat	17—Screw (2 used)
3—Seal Holder	8—Spool End Screw	13—Ball (4 used)	18—Spool Wiper
4—Detent Sleeve	9—Vent Screen	14—Detent Spring	19—Spool
5—Cap Screw (2 used)	10—Spring Seat	15—Lip Seal (2 used)	20—Retaining Plate

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IMPORTANT: Spool MUST be installed into the valve housing the same way it was removed for proper operation of the hydraulic function.

1. Remove parts (5, 7 and 9). Remove spool (19) from housing (2).
2. Using a protective cover or wooden blocks, put spool in vise. Remove parts (8, and 10—12).
3. Remove parts (13, 6 and 14).
4. Remove parts (4, 3 15 and 16).
5. Inspect parts for wear or damage. Replace all O-rings and backup rings.
6. Put clean hydraulic oil on spool and install spool into valve housing. On spool tang end install seal (15) and wiper ring (18) using JDG734 Seal Installation Tool.

IMPORTANT: Lip seal (15) will be damaged if installed over spool end while installed in seal holder (3).

7. On cap end install seal holder (3) over spool end first. Lubricate seal (15) and install over spool end being careful to keep seal perpendicular to spool axis when passing cross drilled holes in the spool. Grease and install detent sleeve (4).

Continued on next page

CED,TX03399,6082 –19–31MAR00–1/2

8. Install detent spring (14) and ball cam (6). Hold detent balls (13) in place with grease. Slide spring collar (12) into place until it touches detent balls (13). Using a punch push through spring collar (12) into spool end and depress ball cam (6) against spring. This will allow balls (13) to retract so spring collar (12) can be moved fully into place.

9. Install parts (10, 11, 8 and 12) on spool. Clean threads of spool (19) and spool end (8) apply cure primer. Apply thread lock and sealer (high strength) on screw. Install and tighten to specifications.

Hydraulic Control Valve—Specification

Lift Valve Spool End Screw—Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)

10. Apply grease to spring (11). Install cap (7).

11. Install all remaining parts. Tighten cap screws (5 and 17) to specifications.

Hydraulic Control Valve—Specification

Lift Valve Spool Cap Socket Head Screws—Torque	9.5 ± 0.1 N•m (84 ± 12 lb-in.)
Lift Valve Retainer Plate Screws—Torque	5.5 ± 0.1 N•m (48 ± 12 lb-in.)

CED,TX03399,6082 –19–31MAR00–2/2

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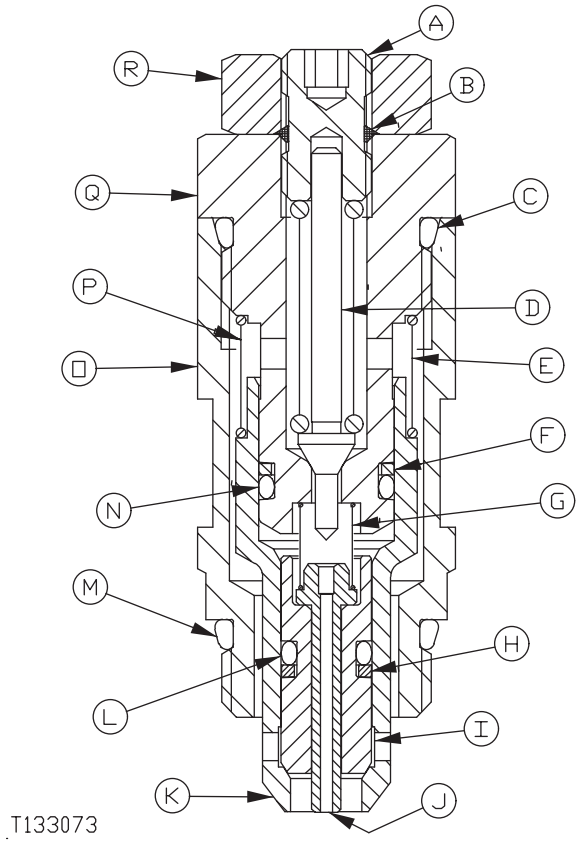
Disassemble and Assemble System Relief Valve

NOTE: Only O-rings and backup rings are serviceable as a kit. If other parts are damaged, replace relief valve assembly.

1. Disassemble and inspect parts for wear and damage.
2. Put clean hydraulic oil on all parts before assembly.
3. Adjust system relief valve. (See Hydraulic System Relief Valve Test in Operation and Test Manual, Group 9025-25.)

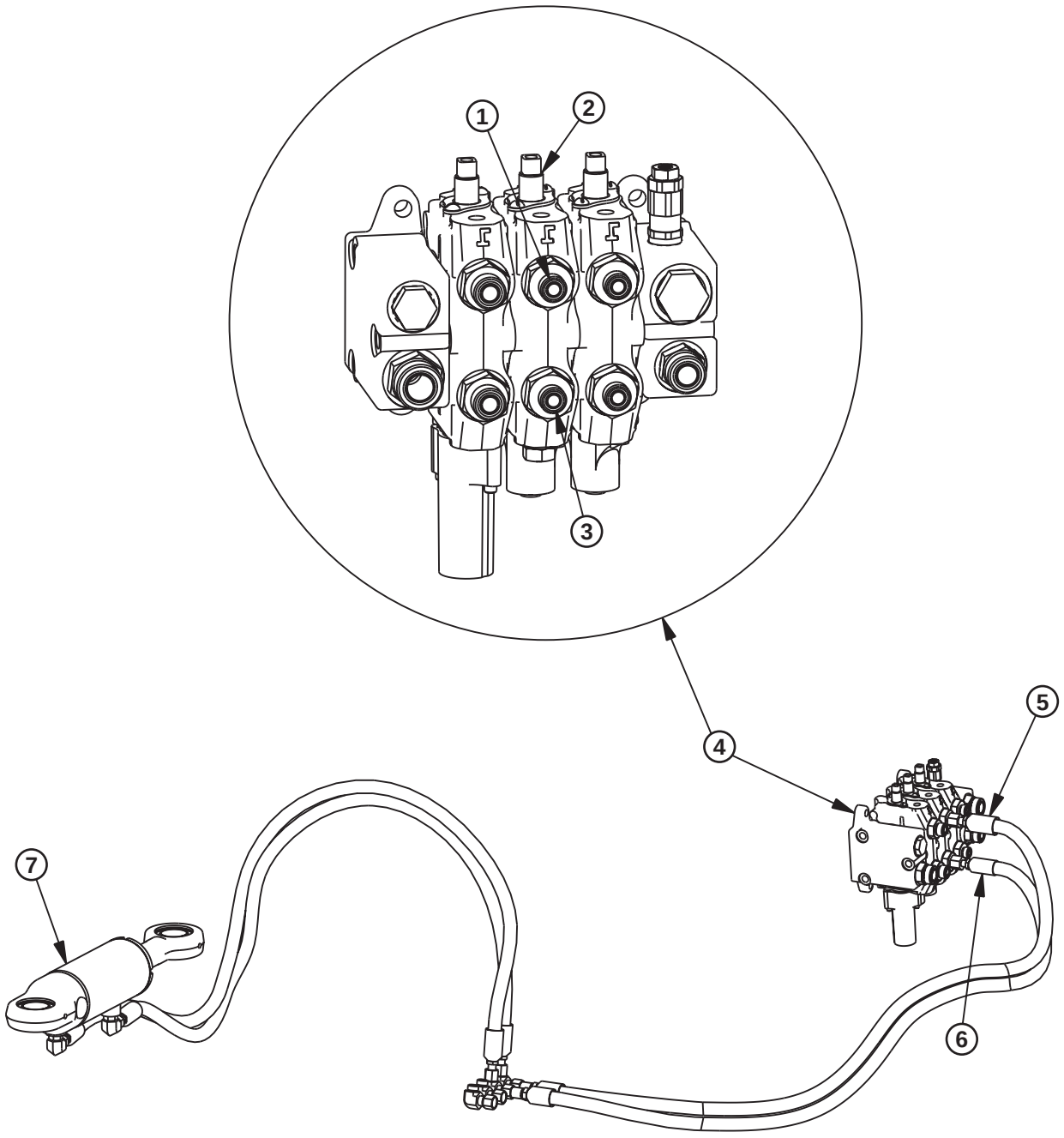
A—Adjusting Screw
B—O-Ring (2 used)
C—O-Ring
D—Pilot Poppet
E—Spring
F—Backup Ring
G—Spring
H—Backup Ring
I—Poppet
J—Piston
K—Poppet
L—O-Ring
M—O-Ring
N—O-Ring
O—Valve Body
P—Spring
Q—Valve Body Plug
R—Nut



T133073 –UN–09AUG00

CED,TX03399,6083 –19–31MAR00–1/1

Tilt Cylinder-To-Control Valve Component Location



T132531
(EVA100248)

T132531 –UN–17JUL00

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CED,TX03399,6084 –19–31MAR00–1/2

1—Blade Tilt Cylinder "Right" Rod End Port
2—Blade Tilt Valve Section
3—Blade Tilt Cylinder "Left" Head End Port
4—Hydraulic Control Valve
5—Cylinder Rod End Hose
6—Cylinder Head End Hose
7—Tilt Cylinder

CED,TX03399,6084 –19–31MAR00–2/2

Remove and Install Tilt Cylinder

1. Lower all equipment to the ground.
2. Stop engine. Operate all hydraulic controls to release pressure in hydraulic system.

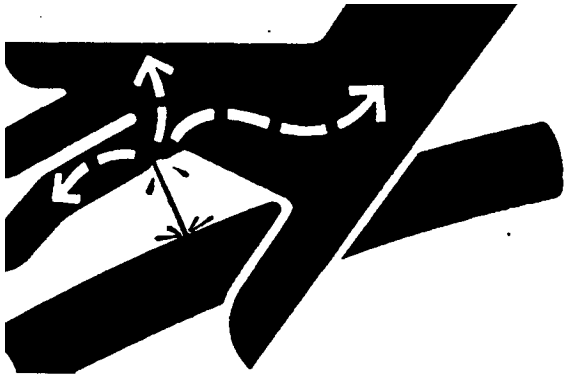
CED,TX03399,6085 –19–31MAR00–1/2

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

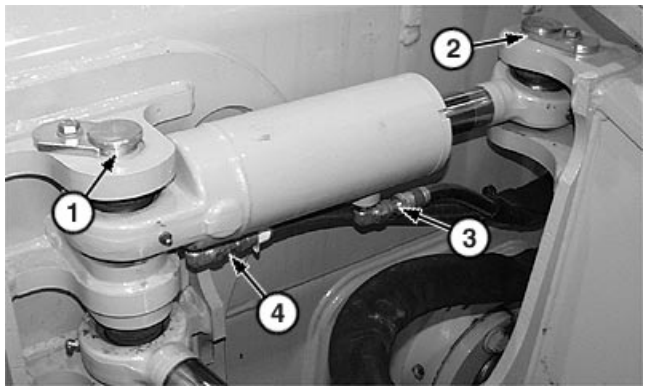
3. Tag and disconnect cylinder hoses (3 and 4). Close all opening using caps and plugs.
4. Attach cylinder to hoist using lift strap.

CAUTION: Use a lifting device for heavy components.

5. Remove cap screw and retainer and remove pin (2). Remove cap screws and retainers on tilt cylinder head end and angle cylinder rod end. Drive tilt cylinder pin (1) and angle pin out.
6. Remove cylinder.
7. Inspect rubber bushings, replace if necessary.
8. Install cylinder and pins. Connect tilt cylinder hoses. (See Tilt Cylinder-to-Control Valve Component Location in this group for hose routing.)



X9811 –UN–23AUG88

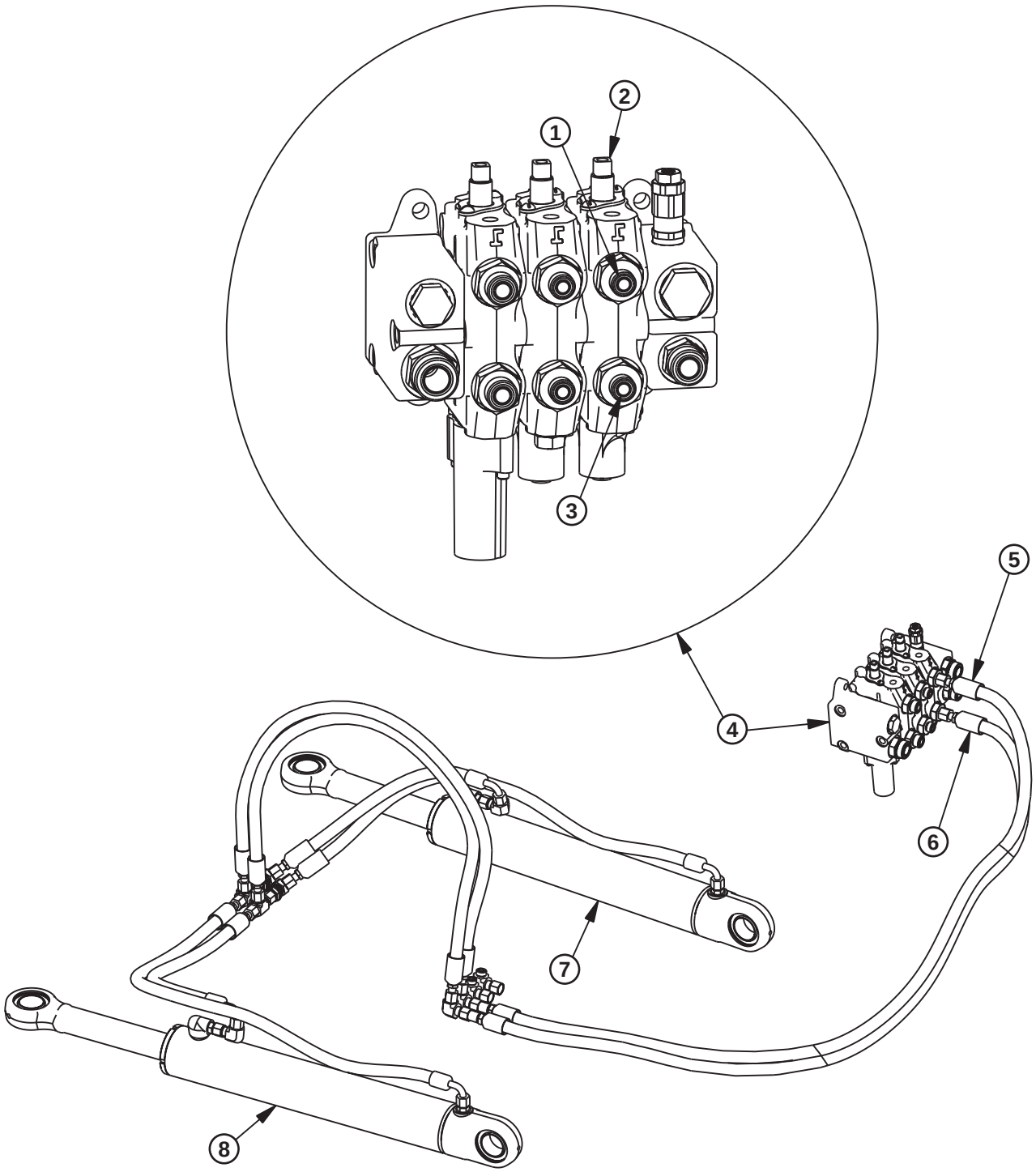


T132534B –UN–20JUL00

1—Tilt Cylinder Head End Pin/Angle Cylinder Rod End Pin
2—Tilt Cylinder Rod End Pin
3—Tilt Cylinder Rod End Hose
4—Tilt Cylinder Head End Hose

CED,TX03399,6085 –19–31MAR00–2/2

Angle Cylinder-To-Control Valve Component Location



T132529
(EVA100248)

T132529 –UN–17JUL00

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CED,TX03399,6086 –19–31MAR00–1/2

1—Top Port-to-Right Angle Cylinder Rod End and Left Cylinder Head End Port
2—Blade Angle Valve Section
3—Bottom Port-to-Right Cylinder Head End and Left Cylinder Rod End
4—Hydraulic Control Valve
5—Angle Cylinder Hose
6—Angle Cylinder Hose
7—Right Angle Cylinder
8—Left Angle Cylinder

CED,TX03399,6086 –19–31MAR00–2/2

Remove and Install Angle Cylinder

1. Lower all equipment to the ground.
2. Stop engine. Operate all hydraulic controls to release pressure in hydraulic system.

Continued on next page

CED,TX03399,6087 –19–19JUN02–1/2

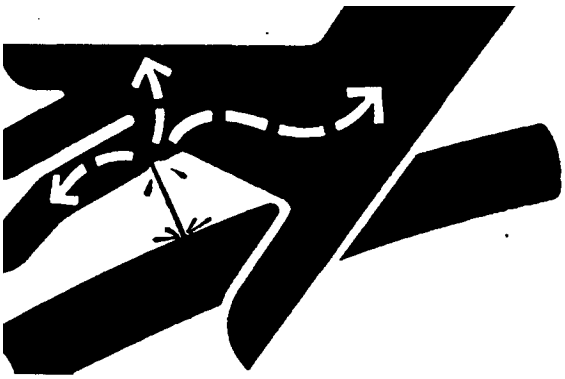
CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

3. Tag and disconnect cylinder hoses (1 and 2) and grease line. Close all opening using caps and plugs.
4. Attach cylinder to hoist using lift strap.

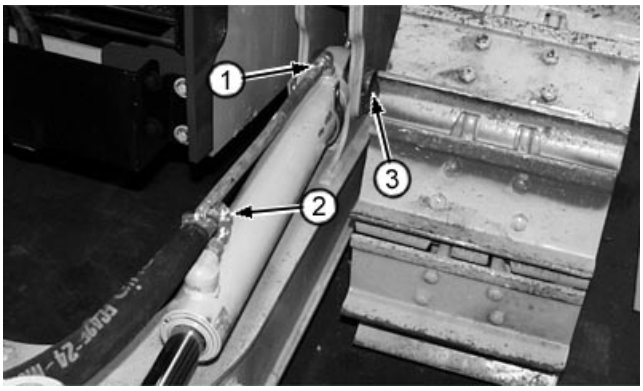
CAUTION: Use a lifting device for heavy components.

5. Remove cap screw and retainer. Remove pin (3). Remove cap screws and retainers on tilt cylinder head end and angle cylinder rod end. Drive tilt cylinder pin (4) and angle pin (5) out.
6. Remove angle cylinder.
7. Inspect rubber bushings. Replace if necessary.
8. Install cylinder and pins. Connect angle cylinder hoses. (See Angle Cylinder-to-Control Valve Component Location in this group for hose routing.)

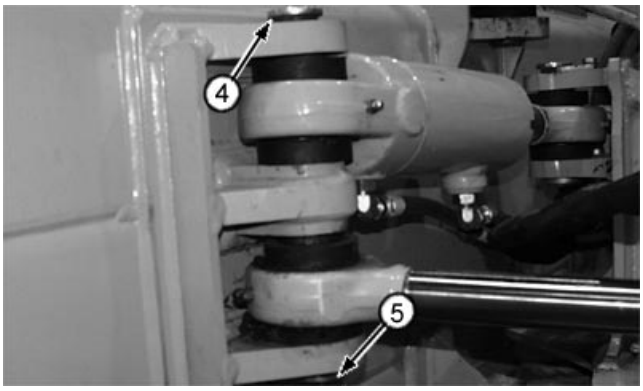
1—Angle Cylinder Head End Hose
2—Angle Cylinder Rod End Hose
3—Angle Cylinder Head End Pin
4—Tilt Cylinder Head End Pin
5—Angle Rod End Pin



X9811 –UN–23AUG88



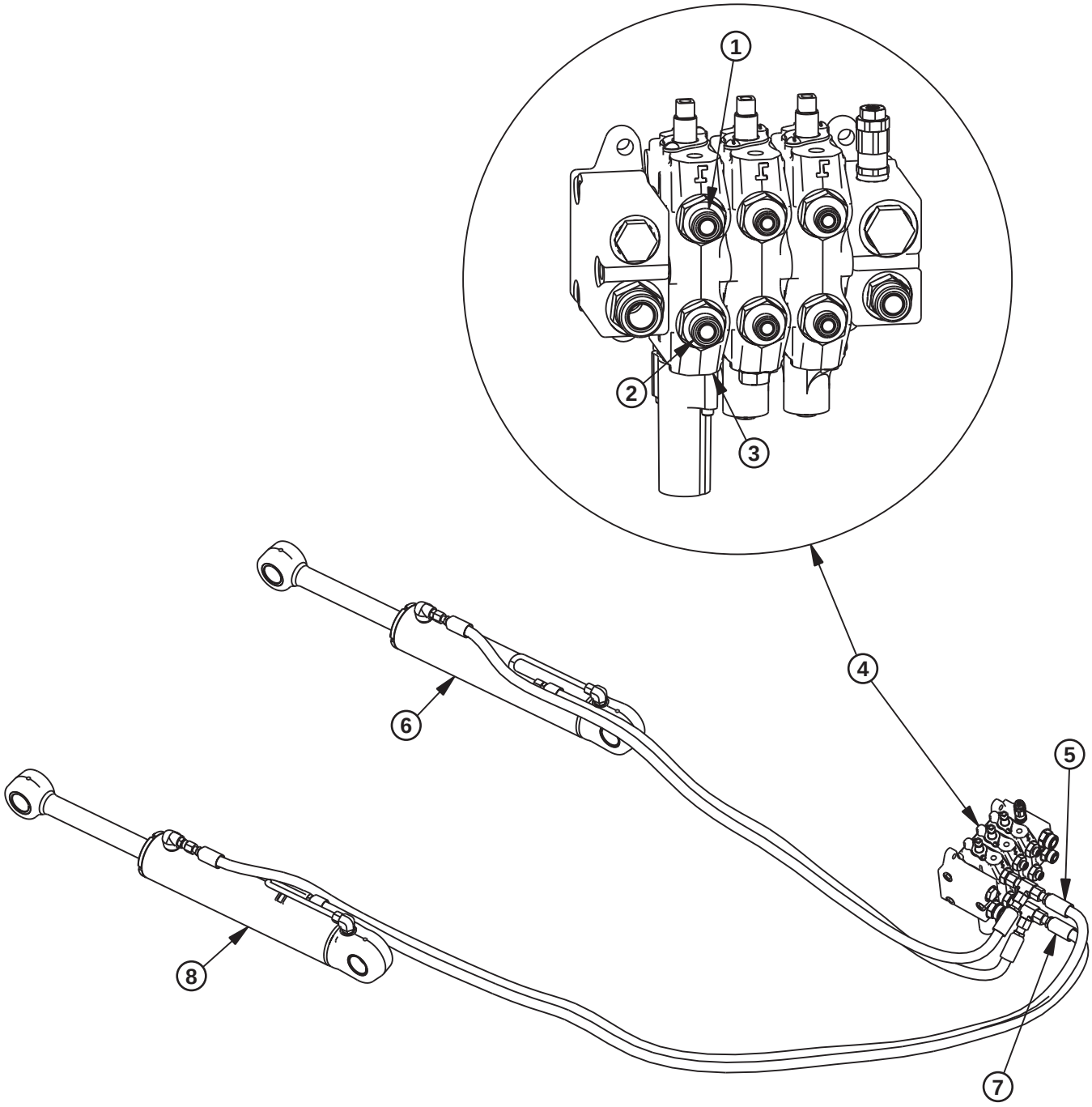
T119486B –UN–11JAN99



T119487B –UN–11JAN99

CED,TX03399,6087 –19–19JUN02–2/2

Lift Cylinder-To-Control Valve Component Location



T132530 –UN–17JUL00

T132530
(EVA100248)

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CED,TX03399,6088 –19–31MAR00–1/2

1—Lift Cylinder Blade "Raise" Rod End Port
2—Lift Cylinder Blade "Lower" Head End Port
3—Blade Lift Valve Section
4—Hydraulic Control Valve
5—Cylinder Rod End Hose
6—Right Lift Cylinder
7—Cylinder Head End Hose
8—Left Lift Cylinder

CED,TX03399,6088 –19–31MAR00–2/2

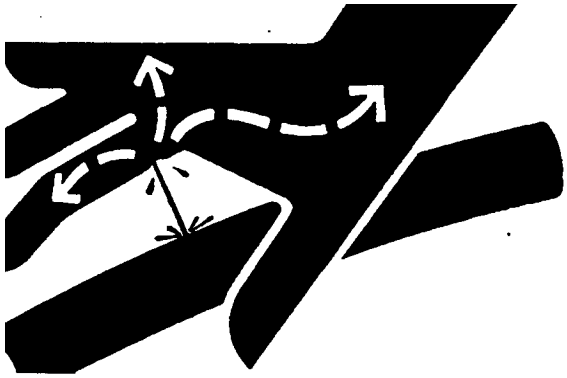
Remove and Install Lift Cylinder

1. Lower all equipment to the ground.
2. Stop engine. Operate all hydraulic controls to release pressure in hydraulic system.

CED,TX03399,6089 –19–31MAR00–1/2

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure.

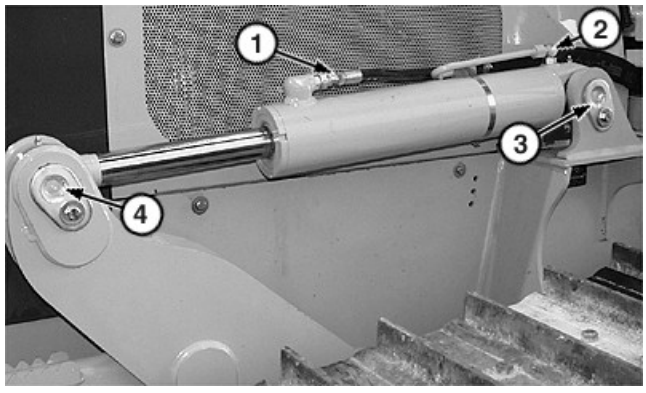
3. Tag and disconnect cylinder hose (1) and line (2). Close all opening using caps and plugs.
4. Attach cylinder to hoist using lift strap.



X9811 –UN–23AUG88

CAUTION: Use a lifting device for heavy components.

5. Remove cap screws and remove pins (3 and 4).
6. Remove lift cylinder.
7. Install cylinder and pins. Connect lift cylinder hose and line. (See Lift Cylinder-to-Control Valve Component Location in this group for hose routing.)



T132536B –UN–20JUL00

1—Cylinder Rod End Hose
2—Cylinder Head End Line
3—Head End Pin
4—Rod End Pin

CED,TX03399,6089 –19–31MAR00–2/2

Disassemble and Assemble Angle and Lift and Tilt Cylinders (John Deere 120 Series Cylinders)

See Disassemble Cylinder. TM-H120A. (Group 01) See Assemble Cylinder . TM-H120A. (Group 01)

OUT3019,000009D –19–19AUG03–1/1

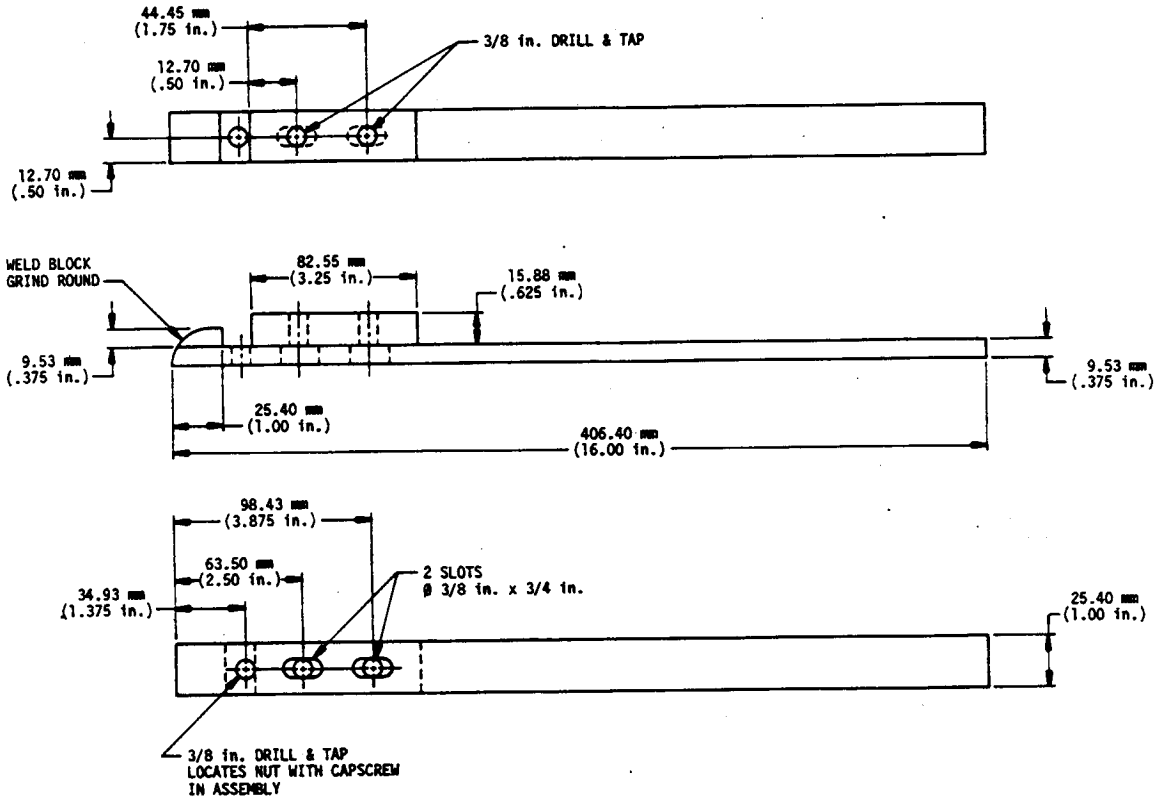
Section 99
Dealer Fabricated Tools

Contents

Page

Group 9900—Dealer Fabricated Tools
DTF1041 Track Nut Removal Tool 99-9900-1
DF1063 Final Drive and Pump Lifting Bracket 99-9900-2
DF1065 Final Drive and Pump Adapter Bracket 99-9900-3
DFT1211 Final Drive Lifting Bracket Adapter 99-9900-4
DFT1087 Track Recoil Spring Disassembly and Assembly Guard Tool. . .99-9900-5
DFT1137 Hydrostatic Motor Removal and Installation Tool 99-9900-6
ST4920 Track Recoil Spring Disassembly and Assembly Tool 99-9900-7
DFT1119 Pump Support 99-9900-11
DFT1130 Adapter 99-9900-12
DFT1132 Hydrostatic Motor and Hydraulic Pump Removal and Installation Tool 99-9900-13
DFT1203 Torque Adapter For Pivot Shaft 99-9900-14
DFT1212 Park Brake Spring Compressor 99-9900-15
DFRW20 Compressor Holding Fixture. 99-9900-16

DTF1041 Track Nut Removal Tool



T6690AH –19–20MAR89

Tool can be made in dealer's shop. Used to remove and install track shoe nuts.

Material: 1020 Flat Stock

9900,WW11 –19–21OCT87–1/1

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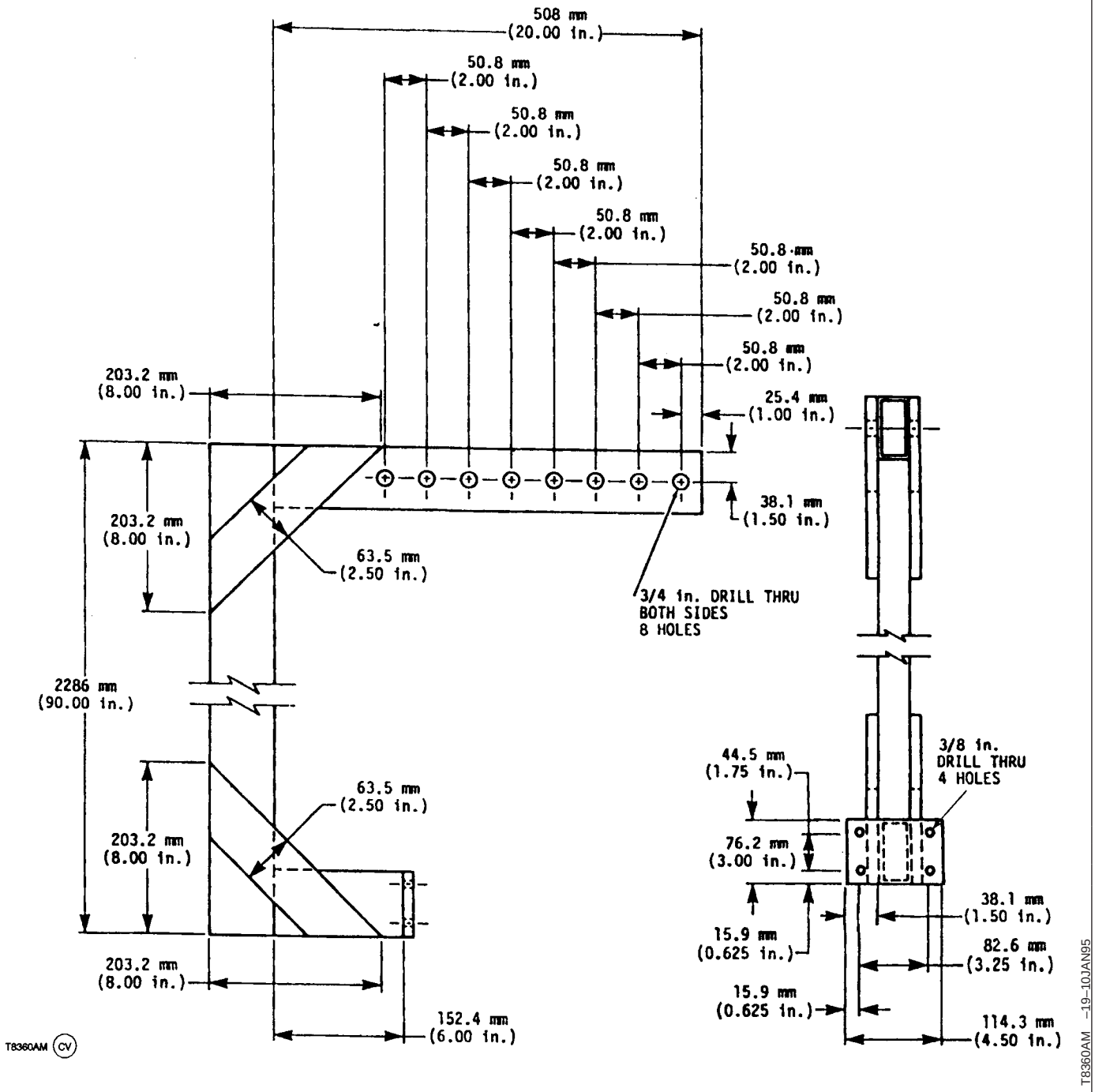
DF1063 Final Drive and Pump Lifting Bracket



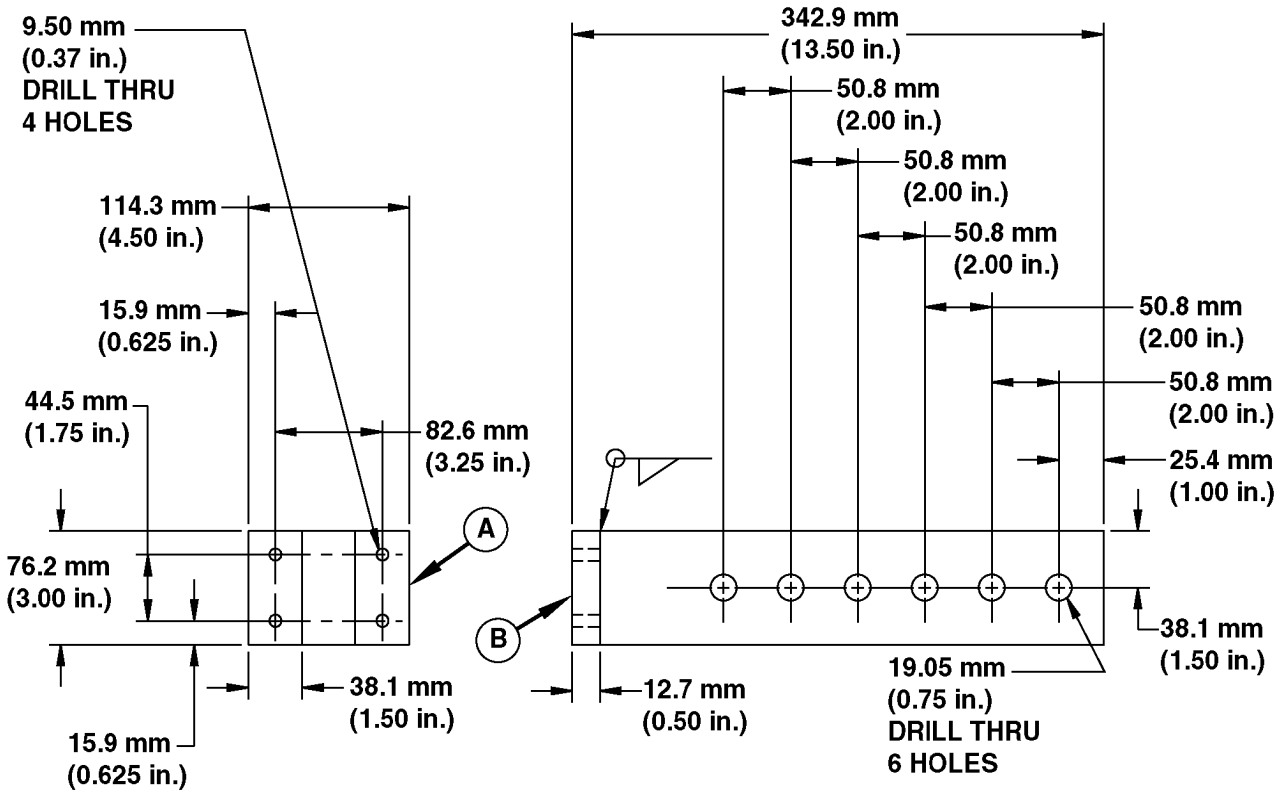
Tool used to remove and install final drive and hydrostatic pumps.

Material required:

- 1-1/2 in. x 3 in. x 3/16 in. Rectangle Tube
- 1/2 in. 1020 Steel
- 5/8 in. x 5 in. Cap Screw
- 3/8 in. x 1-1/2 in. Cap Screw with Nut (4 used)

TX,9900,YY1198 –19–13JUL95–1/1

DF1065 Final Drive and Pump Adapter Bracket



T100422 –19–29FEB96

Adapter used with DF1063 to remove or install final drive and hydraulic pump.

Material required:

- 1/2 in. 1020 steel plate (B) 3 x 4.5 in.
- 2 x 3 rectangular tube 13 in. long

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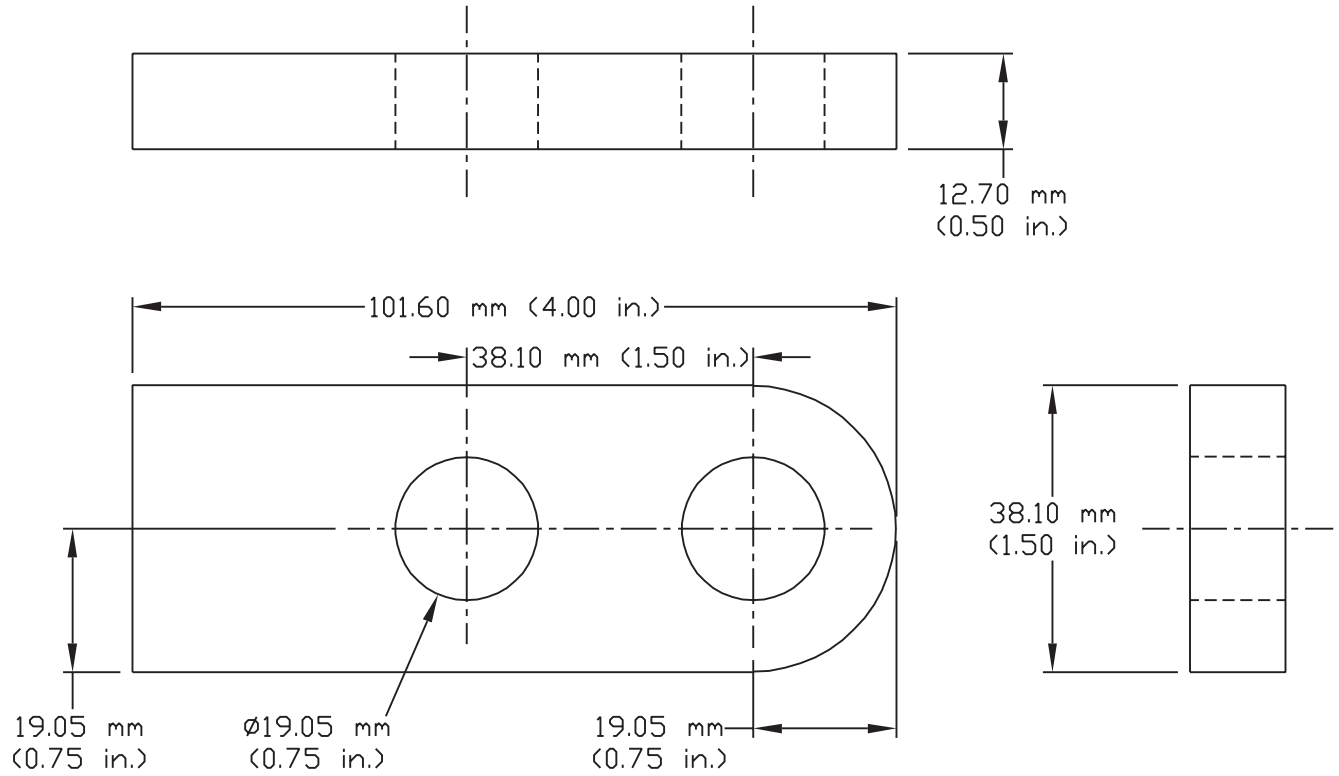
CED,OUO1065,1019 –19–29AUG00–1/1

DFT1211 Final Drive Lifting Bracket Adapter



Adapter used with JT01748 Lifting Bracket to remove and install final drive.

Material required:

- 1/2 in. 1020 steel plate 1.5 x 4 in.

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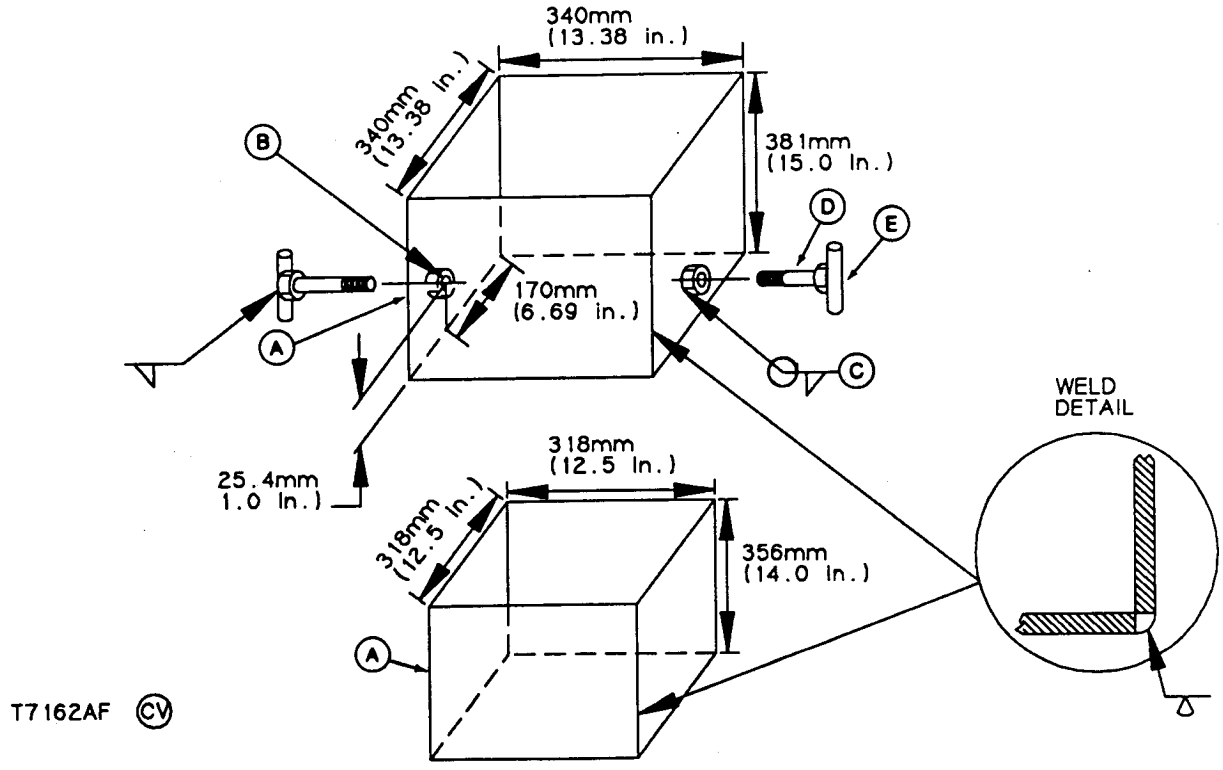
CED,OUO1065,1020 –19–10NOV00–1/1

DFT1087 Track Recoil Spring Disassembly and Assembly Guard Tool



T7162AF –UN–17OCT89

A—3/16 in. 1020 CR Steel Plate
B—9/16 in. Hole (2 places)
C—1/2 in. Nut (2 used)
D—1/2 x 2 in. Cap Screw (2 used)
E—1/2 x 3 in. Steel Round Stock (2 used)

Track Disassembly and Assembly Guard Tool is used with ST4920 Track Recoil Spring Disassembly and Assembly Tool.

Material required:

- 3/16 in. 1020 CR Steel Plate (A)
- 1/2 in. Nut (C) (2 used)
- 1/2 x 2 in. Cap Screw (D) (2 used)
- 1/2 x 3 in. Steel Round Stock (E) (2 used)

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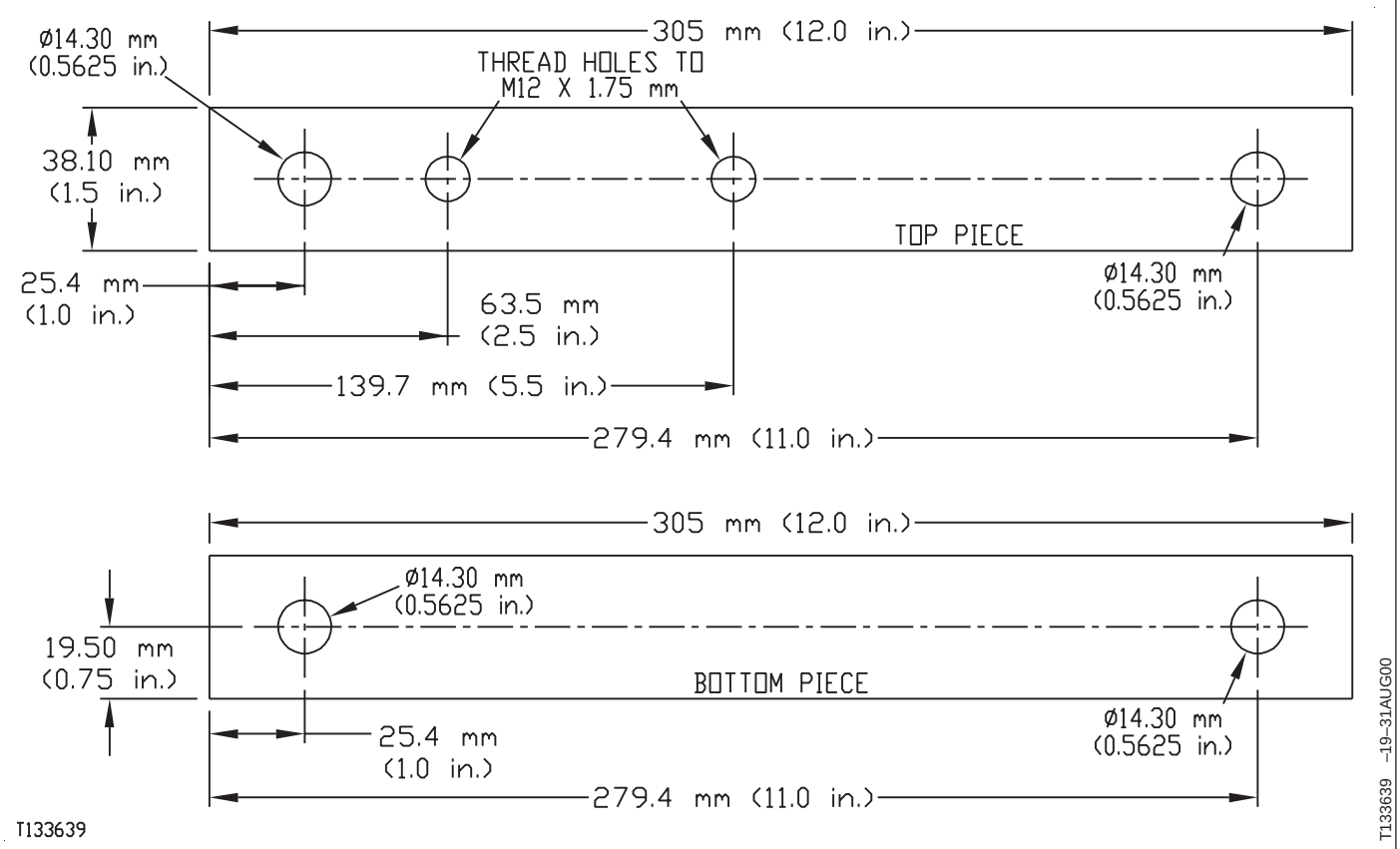
TX,01,RB432 –19–12FEB98–1/1

DFT1137 Hydrostatic Motor Removal and Installation Tool



IMPORTANT: Modification to tool as shown must be made for right side motor removal.

This tool will need to be modified with second threaded hole to allow right side hydrostatic motor to attain correct index position. This tool is to be used with DFT1132 to remove and install hydrostatic motors from rear access hole in frame.

Material required:

- 1-1/2 in. x 3/4 in. x 12 in. long steel bars (2 used)
- M12 x 1.75 eyebolt
- 1/2 in. x 9 in. cap screws with nuts and washers

Install and tighten eyebolt in bracket. Trim any excess eyebolt material so it is even with bottom surface of bracket.

CED,OUO1065,1021 –19–29AUG00–1/1

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ST4920 Track Recoil Spring Disassembly and Assembly Tool

NOTE: It is recommended that DFT1087 Track Recoil Spring Disassembly and Assembly Guard Tool be used with track recoil spring disassembly and assembly tool.

Dimensions given are metric.

Tool is the same as used on other machines except the holder (C). For each track adjuster use the holder with the correct size hole for the nut on that track adjuster.

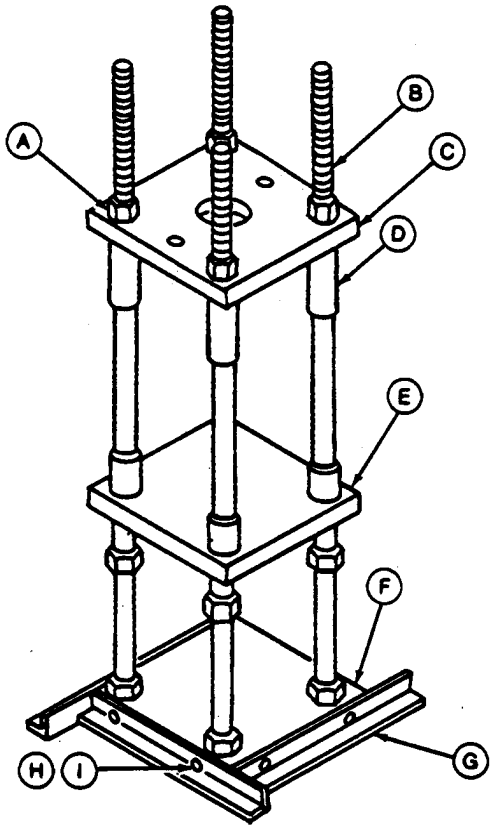
Track Recoil Spring Disassembly and Assembly Tool (compression tool) is used with hydraulic jack to compress recoil spring in track adjuster repair.

Material required:

- 1020 HR Steel for Holder (C), Supporting Plate (E), Base Plate (F), and Base (G).
- "D" Grade (SAE Grade 5) for Eyebolts (D), Nuts (A), and Cap Screws (H).
- "F" Grade (SAE Grade 8) for Studs (B).

Print Numbers:

- A—ST4050 Nut
- B—ST4045 Bolt
- C—ST4035 Holder (Plate)
  - ST4036 Holder (Plate)
  - ST4037 Holder (Plate)
  - DFT1204 Holder (Plate)
- D—ST4047 Eyebolt
- E—ST4040 Supporting Base
- F—ST4042 Base Plate
- G—ST4041 Base
- H—ST4046 Cap Screw
- I—ST4049 Lock Washer



T6585UY –UN–24MAR98

A—Nut (12 used)
B—Stud (4 used)
C—Holder
D—Eyebolt (2 used)
E—Supporting Plate
F—Base Plate
G—Base (4 used)
H—Cap Screw (8 used)
I—Lock Washer (8 used)

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9900
7

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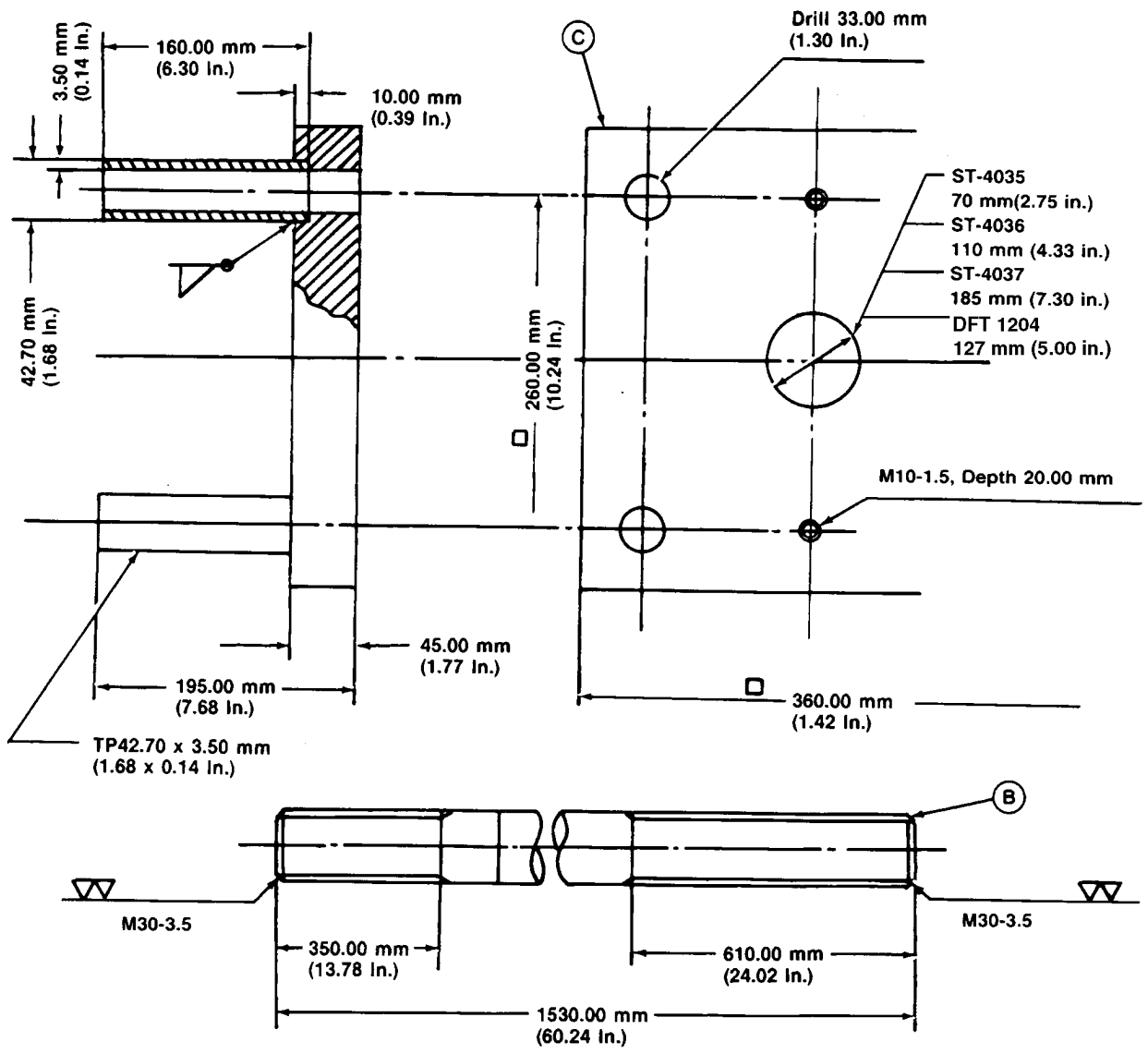
CED,TX03399,6111 –19–08JUN00–1/4



T131532 –UN–16AUG00

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CED,TX03399,6111 –19–08JUN00–2/4

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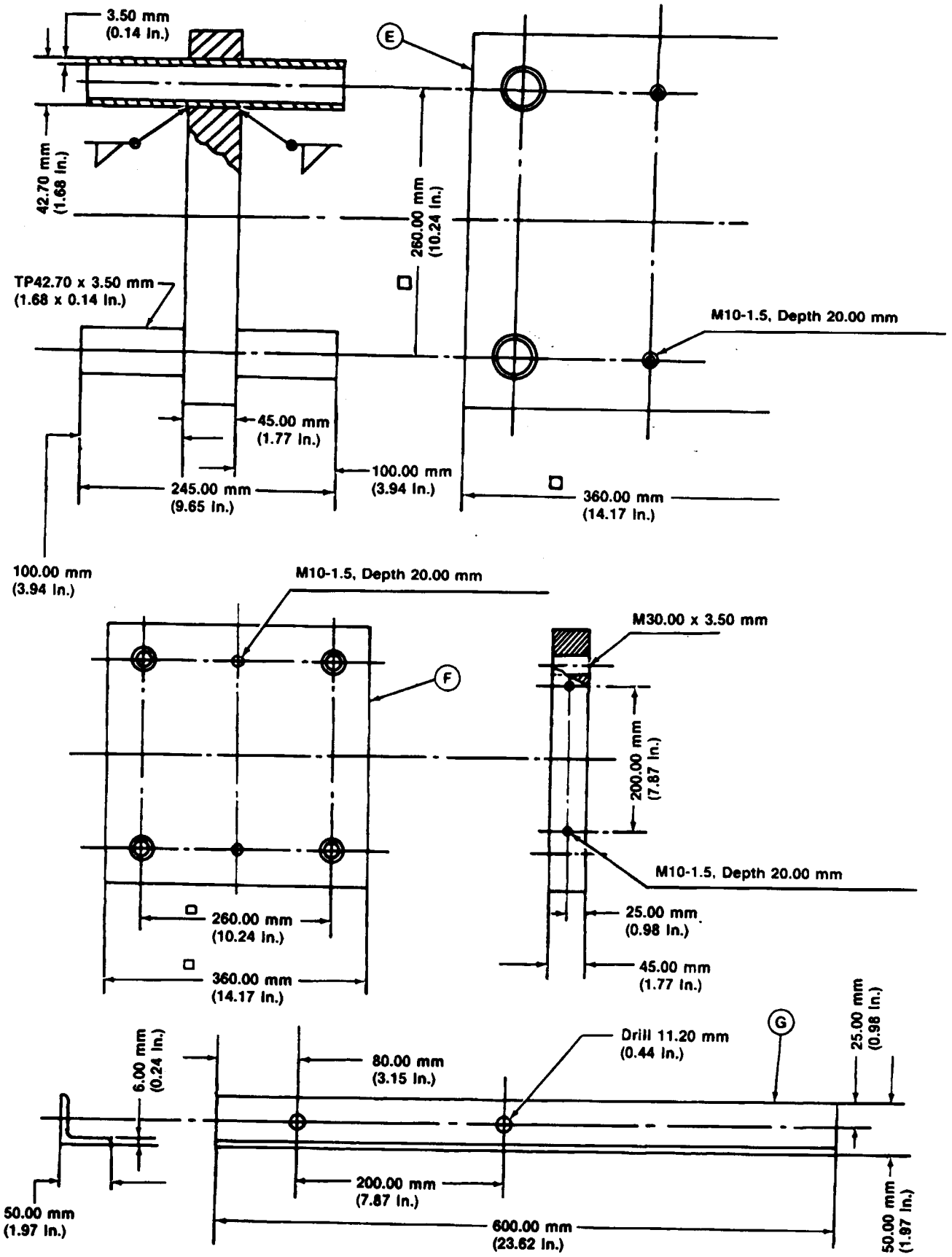

T7029CH –UN–06JUL89

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CED,TX03399,6111 –19–08JUN00–3/4

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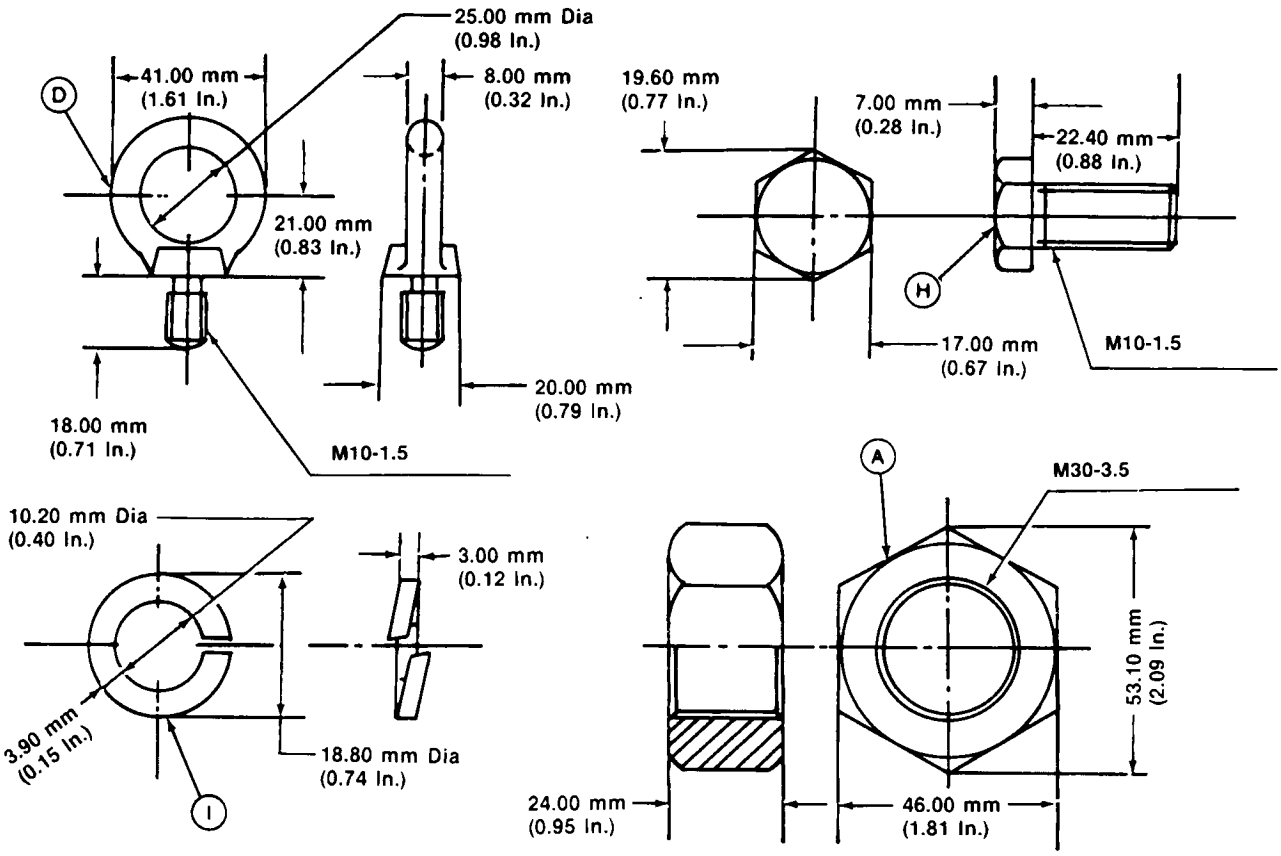
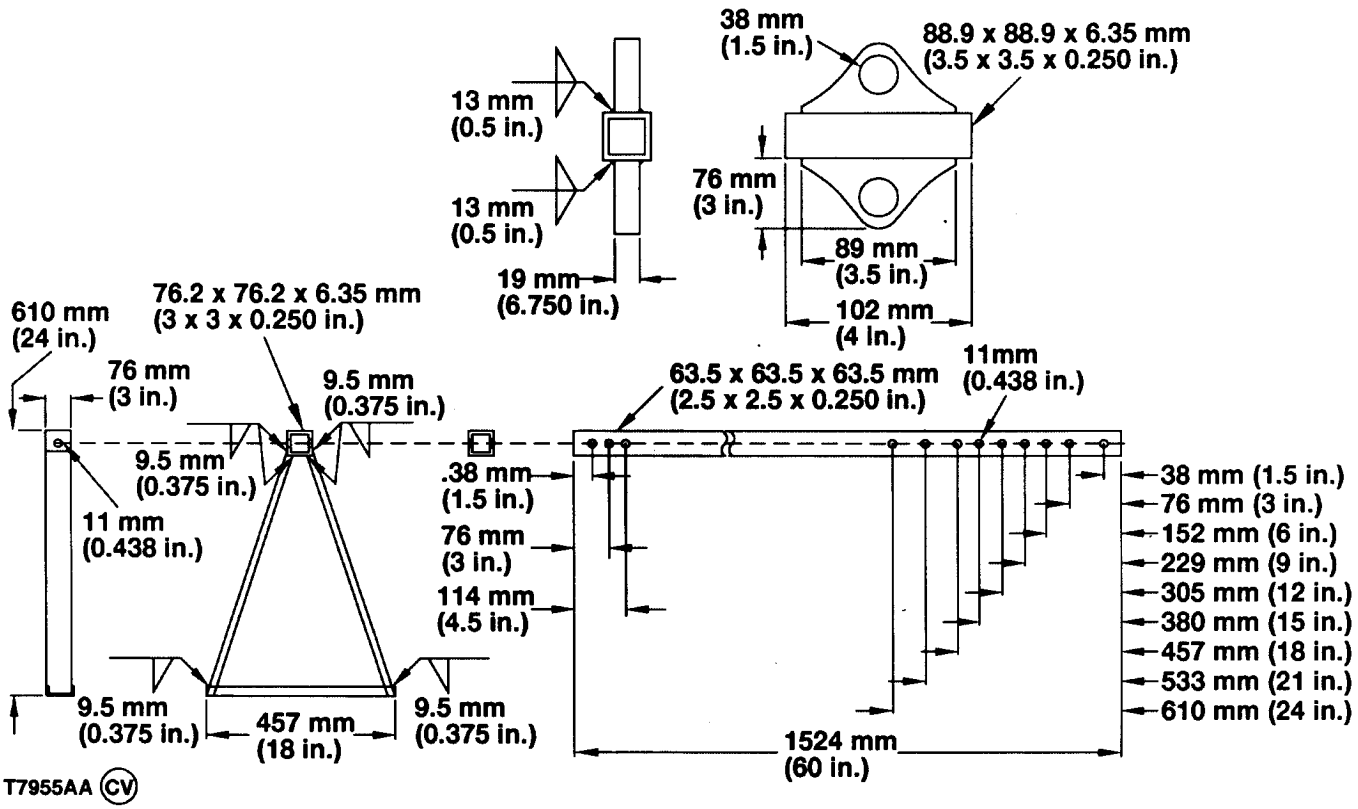


T7029CG –UN–06JUL89

A—Nut (12 used)
B—Stud (4 used)
C—Holder
D—Eyebolt (2 used)
E—Supporting Plate
F—Base Plate
G—Base (4 used)
H—Cap Screw (8 used)
I—Lock Washer (8 used)

CED,TX03399,6111 –19–08JUN00–4/4

DFT1119 Pump Support



Pump support is used with a small winch hoist to support the hydrostatic pumps when an engine is removed.

Two end stands are needed.

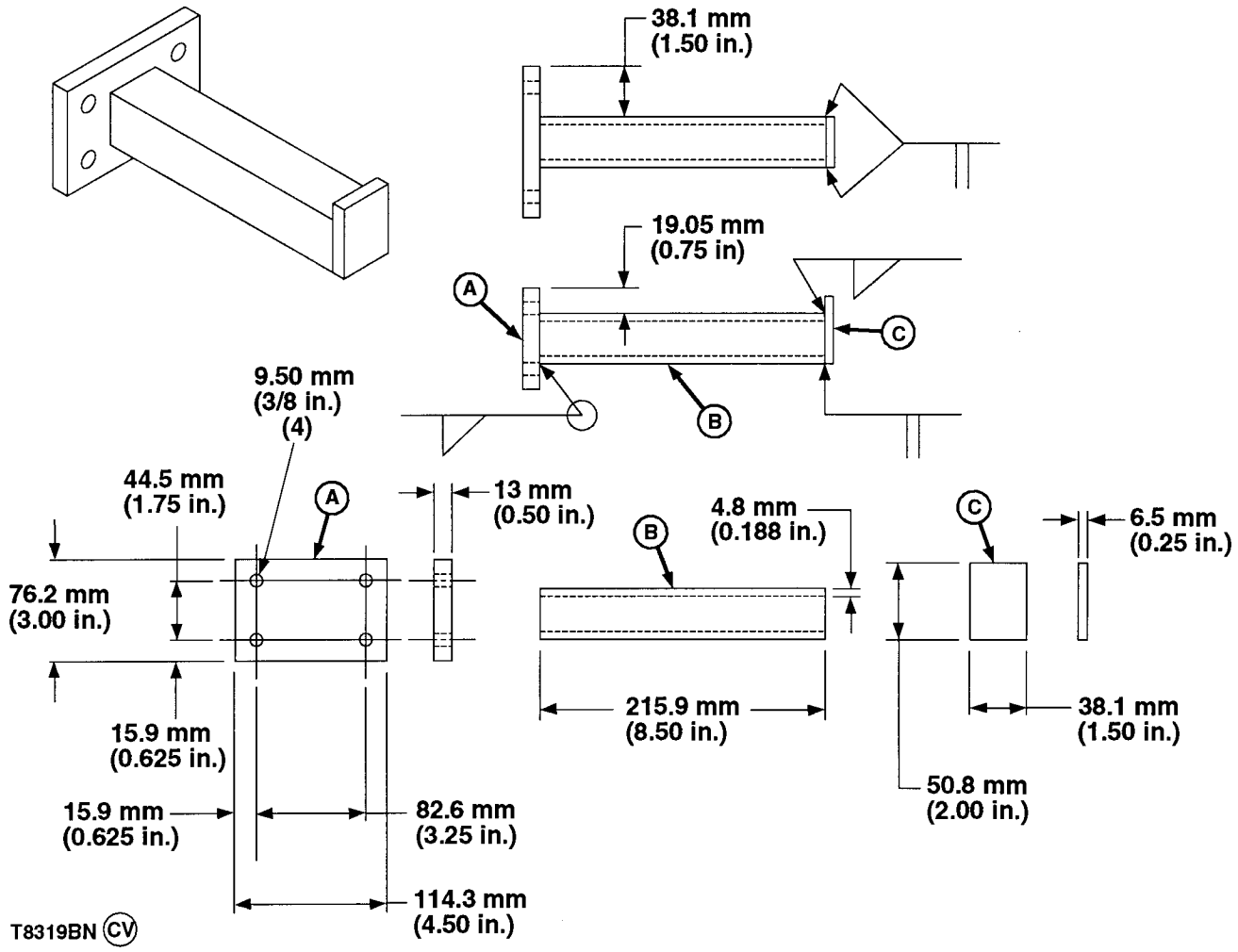
Drill the holes through the square steel tubing so they are centered.

Material required:

- C3 x 5 Steel Channel
- 88.9 x 88.9 x 6.35 mm (3.5 x 3.5 x 0.250 in.) Square Steel Tubing
- 76.2 x 76.2 x 6.35 mm (3 x 3 x 0.250 in.) Square Steel Tubing
- 63.5 x 63.5 x 6.35 mm (2.5 x 2.5 x 0.250 in.) Square Steel Tubing
- 19 mm (3/4 in.) flat bar stock
- M10 x 89 mm or 3/8 x 3 1/2 in. D Grade (SAE Grade 5) Cap Screw (2 used)
- M10 or 3/8 in. D Grade (SAE Grade 5) Nut (2 used)

CED,TX03399,2297 –19–10DEC98–1/1

DFT1130 Adapter



T8319BN –UN–20SEP94

99
9900
12

A—Adapter Plate **B—Tube** **C—Stop Plate**

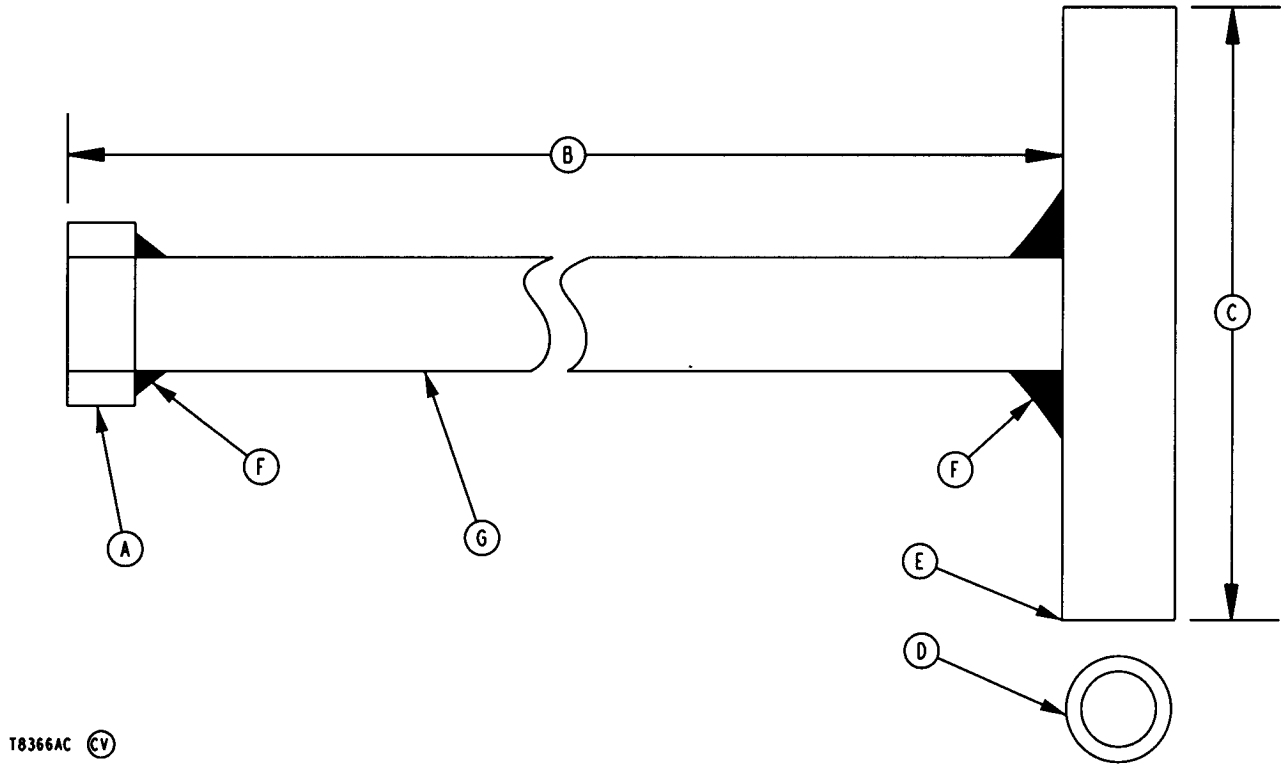
Adapter is used with DF1063 Lift Bracket to remove and install hydrostatic pumps.

Material required:

- 1/2 in. 1020 Steel Plate (A)
- 1-1/2 in. x 1-1/2 in. x 3/16 in. Square Tube (B)
- 1/4 in. 1020 Steel Plate (C)

TX,9900,YY1199 –19–13JUL95–1/1

DFT1132 Hydrostatic Motor and Hydraulic Pump Removal and Installation Tool



T8366AC –UN–10JUL95

A—1 in. Nut
B—Pipe 2134 mm (7 ft) long
C—Pipe 457 mm (18 in.) long
D—1 in. ID Heavy Wall Steel Pipe
E—Pipe
F—Weld
G—Pipe

This tool is used to remove and install hydrostatic motors and hydraulic pump from rear of machine.

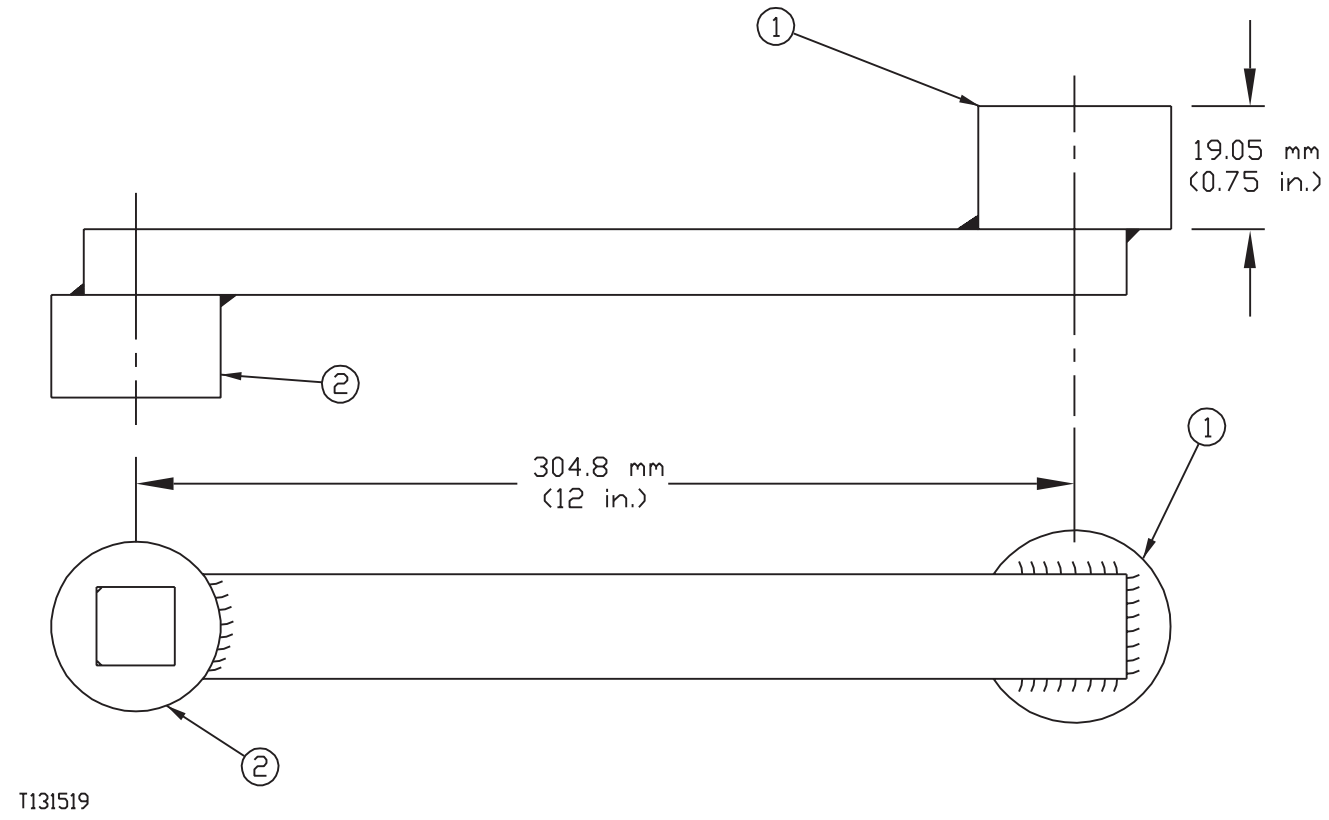
Material required:

- 1 in. piece heavy wall steel pipe 8 ft. x 6 in. long
- Weld (E) to (G)

99
9900
13

CED,TX03768,2520 –19–27JAN99–1/1

DFT1203 Torque Adapter For Pivot Shaft



T131519 –UN–30AUG00

1—19 mm (3/4 in.) Socket Length

2—3/4 in Square Drive

Use to torque pivot shaft cap screws.

Material Required:

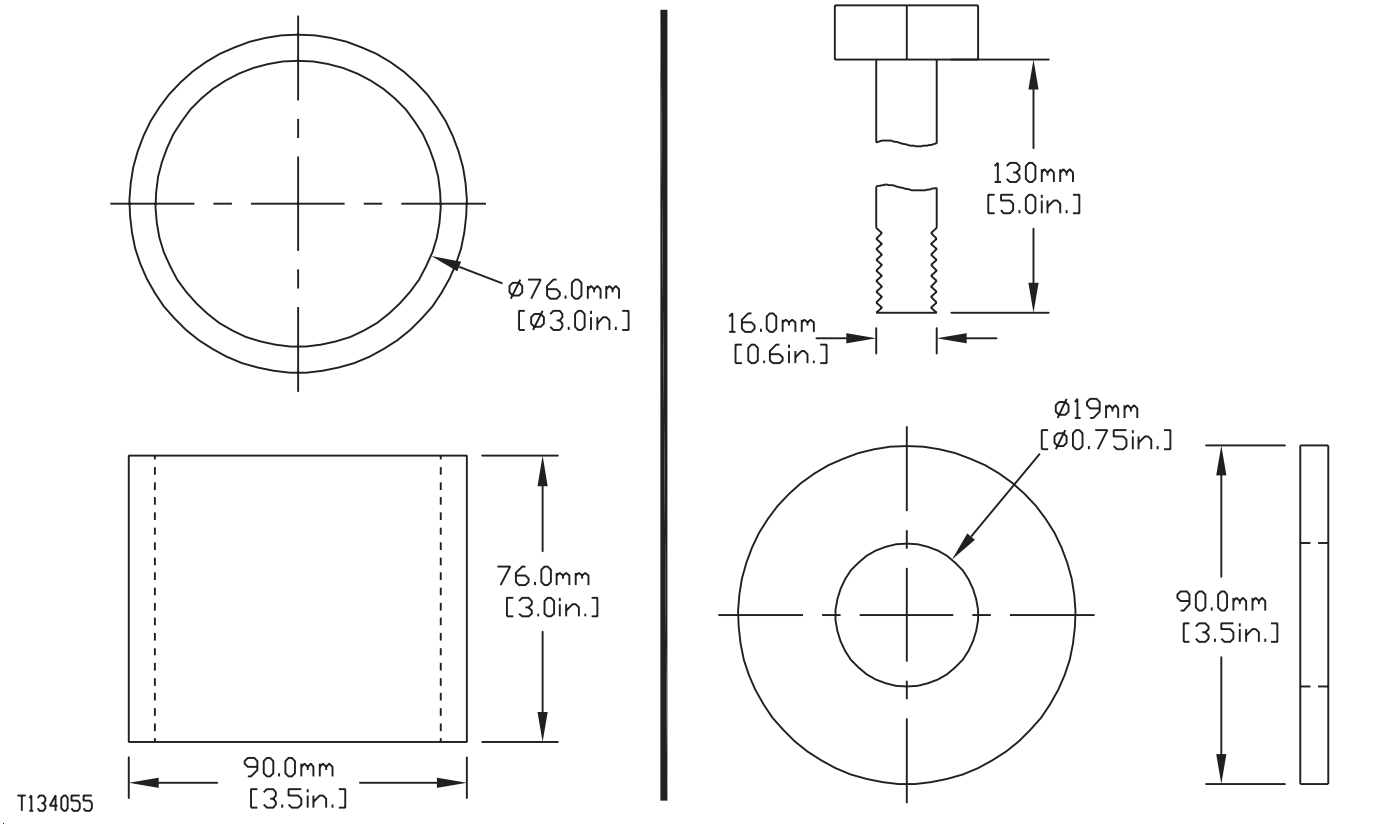
- 1 in. x 5/8 in bar stock
- 30 mm (1-3/16 in.) 12 pt Socket

1. Cut bar stock to given dimension.
2. Cut 30 mm (1-3/16 in.) socket in half.
3. Fillet weld socket on one end of bar stock and square drive on other end of bar stock.

99
9900
14

TX03399,0001834 –19–30AUG00–1/1

DFT1212 Park Brake Spring Compressor



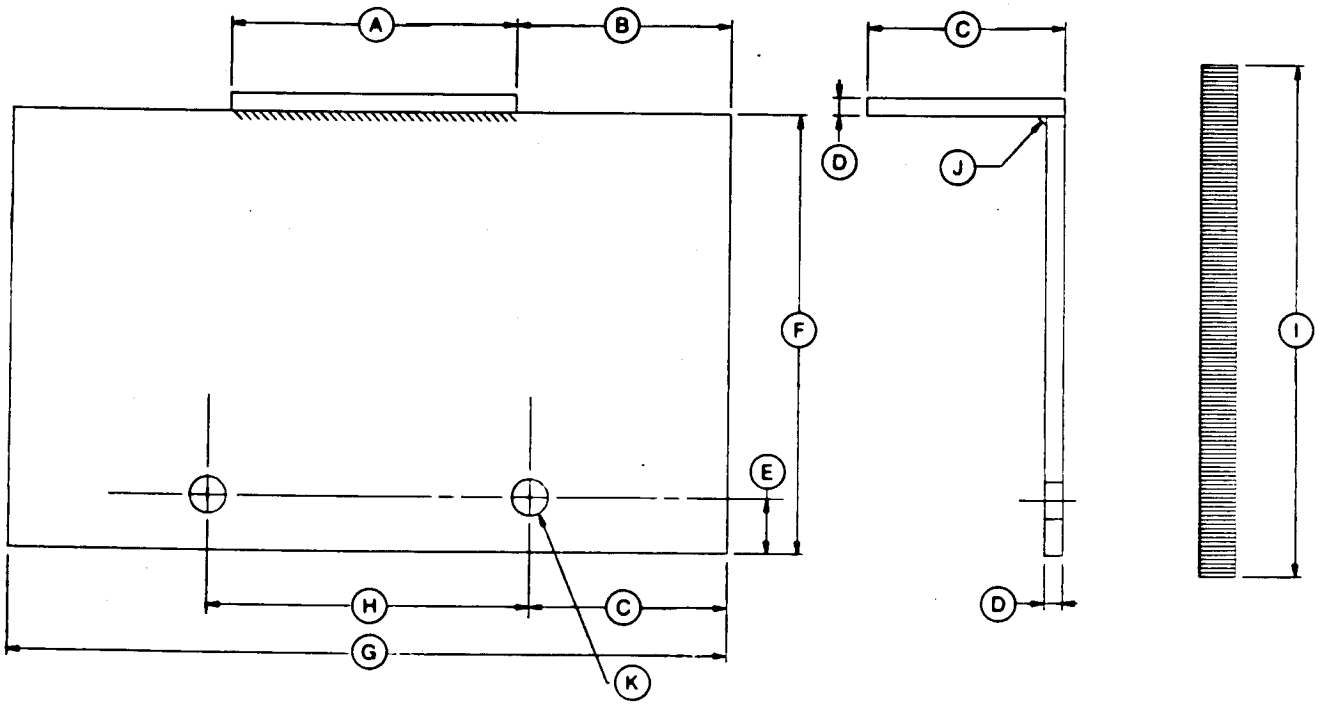
Used to compress park brake springs and hold park brake disks and plates in position while installing park housing. When final drive is still mounted to main frame

- 3.5 in. diameter heavy wall pipe 3 in. long
- 3.5 in. diameter washer or 0.250 in. plate steel cut to fit pipe with 0.750 hole
- 130 mm x 16 mm cap screw

99
9900
15

OUO1065,0000408 –19–26SEP00–1/1

DFRW20 Compressor Holding Fixture



RW13619 –UN–20SEP89

A—102 mm (4 in.)
B—76 mm (3 in.)
C—70 mm (2.75 in.)
D—6.4 mm (0.25 in.)
E—19 mm (0.75 in.)
F—152 mm (6 in.)
G—254 mm (10 in.)
H—114 mm (4.5 in.)
I—178 mm (7 in.)
J—Fillet Weld
K—Two Holes

Material required:

- 2—Steel Plates (4 x 2.75 in.) and (10 x 6 in.)
- 2—Threaded Steel Rods (0.5 x 7 in.)
- 4—Matching Lock Washers and Nuts

Tool is used to hold air conditioning compressor during assembly and disassembly.

TX,18,RB766 –19–21APR98–1/1

Index

Page

A

A/C freeze switch
Remove and install 18-1830-39
Adjust track sag 01-0130-52
Air conditioning
Cleaning procedures 18-1830-21
Clutch hub clearance 18-1830-29
Component location 18-1830-25
Compressor clutch 18-1830-28
Flush. 18-1830-23
Leak testing 18-1830-20
Purge 18-1830-22
Refrigerant handling 18-1830-9
Air conditioning compressor
Remove and install 18-1830-26
Air conditioning electrical
Component location 18-1830-25
Air suspension seat
Remove and install 18-1821-17
Alternator
Remove and install 16-1672-2
Angle control valve section
Disassemble and assemble 32-3260-17
Angle cylinder
Assemble 32-3260-32
Disassemble 32-3260-32
Remove and install 32-3260-27
Angle cylinder-to-control valve
Component location 32-3260-26
Auxiliary control linkage Fifth func.
Remove and install 32-3215-5
Auxiliary control linkage fourth func.
Remove and install 32-3215-4
Auxiliary control valve section
Disassemble and assemble 32-3260-15

B

Batteries
Remove and install 16-1671-12
Service carefully 16-1671-4
Battery
Booster 16-1671-12
Electrolyte specific gravity 16-1671-8
Safety 16-1671-3
Specification 16-1671-4
Blade, dozer
Remove and install 32-3201-2
Bottom covers
Remove and install 17-1740-7

Page

Brake pedal control linkage
Remove and install 11-1115-2
Brake valve
Disassemble and assemble 11-1160-1
Remove and install 11-1100-1
Brake, park
Remove and install 11-1100-3
Brakes, park
Disassemble and assemble 11-1160-3

C

C-frame
Remove and install 32-3240-1
Cab under seat heater
Diassemble and assemble 18-1830-42
Cab upper heater
Disassemble and assemble 18-1830-40
Cab/ROPS
Install 18-1800-9
Remove 18-1800-2
Capacities
700H, crawler dozer drain and refill. 00-02-6
Carrier roller
Remove and install 01-0130-12
Test for oil leakage 01-0130-17
Carrier roller wear measurement 01-0130-11
Chain, lubricated track
Remove and install 01-0130-32
Charge pump, disassemble and
assemble 03-0360-19
Cleanout cover
Remove and install 21-2160-18
Clutch hub clearance 18-1830-29
Component location
(W5) Cab and ROPS harness. 16-1674-2
Compressor
Disassemble and assemble 18-1830-31
Disassemble and assemble clutch 18-1830-28
Oil charge check. 18-1830-11
Oil removal 18-1830-12
Remove and install 18-1830-26
Compressor holding fixture. 99-9900-16
Condenser
Remove and install 18-1830-38
Connector body from blade terminals
Remove 16-1674-16
Connector, DEUTSCH
Install 16-1674-11
Replace 16-1674-9

Indx 1

Page

Connectors
WEATHER PACK 16-1674-12
Controller, transmission
Remove and install 16-1675-2
Coolant
Diesel engine 00-04-9
Coolant heater, engine
Remove and install 05-0505-2
Counterweight
Remove and install 17-1749-1
Cover, cleanout
Hydraulic and hydrostatic reservoirs . . .21-2160-18
Crossbar
Disassemble and assemble 17-1740-11
Crossbar lube
Remove and install 17-1740-10
Cutting edges and end bits
Remove and install 32-3201-4
Cylinder angle-to-control valve
Component location 32-3260-26
Cylinder lift-to-control valve
Component location 32-3260-30
Cylinder tilt-to-control valve
Component location 32-3260-24
Cylinder, angle
Assemble 32-3260-32
Disassemble 32-3260-32
Remove and install 32-3260-27
Cylinder, lift
Assemble 32-3260-32
Disassemble 32-3260-32
Remove and install 32-3260-31
Cylinder, tilt
Assemble 32-3260-32
Disassemble 32-3260-32
Remove and install 32-3260-25

D

Dampener drive
Remove and install 07-0752-2
Dash, switches and gauges
Remove and install 16-1676-1
Dealer fabricated tool
DFT1063 pump lifting bracket 99-9900-2
DFT1130 adapter 99-9900-12
DFT119 pump support 99-9900-11
Dealer fabricated tools
DFT1087 track recoil spring guard 99-9900-5
ST4920 track recoil spring assembly. . . .99-9900-7

Page

Diagnostic Plumbing
Remove and install 03-0360-69
Diagnostic plumbing
Remove and install 03-0360-68
Diesel engine oil 00-04-3
Diesel fuel 00-04-1
Diesel fuel conditioner
Low sulfur 00-04-1
Diesel fuel storage 00-04-2
Dimensions
700H crawler dozer 00-02-1
Displacement control valve, disassemble and
assemble 03-0360-24
Dozer blade
Remove and install 32-3201-2

E

Electrical
Battery Specification 16-1671-4
Welding procedure 01-0130-67, 16-1675-1
Electrolyte specific gravity
Checking 16-1671-8
Engine
Boost starting 16-1671-12
Remove and install 04-0400-3
Engine and power train mounting parts . . .05-0540-2
Engine coolant heater
Remove and install 05-0505-2
Engine harness
Component location 16-1674-3
Engine oil
Diesel 00-04-3
Engine side shields
Remove and install 19-1910-4
Engine speed control
Remove and Install 05-0515-2
Engine 6.8L (6068)
Use CTM 05-0505-1
Evaporator
Remove and install 18-1830-34
Expansion valve
Remove and install 18-1830-37
Explanation of wire markings 16-1674-4

F

Fan blade
Remove and install 05-0510-1

Page

Fan shroud
Remove and install 05-0510-1
Filter, hydraulic
Disassemble and assemble 21-2160-24
Remove and install 21-2160-23
Filter, hydrostatic
Disassemble and assemble 03-0360-64
Remove and install 03-0360-62
Final drive
Disassemble and assemble 02-0250-2
Oil specification. 00-04-6
Remove and install 02-0201-2
Frame
Remove and install 17-1740-7
Frame, track
Remove 01-0130-68
Front idler
Adjust vertical movement 01-0130-59
Disassemble 01-0130-56
Oil specification. 00-04-4
Remove 01-0130-54
Test for oil leakage 01-0130-61
Fuel
Diesel 00-04-1
Fuel system
Bleed 04-0400-13
Fuel tank
Capacity 00-04-2
Remove and installl. 05-0560-1
Fuel, diesel
storage 00-04-2
Fuse
Location 16-1674-6, 16-1674-8
Specifications 16-1674-6, 16-1674-8
Fuse (blade-type)
Color codes 16-1674-5

G

Grease
Extreme pressure and multipurpose 00-04-7
Grille and grille housing
Remove 19-1921-1

H

Heater core, upper
Remove and install 18-1830-34
Heater, engine coolant
Remove and install 05-0505-2

Page

Hood
Remove and install 19-1910-2
Hood support
Remove and install 19-1910-4
Hydraulic control valve
Component/line location 32-3260-6
Disassemble and assemble 32-3260-9
Disassemble and assemble lift section. 32-3260-21
Disassemble and assemble tilt section. 32-3260-19
Remove and install 32-3260-8
Wiper seals and seals, replace 32-3260-10
Hydraulic filter
Disassemble and assemble 21-2160-24
Remove and install 21-2160-23
Hydraulic pump
Disassemble and assemble (with winch option) 21-2160-7
Disassemble and assemble (without winch option) 21-2160-13
Remove and install 21-2160-3
Hydraulic reservoir
Disassemble and assemble 21-2160-22
Remove and install 21-2160-15
Hydraulic reservoir cleanout cover
Remove and install 21-2160-18
Hydraulic system component location. 32-3260-6
Hydrometer test 16-1671-6
Hydrostatic component location and line routing. 03-0300-4
Hydrostatic filter
Disassemble and assemble 03-0360-64
Remove and install 03-0360-62
Hydrostatic motor
Assemble 03-0360-51
Disassemble 03-0360-40
Speed sensor, adjust 03-0360-39
Speed sensor, remove and install 03-0360-38
Hydrostatic motors
Remove and install 03-0300-16
Hydrostatic pump
Assemble 03-0360-29
Charge pump and controls exploded view. 03-0360-18
Charge pump, disassemble and assemble. 03-0360-19
Displacement control valve, disassemble and assemble. 03-0360-24
Exploded view. 03-0360-6
Multifunction valve, disassemble and assemble. 03-0360-26

Page

Neutral charge relief valve, disassemble and assemble 03-0360-29
Hydrostatic pumps
Remove and install 03-0300-7
Hydrostatic reservoir
Remove and Install 03-0360-66
Hydrostatic reservoir cleanout cover
Remove and install 21-2160-18

I

Idler
Front, oil specification 00-04-4
Idler, front
Adjust vertical movement 01-0130-59
Disassemble 01-0130-56
Measure wear 01-0130-53
Remove 01-0130-54
Test for oil leakage 01-0130-61
Inch torque values 00-03-3
Inner guide wear strip
Remove and install 01-0130-70

J

Jump starting 16-1671-12

L

Lift cylinder
Assemble 32-3260-32
Disassemble 32-3260-32
Remove and install 32-3260-31
Lift cylinder-to-contol valve
Component location 32-3260-30
Linkage
T-bar, remove and install 32-3215-2
Linkage, fifth function
Auxiliary, remove and install 32-3215-5
Linkage, fourth function
Auxiliary, remove and install 32-3215-4
Linkage, park lock
Remove and Install 11-1115-3
Load test, batteries 16-1671-7
Low sulfur diesel fuel conditioner 00-04-1
Lubricant
Mixing 00-04-8
Storage 00-04-7

Page

Lubricated track chain
Assemble and not relubricate 01-0130-45
Assemble to lubricate 01-0130-38
Assemble to turn bushings 01-0130-38
Disassemble and assemble 01-0130-45
Disassemble and not relubricate 01-0130-45
Disassemble to lubricate 01-0130-35
Disassemble to turn bushing 01-0130-35
Remove and install 01-0130-32

M

Measure bushing wear 01-0130-31
Measure front idler wear 01-0130-53
Measure link height 01-0130-31
Measure track pitch 01-0130-32
Measure track shoe wear 01-0130-28
Metal face seals
Inspect 01-0130-15, 01-0130-58
Metric torque values 00-03-5, 00-03-7
Mixing lubricants 00-04-8
Monitor, display
Remove and install 16-1675-2
Muffler
Remove and install 05-0530-1
Multi-function valve, disassemble and assemble 03-0360-26

N

Neutral charge relief valve, disassemble and assemble 03-0360-29

O

O-ring boss fittings 00-03-11
O-ring seal fittings 00-03-10
Oil
Specification carrier roller 00-04-4
Specification final drive 00-04-6
Specification front idler 00-04-4
Specification track frame pivot 00-04-4
Specification track roller 00-04-4
Specification transmission 00-04-4
Oil cooler and radiator
Install 05-0510-6
Remove 05-0510-4

Page

Oil pan
Remove and install 04-0400-13

P

Pan, oil
Remove and install 04-0400-13
Park brake
Disassemble and assemble 11-1160-3
Remove and Install 11-1100-3
Park brake spring compressor 99-9900-15
Park lock linkage
Remove and install 11-1115-3
Pivot shaft, torque adapter 99-9900-14
Pivot shafts
Remove and install 17-1740-8
Pump support
DFT1119. 99-9900-11
Pump, hydraulic
Remove and install 21-2160-3

R

Radiator and oil cooler
Install 05-0510-6
Remove 05-0510-4
Radio harness
Component location 16-1674-3
Receiver-dryer
Remove and install 18-1830-34
Recovery/charging station
Installation procedure 18-1830-15
Refrigerant R134a caution 18-1830-10
Refrigerant theory of operation 18-1830-8
Reservoir cover
Remove and install 21-2160-18
Reservoir, hydraulic
Disassemble and assemble 21-2160-22
Reverse warning alarm
Remove and install 20-2004-1
Reverse warning alarm volume
Adjust 20-2004-1
Rock guards
Remove and install 01-0130-10
Roller, carrier
Remove and install 01-0130-12
Test for oil leakage 01-0130-17
Roller, track
Disassemble and assemble 01-0130-21
Remove and install 01-0130-19

Page

Test for oil leakage 01-0130-27
ROPS
Torque 00-03-1
ROPS under seat heater
Disassemble and assemble 18-1830-42
ROPS/cab
Install 18-1800-9
Remove 18-1800-2
R134a
Component oil charge 18-1830-13
R134a system
Charge 18-1830-19
Evacuate. 18-1830-17
Recover 18-1830-16

S

Sand shield
Remove and install 05-0510-8
Seals, metal face
Inspect 01-0130-15, 01-0130-58
Seat, deluxe
Remove and install 18-1821-6
Seat, standard
Remove and install 18-1821-1
Shield, sand
Remove and install 05-0510-8
Shoe, track
Remove and install 01-0130-29
Single lever control
Remove and install 03-0315-8
Slide glass
Remove and install 18-1810-1
Specific gravity, electrolyte 16-1671-8
Specification
Battery 16-1671-4
Final drive oil 00-04-6
Transmission oil 00-04-4
Specifications
Carrier roller oil 00-04-4
Front idler oil. 00-04-4
Track roller oil 00-04-4
700H crawler dozer. 00-02-3
Speed sensor, hydrostatic motor
Adjust 03-0360-39
Remove and install 03-0360-38
Sprocket
Remove and install 01-0130-72
Sprocket segment
Remove and install 01-0130-71

Page

Staring aid solenoid
Remove and install 05-0505-5
Start aid
Remove and install 05-0505-4
Starting motor
Remove and install 16-1677-1
Stationary glass
Remove and install 18-1810-3
Storing lubricants 00-04-7
Strip, inner guide wear
Remove and install 01-0130-70
Support, hood
Remove and install 19-1910-4
Switch, A/C freeze
Removel and install. 18-1830-39
System relief valve
Disassemble and assemble 32-3260-23

T

T-bar control linkage
Remove and install 32-3215-2
Tension adjuster, track
Remove and Install 01-0130-62
Thermal bypass valve
Disassemble and assemble 03-0360-61
Remove and install 03-0360-60
Tilt cylinder
Assemble 32-3260-32
Disassemble 32-3260-32
Remove and install 32-3260-25
Tilt cylinder-to-control valve
Component location 32-3260-24
Tools, dealer fabricated
DFT1063 pump lifting bracket 99-9900-2
DFT1087 track recoil spring guard 99-9900-5
DFT1130 adapter 99-9900-12
ST4920 track recoil spring assembly. . . .99-9900-7
Torque value
Flat face O-ring seal fitting 00-03-10
Inch SAE four bolt flange fitting. 00-03-12
Metric four bolt flange fitting 00-03-13
O-Ring boss fitting 00-03-11
ROPS 00-03-1
Track shoe cap screw. 00-03-2
Torque values
Inch. 00-03-3
Metric 00-03-5, 00-03-7
Track
Roller oil specification 00-04-4
Shoe cap screw torque value 00-03-2

Page

Track chain, lubricated
Remove and install 01-0130-32
Track frame
Remove 01-0130-68
Track idler recoil spring
Disassemble and assemble 01-0130-64
Remove and install 01-0130-63
Track roller
Disassemble and assemble 01-0130-21
Remove and install 01-0130-19
Test for oil leakage 01-0130-27
Track sag
Adjust 01-0130-52
Track shoe
Remove and install 01-0130-29
Track tension adjuster
Remove and install 01-0130-62
Transmission
Oil specification. 00-04-4
Transmission harness
Component location 16-1674-3

U

Upper heater core
Remove and install 18-1830-34

V

Valve, hydraulic control
Disassemble and assemble 32-3260-9
Remove and install 32-3260-8
Valve, section auxiliary
Disassemble and assemble 32-3260-15
Valve, system relief
Disassemble and assemble 32-3260-23

W

Wear strip, inner guide
Remove and install 01-0130-70
Weights
700H crawler dozer. 00-02-4
Welding procedure 01-0130-67, 16-1675-1
Welding repair of major structure 17-1740-4
Window
Remove and install 18-1810-4

Page

Window wiper
Remove and install 18-1810-8, 18-1810-11
Windowpanes
Remove and install 18-1810-5
Wiper, window
Remove and install 18-1810-8, 18-1810-11
Wipers, door window
Remove and install 18-1810-10
6.8: (6068) engine
Use CTM104. 04-0400-3