

## HYDRAULIC SYSTEM

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**1. SPECIFICATIONS**

ITEM		SPECIFICATIONS
Hydraulic oil		<ul style="list-style-type: none"> <li>Hydraulic oil capacity : 38 ℓ (10.0 u.s.gal.)</li> <li>Chain box capacity (LH / RH) : 13 ℓ (3.4 u.s.gal.)</li> <li>Used oil : ISO VG46</li> </ul>
Loader pressure	Standard	<ul style="list-style-type: none"> <li>Loader pressure : 230 bar (3,335 psi)</li> <li>Loader flow : 82.9 lpm (21.9 gpm)</li> </ul>
	High flow [HS120V-LQF]	<ul style="list-style-type: none"> <li>Loader pressure : 150 bar (2,176 psi)</li> <li>Loader flow : 128.8 lpm (34.0 gpm)</li> </ul>
2-Speed track motor [HS120V-LQ/SL750U-LQF]		<ul style="list-style-type: none"> <li>Capacity : Lo 31.5 cm<sup>3</sup> Hi 20.6 cm<sup>3</sup></li> <li>Max. system pressure : 34.3 MPa</li> <li>Max. speed (At Min. capacity) : 4,170 rpm</li> <li>Brake pressure : 1.5 (Min) ~ 4.9 (Max) MPa</li> </ul>
Pilot lock valve		<ul style="list-style-type: none"> <li>Max. flow : 10 lpm</li> <li>Max. pressure : 40 bar</li> <li>Accumulator capacity : 0.32 ℓ</li> <li>Free charge pressure : 11 bar</li> </ul>
Self level valve		<ul style="list-style-type: none"> <li>Max. flow : A-port (Boom down) 69 lpm B-port (Boom up) 41 lpm</li> <li>Max. pressure : 250 bar</li> </ul>
High flow valve		<ul style="list-style-type: none"> <li>Max. flow : 150 lpm</li> <li>Max. pressure : 250 bar</li> </ul>
Soft shift valve		<ul style="list-style-type: none"> <li>Max. flow : 20 lpm</li> <li>Max. pressure : 210 bar</li> </ul>
Parking valve		<ul style="list-style-type: none"> <li>Max. flow : 20 lpm or more</li> <li>Max. pressure : 280 bar or more</li> </ul>
Ride control valve		<ul style="list-style-type: none"> <li>Max. flow : 0.5 ~40 lpm</li> <li>Max. operating pressure : 350 bar or more</li> </ul>
Main control valve (MCV)		<ul style="list-style-type: none"> <li>Rated flow : 80 lpm</li> <li>Max. pressure : 250 bar</li> <li>Max. back pressure : 25 bar</li> </ul>
Cylinder	Quick attachment cylinder (mm)	<ul style="list-style-type: none"> <li>Size : Ø30 × Ø60 × 209</li> </ul>
	Tilt cylinder (mm)	<ul style="list-style-type: none"> <li>Size : Ø40 × Ø75 × 364</li> </ul>
	Lift cylinder (mm)	<ul style="list-style-type: none"> <li>Size : Ø45 × Ø65 × 992</li> </ul>

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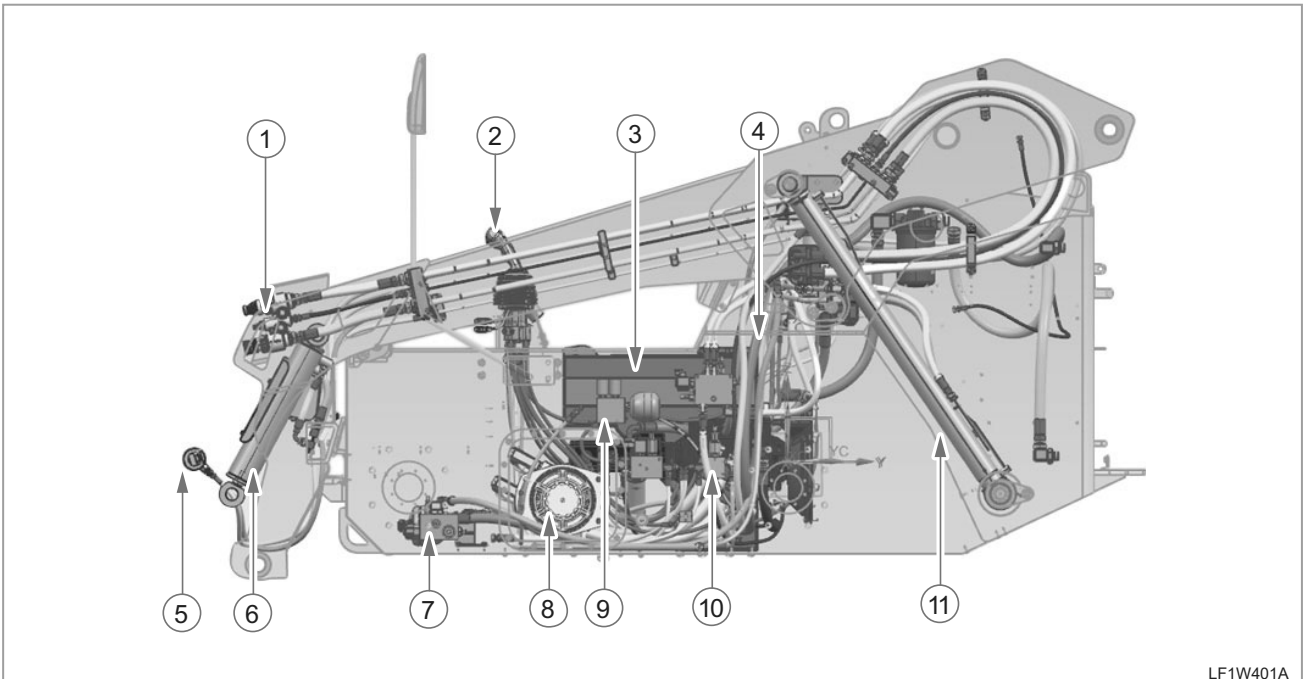
INDEX

ITEM		SPECIFICATIONS
Filter	Return filter	<ul style="list-style-type: none"> <li>• Fineness : 10 <math>\mu\text{m}</math></li> <li>• Filtering dimension : 4,410 <math>\text{cm}^2</math></li> <li>• Flow : 125 lpm</li> <li>• Bypass valve setting pressure : 1.7 bar</li> <li>• Operating pressure : 12 bar</li> </ul>
	HST filter	<ul style="list-style-type: none"> <li>• Fineness : 10 <math>\mu\text{m}</math></li> <li>• Filtering dimension : 415 <math>\text{cm}^2</math></li> <li>• Flow : 35 lpm</li> <li>• Bypass valve setting pressure : 6 bar</li> <li>• Operating pressure : 310 bar</li> </ul>
HST motor (LH, RH)		<ul style="list-style-type: none"> <li>• Brake pressure (At 2,200 N.m) : 11 ~ 15 bar</li> <li>• Maximum pressure applied to brake port (Z): 40 bar</li> </ul>
Quick attachment valve		<ul style="list-style-type: none"> <li>• Max. flow : 20 lpm or more,</li> <li>• Max. operating pressure : 280 bar or more</li> </ul>
Main pump		<ul style="list-style-type: none"> <li>• Capacity : 34.555 <math>\text{cm}^3/\text{rev}</math></li> <li>• Continuous pressure : 280 bar</li> <li>• Peak pressure : 320 bar</li> <li>• Rotation speed : 500 ~ 3,000 rpm</li> </ul>
Charge pump		<ul style="list-style-type: none"> <li>• Capacity : 19.091 <math>\text{cm}^3/\text{rev}</math></li> <li>• Continuous pressure : 200 bar</li> <li>• Peak pressure : 240 bar</li> <li>• Rotation speed : 500 ~ 3,000 rpm</li> </ul>
High flow pump		<ul style="list-style-type: none"> <li>• Capacity : 19.091 <math>\text{cm}^3/\text{rev}</math></li> <li>• Continuous pressure : 200 bar</li> <li>• Peak pressure : 240 bar</li> <li>• Rotation speed : 500 ~ 3,000 rpm</li> </ul>
HST pump		<ul style="list-style-type: none"> <li>• Input power : 55.4 kW (At 2,600 rpm)</li> <li>• Rated rpm : 2,400 rpm</li> <li>• Max. flow : 2 x 113.1 lpm (Capacity : 42.5 <math>\text{cm}^3/\text{rot}</math>)</li> <li>• Boost pressure : 23 bar</li> <li>• High-pressure valve pressure : 368 bar</li> </ul>
Quick coupler (External hydraulic)	Male Drain Female	<ul style="list-style-type: none"> <li>• Size : 12.5 mm</li> <li>• Max. Operating pressure : 35 MPa</li> <li>• Rated flow : 100 lpm</li> </ul>
RCV assembly (LH, RH)		<ul style="list-style-type: none"> <li>• Min. initial pressure : 30 bar</li> <li>• Max. initial pressure : 100 bar</li> <li>• Min. rated flow : 5 lpm</li> <li>• Max. rated flow : 20 lpm</li> </ul>

2. HYDRAULIC SYSTEM OVERVIEW

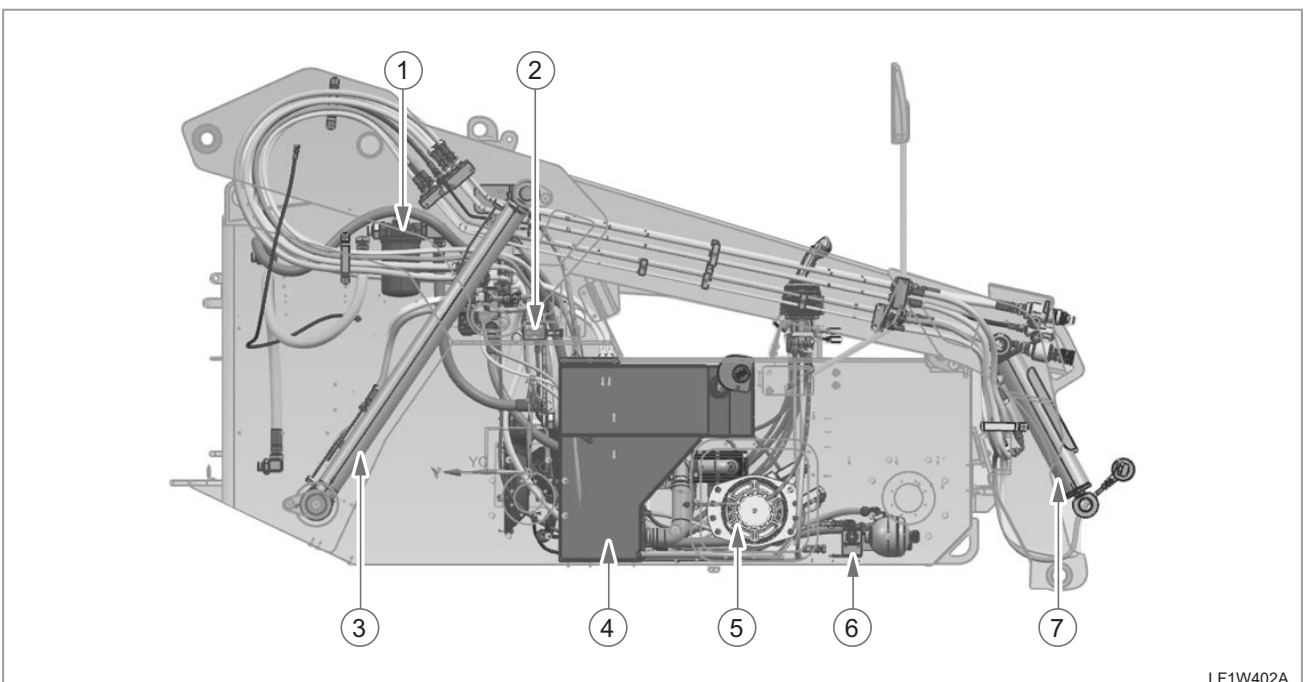
2.1 HYDRAULIC SYSTEM LAYOUT

LH



- |                      |                               |                      |
|----------------------|-------------------------------|----------------------|
| (1) Quick coupler    | (5) Quick attachment cylinder | (9) Soft shift valve |
| (2) RCV assembly     | (6) Tilt cylinder             | (10) Parking valve   |
| (3) Pilot lock valve | (7) High flow valve           | (11) Lift cylinder   |
| (4) Selt level valve | (8) HST motor                 |                      |

RH



- |                            |                        |                   |
|----------------------------|------------------------|-------------------|
| (1) Return filter          | (4) Oil tank           | (7) Tilt cylinder |
| (2) Quick attachment valve | (5) HST motor          |                   |
| (3) Lift cylinder          | (6) Ride control valve |                   |

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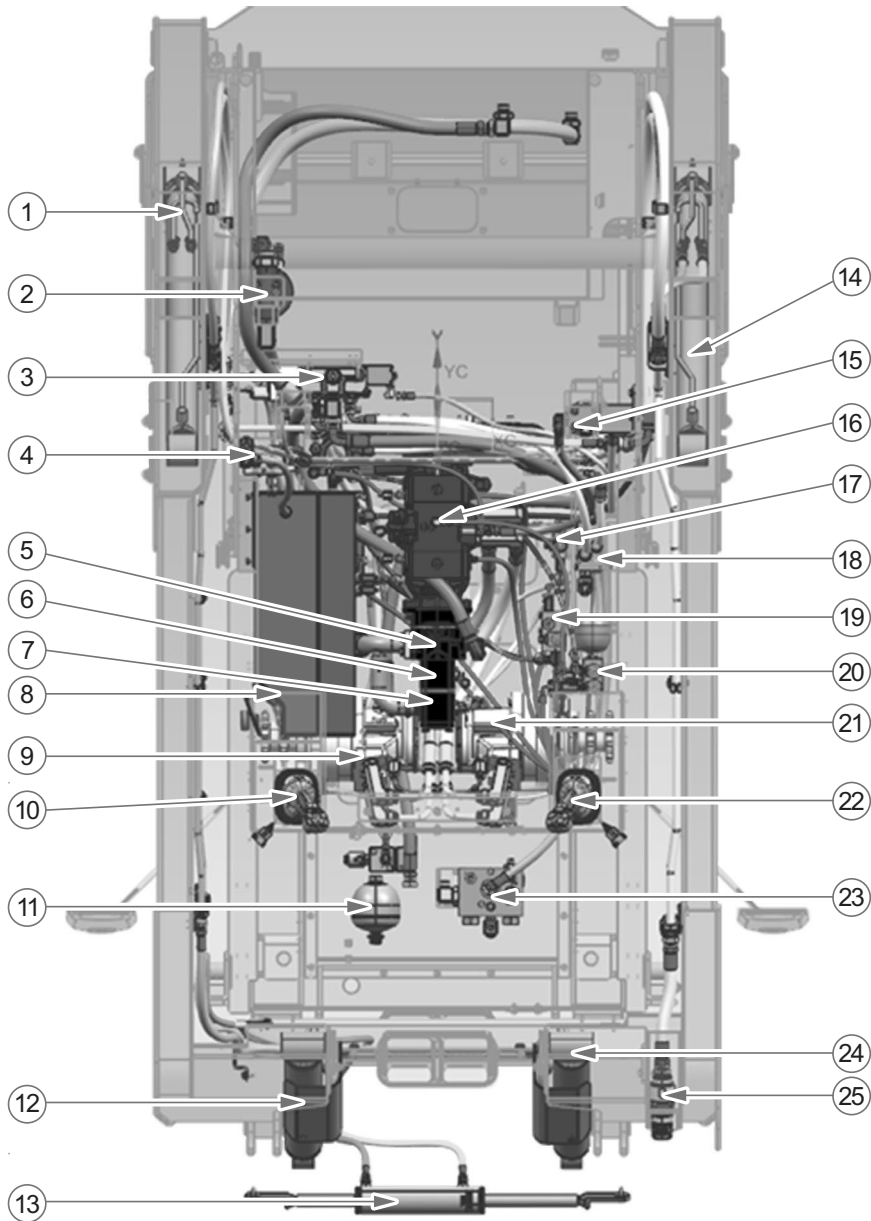
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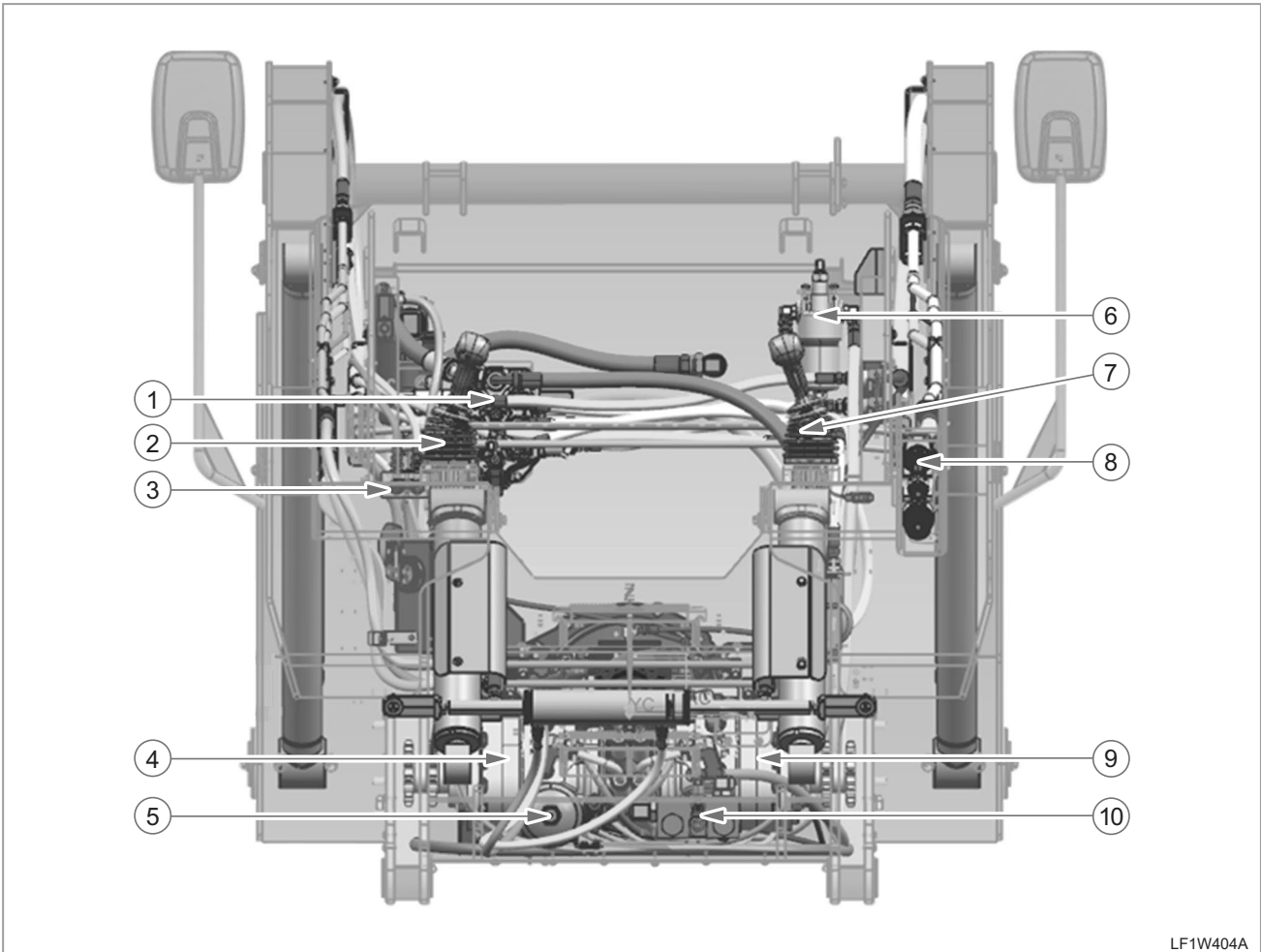
OVER VIEW



LF1W403A

- |                                |   |
|--------------------------------|---|
| (1) Lift cylinder (RH)         | (14) Lift cylinder (LH)                 |
| (2) Return filter              | (15) HST filter                         |
| (3) Main control valve (MCV)   | (16) HST pump                           |
| (4) Quick attachment valve     | (17) Parking valve                      |
| (5) Main pump                  | (18) Self level valve                   |
| (6) Charge pump                | (19) Soft shift valve                   |
| (7) High flow pump             | (20) Pilot lock valve                   |
| (8) Oil tank                   | (21) HST motor (LH)                     |
| (9) HST motor (RH)             | (22) RCV assembly (LH- Driving)         |
| (10) RCV assembly (RH-Working) | (23) High flow valve                    |
| (11) Ride control valve        | (24) Tilt cylinder (RH)                 |
| (12) Tilt cylinder (LH)        | (25) Quick coupler (External hydraulic) |
| (13) Quick attachment cylinder |   |

**FRONT VIEW**



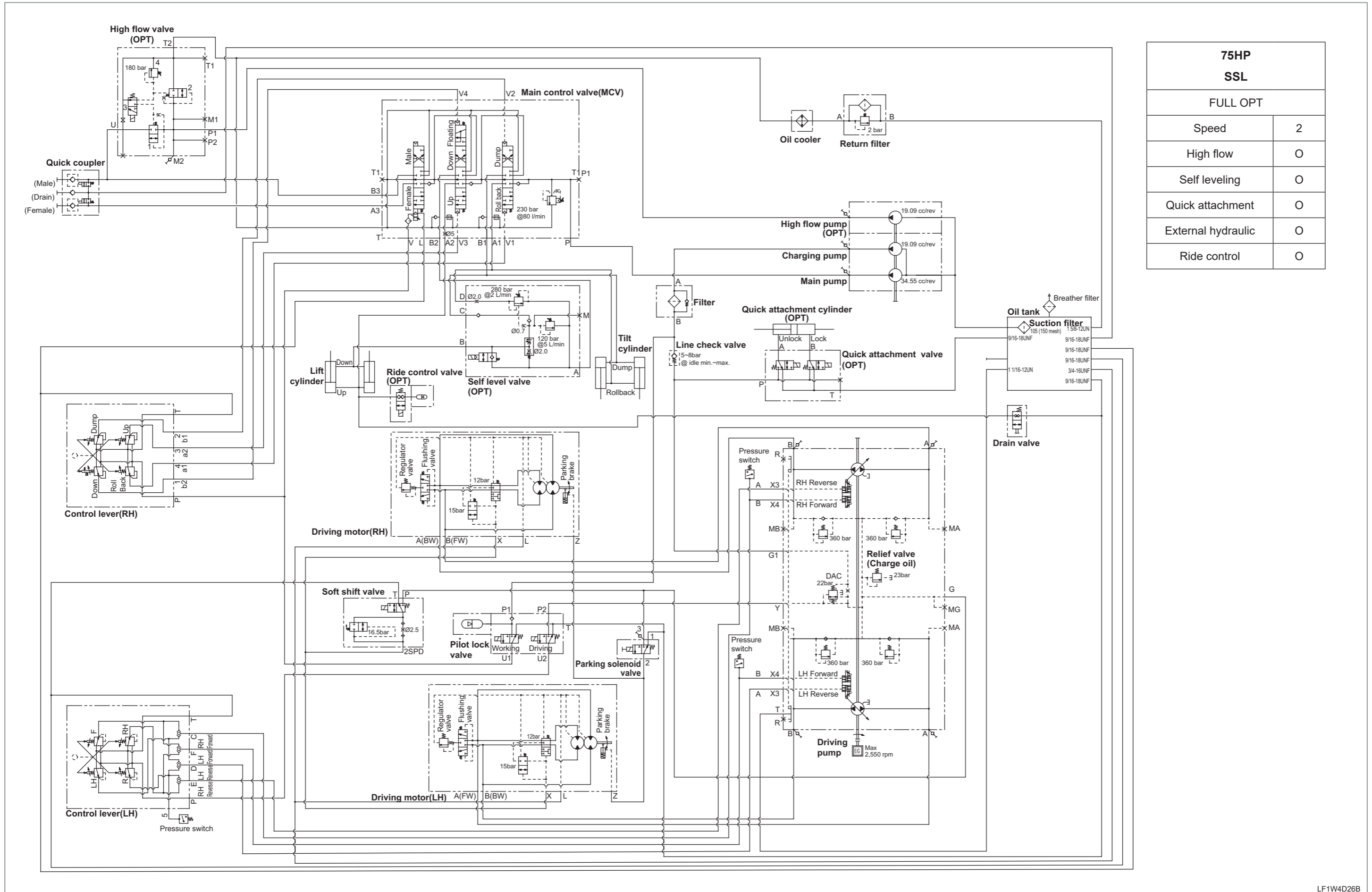
LF1W404A

- (1) Main control valve (MCV)
- (2) RCV assembly (RH-Working)
- (3) Quick attachment valve
- (4) HST motor (RH)
- (5) Ride control valve

- (6) HST filter
- (7) RCV assembly (LH-dRIVING)
- (8) Quick coupler (External hydraulic)
- (9) HST motro (LH)
- (10) High flow valve



2.2 CIRCUIT DIAGRAM FOR HYDRAULIC SYSTEM



<b>75HP SSL</b>	
<b>FULL OPT</b>	
Speed	2
High flow	O
Self leveling	O
Quick attachment	O
External hydraulic	O
Ride control	O

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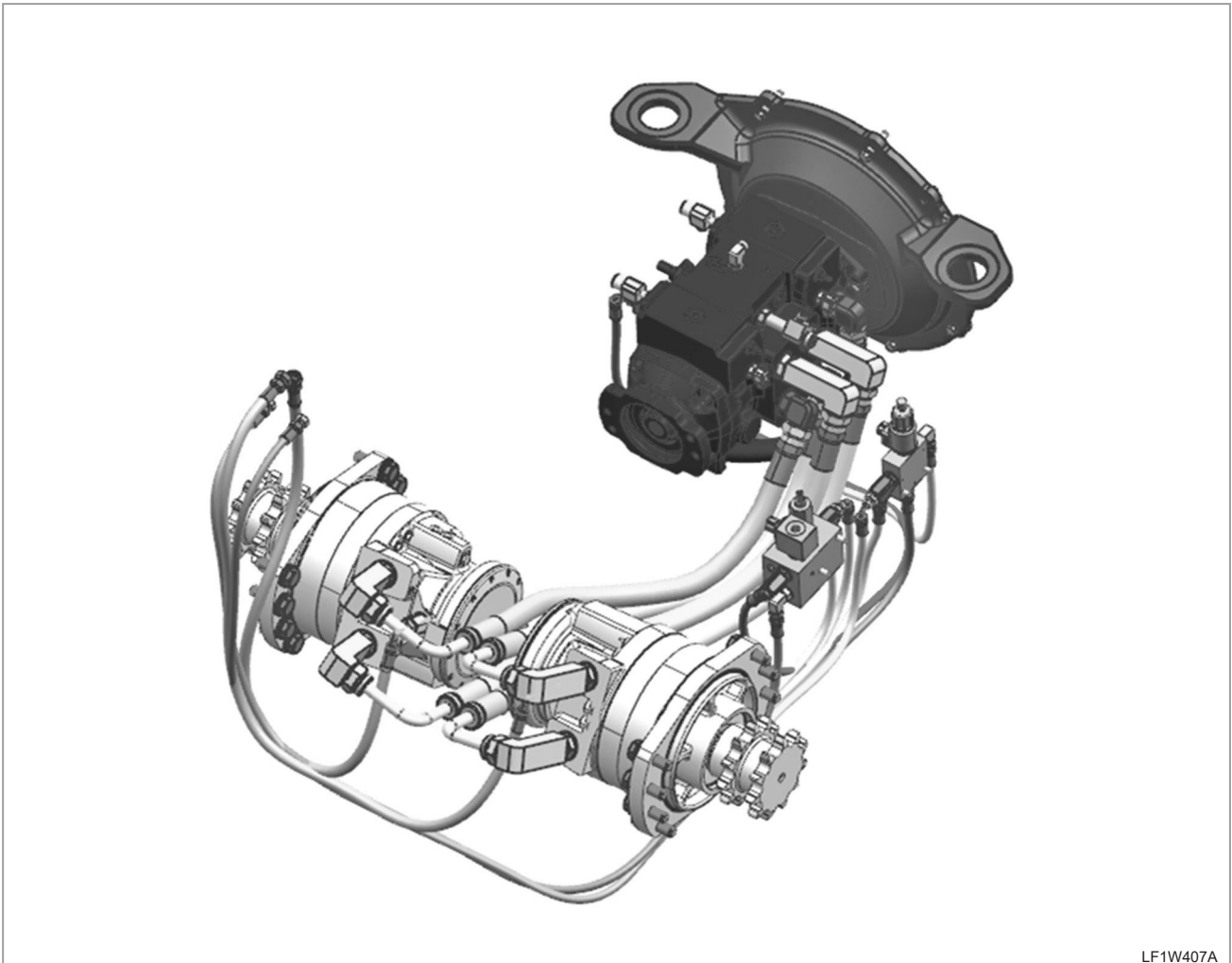
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**2.3 CONNECTING LINES BY HYDRAULIC SYSTEM GROUPS**

**2.3.1 HST GROUP**



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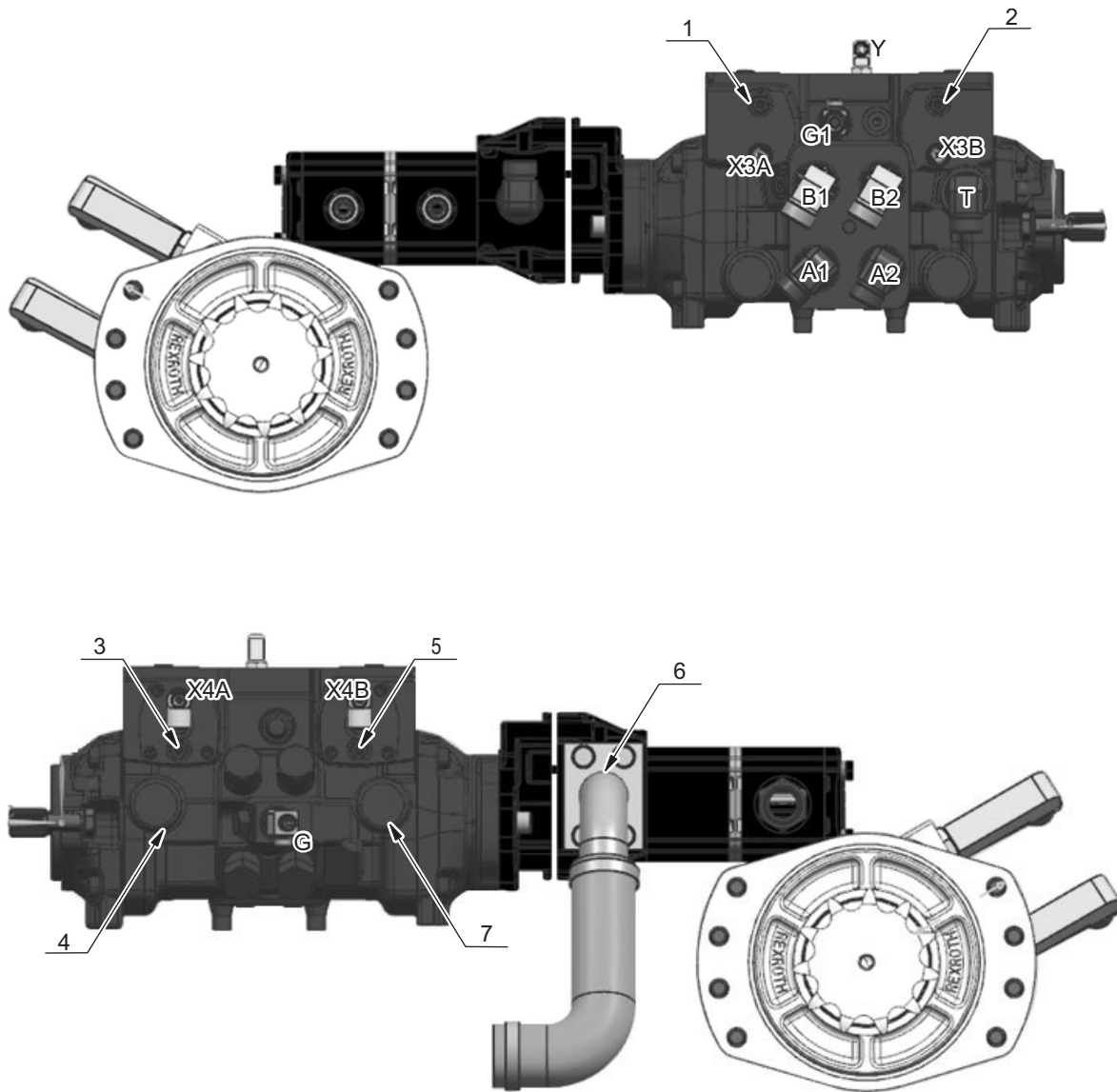
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HST PUMP



LF1W408A

- (A1) To HST motor-RH (Forward)
- (A2) To HST motor-LH (Forward)
- (B-1) To HST motor-RH (Reverse)
- (B-2) To HST motor-LH (Reverse)
- (G) To parking valve (3),  
To soft shift valve (P),  
To pilot lock valve (P1)
- (G1) From HST filter
- (T) To oil tank
- (X3A) From RCV-LH (Reverse-RH)
- (X3B) From RCV-LH (Reverse-LH)
- (X4A) From RCV-LH (Forward-LH)
- (X4B) From RCV-LH (Forward-RH)
- (Y) To pilot lock valve (P2)

- (1) Speed control (Forward-RH)
- (2) Speed control (Forward-LH)
- (3) Speed control (Reverse-LH)
- (4) RH pump
- (5) Speed control (Reverse-RH)
- (6) From oil tank
- (7) LH pump

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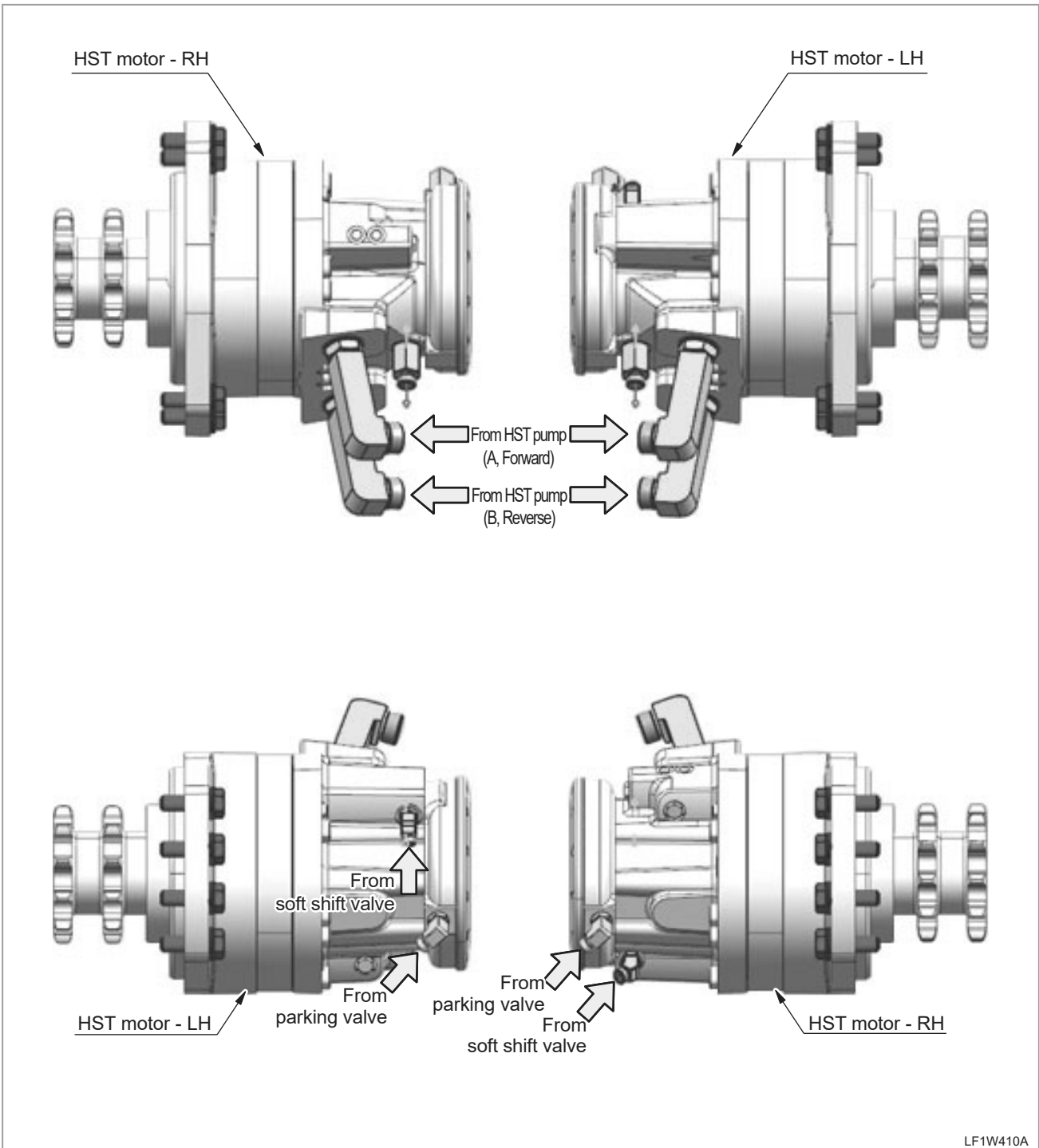
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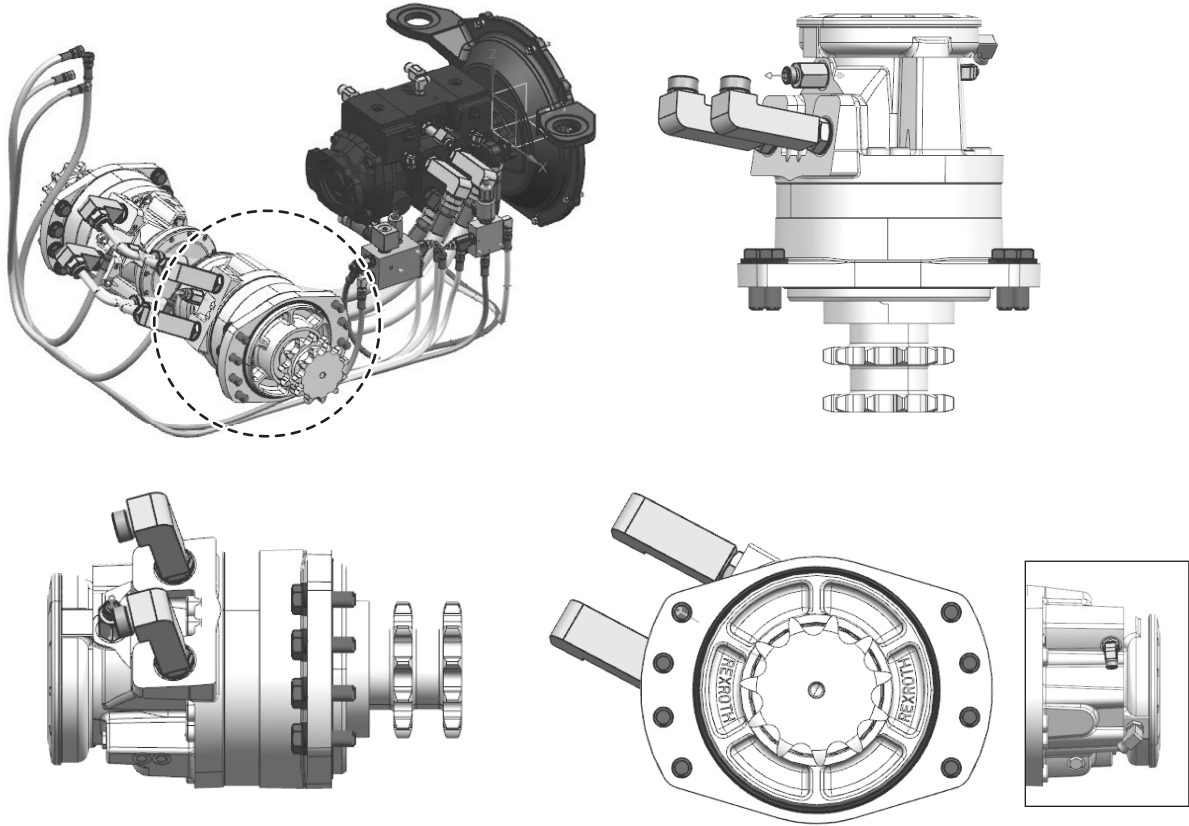
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HST MOTOR

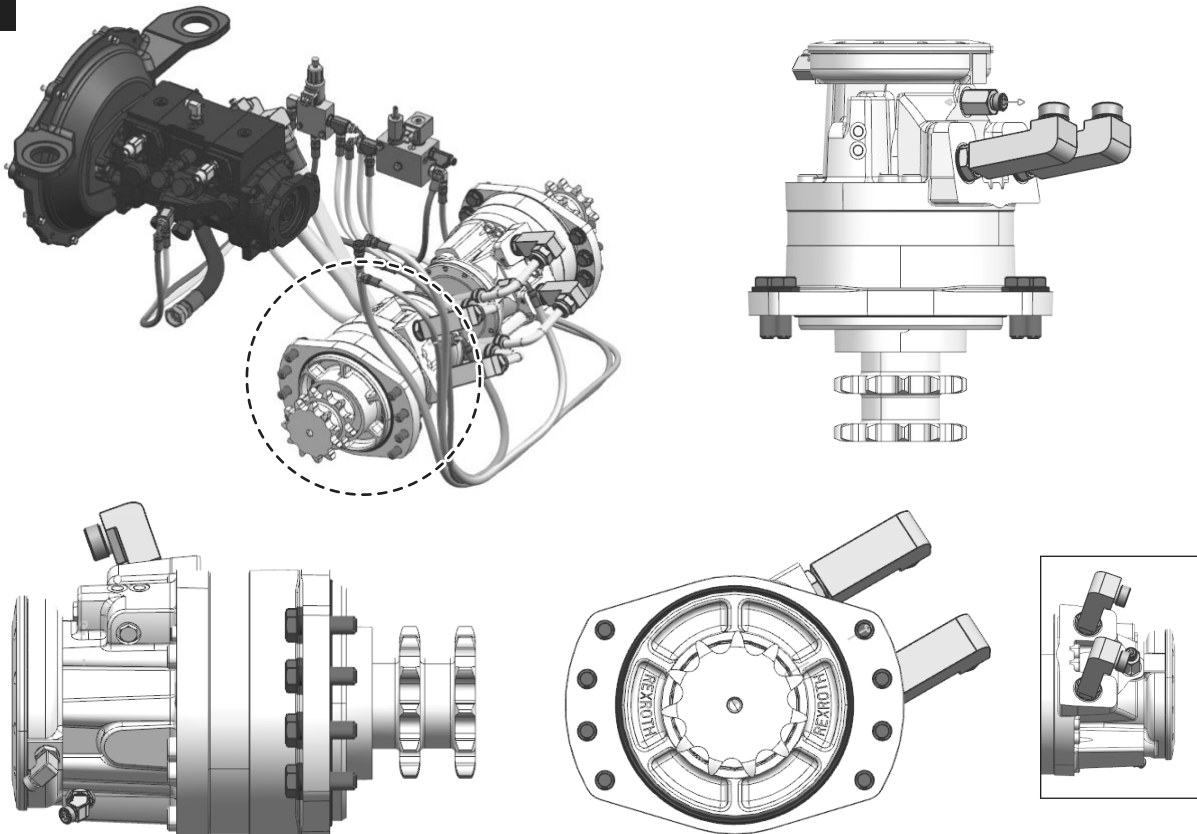


LH



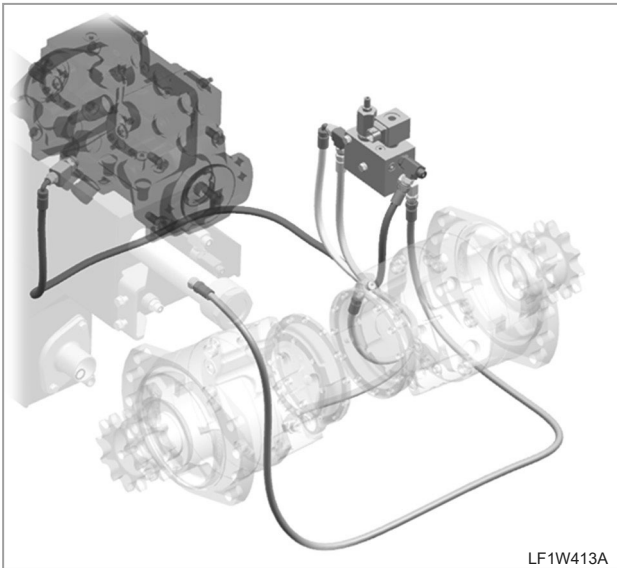
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RH



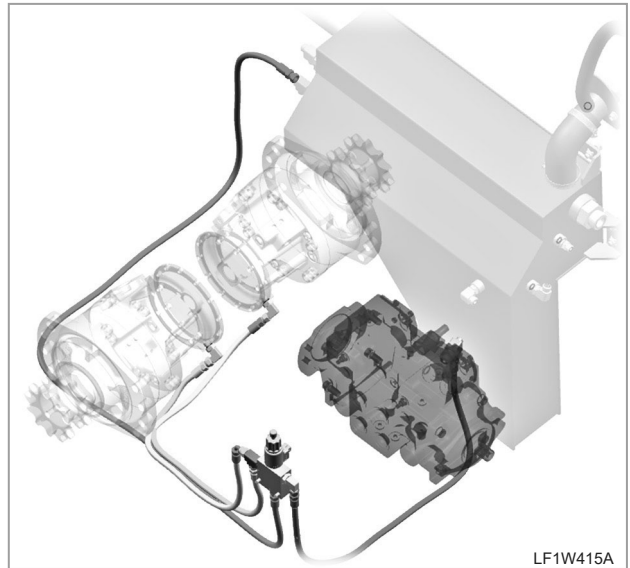
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**SOFT SHIFT VALVE**

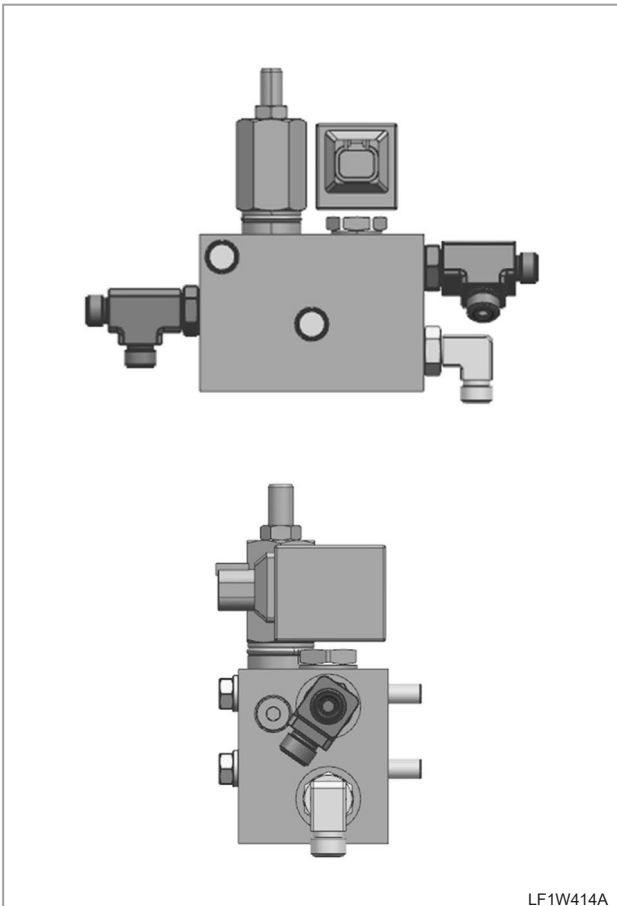


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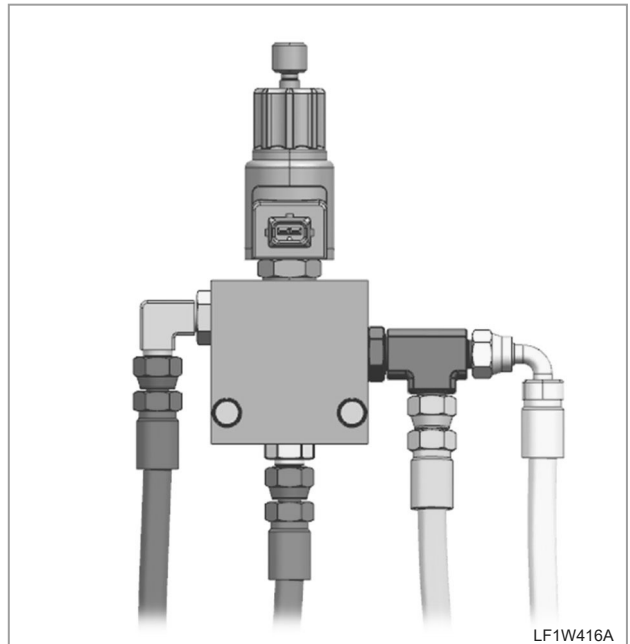
**PARKING VALVE**



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LF1W414A



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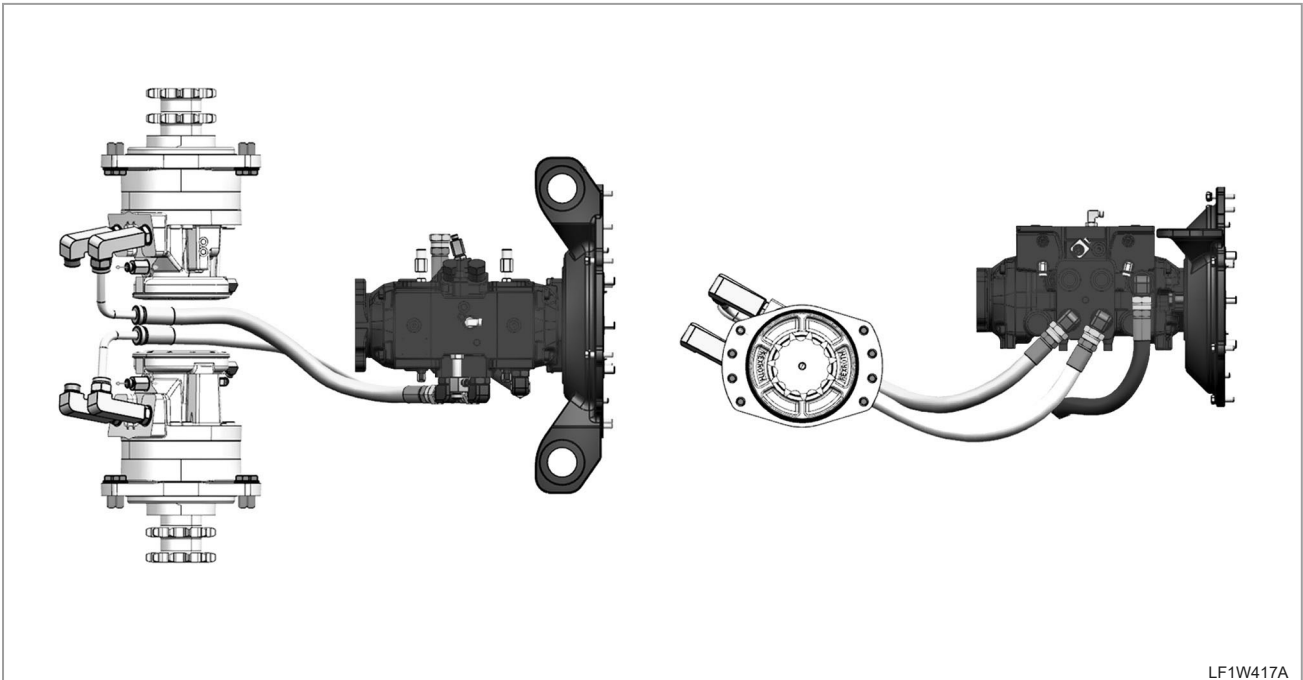
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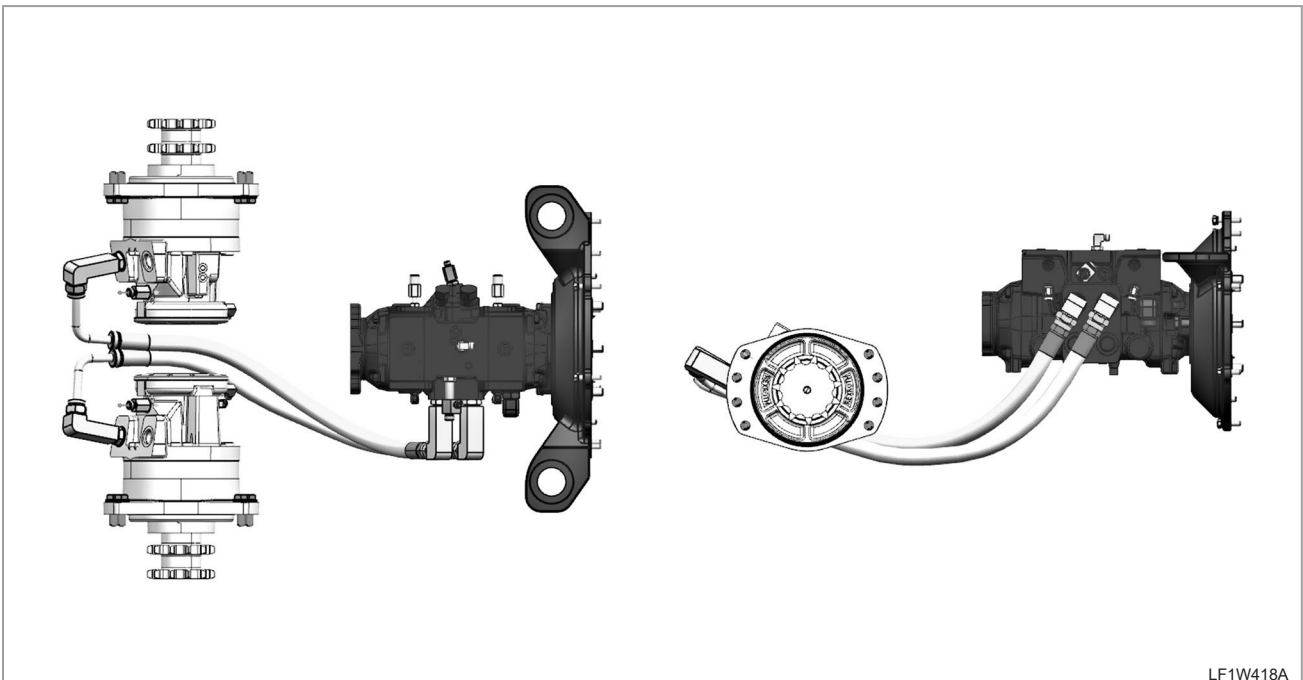
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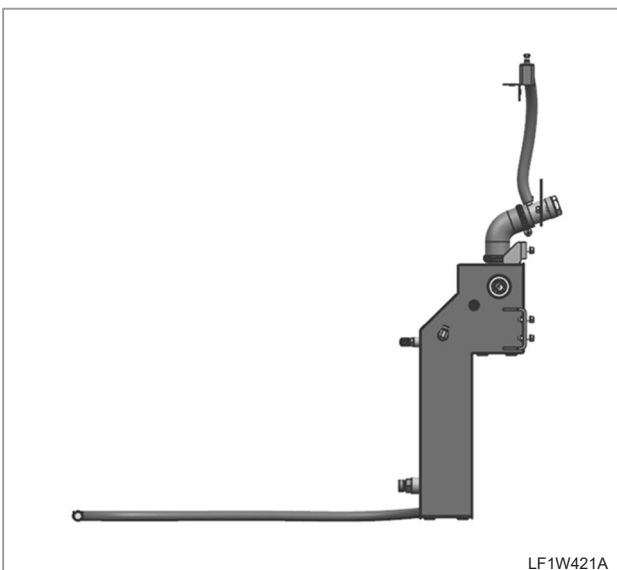
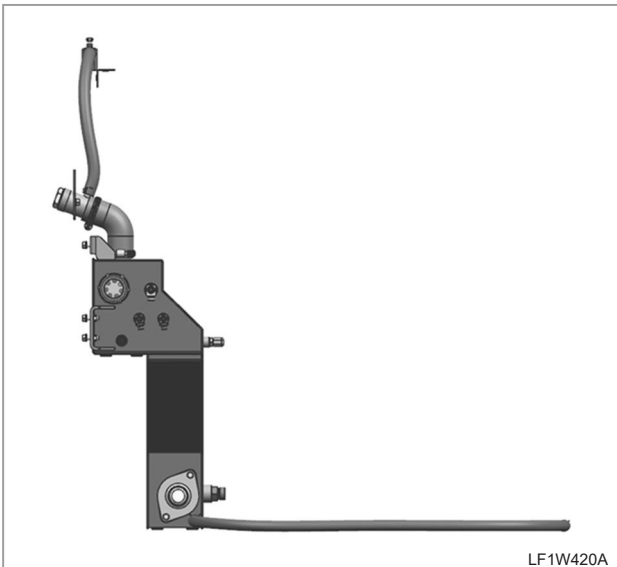
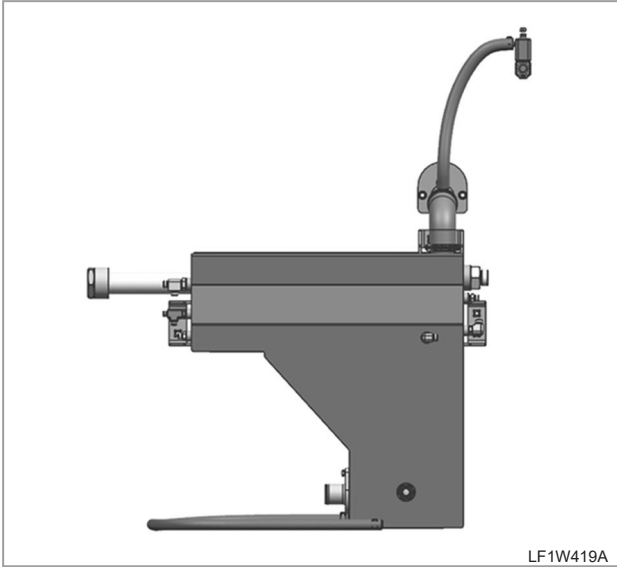


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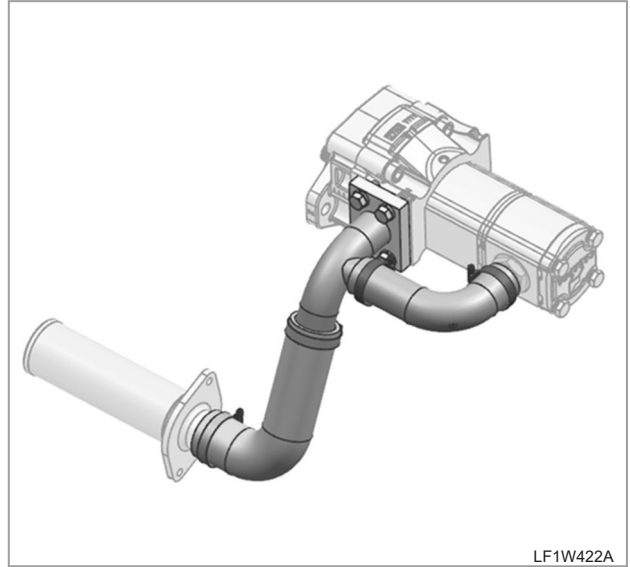


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2.3.2 OIL TANK GROUP



2.3.3 SUCTION LINE GROUP



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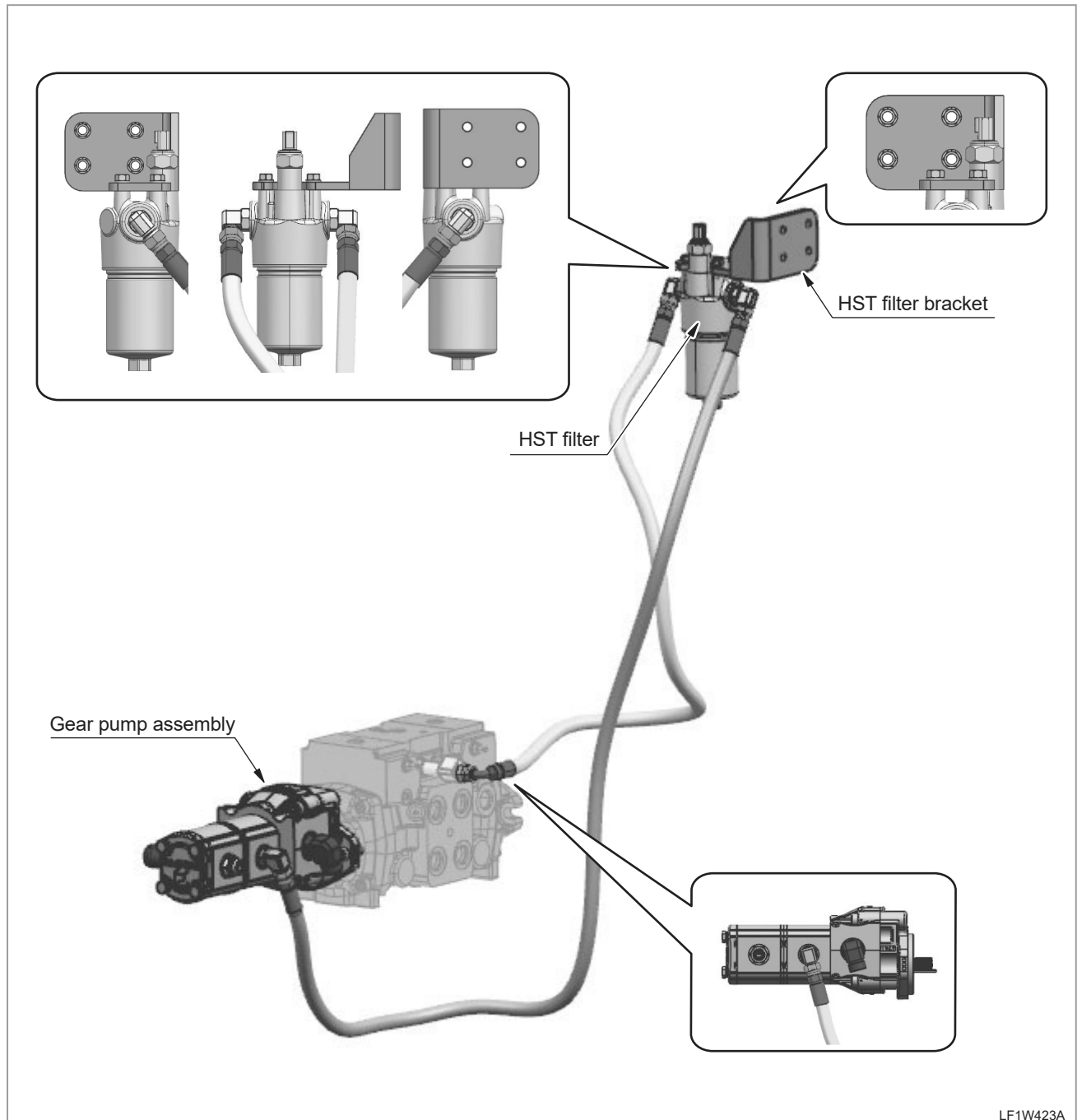
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2.3.4 HYDRAULIC PUMP GROUP



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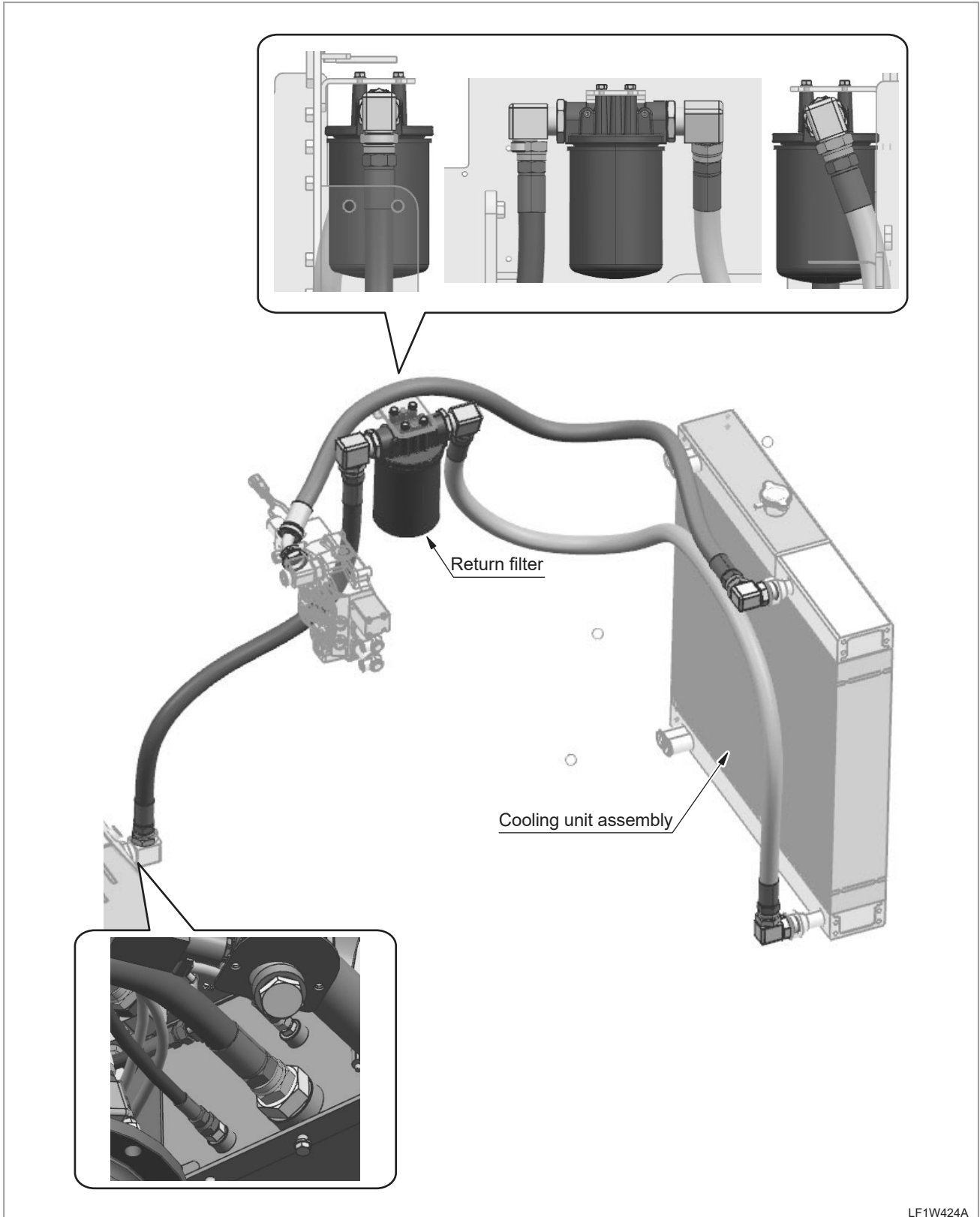
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2.3.5 OIL COOLER GROUP



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2.3.6 TILT CYLINDER GROUP

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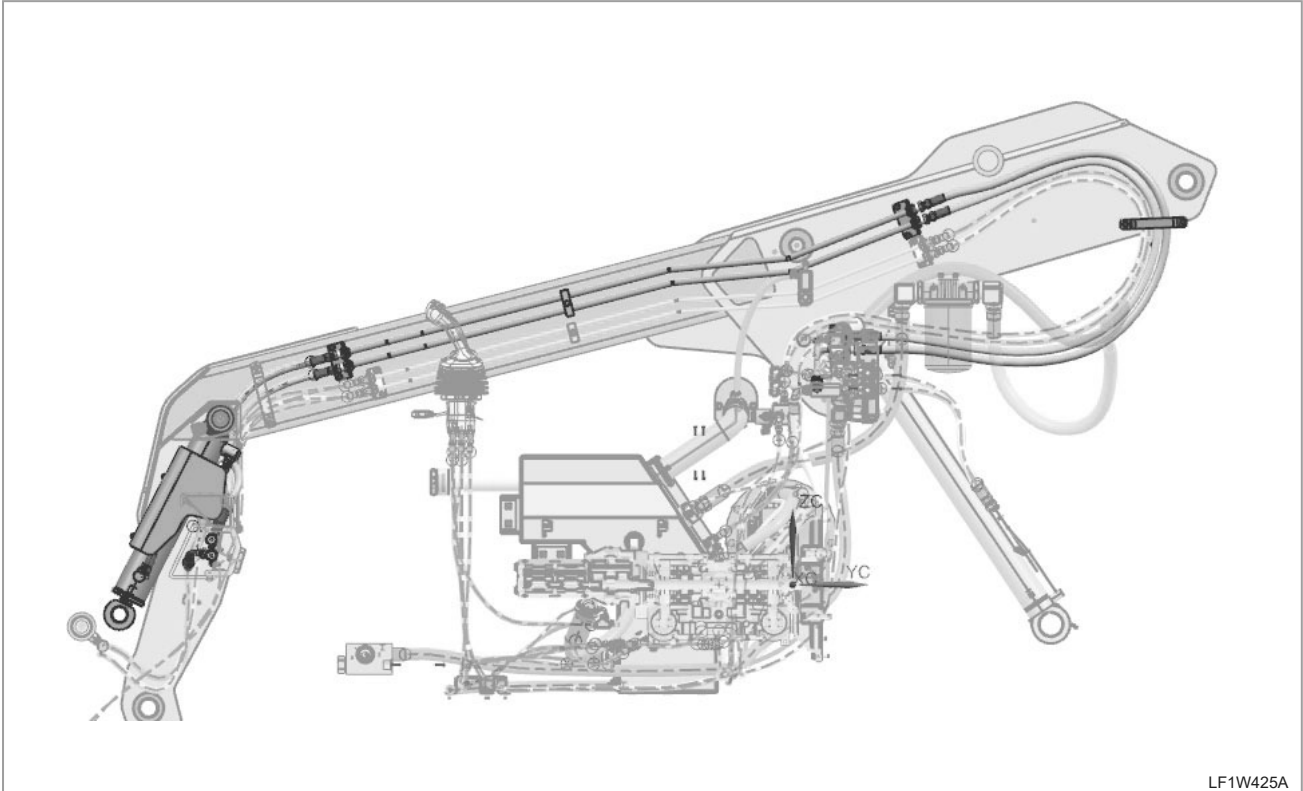
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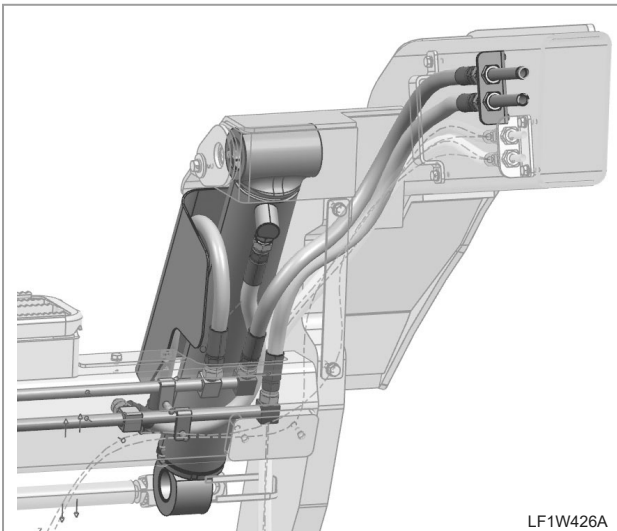
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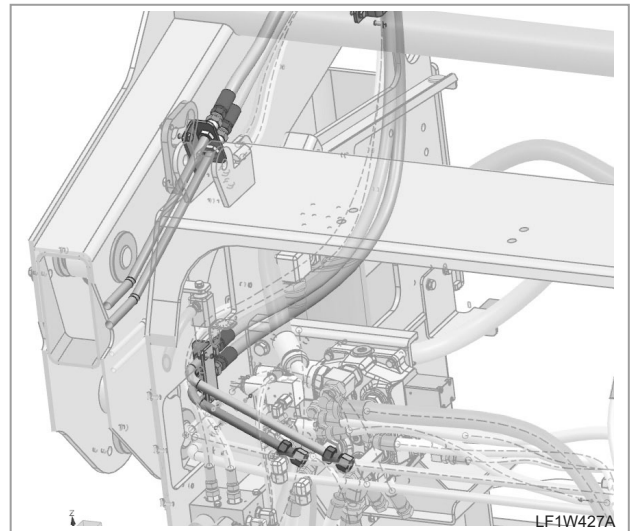
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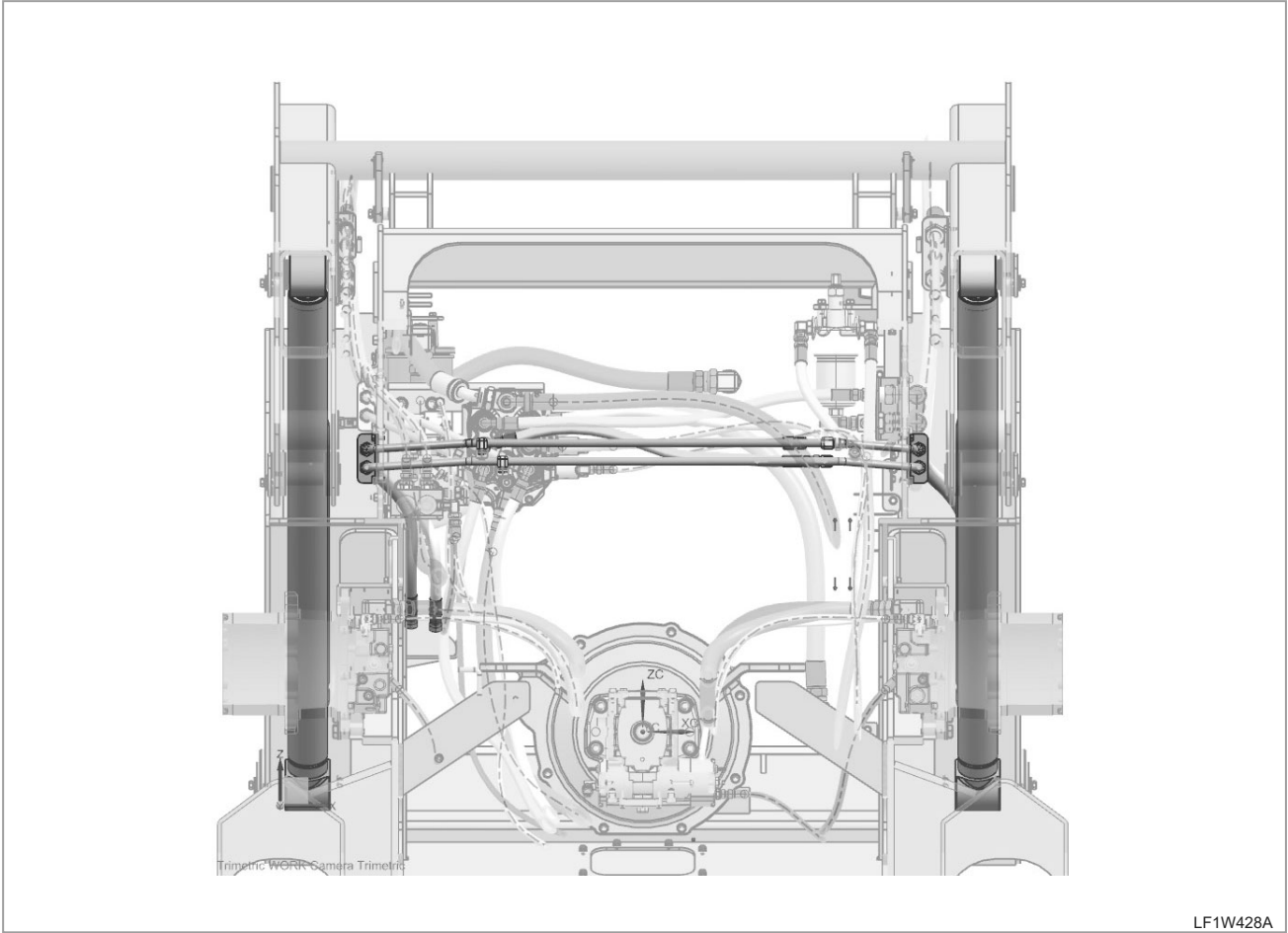


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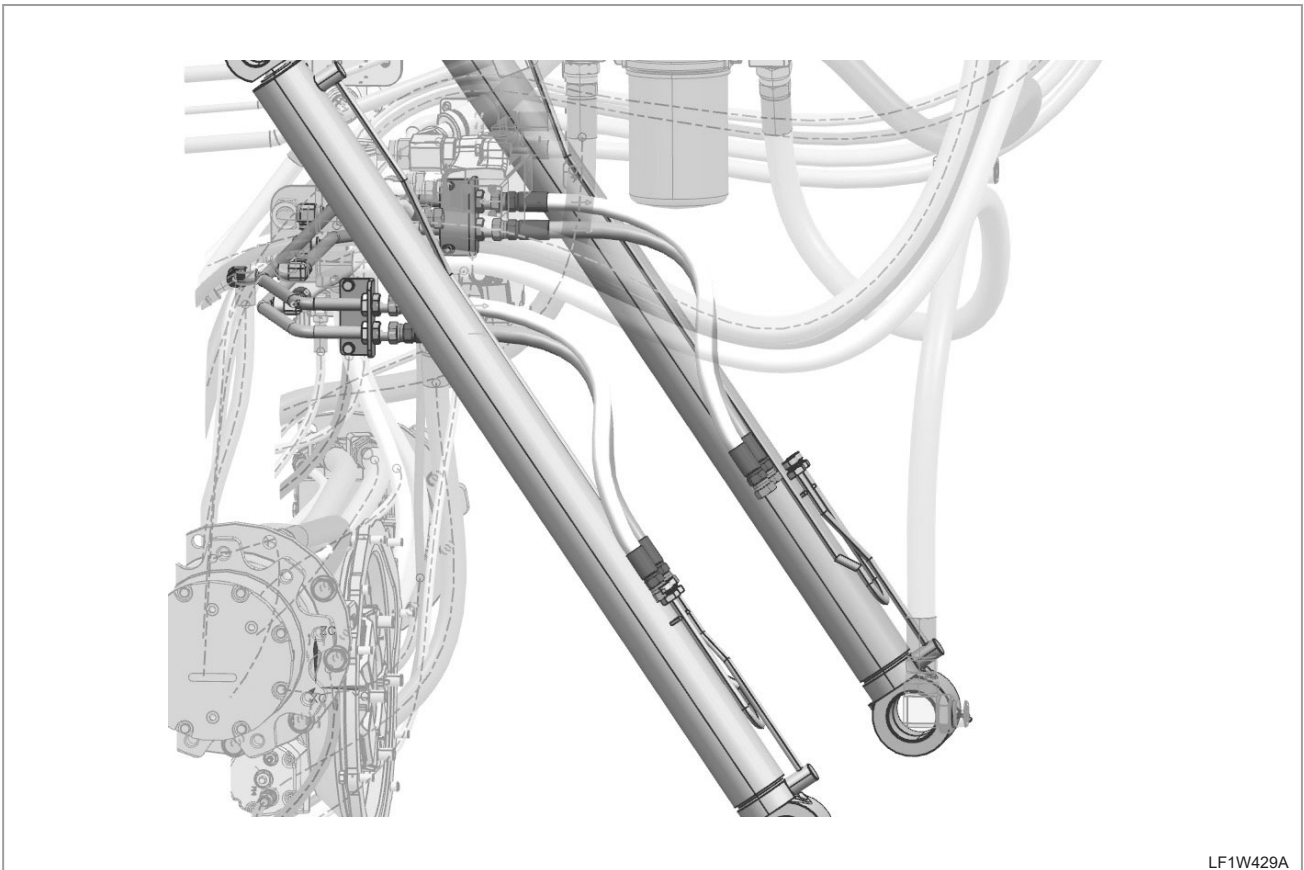


LF1W427A

2.3.7 LIFT CYLINDER GROUP



LF1W428A



LF1W429A

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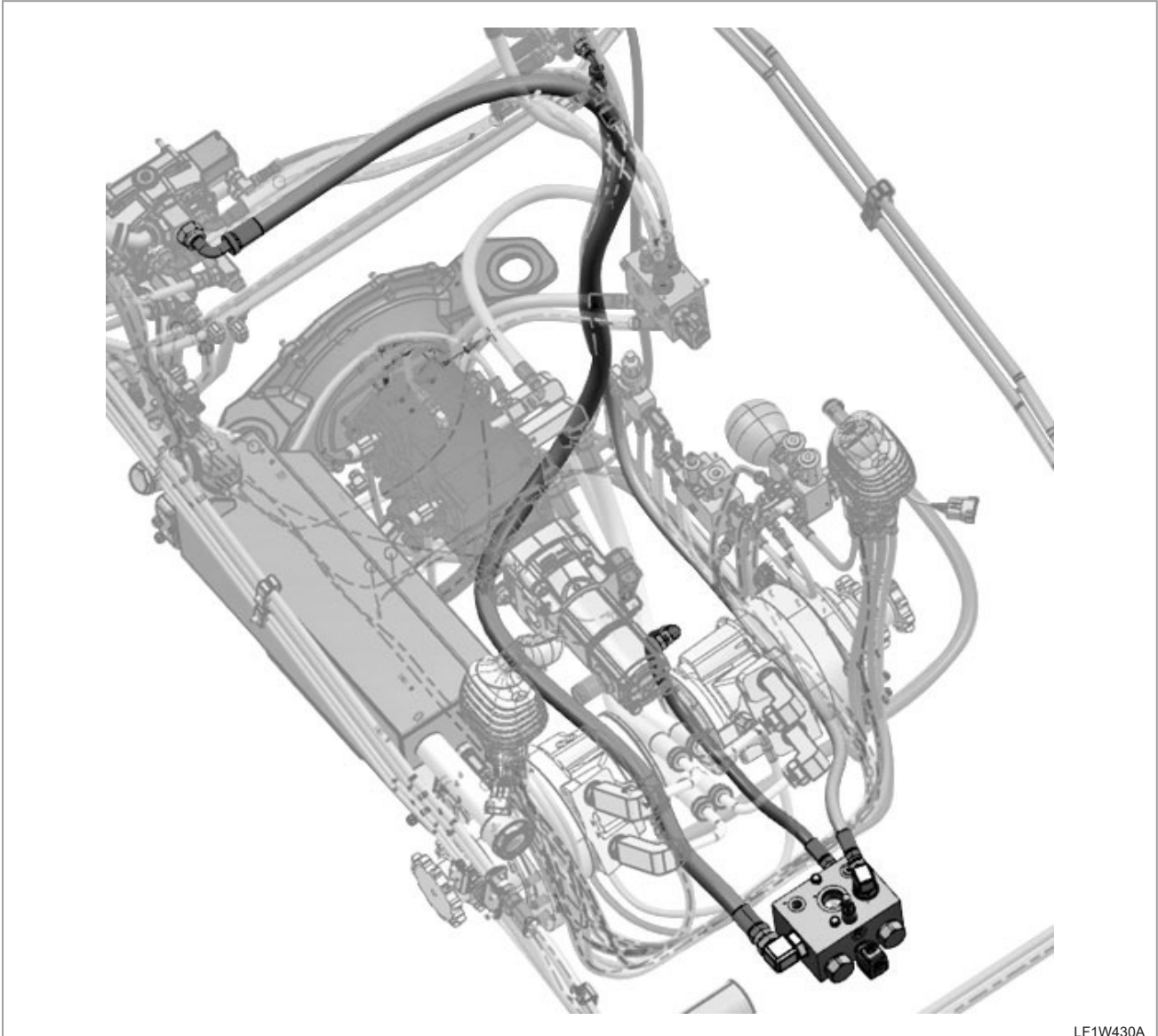
HYDRAULIC SYSTEM

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## 2.3.8 HIGH FLOW GROUP



LF1W430A

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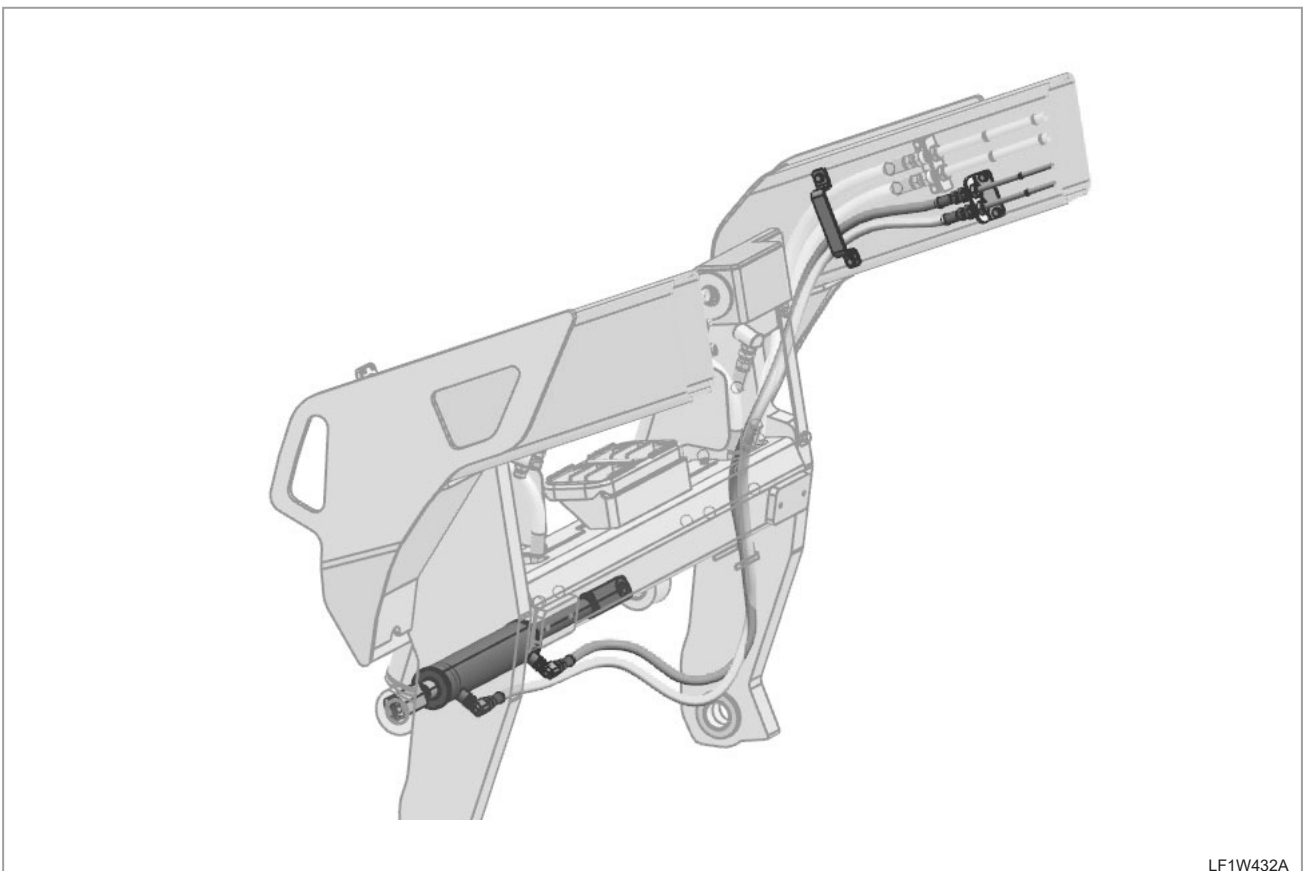
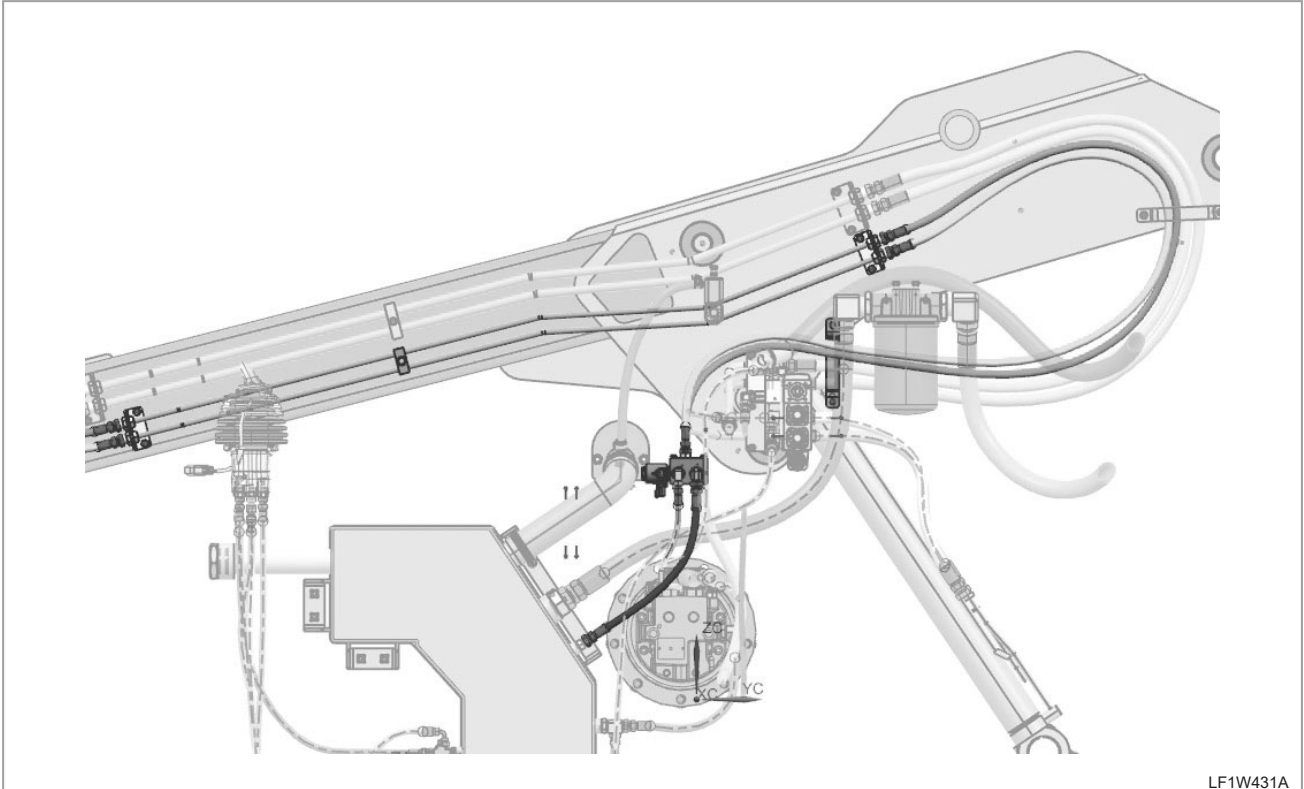
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2.3.9 QUICK ATTACHMENT CYLINDER GROUP



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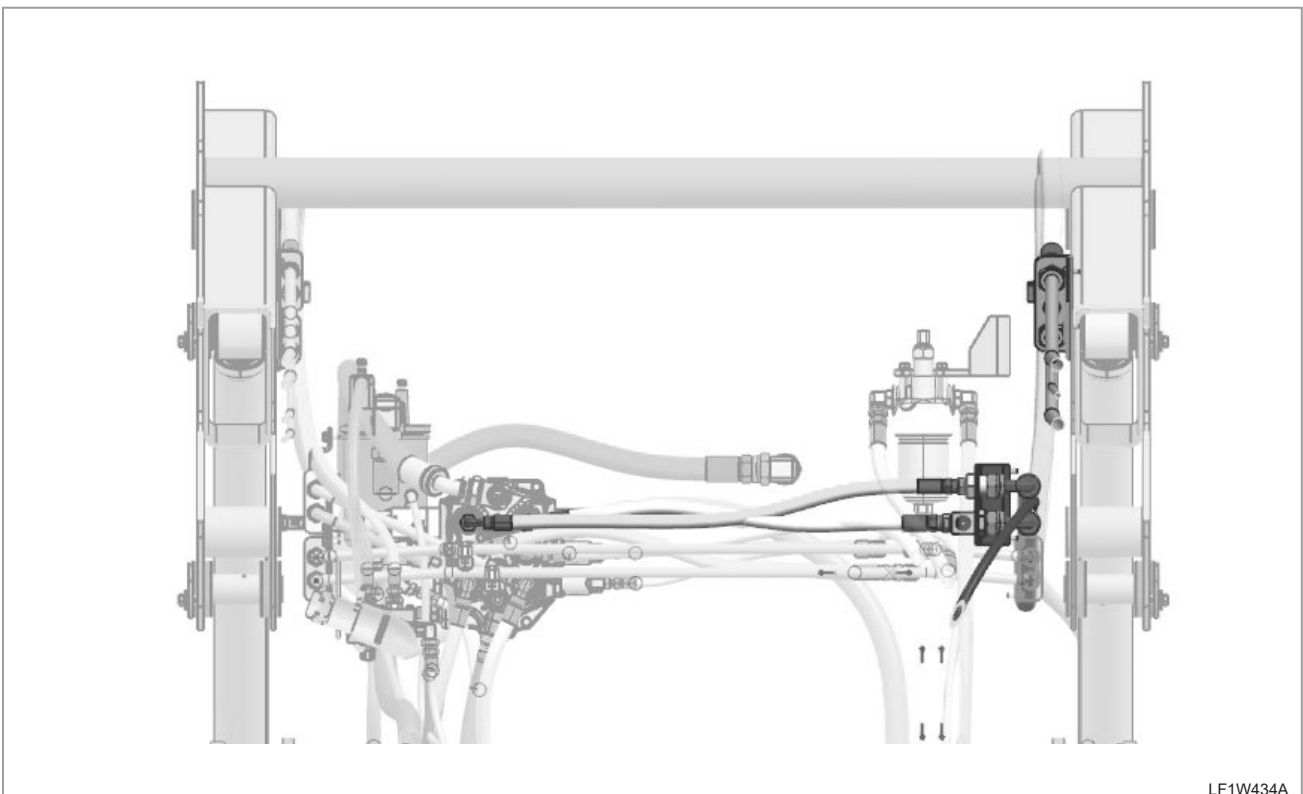
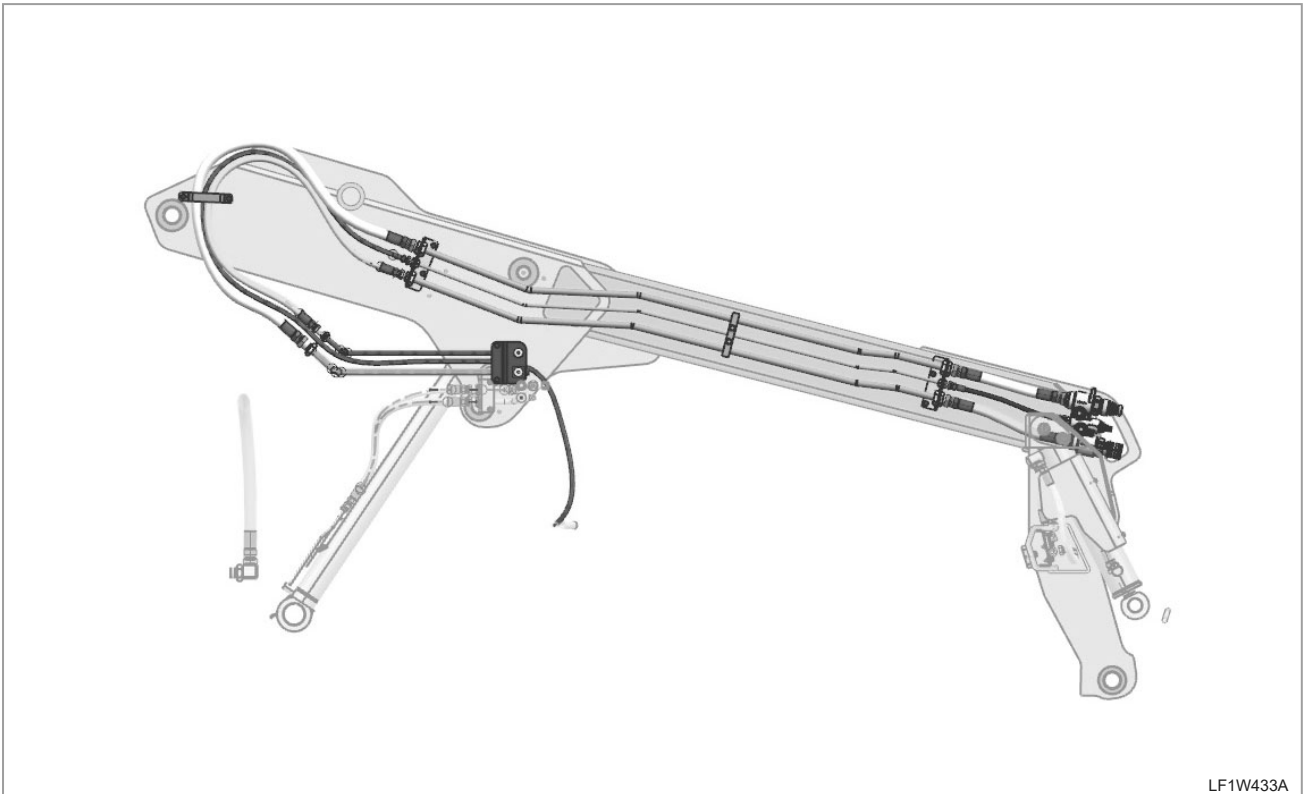
HYDRAULIC SYSTEM

ELECTRIC SYSTEM

CABIN

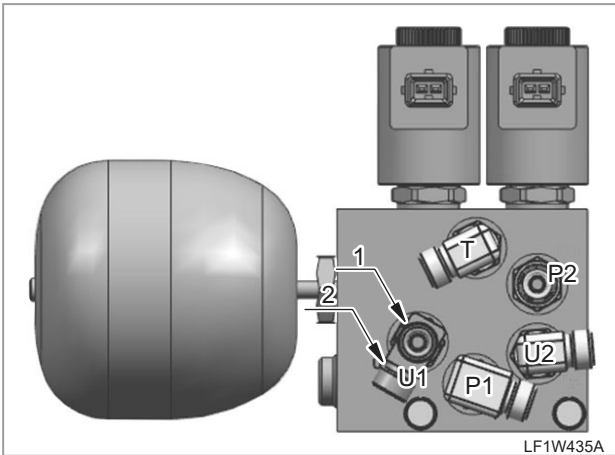
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2.3.10 EXTERNAL HYDRAULIC GROUP



**2.4 CONNECTING LINES FOR HYDRAULIC VALVES**

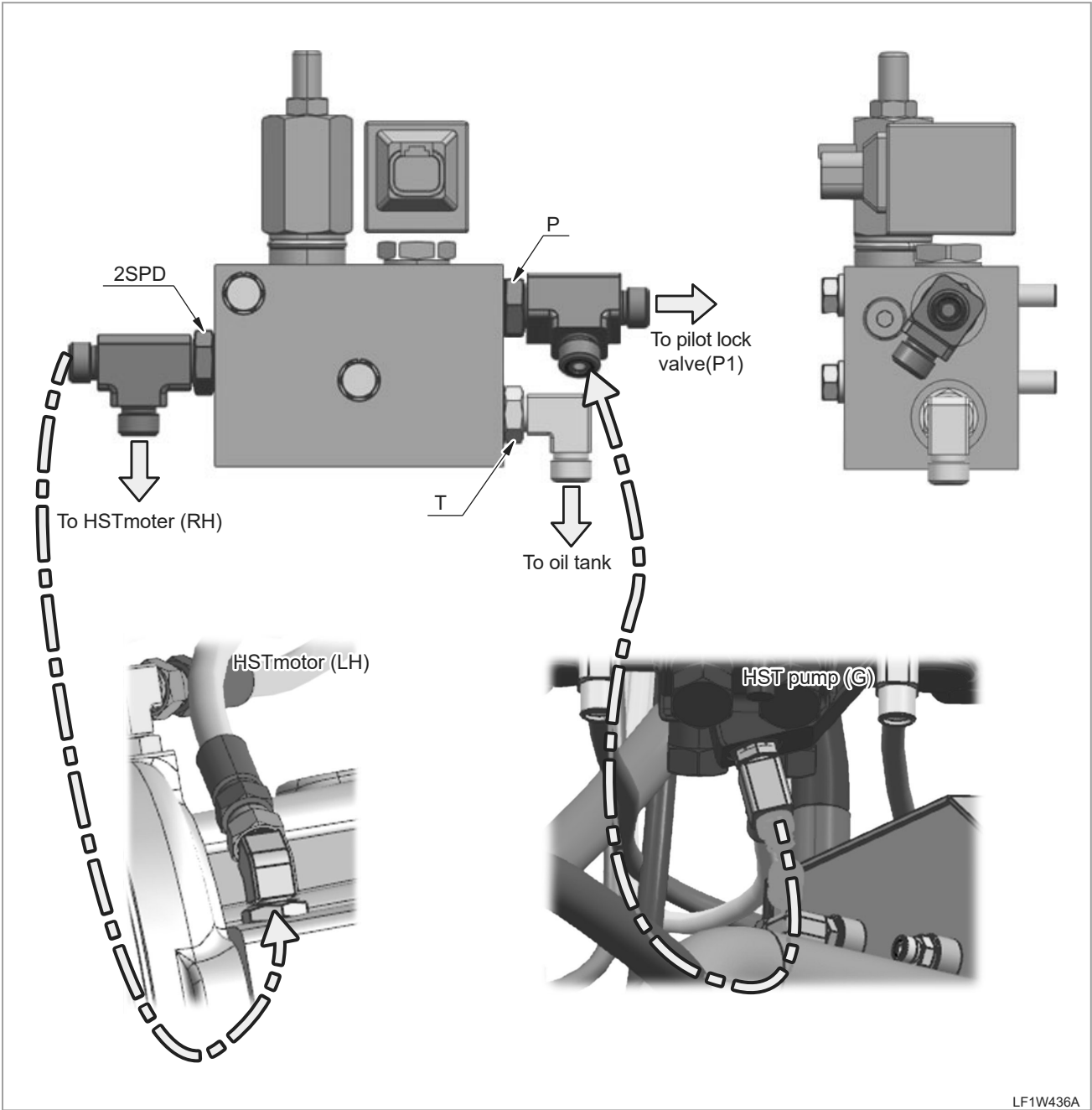
**2.4.1 PILOT LOCK VALVE (LF13-0094)**



- (T) To oil tank
- (P1) (Working)  
From HST pump (G)  
Through shift valve elbow
- (P2) From HST pump (Y)(Driving)
- (U2) From RCV assembly-LH (Driving)
- (U1)  
(1) To main control valve (V)  
(2) To RCV assembly-RH (Working)

PORT	FITTING	HOSE
T	LF13-0029	LF13-0446
P2	LF13-0093	LF13-0101
U2	LF13-0029	LF13-0061
P1	LF13-0095	LF13-0332
U1	LF13-0445	LF13-0551 To MCV
		LF13-0557 To RCV

2.4.2 SOFT SHIFT VALVE (LF13-0259)



LF1W436A

PORT	FITTING	HOSE
P	LF13-0092	LF13-0332, To pilot lock valve
		LF13-0110, To HST pump
T	LF13-0045	LF13-0199
2SPD	LF13-0092	LF13-0396, To HST motor-RH
		LF13-0397, To HST motor-LH

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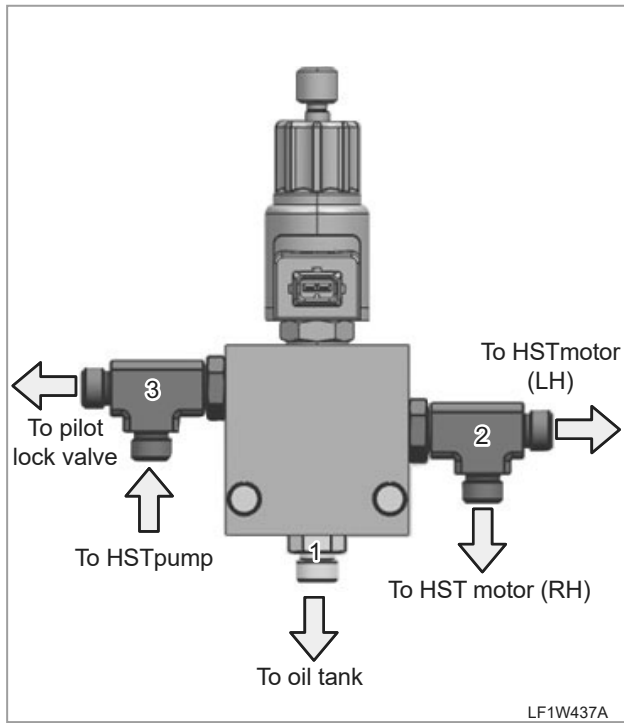
CABIN

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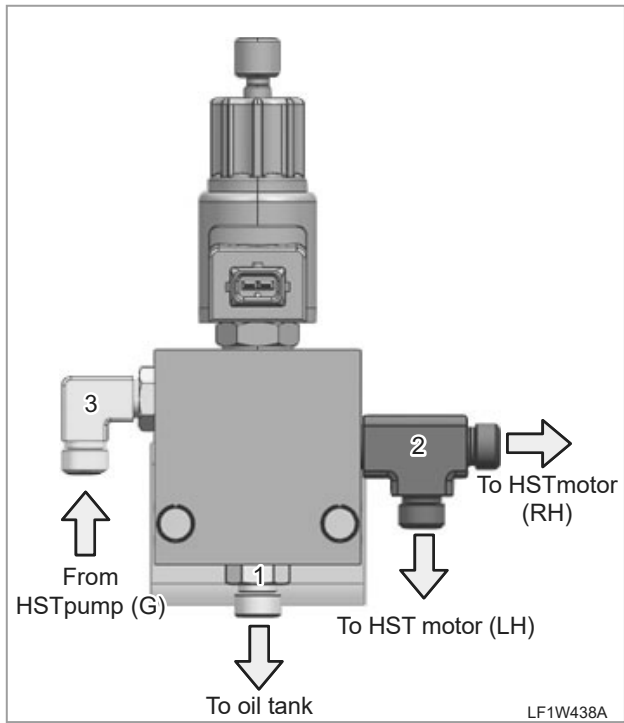
2.4.3 PARKING VALVE (LF13-0090)

**CTL**



PORT	FITTING	HOSE
1	LF13-0108	LF13-0338
2	LF13-0092	LF13-0337, To HST motor-LH
		LF13-0336, To HST motor-RH
3	LF13-0092	LF13-0342, To pilot lock valve
		LF13-0341, From HST pump

**SSL**



PORT	FITTING	HOSE
1	LF13-0376	LF13-0089
2	LF13-0092	LF13-0088, To HST motor-RH
		LF13-0087, To HST motor-LH
3	LF13-0045	LF13-0102

2.4.4 SELF LEVEL VALVE (LF13-0218)

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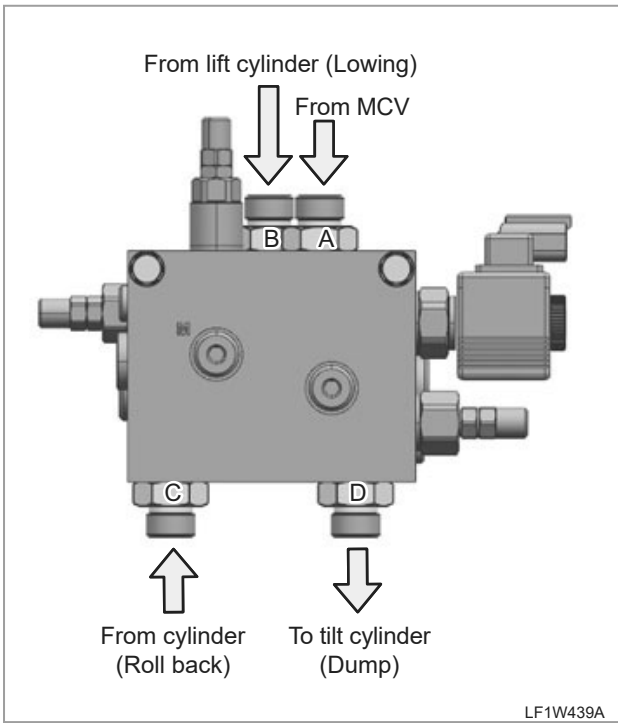
HYDRAULIC SYSTEM

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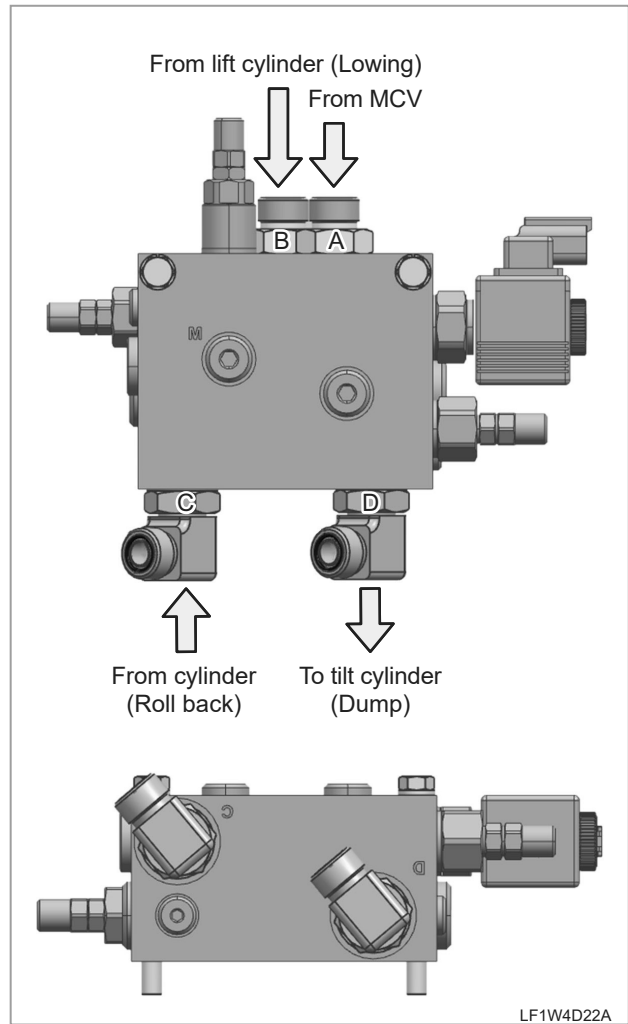
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**CTL**



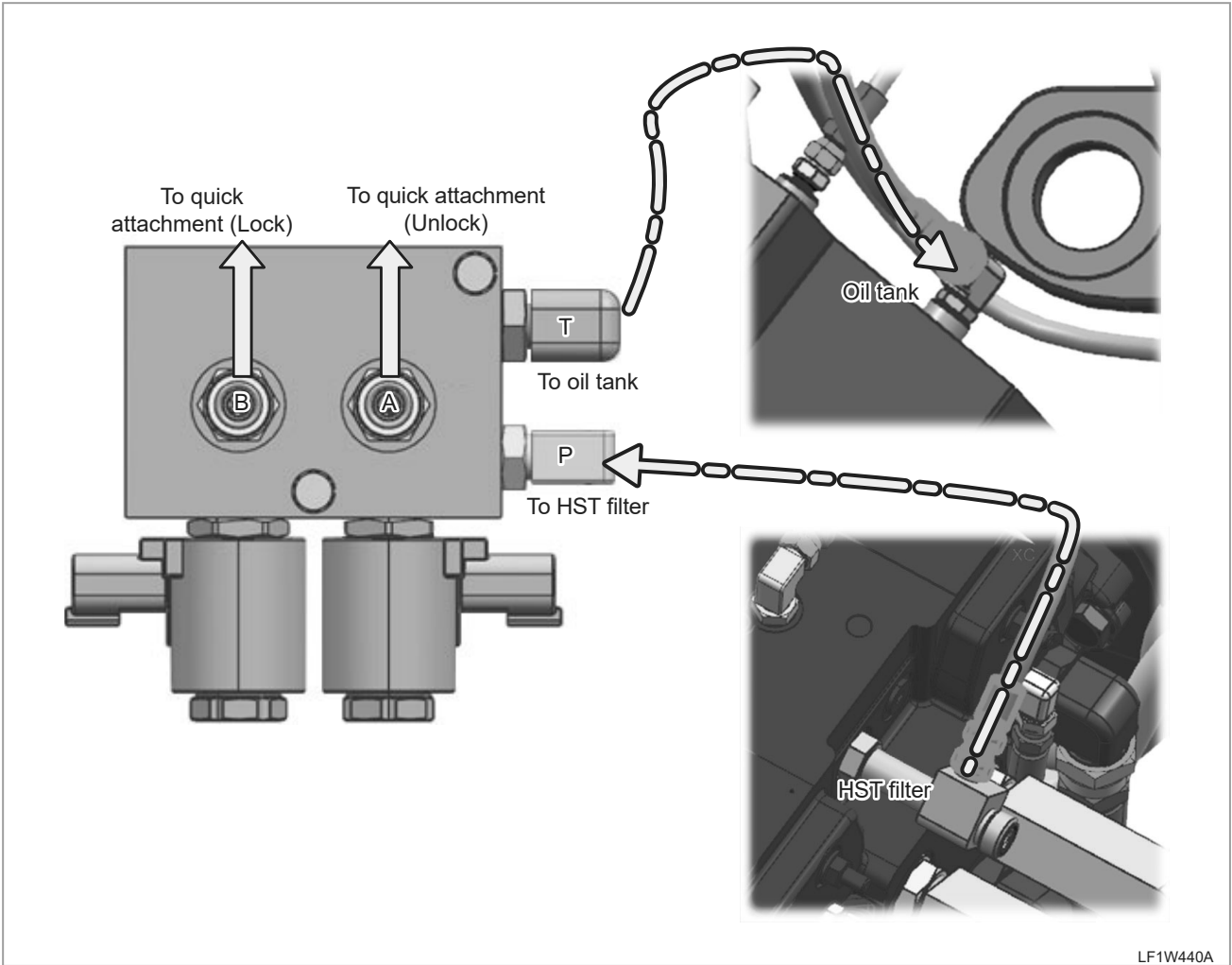
PORT	FITTING	HOSE
A	LF13-0141	LF13-0350
B	LF13-0141	LF13-0351
C	LF13-0141	LF13-0353
D	LF13-0141	LF13-0352

**SSL**



PORT	FITTING	HOSE
A	LF13-0141	LF13-0350
B	LF13-0141	LF13-0351
C	LF13-0276	LF13-0556
D	LF13-0276	LF13-0570

2.4.5 QUICK ATTACHMENT VALVE (LF13-0307)



LF1W440A

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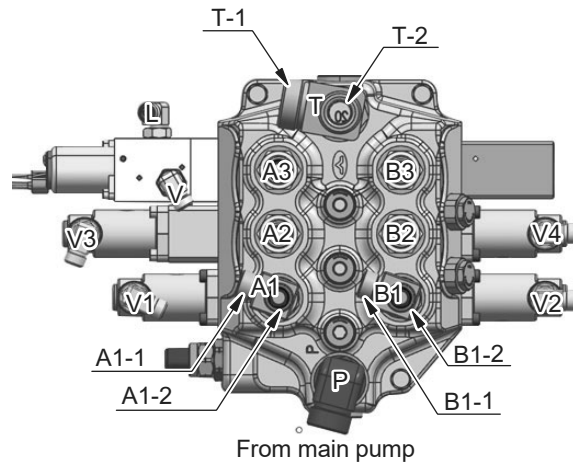
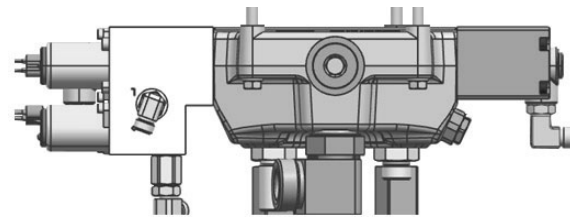
**CTL**

PORT	FITTING	HOSE
A	LF13-0374	LF13-0370, To LF13-0373 hydraulic tube
B	LF13-0374	LF13-0371, To LF13-0372 hydraulic tube
P	LF13-0045	LF13-0375, To HST pump
T	LF13-0426	LF13-0377, To hydraulic oil tank

**SSL**

PORT	FITTING	HOSE
A	LF13-0374	LF13-0370, To LF13-0373 hydraulic tube
B	LF13-0374	LF13-0371, To LF13-0372 hydraulic tube
P	LF13-0045	LF13-0375, To HST pump
T	LF13-0426	LF13-0463, To hydraulic oil tank

2.4.6 MAIN CONTROL VALVE (LF13-0028)



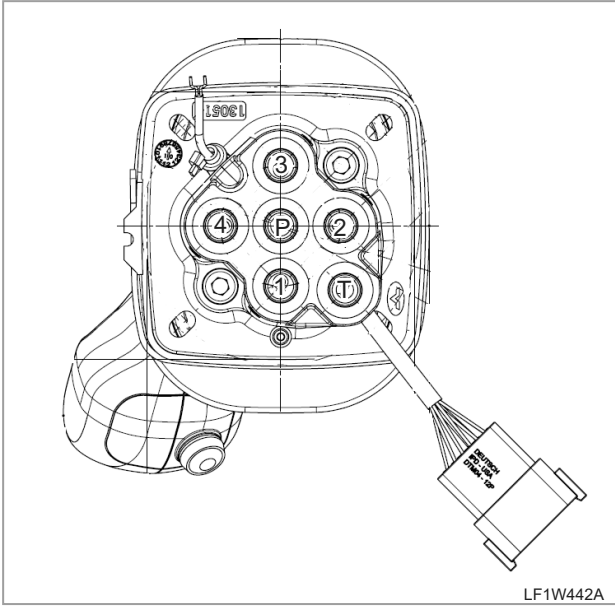
LF1W441A

- (L) To oil tank
- (V) From pilot lock valve U1
- (V3) From RCV (Boom up)
- (V1) From RCV (Roll back)
- (V4) From RCV (Boom down)
- (V2) From RCV (Dump)

- (A1) To tilt cylinder (Roll back)
- (A2) To lift cylinder (Lift)
- (A3) To external hydraulic (Female)
- (B1) To tilt cylinder (Dump)
- (B2) To self level (A)
- (B3) To external hydraulic (Male)

PORT	FITTING	HOSE		PORT	FITTING	HOSE (TUBE)	
		CTL	SSL			CTL	SSL
L	LF13-0029	0567	0556	A1	0358	0505 To tilt (A1-1)	
						0353 From self level (A1-2)	0556 From self level (A1-2)
V	0029	0551	0551	A2	0324	0303	
V1	0045	0069	0558	A3	0356	0392	0558 FROM RCV-RH 4번
V2	0045	0062	0560	B1	0358	0507 to tilt (B1-1)	
						0352 From self level (B1-2)	0570 From self level (B1-2)
V3	0045	0068	0559	B2	0324	0350	
V4	0045	0067	0561	B3	0324	0394	
P	0428	0553	0553	T	0440	0158 to oil cooler (T-1)	0158 to oil cooler (T-1)
						0448 From high flow (T-2)	0562 From high flow (T-2)

**2.4.7 RCV ASSEMBLY (RH) (LF13-0056)**



PORT	LINE	FITTING	HOSE	
			CTL	SSL
1	MCV (Boom down)	Short LF13-0070	LF13-0067	LF13-0561
2	MCV (Dump)	Short LF13-0070	LF13-0062	LF13-0560
3	MCV(Boom up)	Short LF13-0070	LF13-0068	LF13-0559
4	MCV (Roll back)	Short LF13-0070	LF13-0069	LF13-0558
P	Pilot lock valve	Long LF13-0057	LF13-0060	LF13-0557
T	Oil tank	Long LF13-0057	LF13-0053	LF13-0566

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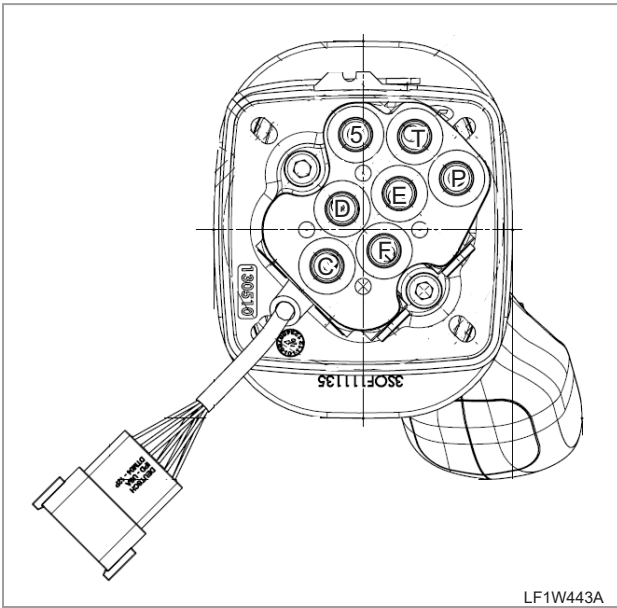
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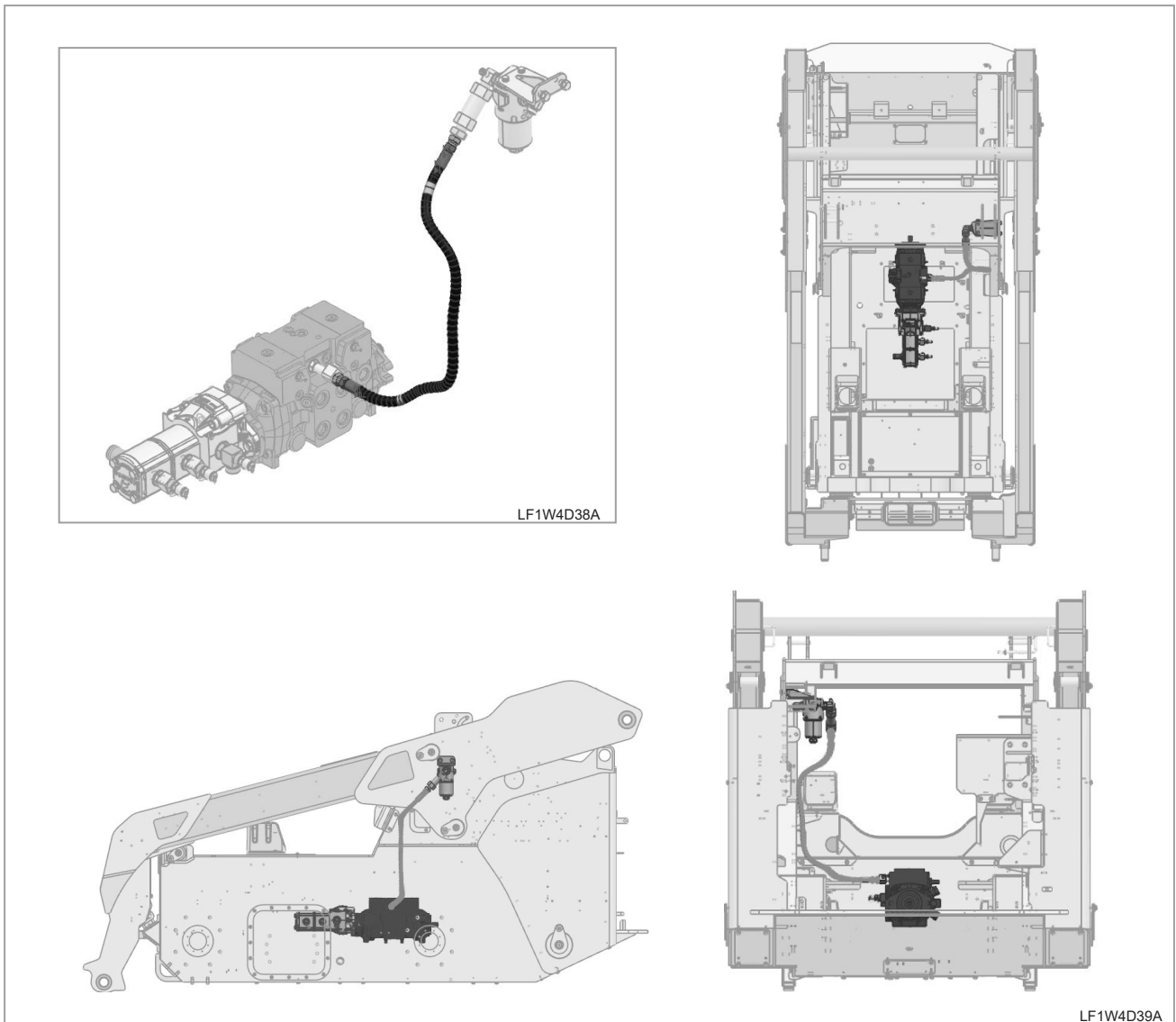
2.4.8 RCV ASSEMBLY (LH) (LF13-0055)



PORT	LINE	FITTING	HOSE	
			CTL	SSL
5	Hydraulic block	Short LF13-0070	LF13-0331	LF13-0058
C	HST pump (Forward-RH)	Short LF13-0070	LF13-0329	LF13-0063
D	HST pump (Reverse-LH)	Long LF13-0057	LF13-0327	LF13-0064
E	HST pump (Reverse-RH)	Long LF13-0057	LF13-0328	LF13-0066
F	HST pump (Forward-LH)	Short LF13-0070	LF13-0330	LF13-0065
P	Pilot lock valve	Short LF13-0070	LF13-0522	LF13-0061
T	Oil tank	Long LF13-0057	LF13-0052	LF13-0565

2.5 HOSE CONNECTING LINES FOR A DRIVING SYSTEM AND CIRCULATION SYSTEM

2.5.1 HYDRAULIC HOSE - CHARGE (LF13-0323C)



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2.5.2 HYDRAULIC HOSE - SHIFT P (LF13-0110B)

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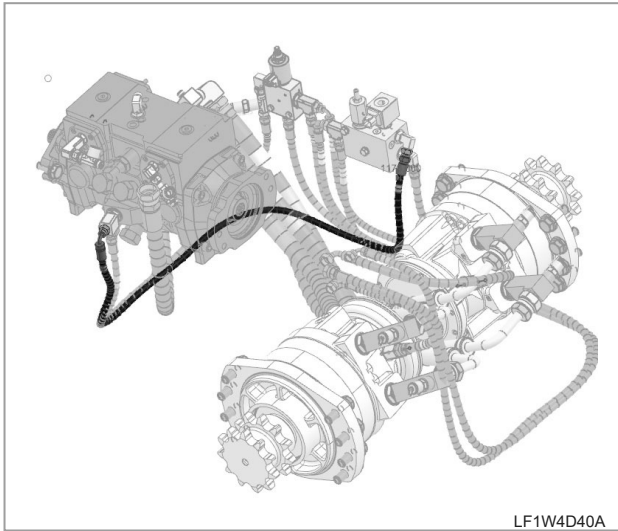
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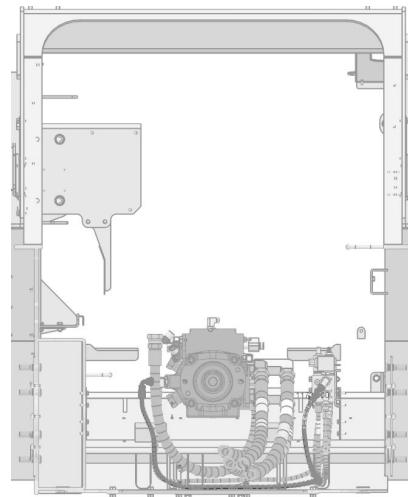
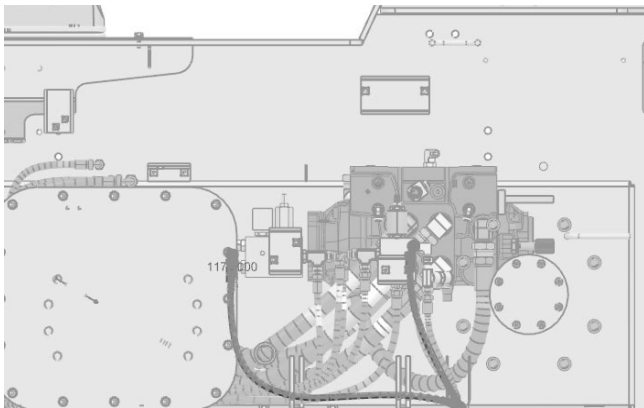
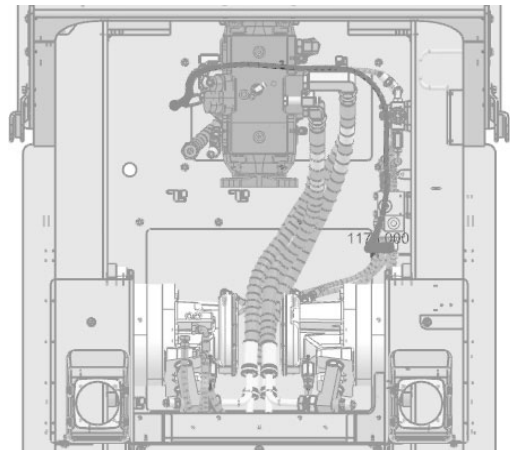
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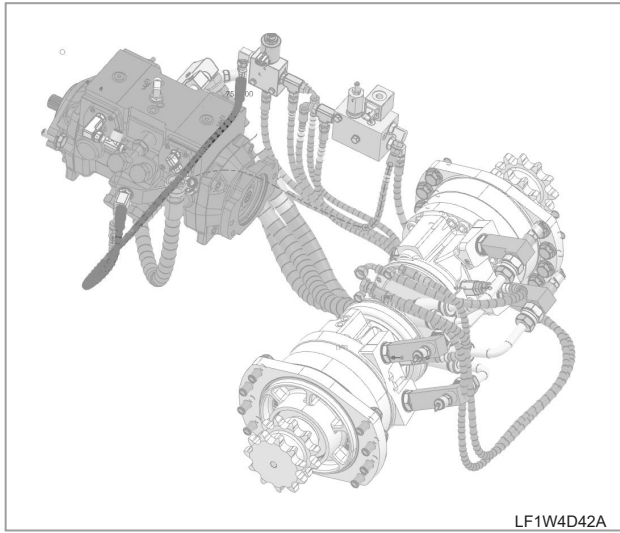
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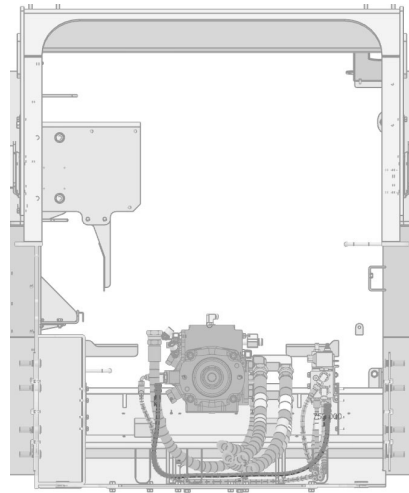
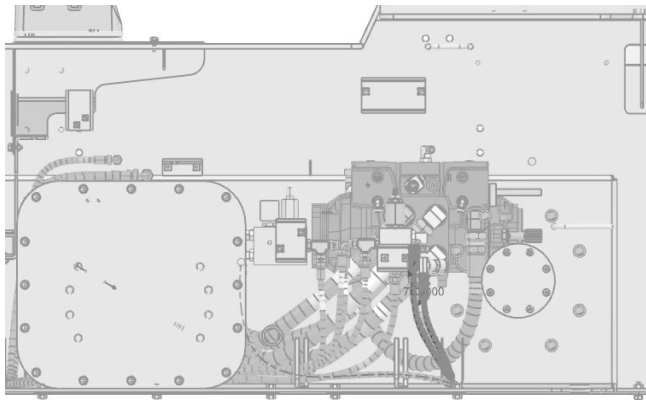
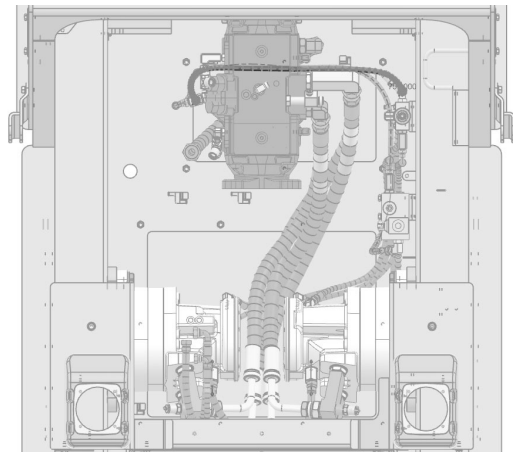
LF1W4D41A



2.5.3 HYDRAULIC HOSE - PARKING P (LF13-0102B)



LF1W4D42A



LF1W4D43A

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2.5.4 HYDRAULIC HOSE -HST B(RH) (LF13-0701A)

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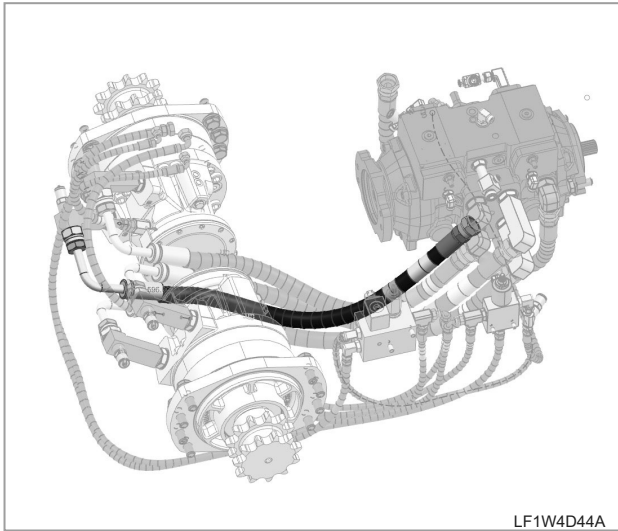
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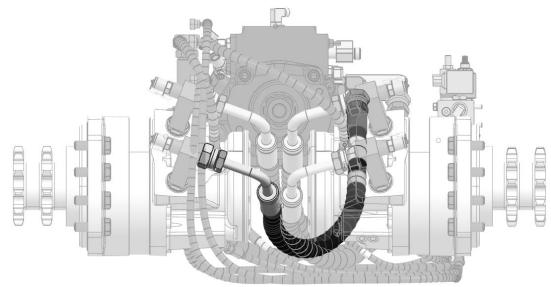
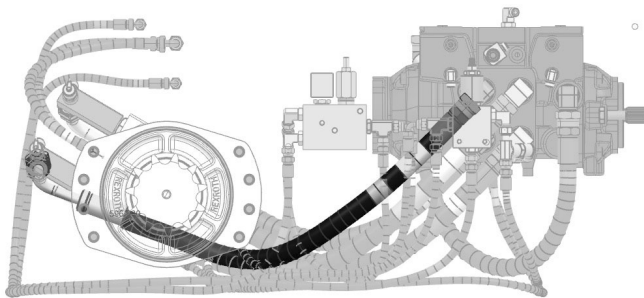
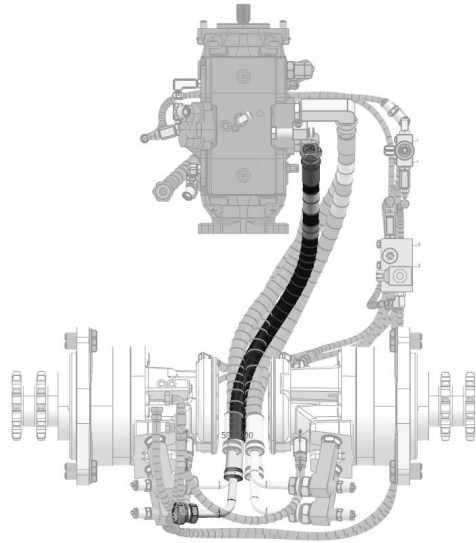
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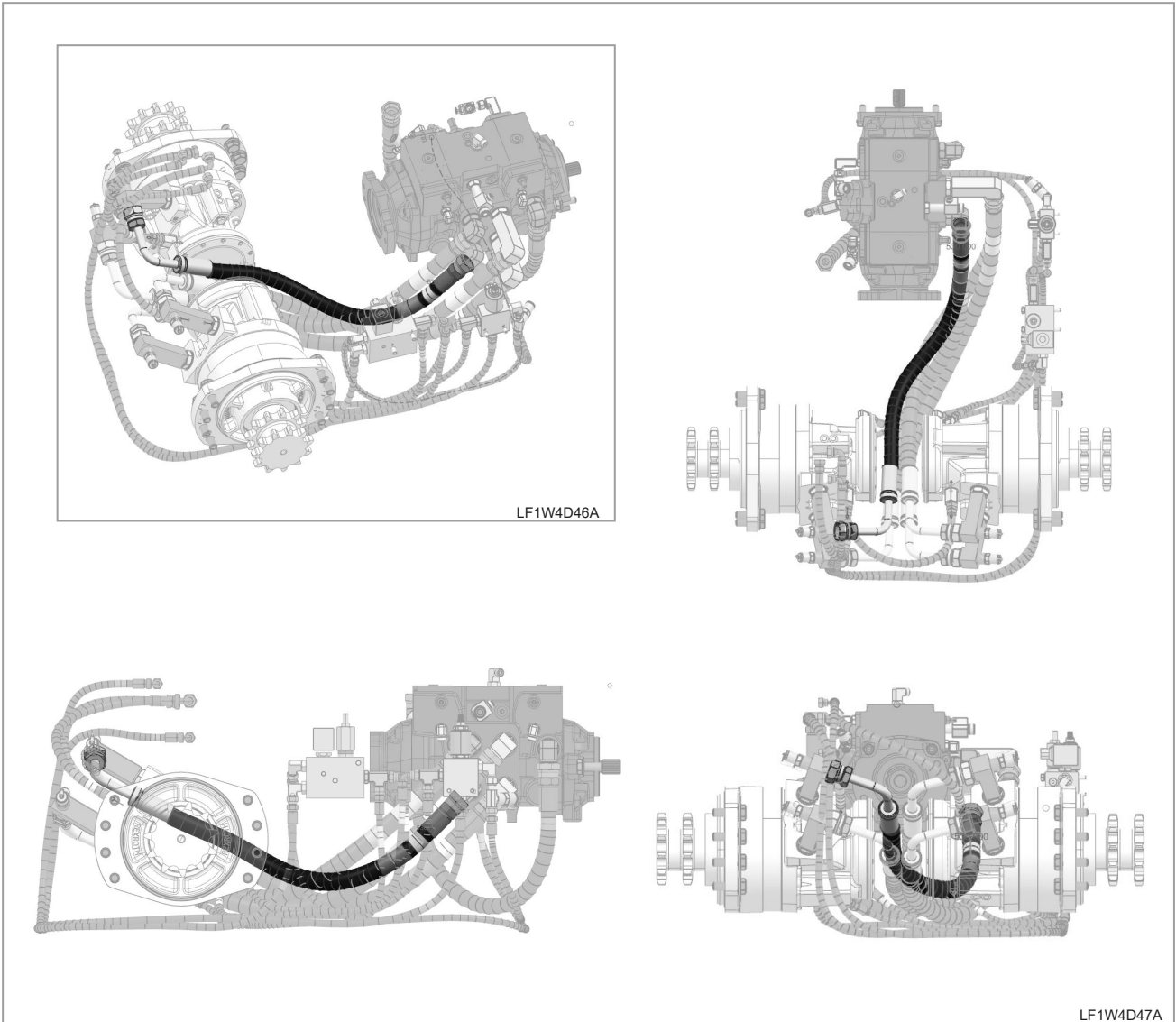


LF1W4D44A



LF1W4D45A

2.5.5 HYDRAULIC HOSE - HST A(RH) (LF13-0703A)



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2.5.6 HYDRAULIC HOSE - HST B(LH) (LF13-0702A)

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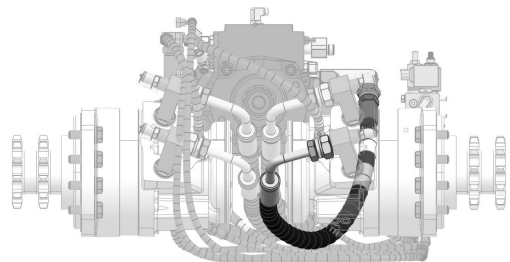
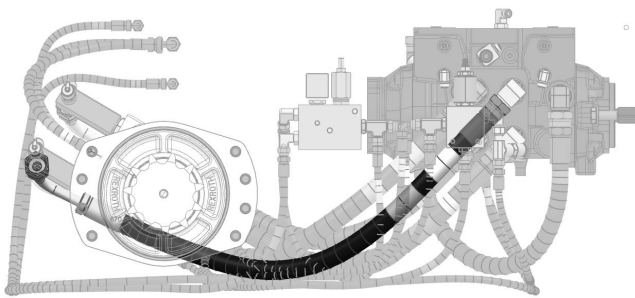
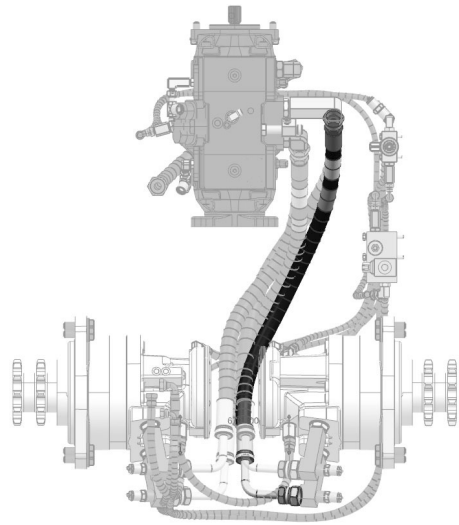
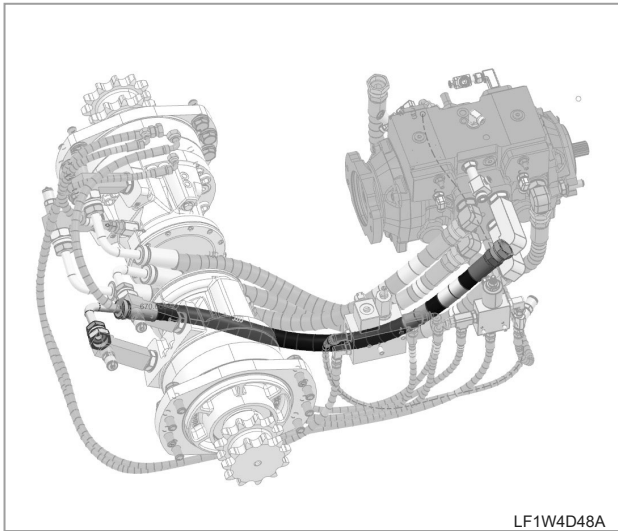
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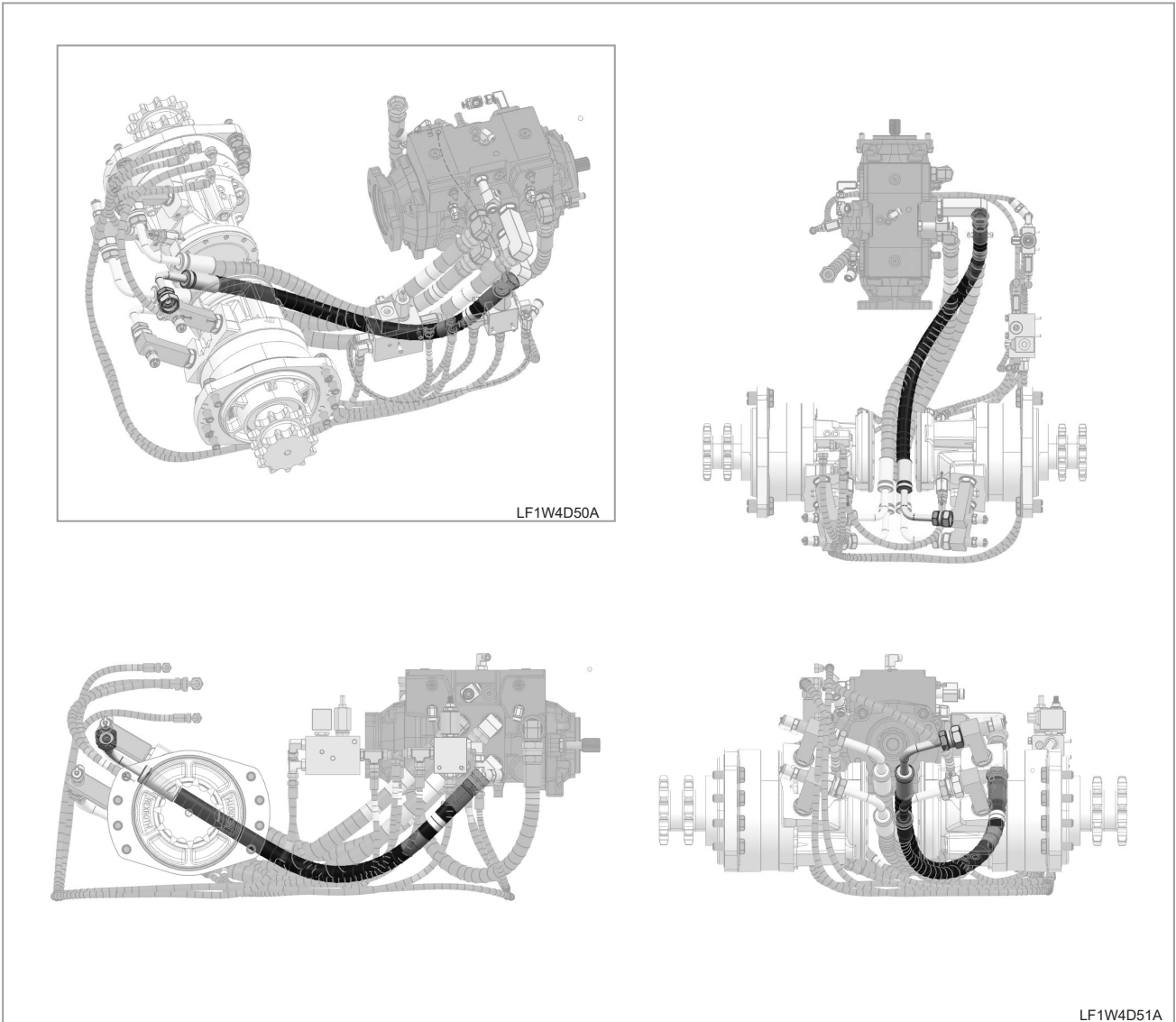
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LF1W4D49A

2.5.7 HYDRAULIC HOSE - HST A(LH) (LF13-0700A)



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2.5.8 HYDRAULIC HOSE - SHIFT MOTOR(RH) (LF13-0396B)

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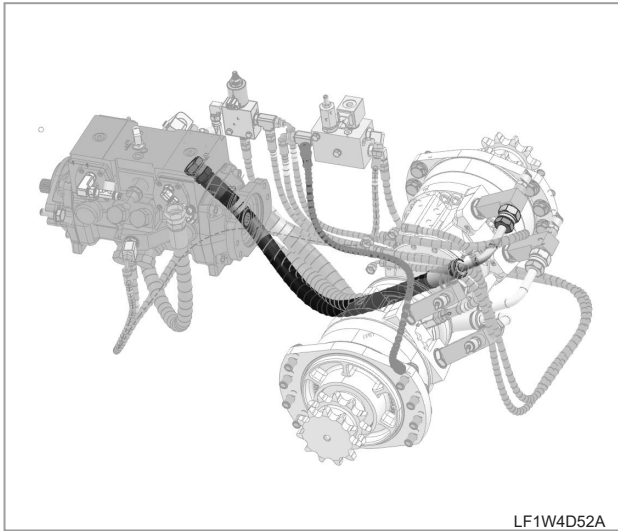
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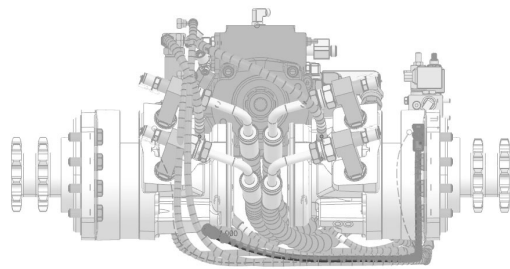
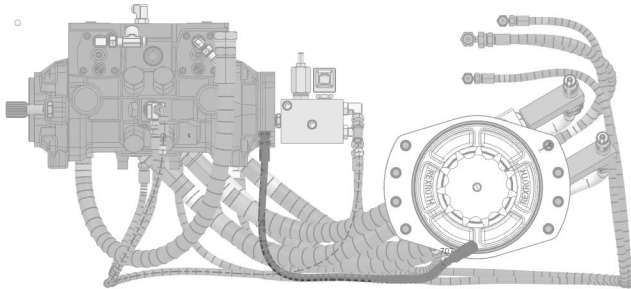
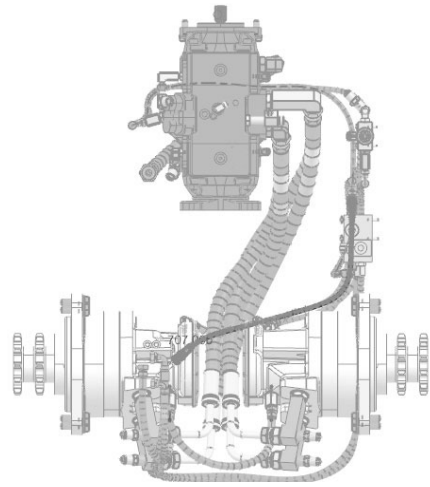
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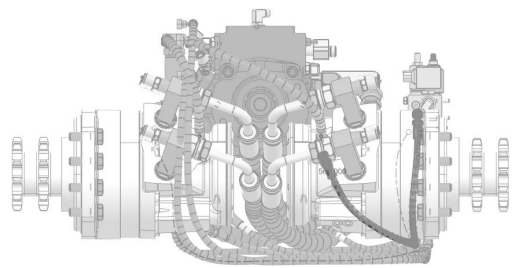
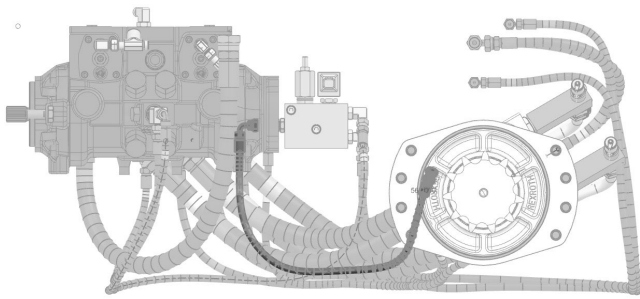
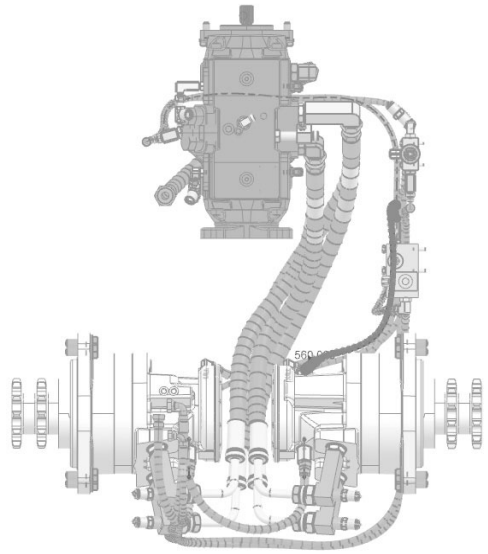
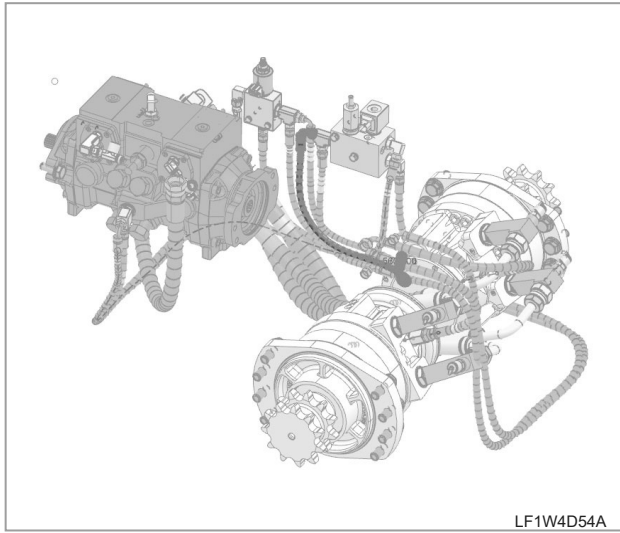


LF1W4D52A



LF1W4D53A

2.5.9 HYDRAULIC HOSE - SHIFT MOTOR(LH) (LF13-0397B)



LF1W4D55A

2.5.10 HYDRAULIC HOSE - PARKING(RH) (LF13-0088B)

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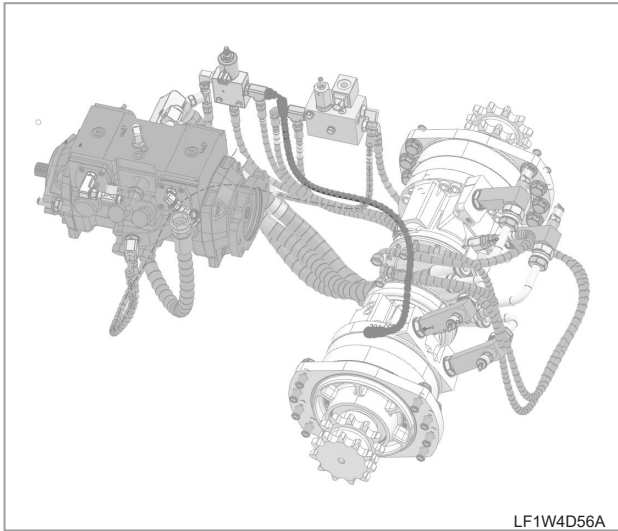
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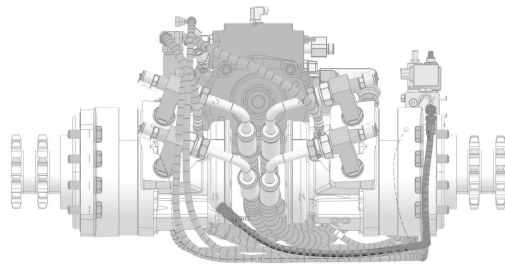
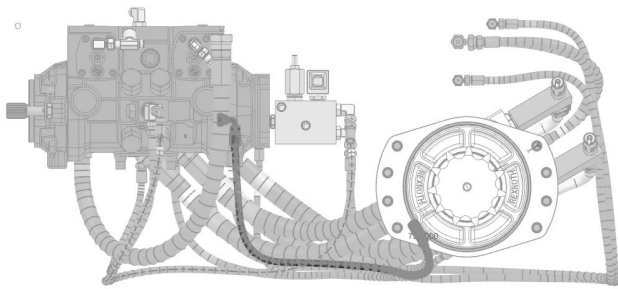
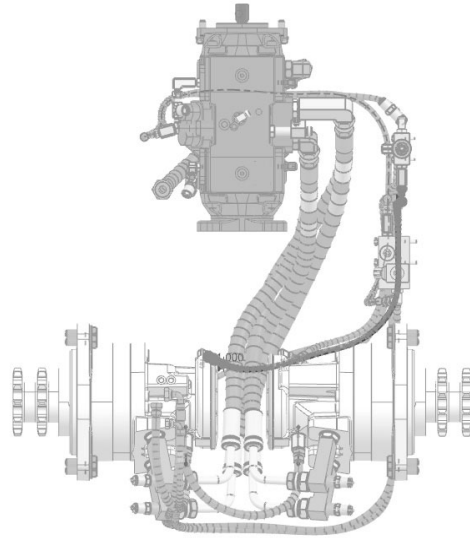
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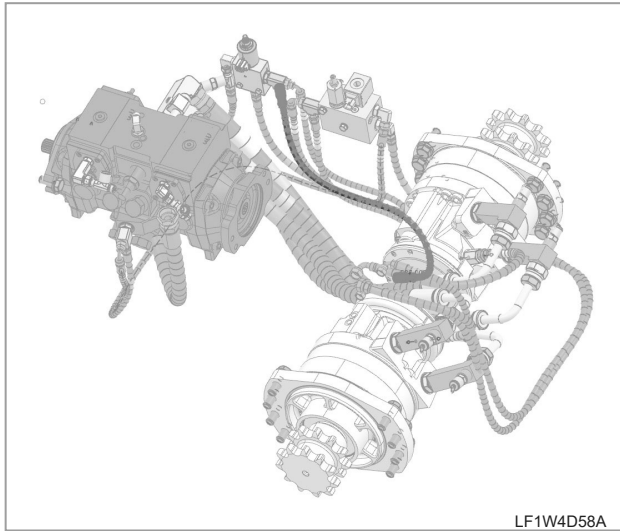
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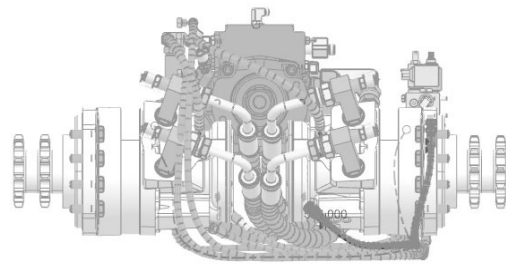
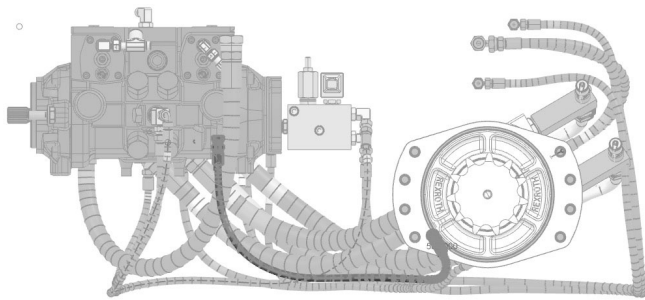
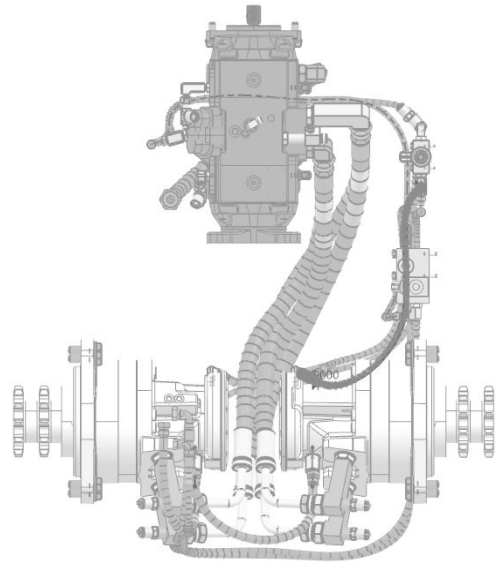
LF1W4D57A



2.5.11 HYDRAULIC HOSE - PARKING(LH) (LF13-0087B)



LF1W4D58A



LF1W4D59A

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2.5.12 HYDRAULIC HOSE - MOTOR(LH) T (LF13-0201C)

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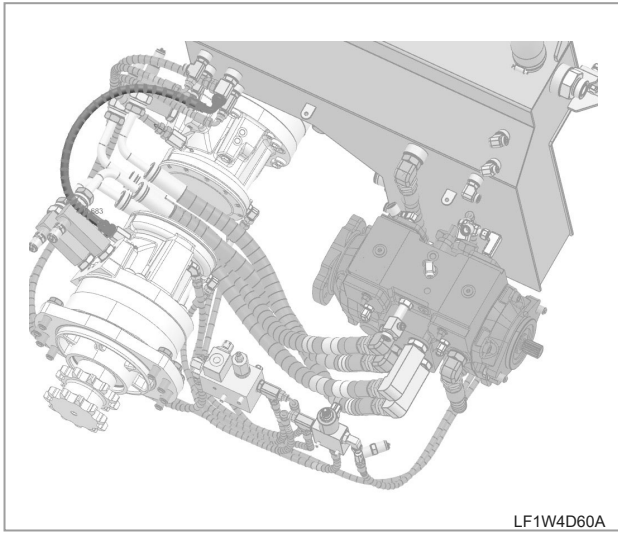
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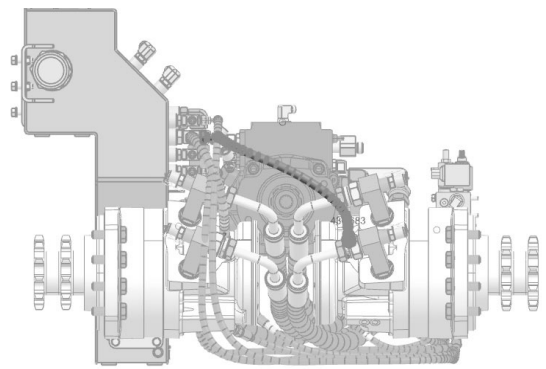
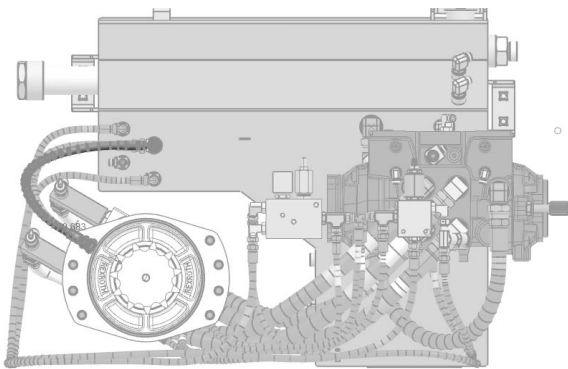
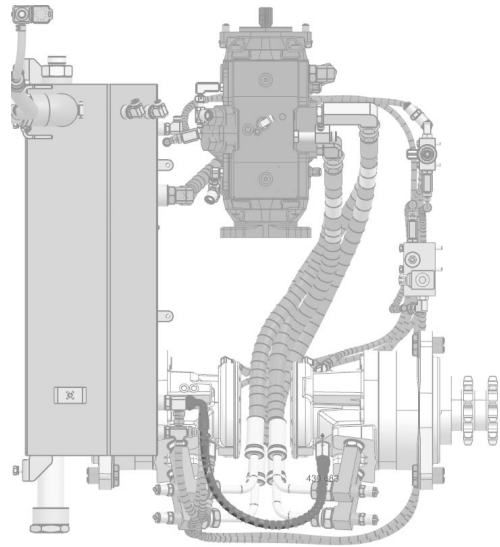
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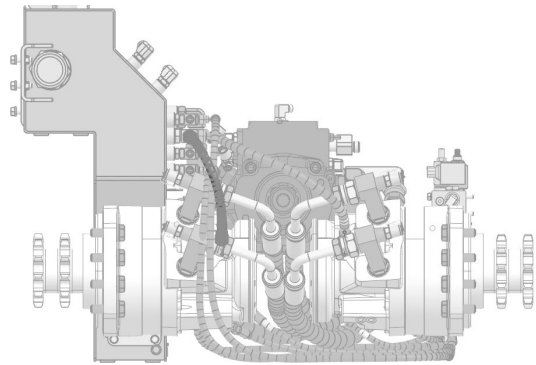
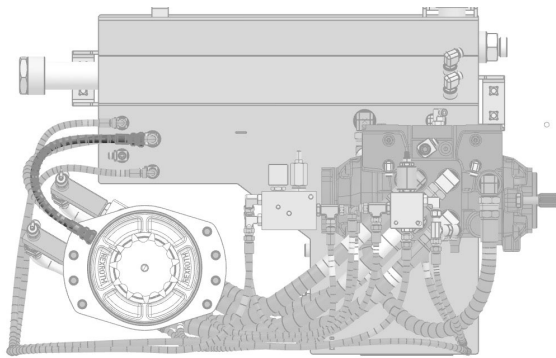
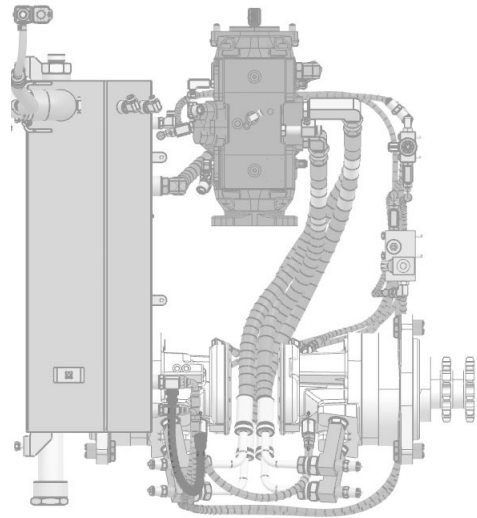
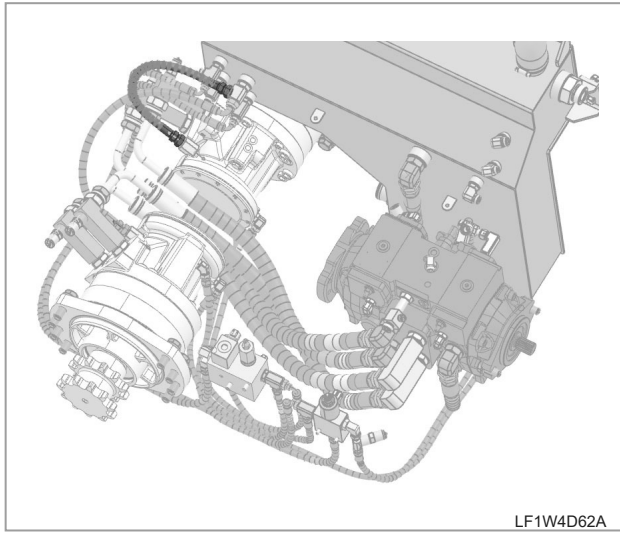


LF1W4D60A



LF1W4D61A

2.5.13 HYDRAULIC HOSE - MOTOR(RH) T (LF13-0203C)



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2.5.14 HYDRAULIC HOSE - HST T (LF13-0204C)

SAFETY FIRST

ENGINE

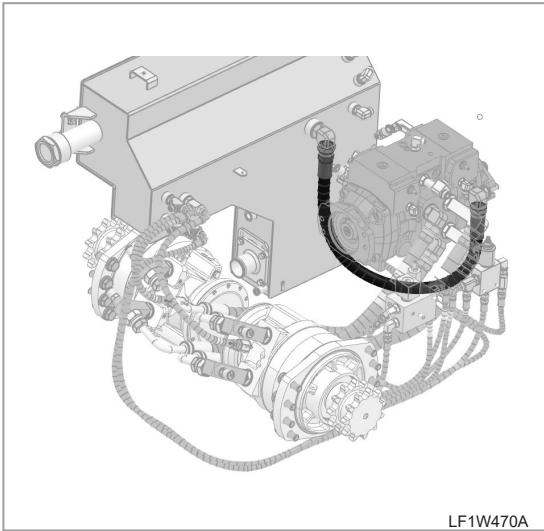
DRIVING & CHASSIS

HYDRAULIC SYSTEM

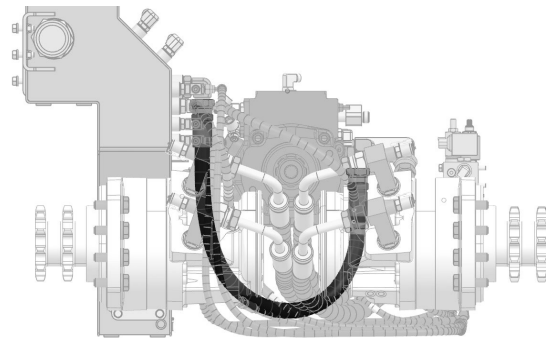
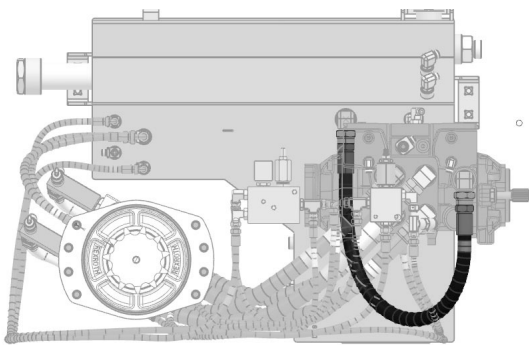
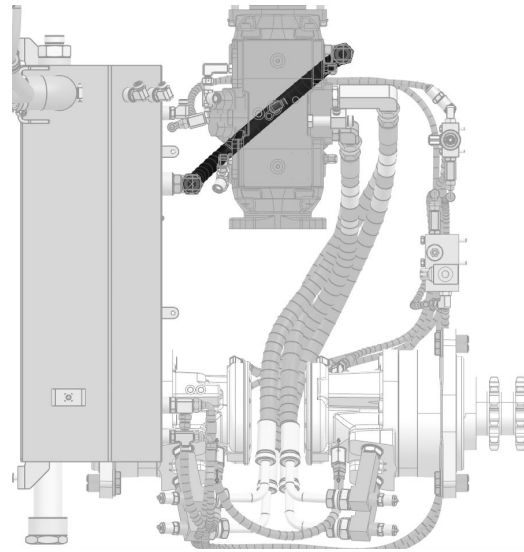
ELECTRIC SYSTEM

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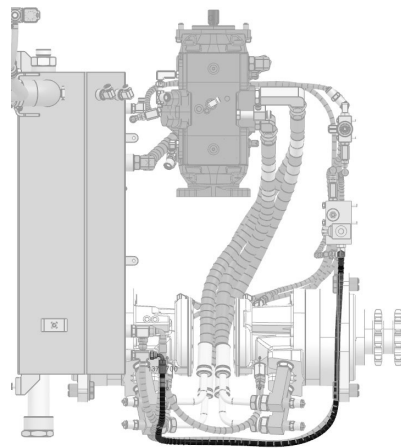
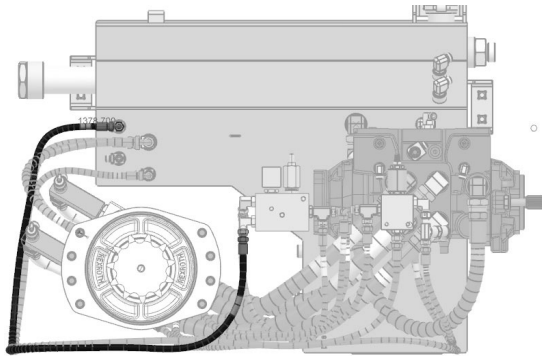
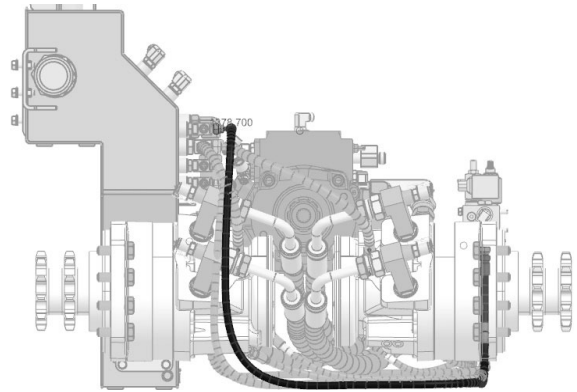
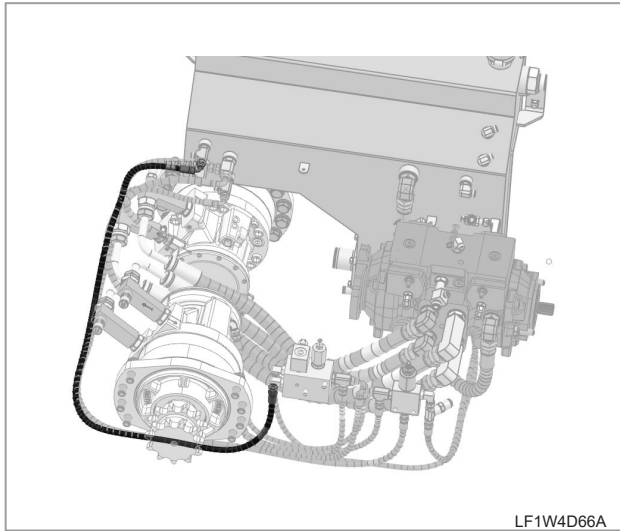


LF1W470A



LF1W4D65A

2.5.15 HYDRAULIC HOSE - SHIFT T (LF13-0199C)



LF1W4D67A

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ENGINE

DRIVING & CHASSIS

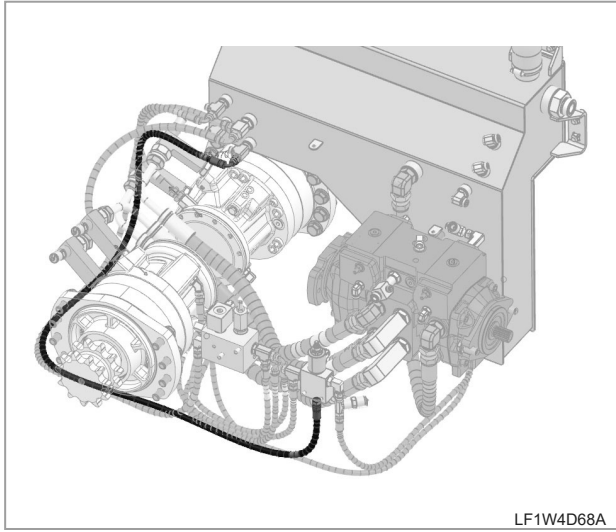
HYDRAULIC SYSTEM

ELECTRIC SYSTEM

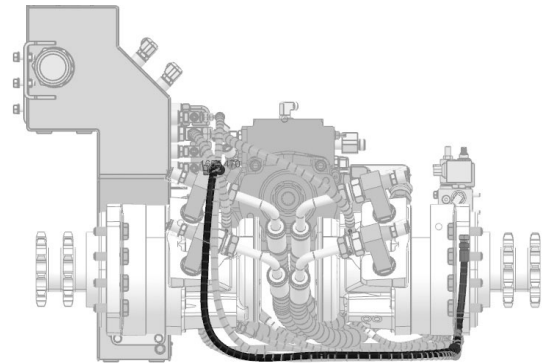
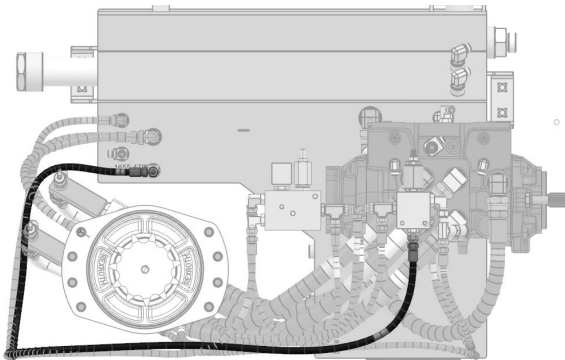
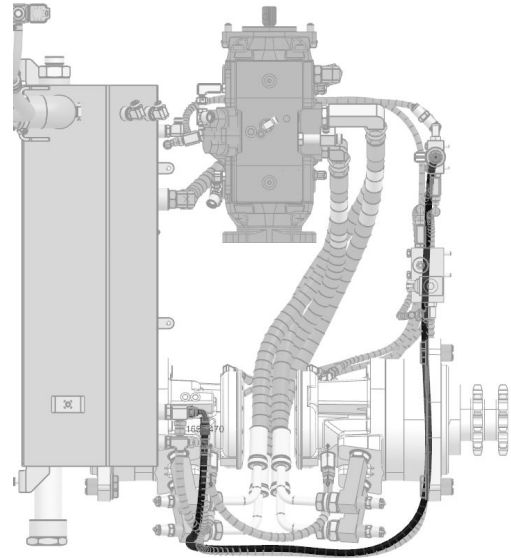
CABIN

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2.5.16 HYDRAULIC HOSE - PARKING T (LF13-0089C)



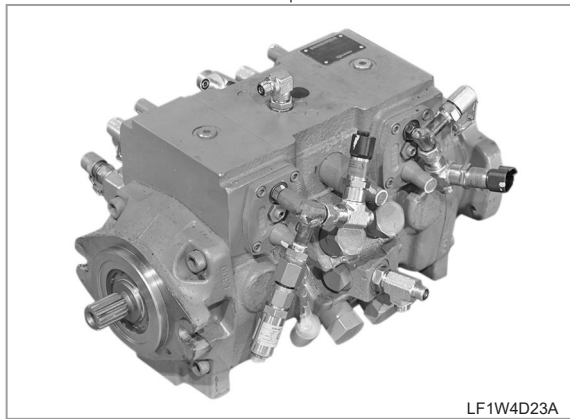
LF1W4D68A



LF1W4D69A

3. MAIN COMPONENTS

3.1 HST PUMP (DRIVING PUMP)



LF1W4D23A

LF1W476A

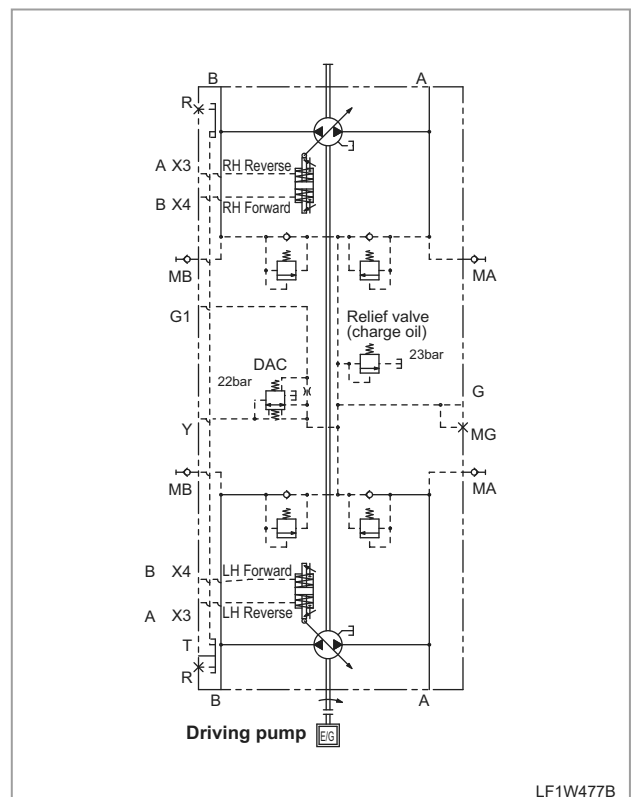
The HST pump is assembled with the engine flywheel with the coupling engagement so that the rotating power from the engine is directly delivered to the inside of the HST pump.

This HST pump is a hydraulic tandem piston pump which has three different types of gear pumps mounted on its inlet in a row. The HST pump is connected to the RCV (LH), being involved in controlling hydraulic flow for driving, and it also supplies hydraulic flow to the HST motors (LH/RH) for forward/reverse driving of the vehicle.

SPECIFICATIONS

<b>TYPE</b>	Axial piston unit, Closed circuit, Double pump, Variable swash plate
<b>NOMINAL PRESSURE</b>	380 bar
<b>PEAK PRESSURE</b>	420 bar
<b>CAPACITY</b>	42.5cm <sup>3</sup> /rev
<b>ROTATION DIRECTION</b>	Clockwise (View from drive shaft)
<b>INPUT OUTPUT</b>	55.4 kW / 2,600 rpm
<b>RATED SPEED</b>	2,400 rpm
<b>HIGH SPEED IDLE</b>	2,600 rpm

CIRCUIT DIAGRAM & EXTERIOR



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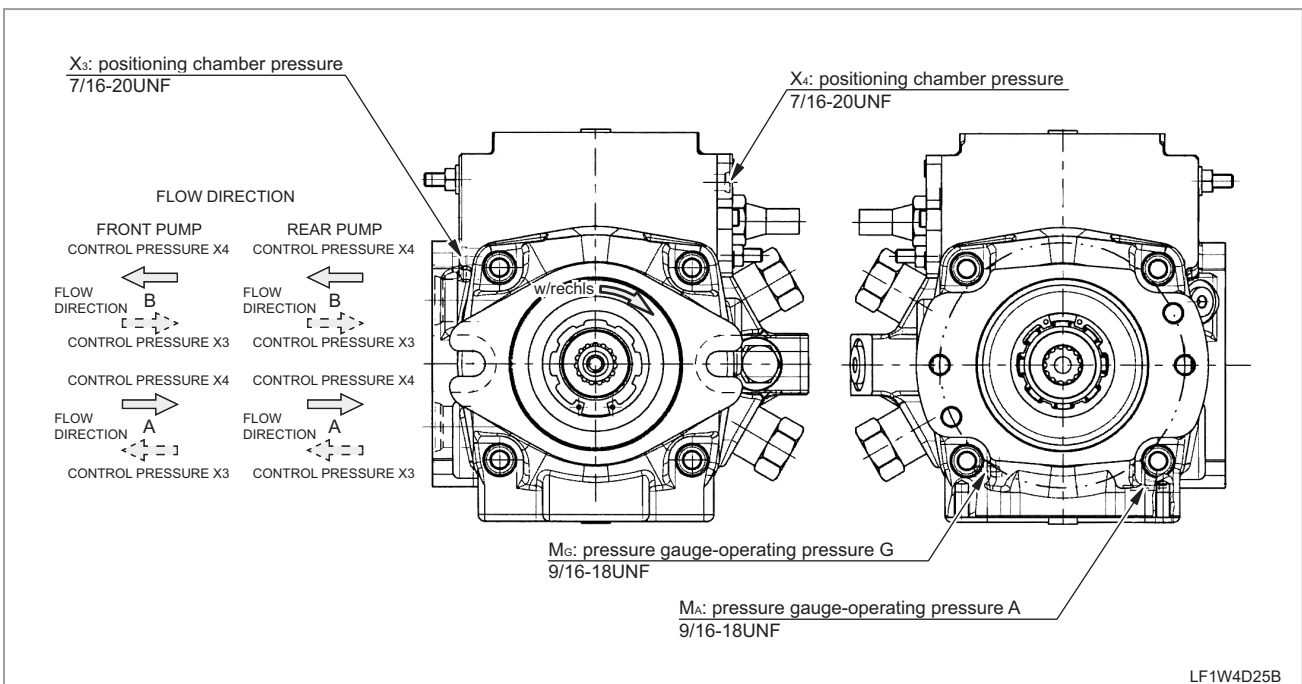
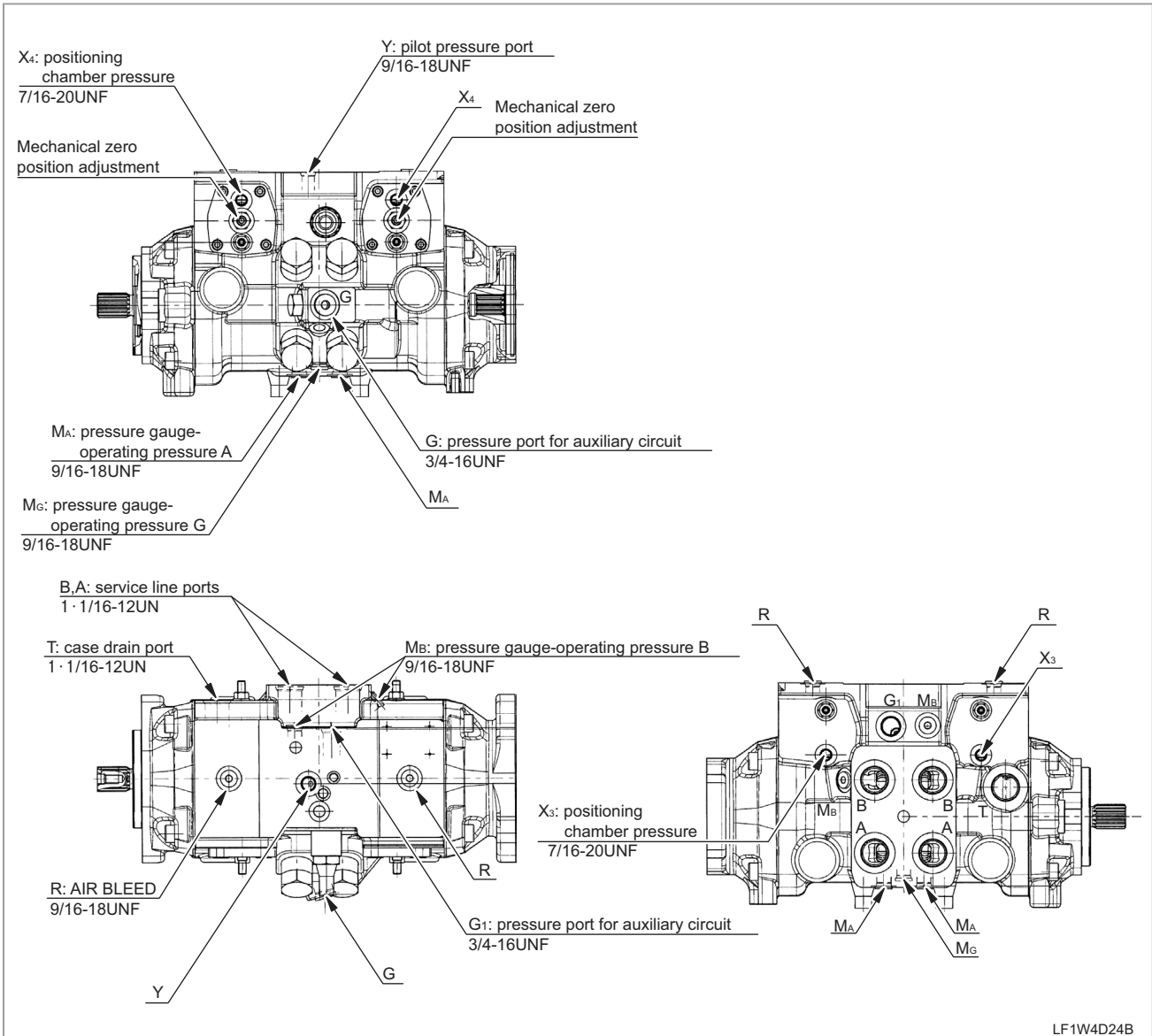
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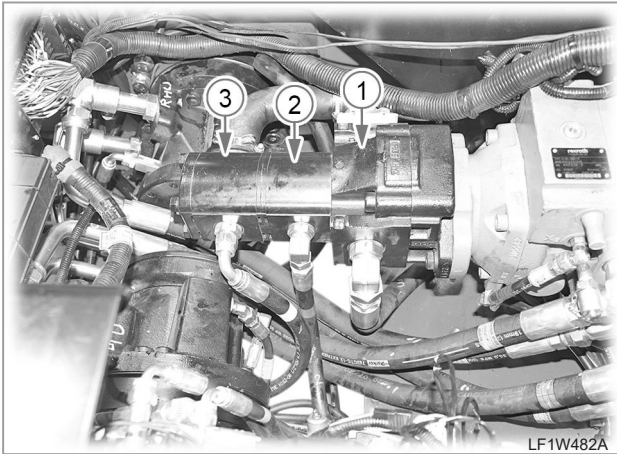
CABIN

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3.2 GEAR PUMP (MAIN+CHARGE+HIGH FLOW PUMP)



The gear pumps are connected to the HST pump in a row and receives the rotating power from the engine through the HST pump. The main pump (1), charge pump (2), and high-flow pump (3) are mounted in order when seen from the HST pump side.

**SPECIFICATIONS**

ITEM	MAIN PUMP (1)	CHARGE PUMP (2)	HIGH FLOW PUMP (3)
Capacity (cm <sup>3</sup> / rev)	34.555	19.091	19.091
Maximum continuous pressure (bar)	280	200	200
Maximum peak pressure (bar)	320	240	240
Speed (rpm)	500 ~ 3,000		
Temperature (°C)	-25 ~ 80 (Continuous / 100 (Peak))		
Rotation direction	Clockwise (View from drive shaft)		

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DRIVING & CHASSIS

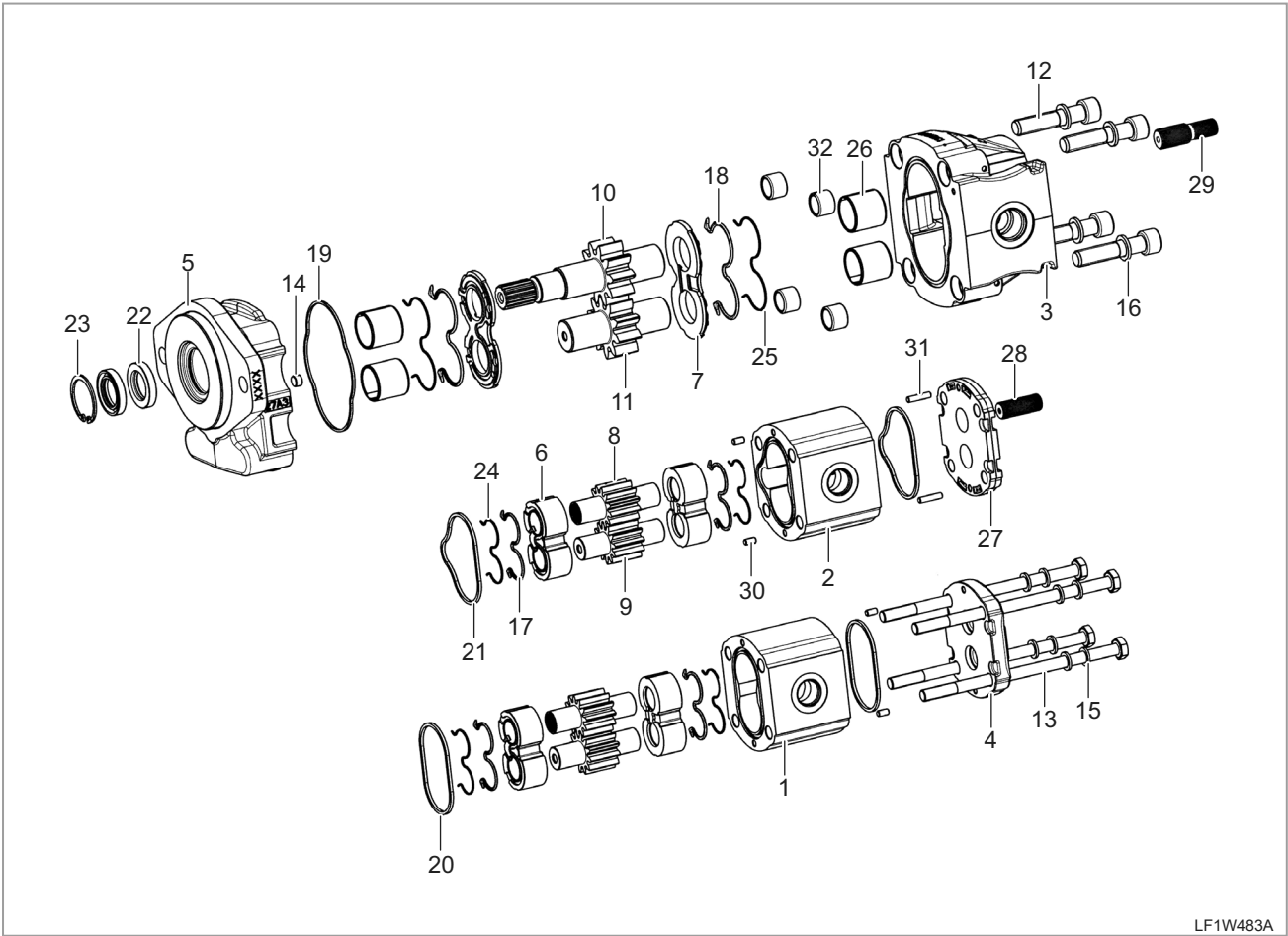
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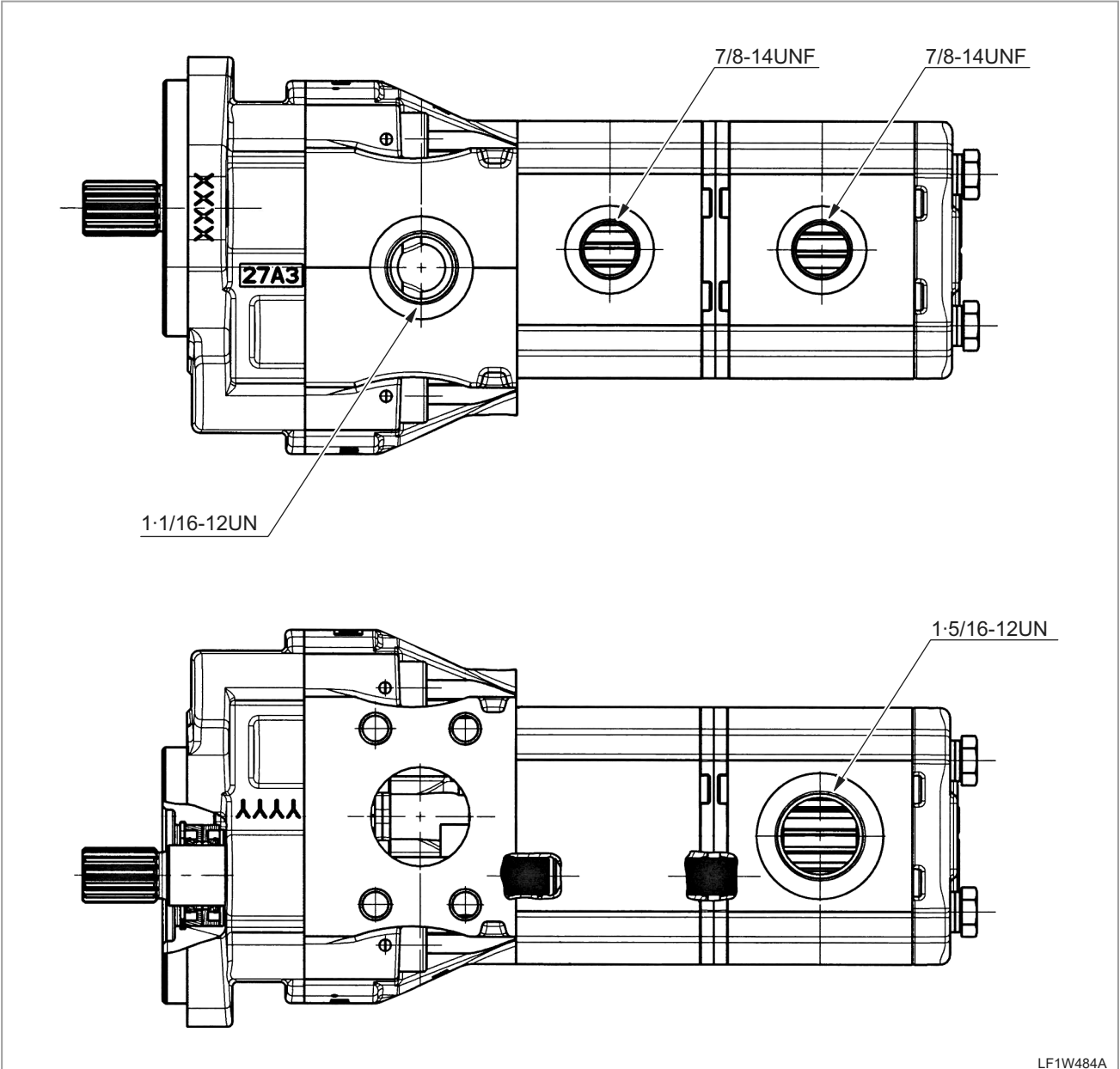
COMPONENTS



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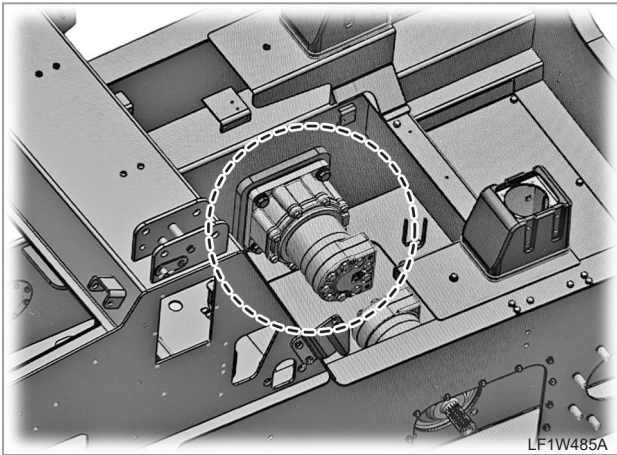
- |                  |                       |                    |                  |
|------------------|-----------------------|--------------------|------------------|
| (1) Housing 1    | (9) Driven gear       | (17) Seal          | (25) Backup ring |
| (2) Housing 2    | (10) Drive shaft      | (18) Seal          | (26) Sleeve      |
| (3) Housing 3    | (11) Driven gear      | (19) Square O-Ring | (27) Flange      |
| (4) Rear cover   | (12) Bolt             | (20) Square O-Ring | (28) Hub         |
| (5) Front cover  | (13) Bolt             | (21) Square O-Ring | (29) Hub         |
| (6) Thrust block | (14) Glove screw seal | (22) Shaft seal    | (30) Dowel pin   |
| (7) Thrust plate | (15) Washer           | (23) Snap ring     | (31) Dowel pin   |
| (8) Drive gear   | (16) Washer           | (24) Backup ring   | (32) Bush        |

EXTERIOR



3.3 HST MOTOR (DRIVING MOTER)

▶ 1 SPEED MOTER

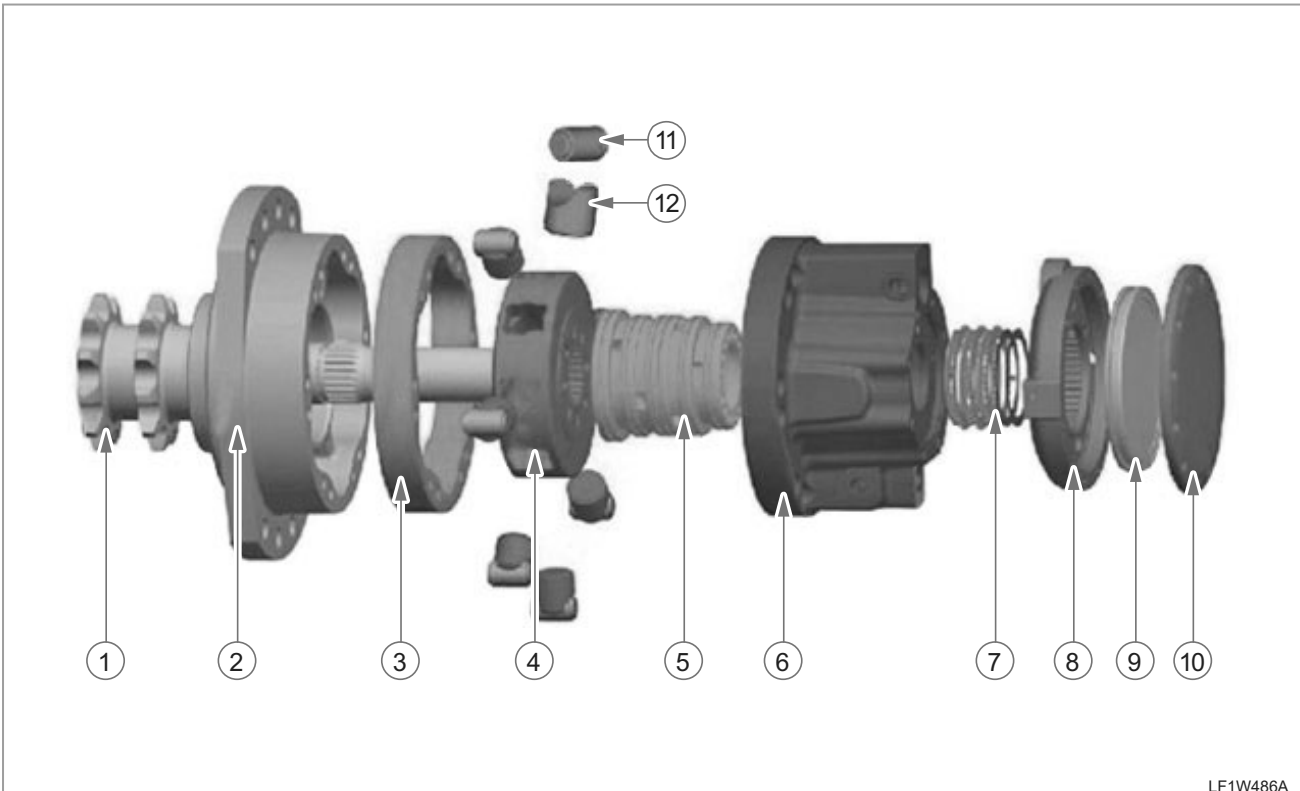


The HST motors (1) are radial piston type motors located on the left and right sides of the main frame. This is a hydraulic motor consisting of pistons that have rotary groups radially arranged, and it is a low-speed high-torque motor, delivering the rotating power directly to the output shaft through the multiple stroke method by hydraulic flow.

**SPECIFICATIONS**

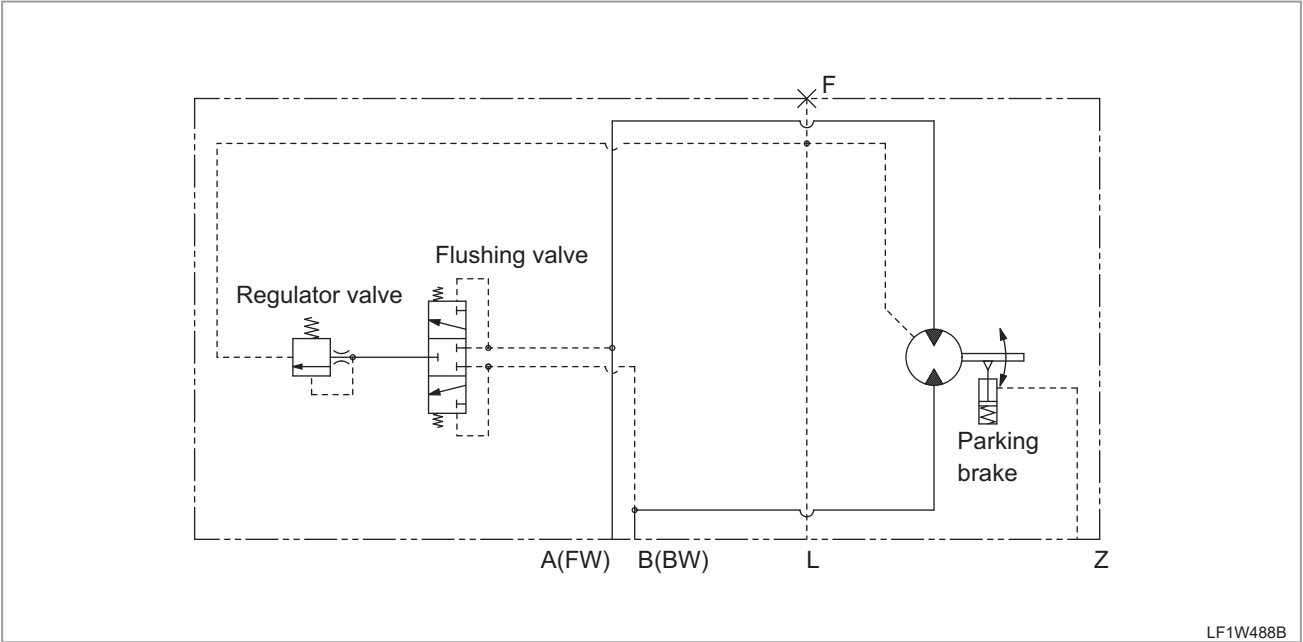
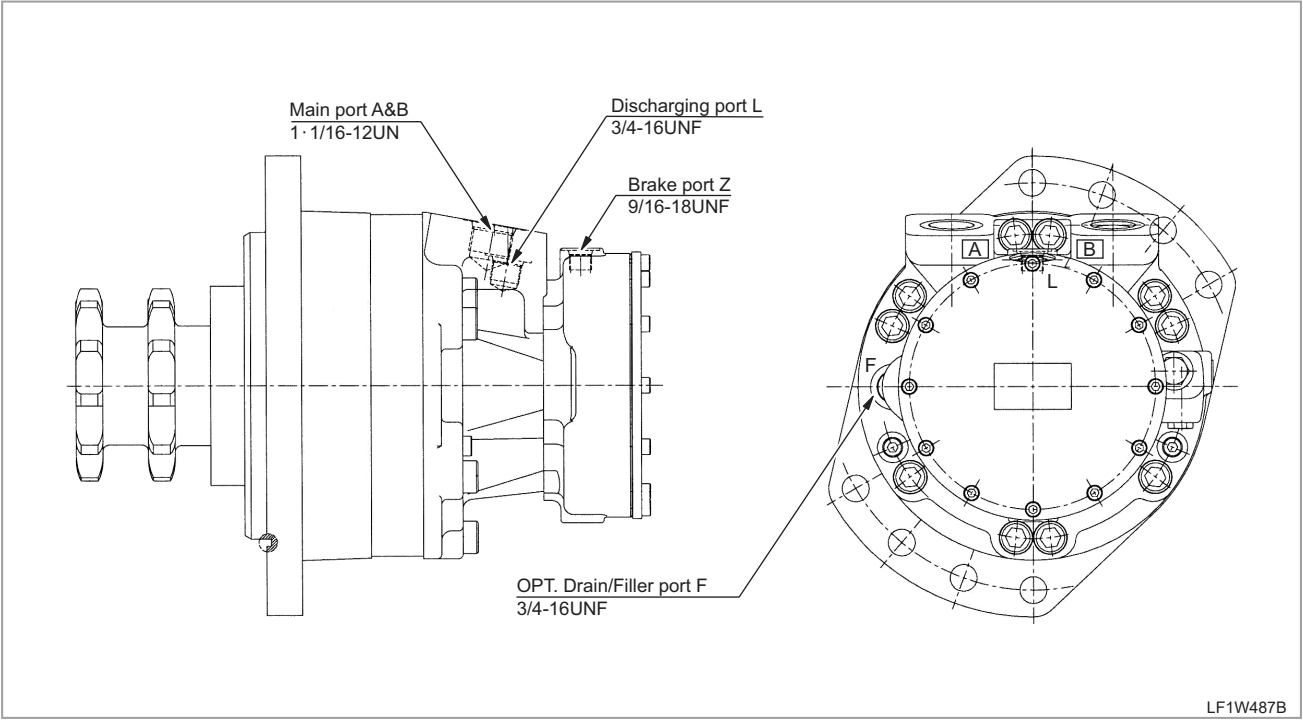
<b>TYPE</b>		Radial piston moter
<b>CAPACITY</b>		470 cc/rev
<b>SPROCKET SIZE</b>		Number of teeth : 11 Chain pitch : 31.75mm P.C.D : Ø112.69mm
<b>GEAR STAGE</b>		1 speed
<b>BRAKE</b>	<b>Min. holding torque</b>	2,200N.m
	<b>Relase pressure</b>	11 ~ 15 bar
	<b>Max. pressure (PORT Z)</b>	40 bar

**COMPONENTS**

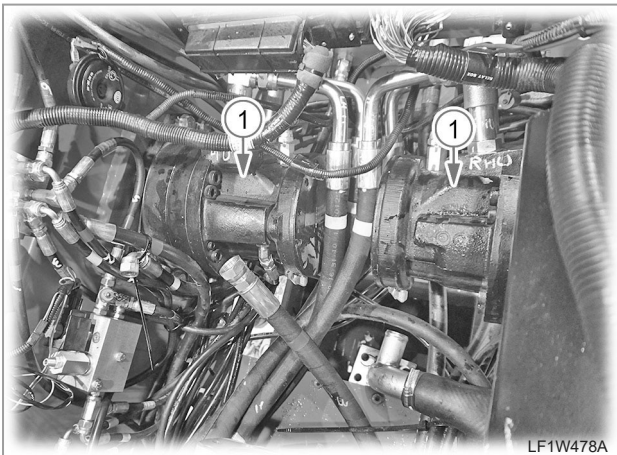


- (1) Shaft
- (2) Front case
- (3) Cam
- (4) Block
- (5) Distributor
- (6) Rear case
- (7) Disc pack
- (8) Housing
- (9) Piston
- (10) End cover
- (11) Roller
- (12) Piston

**EXTERIOR & CIRCUIT DIAGRAM**



► 2-SPEED MOTOR

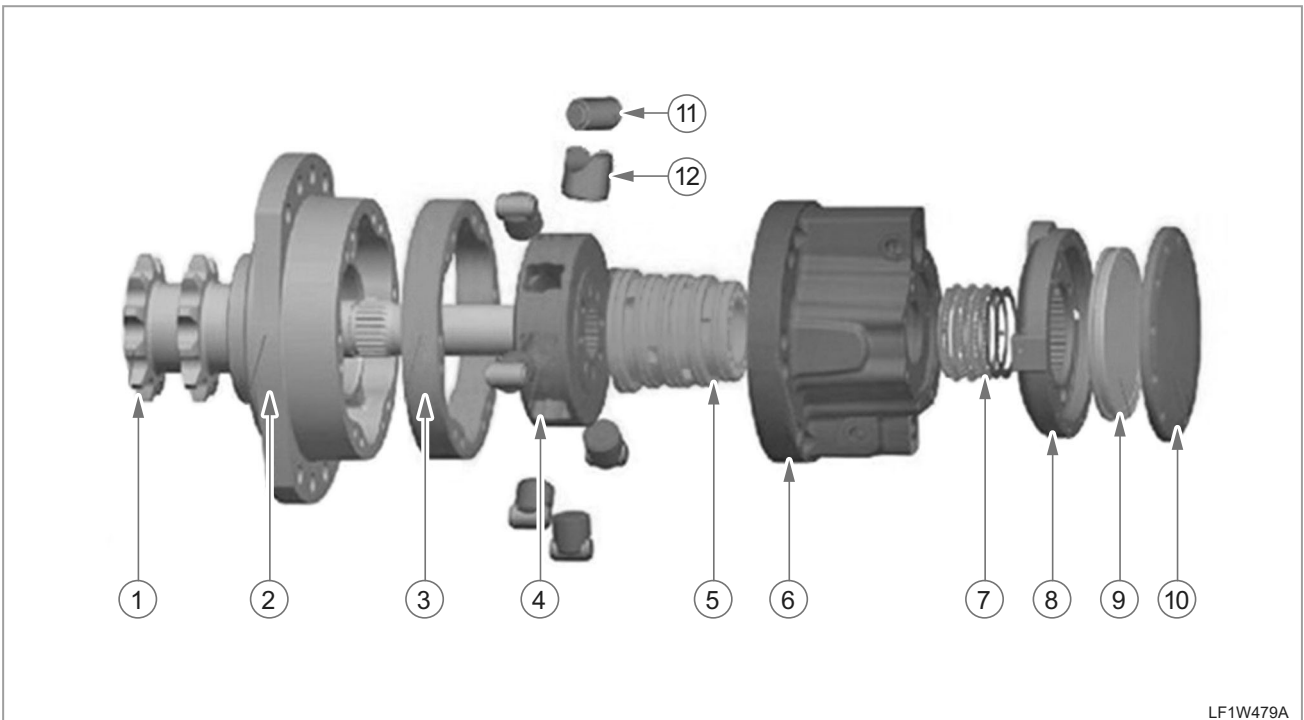


The 2-speed motors (1) are designed to be activated when the machine needs to be operated at a high speed with a low motor load. Therefore, these motors can be switched into the low-torque high-speed mode when necessary. This function is achieved by the functioning valve inside the motor that cuts the flow required to operate the motor in half.

**SPECIFICATIONS**

<b>TYPE</b>	Radial piston motor	
<b>NOMINAL PRESSURE</b>	520 cc/rev 310 cc/rev (When decrease pressure)	
<b>SPROCKET SIZE</b>	Number of teeth : 11 Chain pitch : 31.75mm P.C.D : Ø112.69mm	
<b>GEAR STAGE</b>	2 speed	
<b>FLUSHING VALVE FLOW</b>	13.5 lpm	
<b>OUTPUT TORQUE</b>	3,350 N.m	
<b>MAXIMUM OUTPUT SPEED</b>	350 rpm	
<b>NOMINAL OUTPUT</b>	29 kW	
<b>MAXIMUM DIFFERENTIAL PRESSURE</b>	400 bar	
<b>A.B PORT MAXIMUM PRESSURE</b>	420 bar	
<b>OIL TEMPERATURE RANGE</b>	- 40°C ~ 100°C	
<b>BRAKE</b>	<b>MINMUM HOLDING TORQUE</b>	1,700 N.m
	<b>RELEASE PRESSURE</b>	16 ~ 20 bar
	<b>MAXIMUM PRESSURE PRESSURE (PORT Z)</b>	40 bar
	<b>OIL CAPACITY</b>	23 cm <sup>3</sup>

**COMPONENTS**



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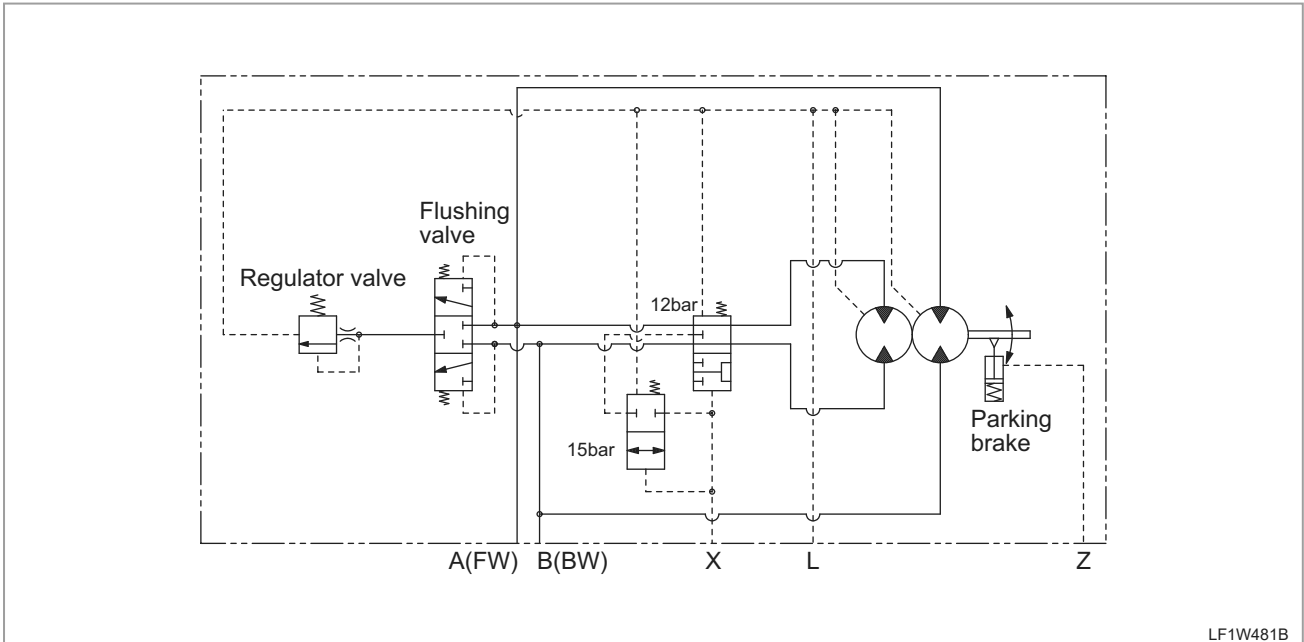
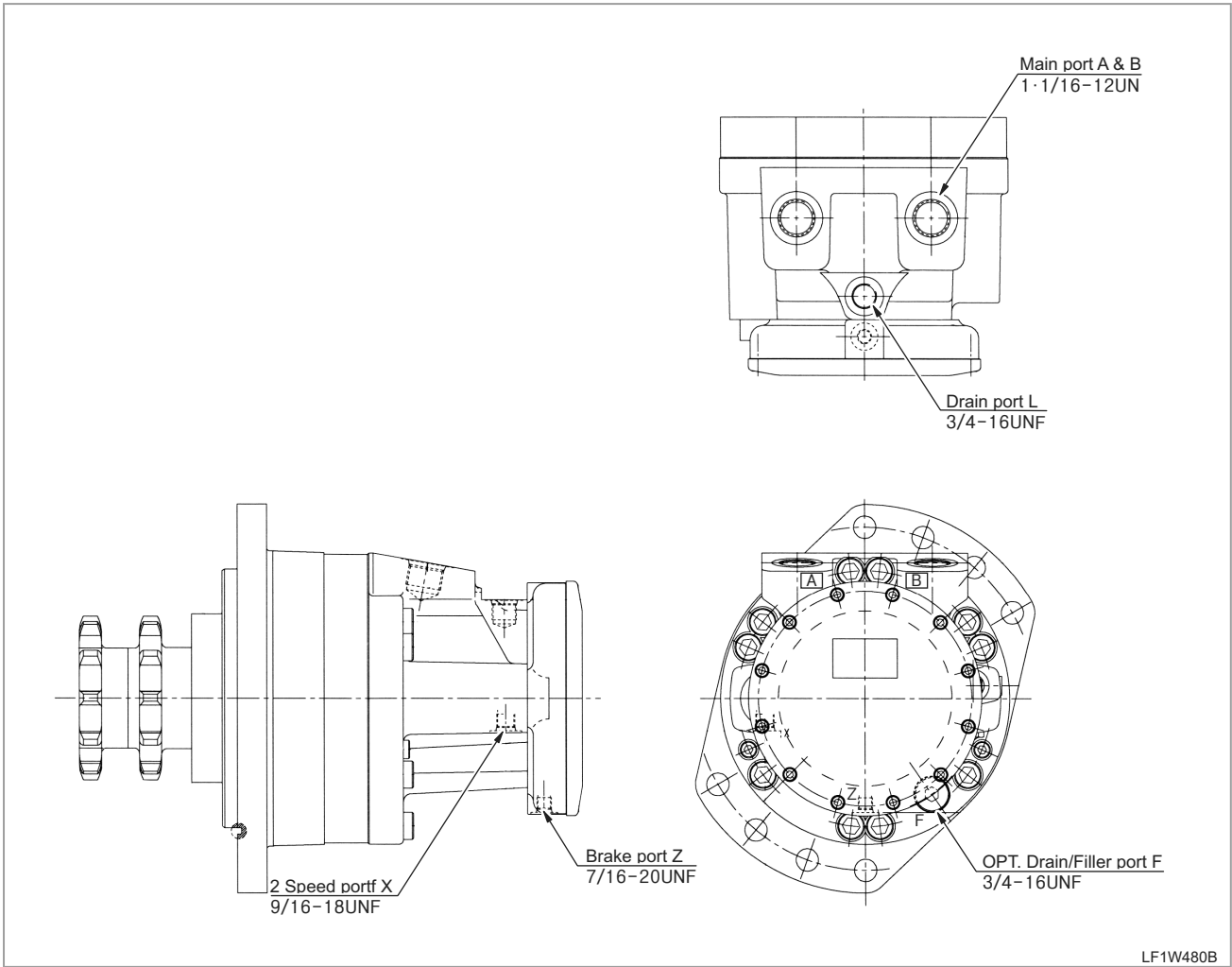
- (1) Shaft
- (2) Front case
- (3) Cam

- (4) Block
- (5) Distributor
- (6) Rear case

- (7) Disc pack
- (8) Housing
- (9) Piston

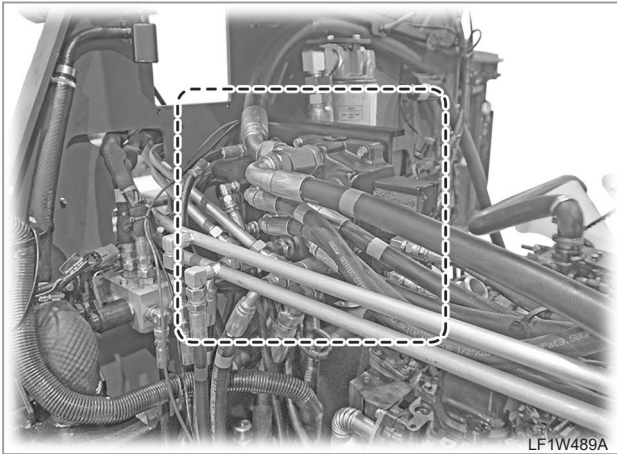
- (10) End cover
- (11) Roller
- (12) Piston

EXTERIOR & CIRCUIT DIAGRAM





3.4 MAIN CONTROL VALVE (MCV)

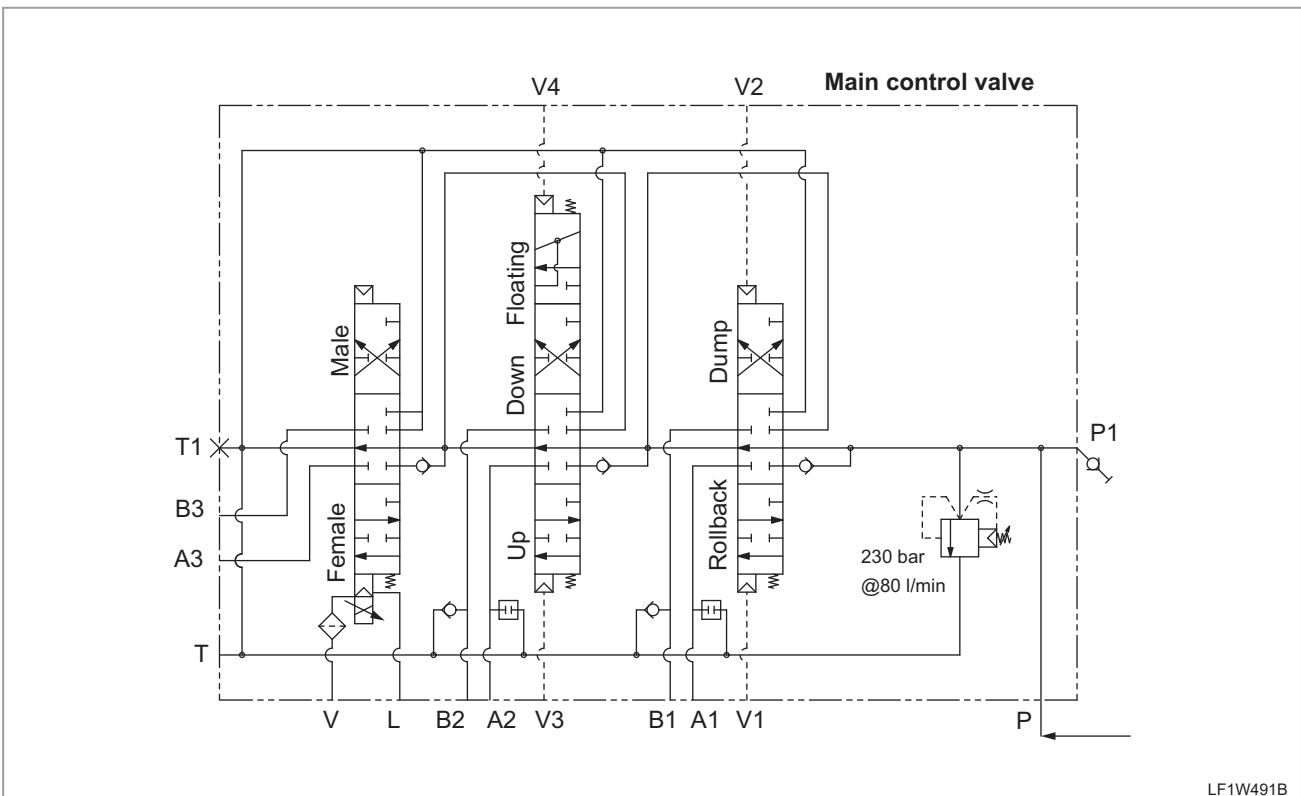


**SPECIFICATIONS**

ITEM	SPECIFICATION
Rated flow	80 l/min
Max. pressure	250 bar
Max. back pressure	25 bar
Operating temperature	-20°C ~ 80°C

The main control valve is located on the right upper section in the engine compartment and it receives hydraulic flow from the main pump. The main control valve is designed to control the area related to the attachment of the vehicle, and it is connected to the RCV (RH). Basically, it controls the loader's boom and bucket operation, supplying the lift cylinder and tilt cylinder with hydraulic flow. It is also connected to the self-leveling valve, ride control valve, and auxiliary output port.

**CIRCUIT DIAGRAM**



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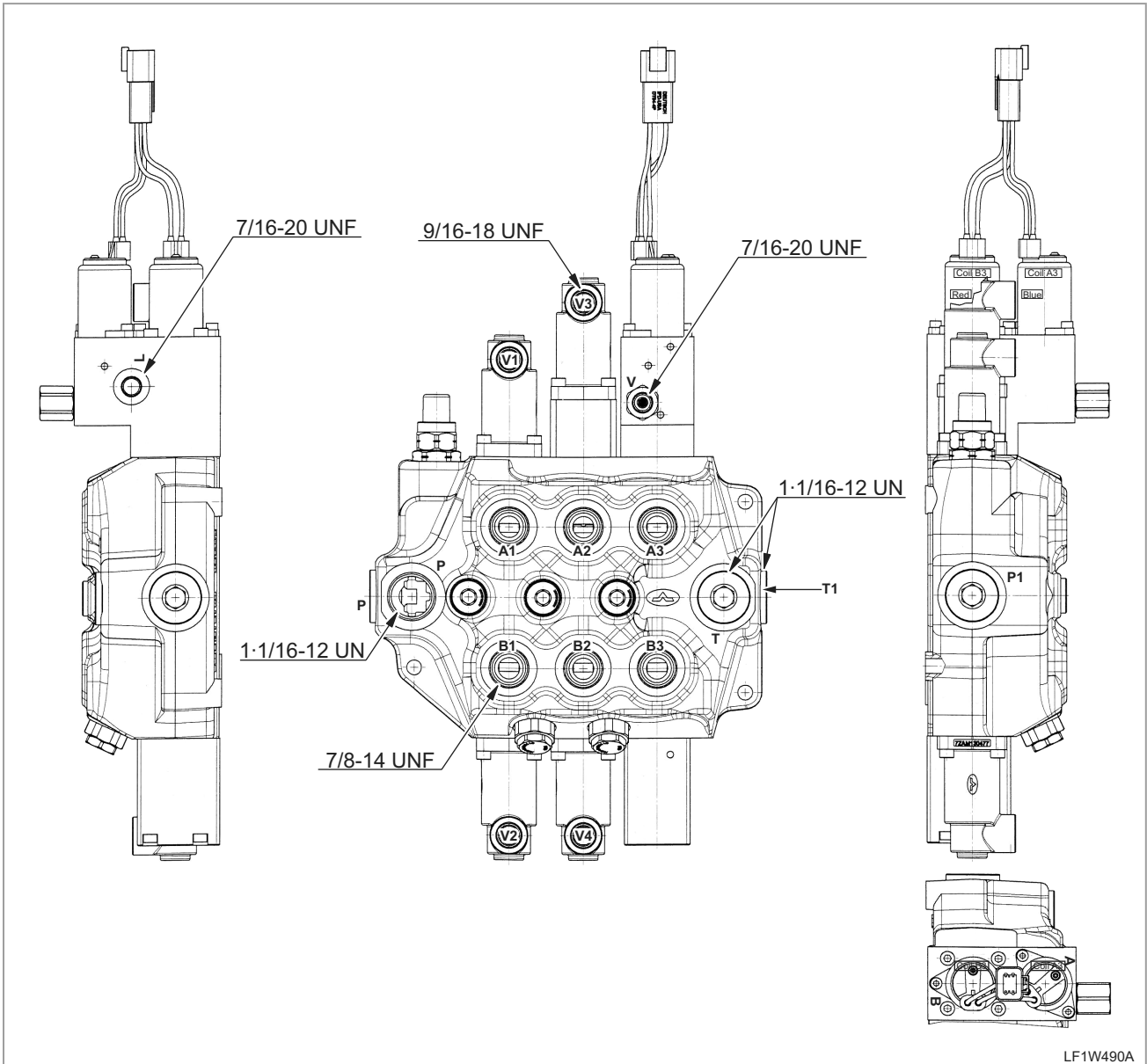
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3.5 PILOT LOCK VALVE

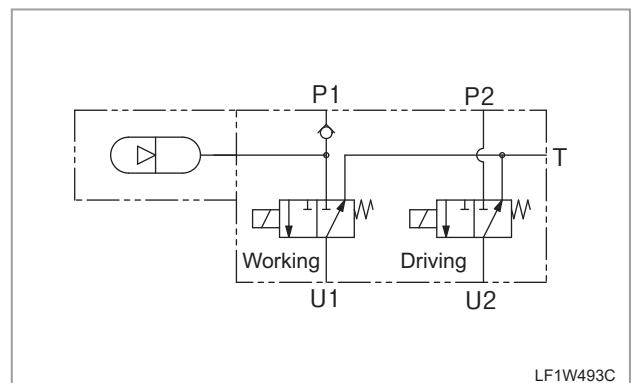


The pilot lock valve is mounted on the left middle section of the main frame. When the seat bar is raised, this valve blocks the main oil gallery in order to stop the whole hydraulic operation. When the seat bar is lowered and the reset switch is turned on, the main oil gallery is restored for normal operation.

SPECIFICATIONS

ITEM	SPECIFICATION
Max. flow	10 ℓ/min
Max. pressure	40 bar
Accumulator capacity	0.32 ℓ
Free charge pressure	11 bar

CIRCUIT DIAGRAM



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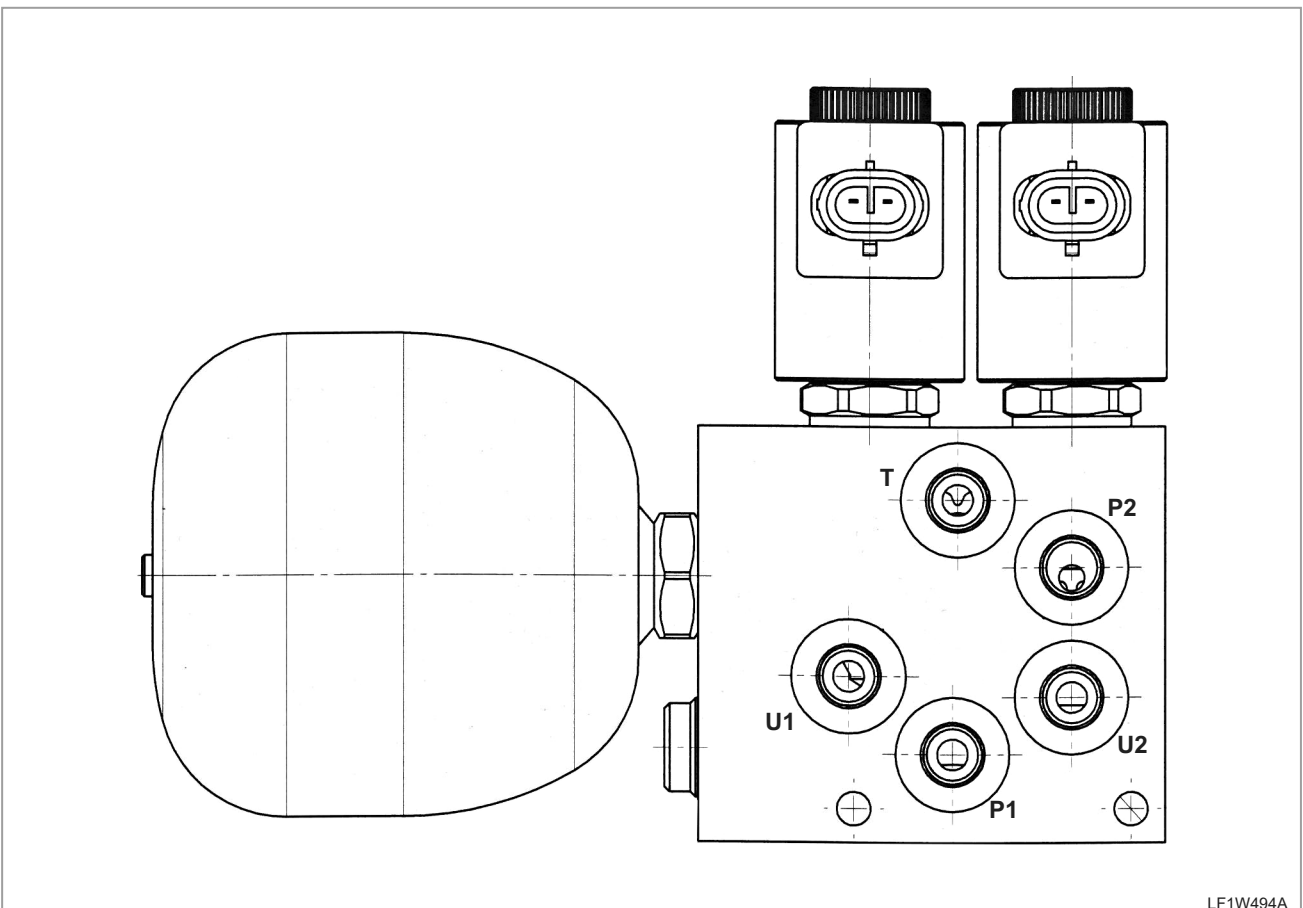
HYDRAULIC SYSTEM

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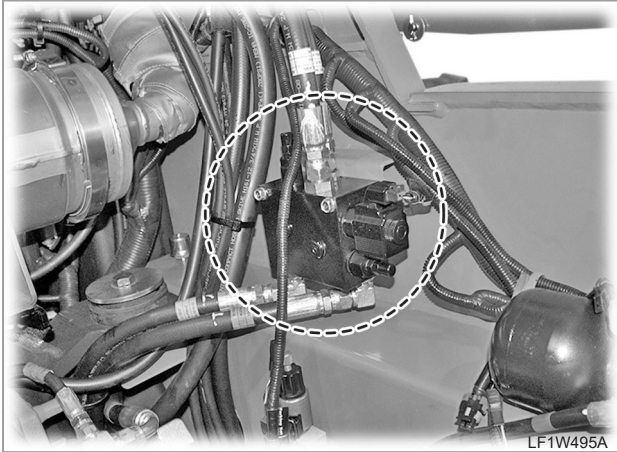
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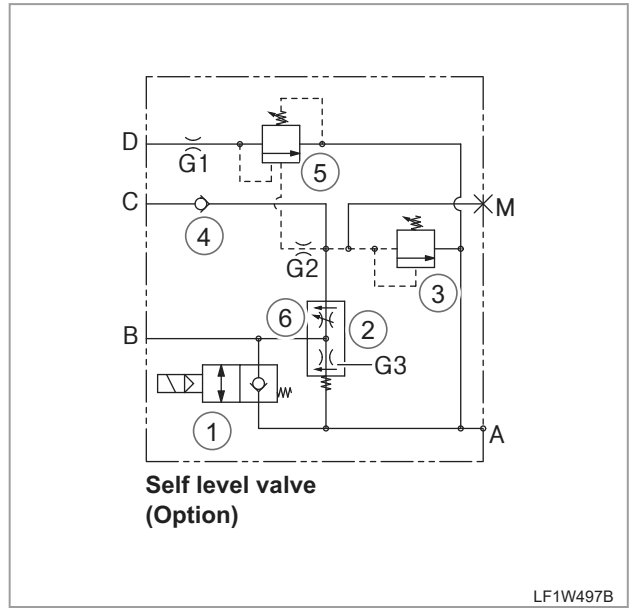


3.6 SELF LEVEL VALVE



The self-leveling valve is located on the left rear section of the main frame. This valve is designed to maintain the bucket parallel to the ground regardless of the lifting height of the bucket in order to prevent the falling of objects in the bucket as the angle of the bucket changes along with the lifting height of the boom while the boom is being raised.

CIRCUIT DIAGRAM



SPECIFICATIONS

ITEM	SPECIFICATION
A-port max. flow (Boom down)	69 ℓ/min
B-port max. flow (Boom up)	41 ℓ/min
Max. pressure	250 bar
Operating temperature	-20°C ~ 80°C

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DRIVING & CHASSIS

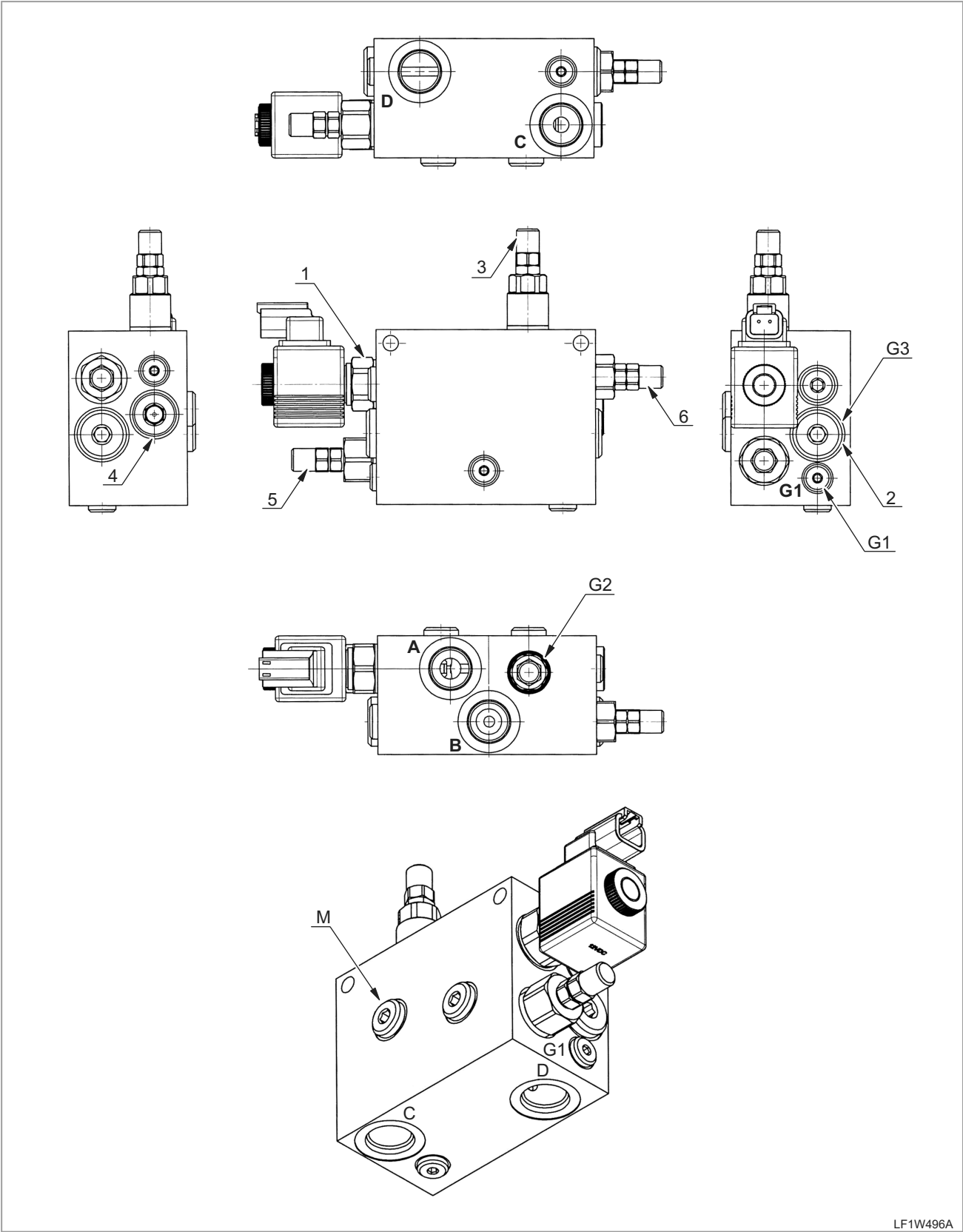
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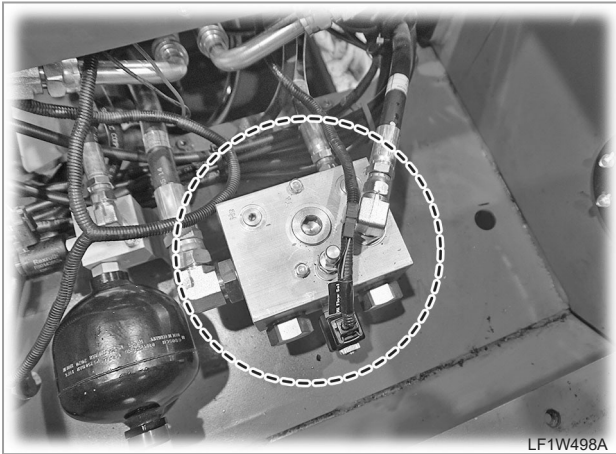
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## 3.7 HIGH FLOW VALVE

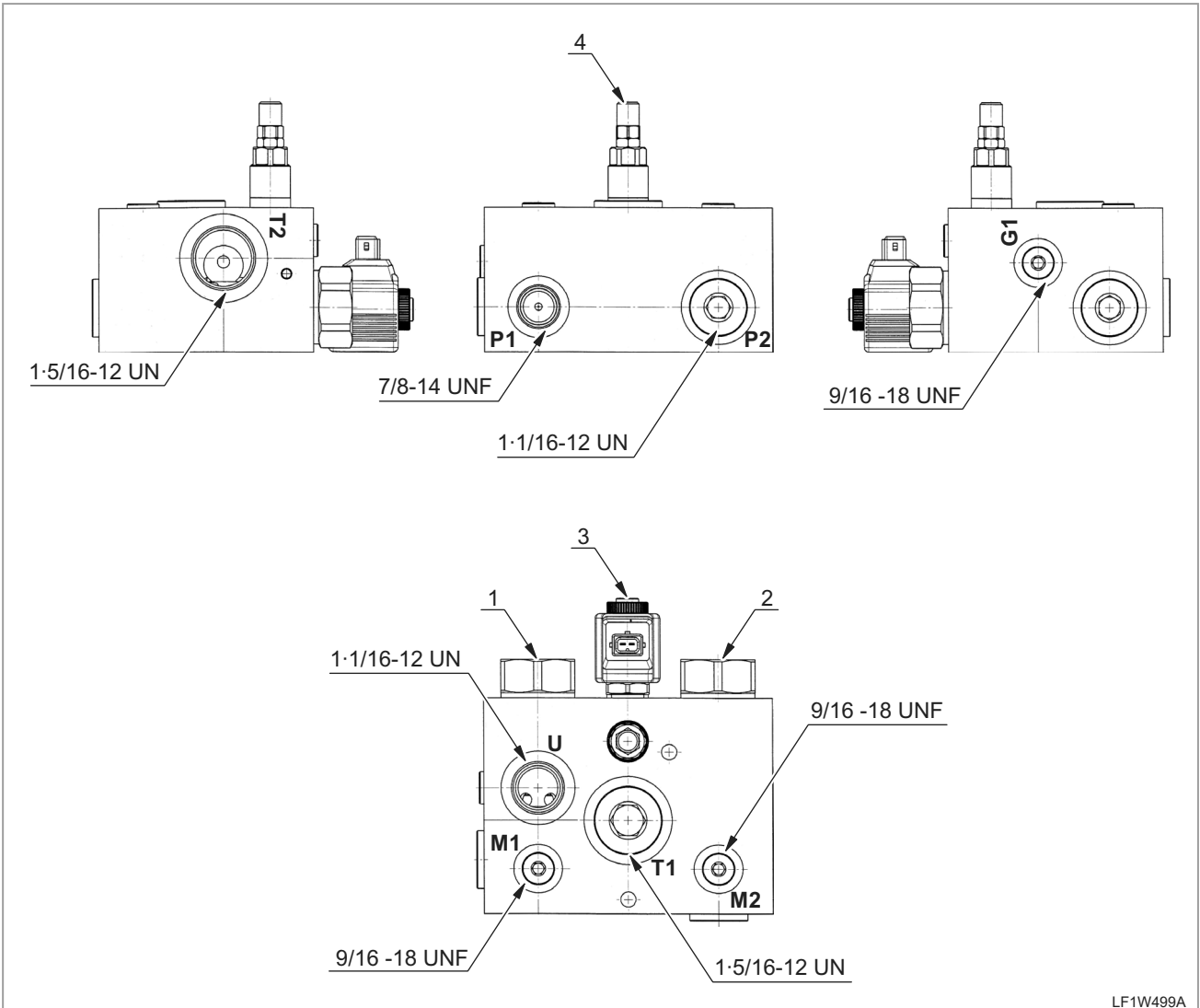


The high-flow valve is located under the floor of the cabin. When the switch is turned on to operate the high-flow valve, additional flow is supplied to the male side of the quick coupler for the external use of hydraulic pressure and this flow is used solely for the necessary operation.

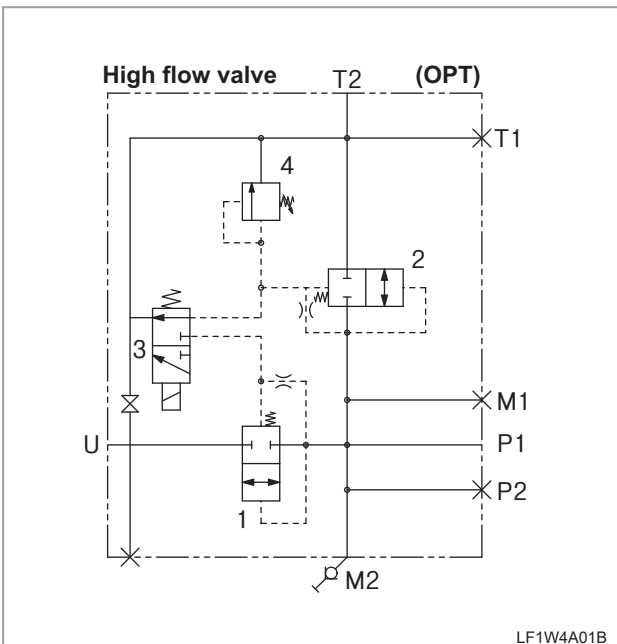
## SPECIFICATIONS

ITEM	SPECIFICATION
Max. flow	150 ℓ/min
Max. pressure	250 bar
Oil operating temperature	-20°C ~ 80°C

**EXTERIOR & CIRCUIT DIAGRAM**

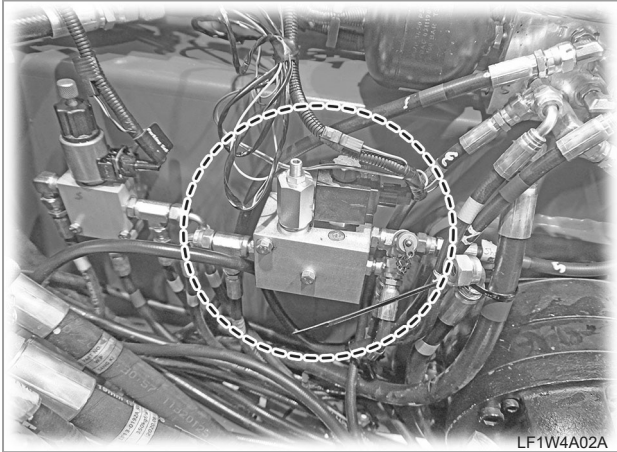


LF1W499A



LF1W4A01B

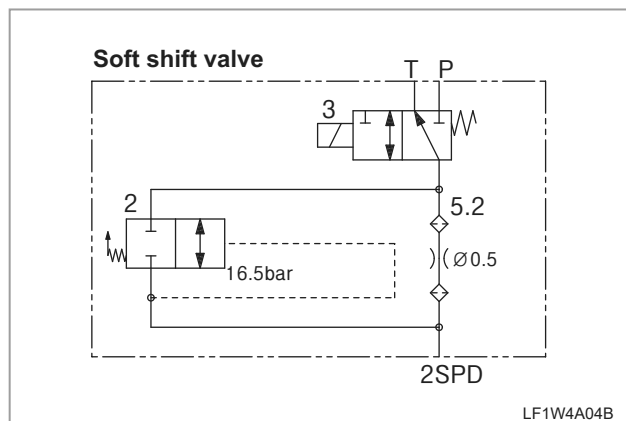
3.8 SOFT SHIFT VALVE



SPECIFICATIONS

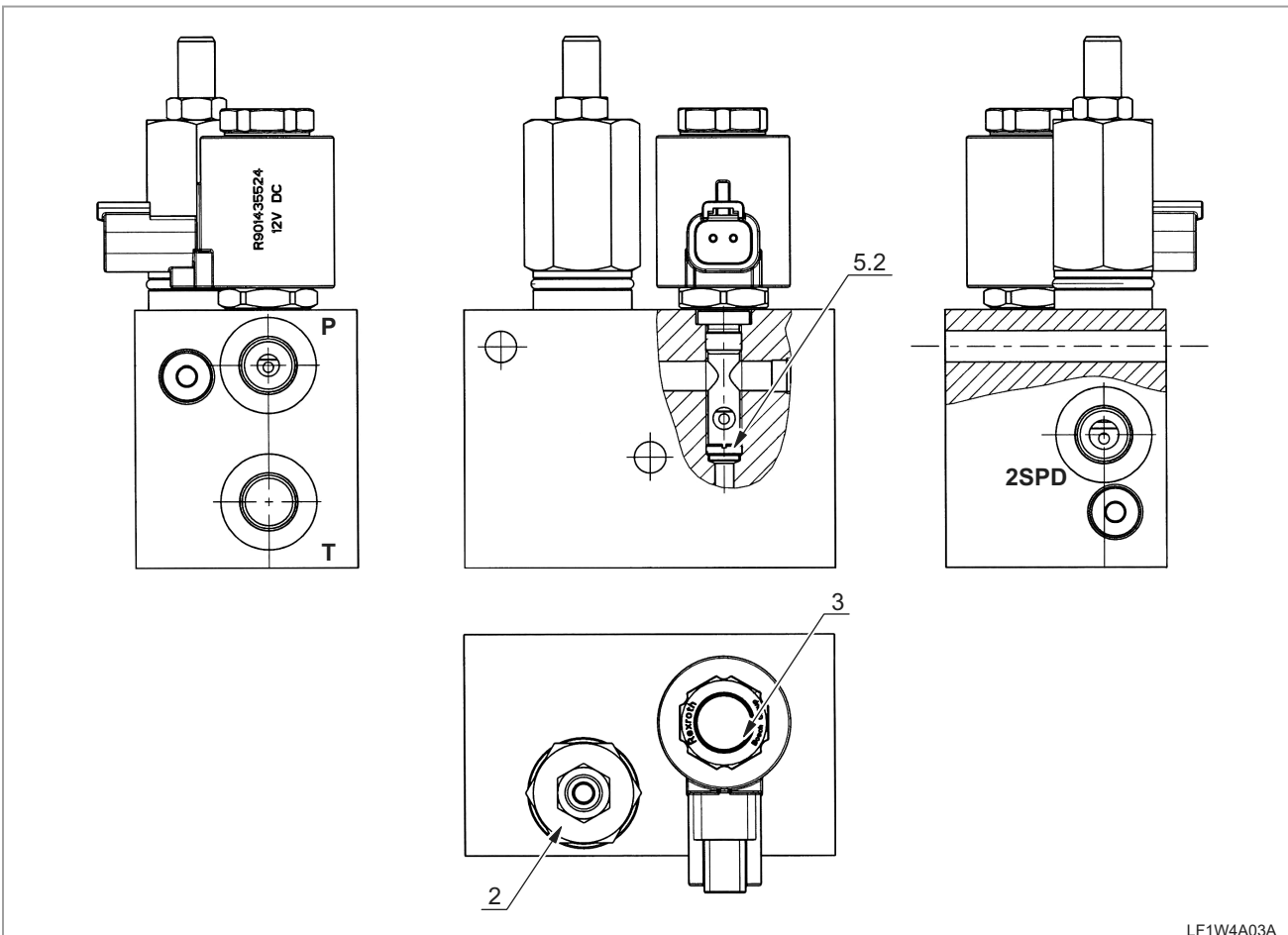
ITEM	SPECIFICATION
Max. pressure	210 bar
Max. flow	20 l/min
Port size	9/16 -18 UNF
Oil operating temperature	-20°C ~ 80°C

CIRCUIT DIAGRAM



The soft shift valve is located on the left lower section of the main frame. This valve is for the 2-speed shift driving motor and is used to shift between the 1st gear speed and the 2nd gear speed.

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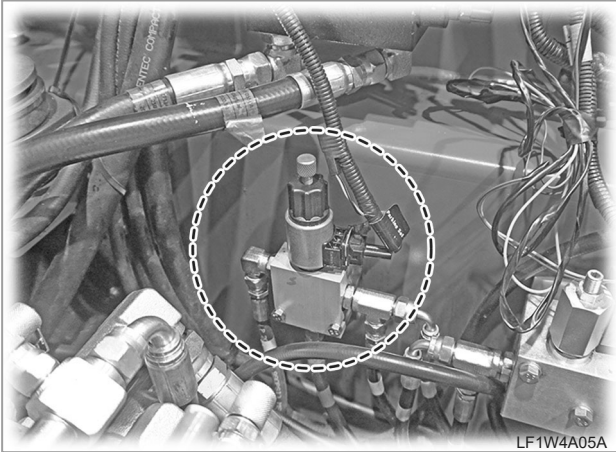
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3.9 PARKING VALVE

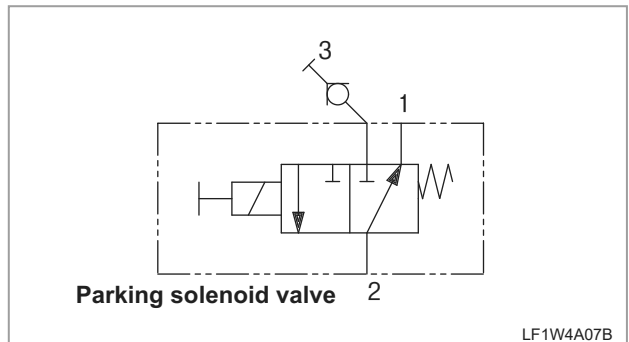


The parking valve is located behind the soft shift valve on the left section of the main frame. The parking valve controls the parking brake located on the HST motor (driving motor). When the hydraulic system normally operates with the key in the ON position, it discharges the hydraulic flow through the parking brake oil passage to compress the parking brake spring toward the release side, disengaging the parking brake.

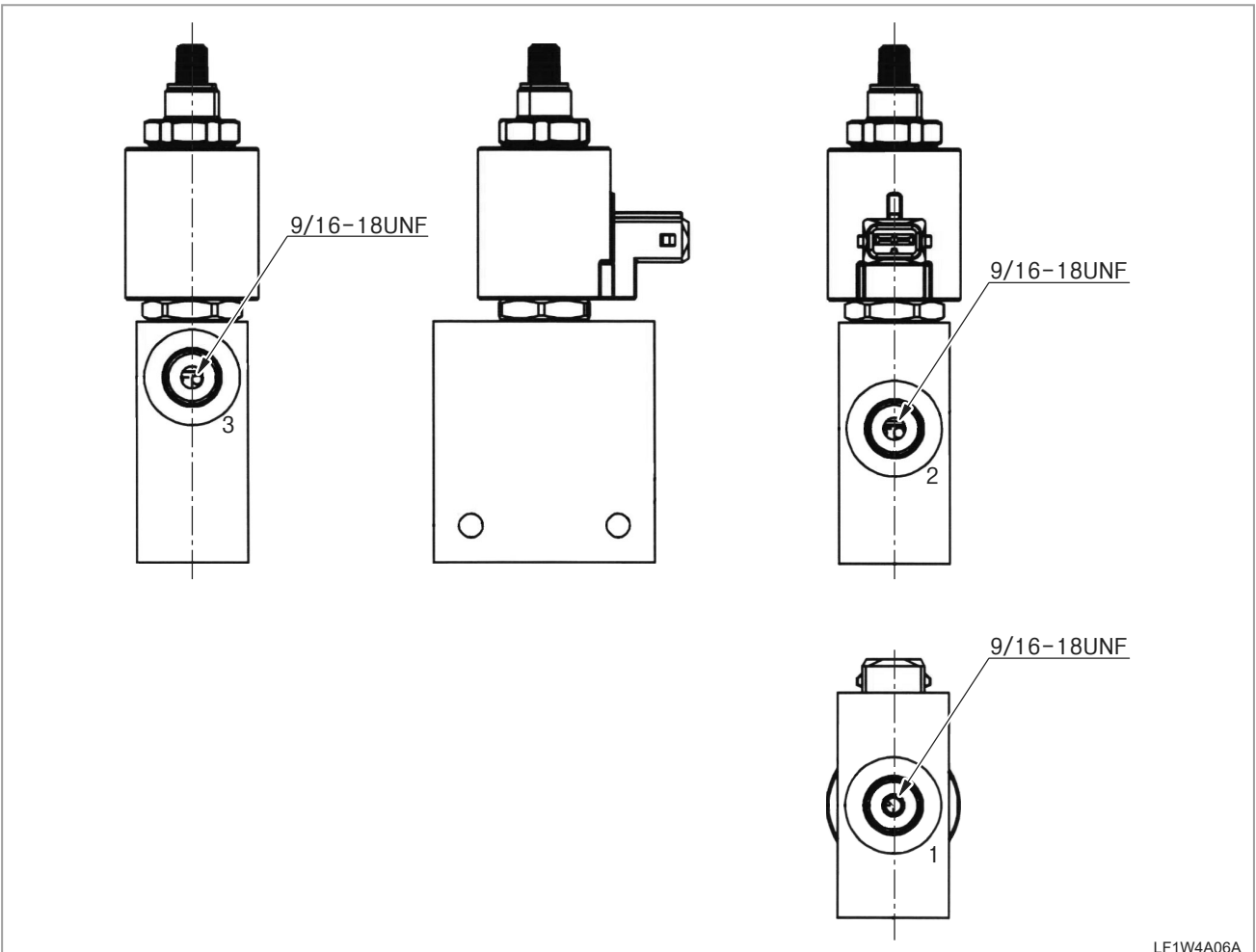
SPECIFICATIONS

ITEM	SPECIFICATION
Max. operating pressure	280 bar or more
Max. flow	20 l/min or more
Oil operating temperature	-20°C ~ 80°C

CIRCUIT DIAGRAM



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3.10 RIDE CONTROL VALVE

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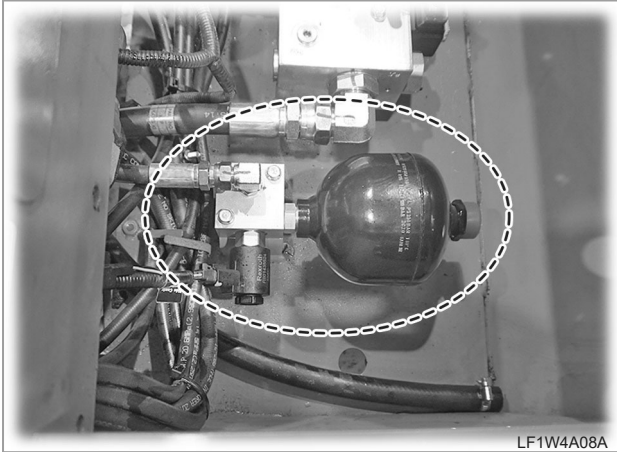
DRIVING & CHASSIS

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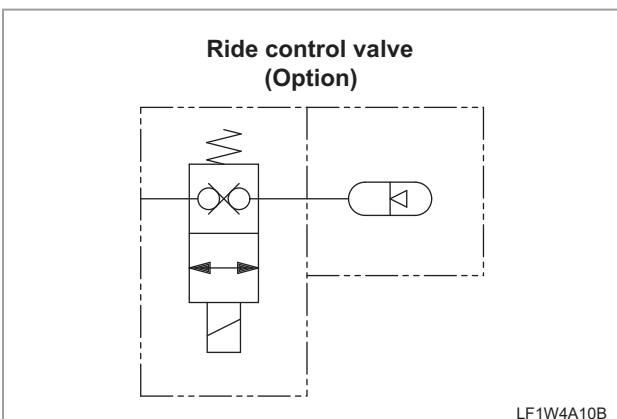
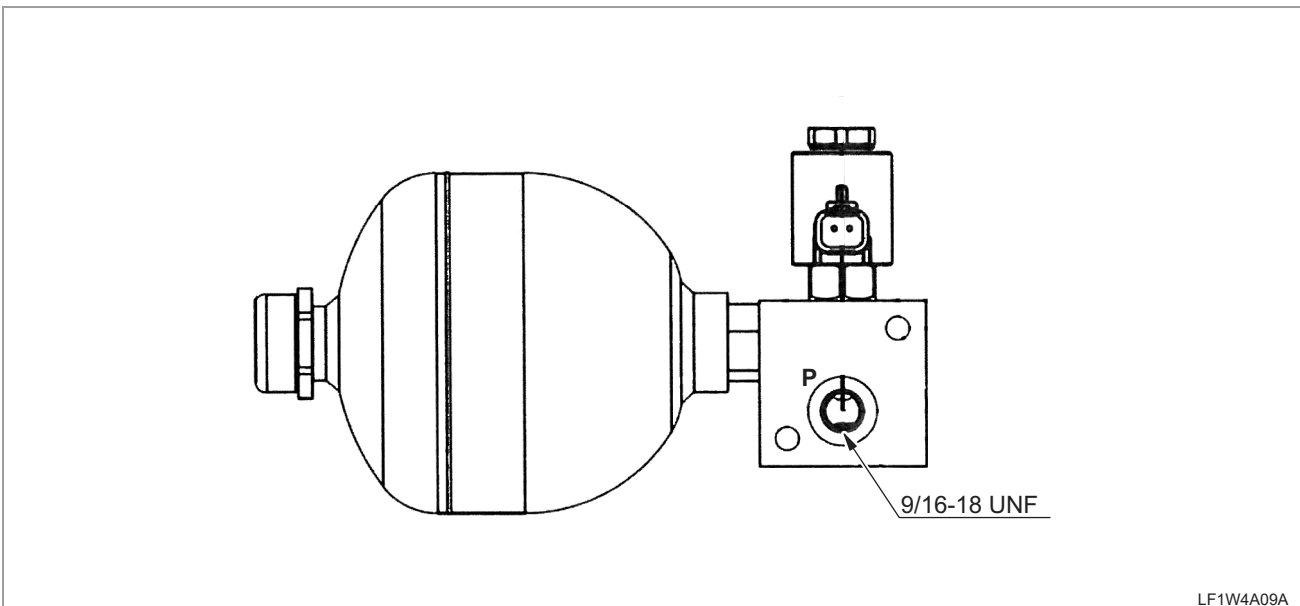


SPECIFICATIONS

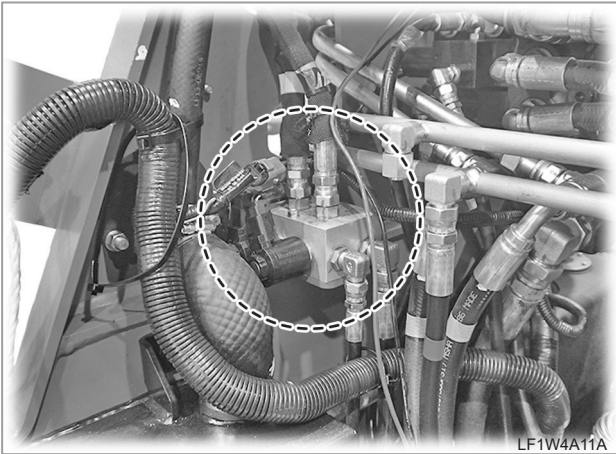
ITEM	SPECIFICATION
Max. operating pressure	350 bar or more
Max. flow	0.5 ~ 40 ℓ/min
Switching time	Opening ≤ 50 ms Closing ≤ 100 ms
Accumulator capacity	0.75 ℓ
Max. allowable pressure	250 bar
Max. Free charge pressure	130 bar

The ride control valve is located under the front section of the cabin floor. The ride control valve helps stabilize the driving condition on a bumpy road by canceling some of the vibration coming from the road surface to the vehicle through its operation with the hydraulic flow control of the accumulator.

EXTERIOR & CIRCUIT DIAGRAM



3.11 QUICK ATTACHMENT VALVE

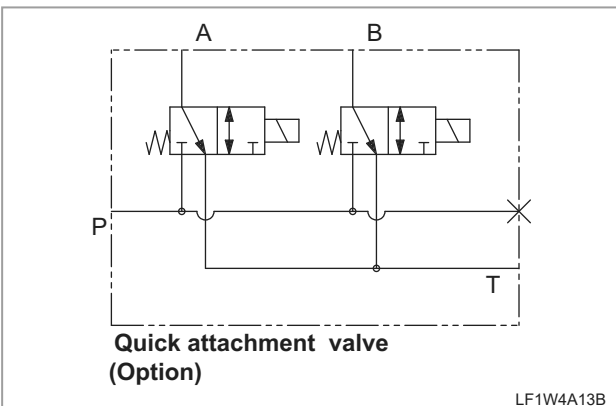
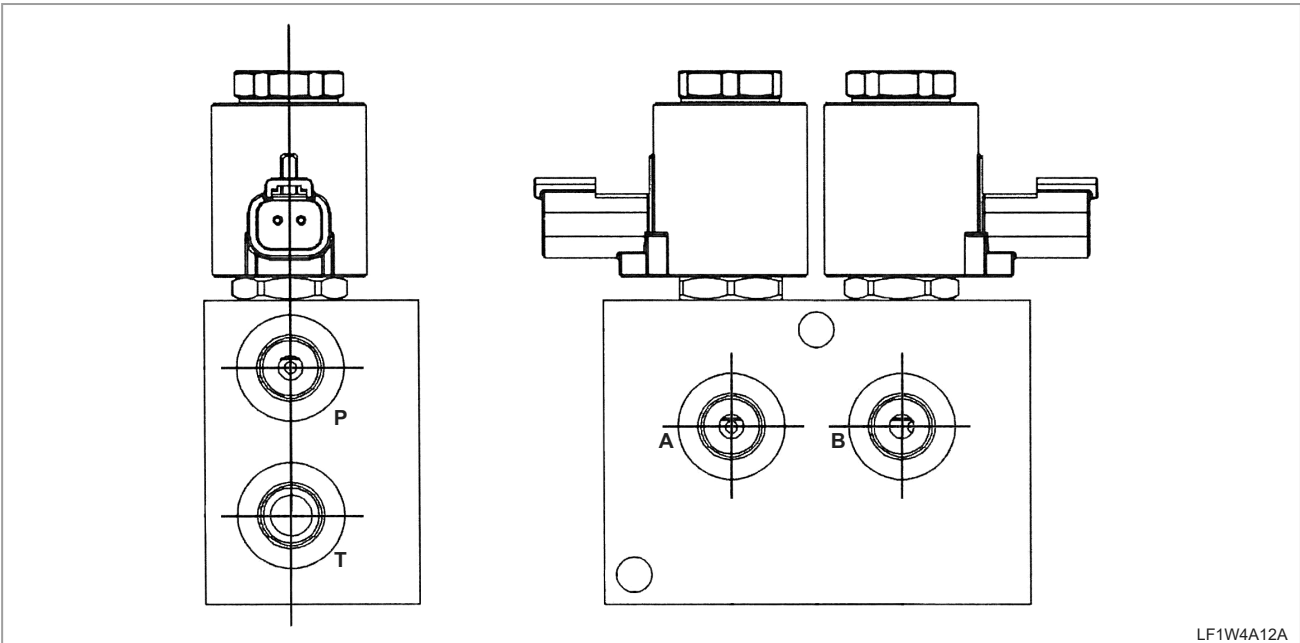


**SPECIFICATIONS**

ITEM	SPECIFICATION
Max. operating pressure	280 bar or more
Max. flow	20 l/min
A, B, P, T port size	9/16 - 18 UNF

The quick attachment valve is located in front of the main control valve on the right rear section of the main frame. The quick attachment valve controls the operation of the quick attachment cylinder with hydraulic flow when attaching and detaching the bucket to/from the equipment.

**EXTERIOR & CIRCUIT DIAGRAM**



SAFETY FIRST

ENGINE

DRIVING & CHASSIS

HYDRAULIC SYSTEM

ELECTRIC SYSTEM

CABIN

INDEX

## 3.12 RCV ASSEMBLY (LH)

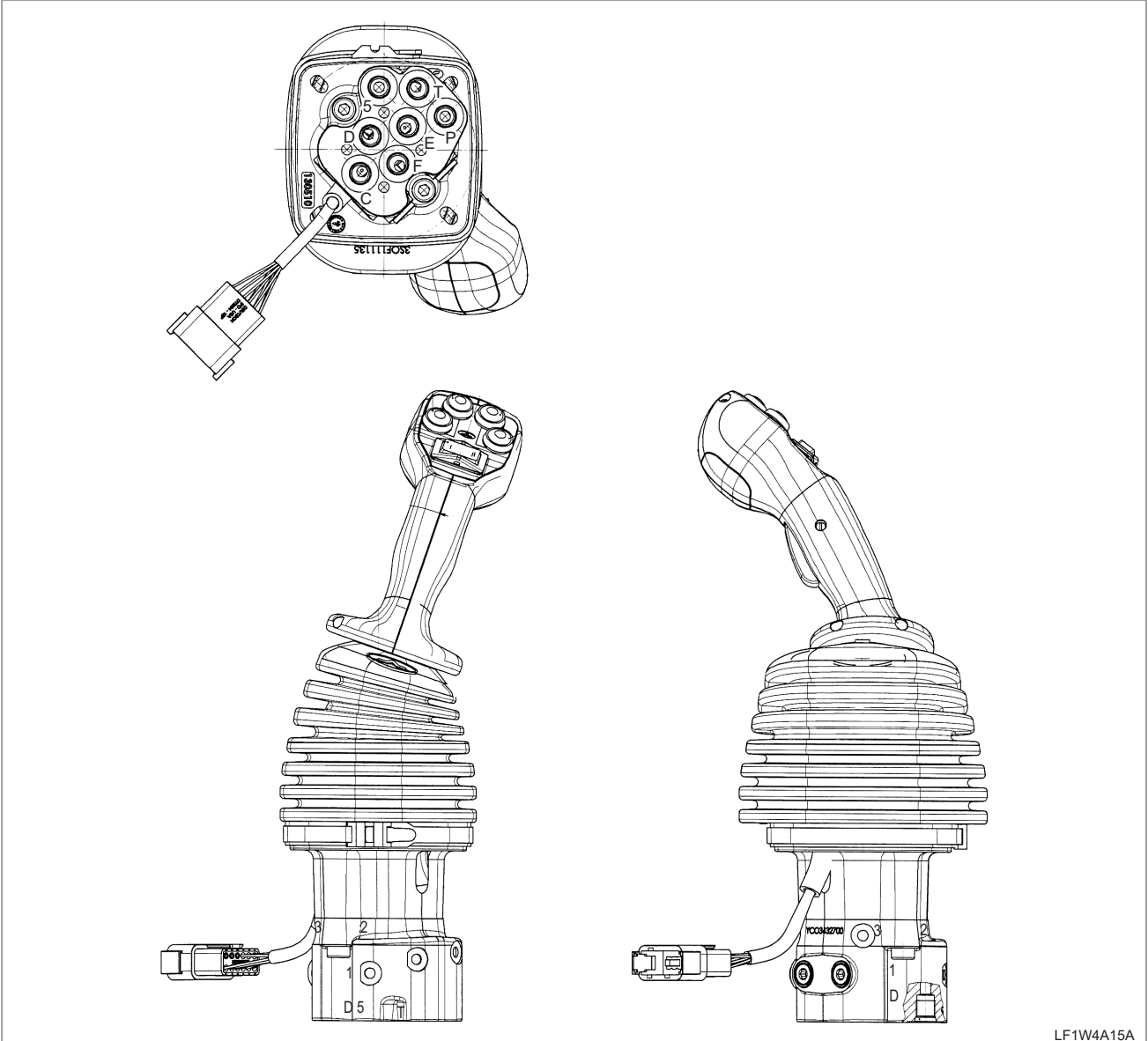


The RCV assembly (LH) is located on the left side of the driver's seat. It is used to control not only the major driving functions such as the forward driving, reverse driving, left turn, and right turn, but also the auxiliary power operation, ride control, 2-speed shift, and horn.

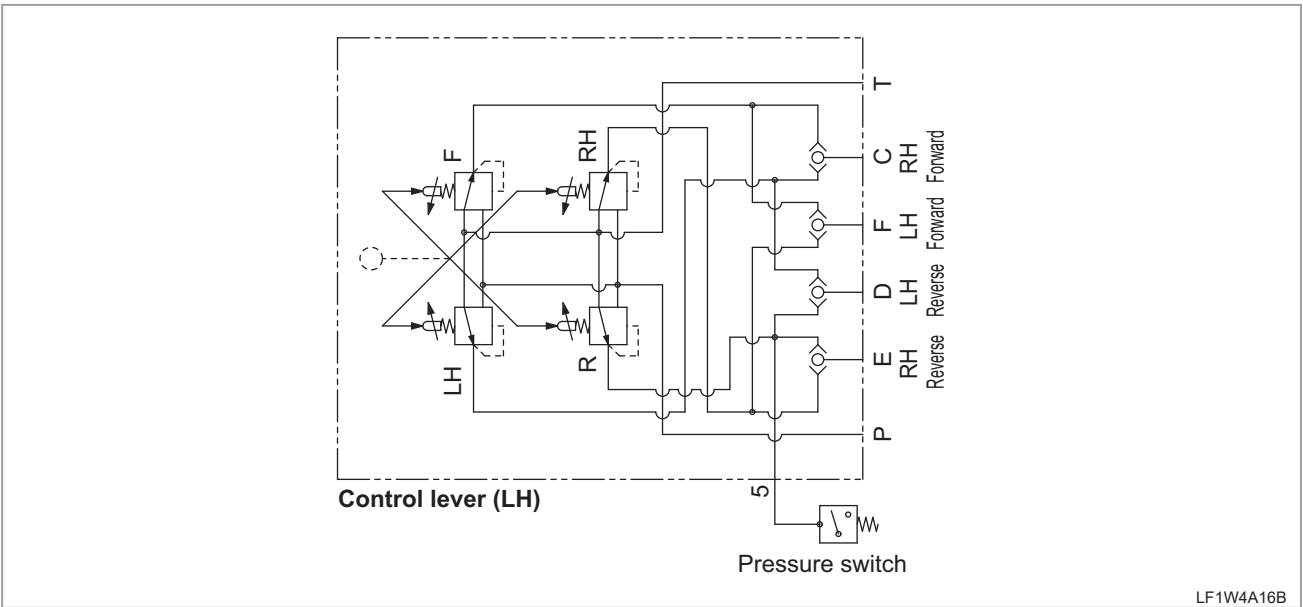
#### SPECIFICATIONS

ITEM	SPECIFICATION
Min. initial pressure	30 bar
Max. initial pressure	100 bar
Max. back pressure	3 bar
Min. rated flow	5 ℓ/min
Max. rated flow	20 ℓ/min
Oil operating temperature	-10°C ~ 80°C

**EXTERIOR & CIRCUIT DIAGRAM**



LF1W4A15A



LF1W4A16B

## 3.13 RCV ASSEMBLY (RH)

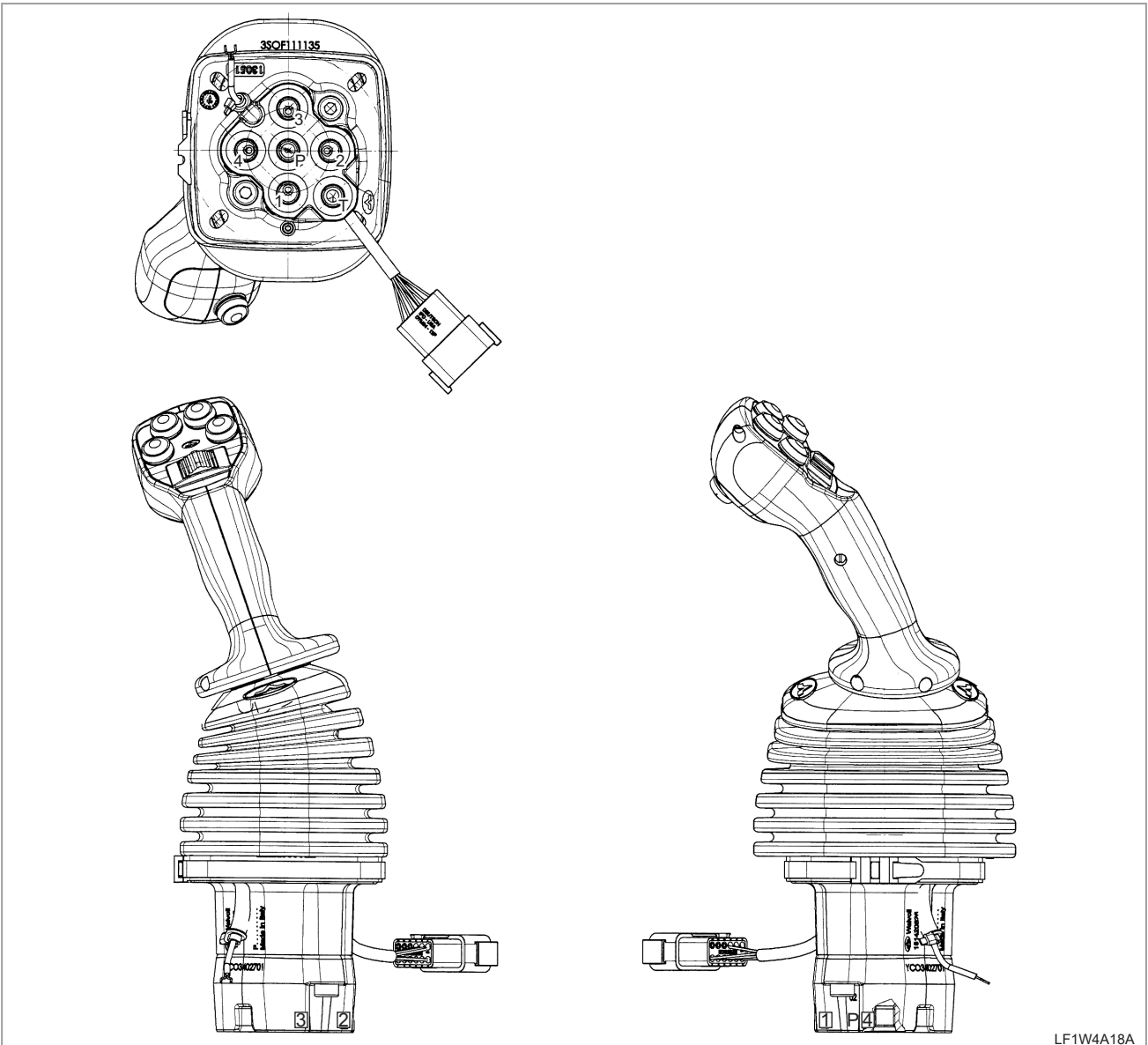


The RCV assembly (RH) is located on the right side of the driver's seat. This is used to control not only the operation of the attachment, such as boom up, boom down, bucket rollback, and bucket dump, but also auxiliary hydraulic operation and electric operation.

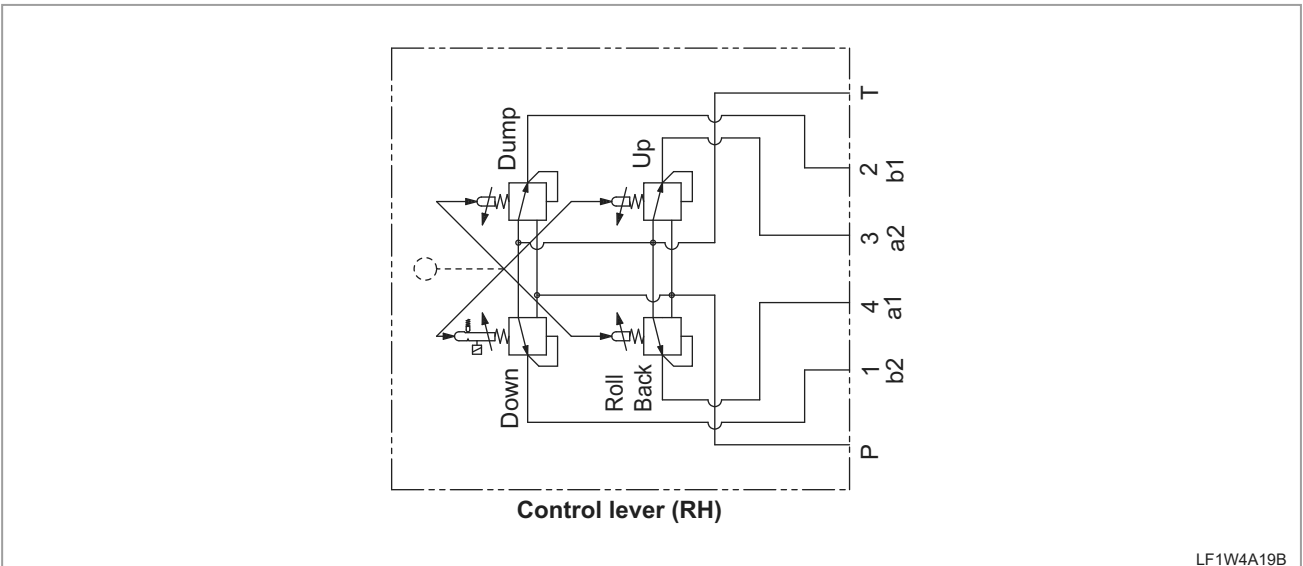
#### SPECIFICATIONS

ITEM	SPECIFICATION
Min. initial pressure	30 bar
Max. initial pressure	100 bar
Max. back pressure	3 bar
Min. rated flow	5 ℓ/min
Max. rated flow	20 ℓ/min
Oil operating temperature	-10°C ~ 80°C

**EXTERIOR & CIRCUIT DIAGRAM**



LF1W4A18A



LF1W4A19B

3.14 HYDRAULIC CYLINDER

3.14.1 LIFT CYLINDER

SAFETY FIRST

ENGINE

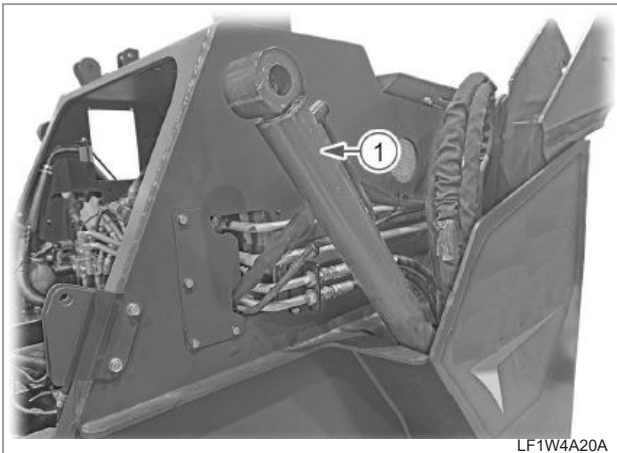
DRIVING & CHASSIS

HYDRAULIC SYSTEM

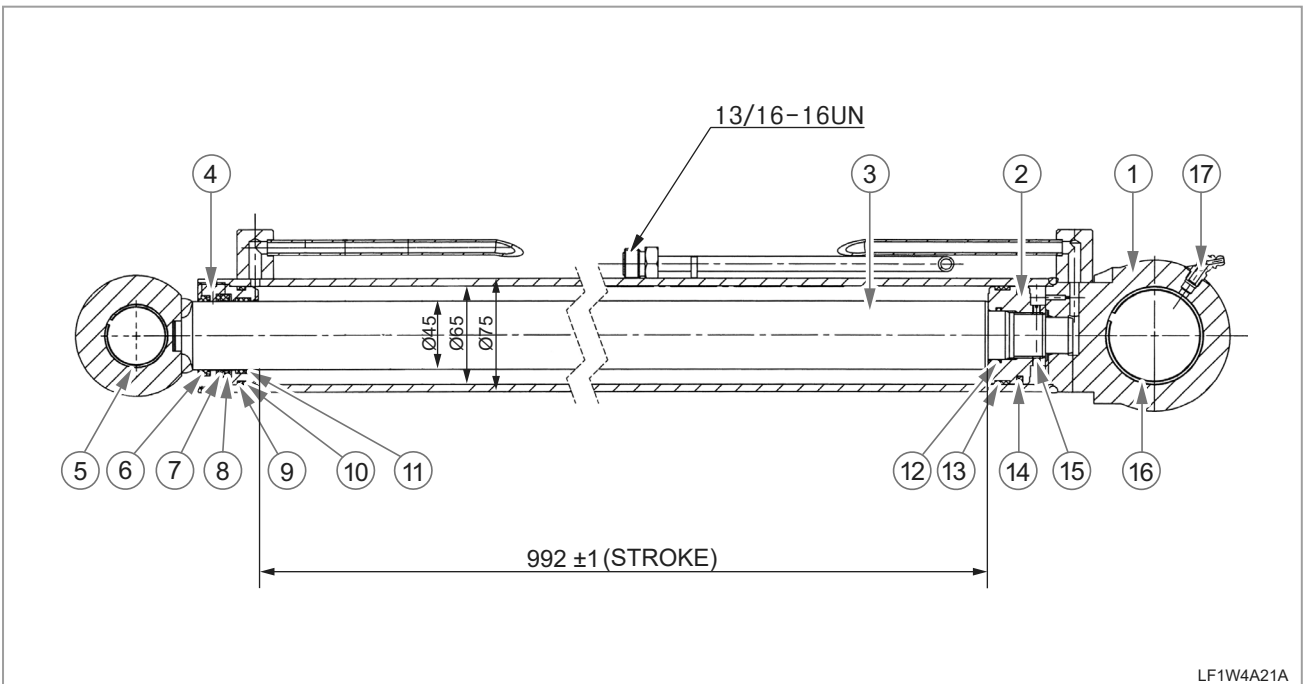
ELECTRIC SYSTEM

CABIN

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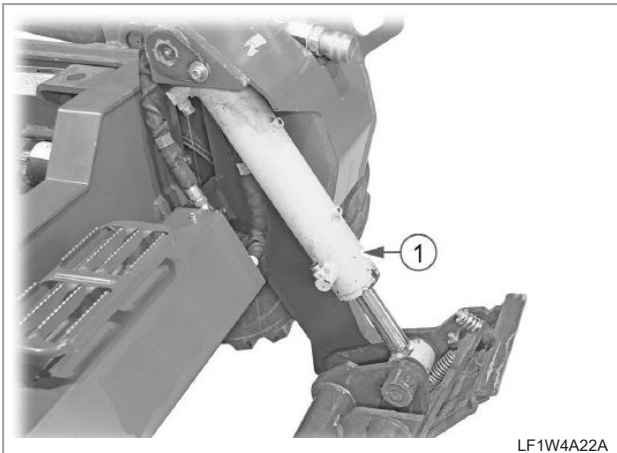
The lift cylinders (1) are located on the left and right sides of the main frame. These are single rod, double acting cylinders that are used to raise and lower the loader's boom.



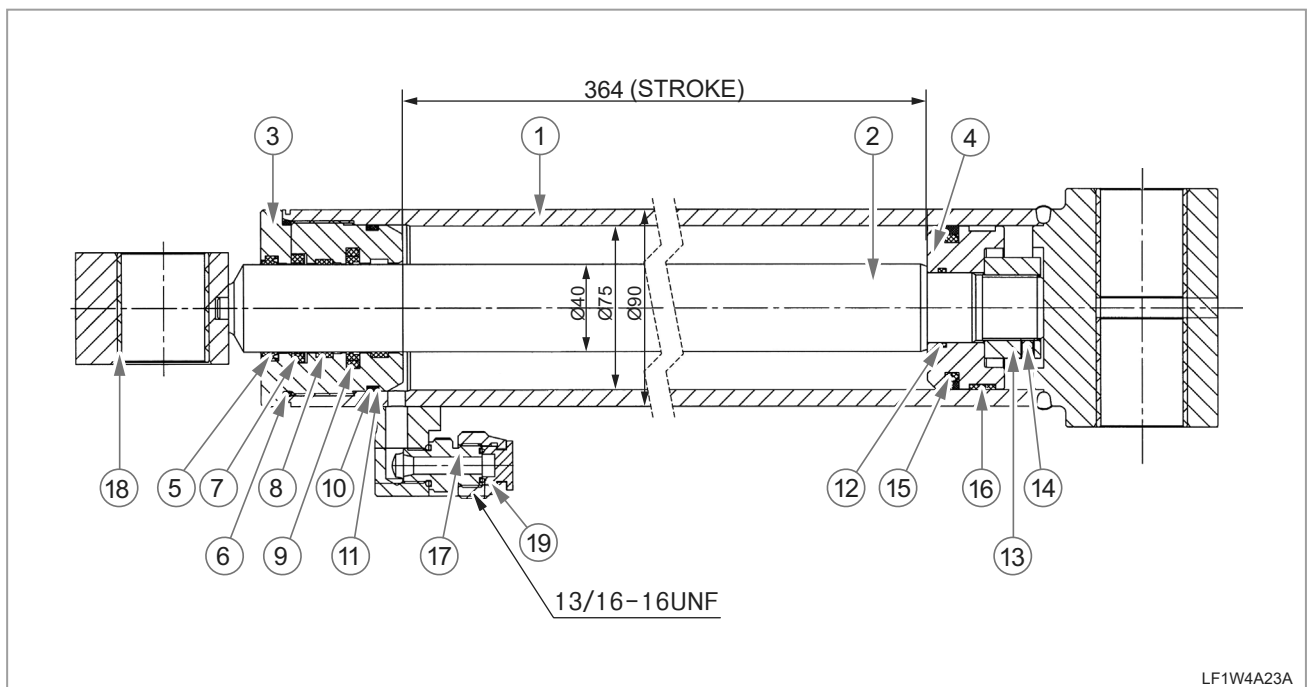
- |                       |                                   |                                  |
|-----------------------|-----------------------------------|----------------------------------|
| (1) Rear Cover & Tube | (7) Seal & Retaining Ring 55X45X3 | (13) PFC Support Ring            |
| (2) Piston            | (8) 605 Shaft Ring                | (14) 754 Glyd Ring               |
| (3) Rod Assembly      | (9) O-Ring retaining ring         | (15) Slotted Taper End Set Screw |
| (4) Front Cover       | (10) O-Ring                       | (16) Composite Bushing           |
| (5) Composite Bushing | (11) PFC Support Ring             | (17) Joint Type Oil Cup 45°      |
| (6) 839N Dust Ring    | (12) O-Ring                       |                                  |



3.14.2 TILT CYLINDER



The tilt cylinders (1) are located on the left and right sides of the quick coupler for the bucket. These are single rod, double acting cylinders that are used for rollback and the dump operation of the bucket.



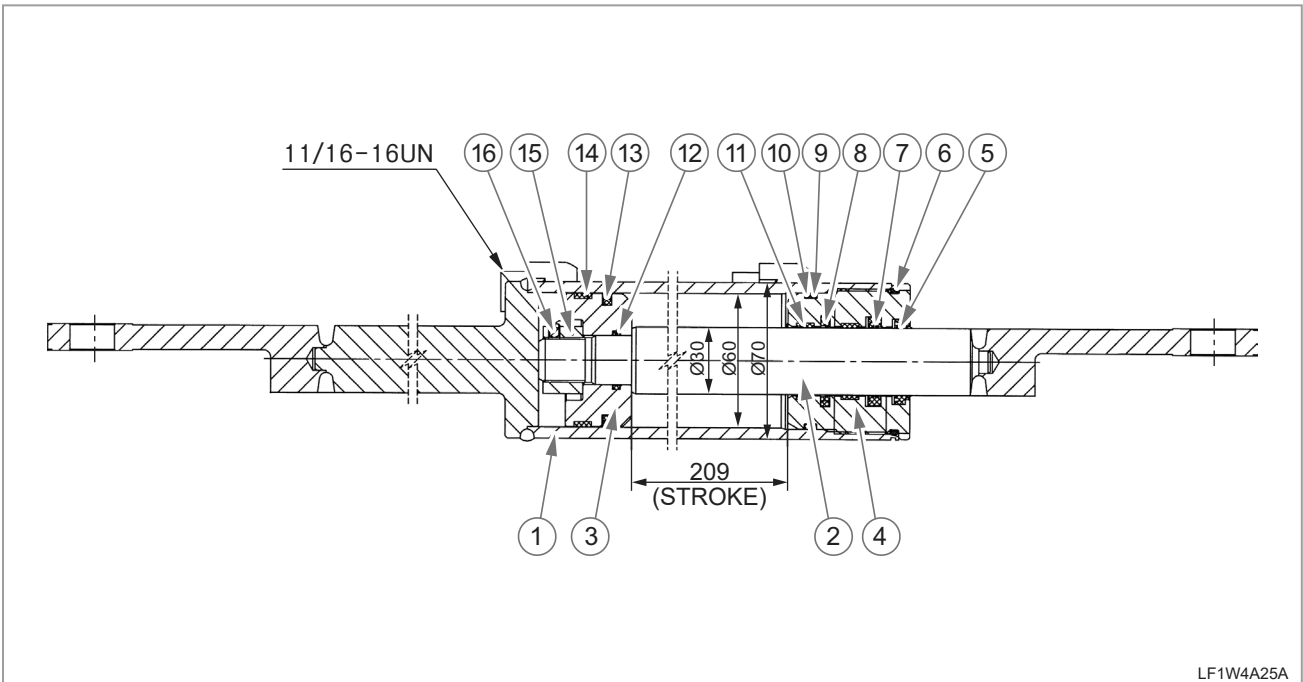
- |                       |                                     |                                      |
|-----------------------|-------------------------------------|--------------------------------------|
| (1) Rear Cover & Tube | (8) PFC Support Ring                | (15) 754 Glyd Ring                   |
| (2) Rod Assembly      | (9) GSJ Step Ring                   | (16) PFC Support Ring                |
| (3) Front Cover       | (10) O-Ring                         | (17) Threaded O-Ring Flat Seal Joint |
| (4) Piston            | (11) O-Ring                         | (18) Composite Bushing               |
| (5) 839N Dust Ring    | (12) O-Ring                         | (19) O-Ring                          |
| (6) O-Ring            | (13) Lock Nut                       |                                      |
| (7) 605 Shaft Ring    | (14) Hexagon Socket Taper Set Screw |                                      |

3.14.3 QUICK ATTACHMENT CYLINDER



LF1W4A24A

The quick attachment cylinder (1) is on top of the quick coupler for the bucket, and it is a single rod, double acting cylinder used for automatic operation of attachment and detachment of the bucket using hydraulic flow.



LF1W4A25A

- |                       |                     |  |
|-----------------------|---------------------|--|
| (1) Rear Cover & Tube | (7) 605 Shaft Ring  | (13) 754 Glyd Ring                             |
| (2) Rod Assembly      | (8) Gsj Step Ring   | (14) PFC Support Ring                          |
| (3) Piston            | (9) O-Ring          | (15) Lock Nut                                  |
| (4) Front Cover       | (10) O-Ring         | (16) Cross Recessed Set Screw With Tapered End |
| (5) 839 Dust Ring     | (11) PFC Guide Ring | (17) O-Ring                                    |
| (6) O-Ring            | (12) O-Ring         |  |

3.15 HYDRAULIC FILTER

3.15.1 RETURN FILTER



The return filter is located on the right upper section in the engine compartment. It is used to filter the oil after it is cooled down through the oil cooler before it is returned to the oil tank.

**SPECIFICATIONS**

ITEM	SPECIFICATION
Fineness	10 μm
Filtering dimension	4,410 cm <sup>2</sup>
Rated flow	125 ℓ/min
By-pass valve setting pressure	1.7 bar (25 psi)
Operation pressure	12 bar (174 psi)
Oil operating temperature	-20°C ~ 110°C

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DRIVING & CHASSIS

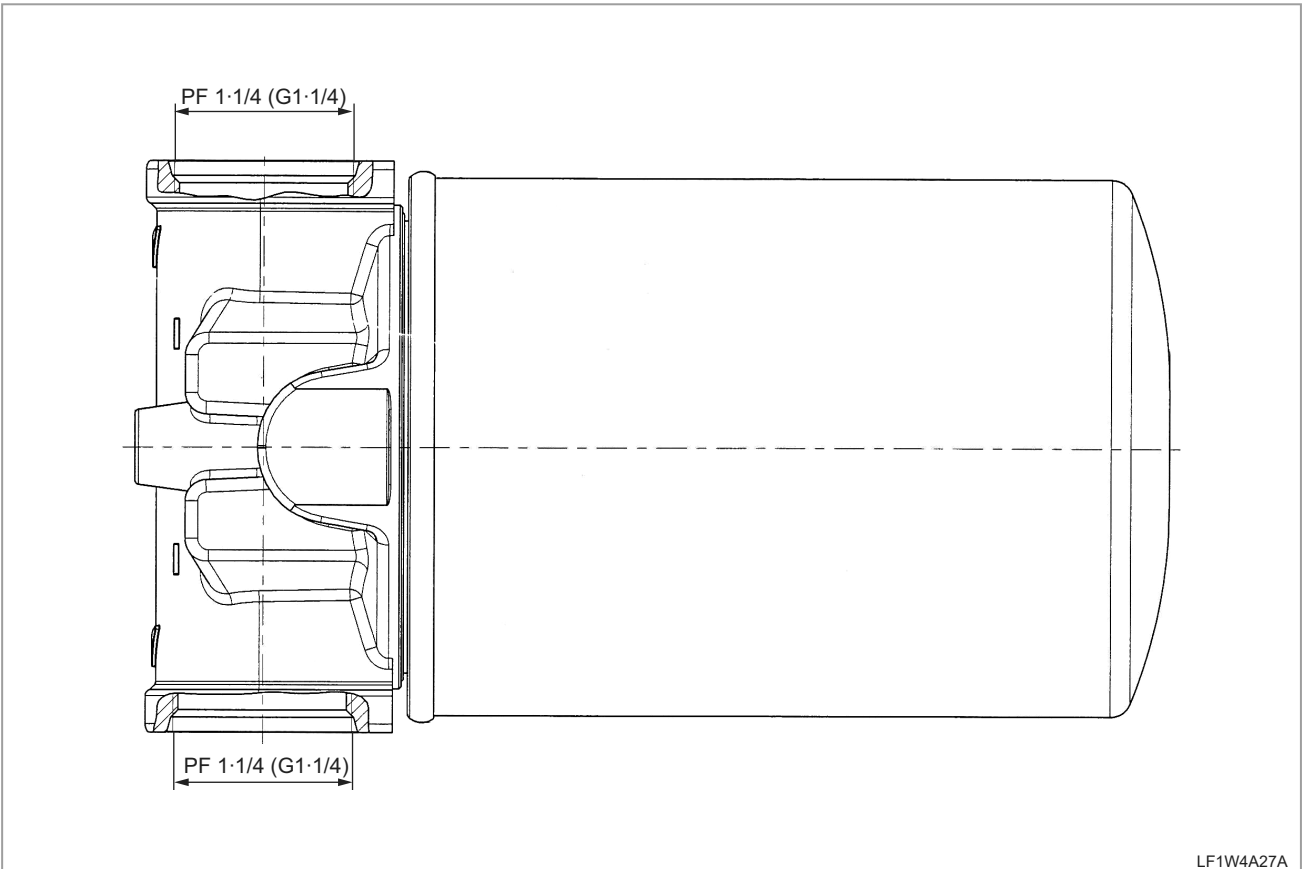
HYDRAULIC SYSTEM

ELECTRIC SYSTEM

CABIN

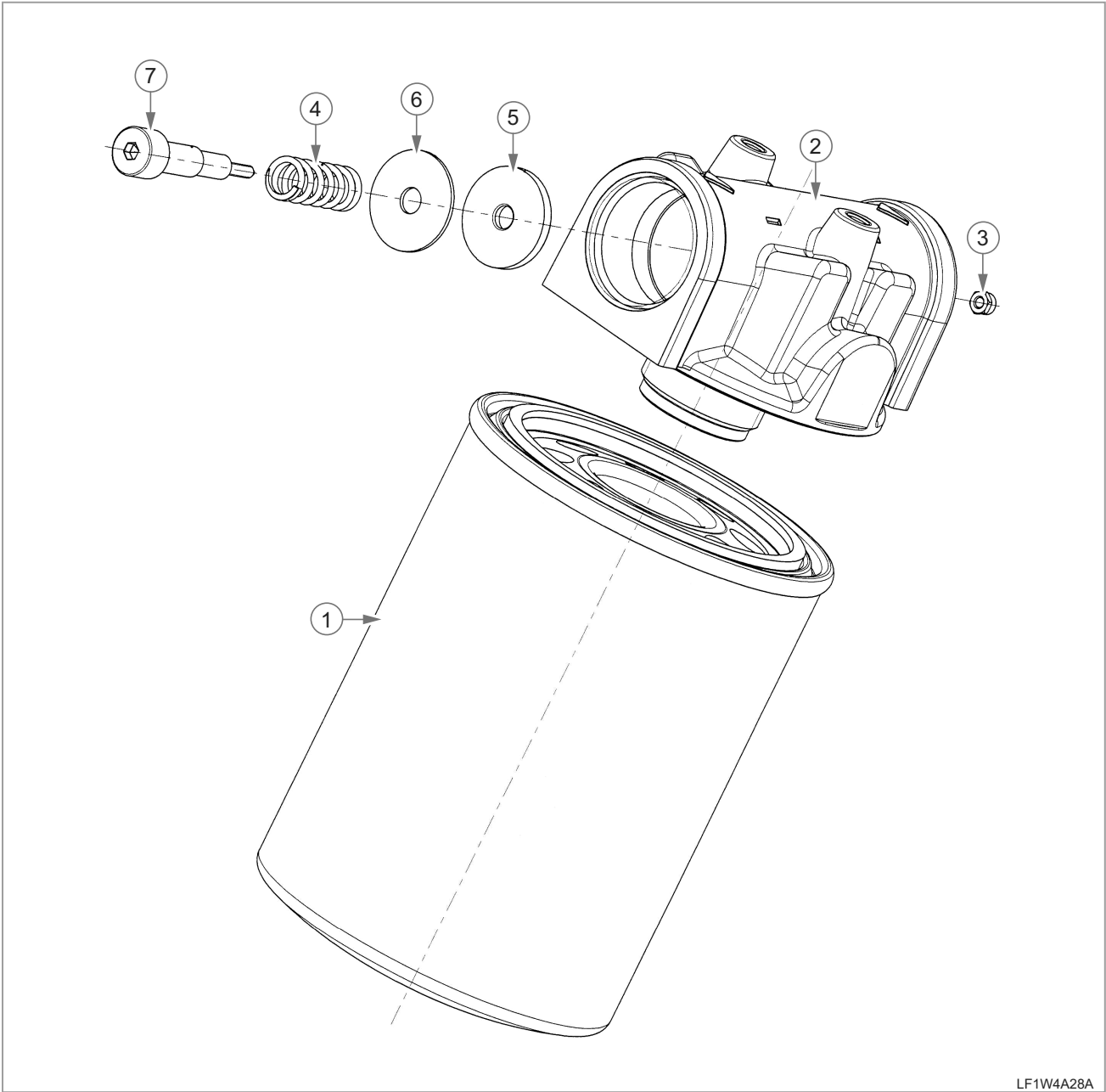
INDEX

**EXTERIOR**



LF1W4A27A

COMPONENTS



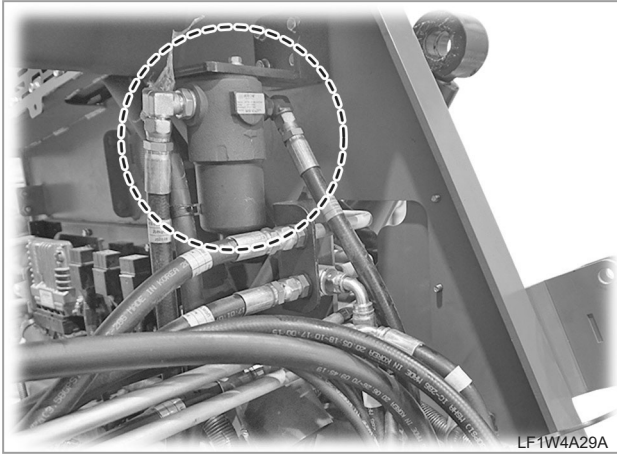
LF1W4A28A

- (1) Filter case
- (2) Head
- (3) Nut

- (4) Spring
- (5) Sealing plate
- (6) Backup washer

- (7) By-pass valve

3.15.2 HST FILTER



The HST filter is located on the left upper section of the main frame, and it filters the hydraulic oil discharged from the charge pump to the quick attachment valve and HST pump.

**SPECIFICATIONS**

ITEM	SPECIFICATION
Fineness	10 μm
Filtering dimension	415 cm <sup>2</sup>
Rated flow	35 l/min
By-pass valve setting pressure	6 bar (87 psi)
Operation pressure	310 bar (4,496 psi)
Oil operating temperature	-30°C ~ 90°C

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ENGINE

DRIVING & CHASSIS

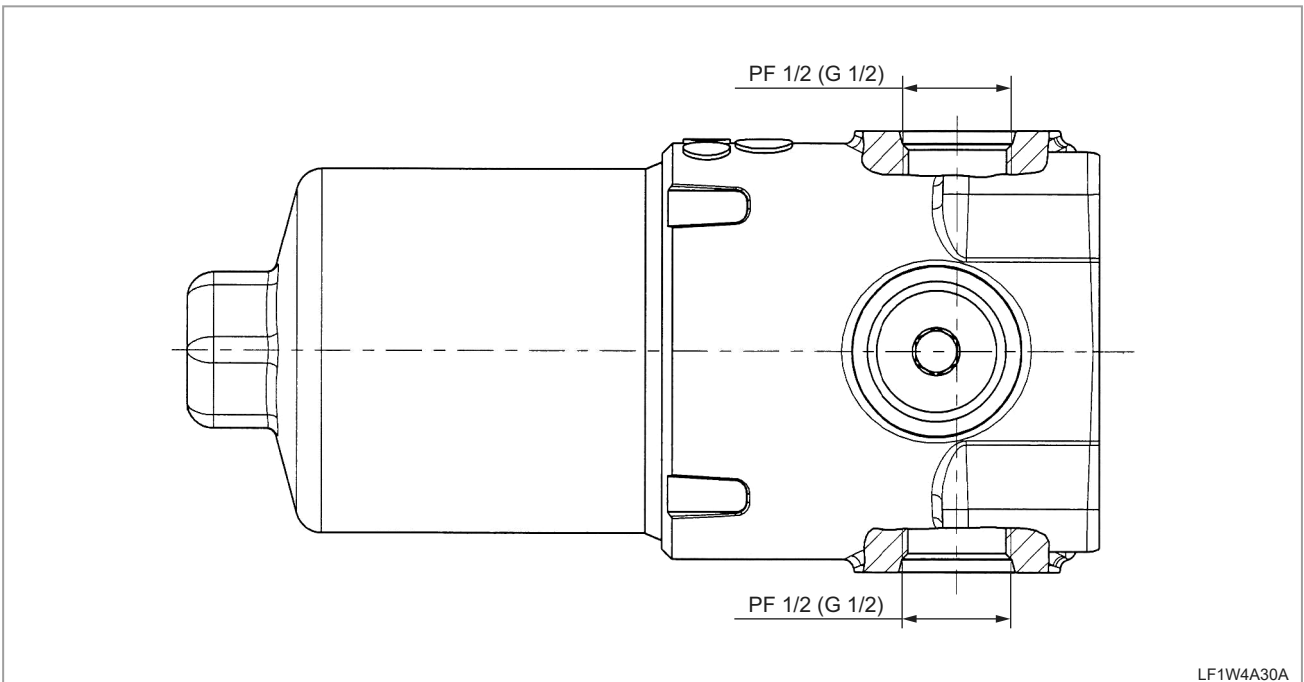
HYDRAULIC SYSTEM

ELECTRIC SYSTEM

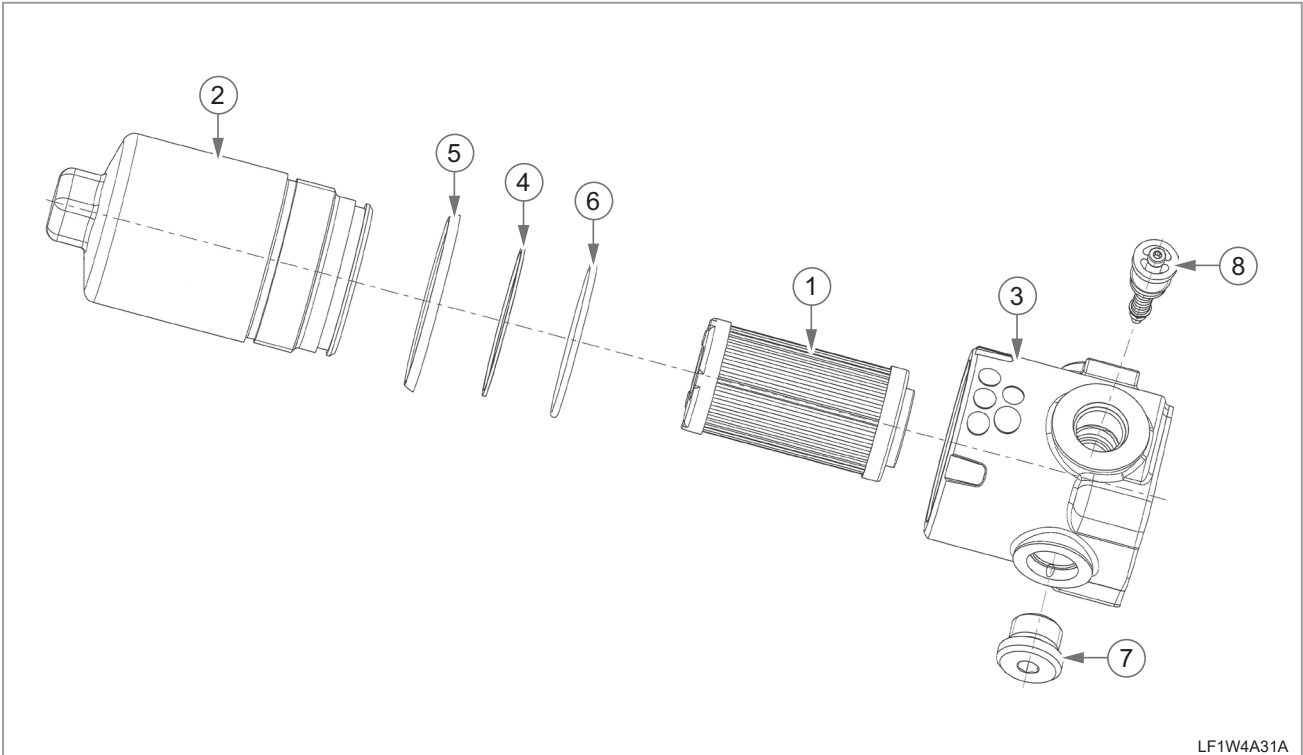
CABIN

INDEX

**EXTERIOR**



COMPONENTS



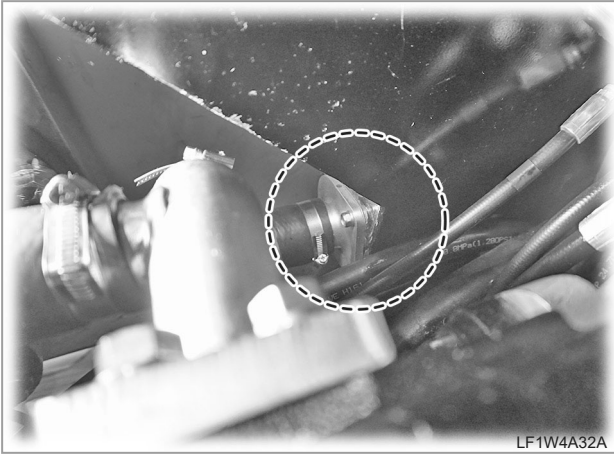
LF1W4A31A

- (1) Filter element
- (2) Filter case
- (3) Body

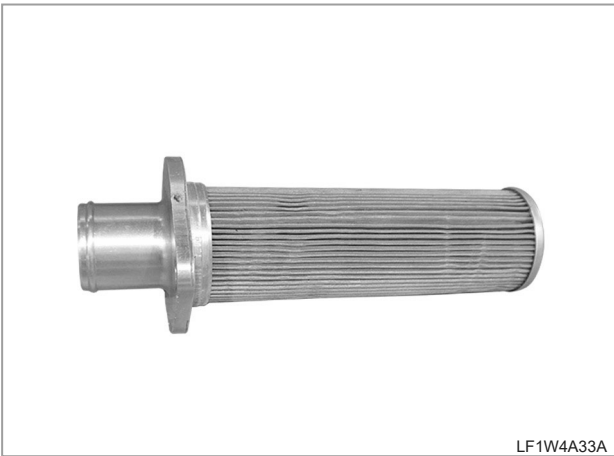
- (4) Backup ring
- (5) Filter gasket
- (6) O-Ring

- (7) Steel plug
- (8) By-pass valve

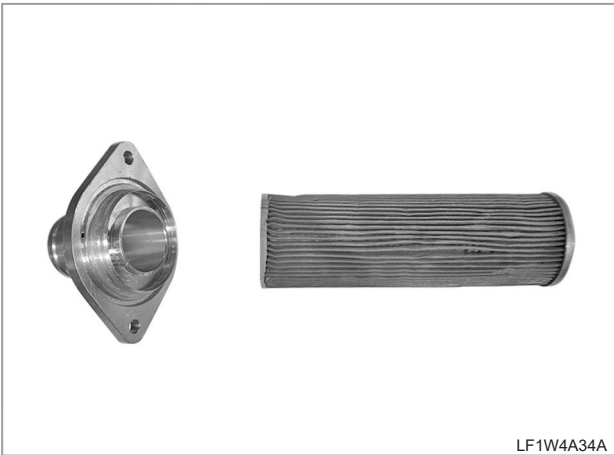
3.15.3 OIL STRAINER



LF1W4A32A



LF1W4A33A



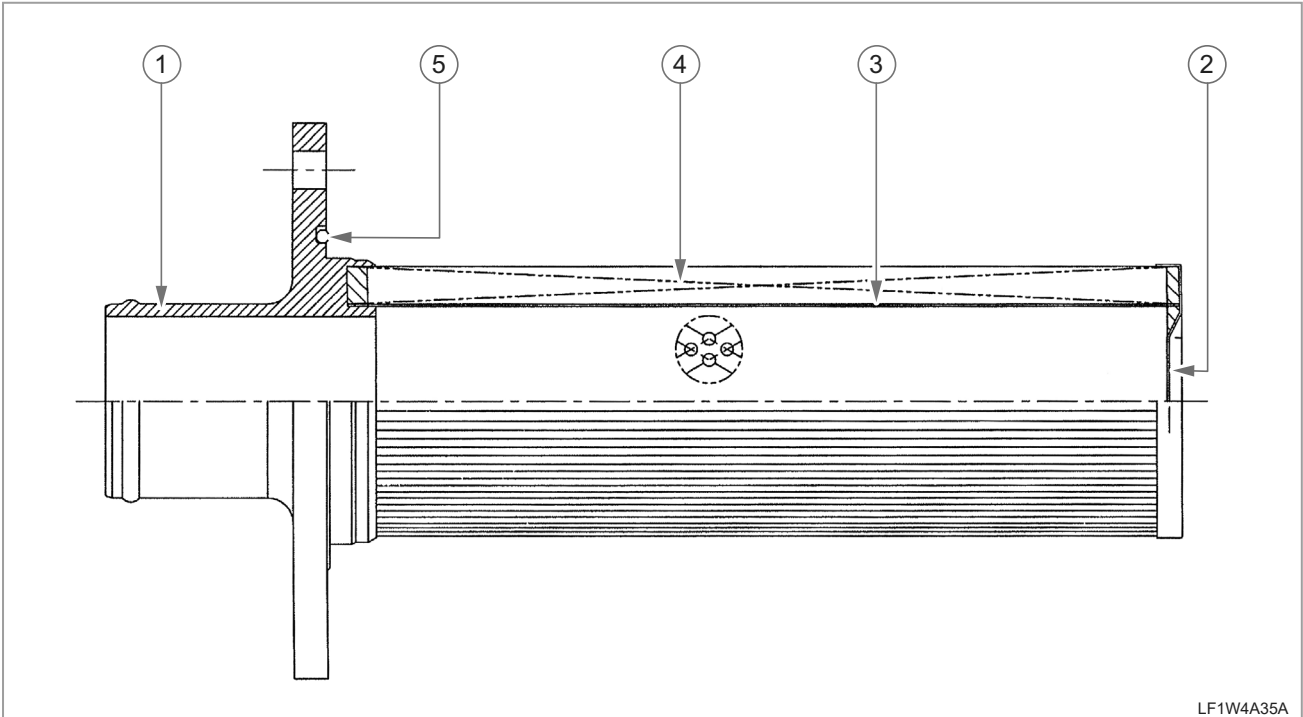
LF1W4A34A

The oil strainer is a suction filter located on the inlet on the front bottom section of the oil tank. It filters the oil before it is delivered to the main pump and high-flow pump.

**SPECIFICATIONS**

ITEM	SPECIFICATION
Number of folds	57
Effective filtering dimension	0.157 m <sup>2</sup>

**EXTERIOR**



LF1W4A35A

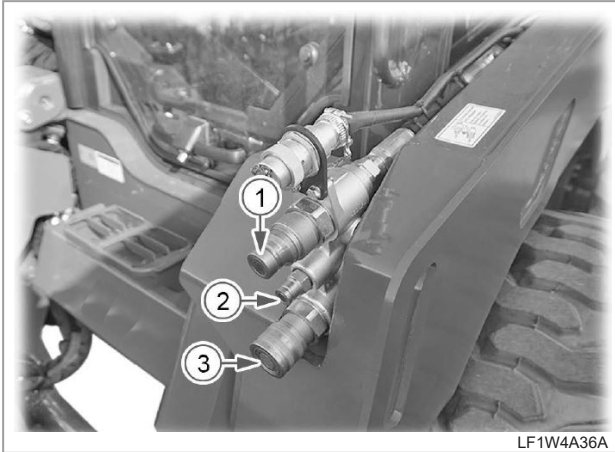
(1) Head  
(2) End plate

(3) Inner core plate  
(4) Filter

(5) O-Ring



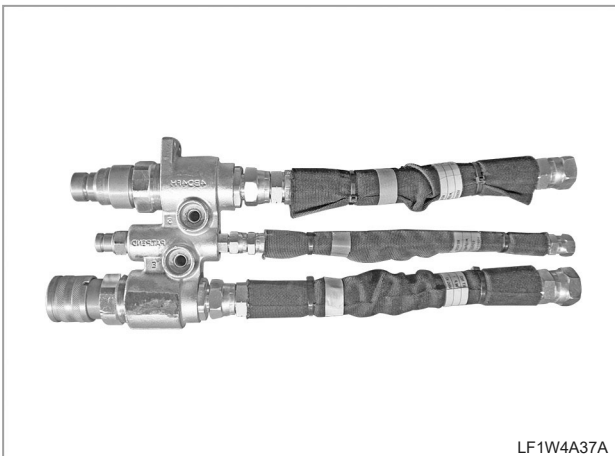
3.16 QUICK COUPLER (EXTERNAL HYDRAULIC)



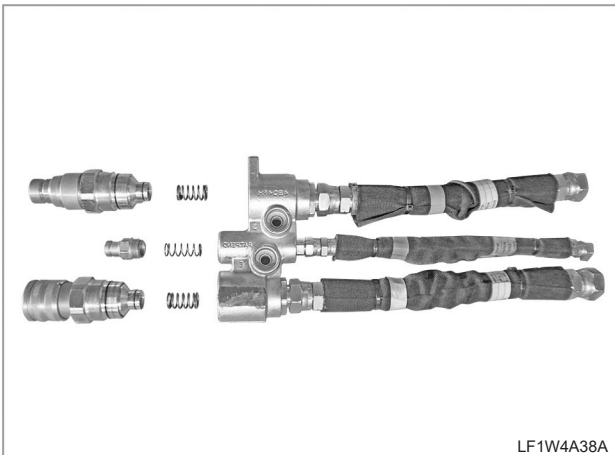
LF1W4A36A

**SPECIFICATIONS**

ITEM	SPECIFICATION
Max. operating pressure	35 MPa
Rated flow	100 ℓ/min
Oil operating temperature	-25°C ~ 100°C



LF1W4A37A



LF1W4A38A

The quick coupler is located on the front left section of the boom structure and consists of the male (1), drain (2), and female (3) couplings.

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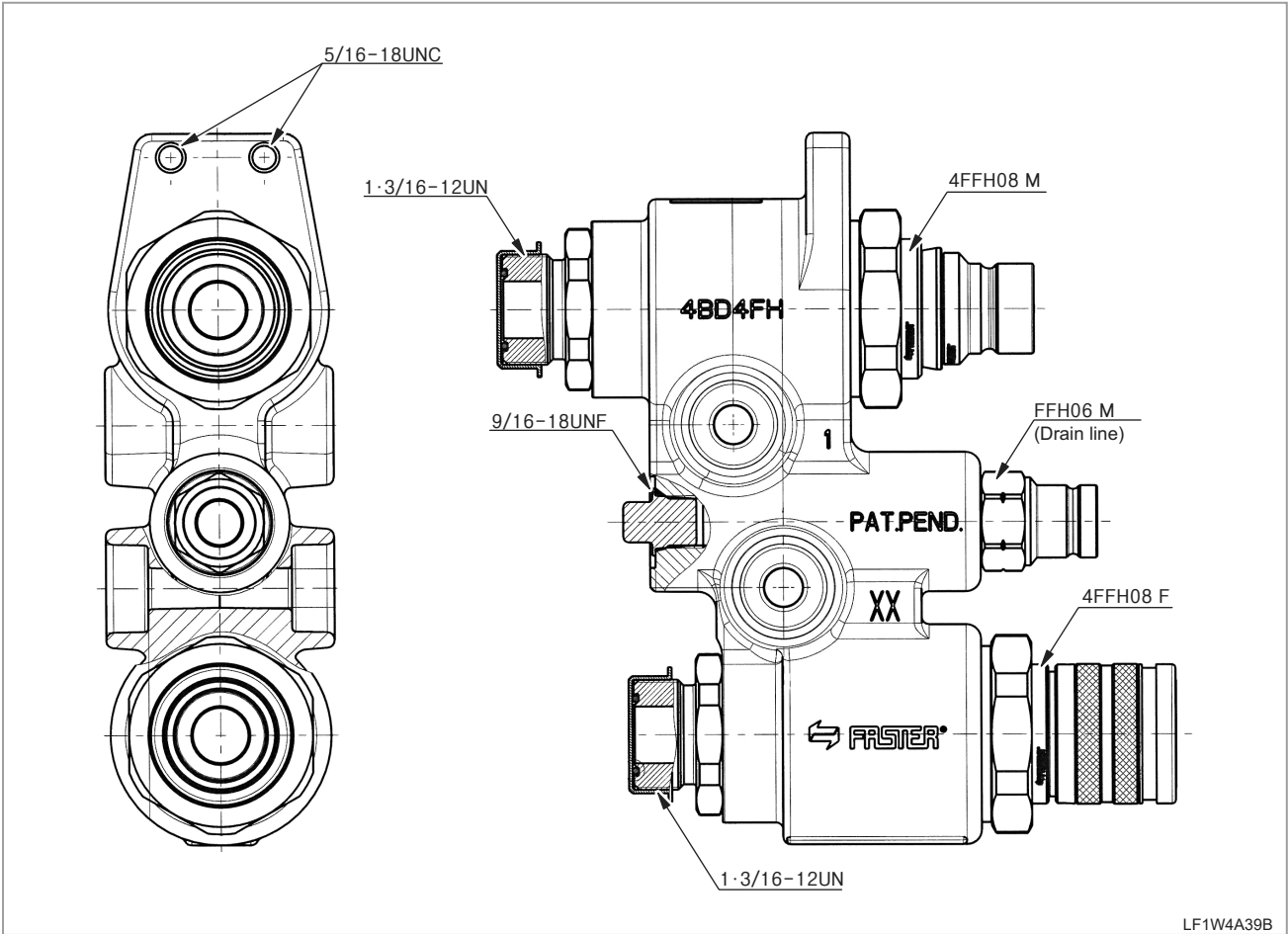
HYDRAULIC SYSTEM

ELECTRIC SYSTEM

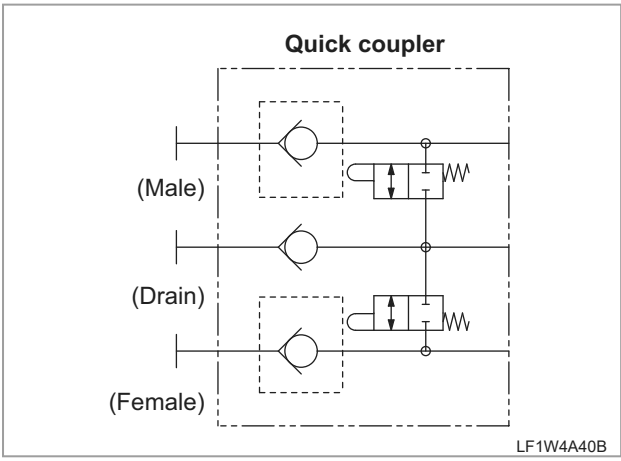
CABIN

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EXTERIOR & CIRCUIT DIAGRAM

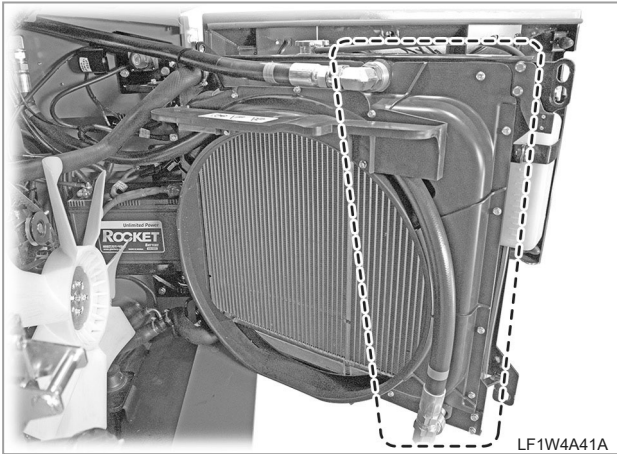


LF1W4A39B



LF1W4A40B

**3.17 OIL COOLER**



The oil cooler is located next to the radiator on the cooling unit. The oil cooler is used to cool the oil returned from the high-flow valve (optional) and MCV (Main Control Valve) before it is delivered to the oil tank.

**SPECIFICATIONS**

ITEM	SPECIFICATION
Heat rejection rate	24,000 kcal -5%
Flow	165 ℓ/min
Pressure drop	96.5 kPa
Core type	BAR PLATE
Core size	113(W) × 595(H) × 269(L) mm
Capacity	4.7 ℓ

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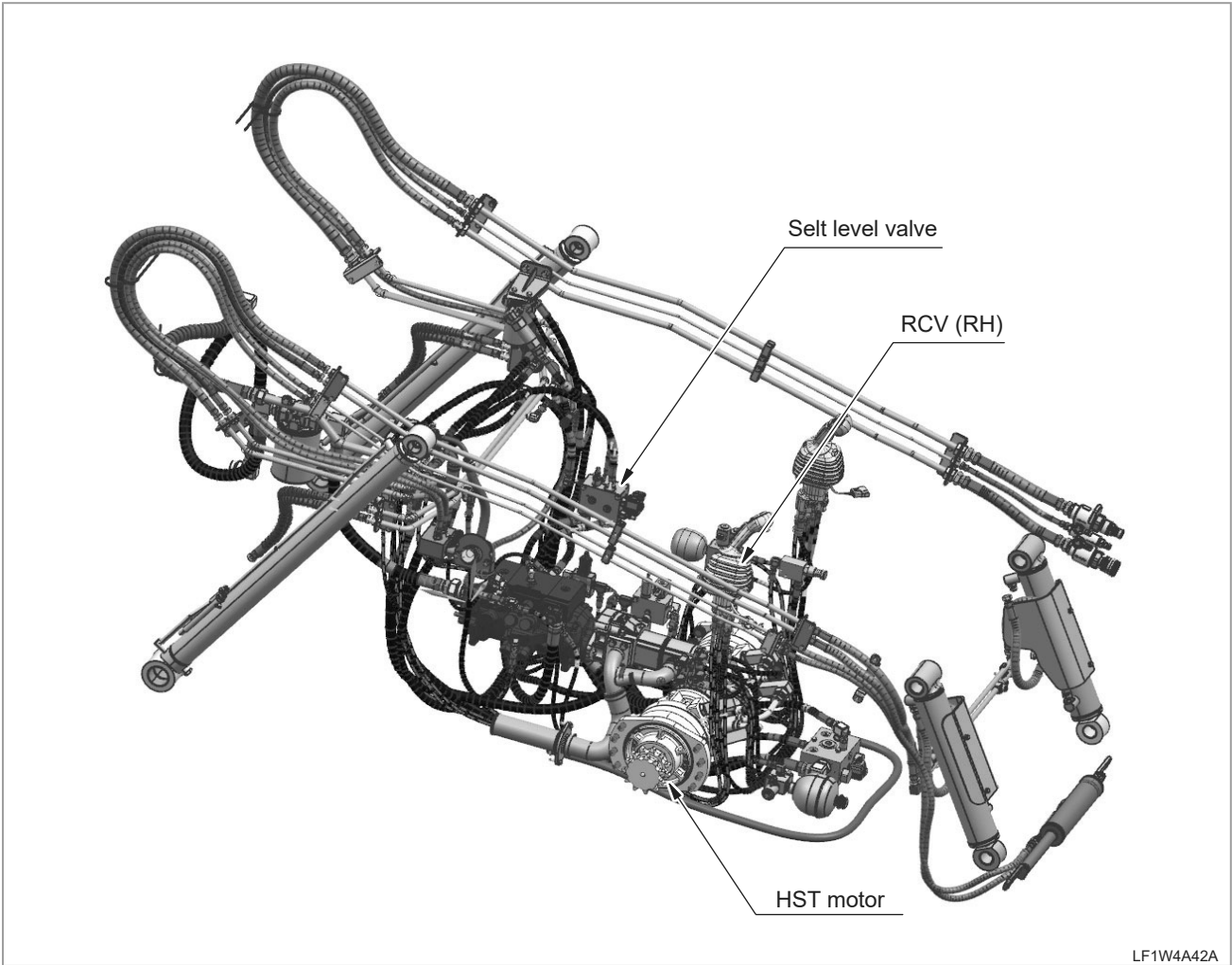
**HYDRAULIC SYSTEM**

ELECTRIC SYSTEM

CABIN

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4. OPERATING PRINCIPLE



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ENGINE

DRIVING & CHASSIS

HYDRAULIC SYSTEM

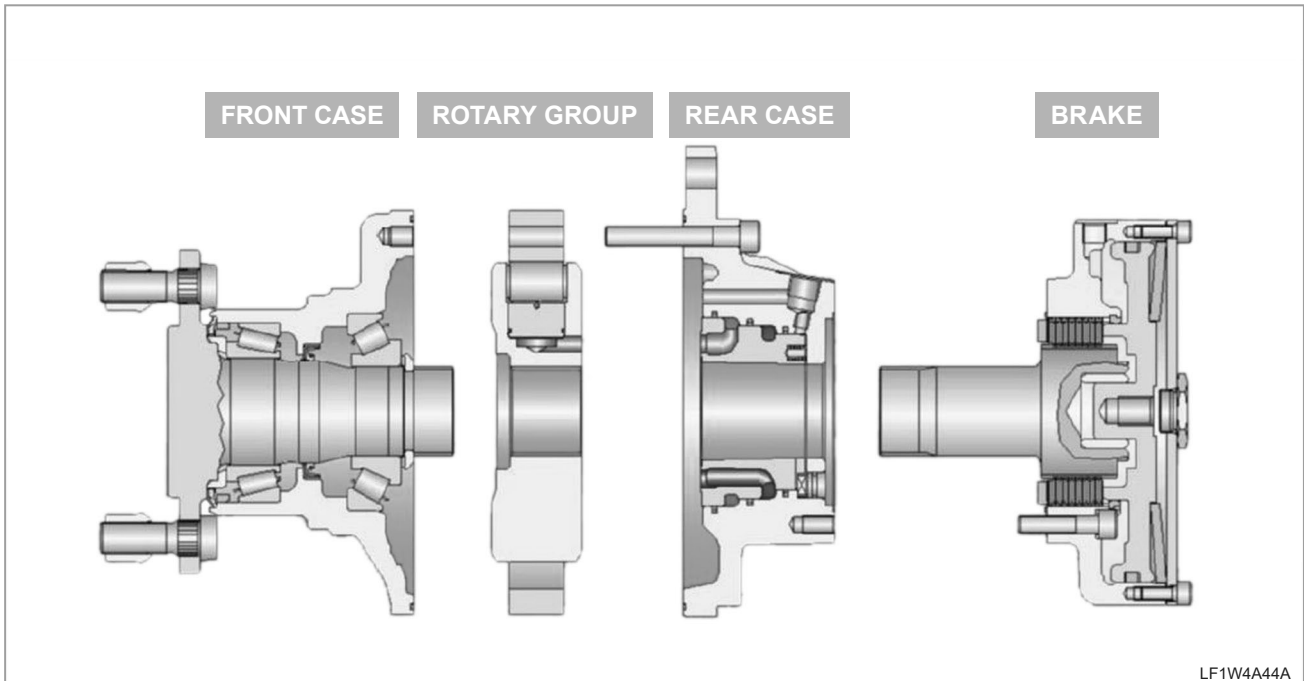
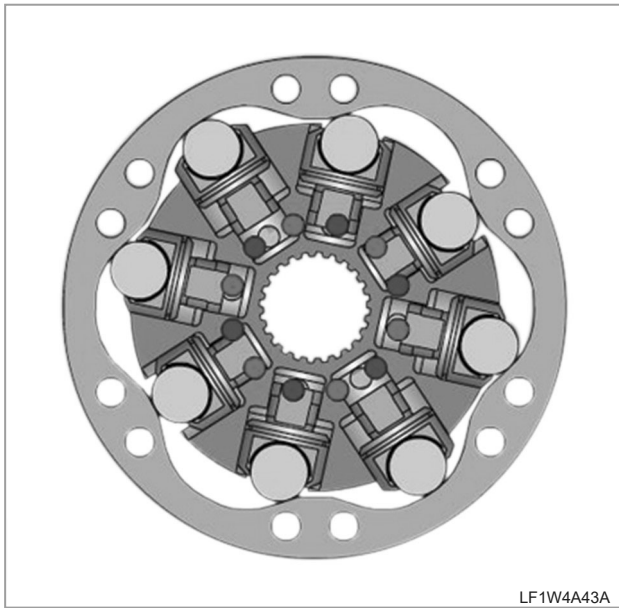
ELECTRIC SYSTEM

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4.1 HST MOTOR

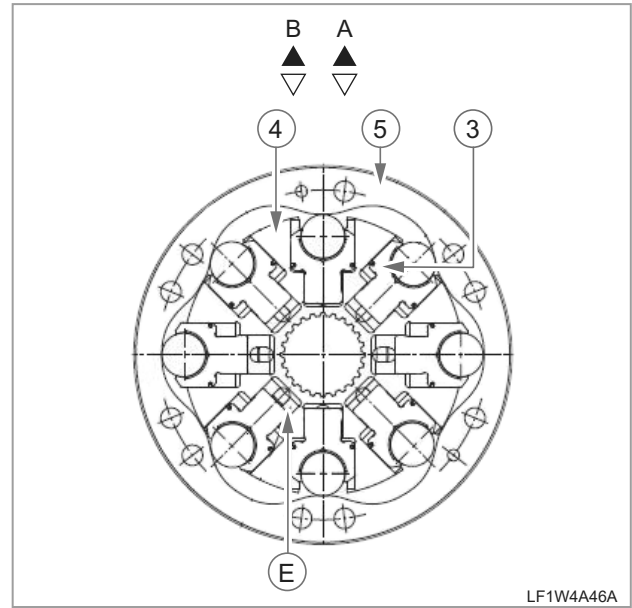
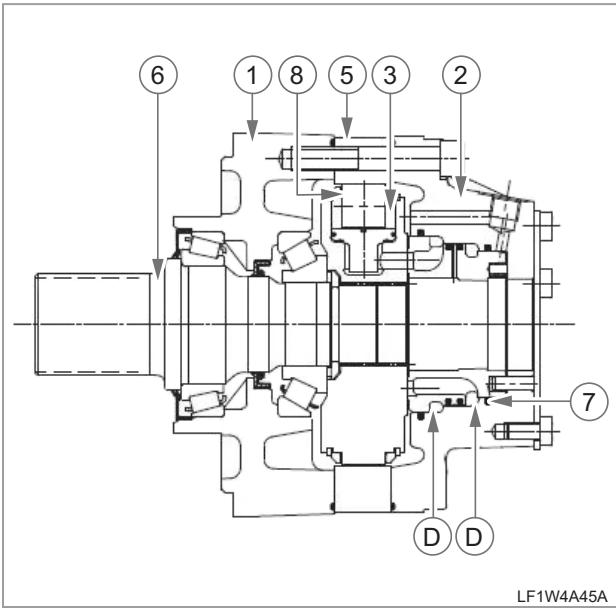
OVERVIEW



The HST motor is a radial piston pump that is used to convert the oil flow into mechanical rotating motion. This is a hydraulic motor consisting of pistons that have rotary groups radially arranged, and it is a low-speed high-torque motor, delivering the power directly to the output shaft through the multiple stroke method.

After the oil enters the motor through port A (red) and port B (blue), it leaves the motor, flows through the control section, and is then led into the piston assembly that is rotating. As the rotor is connected to the shaft with the splines, the stroke of the piston is converted to the rotating power by the reaction of the force applied to the cam. The maximum torque of the motor is determined by the displacement of the motor and system pressure and the actual output torque changes by the resistance (differential pressure between the input and output of the motor).

**FUNCTION & STRUCTURE**

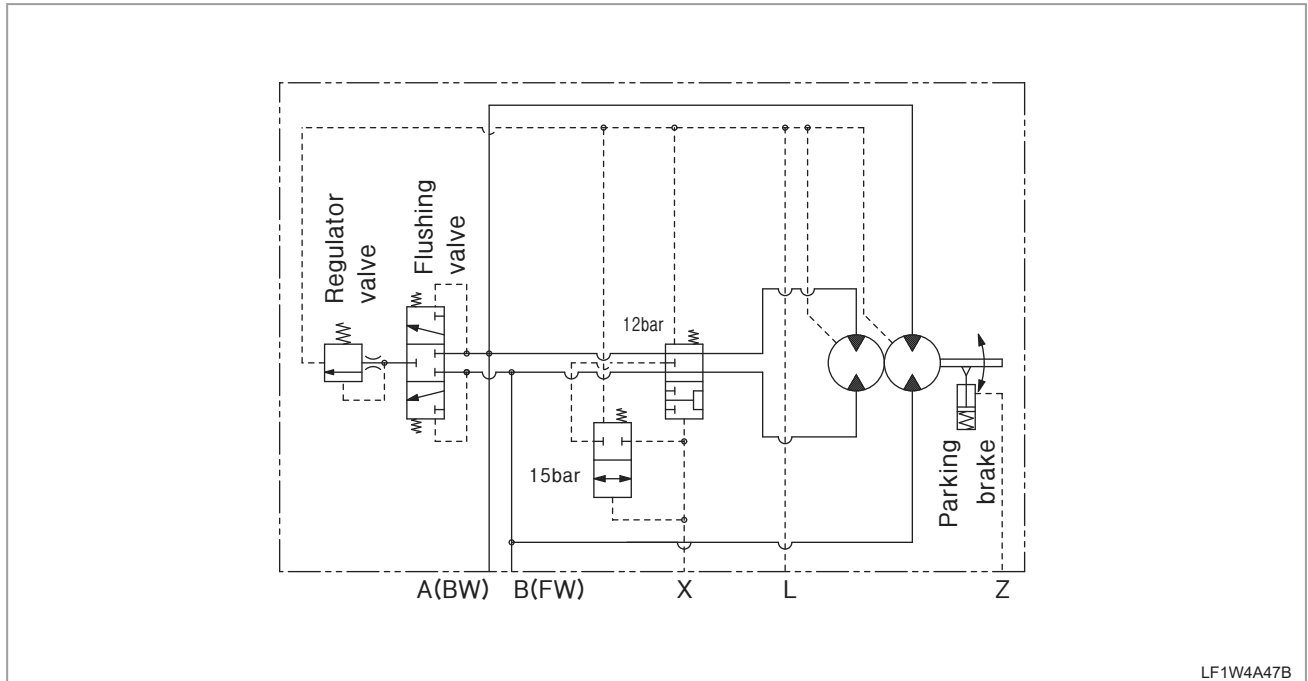


The HST motor consists of the front case (1), rear case (2), rotary groups (3, 4 & 8), cam (5), drive shaft (6), and distributor (7). It is connected through the chain to the sprocket of the axle that is independently connected to the left and right sides of the vehicle in order to drive in the forward or backward direction.

The cylinder block (4) is connected to the drive shaft that is fixed with splines while the pistons (3) are arranged radially in the cylinder block and make contact with the cam (5) through the roller (8).

The port A and port B located on the rear case deliver the oil to the chamber (E) through the distributor (7).

**2 SPEED OPERATION [HS120V-LQ / HS120V-LQF]**



LF1W4A47B

The motor can be switched into the low-torque high-speed mode in case that the equipment needs to be operated at a high speed with low motor load. This function is achieved by the functioning valve inside the motor that cuts the flow required to rotate the motor in half.

- Flushing valve

If the hydraulic oil continuously flows between the pump and motor in a closed circuit, it can be overheated. The flushing valve is designed to replace the hydraulic oil in the closed circuit with new hydraulic oil from the tank.

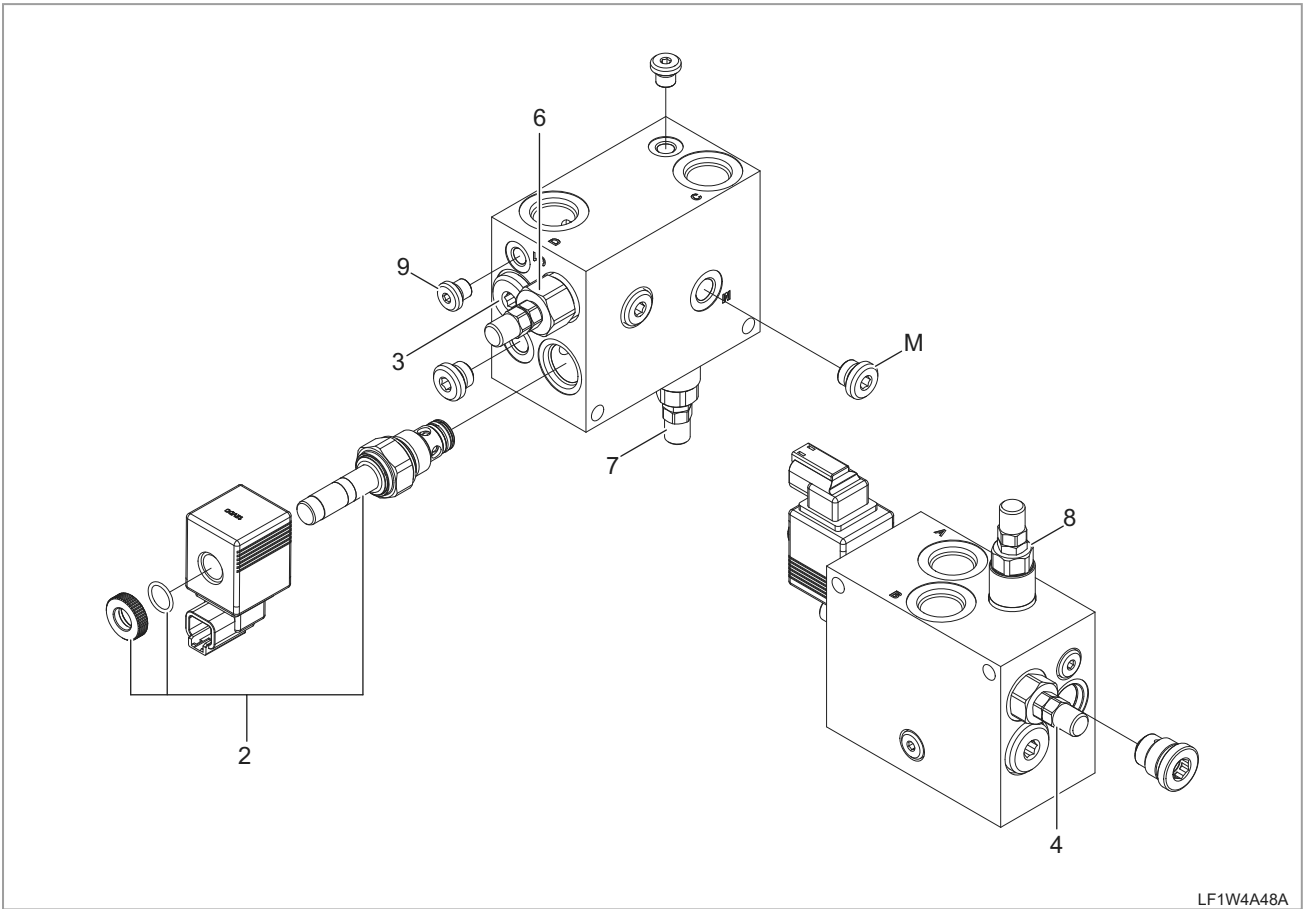
When the hydraulic motor operates in the clockwise or counterclockwise direction under load, the flushing valve opens and the oil escapes the closed circuit through the orifice on the low-pressure side. Once this oil is led to the motor case, it is returned to the tank through the drain line.

To charge the low-pressure side of the circuit, the oil cooled down by the pump is supplied from the tank to the pump inlet through the check valve. As such, the flushing valve achieves the continuous replacement and cooling of the hydraulic oil.

The relief valve is included in the flushing function in order to maintain the minimum pressure (charge pressure 23 bar).

4.2 SELF LEVEL VALVE

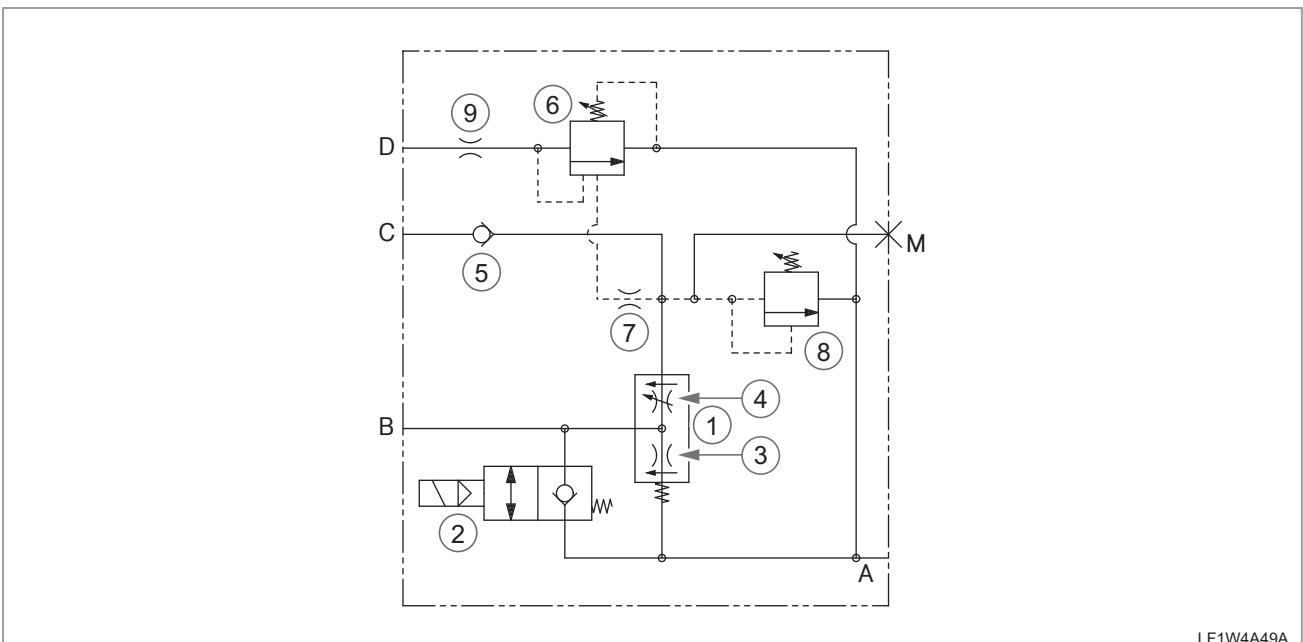
COMPONENTS



LF1W4A48A

- |                        |                         |                                |
|------------------------|-------------------------|--------------------------------|
| (1) Flow divider spool | (4) Control orifice     | (7) Lock valve damping orifice |
| (2) solenoid valve     | (5) Flow check valve    | (8) Main relief valve          |
| (3) Fixed orifice      | (6) Cylinder lock valve | (9) Anti-chattering orifice    |

CIRCUIT DIAGRAM



LF1W4A49A

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HYDRAULIC SYSTEM

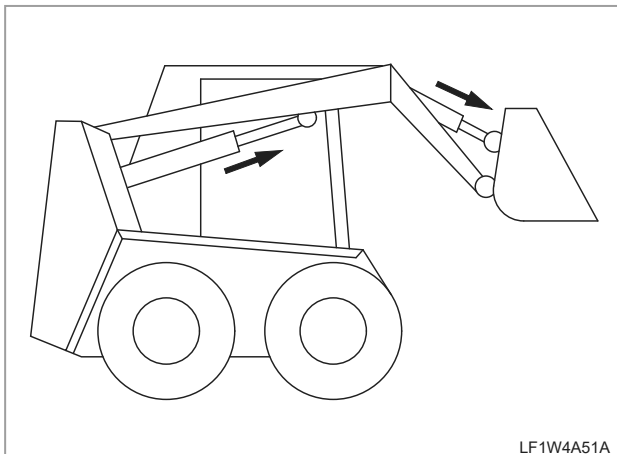
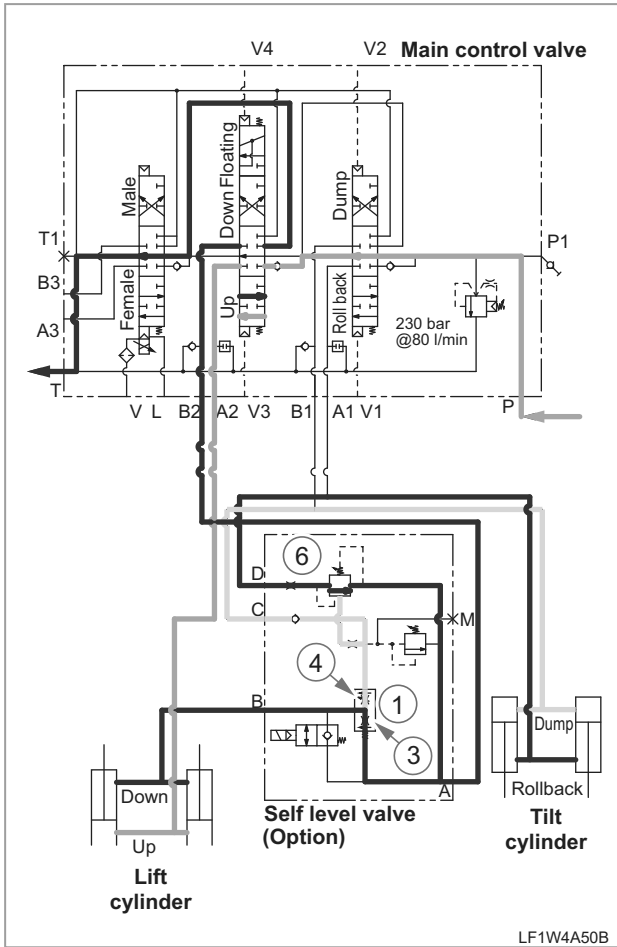
ELECTRIC SYSTEM

CABIN

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**SELF LEVELING**



To activate this function, press the self-leveling switch first.

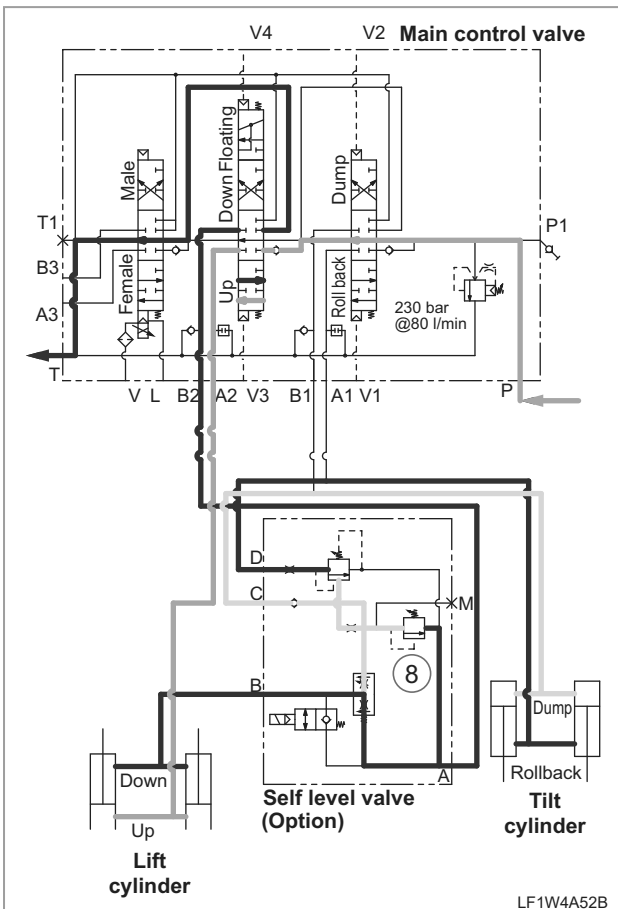
When the boom spool is pulled, the hydraulic oil from the control valve is led into the head port of the lift cylinder.

As the lift cylinder expands, the oil from the rod port flows directly to port B of the self-leveling valve. The oil entering port B passes through the fixing orifice (3) and adjusting orifice (4) in the flow divider spool (1).

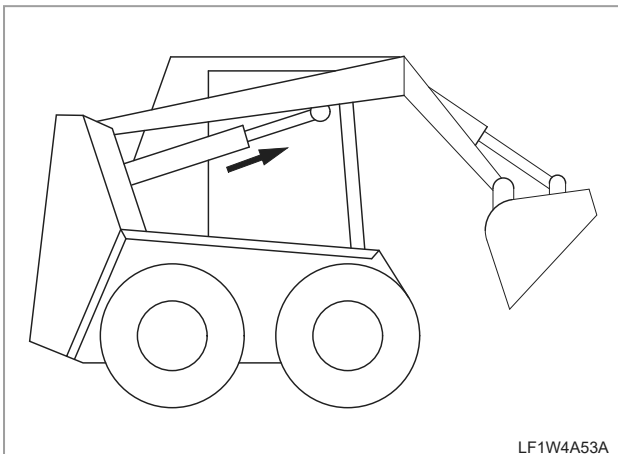
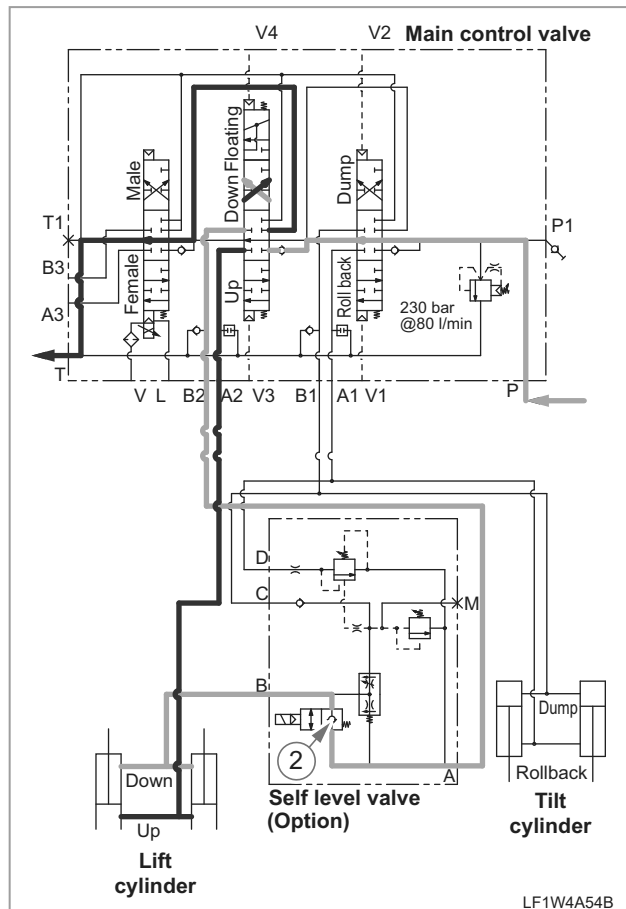
The split ratio of the hydraulic oil is determined by the setting of the adjusting orifice (4). The remaining oil is returned to the tank after it is returned to the control valve through the fixing orifice (3) and out port A. The oil passing through the adjusting orifice (4) flows to out port C, and then it is led to the head port of the tilt cylinder in a T form in order to extend the tilt cylinder.

The resistance from the tilt cylinder operation builds enough pressure to open the cylinder lock valve (6) of the self-leveling valve. When the tilt cylinder is extended, the oil from the rod port of the tilt cylinder flows to port D and passes through the cylinder lock valve (6) that is open. Then, it is returned to the control valve through out port A before it is finally returned to the tank.

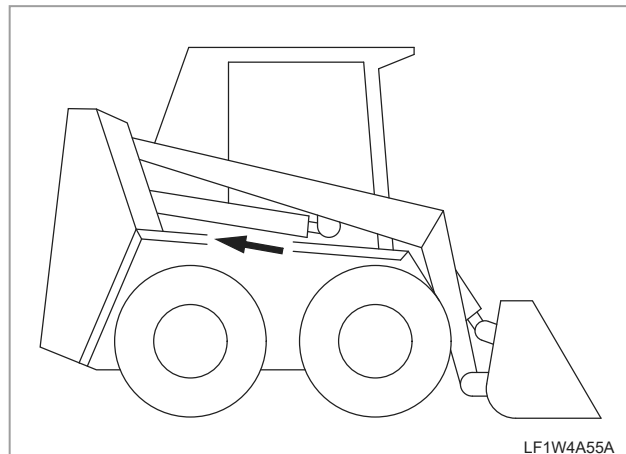
**RAISING THE BOOM WITH THE TILT CYLINDER FULLY EXTENDED**



**RETRACTING THE LIFT CYLINDER**



LF1W4A53A



LF1W4A55A

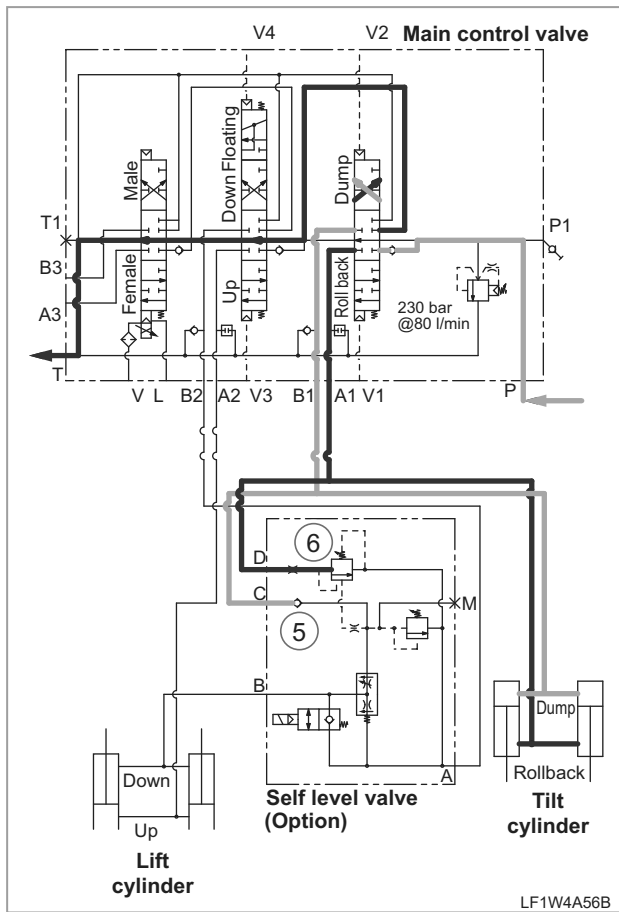
In the self-leveling state, the lift cylinder continues to rise even when extending it fully or moving the bucket spool to the dump position.

This is because the main relief valve (8) opens and the oil supplied to the tilt cylinder head port is returned to the tank, preventing the lift cylinder from stopping during the lift operation.

As the boom spool is pushed, the hydraulic oil is directly led into port A of the self-leveling valve.

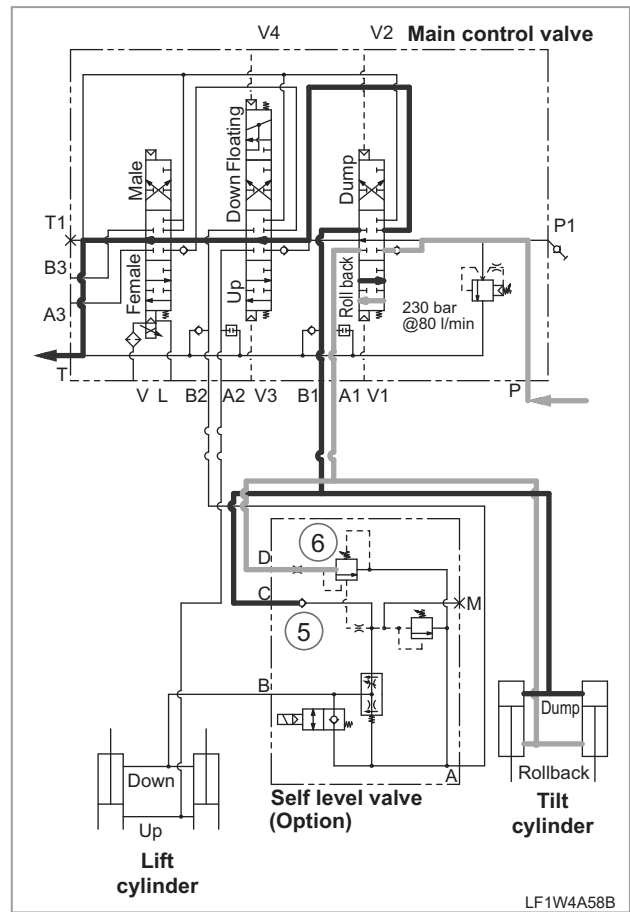
This hydraulic oil enters the self-leveling valve and opens the lift check valve (2). Then, it flows into the rod port of the lift cylinder due to the pressure difference between port B and flow divider spool, resulting in no extension of the tilt cylinder.

**EXTENDING THE TILT CYLINDER**

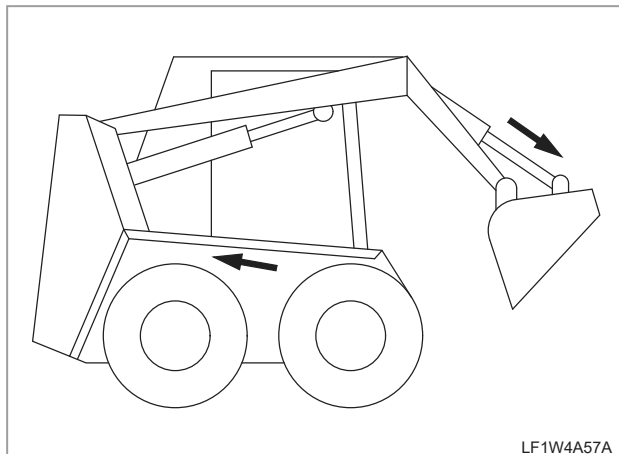


LF1W4A56B

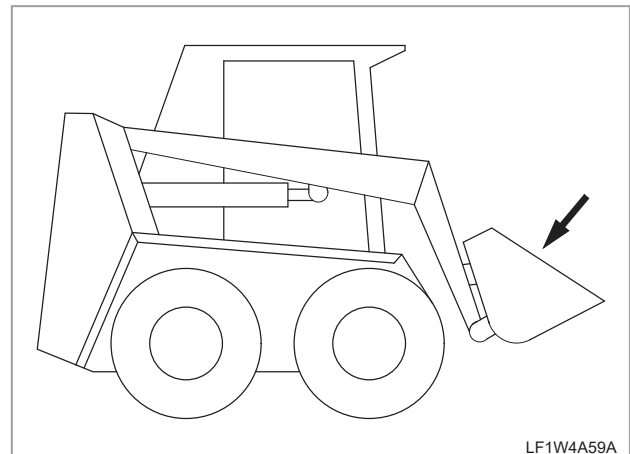
**RETRACTING THE TILT CYLINDER**



LF1W4A58B



LF1W4A57A



LF1W4A59A

As the bucket spool is pulled, the hydraulic oil is directly led to the head port of the tilt cylinder from the control valve. The hydraulic oil flows to port C, but it is also blocked by the flow check valve (5).

The oil from the rod port flows directly to the control valve and returns to the tank.

The returned oil goes to port D of the self-leveling valve, but it is blocked by the cylinder lock valve (6).

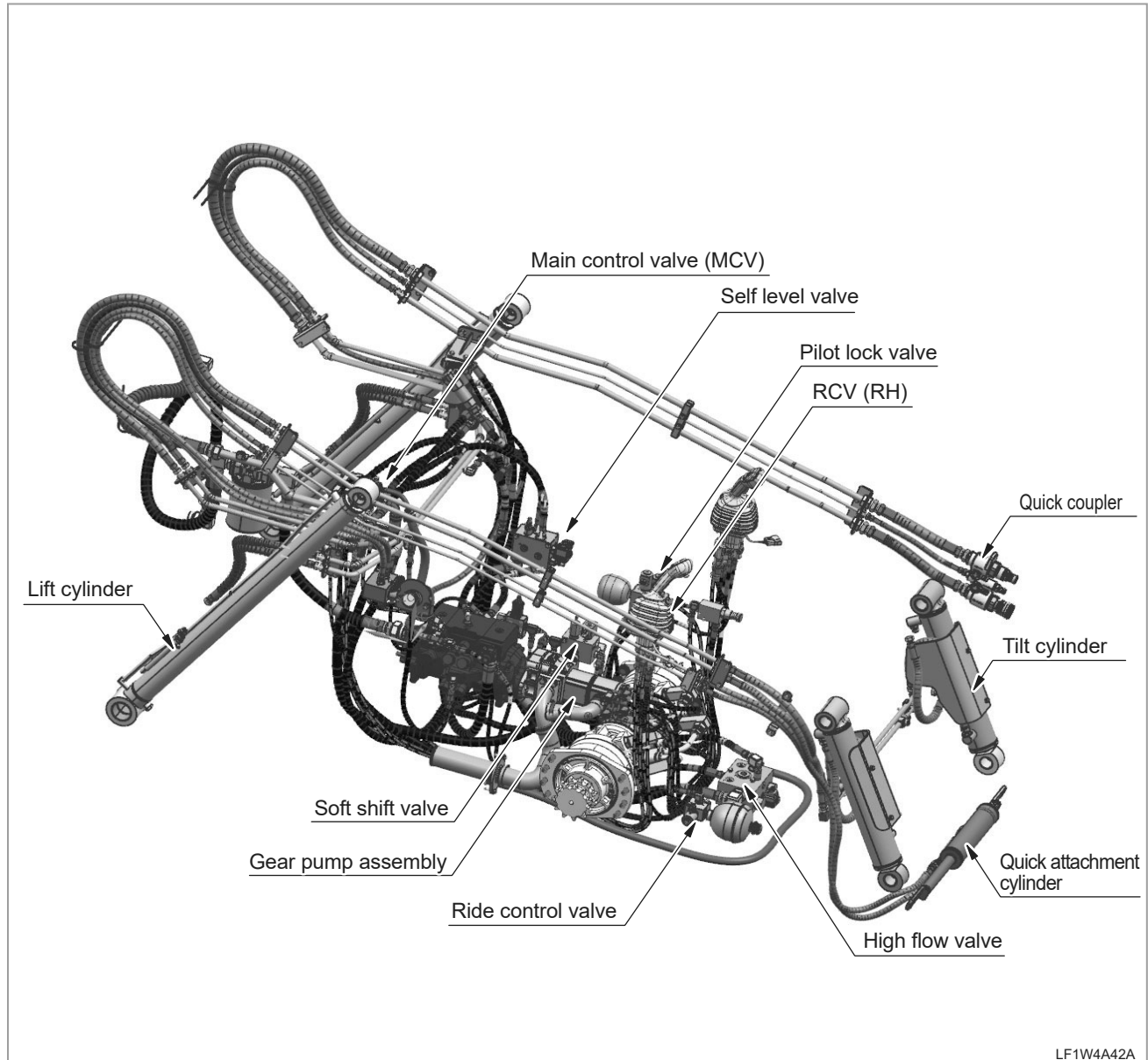
As the bucket spool is pushed, the hydraulic oil is directly led into the rod port of the tilt cylinder.

The hydraulic oil also flows to port D of the self-leveling valve through the connection T, but it is blocked by the cylinder lock valve (6).

The oil that has returned from the head port flows directly to the control valve and returns to the tank.

The oil from the head port also flows to port C of the self-leveling valve through the connection T, but it is blocked by the flow check valve (5).

4.3 RCV (R/H)



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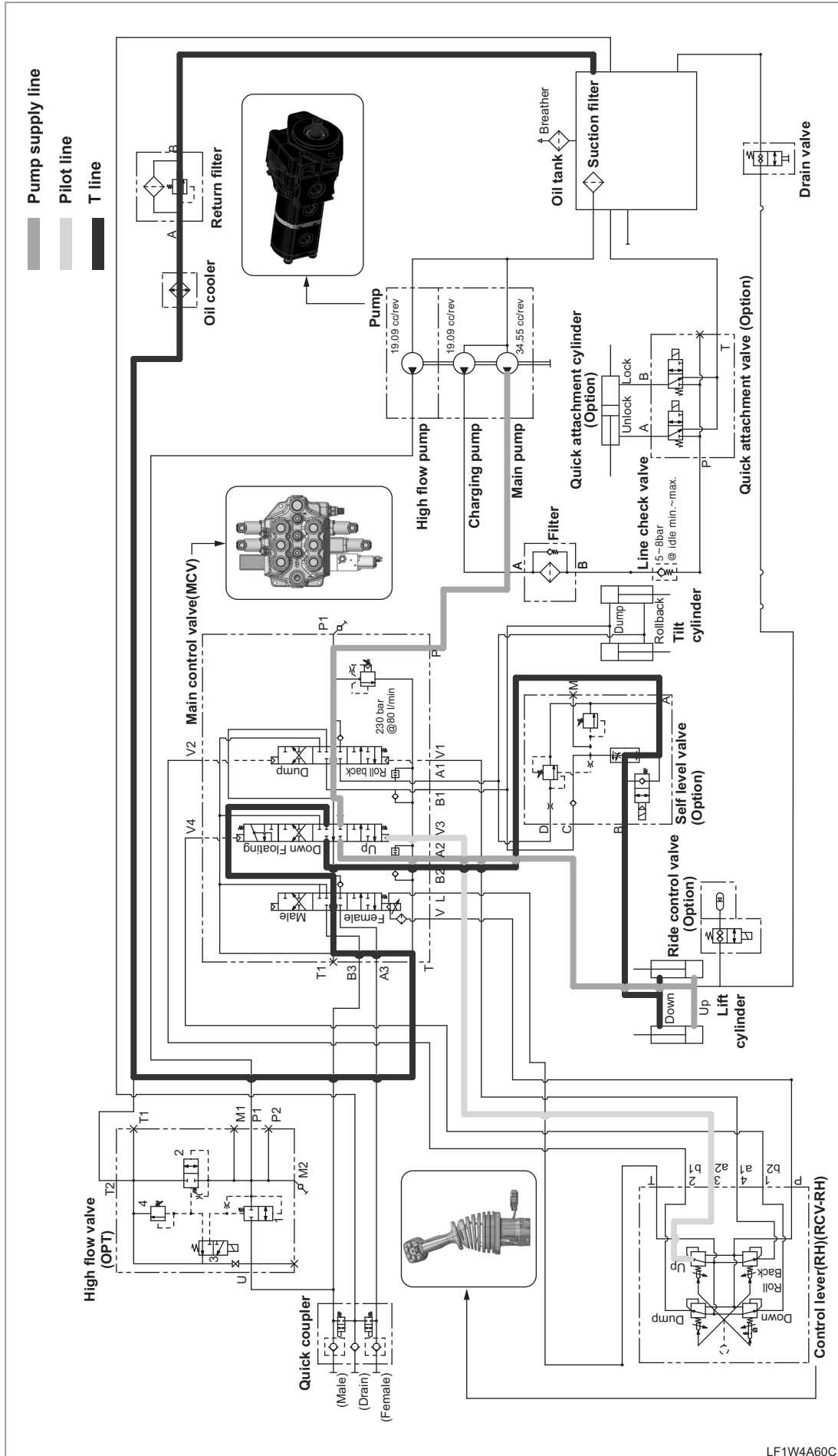
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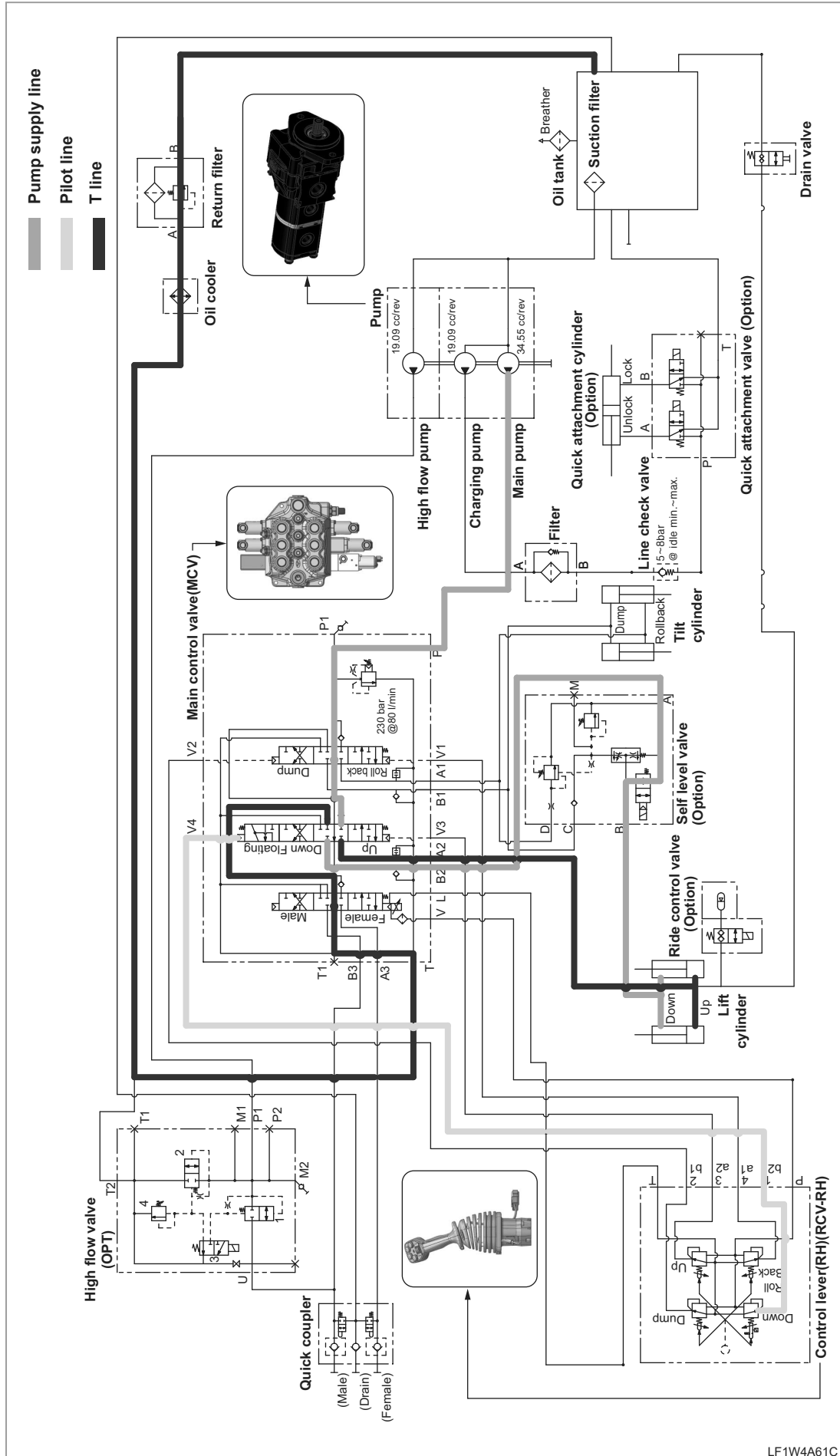
4.3.1 BOOM OPERATION (UP)



**RCV(RH)(Joystick lever) pulled backward**

- 1) Pilot line : RCV-RH → MCV (switches to UP direction)
- 2) Pump supply line : Gear pump → MCV → Lift cylinder head → Boom up
- 3) T line : Lift cylinder rod → Self-leveling valve port A → MCV → Oil tank

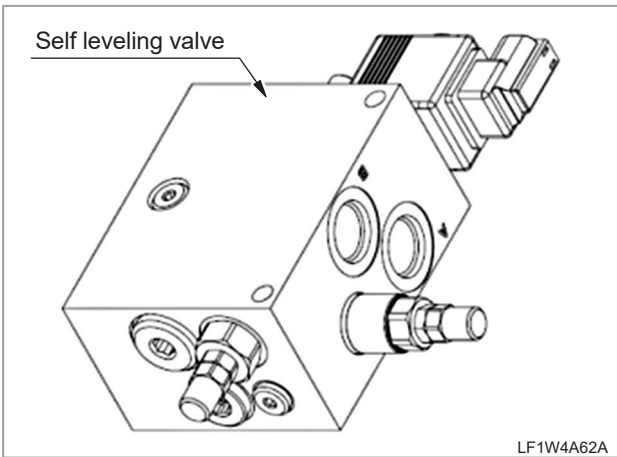
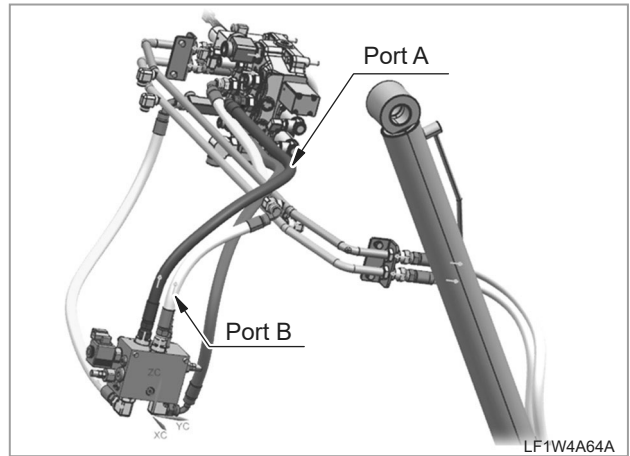
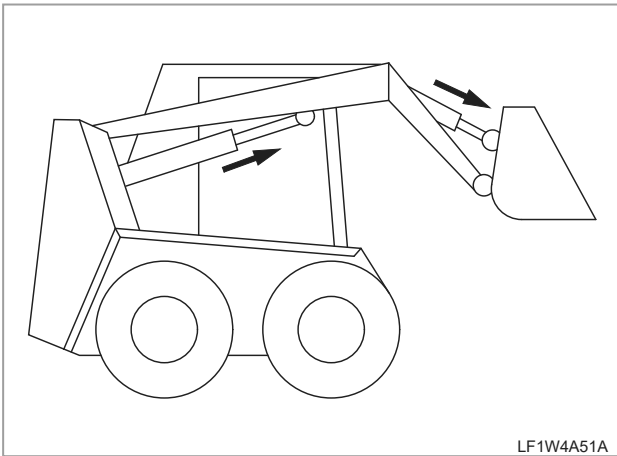
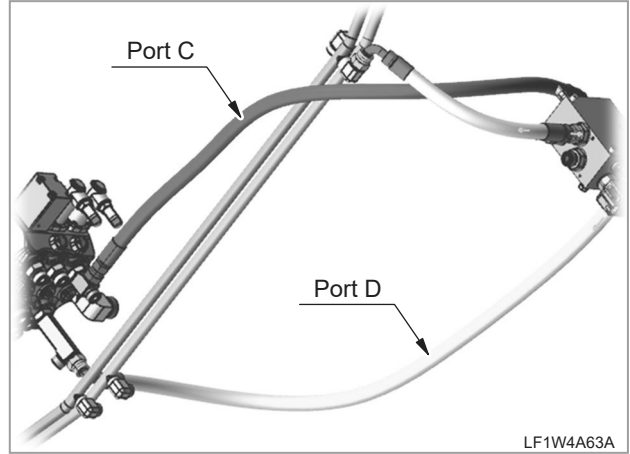
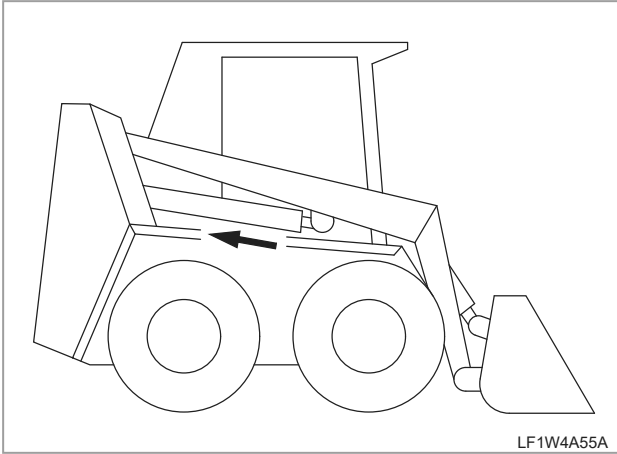
4.3.2 BOOM OPERATION (DOWN)



**RCV(RH)(Joystick lever) pulled forward**

- 1) Pilot line : RCV-RH → MCV (switches to DOWN direction)
- 2) Pump supply line : Gear pump → MCV → Lift cylinder rod → Boom down
- 3) T line : Lift cylinder head → MCV → Oil tank

4.3.3 SELF LEVELING



► SELF LEVELING FUNCTIONS

The rollback of the bucket during boom up operations reduces work efficiency. The self-leveling valve diverts some of the flow from the lift cylinder toward the tilt cylinder in order to maintain the horizontal position of the bucket. This function is known as self-leveling.

- Type : Hydraulic (Boom up leveling)
- Flow rate : 49 ℓ/min (Boom up)
- Maximum operation pressure : 210 bar

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ENGINE

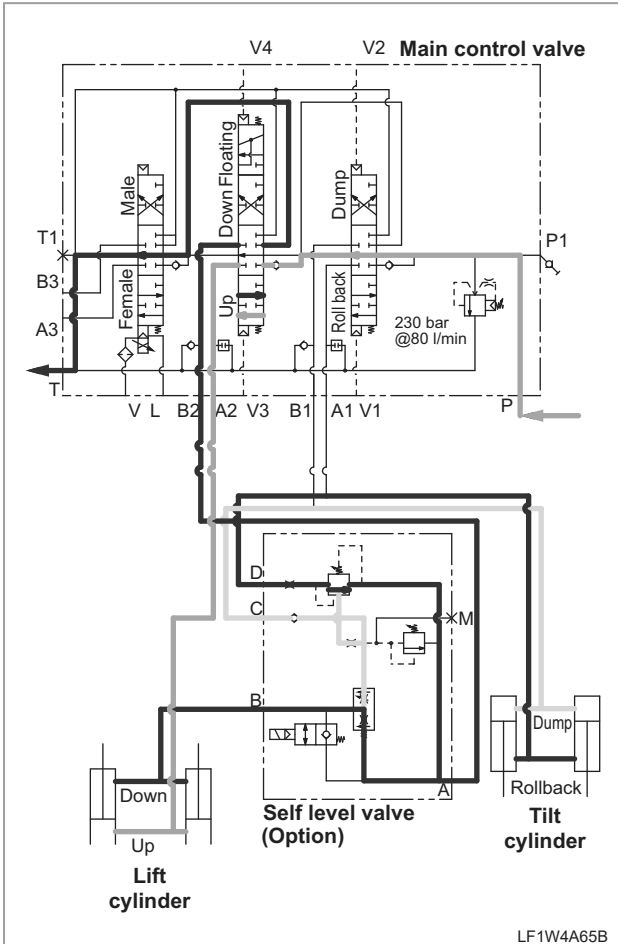
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HYDRAULIC SYSTEM

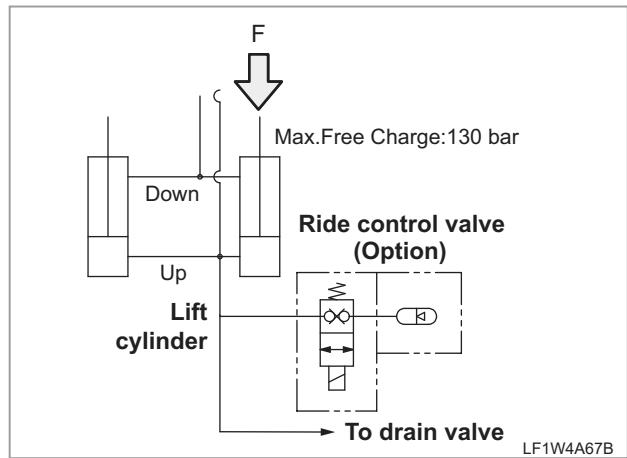
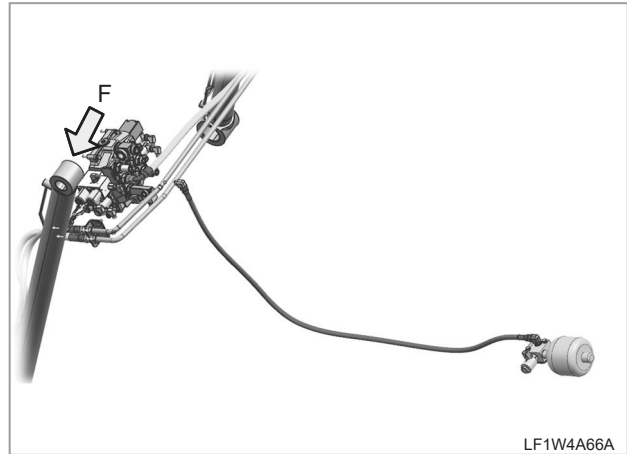
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4.3.4 RIDE CONTROL



► BUCKET LOWERED ON THE GROUND

Boom up → Port B → Port A, Port C → Bucket dump

► TILT CYLINDER BEING FULLY EXTENDED

Boom up → Port B → Port A → MCV → Oil tank

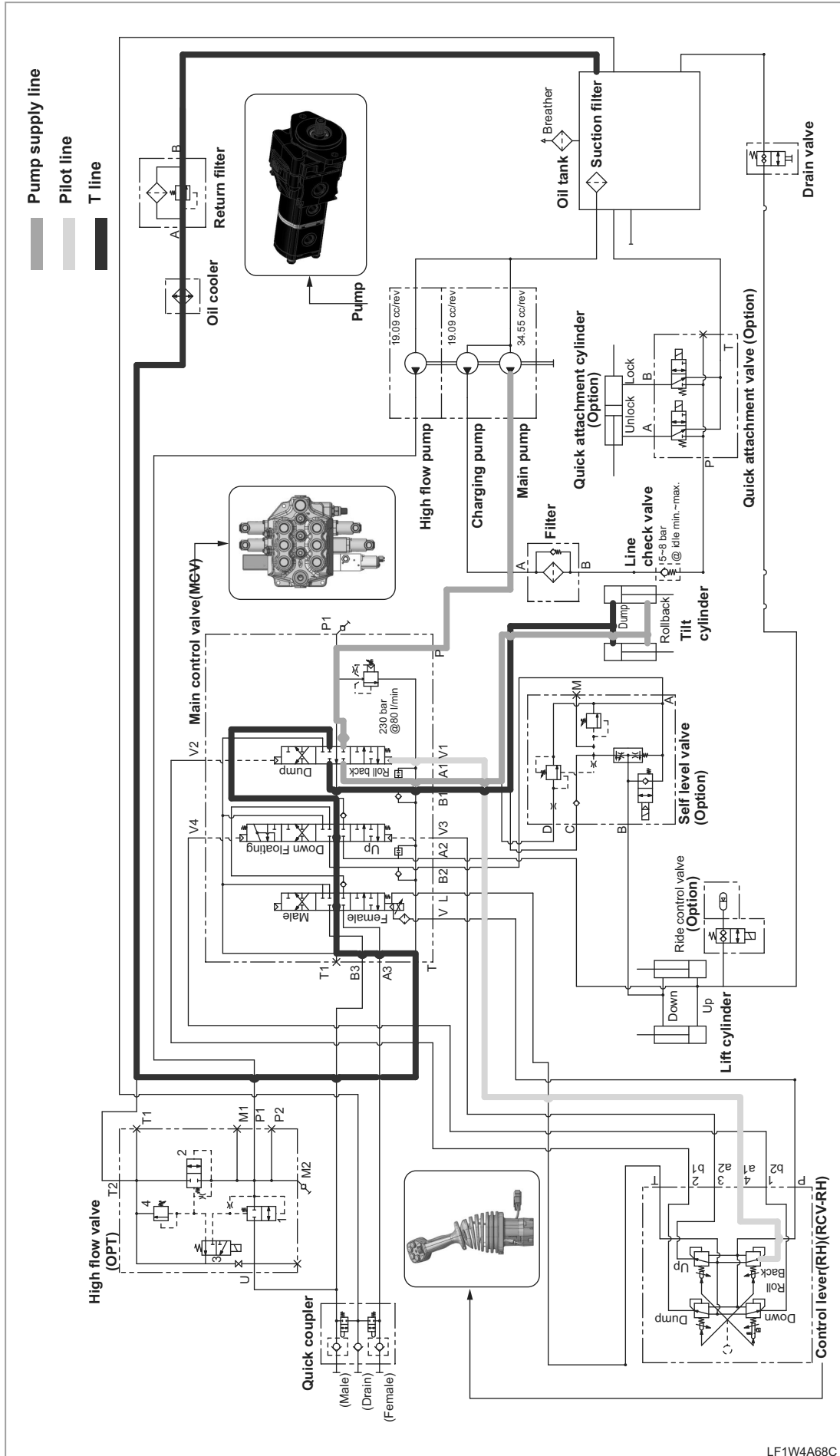
\* The proportion of the division of the flow rate is determined by the setting of the adjustment orifice (4).

► RIDE CONTROL FUNCTIONS

When driving on uneven ground, the gravel in the bucket may pour out as the machine shakes due to the force applied to the lift cylinder. When the ride control function is used, the accumulator absorbs this force to enable more stable operation while the skid loader is traveling.



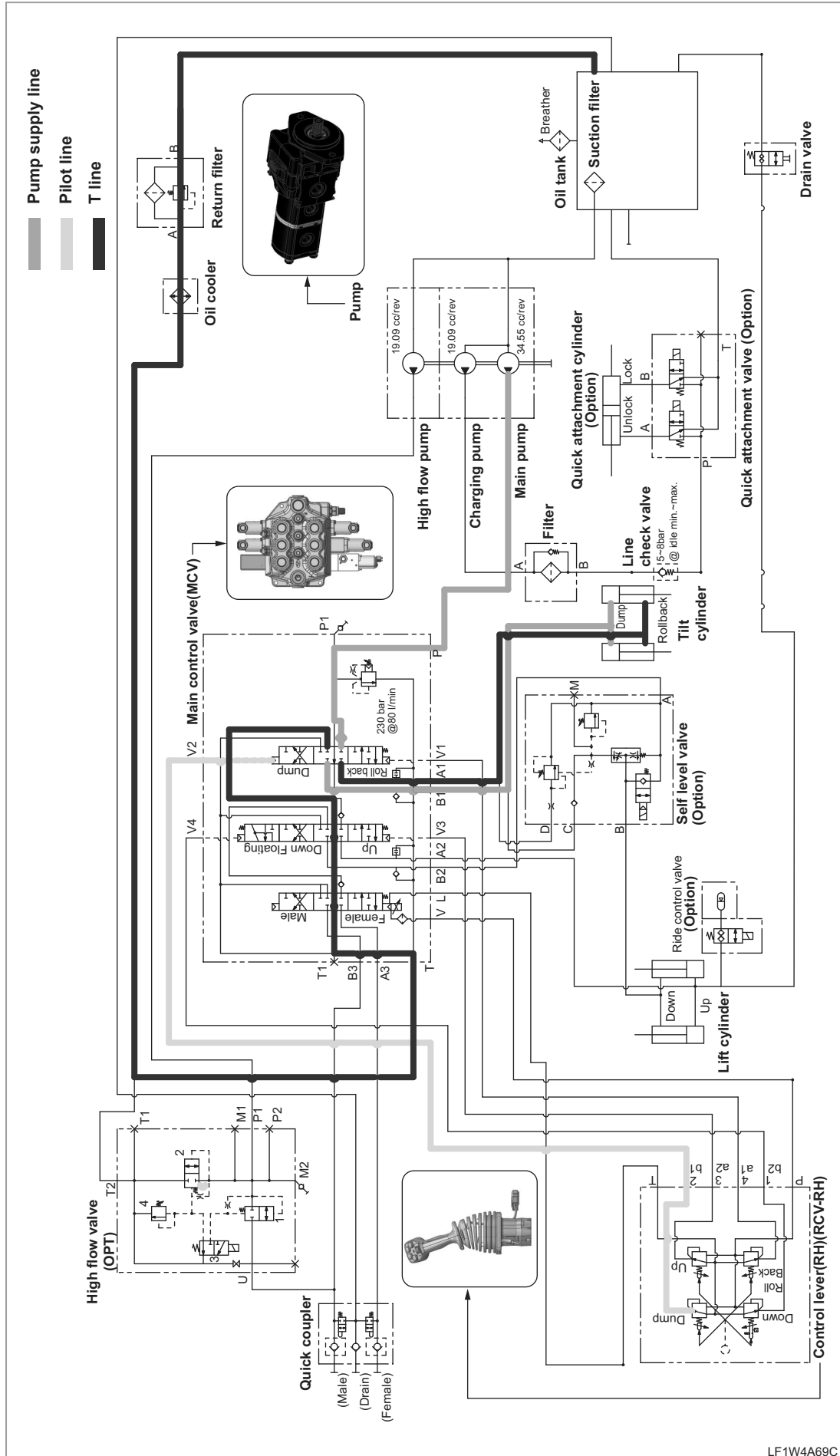
4.3.5 BUCKET OPERATION (ROLL BACK)



**RCV(RH)(Joystick lever) pushed to the left**

- 1) Pilot line : RCV-RH → MCV (switches to rollback direction)
- 2) Pump supply line : Gear pump → MCV → Tilt cylinder rod → Bucket roll back
- 3) T line : Tilt cylinder head → MCV → Oil tank

4.3.6 BUCKET OPERATION (DUMP)

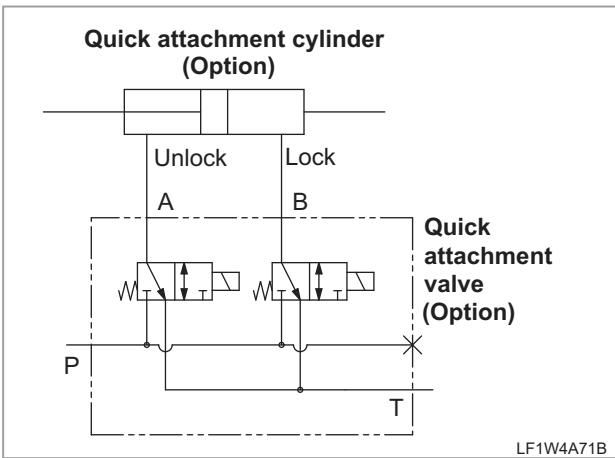
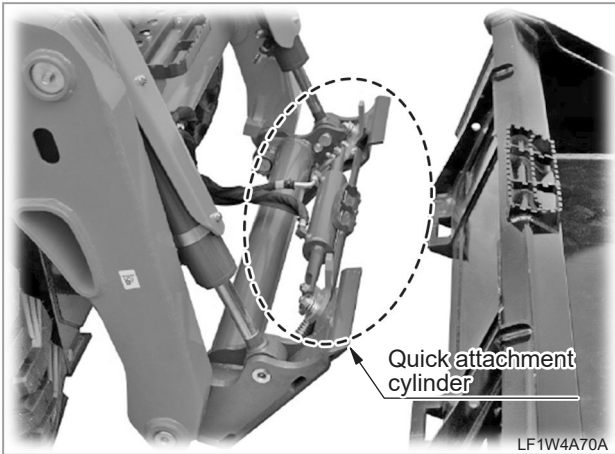


RCV(RH)(Joystick lever) pushed to the right

- 1) Pilot line : RCV-RH → MCV (switches to dump direction)
- 2) Pump supply line : Gear pump → MCV → Tilt cylinder head → Bucket dump
- 3) T line : Tilt cylinder rod → MCV → Oil tank

LF1W4A69C

4.3.7 QUICK ATTACHMENT



► QUICK ATTACHMENT FUNCTIONS

Previously, in order to mount the bucket on the skid loader, the attachment lever had to be locked manually. As a result, there was the inconvenience of having to leave the machine in order to mount the bucket. As shown in the figure above, the quick attach cylinder and valve enable the operator to mount the bucket with a single button without having to leave the machine itself.

4.3.8 EXTERNAL IMPLEMENT

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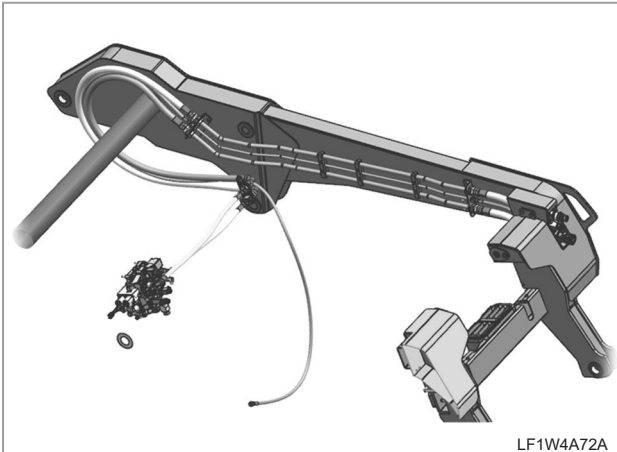
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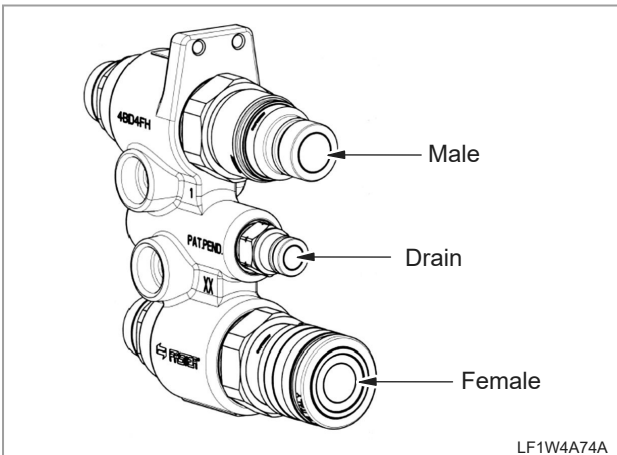
GENERAL



LF1W4A72A



LF1W4A73A

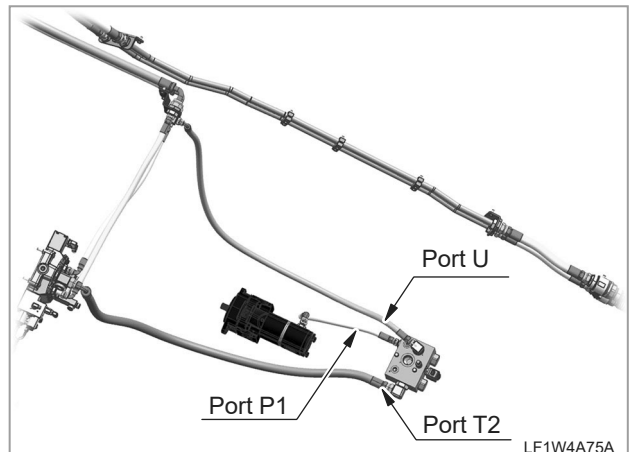


LF1W4A74A

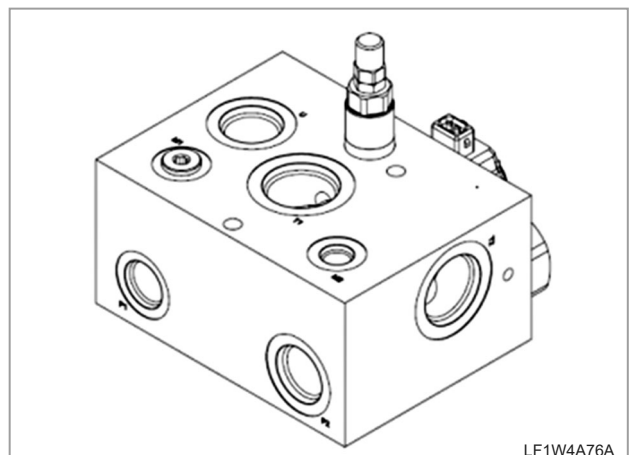
► EXTERNAL IMPLEMENT FUNCTIONS

Necessary when using an implement aside from the bucket, this function actuates the implement with hydraulics by connecting the quick coupler and implement with hydraulic hoses

HIGH FLOW



LF1W4A75A

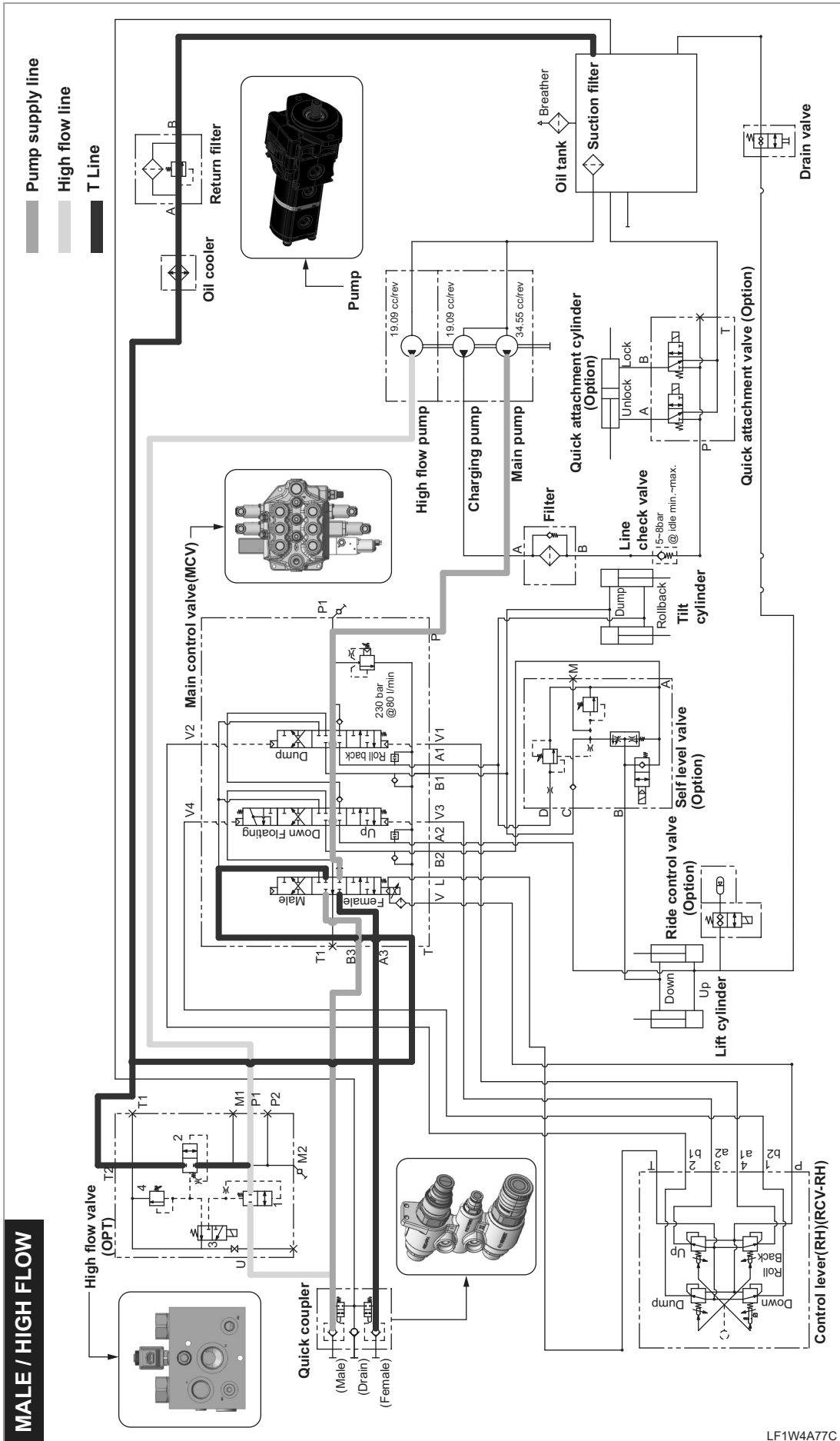


LF1W4A76A

► HIGH FLOW VALVE FUNCTIONS

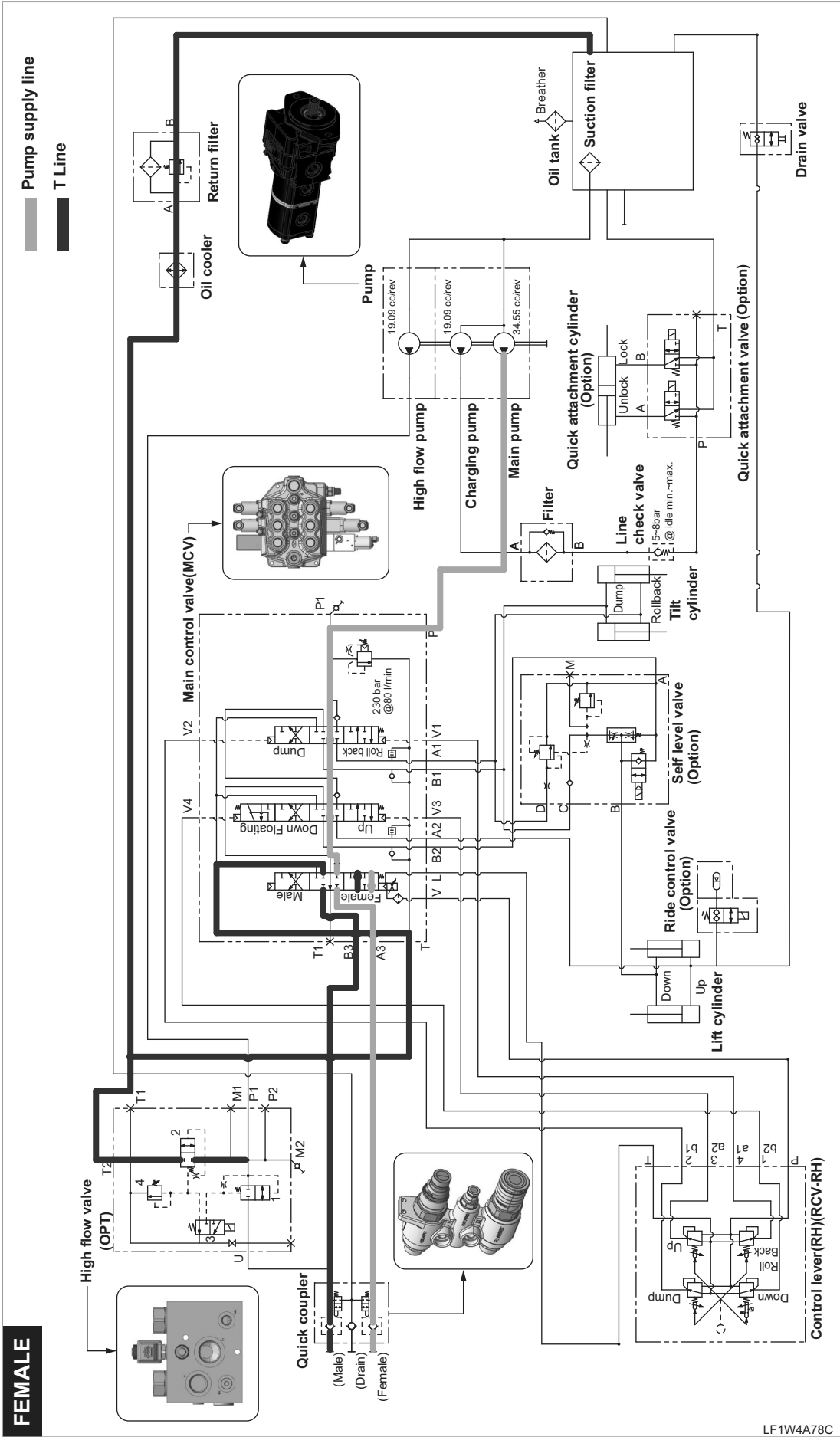
This option is necessary when using an implement which requires a relatively high flow rate. It increases the flow rate to the quick coupler by means of a high-flow pump and valve.

- Max. operating pressure : 210 bar
- Max. flow : 150 l/min



**RCV(RH)(Joystick lever) "male" button pushed**

- 1) MCV solenoid "On" → Switches to Male
- 2) Pump supply line : Gear pump → MCV → Quick coupler (male)
- 3) T line : Quick coupler (female) → MCV → Oil tank



LF1W4A78C

**FEMALE**

**RCV(RH)(Joystick lever) "Female" button pushed**

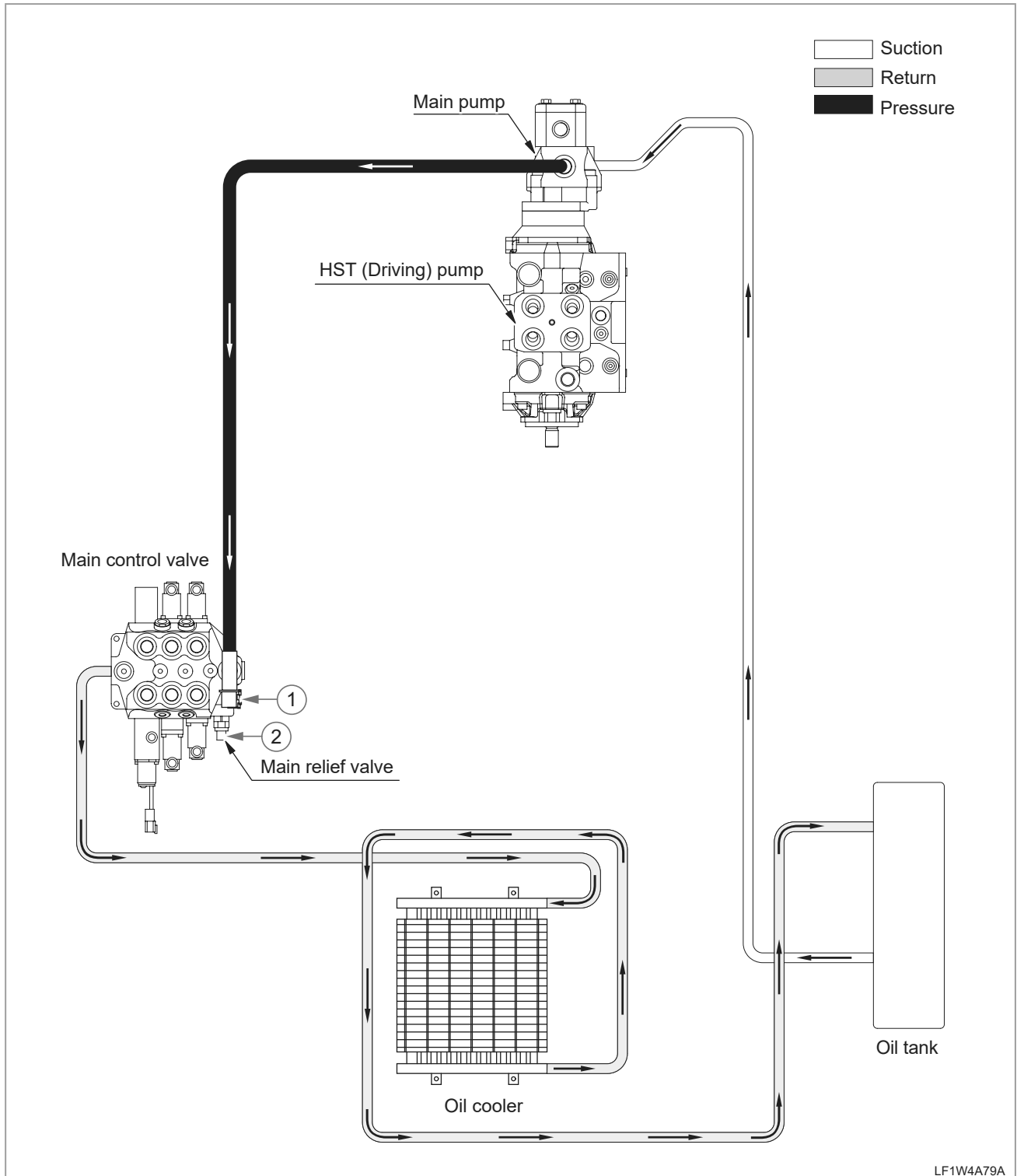
- 1) MCV solenoid "On" → Switches to Female
- 2) Pump supply line : Gear pump → MCV → Quick coupler (female)
- 3) T line : Quick coupler (male) → MCV → Oil tank

**REMARKS**

- The female coupler shuts off the high-flow function electrically, so pressing the high-flow switch does not activate the high-flow function.

5. CHECK & ADJUSTMENT

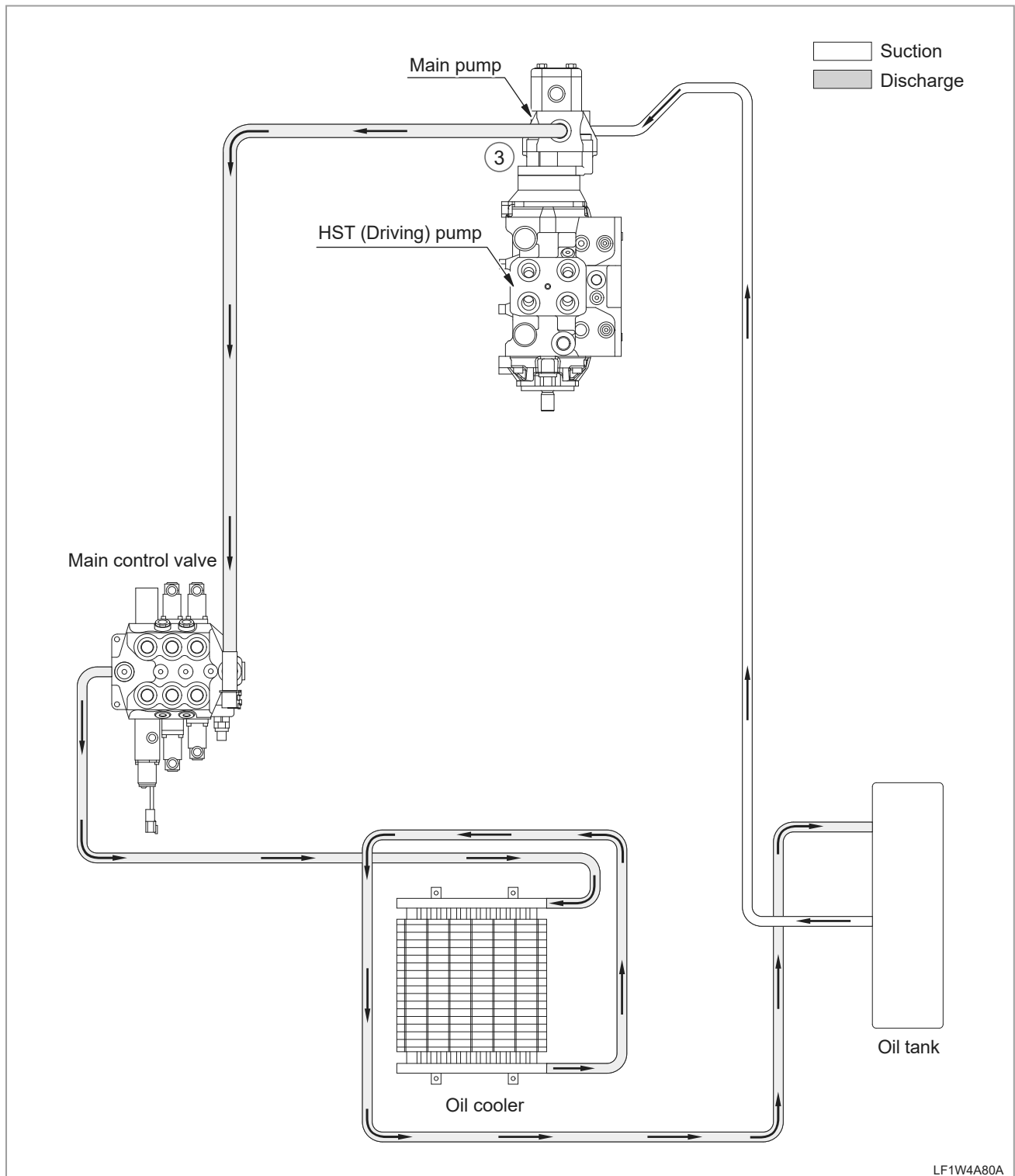
5.1 MAIN CONTROL VALVE (MCV) SYSTEM PRESSURE



Install a pressure gauge on the position (1), and then move the RCV (RH) (joystick lever) to the right with the engine running at 2,550 RPM. The pressure gauge should indicate 230 bar. If not, adjust or replace the main relief valve on the position (2).

(Port size (1) : M16 x 2.0)

5.2 MAIN PUMP FLOW RATE



Install a flowmeter on position (3) and measure the flow with the engine running at 2,550 RPM. The flowmeter should indicate 66 lpm. If the measured flow is below 52.8 lpm, the main pump is excessively worn. In this case, repair or replace it.

(Port size (3) : O-ring boss elbow SAE 1-1/16-12UN)

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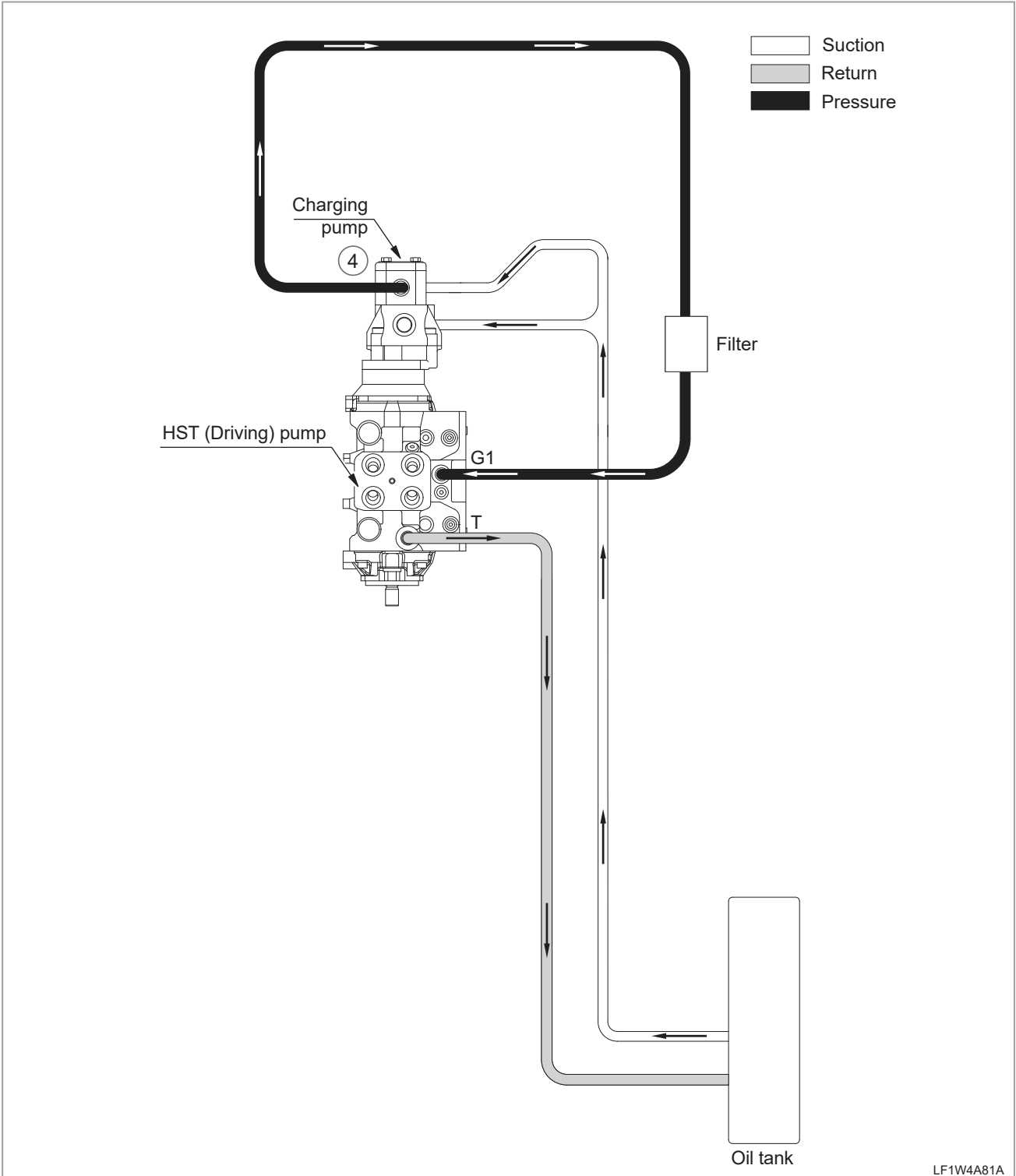
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5.3 CHARGING PUMP PRESSURE

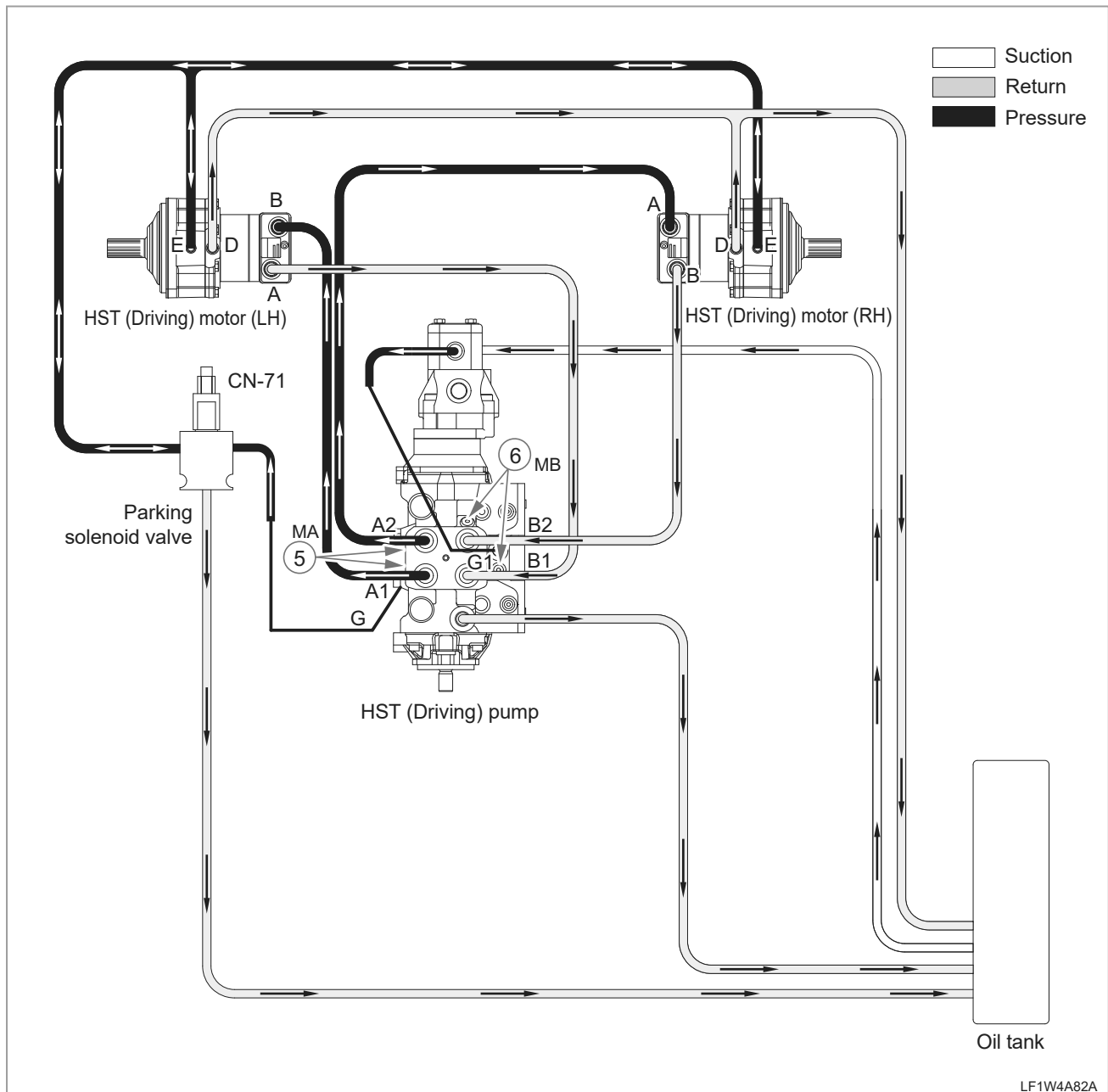


Install a pressure gauge on the position (4) and measure the pressure with the engine idling at a low speed. The gauge should indicate 23-25 bar. If not, replace the relief valve of the charge pump as it cannot be adjusted.

(Port size (4) : O-ring boss connector 7/8-14UNF)

(Almost identical pressure is measured at the parking solenoid valve supply section that has a pressure port.)

## 5.4 HST (DRIVING) PUMP PRESSURE



For the HST (driving) pump valve block, the four relief valves should be inspected. All of the relief valves have the same setting and they are located as shown in the above figure.

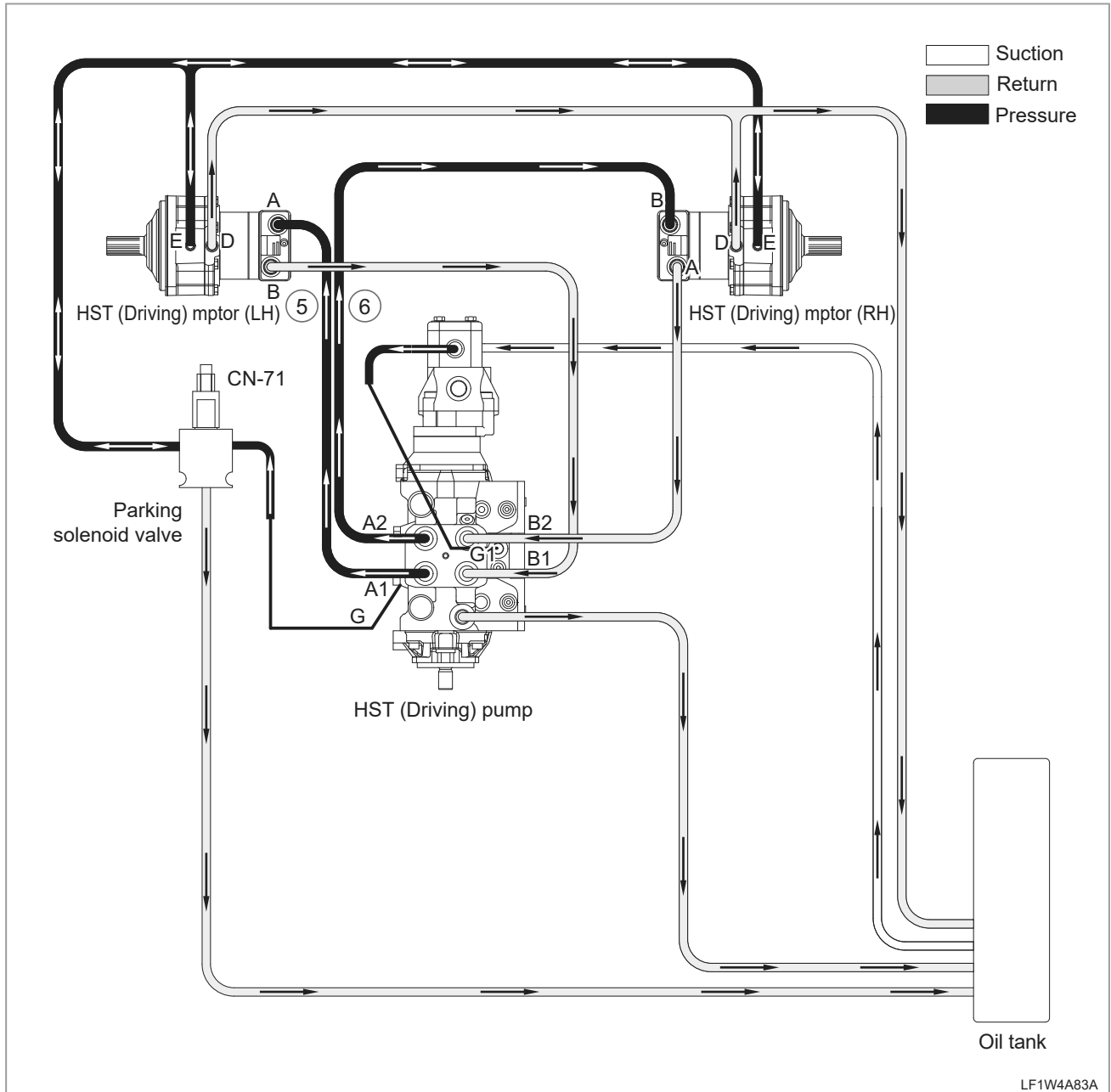
Example: The shaded area in the above figure for the driving circuit hydraulic oil flow diagram shows the flow of the hydraulic oil for the inspection of the relief valve cartridge when the right-hand HST (driving) motor moves in the forward driving direction.

Install a pressure gauge on the position (6), run the engine at 2,550 RPM, and then raise the seat bar to apply the parking brake. Push the RCV (RH) (joystick lever) forward slowly to bring driving to a stop. The gauge should indicate 360 bar at this moment. If the measured pressure is incorrect, replace the relief valve cartridge under the port, as it is not adjustable.

According to the hydraulic oil flow diagram above, install pressure gauges on the positions (5 & 6) and test the three relief valve cartridges. With the engine running at 2,550 RPM, raise the seat bar to apply the parking brake. Then, move the RCV (LH) and RCV (RH) (joystick levers) forward/backward slowly to bring driving to a stop.

(Port size (5), (6) : O-ring boss connector 9/16-18UNF)

5.5 HST (DRIVING) PUMP FLOW RATE



Before performing the pump oil flow test, lift up the loader and use jack stands or chocks to keep the four wheels off the ground.

Perform the oil flow test to measure the oil flow of the left-hand and right-hand HST (driving) pumps. According to the above HST (driving) circuit oil flow diagram, install flowmeters on the positions (5 & 6) and test the forward driving oil flow of the HST (driving) motors (LH/RH). With the engine running at 2,550 RPM, the gauge should indicate 100 lpm. At this moment, fully push the RCV (LH) joystick lever forward/backward to a stop.

If the measured flow is approx. 85 lpm or lower, the HST (driving) pump is worn, so repair or replace it with a new one.

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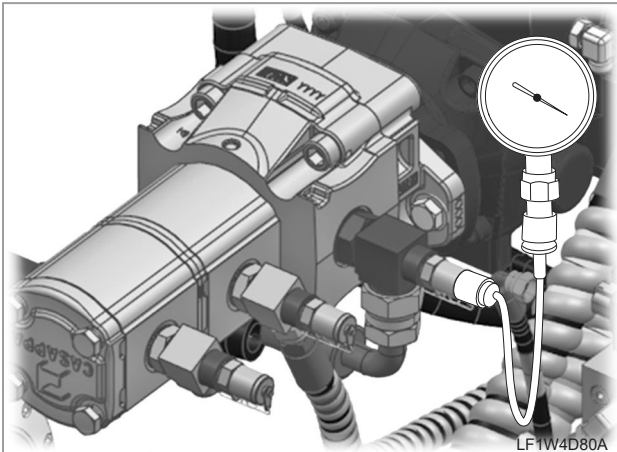
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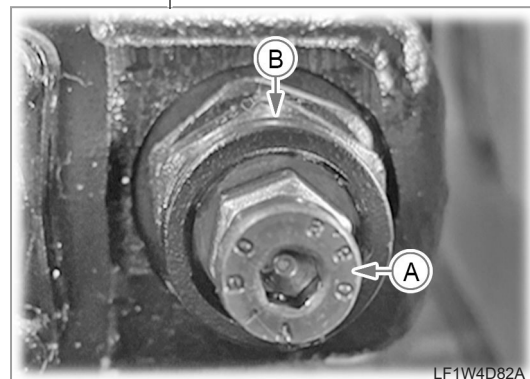
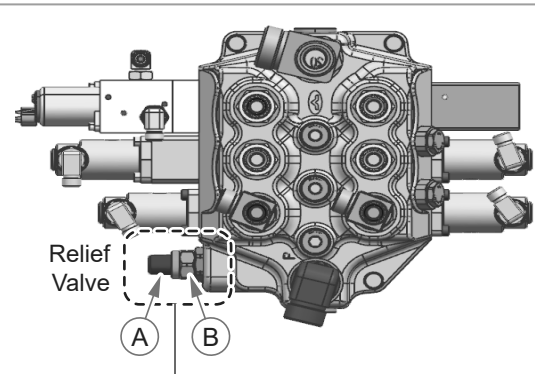
## 5.6 RELIEF PRESSURE SETTING



1. Install a pressure gauge (300 bar or higher) on the pressure gauge port (M16 P2.0) of the main pump.
2. After starting the engine, run it at  $2,550 \pm 50$  rpm and move the bucket to the lowest position.
3. Raise the oil temperature up to  $50^\circ \pm 5^\circ$ . Then, check the pressure when the main relief valve is activated while lowering the boom.
4. If the measured pressure is not  $230 \pm 5$  bar, adjust the relief valve of the MCV (Main Control Valve) for correct specified pressure.

### REMARKS

#### RELIEF VALVE ADJUSTMENT



LF1W4D82A

LF1W4D81A

- After securing the adjusting bolt (A) from rotating, unscrew the mounting nut (B) and turn the adjusting bolt to set the relief valve pressure. (Clockwise: increasing pressure, Counterclockwise: decreasing pressure)
- After setting the correct pressure, tighten the mounting nut (B) fully with the adjusting bolt (A) fixed.
- Tools needed
  - Adjusting bolt (A) : 5 mm L Wrench
  - Mounting nut (B) : 13 mm or 1/2 inch Spanner

6. TROUBLESHOOTING

SYMPTOM	CAUSES	REMEDY
The hydraulic oil pressure is weak. (The oil does not flow in the charge and main pumps.)	<ul style="list-style-type: none"> <li>• Insufficient oil in the tank</li> <li>• Damaged coupling between the engine and pump</li> <li>• Malfunctioning main pump</li> <li>• Defective main pump shaft</li> <li>• Faulty spline coupling between front/rear pumps</li> </ul>	<ul style="list-style-type: none"> <li>• Check for leakage and add the oil to the tank.</li> <li>• Check for any damaged part and replace it as necessary. Check for proper alignment.</li> <li>• Check for any damaged part, and replace it as necessary.</li> <li>• Check for any damaged part, and replace it as necessary.</li> <li>• Check for any damaged part, and replace it as necessary.</li> </ul>
The hydraulic oil pressure is weak. (The oil flows in the charge and main pumps.)	<ul style="list-style-type: none"> <li>• Locked auxiliary valve spool</li> <li>• Disconnected or stuck component linkage</li> <li>• Defective relief valve and repair impossible</li> </ul>	<ul style="list-style-type: none"> <li>• Unlock it.</li> <li>• Check and adjust or repair it.</li> <li>• Check the pressure and repair as necessary.</li> </ul>
The hydraulic operation is not smooth, but intermittent.	<ul style="list-style-type: none"> <li>• Insufficient oil in the tank</li> <li>• Worn or loose component linkage</li> <li>• Air in the hydraulic system</li> <li>• Rod check valve inoperable</li> <li>• The control valve spool spring won't return</li> </ul>	<ul style="list-style-type: none"> <li>• Check for leakage and add oil to the tank.</li> <li>• Check and adjust or replace any damaged part.</li> <li>• Check for oil leakage between the oil tank and pump. Operate the lift cylinder several times to bleed the system.</li> <li>• Check and replace any damaged part.</li> <li>• Check and replace any damaged part.</li> </ul>
The boom rises slowly.	<ul style="list-style-type: none"> <li>• Insufficient oil in the tank</li> <li>• Defective component linkage</li> <li>• Locked auxiliary switch</li> <li>• Exceeding rated capacity</li> <li>• Excessively low engine RPM</li> </ul>	<ul style="list-style-type: none"> <li>• Check for leakage and add the oil to the tank.</li> <li>• Check and adjust it.</li> <li>• Unlock the auxiliary switch.</li> <li>• Reduce the load.</li> <li>• Check and readjust the engine RPM.</li> </ul>
The boom rises slowly at the maximum RPM.	<ul style="list-style-type: none"> <li>• Defective or incorrectly adjusted relief valve</li> <li>• Leakage from the lift cylinder piston seal</li> <li>• Internal leakage from the main pump</li> <li>• Internal leakage from the control valve</li> </ul>	<ul style="list-style-type: none"> <li>• Check the pressure and adjust or repair it.</li> <li>• Check for leakage of the piston seal and repair it as necessary.</li> <li>• Test and repair the main pump.</li> <li>• Check and repair the control valve.</li> </ul>
The boom and bucket cylinder cannot overcome the load.	<ul style="list-style-type: none"> <li>• External oil leakage between the control valve and cylinder</li> <li>• Incorrectly centered control valve spool</li> <li>• Oil leakage from one or both lift cylinder piston seal(s)</li> <li>• Internal leakage from the control valve</li> </ul>	<ul style="list-style-type: none"> <li>• Check and repair it.</li> <li>• Check if the control lever is stuck and repair it.</li> <li>• Check if the spring return device of the control valve spool is damaged.</li> <li>• Check for leakage of the piston seal and repair it as necessary.</li> <li>• Check and repair the control valve.</li> </ul>
The hydraulic oil warning lamp is turned on. The hydraulic oil is overheated.	<ul style="list-style-type: none"> <li>• Insufficient oil in the tank</li> <li>• Clogged or contaminated oil cooler or engine radiator</li> <li>• Locked auxiliary switch</li> <li>• Excessively low engine RPM</li> <li>• Engine cooling fan rotating in the opposite direction</li> <li>• Defective or incorrectly adjusted relief valve</li> <li>• Defective temperature sensor switch</li> <li>• Faulty hydraulic oil</li> </ul>	<ul style="list-style-type: none"> <li>• Check for leakage and add the oil.</li> <li>• Clean the oil cooler fins.</li> <li>• Unlock the auxiliary switch.</li> <li>• Check and readjust the engine RPM.</li> <li>• Check and reinstall the fan.</li> <li>• Check and adjust the pressure.</li> <li>• Replace</li> <li>• Replace</li> </ul>

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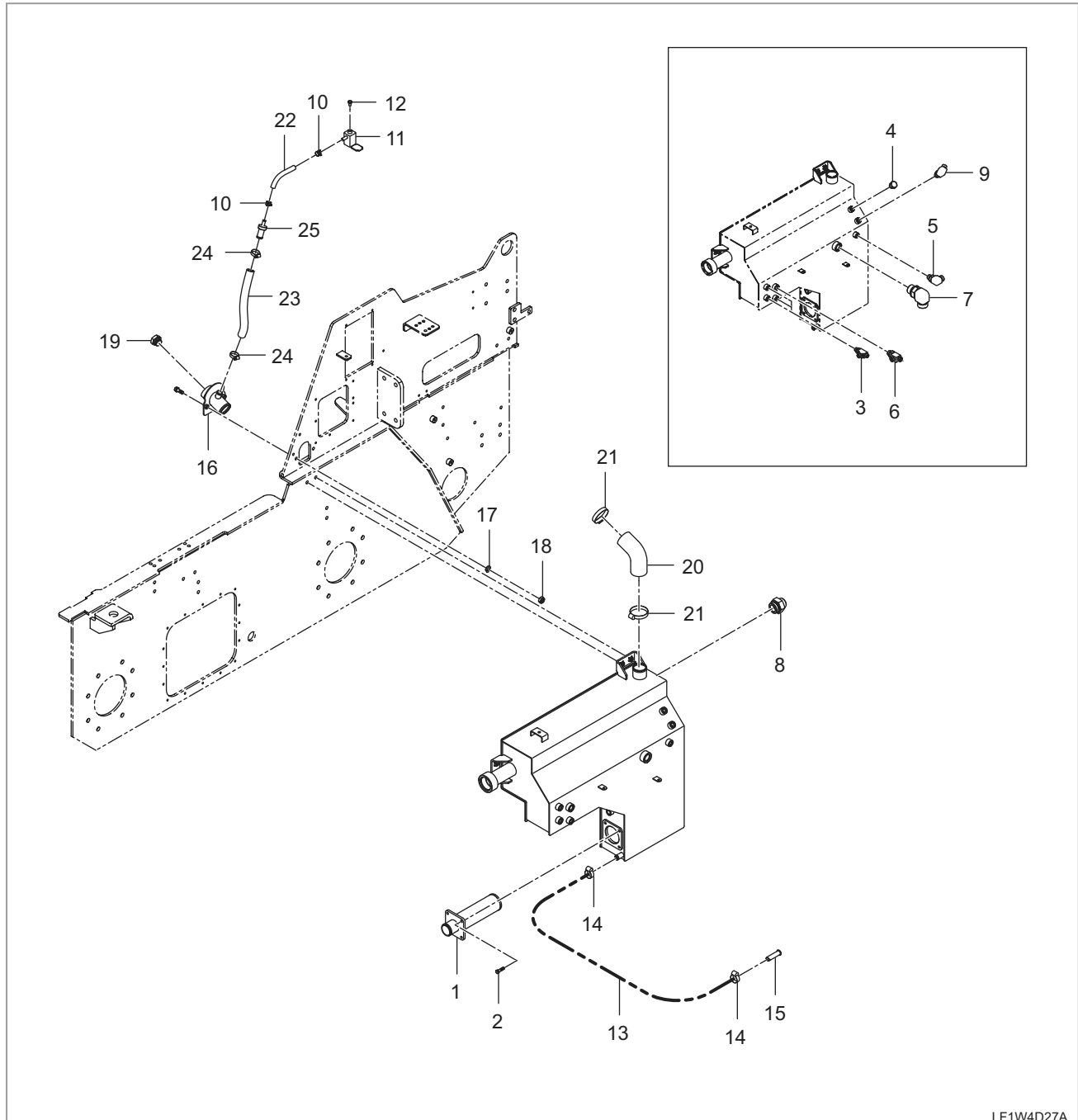
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7. EXPLODED VIEW

REMARKS

- The manufacturing parts are subject to change without notice. Therefore, check the parts catalog or electronic manual for latest information.

7.1 LF1-G211004 OIL TANK SUB GROUP



LF1W4D27A

COMPONENTS

- |                   |                   |                         |                           |
|-------------------|-------------------|-------------------------|---------------------------|
| (1) Strainer, Oil | (8) Connector     | (15) Joint Pin          | (22) Hose, Air Breather 2 |
| (2) Bolt, Washer  | (9) Connector     | (16) Tube, Oiling       | (23) Hose, Air Breather 1 |
| (3) Elbow-T Type  | (10) Band, Hose   | (17) Spring Washer, M10 | (24) Hose Clip            |
| (4) Plug          | (11) Air Breather | (18) Nut                | (25) Connector            |
| (5) Elbow         | (12) Bolt         | (19) Plug               |                           |
| (6) Elbow-T Type  | (13) Hose         | (20) Hose               |                           |
| (7) Elbow         | (14) Band, Hose   | (21) Hose Clamp         |                           |

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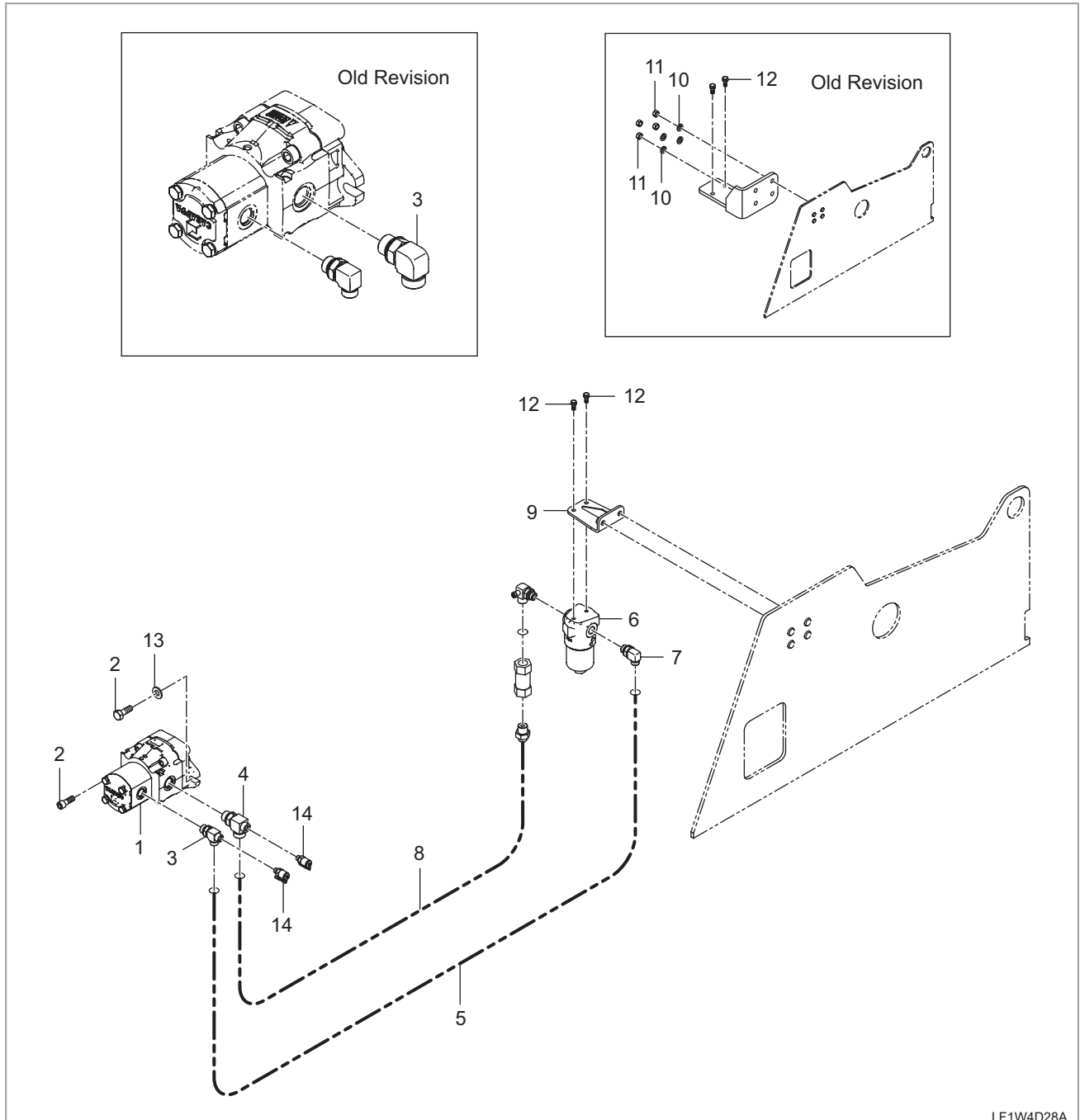
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7.2 LF1-G213002 HYDRAULIC PUMP GROUP

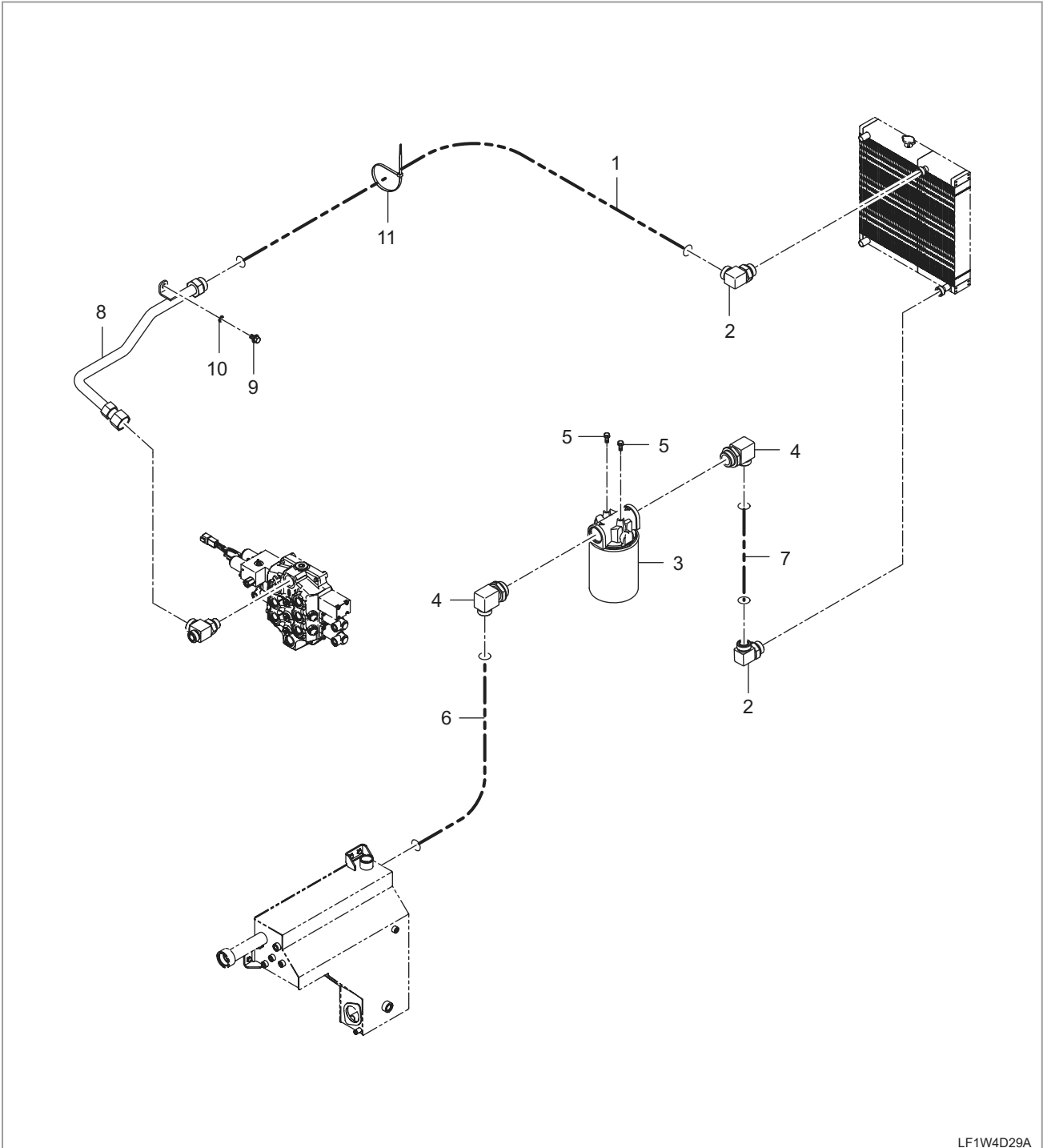


LF1W4D28A

COMPONENTS

- |                             |                          |                          |
|-----------------------------|--------------------------|--------------------------|
| (1) Pump, Gear Assy         | (6) Filter, HST          | (11) Nut                 |
| (2) Bolt, Hexagon           | (7) Elbow                | (12) Bolt, Washer        |
| (3) Elbow                   | (8) Hose, Hyd-Hst Charge | (13) Plain Washer        |
| (4) Elbow -Port Pf1 4       | (9) Bracket, Hst Filter  | (14) Adapter -Port Pf1 4 |
| (5) Hose, Hyd-Hst Filter In | (10) Spring Washer, M10  |                          |

7.3 LF1-G214002 OIL COOLER GROUP



LF1W4D29A

**COMPONENTS**

- |                      |                         |                   |
|----------------------|-------------------------|-------------------|
| (1) Hose, HYD-MCV OC | (5) Bolt, Washer        | (9) Bolt, Washer  |
| (2) Elbow            | (6) Hose, HYD-Filter Ot | (10) Washer, Seal |
| (3) Filter, Return   | (7) Hose, HYD-OC Filter | (11) Cord Band    |
| (4) Elbow            | (8) Tube, HYD-MCV OC    |                   |

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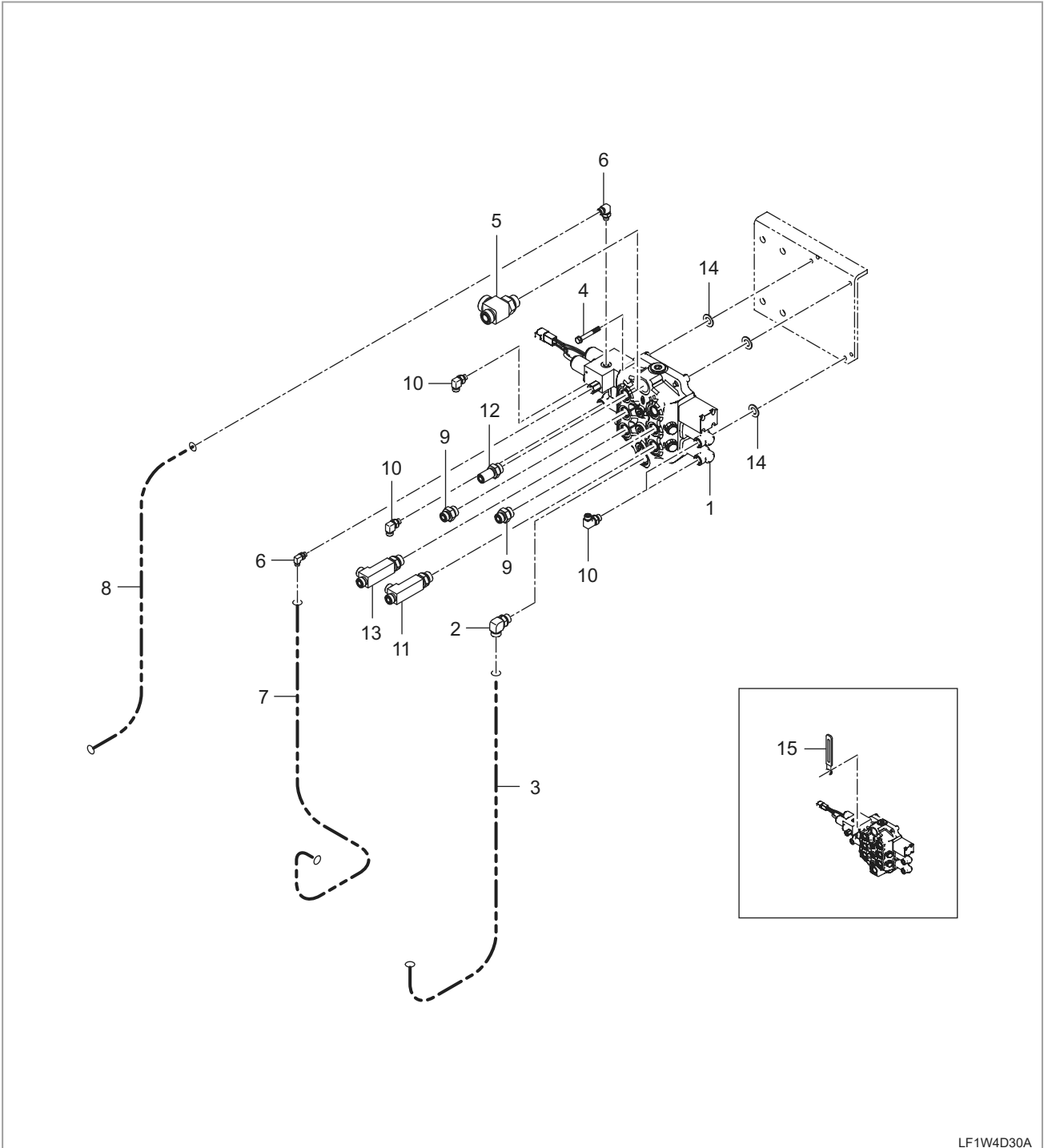
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7.4 LF1-G221003 MAIN CONTROL VALVE GROUP



LF1W4D30A

COMPONENTS

- |                        |                              |                  |
|------------------------|------------------------------|------------------|
| (1) MCV                | (6) Elbow                    | (11) Connector   |
| (2) Elbow              | (7) Hose, Hyd-Outlet Pilot V | (12) Connector   |
| (3) Hose, HYD-Pump MCV | (8) Hose, Hyd-Outlet Pilot L | (13) Connector   |
| (4) With Washer Bolt   | (9) Connector                | (14) Seal Washer |
| (5) Elbow-T Type       | (10) Elbow                   | (15) Clamp, Cord |

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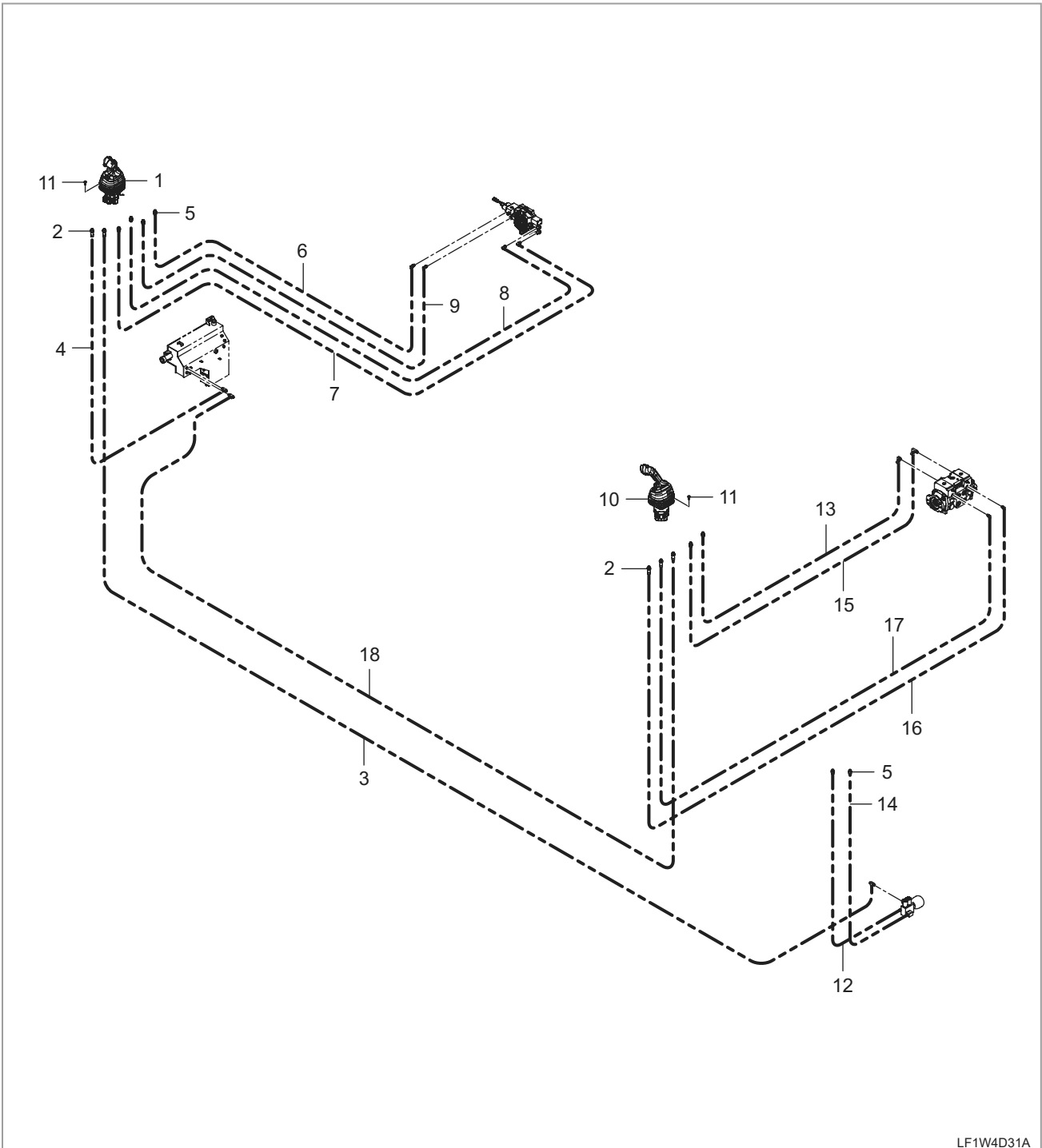
HYDRAULIC SYSTEM

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7.5 LF1-G221504 JOYSTICK GROUP



LF1W4D31A

COMPONENTS

- |                         |                          |                          |
|-------------------------|--------------------------|--------------------------|
| (1) Lever, Joystick-RH  | (7) Hose, HYD-RCV(Rh) 2  | (13) Hose, HYD-RCV(LH) C |
| (2) Connector           | (8) Hose, HYD-RCV(Rh) 1  | (14) Hose, HYD-RCV(LH) 5 |
| (3) Hose, HYD-RCV(RH) P | (9) Hose, HYD-RCV(Rh) 4  | (15) Hose, HYD-RCV(LH) F |
| (4) Hose, HYD-RCV(Rh) T | (10) Lever, Joystick-LH  | (16) Hose, HYD-RCV(LH) D |
| (5) Connector           | (11) Bolt, Flange        | (17) Hose, HYD-RCV(LH) E |
| (6) Hose, HYD-RCV(RH) 3 | (12) Hose, HYD-RCV(LH) P | (18) Hose, HYD-RCV(LH) T |

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7.6 LF1-G222005 AUXILIARY HYDRAULIC GROUP

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ENGINE

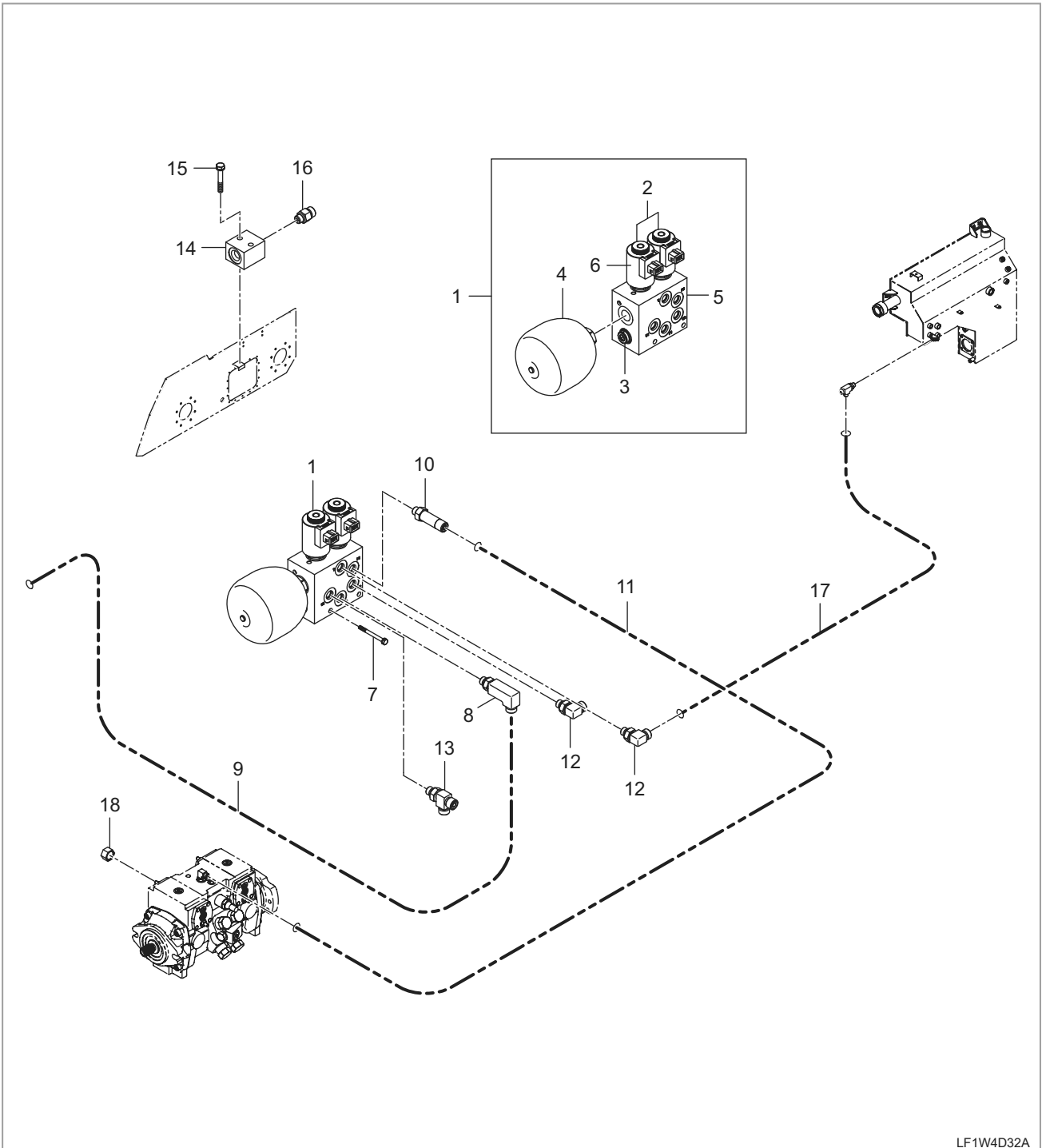
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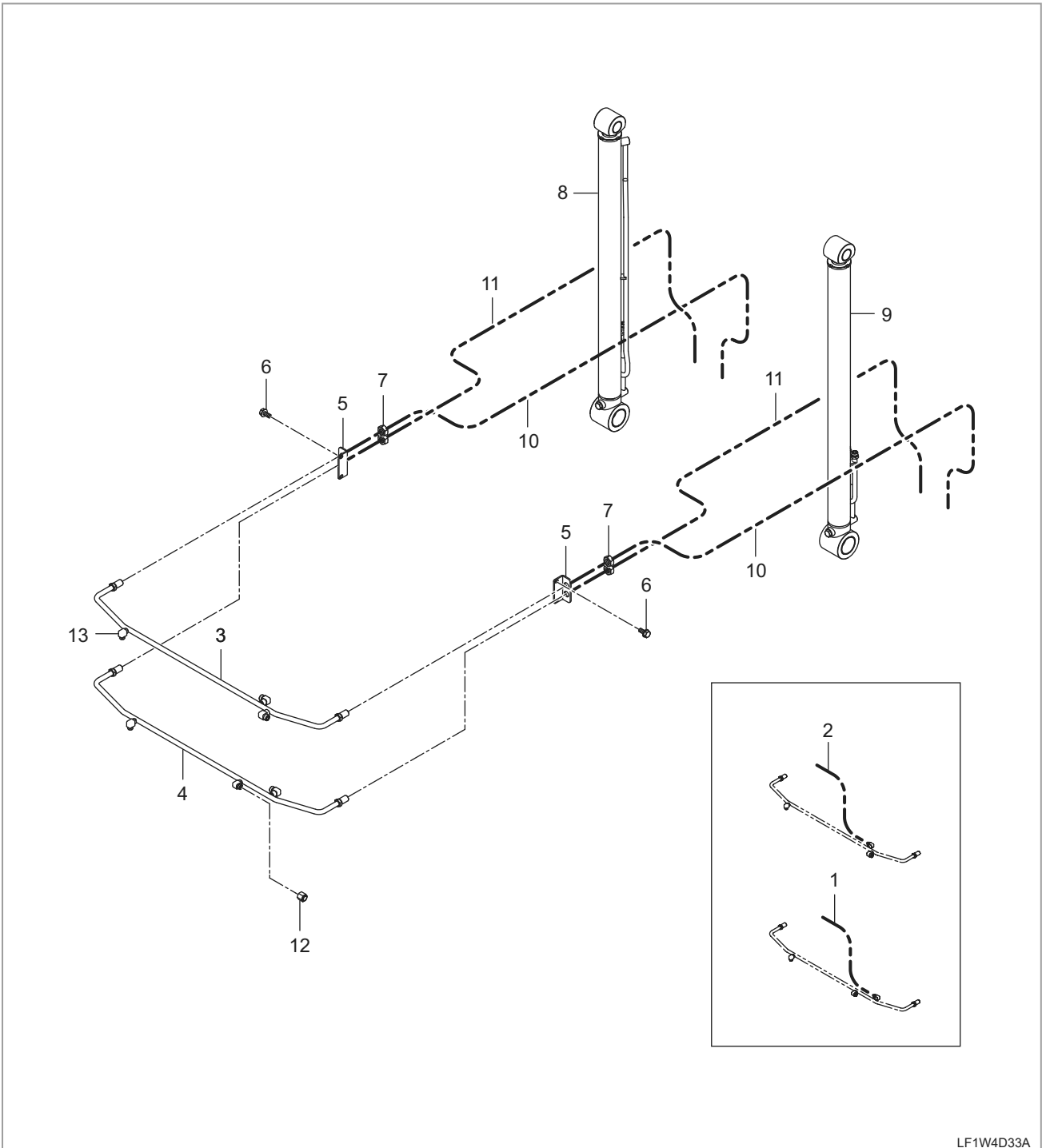


LF1W4D32A

COMPONENTS

- |                      |                              |                             |
|----------------------|------------------------------|-----------------------------|
| (1) Pilot Lock Valve | (7) Bolt, Washer             | (13) Elbow-T Type           |
| (2) Cartridge        | (8) Elbow                    | (14) Block, HYD             |
| (3) Plug             | (9) Hose, HYD-Pilot Lock P1  | (15) Bolt                   |
| (4) Accum            | (10) Connector               | (16) Connector              |
| (5) Body             | (11) Hose, HYD-Pilot Lock P2 | (17) Hose, HYD-Pilot Lock T |
| (6) Coil             | (12) Elbow                   | (18) Cap, Plug-9 16         |

7.7 LF1-G223003 LIFT CYLINDER GROUP



LF1W4D33A

COMPONENTS

- |               |                               |                      |
|---------------|-------------------------------|----------------------|
| (1) Hose, HYD | (6) Hex Head Bolt With Washer | (11) Hose, HYD       |
| (2) Hose, HYD | (7) Nut                       | (12) Plug            |
| (3) Tube, HYD | (8) Cylinder, Lift-RH         | (13) Connector, Weld |
| (4) Tube, HYD | (9) Cylinder, Lift-LH         |                      |
| (5) Bracket   | (10) Hose, HYD                |                      |

SAFETY FIRST

ENGINE

DRIVING & CHASSIS

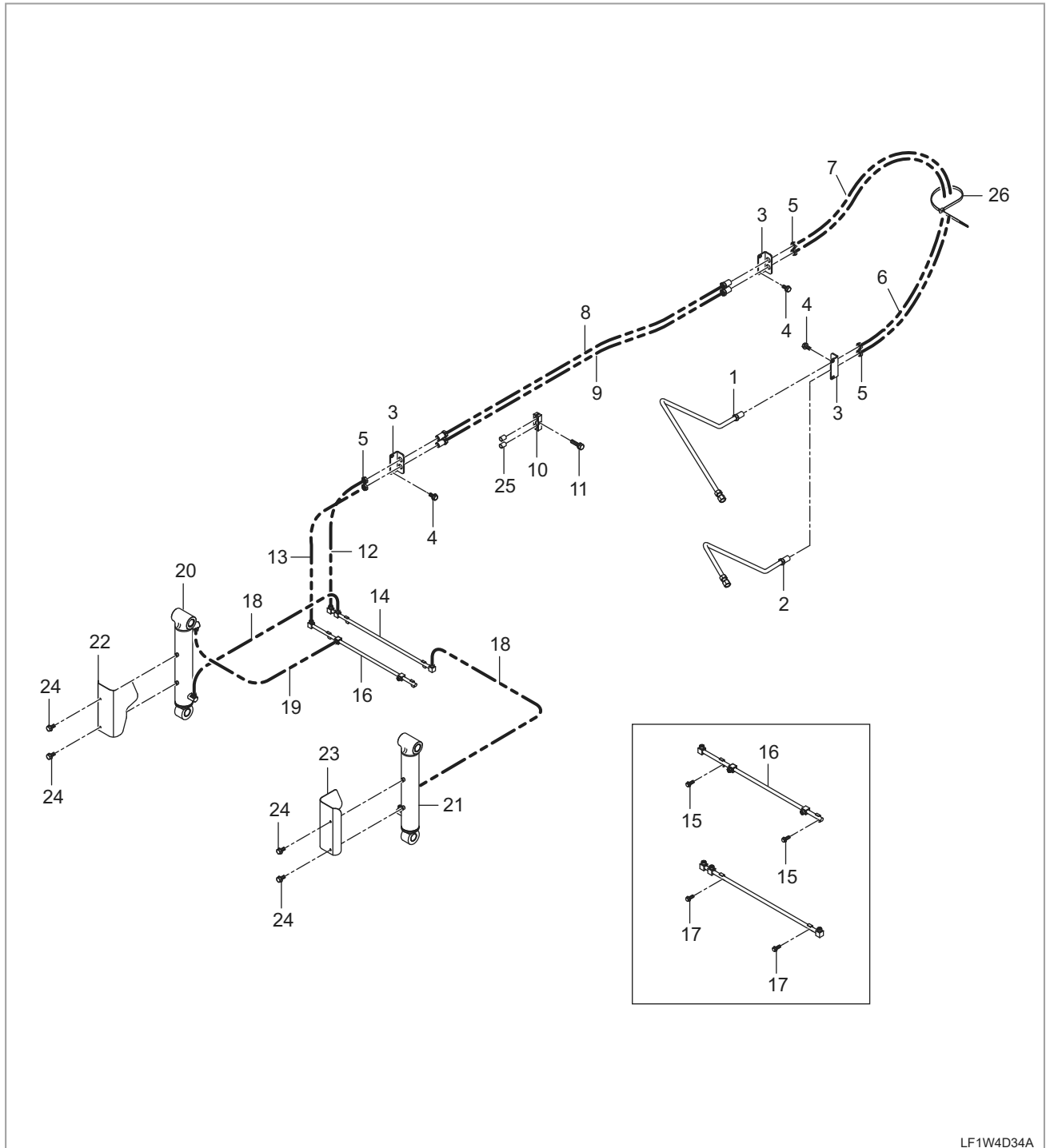
HYDRAULIC SYSTEM

ELECTRIC SYSTEM

CABIN

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7.8 LF1-G224502 TILT CYLINDER GROUP

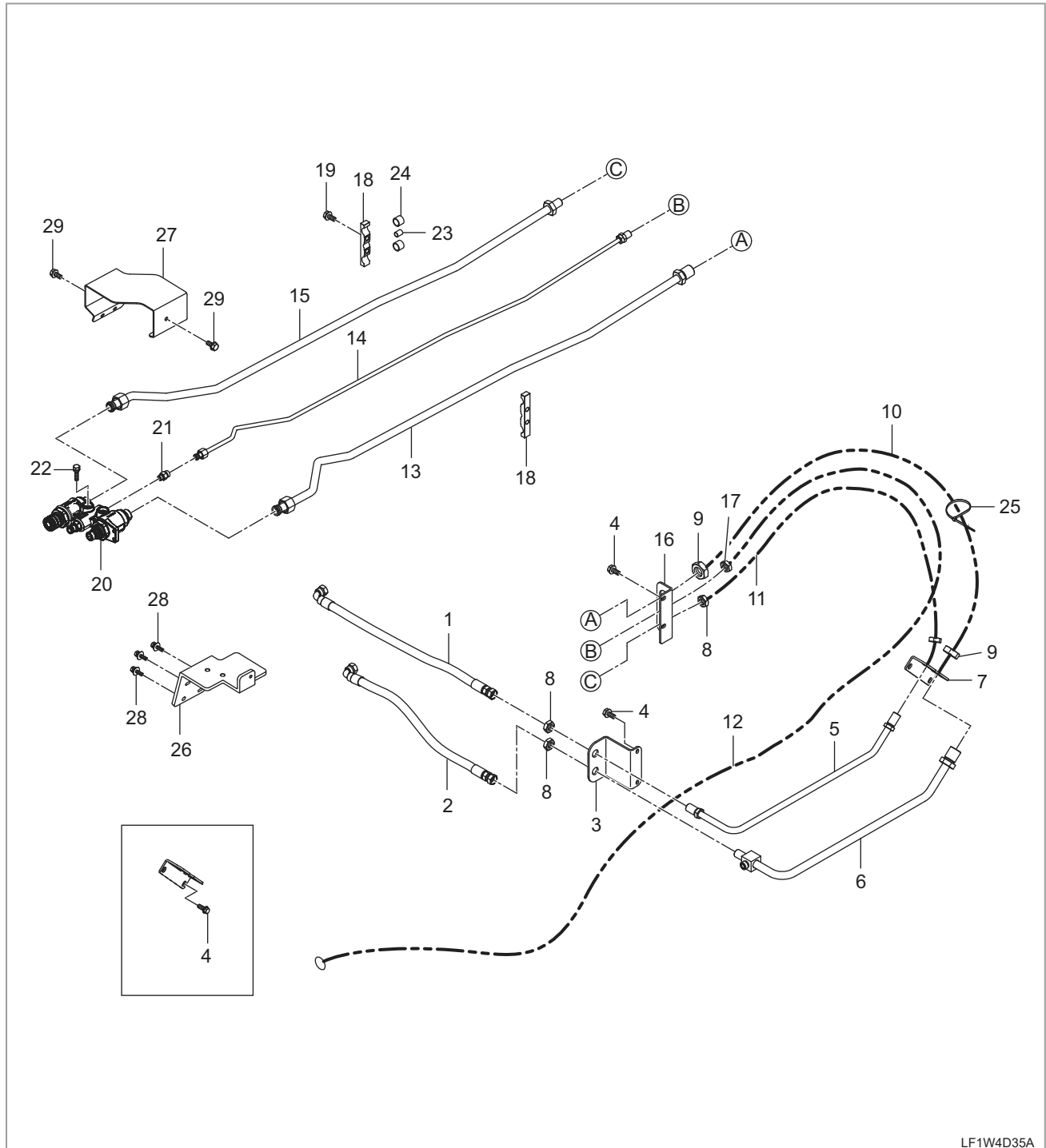


LF1W4D34A

COMPONENTS

- |                               |                              |                            |
|-------------------------------|------------------------------|----------------------------|
| (1) Tube, HYD                 | (10) Clamp, Pipe             | (19) Hose, HYD-BK Dump 3   |
| (2) Tube, HYD                 | (11) With Washer Bolt        | (20) Cylinder, Tilt-RH     |
| (3) Bracket                   | (12) Hose, HYD-BK Rollback 2 | (21) Cylinder, Tilt-LH     |
| (4) Hex Head Bolt With Washer | (13) Hose, HYD-BK Dump 2     | (22) Cover, CYL-RH         |
| (5) Nut                       | (14) Tube, HYD               | (23) Cover, CYL-LH         |
| (6) Hose, HYD-Bk Dump 1       | (15) Flange Bolt             | (24) Flange Bolt           |
| (7) Hose, HYD-Bk Rollback 1   | (16) Tube, HYD               | (25) Holder, Pipe-Rubber 2 |
| (8) Tube, HYD                 | (17) Flange Bolt             | (26) Cord Band             |
| (9) Tube, HYD                 | (18) Hose, HYD-BK Rollback 3 |                            |

7.9 LF1-G225505 EXTERNAL HYDRAULIC GROUP



LF1W4D35A

COMPONENTS

- |                               |                            |                            |
|-------------------------------|----------------------------|----------------------------|
| (1) Hose, HYD-OI Female 1     | (11) Hose, HYD-OI Female 2 | (21) Connector             |
| (2) Hose, HYD-OI Male 1       | (12) Hose, HYD-OI T2       | (22) Bolt                  |
| (3) Bracket                   | (13) Tube, HYD             | (23) Holder, Pipe-Rubber 1 |
| (4) Hex Head Bolt With Washer | (14) Tube, HYD             | (24) Holder, Pipe-Rubber 3 |
| (5) Tube, HYD                 | (15) Tube, HYD             | (25) Cord Band             |
| (6) Tube, HYD                 | (16) Bracket               | (26) Support, Socket       |
| (7) Bracket                   | (17) Nut                   | (27) Cover                 |
| (8) Nut                       | (18) Clamp, Pipe           | (28) Bolt                  |
| (9) Nut                       | (19) Bolt, Washer          | (29) Flange Bolt           |
| (10) Hose, HYD-OI Male 2      | (20) Assy Coupler, Quick   |                            |

SAFETY FIRST

ENGINE

DRIVING & CHASSIS

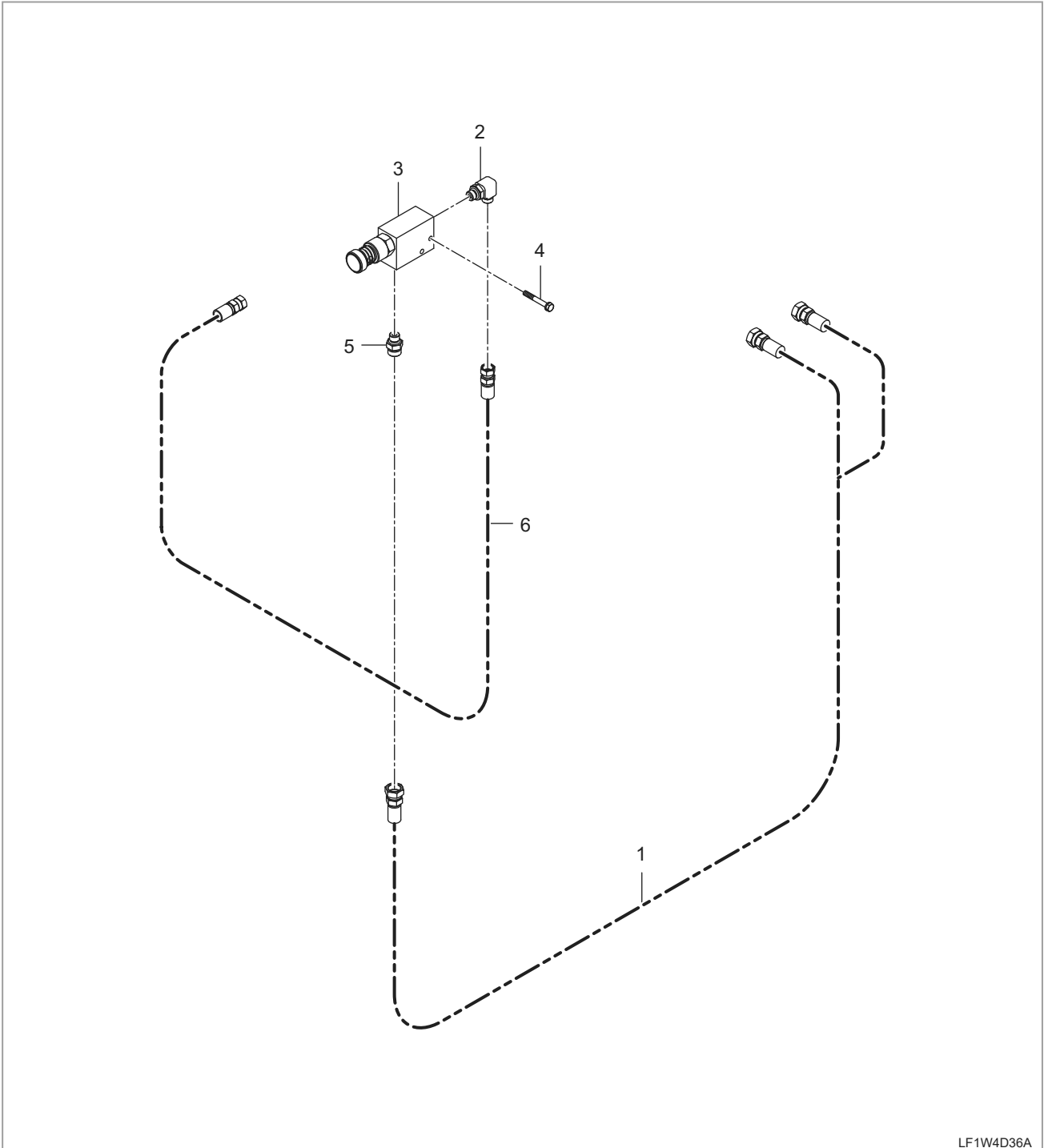
HYDRAULIC SYSTEM

ELECTRIC SYSTEM

CABIN

INDEX

7.10 LF1-G226002 DRAIN VAVLE GROUP



LF1W4D36A

COMPONENTS

- (1) Hose, HYD -DV A
- (2) Elbow

- (3) Valve, Drain
- (4) Bolt

- (5) Connector
- (6) Hose, HYD -DV B

7.11 LF1-G231004 HST GROUP

SAFETY FIRST

ENGINE

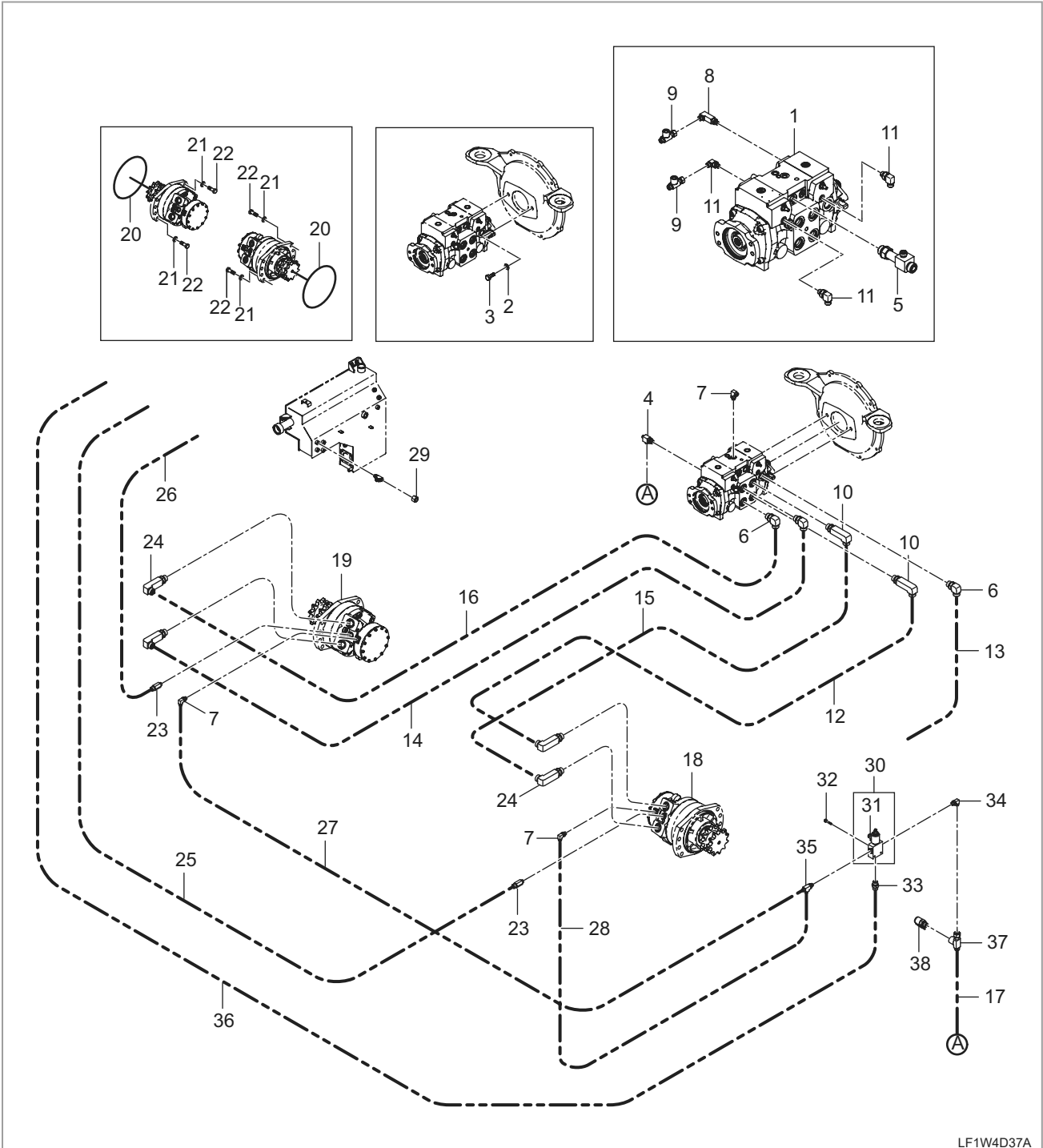
DRIVING & CHASSIS

HYDRAULIC SYSTEM

ELECTRIC SYSTEM

CABIN

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LF1W4D37A

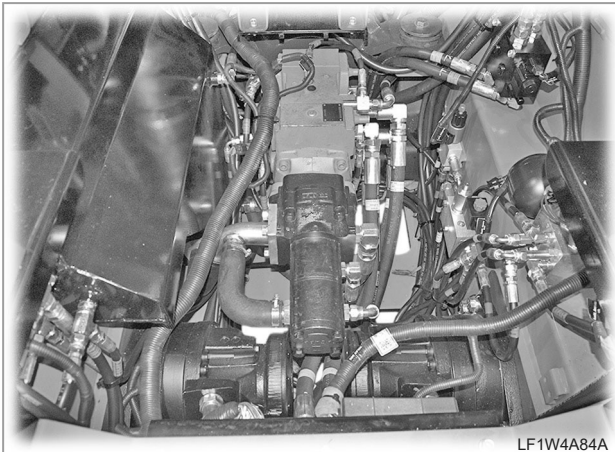
COMPONENTS

- |                          |                            |                            |
|--------------------------|----------------------------|----------------------------|
| (1) Pump, HST            | (14) Hose, HYD-HST B(RH)   | (27) Hose, HYD-Parking(RH) |
| (2) Washer               | (15) Hose, HYD-HST B(LH)   | (28) Hose, HYD-Parking(LH) |
| (3) Bolt                 | (16) Hose, HYD-HST A(RH)   | (29) Cap, Plug-9 16        |
| (4) Elbow-T Type         | (17) Hose, HYD-Parking P   | (30) Valve, Parking        |
| (5) Elbow-T Type         | (18) Motor, HST-LH         | (31) 0d023607300b00(Coil)  |
| (6) Elbow                | (19) Motor, HST-RH         | (32) Bolt                  |
| (7) Elbow                | (20) O Ring                | (33) Connector             |
| (8) Elbow                | (21) Washer                | (34) Elbow                 |
| (9) Elbow-T Type         | (22) Bolt, Hexagon         | (35) Elbow-T Type          |
| (10) Elbow               | (23) Connector             | (36) Hose, HYD-Parking T   |
| (11) Elbow               | (24) Elbow -Port Pf1 4     | (37) Elbow-T Type          |
| (12) Hose, HYD-HST A(Lh) | (25) Hose, HYD-Motor T(LH) | (38) Adapter -Port Pf1 4   |
| (13) Hose, HYD-HST T     | (26) Hose, HYD-Motor T(RH) |                            |

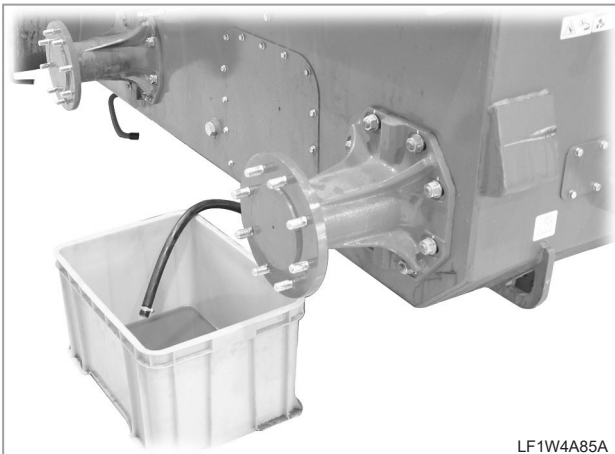


8. HYDRAULIC SYSTEM MAINTENANCE

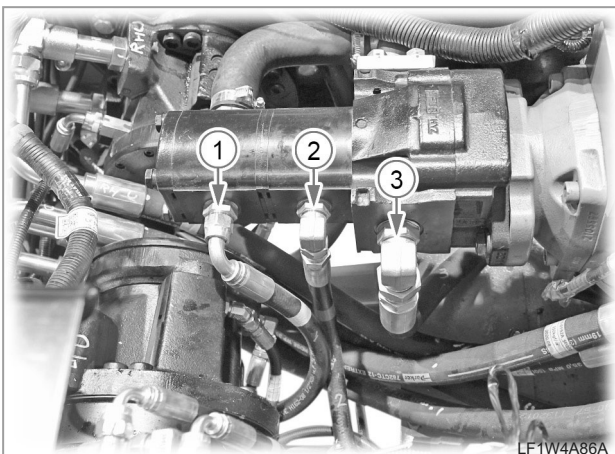
8.1 MAIN PUMP DETACH



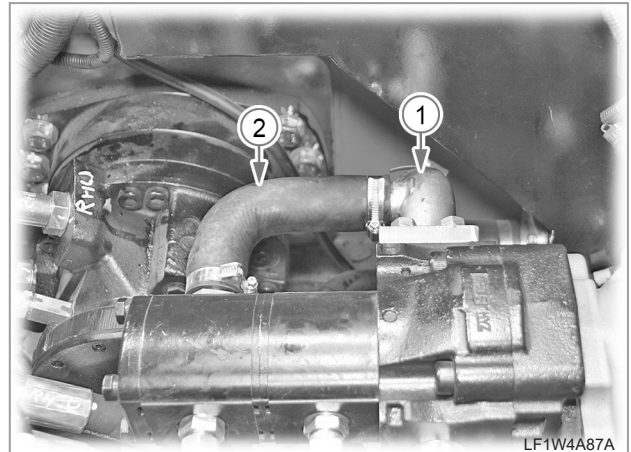
1. Open or remove the cabin.



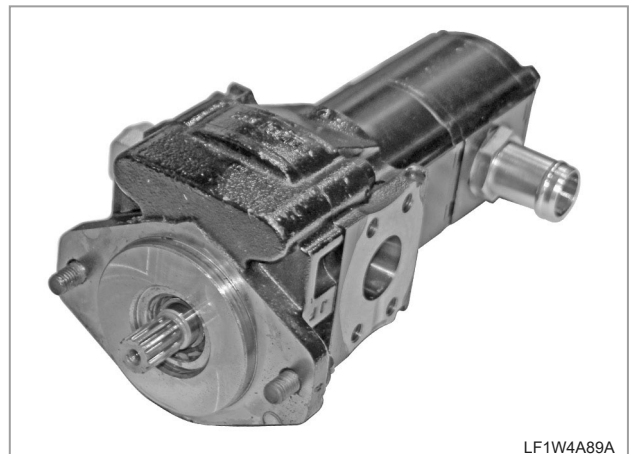
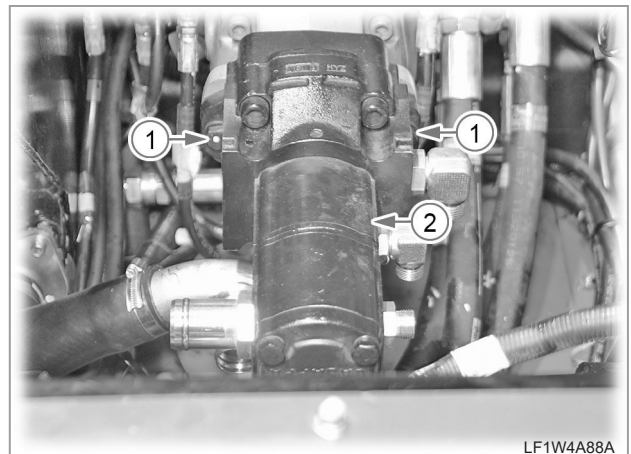
2. Drain the hydraulic oil from the oil tank.



3. Disconnect the high-flow pump hydraulic hose (1), charge pump hydraulic hose (2), and main pump hydraulic hose (3).



4. Disconnect the suction hose (1) from the main pump and the suction hose (2) from the high-flow pump.



5. Unscrew the main pump mounting bolts (1)(2EA) to remove the main pump assembly (2).

**Mounting bolt (1/2-13 UNC, 10.9T)**  
**Tightening torque..... 6.40~7.40 kgf.m**

8.2 HST PUMP DETACH

SAFETY FIRST

ENGINE

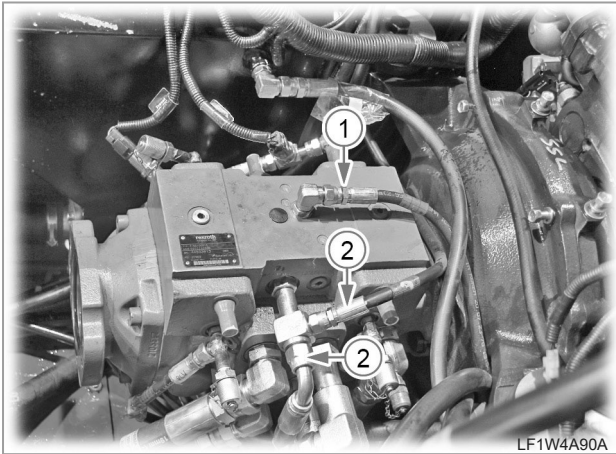
DRIVING & CHASSIS

HYDRAULIC SYSTEM

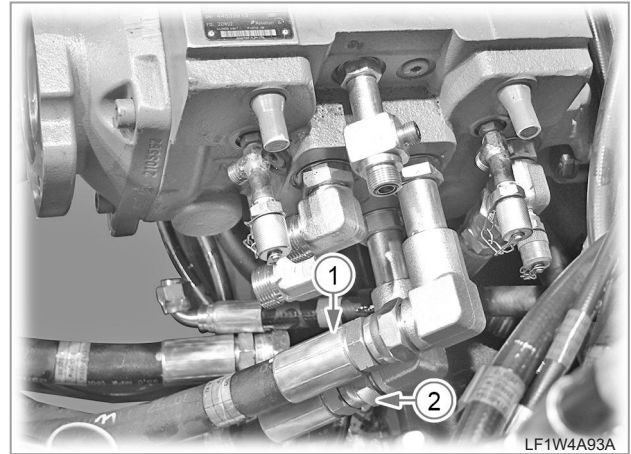
ELECTRIC SYSTEM

CABIN

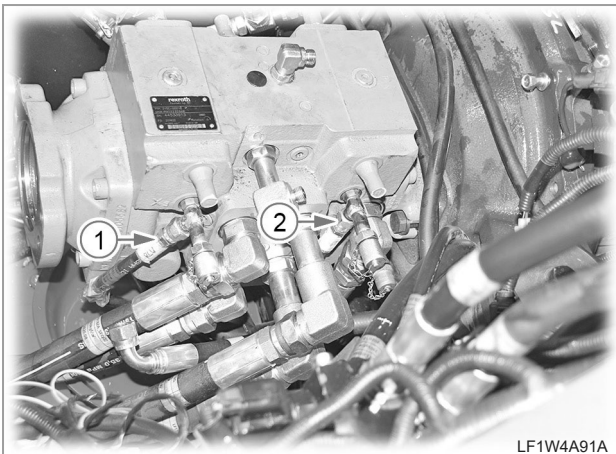
INDEX



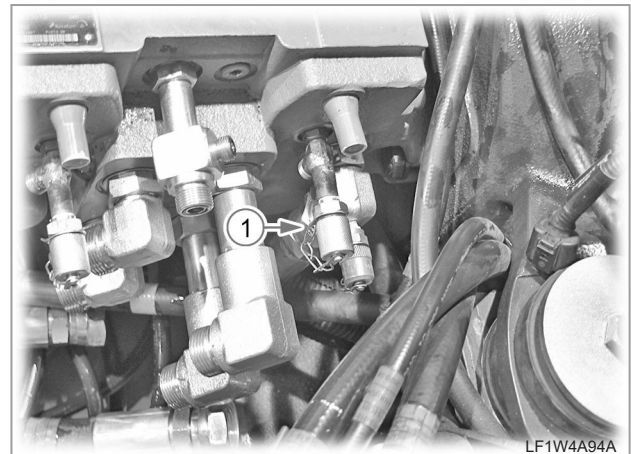
1. Disconnect the pilot lock valve hose (1) from the top of the HST pump and the HST filter hose (2) from the left side of the HST pump.



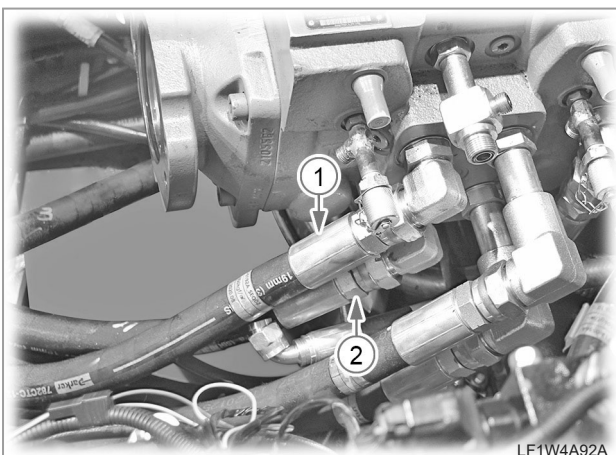
4. Disconnect the HST motor left-hand (reverse driving) hose (1) and HST motor left-hand (forward driving) hose (2).



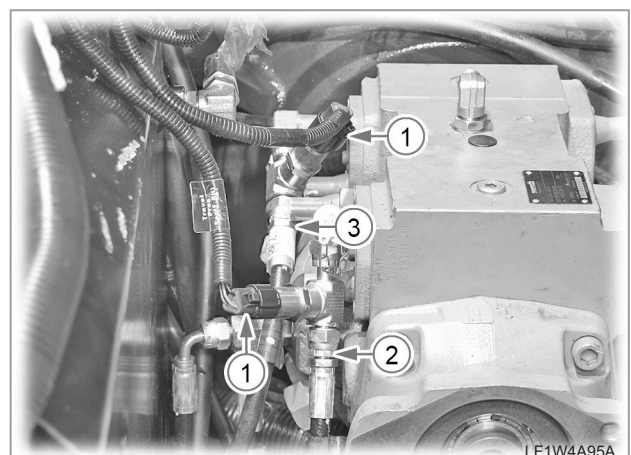
2. Disconnect the RCV left-hand (reverse driving-RH) hose (1) and RCV left-hand (reverse driving-LH) hose (2).



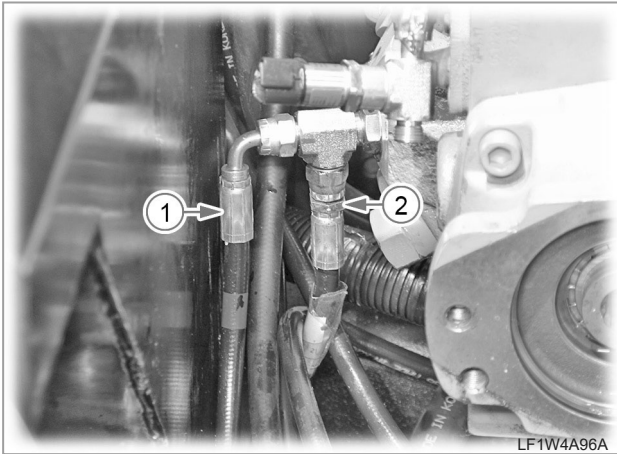
5. Disconnect the oil tank hose (1).



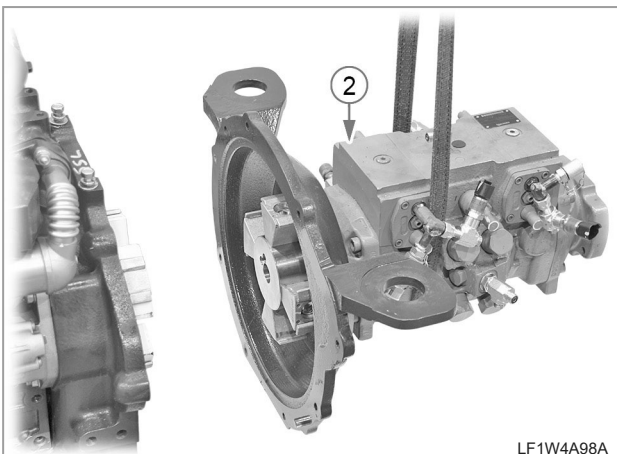
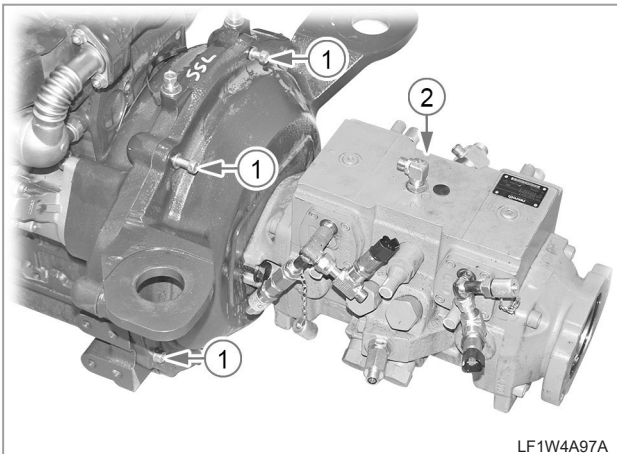
3. Disconnect the HST motor right-hand (reverse driving) hose (1) and HST motor right-hand (forward driving) hose (2).



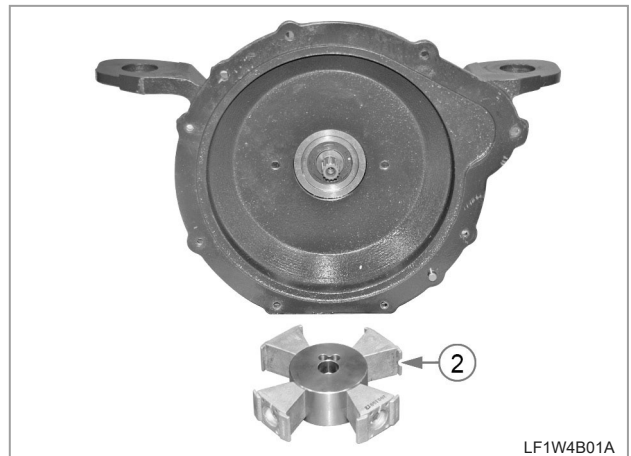
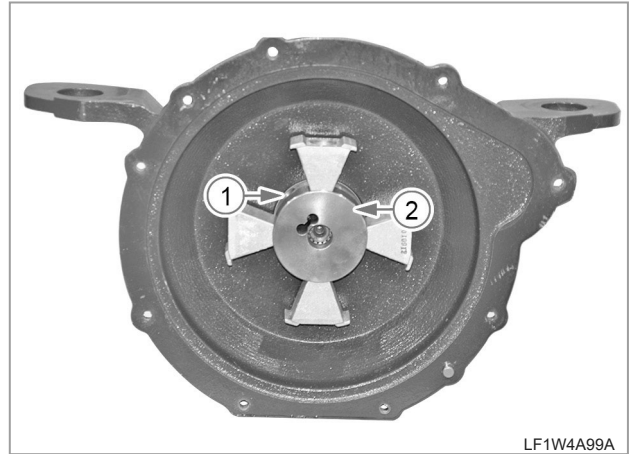
6. Disconnect each driving pressure sensor connector (1) from the RCV (LH) hydraulic hoses. Then, disconnect the RCV left-hand (forward driving-RH) hydraulic hose (2) and RCV left-hand (forward driving-LH) hydraulic hose (3).



7. Disconnect the soft shift valve hose (1) and parking valve hose (2).

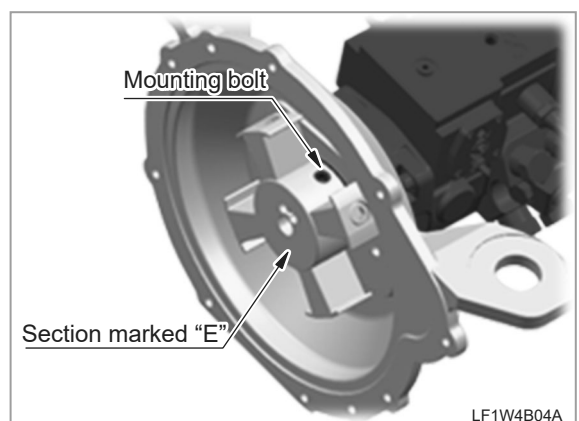


8. Unscrew the engine flywheel housing mounting bolts (1)(7EA) to remove the HST pump assembly (2).



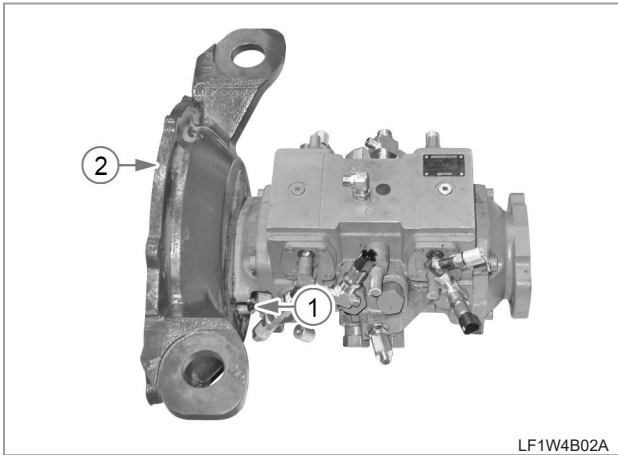
9. Unscrew the hub mounting bolts (1) on the HST pump assembly housing section to remove the hub assembly (2).

**REMARKS**

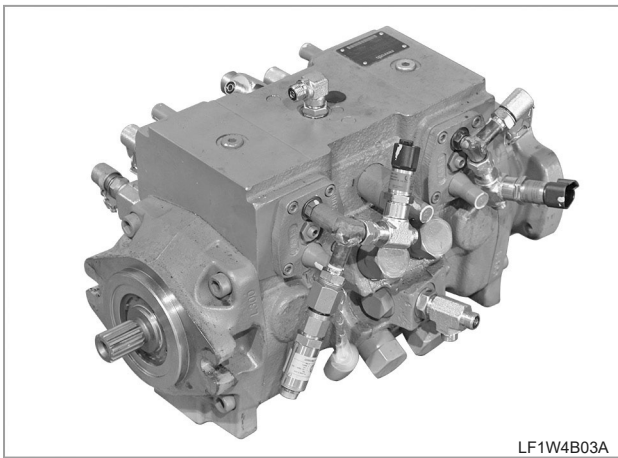


- When installing the hub on the pump housing, its section marked "E" should face the engine. In addition, tighten the mounting bolts to the specified torque.

Mounting bolt  
tightening torque .....20 ~ 22 kgf.m



LF1W4B02A



LF1W4B03A

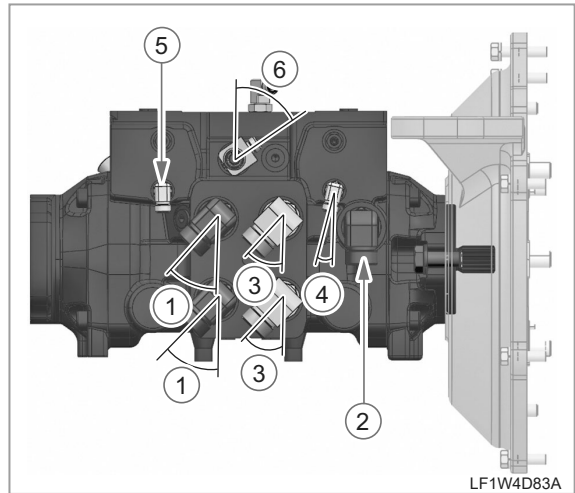
10. Unscrew the housing mounting bolts (1) on the HST pump assembly to remove the housing (2).

**REMARKS**

- When reinstalling the housing mounting bolt, apply the sealant (LOCTITE 271 or equivalent) on its threads and tighten it to the specified torque.  
**Mounting bolt  
 tightening torque ..... 20.4 ~ 22.6 kgf.m**

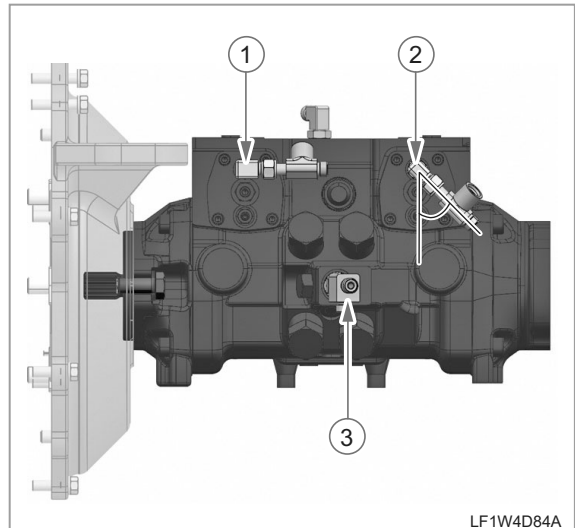
**REMARKS**

**ELBOW ASSEMBLY**



LF1W4D83A

- **Tightening torque**
  - ①, ②, ③ (1-1/16-12 UN) : 17.35 ~ 18.67 kgf.m
  - ④, ⑤ (7/16-20 UNF) : 2.04 ~ 2.24 kgf.m
  - ⑥ (3/4-16 UNF) : 6.94 ~ 7.96 kgf.m
- **Assembly angle**
  - ①, ③ : 45°
  - ④ : 15°
  - ②, ⑤ : 90°
  - ⑥ : 55° ±5

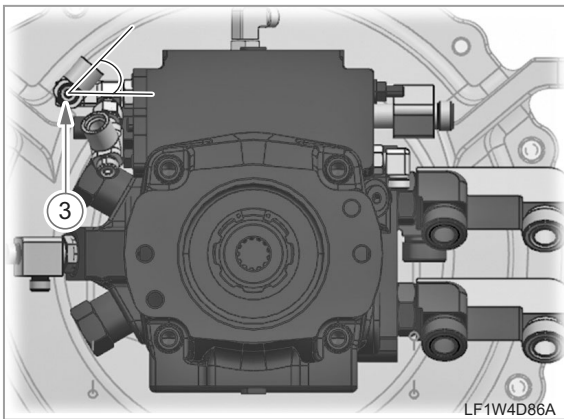
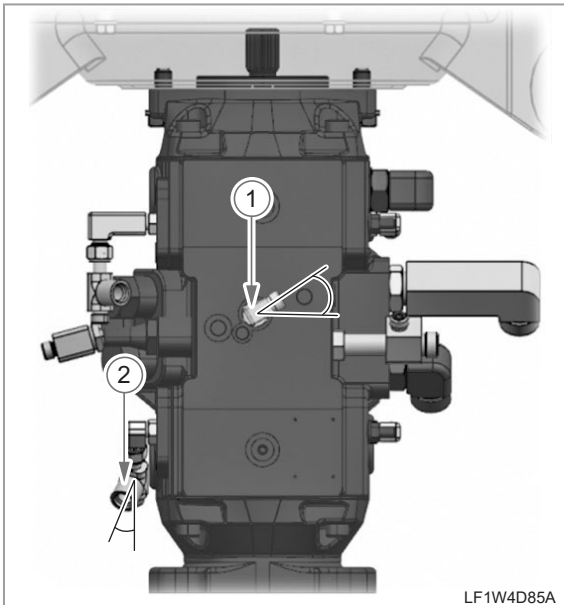


LF1W4D84A

- **Tightening torque**
  - ①, ② (7/16-20 UNF) : 2.04 ~ 2.24 kgf.m
  - ③ (3/4-16 UNF) : 6.94 ~ 7.96 kgf.m
- **Assembly angle**
  - ② : 45°
  - ③ : 90°

REMARKS

**ELBOW ASSEMBLY**



- **Tightening torque**
  - ①, ②, ③ (9/16-18 UNF) : 3.37 ~ 3.57 kgf.m
- **Assembly angle**
  - ① : 30°
  - ② : 20°
  - ③ : 40°

8.3 MAIN PUMP, CHARGE PUMP, HIGH FLOW PUMP DISASSEMBLY

SAFETY FIRST

ENGINE

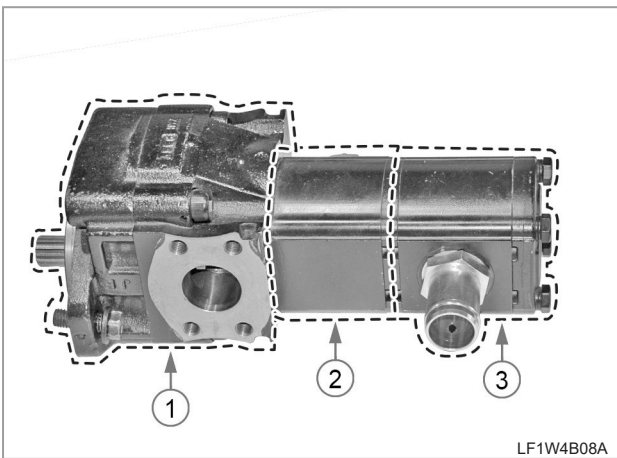
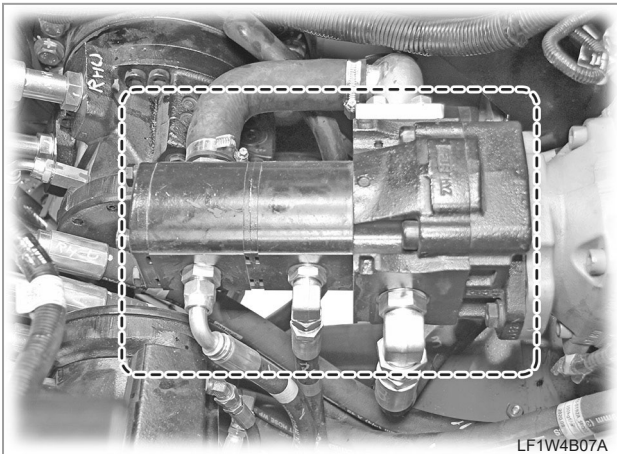
DRIVING & CHASSIS

HYDRAULIC SYSTEM

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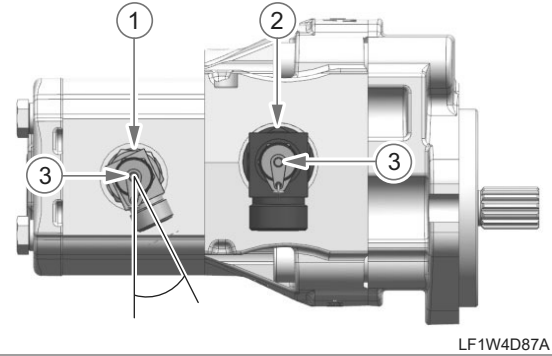


- (1) Main pump
- (2) Charge pump
- (3) High flow pump

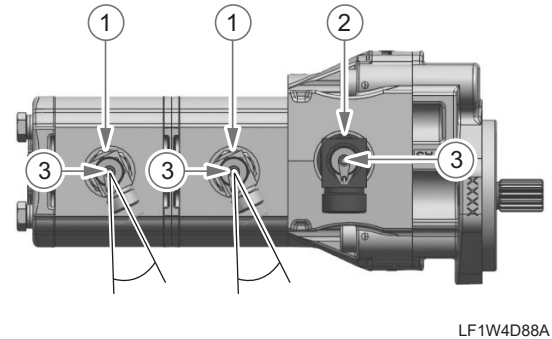
REMARKS

ELBOW ASSEMBLY

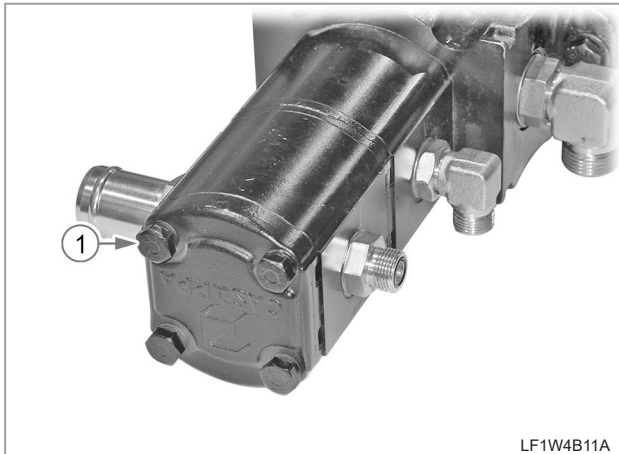
L, LQ MODEL



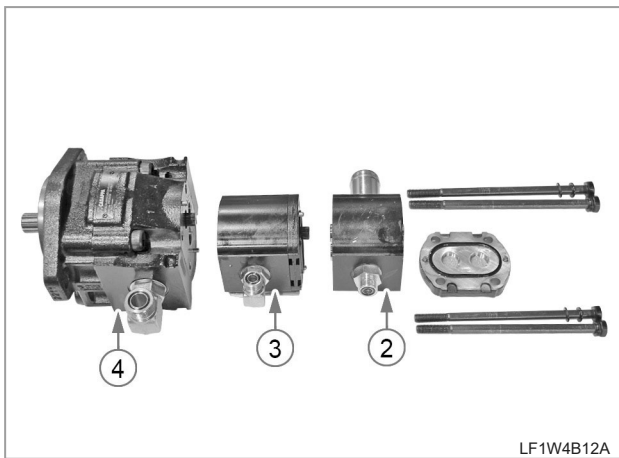
LQF MODEL



- **Tightening torque**
  - ① (7/8-14 UNF) : 10 ~ 11.22 kgf.m
  - ② (1-1/16-12 UN) : 17.35 ~ 18.67 kgf.m
  - ③ (PF1/4) : 3.5~4.0 kgf.m
- **Assembly angle**
  - ① : 25°
  - ② : 90°



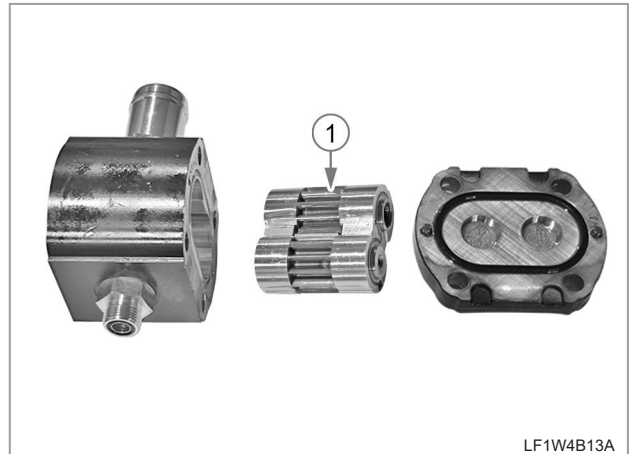
LF1W4B11A



LF1W4B12A

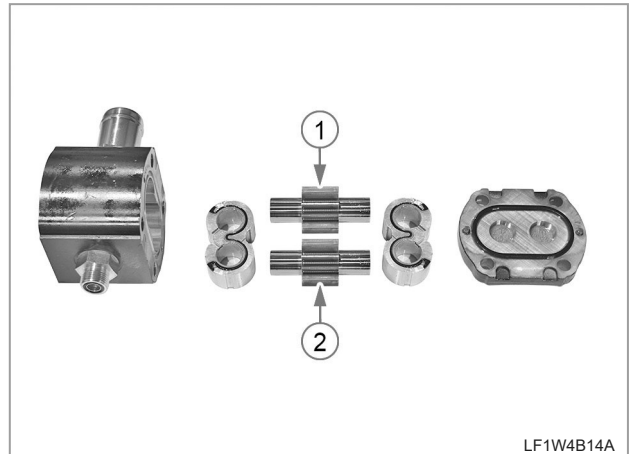
1. Unscrew the rear cover mounting bolts (1)(4EA), and then remove the high-flow pump (2) and charge pump (3) from the main pump (4).

► HIGH FLOW PUMP DISASSEMBLY



LF1W4B13A

1. Remove the thrust plate assembly (1) from the pump housing.

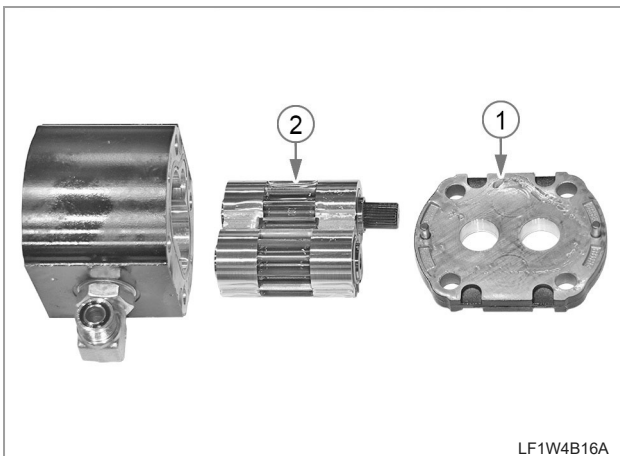
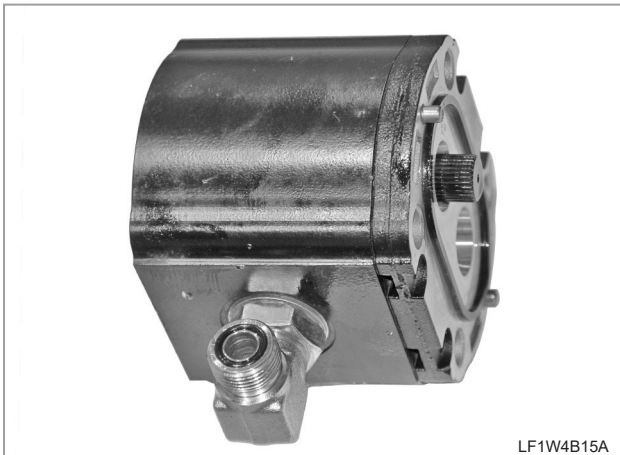


LF1W4B14A

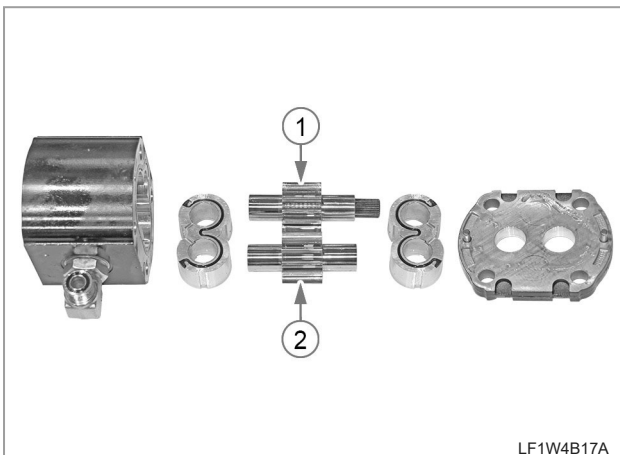
2. Remove the drive gear (1) and driven gear (2) from the thrust plate.



► CHARGE PUMP DISASSEMBLY

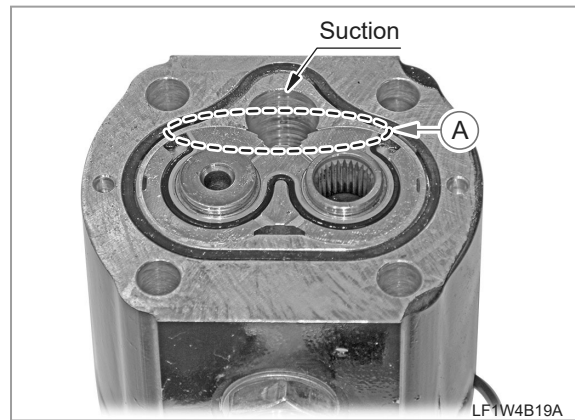
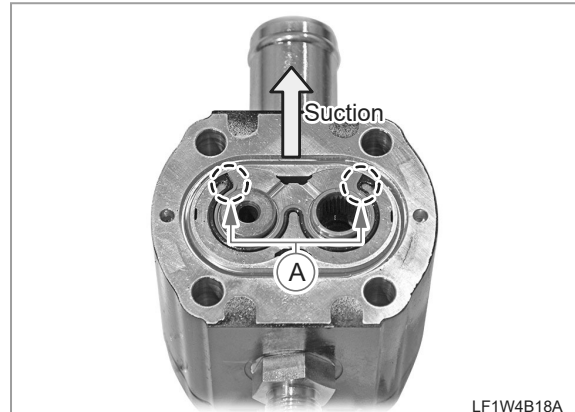


1. Remove the cover (1) and thrust plate assembly (2) from the charge pump housing.



2. Remove the drive gear (1) and driven gear (2) from the thrust plate.

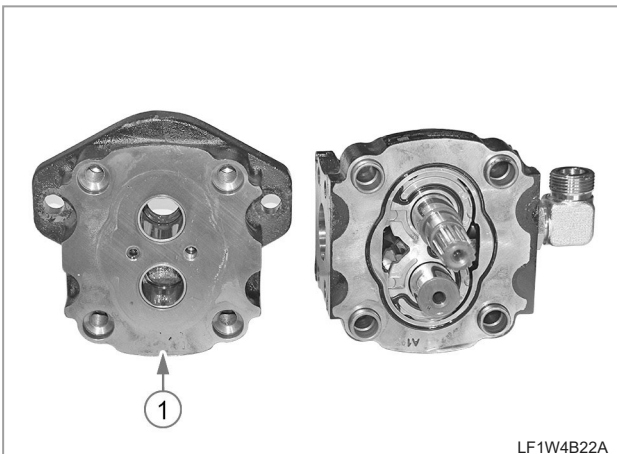
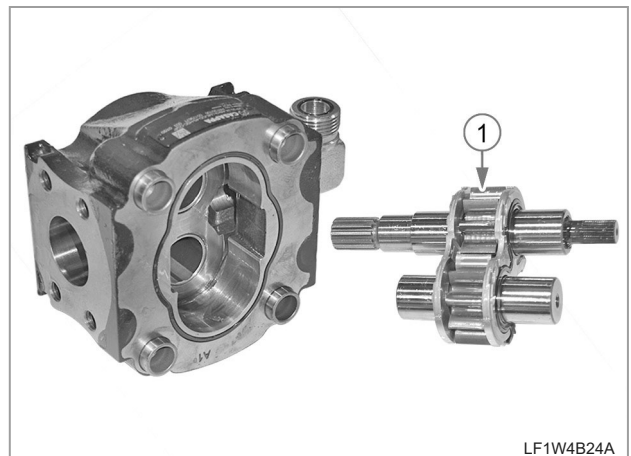
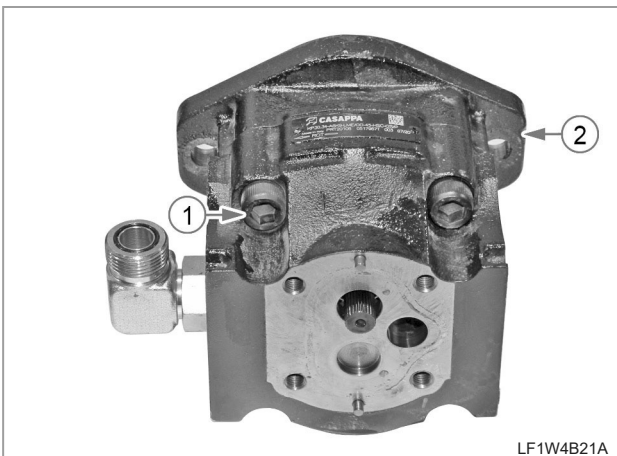
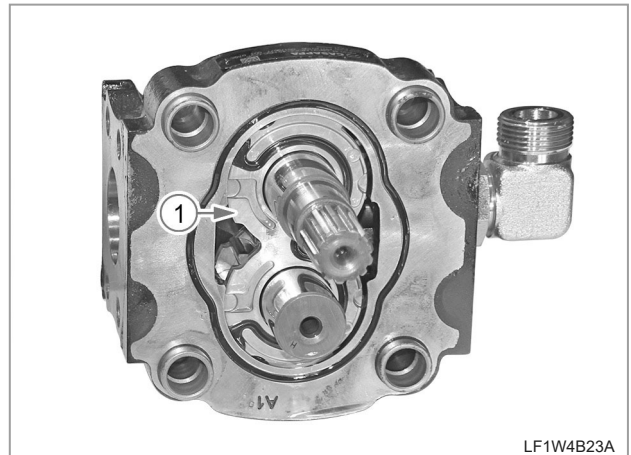
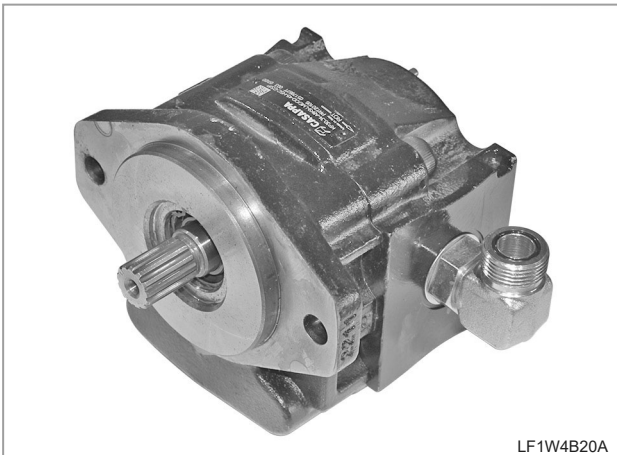
REMARKS



- When installing the charge pump and high-flow pump, the thrust plate seal opening (A) should face the suction side.

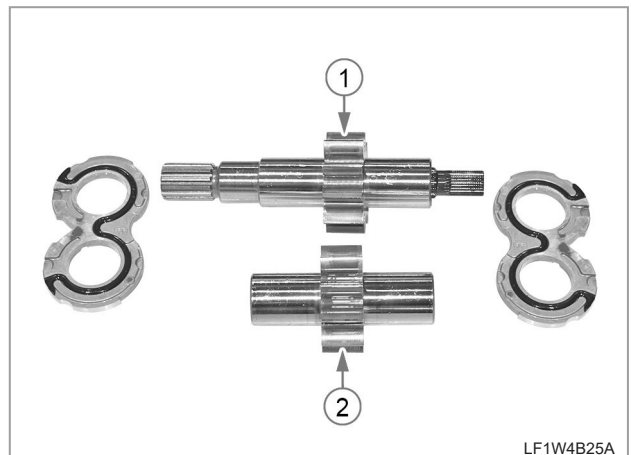


► MAIN PUMP DISASSEMBLY

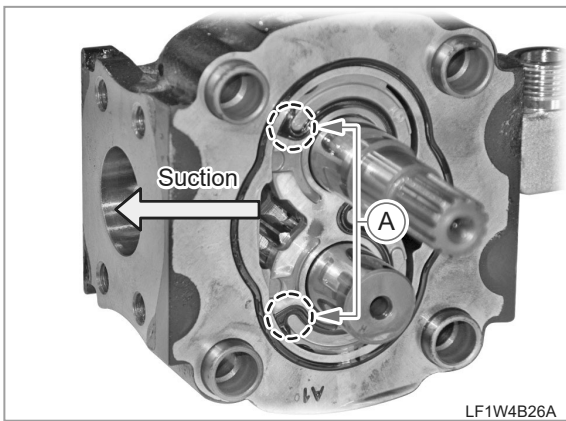


1. Unscrew the hex wrench bolts (1)(4EA) and then remove the front cover (2).

2. Remove the thrust plate assembly (1) from the main pump body.

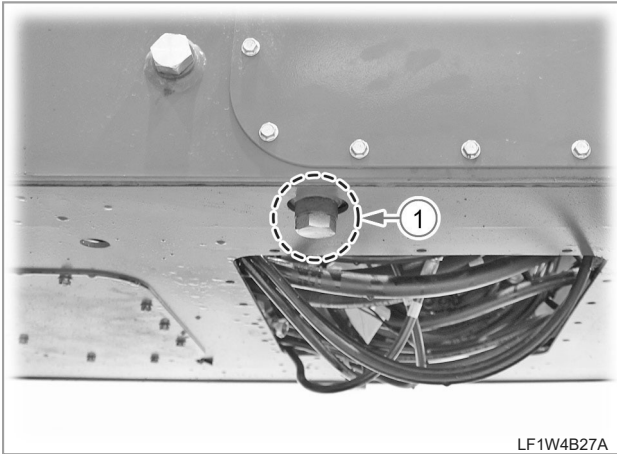


3. Remove the drive gear (2) and driven gear (3) from the thrust plate.

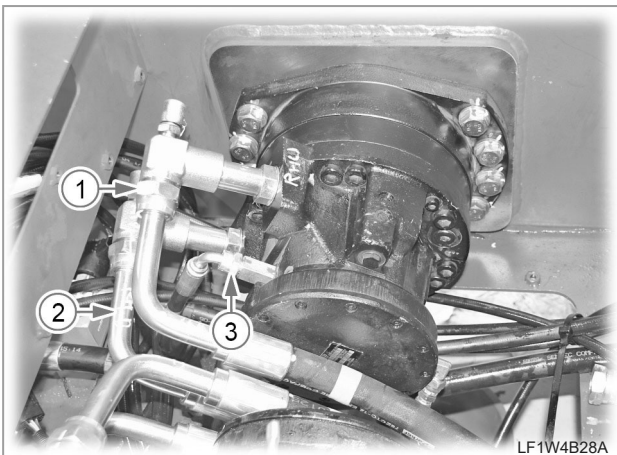
 REMARKS

- The seal opening (A) should face the suction side.

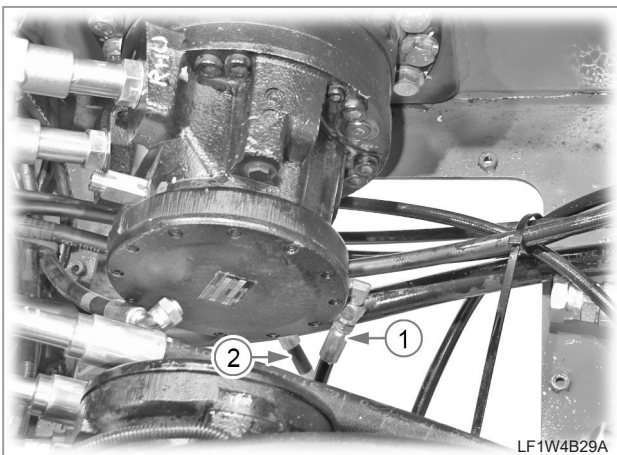
8.4 HST MOTOR DISASSEMBLY



1. Unscrew the drain plug (1) on the bottom of the main frame, and then drain the gear oil from the axle oil box on the side of the main frame completely.



2. Disconnect the hydraulic hoses (forward driving: 1, reverse driving: 2, tank return: 3) from the upper side of the HST motor.

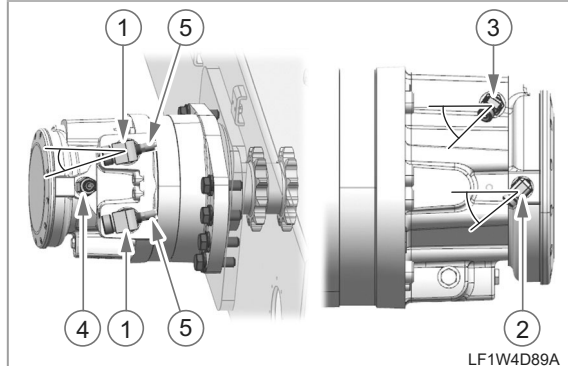


3. Disconnect the hydraulic hoses (parking valve: 1, soft shift valve: 2) from the lower side of the HST motor.

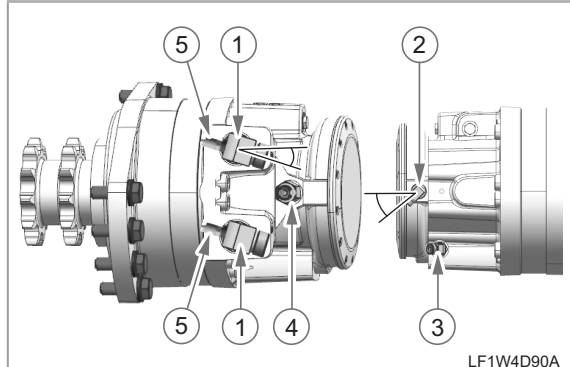
REMARKS

ELBOW ASSEMBLY

LQ, LQF MODEL [HST-2-SPEED MOTOR(LH)]



LQ, LQF MODEL [HST-2-SPEED MOTOR(RH)]

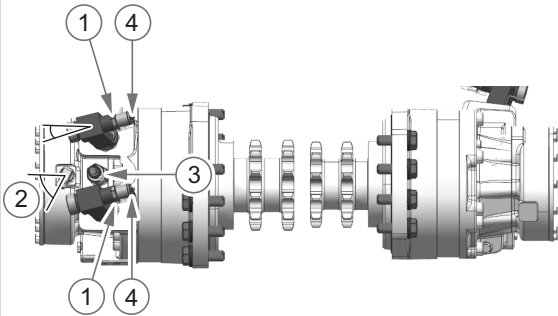


- **Tightening torque**
  - ① (1-1/16-12 UN) : 17.35 ~ 18.67 kgf.m
  - ②, ③ (9/16-18 UNF) : 3.37 ~ 3.57 kgf.m
  - ④ (3/4-16 UNF) : 6.94 ~ 7.96 kgf.m
  - ⑤ (PF1/4) : 3.5 ~ 4.0 kgf.m
- **Assemblt angle**
  - ① : 10°
  - ② : 45°
  - ③ : 65°(LH), 90° (RH)

REMARKS

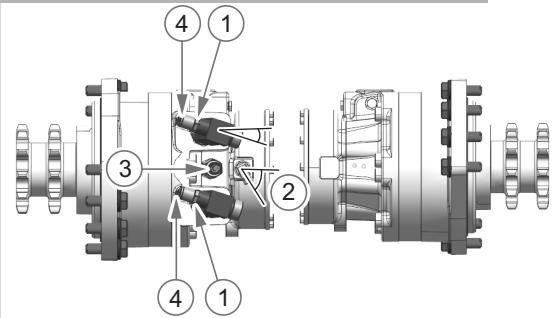
ELBOW ASSEMBLY

L MODEL [HST-1-SPEED MOTOR(LH)]



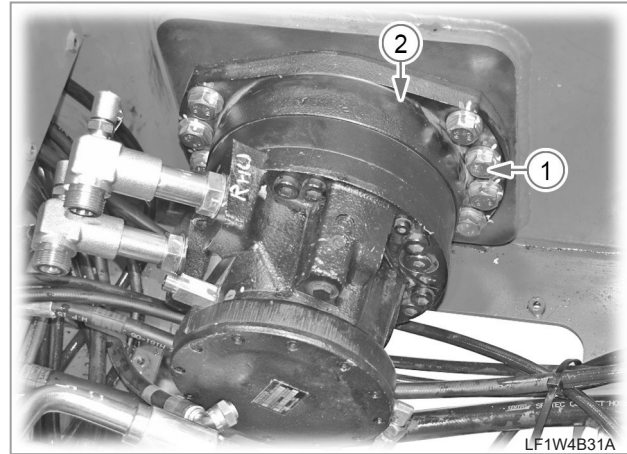
LF1W4D91A

L MODEL [HST-1-SPEED MOTOR(RH)]

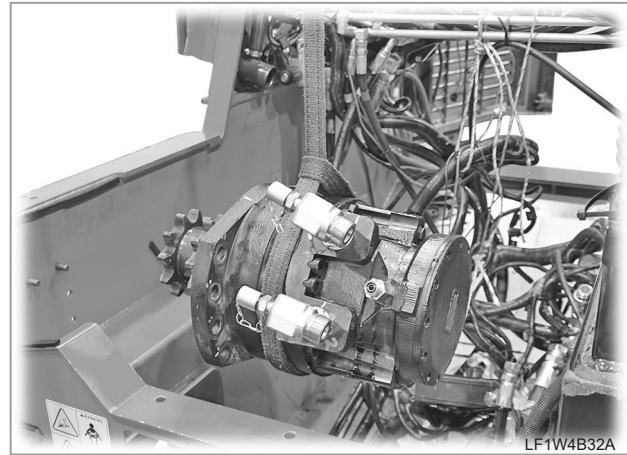


LF1W4D92A

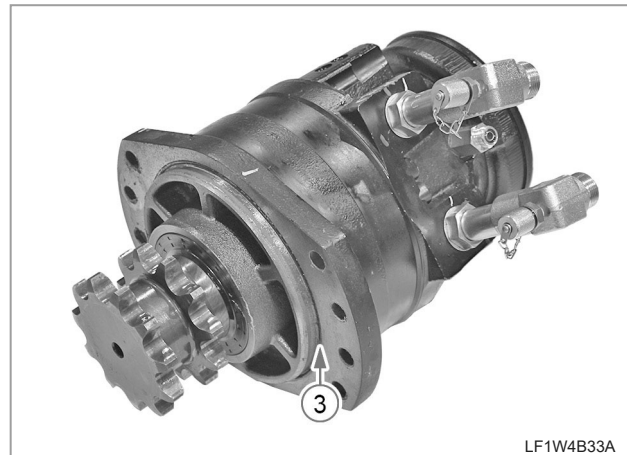
- **Tightening torque**
  - ① (1-1/16-12 UN) : 17.35 ~ 18.67 kgf.m
  - ② (9/16-18 UNF) : 3.37 ~ 3.57 kgf.m
  - ③ (3/4-16 UNF) : 6.94 ~ 7.96 kgf.m
  - ④ (PF1/4) : 3.5 ~ 4.0 kgf.m
- **Assemblt angle**
  - ① : 10°
  - ② : 65°



LF1W4B31A



LF1W4B32A



LF1W4B33A

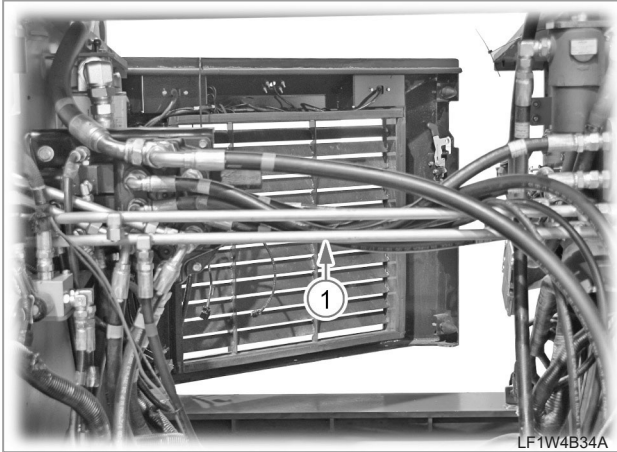
4. Unscrew the 8 HST motor mounting bolts (1) to remove the HST motor (2) from the inside of the main frame.

During reassembly, be careful not to miss the O-ring (3) and apply grease on the surface of the O-ring.

REMARKS

- **When reinstalling the mounting bolt, apply the sealant (LOCTITE 271 or equivalent) on its threads and tighten it to the specified torque.**  
**Mounting bolt (M16 P1.5)**  
**tightening torque ..... 30.8 ~ 34.0 kgf.m**

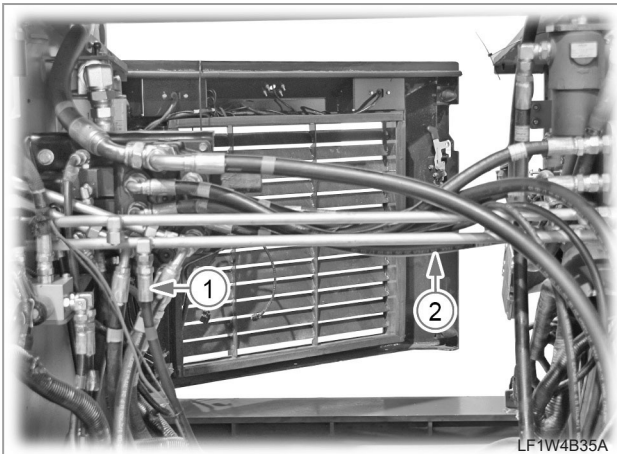
8.5 MAIN CONTROL VALVE DETACH & DISASSEMBLY



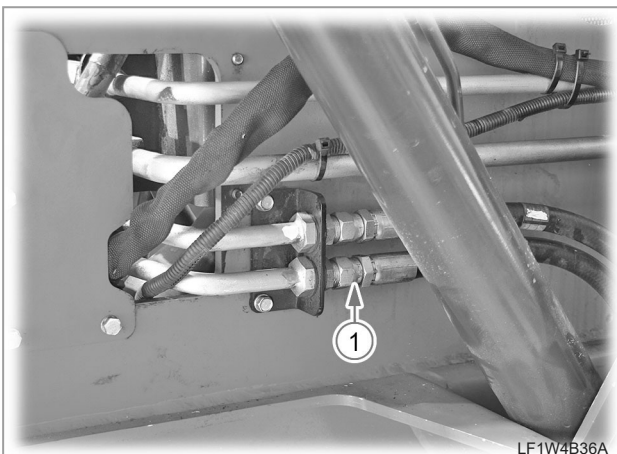
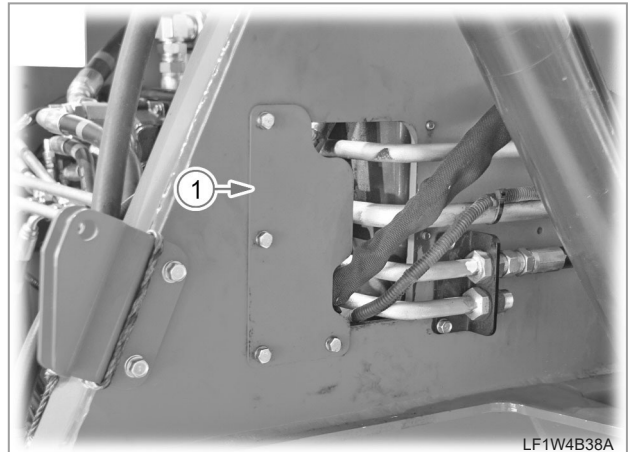
1. Disconnect the hydraulic tube (LF13-0365) (1).



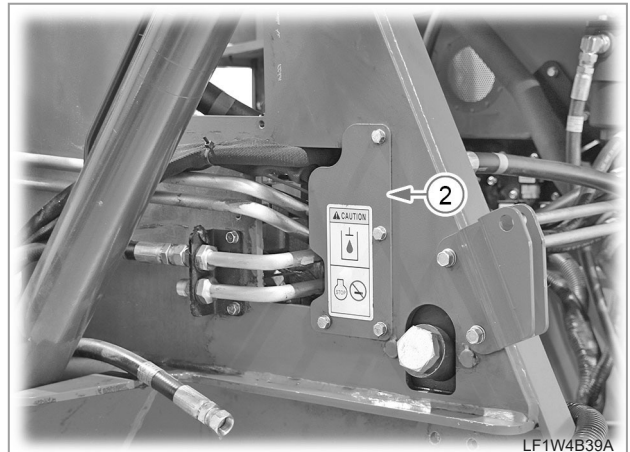
1-3. Disconnect the hydraulic hose (1) to the hydraulic tube from the outside of the right section of the main frame.



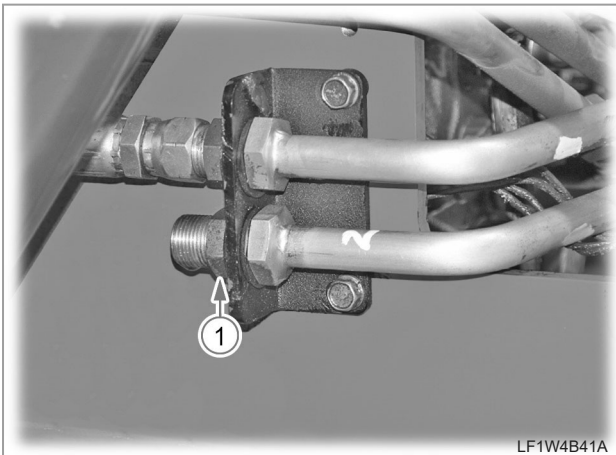
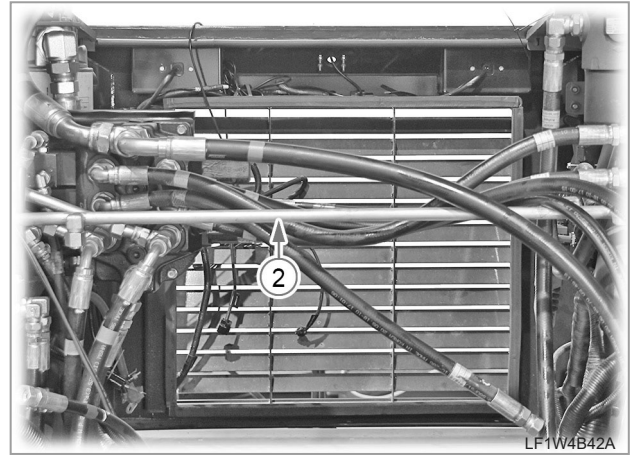
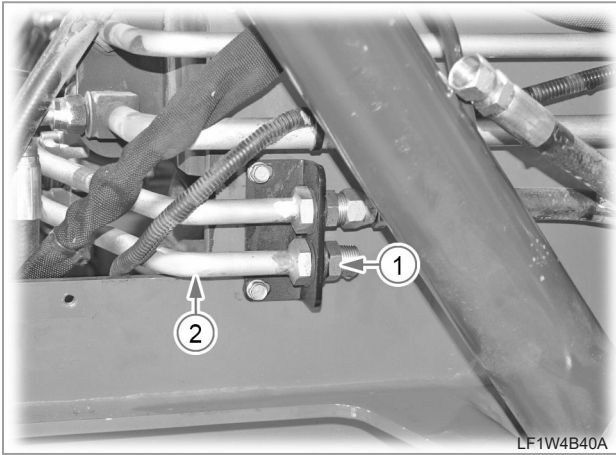
1-1. Disconnect the hydraulic hoses (1 & 2) to the hydraulic tube from the inside of the main frame.



1-2. Disconnect the hydraulic hose (1) to the hydraulic tube from the outside of the left section of the main frame.

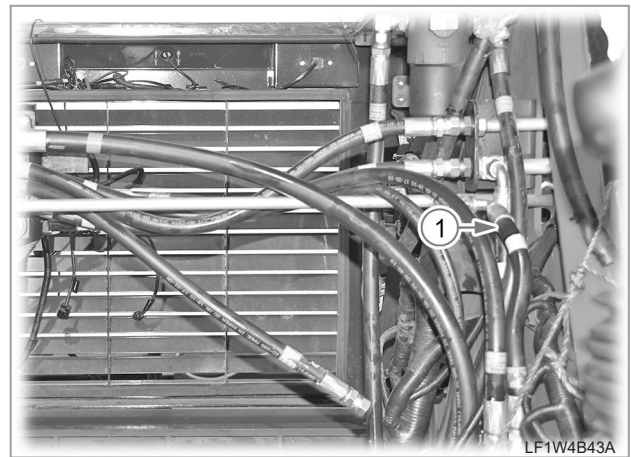


1-4. Remove the covers (1 & 2) from the left and right sides of the main frame.

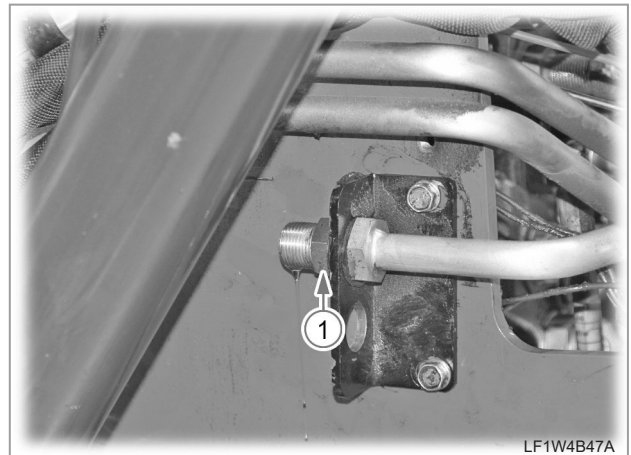
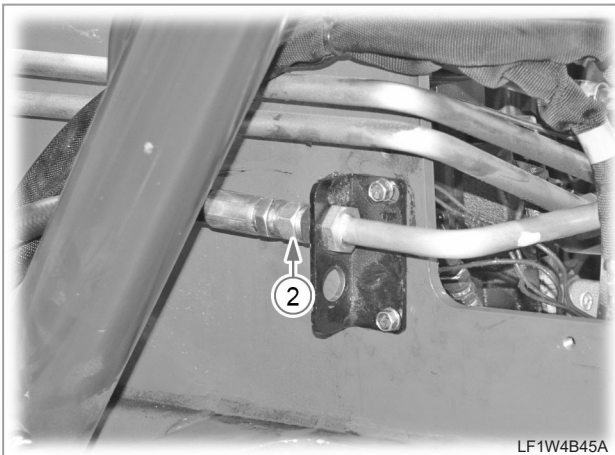
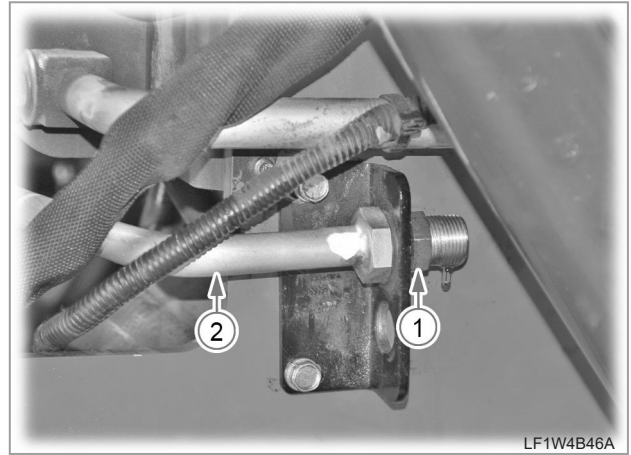
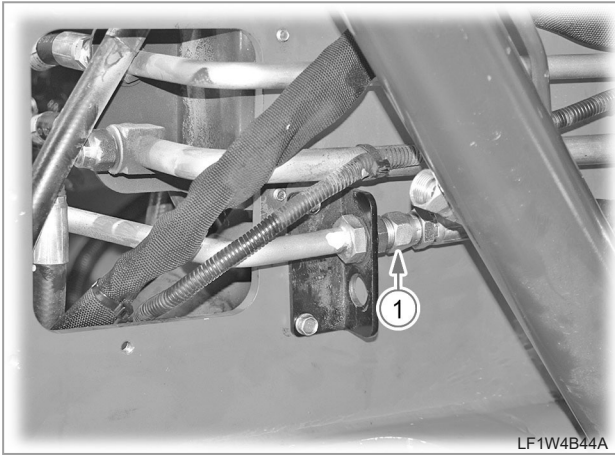


1-5. Unscrew the left-hand and right-hand hydraulic tube mounting nuts (1) to disconnect the hydraulic tubes (2).

2. Hydraulic tube (LF13-0363)(2) detach



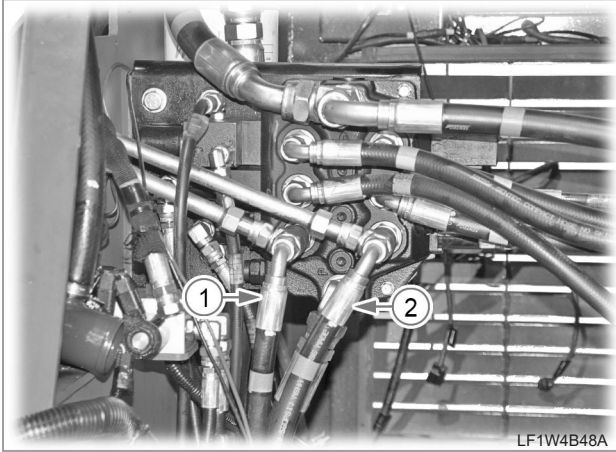
2-1. Disconnect the hydraulic hose (1) to the hydraulic tube from the inside of the main frame.



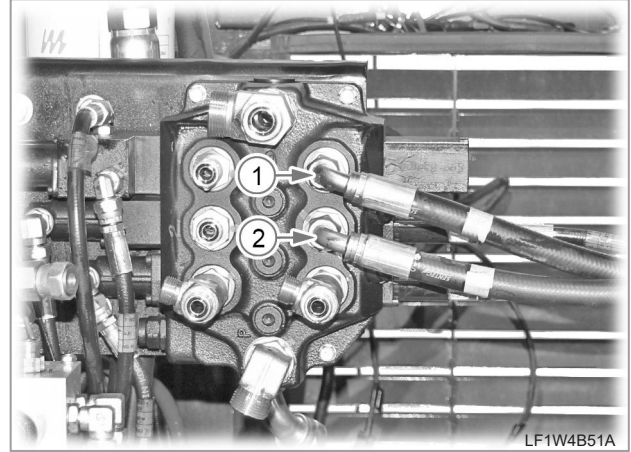
2-2. Disconnect the hydraulic hoses from the left section (1) and right section (2) of the main frame.

2-3. Unscrew the left-hand and right-hand hydraulic tube mounting nuts (1) to disconnect the hydraulic tubes (2).

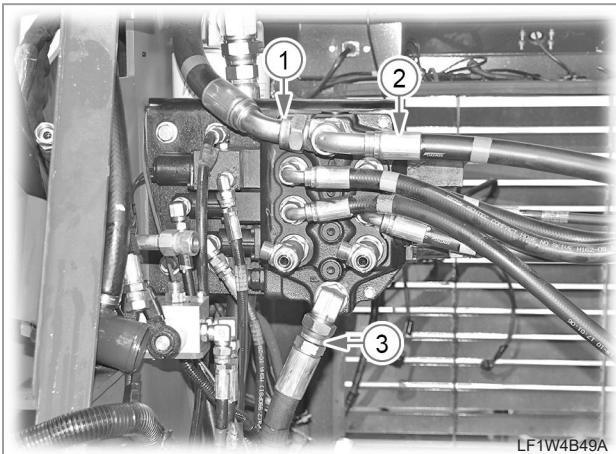




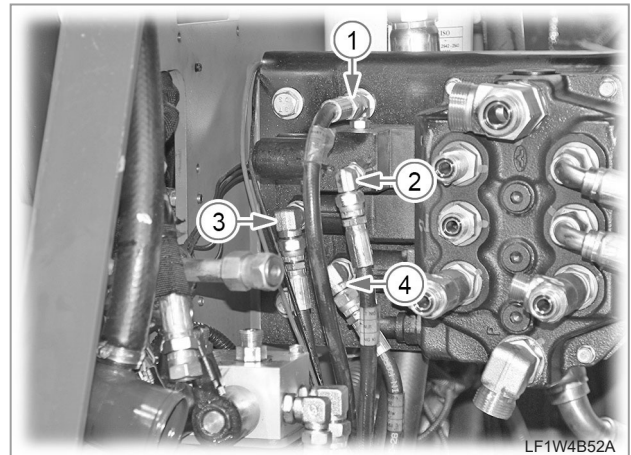
3. Disconnect the tilt cylinder rollback hydraulic hose (1) and tilt cylinder dump hydraulic hose (2) from the main control valve.



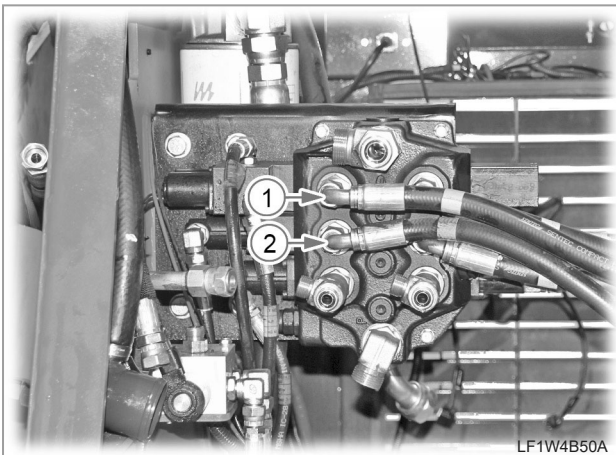
6. Disconnect the external hydraulic (male) hose (1) and self-leveling hydraulic hose (2).



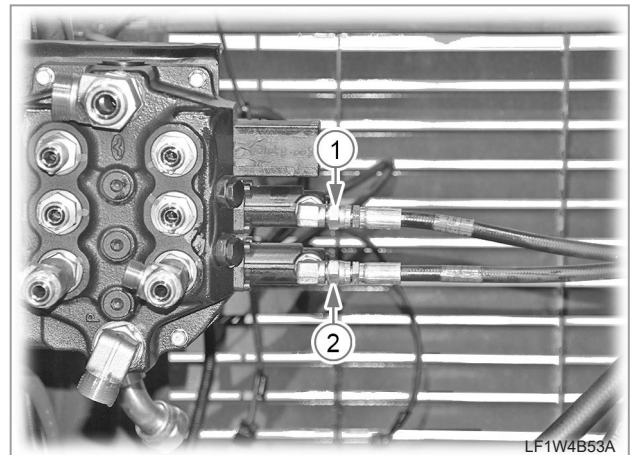
4. Disconnect the oil cooler hose (1), high-flow valve hose (2), and oil cooler hydraulic hose (3).



7. Disconnect the oil tank return hose (1), pilot lock valve UI hose (2), RCV boom up hose (3), and RCV rollback hose (4).



5. Disconnect the external hydraulic (female) hose (1) and lift cylinder (lifting) hydraulic hose (2).

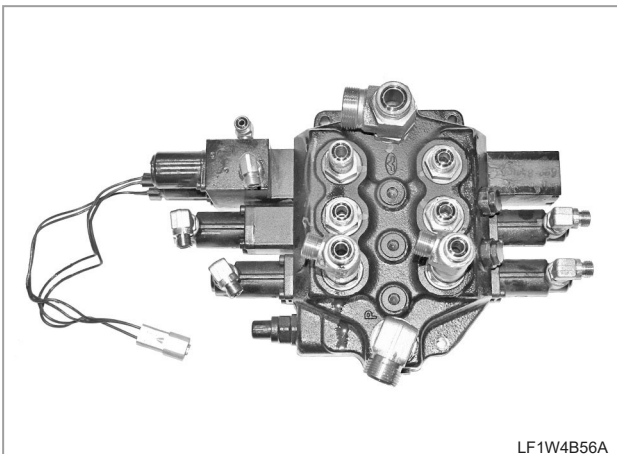
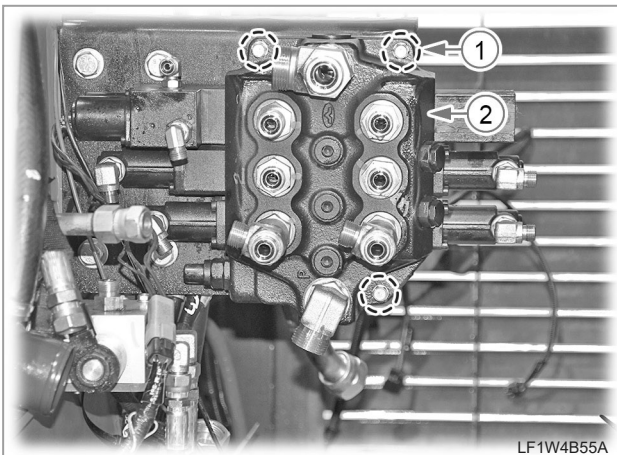


8. Disconnect the RCV boom down hose (1) and RCV dump hose (2).





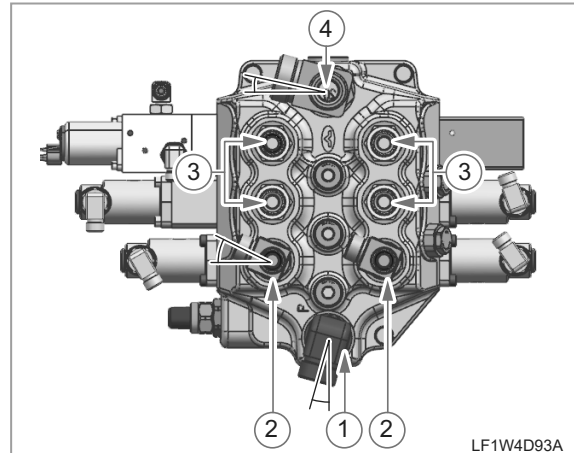
9. Disconnect the main control valve connector (1).



10. Unscrew the three main control valve mounting bolts and nuts (1)(3EA), and then remove the main control valve assembly (2).

REMARKS

ELBOW ASSEMBLY



- When installing the elbow, install it according to the direction and specified torque.

Mounting section tightening torque

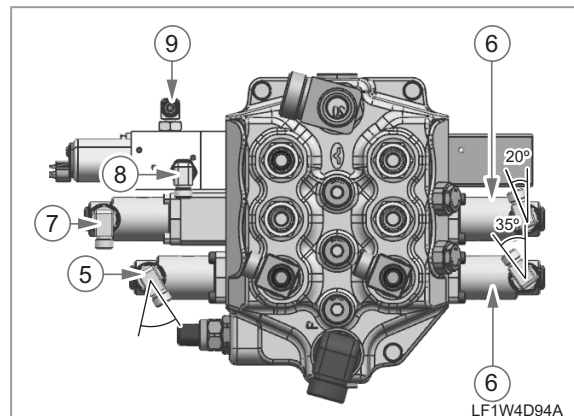
- ① (1-1/16-12 UN) : 17.4 ~ 18.7 kgf.m
- ②, ③ (7/8-14 UNF) : 10.0 ~ 11.2 kgf.m
- ④ (1-1/16-12 UN) : 17.4~18.7kgf.m

Hose tightening torque

- ① (1-3/16-12 UN) : 12.0 ~ 13.0 kgf.m
- ②, ③ (13/16-16 UN) : 6.0 ~ 6.5 kgf.m
- ④ (1-3/16-12 UN) 12.0 ~ 13.0 kgf.m  
and (1-7/16-12 UN) : 18.5~19.5kgf.m

Assembly angle

- ① : 15°
- ② : 20°
- ④ : 15°



Mounting section tightening torque

- ⑤, ⑥, ⑦ (9/16-18 UNF) : 3.4 ~ 3.6 kgf.m
- ⑧, ⑨ (7/16-20 UNF): 2.0 ~ 2.2 kgf.m

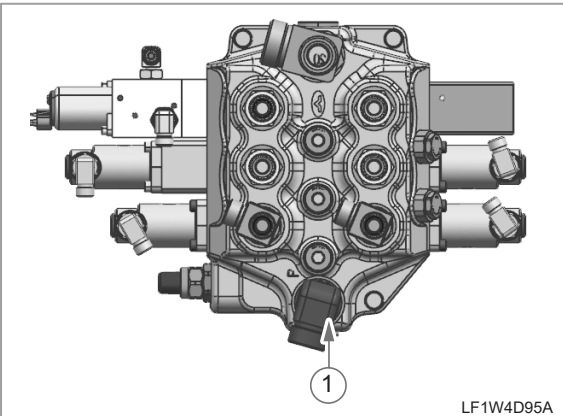
Hose tightening torque

- ⑤, ⑥, ⑦ (9/16-18 UNF) : 2.5 ~ 3.0 kgf.m
- ⑧, ⑨ (9/16-18 UNF) : 2.5 ~ 3.0 kgf.m

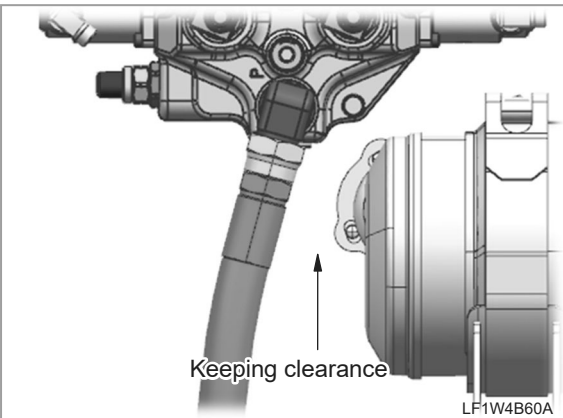
Assembly angle

- ⑤ : 45°

**CAUTION**



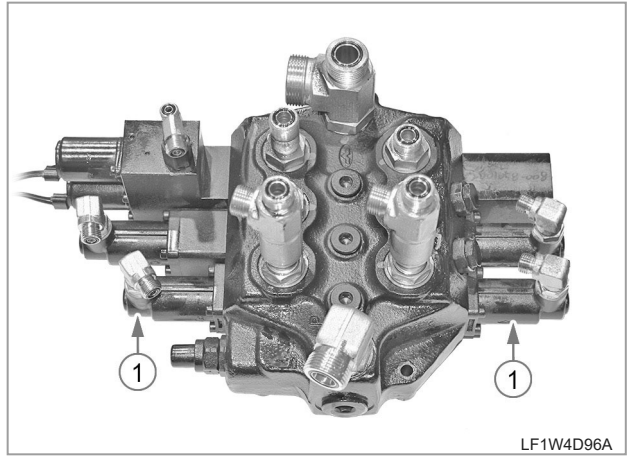
LF1W4D95A



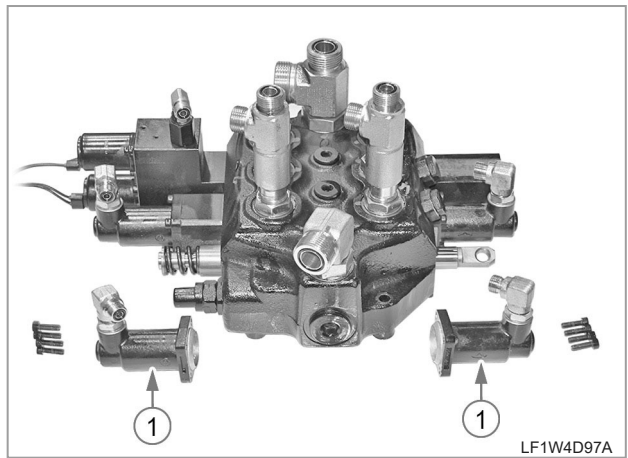
LF1W4B60A

- ① When connecting the hydraulic hose to the elbow, keep the clearance from the CCRT for at least 50 mm to prevent any interference.

**DISASSEMBLY**

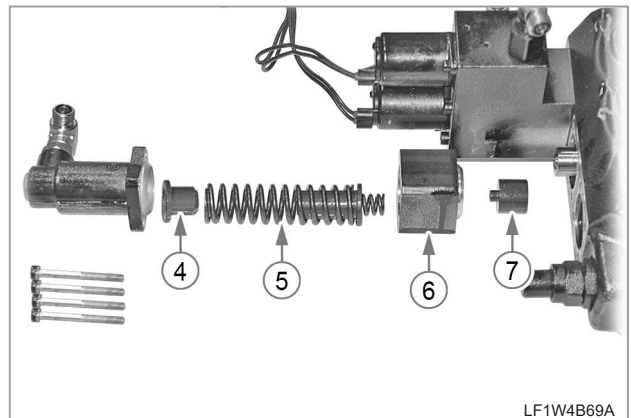
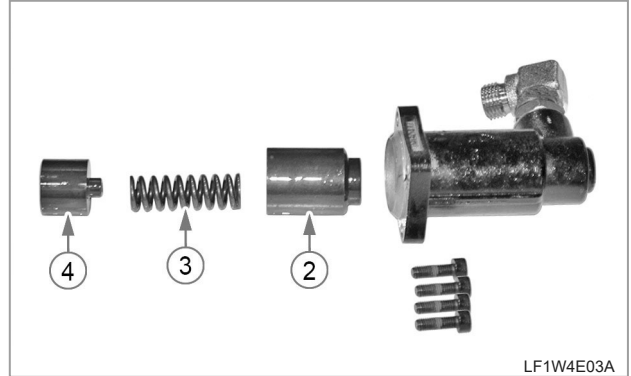
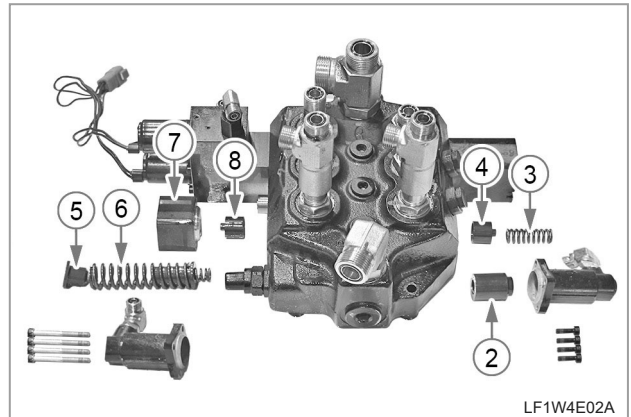
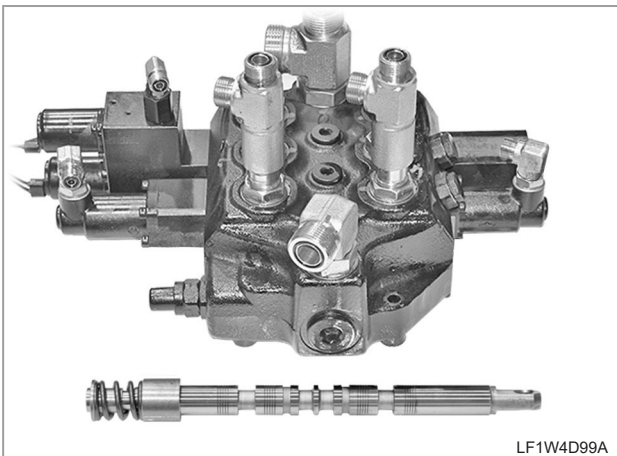
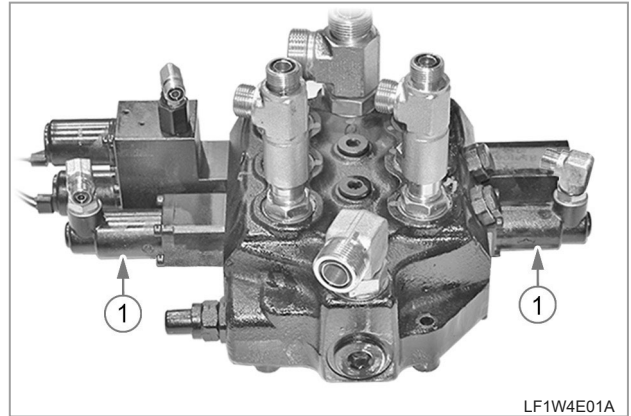
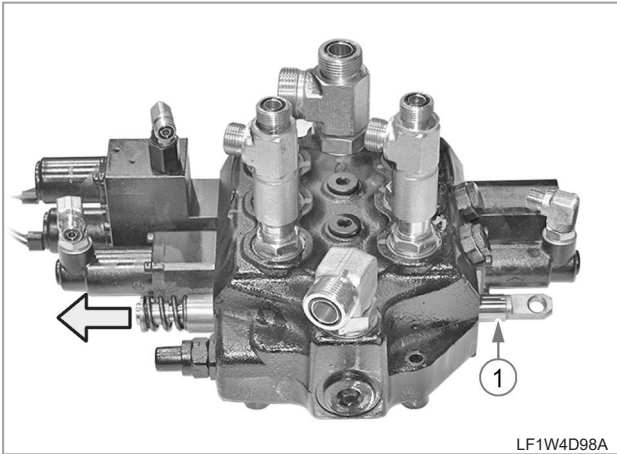


LF1W4D96A



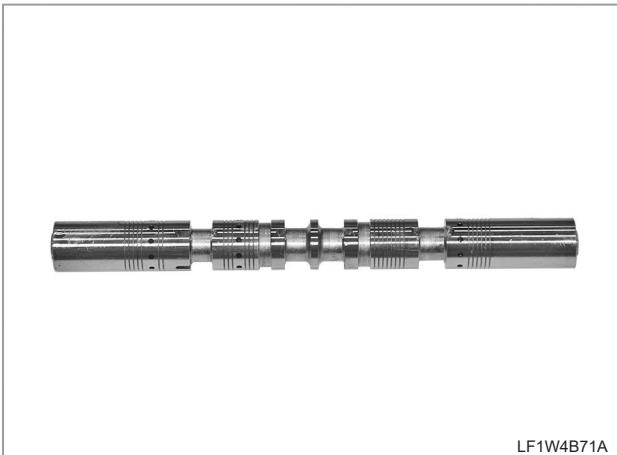
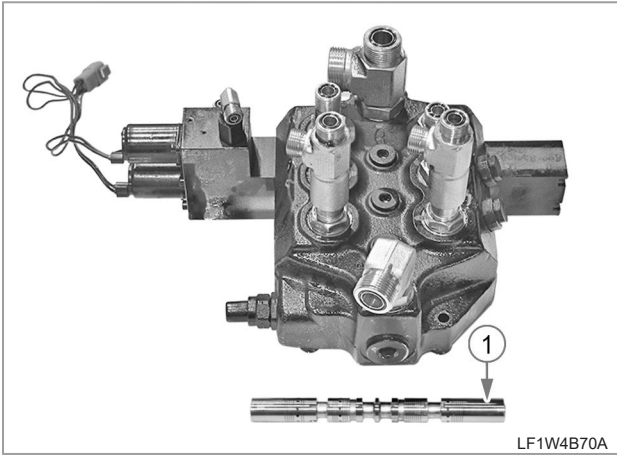
LF1W4D97A

1. Remove the left-hand and right-hand bucket spool covers (1) of the control valve.

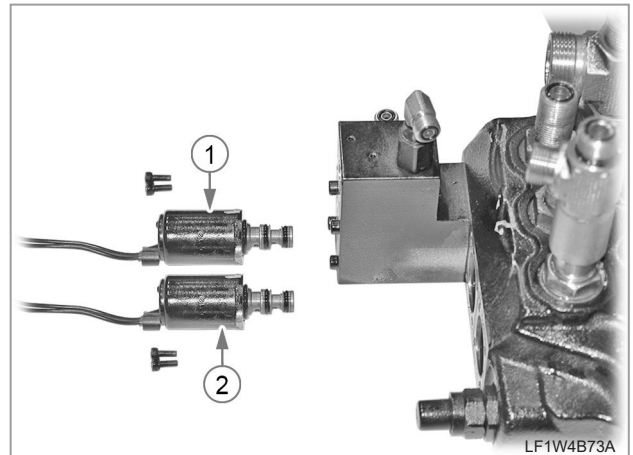
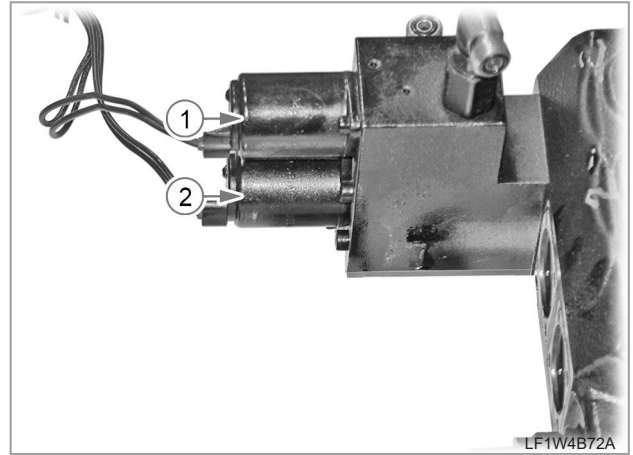


2. Pull out the bucket spools (1).

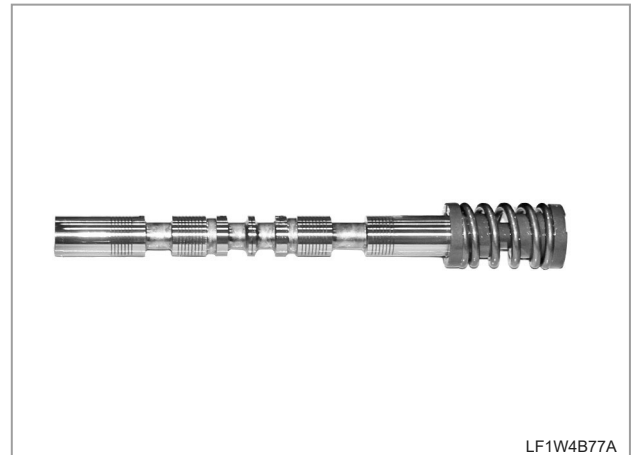
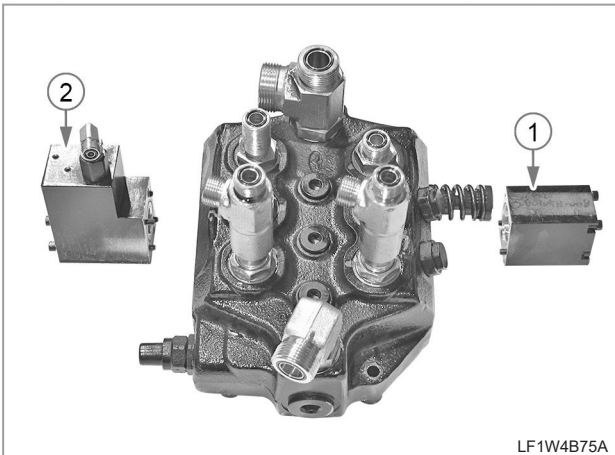
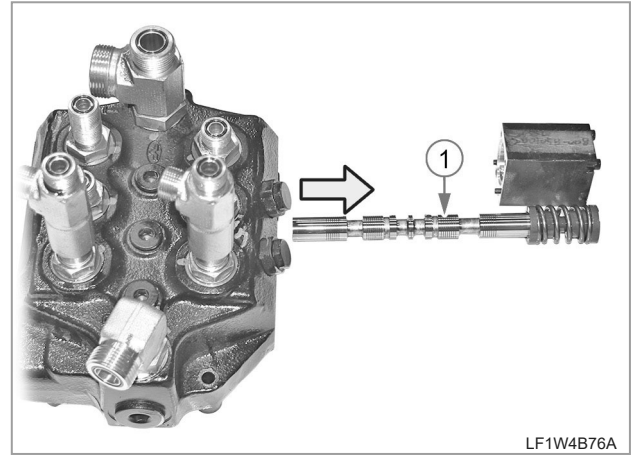
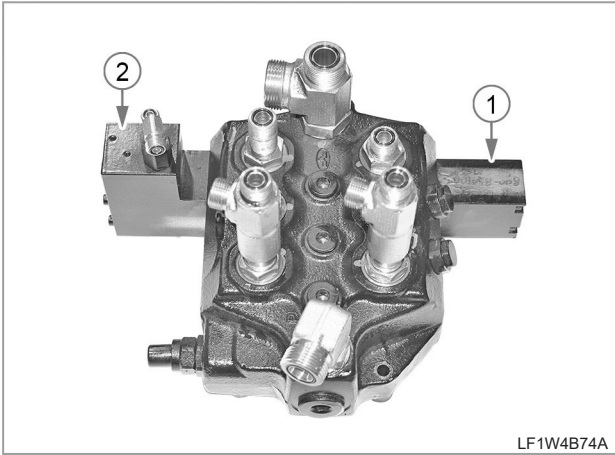
3. After removing the boom spool covers (1), remove the components (2, 3, & 4) from the left side as well as the components (5, 6, 7, & 8) from the right side.



4. Pull out the boom spool (1).

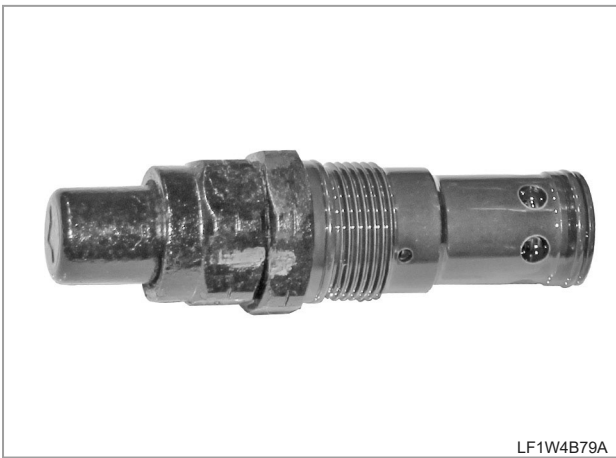
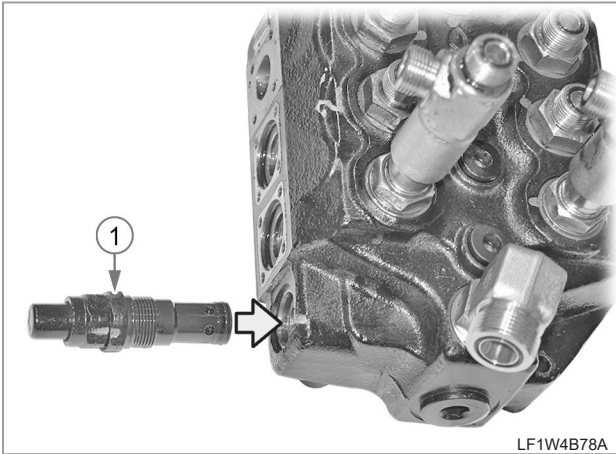


5. Remove the solenoid valves (1 & 2).



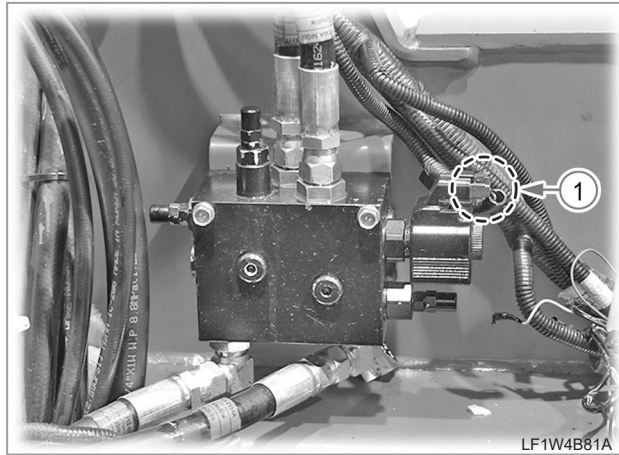
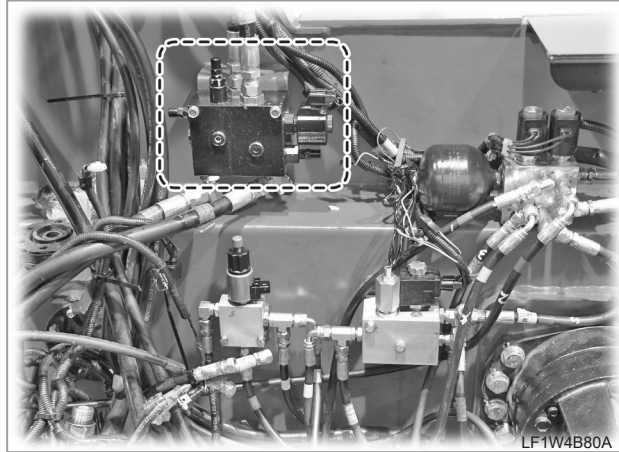
6. Remove the left-hand cover (1) and right-hand cover (2) from the main control valve body.

7. Pull out the external hydraulic flow spool (1) from the main control valve body.

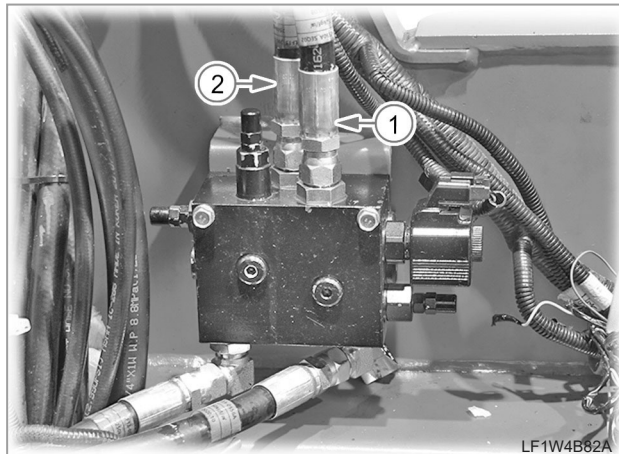


8. Remove the relief valve assembly (1).

8.6 SELF LEVEL VALVE DETACH & DISASSEMBLY



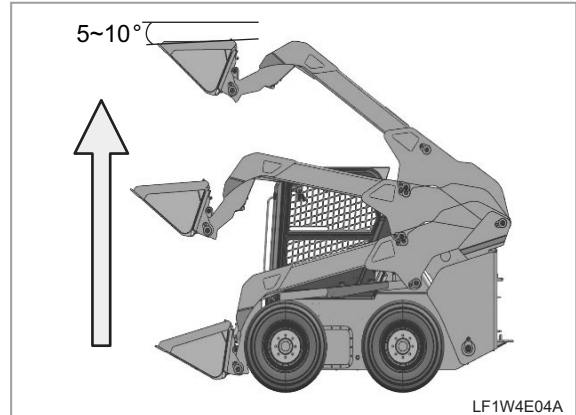
1. Disconnect the solenoid valve connector (1).



2. Disconnect the MCV hydraulic hose (1) and lift cylinder (lowering) hydraulic hose (2) from the top of the self-leveling valve body.

REMARKS

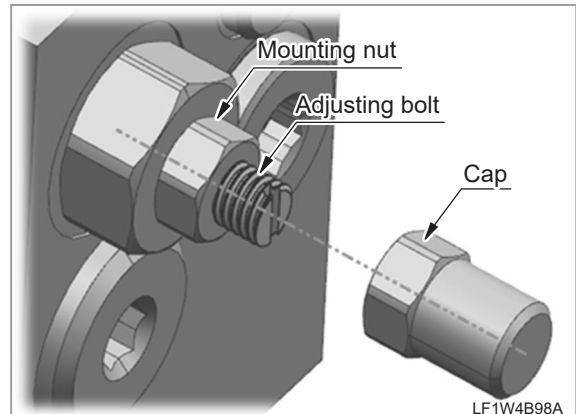
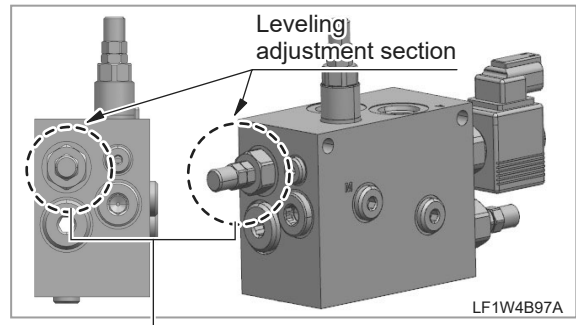
SELF-LEVELING ADJUSTMENT



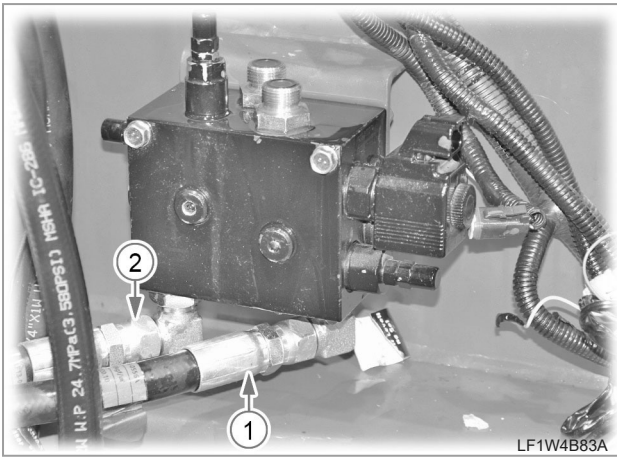
1. Set the machine with the boom in the lowest position and the bucket in the maximum rollback position.
2. Run the engine at its maximum rpm (2,550 ± 50) to check the angle of the bucket after the boom is raised up to the highest position.

Bucket angle : 5~10 °

3. If the angle of the bucket is abnormal.

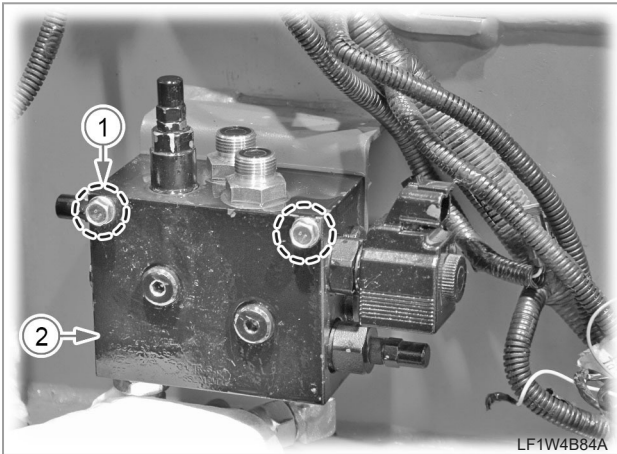


- Remove the cap.
- Unscrew the mounting nut.
- Turn the adjusting bolt clockwise or counterclockwise to adjust it.  
(Adjustment should be done within 1 and a half turns.)  
- Clockwise direction: decreasing bucket dump ratio  
- Counterclockwise direction: increasing bucket dump ratio
- After setting the adjusting bolt, lock it with the mounting nut.
- Install the cap again.

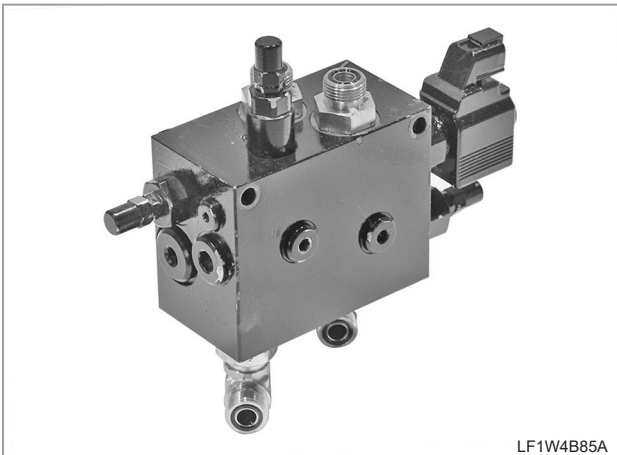


LF1W4B83A

3. Disconnect the tilt cylinder (dump) hydraulic hose (1) and tilt cylinder (rollback) hydraulic hose (2).



LF1W4B84A

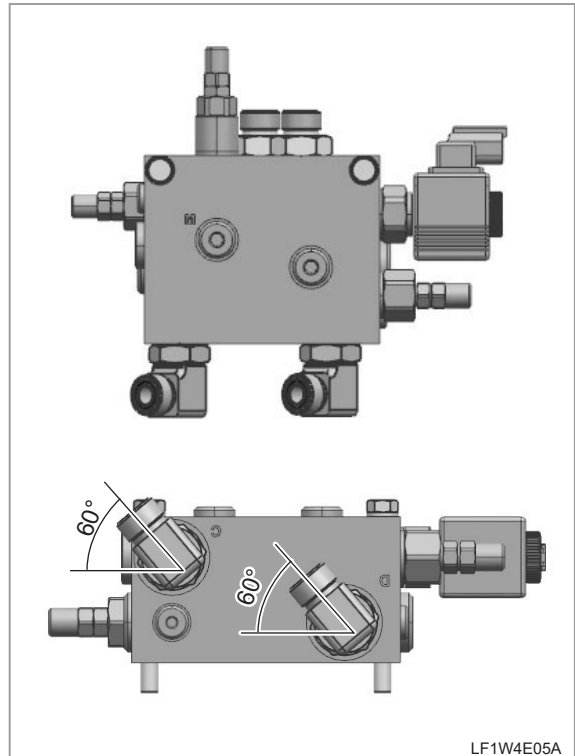


LF1W4B85A

4. Unscrew the self-leveling valve body mounting bolts (1)(2EA), and then remove the self-leveling valve (2).

REMARKS

ELBOW ASSEMBLY



LF1W4E05A

- When installing the elbow, be careful with its installation direction and tightening torque.

**Mounting section (7/8-14 UNF)**

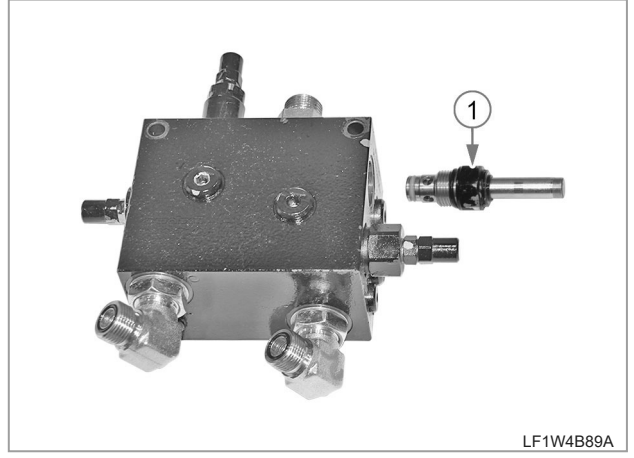
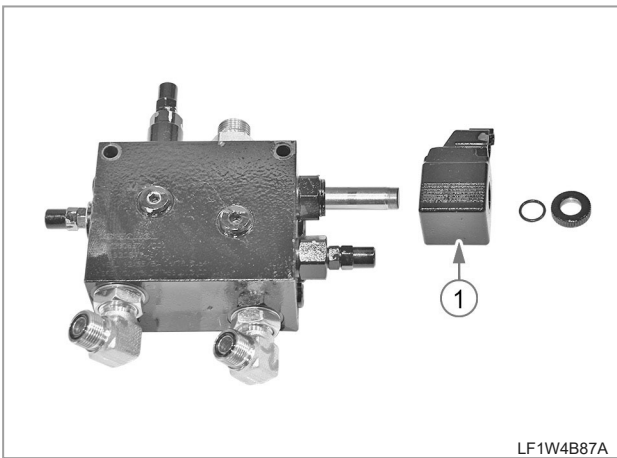
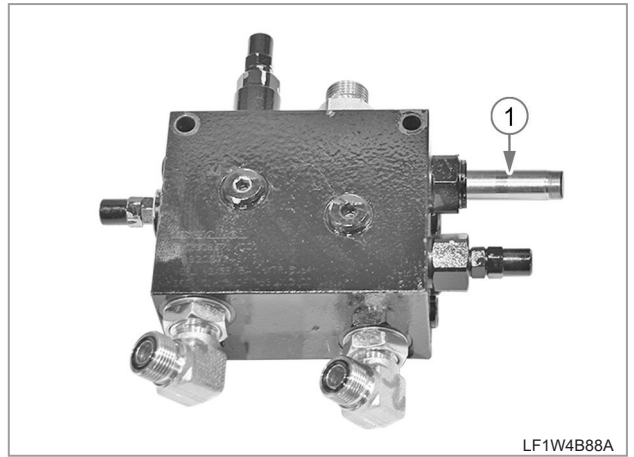
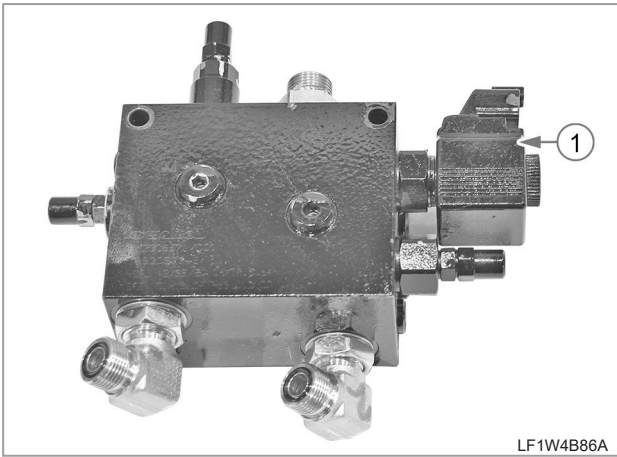
tightening torque .....10.0 ~ 11.2 kgf.m

**Hose (1-3/16-12 UN)**

tightening torque .....12.0 ~ 13.0 kgf.m

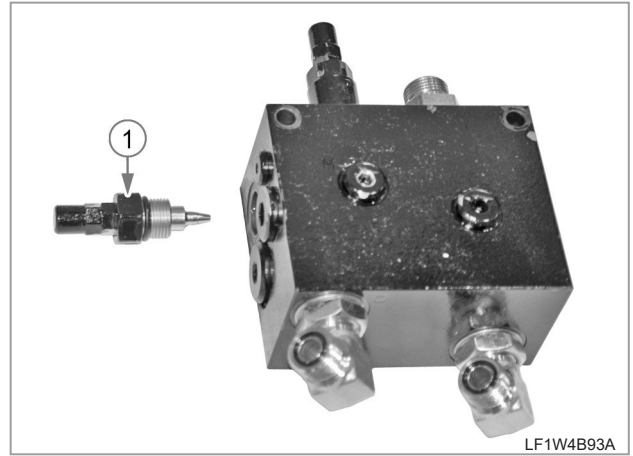
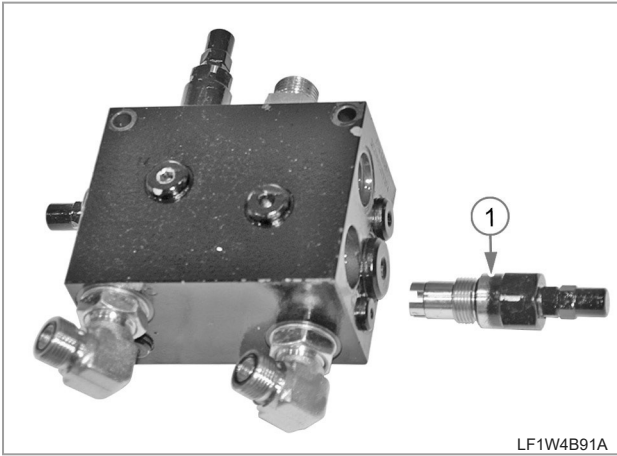
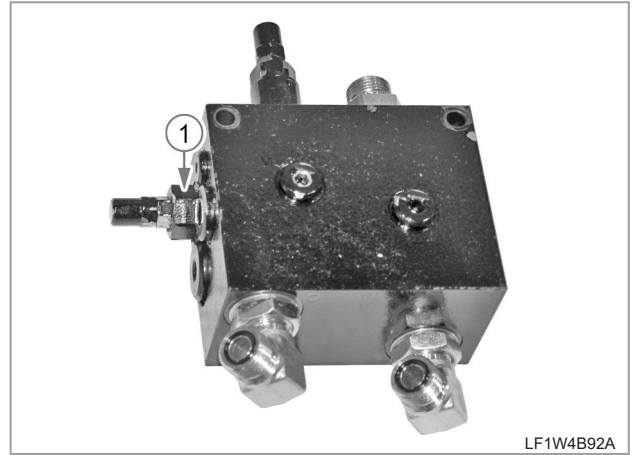
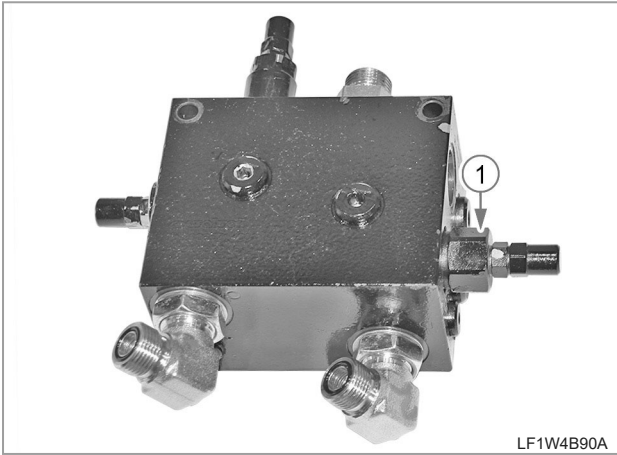


**DISASSEMBLY**



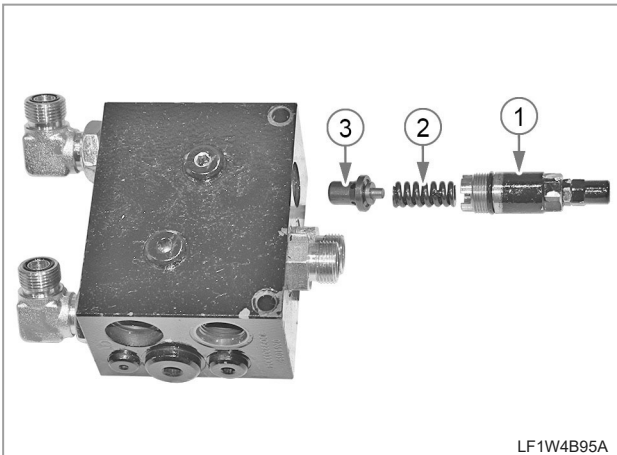
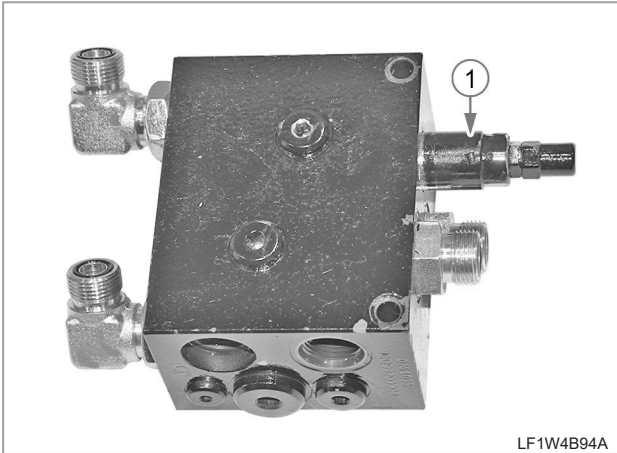
1. Remove the solenoid magnet (1) from the valve body.

2. Remove the solenoid valve (1).

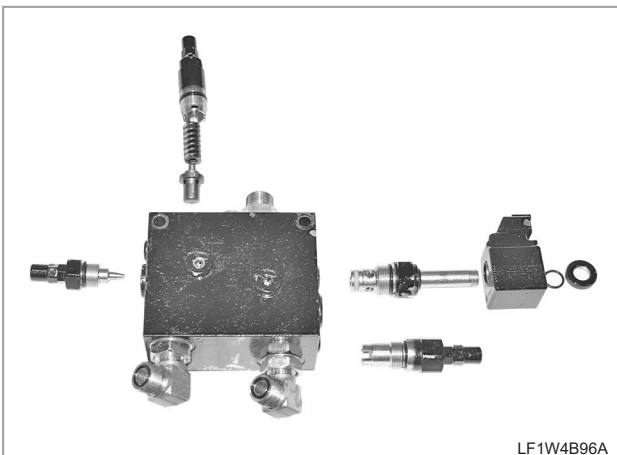


3. Remove the relief valve (1).

4. Remove the horizontal balance control valve (1).



5. Unscrew the holder (1) on top of the valve body to remove the spring (2) and valve (3).



6. Assemble in the reverse order of disassembly.

8.7 PILOT LOCK VALVE DETACH & DISASSEMBLY

SAFETY FIRST

ENGINE

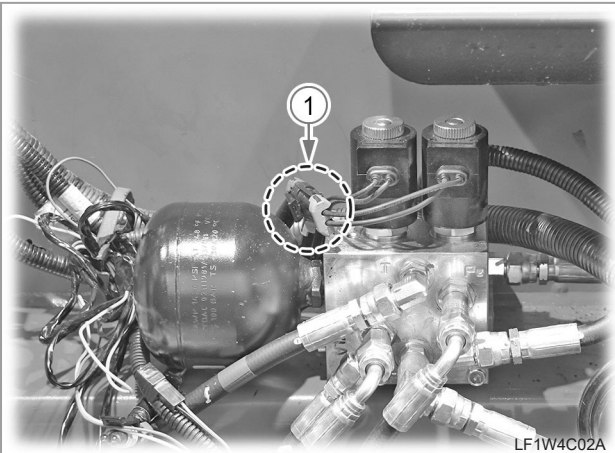
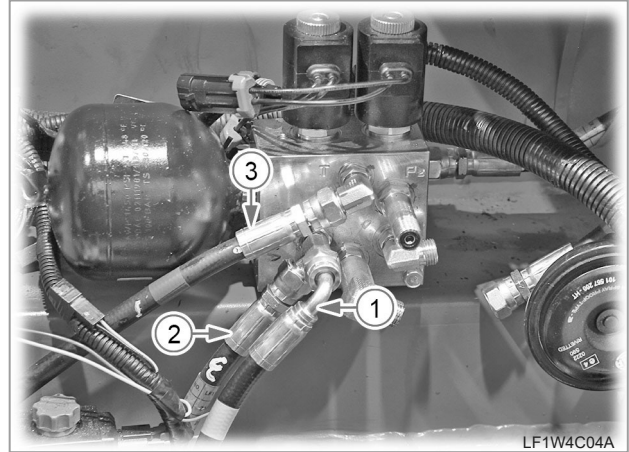
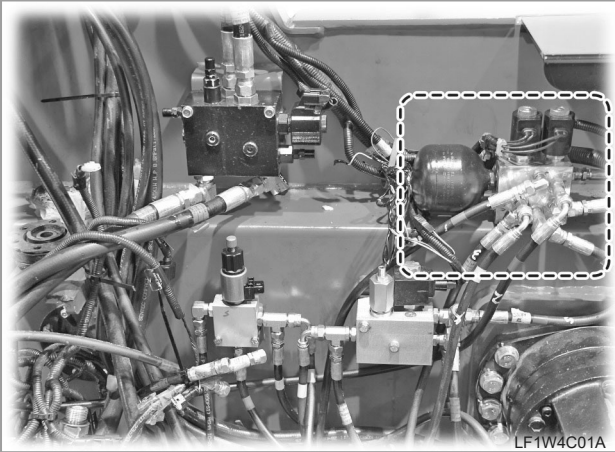
DRIVING & CHASSIS

HYDRAULIC SYSTEM

ELECTRIC SYSTEM

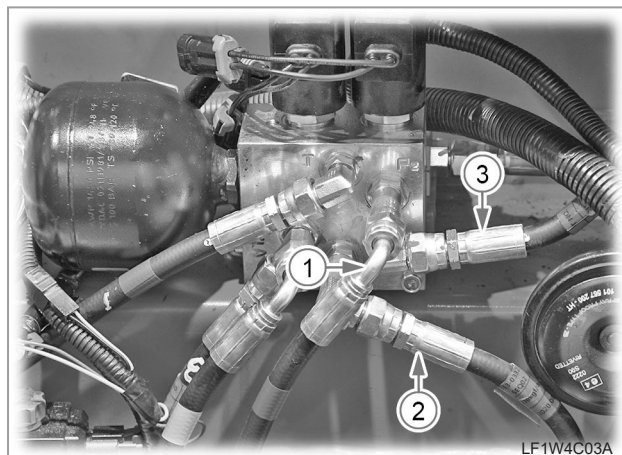
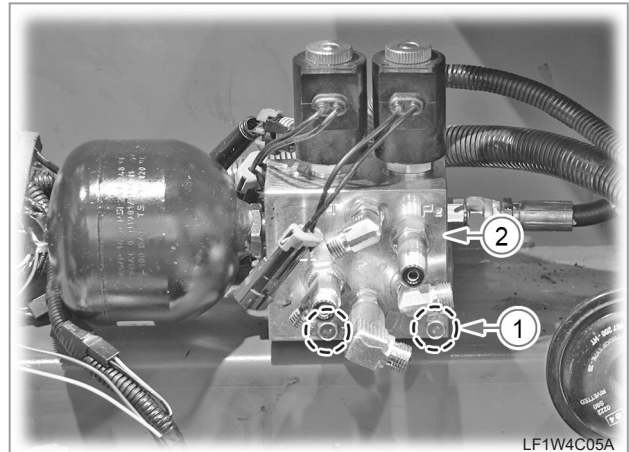
CABIN

INDEX

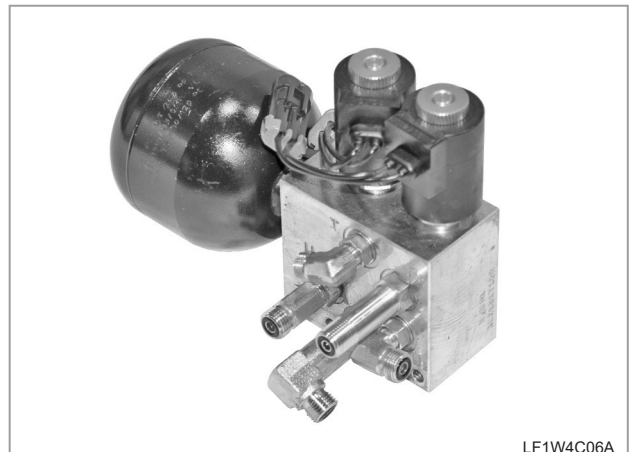


3. Disconnect the main control valve hose (1), RCV assembly (RH) operation hose (2), and oil tank return hose (3).

1. Disconnect the solenoid connector (1).



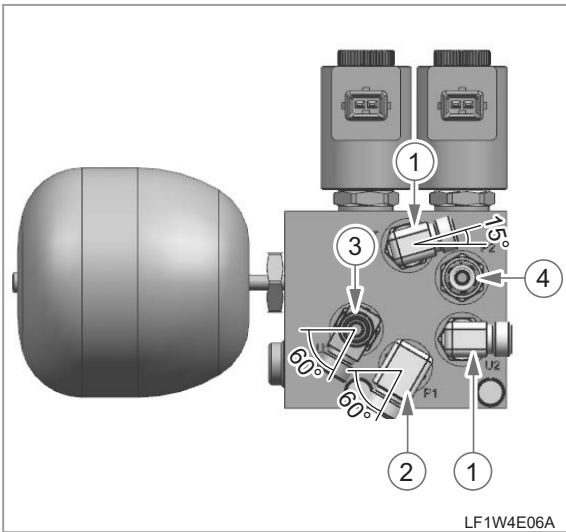
2. Disconnect the HST pump driving hose (1), HST pump shift valve hose (2), and oil tank return hose (3).



4. Unscrew the two pilot lock valve body mounting bolts (1) and then remove the pilot lock valve assembly (2).

REMARKS

ELBOE ASSEMBLY



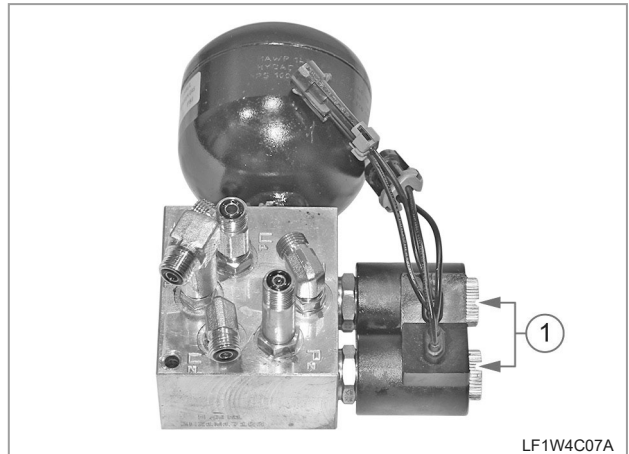
LF1W4E06A

- When installing the elbow, install it according to the direction and specified torque

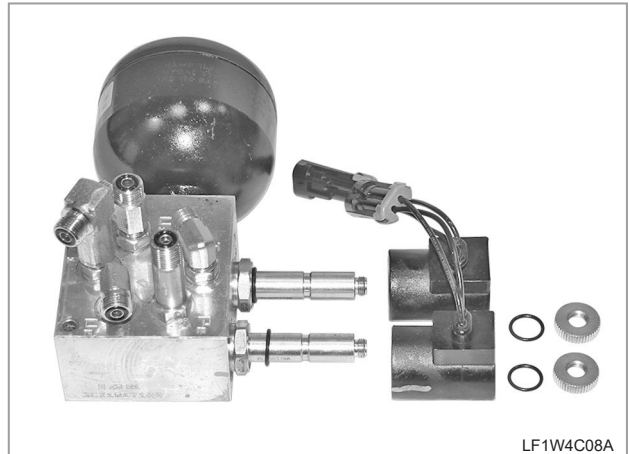
①, ②, ③, ④ :

**Mounting section (7/16-20 UNF)**  
 tightening torque .....2.0 ~ 2.2 kgf.m  
**Hose section (9/16-18 UNF)**  
 tightening torque .....2.5 ~ 3.0 kgf.m

DISASSEMBLY

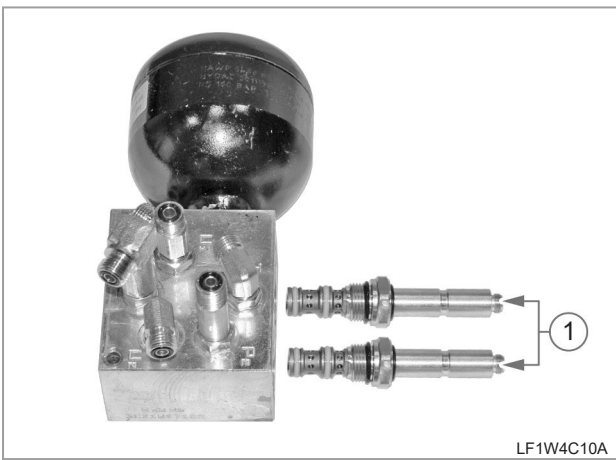
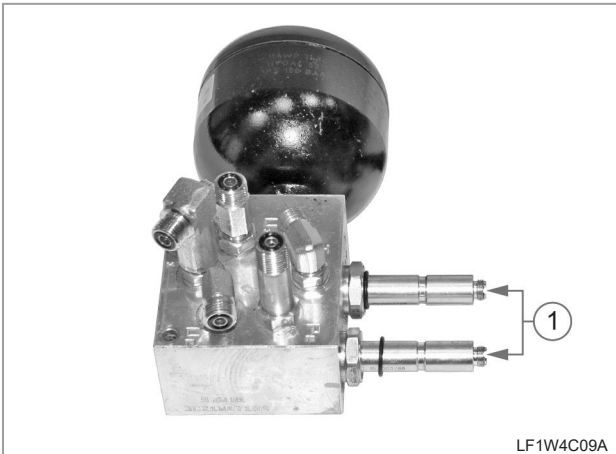


LF1W4C07A



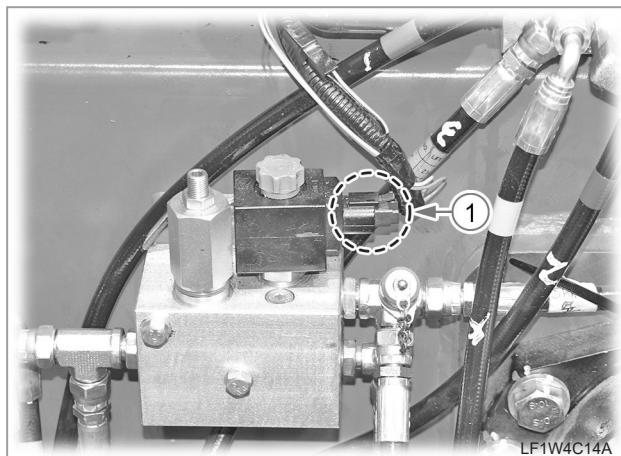
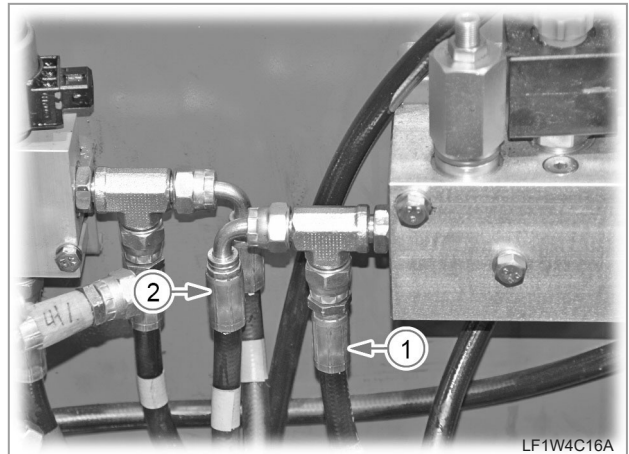
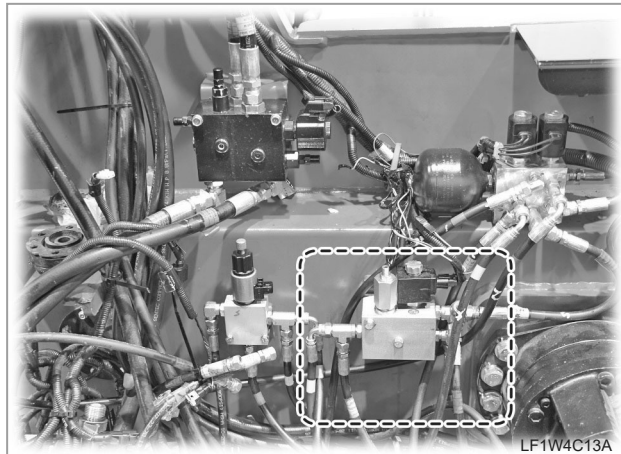
LF1W4C08A

1. Remove the solenoid magnets (1) from the pilot lock valve body.



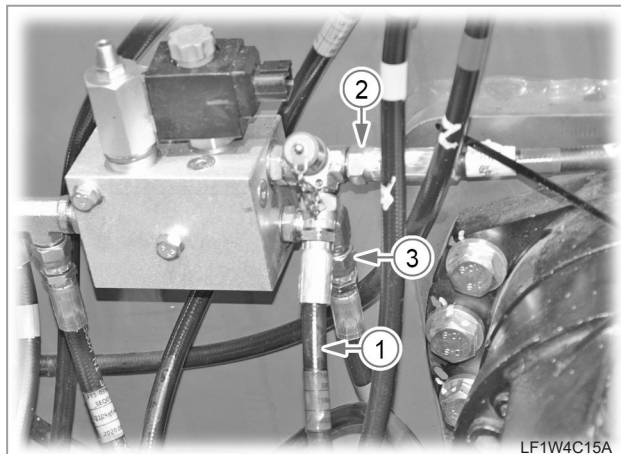
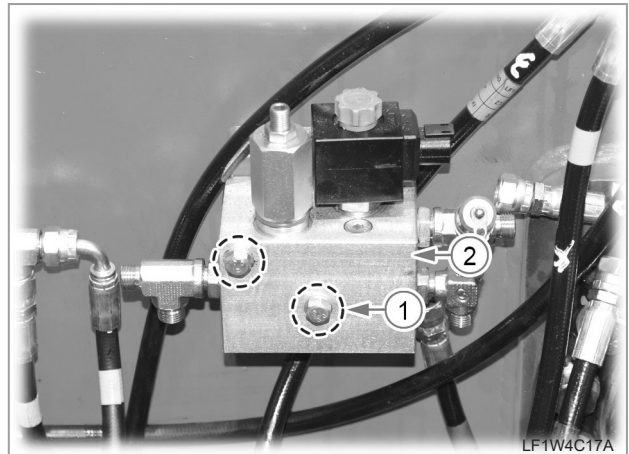
2. Remove the solenoid valves (1).

8.8 SOFT SHIFT VALVE DETACH & DISASSEMBLY

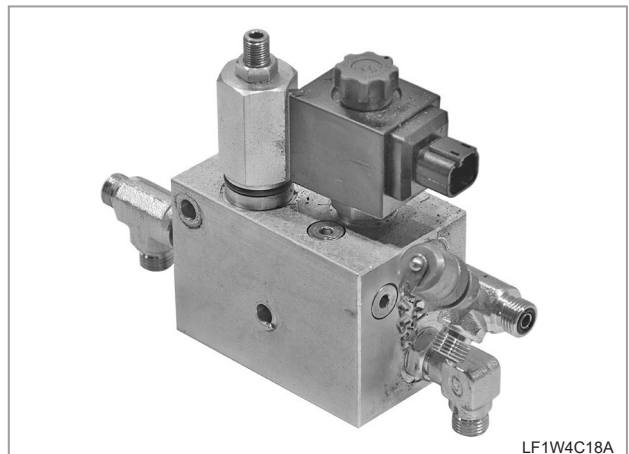


1. Disconnect the solenoid magnet connector (1).

3. Disconnect the HST motor (RH) hose (1) and HST motor (LH) hose (2).



2. Disconnect the HST pump hose (1), pilot lock valve hose (2), and oil tank return hose (3) from the valve assembly.



4. Unscrew the soft shift valve mounting bolts (1)(2EA) to remove the soft shift valve (2).

SAFETY FIRST

ENGINE

DRIVING & CHASSIS

HYDRAULIC SYSTEM

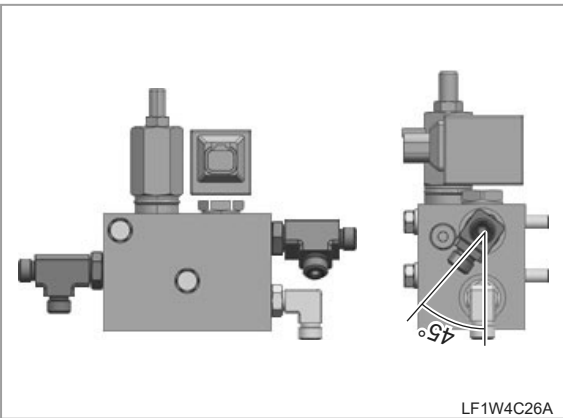
ELECTRIC SYSTEM

CABIN

INDEX

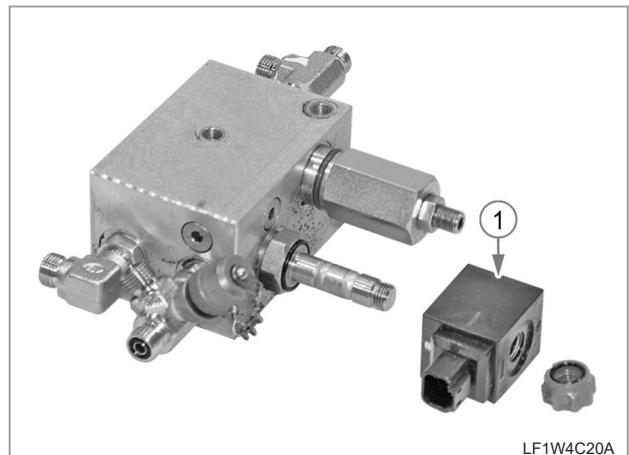
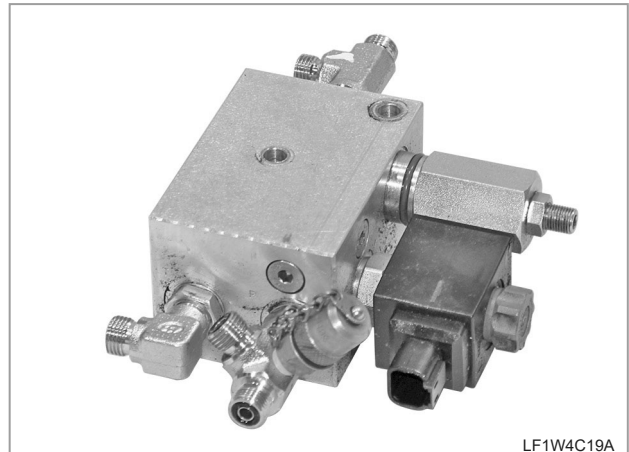
REMARKS

CONNECTOR ASSEMBLY



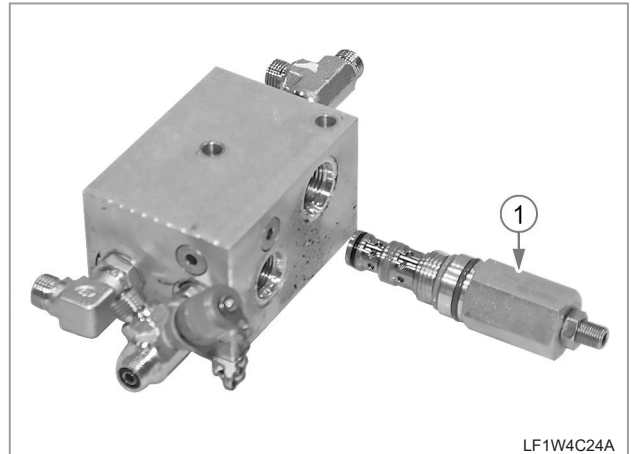
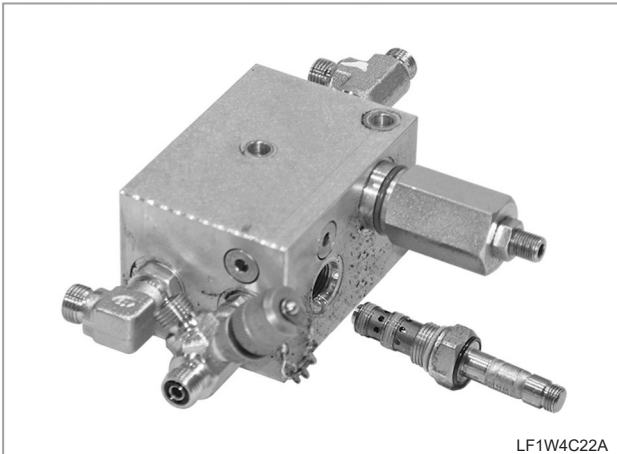
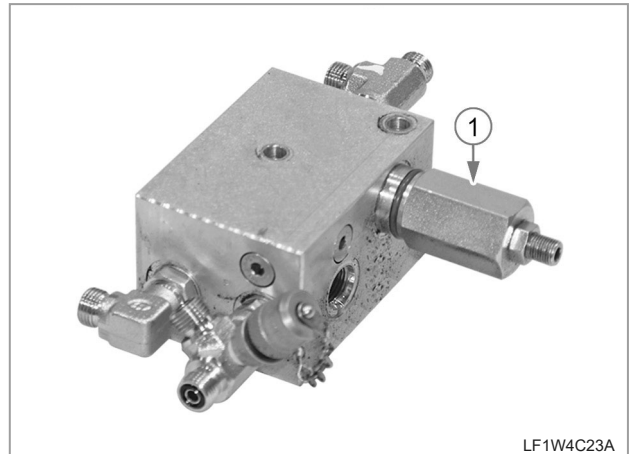
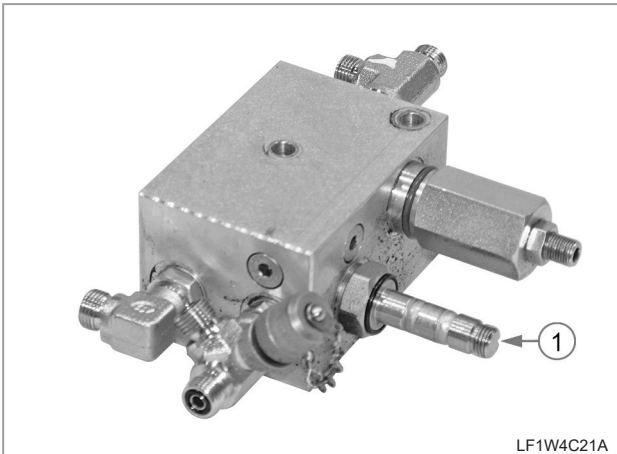
- When installing the connector, install it according to the specified torque.  
 Mounting section (9/16-18 UNF)  
 tightening torque .....3.4 ~ 3.6 kgf.m  
 Hose (9/16-18 UNF)  
 tightening torque .....2.5 ~ 3.0 kgf.m

DISASSEMBLY



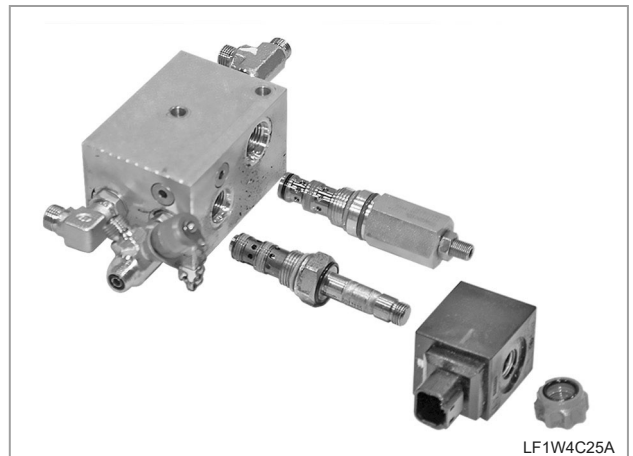
1. Remove the solenoid magnet (1).





2. Remove the solenoid valve (1).

3. Remove the valve assembly (1).



4. Assemble in the reverse order of disassembly.

8.9 PARKING VALVE DETACH & DISASSEMBLY

SAFETY FIRST

ENGINE

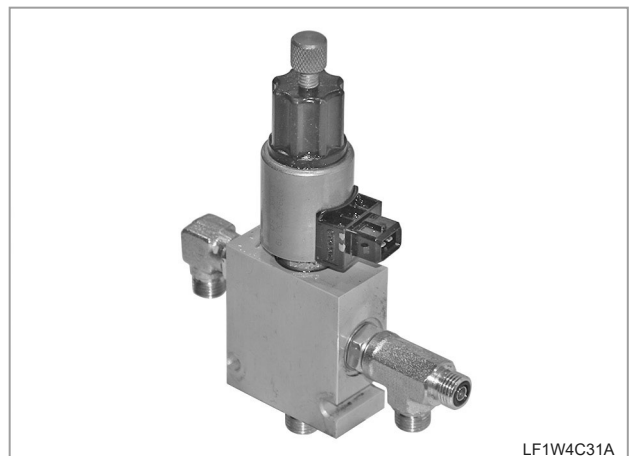
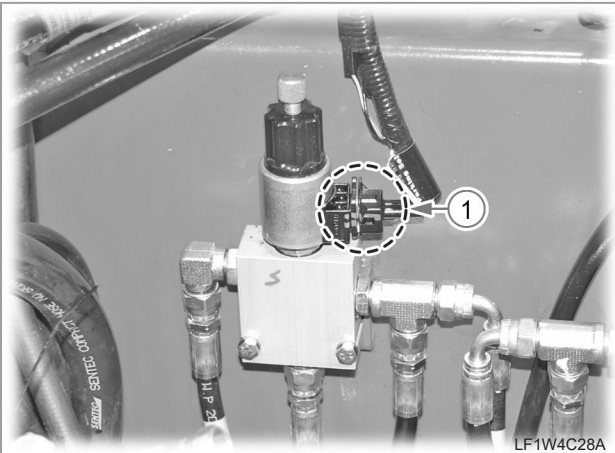
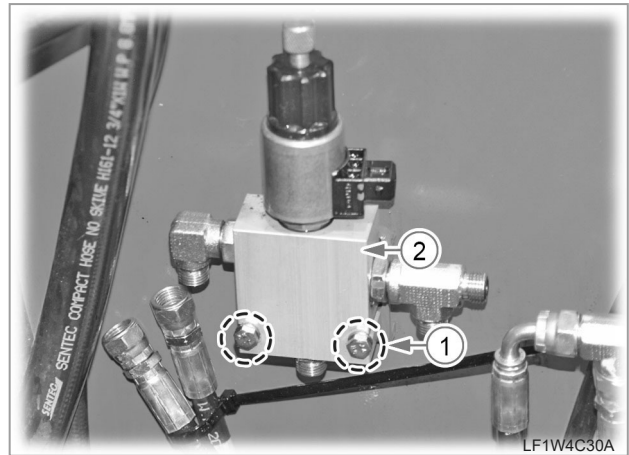
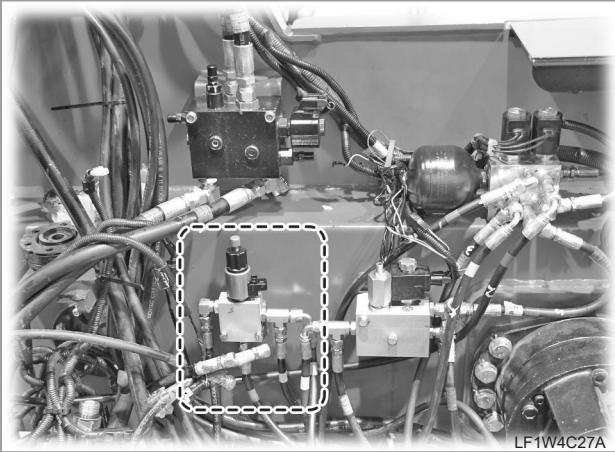
DRIVING & CHASSIS

HYDRAULIC SYSTEM

ELECTRIC SYSTEM

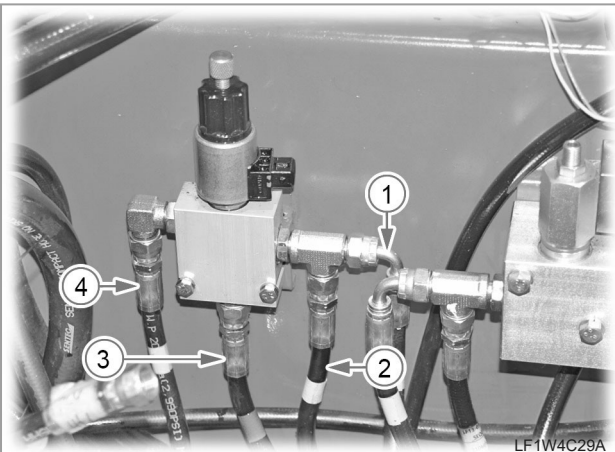
CABIN

INDEX



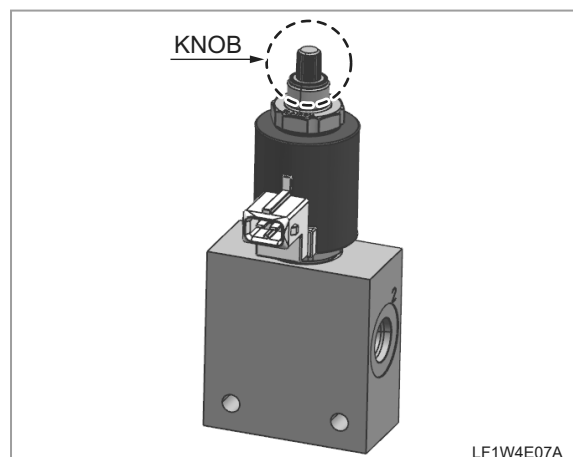
1. Disconnect the solenoid magnet connector (1).

3. Unscrew the two parking valve mounting bolts (1) to remove the parking valve assembly (2).



2. Disconnect the HST motor (RH) hose (1), HST motor (LH) hose (2), oil tank return hose (3), and HST pump hose (4).

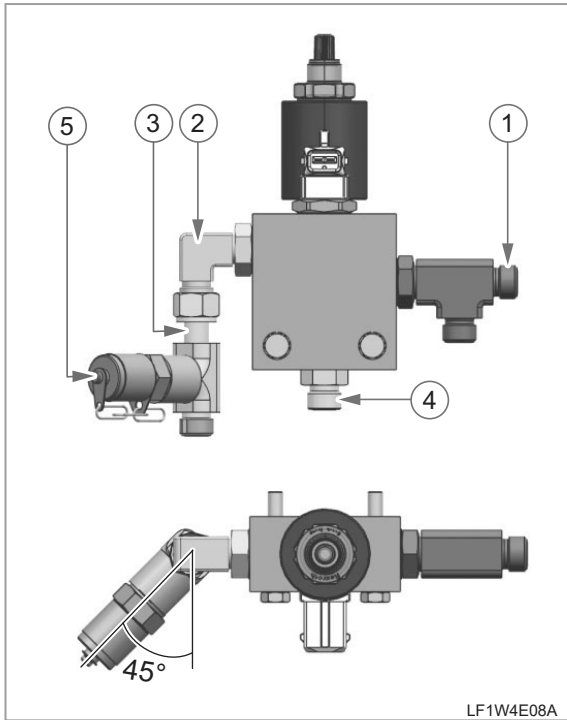
REMARKS



- Check the knob is in the full lock position before temporary assembly of the parking valve. (Full lock position: knob turned clockwise completely with a hand)

REMARKS

CONNECTOR ASSEMBLY



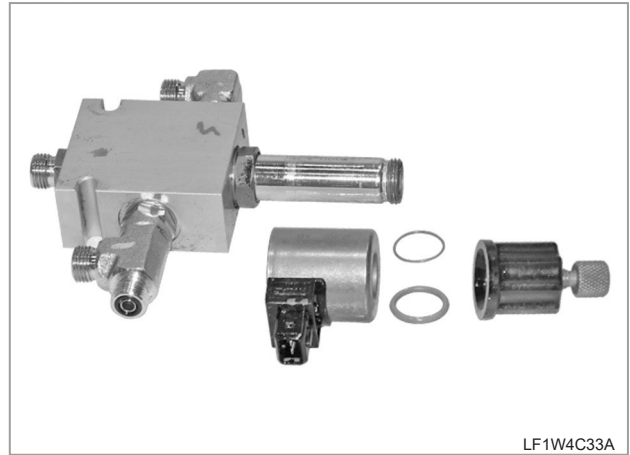
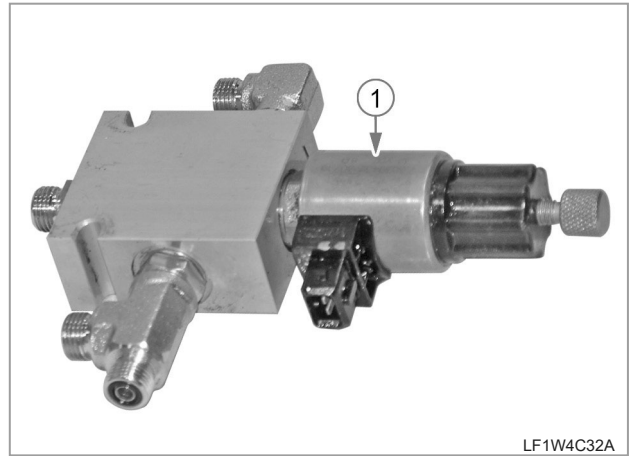
- When installing the connector, install it according to the specified torque.

Mounting section tightening torque :

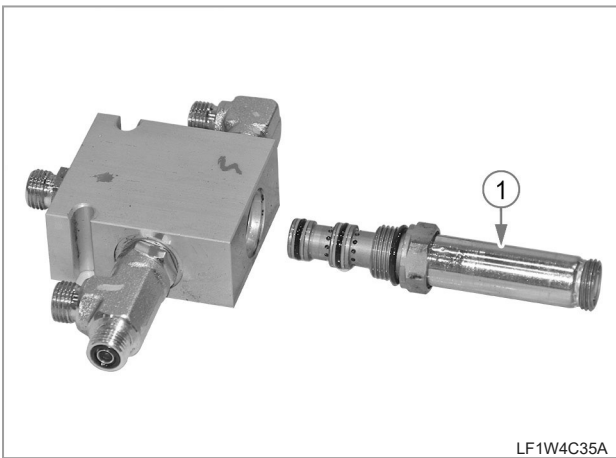
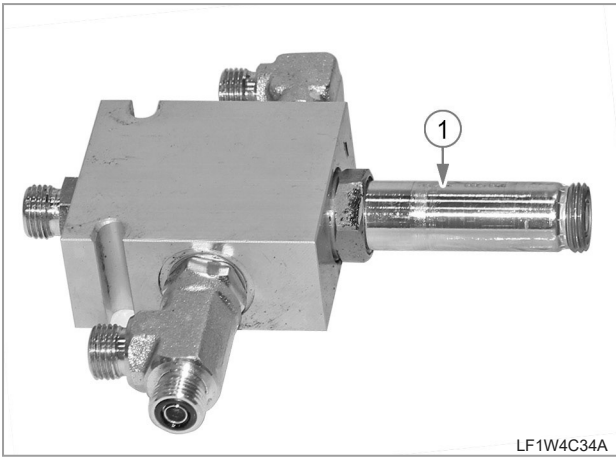
- ①, ②, ④ (9/16-18 UNF) : 3.4 ~ 3.6 kgf.m
- ③ (9/16-18 UNF) : 2.5 ~ 3.0 kgf.m
- ⑤ (PF1/4) : 2.5 ~ 3.06 kgf.m

Hydraulic hose tightening torque :  
(9/16-18 UNF) : 2.5 ~ 3.0 kgf.m

DISASSEMBLY

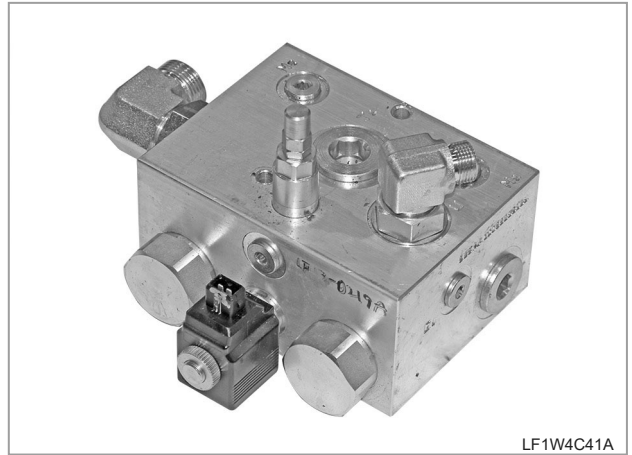
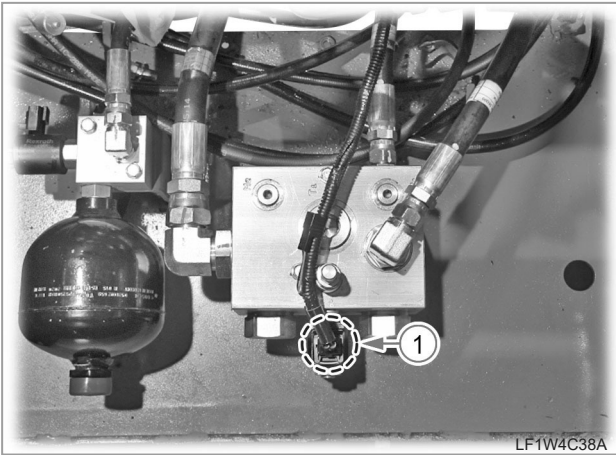
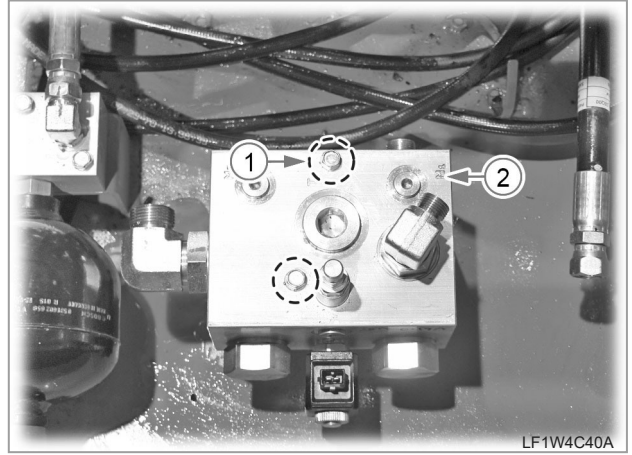
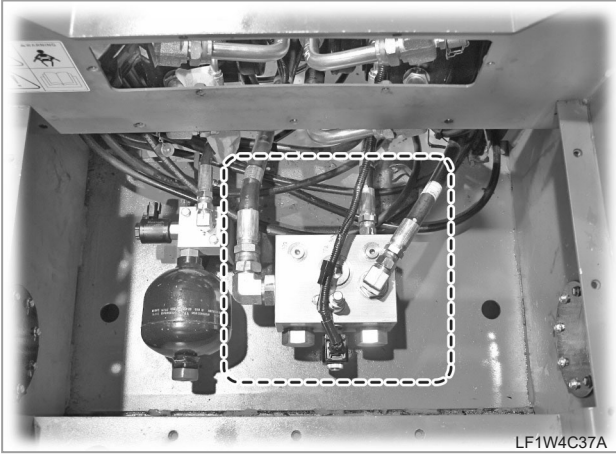


1. Remove the solenoid magnet (1).



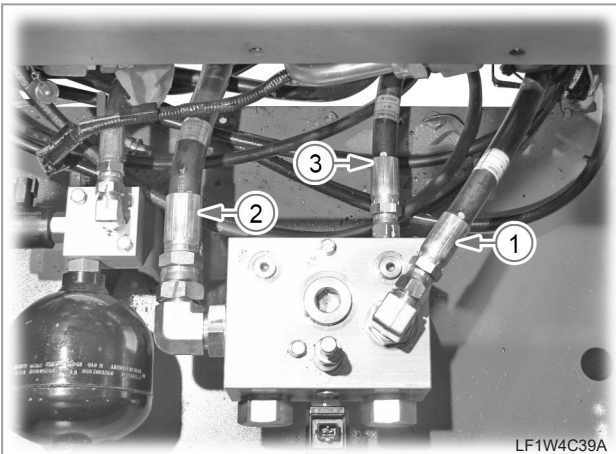
2. Remove the solenoid valve (1).

8.10 HIGH FLOW VALVE DETACH & DISASSEMBLY



1. Disconnect the solenoid magnet connector (1).

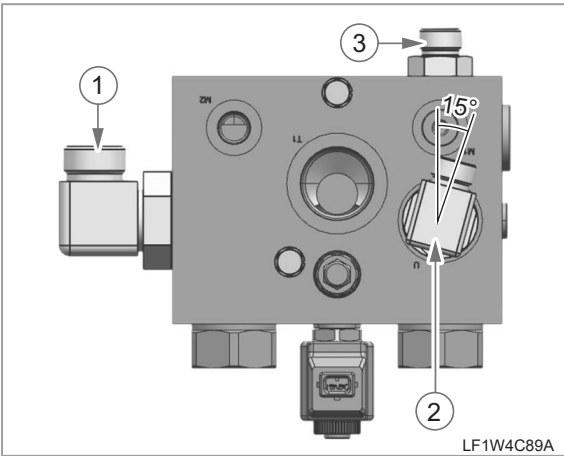
3. Unscrew the two high-flow valve mounting bolts (1) and remove the high-flow valve assembly (2).



2. Disconnect the hydraulic hoses (1, 2, & 3) from the high-flow valve body.

REMARKS

CONNECTOR ASSEMBLY



- When installing the connector, install it according to the specified torque.

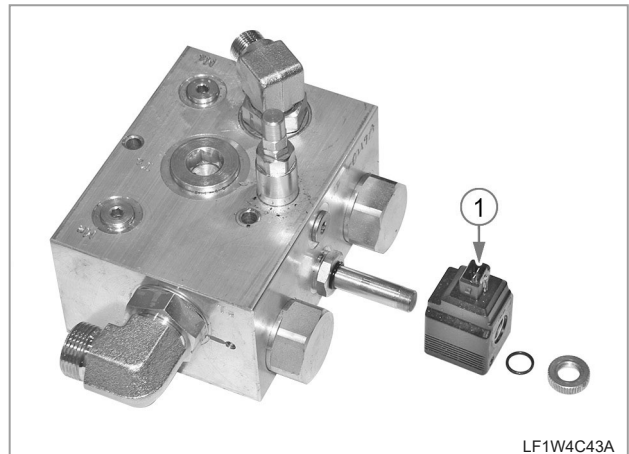
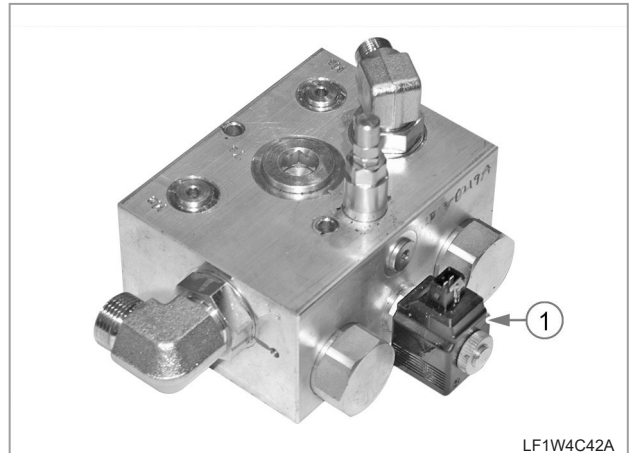
Mounting section tightening torque :

- ① (1-5/16-12 UN) : 27.6 ~ 30.6 kgf.m
- ② (1-1/16-12 UN) : 17.4 ~ 18.7 kgf.m
- ③ (7/8-14 UNF) : 10 ~ 11.2 kgf.m

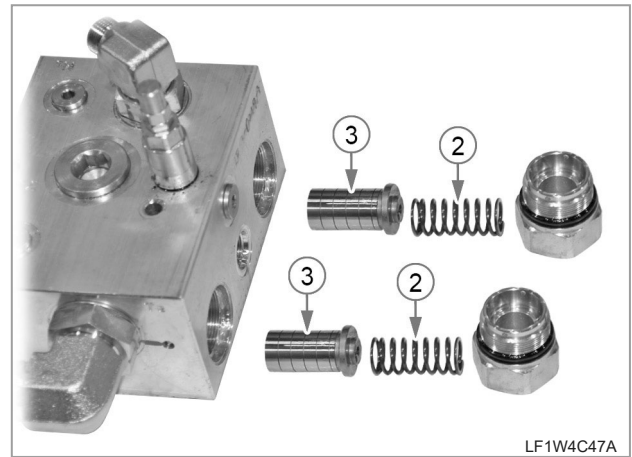
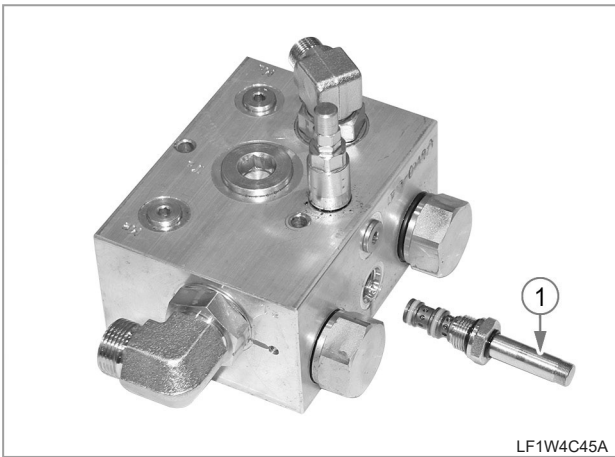
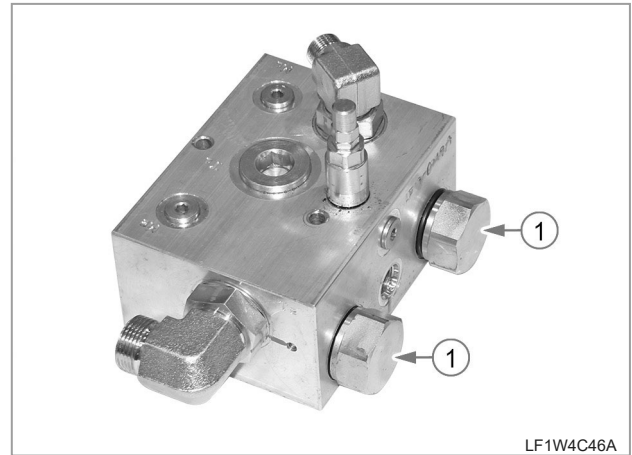
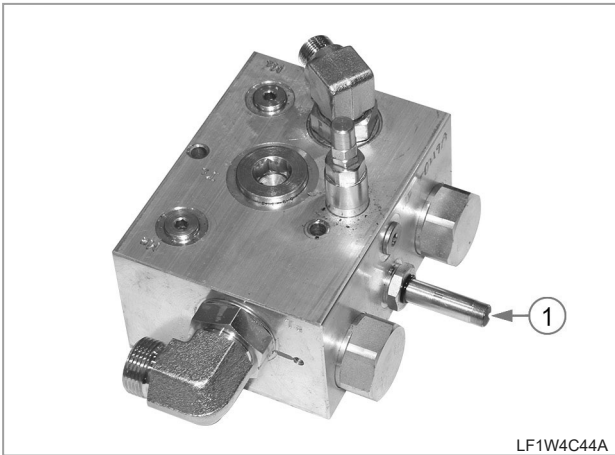
Hose tightening torque :

- ① (1-3/16-12 UN) : 12.0 ~ 13.0 kgf.m
- ②, ③ (13/16-16 UN) : 6.0 ~ 6.5 kgf.m

DISASSEMBLY

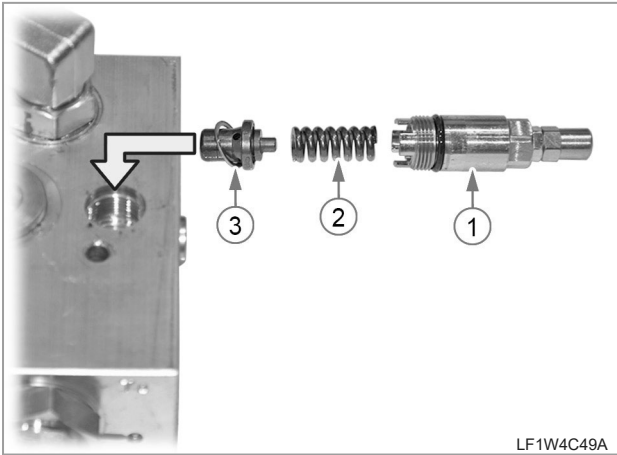
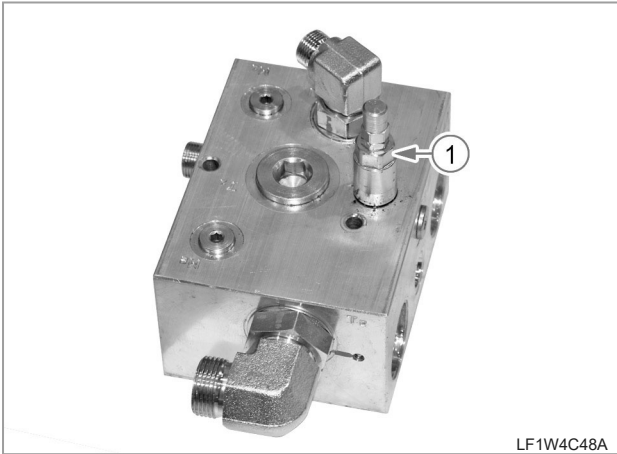


1. Remove the solenoid magnet (1).

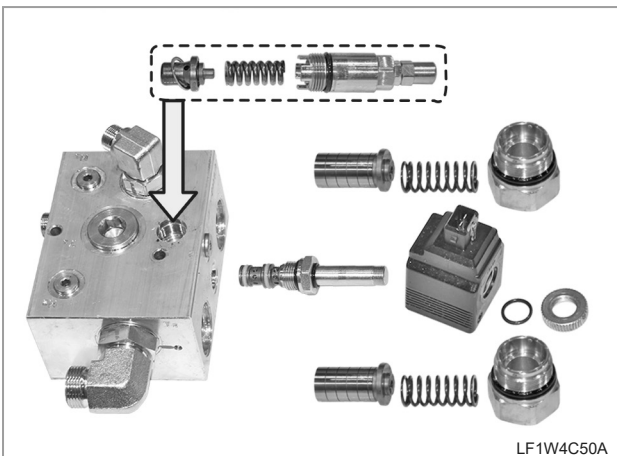


2. Remove the solenoid valve (1).

3. Unscrew the plugs (1) and remove the springs (2) and spools (3).



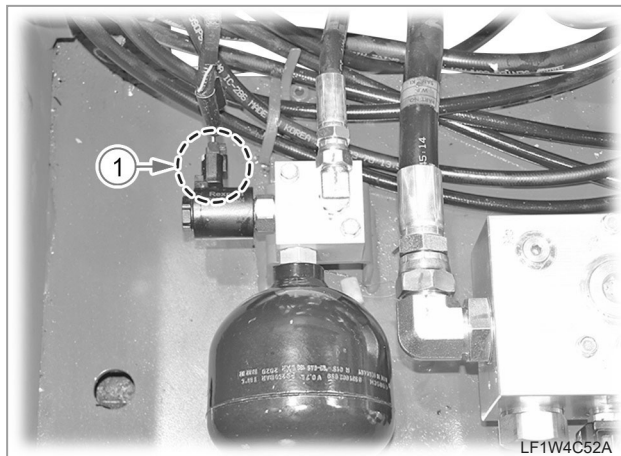
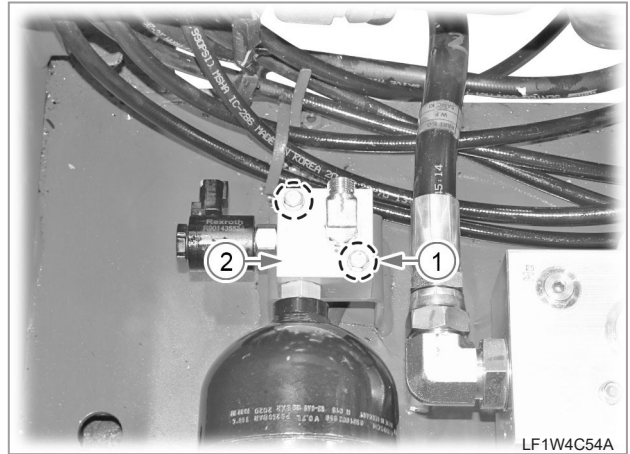
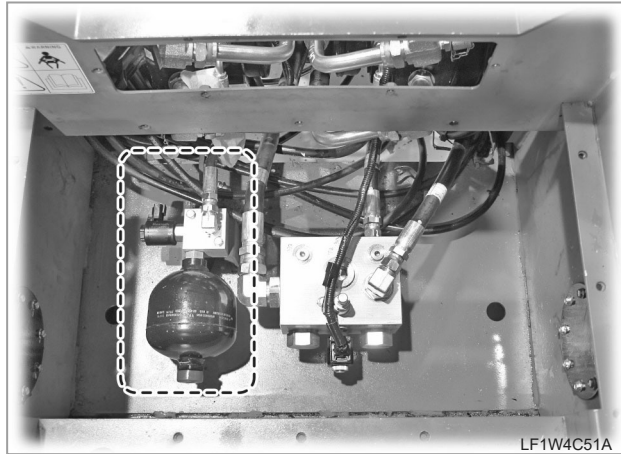
4. Unscrew the cap (1) on top of the valve body to remove the spring (2) and valve (3).



5. Assemble in the reverse order of disassembly.

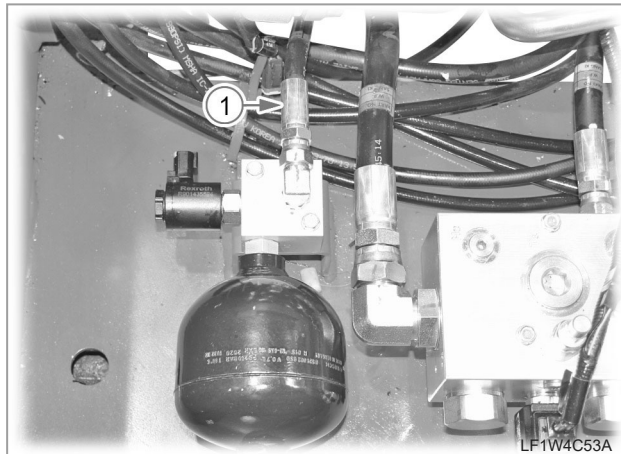


8.11 RIDE CONTROL VALVE DETACH & DISASSEMBLY



1. Disconnect the solenoid valve connector (1).

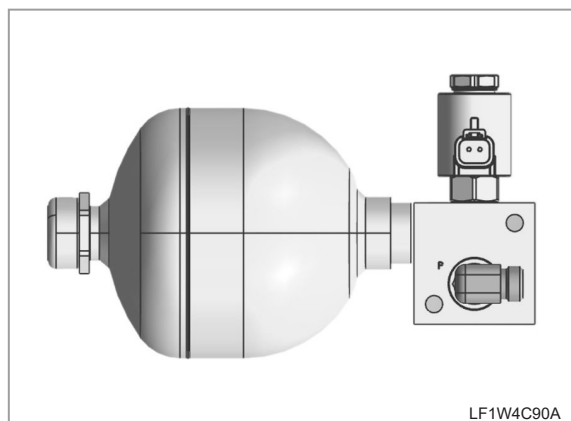
3. Unscrew the two valve body mounting bolts (1) and then remove the ride control valve assembly (2).



2. Disconnect the lift cylinder (lifting) hydraulic hose (1).

REMARKS

CONNECTOR ASSEMBLY



• When installing the connector, install it according to the specified torque.

Mounting section (9/16-18 UNF)  
 tightening torque .....3.4 ~ 3.6 kgf.m  
 Hose (11/16-16 UN)  
 tightening torque .....3.8 ~4.3 kgf.m

SAFETY FIRST

ENGINE

DRIVING & CHASSIS

HYDRAULIC SYSTEM

ELECTRIC SYSTEM

CABIN

INDEX

**DISASSEMBLY**



LF1W4C56A



LF1W4C58A



LF1W4C57A



LF1W4C59A

1. Remove the solenoid magnet (1).

2. Remove the solenoid valve (1).



3. Remove the accumulator (1).



4. Assemble in the reverse order of disassembly.

8.12 QUICK ATTACHMENT VALVE DETACH & DISASSEMBLY

SAFETY FIRST

ENGINE

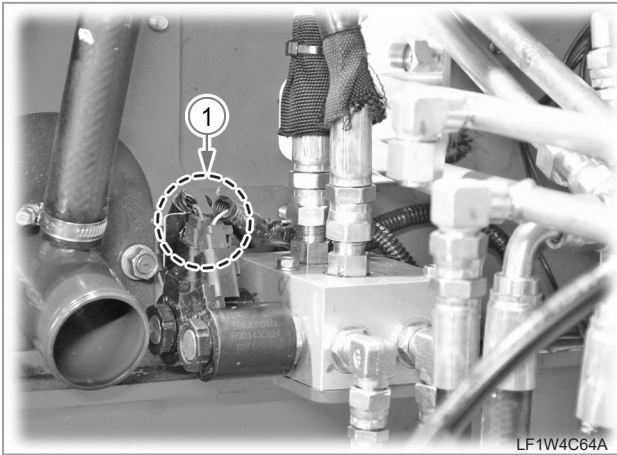
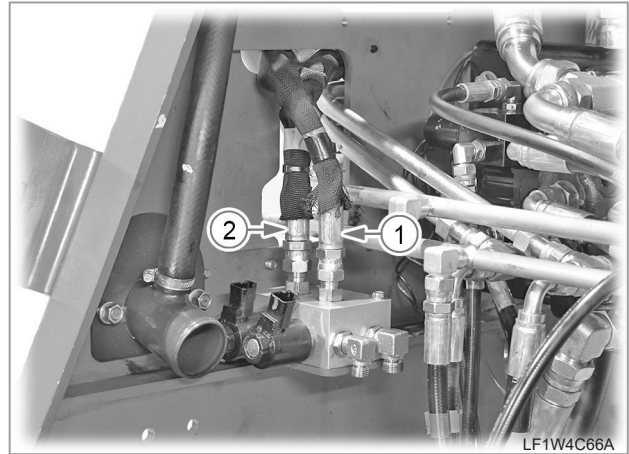
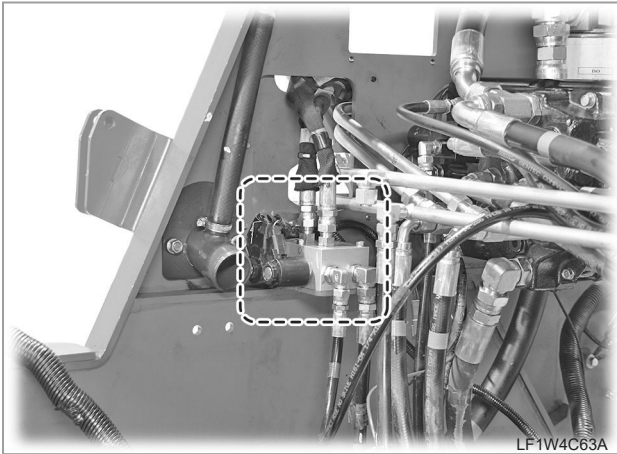
DRIVING & CHASSIS

HYDRAULIC SYSTEM

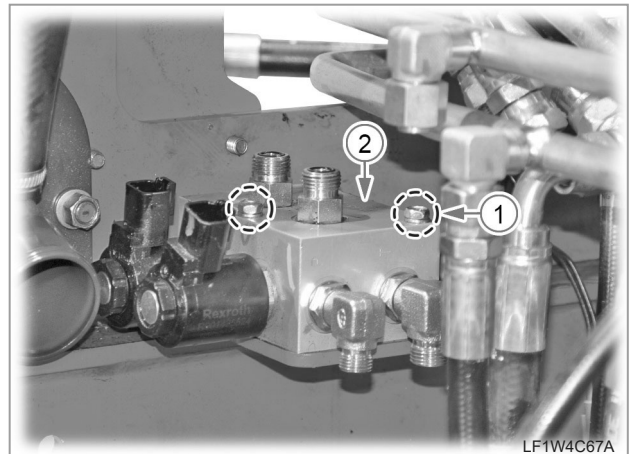
ELECTRIC SYSTEM

CABIN

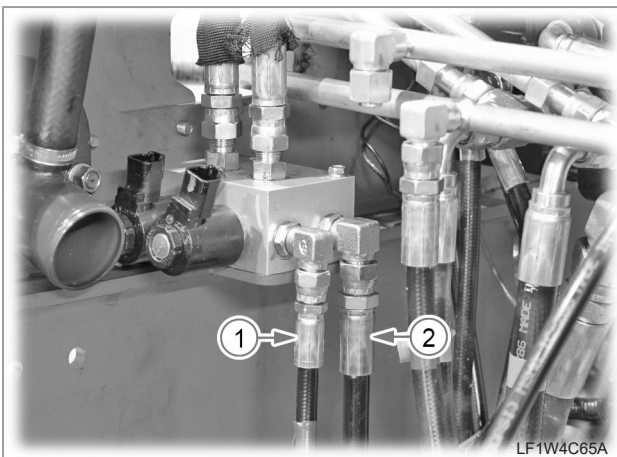
INDEX



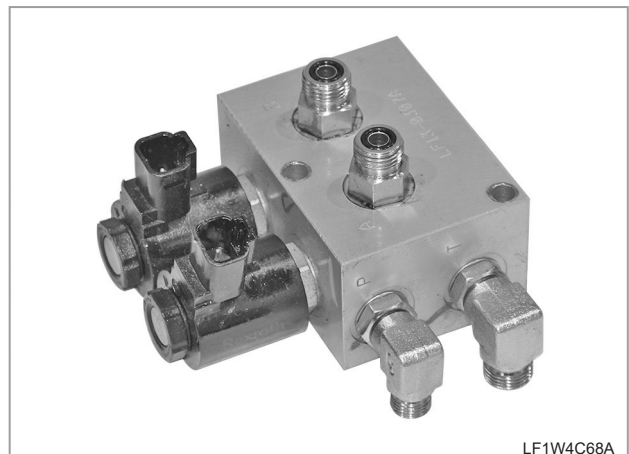
3. Disconnect the quick attachment cylinder hydraulic hoses (1 & 2).



1. Disconnect the solenoid connector (1).



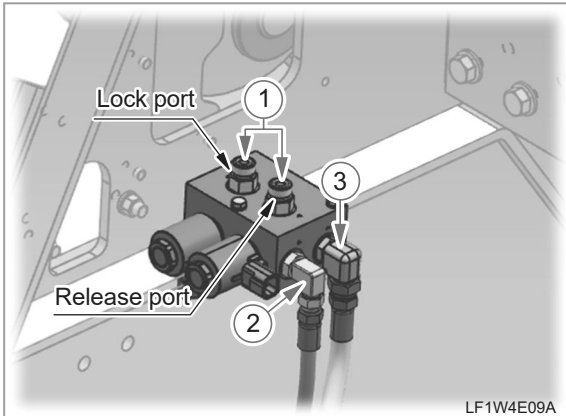
2. Disconnect the hydraulic hoses (1 & 2).



4. Unscrew the two valve body mounting bolts (1) and then remove the quick attachment valve assembly (2).

REMARKS

CONNECTOR ASSEMBLY



LF1W4E09A

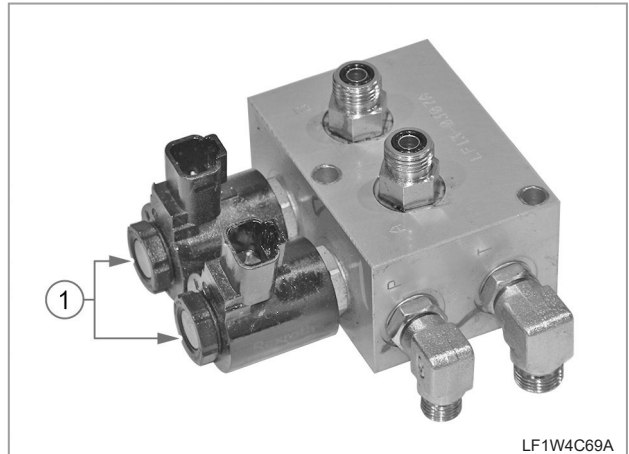
- When connecting the hoses, ensure to connect them correctly to the “lock” and “release” ports and tighten them to the specified torque.

Mounting section (9/16-18UNF)  
tightening torque : 3.4 ~ 3.6 kgf.m

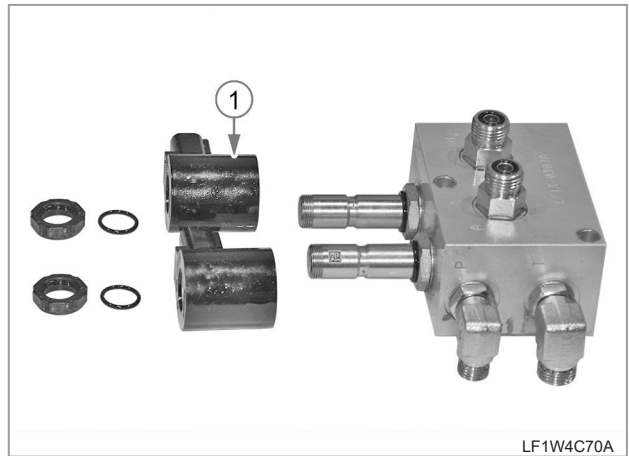
Hose tightening torque :

- ①, ③ (11/16-18UN) : 3.8 ~ 4.8 kgf.m
- ② (9/16-18UNF) : 2.5 ~ 3.0 kgf.m

DISASSEMBLY

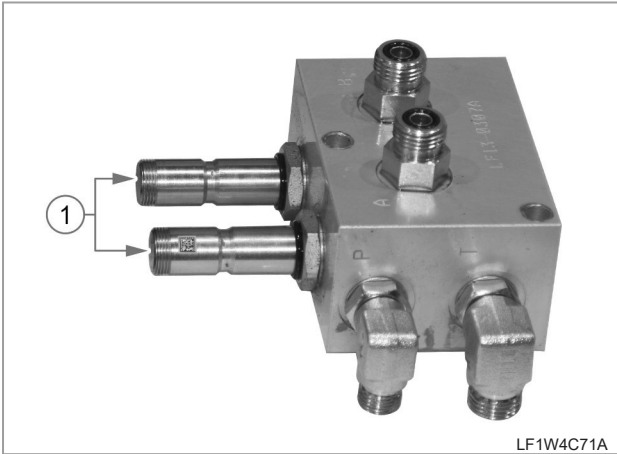


LF1W4C69A

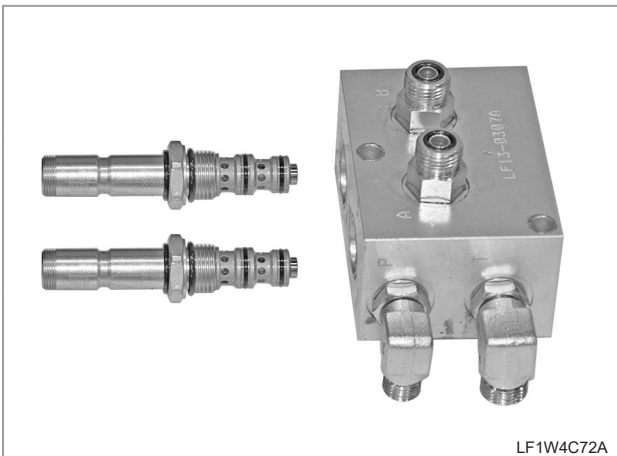


LF1W4C70A

1. Remove the solenoid magnets (1).

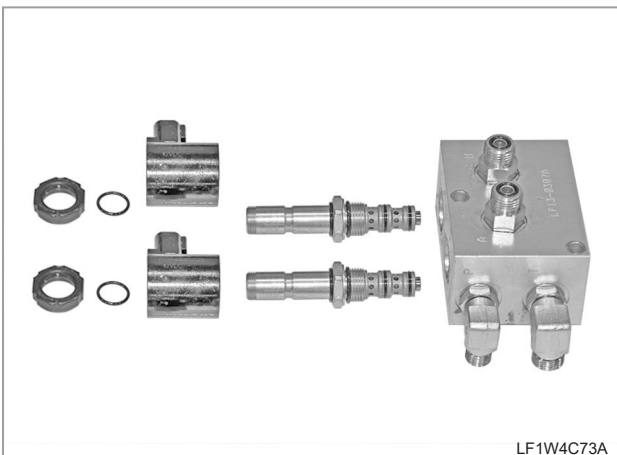


LF1W4C71A



LF1W4C72A

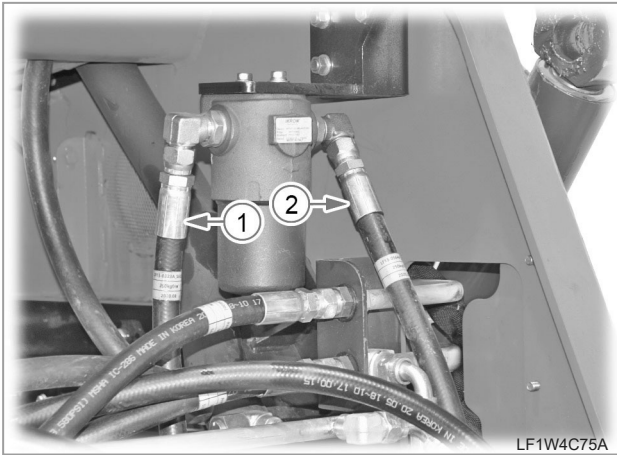
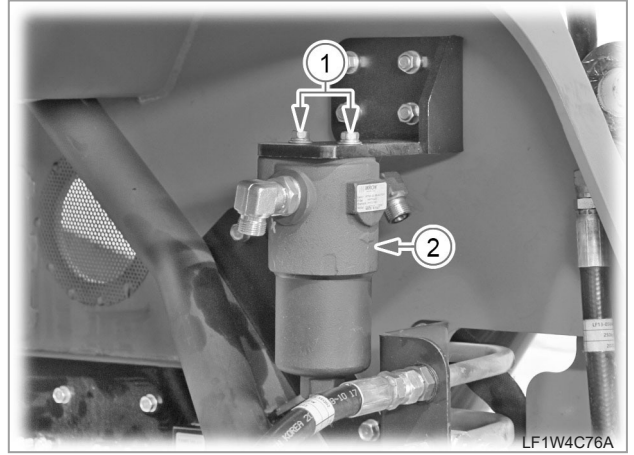
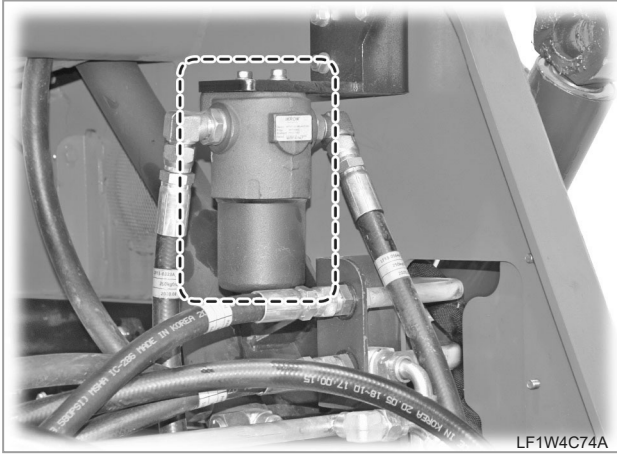
2. Remove the solenoid valves (1).



LF1W4C73A

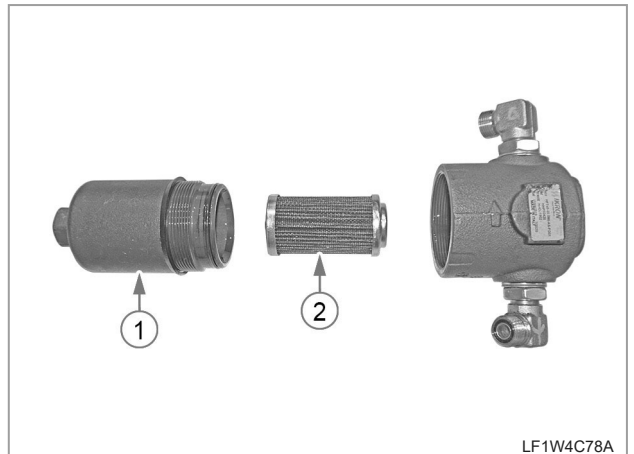
3. Assemble in the reverse order of disassembly.

8.13 HST FILTER REPLACEMENT



1. Disconnect the hydraulic hoses (1 & 2).

2. Unscrew the filter support mounting bolts (1)(2EA) to remove the HST filter assembly (2).



3. Unscrew the HST filter case (1) and remove the filter element (2) from the inside. Then, replace the element with a new one as necessary.

SAFETY FIRST

ENGINE

DRIVING & CHASSIS

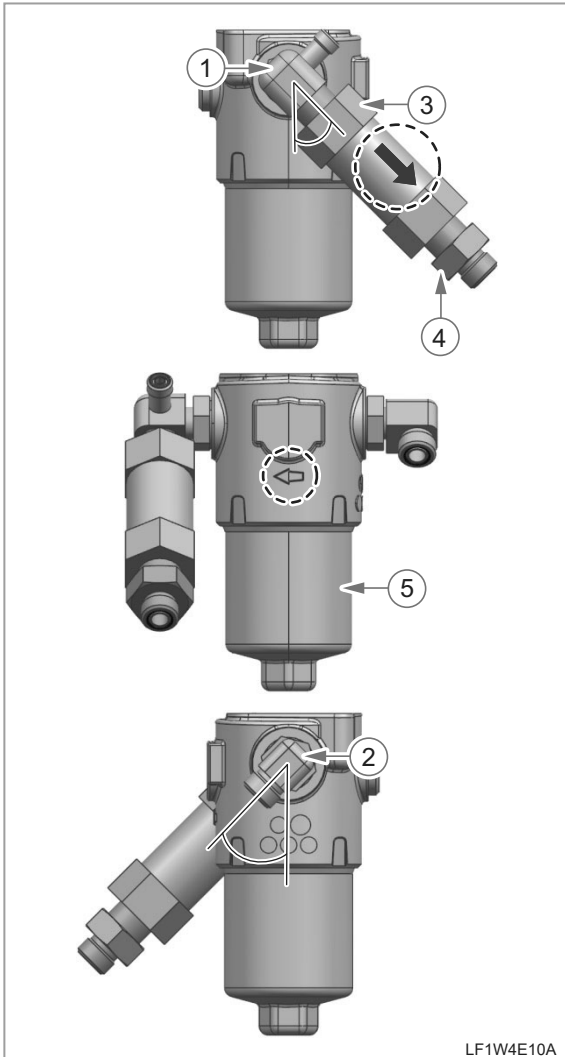
HYDRAULIC SYSTEM

ELECTRIC SYSTEM

CABIN

INDEX

 REMARKS

**ASSEMBLY ANGLE AND TIGHTENING TORQUE  
WHEN INSTALLING THE ELBOW**


- **Tightening torque**
  - ①, ② (PF1/2) : 6.0 ~ 6.5 kgf.m
- **Assembly angle**
  - ①, ② : 40°
- **When installing ③ and ⑤, make sure to follow the stamped arrow mark.**
- **Apply LOCTITE 577 or equivalent on the threads of ① and ④ and install them on ③.**



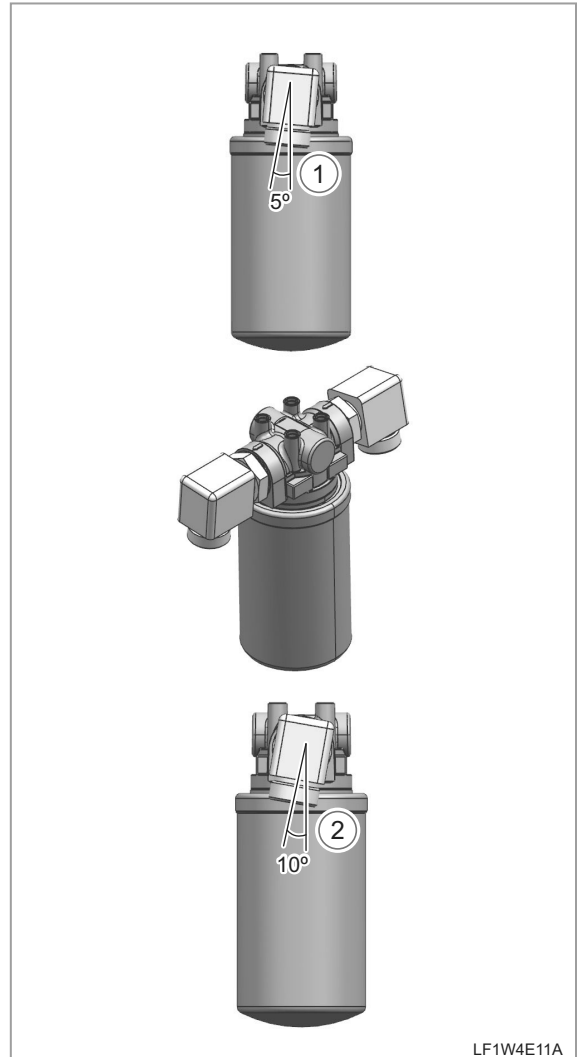
8.14 RETURN FILTER REPLACEMENT



1. With a filter wrench completely engaged with the filter, turn the wrench counterclockwise to remove the return filter (1). After inspection, replace it with a new one as necessary.

REMARKS

**ASSEMBLY ANGLE AND TIGHTENING TORQUE WHEN INSTALLING THE ELBOW**



- ①, ② Elbow Mounting section (PF1)  
: 18.5 ~ 19.5 kgf.m
- Hydraulic hose tightening (1-5/16-12 UN)  
: 18.5 ~ 19.5 kgf.m

8.15 LIFT CYLINDER DISASSEMBLY

SAFETY FIRST

ENGINE

DRIVING & CHASSIS

HYDRAULIC SYSTEM

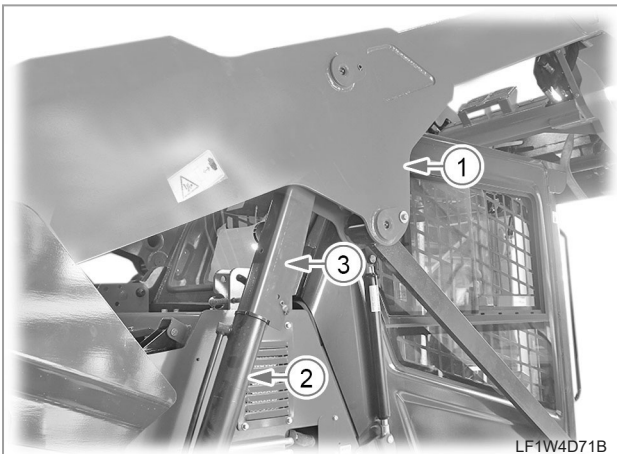
ELECTRIC SYSTEM

CABIN

INDEX

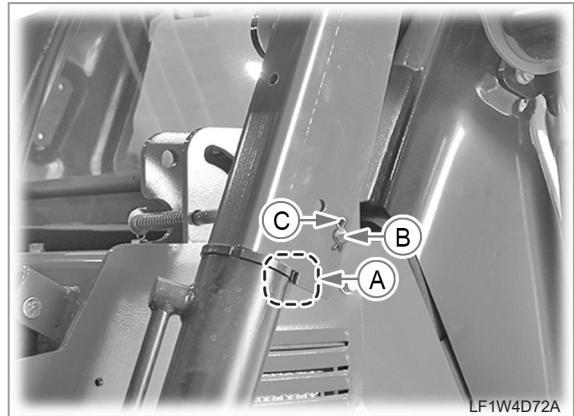


1. Remove the boom support (1) that is attached on the bar on the opposite side of the lift cylinder to be disassembled.



2. Raise the boom assembly (1) with the lift cylinder (2). After installing the boom support (3), that was previously removed, on the lobe section of the lift cylinder, lower the lift cylinder until the boom support makes contact with the boom assembly.

REMARKS

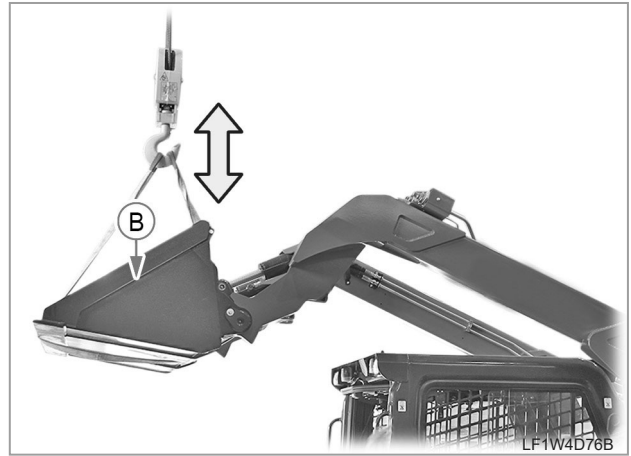
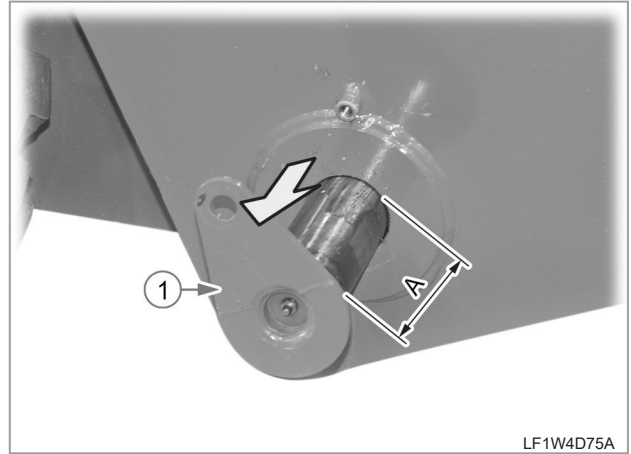


- After inserting the boom support (“L” shape) into the lift cylinder section (A), fit the head pin (B) into the boom support hole and fix it with the snap pin (C).

REMARKS

**TIP FOR INSTALLING THE BOOM SUPPORT**

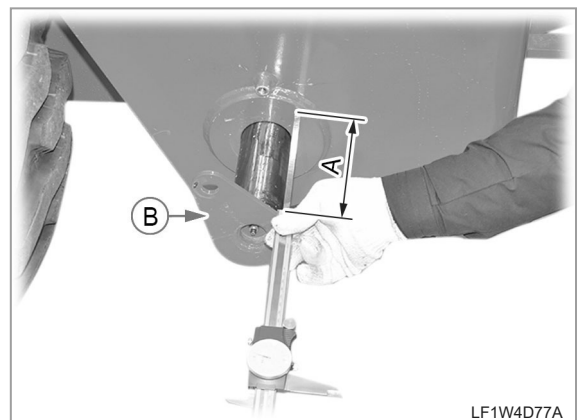
- Install it on the lift cylinder on the opposite side of the lift cylinder to be serviced.



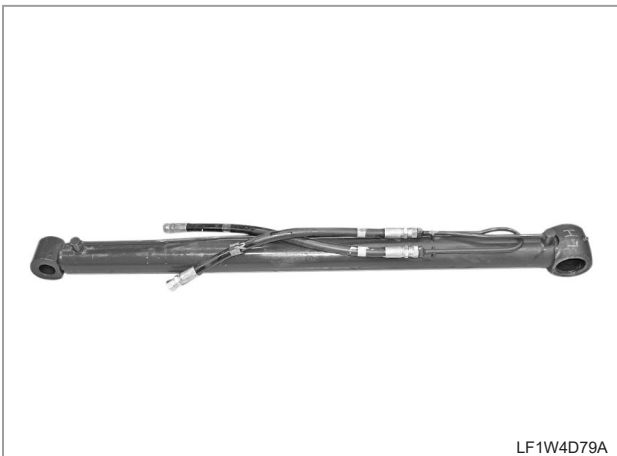
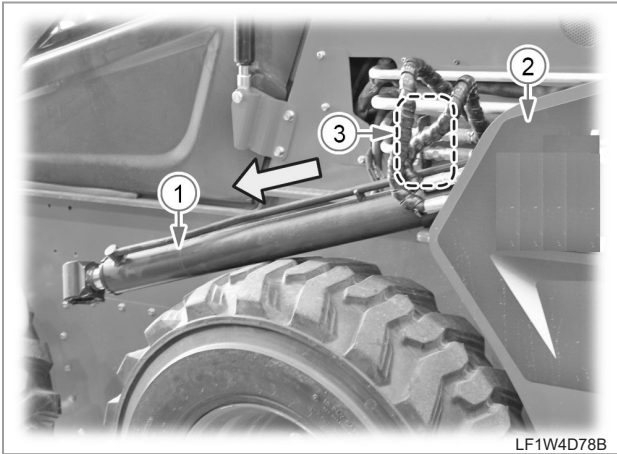
3. Remove the top pin (1) from the lift cylinder to be disassembled. Then, lower the lift cylinder (2).

4. Pull out the lower pin (1) of the lift cylinder for a proper amount. The cylinder lower pin may be stuck so may not be pulled out easily. In this case, support the bucket (B) with a hoist and pull out the pin little by little while moving the bucket up and down.

**REMARKS**



- Do not pull out the cylinder lower pin (B) completely.  
A (pulling out amount) : approx. 156 mm (6.14 in.)



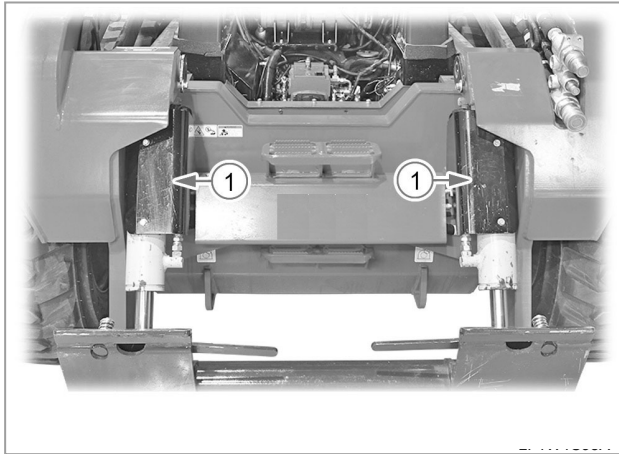
5. Lift the lift cylinder (1) out of the main frame (2), disconnect the hydraulic hose (3), and remove the cylinder.

**Hydraulic hose**

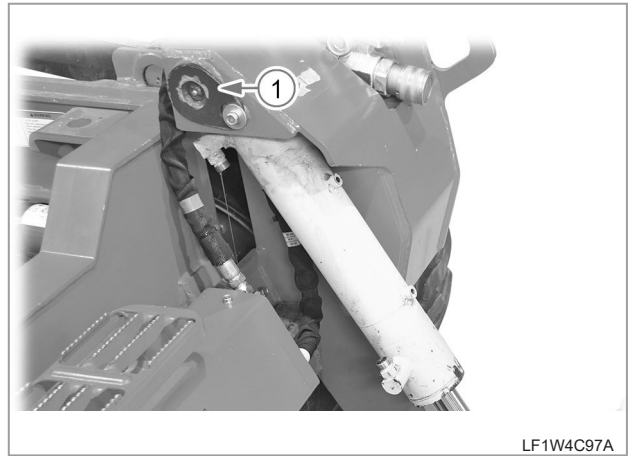
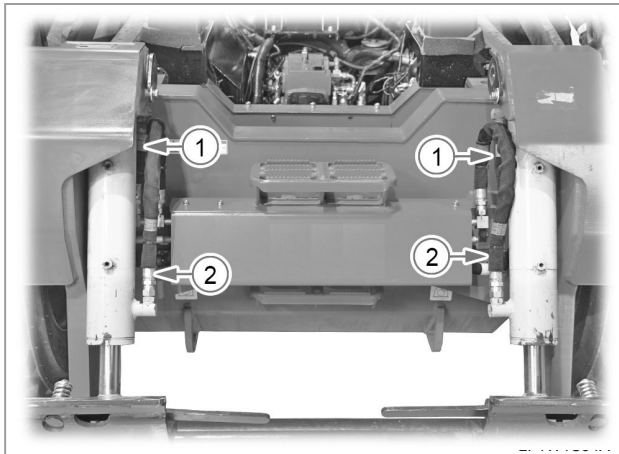
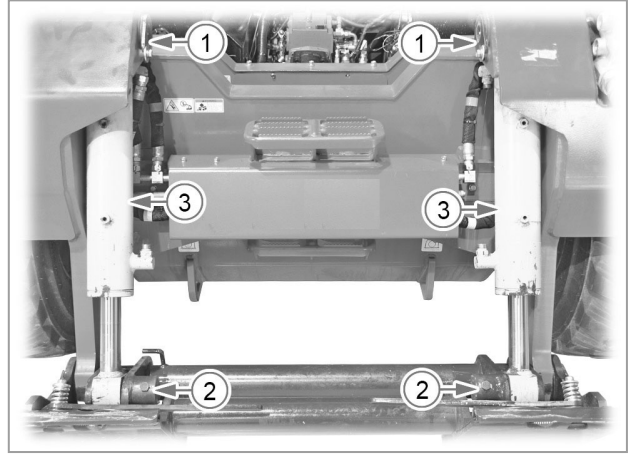
tightening torque ..... 58.8 ~ 63.7 N·m  
 6.0 ~ 6.5 kgf.m  
 43.2 ~ 46.8 lb·ft

6. Assemble in the reverse order of disassembly.

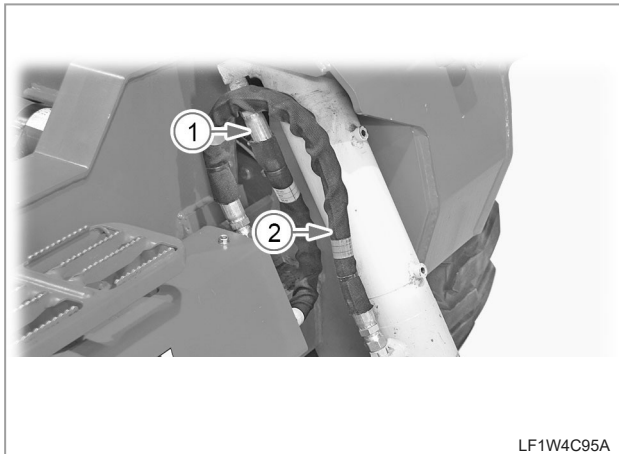
8.16 TILT CYLINDER DISASSEMBLY



1. Remove the tilt cylinder covers (1).

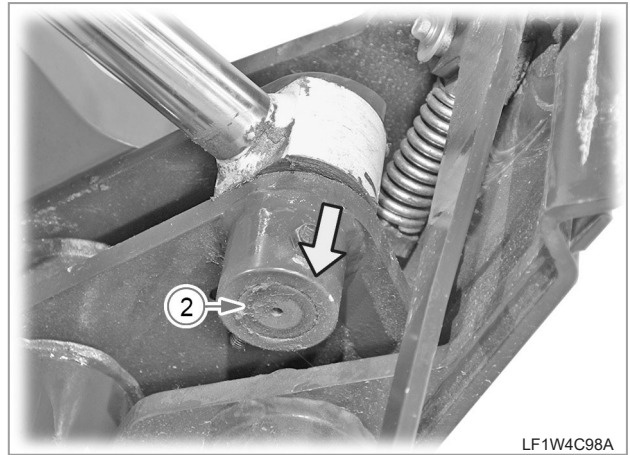


LF1W4C97A



LF1W4C95A

2. Disconnect the tilt cylinder hydraulic hoses (1 & 2).



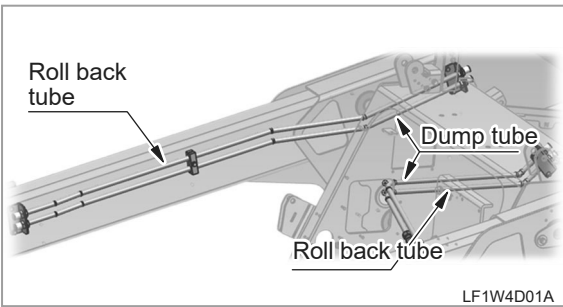
LF1W4C98A



LF1W4C99A

7. Remove the tilt cylinder retaining pins (1 & 2) through the inside in order to remove the tilt cylinders (3).

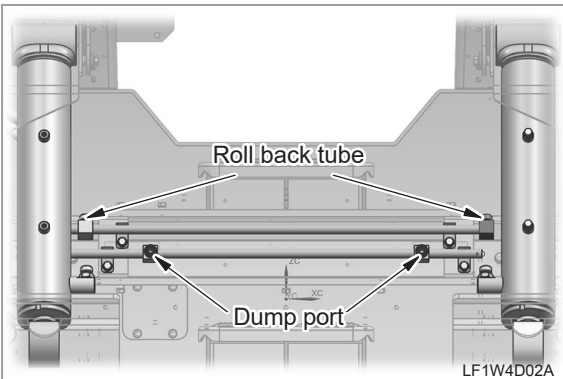
 REMARKS



- When connecting the hydraulic tube connecting hose, check the port location and tighten it with the specified torque.

Hose (13/16-16 UN)

tightening torque .....6.0 ~ 6.5 kgf.m

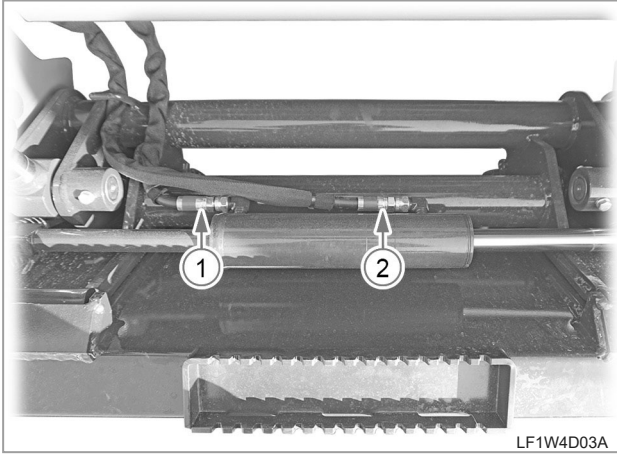


- When connecting the hose between the hydraulic tube and tilt cylinder, check the port location and tighten it with the specified torque.

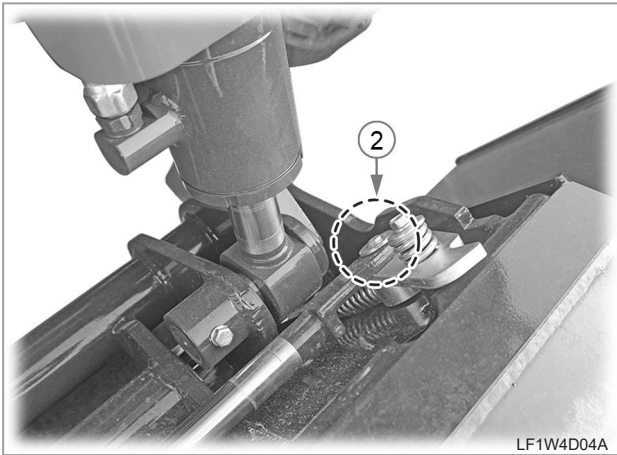
Hose (13/16-16 UN)

tightening torque .....6.0 ~ 6.5 kgf.m

8.17 QUICK ATTACHMENT CYLINDER DISASSEMBLY



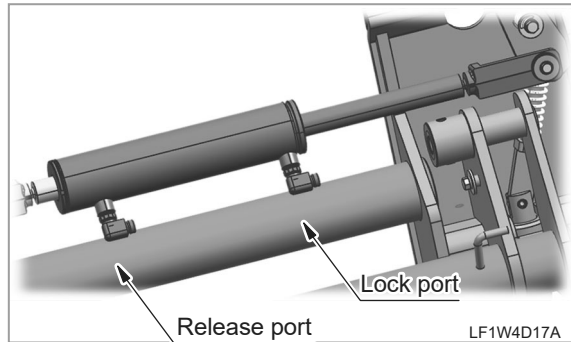
1. Disconnect the quick attachment cylinder hydraulic hoses (1 & 2) from the back of the bucket.



2. Separate the left-hand and right-hand quick attachment operating lever connections (2) and then remove the quick attachment cylinder.

REMARKS

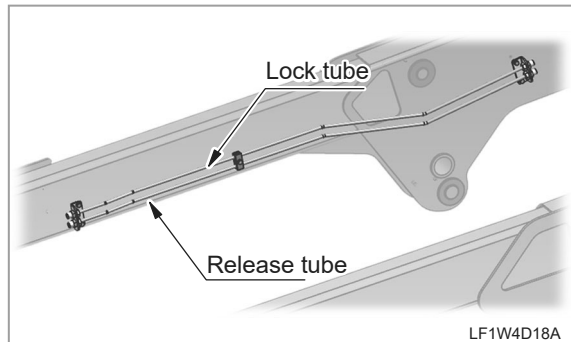
QUICK ATTACHMENT ASSEMBLY PORT



- When connecting the hose, make sure to check the "Lock" and "Release" ports.

Hose (11/16-18 UN)  
tightening torque .....3.8 ~ 4.8 kgf.m

QUICK ATTACHMENT HYDRAULIC TUBE



Hose (11/16-18 UN)  
tightening torque .....3.8 ~ 4.8 kgf.m

8.18 RCV ASSEMBLY & OIL TANK DISASSEMBLY

SAFETY FIRST

ENGINE

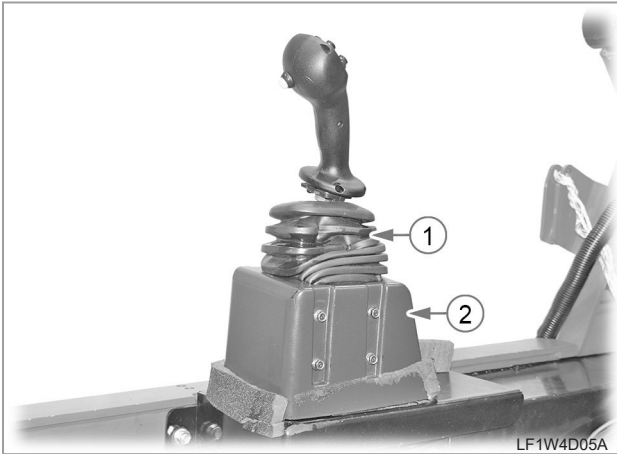
DRIVING & CHASSIS

HYDRAULIC SYSTEM

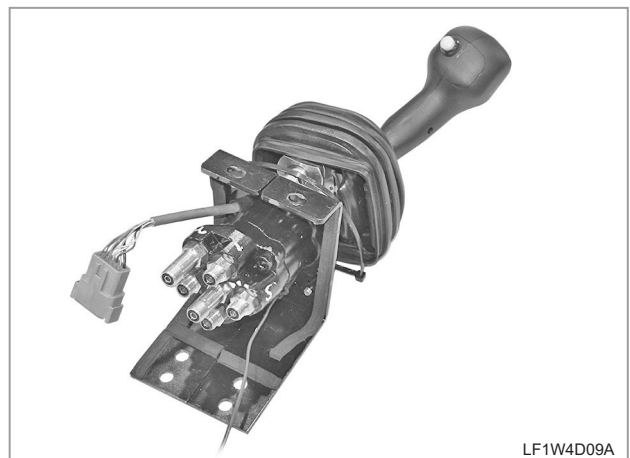
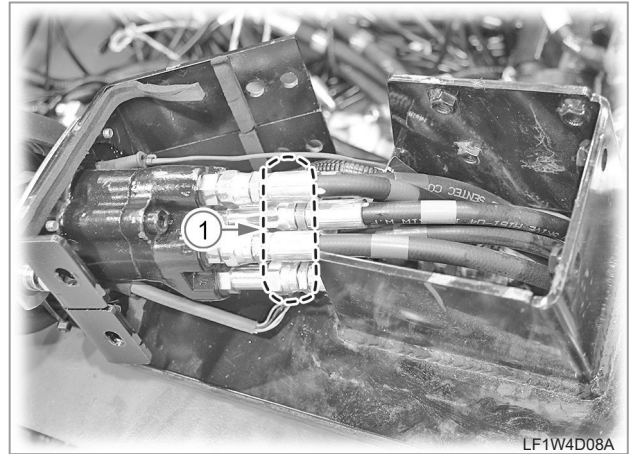
ELECTRIC SYSTEM

CABIN

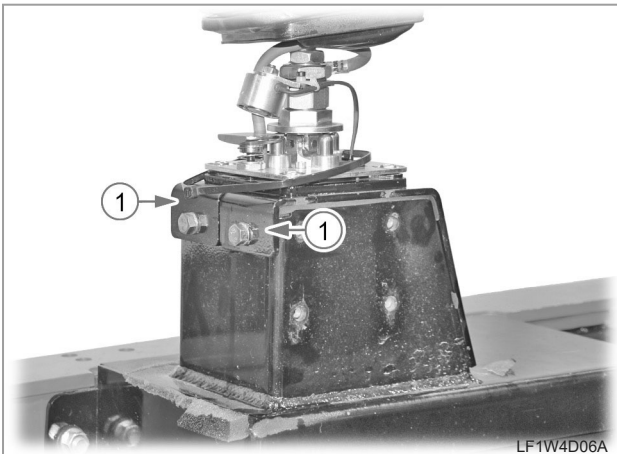
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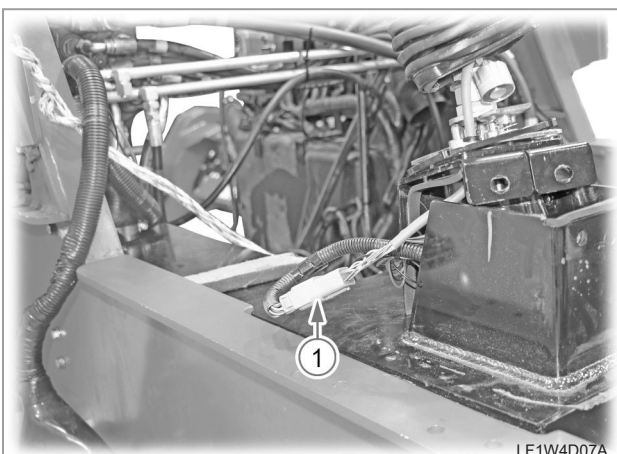
1. Remove the rubber bellows (1) of the joystick lever and then remove the RCV assembly cover (2).



4. Disconnect the hydraulic hoses (1) from the RCV assembly.



2. Remove the RCV assembly kit brackets (1).



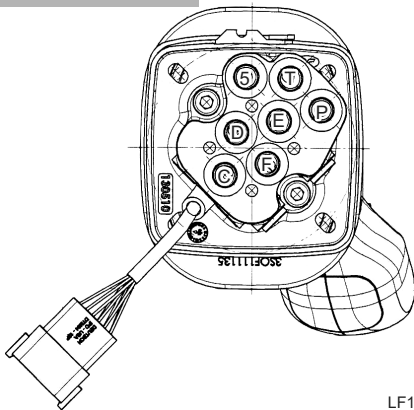
3. Pull out the RCV assembly and disconnect the wiring connector (1).



REMARKS

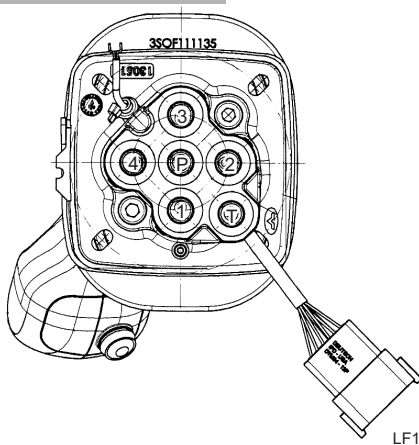
CONNECTOR ASSEMBLY

RCV (LH) - DRIVING



LF1W4D19A

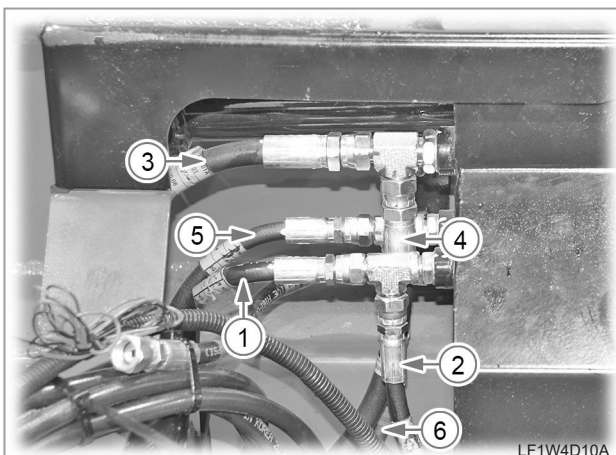
RCV (RH) - WORKING



LF1W4D20A

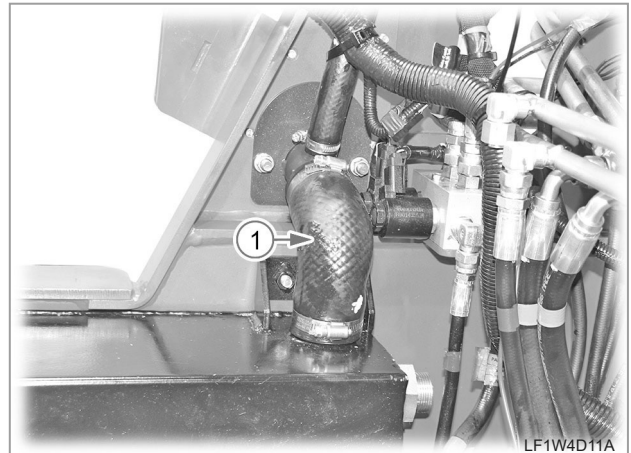
- When installing the connector, install it according to the specified torque.

Mounting section (7/16-20 UNF)  
 tightening torque .....2.0 ~ 2.2 kgf.m  
 Hose (9/16-18 UNF)  
 tightening torque .....2.5 ~ 3.0 kgf.m



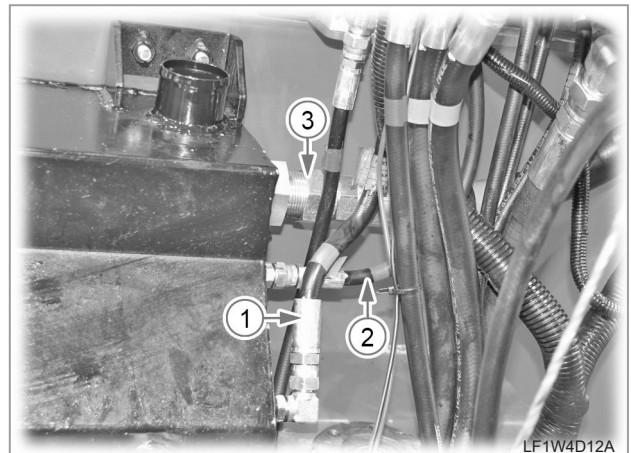
LF1W4D10A

5. Disconnect the hydraulic hoses (1, 2, 3, 4, 5, & 6) from the oil tank.



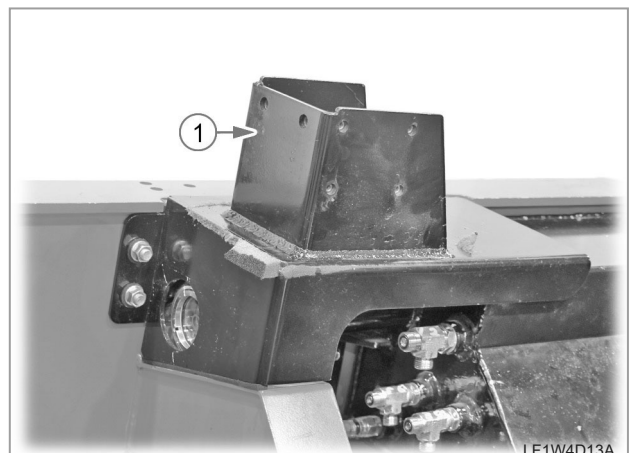
LF1W4D11A

6. Disconnect the oil tank feed hose (1).



LF1W4D12A

7. Disconnect the hydraulic hoses (1, 2, & 3) from the oil tank.



LF1W4D13A

8. Remove the right-hand RCV assembly support (1).

SAFETY FIRST

ENGINE

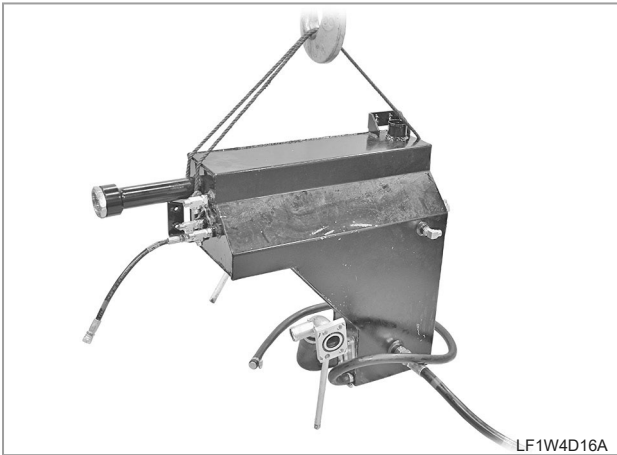
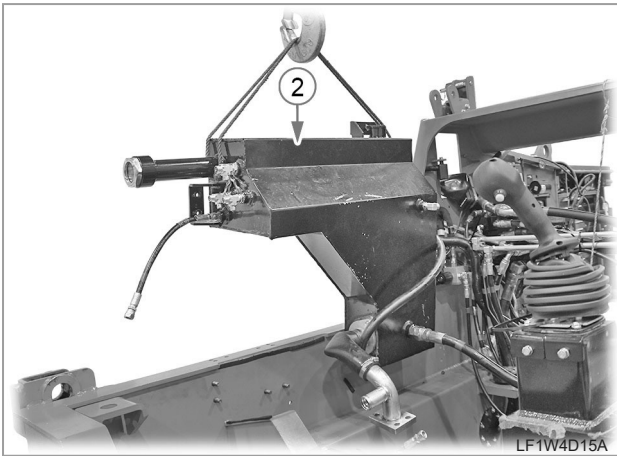
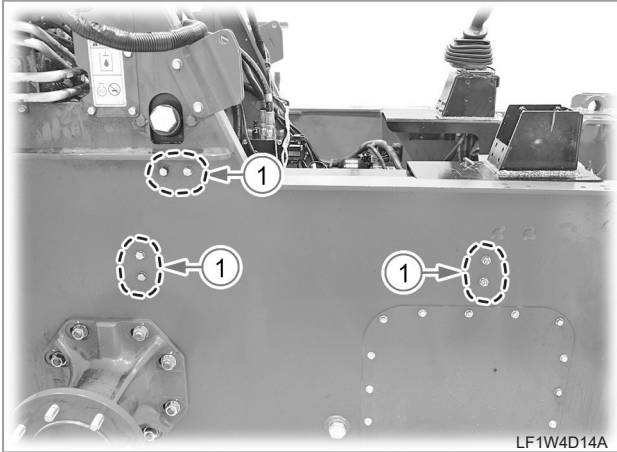
DRIVING & CHASSIS

HYDRAULIC SYSTEM

ELECTRIC SYSTEM

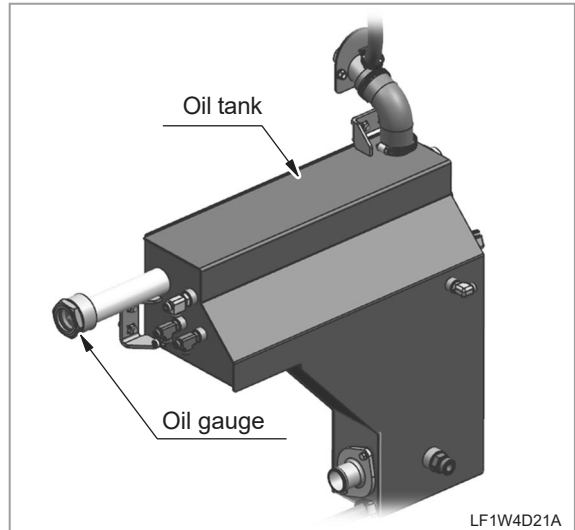
CABIN

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9. Unscrew the oil tank mounting bolts (1)(6EA) and then remove the oil tank (2) from the main frame.

REMARKS



LF1W4D21A

- When installing the oil gauge, install it according to the specified torque.  
**Oil gauge bolt (M52 P2.0)**  
 tightening torque .....6.3 ~ 7.7 kgf.m