PREFACE

This guide contains set-up and installation instructions for Honda outboards.

Pre-delivery service must be performed by an authorized Honda Marine Dealer, OEM or Package Dealer. These instructions are provided for dealer use only.

FOLLOW THESE INSTRUCTIONS CAREFULLY

Proper set-up, installation, and pre-delivery service are esential for safe, reliable operation. Your customer expects their Honda outbaord motor to be correctly set-up, installed, adjusted, and ready for use.

As you read this guide, you will find information that is preceded by a NOTICE symbol. The purpose of this message is to prevent damage to the outboard, other property, or the environment.

DO NOT OVERPOWER THE BOAT

Do not install an outboard motor that exceeds the recommended maximum horsepower for the boat. refer to the certification plate for the boat's maximum recommended horsepower. For most boat applications, the outboard motor should have a horsepower which provides 80% of the maximum recommended horsepower for the boat. If the certification plate information is not available, contact the boat manufacturer.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at anytime without prior notice.

CONTENTS

IMPORTANCE OF PROPER SET-UP AND PRE-DELIVERY SERVICE

For Your Customer's Safety

Proper set-up or pre-delivery service are essential to the customer's safety and the reliability of the tiller. Any error or oversight made during assembly and servicing of a tiller can result in faulty operation, damage to the tiller or injury to others.

⚠ WARNING

Improper service or pre-delivery service can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Some of the most important general safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing set-up and pre-delivery service. Only you can decide whether or not you should perform a given task.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

IMPORTANT SAFETY PRECAUTIONS

- Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and safety equipment. When performing set-up and pre-delivery service, be especially careful of the following:
  - Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
  - Protect your eyes by using proper safety glasses, goggles, or face shields any time you hammer, drill, grind, or work around pressurized air or liquids, and springs or other stored-energy components. If there is any doubt, put on eye protection.
  - Use protective wear when necessary, for example, gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:
  - Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
  - Burns from hot parts. Let the engine and exhaust system cool before working in those areas.
  - Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers, and clothing are out of the way.
- Gasoline vapors are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline.
  - Use only a nonflammable solvent, not gasoline, to clean parts.
  - Never drain or store gasoline in an open container.
  - Keep all cigarettes, sparks, and flames away from all fuel-related parts.

CONVERSION TABLES AND TORQUE VALUES

LENGTH CONVERSIONS					
From Unit	**To Unit**	**Multiply By**	**From Unit**	**To Unit**	**Multiply By**
Milimeters	Centimeters	.1	Inches	Centimeters	2.54
	Inches	.03937		Feet	.0833
	Feet	.00328		Meters	.0254
Centimeters	Inches	.394	Miles	Feet	5,280
	Feet	.0328		Yards	1,760
	Meters	.01		Kilometers	1.609
Kilometers	Feet	3281	Meters	Kilometers	.001
	Meters	1000		Miles	.0006214
	Miles	.621		Millimeters	1000
Meters	Centimeters	100			
	Feet	3.281			
	Inches	39.37			
MASS (WEIGHT) CONVERSIONS					
From Unit	**To Unit**	**Multiply By**	**From Unit**	**To Unit**	**Multiply By**
Kilograms	Grams	1000	Pounds	Grams	453.59
	Ounces	35.274		Ounces	16
	Pounds	2.205		Kilograms	.454
Grams	Ounces	.035	Ounces	Grams	28.35
	Pounds	.002		Pounds	.0625
	Kilograms	.001		Kilograms	.028
LIQUID MEASURE CONVERSIONS					
Liters	Gallons	.264	Gallons	Pints	8
	Milliliters	1000		Liters	3.785
	Quarts	1.057		Quarts	4
Fluid ounces	Cubic inches	1.8046	Quarts	Pints	2
	Liters	.02947		Liters	.946
				Gallons	.25
PRESSURE CONVERSIONS					
From Unit	**To Unit**	**Multiply By**	**From Unit**	**To Unit**	**Multiply By**
Kilopascals (kPa)	psi	0.145038	Kilograms per sq cm (kgf/cm^2)	kPa	98.0665
	kgf/cm^2	.010197		psi	14.22333
Pounds per sq in (psi)	kPa	6.89476			
	kgf/cm^2	.07031			
TEMPERATURE CONVERSIONS					
From Unit	**To Unit**	**Formula**	**From Unit**	**To Unit**	**Formula**
Celsius	Fahrenheit	(C° x 1.8) + 32	Fahrenheit	Celsius	(°F-32) ÷ 1.8

VELOCITY (SPEED) CONVERSIONS					
From Unit	**To Unit**	**Multiply By**	**From Unit**	**To Unit**	**Multiply By**
Meters per sec (m/s)	km/h	3.6	Kilometers per hr (km/h)	m/s	0.277
	ft/s	3.281		ft/s	0.911
	mi/hr	2.237		mi/hr	0.621
	kn	1.837		kn	0.540
Feet per sec (ft/s)	m/s	0.3048	Miles per hr (mi/hr)	m/s	0.447
	km/h	1.09728		km/h	1.609
	mi/hr	0.682		ft/s	1.466
	kn	0.592		kn	0.869
Knots (kn)	m/s	0.544			
	km/h	1.852			
	ft/s	1.688			
	mi/hr	1.151			

BATTERY AMPERAGE					
From Unit	**To Unit**	**Multiply By**	**From Unit**	**To Unit**	**Multiply By**
CCA (Cold Cranking Amps)	MCA (Marine Cranking Amps)	1.3	MCA	CCA	0.77

STANDARD TORQUE VALUES (FORCE)

Metric Bolt Diameter			
Item	**N·m**	**kg-m**	**ft-lb**
5 mm bolt and nut	5	0.5	3.6
6 mm bolt and nut	10	1.0	7
8 mm bolt and nut	22	2.2	16
10 mm bolt and nut	24	3.5	25
12 mm bolt and nut	54	5.5	40
5 mm screw	4	0.4	2.9
6 mm screw and SH (small head flange) bolt	9	0.9	6.5
6 mm flange bolt and nut	12	1.2	9
8 mm flange bolt and nut	26	2.7	20
10 mm flange bolt and nut	39	4.0	29

For additional torque values, see the applicable *Honda Marine Shop Manual*.

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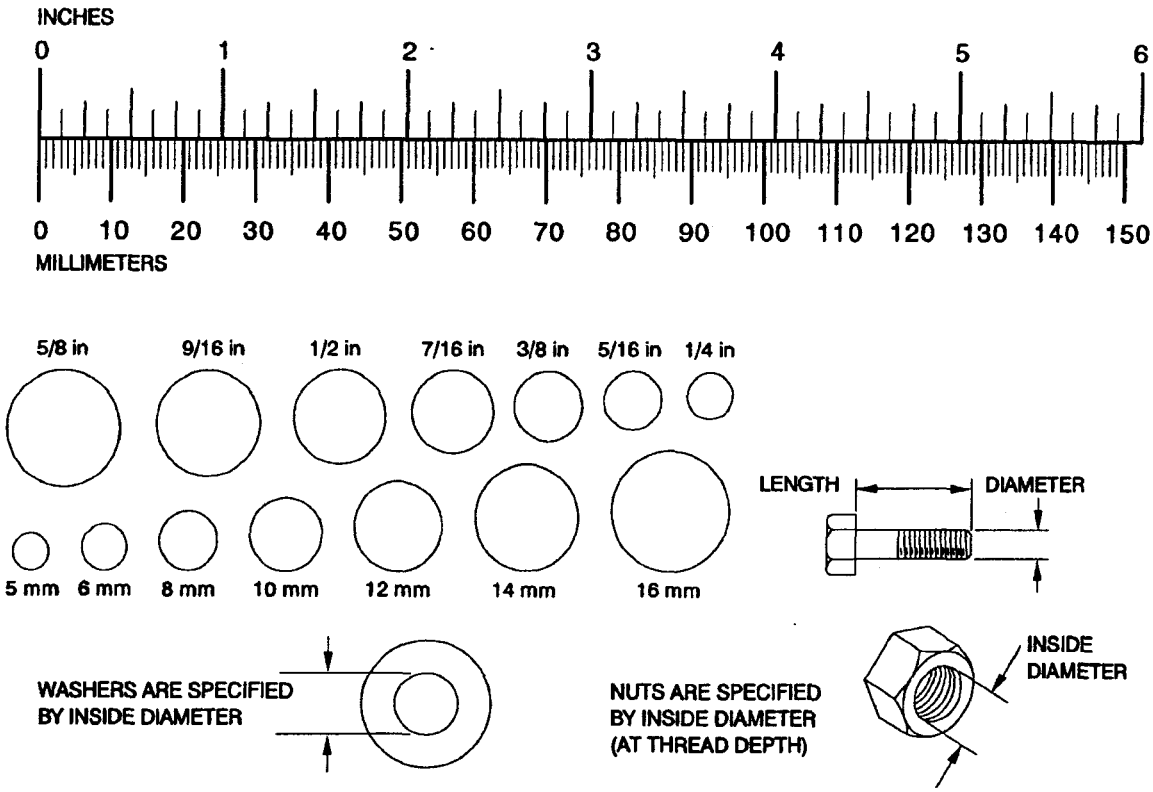
MEASURING HARDWARE AND COMPONENTS



MOTOR SELECTION

Secure and correct outboard motor set-up is essential for safe boating and good performance. Follow the installation instructions provided in this guide.

NOTICE

Do not use an air impact tool to tighten or loosen the transom bolts. Using an air impact tool to tighten or loosen the transom bolts can generate enough heat to damage the bolt threads. The air impact tool can also produce enough tightening torque to damage the boat transom.

Before installation, be sure the outboard motor does not exceed the recommended maximum horsepower for the boat. Refer to the boat's certification plate for recommended maximum horsepower. For most applications, the outboard motor should provide 80% of the recommended maximum horsepower for the boat. If the certification plate information is not available, contact the boat dealer or manufacturer.

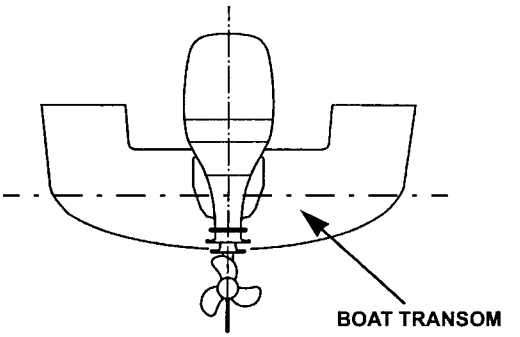
Refer to the dimensional drawings in the appropriate *Honda Marine Shop Manual* to be sure there is nothing on the boat that will interfere with outboard motor tilt-up and steering.

On a dual motor installation when the minimum distance between motors is used, the engine cover of one motor June interfere with the adjacent motor if only one motor is tilted up when the boat is steered full right or full left.

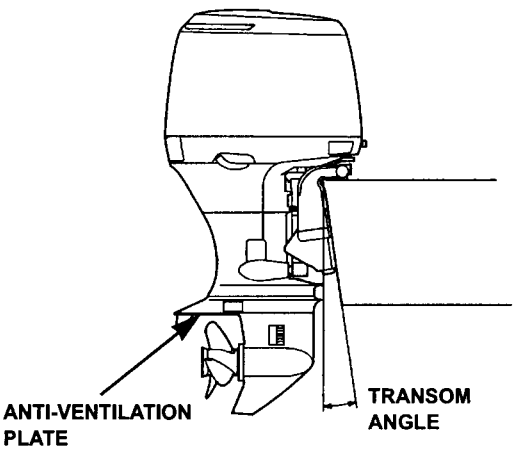
NOTICE

Do not tilt one motor up when the boat is steered full right or full left, or the engine cover June be damaged.

ANTI-VENTILATION PLATE HEIGHT

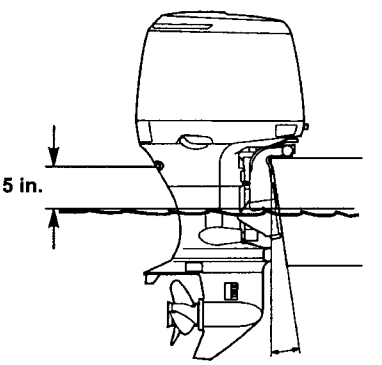


Install the outboard on the center of the transom securely, and be sure the boat is well-balanced.



As a general rule, the outboard should be mounted so the anti-ventilation plate is parallel to and on the same plane as the boat bottom or slightly higher.

If the boat transom angle is less than 8° (4° on BF8D/9.9D, BF15D/BF20D and BF25A/30A; 12° on BF200A/225A), the anti-ventilation plate will not be parallel to the boat bottom when trimmed to the lowest hole.



With the boat loaded and unmoving, and the outboard perpendicular to the water, ensure a **minimum 5 in. clearance** exists from the idle exhaust ports to the water level.

Refer to the boat specifications for details.

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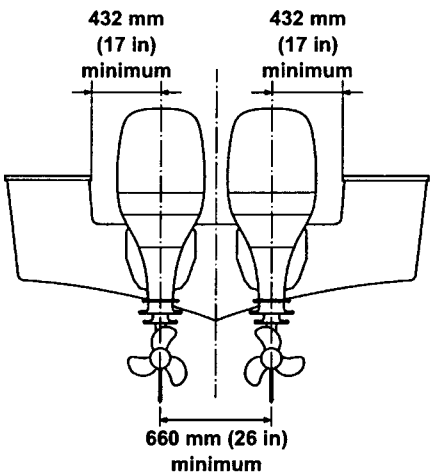
DUAL OUTBOARD INSTALLATION

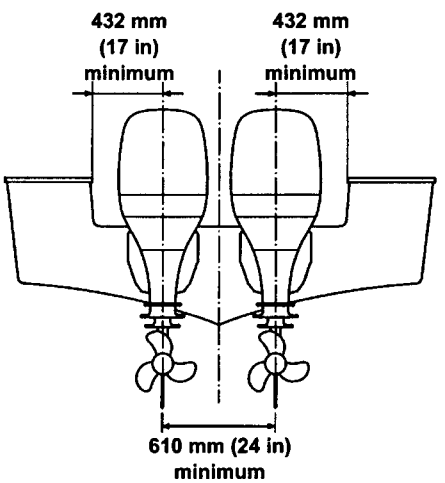
BF200A/225A, BF115A/130A, BF75A/90A



Dual outboards must be installed so the outboard center-to-center distance is a minimum of 660 mm (26 in). The transom board should still have a minimum extra space of 432 mm (17 in). Be sure the boat is well-balanced.

Mount the counter-rotation outboard on the port side.

BF40A/BF50A

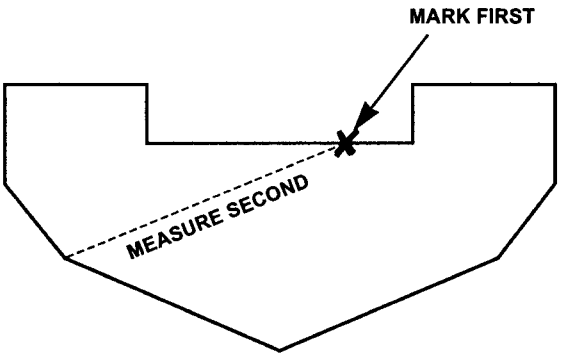


Dual outboards must be installed so the outboard center-to-center distance is a minimum of 610 mm (24 in). The transom board should still have a minimum extra space of 432 mm (17 in). Be sure the boat is well-balanced.

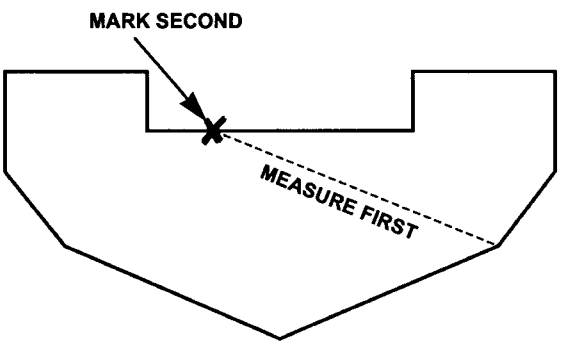
TRANSOM CENTER LINE

Measure across the transom to determine the transom center line and draw a vertical line. On a "V" bottom boat, the vertical line should pass through the keel.

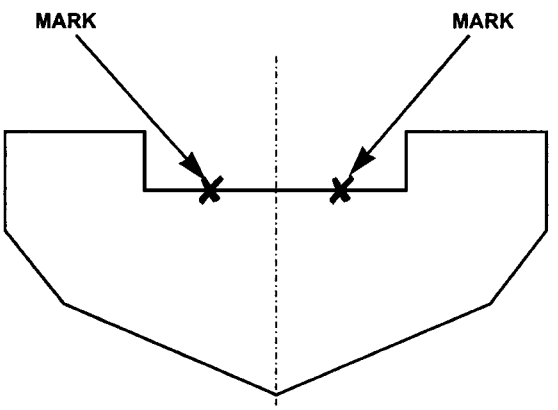
Use a pencil and tape measure to locate center line.



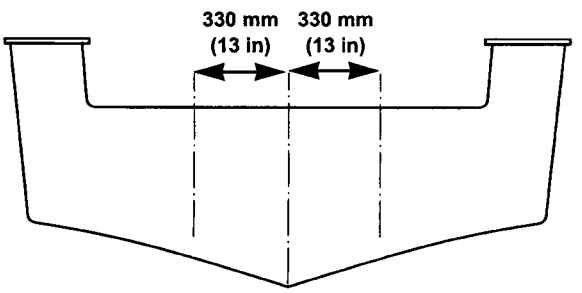
1. Put one end of the tape measure on a chine and place the other end on the upper edge of the transom, somewhere past the "visual" center. Place a mark on the transom and record the distance measured.



2. Measure the same distance from the opposite chine and make a mark.



3. Measure the distance between the two marks and place a third mark halfway between them. The line connecting the third mark with the keel is the center line.



4. If dual outboards are to be installed, mark transom at a minimum of 330 mm (13 in) [305 mm (12 in) for BF40A/BF50A] from center line.

INSTALLATION HEIGHT CHECK

Optimum outboard motor installation height varies with boat type and bottom shape. See INSTALLATION HEIGHT RECOMMENDATIONS section under the applicable model-family chapter. Contact boat manufacturer for any special recommendations unique to a specific model boat.

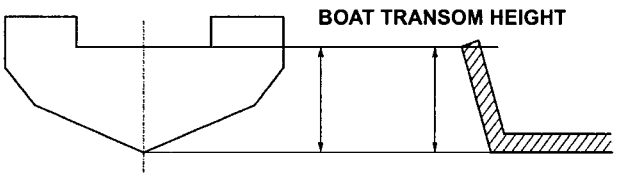
If the outboard motor is installed too low:

- The boat will squat and be hard to plane.
- The boat will tend to porpoise.
- The boat's high-speed stability will be reduced.
- Top speed will be reduced.

If the outboard motor is set-up too high:

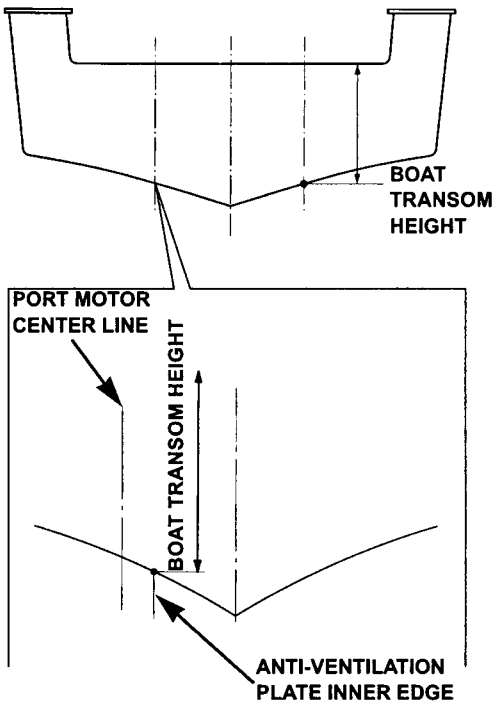
- Propeller ventilation June occur.
- Engine overheating will occur.
- The boat will tend to porpoise.

SINGLE OUTBOARD

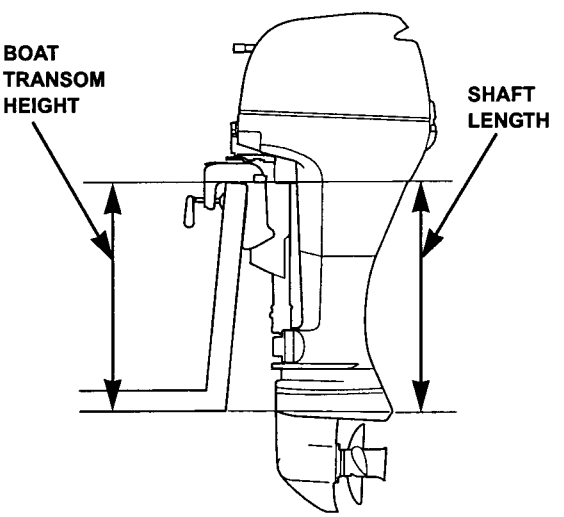


Measure from the top of the transom to the bottom of the boat, not including the keel.

DUAL OUTBOARDS



On a vertical line, inward from the outboard centerline and even with the edge of the anti-ventilation plate, measure up to the top of the transom.



Select an engine with a shaft length 1 inch longer than boat transom height. The shaft length of an

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outboard is the vertical distance from the horizontal contact surface of the transom bracket to the anti-ventilation plate.

If the outboard installation height cannot be achieved, adjust boat transom height.

TRANSOM HEIGHT ADJUSTMENT

If the transom is too low or too high, or needs to be modified to accommodate the width of the outboard motor(s), contact the boat manufacturer and follow their recommendations for corrective action.

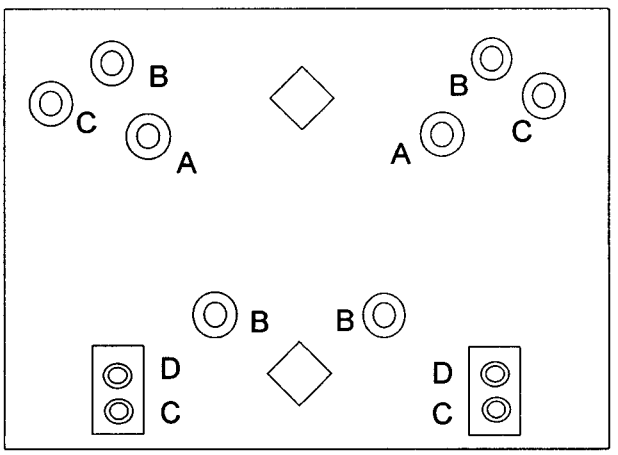
If mounting two outboard motors, be sure the installation height is identical for both.

Some boat manufacturers June require different mounting heights. Consult your boat manufacturer for specifics on your boat.

USING THE TRANSOM MOUNT DRILL FIXTURE

Verify no damage will occur when the motor mounting holes are drilled. Look for any structural impediments such as bulkheads, braces, fuel cells, bilge pumps, or floor sections before drilling.

Ensure there is adequate space for the bolt, washer and transom support plates (if applicable) to bear on a flat surface.



Use the Transom Mount Drill Fixture as a drill guide.

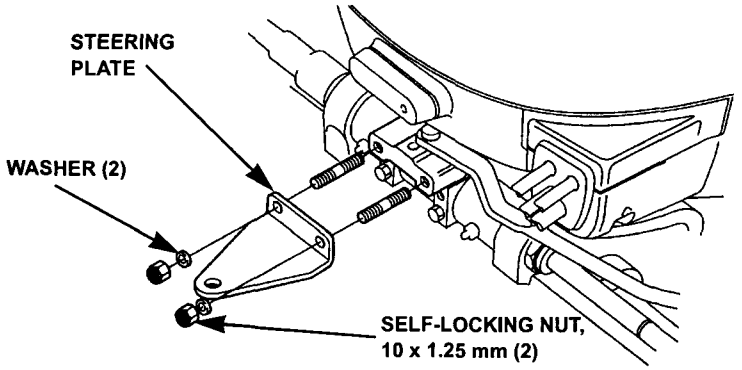
Description	Part No.
Transom Mount Drill Fixture	07MPZ-ZV3010C

See TRANSOM DRILLING section in applicable model-family chapter for additional information regarding use of the transom mount drill fixture.

TIE BAR INSTALLATION (DUAL MOTORS WITH CABLE STEERING)

For BF200A/BF225A see DUAL MOTOR INSTALLATION on page 8-11.

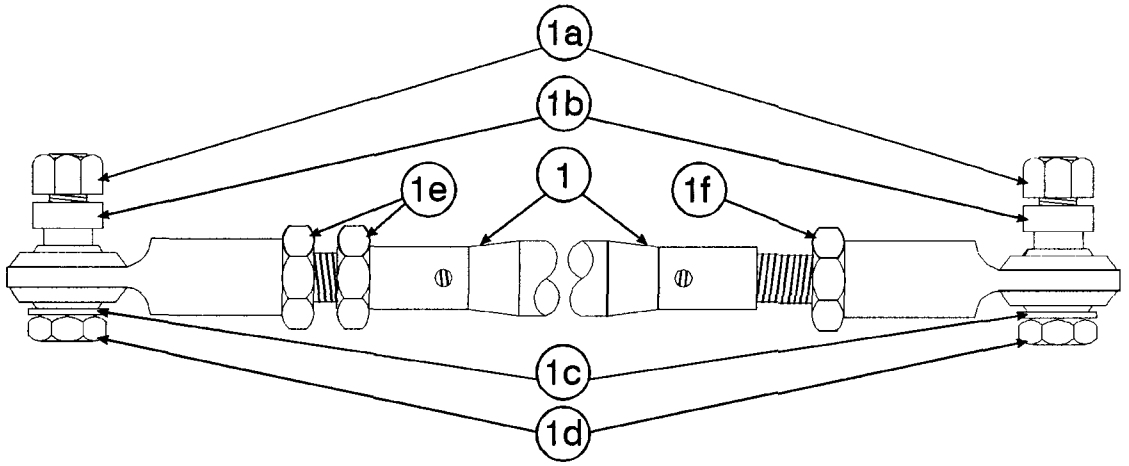
1. As described in the applicable model-family chapter, set up steering cable and steering link arm.



2. Install a steering plate on each motor.
   TORQUE: 34 N•m (25 ft-lb)
3. Install a Honda Marine tie bar kit (or equivalent) in the steering plate hole.

DESCRIPTION	PART NO.
Tie Bar Kit	50850-ZV5-000AH

PARTS LISTING



ITEM	QTY	DESCRIPTION
1	1	Tie bar assembly
1a	2	3/8-24 UNF Self-locking nuts
1b	2	1/2-3/8 in Reducer bushings
1c	2	3/8 in I.D. Flat washers
1d	2	3/8-24 UNF Hex head bolts
1e	2	1/2-20 UNF Right hand thread jam nuts
1f	1	1/2-20 UNF Left hand thread jam nut

One end of the tie bar center tube, threaded rod, and rod end have left-hand threads while the other end has right-hand threads. If the tie bar assembly should become disassembled, do not try to interchange the parts from one end to the other.

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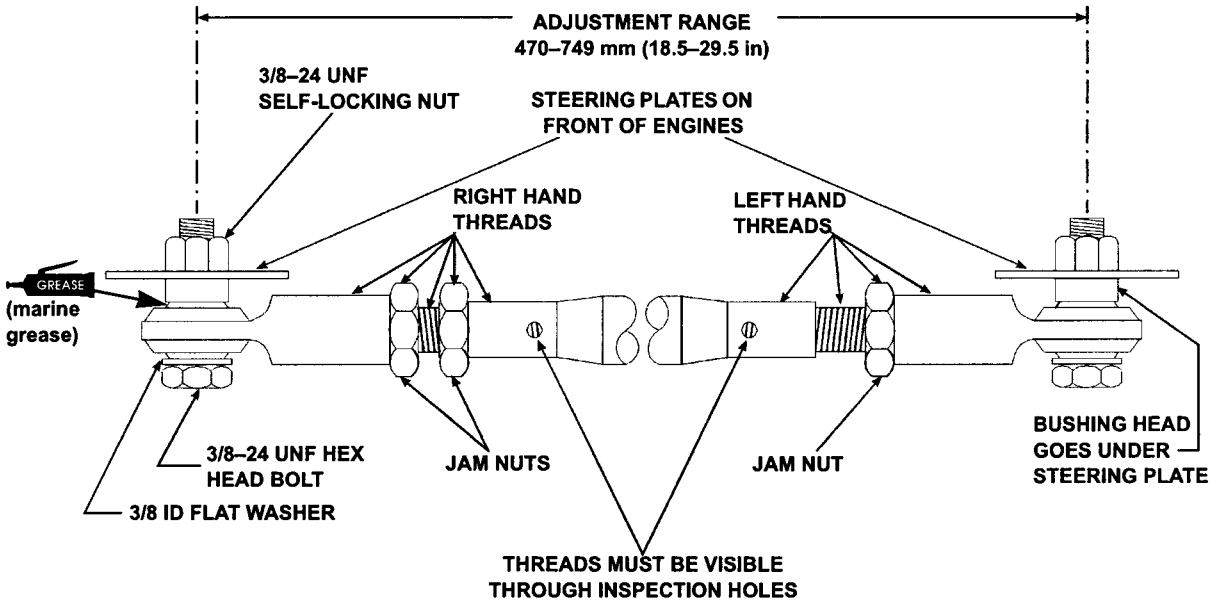

4. Be sure that the threaded rods are bottomed out in the rod ends before tightening the jam nuts against the rod ends.
5. The two threaded rods must be threaded into the center tube far enough so that the threads can be seen through the two inspection holes at either end of the center tube. This determines the maximum extension possible. The minimum centerline distance is 470 mm (18.5 in). Do not tighten the jam nut.

NOTICE

Extending the bar, so you cannot see the threads through the inspection holes, can make the tie bar weak. A weak tie bar can flex and adversely effect steering. Do not exceed the maximum allowable extension of 749 mm (29.5 in).

6. Grease and place the bushing inserts through the rod eyes. Mount the bar with the bushing heads under the steering plates. **The bar can be mounted on top of the steering plates in some applications**.
7. Place a flat washer over the 3/8 inch hex head bolt and insert the bolt through the bushing in the rod end from the underside. Thread this bolt into the forward hole on the steering plate found on the front of the engine.
8. Thread the self-locking nut onto the bolt portion that protrudes above the steering plate and tighten securely.

ADJUSTMENT

Different hull configurations June require slightly different set-up and adjustments. Some trial and error adjustments June have to be made in order to maximize the performance of the dual engines.

1. Turning the center tube in one direction will create "toe-in," while turning the center tube in the opposite direction will create a "toe-out" attitude for the two engines. An 11/16 inch flat has been provided at the center of the center tube to facilitate turning the tube.
2. Always tighten the jam nut against the center tube before doing any performance evaluations.

NOTICE

Leaving the jam nuts loose can cause the rod ends to misalign. Misaligned rod ends can adversely effect steering. After making adjustments, always tighten all jam nuts securely before operating the boat.

There are three jam nuts on the bar. Two of these are tightened down against the tie rod ends and the third jam nut is tightened against the center tube. There is no jam nut against the other end of the center tube because this allows for either engine to be tilted independently.

NOTICE

If the engines are not allowed to tilt independently of each other, the steering plates and related steering components June become bent when the engines are tilted.

Motors with toe-out (viewed from the stern) will ensure better boat stability. It is best if the exhaust wakes of two motors join 9–12 meters (30–40 ft) astern.

HYDRAULIC STEERING RECOMMENDATIONS

The following installation instructions (page 1-27 through 1-39) have been reprinted with the permission of Teleflex, Inc.

Please contact your local Teleflex distributor with any questions you June have regarding Teleflex hydraulic steering systems.

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Teleflex SeaStar®
Steering Cylinder Installation

SEASTAR

SEASTAR PRO

Horse Power Limitations

Single Cylinder, Single Engine
- Counter Rotating, Splashwell Mount . . . . . **225 HP**
- Counter Rotating, Side/Front Mount . . . . . **300 HP**

Single Cylinder, Twin Engine
- Non Counter Rotating, Side/Splashwell Mount . . . **300 HP**
- Non Counter Rotating, Front Mount . . . . . **450 HP**
- Counter Rotating, Splashwell Mount . . . . . **450 HP**
- Counter Rotating, Side/Front Mount . . . . . **600 HP**

Twin Cylinders, Twin Engine . . . . . **600 HP**

Tools

You will need the following tools to complete your installation.
- 3" (77mm) diameter Hole Saw or Key Hole Saw
- 5/16" (8mm) dia. Drill Bit
- 7/16", 9/16", 5/8" and 3/4" Open End type Wrench/Spanner
- 15/16" Socket for SeaStar Helms

Additional tools needed

20° Mount Wedge
- Key Hole or Sabre Saw
- 5/16" (8mm) dia. Drill Bit
- 1/2" Wrench/Spanner, Box or Open End type
- 7/16" Socket and Drive

Cylinder, Outboard Front Mount Type
- 5/8", 3/4", 1/2", 9/16" Wrench/Spanner, Box or Open End type, 2 required.
- 5/32" Allen Key/Wrench

Cylinder, Side Mount / Splashwell Mount Type
- 1-5/16" Wrench/Spanner, Open or Adjustable type
- 3/16" Allen Key/Wrench
- 3/8" Drill Bit

⚠ CAUTION

Lightly lubricate threaded fasteners before installing. This will prevent them from seizing.

Lubricate support rod and all moving parts with a quality marine grease.

Do not remove protective caps from fittings and fitting ports until hose or tube connections are made. Contaminants in the steering system may cause premature wear and steering malfunctions.

DO NOT use the SeaStar PRO Helms with side mount cylinder HC5370 or splashwell mount cylinder HC5380 as they are incompatible with ALL unbalanced cylinders.

INSTALLATION INSTRUCTIONS

SINGLE ENGINE

***Refer to page 1-39 for torque specifications.**

ENGINE MANUFACTURER	YEAR	MODEL	CYLINDER	NOTE
HONDA	1992 TO DATE 1996 TO DATE 1998 TO DATE 2001 TO DATE	30–50 HP 75–90 HP 115–130 HP 200–225HP	HC5345 HC5345 HC5347 HC5345	Requires Spacer Kit HO5090 (See Fig. A1) **(See next page for installation.)**

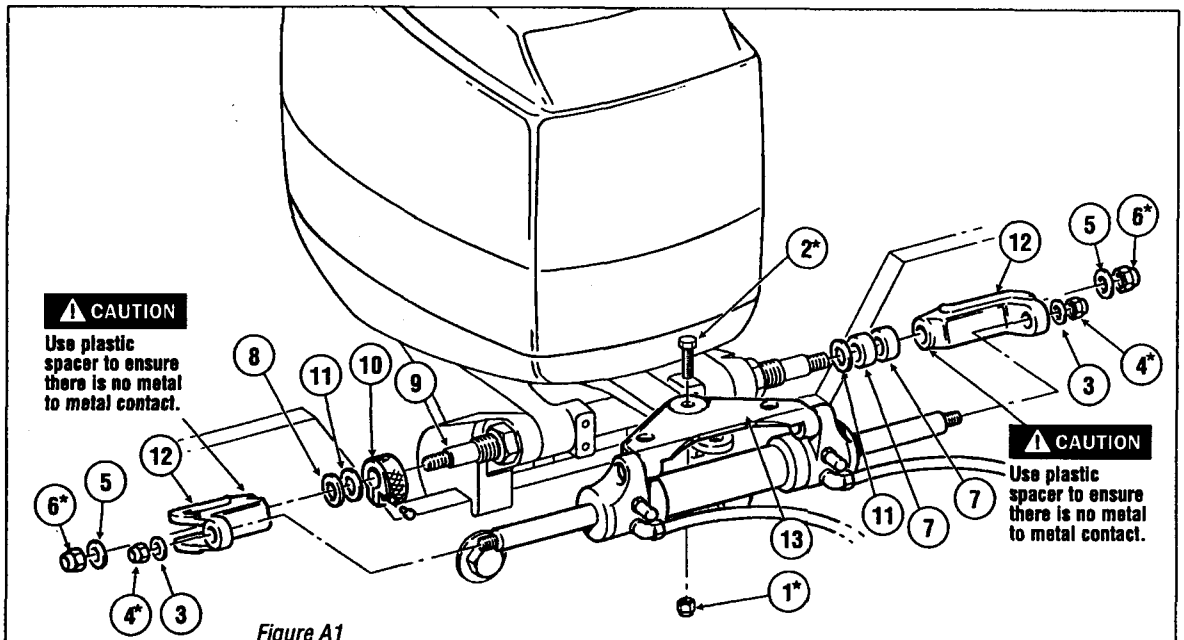
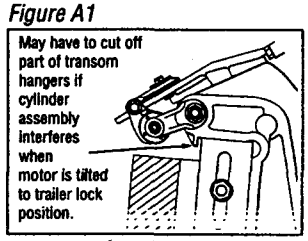


Figure A1



WARNING

Fully tilting the engine may cause the steering cylinder to interfere with the transom and/or splashwell. Possible damage to the steering system can result. Ensure that the cylinder is free from interference at all times.

Figure A

Honda 75/90 to 1998

ITEM	PART #	QTY	DESCRIPTION
*1	113529	1	Nut, 3/8" NF Nylok® SS
*2	113222	1	HHCS 3/8" NF x 1-1/4" SS
3	731625	2	Washer Flat, 7/16" SS
*4	731720	2	7/16" NF Nylok® SS
5	202027	2	Washer, Flat 1/2" SS
*6	192126	2	Nut 1/2" NF Nylok® ni plt br
7	995876	2	Spacer, Thick, Plastic
8	996689	1	Spacer, Thin, Plastic
9	730229	1	Support Rod

ITEM	PART #	QTY	DESCRIPTION
10	828085	1	Adjusting Nut & Screw SS, Teflon Coated
11	202300	2	Washer, Flat 5/8" SS
12	839120	2	Support Brackets
13	444005	1	Pivot Mount Cylinder
14	728994	1	Spacer, Medium (Not Used)
15	113330	1	HHCS 3/8" NF x 1-3/8" SS

Date of Issue: June 2003

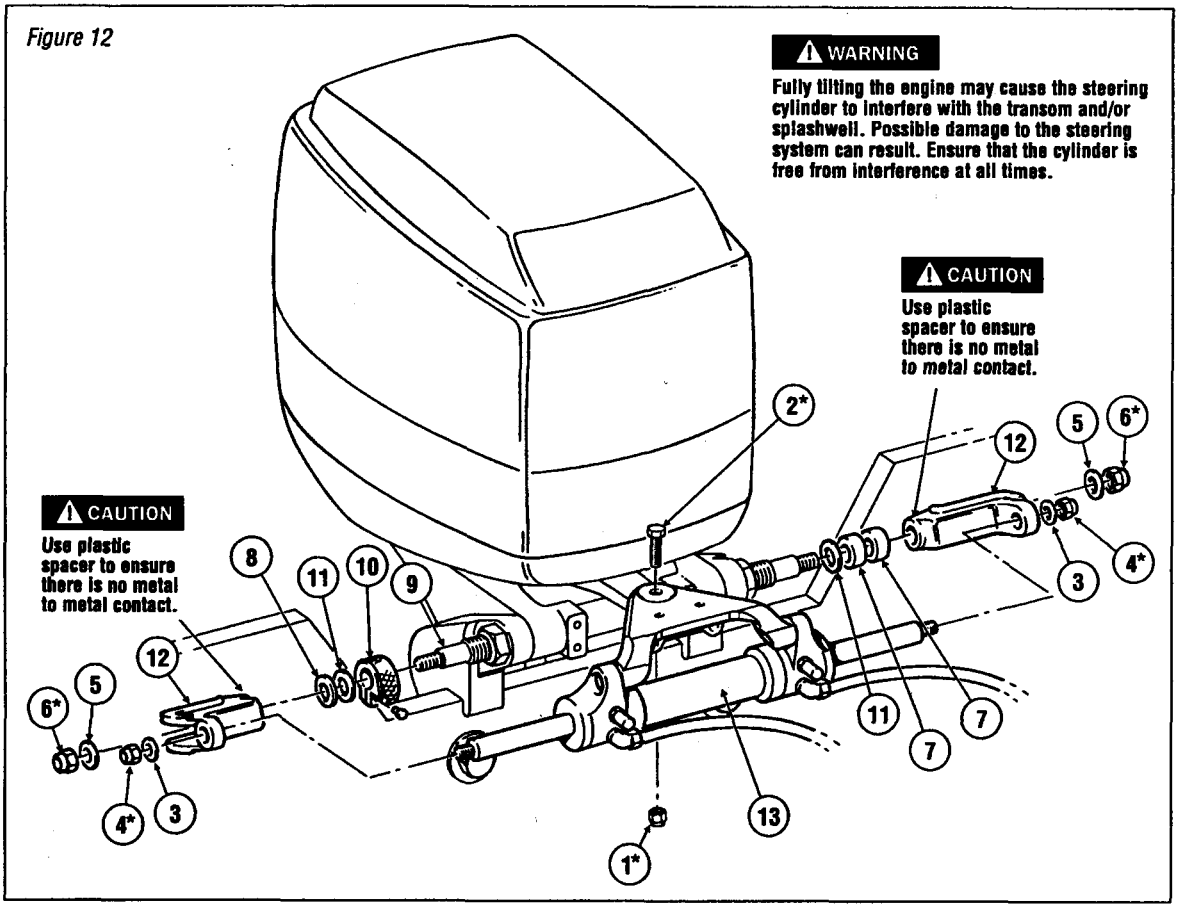
For **HC5347** Cylinder Installation **ONLY**

INSTALLATION INSTRUCTIONS
SINGLE ENGINE

***Refer to page 1-39 for torque specifications.**

ENGINE MANUFACTURER	YEAR	MODEL	CYLINDER	NOTE
HONDA	1998 TO DATE	115-130 HP	HC5347	(See page 1-35 for twin engine applications.)

Figure 12



ITEM	PART #	QTY	DESCRIPTION
*1	113529	1	Nut, 3/8" NF Nylok® SS
*2	113222	1	HHCS 3/8" NF x 1-1/4" SS
3	731625	2	Washer Flat, 7/16" SS
*4	731720	2	7/16" NF Nylok® SS
5	202027	2	Washer, Flat 1/2" SS
*6	192126	2	Nut 1/2" NF Nylok® ni plt br
7	995876	2	Spacer, Thick, Plastic
8	996689	1	Spacer, Thin, Plastic
9	730229	1	Support Rod

ITEM	PART #	QTY	DESCRIPTION
10	729621	1	Adjusting Nut & Screw SS, Teflon Coated
11	202300	2	Washer, Flat 5/8" SS
12	839120	2	Support Brackets
13	828003	1	Pivot Mount Cylinder
14	728994	1	Spacer, Medium (Not Used)
15	113330	1	HHCS 3/8" NF x 1-3/8" SS

New Tie Bar Installation

INSTALLATION INSTRUCTIONS
TWIN ENGINES

Installation Instructions: New Style Tie Bar

⚠ WARNING

Cut the threaded end of the tie bar and tube to length using the following formulas below:

⚠ CAUTION *The CD dimension must include allowance for engine toe in/out as required, or recommended by the engine manufacturer. Failing to observe toe in/out recommendations may result in harder than normal steering effort.*

⚠ WARNING

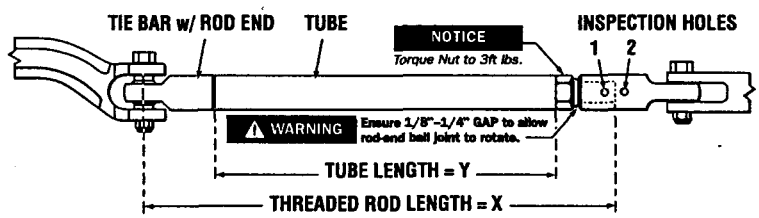
At the time of installation and any other time thereafter, the threaded rod must always fully cover inspection hole 1 of the rod end, but never inspection hole 2. Failing to observe this warning may result in one engine becoming separated from the steering system resulting in property damage and/or personal injury. The SeaStar tie bar is designed for use on Teleflex/SeaStar cylinders only. It may not be compatible with other cylinders.

Note: Maximum standard engine center= 3ft. (0.9m)

H06001

Note: Engine or tiller centers=CD
X=CD - 14¾" (375mm)
Y=CD - 18¼" (464mm)

Note: H06001 Minimum Engine centers= 26" (660mm)

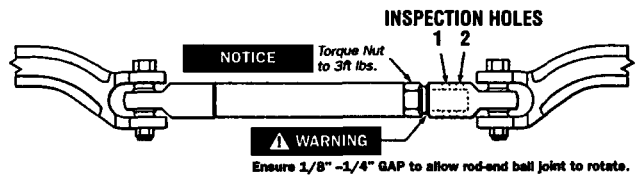


H06002

X=CD - 19¼" (489mm)
Y=CD - 22½" (572mm)

Note: Johnson/Evinrude 200–225HP (1991 To Date) and Johnson/Evinrude FICHT 90–225HP (1996 To Date) H06002 Minimum Engine centers = 29" (737mm)

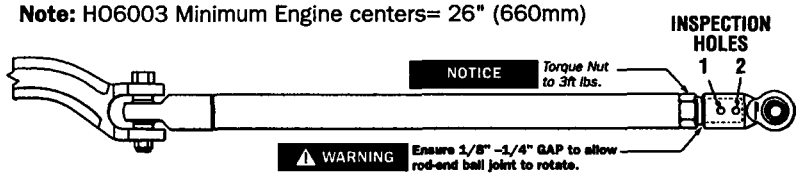
All other makes and models H06002 Minimum Engine centers = 27" (685mm)



H06003

X=CD - 10⅛" (257mm)
Y=CD - 13⅜" (340mm)

Note: H06003 Minimum Engine centers= 26" (660mm)



⚠ CAUTION

Ensure that each cylinder (if more than one) is allowed to hit its piston stop. The tie-bar may have to be disconnected. Failure to do so may fail to purge all the air from the system, causing poor performance.

Date of Issue: June 2003

INSTALLATION INSTRUCTIONS

TWIN ENGINES

HO6001-Single Cylinder Tiebar Kit

***Refer to page 1-39 for torque specifications.**

ENGINE MANUFACTURER	YEAR	MODEL	CYLINDER	ENGINE TIE BAR KITS SINGLE CYL.	DUAL CYL.	NOTE
HONDA	1996 TO DATE	75–90 HP	HC5345	**H06001**	H06002	Port Cylinder install only. (See Figure 14b)
	1998 TO DATE	25–50 HP	HC5345	**H06001**	H06002	Requires Spacer Kit HO5090. Trim Engine Hooks if Interference occurs
		115–130 HP	HC5347	H06001	H06002	
	2001 TO DATE	200–225HP	HC5345	**H06001**	H06002	(See Figure 14C)

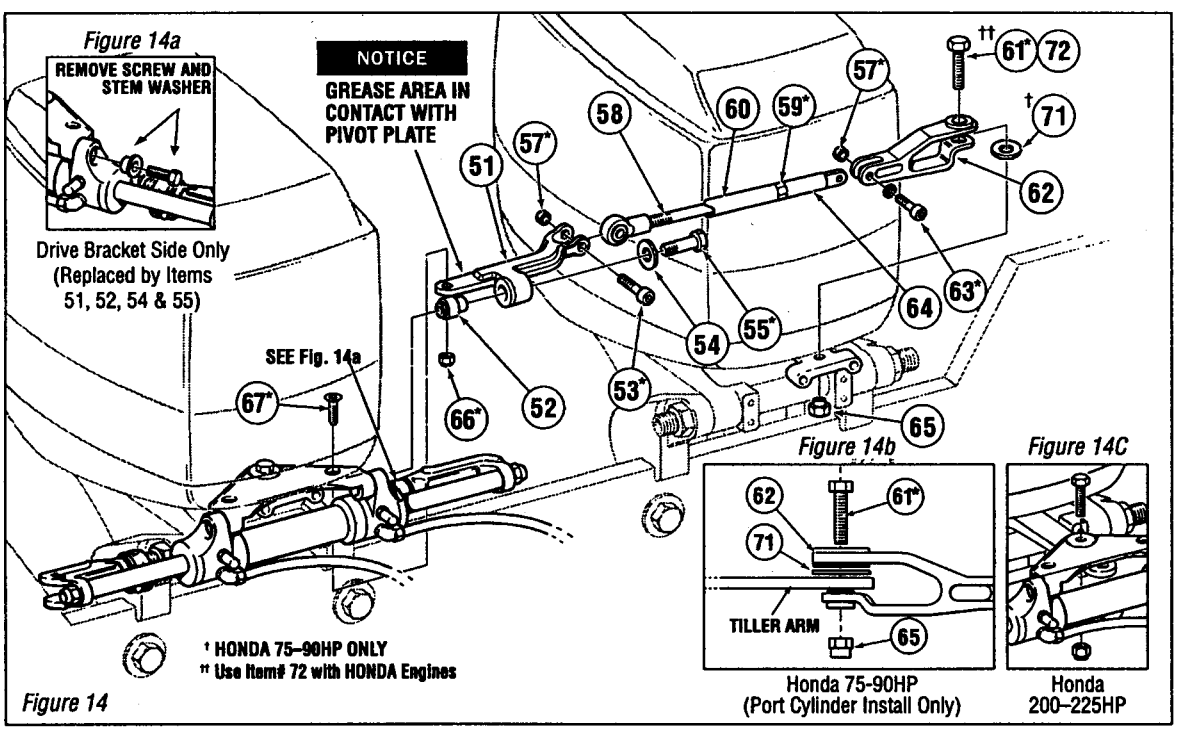


Figure 14

ITEM	PART #	QTY	DESCRIPTION
51	961665	1	Drive Bracket Assembly
52	961686	1	Spacer
*53	186540	1	Shoulder Bolt, 3/8" x 1-1/4", SS
54	010924	1	Washer 5/16" x 3/4" OD SS
*55	961704	1	HHCS 5/16" NC x 2-1/2" SS
*56	113529	1	Nut, Nylok®, 3/8" NF, SS (Not used)
*57	704525	2	Nut, Nylok®, 5/16" NC SS
58	722540	1	Tie Bar c/w Ball Joint
*59	192126	1	Nut, Nylok® 1/2" NF, NI PL BR
60	722750	1	Stringer Tube, SS
††*61	113222	1	HHCS, 3/8" NF 1-1/4", SS

ITEM	PART #	QTY	DESCRIPTION
62	961495	1	Slave Bracket Assembly
*63	186530	1	Shoulder Bolt, 3/8" x 1" SS
64	961685	1	Rod End SS 1/2" NF
65	961193	1	Threaded Bushing
*66	113021	1	Nut, Nylok®, 5/16" NC, SS, Thin
*67	185901	1	FHSCS, 5/16" NC x 3/4", SS
69	961241	1	Bush, 1/2" OD x 3/8", SS (Not Used)
*70	198767	1	HHCS 3/8" NF x 1-5/8", SS (Not Used)
†71	113600	1	Washer, 3/8" x 1-1/4" OD, SS
††*72	240017	1	HHCS, 3/8" NF 1-1/2", SS

INSTALLATION INSTRUCTIONS

TWIN ENGINES

HO6002-Dual Cylinder Tiebar Kit

***Refer to page 1-39 for torque specifications.**

ENGINE MANUFACTURER	YEAR	MODEL	CYLINDER	ENGINE TIE BAR KITS SINGLE CYL	DUAL CYL	NOTE
HONDA	1996 TO DATE	75–90 HP	HC5345	HO6001	N/A	
	1998 TO DATE	115–130 HP	HC5347	HO5028	HO5044A & HO5009	
	2001 TO DATE	200–225 HP	HC5345	HO6001	H06002	See Fig. 16b

Figure 16a

Drive Bracket Side Only (Replaced by Items 51, 52, 54 & 55)

Figure 16

Figure 16b

Honda 200–225HP

ITEM	PART #	QTY	DESCRIPTION
51	961665	2	Drive Bracket Assembly
52	961686	2	Spacer
*53	186540	2	Shoulder Bolt, 3/8" x 1-1/4", SS
54	010924	2	Washer 5/16" x 3/4" OD SS
*55	961704	2	HHCS 5/16" NC x 2-1/2" SS
*57	704525	2	Nut, Nylok®, 5/16" NC, SS

ITEM	PART #	QTY	DESCRIPTION
58	722543	1	Tiebar c/w Ball Joint
*59	192126	1	Nut, Nylok® 1/2" NF, NI PL BR
60	722753	1	Stringer Tube, SS
61	116527	1	Rod End Ball 1/2" SS
*66	113021	2	Nut, Nylok®, 5/16" NC, SS, Thin
*67	185901	2	FHSCS, 5/16" NC x 3/4", SS

Date of Issue: June 2003

Old Tie Bar Installation

INSTALLATION INSTRUCTIONS

TWIN ENGINES

Installation Instructions: Old Style Tie Bar

Cut the tie bar and tie bar tube to length using the following formula.

X = CD - 1" (25mm)

Y = CD - 4" (101mm)

⚠ CAUTION

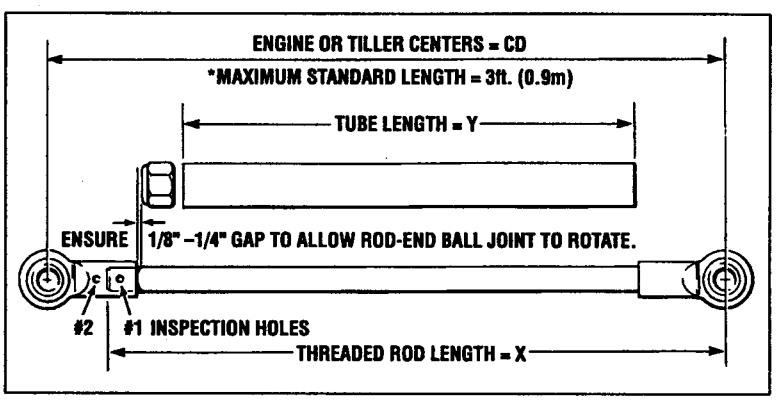
The CD dimension must include allowance for engine toe in/out as required, or recommended by the engine manufacturer. Failing to observe toe in/out recommendations may result in harder than normal steering effort.

⚠ WARNING

At the time of installation and any other time thereafter, the threaded rod must always fully cover inspection hole 1, but never inspection hole 2. Failing to observe this warning may result in one engine becoming separated from the steering system causing result in property damage and/or personal injury.
The SeaStar tie bar is designed for use on Teleflex/SeaStar cylinders only. It may not be compatible with other cylinders.

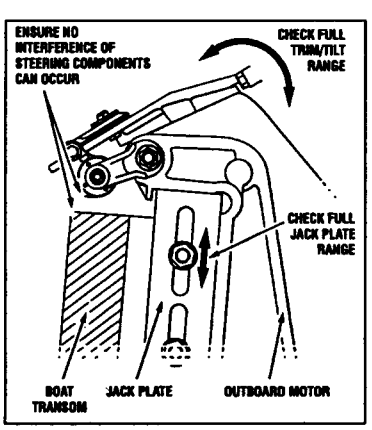
⚠ WARNING

IF AUTOPURGE SYSTEM IS USED TO FILL AND PURGE THE STEERING SYSTEM, DO NOT CONNECT THE TIE BAR UNTIL THE PURGE TANK HAS BEEN DISCONNECTED FROM CYLINDER.



Cylinder Installation Warning

⚠ WARNING



Operational interference of the steering cylinder/cylinder fittings and jackplates/transom/splashwell can occur under certain conditions. Check installation thoroughly throughout the full range of Motor Tilt, Jack Height and Trim before making final installation.

If interference does occur, contact:

Teleflex Canada for additional information/options.

Telephone: **(604) 270-6899** or **(941) 488-6744**

If interference is not eliminated total steering loss can occur, causing property damage and/or personal injury.

INSTALLATION INSTRUCTIONS

TWIN ENGINES

***Refer to page 1-39 for torque specifications.**

ENGINE MANUFACTURER	YEAR	MODEL	CYLINDER	ENGINE ADAPTER PLATES SINGLE	TWIN c/w tie-rod	TWIN w/o tie rod	NOTES
HONDA	1996 TO DATE	75-90 HP	HC5345	NOT REQ.	H05044A & H05009	H05044A	

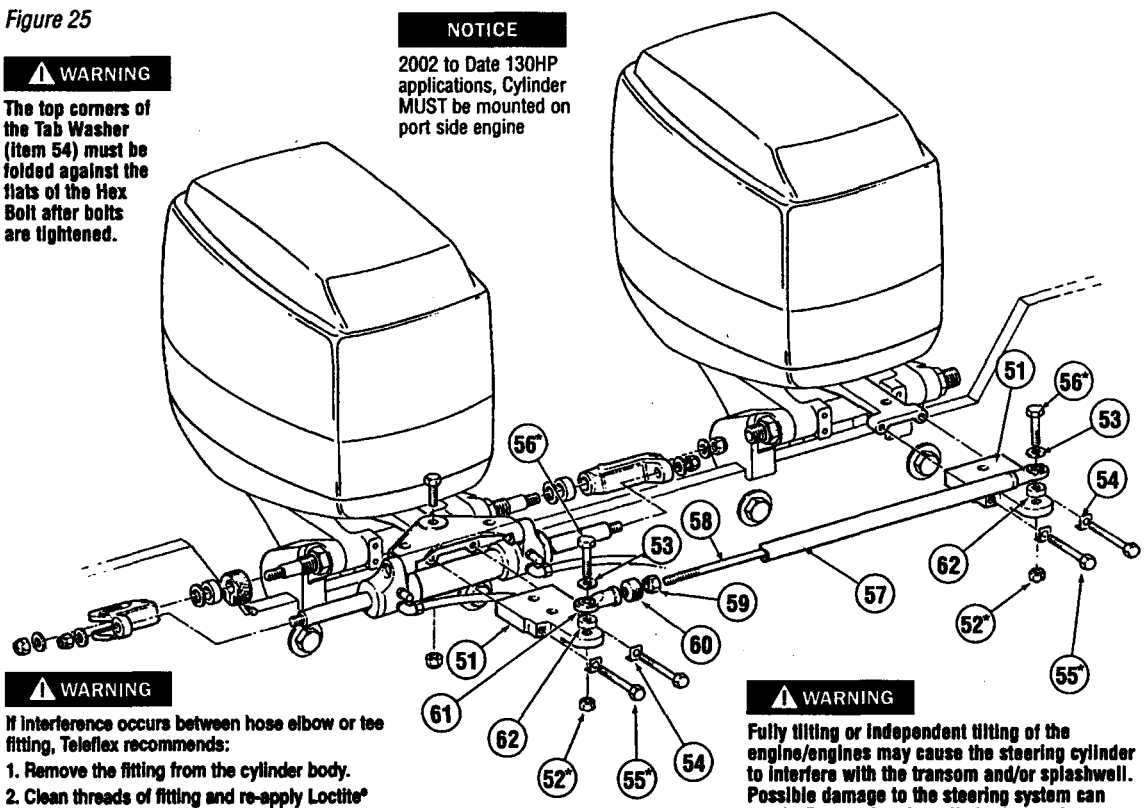
Figure 25

⚠ WARNING

The top corners of the Tab Washer (item 54) must be folded against the flats of the Hex Bolt after bolts are tightened.

NOTICE

2002 to Date 130HP applications, Cylinder MUST be mounted on port side engine



⚠ WARNING

If interference occurs between hose elbow or tee fitting, Teleflex recommends:

1. **Remove the fitting from the cylinder body.**
2. **Clean threads of fitting and re-apply Loctite® with PST. Thread the fitting back into the port. Adjust fitting to desired angle.**

If interference re-occurs please contact Teleflex (ref. rear cover for contact info.).

⚠ WARNING

Fully tilting or independent tilting of the engine/engines may cause the steering cylinder to interfere with the transom and/or splashwell. Possible damage to the steering system can result. Ensure that the cylinder is free from interference at all times. Maximum Transom thickness 2-3/4"

ITEM	PART #	QTY	DESCRIPTION
51	687723	2	Extension Plate
*52	113529	2	Nut 3/8" NF Nylok®
53	113622	2	Washer 3/8" dia.
54	823673	4	Locking Tab Washer
*55	752927	4	Screw M10 x 1-1/4" x 90 HHCS
*56	726825	2	Screw 3/8" NF x 1-3/4" HHCS

ITEM	PART #	QTY	DESCRIPTION
57	722721	1	Stringer Tube
58	722523	1	Threaded Rod c/w Ball Joint
59	192126	1	Nut 1/2" NF Nylok®
60	746123	1	Obsolete–No longer required
61	116527	1	Ball Joint
62	710921	2	Spacer

Date of Issue: June 2003

For **HC5347** Cylinder Installation **ONLY**

INSTALLATION INSTRUCTIONS
TWIN ENGINES

***Refer to page 1-39 for torque specifications.**

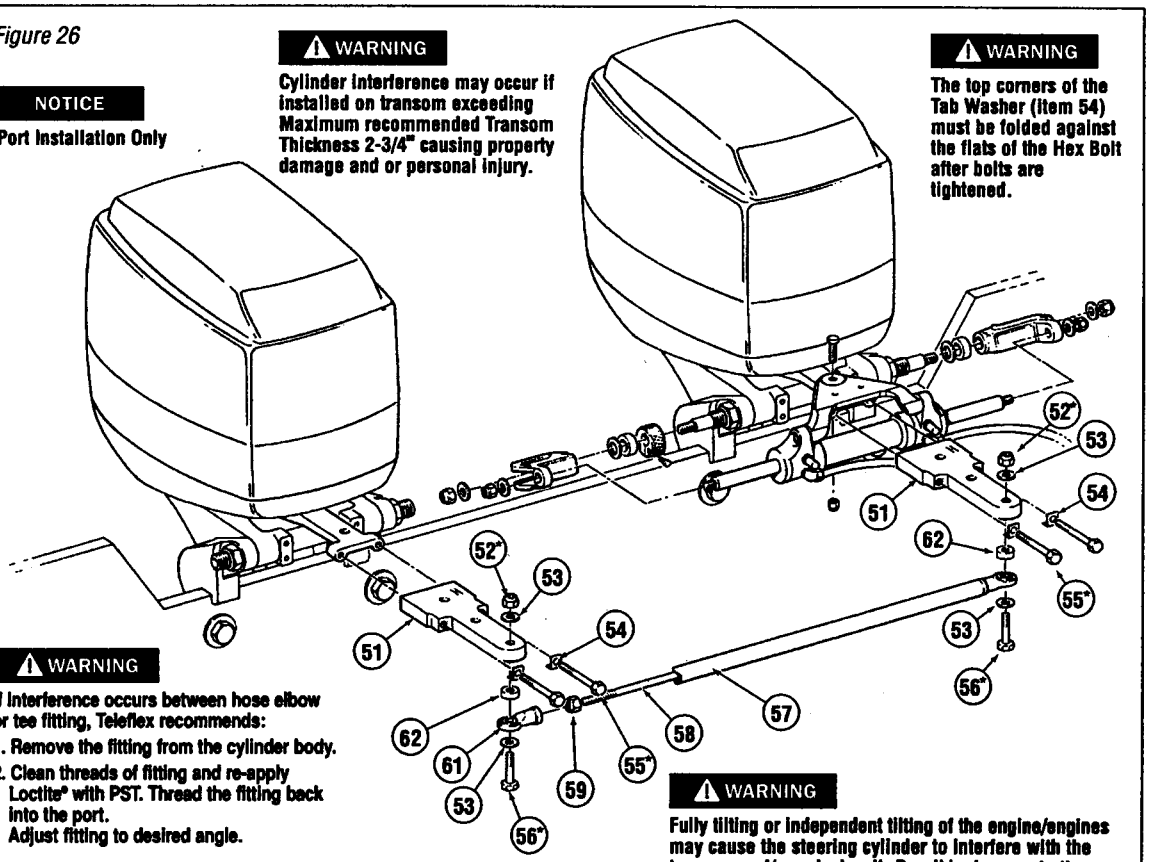
ENGINE MANUFACTURER	YEAR	MODEL	CYLINDER	ENGINE ADAPTER PLATES SINGLE	TWIN c/w tie-rod	TWIN w/o tie rod	NOTES
HONDA	1998 TO DATE	115-130 HP	HC5347	NOT REQ.	H05063	H05064	

Figure 26

NOTICE
Port Installation Only

⚠ WARNING
Cylinder interference may occur if installed on transom exceeding Maximum recommended Transom Thickness 2-3/4" causing property damage and or personal injury.

⚠ WARNING
The top corners of the Tab Washer (item 54) must be folded against the flats of the Hex Bolt after bolts are tightened.



⚠ WARNING
If interference occurs between hose elbow or tee fitting, Teleflex recommends:
1. **Remove the fitting from the cylinder body.**
2. **Clean threads of fitting and re-apply Loctite® with PST. Thread the fitting back into the port. Adjust fitting to desired angle.**

If interference re-occurs please contact Teleflex (ref. rear cover for contact info.).

⚠ WARNING
Fully tilting or independent tilting of the engine/engines may cause the steering cylinder to interfere with the transom and/or splashwell. Possible damage to the steering system can result. Ensure that the cylinder is free from interference at all times. Maximum Transom thickness 2-3/4"

ITEM	PART #	QTY	DESCRIPTION
51	688725	2	Extension Plate
*52	113529	2	Nut 3/8" NF Nylok®
53	113622	4	Washer 3/8" dia.
54	823673	4	Locking Tab Washer
*55	752930	4	Screw M10 x 1.25 x 62mm HHCS
*56	726825	2	Screw 3/8" NF x 1-3/4" HHCS
57	722721	1	Stringer Tube

ITEM	PART #	QTY	DESCRIPTION
58	722523	1	Threaded Rod c/w Ball Joint
59	192126	1	Nut 1/2" NF Nylok®
61	116527	2	Ball Joint
62	710921	2	Spacer

Trolling Motor Tie Bar Installation

INSTALLATION INSTRUCTIONS
TWIN ENGINES

H06010-Single Cylinder Trolling Motor Tiebar Kit

*Refer to page 1-39 for torque specifications.

ENGINE MANUFACTURER	YEAR	MODEL	CYLINDER	ENGINE ADAPTER KIT	NOTE
ALL	1991 TO DATE	Kicker or Trolling Motor	HC5345	H06010	See Fig. 32a

NOTICE

Fully tilt engine and turn steering wheel from hard over to hard over. Insure that no interference occurs at any point between the Steering Cylinder, Adapter Bracket or Tie Bar and any part of the engine or transom area.

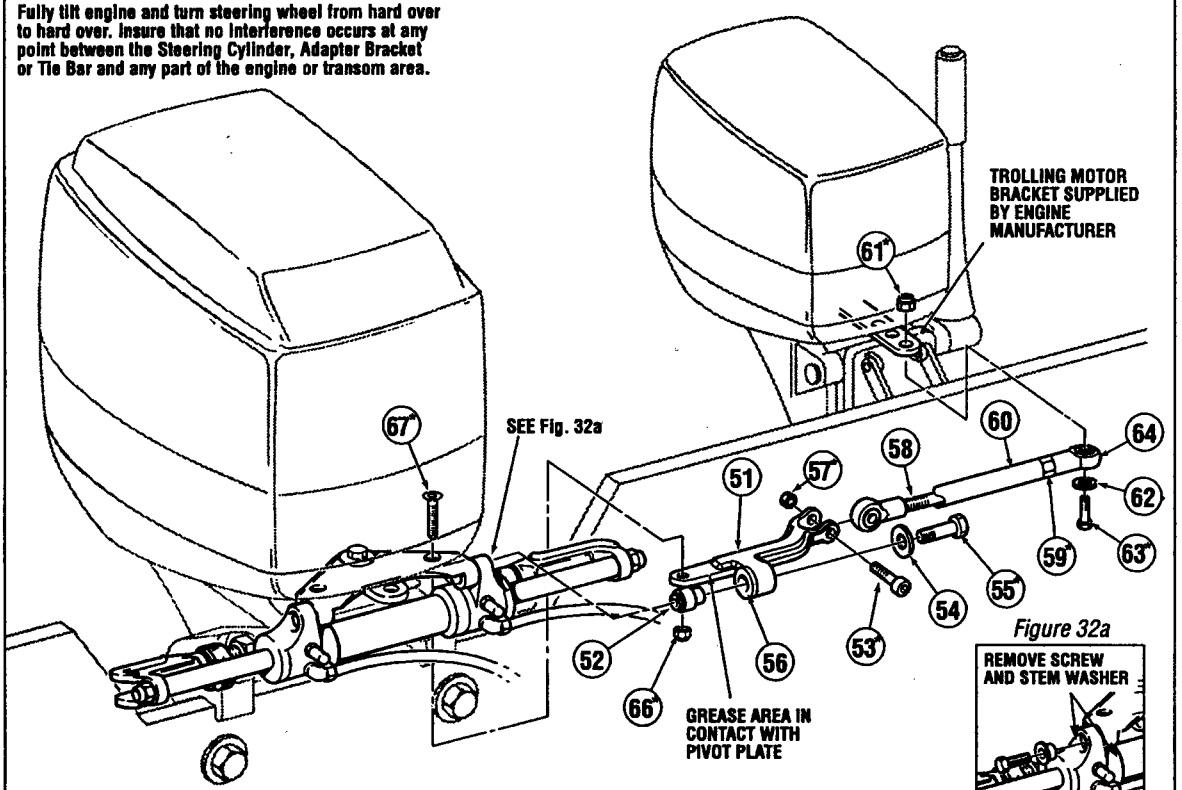


Figure 32

Figure 32a

Drive Bracket Side Only

ITEM	PART #	QTY	DESCRIPTION
51	961650	1	Drive Bracket
52	961686	1	Spacer
*53	186540	1	Shoulder Bolt, 1-1/4", SS
54	010924	1	Washer, 5/16" Flat 3/4" OD SS
*55	961704	1	HHCS, 5/16" NC x 2-1/2", SS NLP
56	748668	1	Bush, Flange
*57	704525	1	Nut, Nylok®, 5/16" NC, SS
58	722547	1	Tie Bar c/w Ball Joint

ITEM	PART #	QTY	DESCRIPTION
*59	192126	1	Nut, Nylok®, 1/2" NF, Ni Pl Br
60	620527	1	PVC Tubing
*61	113529	1	Nut, Nylok®, 3/8" NF, Thin, SS
62	113622	1	Washer, 3/8" Flat 7/8" OD SS
*63	726825	1	HHCS, 3/8" NF x 1-3/4" SS
64	116527	1	Rod End SS 1/2" NF
*66	113021	1	Nut, Nylok®, 5/16" NC, Thin, SS
*67	185901	1	FHSCS, 5/16" NC x 7/8", SS

Date of Issue: June 2003

Triple Engine Installation

INSTALLATION INSTRUCTIONS
TRIPLE ENGINES

H05090 Spacer Kit For Use with Teleflex Hydraulic Steering Cylinder HC5345 & HC5358

*Refer to page 1-39 for torque specifications.

HONDA	1998 to DATE	25–50 HP	Fig. 33

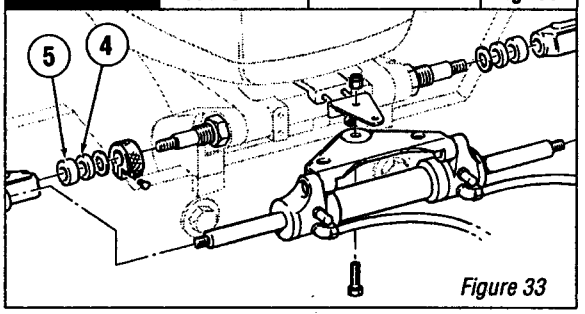


Figure 33

ITEM	PART #	QTY	DESCRIPTION
*1	198767	1	HHCS 3/8" NF x 1-5/8" SS (Tiller Bolt)
2	113600	1	SS Fender Washer
3	773421	1	Aluminum Spacer 1/2"
4	728994-1	1	3/16" Spacer, Yamaha
5	995876	2	Thick Nylon Spacer 3/8"

INSTALLATION INSTRUCTIONS

TRIPLE ENGINES

*Refer to page 1-39 for torque specifications.

ENGINE MANUFACTURER	YEAR	MODEL	CYLINDER	ENGINE TIE BAR KITS STARBOARD ENG. TO DRIVE CYL.	ENGINE TIE BAR KITS PORT CYL. TO DRIVE CYL.	NOTE
HONDA	1992 TO DATE	30–50 HP	HC5345	H06001	H06002	See Fig. 40 Min. Engine Centers=29"
	1996 TO DATE	75–90 HP	HC5345	H06001	H06002	
	1998 TO DATE	115–130 HP	HC5347			
	2001 TO DATE	200–225HP	HC5345	H06001	H06002	

NOTICE

Refer to your specific engine application for detailed installation instructions.

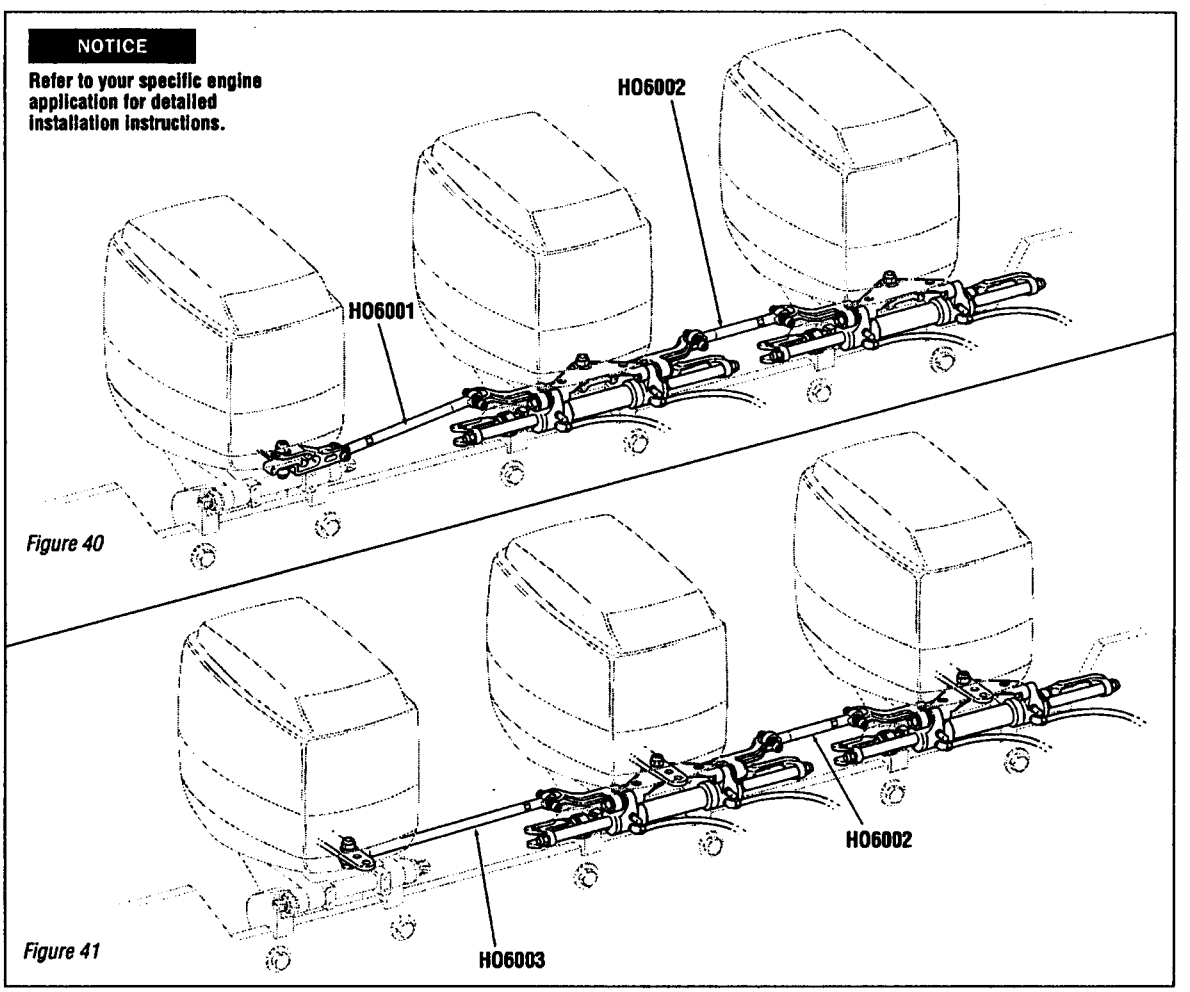


Figure 40

Figure 41

Date of Issue: June 2003

TECHNICAL INFORMATION

Bolt Torque Specifications

These are the recommended maximum torque values for reusable dry bolts. Bolts should be torqued to this value +0% -20%. For lubricated bolts, multiply the dry bolt torque values by .75.

Values are stated in: **in/lbs (N.m)**

Bolt Size	18-8SS	Brass	Bolt Size	18-8SS	Brass	Bolt Size	18-8SS	Brass
2-56	2.5 (.282)	2.0 (.226)	6-32	9.6 (1.08)	4.9 (.554)	5/16"-18	132.0 (14.91)	107.0 (12.10)
2-64	3.0 (.338)	2.5 (.282)	6-40	12.0 (1.35)	9.9 (1.12)	5/16"-24	142.0 (16.04)	116.0 (13.11)
3-48	3.9 (.440)	3.2 (.361)	8-32	20.0 (2.25)	16.0 (1.81)	3/8"-16	236.0 (26.66)	192.0 (21.71)
3-56	4.4 (.497)	3.6 (.407)	8-36	22.0 (2.48)	18.0 (2.03)	3/8"-24	259.0 (29.20)	212.0 (23.97)
4-40	5.2 (.587)	4.3 (.486)	10-24	23.0 (2.59)	19.0 (2.14)			
4-48	6.6 (.740)	5.4 (.610)	10-32	32.0 (3.61)	26.0 (2.94)			
5-40	7.7 (.869)	6.3 (.712)	1/4"-20	75.0 (8.47)	62.0 (7.01)			
5-44	9.4 (1.06)	7.7 (.869)	1/4"-28	94.0 (10.6)	77.0 (8.70)			

Values are stated in: **ft/lbs (N.m)**

Bolt Size	18-8SS	Brass	Bolt Size	18-8SS	Brass	Bolt Size	18-8SS	Brass
7/16"-14	31.0 (42.00)	26.0 (35.25)	5/8"-11	93.0 (126.09)	76.0 (103.04)	1"-8	287.0 (389.12)	235.0 (318.62)
7/16"-20	33.0 (44.74)	27.0 (36.61)	5/8"-18	104.0 (141.00)	85.0 (115.24)	1"-14	259.0 (351.16)	212.0 (287.43)
1/2"-13	43.0 (58.30)	35.0 (47.45)	3/4"-10	128.0 (173.55)	104.0 (141.00)			
1/2"-20	45.0 (61.01)	37.0 (50.17)	3/4"-16	124.0 (168.12)	102.0 (138.29)			
9/16"-12	57.0 (77.28)	47.0 (63.72)	7/8"-9	194.0 (236.03)	159.0 (215.58)			
9/16"-18	63.0 (85.42)	51.0 (69.15)	7/8"-14	193.0 (261.67)	158.0 (214.22)			

NOTICE *Torque values for 18-8 stainless steel and brass bolts are taken from a torque guide by ITT Harper. All results correspond well with basic bolt equations, using a bolt factor of 0.2 and a factor of 3/4 for a reusable connection.*

Helm Pump

	DISPLACEMENT	RELIEF VALVE	PORTS
SeaStar 1.7	1.7 cu. in. (27.8 cc)	1000 PSI (68 Bar)	1/4" NPT
SeaStar 2.4	2.4 cu. in. (39.3 cc)	1000 PSI (68 Bar)	1/4" NPT
SeaStar Pro 2.0	2.0 cu. in. (33.0 cc)	1500 PSI (102 Bar)	1/4" NPT

Helm Pump Shaft

	TAPER	THREAD	KEY SIZE
SeaStar 1.7	3/4" Standard, 1" per ft.	5/8" NF	3/16"
SeaStar 2.4	3/4" Standard, 1" per ft.	5/8" NF	3/16"
SeaStar Pro 2.0	3/4" Standard, 1" per ft.	5/8" NF	3/16"

Cylinder

	INSIDE DIAMETER	STROKE.
Front Mount (Pivot)	1.375" (34.93 mm)	8" (203 mm)
Side Mount	1.250" (31.70 mm)	8" (203 mm)
Splashwell Mount	1.250" (31.70 mm)	9" (229 mm)

	VOLUME	TORQUE @ 1000 psi (70 Bar) H.O.
Front Mount (Pivot)	8.34 cu. in. (136.6 cc)	N/A
Side Mount	8.25/9.8 cu. in. (135.1/160.8 cc)	7142/8502 in/lbs (82.1/97.7 Kg)
Splashwell Mount	9.3 cu. in. (152.4 cc)	N/A

Fittings

SeaStar cylinders and all other fittings are 3/8" compression type fittings. Threads are 9/16" x 24 UNEF. A brochure on all SeaStar fittings is available from Teleflex Canada.

SeaStar & SeaStar Pro Hose

Inside diameter – 5/16" (8 mm)

METER WIRE CONNECTIONS

Connect wire harnesses properly, as shown in the meter wiring diagram.

NOTICE

Use Meter Wire Harness A and B for instruments ONLY. Do not splice or otherwise add any other electrical appliance to the meter harness.

Connect leads and terminals securely. Make sure terminals are waterproof.

Use 19-gauge (1.25 mm dia.) wire.

Connect the wire harnesses securely. If a terminal is oxidized or corroded, remove the oxidation or corrosion with a nonconductive plastic scrub pad or contact cleaner before reconnecting it.

Make sure all connections are water tight. Use the Honda Marine Terminal Service Kit (see page 1-49).

Description	Part No.
Honda Marine Terminal Service Kit A	07VPZ-001000A

Make sure insulators surround their connectors completely and the ends are not folded up.

Do not use simple butt connectors. They are not water/corrosion resistant.

Do not break the wire harness coverings. If the covering of a wire is broken, either repair it with electrician's tape, or replace it.

Attach unused terminals to the adjacent main harness with a piece of electrician's tape so the terminals do not interfere with the surrounding parts.

After each wire and harness is connected, check for proper connections by referring to the wiring diagram. Connect the battery and turn the main power on to check for proper operation.

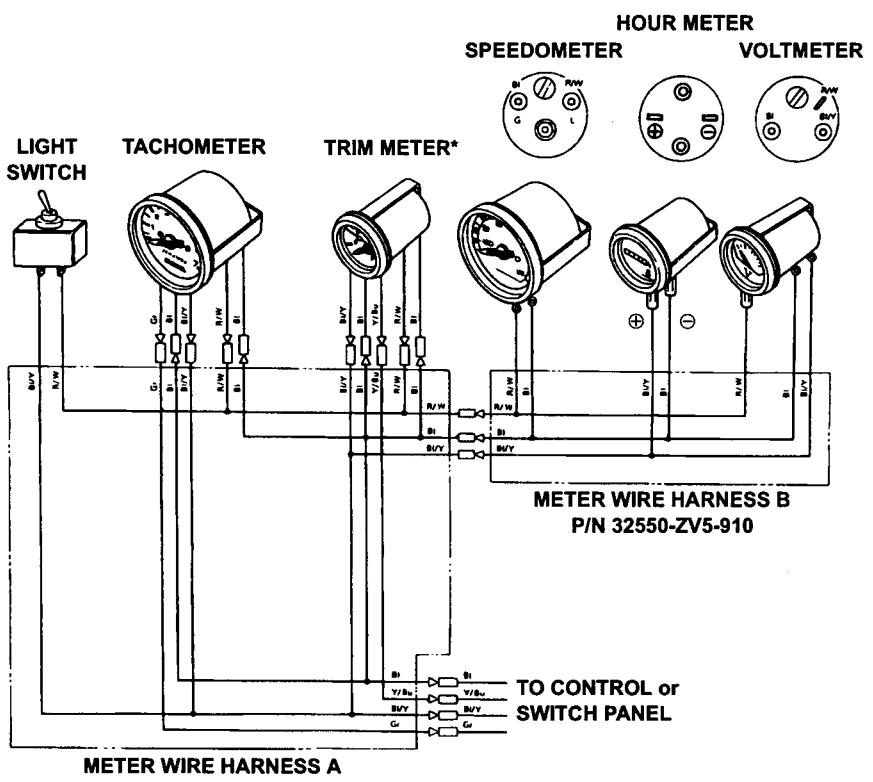
Meter Wiring Diagram

The meter wire harness is an independent engine-control system. Do not attempt to integrate it with the boat's system or other accessories, except for the instrument light switch.

There are three ways to illuminate the instrument lights:

- Connect a commercially available switch (Teleflex 1A 16970 or equivalent) between the BI/Y and R/W terminals.
- Connect 12V (+) from the boat's instrument lights to the R/W terminal OR connect the BI/Y and R/W terminals together for "lights on" with the engine switch.

See page 1-53 for standard wire color table.



*See page 5-15 for BF40A/BF50A trim meter connections.

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WATER SEPARATORS

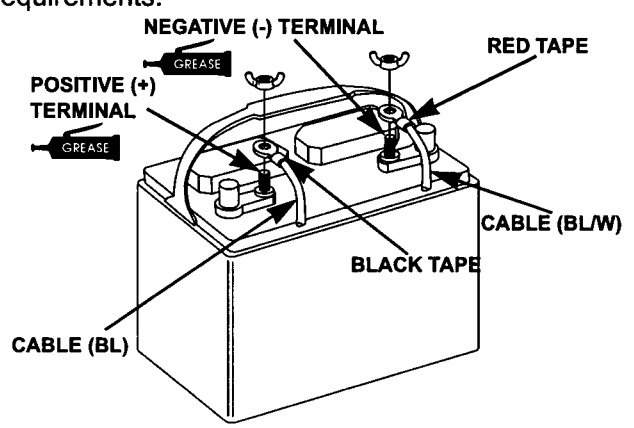
One of the most effective means of saving a carburetor, or fuel injection system, is installing a water separator. Honda recommends the installation of water separators in situations where condensation or water contamination can be a problem. Given the environment in which boats operate, condensation and water contamination are givens. Racor water separators are available from Honda in three sizes to cover fuel flow from 30 to 60 gph. See the *Honda Marine Accessories Catalog* for additional information.

BATTERY (NOT INCLUDED)

Batteries for marine applications often have a Marine Cranking Amps (MCA) rating. This is the discharge load in amperes that a new, fully charged battery at 32°F (0°C), can continuously deliver for 30 seconds and maintain a terminal voltage equal to or higher than 1.2 volts per cell (7.2 volts for a 12-volt battery).

- To convert CCA (Cold Cranking Amps) to MCA: CCA x 1.3 = MCA
- To convert MCA to CCA: MCA x 0.77 = CCA

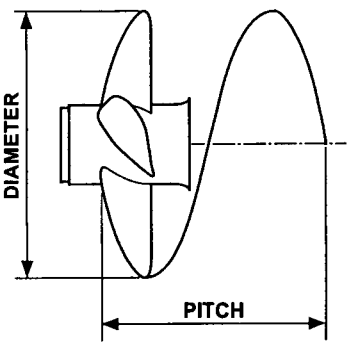
See SPECIFICATIONS section in applicable outboard model-family chapter for minimum battery requirement. If additional accessories or electrical equipment are also to be powered by this battery, the battery's capacity must be correspondingly higher to accommodate the additional power requirements.

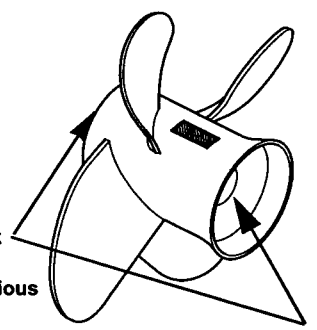


If boat is equipped with two outboard motors, *two batteries must be installed*, one for each motor.

1. Install the battery in the correct size corrosion-resistant battery box, in a dry, well-ventilated location protected from water and direct sunlight.
2. Connect the positive (+) battery cable first, then connect the negative (-) battery cable. Tighten cable nuts securely.
3. Coat battery terminal ends with nonconductive grease.
4. Secure the corrosion-resistant battery box properly to the boat. To keep potential sparks away from the fuel tank, do not secure or place battery near the fuel tank.

PROPELLER SELECTION AND TROUBLESHOOTING





See SPECIFICATIONS section in applicable outboard model-family chapter for recommended engine speed range.

Engine speed varies with propeller size and boat condition.

Using the wrong propeller can cause motor damage through "lugging" the motor or "overspeeding." The proper propeller will assure powerful acceleration, top speed, good fuel economy, cruising comfort, and longer engine service life.

General Maintenance

- Protect propeller from foreign objects, check regularly for damage and/or deformation, and aquatic plants wrapped around propeller hub.

- Keep boat bottom clean of shells, algae growth and dirt. Accumulation causes a significant drop in top speed.

Propeller Selection Precautions

Propeller Test Reports are available on the iN by clicking on Information Library\Service\Prop Tests.

- The outboard motor must be installed vertically in relation to boat bottom. Set moderate trim angle, and adjust power trim angle to lowest setting.
- Set trim tab so boat will run in a straight line.
- When doing propeller checks, select a calm day with little wave action.
- Avoid strong winds. Wind speed should be less than 10 mph (15 km/h).
- The boat should carry its average load (crew, load arrangement, ballast) and be balanced, fore to aft, in this loaded condition.
- Select the correct propeller so full throttle engine speed is within the recommended range.
- If engine speed is under the recommended speed range, or over the recommended speed range, select a propeller with a lower (finer) pitch or a higher (coarser) pitch, respectively.
- If the following conditions exist, acceleration will improve and outboard motor service life will increase by lowering the propeller pitch:
  - heavy loads such as crew, load, equipment, etc.
  - high temperatures and high humidity conditions
  - when operating at high altitudes
  - when boat bottom needs cleaning
  - when area around gear case is obstructed

NOTICE

- *If full throttle engine speed exceeds the recommended range, it can cause increased vibration, noise, reduced boat performance, poor fuel economy and possible engine wear.*
- *If full throttle engine speed is below recommended range, it indicates that the engine is being overloaded.*

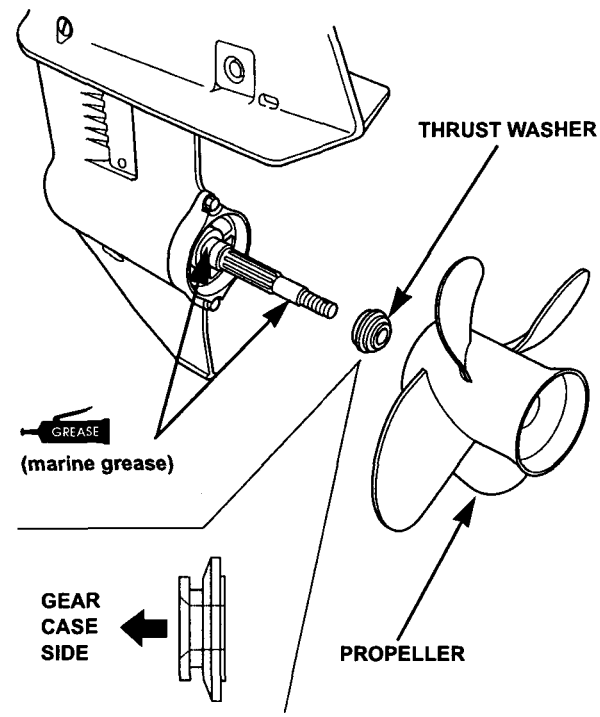
TYPICAL PROPELLER INSTALLATION

See PARTS LISTING section in applicable outboard model-family chapter for propeller parts information.

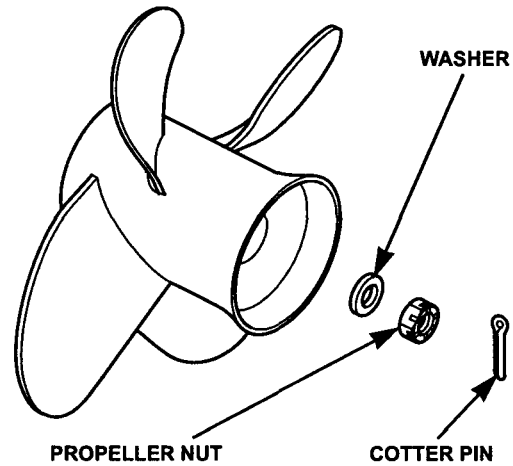
Turn ignition key to OFF position and remove the emergency stop switch lanyard and clip to prevent the engine from starting accidentally.

Wear heavy gloves to protect your hands from sharp or nicked propeller blades.

BF40A/BF50A SHOWN



1. Apply marine grease to the propeller shaft and thrust washer taper.
2. Install the thrust washer and the propeller on the propeller shaft.



3. Install the washer and propeller nut.

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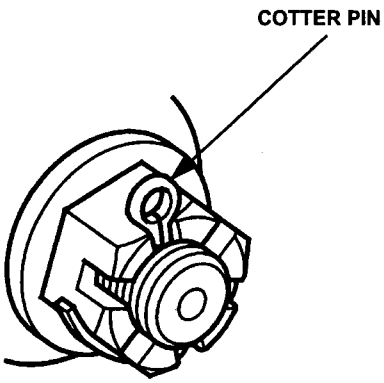


4. Tighten the propeller nut and secure with the cotter pin.

   If the cotter pin does not align with the hole in the propeller shaft, adjust by turning the nut in the tightening direction. Do not exceed the maximum torque. Refer to the appropriate *Honda Marine Shop Manual* for torque specifications.

   After installation, bend the cotter pin ends as shown to secure the propeller nut.

TRIM ANGLE ADJUSTMENT

For outboard motors equipped with power trim and tilt, initial placement of the transom angle adjusting rod should be in the lowest hole (nearest to the transom).

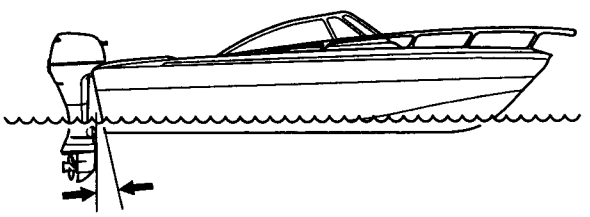
For outboard motors not equipped with power trim and tilt, initial placement of the adjusting rod should ensure the outboard motor is vertical to the boat when the boat is at its normal attitude.

It June be necessary to move the adjusting rod to a different position due to the following situations:

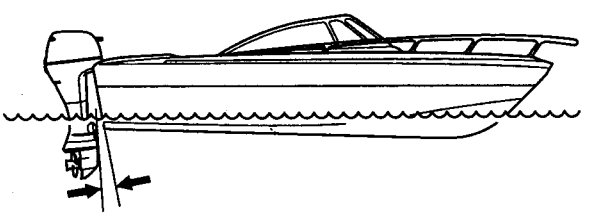
- To avoid interference when motor is trimmed to lowest position.
- If, due to boat weight or design, boat does not produce increased performance with motor trimmed to lowest hole.

Motor installation angle (trim angle) should be adjusted when stopped. Changing trim angle compensates for wave conditions, wind, boat load, crew number, etc., to ensure optimum handling.

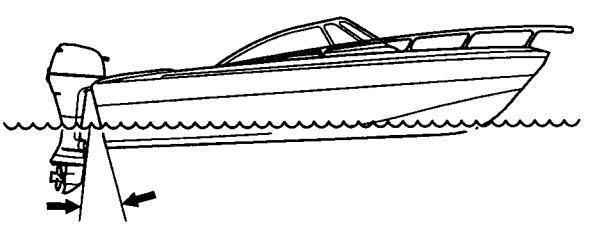
Cruising Characteristics



Proper trim angle: Assures most stable cruising and maximum performance.



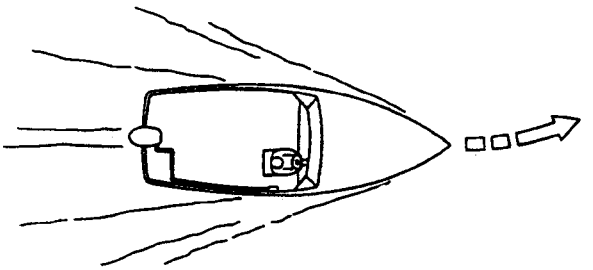
Excessive negative trim angle: Causes unwanted "bow steer."



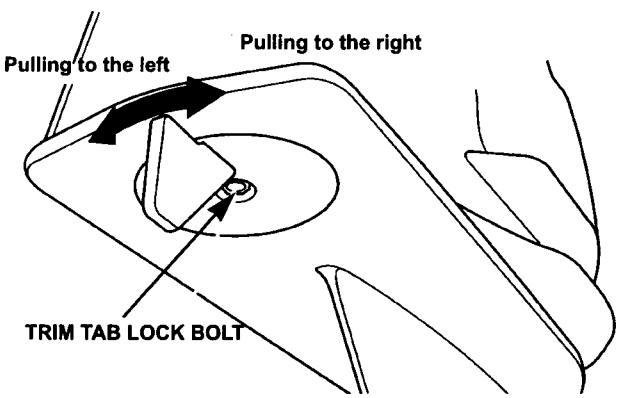
Too large trim angle: Causes bow rise, which hinders stable cruising, visibility and planing.

TRIM TAB ADJUSTMENT

After engine break-in, run boat at full speed and check to see if boat pulls to the left or right, or an uneven effort is required to turn left or right. Adjust trim tab as required to ensure good, straight running characteristics.

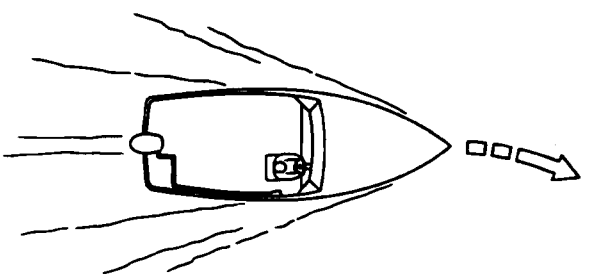


BF200A/225A shown.



If boat pulls to the left:

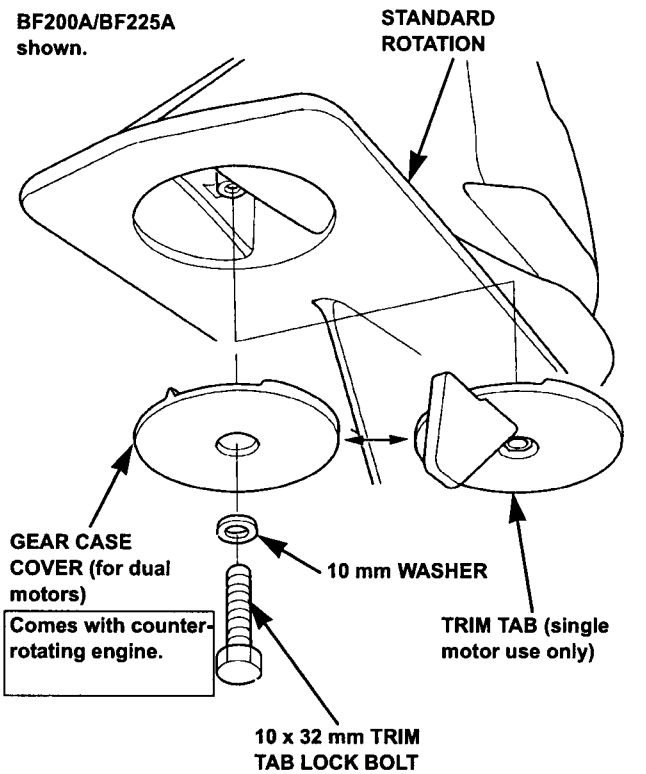
Loosen trim tab lock bolt and move trim tab trailing edge to the left.



If boat pulls to the right:

Loosen trim tab lock bolt and move trim tab trailing edge to the right.

Dual Motors



1. Remove the trim tab lock bolt and trim tab from the standard rotation outboard motor.
2. Replace the trim tab with the gear case cover and tighten the bolt.

   TORQUE: 34 N•m (25 ft-lb)

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RADIO MOUNTING/USAGE

Observe the following when installing a VHF radio unit:

- Keep the antenna and radio at least 50 cm (1.6 ft) or more away from the outboard engine, main wire harness, indicator wire harness, switch panel, indicator panel or remote control.
- Avoid routing the antenna wire too long a distance. The antenna wire should not be routed along the panel wire harness.
- Do not install a radio that does not conform to local laws and regulations (10W or less).
- Connect the positive and negative radio leads to the boat wiring harness, not the engine-related wiring harnesses.
- If the engine performance is adversely effected during radio transmission, inspect radio for proper installation location, settings and general operation.

GPS UNIT INSTALLATION

- Keep the GPS unit and antenna at least 3 m (10 ft) away from the outboard motor.
- Be sure to connect the GPS ground system to the boat ground system.

BREAK-IN PROCEDURE

The outboard motor break-in should be performed as follows, although it is usually done during the trial runs.

Break-in period: 10 hours

Break-in operation allows the moving parts to wear-in evenly and ensures proper performance and longer outboard motor service life.

- **First 15 minutes:**

  Run the outboard motor at idling or trolling speeds (the lowest speed possible). Use the minimum amount of throttle opening necessary to operate the boat at a safe trolling speed.

- **Next 45 minutes:**

  Run the outboard motor up to a maximum of 2,000 to 3,000 rpm (or 10% to 30% of throttle opening).

- **Next 60 minutes:**

  Run the outboard motor up to a maximum of 4,000 to 5,000 rpm (or 50% to 80% of throttle opening).

  Short full-throttle bursts are acceptable, but do not operate the motor continuously at full throttle.

  For boats that plane easily, bring the boat up on plane, then reduce the throttle opening to the specified break-in settings called out above.

- **Next 8 hours:**

  Avoid continuous full throttle operation (100% throttle opening). Do not run the outboard motor at full throttle for more than 5 minutes at a time.

OPERATIONS CHECK LIST

Check all items on the following list. Refer to the applicable *Honda Marine Owner's Manual* or *Shop Manual* for specifications and detailed procedures. Test every unit to be sure it is functioning properly.

ON LAND

- ❑ After completing this check list, complete the *Honda Marine Outboard Delivery Check List* [TM023 (see page 1-48)]. Provide the yellow copy to your customer, retain the white copy for your sales file, and submit the pink copy to Honda Marine. This check list must be completed for every outboard sold.

• EXTERNAL APPEARANCE

- ❑ Check for paint scratches; touch up if necessary.

• INSTALLATION LOCATION

- ❑ Check for correct installation location.
- ❑ Check outboard motor for correct installation height.
- ❑ Make sure the motor mounting bolts are tight.
- ❑ Check to be sure sealant has been applied to the transom mounting bolt holes.

• GEAR OIL

- ❑ Check for proper gear oil level. Make sure the oil level and drain plugs are tight.
  Use a commercially available gear oil that meets or exceeds the requirement for API Service Classification. See SPECIFICATIONS section in applicable model-family chapter of this guide.

• FUEL SYSTEM

- ❑ Be sure fuel lines are connected securely.
- ❑ Use fresh 86 pump octane rating or higher unleaded gasoline.
- ❑ Check for fuel leaks. If necessary, repair immediately.

• STEERING SYSTEM

- ❑ Check the steering system for smooth operation.
- ❑ Make sure the outboard motor does not interfere with the:
  - steering cable and/or link arm
  - control cables
  - wire harness, etc.

  when the steering wheel is turned full left and full right and with the motor in full tilt up positions.

• REMOTE CONTROL SYSTEM

- ❑ Check remote control for proper operation.
- ❑ Make sure the control lever selects forward, neutral, and reverse gears.
- ❑ Check for full throttle capability.
- ❑ Check to be sure the throttle operates smoothly with the remote control lever at full throttle position. On side-surface mount controls, the fast idle lever must be in the idle position.

• ELECTRICAL SYSTEM

- ❑ Check wire harness for proper connections.
- ❑ Check battery connections for correct polarity and tightness.
- ❑ Make sure battery is fully charged and installed securely.
- ❑ Make sure meters, indicators and switches are connected correctly.

• TILT MECHANISM

- ❑ Push power trim/tilt switch, and make sure outboard motor tilts up and down smoothly.
- ❑ Check for abnormal tilt motor noise while tilting up or down.
- ❑ Tilt down the outboard motor and check to see that the trim meter functions and indicates "DOWN."
- ❑ Operate the steering with the outboard motor in the tilt UP position, and check to be sure that the cables, harnesses, boat splashwell, etc. do not interfere with the outboard motor.
- ❑ Make sure tilt stopper will set in the lock position at full tilt up position.
- ❑ Check the power tilt oil level. Tilt the outboard motor up to the full tilt UP position and lock it in place with the tilt lock lever. Remove the oil tank cap and be sure the oil level is up to the oil filler port. Install the tank cap securely. Check the applicable *Honda Marine Shop Manual* for oil capacity and recommended oil.

• ENGINE OIL

- ❑ Check engine oil level.
  See SPECIFICATIONS section in applicable model-family chapter of this guide. All Honda engines are shipped with a small amount of oil from the factory. Add 80% of oil capacity before initial start-up. Then run engine, shut it off, wait 30 seconds and check/adjust oil level. "Hot" oil level should be 6–7 mm below top mark on dipstick.

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- **ALL NUTS, BOLTS, & OTHER FASTENERS**

❑ Check security and tighten if necessary.

IN THE WATER

- **OUTBOARD MOTOR INSTALLATION**

❑ Check that there are no water leaks from the motor mounting bolt holes.

❑ Check boat for balanced weight distribution.

❑ With the outboard perpendicular to the water, check that exhaust ports are a minimum of 125 mm (5 in) above the water.

- **OUTBOARD MOTOR OPERATION**

❑ Check the choke/neutral switch for proper operation.

❑ Turn the ignition switch to START and make sure the outboard motor starts.

❑ Check outboard motor for any abnormal noise.

❑ Check to be sure cooling water flows out of the water cooling system indicator. After the engine warms up, make sure motor returns smoothly to idle.

❑ Snap throttle and check engine response.

❑ Check the emergency engine stop switch for proper operation.

- **LEAKS**

❑ Make sure there are no leaks from the fuel lines and/or connections. If necessary, repair immediately.

❑ Check the outboard motor for water/oil leaks. Repair if necessary.

❑ Check exhaust system for exhaust leaks.

DURING SEA TRIALS

- **OUTBOARD MOTOR OPERATION**

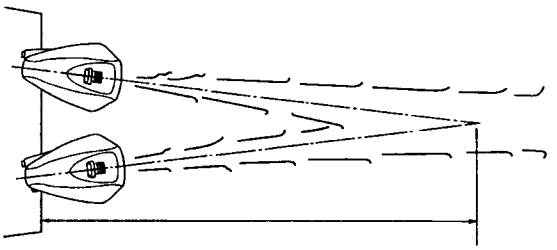
❑ Check the gearshift operation with the remote control lever or gearshift lever (tiller).

❑ Check motor operation at trolling speed. Use the minimum amount of throttle opening necessary to operate boat at a safe trolling speed for 15 minutes.

❑ Go astern and check that the outboard motor does not tilt up and water does not overflow the transom.

❑ Dual motors:

- Adjust tie bar length so the motors toe-out. Toe-out is when the motors' forward measurement is wider than the motors' aft measurement.



- Motors with toe-out (viewed from the stern) will ensure better boat stability. It is best if the wakes of two motors join 20~25 meters (66~82 ft) astern.
- Not all boats will follow this specification. Consult your boat manufacturer for toe-in or toe-out recommendation.

- **PROPELLER SELECTION**

❑ Check the engine rpm with the boat under way. Before engine break-in, avoid continuous full throttle operation (100% throttle opening). Do not run the outboard motor at full throttle for more than 2 minutes at a time.

❑ Make sure there is no propeller ventilation in a straight line. There is the possibility of some propeller ventilation when turning at full throttle with the motor trimmed out.

AFTER SEA TRIALS

- **CHECK & CLEAN THE OUTBOARD MOTOR**

❑ Check that there is no water in the gear oil.

❑ Check that there are no signs of fuel, oil or water leaks. Repair if necessary.

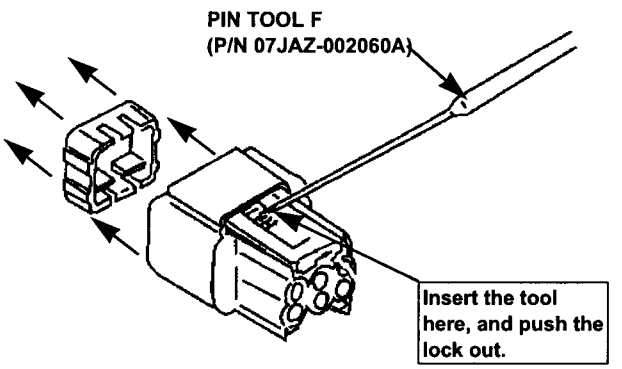
❑ After running in salty or dirty water, flush the cooling system with clean water and flush the exterior of the motor.

❑ Thoroughly clean entire outboard motor with cloth.

❑ Check the outboard motor for external damage, defects or cracks.

TERMINAL SERVICE KIT A REFERENCE GUIDE

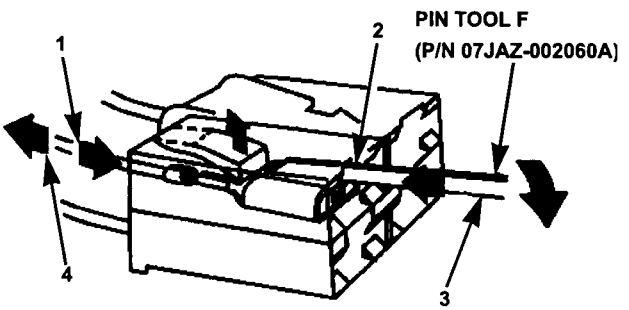
SPECIAL CONNECTORS



Hold pin tool firmly by the handle with the pin tool in the down position.

Hold connector housing with attachment tab on the top facing toward you. Place the tip of the pin tool toward the front of the release tab on the top of the terminal top.

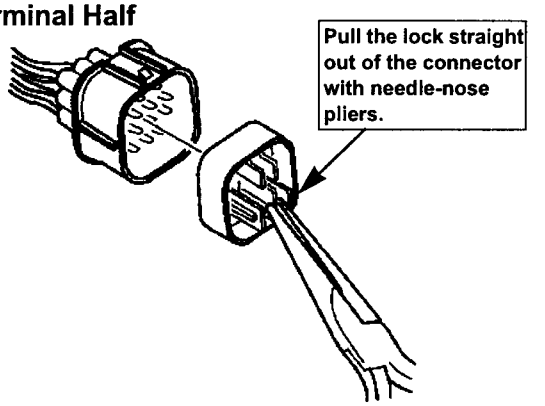
While pressure is applied to the release tab with the pin tool, pull the connector housing from the terminal.



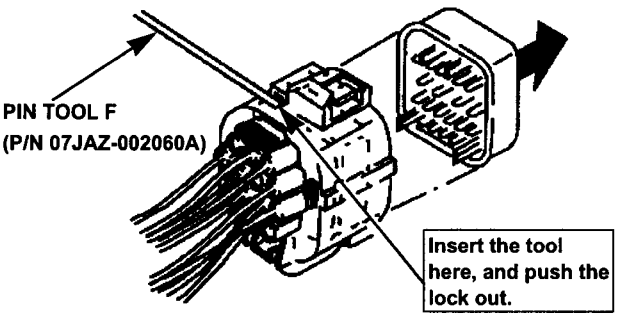
1. Push the wire into the connector to relieve the tension on the primary lock.
2. Insert the tool at the middle of the terminal.
3. Push down on the tool to lift up on the primary lock.
4. Pull the connector out of the terminal.

CONNECTORS WITH A SECONDARY LOCK

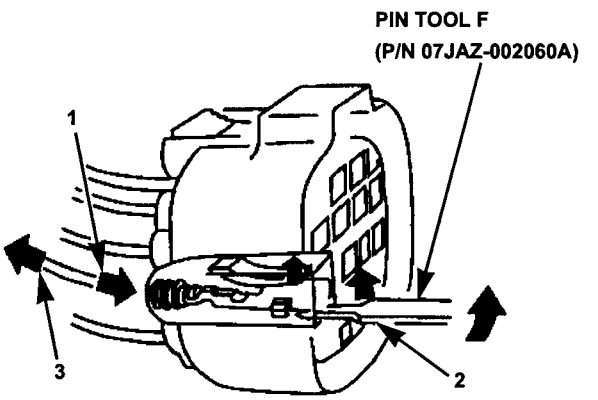
Male Terminal Half



Female Terminal Half



Remove the secondary lock.



Remove the terminal (same procedure for male and female).

1. Push the wire into the connector to relieve the tension on the primary lock.
2. Insert the tool under the terminal and lift up.
3. Pull the terminal out of the connector.

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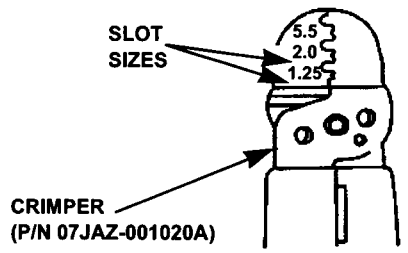
INSTALLING THE NEW TERMINAL

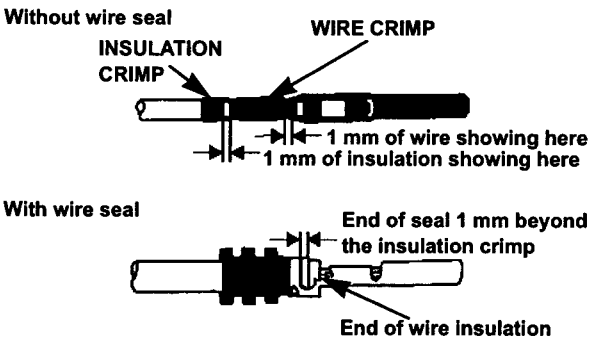
Carefully match the old terminal with the new one from the Terminal Service Kit. Choose the correct replacement terminal based on the wire size range the terminal will accommodate.

If the replacement terminal quantities are low, reorder by using the terminal part number listed on the inside lid of the Terminal Service Kit.



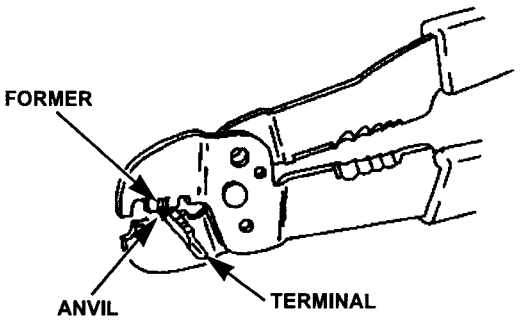
Crimping Tool Slot Sizes	AWG Wire Size Range
1.25	Small wire (18–20)
2.0	Large wire (14–16)

Depending on the size of the wire you are repairing, use the proper size slot in the crimping tool.



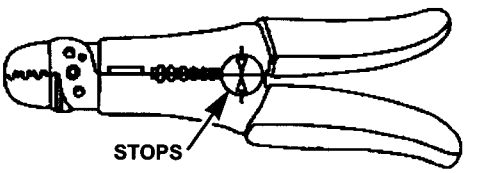
Strip the insulation off the end of the wire so the wire fits in the new terminal as shown. (If the wire has a wire seal, replace it with a new one from the kit.)

After stripping the end of the wire, make sure you did not cut any wire or wire strands. If you did, cut the wire even with the insulation, and strip it again.



Position the terminal in the crimping tool slot with the solid portion of the terminal toward the anvil and the open section toward the former.

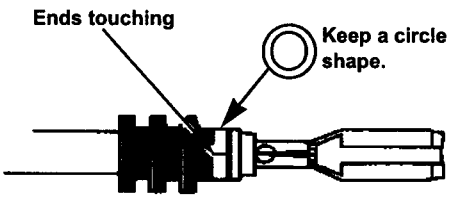
Insert the wire into the terminal.



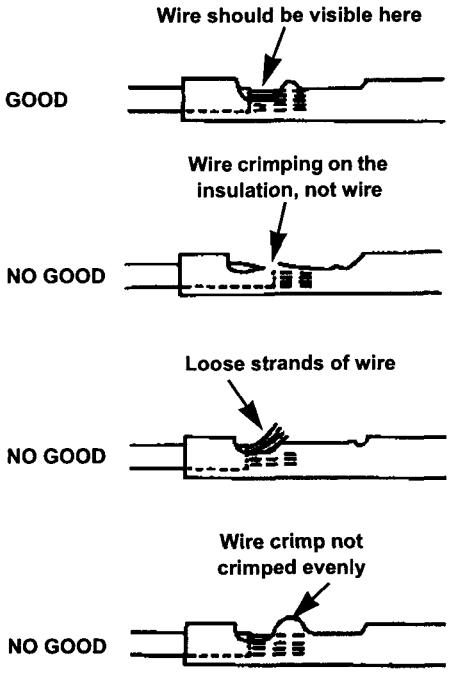
Squeeze the tool with both hands until the stops make contact.

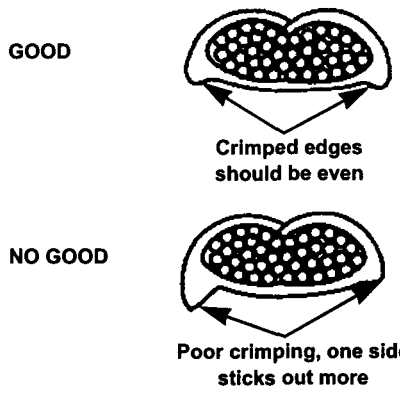
Crimping the Insulation Crimp

- Without a wire seal: Depending on the wire size, you June need to use the next larger slot size. (Example: If you used the 1.25 crimp slot for the wire crimp, then use the 2.0 crimp slot for the insulation crimp.) Position the crimping tool over the insulation crimp section of the terminal, then squeeze the tool with both hands until the stops make contact.



- With a wire seal: Position the insulation crimp in the 5.5 crimping slot, then carefully squeeze the crimp closed until its ends are touching and making a full circle shape.





Inspect the quality of the wire crimp. If it has any of the following problems, cut it off and start over.

Insert the terminal into the connector.

- Make sure the wire seals are pushed all the way into the connector.
- Lightly pull on the wires to make sure the terminal is locked in place.

Close or insert the secondary terminal lock, if applicable, and reconnect the connector.

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STANDARD WIRE COLOR TABLES

WIRE HARNESS FUNCTION/COLOR GUIDE

Honda BF25A–BF225A

FUNCTION	COLOR
14-PIN WIRE HARNESS	
12 volt - hot	W/BL
12 volt - ignition	BL/Y
Choke solenoid	BR
Emergency stop switch	BL/R
Ground	BL
Horn/buzzer	Y/G
Oil pressure sensor	Y
Starter solenoid	BL/W
Tach signal	GR
Thermosensor	R
Trim Angle Sensor	LG/BL
Trim signal	Y/BU
Trim switch - Dn	LB
Trim switch - Up	LG
+3/17-PIN WIRE HARNESS	
Alternator	W/BU
Common voltage	Y/BL
ECU	R/BU

BL	Black
BR	Brown
BU	Blue
G	Green
GR	Gray
LB	Light blue
LG	Light green
O	Orange
R	Red
V	Violet
W	White
Y	Yellow

WIRE HARNESS FUNCTION/COLOR GUIDE

Honda BF8D/9.9D with Tilt, BF15D/BF20D

FUNCTION	COLOR
6-PIN WIRE HARNESS	
Trim switch - Dn	LB
Trim switch - Up	LG
Emergency stop switch	BL/R
Horn/buzzer	Y/G
Oil pressure sensor	O
Thermosensor	R
+4/10-PIN WIRE HARNESS	
12 volt - hot	W/BL
Starter solenoid	BL/W
Tach signal	GR
Ground	BL

BL	Black
BR	Brown
BU	Blue
G	Green
GR	Gray
LB	Light blue
LG	Light green
O	Orange
R	Red
V	Violet
W	White
Y	Yellow

Honda BF8D/9.9D without Tilt

FUNCTION	COLOR
4-PIN WIRE HARNESS	
Emergency stop switch	BL/R
Horn/buzzer	Y/G
Oil pressure sensor	O
Thermosensor	R
+4/8-PIN WIRE HARNESS	
12 volt - hot	W/BL
Starter solenoid	BL/W
Tach signal	GR
Ground	BL

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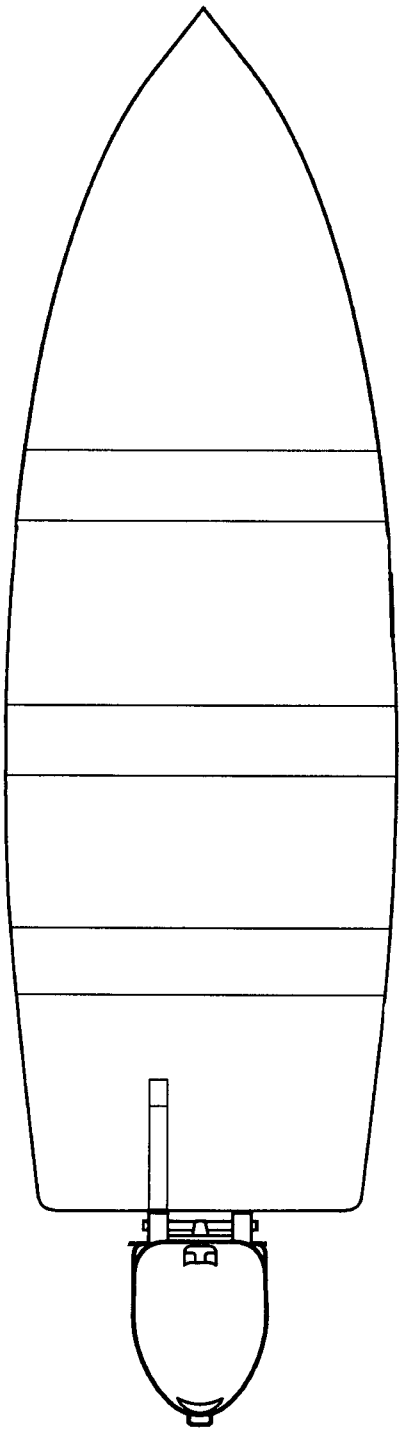
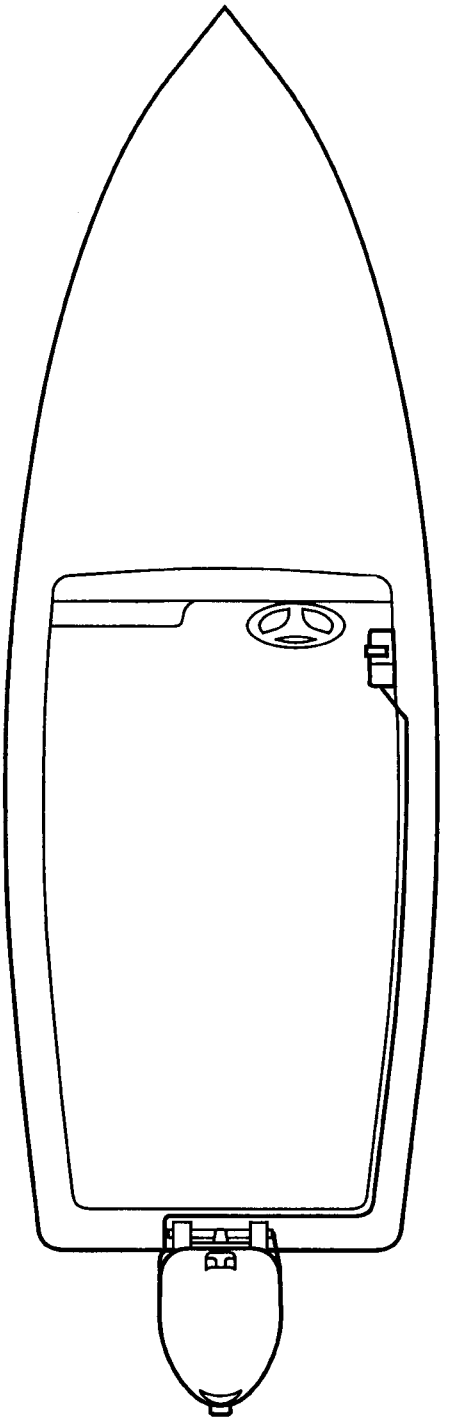
TILLER LAYOUT

BF8D/BF9.9D THROUGH BF75A/BF90A



REMOTE LAYOUT

ALL MODELS



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SPECIFICATIONS

ENGINE

Model	BF8D, BFP8D	BF9.9D, BFP9.9D
Type	Water cooled 4-stroke, O.H.C., vertical twin	
Displacement	222 cm³ (13.5 cu. in.)	
Bore x stroke	58 x 42 mm (2.3 x 1.7 in)	
Rated horsepower	5.9 kW (8.0 PS) at 4,500–5,000 rpm	7.3 kW (9.9 PS) at 5,000–6,000 rpm
Maximum torque	12.5 N•m (1.27 kg-m, 9.18 lb-ft) at 4,000 rpm	13.1 N•m (1.34 kg-m, 9.67 lb-ft) at 4,500 rpm
Compression ratio	9.0 : 1	
Fuel consumption	377 g (13.3 oz.) / kWh	394 g (13.9 oz.) / kWh
Cooling system	Forced water circulation by impeller pump with thermostat	
Ignition system	Optical CDI	
Ignition timing	0° B.T.D.C. at 1,000 min^{-1} (rpm)	
Spark plug	CR5EH-9 (NGK), U16FER9 (DENSO)	
Carburetor	Horizontal butterfly valve-type single carburetor with auto start	
Lubricating system	Forced lubrication by trochoid pump	
Oil capacity	1.0 liter (1.06 US qt) at oil change 1.3 liter (1.37 US qt) with oil filter replacement	
Recommended oil	SAE10W-30, API Service classification SG, SH, SJ	
Starting system	Electric starter and recoil starter	
Battery system	494 MCA minimum (engine operations only)	
Stopping system	Ignition primary circuit ground	
Fuel used	Automotive unleaded gasoline (minimum 86 pump octane)	
Fuel tank capacity	12 liters (3.2 US gal)	
Fuel pump	Mechanical plunger type	
Exhaust system	Thru-hub type	

LOWER UNIT

Model		BF8D, BF9.9D	BFP8D, BFP9.9D
Clutch		Dog clutch (forward-neutral-reverse)	
Gear ratio		2.3:1 (28/12)	
Reduction type		Spiral bevel gear	
Gear case oil capacity		0.285 liters (0.27 US qt)	
Recommended gear case oil		API Service classification GL4 or GL5	
Propeller	Number of blades	4	4
	Diameter	235 mm (9.3 in)	254 mm (10 in)
	Pitch	S type: 229 mm (9.0 in) L, XL type: 203 mm (8.0 in)	165 mm (6.5 in)
	Rotating direction	Clockwise (viewed from rear)	

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INSTALLATION HEIGHT RECOMMENDATIONS

Shaft Length	Outboard Transom Height	Workable Boat Transom Height
S type	433 mm (17.0 in)	383 ~ 433 mm (15.1 ~ 17.0 in)
L type	563 mm (22.2 in)	513 ~ 563 mm (20.2 ~ 22.2 in)
XL type	703 mm (27.7 in)	653 ~ 703 mm (25.7 ~ 27.7 in)

TRANSOM DRILLING

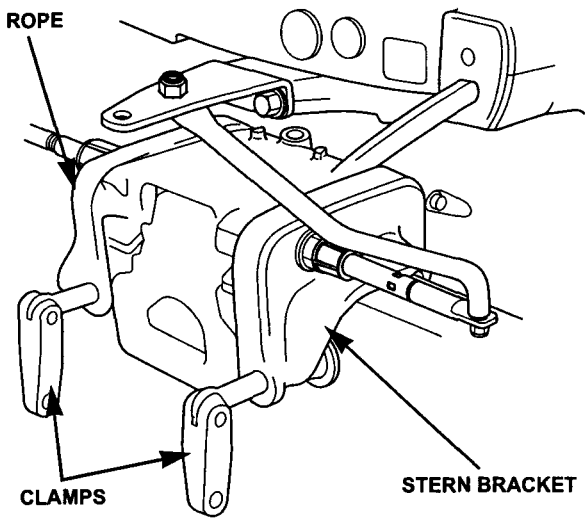
See also "USING THE TRANSOM MOUNT DRILL FIXTURE" on page 1-23.

Description	Part No.
Transom Mount Drill Fixture	07MPZ-ZV3010C

The BF8D and BF9.9D outboards motors are designed to be installed on a boat transom with the following transom board thickness:

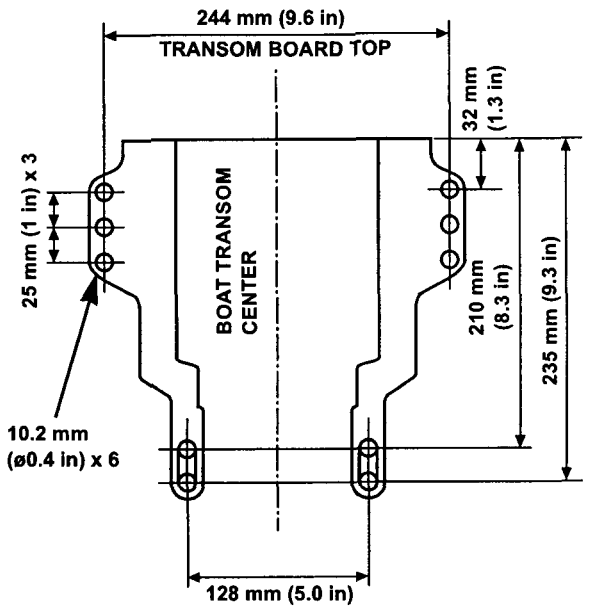
Boat Transom Board Thickness
35 ~ 57 mm (1.3 ~ 2.2 in)

1. Set the outboard motor onto the boat transom and verify the installation height is correct.



It is recommended that large bracket models be bolted to the transom.

Large Bracket (Types SR, LR, XH, XHS, XR)



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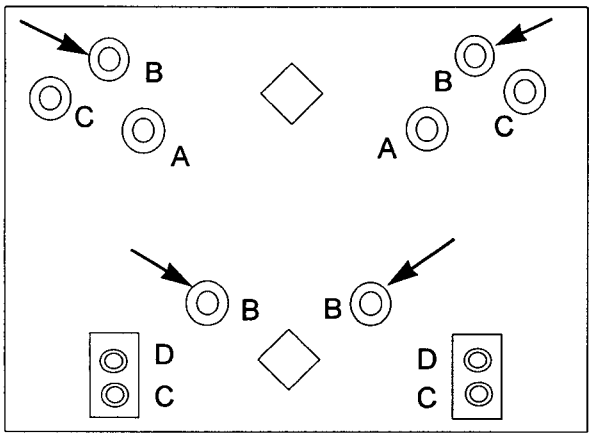
TRANSOM DRILL FIXTURE

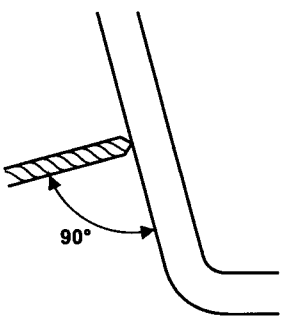


Use the upper and lower "B" holes.

1. Mark four center marks for the bolt holes on the transom board (two marks on either side of the outboard motor installation lines).

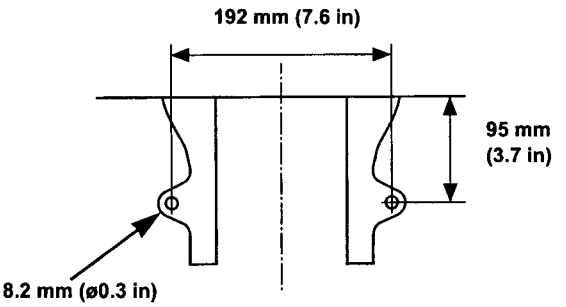
   The upper bolt holes should be more than 33 mm (1.3 in) from the top of the transom.

   The lower bolt holes should allow the mounting bolts to contact the upper end of the stern bracket.

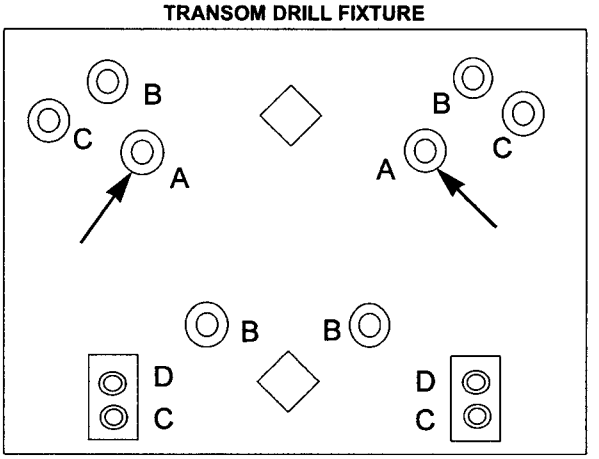


2. Drill four holes with an 11 mm drill bit.

Small Bracket (Types SH, SHS, LH, LHS)



TRANSOM DRILL FIXTURE



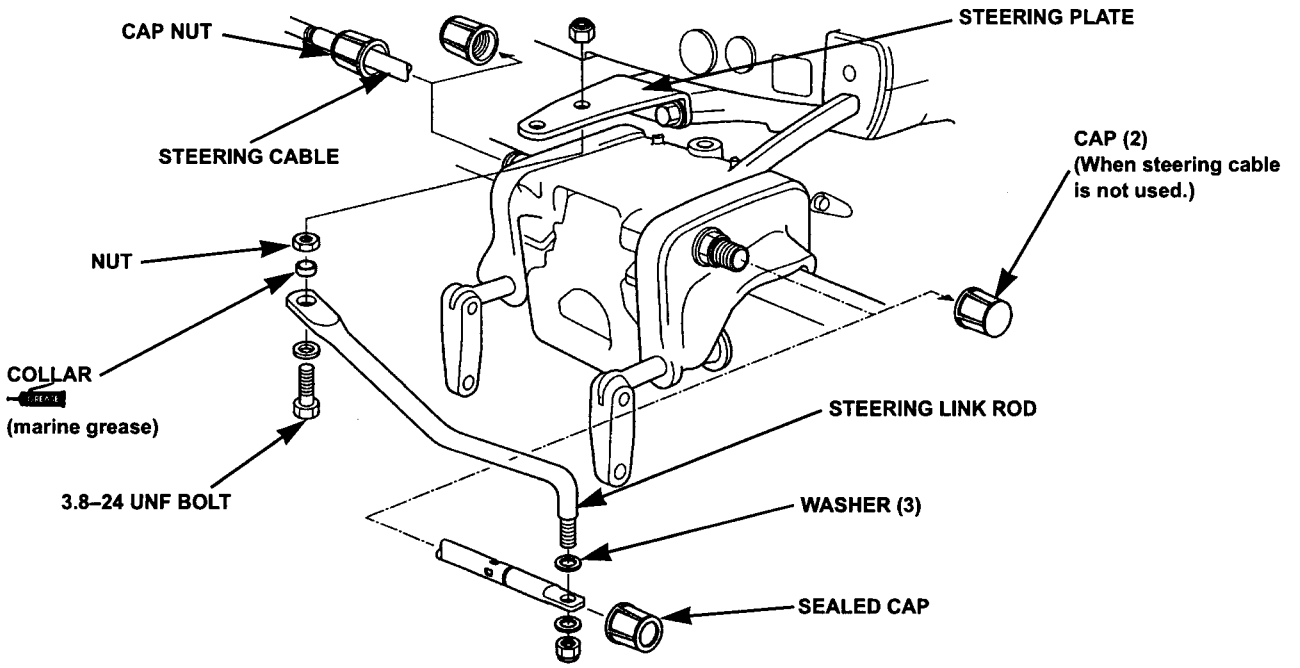
Use the upper "A" holes.

Drill two holes with a "Q" drill bit.

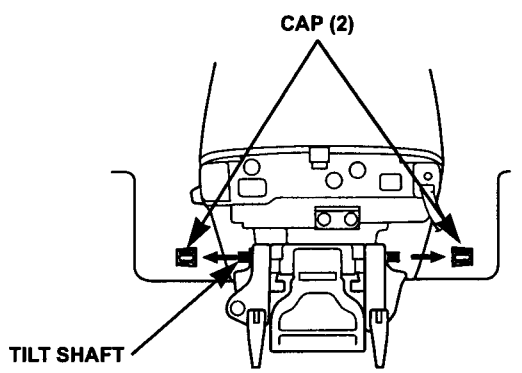
STEERING CONNECTIONS

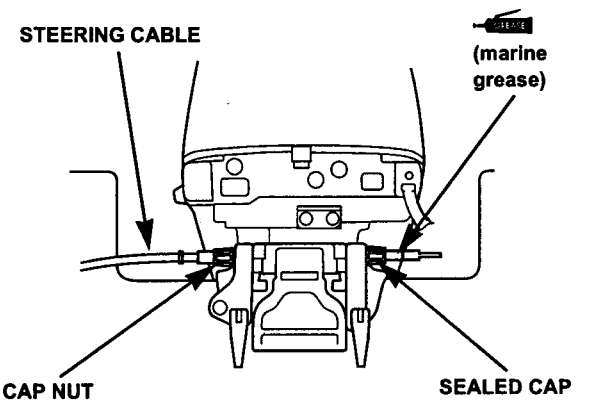
Do this before final placement of the motor on the transom.

Refer to the steering cable manufacturer's manual for cable handling procedures.



Tilt-Tube Type





1. Remove the left and right caps from the tilt shaft.
2. If the steering wheel is mounted on the starboard side, insert the steering cable through the hole in the tilt tube on the starboard side and attach the cable with the cap nut. Apply marine grease to the inner and outer cable before installation.
3. Install the sealed cap to the tilt shaft over the steering cable.

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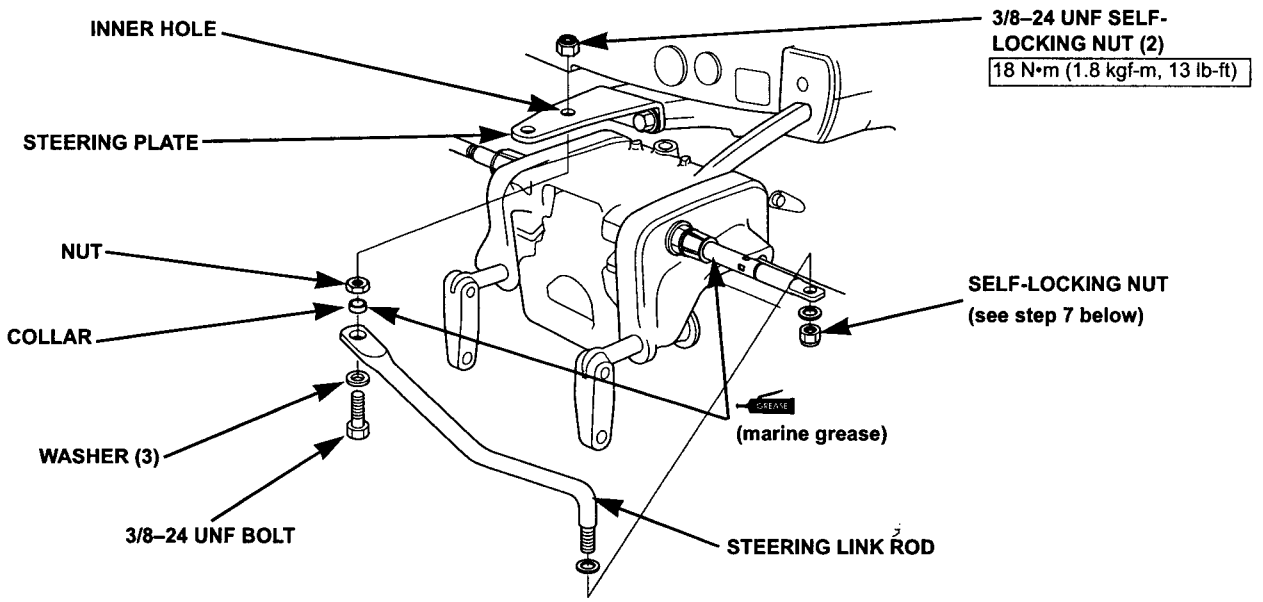
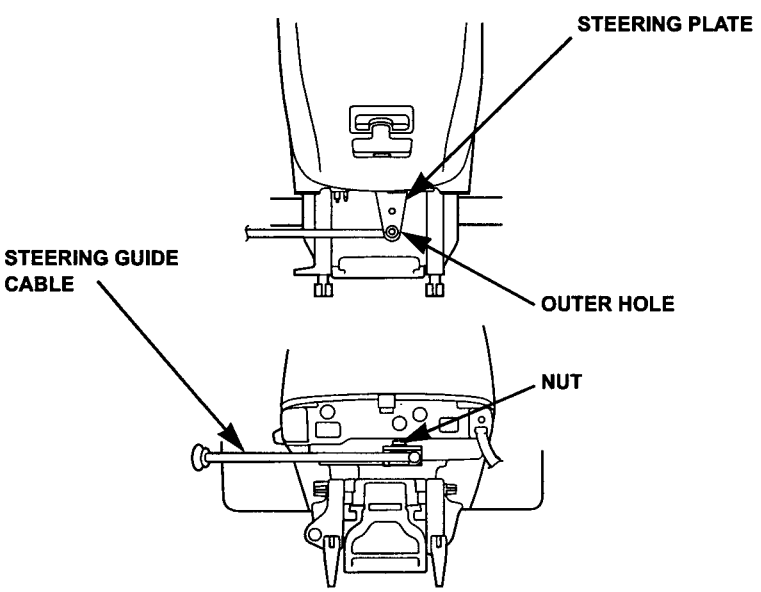


4. Install the steering link rod between the steering plate on the motor side and the cable end using the bolt, washers, nuts, and collar as shown.
5. Connect the steering link rod to the inside hole of the steering plate. Do not mount anything in the outer hole of the steering plate.
6. When connecting the link rod with the cable end, turn the outboard motor and steering wheel to the port side. Apply marine grease to the collar and sliding position of the link rod as shown before installation.
7. Turn steering wheel to retract steering cable into the steering/tilt tube. Tighten self-locking nut, then loosen self-locking nut 1/8 turn.

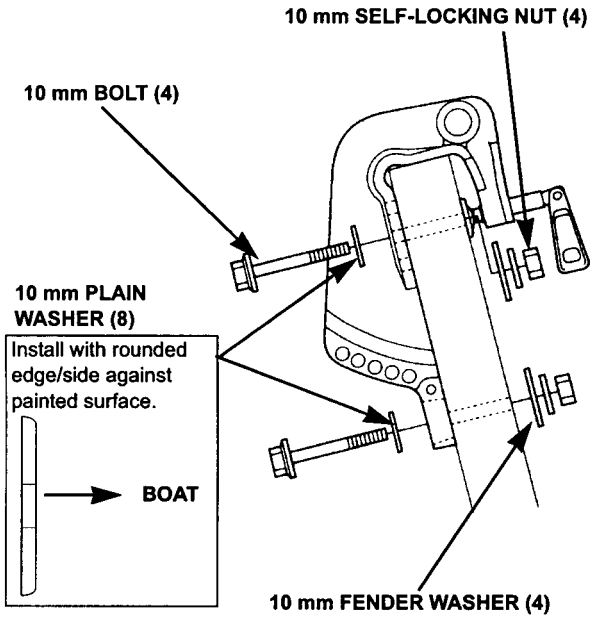
   TORQUE: 8–11 N•m (7–8 ft-lb)
8. After attaching the cable, turn the steering wheel to the right and left, checking the steering angle. If necessary, adjust at the steering cable side, until both angles are even.

Support Type



Insert the steering cable into the outer hole of the steering plate and fasten with a nut.

BOLTING MOTOR TO TRANSOM



Apply marine hull sealant to the mounting holes and hardware. Use Hondabond
equivalent silicone sealant for below waterline use.

With the motor in place against the transom, verify correct motor height. Motor can be raised by using a lower set of mounting holes.

Attach the motor with marine grade hardware. Use washers under all bolts and nuts. Use additional fender washers against the transom. Use support plates as recommended by the hull manufacturer.

Apply a small amount of oil or grease to all bolt threads prior to installation.

Be sure at least one thread of the bolt is visible beyond the nut when the fasteners are tightened.

NOTICE

Do not use an air impact tool to tighten or loosen the transom bolts. Using an air impact tool to tighten or loosen the transom bolts can generate enough heat to damage the bolt threads. The air impact tool can also produce enough tightening torque to damage the boat transom.

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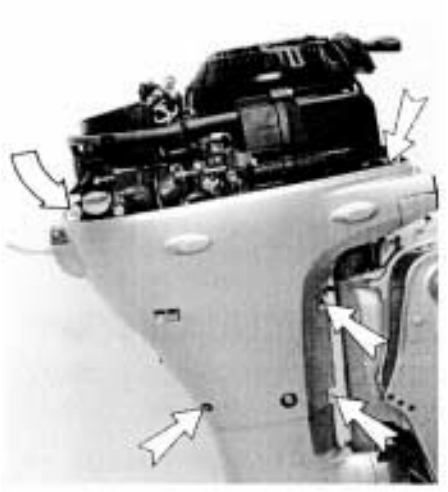
REMOTE CABLE INSTALLATION

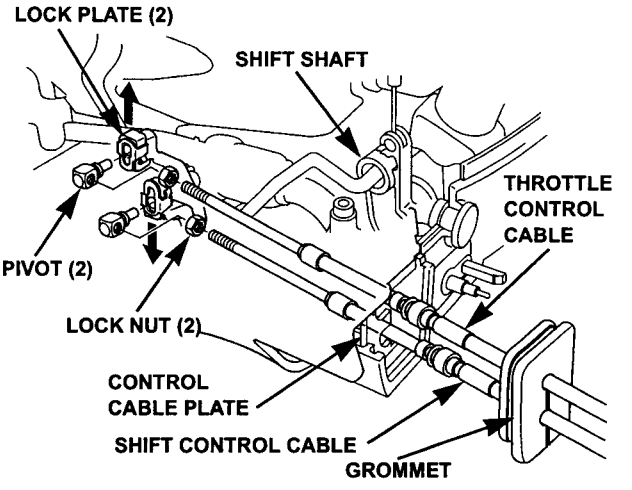
First, install the remote control box and cables.



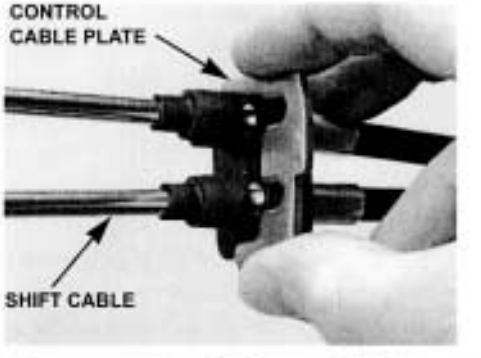
1. Remove the four (4) screws on each lower case cover and loosen the top-rear screw.

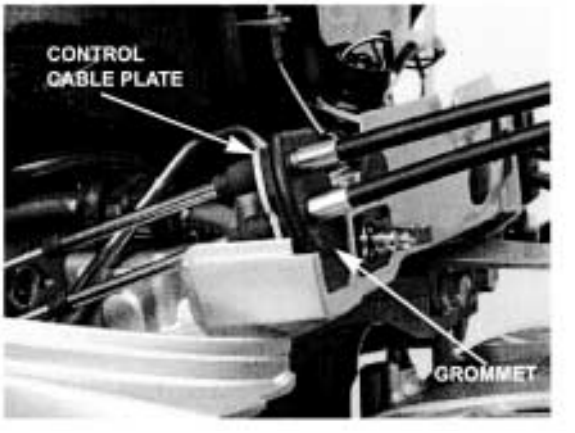
2. Pull the covers out from the engine about 20 mm (0.78 in) and allow them to droop.

Remote Control Cables

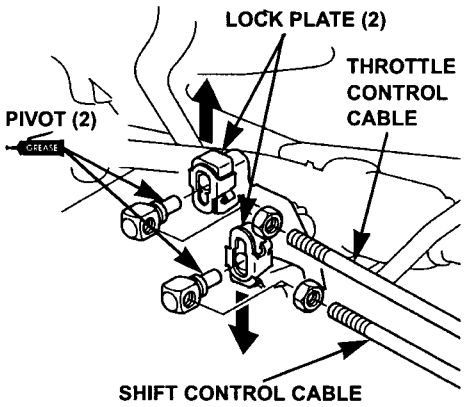


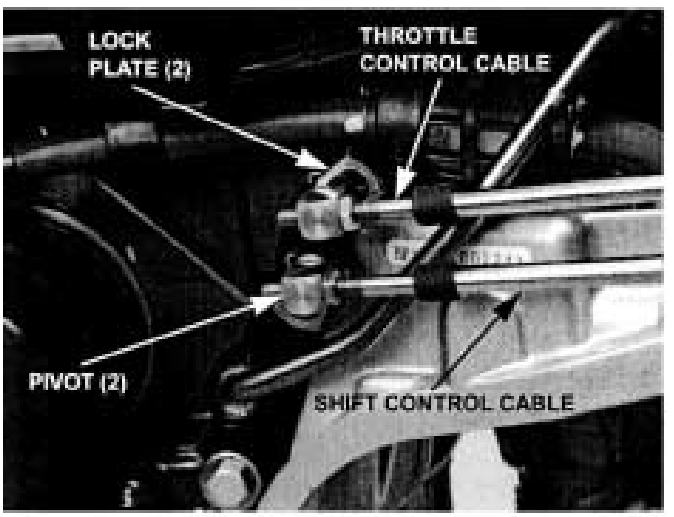
1. Remove the grommet and the control cable plate.
2. Place the grommet over the cables, even with the locking grooves. *The shift cable must be on the bottom*

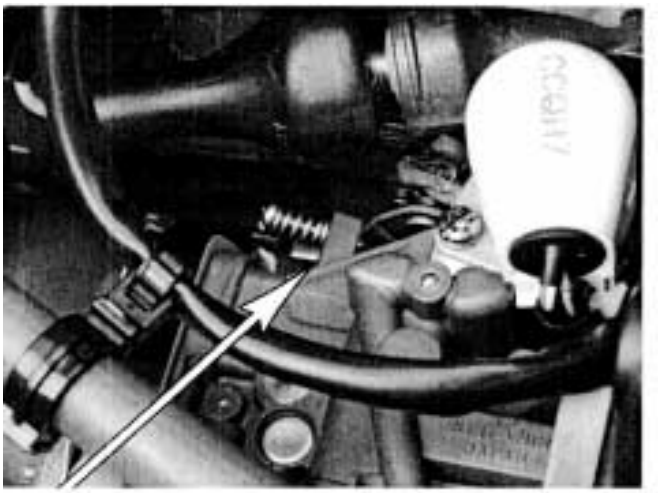


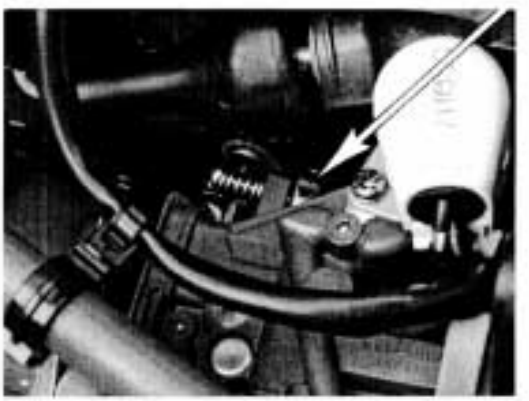


3. Slide the plate into the grooves, press the grommet against the plate, and slide the assembly into position in the lower case.









4. Shift the outboard into forward gear by moving the shift link arm forward while turning the propeller.
5. Coat the pivots with marine grease.
6. Set the remote control lever full forward and adjust the shift pivot to be a slip fit in the shift link arm. Slide the lock plate *down* to secure the pivot.
7. With the remote control lever still full forward, hold the throttle remote arm against the full throttle stop and adjust the throttle pivot to be a slip fit in the throttle remote arm. Slide the lock plate *up* to secure the pivot.
8. Operate the remote control and check to see that:
   - When the remote is at full throttle (WOT), the throttle is within 1mm of the stop.
   - When the remote is at full throttle (WOT), the shift linkage is in the forward detent.
   - When the remote is in neutral, the throttle is against the idle stop screw.
   - When the remote is in neutral, the shift linkage is in the neutral detent.
   - When the remote is in reverse, the shift linkage is in the reverse detent.

   (Turn the prop while shifting gears.)

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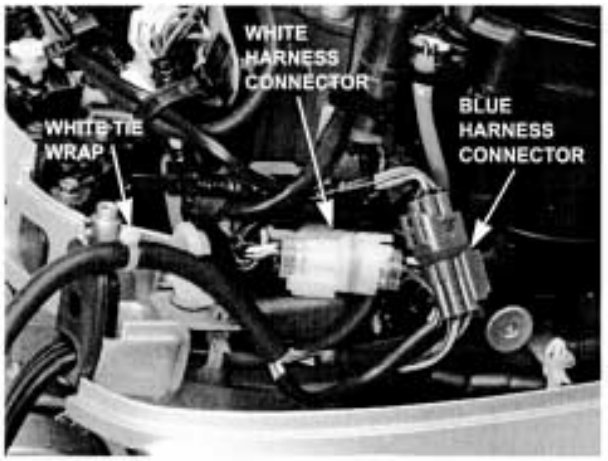
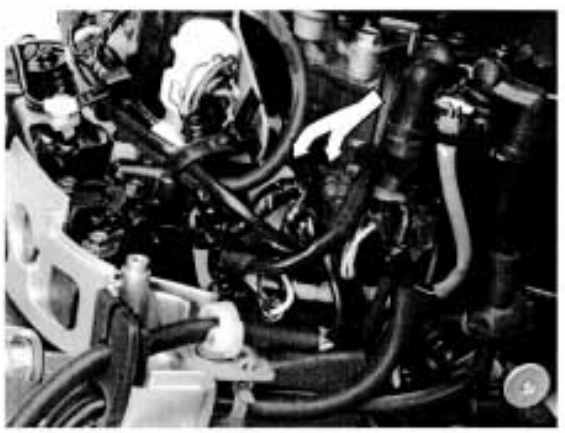
Wire Harness



1. Place the white tie-wrap on the harness near the grommet, and connect the white and the blue harness connectors to their respective plugs on the engine.

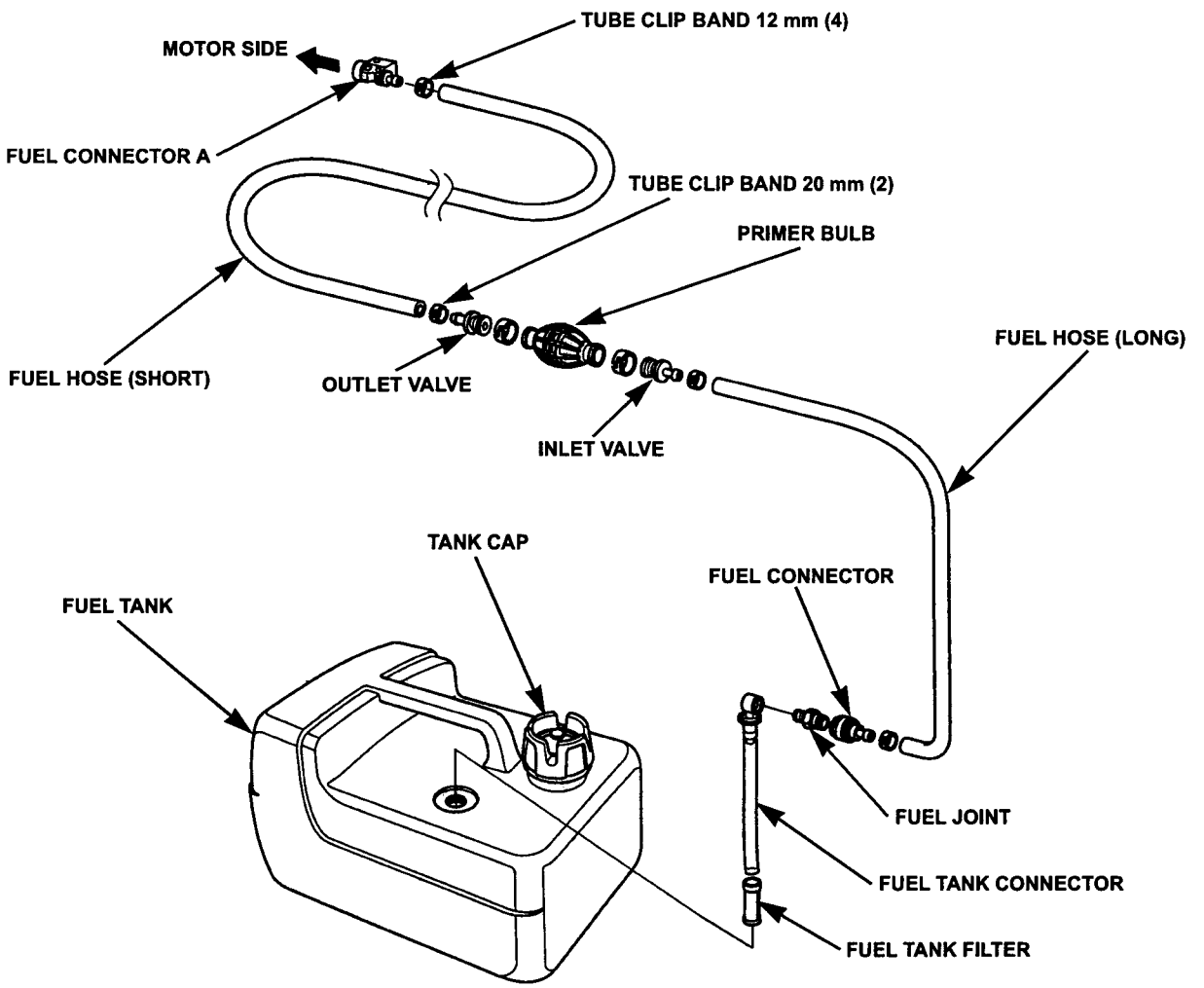


2. Slide the connectors onto their tabs on the CDI bracket. Be sure they click into position.
3. With the white tie-wrap inside the grommet, slide the harness into the grommet and into the plastic support. Close the support around the harness.

AVAILABLE ACCESSORIES

Consult the *Honda Marine Accessories Catalog* (MO045) for current information on gauges, instrument harnesses, wiring harnesses, switch panels, and control boxes.

FUEL SYSTEM CONNECTIONS



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SPECIFICATIONS

ENGINE

Model	BF15D, BFP15D	BF20D, BFP20D
Type	Water cooled 4-stroke, overhead valve, vertical twin	
Displacement	350 cm³ (21.5 cu. in.)	
Bore x stroke	59 x 64 mm (2.3 x 2.5 in)	
Rated horsepower	11 kW (15 PS) at 5,000 rpm	14.7 kW (20 PS) at 5,500 rpm
Maximum torque	25.2 N•m (2.6 kg-m, 18.8 lb-ft) at 3,500 rpm	25.8 N•m (2.6 kg-m, 18.8 lb-ft) at 5,000 rpm
Compression ratio	9.2:1	
Fuel consumption	313 g (11 oz.) / kWh	337 g (11.9 oz.) / kWh
Cooling system	Forced water circulation by impeller pump with thermostat	
Ignition system	Optical CDI	
Ignition timing	0° ± 2° B.T.D.C.	
Spark plug	CR5EH-9 (NGK), U16FER9 (DENSO)	
Carburetor	Horizontal butterfly valve-type single carburetor with auto start	
Lubricating system	Forced lubrication by trochoid pump	
Oil capacity	1.0 liter (1.06 US qt) at oil change 1.3 liter (1.37 US qt) with oil filter replacement	
Recommended oil	SAE10W-30, API Service classification SG, SH, SJ	
Starting system	Electric starter and recoil starter	
Stopping system	Ignition primary circuit ground	
Fuel used	Automotive unleaded gasoline (minimum 86 pump octane)	
Fuel tank capacity	12 liters (3.2 US gal, 2.6 Imp gal)	
Fuel pump	Mechanical plunger type	
Exhaust system	Thru hub type	

LOWER UNIT

Model		BF15D, BFP15D	BF20D, BFP20D
Clutch		Dog clutch (forward-neutral-reverse)	
Gear ratio		2.08:1 (13/27)	
Reduction type		Spiral bevel gear	
Gear case oil capacity		0.285 liters (0.27 US qt, 0.23 Imp qt)	
Recommended gear case oil		API Service classification GL4 or GL5	
Propeller	Number of blades	4	4
	Diameter	235 mm (9.25 in)	254 mm (10 in)
	Pitch	203 mm (8.0 in)	165 mm (6.5 in)
	Rotating direction	Clockwise (viewed from rear)	

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INSTALLATION HEIGHT RECOMMENDATIONS

Shaft Length	Outboard Transom Height	Workable Boat Transom Height
S type	433 mm (17.0 in)	383 ~ 433 mm (15.1 ~ 17.0 in)
L type	563 mm (22.2 in)	513 ~ 563 mm (20.2 ~ 22.2 in)
X type	703 mm (27.7 in)	653 ~ 703 mm (25.7 ~ 27.7 in)

TRANSOM DRILLING

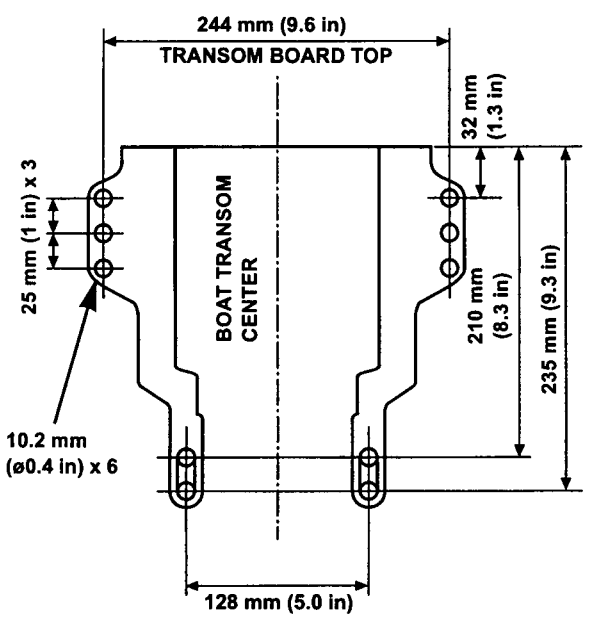
See also "USING THE TRANSOM MOUNT DRILL FIXTURE" on page 1-23.

Description	Part No.
Transom Mount Drill Fixture	07MPZ-ZV3010C

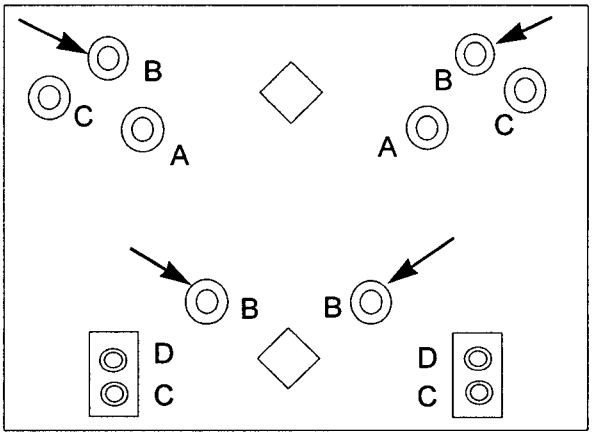
The BF15D and BF20D outboards motors are designed to be installed on a boat transom with the following transom board thickness:

Boat Transom Board Thickness
35 ~ 57 mm (1.3 ~ 2.2 in)

1. Set the outboard motor onto the boat transom and verify the installation height is correct.



TRANSOM DRILL FIXTURE

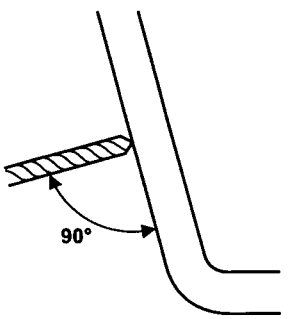


Use the upper and lower "B" holes.

2. Mark four center marks for the bolt holes on the transom board (two marks on either side of the outboard motor installation lines).

   The upper bolt holes should be more than 33 mm (1.3 in) from the top of the transom.

   The lower bolt holes should allow the mounting bolts to contact the upper end of the stern bracket.



3. Drill four holes with an 11 mm drill bit.

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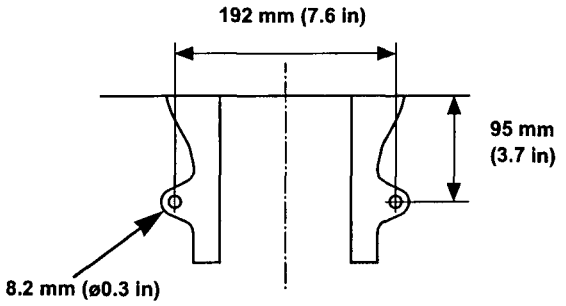
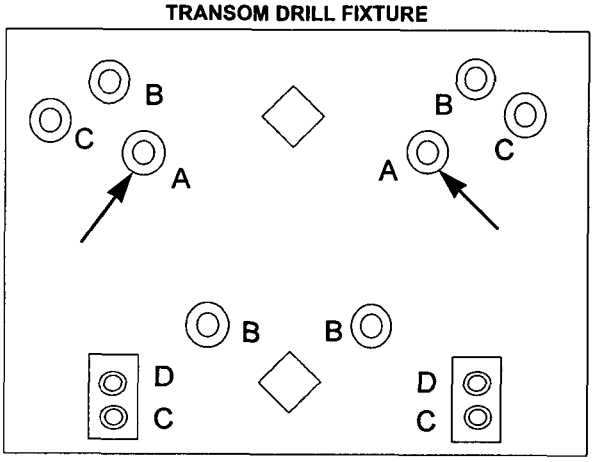
Small Bracket (Types SH, LH, LHS, XH)



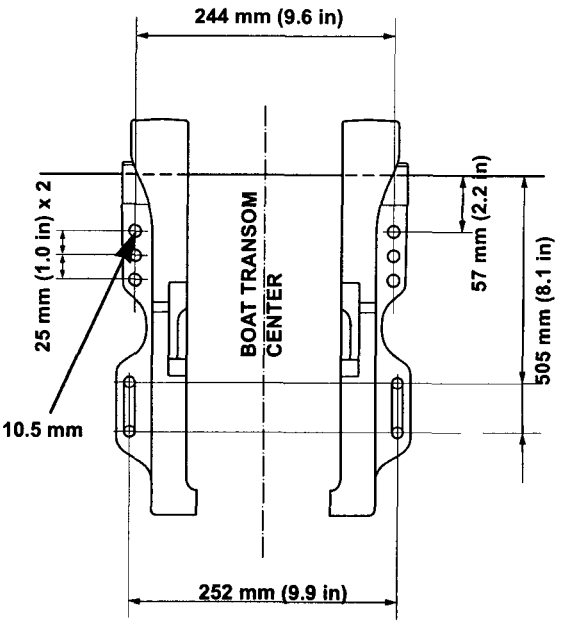


Use the upper "A" holes.

1. Drill two holes with a "Q" drill bit.

Power Tilt Bracket (Types SHT, LHT, SRT, LRT, XHT, XRT)

1. Do not use the transom drill fixture for these brackets.

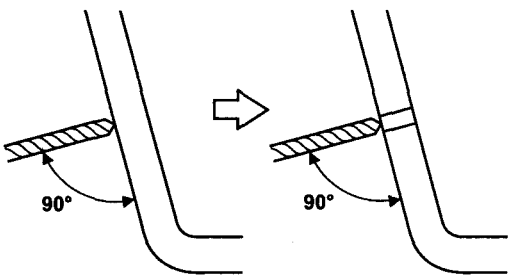


2. Mark four center marks for the bolt holes on the transom board (two marks on either side of the outboard motor installation lines). Use highest holes in the upper bracket.

   Be sure the upper bolt holes are not located above the position shown in the drawing less than 57 mm (2.2 in) from the top of the transom.
3. Lower bolt holes should be in the top of the bracket slots.
4. Wear safety glasses and drill pilot holes using a 3–5 mm (1/8–3/16 in) drill bit.

   Finish drilling the holes using a 10.2 mm (13/32 in) drill bit.

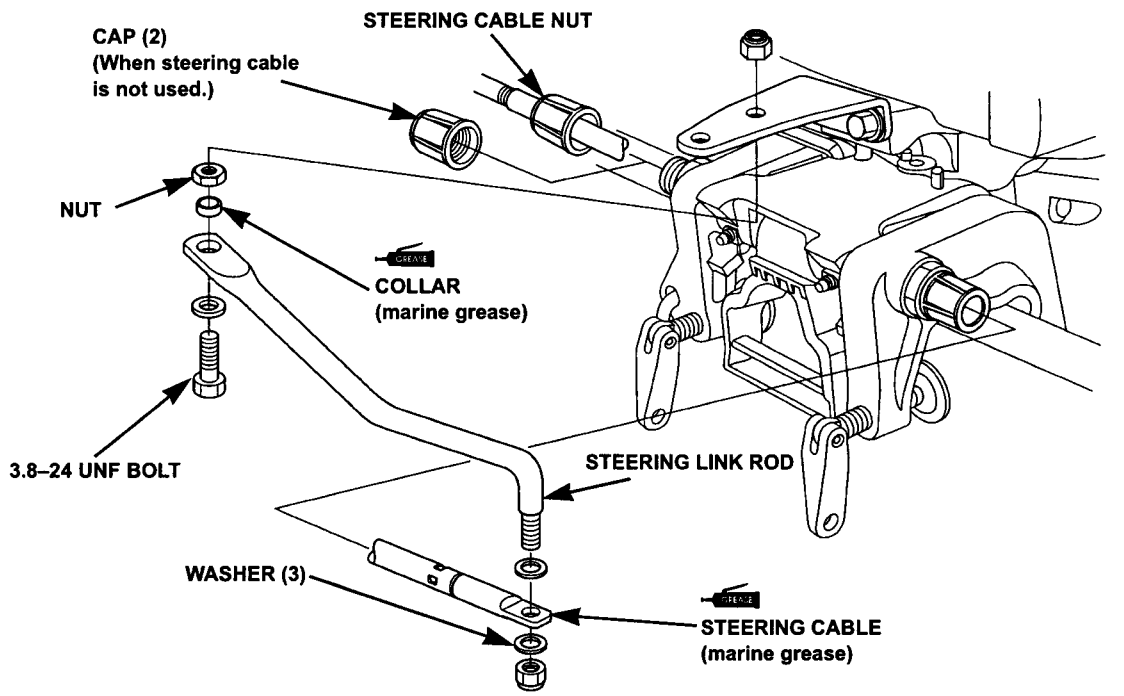
   Drill at right angles to the transom.



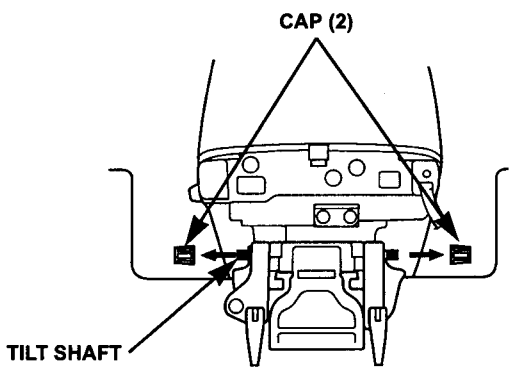
STEERING CONNECTIONS

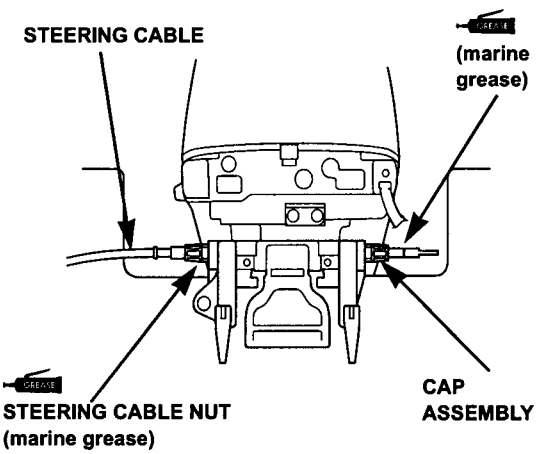
Do this before final placement of the motor on the transom.

Refer to the steering cable manufacturer's manual for cable handling procedures.



Tilt Tube Type





1. Remove the left and right caps from the tilt tube.
2. If the steering wheel is mounted on the starboard side, insert the steering cable through the hole in the tilt tube on the starboard side and attach the cable with the steering cable nut. Apply marine grease to the inner and outer cable before installation.
3. Install the sealed end cap to the tilt tube over the steering cable.

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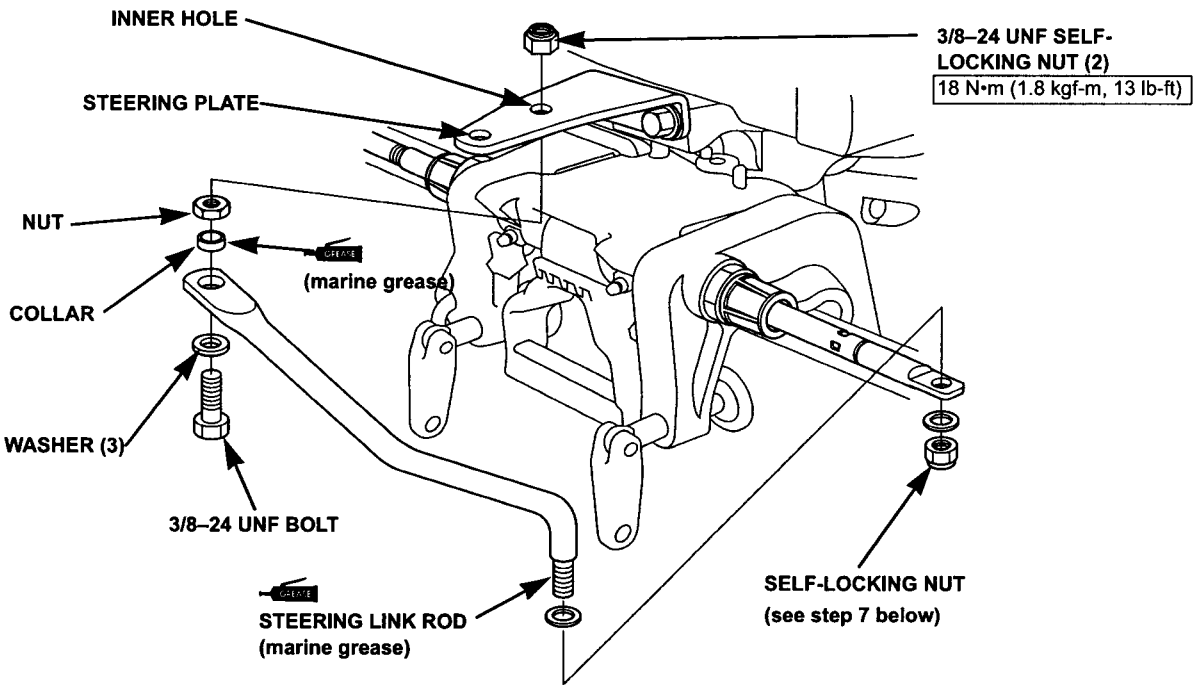
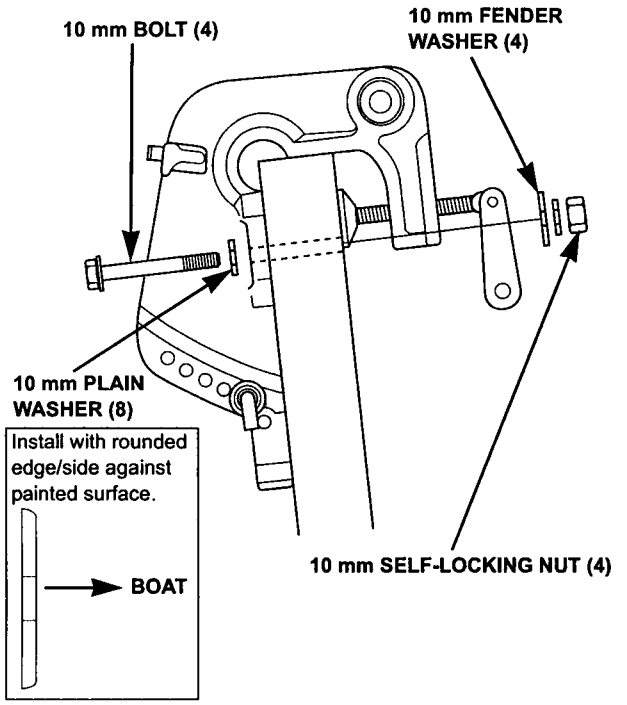


4. Install the steering link rod between the steering plate on the motor side and the cable end using the bolt, washers, nuts, and collar as shown.
5. Connect the steering link rod to the inside hole of the steering plate. Do not mount anything in the outer hole of the steering plate.
6. When connecting the link rod with the cable end, turn the outboard motor and steering wheel to the port side. Apply marine grease to the collar and steering link rod as shown before installation.
7. Turn steering wheel to retract steering cable into the steering/tilt tube. Tighten self-locking nut, then loosen self-locking nut 1/8 turn.

   TORQUE: 8–11 N•m (7–8 ft-lb)
8. After attaching the cable, turn the steering wheel to the right and left, checking the steering angle. If necessary, adjust at the steering cable side, until both angles are even.

BOLTING MOTOR TO TRANSOM



Apply marine hull sealant to the mounting holes and hardware. Use Hondabond HT equivalent silicone sealant for below waterline use.

With the motor in place against the transom, verify correct motor height. Motor can be raised by using a lower set of mounting holes.

Attach the motor with marine grade hardware. Use washers under all bolts and nuts. Use additional fender washers against the transom. Use support plates as recommended by the hull manufacturer.

Apply a small amount of oil or grease to all bolt threads prior to installation.

Be sure at least one thread of the bolt is visible beyond the nut when the fasteners are tightened.

NOTICE

Do not use an air impact tool to tighten or loosen the transom bolts. Using an air impact tool to tighten or loosen the transom bolts can generate enough heat to damage the bolt threads. The air impact tool can also produce enough tightening torque to damage the boat transom.

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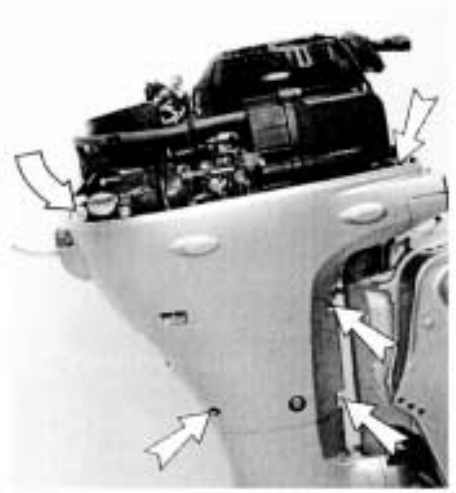
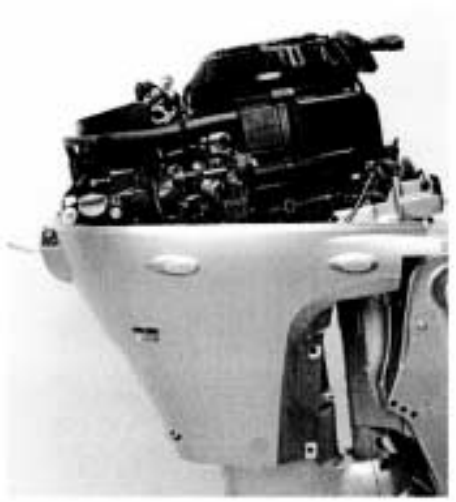
REMOTE CABLE INSTALLATION

First, install the remote control box and cables.

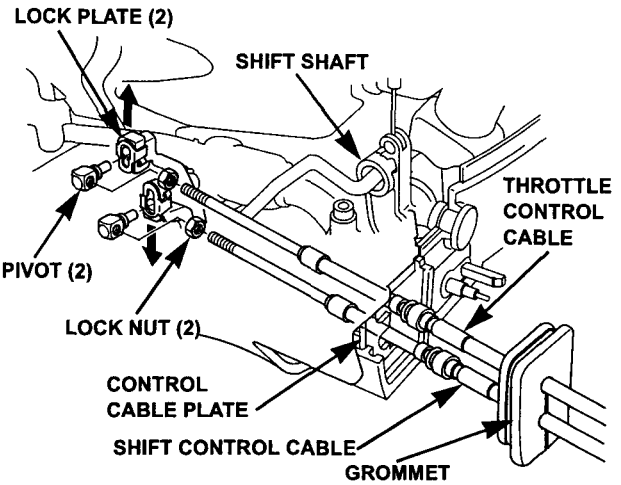


1. Remove the four (4) screws on each lower case cover and loosen the top-rear screw.

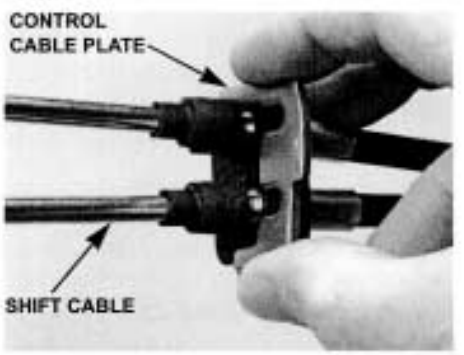


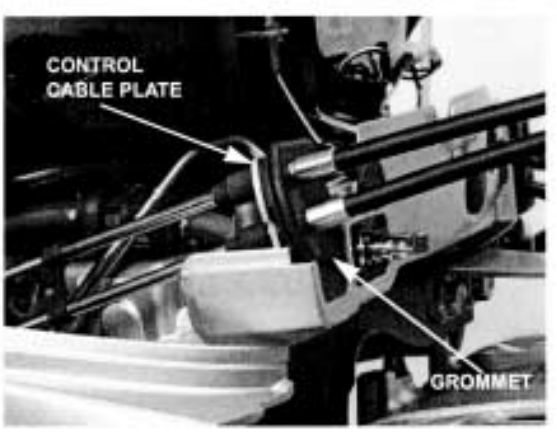
2. Pull the covers out from the engine about 20 mm (0.78 in) and allow them to droop.

Remote Control Cables

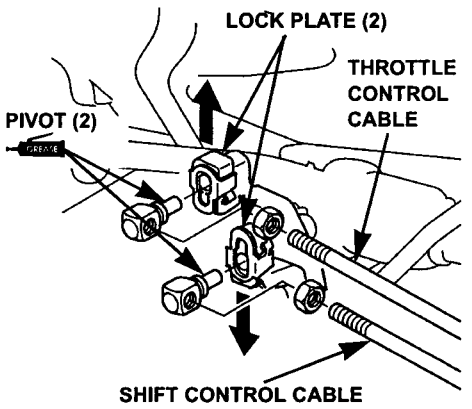


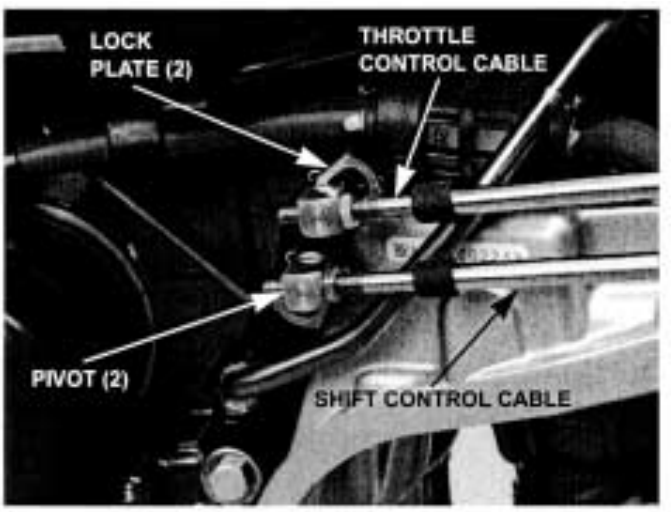
1. Remove the grommet and the control cable plate.
2. Place the grommet over the cables, even with the locking grooves. *The shift cable must be on the bottom.*

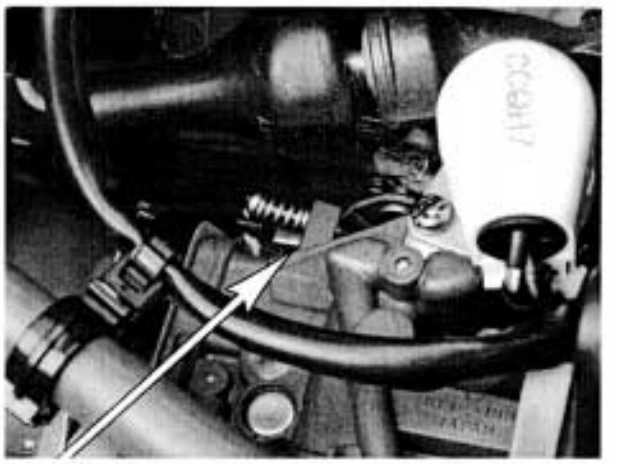


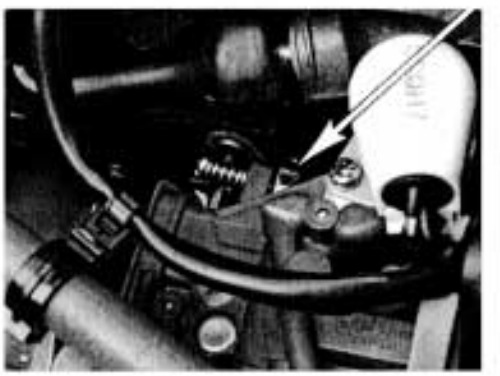


3. Slide the plate into the grooves, press the grommet against the plate, and slide the assembly into position in the lower case.









4. Shift the outboard into forward gear by moving the shift link arm forward while turning the propeller.
5. Coat the pivots with marine grease.
6. Set the remote control lever full forward and adjust the shift pivot to be a slip fit in the shift link arm. Slide the lock plate *down* to secure the pivot.
7. With the remote control lever still full forward, hold the throttle remote arm against the full throttle stop and adjust the throttle pivot to be a slip fit in the throttle remote arm. Slide the lock plate *up* to secure the pivot.
8. Operate the remote control and check to see that:
   - When the remote is at full throttle (WOT), the throttle is within 1mm of the stop.
   - When the remote is at full throttle (WOT), the shift linkage is in the forward detent.
   - When the remote is in neutral, the throttle is against the idle stop screw.
   - When the remote is in neutral, the shift linkage is in the neutral detent.
   - When the remote is in reverse, the shift linkage is in the reverse detent.

   (Turn the prop while shifting gears.)

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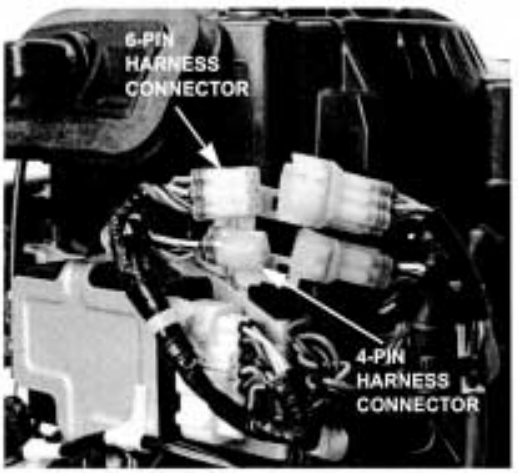
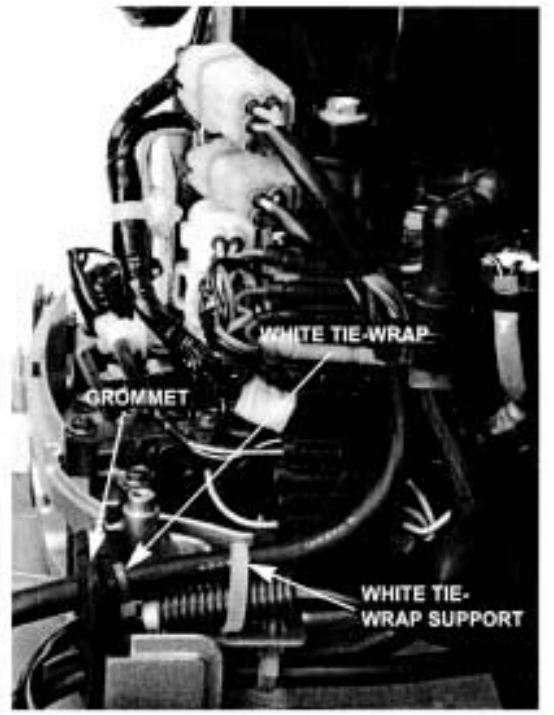
Wire Harness

1. Place the white tie-wrap on the harness near the grommet.



2. Connect the six-pin and the four-pin harness connectors to their respective plugs on the engine.

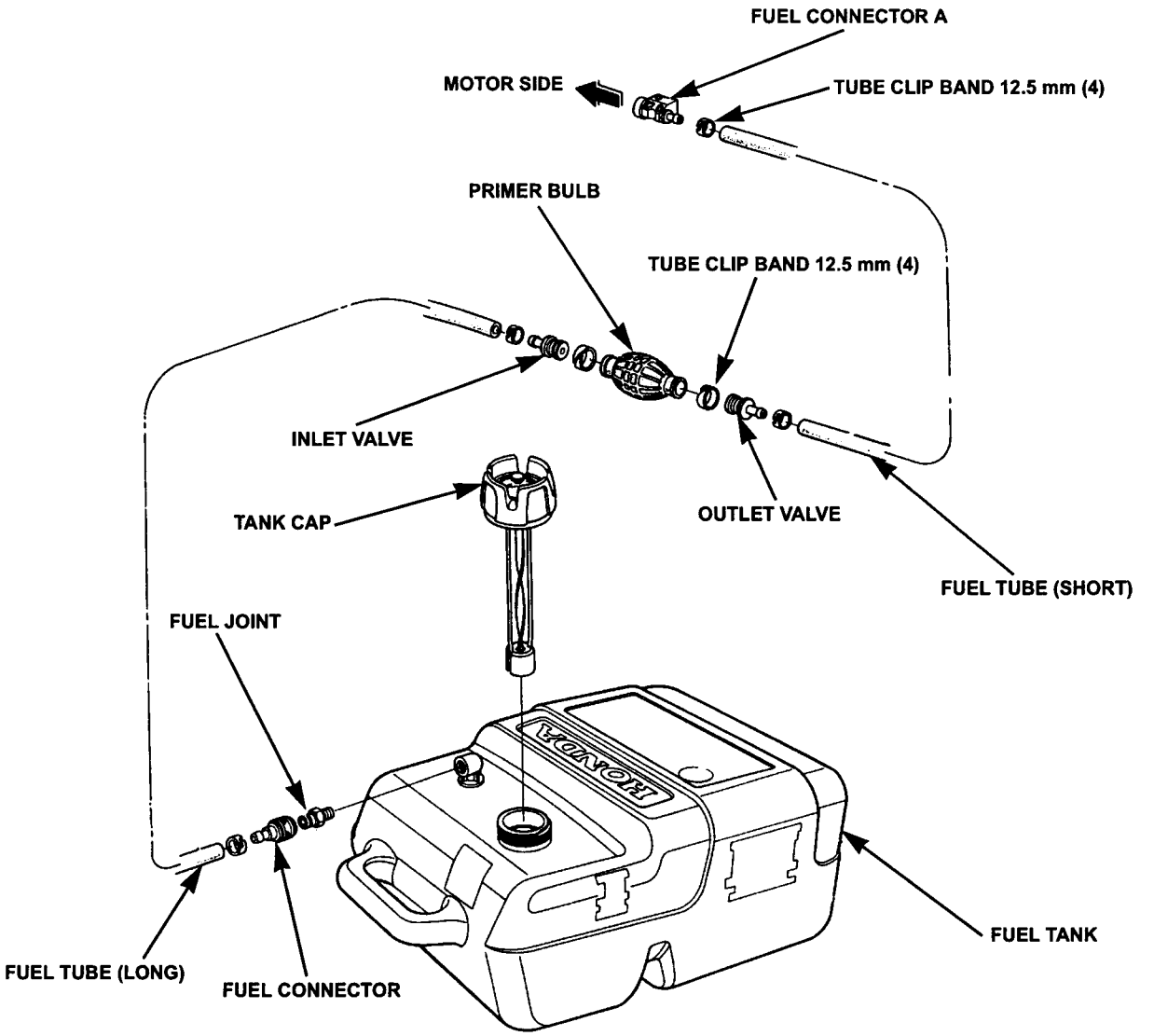


3. Slide the connectors onto their tabs on the CDI bracket. Be sure they click into position.
4. With the white tie-wrap inside the grommet, slide the harness into the grommet and secure it with the white tie-wrap support.

AVAILABLE ACCESSORIES

Consult the *Honda Marine Accessories Catalog* (MO045) for current information on gauges, instrument harnesses, wiring harnesses, switch panels, and control boxes.

FUEL SYSTEM CONNECTIONS



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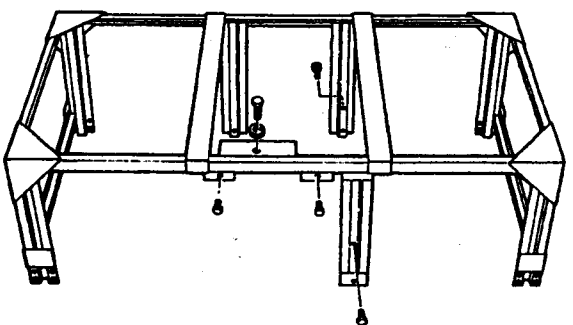
4. BF25A/BF30A

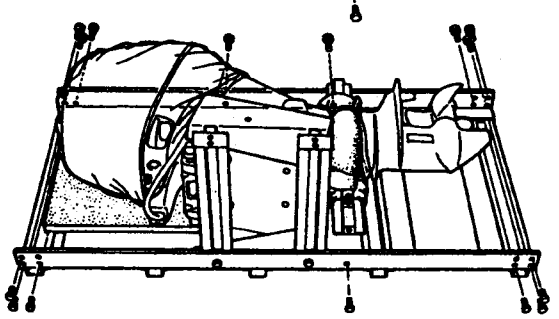
4

UNPACKING

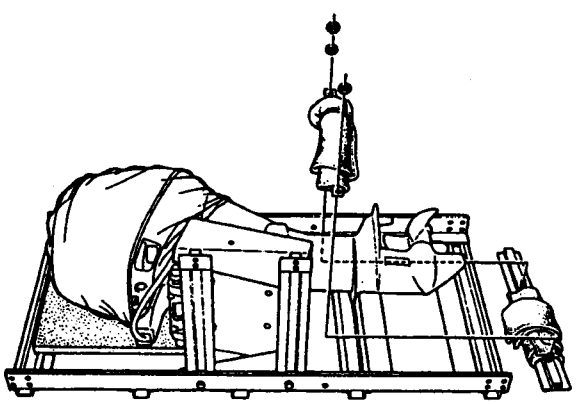
1. Remove/discard the nineteen 6 x 16 mm bolts and one 8 x 20 mm bolt which attach the crate frame to the crate base.

   To avoid scratching the motor, do not attempt to lift the upper crate frame alone. Get at least one other person to assist you.

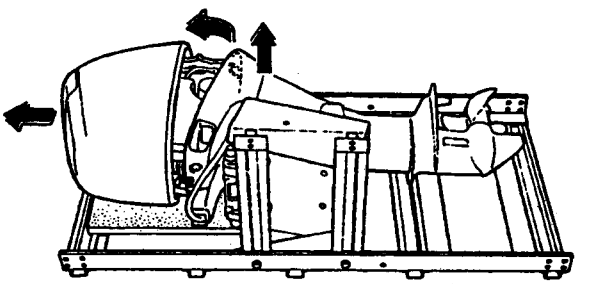




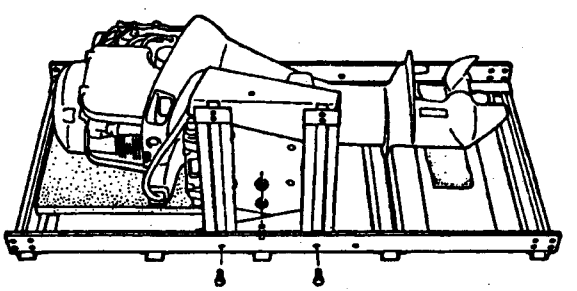
2. Remove the two 8 mm nuts and one washer from the extension housing support band. Remove the band and extension housing support. Remove and save the pads which will be used in step 5.



3. Remove the plastic bag covering the engine cover.
4. Release the hood latch. Have an assistant lift and pivot the motor slightly on its swivel case. Remove the engine cover.



5. Position the pads, removed in step 2, under the gear case and propeller area.
6. Remove the two 6 x 16 mm bolts and one 8 mm nut and flat washer which attaches the stem bracket support to the crate base.



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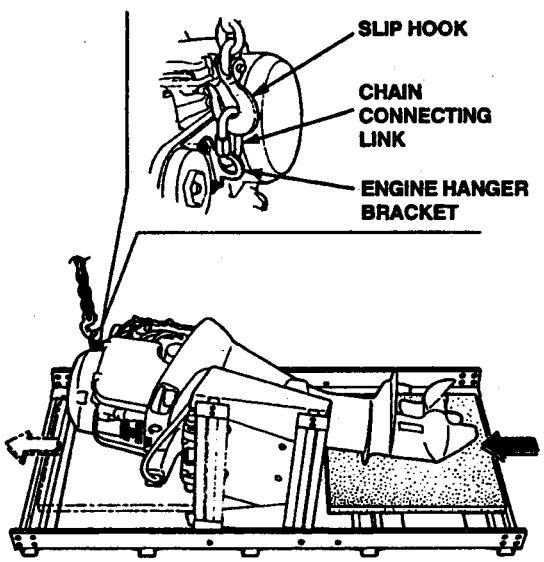
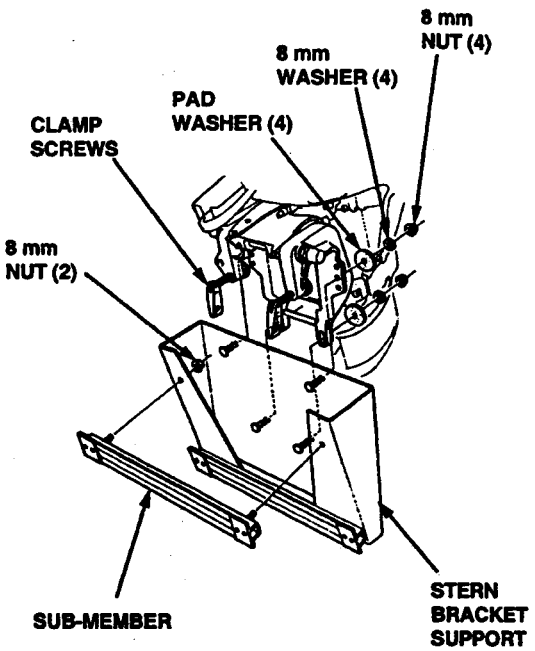
7. Install a chain connecting link or equivalent, with a minimum lift capacity of 500 lbs. (227 kg), to the engine hanger bracket. A slip hook should not be connected directly to the engine hanger bracket due to insufficient clearance between the engine hanger bracket and the recoil starter or flywheel cover.
   Use a hoist with a minimum lift capacity of 500 lbs. (227 kg). Slowly lift the motor just enough so the foam pad can be removed and transferred to the gear case area. Slowly lift the motor making sure the gear case does not contact the crate base.



8. Remove the two 8 mm nuts from the sub-member and remove the sub-member. Loosen the clamp screws. Remove the four 8 mm nuts, washers, and pad washers from the stern bracket support. Remove the stern bracket support.



SPECIFICATIONS

ENGINE

Model	BF25A	BF30A
Type	4-stroke, O.H.C., 3-cylinder	
Displacement	499 cm³ (30.5 cu. in.)	
Bore x stroke	58 x 63 mm (2.3 x 2.5 in)	
Rated horsepower	18.7 kW (25 PS) at 5,000–6,000 rpm	22.4 kW (30 PS) at 5,700–6,200 rpm
Maximum torque	35.2 N•m (3.59 kg-m, 26.0 lb-ft) at 4,000 rpm	36.3 N•m (3.7 kg-m, 26.8 lb-ft) at 4,500 rpm
Compression ratio	9.2 : 1	
Fuel consumption	239 g (8.4 oz.) / kWh	291 g (10.3 oz.) / kWh
Cooling system	Forced water circulation by impeller pump with thermostat	
Ignition system	CDI	
Ignition timing	5—26° B.T.D.C.	5—32° B.T.D.C.
Spark plug	DR7EA (NGK), X22ESR-U (DENSO)	
Carburetor	Horizontal butterfly valve-type triple carburetor	
Lubricating system	Pressure lubrication by trochoid pump	
Oil capacity	1.6 liter (1.69 US qt) at oil change 1.9 liter (2.0 US qt) with oil filter replacement	
Recommended oil	SAE 10W-30, API Service classification SG, SH, SJ	SAE 5W-30, API Service classification SG, SH, SJ
Starting system	Electric starter and recoil starter	
Battery system	494 MCA minimum (engine operations only)	
Stopping system	Ignition primary circuit ground	
Fuel used	Automotive unleaded gasoline (minimum 86 pump octane)	
Fuel tank capacity	25 liters (6.6 US gal)	
Fuel pump	Mechanical plunger type	
Exhaust system	Thru-hub	

LOWER UNIT

Model		BF25A	BF30A
Clutch		Dog clutch (forward-neutral-reverse)	
Gear ratio		2.08:1 (27/13)	
Reduction type		Spiral bevel gear	
Gear case oil capacity		0.29 liters (0.307 US qt)	
Recommended gear case oil		API Service classification GL4 or GL5	
Propeller	Number of blades	3	
	Diameter	235 mm (9.25 in) XRS type: 254 mm (10 in)	235 mm (9.24 in)
	Pitch	305 mm (12 in) XRS type: 210 mm (8.25 in)	305 mm (12 in)
	Rotating direction	Clockwise (viewed from rear)	
	Driving system	Spline	

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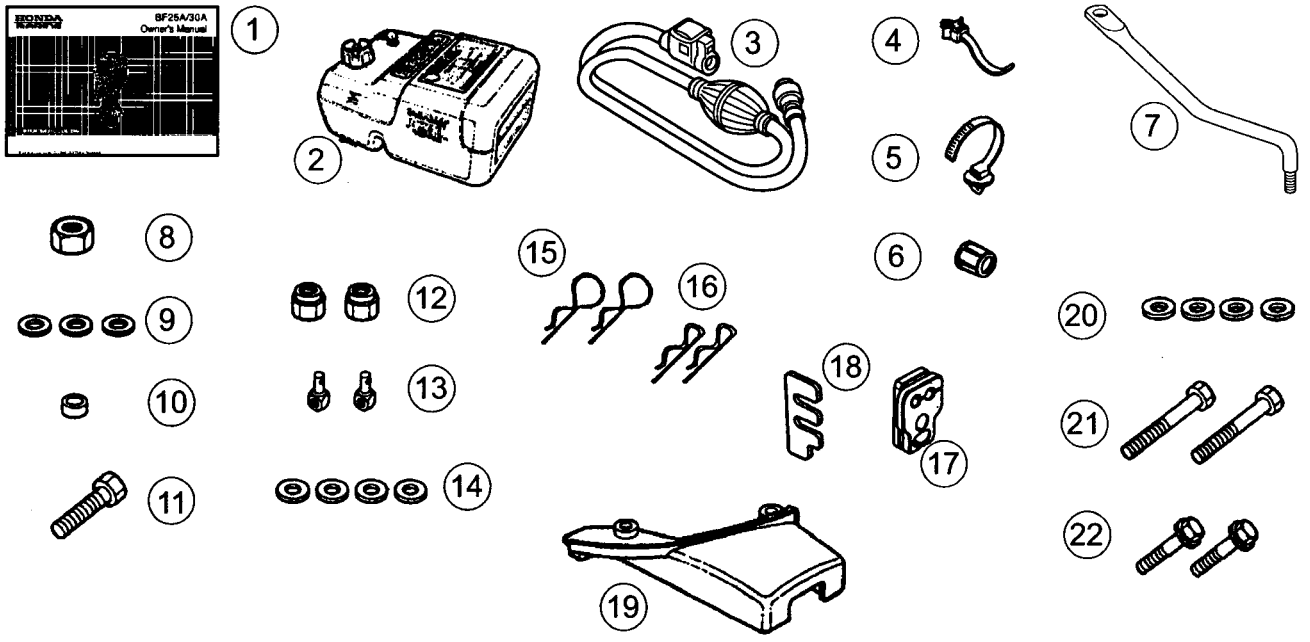
PARTS LISTING



REF. NO.	DESCRIPTION	BF25A							BF30A				PART NO.
		SHA	LHA	SHSA	LHSA	SRSA	LRSA	LRTA	LHA	LHSA	LRSA	LRTA	
1	*Owner's Manual*	1	1	1	1	1	1	1	1	1	1	1	31ZV7616
2	Fuel tank assembly	1	1	1	1	1	1	1	1	1	1	1	17500-ZV5-910
3	Fuel tube assembly	1	1	1	1	1	1	1	1	1	1	1	17700-ZW9-010
4	Harness band A					1	1	1			1	1	32161-404-000
5	Harness band B					1	1	1			1	1	91547-SF4-003
6	Sealed cap					1	1	1			1	1	50331-ZV5-000
7	Steering rod					1	1	1			1	1	17853-ZV5-000
8	3/8–24 UNF nut					1	1	1			1	1	90302-ZV5-000
9	Plain washer (10 mm)					3	3	3			3	3	90514-ZV4-000
10	Steering rod collar					1	1	1			1	1	91560-ZV5-000
11	3/8–24 UNF bolt					1	1	1			1	1	90105-ZV5-000
12	3/8–24 UNF self-locking nut					2	2	2			2	2	90307-ZV5-003
13	Shift pivot					2	2	2			2	2	24618-ZV5-000
14	Flat washer (6 mm)					4	4	4			4	4	90504-921-010
15	Lock pin (6 mm) (large loop, motor side)					2	2	2			2	2	90765-ZV5-000
16	Lock pin (6 mm) (small loop, control box side)					2	2	2			2	2	90751-ZV5-000
17	Grommet					1	1	1			1	1	40105-ZV5-000
18	Remote control cable plate					1	1	1			1	1	17877-ZV5-000
19	Separate top cover					1	1	1			1	1	40151-ZV7-000ZA
20	Plain washer (6 mm)					4	4	4			4	4	90506-ZV4-000
21	Bolt (6 x 45 mm)					2	2	2			2	2	90121-ZV4-000
22	Self-tapping bolt (6 x 28 mm)					2	2	2			2	2	90015-ZV0-000

INSTALLATION HEIGHT RECOMMENDATIONS

Shaft Length	Outboard Transom Height	Workable Boat Transom Height
S type	431 mm (17.0 in)	381 ~ 431 mm (15.0 ~ 17.0 in)
L type	552 mm (21.7 in)	502 ~ 552 mm (19.7 ~ 21.7 in)
X type	632 mm (24.9 in)	582 ~ 632 mm (22.9 ~ 24.9 in)

TRANSOM DRILLING

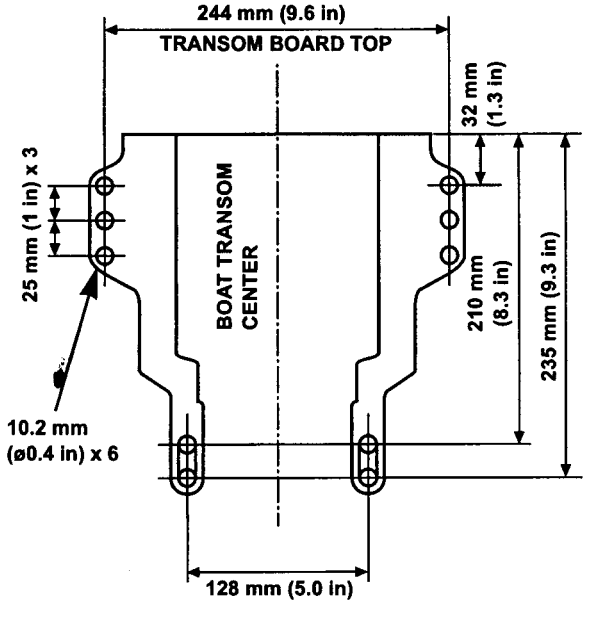
See also "USING THE TRANSOM MOUNT DRILL FIXTURE" on page 1-23.

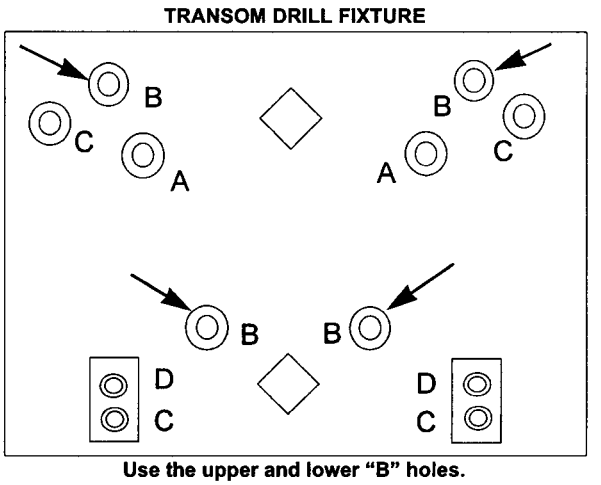
Description	Part No.
Transom Mount Drill Fixture	07MPZ-ZV3010C

The BF25A and BF30A outboards motors are designed to be installed on a boat transom with the following transom board thickness:

Boat Transom Board Thickness
35 ~ 57 mm (1.3 ~ 2.2 in)

1. Set the outboard motor onto the boat transom and verify the installation height is correct.



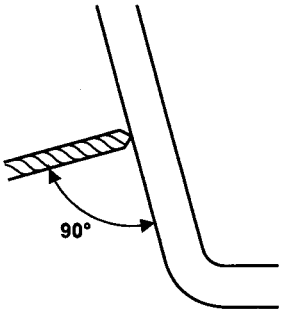


Use the upper and lower "B" holes.

2. Mark four center marks for the bolt holes on the transom board (two marks on either side of the outboard motor installation lines).

   The upper bolt holes should be more than 33 mm (1.3 in) from the top of the transom.

   The lower bolt holes should allow the mounting bolts to contact the upper end of the stern bracket.

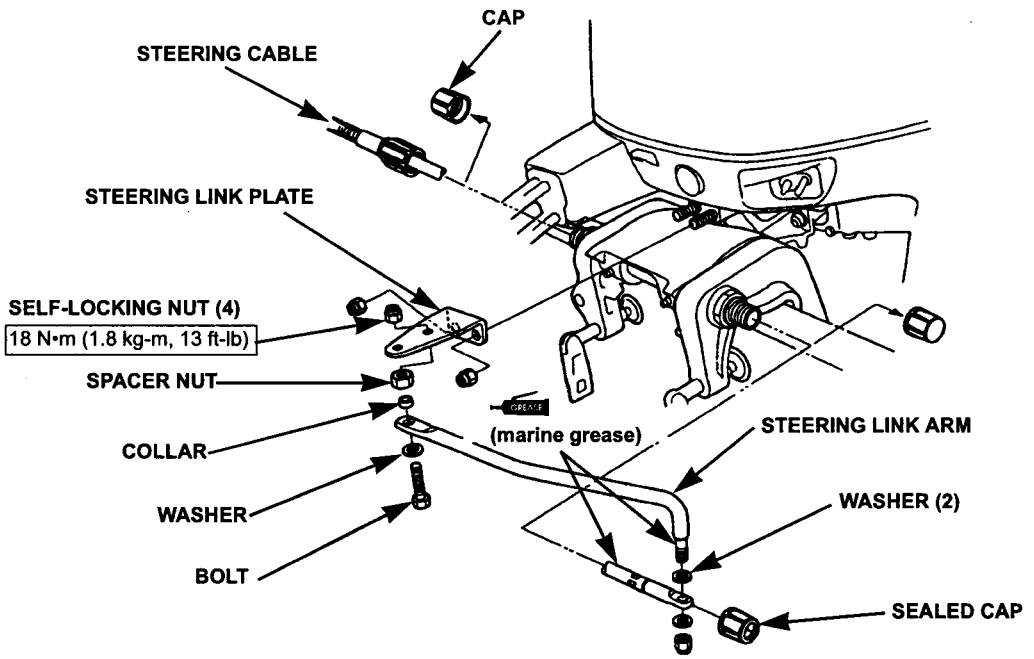


3. Drill four holes with an 11 mm drill bit.

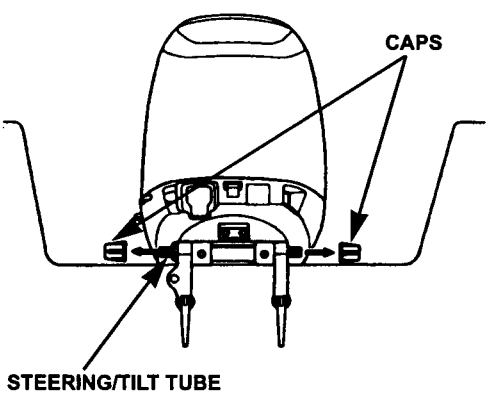
STEERING CONNECTIONS

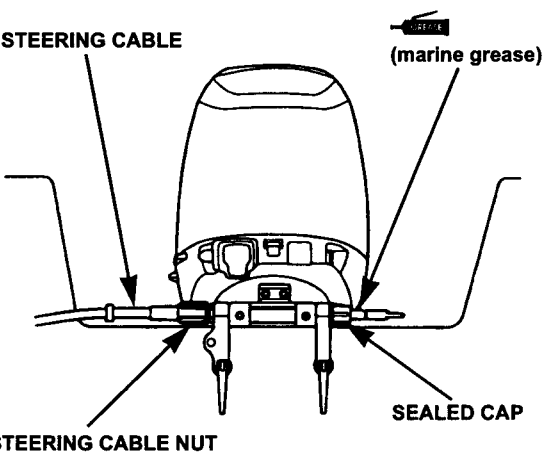
Do this before final placement of the motor on the transom.

Refer to the steering cable manufacturer's manual for cable handling procedures.



Tilt-Tube Type





1. Remove the left and right caps from the steering/tilt tube.
2. Apply marine grease to the steering cable and install the steering cable through the steering/tilt tube. Do this before final placement of the motor on the transom.
3. Position the motor on the center line. If applicable, line up the drilled holes in the transom with the holes in the stern bracket. Tighten the clamp screws.
4. Hand tighten the steering cable nut at this time.
5. Install the sealed cap on the steering/tilt tube. Below is a list of two optional steering tube seals which are available and include a grease fitting.

Description	Part No.
Stainless steel	50899-ZV5-020AH
Anodized aluminum	50899-ZV5-000AH

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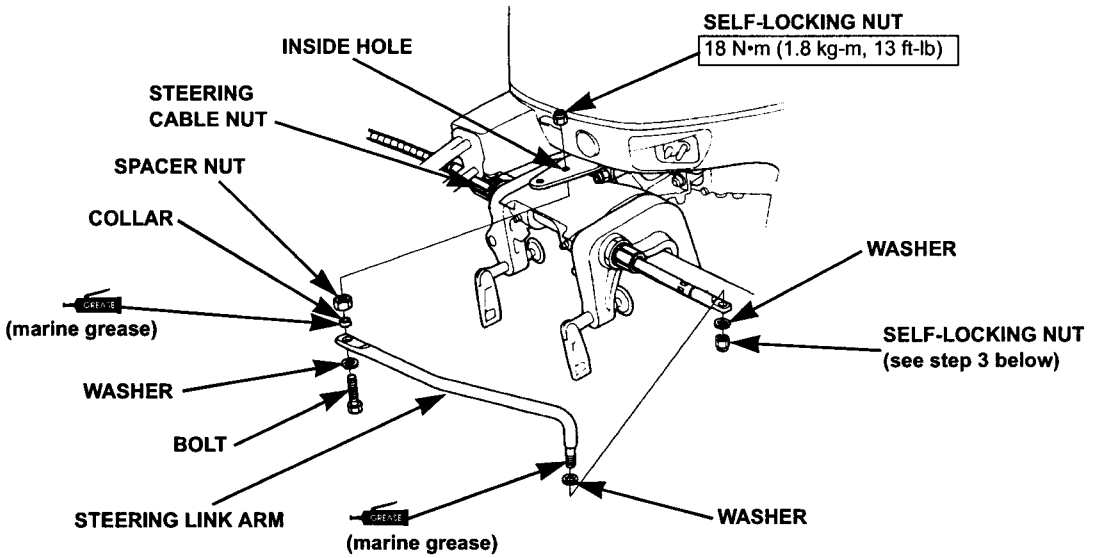
STEERING LINK ARM INSTALLATION



1. Install bolt, washer, and collar into link arm. Lightly seat the spacer nut against the collar, then thread the bolt into the inside hole on the steering plate. Tighten bolt securely. Hold bolt and tighten self-locking nut. Do not use forward hole.

   TORQUE:

   3/8-24 UNF bolt: 22 N•m (16 ft-lb)
   3/8-24 UNF lock nut: 18 N•m (13 ft-lb)
2. Turn steering wheel to extend the steering cable out of the steering/tilt tube. Install steering link arm into steering cable end. Use hardware shown and connect link arm to the steering cable.
3. Turn steering wheel to retract steering cable into the steering/tilt tube. Tighten self-locking nut, then loosen self-locking nut 1/8 turn.

   TORQUE: 8–11 N•m (7–8 ft-lb)
4. Tighten steering cable nut until the steering cable end play is removed.

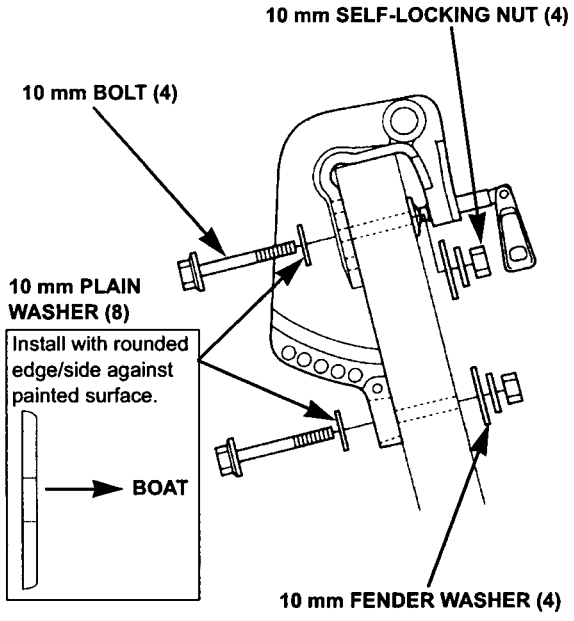
   TORQUE: 34–49 N•m (25–36 ft-lb)

   After steering cable nut is tightened, there should be no end play between outer steering cable and steering tilt/tube.

   For further information regarding steering cable, refer to the boat manufacturer's operation manual.
5. Directly after completing the steering link arm and steering cable installation, verify the following:
   - Motor turns the proper direction when the steering wheel is turned right and left. If the steering is reversed, correct at the steering box.
   - Motor steering angle is equal when steering wheel is turned full right and full left. If the motor steering angles are not equal:
     - Major corrections can be made at the steering box (refer to the steering box or steering cable manufacturer's instructions).
     - Minor corrections can be made by moving the steering/tilt tube laterally (refer to the *BF25A/BF30A Shop Manual*).

   Make the steering angles equal as necessary.
   - The steering cable and/or steering link arm must not come in contact with any part of the boat when the steering wheel is turned full right and full left and at all tilt angles. Correct as necessary and check again.

BOLTING MOTOR TO TRANSOM



Apply marine hull sealant to the mounting holes and hardware. Use Hondabond HT (P/N 08718-0001) or equivalent silicone sealant for below waterline use.

With the motor in place against the transom, verify correct motor height. Motor can be raised by using a lower set of mounting holes.

Attach the motor with marine grade hardware. Use washers under all bolts and nuts. Use additional fender washers against the transom. Use support plates as recommended by the hull manufacturer.

Apply a small amount of oil or grease to all bolt threads prior to installation.

Be sure at least one thread of the bolt is visible beyond the nut when the fasteners are tightened.

NOTICE

Do not use an air impact tool to tighten or loosen the transom bolts. Using an air impact tool to tighten or loosen the transom bolts can generate enough heat to damage the bolt threads. The air impact tool can also produce enough tightening torque to damage the boat transom.

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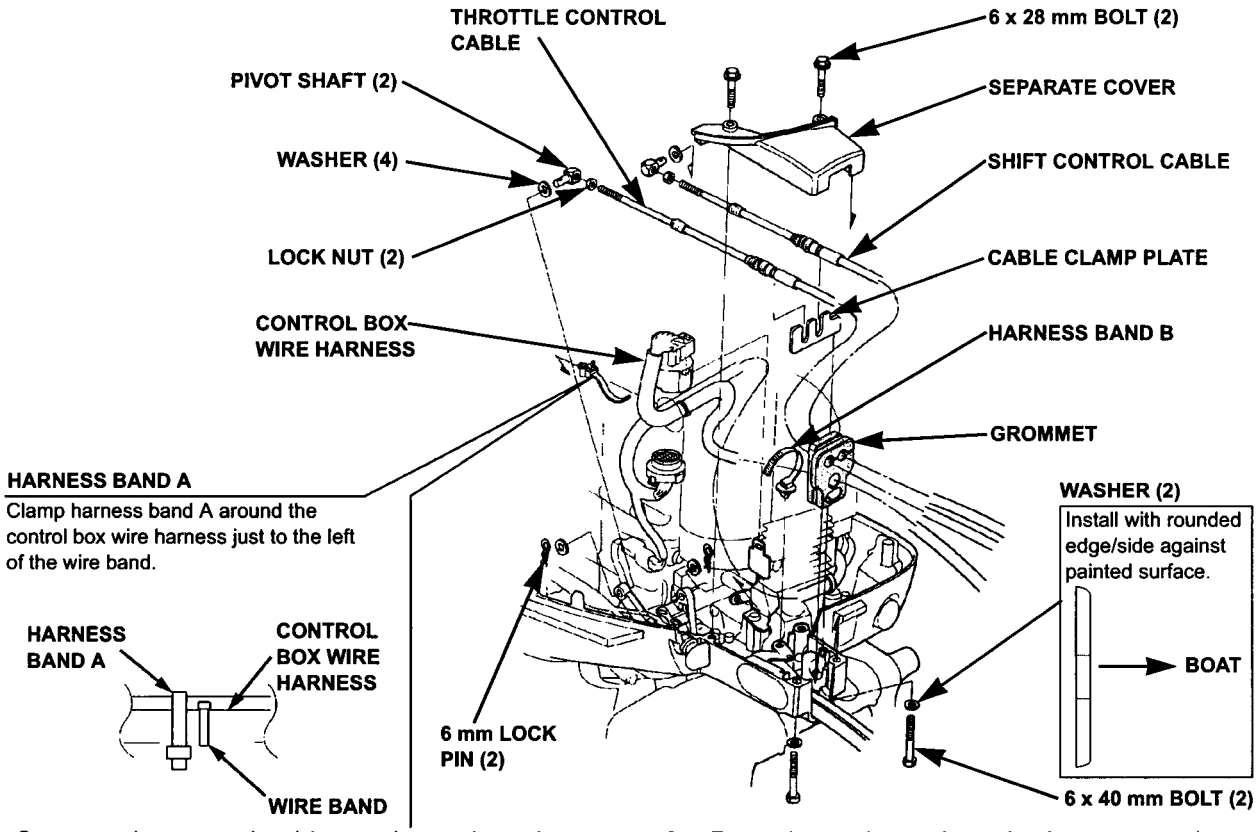
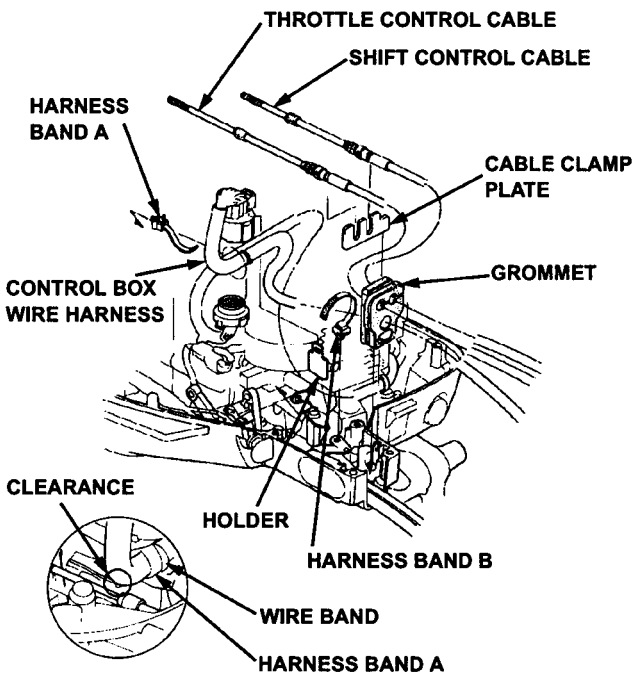
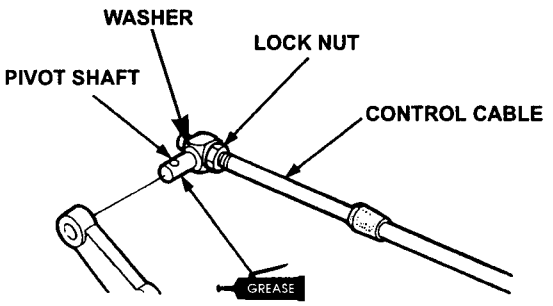
REMOTE CONTROL CABLE INSTALLATION



1. Connect the control cables to the outboard motor with the remote control lever in the neutral position and the choke/fast idle lever in the lowest (idle) position.

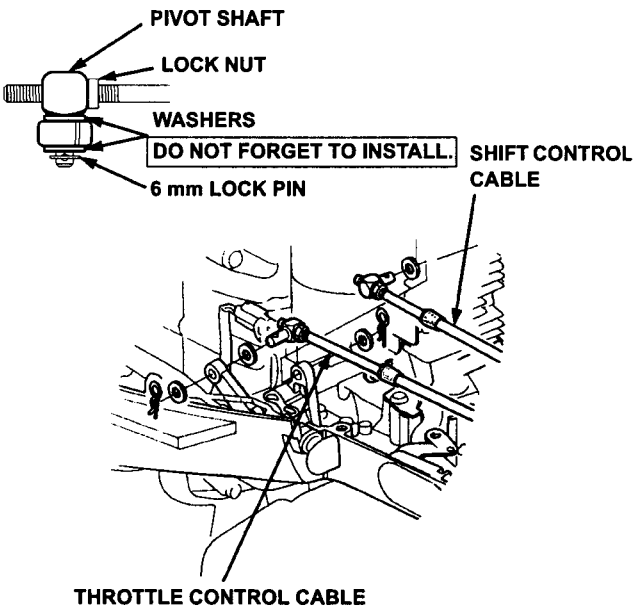


2. Pass the main engine wire harness and control cables through the grommet as shown.
3. Attach the cable clamp plate to both control cables by aligning the grooves in the cables with grooves in the cable clamp plate. Then install them into the engine undercase.
4. Connect the control box wire harness to the outboard motor wire harness and secure the connector to the holder as shown.
5. Secure the wire harnesses into place as shown above using harness band A and B. Clamp harness band A around the control box wire harness and to the left side of the wire band. Snap harness band A into the holder. Make sure there is enough clearance between the control cable and the wire harness.

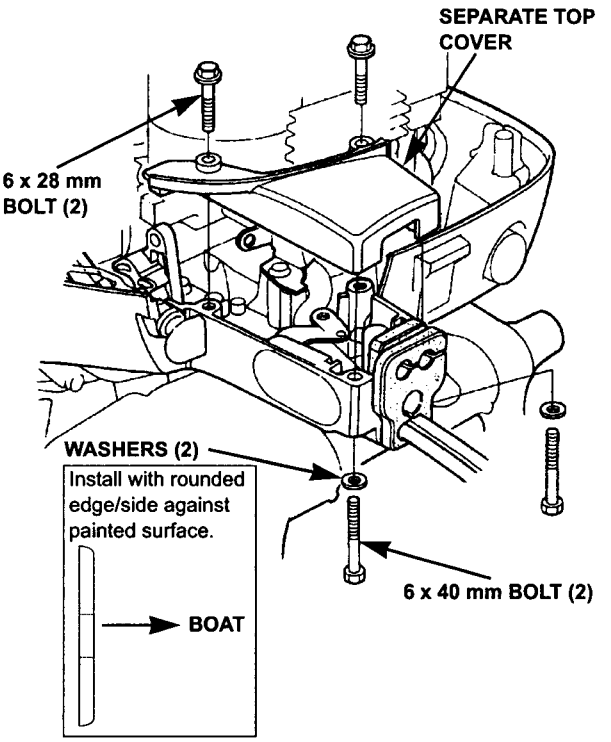


(marine grease)

6. Thread the lock nuts all the way on the control cables. Thread the pivots shafts onto the control cables. Apply marine grease as shown.
7. Verify that the shift arm on the outboard motor is in the neutral position, or that the control lever at the remote control box is in the neutral position.



8. Connect the control cables to the shift arm and throttle arm using the 6 mm washers and lock pins as shown. *Use the 6 mm washers on both sides of the arm. Do not forget to install the washers.* If the hole in the shift arm and the pivot shaft do not align, turn the pivot shafts in or out to align the pivot pin with the shift or throttle arm holes as necessary. Turn the lock nut up to the pivot shaft, then tighten the lock nuts securely.



9. Install the separate top cover and tighten the bolts securely.

   Install the washers with the rounded edge/side against the painted surface to prevent paint damage and corrosion.

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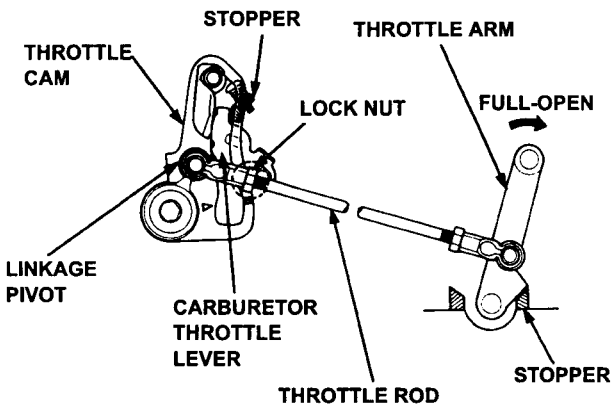
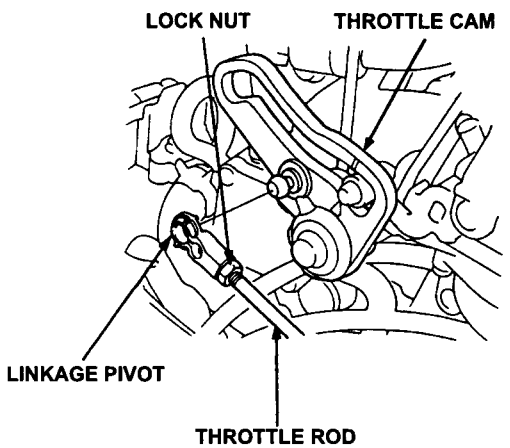
CONTROL CABLE LENGTH ADJUSTMENT

THROTTLE CONTROL CABLE

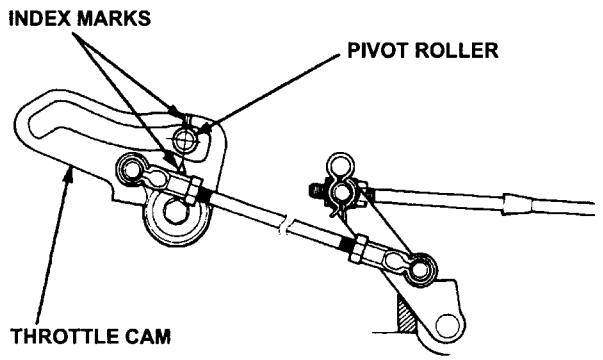
1. Put the remote control lever in the neutral position.
2. Disconnect the throttle control cable from the throttle arm.



3. Move the throttle arm to the fully-open position until it touches the stopper, and verify that the carburetor throttle lever touches the stopper in the fully-open position.
4. If not, loosen the lock nut, disconnect the throttle rod from the throttle cam, and adjust the throttle rod length by turning the linkage pivot.



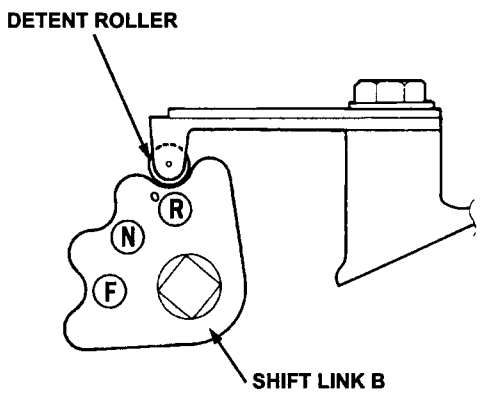
5. After the adjustment, connect the throttle rod to the throttle cam and tighten the lock nut securely.
6. Reconnect the throttle control cable to the throttle arm.



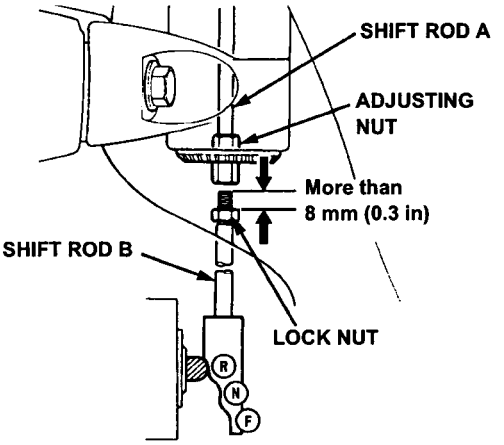
7. Verify the center of the pivot roller aligns with the index marks on the throttle cam.
8. If not, loosen the throttle control cable lock nut, disconnect the throttle control cable and turn the pivot shaft until adjustment is correct.
9. After the adjustment, reconnect the throttle control cable and tighten the lock nut securely.
10. Move the remote control lever and verify the following:
    - The control lever moves smoothly into all positions.
    - The carburetor throttle lever moves smoothly without binding from the fully-opened to the fully-closed position.

SHIFT CONTROL CABLE

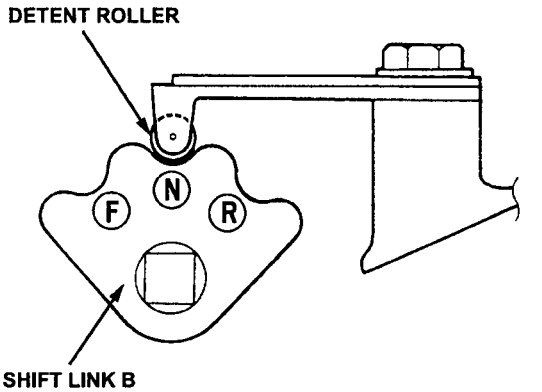
1. Move the remote control lever to the REVERSE position.
2. Disconnect the shift control cable from the shift arm.



3. Verify the detent roller is in the center of the groove on the shift link B at the (R) mark.



4. If not, loosen the lock nut and adjusting nut connecting shift rod A to shift rod B.
5. Disconnect shift rod A from shift rod B by backing off the adjusting nut. Back off the adjusting nut until it is approximately 3 mm above the top of shift rod B.
6. Turn the lock nut on shift rod B to obtain 0.3 inch (8 mm) between the lock nut and the top of shift rod B as shown.
7. Thread the adjusting nut onto shift rod B until the adjusting nut comes in contact with the lock nut. When the adjusting nut contacts the lock nut, tighten the lock nut and adjusting nut together.
8. Reconnect the shift control cable to the shift arm.
9. Put the remote control lever in the neutral position.



10. Verify the detent roller sits in the N groove of the shift link B.
11. If not, loosen the shift control cable lock nut, disconnect the shift control cable and turn the pivot shaft until the adjustment is correct.
12. After the adjustment, reconnect the shift control cable and tighten the lock nut securely.
13. Verify the remote control lever moves smoothly into all positions.

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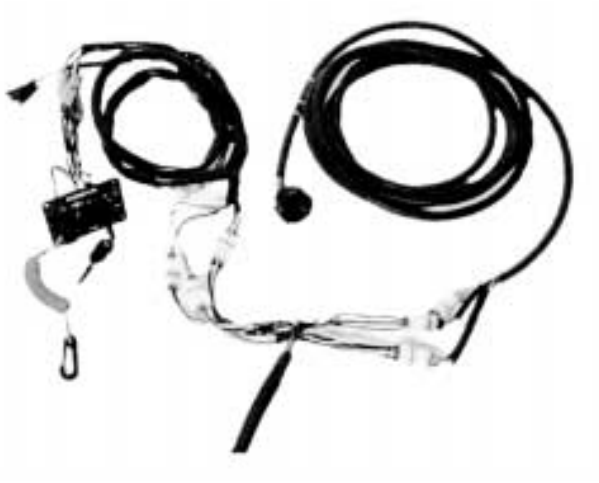
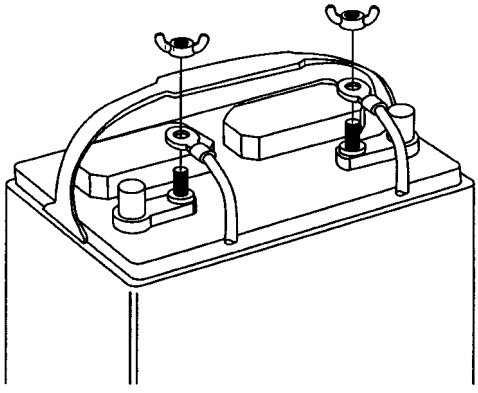
Top Mount Control/Key Switch Panel Connections

1. Disconnect the main engine harness from the key switch panel harness by unplugging the three Sumitomo connectors.
2. Plug the mating connectors from the relay box harness into the connectors from the key switch panel harness.
3. Plug the mating connectors from the relay box harness into the connectors on the main engine harness.



12 VDC Power Lead Connections

Connect the positive (red) and negative (black) 12 volt DC leads from the relay box to the appropriate positive and negative terminals on the boat's battery. Be careful not to switch the leads as damage to the relay box could occur.



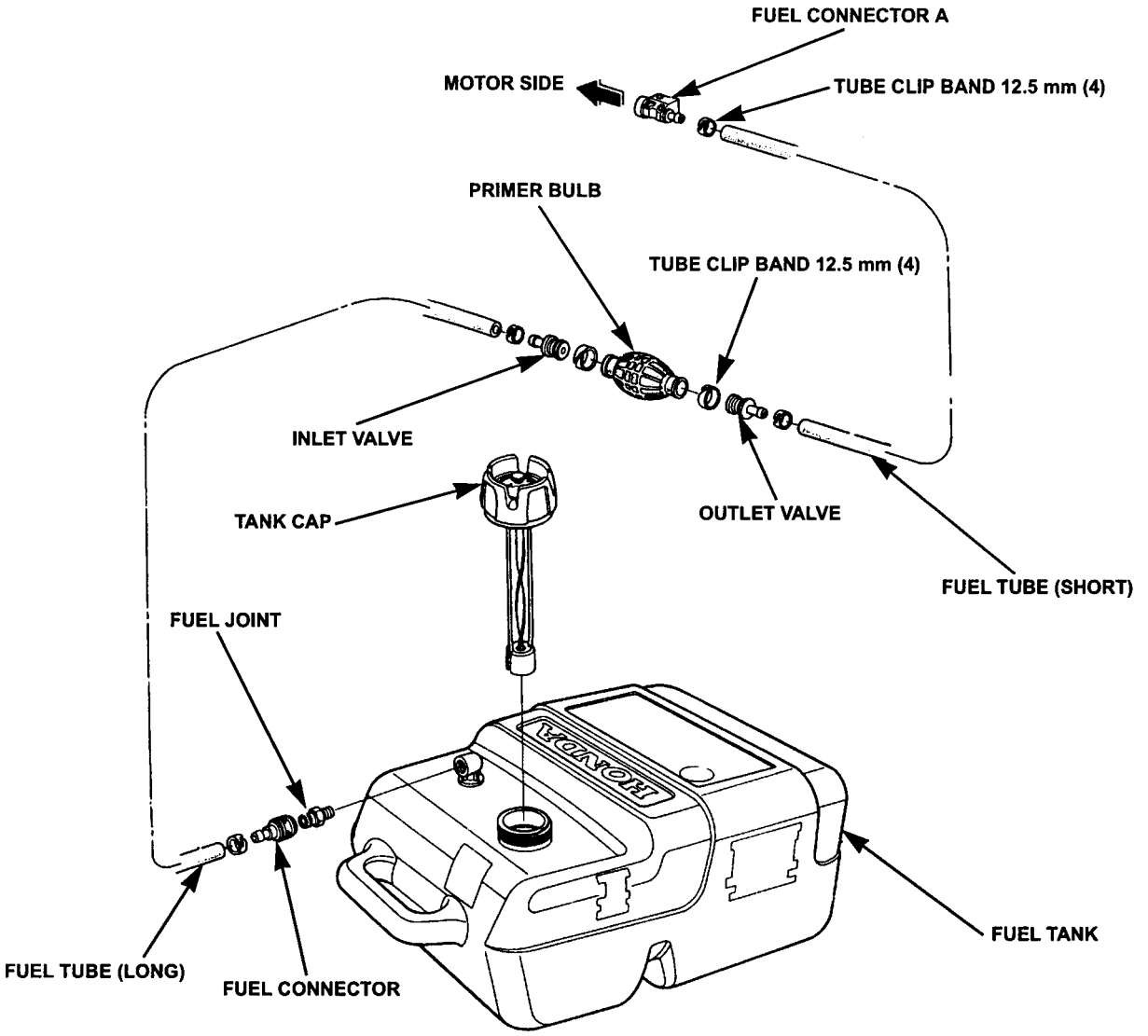
General Information

1. Coil and band all excess harness lengths and secure in an area away from snags and other moving parts. Try to secure in an area where there will be no chaffing or standing water.
2. After connecting the main engine harness "Y" connectors forward at the control box or key switch panel, stagger the two sets of three Sumitomo connectors and tape off any exposed wires coming from the relay box harness.
3. All functions operate in a normal manner after installation. The engine will tilt up and down with the standard tilt switch in the control box handle or tilt switch in the top mount control handle. The engine can also be tilted by the tilt switch provided on the side of the motor pan.
4. Harness "A" or other Honda instrument harnesses plugged into the side mount control box or key switch panel harness will support normal trim meter function.
5. The relay box is protected internally by a 15 amp blade-style fuse. If a unit does not function normally, first check all the connectors and then check the main fuse in the engine compartment. If this main fuse is normal, then check the 15 amp fuse inside the relay box. This fuse can be accessed by removing the four (4) Phillips head screws on the top cover of the relay box.
6. Individual component parts are not available separately. If there is any component failure, the complete assembly will need to be replaced.

AVAILABLE ACCESSORIES

Consult the *Honda Marine Accessories Catalog* (MO045) for current information on gauges, instrument harnesses, wiring harnesses, switch panels, and control boxes.

FUEL SYSTEM CONNECTIONS



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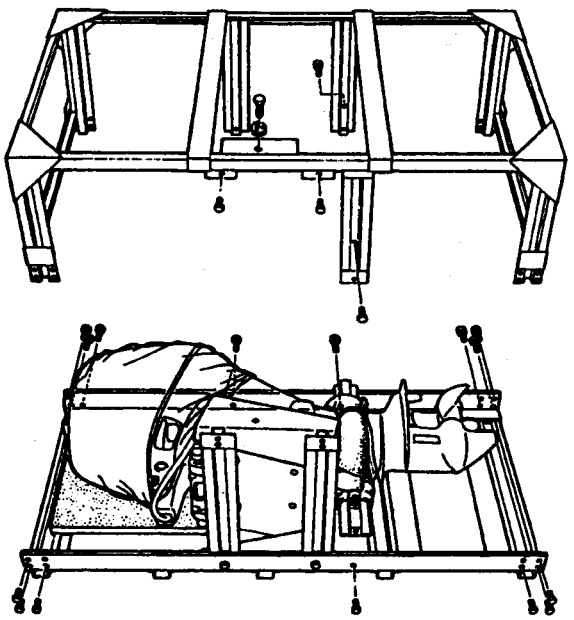
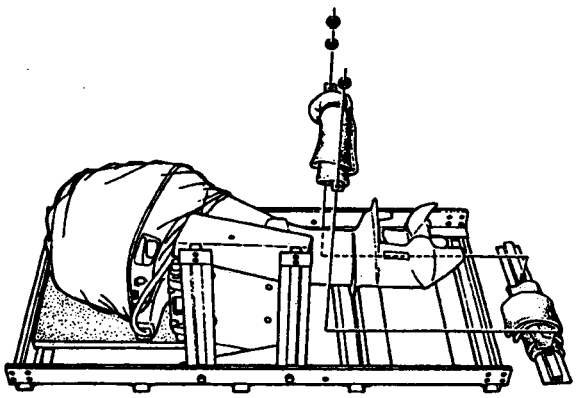
UNPACKING

1. Remove/discard the nineteen 6 x 16 mm bolts and one 8 x 20 mm bolt which attach the crate frame to the crate base.

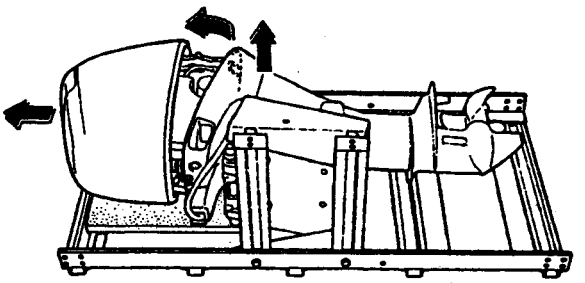
   To avoid scratching the motor, do not attempt to lift the upper crate frame alone. Get at least one other person to assist you.



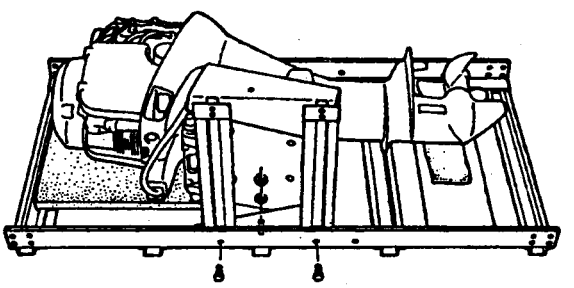
2. Remove the two 8 mm nuts and one washer from the extension housing support band. Remove the band and extension housing support. Remove and save the pads which will be used in step 5.



3. Remove the plastic bag covering the engine cover.
4. Release the hood latch. Have an assistant lift and pivot the motor slightly on its swivel case. Remove the engine cover.



5. Position the pads, removed in step 2, under the gear case and propeller area.
6. Remove the two 6 x 16 mm bolts and one 8 mm nut and flat washer which attaches the stern bracket support to the crate base.



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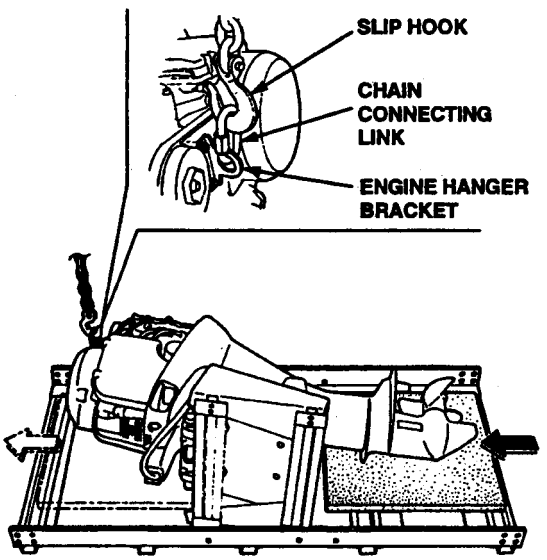
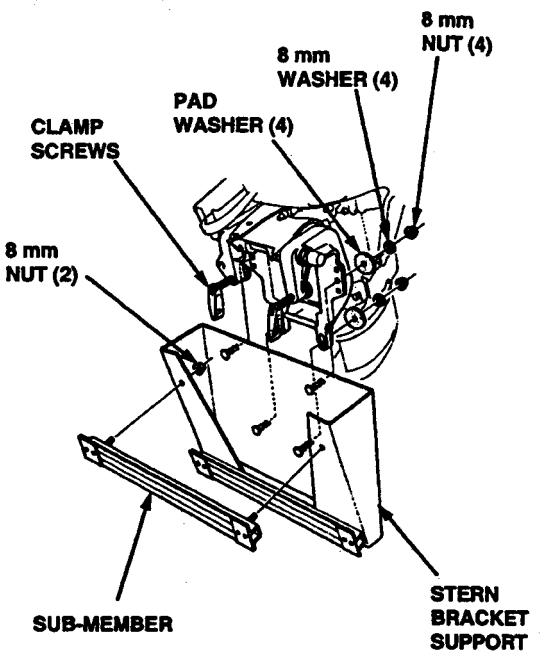
7. Install a chain connecting link or equivalent, with a minimum lift capacity of 500 lbs. (227 kg), to the engine hanger bracket. A slip hook should not be connected directly to the engine hanger bracket due to insufficient clearance between the engine hanger bracket and the recoil starter or flywheel cover.
   Use a hoist with a minimum lift capacity of 500 lbs. (227 kg). Slowly lift the motor just enough so the foam pad can be removed and transferred to the gear case area. Slowly lift the motor making sure the gear case does not contact the crate base.



8. Remove the two 8 mm nuts from the sub-member and remove the sub-member. Loosen the clamp screws. Remove the four 8 mm nuts, washers, and pad washers from the stern bracket support. Remove the stern bracket support.



SPECIFICATIONS

ENGINE

Model	BF40A	BF50A
Type	4-stroke, O.H.C., 3-cylinder	
Displacement	808 cm³ (49.4 cu. in.)	
Bore x stroke	70 x 70 mm (2.8 x 2.8 in)	
Rated horsepower	29.8 kW (40 PS) at 5,000–6,000 rpm	37.3 kW (50 PS) at 5,500–6,000 rpm
Maximum torque	60 N•m (6.05 kg-m, 43.8 lb-ft) at 3,500 rpm	65 N•m (6.5 kg-m, 47.1 lb-ft) at 4,500 rpm
Compression ratio	9.2 : 1	
Fuel consumption	276 g (9.74 oz.) / kWh	265 g (9.35 oz.) / kWh
Cooling system	Forced water circulation by impeller pump with thermostat	
Ignition system	CDI	
Ignition timing	5—28° B.T.D.C.	5—32° B.T.D.C.
Spark plug	DR7ES (NGK), X22ESR-U (DENSO)	
Carburetor	Horizontal butterfly valve-type triple carburetor	
Lubricating system	Pressure lubrication by trochoid pump	
Oil capacity	2.2 liter (2.32 US qt) at oil change 2.4 liter (2.54 US qt) with oil filter replacement	
Recommended oil	SAE5W-30, API Service classification SG, SH, SJ	
Starting system	Electric starter	
Battery system	494 MCA minimum (engine operations only)	
Stopping system	Ignition primary circuit ground	
Fuel used	Automotive unleaded gasoline (minimum 86 pump octane)	
Fuel tank capacity	25 liters (6.6 US gal)	
Fuel pump	Mechanical plunger type	
Exhaust system	Thru-hub type	

LOWER UNIT

Model		BF40A	BF50A
Clutch		Dog clutch (forward-neutral-reverse)	
Gear ratio		2.09:1 (33/26 x 23/14)	
Reduction type		Spiral bevel gear	
Gear case oil capacity		0.52 liters (0.550 US qt)	
Recommended gear case oil		API Service classification GL4 or GL5	
Propeller			
	Rotating direction	Clockwise (viewed from rear)	
	Driving system	Spline	

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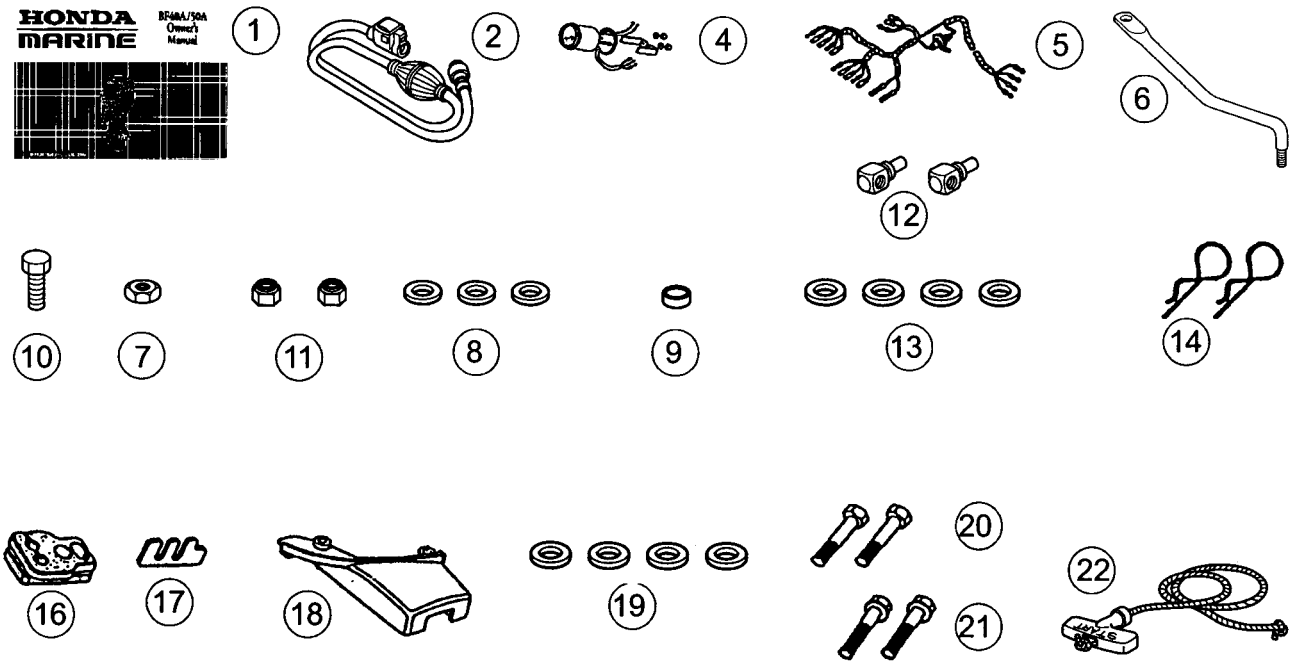
PARTS LISTING



REF. NO.	DESCRIPTION	BF40A				BF50A					PART NO.
		LHA	LHTA	LRA	LRTA	LHTA	LRA	LRTA	SRJA	XRTA	
1	*Owner's Manual*	1	1	1	1	1	1	1	1	1	31ZW4607
2	Fuel tube assy.	1	1	1	1	1	1	1	1	1	17700-ZW9-010
4	Trim meter assy.		1		1	1		1			37260-ZV5-821
5	Wire harness "A"		1		1	1		1		1	32540-ZV5-910
6	Steering link arm			1	1		1	1	1	1	17853-ZV5-000
7	Stainless nut (3/8 x 24 UNF)			1	1		1	1	1	1	90302-ZV5-000
8	Stainless plain washers (10 mm)			3	3		3	3	3	3	90514-ZV4-000
9	Steering link arm collar			1	1		1	1	1	1	91560-ZV5-000
10	Stainless bolt (3/8 x 24 UNF)			1	1		1	1	1	1	90105-ZV5-000
11	Stainless nylon lock nuts (3/8 x 24 UNF)			2	2		2	2	2	2	90307-ZV5-003
12	Pivot shafts			2	2		2	2	2	2	24618-ZV5-000
13	Flat washers (6 mm)			4	4		4	4	4	4	90504-921-010
14	Lock pin (6 mm) (large loop, motor side)			2	2		2	2	2	2	90765-ZV5-000
16	Grommet			1	1		1	1	1	1	40105-ZV5-000
17	Remote control cable plate			1	1		1	1	1	1	17877-ZV5-000
18	Separate top cover			1	1		1	1	1	1	40151-ZV5-000ZA
19	Stainless plain washers (6 mm)			4	4		4	4	4	4	90506-ZV4-000
20	Stainless bolts (6 x 40 mm)			2	2		2	2	2	2	90120-ZV4-000
21	Self-tapping bolts (6 x 28 mm)			2	2		2	2	2	2	90015-ZV0-000
22	Emergency starter rope	1	1	1	1	1	1	1	1	1	28470-816-000

INSTALLATION HEIGHT RECOMMENDATIONS

Shaft Length	Outboard Transom Height	Workable Boat Transom Height
L type	521 mm (20.5 in)	483 ~ 521 mm (19.0 ~ 20.5 in)
X type	622 mm (24.5 in)	584 ~ 622 mm (23.0 ~ 24.5 in)

TRANSOM DRILLING

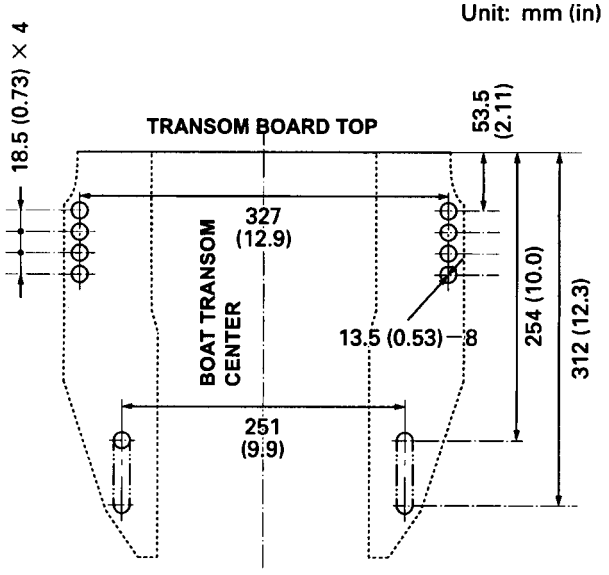
See also "USING THE TRANSOM MOUNT DRILL FIXTURE" on page 1-23.

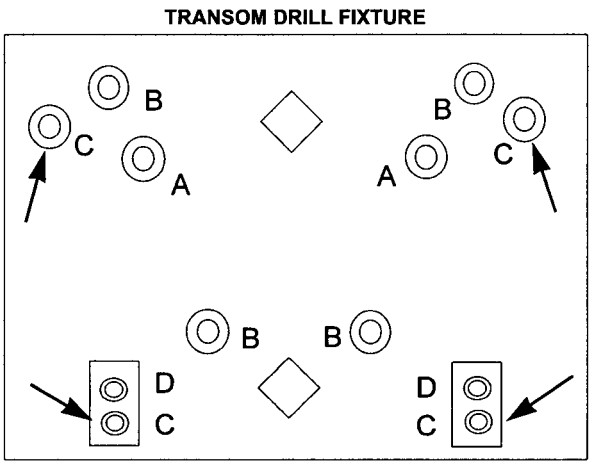
Description	Part No.
Transom Mount Drill Fixture	07MPZ-ZV3010C

The BF40A and BF50A outboards motors are designed to be installed on a boat transom with the following transom board thickness:

Boat Transom Board Thickness
35 ~ 57 mm (1.3 ~ 2.2 in)

1. Set the outboard motor onto the boat transom and verify the installation height is correct.



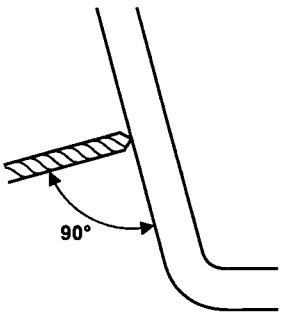


Use the upper and lower "C" holes.

2. Mark four center marks for the bolt holes on the transom board (two marks on either side of the outboard motor installation lines).

   The upper bolt holes should be more than 33 mm (1.3 in) from the top of the transom.

   The lower bolt holes should allow the mounting bolts to contact the upper end of the stern bracket.

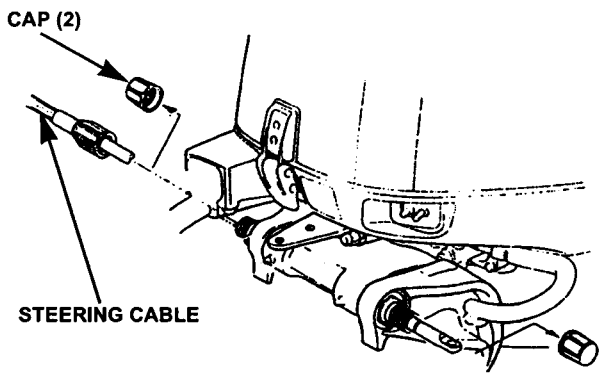


3. Drill four holes with a 17/32 drill bit.

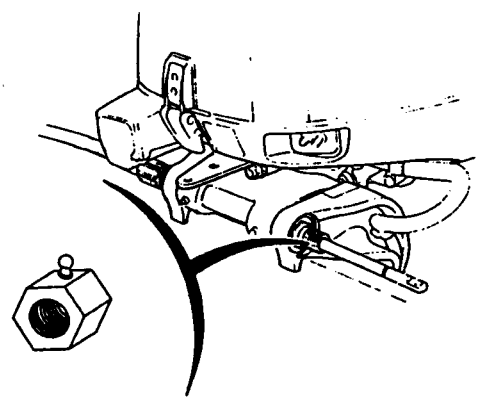
STEERING CONNECTIONS

Do this before final placement of the motor on the transom.

Refer to the steering cable manufacturer's manual for cable handling procedures.



1. Remove the left and right caps from the steering/tilt tube.
2. Apply marine grease to the steering cable and install the steering cable through the steering/tilt tube. Do this before final placement of the motor on the transom.
3. Position the motor on the center line. Line up the drilled holes in the transom with the holes in the stern bracket.
4. Hand tighten the steering cable nut at this time.



5. Install the sealed cap on the steering/tilt tube. Below is a list of two optional steering tube seals which are available and include a grease fitting.

Description	Part No.
Stainless steel	50899-ZV5-020AH
Anodized aluminum	50899-ZV5-000AH

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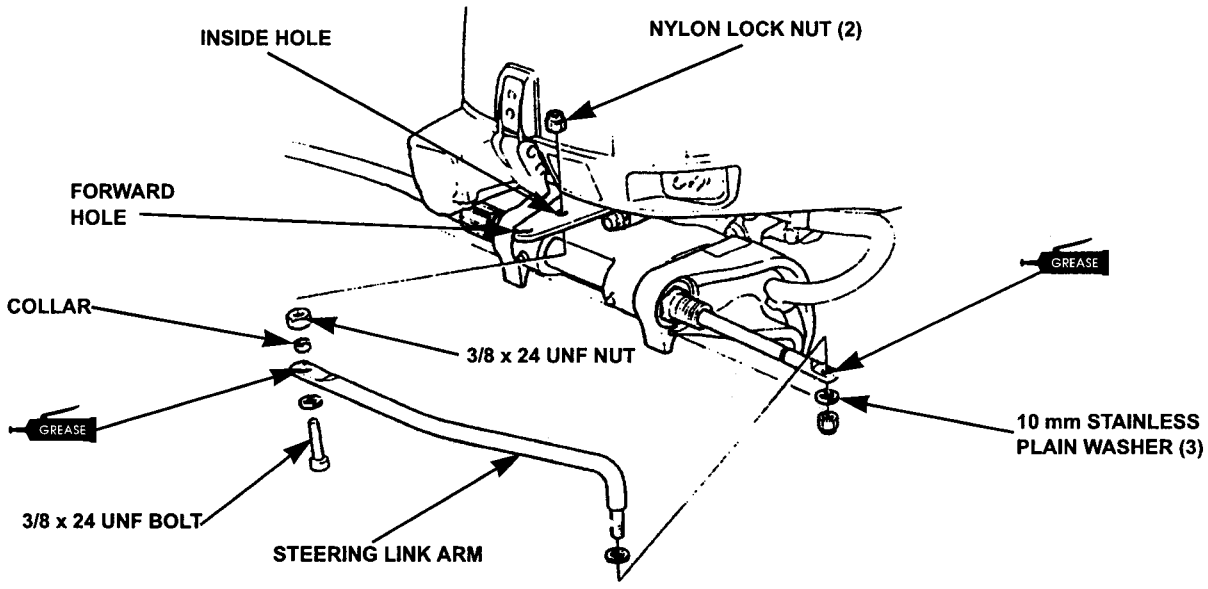
STEERING LINK ARM INSTALLATION

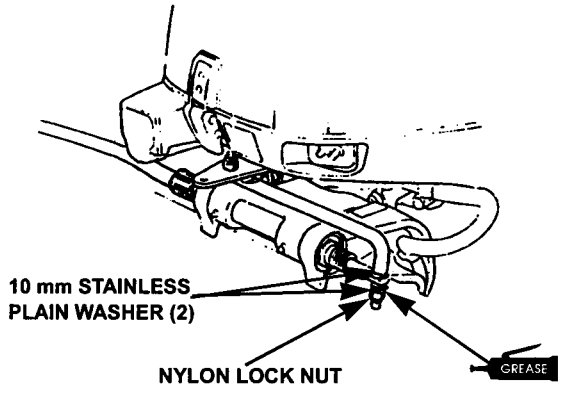


If the steering cable enters the tilt/steering tube from the port side, use the forward hole. Otherwise, do not mount anything in the forward hole of the steering plate. This hole is usually used for dual motor installations.

1. Install the steering link arm into the inside hole of the steering plate using the bolt, washer, nuts and collar as shown. Lightly seat the inner nut against the collar, then thread the bolt into the steering plate and tighten securely. Hold the bolt and tighten the nylon lock nut.

   TORQUE:

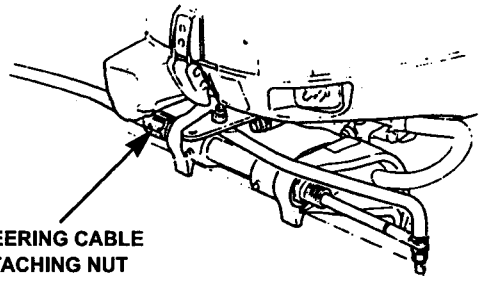
   Nylon lock nut: 27.1 N•m (20 ft-lb)



2. Turn the steering wheel to extend the steering cable out of the steering/tilt tube. Install the steering link arm into the steering cable end using the washers and lock nut as shown.

3. Turn steering wheel to retract steering cable into the steering/tilt tube. Tighten the lock nut, then loosen the lock nut 1/8 turn.

   TORQUE: 8–11 N•m (7–8 ft-lb)



4. Tighten the steering cable attaching nut until the steering cable end play is removed.

   TORQUE: 14 N•m (10 ft-lb)

   After steering cable nut is tightened, there should be no end play between outer steering cable and steering tilt/tube.

   For further information regarding steering cable, refer to the boat manufacturer's operation manual.

5. Directly after completing the steering link arm and steering cable installation, verify the following:

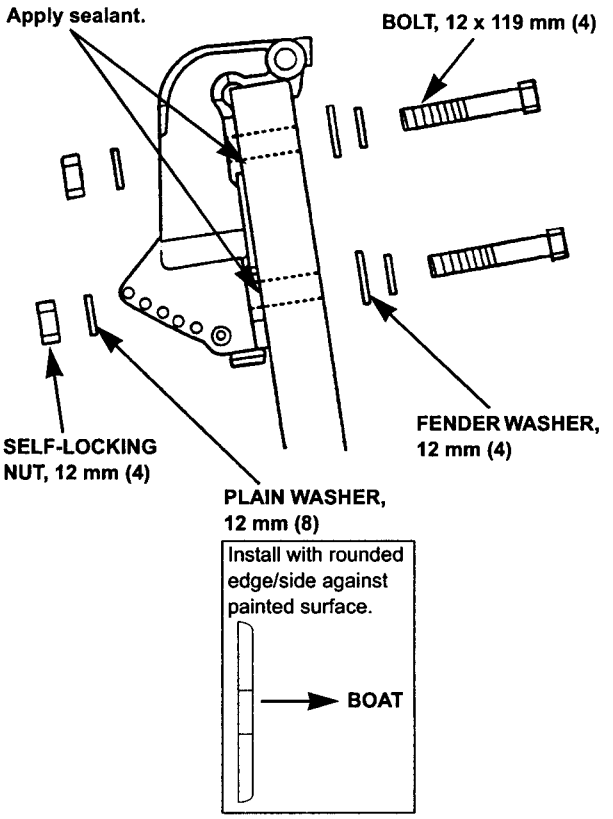
   - Motor turns the proper direction when the steering wheel is turned right and left. If the steering is reversed, correct at the steering box.

- Motor steering angle is equal when steering wheel is turned full right and full left. If the motor steering angles are not equal:
  - Major corrections can be made at the steering box (refer to the steering box or steering cable manufacturer's instructions).
  - Minor corrections can be made by moving the steering/tilt tube laterally (refer to the *BF40A/BF50A Shop Manual*).

Make the steering angles equal as necessary.

- The steering cable and/or steering link arm must not come in contact with any part of the boat when the steering wheel is turned full right and full left and at all tilt angles. Correct as necessary and check again.

BOLTING MOTOR TO TRANSOM



Apply marine hull sealant to the mounting holes and hardware. Use Hondabond HT (P/N 08718-0001) or equivalent silicone sealant for below waterline use.

With the motor in place against the transom, verify correct motor height. Motor can be raised by using a lower set of mounting holes.

Attach the motor with marine grade hardware. Use washers under all bolts and nuts. Use additional fender washers against the transom. Use support plates as recommended by the hull manufacturer.

Apply a small amount of oil or grease to all bolt threads prior to installation.

Be sure at least one thread of the bolt is visible beyond the nut when the fasteners are tightened.

NOTICE

Do not use an air impact tool to tighten or loosen the transom bolts. Using an air impact tool to tighten or loosen the transom bolts can generate enough heat to damage the bolt threads. The air impact tool can also produce enough tightening torque to damage the boat transom.

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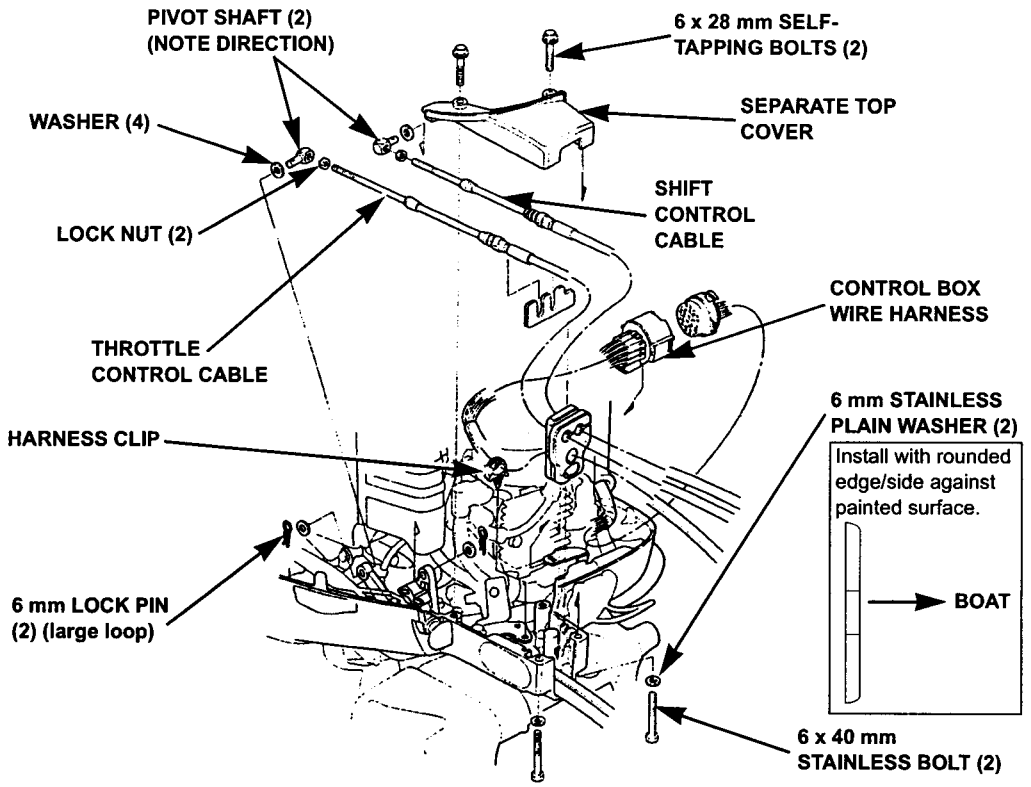
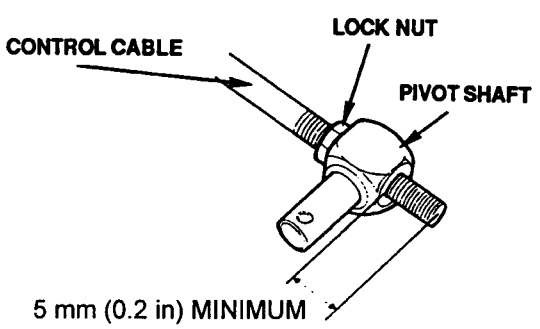
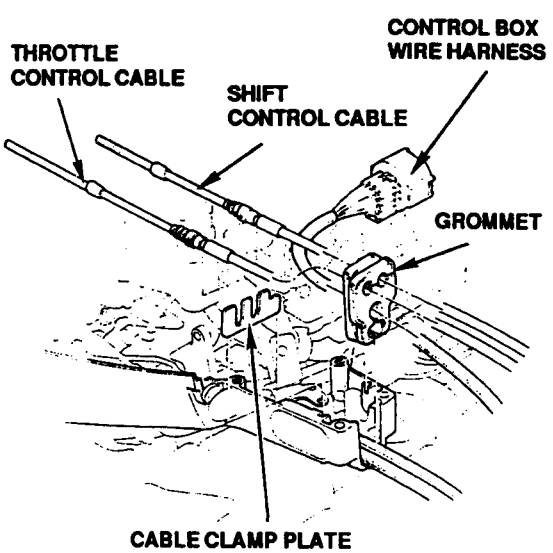
REMOTE CONTROL CABLE INSTALLATION



1. Connect the control cables to the outboard motor with the remote control lever in the neutral position and the choke/fast idle lever in the lowest (idle) position.
2. Pass the control box wire harness and control cables through the grommet as shown.

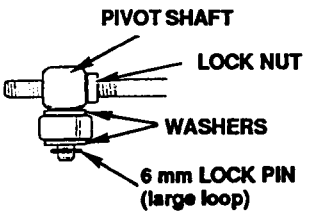


3. Screw the pivot shafts onto the threaded portions of the throttle and shift cables as shown.

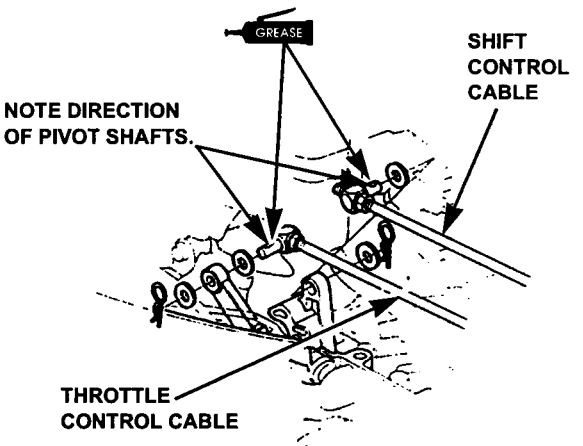


4. Attach the cable clamp plate to both control cables by aligning the grooves in the cables with grooves in the cable clamp plate. Then install them into the engine undercase.
5. Verify that the shift arm on the outboard motor is in the neutral position, and that the control lever at the remote control box is in the neutral position.

6. Apply marine grease to the pins of the pivot shaft.

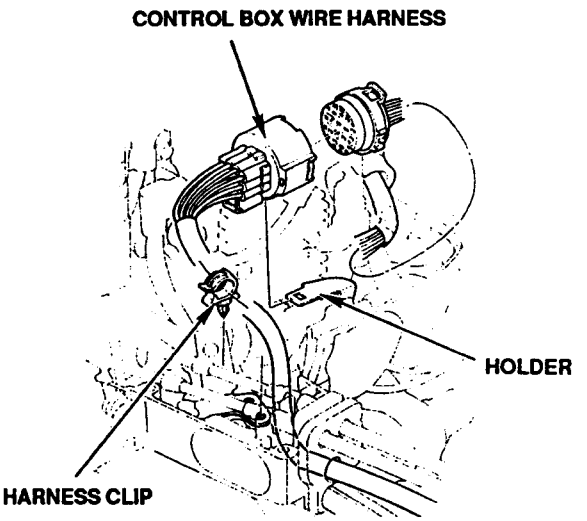


7. Connect the control cables to the shift arm and throttle arm using the 6 mm washers and lock pins as shown. *Use the 6 mm washers on both sides of the arm as shown.* Tighten the lock nuts securely.

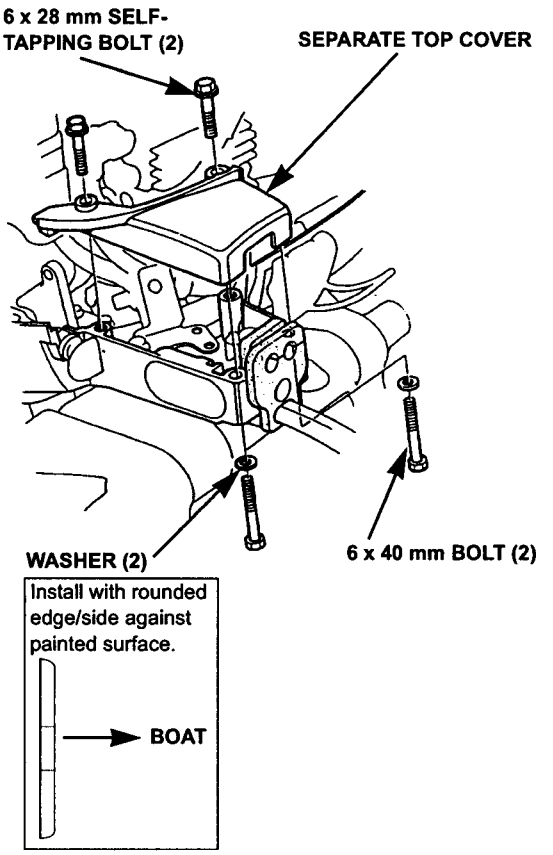


If the holes in the shift arm and pivot shaft do not align, adjust by turning the pivot shaft in or out as necessary.

8. Connect the control box wire harness to the outboard motor wire harness and attach the connector to the holder.



9. Secure the main engine wire harness with the harness clip.



10. Install the separate top cover and tighten the bolts securely.

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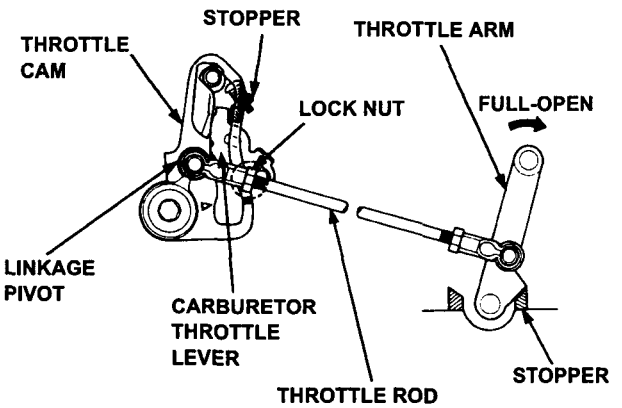
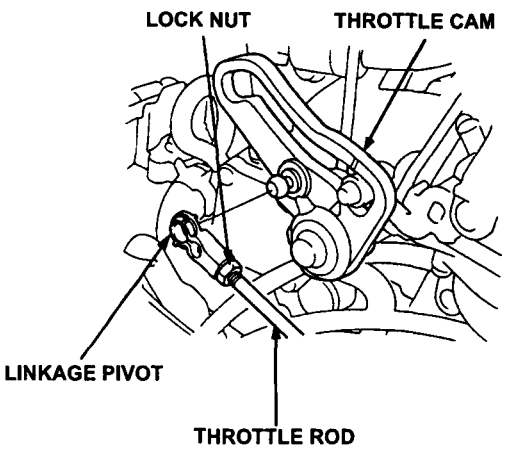
CONTROL CABLE LENGTH ADJUSTMENT

THROTTLE CONTROL CABLE

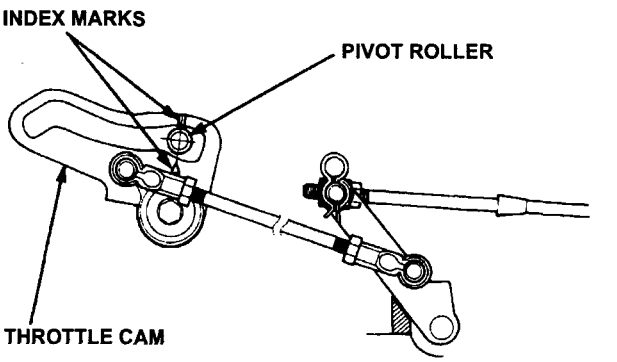
1. Put the remote control lever in the neutral position.
2. Disconnect the throttle control cable from the throttle arm.



3. Move the throttle arm to the fully-open position until it touches the stopper, and verify that the carburetor throttle lever touches the stopper in the fully-open position.
4. If not, loosen the lock nut, disconnect the throttle rod from the throttle cam, and adjust the throttle rod length by turning the linkage pivot.



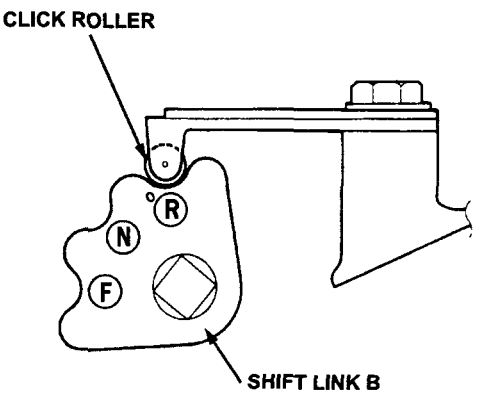
5. After the adjustment, connect the throttle rod to the throttle cam and tighten the lock nut securely.
6. Reconnect the throttle control cable to the throttle arm.



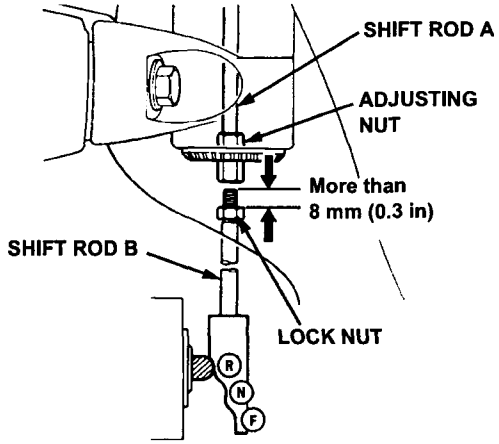
7. Verify that the center of the pivot roller aligns with the index marks on the throttle cam.
8. If not, loosen the throttle control cable lock nut, disconnect the throttle control cable and turn the pivot shaft until adjustment is correct.
9. After the adjustment, reconnect the throttle control cable and tighten the lock nut securely.
10. Move the remote control lever and verify the following:
    - The control lever moves smoothly into all positions.
    - The carburetor throttle lever moves smoothly without binding from the fully-opened to the fully-closed position.

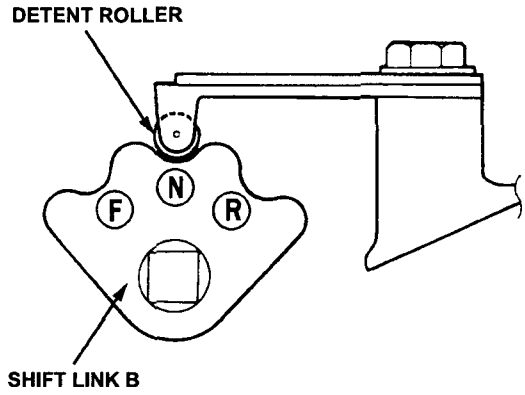
SHIFT CONTROL CABLE

1. Move the remote control lever to the reverse position.
2. Disconnect the shift control cable from the shift arm.



3. Verify the click roller is in the center of the groove on the shift link B at the (R) mark.





4. If not, loosen the lock nut and adjusting nut connecting shift rod A to shift rod B.
5. Disconnect shift rod A from shift rod B by backing off the adjusting nut. Back off the adjusting nut until it is approximately 3 mm above the top of shift rod B.
6. Turn the lock nut on shift rod B to obtain 0.3 inch (8 mm) between the lock nut and the top of shift rod B as shown.
7. Thread the adjusting nut onto shift rod B until the adjusting nut comes in contact with the lock nut. When the adjusting nut contacts the lock nut, tighten the lock nut and adjusting nut together.
8. Reconnect the shift control cable to the shift arm.
9. Put the remote control lever in the neutral position.
10. Verify the detent roller sits in the N groove of the shift link B.
11. If not, loosen the shift control cable lock nut, disconnect the shift control cable and turn the pivot shaft until the adjustment is correct.
12. After the adjustment, reconnect the shift control cable and tighten the lock nut securely.
13. Verify the remote control lever moves smoothly into all positions.

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TRIM METER CONNECTIONS

IMPORTANT NOTE TO INSTALLER

The following illlustrations show 2 versions of the Japan supplied Harness A (9100 and 9110) for trim meter connections. The U.S.A. sourced gauge sets use brand specific gauge harnesses and the connections are not shown. The wire colors and harness configurations are identical to Harness A P/N 32540-ZV5-9100 so the Voltage Conversion Module (VCM) connections are identical.

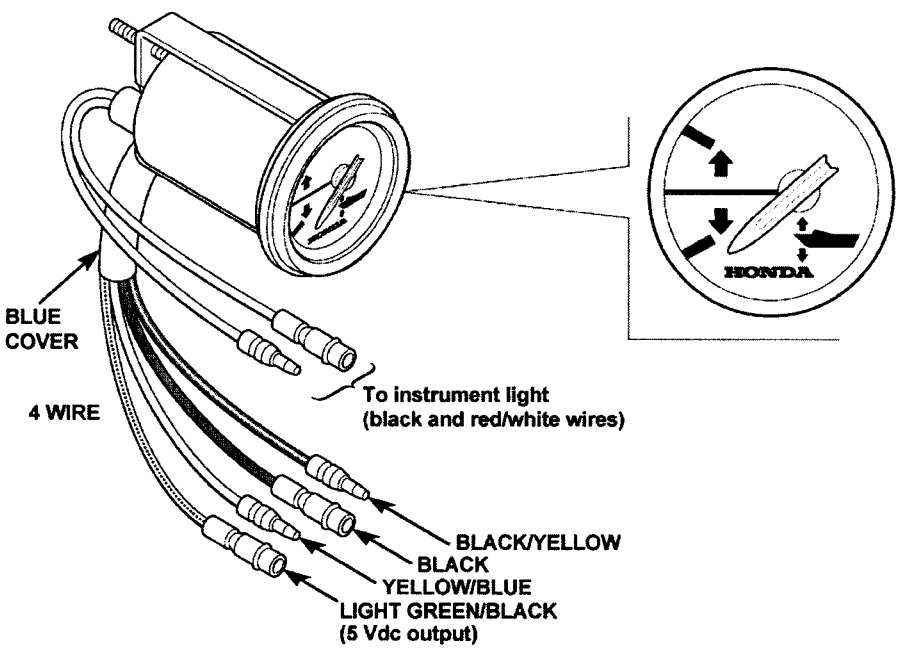
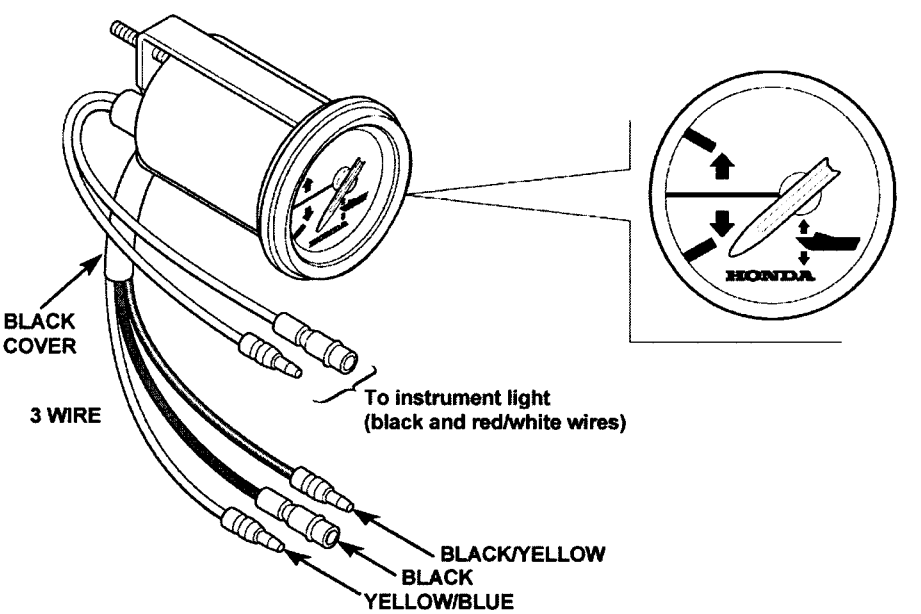
The key switch panel shown on page 5-20 and page 5-22 is the Japan supplied key switch panel. Other U.S.A. sourced key switch panels, not shown, are used in the U.S.A. market. Wire colors and configuration is identical to the key switch panel shown so the VCM connections are identical.

TRIM METER OPERATION

The trim control unit, located on the engine, and the throttle switch, located in the remote control, were removed to eliminate the intermittent overtrim buzzer sound on the BF40A3 • BF50A3 (2003 models). This is outlined in the *BF40A • BF50A Shop Manual Supplement* P/N 61ZV300V. The 12 Vdc to 5 Vdc trim control unit voltage converter function was moved to the Honda 4 wire trim meter. One of these trim meters is shipped with each BF40A3 • BF50A3 trim/tilt model outboard.

Connections for a standard BF40A3 • BF50A3 trim meter configuration are shown on page 5-36.

Accessory trim meters will not work on these engines unless a 12 Vdc to 5 Vdc Voltage Conversion Module (VCM) P/N 34310-ZV5-010AH is added to the circuit.

Model	Trim Meter
BF40A3 • BF50A3 (5 Vdc output from the trim meter light green and black wire)	
PRE BF40A3 • BF50A3 (No 5 Vdc output from trim meter) This also applies to accessory trim meters found in 5 gauge sets and sold separately.	

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COMBINATION TABLE (most common)

Side Mount Remote Control		Combinations (shown on following pages)		Parts				Requires optional wire (in)	Requires control box bypass wire (in)	No trim meter 5 Vdc output	Voltage Conversion Module (VCM)		
						Shipped with BF40A3 BF50A3					Location		
4 wire	5 wire			Description	Part Number	Yes	No				Harness A	Main Harness	Not Needed
		1		Key switch panel	32340-ZW1-V02		•						
				Harness A (5 wire)	32540-ZV5-911	•		20					•
				Trim meter (4 wire)	37260-ZW4-821	•							
			1a	Key switch panel	32340-ZW1-V02		•						
				Harness A (4 wire)	32540-ZV5-910		•						
				Trim meter (3 wire)	37260-ZV5-821		•			•		•	
				VCM	34310-ZV5-010AH		•						
		2		16 ft continuous main harness	Not available								
				Harness A (5 wire)	32540-ZV5-911	•			12				•
				Trim meter (4 wire)	37260-ZW4-821	•							
•			2a	16 ft continuous main harness	Not available								
				Harness A (5 wire)	32540-ZV5-911	•							
				Trim meter (3 wire)	37260-ZV5-821		•		12	•	•		
				VCM	34310-ZV5-010AH		•						
		3		3 main harness connectors	24800-ZW5-621		•						
				Harness A (5 wire)	32540-ZV5-911	•			12				•
				Trim meter (4 wire)	37260-ZW4-821	•							
			3a	3 main harness connectors	24800-ZW5-621		•						
				Harness A (5 wire)	32540-ZV5-911	•							
•				Trim meter (3 wire)	37260-ZV5-821		•		12	•	•		
				VCM	34310-ZV5-010AH								
			3b	3 main harness connectors	24800-ZW5-621		•						
				Harness A (4 wire)	32540-ZV5-910		•						
				Trim meter (3 wire)	37260-ZV5-821		•			•		•	
				VCM	34310-ZV5-010AH		•						
		4		Standard	24800-ZY3-000		•						
				Harness A (5 wire)	32540-ZV5-911	•							•
				Trim meter (4 wire)	37260-ZW4-821	•							
			4a	Standard	24800-ZY3-000		•						
				Harness A (5 wire)	32540-ZV5-911	•							
	•			Trim meter (3 wire)	37260-ZV5-821		•			•	•		
				VCM	34310-ZV5-010AH		•						
			4b	Standard	24800-ZY3-000		•						
				Harness A (4 wire)	32540-ZV5-910		•						
				Trim meter (3 wire)	37260-ZV5-821		•			•		•	
				VCM	34310-ZV5-010AH		•						

COMMON PROCEDURES

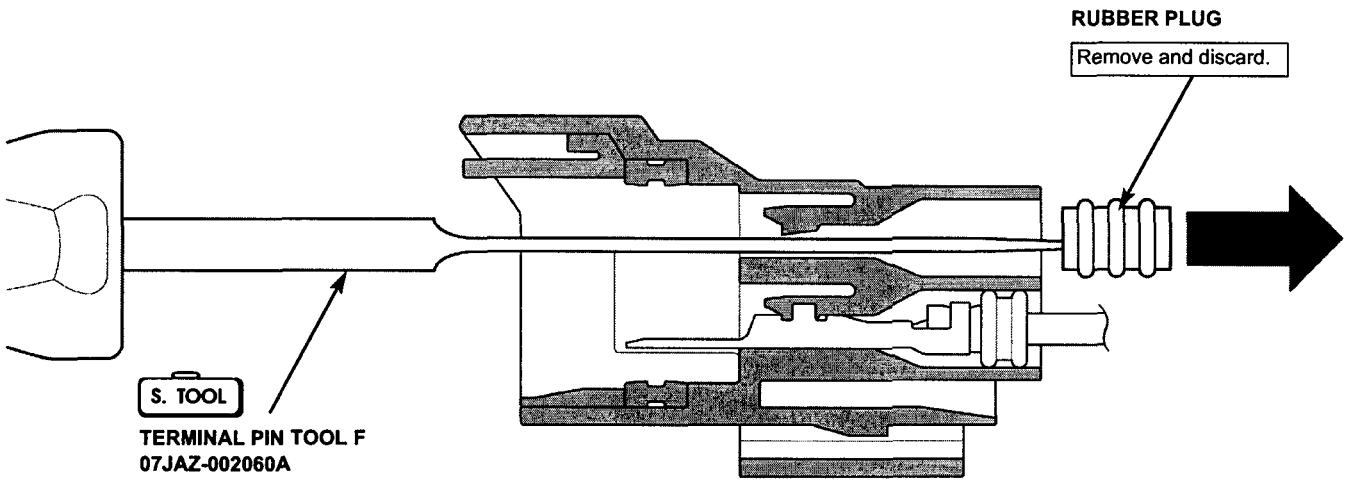
Always make sure all bullet connector boots are properly seated.

Four Wire Connector

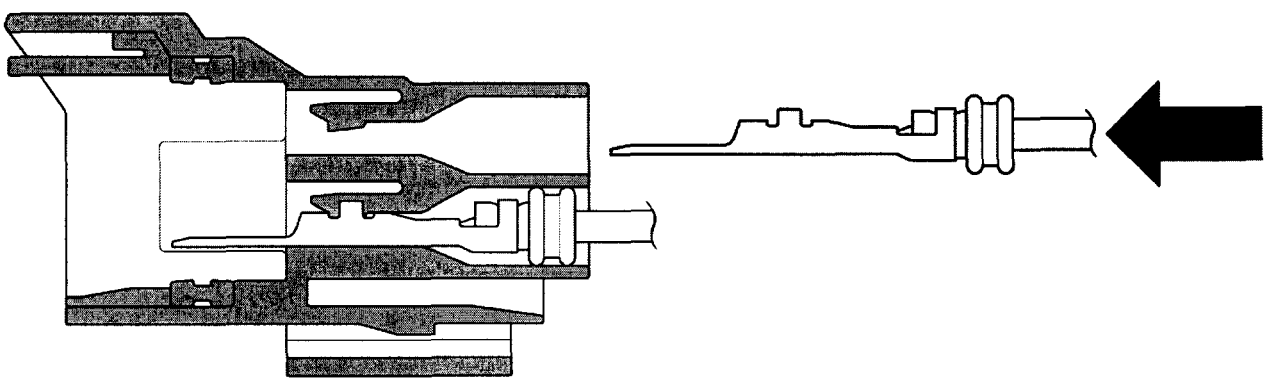
A four wire blue connector was used on all models prior to the BF40A3 • BF50A3 and a four wire black connector is used on all BF40A3 • BF50A3 models. Refer to page 5-20 for connector location.

Combinations 1, 1a, 3b

1. Use a small piece of safety wire or terminal pin tool F to remove the rubber plug.



2. Depending on the combination, insert the optional light green/black 20 inch wire or the VCM wire spade terminal into connector.



- Make sure the wire seal is pushed all the way into the connector.
- Lightly pull on the wire to make sure the terminal is locked in place.

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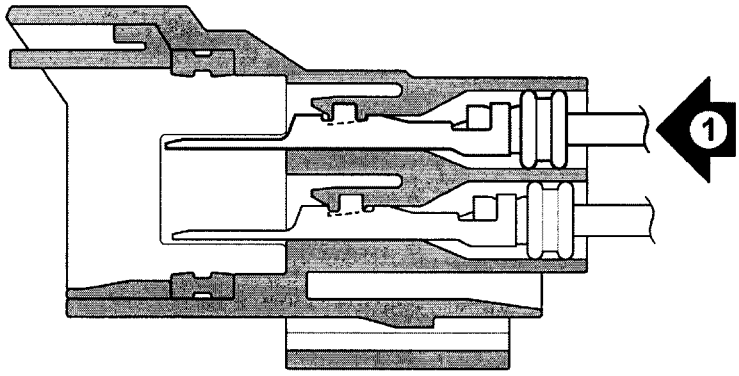
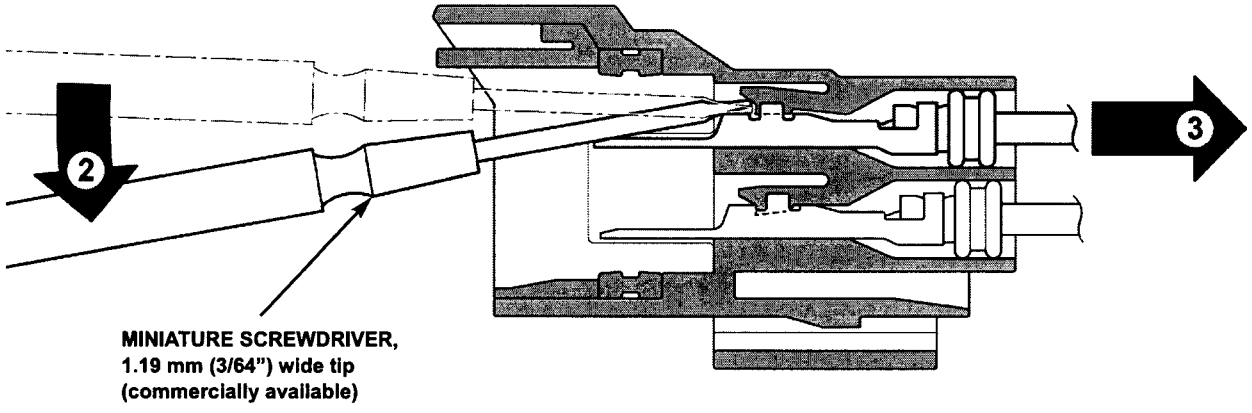
Combination 3b

1. Push the wire into the connector to relieve the tension on the primary lock.



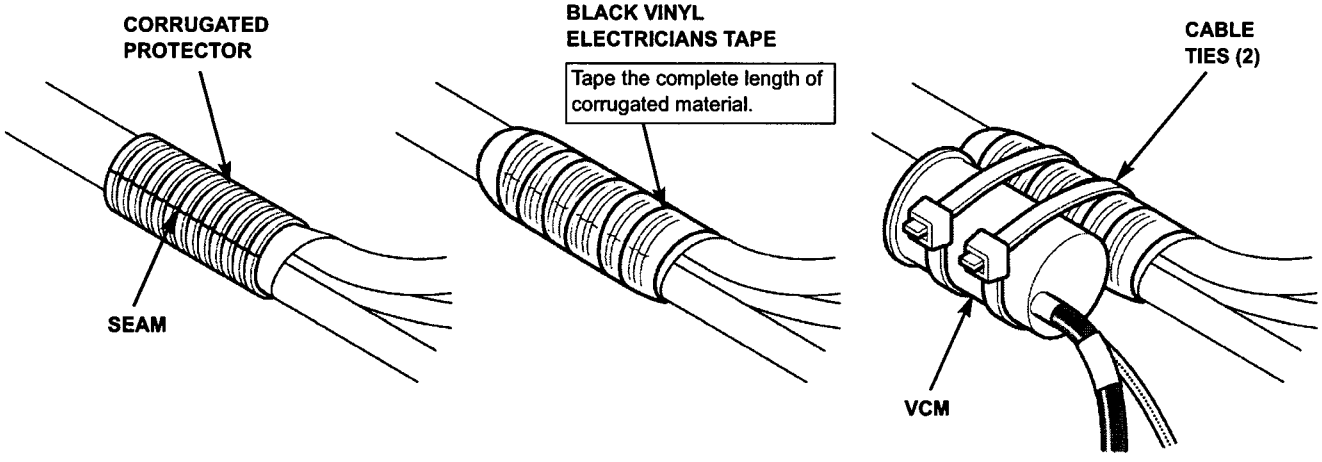
2. Insert the tool on top of the terminal and lift the primary lock up, then pull the terminal out of the connector.



Voltage Conversion Module (VCM)

Combinations 1a, 2a, 3a, 4a

Position a 2-1/2 inch piece of the corrugated protector between the VCM and harness A. Position seam as shown. Secure the corrugated protector to harness A with black vinyl electricians tape. Tape the complete length of the corrugated protector, then use cable ties to secure the VCM to harness A.



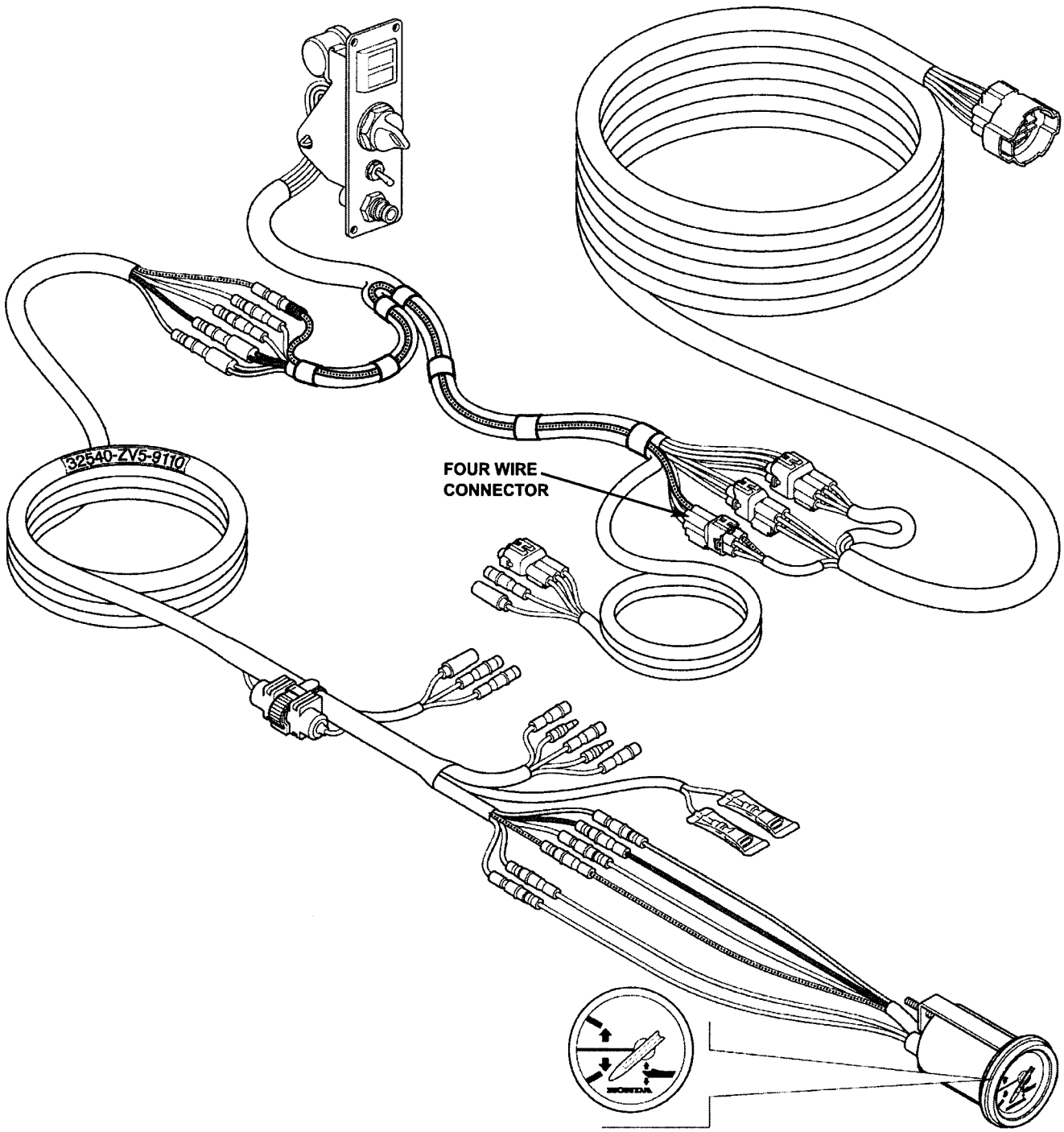
CONNECTIONS

Components illustrated uninstalled for clarity purposes.

Key Switch Panel

Combination 1

1. See page 5-18 to prepare the four wire blue male connector to accept the 20 inch optional wire.
2. Connect the color coded wires and refer to the circuit diagram on the following page as needed.



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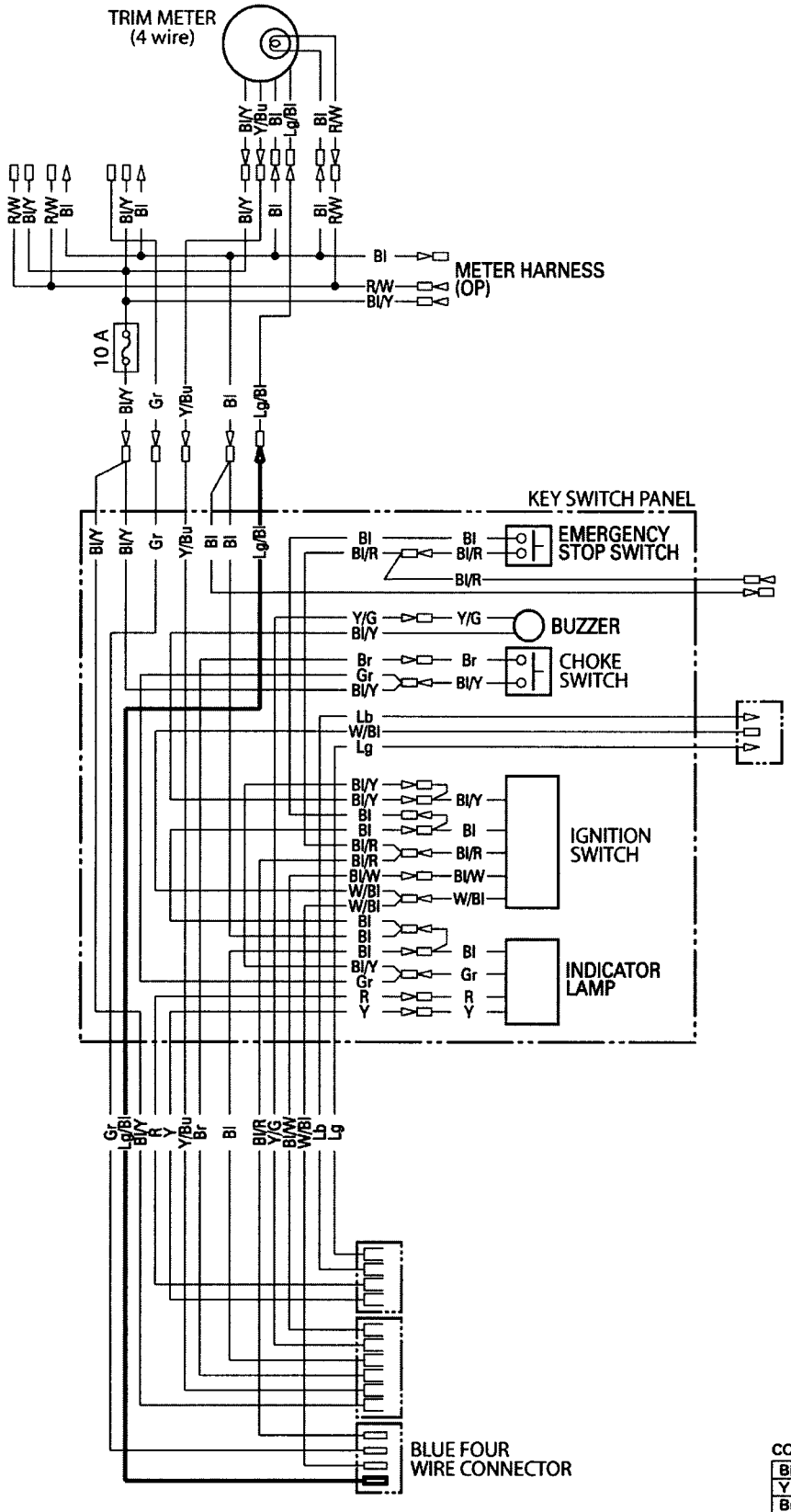
Combination 1

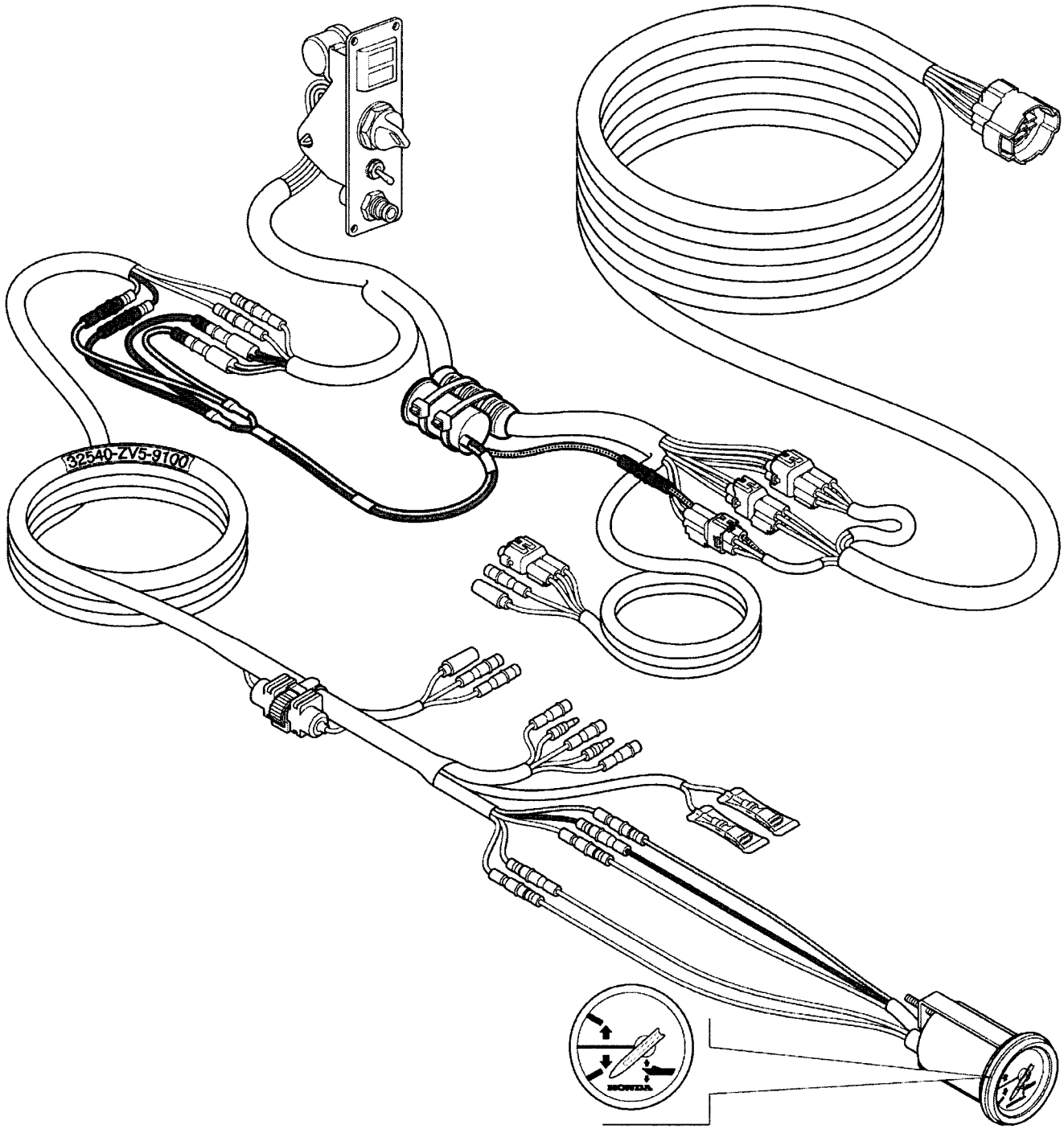


COLOR COMB : GROUND/MARKING

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

Combination 1a

1. See page 5-18 to prepare the four wire connector and how to secure the VCM.
2. Connect the color coded wires and refer to the circuit diagram on the following page as needed.



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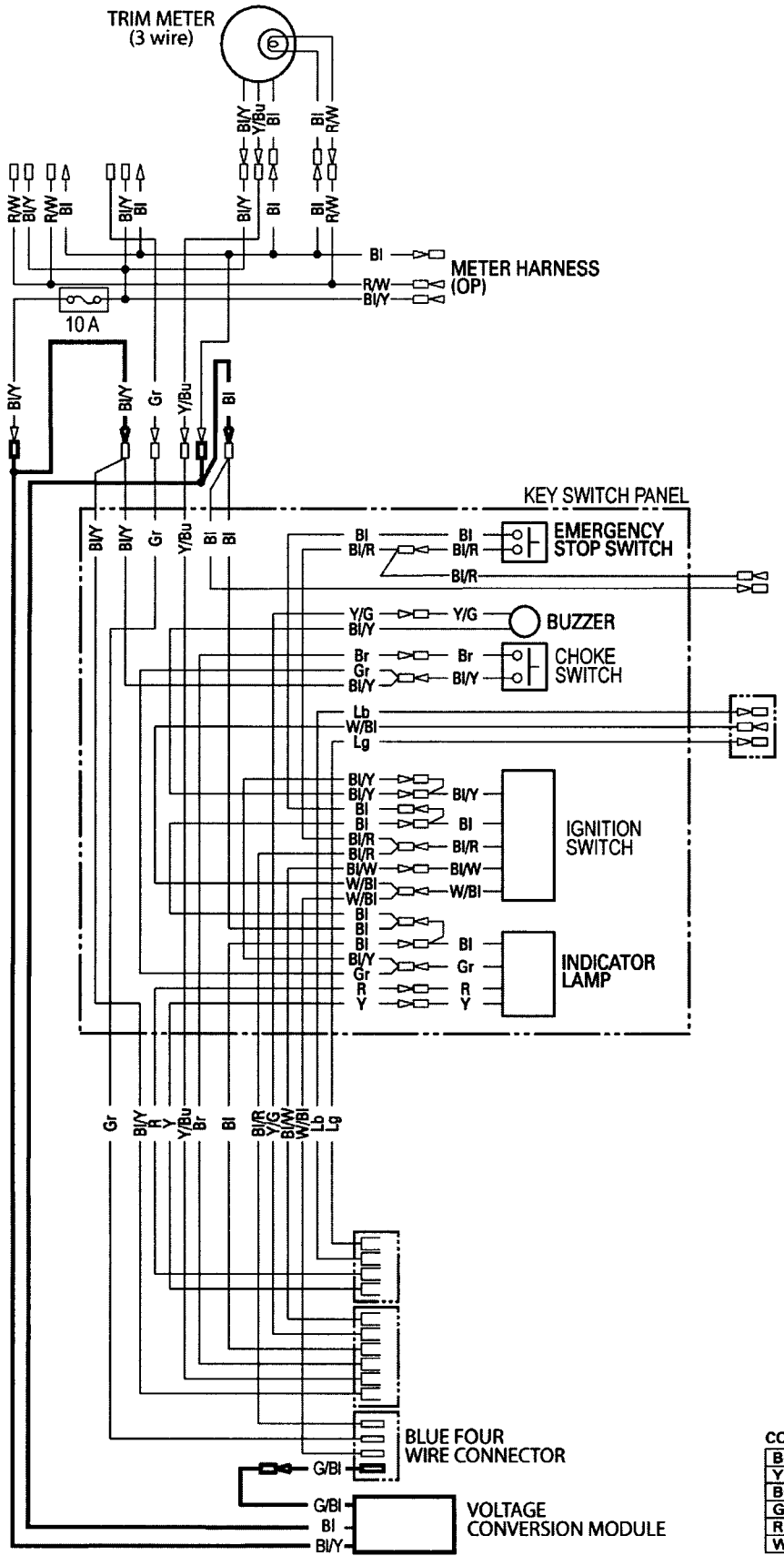
Combination 1a



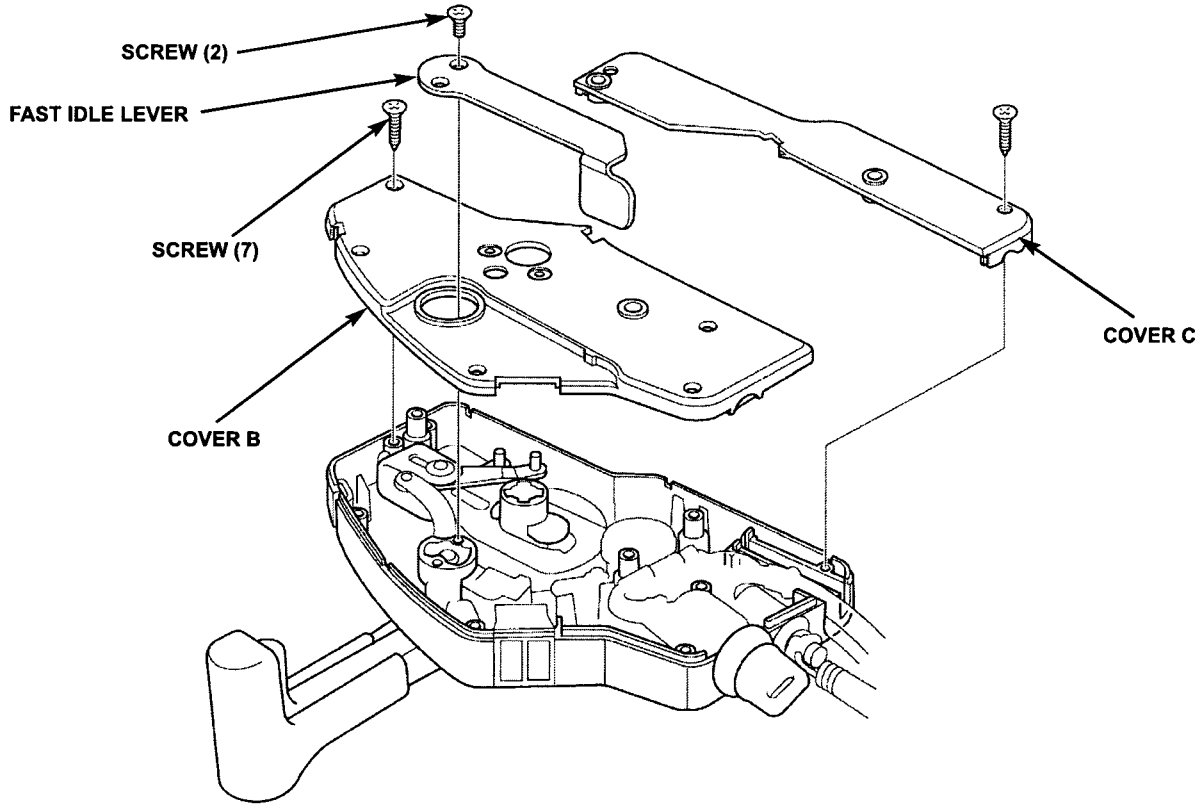
COLOR COMB : GROUND/MARKING

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

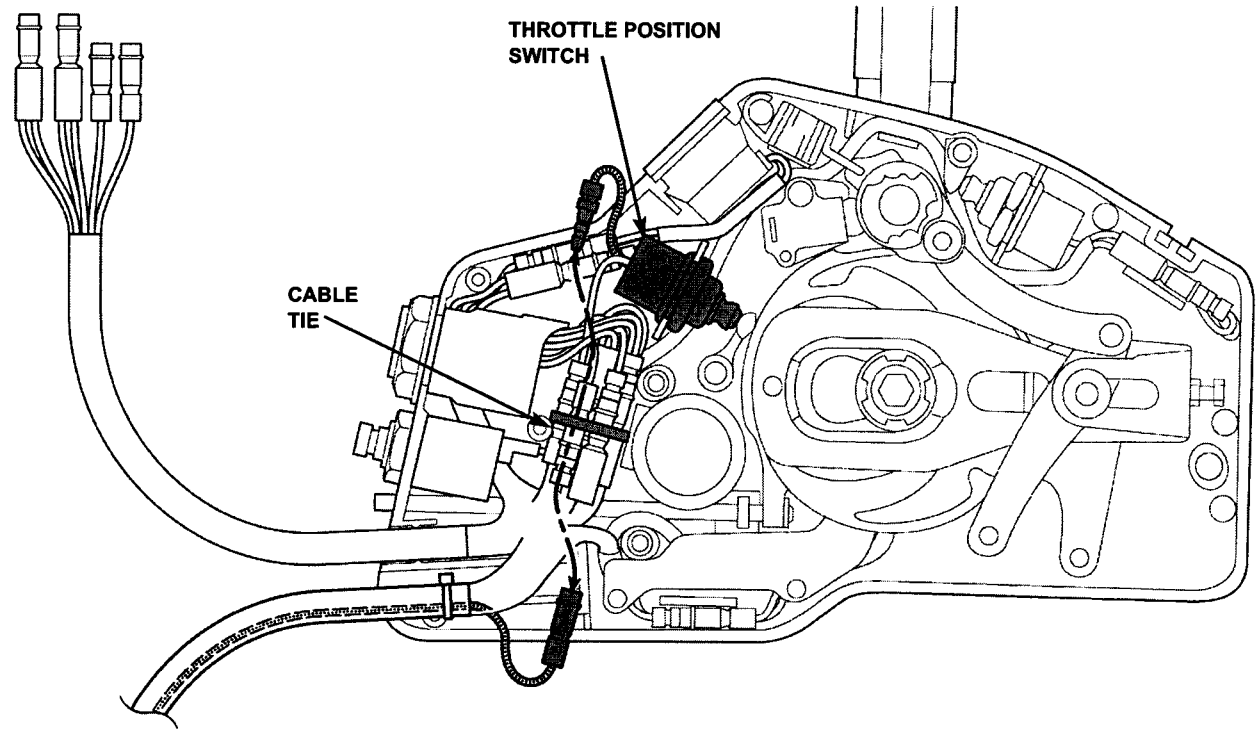
Side Mount Remote Control

Combination 2

1. Remove the remote control fast idle lever and both rear covers.



2. Disconnect the throttle position switch light green/black wire. It is not necessary to remove the cable tie. The throttle position switch is no longer needed.



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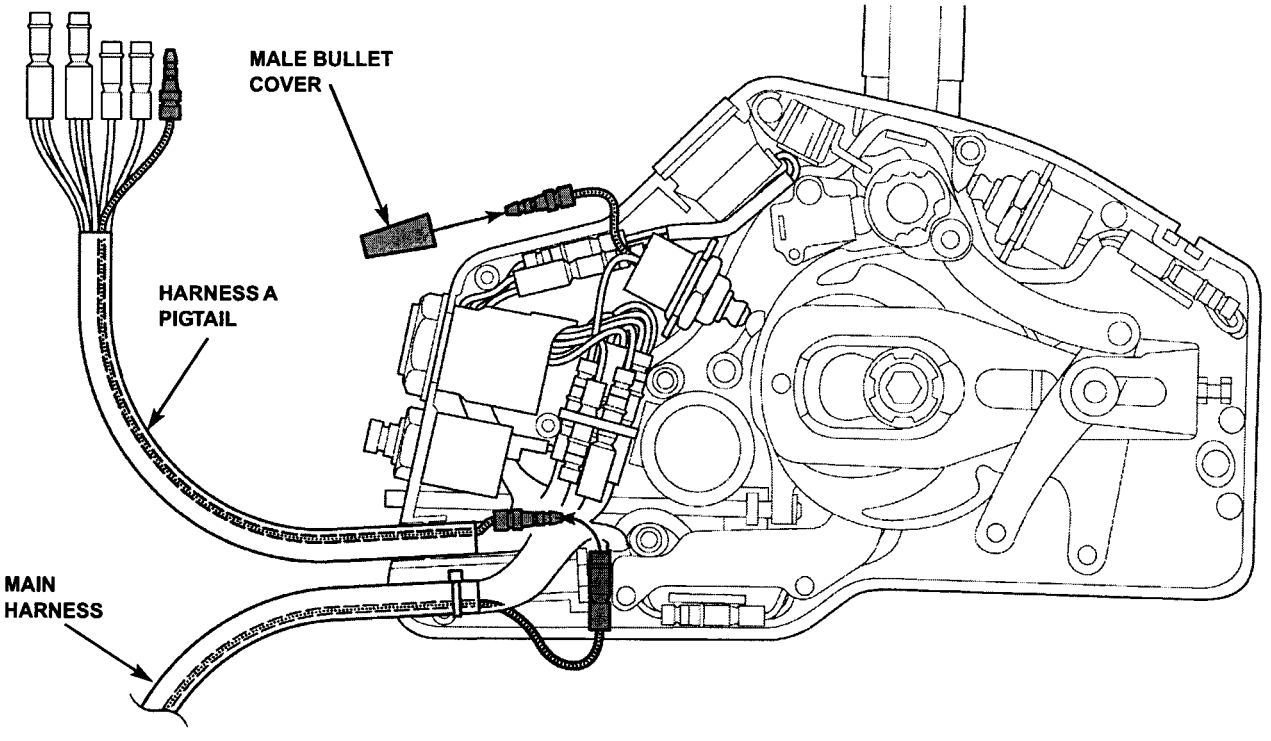
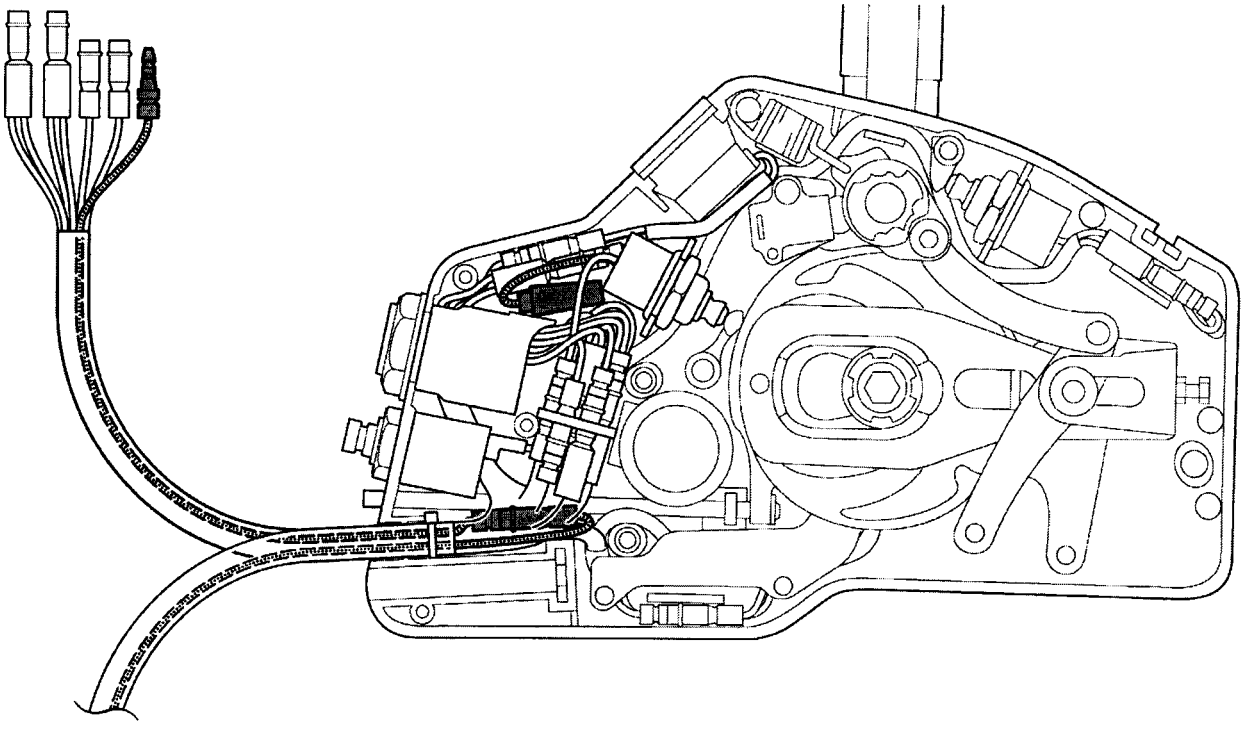
3. With a straw installed on a silicone lubricant can, spray a light film inside harness A pigtail. Also, spray a light film on the male bullet. Straighten harness A pigtail and starting from the remote control side, feed the 12 inch wire through harness A pigtail. Connect the wire inside the control box to the light green/ black wire coming from the main harness. Cover the male bullet with a leftover rubber cover from harness A.

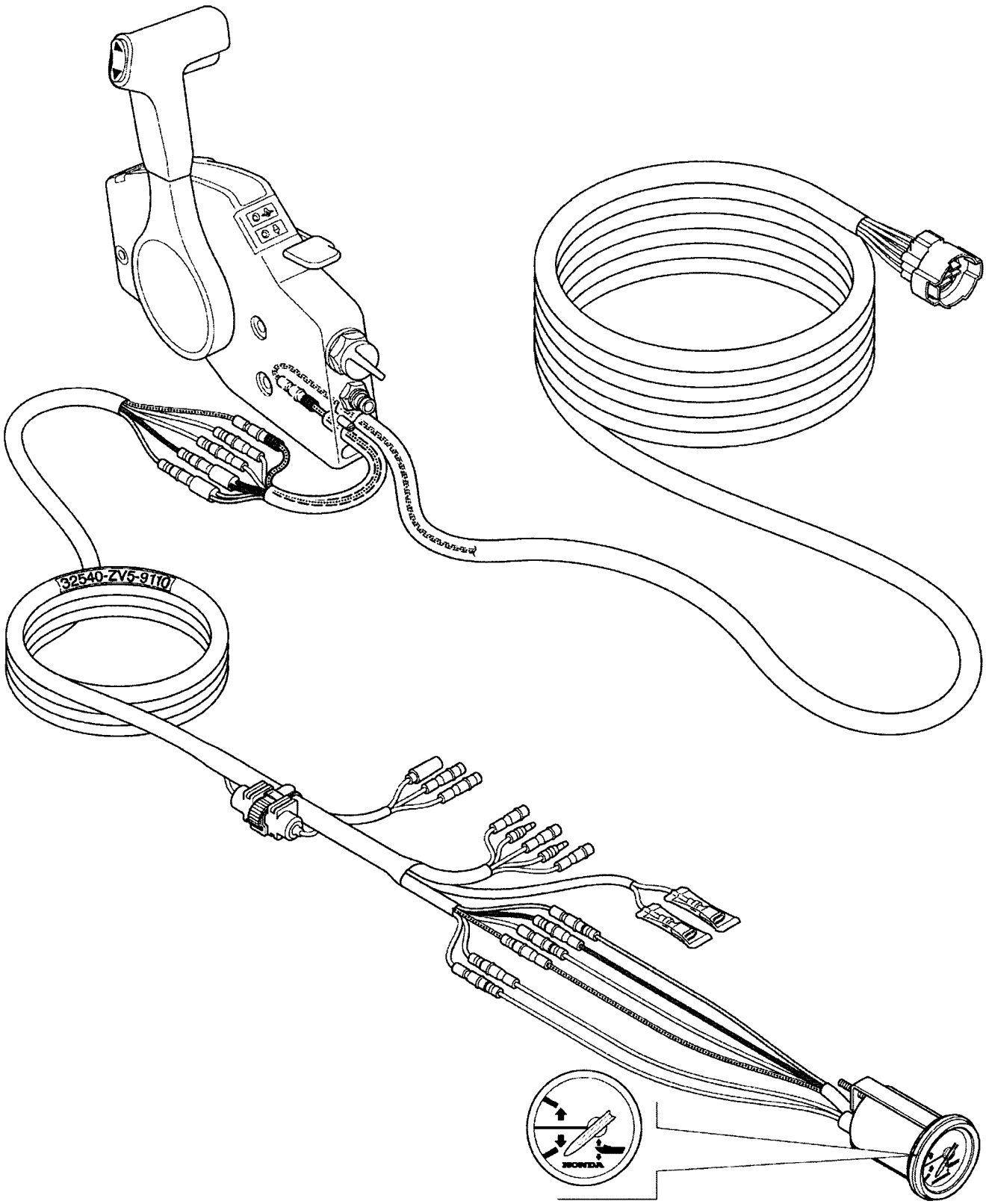


4. Position and secure wires inside the remote control as shown.



5. Install the remote control fast idle lever and covers.

6. Connect the color coded wires and refer to the circuit diagram on the following page as needed.



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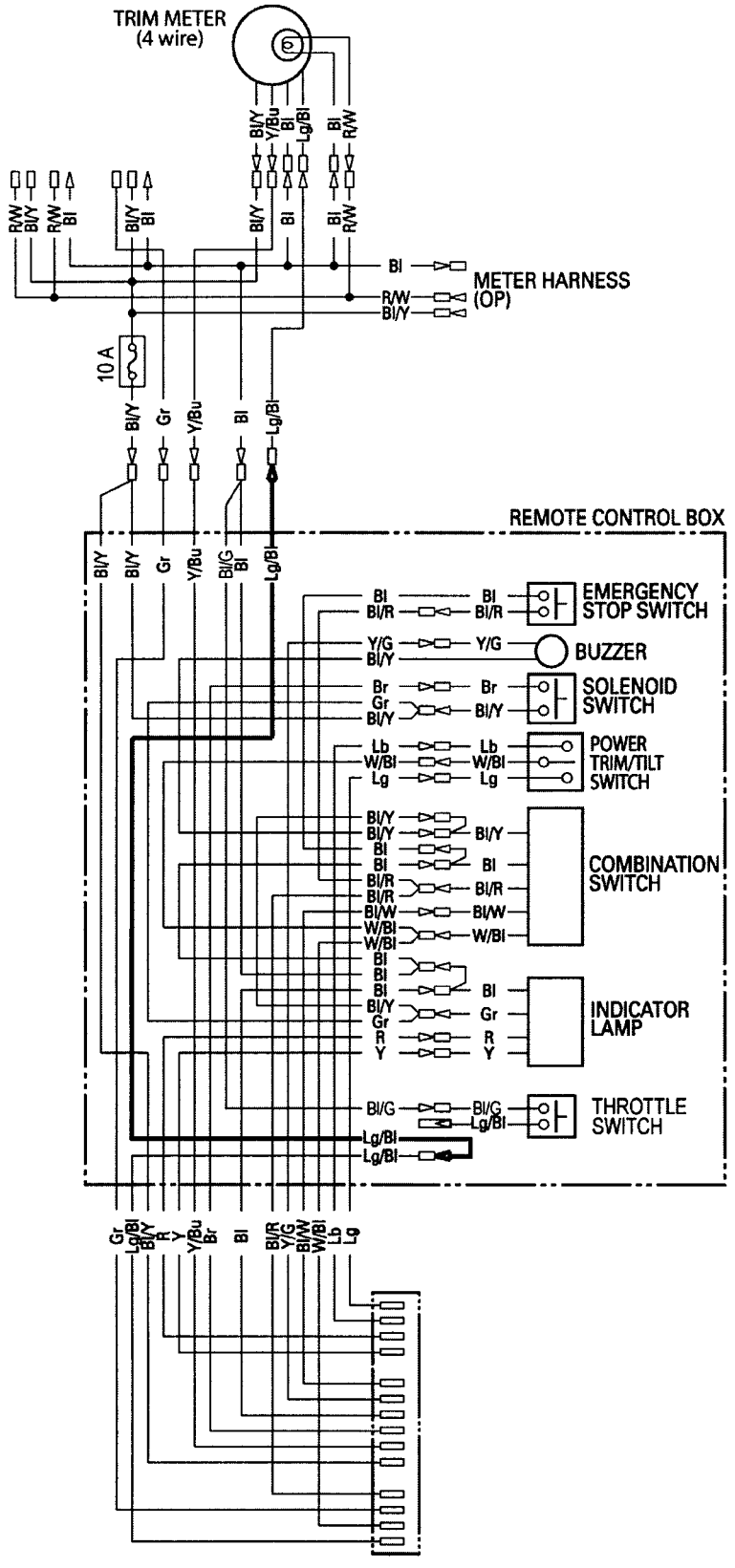
Combination 2

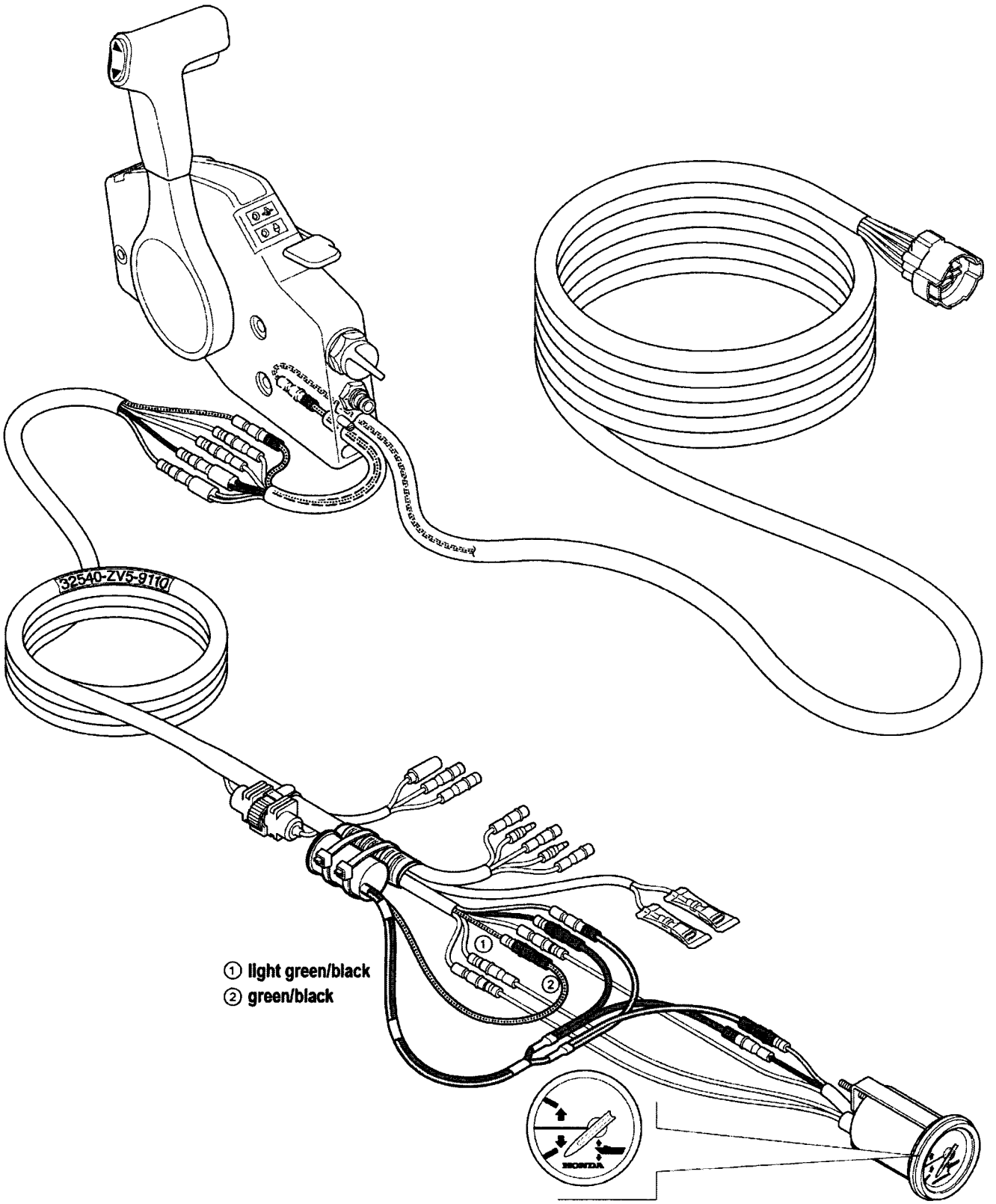


COLOR COMB : GROUND/MARKING

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

Combination 2a

1. Run the 12 inch wire as outlined in combination 2 and see page 5-18 to secure module.
2. Connect the color coded wires and refer to the circuit diagram on the following page as needed. Connect the VCM green/black power output wire to harness A light green/black wire.



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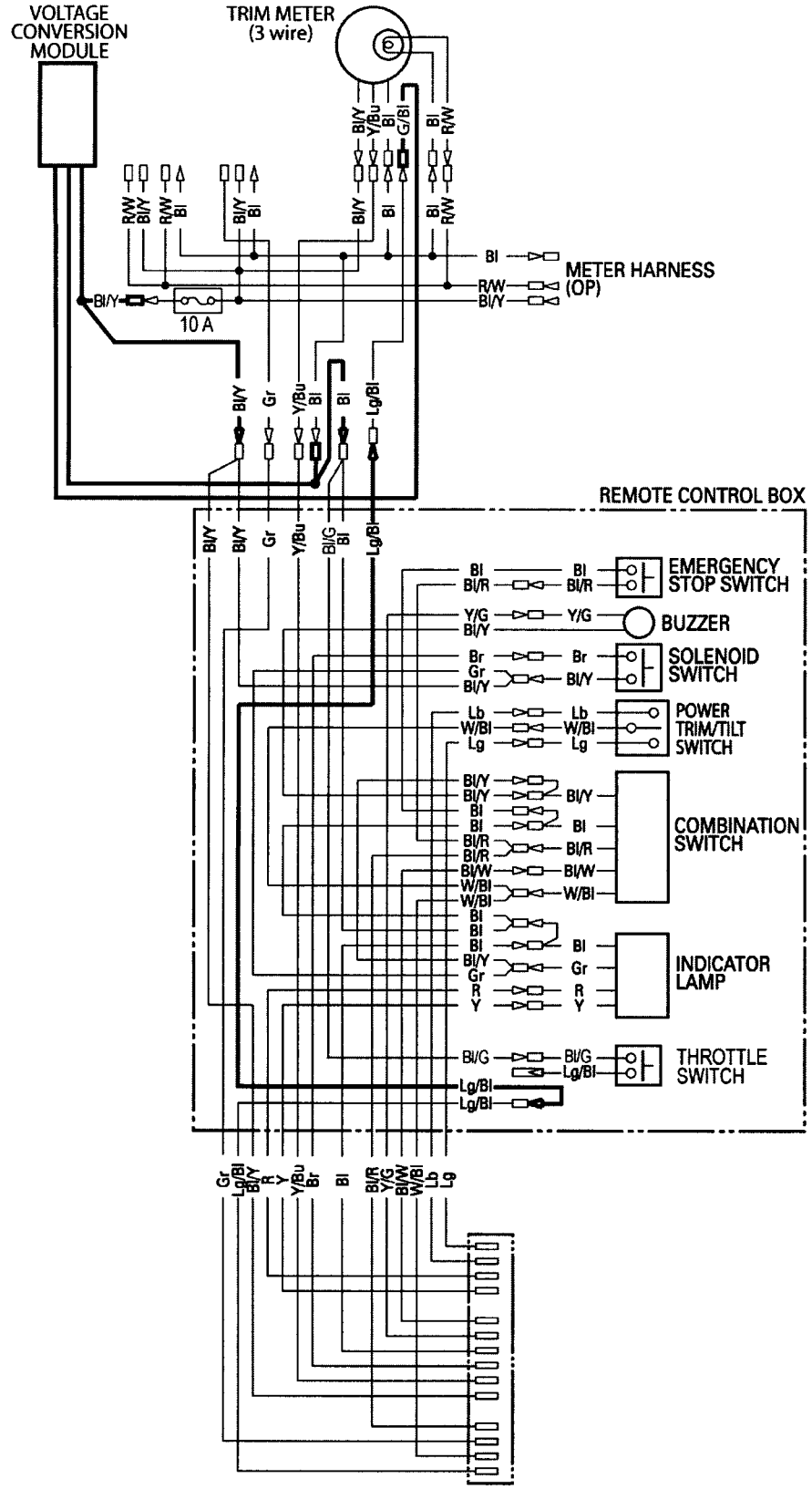
Combination 2a

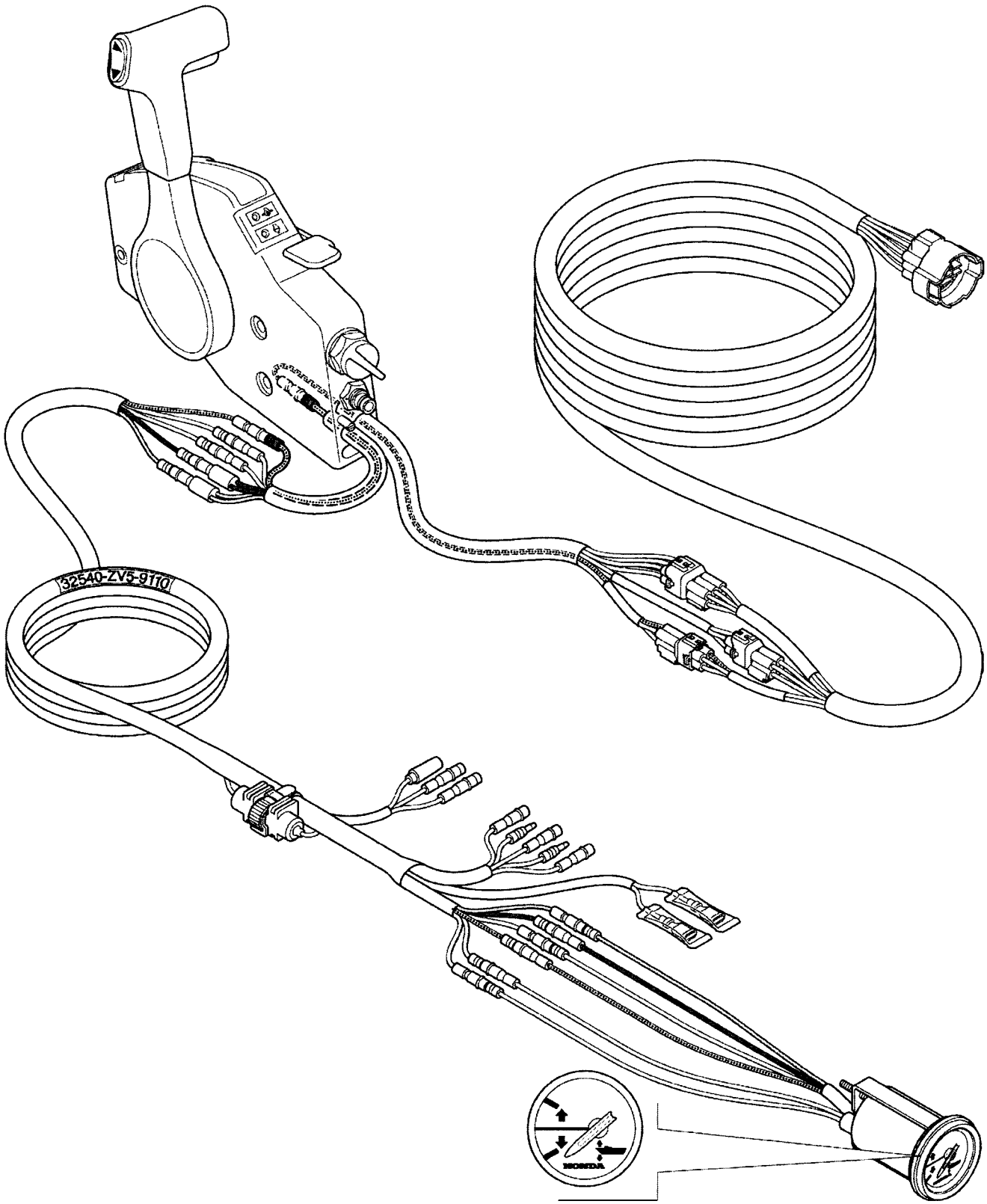


COLOR COMB : GROUND/MARKING

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

Combination 3

1. Run the 12 inch wire as outlined in combination 2.
2. Connect the color coded wires and refer to the circuit diagram on the following page as needed.



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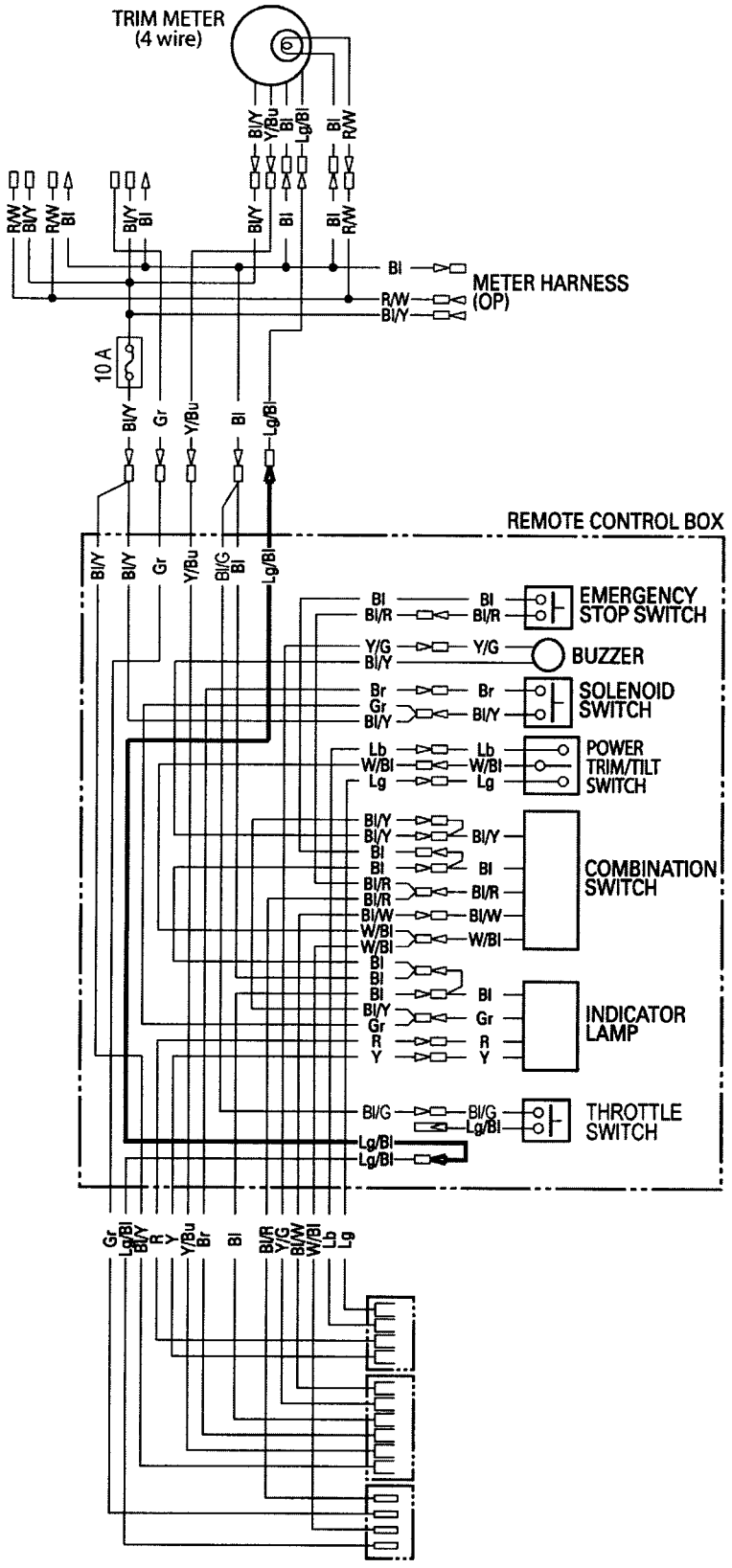
Combination 3

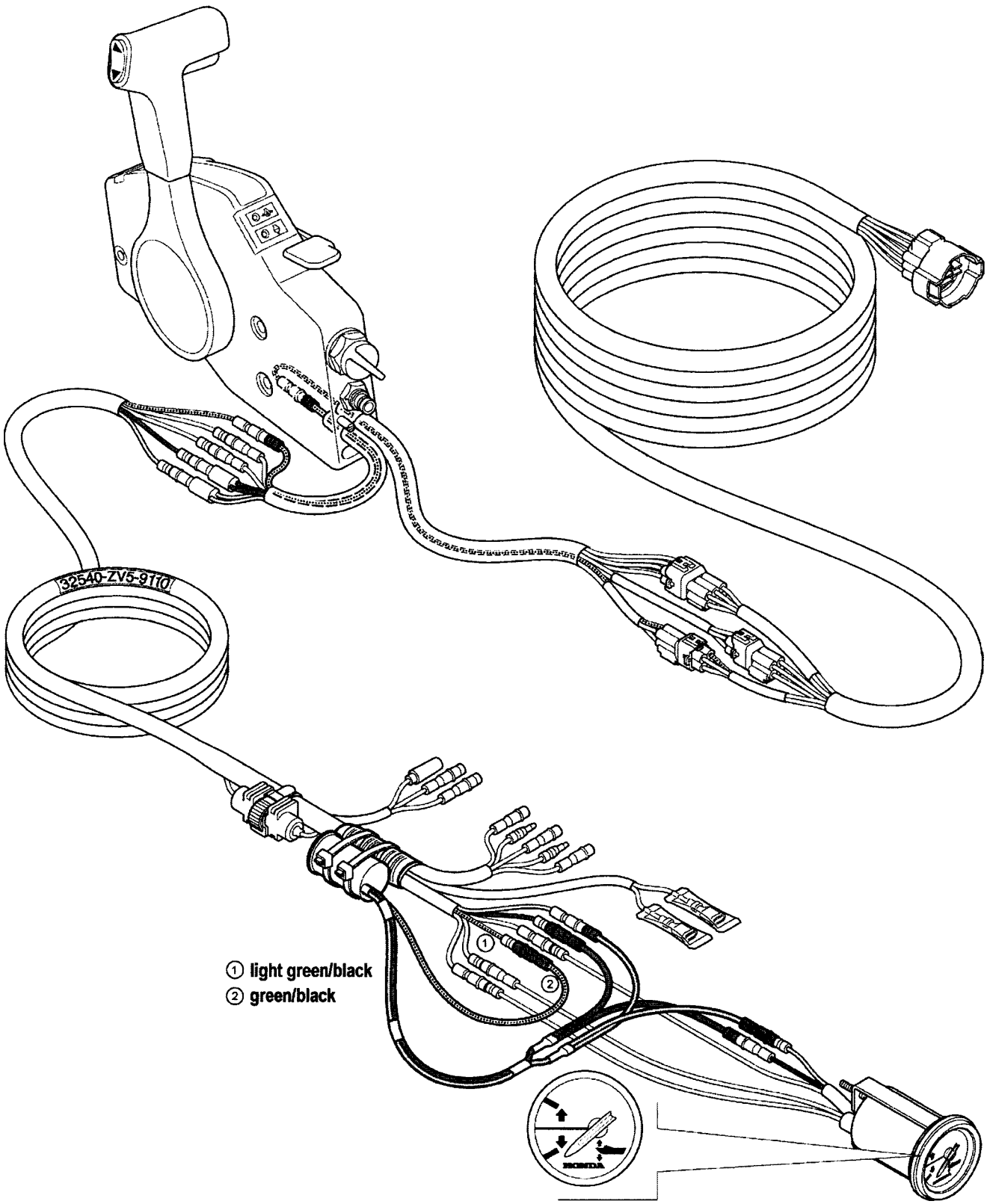


COLOR COMB : GROUND/MARKING

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

Combination 3a

1. Run the 12 inch wire as outlined in combination 2 and see page 5-18 to secure module.
2. Connect the color coded wires and refer to the circuit diagram on the following page as needed. Connect the VCM green/black power output wire to harness A light green/black wire.



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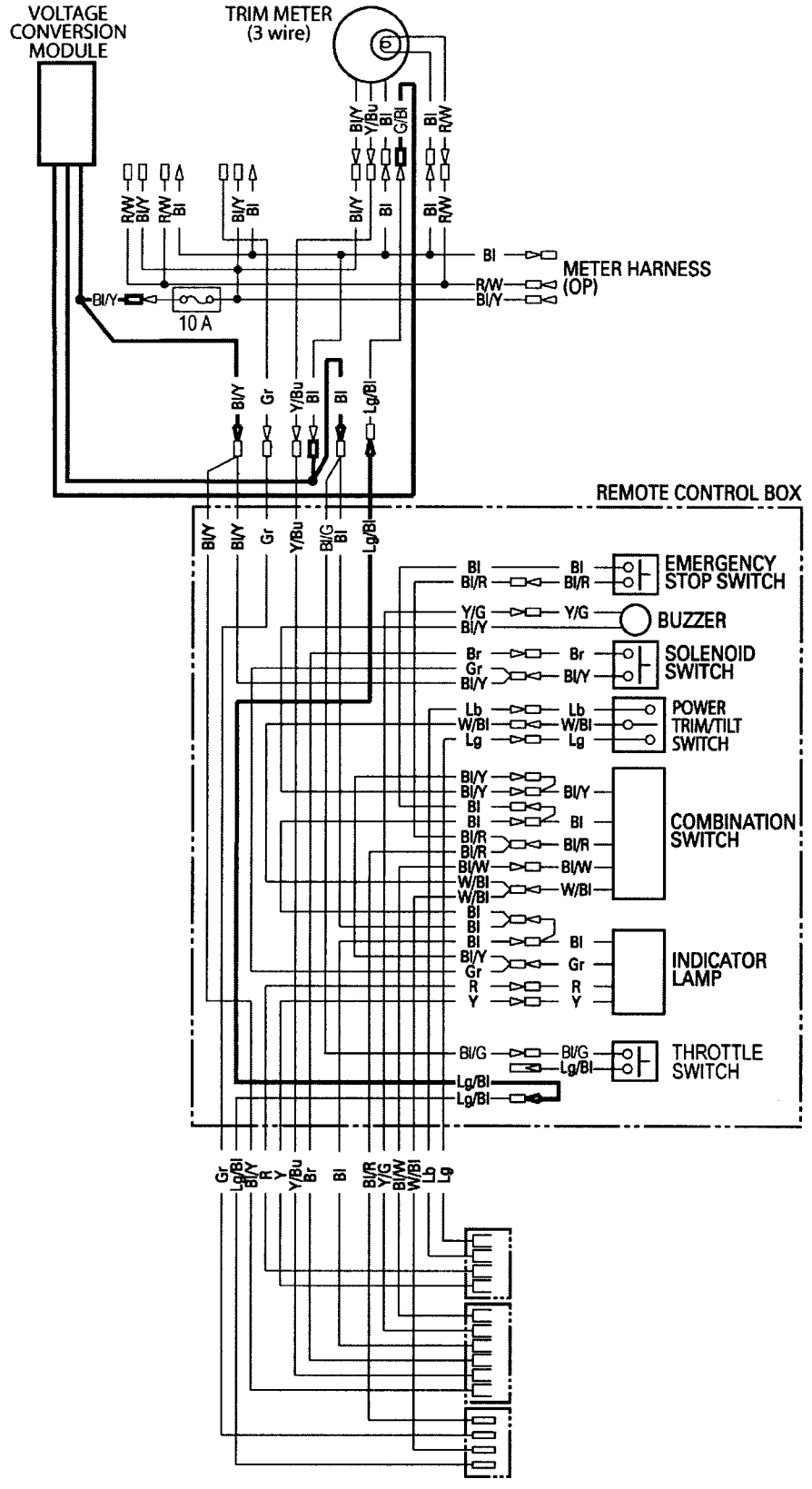
Combination 3a

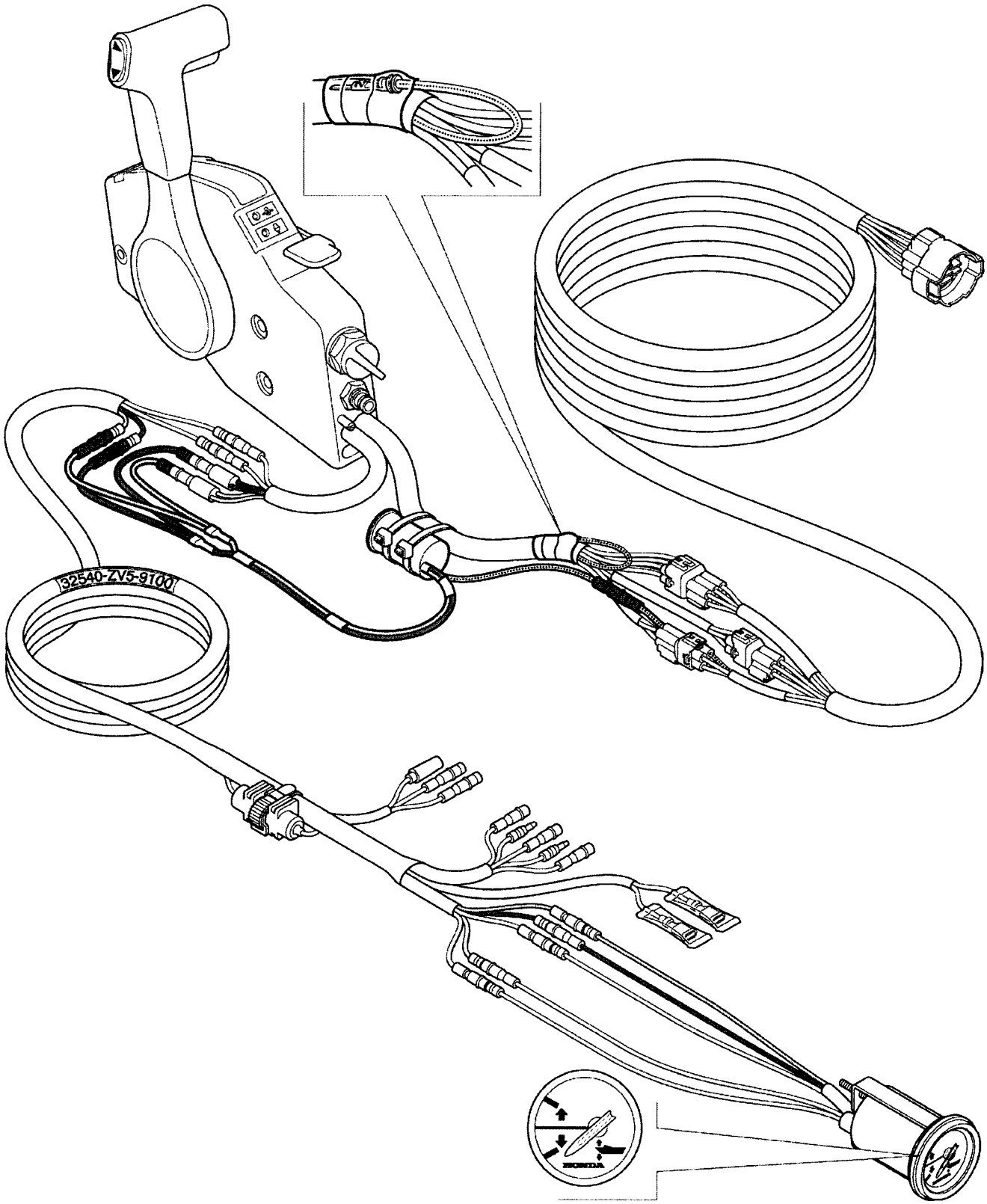


COLOR COMB : GROUND/MARKING

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

Combination 3b

1. See page 5-18 to prepare the four wire connector.
2. Connect the color coded wires and refer to the circuit diagram on the following page as needed. Use black electricians vinyl tape to secure the wire terminal to the main harness as shown.



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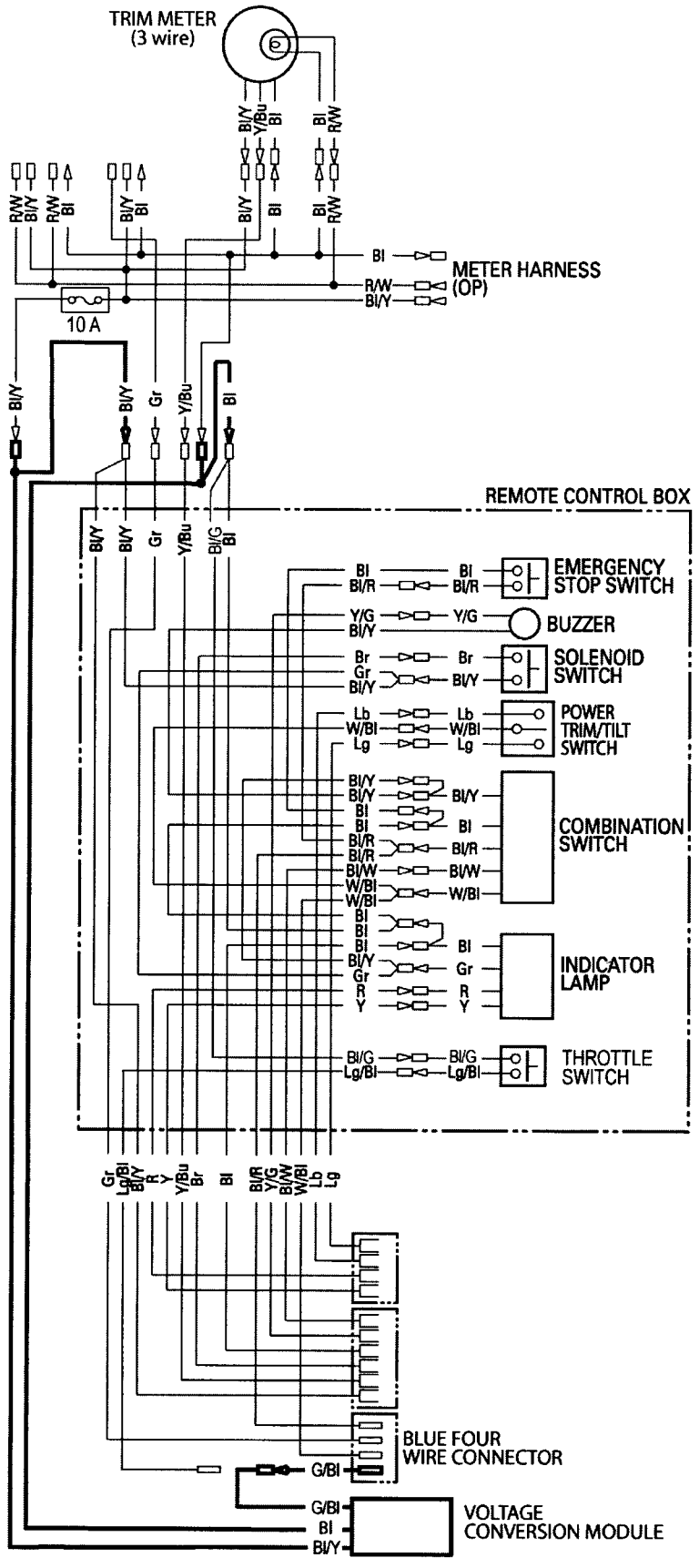
Combination 3b

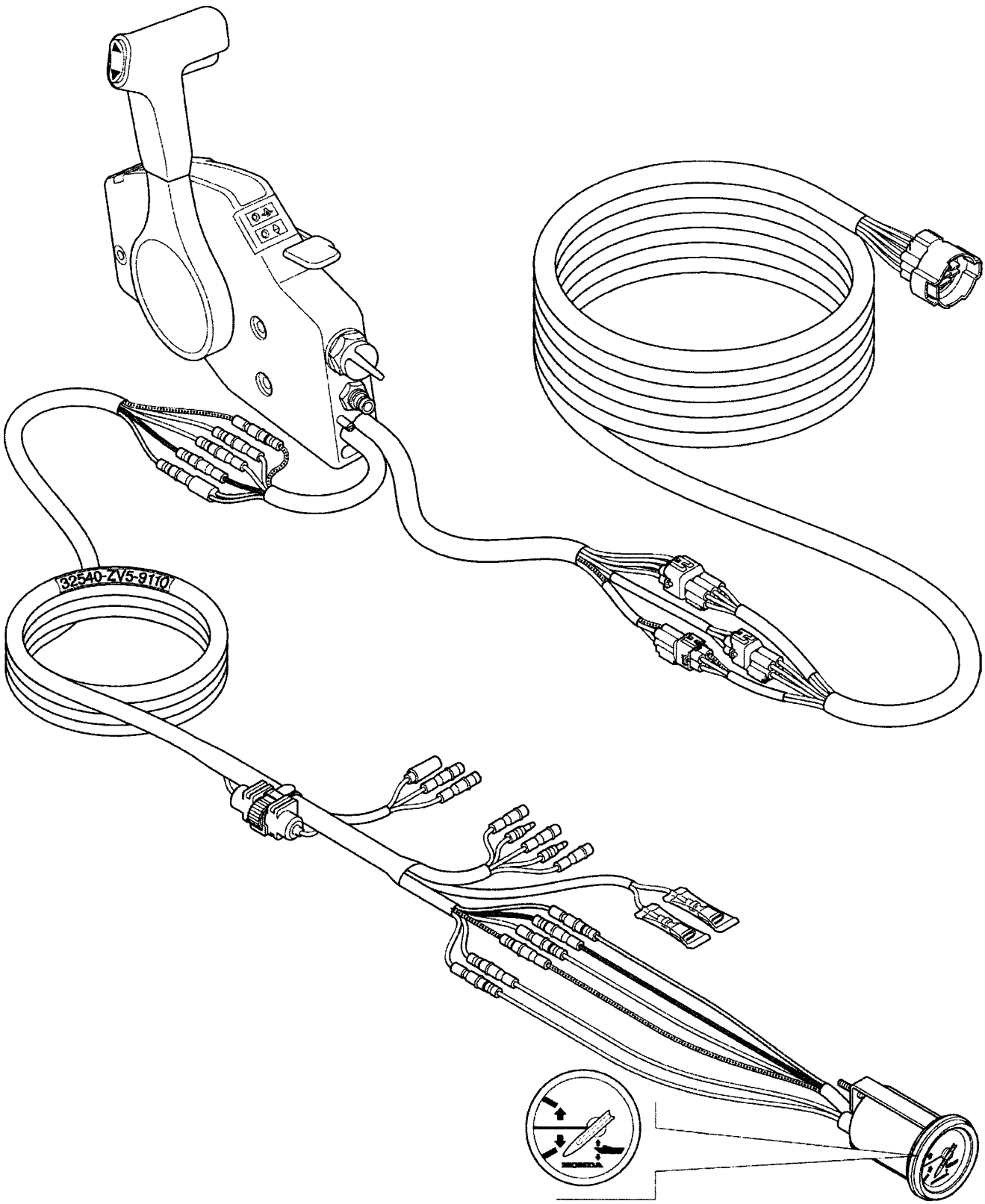


COLOR COMB : GROUND/MARKING

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

Combination 4

Connect the color coded wires and refer to the circuit diagram on the following page as needed.



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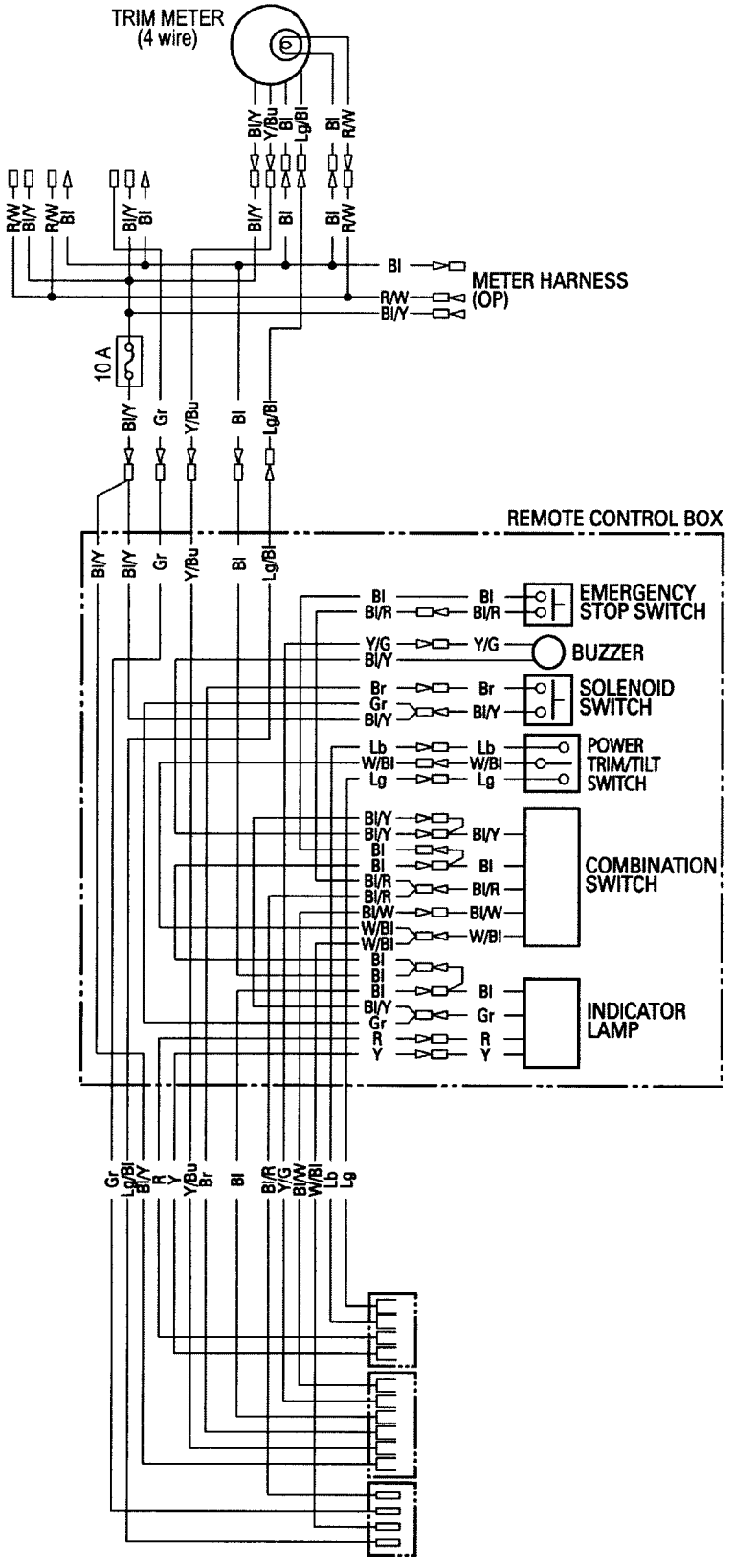
Combination 4 (complete wiring diagram page 5-42a)

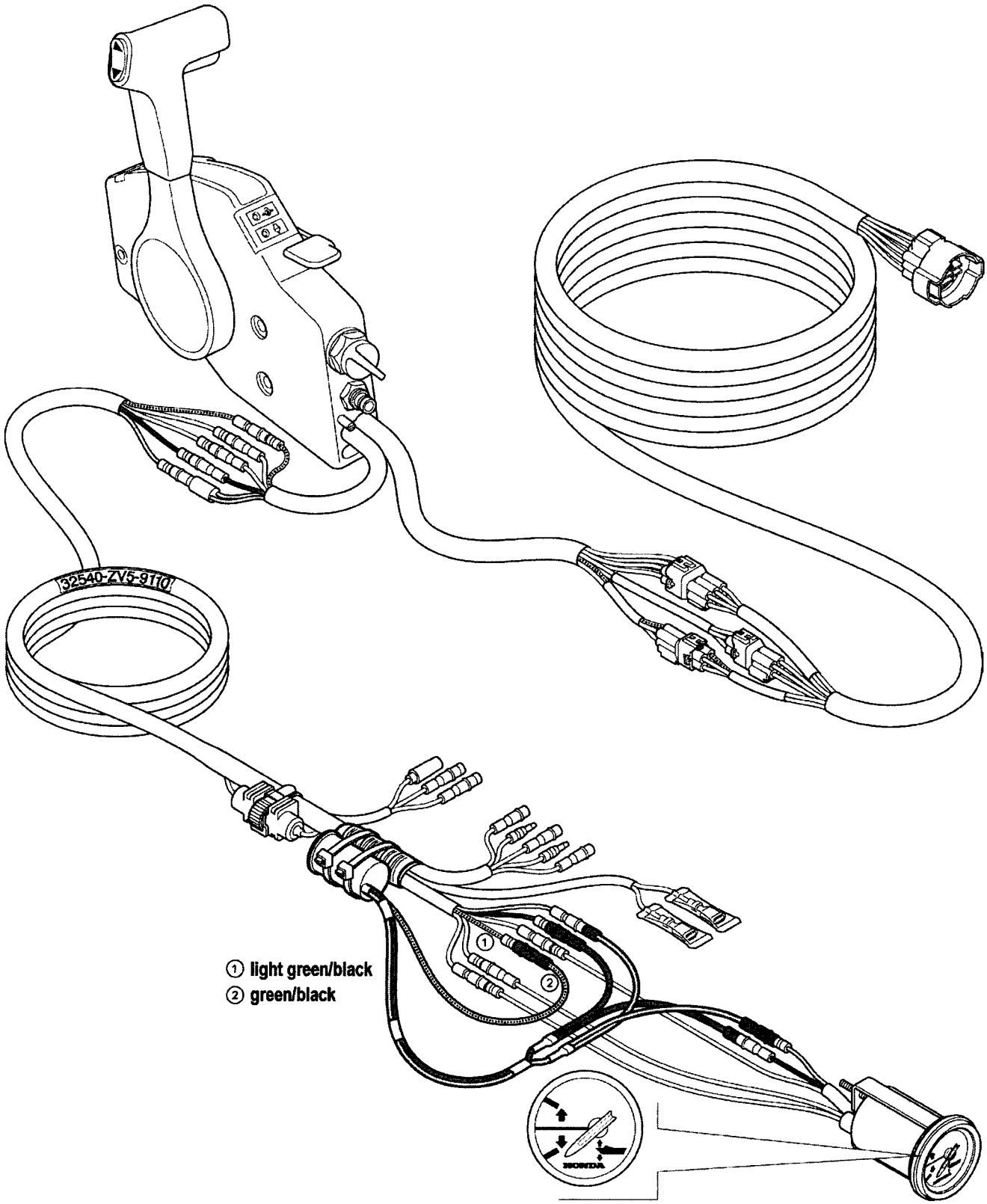


COLOR COMB : GROUND/MARKING

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

Combination 4a

1. See page 5-18 to secure the module.
2. Connect the color coded wires and refer to the circuit diagram on the following page as needed. Connect the VCM green/black power output wire to harness A light green/black wire.



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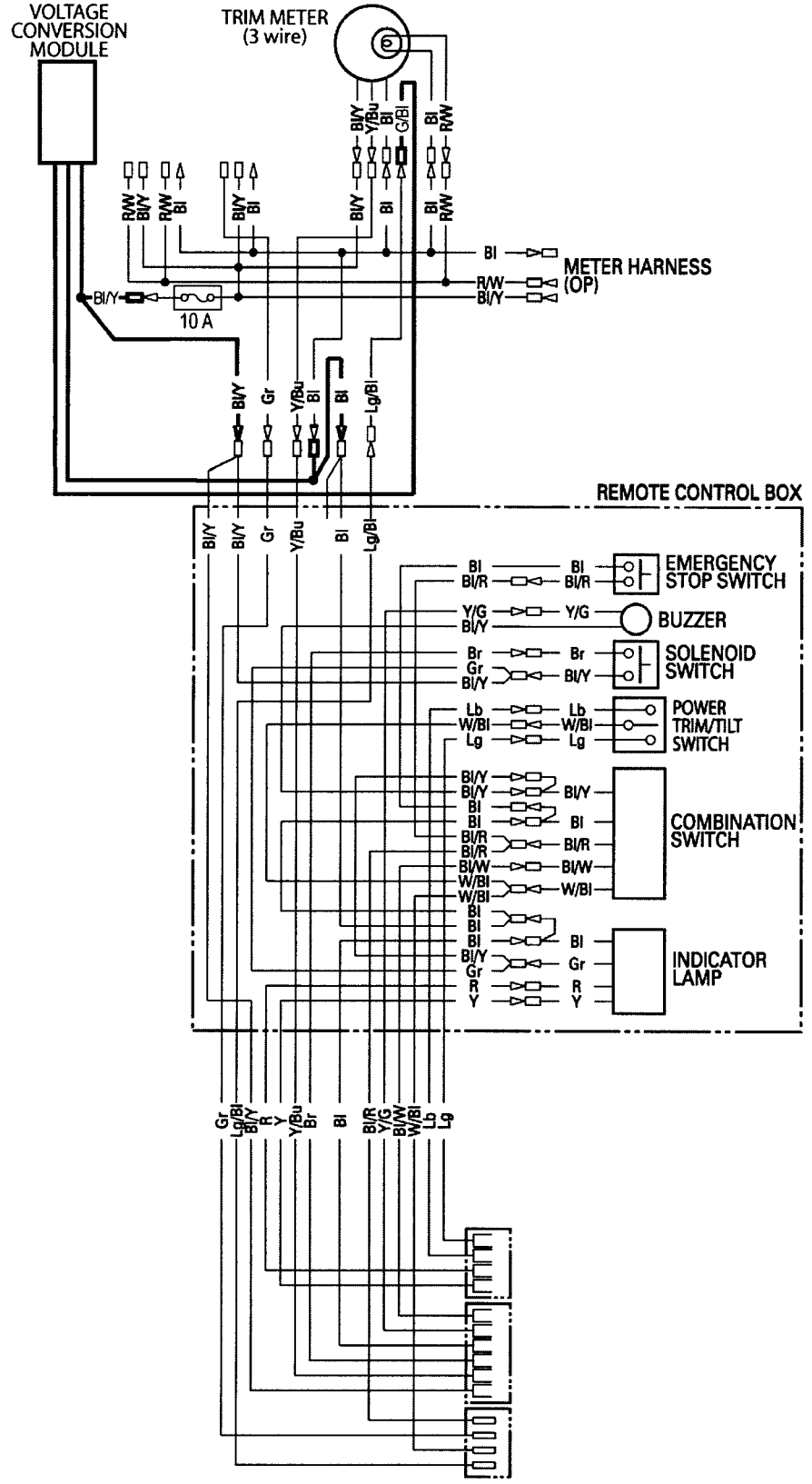
Combination 4a

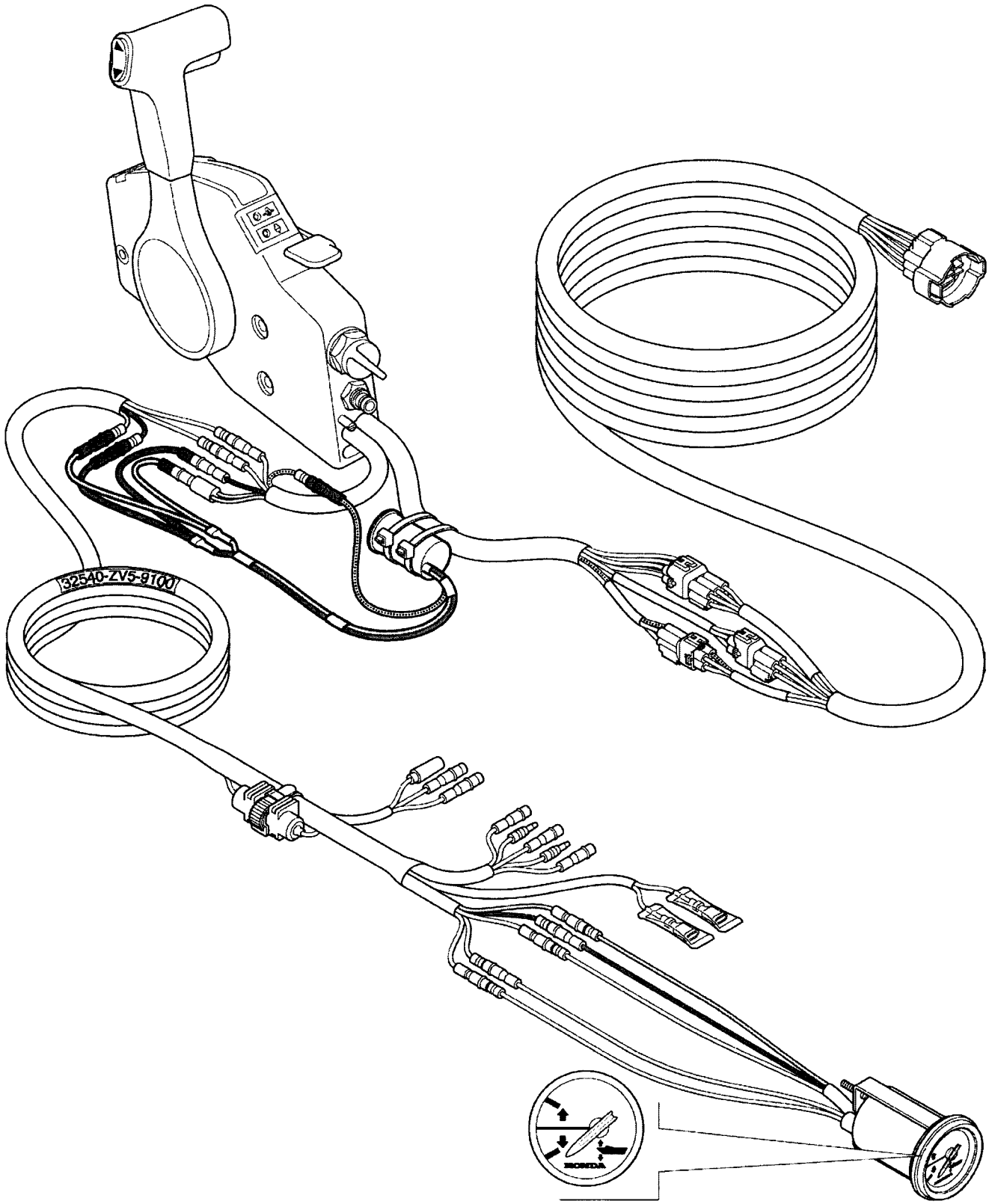


COLOR COMB : GROUND/MARKING

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

Combination 4b

Secure the VCM and connect the color coded wires and refer to the circuit diagram on the following page as needed. Depending on the application, it June be necessary to rotate the VCM 180° on main harness and position the VCM closer to remote control.



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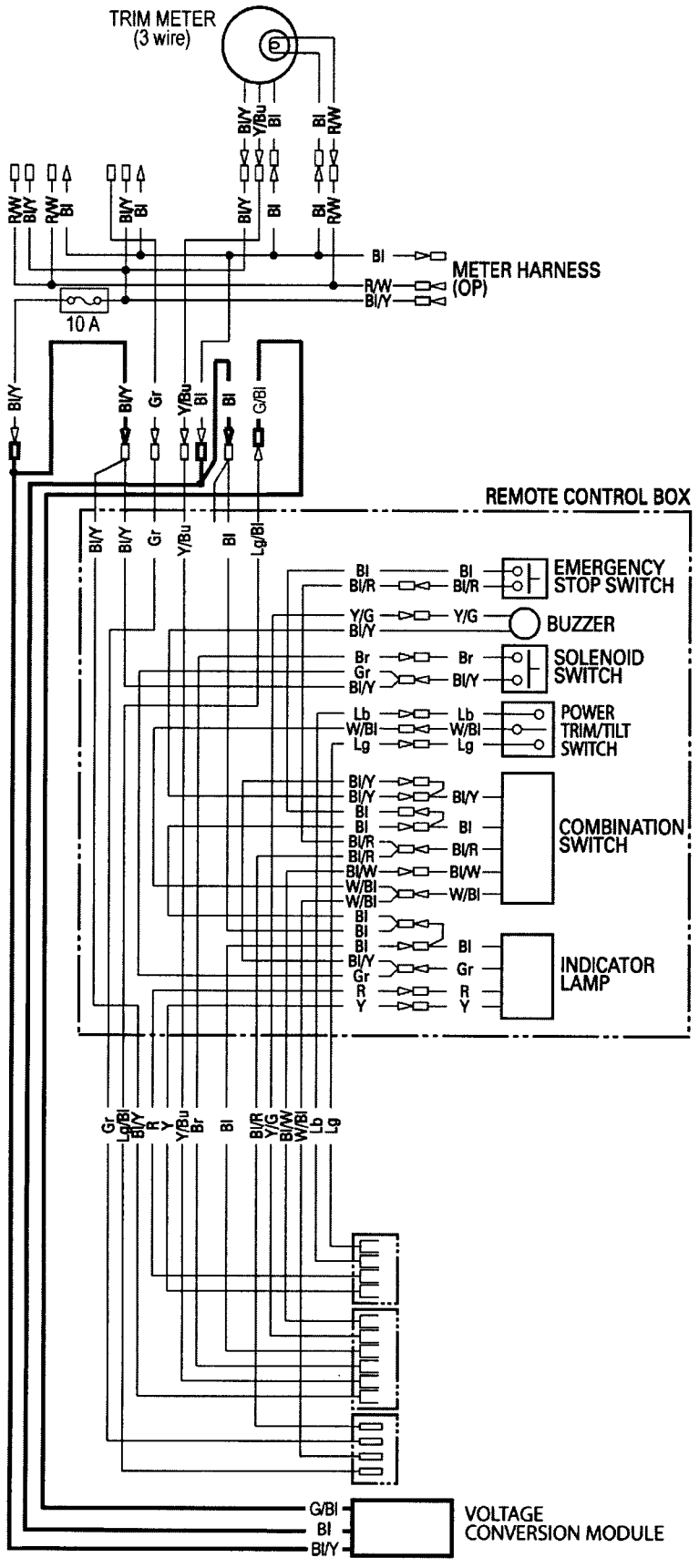
Combination 4b



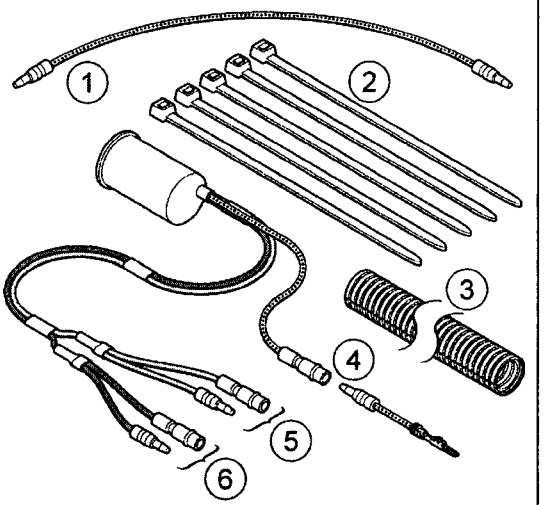
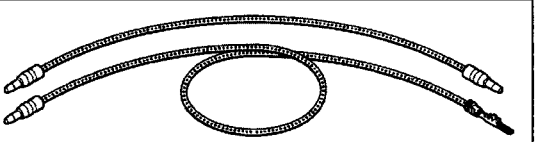
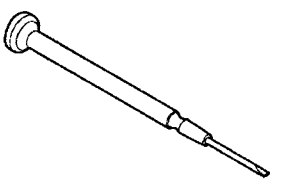
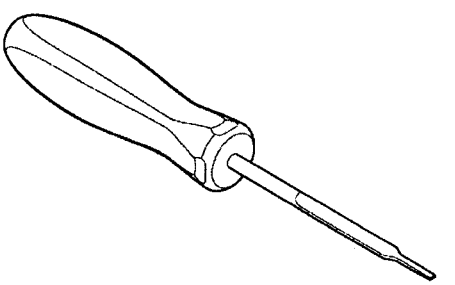
COLOR COMB : GROUND/MARKING

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

TOOLS AND MATERIALS

Each item shown below June not be required for every combination.

Terminal pin tool F is included in the Honda Marine Terminal Service Kit A P/N 07VPZ-001000A.

Item	Qty.	Part Number	Honda Code	Illustration
Voltage Conversion Module (VCM) Kit, converts 12 Vdc to 5 Vdc ①12" light green/black wire (5 Vdc output) ②cable ties (5) ③12" corrugated cover ④green/black wire ⑤black wire ⑥black/yellow wire	1	34310-ZV5-010AH	7451644	
VCM Wire Set,12" & 20" light green/black wires (multiple pack of 4 each)	1	34311-ZV5-010AH	7451651	
Miniature screwdriver, 1.19 mm (3/64") wide tip	–	Commercially available	N/A	
Terminal pin tool F S. TOOL	–	07JAZ-002060A	3087780	
Accessory 3 wire trim meter	1	Refer to *Honda Marine Accessory Catalog*		

Tool Ordering Information

- Special Tools:

These tools are distinguished by the S. TOOL special tool box icon and normally start with a "07" tool number. They are available through the Honda Parts Department and ordered by using normal American Honda Parts ordering procedures.

- Commercially Available Tools:

These tools are distinguished by the words (commercially available). They are **not** available through the American Honda Parts Department. Most commercially available tools can be ordered through the Honda Marine Tool and Equipment program by calling .

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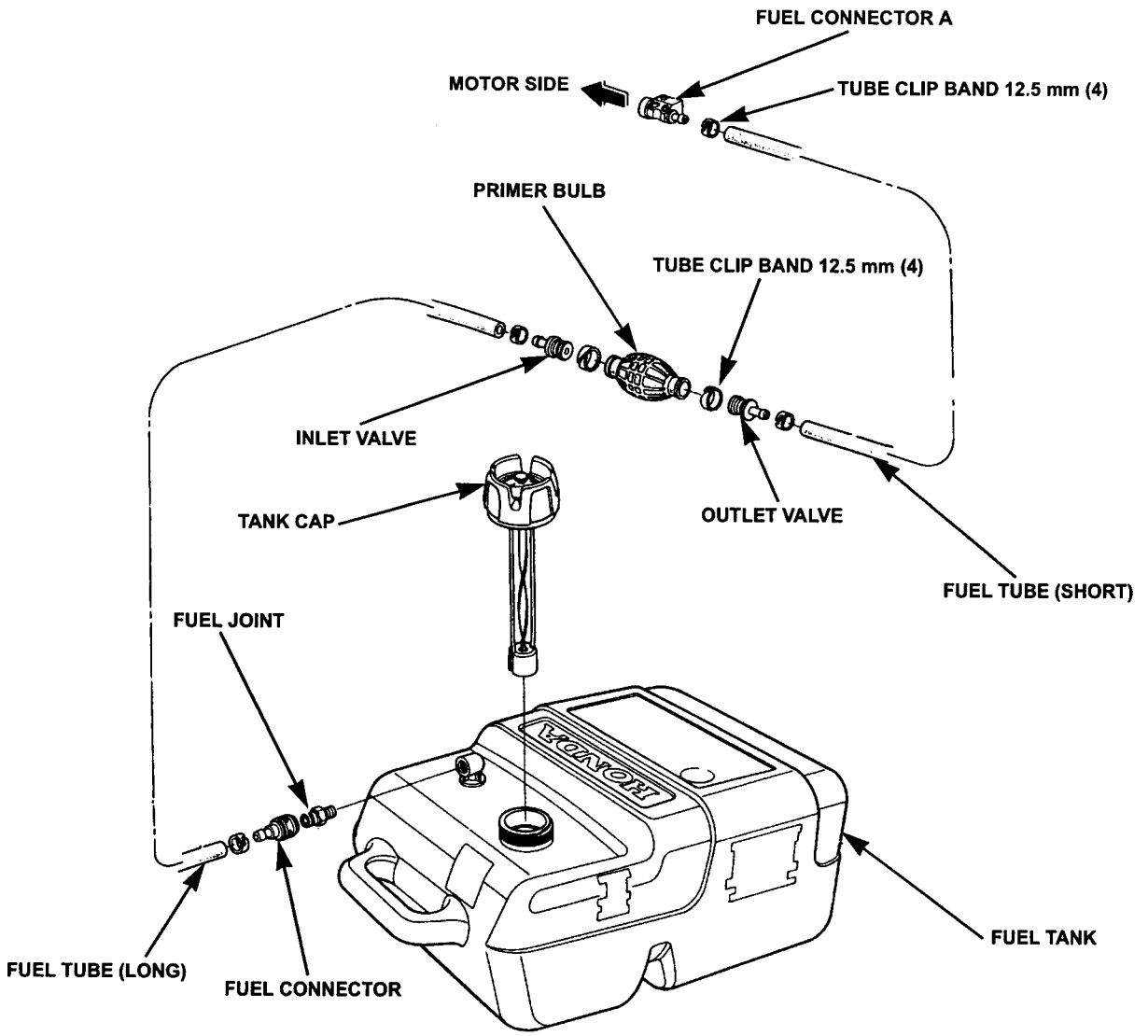
AVAILABLE ACCESSORIES

Consult the *Honda Marine Accessories Catalog* (MO045) for current information on gauges, instrument harnesses, wiring harnesses, switch panels, and control boxes.

FUEL SYSTEM CONNECTIONS



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SPECIFICATIONS

ENGINE

Model	BF75A	BF90A
Type	4-stroke, O.H.C., 4-cylinder	
Displacement	1,590 cm³ (97.0 cu. in.)	
Bore x stroke	75 x 90 mm (3.0 x 3.5 in)	
Rated horsepower	55.2 kW (75 PS) at 5,000–6,000 rpm	66.8 kW (90 PS) at 5,000–6,000 rpm
Maximum torque	117.6 N•m (12.0 kg-m, 87 lb-ft) at 4,000 rpm	125.5 N•m (12.8 kg-m, 93 lb-ft) at 4,500 rpm
Compression ratio	8.8 : 1	
Fuel consumption	241 g (8.5 oz.) / kWh	227 g (8.0 oz.) / kWh
Cooling system	Forced water circulation by impeller pump with thermostat	
Ignition system	CDI	
Ignition timing	5—29° B.T.D.C.	
Spark plug	DR7EA (NGK), X22ESR-U (DENSO)	
Carburetor	Horizontal butterfly valve-type four carburetor	
Lubricating system	Pressure lubrication by trochoid pump	
Oil capacity	4.0 liter (4.2 US qt) at oil change 4.5 liter (4.8 US qt) with oil filter replacement	
Recommended oil	SAE10W-30, API Service classification SH, SG, SJ	
Starting system	Electric starter	
Battery system	494 MCA minimum (engine operations only)	
Stopping system	Ignition primary circuit ground	
Fuel used	Automotive unleaded gasoline (minimum 86 pump octane)	
Optional fuel tank capacity	25 liters (6.6 US gal)	
Fuel pump	Mechanical plunger type	
Exhaust system	Thru hub type	

LOWER UNIT

Model		BF75A	BF90A
Clutch		Dog clutch (forward-neutral-reverse)	
Gear ratio		2.33:1 (28/12)	
Reduction type		Spiral bevel gear	
Gear case oil capacity		1.0 liters (1.1 US qt)	
Recommended gear case oil		API Service classification GL4 or GL5	
Propeller	Number of blades	Optional part	
	Rotating direction	Clockwise (viewed from rear)	
	Driving system	Spline	

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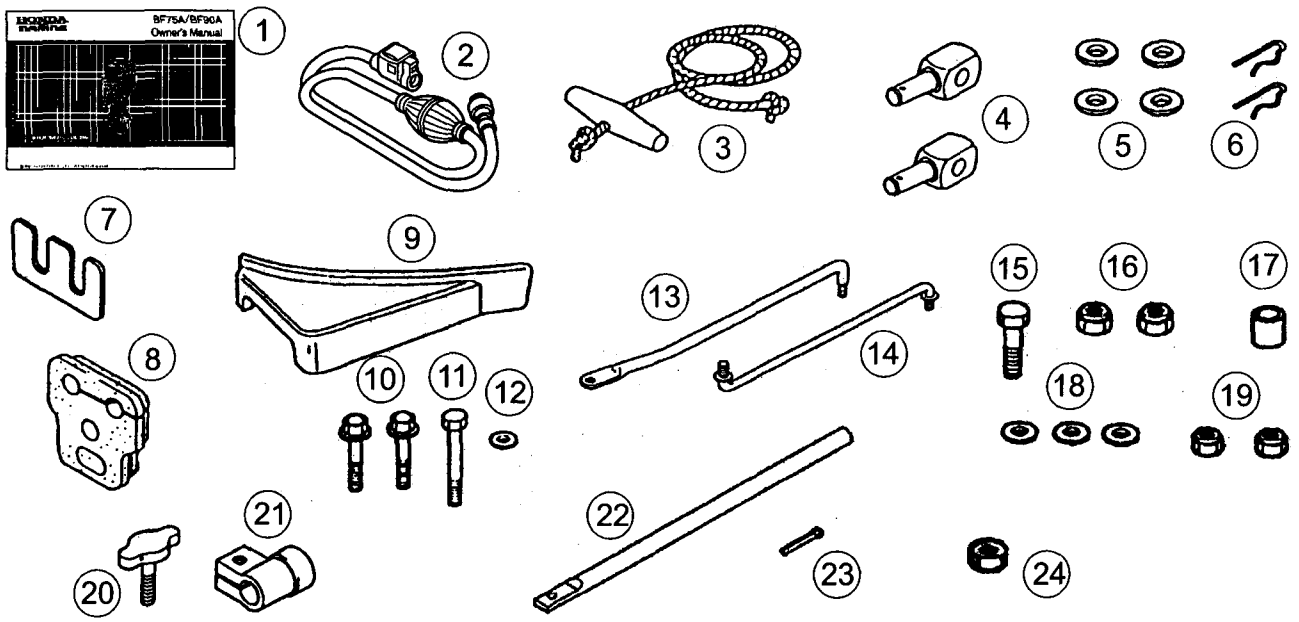
PARTS LISTING



REF. NO.	DESCRIPTION	BF75A		BF90A				PART NO.	REMARKS
		LHTA	LRTA	LHTA	LRTA	XRTA	JRTA		
1	*Owner's Manual*	1	1	1	1	1	1	31ZW0606	
2	Fuel tube assembly	1	1	1	1	1	1	17700-ZW9-010	
3	Emergency starter rope	1	1	1	1	1	1	28470-816-000	
4	Shift pivot	2	2	2	2	2	2	24618-ZV5-000	
5	Plain washer (6 mm)	4	4	4	4	4	4	90504-921-010	Use with REF. NO. 4
6	Lock pin (large) (6 mm)	2	2	2	2	2	2	90765-ZV5-000	
7	Control cable plate	1	1	1	1	1	1	17877-ZW1-000	
8	Grommet	1	1	1	1	1	1	40105-ZW1-000	
9	Separate cover	1	1	1	1	1	1	40151-ZW1-000ZA	
10	Bolt (6 x 28 mm)	2	2	2	2	2	2	90015-ZV0-000	Use with REF. NO. 9
11	Bolt (6 x 35 mm)	1	1	1	1	1	1	90113-ZV0-000	
12	Plain washer (6 mm)	1	1	1	1	1	1	90506-ZV4-000	
13	Steering link arm	1	1	1	1	1	1	53238-ZW1-010	
14	Friction arm	1		1				53238-ZW1-700	
15	3/8-24 UNF bolt		1		1	1	1	90105-ZW1-000	Use with REF. NO. 13
16	3/8-24 UNF nut		2		2	2	2	90307-ZV5-003	
17	Steering rod collar		1		1	1	1	91560-ZV5-000	
18	Washer (10 mm)	2	3	2	3	3	3	90514-ZV4-000	Use with REF. NO. 13, 14
19	Self-lock nut (10 mm)	2		2				90306-ZV5-003	Use with REF. NO. 29
20	Friction bolt	1		1				53104-ZV3-000	
21	Friction block	1		1				53236-ZW1-700	
22	Friction shaft	1		1				53239-ZW1-700	
23	Cotter pin (2 mm)	1		1				90759-ZV1-000	Use with REF. NO. 21
24	Hex. nut (6 mm)	1		1				94002-06490-0S	

INSTALLATION HEIGHT RECOMMENDATIONS

Shaft Length	Outboard Transom Height	Workable Boat Transom Height
L type	537 mm (21.1 in)	487 ~ 537 mm (19.2 ~ 21.1 in)
X type	664 mm (26.1 in)	614 ~ 664 mm (24.2 ~ 26.1 in)

TRANSOM DRILLING

See also "USING THE TRANSOM MOUNT DRILL FIXTURE" on page 1-23.

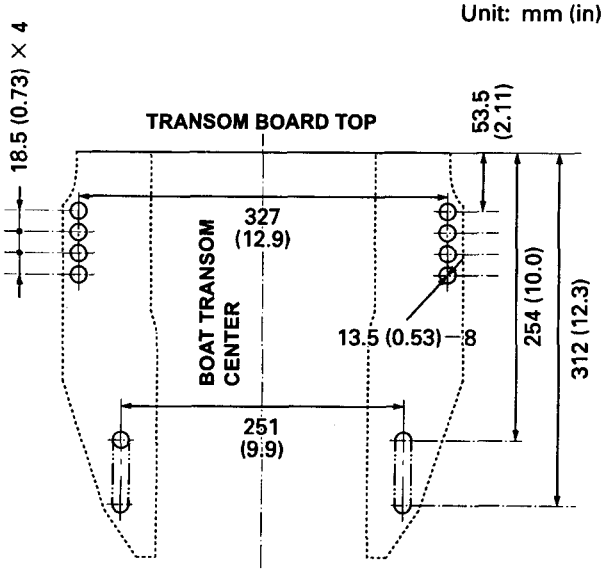
Description	Part No.
Transom Mount Drill Fixture	07MPZ-ZV3010C

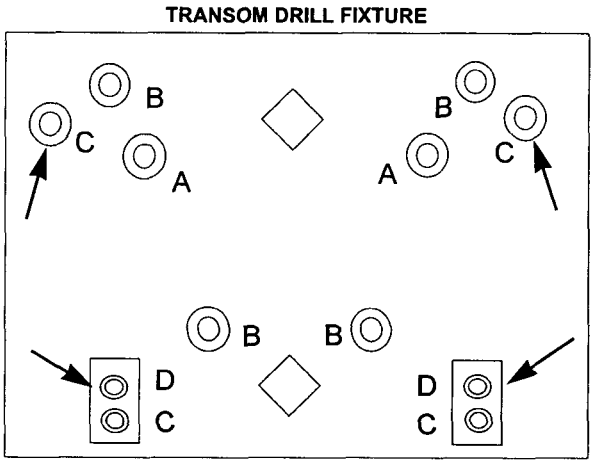
The BF75A and BF90A outboards motors are designed to be installed on a boat transom with the following transom board thickness:

Boat Transom Board Thickness
50 ~ 70 mm (2 ~ 2.75 in)

1. Set the outboard motor onto the boat transom and verify the installation height is correct.

Unit: mm (in)



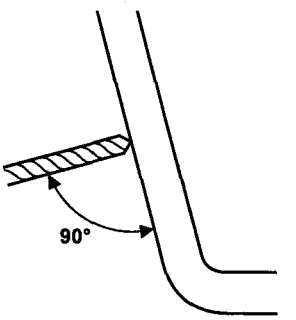


Use the upper "C" and lower "D" holes.

2. Mark four center marks for the bolt holes on the transom board (two marks on either side of the outboard motor installation lines).

   The upper bolt holes should be more than 33 mm (1.3 in) from the top of the transom.

   The lower bolt holes should allow the mounting bolts to contact the upper end of the stern bracket.

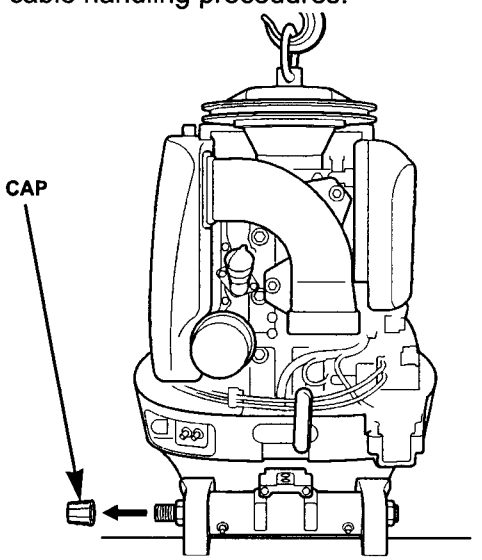


3. Drill four holes with a 17/32 drill bit.

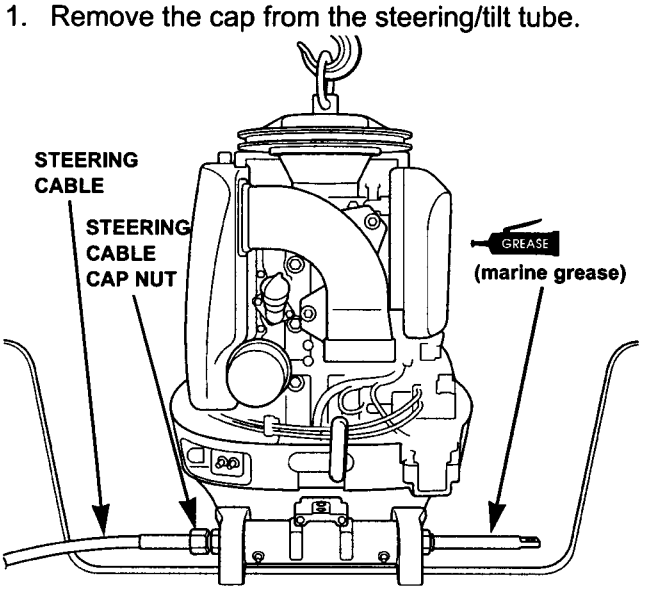
STEERING CONNECTIONS

Do this before final placement of the motor on the transom.

Refer to the steering cable manufacturer's manual for cable handling procedures.



1. Remove the cap from the steering/tilt tube.



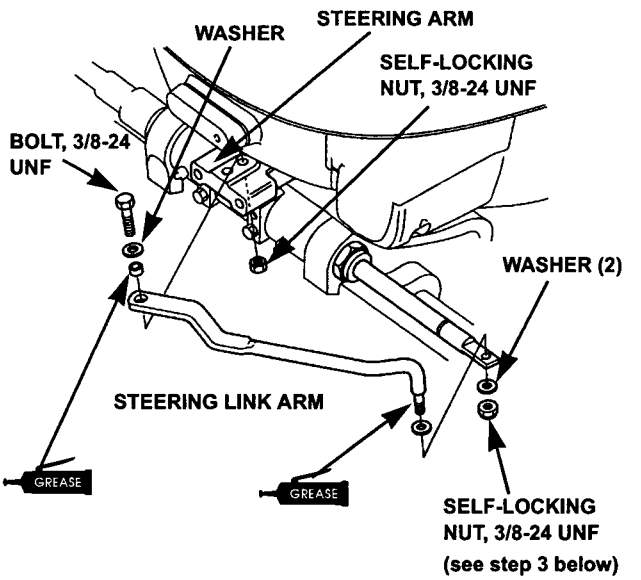
2. Fully extend the steering cable. Apply waterproof marine grease to the inner and outer cable ends. Do not use wheel bearing grease. Install the steering cable through the steering/tilt tube. When steering cable enters from the port side, the steering/tilt tube must be reversed. Refer to the *Honda Marine BF75A/BF90A Shop Manual* for procedures.
3. Hand-tighten steering cable cap nut at this time.
4. Lower motor on transom and align mounting holes.

STEERING LINK ARM INSTALLATION

1. Install bolt, washer, and collar into link arm. Thread bolt into steering arm inside hole. Tighten bolt then tighten lock nut. Do not use forward hole.

   TORQUE:

3/8-24 UNF bolt:	22 N•m (16 ft-lb)
3/8-24 UNF lock nut:	18 N•m (13 ft-lb)



2. Turn steering wheel to extend the steering cable out of the steering/tilt tube. Install steering link arm into steering cable end. Use hardware shown and connect link arm to the steering cable.
3. Turn steering wheel to retract steering cable into the steering/tilt tube. Tighten steering link arm to steering cable self-locking nut. Then loosen self-locking nut 1/8 turn.

   TORQUE: 8–11 N•m (7–8 ft-lb)
4. Tighten steering cable nut until the steering cable end play is removed.

   TORQUE: 34–49 N•m (25–36 ft-lb)

   After steering cable cap nut is tightened, there should be no end play between outer steering cable and steering tilt/tube.

   For further information regarding steering cable, refer to the boat manufacturer's operation manual.

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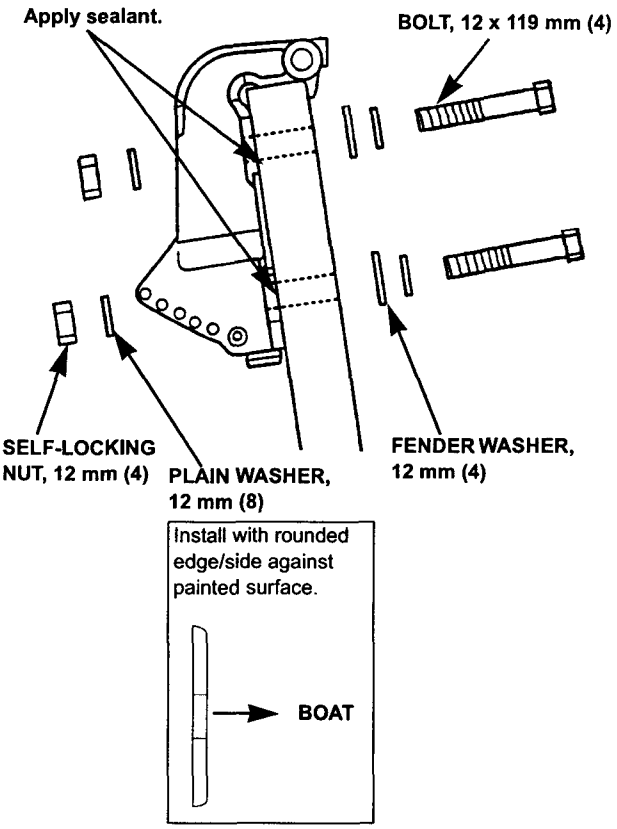
5. Directly after completing the steering link arm and steering cable installation, verify the following:
   - Motor turns the proper direction when the steering wheel is turned right and left. If the steering is reversed, correct at the steering box.
   - Motor steering angle is equal when steering wheel is turned full right and full left. If the motor steering angles are not equal:
     - Major corrections can be made at the steering box (refer to the steering box or steering cable manufacturer's instructions).
     - Minor corrections can be made by moving the steering/tilt tube laterally (refer to the *BF75A/BF90A Shop Manual*).

   Make the steering angles equal as necessary.
   - The steering cable and/or steering link arm must not come in contact with any part of the boat when the steering wheel is turned full right and full left and at all tilt angles. Correct as necessary and check again.

BOLTING MOTOR TO TRANSOM



Apply marine hull sealant to the mounting holes and hardware. Use Hondabond HT (P/N 08718-0001) or equivalent silicone sealant for below waterline use.

With the motor in place against the transom, verify correct motor height. Motor can be raised by using a lower set of mounting holes.

Attach the motor with marine grade hardware. Use washers under all bolts and nuts. Use additional fender washers against the transom. Use support plates as recommended by the hull manufacturer.

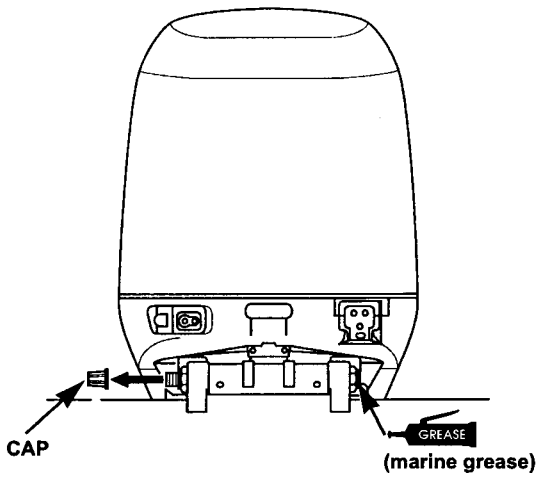
Apply a small amount of oil or grease to all bolt threads prior to installation.

Be sure at least one thread of the bolt is visible beyond the nut when the fasteners are tightened.

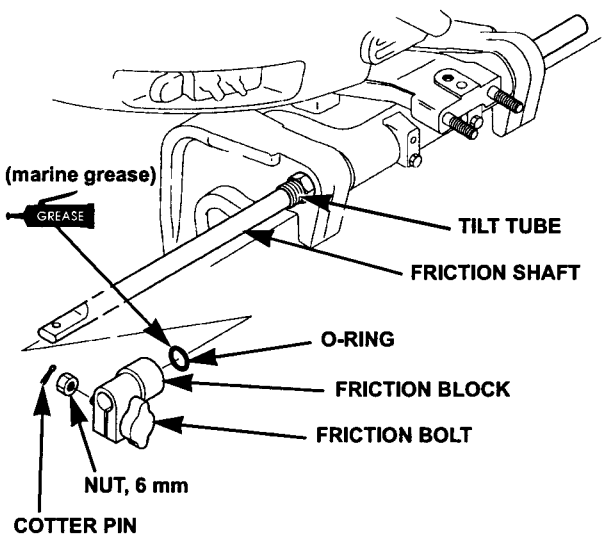
NOTICE

Do not use an air impact tool to tighten or loosen the transom bolts. Using an air impact tool to tighten or loosen the transom bolts can generate enough heat to damage the bolt threads. The air impact tool can also produce enough tightening torque to damage the boat transom.

TILLER HANDLE ASSEMBLY INSTALLATION



1. Remove right side cap from tilt tube.

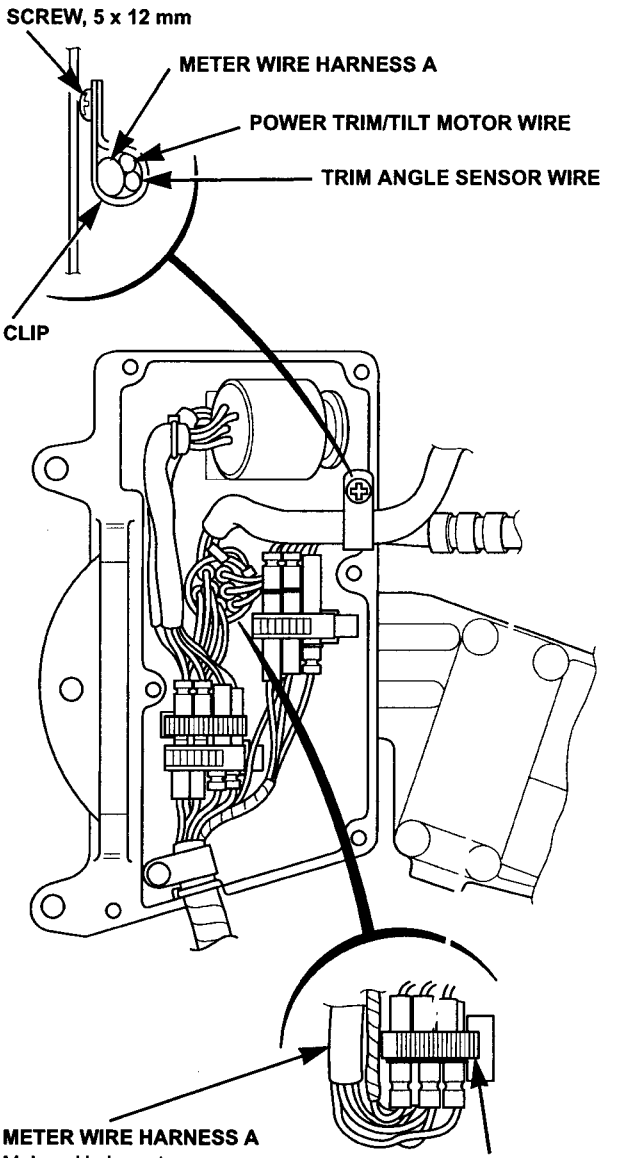


2. Apply marine grease to the friction shaft and install friction shaft into tilt tube.

   Apply marine grease to O-ring then install O-ring into friction block.

   Install friction block over friction shaft and onto tilt tube.

   Install the friction bolt, 6 mm nut, and cotter pin on the friction block.



3. Connect Meter Wire Harness A to the tiller handle wire harness.
   - Remove tiller handle cover, and connect Meter Wire Harness A to tiller handle harness.
   - Connect harnesses as shown and secure with harness bands and harness clips.

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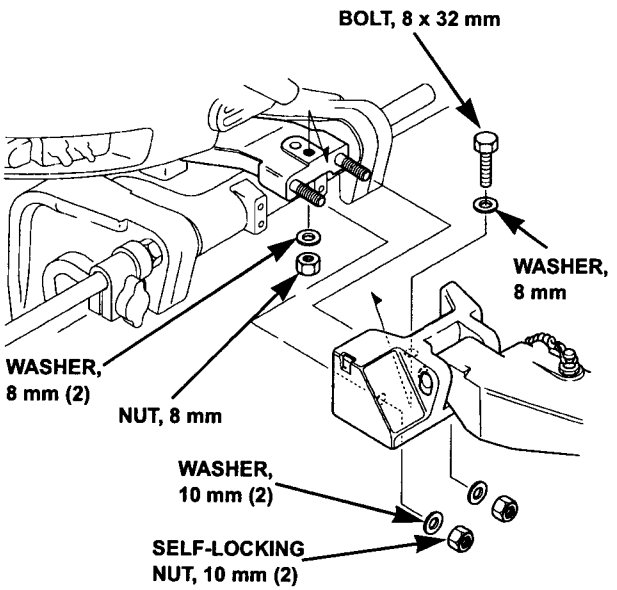
- If a remote power trim/tilt foot switch is to be installed, do it now. Refer to page 6-10.

DESCRIPTION	PART NO.
Screw, 5 x 12 mm	90123-ZV3-000
Clip	90602-SB0-003
Harness band	32161-404-000



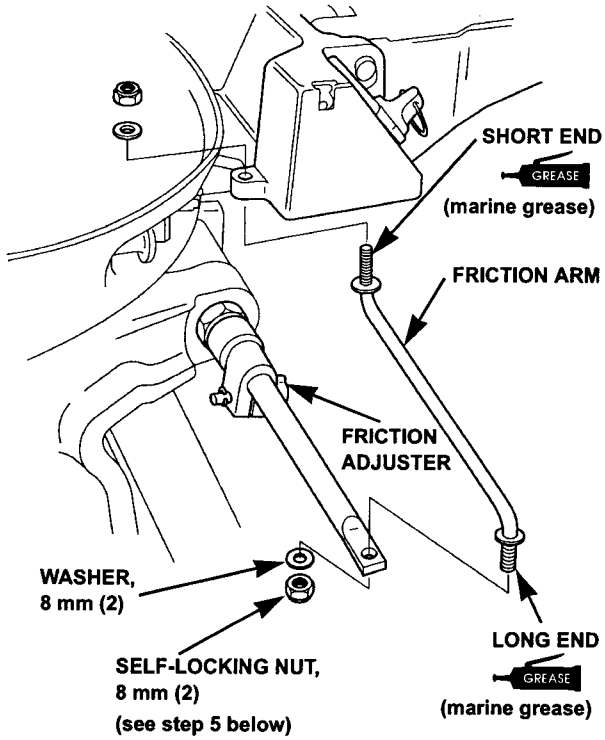
4. Install tiller handle assembly and loosely secure with 10 mm washers and self-locking nuts. Then install 8 mm bolt and washer. Tighten 10 mm nuts and 8 mm bolt to specified torque. Then tighten 8 mm nut.

   TORQUE:

   Self-locking nut, 10 mm: 34 N•m (25 ft-lb)

   Bolt, 8 x 32 mm: 22 N•m (16 ft-lb)

   Nut, 8 mm: 22 N•m (16 ft-lb)



5. Install the steering friction arm between the tiller handle bracket and the friction shaft. Secure with the 8 mm washers and 8 mm self-locking nuts. Tighten 8 mm self-locking nuts, then loosen self-locking nuts 1/8 turn. Threads must protrude past the end of the self-locking nuts.

   TORQUE:

   Self-locking nut, 8 mm: 8~11 N•m (7~8 ft-lb)

6. Adjust steering friction by turning friction adjuster.

POWER TRIM/TILT FOOT SWITCH

When mounting a tiller handle type outboard, an optional power trim/tilt foot switch can be installed. It will be necessary to perform wiring connections.

Connect the terminals and terminal covers to the wire harness that comes from the power trim/tilt foot switch.

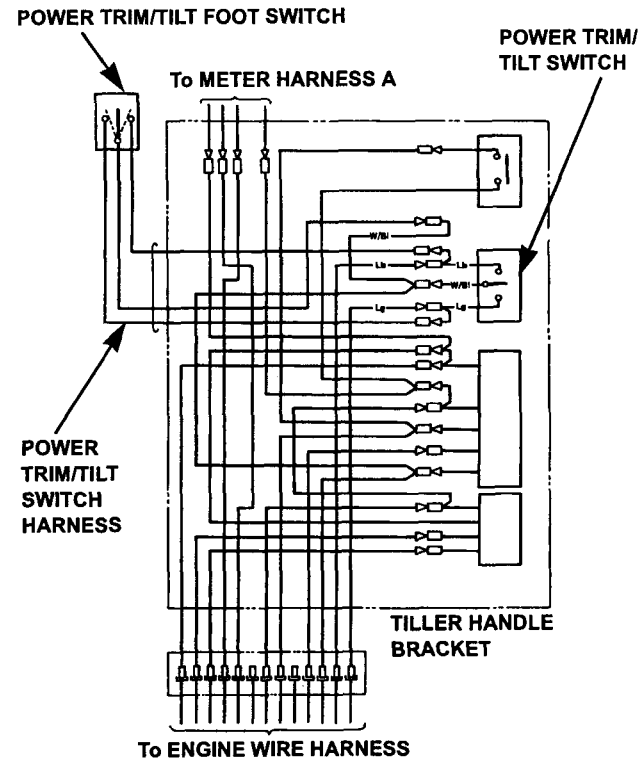
Be sure to use water resistant terminal covers.

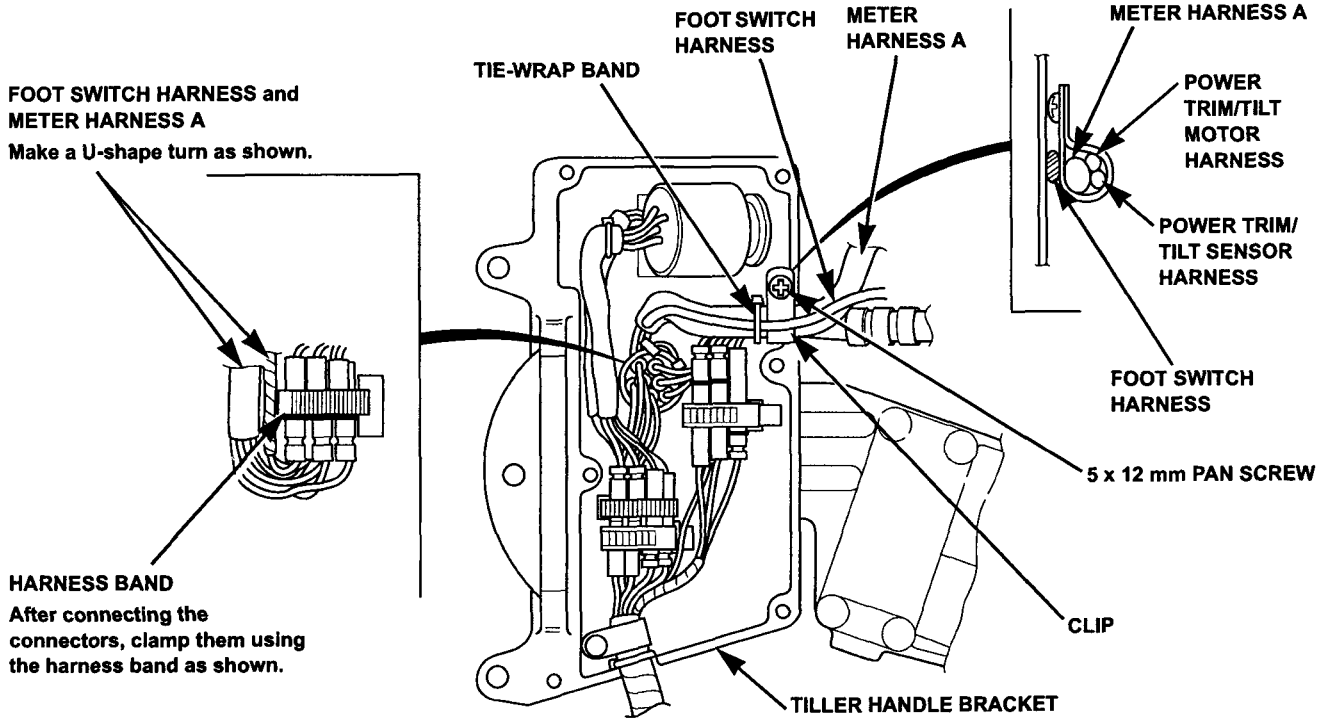
If terminals are added, always use a wire crimper and securely stake terminals to wires.

Remove the tiller handle bracket cover, connect the power trim/tilt foot switch wire harness, and secure it with the harness band and clips.

DESCRIPTION	PART NO.
Foot Trim Switch	06180-ZV5-000AH

Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY
Sl	SLATE	Pu	PURPLE





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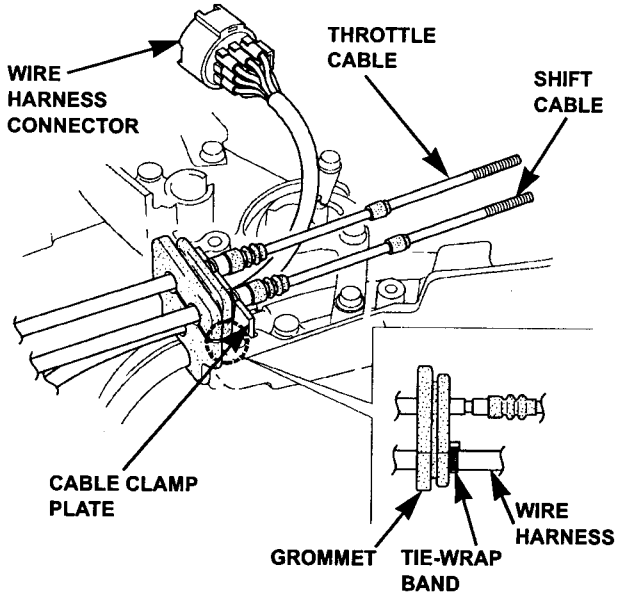
REMOTE CONTROL CABLE INSTALLATION AND ADJUSTMENT

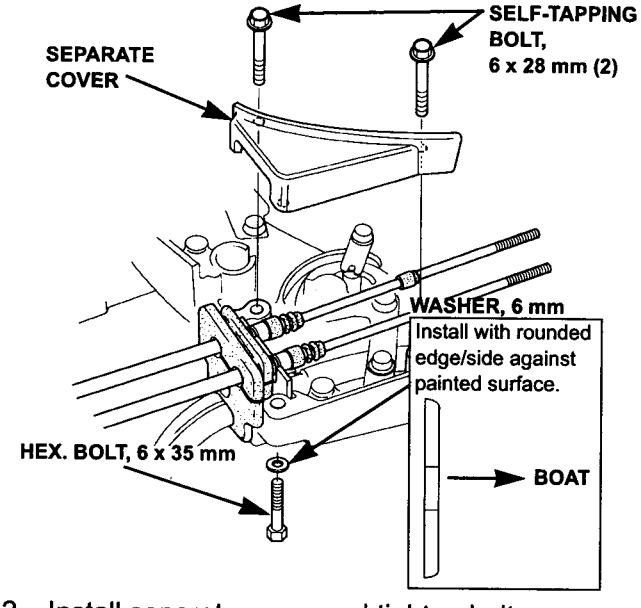
Route and connect cables to the remote control before connecting them to the motor.



1. Pass wire harness and control cables through grommet.

   Hold control cables with cable clamp plate by aligning the plate cutout with cable groove.

   Position tie-wrap band on wire harness inside grommet as shown.

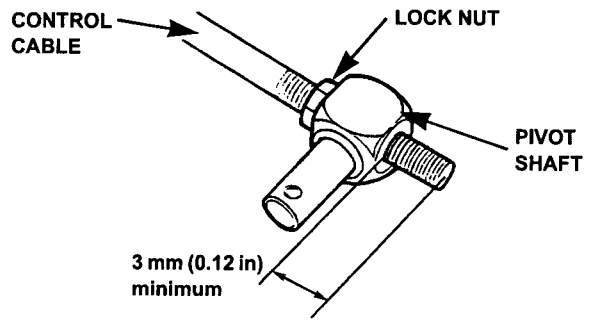


2. Install separate cover and tighten bolts securely.

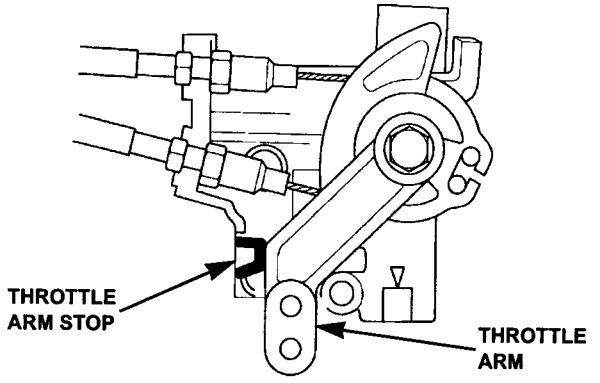
   TORQUE:

   Self-tapping bolt, 6 x 28 mm: 12 N•m (9 ft-lb)

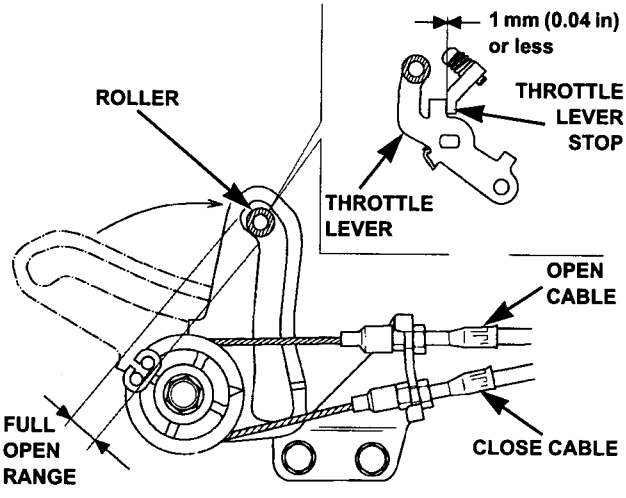
   Hex bolt, 6 x 35 mm: 10 N•m (7 ft-lb)



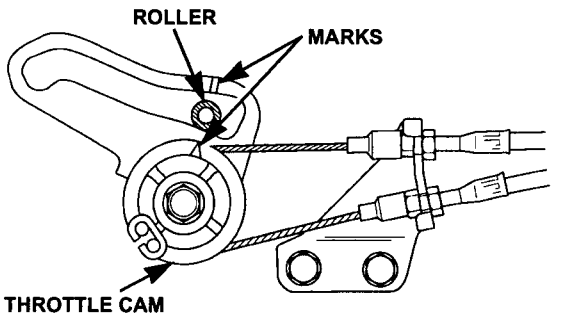
3. Thread pivot shaft onto threaded portion of the throttle and shift cable as shown.
4. Do not tighten lock nuts at this time. The lock nuts will be tightened after cables are connected.



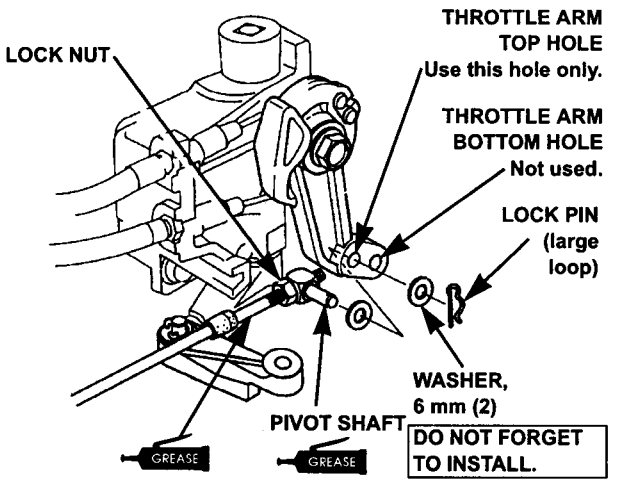
5. Pull and hold throttle arm against throttle arm stop.



Check clearance between carburetor throttle lever and throttle lever stop. Wide open throttle (WOT) clearance should be 1 mm (0.04 in) or less. If adjustment is necessary, refer to the *Honda Marine BF75A/90A Shop Manual* (page 3-12 through 3-15) for open and close cable adjustment. If clearance is within specifications, release throttle arm and proceed to step 6.

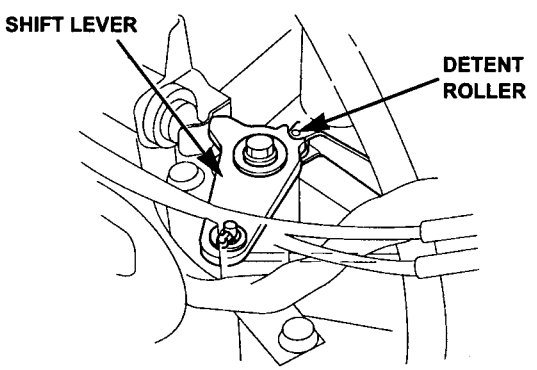


6. Throttle cable connection: Apply marine grease to the throttle cable pivot shaft. Rotate the throttle cam until marks line up with roller.

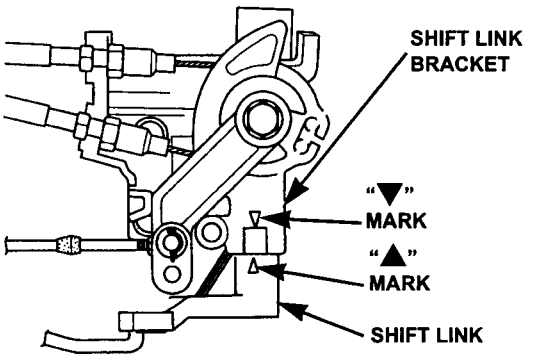


Adjust pivot shaft until it will easily attach to the throttle arm top hole. Install pivot shaft from the engine side. *Be sure pivot shaft, washers and lock pin are installed as shown.*

After connecting pivot shaft, go back and make sure marks still line up with roller. If marks do not bisect roller, readjust pivot shaft.

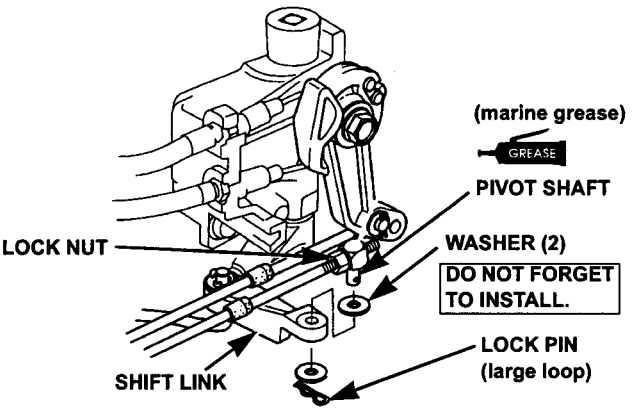


7. Shift cable connection: Make sure the shift lever is in the neutral position.



The "▼" mark on the shift link bracket will be aligned with the "▲" mark on the shift link.

8. Grease pivot shaft with marine grease.



Adjust pivot shaft until it will insert into shift link. Preload shift cable by turning pivot shaft one turn away from lock nut. *Be sure pivot shaft, washers and lock pin are installed as shown.*

After attaching shift cable to shift link, check for smooth operation by moving remote control or gear shift lever to forward and reverse positions. Make sure shift link moves smoothly and returns to the neutral detent position when the remote control or gear shift lever is returned to neutral.

NOTICE

If it is hard to shift, turn propeller shaft. Shifting with force will damage shift mechanism.

If shift arm moves smoothly and neutral detent aligns, tighten cable lock nut and proceed.

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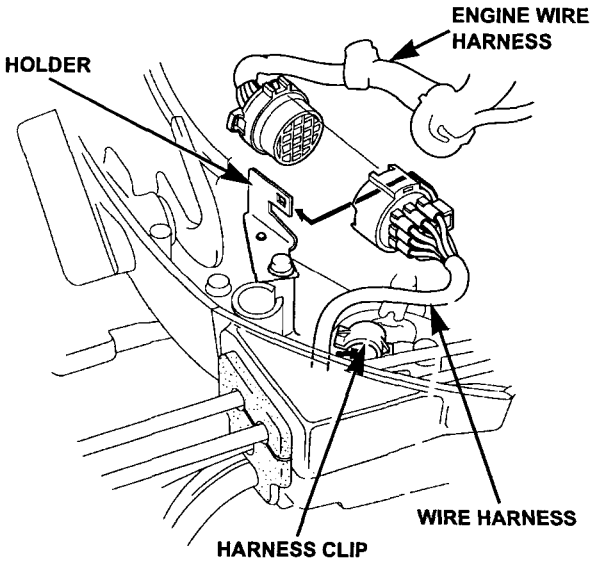
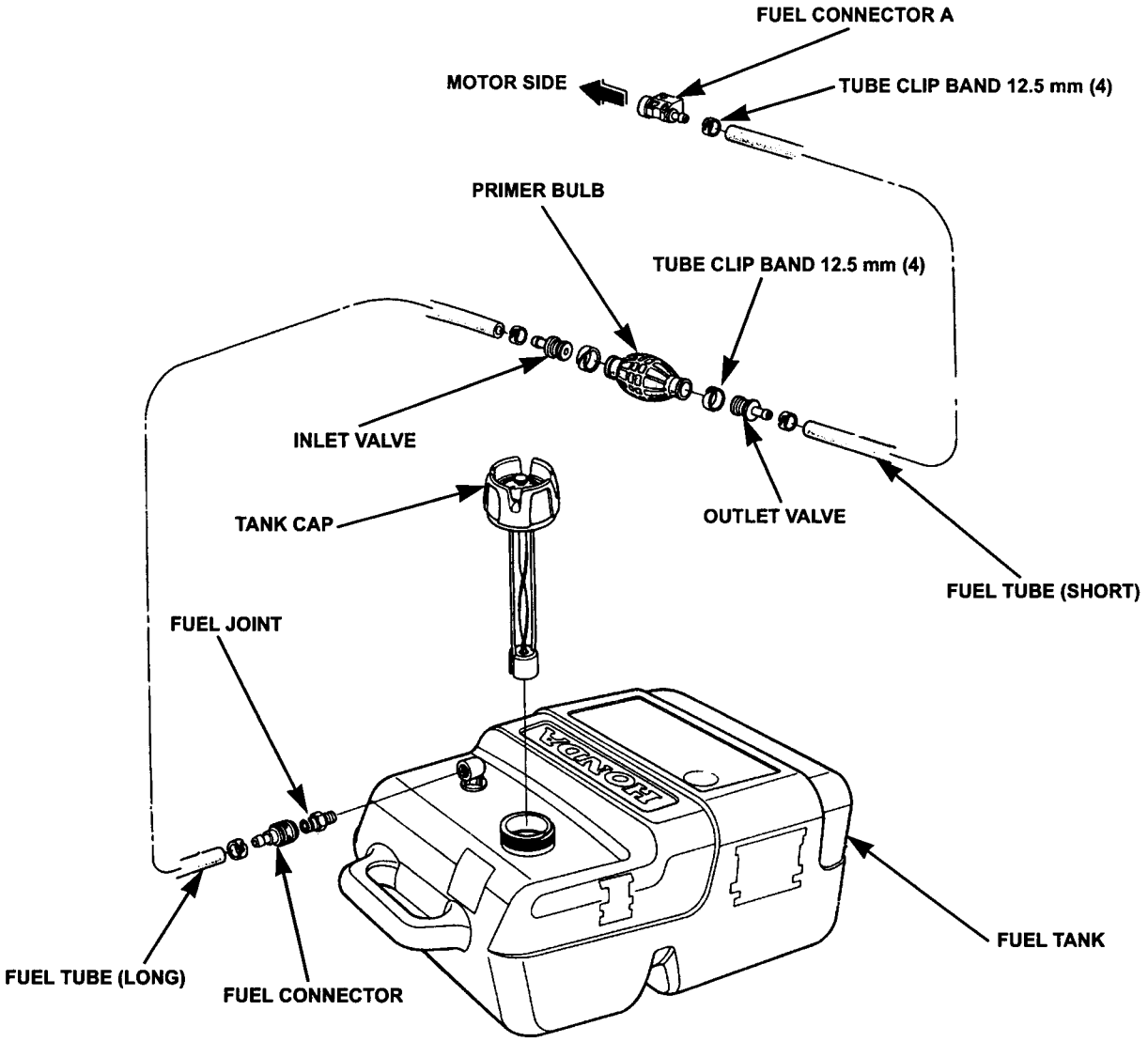


9. Connect wire harness to the engine wire harness and attach harness connector to holder. Secure wire harness with harness clip.
10. Operate control lever or gear shift lever to check for smooth, proper shift cable and throttle cable operation.

AVAILABLE ACCESSORIES

Consult the *Honda Marine Accessories Catalog* for current information on gauges, instrument harnesses, wiring harnesses, switch panels, and control boxes.

FUEL SYSTEM CONNECTIONS



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7. BF115A/BF130A

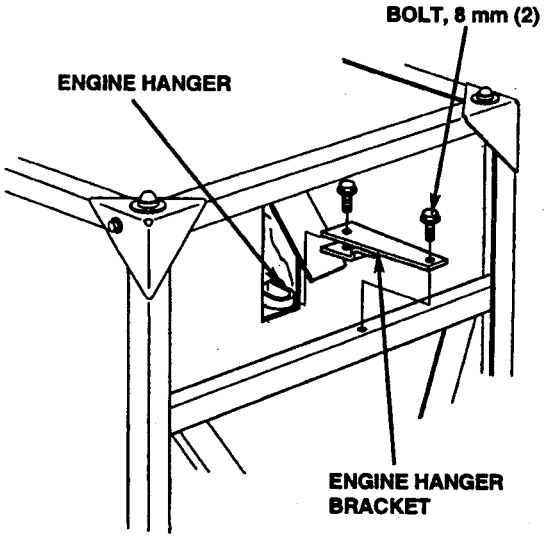
To ensure proper operation, you must install a PGM-FI panel indicator or a key switch panel with PGM-FI lights. See the *Honda Marine Accessories Catalog* (MO045).

7

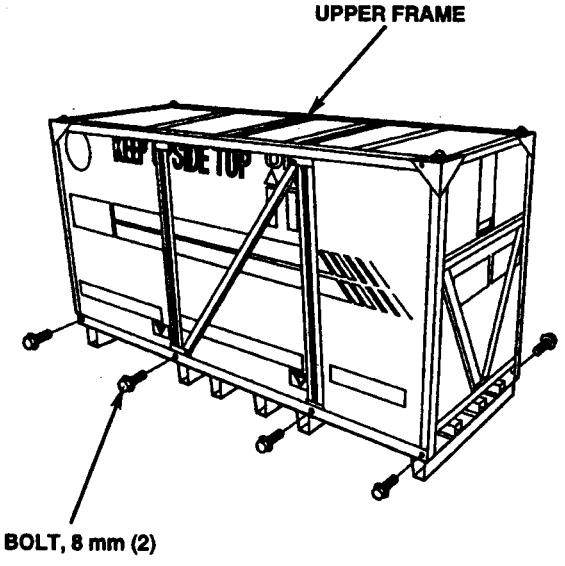
UNPACKING

Wear heavy gloves during unpacking to protect your hands from sharp edges and burrs on the steel crate frame.

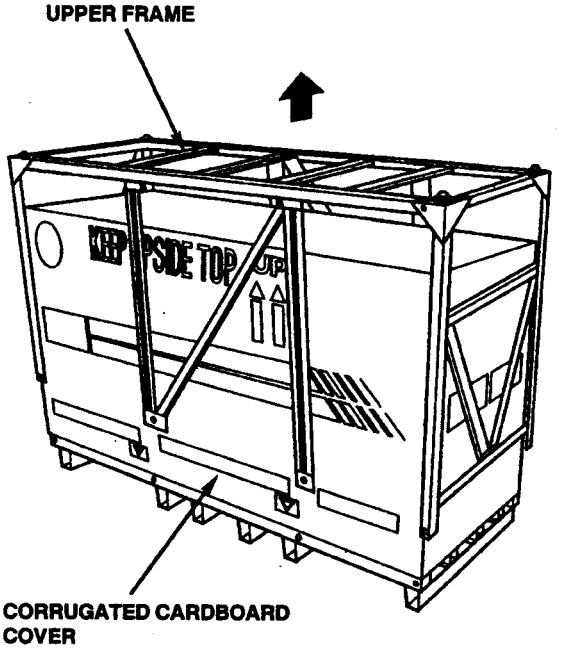
1. Remove the engine hanger bracket that secures the engine hanger.



2. Remove the eight bolts attaching the upper frame to the crate base.

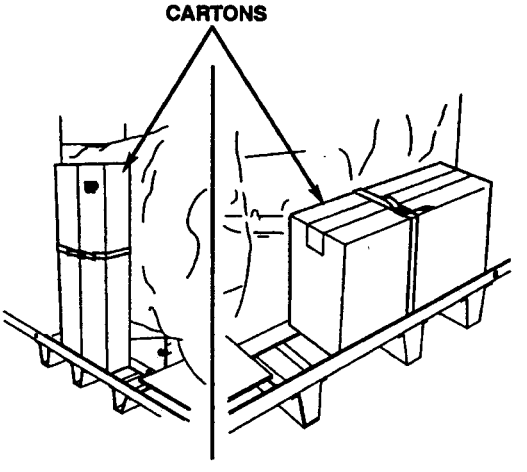


3. Slowly lift the upper frame being careful to not strike the outboard motor. Get an assistant to help remove the crate frame. Then remove the corugrated cardboard cover.



4. Cut the ties and remove the parts cartons from the crate.

   Check parts against parts list



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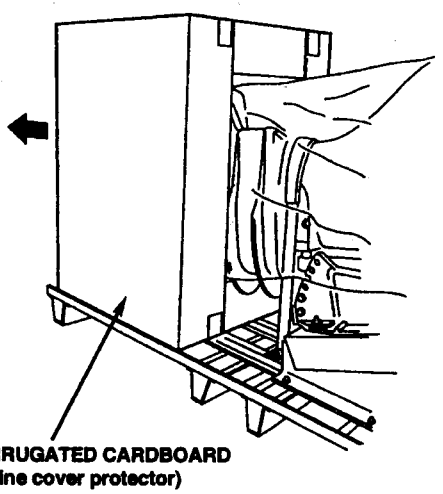
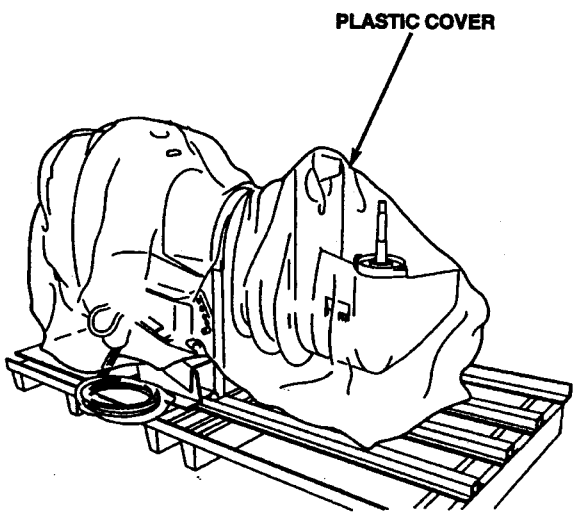
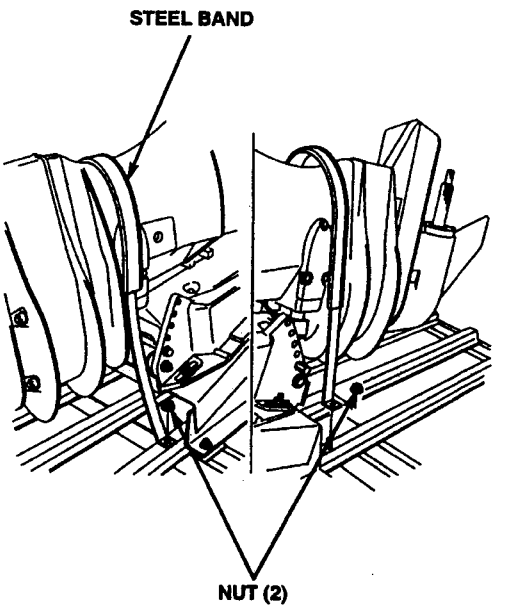
5. Slide off the corrugated cardboard engine cover protector.



6. Remove the plastic cover from the outboard motor.



7. Remove the two nuts and remove the steel band from the outboard motor.

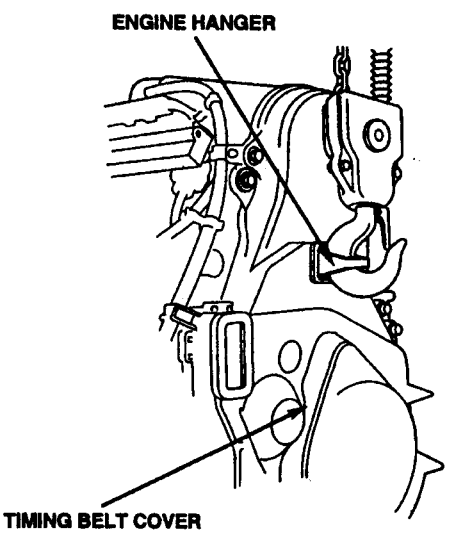


8. Connect a hoist to the engine hanger. Carefully lift the outboard motor with the lower crate frame attached.

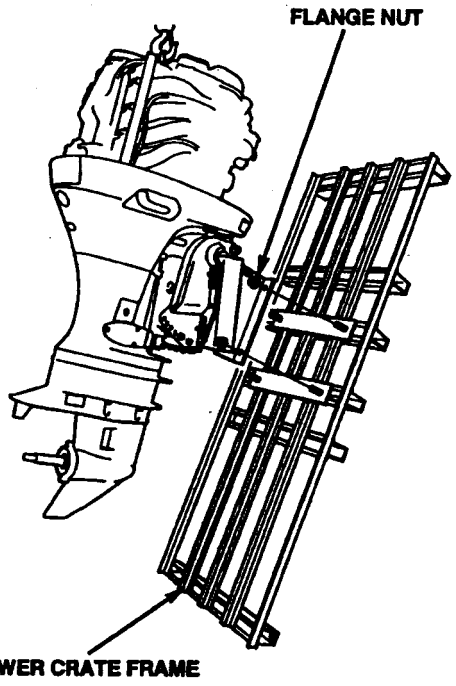
   Use a suitable hoist with a capacity rating of 550 lb (250 kg) or more.

   Lift up the outboard motor while supporting it and take care not to let the outboard motor swing.

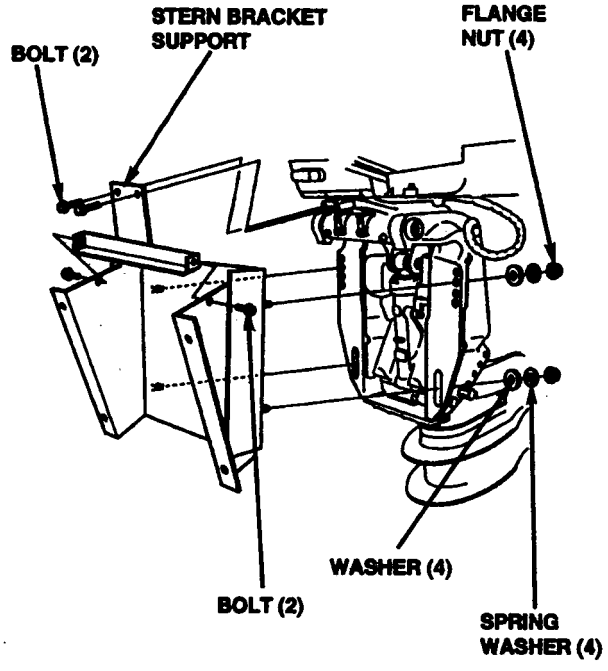
   Take care not to damage the timing belt cover while lifting the outboard motor.



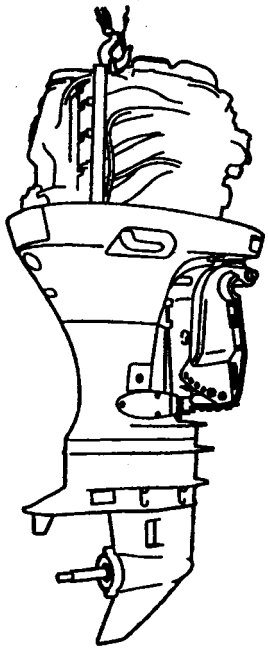
9. With the lower crate frame end resting on the floor, remove the lower crate frame from the outboard motor by removing the four flange nuts.



10. Remove the four bolts, washers, spring washers and flange nuts, and remove the stern bracket support.



11. The outboard motor should be placed on a stand until boat transom is completely prepared.



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SPECIFICATIONS

ENGINE

Model	BF115A	BF130A
Type	4-stroke, O.H.C., 4-cylinder	
Displacement	2,254 cm³ (137.5 cu. in.)	
Bore x stroke	86 x 97 mm (3.4 x 3.8 in)	
Rated horsepower	84.6 kW (115 PS) at 5,000–6,000 rpm	95.6 kW (130 PS) at 5,000–6,000 rpm
Maximum torque	169 N•m (17.2 kg-m, 124 lb-ft)	180 N•m (18.4 kg-m, 133 lb-ft)
Compression ratio	8.8 : 1	
Fuel consumption	310 g (10.9 oz.) / kWh	345 g (12.2 oz.) / kWh
Cooling system	Forced water circulation by impeller pump with thermostat	
Ignition system	Fully transistorized, battery ignition	
Ignition timing	10° at 650 rpm B.T.D.C. to 24° at 6,000 rpm B.T.D.C.	
Spark plug	ZFR7F (NGK), KJ22CR-L8 (DENSO)	
Fuel supply system	Programmed fuel injection	
Fuel injection system	Electronic control	
Fuel injection nozzle	Pintle type	
Fuel pipe	Steel pipe and rubber tubes	
Lubricating system	Pressure lubrication by trochoid pump	
Oil capacity	5.6 liter (5.9 US qt) at oil change 6.5 liter (6.9 US qt) with oil filter replacement	
Recommended oil	SAE10W-30, API Service classification SG, SH, SJ	
Starting system	Electric starter	
Battery system	666 MCA minimum (engine operations only)	
Stopping system	Ignition primary circuit ground	
Fuel used	Automotive unleaded gasoline (minimum 86 pump octane)	
Optional fuel tank capacity	26 liters (6.6 US gal)	
Fuel pump	Electric and mechanical plunger type	
Exhaust system	Thru hub type	

LOWER UNIT

Model		BF115A	BF130A
Clutch		Dog clutch (forward-neutral-reverse)	
Gear ratio		2.0:1 (28/14)	
Reduction type		Spiral bevel gear	
Gear case oil capacity		1.0 liters (1.1 US qt)	
Recommended gear case oil		API Service classification GL4 or GL5	
Propeller	Number of blades Diameter x pitch	Optional part	
	Rotating direction	Clockwise (viewed from rear) LA and XA types Counterclockwise (viewed from rear) LCA and XCA types	
	Driving system	Spline	

INSTALLATION HEIGHT RECOMMENDATIONS

Shaft Length	Outboard Transom Height	Workable Boat Transom Height
L type	537 mm (21.1 in)	512 ~ 537 mm (20.2 ~ 21.1 in)
X type	664 mm (26.1 in)	639 ~ 664 mm (25.2 ~ 26.1 in)

TRANSOM DRILLING

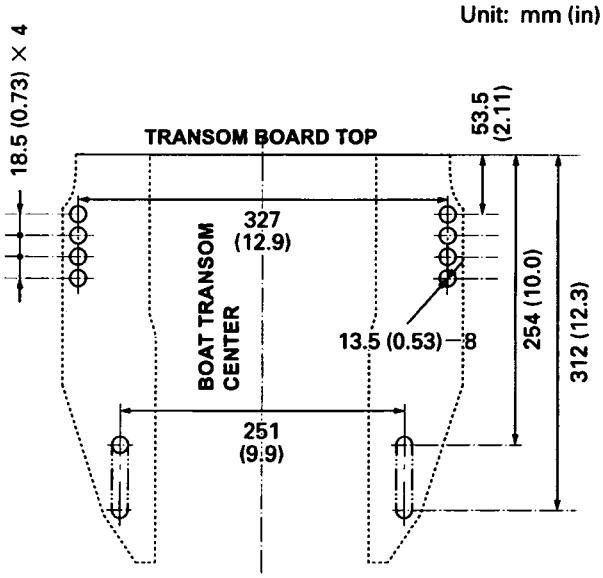
See also "USING THE TRANSOM MOUNT DRILL FIXTURE" on page 1-23.

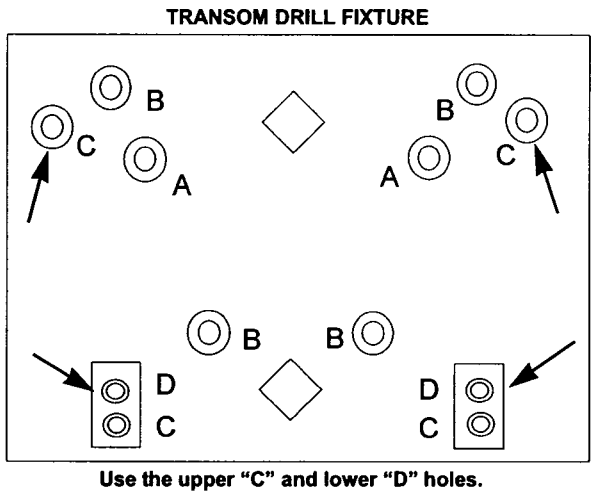
Description	Part No.
Transom Mount Drill Fixture	07MPZ-ZV3010C

The BF115A and BF130A outboards motors are designed to be installed on a boat transom with the following transom board thickness:

Boat Transom Board Thickness
50 ~ 70 mm (2 ~ 2.75 in)

1. Set the outboard motor onto the boat transom and verify the installation height is correct.



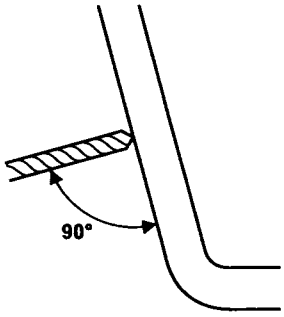


Use the upper "C" and lower "D" holes.

2. Mark four center marks for the bolt holes on the transom board (two marks on either side of the outboard motor installation lines).

   The upper bolt holes should be more than 33 mm (1.3 in) from the top of the transom.

   The lower bolt holes should allow the mounting bolts to contact the upper end of the stern bracket.

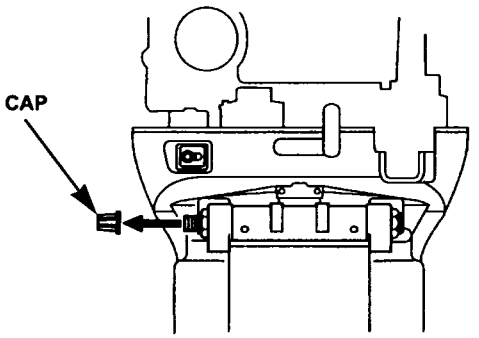


3. Drill four holes using a 17/32 drill bit.

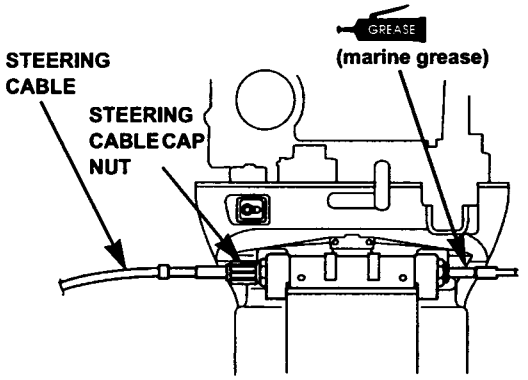
STEERING CONNECTIONS

Do this before final placement of the motor on the transom.

Refer to the steering cable manufacturer's manual for cable handling procedures.



1. Remove the cap from the steering/tilt tube.



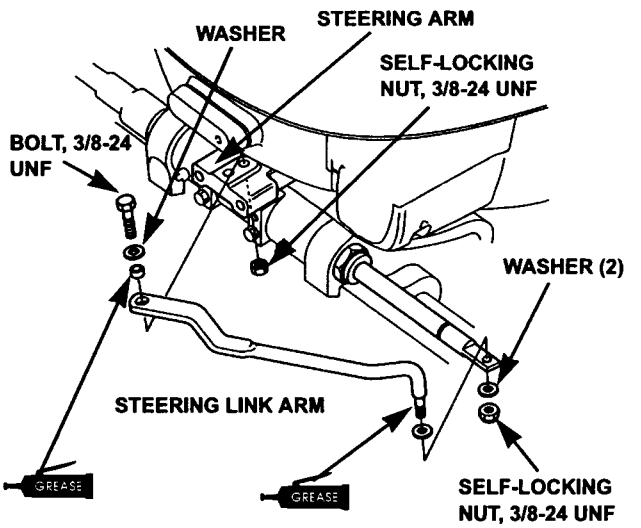
2. Fully extend the steering cable. Apply waterproof marine grease to the inner and outer cable ends. Do not use wheel bearing grease. Install the steering cable through the steering/tilt tube. When steering cable enters from the port side, the steering/tilt tube must be reversed. Refer to the *Honda Marine BF115A/BF130A Shop Manual* for procedures.
3. Hand-tighten steering cable cap nut at this time.
4. Lower motor on transom and align mounting holes.

STEERING LINK ARM INSTALLATION

1. Install bolt, washer, and collar into link arm. Remove access grommet from inside engine cover area and thread bolt into steering arm inside hole. Tighten bolt then tighten lock nut. Do not use forward hole.

   TORQUE:

   3/8-24 UNF bolt: 22 N•m (16 ft-lb)
   3/8-24 UNF lock nut: 18 N•m (13 ft-lb)



2. Turn steering wheel to extend the steering cable out of the steering/tilt tube. Install steering link arm into steering cable end. Use hardware shown and connect link arm to the steering cable.
3. Turn steering wheel to retract steering cable into the steering/tilt tube. Tighten steering link arm to steering cable self-locking nut. Then loosen self-locking nut 1/8 turn.

   TORQUE: 8–11 N•m (7–8 ft-lb)
4. Tighten steering cable nut until the steering cable end play is removed.

   TORQUE: 34–49 N•m (25–36 ft-lb)

   After steering cable nut is tightened, there should be no end play between outer steering cable and steering tilt/tube.

   For further information regarding steering cable, refer to the boat manufacturer's operation manual.
5. Directly after completing the steering link arm and steering cable installation, verify the following:
   - Motor turns the proper direction when the steering wheel is turned right and left. If the

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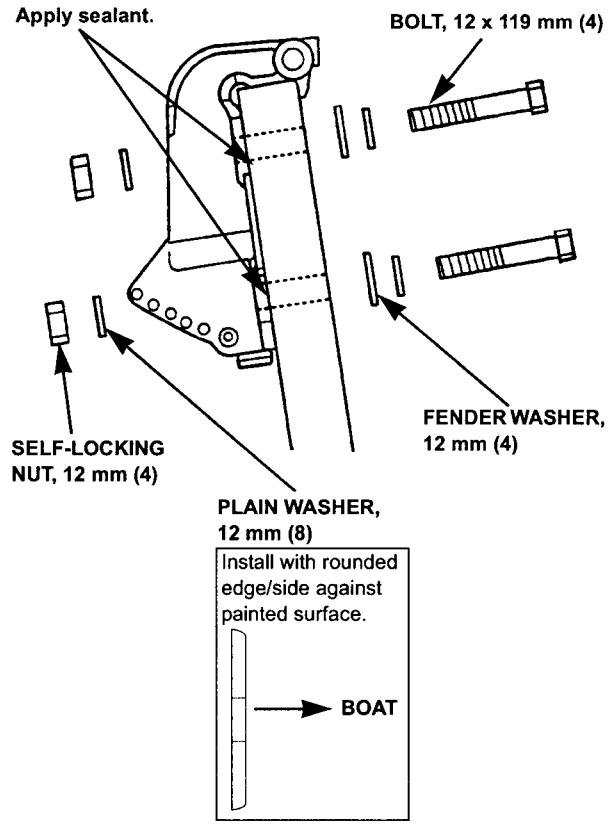
steering is reversed, correct at the steering box.

- Motor steering angle is equal when steering wheel is turned full right and full left. If the motor steering angles are not equal:
  - Major corrections can be made at the steering box (refer to the steering box or steering cable manufacturer's instructions).
  - Minor corrections can be made by moving the steering/tilt tube laterally (refer to the *BF115A/BF130A Shop Manual*).

Make the steering angles equal as necessary.

- The steering cable and/or steering link arm must not come in contact with any part of the boat when the steering wheel is turned full right and full left and at all tilt angles. Correct as necessary and check again.

BOLTING MOTOR TO TRANSOM



Apply marine hull sealant to the mounting holes and hardware. Use Hondabond HT (P/N 08718-0001) or equivalent silicone sealant for below waterline use.

With the motor in place against the transom, verify correct motor height. Motor can be raised by using a lower set of mounting holes.

Attach the motor with marine grade hardware. Use washers under all bolts and nuts. Use additional fender washers against the transom. Use support plates as recommended by the hull manufacturer.

Apply a small amount of oil or grease to all bolt threads prior to installation.

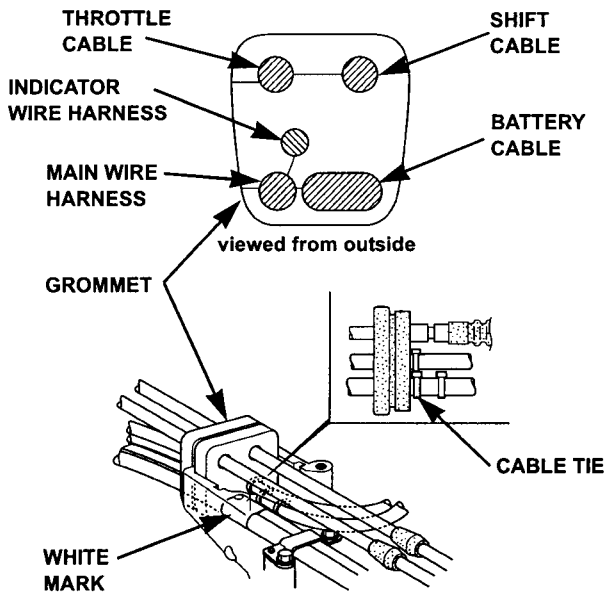
Be sure at least one thread of the bolt is visible beyond the nut when the fasteners are tightened.

NOTICE

Do not use an air impact tool to tighten or loosen the transom bolts. Using an air impact tool to tighten or loosen the transom bolts can generate enough heat to damage the bolt threads. The air impact tool can also produce enough tightening torque to damage the boat transom.

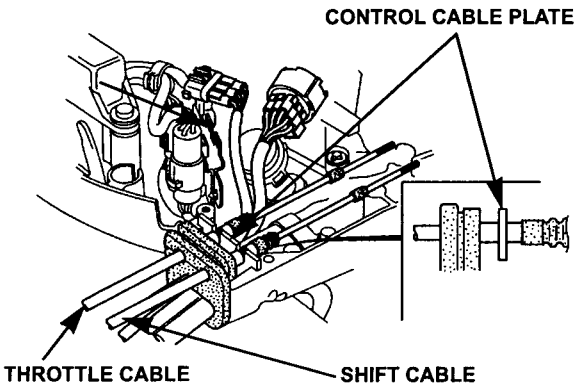
REMOTE CONTROL CABLE INSTALLATION AND ADJUSTMENT

Route and connect cables to the remote control before connecting them to the motor.

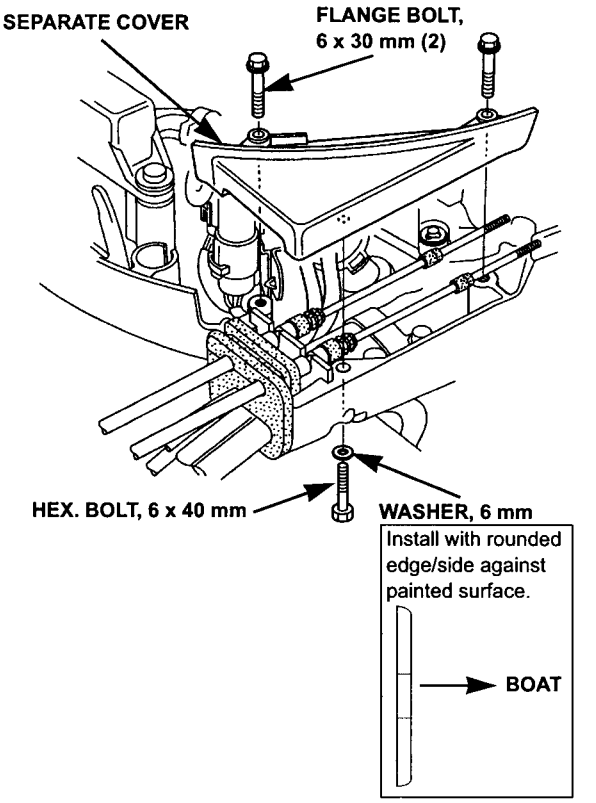


1. Pass the main wire harness, indicator wire harness, battery cable and control cables through grommet.
2. Make sure the white mark on the battery cable aligns with the inside edge of the grommet.

   Position the cable tie on the switch panel wire harness and the indicator wire harness at the inside of the grommet.



3. Install the remote control cable plate by aligning groove in control cables and groove in undercase.

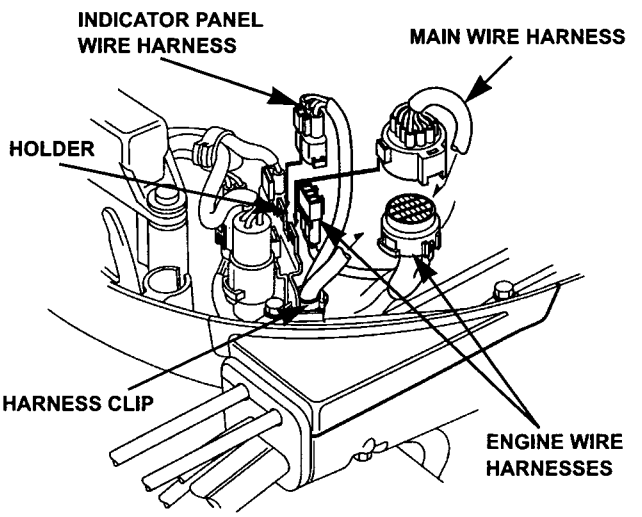


4. Install separate cover and tighten bolts securely.

   TORQUE:

   Flange bolt, 6 x 30 mm; 12 N•m (9 ft-lb)

   Hex bolt, 6 x 40 mm; 10 N•m (7 ft-lb)



5. Connect the indicator panel wire harness and switch panel or main wire harness to the engine wire harnesses. Attach the harness connectors to the holder and secure wire harnesses to harness clip.

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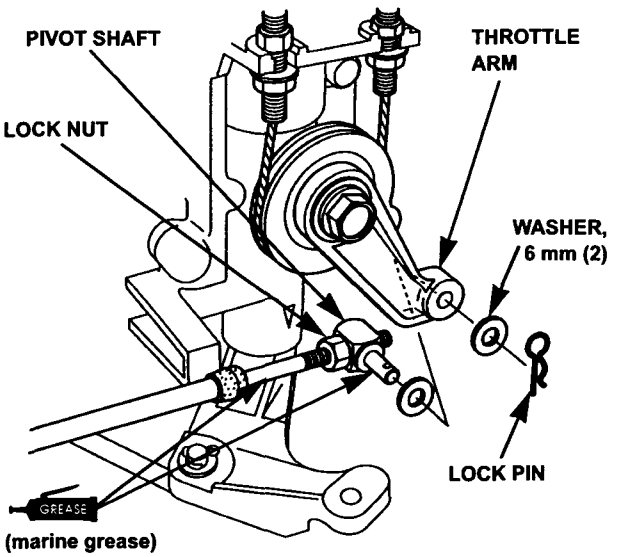
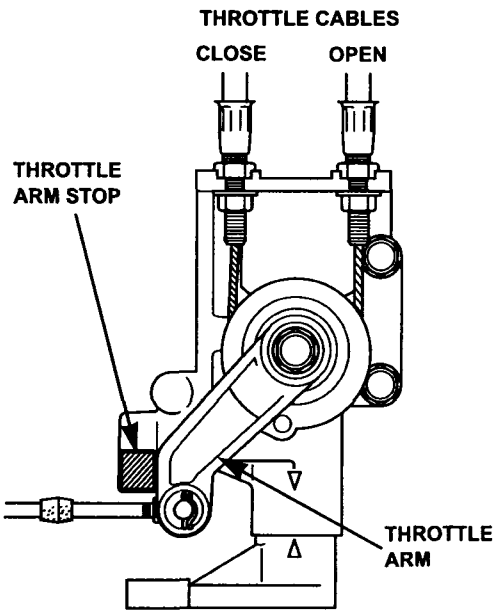
THROTTLE CABLE CONNECTION

1. Put the remote control lever in the NEUTRAL position.



2. Thread the pivot shaft onto the threaded portion of the throttle cable. Apply marine grease to the pivot pin.
3. Adjust the pivot shaft until it slips into the throttle arm. Install the pivot shaft from the engine side. Install washers on both sides of the arm and secure with a lock pin.

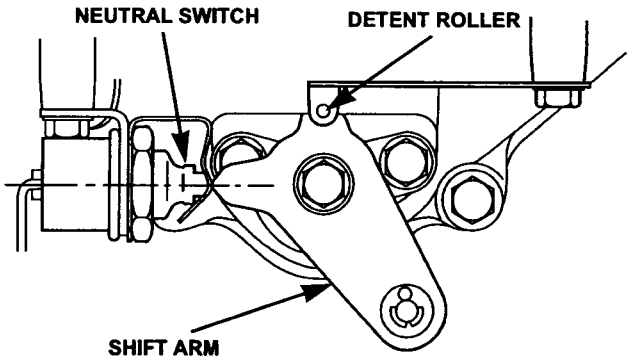


4. Move the remote control lever to the full throttle position. Make sure the throttle arm contacts the throttle arm stopper. If the throttle arm does not contract throttle arm stop, check for full stroke at the remote control.

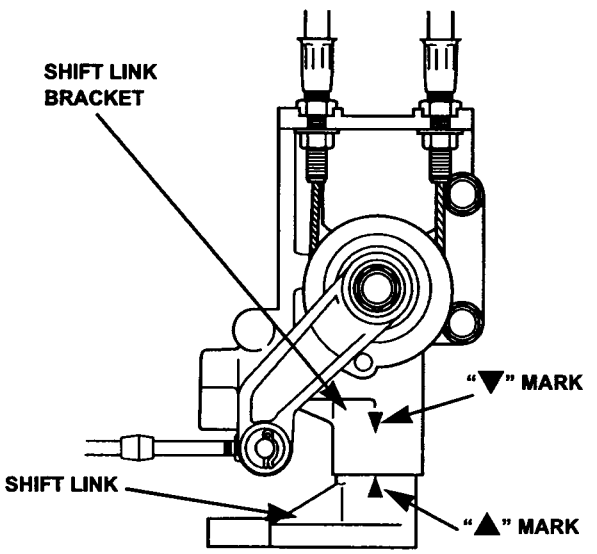
   Avoid changing the open or close throttle cable adjustment. These cables normally do not require adjustment during pre-delivery service. If these cables are changed unnecessarily, full throttle and/or idle speed June be adversely affected. If you cannot achieve full throttle or proper idle speed, always check control cable adjustment first before changing the open or close throttle cable adjustment or idle rpm. See *Honda Marine BF115A/BF130A Shop Manual*, page 3-10 through 3-13, for cable adjustment.

SHIFT CABLE CONNECTION

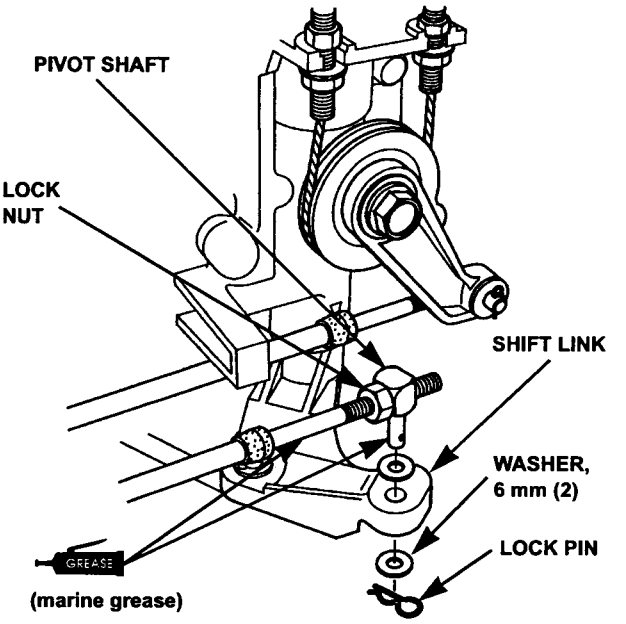
1. Center remote control lever:
   a. Move remote control lever to full forward position.
   b. Slowly return control lever to the NEUTRAL position.
   c. Move control lever to full REVERSE position.
   d. Slowly return control lever to the NEUTRAL position.



2. With the outboard motor in the neutral position, make sure the shift arm tip aligns with the neutral switch tip and the detent roller is in the shift arm groove.



The "▼" mark on the shift link bracket will be aligned with the "▲" mark on the shift link.



3. Thread the pivot shaft onto the threaded portion of the shift cable.
4. Apply marine grease to the pivot pin.
5. Adjust the pivot shaft until it will insert into the shift link.

   Make sure the pivot shaft is centered in the shift link hole. Adjust by turning the pivot shaft, if necessary.

   Install washers on both sides of the arm and secure with the lock pin.

   After attaching shift cable to shift link, check for smooth operation by moving remote control lever to forward and reverse positions. Make sure shift link moves smoothly and returns to the neutral detent position when the remote control lever is returned to neutral.

NOTICE

If remote control lever is hard to shift, turn propeller shaft. Shifting with force will damage shift mechanism.

   If shift arm moves smoothly and neutral detent aligns, tighten cable lock nut.

6. Operate control lever to check for smooth, proper shift cable and throttle cable operation.

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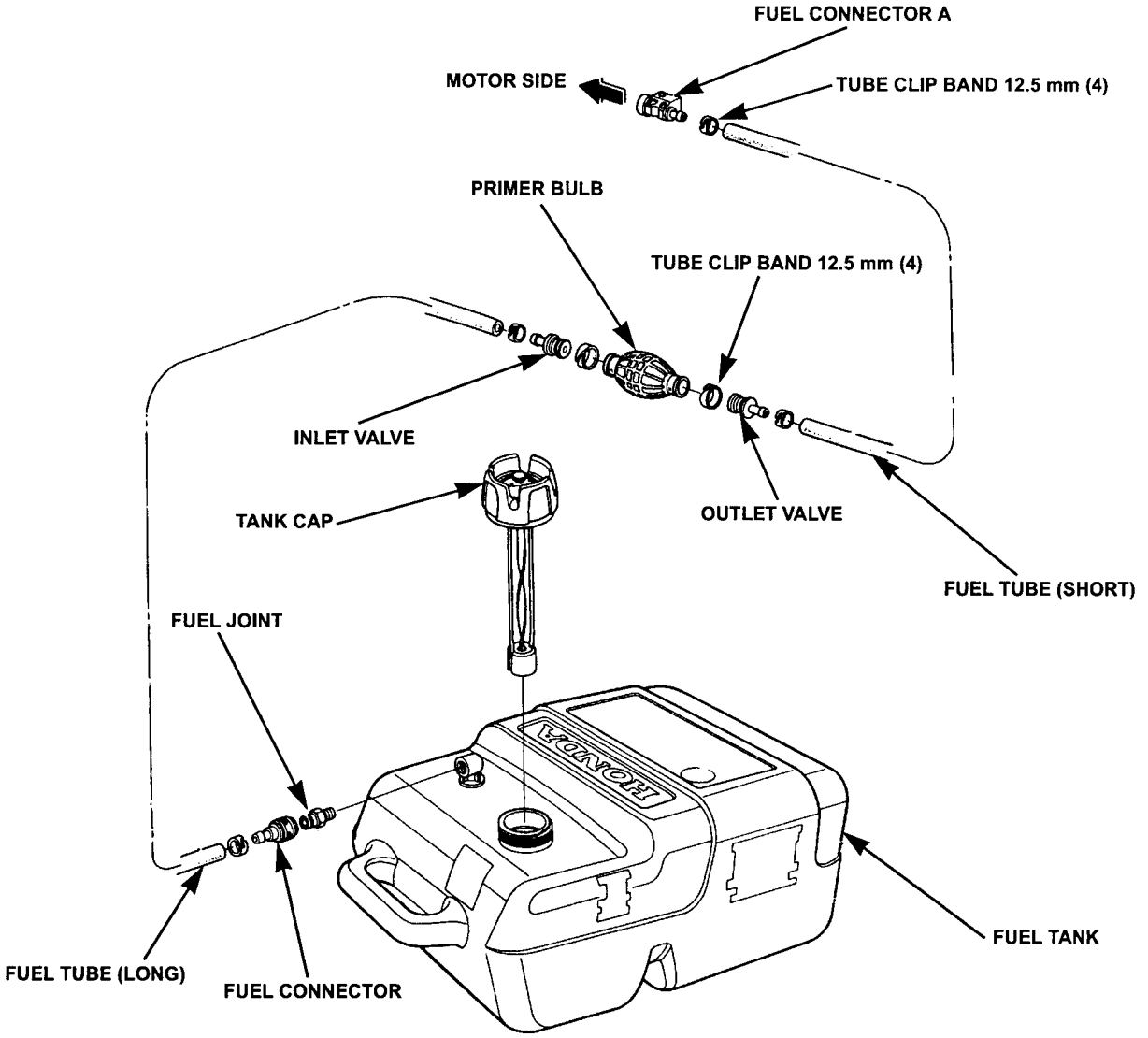
AVAILABLE ACCESSORIES

Consult the *Honda Marine Accessories Catalog* (MO045) for current information on gauges, instrument harnesses, wiring harnesses, switch panels, and control boxes.

FUEL SYSTEM CONNECTIONS



The supplied Honda fuel hose assembly has a 7.5 mm (5/16 in) I.D. to properly connect this fuel tube to the fuel hoses commonly found in most boats. You will need an adapter, 7.5 ~ 10 mm (5/16 ~ 3/8 in). Order P/N 16966-MR1-000 (joint, fuel tube).

NOTICE

Do not use unlined worm-type clamps. Damage to the fuel hose will occur.

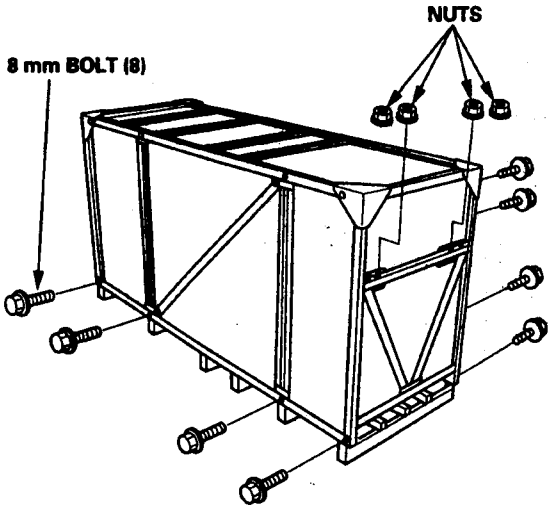
To ensure proper operation, you must install a PGM-FI panel indicator or a key switch panel with PGM-FI lights. See the *Honda Marine Accessories Catalog* (MO045).

UNPACKING

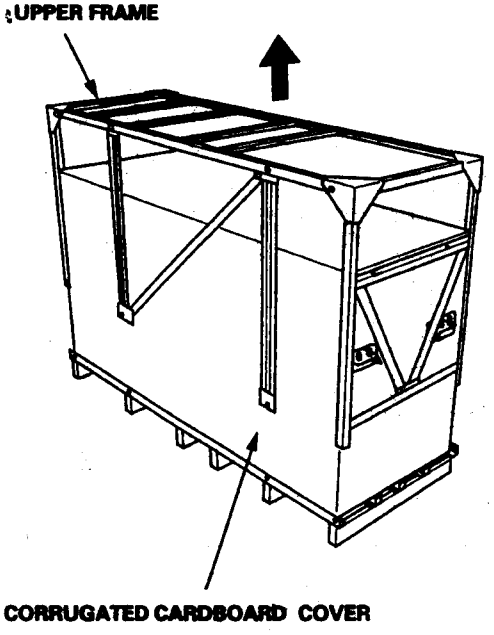
An engine hanger is now available for use in lifting the BF200A/BF225A. Call the *Honda Marine Tool and Equipment Program* at 1-888-424-6857 to order P/N VSB02C000013.

Wear heavy gloves during unpacking to protect your hands from the sharp edges and burrs on the steel crate frame.

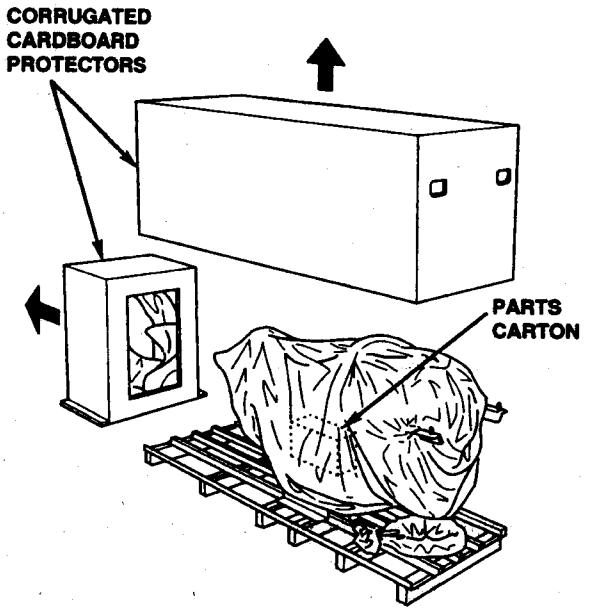
1. **Remove the eight bolts attaching the upper frame and the four nuts attaching the engine hanger bracket.**



2. **Lift up the upper frame slowly with care not to hit the outboard motor. Get an assistant to help remove the crate frame. Then remove the corrugated cardboard cover.**



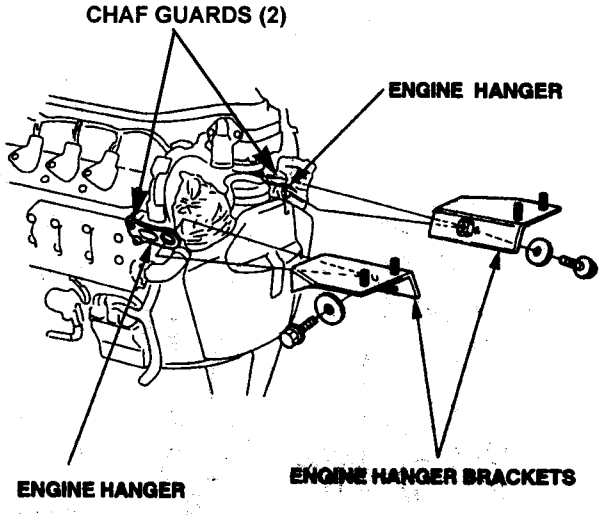
3. **Lift up and remove the corrugated cardboard protector that contains the engine, then slide and remove the corrugated cardboard protector that contains the engine cover.**



4. **Cut the tie and remove the parts carton from the crate. Compare the parts to the parts list**

5. **Remove the engine hanger brackets from the engine hangers.**

   Remove clear plastic chaf guards.



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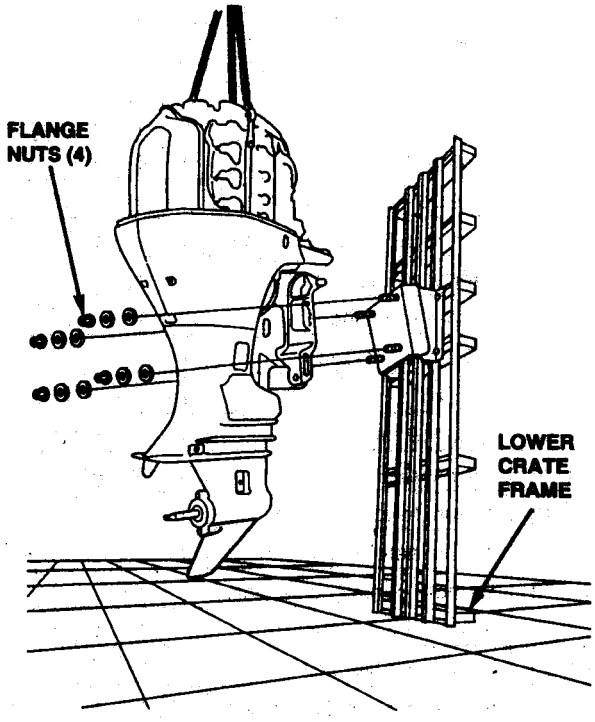
6. Attach a three point engine chain sling to the three engine hangers. As necessary, use clean protective pads between the anchors and the engine belt cover or other related parts. Use an overhead gantry type crane with a lift capacity of at least 2000 lbs.

   Do not use an automotive type telescoping hydraulic crane. This type of crane may tend to tip when the boom is extended and the engine is lifted to the installation height.

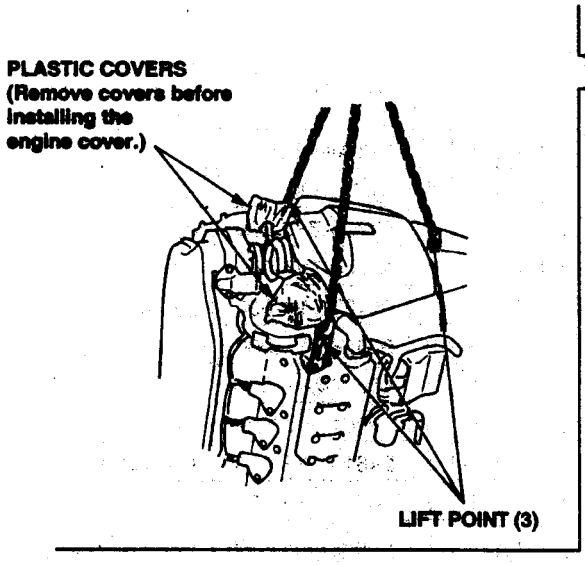
   Before each use, inspect the sling and all fasteners and attachments for damage or defects. Additional inspections should be performed during sling use. Damaged or defective slings must be immediately removed from service.

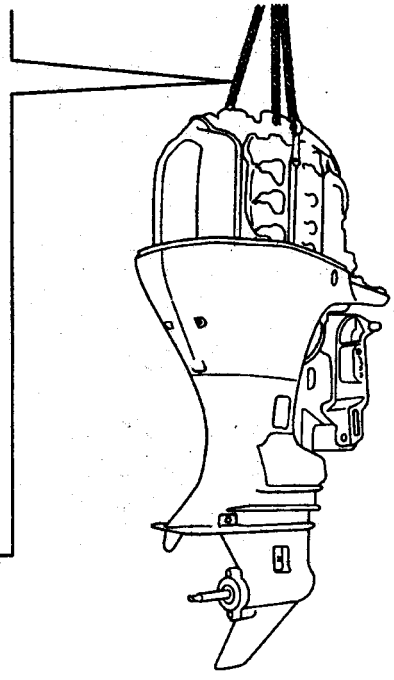
Lift up the motor up with the crate frame still attached. With the crate frame upright and the lower crate frame resting on the floor, remove the crate frame from the motor by removing the four flange nuts.



NOTICE

Before installing the engine cover, remove the plastic covers from the air intake mouths of the engine to prevent damage to the engine.





SPECIFICATIONS

ENGINE

Model	BF200A	BF225A
Type	4-stroke, O.H.C., 6-cylinder	
Displacement	3,471 cm³ (211.7 cu in)	
Bore x stroke	89 x 93 mm (3.5 x 3.7 in)	
Rated horsepower (full throttle range)	147.1 kW (200 HP) at 5,000–5,700 rpm	165.5 kW (225 HP) at 5,500–6,000 rpm
Maximum torque	295 N•m (30.1 kg-m, 217.7 lb-ft)	
Compression ratio	9.4 : 1	
Fuel consumption ratio	334 g/kW•h (246 g/PS•h)	
Cooling system	Forced water circulation by impeller pump with thermostat	
Ignition system	Fully transistorized, battery ignition	
Ignition timing	10° at 650 rpm B.T.D.C.	
Spark plug	IZFR6F 11 (NGK), VKJ20RZ-M II (DENSO)	
Fuel supply system	Programmed fuel injection	
Fuel injection system	Electronic control	
Fuel injection nozzle	Pintle type	
Fuel	Unleaded gasoline with a pump octane rating of 86 or higher	
Fuel pump	Electric and mechanical plunger type	
Lubrication system	Pressure lubrication by trochoid pump	
Lubrication capacity	7.6 liter (8.0 US qt)	
Starter system	Electric starter	
Stopping system	Primary circuit ground	
Exhaust system	Thru hub type	

LOWER UNIT

Model	BF200A	BF225A
Clutch	Dog clutch (forward-neutral-reverse)	
Gear ratio	1.86:1 (15/28)	
Reduction type	Spiral bevel gear	
Gear case oil capacity	1.17 liter (1.24 US qt)	
Recommended gear case oil	API Service classification GL4 or GL5	
Propeller rotating direction	Clockwise (viewed from rear): LA, XA and XXA types Counterclockwise (viewed from rear): XCA and XXCA types	

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PARTS LISTING

REF. NO.	DESCRIPTION	BF200A					BF225A					PART NO.	REMARKS
		LA	XA	XCA	XXA	XXCA	LA	XA	XCA	XXA	XXCA		
1	Indicator wire harness	1	1	1	1	1	1	1	1	1	1	32185-ZW5-000	
2	Indicator panel assembly	1	1	1	1	1	1	1	1	1	1	37206-ZW5-004	
3	Pan-head screw (5 x 40mm)	4	4	4	4	4	4	4	4	4	4	93500-05040-1B	Use with REF. NO. 2
4	Flange nut (5 mm)	4	4	4	4	4	4	4	4	4	4	94050-05020	
5	Plain washer (5 mm)	4	4	4	4	4	4	4	4	4	4	94103-05200	
6	Lock washer (5 mm)	4	4	4	4	4	4	4	4	4	4	90501-ZW5-U00	
7	Band, case grommet (lower)	1	1	1	1	1	1	1	1	1	1	40119-ZY3-003	
8	Undercase grommet A	1	1	1	1	1	1	1	1	1	1	40105-ZY3-U00	
9	Propeller castle nut (18 mm)	1	1	1	1	1	1	1	1	1	1	90301-ZW1-B00	Propeller installation
10	Propeller thrust washer	1	1	1	1	1	1	1	1	1	1	90506-ZY3-000	
11	Propeller washer	1	1	1	1	1	1	1	1	1	1	90512-ZY3-000	
12	Cotter pin (4.0 mm)	1	1	1	1	1	1	1	1	1	1	90758-ZW1-B00	
13a	Wrench (14x17) (open end)	1	1	1	1	1	1	1	1	1	1	99001-14170	
13b	Wrench (10x12) (open end)	1	1	1	1	1	1	1	1	1	1	99001-10120	
13c	Wrench (8 mm) (open end)	1	1	1	1	1	1	1	1	1	1	89203-836-000	
13d	Pliers (135 mm)	1	1	1	1	1	1	1	1	1	1	99002-13500	
13e	Wrench, hex. (6 mm)	1	1	1	1	1	1	1	1	1	1	89221-371-000	
13f	Grip	1	1	1	1	1	1	1	1	1	1	99003-30000	
13g	Screwdriver, check bolt	1	1	1	1	1	1	1	1	1	1	89301-921-010	
13h	Screwdriver 3, straight slot (no. 2)	1	1	1	1	1	1	1	1	1	1	99003-30000	
13i	Screwdriver 1, Phillips (no. 2)	1	1	1	1	1	1	1	1	1	1	99003-10000	
13j	Wrench, plug	1	1	1	1	1	1	1	1	1	1	89216-SF4-000	
13k	Puller, mini fuse	1	1	1	1	1	1	1	1	1	1	38235-S04-003	
13l	Wrench, eye (19 mm)	1	1	1	1	1	1	1	1	1	1	99006-19000	
13m	Wrench, box (P16x17)	1	1	1	1	1	1	1	1	1	1	99004-16170	
13n	Bag, tool	1	1	1	1	1	1	1	1	1	1	89101-ME5-670	
14	Hex bolt (12 x 119 mm)	4	4	4	4	4	4	4	4	4	4	90129-ZW1-010	Outboard motor installation
15	Plain washer (12 mm)	8	8	8	8	8	8	8	8	8	8	90559-ZV5-000	
16	Fender washer (12 mm)	4	4	4	4	4	4	4	4	4	4	90552-ZV5-000	
17	Self-locking nut (12 mm)	4	4	4	4	4	4	4	4	4	4	90308-ZW1-003	
18	Remote control cable plate	1	1	1	1	1	1	1	1	1	1	17877-ZY3-000	
19	Front separate cover	1	1	1	1	1	1	1	1	1	1	40151-ZY3-000ZA	
20	Hex bolt (6 x 25 mm)	2	2	2	2	2	2	2	2	2	2	90113-ZV5-000	Use with REF. NO. 19
21	Shouldered bolt (6 x 17 mm)	1	1	1	1	1	1	1	1	1	1	90111-ZY3-000	
22	Shouldered bolt (6 x 37 mm)	2	2	2	2	2	2	2	2	2	2	90132-ZY3-000	
23	Emergency lock clip	1	1	1	1	1	1	1	1	1	1	36187-ZV4-651	
24	Emission hang tag (CARB 3 stars)	1	1	1	1	1	1	1	1	1	1	N/A	

REF. NO.	DESCRIPTION	BF200A					BF225A					PART NO.	REMARKS
		LA	XA	XCA	XXA	XXCA	LA	XA	XCA	XXA	XXCA		
25	Instruction (CARB)	1	1	1	1	1	1	1	1	1	1	N/A	
26	*Owner's Manual*	1	1	1	1	1	1	1	1	1	1	31ZY2601	
27	Fuel tube assembly	1	1	1	1	1	1	1	1	1	1	17700-ZY3-000	
28	Band tube clip (12.5 mm)	1	1	1	1	1	1	1	1	1	1	17704-ZV4-010	
29	Hex bolt (6 x 16 mm)	1	1	1	1	1	1	1	1	1	1	90127-ZV4-000	
30	Washer (6 mm)	2	2	2	2	2	2	2	2	2	2	90508-ZY3-000	
31	Cable clamp (7.5 mm)	1	1	1	1	1	1	1	1	1	1	90627-ZA8-E50	
32	Cable tie	5	5	5	5	5	5	5	5	5	5	32901-952-770	
33	Cable end	2	2	2	2	2	2	2	2	2	2	24618-ZY3-000	
34	Connector cover	1	1	1	1	1	1	1	1	1	1	30421-ZY3-000	
35	Gear case cover			1		1			1		1	41102-ZY3-710ZA	
	Emission Control System Warranty	1	1	1	1	1	1	1	1	1	1	TM022	

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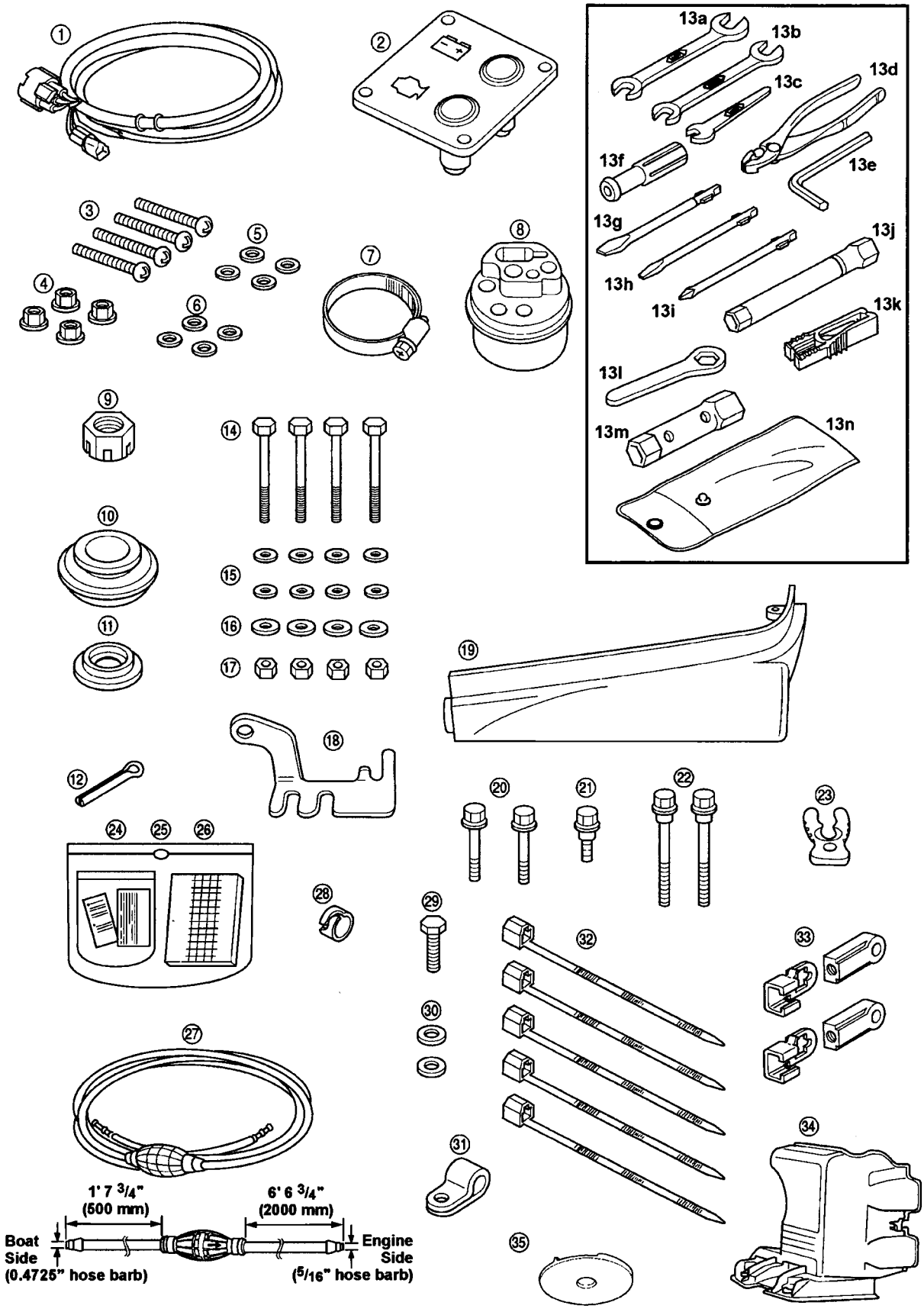


INSTALLATION HEIGHT RECOMMENDATIONS

Shaft Length	Outboard Transom Height	Workable Boat Transom Height
L type	508 mm (20 in)	483 ~ 508 mm (19 ~ 20 in)
X type	635 mm (25 in)	610 ~ 635 mm (24 ~ 25 in)
XX type	762 mm (30 in)	737 ~ 762 mm (29 ~ 30 in)

TRANSOM DRILLING

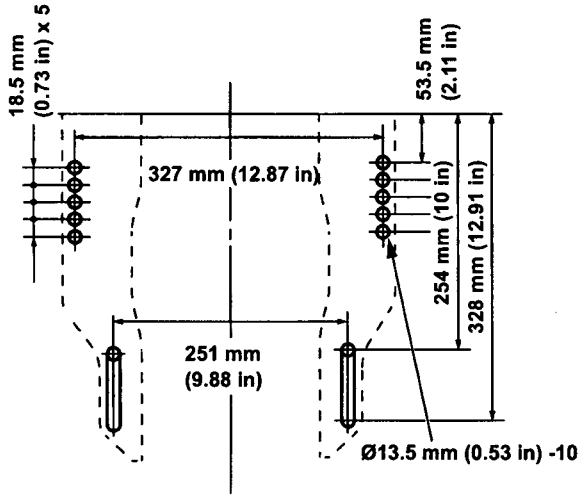
See also "USING THE TRANSOM MOUNT DRILL FIXTURE" on page 1-23.

Description	Part No.
Transom mount drill fixture	07MPZ-ZV3010C

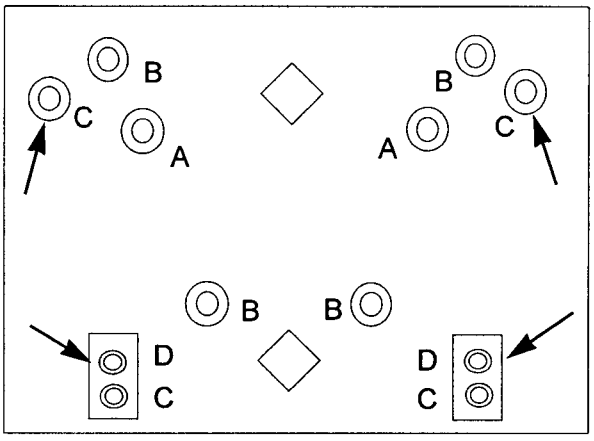
The BF200A and BF225A outboards motors are designed to be installed on a boat transom with the following transom board thickness:

Boat Transom Board Thickness
85 mm (3.35 in)

1. Set the outboard motor onto the boat transom and verify the installation height is correct.



TRANSOM DRILL FIXTURE

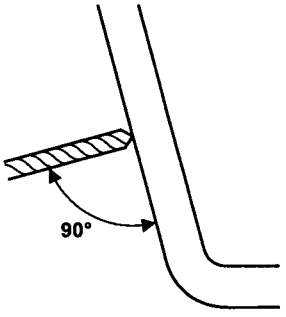


Use the upper "C" and lower "D" holes.

2. Mark four center marks for the bolt holes on the transom board (two marks on either side of the outboard motor installation lines).

   The upper bolt holes should be more than 33 mm (1.3 in) from the top of the transom.

   The lower bolt holes should allow the mounting bolts to contact the upper end of the stern bracket.



3. Drill four holes using a 17/32 drill bit.

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STEERING

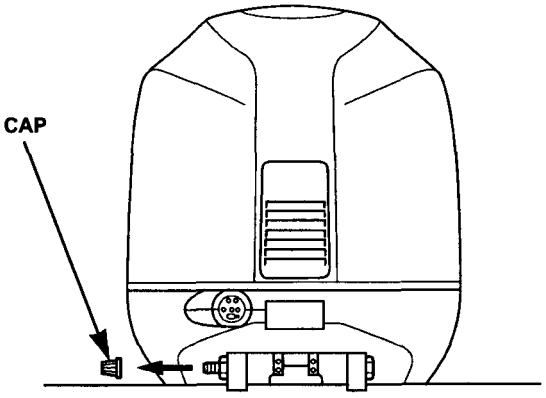
SELECTION

A single cable steering system is not recommended for either the BF200A or BF225A.

The steering system selection is determined by the particular application. Consult the boat manufacturer or steering manufacturer for recommendations.

Hydraulic steering would be the best choice to improve boat stability, minimize lost motion in the steering system, and reduce boat chine walk on high-performance boats. Dual cables can also be considered. A good steering system will help to eliminate steering free play which June cause the outboard motor to move side-to-side slightly at high speeds resulting in chine walk. For further information regarding hydraulic steering or dual cable steering, refer to the hydraulic steering, mechanical steering or dual cable kit manufacturer's instructions.

STEERING PREPARATION

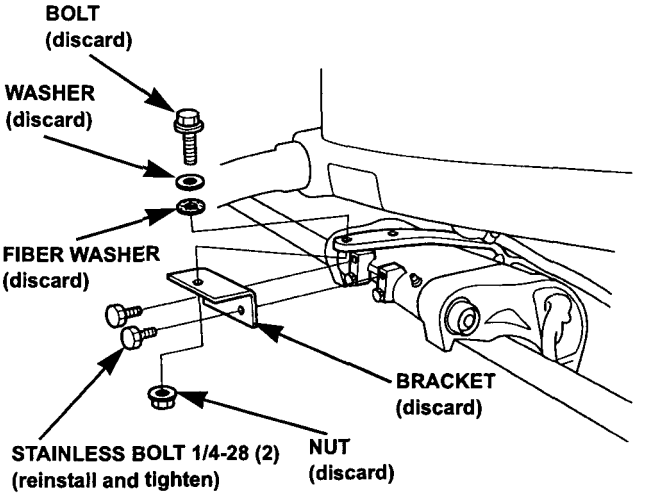


Remove the cap from the steering/tilt tube prior to installing the steering system.

Loosely install the hydraulic or mechanical steering cables on the motor before final placement of the motor on the transom.

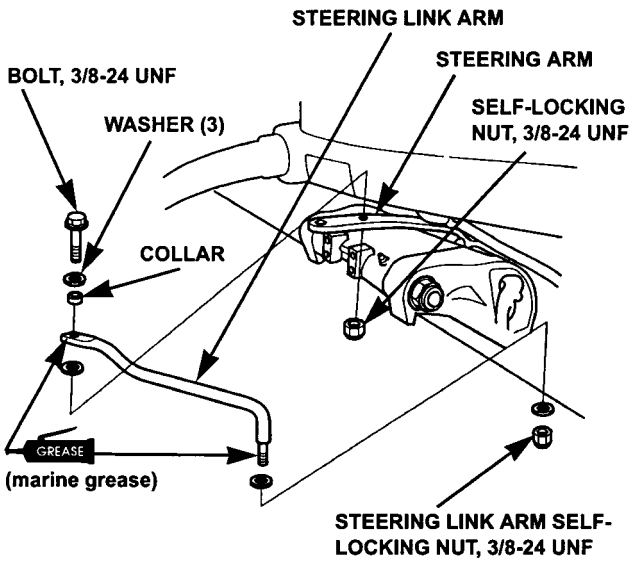
Refer to the steering cable or hydraulic steering manufacturer's instruction manual for handling procedures.

STEERING LINK ARM INSTALLATION



Remove the bolts and bracket from the steering arm. Discard the hardware indicated and reinstall the 1/4-28 bolts.

Steering Link Arm P/N 06532-ZY3-U00
(optional part, includes all hardware)



The steering link arm must be secured between the steering arm and steering system using the bolt, washers, nuts and collar shown. Both the bolt and self-locking nuts, used at each end of the steering link arm, must be in good condition.

1. Install bolt, washer and collar into link arm. Remove access grommet from inside engine cover area and thread bolt into steering arm inside hole. Tighten bolt then tighten lock nut. Do not use forward hole.

   TORQUE:

   3/8-24 UNF bolt: 22 N•m (16 ft-lb)
   3/8-24 UNF lock nut: 18 N•m (13 ft-lb)

   The steering link arm to steering system self-locking nut is normally tightened to 8–11 N•m (7–8 ft-lb) then loosened 1/8 turn. The link arm needs to be able to pivot at the steering attaching point. The steering link arm must have sufficient thread length when the nut is tightened down and the link arm must have at least two or three threads past the end of the self-locking nut.

2. Directly after completing the steering link arm installation, verify the following:
   - Motor turns the proper direction when the steering wheel is turned right and left. If the steering is reversed, correct as necessary.
   - Motor steering angle is equal when steering wheel is turned full right and full left. If the motor steering angles are not equal, corrections can be made at the steering box (refer to the steering box or steering cable manufacturer's instructions).
   - Make the steering angles equal as necessary.

   The steering mechanism must not come in contact with any part of the boat when the steering wheel is turned full right and full left and at all tilt angles. Correct as necessary and check again.

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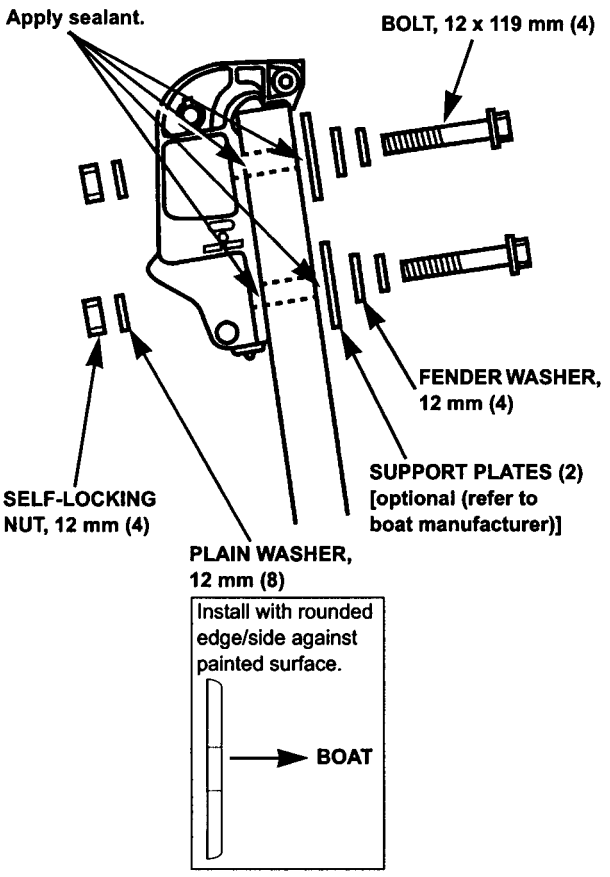
BOLTING MOTOR TO TRANSOM



Apply marine hull sealant to the mounting holes and hardware. Use Hondabond HT (P/N 08718-0001) or equivalent silicone sealant for below waterline use.

With the motor in place against the transom, verify correct motor height. Motor can be raised by using a lower set of mounting holes.

Attach the motor with marine grade hardware. Use washers under all bolts and nuts. Use additional fender washers against the transom. Use support plates as recommended by the hull manufacturer.

Apply a small amount of oil or grease to all bolt threads prior to installation.

Be sure at least one thread of the bolt is visible beyond the nut when the fasteners are tightened.

NOTICE

Do not use an air impact tool to tighten or loosen the transom bolts. Using an air impact tool to tighten or loosen the transom bolts can generate enough heat to damage the bolt threads. The air impact tool can also produce enough tightening torque to damage the boat transom.

Pay attention to the washers, support plates (if applicable) and boat transom as the nuts are tightened. This is especially important on boats that are being repowered. If the washers and/or support plates (if applicable) are drawn into the transom material, the transom material is weakened and must be inspected and repaired as necessary before the engine is installed.

If the transom is found to be soft, water penetration June have occurred and caused the transom material to rot and weaken. Contact the boat manufacturer for boat repair information as needed.

Make sure the stern bracket sits flat against the boat transom and that there is no trim that would prevent the stern bracket from sitting flat against the boat. If the boat transom has molding that prevents the outboard stern bracket from sitting flat against the transom, contact the boat manufacturer for information on how to remove molding.

DUAL MOTOR INSTALLATION

1. Install the steering system of choice.
2. Install a commercially available tie bar.
3. Adjust the toe-in or toe-out. Refer to page 1-47 for details.

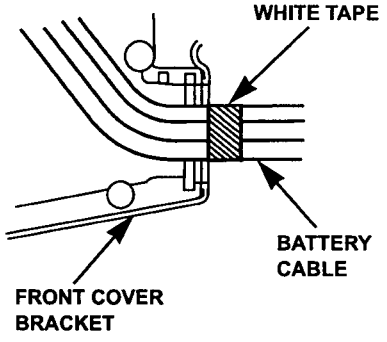
On a dual motor installation when the minimum distance between motors is used, the engine cover of one motor June interfere with the adjacent motor if only one motor is tilted up when the boat is steered full right or full left.

NOTICE

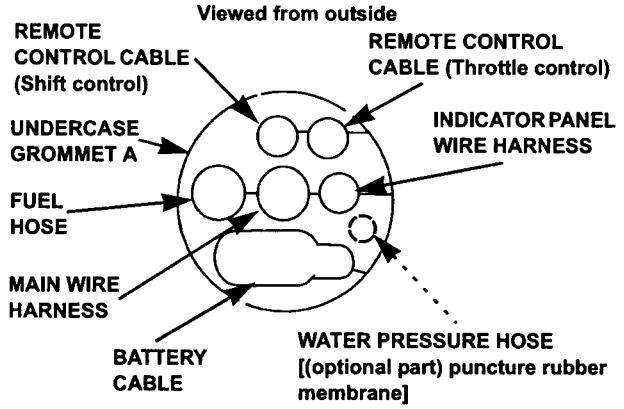
Do not tilt only one motor up when the boat is steered full right or full left, or the engine cover June be damaged.

REMOTE CONTROL CABLE INSTALLATION AND ADJUSTMENT

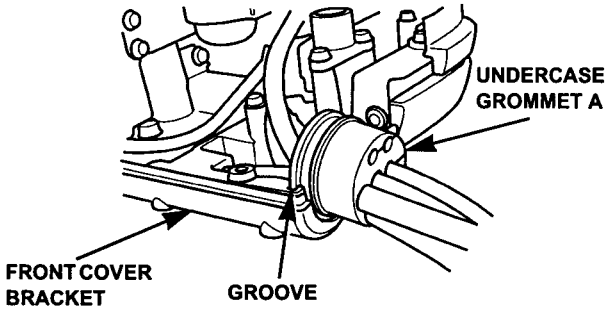
Route the electrical harnesses and cables through the boat. Connect the cables to remote control before connecting them to the motor.



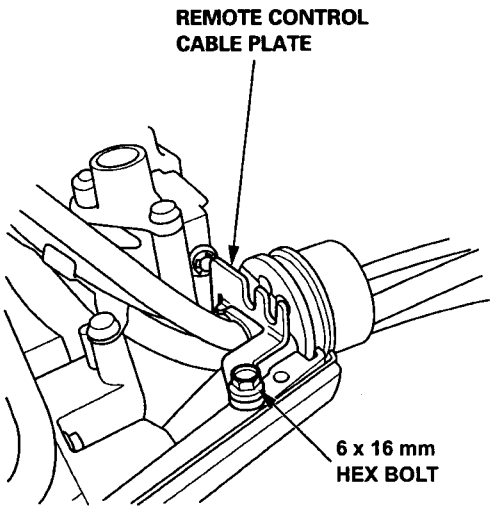
1. Route the battery cable to the front cover bracket. Position the battery cable white tape mark so it aligns with the edge of the front cover bracket.
2. Spray the grommet with silicone spray.



3. Run the fuel hose, indicator wire harness, battery cable and main harness through the undercase grommet A.



4. Install the grommet by aligning it with the groove in the front cover bracket.



5. Install the remote control cable plate with the 6 x 16 mm hex bolt.

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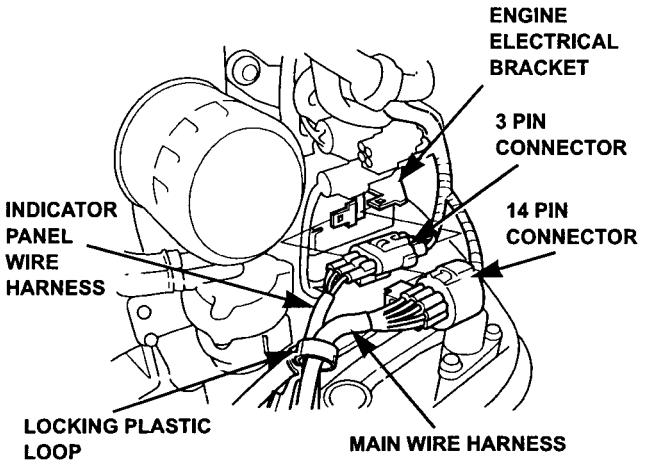
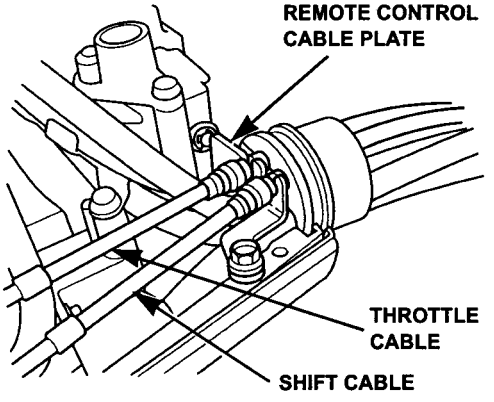
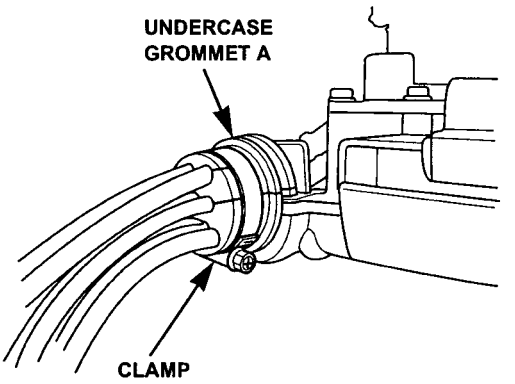


6. Connect the indicator panel 3 pin and main 14 pin connectors to the engine electrical bracket. Secure the connectors to the locking tabs on the bracket. Route the wires through the locking plastic loop and follow the path to the grommet. Route the two individual portions of the harness through the grommet as indicated.



7. Loosen the control cable lock nuts approximately 1/2 inch from the end of the cable. Thread the cable ends onto the cables with a minimum of 1/2 inch thread engagement as a starting point for adjustment. Do not tighten the lock nuts at this time.

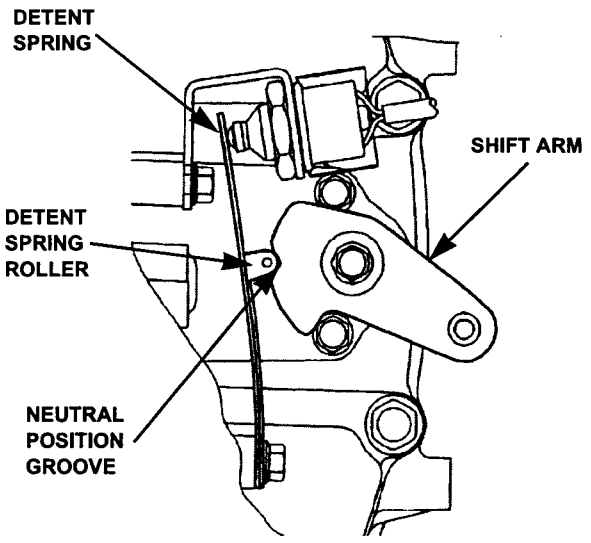
   With the remote control lever in the NEUTRAL position, the shorter cable will always be the throttle cable.



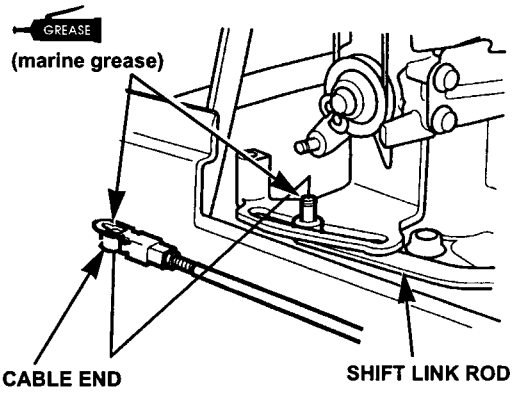
8. Install the control cables with the throttle cable inside and the shift cable outside. Install the clamp (included with engine) on the undercase grommet A or slip a 50 mm (2 in) corrugated flexible hose over the undercase grommet A and secure the corrugated flexible hose (not included) with the clamp.

SHIFT CABLE CONNECTION

1. Centering remote control lever:
   a. Move remote control lever to full FORWARD position.
   b. Slowly return control lever to NEUTRAL position.
   c. Move control lever to full REVERSE position.
   d. Slowly return control lever to NEUTRAL position.



2. With the outboard motor in the NEUTRAL position, make sure the detent spring roller is set in the center of the shift arm neutral position groove. If not, move the detent spring LEFT or RIGHT.



3. Apply a light coat of marine grease to the pivot pin and sliding surface.
4. Adjust the cable end until it will just slip over the shift link rod pivot pin. Slide the locking plate forward into the locked position.

   After attaching the shift cable to the shift link, check for smooth operation by moving the remote control lever to the forward and the reverse positions. Make sure the shift link moves smoothly and returns to the neutral detent position when the remote control lever is returned to neutral.

NOTICE

If the control lever is hard to shift, place a shop towel over the propeller shaft and turn the shaft by hand. Shifting with force will damage the shift mechanism.

Once the shift arm moves smoothly and neutral detent aligns, tighten cable lock nut.

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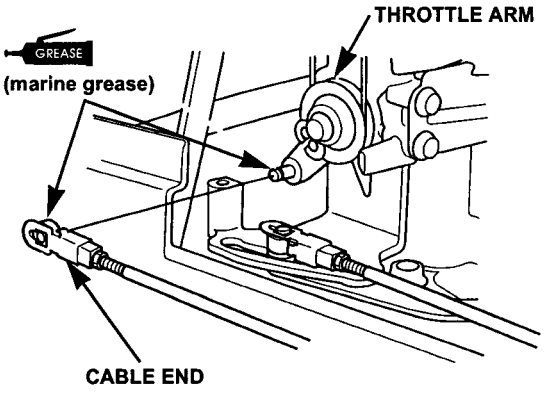
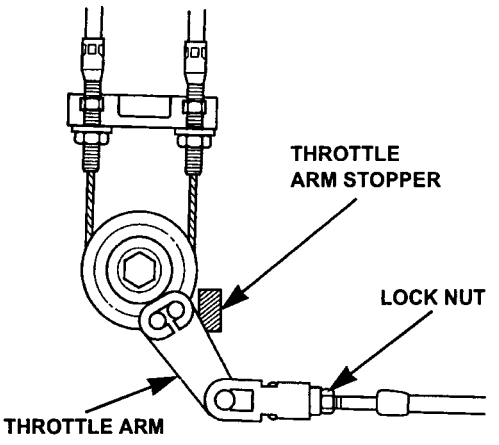
THROTTLE CABLE CONNECTION

1. Put the remote control lever in the neutral position.



2. Apply a light coat of marine grease to the pivot pin and sliding surface.
3. Adjust the cable end until it will just slip onto the throttle arm. Slide the locking plate forward into the locked position.



4. Move the remote control lever to the full throttle position. Make sure the throttle arm contacts the throttle arm stop. If the throttle arm does not contact the throttle arm stop, check for full stroke at the remote control lever.

   The engine must also return to an ECM controlled idle position when the control lever is returned to the idle position.

   Tighten the lock nut securely.

   Avoid changing the open or close throttle cable adjustment. These cables normally do not require adjustment during pre-delivery service. If these cables are changed unnecessarily, full throttle and/or idle speed June be adversely affected. If you cannot achieve full throttle or proper idle speed, always check control cable adjustment first before changing the open or close throttle cable adjustment or idle rpm. See *Honda Marine BF200A/BF225A Shop Manual*, page 3-18 through 3-21, for cable adjustment.
5. Operate the control lever to check for smooth, proper shift cable and throttle cable operation.

AVAILABLE ACCESSORIES

Consult the *Honda Marine Accessories Catalog* (MO045) for current information on gauges, instrument harnesses, wiring harnesses, switch panels, and control boxes.

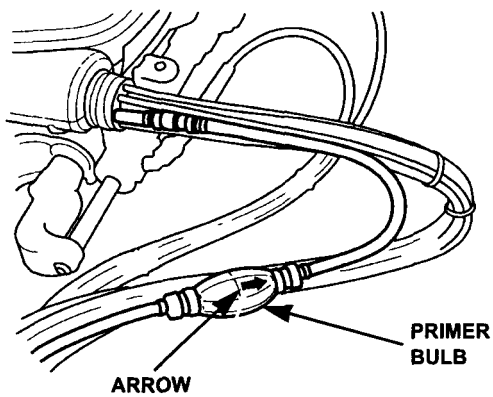
FUEL HOSE CONNECTION

Do not use unlined, worm-type fuel hose clamps because they will shred the outside of the fuel hose.

During operation, check for any fuel or air leaks and repair immediately. If these connections suck air, the engine fuel pump will malfunction.

The primer bulb must be positioned so the outlet end is higher or can be positioned higher than the inlet end. The arrow on the primer bulb must point upward toward the engine.

ENGINE SIDE



If you are unable to properly crimp the band type clamp provided, use a good quality stainless steel lined fuel hose clamp.

Refer to the *Honda Marine Carburetion Manual* (TM044) for additional information on fuel hose clamps.

BOAT SIDE

The fuel hose is 7.5 mm (5/16 in) and the male hose barb is stepped to 12 mm (0.4725 in). The priming bulb hose barbs are 7.5 mm (5/16 in). Make sure the fuel hose is not pinched or crushed as it routes to the boat fuel supply. This could cause an engine malfunction.

A water separator is recommended between the boat fuel tank and the motor. Remove the hose barb from the fuel hose end and connect the fuel hose directly to the water separator outlet 7.5 mm (5/16 in) brass hose barb (not included) and clamp securely.

If the outboard motor fuel hose is going to be connected directly into the boat fuel tank supply hose, secure using a fuel hose clamp type as listed above. Secure the hose joint so it does not pound on the boat under deck and become damaged.

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9. GAUGES

Do not splice or otherwise cut into any wire harness. Always pull power from the battery via an electrical buss.

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INSTALLATION INFORMATION

SAFETY INFORMATION

- Disconnect the battery before starting the installation of any electrical gauge.
- Use the appropriate size fuse to protect electrical circuits.
- Be careful to avoid touching wrenches or other tools to the metal frames because short circuits June be caused, resulting in sparks, fire damage or electrical component damage.
- If electrical wire is added, make sure it is the proper gauge and color for the circuit.

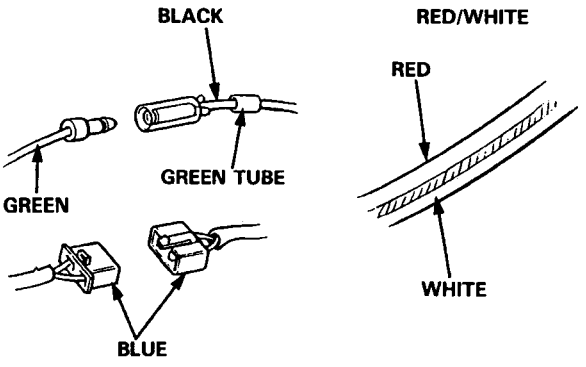
SERVICE RULES

- Before drilling holes for any gauge, verify that there are no wires or other obstructions behind the area that is to be drilled.
- Always use masking tape on a fiberglass surface before drilling to minimize possible cracking of the surface.
- Remove rubber covering from the dash panel before doing any cutting to keep it from tearing.
- When mounting gauges, do not overtighten nuts. You June crack the gauge housing or the mounting panel. Tighten the nuts until the gauge can no longer be rotated by hand in the dash panel.
- Before reconnecting the battery and starting the outboard, double check all electrical connections are tight and correct. Make sure that wires are not rubbing on any surface that could cause electrical shorts.
- Make sure that wires and wire harnesses are provided with grommets around sharp edges to protect against rubbing.
- Make sure wires and wire harnesses have the proper amount of slack. Use wire ties or bands to secure wires or wire harnesses to keep them from sagging too much.
- Always check electrical connectors for proper connection. Make sure rubber covers are properly installed around connectors.

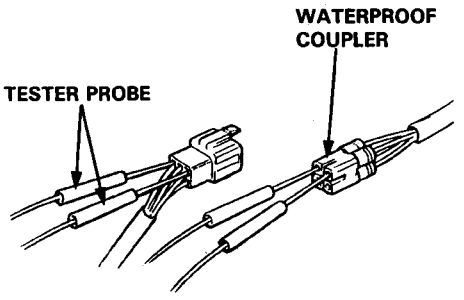
GENERAL INFORMATION

1. Wires of the same color are connected together. When wires of differing colors are connected, a color tube of the same color is attached near the connector. When couplers are used, those of the same color are connected together.

   When two-color wires are used, the main base color is noted first, and the subordinate marking color last.



2. When using a circuit tester to measure the voltage or resistance between terminals, touch the tester probe to the rear of the terminal coupler. When a waterproof coupler makes it impossible to insert the probe and touch the terminal from the rear, insert the probe from the front, but take great care to avoid expanding the gap of the terminal contacts.



3. Before beginning any work, be sure to disconnect the negative (-) battery terminal first.

4. Following completion of work procedures, recheck all connections, screws and bolts for tightness and clearances.
5. When the battery is being installed or reconnected, the positive (+) terminal should be connected first.
6. After reconnecting the battery terminals, apply fresh dielectric grease to their surfaces.

7. Following the completion of work procedures, be sure to securely reconnect any terminal covers which have been removed.

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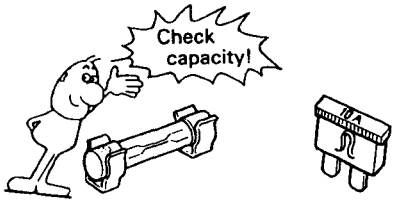
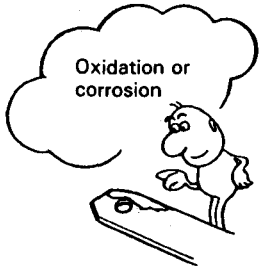
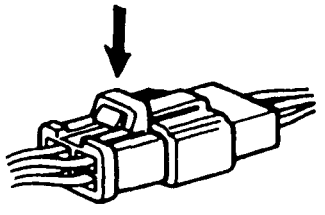
8. When a fuse is burned out, investigate and repair the cause of the short before replacing the fuse. Be sure to replace the fuse with the specified capacity.



9. If a terminal is oxidized or corroded, remove the oxidation or corrosion with a nonconductive plastic scrub pad and contact cleaner before reconnecting it.



10. When disconnecting locking couplers, be sure to disconnect the locking device carefully.



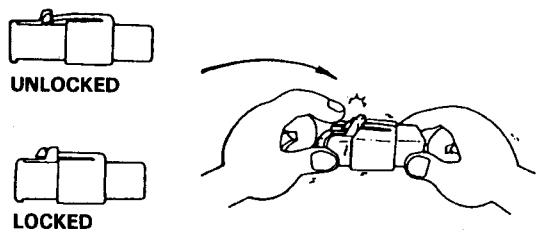
11. When disconnecting couplers, hold the coupler bodies, not the wires, and pull apart evenly.

    Do not pull on wire harnesses.

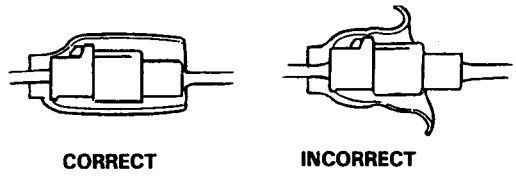
12. Be sure to reconnect couplers by inserting them fully into their receptacles.

    Check locking couplers to be sure locking devices are reconnected securely.

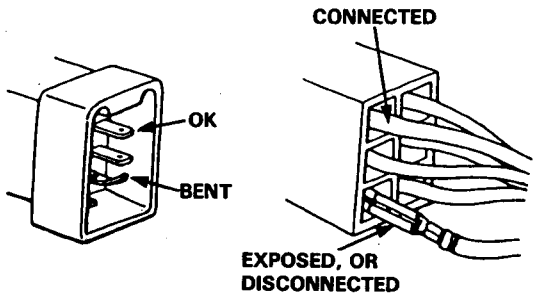
13. When reconnecting wire harnesses, be sure nothing has been left unconnected.



14. Be sure the coupler covers are not stretched or rolled back but surround their couplers completely.



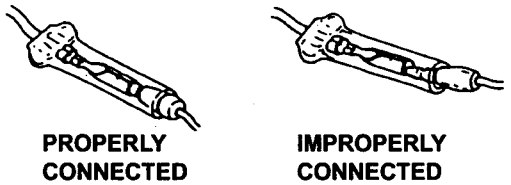
15. Before reconnecting couplers, check them carefully to make sure their terminals are not bent, exposed or disconnected.



16. Push in connectors securely.

    Check rubber covers to make sure they surround their connectors completely.

    Do not fold up the mouths of rubber covers.



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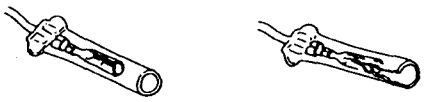
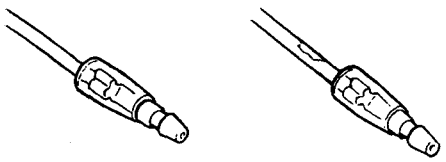
17. Before reconnecting wire connectors, check them to make sure the covers are not torn or broken, and the gaps of female terminals are not overly expanded or loose.



CORRECT INCORRECT

18. Do not break the coverings of wire harnesses.

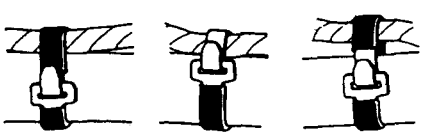
    If the covering of a wire harness is broken, either repair it with electrician's tape or replace it.



OK REPAIR OR REPLACE

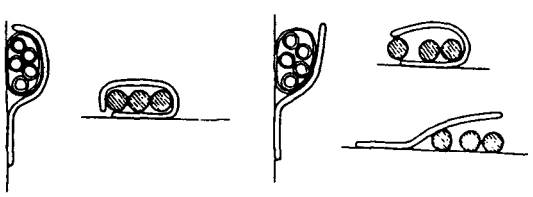
19. Connect wire fixing bands securely to frames in their designated locations.

    When aluminum bands are used, be sure they are placed so their wires are held under the bands' coated (insulated) surfaces only.



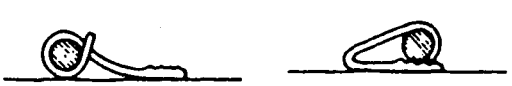
CORRECT INCORRECT

20. Attach clamps securely to ensure their wire harnesses do not come loose.



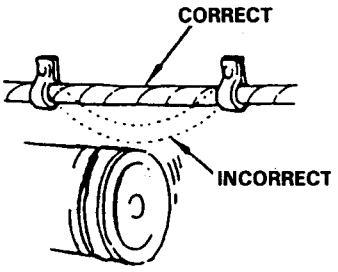
CORRECT INCORRECT

21. Do not squeeze wires against the weld or end of a clamp when a weld-on clamp is used.

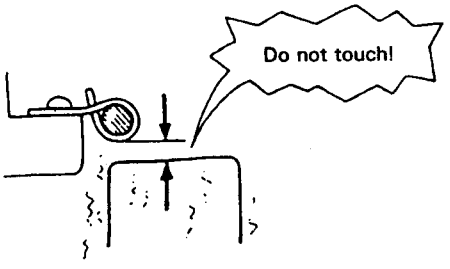


CORRECT INCORRECT

22. Clamped wires or wire harnesses should not touch or rest on rotating or moving parts.

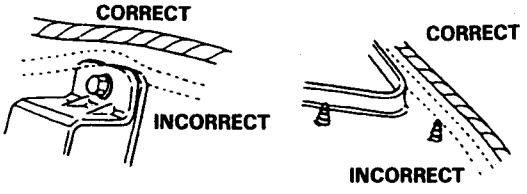


23. Be sure all wires and wire harnesses are routed away from hot surfaces.

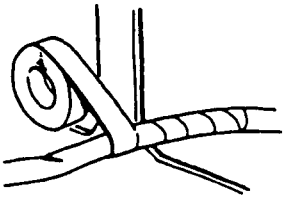


24. Wires should not lay or rest on sharp body edges or parts.

    Wires should be routed clear of bolts and screw heads or ends.



25. If wire harnesses cannot be routed to avoid a sharp corner edge, protect that portion of the harness by applying a tube covering.



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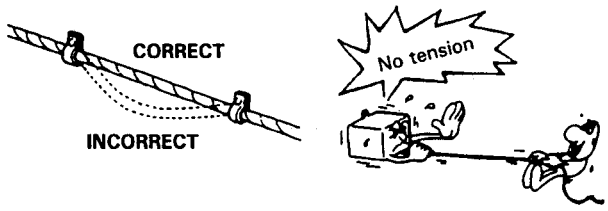
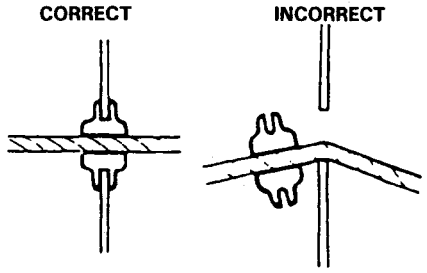
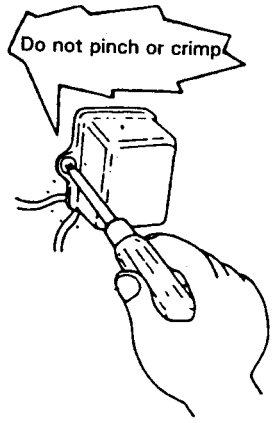
26. Do not give wire harnesses excessive slack, and do not apply excessive tension on them.



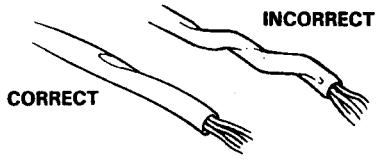
27. When wire harnesses are provided with grommets around sharp edges, etc., be sure the grommets are installed properly.



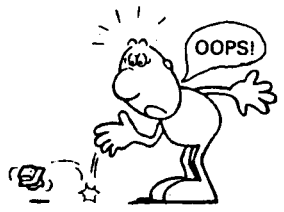
28. When attaching parts, be sure the wire harnesses do not become wedged between parts and frame, etc.



29. Do not allow wire harnesses to become twisted.



30. Do not drop or throw parts. Take particular care when handling parts containing semiconductors, since strong impacts June cause internal damage.



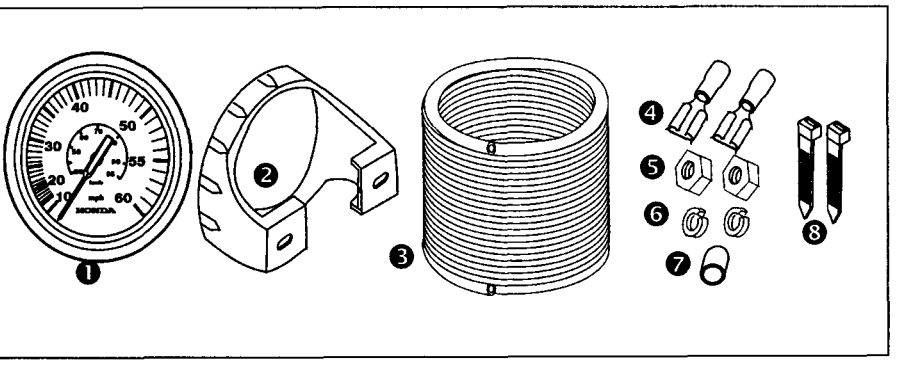
FARIA®

PARTS LISTING

Open the gauge carton and check all loose parts against the following list.

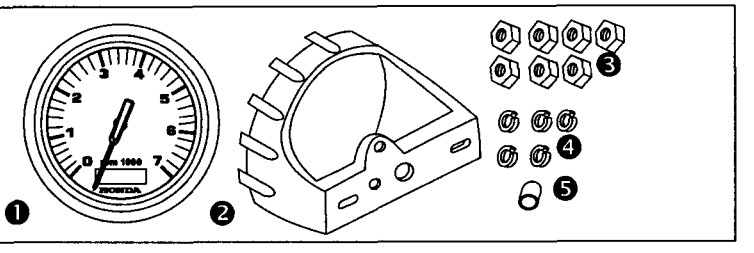
Speedometer

Ref	Qty	Description
1	1	Speedometer
2	1	Mounting Bracket
3	1	Rubber Hose
4	2	Female Connector
5	2	Brass Nut
6	2	Star Washer
7	1	Red Sleeve
8	2	Cable Tie



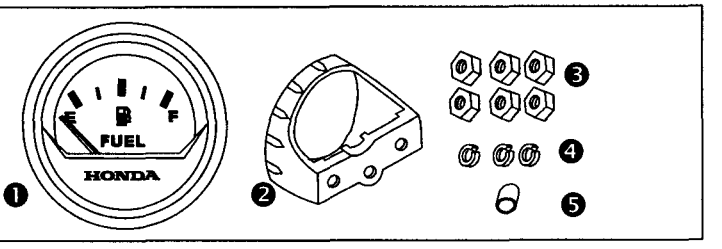
Tachometer

Ref	Qty	Description
1	1	Tachometer
2	1	Mounting Bracket
3	7	Brass Nut
4	5	Split Washer
5	1	Red Sleeve



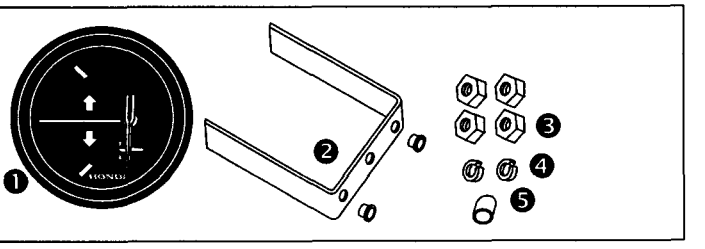
Fuel Gauge

Ref	Qty	Description
1	1	Fuel Gauge
2	1	Mounting Bracket
3	6	Brass Nut
4	3	Split Washer
5	1	Red Sleeve



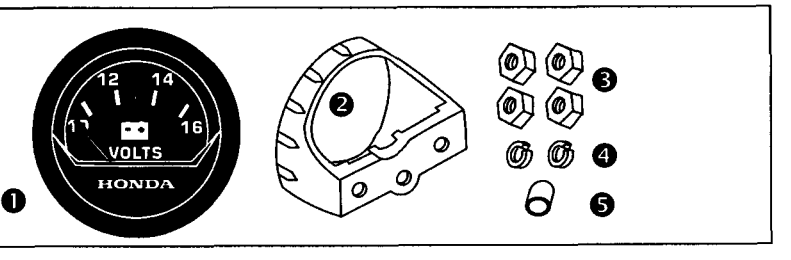
Trim Meter

Ref	Qty	Description
1	1	Trim Meter
2	1	Mounting Bracket
3	4	Brass Nut
4	2	Split Washer
5	1	Red Sleeve



Volt Meter

Ref	Qty	Description
1	1	Volt Meter
2	1	Mounting Bracket
3	4	Brass Nut
4	4	Split Washer
5	1	Red Sleeve



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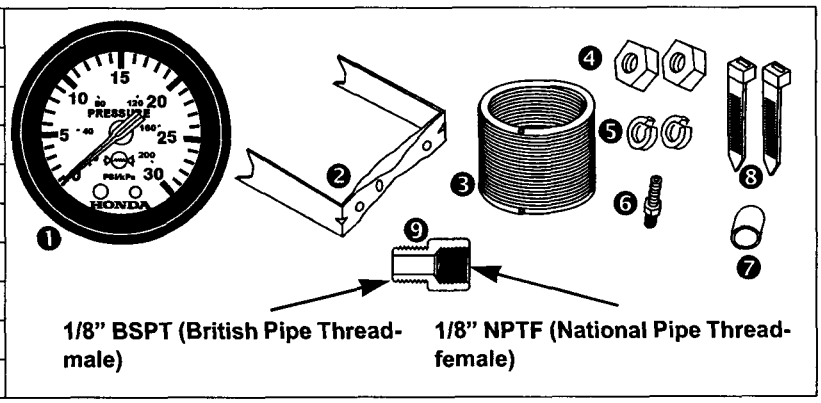
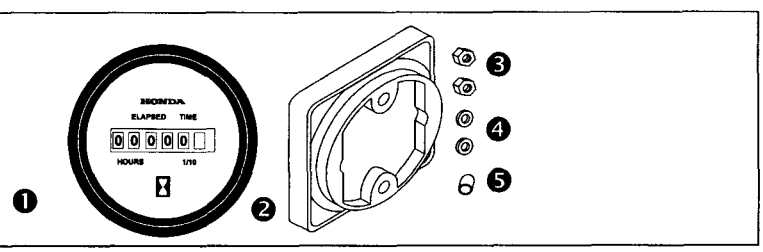
Water Pressure Gauge (not included in 5 gauge set)

Ref	Qty.	Description
1	1	Water Pressure Gauge
2	1	Mounting Bracket
3	1	Rubber Hose
4	2	Brass Nut
5	2	Split Washer
6	1	1/8" NPT Fitting
7	1	Red Sleeve
8	2	Cable Tie
9	1	Adaptor 1/8" NPTF To BSPT



Analog Hour Meter (not included in 5 gauge set)

Ref	Qty	Description
1	1	Volt Meter
2	1	Mounting Bracket
3	2	Brass Nut
4	2	Split Washer
5	1	Red Sleeve



Use the Faria Instrument Harness (P/N 32103-ZW7-000AH) to connect Faria gauges to the Honda main harness (refer to page 9-13).

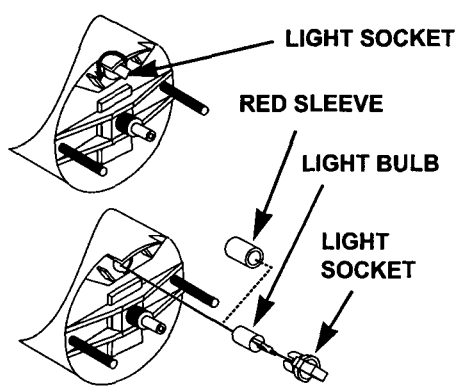
GAUGE INSTALLATION

GAUGE	HOLE DIA.
Speedometer	86 mm (3-3/8")
Tachometer	86 mm (3-3/8")
Trim Meter	52.4 mm (2-1/16")
Volt Meter	52.4 mm (2-1/16")
Fuel Gauge	52.4 mm (2-1/16")
Water Pressure	52.4 mm (2-1/16")
Hour Meter	52.4 mm (2-1/16")

1. Disconnect the battery negative terminal.
2. Select a mounting location for the appropriate gauge(s) which provides easy readability from the operator's position. Check behind each mounting hole location for sufficient installation clearance.
3. Cut a hole in the dash for each gauge to the specification shown.
4. Install the gauge in its mounting hole and check the fit.

   If necessary, install the red cover over the light bulb before installing the gauges:

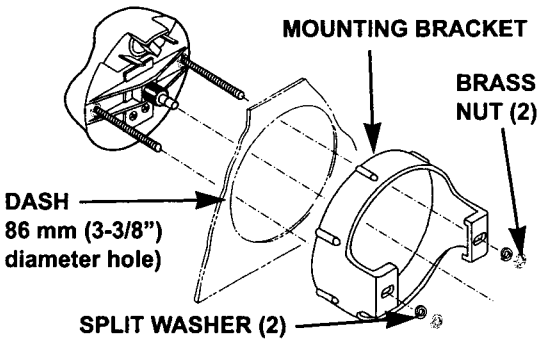
   a. Twist the black socket assembly one-eighth turn counterclockwise and remove it.
   b. Pull the bulb straight out of the assembly.
   c. Slip the red sleeve over the bulb and install socket assembly.



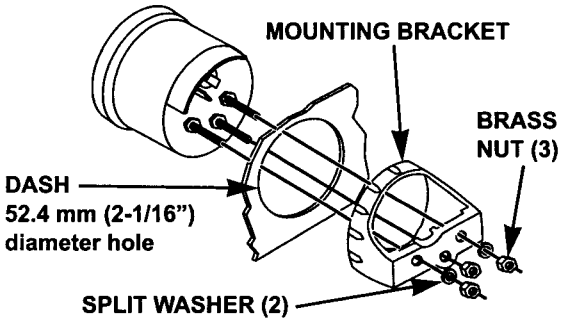
4. Mount the gauges with mounting brackets, split washers and brass nuts as shown starting on the next page. Tighten the nuts until the gauge can no longer be rotated in the dash.

   Do not overtighten the mounting nuts. Overtightening the nuts June crack the gauge housing, mounting bracket or mounting panel.

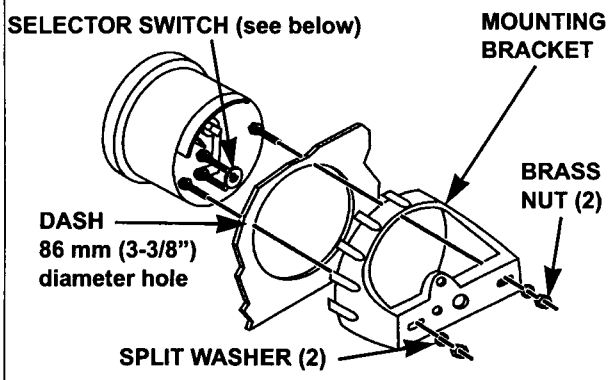
Speedometer



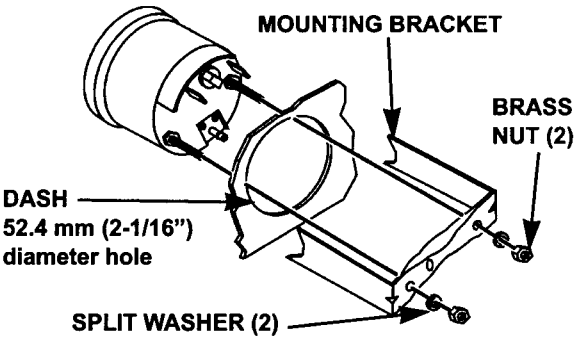
Fuel Gauge



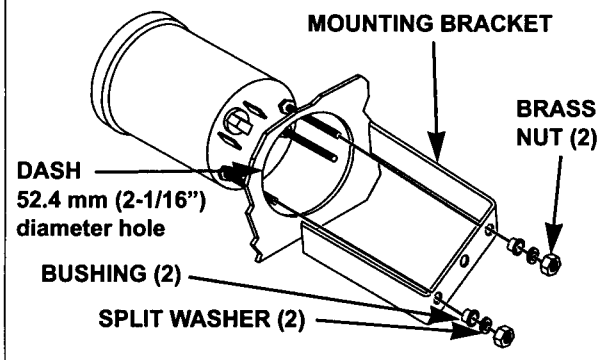
Tachometer



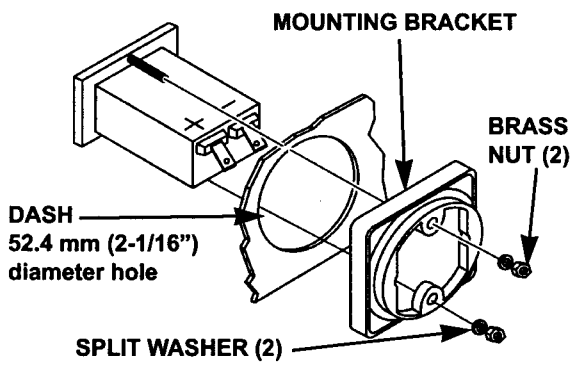
Water Pressure Gauge



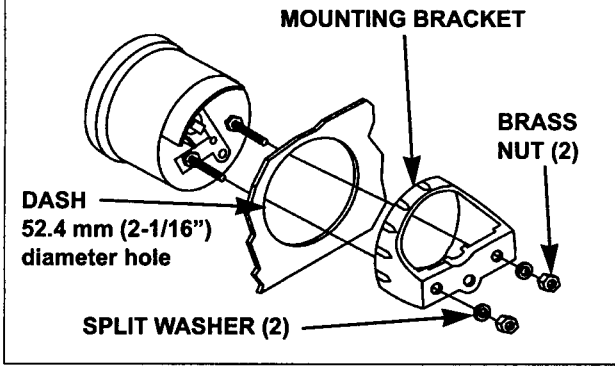
Trim Meter



Hour Meter



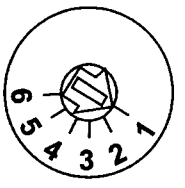
Volt Meter



Tachometer Selector Switch Setting:

Using a small screwdriver, SLIGHTLY depress and turn the selector switch to the desired position.

Model	Setting
BF35 BF40 BF45 BF50	2
All others	1



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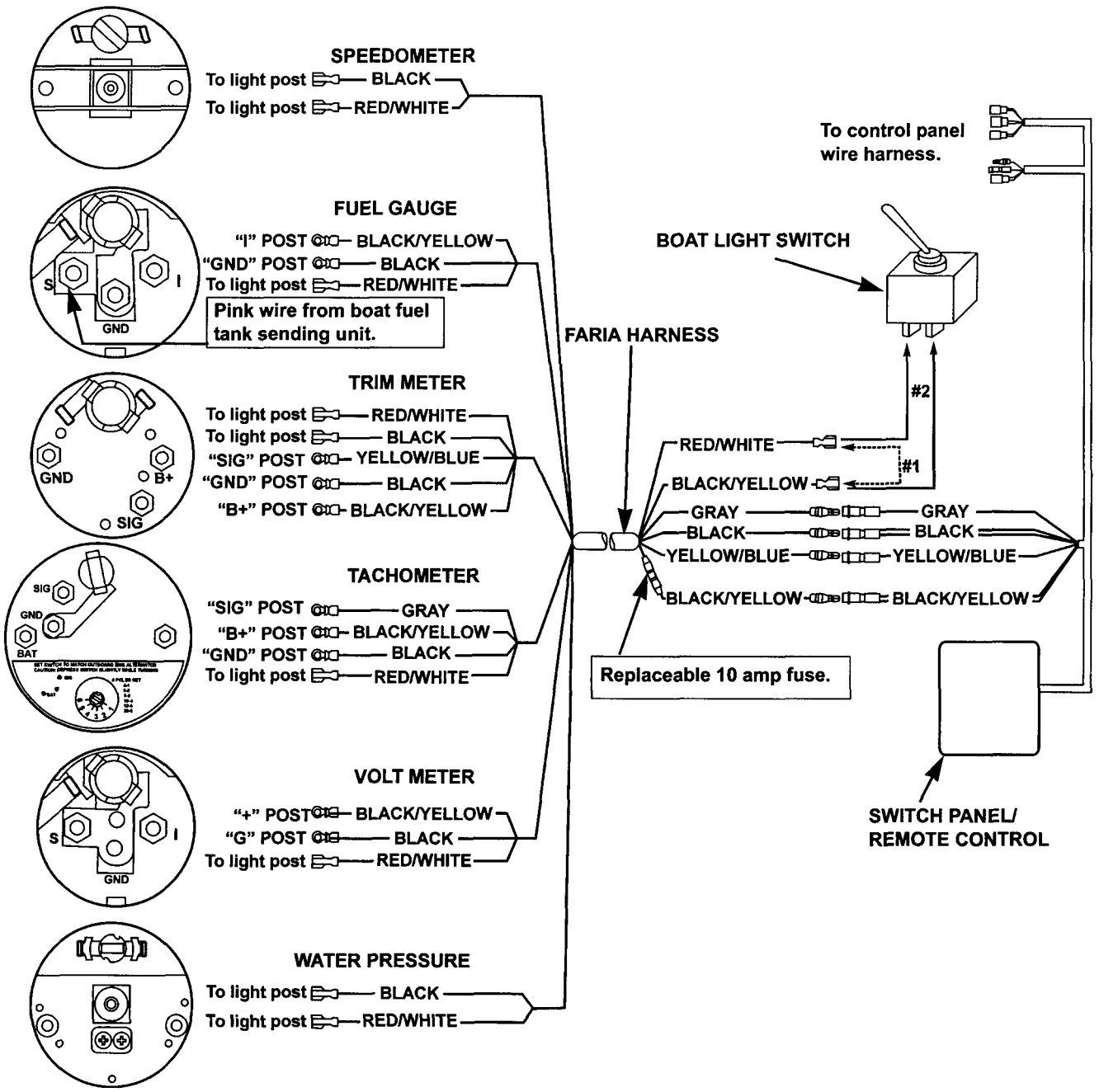
ELECTRICAL CONNECTIONS

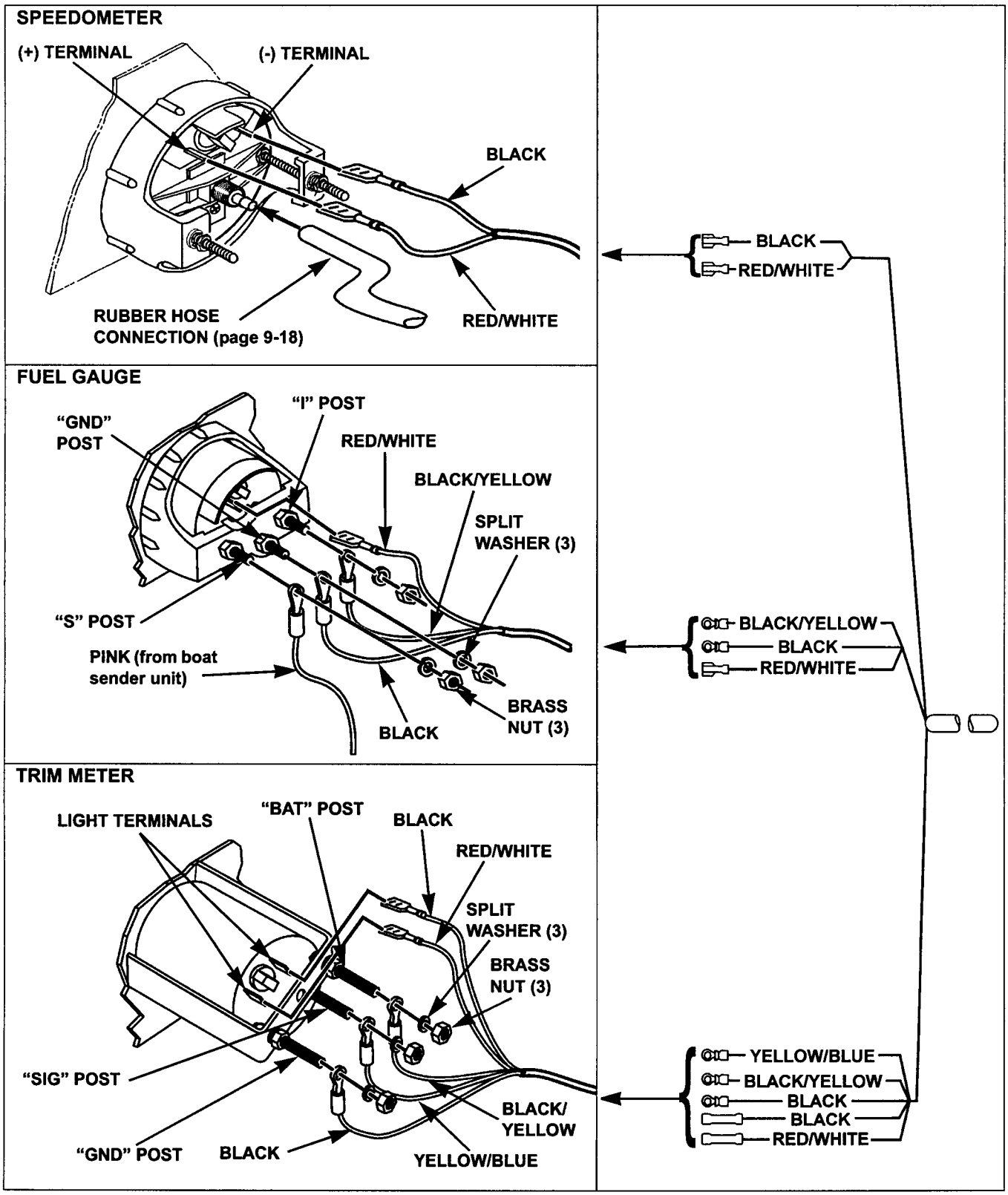
1. Disconnect the battery.
2. Connect the Faria Instrument Harness to the Honda control panel as shown.



3. Connect the instrument lighting as shown using the instructions below.

#1	Instrument lights operate when Honda key switch is ON.	Connect red/white wire to the black/ yellow wire.
#2	Instrument lights operate when boat light switch is ON.	Connect red/white wire and black/ yellow wires to the boat light switch.

4. Connect the other end of the Faria Instrument harness to the instruments as shown.
5. Secure the wire terminals with the hardware as shown.



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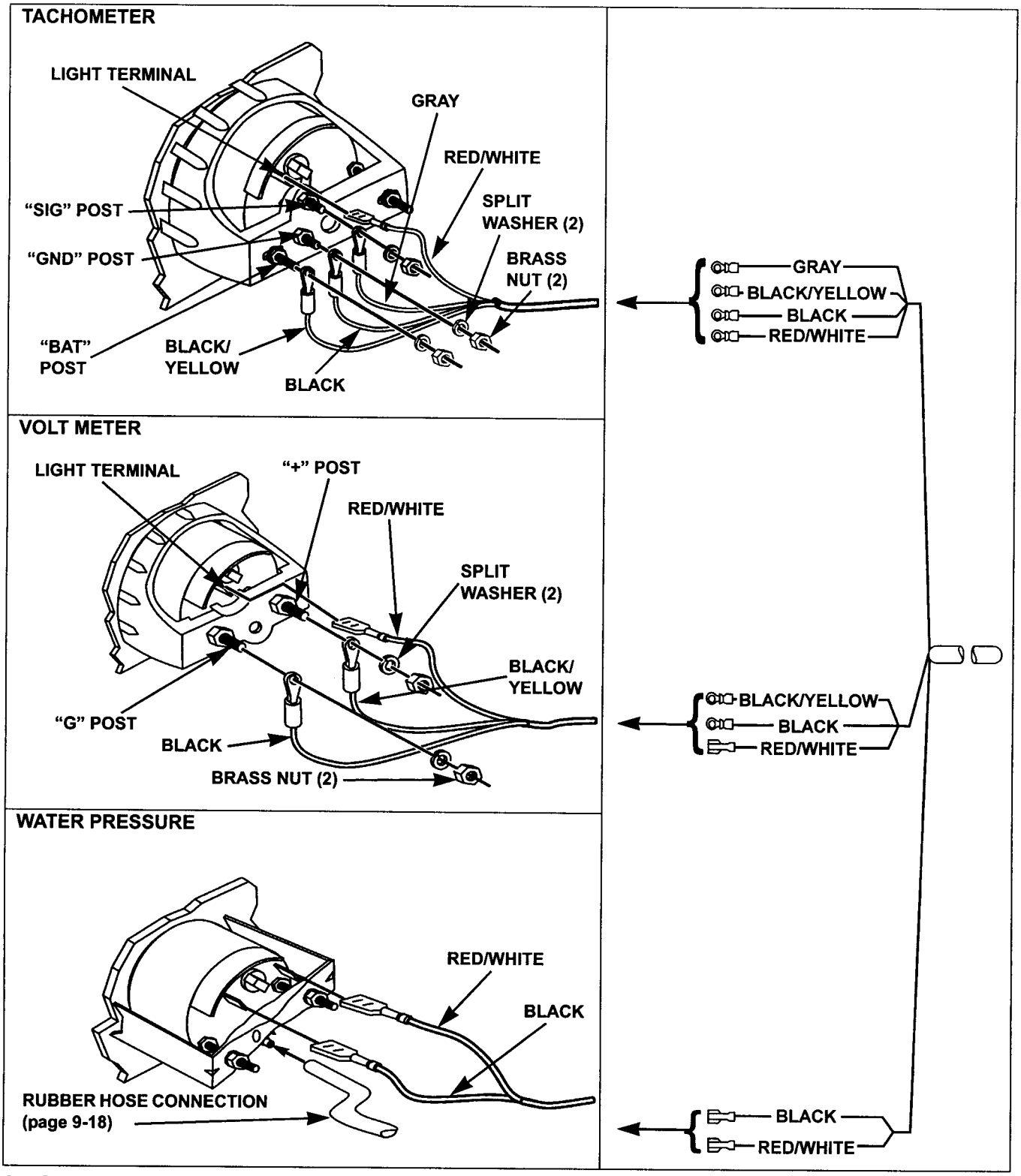
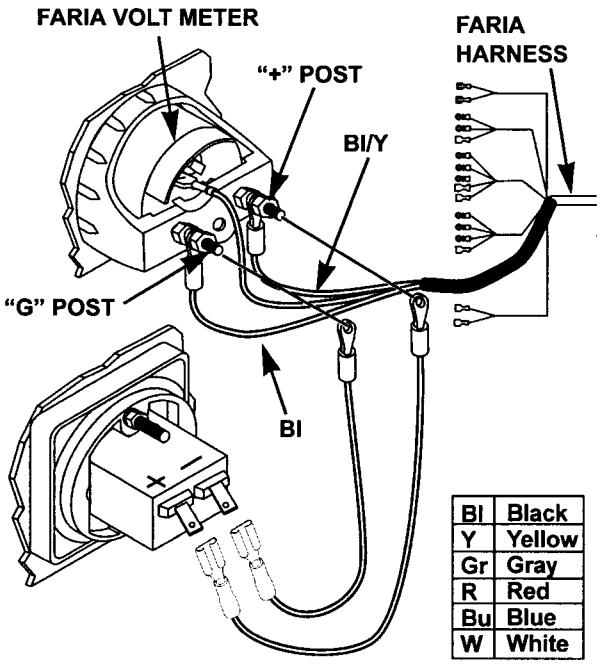


6. Connect the rubber hose for the speedometer (page 9-16) and water pressure gauge (page 9-18).
7. Before connecting the battery, recheck all electrical connections and ensure mounting hardware is secure.
8. Reconnect the battery and check the operation of each gauge.

ANALOG HOUR METER INSTALLATION

The hour meter will operate as long as the ignition switch is in the RUN position, and will turn off when the ignition switch is turned to the STOP position.

The Faria wire harness does not have connections for the Faria hour meter. If the Honda Faria wire harness is used with the Faria gauge set (or individual gauges), tap off any of the black/yellow wire posts with a wire and connect to the hour meter "+" terminal. Tap off any of the black wire posts with a wire and connect to the hour meter "–" terminal.



Materials required:

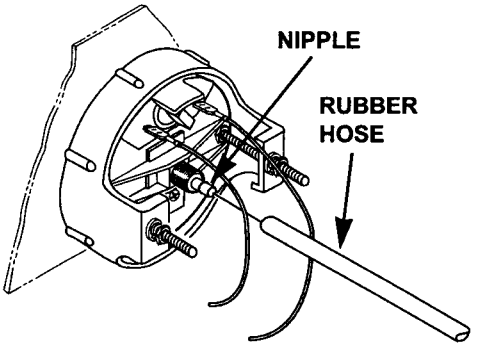
- Use stranded, insulated wire not smaller than 18 AWG that is approved for marine use.
- Use insulated ¼" female spade connectors on hour meter connections.
- Use eyelet terminals to connect to the Faria gauge.

ITEM	PART NUMBER
Female Spade Connector	07VPZ-001050A
Eyelet Terminal	07VPZ-001060A

9. Reconnect the battery and test the lighting circuit.

SPEEDOMETER WATER TUBE INSTALLATION

1. After installing the speedometer in the dash, connect the rubber hose to the back of the speedometer and secure with a cable tie.
2. Route the rubber hose back to the motor alongside the control cables.
   - A slight downward slope from bow to stern will help avoid trapping water.
   - Avoid sharp turns, crimping, kinking, or other forces that June reduce the inside diameter of the hose.
   - Do not coil any excess rubber hose. Carefully measure, then cut to the desired length.



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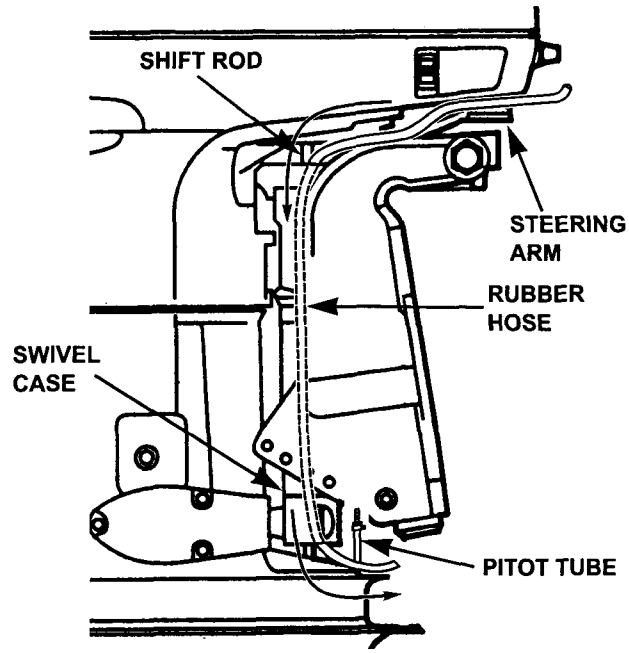
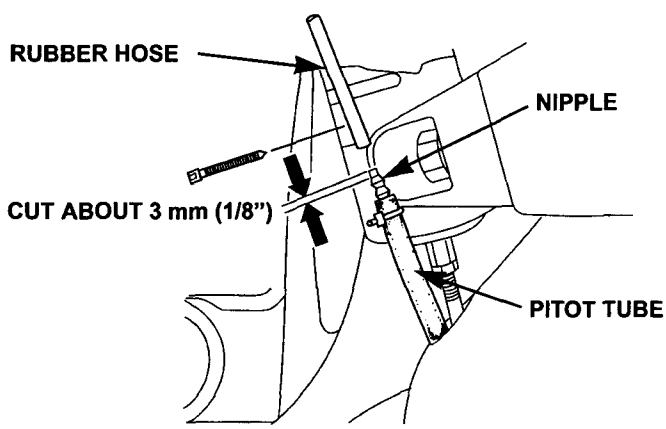
3. Fasten the rubber hose at regular intervals with small plastic wire ties (be careful not to pinch tubing).
4. Starting at the top of the swivel case, route the rubber hose over the top of the steering arm, down through the inside of the swivel case along side the shift rod, and out the bottom of the swivel case to the pitot tube.



5. Cut approximately 3 mm (1/8") off the nipple end.

   Clean the pitot tube if it is clogged with salt or any other foreign material.
6. Cut the hose to the appropriate length to reach the nipple end.
7. Press the end of the hose over the nipple and secure with a cable tie.
8. Gently feed the pitot tube and rubber hose back up through the swivel case until a slight loop is made in the pitot tube.
9. Secure the hose to the steering arm with cable ties.



Speedometer Water Tube Maintenance

The pitot tube should be flushed with fresh water before storing the boat for prolonged periods. Any remaining water in the rubber hose should also be removed before storing the boat for prolonged periods.

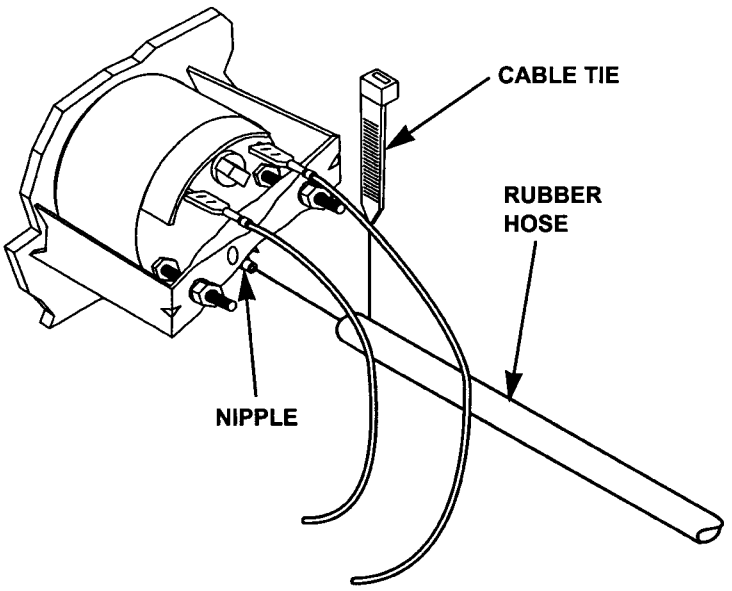
If the pitot tube or rubber hose should become clogged:

1. Disconnect the rubber hose from the speedometer and the pitot tube.
2. Clean the rubber hose with a stiff wire or blow air through it.

   Do not blow air through the rubber hose when it is connected to the speedometer. High air pressure will damage the speedometer.
3. Flush and clean the pitot tube with fresh water. If necessary, clean the pitot tube opening with a stiff wire.
4. Reconnect the rubber hose to the speedometer and secure with a new cable tie.
5. Reconnect the rubber hose to the pitot tube nipple end and secure with a new cable tie.

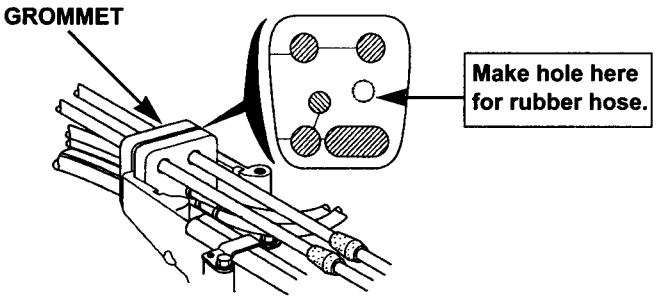
WATER PRESSURE GAUGE RUBBER HOSE INSTALLATION

1. After installing the speedometer in the dash, connect the rubber hose to the back of the speedometer and secure with a cable tie.
2. Route the rubber hose back to the motor alongside the control cables.
   - A slight downward slope from bow to stern will help avoid trapping water.
   - Avoid sharp turns, crimping, kinking, or other forces that June reduce the inside diameter of the hose.
   - Do not coil any excess rubber hose. Carefully measure, then cut to the desired length.

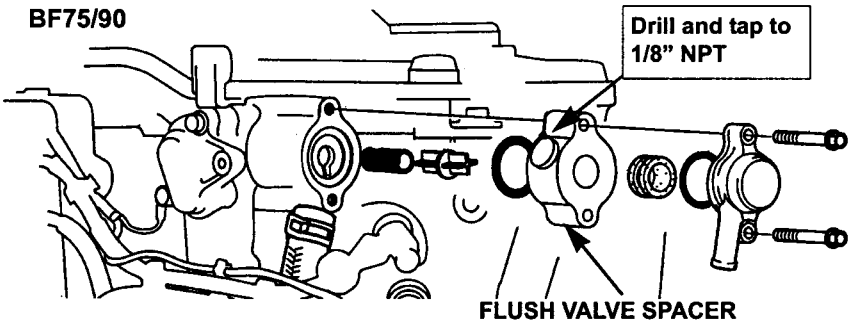


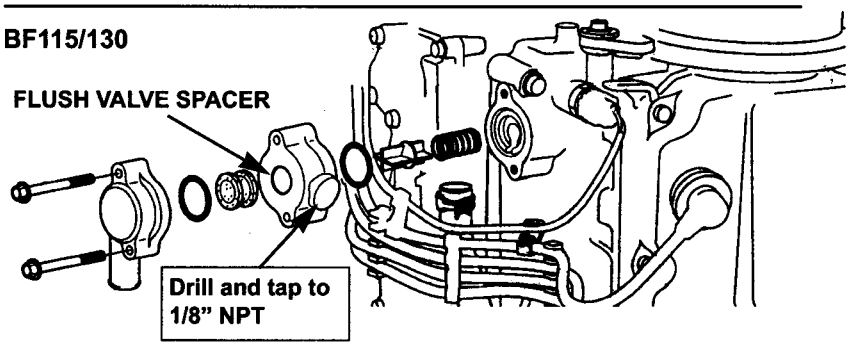
BF75/90/115/130

1. Remove the grommet and make a hole a little larger than the rubber tubing.
2. Route the tubing through the grommet and reinstall the grommet.



3. Remove the flush valve spacer.
4. Drill and tap the flush valve spacer raised bossed to 1/8" NPT.
5. Thoroughly clean the flush valve spacer then reinstall it.





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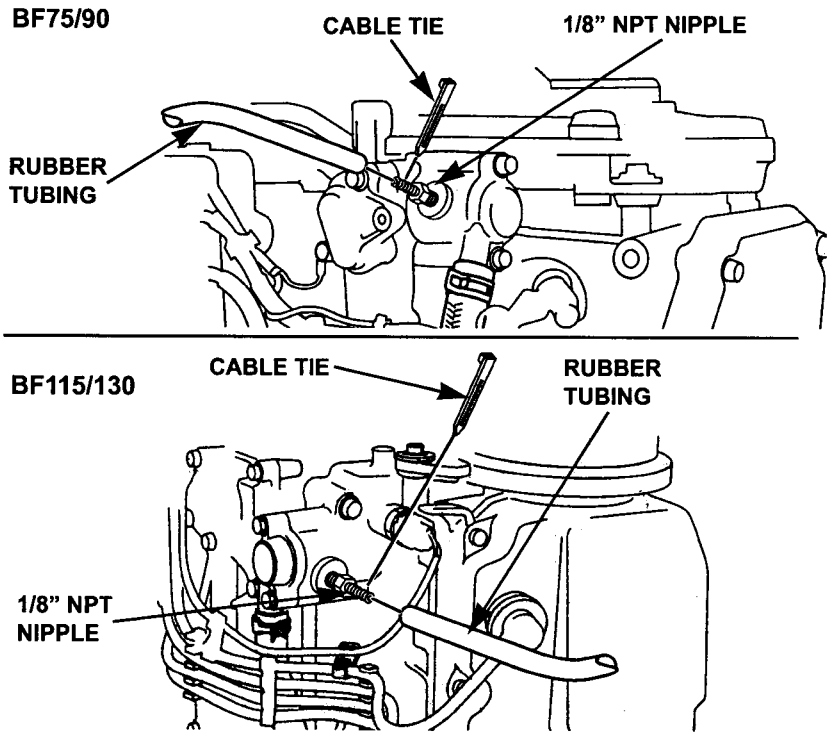
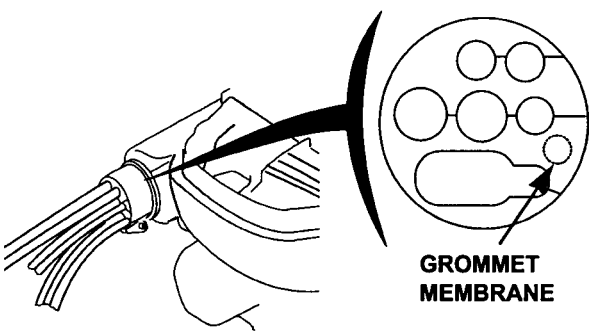
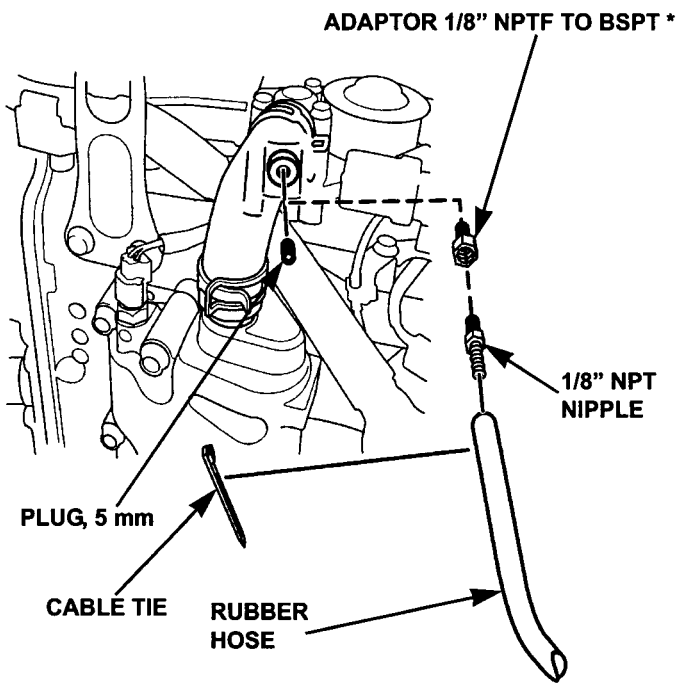
6. Apply a sealing compound to a 1/8" x 28 BSPT brass hose fitting and install the fitting securely.
7. Secure the rubber tubing with a plastic cable tie.



BF200/225

1. Use a 5 mm hex wrench and remove the water pressure access plug (located above the starboard exhaust manifold).
2. Apply sealing compound to the adaptor 1/8" NPTF to BSPT (supplied with kit*) and install the adaptor securely where the access plug was removed.
3. Apply sealing compound to the 1/8" NPT brass hose fitting (supplied with kit) and install the fitting securely in the adaptor.
4. Use a 7/32" drill bit and open the hole through the grommet membrane.





5. Route the rubber hose through the hole and to the hose fitting.
6. Attach the hose to the brass fitting and secure it with a cable tie.
7. Use cable ties and secure the rubber hose to various spots on the motor making sure it does not come into contact with any moving parts or hot components.

*Some water pressure gauge kits will not have the adaptor supplied. Do not use the 1/8" NPTF adaptor. Order P/N 19271-ZV5-000 BSPT 1/8" hose barb fitting.

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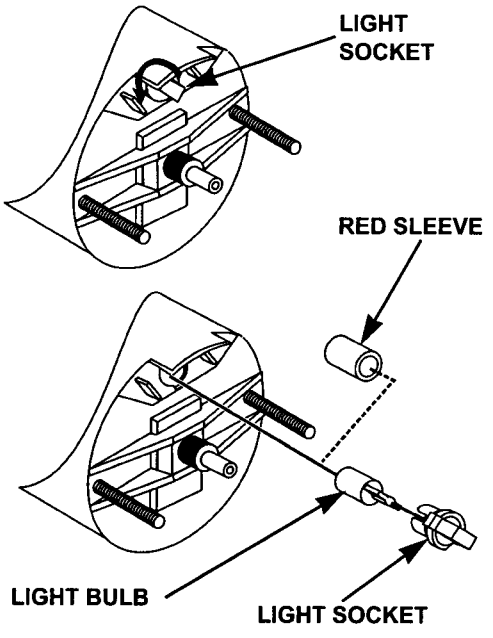
LIGHT BULB REPLACEMENT

1. Twist the black socket assembly one-eighth turn counterclockwise and remove it.
2. Pull the bulb straight out of the assembly.

REPLACEMENT BULBS:

Faria Instrument	Replacement Bulb
Speedometer	GE No.158
Tachometer	GE No.1948
Fuel Gauge	GE No.194
Trim Meter	GE No.161
Volt Meter	GE No.194
Water Pressure Gauge	GE No.161
Hour Meter	NA

3. If a red sleeve is covering the meter bulb, remove the red sleeve and install it on the new bulb before reinstalling the socket assembly.
4. Reinstall the socket assembly.



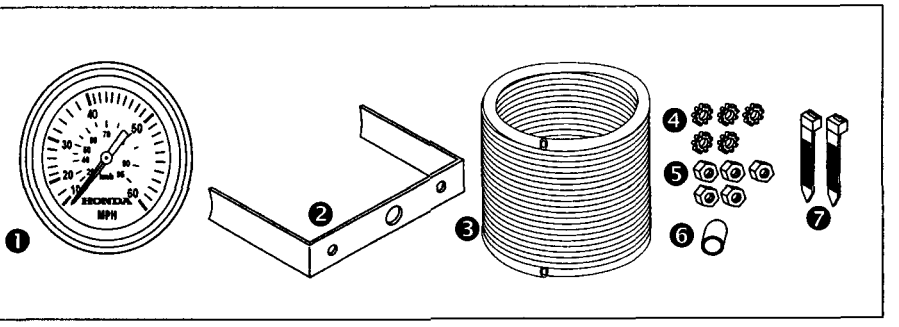
BEEDE

PARTS LISTING

Open the gauge carton and check all loose parts against the following list.

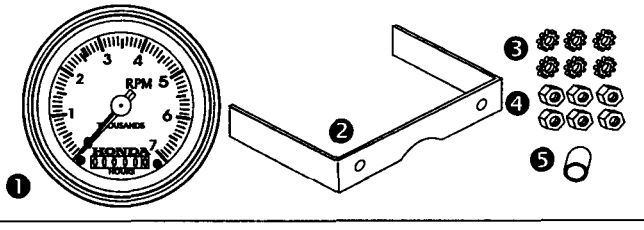
Speedometer

Ref	Qty	Description
1	1	Speedometer
2	1	Mounting Bracket
3	1	Rubber Hose
4	5	Star Washer
5	5	Brass Nut
6	1	Red Sleeve
7	2	Cable Tie



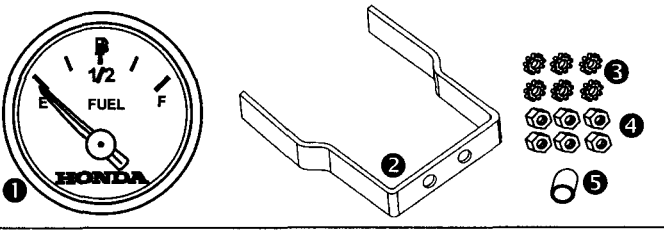
Tachometer

Ref	Qty	Description
1	1	Tachometer
2	1	Mounting Bracket
3	6	Star Washer
4	6	Brass Nut
5	1	Red Sleeve



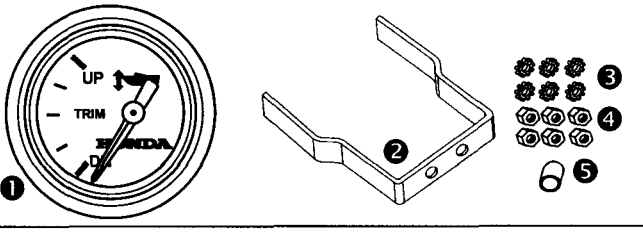
Fuel Gauge

Ref	Qty	Description
1	1	Fuel Gauge
2	1	Mounting Bracket
3	6	Star Washer
4	6	Brass Nut
5	1	Red Sleeve



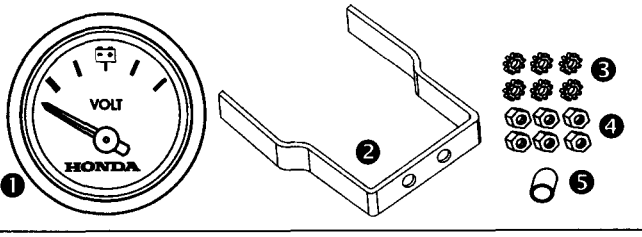
Trim Meter

Ref	Qty	Description
1	1	Trim Meter
2	1	Mounting Bracket
3	6	Star Washer
4	6	Brass Nut
5	1	Red Sleeve



Volt Meter

Ref	Qty	Description
1	1	Volt Meter
2	1	Mounting Bracket
3	6	Star Washer
4	6	Brass Nut
5	1	Red Sleeve



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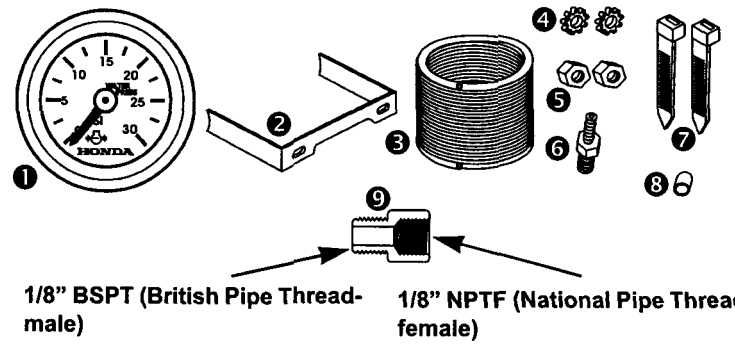
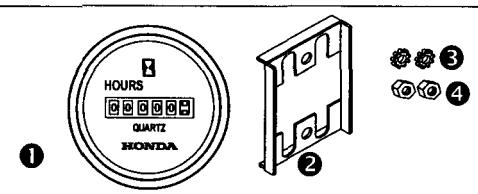
Water Pressure Gauge (not included in 5 gauge set)

Ref	Qty.	Description
1	1	Water Pressure Gauge
2	1	Mounting Bracket
3	1	Rubber Hose
4	2	Brass Nut
5	2	Star Washer
6	1	1/8" NPT Fitting
7	1	Red Sleeve
8	2	Cable Tie
9	1	Adaptor 1/8" NPTF To BSPT



Analog Hour Meter (not included in 5 gauge set)

Ref	Qty	Description
1	1	Volt Meter
2	1	Mounting Bracket
3	2	Star Washer
4	2	Brass Nut



Use the Beede Instrument Harness (P/N 32103-ZW7-000AH) to connect Beede gauges to the Honda main harness (refer to 9-25).

GAUGE INSTALLATION

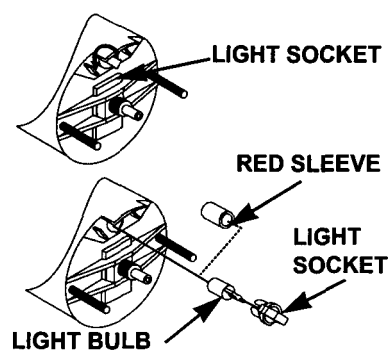
GAUGE	HOLE DIA.
Speedometer	86 mm (3-3/8")
Tachometer	86 mm (3-3/8")
Trim Meter	52.4 mm (2-1/16")
Volt Meter	52.4 mm (2-1/16")
Fuel Gauge	52.4 mm (2-1/16")
Water Pressure	52.4 mm (2-1/16")
Hour Meter	52.4 mm (2-1/16")

1. Disconnect the negative battery terminal cable.
2. Select a mounting location for the appropriate gauge(s) which provides easy readability from the operator's position. Check behind each mounting hole location for sufficient installation clearance.
3. Cut a hole in the dash for each gauge to the specification shown.
4. Install the gauge in its mounting hole and check the fit.

   If necessary, install the red cover over the light bulb before installing the gauges:

   a. Twist the black socket assembly one-eighth turn counterclockwise and remove it.
   b. Pull the bulb straight out of the assembly.
   c. Slip the red sleeve over the bulb and install socket assembly.

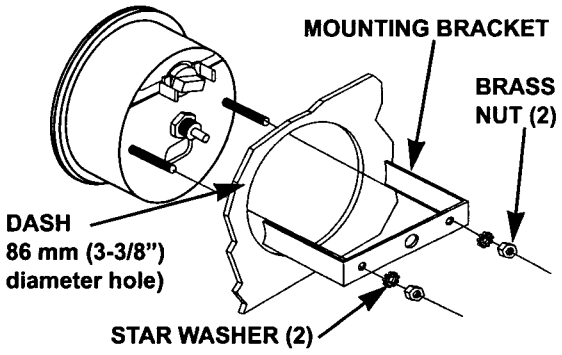
4. Mount the gauges with the appropriate mounting bracket, star washers and brass nuts as shown starting on the next page. Tighten the nuts until the gauge can no longer be rotated in the dash.



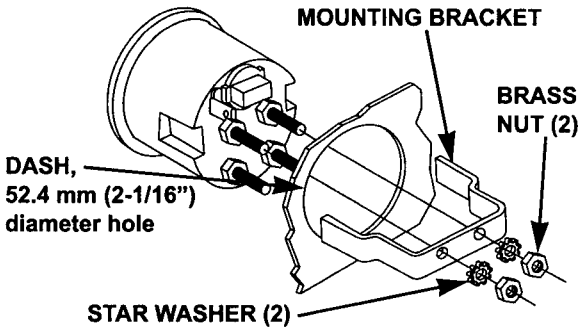
If necessary, shorten the clamp legs if the dashboard thickness exceeds clamp grip range.

Do not overtighten the mounting nuts. Overtightening the nuts June crack the gauge housing, mounting bracket or mounting panel.

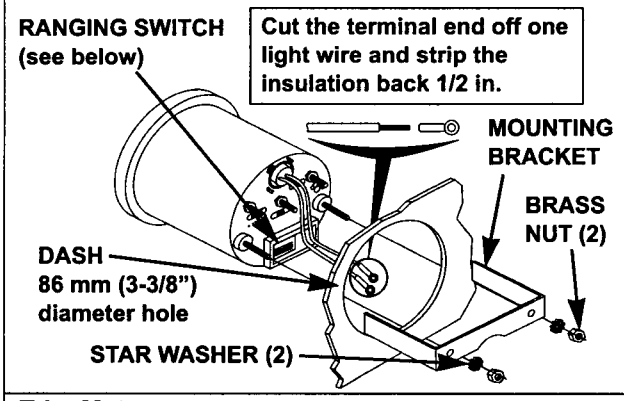
Speedometer



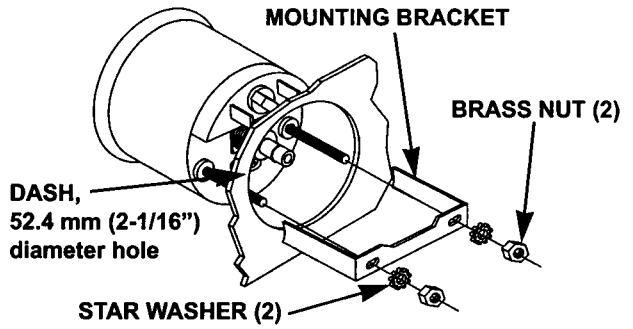
Fuel Gauge



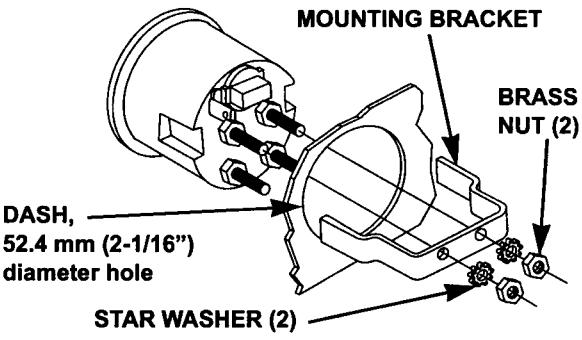
Tachometer



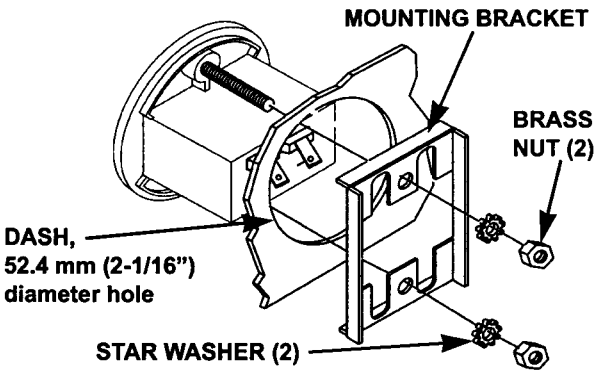
Water Pressure Gauge



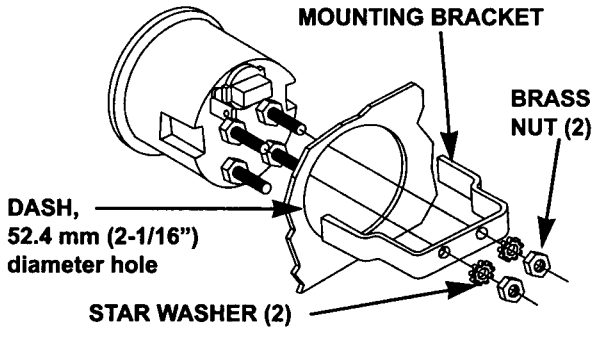
Trim Meter



Analog Hour Meter



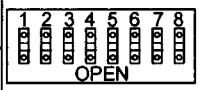
Volt Meter



Tachometer Ranging Switch Setting:

Using a small screwdriver, SLIGHTLY push the numbered dip switch to the OPEN position.

Model	Pole "OPEN"	Setting	Pulse
BF8D/9.9D BF15D/20D	12	4	6
BF35/45 BF40/50	6	2 and 3	3
BF25/30 BF75/90 BF115/130 BF200/225	4	1 and 2	2



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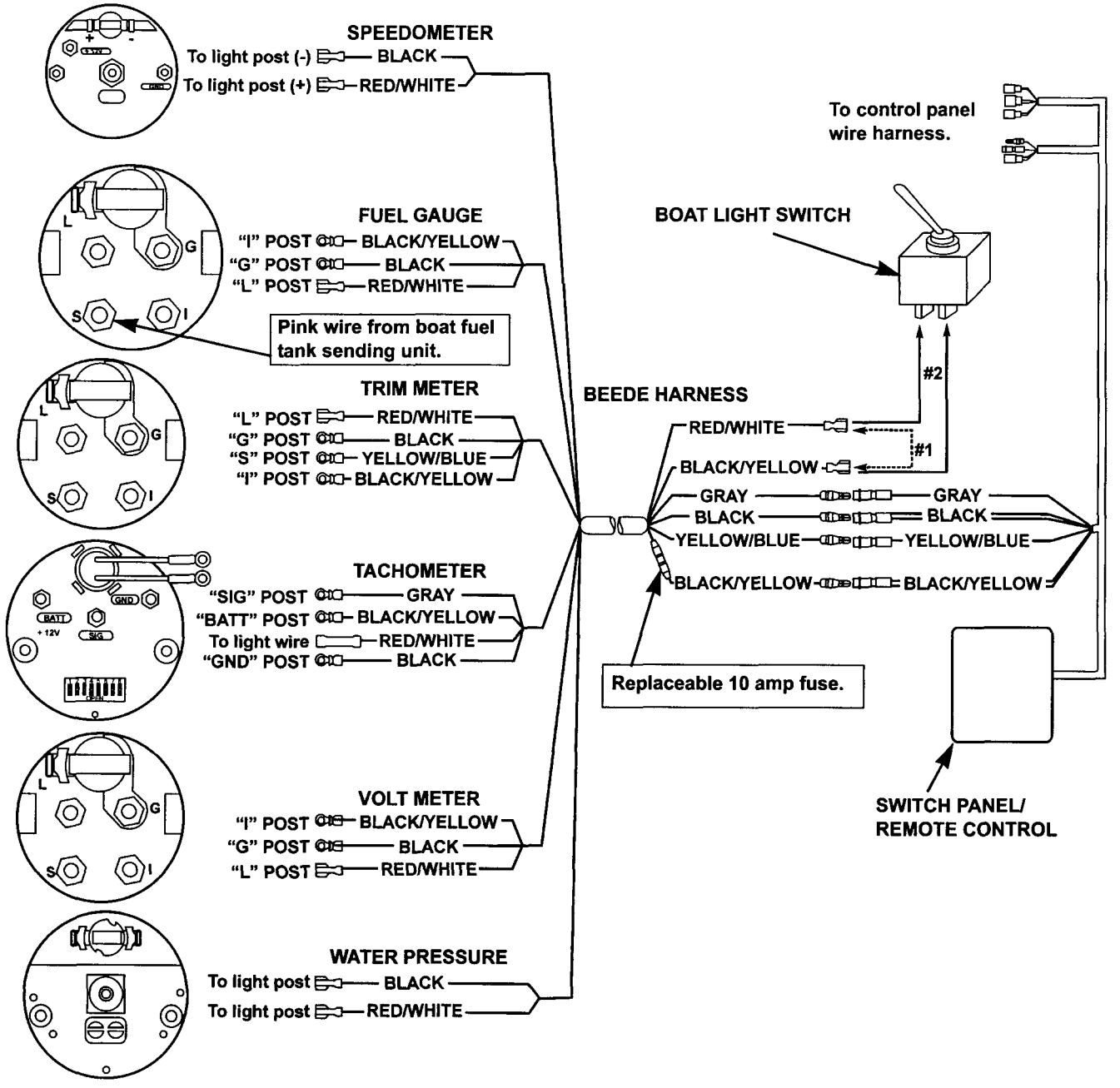
ELECTRICAL CONNECTIONS

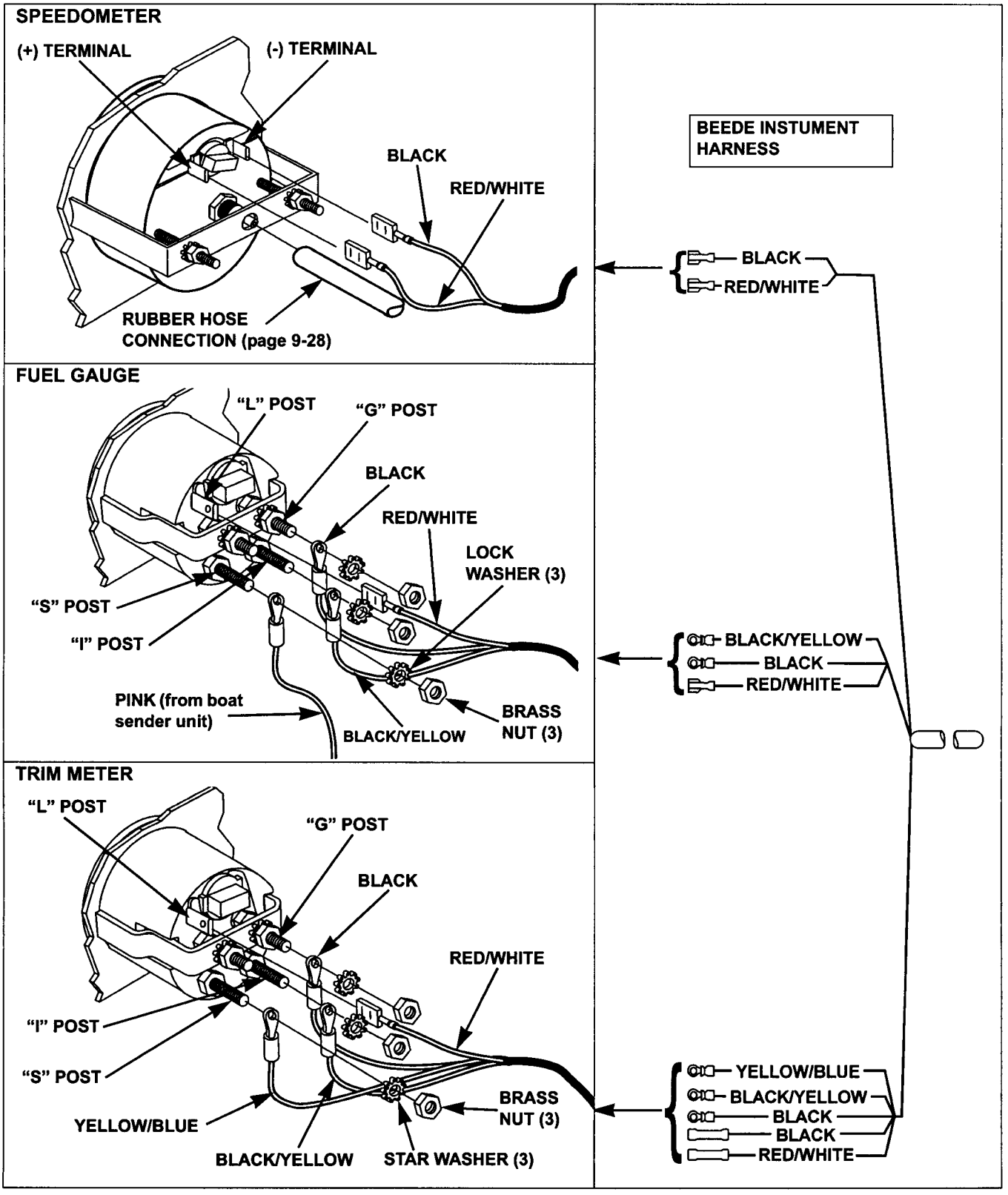
1. Disconnect the battery.
2. Connect the Beede Instrument Harness to the Honda switch panel as shown.



3. Connect the instrument lighting as shown using the instructions below.

#1	Instrument lights operate when Honda key switch is ON.	Connect red/white wire to the black/yellow wire.
#2	Instrument lights operate when light switch is ON.	Connect red/white wire and black/yellow wires to the boat light switch.

4. Connect the other end of the Beede instrument harness to the instruments as shown.
5. Secure the wire terminals with the hardware as shown.



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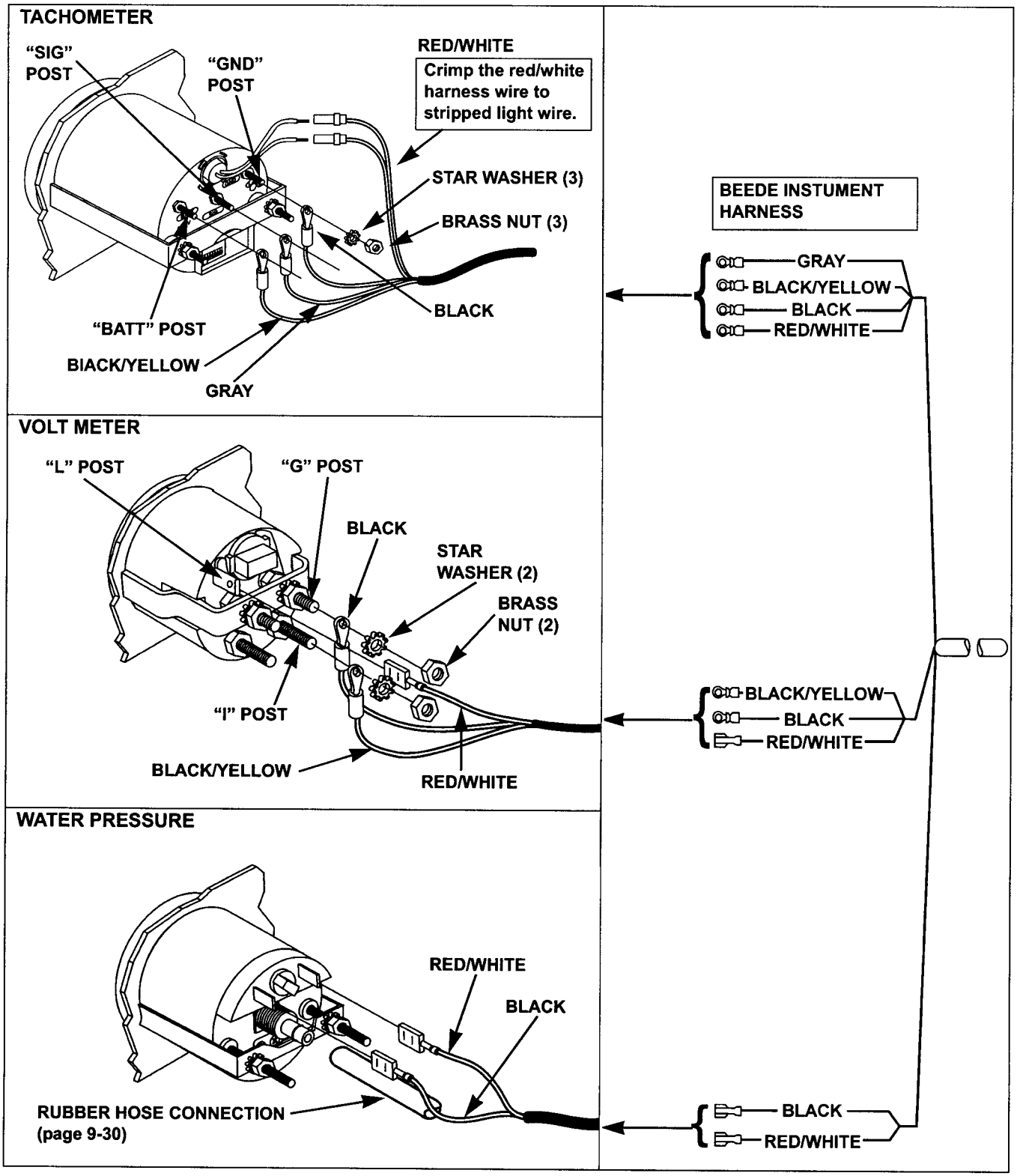
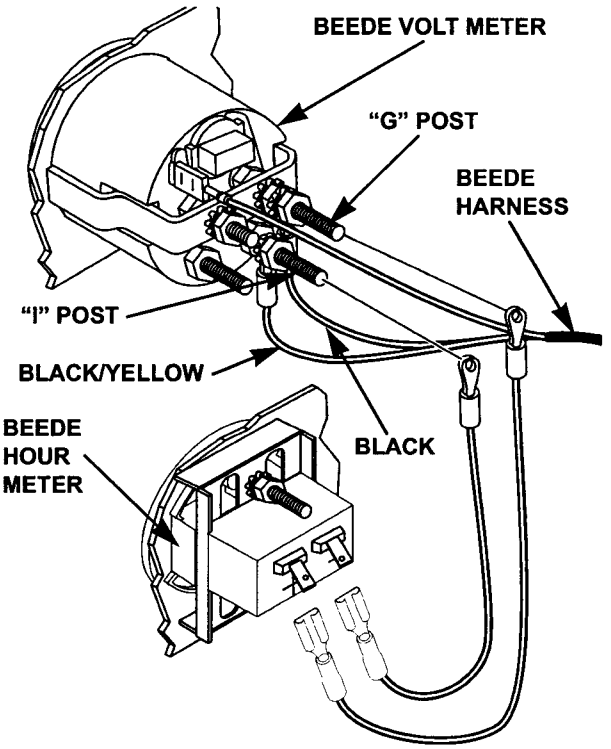


6. Connect the rubber hose for the speedometer (page 9-28) and water pressure gauge (page 9-30).
7. Before connecting the battery, recheck all electrical connections and ensure mounting hardware is secure.
8. Reconnect the battery and check the operation of each gauge.

ANALOG HOUR METER INSTALLATION (not included in 5 gauge set)

The hour meter will operate as long as the ignition switch is in the RUN position, and will turn off when the ignition switch is turned to the STOP position.

The Beede wire harness does not have connections for the Beede hour meter. If the Honda Beede wire harness is used with the Beede gauge set (or individual gauges), tap off any of the black/yellow wire posts with a wire and connect to the hour meter "+" terminal. Tap off any of the black wire posts with a wire and connect to the hour meter "–" terminal.



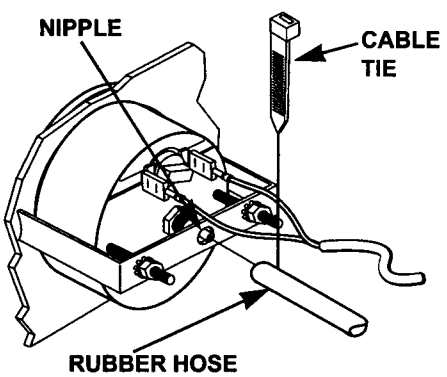
Materials required:

- Use stranded, insulated wire no smaller than 18 AWG that is approved for marine use.
- Use insulated ¼" female spade connectors on hour meter connections.
- Use eyelet terminals to connect to the Beede gauge.

Item	Part Number
Female Spade Connector	07VPZ-001050A
Eyelet Terminal	07VPZ-001060A

9. Reconnect the battery and test the lighting circuit.

SPEEDOMETER WATER TUBE INSTALLATION



1. After installing the speedometer in the dash, connect the rubber hose to the back of the speedometer and secure with a cable tie.
2. Route the rubber hose back to the motor alongside the control cables.
   - A slight downward slope from bow to stern will help avoid trapping water.
   - Avoid sharp turns, crimping, kinking, or other forces that June reduce the inside diameter of the hose.
   - Do not coil any excess rubber hose. Carefully measure, then cut to the desired length.

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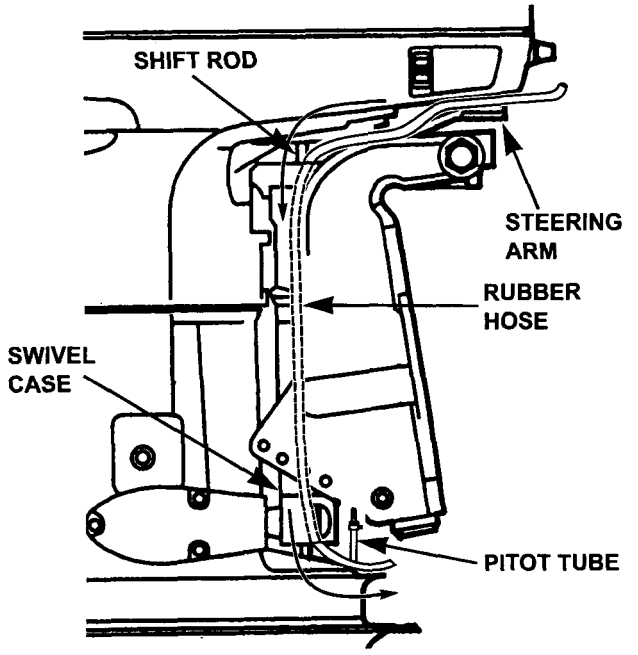
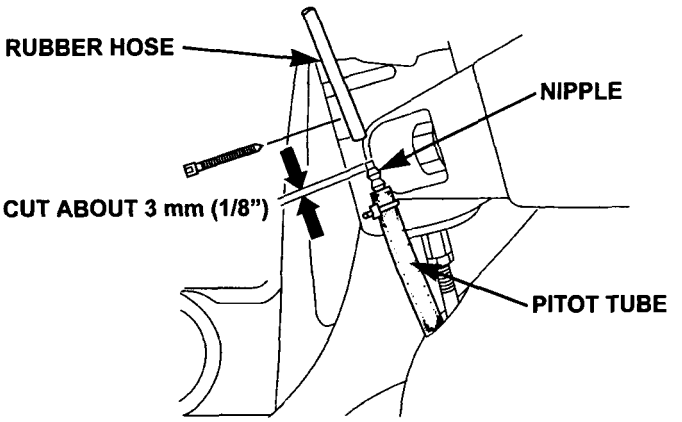
3. Fasten the rubber hose at regular intervals with small plastic wire ties (be careful not to pinch tubing).
4. Starting at the top of the swivel case, route the rubber hose over the top of the steering arm, down through the inside of the swivel case alongside the shift rod, and out the bottom of the swivel case to the pitot tube.



5. Cut approximately 3 mm (1/8") off the nipple end.

   Clean the pitot tube if it is clogged with salt or any other foreign material.
6. Cut the hose to the appropriate length to reach the nipple end.
7. Press the end of the hose over the nipple and secure with a cable tie.
8. Gently feed the pitot tube and rubber hose back up through the swivel case until a slight loop is made in the pitot tube.



9. Secure the hose to the steering arm with cable ties.

Speedometer Water Tube Maintenance

The pitot tube should be flushed with fresh water before storing the boat for prolonged periods. Any remaining water in the rubber hose should also be removed before storing the boat for prolonged periods.

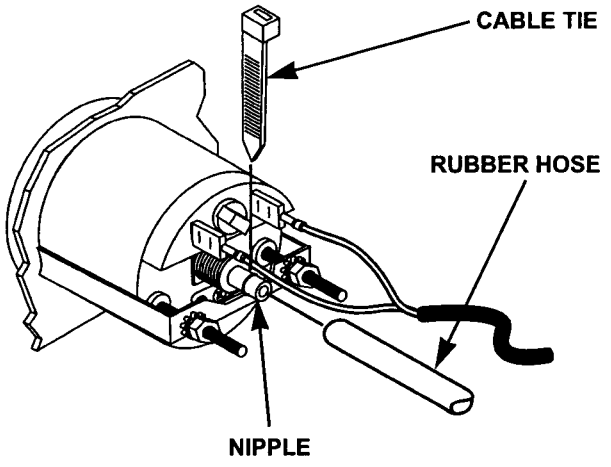
If the pitot tube or rubber hose should become clogged:

1. Disconnect the rubber hose from the speedometer and the pitot tube.
2. Clean the rubber hose with a stiff wire or blow air through it.

   Do not blow air through the rubber hose when it is connected to the speedometer. High air pressure will damage the speedometer.
3. Flush and clean the pitot tube with fresh water. If necessary, clean the pitot tube opening with a stiff wire.
4. Reconnect the rubber hose to the speedometer and secure with a new cable tie.
5. Reconnect the rubber hose to the pitot tube nipple end and secure with a new cable tie.

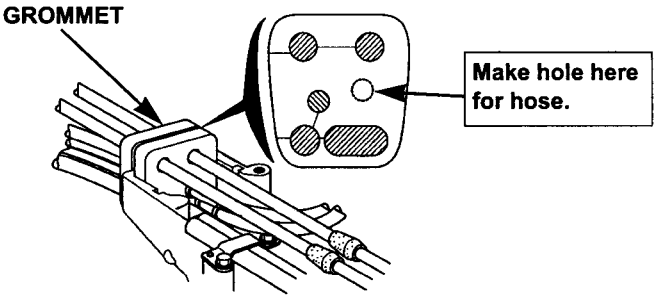
WATER PRESSURE GAUGE TUBING INSTALLATION

1. After installing the water pressure gauge in the dash, connect the rubber hose to the back of the water pressure gauge and secure with a cable tie.
2. Route the rubber hose back to the motor alongside the control cables.
   - Avoid sharp turns, crimping, kinking, or other forces that June reduce the inside diameter of the hose.
   - Do not coil any excess hose. Cut hose to the desired length.
3. Fasten the rubber hose at regular intervals with small plastic cable ties (be careful to not pinch the hose).

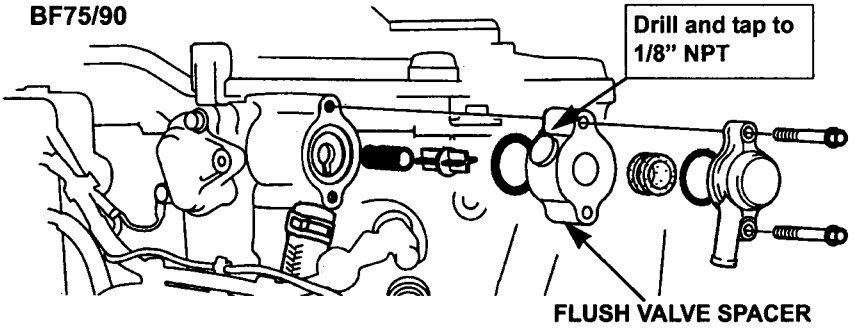


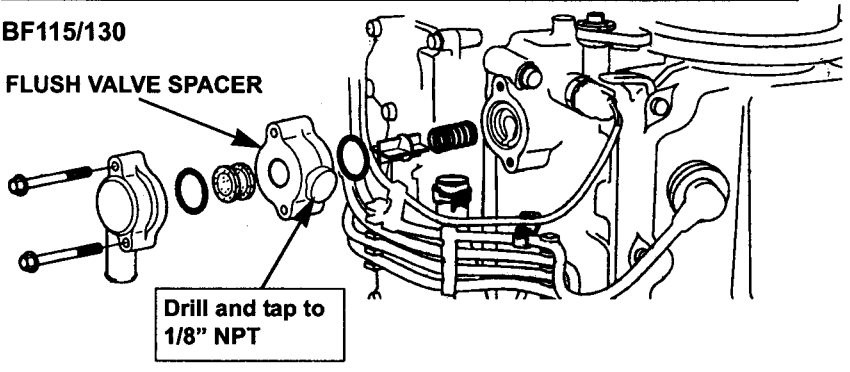
BF75/90/115/130

1. Remove the grommet and make a hole a little larger than the rubber hose.
2. Route the rubber hose through the grommet and reinstall the grommet.



3. Remove the flush valve spacer.
4. Drill and tap the flush valve spacer raised bossed to 1/8" NPT.
5. Thoroughly clean the flush valve spacer then reinstall it.





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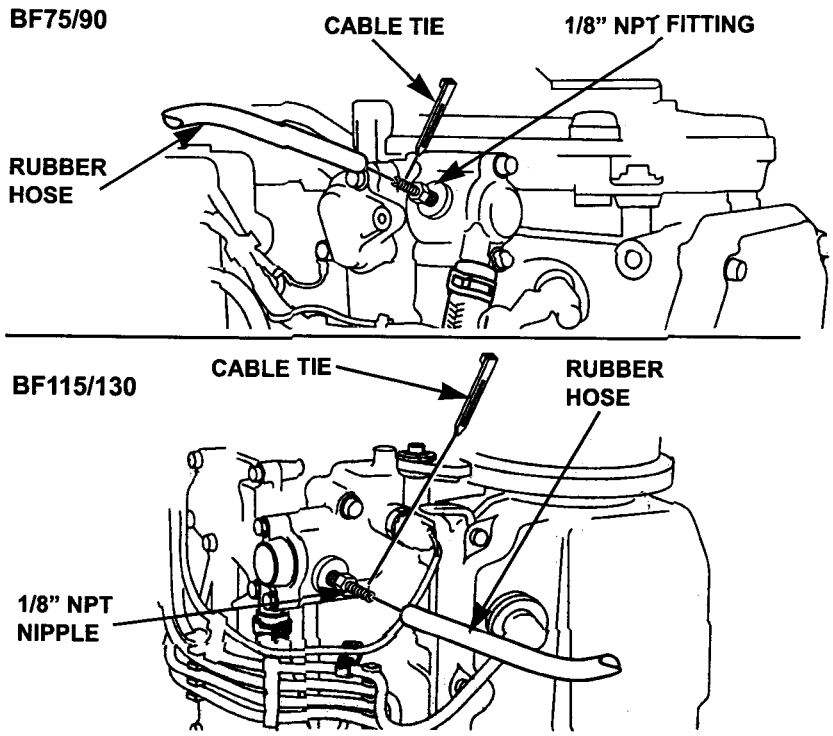
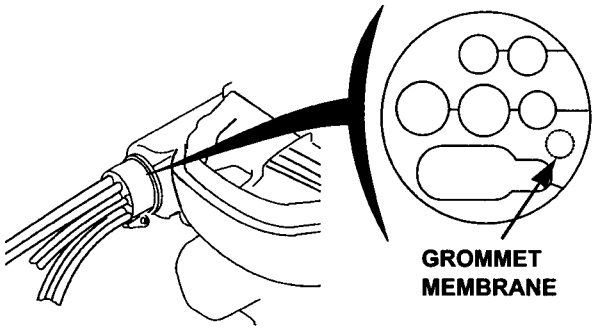
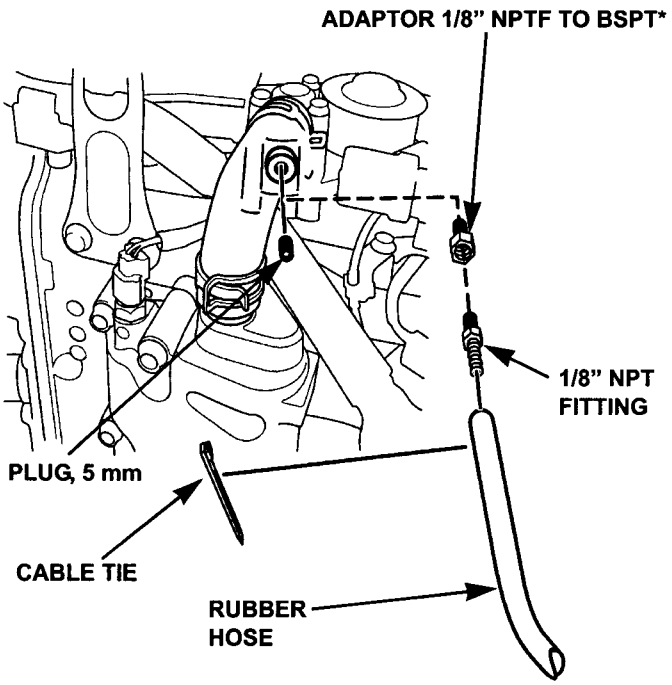
6. Apply sealing compound to the 1/8" NPT brass hose fitting (supplied with kit) and install the fitting securely.
7. Install the rubber hose onto the 1/8" NPT brass fitting and secure with a plastic cable tie.



BF200/225

1. Use a 5 mm hex wrench and remove the water pressure access plug (located above the starboard exhaust manifold).
2. Apply sealing compound to the adaptor 1/8" NPTF to BSPT (supplied with kit*) and install the adaptor securely where the access plug was removed.
3. Apply sealing compound to the 1/8" NPT brass hose fitting (supplied with kit) and install the fitting securely in the adaptor.
4. Use a 7/32" drill bit and open the hole through the grommet membrane.





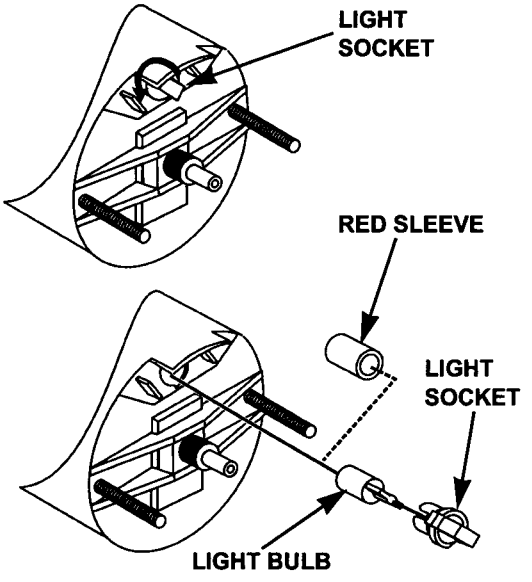
5. Route the rubber hose through the hole and to the hose fitting.
6. Attach the hose to the brass fitting and secure it with a cable tie.
7. Use cable ties and secure the rubber hose to various spots on the motor making sure it does not come into contact with any moving parts or hot components.

*Some water pressure gauge kits will not have the adaptor supplied. Do not use the 1/8" NPTF adaptor. Order P/N 19271-ZV5-000 BSPT 1/8" hose barb fitting.

LIGHT BULB REPLACEMENT

1. Twist the black socket assembly one-eighth turn counterclockwise and remove it.
2. Pull the bulb straight out of the assembly.

   REPLACEMENT BULBS: GE161
3. If a red sleeve is covering the meter bulb, remove the red sleeve and install it on the new bulb before reinstalling the socket assembly.
4. Reinstall the socket assembly.



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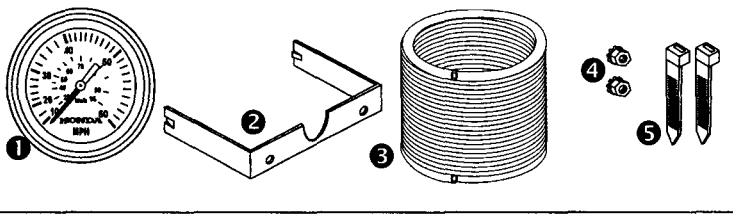
TELEFLEX®

PARTS LISTING

Open the gauge carton and check all loose parts against the following list.

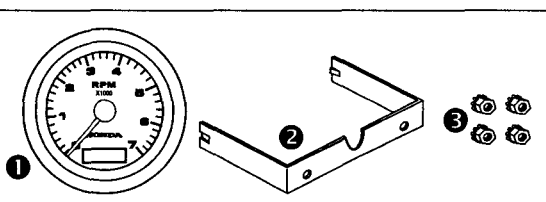
Speedometer

Ref	Qty	Description
1	1	Speedometer
2	1	Mounting Bracket
3	1	Rubber Hose
4	2	Lock Nut
5	2	Cable Tie



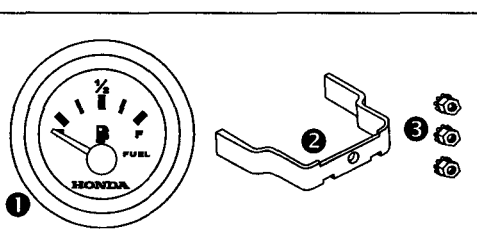
Tachometer

Ref	Qty	Description
1	1	Tachometer
2	1	Mounting Bracket
3	4	Lock Nut



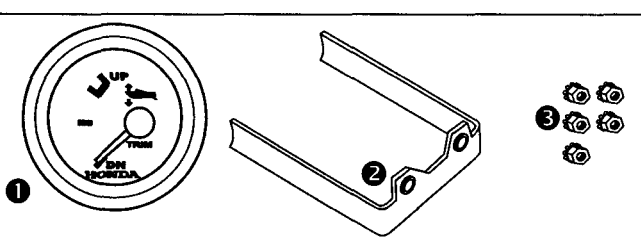
Fuel Gauge

Ref	Qty	Description
1	1	Fuel Gauge
2	1	Mounting Bracket
3	3	Lock Nut



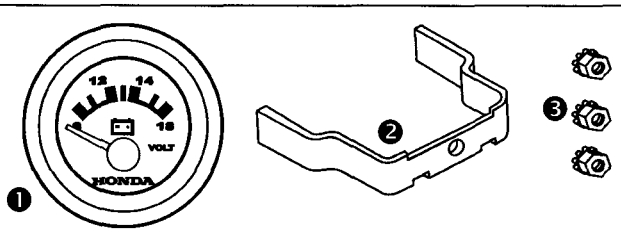
Trim Meter

Ref	Qty	Description
1	1	Trim Meter
2	1	Mounting Bracket
3	5	Lock Nut



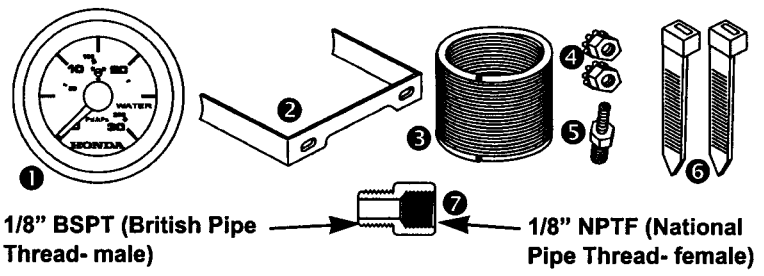
Volt Meter

Ref	Qty	Description
1	1	Volt Meter
2	1	Mounting Bracket
3	3	Lock Nut



Water Pressure Gauge*

Ref	Qty.	Description
1	1	Water Pressure Gauge
2	1	Mounting Bracket
3	1	Rubber Hose
4	2	Lock Nut
5	1	1/8" NPT Fitting
6	2	Cable Tie
7	1	Adaptor 1/8" NPTF To BSPT



* The water pressure gauge is not included in the 5 gauge set. It must be ordered separately.

Use the Teleflex Instrument Harness (P/N 32200-ZW7-000AH) to connect Teleflex gauges to the Honda main harness (refer to 9-36).

GAUGE INSTALLATION

GAUGE	HOLE DIA.
Speedometer	86 mm (3-3/8")
Tachometer	86 mm (3-3/8")
Trim Meter	52.4 mm (2-1/16")
Volt Meter	52.4 mm (2-1/16")
Fuel Gauge	52.4 mm (2-1/16")
Water Pressure	52.4 mm (2-1/16")
Hour Meter	52.4 mm (2-1/16")

1. Disconnect the negative battery terminal cable.
2. Select a mounting location for the appropriate gauge(s) which provides easy readability from the operator's position. Check behind each mounting hole location for sufficient installation clearance.
3. Cut a hole in the dash for each gauge to the specification shown.
4. Mount the gauges with the appropriate mounting bracket, star washers and lock nuts as shown starting on the next page. Tighten the nuts until the gauge can no longer be rotated in the dash.

   If necessary, shorten the clamp legs if the dashboard thickness exceeds clamp grip range.

   Do not overtighten the mounting nuts. Overtightening the nuts June crack the gauge housing, mounting bracket or mounting panel.

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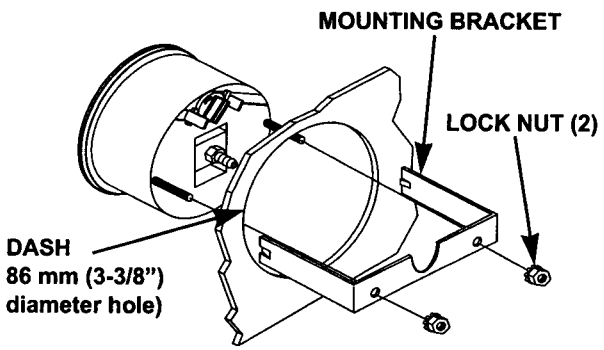
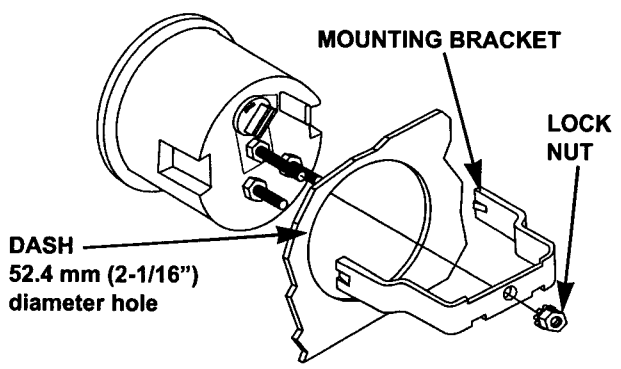
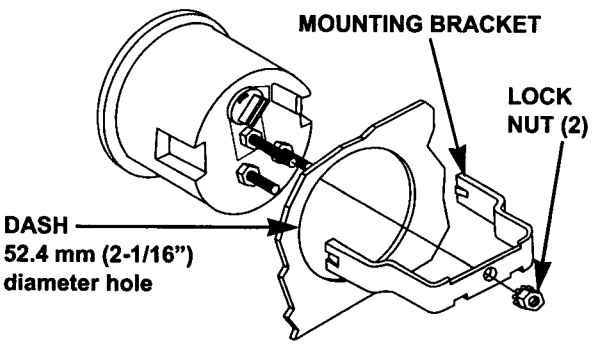
Speedometer



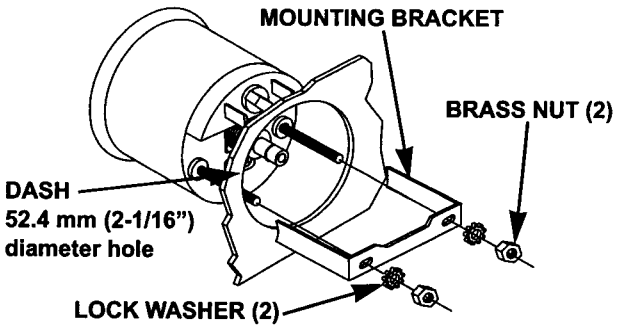
Fuel Gauge



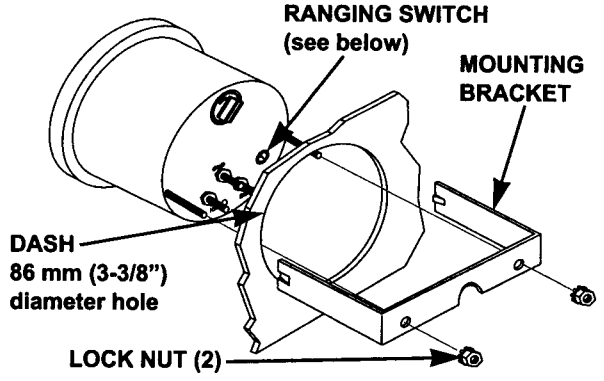
Volt Meter



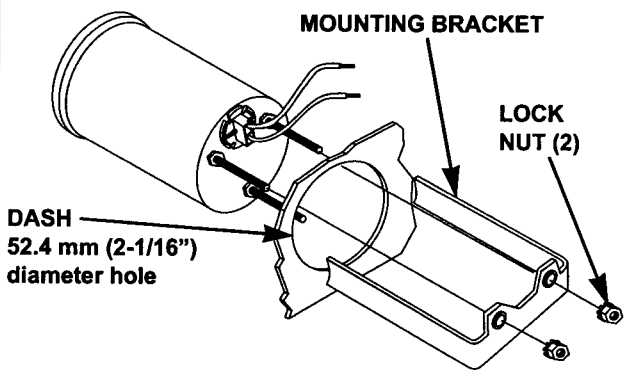
Water Pressure Gauge



Tachometer

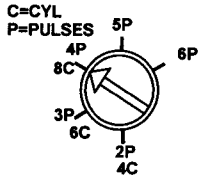


Trim Meter



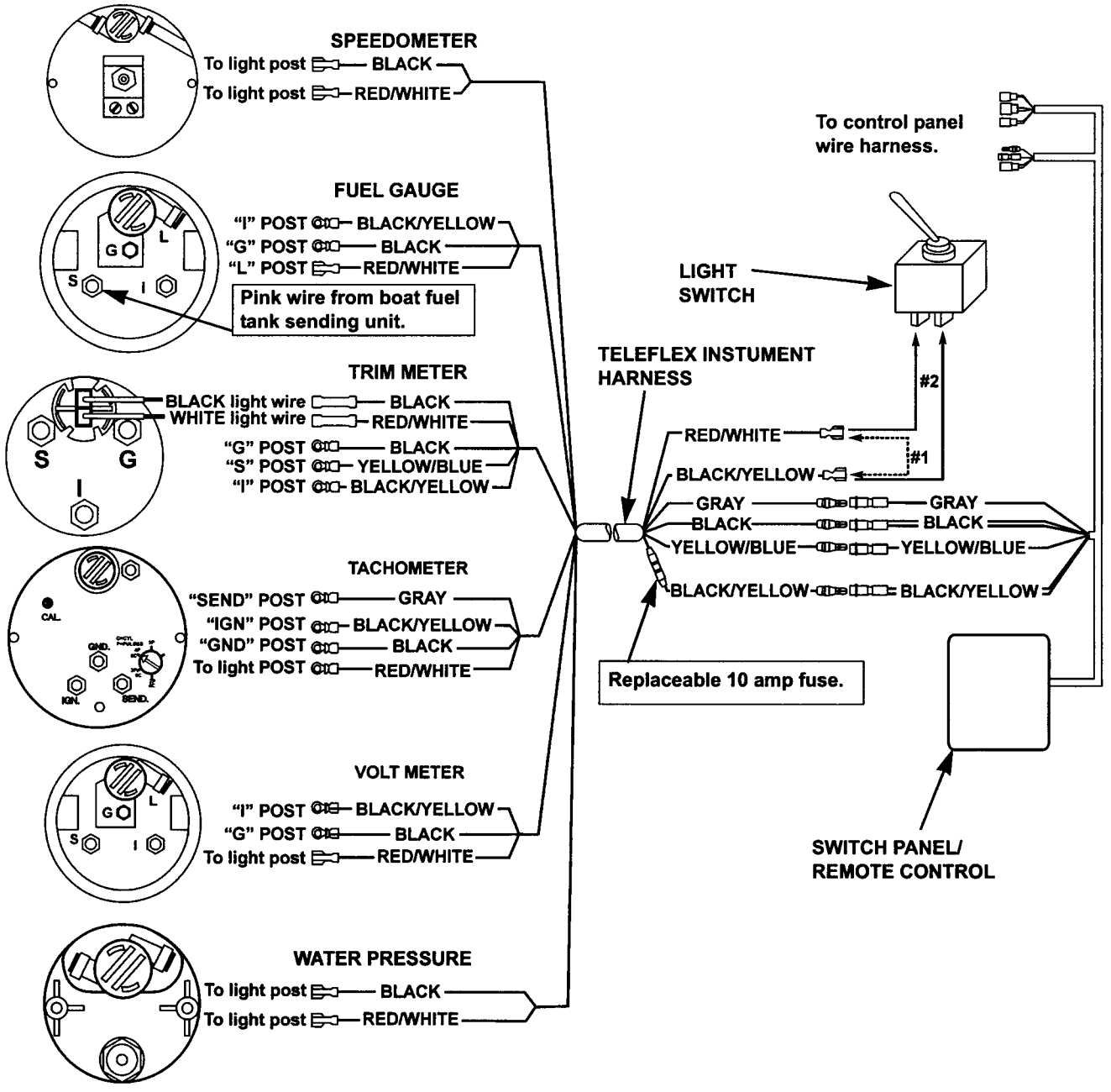
Tachometer Ranging Switch Setting:
Using a small screwdriver, turn the dial to the appropriate setting.

Model	Pulses	Poles	Setting
BF8D/9.9D BF15D/20D	6	12	6P
BF35/45 BF40/50	3	6	3P
BF25/30 BF75/90 BF115/130 BF200/225	2	4	2P



ELECTRICAL CONNECTIONS

1. Disconnect the battery.
2. Connect the Teleflex instrument harness to the Honda switch panel or control box as shown.



3. Connect the instrument lighting as shown using the instructions below.

#1	Instrument lights operate when Honda key switch is ON.	Connect red/white wire to the black/yellow wire.
#2	Instrument lights operate when light switch is ON.	Connect red/white wire and black/yellow wires to the light switch.

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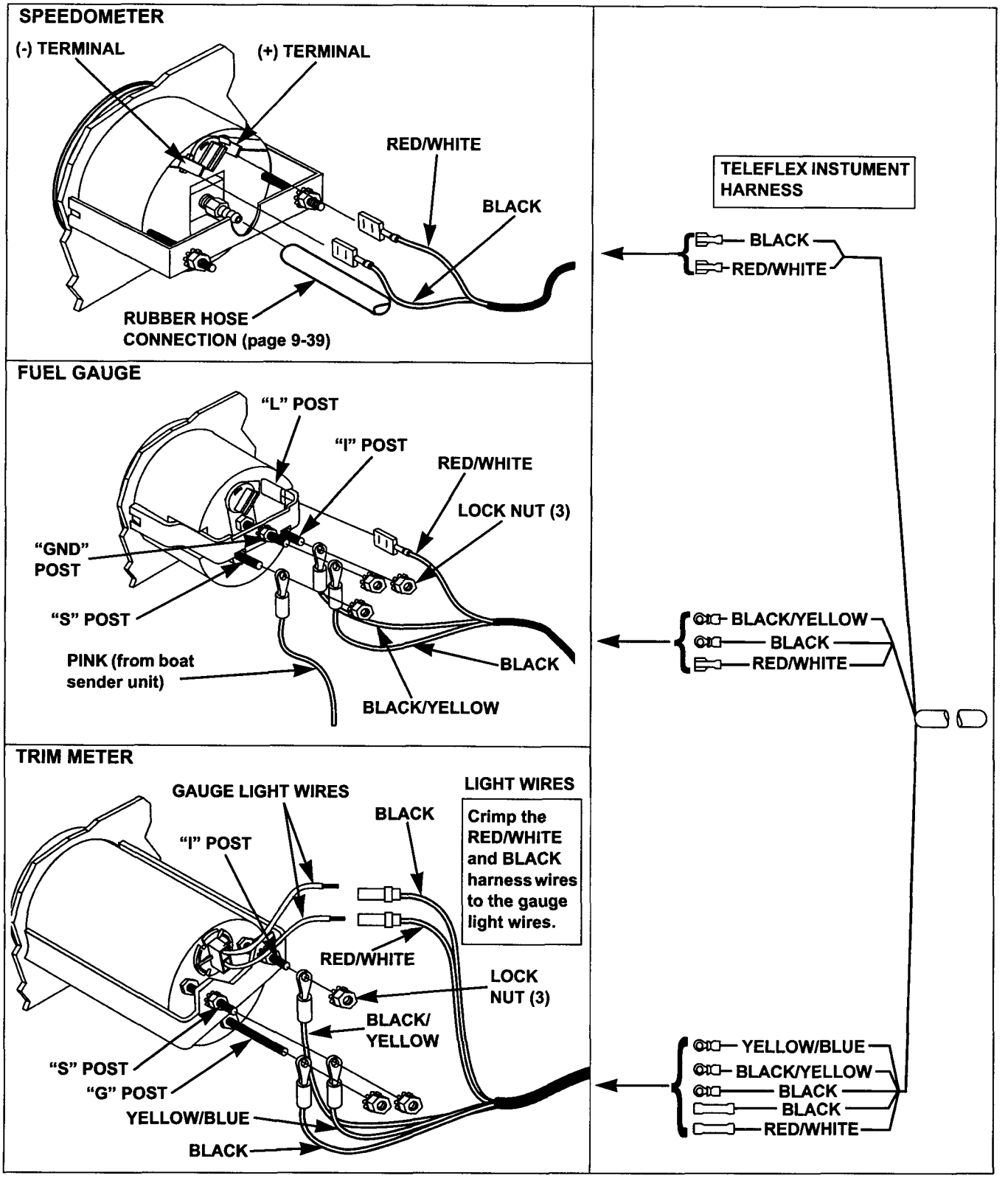
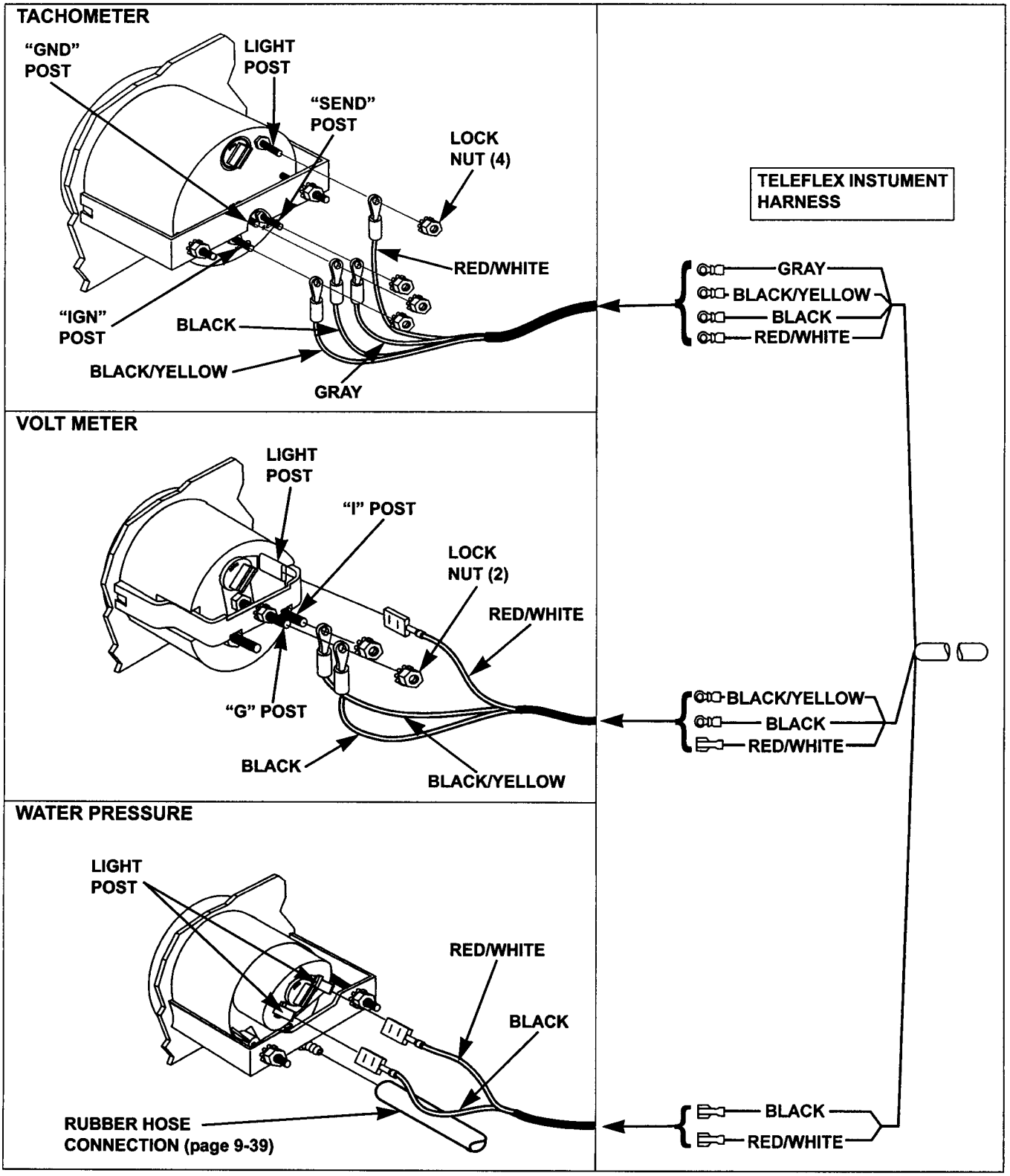
4. Connect the other end of the Teleflex instrument harness to the instruments as shown.
5. Secure the wire terminals with the hardware as shown.





6. Connect the rubber hose for the speedometer (page 9-39) and water pressure gauge (page 9-40).
7. Before connecting the battery, recheck all electrical connections and ensure mounting hardware is secure.
8. Reconnect the battery and check the operation of each gauge.

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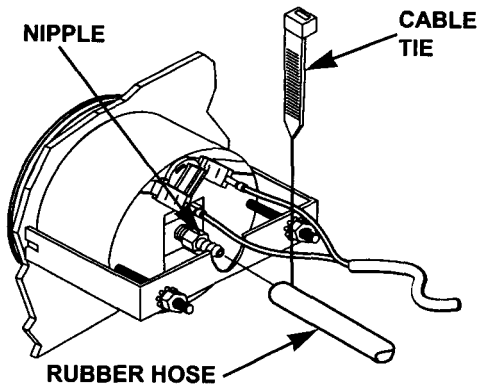
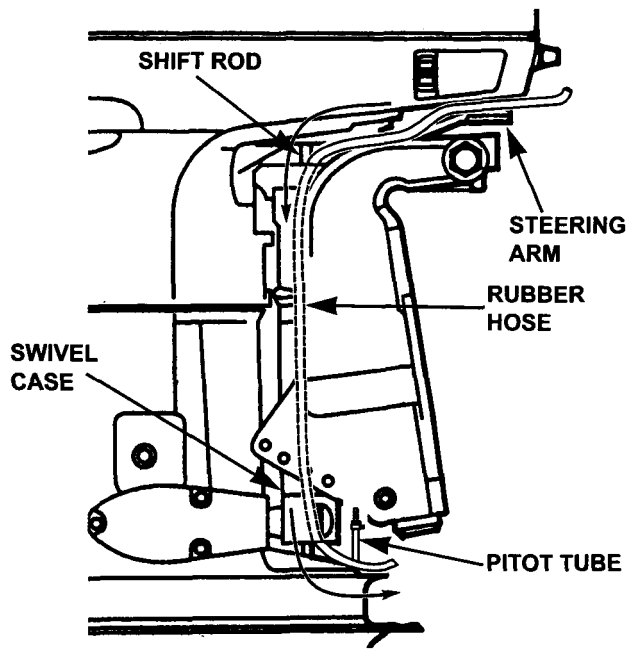
SPEEDOMETER RUBBER HOSE INSTALLATION

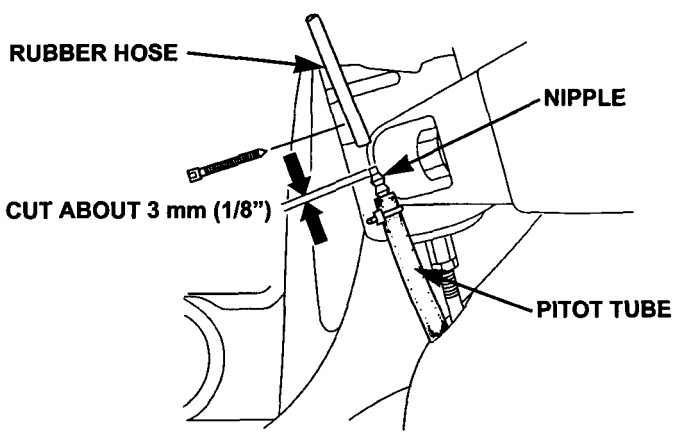
1. After installing the speedometer in the dash, connect the rubber hose to the back of the speedometer and secure with a cable tie.
2. Route the rubber hose back to the motor alongside the control cables.
   - A slight downward slope from bow to stern will help avoid trapping water.
   - Avoid sharp turns, crimping, kinking, or other forces that June reduce the inside diameter of the hose.
   - Do not coil any excess rubber hose. Carefully measure, then cut to the desired length.
3. Fasten the rubber hose at regular intervals with small plastic wire ties (be careful not to pinch tubing).
4. Starting at the top of the swivel case, route the rubber hose over the top of the steering arm, down through the inside of the swivel case alongside the shift rod, and out the bottom of the swivel case to the pitot tube.





5. Cut approximately 3 mm (1/8") off the nipple end.

   Clean the pitot tube if it is clogged with salt or any other foreign material.
6. Cut the hose to the appropriate length to reach the nipple end.
7. Press the end of the hose over the nipple and secure with a cable tie.
8. Gently feed the pitot tube and rubber hose back up through the swivel case until a slight loop is made in the pitot tube.
9. Secure the hose to the steering arm with cable ties.



Speedometer Water Tube Maintenance

The pitot tube should be flushed with fresh water before storing the boat for prolonged periods. Any remaining water in the rubber hose should also be removed before storing the boat for prolonged periods.

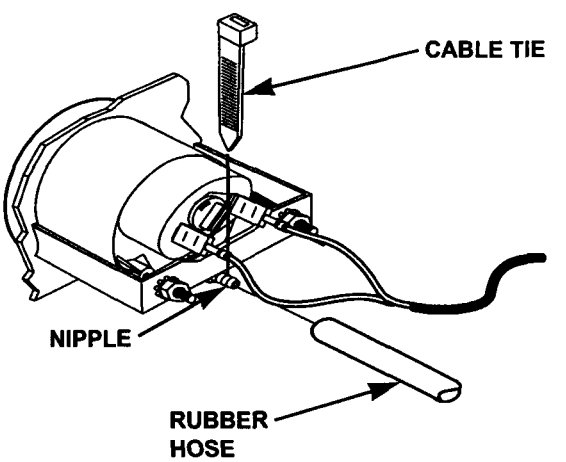
If the pitot tube or rubber hose should become clogged:

1. Disconnect the rubber hose from the speedometer and the pitot tube.
2. Clean the rubber hose with a stiff wire or blow air through it.

   Do not blow air through the rubber hose when it is connected to the speedometer. High air pressure will damage the speedometer.
3. Flush and clean the pitot tube with fresh water. If necessary, clean the pitot tube opening with a stiff wire.
4. Reconnect the rubber hose to the speedometer and secure with a new cable tie.
5. Reconnect the rubber hose to the pitot tube nipple end and secure with a new cable tie.

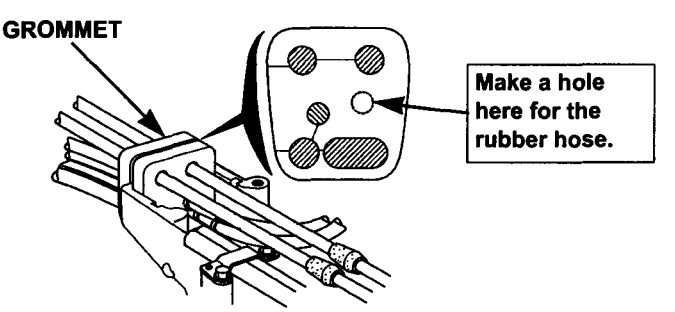
WATER PRESSURE GAUGE RUBBER HOSE INSTALLATION

1. After installing the water pressure gauge in the dash, connect the rubber hose to the back of the cable tie.
2. Route the rubber hose back to the motor alongside the control cables.
   - Avoid sharp turns, crimping, kinking, or other forces that June reduce the inside diameter of the hose.
   - Do not coil any excess hose. Cut hose to the desired length.
3. Fasten the rubber hose at regular intervals with small plastic cable ties (be careful to not pinch the hose).



BF75/90/115/130

1. Remove the grommet and make a hole slightly larger than the rubber hose.
2. Route the rubber hose through the grommet and reinstall the grommet.



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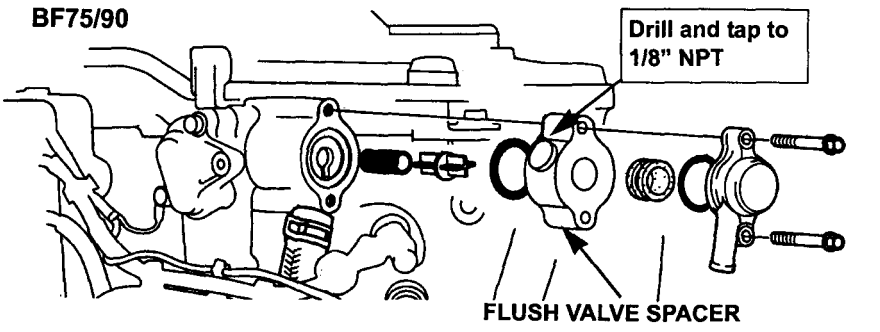
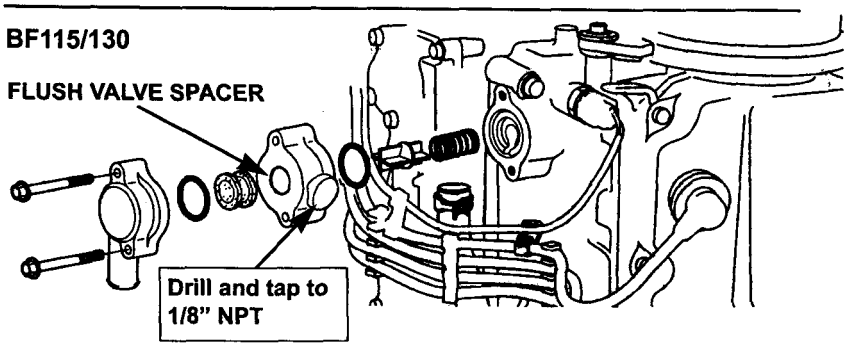
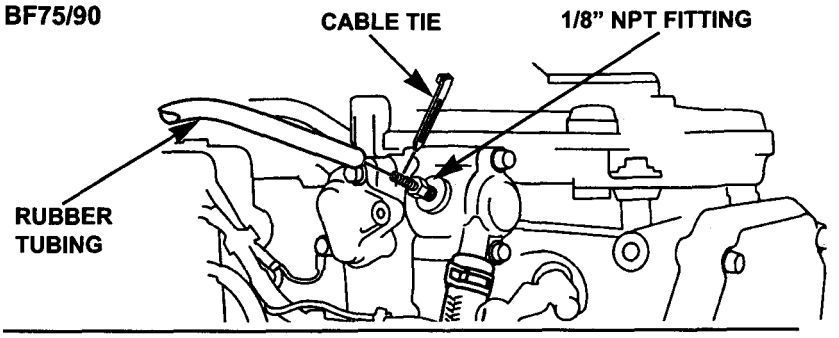
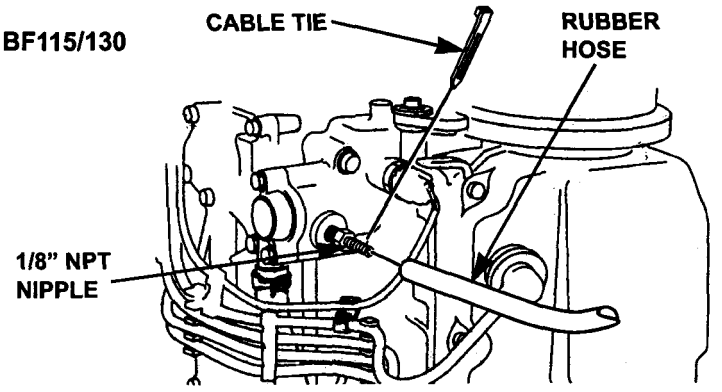
3. Remove the flush valve spacer.
4. Drill and tap the flush valve spacer raised bossed to 1/8" NPT.
5. Thoroughly clean the flush valve spacer then reinstall it.



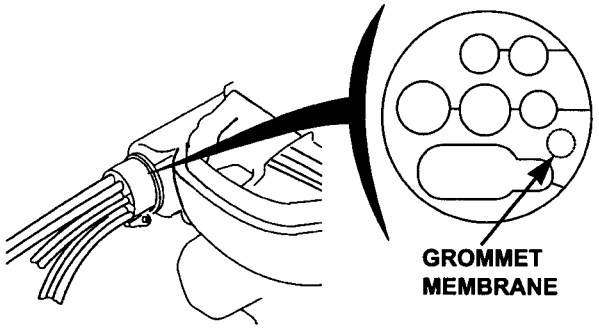


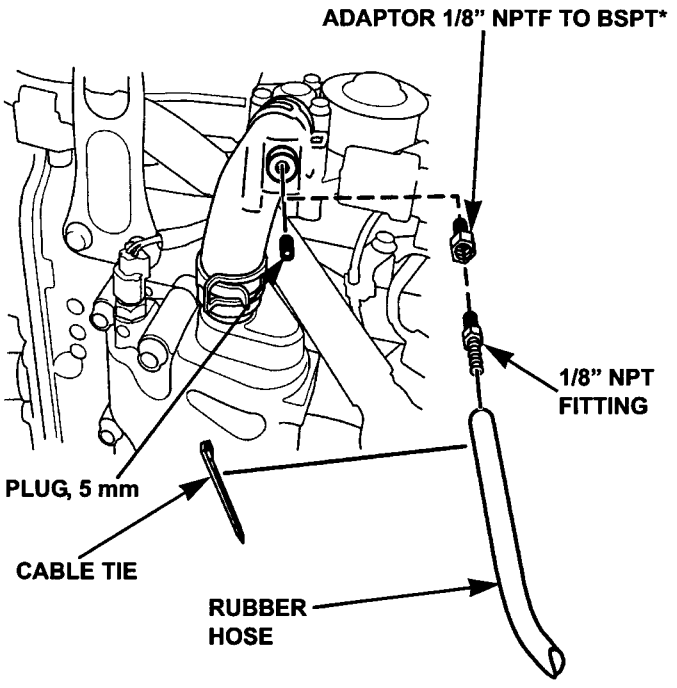
6. Apply sealing compound to the 1/8" NPT brass hose fitting (supplied with kit) and install the fitting securely.
7. Install the rubber hose on the hose fitting and secure with a cable tie.





1. Use a 5 mm hex wrench and remove the water pressure access plug (located above the starboard exhaust manifold).
2. Apply sealing compound to the adaptor 1/8" NPTF to BSPT (supplied with kit*) and install the adaptor securely where the access plug was removed.
3. Apply sealing compound to the 1/8" NPT brass hose fitting (supplied with kit) and install the fitting securely in the adaptor.
4. Use a 7/32" drill bit and open the hole through the grommet membrane.





5. Route the rubber hose through the hole and to the hose fitting.
6. Secure the hose to the brass fitting with a cable tie.
7. Use cable ties and secure the rubber hose to various spots on the motor making sure the hose does not come into contact with any moving parts or hot components.

*Some water pressure gauge kits will not have the adaptor supplied. Do not use the 1/8" NPTF adaptor. Order P/N 19271-ZV5-000 BSPT 1/8" hose barb fitting.

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10. CONTROL BOXES AND TEMPLATES

- Use only TFXTREME cables for all rigging procedures.
- Place tie wraps no closer than 3 ft. to the control box, with a minimum 8 in. distance between tie wraps.

10

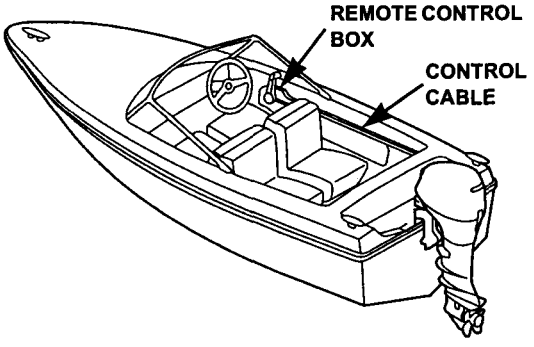
REMOTE CONTROL BOX LOCATION AND SELECTION

LOCATION

Select a mounting location which allows easy access and unobstructed, comfortable operation of the remote control lever. Make sure there are no cable obstructing components between the remote control box and the outboard motor.

The remote control box is normally mounted on the starboard side of the gunnel. The control lever can be reversed to accommodate port side or starboard helm/console installation.

CONTROL CABLE SELECTION/ROUTING

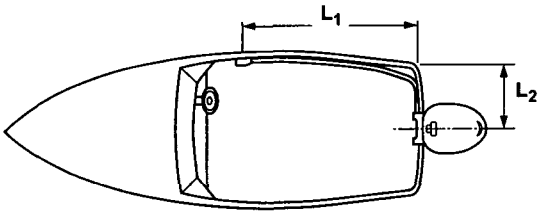


1. Select a mounting location which permits easy access and unrestricted operation of the control lever. Make sure there are no other parts obstructing the cables or components between the remote control box and the outboard motor.

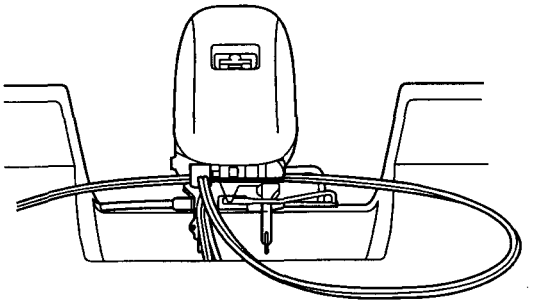
   The bottom of the remote control box should be at the same level as the upper surface of the seat.

   Top Mount Controls

   Insert a spacer between the box and the installation surface if the travel of the operating lever is compromised (see page 10-10).



2. Determine and select the remote control cable length.
   - Top mount control:
     - **CABLE LENGTH**: L1 + L2 + 300 mm (12 in)



   - Dual mount remote control:
     - Measure the control cable routing length to the respective outboard motors.
   - If the cable is routed around one outboard motor to the other side:
     - **CABLE LENGTH**: L1 + L2 + 1200 mm (48 in)

   The bending diameter of a cable must never be less than 400 mm (16 in).

   If the cable is routed in a tight arc, resistance on the control lever will increase, and a smooth throttle operation is no longer possible. This June lead to a loss of control over the craft.

   The cable length must be calculated in such a way that unrestricted operation is possible, even if the outboard motor(s) are tilted or turned to one side.

RECOMMENDED REMOTE CONTROL CABLES

Description	Part No.
Teleflex Series TFXTREME (SAE, 10-32 thread)	See *Honda Marine Accessories Catalog* (MO045).

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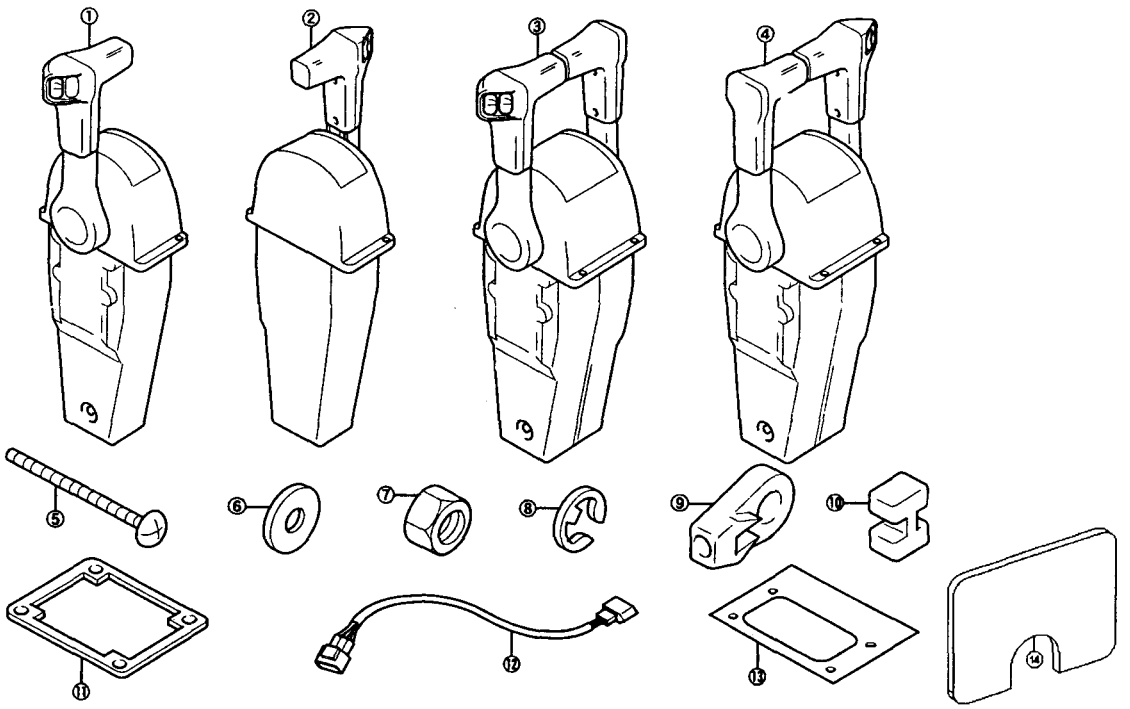
PREMIUM SINGLE/DUAL TOP-MOUNT CONTROL

PARTS LISTING (Remote Control Kit)

Take out all parts from the kit and check them against the parts list shown below. Be sure all parts listed are contained in the package.

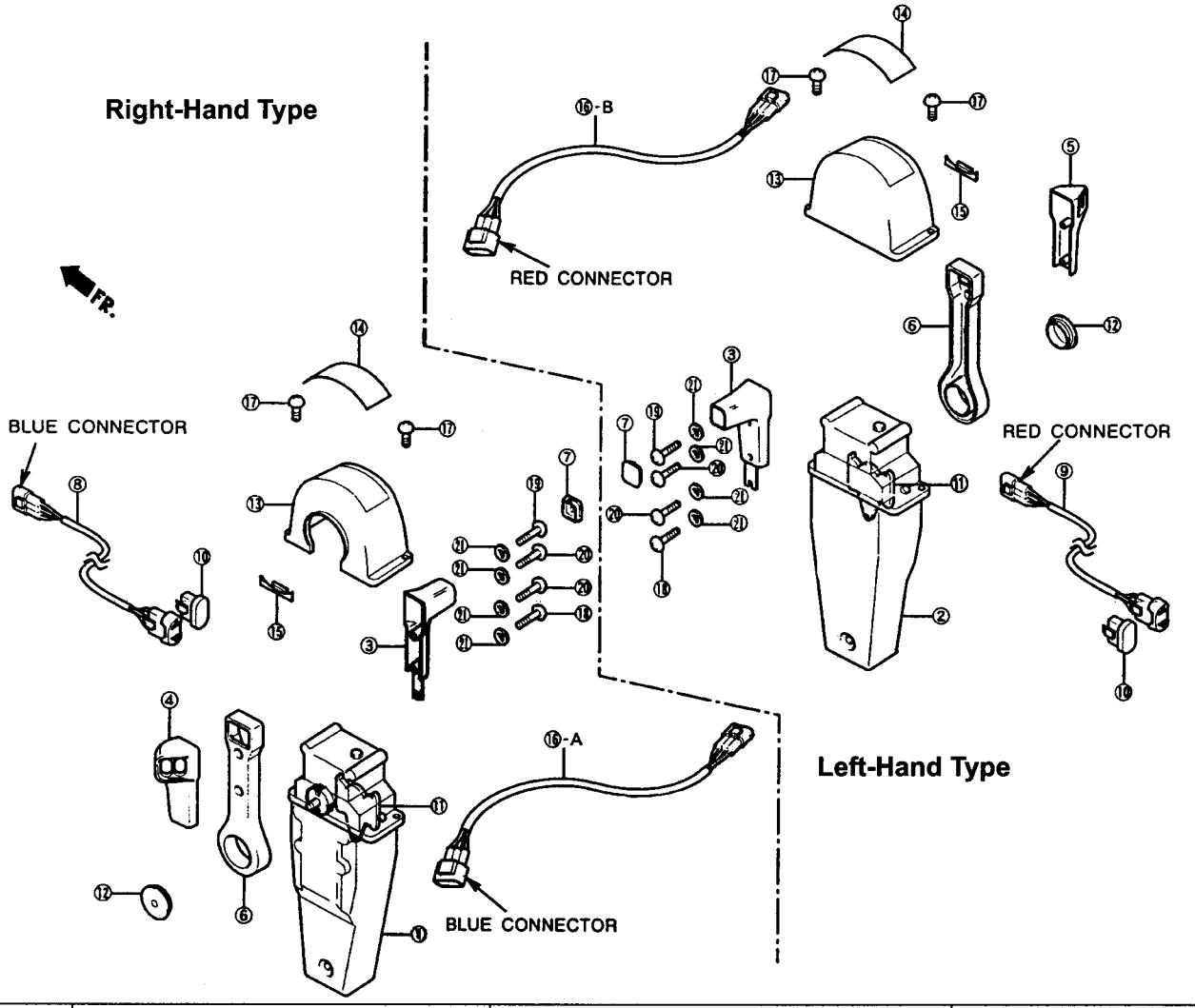


Ref. No.	Description	RT. HD Single Lever	LT. HD Single Lever	RT. HD Dual Lever	LT. HD Dual Lever	Part No.
		Quantity				
1	Remote control (right-hand handle, single lever type)	1				06240-ZW5-U40
2	Remote control (left-hand handle, single lever type)		1			06240-ZW5-U50
3	Remote control (right-hand handle, dual lever type)			1		06240-ZW5-U60
4	Remote control (left-hand handle, dual lever type)				1	06240-ZW5-U70
5	5 x 40 mm pan-head screw	4	4	4	4	
6	5 mm washer	4	4	4	4	
7	5 mm nut	4	4	4	4	
8	E-ring	2	2	4	4	
9	Remote control cable end	2	2	4	4	
10	Cable clamp spacer	1	1	2	2	
11*	Packing			1	1	
12	Sub harness assembly (red)		1	1	1	
	Sub harness assembly (blue)	1		1	1	
13	Template	1	1	1	1	
14	Guide plate (provide to customer for future use)	1	1	1	1	

* On the right-hand/left-hand single lever type, the packing is mounted on the remote control.

10. CONTROL BOXES AND TEMPLATES

PARTS LISTING (Single Lever Type)



Ref. No.	Description	Quantity		Part No.
		Right-Hand Handle Type	Left-Hand Handle Type	
1	Left inner housing assy.	1		24810-ZW5-U01
2	Right inner housing assy.		1	24810-ZW5-U11
3	Remote control housing grip	1	1	24813-ZW5-U01
4	Right grip cover	1		24812-ZW5-U11
5	Grip cover		1	24813-ZW5-U21
6	Remote control handle	1	1	24811-ZW5-U01
7	Grip cap	1	1	24814-ZW5-U01
8	Power tilt/trim switch assy. A	1		35370-ZW5-U02
9	Power tilt/trim switch assy. B		1	35370-ZW5-U12
10	Switch cap	1	1	24815-ZW5-U01
11	Dual plate	1	1	24826-ZW5-U01

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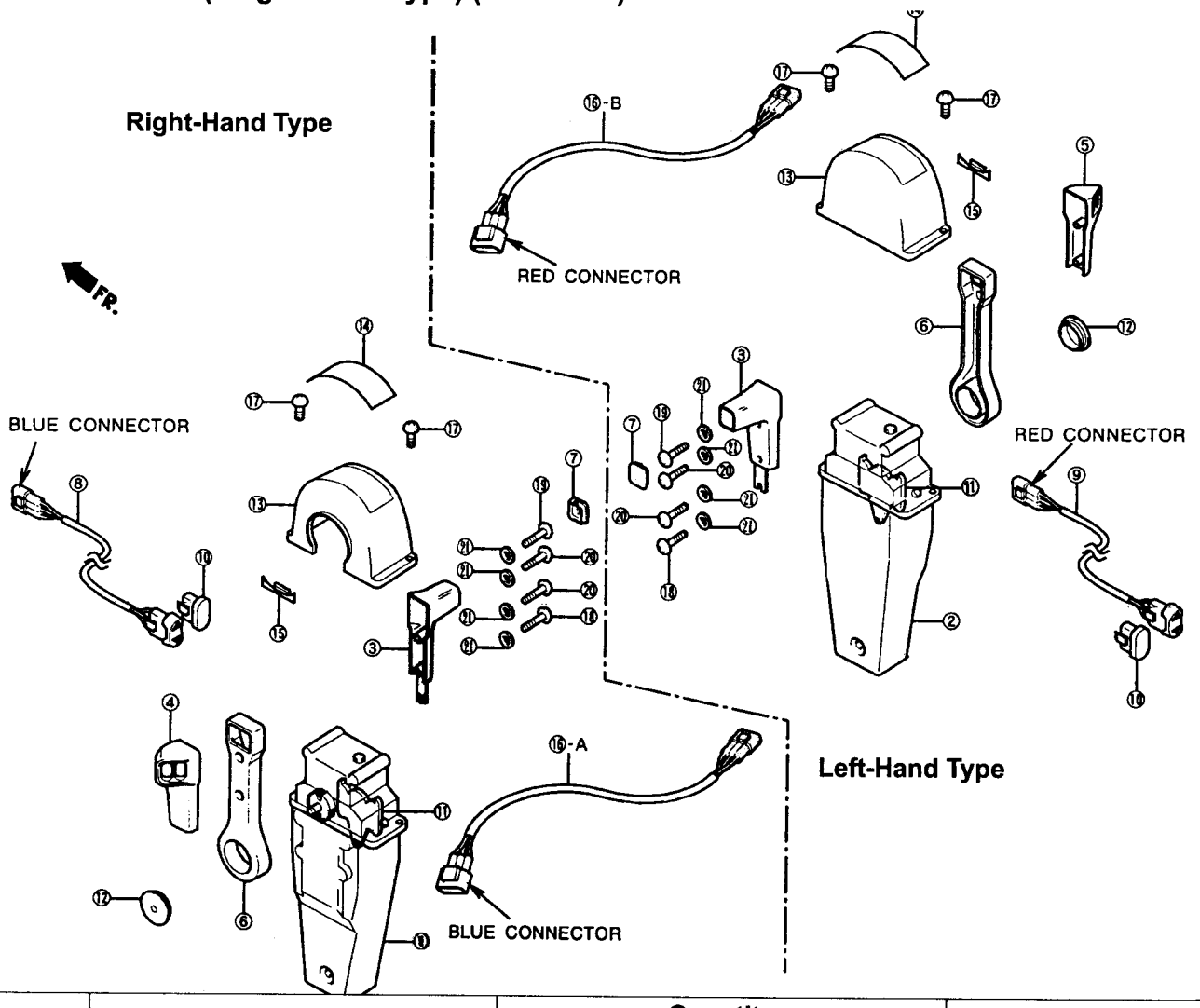
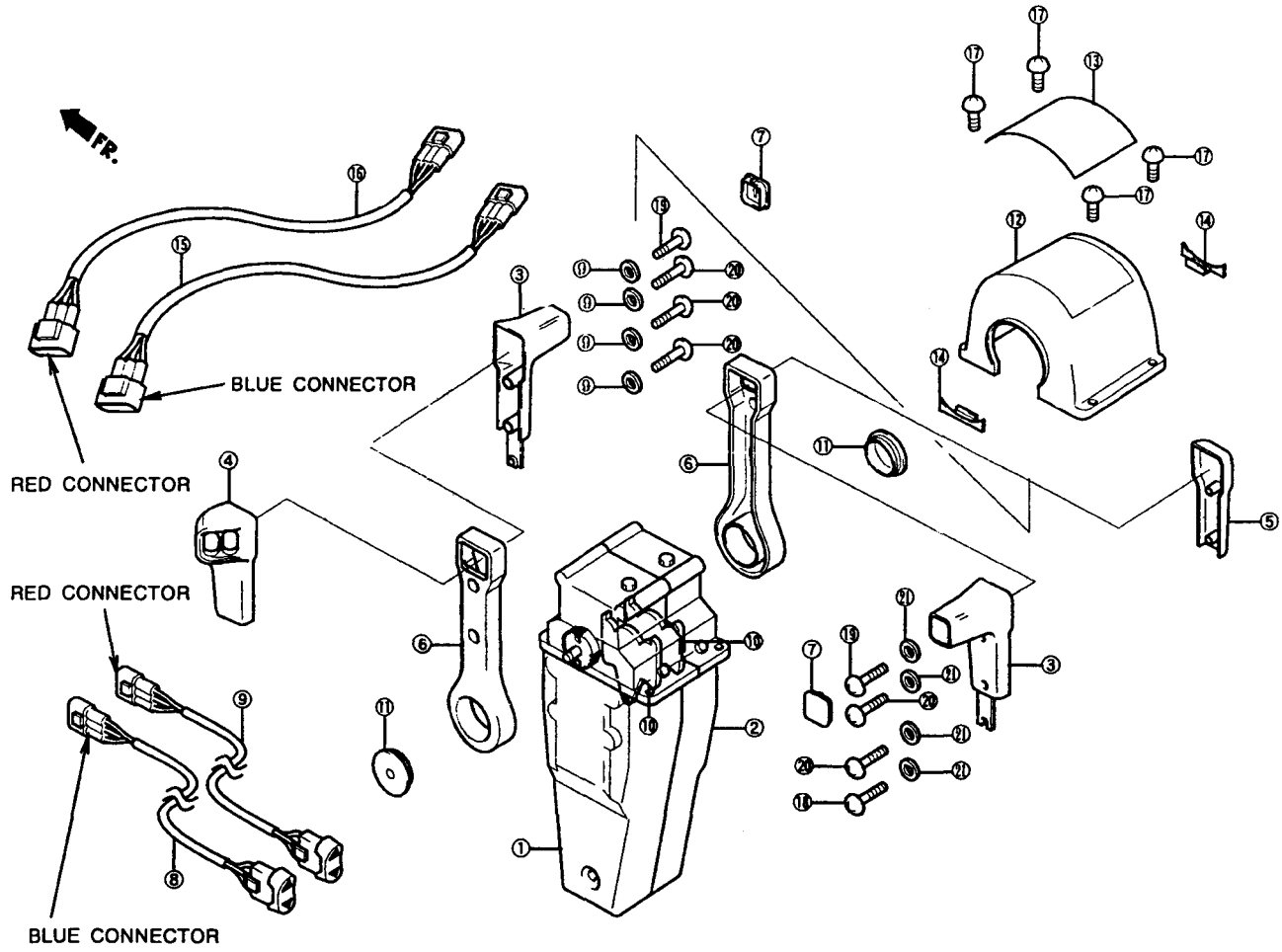
PARTS LISTING (Single Lever Type) (continued)



Ref. No.	Description	Quantity		Part No.
		Right-Hand Handle Type	Left-Hand Handle Type	
12	Throttle button	1	1	24816-ZW5-U01
13	Remote control box housing	1	1	24820-ZW5-U01
14	Remote control box mark	1	1	87703-ZW5-U01
15	Housing lead	1	1	24825-ZW5-U01
16A	Sub harness A	1		32530-ZW7-U00
16B	Sub harness B		1	32530-ZW7-U10
17	4 x 10 mm pan-head screw	2	2	90105-ZW5-U01
18	5 x 10 mm pan-head screw	1	1	90102-ZW5-U00
19	5 x 16 mm pan-head screw	1	1	90101-ZW5-U00
20	5 x 20 mm pan-head screw	2	2	90103-ZW5-U01
21	5 mm lock washer	4	4	90501-ZW5-U00

PARTS LISTING (Dual Lever, Right-Hand Handle Type)



Ref. No.	Description	Quantity	Part No.
1	Left inner housing assy.	1	24810-ZW5-U01
2	Right inner housing assy.	1	24810-ZW5-U11
3	Remote control housing grip	2	24813-ZW5-U01
4	Right grip cover	1	24812-ZW5-U11
5	Grip cover	1	24813-ZW5-U21
6	Remote control handle	2	24811-ZW5-U01
7	Grip cap	2	24814-ZW5-U01
8	Power tilt/trim switch assy. A	1	35370-ZW5-U02
9	Power tilt/trim switch assy. B	1	35370-ZW5-U12
10	Dual plate	2	24826-ZW5-U01
11	Throttle button	2	24816-ZW5-U01

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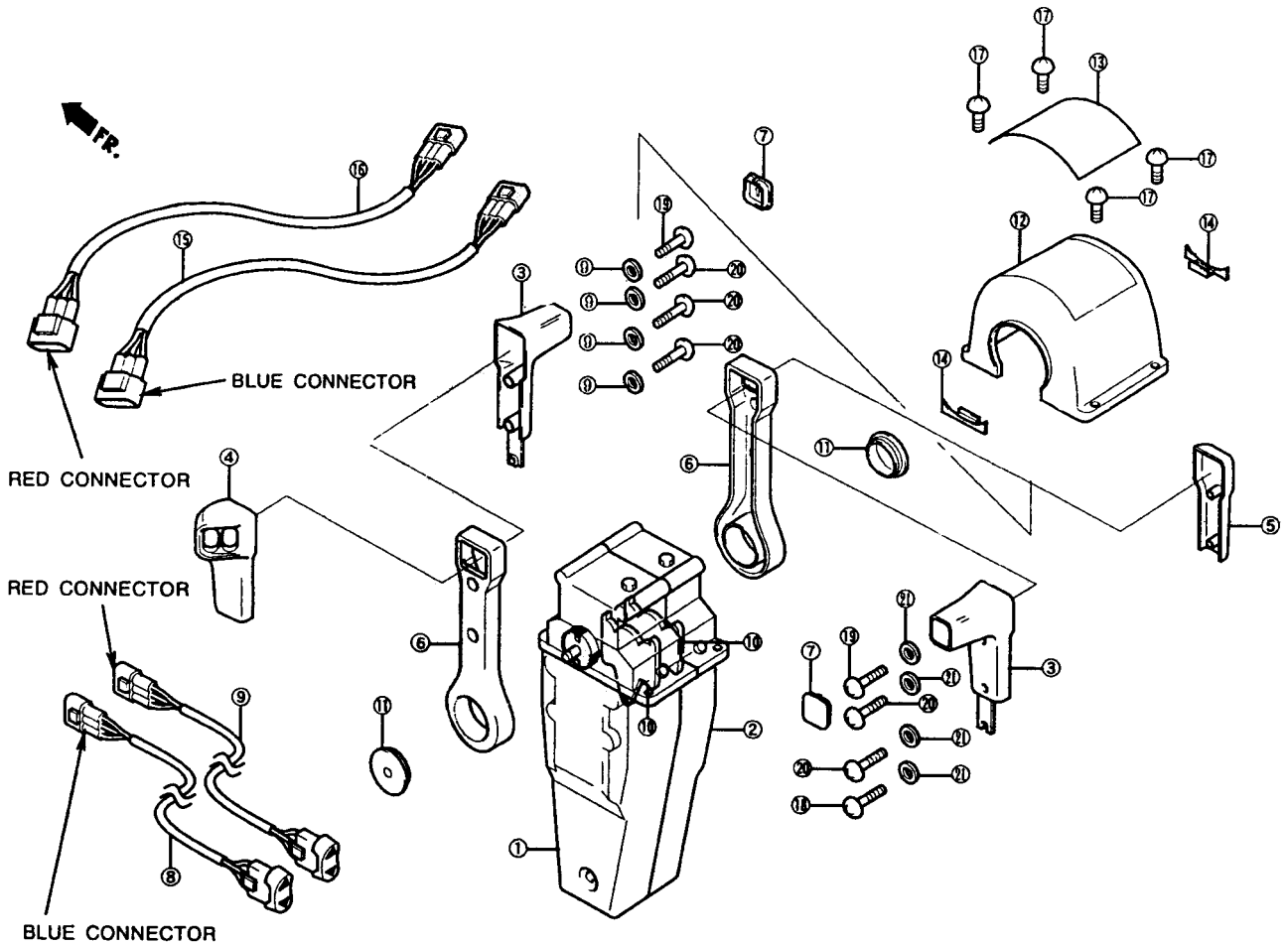
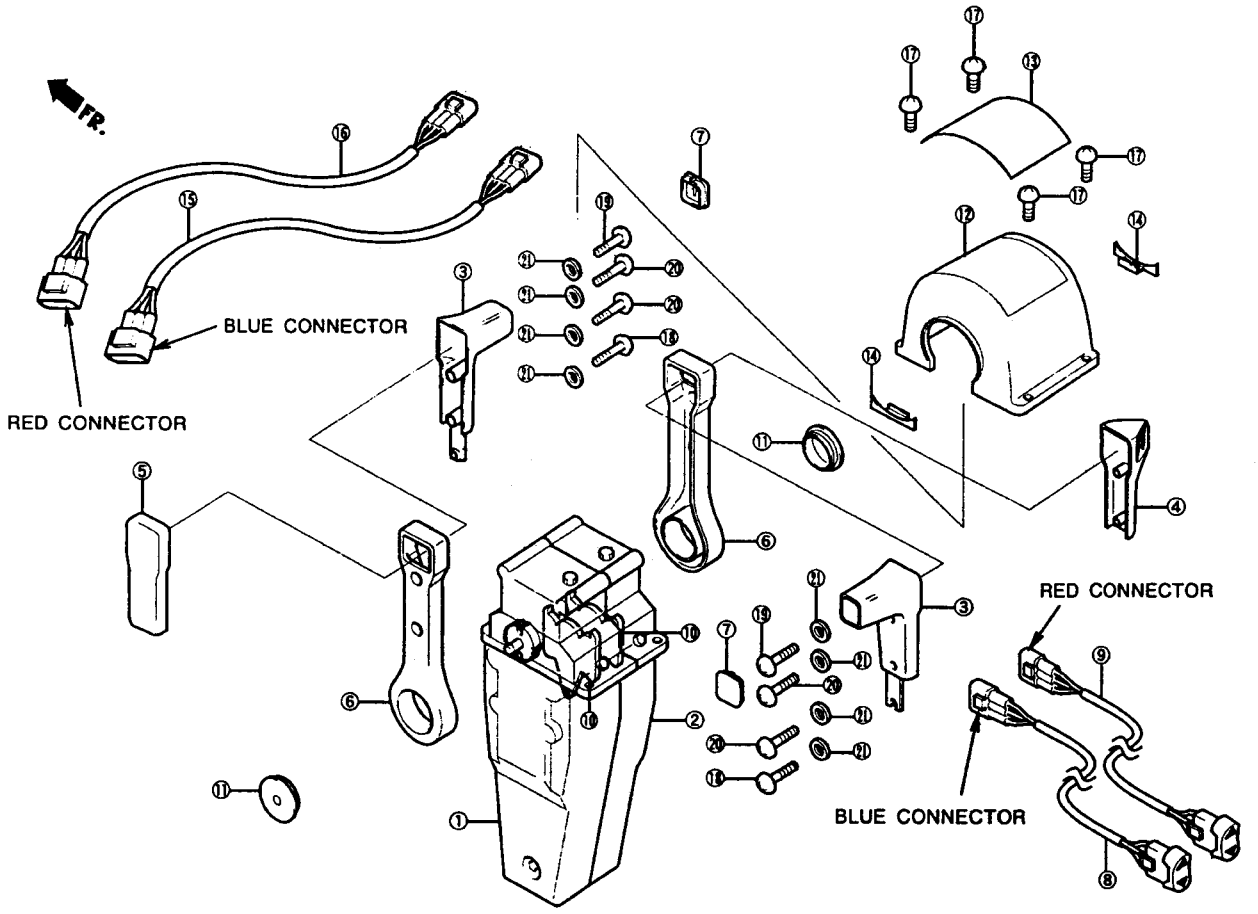
PARTS LISTING (Dual Lever, Right-Hand Handle Type)



Ref. No.	Description	Quantity	Part No.
12	Remote control box housing	1	24820-ZW5-U21
13	Remote control box mark	1	87703-ZW5-U21
14	Housing lead	2	24825-ZW5-U01
15	Sub harness A	1	32530-ZW7-U00
16	Sub harness B	1	32530-ZW7-U10
17	4 x 10 mm pan-head screw	4	90105-ZW5-U01
18	5 x 10 mm pan-head screw	2	90102-ZW5-U00
19	5 x 16 mm pan-head screw	2	90101-ZW5-U00
20	5 x 20 mm pan-head screw	4	90103-ZW5-U01
21	5 mm lock washer	8	90501-ZW5-U00

PARTS LISTING (Dual Lever, Left-Hand Handle Type)



Ref. No.	Description	Quantity	Part No.
1	Left inner housing assy.	1	24810-ZW5-U01
2	Right inner housing assy.	1	24810-ZW5-U11
3	Remote control housing grip	2	24813-ZW5-U01
4	Right grip cover	1	24812-ZW5-U11
5	Grip cover	1	24813-ZW5-U21
6	Remote control handle	2	24811-ZW5-U01
7	Grip cap	2	24814-ZW5-U01
8	Power tilt/trim switch assy. A	1	35370-ZW5-U02
9	Power tilt/trim switch assy. B	1	35370-ZW5-U12
10	Dual plate	2	24826-ZW5-U01
11	Throttle button	2	24816-ZW5-U01

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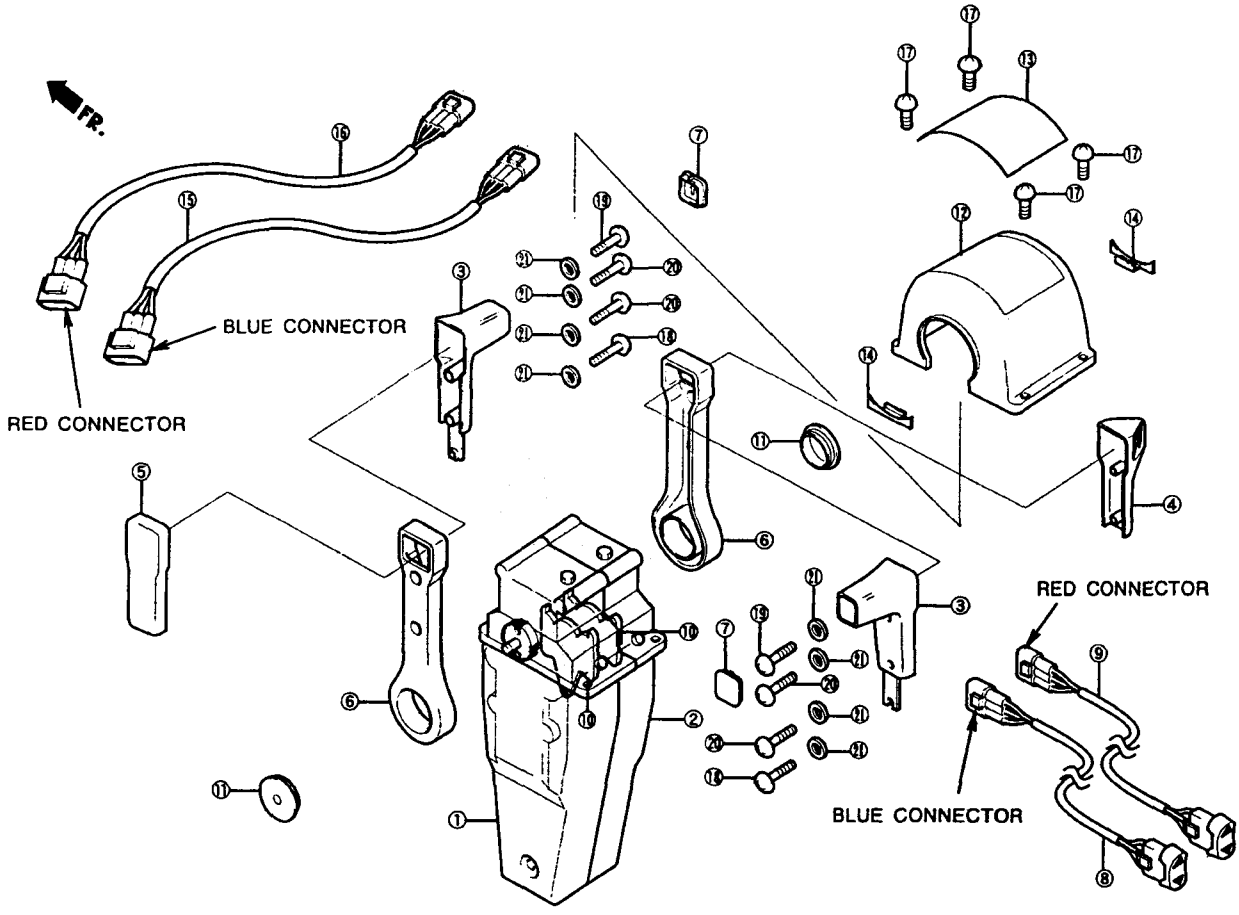
PARTS LISTING (Dual Lever, Left-Hand Handle Type)



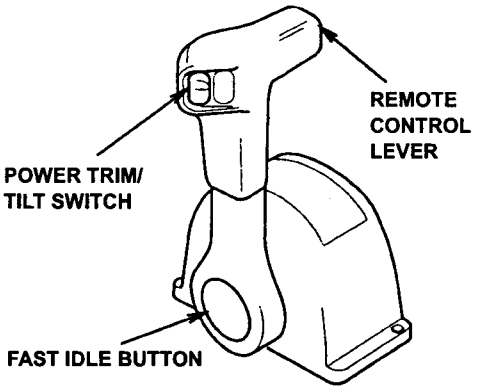
Ref. No.	Description	Quantity	Part No.
12	Remote control box housing	1	24820-ZW5-U21
13	Remote control box mark	1	87703-ZW5-U21
14	Housing lead	2	24825-ZW5-U01
15	Sub harness A	1	32530-ZW7-U00
16	Sub harness B	1	32530-ZW7-U10
17	4 x 10 mm pan-head screw	4	90105-ZW5-U01
18	5 x 10 mm pan-head screw	2	90102-ZW5-U00
19	5 x 16 mm pan-head screw	2	90101-ZW5-U00
20	5 x 20 mm pan-head screw	4	90103-ZW5-U01
21	5 mm lock washer	8	90501-ZW5-U00

COMPONENT IDENTIFICATION

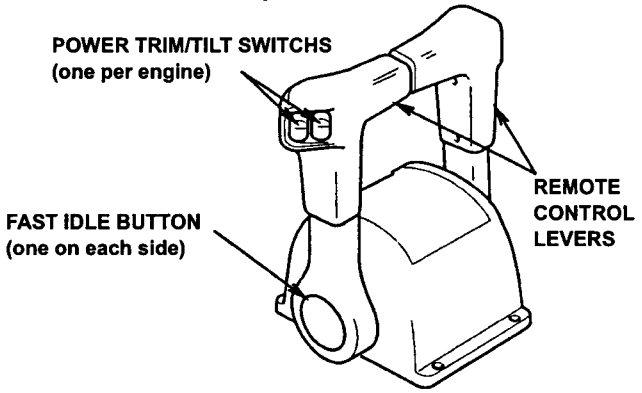
This section shows the right-hand handle type only. The right-hand remote control is designed to perform the throttle operation and the tilt angle adjustment with the right hand. Note the name and operation of each part of the left-hand handle type are identical with those of the right-hand handle type.

Top Mount Remote Control (right-hand handle type shown)

Single Top-Mount Remote Control

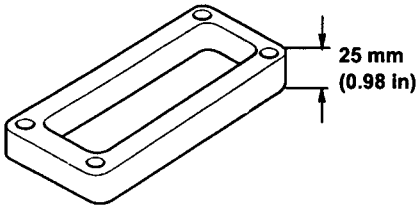


Dual Top-Mount Remote Control

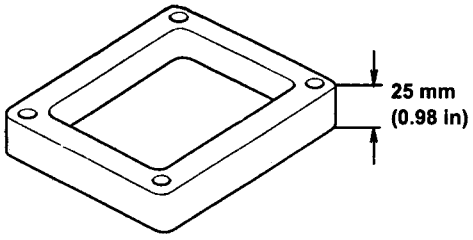


Remote Control Lever	The remote control lever controls gear selection and throttle opening positions.
Power Trim/Power Tilt	For power trim: Press the power trim/tilt switch on the remote control lever to adjust the motor trim angle to maintain proper boat trim. For power tilt: Press the power trim/tilt switch on the remote control lever to adjust the motor tilt angle.
Fast Idle Button	Used for engine starting and warm-up. With the fast idle button pushed in, the remote control lever can be moved forward or backward. This opens and closes the throttle without engaging the propeller.

Spacer (optional)



For single lever type (P/N 06241-ZW5-U00)



For dual lever type (P/N 06241-ZW5-U10)

The spacer is not included in the remote control kit. It is available as an optional part. Purchase a genuine Honda spacer for the outboard motor remote control kit as needed.

- The installation height of the remote control increases 25 mm (0.98 in) by mounting the spacer.
- Check the spacer installation position and the surrounding area for freedom from interference and restriction.

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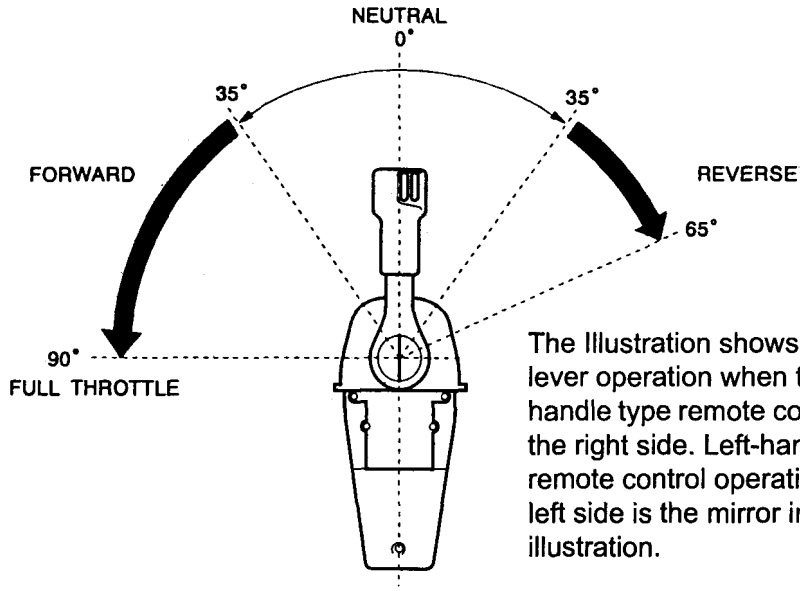
SHIFT OPERATION

Move the remote control lever to the NEUTRAL position. Push the fast idle button, and move the remote control lever a little forward to start the engine. The fast idle button can only be pushed when the remote control lever is in the neutral position. After starting the engine, warm up the engine. After warming up the engine, return the remote control lever to the NEUTRAL position, and shift into gear by moving the remote control lever to the FORWARD or REVERSE gear.

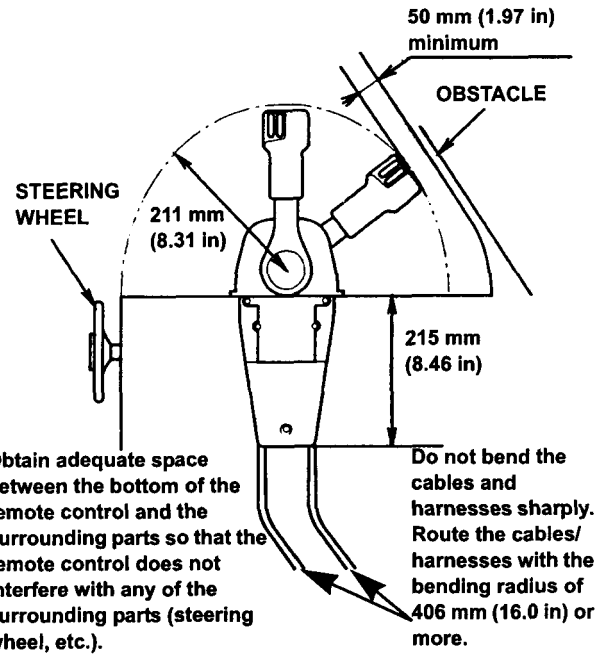


The Illustration shows the remote control lever operation when the right-hand handle type remote control is mounted on the right side. Left-hand handle type remote control operation mounted on the left side is the mirror image of this illustration.

Move the remote control lever approximately 35° forward to engage FORWARD gear or approximately 35° rearward to engage REVERSE gear. The throttle does not open unless the lever is turned 35° or more. The fast idle button automatically returns when the remote control lever is returned to the NEUTRAL position, and you can select the FORWARD or REVERSE gear.

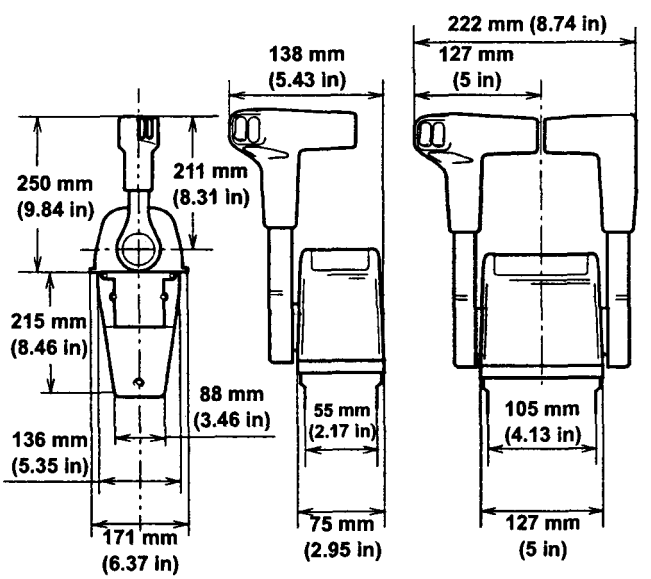
INSTALLATION POSITION

Select the remote control installation position on the boat.

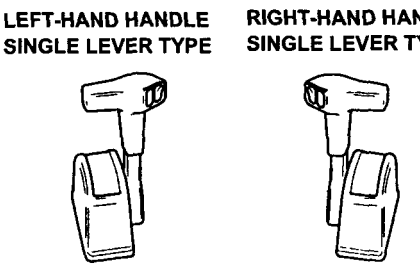


Install the remote control in the position that allows proper remote control lever operation, and where the cables and harnesses can be routed properly without strain between the remote control and the outboard motor.

Recommended Installation Position



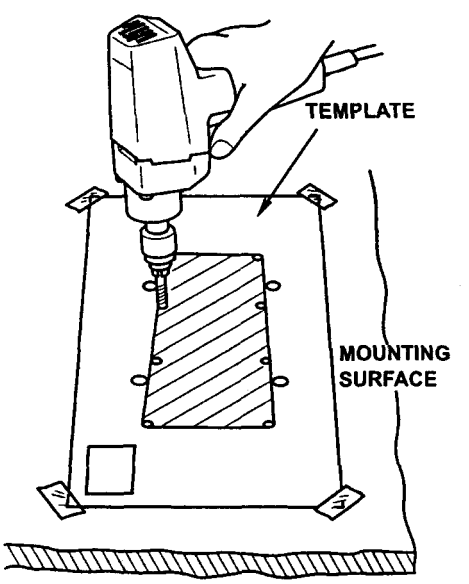
The above illustration details the space necessary to install the remote control.



- Both the single and the dual lever type remote controls are available in the right-hand handle type and the left-hand handle type respectively. Select the correct type for the boat.

TOP MOUNT INSTALLATION (right-hand handle, single lever type)

This section explains the installation procedure of the right-hand handle, single lever type remote control. The left-hand handle, single lever type remote control and the left-hand/right-hand handle, dual lever type remote controls can be installed in the same manner.



1. Attach the drilling template (included in kit) to the remote control mounting surface using adhesive tape.
2. Drill the installation holes and cut out the center.
3. Install the control cushion around the opening and spacer (if used).
4. Pass the remote control wire harness and the control cables along the route properly.
5. Remove the cover and the other parts as shown.

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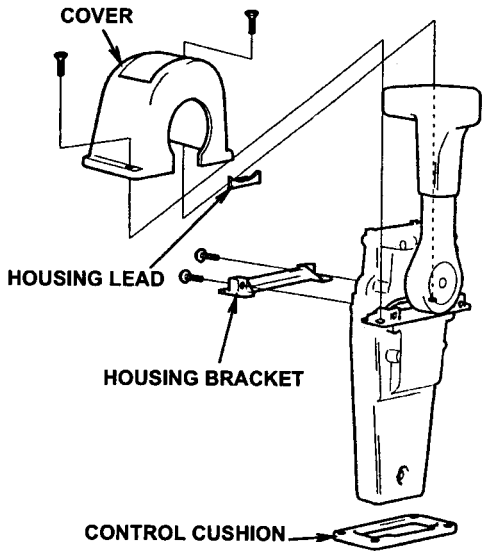
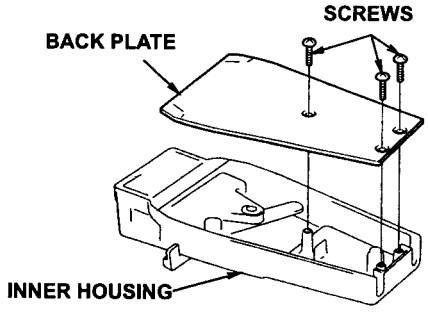
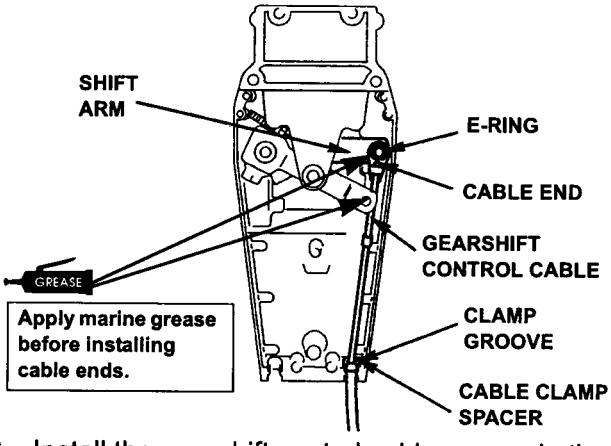
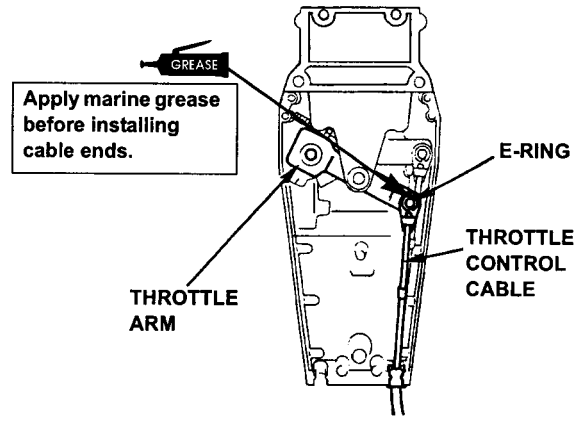




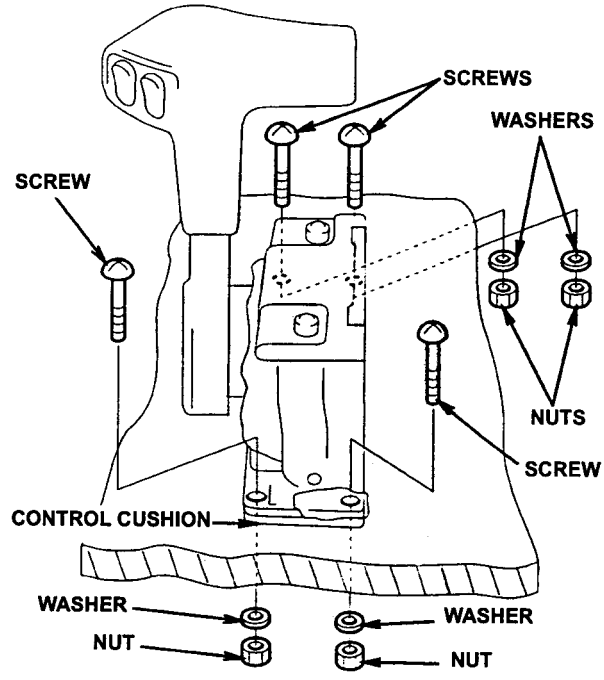
6. Remove the screws and remove the back plate from the inner housing.
7. Apply marine grease to both the shift and throttle pins at the end of each arm.



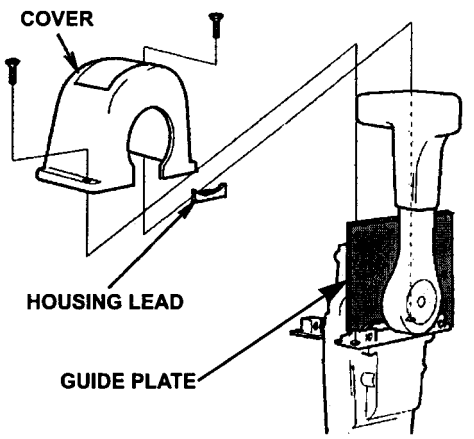
8. Install the gearshift control cable groove in the housing clamp groove. Insert the cable end over the pin at the end of the shift arm and secure with an E-ring.
9. Insert cable clamp spacer in clamp groove.
10. Apply marine grease to the throttle cable pin where it connects to the throttle arm.



11. Connect the throttle control cable to the throttle arm, in the same manner as the gearshift control cable, with an E-ring.
12. Install the back plate and the housing bracket in the reverse order of removal.

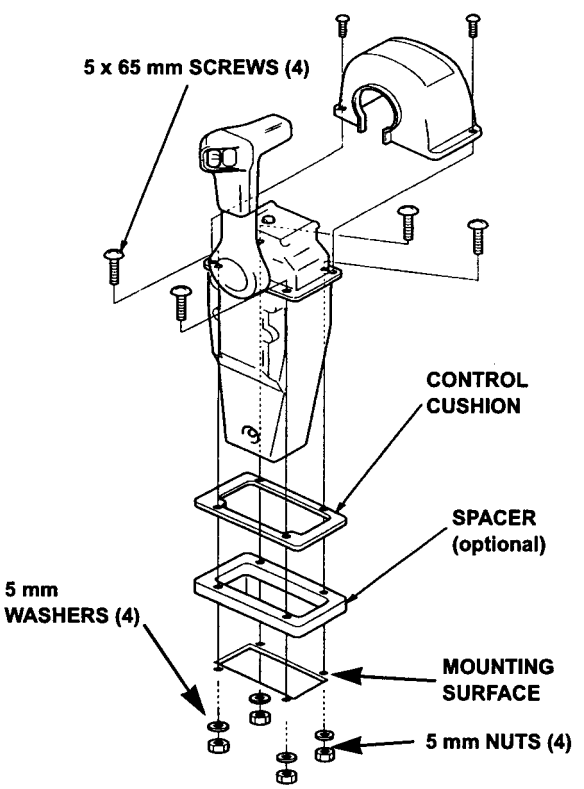


13. Install the remote control as shown. Be sure to connect the switch wire to the remote control wire harness before installation.

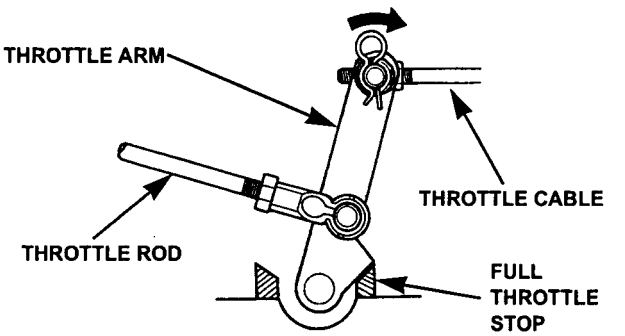


14. Use the guide plate (provided with the kit) and install the cover and the housing lead. Follow the instructions on the guide plate carefully.

SPACER INSTALLATION (optional)



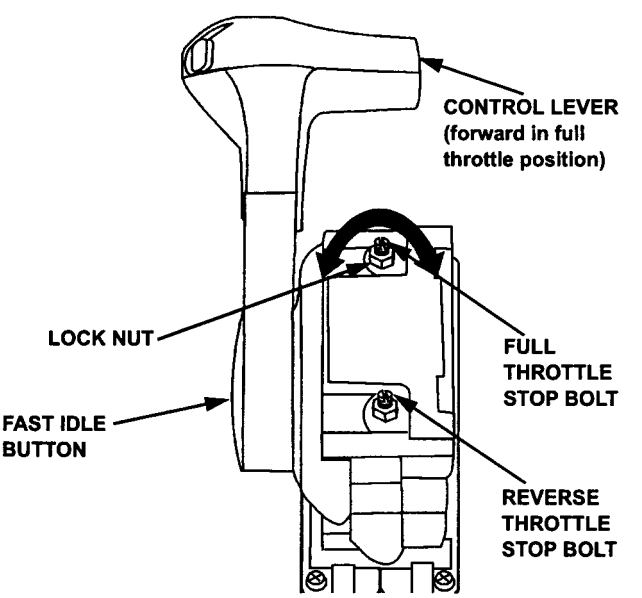
Install the spacer, if necessary, between the control cushion and the mounting surface as shown, and secure with the 5 x 65 mm screws, 5 mm washers and 5 mm nuts (provided with the spacer).



CONTROL LEVER LIMIT ADJUSTMENT (BF25/30/40/50 models only)

The forward and reverse throttle limit stop screws on the premium remote controls are pre-set for the BF75/90/115/130 outboard motors. If these remote controls are to be used on the BF25/30/40/50, it is necessary to perform the following adjustment procedure.

1. Remove the cover by removing the two screws.
2. Set the control lever in the neutral position, push the fast idle button, and carefully move the control lever forward to the full throttle position.
3. Check at the outboard motor and verify the throttle arm is against its stop. If not, refer to the appropriate model-family section, and adjust the throttle rod or control cable.



4. Loosen the stopper bolt on the forward side by loosening the lock nut.
5. With the control lever in the full throttle position, turn the stopper bolt (counterclockwise) 1 - 2 turns, then gently turn the stopper bolt (clockwise) until it just stops.

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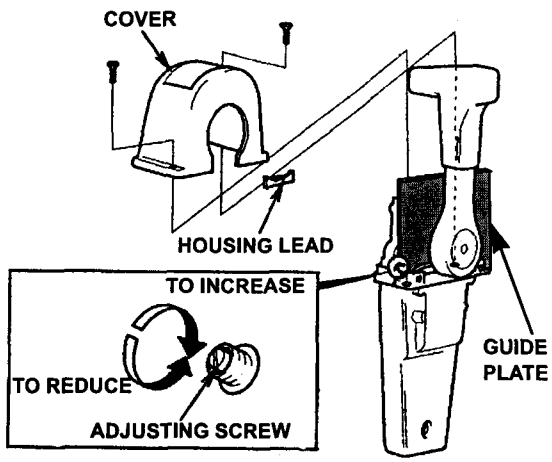
6. While holding the stopper bolt, tighten the lock nut.

   TORQUE: 5–8 N•m (3.6–5.8 ft-lb)

7. With the control lever in the full throttle position, recheck at the outboard motor that the throttle arm is against the full throttle stop.

THROTTLE FRICTION ADJUSTMENT

The operating load of the remote control lever can be adjusted by turning the adjusting screw. Adjust the load according to your preference as described below.



1. Remove the cover as shown.
2. Adjust the handle operation load by turning the adjusting screw right or left.
3. Use the guide plate (provided with the kit) and install the cover and the housing lead. Follow the instructions on the guide plate carefully.

WIRE HARNESS CONNECTIONS

When using optional harnesses:

- Check whether wire harnesses are connected as shown on the wiring diagrams on the following pages.
- Connect leads and terminals securely, and waterproof to prevent moisture from entering and corroding the connector terminals.

Observe the following wire harness connector instructions:

- If the standard 16.5 foot switch panel-to-engine wire harness is too short, please see the *Honda Marine Accessories Catalog* (MO045) for available harnesses.
- Maximum combination lengths follow:
- One or two 7 ft wire harness extensions + one standard 16.5 ft wire harness = max. length 30.5 feet.
- One 30 ft wire harness + one or two 7 ft wire harness extensions = maximum length 44 feet.
- Connect wire harness securely. If a terminal is oxidized or corroded, remove the oxidation or corrosion with a non-conductive plastic scrub pad or contact cleaner before reconnecting it.
- Make sure insulators completely surround connectors and that ends are not folded up.
- Do not break the coverings of the wire harness. If the coverings are broken, either repair them with electrician's tape, or replace them.
- Use vinyl tape to attach any unused terminals to the adjacent main harness to keep them from interfering with surrounding parts.
- Connect each wire harness properly as shown on the wiring diagram.
- After connecting each harness, turn the main power on to check for proper operation.

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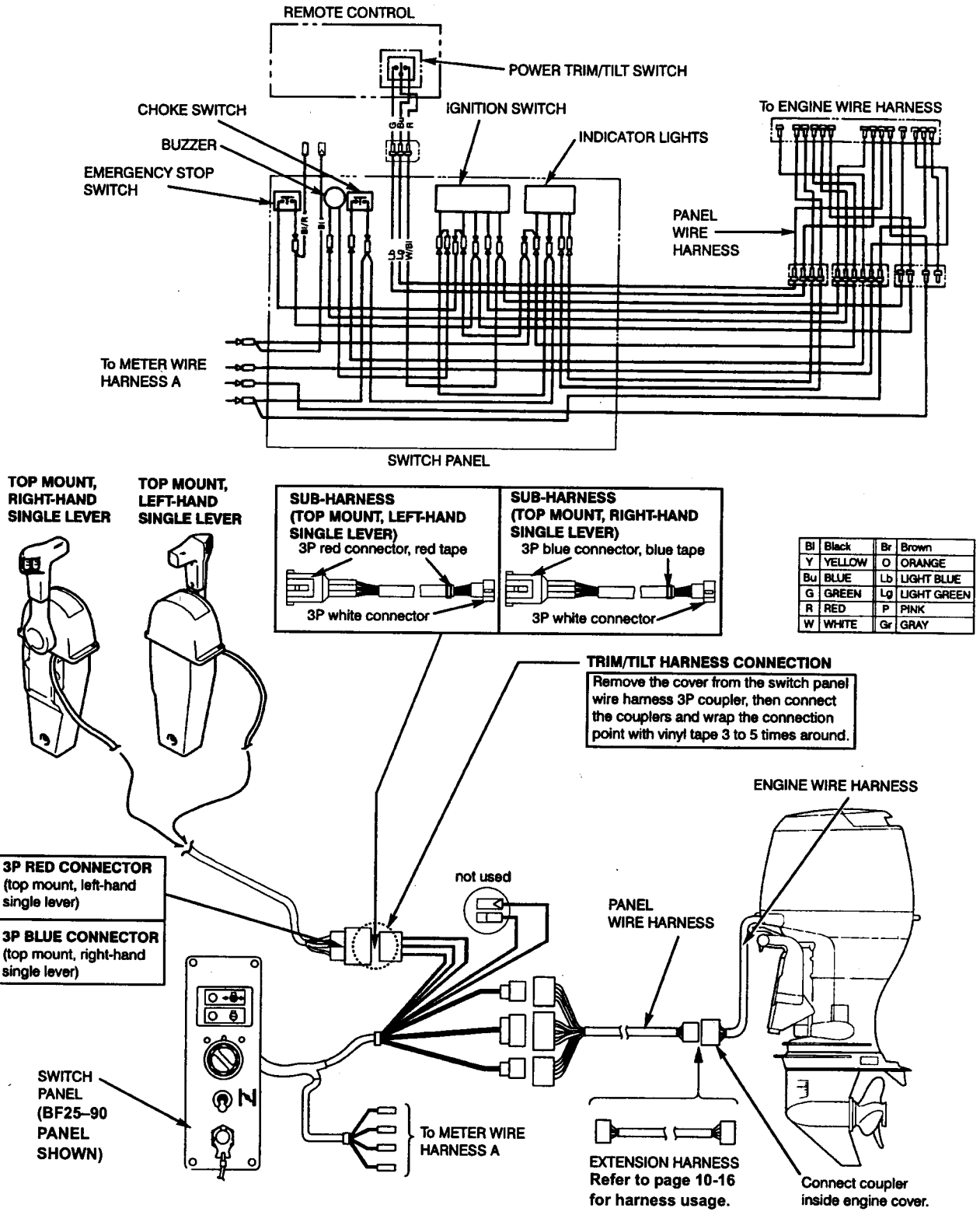
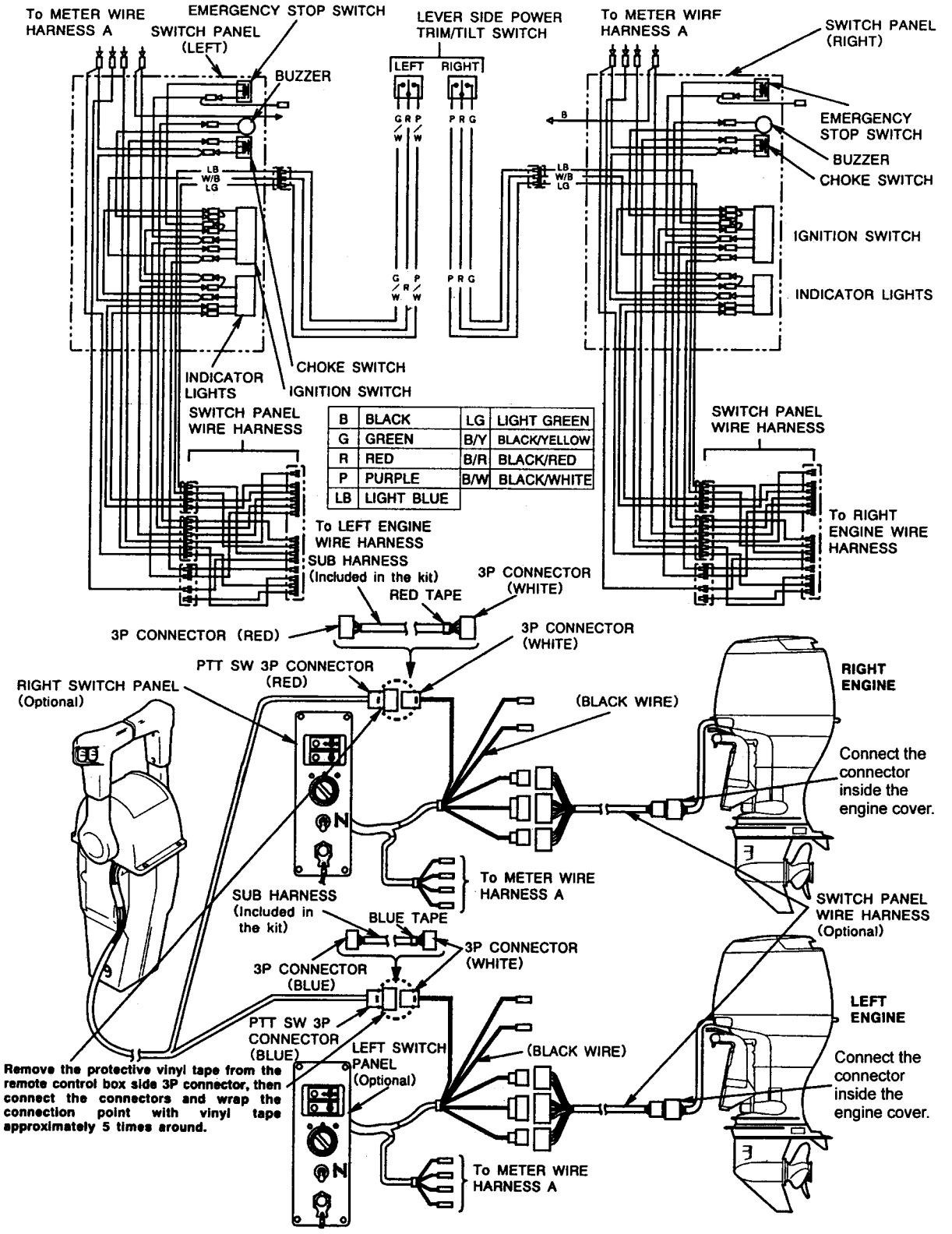
WIRING DIAGRAM (Top Mount Single-Lever Type)



WIRING DIAGRAM (Top Mount Single-Dual Type)



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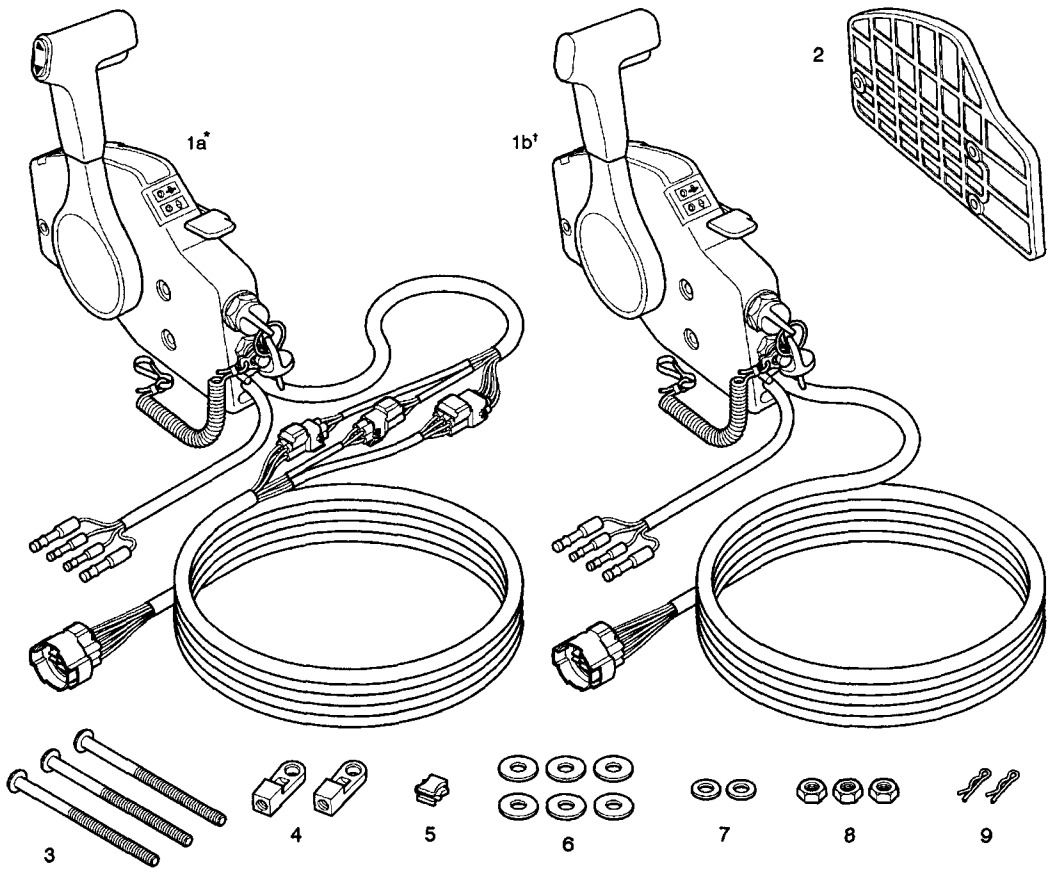
PREMIUM SIDE-MOUNT REMOTE CONTROL

PARTS LISTING

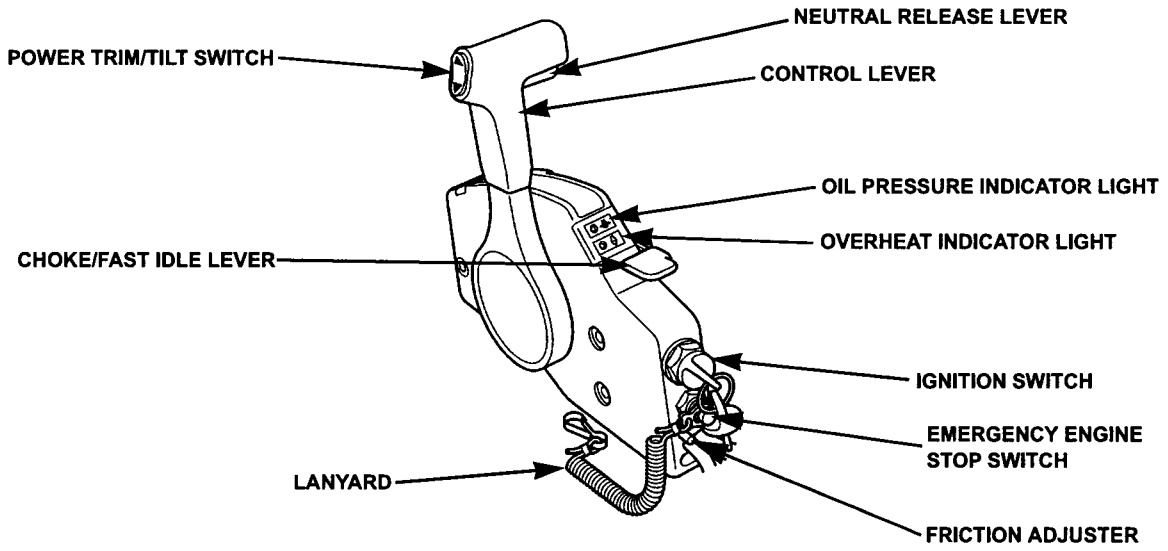
Take out all parts from the kit and check them against the parts list shown below. Be sure all parts listed in the parts list are contained in the package.



Ref. No.	Description	Quantity	Part No.
1a*	Remote control (with trim)	1	24800-ZY3-000
1b†	Remote control (without trim)	1	24800-ZV5-020
2	Spacer plate	1	24885-ZV5-000
3	6 x 95 mm phillips head screw	3	90125-ZV5-000
4	Cable eye end	2	24855-ZV5-000
5	Cable clamp spacer	1	24898-ZV5-000
6	6 mm stainless washer	6	90512-921-010
7	6 mm stainless plain washer	2	90504-921-010
8	6 mm stainless nut	3	90304-ZV4-000
9	6 mm lock pin (small loop)	2	90751-ZV5-000

*Some remote controls June be shipped with a 16.5 foot harness without the three connectors near the control.
†Early Non-Power Trim/Tilt type shown. Later models June include three connectors near the control.

COMPONENT IDENTIFICATION



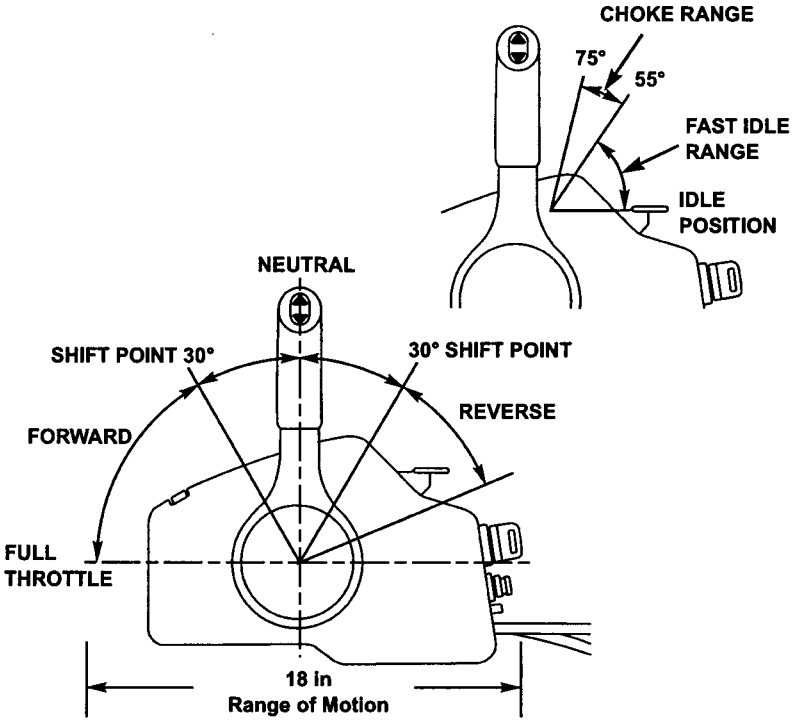
Neutral Release Lever	Must be raised to move the control lever into forward or reverse gears.
Power Trim/Tilt Switch	Adjusts the trim angle and operates tilt UP and DOWN.
Control Lever	Controls gear selection and throttle opening.
Indicator Lights	Indicates engine oil pressure and cooling system conditions.
Choke/Fast Idle Lever	Operates the throttle and choke when the control lever is in neutral.
Ignition Switch	For starting and stopping the outboard motor.
Emergency Engine Stop Switch	With the lanyard securely attached to the operator and if the operator is thrown from his seat or out of the boat, the lanyard is pulled disengaging the stop switch clip from the stop switch to stop the engine.
Friction Adjuster	Adjusts the operating resistance of the control lever.

Operation

Start the engine with the control lever in the NEUTRAL position. For cold starts, the choke/fast idle lever should be fully raised, then lowered slowly to avoid stalling.

The choke/fast idle lever cannot be raised unless the control lever is in the NEUTRAL position, and the control lever cannot be moved away from NEUTRAL unless the choke/fast idle lever is lowered.

With the choke/fast idle lever in the idle position, lifting up the neutral release lever enables the control lever to be moved to the FORWARD or REVERSE positions.



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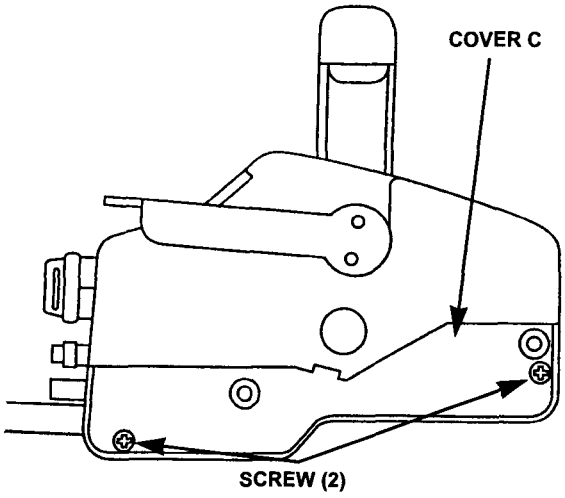
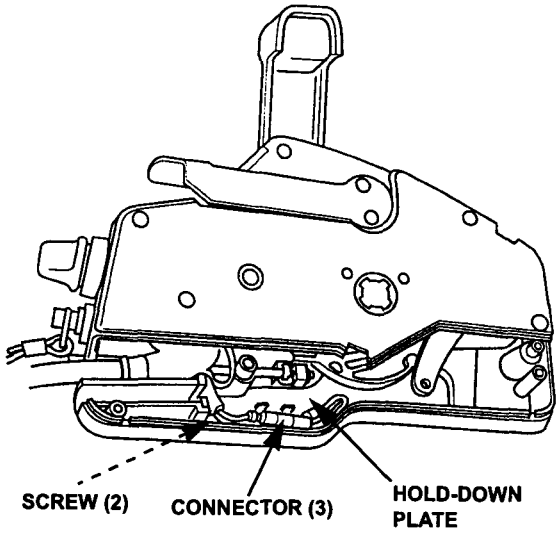
REVERSING THE CONTROL LEVER

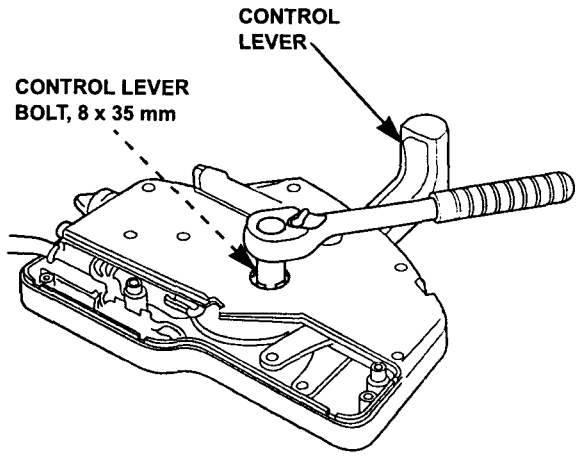
The side mount remote control can be mounted on the starboard or port side by reversing the control lever.



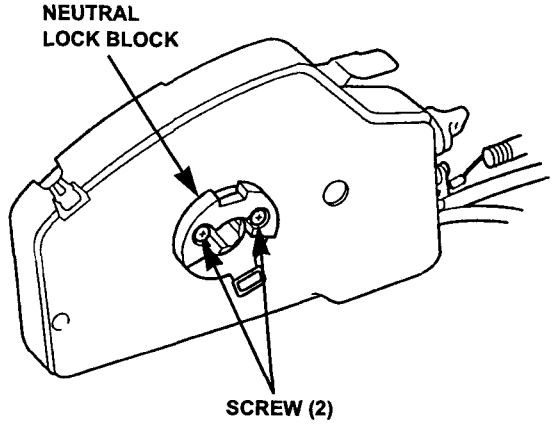
1. Put the control lever into the NEUTRAL position. Remove the two screws and cover C.



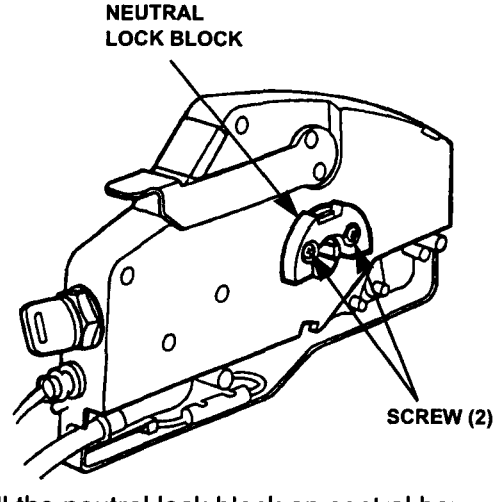
2. Remove the two screws and the hold-down plate. Then disconnect the power trim/tilt switch wire connectors (power trim/tilt types only).



3. With the control lever in the NEUTRAL position, remove the 8 mm control lever bolt using a 12 mm socket. Separate the control lever from the control box. Do not damage the power trim/tilt switch wire harness.

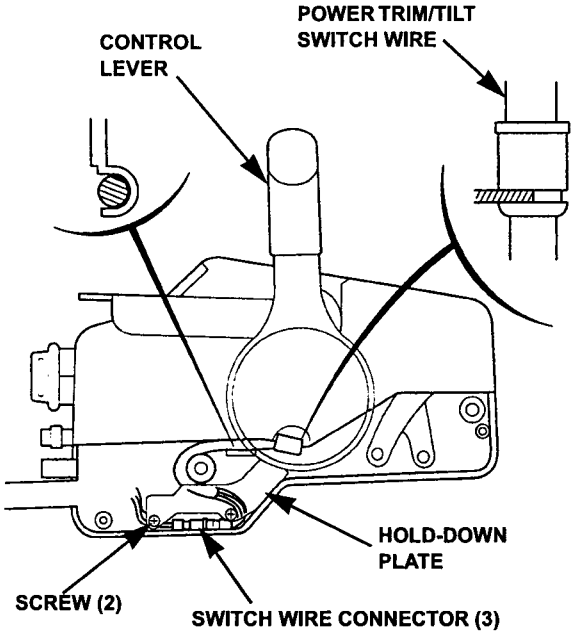


4. Remove the two screws and the neutral lock block from the remote control box housing A.



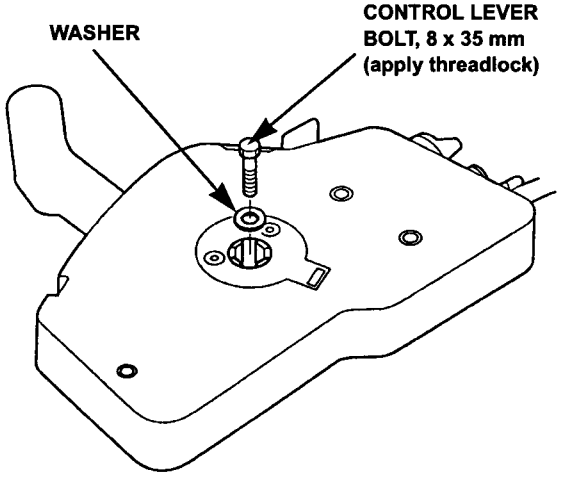
5. Install the neutral lock block on control box housing B and tighten the two screws securely.

6. Before installing the 8 x 35 mm control lever bolt, install the control cables into the control box (see page 10-23).



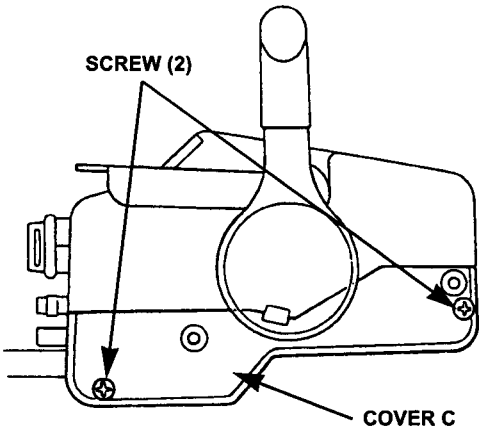
7. Route the power trim/tilt switch wire harness as shown.

   Install the hold-down plate and tighten the two screws. Connect the switch wire connectors.



8. With the control lever in the neutral position, apply one or two drops of Hondalock 1 (P/N 08713-0001) or commercially available Loctite 271® to the threads. Install and tighten the 8 mm bolt.

   TORQUE: 20 N·m (2.0 kg-m, 14 ft-lb)



9. Install cover C and tighten the screws securely.

   TORQUE: 2 N·m (0.2 kg-m, 1.4 ft-lb)

NOTICE

Overtightening the mounting screws can damage or distort the control box.

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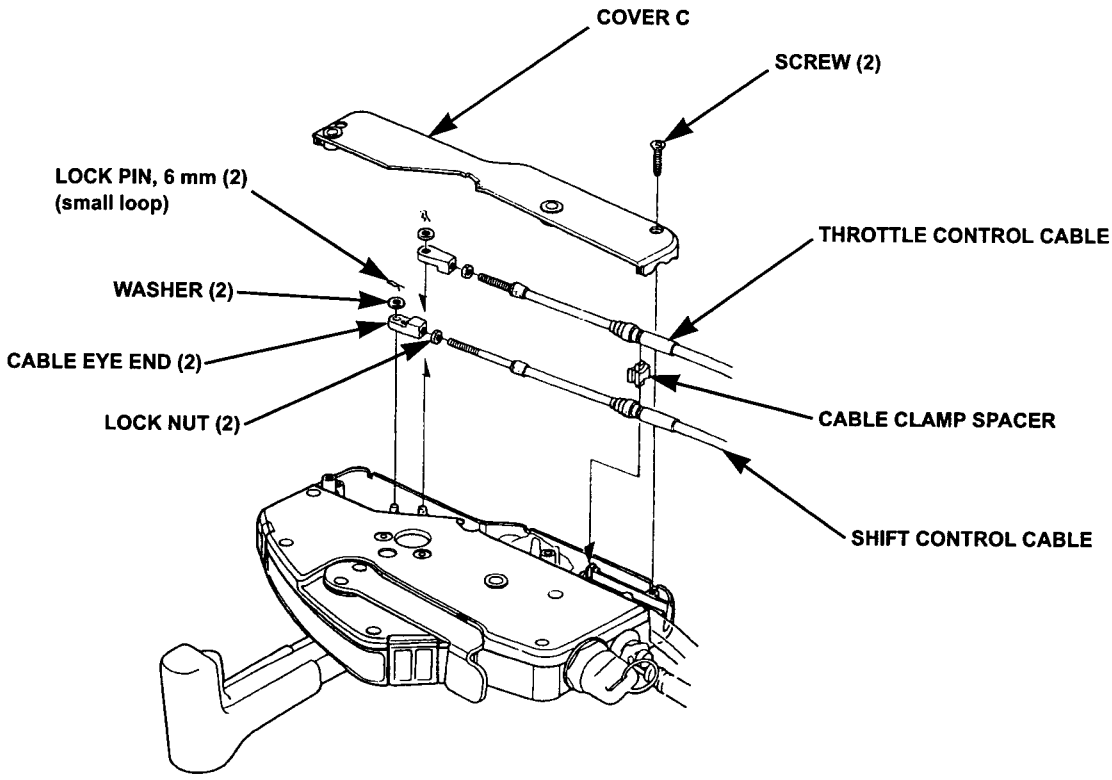
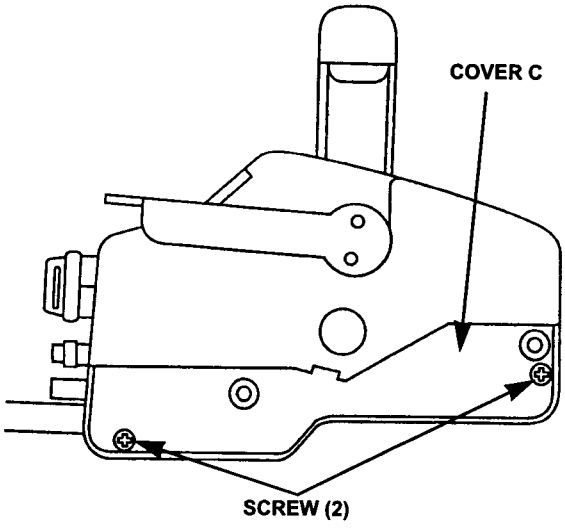
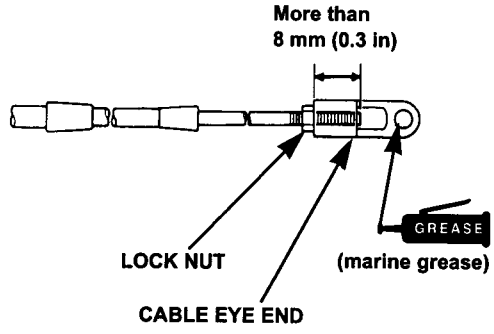
REMOTE CONTROL CABLE INSTALLATION

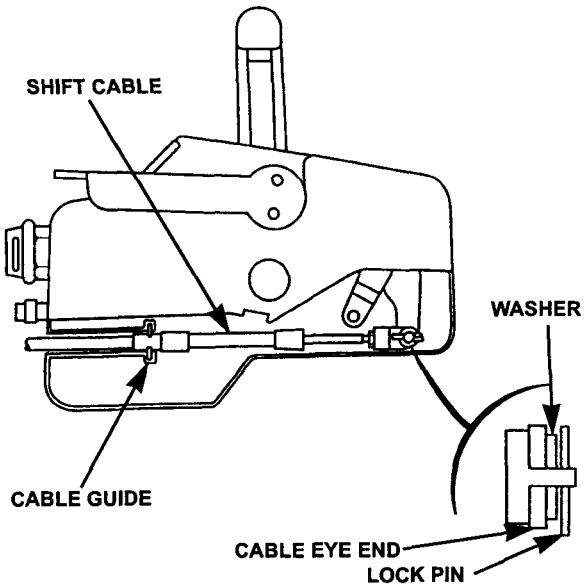




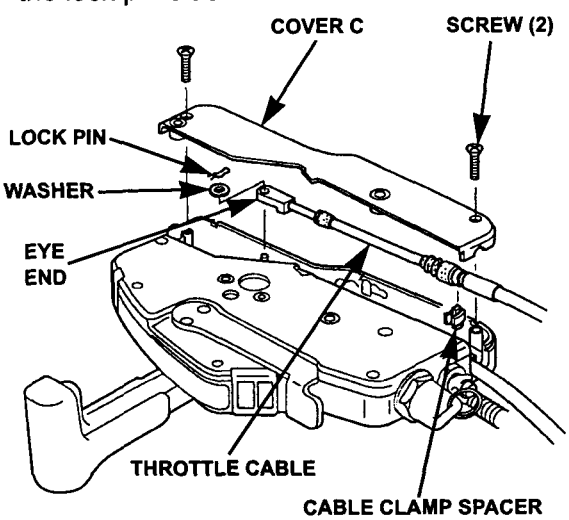
1. Remove the two screws and cover C.



2. Screw the lock nuts and cable eye ends onto the threads of the remote control cables at least 8 mm (0.3 in). Apply marine grease to the holes in the eye ends.



3. Install the shift cable by aligning the cable groove with the cable guide plate. Then connect the eye end to the short arm pin using the washer and 6 mm lock pin. Install the washer on the lock pin side.



4. Install the cable clamp spacer and throttle control cable by aligning the cable groove with the cable guide plate. Then connect the eye end to the throttle arm pin using the washer and 6 mm lock pin.
5. Tighten the lock nuts securely.
6. Install the cover C and tighten the screws securely.

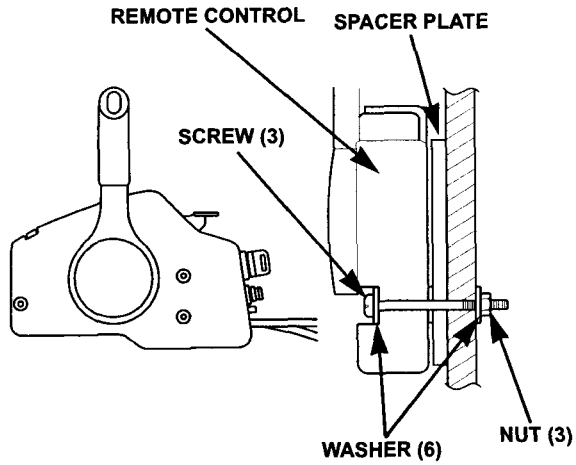
   TORQUE: 2 N·m (0.2 kg-m, 1.4 ft-lb)

NOTICE

Overtightening the mounting screws can damage or distort the control box.

REMOTE CONTROL INSTALLATION

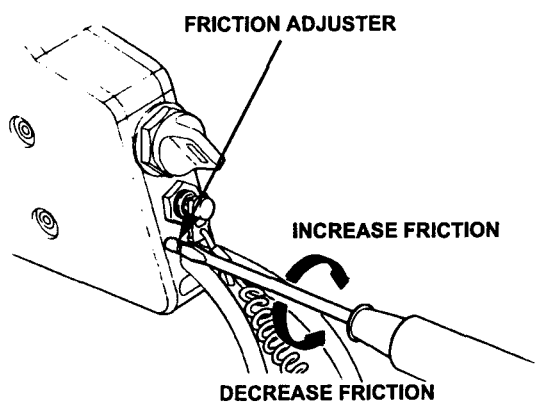
After the control cable installation and adjustment, install the remote control.



1. Put the control lever in the neutral position.
2. Hold the remote control at the desired position, and mark the drill points. Drill three 7 mm (1/4 in) holes at the marked points.
3. Install the control at the selected mounting location (see page 10-21). Apply one or two drops of Hondalock 2 (P/N 08713-0002) to the threads of the nuts. Tighten the nuts securely.

CONTROL LEVER FRICTION ADJUSTMENT

The control lever friction can be adjusted by turning the friction adjuster at the front of the remote control.



Turning the adjuster clockwise will increase the control lever friction, turning it counterclockwise will decrease the control lever friction.

Adjust the friction adjuster so that a slight amount of drag is felt. The remote control lever should move smoothly and freely.

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OPERATIONAL CHECKS

Before operating the boat, make sure the cables are correctly adjusted and that there are no kinks or sharp bends in the cables.

Operate the remote control lever and verify the control cables move smoothly.

NOTICE

If the remote control is hard to shift, turn the propeller shaft. Shifting with force will damage the shift mechanism.

Refer to the applicable model-family chapter for motor side cable adjustments.

Shift Control Cable

Move the remote control lever approximately 30° from neutral or until it just engages forward gear. Verify the click roller at the motor is in the proper groove.

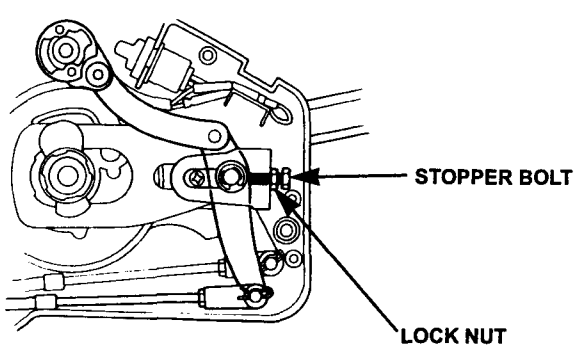
Throttle Control Cable

1. Move the control lever to full throttle in the forward gear position. Verify the throttle is actuated and the throttle lever is in the fully-open position.
2. Return the control lever to the NEUTRAL position. Verify the throttle lever moves to the fully-closed position.
3. If not, readjust the throttle control cable eye end at the motor.

The remote control box is designed so when the throttle rod and throttle control cable are adjusted to the standard adjustment setting, the forward full throttle point will be correctly and automatically set.

If the full throttle point cannot be obtained, adjust the following:

1. Remove the choke/fast idle lever, control housing cover B and control housing cover C.
2. Move the control lever to full throttle position.
3. Loosen the lock nut and turn the stopper bolt until it touches the throttle lever. The carburetor and control lever must be in the full throttle position.
4. Tighten the lock nut and reinstall the control housing cover C, and B, and choke/fast idle lever.



WIRE HARNESS CONNECTIONS

When using optional harnesses:

- Check whether wire harnesses are connected as shown on the wiring diagram on the following page.
- Connect leads and terminals securely. If necessary, wrap connections with vinyl tape to waterproof connections.
- The BF130 requires a 17 wire main wire harness or a 14 wire main wire harness and the 3 wire PGM-FI panel wire harness.

If the standard 16.5 foot cable harness is too short, please see the *Honda Marine Accessories Catalog* (MO045) for additional harnesses and extensions.

Observe the following wire harness connector instructions:

Maximum combination lengths follow:

- One or two 7 ft wire harness extensions + one standard 16.5 ft wire harness = maximum length 30 feet.
- One 30 ft wire harness + one or two 7 ft wire harness extensions = maximum length 44 feet.
- Connect wire harness securely. If a terminal is oxidized or corroded, remove the oxidation or corrosion with a non-conductive plastic scrub pad or contact cleaner before reconnecting it.
- Make sure insulators completely surround connectors and that ends are not folded up.
- Do not break the coverings of the wire harness. If the coverings are broken, either repair them with electrician's tape, or replace them.
- Use vinyl tape to attach any unused terminals to the adjacent main harness to keep them from interfering with surrounding parts.
- Connect each wire harness properly as shown on the wiring diagram.
- After connecting each harness, turn the main power on to check for proper operation.

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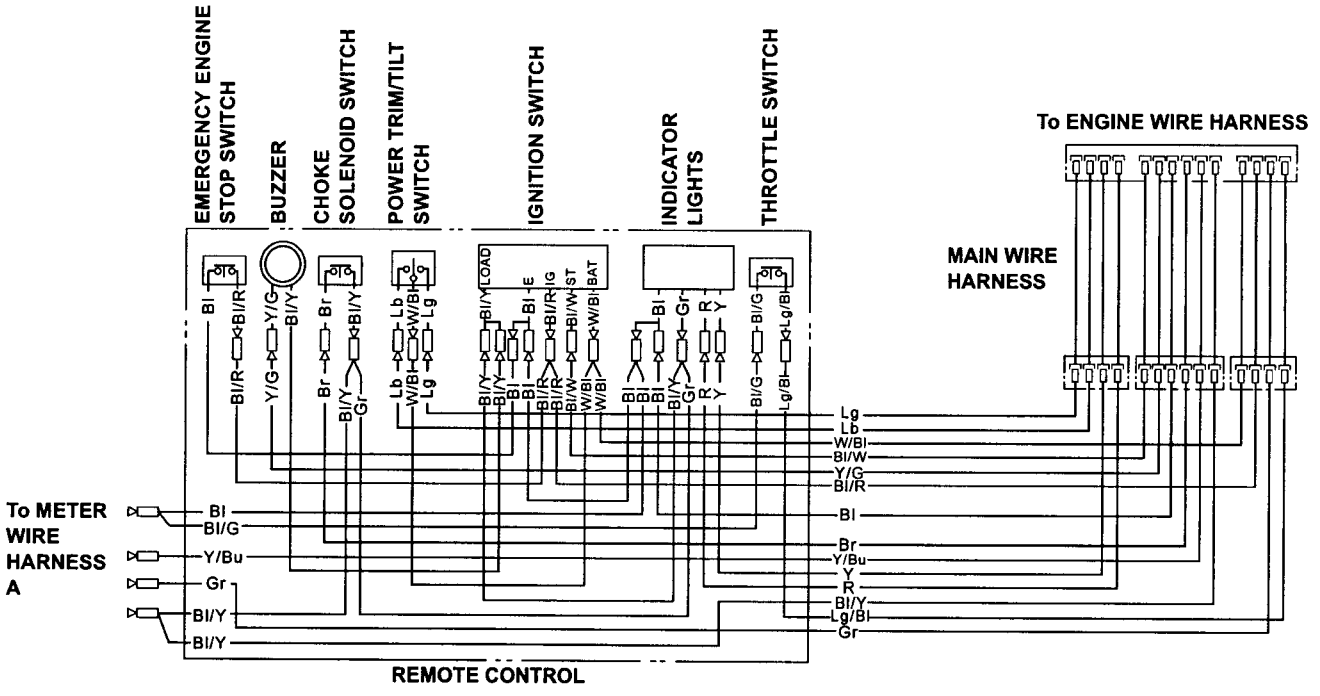
WIRING DIAGRAM (AW models to A2 models, excluding A3*)

(*See *Outboard Motor Service Bulletin #38* and Chapter 5 of this guide for information specific to BF40A3/BF50A3 models)



EMERGENCY ENGINE STOP SWITCH

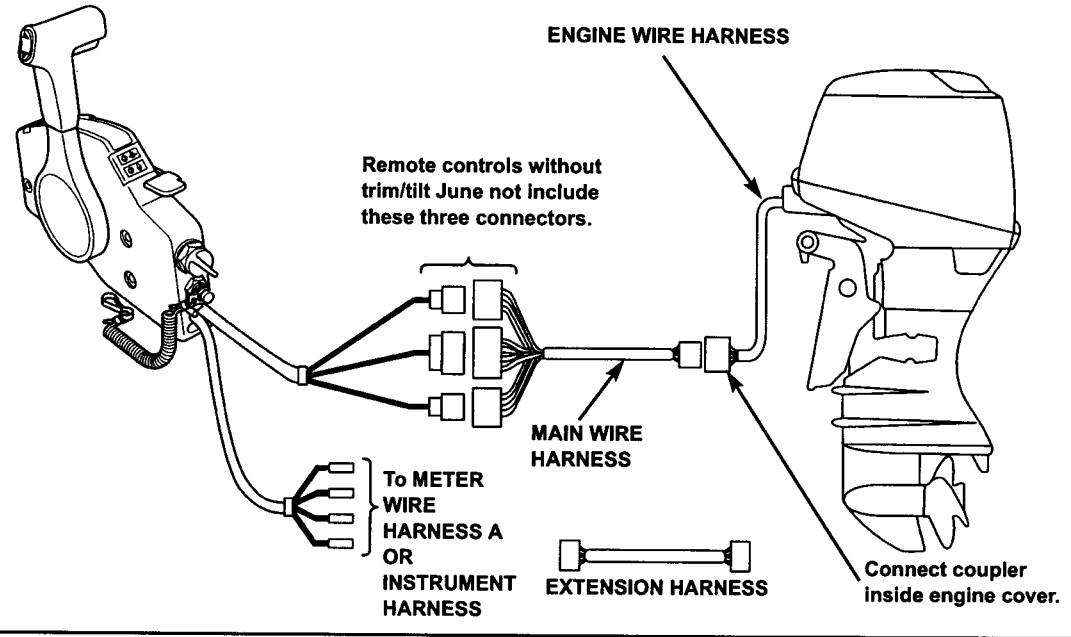
	Bl/R	Bl
PUSH or LOCK PLATE OFF	○	○
NORMAL		

IGNITION SWITCH

	E	IG	BAT	LOAD	ST
COLOR	Bl	Bl/R	W/Bl	Bl/Y	Bl/W
OFF	○	○			
ON			○	○	
START			○	○	○

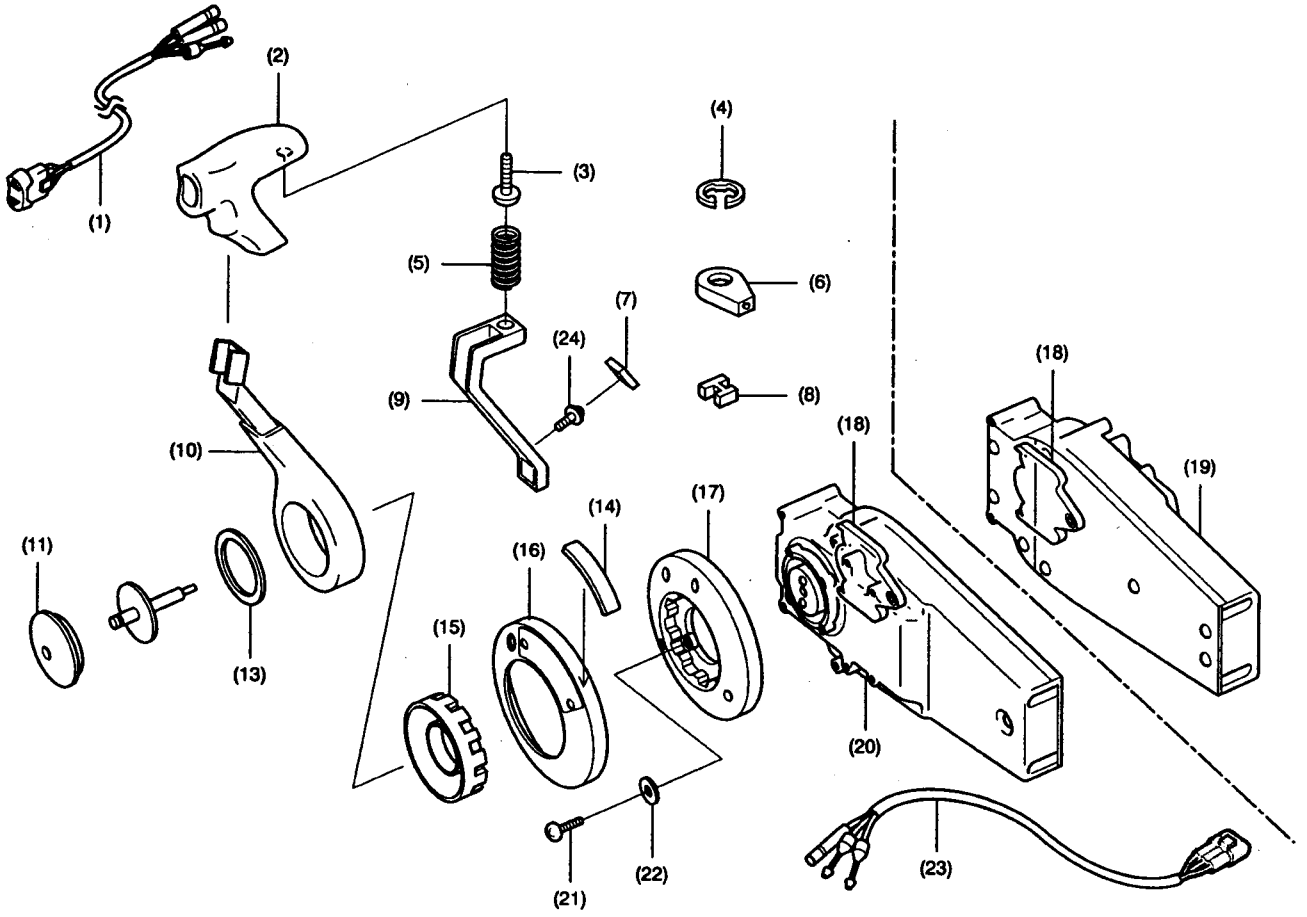
Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

REMOTE CONTROL



PREMIUM FLUSH-MOUNT REMOTE CONTROL

PARTS LISTING (Single Lever Type)



Ref. No.	Description	Quantity		Part No.
		Right-Hand Handle Type	Left-Hand Handle Type	
	Flush mount remote control kit	Right		06240-ZW7-U00
	Flush mount remote control kit	Left		06240-ZW7-U10
1	Switch assy. C, power trim/tilt	1	1	35370-ZW7-U01
2	Cover, grip	1	1	24812-ZW7-U01
3	Screw, pan-head, 5 x 10 mm	1	1	90102-ZW5-U00
4	E-ring, 6 mm	2	2	94540-06029
5	Spring, neutral lock arm	1	1	24815-ZW7-U01
6	Cable, terminal shift	2	2	24831-ZW5-U01
7	Cover, lock arm	1	1	24814-ZW7-U01
8	Spacer, cable clamp	1	1	24832-ZW5-U01
9	Arm, neutral lock	1	1	24813-ZW7-U01
10	Handle, remote control	1	1	24811-ZW7-U01
11	Button, throttle	1	1	24816-ZW5-U01

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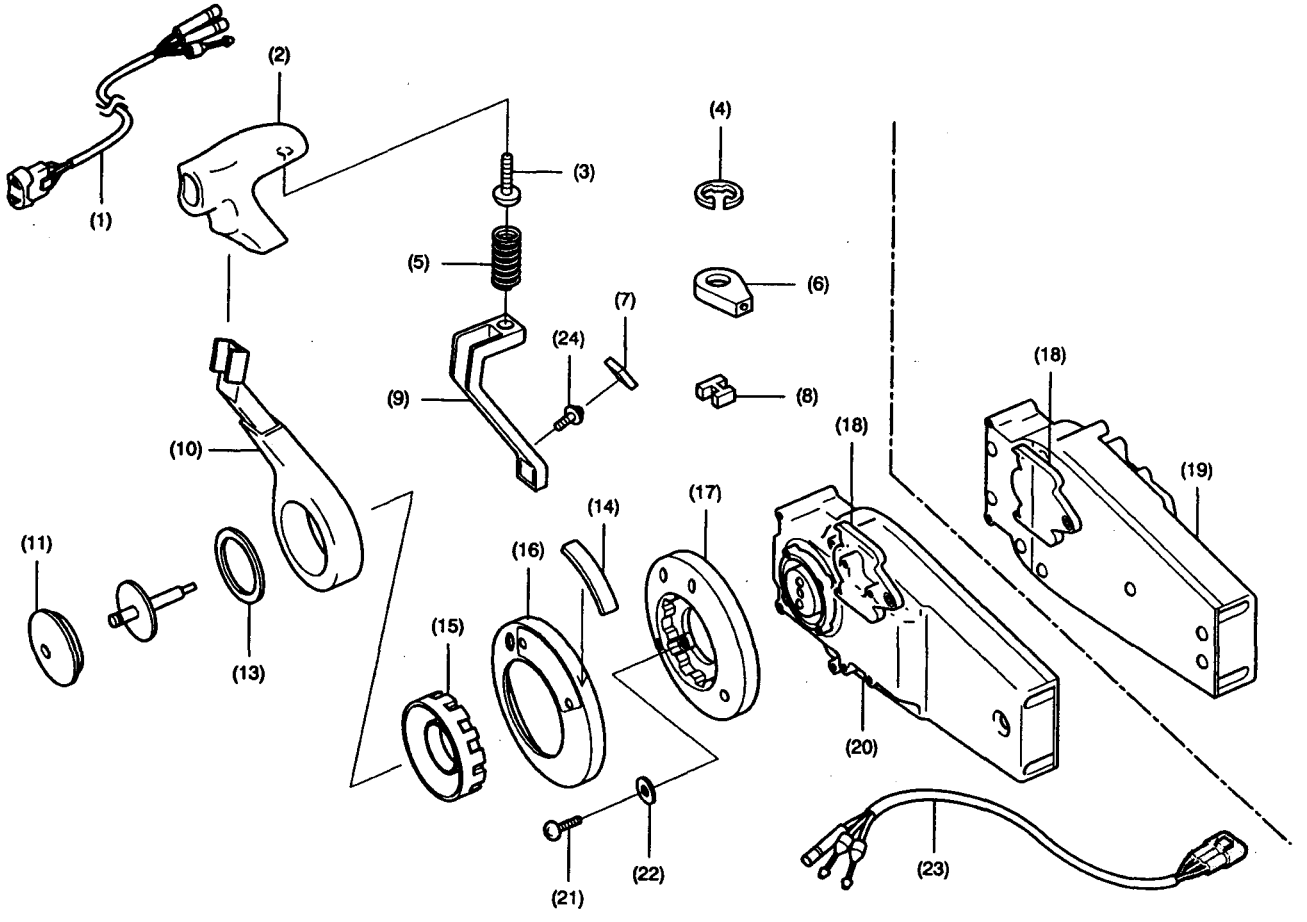
PARTS LISTING (Single Lever Type) (continued)

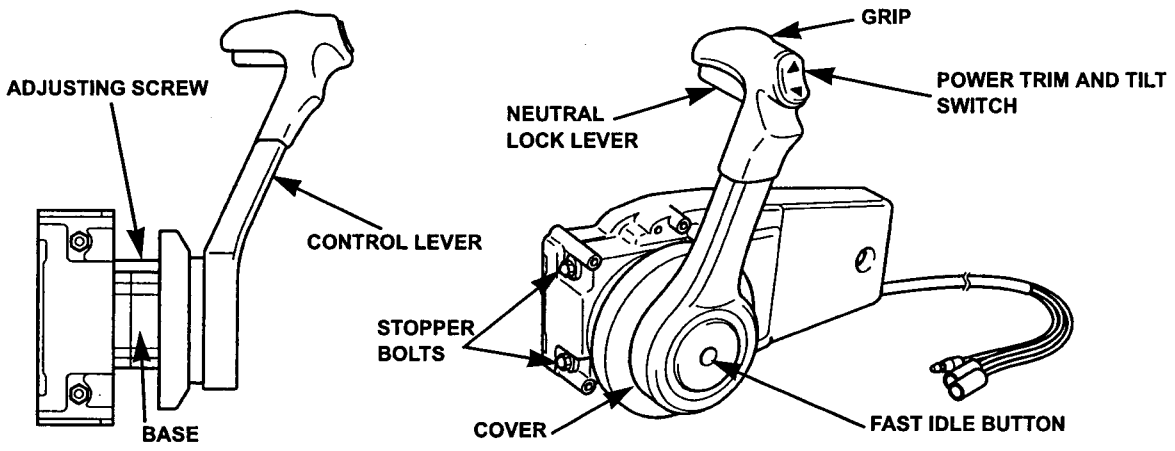


Ref. No.	Description	Quantity		Part No.
		Right-Hand Handle Type	Left-Hand Handle Type	
13	Mark, handle flush mount	1	1	87701-ZW7-U00
14	Mark, flush mount remote control box	1	1	87703-ZW7-U00
15	Holder, neutral lock	1	1	24832-ZW7-U01
16	Cover assy.	1	1	24830-ZW7-U01
17	Base	1	1	24833-ZW7-U01
18	Plate, dual	1	1	24826-ZW5-U01
19	Housing assy., inner (FL M/T. LH)	—	1	24810-ZW7-U11
20	Housing assy., inner (FL M/T. RH)	1	—	24810-ZW7-U01
21	Screw, pan-head, 5 x 30 mm	4	4	90102-ZW7-U01
22	Washer, lock, 5 mm	4	4	90501-ZW5-U00
23	Harness assy. C, PTT sub	1	1	32530-ZW7-U20
24	Screw, truss, 4 x 12 mm	1	1	90101-ZW7-U01
	Nut, hex. (6 mm)	3	3	90301-ZW7-U01

COMPONENT IDENTIFICATION

The right-hand remote control is designed to perform the throttle operation and the tilt angle adjustment with the right hand. The name and operation of each part of the left-hand handle type are identical with those of the right-hand handle type.

Flush Mount Remote Control



Remote Control Lever	The remote control lever controls gear selection and throttle opening positions.
Power Trim/Power Tilt	For power trim: Press the power trim/tilt switch on the remote control lever to adjust the motor trim angle to maintain proper boat trim. For power tilt: Press the power trim/tilt switch on the remote control lever to adjust the motor tilt angle.
Fast Idle Button	Used for engine starting and warm-up. With the fast idle button pushed in, the remote control lever can be moved forward or backward. This opens and closes the throttle without engaging the propeller.

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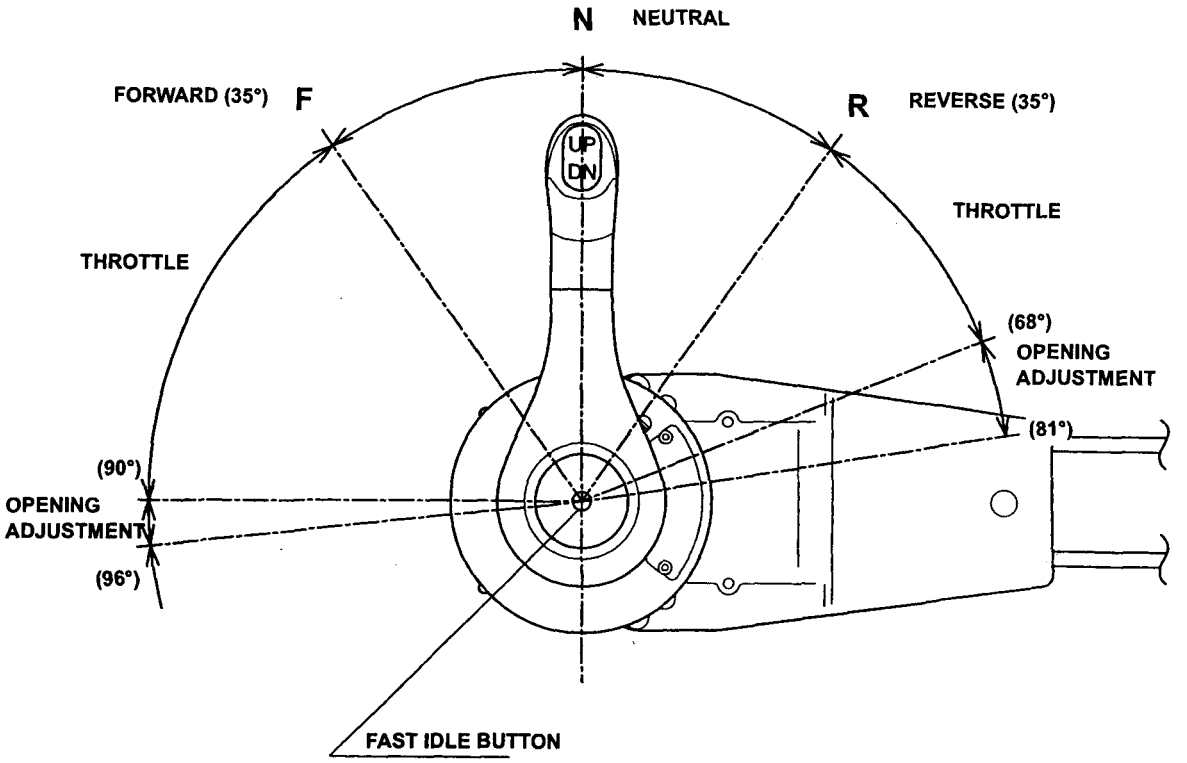
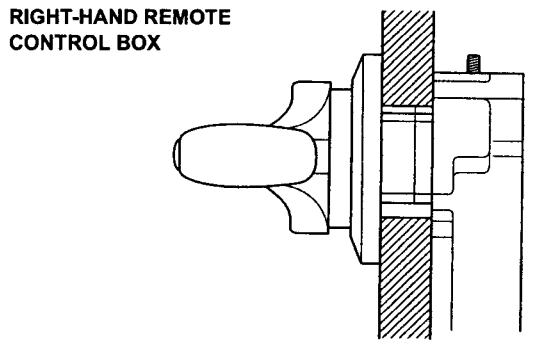
SHIFT OPERATION

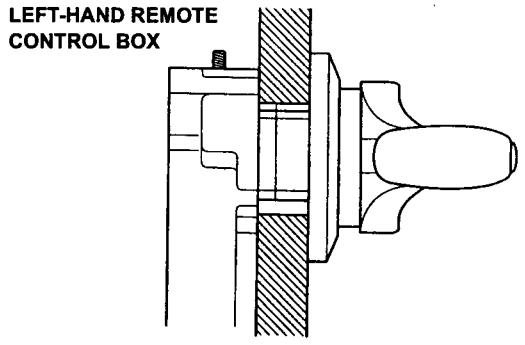
Move the remote control lever to the NEUTRAL position. Push the fast idle button, and move the remote control lever a little forward to start the engine. The fast idle button can only be pushed when the remote control lever is in the NEUTRAL position. After starting the engine, warm up the engine. After warming up the engine, return the remote control lever to the NEUTRAL position, and shift into gear by moving the remote control lever to the FORWARD or REVERSE range.



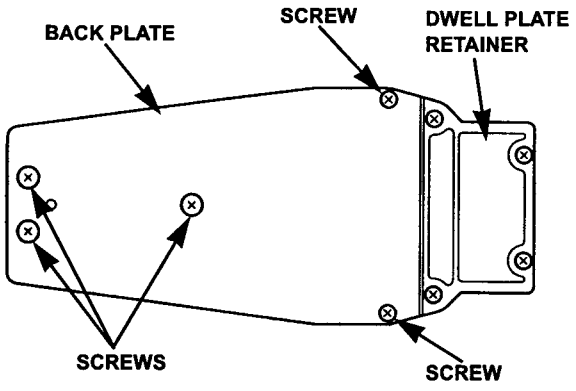
Move the remote control lever approximately 35° forward to engage FORWARD gear or approximately 35° rearward to engage REVERSE gear. The throttle does not open unless the lever is turned 35° or more. The fast idle button automatically returns when the remote control lever is returned to the NEUTRAL position, and you can select the FORWARD or REVERSE gear.

CHANGE IN THE CONTROL LEVER POSITION

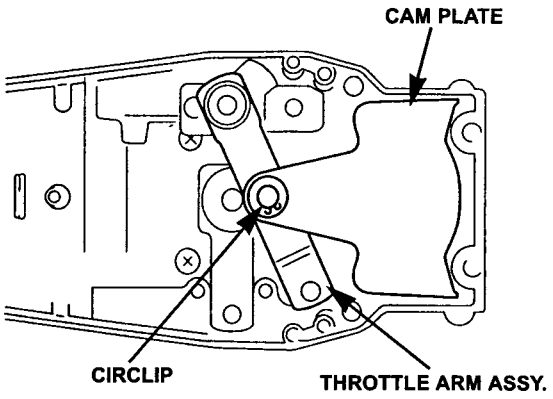




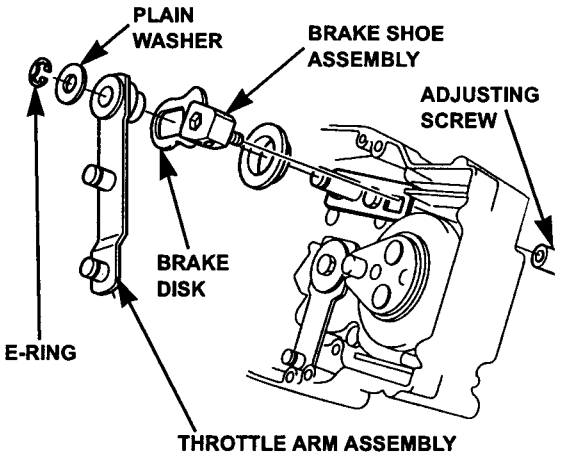
The remote control box permits you to change the control lever position from the right-hand side to the left-hand side or vice versa.



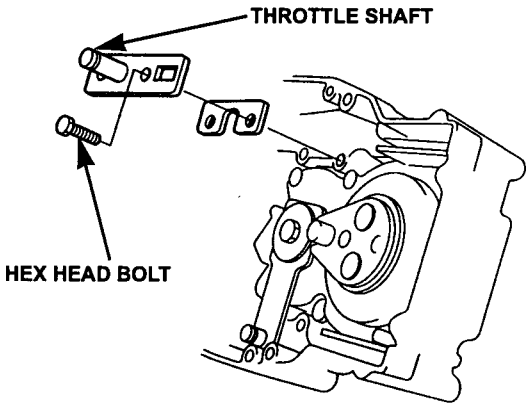
1. Loosen the five screws and remove the back plate.
2. Remove the four screws and remove the dwell plate retainer.



3. Remove the circlip, then remove the plate.



4. Remove the E-ring and plain washer from the throttle shaft, loosen the adjusting screw, and remove the throttle arm assembly and bushing.
5. Remove the brake disk and brake shoe assembly.



6. Loosen the two hex head bolts and remove the throttle shaft.

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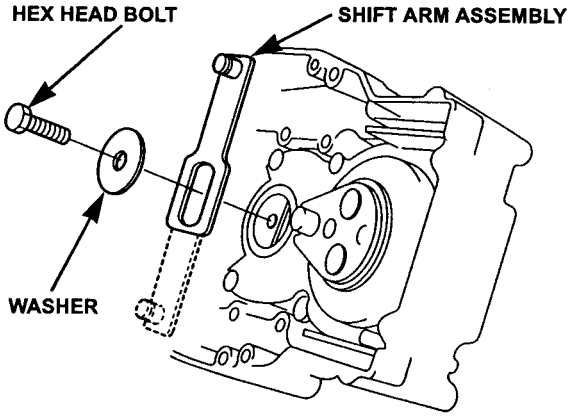
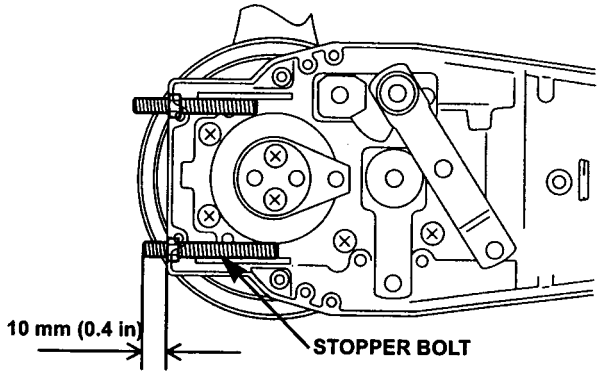


7. Loosen the hex head bolt, and install the shift arm assembly, while holding it in an inverted position.

   TORQUE: 5-8 N•m (0.5-0.8 kgf-m, 3.6-5.8 lbf-ft)

8. Install the throttle shaft on the opposite side to the original position, with the two hex head bolts.

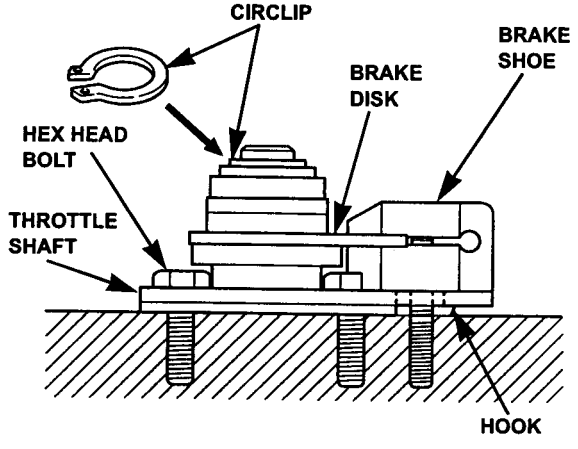
   TORQUE: 5-8 N•m (0.5-0.8 kgf-m, 3.6-5.8 lbf-ft)

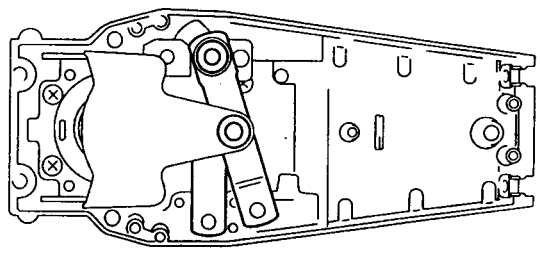


9. Loosen the lock nuts, and reverse the right and left stopper bolt positions, and secure the bolts with the two lock nuts.

   TORQUE: 5-8 N•m (0.5-0.8 kgf-m, 3.6-5.8 lbf-ft)

   Do not allow the stopper bolt to project more than 10 mm (0.4 in) from the nut surface.





10. Set the brake disk and brake shoe assembly on the throttle arm asembly, and install the throttle shaft.

    Push in the brake shoe hook until it fits into the hole in the throttle shaft.

11. Install the plain washer and circlip on the throttle shaft.

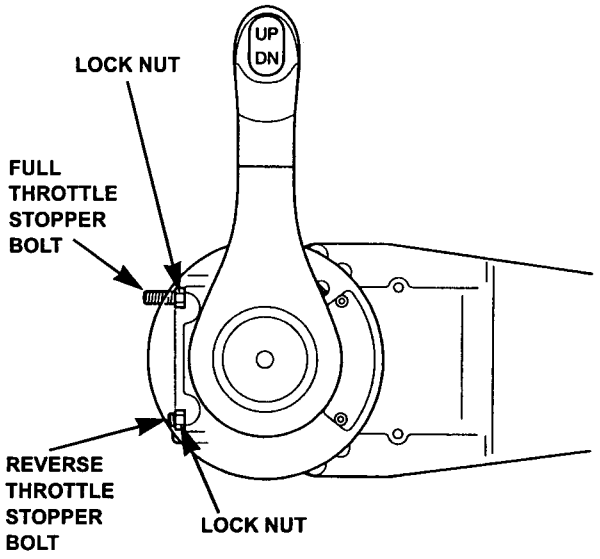
12. Make sure the cam plate aligns with the cam groove (for push-to-open throttle) and the throttle lever roller.

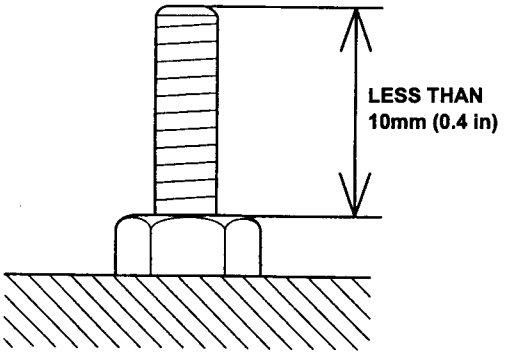
    Make sure the circlip is correctly fitted in place.

13. Install the dwell plate retainer, mounting flange, back plate, packing and cover according to page 10-32.

THROTTLE OPENING ADJUSTMENT

With this remote control box, the throttle opening can be adjusted by using the following procedure:





1. To set amount of throttle advance in FORWARD gear, loosen lock nut and set throttle opening by turning stopper bolt.
2. To set amount of throttle advance in REVERSE gear, loosen lock nut and set throttle opening by turning stopper bolt.

   Clockwise rotation–decreased throttle opening.

   Counterclockwise rotation–increased throttle opening.

NOTICE

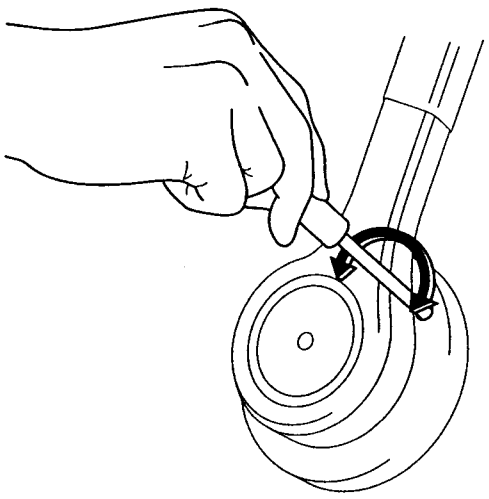
Do not allow the stopper bolts to project more than 10 mm (0.4 in) above the top of the nut.

Standard length	Forward (90°)	2 mm (0.08 in)
	Reverse (68°)	2 mm (0.08 in)

3. After adjusting, tighten the locknut.

   TORQUE: 5-8 N•m (0.5-0.8 kg-m, 3.6-5.8 ft-lb)

Control Lever Tension Adjustment

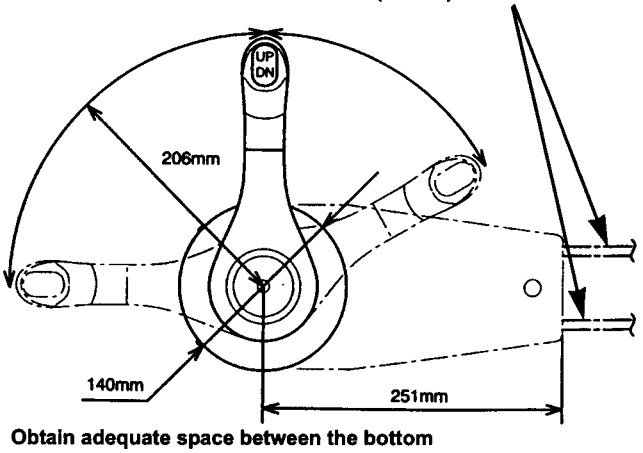


By turning in or out the throttle friction screw at the rear of the remote control box, the stiffness of the control lever can be adjusted. Turning the screw to the right makes the control lever stiff to turn, and turning it to the left makes the lever easier to turn.

REMOTE CONTROL INSTALLATION POSITION

Select the remote control installation position on the boat.

Do not bend the cables and harnesses sharply. Route the cables/ harnesses with the bending radius of 406 mm (16.0 in) or more.



Obtain adequate space between the bottom of the remote control and the surrounding parts so that the remote control does not interfere with any of the surrounding parts (steering wheel, etc.).

Install the remote control in the position that allows proper remote control lever operation, and where the cables and harnesses can be routed properly without strain between the remote control and the outboard motor.

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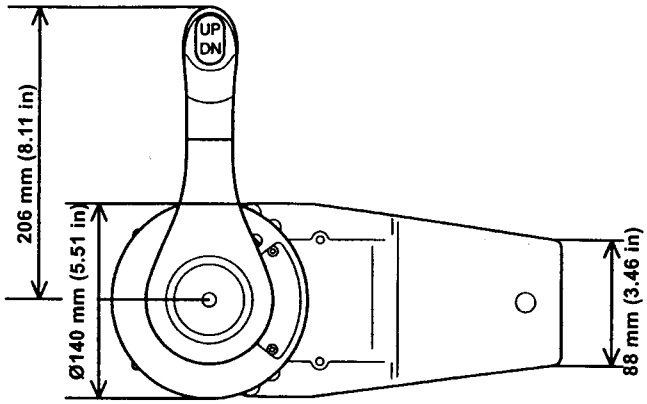
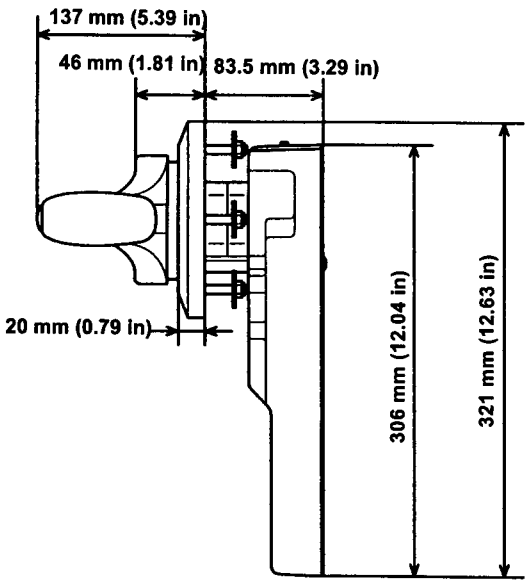
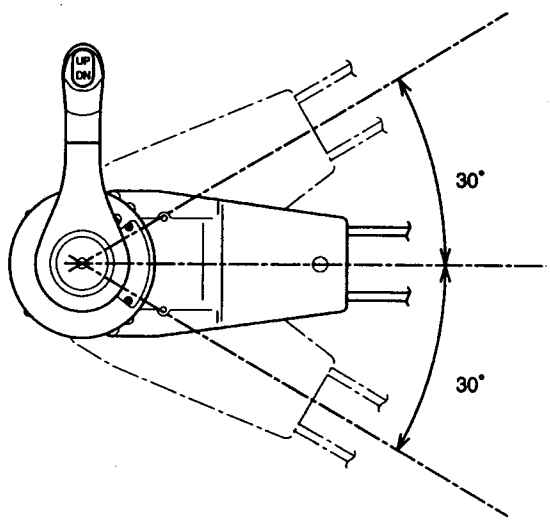
Recommended Installation Position

The following illustrates the space necessary to install the remote control.







The angle of the remote control box can be changed 30° each time in reference to the control lever.

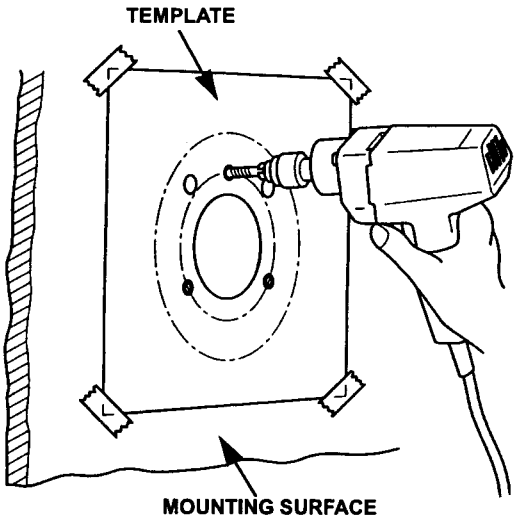
NOTICE

On the model with the power trim and tilt switch, electrical wires must be correctly routed to prevent damage.

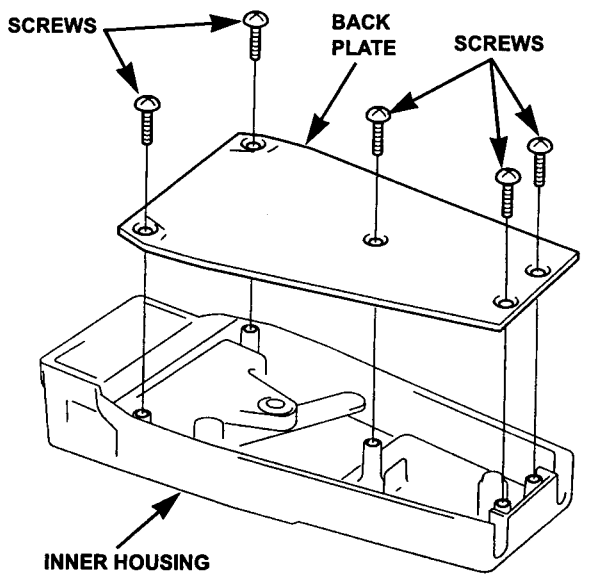
FLUSH MOUNT REMOTE CONTROL INSTALLATION (right-hand handle)

This section explains the installation procedure of the right-hand handle remote control. The left-hand handle remote control can be installed in the same manner.

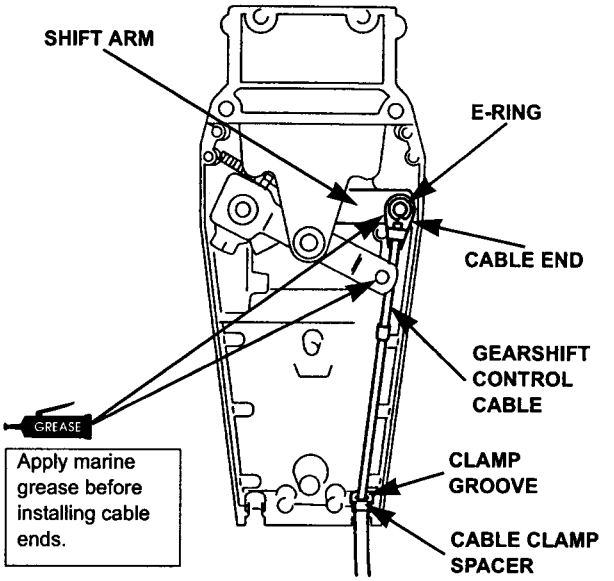
When the mounting plate (hull) is more than 30 mm (1.18 in), the installation of the remote control box is impossible.



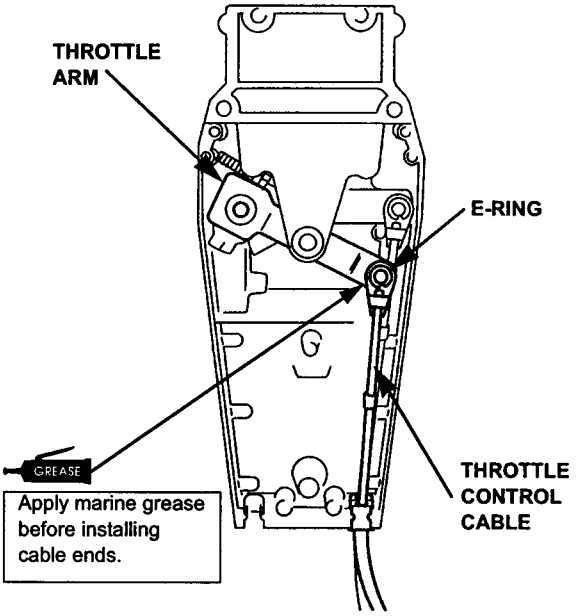
1. Attach the drilling template to the remote control mounting surface using adhesive tape.
2. Drill the installation holes and cut out the center.
3. Pass the remote control wire harness and the control cables along the route properly.



4. Remove the screws and remove the back plate from the inner housing.



5. Apply marine grease to both the shift and throttle pins at the end of each arm.
6. Install the gearshift control cable groove in the housing clamp groove. Insert the cable end into the pin at the end of the shift arm and secure with an E-ring.
7. Insert cable clamp spacer in clamp groove.



8. Apply marine grease to the throttle cable pin where it connects to the throttle arm.
9. Connect the throttle control cable to the throttle arm, in the same manner as the gearshift control cable, with an E-ring.

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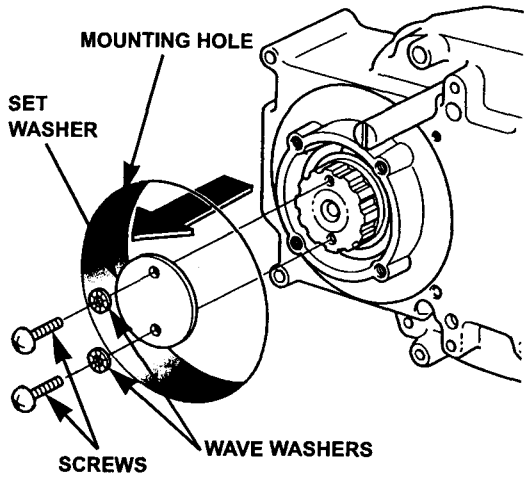
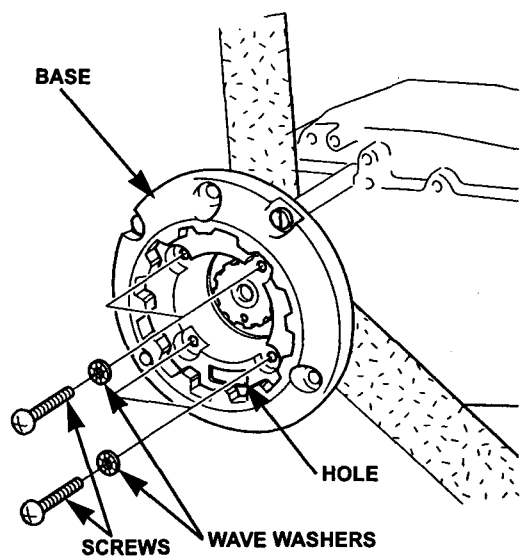
10. Install the back plate in the reverse order of removal.

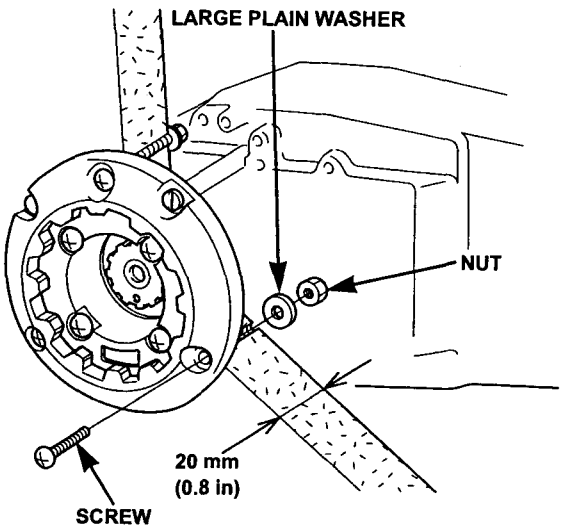


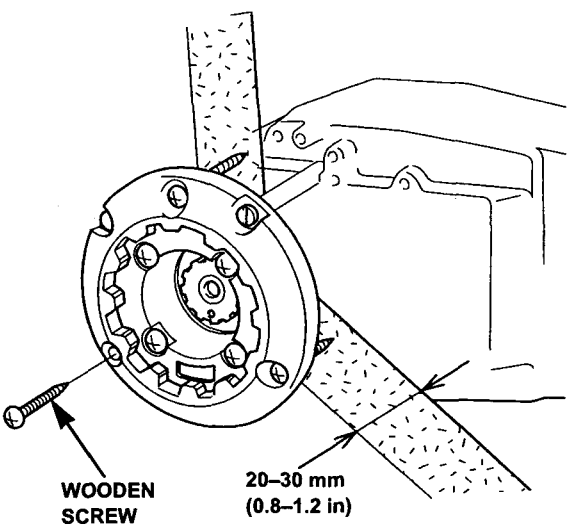
11. Remove the screws, wave washers and set washer. Set the remote control box so that the mounting holes align with the mounting holes in the base.



12. Tightly screw the base to the remote control box.

TORQUE: 3-4.5 N•m (0.3-0.5 kg-m, 2.2-3.6 ft-lb)

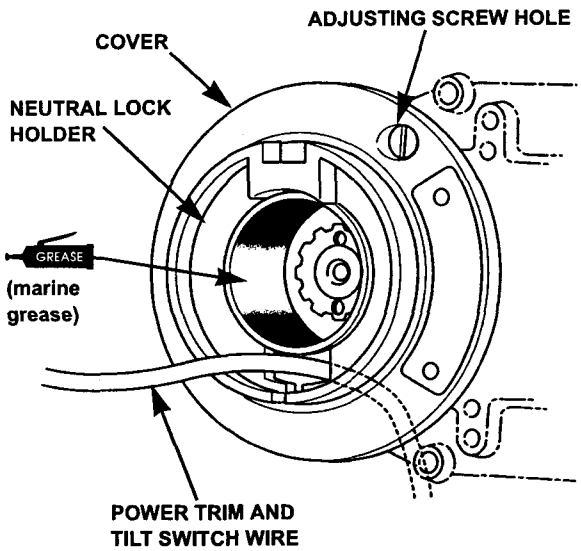




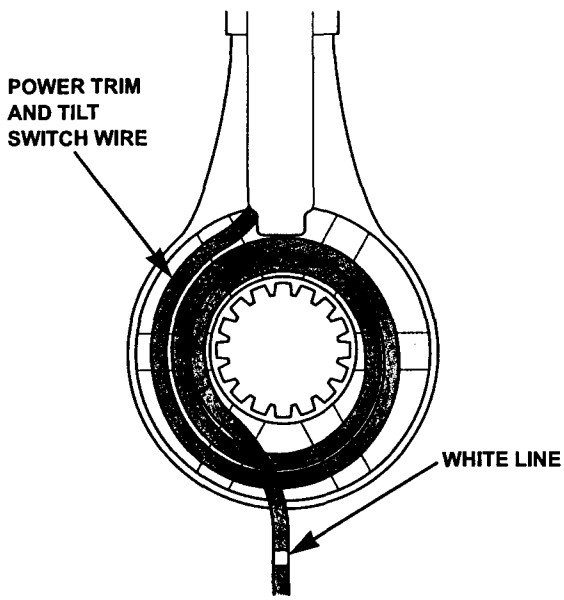
13. Install the base to the mounting plate (hull) with the screws and nuts.

When the mounting plate thickness is less than 20 mm, use the screws, nuts and large plain washers. When 20 mm or more, use the wooden screws.

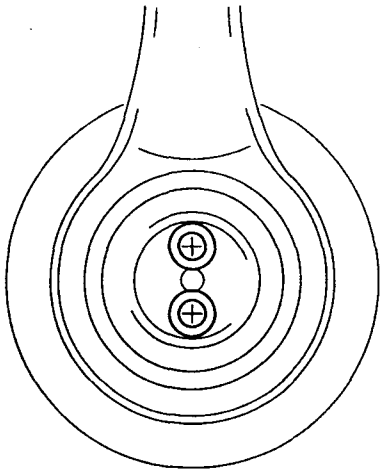
TORQUE: 5-8 N•m (0.5-0.8 kg-m, 3.6-5.8 ft-lb)



14. Install the cover on the base by aligning the adjusting screw holes in the cover and the base.

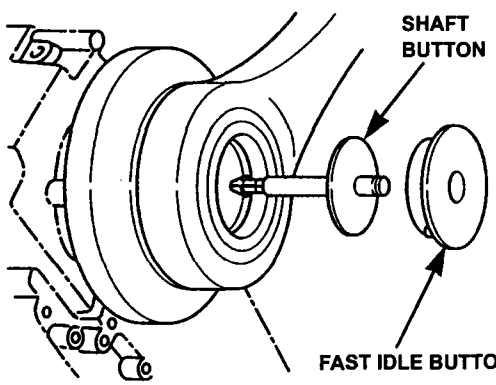


15. Wind the trim switch wire two turns counterclockwise around the boss at the lower end of the control lever. Make sure the wire is not twisted and the white line portion of the wire is positioned at the lower end of the control lever. If the wire is twisted or wound incorrectly, it June break. Coil the wire so that windings do not cross each other.
16. Bring the white line portion of the trim switch wire to the hole in the neutral lock holder, and insert the neutral lock holder into the base.
17. Pass the trim switch wire through the holes in the mounting plate and base, and bring them to the back of the mounting plate.
18. Install the control lever on the remote control box.

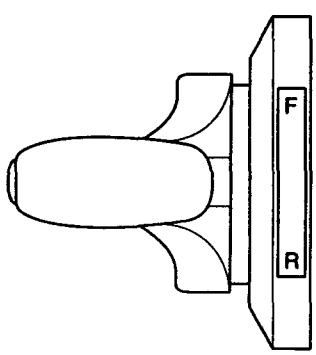


19. Place the set washer in the boss of the control lever, and fasten it with the screws and wave washers.

TORQUE: 3-4 N•m (0.3-0.4 kg-m, 2.2-2.9 ft-lb)



20. Install the shaft button in the hole in the accelerator shaft and install the fast idle button.



21. Install the remote control box mark on the cover.

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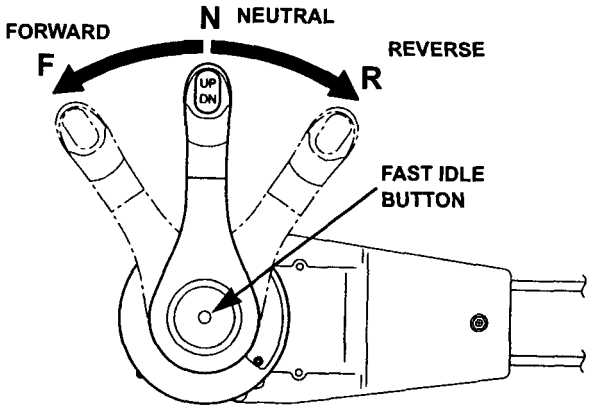
REMOTE CONTROL CABLE CONNECTION



1. According to the instructions given in the respective outboard motor owner's manual, connect the remote control cables for both shifting and throttle and wire harness to the engine. When connecting, set the control lever to NEUTRAL.
2. Operate the control lever a few times, check to see that the lever is turned to FORWARD or REVERSE until it stops once (about 35°), the gear shifts, and that when the lever is turned further from this position to FORWARD, the throttle fully opens. Next, make sure that when the control lever is returned to NEUTRAL, the throttle is completely closed. If not fully closed, adjust the positions of cable ends on the engine side, and install them again.

NOTICE

The cable ends on the engine side must be screwed in at least 8 mm (0.3 in) over the remote control cables to prevent the ends from growing weak, causing them to flex and break.

3. Move the control lever several times from lock to lock and make sure that when it is returned to the NEUTRAL position, the throttle lever on the engine side is set to the full-closed position. If not in the NEUTRAL position, the cable end on the engine side must be adjusted. Next, push the fast idle button and turn the control lever downward until it stops, then make sure that when it is returned to the NEUTRAL position, the fast idle button is automatically reset. If not, the throttle lever on the engine side is forced against the stopper or it is not in the full-closed position. Adjust the cables so that the fast idle button can reset automatically.

NOTICE

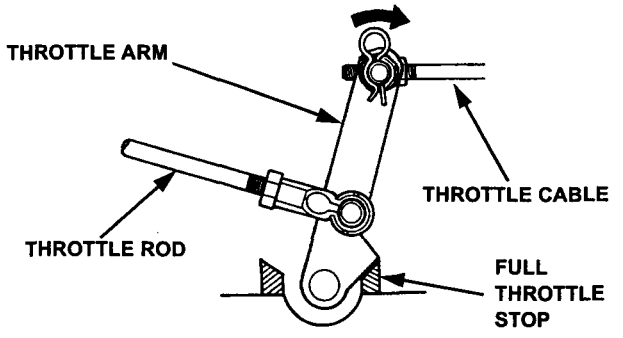
Check that the cables are not sharply bent (less than 406 mm (16 in) in radius) or unnecessarily bent. (The number of bends should be minimized.) Also, check that no portions of the cables are clamped so hard as to deform the cable outers.

4. After connecting the cables to the engine, move the control lever through all functions several times and check for smooth operation at the engine and remote control box. Next, firmly secure the remote control box (which is temporarily held with the screws) to the hull.

CONTROL LEVER LIMIT ADJUSTMENT (BF25/30/40/50 models only)

The forward and reverse throttle limit stop screws on the premium remote controls are pre-set for the BF75/90/115/130 outboard motors. If these remote controls are to be used on the BF25/30/40/50, it is necessary to perform the following adjustment procedure.

1. Remove the cover by removing the two screws.
2. Set the control lever in the neutral position, push the fast idle button, and carefully move the control lever *forward* to the full throttle position.



3. Check at the outboard motor and verify the throttle arm is against its stop. If not, refer to the appropriate model-family section for the model you are performing the installation on, and adjust the throttle rod or control cable.
4. Loosen the stopper bolt on the *reverse* side by loosening the lock nut.
5. With the control lever in the full throttle position, turn the stopper bolt out (counterclockwise)1 - 2 turns, then gently turn the stopper bolt in (clockwise) until it just stops.
6. While holding the stopper bolt, tighten the lock nut:

   TORQUE: 5–8 N•m (3.6–5.8 ft-lb)
7. With the control lever in the full throttle position, recheck at the outboard motor that the throttle arm is against the full throttle stop.

WIRE HARNESS CONNECTIONS

When using optional harnesses:

- Check whether wire harnesses are connected as shown on the wiring diagrams on the following pages.
- Connect leads and terminals securely, and waterproof to prevent moisture from entering and corroding the connector terminals.

Observe the following wire harness connector instructions:

- If the standard 16.5 foot switch panel-to-engine cable harness is too short, please see the *Honda Marine Accessories Catalog* (MO045) for available harnesses.
- Maximum combination lengths follow:
- One or two 7 ft cable harness extensions + one standard 16.5 ft cable harness = maximum length 30.5 feet.
- One 30 ft cable harness + one or two 7 ft cable harness extensions = max. length 44 feet.
- Connect wire harness securely. If a terminal is oxidized or corroded, remove the oxidation or corrosion with a non-conductive plastic scrub pad or contact cleaner before reconnecting it.
- Make sure insulators completely surround connectors and that ends are not folded up.
- Do not break the coverings of the wire harness. If the coverings are broken, either repair them with electrician's tape, or replace them.
- Use vinyl tape to attach any unused terminals to the adjacent main harness to keep them from interfering with surrounding parts.
- Connect each wire harness properly as shown on the wiring diagram.
- After connecting each harness, turn the main power on to check for proper operation.

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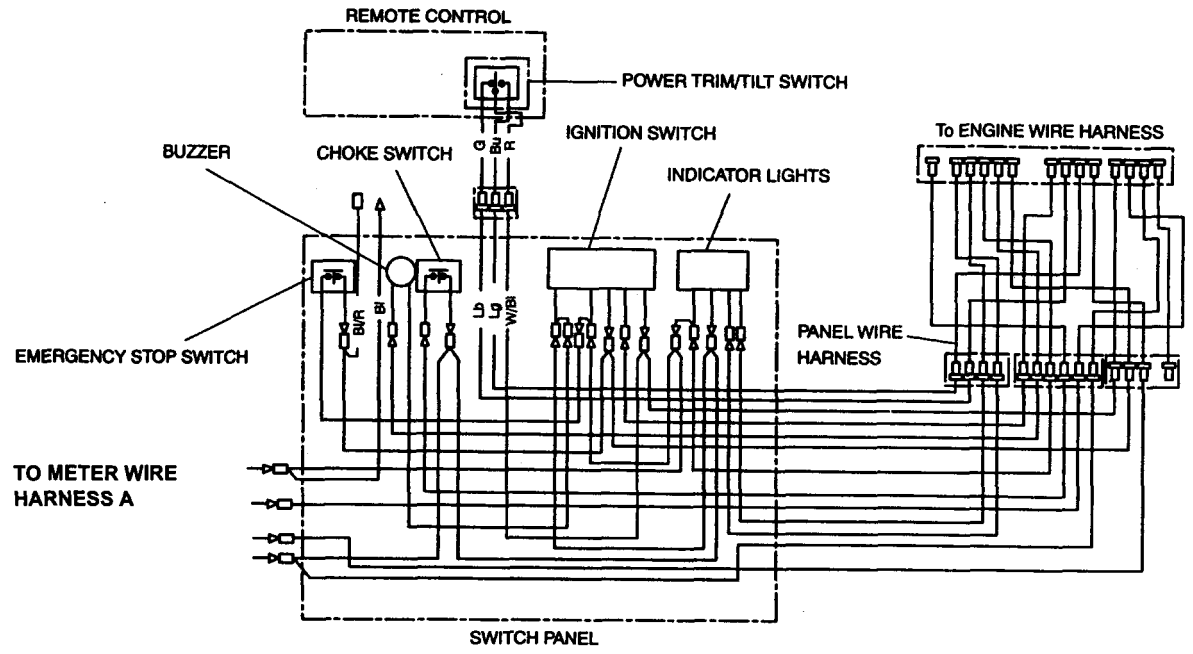
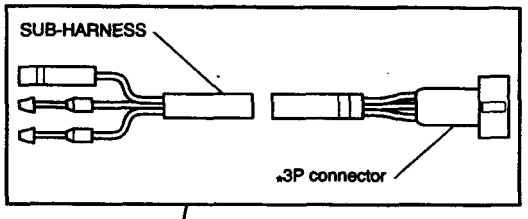
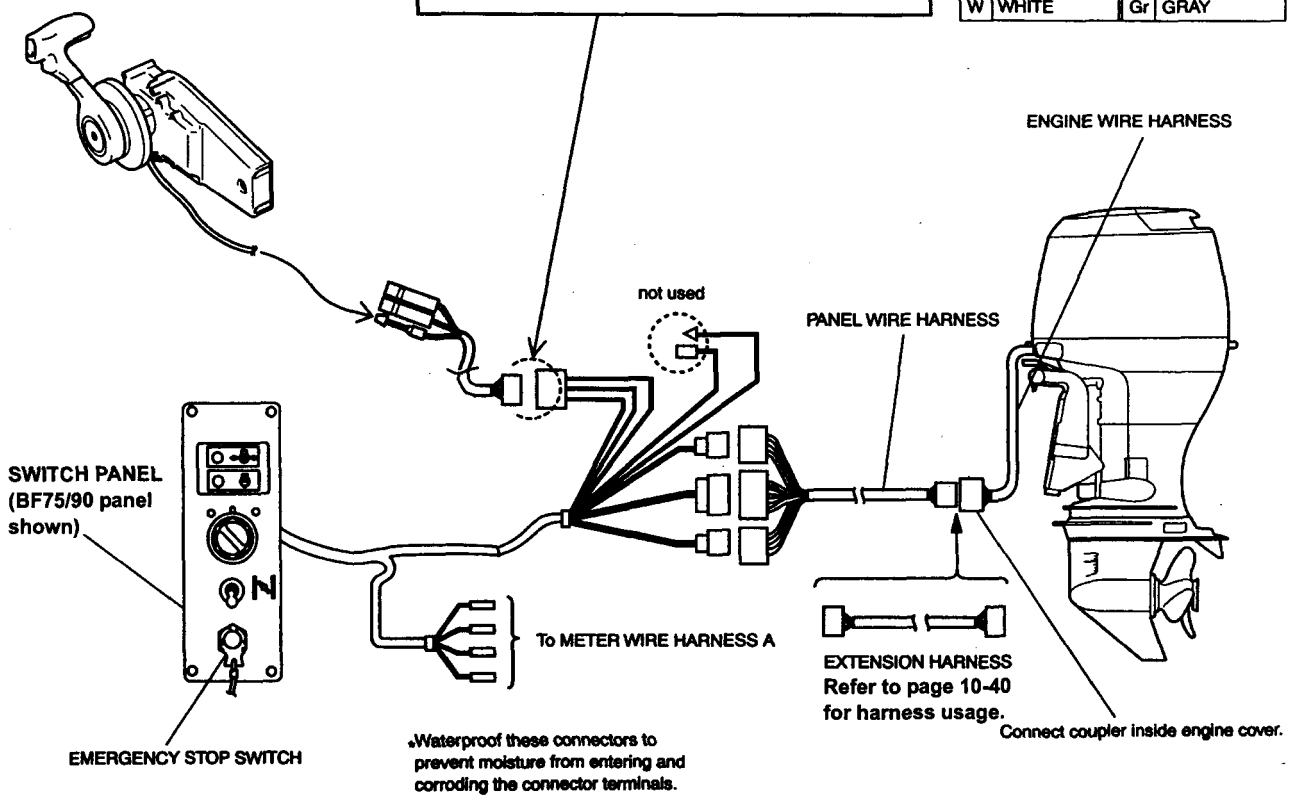
WIRING DIAGRAM (Flush Mount Remote Control Box)





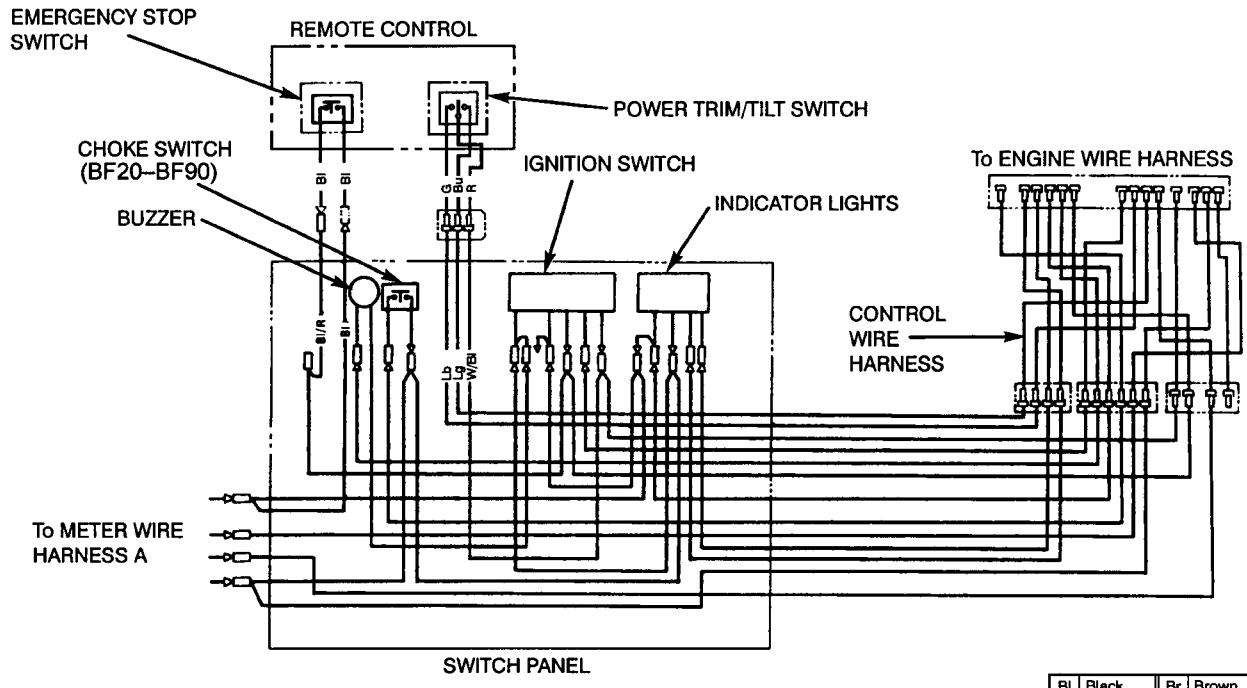
Bl	BLACK	Br	BROWN
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY

FLUSH MOUNT LEFT-HAND/RIGHT-HAND SINGLE LEVER

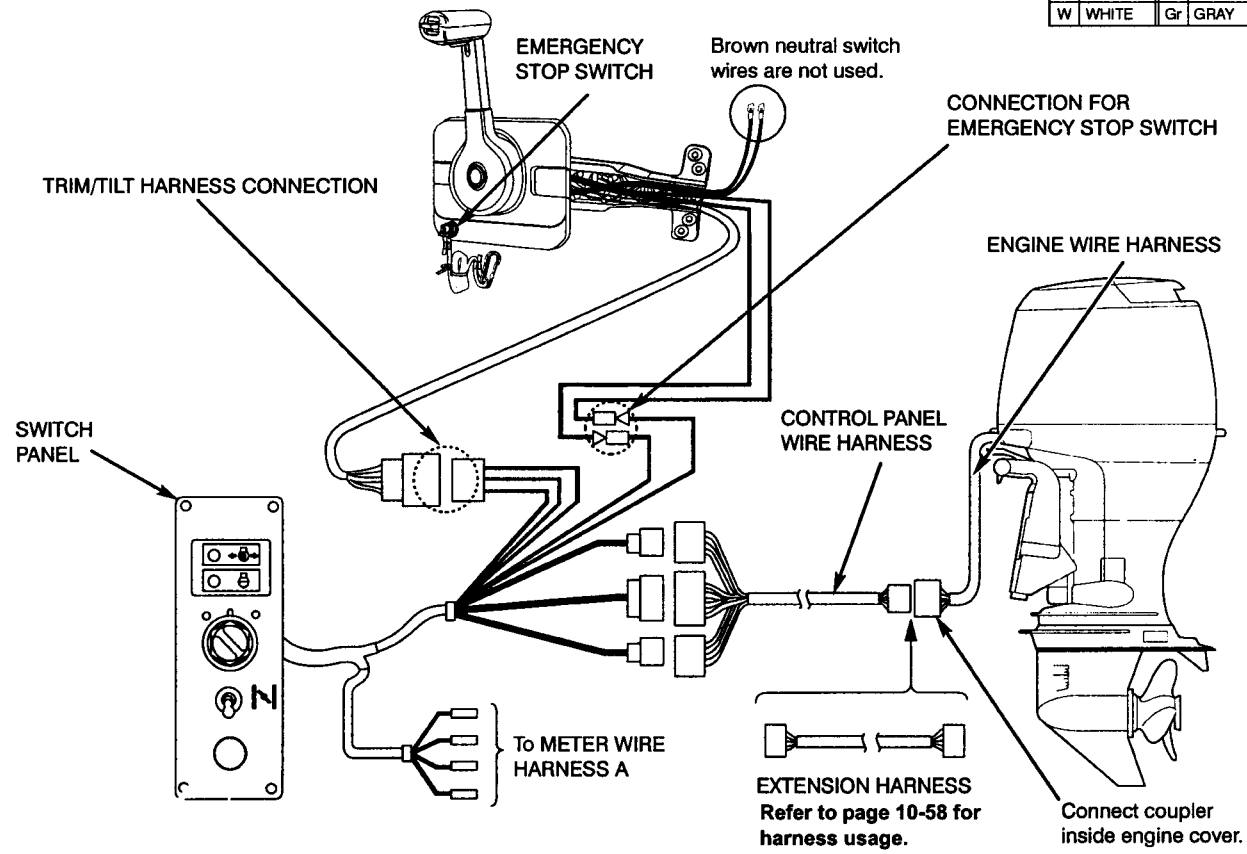


*Waterproof these connectors to prevent moisture from entering and corroding the connector terminals.

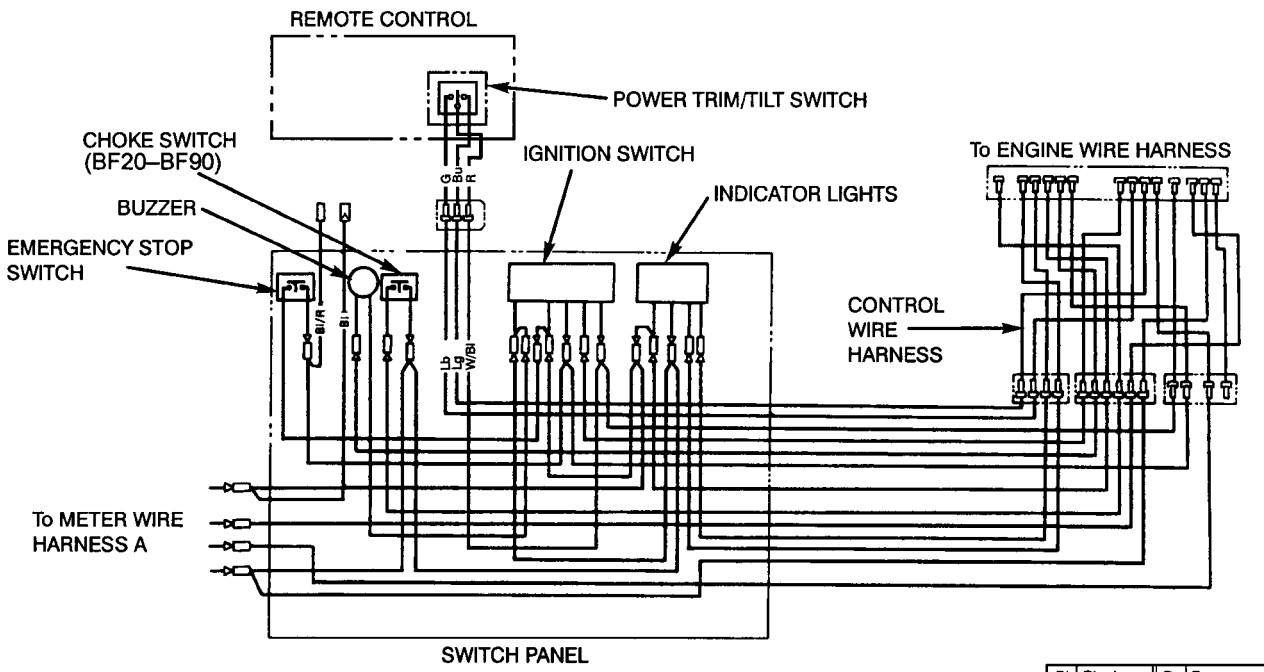
Side Flush-Mount



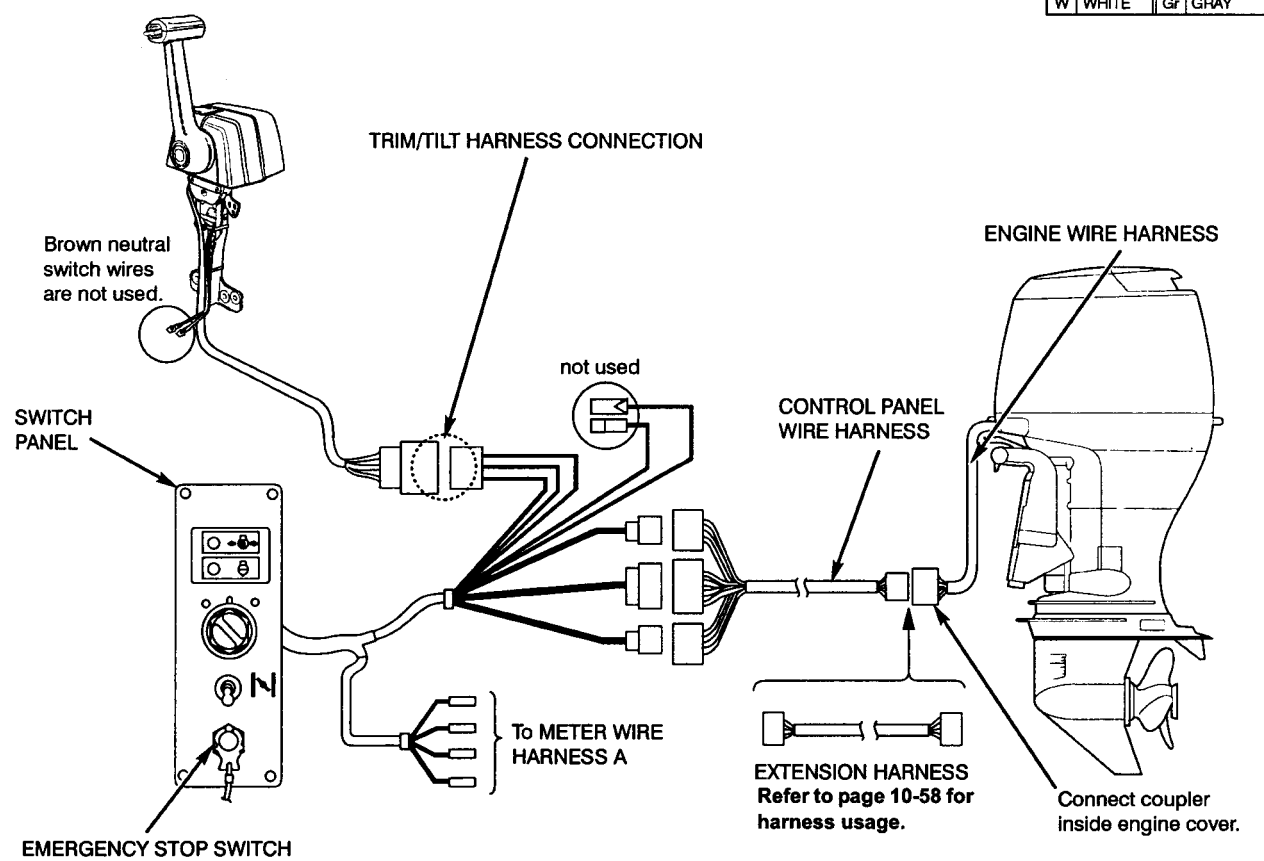
Bl	Black	Br	Brown
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY



Single Top-Mount Control



Bl	Black	Br	Brown
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY



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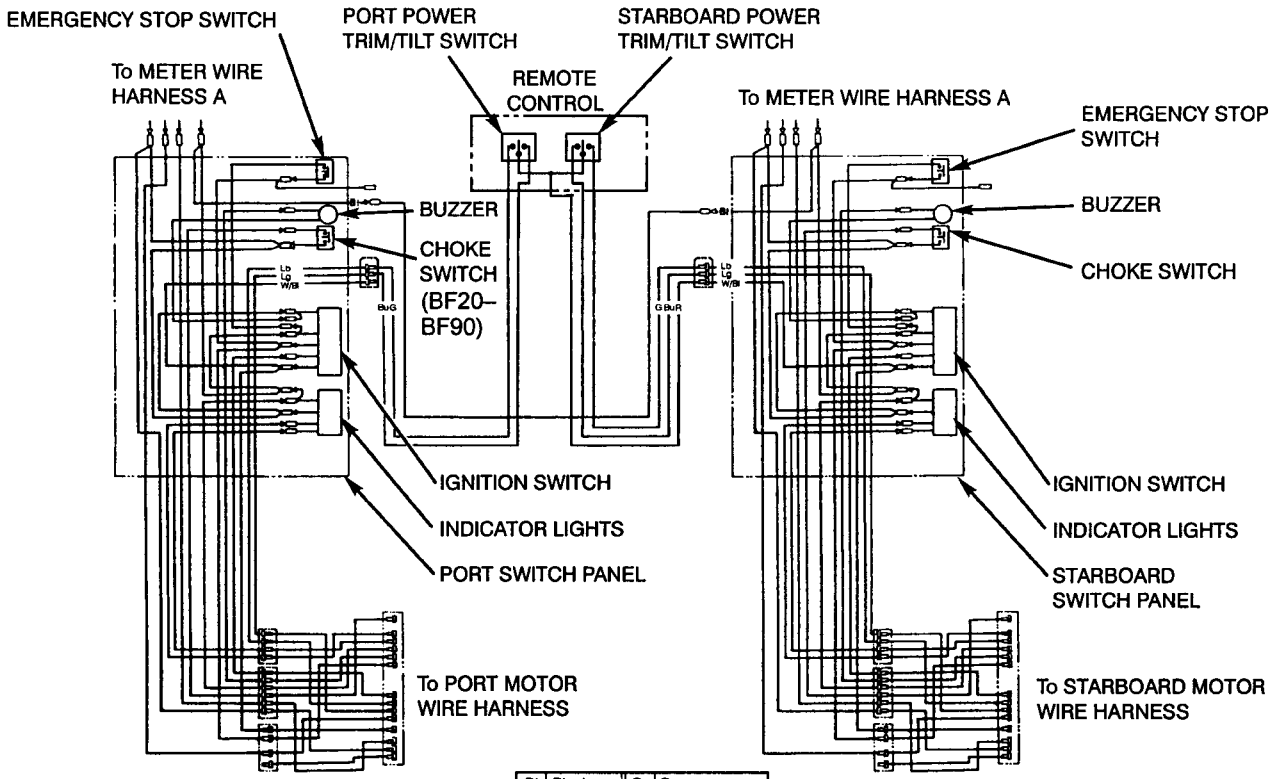
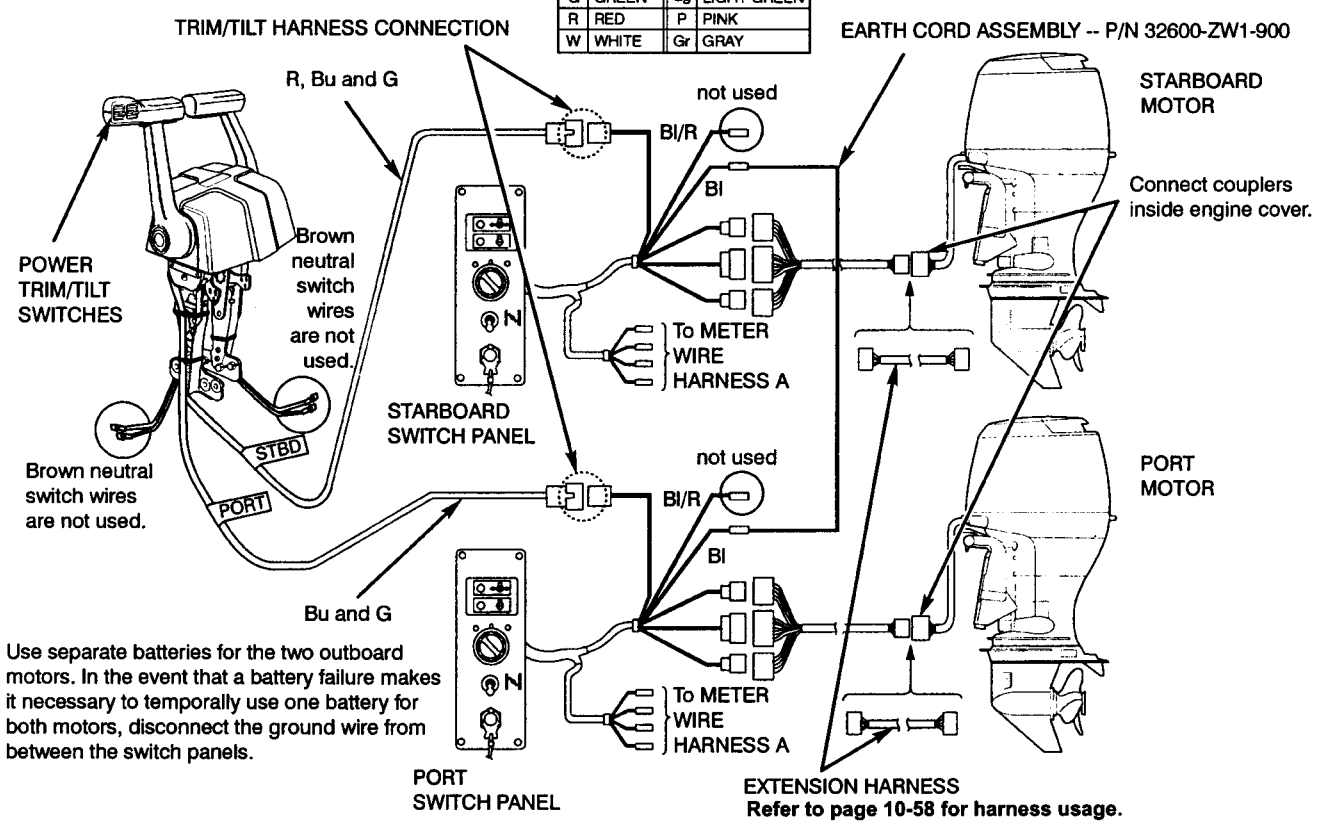
Dual Top-Mount Control



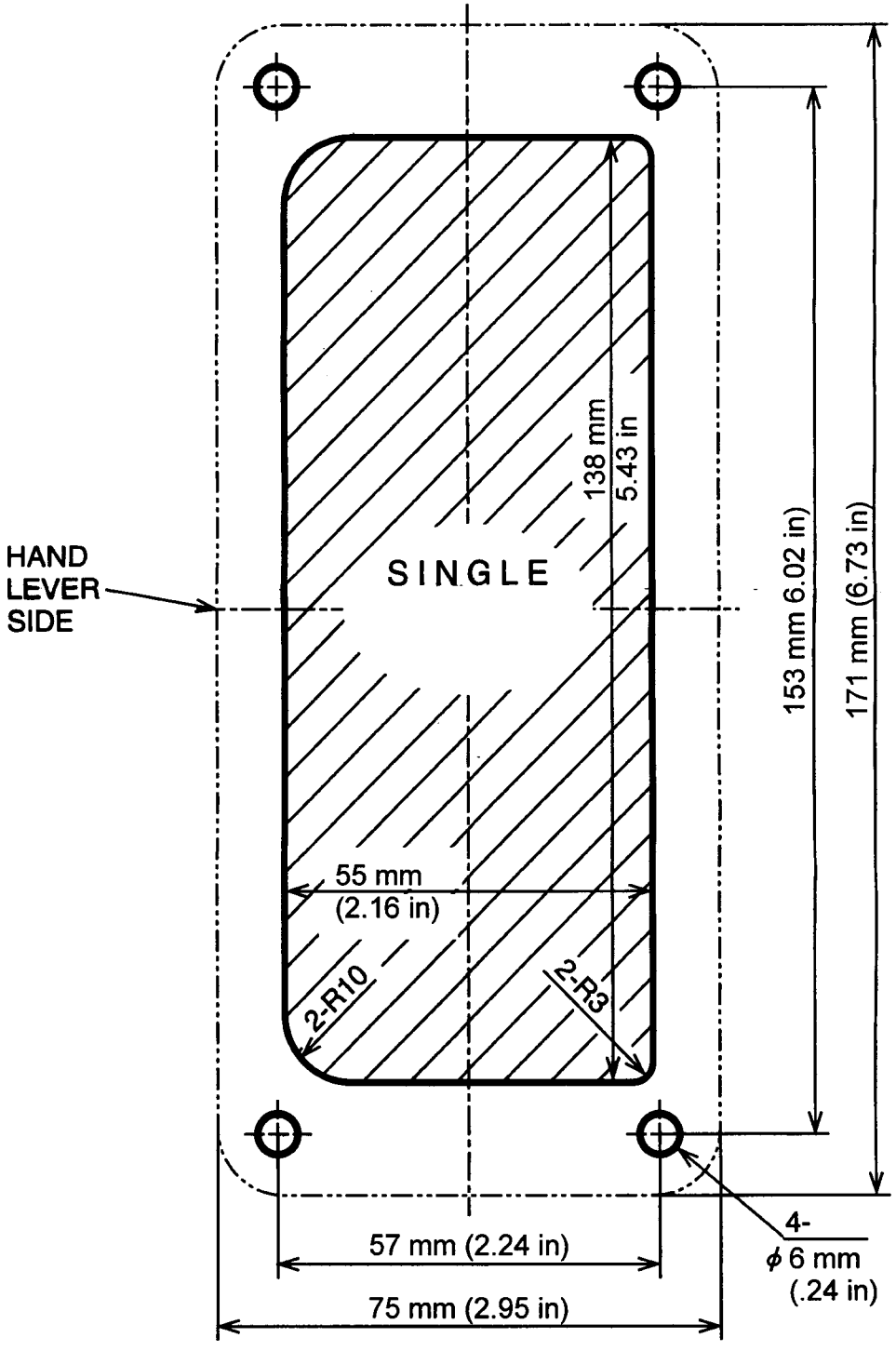
Bl	Black	Br	Brown
Y	YELLOW	O	ORANGE
Bu	BLUE	Lb	LIGHT BLUE
G	GREEN	Lg	LIGHT GREEN
R	RED	P	PINK
W	WHITE	Gr	GRAY



Use separate batteries for the two outboard motors. In the event that a battery failure makes it necessary to temporally use one battery for both motors, disconnect the ground wire from between the switch panels.

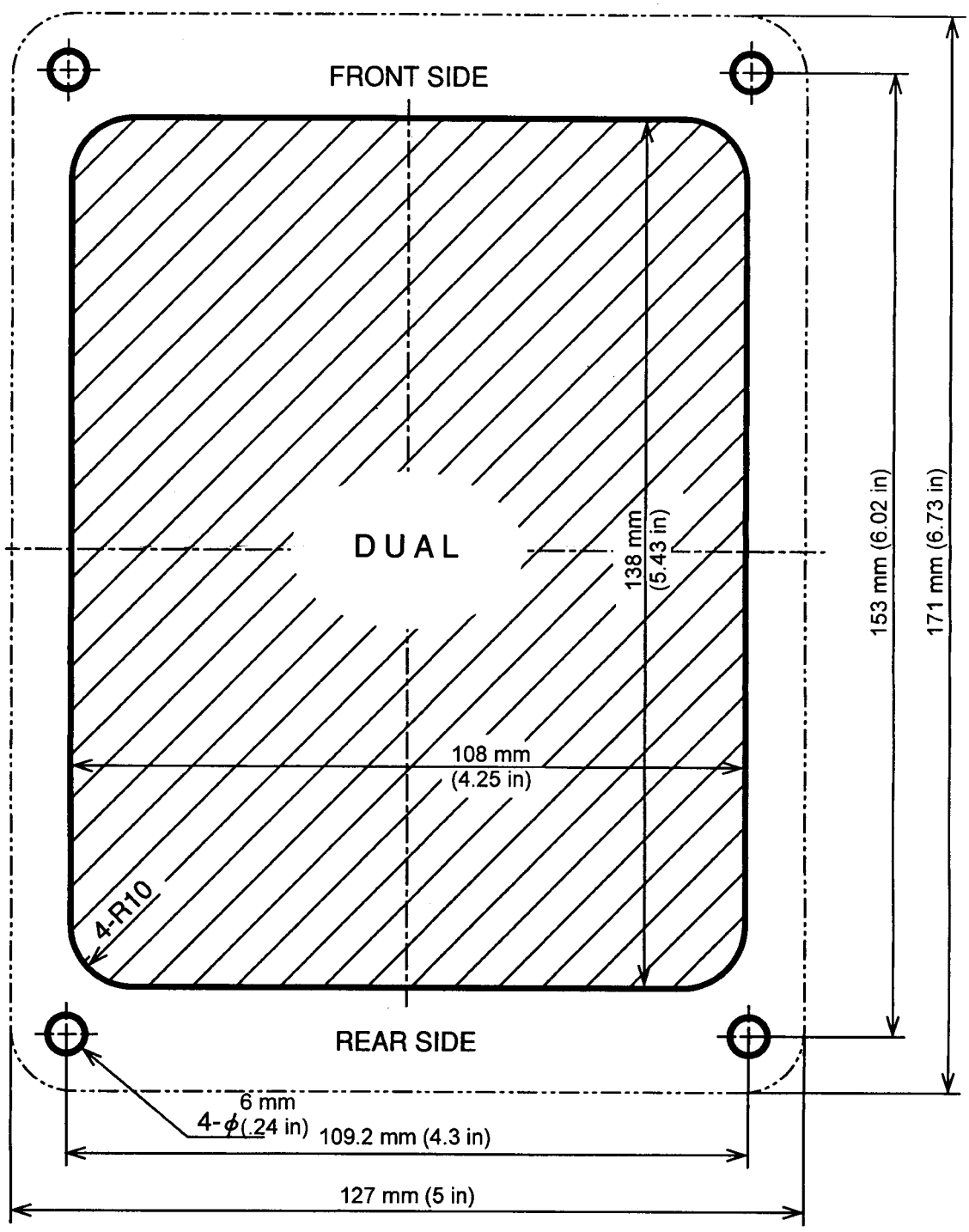
PREMIUM SINGLE TOP-MOUNT CONTROL TEMPLATE

Prior to using the template, use calipers or ruler to be sure template dimensions are correct. Dimensions can change due to photocopying or reprinting.



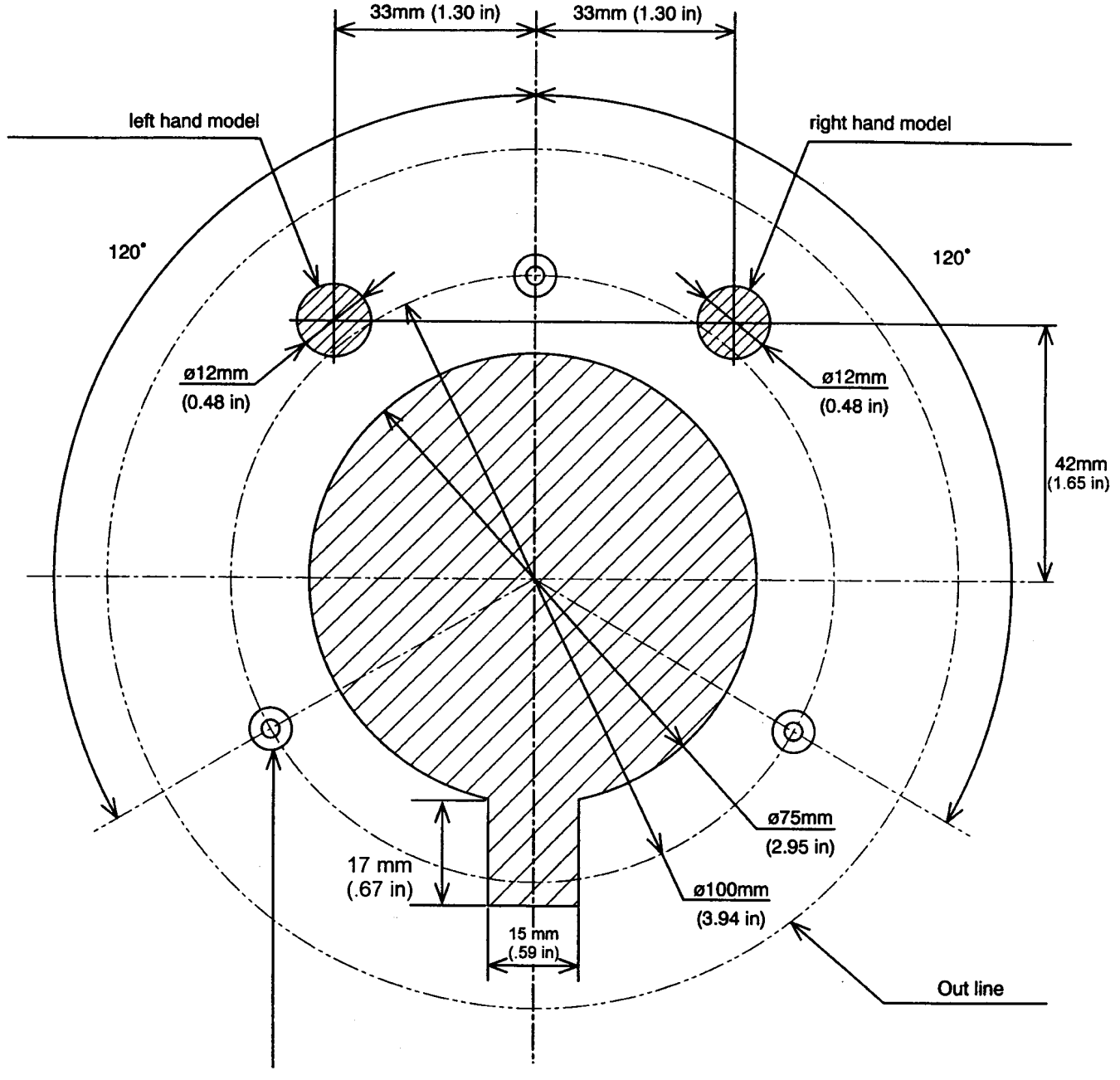
PREMIUM DUAL TOP-MOUNT CONTROL TEMPLATE

Prior to using the template, use calipers or ruler to be sure template dimensions are correct. Dimensions car change due to photocopying or reprinting.



PREMIUM FLUSH-MOUNT REMOTE CONTROL TEMPLATE

Prior to using the template, use calipers or ruler to be sure template dimensions are correct. Dimensions can change due to photocopying or reprinting.



Cut out the shaded area.

When using bolt/nut [for hull thickness of less than 20 mm (0.78 in)]:
7 mm diameter (0.28 in) through hole, 3 places.
When using wood screw [for hull thickness of 20–30 mm (0.78–1.18 in)]:
3 mm diameter (0.12 in) through hole, 3 places.

11. PROPELLER APPLICATION CHARTS

Propeller Test Reports are available on the iN by selecting Service\Publications\Propeller Tests.
OR
www.honda-marine.com (select Boat Applications)

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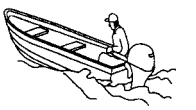
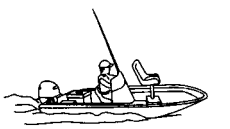
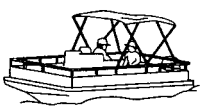
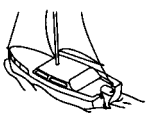
11. PROPELLER APPLICATION CHARTS

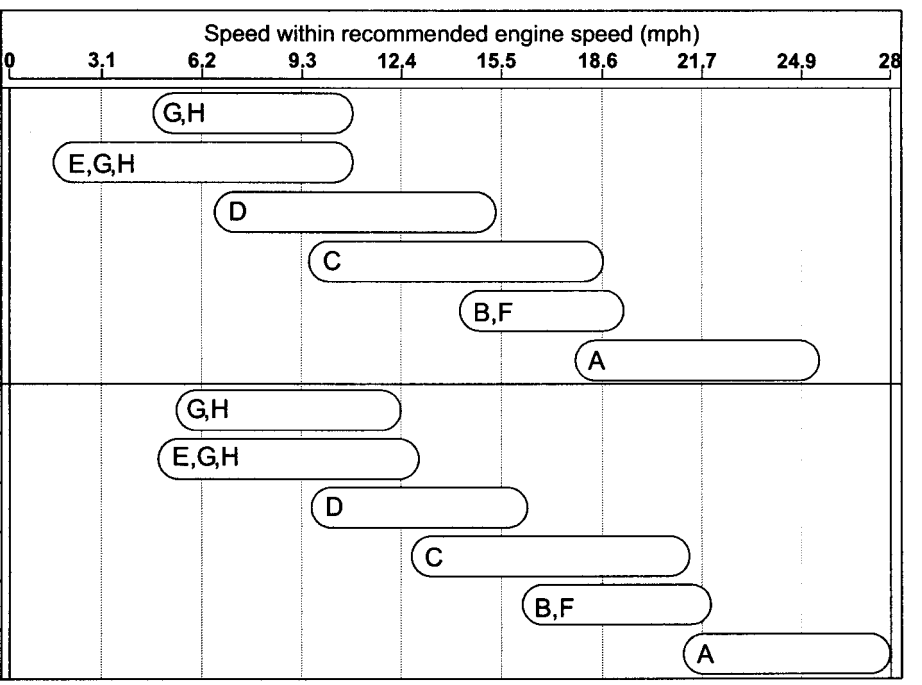
BF8D, BFP8D, BF9.9D, BFP9.9D

BOAT TYPE AND APPLICABLE SIZE (LENGTH AND WEIGHT)

Code	Boat type	Overall length (ft)	Weight (lb)	Hull shape (example)
A	Utility	10 ~ 15	150 ~ 600	
B				
C				
D	Inflatable	9 ~ 12	100 ~ 250	
E				
F	Fishing	12 ~ 14	250 ~ 600	
G	Pontoon	12 ~ 16	650 ~ 1,000	
H	Sail Boat	18 ~ 24	2,200 ~ 5,512	

PROPELLER SELECTION CHART

Model	Propeller size Dia. x pitch (in)	Approx. Speed
BFP8D	10 x 6-1/2 STD	4.5 ~ 10.8
BF8D	9-1/4 x 7 OP	1.5 ~ 10.8
	9-1/4 x 8 STD	6.5 ~ 15.2
	9-1/4 x 9 STD	9.5 ~ 18.6
	9-1/4 x 10 OP	14 ~ 19
	9-1/4 x 11 OP	17.5 ~ 25.5
BFP9.9D	10 x 6-1/2 STD	5.5 ~ 12.4
BF9.9D	9-1/4 x 7 OP	4.5 ~ 13
	9-1/4 x 8 STD	9.5 ~ 16
	9-1/4 x 9 STD	13 ~ 21
	9-1/4 x 10 OP	16 ~ 22
	9-1/4 x 11 OP	20 ~ 28



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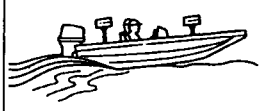
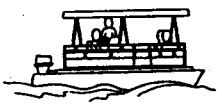
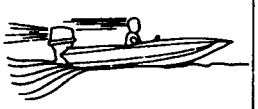
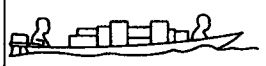
BF75A, BF90A

BOAT TYPE AND APPLICABLE SIZE (LENGTH AND WEIGHT)

Code	Boat type	Overall length (ft)	Weight (lb)	Hull shape (example)
A	Bass boat	15 ~ 18	1,433 ~ 1,764	
B	Center console	16 ~ 18	1,984 ~ 2,756	
C	Fishing boat	15 ~ 17	1,874 ~ 2,205	
D	Inflatable	17 ~ 19	1,213 ~ 1,653	
E	Pontoon boat	18 ~ 32	2,000 ~ 5,516	
F	Runabout	15 ~ 18	1,764 ~ 2,646	
G	Water ski	15 ~ 16	1,764 ~ 1,984	
H	Utility	16 ~ 21	1,764 ~ 2,646	
I	Working boat		4,409 ~	

11. PROPELLER APPLICATION CHARTS

ALUMINUM PROPELLER SELECTION CHART

Model	Propeller size Dia. x pitch (in)	Approx. Speed	Speed within recommended engine speed (mph) 0 10 20 30 40 50 60 70 80 90
BF75A	14 x 11	0 ~ 10 15 ~ 25	I E
	14 x 13	0 ~ 24 15 ~ 27	I E
	13-3/4 x 15	2.5 ~ 25	E
	13 x 19	24 ~ 40	A,B,C,D,F,G,H
BF90A	14 x 11	0 ~ 10 15 ~ 26	I E
	14 x 13	0 ~ 20 15 ~ 28	I E
	13-3/4 x 15	16 ~ 29	E
	13-3/4 x 17	15 ~ 44	B,C,D,F,G,H
	13 x 19	18 ~ 48	B,C,D,F,G,H

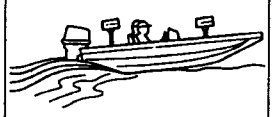
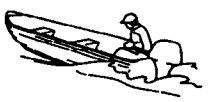
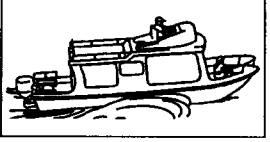
STAINLESS STEEL PROPELLER SELECTION CHART

Model	Propeller size Dia. x pitch (in)	Approx. Speed	Speed within recommended engine speed (mph) 0 10 20 30 40 50 60 70 80 90
BF75A	13-3/4 x 13 x 3	11.7 ~ 26	E
	13 x 18	24 ~ 44	B,C,D,F,H
	13-1/4 x 20	28 ~ 45	F,G,H
BF90A	13-3/4 x 13 x 3	11.7 ~ 28.0	A,G
	13 x 18	25 ~ 46	E
	13-1/4 x 20	30 ~ 50	B,D,F,H

Date of Issue: June 2003

BF115A, BF130A

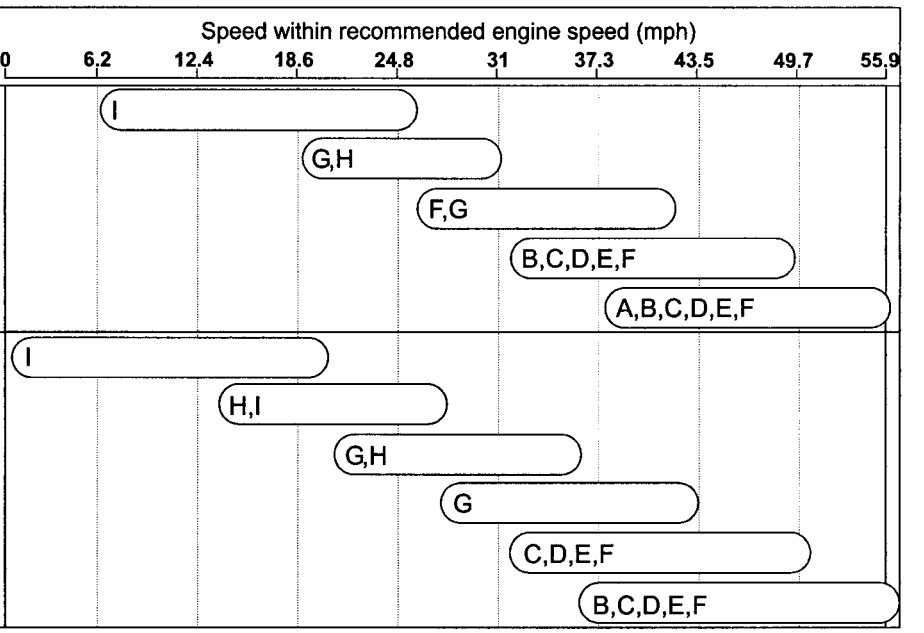
BOAT TYPE AND APPLICABLE SIZE (LENGTH AND WEIGHT)

Code	Boat type	Overall length (ft)	Weight (lb)	Hull shape (example)
A	Bass boat	16 ~ 17	1,818 ~ 2,114	
B	Water ski	16 ~ 17	1,873 ~ 2,314	
C	Utility	18	2,094 ~ 2,535	
D	Fishing boat	16 ~ 17	2,171 ~ 2,314	
E	Runabout	16 ~ 17	2,204 ~ 2,579	
F	Center console	17 ~ 18	2,480 ~ 3,306	
G	Pontoon boat	24 ~ 28	2,954 ~ 5,952	
H	Deck boat	19 ~ 26	2,590 ~ 6,613	
I	House boat	35 ~ 37	11,464 ~ 17,636	

11. PROPELLER APPLICATION CHARTS

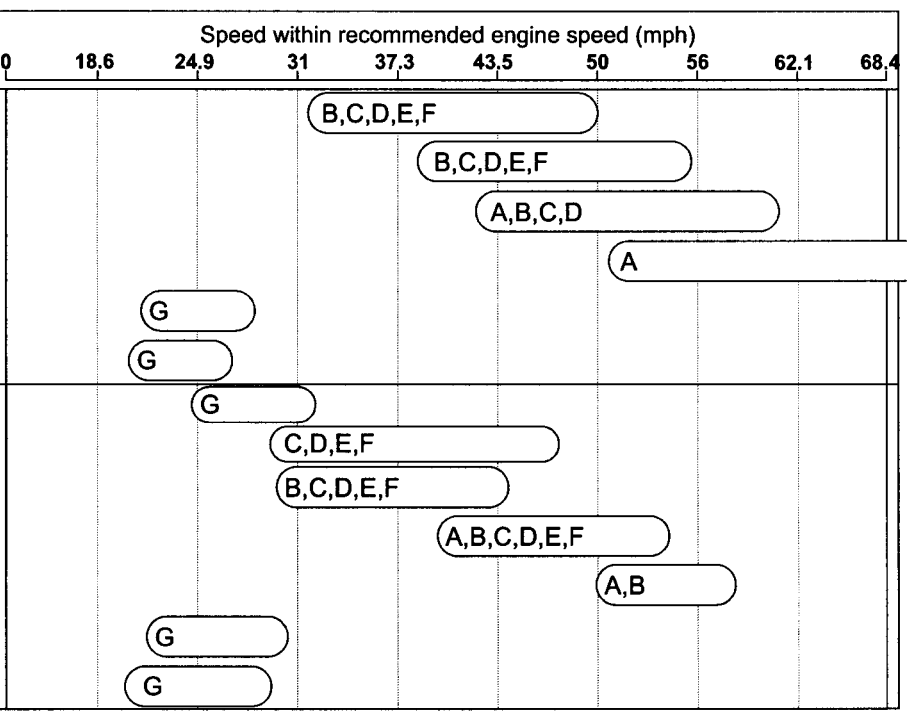
ALUMINUM PROPELLER SELECTION CHART

Model	Propeller size Dia. x pitch (in)	Approx. Speed
BF115A	14 x 11	6.6 ~ 26
	14 x 13	19.3 ~ 31.9
	13-3/4 x 15	26.3 ~ 41.5
	13-3/4 x 17	32.3 ~ 49
	13 x 19	38 ~ 56
BF130A	14 x 11	1 ~ 20.4
	14 x 13	14.3 ~ 28.7
	13-3/4 x 15	21.7 ~ 36.3
	13-1/4 x 17	27.4 ~ 43.5
	13 x 19	32.5 ~ 50.4
	12-3/4 x 21	36.6 ~ 56.2



STAINLESS STEEL PROPELLER SELECTION CHART

Model	Propeller size Dia. x pitch (in)	Approx. Speed
BF115A	13-1/4 x 15	32.3 ~ 50
	13-1/4 x 17	38.5 ~ 55.3
	13-1/4 x 19	42.9 ~ 60
	13-1/4 x 21	51.6 ~ 70.2
	13-3/4 x 13 x 3	21 ~ 28
	14 x 11 x 3	20 ~ 26
BF130A	13-1/4 x 15	24 ~ 32 29.8 ~ 47.8
	13-1/4 x 17	30 ~ 44
	13-1/4 x 19	40 ~ 50
	13-1/4 x 21	50 ~ 58
	13-3/4 x 13 x 3	22 ~ 30
	14 x 11 x 3	20 ~ 28



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