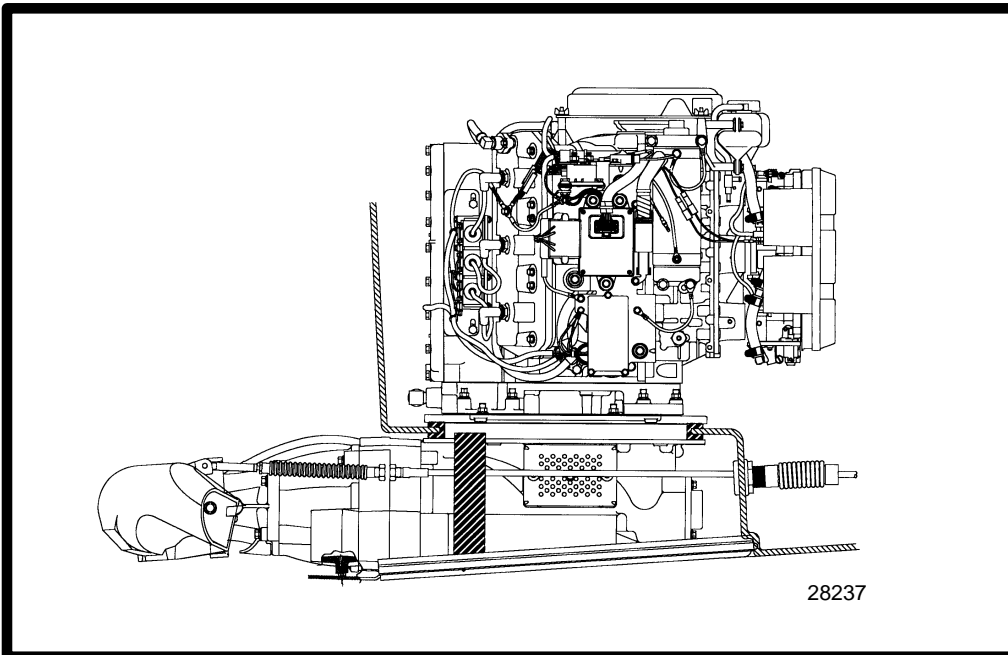




IMPORTANT INFORMATION

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SPORT JET INSTALLATION




Table Of Contents

	Page		Page
General Information	1D-1	Bilge Siphon Feature	1D-13
Notice to Installer	1D-1	Installing Bilge Siphon	1D-13
Installation Products	1D-1	Installing Powerhead	1D-13
Torque Specifications	1D-1	Battery Connection	1D-14
Serial Number Decal Location	1D-2	Throttle Cable Adjustment	1D-15
Corrosion Protection	1D-2	Oil Injection System	1D-15
Installation Requirements	1D-2	Bleeding Air from Oil Injection Pump and Oil Injection Outlet Hose	1D-16
Battery/Battery Cables	1D-2	Adjusting Oil Injection Pump	1D-16
Boat Construction	1D-3	Turn-Key Start Feature	1D-17
Engine Compartment Ventilation	1D-3	Timing/Synchronizing/ Adjusting	1D-17
Exhaust System	1D-3	Specifications	1D-17
Fuel Delivery System	1D-4	Adjustments	1D-17
Instrumentation	1D-4	Timing Pointer Adjustment	1D-17
Wiring Diagrams	1D-5	Carburetor Synchronization	1D-18
Impeller Selection	1D-6	Timing Adjustments	1D-18
Remote Control and Cables	1D-6	Maximum Timing Adjustment	1D-19
Steering Helm and Cable	1D-6	Primary Pickup Timing Adjustment ...	1D-19
Sport Jet Hull Dimensions		Idle Speed Adjustment	1D-20
175XR2	1D-7	Trim Plate Adjustment	1D-20
Installing Jet Pump	1D-9	Pre-delivery Inspection	1D-21
Steering Cable Adjustment	1D-10		
Shift Cable Adjustment	1D-11		



General Information

Notice to Installer

Throughout this publication, “Warnings” and “Cautions” (accompanied by the International Hazard Symbol ) are used to alert the installer to special instructions concerning a particular service or operation that may be hazardous if performed incorrectly or carelessly. — **Observe Them Carefully!**

These “Safety Alerts,” alone, cannot eliminate the hazards that they signal. Strict compliance to these special instructions when performing the service, plus “common sense” operation, are major accident prevention measures.

WARNING

Hazards or unsafe practices which COULD result in severe personal injury or death.

CAUTION

Hazards or unsafe practices which could result in minor personal injury or product or property damage.

IMPORTANT: Indicates information or instructions that are necessary for proper installation and/or operation.

This installation manual has been written and published by the service department of Mercury Marine to aid installers when installing the products described herein.

It is assumed that these personnel are familiar with the installation procedures of these products, or like or similar products manufactured and marketed by Mercury Marine. Also, that they have been trained in the recommended installation procedures of these products which includes the use of mechanics' common hand tools and the special Mercury Marine or recommended tools from other suppliers.

We could not possibly know of and advise the marine trade of all conceivable procedures by which an installation might be performed and of the possible hazards and/or results of each method. We have not undertaken any such wide evaluation. Therefore, anyone who uses an installation procedure and/or tool, which is not recommended by the manufacturer, first must completely satisfy himself that neither his nor the product's safety will be endangered by the installation procedure selected.

All information, illustrations, and specifications contained in this manual are based on the latest product information available at time of publication. As required, revisions to this manual will be sent to all OEM boat companies.

INSTALLATION PRODUCTS

Loctite “271”	92-809820
Liquid Neoprene	92-25711--2
Dielectric Grease	92-823506--1
Perfect Seal	92-34227--1
Special Lube 101	92-13872A1

Torque Specifications

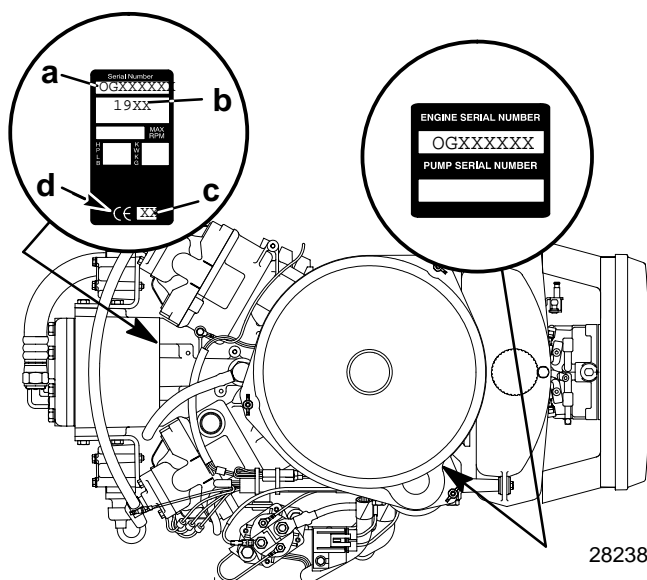
NOTE: Tighten all fasteners, not listed, securely.

10 mm Fasteners (Powerhead to Pump)	35 lb. ft. (47 N·m)
Reverse Stop Screw	120 lb. in. (14 N·m)
Forward Stop Screw	120 lb. in. (14 N·m)
Ride Plate-to-Pump Screws	75 lb. in. (8.5 N·m)
Drive Housing Cover to Drive Housing fasteners	35 lb. ft. (47 N·m)



Serial Number Decal Location

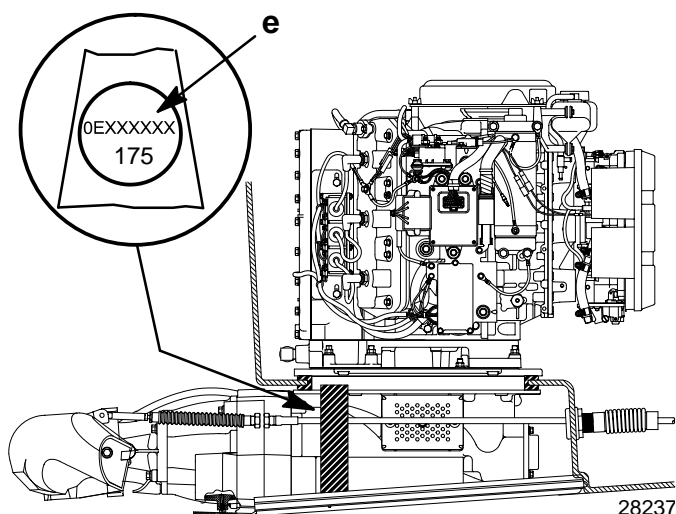
A serial number decal is located on the side of the flywheel cover and on top of the cylinder block.



- a - Engine Serial Number
- b - Model Year
- c - Year Manufactured
- d - Certified Europe

IMPORTANT: The Pump Unit Serial Number sticker must be taken out of the envelope affixed to the pump unit and applied to the flywheel cover decal.

The engine serial number and pump serial number are different and unique. The engine serial number is located aft of the flywheel cover. The pump unit serial number is stamped in a plug located above the shift cable hole on the starboard side of the pump housing.



- e - Pump Unit Serial Number

Corrosion Protection

This power package is equipped with anodes to help protect it from galvanic corrosion under moderate conditions. See the Operator's Manual for location of anodes.

Installation Requirements

IMPORTANT: The Sport Jet is considered an INBOARD engine. The boat it is installed in must meet industry standards (ABYC, NMMA, etc.), federal standards and Coast Guard regulations for INBOARD engine installations

Battery/Battery Cables

IMPORTANT: Boating industry standards (ABYC, NMMA, etc.), federal standards and Coast Guard regulations must be adhered to when installing battery. Be sure battery cable installation meets the pull test requirements and that positive battery terminal is properly insulated in accordance with regulations.

IMPORTANT: Engine electrical system is negative (–) ground. It is recommended (required in some states) that battery be installed in an enclosed case. Refer to regulations for your area.

3. Select a battery that meets all of the following specifications:
 - a. 12-volt marine type.
 - b. 670 Marine Cranking Amps (MCA) or 520 Cold Cranking Amps (CCA) minimum.
 - c. Reserve capacity rating of at least 100 minutes.
4. Select proper size positive (+) and negative (–) battery cables using chart. Battery should be located as close to engine as possible.

IMPORTANT: Terminals must be soldered to cable ends to ensure good electrical contact. Use electrical grade (resin flux) solder only. Do not use acid flux solder, as it may cause corrosion and a subsequent failure.

Cable Length	Cable Gauge
Up to 3-1/2 ft. (1.1 m)	4 (25 mm ²)
3-1/2 - 6 ft. (1.1-1.8 m)	2 (35 mm ²)
6 - 7-1/2 ft. (1.8-2.3 m)	1 (50 mm ²)
7-1/2 - 9-1/2 ft. (2.3-2.9 m)	0 (50 mm ²)
9-1/2 - 12 ft. (2.9-3.7 m)	00 (70 mm ²)
12 - 15 ft. (3.7- 4.6 m)	000 (95 mm ²)
15 - 19 ft. (4.6 - 5.8 m)	0000 (120 mm ²)



Boat Construction

IMPORTANT: All applicable U.S. Coast Guard regulations for INBOARD engines must be complied with, when constructing engine compartment.

Care must be exercised in the design and construction of the engine compartment. Seams must be located so that any rain water or splash, which may leak through the seams, is directed away from the engine and carburetor cover. Also, the passenger compartment drainage system should not be routed directly to the engine compartment. **Water that runs on or is splashed in the carburetor cover may enter the engine and cause serious damage to internal engine parts.**

IMPORTANT: Mercury Marine will not honor any warranty claim for engine damage as a result of water entry.

Engine Compartment Ventilation

Engine compartment must be designed to provide a sufficient volume of air for engine breathing and also must vent off any fumes in engine compartment in accordance with industry standards (ABYC, NMMA, etc.), federal standards and U.S. Coast Guard regulations for inboard engines. Pressure differential (outside engine compartment versus inside engine compartment) should not exceed 2 in. (51 mm) of water (measured with a manometer) at maximum air flow rate.

Engine Compartment Specifications		
Model	Engine Air Requirements at Wide Open Throttle	Physical Engine Volume*
175XR ²	487 ft. ³ /min. (0.230 m ³ /sec.)	1.33 ft. ³ (38 L)

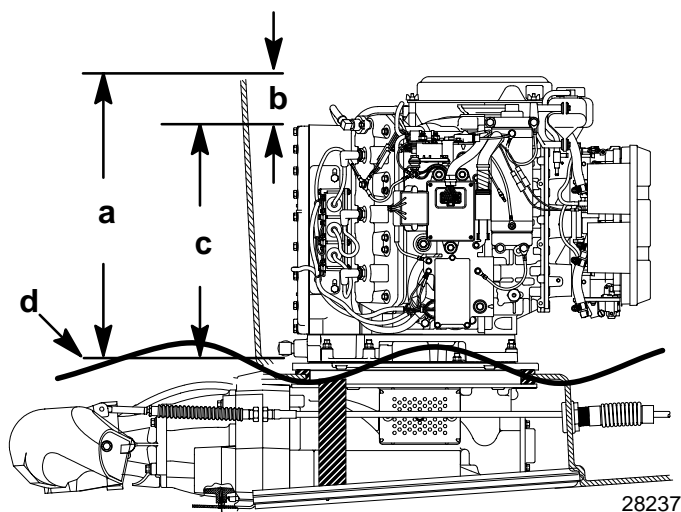
* Physical engine volume is used in flotation calculations and is representative of the amount of flotation the engine provides.

For serviceability, it is recommended that an additional 6 inches minimum (152 mm) (per side) of clearance be allowed between powerhead and engine compartment walls.

Exhaust System

IMPORTANT: It is the responsibility of the boat manufacturer, or installing dealer, to properly locate the engine. Improper installation may allow water to enter the exhaust manifold and combustion chambers and severely damage the engine. Damage caused by water in the engine will not be covered by Mercury Marine Limited Warranty, unless this damage is the result of defective part(s).

The engine must be properly located to ensure that water will not enter the engine through the exhaust system. Determine the correct engine height by taking measurements (a) and (b), with boat at rest in the water and maximum load aboard. Subtract (b) from (a) to find (c). If (c) is less than specified in chart, boat construction must be altered to properly lower waterline relative to exhaust elbow.



- a - From Waterline to Top of Transom
- b - From Highest Point on Exhaust Manifold to Top of Transom
- c - (a) minus (b) = (c)
- d - Waterline at Rest (at Maximum Load)

Model	c = (a) minus (b)
175XR ²	(c) must be 8 in. (203 mm) or more.



Fuel Delivery System

⚠ WARNING

Boating standards (NMMA, ABYC, etc.), federal standards and U. S. Coast Guard regulations for INBOARD engines must be adhered to when installing fuel delivery system. Failure to comply could result in severe personal injury or death.

⚠ CAUTION

Remove plastic plug from fuel inlet fitting. Attach fuel line to fuel fitting with U.S. Coast Guard approved hose clamp. Inspect for fuel leaks.

1. Fuel tank should be mounted below carburetor(s) level (if possible) or gravity feed may cause carburetor fuel inlet needle(s) to unseat, and flooding may result.
2. Fuel pickup should be at least 1 in. (25 mm) from the bottom of the fuel tank to prevent picking up impurities.
3. Fuel lines used must be U.S. Coast Guard approved (USCG type A1), fittings and lines must not be smaller than 5/16 in. (8 mm) I.D.
4. On installations requiring long lines or numerous fittings, larger size lines should be used.
5. Fuel line should be installed free of stress and firmly secured to prevent vibration and/or chafing.
6. Sharp bends in fuel line should be avoided.
7. A flexible fuel line must be used to connect fuel line to engine fuel pump to absorb deflection when engine is running.
8. A primer bulb is not necessary with this application. If a primer bulb is used, it must be U.S. Coast Guard approved for inboard engine applications.

Instrumentation

⚠ CAUTION

If a fused accessory panel is to be used, it is recommended that a separate circuit (properly fused) be used from the battery to the fuse panel with sufficient wire size to handle the intended current load.

NOTE: *The charging system on these engines is capable of producing 12 amps maximum charge at 3500 RPM. The electrical load of the boat should not exceed this capacity.*

We recommend the use of Quicksilver Instrumentation and Wiring Harness(es). Refer to "Quicksilver Accessories Guide" for selection.

If other than Quicksilver electrical accessories are to be used, it is good practice to use waterproof ignition components (ignition switch, lanyard stop switch, etc.). A typical jet boat of this nature will see water splashed on these components. Therefore, precautions must be taken to avoid ignition failure due to shorting out of ignition components.

⚠ WARNING

Sudden stopping of engine (shorting ignition components) while boat is underway will cause loss of steering control due to loss of thrust. This loss of steering control may cause property damage, personal injury or death.

A warning horn must be incorporated in the wiring harness (see wiring diagram) to alert the user of an overheat, low oil condition or oil pump failure.

IMPORTANT: **If a warning horn system is not installed by the boat manufacturer, Mercury Marine will not honor any warranty claims for engine damage as a result of overheating or lack of engine oil.**

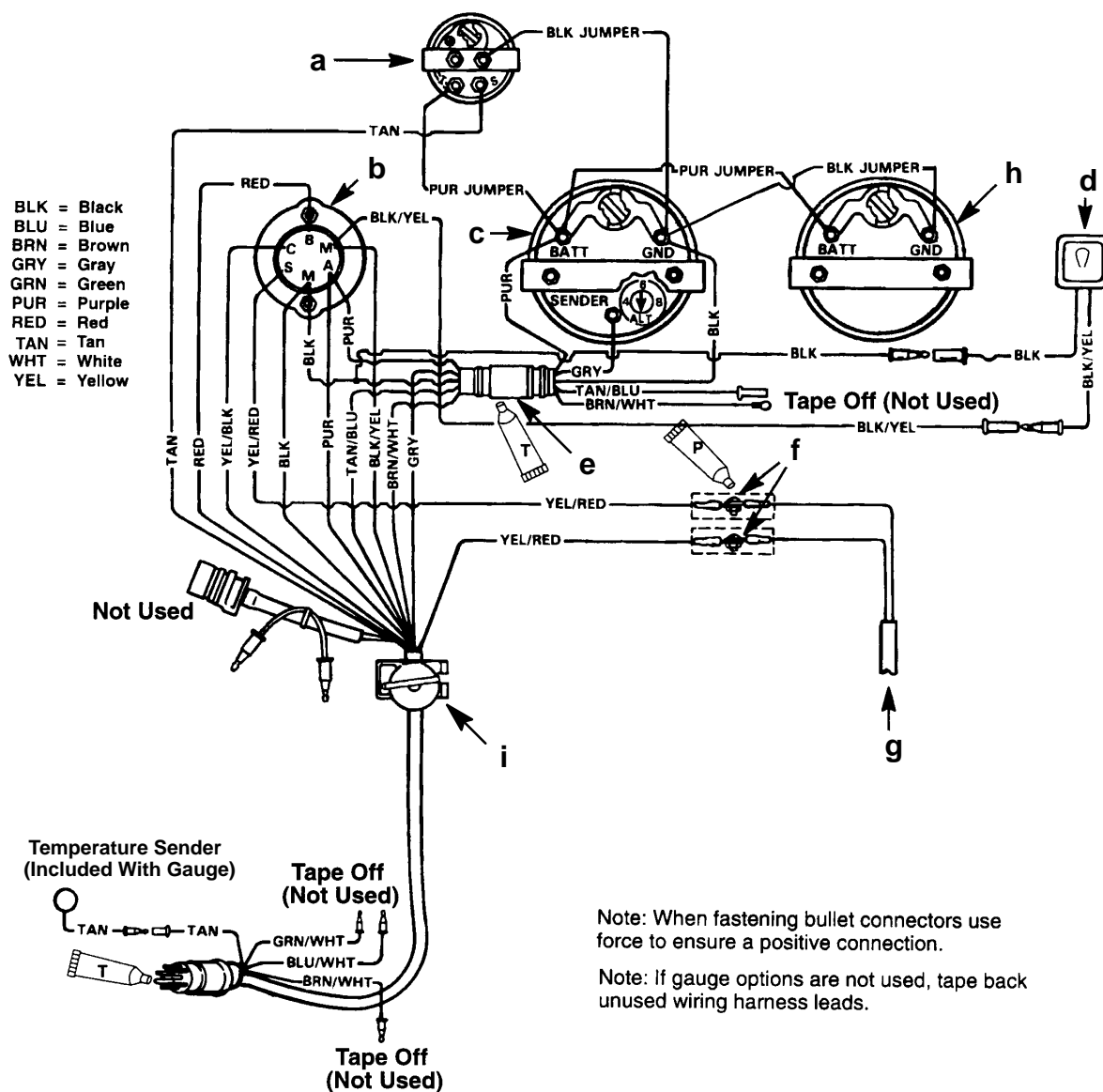
Route instrumentation wiring harness back to engine, making sure that harness does not rub or get pinched. If an extension harness is required, be sure to secure connection properly. Fasten harness(es) to boat at least every 18 in. (460 mm), using appropriate fasteners.



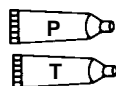
Wiring Diagrams

QUICKSILVER INSTRUMENTATION, TYPICAL INSTALLATION SHOWN

REFER TO GAUGE MANUFACTURER'S INSTRUCTIONS FOR SPECIFIC CONNECTIONS.



- a - Temperature Gauge
- b - Key Switch
- c - Tachometer Gauge
- d - Emergency Stop Switch
- e - Tachometer Harness (P/N 84-86396A8) (Not Included With Key/Choke Harness Kit)
- f - Connect Wires Together With Screw and Hex Nut (2 Places) Apply Quicksilver Liquid Neoprene to Connections and Slide Rubber Sleeve Over Each Connection.
- g - To Neutral Start Safety Switch In Remote Control Box
- h - Speedometer Gauge
- i - Overheat/low oil horn



Liquid Neoprene (92-25711--2)

Dielectric Grease (92-823506--1)



Impeller Selection

IMPORTANT: Installed impeller must allow engine to run in its specified maximum wide-open-throttle RPM range.

The jet drive comes equipped with a standard stainless steel impeller which allows the engine to operate in its specified operating range.

If a different impeller is installed in place of the standard impeller, it is the responsibility of the installer to ensure engine RPM remains in specified range. Specified engine WOT RPM range is listed in "Operation and Maintenance Manual" attached to the engine.

Remote Control and Cables

To ensure proper shift and throttle operation, we recommend the use of the Sport Jet Remote Control (P/N 850696). This remote control has been qualified by Mercury Marine to be used with the Sport Jet and provides the following required features:

Start-in-gear protection

Neutral RPM Limit at 2,000 RPM

NOTE: This applies to dual lever remote controls as well as single lever remote controls.

High strength mechanism to accommodate loads transmitted to the remote control

Shift cable travel of 3 inches \pm 1/8 inch (76 mm \pm 3 mm)

Ability to use a 40 series shift cable

If a remote control other than the Sport Jet Remote Control (P/N 850696) is used, the remote control must meet the above criteria as well as the design criteria outlined in the ABYC manual pertaining to Mini-Jet Boats (Standard P-23).

SHIFT CABLE

The shift cable to be used MUST MEET the following criteria:

40-Series Cable

40 Series bulkhead fitting at output end

Allow for a minimum of 3 inches (76 mm) of travel.

A means of attaching and locking the cable to the shift cable bracket (provided w/ pump).

Cable end at pump must allow for a 1/4-28 thread adaptor, clevis pin and cotter pin (all provided w/ pump) to connect cable to the reverse gate.

Protected against water intrusion and/or corrosion as the cable end (at the pump) is submerged in water with the boat at rest.

A cable bellows is provided with the cable (P/N 64-835457A_). Follow installation procedures for proper sealing of cable.

A locking tab is provided by Mercury to be used with a cable having threads and locknuts located 8 inches (203 mm) from cable end at pump with cable at center of travel.

The shift cable end (at the pump) is submerged in water. It should be sealed against water intrusion, protected against corrosion and be able to withstand the shift loads imparted on it by the reverse gate.

Follow shift cable adjustment procedure for proper adjustment.

THROTTLE CABLE

The throttle cable must have one end compatible with the control box. The other end must have Mercury style connectors.

Follow throttle cable adjustment procedures for proper adjustment.

Steering Helm and Cable

STEERING HELM

The steering helm must limit steering cable travel to 3.50 \pm .10 inches (88.9 \pm 2.5 mm).

WARNING

Failure to limit steering cable travel at the helm could pre-load the cable resulting in premature failure of a steering component causing loss of steering. This loss of steering could cause property damage, personal injury or death.

STEERING CABLE

The steering cable to be used MUST MEET the following criteria:

60 Series Steering Cable

60 Series bulkhead fitting at output end

Allow for a minimum of 3.75 inches (95.3 mm) of travel.

Cable end at pump must allow for a 5/16 in. threaded adaptor shouldered thru-bolt and lock nut to connect the cable to the steering arm.



A means of attaching and locking the cable to the steering cable bracket (provided w/ pump).

Protected against water intrusion and/or corrosion as the cable end (at the pump) is submerged in water with the boat at rest.

The steering cable should be able to withstand the steering loads imparted on it by the rudder.

A cable bellows is provided with the cable (P/N 64-835457A_). Follow installation procedures for proper sealing of cable.

A locking tab is provided by Mercury to be used with a cable having threads and locknuts located 11.31 inches (287 mm) from cable end at pump with cable at center of travel.

Follow steering cable adjustment procedure for proper adjustment.

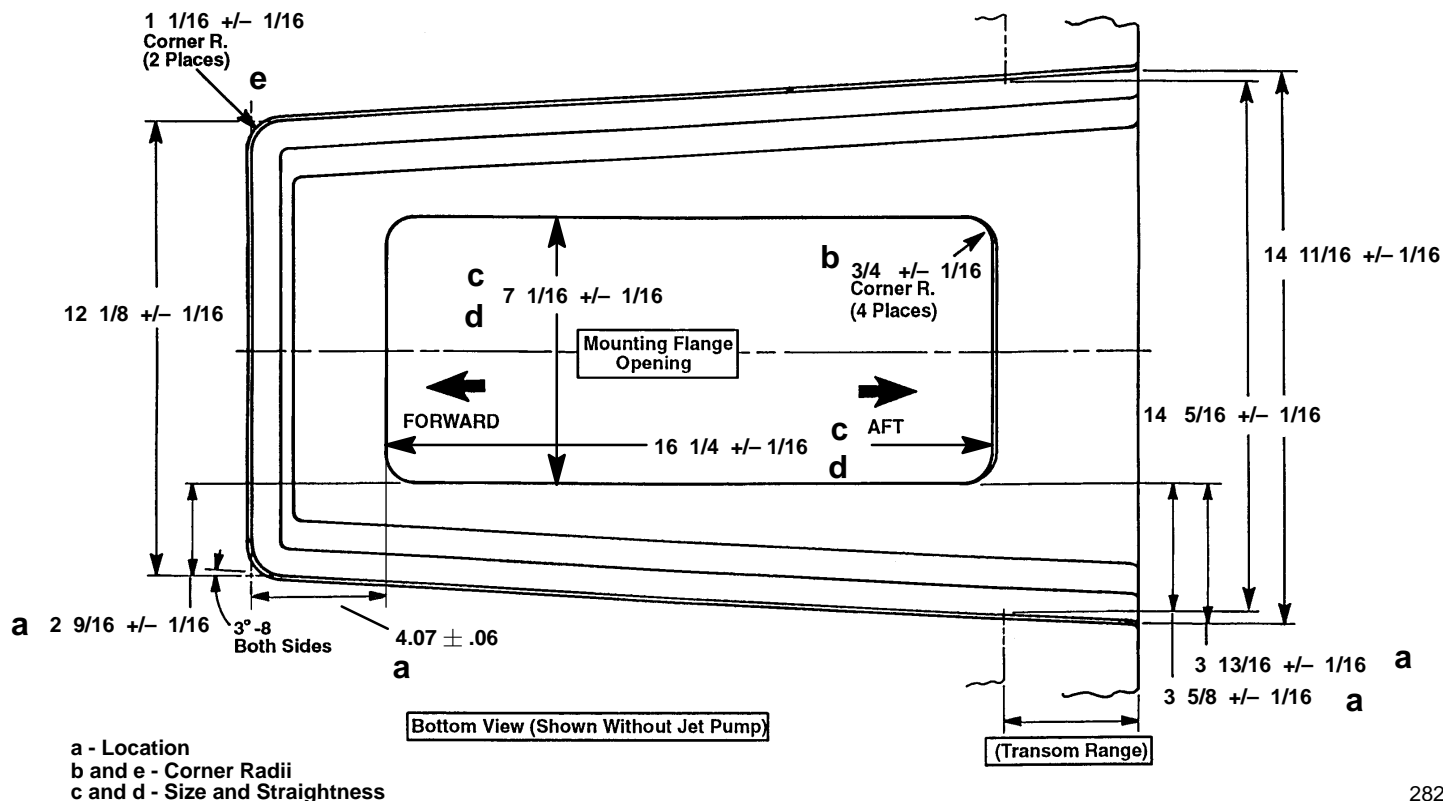
Sport Jet Hull Dimensions 175XR²

HULL OPENING CUT OUT

The pump to powerhead opening in the hull is the most important factor to consider in a Sport Jet installation. There are three areas of concern:

1. Location (a) of the pump to powerhead hull cut out relative to the boat bottom for proper ride plate seal fit.
2. Dimensional control of the cutout - corner radii (b), straightness (c) and size (d) for proper grommet installation, and corner radii (e) for ride plate seal fit.
3. Flatness and thickness of the area around the hull cut out for proper grommet sealing (see drawing on next page).

Tunnel Dimensions (in inches)



28249



METHODS OF CONTROLLING LOCATION AND SIZE

If the tunnel area in the plug is correct, the boat bottom mold should repeat and reproduce the tunnel area which will aid the cut out process.

A reference area for the cut out can be produced on the plug and bottom mold as a raised area or a cutting guide.

Location pins (a) that would project into the internal hull area could simplify the cut out process.

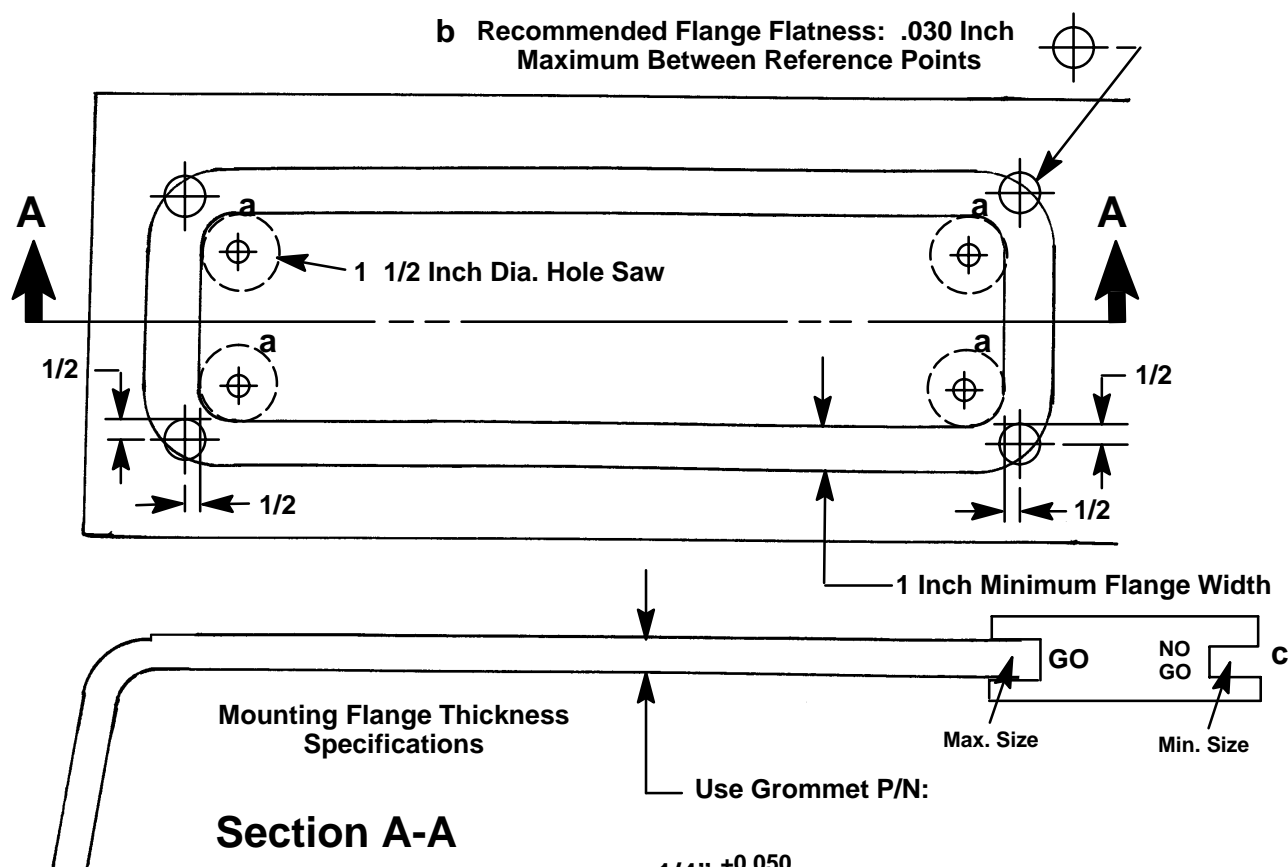
These location pin holes could allow the use of a 1-1/2 inch diameter hole saw to cut the four corner radii and use of a reciprocating saw or router template to connect the four holes.

CHECKING MOUNTING FLANGE THICKNESS AND FLATNESS

Use a flat plate that will contact the flange at the reference points (b) and a .030 in. feeler gauge to check flatness.

Additional sanding and/ or resin/ filler may be required to maintain the flatness specification.

A simple slotted go/ no go gauge (c) will check the flange thickness.



a - Location Pins in Hull Mold
b - Flange Flatness Specification
c - Go - No Go Gauge for Thickness

1/4"	+0.050 -0.030	25-820663-250
3/8"	+0.050 -0.030	25-820663-375
1/2"	+0.070 -0.030	25-820663-500

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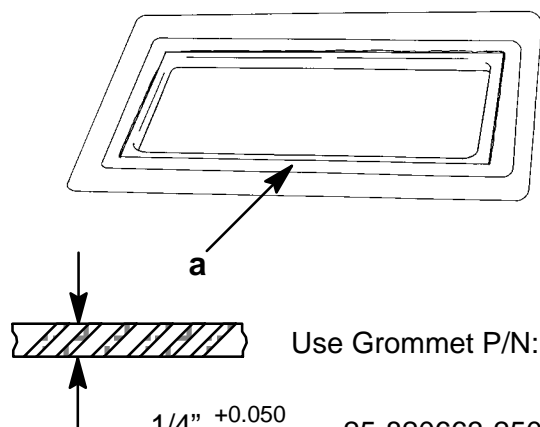
Installing Jet Pump

Hull Cutout

CAUTION

The hull cutout dimensions are critical for proper sealing between Jet Pump and boat. Measure cutout thickness and overall dimensions before attempting a Jet Pump installation.

1. Install tunnel grommet (a) in cut-out of boat. Three different size grommets are available depending on cutout thickness.



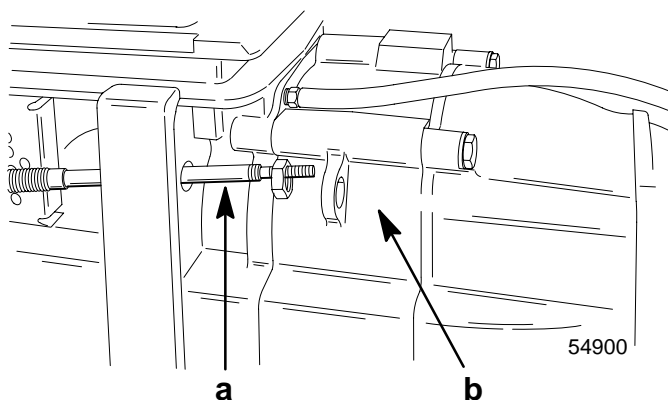
Use Grommet P/N:

1/4"	+0.050 -0.030	25-820663-250
3/8"	+0.050 -0.030	25-820663-375
1/2"	+0.070 -0.030	25-820663-500

CUTOUT THICKNESS

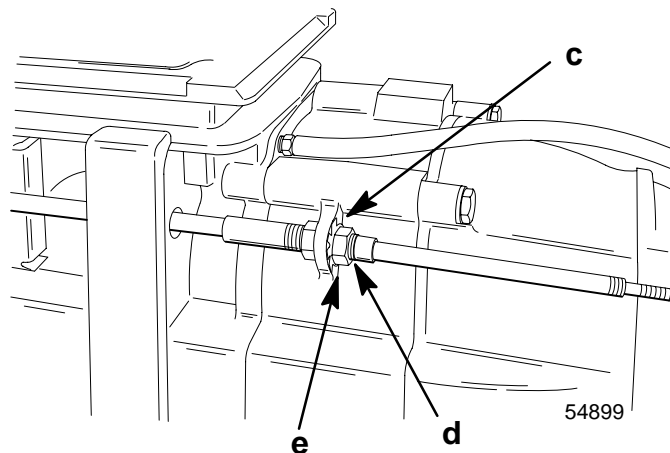
a - Tunnel Grommet

2. Route steering cable through port side hole in flange of pump housing. Install nut on cable before routing cable through wear ring.



a - Shift Cable
b - Wear Ring

3. Install tab washer and nut on cable after guiding through wear ring. Locate tab washer in tab hole. Coarse cable adjustment is made using these nuts. Do not tighten until after final steering adjustment is made.



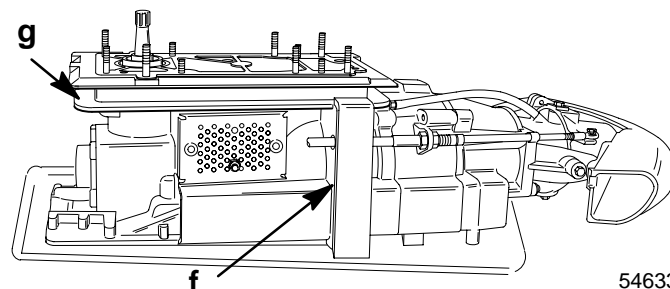
c - Tab Hole
d - Nut
e - Tab Washer

4. Repeat the same procedure for the shift cable on the starboard side of the pump housing.

IMPORTANT: Ensure that the shift lever in the control box is set for three (3) inches of travel.

NOTE: It is easier to adjust the shift and steering cables before installing pump unit in boat.

5. Spray soapy water on tunnel grommet, both side foam exhaust seals (f), ride plate and sides of boat tunnel.



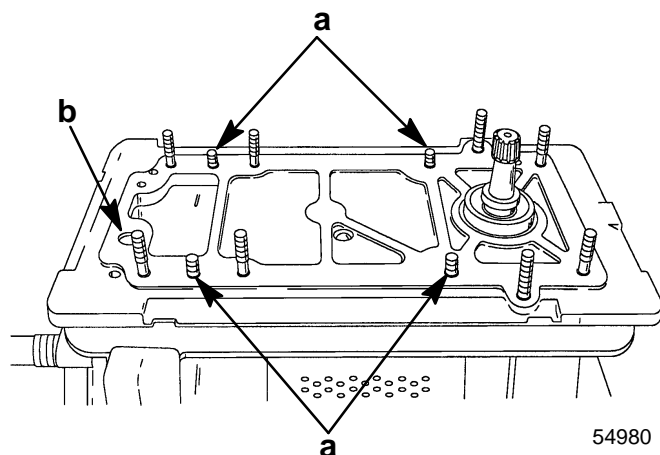
f - Side Foam Exhaust Seals (One Each Side)
g - Grommet Flange

NOTE: When installing pump in tunnel, be sure cables are below grommet flange on pump to prevent pinching of cables between pump and boat.

6. Install jet pump by pushing unit through opening in tunnel grommet. Ride plate seal should fit snugly in boat tunnel without any gaps along perimeter.
7. Install gasket and cover on jet pump. Ensure gasket lines up with water inlet hole in pump.



8. Secure with four (4) M10 x 1.5 nuts.



a - Housing Cover Nut Location
b - Water Inlet Hole

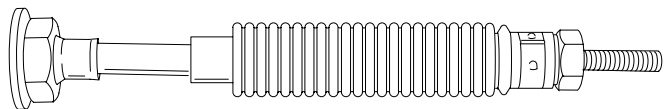
NOTE: Before torquing fasteners, check side exhaust seals and ride plate seal for proper fit in tunnel.

9. Torque housing cover nuts (a) to 35 lb. ft. (47 N·m).

NOTE: Check cables for free movement after cover plate is installed. DO NOT install powerhead without making this check. If cables do not move freely, remove pump and correct before proceeding.

Steering Cable Adjustment

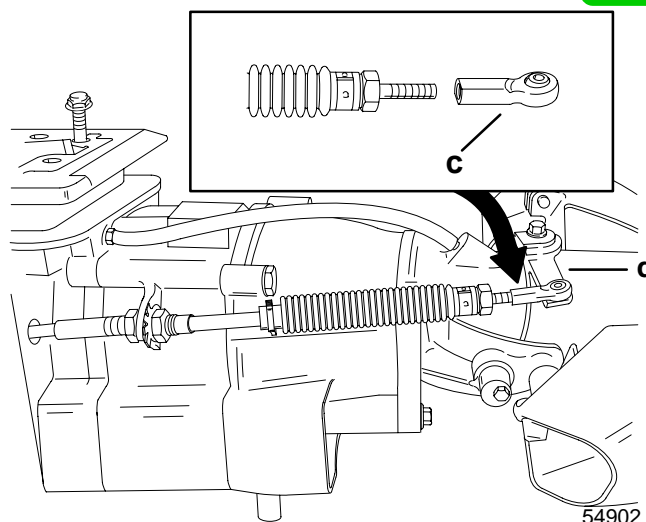
1. Slide bellows assembly over cable and thread on cable completely. Do Not tighten.



2. Thread cable end adaptor (c) on steering cable 14 turns (to allow for adjustment).

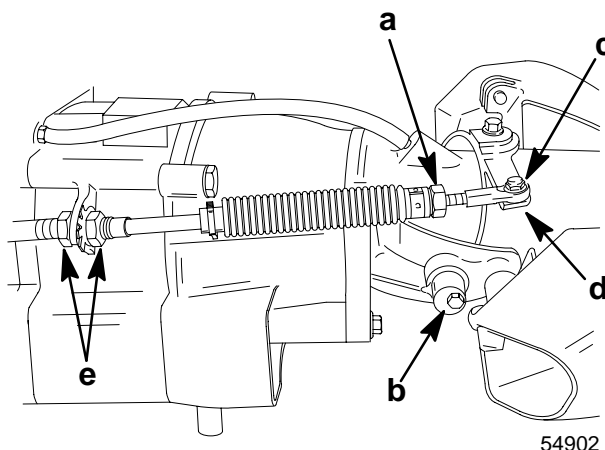
⚠ WARNING

Cable end adaptor must be installed a minimum of nine (9) turns. Failure to install cable end adaptor on steering cable a minimum of nine (9) turns could result in loss of steering control of boat, personal injury, or death.



c - Cable End Adaptor
d - Steering Arm

3. Center rudder assembly on nozzle.
4. Center steering wheel by turning wheel lock to lock and positioning wheel midway between locks.
5. Adjust cable end adaptor until thru-hole in adaptor lines up with threaded hole in steering arm (d). This is the steering cable fine adjustment. Cable end adaptor **MUST** be installed on steering cable a minimum of nine (9) turns.
6. Attach steering cable to steering arm with bolt and locknut. Torque nut to 180 lb. in. (20.3 N·m).

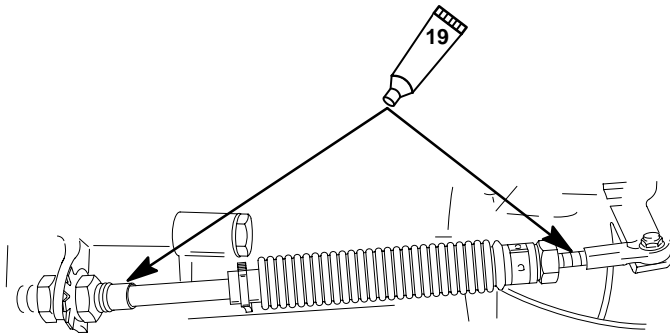


a - Bellows Nut
b - Forward Stop
c - Bolt
d - Lock Nut
e - Cable Nuts

7. Tighten cable nuts.
8. Check steering adjustment to ensure that the helm limits cable travel for maximum left and right turns. Correct if required.
9. Secure cable nut with tab washer.

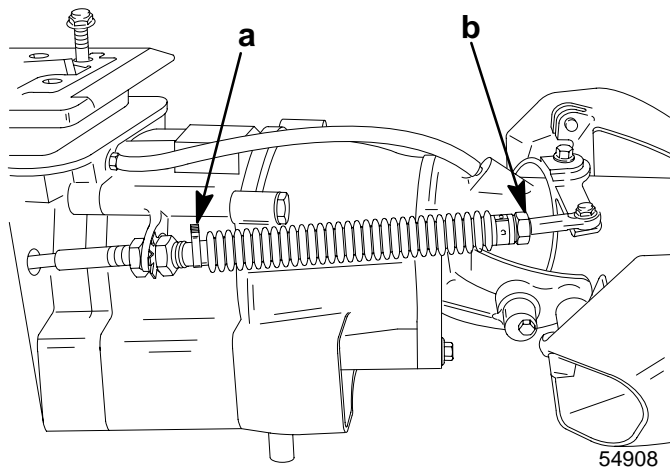


10. Apply perfect seal (92-34227-1) to end threads and cable conduit end.



19 Perfect Seal (92-34227-1)

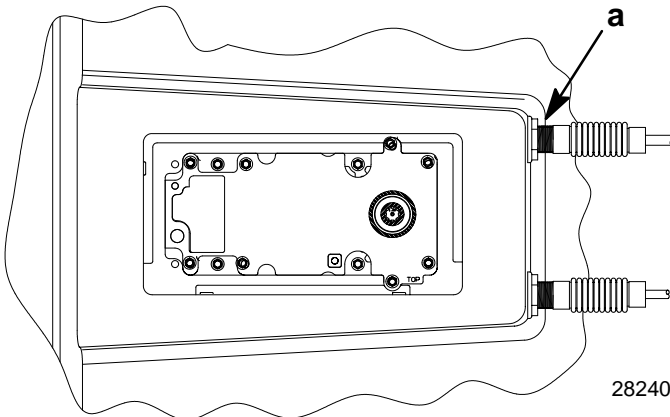
11. Turn bellows nut out and tighten against cable end adaptor.



a - Bellows Clamp
b - Bellows Nut Tight Against Cable End Adaptor

12. Turn rudder to port to compress bellows as much as possible. Pull bellows over cable conduit and secure with bellows clamp.

13. Tighten steering cable thru-hull fitting (a) from inside boat to prevent any leaks.

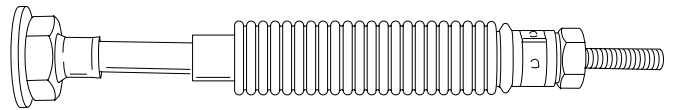


a - Steering Cable Thru-Hull Fitting

Shift Cable Adjustment

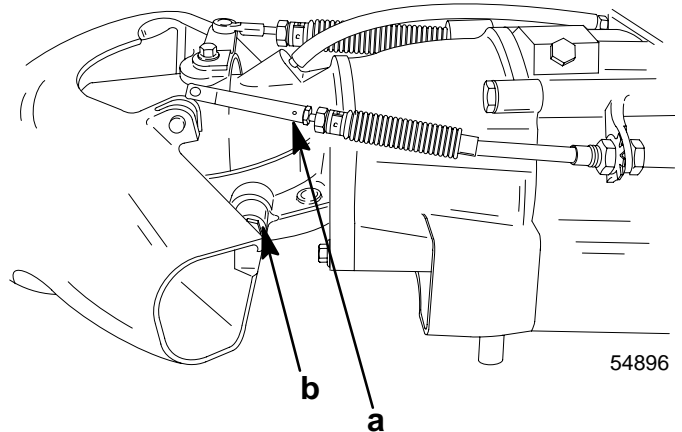
IMPORTANT: The shift cable **MUST BE** properly adjusted. The shift cable is adjusted so that the reverse gate is not pre-loaded against either the forward or reverse stop. Pre-load in either position may cause failure of the stop and/or premature wear of the shift cable or control box components. It may also cause stiffness of the throttle control.

1. Slide bellows assembly over cable and thread on cable completely. Do Not tighten.



54456

2. Thread adaptor on cable until threads are visible through sight hole in adaptor. Thread adaptor on an additional five (5) turns to allow for adjustment.



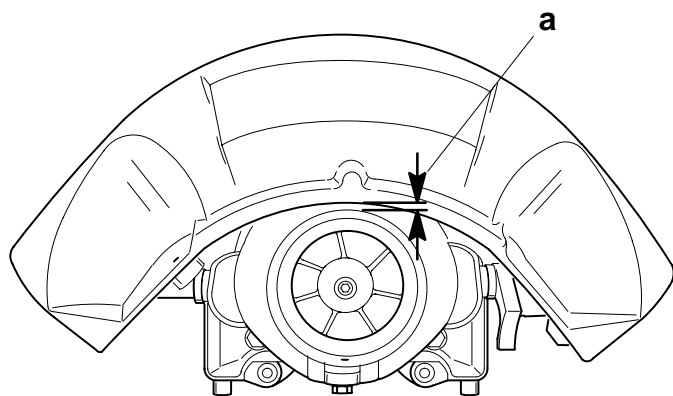
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a - Sight Hole
b - Reverse Stop

3. Shift remote control to forward.
4. Lift reverse gate and temporarily install the clevis pin (without washer or cotter pin) through reverse gate boss and cable end adaptor.



5. Pull reverse gate (by hand) toward the neutral position to take up the cable slack. With cable slack pulled out, adjust the cable so that the lower edge of the reverse gate is positioned above the top edge of the rudder by 3/8 to 1/2 in. Use the cable nuts or the cable end adaptor to make this adjustment. The cable end adaptor **MUST** be installed so that the cable end is visible in the sight hole after final adjustments are made. It may be necessary to adjust the forward stop to allow the reverse gate to reach the correct position for forward.



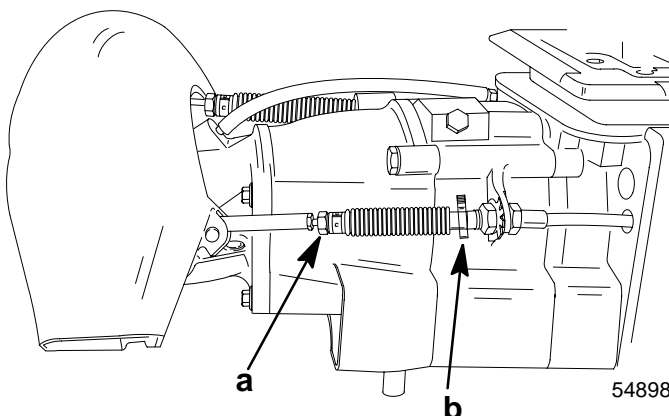
a - 3/8 to 1/2 in.

⚠ WARNING

The shift cable must be adjusted correctly so that the reverse gate does not interfere with water flow coming out of the rudder. If the reverse gate hangs down into the water flow, a vibration may be felt in the control box. If this occurs, reduce throttle immediately and readjust the cable. Improper adjustment may result in pump damage including loss of the reverse gate. Failure to properly adjust the shift cable could result in loss of neutral and reverse, property damage, personal injury or death.

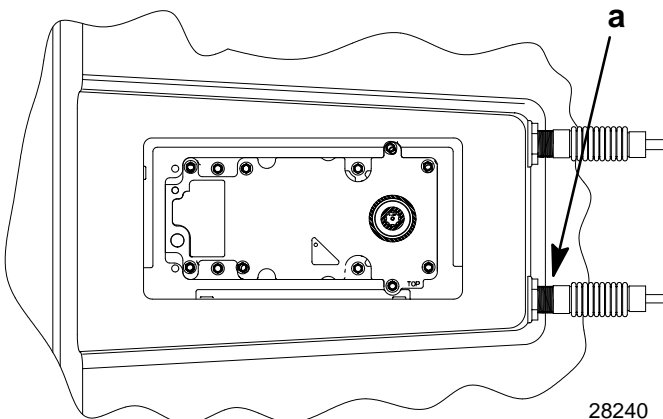
6. After adjusting the shift cable, tighten the cable nuts and secure them with the tab washer. Insure forward nut is correctly located in wear ring casting to prevent rotation.
7. Adjust the forward stop so that it just touches the reverse gate in the forward position with the slack pulled out of the cable. Torque forward stop screw to 120 lb. in. (14 N·m).
8. Check the cable adaptor sight hole to ensure that adequate thread engagement of the cable end has been maintained. Install clevis pin, washer, and cotter pin.

9. Adjust the reverse stop (located on the starboard side of the nozzle) so the stop just touches the reverse gate with the control handle in reverse position. Torque reverse stop screw to 120 lb. in. (14 N·m).
10. Apply Prefect Seal (92-34227-1) to the exposed cable end threads between the cable adaptor and the bellows nut. Tighten the bellows nut against the cable adaptor.



a - Bellows Nut
b - Bellows Clamp

11. Shift the control box to forward. Apply Perfect Seal (92-34227-1) to the cable conduit just behind the cable nut threads. Slide the forward end of the bellows over the cable conduit up to the threads. Secure bellows to the cable conduit with the bellows clamp provided.
12. Shift control box through entire range several times. Check for any cable binding or bellows rubbing. Check stops for proper adjustment. Re-check forward cable adjustment so that reverse gate is clear of water flow with cable slack pulled out. Re-adjust as necessary.
13. Tighten shift cable thru-hull fitting from inside boat to prevent any leaks.



a - Shift Cable Thru Hull Fitting

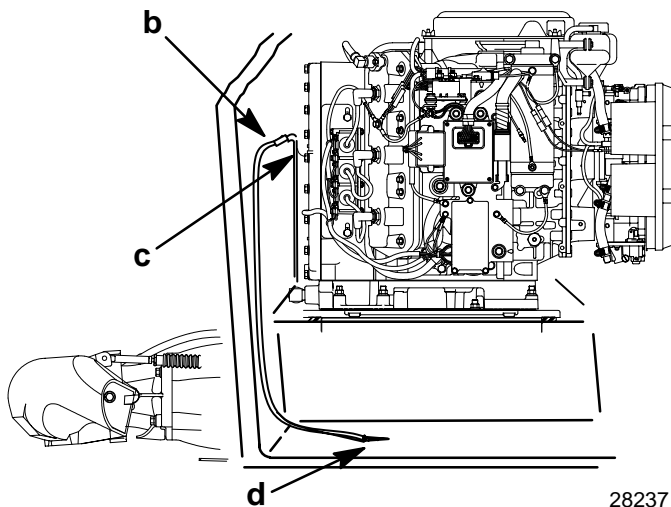


Bilge Siphon Feature

The Sport Jet incorporates an automatic bilge siphoning feature. The bilge siphon is working whenever the engine is running above idle speeds. Maximum performance of the bilge siphon is realized above 3,000 rpm. A hose is attached to the jet pump nozzle. The hose is routed to the engine compartment and placed in the bilge. Water exiting the nozzle creates a suction or vacuum in the hose creating the bilge siphon, drawing water out of the boat.

Installing Bilge Siphon

Uncoil siphon hose from clamp on exhaust manifold. Hose should remain attached to clamp on manifold. Loop siphon hose over clamp on exhaust manifold. Place siphon hose in bilge.



- b - Siphon Break
- c - Manifold Clamp
- d - Pick Up Screen

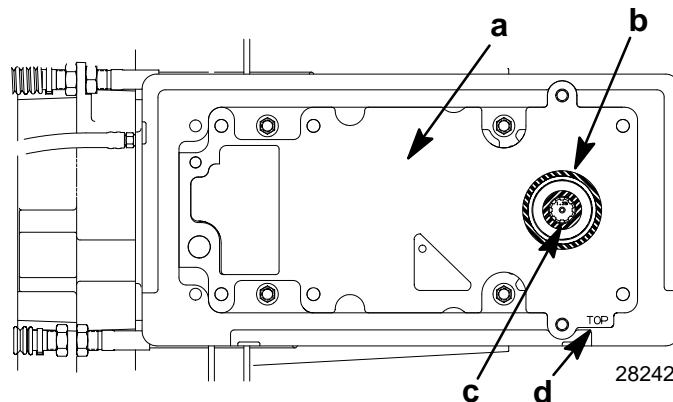
The siphon break must be located above the water line. The siphon break has a .020 in. hole which must be kept open.

CAUTION

Failure to locate siphon break above the water line and keep hole open could result in water entering the bilge through the siphon when the engine is not running.

Installing Powerhead

1. Install gasket (a) on drive housing cover (b).

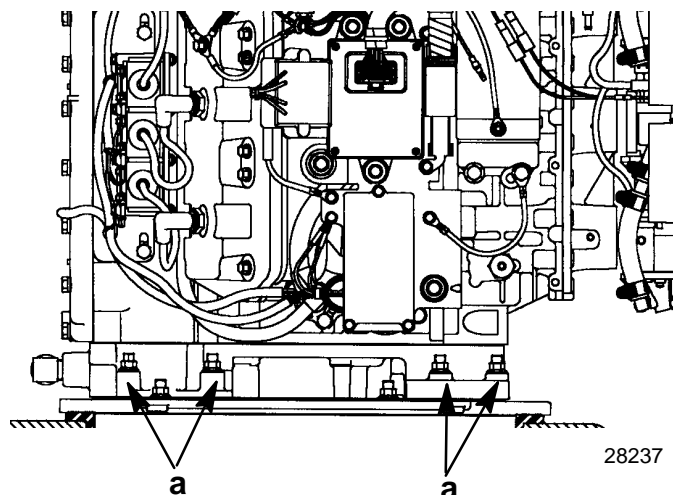


- a - Gasket
- b - Drive Housing Cover O-Ring
- c - Slinger
- d - "TOP" Facing Up

2. Check that slinger (c) is on drive shaft. Ensure "TOP" is facing up (d) on gasket.
3. Lubricate drive shaft splines with Special Lube 101 (92-13872A1).
4. Lower powerhead on drive housing cover. Align drive shaft splines with crank shaft splines, and powerhead mounting studs with adapter plate holes.

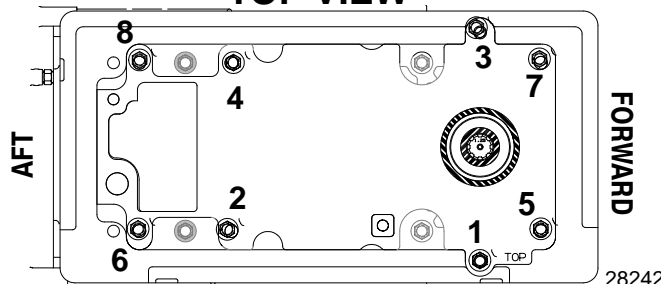


- Secure powerhead to drive housing cover with eight (8) M10 x1.5 nuts (a). Torque fasteners to 35 lb. ft. (47 N-m) following the torque sequence given. Repeat torque sequence to ensure all fasteners retain their torque.



28237

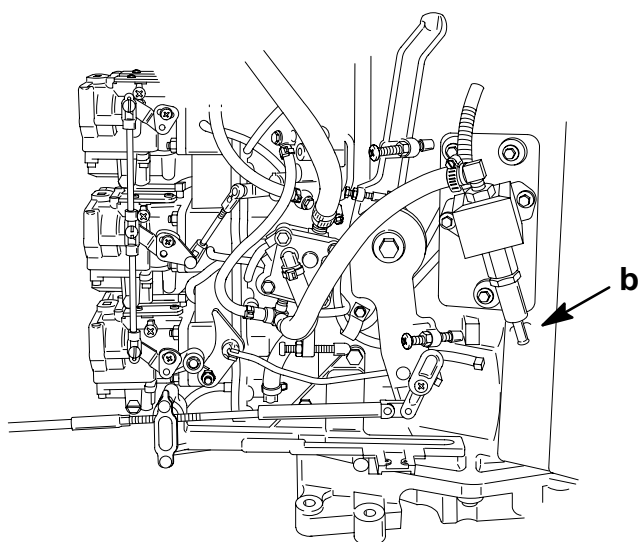
TOP VIEW



28242

a - M10 x 1.5 Nuts – 35 lb. ft. (47 N-m)

- Connect fuel line to fuel inlet fitting, secure with U.S. Coast Guard approved hose clamp (183.532).



b - Fuel Inlet Fitting

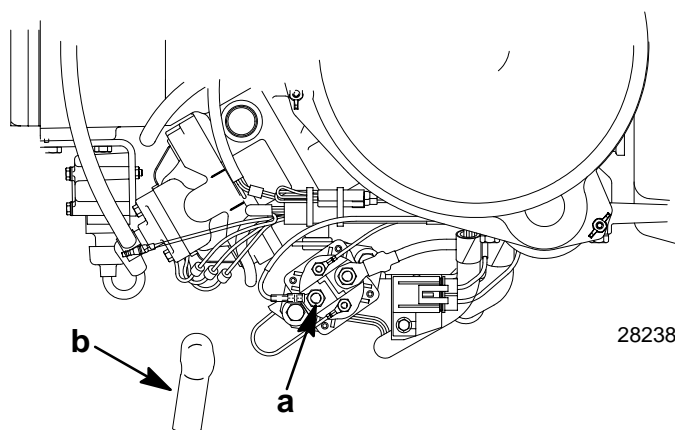
Battery Connection

NOTE: Engine electrical system is negative (–) ground.

- Connect positive (+) battery cable (usually red) to starter solenoid using protective boot (provided).
- Connect negative (–) battery cable (usually black) to engine ground at forward starter motor bolt (c).

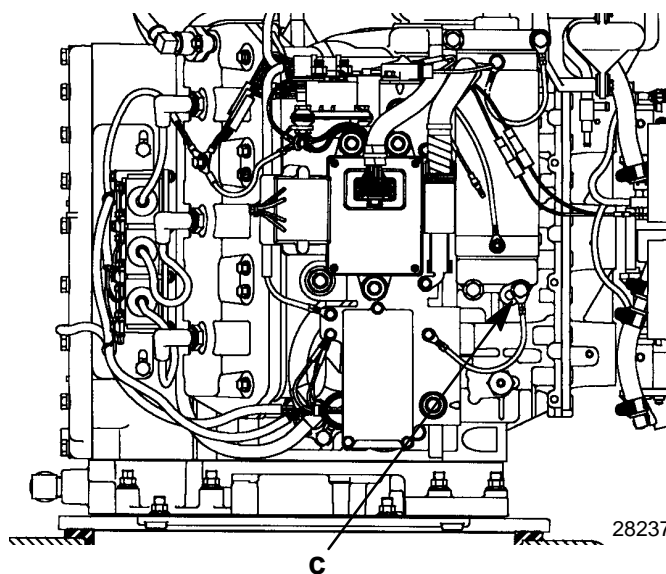
⚠ WARNING

U.S. Coast Guard regulation #33 CFR 183.445 requires that the “positive” battery cable connection at the starter solenoid terminal be protected by either a boot (“b” shown following), or protective shield.



28238

- a - Positive Battery Cable Attaching Location
b - Boot Protector for Positive Battery Cable



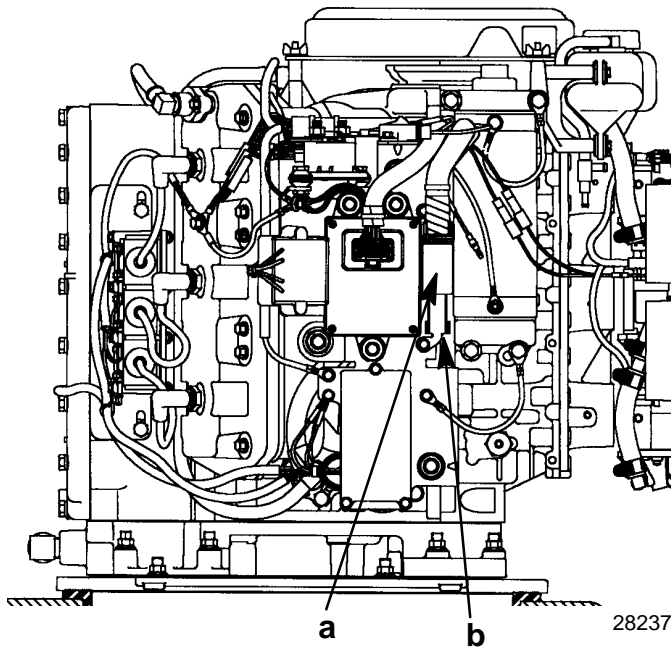
28237

c - Forward Starter Bolt (Engine Ground)

- Connect battery cables to battery. Make sure that all battery terminal connections are tight; then, spray terminals with a battery connection sealant to help retard corrosion.



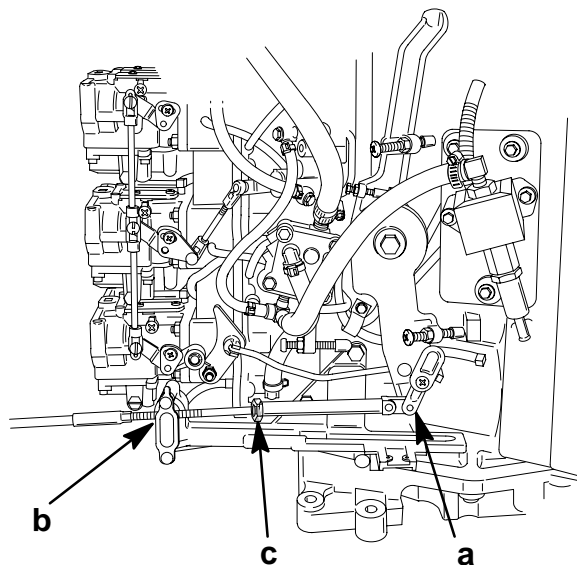
4. Attach remote control harness plug to engine harness plug. Reinstall harness plug in clip.



a - Engine Harness Plug
b - Clip

Throttle Cable Adjustment (Using Morse MV2.5 Control Box)

1. Insert throttle cable anchor in the top retainer hole and close retainer cover (b).
2. With throttle arm in the idle position (against stop) and remote control in forward (with no throttle advance), rotate throttle cable end until it lines up with anchor pin (a). Attach cable to pin and secure with latch. Tighten jam nut (c).



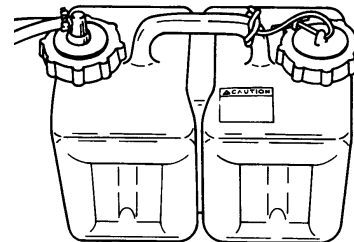
a - Throttle Lever Anchor Pin
b - Barrel Retainer Cover
c - Jam Nut

Oil Injection System

⚠ CAUTION

Oil injected engines must be run on a 50:1 gas-oil mixture in the fuel tank for the first 30 gallons of fuel. Refer to engine break-in procedures in the Operation & Maintenance Manual.

1. Mount the oil reservoir in a suitable location. Use the oil tank hold down kit provided.

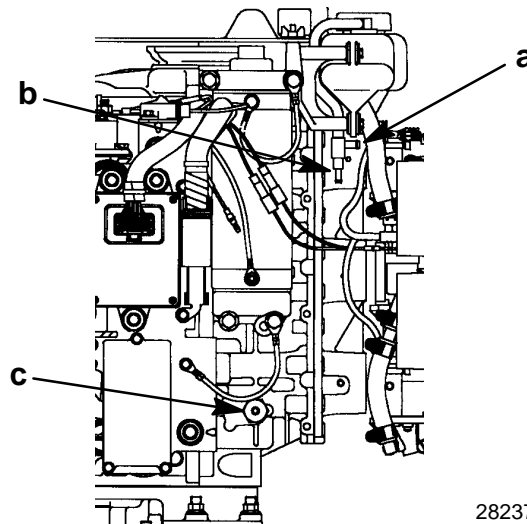


28243

2. Oil hoses must be arranged so they cannot become pinched, kinked, sharply bent or stretched during operation of the engine.
3. Remove (and discard) the shipping cap from hose fitting (a).
4. Connect oil hose from remote oil tank (hose with blue stripe) to fitting (a). Secure with sta-strap.

NOTE: Fitting barb (b) is a vent and does not get connected to a hose.

5. Remove (and discard) shipping cap from pulse fitting (c).
6. Connect the second oil hose from remote oil tank to pulse fitting. Secure with sta-strap.

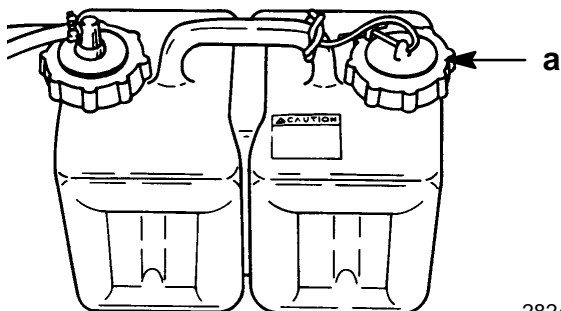


28237

a - Hose Fitting
b - Vent
c - Pulse Fitting

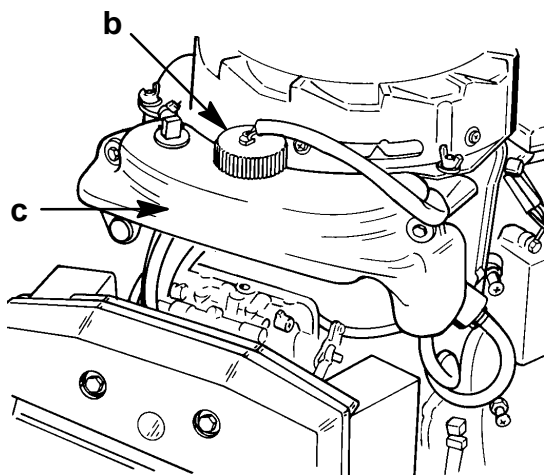


- Fill remote oil tank with Quicksilver TCW-3 2-Cycle Oil. Tighten fill cap (a).



a - Fill Cap

- Remove fill cap (b) from the engine oil tank (c) and fill the tank with oil. Reinstall the fill cap.



b - Fill Cap

c - Engine Mounted Oil Reservoir

- Loosen the fill cap (b) on the engine mounted oil tank. Run the engine until all the air has been vented out of the tank and oil starts to flow out of the tank. Re-tighten fill cap.

⚠ CAUTION

Be certain that the fill caps on the engine oil tank and remote oil tank are installed tight. An air leak, at one of the caps on the remote oil tank, will prevent oil flow to the engine oil tank. A loose fill cap on the engine oil tank will cause oil leakage.

Bleeding Air from Oil Injection Pump and Oil Injection Outlet Hose

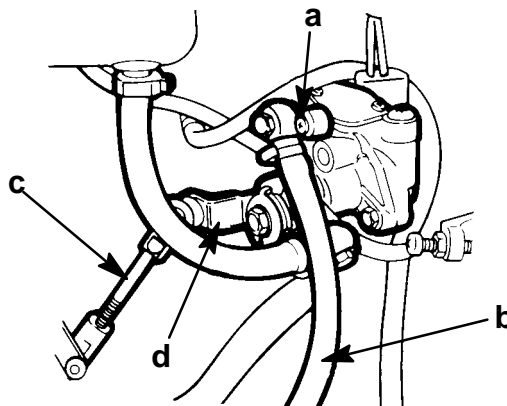
BLEEDING AIR FROM OIL INJECTION PUMP

With engine not running, place a shop towel below the oil injection pump. Loosen bleed screw (a) three to four turns and allow oil to flow from bleed hole. Re-tighten bleed screw. This procedure allows the pump to fill with oil.

BLEEDING AIR FROM OIL INJECTION PUMP OUTLET HOSE

Any air bubbles in outlet hose in most cases will be purged out of the system during operation of the engine.

NOTE: If air bubbles persist, they can be purged out of the hose by removing link rod and rotating the pump arm full clockwise while operating engine at 1000 to 1500 RPM: If necessary, gently pinch the fuel line between the fuel tank and the fuel pump "Tee" fitting. This will cause the fuel pump to provide a partial vacuum which will aid in removal of the air. Reinstall link rod.



a - Bleed Screw

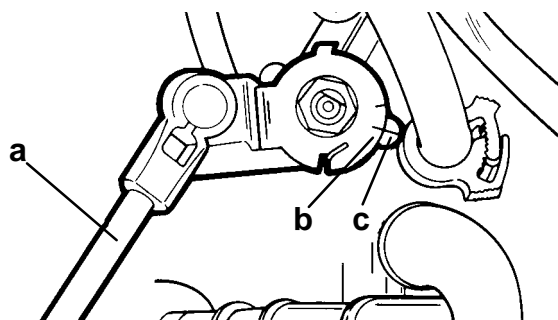
b - Outlet Hose

c - Link Rod

d - Pump Arm

Adjusting Oil Injection Pump

When throttle linkage is at idle position, alignment mark on oil injection arm should be in-line with mark on casting as shown. If necessary, adjust link rod.



a - Link Rod

b - Alignment Mark

c - Casting Mark



Turn-Key Start Feature

The Sport Jet utilizes an automatic enricher to start a cold engine. The enricher is controlled by the ECM (Electronic Control Module). There are no adjustments for the Turn Key Start Feature.

IMPORTANT: The Turn-Key Start relies on closed throttle plates at idle. Ensure throttle plates are fully closed at idle.

Timing/Synchronizing/Adjusting

Specifications

Sport Jet 175XR ²	
Full Throttle RPM Range	5000-5500
Idle RPM	1000 - 1100
Maximum Timing: @ Cranking Speed @ 5000 RPM	22° BTDC 20° BTDC
Idle Speed/Pickup Timing	0° ±2° ATDC
Spark Plug	NGK-BU8H
Firing Order	1-2-3-4-5-6

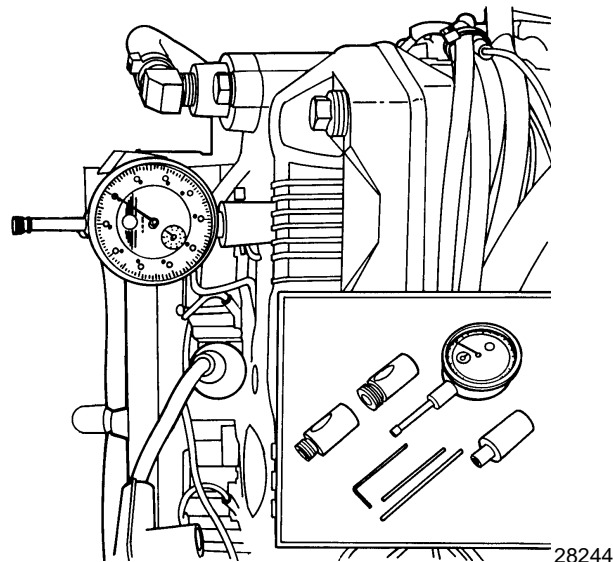
Adjustments

TIMING POINTER ADJUSTMENT

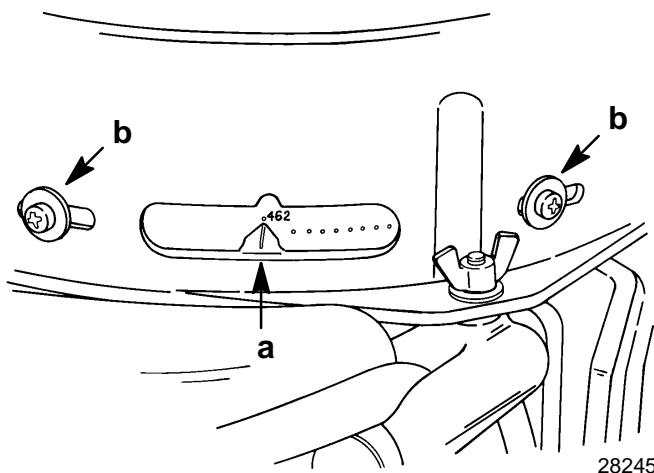
WARNING

Engine could start when turning flywheel to check timing pointer adjustment. Remove all spark plugs from engine to prevent engine from starting.

1. Remove all spark plugs and install Dial Indicator (91-58222A1) into No. 1 cylinder (top cylinder, starboard bank).



2. Turn flywheel in a clockwise direction until No. 1 piston is at top dead center (TDC). Set dial indicator at "O" (zero) and tighten indicator set screw.
3. Turn flywheel counterclockwise until dial indicator needle is approximately 1/4-turn beyond .462 in., then turn flywheel clockwise so that dial indicator reads .462 in. (11.7mm) exactly.
4. Reposition timing pointer (a) "if necessary" so that timing pointer is aligned with .462 in. mark on timing decal. Retighten pointer attaching screws (b).



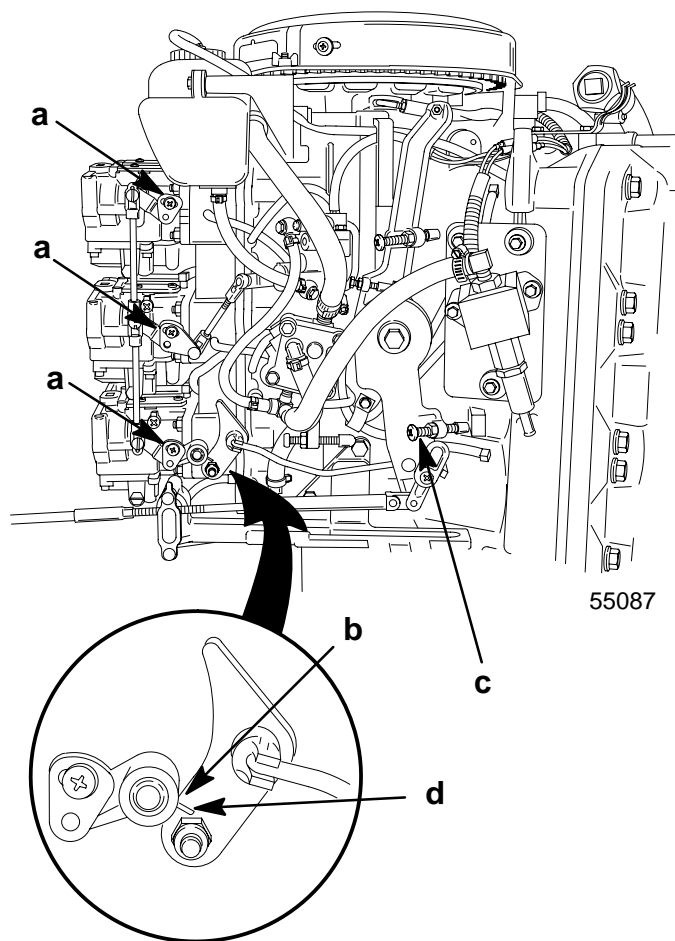
- a - Timing Pointer
b - Pointer Attaching Screws

5. Remove dial indicator from cylinder.



CARBURETOR SYNCHRONIZATION

1. Loosen 3 carburetor synchronization screws (a) to allow shutter plates to close completely.
2. Position throttle lever so that idle stop screw is against idle stop and move roller arm until roller lightly touches throttle cam (b). Adjust idle stop screw (c) on throttle arm to align mark (d) on throttle cam with center of roller. Without moving roller from this position, retighten carburetor synchronization screws.

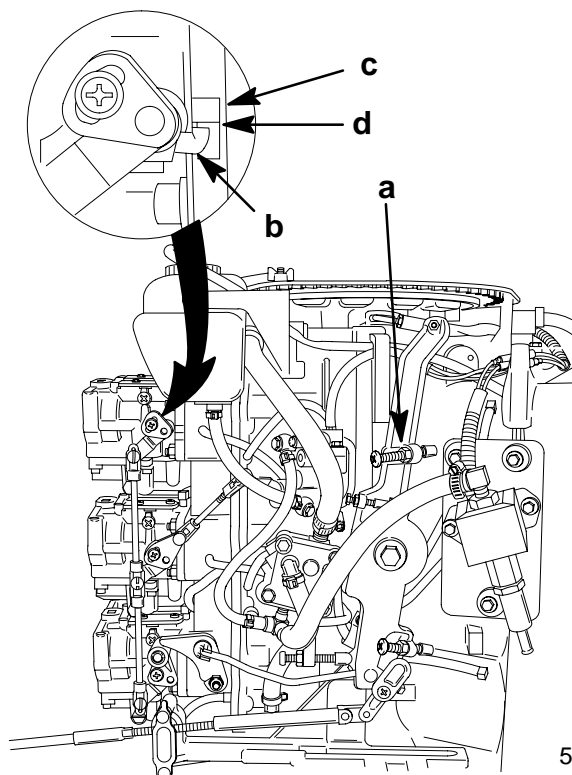


55087

- a - Carburetor Synchronization Screws
b - Throttle Cam
c - Idle Stop Screw
d - Alignment Mark

3. Verify throttle shutter plates open and close simultaneously during throttle lever operation. Readjust if necessary.

4. Move throttle lever to wide-open-throttle (W.O.T.) position and adjust full throttle stop screw (a) to allow full throttle shutter opening at W.O.T. Verify that throttle shutters do not act as a throttle stop. Allow .010 in. - .015 in. (.25 mm - .38 mm) clearance between throttle shaft arm(b) and stop (c) at W.O.T. Retighten jam nut on adjustment screw.



55086

- a - Full Throttle Screw
b - Throttle Shaft Arm
c - Throttle Shaft Arm Stop
d - .010 - .015 in. (0.25 mm - 0.38 mm)

Timing Adjustments

⚠ CAUTION

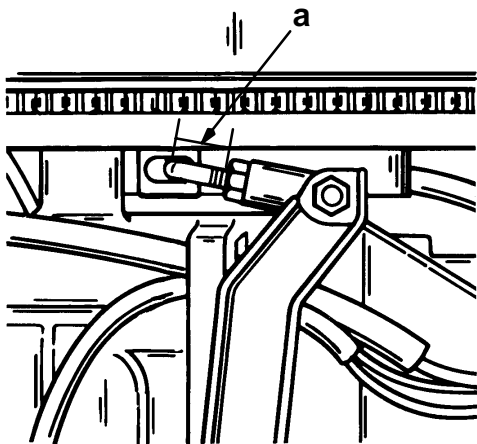
Engine may be timed while cranking engine with starter motor. To prevent engine from starting when being cranked, remove all spark plug leads and attach to engine ground using spark gap tester.

1. Insert Spark Gap Tool (91-63998A1) into each spark plug boot and attach alligator clips to good engine ground.
2. Remove throttle cable barrel from barrel retainer.

IMPORTANT: The remaining timing adjustments rely on a fully charged battery capable of cranking the engine a minimum of 300 rpm. Battery voltage should not drop below 9.5 volts at starter solenoid while cranking.



IMPORTANT: If trigger link rod was disassembled verify that 11/16 in. (17.5 mm) length is retained.

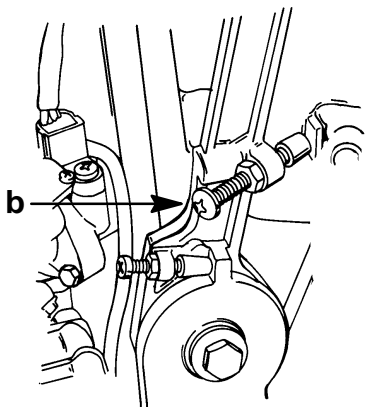


28246

a - 11/16 in. (17.5 mm)

MAXIMUM TIMING ADJUSTMENT

1. Connect timing light to No 1 spark plug lead (TOP STARBOARD BANK)
2. With engine in neutral, move throttle lever to place maximum spark advance screw (b) against stop. Crank engine with starter motor and adjust maximum spark advance timing mark to obtain 22° BTDC. Retighten jam nut on adjustment screw.



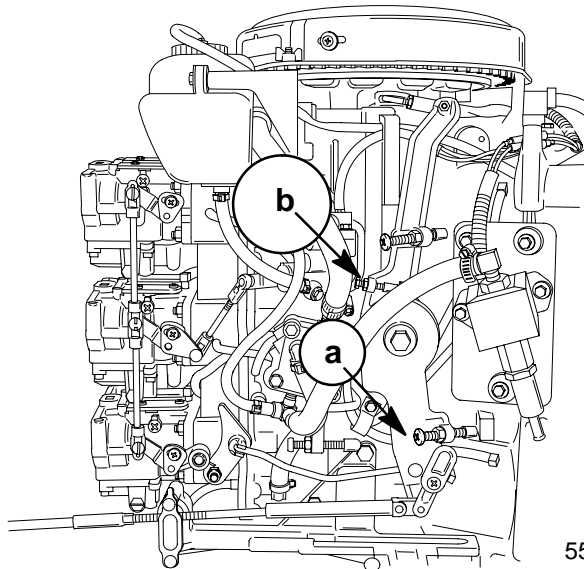
28247

b - Spark Advance Screw

PRIMARY PICKUP TIMING ADJUSTMENT

1. With engine in neutral, hold throttle arm so that idle stop screw (a) is against idle stop. Crank engine with starter motor and adjust throttle primary pickup screw (b) to align specified throttle primary pickup mark on timing decal with timing pointer. Retighten jam nut on adjustment screw.

NOTE: Primary pickup timing also determines engine idle RPM, refer to "Idle Speed Adjustment" following.



55087

a - Idle Stop Screw

b - Primary Pick-Up Screw

NOTE: All timing adjustments made to engine under cranking speed conditions should be verified with engine running and adjustments made if necessary. This is due to advance characteristics of individual ignition systems.

2. Remove timing light from No. 1 spark plug lead.
3. Remove spark gap tools (91-63998A1) from each spark plug boot and attach spark plug leads to spark plugs.



IDLE SPEED ADJUSTMENT

1. With boat in water, start engine and allow to warm up.
2. With engine in neutral, monitor engine RPM. If RPM is above or below recommended RPM (see specifications), readjust primary pickup screw to attain recommended engine speed. Retighten jam nut. Re-install throttle cable barrel.

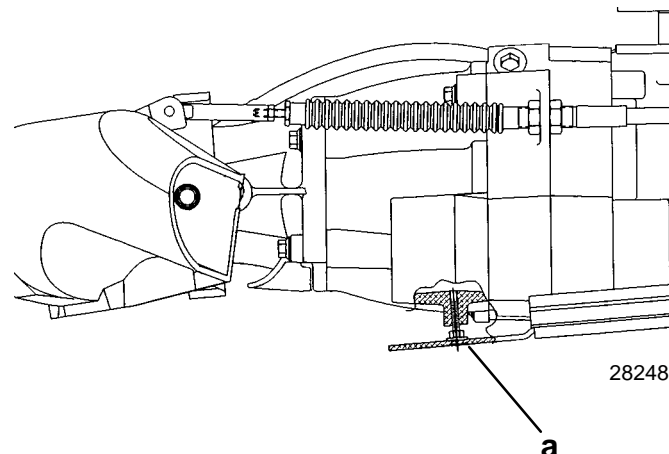
IMPORTANT: Below 3,000 RPM the TKS ECM advances idle timing 5° until the engine reaches 104°F (40°C). Above 3,000 RPM, the TKS ECM does not affect ignition timing regardless of engine temperature.

NOTE: If idle speed is checked with engine running on flushing attachment, adjust idle speed 400-500 rpm higher than specified.

Trim Plate Adjustment

The Sport Jet trim plate is factory set for general applications. Should a particular boat experience porpoising problems, the trim plate can be adjusted as follows:

1. Loosen both jam nuts on trim plate (one starboard and one port).



a - Jam Nut w/Washer (Two: One On Each Side)

2. Turn both screws the exact same number of turns. Tighten both jam nuts against trim plate. The distance from top of nut to bottom of boss should be equal on both sides.

WARNING

Adjusting the trim plate may affect boat handling (steering). Overly sensitive steering or reduced turning ability could result from trim plate adjustments. Boat handling characteristics also vary with the load distribution in the boat. Use caution after adjusting: check for acceptable handling characteristics under all loading conditions. Failure to adequately test the boat could result in inadequate steering control resulting in property damage, personal injury or death.



Pre-delivery Inspection

Not Applicable	Check/ Adjust	CHECK BEFORE RUNNING
<input type="checkbox"/>	<input type="checkbox"/>	Cover plate & adaptor plate fasteners torqued
<input type="checkbox"/>	<input type="checkbox"/>	Battery charged & secure
<input type="checkbox"/>	<input type="checkbox"/>	All electrical connections tight
<input type="checkbox"/>	<input type="checkbox"/>	All fuel connections tight
<input type="checkbox"/>	<input type="checkbox"/>	Throttle, shift, & steering adjusted correctly and fasteners torqued
<input type="checkbox"/>	<input type="checkbox"/>	Shift cable adjusted to keep reverse gate 3/8-1/2 in. above rudder in forward w/ slack pulled out of cable
<input type="checkbox"/>	<input type="checkbox"/>	Carb throttle shutters open & close completely
<input type="checkbox"/>	<input type="checkbox"/>	Pump housing & stator oil levels full (See Section 5)
<input type="checkbox"/>	<input type="checkbox"/>	Oil injection system full and bled
<input type="checkbox"/>	<input type="checkbox"/>	Warning system(s) operational

On the water test

<input type="checkbox"/>	<input type="checkbox"/>	Starter neutral safety switch operational
<input type="checkbox"/>	<input type="checkbox"/>	Lanyard stop switch operational
<input type="checkbox"/>	<input type="checkbox"/>	All gauges read properly
<input type="checkbox"/>	<input type="checkbox"/>	No fuel or oil leaks
<input type="checkbox"/>	<input type="checkbox"/>	No water leaks
<input type="checkbox"/>	<input type="checkbox"/>	No exhaust leaks
<input type="checkbox"/>	<input type="checkbox"/>	Ignition timing set to specs
<input type="checkbox"/>	<input type="checkbox"/>	Idle: _____ RPM
<input type="checkbox"/>	<input type="checkbox"/>	Idle mixture adjusted

On the water test (continued)

<input type="checkbox"/>	<input type="checkbox"/>	Forward-Neutral-Reverse operational
<input type="checkbox"/>	<input type="checkbox"/>	Steering operational throughout entire range
<input type="checkbox"/>	<input type="checkbox"/>	Acceleration test
<input type="checkbox"/>	<input type="checkbox"/>	WOT: _____ RPM
<input type="checkbox"/>	<input type="checkbox"/>	Boat handling

Post water test

<input type="checkbox"/>	<input type="checkbox"/>	No fuel, oil, water or exhaust leaks
<input type="checkbox"/>	<input type="checkbox"/>	Re-torque adapter plate fasteners