

SUZUKI OUTBOARD MOTOR

SET-UP MANUAL

DF140

For '02 model



99505-92J00-01E

IMPORTANT

▲ WARNING/CAUTION/NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the symbol ▲ and the words WARNING, CAUTION and NOTE have special meanings. Pay special attention to the messages highlighted by these signal words.

▲ WARNING

Indicates a potential hazard that could result in death or injury.

CAUTION

Indicates a potential hazard that could result in motor damage.

NOTE:

Indicates special information to make maintenance easier or instructions clearer.

Please note, however, that the warnings and cautions contained in this manual cannot possibly cover all potential hazards relating to the servicing, or lack of servicing, of the outboard motor. In addition to the WARNINGS and CAUTIONS stated, you must use good judgement and basic mechanical safety principles.

FOREWORD

This outboard motor has been designed and produced utilizing Suzuki's most modern technology. The finest product, however, cannot perform properly unless it is correctly assembled and serviced. This set-up manual has been produced to aid you in properly assembling and servicing this outboard motor.

- * This manual has been prepared on the basis of the latest specifications at the time of publication. If modifications have been made since then, differences may exist between the content of this manual and the actual outboard motor.
- * Illustrations in this manual are used to show the basic principles of operation and work procedures and may not represent the actual outboard motor exactly in detail.
- * This manual is intended for those who have enough knowledge and skills to service SUZUKI outboard motors. Without such knowledge and skills, you should not attempt servicing by relying on this manual only. Instead, please contact your nearby authorized SUZUKI outboard motor dealer.

⚠ WARNING

Apprentice mechanics or do-it-yourself mechanics that don't have the proper tools and equipment may not be able to properly perform the services described in this manual. Improper assembly and/or servicing may result in injury to the mechanic and may render the engine unsafe for the boat operator and passengers.

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Marine & Power Products Division

SYMBOL

Listed in the table below are symbols indicating special instructions and other important information necessary for proper servicing. Please note the definition for each symbol. You will find these symbols used throughout this manual. Refer back to this table if you are not sure of any symbol(s) meanings.

SYMBOL	DEFINITION	SYMBOL	DEFINITION
	Torque control required. Data beside it indicates specified torque.		Apply THREAD LOCK "1342".
	Apply SUZUKI WATER RESISTANT GREASE.		Use special tool.
	Apply SUZUKI SILICONE SEAL.		

MATERIALS REQUIRED

WATER RESISTANT GREASE  99000-25160 (250 g/8.8 oz)	SUZUKI SILICONE SEAL  99000-31120 (50 g/1.7 oz)
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OUTBOARD MOTOR INSTALLATION

HORSEPOWER SELECTION

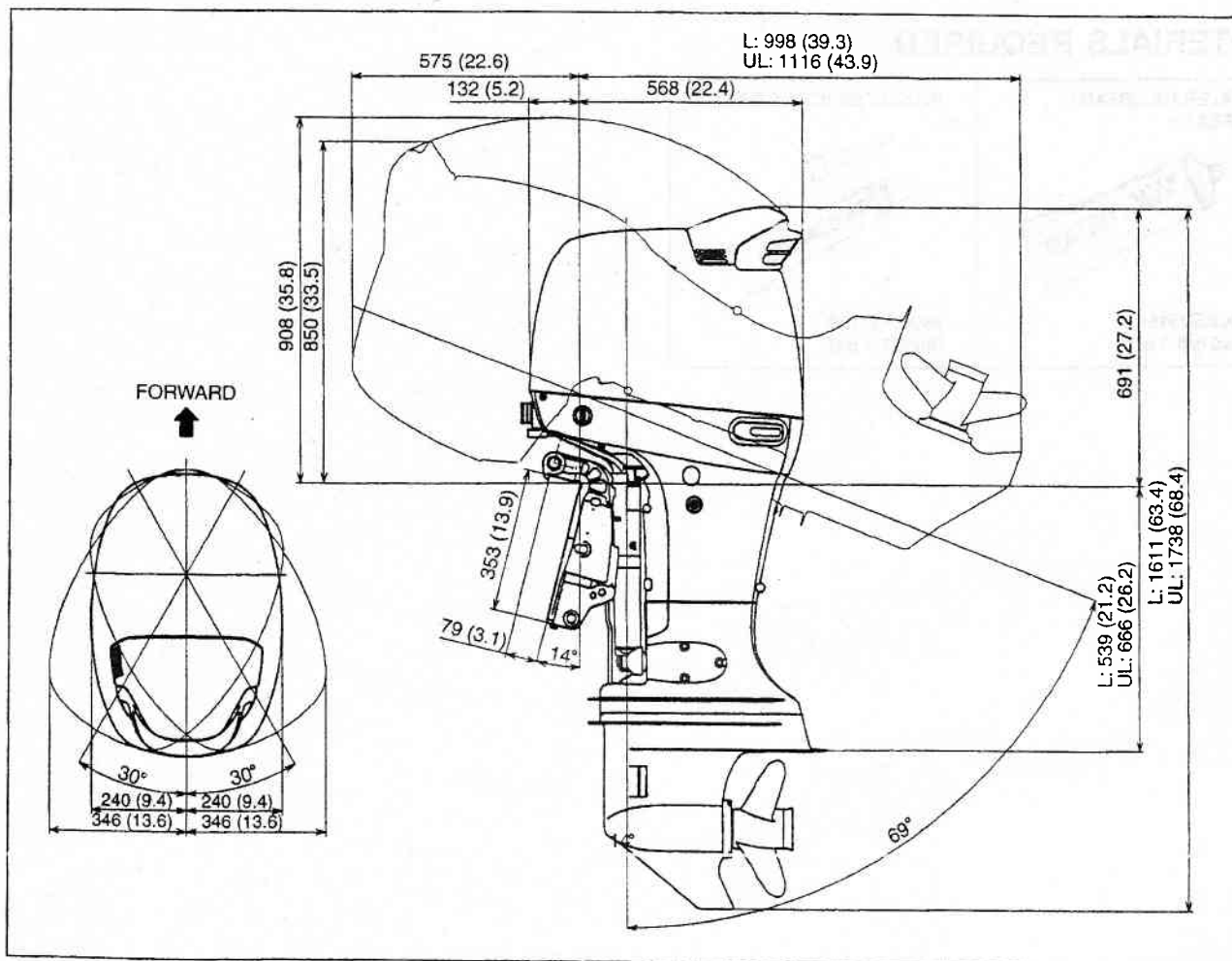
⚠ WARNING

Do not overpower your boat. Never install an outboard motor with horsepower exceeding the boat manufacturer's recommended maximum. Excessive horsepower will have an adverse effect on hull safety and may cause operating/handling difficulties.

NOTE:

- State the maximum horsepower outboard motor that can be safely used on that boat. There is severe product liability potential connected with rigging and selling a boat with an outboard motor exceeding the horsepower capacity limitation.
- The rig should not be underpowered, as this will not allow the performance balance you are trying to achieve. Determine the customer's needs, application and use of the perspective rig to make the best overall horsepower recommendation.

MOTOR DIMENSIONS

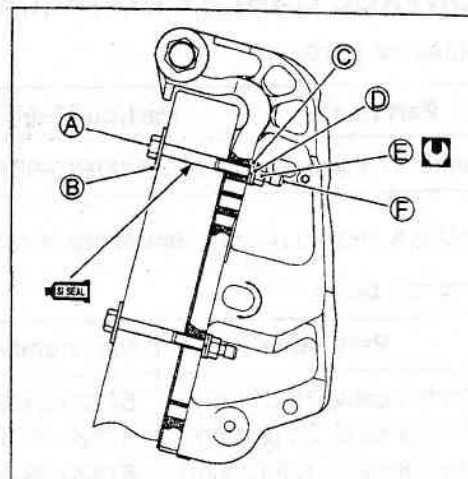


MOUNTING TO THE TRANSOM

Contained parts

Item	Part name	Part number	Q'ty
Ⓐ	Bolt (M12)	09100-12083	4
Ⓑ	Washer (Large)	09160-12044	4
Ⓒ	Washer (Small)	09160-12066	4
Ⓓ	Lock washer	09162-12005	4
Ⓔ	Nut	09140-12028	4
Ⓕ	Cap	41153-94500	4

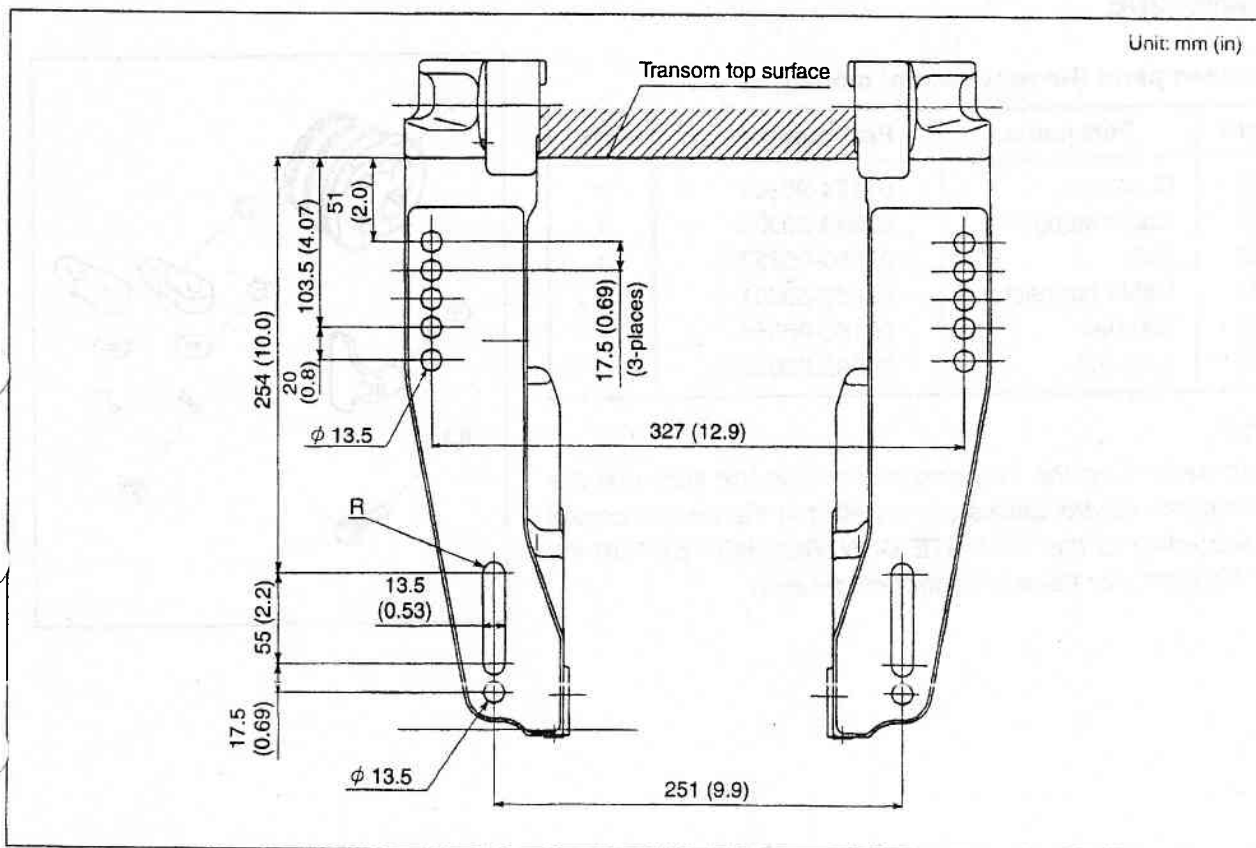
 Nut Ⓔ : 55 N·m (5.5 kg·m, 40.0 lb·ft)



NOTE:

- Drill the upper holes at least 25 mm (1.0 in) away from the transom top surface.
- Install the large diameter washer Ⓑ on the transom board side.
- To ensure a water-tight engine installation, sealant (SUZUKI SILICONE SEAL or equivalent) should be applied to all bolt holes.
- If tightening torque cannot reach to the specified torque due to weak transom material, it is necessary to reinforce the transom board with an attachment plate.

TRANSOM DIMENSIONS



CONTROL CABLES INSTALLATION

Contained parts

Part name	Part number	Q'ty
Remote control box	67200-99E10-0EP	1

For U.S.A. model, remote control box is optional.

Required parts

Part name	Part number	Q'ty	Part name	Part number	Q'ty
Control cable 7ft (2.1 m)	67320-89J00	2	Control cable 16ft (4.9 m)	67320-89J50	2
Control cable 8ft (2.4 m)	67320-89J10	2	Control cable 18ft (5.5 m)	67320-89J60	2
Control cable 10ft (3.1 m)	67320-89J20	2	Control cable 20ft (6.1 m)	67320-89J70	2
Control cable 12ft (3.7 m)	67320-89J30	2	Control cable 22ft (6.7 m)	67320-89J80	2
Control cable 14ft (4.3 m)	67320-89J40	2			

Choose one item which is matched to the boat in length.

REMOTE CONTROL BOX SIDE

For the procedure to connect the throttle control cable and clutch control cable to the remote control box, refer to the "REMOTE CONTROL BOX SET-UP INSTRUCTION" that comes supplied with each unit of remote control box. (for Remote control model only)

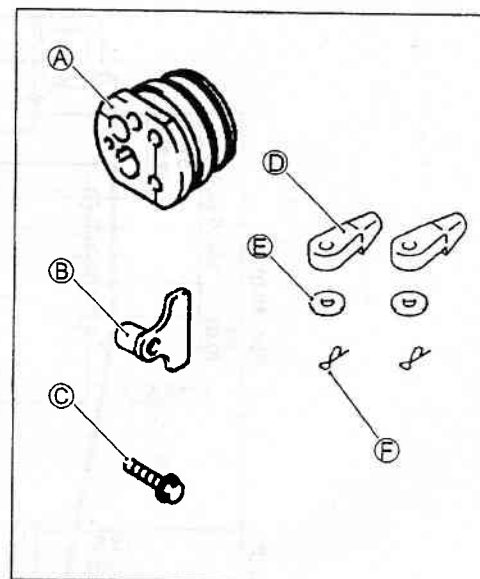
ENGINE SIDE

Contained parts (Remote control model)

Item	Part name	Part number	Q'ty
(A)	Grommet	61124-90J00	1
(B)	Cable stopper	67343-90J01	1
(C)	Bolt	01550-06257	1
(D)	Cable connector	67467-89J01	2
(E)	Washer	09160-06055	2
(F)	Lock pin	09385-06012	2

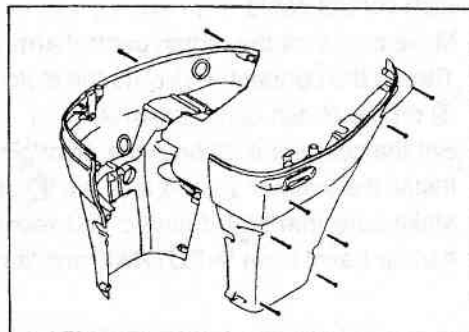
NOTE:

Before performing the following procedures, be sure that the throttle/clutch control cables are installed in the remote control box according to the "REMOTE CONTROL BOX SET-UP INSTRUCTION". (for Remote control model only)

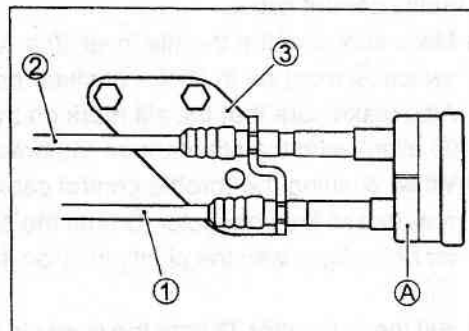


Procedure

- 1) Remove the nine (9) bolts, then remove the both side lower covers from the outboard motor.



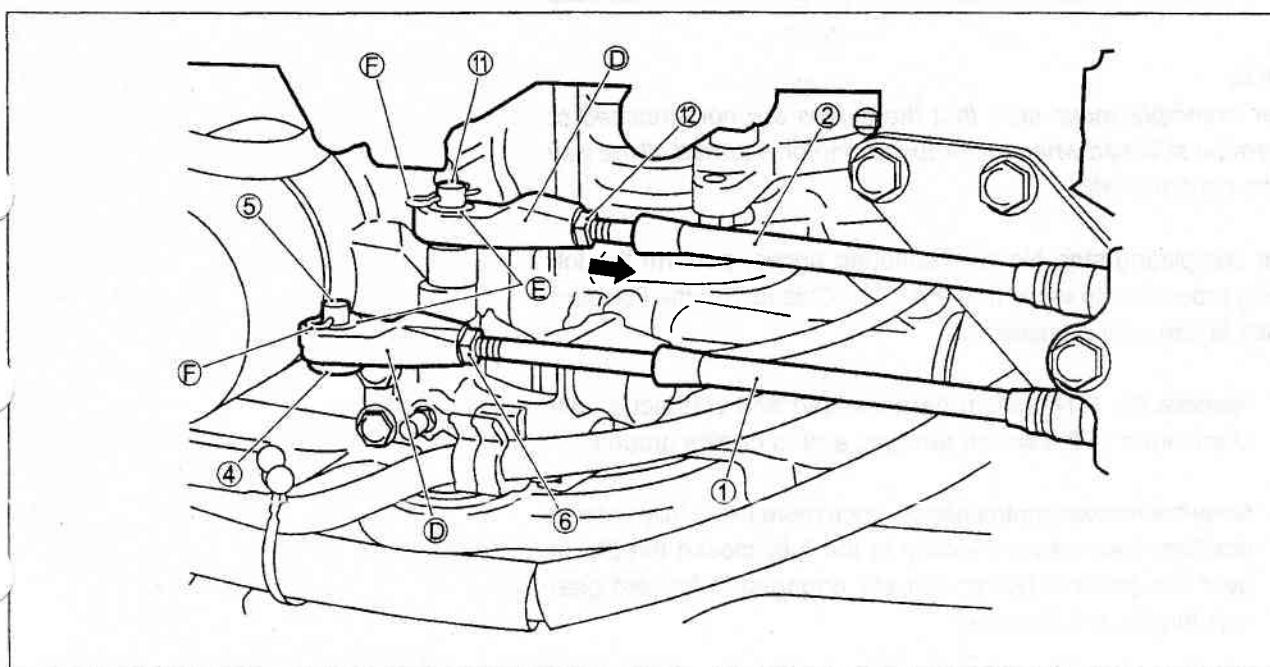
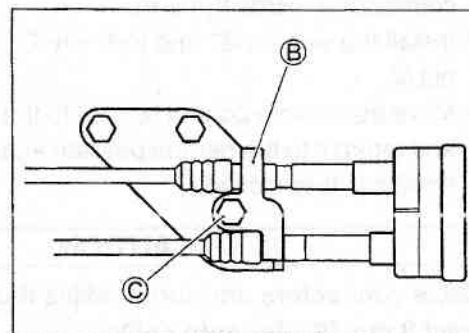
- 2) Install the clutch control cable ① and throttle control cable ② to the grommet ④.
- 3) Secure the cable ① and ② in the cable holder ③ by fitting groove on the cable into a slot on the holder.



NOTE:

Refer to the page 8 for installing wire harness to the grommet.

- 4) Install the cable stopper ⑤ by the bolt ⑥.
- 5) Position the remote control handle into "NEUTRAL".

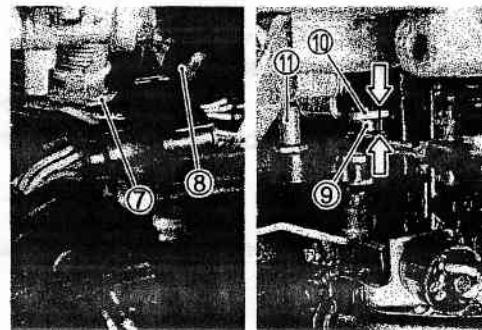


— Clutch control cable —

- (6) Make sure that the clutch control arm ④ is in the neutral position.
- (7) Thread the connector ① onto the clutch control cable ① until the connector hole aligns with the pivot pin ⑤ on the clutch control arm ④.
- (8) Set the connector ① onto the pivot pin ⑤ with the flat side of connector towards the arm.
- (9) Install the washer ⑤ and lock pin ⑥, then tighten the lock nut ⑥.
- (10) Make sure that both forward and reverse gear can be engaged with the same angle of remote control handle travel from "NEUTRAL" position.

— Throttle control cable —

- (11) Make sure that the throttle lever ⑦ is fully closed. (The CTP switch ⑧ must be in "ON – pushed" position.)
Also make sure that the slit mark on the throttle control arm ⑨ aligns with the slit mark on the bracket ⑩.
- (12) While pushing the throttle control cable ② as shown by arrow, thread the connector ① onto the cable until the connector hole aligns with the pivot pin ⑪ on the throttle control arm ⑨.
- (13) Set the connector ① onto the pivot pin ⑪ with the flat side of connector towards the arm.
- (14) Install the washer ⑤ and lock pin ⑥, then tighten the lock nut ⑥.
- (15) Move the remote control handle to the fully opened position and return it to the neutral position again. Make sure that the throttle is fully closed.



CAUTION

Cable connectors and turnbuckles must be threaded at least 8 mm (0.3 in) onto cable.

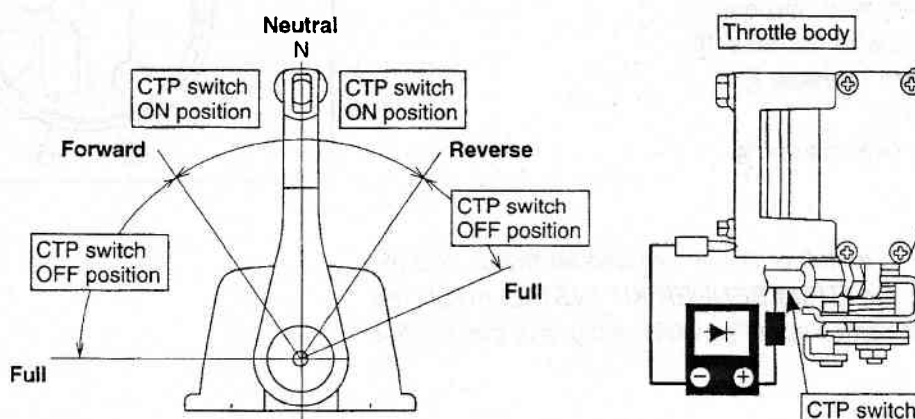
NOTE:

After assembly, make sure that the cables are not stretched or otherwise stressed when the outboard motor is turned all the way to the right and left.

After completing step No.15 mentioned above, perform the following procedure to verify that the CTP (Closed Throttle Position) switch is correctly adjusted.

- (1) Remove the CTP switch harness lead and connect a Volt-Ohm meter to the switch terminal and to engine ground.
- (2) Move the remote control handle once more to the fully opened position, then return it slowly to the fully closed throttle, in gear idle position (lower unit still engaged in forward gear with throttle at full close.)

- (3) Check the meter connected to the CTP switch. It must indicate the switch has turned to the "ON" position (meter will indicate continuity).
- (4) If the CTP switch is in the "OFF" position (No continuity) at the in gear idle position, loosen the remote control cable connector lock nut and readjust the cable connector slightly until the CTP switch is in the "ON" condition (continuity indicated).
- (5) After readjusting the cable connector, tighten the lock nut and move the remote control handle to the fully opened position and back to the in gear idle position to confirm that the CTP switch is now correctly adjusted (switch in the "ON" position, continuity indicated).
- (6) When correct switch adjustment has been confirmed, remove the volt-Ohm meter and reconnect the CTP switch harness lead.



NOTE:

Failure to properly adjust the CTP switch may cause the engine to stall when returned to the in-gear idle position. This may occur to non-activation of the ECM electric dash-pot function which is controlled by the CTP switch's "ON" / "OFF" position.

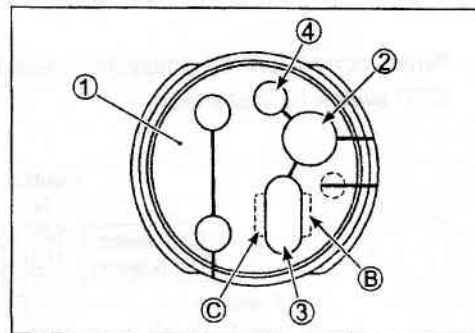
WIRE HARNESS INSTALLATION

Contained parts

Item	Part name	Part number	Q'ty
Ⓐ	Monitor-tachometer	34200-99E00	1
Ⓑ	Monitor gauge wire	36682-92E00	1
Ⓒ	Trim meter wire harness	36682-90J00	1
Ⓓ	Instrument wire harness	36630-92E00	1

Procedure

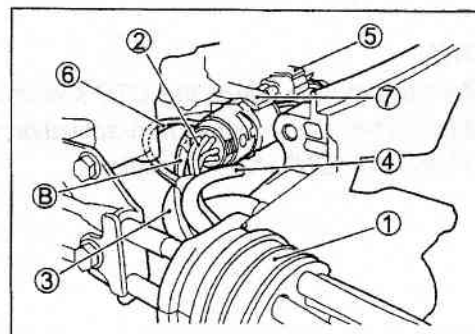
- (1) Remove the both side lower covers. (See page 5.)
- (2) Route the following items through the grommet ① as shown position.
 - Remote control wire harness ②.
 - Monitor gauge wire harness ⑦.
 - Trim meter wire harness ⑧.
 - Battery cable ③.
 - Speed meter pickup tube ④.



NOTE:

For the procedure to install optional trim sender/meter and related parts, refer to the "TRIM SENDER KIT INSTALLATION INSTRUCTIONS" that comes supplied with each unit of trim sender kit.

- (3) Connect the monitor gauge wire harness ⑦ to the engine side, then press fit the connector into the holder ⑤.
- (4) Connect the remote control wire harness ② and PTT wires ⑥ to the engine side, then press fit the connector into the holder ⑦. Route the monitor gauge wire harness ⑦ and PTT wires ⑥ behind the connector of ②.
- (5) Push the grommet ① into the front panel.



NOTE:

For the remote control box/meter/wire harness connection, refer to the WIRING DIAGRAM on page 16.

DRAG LINK INSTALLATION

⚠ WARNING

If the drag link and related parts are not installed correctly the steering system may bind, causing the operator to lose steering control of the boat.

NOTE:

These instructions are for connecting a mechanical push-pull steering system with the following specifications:

Single cable

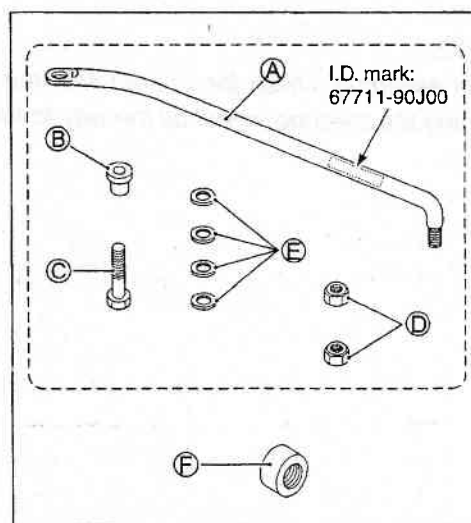
- Starboard cable entry into the motor tilt tube.
- Steering cable meeting the current American Boat and Yacht Council's Safety standard (P-17).

Contained parts

Item	Part name	Part number	Q'ty
	Drag link assy	67701-90J00	
Ⓐ	• Drag link	• Not available separately	1
Ⓑ	• Spacer	• 67721-99E00	1
Ⓒ	• Bolt	• 67725-99E00	1
Ⓓ	• Safety nut	• 67726-99E00	2
Ⓔ	• Washer	• 67728-99E00	4
Ⓕ	Steering cable seal	41161-94400	1

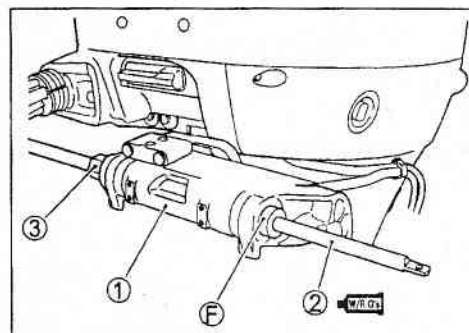
CAUTION

Never reuse the safety nut Ⓓ after it have been threaded into position and torqued.



Procedure

- (1) Thread the steering cable seal Ⓕ onto the port side end of the motor tilt tube ①.
- (2) Apply SUZUKI WATER RESISTANT GREASE to the steering cable ②.
- (3) Insert the cable ② into the tube ① from the starboard side, then tighten the cable retaining nut ③ to the torque specified by the cable manufacturer.



NOTE:

On most outboard motor installations, it will be necessary to install the steering cable prior to the outboard motor installation.

- (4) Connect the drag link (A) to the steering cable end (2) with washers (E) and safety nut (D) as shown. Tighten the nut (D) to the specified torque, then BACK THE NUT OFF 1/8 TURN.

 **Safety nut (D) : 10 N·m (1.0 kg-m, 7.0 lb-ft)**

- (5) Move the steering cable until the hole of drag link (A) aligns with the rear thread hole on the steering bracket (4).
(6) Connect the drag link to the steering bracket (4) by tightening the bolt (C) with the spacer (B) and washers (E) as shown.

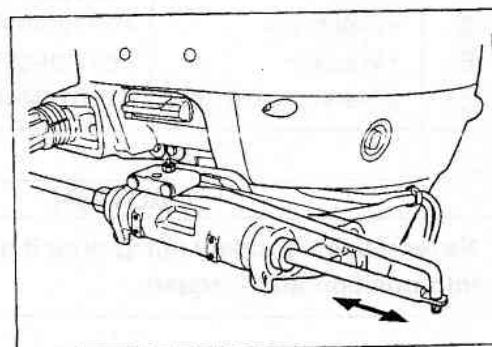
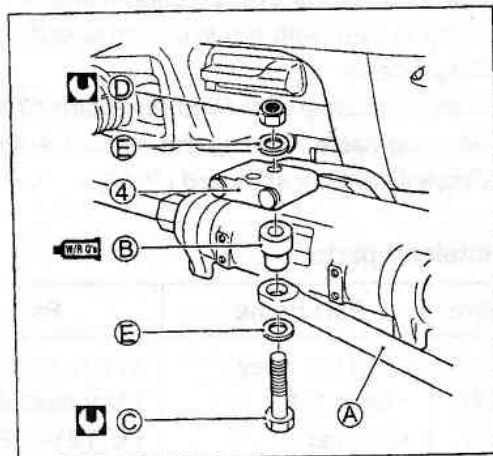
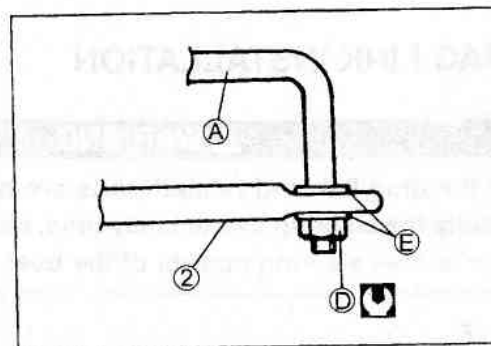
 **Bolt (C) : 34 N·m (3.4 kg-m, 24.5 lb-ft)**

- (7) Tighten the safety nut (D) with the washer (E).

 **Safety nut (D) : 34 N·m (3.4 kg-m, 24.5 lb-ft)**

NOTE:

After assembly, check for smooth and free steering operation by turning the steering wheel all the way to the right and left.



COUNTER ROTATION MODEL OR DUAL ENGINE, TIE-ROD KIT (OPTIONAL PARTS) INSTALLATION

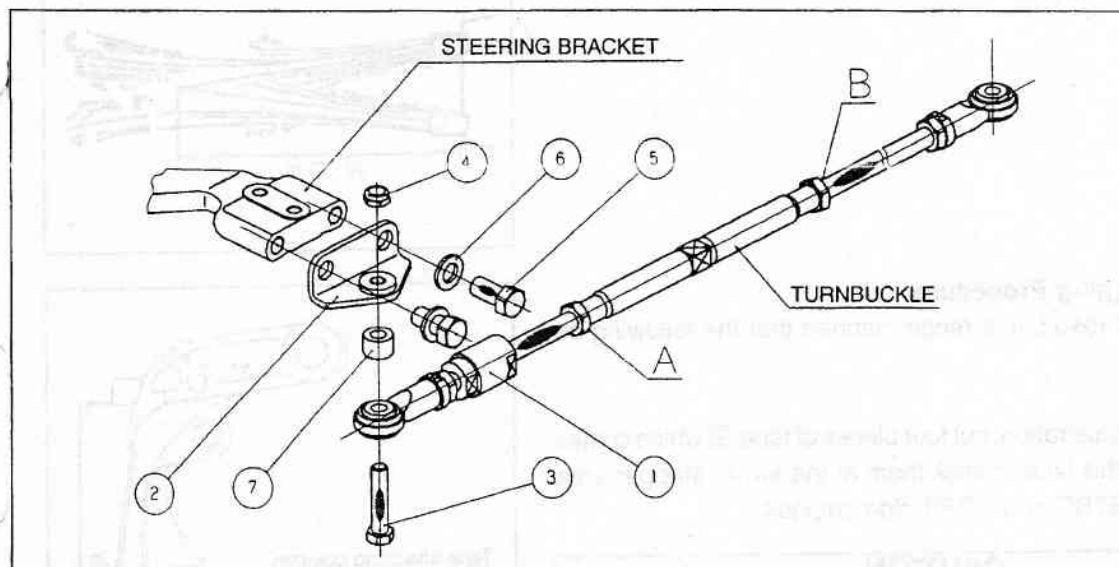
TIE-ROD KIT (OPTIONAL PARTS) Contained parts

Item	Part Name	Q'ty
1	TIE-ROD ASSY	1
2	BRACKET, TIE-ROD	2
3	BOLT, TIE-ROD (UNF)	2
4	NUT, TIE-ROD	2
5	BOLT, TIE-ROD BRACKET(M12)	4
6	WASHER, TIE-ROD BRACKET	4
7	SPACER, TIE-ROD	2
8	INSTRUCTION, TIE-ROD	1
9	TAPE	1

⚠ WARNING

Suzuki recommends that only authorized Suzuki outboard motor dealer or a qualified service mechanic perform installation of this kit.

Parts installation Procedure



- Install the tie-rod bracket ② on the end of steering bracket using the bolts ⑤ and washers ⑥.
⚙ Bolt ⑤ : 85 N·m (8.5 kg-m, 61.0 lb-ft)
- Install the tie-rod assy ① on the bottom side of tie-rod bracket ② with the spacer ⑦ positioned in between using the bolt ③.
⚙ Bolt ③ : 50 N·m (5.0 kg-m, 36.0 lb-ft)
- Tighten the nut ④ to the end of bolt ③ that has been installed in the step 2) above. (When tightening the nut ④, hold the bolt ③ securely so as not to come loose.)
⚙ Nut ④ : 30 N·m (3.0 kg-m, 21.5 lb-ft)

Adjustment Procedure of tie-rod length

- (1) Loosen the nuts A and B.
- (2) Adjust the tie-rod length by turning the turnbuckle.
- (3) When the tie-rod length has been adjusted, tighten the nuts A and B.

Nut: 85 N·m (8.5 kg-m, 61.0 lb-ft)

The required length of tie-rod depends on the condition. Adjust the length so that the best result can be obtained. The following is an example of adjustment to obtain the optimum result.

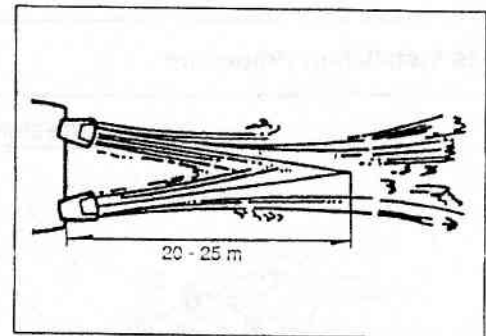
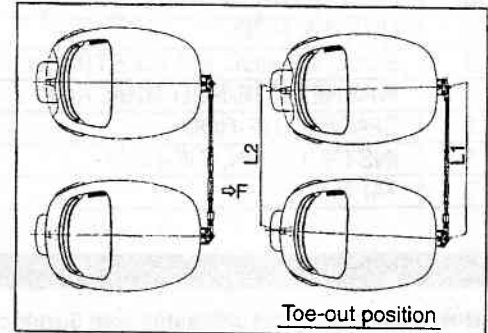
Example: Toe-out position

- (1) Adjust the tie-rod length so that the two engine centerlines in forward direction are away from each other with the differential $L1 - L2$ within 25 mm (1 inch).

NOTE:

The center to center distance for twin engine installation is minimum 635 mm (25 in.).

- (2) The two engine wakes should meet together at approximately 20m ~ 25m behind them.



Recommend rigging Procedure

For the best result, it is recommended that the following be checked.

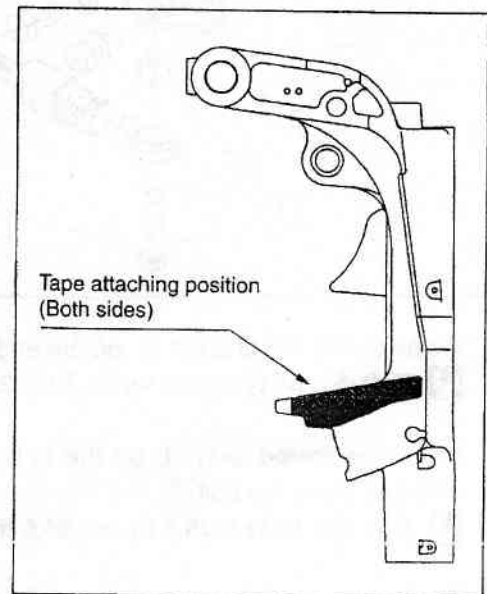
- (1) As shown in illustration, cut four pieces of tape ⑨ which comes provided in this kit and stick them at the swivel stopper area of both the STBD and PORT side engines.

CAUTION

Prior to sticking the tape, make sure to degrease the attaching surface thoroughly.

CAUTION

For increased adhesion, press and scrape the tape surface. At this time, however, use caution not to cause wrinkle, scratch, etc. on the tape.



- (2) Perform double-check to make sure that all the bolts and nut are tightened properly to the specified torque.
- (3) After one hour of operation, perform another check to make sure that all the bolts and nuts are tightened properly to the specified torque.
- (4) After another one hour of operation further to the above, check again visually for the surface condition of aluminum tape. If all the four aluminum tapes show the sign of equal contact, it shows the rigging has been accomplished successfully. If any difference in contact condition is found, adjust the tie-rod length observing the following instructions:
 - ① Requiring shorter tie-rod length:
There is a damage on the starboard side aluminum tape of the starboard side engine as well as on the port side tape of the port side engine.
 - ② Requiring longer tie-rod length:
There is a damage on the port side aluminum tape of the starboard side engine as well as on the starboard side tape of the port side engine.
- (5) If any of the above conditions presents, adjust the tie-rod length to either shorter or longer as appropriate by approximately 5 mm at a time. Repeat the procedures in the steps (1) to (4) until all the four aluminum tapes show the equal contact condition.

CAUTION

Damaged aluminum tapes can no longer be used for the subsequent adjustment and therefore should be replaced.

With the procedures above performed, the rigging completes.

▲ WARNING

- Depending on the boat and adjustment condition, the initial setting of toe-in can turn to toe-out later. Especially when the boat is equipped with outrigger, such a variation may become more evident.
- Double-check all the bolts and nuts for proper installation and tightness.
- After two hours of operation, perform another check to make sure that all the bolts and nuts are tightened properly to the specified torque.
- At the end of every 50 hours of operation, lubricate and check all the parts for wear, installation condition and tightening torque.

INSTALLATION WITH THE PRE-RIGGED ITEMS FOR 2 CYCLE MODEL

When the DF90/115 is installed on the boat which has already been rigged with the items for 2 cycle model, perform rigging by using the following items.

Required parts

Item	Part name	Part number	Q'ty
Ⓐ	Adapter wire harness (meter side)	34711-99E00	1
Ⓑ	Adapter wire harness (engine side)	36661-99E00	1
Ⓒ	Remo-con link plate	67220-95630	1

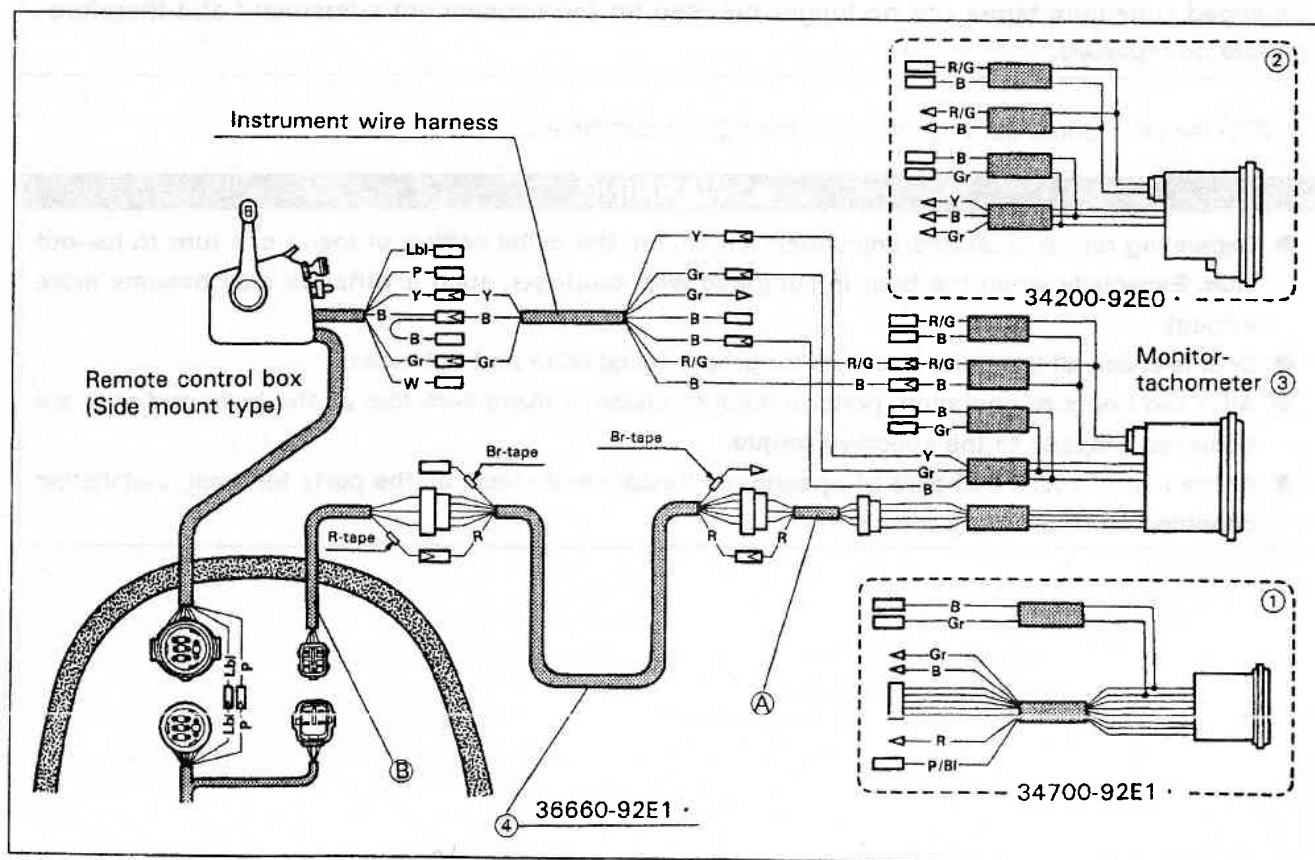
NOTE:

Following procedure are based on the boat which has already been rigged with "34700-92E1 •", "34200-92E0 •", "36660-92E1 •" and "67200-87D3 • (pull-to-open-type)".

Procedure

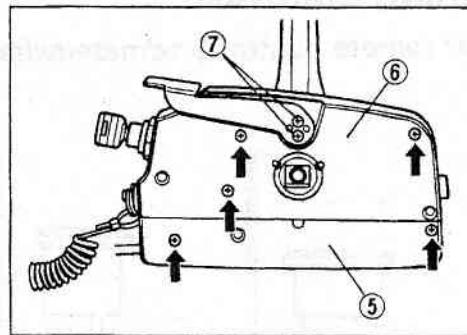
– Wire harness and Meter–

- (1) Remove the monitor gauge ①, then plug the mount hole.
- (2) Remove the tachometer ②.
- (3) Connect the adapter wire harness Ⓐ between the monitor-tachometer ③ and monitor gauge wire harness ④ as shown.
- (4) Install the monitor-tachometer ③ to the hole of original tachometer ②.
- (5) Connect the adapter wire harness Ⓑ between the engine and the monitor gauge wire harness ④ as shown.

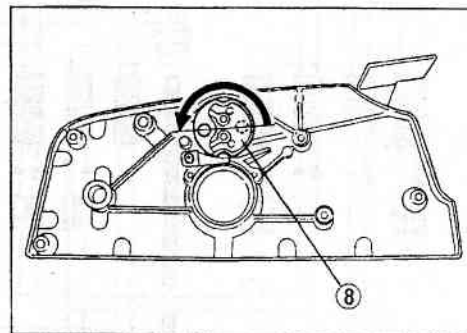


—Remote control box—

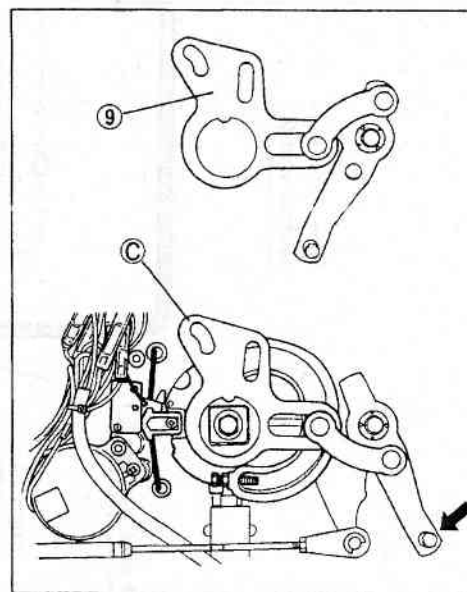
- (6) Remove the screws, back cover ⑤ and ⑥.
- (7) Remove the warm-up lever screws ⑦.



- (8) Remove the drum ⑧, then reinstall the drum ⑧ with 180° turned position by the screws ⑦.



- (9) After disconnecting the throttle control cable, remove the original link plate ⑨ (for pull-to-open).
- (10) Install the link plate ③ (for push-to-open).
- (11) Install the upper back cover ⑥ by the screws.
- (12) After connecting the throttle control cable, install the lower back cover ⑤ by the screws.

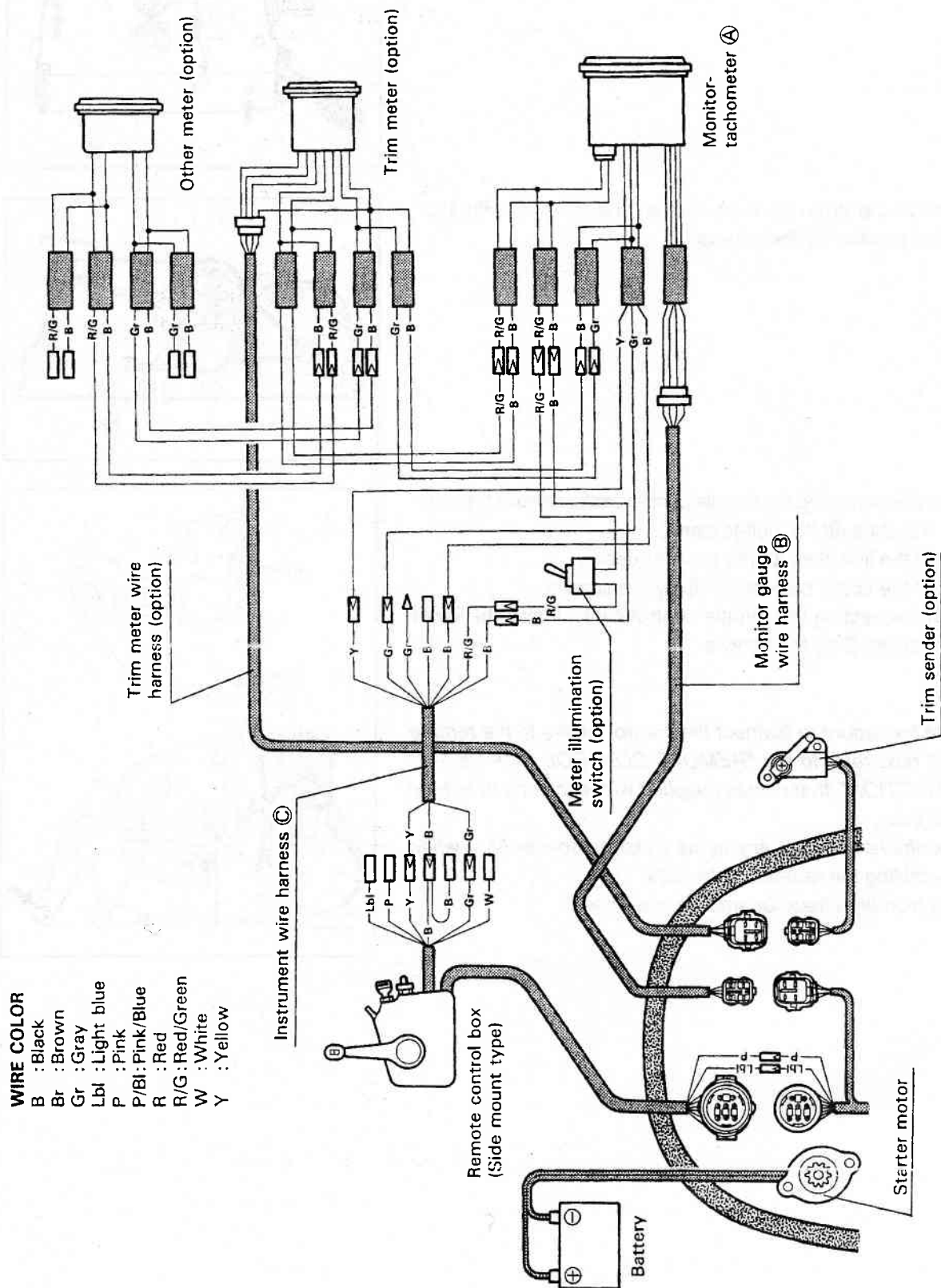


NOTE:

- For the procedure to connect the control cables to the remote control box, refer to the "REMOTE CONTROL BOX SET-UP INSTRUCTION" that comes supplied with each unit of remote control box.
- Be careful not to miss any items (washer, spacer etc.) when reassembling the remote control box.
- After assembly, check for smooth operation.

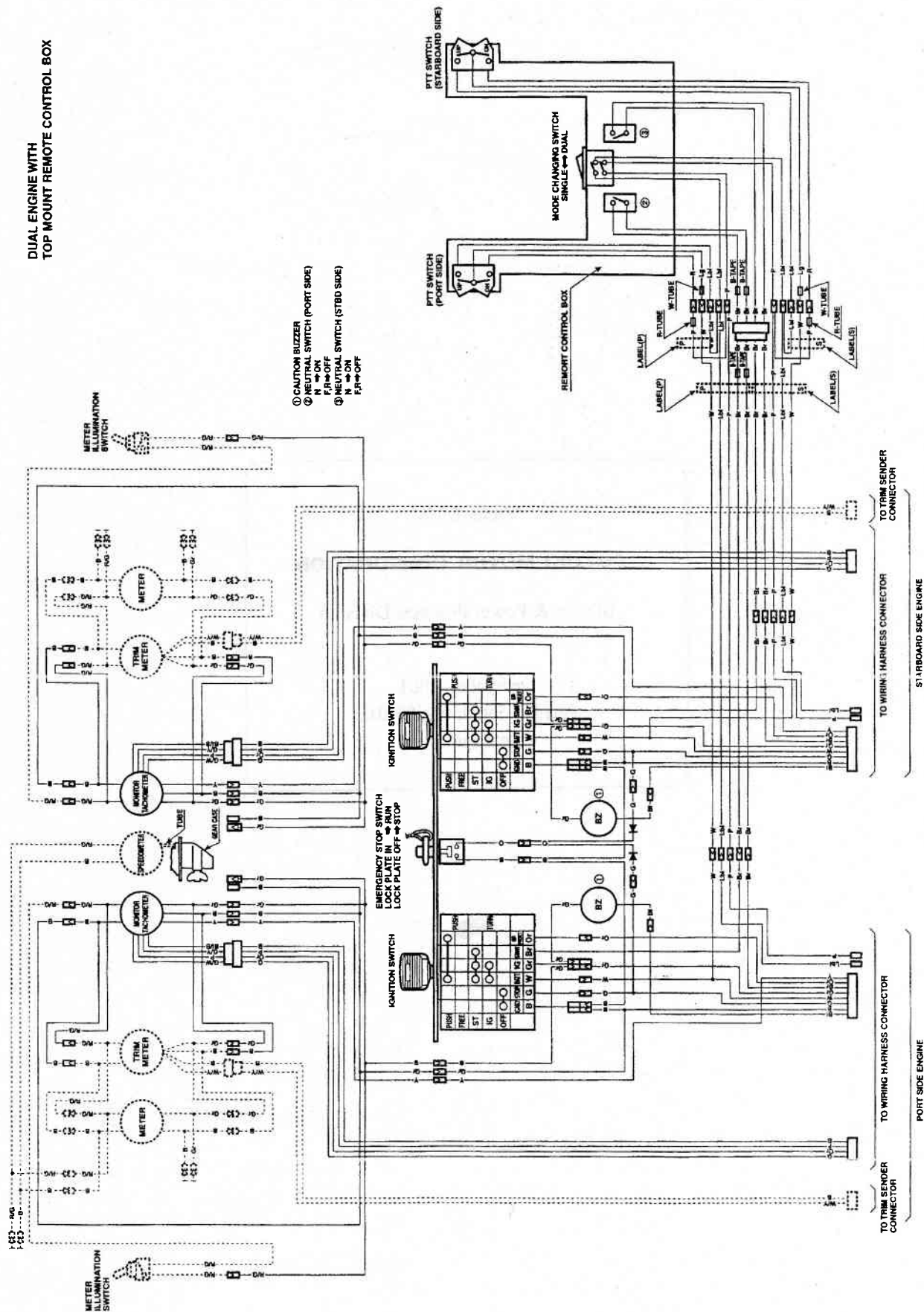
WIRING DIAGRAM

(For remote control box/meter/wire harness)



WIRING DIAGRAM FOR DUAL ENGINE

**DUAL ENGINE WITH
TOP MOUNT REMOTE CONTROL BOX**



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