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INSTALLATION INSTRUCTIONS AND OWNERS MANUAL

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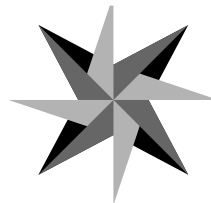


CH5300P



CH5310P

MT-3 CONTROLS
CH5300 SERIES



SEASTAR
SOLUTIONS®

*Before you do it your way,
please try it our way.*

*ch2200
ch2300
mt3
osprey
pro-trim
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twin s
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MARINE ACQUISITION INCORPORATED
DBA SEASTAR SOLUTIONS
U.S.A.

MT-3 CONTROLS

CH5300 SERIES

NOTICE

Installer: these instructions contain important safety information and must be forwarded to the boat owner.

The SeaStar Solutions Model CH5300P, CH5310P, CH5320P and CH5330P Controls provide both shift and throttle operation for outboards, inboards/outboards, or inboards with hydraulic transmissions, or small manual transmissions (Hurth, Yanmar) with light shifting loads of 15 lbs. (6.8 kg.) maximum. It can be used with SeaStar Solutions 3300/33C or Xtreme™ Cables. A heavy Duty Kit (Part Number 308725) is available for a 4300 style cable, when said Cable is used on the CH5310P and CH5330P Single Control.*

**Allison, Borg Warner, Capitol, Caterpillar, Paragon Twin Disc, ZF*

NOTICE

4300 style cables cannot be used on the CH5300P and CH5320P twin control.

Standard control features:

- *Single lever operation per engine.*
- *Neutral throttle warm-up.*
- *Neutral safety switch to prevent starting in gear.*
- *Adjustable shift stroke to accommodate most transmission applications (refer to Figure 2).*

In addition to this control, the following components are required for a complete control system:

- *Two (2) each SeaStar Solutions 3300/33C or Xtreme™ Cables. One for throttle and one for shift for each engine.*
- *Throttle and Shift Connection Kits for engine. See SeaStar Solutions Catalog.*

Tools needed for installation:

<i>Adhesive tape</i>	<i>Sabre saw</i>
<i>Phillips and standard screwdrivers</i>	<i>Power drill</i>
<i>3/8" & 7/16" box end wrenches</i>	<i>3/8" & 7/32" drill bits</i>

NOTICE

Cable installation and connections must be made in accordance with the motor manufacturer's instructions.

To insure best performance, free operation of all linkages and the remote control is essential. Follow the manufacturer's recommended procedures for adjustment and lubrication.

All specifications and features are subject to change without notice.

WARNING

Before starting installation read these instructions and engine makers instructions thoroughly. Failure to follow either of these instructions or incorrect assembly can result in loss of control and cause property damage, injury, or death.

WARNING

DO NOT substitute parts from other manufacturers, they may cause a safety hazard for which SeaStar Solutions cannot accept responsibility.

NOTICE

SeaStar Solutions highly recommends the installation and usage of an engine shut off switch as a important emergency safety feature for boats. This switch should be connected by a cord to the boat driver. Should the driver be thrown from the helm position, the engine will automatically shut off.

This shut off switch is not a standard part of this control. It can, however, be obtained from most marine dealers and distributors.

Section 1: Location of Control

STEP 1. Allow adequate clearance for hand lever swing (forward and reverse positions).

STEP 2. Allow adequate clearance under the console for the cables. Refer to Figure 1.

STEP 3. After a suitable location for the control is determined, use the separate mounting template.

STEP 4. Closely follow the instructions provided on the template. Cut and drill the mounting holes required.

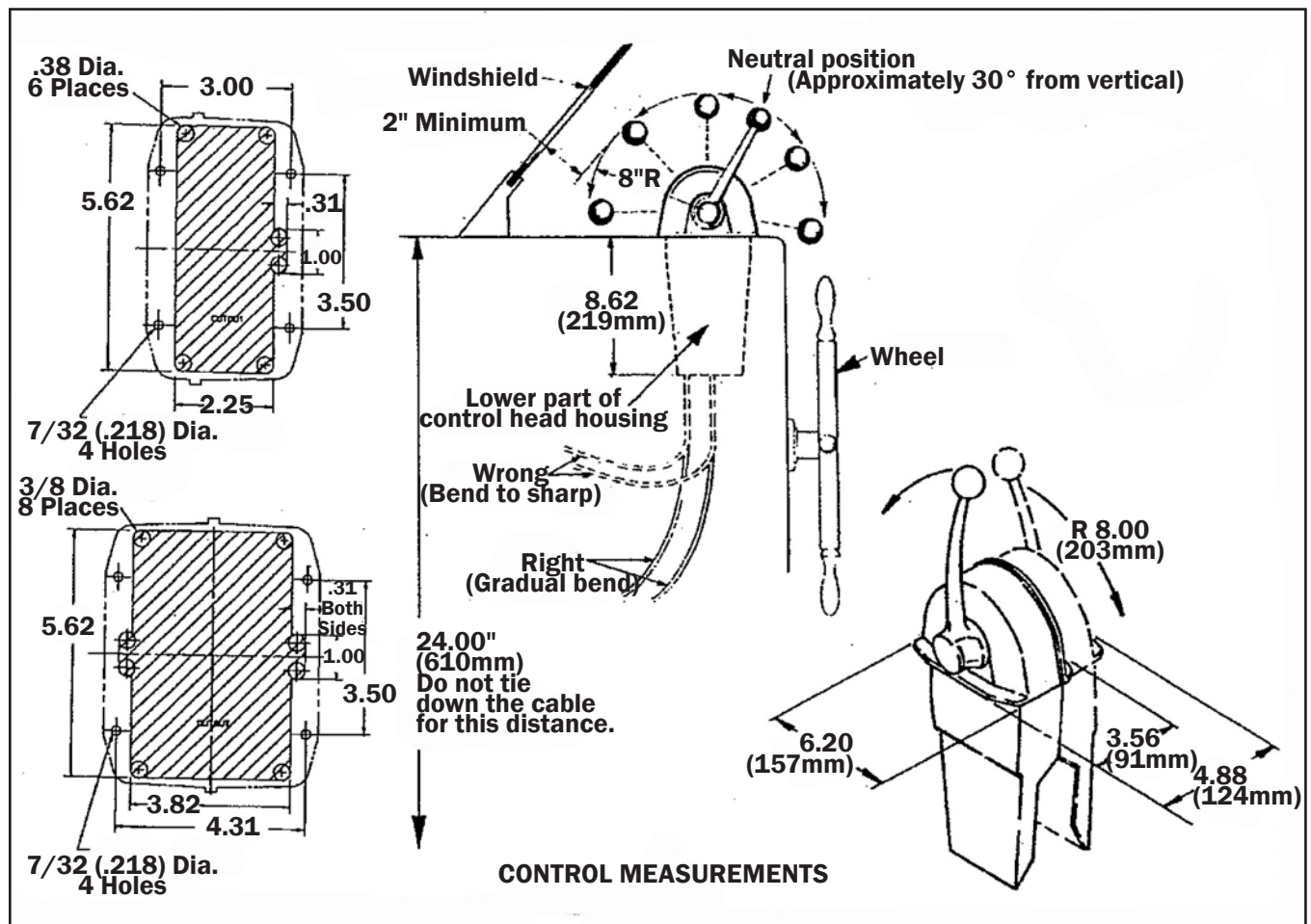


Figure 1.

Section 2: Cable Measurement

Measure from the control head position—along an unobstructed cable routing—to the shift and throttle connections.

Cable lengths are measured from end to end. When a measurement is in feet and inches, round up to the next whole foot.

NOTICE

For outboard engines, add four (4) feet to the measurement to allow for a loop which provides unrestricted engine movement.

Installation of Cables

A. BEND RADIUS. When routing the control cables, select a path with the minimum number of bends, making the bends as large as possible. Sharp or frequent bends will result in difficult throttle or shift control, loss of motion, and premature cable wear. **DO NOT MAKE BENDS OF LESS THAN THE RECOMMENDED MINIMUM BEND RADIUS AS NOTED BELOW.**

Cable Type	Minimum Bend Radius
Standard 3300/33C	8"
Xtreme 3300 Cable	4"
Xtreme 4300 Series	5"

For best performance, SeaStar Solutions recommends using Xtreme cables with this control.

B. SUPPORTING THE CABLE. Do not tie or clamp the cable within 36 inches of the control. When supporting the cable beyond 36 inches of the control, cables should be loosely clamped or tied for support at regular intervals.

CAUTION

Cables must not be bundled together with electrical wiring.

Cables must not rest on sharp edges which can cause chafing.

C. CABLE ROUTING. Cables shall not be installed in areas of excess heat such as on, or close to, exhaust manifolds where temperatures may exceed 212 °F (100 °C).

Section 4: Shift Cable Connection— Control End

NOTICE

To determine the correct control configuration for inboard engines equipped with hydraulic clutches, it is first necessary to determine whether the control cables must exert a “push” or “pull” action at the transmission lever to engage forward gear, and a “push” or “pull” action at the carburetor lever to open the throttle.

Refer to the engine application guide for the proper cable action to suit your engine and transmission.

The Shift Arm is factory-set for standard travel (center notch). Refer to Figure 2.

SHIFT STROKE ADJUSTMENT

If you find it necessary to change this position, proceed as follows:

NOTICE

This control must be disassembled and re-assembled to perform this operation. Because proper assembly and cable adjustment is so important to the boat's performance, we recommend this conversion be completed by a boat dealer or boat repair facility.

STEP 1. Loosen the two (2) hex head cap screws so the Shift Arm can be lifted to clear the notches

STEP 2. Reposition the Shift Arm to the desired stroke. Be sure the notches are properly engaged before tightening the screws. Refer to Figure 2.

STEP 3. Tighten the hex head screws to 75-80 inch lbs.

NOTICE

For opposite cable action, shift arm and neutral safety switch should be a mirror image of that which is shown.

ENGINE APPLICATION GUIDE			
ENGINE MAKE	SHIFT CABLE	THROTTLE CABLE	SHIFT CABLE ATTACHMENT HOLE
Johnson/Evinrude, OMC I/O, Mercury 18 & 25 H.P.	Cable "pulls" to go forward.	Cable "pushes" to open throttle.	Short (except OMC "King Cobra" I/O uses long hole)
Mercury & Mariner Outboards; Mercruiser I/O's	Cable "pulls" to go forward.	Cable "pulls" to open throttle.	Long
Volvo I/O	Cable "pushes" to go forward.	Cable "pulls" to open throttle.	Standard
Yamaha 90 H.P. & up; US Marine (Force)	Cable "pulls" to go forward.	Cable "pushes" to open throttle.	Standard
Honda, Suzuki, Tohatsu (All models), Yamaha 70 H.P. & under	Cable "pulls" to go forward.	Cable "pulls" to open throttle.	Standard
Inboards (Diesel or Gas)	Most inboard transmissions "pull" to go forward.	Most inboard throttles or governors "pull" to open.	Standard
Yamaha I/O's (All)	Cable "pulls" to go forward.	Cable "pulls" to open throttle.	Standard

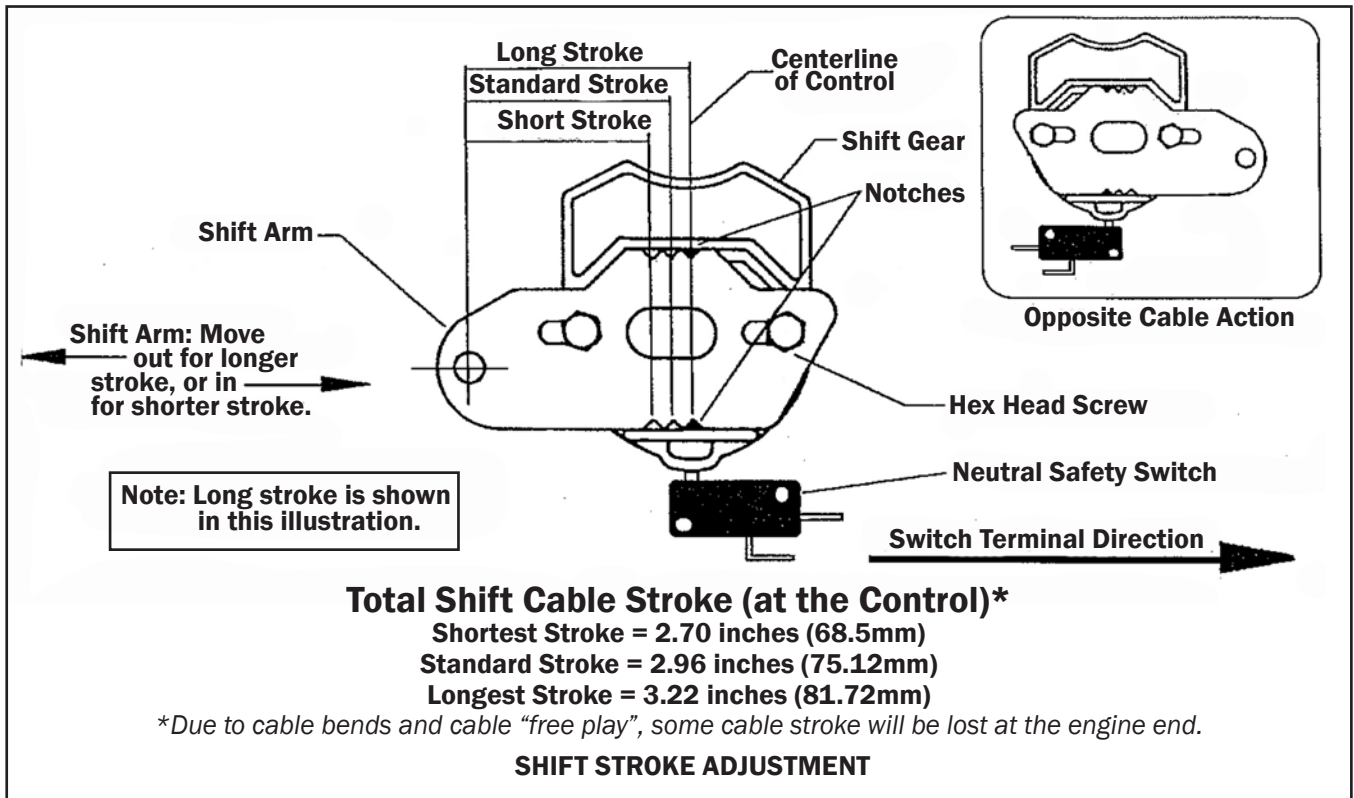


Figure 2.

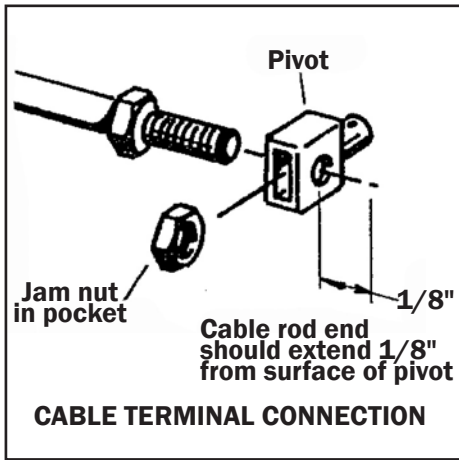


Figure 3.

SHIFT CABLE CONNECTION

STEP 1. Attach the Pivot to the end of the Shift cable, as shown in Figure 3.

STEP 2. Feed the Cable behind the Shift Arm and insert the Pivot into the hole. Secure the Pivot in place with the Cotter Pin included.

STEP 3. Attach the Cable Hub to the bottom of the Housing at the tapped hole location for 3300/33C type cables. Make sure the groove in the cable Hub engages the Cable Clamp.

Section 5: Shift Cable Connection— Engine End

After the shift cable connections are done at the control end, refer to engine manufacturers recommendations for attaching cable to transmission shift lever.

NOTICE

To assure smooth control operation and avoid preloading of system, put hand lever into full forward throttle before connecting cable to shift lever and transmission linkage.

Section 6: Throttle Cable Connection— Control End

Refer to the ENGINE APPLICATION GUIDE, SECTION 4, for the proper Cable action to suit your engine.

The Throttle lever may be factory-set for “push” to open throttle. Refer to Figure 4. If you find it necessary to change to “pull” to open throttle, proceed as follows:

NOTICE

This control must be disassembled and re-assembled to perform this operation. Because proper assembly and cable adjustment is so important to the boat’s performance, we recommend this conversion be completed by a boat dealer or boat repair facility.

STEP 1. Remove the Hand Lever.

STEP 2. Remove the Throttle Cable, if attached.

STEP 3. Remove the Swivel Bracket.

STEP 4. Remove the two (2) hex head screws, at the Link Assembly, and remove the Link. Make sure the Shift Arm does not change notch positions.

STEP 5. Push in on the Throttle Arm toward the Housing and rotate it 180 degrees until it snaps back into place.

STEP 6. Attach the Link Assembly in the desired position using the Hex Head Screws. Tighten the Screws to 75-80 inch lbs.

STEP 7. Attach the Swivel Bracket in the proper hole. See Figures 4 and 5 for proper location.

STEP 8. Reinstall the Cable and Hand Lever.

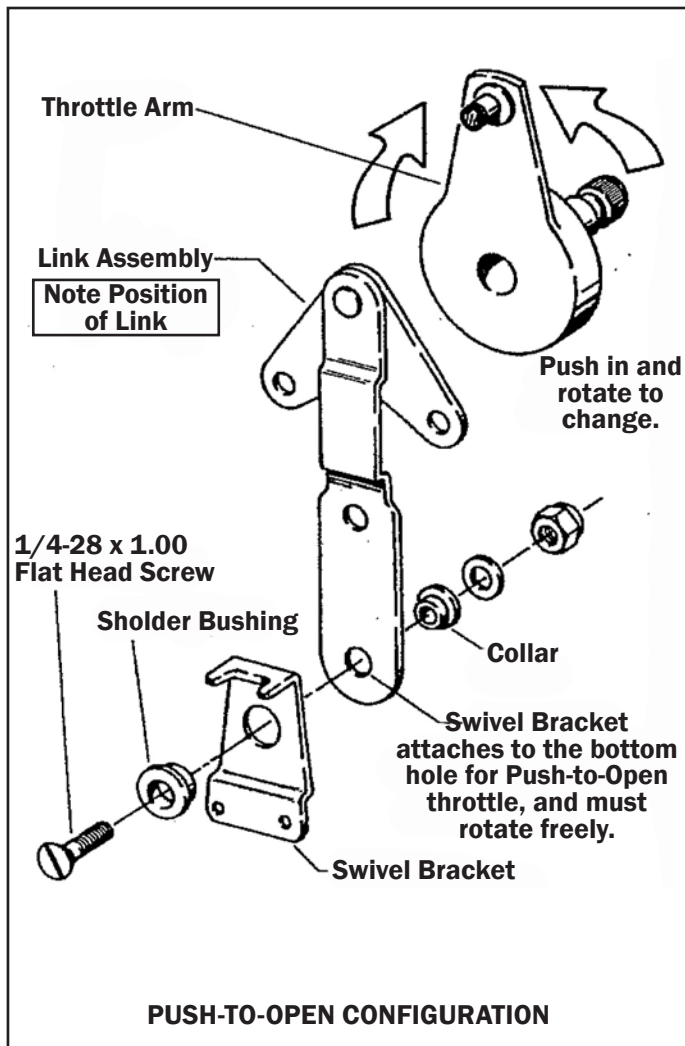


Figure 4.

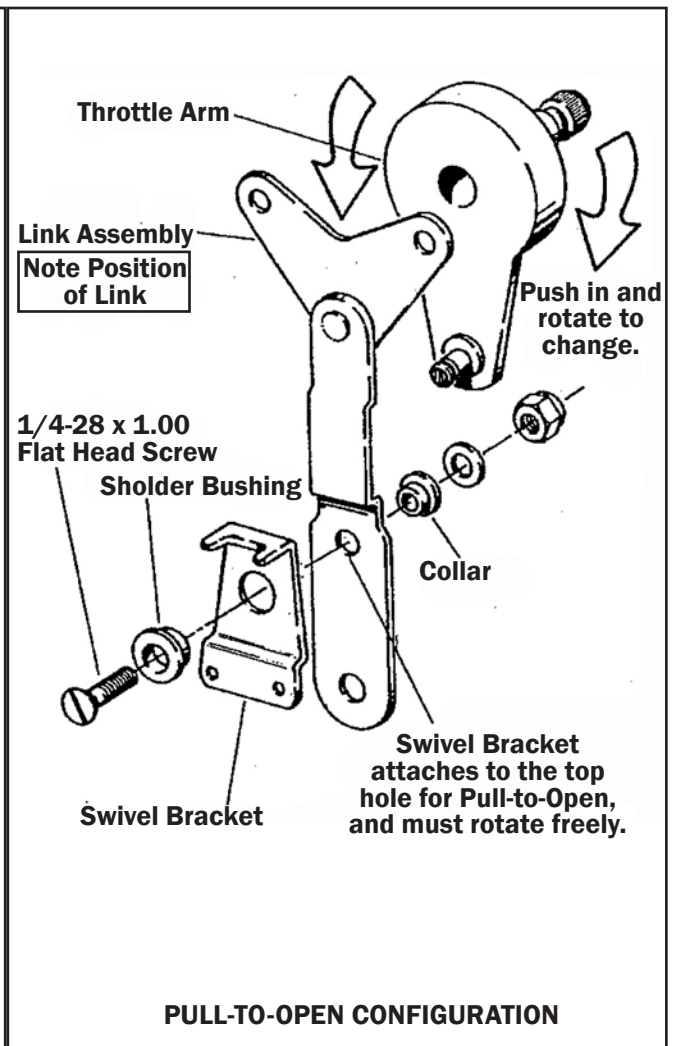


Figure 5.

Section 7: Throttle Cable Connection— Engine End

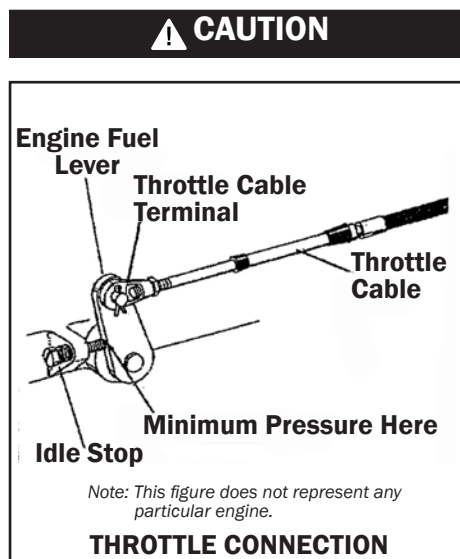


Figure 6.

The throttle cable must be disconnected from the motor before making motor idle adjustments. Adjustment of the motor idle while the throttle cable is connected to the motor may cause jamming action against the idle stop. As a result, the control may not function properly and damage to the control, the cable and/or the motor may occur.

STEP 1. Make sure the Control is in Neutral Detent.

STEP 2. The Fuel Lever should rest lightly against the idle Stop on the carburetor.

STEP 3. Connect the Throttle Cable to the fuel lever.

STEP 4. At the Neutral Detent, pull out the Hand Lever Hub and move the Lever PAST the forward range. Return to NEUTRAL and the Hand Lever should snap back into place.

NOTICE

Place "Forward-Reverse" decal on housing, opposite the neutral position of the hand lever.

Section 8: Neutral Safety Switch

The CH5300P, Ch5310P, CH5320P and CH5330P Controls are provided with a Neutral Safety Switch. This switch is used to prevent the engine from starting in gear.

NOTICE

Use a battery-powered test light or test meter to check continuity.

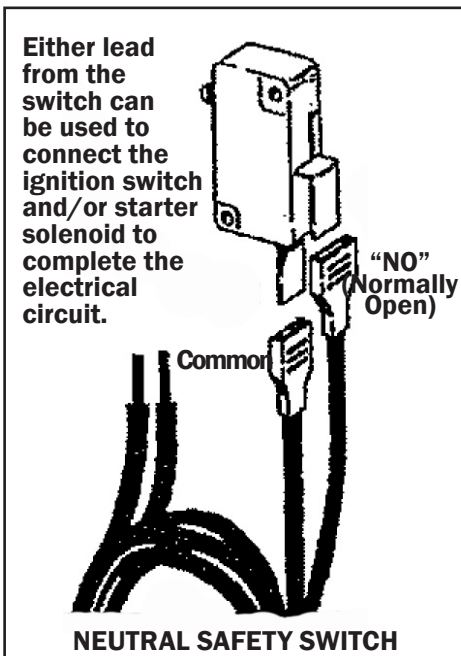


Figure 7.

⚠ CAUTION

Use a multimeter or continuity tester to make sure that there is electrical continuity only when the control is in neutral position. When the control is in forward or reverse gear there must not be electrical continuity.

Section 9: Maintenance Notes

1. After a few hours of operation and at frequent intervals thereafter, check all fasteners and the complete control system for security and integrity.

DANGER

Loosening or loss of one or more fasteners may cause failure of the control system and could cause property damage, injury, or death.

2. Keep all moving parts free from build-up of salt and other foreign material. This will affect their operation and create control problems.

3. Periodically inspect for corrosion. Any parts affected by corrosion must be replaced. Any replacement hardware must be as originally supplied (i.e. similar material and locking features).

4. Periodically inspect control cables for cracks and other damage. If any is found the cable must be replaced.

5. If cable is stiff in operation, it is unsafe to use and must be replaced immediately.

DANGER

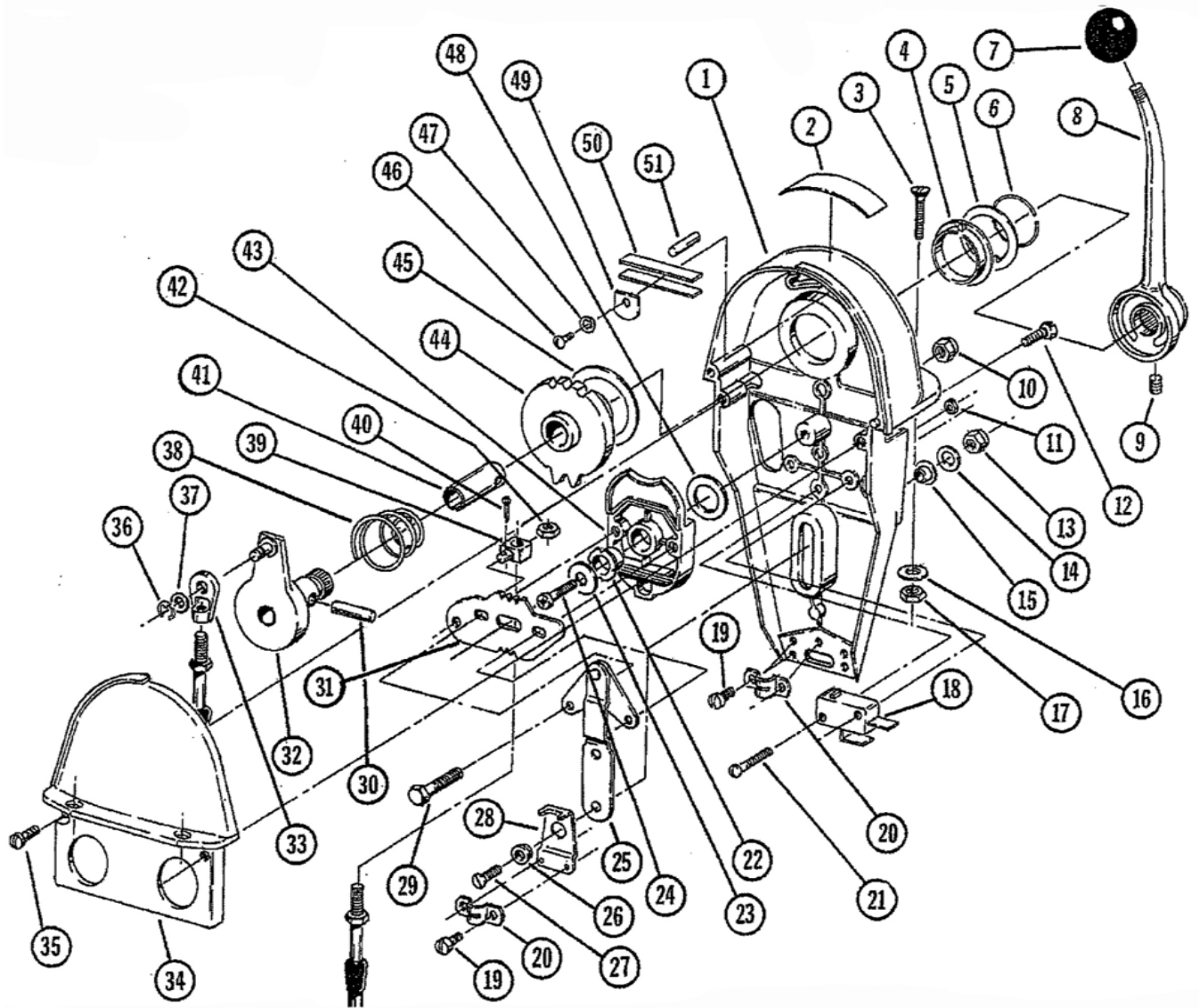
DO NOT cover cracks with tape or other sealants. This will create a hazard in which the cable can fail suddenly without warning, resulting in property damage, injury, or death.

NOTICE

Boat builder and boat dealer, please supply these Installation Instructions and Owner's Manual with the delivery of boat. Boat owner keep these instructions with your boat for future reference. Boat owner consult with your boat builder, boat dealer, or SeaStar Solutions if you have any questions regarding these instructions.

BILL OF MATERIAL		
ITEM	QUANTITY	DESCRIPTION
1	1	HOUSING, CHROME
2	1	DECAL—"FWD"—"REV"
3	4	OVAL HEAD SCREW, #10-24 X 1.50 LONG
4	1	DRIVE GEAR BEARING
5	1	KEYED WASHER
6	1	SPLIT RING
7	1	RED BALL KNOB
8	1	HANDLE
9	1	HEX SOCKET SETSCREW, 5/16-18 X 1/2 LONG
10	1	HEX ELASTIC STOP NUT, #10-32
11	2	HEX NUT, #4-40
12	1	FILLISTER HEAD PHILLIPS SCREW, #10-24 X 1.00 LONG
13	1	HEX ELASTIC STOP NUT, 1/4-28
14	1	1/4 FLAT WASHER
15	1	COLLAR
16	4	#10 FLAT WASHER (.203 ID X .56 OD X .040 THK)
17	4	HEX NUT, #10-24
18	1	NEUTRAL SAFETY SWITCH
19	4	FILLISTER HEAD SCREW, #10-24 X .31 LONG
20	2	CABLE CLAMP
21	2	ROUND HEAD SCREW, #4-40 X .62 LONG
22	1	SHIFT BEARING
23	1	THRUST WASHER
24	1	ROUND HEAD SCREW, #10-32 X 1.00 LONG
25	1	LINKAGE ASSEMBLY
26	1	SHOULDER BUSHING
27	1	FLAT HEAD SLOTTED SCREW, 1/4-28 X 1.00 LONG
28	1	SWIVEL BRACKET
29	2	HEX HEAD SCREW, 1/4-28 X .62 LONG
30	1	GROOV-PIN, TYPE 5, .187 DIA. X 1.38 LONG, SST
31	1	SHIFT ARM
32	1	THROTTLE ARM ASSEMBLY
33	1	CABLE TERMINAL
34	1	SIDE COVER
35	1	FILLISTER HEAD PHILLIPS SCREW, #10-24 X .62 LONG
36	1	E-RING, .312 NOMINAL
37	1	FLAT WASHER, .328 ID X .56 OD X .062 THK
38	1	CONICAL SPRING
39	1	CABLE PIVOT
40	1	COTTER PIN, .093 X .50 LONG, BRASS
41	1	THROTTLE ARM BEARING
42	1	HEX JAM NUT, #10-32
43	1	SHIFT GEAR
44	1	DRIVE GEAR
45	1	WAVED WASHER
46	1	ROUND HEAD SCREW, #10-24 X .31 LONG
47	1	#10 INTERNAL TOOTH LOCKWASHER
48	1	SPACER WASHER
49	1	DETENT RETAINER CLIP
50	2	FLAT SPRING
51	1	DETENT ROLLER

Exploded View





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