

GARMIN™

TR-1 Gold

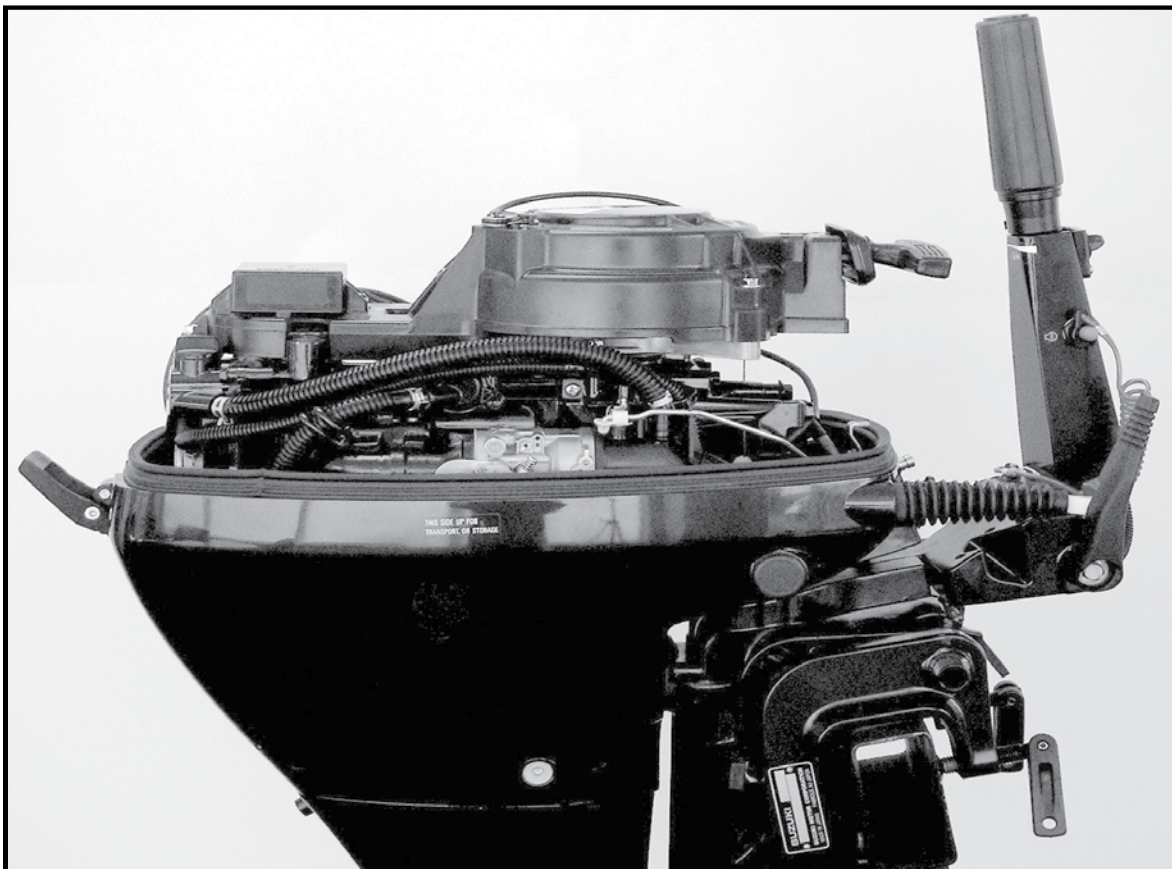
Throttle Actuator Installation Instructions

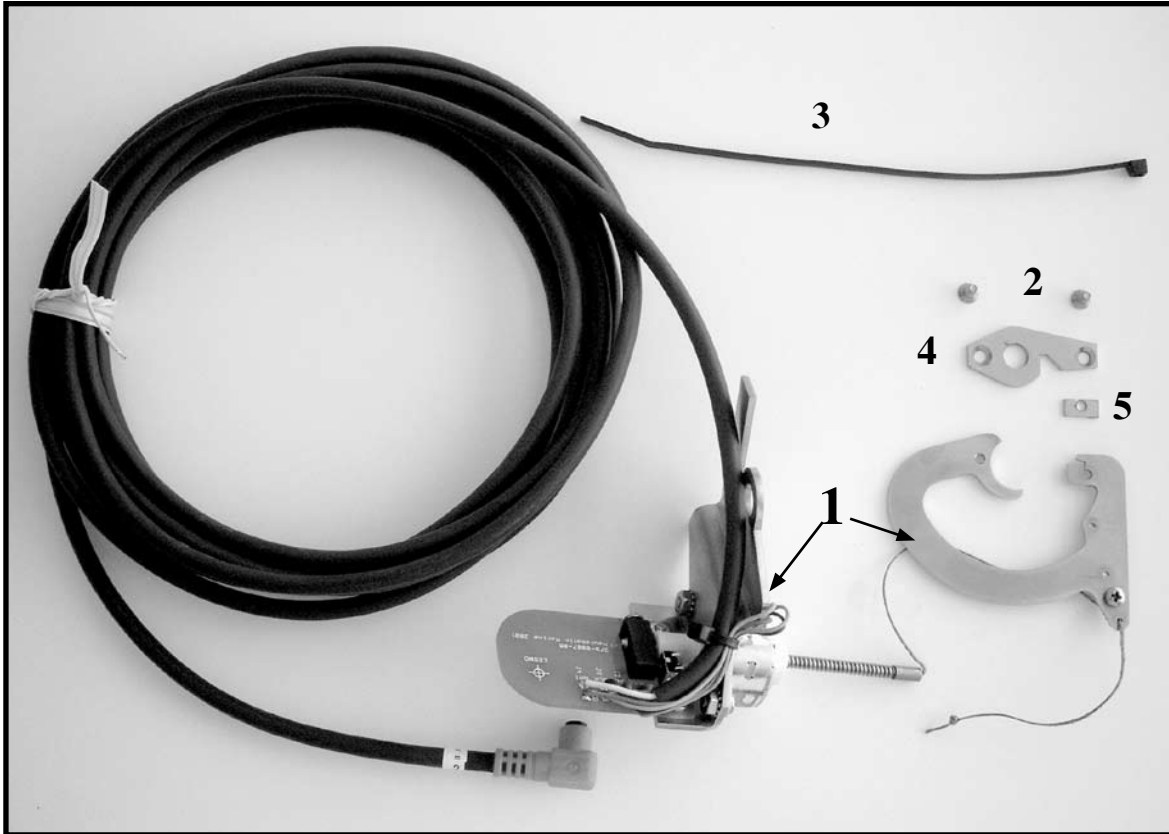
Suzuki 9.9 HP: 1997- 2004

Suzuki 15 HP: 1997- 2004

OMC 9.9 HP: 2003 and Newer

OMC 15 HP: 2003 and Newer





Suzuki/OMC Throttle Parts			
Item #	Part Number	Description	Qty.
1	130-1090-01	Throttle Actuator Assembly. Suzuki/ OMC	1
2	310-0004-25	#4-40 X 1/4 Phillips Flathead screw	2
3	305-0002-02	Small Tie Wrap	1
4	380-1098-00	Plate, Bell Crank Draw	1
5	380-1099-00	Plate, Bell Crank Spacer	1

Tools Needed:



Suzuki/OMC Outboard Motor Service Manual Manufacture's Part # 99500-93E02-01E
Vice Grips or Similar
Pliers
Ratchet
12mm socket
10mm socket
Extension
6mm internal Hex Bit (Allen)
Torque Wrench
Hacksaw
#1 Phillips screw driver
#3 Phillips screw driver
Loctite or Similar thread locker

Warning! Please Read. This application can be a difficult throttle installation, and requires the use of a Torque Wrench in the installation. Since this engine is so tightly packaged, you may wish to have your Suzuki/OMC dealer install this for you. Read through the instructions completely before proceeding. If you have any questions, please don't hesitate to call our technical service advisors.



Figure 1

Step One:

Disconnect motor from battery and or disconnect safety lanyard, to prevent motor from starting during throttle actuator installation

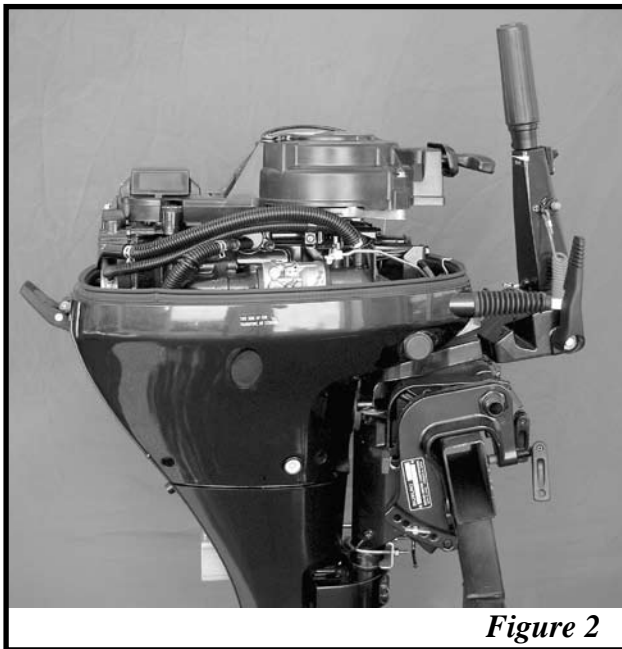


Figure 2

Step Two:

Remove Cover (cowling) from motor.

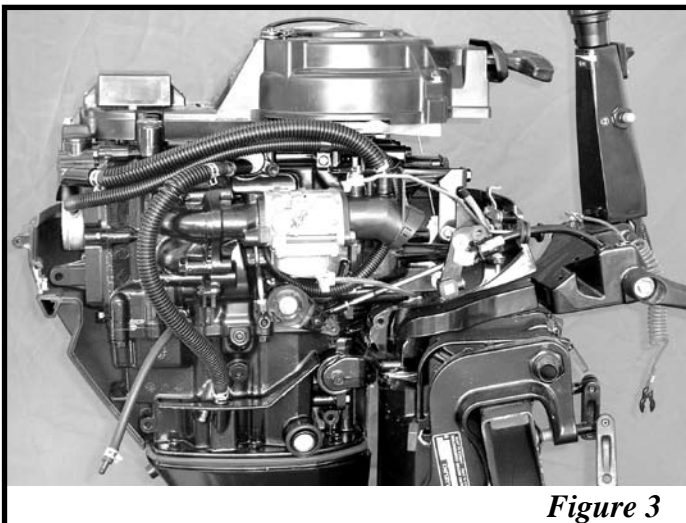


Figure 3

Step Three:

Remove the right side cover as described in the Service Manual.

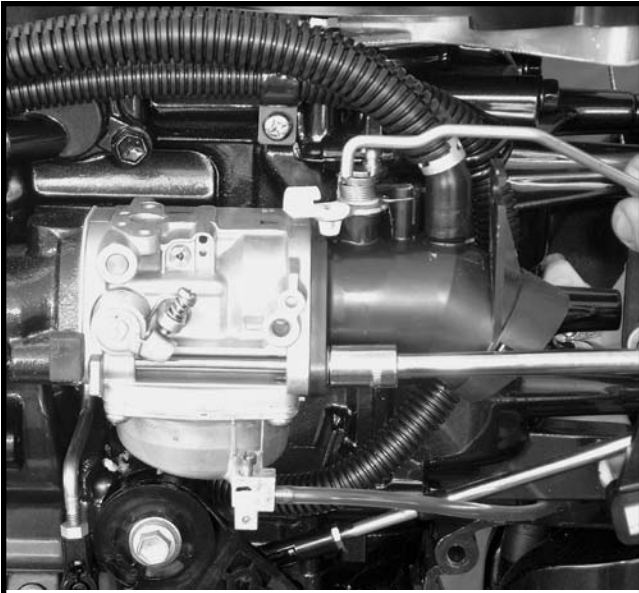


Figure 4

Step Four:

Remove the carburetor as described in the Service Manual. Leave the fuel hose attached, as shown in figure 5.

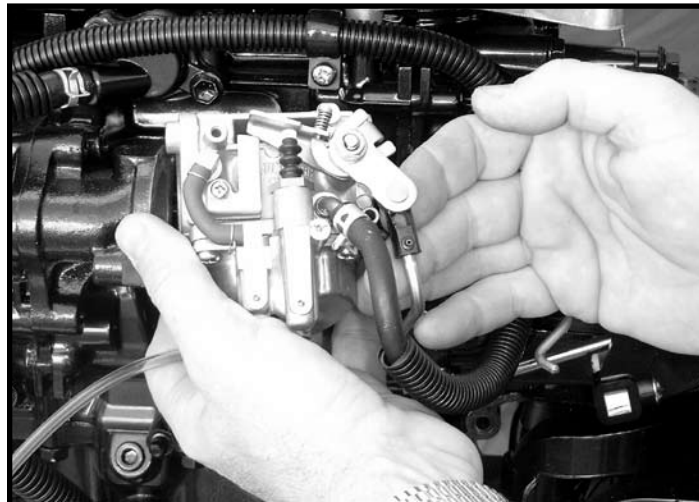


Figure 5

Step Five:

Remove the outer throttle lever parts. See figures 5 and 6. Note the order and orientation of these parts as they are removed. See Figure 7.



Figure 6

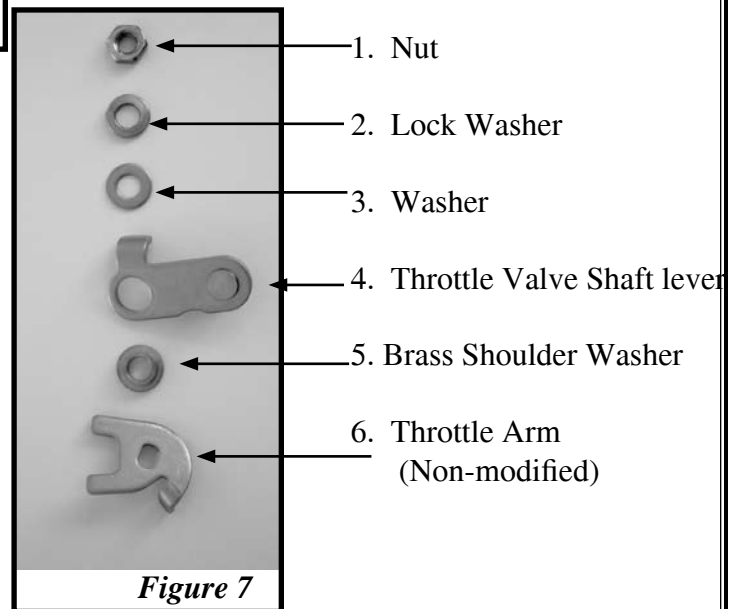
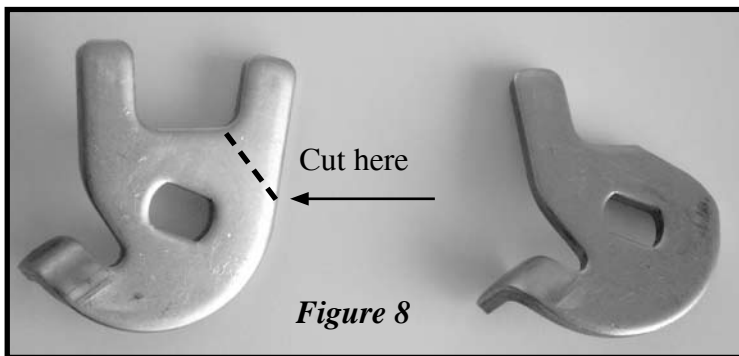


Figure 7



Original Part

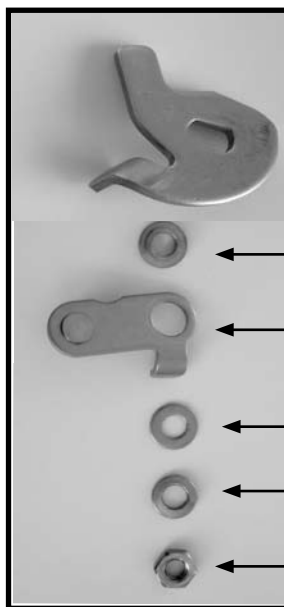
Modified Part

Step Six:

Remove the return ear of the throttle arm, as shown in figure 8.

Note: This Modification allows the throttle to be advanced by either the tiller or remote, or by the TR-1 Throttle actuator. It will also disable the “force to idle” feature of the standard throttle.

Replace these parts in the order that they were removed. (See step seven) Start first with the modified throttle arm.



1. Throttle Arm (Modified) (Figure 9)

2. Brass Shoulder Washer (Figure 10)

3. Throttle Valve Shaft lever (Figure 11)

4. Washer (Figure 12)

5. Lock Washer (Figure 13)

6. Nut (Figure 13)

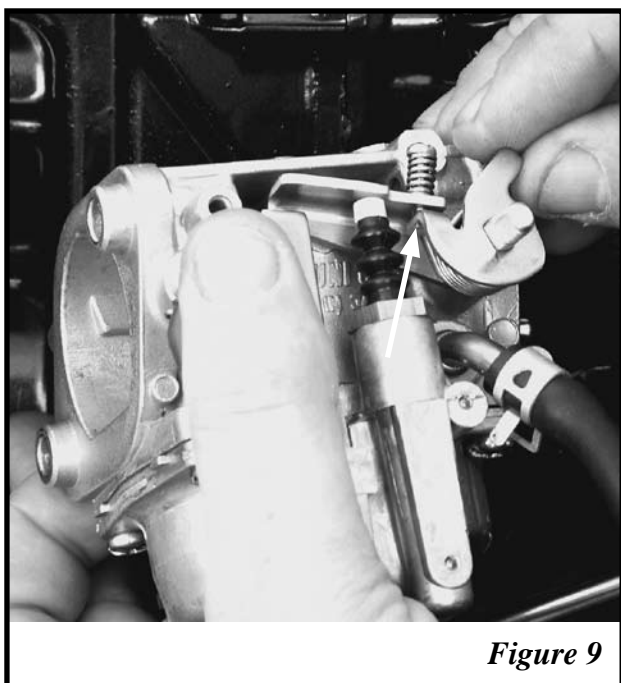


Figure 9

Step Seven:

Re-assemble the lever assembly starting with the throttle arm first. Be sure that the return spring gets wound down to engage the lever, as it was before the arm was removed. Re-assemble the remaining pieces using figures 10, 11, 12, and 13

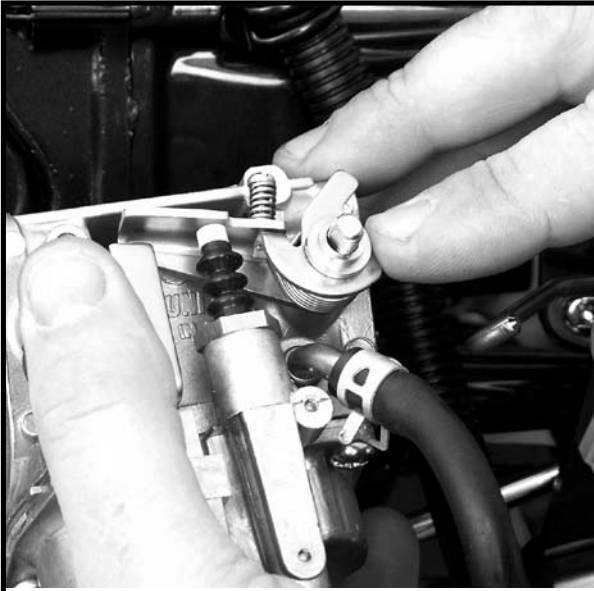


Figure 10

Install Brass Shoulder Washer. See figure 10.

Install Throttle Valve Shaft Lever. See figure 11

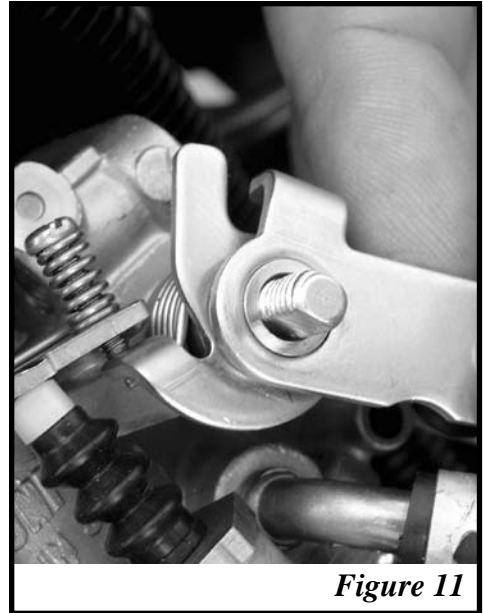


Figure 11

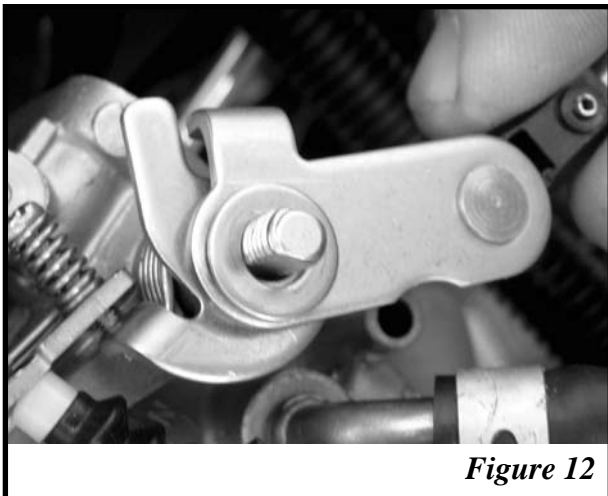


Figure 12

Install the first washer. See figure 12.



Figure 13

Install the lock washer, then install the nut. See figure 13.



Figure 14

Retighten the lever assembly. See figure 14.

Note: If you did not change carburetor adjustment screws, they should not need re-adjustment

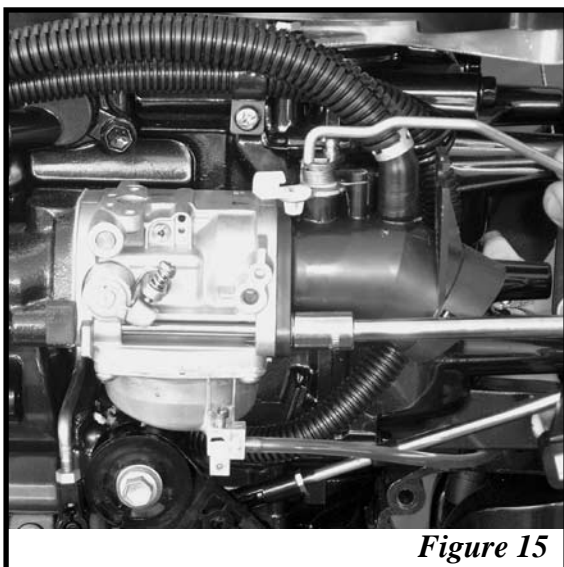


Figure 15

Step eight:

Re-Install the carburetor according to the directions in the service manual.

If you decide to remove the carburetor by detaching the carburetor manifold from the head. Re-torque those bolts to 10 Nm/7 Ft. Lb.

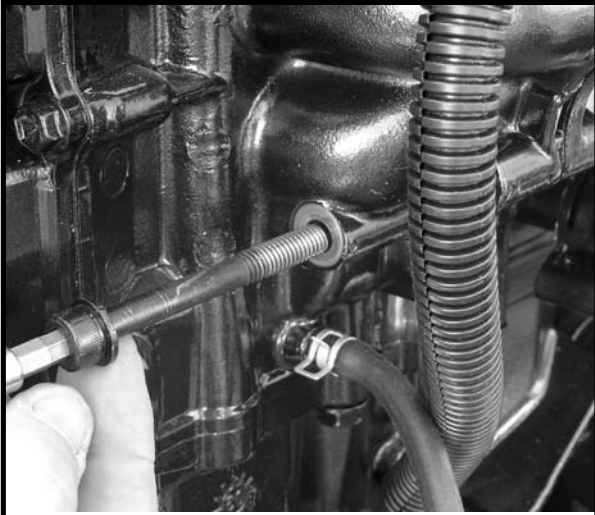


Figure 16

Step Nine:

Remove the head bolt, as indicated in figure 16.

Route the water hose inlet behind, or under the water inspection hose.

Use the removed cylinder head bolt to mount the throttle actuator bracket as shown.

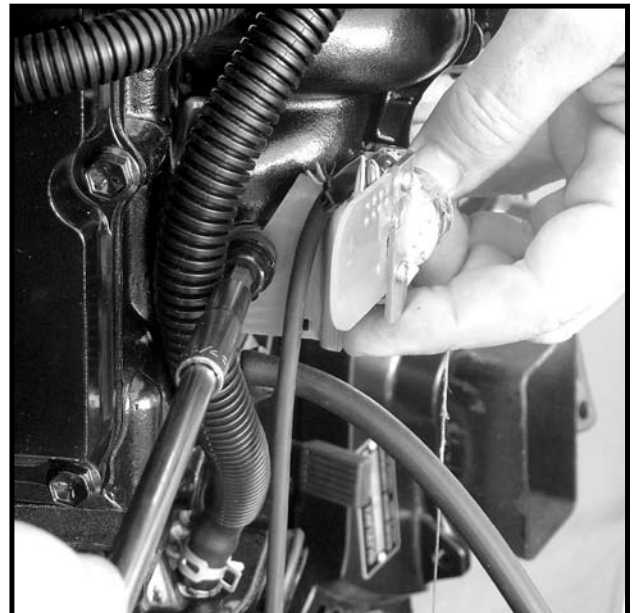


Figure 17

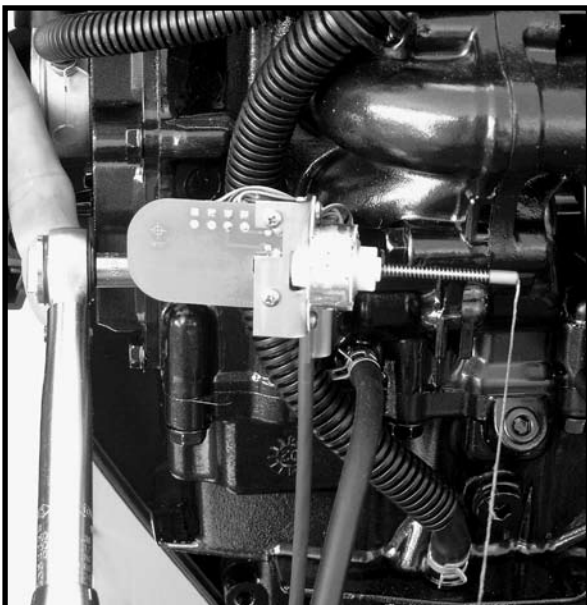


Figure 18

Torque bolt 30Nm/21.5 lb. ft.

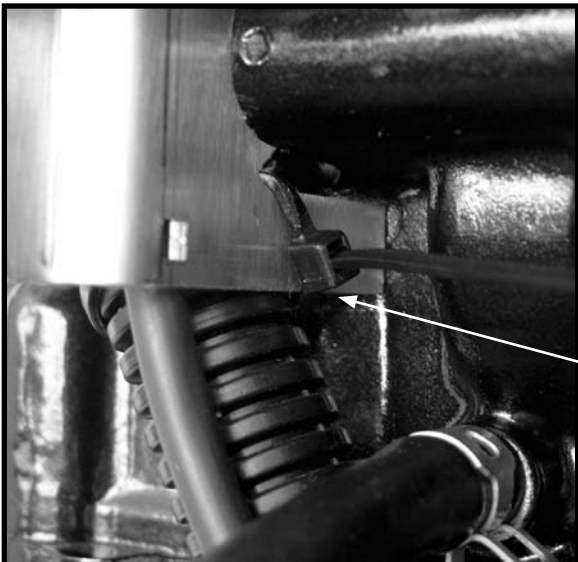


Figure 19

Step Ten:

Tie wrap the water inlet line to the leg of the actuator mounting bracket as shown in figure 19.

Step Eleven:

Mount the throttle bell crank. Put the radius of the bracket against the backside (spring side) of the white plastic Spring Bushing. It goes in between the spring and the head of the bushing. See figure 20.

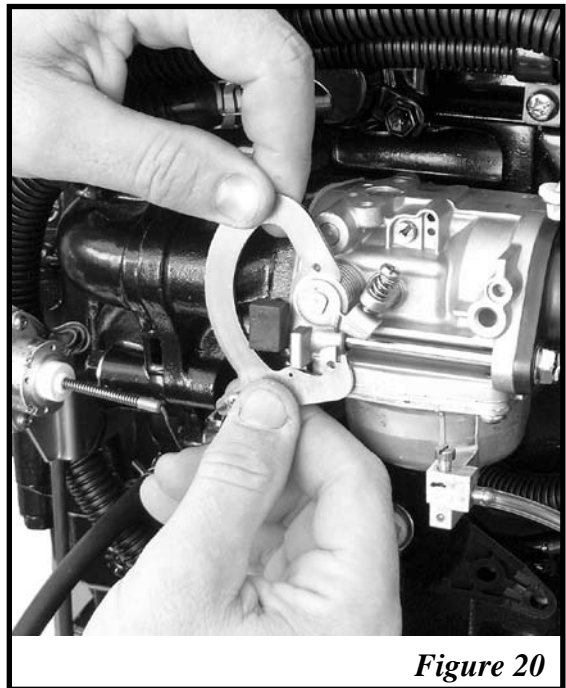


Figure 20

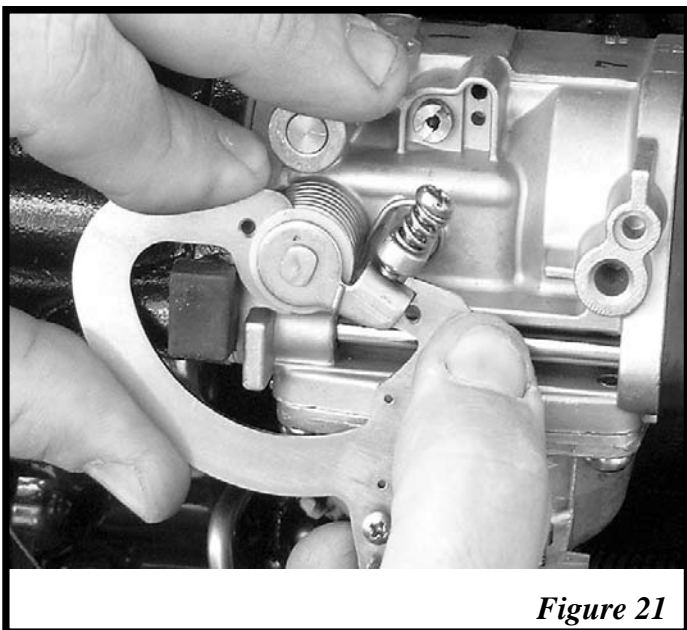


Figure 21

Rotate the Bracket counter clockwise and tip the bottom out slightly, and the top right in, so it will go under the throttle return spring lever. Engage the bent tab of the spring lever in the slot of the bell crank lever. See figure 21.

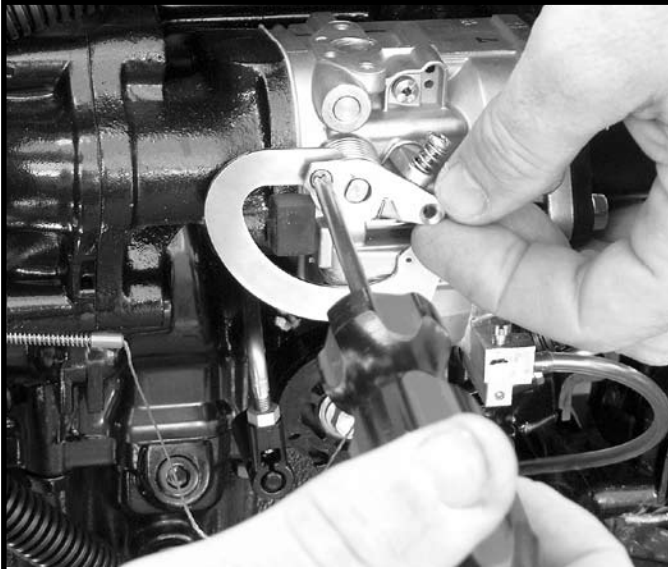


Figure 22

Place the spacer plate with its hole lined up with the threaded hole of the bell crank, and between the crank and the face of the spring lever. See figure 23.

Use thread locker on screw and put the second screw through the draw plate long end, through the spacer plate hole, and into the bell crank threaded hole. Tighten both draw plate screws. Check to be sure the throttle rotates and returns to idle stop freely. See figure 24

Step Twelve:

Use thread locker (locktite) on screw. Put the draw plate hole over the butterfly shaft end and just start the screw on the short (upper left) end. See figure 22



Figure 23

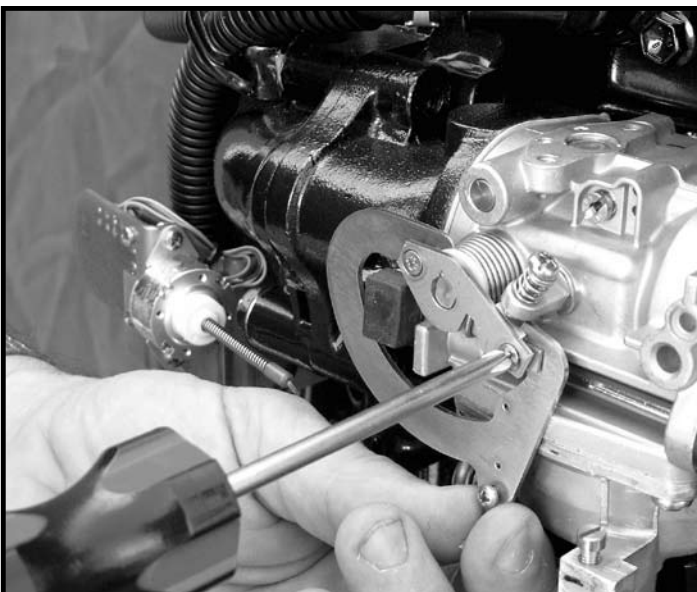


Figure 24

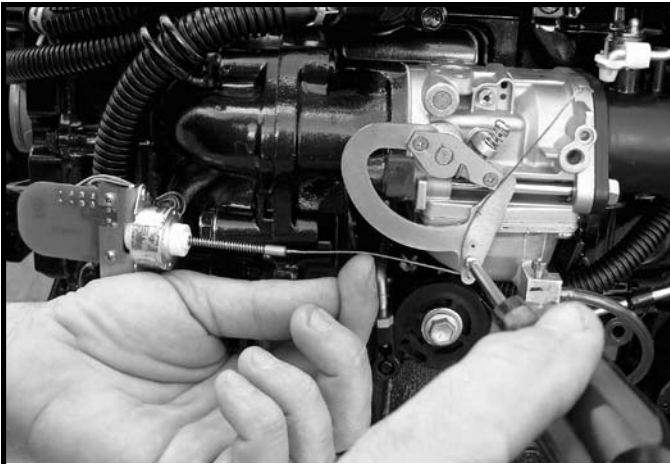


Figure 25

Step Fourteen:

Connect to Electrohydraulic unit at number 2. Be sure to seat this connection firmly.

(Other connections per autopilot installation manual.)

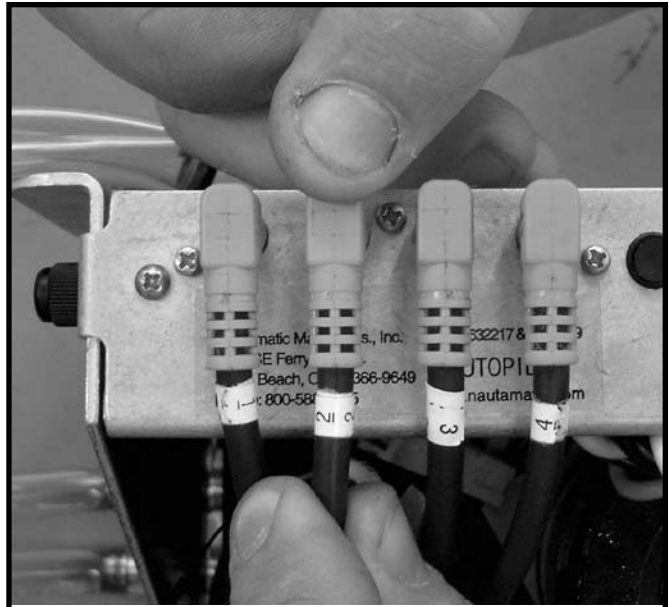


Figure 26

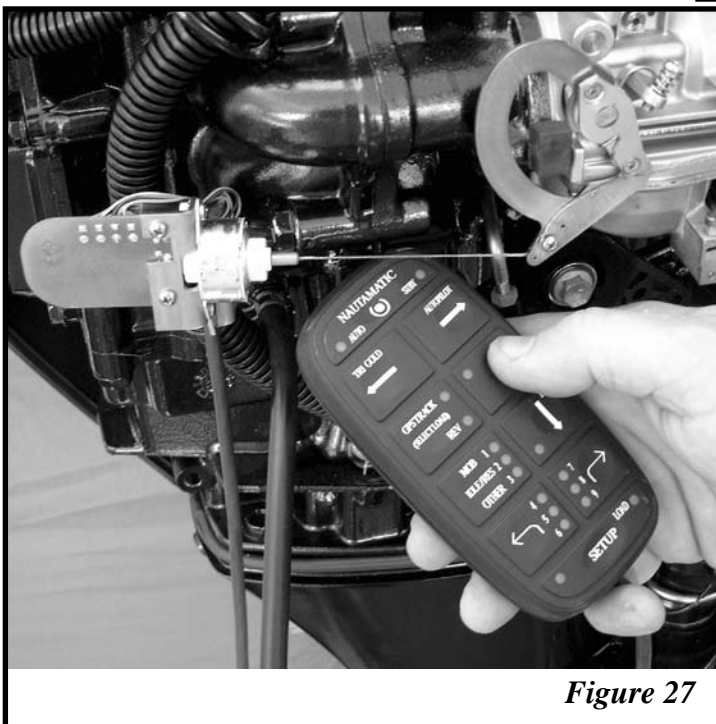


Figure 27

Step Thirteen:

Push the actuator shaft (threaded rod) to the fully extended position. Adjust the throttle pull string so there is a 1/16 of an inch bow of slack at full idle and use the screw to lock the string in this position.

Step Fifteen: Test Actuator

Turn the system on by pressing and releasing the Deckmount button (On/Off switch). The Deckmount will continue to flash for 30 seconds, but the throttle functions will work while it is flashing. Press and hold the up arrow on the handheld as shown in figure 27, until the actuator rod (threaded rod) is fully retracted. It should move freely without any binding.

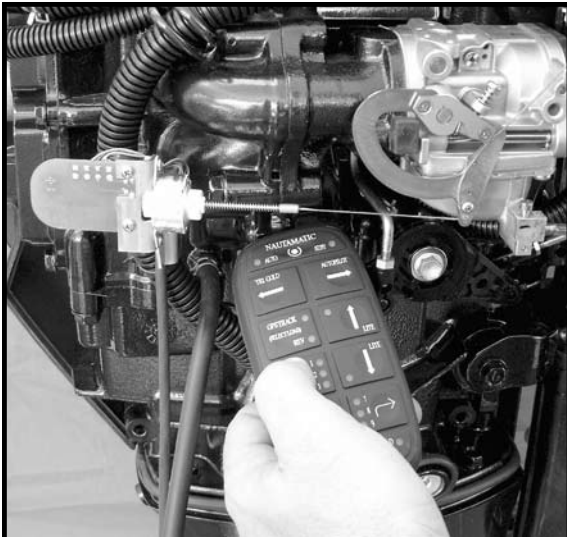


Figure 28

Now test the Idle/Resume function by pressing and releasing the Idle/Res on the handheld. See figure 28. Be sure the Carburetor returns to the full Idle Position. Press the Idle/Res button again, the throttle should advance until the actuator is fully retracted.



Figure 29

Press the down arrow till the actuator rod is out about 1/4 inch. Press the Idle/Resume to confirm function. Re-adjust string (or parts) if necessary. Return throttle to Idle position by pressing the Idle/Res button.



Figure 30



Figure 31

Use the factory standard throttle to manually advance and reduce the throttle setting. See figure 31.

Note: Which ever mechanism is set for the highest throttle setting, will have control of the carburetor; tiller, remote throttle, or TR-1 throttle control. If your motor does not idle down fully when using the autopilot throttle, check your manual throttle to be sure it is at full Idle.



Figure 32

Step Sixteen:

Re-install the lower covers of the motor per the service manual.

Secure wire in a position where it will not get damaged, cause problems with other parts, or get pinched between the motor frame and the covers.



Figure 33

Step Seventeen:

Route the throttle control wire out of the motor covers and to the Electrohydraulic Unit. Secure the wire and be sure the routing to the box allows for full travel of the motor in both directions plus tilt.

Replace cover (cowling). Re-connect the lanyard and re-connect motor to battery.

Testing the Actuator Functions:

Please refer to the startup section of your owner's manual before operating your handheld and running the throttle actuator.

1. With the outboard in the water, or with a proper coolant flush device connected, start the outboard and let it warm up to operating conditions. Be prepared to kill the outboard ignition if the idle speed is too high when the engine starts.
2. Using the UP ARROW button on the Handheld verify that the engine rpm's go up. Using the IDLE/RESUME button on the handheld verify that the engine returns to idle. Check the throttle up and down several times along with the idle/res and verify that you don't have any problems.