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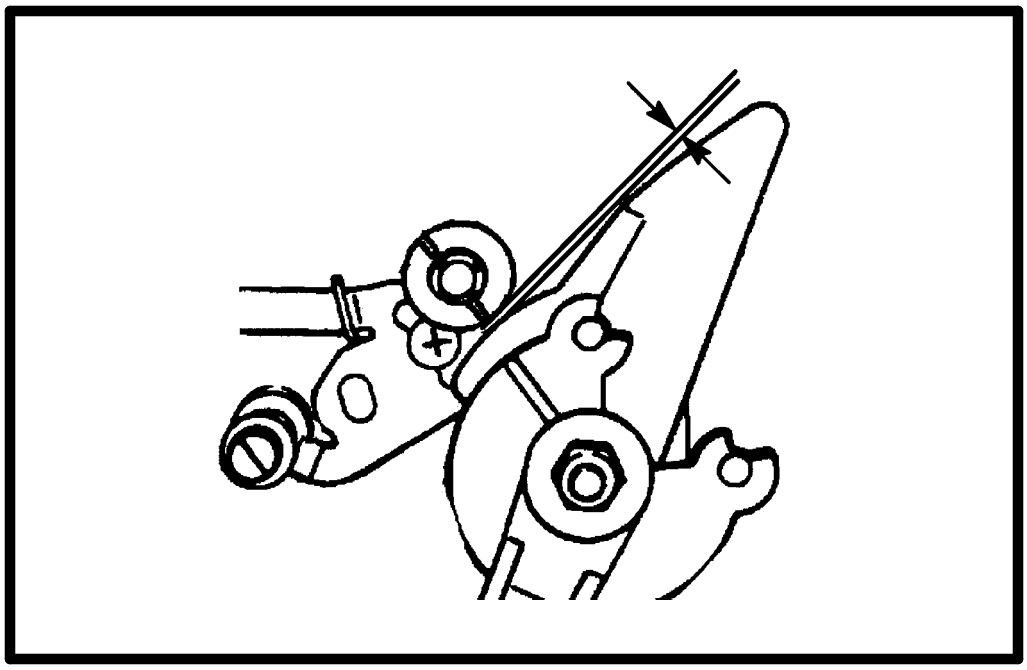

TIMING, SYNCHRONIZING & ADJUSTING

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Specifications

SPECIFICATIONS	**Idle RPM (In Forward Gear)** **Full Throttle RPM Range** **– Model 30, 40 Sea Pro, 40 Marathon** **– Model 40**	700-800 RPM 4500-5500 RPM 5000-5500 RPM
	Spark Plug Type (NGK) **Gap** **Optional Plug (NGK)**** **Gap** **Firing Order**	BP8H-N-10 0.040 in. (1.0mm) BPZ8H-N-10* 0.040 in. (1.0mm) 1-2
	Models with (S/N-0G589999 & Below) – Idle Maximum BTDC @ 2500-5500 RPM	3°BTDC ±3°(Not Adjustable) 25°BTDC ±3°(Not Adjustable)
	Models with (S/N-0G590000 & Above) – Idle Maximum Spark Advance	8°BTDC ±1° 1 Turn Clockwise After Contacting Throttle Plate

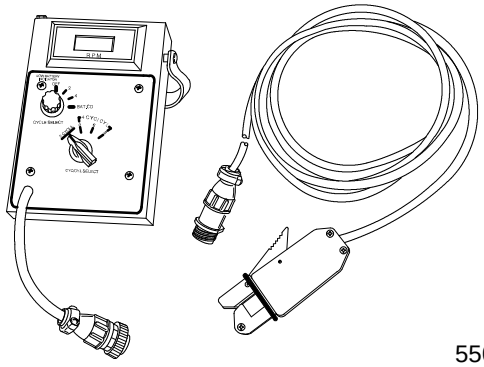
** Suppressor (Inductor) Spark Plug.

⚠ WARNING

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

Special Tools

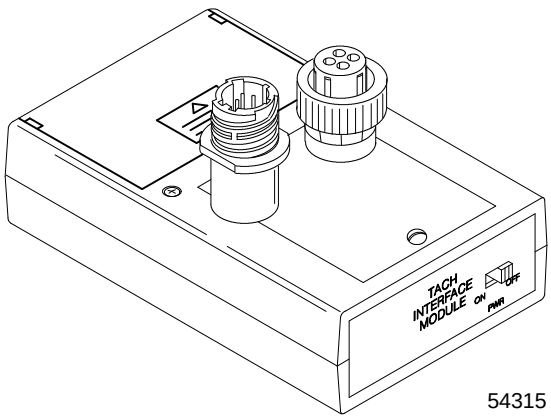
1. Service Tachometer P/N *91-59339



55002

*May be obtained locally.

2. MercTach Interface Module P/N 91-825824A-2



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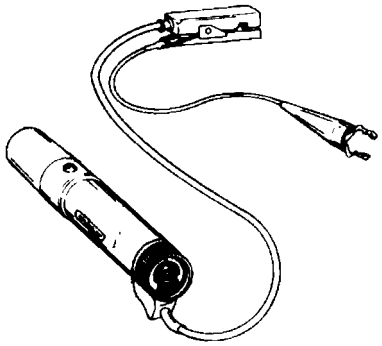
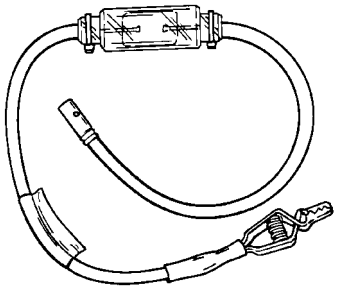
3. Timing Light P/N *91-99379



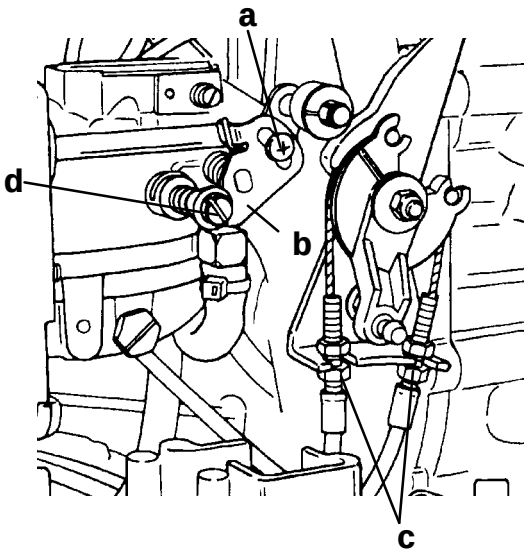
*May be obtained locally.

4. Spark Gap Tool P/N 91-63988A1



Tiller Handle Model (S/N-0G589999 & Below)

1. With engine off and gear shift in neutral position, loosen cam follower screw.
2. Back off idle speed screw until the throttle shutter positioner does not touch the taper of idle speed screw. (Throttle plate closed).
3. Loosen throttle cable jam nuts.



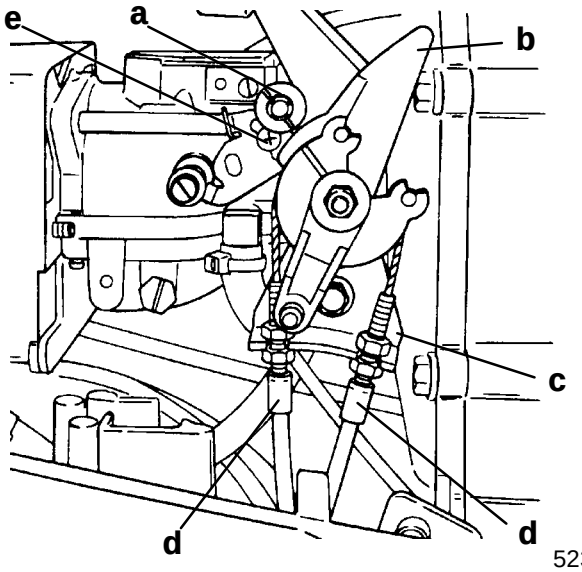
52301

a - Cam Follower Screw
b - Throttle Shutter Positioner
c - Jam Nut
d - Idle Speed Screw

4. With throttle at idle position, place cam follower roller against throttle cam. Center the roller with raised mark on throttle cam by adjusting the position of throttle cable sleeves in the mounting bracket.

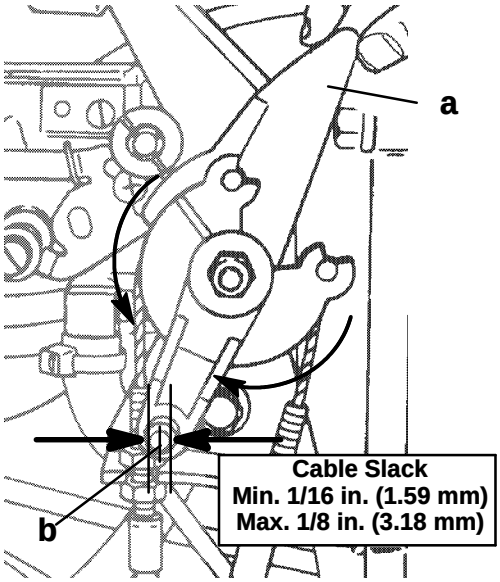
NOTE: *When positioning throttle cables, a minimum of 1/16 in. (1.59 mm) to a maximum of 1/8 in. (3.18 mm) slack must be allowed to prevent throttle cables from binding. (Rock throttle cam side to side and measure the amount of throttle cam travel at link rod ball.*

5. Tighten throttle cable jam nuts.



52300

a - Cam Follower Roller
b - Throttle Cam
c - Mounting Bracket
d - Throttle Cable Sleeve
e - Cam Follower Screw

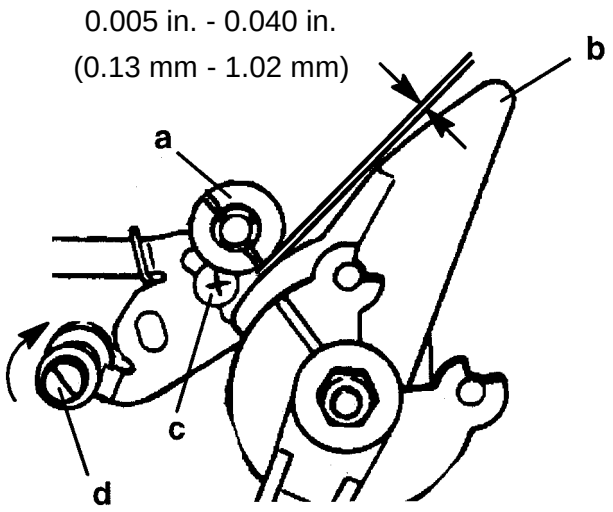


52300

a - Throttle Cam
b - Link Rod Ball

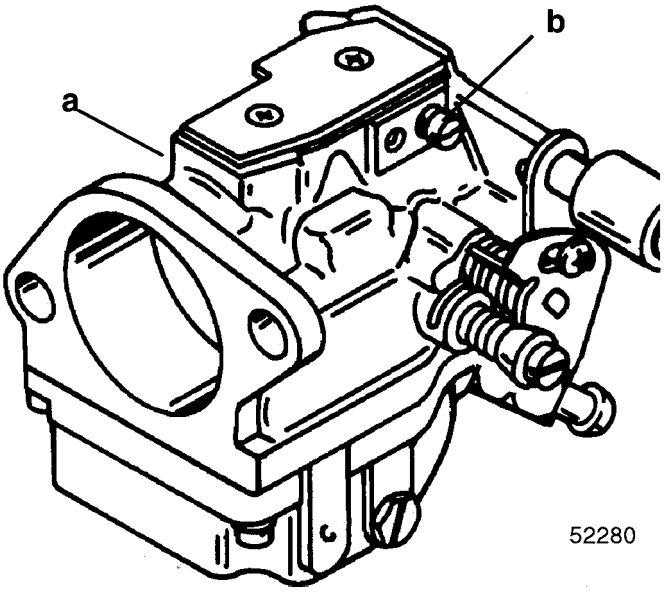
6. With cam follower resting on throttle cam, tighten the cam follower screw.

7. With throttle at idle position, turn idle speed screw clockwise "In" until a gap of 0.005 in. - 0.040 in. (0.13 mm - 1.02 mm) is achieved between throttle cam and cam follower.



a - Cam Follower Roller
b - Throttle Cam
c - Cam Follower Screw
d - Idle Speed Screw

8. Turn idle mixture screw in (clockwise) until **LIGHTLY** seated then, back out to an initial setting of 1-1/4 turns.



a - Carburetor
b - Mixture Screw

⚠ WARNING

Keep clear of propeller while cranking and running the outboard motor.

9. Connect the electrical harness and fuel line to engine.
10. With the outboard in the water, start engine and allow to warm up.
11. Adjust idle speed screw in "FORWARD" gear to specification.

NOTE: *When setting idle mixture, DO NOT adjust leaner than necessary to attain reasonably smooth idling. When in doubt, stay to the slightly rich side of the adjustment.*

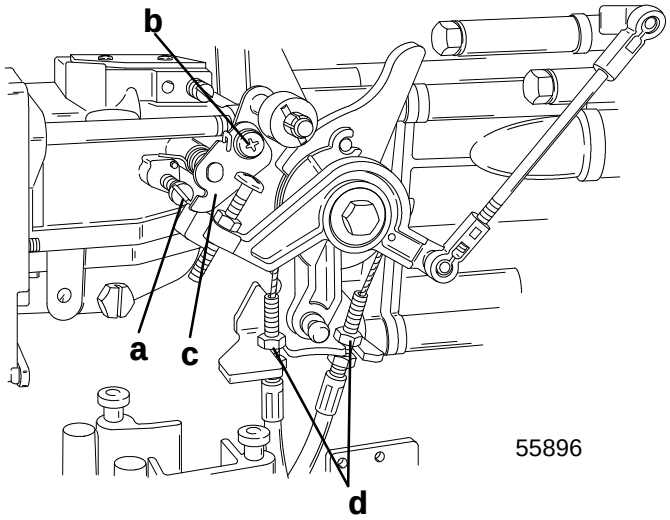
12. With engine running at idle speed in "FORWARD" gear, turn mixture screw "In" (clockwise) until engine starts to "bog" down and misfire. Back out 1/4 turn or more.
13. Check for too lean of mixture on acceleration. (Engine will "bog" on acceleration). Readjust if necessary.
14. Re-adjust idle speed screw in "FORWARD" gear to specification.
15. Check for too lean of mixture on acceleration. (Engine will "bog" on acceleration). Readjust if necessary.
16. Re-adjust idle speed screw in "FORWARD" gear to specification.

Timing Adjustments

NOTE: *No timing adjustments are required for the 30/40 model outboard with (S/N-0G589999 & Below).*

Tiller Handle Model with Mechanical Spark Advance (S/N-0G590000 & Above)

1. Check all electrical connections to ensure they are tight and secure (including battery connections on electric start models).
2. With engine off and gear shift in neutral position, loosen cam follower screw.
3. Back off idle speed screw until the throttle shutter positioner does not touch the taper of idle speed screw. (Throttle plate closed).
4. Loosen throttle cable jam nuts.

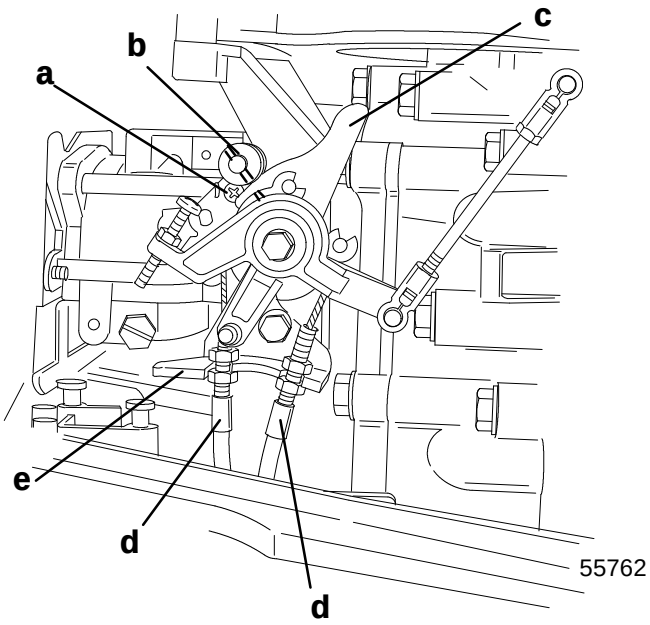


a - Idle Speed Screw
b - Cam Follower Screw
c - Throttle Shutter Positioner
d - Jam Nuts

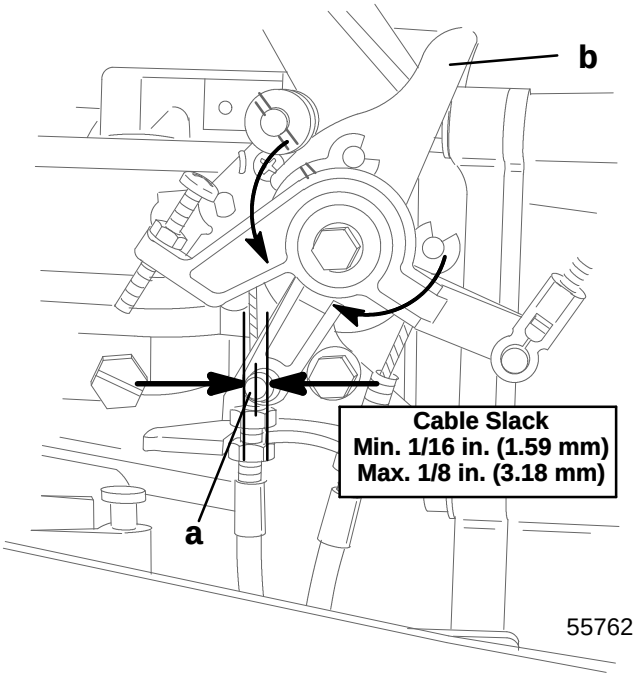
5. With throttle at idle position, place cam follower roller against throttle cam. Center the roller with raised mark on throttle cam by adjusting the position of throttle cable sleeves in the mounting bracket on tiller handle models or throttle link rod on remote control models.

NOTE: *When positioning throttle cables, a minimum of 1/16 in. (1.59 mm) to a maximum of 1/8 in. (3.18 mm) slack must be allowed to prevent throttle cables from binding. (Rock throttle cam side to side and measure the amount of throttle cam travel at link rod ball.*

6. Tighten throttle cable jam nuts.



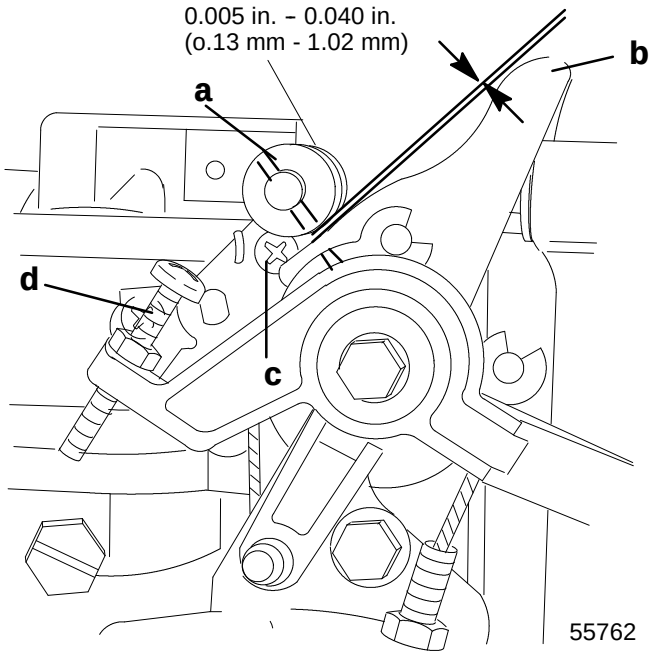
a - Cam Follower Screw
b - Cam Follower Roller
c - Throttle Cam
d - Throttle Cable Sleeve
e - Mounting Bracket



a - Link Rod Ball
b - Throttle Cam

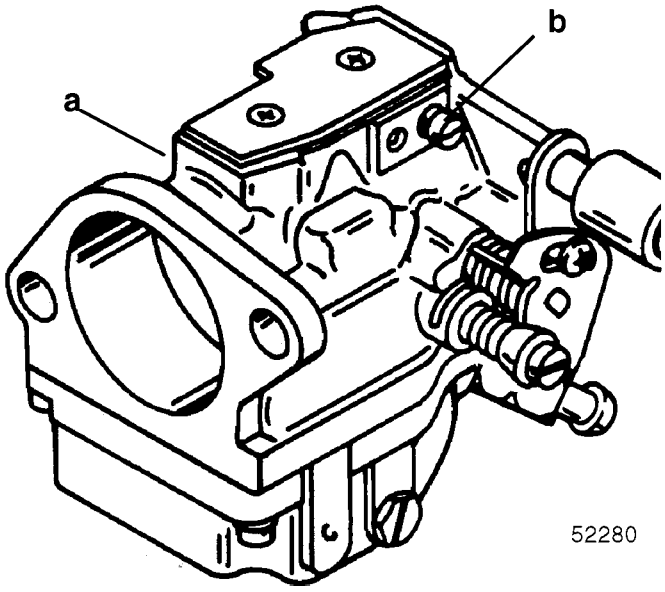
7. With cam follower resting on throttle cam, tighten the cam follower screw.

8. With throttle at idle position, turn idle speed screw clockwise "IN" until a gap of 0.005 in. - 0.040 in. (0.13 mm - 1.02 mm) is achieved between throttle cam and cam follower. This will open the throttle shutter enough to keep the engine running near idle speed after starting.



a - Cam Follower Roller
b - Throttle Cam
c - Cam Follower Screw
d - Idle Speed Screw

9. Turn idle mixture screw in (clockwise) until **LIGHTLY** seated then, back out to an initial setting of 1-1/2 turns.



a - Carburetor
b - Mixture Screw

⚠ WARNING

Keep clear of propeller while cranking and running the outboard motor.

10. Connect the fuel line to the engine and electrical harness on electric engines.
11. With the outboard in the water, start engine, check tell-tale, and allow to warm up.
12. Adjust idle speed screw in "FORWARD" gear to specification; (750 ± 50 rpm)
13. Check the idle timing and maximum spark advance. (If not within specifications, adjustment will be required).
    a. Idle timing: 8 ± 1 degrees B.T.D.C.
    b. Maximum spark advance: (22 - 28 Degrees, Reference only). One (1) Turn clockwise after contacting throttle plate.

TIMING AND MAXIMUM SPARK ADVANCE ADJUSTMENTS - MECHANICAL SPARK ADVANCE MODELS

IMPORTANT: Setting the idle timing is required before adjusting the maximum spark advance.

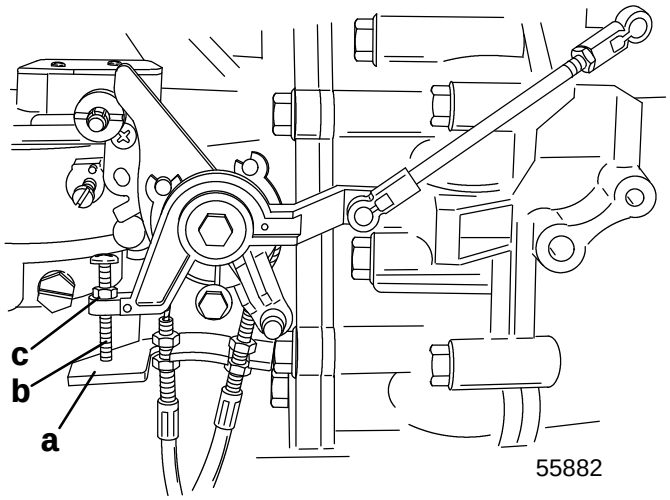
ADJUSTING IDLE TIMING

14. With the engine "OFF", snap the trigger link rod socket off ball stud and:
    a. Extend rod length to "ADVANCE" timing
    b. Shorten rod length to "RETARD" timing
15. Snap link rod onto ball stud, re-start engine and cycle the throttle mechanism through part throttle and back to idle three (3) times. Re-check idle timing and idle R.P.M. specification. Re-adjust if necessary.

ADJUSTING MAXIMUM SPARK ADVANCE

IMPORTANT: Setting the idle timing is required before adjusting the maximum spark advance.

16. Turn engine off.
17. Position twist grip or remote control lever to maximum throttle opening, (wide open throttle).
18. Loosen jam nut and turn screw counter-clockwise until screw no longer makes contact with throttle bracket platform.
19. Turn screw in (clockwise) until screw just makes contact with the throttle bracket platform and then give screw one (1) additional turn clockwise and tighten jam nut.



a - Throttle Bracket Platform
b - Screw
c - Jam Nut

20. With engine idling at specified R.P.M. in "FORWARD" gear, loosen cam follower screw and place cam follower roller against throttle cam and tighten cam follower screw. Cycle the throttle mechanism through part throttle and back to idle. Recheck in gear idle R.P.M..

NOTE: *When setting idle mixture, DO NOT adjust leaner than necessary to attain reasonably smooth idling. When in doubt, stay to the slightly rich side of highest R.P.M..*

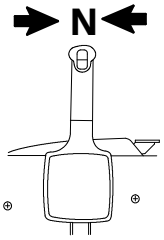
21. Adjust carburetor for best performance, after clearing the engine. With engine running at idle speed in "FORWARD" gear, turn mixture screw "IN" (clockwise) until engine starts to loose R.P.M., fire unevenly, and or misfires. Back out 1/4 turn or more. (See General Specifications for minimum and maximum adjustment).
22. Check for too lean of mixture on acceleration. (Engine will "hesitate" or "stall" on acceleration). Readjust mixture if necessary.
23. Re-adjust idle speed screw in "FORWARD" gear to specification.

Shift Link Rod Installation and Adjustment to Engine

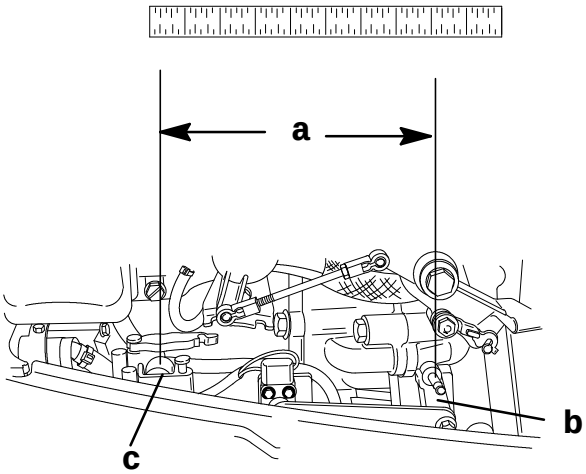
Install cables into the remote control following the instructions provided with the remote control.

NOTE: *Install the shift cable to the engine first. The shift cable is the first cable to move when the remote control handle is moved out of neutral.*

1. Position remote control and outboard into neutral.

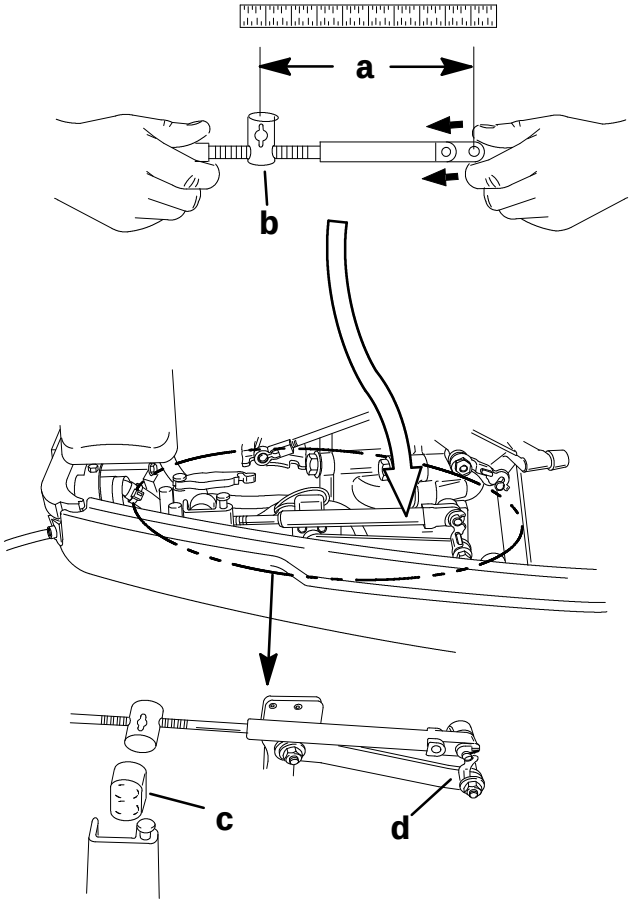


2. Measure distance "a" between mounting pin and middle of the barrel holder.



a - Distance Between Pin and Middle of Barrel Holder
b - Mounting Pin
c - Barrel Holder

3. Push-in on the cable end until resistance is felt. Adjust the cable barrel (b) to attain the measured distance "a" taken in Step 2.
4. Place cable barrel into the bottom hole in the barrel holder. Fasten cable to pin with retainer.

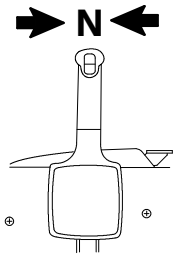


a - Move Cable Barrel To Attain The Measured Distance Taken In Step 2
b - Cable Barrel
c - Barrel Holder– Place Barrel Into Bottom Hole
d - Retainer

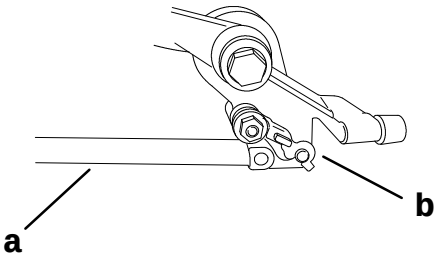
5. Check shift cable adjustments as follows:
   a. Shift remote control into forward. The propeller shaft should be locked in gear. If not, adjust the barrel closer to the cable end.
   b. Shift remote control into neutral. The propeller shaft should turn freely without drag. If not, adjust the barrel away from the cable end. Repeat steps a and b.
   c. Shift remote control into reverse while turning propeller. The propeller shaft should be locked in gear. If not, adjust the barrel away from the cable end . Repeat steps a thru c.
   d. Shift remote control back to neutral. The propeller shaft should turn freely without drag. If not, adjust the barrel closer to the cable end. Repeat steps a thru d.

Throttle Cable Installation

1. Position remote control into neutral.

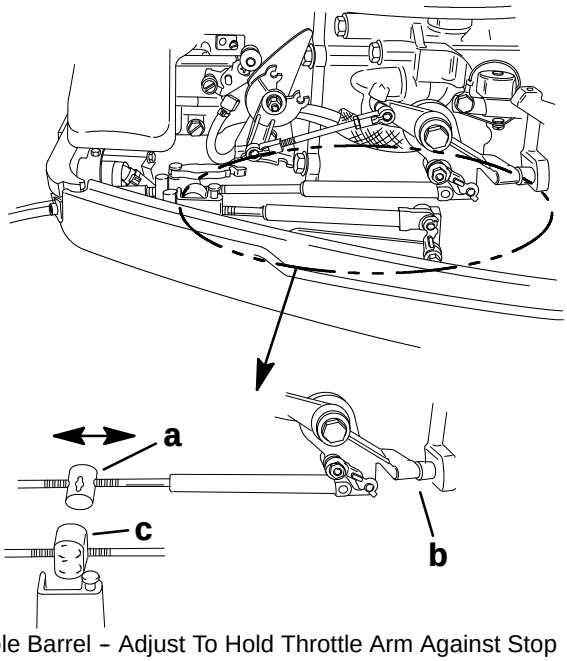


2. Install cable to the throttle lever. Secure with retainer.



a - Throttle Cable
b - Retainer

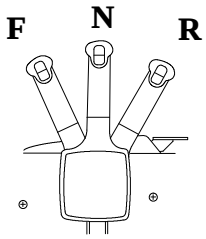
3. Adjust the cable barrel so that the installed throttle cable will hold the throttle arm against the stop.



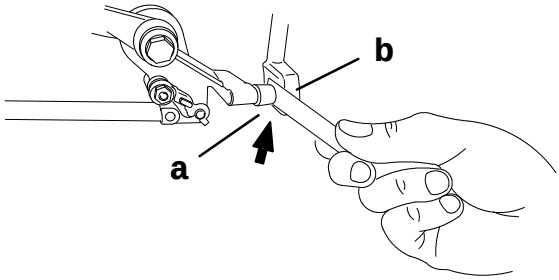
a - Cable Barrel – Adjust To Hold Throttle Arm Against Stop
b - Throttle Arm
c - Barrel Holder – Place barrel Into Top Hole

4. Check throttle cable adjustment as follows:

   a. Shift outboard into gear a few times to activate the throttle linkage. Make sure to rotate the propeller shaft while shifting into reverse.

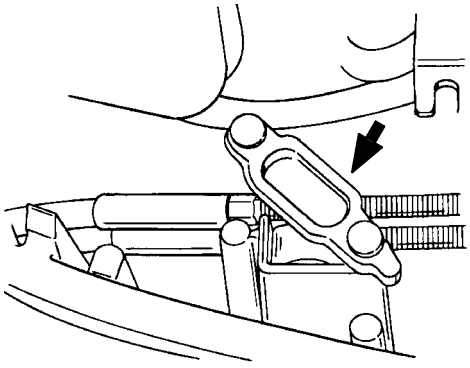


   b. Return remote control to neutral. Place a thin piece of paper between throttle arm and idle stop. Adjustment is correct when the paper can be removed without tearing, but has some drag on it. Readjust cable barrel if necessary.



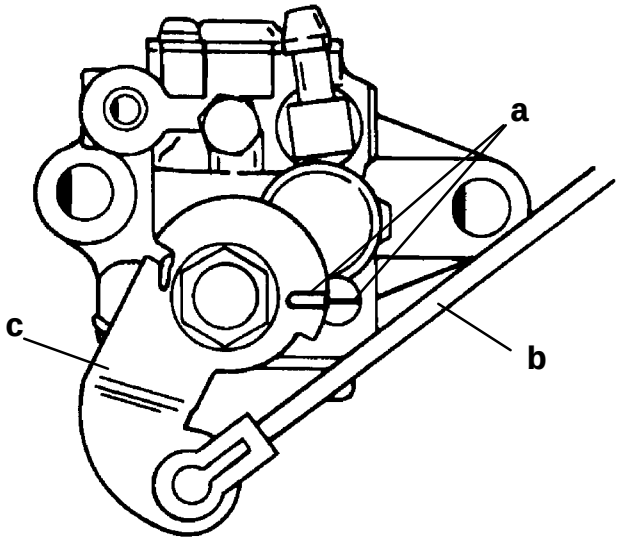
a - Throttle Arm
b - Idle Stop

5. Lock the barrel holder in place with the cable latch.



Oil Pump Adjustment

While holding throttle arm at idle position, adjust length of link rod so the stamped mark of oil pump body aligns with stamped mark of oil pump lever.



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a - Alignment Mark
b - Link Rod
c - Oil Pump Lever