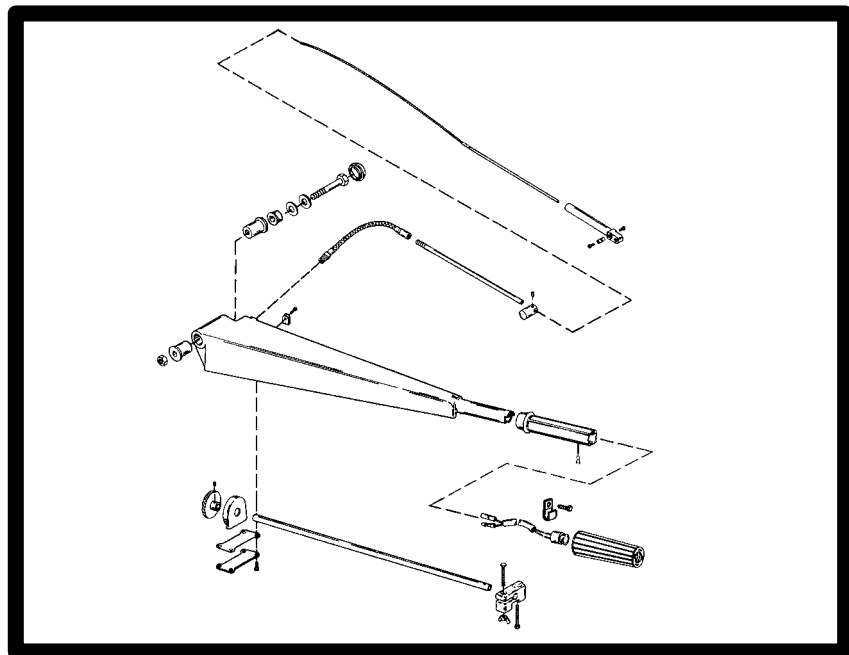




OUTBOARD MOTOR INSTALLATION/ ATTACHMENTS



7

B

TILLER HANDLE AND CO-PILOT



Table Of Contents

	Page		
Tiller Arm Components	7B-2	Tiller Arm Reassembly	7B-13
Tiller Arm Bracket Assembly	7B-4	Tiller Handle/Shaft Bracket Installation	7B-16
Co-Pilot Components	7B-6	Shift Link Rod Installation and Adjustment to Engine	7B-20
Tiller Arm/Shift Lever Removal	7B-7	Throttle Cable Installation and Adjustment to Engine	7B-20
Tiller Handle Disassembly	7B-10	Co-Pilot Installation	7B-21



Notes:





This diagram illustrates the exploded view of a mechanical assembly, likely a boat's outboard motor lower unit, with numbered parts and application points for Quicksilver Lubrication/Sealant. The parts are numbered 1 through 33. The diagram shows the following components and their assembly sequence:

- Part 1:** The main housing or lower unit.
- Part 2:** A long shaft or pin.
- Part 3:** A gear or pulley.
- Part 4:** A bracket or support.
- Part 5:** A bracket or support.
- Part 6:** A pin or screw.
- Part 7:** A small tube or sealant applicator.
- Part 8:** A small screw or pin.
- Part 9:** A small screw or pin.
- Part 10:** A long shaft or pin.
- Part 11:** A small tube or sealant applicator.
- Part 12:** A small tube or sealant applicator.
- Part 13:** A small tube or sealant applicator.
- Part 14:** A long shaft or pin.
- Part 15:** A small screw or pin.
- Part 16:** A small screw or pin.
- Part 17:** A long shaft or pin.
- Part 18:** A long shaft or pin.
- Part 19:** A small screw or pin.
- Part 20:** A small screw or pin.
- Part 21:** A long shaft or pin.
- Part 22:** A long shaft or pin.
- Part 23:** A small screw or pin.
- Part 24:** A small screw or pin.
- Part 25:** A long shaft or pin.
- Part 26:** A long shaft or pin.
- Part 27:** A long shaft or pin.
- Part 28:** A long shaft or pin.
- Part 29:** A long shaft or pin.
- Part 30:** A long shaft or pin.
- Part 31:** A long shaft or pin.
- Part 32:** A long shaft or pin.
- Part 33:** A long shaft or pin.

The diagram also shows application points for Quicksilver Lubrication/Sealant, indicated by the number 110. These points are located at various joints and contact surfaces throughout the assembly.

 2-4-C W/Teflon (92-825407A12)

 Soapy Water Solution (Obtain Locally)

 Loctite 271 (Obtain Locally)

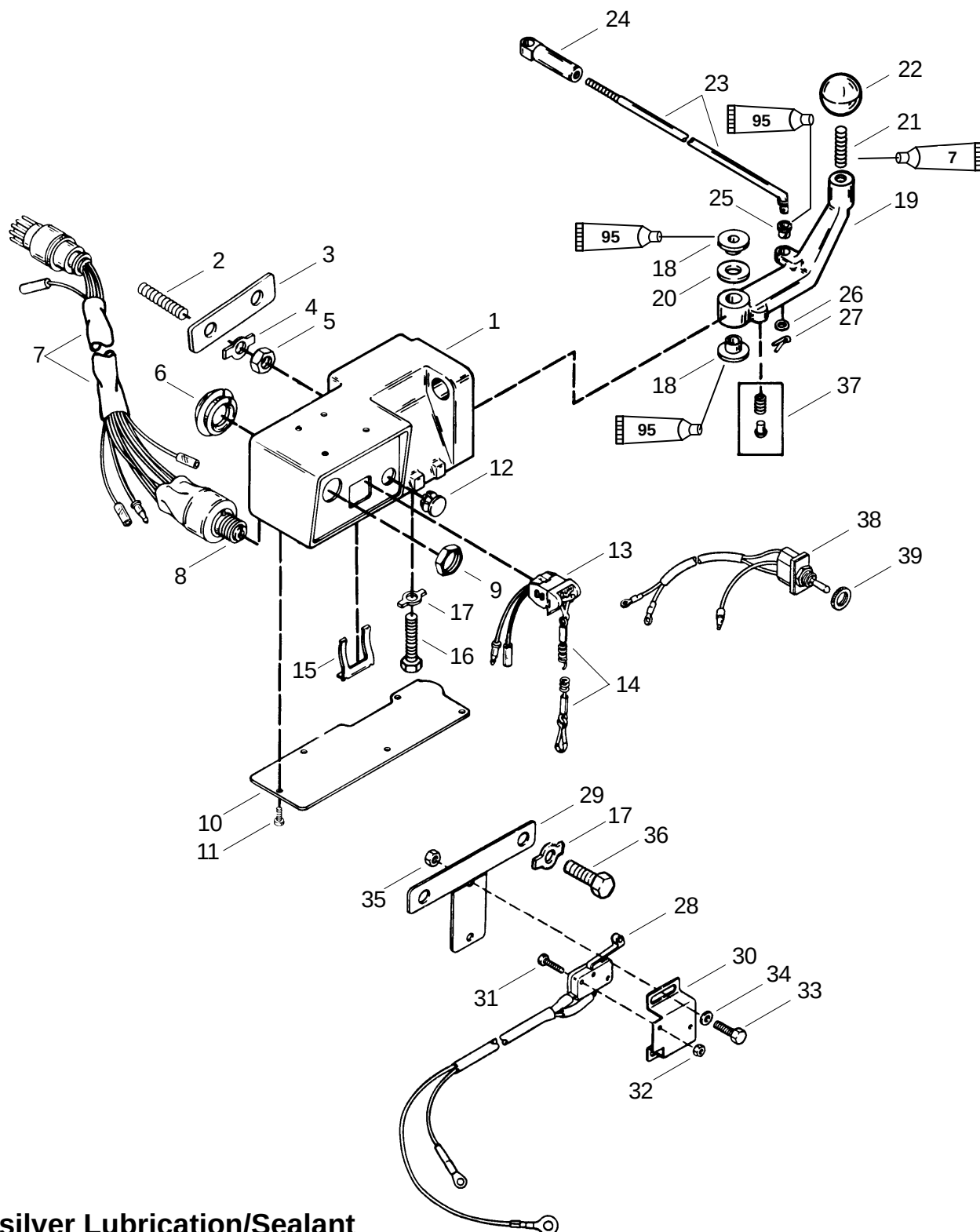


Tiller Arm Components (Continued)

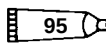
REF. NO.	QUAN.	DESCRIPTION	TORQUE		
			lb. in.	lb. ft.	N·m
1	1	Steering Arm			
2	1	Throttle Tube			
3	1	Housing			
4	1	Gasket			
5	1	Plate			
6	4	Screw	Drive Tight		
7	1	Throttle Clamp			
8	2	Screw	40		4.5
9	1	Nut			
10	1	Throttle Handle			
11	1	Screw	Drive Tight		
12	1	Stop Switch Harness			
13	1	Stop Switch			
14	1	Grip			
15	1	Clip			
16	1	Screw			
17	1	Conduit			
18	1	Guide Tube			
19	1	Barrel			
20	1	Set Screw	9		1.0
21	1	Cable			
22	1	Cable Guide			
23	1	Anchor			
24	2	Set Screw	Drive Tight		
25	1	Bolt			
26	1	Cap			
27	1	Washer			
28	1	Washer			
29	1	Spacer			
30	1	Bushing			
31	1	Nut	40		4.5
32	1	Gear Assembly			
33	1	Grease Fitting			

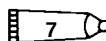


Tiller Arm Bracket Assembly



Quicksilver Lubrication/Sealant Application Points

 2-4-C With Teflon (92-825407A12)

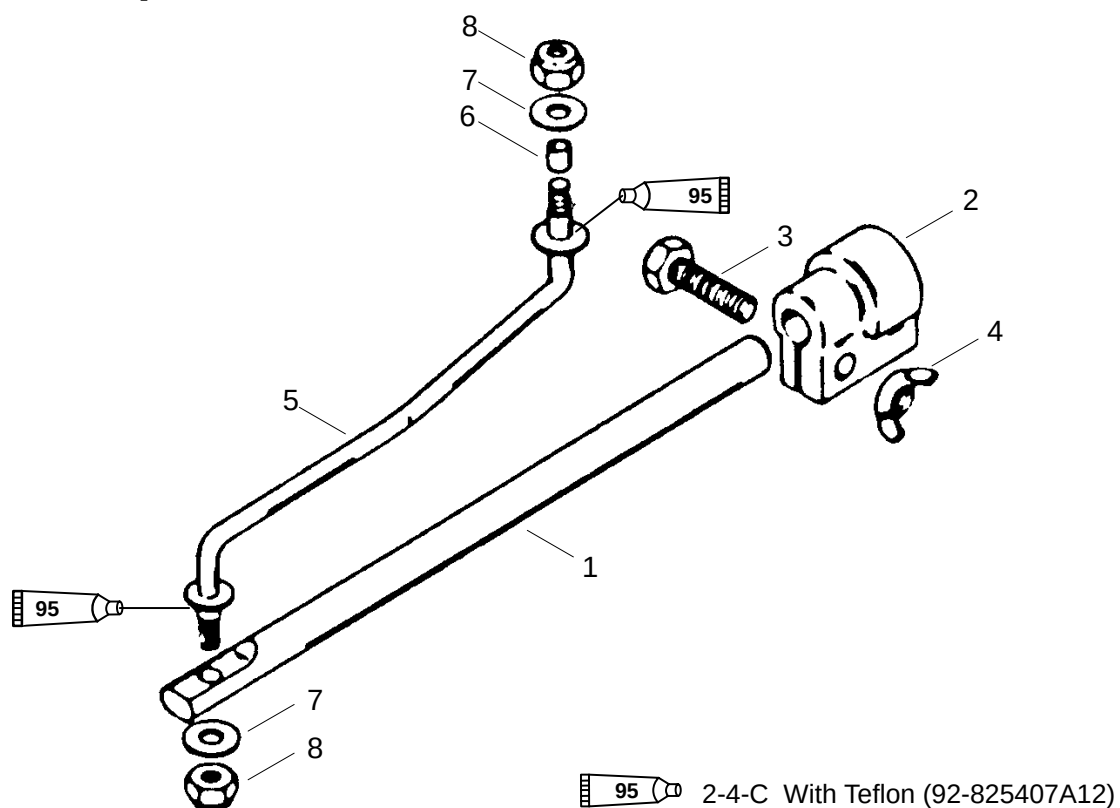
 Loctite 271 (Obtain Locally)



Tiller Arm Bracket Assembly (Continued)

REF. NO.	QUAN.	DESCRIPTION	TORQUE		
			lb. in.	lb. ft.	N-m
1	1	Bracket Assembly			
2	2	Stud			
3	1	Spacer			
4	2	Tab Washer			
5	2	Nut		35	47.4
6	1	Grommet			
7	1	Harness Assembly			
8	1	Key Switch			
9	1	Nut			
10	1	Cover			
11	6	Screw	Drive Tight		
12	1	Plug			
13	1	Stop Switch Assembly			
14	1	Lanyard			
15	1	Retainer			
16	1	Bolt	110		12.4
17	3	Tab Washer			
18	2	Bushing			
19	1	Shift Lever			
20	1	Washer			
21	1	Stud			
22	1	Shift Knob			
23	1	Shift Rod			
24	1	Rod End			
25	1	Bushing			
26	1	Washer			
27	1	Cotter Pin			
28	1	Neutral Start Switch			
29	1	Bracket			
30	1	Switch Bracket			
31	2	Screw			
32	2	Nut	Drive Tight		
33	2	Bolt			
34	2	Washer			
35	2	Nut	Drive Tight		
36	2	Bolt		15	20.3
37	1	Detent Assembly			
38	1	Trim Switch			
39	1	Nut			

Co-Pilot Components

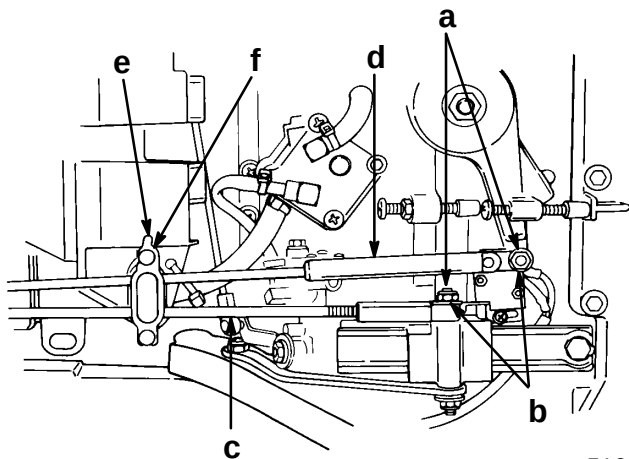


REF. NO.	QUAN.	DESCRIPTION	TORQUE		
			lb. in.	lb. ft.	N·m
1	1	Pilot Rod			
2	1	Friction Assembly			
3	1	Bolt			
4	1	Wing Nut			
5	1	Steering Link Rod			
6	1	Bushing			
7	2	Washer			
8	2	Nut -- Tighten until it seats; do not exceed 120 lb. in. (13.6 N·m), then back off 1/4 turn.	120		13.6



Tiller Arm/Shift Lever Removal

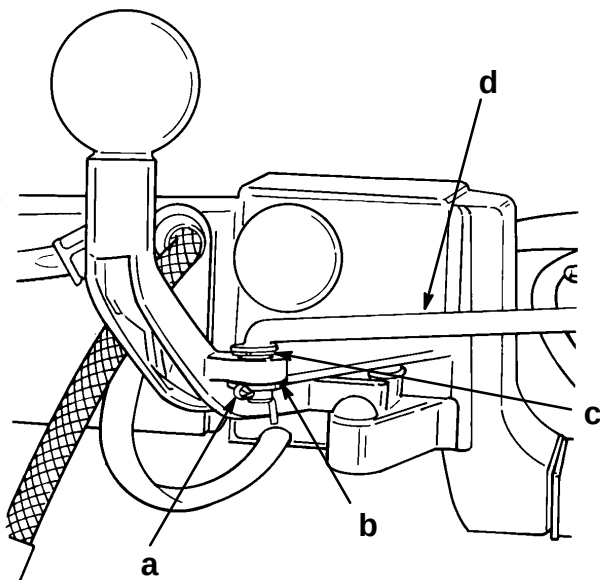
1. Remove BATTERY CABLES from BATTERY.
2. Remove outboard cowling.
3. Remove nuts securing shift link rod and throttle cable to engine. Release latch and remove shift link rod and throttle cable from anchor bracket.



51620

- a - Locking Nut
- b - Washer
- c - Shift Cable
- d - Throttle Cable
- e - Latch
- f - Anchor Bracket

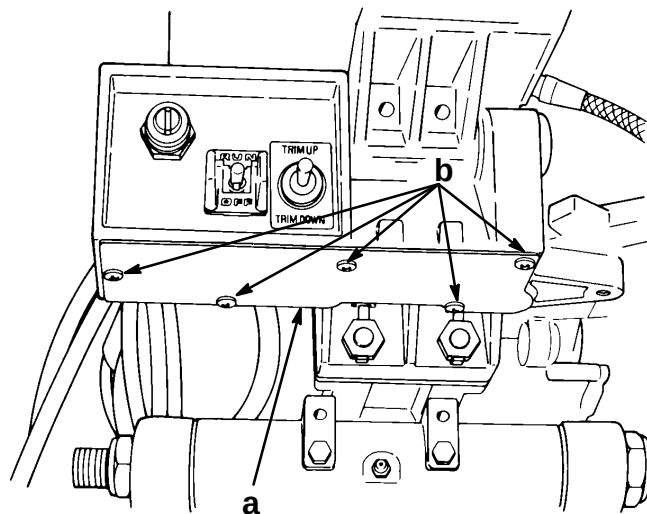
4. Remove cotter key, washer, bushing and shift link rod from shift lever.



51624

- a - Cotter Key
- b - Washer
- c - Bushing
- d - Shift Link Rod

5. Remove access cover from underneath tiller handle bracket.

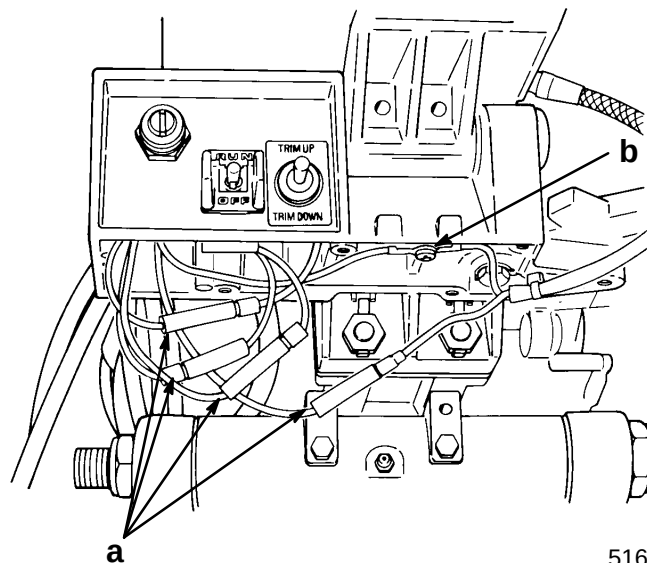


51626

- a - Access Cover
- b - Screws

6. Disconnect key switch, lanyard stop switch and tiller stop switch leads at bullet connectors.

Remove screw securing key switch and tiller stop switch ground leads.



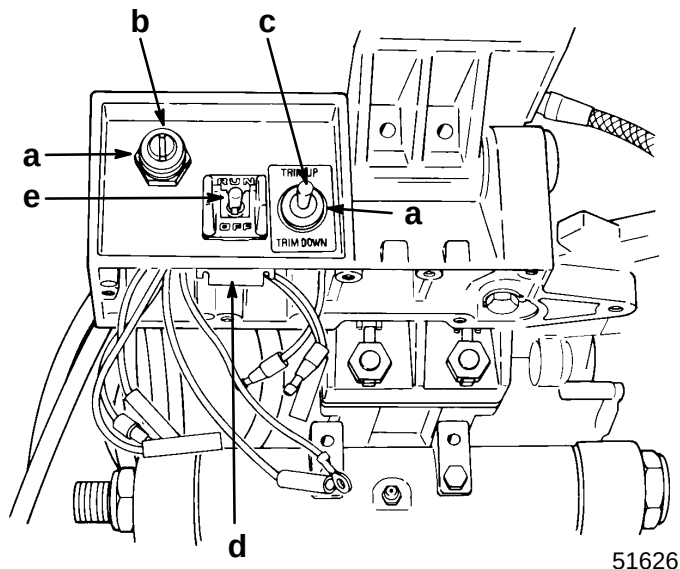
51626

- a - Bullet Connectors
- b - Screw



7. Remove nuts securing key switch and trim switch to tiller handle bracket.

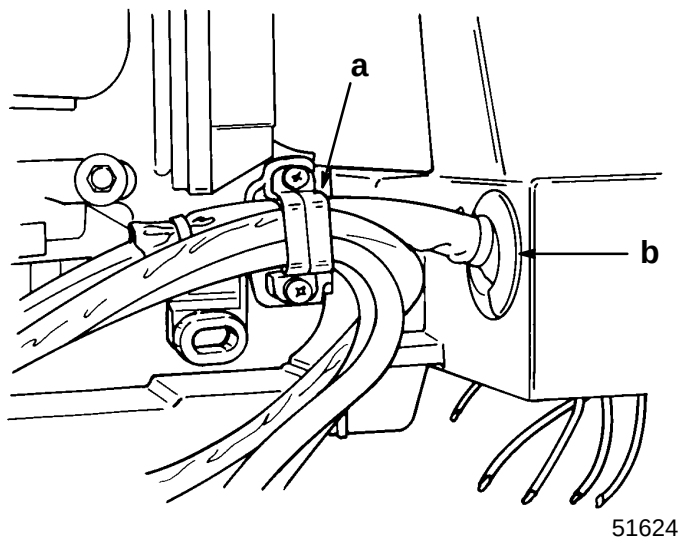
Remove clip securing lanyard stop switch and remove switch from bracket.



- a - Nuts
- b - Key Switch
- c - Trim Switch
- d - Clip
- e - Lanyard Stop Switch

8. Remove harness retainer from outboard.

Remove grommet from tiller bracket.

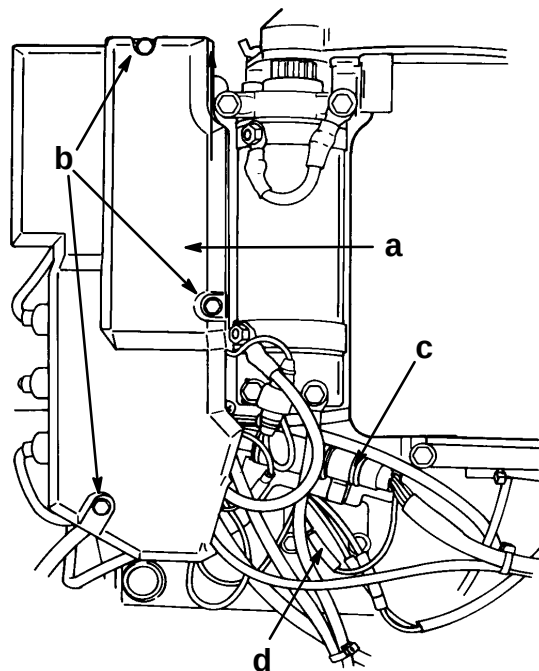


- a - Harness Retainer
- b - Grommet

9. Remove electrical panel access cover.

Disconnect switch harness from engine harness plug.

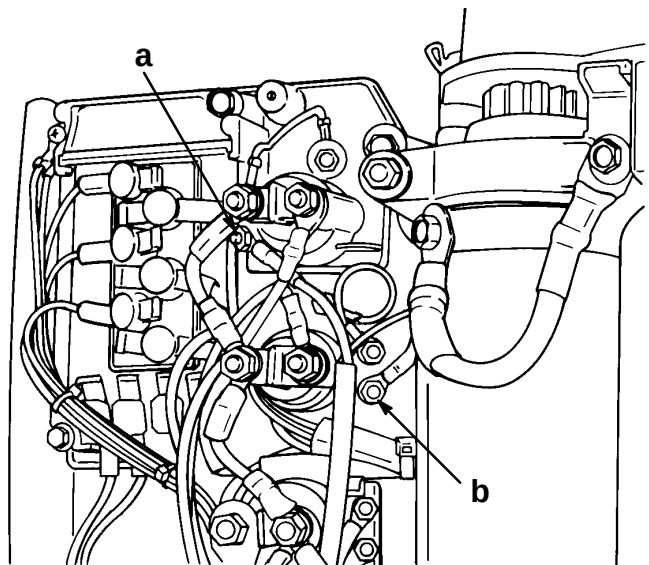
Disconnect PURPLE bullet connector.



- a - Access Cover
- b - Bolts
- c - Switch Harness
- d - PURPLE Lead



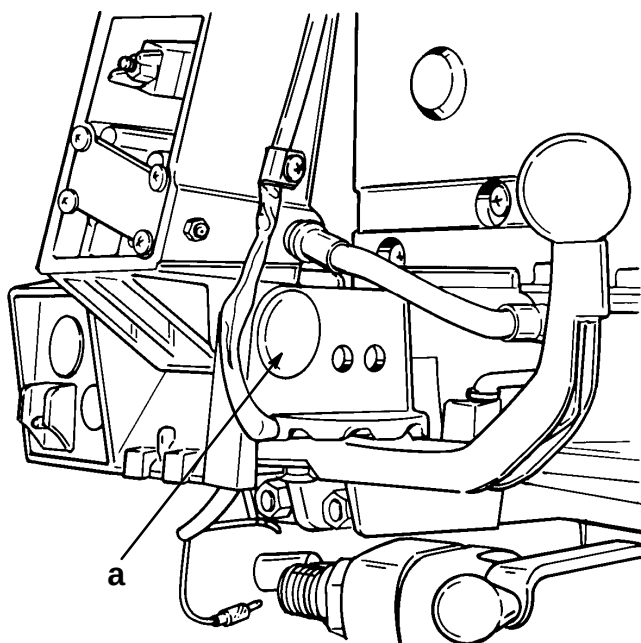
10. Disconnect BLUE/WHITE and GREEN/WHITE trim leads from trim solenoids.



51622

- a - BLUE/WHITE Lead
b - GREEN/WHITE Lead

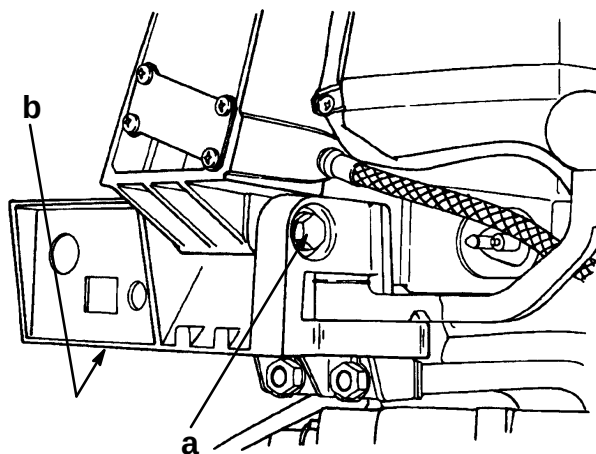
11. Remove key switch, trim switch and their harnesses from tiller bracket.
12. Remove plug from tiller handle bracket.



51608

- a - Plug

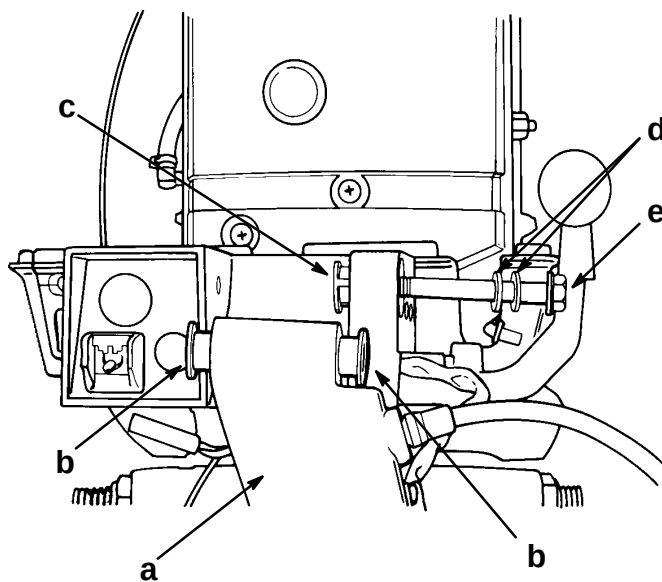
13. Remove bolt and nut (hidden) from tiller handle bracket.



51625

- a - Bolt
b - Nut (Hidden)

14. Remove tiller handle, 2 nylon bushings, stainless bushing and 2 flat washers from bracket.

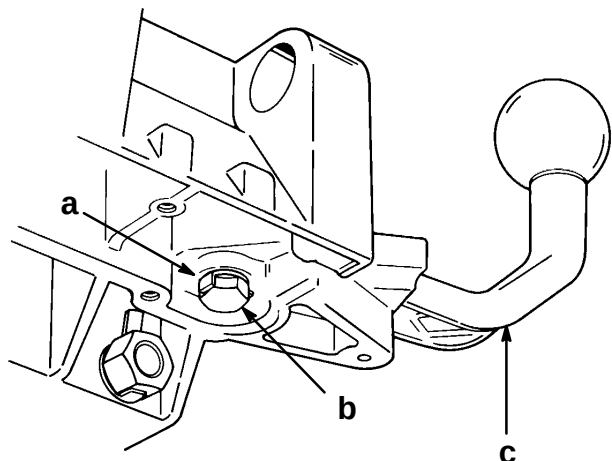


51606

- a - Tiller Handle
b - Nylon Bushings (2)
c - Stainless Steel Bushing
d - Flat Washers (2)
e - Bolt



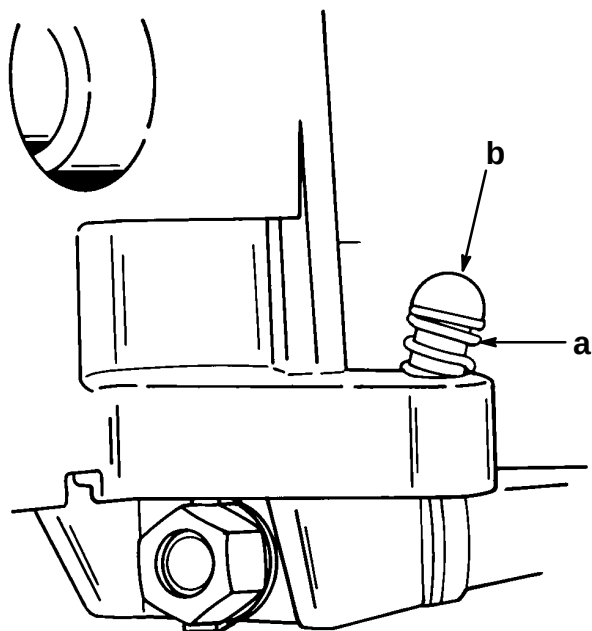
15. Bend tab washer away from bolt securing shift lever and remove bolt and lever from bracket.



51622

- a - Tab Washer
b - Bolt
c - Shift Lever

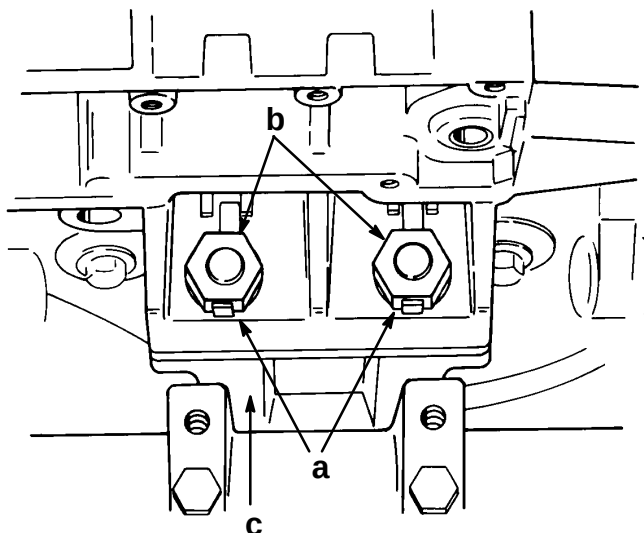
16. Remove spring and detent pin from bracket.



51621

- a - Spring
b - Detent Pin

17. Bend tabs on tab washers away from nuts securing bracket to steering arm. Remove nuts, tab washers and bracket from steering arm.

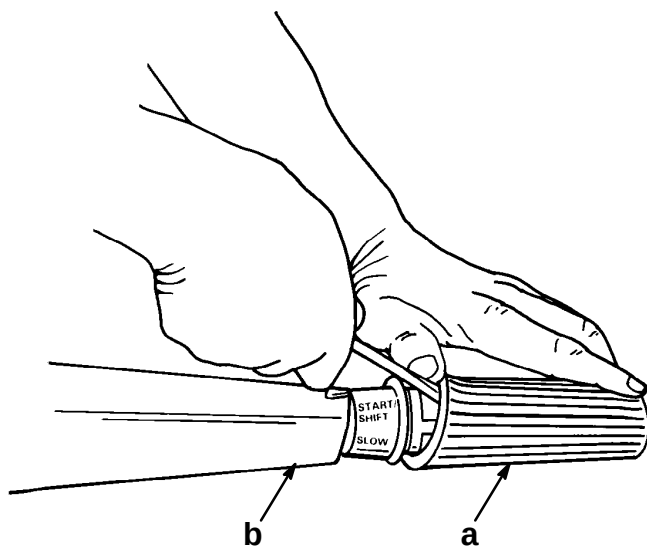


51621

- a - Tab Washer
b - Nut
c - Steering Arm

Tiller Handle Disassembly

1. Using a flat tip screwdriver, carefully pry/push rubber grip off tiller handle.

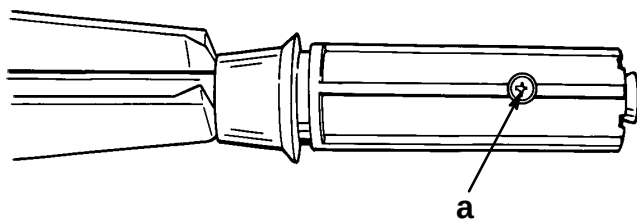


51603

- a - Grip
b - Tiller Handle



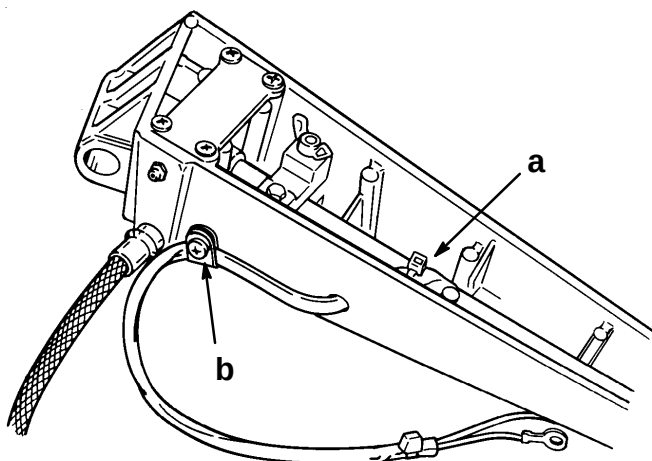
2. Remove screw from twist grip.



51603

a - Screw

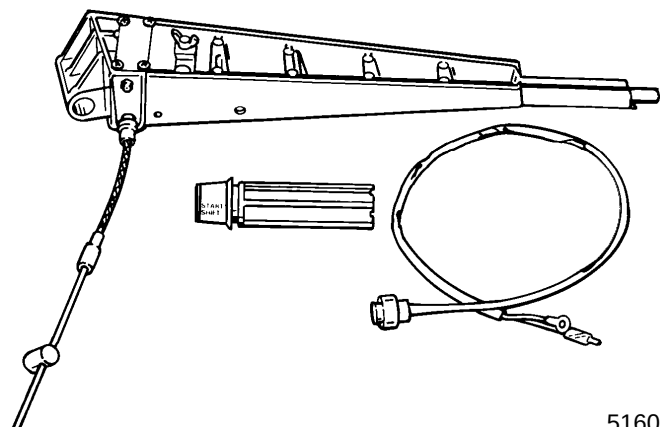
3. Cut sta-strap securing stop switch harness and remove screw from harness J-clip.



51603

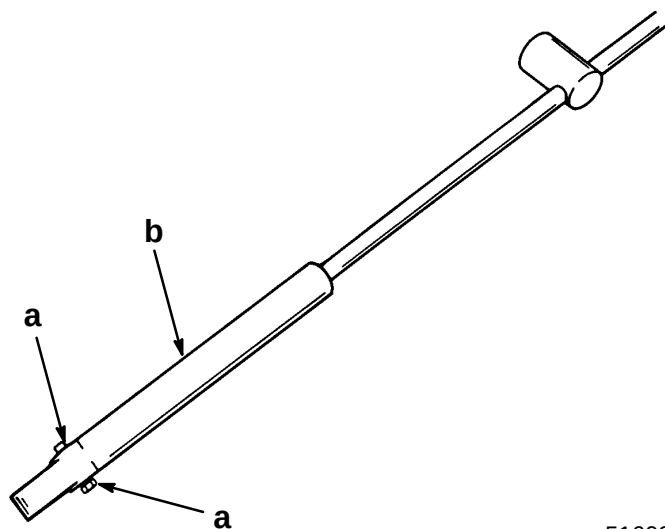
a - Ties
b - Screw

4. Remove stop switch and twist grip from tiller handle.



51603

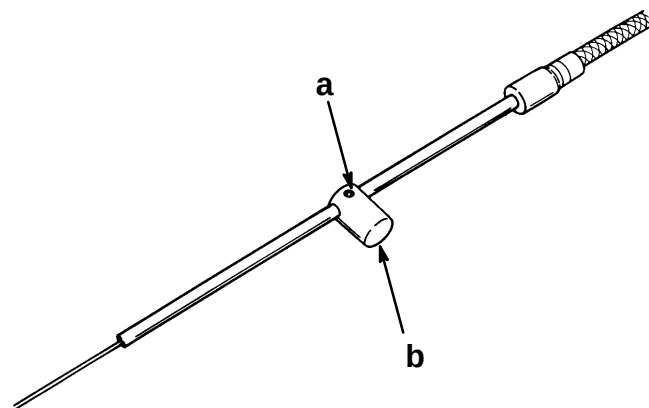
5. Remove throttle cable anchor screws and remove cable guide.



51602

a - Anchor Screws
b - Throttle Cable Guide

6. Remove allen screw from brass barrel and remove barrel.

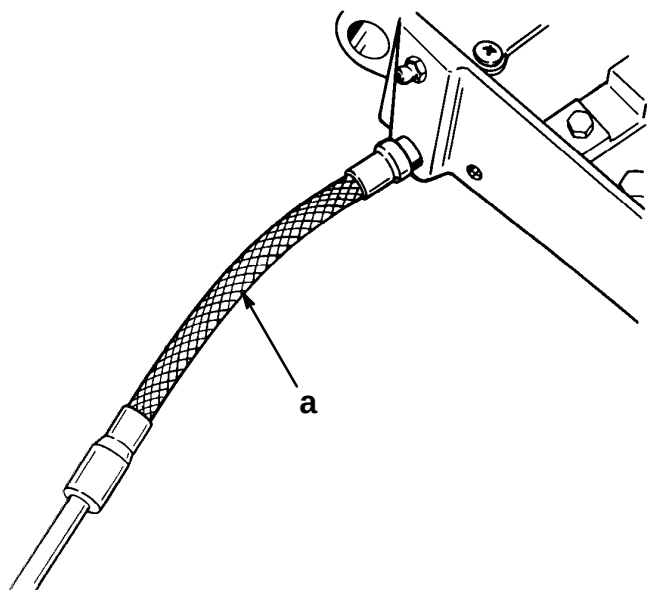


51602

a - Allen Screw
b - Brass Barrel



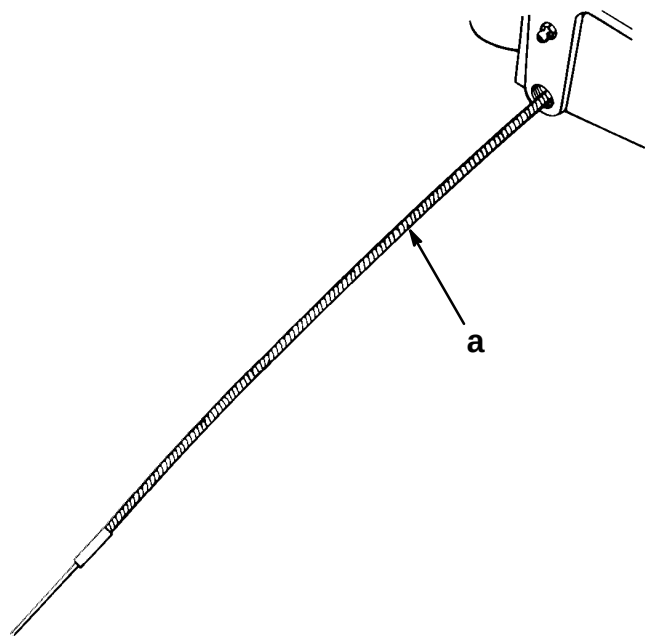
7. Unscrew (counterclockwise) stainless conduit from tiller handle.



51603

a - Conduit

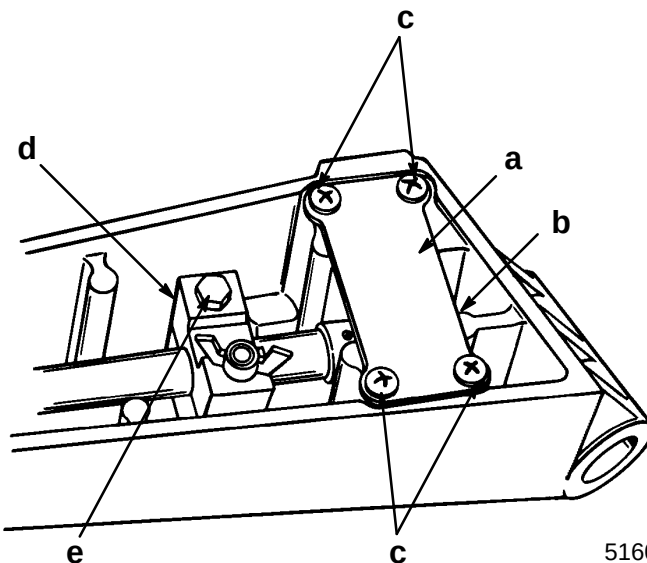
8. Pull throttle cable from tiller handle.



51604

a - Throttle Cable

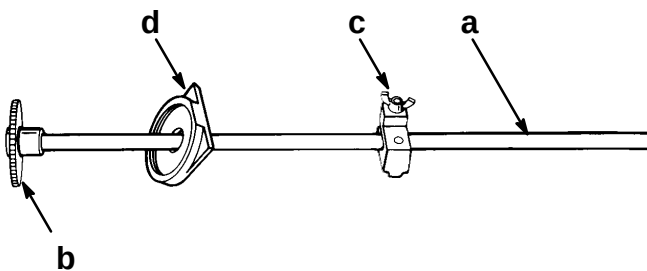
9. Remove cover plate and gasket from tiller handle.
10. Remove bolt from throttle friction assembly.



51604

a - Cover Plate
b - Gasket (below plate)
c - Screws
d - Throttle Friction Assembly
e - Bolt

11. Remove throttle arm, gear assembly and friction device from tiller handle. Slide gear cover and friction device off of throttle arm.

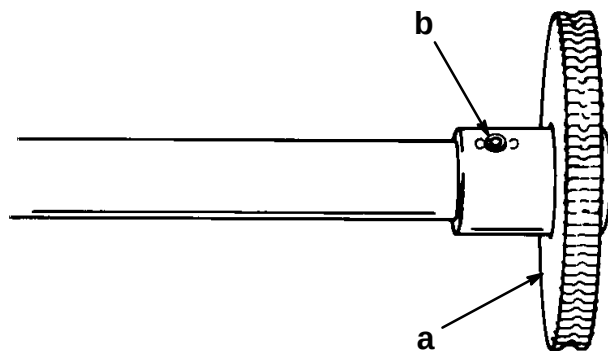


51604

a - Throttle Arm
b - Gear Assembly
c - Friction Device
d - Gear Cover



12. Drive out drift pin and remove throttle gear from throttle arm.

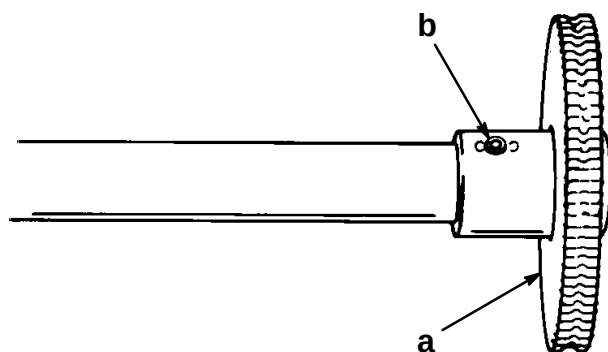


51602

- a - Gear
- b - Drift Pin

Tiller Arm Reassembly

1. Reinstall throttle gear on throttle arm and secure gear to arm with new drift pin.

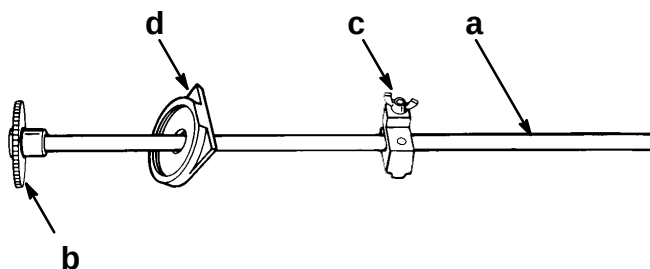


51602

- a - Gear
- b - Drift Pin

2. Apply a light coat of 2-4-C w/Teflon to gear teeth and inside of gear cover.

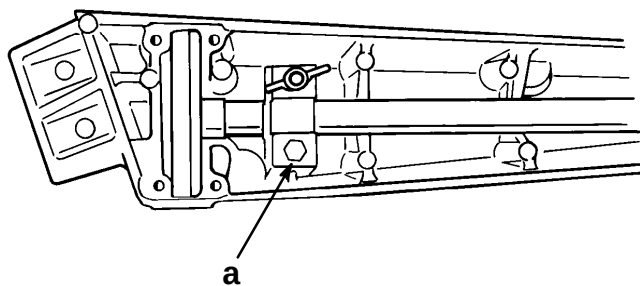
3. Slide cover and friction device onto throttle arm.



51604

- a - Throttle Arm
- b - Gear
- c - Throttle Friction Device
- d - Cover

4. Install throttle arm assembly into tiller arm.
5. Torque friction device attaching bolt to 40 lb. in. (4.5 N·m).

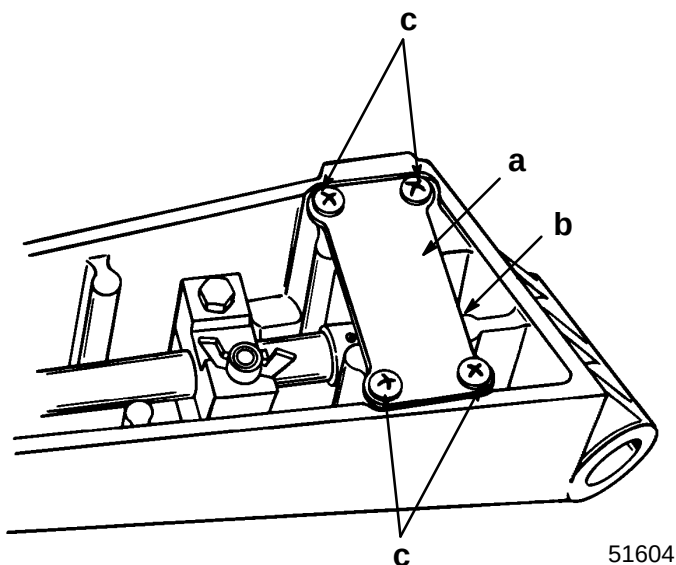


51604

- a - Bolt [Torque to 40 lb. in. (4.5 N·m)]

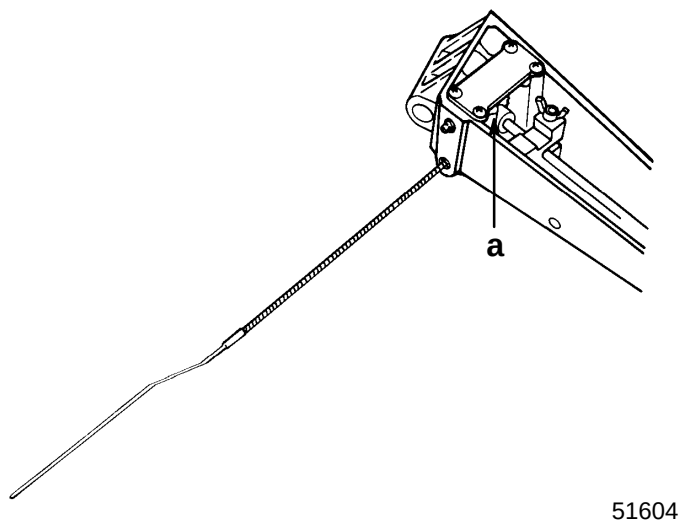


6. Install gasket and cover plate over gear assembly. **DO NOT OVERTIGHTEN** attaching screws.



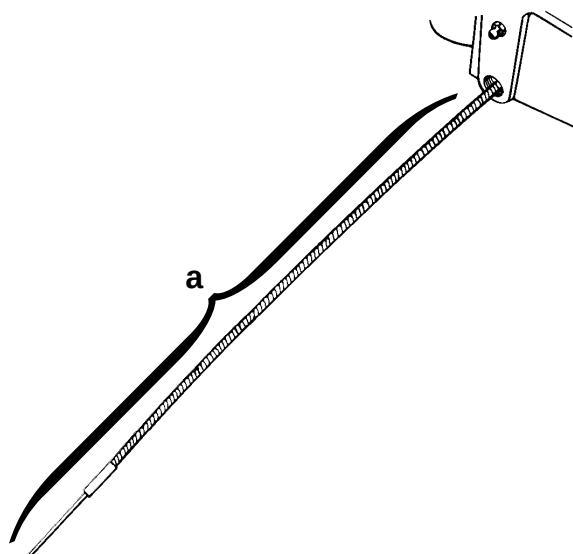
- a - Cover Plate
b - Gasket (below cover)
c - Screws

7. Rotate throttle arm so that twist grip attaching screw hole faces **DOWN** and gear drift pin faces **UP**.
8. Insert throttle cable (**CURVED END FACING UP**) into tiller handle gear assembly while rotating tiller arm **COUNTERCLOCKWISE**.



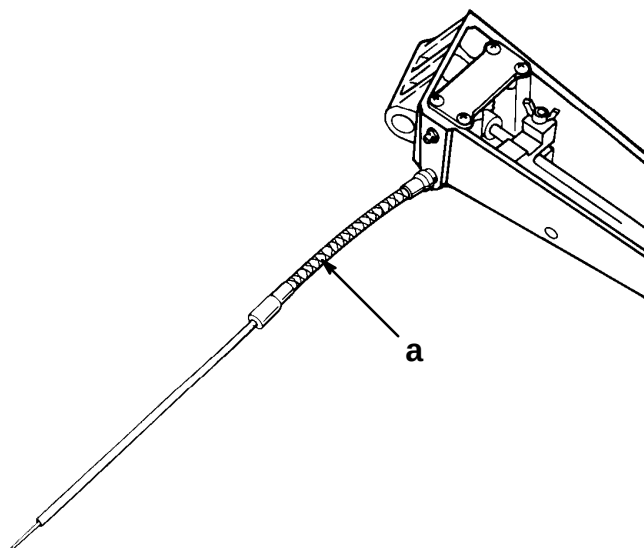
- a - Gear Drift Pin (FACES UP)

9. Retract throttle cable into gear assembly until approximately 17 in. (43 cm) extends from the tiller arm.



- a - Cable [Extends 17 in. (43 cm)]

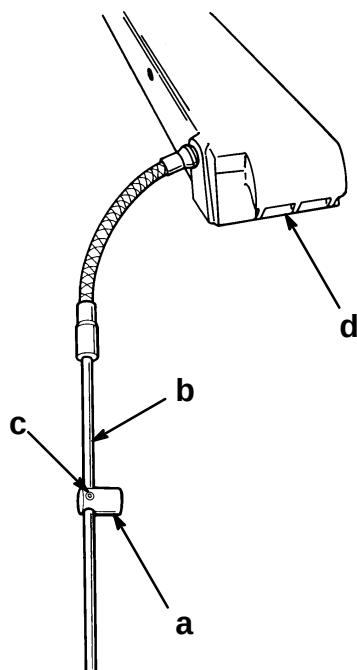
10. Slide stainless steel conduit over throttle cable and thread into tiller arm until lightly seated. Rotate conduit **COUNTERCLOCKWISE ONE FULL TURN** from a lightly seated position.



- a - Stainless Steel Conduit



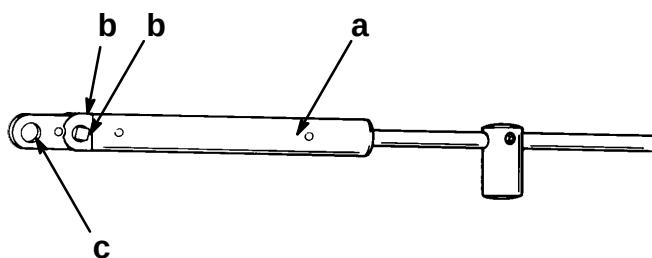
11. Slide brass barrel over throttle cable tube. Secure barrel to tube with allen screw approximately 3.5 in. (89 mm) from stainless conduit. DO NOT OVERTIGHTEN screw as tubing may be crushed binding throttle cable. Position barrel to face towards tiller handle.



- a - Brass Barrel
b - Tube
c - Allen Screw
d - Tiller Handle

51607

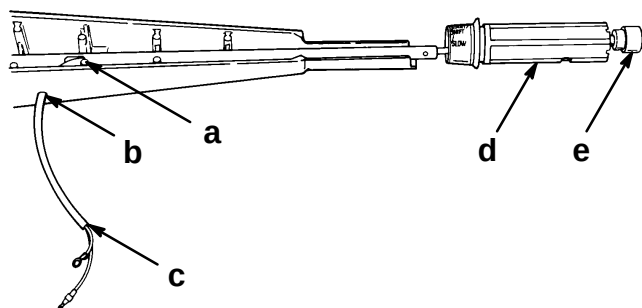
12. Install throttle cable guide onto throttle cable. Secure guide to cable with anchor and two screws. Guide hole should face up.



- a - Cable Guide
b - Screws (2)
c - Hole (faces up)

51602

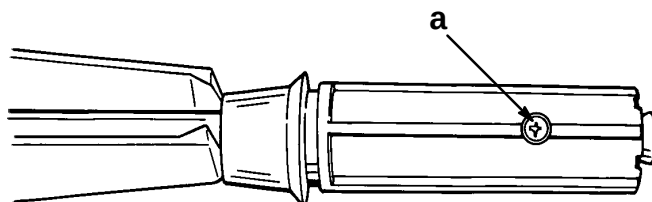
13. Position throttle arm slot to face stop harness exit hole in tiller handle. Route stop switch harness through twist grip, into throttle arm, and out through side of tiller handle.



51602

- a - Slot
b - Exit Hole
c - Harness
d - Twist Grip
e - Stop Switch

14. Secure twist grip to throttle arm with attaching screw.



51603

- a - Screw

15. Sta-strap harness to throttle arm.

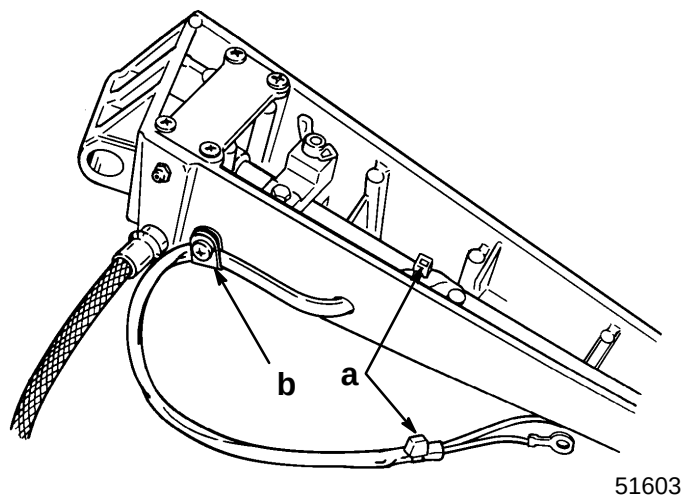
CAUTION

Allow enough slack in harness (rotate throttle grip in both directions) before securing harness to handle assembly with J-clip.

16. Attach harness to tiller arm with J-clip allowing enough slack in harness for full throttle rotation.



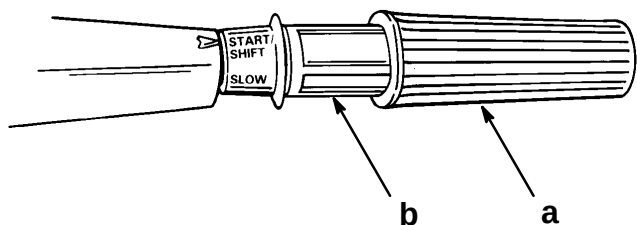
17. Attach sta-strap to end of harness sleeve.



- a - Sta-strap
b - J-clip

18. Install rubber twist grip by aligning ridges on plastic twist grip with grooves inside of rubber grip.

NOTE: Applying a soapy water solution to rubber grip will ease installation.



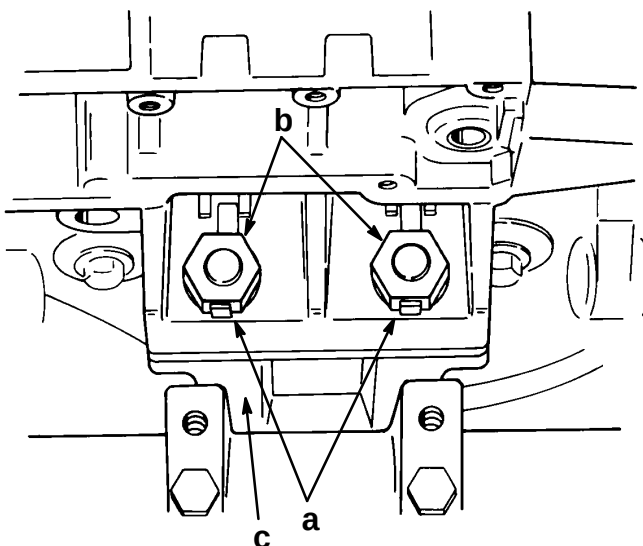
- a - Ridges
b - Grooves (under handle)

Tiller Handle/Shaft Bracket Installation

1. Slide bracket over steering arm studs. Secure bracket to arm with retained nuts and NEW tab washers.

Torque nuts to 35 lb. ft. (47.5 N·m).

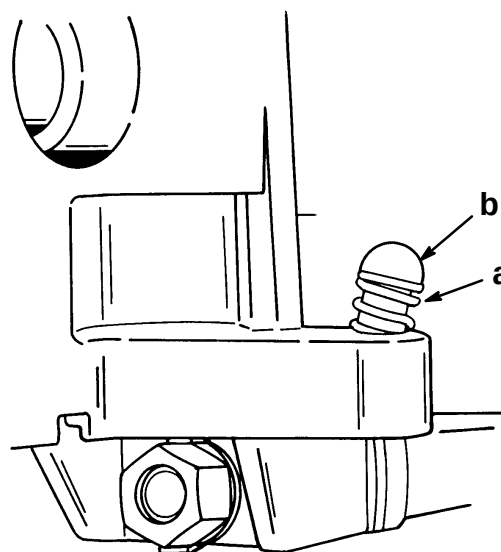
Bend locking tabs against flats of nuts.



51621

- a - Tab Washer
b - Nut
c - Steering Arm

2. Install retained spring and detent pin into tiller handle bracket.

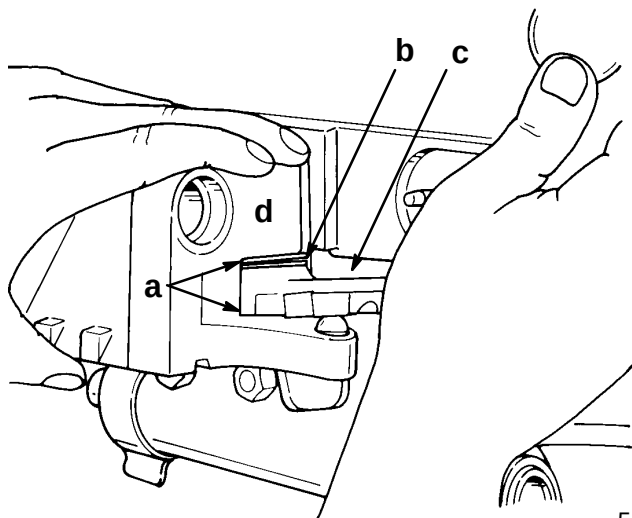


51621

- a - Spring
b - Detent Pin



3. Insert bushings and thrust washer into shift lever. Install shift lever onto bracket.

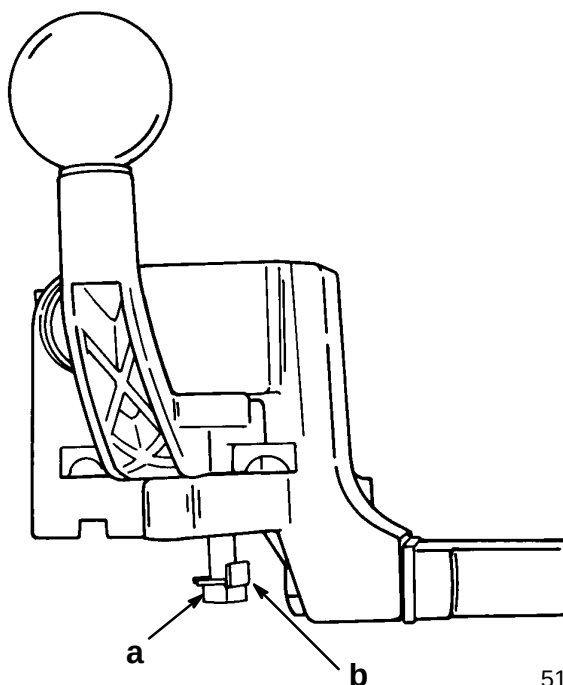


51620

- a - Bushings
- b - Thrust Washer
- c - Shift Lever
- d - Bracket

4. Secure shift lever to bracket with bolt and NEW tab washer. Align tab washer with slot in bracket.

Torque bolt to 110 lb. in. (12.4 N·m).



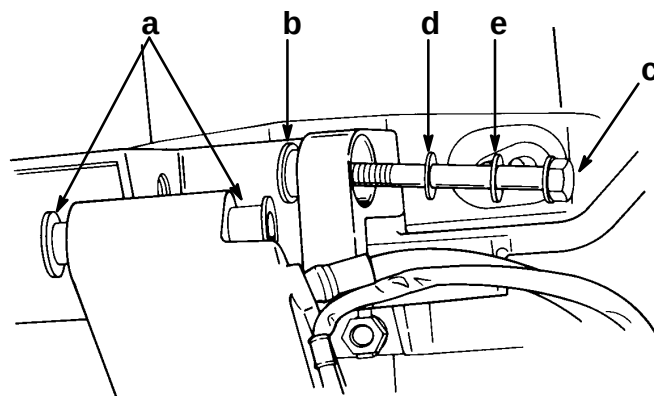
51620

- a - Bolt
- b - Tab Washer

5. Install two nylon bushings into tiller handle.

Install stainless bushing into bracket.

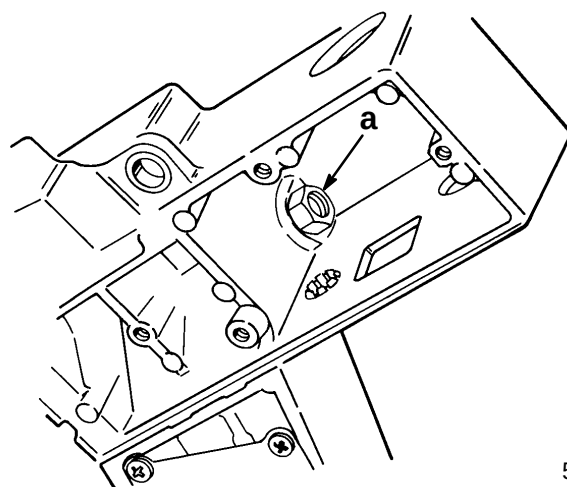
Install tiller handle to bracket using bolt and two washers.



51622

- a - Nylon Bushings
- b - Stainless Bushing
- c - Bolt
- d - Washer (Thin)
- e - Washer (Thick)

6. Secure bolt in place with nut. Torque nut to 40 lb. ft. (54.2 N·m).

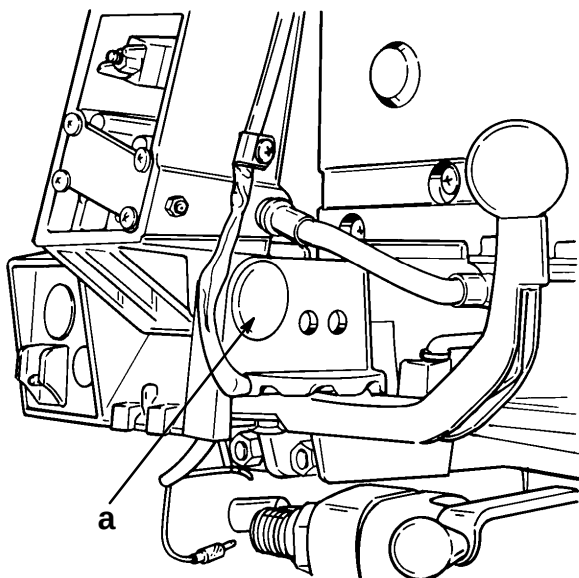


51623

- a - Nut



7. Reinstall plug.



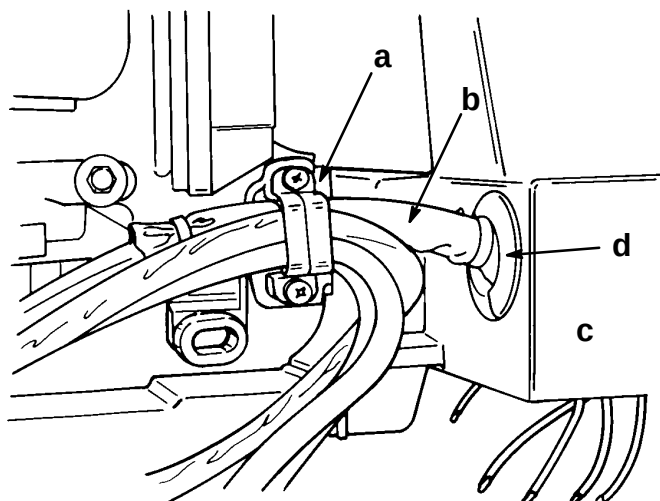
51608

a - Plug

8. Route key switch and trim switch harness through tiller bracket. Secure both switches to bracket with respective nuts.

Install grommet in harness access hole.

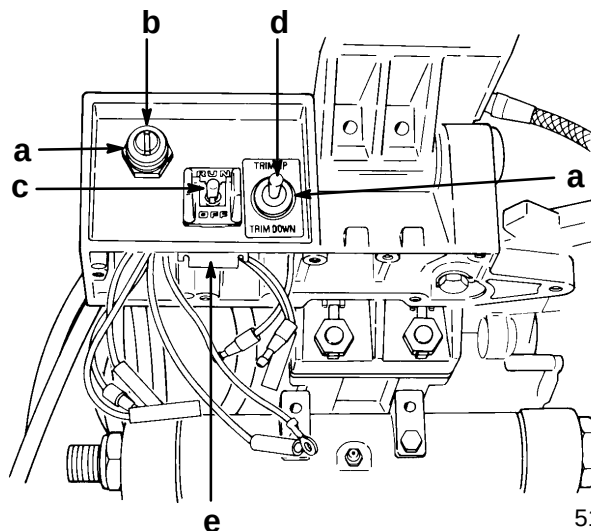
Secure harness with harness retainer.



51624

a - Harness Retainer
b - Switch Harness
c - Tiller Bracket
d - Grommet

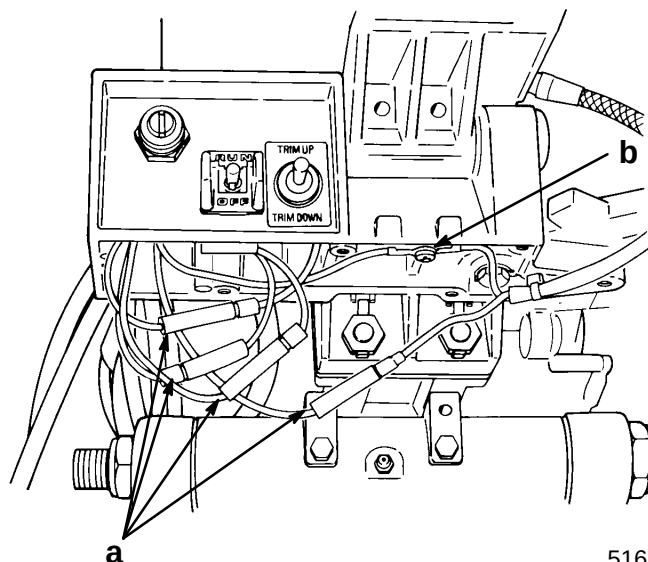
9. Reinstall lanyard stop switch in bracket and secure with clip.



51626

a - Nuts
b - Key Switch
c - Lanyard Stop Switch
d - Trim Switch
e - Clip

10. Reconnect key switch, trim switch and remote stop switch leads at bullet connectors. Secure harness BLACK ground lead and tiller handle remote stop switch ground lead to bracket with self-tapping screw.

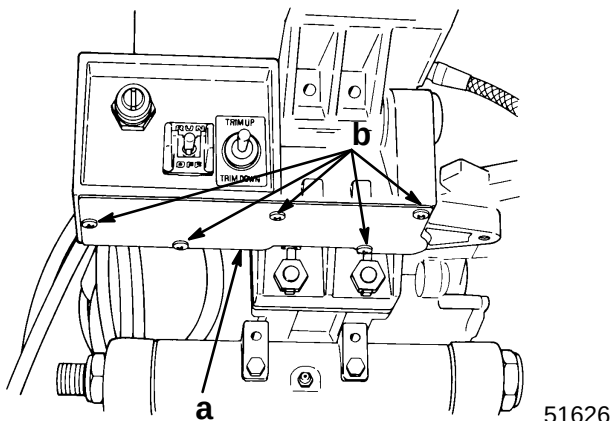


51626

a - Bullet Connectors
b - Screw



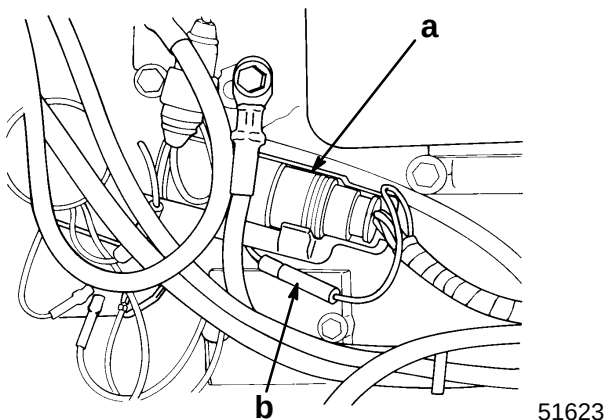
11. Secure access cover to tiller bracket with five screws. **DO NOT OVERTIGHTEN SCREWS.**



a - Access Cover
b - Screws

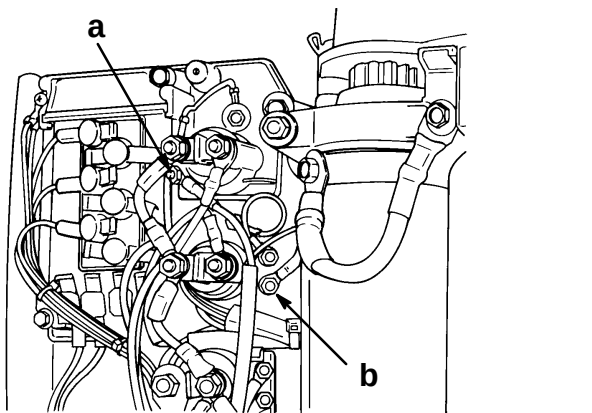
12. Connect switch harness plug to engine harness plug.

Reconnect PURPLE bullet connector.



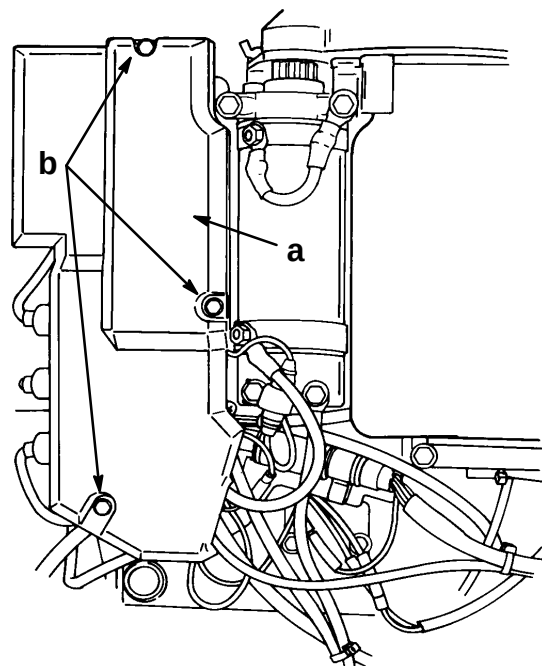
a - Switch Harness Plug
b - PURPLE Bullet Connector

13. Reconnect trim switch leads to trim solenoids.



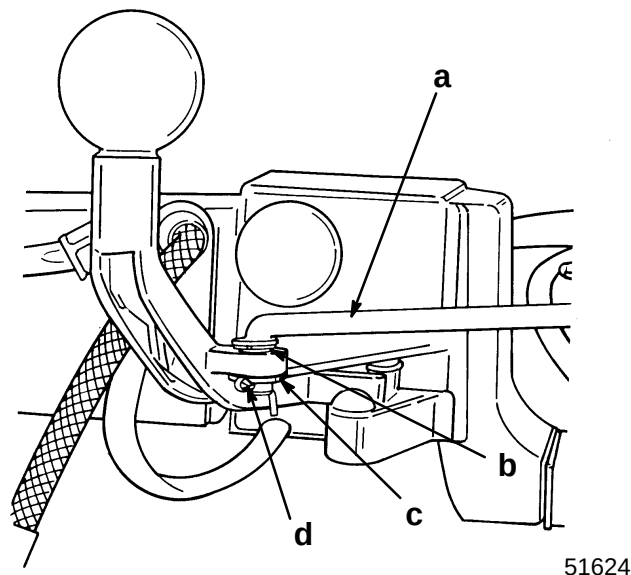
a - BLUE/WHITE Lead
b - GREEN/WHITE Lead

14. Reinstall electrical panel access cover and secure with screws. Torque screws to 30 lb. in. (3.4 N·m).



a - Panel
b - Screws - Torque to 30 lb. in. (3.4 N·m)

15. Reconnect shift link rod to shift lever using bushing, washer and cotter key.

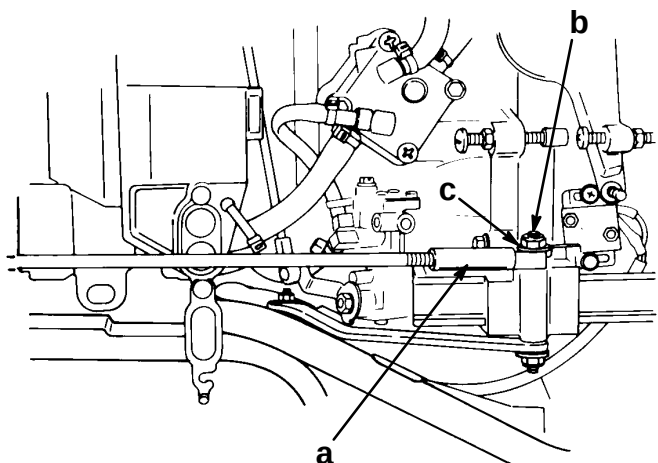


a - Shift Link Rod
b - Bushing
c - Washer
d - Cotter Key



Shift Link Rod Installation and Adjustment to Engine

1. Position shift lever handle into neutral detent.
2. Manually shift outboard into neutral (propeller will rotate freely).
3. Adjust shift link rod end to slip over shift actuator bolt with slight preload adjustment toward reverse.
4. Place hole in end of shift link rod end over stud of shift actuator and secure with lock nut and washer. Tighten until snug then back off 1/4 turn.



51622

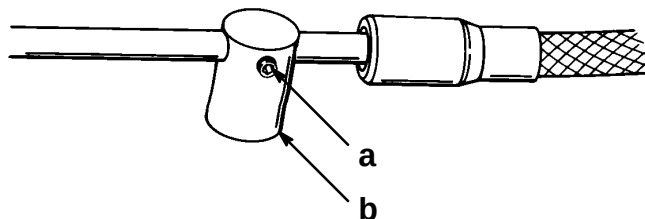
- a - Shift Link Rod End
- b - Shift Actuator Stud
- c - Lock Nut

5. Check shift link rod adjustment as follows:
 - a. Place engine shift lever in "F" (Forward) position. Propeller should not rotate in a COUNTERCLOCKWISE direction. If propeller does rotate COUNTERCLOCKWISE, length of shift link rod must be reduced and Step "a" repeated.
 - b. Place engine shift lever in "N" (Neutral) position. Propeller should rotate freely without drag. If not, length of shift link rod must be increased and Steps "a" and "b" repeated.
 - c. While rotating propeller, place engine shift lever in "R" (Reverse) position. If propeller can be rotated in either direction, length of shift link rod must be increased and Steps "a" thru "c" repeated.
 - d. Place engine shift lever in "N" (Neutral) position. Propeller should turn freely without drag. If not, length of shift link rod must be decreased and Steps "a" thru "d" repeated.

Throttle Cable Installation and Adjustment to Engine

IMPORTANT: Turn throttle cable conduit clockwise until bottomed on tiller handle then back off one turn before reconnecting throttle cable to engine.

1. Rotate throttle twist grip fully clockwise to stop "IDLE" position.
2. Back out set screw from throttle cable barrel until 2 or 3 threads of set screw are exposed.



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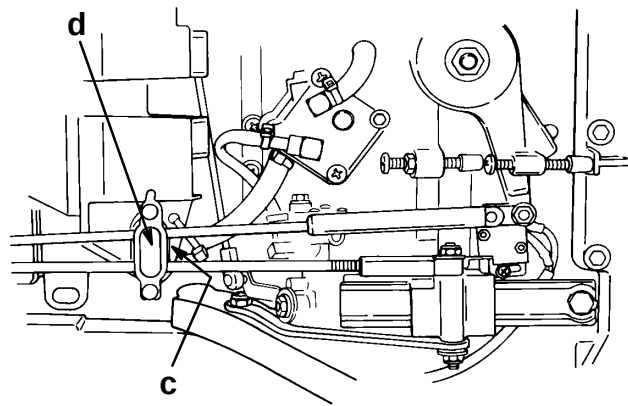
- a - Set Screw
- b - Throttle Cable Barrel

3. Place end of throttle cable guide over peg of throttle lever and secure with locknut and washer. Tighten until snug then back off 1/4 turn.

CAUTION

DO NOT exceed 1/4 turn on set screw after it has bottomed-out.

4. Holding engine throttle lever against idle stop, adjust throttle cable barrel to slip into upper hole of barrel receptacle, with a very light preload of throttle lever against idle stop. Apply small amount of Loctite 271 to threads of allen screw and tighten until snug, then an additional 1/8 turn. Lock barrel in place with barrel retainer.



51620

- c - Barrel Receptacle
- d - Barrel Retainer



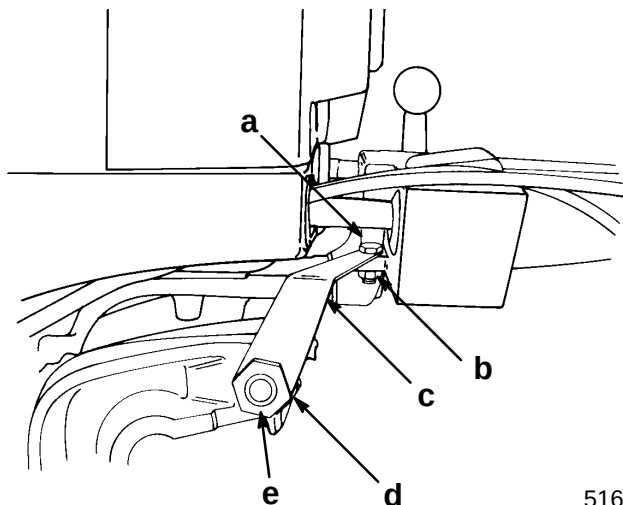
5. Check preload on throttle cable by placing a thin piece of paper between idle stop screw and idle stop. Preload is correct when paper can be removed without tearing, but has some drag on it. Readjust cable barrel, if necessary.
6. Reinstall outboard cowling.
7. Reconnect POSITIVE (+) and NEGATIVE (-) cables to battery.

Co-Pilot Installation

⚠ WARNING

Co-Pilot Assembly (supplied) MUST BE installed on tiller handle models.

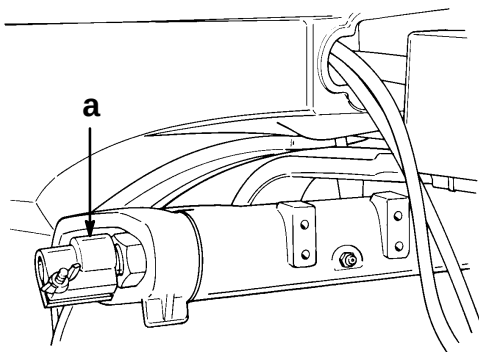
1. Remove and discard shipping bracket components, if installed.



51623

- a - Bolt
- b - Nut
- c - Shipping Bracket
- d - Washer
- e - Nut

2. Thread friction device onto starboard end of tile tube, until securely tightened and position wing nut toward front of outboard as shown.



51624

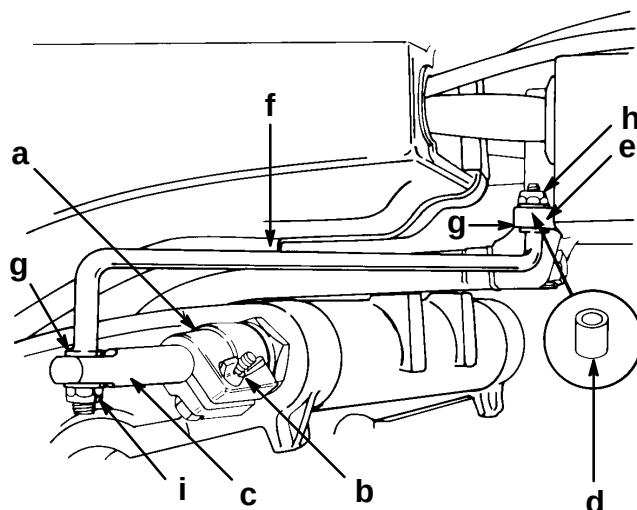
- a - Friction Device

3. Loosen wing nut on friction device and insert pilot rod thru friction device and into tilt tube.
4. Lubricate both ends of link rod with Quicksilver 2-4-C w/Teflon.
5. Secure link rod between steering handle assembly and pilot rod end as shown.
6. Adjust wing nut on friction device to provide desired steering control.

IMPORTANT: Tighten wing nut to increase friction; loosen to decrease friction.

⚠ WARNING

If wing nut is tightened, it may not be possible to steer the outboard in an emergency.



51626

- a - Steering Friction Device
- b - Wing Nut
- c - Pilot Rod
- d - Spacer (Hidden) - Place in hole of steering handle assembly.
- e - Steering Handle Assembly
- f - Link Rod - Short bend of link rod to steering handle.
- g - Flat Washer (2)
- h - Locknut - Torque to 120 lb. in. (13.6 N·m)
- i - Locknut - Tighten until it seats DO NOT exceed 120 lb. in. (13.6 N·m), then back off 1/4 Turn.