



FUEL SYSTEM

Section 3B - Carburetor

Table of Contents

Specifications	3B-2	Intake Assembly Removal	3B-13
Carburetor Specifications	3B-2	Intake Disassembly	3B-14
Special Tools	3B-3	Auto Enrichener Removal/Disassembly	3B-16
Intake	3B-4	Carburetor Disassembly	3B-17
Carburetor	3B-6	Cleaning/Inspection/Repair	3B-19
Fuel & Vent Lines	3B-8	Carburetor	3B-19
Theory of Operations	3B-10	Auto Enrichener	3B-20
Prime Start System	3B-10	Carburetor Reassembly	3B-21
Acceleration	3B-11	Auto Enrichener Assembly/Installation	3B-22
Carburetor Adjustments	3B-12	Intake Reassembly	3B-24
Float Level	3B-12	Intake Assembly Installation	3B-27
Idle Speed	3B-12		





Specifications

CARBURETOR	Number of Carburetors	4
	ID Mark	67G 67F
	Venturi Size	0.945 in. (24 mm) 1.181 in. (30 mm)
	Idle rpm (Neutral) Warm Engine	850 ± 25 rpm
	Idle rpm (Forward Gear) Warm Engine	775 - 800 rpm
	Wide Open Throttle rpm (WOT)	
	Range:	
	Model 75	4500-5500
	Model 90	5000-6000

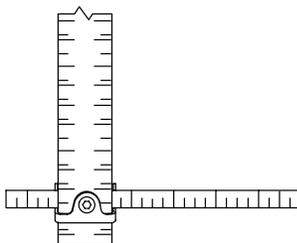
Carburetor Specifications

Carburetor Number	Model	Main Fuel-Jet	Main AirJet	Pilot Jet	Pilot AirJet	Float Setting	Idle Mixture Pre-Set
BCF68C10	75H.P. 4-Stroke	#112	#115	#45	#85	0.51-0.59in (13-15 mm)	2-1/2 ± 1/2
BCF68C00	90H.P. 4-Stroke	#128	#75	#42	#85	0.51-0.59in (13-15 mm)	2 ± 1/2

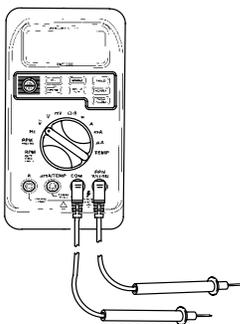


Special Tools

1. Carburetor Scale P/N 91-36392.

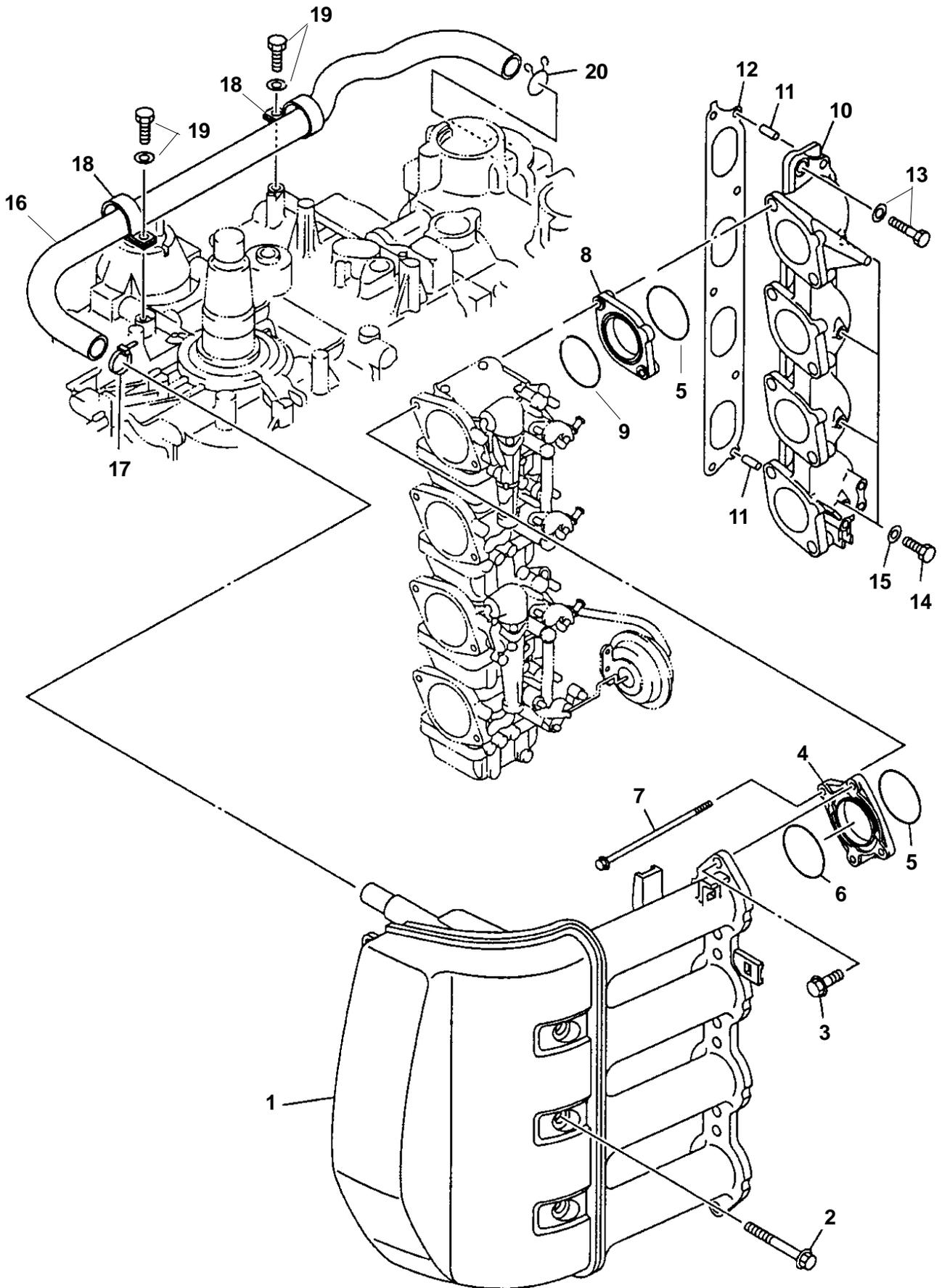


2. DMT 2000 Digital Tachometer Multi-meter P/N 91-854009A1.





Intake



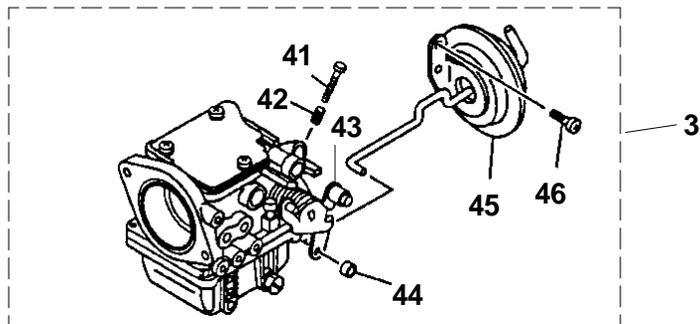
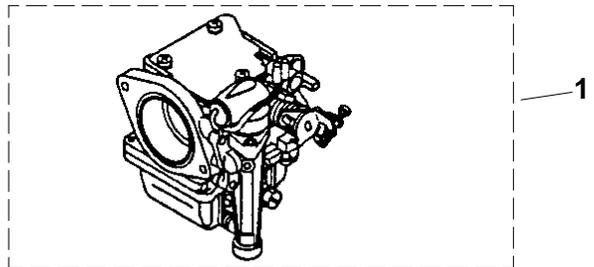
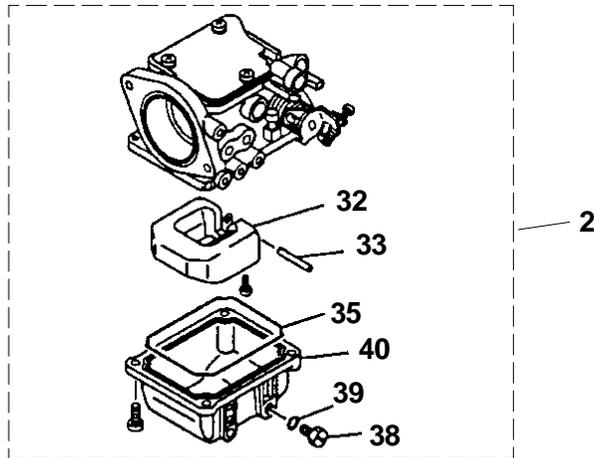
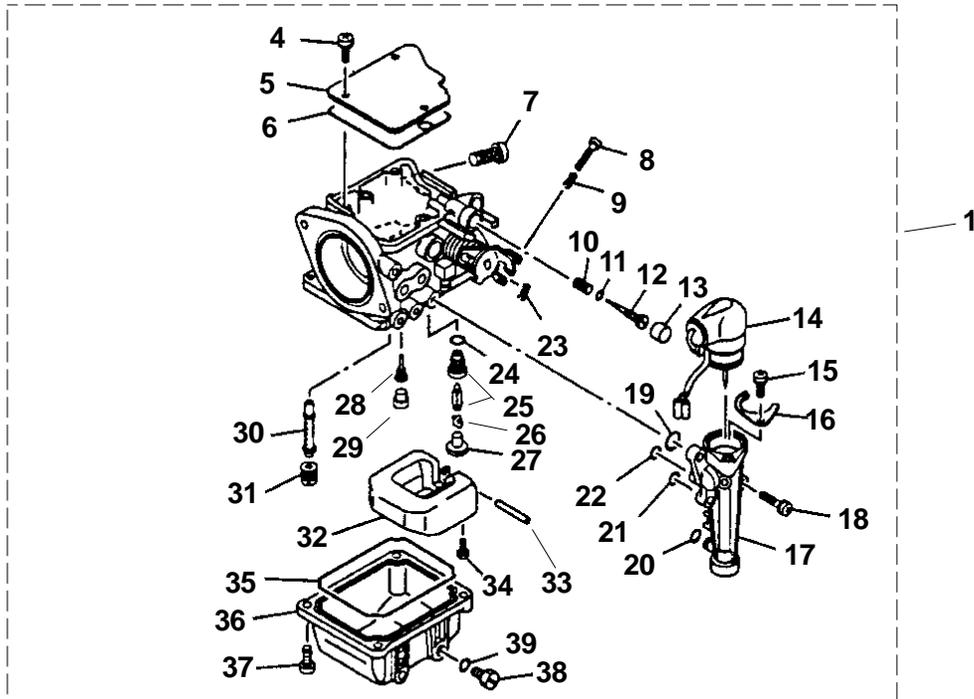


Intake

REF. NO.	QTY.	DESCRIPTION	TORQUE		
			lb-in.	lb-ft	Nm
1	1	INTAKE SILENCER			
2	3	SCREW (M8 x 60 mm)		13	181
3	8	SCREW (M6 x 16 mm)	70		8
4	4	PLATE			
5	8	O RING			
6	4	O RING			
7	8	SCREW (M6 x 115 mm)	70		8
8	4	INSULATOR			
9	4	SEAL			
10	1	MANIFOLD			
11	2	PIN			
12	1	GASKET			
13	5	SCREW (M8 x 35 mm)		13	181
14	4	SCREW (M6 x 10 mm)	70		8
15	4	GASKET			
16	1	BREATHER PIPE			
17	1	STA-STRAP			
18	2	CLAMP			
19	2	SCREW (M6 x 12 mm)	70		8
20	1	CLIP			



Carburetor



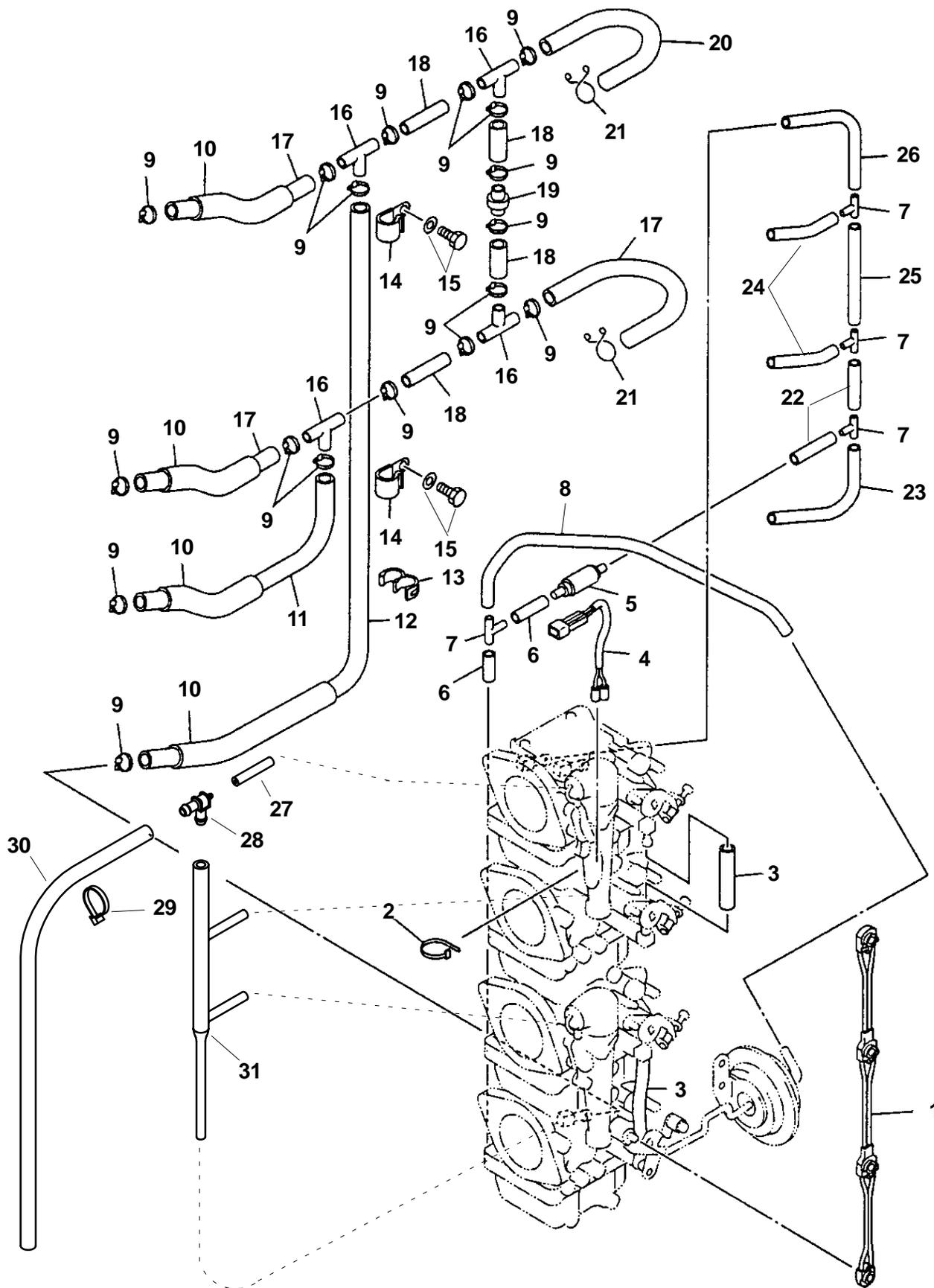


Carburetor

REF. NO.	QTY.	DESCRIPTION	TORQUE		
			lb-in.	lb-ft	Nm
1	2	CARBURETOR (1/3)			
2	1	CARBURETOR (2)			
3	1	CARBURETOR (4)			
4	12	SCREW (M4 x 10 mm)			
5	4	PLAT			
6	4	O RING			
7	4	FILTER ELEMENT			
8	3	SCREW (1/2/3)			
9	3	SPRING (1/2/3)			
10	4	SPRING			
11	4	O RING			
12	4	PILOT SCREW			
13	4	PLUG			
14	2	PRIME STARTER (1/3)			
15	2	SCREW (1/3) (M4 x 10 mm)			
16	2	STARTER LEVER PLATE (1/3)			
17	2	STARTER HOUSING (1/3)			
18	6	SCREW (1/3) (M5 x 16 mm)			
19	2	O RING (1/3)			
20	2	O RING (1/3)			
21	2	O RING (1/3)			
22	4	O RING (1/3)			
23	3	SPRING (1/2/3)			
24	4	O RING			
25	4	NEEDLE VALVE SET			
26	4	CLIP			
27	4	FLOAT PIN			
28	4	JET (#42)			
29	4	CAP			
30	4	NEEDLE JET			
31	4	MAIN JET (#128)			
32	4	FLOAT			
33	4	FLOAT ARM PIN			
34	4	SCREW (M4 x 8 mm)			
35	4	GASKET			
36	2	FLOAT BOWL (1/3)			
37	16	SCREW (M4 x 14 mm)			
38	4	DRAIN SCREW			
39	4	O RING			
40	2	FLOAT BOWL (2/4)			
41	2	SCREW (4)			
42	2	SPRING (4)			
43	1	COLLAR (4)			
44	1	BUSHING (4)			
45	1	DIAPHRAGM (4)			
46	2	SCREW (4) (M6 x14 mm)	70		8



Fuel & Vent Lines





Fuel & Vent Lines

REF. NO.	QTY.	DESCRIPTION	TORQUE		
			lb-in.	lb-ft	Nm
1	1	CHOKE ROD			
2	1	STA-STRAP			
3	2	HOSE			
4	1	HARNESS			
5	1	CHECK VALVE			
6	2	HOSE			
7	14	CONNECTOR			
8	1	HOSE			
9	18	CLAMP			
10	4	HOSE			
11	1	HOSE			
12	1	HOSE			
13	1	CLAMP			
14	2	CLAMP			
15	2	BOLT			
16	4	TEE FITTING			
17	3	HOSE			
18	4	HOSE			
19	1	CONNECTOR			
20	1	HOSE			
21	2	CLIP			
22	2	HOSE			
23	1	HOSE			
24	2	HOSE			
25	1	HOSE			
26	1	HOSE			
27	1	TUBING (1-3/4 IN.)			
28	1	TEE FITTING			
29	1	STA-STRAP			
30	1	TUBING (22 IN.)			
31	1	TUBE			



Theory of Operations

Prime Start System

This carburetor assembly uses the PrimeStart system for precise fuel delivery during start-up, at all temperatures. Two electrothermal valves are installed on the carburetor assembly. The upper electrothermal valve controls fuel flow for carburetors #1 and #2, and the lower valve controls fuel flow for carburetors #3 and #4.

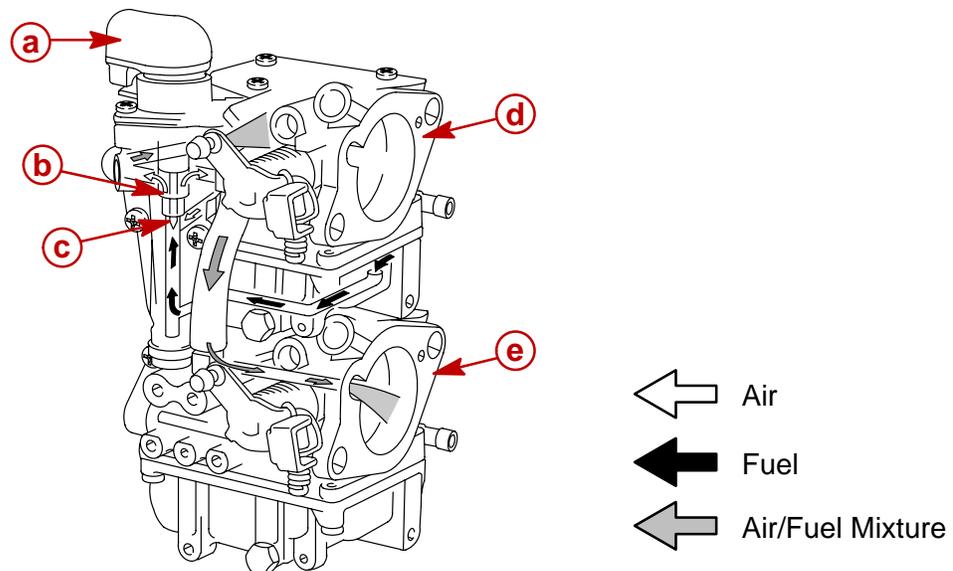
Before start-up, the electrothermal ram (needle) is retracted (the fuel enrichment valve is opened) according to the temperature, allowing a high percentage of fuel to flow from the float chamber into the venturi during start-up.

During start-up, the electrothermal ram (needle) is still retracted (the fuel enrichment valve is opened) according to the temperature, allowing a rich air/fuel mixture to be fed to the cylinders.

After start-up, the current supplied from the electric power source and then flows to the electrothermal valves causing the wax in the valves to heat up.

As the wax heats up the electrothermal ram (needle) begins to extend, partially closing the fuel enrichment valve, and reducing the flow of fuel from the float chamber into the venturi.

After a few minutes, the electrothermal ram (needle) is fully extended, the fuel enrichment valve is fully closed, and enrichment ceases.



- a** - Electrothermal Valve
- b** - Fuel Enrichment Valve
- c** - Electrothermal Ram (needle)
- d** - Carburetor #1 and #3
- e** - Carburetor #2 and #4



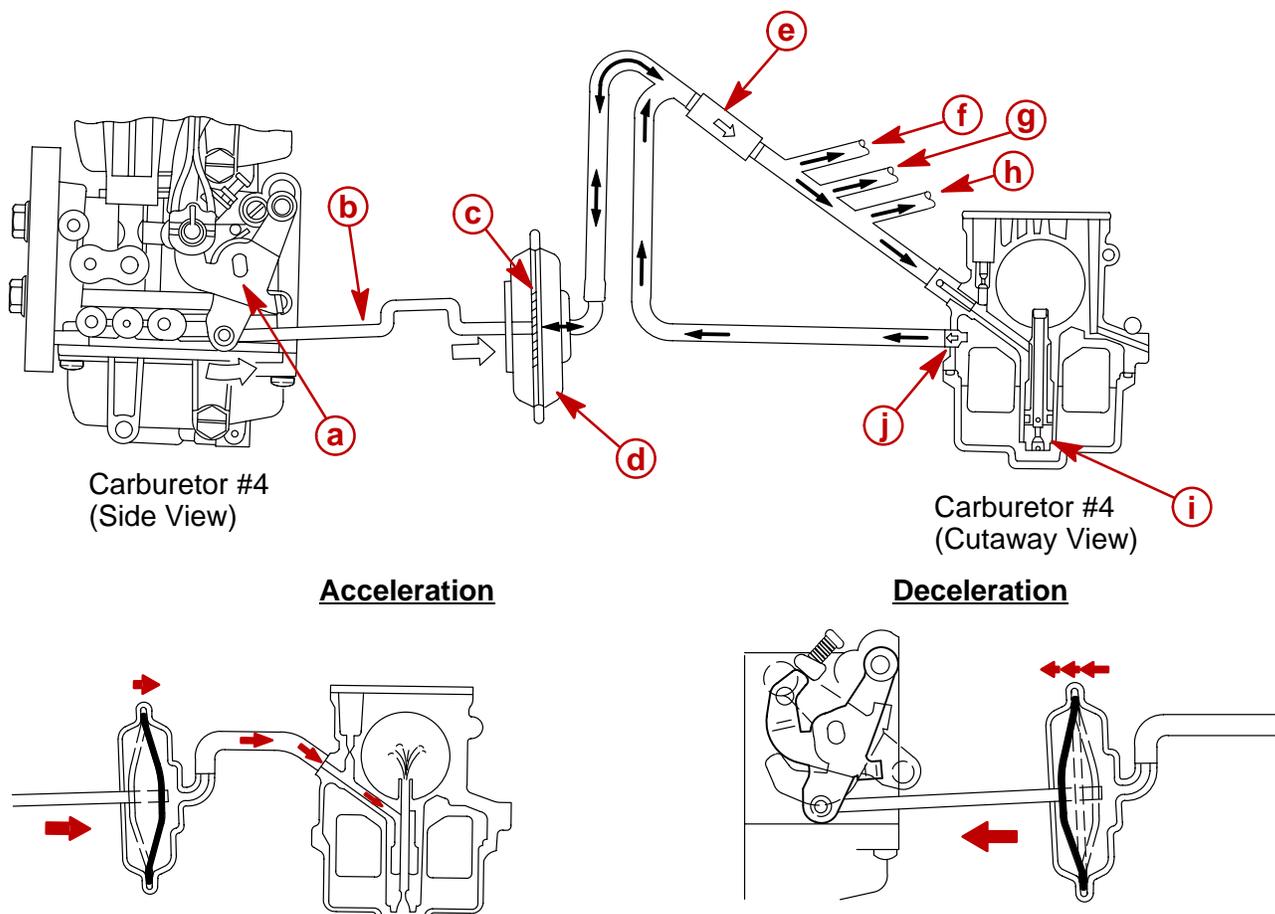
Acceleration

This carburetor assembly uses an accelerator pump to ensure that the proper amount of fuel reaches all of the carburetors during rapid throttle openings (preventing temporary lean conditions).

As the throttle is opened, the throttle lever rotates and pushes the throttle lever link rod. The throttle lever link rod then pushes the diaphragm in the dashpot, forcing out the air. The air flows through the in-line, one-way valve, and then to all of the carburetors. This additional air flows into the carburetors and mixes with the fuel from the main jets. This air/fuel mixture is then injected into the venturi, ensuring that enough fuel reaches the engine.

As the throttle is closed, the throttle lever rotates back and the throttle lever link rod returns, causing the diaphragm in the dashpot to move back. As the diaphragm moves back, suction causes the air from the venturi of carburetor #4 to flow through a one-way valve in the carburetors and back to the dashpot. The in-line, one-way valve prevents the air in the hoses from flowing back to the dashpot.

Also, the diaphragm functions as a coasting enrichener during quick deceleration, preventing the engine from stalling.



Carburetor #4
(Side View)

Carburetor #4
(Cutaway View)

Acceleration

Deceleration

- a - Throttle Lever
- b - Throttle Lever Link Rod
- c - Diaphragm
- d - Dashpot
- e - In-Line, One-Way Valve

- f - To Carburetor #1
- g - To Carburetor #2
- h - To Carburetor #3
- i - Main Jet
- j - One-Way Valve



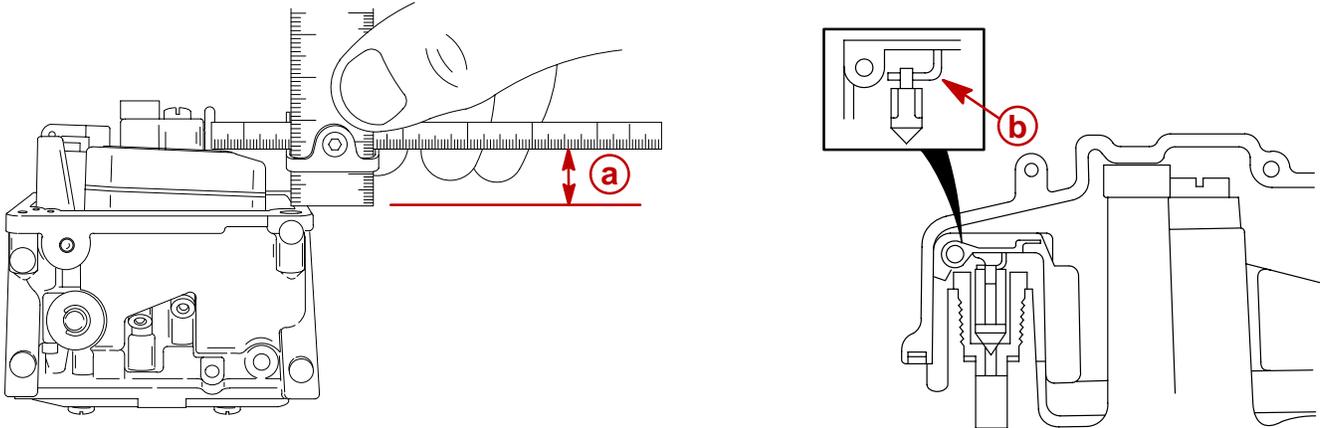
Carburetor Adjustments

Float Level

1. With carburetor turned upside down, and carb scale seated on inner edge, check float level from top of float to float bowl flange as shown. Adjust tab if out of specification.

NOTE: Measure float level without gasket.

NOTE: Bend tab to adjust float height.



- a** - Float Level
- b** - Tab

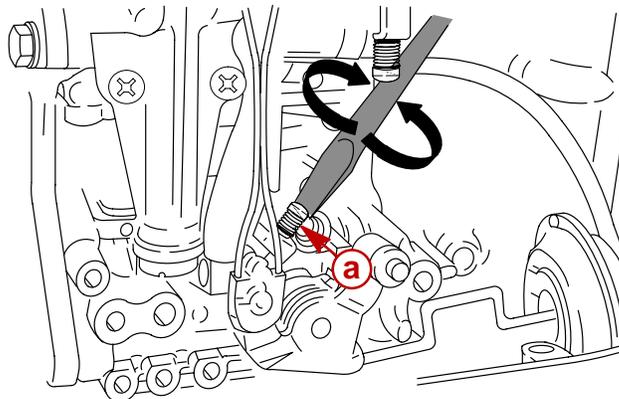
Float Height
0.51-0.59 in. (13-15 mm)

Idle Speed

NOTE: Outboard should be completely **warmed up** for the idle speed adjustment.

1. With the outboard in forward gear, adjust idle speed screw to obtain the specified idle speed.

NOTE: Turning idle speed adjustment screw;
-clockwise will increase engine idling speed.
-counterclockwise will decrease engine idling speed.



- a** - Idle Speed Screw

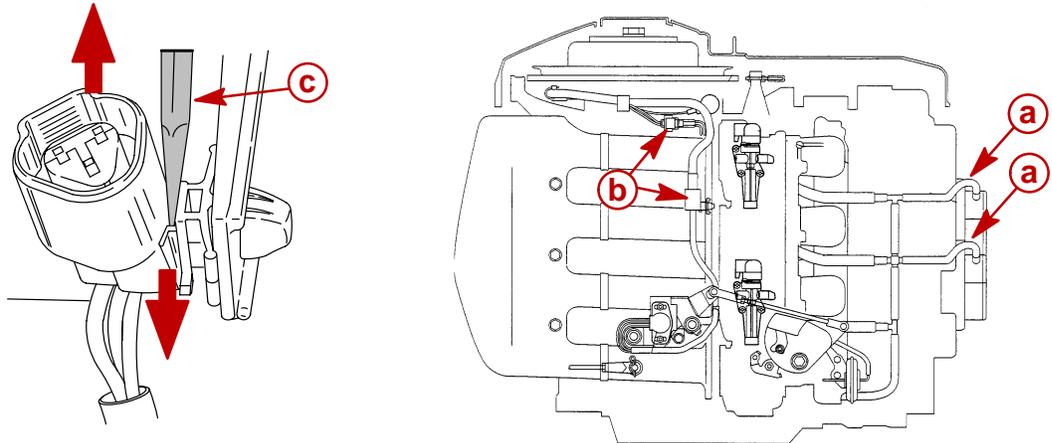
Idle Speed (Forward Gear)
775-800 RPM



Intake Assembly Removal

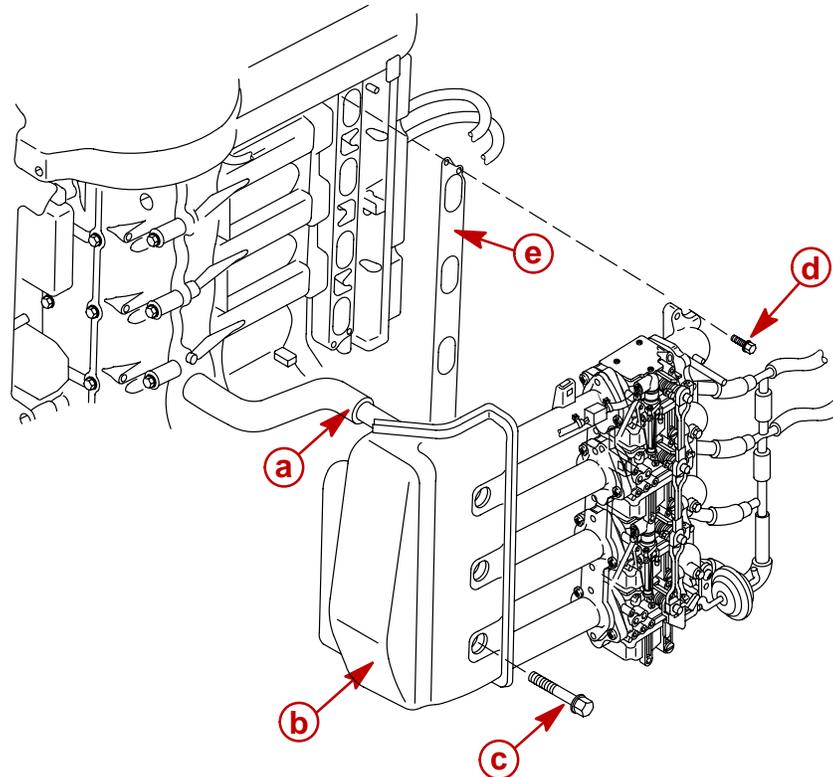
NOTE: Refer to **Section 7** for removal of the throttle lever/linkage assembly prior to removal of the intake assembly and carburetors.

1. Remove fuel pump hoses.
2. Disconnect auto enrichener wires and throttle position sensor (TPS) harness.



- a** - Fuel Pump Hoses
- b** - Auto Enrichener and TPS Connection
- c** - Flat Blade Screwdriver Inserted into TPS Connector

3. Disconnect breather hose from intake silencer.
4. Remove intake assembly from engine.



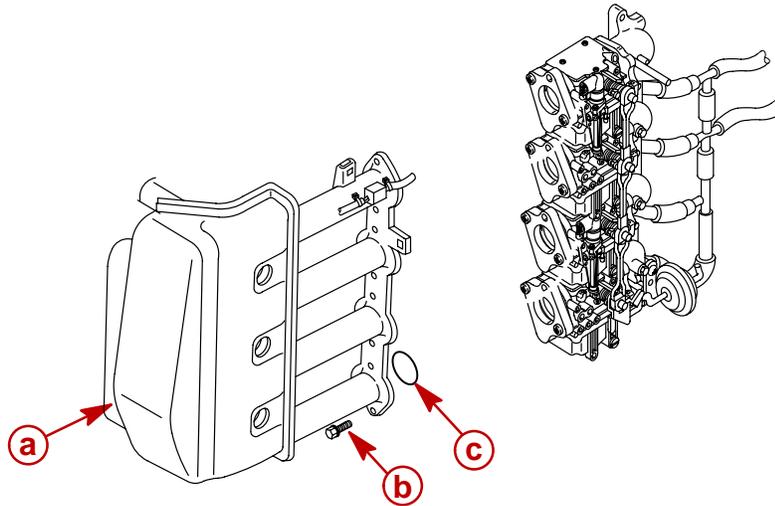
- a** - Breather Hose
- b** - Intake Silencer
- c** - Screw (3) M8 x 60

- d** - Screw (5) M8 x 35
- e** - Gasket



Intake Disassembly

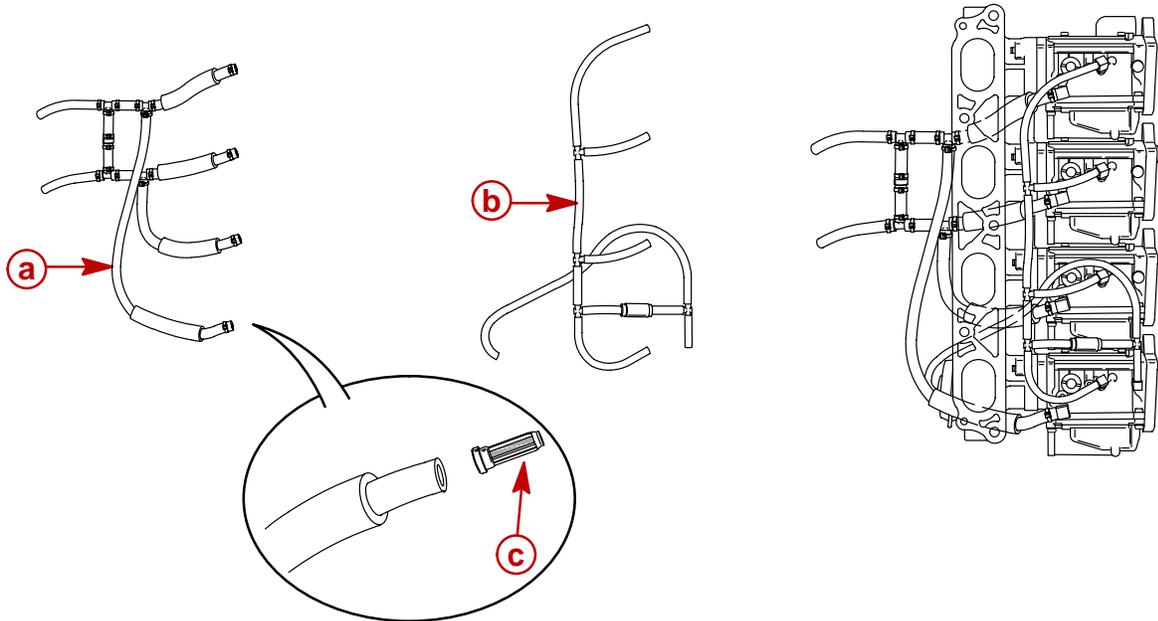
1. Remove intake silencer.



- a** - Intake Silencer
- b** - Screw (8) M6x16
- c** - O-Ring (4)

2. Remove fuel and accelerator pump piping.

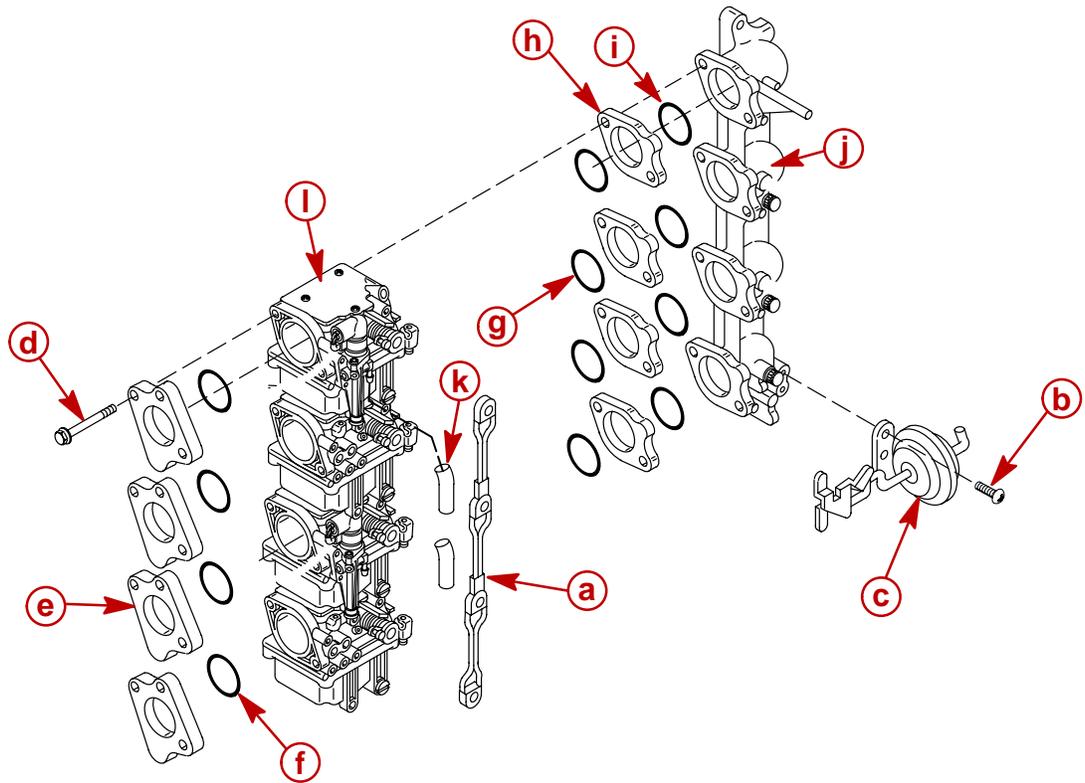
NOTE: When removing fuel pump piping check hose for in-line fuel filters that may be stuck inside the hose.



- a** - Fuel Pump Piping
- b** - Accelerator Pump Piping
- c** - Remove Any Fuel Filters That May Be Stuck in Hose



3. Remove link lever and accelerator pump.
4. Remove spacers and intake manifold.
5. Remove hose.



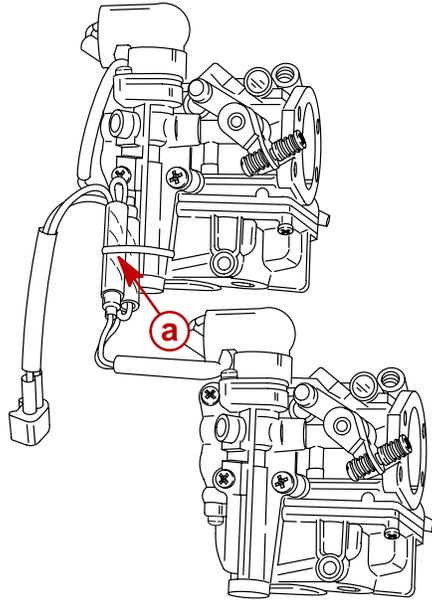
- a** - Link Lever
- b** - Screw (2) M6 x 14 mm
- c** - Accelerator Pump
- d** - Bolt (8) M6 x 115 mm
- e** - Spacer (4)
- f** - O-Ring (4)

- g** - O-Ring (4)
- h** - Spacer (4)
- i** - O-Ring (4)
- j** - Intake Manifold
- k** - Hose (2)
- l** - Carburetor Assembly



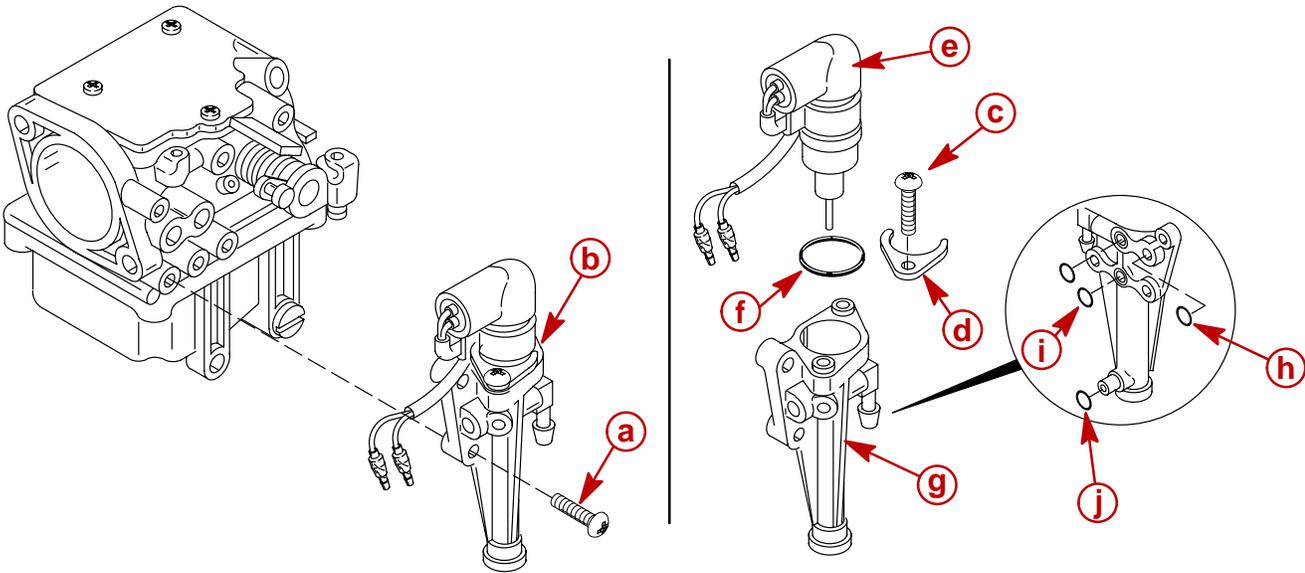
Auto Enrichener Removal/Disassembly

1. Cut cable tie and disconnect auto enrichener wires.



a - Cable Tie

2. Remove auto enrichener assembly.
3. Remove auto enrichener from valve housing.



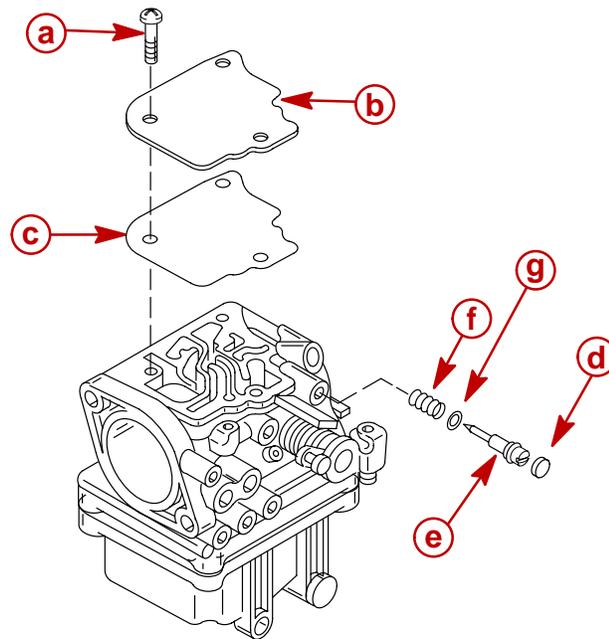
- a** - Screw (3) M5 x 16
- b** - Auto Enrichener Valve Assembly
- c** - Screw-M4 x 10
- d** - Auto Enrichener Valve Retainer
- e** - Auto Enrichener Valve

- f** - O-Ring
- g** - Auto Enrichener Valve Housing
- h** - O-Ring (2)
- i** - O-Ring
- j** - O-Ring



Carburetor Disassembly

1. Remove top cover and pilot screw.

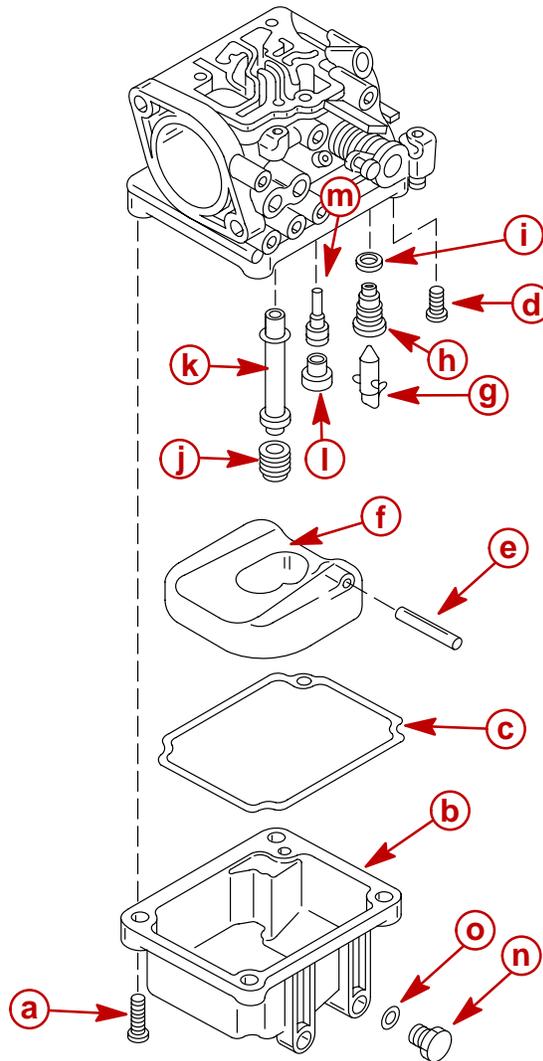


- a** - Screw (3) M4 x 10
- b** - Carburetor Top Cover
- c** - Gasket
- d** - Blind Plug

- e** - Pilot Screw
- f** - Spring
- g** - O-Ring



2. Remove float chamber and float.
3. Remove needle valve.
4. Remove main jet and main nozzle.
5. Remove pilot jet.



- a** - Screw (4) M4 x 14
- b** - Float Chamber
- c** - Rubber Gasket
- d** - Screw-M4 x 8
- e** - Float Pin
- f** - Float
- g** - Needle Valve
- h** - Needle Valve Seat

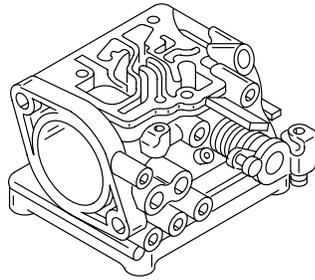
- i** - O-Ring
- j** - Main Jet
- k** - Main Nozzle
- l** - Pilot Jet Plug
- m** - Pilot Jet
- n** - Drain Screw
- o** - O-Ring



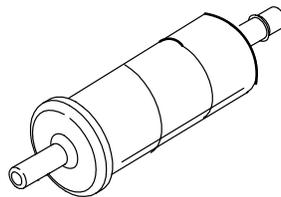
Cleaning/Inspection/Repair

Carburetor

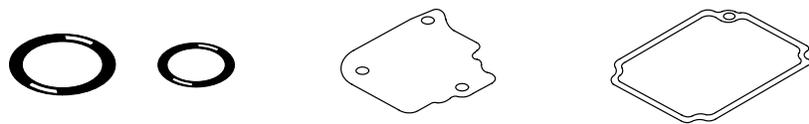
1. Inspect carburetor body. Replace if cracked or damaged.



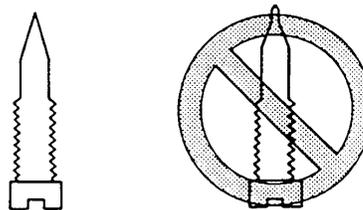
2. Inspect inline filter for leaks or contamination. Replace if necessary.



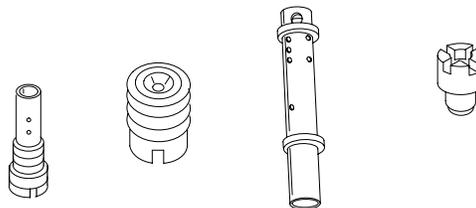
3. Inspect o-rings and gaskets. Replace if cut or torn.



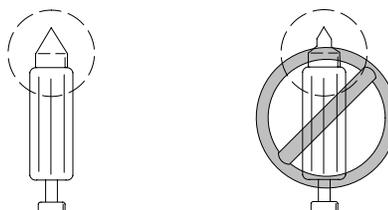
4. Inspect pilot screw. Replace if bent or worn.



5. Inspect main jet and pilot jet. Clean if they are contaminated.

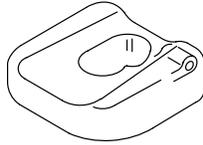


6. Inspect needle valve. Replace if grooved wear is noticeable.





7. Inspect float. Replace if cracked or damaged.

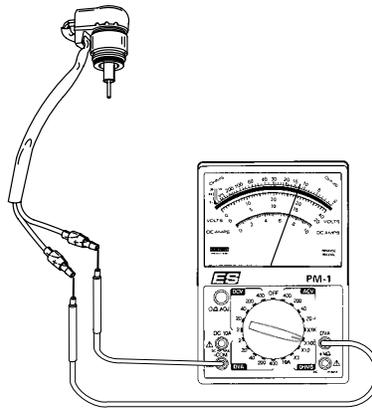


⚠ CAUTION

Do not use steel wire for cleaning the jets as this may enlarge the jet diameters and seriously affect performance. Use a petroleum based solvent for cleaning and blow out all passages with compressed air.

Auto Enrichener

1. Inspect needle and piston valve. Replace if worn or damaged.
2. Measure auto enrichener resistance. Replace if out of specification.



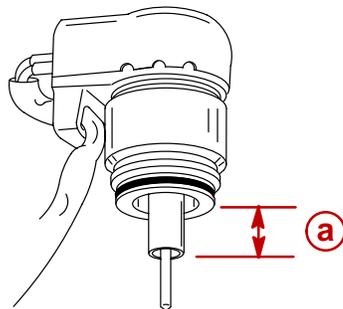
Auto Enrichener Resistance

15-25 Ω @ 68°F (20°C)

3. Perform piston valve height test below.

Piston Valve Height Test:

- a. Measure piston valve height (a).
 - b. Connect to 12 V battery.
 - c. Wait several minutes.
 - d. Measure piston valve height.
4. Replace auto enrichener if **no change** was observed.



a - Piston Valve Height Measurement

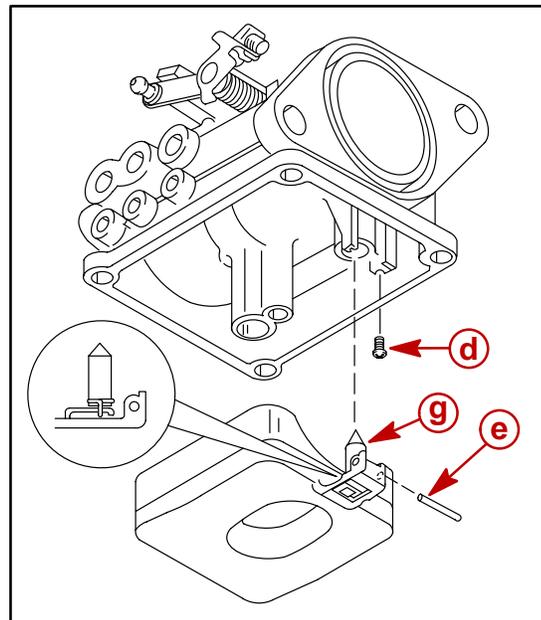
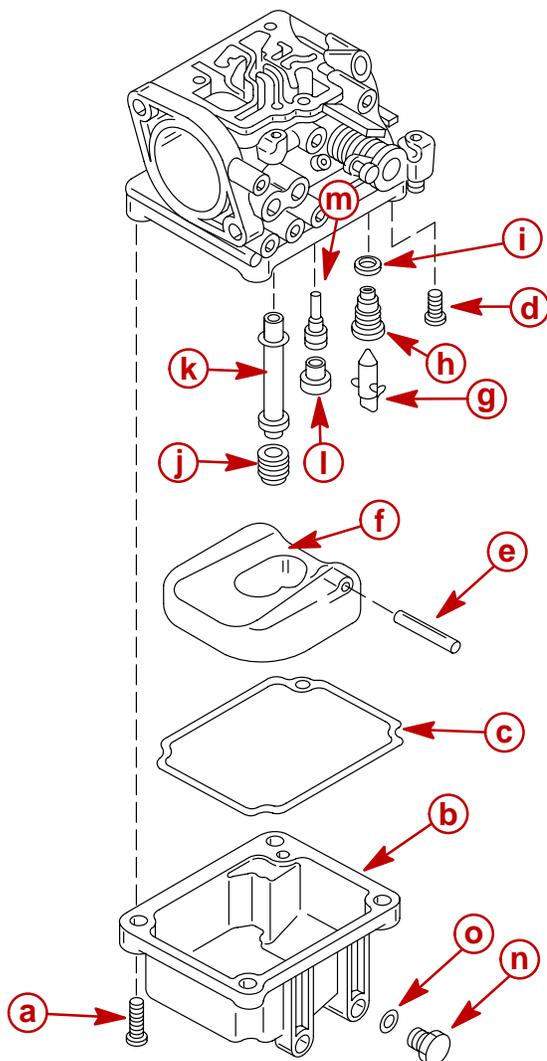


Carburetor Reassembly

1. Install pilot jet, main jet, and main nozzle.
2. Install needle valve, float chamber, and float.

NOTE: Check float for smooth operation after installation.

NOTE: When installing float into carburetor, place needle valve into needle valve seat.

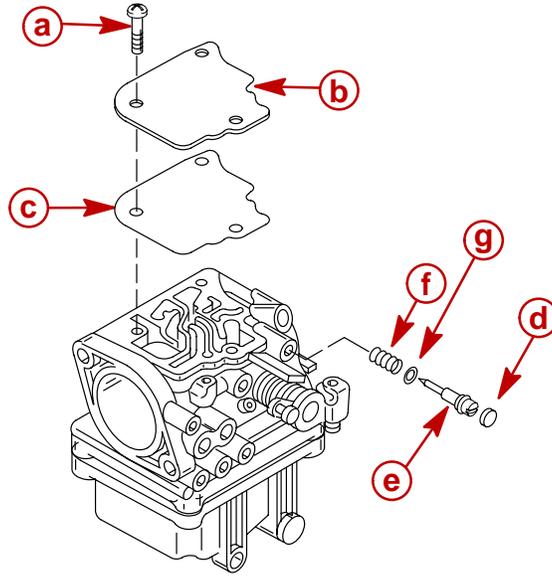


- a** - Screw (4) M4 x 14
- b** - Float Chamber
- c** - Rubber Gasket
- d** - Screw-M4x
- e** - Float Pin
- f** - Float
- g** - Needle Valve
- h** - Needle Valve Seat

- i** - O-Ring
- j** - Main Jet
- k** - Main Nozzle
- l** - Pilot Jet Plug
- m** - Pilot Jet
- n** - Drain Screw
- o** - O-Ring



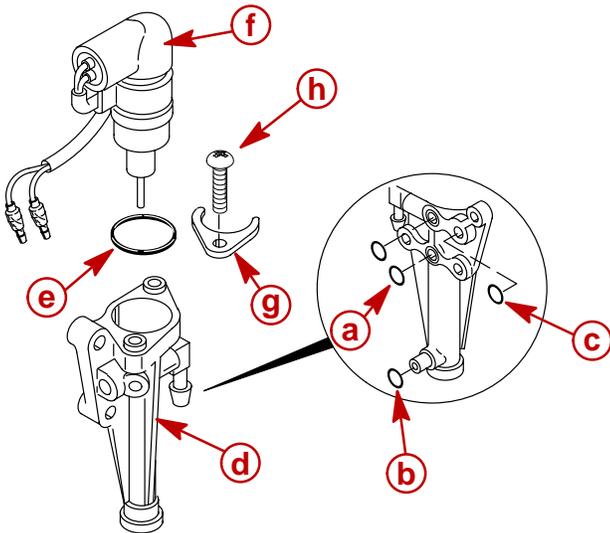
3. Install float chamber, pilot screw, and top cover.
4. Adjust pilot screw to specifications listed on page 3B-1.



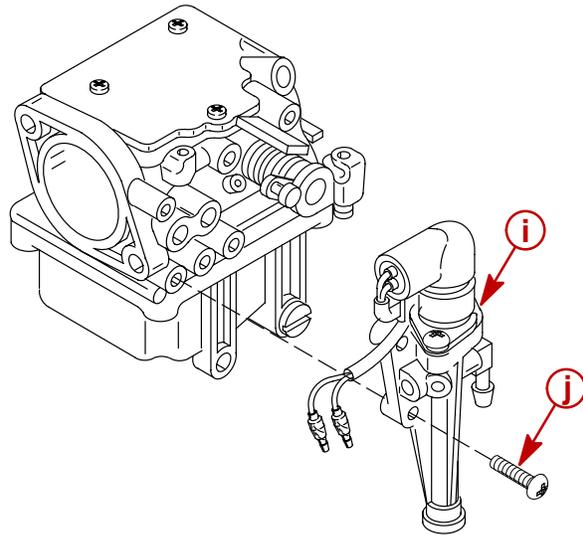
- | | |
|---------------------------------|------------------------|
| a - Screw (3) M4 x 10 mm | e - Pilot Screw |
| b - Carburetor Top Cover | f - Spring |
| c - Gasket | g - O-Ring |
| d - Blind Plug | |

Auto Enrichener Assembly/Installation

1. Assemble valve housing and auto enrichener.
2. Install auto enrichener assembly onto carburetors.



- | |
|--|
| a - O-Ring |
| b - O-Ring |
| c - O-Ring (2) |
| d - Auto Enrichener Valve Housing |
| e - O-Ring |

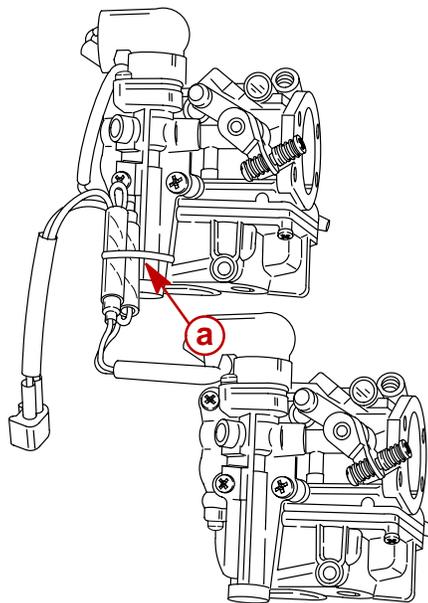


- | |
|---|
| f - Auto Enrichener Valve |
| g - Auto Enrichener Valve Retainer |
| h - Screw-M4 x 10 |
| i - Auto Enrichener Valve Assembly |
| j - Screw (3) M5 x 16 |



3. Connect auto enrichener wires and secure with cable tie.

NOTE: Refer to wiring diagram in **section 2D** for proper connections.



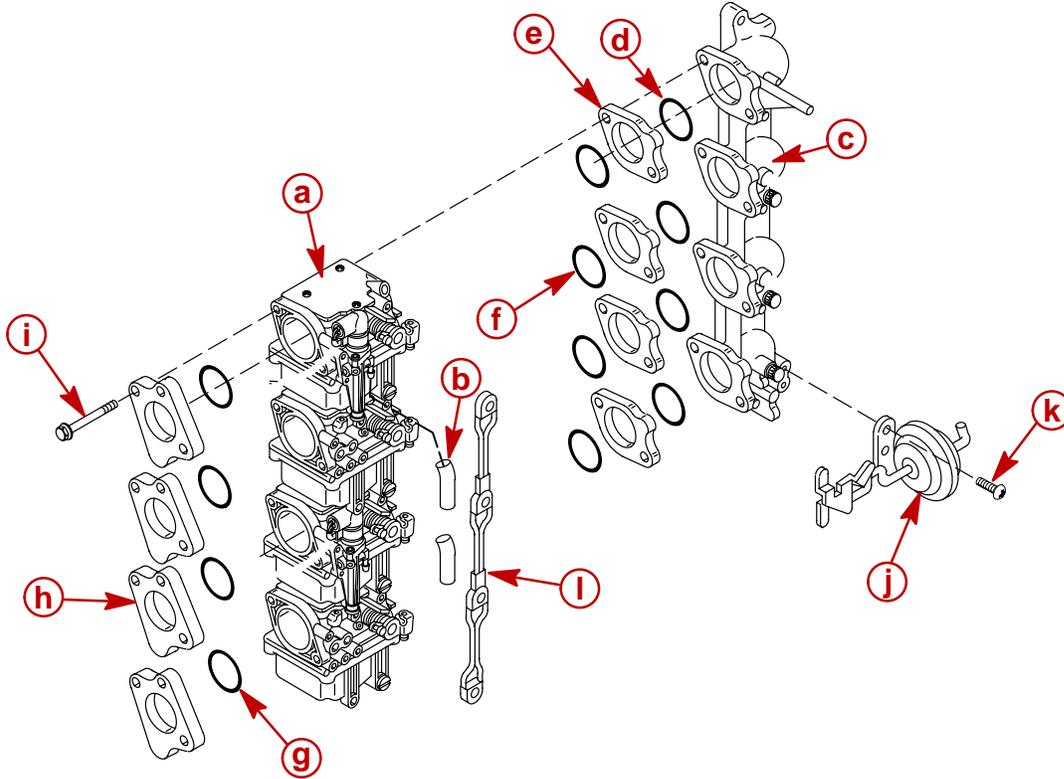
a - Cable Tie



Intake Reassembly

NOTE: Assemble carburetors in their original positions #1-#4.

1. Install hose, spacers and intake manifold.
2. Install link lever and accelerator pump.



- a - Carburetor Assembly
- h - Spacer (4)
- b - Hose (2)
- i - Bolt (8) M6 x 115
- c - Intake Manifold
- j - Accelerator Pump
- d - O-Ring (4)
- k - Screw (2) M6 x 10
- e - Spacer (4)
- l - Link Lever
- f - O-Ring (4)
-
- g - O-Ring (4)
-

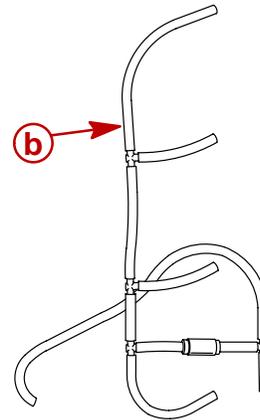
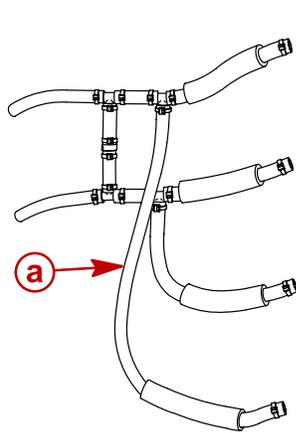
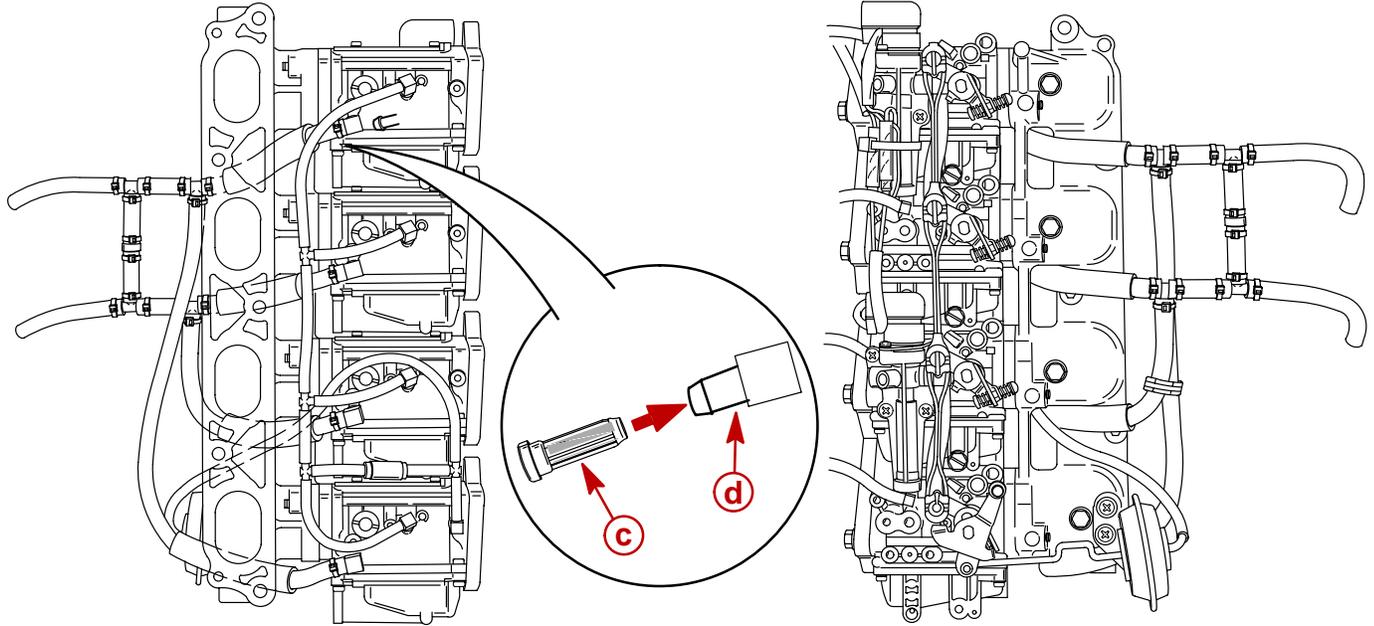
Carburetor Screw Torque (M6x115mm)
70 lb-in. (8 Nm)



3. Install in-line fuel filters into 90° adapter.
4. Install fuel and accelerator pump line.

Back View

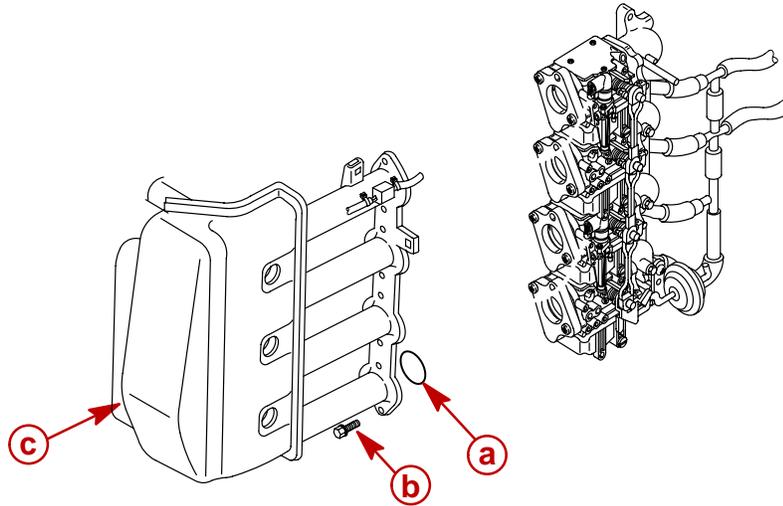
Front View



- a** - Fuel Pump Line
- b** - Accelerator Pump Line
- c** - In-line Fuel Filter (4)
- d** - 90° adapter



5. Install intake silencer.



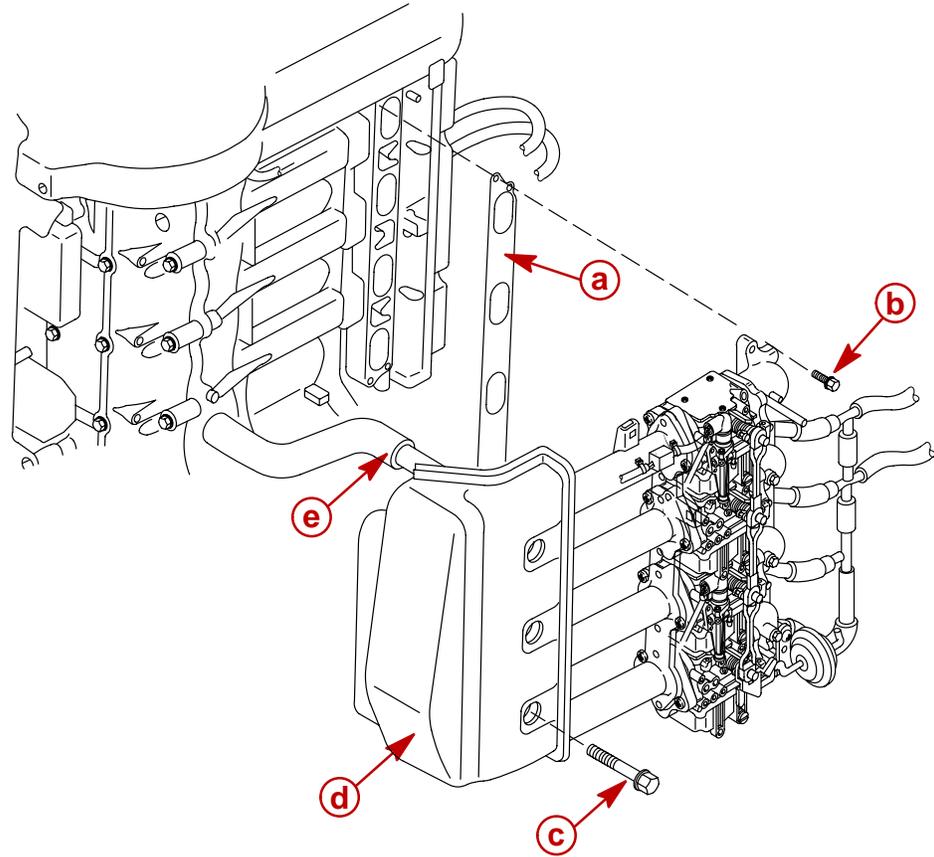
- a** - O-Ring (4)
- b** - Screw (8) M6 x 16
- c** - Intake Silencer

Intake Silencer Screw Torque
70 lb-in. (8 Nm)



Intake Assembly Installation

1. Install intake assembly onto engine.
2. Connect breather hose to intake silencer, secure with cable tie.



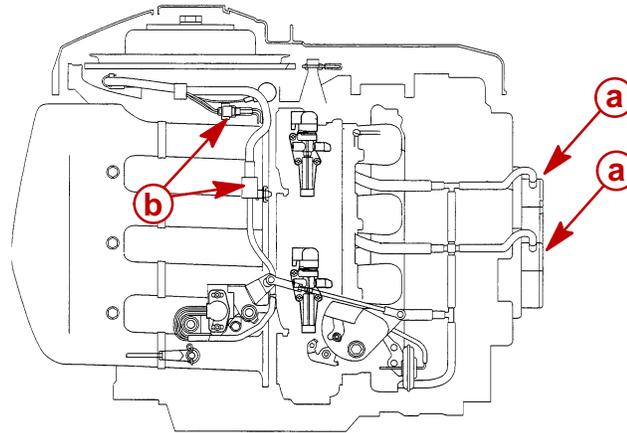
- a - Gasket
- b - Screw (5) M8 x 35
- c - Screw (3) M8 x 60
- d - Intake Silencer
- e - Breather Hose

Intake Manifold Screw Torque-M8x35mm
159 lb-in. (18 Nm)

Intake Silencer Screw Torque-M8x60mm
159 lb-in. (18 Nm)



3. Install fuel pump hoses, secure with hose clamps.
4. Connect auto enrichener wires, throttle position sensor (TPS) harness.



- a** - Fuel Pump Hoses
- b** - Auto Enrichener and TPS Connection

NOTE: Refer to **Section 7** for installation of the throttle lever/linkage assembly.

NOTE: Carburetor adjustments are required after rebuilding carburetors. Refer to **Section 2C - Timing/Synchronizing/Adjusting** for:

- Pilot Screw Adjustments
- Carburetor Synchronization
- Throttle Cam Adjustment