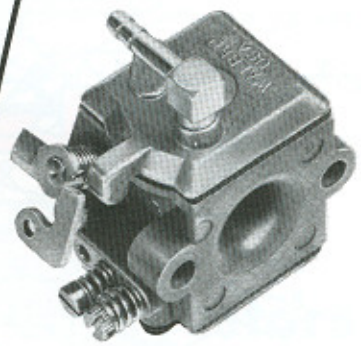
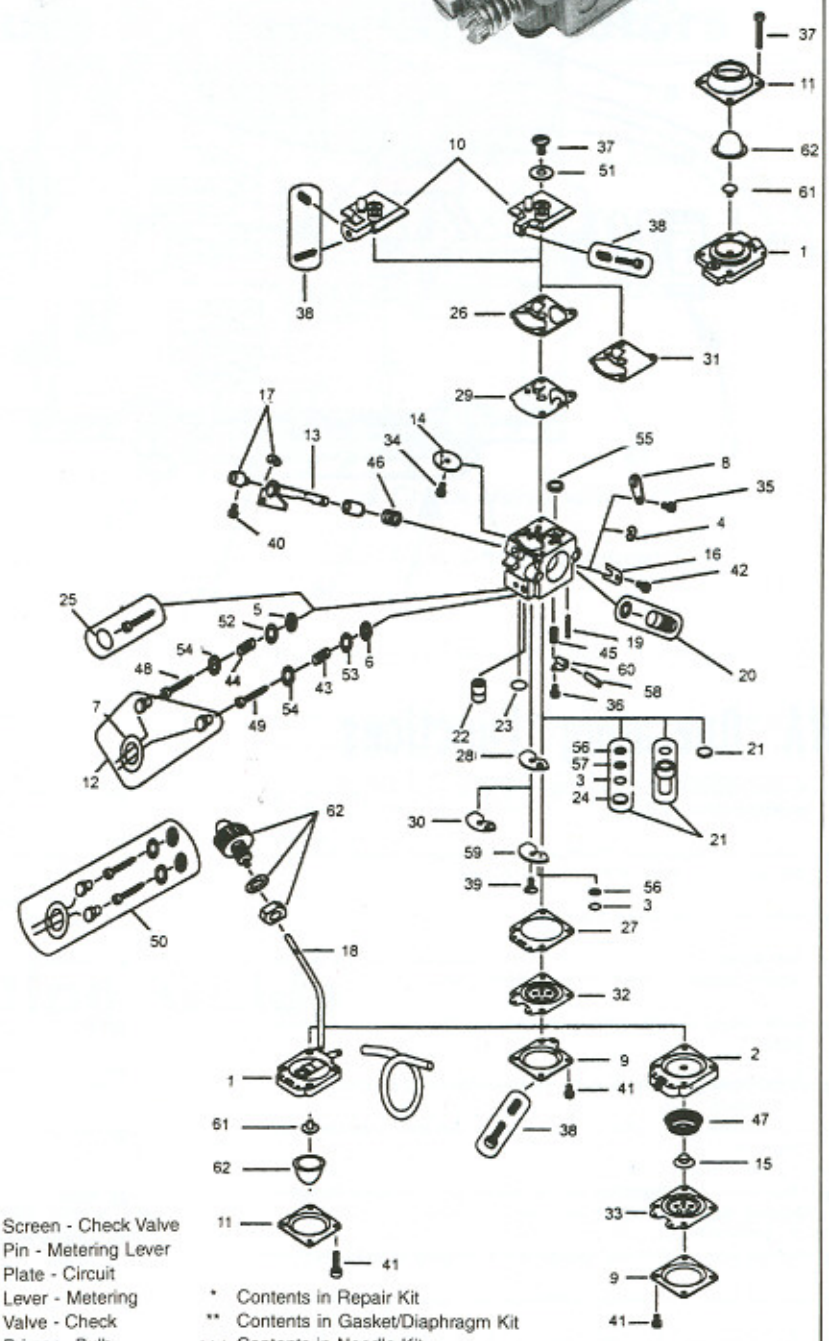
CHAIN SAW CARBURETOR SERVICE MANUAL



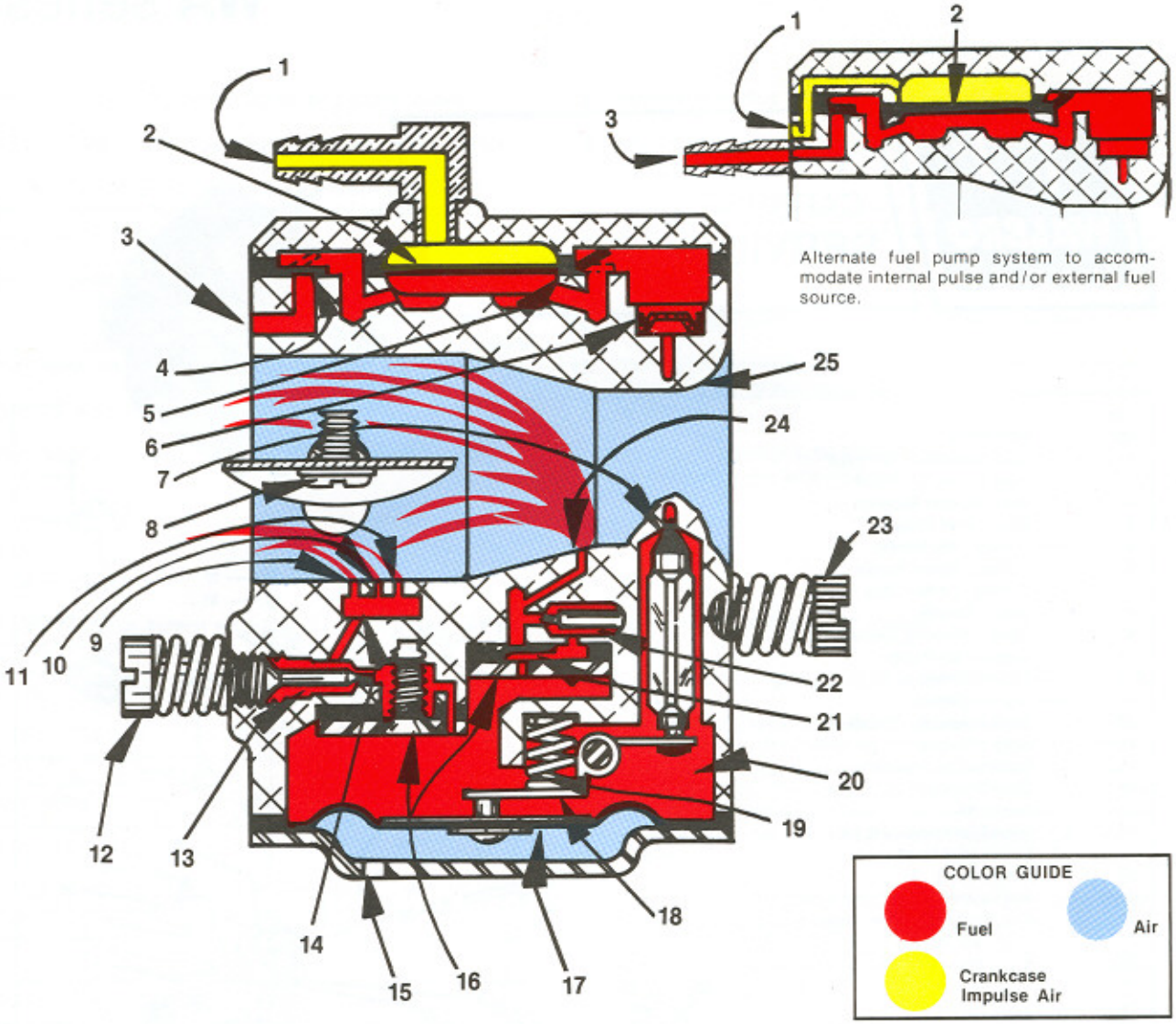
Ref. No.		Part Name
1		Body Assembly - Air Purge
2		Body Assembly - Primer
3	*	Ring - Screen Retainer
4		Ring - Shaft Retainer
5	+++	O' Ring - Idle Needle
6	+++	O' Ring - Power Needle
7	+++	O' Ring - Limiter Caps
8		Lever - Throttle
9		Cover - Metering Diaphragm
10		Cover - Fuel Pump
11		Cover - Primer
12	+++	Cap Kit (limiter)
13		Shaft Assembly - Throttle
14		Valve - Throttle
15		Button - Fuel Shut-Off
16		Clip - Throttle Shaft
17		Swivel Kit
18		Hose Fuel Intake (with jet)
19	*	Valve - Inlet Needle
20		Governor Kit
21		Nozzle Assembly - Check Valve
22		Seat Assembly - Check Valve
23	*	Plug - Welch
24		Plug - Welch or Cup
25	+++	Plug - Needle
26	**	Gasket - Fuel Pump
27	**	Gasket - Metering Diaphragm
28	**	Gasket - Circuit Plate
29	**	Diaphragm - Fuel Pump
30	**	Diaphragm - Circuit
31	**	Diaphragm - Surge Chamber
32	**	Diaphragm Ass'y - Metering
33	**	Diaphragm Ass'y - Primer
34		Screw - Throttle Valve
35		Screw - Lever Retainer
36		Screw - Metering Lever Pin
37		Screw - Fuel Pump Cover
38		Screw - Idle Adjust Kit
39		Screw - Circuit Plate
40		Screw - Swivel
41		Screw Ass'y - Metering Cover
42		Screw - Shaft Retainer Clip
43		Spring - Needle (power)
44		Spring - Needle (idle)
45		Spring - Metering Lever
46		Spring - Throttle Return
47		Spring - Primer Diaphragm
48	+++	Needle - Idle
49	+++	Needle - Power
50		Needle Kit
51		Washer - Cover Screw
52	+++	Washer - Idle Needle
53	+++	Washer - Power Needle
54	+++	Washer - Needle
55	*	Screen - Fuel Inlet
56	*	Screen - Check Valve
57	*	Screen - Check Valve
58		Pin - Metering Lever
59		Plate - Circuit
60	*	Lever - Metering
61		Valve - Check
62		Primer - Bulb



* Contents in Repair Kit
** Contents in Gasket/Diaphragm Kit
+++ Contents in Needle Kit

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Walbro Model WA Carburetor



Alternate fuel pump system to accommodate internal pulse and/or external fuel source.

WA Operating Functions

1 Engine Impulse: Actuates Fuel Pump Diaphragm with alternating pressure-vacuum pulses.

2 Fuel Pump Diaphragm: Fluctuates in response to engine impulse. Transfers fuel through Fuel Pump Valves.

3 Fuel Inlet: Fuel drawn from tank.

4 Inlet Valve: Responds to Fuel Pump Diaphragm. Opens during vacuum pulse. Closes during pressure pulse.

5 Outlet Valve: Closes during vacuum pulse. Opens during pressure pulse.

6 Filter Screen: Filters fuel on route to Metering Chamber.

7 Inlet Needle Valve: Lifts off seat to allow fuel entry into Metering Chamber.

8 Throttle Valve: Regulates engine speed as it exposes Primary, Second, and Third Idle holes, then Nozzle for fuel delivery.

9 Primary Idle Hole: Only fuel source to engine at Idle position.

10 Second Idle Hole: Allows additional fuel flow on acceleration.

11 Third Idle Hole: Increases fuel flow at Part Throttle.

12 Idle Needle: Adjust for fuel richness to 3 Idle holes.

13 Idle Take-Off: Fuel entry for Idle holes.

14 Idle Port: Fuel reservoir for Idle holes.

15 Atmospheric Vent: Allows air pressure against Metering Diaphragm.

16 Circuit Plate: Meters fuel from Metering Chamber to Low Speed and High Speed Circuits.

17 Metering Diaphragm: Drawn up by vacuum to activate Metering Lever.

18 Metering Lever: Lifts Inlet Needle off seat.

19 Metering Lever Spring: Transmits force to Metering Lever. Closes Needle Valve as Metering Chamber fills.

20 Metering Chamber: Fuel reservoir, feeds to Idle and Nozzle circuits.

21 Nozzle Check Valve: Engine vacuum draws Valve open.

22 Nozzle Well: Fuel is drawn in from Metering Chamber at high speed.

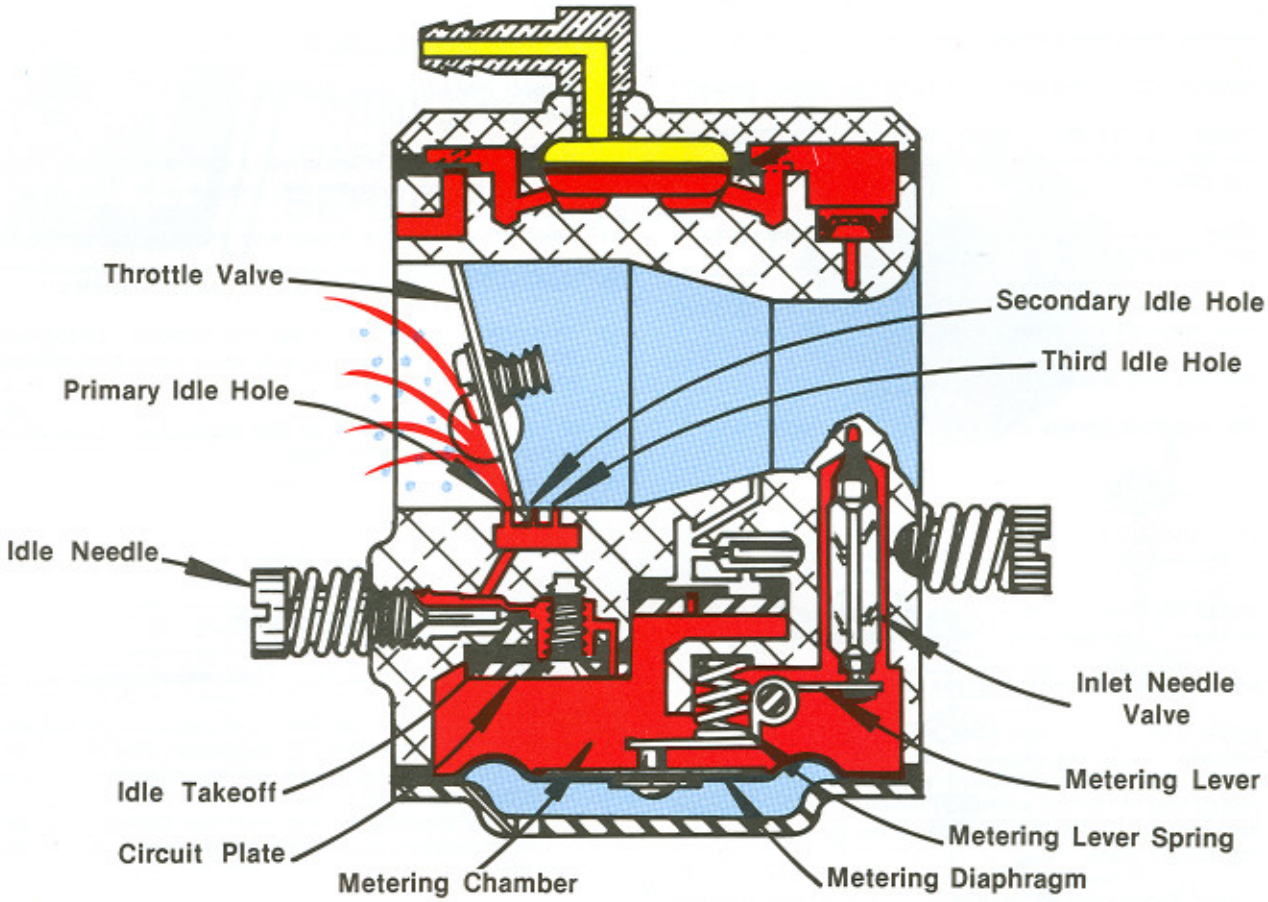
23 Hi Speed Needle: Adjusts for fuel richness at high speeds.

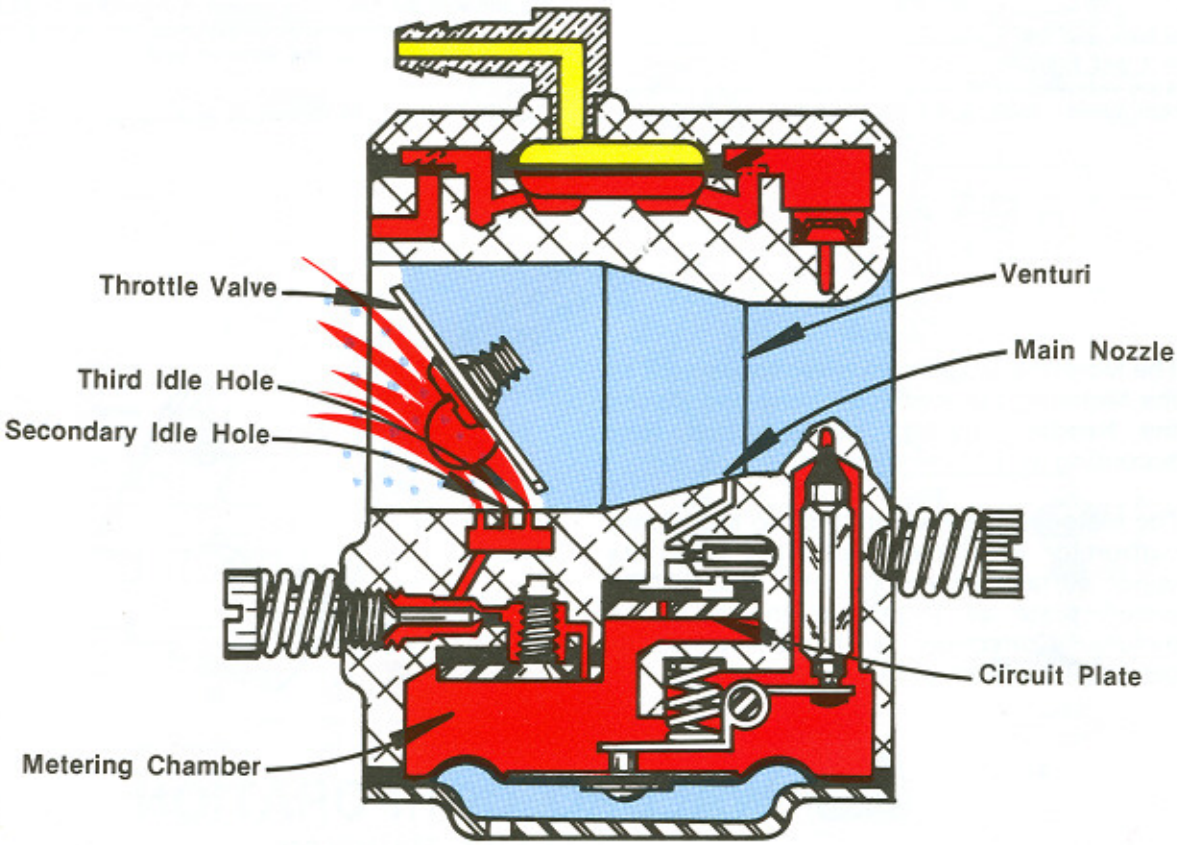
24 Nozzle: Increases fuel discharge for high speeds.

25 Venturi: Increases air velocity at Nozzle, creating a suction to draw fuel into Throttle Bore.

Idle Speed Circuit

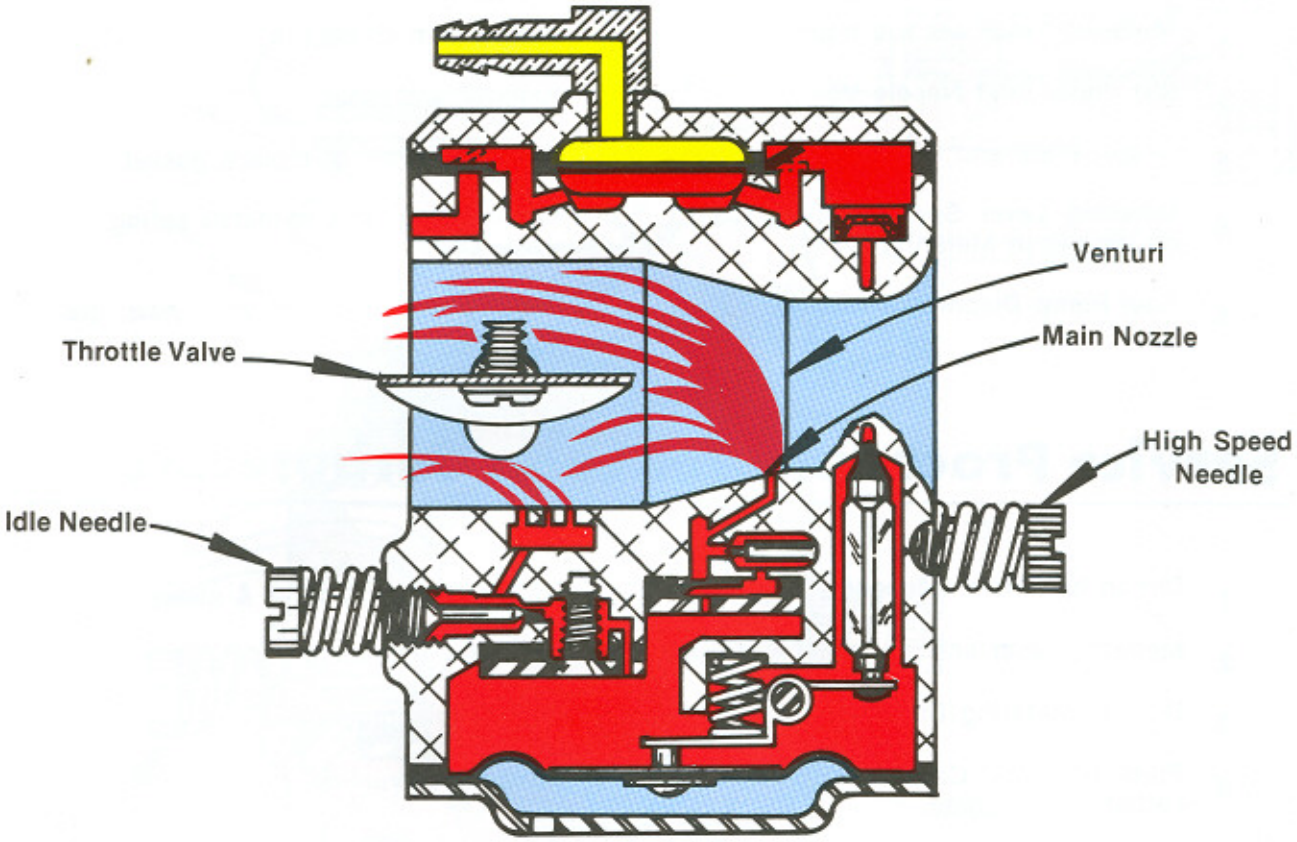
NOTE: The Walbro Model WA carburetor is provided without choke. Enrichening for starting purposes is achieved by auxiliary means or by providing a choke on the engine air filter as needed. Fuel flow and throttle position during starting is identical to that of the HIGH SPEED CIRCUIT (See P. 4).



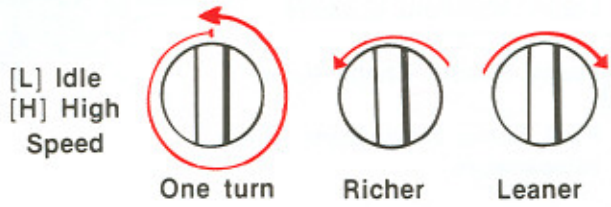


Part Throttle Circuit

High Speed Circuit



Tuning Instructions



With both needles set at 1 and 1/4 turns open, proceed as follows:

IDLE ADJUSTMENT

1. Start engine and adjust idle throttle screw so that engine idles at a moderate speed slightly slower than clutch engagement.
2. Turn low speed needle clockwise (lean) until engine runs smoothly.
3. Re-adjust idle screw to correct engine speed.
4. Continue turning low speed screw slowly clockwise until a slight decrease is noted in engine speed. Stop.
5. Turn low speed needle counter-clockwise for optimum smooth engine speed.

IDLE SPEED-FIXED No adjustment required, needle eliminated.

HIGH SPEED ADJUSTMENT

1. With high speed needle 1 and 1/4 turns open the machine should run rich at wide open throttle. Listen for the four-cycling sound.
2. With throttle wide open and no load on the chain, turn high speed needle clockwise until engine becomes smooth (two-cycling).
3. Optimum adjustment is achieved when a very slight four-cycling sound is heard.

HIGH SPEED-FIXED No adjustment required, needle eliminated.

NOTE: Circuit Plates for high altitudes are available - Refer to owner's manual.

Service Procedure for Flooded Carburetors

	CAUSE	REMEDY
1	Metering Lever set too high	See bottom of page 6
2	Dirt under Inlet Needle Valve	Remove and clean
3	Circuit Plate and Gasket leaking	Tighten screws or replace gasket
4	Metering Lever Spring not seated on dimple in Metering Lever	Remove lever and re-install spring
5	Fuel Pump Diaphragm leaking	Remove and replace with new diaphragm

Service Procedure for Lean Carburetors

	CAUSE	REMEDY
1	Dirt in Idle Main Channels	Disassemble carburetor & clean
2	Metering Lever set too low	See bottom of page 6
3	Hole in Metering Diaphragm	Replace Diaphragm
4	Pulse line from Crankcase to carburetor plugged	Remove obstruction
5	Leaky Manifold Gaskets	Replace Gaskets
6	Leaky Nozzle Check Valve	Replace Check Valve with Kit
7	Fuel Pump Diaphragm Check valves worn	Replace Fuel Pump Diaphragm
8	Dirty Fuel Inlet Screen	Remove Fuel Pump Cover & Clean
9	Faulty Fuel Delivery System to carburetor	Check complete Fuel Delivery System from Pickup in Fuel Tank to carburetor Fuel Inlet for cracks, dirt, etc. Replace fuel line or Pickup Filter when necessary

TIGHTEN ALL SCREWS

Trouble Shooting Guide

Fuel Source—In-tank filters, lines, fittings—check for leaks or obstructions, venting and air filter.

Choke and Throttle—Check mechanical linkage and cables—Look for ice, kinks, etc.

Adjustments—Idle and Main needles, 1¼ turns off seat —Tune from rich side by 1/8 turn, gradually. Fixed jet models may require flushing in fuel to clean.

Ignition—Spark plugs—Change if back-fire or preignition—when timed correctly, white plugs mean fuel is too lean, black—too rich, chocolate brown = normal.

Fuel Mixture—Use 16 to 1 or as recommended by engine manufacturer.

Tighten all screws on the carburetor—tighten all mounting bolts—check for cracks or leaks at flanges and manifolds.

WALBRO MODEL WA (Maintenance Instructions)

DISASSEMBLY

1. Remove fuel pump cover screw and pump cover.
2. Remove fuel pump diaphragm and fuel pump gasket.
3. Inspect diaphragm for flatness and continuity. Diaphragm should have no holes. The flapper valves should be flat and free from curling.
4. Blow through external pulse hole on body casting to insure that there are no obstructions.
5. Blow through internal fuel hole on body casting to insure that there are no obstructions.
6. Remove and discard filter screen.
7. Remove four screws and metering diaphragm plate.
8. Remove metering diaphragm and gasket.
9. Inspect metering diaphragm for holes, dirt, and foreign matter.
10. Remove metering lever screw and metering lever components including lever, pin, needle valve, and spring.
11. Remove circuit plate screw with diaphragm and gasket.
12. Remove high and low speed adjustment needles.
13. Thoroughly inspect and clean the carburetor, especially all small orifices and openings, using a solvent wash and an air gun.
14. Dry the carburetor with air and inspect the operation of the throttle valve and lever.

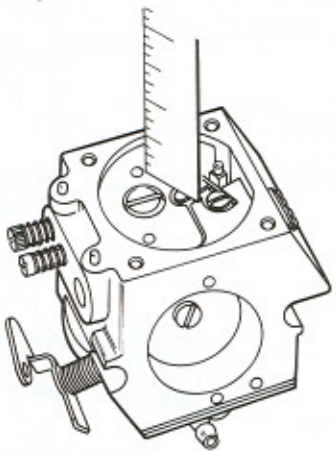
RE-ASSEMBLY

1. Install the filter screen with any appropriate hollow tube or tool of approximately .300 inch diameter.
2. Inspect circuit plate for flatness and correct if necessary.
3. Inspect the new circuit plate diaphragm and gasket for flatness. Install the circuit plate, circuit diaphragm and circuit plate gasket with diaphragm in contact with plate and gasket in contact with body casting. Use only moderate pressure on the circuit plate screw so as not to warp the circuit plate.
4. Install metering lever components and adjust metering lever to be flush with surface of circuit plate. (See illustration, below)
5. Install high and low speed needles and set at approximately 1 and 1/4 turns open. The high and low speed letters are indicated on the side of the carburetor casting. The high speed needle is the long needle and the low speed needle is the short needle.
6. Install the metering diaphragm and related components as follows:
   Install the gasket over the locator pins on the casting. Next, install the metering diaphragm over the locator pins on the casting. (The metering plate pin must be in contact with the metering lever.) Next, install the metering diaphragm cover with four screws. The vent hole in the cover should be located opposite the throttle valve.
7. With the large single screw, install the fuel pump cover with fuel pump diaphragm in contact with the body casting and with the fuel pump gasket in contact with the fuel pump cover. The extension on the cover should be located on the same side as the throttle lever.
8. Visually inspect the carburetor and tighten all screws.

ADJUSTING THE METERING LEVER

The Metering Diaphragm gives movement to the Metering Lever which opens and closes the Needle Valve to regulate fuel flow according to engine demands.

The Metering Lever of the Walbro Model WA carburetor is correctly adjusted when its upper surface is aligned with that of the circuit plate as shown in the adjoining picture. Correction is made by gently bending the lever as necessary.



WALBRO CORPORATION
CASS CITY, MICHIGAN

Walbro
Engine Management
Aftermarket Division