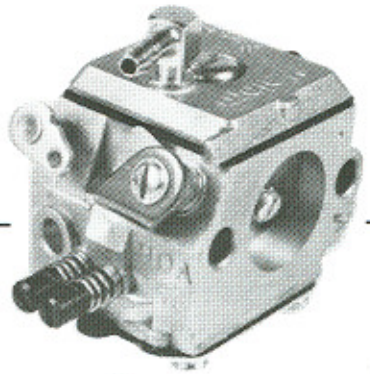
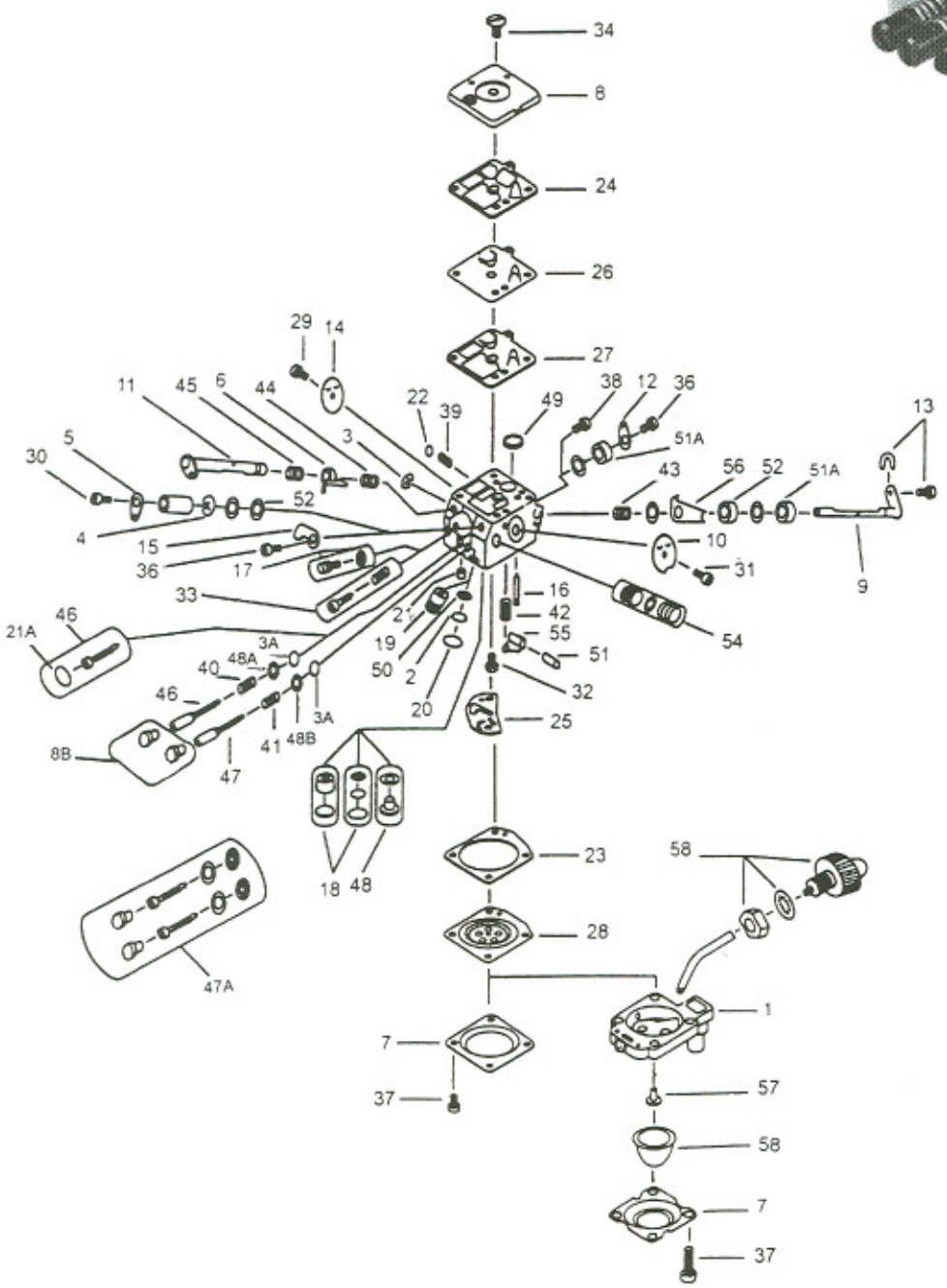
HDA series

CHAIN SAW
CARBURETOR
SERVICE MANUAL





Ref. No.		Part Name
1		Body Ass'y - Air Purge
2	*	Ring - Screen Retainer
3		Ring - Shaft Retainer
3A	++	Ring - Idle Needle
4		Clip - Throttle Shaft
5		Lever - Throttle (outer)
6		Lever - Fast Idle Lock
7		Cover - Metering Diaphragm
8		Cover - Fuel Pump
8B	++	Limiter Cap Kit
9		Shaft Assembly - Throttle
10		Valve - Throttle
11		Shaft Assy - Choke
12		Lever - Choke
13		Swivel Kit
14		Valve - Choke
15		Stop - Throttle
16	*	Valve - Inlet Needle
17		Governor Kit
18		Seat Assembly - Check Valve
19		Nozzle Assembly - Check Valve
20	*	Plug - Welch
21		Plug - Cup
21A		Plug - Idle Needle
22		Ball - Choke Friction
23	**	Gasket - Metering Diaphragm
24	**	Gasket - Fuel Pump
25	**	Gasket-Circuit Plate
26	**	Diaphragm - Fuel Pump
27	**	Diaphragm - Fuel Pump
28	**	Diaphragm Ass'y - Metering
29		Screw - Choke Valve
30		Screw - Lever Retainer
31		Screw - Throttle Valve
32		Screw - Metering Lever Pin
33		Screw - Idle Adjust Kit
34		Screw - Pump Cover
36		Screw - Shaft Retainer
37		Screw - Metering Cover [4]
38		Screw - Choke Shaft Retainer
39		Spring - Choke Friction
40		Spring - Needle (idle)
41		Spring - Needle (power)
42		Spring - Metering Lever
43		Spring - Throttle Return
44		Spring - Choke Return
45		Spring - Fast Idle Return
46	++	Needle - Idle
47	++	Needle - Power
47A		Needle & Cap Kit
48		Jet - Main Kit
48A	++	Washer - Idle Needle
48B	++	Washer - Power Needle
49	*	Screen - Fuel Inlet
50	*	Screen - Check Valve
51		Pin - Metering Lever
51A		Spacer - Throttle Shaft
52		Seal - Dust
54		Piston - Accelerator Kit
55	*	Lever - Metering
56		Lever - Choke Fast Idle
57		Valve - Check
58		Primer - Bulb

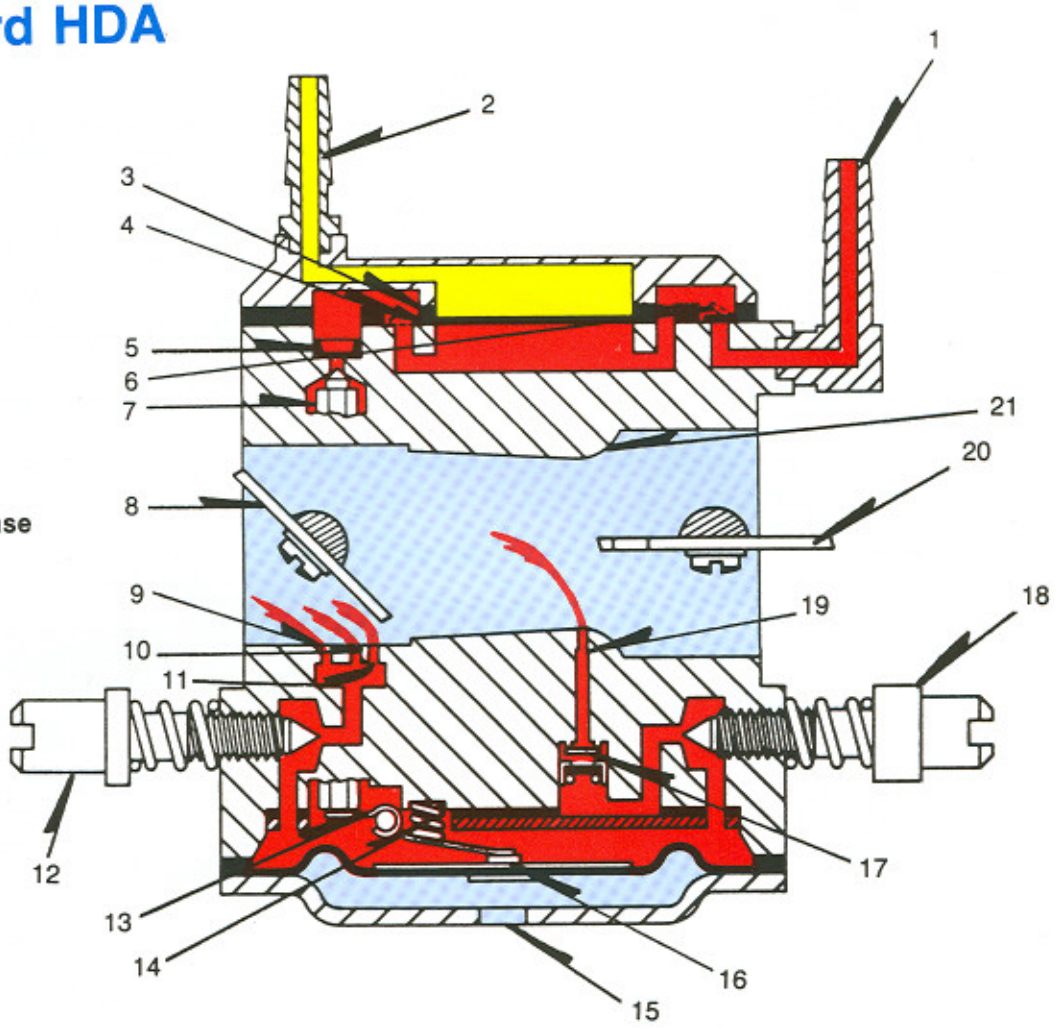
* Contents in Repair Kit
** Contents in Gasket/Diaphragm Kit
++ Contents in Needle Kit

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Standard HDA

COLOR CODE

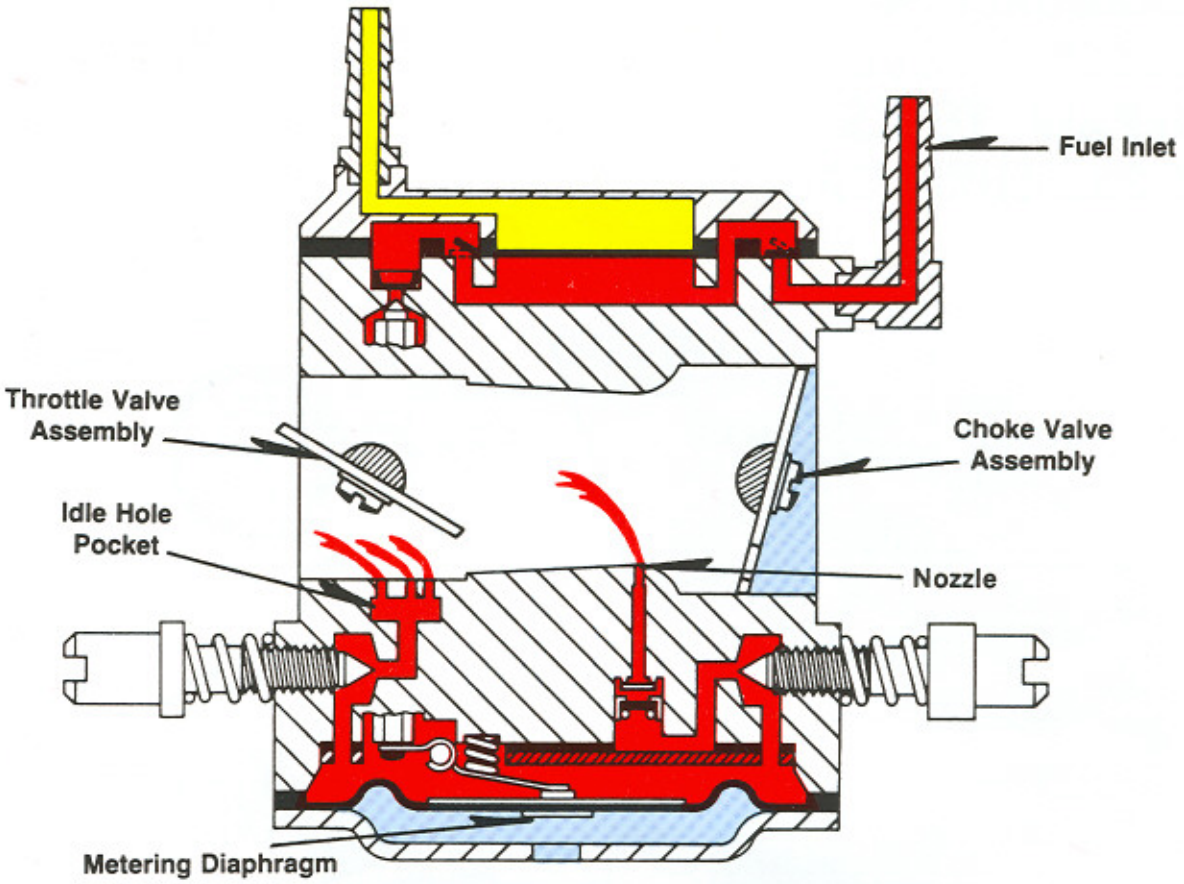
- -Fuel
- -Crankcase Pulse
- -Air



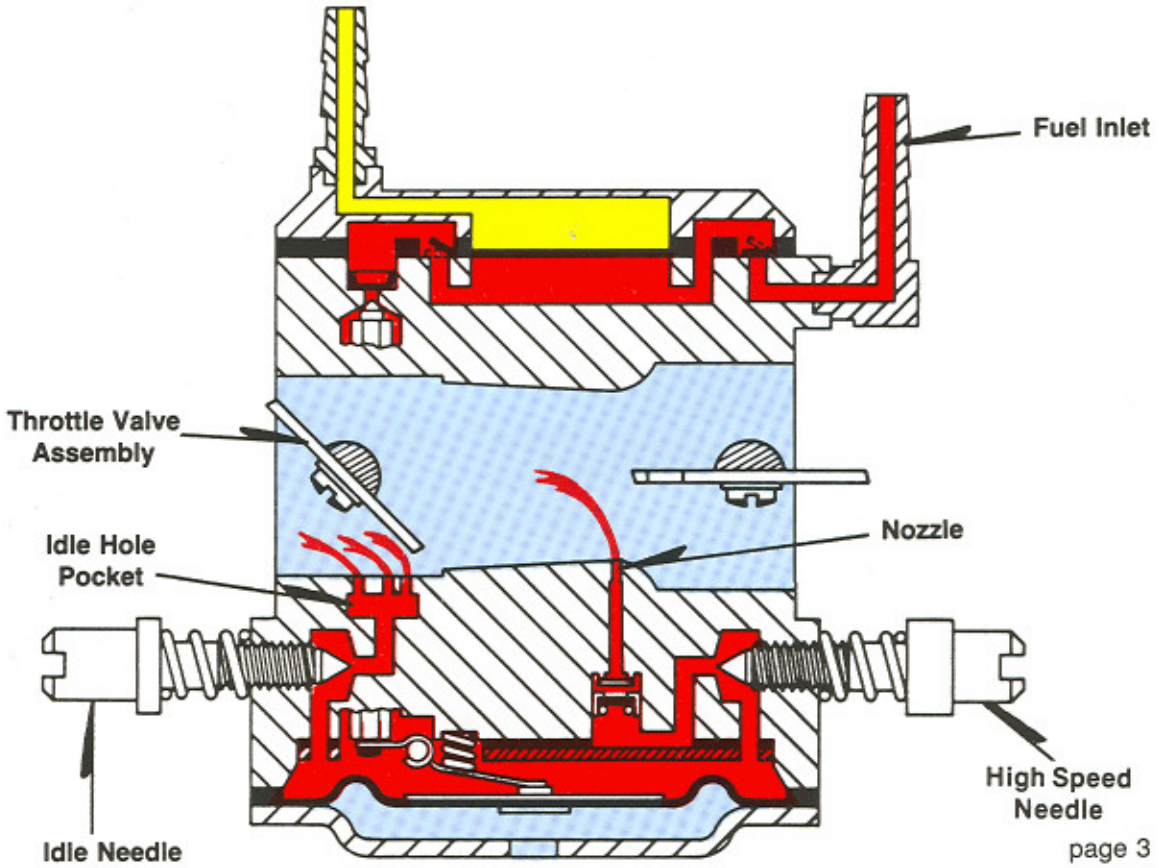
OPERATING FUNCTIONS

1. Fuel Inlet: Fuel drawn from tank enters here.
2. Impulse Fitting: Engines crankcase impulse enters here.
3. Fuel Pump Diaphragm: Activates in response to crankcase pulse to transfer fuel to pump check valve.
4. Inlet Check Valve: Opens during vacuum pulse. Closes during pressure pulse.
5. Filter Screen: Filters fuel before it enters metering chamber.
6. Inlet Check Valve: Closes during vacuum pulse. Opens during pressure pulse.
7. Inlet Needle: Lifts off seat to allow the correct amount of fuel to enter the metering chamber.
8. Throttle Valve Assembly: Allows correct ratio of air/fuel to mix as engine goes from idle to wide open throttle.
9. Primary Idle Hole: Main source of fuel at the idle position.
10. Second Idle Hole: Feeds additional fuel when uncovered by the throttle valve.
11. Third Idle Hole: Feeds additional fuel when uncovered by the throttle valve.
12. Idle Needle: Adjusts correct amount of fuel to enter idle holes.
13. Metering Lever: Activated by the metering diaphragm to lift inlet needle off seat.
14. Metering Spring: When compressed it allows lever to lift inlet needle. When released allows lever to lower needle onto seat.
15. Atmospheric Vent: Allows atmospheric pressure onto dry side of metering diaphragm.
16. Metering Diaphragm: Drawn onto metering lever to lift inlet needle off seat.
17. Nozzle Check Valve: Engine vacuum draws valve away from retainer to allow fuel to enter engine at W.O.T. Seals at idle.
18. High Speed Needle: Adjusts amount of fuel to enter nozzle.
19. Nozzle: Main source of fuel to engine at wide open throttle.
20. Choke Valve Assembly: Closes air entering carburetor at start position.
21. Venturi: Velocity of air entering carburetor increases at this point to draw fuel from nozzle.

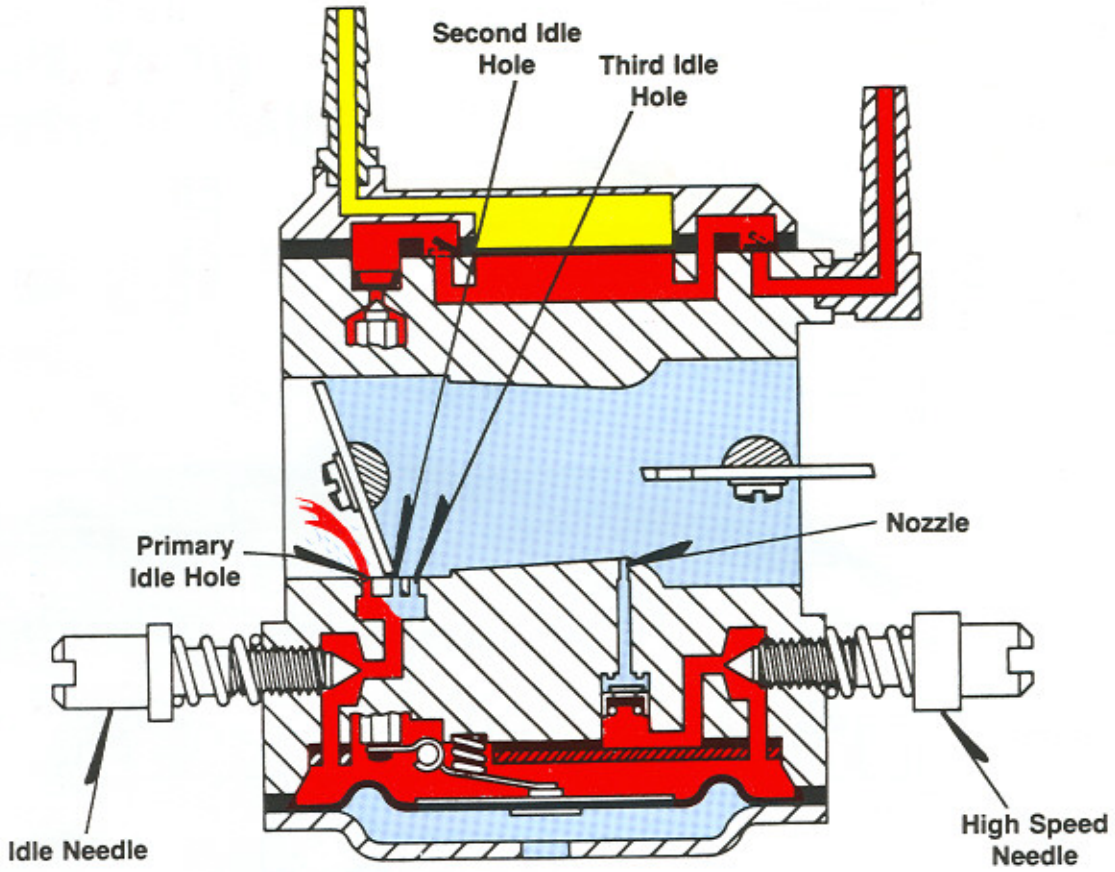
HDA at Start Position



HDA at Part Throttle Position



HDA at Idle Position



IDLE ADJUSTMENT OF HDA

NOTE I: With the engine at the idle position the carburetor feeds fuel thru the primary idle hole. The second and third idle holes act as air bleed holes to mix with the fuel to create the correct air/fuel ratio.

NOTE II: Both high speed and idle adjustment needles are pre-set by the engine manufacturer and should only be readjusted by an authorized Walbro service person.

WITH BOTH NEEDLES SET AT 1¼ TURNS OPEN PROCEED AS FOLLOWS:

1. Start engine and adjust idle speed screw (not idle needle) so that engine idles at a moderate speed slightly slower than clutch engagement.

2. Turn the idle needle clockwise (lean) until engine idles smoothly.

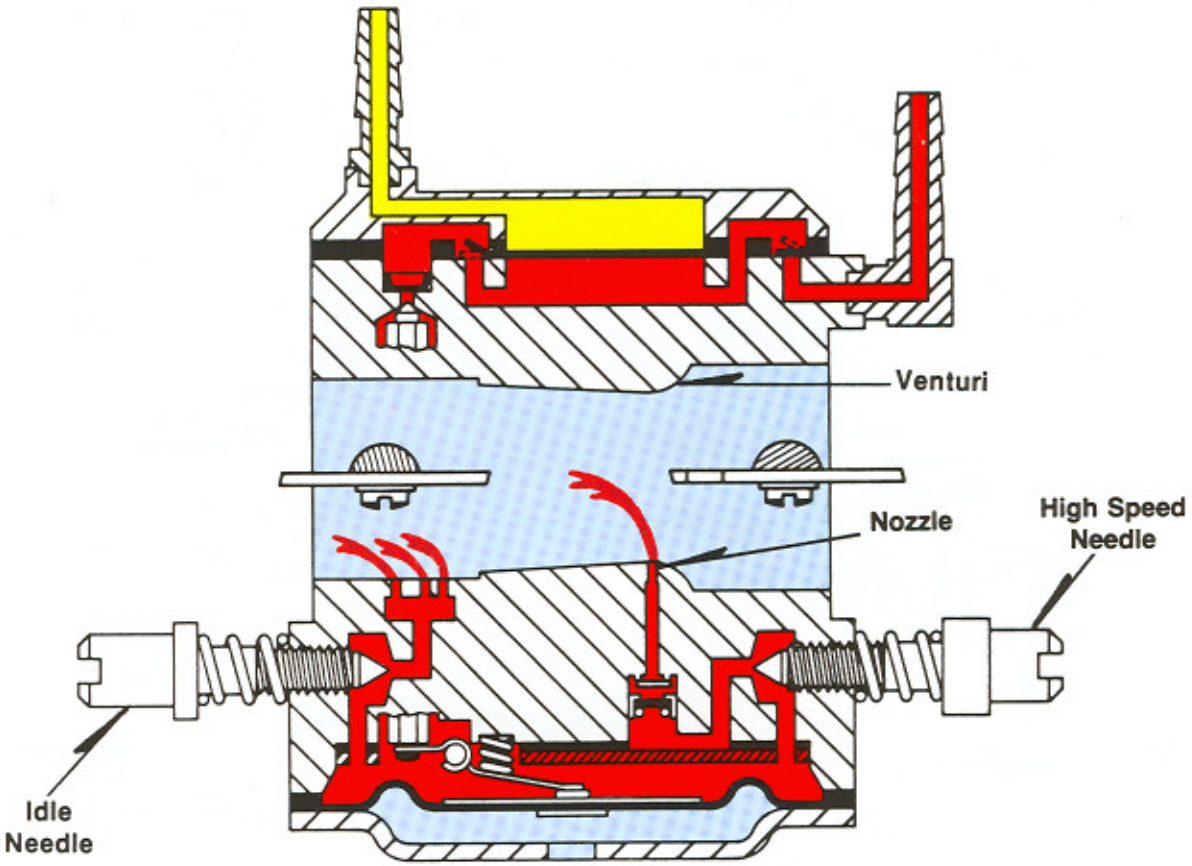
3. Readjust speed screw to correct engine speed.

4. Continue turning idle needle clockwise until a decrease in idle RPM is evident. STOP.

5. Turn idle needle counterclockwise (rich) until optimum smooth engine idle is obtained.

6. For your reference, always record the settings prior to releasing the engine to your customer.

HDA at High Speed Position



HIGH SPEED NEEDLE ADJUSTMENT

With the engine at the high speed position the manifold vacuum draws the majority of the fuel from the carburetor nozzle.

WITH BOTH NEEDLES SET AT 1¼ TURNS OPEN PROCEED AS FOLLOWS:

1. With the high speed needle set at 1¼ turns open the engine should be running at a slightly richer than normal high speed. Some engines will give a 4-cycling sound.

2. With the engine running at high speed turn the high speed needle clockwise (lean) until the engine runs smooth or into a 2-cycle sound.

3. Optimum adjustment is obtained when a very slight 4-cycling sound is heard.

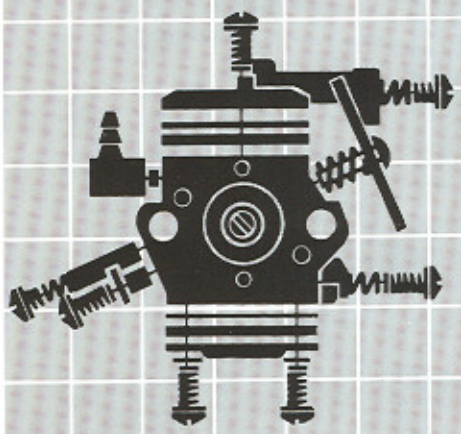
4. For your reference always record the setting of the needles prior to releasing the engine to your customer.

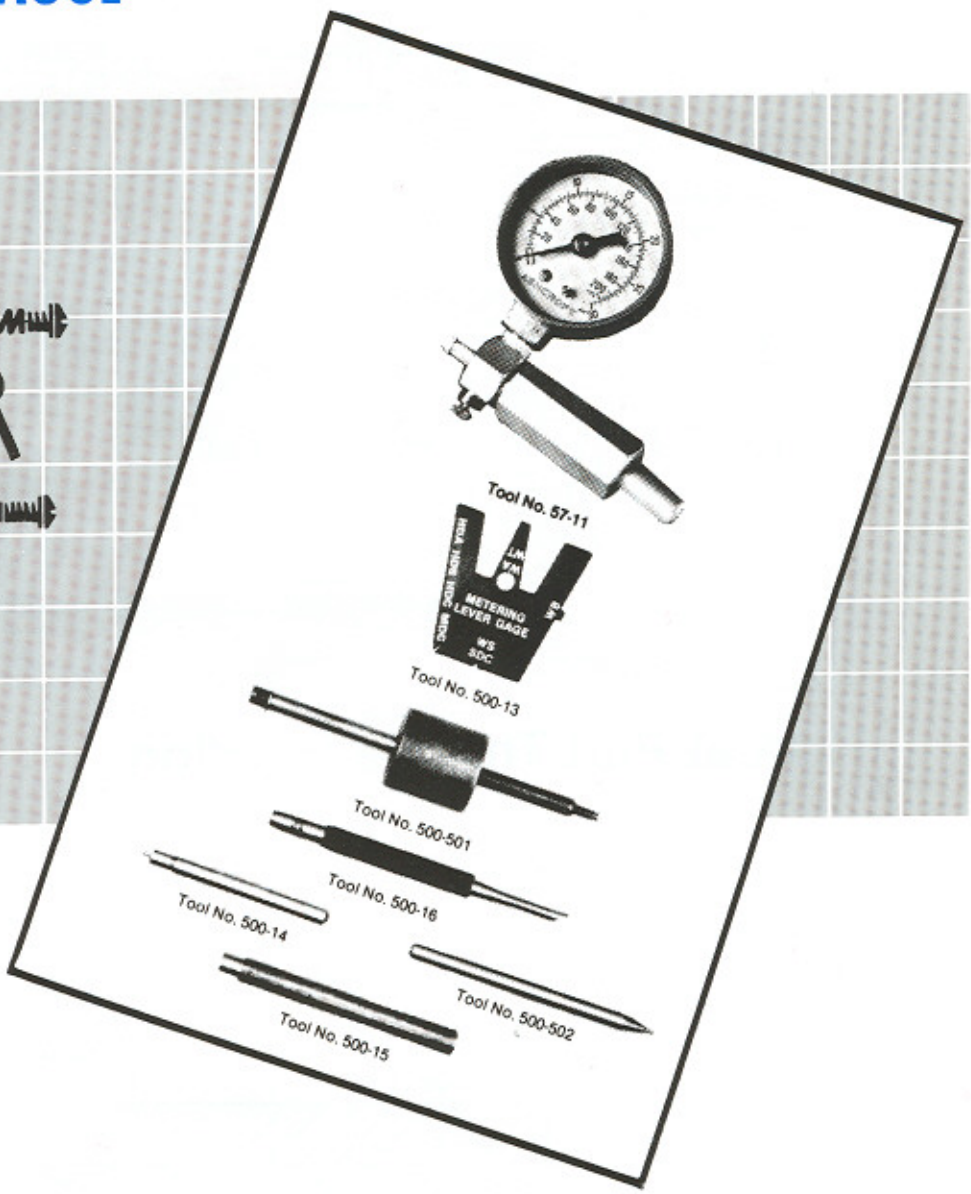
DIAPHRAGM CARBURETOR CHECK VALVE REPAIR TOOLS & PRESSURE GAUGE

INCREASE PRODUCTIVITY

Pressure gauge aids in diagnosing problem areas, while the specially designed tools simplify repair procedures.

Part No. 400-595





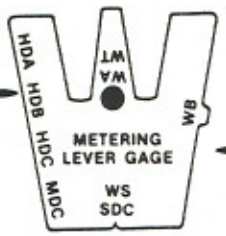
Recommended by Walbro engineers, this kit of specially designed carburetor tools is a must for every service man engaged in the repair of Walbro diaphragm carburetors.

It contains everything needed for proper repair and will pay for itself many times over.

The tools are designed to cut labor costs and to reduce the risk of costly damage to parts during repair.

The pressure gauge is a necessary tool for the professional repair person.

HDA Series



Carburetor models listed on side of gage indicate the side used for that carburetor metering system.

ADJUSTING THE METERING LEVER

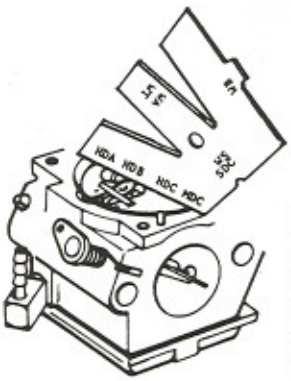
1. With metering diaphragm cover (4 screws), metering diaphragm and gasket removed:

2. Metering lever adjustment instructions are pictured below using our metering lever gage.

3. Make sure the metering lever spring is seated properly in the chamber floor and under the dimple in the metering lever.

4. Special care should be taken to make sure that the fork of the lever is attached properly to the inlet needle valve.

5. Re-assembly: Install gasket to casting, add diaphragm assembly then the cover. NOTE: Some diaphragms also attach to the metering lever. (Opposite the inlet needle valve.)



HDA - HDB - HDC - MDC
Place gage across carburetor body casting as illustrated. Metering lever should just touch the gage without opening the inlet needle valve. Slight pressure will bend the lever up or down.



HDA - HDB - HDC - MDC
Place a straightedge across carburetor body casting as illustrated. Metering lever should just touch the straightedge, without opening the inlet needle valve. Slight pressure will bend the metering lever up or down.

SERVICE PROCEDURE FOR FLOODED CARBURETORS

CAUSE:

1. Metering lever set too high	Readjust lever to correct height with gage.
2. Metering diaphragm misassembled	Place metering gasket on body before placing metering diaphragm.
3. Inlet needle will not seal	Remove inlet needle and wipe tip clean or replace. Also wash and blow inlet seat clean.
4. Idle needle set too rich	Reset idle needle to specified setting.

SERVICE PROCEDURE FOR LEAN CARBURETOR

1. Metering lever set too low	Readjust lever to correct height with gage.
2. Hole in metering diaphragm	Replace metering diaphragm and check gasket.
3. Leaky manifold gasket or block	Replace manifold gasket and block.
4. Loose cover screws	Tighten securely.
5. Pump diaphragm check valves worn	Replace pump diaphragm.
6. Dirty or plugged inlet screen	Remove screen and clean or replace.
7. Obstructed or damaged fuel or pulse line	Remove obstruction or replace line if necessary. Also, check in-line fuel filter.
8. Fuel tank cap not venting	Remove cap and replace vent.
9. Idle needle set too lean	Reset idle needle to specified setting.