

FIG. 1

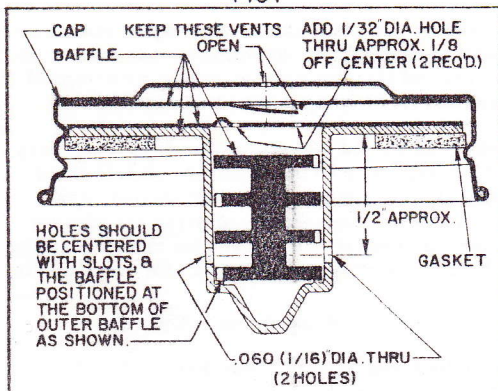


FIG. 2

**NOTE! . . . PLEASE READ CAREFULLY
ESPECIALLY IMPORTANT IS GAS CAP
VENTING.**

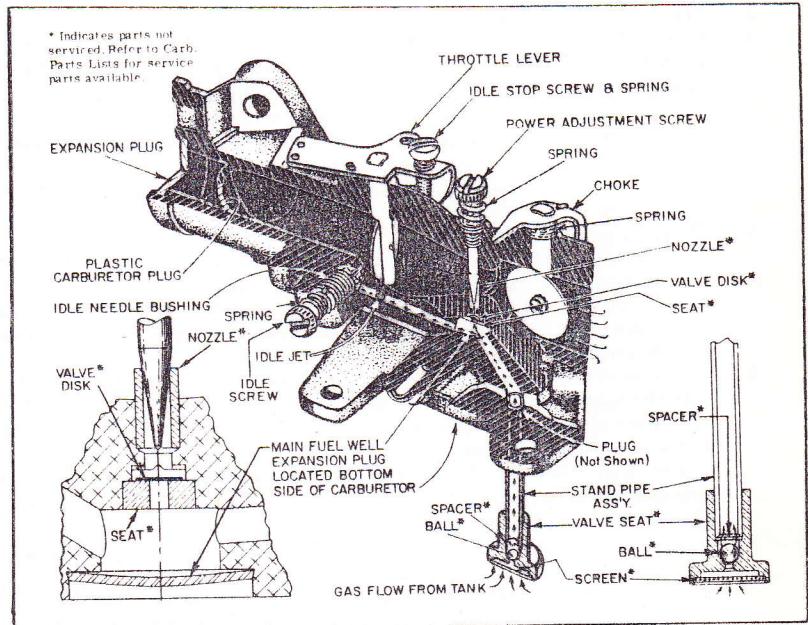


FIG. 3

LIFT CARBURETOR - MODELS 402, 403, 408 & 409

Engine has been preset and test run at factory. The normal starting procedure is listed in Sec. I also in the Customers Owner Guide. Should a starting or operating problem be encountered the following should be performed or checked in the order listed in Sec. II below. If the unit has been customer adjusted or used check the Steps under Sec. II.

I. Starting Engine

1. Move speed control lever to choke position (Fig. 1).
Optional: Some engines may have speed control mounted remote on equipment.
2. Crank engine. Pull recoil starter slowly until it engages and then pull with a quick firm pull.
3. After three or four full firm pulls on recoil or releases of optional impulse starter move speed control to run position or as soon as engine fires.
4. Use choke as necessary to keep engine operating during warm-up period.
5. Operate a new engine at intermediate speeds and light load for the first few hours as you would a new automotive engine.
6. To stop engine, move speed control lever to stop position (Fig. 1).
Optional: some engines may have remote stop device installed by equipment manufacturer. Others may use stop device on spark plug.
7. If carburetor needs adjustment to start or for operation, see "Carburetor Readjustment" section. Sec. III-7, Fig.

II. Should a starting or operation problem be encountered check the following:

1. One-half tank of fresh gas. (Proper level for adjusting Carburetor) see Sec. III-1.
2. Check gas cap venting. (See Sec. III-2 & Fig. 2).
3. Check ignition. Refer to Sec. III-4.
4. Shroud of valance may be hitting shorting clip. Sec. III-4 & Fig. 1.
5. Check compression. Refer to Sec. III-5.
6. If remote control cable is used, make sure that when cable handle indicates choke position that the engine is actually in a choke position. Refer to Sec. III-6 & Fig. 1.
7. Setting of Carburetors.
 - a. High-speed---3/4 to one (1) turn open for starting. May require adjustment to more than one turn or less than 3/4 depending on unit. Refer to Sec. III-7 & Fig. 1.
 - b. Idle. 4 to 4-1/2 turns open. Fine thread needle. Refer to Sec. III-7 & Fig. 1.
1-1/2 turns open. Coarse thread needle. Sec. III-7 & Fig. 1.
8. If engine does not start, check foot valve & stand pipe ass'y. Refer to Sec. III-10 & Fig. 3.
9. Erratic running between high speed and idle. Refer to Sec. III-11.
10. High speed setting very critical. If either idle or high speed needles vibrate out of proper setting, see Sec. III-9.
11. High speed screw may shoulder on setting. Requires slight extra pressure to seat needle. Do not use too much pressure as damage can result to high speed seat or adjustment screw.

III. Detailed check on engine starting or operation problem:

1. Dump fuel from the tank and add fresh, clean regular gasoline until fuel tank approximately one-half (1/2) full (this is the proper fuel level for adjusting Carburetor).
2. Prior to replacing fuel cap, check for venting of fuel cap as illustrated in Fig. 2. Inadequate venting of fuel tank can result in:
 - a. Rich fuel setting regardless of the idle or high speed setting. Agitation of fuel and heat expansion of fuel can result in pressure in tank forcing fuel past adjustment needles.
 - b. Lean fuel setting - After expansion of fuel, air must move into tank as fuel is used or the engine can starve out regardless of idle or hi-speed needle setting.

NOTE: Either of the above conditions can be checked by loosening the fuel cap so that air by passes, and if engine operation changes drastically it will be necessary to vent fuel cap as in Fig. 2, then reset Carburetor as listed in Sec. III-7. Next start engine (making necessary adjustment to keep engine running); allow engine to run until it reaches operating temperature then adjust as listed.
3. Crankcase requires oil. See Owners Guide for weight, rating & quantity, also level.
4. Check Magneto output by use of 18-MM spark plug gapped 5/32 (.156) to 3/16 (.187). Place hi-tension lead on 18-MM spark plug and hold spark plug body against engine. Check fire across gap at normal cranking speed.

NOTE: Should Magneto output be inadequate (not jump gap at normal cranking speed) check shroud over carburetor. This shroud covers the Magneto stop device Fig. 1. If the shroud has been bent inward in handling or shipment it can short out the Magneto causing no start. Reposition shroud to secure clearance to stop device should this be a problem.
If the shroud grounding stop device is not the cause of inadequate Magneto output, it will be necessary to have the Magneto Ass'y checked by an authorized Clinton Service Account.
5. Check Engine Compression.

Crank engine into compression stroke, compression will be indicated by resistance on compression stroke or a "bouncing back" if pull is released. Also can be checked by compression gauge and compression should be at least 65 Lbs. at normal cranking speed with choke in open position and throttle control in fast or hi-speed position. In case of Lack of compression, have engine checked and serviced by authorized Clinton Service Account.
6. Check movement of engine speed controls by operating the remote control handle (if so equipped). It is necessary that the speed control lever moves the choke to a full choke position if the engine is to start easily. If full choke is not secured, it will be necessary to adjust Boden Wire travel by loosening clamp on carburetor shroud, and move cable so choke valve is completely closed. NOTE: Choke position can be checked by removing air cleaner cover, and element. In some cases it may be necessary to move ground clip toward lever and also move mounting bracket for shorting clip toward lever to secure proper travel for choke and shorting. CAUTION: Be certain that clip is not grounded on Carburetor or shroud.
7. Reset Carburetor - The basic settings are as follows: (CW equals clockwise or right hand) and (CCW equals counterclockwise or left hand). See Fig. 1
 - a. Turn idle screw (CW) until completely closed and then open (CCW) four turns to 4-1/2 fine thread, 1-1/2 turns coarse thread for starting setting. Do not force when closing.
 - b. Turn high speed screw (power screw) (CW) until completely closed and then open (CCW) 3/4 to 1 turn for starting setting. Do not force.
 - c. Start engine - (use full choke) Choke and adjust as required to keep engine running. Allow a short period of time for engine to reach operating temperature.
 - d. To adjust hi-speed (power needle) move speed control to fast position and turn needle in (CW) until engine misfires; open screw (CCW) until engine sound smooths out. If power screw is open too far, engine exhaust will be heavy & dull and engine may again misfire.
 - e. Move speed control to idle or slow speed setting - adjust throttle stop screw to keep engine operating at slow speed. Stop screw sets minimum speed. Turn idle adjustment screw (CW) or toward closed position slowly and continue closing as long as engine sound improves and engine speed increases. In some cases idle screw may need to be opened to secure desired results. Carburetor has an idle speed between 1800 to 2200 RPM.
 - f. Readjust hi-speed screw (power screw) as listed in "D" preceeding. Idle setting can affect power setting if much change is required on idle setting.
 - g. Check progression from idle to high speed by; moving speed control lever. It may be necessary to open (CCW) idle needle 1/16 to 1/8 turn for best progression from slow speed to operating speed. If engine speed variation is noted at speeds above idle, open idle needle (CCW) slightly.
8. If the engine has operated a period of time prior to problem being encountered, remove air cleaner element, wash in solvent or kerosene, wring out filter, reoil with 3 to 4 drops of oil and squeeze element to distribute oil through element. Check engine operation prior to installation of element and reinstall with engine operating to determine if problem due to dirty filter or over-oiled filter.
9. Should a complaint of varying Carburetor setting be traced to other than preceeding and it is determined that the idle or hi-speed setting will not stay as adjusted, use a 94-111 "O" ring between respective adjustment screw spring and carburetor casting. This will minimize the problem. CAUTION: Also check for out of balance blade and/or adaptor or bent or damaged blade as vibration due to these will result in changing adjustments and while the "O" ring can hold the adjustment other damage can occur to equipment or engine due to excessive vibration.
10. Should it not be possible to start engine check stand pipe ass'y by removal of carburetor & tank ass'y from engine and then remove tank. Ball can stick in stand pipe ass'y and one should be able to blow (by mouth from bottom or screen side) air through the stand pipe ass'y. Should the stand pipe be plugged, soak in carburetor solvent to loosen gum or varnish and then recheck for proper function or replace stand pipe ass'y. Fig. 3. CAUTION: Be certain that spacer is in position; it keeps ball from blocking end of stand pipe. Also check to see that installation of stand pipe ass'y has not moved metal into fuel passage. For disassembly and reassembly instructions, see Engine Service Manual, Pages 27 & 28, Sec. III, Div. A (Authorized Clinton Accounts).
11. Erratic running can be caused by the following:
 - a. Air vane binding on post or side drag of tab on sides of post groove.
 - b. Carburetor idle screw setting. This should be approximately 4 to 4-1/2 turns open (fine thread) and 1-1/2 turns open (coarse thread) Sec. III-7 & Fig. 1.
 - c. Air vane linkage hitting block or shroud and/or bent.
 - d. Not enough fuel in tank.
 - e. Carburetor high speed and idle screw settings changing while engine is operating; This can be minimized by using Part No. 94-111, 400725 or 401197 "O" ring on adjusting screws between spring and carburetor casting.
 - f. Magneto output not adequate. Sec. III-4.



SUCTION LIFT CARBURETORS

The Suction Lift Carburetor used on early production, 1962 engines has been re-designed. We have improved the performance of this Carburetor considerably over the original design. If trouble is experienced in setting the original Carburetor it may be necessary to replace. Use the 39-857-500 or 39-867-990 replacement Carburetor for 403 and 409 series engines. The series 402, 408, and 424 require the 39-858-500 or 39-868-990. If the warranty period has not expired, this replacement should be performed on a No Charge basis to the customer and warranty claim submitted covering same. If fuel remained in Tank over winter months it will be necessary to clean Carburetor of gum formation. A commercial Carburetor cleaner or a 50-50 mixture of Benzine and Acetone can be used.

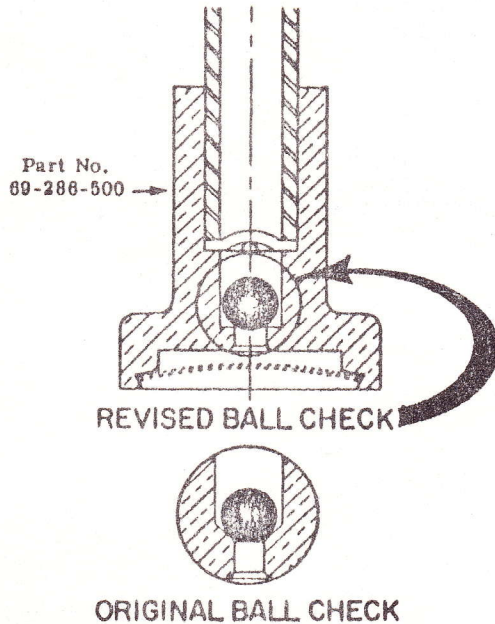
Below are illustrations & comments on these changes.

POWER ADJUSTMENT NEEDLE & NOZZLE

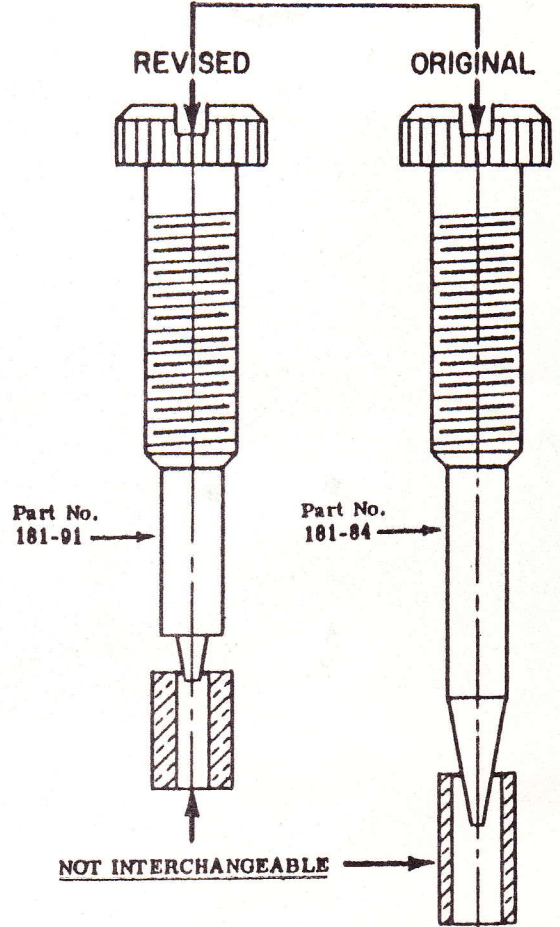
The revised power needle has a shoulder to prevent splitting of nozzle caused by forcing original type needle into nozzle. In redesigning the high speed needle the nozzle bore was reduced from .090 to .048 to allow a 1/2 turn variance in adjustment compared to 1/8 on original power needle. This also increased gas flow clearance from .003-.004 to .006-.008 preventing foreign material from lodging between power needle and nozzle.

STAND PIPE ASS'Y

Aluminum ball is used in place of brass for easier lifting by carburetor vacuum. Seat is redesigned as illustrated. Old style seat allowed larger surface for gum formation and resulted in ball sticking to the seat. Finer mesh screen is used to prevent foreign material from being drawn into carburetor.



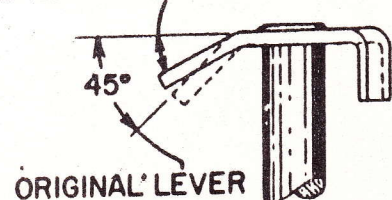
POWER NEEDLE & NOZZLE



CHOKE & SPEED CONTROL LEVER ASS'Y

The angle between speed control lever and choke shaft lever was changed from 45° to 28° to prevent binding, resulting in a smoother choke action.

Use Kit 149-584 → 28° REVISED LEVER



TANK CHANGE

DEPTH: Original tank was 2-1/2" deep. New tank is 2" deep. When replacing old style (2-1/2") tank, with new style (2") tank, it will be necessary to replace 2-1/2" stand pipe with 2" stand pipe.

A threaded steel insert was used in the original carburetor for the power and idle adjustment needle however this steel to steel contact allowed the needle to move and carburetor adjustment would change. By eliminating this insert and threading carburetor casting the above problem was eliminated.

For additional Service information, refer to Sec. VIII, Service Bulletin No. 3.