Carb & Turbo
Alternative Fuel Systems Specialists
Compressed Natural Gas (CNG) - Propane (LPG)

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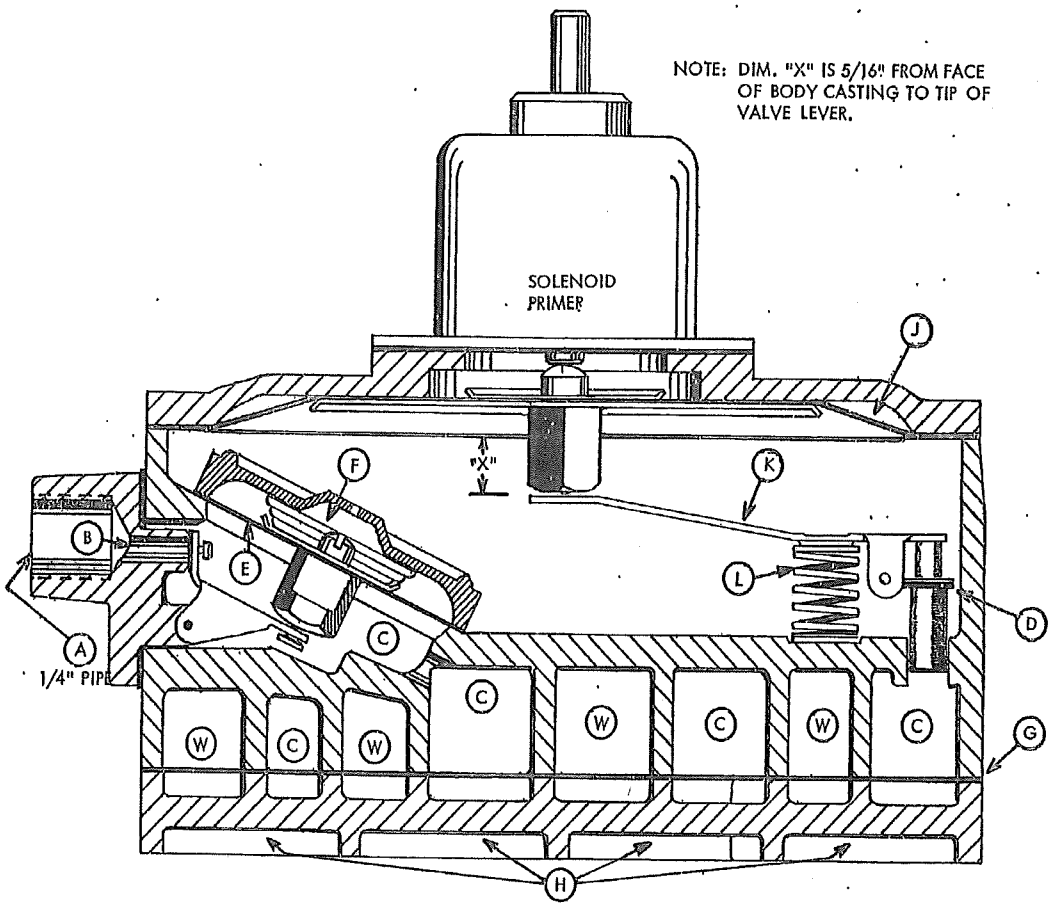
Model H & HV Operation



1. Primary (High Pressure) Regulator — Figure 1

A conventional valve, diaphragm and spring regulator controls pressures in primary and heat exchanging cavities as follows:

Liquid fuel enters through opening (A) and passage (B) (9/32 Model H, 5/32 Model HV and OEM John Deer Model H) and expands in primary cavity and heat exchanger (C). Area (C) is a continuous passage through the heat exchanging area and terminates at the secondary valve orifice (D).
Pressure of expanding fuel forces primary diaphragm (E) upward against spring (F), which is overpowered, and primary valve is closed.

The Primary valve will remain closed until pressure is reduced by engine demand at which time it opens and the cycle is repeated. During engine operation this regulator functions continuously and maintains consistent pressure in the heat exchanging area.

2. **Heat Exchanger — Figure 1**

Engine coolant is circulated through continuous passages (W) and heats adjoining casting walls preventing refrigeration due to expansion of vaporizing fuel.

Back gasket (G) seals coolant passages and expansion areas (H). In case of freezing coolant, this gasket is displaced into the expansion area and absorbs expansion of the frozen coolant. Damage to vital parts is prevented by this built-in safety feature.

3. **Secondary Regulator — Figure 1**

A reduction of pressure (vacuum) occurs in the secondary body upon engine demand. Atmospheric pressure forces diaphragm (J) downward, depressing valve and lever (K) and opening secondary valve. Vaporized fuel flows through secondary valve as long as demand persists and in quantities dictated by carburetor adjustment and engine requirement.

Spring (L) closes or regulates secondary valve as demand varies.
Secondary regulator may be actuated by hand primer or solenoid (as shown) to fill vapor hose with fuel prior to starting.

INSTALLATION

Locate converter as near to carburetor as is practical and where water hookup can be readily made. Under no circumstances should it be above the top of the radiator core or in an area exposed to excessive engine manifold heat.

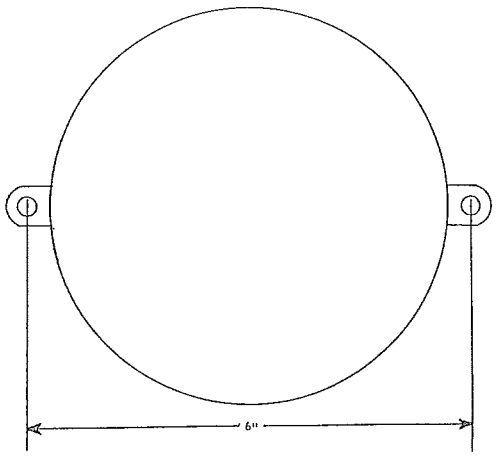


Figure 2

No converter should be installed without being preceded by an efficient filter and fuelock of sufficient size. Century's STF series filter fuelocks are exceptional from these standpoints and are available in various sizes, voltages and capacities. USE THEM.
Drill two holes for clearance of ¼" mounting bolts in securely mounted bracket or other vertical service. Hole pattern is shown in Figure 2. Care must be taken to make sure the mounting surface is flat to avoid damage to back casting.

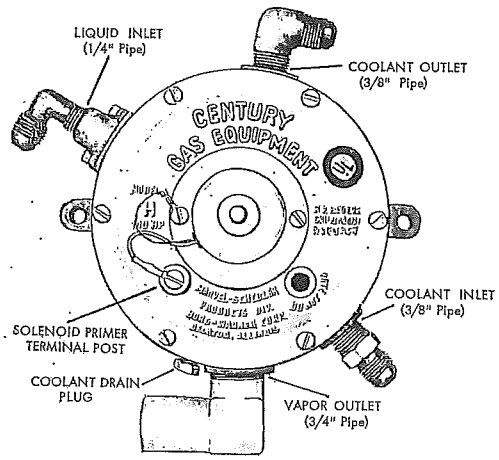
Install approved SAE (Flare) fitting in fuel inlet using thread sealing compound carefully to avoid getting it into the converter. Tighten fitting to point in proper direction for attaching high pressure hose from filter fuelock. (Fig. 3)

Install water hose fitting in two ⅜" pipe openings again using sealing compound and positioning fittings to facilitate hose connections. Automotive type ⅝" heater hose can be used with Century #1S-40 Elbow Fittings or #1S-35 Straight Fittings.
Insert and tighten the vapor oulet fitting using the largest hose size fitting which can be reasonably assembled in the carburetor being installed.

NEVER USE CONVENTIONAL PIPE STREET ELLS IN THE VAPOR LINE.
Mount converter with two bolts and tighten securely. Install fittings in filter fuelock and carburetor and secure all hoses.

Select an opening on suction side of water pump, install fitting, and attach hose from this point to TOP outlet in converter. In case no opening in the suction side exists, it is necessary to drill and tap a ⅜" pipe hole in the inlet side of the water pump.

Attach hose from lower water outlet in converter to any available opening on pressure side of water pump. Heater water supply openings are suitably located to provide good water circulation in most cases. DO NOT connect the converter in series with the heater. A parallel connection is usually acceptable, but it is preferable to select a completely independent water source if possible. **STAY BELOW THE THERMOSTAT.**



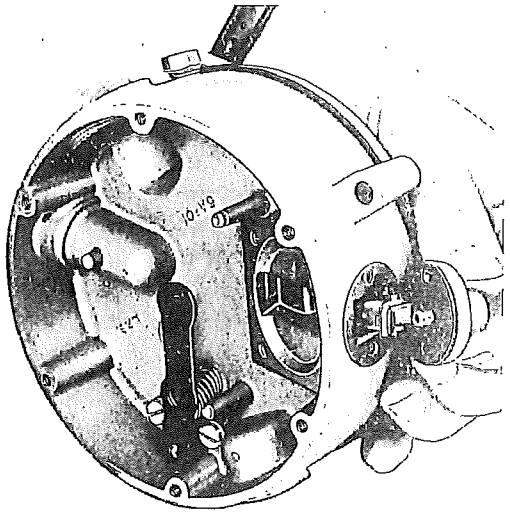
REMEMBER: Water circulation is of prime importance. Any frosting of the converter body indicates poor circulation which must be corrected.

Connect a wire from battery, through a push button switch, to the solenoid primer terminal (unless hand primer is used). Primers are furnished for operation on either 6 or 12 volts using the same coil. The primer is to be actuated only to fill the vapor hose prior to starting and is, therefore, energized only a second or two each time it is used.

Fill cooling system with clean water or anti-freeze. Remove top water hose from converter to allow trapped air to escape. Failure to do this may result in freezing since coolant circulation may not occur until air is bled from the converter body.

When water is used as coolant, it is recommended that the correct amount of quality rust inhibitor be added to the cooling system.

REBUILDING



A. Disassembly

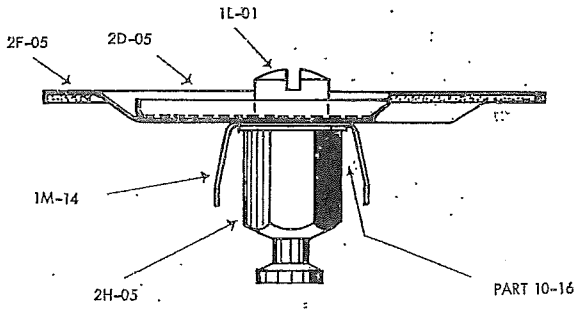
1. Remove primer and front cover.
2. Remove secondary diaphragm assembly and valve lever assembly.
3. Remove two screws holding inlet assembly and slide assembly from opening in side of primary body (Fig. 4).
4. Remove square primary diaphragm cover and lift diaphragm assembly from primary cavity. This assembly is rarely defective and requires service only if primary pressure is incorrect or the converter is being completely rebuilt.
5. Remove nine back screws and lift back cover and gasket from converter body. Discard gasket.
6. Wash all parts in solvent and dry with compressed air. Although diaphragms and valve seats can normally be reused, it is advisable to discard them and install new parts when the converter is reassembled.
7. Inspect all parts for wear, damage or distortion. Discard any questionable items.

B. Assembly

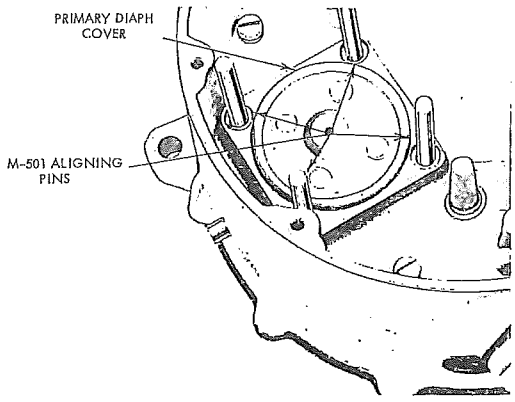
1. Back Cover
   a. Check back plate and back surface of converter with straight edge to determine if they are flat. Any variation in these surfaces will cause difficulty in preventing leaks around back gasket.
   b. Should an uneven or warped condition exist, lap castings on a surface plate until condition is corrected. DO NOT PROCEED UNTIL THIS WORK IS COMPLETED! Severely warped parts will require machining or replacement.
   c. Lay converter body face down, place new gasket in position and insert aligning pins to hold it in place. Back gasket and plate cannot be installed incorrectly. Insert screws and turn down extremely tight. Start with center screws and then alternate from one side to the other.
   NOTE: DO NOT USE GASKET SEALING COMPOUND ON ANY GASKET OR DIAPHRAGM.

2. Primary Diaphragm Assembly (Figure 5)

a. Place 2D-05 Diaphragm Plate on #1L-01 Screw with flange toward head of screw. Set #2F-05 Diaphragm and Gasket Assembly on screw with gasket on lower side. Install #1M-14 Damper Spring. Place #10-16 Washer against Damper Spring in position as indicated and screw entire assembly into #2H-05 Diaphragm Link. Be sure to position legs of damper spring parallel to any two flat sides on diaphragm link and any two edges of diaphragm. Tighten screw securely.



b. Place Diaphragm and Link Assembly over opening into primary cavity, making sure that damper spring is in position to contact sides of opening when diaphragm is all the way down, and hold in position with four aligning pins. Place #1M-12 Primary Regulator Spring on top of Diaphragm Assembly and install Cover.



c. Press Diaphragm Cover down and remove aligning pins ONE AT A TIME being sure to insert a screw in each hole before removing the next pin. Turn screws down to hold Cover and Diaphragm Assembly lightly against Gasket and Casting surface. Then tighten all four Diaphragm Cover screws alternately, evenly, and securely.

CAUTION: Failure to use aligning pins while screws are installed may result in screws cutting into Diaphragm.

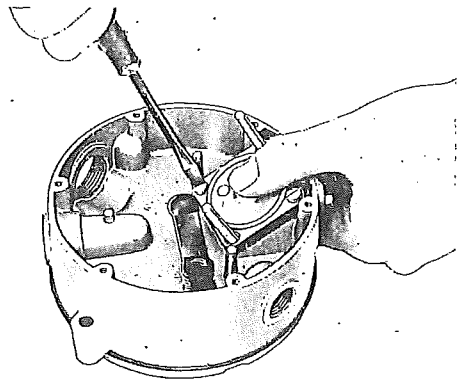


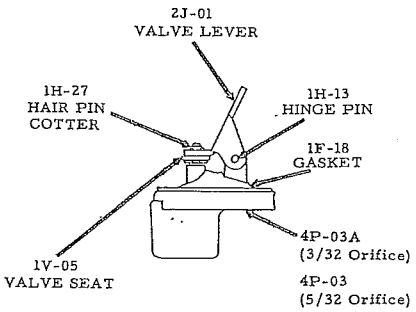
Figure 7

3. Primary Inlet and Valve Assembly — Figure 8

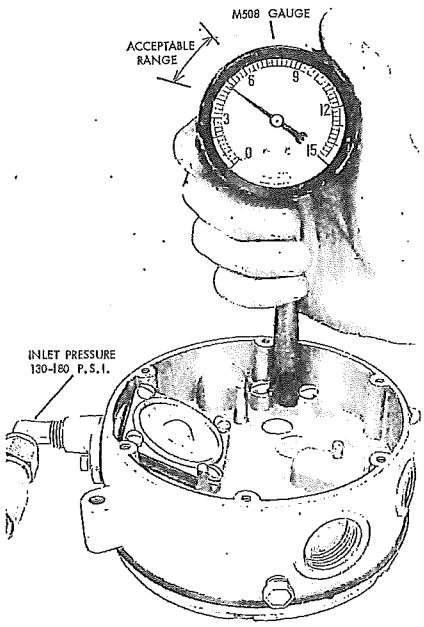
a. Install a new #1V-05 Valve Seat and secure in valve lever with hair pin cotter.

b. Place new #1F-18 Gasket over jet and against inside surface of inlet fitting. Mount lever and valve assembly in place and insert hinge pin.

c. Slide completed inlet fitting and valve assembly into opening in side of primary body and secure with two screws.



4. Pressure Test — Figure 9
Attach compressed air hose to inlet fitting and place #M-508 gauge over secondary valve orifice; turn on air supply and proceed as follows:



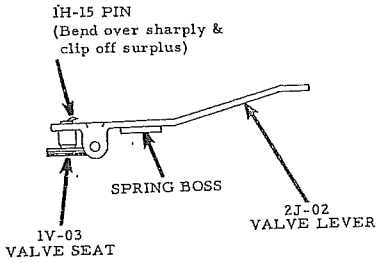
a. Note pressure gauge reading. It should be 4-6 pounds with inlet pressure of 130-180 p.s.i. If pressure does not fall within these limits, retrace previous operations to double-check work to this point. Pay particular attention to primary valve lever and pin. Wear or distortion at this point may be responsible. Extremely low pressure indicates spring has been left out.

b. If pressure creeps upward, the primary valve is leaking and must be reworked. Foreign material, such as metallic chips, is most frequent cause of problem.

c. Check pressure under simulated operating conditions by lifting #M-508 gauge slightly away from orifice, thus allowing air to escape. Pressure will drop slightly and return to original reading upon stopping the leak.

5. Secondary Valve and Lever Assembly—Figure 10

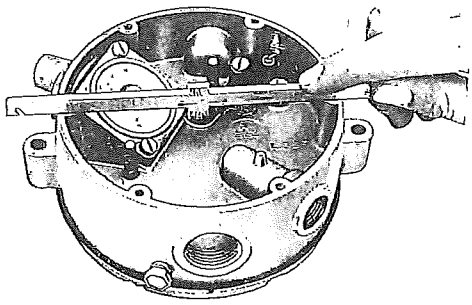
a. Assemble new #1V-03 Valve Seat on valve lever using #1H-15 Pin. Insert pin through valve seat and lever insert. Press valve seat against flat surface and bend pin over sharply. DO NOT HAMMER ON BENT PIN. The seat is self-aligning and may not seal properly if held too rigidly against the valve lever.



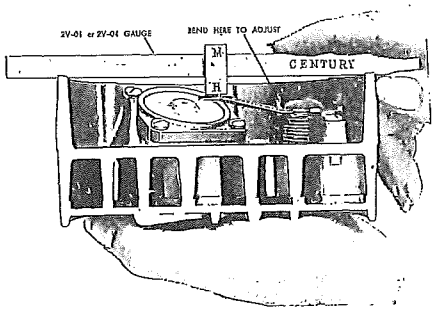
b. Place #1M-13 Spring in pocket in secondary chamber.

c. Insert hinge pin in legs of lever and place lever and seat assembly in position and retain with two screws in mounting posts. Check position of spring to make sure it is located on lever boss.

d. Open valve by hand and allow it to snap closed several times to align seat with orifice.



e. Use #2V-01 Gauge to set lever height. (Figure 11) In case no #2V-01 Gauge is available, measure from a straight edge across face of casting to closest point tip of valve lever. Distance should be 5/16". (See Figure 1) Form valve lever to obtain correct setting.

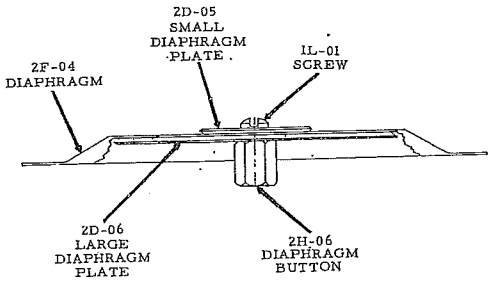


6. Final Testing, Semi-Assembled Converter

a. Reconnect air supply to converter inlet. Plug one water fitting opening and apply soap bubble to the remaining water outlet. Any continuous growth of the soap bubble indicates leakage through the back gasket and will require rework of its installation.

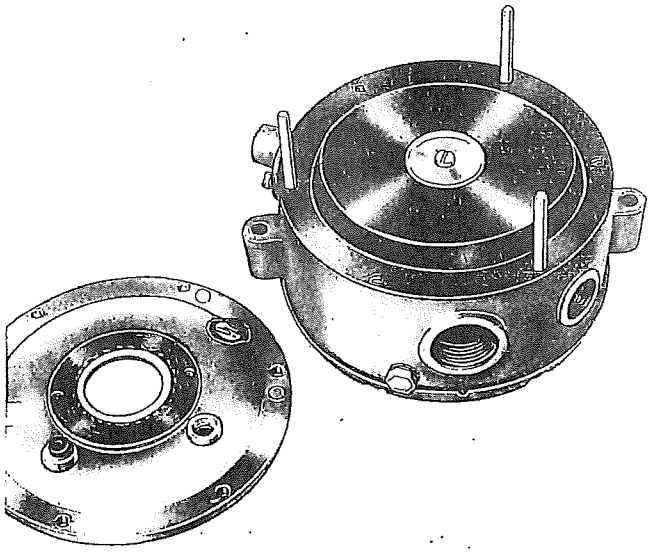
b. Test ALL gasket surfaces, edges, openings, etc. for leaks with soap solution or by immersing the entire unit in water. Any leaks must be corrected before proceeding further. Pay particular attention to secondary seat. If correctly installed, it will not leak.

7. Secondary Diaphragm Assembly — Figure 12



a. Place #2D-05 small Diaphragm Plate on #1L-01 Screw with flange on plate toward screw head. Locate #2F-04 Diaphragm on screw with concave or dished side **away** from screw head. Set #2D-06 large Diaphragm Plate on screw with flange away from diaphragm and screw #2H-06 Diaphragm Button on exposed threads. Tighten securely.

b. Insert aligning pins in Front Cover screw holes, using every other hole. Slide #1F-17 Gasket over pins with gasket ears over primary cover screws. Mount secondary diaphragm assembly on pins with button toward converter lever. (Figure 13)

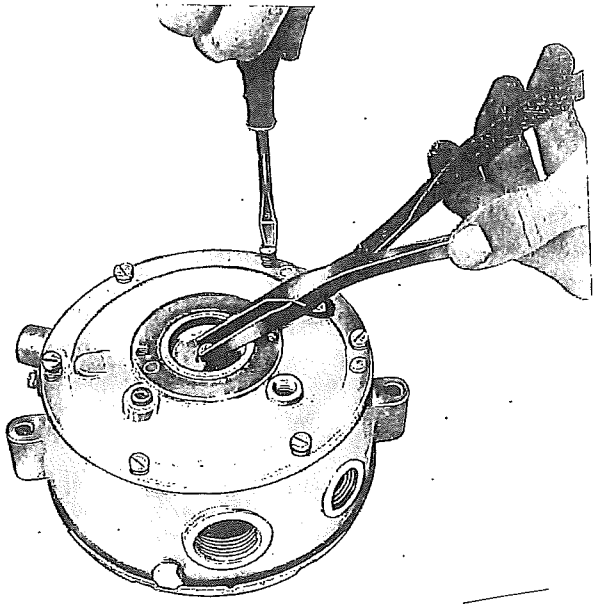


c. Locate cover on aligning pins and install three front cover screws. Remove aligning pins and insert remaining screws. DO NOT TIGHTEN. (The front cover may be installed in any position, however, it should be placed so it will be right side up when converter is mounted.)

d. Lift diaphragm up against cover by pulling with pliers through center hole in cover. Tighten all screws while lifting diaphragm. (Figure 14)

e. Install primer and check for operation with 6 or 12 volt power source. Check for clearance between diaphragm assembly and primer plunger tip. If no clearance exists, recheck lever setting.

f. Apply air pressure to inlet fitting and check for secondary valve leakage with soap bubble over vapor outlet. Depress primer manually or electrically to check for fuel flow. Volume need not be great but should be audible.



TROUBLE SHOOTING

I. GENERAL

Simple hand tools and common sense are all that is required. Your knowledge of converter operating principles will allow prompt diagnosis of any problem if you just slow down and think it over. A pressure gauge (0-15 lbs.) will be helpful but is not absolutely necessary.

Look for the obvious things first. Don't try to make something which is easy into a hard job. If malfunctioning, a converter is either giving too much fuel, not enough fuel, or is freezing. All you have to do is determine what it is or is not doing and why.

II. NO FUEL

A. Loosen fuel line at converter inlet. Fuel escaping indicates problem is in converter. If no fuel is present, check as follows:

1. Filter fuelock
   a. Not opening
      (1) No electricity to coil
      (2) Coil defective
   b. Filter plugged
2. Tank and Fuel line
   a. Empty tank
   b. Excess flow valve closed
   c. Tank valve closed
   d. Crushed fuel line

B. Fuel to converter — no fuel to carburetor upon pushing primer switch.

1. Primary regulator
   a. Pipe dope or protective dust plug in primary orifice
   b. Primary spring missing (Fuel will flow, however, low primary pressure will result in insufficient fuel quantity.)
2. Secondary regulator
   a. Valve seat stuck to orifice
   b. Lever far out of adjustment
   c. Primer plunger too short to open valve
   d. Primer inoperative
      (1) Push button switch defective
      (2) Coil defective
      (3) Wiring incorrect

III. FUEL LEAKING THROUGH

A. Primary Regulator (Check primary pressure. If abnormally high, problem is one of the four following.)
1. Valve seat defective or dirty.
2. Diaphragm broken.
3. Valve lever distorted.
4. Spring or washers installed incorrectly.

B. Secondary Regulator (Only responsible if primary pressure is normal.)
1. Dirt on valve seat.
2. Spring missing.
3. Lever incorrectly set.
4. Primer plunger too long.
5. Primer actuated.

IV. **FREEZING** (Repeated freezing can loosen back screws or distort back cover. The cause must be found and eliminated.)

A. Converter
1. Mounted too high.
2. Hose fittings too small or restricted by corrosion.
3. Internal fuel leak.
4. Piped in series with heater.

B. Other Causes
1. Low coolant level.
2. Bad water pump.
3. Loose fan belt.
4. Defective hose or fittings.
5. Air lock (Remove top water hose from converter and bleed air from system).
6. Thermostat, missing or defective.
7. Incorrect hose installation.
8. Head gasket leaking.

Accessories and Tools to Assist in Installation and Service

HOSE FITTINGS

1S-04 Power Adjusting Elbow
1" Hose to ¾" Pipe

1S-10 Power Adjusting Elbow.
⅝" Hose to ⅜" Pipe

1S-11 Hose Elbow
⅝" Hose to ⅜" Pipe

1S-35 Straight Hose Fitting
⅝" Hose to ⅜" Pipe

1S-37 Hose Elbow
1" Hose to ¾" Pipe

1S-39 Hose Elbow
⅝" Hose to ¾" Pipe

1S-40 Water Hose Elbow (Brass)
⅝" Hose to ⅜" Pipe

1S-42 Straight Hose Fitting
1" Hose to ¾" Pipe

HOSE

2S-08 Vapor Hose
1" I.D. x 10 ft.

2S-10 Vapor Hose
⅝" I.D. x 10 ft.

CLAMPS

1W-03 for 1" Hose
1W-14 for ⅝" Hose

TOOLS

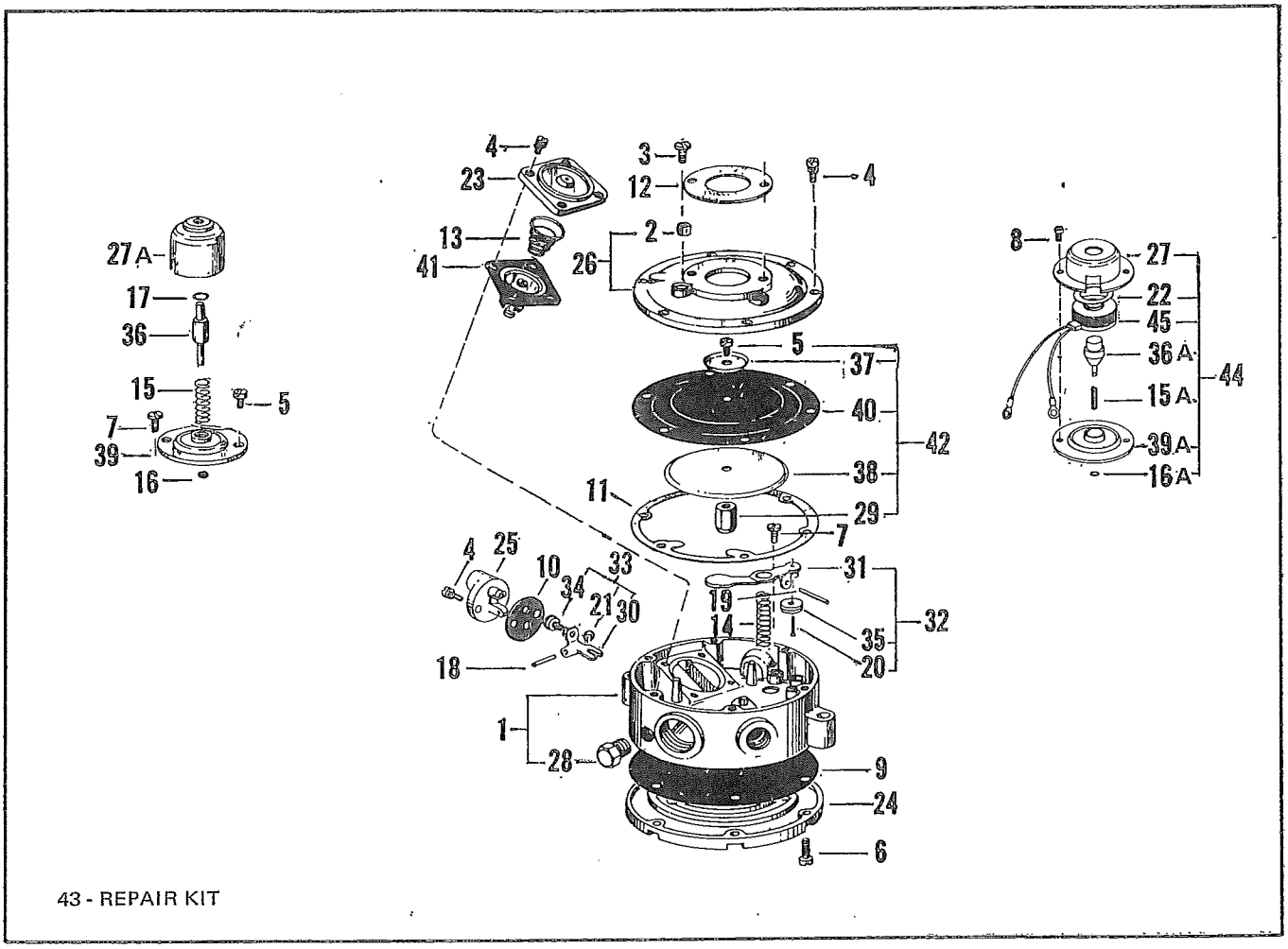
M-501 Aligning Pin
M-508 Pressure Gauge
2V-01 Lever Gauge

SEE CATALOG ACCESSORIES SECTION FOR ADDITIONAL HOSE AND FITTINGS

CONVERTER PARTS DATA

PART NO. 1477

MODEL H



This illustration does not depict a specific Converter but is a Composite View.

Ref. No.	M-S Part No.	Century Part No.	Qty.	Description	Ref. No.	M-S Part No.	Century Part No.	Qty.	Description
1	6-754	5A-01	1	Body Assy.	24	91-293	5A-03	1	Cover - Back
2	11-66	1Q-22	1	Insert - Terminal	25	91-302	4P-03A	1	Cover - Inlet & Jet
3	15-285	1L-74	1	Screw - 8 - 32 x 5/16"	26	91-533	5A-02	1	Secondary Cover Assy.
4	15-A114	1L-03	12	Screw - 10 - 24 x 9/16"	27	91-470	— — —	1	Cover - Primer (Flanged)
5	15-A349	1L-01	1	Screw - 10 - 24 x 1/4"	27A	91-534	1U-09	1	Primer Cover Assy. (Domed)
6	15-A350	1L-08	9	Screw - 10 - 24 x 1/2"	28	99-9	2G-13	1	Plug - 1/8" Pipe
7	15-A370	1L-28	2	Screw - 8 - 32 x 1/4"	29	147-14	2H-06	1	Button - Diaphragm
8	15-B148	— — —	2	Screw - 10 - 24 x 3/8"	30	155-389	2J-01	1	Lever - Primary Valve
9	*16-A346	1F-16	1	Gasket - Back Cover	31	155-620	2J-02	1	Secondary Lever Assy.
10	*16-A347	1F-18	1	Gasket - Inlet Cover	32	155-621	2R-03	1	Secondary Lever & Valve Assy.
11	*16-A350	1F-17	1	Gasket - Secondary Diaphragm	33	155-655	— — —	1	Primary Lever & Valve Assy.
12	16-A353	1F-25	1	Gasket - Primer to Cover	34	*171-583	1V-05	1	Primary Valve Assy.
13	24-A382	1M-12	1	Spring - Primary	35	*171-584	1V-03	1	Secondary Valve Assy.
14	24-A383	1M-13	1	Spring - Secondary	36	194-614	1R-14	1	Primer Plunger Assy. (use w/Domed Cover)
15	24-A387	1M-25	1	Spring - Primer Plunger (use w/Domed Cover)	36A	194-701	— — —	1	Primer Plunger Assy. (use w/Flanged Cover)
15A	24-B78	— — —	1	Spring - Primer Plunger (use w/Flanged Cover)	37	198-137	2D-05	1	Plate - Diaphragm, 1-1/4 x 3/16"
16	44-111	1G-08	1	O-Ring-Primer Plunger (use w/Domed Cover)	38	198-138	2D-06	1	Plate - Diaphragm, 3-1/4 x 3/16"
16A	44-211	— — —	1	O-Ring-Primer Plunger (use w/Flanged Cover)	39	198-510	1R-17	1	Primer Base Plate Assy. (use w/Domed Cover)
17	44-143	1G-14	1	O-Ring-Primer Plunger (use w/Domed Cover)	39A	198-523	— — —	1	Primer Base Plate Assy. (use w/Flanged Cover)
18	*62-344	1H-13	1	Pin - Primary Pivot	40	*237-57	2F-04	1	Diaphragm - Secondary
19	*62-345	1H-14	1	Pin - Secondary Pivot	41	*237-526	2R-02	1	Primary Diaphragm Assy.
20	62-346	1H-15	1	Pin - Secondary Seat	42	237-527	2R-04	1	Secondary Diaphragm Assy.
21	*78-A103	— — —	1	Washer - E Ring	43	286-1301	2X-02	1	Repair Kit
22	78-A137	— — —	1	Washer - Wave, Primer Plunger (use w/Flanged Cover)	44	317-529	— — —	1	Solenoid Primer Assy.
23	91-292	5A-04	1	Cover - Primary	45	323-516	— — —	1	Primer Coil Assy. (use w/Flanged Cover)

* Included in Repair Kit