Bridgepoint
Javelin

Machine Serial Number_____

Document No. 182-530

Revised July 30, 2001

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IMPORTANT

A water conditioner or water softener must be used.
If not used, the warranty will be voided.

Introduction

Javelin

Section 1-1

This manual contains installation and operation instructions as well as information required for proper maintenance, adjustment and repair of this unit. Since the first and most important part of repair work is the correct diagnosis of the problem, component manual troubleshooting charts have been included for your convenience.

Unlike a garden tractor, lawn mower or cement mixer, all having one or two functions to perform, the truckmounted carpet cleaning plant has many functions to perform simultaneously.

- The engine has to run at a consistent RPM.
- The vacuum has to pull air and dirty water back from cleaning site.
- The water pump provides stable pressure at proper water flow for cleaning.
- The chemical has to be injected into the water stream at the right concentration.
- The heating system must maintain proper heat.
- The vacuum tank must store dirty water until drained.

As you can see, it is not just a turn-key operation with one thing to worry about, **Does it start?!**

⚠ WARNING

The manufacturer uses this symbol throughout the manual to warn of possible injury or death

⚠ CAUTION

This symbol is used to warn of possible equipment damage.

Bridgepoint Ststems
542 W. Confluence Ave.
Murray, UT
84123

Hours	Telephone Numbers	
8 a.m. to 5 p.m.	(801) 261-1282	Phone
MOUNTAIN	(800) 658-5314	Phone
STANDARD TIME	(801) 268-3856	FAX

Precautions

Although this unit has been factory adjusted, it may require additional adjustments to achieve optimum performance, for instance altitude may require carburetor adjustment and ambient temperatures may require heat control adjustment. When required, consult an authorized representative.

⚠ CAUTION

THROUGH-FLOOR DRILLING: Be cautious when drilling holes through the van floor. Many vans have critical components mounted directly below the van floor that could be damaged by a misplaced drill bit. (See Product Support Bulletins 92102, 94062 and 94063 at the end of the manual.)

⚠ CAUTION

ENGINE COOLING: Units employing internal combustion engines must not be enclosed within a van with doors and windows closed. Excessive temperatures within the engine will result in premature engine failure and a compromise of applicable warranty.

⚠ WARNING

LEVEL OPERATION: During operation, van or trailer must be parked on level ground not to exceed + or - 10 degrees. Failure to insure proper leveling may prevent proper internal lubrication of engine, vacuum and/or high pressure components.

⚠ CAUTION

MOVING PARTS: Never touch any part of the machine that is in motion. Severe bodily injury may result.

⚠ CAUTION

ACID RINSE AGENTS: The increased demand for "clear water" rinsing results in the need for special care when using these acid based chemicals in your equipment. The negative side of these products is the corrosive effects the acid can have on metals, including swivels, pumps, heat exchangers, etc.

Bridgepoint will not warranty parts that have been damaged from using unprotected acid products that have obviously caused failures.

⚠ CAUTION

HARD WATER PROTECTION: Failure to take appropriate measures to prevent scale build up can result in **system failure** and **loss of warranty** on affected parts. Test the water in your immediate and surrounding areas with hard water test strips. Assume all water obtained from wells is hard. If you are operating in a "Hard Water Area" (3.5 grains or more per gallon), use a water softening system.

⚠ CAUTION

FREEZE PROTECTION: There is often little warning before a cold spell. Therefore, not protecting this equipment from freezing will result in costly down-time. Placing an electric heater in the truck or parking the truck indoors will help to insure against freezing, but should not be the primary method of freeze protection.

⚠ CAUTION

EXHAUST SYSTEM: Do not allow flammable material (i.e. oil, fuel, plastic or wood products) to come in contact with the exhaust system.

⚠ WARNING

HOT SURFACES: During the operation of this equipment, many surfaces on the machine will become very hot. When near the van for any reason care must be taken not to touch any hot surface, such as heater, engine, exhaust, etc.

⚠ WARNING

HEARING PROTECTION: The Occupational Safety and Health Administration (OSHA) recommends the use of hearing protection when a technician is exposed to an average of 85 decibels (this is an average of exposure over an 8 hour period). This equipment can produce 85 decibels to a distance of 10 feet. Please check with your local state agencies to see if OSHA standards apply to your application.

⚠ WARNING

NO SMOKING: It is unsafe to smoke in or around the vehicle.

⚠ WARNING

CARBON MONOXIDE: This unit generates toxic fumes. Position the vehicle so that the fumes will be directed **away** from the job site. **Do not park** where exhaust fumes can enter a building through open doors, windows, air conditioning units or kitchen fans.

⚠ WARNING

TOXIC FUMES: Do not occupy the vehicle when the cleaning equipment is operating. Toxic fumes may accumulate inside a stationary vehicle.

⚠ WARNING

ENGINE EXHAUST: The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

⚠ WARNING

CARBURETOR DRAIN: Under no circumstances should the drain in the carburetor bowl be utilized when the machine is hot.

⚠ WARNING

PORTABLE GAS TANK: **Never** operate this machine with a portable gas can inside the truck. Doing so increases the risk of a fire or explosion.

⚠ WARNING

PORTABLE PROPANE TANK: Do not use a portable tank inside of the truck or van. It is dangerous and illegal in most states.

⚠ WARNING

TRANSPORTATION OF FUEL CONTAINERS: Transportation in a vehicle of any vented fuel container that presently has or has ever contained a flammable liquid is strictly forbidden by Bridgepoint and by federal and state regulation.

System Operation

The Javelin heat exchanger system is a highly engineered cleaning plant designed by Bridgepoint. The system utilizes a dynamic heating system comprised of two separate heat exchangers for capturing "free heat".

The water flow is as follows:

Water is fed into the machine under tap pressure to the water box. The water is then picked up by the high pressure pump and pressurized to the desired level. The water then splits flow, as demanded by the technician. The majority of the water flows to the bypass valve assembly, then back through the blower exhaust heat exchanger, and back to the water box. The water demanded by the technician flows from the water pump, through the engine exhaust heat exchanger and out to the cleaning tool.

When the cleaning solution reaches a preset high temperature, it activates the exhaust diverter valve control, which prevents the exhaust gases from entering the exhaust heat exchanger. Once the solution temperature falls below the set point, the exhaust diverter valve activates to allow the exhaust gases to flow back through the exhaust heat exchanger. If the exhaust diverter valve becomes inoperable for any reason, the high pressure solenoid valve is activated to release the heated water from the system and is directed to the recovery tank. Then cool water enters the system to regulate the temperature. (In a "No Flow" operation, it is common for the solenoid valve to operate for a few seconds per cycle of the diverter valve.)

As there is no guess work in the manufacture of these highly advanced cleaning plants, there must be none in preparing it to get the job done in the field. It is the purpose of this manual to help you properly understand, maintain and service your cleaning plant. Follow the directions carefully and you will be rewarded with years of profitable, trouble-free operation.

It is imperative that no section be overlooked when preparing for operation of this equipment.

Machine Specifications

Frame: 24.5" W x 47.75" L x 37.375" H

Weight: Javelin™ 585 lbs.

Cowling: Aluminum with Epoxy finish

Engine: Kohler, CH25 OHV
Displacement: 725cc
Ignition: Electronic
12 v Electric Starter Motor
12 v, 25 amp Voltage Regulator
Pressurized Oil System with Filter
Oil Cooler

Vacuum Blower: Proprietary Dual Shaft Roots
47 RAI J WhispAir™

Chemical System: High Pressure Injected, Meter Controlled

Heating System: 1 Stainless Steel Coil Exhaust Heat Exchanger

Exchangers: 1 Air-to-Water Copper Shell and Tube Heat Exchangers

Instruments and Controls: Water Pressure Gauge, liquid Filled, 0-1500 PSI
Water Temperature Gauge, 0-250°F
Vacuum Level Gauge, 0-30" Hg
Hour Meter, machine run time
Chemical Flowmeter, clear acrylic, 0-10 GPH
Chemical Metering Valve
Chemical Selector Valve
Chemical Supply Selector
"High Temp Shutdown" Lamp
"Vacuum Tank Full" Lamp
"Water Supply Low" Lamp
Keyed Ignition
Circuit Breakers Panel

Instruments and Controls (cont.):
Accessory Switches
Mix Tank Drain Valve
Recovery Tank Drain Valve
Panel Mounted Pressure Adjustment Valve
Diverter Valve Control Switch
Blower Lubrication Port

Recovery Tank: 100 gallon Aluminum, Epoxy Finish

Cleaning Wand: Stainless Steel
—Grip and Replaceable Vacuum Lips with Stainless Steel Solution Valve.

High Pressure Hose: ¼" High Temperature, Lined, Vinyl Covered Hose rated to 2200 PSI, 250° F.

Vacuum Hose: 2" Reinforced, 1½" Reinforced

Standard Equipment: Machine Power Console
Full Instrumentation
WhispAir™ Vacuum Blower
Javelin™ Water Heating Package
Vacuum Recovery Tank
Carpet Cleaning Wand
5 gallon Chemical Jug
Chemical Jug Holder
Chemical Jug Fill Line
150 ft, 2" Vacuum Hose
10 ft, 1½" Recovery Drain Line
50 ft, Water Supply Line
150 ft, ¼" Solution Line
Dual-Wand Vacuum Fittings
Dual-Wand Solution Fittings
Freeze Guard System
Battery Box with Holder
Van Installation Kit
Operation Manual

Optional Equipment: Please refer to Section 14.

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Spare Parts

Down-time on the unit can be very expensive, because your truckmounted unit is capable of generating several hundred dollars per day. In order to minimize such down-time, it is strongly recommended by the manufacturer that you purchase and keep in your truck the parts listed below.

Parts Orders

To expedite your parts needs, please call your sales representative. In most instances, he either stocks or has access to parts through a regional service center.

Spare Parts List (078-330)

PART NO	DESCRIPTION	QTY
010-111	Belt, A26 Air Pump Drive	1
010-085	Belt, BX42 Javelin Drive	2
010-061	Belt, Pump Drive	1
056-007	Fuse, 10 amp Circuit	2
056-008	Fuse, 15 amp Circuit	1
049-013	Filter, 3" Stainless Steel Vacuum Pump	1
049-118	Filter, ¼" Chemical Filter	1
049-023	Screen, Garden Hose	1
049-121	Filter, Oil - Kohler 25	1
049-122	Filter, Air - Kohler 25	1
052-050	Quick Connect, 440 Male	3
052-051	Quick Connect, 440 Female	2
052-052	Quick Connect, 660 Male	1
052-053	Quick Connect, 660 Female	1

Spare Parts List (078-093) (cont.)

PART NO	DESCRIPTION	QTY
074-007	Gauge, Hi PSI (0-1500)	1
074-032	Meter, Chemical Flow	1
078-019	Kit, H/M Solution Valve	1
078-273	Kit, Bypass Valve Repair	1
157-040	Switch, 12V DC Lighted, ON/OFF	1
157-008	Switch, Ignition	1
157-022	Switch, Relay	2
169-022	Valve, 1½" Full Port	1
169-160	2-way valve	1
169-017	3-way valve	1

Responsibilities

The **Purchaser's** responsibilities are:

Prior to arrival of unit, install 5/8" exterior plywood flooring in the vehicle and cover it with artificial turf.

⚠ CAUTION

Purchase heavy duty 42 - 60 amp hour battery and have the battery 'slow' charge if new. If the battery is not fully charged, damage can occur to the engine charging regulator.

Reading of owner's manual: It is the purchaser's responsibility to read the unit operation manual and to familiarize himself with the information contained therein. *Special attention should be paid to all **Cautions and Warnings.***

The **Sales Representative's** responsibilities are:

ACCEPTANCE OF SHIPMENT:

1. If the unit shows any outward signs of damage, do not sign the delivery receipt until you have closely inspected the unit and noted any damage on the delivery receipt.

2. The salesman from whom you purchased your unit is responsible for supervising the correct installation of the unit in your vehicle and thoroughly training you in its operation, maintenance and precautions.

Correct Installation Includes:

- Installation of through-floor fittings for gasoline fuel lines
- Placing the unit and recovery tank in your vehicle and securing them with bolts or tie down cleats
- Install and connect the fuel pump.
- Connecting gasoline lines

Correct Installation (cont.)

- Connecting the battery
- Checking the pump, vacuum blower and engine oil levels prior to starting the unit
- Starting the unit to check engine and see that all systems function normally
- Checking all hoses, wands, etc. for correct operation.

NOTE: Under certain circumstances, machines may require modification for optimal performance. Certain environmental conditions may require engine modification or control function calibration.

Training Shall Include:

- A thorough review of the operation manual with purchaser;
- Instruction and familiarization in:
  1. How to correctly start up and shut down the unit
  2. How to correctly clean with the unit
  3. Where and how often to check and change component oil levels
  4. How the unit's systems work
  5. How to troubleshoot the unit
  6. How to do basic repairs
  7. Safety precautions and their importance
  8. Freezing damage and how to avoid it
  9. Hard water damage and how to avoid it
  10. Cleaning the orifices and how they function in the system
- A thorough review of the unit warranty and warranty procedures.
- A thorough review of hard water precautions and warnings.
- How to determine hard water areas.
- Use of water softening systems.

Vehicle Prep

The preferable vehicle for a Javelin installation is a cargo van with a heavy-duty suspension package. The van should have three-quarter ton capacity.

TRUCK PREPARATION

The manufacturer recommends the installation of plywood flooring, covered with polypropylene backed astroturf (do not use rubber-backed), in the vehicle prior to installation of machine.

⚠ CAUTION

Be cautious when drilling any holes through the van floor. Many vans have critical components mounted directly below the van floor that could be damaged by a mis-placed drill bit. (See Product Support Bulletins 92102, 94062 and 94063 at the end of this manual.)

This provides a metal-to-cushion mounting rather than metal-to-metal, insulation and makes an attractive van interior. The astroturf should be color-keyed to the van interior.

Materials Needed:

1. 2 sheets 4 x 8 x ⅝" exterior plywood
2. 6'x12' piece of commercial astroturf
3. 16 - 1½" sheet metal screws
4. 1 quart marine adhesive (optional)
5. 1 staple hammer with ½" staples

(See illustration for correct placement of plywood flooring)

Roof Vents

Bridgepoint strongly recommends installing roof vents in vehicles operated in hot weather locations.

Figure 1-1 **Plywood Installation**

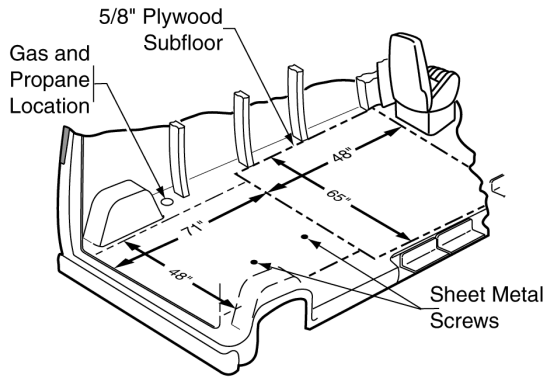


Figure 1-2 **Astroturf and Roof Vent**

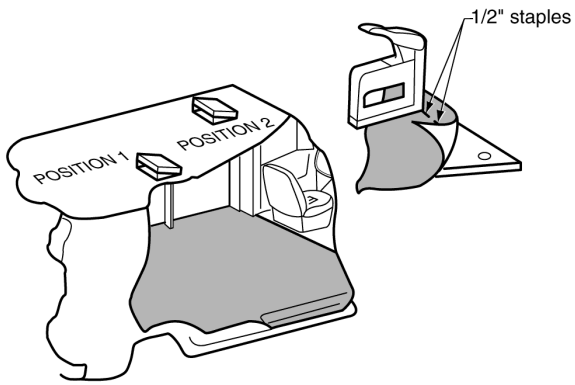
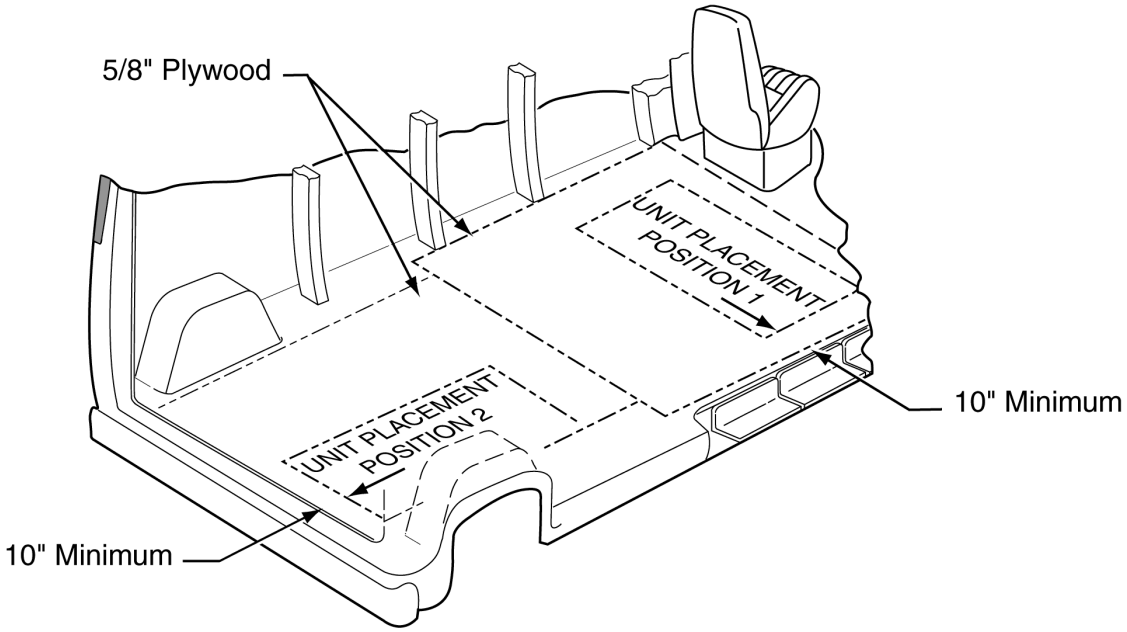


Figure 1-3 **Placement of Unit in Vehicle**



PLACEMENT OF UNIT IN VEHICLE

There are **two recommended unit placements** described below and illustrated in the Figure 1-3.

1. SIDE DOOR:
Most installations are side door. This provides rear access for accessories and hoses as well as unobstructed access to the component/working side of the machine, thus making it a bit easier to perform maintenance and/or repair without removing the unit from the truck.

2. REAR DOOR:
Although this location partly limits working access, it does direct the noise away from the cleaning site. Some cleaners in the colder areas prefer this location because it puts the weight over the rear wheels for better traction in ice and snow. Rear mounting requires the unit to be slid to the right side as far as possible. This not only provides adequate working space on the component side of the unit but also improves weight distribution inside the van (engine and component weight line up over drive shaft). Also, it is physically easier to load the unit into the rear door due to the height of the van bed.

⚠ WARNING

Ensure that the machine is well secured to the floor of the van with the hardware supplied. A sudden or crash stop will cause the machine to rocket forward, all 600 lbs. worth! Protect yourself and the machine. **SECURE IT**!

⚠ WARNING

It is recommended by the manufacturer that the exhaust from the front of the machine be directed in such a way as to prevent carbon monoxide from entering the job site. **Always park the truck so the exhaust is blowing away from the job site.**

The manufacturer also recommends the installation of vents in the truck roof to allow heat to escape for hot weather applications.

Mount a fire extinguisher just inside the rear or side door for emergencies.

⚠ WARNING

Never operate this machine with a portable gas can inside the truck. Doing so increases the risk of a fire or explosion.

⚠ WARNING

Transportation in a vehicle of any vented fuel container that presently holds or has ever held a flammable liquid is strictly forbidden by Bridgepoint Corporation and by federal and state regulation.

⚠ WARNING

Do not use a portable propane tank inside of the truck or van. It is dangerous and illegal in most states.

Local Water Precautions

The quality of water varies greatly. Many areas have an excess of minerals in the water which results in what is commonly called "hard water." These minerals tend to adhere to the insides of heater coils and other parts of the machines causing damage and a loss of cleaning effectiveness. This influences the reliability and efficiency of equipment in direct proportion to the level of hardness.

HARD WATER ADVISORY

Bridgepoint recognizes that any hard water deposits which might occur within the water system of our truckmounts is a serious problem. The precision technology of truckmount heat exchanger systems is intolerant of any foreign material. Hard water deposits will ultimately decrease the performance of the system and are expected to seriously lower the reliability of the machine.

To validate a machine's warranty, Bridgepoint requires that all machines operating in designated "Hard Water Areas" (3.5 grains or more per gallon) be fitted with a water softening system or a properly installed magnetic-type de-scaler must be used and maintained. Periodic de-scaling or acid-rinsing alone is not adequate in these areas. Bridgepoint does not recommend any particular type or brand, however the relative effectiveness of some types of magnetic de-scalers or softeners may require additional periodic use of de-scaling agents.

Bridgepoint also recommends, in the strongest possible terms, that machines in *all areas* be fitted with a water softening system for improved operation and reliability.

Bridgepoint has included five hard water test strips with your machine. These can be used to test the water in your immediate and surrounding areas as they can vary greatly. Assume all water obtained from wells is hard.

⚠ CAUTION

Failure to take appropriate measures to prevent scale build up can result in **system failure** and **loss of warranty** on affected parts.

HARD WATER AREA MAP

The following map defines areas in the United States which compromise fluid related components such as hoses, fittings, heaters, pumps, valves and water cooled engines. For other countries, hard water area maps can be obtained from geological societies.

WATER SOFTENER

Cleaning efficiency and equipment life is increased, chemical use decreased, and the appearance of cleaned carpets enhanced when water softeners are incorporated in hard water areas. The manufacturer strongly urges the use of water softener units in areas exceeding 3½ grains per gallon. Failure to use a water softener in these areas will invalidate the machine's warranty. Using a Hard Water Area map as a reference, determine the quality of water in your area and take action immediately, if necessary.

Reports from several of our machine users commending the results of the use of water softeners in conjunction with their machines prompts us to recommend the procedure to everyone in a "hard water" area.

The relatively low cost of a water softener service is more than made up for by an increased life of machine parts, reduced chemical costs and continued cleaning efficiency. The water softener will also increase the *effectiveness* of the cleaning chemicals, therefore less chemical will be needed.

Contact a water softener distributor in your area for information on the rental of a simple water treatment unit to carry in your truck. Be sure to change the water softener in accordance with the capability of the softener. For example: If the softener will treat 900 gallons of water and the machine uses an average of 30 gallons per hour, for an average of 5 hours a day, this equals 150 gallons per day. In 6 days the machine would use 900 gallons of water. Therefore, the softener would need to be changed every 6 working days for maximum softening.

WASTE WATER DISPOSAL ADVISORY

There are laws in most communities prohibiting the dumping of recovered "gray" water from carpet cleaning in any place but a sanitary treatment system.

WASTE WATER DISPOSAL ADVISORY (cont.)

This cleaning rinse water, recovered into your unit's vacuum tank, contains materials such as detergents. These must be processed before being safe for streams, rivers and reservoirs.

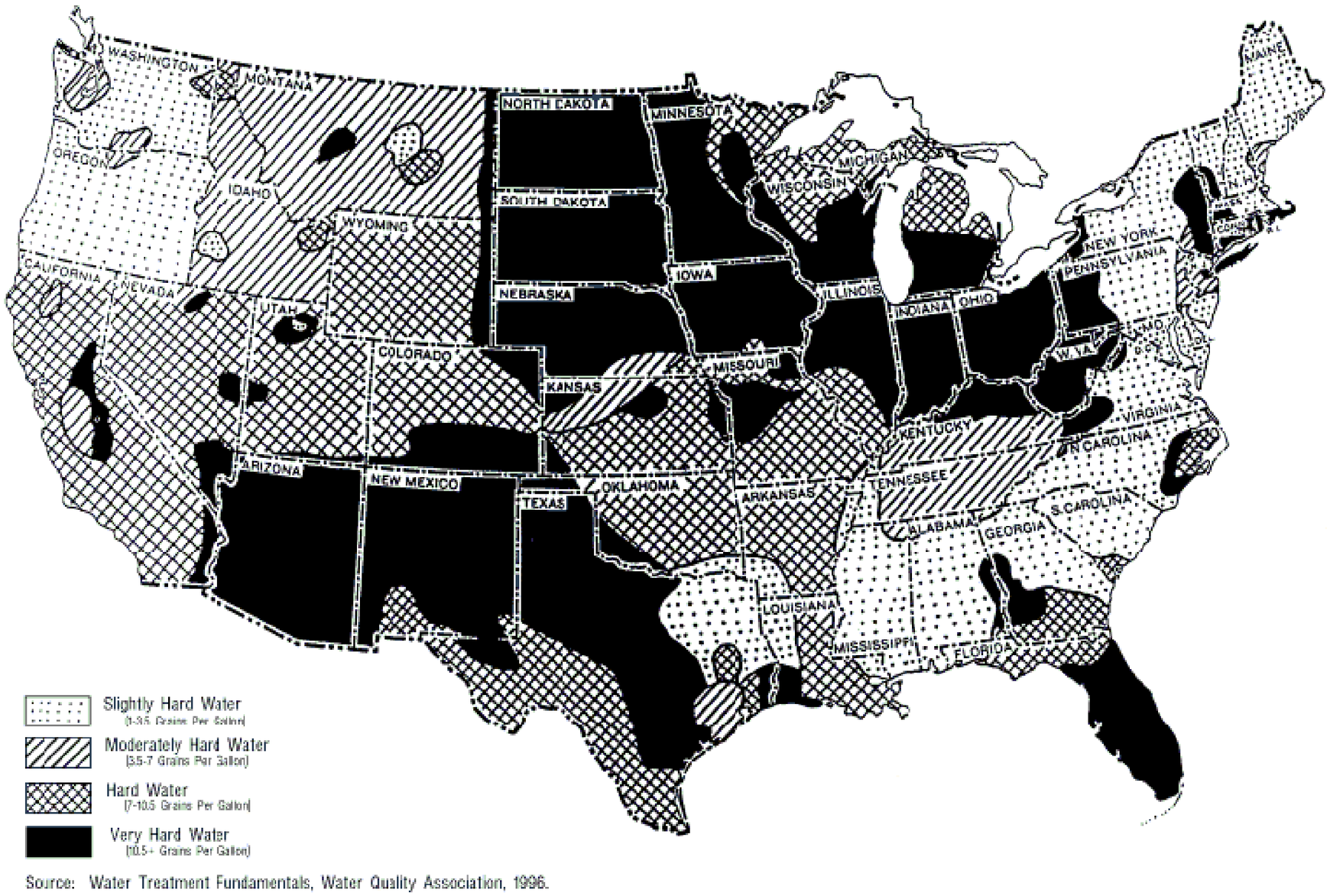
IN ACCORDANCE WITH THE EPA, STATE AND LOCAL LAWS, DO NOT DISPOSE OF WASTE WATER INTO GUTTERS, STORM DRAINS, STREAMS, RESERVOIRS, ETC.

In most cases, an acceptable method of waste water disposal is to discharge into a municipal sewage treatment system after first filtering out solid material such as carpet fiber. Access to the sanitary system can be obtained through a toilet, laundry drain, RV dump, etc. Permission should first be obtained from any concerned party or agency.

One disposal method which usually complies with the law is to accumulate the waste water and haul it to an appropriate dump site. Another solution to the disposal problem is to equip yourself with an Automatic Pump-Out System (APO). These systems are designed to remove waste water from the extractor's recovery system and actively pump the water through hoses to a suitable disposal drain. Properly designed, they will continuously monitor the level of waste water and pump it out simultaneously to the cleaning operation. The hidden benefit of this process is that the technician does not have to stop his cleaning to empty the recovery tank. Bridgepoint makes an APO System available which can be ordered with new equipment or installed later.

The penalties for noncompliance can be serious. Always check local laws and regulations to be sure you are in compliance.

Figure 1-4 **Hard Water Areas**



Source: Water Treatment Fundamentals, Water Quality Association, 1996.

Machine Assemblies and Parts Lists

Figure 1-5 **Machine Assembly (to be added)**

This section will be revised as drawings become available

Figure 1-6 **Frame Assembly - View 1**
D4726 Rev—

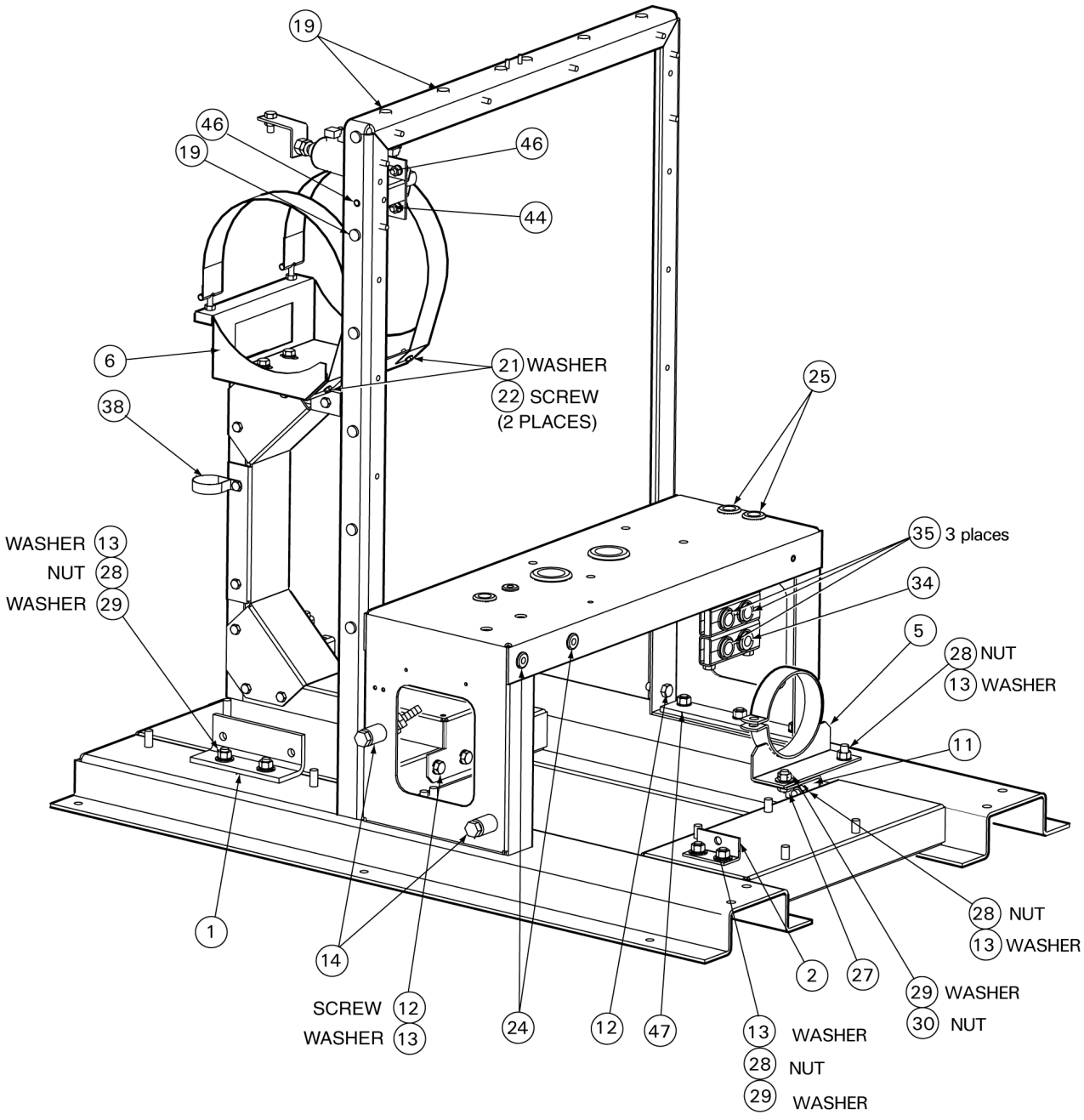
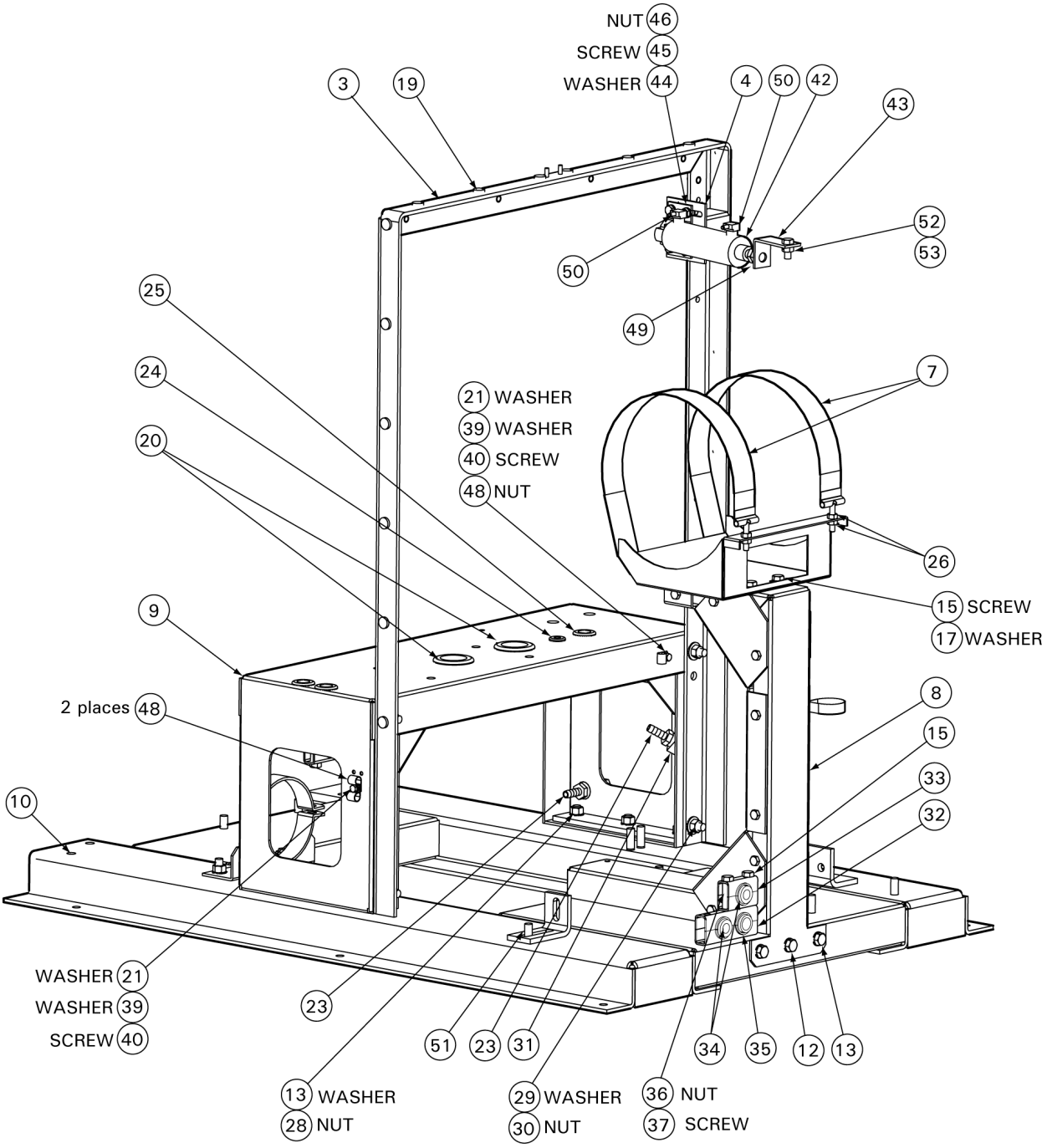


Figure 1-7 **Frame Assembly - View 2**
D4726 Rev—



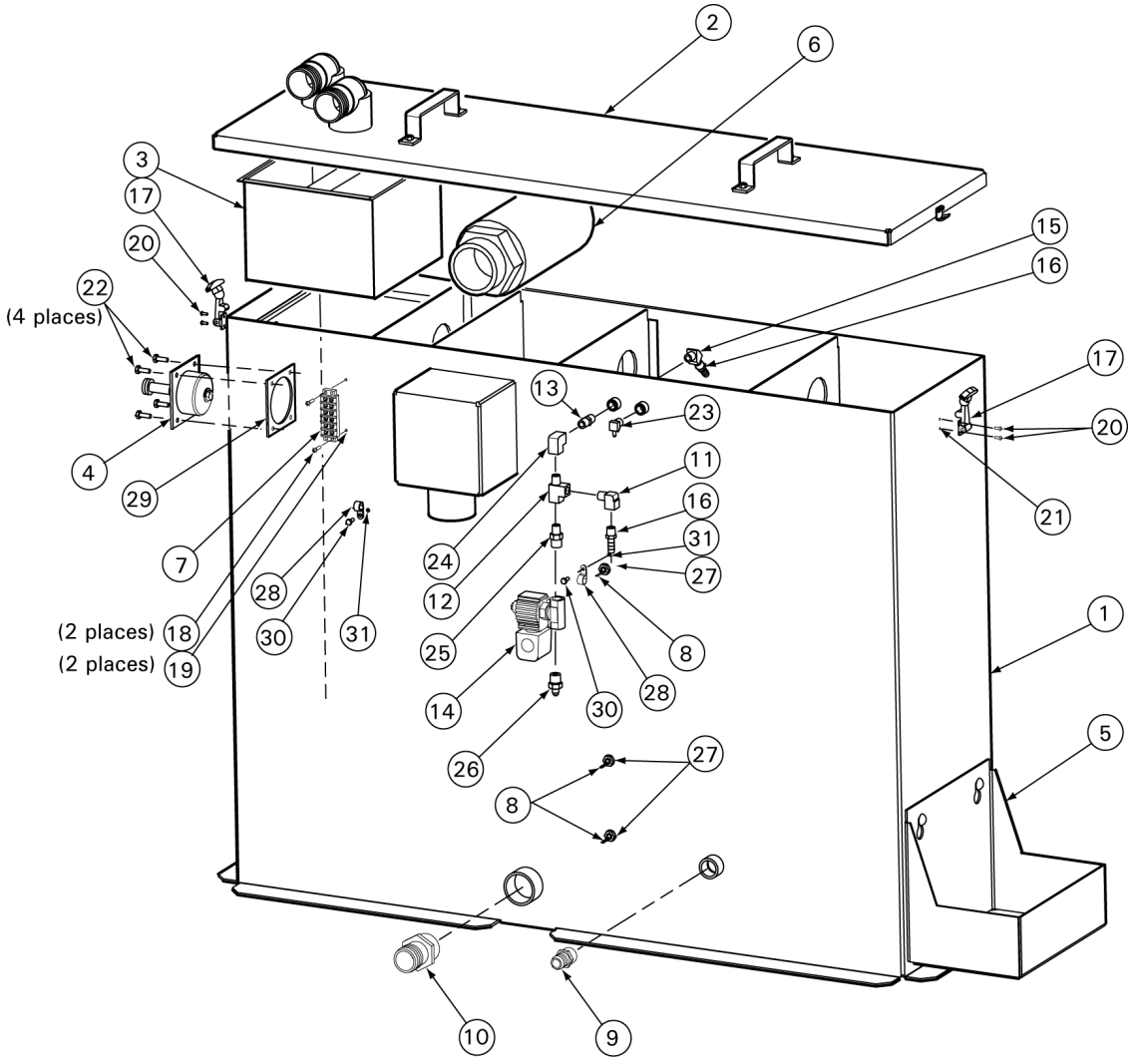
Frame Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	015-557	Bracket, Blower Tensioning Block	1
2	015-563	Bracket, Cat Pump Tensioner	1
3	055-147	Frame, Engine Cover	1
4	015-628	Bracket, Diverter Air Cylinder Mounting	1
5	015-600	Bracket, Heat Exchanger Mount	1
6	015-629	Bracket, After Burner Mounting Saddle	1
7	033-115	Clamp, After Burner Mount	2
8	015-596	Bracket, After Burner HX Mount	1
9	055-145	Frame, Engine Stand	1
10	055-144	Frame-Weldment	1
11	015-687	Bracket, Bypass HX Mounting Angle	1
12	143-096	Screw, 3/8"-16 UNC x 1.00" Lg. Hex Head	10
13	174-057	Washer, 3/8" Lock	18
14	106-033	Plug, 3/8" NPT Hex	2
15	143-012	Screw, 5/16-18 UNC x .75" Lg. Hex Head	8
16	174-018	Washer, 5/16" Lock	4
17	174-049	Washer, 5/16" Flat	4
18	174-019	Washer, 1/4" Lock	1
19	108-024	Protector, Grommet Bumper	18
20	060-010	Grommet, 1 5/16" I.D.	2
21	174-014	Washer, #10 Lock	4
22	143-327	Screw, #10-32 UNF x .59" Lg. Hex Head	2
23	052-104	Insert, #66	2
24	060-008	Grommet, 5/16" I.D.	3
25	006-002	Grommet, Large Wiring	3
26	094-010	Nut, 1/4"-20 UNC Hex	4
27	143-017	Screw, 3/8"-16UNC x .75" Lg. Hex Head	1
28	094-014	Nut, 3/8"-16 UNC Hex, Zinc Plated	12
29	174-032	Washer, 3/8" Flat	9
30	094-015	Nut, 3/8"-16 UNC Hex 2-Way Locking	5

Frame Assembly Parts List (cont.)

REF.	PART NO.	DESCRIPTION	QTY
31	052-083	Elbow, ⅜" NPT Street x 45"	1
32	033-119	Clamping Unit, HC-10-2-3, 2-Position	6
33	033-120	Clamping Unit, HC-10-1 Single Position	2
34	020-041	Bushing, Split, G-10-8 Clamping Unit	3
35	020-042	Bushing, Split, G10-8 Clamping Unit	4
36	094-104	Nut, Stacking, N-10 Clamping Unit	8
37	143-199	Screw, Thread Adapter T-10, Clamping Unit	4
38	033-053	Clamp, 1½" Cushion Loop	1
39	174-001	Washer, #10 Flat	2
40	143-126	Machine Screw, Hex Head, #10-24 UNC x .50" Lg.	2
41	015-650	Bracket, Foot Mount. LH & RH Cylinder Mount	1
42	169-169	Valve, Air Cylinder	1
43	015-630	Bracket, Air Cylinder Extension	1
44	174-003	Washer, ¼" Flat	9
45	143-001	Screw, ¼"-20 UNC x .75" Lg. Hex Head	4
46	094-009	Nut, ¼"-20 UNC Hex Nylock	5
47	105-193	Plate, Engine Stand Washer	2
48	033-044	Clamp, ⅜" Tube	3
49	094-092	Nut, 7/16"-20 UNF Hex Jam	1
50	052-550	Elbow, ⅛" NPT x 3/16" Barb	2
51	015-710	Bracket, Silencer Support	1
52	094-081	Nut, 5/16"-18 UNC Hex 2-Way Locking	1
53	143-156	Screw, 5/16"-18 UNC x .75 Lg. Grade 8	—

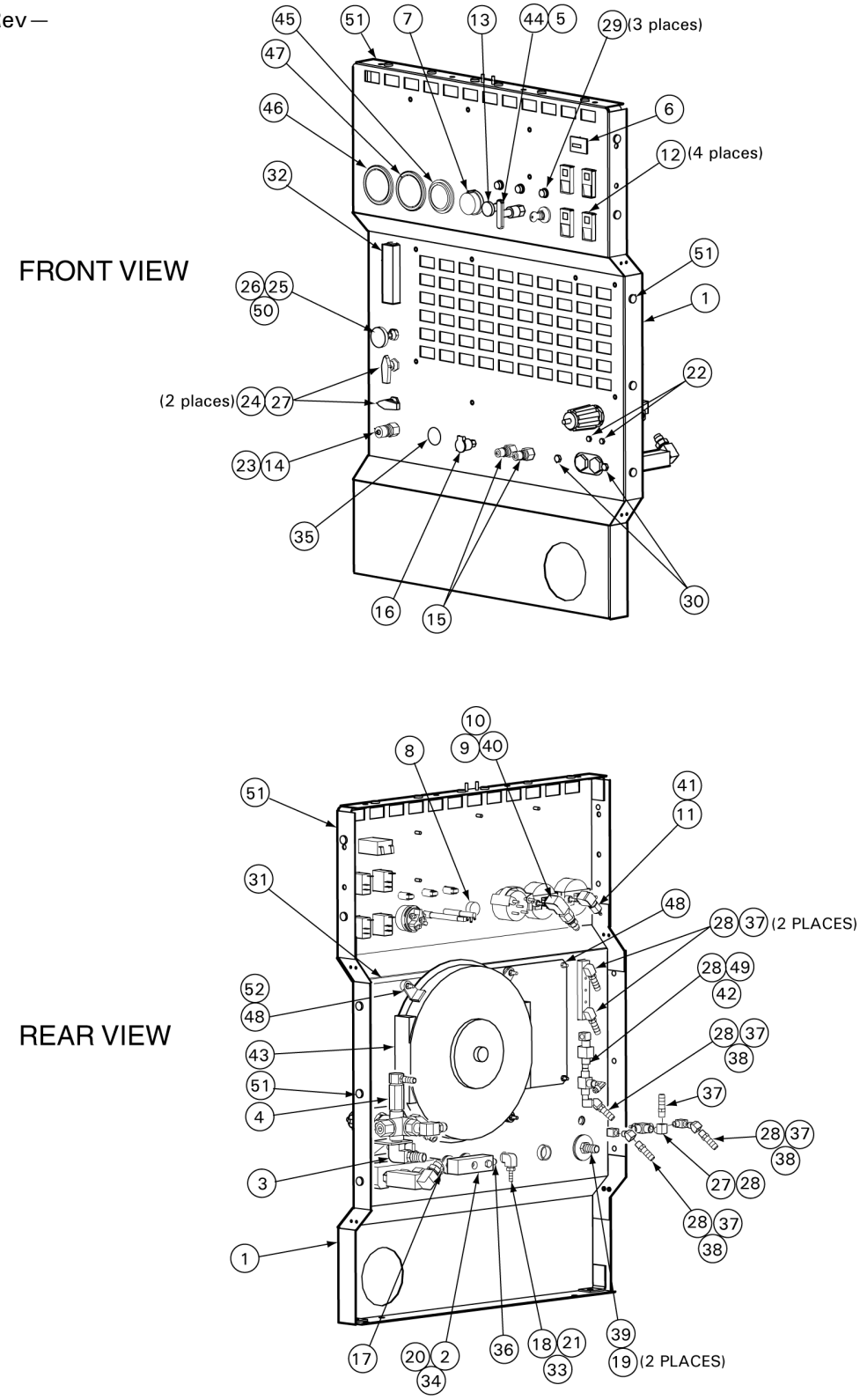
Figure 1-8 **Recovery Tank Assembly**
D4360, Rev A



Recovery Tank Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	159-067	Recovery Tank	1
2	———	Assembly, Recovery Tank Cover	1
3	049-057	Filter Basket, Recovery Tank	1
4	———	Vacuum Relief Valve Assembly	1
5	166-003	Battery Box, Removable	1
6	049-013	Filter, Blower Inlet	1
7	012-002	Block, 6 Post Terminal	1
8	157-080	Switch, Float	3
9	052-338	Insert, #1212	1
10	052-226	Insert, 1½" NPT x 1½" Barb	1
11	052-085	Elbow, ¼" NPT Street	1
12	050-090	Tee, ½" NPT Branch, M-F-F	1
13	052-071	Nipple, ½" NPT Hex	1
14	169-082	Valve, 12 volt Solenoid 1200 PSI	1
15	052-082	Elbow, ½" NPT Street x 45°	1
16	052-102	Insert, #46	2
17	086-001	Latch, Draw "T" Handle	2
18	143-051	Screw, #8-32 UNC x .75" Lg. Binder Head, Phillios	2
19	094-059	Nut, #8-32 UNC Nylock	2
20	143-165	Screw, Pan Head Machine, #6-32 UNC x ⅜" Lg.	8
21	094-063	Nut, #6-32 UNC Nylock	8
22	143-001	Screw, ¼"-20 UNC x .75" Lg. Hex Head	4
23	052-550	Elbow, ⅛"NPT,3⁄16" Barb.	1
24	052-088	Elbow, ¼" FPT x FPT	1
25	052-073	Nipple, ⅜" NPT x ¼" NPT	1
26	052-662	Nipple, ⅜" NPT x ¼" M SAE	1
27	174-029	Washer, ⅜" Rubber Backed	6
28	033-022	Clamp, ½" Nylon Hose	2
29	057-178	Gasket, Vacuum Relief Plate	1
30	143-126	Screw, #10-24 UNC x .50 Lg. Hex Head	2
31	094-034	Nut, #10-24 UNC Nylock	2

Figure 1-9 **Dash Assembly**
D4731 Rev—



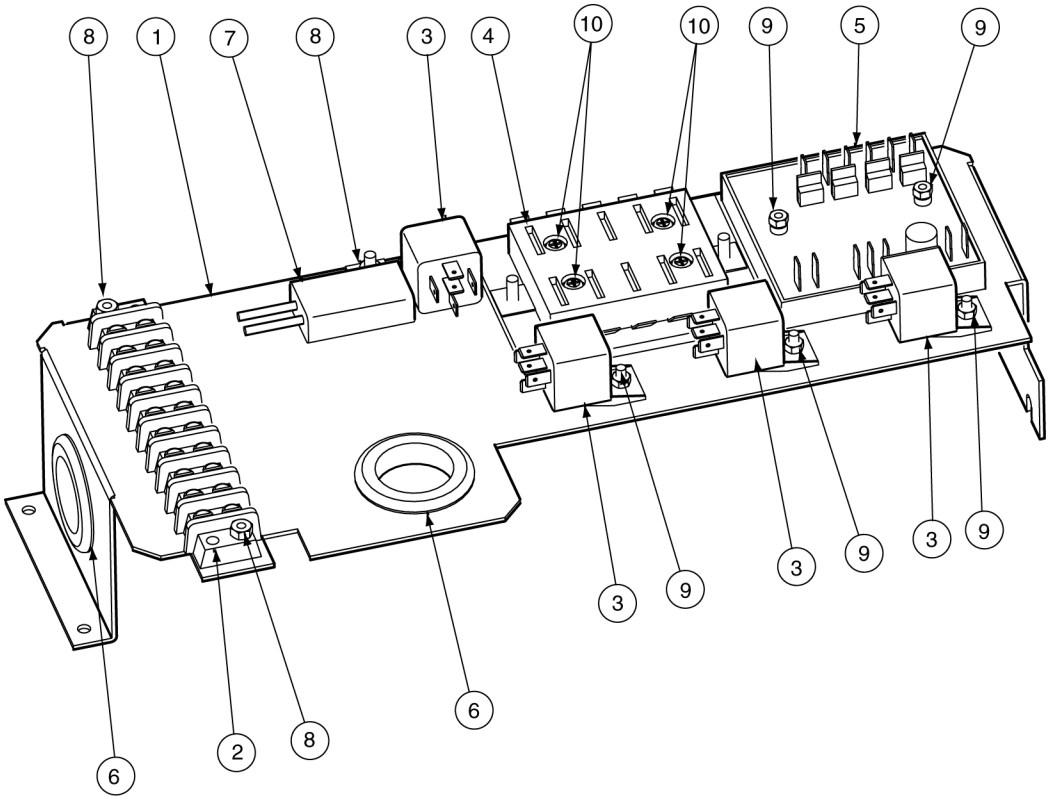
Dash Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	100-109	Dash Panel	1
2	090-008	Manifold, Triple Water Outlet	1
3	———	Assembly, Hi-PSI Manifold	1
4	———	Assembly, Bypass Valve	1
5	157-008	Switch, Ignition	1
6	074-018	Meter, Rectangular w/o Bezel	1
7	061-056	Knob, Temperature Adjustment	1
8	149-047	Thermostat, N/S Temperature Controller	1
9	052-088	Elbow, ¼" FPT x FPT	1
10	052-509	Nipple, ¼" NPT X ¼" M JIC	1
11	052-652	Insert, #F42 ¼" FPT X ⅛" Barb	1
12	157-040	Switch, 20 Amp Rocker	4
13	025-002	Cable, Choke, 3 Foot	1
14	052-052	Quick Connect, 660 Male w/ Viton Standard	1
15	052-050	Quick Connect, 440 Male w/ Viton Standard	2
16	052-272	Cup, Gravity Feed, Oil Blower Lubrication	1
17	174-007	Washer, ½" Flat	4
18	174-005	Washer, ⅜" Flat	2
19	174-008	Washer, ⅝" Flat	2
20	052-071	Nipple, ¼" NPT Hex	2
21	052-293	Insert, #23	1
22	143-126	Screw, Hex Head Machine, #10-24 UNC x .50" Lg.	2
23	174-030	Washer, ⅞" O.D. x ⅝" I.D. x .010" Thick	1
24	169-017	Handle, ⅛" NPT 3-Way Ball Valve	2
25	169-160	Valve, Chemical Metering-Knob	1
26	169-160	Valve, Chemical Metering	1
27	169-017	Valve, 3-Way Ball w/ Black Handle	2
28	052-084	Elbow, ⅛" NPT Street	7
29	084-006	Lamp, Red Pilot, Round	3
30	143-542	Screw, ¼"-28 UNF x .50" Lg.	2

Dash Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
31	100-111	Panel, Perforated Grill	1
32	074-028	Flow Meter, Chemical	1
33	052-089	Elbow, ⅛" NPT Female	1
34	106-001	Plug, ⅛" NPT	1
35	106-029	Plug, 1" Hole	1
36	052-530	Nipple, ⅛" MNPT x ¼ SAE	1
37	052-099	Insert, #26	6
38	052-078	Elbow, ⅛" NPT x 45° Street	3
39	052-105	Insert, #68	1
40	135-052	Regulator, Hi PSI Snubber	1
41	052-085	Elbow, ¼" NPT Street	1
42	052-531	Elbow, ⅛" NPT x ¼" SAE	1
43	050-012	Fan, 12" Diameter, 850 CFM	1
44	025-020	Cable, Throttle, Kohler	1
45	074-024	Gauge, Temperature	1
46	074-025	Gauge, 0-30" HG Vac, 2½"	1
47	074-026	Gauge. 2" Diameter, 0-1500 PSI	1
48	094-027	Nut, #10-24 UNC Hex	18
49	052-057	Nipple, ⅛" NPT Close	1
50	094-098	Nut, 7/16"-24 UNF, 2-Way Metering Valve	1
51	108-024	Protector, Grommet Bumper	16
52	174-001	Washer, #10 Flat	4

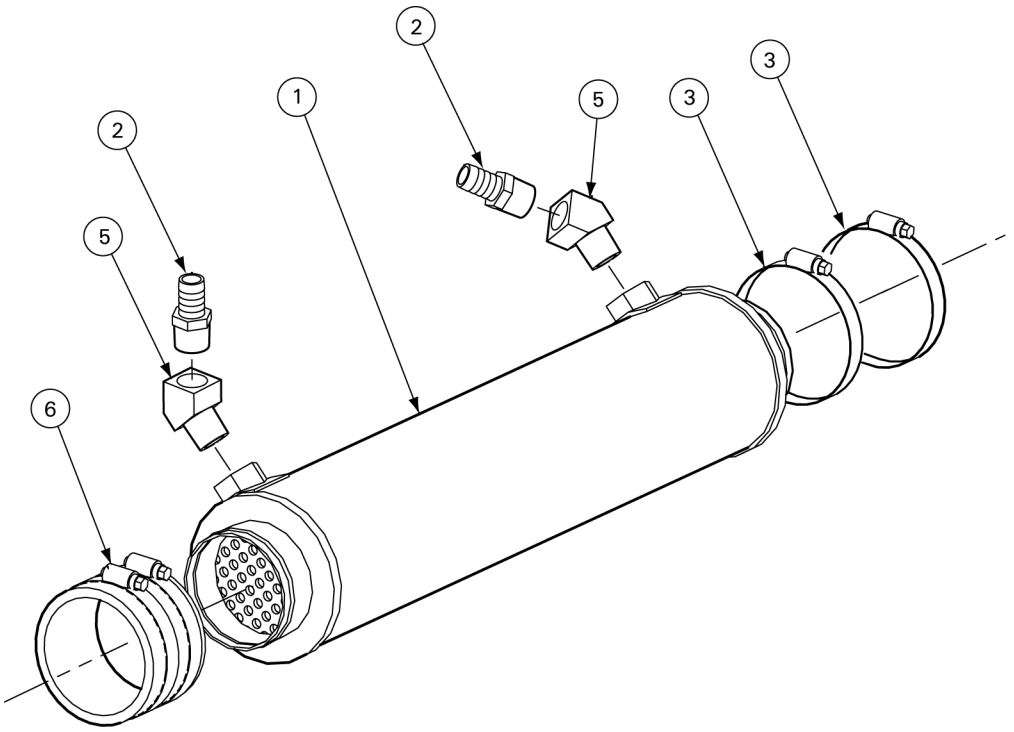
Figure 1-10 **Electrical Control Panel Assembly**
C4736 Rev—



Control Panel Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	100-112	Panel, Electrical Control	1
2	012-010	Block, Terminal 10 Post	1
3	157-022	Switch, Relay	4
4	056-030	Diode Panel	1
5	074-110	Controller, Temp. Analog	1
6	060-010	Grommet, 1 5/16" I.D.	2
7	056-006	Fuse Holder, Inline Weatherproof	1
8	094-034	Nut, #10-24 UNC Nylock	3
9	094-059	Nut, #8-32 UNC Nylock	6
10	143-545	Screw, #8-32 UNC 1.00" Lg. Phillips Head	4

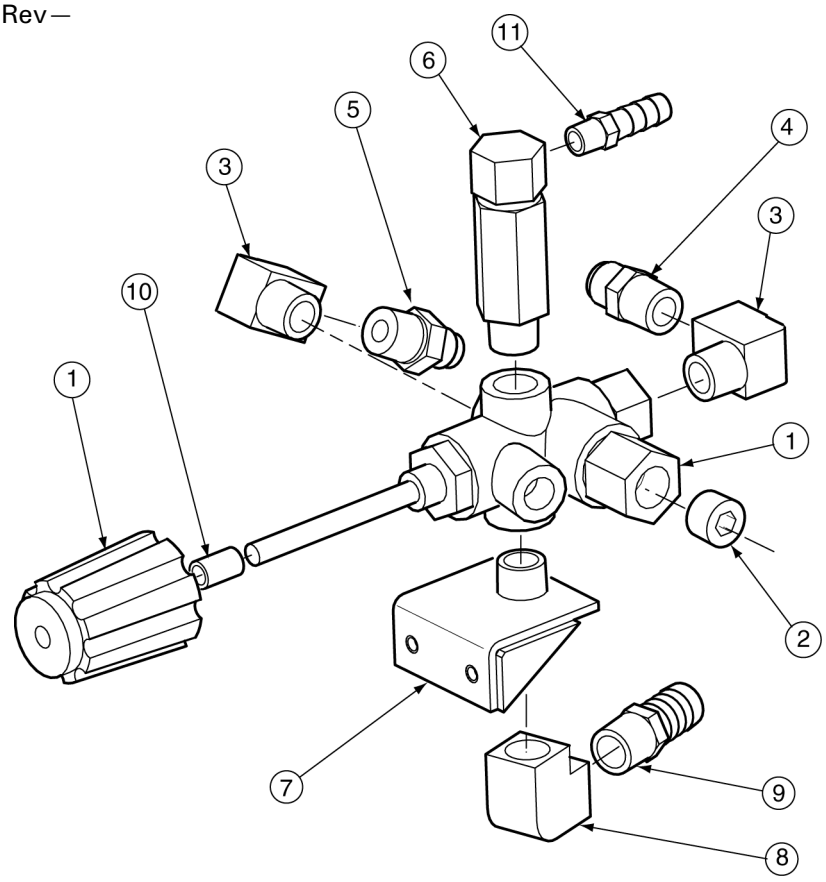
Figure 1-11 **Bypass Heat Exchanger**
C4729 Rev A



Bypass Heat Exchanger Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	038-031	Core, 4" x 19" Tube & Shell, Hex w/ 3" ends	1
2	052-130	Insert, #810 Brass	2
3	033-013	Clamp, #48 Hose	2
4	———	DELETED	—
5	052-081	Elbow, ½" NPT Street x 45°	2
6	068-522	Hose, 3" x 2¼" Lg. Nitrile with Clamps	2

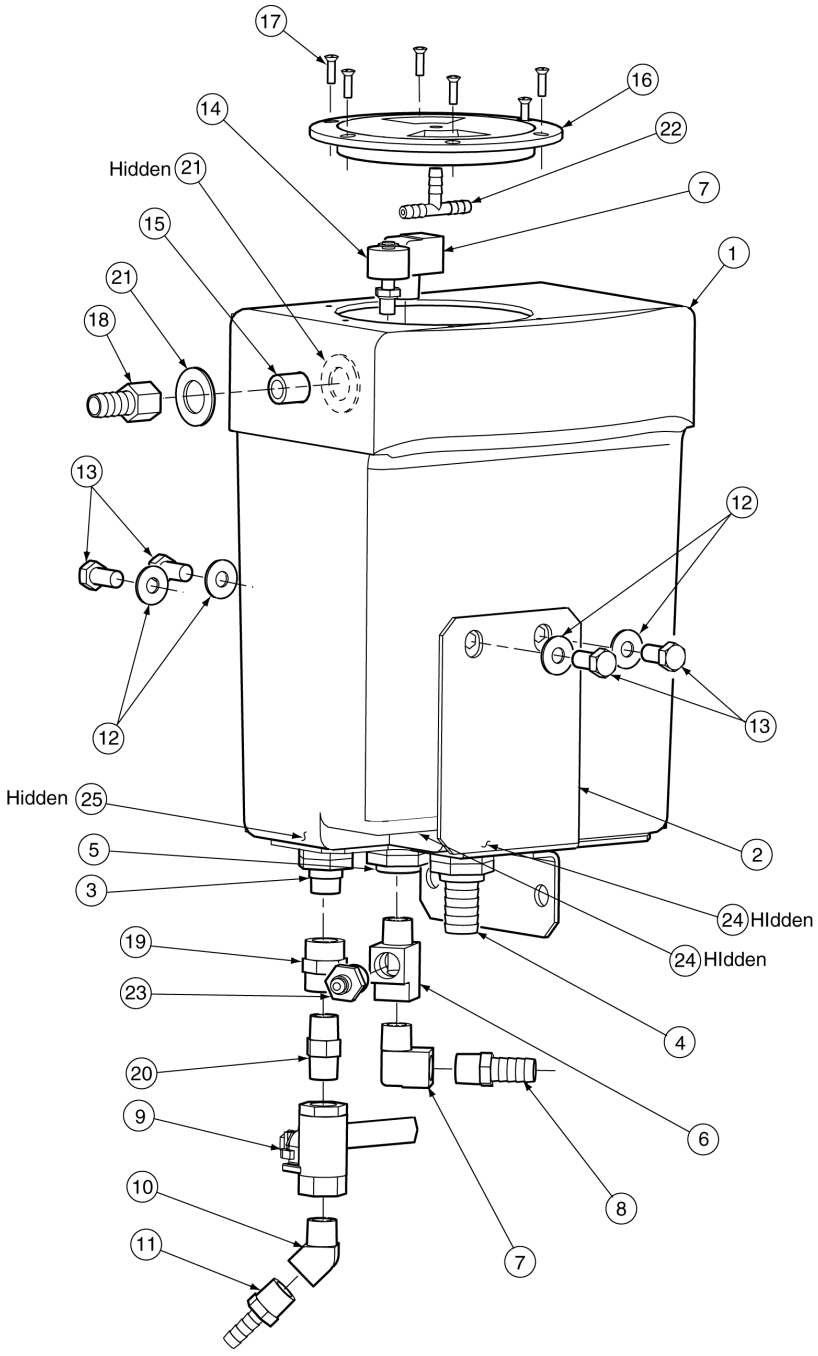
Figure 1-12 **Bypass Valve Assembly**
C4895 Rev—



Bypass Valve Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	169-083	Valve, Hi-PSI Bypass, Modified	1
2	106-008	Plug, ⅜" NPT Allen Head	1
3	052-086	Elbow, ⅜" NPT Street	2
4	052-128	Nipple, ⅜" NPT x ⅜" Male Propane	1
5	052-528	Nipple, ⅜" M JIC x ⅜" NPT	1
6	169-011	Valve, Hi Temp. Control, 180°	1
7	015-515	Bracket, Bypass Valve Mounting	1
8	052-142	Elbow, ⅜" FPT x FPT	1
9	052-538	Insert, #610 Brass	1
10	094-103	Nut, Bypass Valve Handle Stop	1
11	052-099	Insert, #26	1

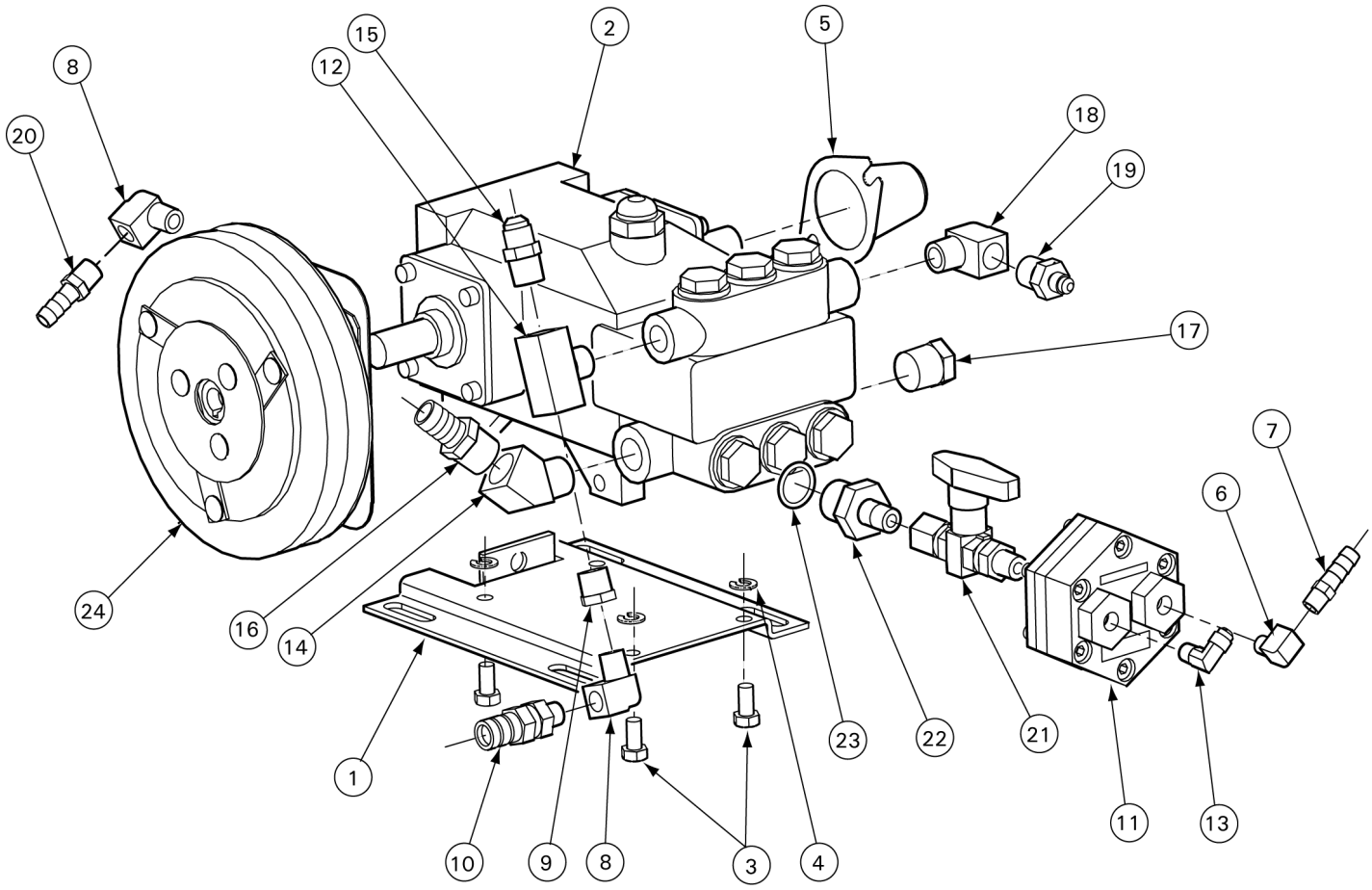
Figure 1-13 **Water Box Assembly**
C4727 Rev A



Water Box Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	159-105	Tank, Poly Water Box	1
2	015-640	Bracket, Water Box Mounting-Weldment	1
3	052-659	Bulkhead, ⅜" MPT x Straight	1
4	052-660	Bulkhead, ⅜" FPT x ⅜" FPT	1
5	052-661	Insert, ¾" Barb x Straight	1
6	052-023	Tee, ⅜" NPT Male Street	1
7	052-086	Elbow, ⅜" NPT Street	2
8	052-105	Insert, #68	1
9	169-064	Valve, ⅜" NPT Full Port Ball	1
10	052-083	Elbow, ⅜" NPT Street x 45°	1
11	052-104	Insert, #66	1
12	174-032	Washer,⅜" Flat	4
13	143-017-1	Screw, ⅜" x 16 x ¾" HHCS	4
14	157-004	Switch, Mini Liquid Level Reed Kill	1
15	169-165	Valve, Mechanical Float-Water Box	1
16	041-237	Cover, Water Box 4"	1
17	143-329	Screw, #8 x ½" Oval Head Sheet Metal	6
18	052-663	Insert, #F68	1
19	052-414	Coupler, ⅜" FPT Hex	1
20	052-074	Nipple, ⅜" NPT Hex	1
21	174-027	Washer, ¾" Flat	2
22	052-156	Tee, ¼" Plastic Vacuum Insert	1
23	052-662	Nipple, ⅜" NPT x ¼" M SAE	1
24	097-041	O-Ring, Bulkhead Fitting w/ ⅝"Hose Barb	2
25	097-042	O-Ring, Bulkhead Fitting w/ ⅜" Hose Barb	1

Figure 1-14 **Pump Assembly**
C4730 Rev A

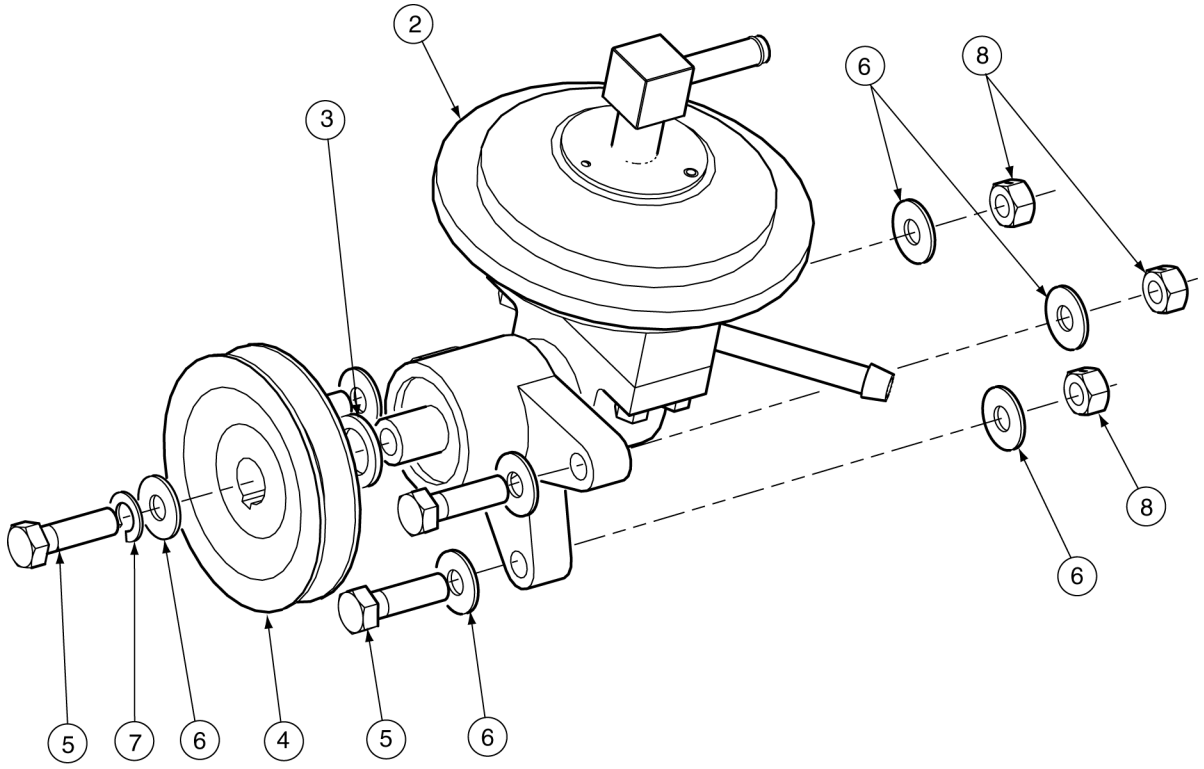


Note: Cat Pump Assembly details shown on page 6-6

Pump Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	015-661	Bracket, Cat Pump Bracket	1
2	111-080	Pump, 5GPM Javelin	1
3	143-337	Screw, HHCS M8 x 1.25 x16MM	4
4	174-018	Washer, 5/16" Lock	4
5	108-055	Protector, Cat 3CP Shaft	2
6	052-084	Elbow, 1/8" NPT Street	1
7	052-099	Insert #26	1
8	052-085	Elbow, 1/4" NPT Street	2
9	052-061	Bushing, 3/8" NPT x 1/4" FTP	1
10	169-050	Valve, High Pressure Safety (2200)	1
11	111-035	Assembly, Chemical Pump	1
12	052-447	Tee, 3/8" Branch	1
13	052-531	Elbow, 1/8" NPT x 1/4" SAE	1
14	052-081	Elbow, 1/2" NPT Street x 45°	1
15	052-128	Nipple, 3/8" NPT x 3/8" Male Propane	1
16	052-130	Insert, #810 Brass	1
17	106-004	Plug, 1/2" NPT Hex	1
18	052-086	Elbow, 3/8" Street	1
19	052-662	Nipple, 3/8"NPT 1/4" M SAE	1
20	052-102	Insert, #46	1
21	169-176	Valve, 2-way Chemical Pump	1
22	001-082	Adapter, Chemical Pump to CAT 3CP	1
23	097-057	O-Ring Adapter-Chemical Pump	1
24	036-007	Clutch, 5CP Cat Pump	1
Not Shown:			
	052-071	Nipple, 1/4" Hex	

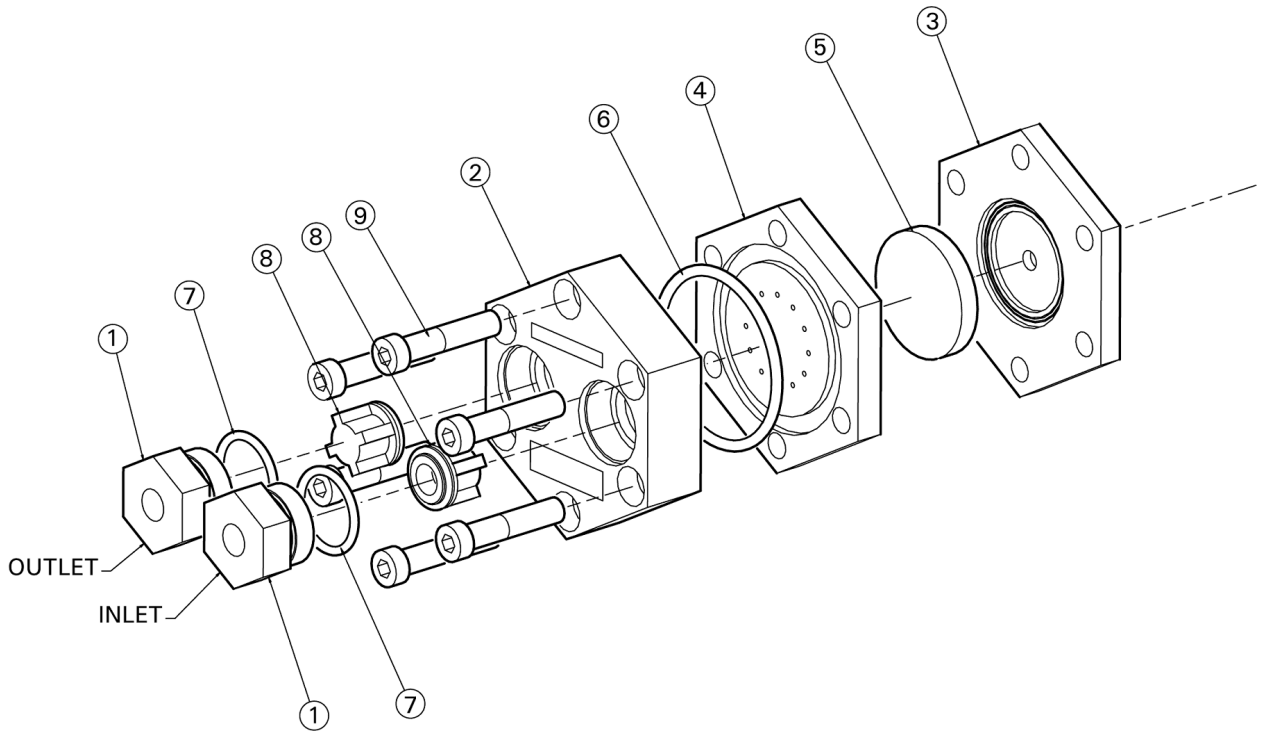
Figure 1-15 **Air Pump Assembly**
C4734 Rev B



Air Pump Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	————	DELETED	—
2	111-157	Pump, Air Injection-Modified	1
3	154-091	Spacer, Air Pump Pulley	1
4	109-085	Pulley, AK35 Modified to 16.5MM Bore	1
5	143-019	Machine Screw, Hex Hd, ⅜"-16UNC x 1.25" Lg.	4
6	174-032	Washer, ⅜" Flat	7
7	174-057	Washer, ⅜" Lock	1
8	094-015	Nut, ⅜"-16UNC Hex 2-way Locking	3

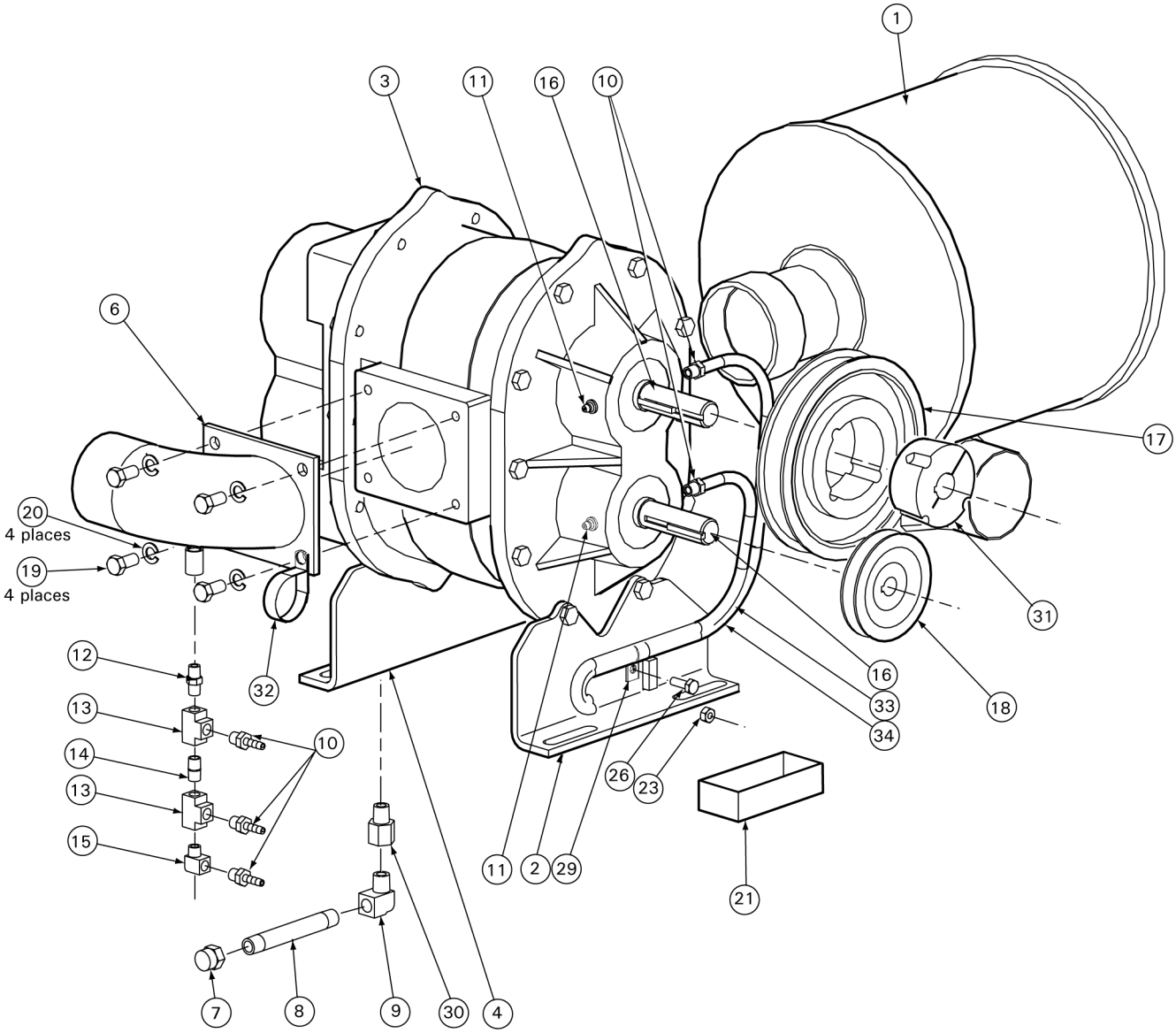
Figure 1-16 **Chemical Pump Assembly**
C4416 Rev A



Chemical Pump Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	106-110	Plug, Check Valve	2
2	064-015	Cover, Chemical Pump	1
3	111-030	Body, Chemical Pump	1
4	105-071	Mid Plate, Chemical Pump	1
5	046-010	Diaphragm, Chemical Pump	1
6	097-055	O-Ring, Midplate AN, Size-227	1
7	097-056	O-Ring, Check Valve Plug	2
8	169-155	Check Valve, Last Step Chemical Injection	2
9	143-152	Machine Screw, Soc. Hd, 5⁄16″-24UNF x 1.50″ Lg	6

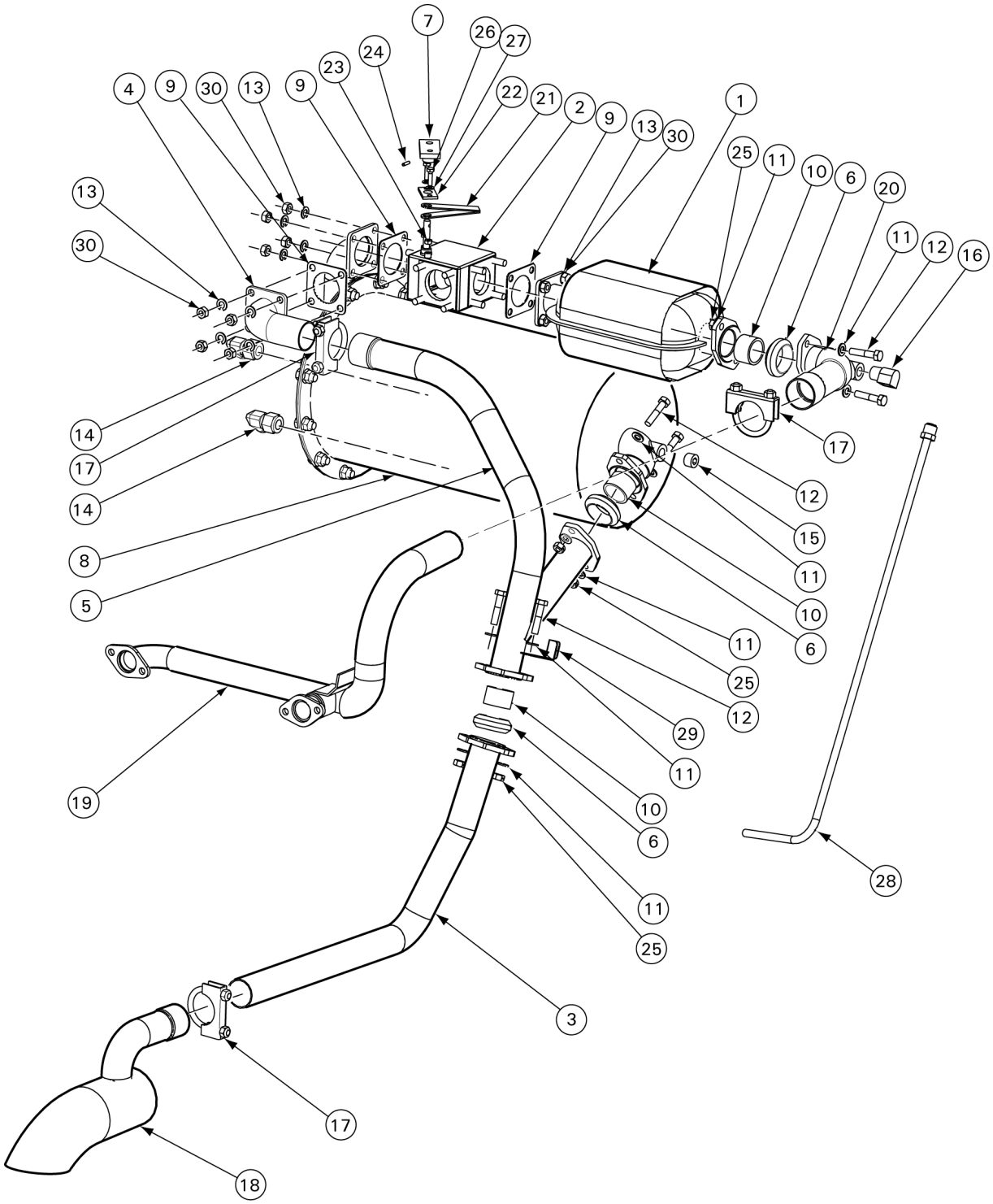
Figure 1-17 **Blower Assembly**
D4724 Rev A



Blower Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	093-082	Silencer, 3" Javelin-Weldment	1
2	015-633	Bracket, Blower Foot Front	1
3	111-023	Blower, 4.7 Hydra Whisper	1
4	015-634	Bracket, Blower Foot Mount Rear	1
6	011-041	Adapter, Blower Inlet	1
7	027-010	Cap, ¼" NPT	1
8	052-647	Nipple, ¼" NPT x 4" Lg.	1
9	052-085	Elbow, ¼" NPT Street	1
10	052-293	Insert, #24	3
11	052-505	Zerk Fitting, ⅛" MPT Grease Fitting	2
12	052-069	Nipple, ⅛" NPT Hex	1
13	052-092	Tee, ⅛" FPT	2
14	052-057	Nipple, ⅛" NPT Close	1
15	052-084	Elbow, ⅛" NPT Street	1
16	077-001	Key #3 & #4 Vacuum Pump Drive	2
17	109-105	Pulley, 8MX-63S-21 Blower	1
18	109-082	Pulley, AK35 with ⅝" Bore	1
19	143-017	Screw, ⅜"-16UNC x .75" LG. Hex Head	4
20	174-057	Washer, ⅜" Lock	4
21	013-035	Box, Blower Grease Capture	1
23	094-010	Nut, ¼"-20UNC Hex	1
26	143-001	Screw, Hex Hd, ¼"-20UNC x .75" Lg	1
29	033-046	Clamp, ½" Wide x ½" Tube	1
30	052-062	Bushing, ¼" NPT x ¼" FPT	1
31	020-019	Bushing, ⅞" Taper-Lok	1
32	033-116	Clamp, 1½" Cushion Loop w/ 7/16" Mounting	1
33	068-030	Hose, ¼" Vacuum	1
34	068-030	Hose, ¼" Vacuum	1
	052-097	Insert, #24	2
Not Shown:			
	001-100	Adapter,Hose, .3 thread x 3"	1
	015-781	Idler Bracket	1
	068-522	Hose, 3" X 1¼"	1
	094-106	7/16" Jam Nuts	2
	109-110	Pulley, Idler, 3.95"	
	150-055	Shaft, Idler Dual V-Belt	

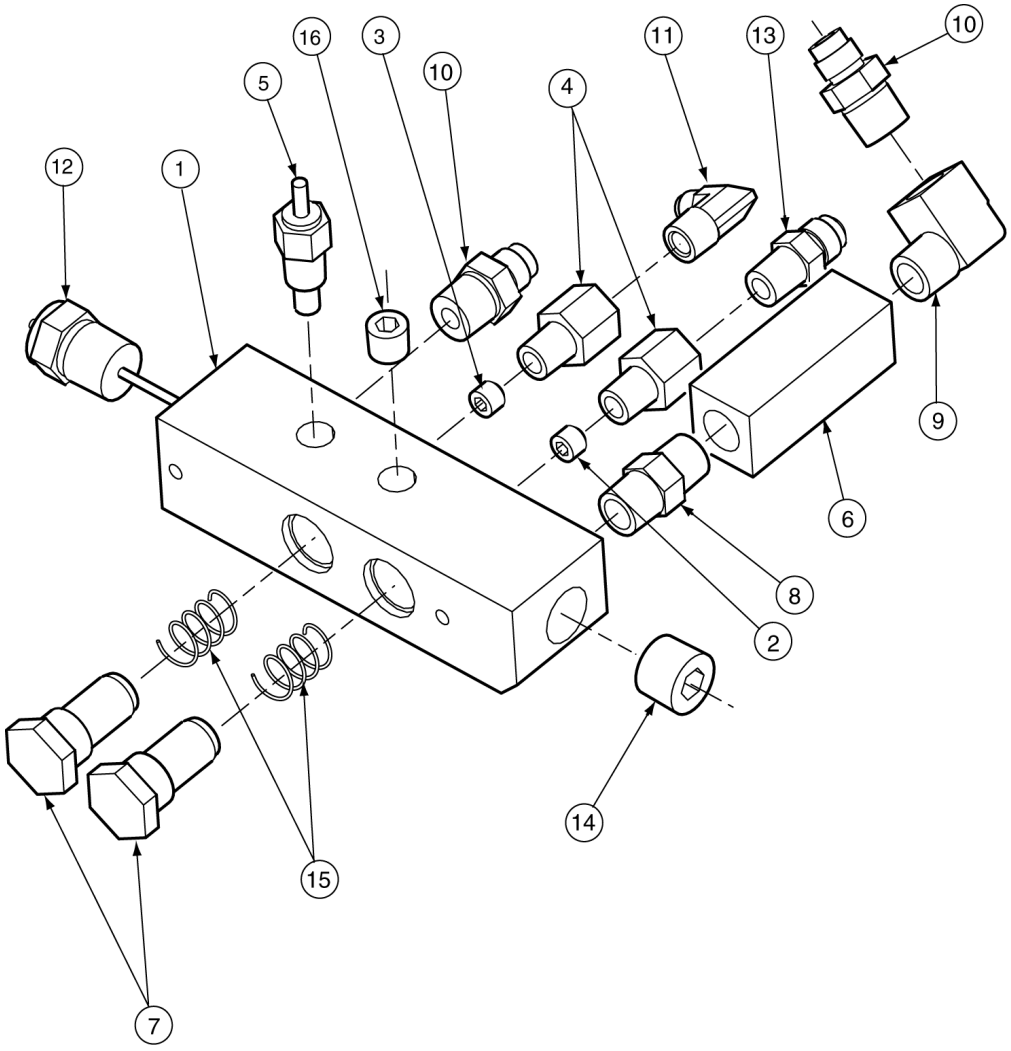
Figure 1-18 **Exhaust Assembly**
C4733 Rev A



Exhaust Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	093-066	Catalytic Converter with Flanges	1
2	169-045	Valve, Exhaust Diverter	1
3	125-125	Tube, Exhaust Final	1
4	052-642	Elbow, 1.50 with Flanges	1
5	125-116	Tube, "Y" with Flared Ends	1
6	057-177	Gasket, Exhaust Donut 1.50	3
7	015-631	Bracket, Air Cylinder Actuation	1
8	038-045	After Burner Heat Exchanger Assembly	1
9	057-146	Gasket, Four Hole Exhaust Diverter	3
10	125-128	Tube, 1⅜" O.D. x ⅛" Wall x ⅞" Lg	3
11	174-049	Washer, 5⁄16" Flat	12
12	143-501	Screw, 5⁄16"-18UNC x 1½" Lg	6
13	174-069	Washer, 5⁄16"Diverter Valve	12
14	052-600	Elbow, ½" Tube x ⅜" FPT	2
15	106-008	Plug, ⅜" NPT Allen Head	1
16	052-385	Elbow, ⅜" Male Comp. to ⅜" NPT	1
17	033-068	Clamp, 1½" Muffler	2
18	001-087	Adapter, Final Exhaust	1
19	090-052	Tube, Manifold to Exhaust	1
20	052-671	Elbow, Manifold to Catalytic Converter	1
21	155-030	Spring, Leaf	1
22	138-010	Retainer, Leaf Spring	1
23	094-027	Nut, #10-24 UNC Hex	2
24	103-005	Pin, ⅛" x ½" Roll	2
25	094-081	Nut, 5⁄16" -18 UNC Hex 2-Way Locking	6
26	143-132	Screw, #10-24 UNC x .75" Lg. Hex	2
27	174-001	Washer, #10 Flat	2
28	125-149	Tube, Air Pump	1
29	015-711	Bracket, Air Pump Tube, Holding	1
30	094-012	Nut, 5⁄16"-18" UNC Hex	12

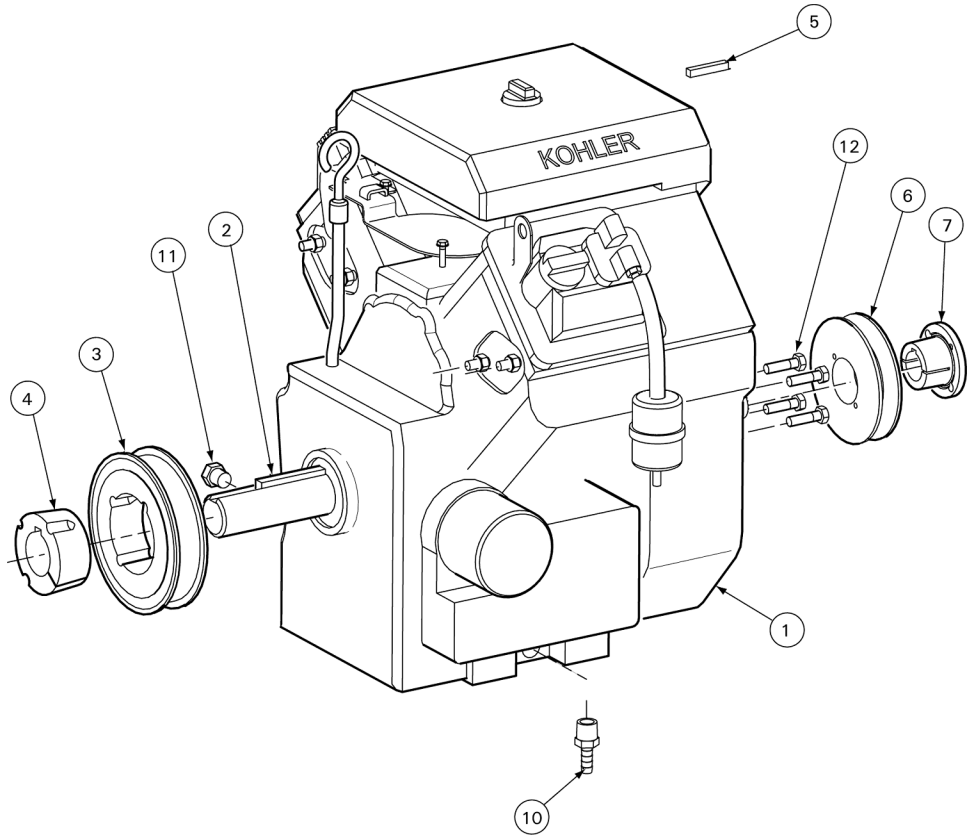
Figure 1-19 **Hi PSI Manifold Assembly**
C4735 Rev—



Hi PSI Manifold Assembly Parts List

REF.	PART NO.	DESCRIPTION	QTY
1	090-010	Manifold, Hi-PSI	1
2	180-006	Orifice, Set Screw .061"	1
3	180-004	Orifice, Set Screw .033"	1
4	052-423	Bushing, Modified Set Screw Orifice	2
5	149-039	Sender, Temperature	1
6	169-175	Valve, ⅜" FPT x ⅜" FPT Check	1
7	049-016	Filter, ¼" NPT Replacement "Y"	2
8	052-074	Nipple, ⅜" NPT Hex	1
9	052-086	Elbow, ⅜" NPT Street	1
10	052-528	Nipple, ⅜" M JIC x ⅜" NPT	2
11	052-532	Elbow, ¼" SAE x ¼" JIC	2
12	149-520	Sensor, Controller Temperature	1
13	155-533	Nipple, ⅜" JIC x ¼" NPT	1
14	106-111	Plug, ½" NPT Allen Head	1
15	155-020	Spring, .54 O.D. x .041 Wire x 1.0 Lg.	2
16	106-007	Plug, ¼" NPT Allen Head	1

Figure 1-20 Engine Assembly - Kohler 25
C4728 Rev A



REF.	PART NO.	DESCRIPTION	QTY
1	047-020	Engine, 25 HP Kohler	1
2	077-004	Key,⅜" x ⅜" x 2.5" Lg.	1
3	109-100	Pulley, 6" Javelin	1
4	020-050	Bushing,1 7/16" Steel	1
5	077-006	Key, ¼" x 1.5" Lg.	1
6	109-089	Pulley, BK45H Cat Pump Drive	1
7	020-025	Bushing, #H x 1" Bore	1
8	————	DELETED	—
9	————	DELETED	—
10	052-104	Insert, #66	1
11	106-003	Plug, ⅜" NPT Hex	1
12	143-083	Screw, 8MM x 30MM Lg., Grade 8 Hex	4

Cleaning and Chemicals

Javelin
Section 2-1

Your mobile carpet cleaning plant has been engineered using the latest and most sophisticated technology available to produce the finest carpet cleaning results possible. Despite this, however, it remains only a tool of the carpet cleaning trade, and can produce only as good a job as the person operating it.

PRECAUTIONS

There are no short cuts to good carpet cleaning. It requires time, cleaning knowledge and the use of good chemicals. Therefore, the manufacturer recommends the use of spotting agents and traffic lane cleaners, as required, prior to the actual cleaning of carpeting.

The use of some chemicals through your mobile carpet cleaning plant can seriously damage the internal plumbing, high pressure pump and heater. These harmful chemicals include concentrated acid (see the pH chart at the end of this section), solvents, and some paint, oil, and grease removers with a high concentration of solvents.

The manufacturer recommends only the use of chemicals containing rust and corrosion inhibitors and water softening agents to prevent chemical buildup which may lead to component failure and warranty invalidation.

⚠ CAUTION

The increased demand for "clear water" rinsing results in the need for special care when using these acid based chemicals in your equipment. The negative side of these products is the corrosive effects the acid can have on metals, including swivels, pumps, heat exchangers, etc.

Bridgepoint will not warranty parts that have been damaged from using unprotected acid products that have obviously caused failures.

CLEANING STROKE PROCEDURE

Purpose:

To eliminate excess moisture remaining in the carpet fiber and the sawtooth appearance which results from diagonal movement of the cleaning tool on all types of carpet.

Procedure:

Always move the cleaning tool in smooth, forward and backward strokes. Apply slight pressure to the forward stroke while the solution is injected into the carpet. When extracting (drying), apply firm pressure on the forward stroke to ensure a positive "lock" for the vacuum and minimize the "hopping" effect resulting on carpet that is not smooth. During the forward and reverse strokes, movement to the right or left should only be accomplished at the extreme rear of the stroke. Overlapping is also important to ensure even application of solution and prevent saturation when cleaning wand is stopped twice at the same point at the rear of the cleaning stroke. This is illustrated at the end of this section.

Failure to adopt this procedure can result in increased chance of "clean streaks," fiber shrinkage, brownout and longer drying periods.

OVERWETTING

Overwetting is annoying to all concerned, and may leave a bad impression of the cleaning process used.

THESE ARE SEVERAL AREAS THAT WILL CAUSE OVERWETTING

1. Too few vacuum strokes or improper saw-tooth vacuum strokes as shown in the following illustration.
2. Obstructed, cut or kinked hoses.
3. Vacuum tank drain valve left partially open.
4. Clogged vacuum blower filter or vacuum tank lid not sealing properly.
5. Cleaning a heavily foam-saturated carpet without defoamer. (We recommend crystal type.)

Figure 2-1: pH Chart

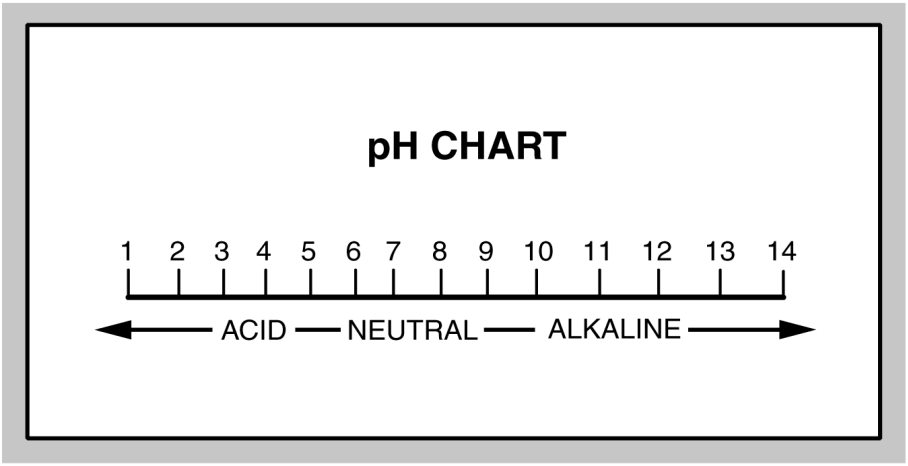
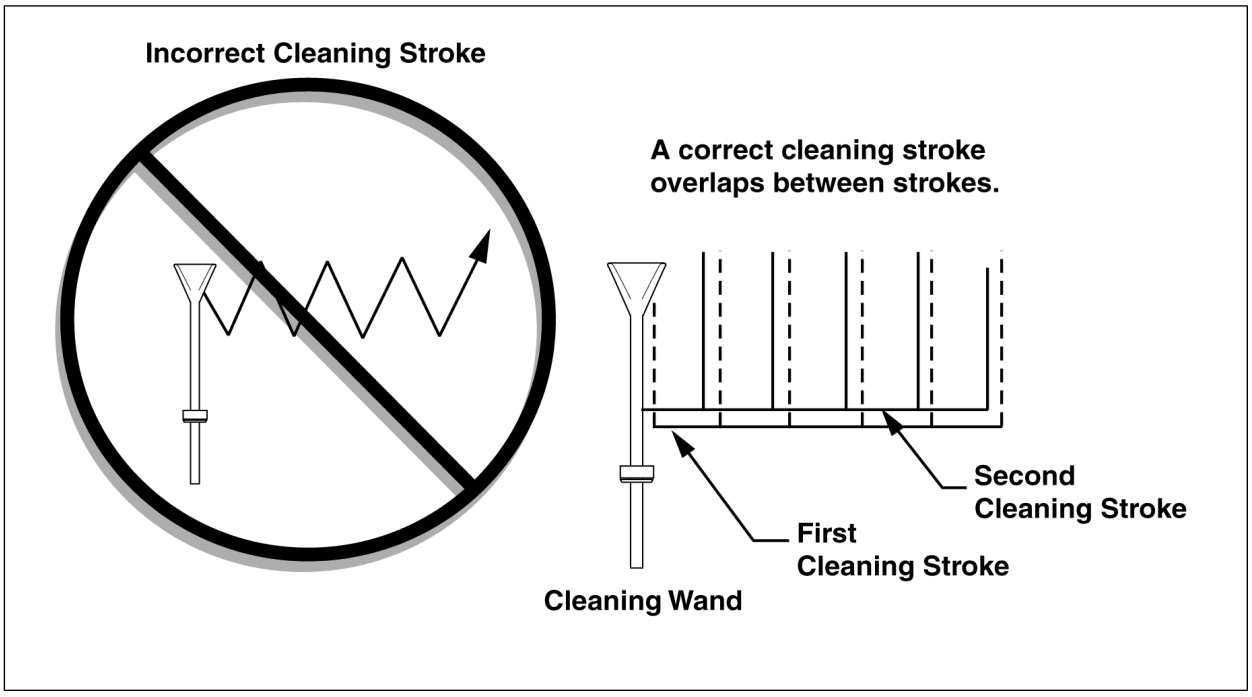


Figure 2-2: Cleaning Stroke Procedure



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Operating Instructions

Javelin

Section 3-1

START UP

1. Perform daily and periodic maintenance as specified in this Owner's Manual.
2. Connect all required hoses, including a garden hose for water supply.
3. Connect the cleaning tool to the length of hose required to perform the cleaning.

⚠ CAUTION

Water box must be full prior to ignition.

⚠ WARNING

The machine cannot be *run* in the "IDLE" position for cleaning upholstery, carpet or floor extraction. This will void the warranty.

NOTE: In order to achieve consistent adjustable temperatures, an operating pressure of 200 PSI must be maintained.

NOTE: Under exceptionally long periods of 'No Flow' conditions, the "Over Temp" light may come on momentarily. This indicates that the high temp solenoid is activated to control water temperature.

Carpet or Hard Surface Cleaning

1. Start the engine with throttle switch in the "**IDLE**" position. Allow machine to run in idle for **2 - 3 minutes to warm up.**
2. Connect hoses.
3. Connect wand or tool.
4. Pull THROTTLE to **"HIGH"**.
5. If used, turn PUMP IN switch to **"ON"** (switch light will be illuminated).
6. Turn PUMP switch to **"ON"** (switch light will be illuminated).
7. Turn DIVERTER switch to **"ON"** (switch light will be illuminated).
8. Set temperature to desired level.
9. If used, turn PUMP OUT switch to **"ON"** (switch light will be illuminated).

10. Set cleaning pressure at desired level.

    Suggested Settings

    Carpet Cleaning: 300 - 400 psi;

    Hard Surface: 900 -1200 psi or as indicated on the tool.

Note: If pressure is above 900 psi the chemical pump shut-off valve *must be turned **OFF***. Failure to turn the chemical pump off may result in ***internal damage.***

11. Select chemical "1" or "2"

12. Turn the chemical selector valve to the "PRIME" position to purge any air from the system.
    a. If the chemical does not begin to flow through the flowmeter within 60 seconds, remove the chemical PRIME line (the one without the filter) from the chemical container and insert it into the vacuum hose connection at the front of the machine.

    b. When the chemical begins to flow through the flowmeter, with the flow indicator reading maximum flow and the PRIME line pulsing, turn the chemical selector valve to "**ON**", and place the chemical PRIME line back into the chemical container.

    c. Then, while spraying solution from the cleaning tool, adjust the chemical flow by turning the chemical adjustment knob as necessary.

13. Commence cleaning.

Upholstery Cleaning

1. Start engine with the THROTTLE switch in the **"IDLE"** position. Allow the machine to run in idle for **2 - 3 minutes to warm up.**
2. Connect hoses.
3. Connect the upholstery tool.
4. Pull the THROTTLE to **"HIGH"**.
5. If used, turn the PUMP IN switch to **"ON"** (switch light will be illuminated).
6. Turn the PUMP switch to **"ON"** (switch light will be illuminated).
7. Turn the DIVERTER switch to **"ON"** (switch light will be illuminated). During upholstery cleaning if you desire a lower temperature you may want to leave the DIVERTER switch in the "**OFF**" position. The engine

exhaust heat exchanger is bypassed, the heat will be obtained from the engine coolant and blower exhaust heat exchangers.

8. Set the temperature to desired level.
9. If used, turn PUMP OUT switch to **"ON"** (switch light will be illuminated).
10. Set cleaning pressure at desired level (300 –400 psi).
11. Select chemical "1" or "2".
12. Turn the chemical selector valve to the "PRIME" position to purge any air from the system.
    a. If the chemical does not begin to flow through the flowmeter within 60 seconds, remove the chemical PRIME line (the one without the filter) from the chemical container and insert it into the vacuum hose connection at the front of the machine.

    b. When the chemical begins to flow through the flowmeter, with the flow indicator reading maximum flow and the PRIME line pulsing, turn the chemical selector valve to "**ON**", and place the chemical PRIME line back into the chemical container.

    c. Then, while spraying solution from the cleaning tool, adjust the chemical flow by turning the chemical adjustment knob as necessary.
13. Commence cleaning.

Flood Extraction

1. Start the engine with the THROTTLE switch in the **"IDLE"** position. Allow the machine to run in idle for **2 - 3 minutes to warm up.**
2. Connect hoses.
3. Connect wand or tool.
4. Pull the THROTTLE to **"HIGH"**.
5. If used, turn PUMP OUT switch to **"ON"** (switch light will be illuminated).
6. Commence water extraction.
   *Note: Make sure the diverter and pump switch are in the **"OFF"** position.*

Flood Damage Work for the Standard Javelin

When using equipment for flood damage, you *must* have a fresh water source hooked up at all times to allow a cold water source into the machine. This will prevent overheating during long periods of vacuum recovery.

Shut Down

1. Flush clear water through the chemical system for 10 seconds. Turn off the chemical flowmeter.
2. Cool the machine by lowering the adjustable thermostat to the "**LOW**" position and the DIVERTER CONTROL switch to the "**OFF**" position while spraying the cleaning wand into the vacuum hose for three to five minutes. The chemical will be flushed from the unit, hoses and cleaning tool.

   NOTE: If the machine is not properly cooled, the water box can overflow.
3. Remove the vacuum hose.
4. At this time, the blower should be lubricated with an oil-based lubricant. See **Lubrication** in the Blower Operation and Maintenance Manual included in Section 8 of this document.

   NOTE: If freeze guarding is necessary, perform the freeze guard procedure at this time. (see Section 4 for **Freeze Guarding**)
5. Lower the engine RPMs to idle.
6. Turn the key off.
7. Drain the water box.
8. Drain the vacuum tank. The vacuum filter should be cleaned prior to mobilization of the van.

   NOTE: In accordance with the EPA, state and local laws, **do not dispose of waste water into gutters, storm drains, streams, reservoirs, etc.**
9. Perform daily maintenance as prescribed in this manual.

Freeze Guard

Javelin
Section 4-1

ANTIFREEZE PROCEDURE

1. Begin by attaching your garden hose, or pump-in hose, to the machine. Now, remove the chemical line from the chemical jug and place it in a 50/50 mixture of antifreeze and water. Turn ignition switch on. Spray water. Allow the antifreeze solution through the chemical flowmeter.

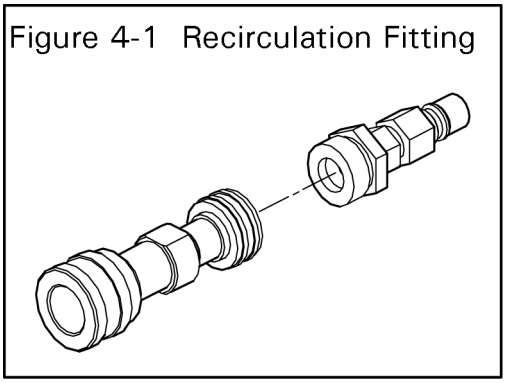
2. Remove the garden hose, or pump-in hose. Now, open the water box drain valve and drain all the water from the machine.

3. With the machine drained of water, close the water box drain and pour one (1) gallon of 50/50 antifreeze and water mix into the water box. Run the machine until you see the antifreeze mix flowing through the wand. This should use approximately 2/3 of the solution.

   When using the Recirculation Kit (part no. 078-058), fill a third of the water box with a 50/50 antifreeze mix.

   Attach the recirculation fitting provided in the kit to the garden hose quick-connect (see illustration to the right) and this combination to the front of the machine.

   Figure 4-1 Recirculation Fitting

   Attach one section of female/female solution hose to the outgoing solution fitting on the front of the machine and the other end to the garden hose and recirculation fitting combination that is attached to the front of the machine (or as many sections as you want, if you wish to freeze guard your hoses).

4. Start the machine and allow it to run for two (2) minutes.

ANTIFREEZE PROCEDURE (cont.)

5. Remove the garden hose inlet fitting from the end of your garden hose and plug it into the front of the machine. Leave it plugged in until the next time the machine is used.
   With the hoses and wand connected, run the machine and spray the water/antifreeze solution out of the wand until the 'low water' switch in the water box shuts the pump clutch off. Your machine is now freeze-protected.

SOLUTION HOSE AND WAND FREEZE GUARD PROCEDURE (OPTIONAL):

6. Attach the solution hoses and wand to the machine. (Dependent upon the amount of hose attached, more antifreeze solution may be needed in the water box. With the machine running, spray the wand into a container to recapture the antifreeze solution. Continue to spray the wand until the pump clutch shuts off.

Recovering Antifreeze for Re-Use:

Open the water box drain valve and allow the antifreeze solution to drain into a sealable container so that it may be used again.

Before cleaning with the machine again, flush the remaining antifreeze solution from the system by spraying water through the hoses and wand until all signs of antifreeze are gone.

⚠ CAUTION

One manufacturer of antifreeze cautions:
"WHEN DISPOSING OF USED ANTIFREEZE COOLANT: Follow local laws and regulations. If required, dispose at facilities licensed to accept household hazardous waste. If permitted, dispose in sanitary sewer systems. Do not discard into storm sewers, septic systems, or onto the ground."

ANTIFREEZE PROCEDURE (cont.)

⚠ WARNING

This warning appears on the label of one brand of antifreeze:
"HARMFUL OR FATAL IF SWALLOWED. Do not drink antifreeze coolant or solution. If swallowed, induce vomiting immediately. Call a physician. Contains Ethylene Glycol which caused birth defects in animal studies. Do not store in open or unlabeled containers.

"KEEP OUT OF REACH OF CHILDREN AND ANIMALS."

VACUUM FREEZE GUARD PROCEDURE

1. Siphon a 50/50 mixture of antifreeze and water through the chemical flow meter.

2. Disconnect the incoming water. Remove the garden hose quick connect assembly from the end of the hose and attach it to the machine.

3. Drain the water box.

4. Attach the freeze guard hose to the recovery tank.

5. Plug the other end of the freeze guard hose into the outgoing quick connect on the front of the machine.

6. Attach the "whip" hose (10 feet of 1½ inch vacuum hose) to the recovery tank and place it over the garden hose quick connect fitting.

7. Switch the machine into low or high speed.

8. Allow the vacuum to pull the water from the incoming and outgoing water lines simultaneously.

9. As soon as all the water is evacuated. Switch the machine into the idle position, then turn it off.

FREEZE PROTECTION OF THE PUMP-IN SYSTEM

1. Drain the fresh water tank.
2. Remove the garden hose adapter from the pump-in pump hose and position the hose so it is pointing outside the van.
3. Turn on the pump-in pump and run for 1-2 minutes till all the water is purged from the hose.

   NOTE: The next time the unit is used it may take a few minutes before the water box begins to fill.

Water and Chemical System

Javelin

Section 5-1

This high pressure chemical system has been designed to be simple and trouble free.

WATER AND CHEMICAL FLOW OPERATION

The chemical pump draws the chemical from the inlet filter which is in the chemical container. It flows through the flow meter indicating the GPH's of chemical being used. The chemical then flows through the chemical pump to the chemical selector valve. The chemical valve can be used to prime the pump (evacuate air from the system), inject chemical into the system or turn the chemical flow off. In the "ON" position, chemical flows through the metering valve, and is injected into the heated water path just prior to its leaving the machine.

The low water float switch in the water box, is a safety switch that is designed to protect your system from sudden or unexpected loss of water supply. If, for example, the water source at the house were turned off, the water level of the water box would drop, activating the low water float switch, which automatically disengages the system and prevents the water pump from running dry.

The desired chemical injection ratio may be obtained by an adjustment of the chemicalflowmeter during the spraying of water through the cleaning tool.

CHEMICAL SYSTEM MAINTENANCE

The chemical lines may need to be flushed with vinegar periodically to prevent abnormal chemical build-up. This flushing may be done by removing the clear plastic hose from the chemical jug and inserting it into a one quart container of vinegar. This should be done with the chemical flowmeter setting 10 GPH. Simply spray water from the wand until the quart of vinegar is exhausted. Then repeat the process with one quart of clear water to void all lines of vinegar.

Manifold Block

Located in the manifold block are the Primary and the Secondary orifice. Weekly maintenance is needed on these orifices and in very hard water areas they may need servicing more often (see Section 1- Hard Water Area map). Hard water deposits are typically the reason these orifices become blocked.

Primary Orifice

The function of the primary orifice is to keep the water in the high pressure system in continuous circulation. By allowing the water to circulate, consistent cleaning temperatures are maintained.

If the primary orifice becomes blocked, the water flow stops circulating. The water system will then have pockets of water which become 'super-heated' and when the water begins to flow through the cleaning tool, the 'super-heated' water moves through the system.

Located in the water system is a high temperature shut-down switch. When the 'super-heated' water flows past the switch, it senses an elevated temperature which causes the machine to shut down.

Secondary Orifice

The function of the secondary orifice is to allow a controlled amount of water to the dump solenoid. The only time the dump solenoid operates is when the diverter valve cannot maintain the solution temperature at the desired level. It then allows a small amount of the heated water to be discharged from the high pressure system and the water temperature is cooled to the desired level. This normally takes place for 1-2 seconds.

If the secondary orifice becomes blocked, this can cause the machine to shut down.

Figure 5-1 **Water Flow Diagram**
D4383 Sht 1 Rev_

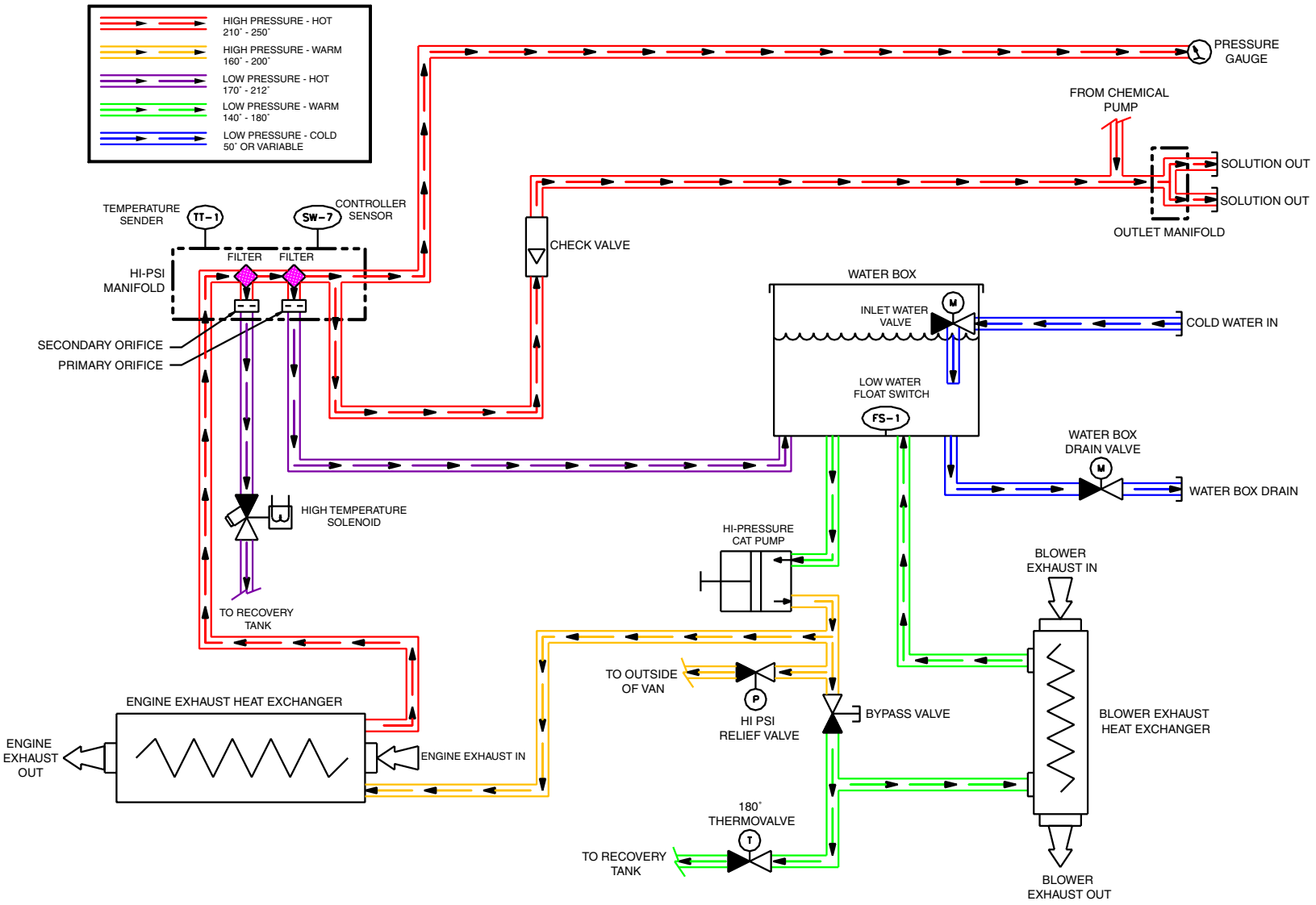


Figure 5-2 **Chemical System Flow Diagram**
D4383 Sht 2 Rev—

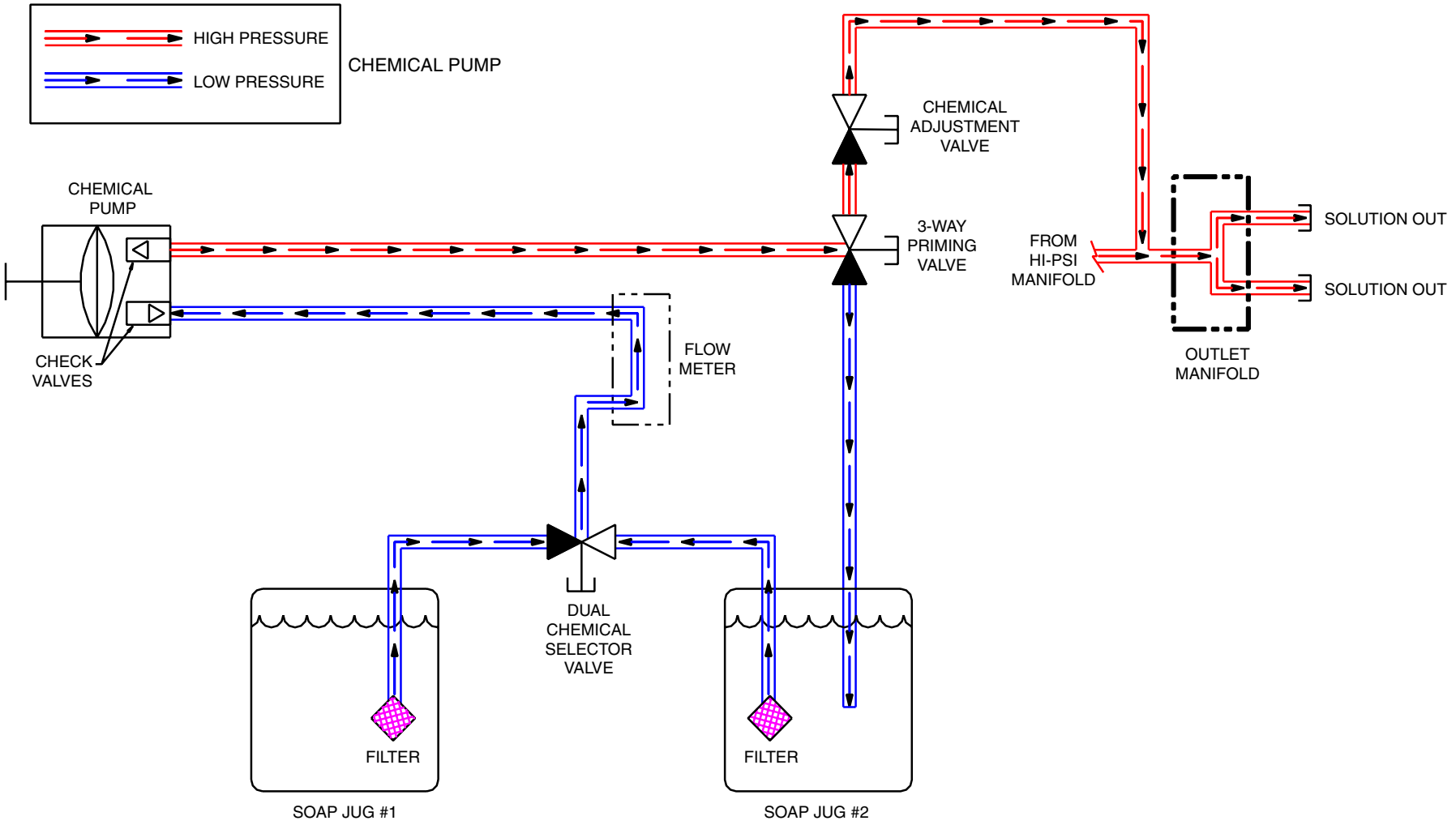
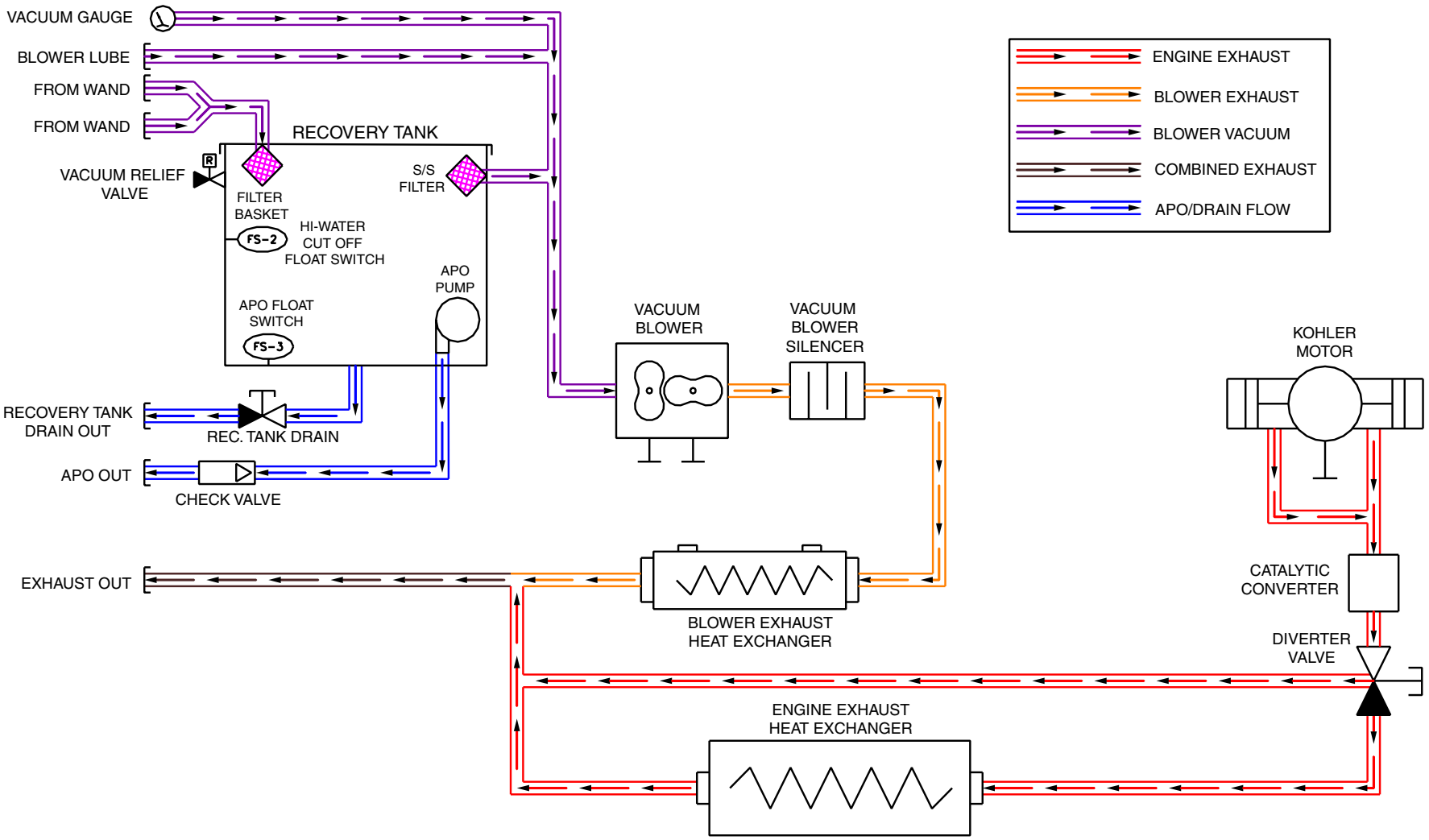


Figure 5-3 **Exhaust, Vacuum, Coolant and APO Diagram**
D4383 Sht 3 Rev __



Chemical Tank Troubleshooting

No.	Problem/Possible Cause	Solution
1.0	**There is a loss of water pressure.**	
1.1	The water box *water supply hose* is missing. This will cause aeration and turbulence in the tank.	Look inside the water box and determine if a water inlet hose is present. If the hose is missing, order a new hose from your Bridgepoint distributor and install it.
1.2	Foreign material is blocking the *outlet hole* for the pump in the bottom of the *water box*.	Inspect the outlet hole leading to the pump in the bottom of the water box. Remove any foreign material blocking the hole.
1.3	Foreign material is blocking the *water supply hose* leading to the pump from the water box.	Remove the water supply hose between the water box and the pump. Sight through the hose. Remove any foreign material from the hose. Reattach the hose.
1.4	The *water supply hose* from the water box to the pump is kinked or blocked.	Remove the hose and clean it. If it is kinked, order a replacement hose from your Bridgepoint distributor.
1.5	The end of the water box *water supply hose* is pointed directly at the pump inlet hole in the bottom of the water box.	Inspect the water box and determine the orientation of the water hose. If it is pointing directly at the pump inlet hole in the bottom of the tank, reposition the hose to point towards the opposite side of the tank from the inlet
1.6	The water box *water supply hose* is blocking the outlet hole leading to the pump in the bottom of the water box.	The water inlet hose may have to be shortened or lengthened to avoid blocking the outlet hole.

CHEMICAL TANK TROUBLESHOOTING (cont.)

No.	Problem/Possible Cause	Solution
1.0 (cont.)	**There is a loss of water pressure**	
1.7	There is an air leak in the *water supply hose* from the water box to the pump.	Inspect the supply hose for worn or damaged areas. Also check for loose fittings. Replace the hose or fittings if necessary.
1.9	There is foreign material in the inlet or outlet valves of the *pump*.	Inspect the valves and remove any foreign material.
1.10	The controlled *orifice* is loose and water is flowing around it.	Clean the orifice and tighten the fittings around it. This may require adding an "O" ring around the jet. Also, check the fitting for wear. If there is excessive wear, replace the fitting.
1.11	The *bypass valve* is malfunctioning.	Repair kits are available **NOTE:** Use a water resistant high temperature lube.
1.12	The *pump manifold* is warped from over-pressurizing the system. (freezing).	Inspect the manifold with a straight edge. Replace it if necessary.
1.13	The *valve spring retainers* in the valve manifold are loose. (Retainers should fit snug.)	Install a valve kit

CHEMICAL TANK TROUBLESHOOTING (cont.)

No.	Problem/Possible Cause	Solution
2.0	**The water temperature is too low.**	
2.1	The *water dump (system control)* solenoid is stuck open.	Remove the electrical wires from the solenoid. If the solenoid continues to dump, disassemble andcheck for residue. Clean and replace the solenoid.
2.2	The *orifice (spray nozzle*) in the cleaning tool is worn, defective, or the wrong size.	Replace or change the orifice size.
2.3	The *incoming water supply* is extremely cold.	Keep the incoming water supply hoses away from ice and snow during winter months.
2.4	There is an *exhaust* leak.	Inspect the exhaust system for leaks. Tighten any loose clamp welds or replace any broken parts.
2.5	There is excessive *pressure*.	Adjust the pressure regulator for less pressure.
2.6	The adjustable *temperature control* dial is set too low or malfunctioning.	If returning the temperature control dial to maximum does not work, replace the temperature control unit.
2.7	The *divert switch* is in the "Off" position.	Turn the diverter switch to the "On" position.
2.8	The *engine speed* is low.	
2.9	A *heat exchanger* is scaled.	De-scale the heat exchanger or remove it and take it to a radiator shop to be boiled out.
2.10	A *heat exchanger* is carbon-coated.	Remove heat exchanger core and clean.

CHEMICAL TANK TROUBLESHOOTING (cont.)

No.	Problem/Possible Cause	Solution
2.0 cont.)	**The water temperature is too low.**	
2.11	The *temperature gauge* sending unit is defective.	Replace sending unit.
2.12	The *temperature gauge* is defective.	Replace gauge.

CHEMICAL TANK TROUBLESHOOTING (cont.)

No.	Problem/Possible Cause	Solution
3.0	**The water temperature is excessive.**	
3.1	The *filter* in front of the controlled orifice is clogged.	Inspect the filter. Clean it if necessary.
3.2	The controlled *orifice* is clogged.	Inspect the controlled orifice. Clean it if necessary.
3.3	The *dump solenoid (system control)* valve is not opening.	Short out the dump sensor. If the dump solenoid valve has 12 volts across the terminals and does not open, replace it.
3.4	The *dump (system control) sensor* is not working.	The sensor switch is normally open.
3.5	The *engine speed* is too low or too high.	Reset the engine speed. Refer to the Engine Operation and Maintenance manual.
3.6	The *temperature gauge* is defective.	Place the end of a grounded wire to the terminal on the temperature gauge labeled as "S" while watching the temperature gauge. The gauge should read maximum temperature. If it does not, replace the gauge.

CHEMICAL TANK TROUBLESHOOTING (cont.)

No.	Problem/Possible Cause	Solution
4.0	**There is pressure on the gauge, but no water coming out of the wand.**	
4.1	The *wand jet* is plugged.	Inspect and clean the jet.
4.2	The *quick connect* on one or more of the high pressure hoses is defective.	Remove and clean or replace the defective quick connect(s).
4.3	The *cleaning tool* has a clogged valve.	Remove the valve stem. Clean the valve. Replace the "O" rings and stem if they are bad.
4.4	The high pressure *quick connect* on the front of the machine is clogged.	Remove and clean or replace the quick connect.
4.5	The inner lining on a *hose* is constricted.	Remove the restriction or replace the hose.

CHEMICAL TANK TROUBLESHOOTING (cont.)

No.	Problem/Possible Cause	Solution
5.0	**The water in the water box will not keep up with the wand.**	
5.1	There is dirt in the *fill valve* along side of the water box.	Take the valve apart and clean it.
5.2	The *water supply* is improperly adjusted.	The water supply should be two 2) gallons per minute or more.
5.3	The *water inlet supply hose filter* is clogged or the hose is kinked.	Remove the obstructions.
5.4	There is a problem with the *pump-in pump.*	Check the amount of water the pump-in pump is supplying. It should supply a minimum of 2GPM if you use one wand or one RX20. It should supply a minimum of 3 GPM if you use two wands.

No.	Problem/Possible Cause	Solution
6.0	**There is water coming out of the exhaust.**	
6.1	There are small amounts of water usually seen at start up.	This is normal! There is no solution! The water is condensation.
6.2	One of the *heat exchangers* is damaged from frozen water.	Determine which heat exchanger is bad. Replace it if it is necessary.
6.3	The *recovery tank* is full.	Empty the tank.
6.4	There is *excessive foam* in the recovery tank.	Apply a powdered or liquid defoamer to counteract this reaction to the excessive chemical in the carpet

CHEMICAL TANK TROUBLESHOOTING (cont.)

No.	Problem/Possible Cause	Solution
7.0	The water box overflows.	
7.1	The *fill float* in the water box is malfunctioning.	
7.2	There is dirt in the *fill valve* in the water box.	Clean the fill valve.

No.	Problem/Possible Cause	Solution
8.0	**The water pump is pulsing.**	
8.1	The hoses are restricted due to *hard water* deposits and/or *chemical build-up*.	Descale the machine.
8.2	The *throb hose* is hardened due to age or heat and cannot absorb spikes.	Replace the throb hose.
8.3	The *inlet hose* is drawing air.	Reseal the fittings. Tighten the hose clamps. Or replace the hose.
8.4	The *valves* are obstructed.	Clean or replace the valves.
8.6	The *valve spring* is broken.	Replace the valves.

Pump Maintenance

Javelin

Section 6-1

DAILY

Check the oil level and the condition of the oil. The oil level should be up to the center of the sight glass on the back of the pump.

Use a 30 weight, non-detergent oil.

⚠ CAUTION

If the oil becomes discolored and contaminated, one of the oil seals may be damaged. Refer to the Service Section.

Do not operate the pump if the crankcase has been contaminated with water.

⚠ CAUTION

Do not leave contaminated oil in the pump housing or leave the housing empty. Remove contaminated oil as soon as it is discovered and replace it with clean oil.

PERIODICALLY

Change the oil after the first 100 hours of operation, and every 400 operating hours thereafter. When changing, remove the drain plug on the oil drain center located on the frame so all oil and accumulated sediment will drain out.

⚠ CAUTION

Do not turn the drive shaft while the oil reservoir is empty.

⚠ CAUTION

Protect the pump from freezing.

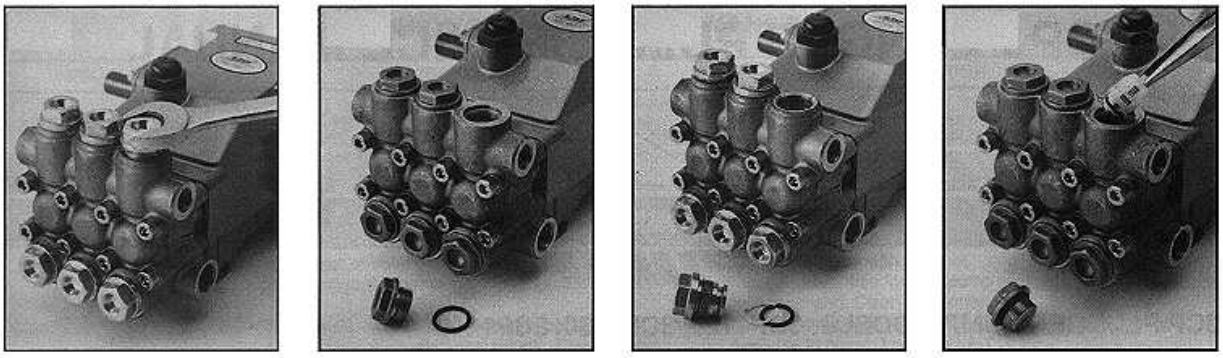
Service

The next few pages explain how to disassemble and inspect all easily serviceable parts of the pump.

⚠ CAUTION

Do not disassemble the hydraulic end unless you are a skilled mechanic.
For assistance, contact Bridgepoint (425-775-7275) or the distributor in your area.

Figure 6-1



1. Servicing the Valves (Fig. 6-1)

A. Remove the hex valve plugs (top-discharge, bottom-inlet).
B. Unthread the valve plug and examine the o-ring under the plug for cuts or distortion. Replace it if it is worn. Lubricate new o-rings before installing.
C. Grasp the valve retainer by the tab at the top with needle-nose pliers, then remove the o-ring at the bottom of the valve chamber.
D. Inspect all valve parts for pitting, gouges, or wear. If wear is excessive, replace valve assembly.
E. Reinstall valve assemblies:
   1. Using a clean towel, clean the valve chamber.
   2. Install the o-ring into the high pressure manifold.
   3. Install the valve assemblies into the high pressure manifold (the metal side of the valve faces the manifold).
   4. Replace the o-ring on the hex valve plug.
   5. Torque the plug to 72 foot pounds.

2. Removing the High Pressure Manifold

A. Using an M6 allen wrench, remove all eight of the socket head bolts.

B. Rotate the crankshaft by hand to start separation of the manifold head from the crankshaft.

C. Insert two flat-head screwdrivers on opposite sides to further separate the manifold from the crankshaft.

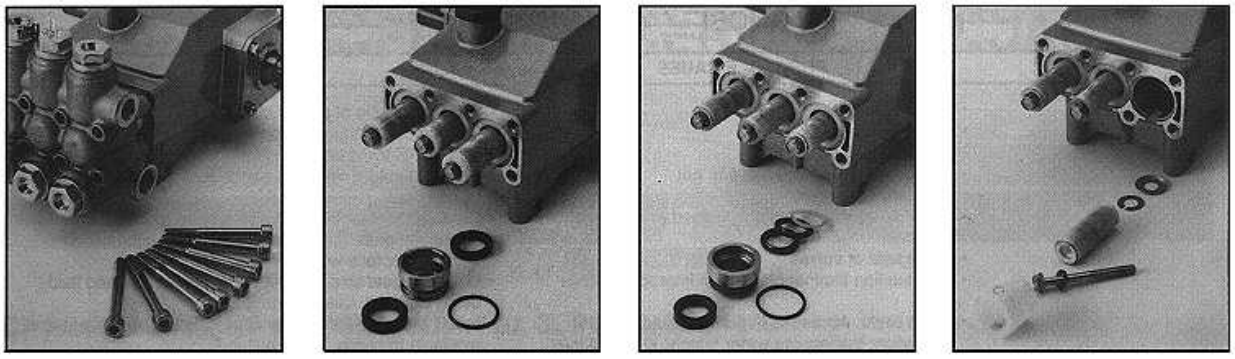
⚠ CAUTION

To avoid damage to either plunger or seal, keep the manifold properly aligned with the ceramic plungers when removing it.

D. Remove the seal retainer from the manifold and inspect for wear.

E. Examine the ceramic plunger for cracks or scoring (refer to Servicing the *Plungers for replacement)*

Figure 6-2



3. Servicing the Low Pressure Seals and High Pressure Seals (Fig 6-2)

A. Remove the low pressure seal from the seal retainer using a 90 degree pick tool.

B. Remove the high pressure seal from the manifold.

C. Inspect the low pressure seal and high pressure seal for wear and replace if necessary.

D. Reinstall the low pressure seal:

1. Install the low pressure seal into the seal retainers with the garter spring down.

E. Reinstall the high pressure seal:

1. Lubricate the seal chamber in the manifold.

2. Carefully square the high pressure seal into position by hand with the grooved side down (metal back facing out).

Servicing the Low Pressure Seals and High Pressure Seals (cont.)

3. Examine the seal retainer's o-ring and replace if worn. Lubricate the new o-ring before installing.
4. Next, press the seal retainers into the manifold until completely seated.

4. Servicing the Plungers (See illustrations above step 3.)

A. Using a hex tool, loosen the plunger retainer about three to four turns. Push the plunger back to separate it from the retainer and finish unthreading the plunger retainer by hand.
B. Unthread the plunger retainer with sealing washer.
C. Remove the ceramic plunger, keyhole washer and barrier slinger from the plunger rod.
D. Reinstall the ceramic plungers:
   1. Examine the sealing washer on the plunger retainer and replace it if it is cut or worn. Lubricate the new sealing washer for ease of installation and to avoid damage.
   2. Apply Loctite 242™ to the threads of the plunger retainer and press it into the ceramic plunger. Thread hand tight, then torque the bolt to 4.4 foot pounds.
   3. Install the seal retainer with holes to the top and bottom, and forward.

5. Reinstall High Pressure Manifold

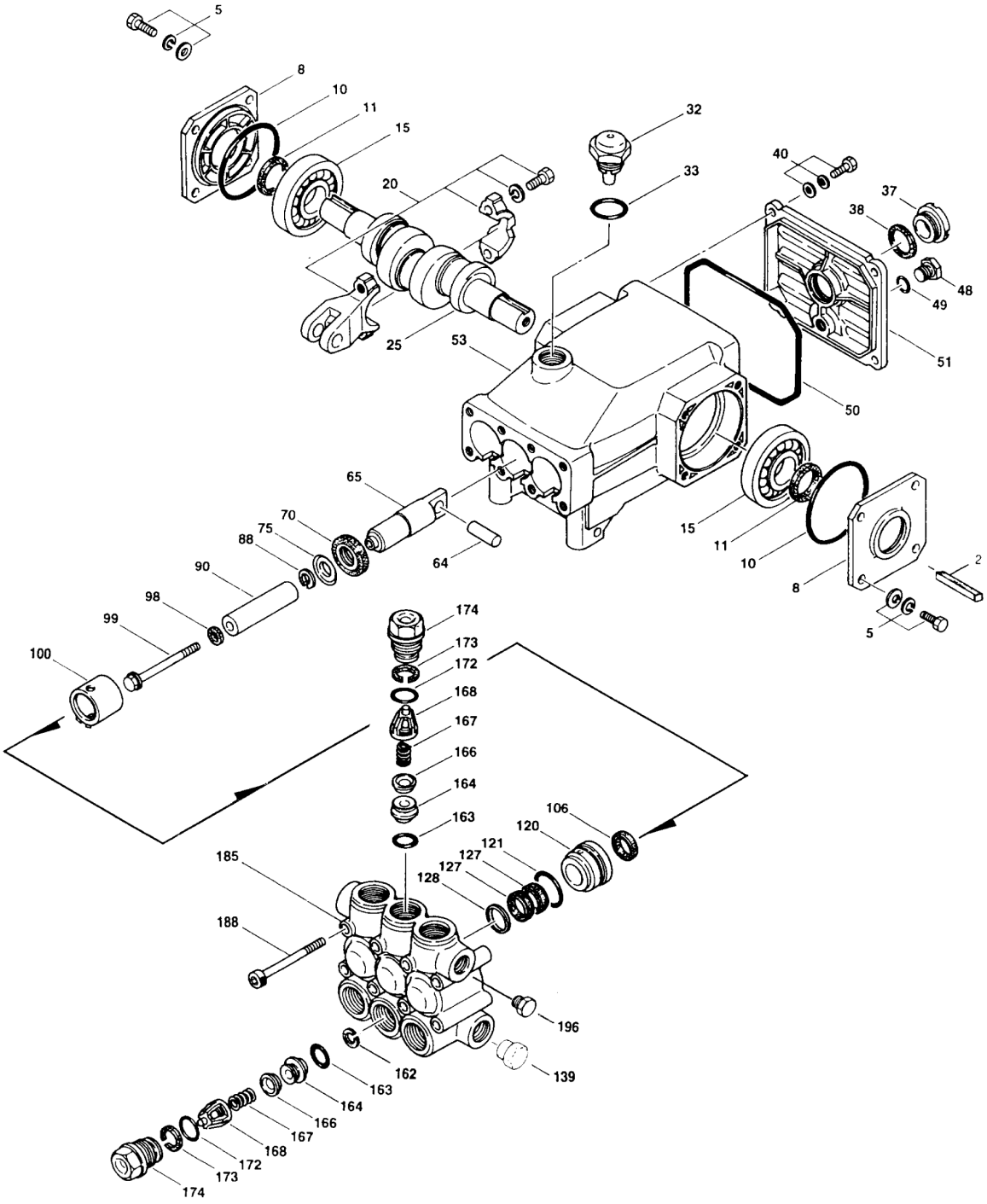
A. Slip the seal retainer over the ceramic plungers with the holes to the top and bottom and forward.
B. Turn the shaft by hand to line up the plungers so that the end plungers are parallel.
C. Lightly lubricate the plungers and carefully slide the manifold head onto the plungers while supporting it from the underside to avoid damaging the plungers.
D. Reinstall the socket head bolts and torque to 4.4 foot pounds.

6. Servicing the Crankcase

A. While manifold, plungers, and seal retainers are removed, examine the crankcase seals for wear.
B. Rotate the crankshaft oil seal externally for drying, cracking or leaking.
C. Consult your Bridgepoint distributor if crankcase servicing is necessary.

Torque Chart				
		Torque		
Pump Item	**Thread**	**Inch Pounds**	**Foot Pounds**	**Nm**
Plunger Retainer	M6	55	4.4	6.2
Manifold Bolt	M6	55	4.4	6.2
Valve Plugs	M22	870	72.3	100.0
Bearing Case Screws	M6	50	4.0	6.0
Crankcase Cover	M6	50	4.0	6.0
Bubble Oil Gauge	M28	45	3.6	5.0
Mounting Bolts	M8	115	9.4	13.0

Figure 6-1 **Cat Pump**



Cat Pump Parts List

ITEM	PART NO.	DESCRIPTION	QTY
2	30047	Key (M5)	1
5	92519	Screw, Sems HHC, Bearing Cover (M6x16)	8
8	46901	Cover, Bearing	2
10	14028	O-Ring, Bearing Cover	1
11	43222	Seal, Oil, Crankshaft	2
15	14480	Bearing	
20	46829	Rod, Connecting, Assembly	2
25	46927	Crankshaft, Dual End	3
32	45690	Cap, Oil Filler	1
33	14179	O-Ring, Oil Filler Cap	1
37	43987	Gauge, Oil, Bubble	1
38	44428	Gasket, Flat, Oil Gauge	1
40	92519	Screw, Sems HHC, Crankcase Cover (M6x16)	4
48	25625	Plug, Drain (¼" x 11)	1
49	23170	O-Ring, Drain Plug	1
50	46939	Cover, Crankcase	1
51	14041	O-Ring, Crankcase Cover	1
53	46534	Crankcase	1
64	46615	Pin, Plunger Rod	3
65	46975	Rod, Plunger	3
70	147-013	Seal, Crankcase Oil for 3CP Cat Pump	3
75	43900	Slinger, Barrier	3
88	45697	Washer, Keyhole	3
90	46976	Plunger (M43)	3
98	46730	Seal, Washer	3
99	48201	Retainer, Plunger with Stud (M6)	3
100	46541	Retainer, Seal	3
106	43243	Seal, LPS with Spring	3
120	46625	Case, Seal	3
121	13976	O-Ring, Seal Case	3
125	46652	Seal, HPS	3
139	22179	Plug, Inlet ½"	1
163	17547	O-Ring 85, Valve Seat	6
164	46658	Seat	6
166	43723	Valve	6

Cat Pump Parts List (cont.)

ITEM	PART NO.	DESCRIPTION	QTY
167	43750	Spring	6
168	44565	Retainer, Spring	6
172	17615	O-Ring 75, Valve Plug	6
174	46756	Plug, Valve	6
185	46616	Manifold, Head	1
193	87870	Bolt, HSH, Manifold Head (M8x65)	8
196	22187	Plug, Discharge 3/8"	1
250	108-055	Protector, 3CP Cat Pump Shaft	1
260	114-003	Rail, Angle - 3CP Cat	1
265	30651	Complete Mounting Kit	1
270	30246	Pulley and Key Assembly	1
299	814841	Complete Head	1
300	078-271	Kit, Seal for 3CP Cat Pump	1
310	078-270	Kit, Valve for 3CP Cat Pump	1
350	30696	Valve Seal Removal Tool	1

Pump Troubleshooting

No.	Problem/Possible Cause
1.0	**Cavatation**
1.1	Inadequate fluid supply because of: -Inlet line collapsed or clogged -Air leak in inlet line -Worn or damaged inlet hose
1.2	Fluid too hot for inlet suction piping system.
1.3	Air entrained in fluid piping system.
1.4	Aeration and turbulence in the supply tank.
1.5	Inlet suction vacuum too high.
1.6	High pressure seals worn.
	Symptoms of cavitation are: –Excessive pump valve noise (chattering) –Premature failure of spring or retainer –Volume or pressure drop –Rough-running pump
2.0	**Drop in Volume or Pressure**
2.1	Air leak in suction piping.
2.2	Clogged suction line.
2.3	Pressure gauge inoperative or not registering accurate.
2.4	Suction line inlet above fluid level in tank.
2.5	Inadequate fluid supply.
2.6	Pump not operating at proper RP
2.7	Worn pump valve parts.

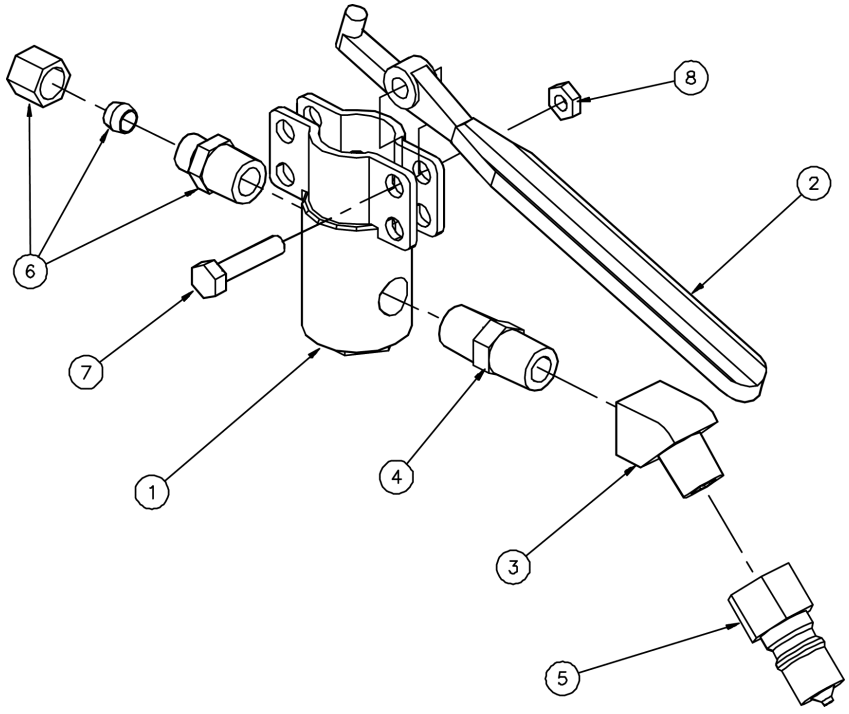
No.	Problem/Possible Cause
3.0	**Water Pulsations**
3.1	Foreign object lodged in pump valve.
3.2	Air in suction line.
3.3	Valve spring broken.
3.4	Cavitation.
3.5	Aeration or turbulence in supply tank.
3.6	Stuck inlet or discharge valve.
4.0	**Valve Wear**
4.1	Normal wear.
5.0	**Loss of Oil**
5.1	External seepage.
5.2	Frozen pump.
5.3	Worn crankshaft seal.
5.4	Oil drain piping or fill cap loose.
6.0	**Premature Failure of Valves or Seals**
6.1	Excessive cavitation.
6.2	Foreign object in the pump.
6.3	Pump running too fast.
6.4	Valve or seal material incompatible with fluid being pumped.
6.5	Excessive inlet pressure.
6.6	Scored plungers.
6.7	Running pump dry for excessive periods of time.
6.8	Excessive temperatures of fluid being pumped.

Cleaning Wand Parts

Javelin

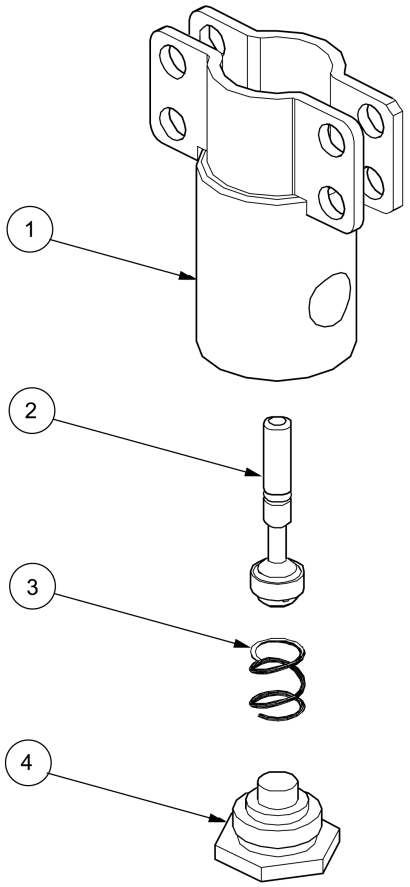
Section 7-1

Figure 7-1 **Valve Assembly**
C3652



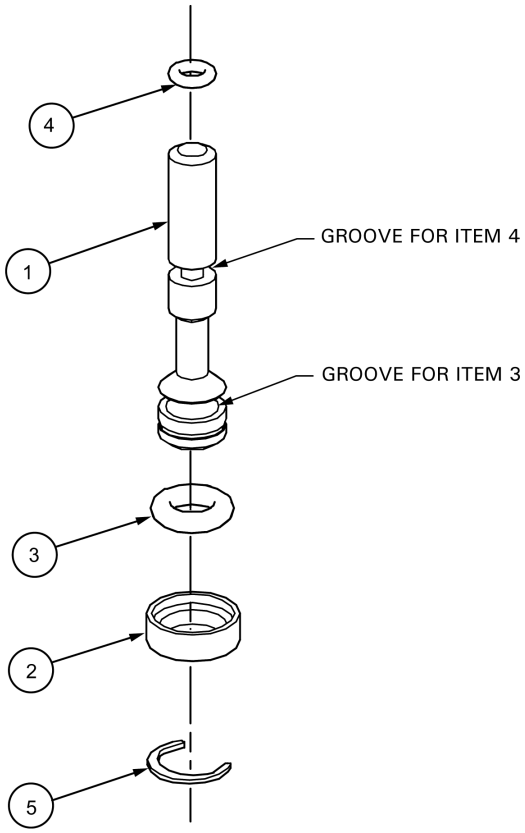
ITEM	PART NO.	DESCRIPTION	QTY
1	169-058	Valve, s/s HM Solution	1
2	167-013	Trigger, Hydra Hoe Valve - Brass	1
3	052-082	Elbow, ¼" Brass 45 Street	1
4	052-095	Nipple, ¼" s/s Hex	1
5	052-050	Quick Connect, 440 M with Viton	1
6	052-152	Compression, ¼" Male Hydra Hoe Fitting	1
7	143-002	Screw, ¼ - 20 x 1" HHC s/s	1
8	094-009	Nut, ¼ - 20 s/s Nylock	1

Figure 7-2 **Solution Valve Assembly**
B1234



ITEM	PART NO.	DESCRIPTION	QTY
1	600-012-001	Valve Body Sub Assembly	1
2	600-012-002	Valve Stem Sub Assembly	1
3	155-003	Spring, HM Solution Valve	1
4	027-001	Cap, Brass	1

Figure 7-3 **Valve Stem Assembly**
B3743



ITEM	PART NO.	DESCRIPTION	QTY
1	107-129	Plunger, HM Solution Valve	1
2	139-003	Ring Keeper, HM Solution Valve	1
3	097-010	O-Ring, HM Valve Plunger, Large	1
4	097-022	O-Ring, Solution Valve Flow Meter, Small	1
5	139-004	Ring, Solution Valve Stem Snap	1

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Engine Troubleshooting

Javelin
Section 9-1

No.	Problem/Possible Cause	Solution
1.0	**The engine will not turn over.**	
1.1	The *circuit breaker* on the control panel is tripped.	Press the reset button. Inspect the unit to determine the cause of the tripped circuit breaker. Repair as required.
1.2	The *battery cable* is loose or the terminals corroded.	Clean and tighten the battery terminal connections..
1.3	The *battery* is dead.	Recharge or replace the battery.
1.4	There is a problem with the *starter solenoid*.	With the ignition switch in the "Start" position, check the following on the solenoid. Check for +12 volts on: a. the small terminal with the blue wire from the ignition switch, b. the large terminal with the cable from the battery, and c. the large terminal with the cable going to the starter. If the voltage is present on the first two checkpoints, but not on the large terminal going to the starter replace the solenoid.
1.5	The *ignition switch* is defective.	Test the switch for entering voltage. If there is voltage entering the switch but not exiting the center post when the switch is fully engaged then replace it.

No.	Problem/Possible Cause	Solution
1.0 (cont.)	**The engine will not turn over.**	
1.6	The *vacuum blower* is seized.	Refer to The Blower, Chapter 10.
1.8	The *starter motor* is defective.	Remove the belt(s) from the engine. Check to see if the engine will turn over manually. Check that the engine is grounded to the minus side of the battery. With the ignition key in the **Start** position, check the starter motor for +12 volts. If all of the above conditions are met and the starter will not turn, replace it.
1.9	The *engine* is malfunctioning.	Refer to the Engine Operation and Maintenance manual included in your Owner's manual or see the local engine repair facility.
1.10	The *ground cable* underneath the motor has fallen or broken off.	Reattach the cable.

No.	Problem/Possible Cause	Solution
2.0	**The starter turns the engine over, however the engine will not start. (There is no spark*.)**	*Check for spark at the spark plugs. If there is no spark, examine the troubleshooting guide below. However if there is a spark, see **Troubleshooting Problem Number 3** on the following page for possible fuel problems.
2.1	A *spark plug wire* is bad.	While the engine is turning over with the starter, make a visual check to identify a bad spark plug wire. In a dark, well ventilated garage start the engine and look at the plug wires. If there is a break in the wire you will see arcing or sparking at the damaged area. If you notice arcing, replace the wire.
2.2	A *spark plug* is faulty.	Check for worn, fouled or improperly gapped spark plugs. Replace if necessary. **CAUTION:** Allow the engine to cool completely before attempting to remove the plugs.
2.3	The *coil* is faulty (one of three).	See the engine owner's manual and replace the coil(s) if necessary.
2.4	The *engine* is malfunctioning.	Refer to the Engine Operation and Maintenance manual included in your Owner's manual.

No.	Problem/Possible Cause	Solution
3.0	**The starter turns the engine over, however the engine will not start. (There is no gas*.)**	*Check for spark at the spark plugs. if there is no spark, see **Troubleing Problem No. 2** on the previous page. However if there is a spark, examine the following troubleshooting guide for possible fuel problems.
3.1	The *lower float* in the water box is defective.	Push in the freeze guard switch located on the lower control panel. If the engine starts and runs with the switch engaged, then replace the defective float.
3.2	The water box is out of water caused by a *defective fill valve* in the water box	Replace or repair the float if it is defective.
3.3	The *fuel pump* is defective.	Remove the fuel line from the engine and place it in a container to see if the fuel is being pumped when the ignition is on. Replace the fuel pump if it is defective.
3.4	There is a poor battery ground to the *fuel pump*.	Repair the loose ground connection.
3.5	The *fuel pump* is sucking air between the gas tank and the inlet side of the fuel pump.	Examine the gas inlet side of the fuel pump. Tighten any loose fittings or clamps. Replace any ruptured hose.
3.6	The *fuel filter* is clogged.	Inspect the filter. Replace if necessary.
3.7	The *quick connect* in the fuel line is clogged.	Clean or replace the quick connect.
3.8	The *carburetor solenoid* is defective.	Check for 12 volts at the solenoid valve. If the solenoid valve is not pening with 12 volts going to it, the valve must be replaced.

No.	Problem/Possible Cause	Solution
3.0 (cont.)	**The starter turns the engine over, however the engine will not start. (There is no gas*.) (cont.)**	*Check for spark at the spark plugs. if there is no spark, see **Troubleing Problem No. 2** on the previous page. However if there is a spark, examine the following troubleshooting guide for possible fuel problems.
3.9	There is *valve train* damage.	See an Authorized Service Station.
3.10	The *recovery tank* is full.	Empty the tank.
3.11	The *recovery tank float* is causing the engine to shut down.	Disconnect the float switch. If the unit starts, replace the defective switch.
3.12	The *oil pressure switch* is causing the engine to shut down.	Check the engine oil level. If the level is correct, then disconnect the oil pressure switch.If the unit starts, then replace the oil pressure switch
3.13	The *lower float* in the water box is defective.	
3.14	The machine's *high temperature switch* is causing the engine to shut down.	Determine the cause of overheating before restarting the unit. See 4.8 - 4.11 in this chapter.
3.15	The machine's *high temperature shutdown switch* is defective.	Disconnect the switch.If the engine starts then test the switch.The switch operates at 245°. Replace it if it is defective.
3.16	The engine's *high temperature switch* is causing the engine to	Examine the radiator for water. Test the switch. If necessary, replace the switch.
3.17	The *engine kill relay* is defective.	With the ignition switch **on** and water in the water box, check the relay. Check for 12 volts on terminal 30 and 87a. If voltage is present on 87a, but not on 30 or 87, replace the relay.

No.	Problem/Possible Cause	Solution
4.0	**The engine runs poorly or dies after running for awhile.**	
4.1	The *lower float* in the water box is bad.	
4.2	The *fuel pump* is defective.	Remove the fuel line from the engine and place it in a container to see if the fuel is being pumped when the the ignition is turned on. Replace the fuel pump if it is defective.
4.3	The *air or gas filter* is clogged.	Inspect both filters. Replace the clogged one.
4.4	There is a poor *battery ground* to the *fuel pump*.	Inspect the electrical grounds. Repair any loose ground connections.
4.5	The *fuel pump* is sucking air between the gas tank and the fuel pump.	Examine the pump's gas inlet side. Tighten any loose fittings or clamps Replace ruptured hoses.
4.6	A clogged *heat exchanger* is causing back pressure. The engine will spit gas from the carburetor and run slow.	
4.7	There is *excessive engine load*.	Clean and adjust the recovery tank relief valve. Adjust for 14 inches of lift under a full load.
4.8	The *engine* overheats from poor ventilation.	Remove any air restriction from around the engine. Add a roof vent or external fan, if necessary.
4.9	The *engine* overheats from carbon build up in the *combustion chamber*	Refer to a local engine dealer.
4.10	The *engine* overheats from too much oil in the *crankcase*.	Check the oil level and correct if necessary.

No.	Problem/Possible Cause	Solution
4.0 (cont.)	**The engine runs poorly or dies after running for awhile.**	
4.11	The engine overheats from low or no water in the radiator.	Refill the radiator. Check for leaks. Tighten any loose fittings or clamps. Replace any ruptured hose.
4.12	The *carburetor solenoid valve* is defective.	With the ignition switch on, check for 12 volts at the solenoid valve. If the voltage is present, the valve should be open. If the valve is defective, it must be replaced.
4.13	The *engine* is malfunctioning.	Refer to the Engine Operation and Maintenance manual included in your Owner's manual, or see a local engine repair facility.
4.14	**On duel tank Fords**, the engine is pulling through the 'Tank Switching Valve'.	Do not try to pull gas from both gas tanks.
4.15	A *spark plug* is faulty.	Check for worn, fouled or improperly gapped spark plugs. Replace if necessary. **CAUTION:** Allow the engine to cool completely before attempting to remove the plugs.
4.16	A *spark plug wire* is faulty.	While the engine is turning over with the starter, make a visual check to identify any bad spark plug wire. In a dark, well ventilated garage start the engine and look at the plug wires. If there is a break in the wire you will see arcing or sparking at the damaged area. If you notice arcing, replace the wire.
4.17	A *PCV valve* is defective.	Remove and check the air cleaner for oil saturation. If it is saturated, replace the PCV valve and air filter.

Electrical System

Javelin

Section 10-1

The Javelin electrical system has been specifically designed with the technician in mind. Often the most difficult problem to trace is an electrical failure.

The Javelin series of machines utilizes a wiring Diagnostic Status Center which allows the technician or mechanic to trace all the electrical circuits from the front of the machine.

The entire electrical system operates on 12 volts DC which is provided by a battery. Battery levels are sustained by a 25 amp voltage regulator inside the engine.

NOTE: When a new battery is installed, check that it is properly charged before installation or damage to the charging regulator may occur.

⚠ CAUTION

Make sure the diodes are replaced in the same position as removed. (See Schematic)

⚠ CAUTION

Always replace a blown fuse with another of the same amperage rating

Figure 10-1 **Wiring Schematic**

D4382 Rev —

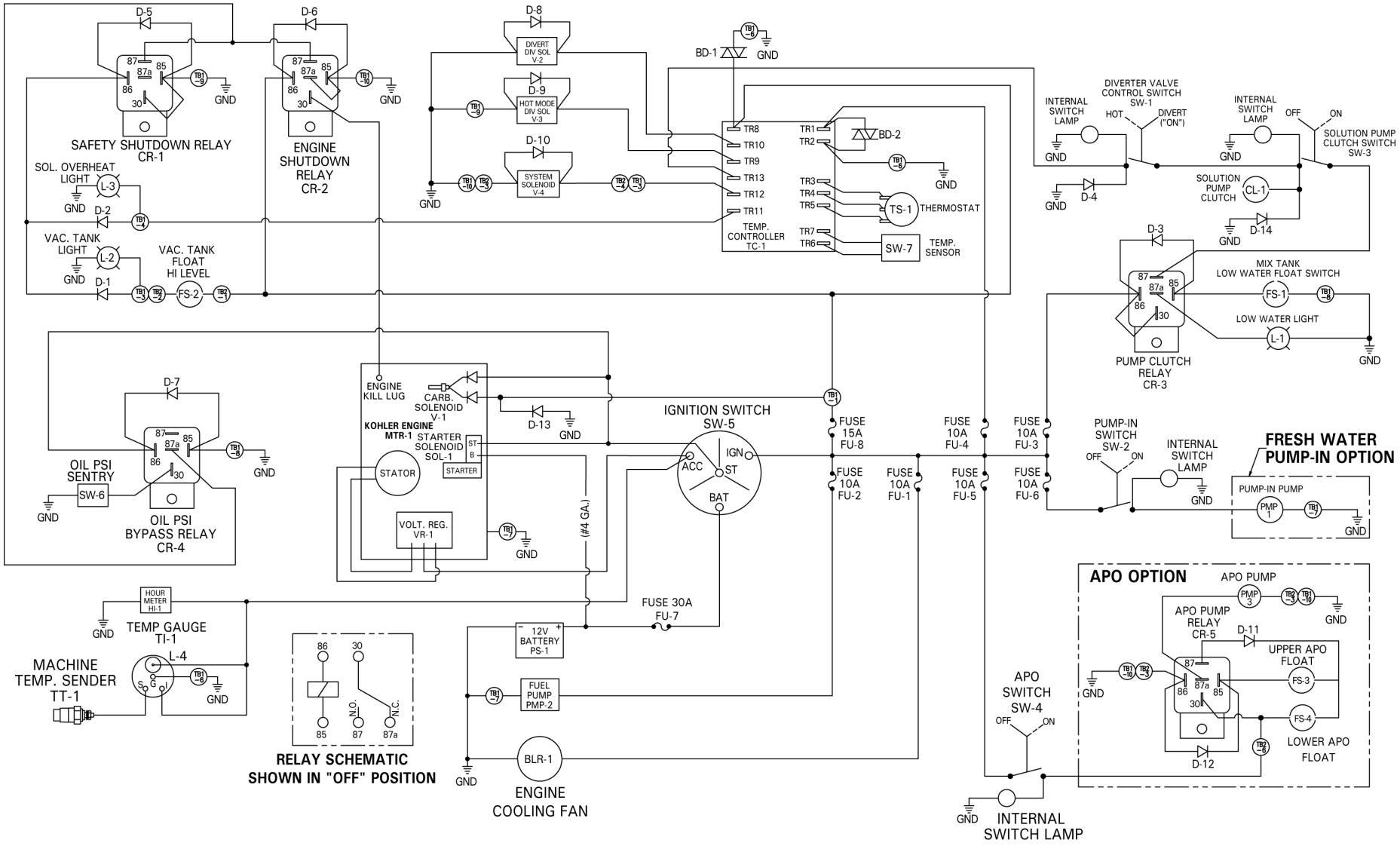


Figure 10-2 **Wiring Diagram**

D4381 Sht 1, Rev —

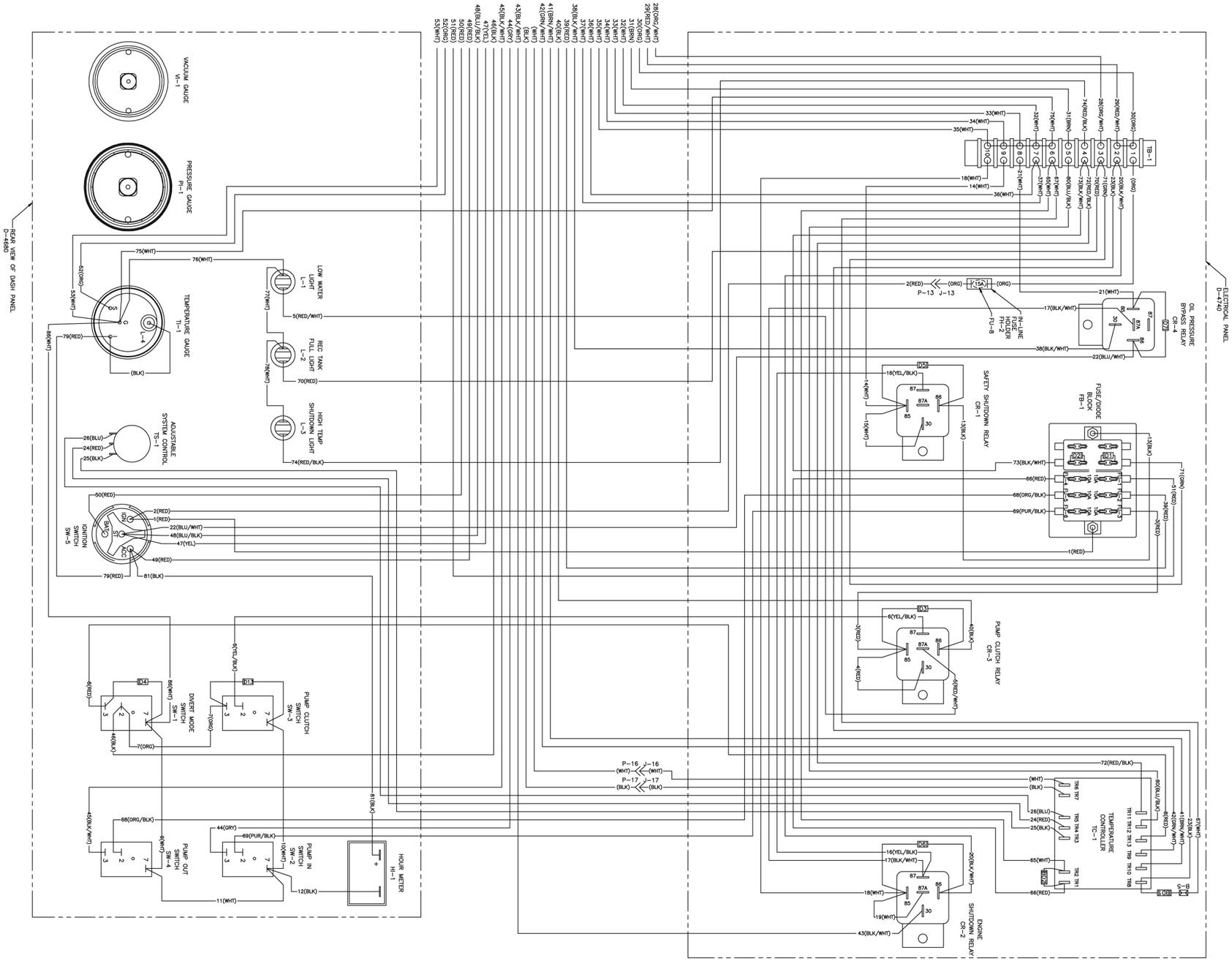
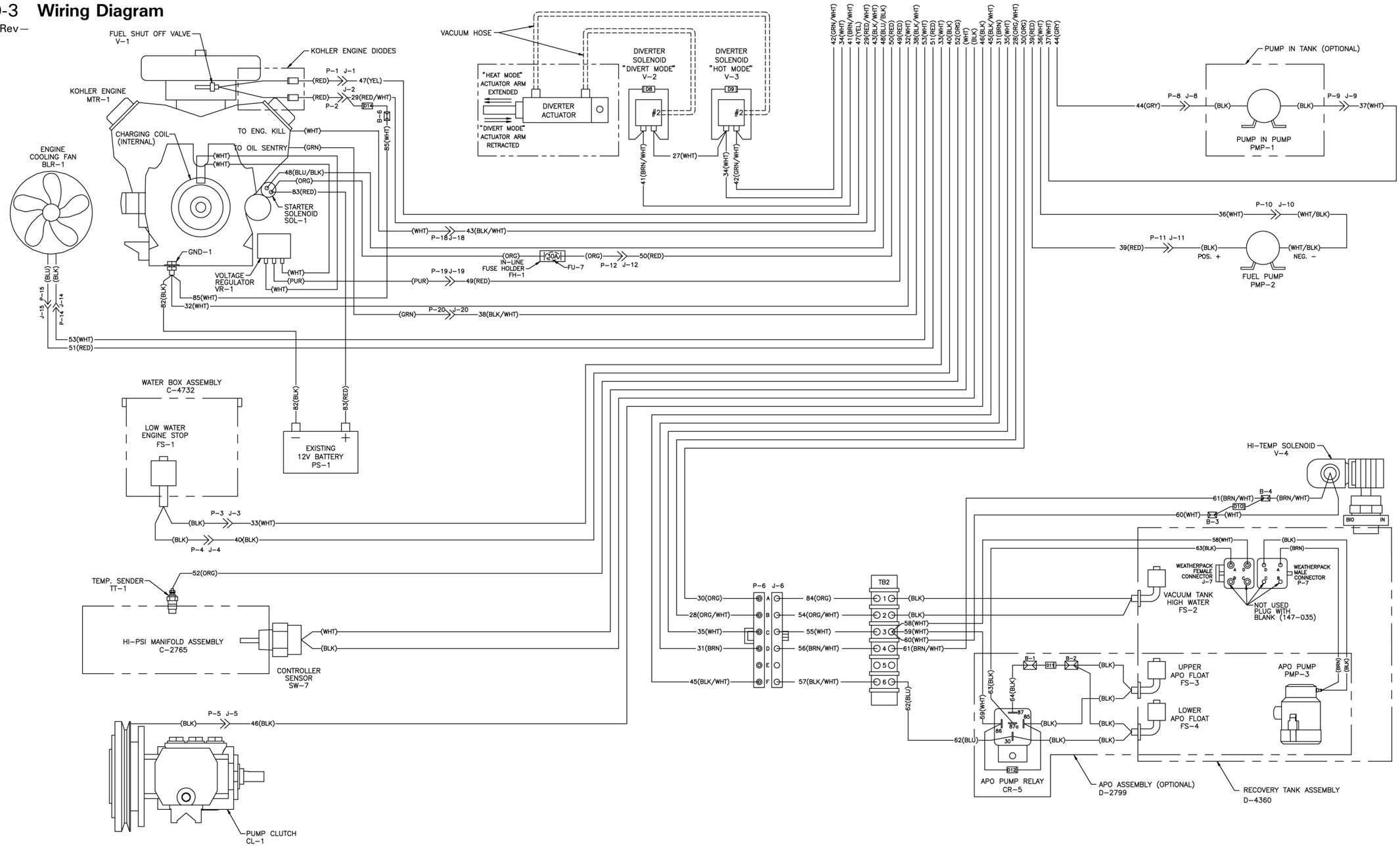


Figure 10-3 **Wiring Diagram**
D4381 Sht 2, Rev—



Machine Maintenance

Javelin
Section 11-1

To avoid costly repairs and down-time, it is imperative to develop and practice good maintenance procedures from the beginning. These procedures fall into daily, weekly, monthly and quarterly increments, and are outlined below. All recommended maintenance must be performed by competent service personnel.

Important: Record the date and machine hours on the maintenance log.

We have provided a maintenance log for your convenience at the end of this section. The symbol means to see this General Maintenance Log for specific maintenance intervals. *Records of maintenance must be kept and copies may be required to be furnished to Bridgepoint before the warranty is honored.* It is recommended that you affix a copy of the Log on the vehicle door near your unit for convenience and to serve as a maintenance reminder.

OPERATIONAL MAINTENANCE

DAILY

1. Visually inspect machine for loose wires, oil leaks, water leaks, etc.
2. Check engine oil level. Add as needed.
3. Inspect garden hose screen. Clean as needed.
4. Inspect recovery tank s/s filter and filter bag for tears, holes, etc. Clean, repair or replace as needed.
5. Lubricate blower with an oil based lubricant through blower inlet.
6. Check coolant. Add as necessary.
7. Inspect fuel, oil, and coolant lines for leakage.

WEEKLY

1. One time change of oil and oil filter ***after first 20 hours*** of use.
2. One time check of the belt tensioning ***after first 25 hours*** of use.
3. Check the oil level in blower.
4. Check the high pressure pump oil. Add as necessary.

OPERATIONAL MAINTENANCE (CONT.)

WEEKLY (CONT.)

5. Check the drive system screws. Tighten as needed.
6. Check the pump drive belt for wear.
7. Check the pump pulleys for wear.
8. Check the high pressure water lines for wear or chafing.
9. Check all nuts and bolts. Tighten as needed.
10. Clean foam element in air cleaner.
11. Inspect vacuum relief valve. Clean and lubricate as necessary.
12. Clean vacuum tank thoroughly with high pressure washer.
13. Check the wiring for any chafing.
14. Flush water and chemical system with 50/50 white vinegar solution.
15. Check float switches for debris.

MONTHLY

1. Change the engine oil regularly.
2. Clean the engine air cleaner filter.
3. Remove pressure bypass valve piston plate. Grease plate. Reinstall.
4. Check water level in the battery. Clean connections as needed.
5. Clean incoming adapter filter.
6. Clean the water box solenoid filter.
7. Clean control orifice and secondary orifice filters (page 11-4).
8. Inspect the primary and the secondary orifice (page 11-4).
9. Change the oil filter every 2 months.
10. Inspect the radiator and hoses every 2 months.
11. Check the belt tensioning every 2 months.
    The poly-chain drive system is approx. ¼" deflection with 8 to 9 lbs of force, measured at midspan.

QUARTERLY

1. Change paper element in air cleaner.
2. Check fuel lines.
3. Clean and gap spark plugs.

QUARTERLY (CONT.)

4. Change coolant.
5. Grease blower bearing fittings.
6. Change oil in blower.
7. Change oil in pump.

SEMI-ANNUALY

1. Inspect chemical pump diaphragm and check valves for wear.

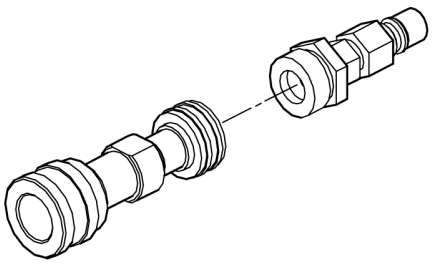
DE-SCALING (AS REQUIRED)

Scale deposits on the interior of the heating system can cause a noticeable loss in heating performance. Deposits of this kind result from hard water deposits, excessive chemical use, improper chemicals, etc. The frequency with which de-scaling procedures are required will vary. If your area has particularly hard water or you see evidence of deposits in the water system, you may have to de-scale monthly.

To de-scale your system, add an appropriate de-scaler chemical to your water box. Circulate it through the heating system. Let it stand. Flush and repeat as necessary. Clean all screens and strainers, and check them frequently following de-scaling. **NOTE:** If you are using T.M. DeScaler through the flow meter, make sure to run clean water through the flow meter after this procedure.

To de-scale using the recirculation kit, start with an empty water box. Fill a third of the water box with T.M. DeScaler. Follow the recommendations on the T.M. DeScaler label for proportions. Verify that the upper float is not lying horizontal, but floats below.

Figure 4-1 Recirculation Fitting



Attach the recirculation fitting provided in the kit to the garden hose quick connect (see illustration to right) and this combination to the front of the machine.

Attach one section of female/female solution hose to the outgoing solution fitting on the front of the machine and the other end to the garden hose and recirculation fitting combination that is attached to the front of the machine (or as many sections as you want, if you wish to de-scale your hoses).

DE-SCALING (CONT.)

Start the machine and allow it to run for three to five minutes. Depress the freeze guard button and hold for 30 seconds. Do not leave the T.M. DeScaler solution in the system. Flush the system with clean water and turn the machine "OFF".

0RIFICE MAINTENANCE

Note: *Do not* mix up the primary and secondary orifice. The primary has a smaller opening than the secondary orifice. If the two orifices are mixed up you will have temperature loss and a decrease of pressure.

1. Remove the hex nuts located in the front of the bypass manifold.
2. Attached to the hex nut is a filter screen. Clean any debris off of this filter.
3. Located behind the screen is the orifice. Remove the orifice with a 3⁄16" allen wrench. Blow air or water through the orifice to remove any debris.

   Do not use a wire tool to free any debris from the opening. This can cause the hole to be enlarged and result in a decrease in cleaning solution temperature.

   Hard water deposits can be removed by soaking the orifice in a mild acid solution.

4. Reinstall the orifice. Do not over-tighten.
5. Reinstall the filter screen and hex nut. Do not over-tighten.

OVERALL MACHINE MAINTENANCE

Maintaining the original appearance of your unit is important for two reasons:

1. It represents a big dollar investment for your cleaning business and its appearance should reflect that fact. A dirty machine is not professional.

2. Maintenance, troubleshooting, and repair is much easier to accomplish on a clean, well maintained unit. Regular cleaning of the machine offers you an opportunity to visually inspect all facets of the machine and spot potential problems before they occur.

OVERALL MACHINE MAINTENANCE (CONT.)

The following maintenance is recommended by the manufacturer at the frequency indicated.

AFTER EACH JOB

1. Check recovery tank, stainless steel filter and filter bag as required.

DAILY

1. Wipe machine down thoroughly with a damp cloth.
2. Flush recovery tank out thoroughly.
3. Empty filter bag and inspect for rips, tears, etc. Replace as needed.
4. Remove, thoroughly clean and reinstall stainless steel filter screen in recovery tank.
5. Inspect and clean vacuum slot on cleaning wand.
6. Check wand head for sharp edges that could tear carpet. File down as needed.
7. Clean wand to maintain original appearance.
8. Wipe down vacuum and high pressure hoses as needed.
9. Visually inspect hoses for cuts, etc.

WEEKLY

1. Wipe down entire unit as needed.
2. Apply good coat of auto wax to all painted surfaces inside and out, and to control panel.
3. Thoroughly clean recovery tank using high pressure hot water (unit with optional high pressure cleaning gun may be used for this).
4. Remove stainless steel filter in recovery tank and thoroughly clean, removing all lint build-up. Inspect for damage and reinstall.
5. Remove filter bag. Thoroughly clean and reinstall. If torn, replace.
6. Empty chemical from chemical container. Wash out thoroughly to remove any chemical build-up.
7. Inspect chemical feed line strainer and use 50% white vinegar/water solution to remove any chemical build-up.

OVERALL MACHINE MAINTENANCE (CONT.)

WEEKLY (CONT.)

8. Thoroughly clean wand and inspect for clogged jet, debris in vacuum slot and leaking fittings at valve.
9. Apply light coat of auto wax to wand.
10. Thoroughly clean vacuum and high pressure hoses including hose cuffs.
11. Inspect for wear or damage to hoses and quick connect fittings.
12. Inspect garden hose connect/adapter screen for debris. Remove and clean thoroughly.
13. Inspect all lines for wear or abrasions that may cause possible leaks.

JAVELIN GENERAL MAINTENANCE LOG

MAX HRS	DAILY SERVICE	OIL RECOMMENDATIONS	
8	ENGINE OIL check	BLOWER	40 weight non-detergent
8	GARDEN HOSE SCREEN clean	PUMP	5 - 30 weight synthetic motor oil
8	MACHINE general inspection	ENGINE	30 weight motor oil
8	RECOVERY TANK FILTER BAG clean		NOTE: Overhead valve engines can use multi-viscosity oil, but will experience increased oil consumption.
8	BLOWER INLET spray with lubricant		

	WEEKLY SERVICE	DATE & HOURS						
20	OIL change with filter		Break-in. One time only.					
25	BELTS check tension		Break-in. One time only.					
25	BLOWER check oil level							
25	PUMP OIL check							
25	DRIVE SYSTEM tighten screws							
25	BELTS & PULLEYS check for wear							
25	HIGH PRESSURE LINES check for chafing							
25	NUTS & BOLTS check tightness							
25	"Y" FILTER check and clean							
25	ORIFICE inspect							
25	VACUUM RELIEF VALVE inspect, clean, lube							
25	VACUUM TANK clean							
25	WIRING check for chafing							
25	CHEMICAL SYSTEM flush with vinegar							
25	FLOAT SWITCHES check for debris							
	MONTHLY SERVICE							
100	ENGINE OIL change							
100	ENGINE AIR CLEANER clean							
100	BY-PASS VALVE grease piston and o-rings							
100	BATTERY WATER LEVELS check							
200	OIL FILTER change							
200	BELTS check tension							
	QUARTERLY SERVICE (3 MONTHS)							
300	FUEL LINES check for wear							
300	SPARK PLUGS clean and gap							
400	BLOWER grease bearing							
400	BLOWER OIL change							
400	PUMP OIL change							
500	CHEMICAL PUMP inspect							
500	CHEM. PUMP DIAPHRAGM check for wear							
500	CHEMICAL PUMP VALVES check for wear							
500	WATER BOX FLOAT VALVE Remove stem and lubricate							
500	AIR CYLINDER Remove fittings and lubricate with light oil.							

How to Order Parts

Javelin
Section 12-1

To obtain a proper diagnosis of your malfunction, and to order warranty replacement parts or repairs, it is important that you proceed in the following manner:

WARRANTY PARTS ORDERS

1. Call the local distributor where you purchased your equipment and ask for the Service Department.

2. Have the following information ready:
   A. Equipment Model
   B. Date of Purchase
   C. Hours on the Unit
   D. Unit Serial Number
   E. Description of Malfunction

3. Once it has been determined which parts are needed to correct the problem with your machine, make arrangements with your distributor to either perform the repairs or ship the parts to you.

PARTS ORDERS

Call your local distributor. In most instances, they either stock or have access to parts through a regional service center.

EMERGENCIES

If, for any reason, your distributor is unable to supply you with the necessary parts, they may call us and arrange for expedited shipping.

Bridgepoint sells parts only through authorized distributors and service centers.

ONE FINAL NOTE...

Any questions you have regarding the warranty program should be directed to the Customer Service Department at (801) 261-1282 or (800) 658-5314, 8 a.m. to 5 p.m. Monday through Friday (MST).

We shall always endeavor to be fair in our evaluation of your warranty claim, and shall provide you with a complete analysis of our findings.

Bridgepoint warranty covers only defective materials and/or workmanship for the periods listed. **Labor and/or diagnostic reimbursement is specifically excluded**.

Warranty Information

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Section 13-1

To avoid misunderstandings which might occur between machine owners and manufacturer, we are listing causes of component failure that specifically voids warranty coverage. Such causes as listed below shall constitute **abuse** or **neglect**.

BLOWER:

- Failure to lubricate impellers daily with an oil based lubricant.
- Failure to lubricate bearings as recommended in blower manual.
- Failure to maintain proper oil levels in the blower.
- Failure to use the correct oil grade and viscosity as recommended in blower manual.
- Failure to properly maintain blower safeguard systems such as waste tank filter screen, vacuum safety relief valve and waste tank automatic shut-off system.
- Allowing foam to pass through blower.

HIGH PRESSURE WATER PUMP:

- Failure to maintain proper oil level as recommended in pump manual.
- Failure to change oil in pump at recommended intervals.
- Failure to protect pump against freezing.
- Failure to maintain pump protection shut-off system.
- Failure to use water softener in hard water areas.
- Use of improper chemicals.

VACUUM TANK:

- Failure to properly maintain filtering devices in tank.
- Failure to clean tank as recommended by manufacturer.
- Failure to maintain vacuum safety release in tank.
- Use of improper chemicals.

CHEMICAL SYSTEM:

- Use of improper chemical.
- Failure to use water softener in hard water area.
- Operating machine without proper chemical filter screen.
- Failure to protect against freezing.

CONTROL PANEL:

- Failure to protect flowmeter and water pressure gauge against freezing.

VACUUM AND SOLUTION HOSES:

- Failure to protect hoses against freezing.
- Failure to protect hoses against burns from engine and blower exhaust.
- Damage to hoses from being run over by vehicles.
- Kinking or cracking from failure to store or unroll hoses correctly.
- Normal wear and tear from everyday use.

CLEANING WAND:

- Failure to protect against freezing.
- Obvious physical abuse of wand.

WATER HEATING SYSTEM:

- Over-pressurization of the system (recommended maximum working pressure-1,000 PSI).
- Failure to protect against freezing.

HARD WATER DEPOSITS:

- Failure to use or maintain a water softening system or a properly installed magnetic-type de-scaler, whichever might be necessary, with machines operating in designated “Hard Water Areas” (3.5 grains or more per gallon).

FOR YOUR REFERENCE:

Model No. _____

Serial No. _____

Date of Purchase: _____

Purchased From (Distributor): _____

Product Support Bulletins

Javelin

Section 14-1

HYDRAMASTER
Corporation
11015 47th Avenue W, Mukilteo, WA 98275

PRODUCT SUPPORT BULLETIN

TO: All CDS Installers DATE: 27 Oct 1992

RE: 1993 Chev Brake Lines PSB #: 92102

Chevrolet cargo vans for 1993 have a new routing for their brake lines. They now travel directly over top of the transmission.

Caution is required when drilling the mounting hole on the passenger side of the blower frame. The brake lines can be lowered out of the way by unbolting two (2) mounting brackets that hold the lines in position.

The blower mounting bolt for this foot should go in from the bottom. Then the brake lines can be reattached.

HYDRAMASTER
Corporation
11015 47th Avenue W, Mukilteo, WA 98275

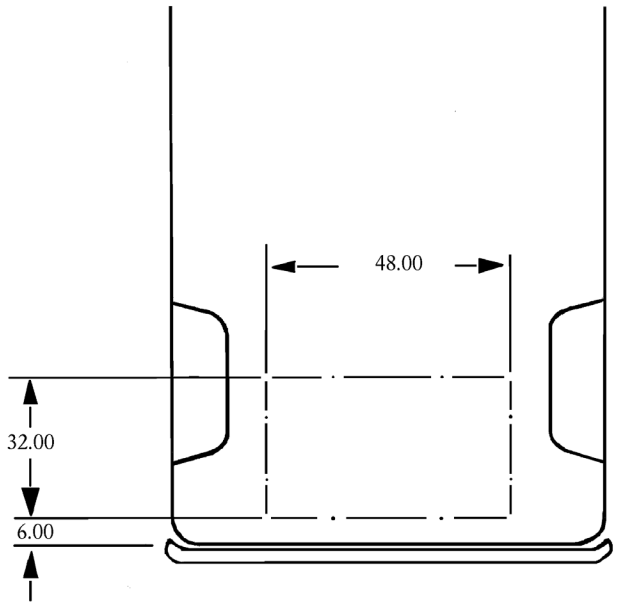
PRODUCT SUPPORT BULLETIN

TO: All HydraMaster Distributors DATE: 14 Jun 1994

RE: '93 Dodge Vans PSB #: 94062
Location of Fuel Tanks

It has come to our attention that the fuel tanks on 1993 and newer Dodge vans are located directly against the floor of the van. Caution must be used when drilling any holes through the floor. The attached illustration indicates the area in the rear of the van where no screws may penetrate the floor.

Anyone who has installed flooring in a 1993 or newer Dodge van may need to check to see that no damage was done to the fuel tank. The fuel tanks are rotationally molded polyethylene plastic. If any holes were made in the tank they can be easily sealed with a hot knife. Please do not use an open flame.



HYDRAMASTER
Corporation
11015 47th Avenue W, Mukilteo, WA 98275

PRODUCT SUPPORT BULLETIN

TO: All HydraMaster Distributors that Install Equipment

DATE: 14 Jun 1994

RE: Chevrolet CDS Installations

PSB #: 94063

This is just a reminder...

When installing CDS or slide-in units in Chevrolet vans, caution must be used while drilling holes through the floor.

There are two areas in which to be cautious. The brake lines, which travel up over the transmission, are close to the blower mounting location. (See Product Support Bulletin 92102.) Also behind the passenger seat, below the floor, is the ABS control unit.

Please check below the van before drilling any holes. This will minimize costly mistakes.