

Clutch Drive System 4.8 / 4.6 Owner's Manual

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MAN-33149 Rev. 0
(182-038-D)

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Revised July 10, 2009

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1 - General Information

The Clutch Drive System (CDS) 4.8 and 4.6 Truckmounts are highly engineered carpet cleaning machines developed, designed and manufactured by HydraMaster Corporation. The systems utilize the most current technology available in water heating and water recovery systems.

As there is no guess work in the manufacture of these highly advanced cleaning systems, there must be none in preparing the CDS 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.

This Owner's Manual contains installation and operation instructions as well as information required for proper maintenance, adjustment and repair of the CDS 4.8 and 4.6. Component troubleshooting guides have also been included for your convenience.

It is imperative that no section be overlooked when preparing for operation of this equipment. Please read this Owner's Manual to familiarize yourself with the operation of the 4.8 and 4.6 Truckmount Systems, paying special attention to all **Warnings and Cautions**.

This section of the manual contains the following helpful information:

- Contact Information
- Warnings, Cautions and Notices
- Machine Specifications
- Responsibilities
- Local Water Precautions

Contact Information

If you have any questions regarding the operation, maintenance or repair of this machine, please contact your local distributor.

To find a local distributor, please visit our website at <http://www.hydramaster.com/owners/locate/index.asp>.

If your question cannot be resolved by your distributor or by the information within this manual, you may contact HydraMaster Customer Service direct using the following phone numbers.

Hours

Monday-Friday
7:00 a.m. to 5:00 p.m.
Pacific Standard Time

Telephone Numbers

(425) 775-7276 Parts
(425) 775-7275 Service
(800) 426-4225 Parts / Service FAX

Warnings, Cautions and Notices

⚠ WARNING

HydraMaster uses this WARNING symbol throughout the manual to warn of possible injury or death.

CAUTION

This CAUTION symbol is used to warn of possible equipment damage.

NOTICE

This NOTICE symbol indicates that federal or state regulatory laws may apply, and also emphasizes supplemental information.

Warnings and Cautions specific to the CDS 4.8 / 4.6 include:

⚠ 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 the engine or the exhaust.

⚠ 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. Do not allow any open flames 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

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

CAUTION

The use of some chemicals through your mobile carpet cleaning plant can seriously damage the internal plumbing, high-pressure pump, chemical pump and heat exchangers. These harmful chemicals include concentrated acid (see the pH chart in Figure 2-1), solvents (including d-Limonene), and some paint, oil and grease removers with a high concentration of solvents.

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.

CAUTION

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

CAUTION

ACID RINSE AGENTS: Some acid rinse products can cause damage to internal machine components. Failure to take appropriate measures to prevent acidic corrosion can result in system failure and loss of warranty on affected parts.

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 at 3.0 grains or more per gallon, use a water softening system.

CAUTION

FREEZE PROTECTION: Failure to take appropriate measures to prevent equipment damage due to freezing can result in system failure and loss of warranty on affected parts. Placing an electric heater in the vehicle or parking the vehicle indoors will help ensure against freezing, but should not be the primary method of freeze protection.

Machine Specifications

Frame:	23" W x 41.5" H x 61.0" L
Weight:	912 lbs.
Construction:	Tank: Marine Aluminum with Baked-on Epoxy Finish Chassis: Painted Steel Cowling: Fiberglass
Power Transfer:	Electric Clutch-driven shaft, Key Activated
Vacuum Blower:	4.6 - 45 Tuthill/M-D Tri-Lobe 4.8 - 47 Tuthill/M-D Tri-Lobe
Water Pump:	Plunger pump, 4.0 gpm (at high speed), 2,500 psi, electric clutch control
Chemical System:	Mechanical, Meter Controlled
Heating System:	Multiple Heat Exchanger (1,200 psi pressure) Dual Shell and Tube Exchangers Optional Salsa Heat Package
Instruments:	
Main Panel:	Electronic Tachometer, 0-3,000 rpm Water Temperature Gauge, 0-320° F Vacuum Gauge, 0-30" Hg Hour Meter, Machine Run-Time Keyed Ignition, Start/Stop Electronic Circuit Protection Breaker, Re-settable Machine Status Indicator Lamps Chemical Flowmeter, 0-10 gph Water Pressure Gauge, Liquid Filled, 0-1,500 psi
Side Panel:	Water Pressure Adjustment Blower Lubrication Port Water Temperature Adjustment Knob High Pressure Solution Outlets, Quick-Disconnect Fresh Water Inlet Fitting, Quick-Disconnect Water Box Drain Valve Chemical Controls

Recovery Tank: 100 gallon Aluminum

Cleaning Tool/
Wand:

Stainless Steel
Replacement Grip
Rebuildable Solution Valve

High Pressure Hose:

1/4" High Temperature, Lined, Vinyl Covered
Hose rated to 2,200 psi, 250° F

Standard Equipment:

Power Transfer Package
Component Power Pack
Equipment Cowling
Vacuum Recovery Tank
Control Console
Dual Tool/Wand Hook-up
HydraMaster Heat Exchanger System
Freeze Guard System
Wheel Chock Set
Carpet Tool/Wand
150' Solution Hose
150', 2" Vacuum Hose
10', 1 1/2" Vacuum Hose
50', Fresh Water Hose (Garden Hose)
10', 1 1/2" Drain Line
5 gallon Chemical Jug
Chemical Jug Holder
Van Finish Package
Van Decal Package
Monogrammed Jacket
Owner's Manual
Equipment Color Selection
Hushkit Silencer System (4.8)

Responsibilities

Prior to the arrival of the unit, the van that it will be installed in should be delivered to the installer.

Purchaser's Responsibility

If you are the purchaser, it is your responsibility to read the Owner's Manual and to familiarize yourself with the information contained herein, paying special attention to all Warnings and Cautions.

Sales Representative's Responsibility

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 sales representative 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.

Installation

- Correctly installing the unit and recovery tank in your vehicle and securing them with bolts and tie down washers.
- Checking the pump, vacuum blower and engine oil levels prior to starting the unit.
- Starting the unit to check the drive system and see that all other systems function normally.
- Checking all hoses, tools/wands and accessories for correct operation.

Training

- A thorough review of the Owner's Manual with the purchaser.
- Instruction in and familiarization with:
 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, how to troubleshoot the unit
 5. How to do basic repairs
 6. Safety precautions and their importance
 7. How to avoid freezing damage
 8. How to avoid hard water damage
- 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.

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

HydraMaster 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, HydraMaster requires that all machines operating in designated “Hard Water Areas” (3.0 grains or more per gallon) be fitted with a water softening system, or a properly installed magnetic-type descaler must be used and maintained. Periodic descaling or acid-rinsing alone is not adequate in these areas. HydraMaster does not recommend any particular type or brand; however, the relative effectiveness of some types of magnetic descalers or softeners may require additional periodic use of descaling agents.

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

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 hard water map, shown in Figure 1-1, defines hard water areas in the lower 48 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.

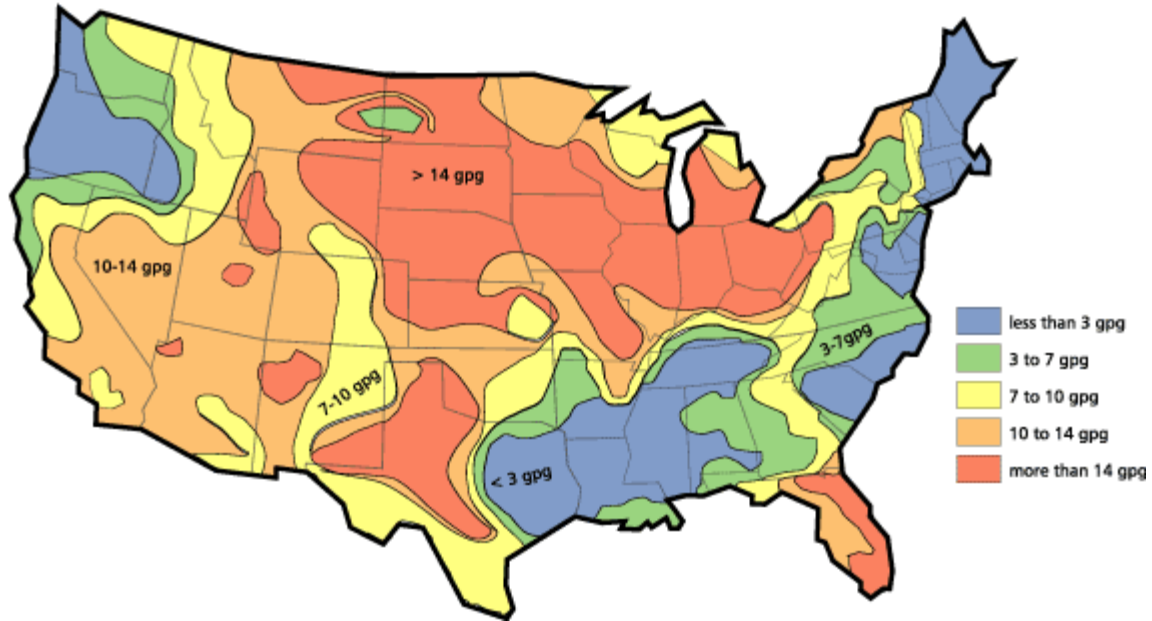


Figure 1-1. Hard Water Map of Mainland United States

NOTICE

The map shown in Figure 1-1 is provided for general reference only. Water hardness in your geographical location should be confirmed by testing.

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. HydraMaster strongly urges the use of water softener units with the CDS 4.8/4.6 machines in areas exceeding 3.0 grains per gallon (see Figure 1-2).

Failure to use a water softener in these areas will invalidate the machine's warranty. Referring to the hard water area map shown Figure 1-1, determine the quality of water in your area and take immediate action if the water hardness exceeds 3.0 grains per gallon.

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.

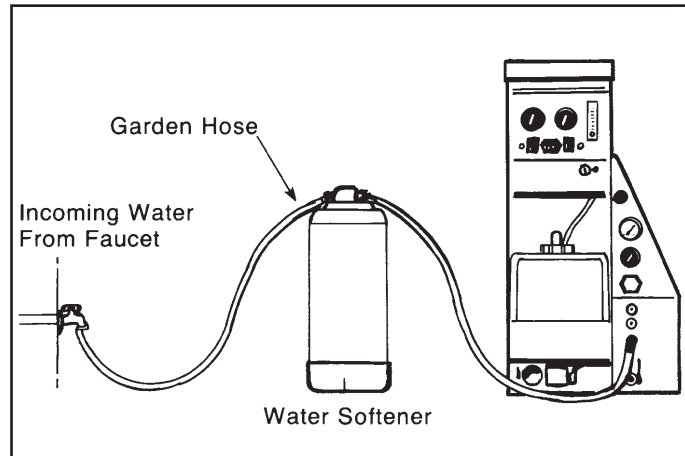


Figure 1-2. Configuration of Water Softener and CDS

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.

The cleaning rinse water, recovered into your unit’s vacuum tank, contains materials such as detergents, and must be safely processed before entering streams, rivers and reservoirs.

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 your CDS 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.

HydraMaster makes an APO System which can be ordered with new equipment or installed later.

When properly configured, the systems will continuously monitor the level of waste water and pump it out simultaneously with the cleaning operation. The hidden benefit of this process is that the technician does not have to stop his/her cleaning to empty the recovery tank.

NOTICE

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

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

2 - Chemicals and Cleaning

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, it remains only a tool of the carpet cleaning trade and can produce only as good a job as the person operating it.

This section of the manual contains the following information:

- Cleaning Precautions
- Cleaning Stroke Procedure
- Overwetting

CAUTION

The use of some chemicals through your mobile carpet cleaning plant can seriously damage the internal plumbing, high-pressure pump, chemical pump and heat exchangers. These harmful chemicals include concentrated acid, solvents (including d-Limonene), and some paint, oil and grease removers with a high concentration of solvents (see pH chart in Figure 2-1).

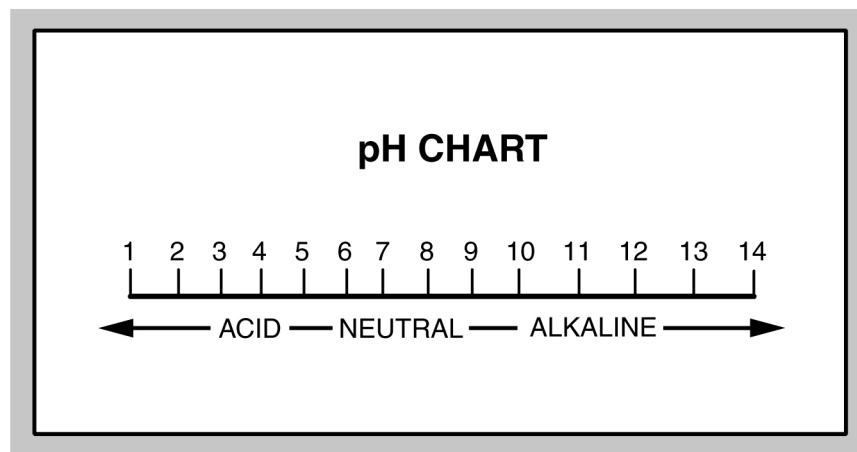


Figure 2-1. pH Chart

CLEANING 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.

HydraMaster also recommends only the use of chemicals containing rust and corrosion inhibitors, and water softening agents to prevent chemical build-up which may lead to component failure and warranty invalidation.

CAUTION

Some acid rinse products can cause damage to internal machine components. Failure to take appropriate measures to prevent acidic corrosion can result in system failure and loss of warranty on affected parts.

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

Avoid using detergents and chemicals which create foam when those products are agitated because foam passing through the blower could lead to serious mechanical failures. To ensure proper cleaning, use HydraMaster detergents and chemicals which are formulated with built in anti-foaming agents. When cleaning surfaces with excessive foaming residue, use HydraMaster de-foamer products as directed.

CLEANING STROKE PROCEDURE

To eliminate excess moisture remaining in the carpet fiber and eliminate the sawtooth appearance which results from diagonal movement of the cleaning tool, follow these steps.

1. Always move the cleaning tool in smooth, forward and backward stroke
2. Apply slight pressure to the forward stroke while the solution is injected into the carpet.
3. 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.
4. During the forward and reverse strokes, movement to the right or left should only be done at the extreme rear of the stroke.
5. Overlapping is also important to ensure even application of solution and prevent saturation when the cleaning tool is stopped twice at the same point at the rear of the cleaning stroke Figure 2-2.

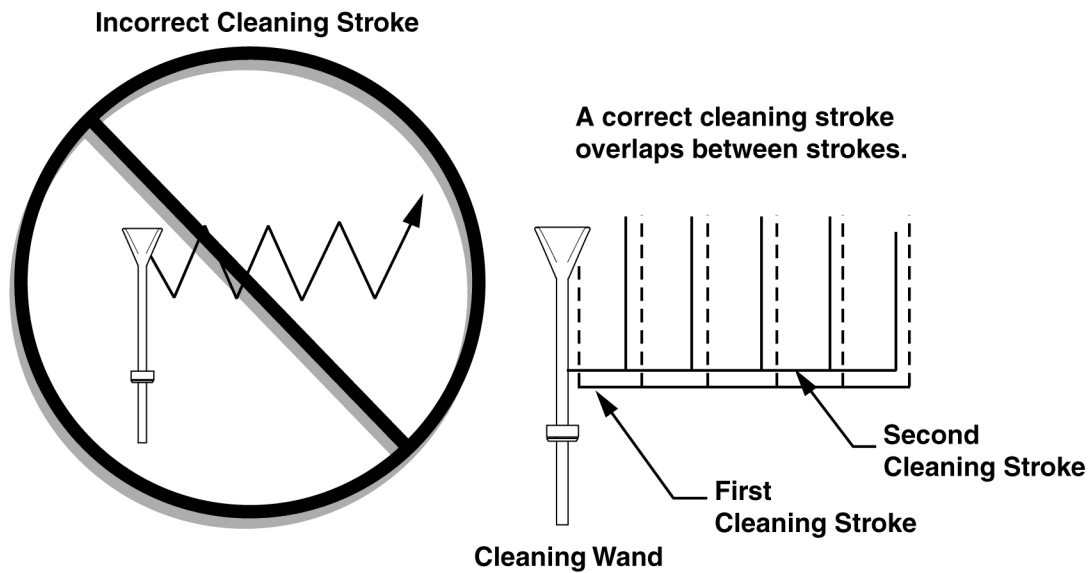


Figure 2-2. Cleaning Stroke Procedure

CAUTION

Failure to adopt the previous procedure can result in increased chance of “clean streaks,” fiber shrinkage, brown-out and longer drying periods.

OVERWETTING

Overwetting is annoying to all concerned, and sometimes leaves the customer with a bad impression of the cleaning process used.

These are several conditions that will cause over-wetting

1. Too few vacuum strokes or improper saw-tooth vacuum strokes as shown in Figure 2-2.
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.

3 - Operating Instructions

This section of the manual contains the following instructions:

- Before Operating the CDS
- CDS Start Up
- CDS Flood Restoration Work
- CDS Shut Down
- 3 Speed Throttle Control Function

BEFORE OPERATING THE CDS

1. Locate the unit and equipment in a well-ventilated area.

▲ WARNING

The CDS 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.

2. Check the fuel tank to be certain there is adequate fuel to complete the job.
3. Position the wheel chocks on one of the front tires.
4. If using a water supply hose which has not been used recently or if using a customer's hose, first connect the hose to the faucet and flush out any debris which may be in the hose. Afterwards connect the hose to the unit.
5. Check the chemical jug to see if you have enough concentrated chemical to finish the job. If not, mix and fill a 5 gallon chemical jug.
6. Connect all required hoses.
7. When connecting the pressure hose to the pressure outlet connections at the front of the unit, go to the farthest area to be cleaned and connect to the cleaning tool. This ensures that you have the proper length of hose required to perform the cleaning.

CDS START UP

1. Make sure the vehicle's gear select lever is in the Park position and the emergency brake is set
2. Start the vehicle's engine.
3. Turn key on the CDS dash.
4. Select the cleaning speed appropriate for the cleaning job.
5. Turn on the PUMP CLUTCH switch. Adjust cleaning pressure to desired level.
6. Turn on the PUMP IN switch (if equipped).
7. Turn the heat control valve to "Max" only if you will be using water. Do not activate the heat exchanger during flood extraction work.
8. Turn the CHEMICAL SYSTEM valve to the "PRIME" position to purge any air from the system.

NOTICE

The prime hose is plumbed into the recovery tank. Leaving the valve in the "PRIME" position will cause excessive chemical usage.

- a. When the chemical begins to flow through the flowmeter, with the flow indicator reading maximum flow and the PRIME line pulsing, turn the CHEMICAL SYSTEM valve to "ON". Cap off vacuum if necessary.
 - b. While spraying the solution from the cleaning tool, adjust the chemical flow by turning the CHEMICAL METERING CONTROL to the desired level.
9. Optional: Turn the APO switch 'ON' if using the Automatic Pump-Out feature.

NOTICE

The pump will not engage until the water level rises inside the recovery tank.

10. Now proceed with the cleaning operation.

NOTICE

The machine will automatically shut down when it reaches its full capacity due to the float switch located inside the recovery tank. When this occurs, turn the switch off and empty the recovery tank. Then, turn the unit back on and continue to clean.

CDS FLOOD RESTORATION WORK

When using equipment for flood damage, adjust the high pressure pump to zero. This will reduce the engine power load and save on fuel consumption.

CDS SHUT DOWN

1. Flush clear water through the chemical system for 10 seconds.
2. Open the water box drain and actuate the tool/wand valve to run fresh water through the water box, heat exchangers and cleaning tools.

NOTICE

If freeze guarding is necessary, perform the freeze guard procedure at this time. Draining the water box to ½ full or less is recommended to reduce spillage inside the vehicle.

NOTICE

Rinse the system with vinegar on a weekly basis. Rinse the entire system with descaler each month.

3. Lay vacuum hoses out in order for all moisture to be removed from the hoses. This prevents spillage of any dirty solution in your vehicle when storing the hoses.
4. Disconnect the hoses and put them away.
5. If you are using an outside water source, turn the water supply faucet off. Bleed pressure out of the supply hose by loosening the hose at the water supply. Unhook the water supply hose and store it in the vehicle
6. Allow the unit to run for a few minutes with the vacuum hose disconnected in order to remove all moisture from the vacuum pump.
7. Plug the vacuum inlets. Spray lubricant into the lube port for about 5 to 10 seconds while the unit is running. This will lubricate the vacuum pump and prevent it from rusting. (The lube port is located on the front panel above the pressure gauge.)
8. Remove the inlet plugs, then turn the ignition "OFF" before draining the recovery tank.
9. Turn the heat control valve to the 'OFF' position. This will help avoid engine overheat problems due to reduced coolant flow through the radiator.
10. Drain the recovery tank.

NOTICE

Do not dump waste in any area which might violate local, state or federal law. If you have the optional Automatic Pump-Out (APO) system, drain the recovery tank into a sanitary drain system.

11. When the recovery tank is drained, lift the recovery tank lid and remove the filter basket.
12. Clean out any accumulated debris.
13. Rinse and re-install.

3 speed Throttle Control function

— For GM Vans —

The GM Throttle Controller must meet certain “Chassis Ready” conditions to elevate the engine rpm, which are as follows:

1. Parking Brake is set
2. Gear shift is in “Park”
3. Foot is off Service Brake (brake pedal)
4. Foot is off Accelerator Pedal
5. Vehicle is stationary (no speed)
6. Engine is started and idling
7. The A/C / Heater switch is in off position

NOTICE

The Throttle Controller must be initialized anytime the Data Link Cable (DLC) harness is disconnected from the Data Link Connector. To initialize the system switch ignition key to OFF position, plug in DLC harness, switch the ignition on, and then start the engine. This allows the Throttle Controller to read the PCM engine computer.

On the Throttle Controller, there are LED lights with corresponding labels to provide status and problem detection information (refer to Figure 3-1 and Table 3-1).

**LED LIGHTS WITH
LABELS**



3 TRIM POTS

Figure 3-1. Location of Controller's LED Lights with Labels and RPM Trim Potentiometers

Table 3-1. GM Throttle Controller LED Functions

LED	STATUS	INDICATION
BUSS	On Solid	Unit ON and functioning (harness connected to data link)
BUSS	Flashing	Unit ON, but a problem was detected
GEAR	On Solid	Transmission in PARK
GEAR	Flashing	Transmission NOT in Park
PK BRK	On Solid	Parking Brake Set
PK BRK	Flashing	Parking Brake is NOT set
SR BRK	On Solid	Service Brake is set (not being used)
SR BRK	Flashing	Service Brake is NOT set
VSPEED	On Solid	Vehicle is stationary
VSPEED	Flashing	Vehicle is moving
RPM1	On Solid	RPM1 mode selected, engine at fast idle
RPM1	Flashing	RPM1 mode selected, engine not at fast idle
RPM2	On Solid	RPM2 mode selected, engine at fast idle
RPM2	Flashing	RPM2 mode selected, engine not at fast idle
RPM3	On Solid	RPM3 mode selected, engine at fast idle
RPM3	Flashing	RPM3 mode selected, engine not at fast idle

NOTICE

On GM gas engine vehicles, the PCM engine computer will cause the engine speed to momentarily drop back to normal idle speed every time the air conditioner pump cycles on or off. Make sure the operator of the CDS understands that the AC / HEAT switch needs to be in the OFF position before activating the CDS unit.

— For Ford Vans —

The Ford 3 Speed Throttle Controller must meet certain “Chassis Ready” conditions to elevate the engine rpm, which are:

1. Parking Brake is set.
2. Gear shift is in “Park”.
3. Foot is off Service Brake (brake pedal).
4. Foot is off Accelerator Pedal.
5. Vehicle is stationary (no speed).
6. Brake light circuit is functional.
7. Engine coolant is above 140° F.
8. Transmission Oil Temperature is below 240° F.
9. Maximum Catalytic Temperature has not been met.

NOTICE

SEIC (Stationary Elevated Idle Control)* will be terminated by a safety condition violation. For instance, the SEIC will be terminated if the service brake is depressed at any time during its operation.

The 3 lights on the Throttle Control assembly indicate the following conditions (refer to Figure 3-2 and Table 3-2):











1. RED LIGHT: the Throttle Control assembly is receiving power from the vehicle, but the SEIC process has not been initiated.
2. YELLOW LIGHT: all the “Chassis Ready” conditions have been met and the SEIC process has been initiated.
3. GREEN LIGHT: the Throttle Control assembly is receiving power from the CDS and the SEIC process is operational.



Figure 3-2. Location of 3 Lights on Throttle Control Assembly

* SEIC is Ford’s onboard computer throttle control strategy.

Table 3-2. Ford Throttle Controller Light Functions

WHEN...	CONTROL LIGHT(S)
1. Van ignition 'ON'	
2. CDS ignition 'OFF'	
1. Van ignition 'ON'	 
2. CDS ignition 'ON'	
3. Recovery tank NOT full	
4. SEIC NOT active a. "Chassis ready" conditions HAVE NOT been met	
1. Van ignition 'ON'	 
2. CDS ignition 'ON'	
3. Recovery tank NOT full	
4. SEIC IS active a. "Chassis ready" conditions HAVE NOT been violated	
1. Van ignition 'ON'	  
2. CDS ignition 'ON'	
3. Recovery tank NOT full	
4. SEIC IS active a. "Chassis ready" conditions HAVE been violated	
1. Van ignition 'ON'	 **
2. CDS ignition 'ON'	
3. Recovery tank IS full *	
4. SEIC IS active a. "Chassis ready" conditions HAVE NOT been violated	
1. Van ignition 'ON'	 **
2. CDS ignition 'OFF'	
3. Recovery tank NOT full *	
4. SEIC IS active a. "Chassis ready" conditions HAVE NOT been violated	

NOTICE

*Turn CDS ignition "OFF" before draining recovery tank.

NOTICE

**SEIC process will continue until a "chassis ready" condition has been violated. To clear single yellow light conditions, van ignition needs to be turned "OFF".

4 - Freeze Guard

When operating the CDS 4.8 / 4.6 during the colder months of the year, ensure that you properly freeze guard the system. No part of the CDS 4.6/4.8 System is covered by warranty if machine damage occurs because of freezing.

This section of the manual includes information concerning:

- Draining the CDS
- Freeze Protecting Pump-In System

CAUTION

BE SURE YOUR MACHINE IS PROTECTED! Freezing will cause GRIEF, LOST MONEY, and DOWN-TIME.

The following precautions are recommended prior to and during cleaning:

1. Run the machine before leaving for the first job to ensure nothing has frozen the night before, including hoses and tool/wand.
2. Insulate the fresh water (garden) hose from the cold ground by running it through an extra 1½" vacuum hose.
3. Leave vehicle doors closed until you begin cleaning; afterwards, open slightly.

NOTICE

In colder climates, insulating the vehicle walls and floor boards will help protect the unit.

4. Do not procrastinate during the cleaning operation or the hot water solution line will also freeze on the ground. The solution line should be insulated in extremely cold climates.
5. Whenever possible, store the van in a heated garage at night or over the weekend. If not possible, place a 1,500 Watt electric heater inside the vehicle, aimed directly at the machine.

CAUTION

Never use a propane heater. It causes excessive moisture on the vehicle ceiling and the possibility of it going out is higher.

6. If the machine and vehicle are left outside with a heater, drain water from the machine cleaning tools and hoses because they can be freeze-damaged also.

DRAINING THE CDS

To drain the machine, follow these steps:

1. Before shutting off the machine, remove the chemical line from the chemical jug and place in a mixture of 50/50 antifreeze and water. Turn the CHEMICAL SYSTEM valve to the “PRIME” position until coolant registers in the flow meter. With the cleaning tool on, allow mixture to fill the remainder of the chemical system.
2. Open the water box drain valve and allow the water to drain thoroughly from the water box.
3. Close the water box drain and fill the water box with 50 / 50 antifreeze and water mixture. Run the unit for 1 minute to circulate the mixture through the machines low-pressure hoses. Spray through the wand or other tool into a suitable container until the water box shut-off switch activates (pump stops). This freeze guards the high-pressure circuit
4. Open the water box drain and drain out the residual fluid into a suitable container. This antifreeze solution may be retained for reuse (attach freeze guard fitting to inlet quick connect and vacuum water out of the inlet line).

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.”

▲ 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.”

FREEZE PROTECTING PUMP-IN SYSTEM

1. Drain the fresh water tank.
2. Remove the fresh water (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 until all the water is purged from the hose.

NOTICE

The next time the CDS is used, it may take a few minutes before the water box begins to fill.

5 - Water and Chemical System

The CDS 4.8 / 4.6 high-pressure water and chemical system has been designed to be simple and trouble free.

This section of the manual explains:

- Water and Chemical Flow Operation
- Chemical System Maintenance
- Chemical System Troubleshooting

WATER AND CHEMICAL FLOW OPERATION

The general concept of the water and chemical flow is as follows:

- Water is fed into the CDS under tap pressure to the water box.
- The water is then pumped from the water box through the heating system, mixed with the chemical and then that mixed solution is pumped out to the cleaning tool/wand.
- After the solution is applied to the carpet, it is recovered by the vacuum system and carried back to the recovery tank.

The chemical pump draws the chemical from the inlet filter which is in the chemical container. The chemical solution flows through the flowmeter, indicating the flow of chemical being used in gallons/hour. The chemical then flows through the chemical pump to the chemical selector valve. The CHEMICAL SYSTEM valve can be used to prime the pump (evacuate air from the system), inject chemical into the system or turn the chemical flow off. When the CHEMICAL SYSTEM valve is 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 adjusting the chemical metering valve when 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.

To flush the chemical system:

1. Set the CHEMICAL FLOWMETER to 10 gph.
2. Remove the clear plastic hose from the chemical jug and insert it into a 1-quart container of vinegar.
3. Spray water from the tool/wand until the vinegar is gone.
4. Repeat the process with 1 quart of clear water to void all lines of vinegar.

Chemical System Troubleshooting

1.0. SYSTEM WILL NOT PRIME

1.1. Check valves in chemical pump are faulty.	Remove valves and inspect. Clean or replace as necessary.
1.2. Chemical pump diaphragm is faulty.	Remove and inspect. Replace as necessary.
1.3. Check valve in high pressure pump (the one that the chemical pump attaches to) is faulty.	Remove valve and inspect. Clean or replace as necessary.
1.4. Filter on feed line in chemical jug is clogged.	Inspect and clean.
1.5. Feed line from chemical jug is loose, pinched or cut.	Inspect and repair.
1.6. Three-way prime valve is faulty.	Check valve for leaks between ports. Replace as necessary.

NOTICE

If the chemical system has been run dry, it may be necessary to prime the chemical system to purge all of the air from the system.

2.0. CHEMICAL FLOW IS UNSTABLE OR LOW

2.1. Air in lines.	Check that all fittings and connections are tight and in good condition. Repair or replace as necessary.
2.2. Filter screen in chemical jug is partially clogged.	Inspect and clean.
2.3. Three-way chemical valve is faulty.	Inspect valve for leaks between ports. Replace as necessary.
2.4. Chemical metering valve is faulty or partially obstructed.	Inspect valve and clean or replace as necessary.
2.5. High pressure check valve is faulty.	Remove and inspect. Clean or replace as necessary.

3.0. CHEMICAL JUG FILLS WITH WATER

3.1. Three-way chemical valve is defective.	Inspect valve for leaks between ports. Replace as necessary.
3.2. Inlet check valve in chemical pump is faulty.	Remove and inspect valve. Clean or replace as necessary.

4.0. CHEMICAL IN WATER BOX

4.1. Chemical pump diaphragm is faulty.	Remove and inspect. Replace as necessary.
4.2. High-pressure check valve is faulty.	Remove and inspect. Clean or replace as necessary.

6 - Water Pump Maintenance

The CDS' water pump features a dynamic low-pressure seal retainer, an innovative intermediate ring, and superior low-pressure and high-pressure seals. With its ceramic plungers and nickel-plated forged brass manifold, this high-temperature pump is ideal for use in carpet cleaning.

You must perform daily and periodic maintenance on the pump to maintain maximum performance of seals and valves.

This section of the manual explains:

- Daily Maintenance
- Periodic Maintenance
- Water Pump Troubleshooting



DAILY MAINTENANCE

1. 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.
2. Use a SAE15W40 oil.

CAUTION

If the oil becomes discolored and contaminated, one of the oil seals may be damaged. Refer to the Pump Owner's Manual, included with the CDS 4.8 / 4.6 Owner's Manual, for more information.

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.

CAUTION

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

CAUTION

Protect the pump from freezing.

PERIODIC MAINTENANCE

Change the oil after the first 50 hours of operation, with the pump stopped and the oil still warm, and after every 300 operating hours or 3 months of operation. When changing the oil, remove the drain plug on the oil drain hose so all oil and accumulated sediment will drain out.

The initial oil change is recommended for no other reason than to eliminate impurities that may be in the oil during the running-in phase. If these impurities are not removed, but are allowed to remain in the oil, they may cause premature wear to the moving parts and the oil seals.

NOTICE

If the pump works in conditions with high humidity and with sharp temperature changes, condensation may appear inside the crankcase. Condensation mixing with the oil can change the oil's properties, which is easy to detect because the oil changes to a white, milky color.

If the pump does not have excessive water leaking from the packings, and the oil becomes milky, the oil has to be changed more frequently.

Water Pump Troubleshooting

1.0. WILL NOT COME UP TO NORMAL CLEANING PRESSURE

1.1. Pressure adjusting valve is defective or dirty.	Disassemble valve. Repair or replace as necessary.
1.2. Worn seals or valves in pump.	Test pump output volume directly from pump at normal operating rpm. If volume is below manufacturers specifications, replace seals and inspect for defective valves.
1.3. Pump rpm is too low.	Check engine rpm and adjust as necessary. Check for loose pump belt. Adjust tension as necessary.
1.4. Primary system control orifice is missing or loose*.	Remove filter and inspect. Tighten or replace as necessary.
1.5. Primary orifice is worn.*	Measure orifice size and replace as necessary.

*Applies to SALSA option only.

2.0. NO PRESSURE READING ON PSI GAUGE

2.1. Pump switch is not turned on.	Turn on switch
2.2. No water in water box.	Refer to section 5 of this manual.
2.3. Pump belt is broken.	Replace belt.
2.4. Pump clutch is not activated. There is no water in water box	Check system back to source to locate cause of interruption to water flow.
2.5. Pump clutch is not activated. There is water in the water box.	2.5.1. Check for 12 volts at clutch. If 12 volts is present, replace clutch.
	2.5.2. If 12 volts is not present, check power to the low-water relay. If there is 12 volts at the relay, check low water switch in water box.
	2.5.3. If low water switch has no continuity when float is up, replace the switch. If switch is good, replace the low water relay.

**3.0. PSI GAUGE READS NORMAL; LOW PRESSURE FROM TOOL/
WAND**

3.1. There is a restriction in the cleaning tool/wand.	Inspect tool jet and clean or replace as necessary. Inspect any filters in the cleaning tool and clean or replace as necessary.
3.2. There is a defective quick connect in the system.	Inspect each quick connect and replace as necessary.
3.3. There is a restriction in one of the solution hoses.	Remove quick connects and inspect hoses. Clean or replace as necessary.
3.4. There are hard water deposits restricting the system between the heat exchanger and the high-pressure solution connection at the front of the machine.	Descal the machine. If this doesn't solve the problem, disassemble this portion of the system and locate restriction.

4.0. PRESSURE PULSATION

4.1. Water in the water-box is too hot and is approaching boiling point.	Check temperature of water in the water-box.
4.2. There is an air leak between the water box outlet and the pump inlet.	Physically check all hoses and fittings for cuts, breaks, cracks or tightness. Repair as necessary.
4.3. One of the intake or outlet valves in the high-pressure pump is defective or is being held open by debris.	Remove each valve and inspect for correct operation.

5.0. WATER BOX EMPTY OR FILLS SLOWLY

5.1. There is a restriction in the water supply system.	Inspect the supply system from the source through the incoming quick connect for kinks, clogs or restricted filters. Clean or repair as necessary.
5.2. The float valve in the water box is defective	Replace.

6.0. WATER BOX OVERFLOWS

6.1. There is either debris caught in the valve or the valve seal is bad.	Replace.
6.2. The float has absorbed water and has lost buoyancy.	Replace.
6.3. The float has come out of adjustment.	Re-adjust float as necessary.

7 - Assemblies and Parts Lists

Figure 7-1. CDS Machine Assembly - Front View
7145 Rev. C

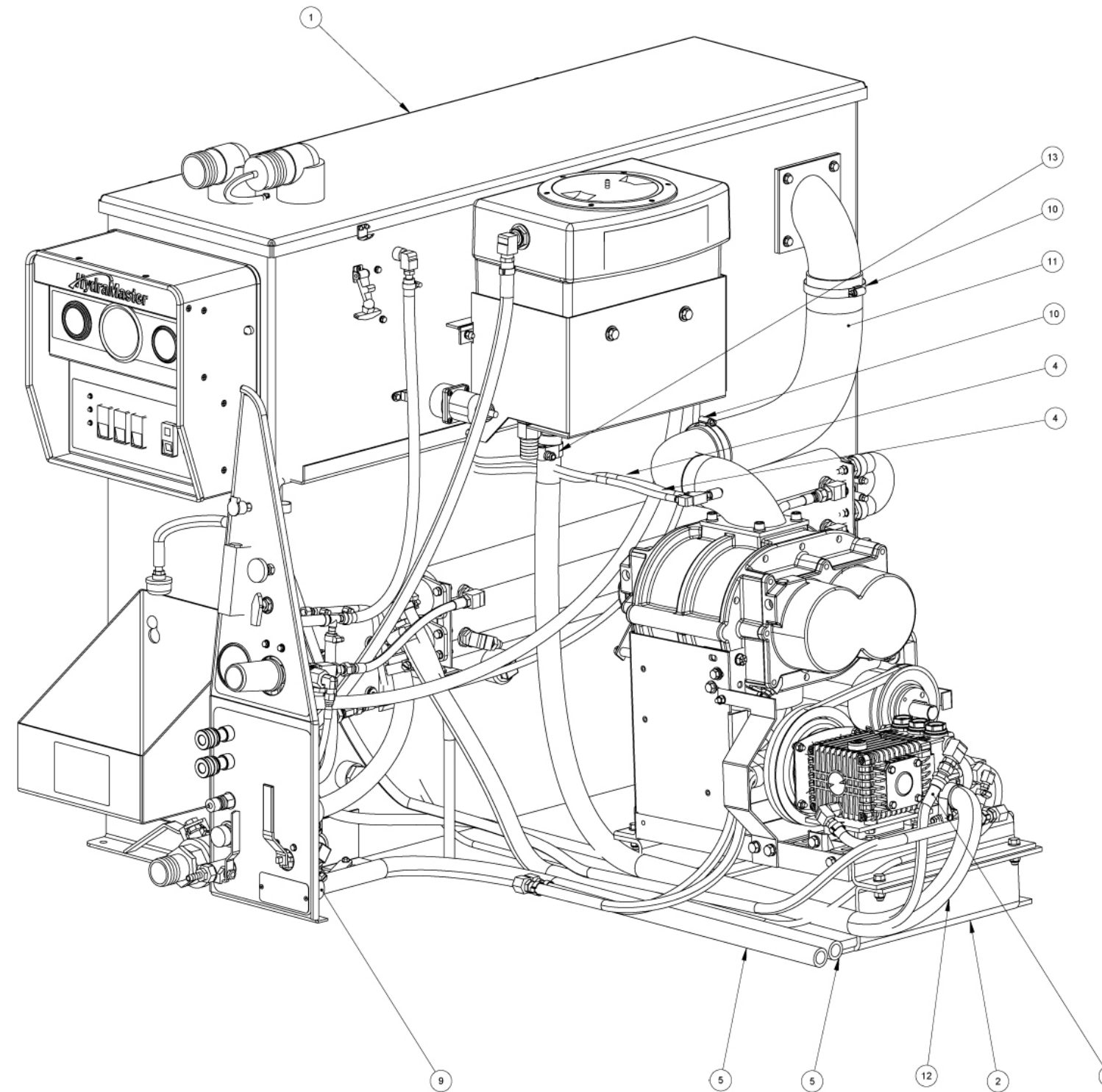
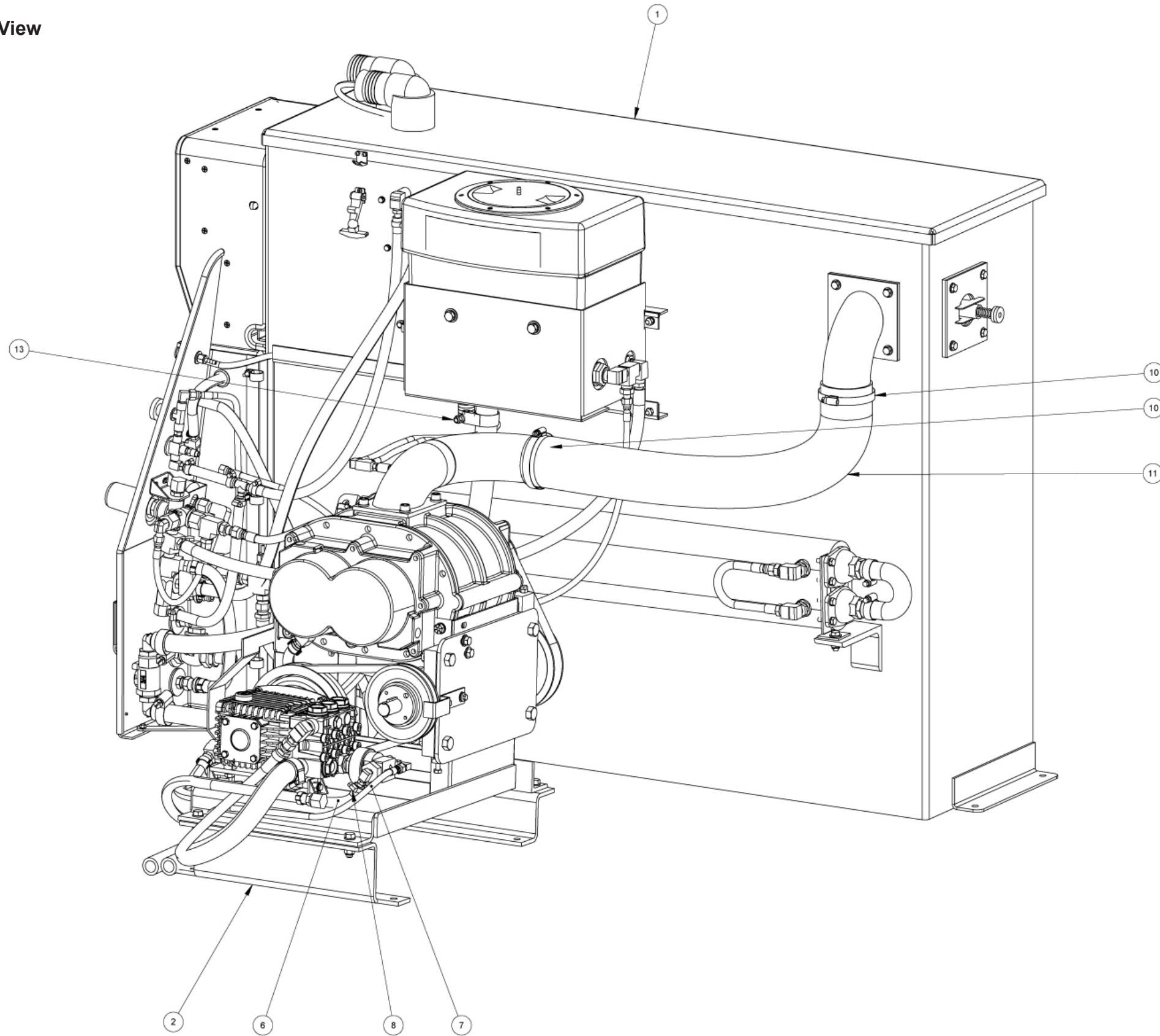


Figure 7-2. CDS Machine Assembly - Rear View
7145 Rev. C



CDS Machine Assembly Parts List

Item	Part Number	Description	Qty
1	---	Assembly, Recovery Tank - CDS 4.8	1
2	---	Pump & Blower Assembly - CDS 4.8	1
3	000-068-588	Hose, 3/8" X 36" Lg. Throb - CDS	1
4	000-068-030	Hose, 5/32" ID Vacuum - Bulk	10 ft
5	000-068-459	Hose, 3/4" ID Green Stripe - Bulk	18 ft
6	000-068-085	Hose, 3/8" Hi Temp Black - Bulk	73"
7	000-068-706	Hose, 3/16" X 70" Lg. Teflon W/ F JIC Ends	1

Item	Part Number	Description	Qty
8	000-033-005	Clamp, Size #5 Hose	2
9	000-033-020	Clamp, Size #16 Hose	2
10	000-033-013	Clamp, #48 Hose (3")	2
11	000-068-764	Hose, Ø3.0" X 15 Lg. Flexible Wire Reinforce	34"
12	000-068-777	Hose, 1" X 45" Lg. Suction	1
13	000-033-132	Clamp, 1-1/2" T-Bolt	2

Figure 7-2. CDS Recovery Tank Assembly - Front View
6977 Rev. B

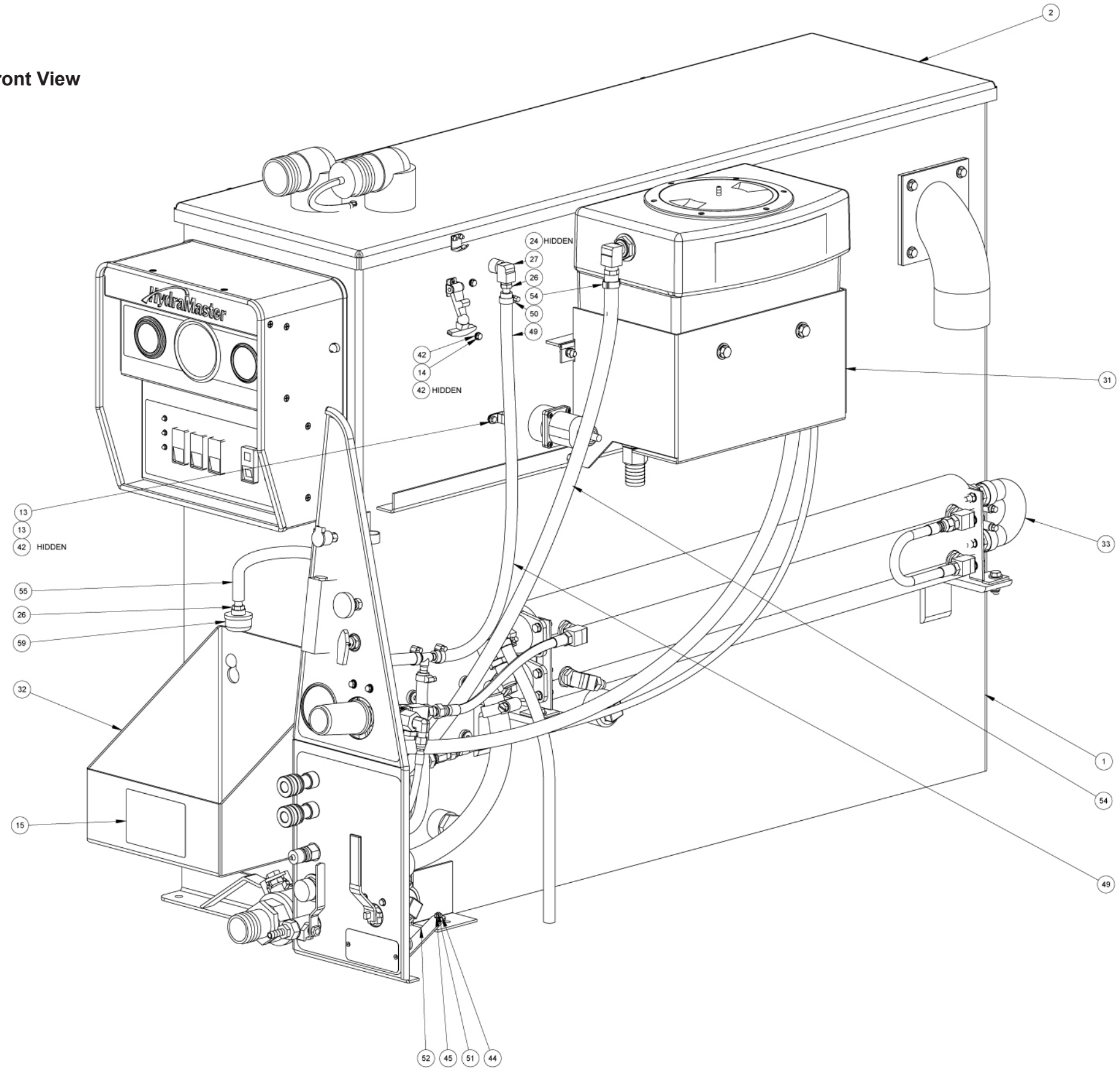
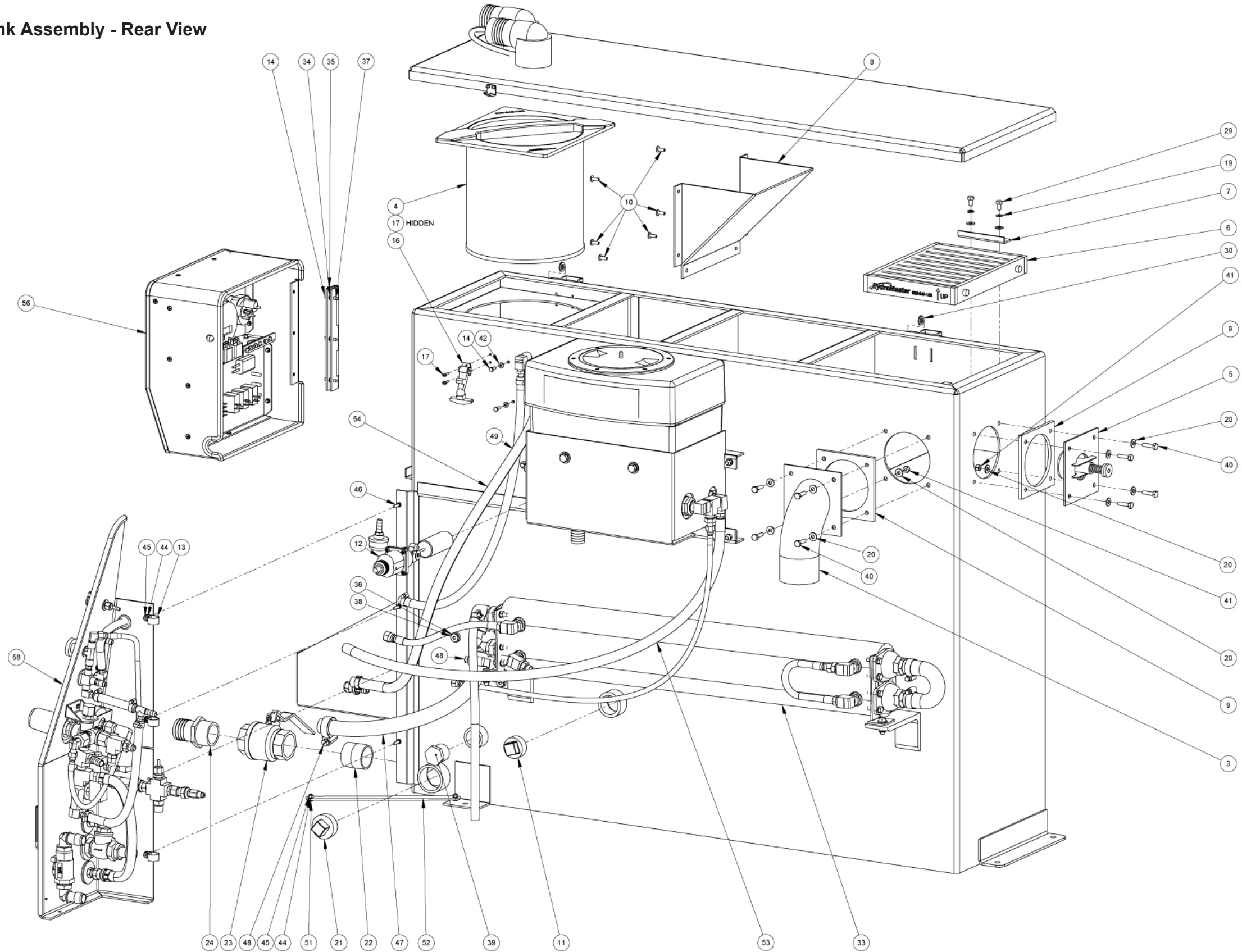


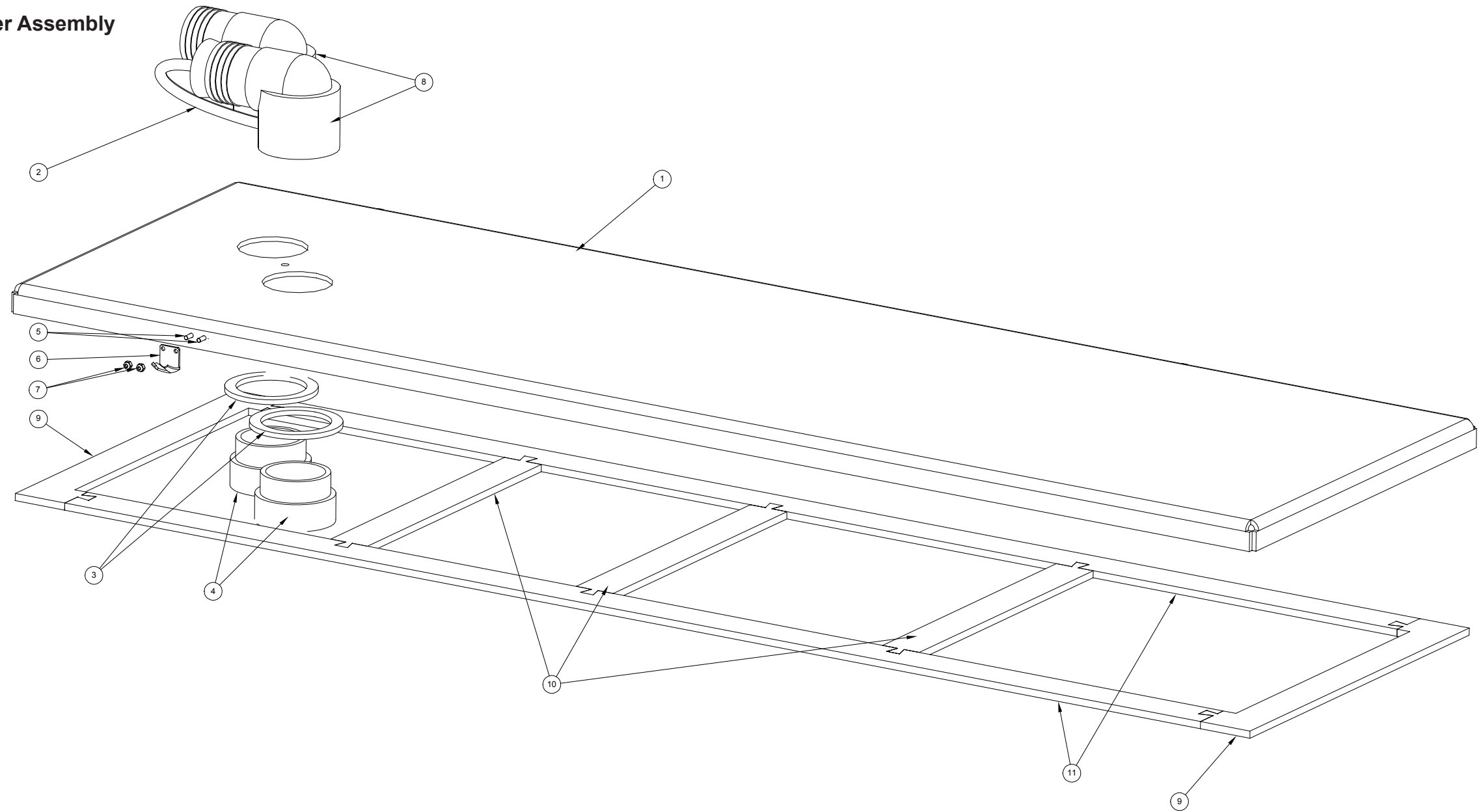
Figure 7-3. CDS Recovery Tank Assembly - Rear View
6977 Rev. B



CDS Recovery Tank Assembly Parts List

Item	Part Number	Description	Qty	Item	Part Number	Description	Qty
1	000-159-130	Tank, 100 Gallon Universal Recovery - Weldment	1	31	601-050-105	Assembly, Water Box	1
2		Assembly, Recovery Tank Cover - 100 Gallon	1	32	000-166-002	Assembly, Soap Jug Tray	1
3	000-001-135	Adapter, Tank To Ø3.0 X 90° Blower Hose	1	33	601-050-111	Assembly, Dual Heat Exchanger	1
4	000-049-152	Filter, Recovery Tank Basket	1	34	000-174-001	Washer, #10 Flat	6
5	See Notes	Assembly, Vacuum Relief Valve - URT	1	35	000-067-031	Hinge, Dash Box	1
6	000-049-153	Filter, Flat - Universal Recovery Tank	1	36	000-094-113	Nut, 1/4"-20UNC Neoprene Wellnut	4
7	000-015-932	Bracket, Flat Filter Securing	1	37	000-143-166	Screw, #10-24UNC X 3/8" Lg. Hex Head	3
8	000-049-154	Deflector, Air - Universal Recovery Tank	1	38	000-174-060	Washer, 1/4" Rubber Backed	4
9	000-057-206	Gasket, Adapter - URT	2	39	000-106-049	Plug, 1" NPT Black Nylon	1
10	000-140-023	Rivet, Ab8-6a Aluminum Pop	6	40	000-143-002	Screw, 1/4"-20UNC X 1.00" Lg. Hex Head	8
11	000-106-046	Plug, 1-1/4" NPT	1	41	000-094-009	Nut, 1/4"-20UNC Nylock	8
12	000-157-091	Float, Lever Switch	1	42	000-174-036	Washer, #10 Flat Rubber Backed	3
13	000-033-023	Clamp, 3/4" Nylon Hose	4	43	000-094-034	Nut, #10-24UNC Nylock S/S	3
14	000-143-126	Screw, #10-24UNC X 0.50" Lg. Hex Head	6	44	000-174-015	Washer, #10 Outside Star	5
15	See Notes	Label, Set CDS 4.6/4.8 Common	1	45	000-094-004	Nut, #10-24UNC Hex	5
16	000-086-008	Latch, Bungie	1	46	000-143-064	Screw, #10-24UNC X 0.50" Lg. Flat Head	4
17	000-143-539	Screw, #6-32UNC X 0.50" Lg. Button Head	2	47	000-068-459	Hose, 3/4" ID Green Stripe	1
18	000-094-063	Nut, #6-32UNC Nylock	2	48	000-033-020	Clamp, Size #16 Hose	2
19	000-174-019	Washer, 1/4" Lock	2	49	000-068-017	Hose, 3/8" Bulk	3.5 ft
20	000-174-003	Washer, 1/4" Flat	18	50	000-033-005	Clamp, Size #5 Hose	2
21	000-106-019	Plug, 1-1/2" NPT	1	51	000-143-114	Screw, #10-24UNC X 0.50" Lg. Flat Head	2
22	000-052-763	Nipple, 1-1/2" IPS Close S/S	1	52	601-013-001	Stabilizer, Instrument Panel To Recovery Tank	1
23	000-169-022	Valve, 1-1/2" Full Port Ball	1	53	000-068-018	Hose, 1/2" ID Rubber - Bulk	3.75 ft
24	000-052-226	Insert, 1-1/2" NPT X 1-1/2" Barb (Grey)	1	54	000-068-734	Hose, 1/2" X 42.5 Lg. W/ 3/8" NPT & 3/8" SAE F Ends	1
25	000-052-082	Elbow, 1/4" NPT Street X 45°	1	55	000-068-326	Hose, 3/8" Id. Clear W/ Braid	1
26	000-052-102	Insert, #46 (1/4" NPT X 3/8" Barb)	3	56	- - -	Assembly, Dash Box	1
27	000-052-085	Elbow, 1/4" NPT Street	1	57	000-068-203	Hose, 3/16" X 34" Lg. 1/4" FJIC X 1/4" FJIC	1
28	See Notes	Label, Maintenance & Lube Schedule	1	58	- - -	Assembly, Instrument Panel	1
29	000-143-333	Screw, 1/4"-20UNC X 0.50" Lg. Hex Head	2	59	000-049-118	Filter, Chemical Inlet High Pressure	1
30	000-174-029	Washer, 3/8" Rubber Backed	2				

Figure 7-4. CDS Recovery Tank Cover Assembly
7151



CDS Recovery Tank Cover Assembly Parts List

Item	Part Number	Description	Qty
1	000-041-447	Cover, 100 Gallon Universal Recovery Tank - Weldment	1
2	000-078-039	Vacuum Inlet Stopper Assembly - Recovery Tank	1
3	000-057-015	Gasket, 1-1/2" Bulkhead Fitting	2
4	000-052-219	Adapter, 2" NPT x 2" F Slip	2
5	000-143-539	Screw, #6-32UNC x 0.50" Lg. Button Head Allen	2
6	000-086-008	Latch, Bungie - Strike	1

Item	Part Number	Description	Qty
7	000-094-063	Nut, #6-32UNC Nylock	2
8	000-052-222	Elbow, 2" Barb x 2" FPT	2
9	000-057-202	Gasket, End - Recovery Tank	2
10	000-057-203	Gasket, Middle - Recovery Tank	3
11	000-057-205	Gasket, Side - Recovery Tank - 100 Gallon	2

Figure 7-5. CDS Instrument Panel Assembly - Front View
6988 Rev. C

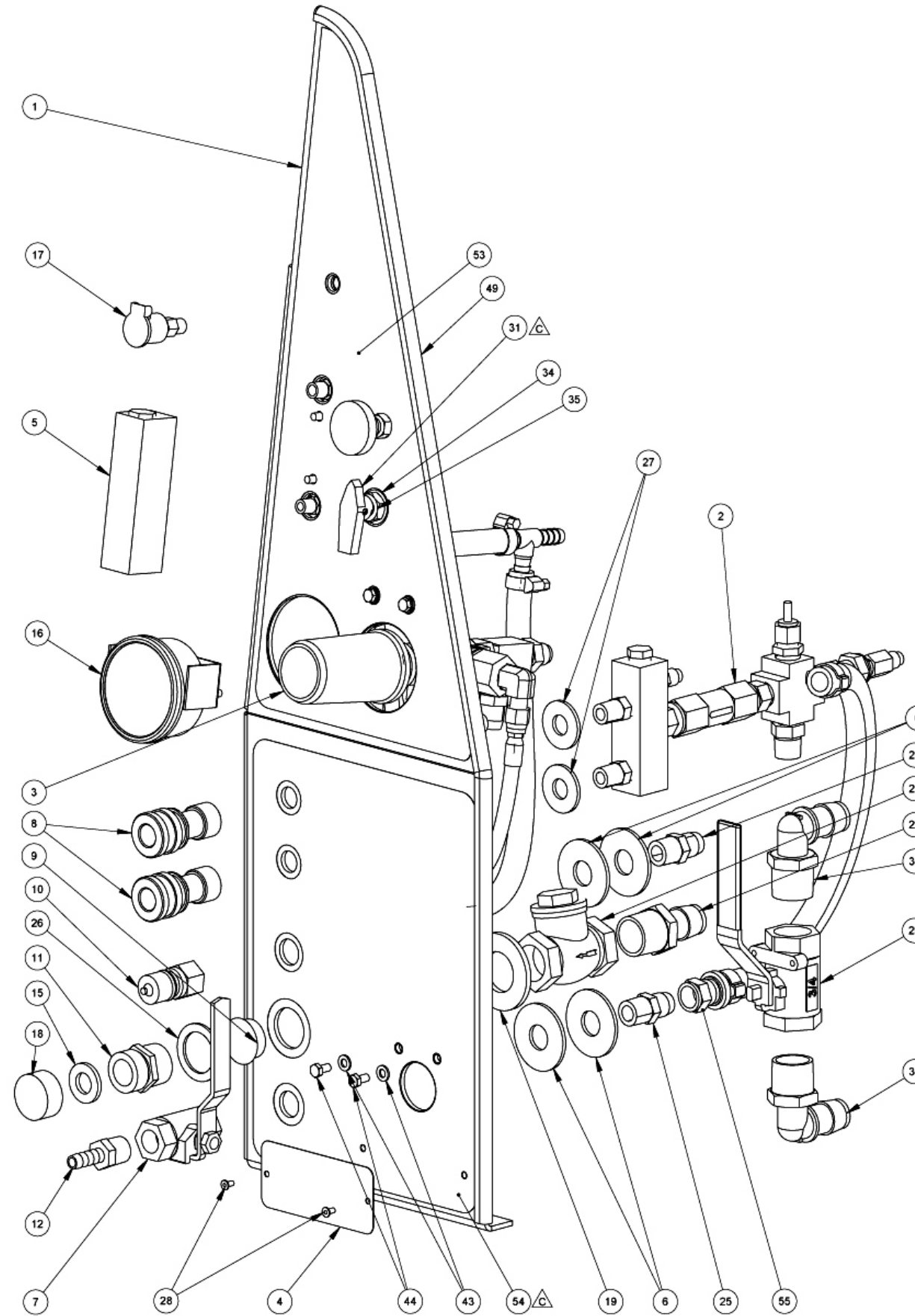
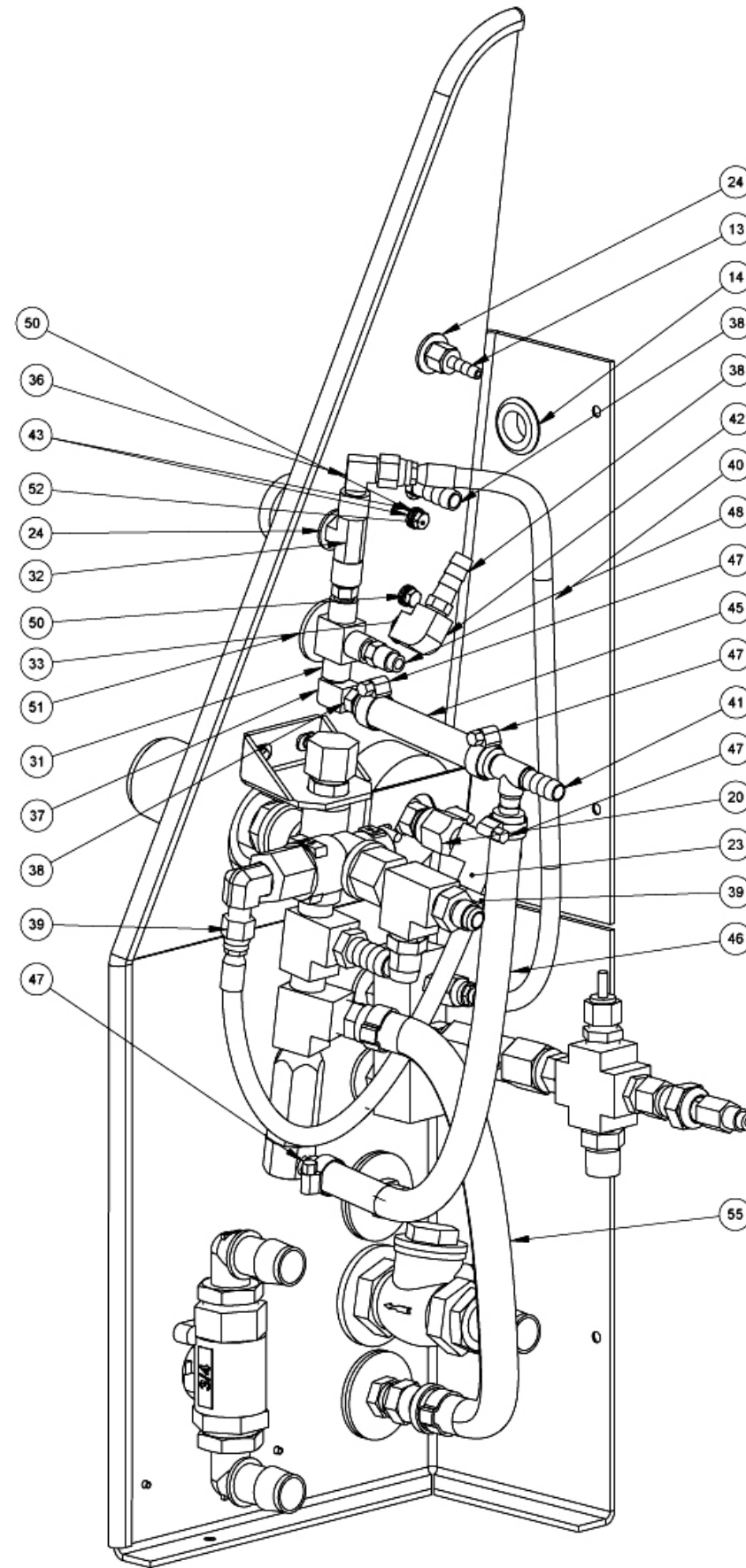


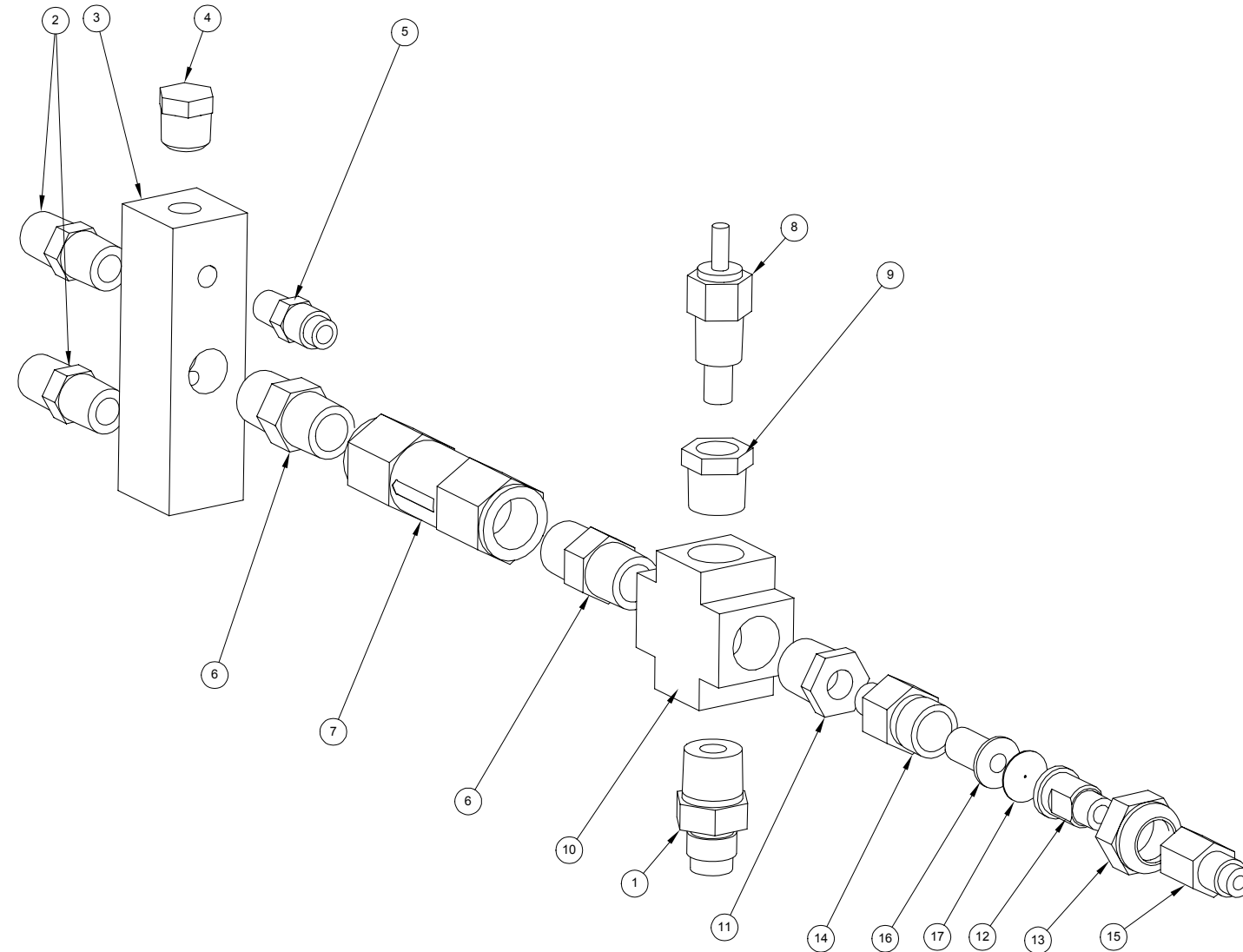
Figure 7-6. CDS Instrument Panel Assembly - Rear View
6988 Rev. C



CDS Instrument Panel Assembly Parts List

Item	Part Number	Description	Qty	Item	Part Number	Description	Qty
1	000-100-168	Panel, Instrument	1	32	000-169-160	Valve, Chemical Metering	1
2	See Notes	Assembly, Hi-psi Manifold	1	33	000-052-069	Nipple, 1/8" NPT Hex	2
3	See Notes	Assembly, By-Pass Valve	1	34	000-174-030	Washer, 5/8" Id X 7/8" OD X 0.010" Thk	1
4	000-105-012	Plate, Machine Serial ID	1	35	000-094-098	Nut, 7/16"-24 UNF - 2 watt Metering Valve	1
5	000-074-030	Meter, Chemical Flow Raw	1	36	000-052-531	Elbow, 1/8" NPT X 1/4" SAE	1
6	000-174-008	Washer, 5/8" Flat	4	37	000-052-084	Elbow, 1/8" NPT Street	1
7	000-169-064	Valve, 3/8" NPT Full Port Ball	1	38	000-052-099	Insert, #26 (1/8" NPT X 3/8" Barb)	3
8	000-052-051	Quick Connect, 440 Female w/ EPDM O-Ring	2	39	000-068-491	Hose, 3/16" X 10" Lg Teflon 1/4" NPT X 1/4" JIC F	1
9	000-106-029	Plug, 1" Hole	1	40	000-068-518	Hose, 3/16" X 18.25" Lg. Teflon w/FJIC Ends	1
10	000-052-052	Quick Connect, 660 3/8" Brass w/ EPDM O-Ring	1	41	000-052-022	Tee, 3/8" Insert	1
11	000-052-281	Nipple, 3/4" NPT X 3/4" Male Garden Hose	1	42	000-052-089	Elbow, 1/8" NPT Female	1
12	000-052-104	Insert, #66 (3/8" NPT X 3/8" Barb)	1	43	000-174-001	Washer, #10 Flat	6
13	000-052-096	Insert, #F23 (1/8" FPT X 3/16" Barb)	1	44	000-143-166	Screw, #10-24 UNC X 3/8" Lg. Hex Head	2
14	000-060-002	Grommet, Large Wiring	1	45	000-068-017	Hose, 3/8" Bulk	1
15	000-057-055	Gasket, Garden Hose	1	46	000-068-017	Hose, 3/8" Bulk	1
16	000-074-007	Gauge, Pressure 0 -1500 psi	1	47	000-033-005	Clamp, Size #5 Hose	4
17	000-052-272	Cup, Gravity Feed Oil Blower Lube Port	1	48	000-052-530	Nipple, 1/4" SAE X 1/8" NPT	1
18	000-027-014	Cap, Garden Hose	1	49	000-131-027	Trimlok, 1/8" X 3/16" Lg.	1
19	000-174-050	Washer, 1" Flat	1	50	000-174-014	Washer, #10 Lock	2
20	000-135-052	Regulator, Hi psi Snubber	1	51	000-174-007	Washer, 1/2" Flat	1
21	000-169-009	Valve, 3/4" FPT Swing Check	1	52	000-143-327	Screw, #10-32UNF X 0.50" Lg. Hex Head	2
22	000-052-338	Insert, #1212 (3/4" NPT X 3/4" Barb)	1	53		Label, Instrument Panel-CDS 4.6/4.8	1
23	000-052-088	Elbow, 1/4" FPT X FPT	1	54		Label, Bottom-Instrument Panel-CDS 4.6/4.8	1
24	000-174-005	Washer, 3/8" Flat	2	55	000-068-757	Hose, 1/2" X 20.5" Lg. Rubber W/3/8" NPT X 3/8" S	1
25	000-052-128	Nipple, 3/8" NPT X 3/8" M Propane	2				
26	000-174-063	Washer, 1.5" OD. X 1.073" ID X 0.075" Thk.	1				
27	000-174-012	Washer, 1/2 SAE H/D	2				
28	000-140-015	Rivet, 1/8" X 1/4" Lg. Pop	2				
29	000-169-201	Valve, 3/4" Heater Panel Mount	1				
30	000-052-756	Insert, 3/4" NPT X 3/4" Elbow	2				
31	000-169-017	Valve, 3-Way Ball O-Ring Style	1				

Figure 7-7. CDS Hi-PSI Manifold Assembly
6091 Rev. B

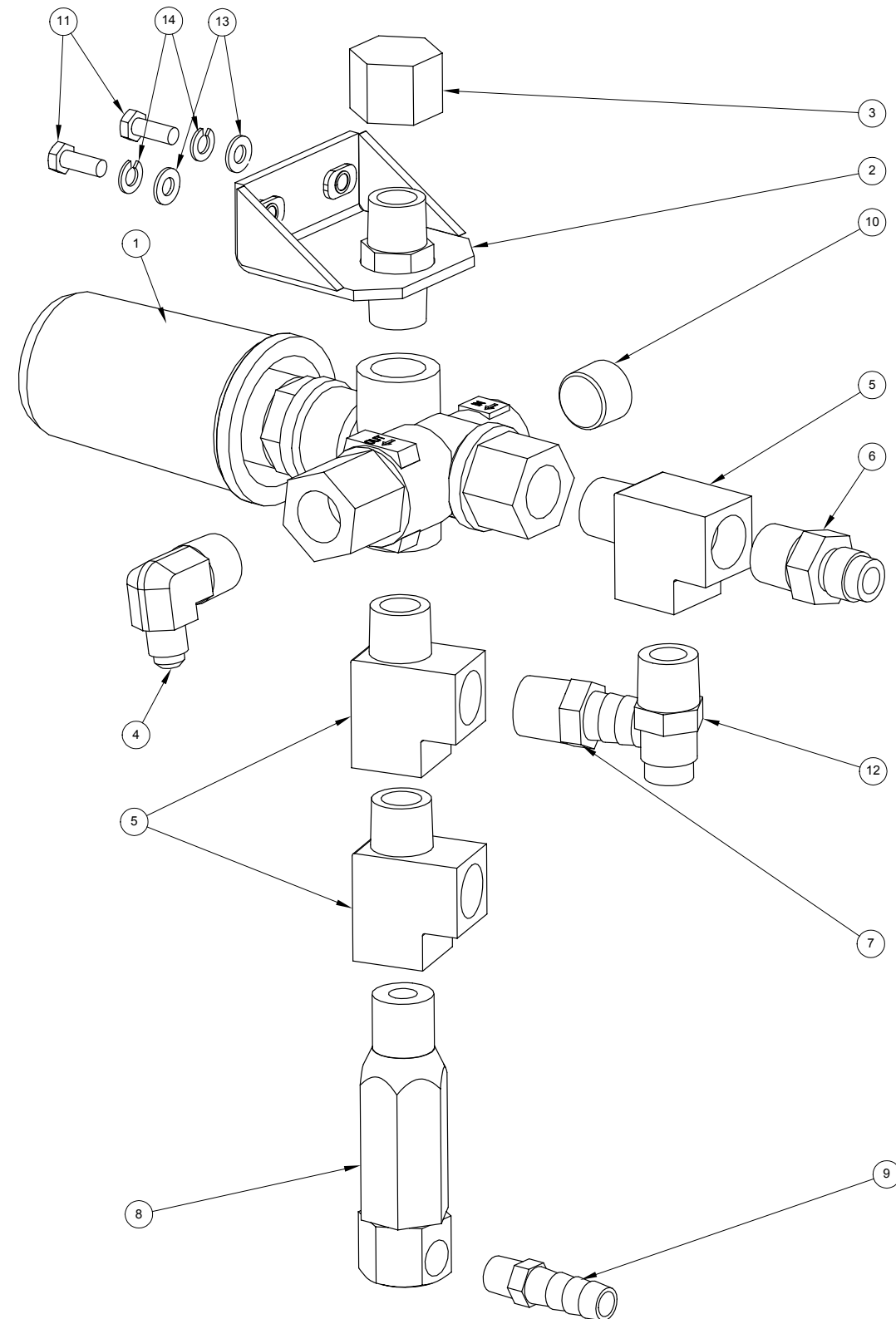


CDS Hi-PSI Manifold Assembly Parts List

Item	Part Number	Description	Qty
1	000-052-528	Nipple, 3/8" MJIC x 3/8" NPT	1
2	000-052-071	Nipple, 1/4" NPT Hex	2
3	000-090-008	Manifold, Hi Pressure	1
4	000-106-002	Plug, 1/4" NPT Hex	1
5	000-052-530	Nipple, 1/8" MNPT x 1/4" SAE	1
6	000-052-074	Nipple, 3/8" NPT Hex	2
7	000-169-186	Valve, 3/8" FPT x 3/8" FPT 100 PSI Check	1
8	000-149-039	Sender, Temperature	1
9	000-052-061	Bushing, 3/8" NPT x 1/4" FPT	1

Item	Part Number	Description	Qty
10	000-052-113	Cross, 3/8" FPT	1
11	000-050-060	Bushing, 3/8" NPT x 1/8" FPT	1
12	000-052-582	Nipple, Tee Jet Style Collar x 1/8" NPT	1
13	000-094-028	Nut, Brass Jet Assembly	1
14	000-052-153	Housing, Stabilizer Nozzle	1
15	000-052-586	Nipple, 1/8" FPT x 1/4" SAE	1
16	000-049-052	Filter Cartridge, 1/4"	1
17	000-180-009	Orifice, 0.027" Plate	1

Figure 7-8. CDS By-Pass Valve Assembly
6989 Rev. A



CDS By-Pass Valve Assembly Parts List

Item	Part Number	Description	Qty
1	000-169-188	Valve, PSI Regulator 0-1500 psi - Modified	1
2	000-015-515	Bracket, By-Pass Valve Mounting	1
3	000-027-008	Cap, 3/8" FPT	1
4	000-052-764	Elbow, 1/4" SAE x 3/8" MNPT x 90°	1
5	000-052-023	Tee, 3/8" NPT Male Street	3
6	000-052-528	Nipple, 3/8" M JIC x 3/8" NPT	1
7	000-052-105	Insert, #68 (3/8" NPT x 1/2" Barb)	1
8	000-169-027	Valve, Thermal Relief 165° F	1
9	000-052-099	Insert, #26 (1/8" NPT x 3/8" Barb)	1
10	000-106-008	Plug, 3/8" NPT Allen Head	1
11	000-143-126	Screw, #10-24UNC x 0.50" Lg. Hex Head	2
12	000-052-128	Nipple, 3/8" NPT x 3/8" Male Propane	1
13	000-174-001	Washer, #10 Flat	2
14	000-174-014	Washer, #10 Lock	2

Figure 7-9. CDS 4.8 Pump and Blower Assembly - Overview
3802 Rev. N

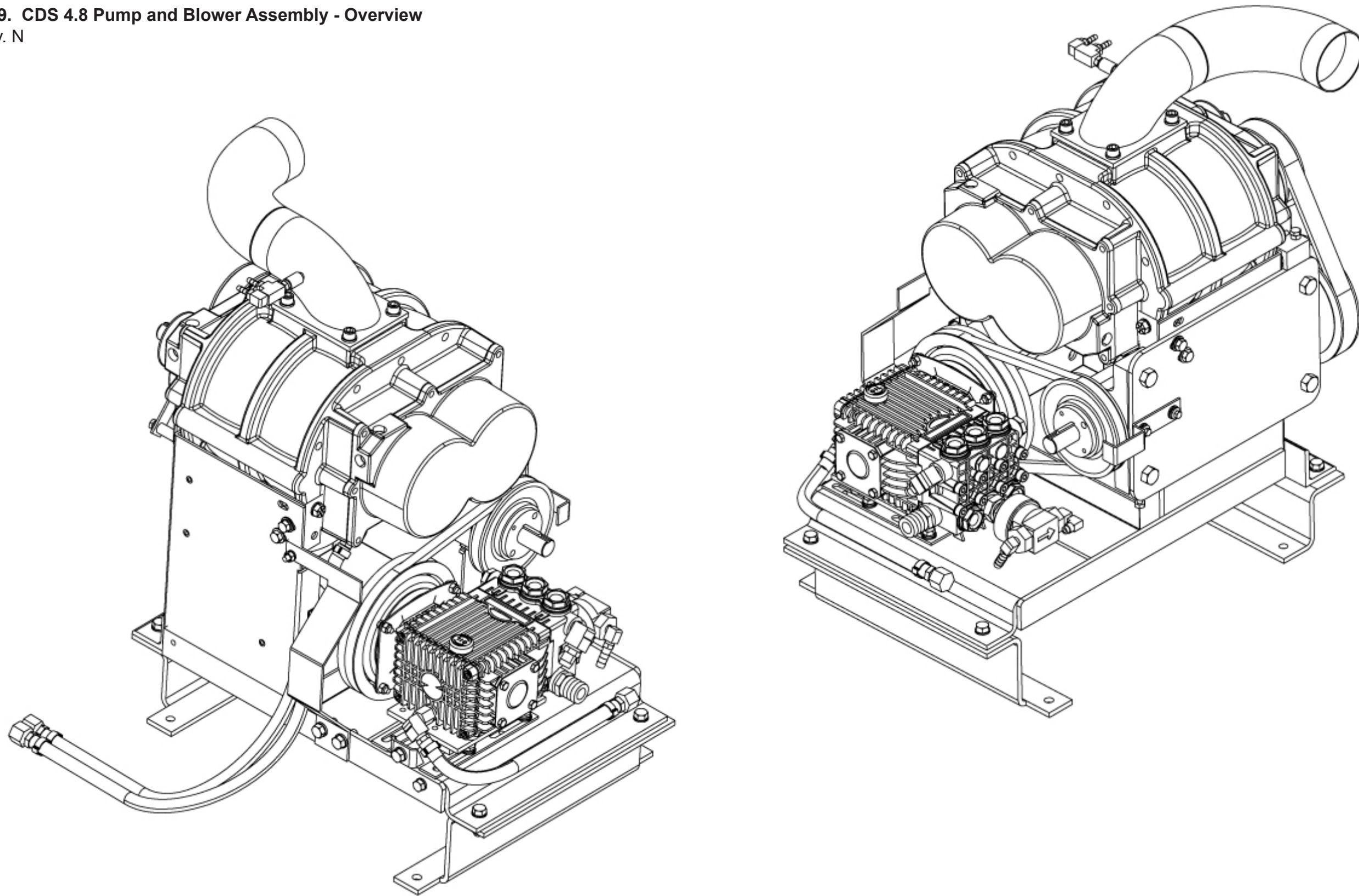
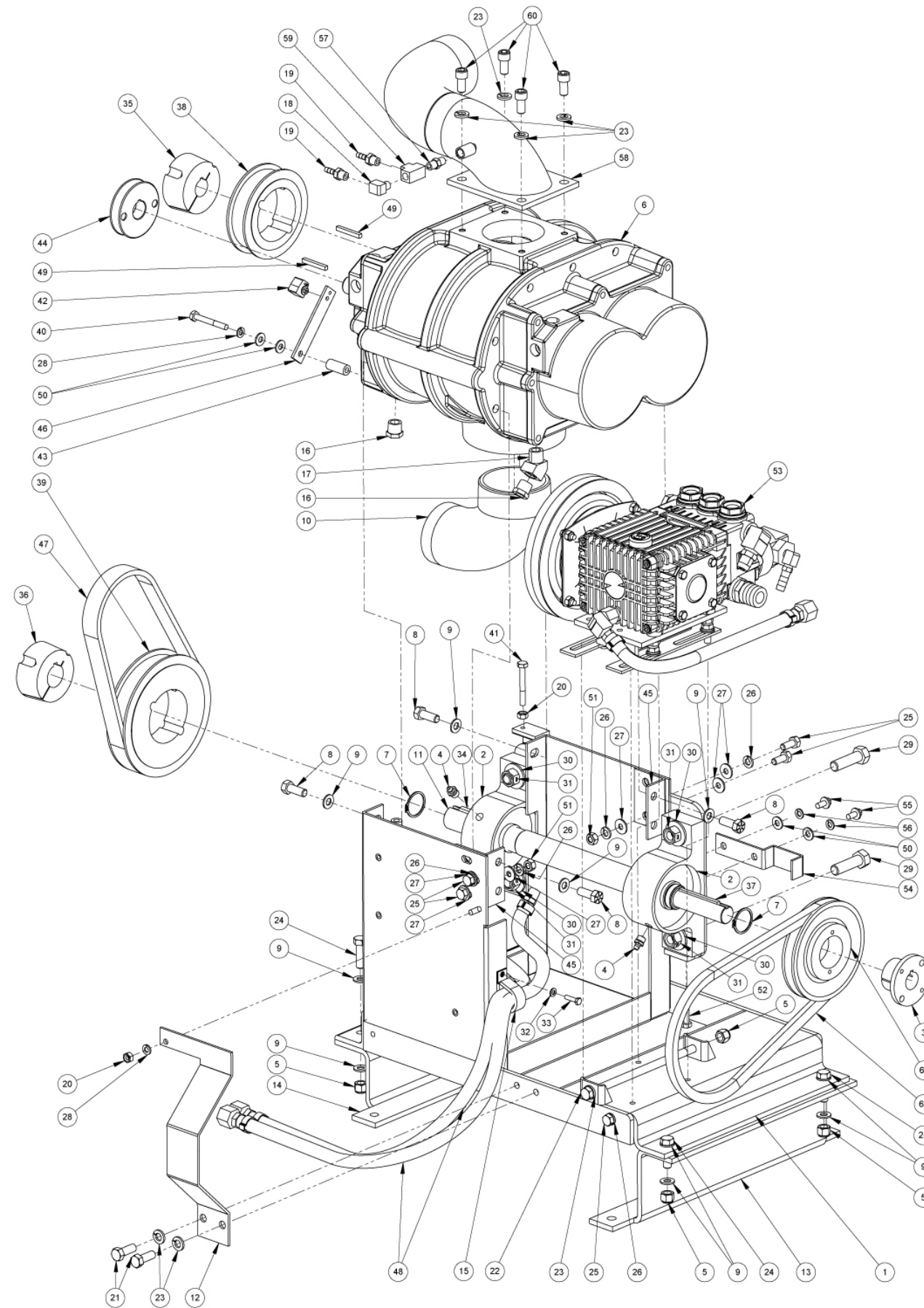


Figure 7-10. CDS 4.8 Pump and Blower Assembly - Parts View
3802 Rev. N



CDS 4.8 Pump and Blower Assembly Parts List

Item	Part Number	Description	Qty
1	000-055-028	Frame Pump And Blower	1
2	000-008-020	Bearing, Pillow Block - 1-3/16" Bore	2
3	000-020-019	Bushing, #H X 7/8" Bore	1
4	000-052-505	Zerk Fitting, 1/8" MPT Grease Fitting - Straight	2
5	000-094-100	Nut, 3/8-16, Nylock	5
6	000-111-147	Blower, 4007 Dominator	1
7	000-139-021	Snap Ring, 1-3/16" Shaft	2
8	000-143-018	Screw, 3/8-16UNC X 1" Hex Head - Grade 8	4
9	000-174-004	Washer, 5/16" Flat	12
10	000-001-042	Adapter, Blower Outlet - CDS 4.8	1
11	000-150-040	Shaft, Drive Sprocket - CDS 4.8	1
12	000-108-065	Protector, Cat Pump Belt Shield	1
13	000-154-146	Spacer, Powerpack - Front - CDS 4.8 Ford 2	1
14	000-154-147	Spacer, Powerpack - Rear - CDS 4.8 Ford 200	1
15	000-033-057	Clamp, 1" Cushion Loop	1
16	000-052-061	Bushing, 3/8" NPT X 1/4" FPT	2
17	000-052-083	Elbow, 3/8" NPT Street X 45°	1
18	000-052-084	Elbow, 1/8" NPT Street	1
19	000-052-293	Insert, #23 (1/8" NPT X 3/16" Barb)	2
20	000-094-010	Nut, 1/4"-20UNC Hex S/S	2
21	000-143-096	Screw, 3/8"-16UNC X 1.00" Lg. Hex Head	2
22	000-143-260	Screw, 3/8"-16UNC X 8.00" Lg. Hex Head W/ 6" Thr	1
23	000-174-021	Washer, 3/8" Lock	7
24	000-143-025	Screw, 3/8"-16UNC. X 1.25" Lg. Hex Head Gr. 8	4
25	000-143-013	Screw, 5/16"-18UNC X 1.00" Lg. Grade 8	5
26	000-174-018	Washer, 5/16" S/S Lock	5
27	000-174-002	Washer, 1/4" Flat	6
28	000-174-017	Washer, 1/4" Lock	2
29	000-143-240	Screw, 1/2"-13UNC X 1.75" Lg. Hex Head - Grade	4
30	000-174-012	Washer, 1/2 SAE H/D	4
31	000-094-037	Nut, 1/2-13 UNC. 2 Way Locking	4

Item	Part Number	Description	Qty
32	000-174-001	Washer, #10 Flat	1
33	000-143-132	Screw, #10-24UNC X 0.75" Lg. Hex Head	1
34	000-077-010	Key, 1/4" X 1-1/2" Lg.	1
35	000-020-020	Bushing, 7/8" Taper-Lock	1
36	000-020-026	Bushing, 1-1/8" Taper-Lock	1
37	000-077-012	Key, 3/16" X 2.5" Lg. Class 2 Fit	1
38	000-109-057	Pulley, 40 Tooth Gt2 8mx-10s-21 Engine & Blower	1
39	000-109-058	Pulley, 56 Tooth Gt2 8mx-56s-21 Engine & Blower	1
40	000-143-373	Screw, 1/4"-20UNC X 2"G. Hex Head Grd 5	1
41	000-143-548	Screw, 1/4"-20UNC X 2.00" Lg. Hex Head	1
42	000-149-010	Sensor, CDS Magnetic Tach	1
43	000-154-153	Spacer, Tach, Sensor - CDS 4.8	1
44	000-109-009	Pulley, 2.75" X 0.88" Pump Drive	1
45	000-015-801	Bracket, Blower Mounting - CDS 4.8	2
46	000-015-930	Bracket, Tach, Magnetic Extension N/S - CDS	1
47	000-010-052	Belt, Polychain Gt	1
48	000-068-149	Hose, CDS Blower Oil Drain	2
49	000-077-001	Key, #3 & #4 Vacuum Pump Drive	2
50	000-174-003	Washer, 1/4" Flat	4
51	000-094-012	Nut, 5/16-18"UNC Hex	2
52	000-143-002	Screw, 1/4"-20UNC X 1.00" Lg. Hex Head	1
53	- - -	Assembly, Pump	1
54	000-108-109	Protector, Pump Drive Belt	1
55	000-143-141	Screw, 1/4"-20UNC X 1/2" Lg. Whiz Lock	2
56	000-174-019	Washer, 1/4" Lock	2
57	000-052-069	Nipple, 1/8" NPT Hex	1
58	000-001-090	Adapter, Blower Inlet - CDS 4.6	1
59	000-052-092	Tee, 1/8" FPT	1
60	000-143-094-1	Screw, 3/8"-16UNC X 3/4" Lg. Socket Head	4
61	000-109-043	Pulley, Ak51h	1
62	000-010-065	Belt, #9345 Pump Drive	1

Figure 7-11. CDS 4.6 Pump and Blower Assembly - Overview
4431 Rev. O

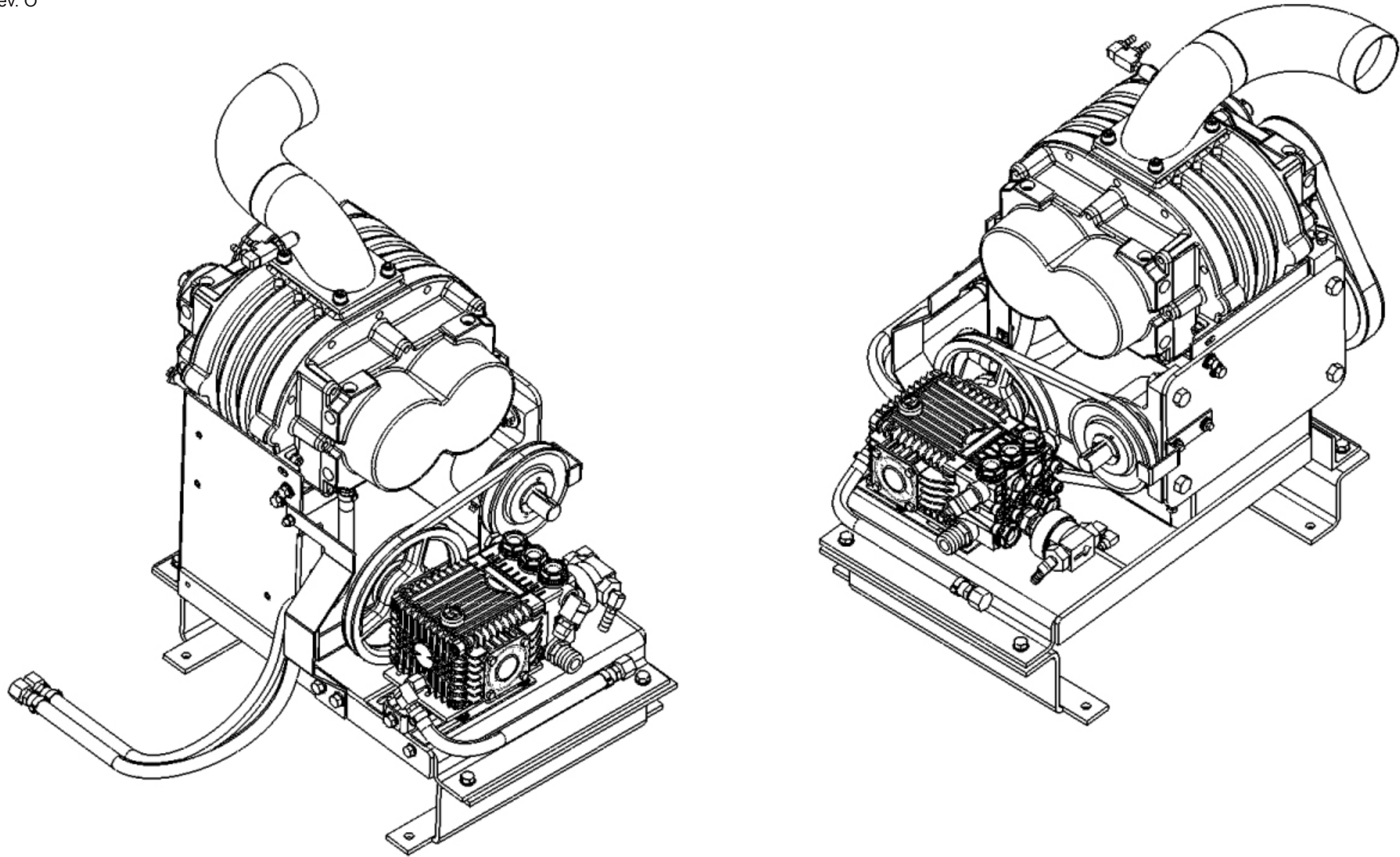
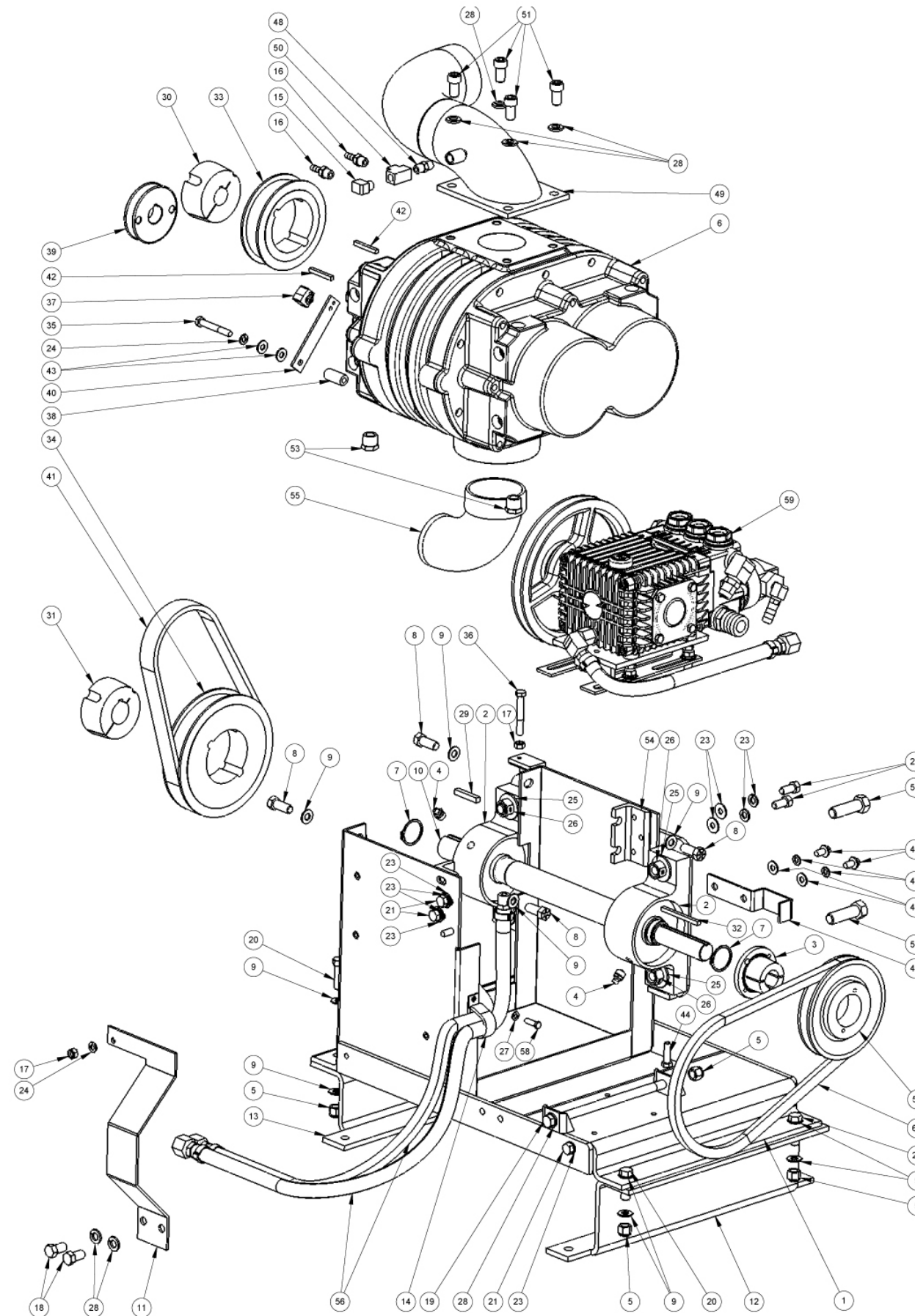


Figure 7-12. CDS 4.6 Pump and Blower Assembly - Parts View
4431 Rev. O



CDS 4.6 Pump and Blower Assembly Parts List

Item	Part Number	Description	Qty	Item	Part Number	Description	Qty
1	000-055-028	Frame Pump And Blower	1	32	000-077-012	Key, 3/16" X 2.5" Lg. Class 2 Fit	1
2	000-008-020	Bearing, Pillow Block - 1-3/16" Bore	2	33	000-109-057	Pulley, 40 Tooth Gt2 8mx-10s-21 Engine & Blower	1
3	000-020-019	Bushing, #H X 7/8" Bore	1	34	000-109-058	Pulley, 56 Tooth Gt2 8mx-56s-21 Engine & Blower	1
4	000-052-505	Zerk Fitting, 1/8" MPT Grease Fitting - Straight	2	35	000-143-373	Screw, 1/4"-20UNC X 2"G. Hex Head Grd 5	1
5	000-094-100	Nut, 3/8-16, Nylock	5	36	000-143-548	Screw, 1/4"-20UNC X 2.00" Lg. Hex Head	1
6	000-111-145	Blower, 4005 Dominator	1	37	000-149-010	Sensor, CDS Magnetic Tach	1
7	000-139-021	Snap Ring, 1-3/16" Shaft	2	38	000-154-153	Spacer, Tach, Sensor - CDS 4.8	1
8	000-143-018	Screw, 3/8-16UNC X 1" Hex Head - Grade 8	4	39	000-109-009	Pulley, 2.75" X 0.88" Pump Drive	1
9	000-174-004	Washer, 5/16" Flat	12	40	000-015-930	Bracket, Tach, Magnetic Extension N/S - CDS	1
10	000-150-040	Shaft, Drive Sprocket - CDS 4.8	1	41	000-010-052	Belt, Polychain Gt	1
11	000-108-065	Protector, Pump Belt Shield	1	42	000-077-001	Key, #3 & #4 Vacuum Pump Drive	2
12	000-154-146	Spacer, Powerpack - Front - CDS 4.8 Ford 2	1	43	000-174-003	Washer, 1/4" Flat	4
13	000-154-147	Spacer, Powerpack - Rear - CDS 4.8 Ford 200	1	44	000-143-002	Screw, 1/4"-20UNC X 1.00" Lg. Hex Head	1
14	000-033-057	Clamp, 1" Cushion Loop	1	45	000-108-109	Protector, Pump Drive Belt	1
15	000-052-084	Elbow, 1/8" NPT Street	1	46	000-143-141	Screw, 1/4"-20UNC X 1/2" Lg. Whiz Lock	2
16	000-052-293	Insert, #23 (1/8" NPT X 3/16" Barb)	2	47	000-174-019	Washer, 1/4" Lock	2
17	000-094-010	Nut, 1/4"-20UNC Hex S/S	2	48	000-052-069	Nipple, 1/8" NPT Hex	1
18	000-143-017	Screw, 3/8"-16UNC X 0.75" Lg. Hex Head Grd. 8	2	49	000-001-090	Adapter, Blower Inlet - CDS 4.6	1
19	000-143-260	Screw, 3/8"-16UNC X 8.00" Lg. Hex Head W/ 6" Thr	1	50	000-052-092	Tee, 1/8" FPT	1
20	000-143-025	Screw, 3/8"-16UNC. X 1.25" Lg. Hex Head Gr. 8	4	51	000-143-094-1	Screw, 3/8"-16UNC X 3/4" Lg. Socket Head	4
21	000-143-013	Screw, 5/16"-18UNC X 1.00" Lg. Grade 8	5	52	000-109-043	Pulley, Ak51h	1
23	000-174-002	Washer, 1/4" Flat	4	53	000-052-061	Bushing, 3/8" NPT X 1/4" FPT	2
23	000-174-018	Washer, 5/16" S/S Lock	5	54	000-015-722	Bracket, Angle Tab	2
24	000-174-017	Washer, 1/4" Lock	2	55	000-001-043	Adapter, Blower Outlet	1
25	000-174-012	Washer, 1/2 SAE H/D	4	56	000-143-240	Screw, 1/2"-13UNC X 1.75" Lg. Hex Head - Grade	4
26	000-094-037	Nut, 1/2-13 UNC. 2 Way Locking	4	57	000-143-132	Screw, #10-24UNC X 0.75" Lg. Hex Head	1
27	000-174-001	Washer, #10 Flat	1	58	See Notes	Assembly, Pump - CDS 4.6	1
28	000-174-021	Washer, 3/8" Lock	7	59	000-010-065	Belt, #9345 Pump Drive	1
29	000-077-010	Key, 1/4" X 1-1/2" Lg.	1				
30	000-020-020	Bushing, 7/8" Taper-Lock	1				
31	000-020-026	Bushing, 1-1/8" Taper-Lock	1				

Figure 7-13. CDS Pump Assembly - Overview
7429 Rev. A

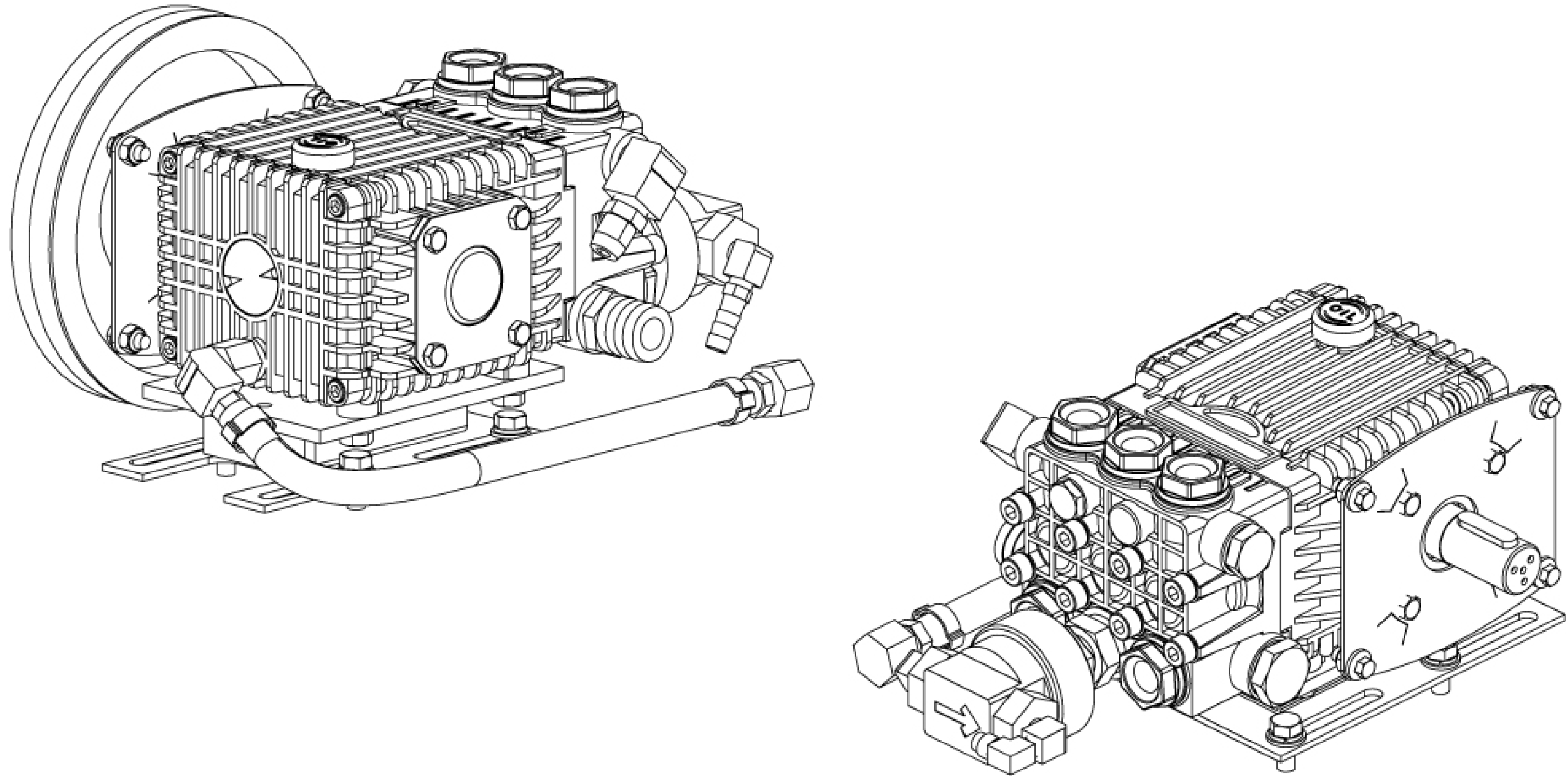
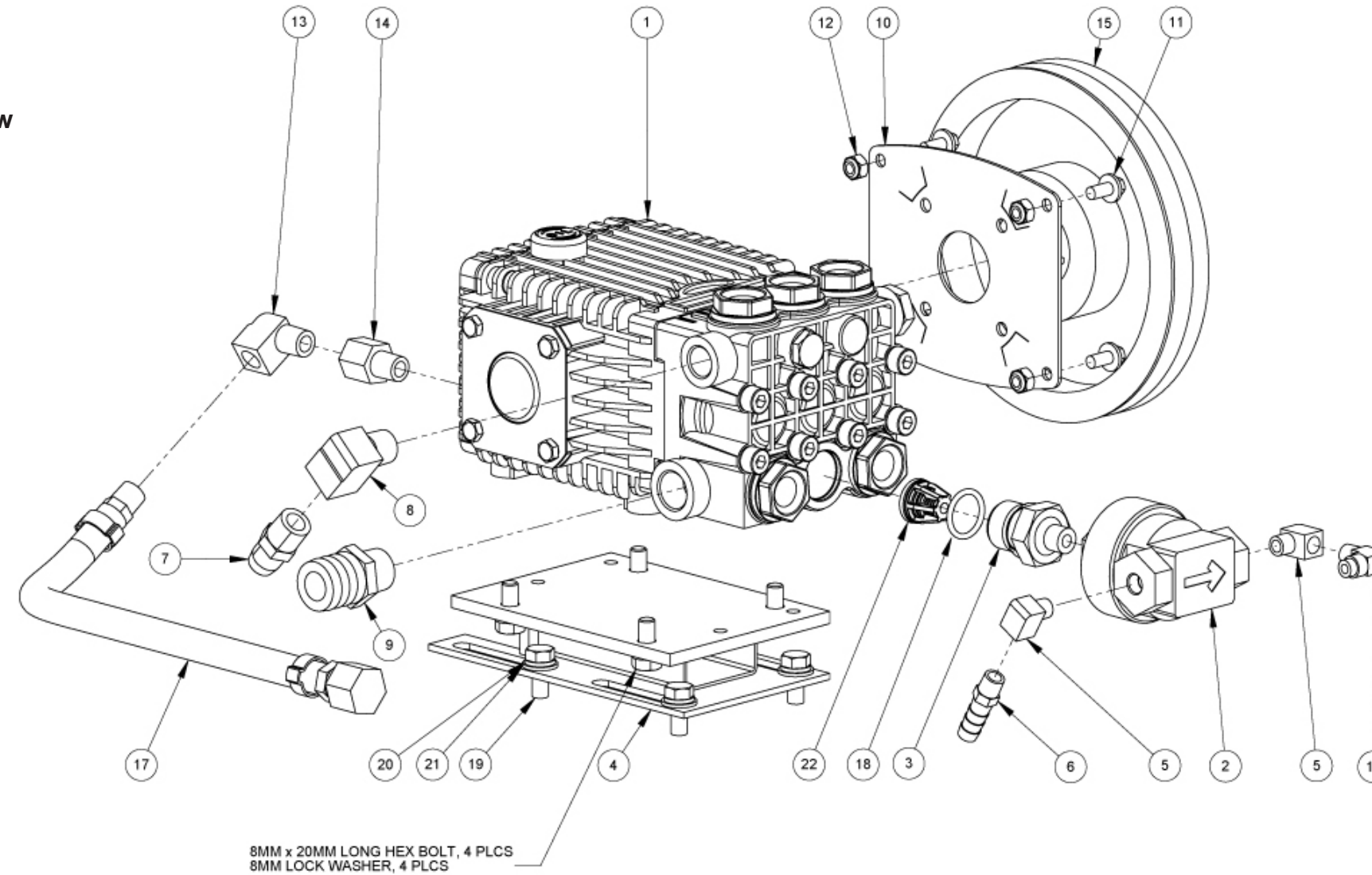


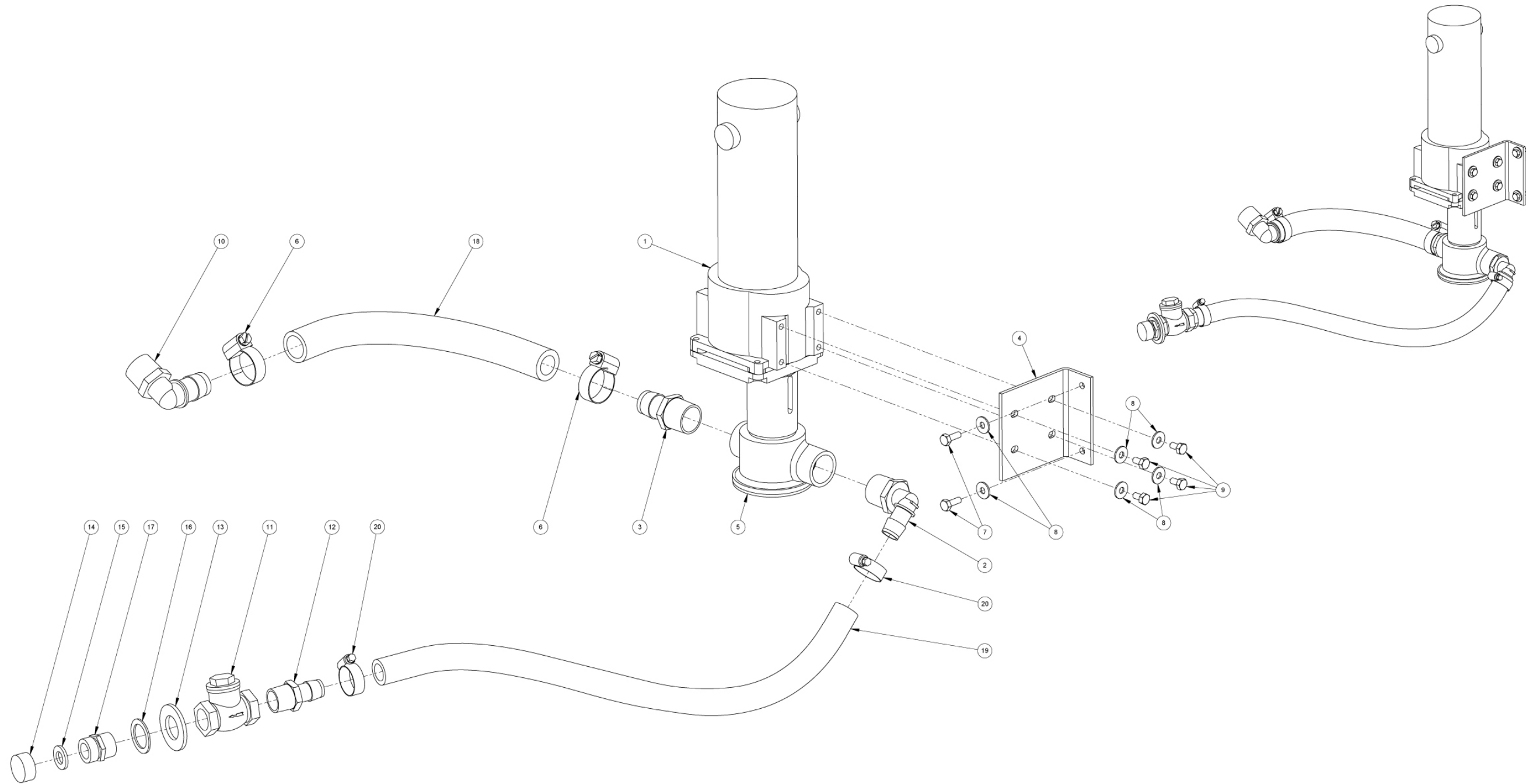
Figure 7-14. CDS Pump Assembly - Parts View
7429 Rev. A



CDS Pump Assembly Parts List

Item	Part Number	Description	Qty	Item	Part Number	Description	Qty
1	000-111-188	Pump, 4.0 gmp	1	12	000-094-071	Nut, 1/4"-20UNC Nylock	4
2	000-111-184	Pump, Chemical	1	13	000-052-085	Elbow, 1/4" NPT Street	1
3	000-001-154	Adapter, Chem Pump S/S 4.0 Gallon	1	14	000-052-062	Bushing, 1/4 M X 1/4 F	1
4	000-015-927	Bracket, Compressor Mount- Weldment	1	15	000-036-008	Clutch, 24mm Single Groove	1
5	000-052-084	Elbow, 1/8" NPT Street	2	16	000-052-531	Elbow, 1/8" NPT X 1/4" SAE	1
6	000-052-099	Insert, #26 (1/8" NPT X 3/8" Barb)	1	17	000-068-149	Hose, CDS Blower Oil Drain	1
7	000-052-128	Nipple, 3/8" NPT X 3/8" M Propane	1	18	000-097-057	O-Ring, Adapter - Chemical Pump	1
8	000-052-086	Elbow, 3/8" NPT Street	1	19	000-143-012	Screw, 5/16"-18 UNC X 3/4" Lg.	4
9	000-052-753	Insert, #816 (1/2" NPT X 1" Barb)	1	20	000-174-018	Washer, 5/16" S/S Lock	4
10	000-105-550	Plate, Pump Clutch - 4.0 Gpm	1	21	000-174-004	Washer, 5/16" Flat	4
11	000-143-141	Screw, 1/4"-20UNC X 1/2" Lg. Whiz Lock	4	22	000-169-216	Valve, Pump Check - Mod. - 4.0 gallon	1

Figure 7-15. CDS DuraFlow Automatic Pump Out (APO) Assembly
5984 Rev. C

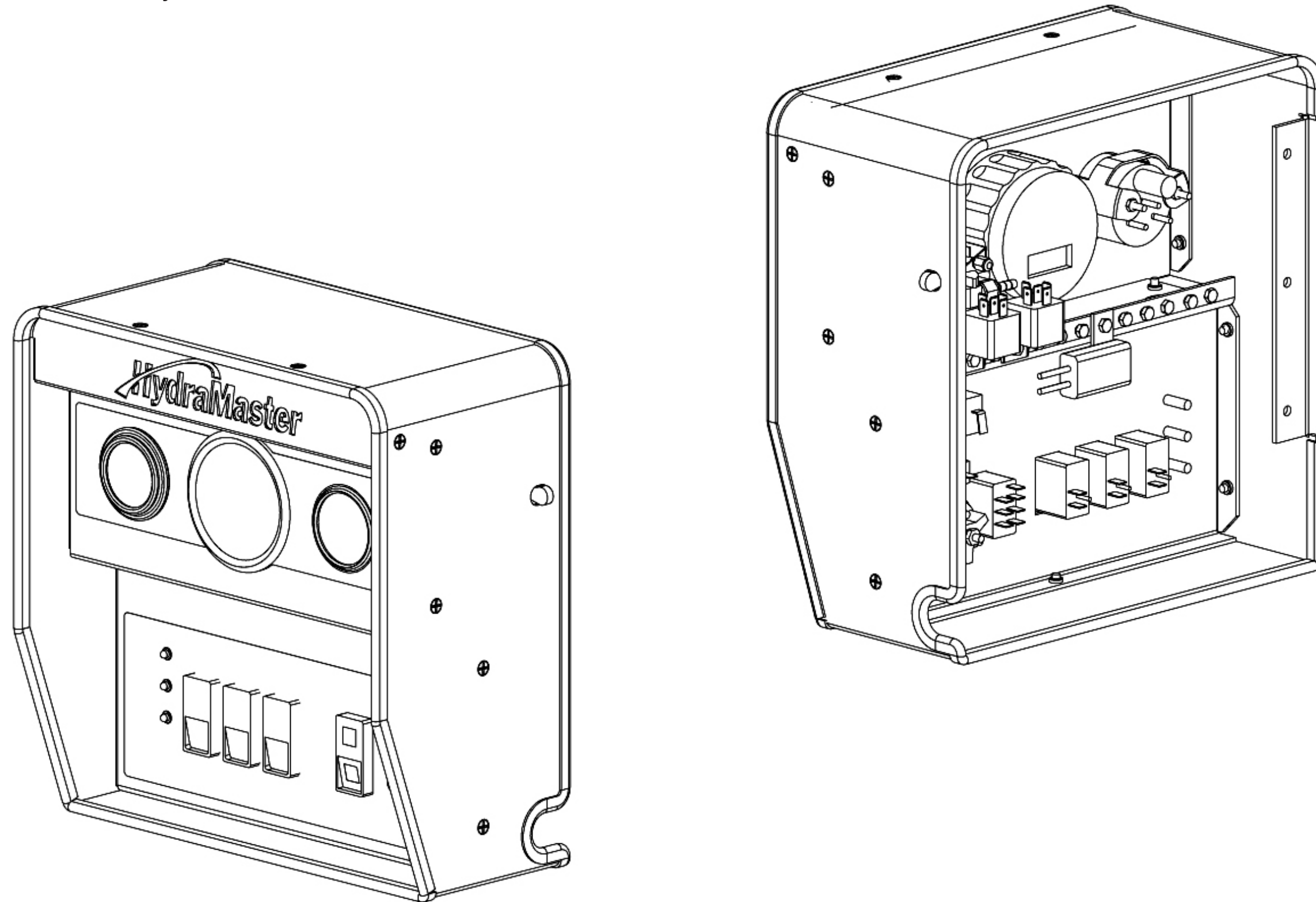


CDS DuraFlow Automatic Pump Out (APO) Assembly Parts List

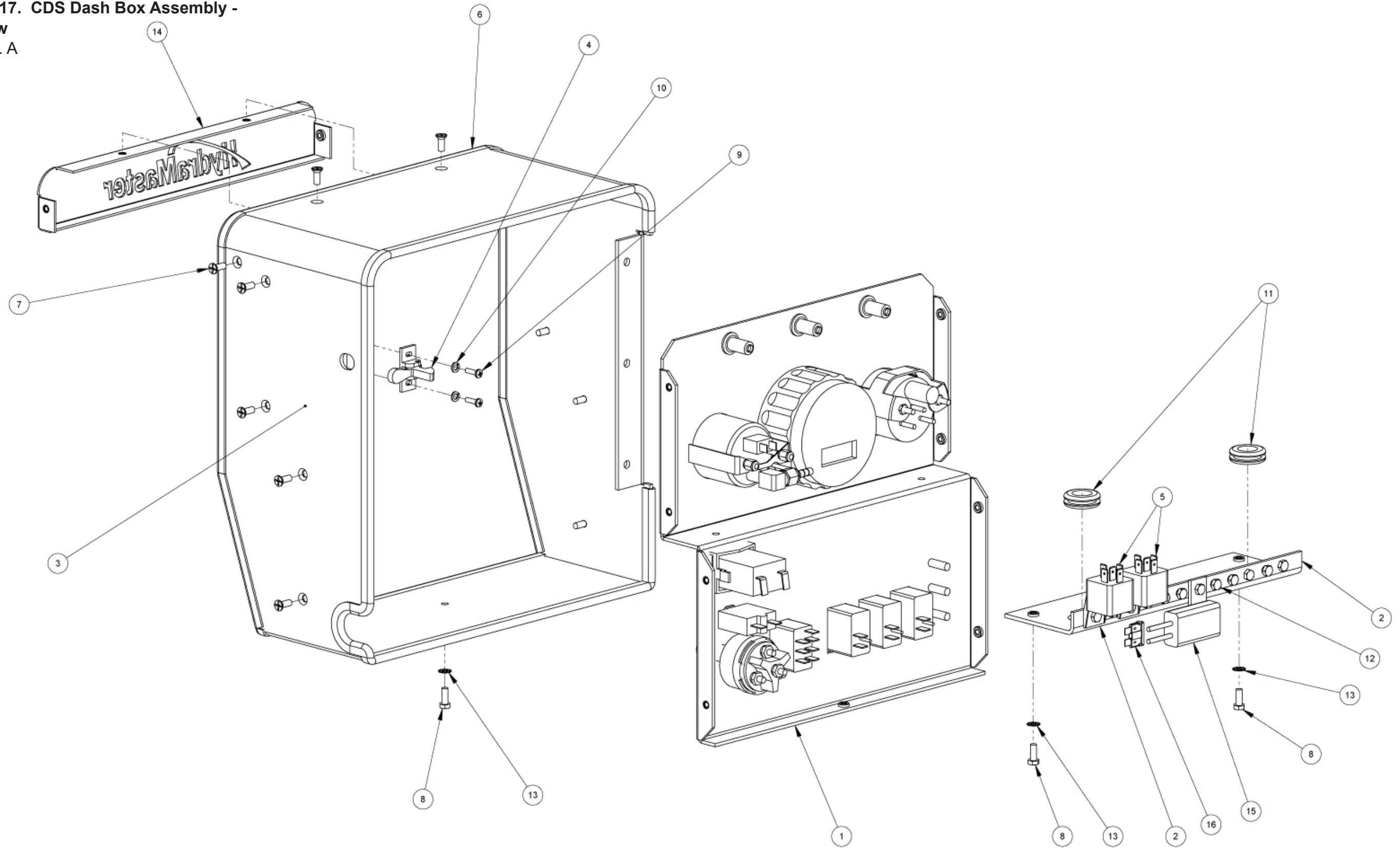
Item	Part Number	Description	Qty
1	000-091-042	Motor, Bison 438 Series	1
2	000-052-757	Insert, 1" NPT X 3/4" Elbow	1
3	000-052-758	Insert, 1" NPT X 1" Barb	1
4	000-015-908	Bracket, CDS Duraflow Power Pack	1
5	000-111-169	Assembly, APO Pump	1
6	000-033-020	Clamp, Size #16 Hose	2
7	000-143-001	Screw, 1/4"-20UNC X 0.75" Lg. Hex Head	2
8	000-174-002	Washer, 1/4" Flat	6
9	000-143-074	Screw, 1/4"-20UNC X 0.50" Lg. Hex Head Self-Tapping	4
10	000-052-131	Elbow, 1"NPT X 1" Barb (Glass Filled Black Nylon)	1

Item	Part Number	Description	Qty
11	000-169-009	Valve, 3/4" FPT Swing Check	1
12	000-052-338	Insert, #1212 (3/4" NPT X 3/4" Barb)	1
13	000-174-050	Washer, 1" Flat	1
14	000-027-014	Cap, Garden Hose	1
15	000-057-055	Gasket, Garden Hose	1
16	000-174-063	Washer, 1.5" OD X 1.073" ID X 0.075" Thk.	1
17	000-052-281	Nipple, 3/4" NPT X 3/4" Male Garden Hose	1
18	000-068-528	Hose, 1" ID Red 200 psi	1
19	000-068-069	Hose, 3/4" ID Parker GST li	1
20	000-033-029	Clamp, Hose, Size 12	2

Figure 7-16. CDS Dash Box Assembly - Overall View
7428 Rev. A



**Figure 7-17. CDS Dash Box Assembly -
Rear View**
7428 Rev. A

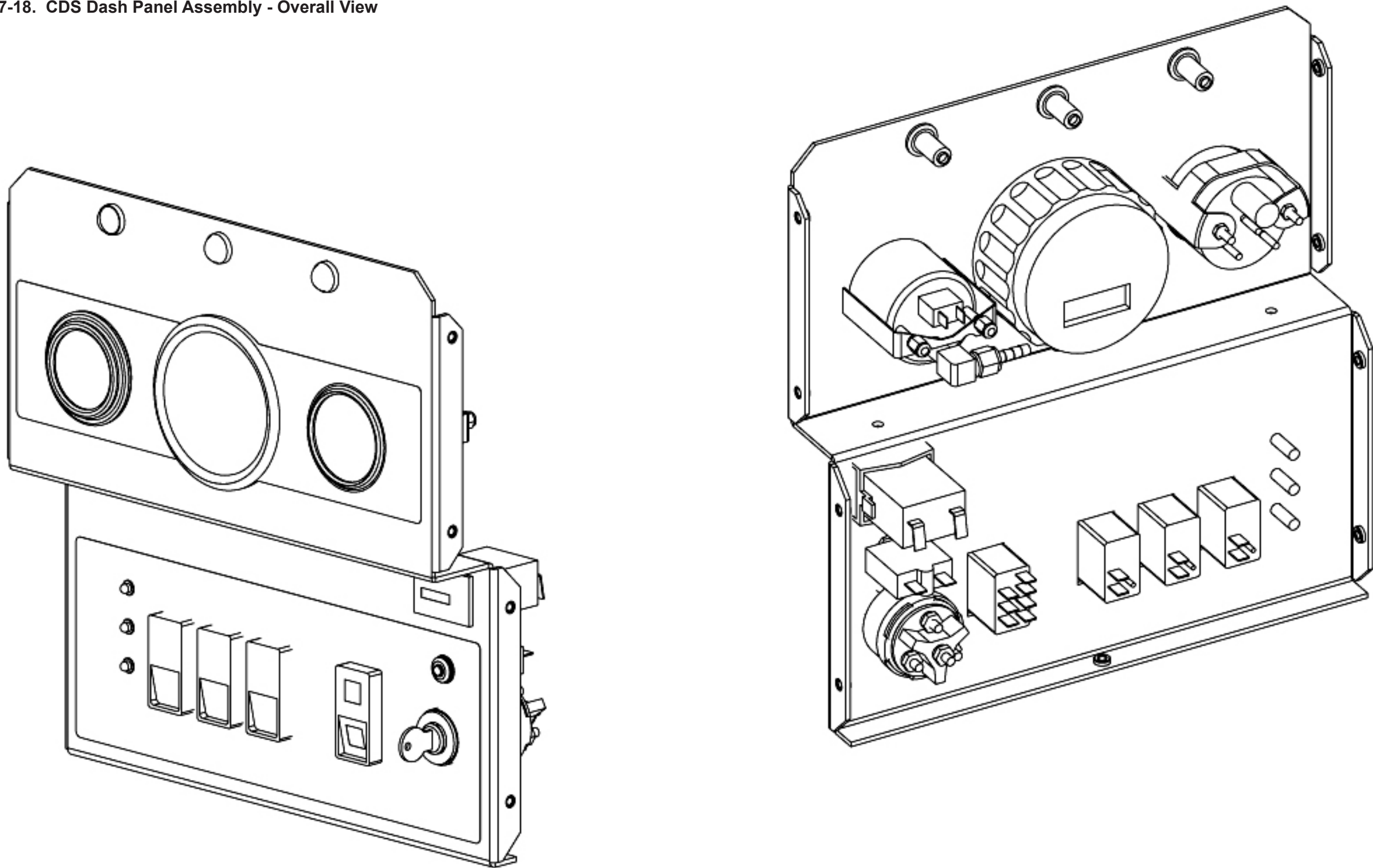


CDS Dash Box Assembly Parts List

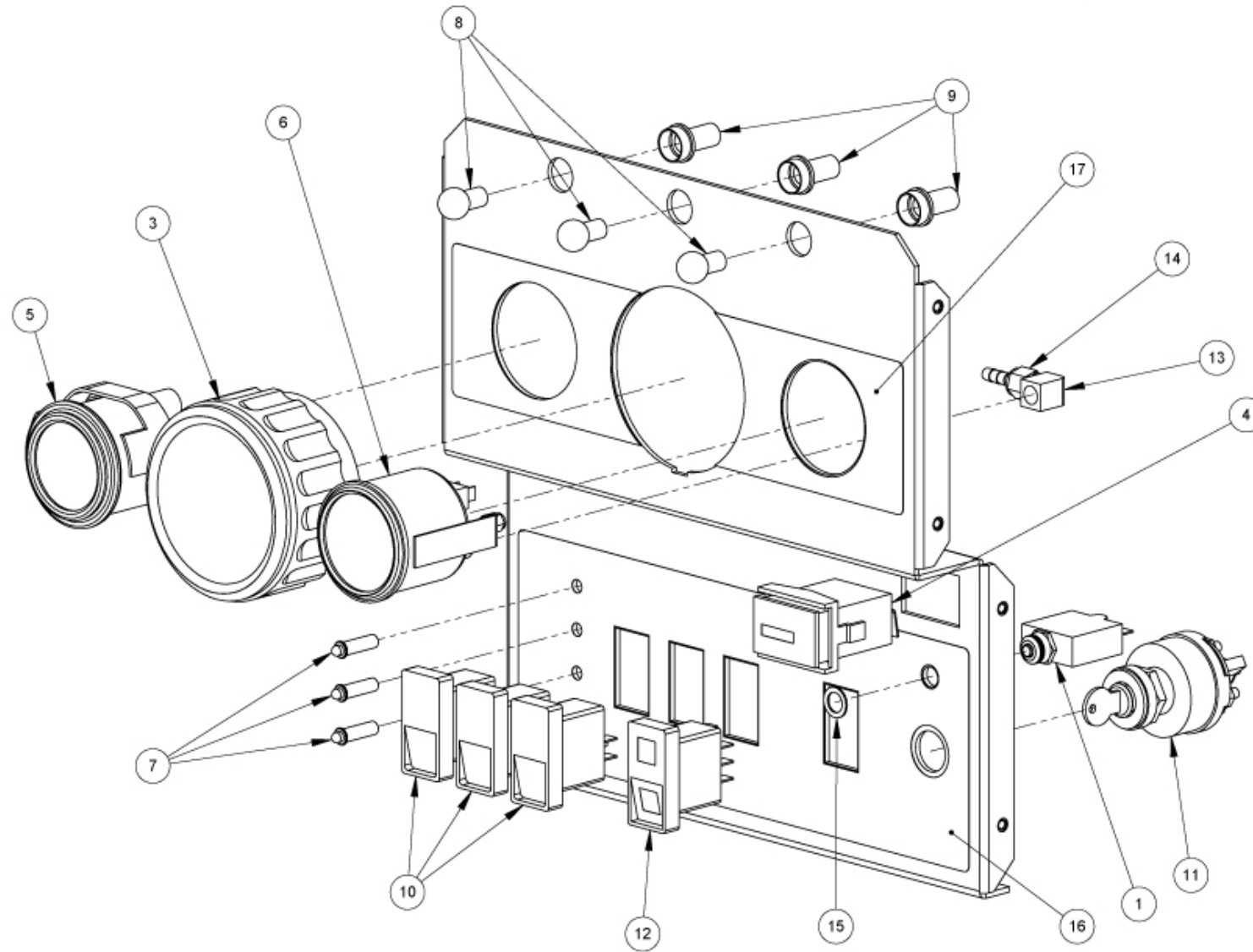
Item	Part Number	Description	Qty
1	- - -	Assembly, 2009 CDS Dash Panel	1
2	000-015-183	Bracket, Grounding Bus	1
3	000-013-024	Box, Dash - Weldment	1
4	000-086-104	Latch, Dash Securing	1
5	000-157-022	Switch, Relay	2
6	000-131-027	Trimlok, 18" Id X 3/8"	1
7	000-143-114	Screw, #10-24UNC X 0.50" Lg. Flat Head	12
8	000-143-126	Screw, #10-24UNC X 0.50" Lg. Hex Head	3

Item	Part Number	Description	Qty
9	000-143-046	Screw, #6-32 X .500" Lg. Phillips	2
10	000-174-043	Washer, #6 Lock	2
11	000-060-002	Grommet, Large Wiring	2
12	000-143-166	Screw, #10-24UNC X 3/8" Lg. Hex Head	12
13	000-174-015	Washer, #10 Outside Star	3
14	000-105-053	Plate, Dash Name -	1
15	000-056-006	Fuse Holder, In-Line - Weatherproof	1
16	000-056-003	Fuse, 15 Amp Plug In	1

Figure 7-18. CDS Dash Panel Assembly - Overall View
7427



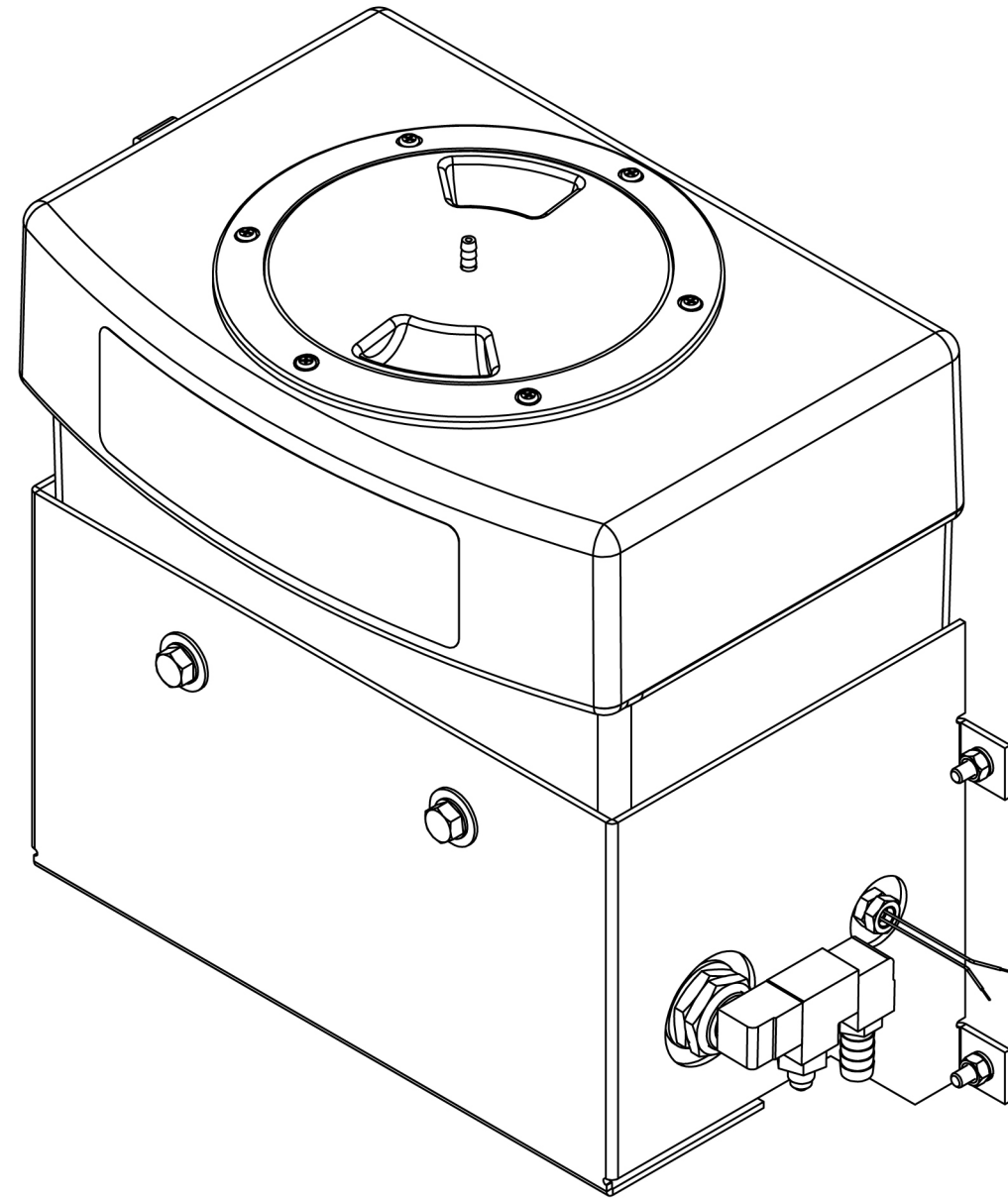
**Figure 7-19. CDS Dash Panel
Assembly - Rear View**
7427



CDS Dash Panel Assembly Parts List

Item	Part Number	Description	Qty
1	000-018-004	Breaker, 25 Amp Circuit	1
2	000-100-070	Panel, Dash - CDS 4.8	1
3	000-074-034	Gauge, Tach. Mag Pick Up 3-3/8" Dial Chev 03+	1
4	000-074-018	Meter, Hour Rectangular w/o Bezel	1
5	000-074-016	Gauge, Temperature	1
6	000-074-006	Gauge, Vacuum	1
7	000-084-011	Light, Red LED Indicator Mini	3
8	000-084-004	Lamp, Replacement Gauge	3
9	000-084-009	Lamp, Socket - Dashboard	3
10	000-157-040	Switch, 20 Amp Rocker	3
11	000-157-008	Switch, Ignition	1
12	000-157-131	Switch, 3 Way Speed Control	1
13	000-052-084	Elbow, 1/8" NPT Street	1
14	000-052-096	Insert, #F23 (1/8" FPT X 3/16" Barb)	1
15	000-174-052	Washer, 3/8" Flat	1
16	000-081-099	Label, Lower Dash	1
17	000-081-099	Label, Upper Dash	1

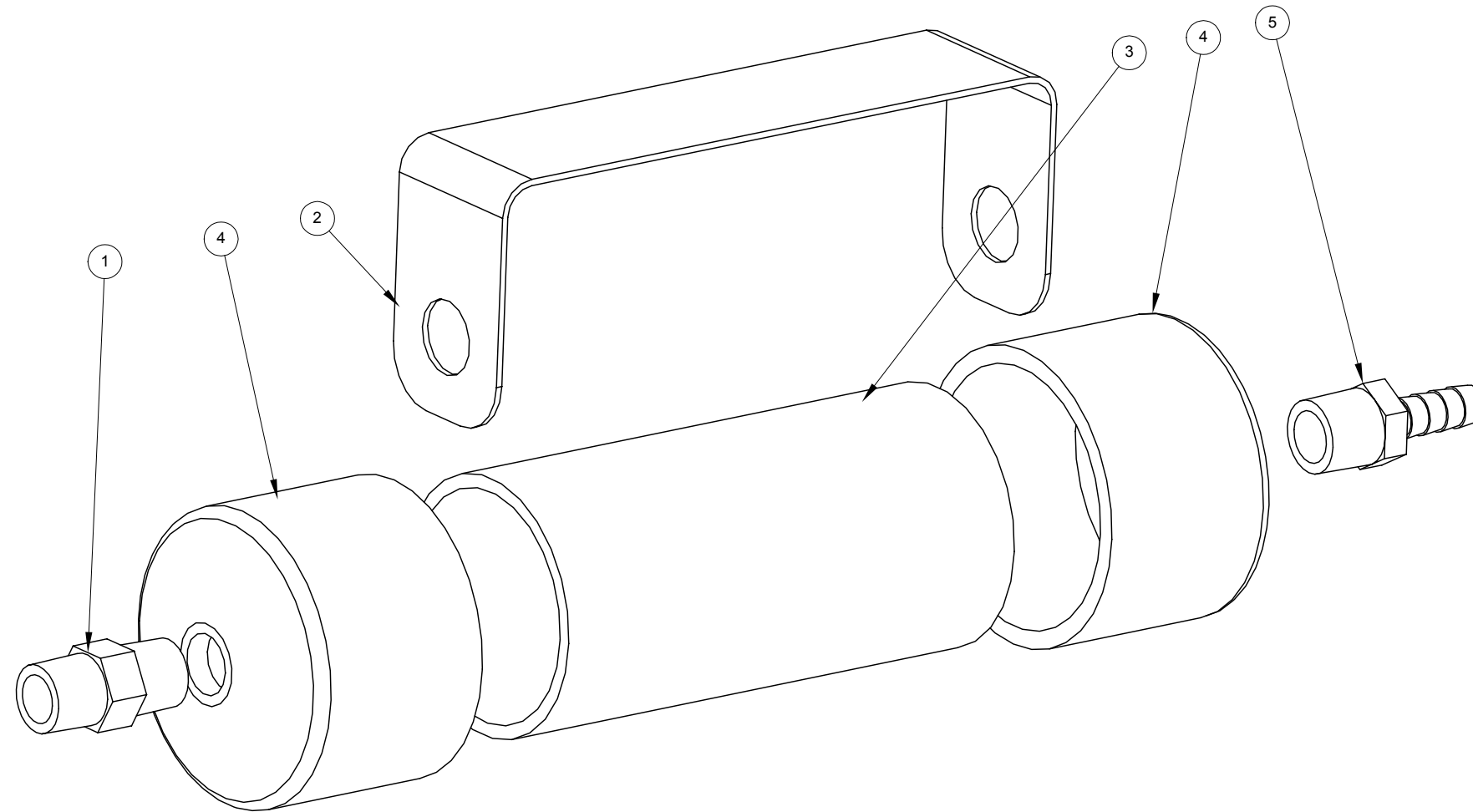
Figure 7-20. CDS Water Box Assembly - Overview
6990 Rev. C



CDS Water Box Assembly Parts List

Item	Part Number	Description	Qty	Item	Part Number	Description	Qty
1		Tank, Poly Water Box - Modified	1	15	000-015-938	Bracket, Water Box Mounting (4 Gallon)	1
2	000-169-218	Valve, Float, Water Box	1	16	000-041-005	Cover, 6"	1
3	000-157-0801	Switch, With Protector	1	17	000-143-314	Screw, #8 X 1/2" Lg. Pan Head	6
4	000-052-728	Bulkhead, 1/2" FPT X 3/8" FPT	1	18	000-052-660	Bulkhead, 3/8" FPT X 3/8" FPT	1
5	000-052-754	Insert, #F816 (1/2" FPT X 1" Barb)	1	19	000-052-086	Elbow, 3/8" NPT Street	3
6	000-049-151	Assembly, Diffuser Filter	1	20	000-174-063	Washer, 1.5" OD X 1.073" ID X 0.075" Thk.	2
7	000-143-017	Screw, 3/8"-16UNC X 0.75" Lg. Hex Head Grd. 8	4	21	000-143-001	Screw, 1/4"-20UNC X 0.75" Lg. Hex Head	4
8	000-174-057	Washer, 3/8" Lock	4	22	000-068-326	Hose, 3/8" ID Clear w/ Braid Solution	1
9	000-174-032	Washer, 3/8" Flat	4	23	000-052-155	Tee, 3/16" Plastic Vacuum Insert	1
10	000-097-041	O-Ring, 1/2" Bulk Head	2	24		Label, Water Box	1
11	000-052-662	Nipple, 3/8" NPT X 1/4" M SAE	1	25	000-174-039	Washer, 1/4" Outside Star	4
12	000-033-005	Clamp, Size #5 Hose	2	26	000-094-010	Nut, 1/4"-20UNC Hex S/S	4
13	000-052-023	Tee, 3/8" NPT Male Street	1	27	000-094-097	Nut, 1"-14UNS Brass	3
14	000-052-105	Insert, #68 (3/8" NPT X 1/2" Barb)	1	28	000-174-017	Washer, 1/4" Lock	4

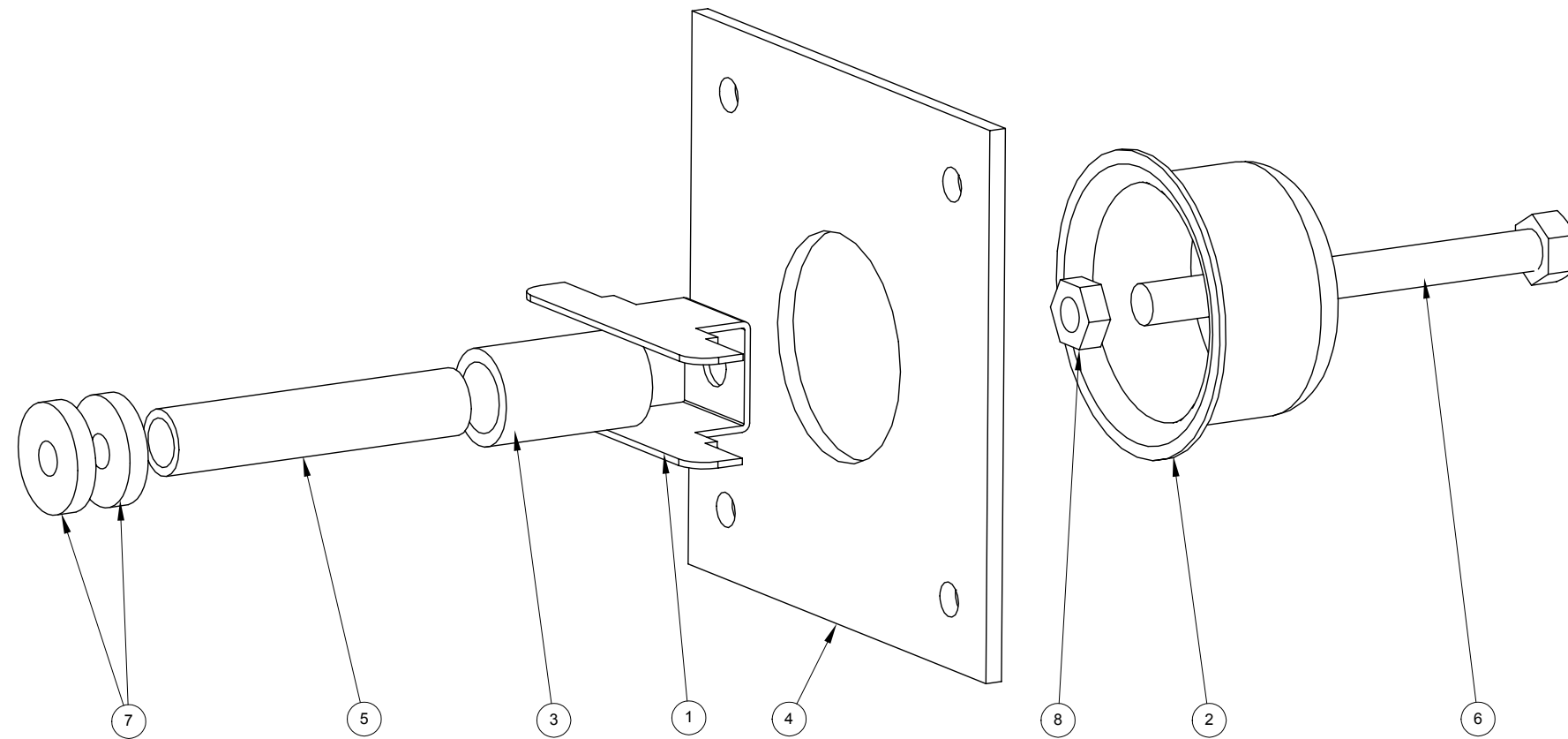
Figure 7-22. CDS Diffuser Filter Assembly
6554



Diffuser Filter Assembly Parts List

Item	Part Number	Description	Qty
1	000-052-074	Nipple, 3/8" NPT Hex	1
2	000-033-131	Clamp, Diffuser	1
3	000-125-222	Tube, Diffuser	1
4	000-027-115	Cap, 2" PVC Modified For Diffuser	2
5	000-052-104	Insert, #66 (3/8" NPT x 3/8" Barb)	1

Figure 7-23. CDS Vacuum Relief Valve Assembly
6894



CDS Vacuum Relief Valve Assembly Parts List

Item	Part Number	Description	Qty
1	000-015-182	Bracket, Vacuum Relief Valve	1
2	000-027-032	Cap, Vacuum Relief Valve	1
3	000-125-111	Pipe, Vacuum Relief Spring Guide	1
4	000-105-332	Plate, Vacuum Relief Valve Mounting - URT	1
5	000-155-026	Spring, Vacuum Relief	1
6	000-143-198	Screw, 3/8"-16UNC x 4" Lg. Hex Head Full Thread	1
7	000-094-077	Nut, 3/8"-16UNC x 1.00" OD Knurled	2
8	000-094-101	Nut, 3/8"-16UNC Hex Jam	1

**Figure 7-24. CDS Front End 2003 - 2009
GM Assembly - Overview**
5481 Rev. B

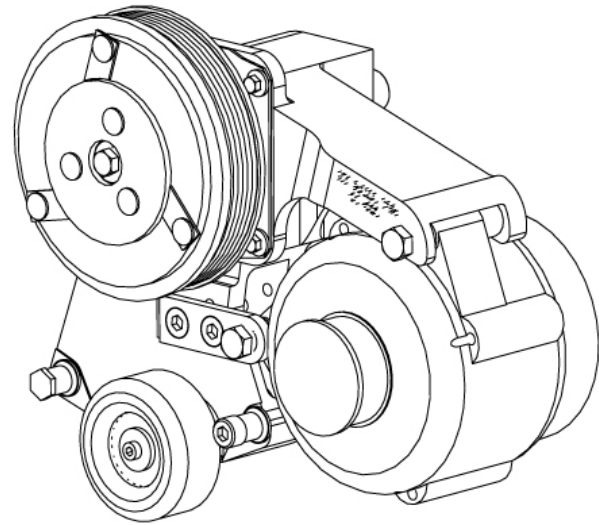
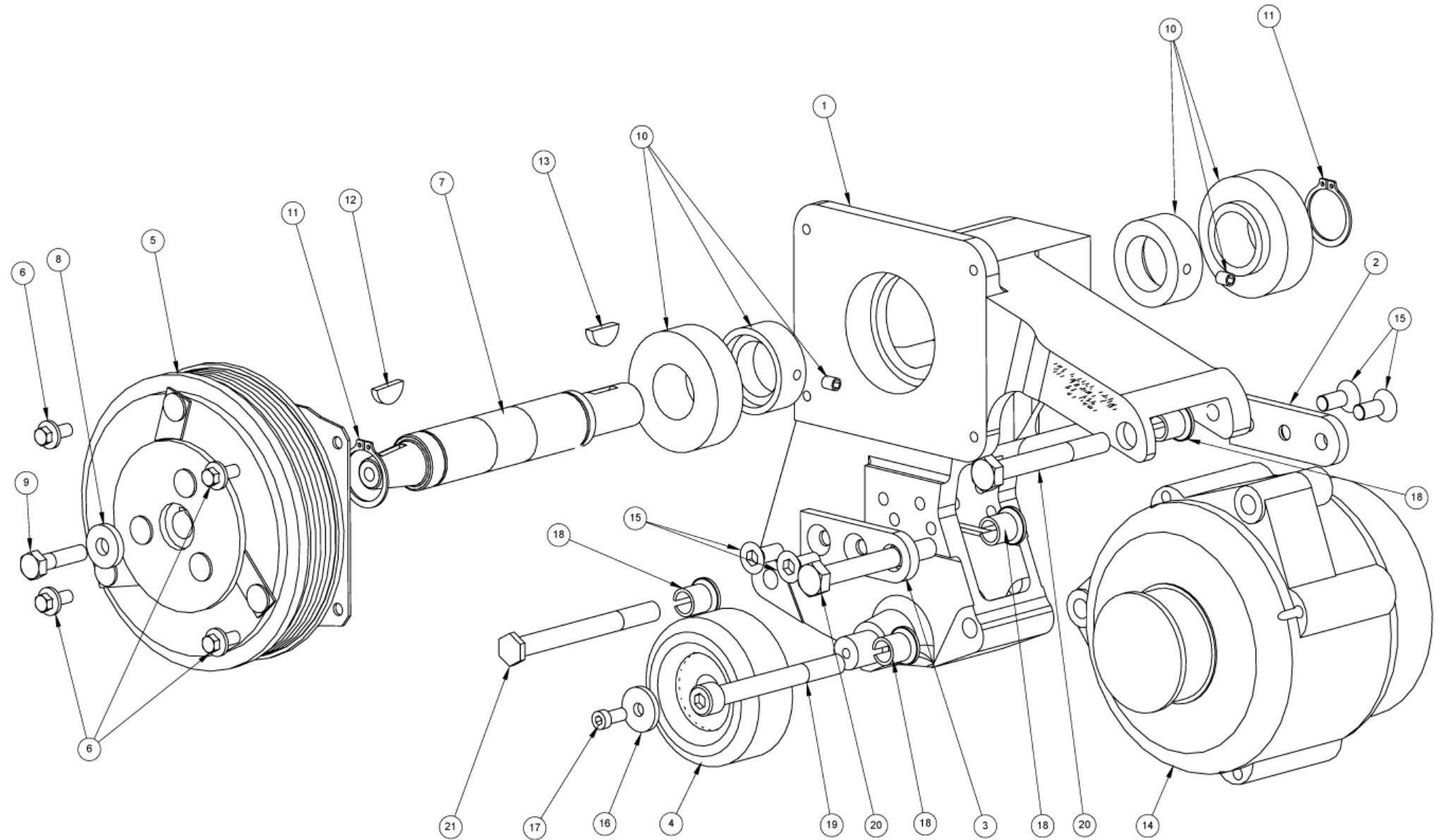


Figure 7-25. CDS Front End 2003 - 2009 GM Assembly - Parts View
5481 Rev. B



CDS Front End 2003 - 2009 GM Assembly Parts List

Item	Part Number	Description	Qty
1	000-015-002	Casting, Front End Chevy CDS	1
2	000-015-880	Bracket, Idler Casting - Rear	1
3	000-015-879	Bracket, Idler Casting - Front	1
4	000-109-095	Pulley, 76mm CDS Idler - Gates w/ Double Row Bearing	1
5	000-036-003	Clutch Assembly, 6" Poly Groove	1
6	000-143-141	Screw, 1/4"-20UNC x 1/2" Lg. Whiz Lock	4
7	000-150-009	Shaft, Electric Clutch - CDS	1
8	000-036-003	Washer, Clutch Assembly, 6" Poly Groove	1
9	000-143-151	Screw, 5/16"-24UNF x 1.25" Lg. Hex Head	1
10	000-008-011	Bearing, CDS Clutch	2
11	000-139-005	Ring, Snap - CDS Clutch Shaft	2

Item	Part Number	Description	Qty
12	000-077-008	Key, 5/32" x 3/4" Woodruff	1
13	000-077-009	Key, 3/16" x 3/4" Woodruff	1
14	- - -	Alternator, 2003 GM (Part of Van)	1
15	000-143-562	Screw, 5/16"18UNC x 0.75" Lg. Flat Head Allen	4
16	000-174-104	Washer, Idler Casting - 2003 - 2009 GM	1
17	000-143-079	Socket Hd. Mach. Scr., 1/4"-20UNC x 0.50" Lg.	1
18	000-154-141	Bushing, CDS Idler Casting - Alternator Mounting	4
19	000-143-563	Screw, M-10 x 1.5 x 90mm Lg. Socket Head	1
20	000-143-564	Screw, M10 x 1.5 x 80mm Lg. Hex Head	2
21	000-143-558	Screw, M10X1.5 x 90mm Lg. Mod. Thinner Head	1

Figure 7-26. Horizontal Pump In Tank Assembly - Front
3700 Rev. C

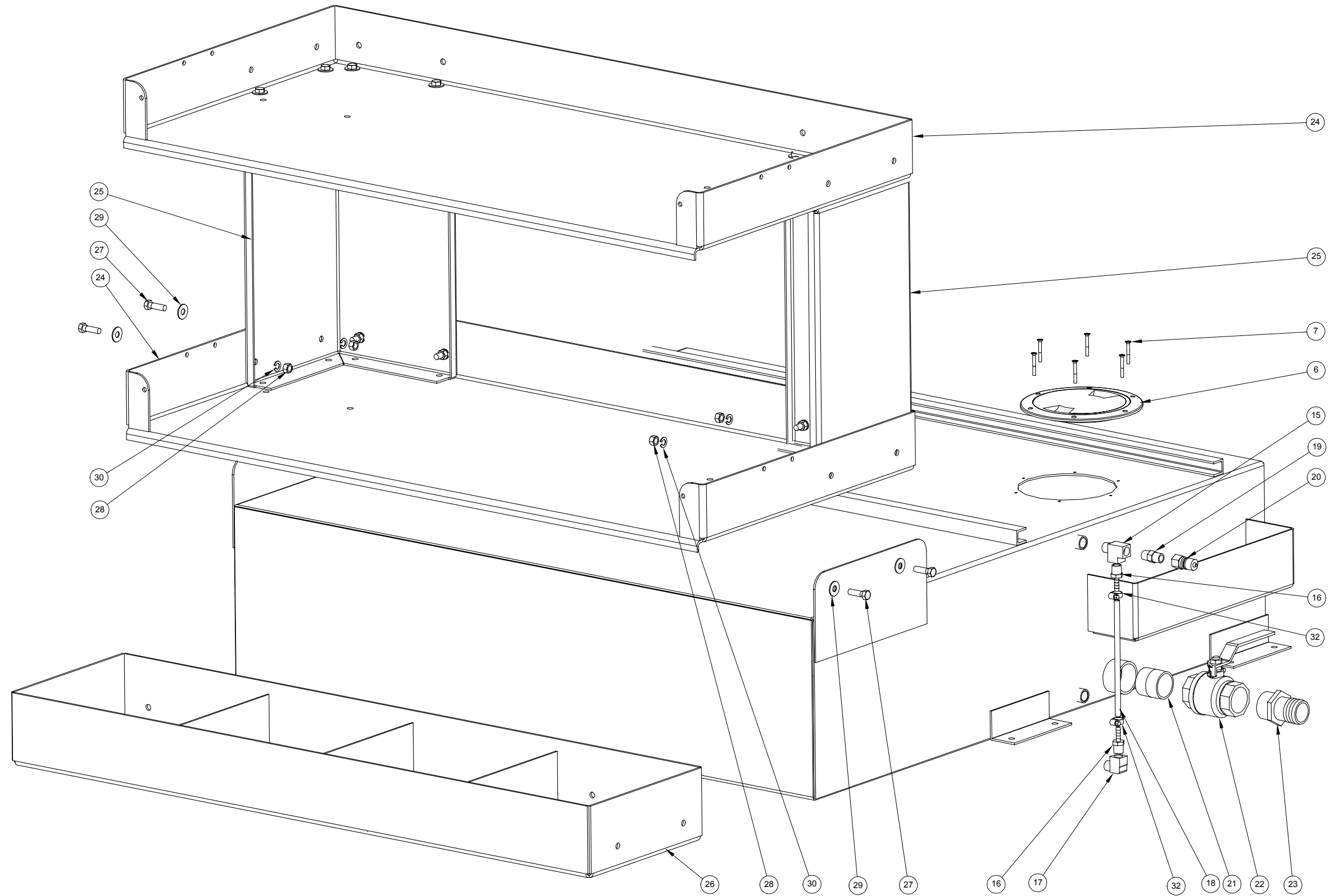
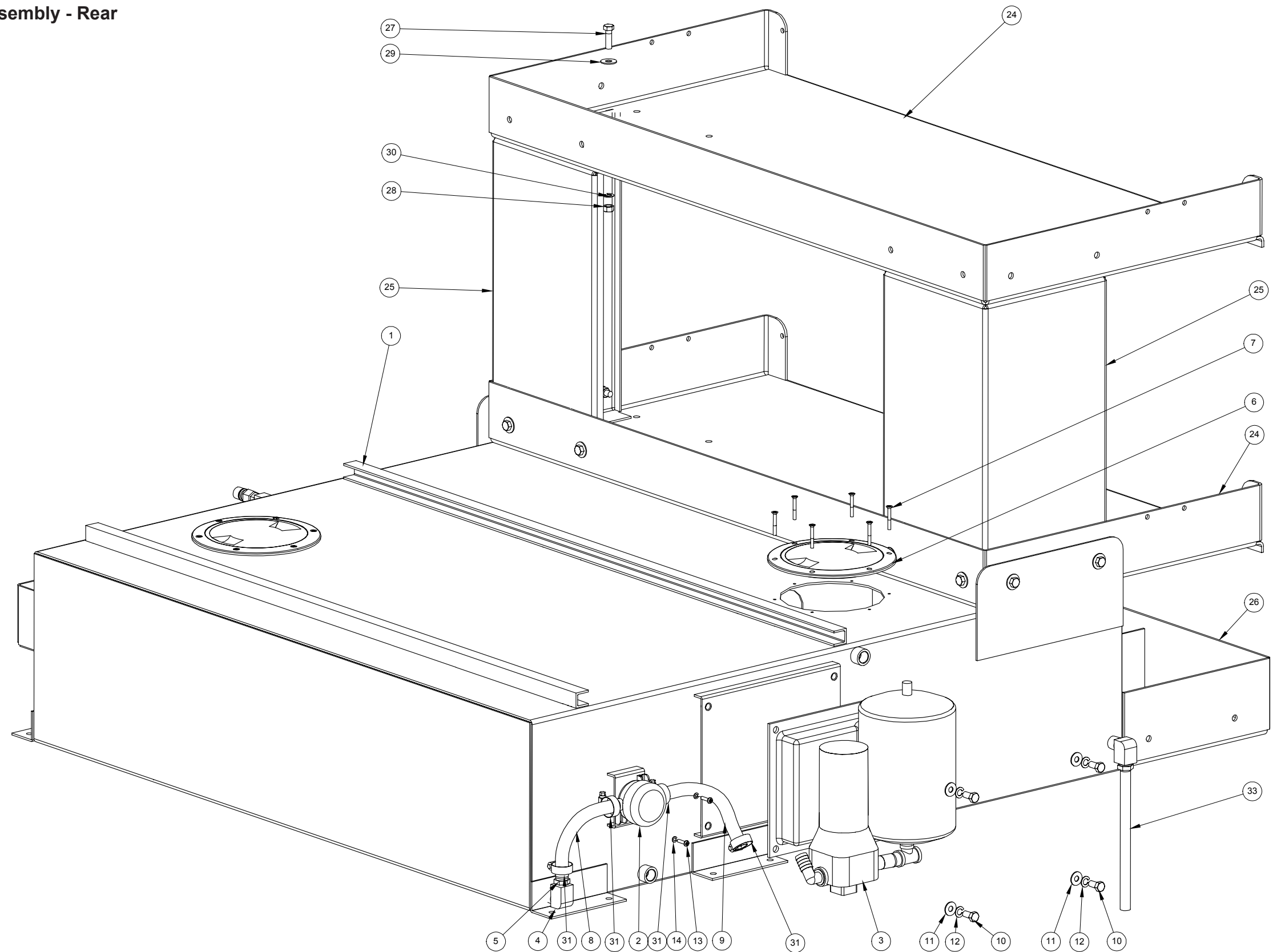


Figure 7-27. Horizontal Pump In Tank Assembly - Rear
3700 Rev. C

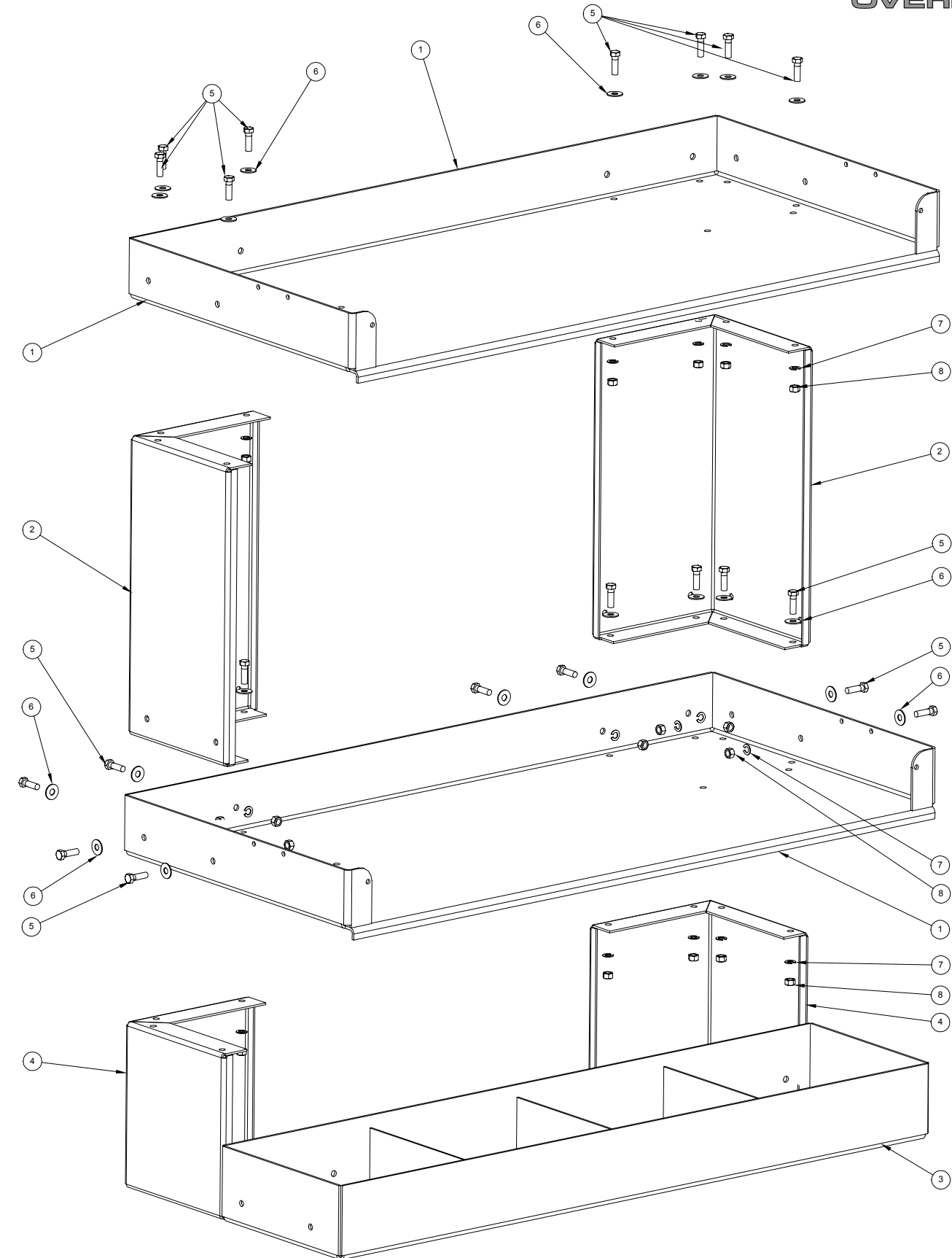


Horizontal Pump In Tank Assembly Parts List

Item	Part Number	Description	Qty
1	000-159-005	Tank, 120 Gallon Horizontal Pump-In - Weldment	1
2	000-111-170	Filter, (Supplied With Pump)	1
3	000-111-170	Pump, Fresh Water	1
4	000-052-087	Elbow, 1/2" NPT Street	1
5	000-052-129	Insert, #812 (1/2" NPT x 3/4" Barb)	1
6	000-041-005	Cover, 6"	2
7	000-143-113	Screw, #10-24UNC x 1 1/2" Lg. Flat HD Philips	12
8	000-068-069	Hose, 3/4" Weatherhead	1
9	000-068-069	Hose, 3/4" Weatherhead	1
10	000-143-017-1	Screw, 3/8"-16UNC x 3/4" Lg. Hex Head	4
11	000-174-032	Washer, 3/8" Flat	4
12	000-174-057	Washer, 3/8" Lock	4
13	000-143-062	Screw, #10-24UNC x 0.75" Lg. Pan Head Phillips	2
14	000-174-014	Washer, #10 Lock	2
15	000-052-023	Tee, 3/8" NPT Male Street	1
16	000-052-103	Insert, #64 (3/8" NPT x 1/4" Barb)	2

Item	Part Number	Description	Qty
17	000-052-086	Elbow, 3/8" NPT Street	1
18	000-068-025	Hose, 1/4" Clear Bulk	1
19	000-052-074	Nipple, 3/8" NPT Hex	1
20	000-052-052	Quick Connect, 660 Male w/ Viton Standard	1
21	000-052-182	Nipple, 1-1/2" NPT Close Galvanized	1
22	000-169-022	Valve, 1-1/2" Full Port Ball	1
23	000-052-226	Insert, 1-1/2" NPT x 1-1/2" Barb (Grey)	1
24	000-166-011	Tray, Air Mover - Removable - Weldment	2
25	000-083-001	Leg, Tray Support - Weldment	2
26	000-166-013	Bin, 4 Compartment Removable - Weldment	1
27	000-143-019	Screw, 3/8"-16UNC x 1.25" Lg. Hex Head Grd 5 Zinc	16
28	000-094-014	Nut, 3/8"-16UNC Hex Zinc Plated	16
29	000-174-005	Washer, 3/8" Flat	16
30	000-174-021	Washer, 3/8" Lock	16
31	000-033-029	Clamp, Size 12 Hose	4
32	000-033-003	Clamp, Size #4 Mini	2
33	000-068-165	Hose Assembly, Pump In Overflow	1

Figure 7-28. Free Standing Tray Assembly
3772-



Free Standing Tray Assembly Parts List

Item	Part Number	Description	Qty
1	000-166-011	Tray, Air Mover - Removable - Weldment	2
2	000-083-001	Leg, Tray Support - Weldment	2
3	000-166-013	Bin, 4 Compartment Removable - Weldment	1
4	000-083-006	Leg, Free Standing Tray Support - Weldment	2
5	000-143-019	Screw, 3/8"-16UNC x 1.25" Lg. Hex Head Grd 5 Zinc	24
6	000-174-005	Washer, 3/8" Flat	24
7	000-174-021	Washer, 3/8" Lock	24
8	000-094-014	Nut, 3/8"-16UNC Hex Zinc Plated	24

Figure 7-29. 85-Gallon Rotomolded Fresh Water Tank Assembly - Overall View
5566 Rev. E

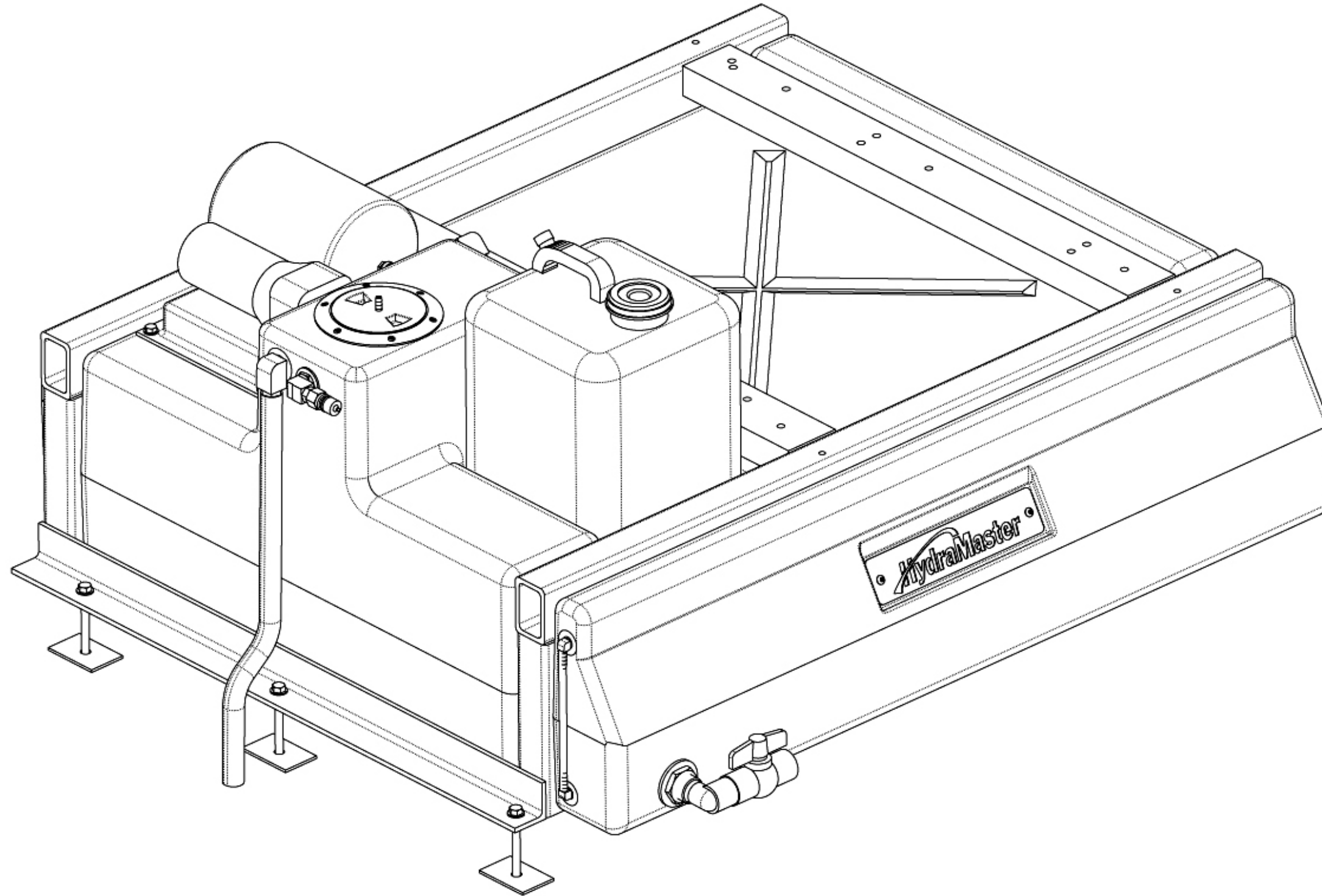


Figure 7-30. 85-Gallon Rotomolded Fresh Water Tank Assembly - Front View
5566 Rev. F

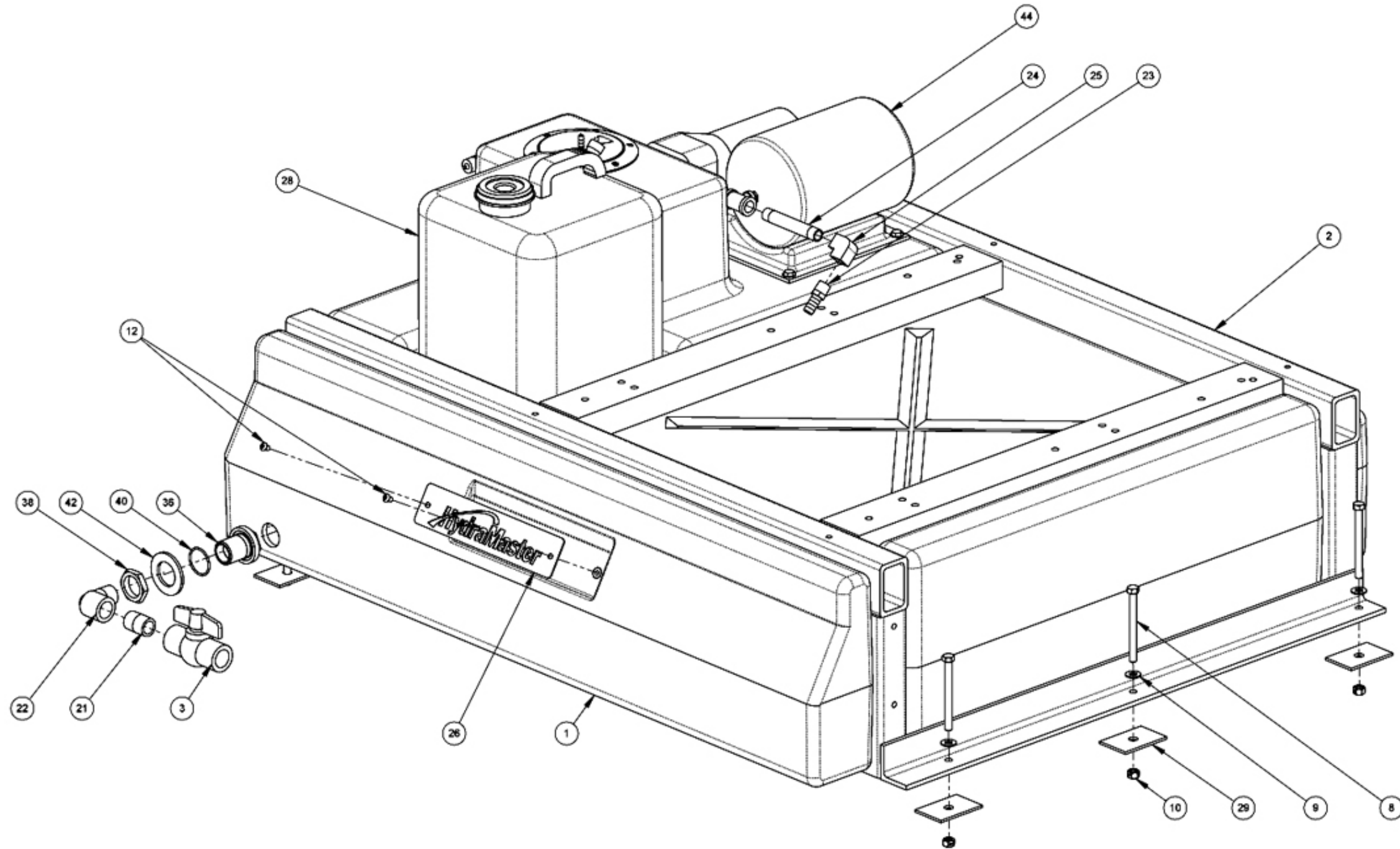
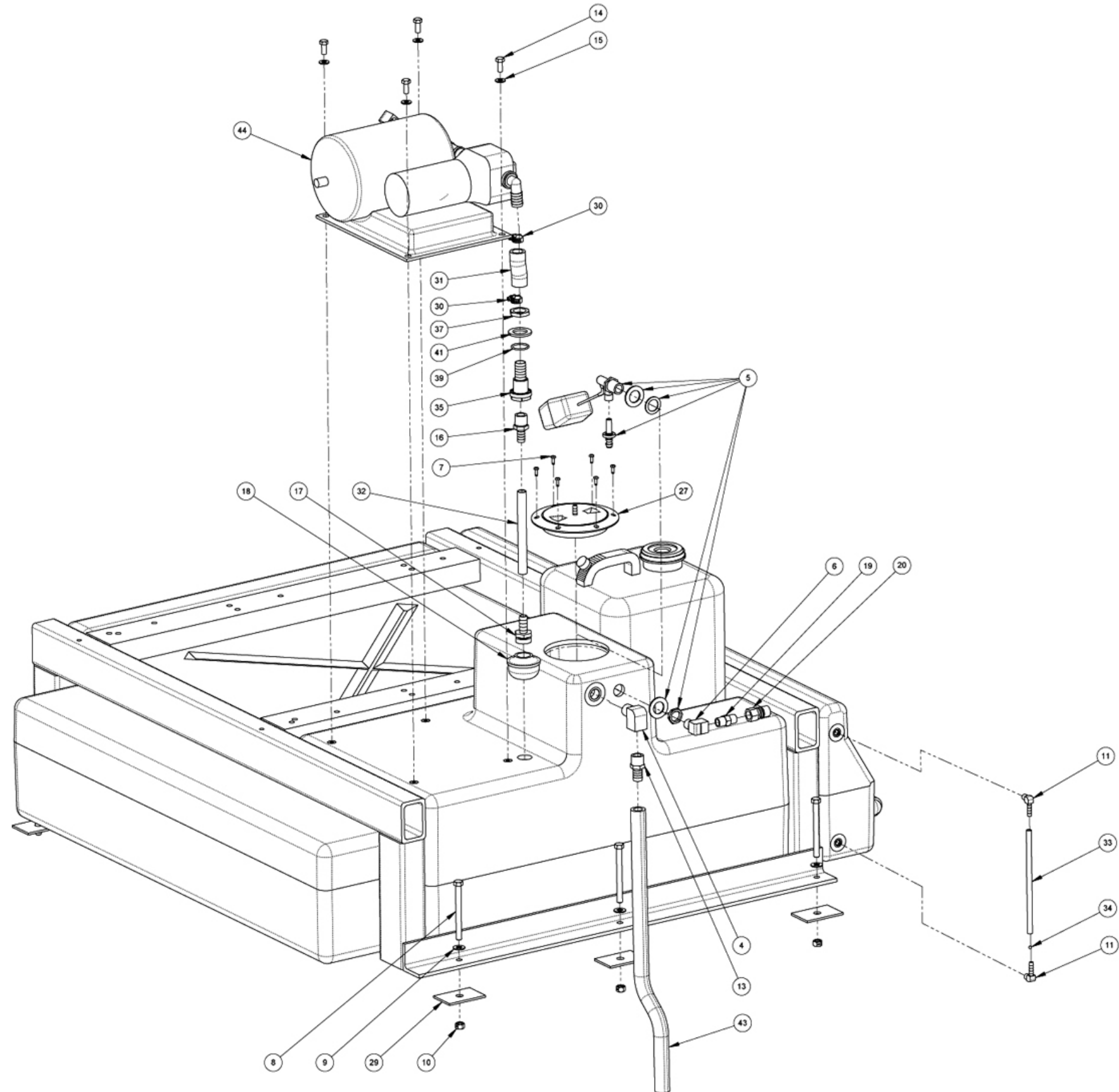


Figure 7-31. 85-Gallon Rotomolded Fresh Water Tank Assembly - Rear view
5566 Rev. E

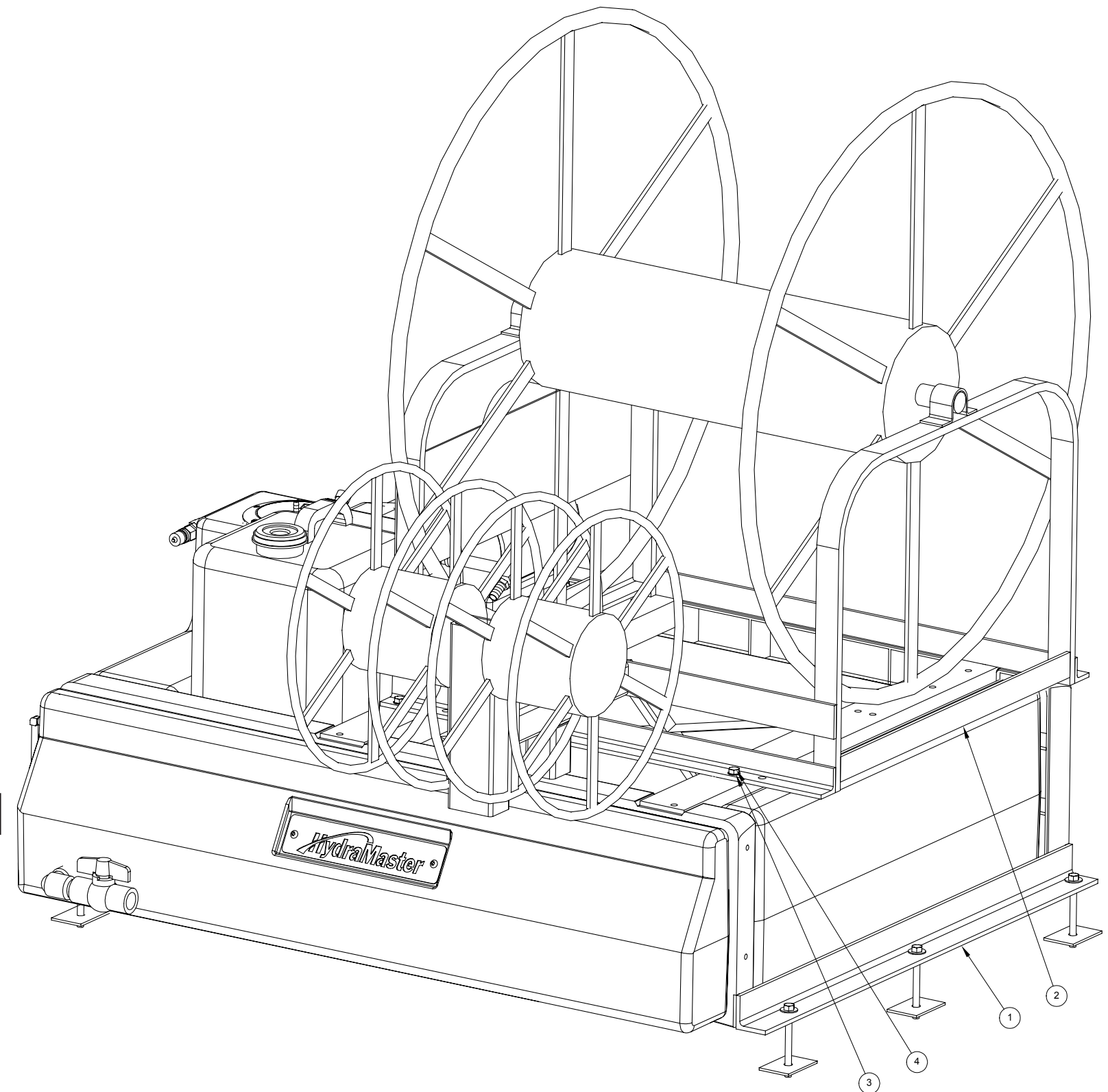


85-Gallon Rotomolded Fresh Water Tank Assembly Parts List

Item	Part Number	Description	Qty
1	000-159-116	Tank, 85 Gallon Rotomolded Fresh Water	1
2	000-055-169	Frame, Rotomolded Fresh Water Tank	1
3	000-169-202	Valve, 3/4" FPT Ball Valve	1
4	000-052-087	Elbow, 1/2" NPT Street	1
5	000-169-218	Valve, Float, Water Box	1
6	000-052-086	Elbow, 3/8" NPT Street	1
7	000-143-314	Screw, #8 X 1/2" Lg. Pan Head	6
8	000-143-198	Screw, 3/8"-16UNC X 4" Lg. Hex Head - Full Thread	6
9	000-174-005	Washer, 3/8" Flat	6
10	000-094-015	Nut, 3/8"-16 UNC Hex 2-Way Locking	6
11	000-052-253	Elbow, 1/8" NPT X 1/4" Barb	2
12	000-143-565	Screw, 1/4""20UNC X 0.375" Lg. Button Head Socket	2
13	000-052-130	Insert, #810 (1/2" NPT X 5/8" Barb)	1
14	000-143-012	Screw, 5/16"-18UNC X 3/4" Lg.	4
15	000-174-049	Washer, 5/16" Flat	4
16	000-052-107	Insert, #88 (1/2" NPT X 1/2" Barb)	1
17	000-052-160	Insert, 3/4" M Garden X 1/2" Barb	1
18	000-049-020	Filter Screen - Medium	1
19	000-052-074	Nipple, 3/8" NPT Hex	1
20	000-052-052	Quick Connect, 660 3/8"" Brass w/ EPDM O-Ring	1
21	000-052-326	Nipple, 3/4" NPT Close	1
22	000-052-726	Elbow, 3/4" Street (Grey)	1

Item	Part Number	Description	Qty
23	000-052-105	Insert, #68 (3/8" NPT X 1/2" Barb)	1
24	000-052-408	Nipple, 3/8" NPT X 4" Lg.	1
25	000-052-142	Elbow, 3/8" F X F Brass	1
26	000-105-313	Plate, Hydramaster Name - Roto Tank	1
27	000-041-004	Cover, Poly Water Box Mod, W/Vent	1
28	000-159-016	Jug, 5 Gallon Plastic Chemical - Standard	1
29	600-011-003	Tie Down Cleat, Washer	6
30	000-033-029	Clamp, Size 12 Hose	2
31	000-068-069	Hose, 3/4" ID Weatherhead Blue - Bulk	1
32	000-068-018	Hose, 1/2" ID Bulk	1
33	000-068-025	Hose, 1/4" ID Clear	1
34	000-005-008	Sight Float Bead, 5mm Red Wally Whale	1
35	000-052-785	Bulkhead, 1/2" FPT X 3/4" Barb	1
36	000-052-786	Bulkhead, 3/4" FPT	1
37	000-094-097	Nut, 1"-14UNS Brass	1
38	000-094-121	Nut, 1-5/16"-12UN Brass	1
39	000-097-072	O-Ring, 1.06" ID X 3/32 " Width	1
40	000-097-073	O-Ring, 1.375 ID X 3/32" Width	1
41	000-174-173	Washer, 1" ID X 1.60 OD X 0.135" Thk.	1
42	000-174-174	Washer, 1.375" ID	1
43	000-068-020	Hose, .625" ID - Green Stripe	1
44	000-111-170	Pump w/ Bladder 40 psi Fresh Water	1

Figure 7-32. 85-Gallon Rotomolded Fresh Water Tank with Reel Assembly
5817-



**85-Gallon Rotomolded Fresh Water Tank
with Reel Assembly Parts List**

Item	Part Number	Description	Qty
1	000-159-118	Assembly, Rotomolded Tank	1
2	000-163-543	Reel, Triple Electric 300' (E2336-518S)	1
3	000-174-057	Washer, 3/8" Lock	4
4	000-143-017-1	Screw, 3/8"-16UNC x 3/4" Lg. Hex Head	4

**Figure 7-33. 125-Gallon HydraCradle™ Tank
Assembly - Parts View 1 of 3**
7582 Rev. A

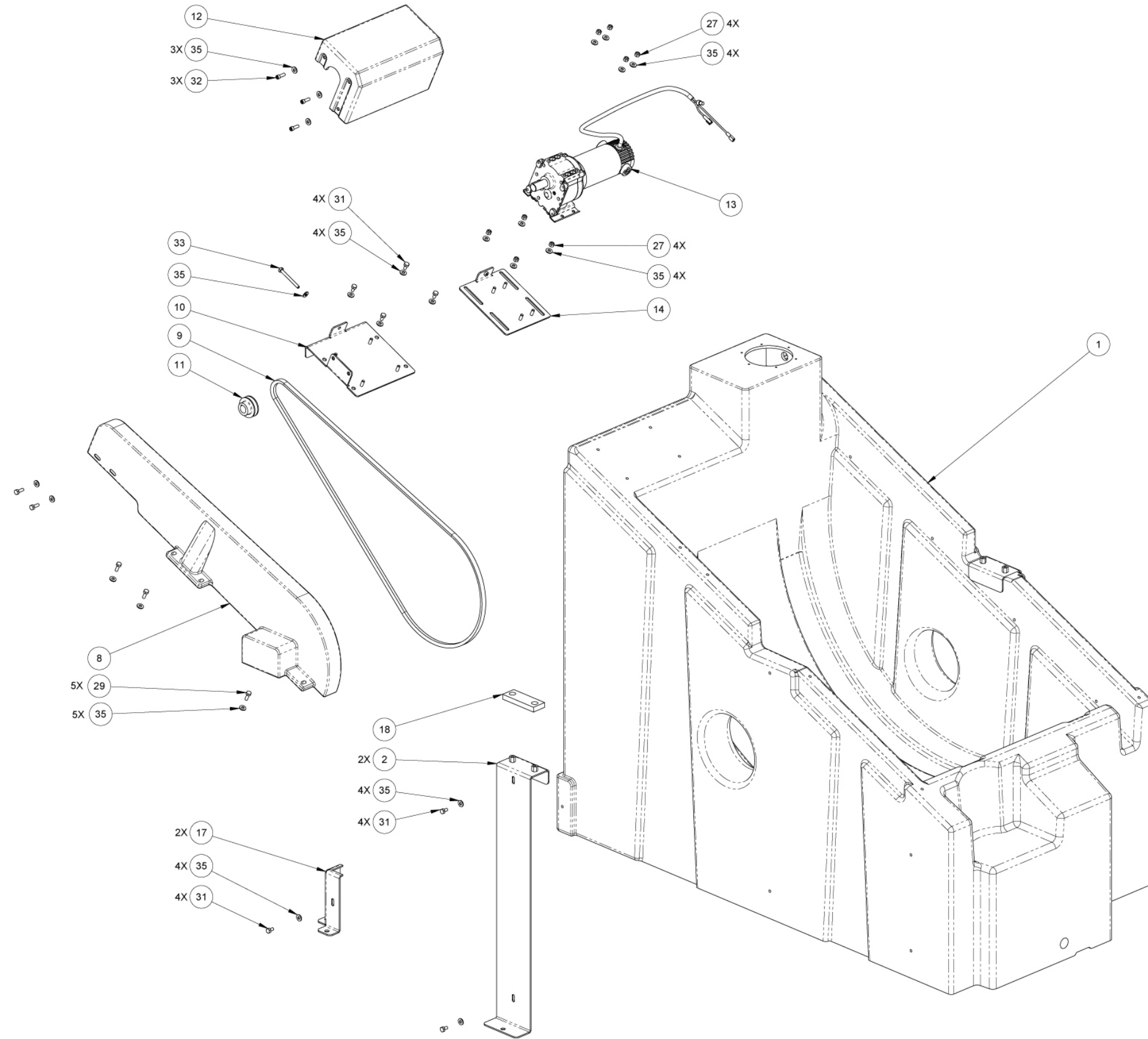


Figure 7-34. 125-Gallon HydraCradle Tank Assembly - Parts View 2 of 3
7582 Rev. A

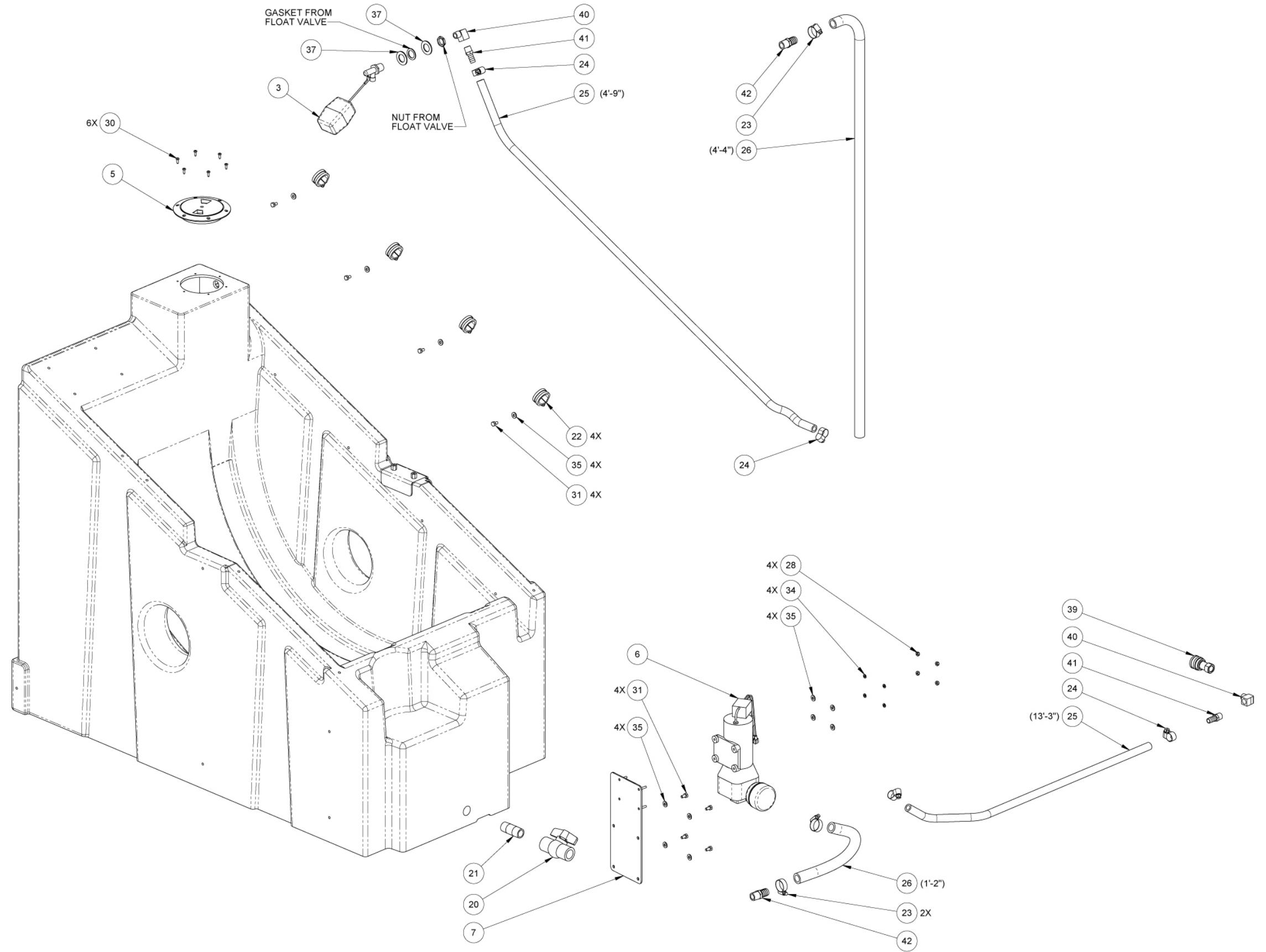
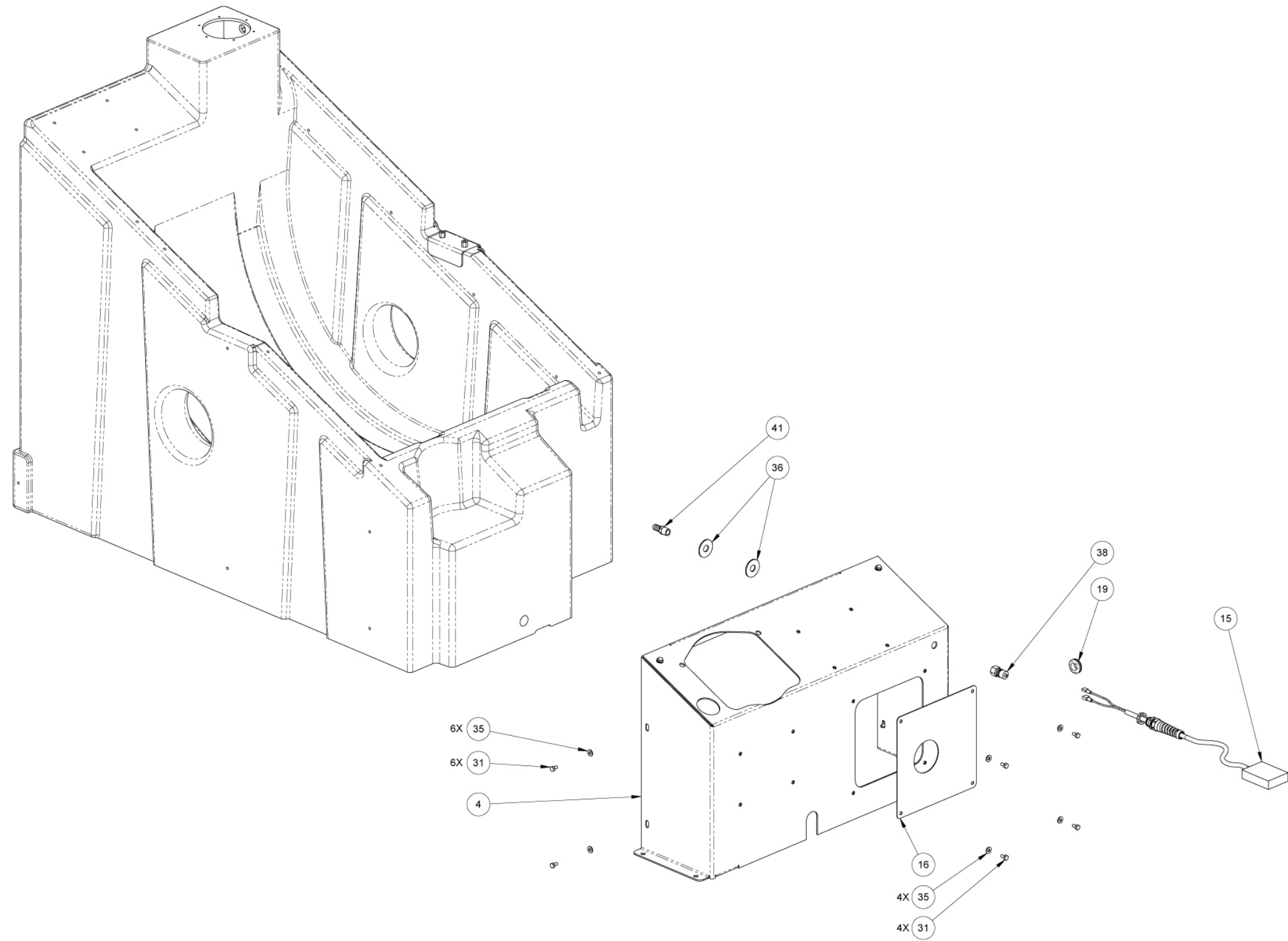


Figure 7-35. 125-Gallon HydraCradle Tank Assembly - Parts View 3 of 3
7582 Rev. A



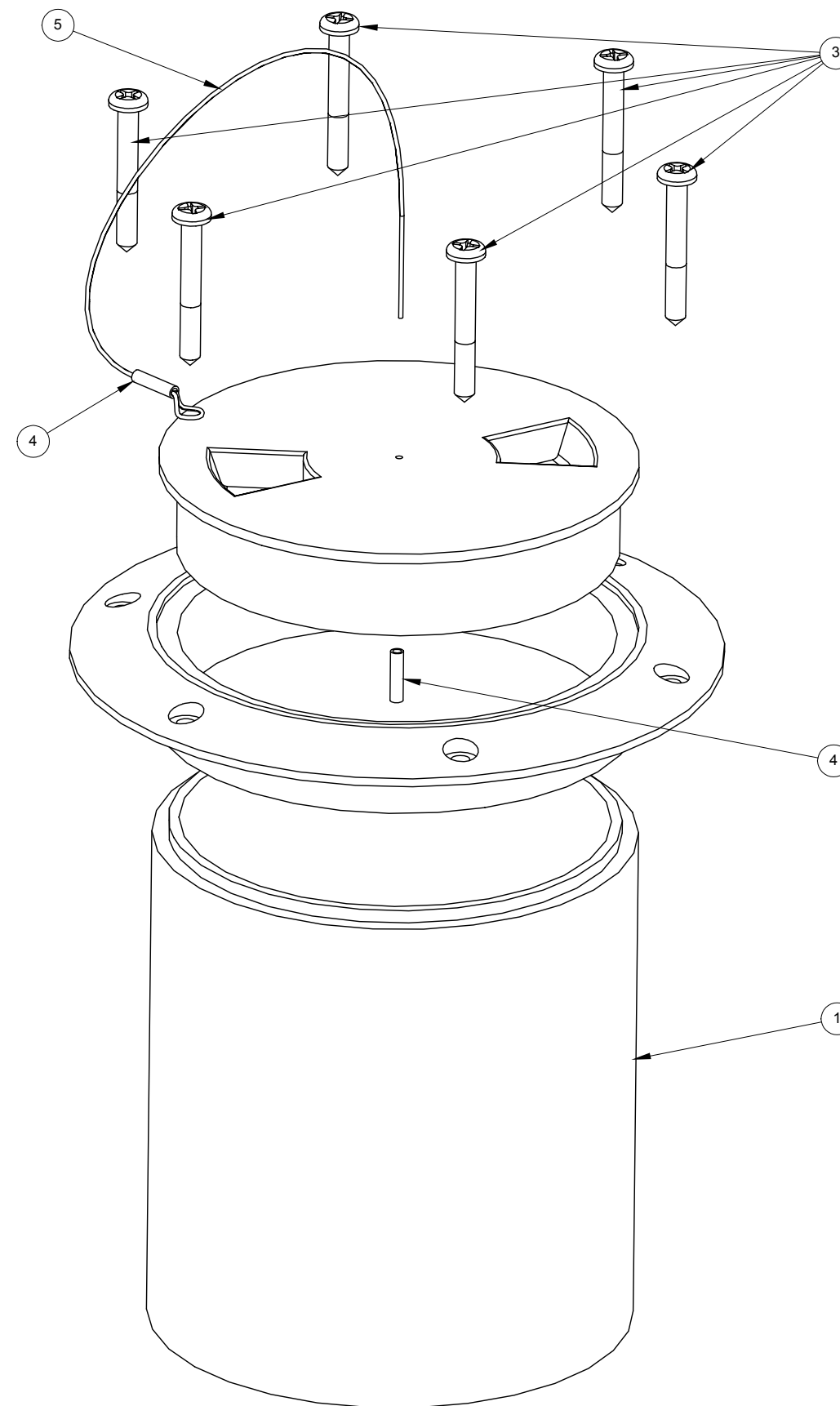
125-Gallon HydraCradle Tank Assembly Parts List *

Item	Part Number	Description	Qty
1	000-159-134	Tank, 125 Gallon, HydraCradle	1
2	000-015-978	Bracket, Tank, Center Tie Down	2
3	000-169-217	Valve, Float, Water Box	1
4	000-041-476	Cover, Tank Front	1
5	000-041-365	Cover, 4" Round	1
6	000-111-190	Pump, 4.5 gpm, 40 psi, 12 Vdc, Modification	1
7	000-100-183	Panel, Pump Mounting	1
8	000-041-475	Cover, Belt HydraCradle Tank	1
9	000-010-130	V-Belt, 4l, 73" Long	1
10	000-092-027	Mount, Drive Motor	1
11	000-109-122	Pulley, 2" OD X 3/4 Bore	1
12	000-041-474	Cover, Motor, HydraCradle Tank	1
13	000-091-046	Motor Assembly, 1/6 HP, 12 Vdc, Modification	1
14	000-092-026	Mount, Motor Adjustment	1
15	000-157-156	Foot Switch - Modified	1
16	000-041-477	Cover, Pump Access	1
17	000-015-977	Bracket, Rear Base	2
18	000-154-173	Spacer, Bearing Block	1
19	000-060-013	Grommet, 3/4"ID Rubber	1
20	000-169-202	Valve, 3/4" FPT Ball Valve	1
21	000-052-328	Nipple, 3/4" X 2 1/2, Pvc	1
22	000-033-116	Clamp, 1-1/2" Cushion Loop w/ 7/16" Mounting Hole	4
23	000-033-029	Clamp, Hose, Size 12	3
24	000-033-004	Clamp, Size #6 Mini Hose	4
25	000-068-018	Hose, 1/2 Rubber	18
26	000-068-459	Hose, 3/4 Rubber, Green Stripe	5.5
27	000-094-009	Nut, 1/4"-20UNC Nylock	8
28	000-094-034	Nut, #10-24UNC Nylock S/S	4
29	000-143-001	Screw, 1/4"-20UNC X 0.75" Lg. Hex Head	5
30	000-143-314	Screw, #8 X 1/2" Lg. Pan Head	6

Item	Part Number	Description	Qty
31	000-143-333	Screw, 1/4"-20UNC X 0.50" Lg. Hex Head	28
32	000-143-566	Screw, 1/4"-28UNF X 0.75" Lg. Socket Head	3
33	000-143-594	Screw, 1/4"-20UNC X 2 1/2" Lg. Hhcs, Full Threads	1
34	000-174-001	Washer, #10 Flat	4
35	000-174-003	Washer, 1/4" Flat	49
36	000-174-008	Washer, 5/8" Flat	2
37	000-174-028	Washer, 7/8" ID X 1.50" O.D. X 0.090" Thk.	2
38	000-052-052	Quick Connect, 660 3/8" Brass w/ EPDM O-Ring	1
39	000-052-053	Quick Connect, 3/8 Female	1
40	000-052-086	Elbow, 3/8" NPT Street	2
41	000-052-105	Insert, #68 (3/8" NPT X 1/2" Barb)	3
42	000-052-129	Insert, #812	2
43	000-063-040	Harness, HydraCradle Tank	1
44	000-068-141	Hose, 2" X 10 ft Vacuum	1
45	000-081-304	Label Set, HydraCradle Tank	1

* Refer to the HydraCradle™ Tank Owner's Manual (P/N 182-09) for more information.

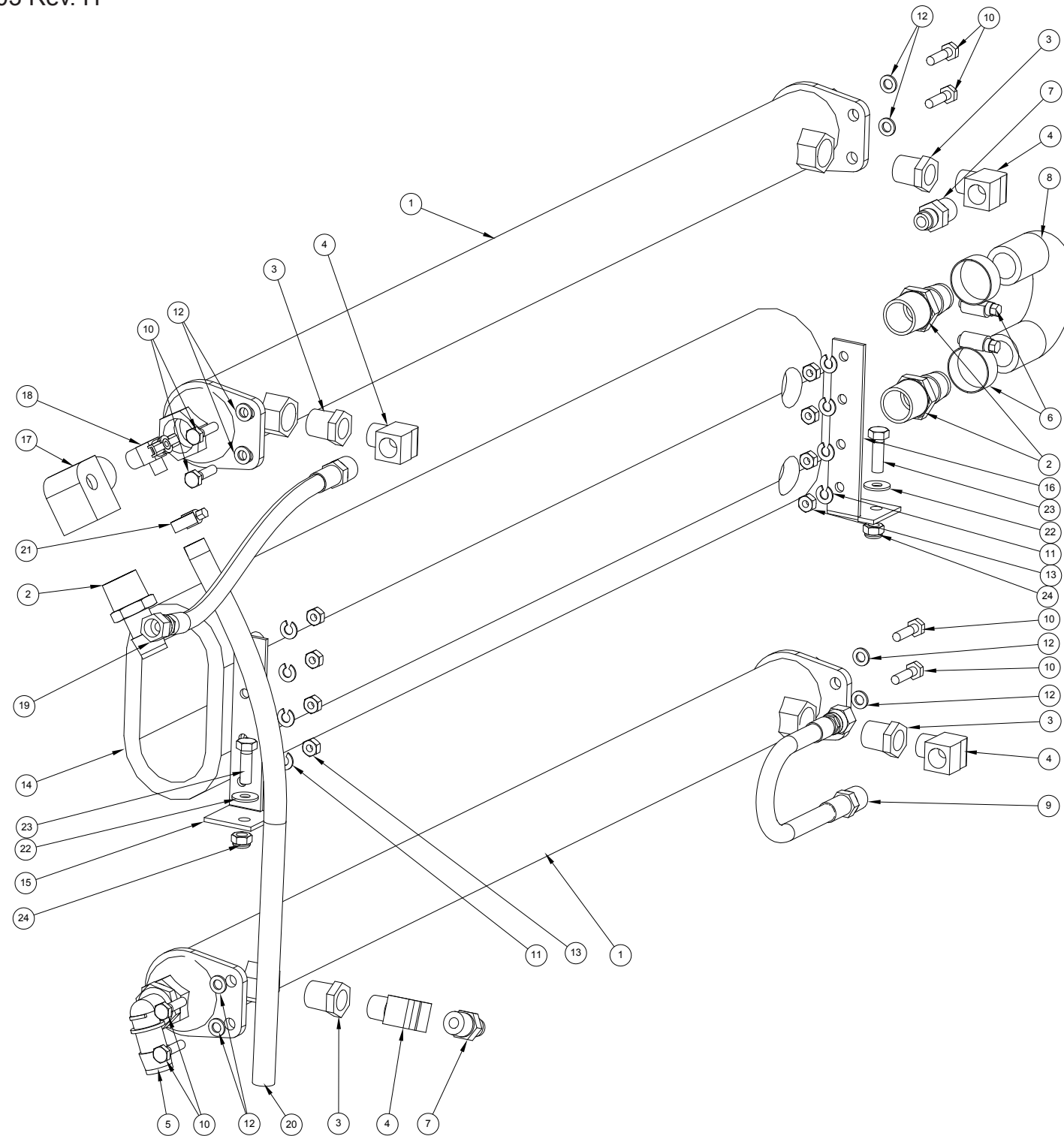
Figure 7-36. CDS Pass Through Assembly
5623 Rev. B



CDS Pass Through Assembly Parts List

Item	Part Number	Description	Qty
1	000-125-182	Tube, Pass Through	1
2	000-041-200	Cover, 4" Round ABS - Mod. - Pass Through	1
3	000-143-537	Screw, #10 x 1.5" Lg. Pan Head Sheet Metal	6
4	000-033-032	Clamp, CDS Throttle Cable	2
5	000-025-008	Cable, 150 Lb Test S/S	1

Figure 7-37. CDS Standard Heat Exchanger Assembly
3803 Rev. H

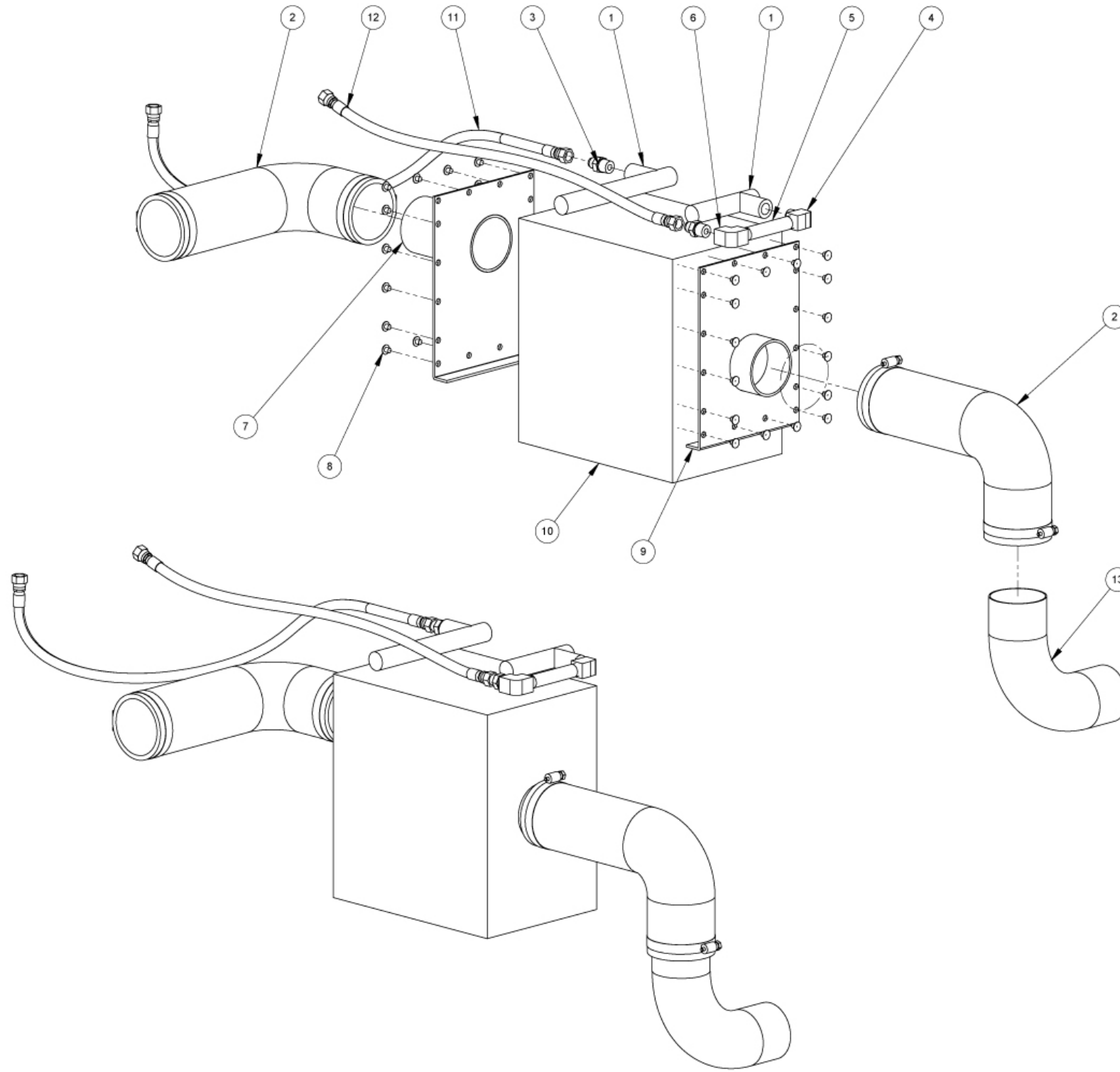


CDS Standard Heat Exchanger Assembly Parts List

Item	Part Number	Description	Qty
1	000-038-046	Heat Exchanger, Water To Water Hi-psi	2
2	000-052-338	Insert, #1212 (3/4" NPT X 3/4" Barb)	3
3	000-052-064	Bushing, 1/2" NPT X 3/8" Fpt	4
4	000-052-086	Elbow, 3/8" NPT Street	4
5	000-052-756	Insert, 3/4" NPT X 3/4" Elbow	1
6	000-033-029	Clamp, Size 12 Hose	2
7	000-052-528	Nipple, 3/8" M JIC X 3/8" NPT	2
8	000-068-066	Hose, 3/4" I.D W/ 180° Bend For Hx	1
9	000-068-070	Hose, 3/8" X 12" Lg. Teflon W/ JIC Ends	1
10	000-143-002	Screw, 1/4"-20 UNC X 1.00" Lg. Hex Head	8
11	000-174-019	Washer, 1/4" Lock	8
12	000-174-003	Washer, 1/4" Flat	8
13	000-094-010	Nut, 1/4"-20 UNC Hex	8
14	000-131-042	Insulation, 4-1/8" X 1/2"	1
15	000-015-172 - Lt	Bracket, Dual Heat Exchanger Mounting	1
16	000-015-171 - Rt	Bracket, Dual Heat Exchanger Mounting	1
17	000-052-733	Elbow, 3/4" NPT Street - Modified	1
18	000-169-205	Petcock, Coolant 1/4" NPT	1
19	000-068-196	Hose, 3/8" ID X 11" Lg W/ 3/8" MPT & 3/8" JIC Ends	1
20	000-068-091	Hose, 3/8" ID Clear - Bulk	1
21	000-033-003	Clamp, Size #4 Mini	1
22	000-174-002	Washer, 1/4" Flat	2
23	000-143-013	Screw, 5/16"-18 UNC X 1.00" Lg. Grade 8	2
24	000-094-038	Nut, 5/16"-18 UNC Nylock	2

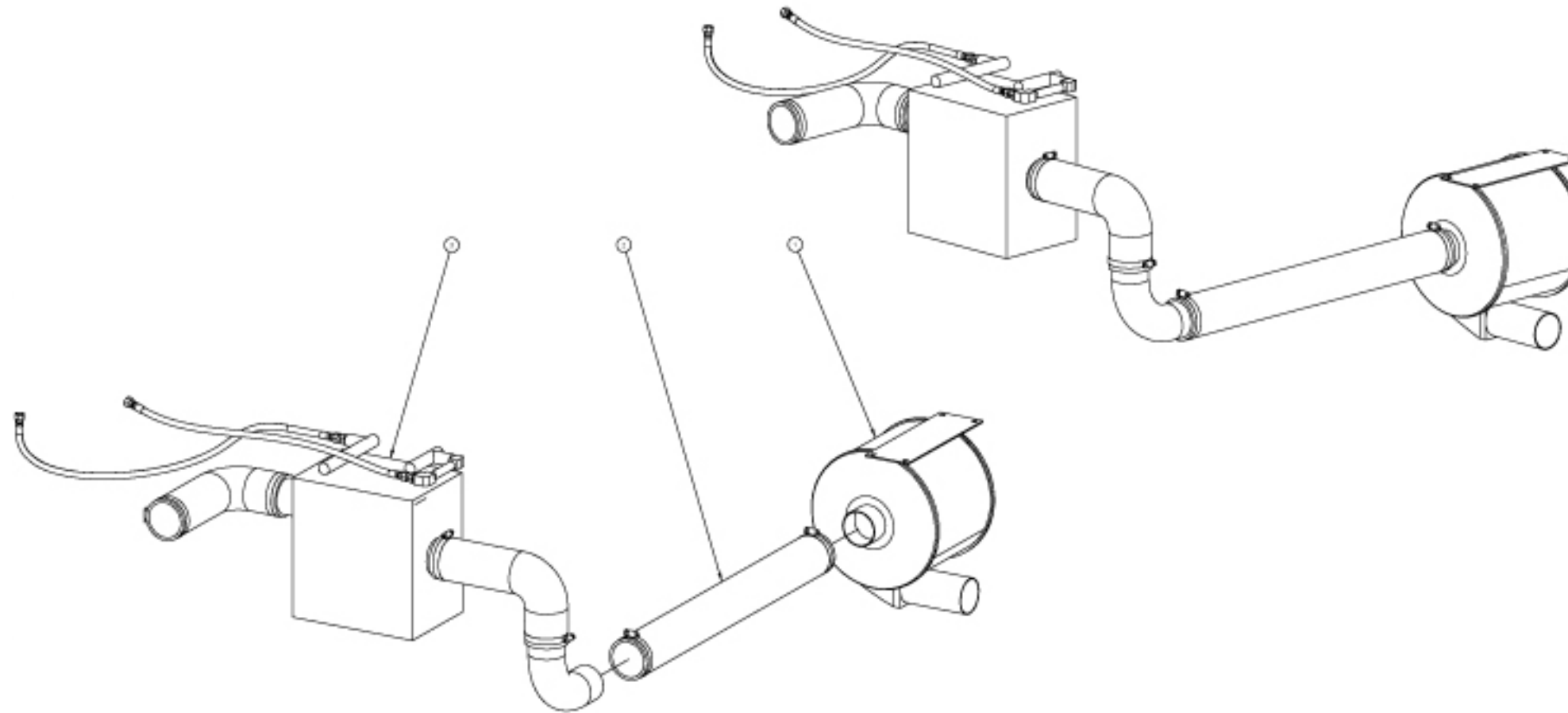
Figure 7-38. CDS Heat Exchanger Assembly
7696

CDS Heat Exchanger Assembly Parts List



Item	Part Number	Description	Qty
1	000-038-053	Core, Blower Heat Exchanger	1
2	000-052-674	Elbow, 3" Rubber W/Clamps	2
3	000-052-528	Nipple, 3/8" M JIC X 3/8" NPT	2
4	000-052-086	Elbow, 3/8" NPT Street	1
5	000-052-408	Nipple, 3/8" NPT X 4" Lg.	1
6	000-052-142	Elbow, 3/8" F X F Brass	1
7	000-100-154	Panel, Salsa Inlet - Weldment - CDS 4.8	1
8	000-140-021	Rivet, 1/4" Blind X 0.50" Lg.	32
9	000-100-155	Panel, Salsa Outlet - Weldment - CDS 4.8	1
10	000-108-140	Protector, Salsa Insulation - CDS 4.8	1
11	000-068-755	Hose, 3/8" X 31" Lg. Teflon W/ 3/8" JIC Ends	1
12	000-068-801	Hose, 3/8" X 37" Lg. Teflon W/ 3/8" JIC Ends	1
13	000-052-649	Elbow, 3" OD X 0.065" Wall 4.5" R W/2"	1

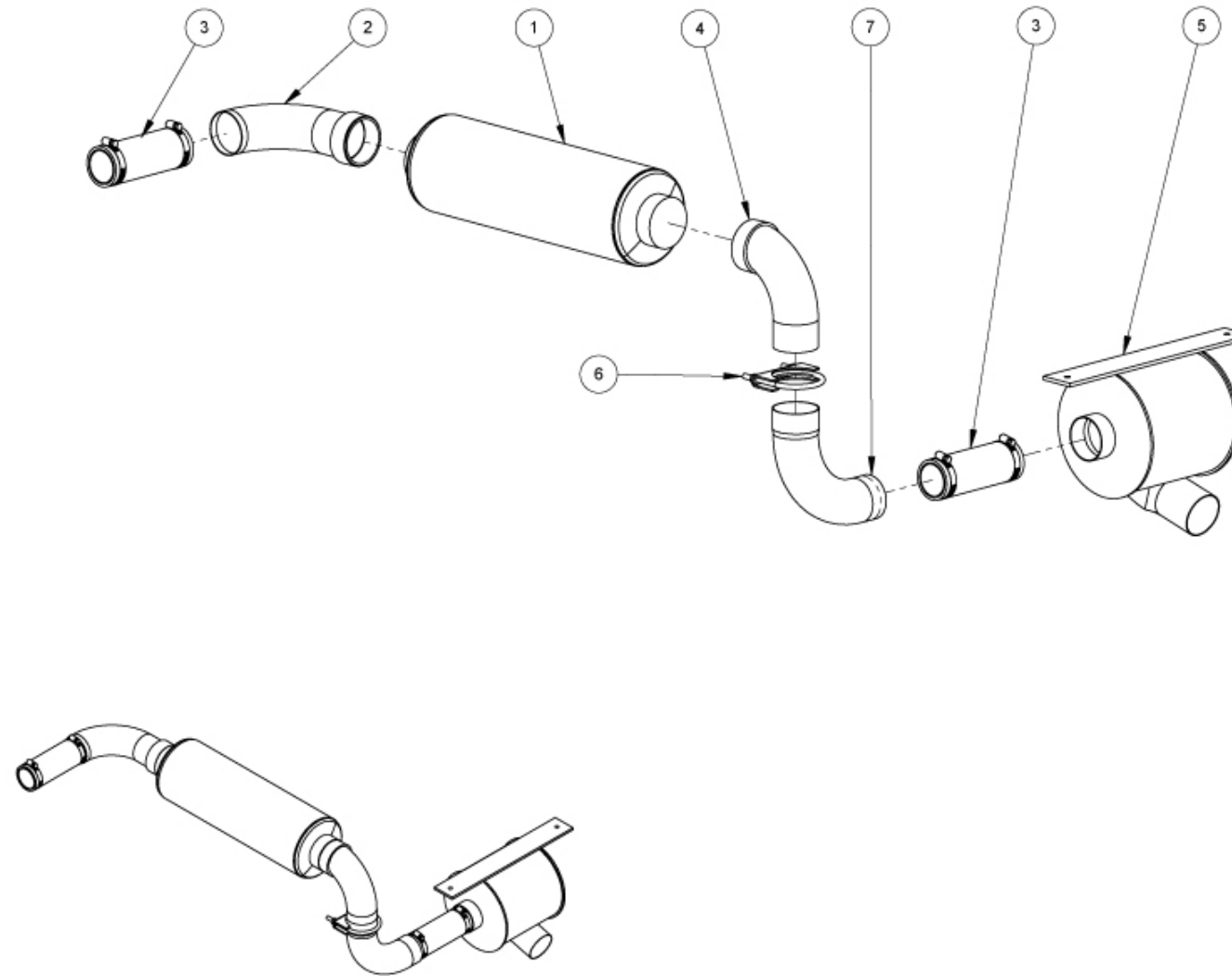
Figure 7-39. CDS Salsa 2005- 2009 (Chevy) Assembly
5954 Rev. A



CDS Salsa 2005 - 2009 Assembly Parts List

Item	Part Number	Description	Qty
1	000-093-030	Silencer, 3" Inlet and Outlet	1
2	000-068-187	Hose, 3" X 30" Lg. Nitrile	1
3	- - -	Heat Exchanger Assembly	1

Figure 7-40. Ford Hush Kit Muffler Assembly - 4.8
7697

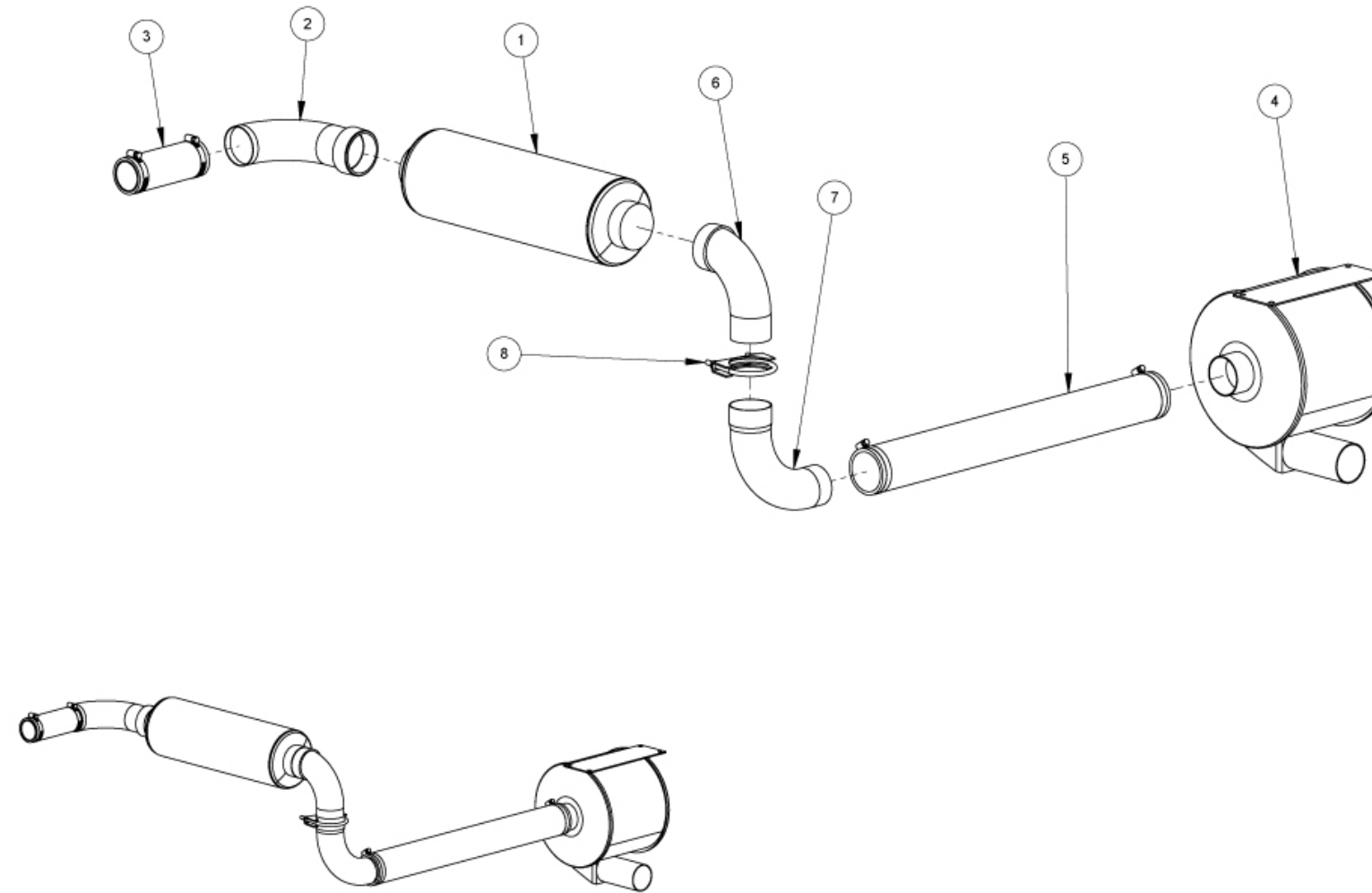


Ford Hush Kit Muffler Assembly Parts List - 4.8

Item	Part Number	Description	Qty
1	000-093-003	Silencer, Hush Kit Muffler	1
2	000-052-322	Adapter, 3" Modified Hush Silencer	1
3	000-068-617	Hose, 3" Silicone X 7"	2
4	000-052-334	Adapter, Vacuum Blower Inlet Fitting	1

Item	Part Number	Description	Qty
5	000-093-094	Silencer, 3" Cowl - CDS Ford 2005 - 2009	1
6	000-033-034	Clamp, 3" Muffler	1
7	000-001-026	Adapter	1

Figure 7-41. Chevy Hush Kit Muffler Assembly - 4.8
7694

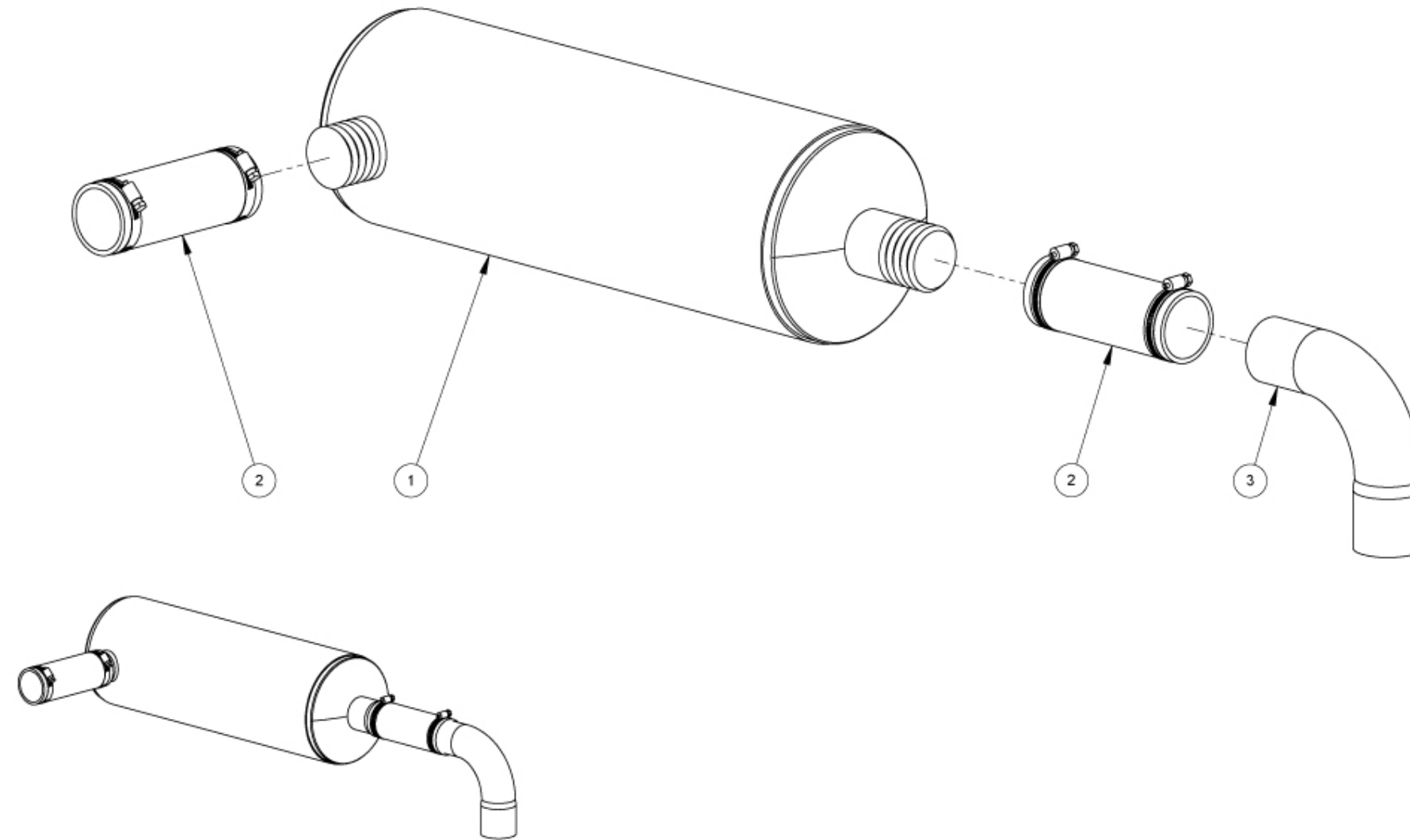


Chevy Hush Kit Muffler Assembly Parts List - 4.8

Item	Part Number	Description	Qty
1	000-093-003	Silencer, Hush Kit Muffler	1
2	000-052-322	Adapter, 3" Modified Hush Silencer	1
3	000-068-617	Hose, 3" Silicone X 7"	1
4	000-093-030	Silencer, 3" Inlet And Outlet	1
5	000-068-187	Hose, 3" X 30" Lg. Nitrile	1

Item	Part Number	Description	Qty
6	000-052-334	Adapter, Vacuum Blower Inlet Fitting	1
7	000-001-026	Adapter	1
8	000-033-034	Clamp, 3" Muffler	1

Figure 7-42. Silencer Assembly - 4.6
7693



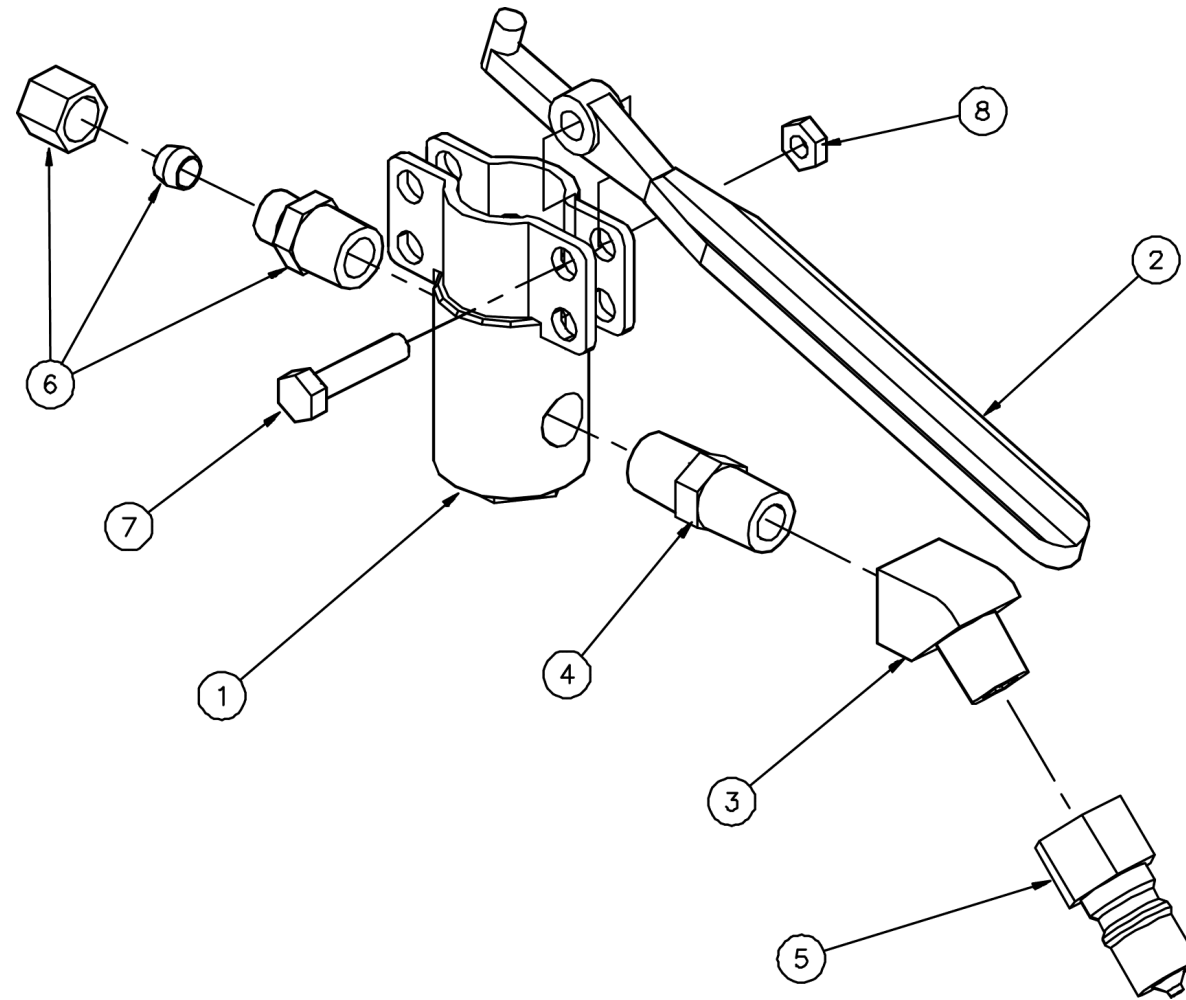
Silencer Assembly Parts List - 4.6

Item	Part Number	Description	Qty
1	000-093-002	Silencer Assembly, CDS	1
2	000-068-162	Hose, CDS Silencer	2
3	000-001-004	Elbow, 3" OD X 0.065" Wall 4.5" R W/2"	1

CDS Belts Parts List

Part Number	Description	Qty
000-010-118	GM Products 2003- to 2009 - Gates K061145	1
000-010-053	Ford Products 2000 to 2009 – Gates K060637	1

Figure 7-43. Cleaning Wand Valve Assembly
3652-

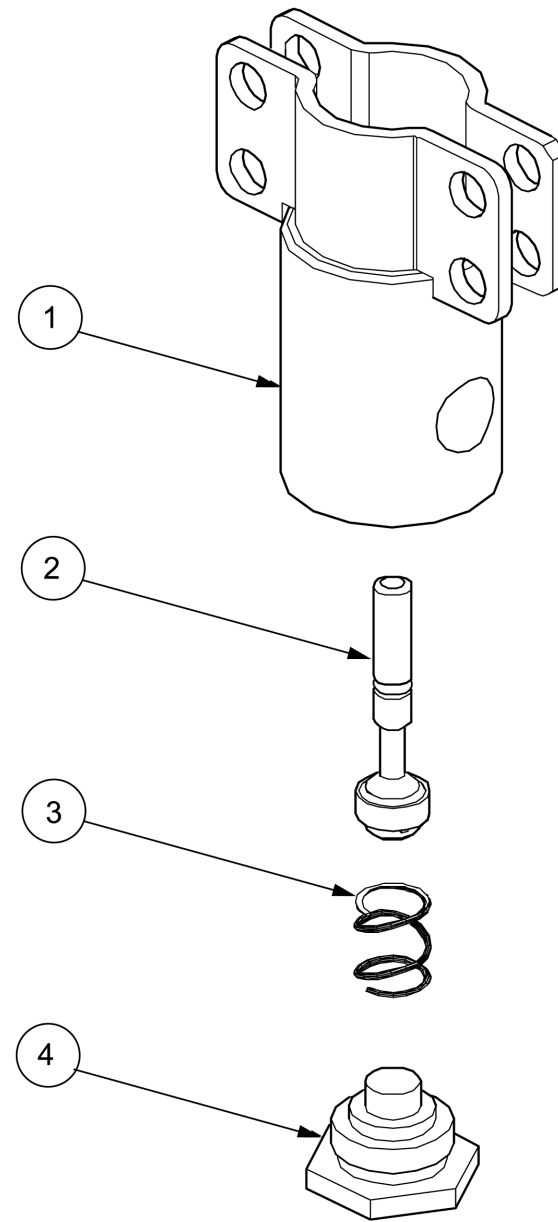


Cleaning Wand Valve Assembly Parts List

Item	Part Number	Description	Qty
1	169-058	Valve, S/S HM Solution	1
2	167-013	Trigger, Hydra Hoe Valve - Brass	1
3	052-082	Elbow, 1/4" Brass 45 Street	1
4	052-095	Nipple, 1/4" S/S Hex	1
5	052-050	Quick Connect, 440 M with Viton	1

Item	Part Number	Description	Qty
6	052-152	Compression, 1/4" Male Hydra Hoe Fitting	1
7	143-002	Screw, 1/4" - 20 x 1" HHC S/S	1
8	094-009	Nut, 1/4" - 20S/S Nylock	1

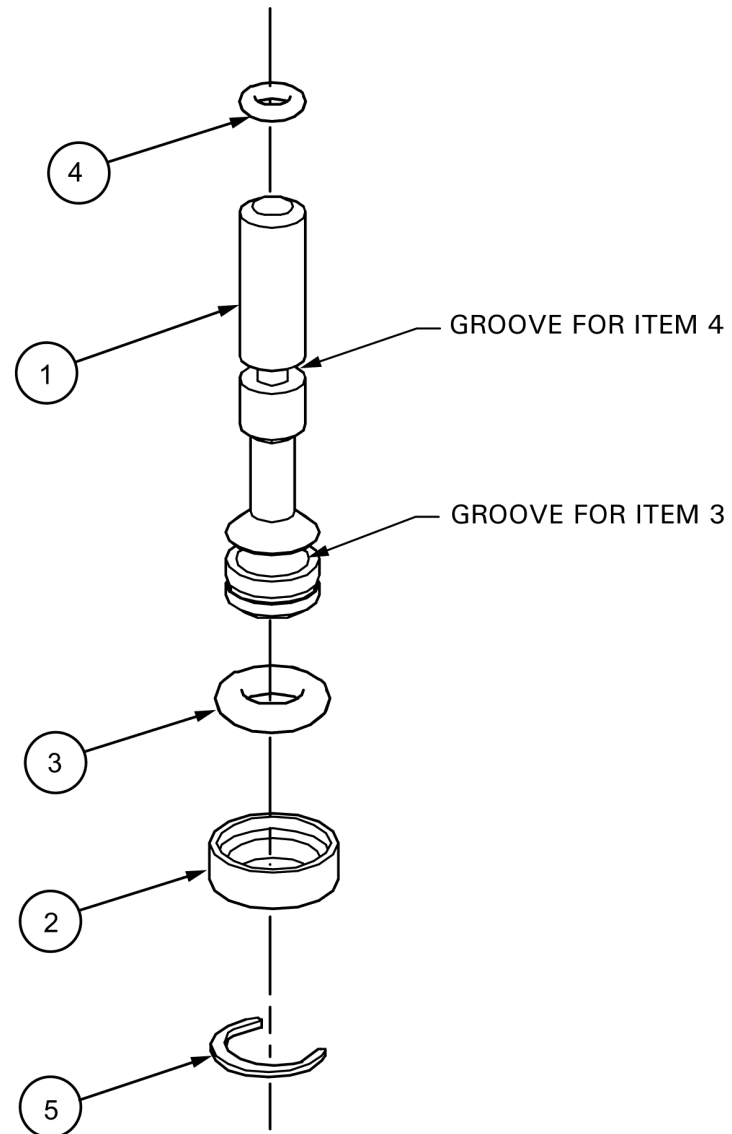
Figure 7-44. Cleaning Wand Solution Valve Assembly
1234 Rev. A



Cleaning Wand Solution Valve Assembly Parts List

Item	Part Number	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

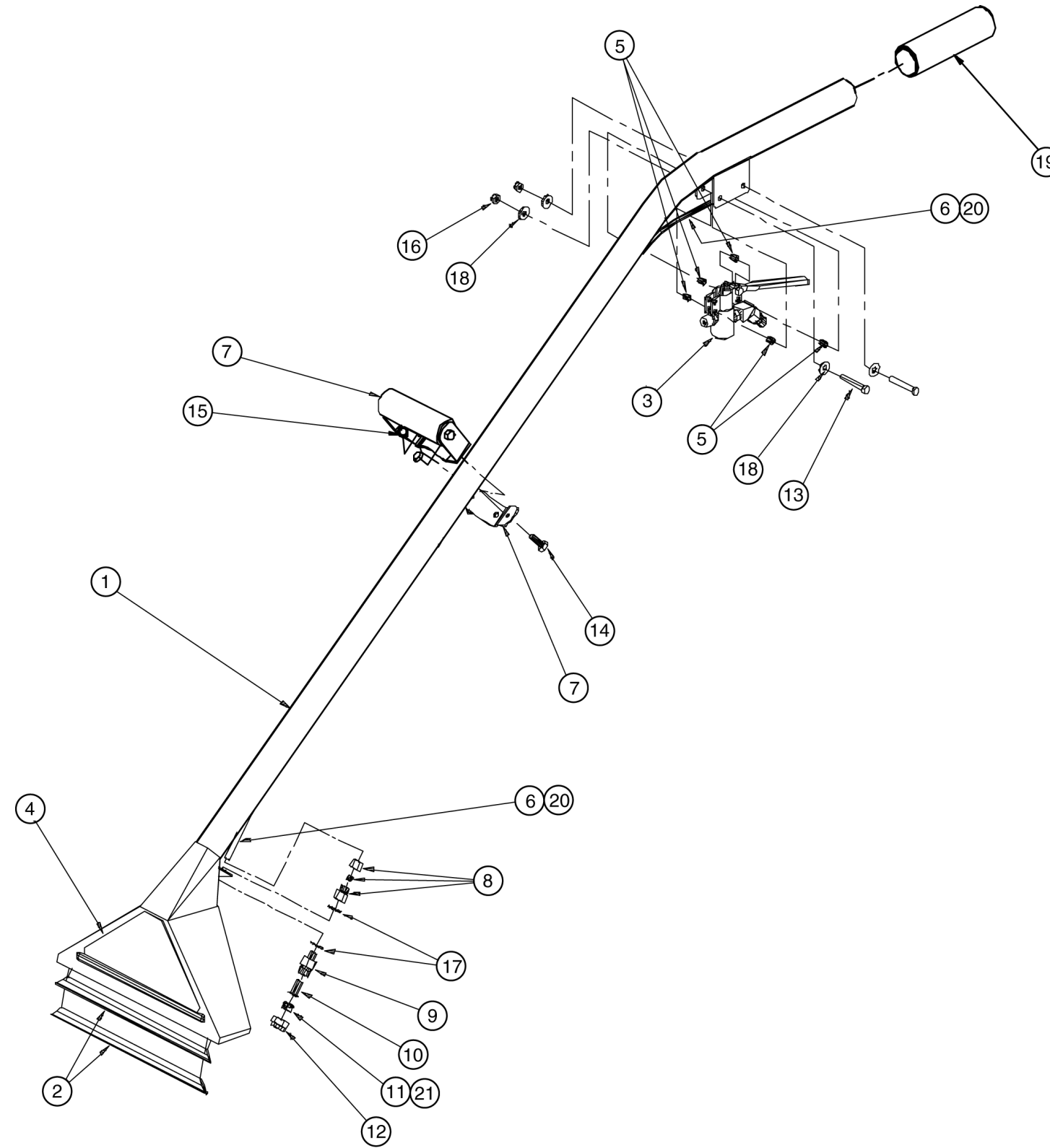
Figure 7-45. Cleaning Wand Valve Stem Assembly
3743



Cleaning Wand Valve Stem Assembly Parts List

Item	Part Number	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

Figure 7-46. Hydra Hoe Wand Assembly
2660-



Hydra Hoe Wand Assembly Parts List

Item	Part Number	Description	Qty
1	173-001	Wand Kit, 12"S/S Truckmount	1
2	082-004	Lips, 12" S/S HM Wand (2 Pieces)	1
3	169-055	Valve Assy, S/S Hydra Hoe with Trigger	1
4	081-015	Label, 'HydraMaster' Wand	1
5	154-001	Spacer, 1/4 x 5/16 S/S Solution Valve	5
6	168-001	Tube, Hydra Hoe Solution - 1/4" OD S/S	1
7	061-006	Handle, Pressure Guide	1
8	052-151	Compression, 1/8" Female Hydra Hoe Fitting	1
9	052-153	Housing, Brass Stabilizer Wand Nozzle Fitting	1
10	186-001	Stabilizer - Jet Assembly Group	1
11	076-005	Jet, No.6S/S Hydra Hoe	1

Item	Part Number	Description	Qty
12	094-028	Nut, Brass Jet Assembly Group	1
13	143-005	Screw, 1/4 - 20 x 1 3/4" HHC	2
14	143-012	Screw, 5/16 - 18 x 3/4" HHC S/S	2
15	094-035	Nut, 5/16 - 18S/S Nylock Half	2
16	094-009	Nut, 3 - 20 S/S Nylock	2
17	174-032	Washer, 3/8 S/S Flat	2
18	174-003	Washer, 1/4" S/S Flat	4
19	061-007	Handle Grip Hydra Hoe	1
20	063-003	Harness Wrap, High Temp. 1/4" - Gray	4
21	076-045	Jet, 8004E S/S T	1

GM Cowling Assembly, 2003 – 2009 Parts List (P/N 601-020-008)

Part Number	Description	Qty
000-041-139	Cowling, 03 - 09 Chev. Equi	1
000-131-060	Trimlok Seal, 3/4" B	15
000-143-119	Screw,#8 X 7/8"Hxwsh	8
000-166-034	Tray, 4.8 CDS Paper H	1
000-166-035	Tray, 4.8 CDS Paper H	1
000-188-015	Arm Rest, 16" Long	1

2009 Ford Cowling Assembly Parts List (P/N 601-020-001)

Part Number	Description	Qty
000-041-069	Cowling, 2009 Ford	1
000-131-060	Trimlok Seal, 3/4" B	15

CDS Parts Kit List (P/N 000-078-069)

Part Number	Description	Qty
000-169-053	Valve, 3/4" Heater Panel	1
000-087-006	Pennz Guard, 12 oz Sp	1
000-078-175	Kit, Water Hardness Test	1
000-078-077	Kit, Freeze Guard-Vac	1
000-068-178	Hose, Water box Drain-	1
000-052-247	Connector, HM Fresh Water (Garden) Hose	1
000-052-226	Insert, 1 1/2" NPT X 1	1
000-052-168	Connector, 2" Plastic	2
000-052-166	Connector, 2" To 1 1/2"	1
000-014-004	Box,12" X 10" X 6"	1
000-002-001	Trifold, "Restore Your Carpet"	1

2009 GM Throttle Kit Parts List (P/N 000-078-430)

Part Number	Description	Qty	Part Number	Description	Qty
000-037-003	Connector,Butt-14/16	2	000-131-132	Velcro, Hook 2" X 25 Yd	0.1
000-037-005	Closed End Connector	3	000-131-133	Velcro, Latch 2" X 25 Yd	0.1
000-037-015	Terminal,5/16 Ring-1	1	000-143-546	Screw,#8 Washer Hd.	1
000-037-026	Term, Fully Insulated Male	1	000-147-030	Seal, Water Tite	3
000-037-051	Terminal, Female Pin	3	000-147-035	Seal, Blank - Silicon	1
000-037-053	Connector ,Female- 4	1	000-162-001	Tie Wrap,4" Nylon	3
000-037-062	Connector,90 Degree.250	3	000-178-057	Wire,18 GXL Red-Bulk	9.16 ft
000-037-071	Terminal, Fully Insulated	4	000-178-067	Wire,18 GXL Brown/Wh	9.16 ft
000-056-006	Fuse Holder, In-Line	1	000-178-069	Wire,18 GXL White -	0.67 ft
000-056-023	Fuse,2 Amp Mini Atm P	2	000-178-074	Wire, 18 GXL Orange/White Stripe, Bulk, 500 Foot Roll	9.16 ft
000-063-021	Harness,1/4" Split W	8.33 ft			
000-074-166	Controller,2008-09 GM	1			

2009 Ford Throttle Kit Parts List (P/N 000-078-405)

Part Number	Description	Qty	Part Number	Description	Qty
000-037-003	Connector, Butt-14/16	5	000-084-011	Lamp, Mx 550 Red Led Indicator - Mini W/35" Leads	1
000-037-004	Closed End Conn-Medi	1	000-084-012	Yellow Light, Dash Panel	1
000-037-012	Terminal, Fully Insulated	3	000-094-034	Nut,10-24 S/S Nylock	1
000-037-015	Terminal,5/16 Ring-1	1	000-131-021	Trimlok,5/8"X 1/8" R	0.25 ft
000-037-022	Terminal,10 Awg Full	1	000-131-123	1/2" Shrink Tubing P	0.25 ft
000-037-050	Terminal, Male Pin- 4	4	000-135-030	Resistor, Ford Speed	1
000-037-023	Terminal,# 10 Awg	1	000-135-031	Resistor, Ford Speed	1
000-037-033	Connector,#22 Pink B	10	000-135-032	Resistor, Ford Speed	1
000-037-052	Connector, Male - 4 P	1	000-135-051	Regulator,3 amp 1000	1
000-037-071	Terminal, Fully Insulated	14	000-143-126	Screw,10-24 X 1/2"S/	1
000-037-072	Terminal, Fully Insulated	5	000-147-030	Seal, Water Tite	4
000-056-006	Fuse Holder, In-Line	1	000-157-022	Switch, Relay, 12v	2
000-056-023	Fuse,2 Amp Mini Atm P	1	000-178-057	Wire,18 GXL Red-Bulk	1 ft
000-063-017	Harness Wrap,3/4" Split	0.5 ft	000-178-058	Wire,18 GXL Blue-Bul	2 ft
000-063-021	Harness,1/4" Split W	0.75 ft	000-178-067	Wire,18 GXL Brown/Wh	1 ft
000-084-010	Indicator Light, Green	1	000-178-068	Wire,18 GXL Brown	3.5 ft
			000-178-092	Wire,18 Awg Green/Wh	1 ft

8 - Vacuum Blower System

This section of the manual covers the CDS' vacuum blower system and includes information on:

- Vacuum Tank Inlet Filter
- Vacuum Blower Lubrication
- Vacuum Blower Troubleshooting

The vacuum blower, featuring tri-lobe rotors, is designed for maximum positive displacement and manufactured using special porting technology to significantly reduce noise.



Lubrication for both the gear end and drive end of the blower is provided by full oil splash. Unlike grease lubrication, oil-splash lubrication provides for longer bearing and seal life through improved heat dissipation.

At the gear end, the timing gear teeth are lubricated by submersion in oil with the gear teeth serving as oil slingers. At the drive end, the bearings are also lubricated by submersion in oil with oil slingers attached on the shafts.

The performance and life of the vacuum blower is greatly dependent on the care and proper maintenance it receives.

Because of the close tolerances between the 3 lobes and housing of the vacuum blower, solid objects entering the inlet will damage the internal lobes, gears, bearings or drive system.

To prevent this from happening, a stainless steel filter screen has been placed at the vacuum blower intake inside the vacuum recovery tank. This stainless steel filter system should be removed for cleaning on a daily basis.

▲ WARNING

Use caution when the CDS is being run for test purposes and the vacuum inlet is open. Unregulated vacuum may cause injury if body parts come in contact with the open vacuum inlet.

CAUTION

To protect the vacuum blower from overloading and damaging itself, there is a vacuum relief system installed on the vacuum recovery tank. When the vacuum tank inlet is completely sealed off, a maximum of 14" Hg will be attained. At the end of each day, spray an oil-based lubricant into the blower lubrication port before shutting down the machine. If you fail to lubricate the vacuum blower on a daily basis, rust deposits and moisture can form and decrease the life of the vacuum blower.

CAUTION

Foam passing through the blower could lead to serious problems. Therefore, it is important to keep the vacuum tank foam free. When cleaning surfaces with excessive foaming residue, use HydraMaster's Defoamer as directed.

CAUTION

The vacuum tank is protected from excessive water level overflowing by a vacuum tank float kill switch. The switch is not activated by foam, only by liquid.

VACUUM TANK INLET FILTER

HydraMaster inlet filter screens are designed to trap lint, hair and large objects that would normally collect at the bottom of your vacuum tank. Clean the screen at the end of each job to eliminate build-up of debris in the tank.

VACUUM BLOWER LUBRICATION

Read the vacuum blower Owner's Manual, included with the CDS 4.8 / 4.6 Owner's Manual, for proper oil changing instructions. Because the CDS is very demanding of the vacuum blower, the vacuum blower should be maintained as recommended in the vacuum blower Owner's Manual.

Remember to:

1. Remove vented oil fill plug on front or rear oil case.
2. Fill with specified oil until it registers to the top of the sight glass.
3. Use lubricants as listed in the Table 8-1.
4. Add fresh oil as required to maintain proper level.

The oil should be drained, flushed and replaced every 300 hours. The oil drain hose is connected under the head plate; at the end of the oil drain hose is a cap.

Table 8-1. Lubricants for Oil-Lubricated Gears and Bearings

Ambient Temperature*	Oil Grade USA	Oil Viscosity, Centistokes at 40°
Below 32° F (0° C)	SAE 20 Non-Detergent	100
32° to 100° F (0° to 38° C)	SAE 40 Non-Detergent	200
Over 100° F (38° C)	SAE 50 Non-Detergent	250

*Refers to ambient air temperature at the cleaning tool

In applications with extreme variations in ambient temperature, a 20W - 50W multiple viscosity oil is recommended.

Vacuum Blower Troubleshooting

1.0. Weak vacuum at tool/wand.

Gauge reads normal (10” Hg to 14” Hg)

1.1. Clogged hoses or tool/wand tube.	Disconnect hoses and carefully check for an obstruction.
1.2. Excessive length of hoses connected to machine.	Make sure machine is rated for the conditions under which it is being operated.

2.0. Vacuum gauge will not come up to 14” Hg

2.1. There is an air leak somewhere in the vacuum system.	Check vacuum relief valve for proper adjustment. Check all hoses for cuts and breaks. Check recovery tank lid gasket. Make sure the recovery tank drain valve is fully closed.
2.2. The vacuum gauge is defective.	Test and replace as necessary.
2.3. Vacuum blower is turning too slowly.	Check blower rpm at tachometer on the CDS’ dash. Blower rpm should be 2 times the tachometer rpm. See the throttle control kit instructions for further troubleshooting assistance.

3.0. Vacuum gauge reads high with no hoses attached

3.1. Filter in recovery tank is clogged.	Remove and clean or replace as necessary.
3.2. Hose from recovery tank to blower is collapsed internally	Inspect and replace as necessary.

4.0. Noisy Vacuum Blower

4.1. Vacuum blower is low on oil.	Inspect oil level and replenish as necessary
CAUTION Running the blower when it is low on oil will cause severe internal damage to the blower. If this situation occurs, the blower should be inspected by a qualified service technician.	
4.2. There is internal damage to blower.	Refer to qualified service technician.

5.0. Vacuum Blower is locked and will not turn

5.1. The machine has been unused for a period of time and the blower was not properly lubricated when it was shut down, causing rust to build up on internal surfaces.	Spray penetrating oil into blower and let sit for at least 1 hour. Then very carefully use pipe wrench on outer diameter of pulley on blower shaft and attempt to free up blower. Do not use wrench directly on blower shaft. If unable to free up blower in this manner refer to a qualified service technician.
5.2. There is internal damage to blower.	Refer to qualified service technician.

9 - Electrical System

Because the most difficult problem to trace in any system is often an electrical failure, HydraMaster has designed the CDS' electrical system with the technician in mind.

This section of the manual includes CDS wiring schematics and diagrams as well as troubleshooting guides.

The entire electrical system operates on 12 volts DC which is provided by the vehicle's battery.

CAUTION

To avoid equipment damage, it is very important to tie up any loose wires or hoses near the drive shaft area. Tie wraps are sufficient for wires and small hoses.

When securing large hoses or wiring harnesses in the area of the drive shaft, tie down the components with a hose clamp, with a clear vinyl hose inserted onto the clamp. On some installations, if the fuel injector wires are not properly secured, the wires could rub against the CDS drive shaft causing a short in the electrical system of the van.

Figure 9-1. CDS Electrical Schematic
7425 Rev. B

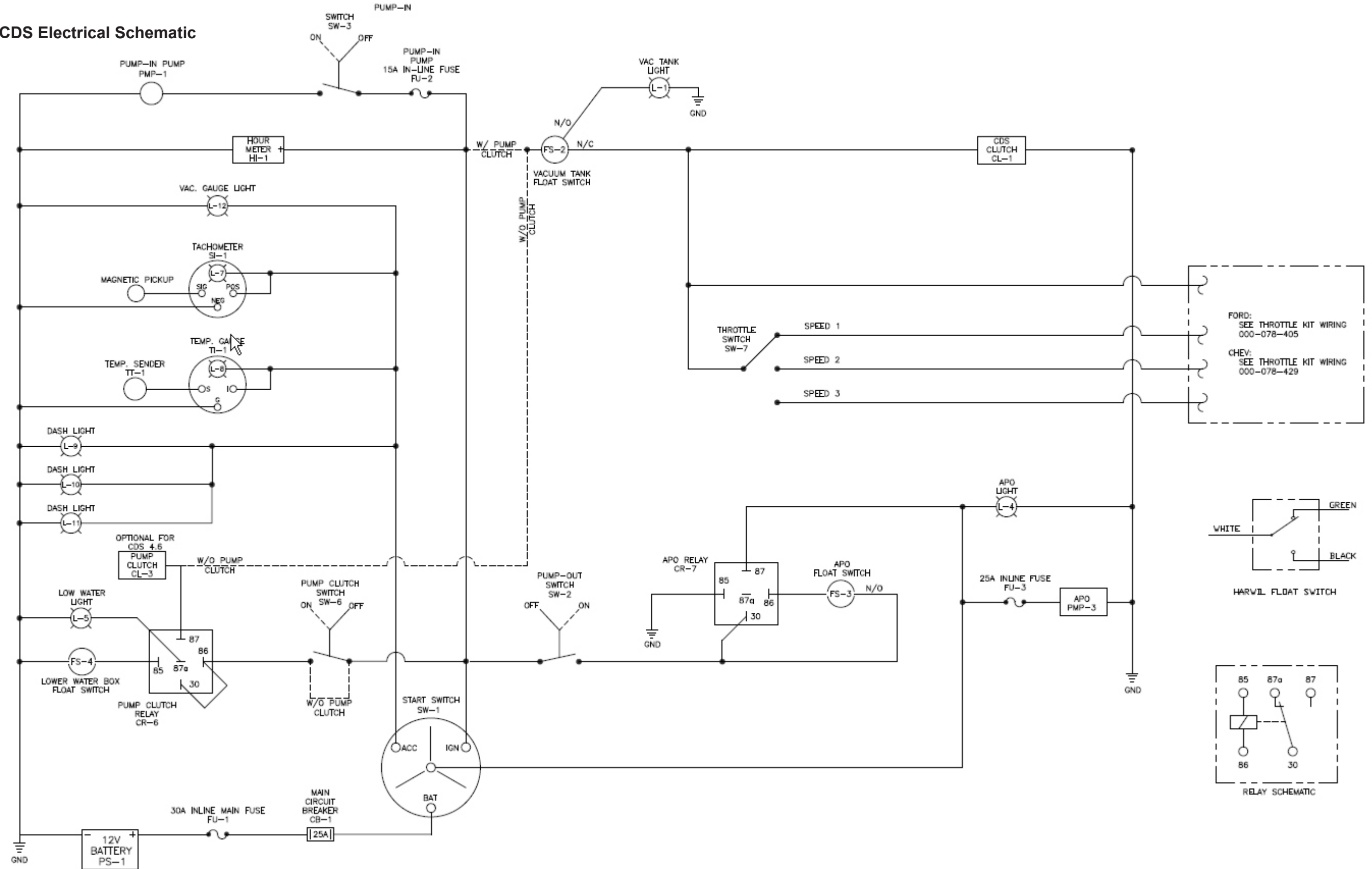
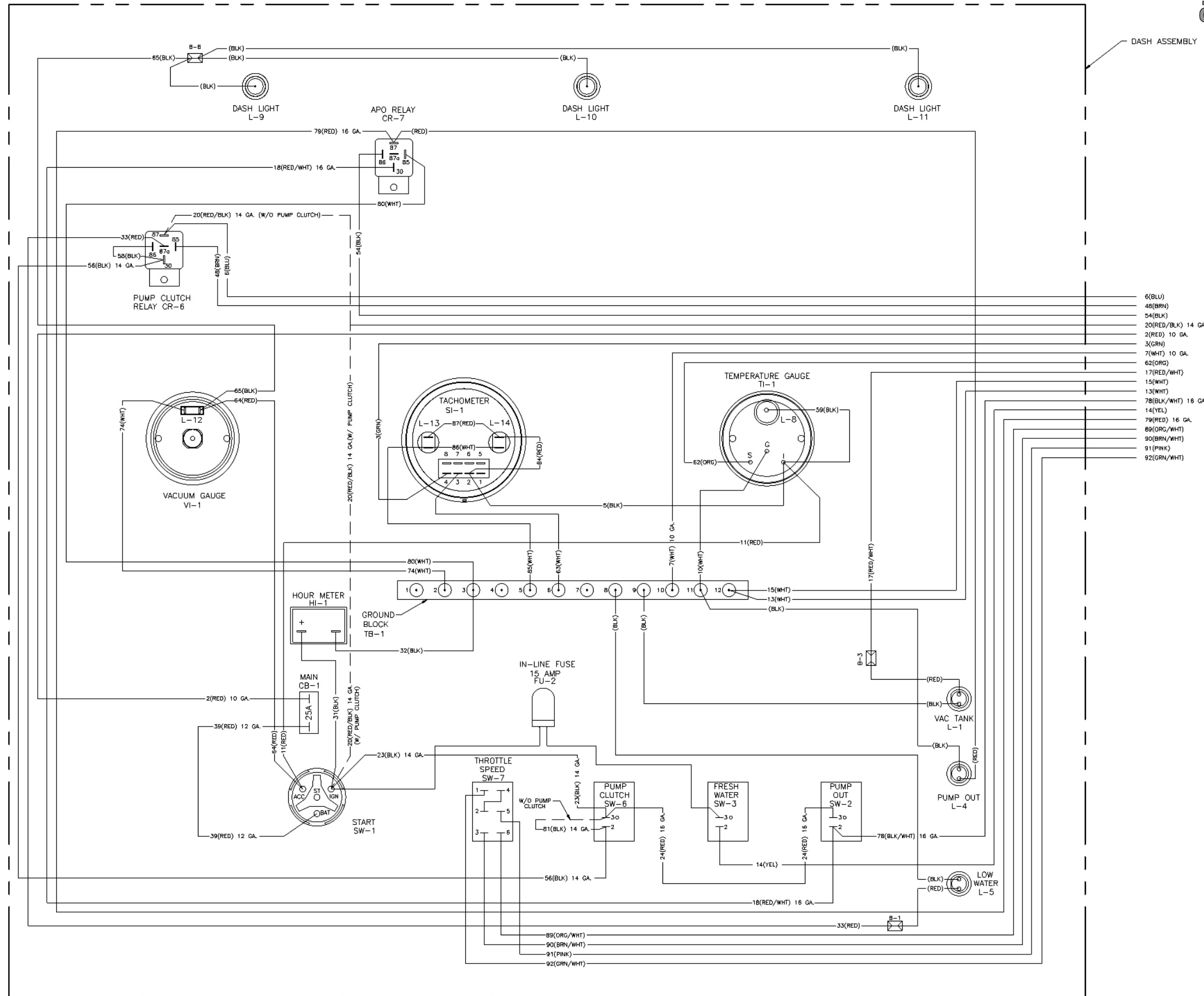
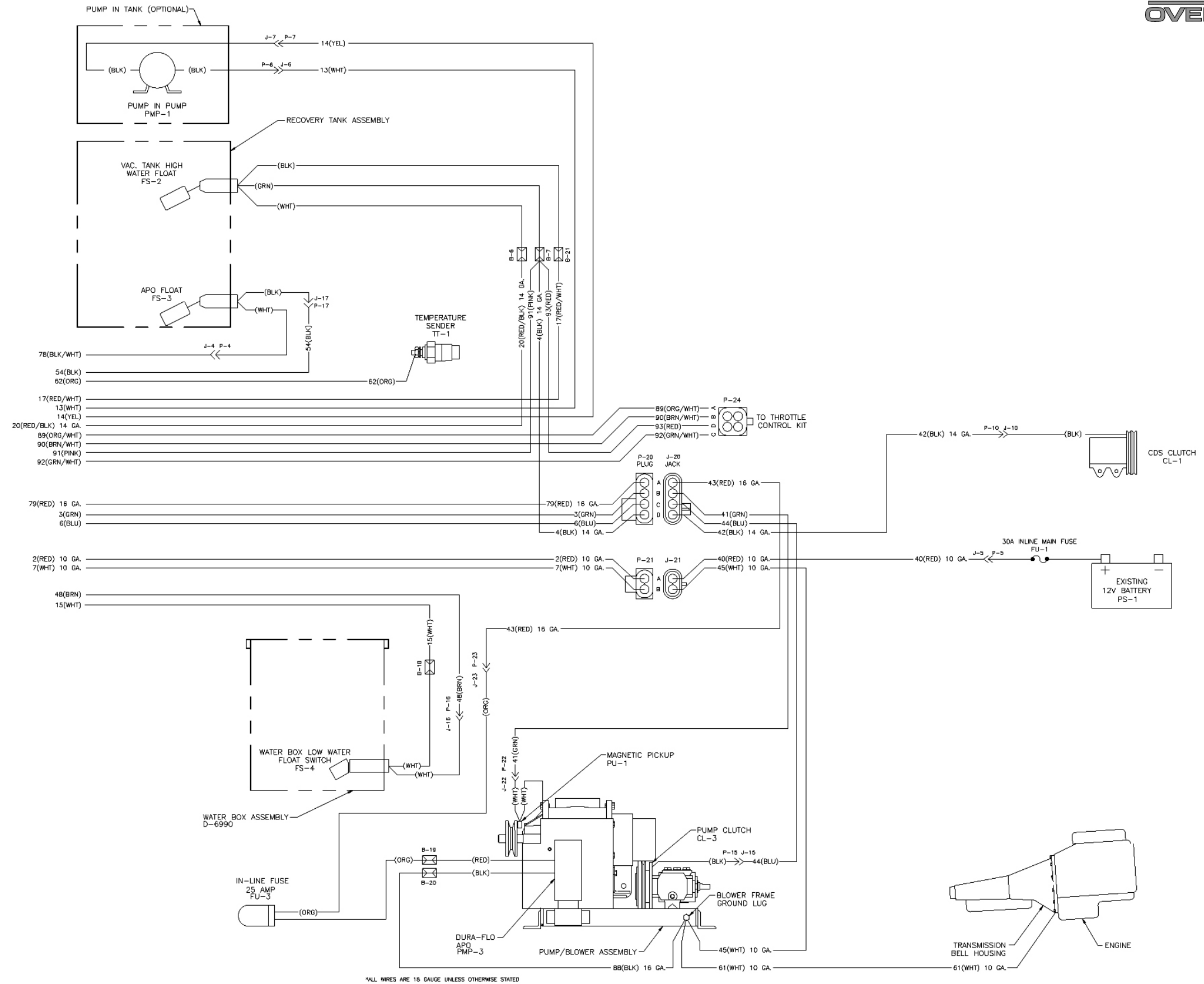


Figure 9-2. CDS Wiring Diagram
7426 Sht 2, Rev C



*ALL WIRES ARE 18 GAUGE UNLESS OTHERWISE STATED

Figure 9-3. CDS Wiring Diagram
7426 Sht 3, Rev C



*ALL WIRES ARE 18 GAUGE UNLESS OTHERWISE STATED

Electrical Troubleshooting

1.0. CDS WILL NOT TURN ON

1.1. The main power fuse has blown.	Remove CDS cowling and engine cover and check all wiring from the power source back to the CDS console for damage. Replace fuse only after locating the problem that caused the fuse to blow. If unable to locate problem, refer to qualified service technician.
1.2. The plug-in connection at the base of the recovery tank is corroded.	Clean and seal connection to protect it from moisture.
1.3. The main circuit breaker has blown on the CDS dash..	Reset breaker and look for loose connections or damaged wires. Check all wires from the control panel forward to the front of the vehicle. If no problem is found but the breaker still trips refer to qualified service technician.

2.0. CDS SHUTS OFF WHILE IN USE

5.1. Recovery tank is full.	Empty tank and restart machine.
5.2. Recovery tank float switch is dirty or defective.	Inspect float to see if the triangle mark on the float is facing up. If it is, and the float slides freely on the post, replace the float assembly.
5.3. The vehicle gear selector has moved.	Inspect the gear selector to be sure it is in the proper position. If selector has moved, refer to qualified service technician.

⚠ WARNING

If vehicle gear selector has moved, refer to qualified service technician. This is a dangerous condition and needs to be repaired immediately.

10 - Machine Maintenance

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 in this section. All recommended maintenance must be performed by competent service personnel.

This section is divided into 6 parts:

- Operational Maintenance
- Appearance Maintenance
- Long-Term Maintenance
- Drive Shaft Maintenance
- Troubleshooting
- CDS 4.8 / 4.6 Maintenance Log

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. Records of maintenance must be kept and copies may be required to be furnished to HydraMaster 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

This section contains recommendations for maintenance that will affect the service life of your unit.

CAUTION

HydraMaster recommends that you follow the vehicle maintenance schedule as stated by the manufacturer. All Hydramaster references to vehicle maintenance serve as general vehicle service reminders. If there are any questions regarding servicing of your vehicle, please contact your local vehicle dealership.

Daily

- Check engine oil level.
- Inspect fresh water (garden) hose screen. Clean as needed.
- Empty waste tank inlet filter.
- Visually inspect machine for loose wires, oil leaks, water leaks, etc.
- Inspect vacuum tank stainless steel filter for clogging or damage. Clean, repair or replace as needed.
- Inspect and clean the vacuum slot on the cleaning wand. Watch for sharp edges that may tear the carpet, remove any sharp edges as required.
- Lubricate blower with an oil-based lubricant through blower inlet.
- Perform freeze guard procedure as weather dictates

Weekly

- Check around vehicle and CDS unit for any evidence of oil/fluid leaks.

CAUTION

Grease, oil, antifreeze, and debris build-up near hot equipment, such as the vehicle engine exhaust system or the CDS blower exhaust system, can present a fire hazard.

- Check high pressure pump oil. Add as necessary.
- Check pump drive belts for wear.
- Check pump pulleys for wear.
- Check internal machine high pressure water lines for wear or chafing.
- Remove the stainless steel blower inlet filter inside the recovery tank and thoroughly clean, removing all lint build-up. Inspect for damage and re-install.
- Remove the filter screen from the fresh water (garden hose inlet fitting). Thoroughly clean and reinstall.
- Empty chemical from the chemical container. Wash out thoroughly to remove any chemical build-up.
- Inspect vacuum relief valve. Clean and lubricate as necessary.
- Inspect all external solution hoses, vacuum hoses, and quick connects for wear or damage that may cause premature failure, replace as needed.
- Clean vacuum tank thoroughly with high pressure washer.
- Flush water and chemical system with 50/50 white vinegar solution.
- Check vehicle engine rpm on CDS tachometer:

Speed 1 = 1500

Speed 2 = 1400

Speed 3 = 1300

Monthly

- Change engine oil.
- Check engine air cleaner filter. Clean as necessary.
- Clean battery connections as needed.
- Grease drive shaft U-joints. Inspect for wear. (See Drive Shaft Maintenance at the end of this section.)

Quarterly

- Change oil in blower.
- Change oil in pump.
- Check the vehicle fuel lines for any chafing or wear, especially in the engine compartment or near any rotating parts.
- Check the CDS wiring harness for any chafing or wear, especially in the vehicle engine compartment or near any rotating parts.
- Check the vehicle wiring harness for any chafing or wear, especially in the vehicle engine compartment or near any rotating parts.
- Check CDS blower mounting fasteners, drive shaft clamping collar fasteners, and CDS front end component fasteners, tighten as needed.
- Grease the drive shaft spline if so equipped.
- Grease the power pack pillow block bearings.

Yearly

- Give truck complete vehicle service.
- Flush the truck's cooling system. Add new anti-freeze.
- Change the truck's transmission fluid.

Perform Descaling 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 or improper chemicals. The frequency with which descaling 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 descale monthly.

To descale your system:

1. Add an appropriate descaler chemical to your water box.
2. Circulate it through the heating system. Let it stand.
3. Flush and repeat as necessary.
4. Clean all screens and strainers, and check them frequently following descaling.

NOTICE

If you are circulating a descaler through the flowmeter, make sure to run clean water through the flowmeter after you perform this procedure.

APPEARANCE 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 does not look 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 parts of the machine and spot potential problems before they occur.

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

Daily

- Wipe machine down thoroughly with a damp cloth.
- Flush recovery tank out thoroughly.
- Clean wand to maintain original appearance.
- Wipe down vacuum and high pressure hoses as needed.
- Visually inspect hoses for cuts, etc.

Weekly

- Wipe down entire unit as needed.
- Apply good coat of auto wax to all painted surfaces inside and out.
- Thoroughly clean wand and inspect for clogged jet, debris in vacuum slot and leaking fittings at valve.
- Apply light coat of auto wax to wand. Thoroughly clean vacuum and high pressure hoses including hose cuffs.

Long-Term Maintenance Schedule

The following components or systems should be serviced or replaced at the specified intervals.

Component	Interval (Machine hours / months of service)
High pressure water pump rebuild	2,000 / 24
Vehicle engine thermostat	2,000 / 24
Vehicle engine accessory drive belt	2,000 / 24
CDS clutch	3,000 / 36
CDS drive shaft	3,000 / 36
CDS blower silencer and exhaust plumbing	4,000 / 48
CDS and vehicle heater hoses	4,000 / 48
CDS wire harness	4,000 / 48
CDS clutch housing drive bearings	4,000 / 48

Drive Shaft Maintenance

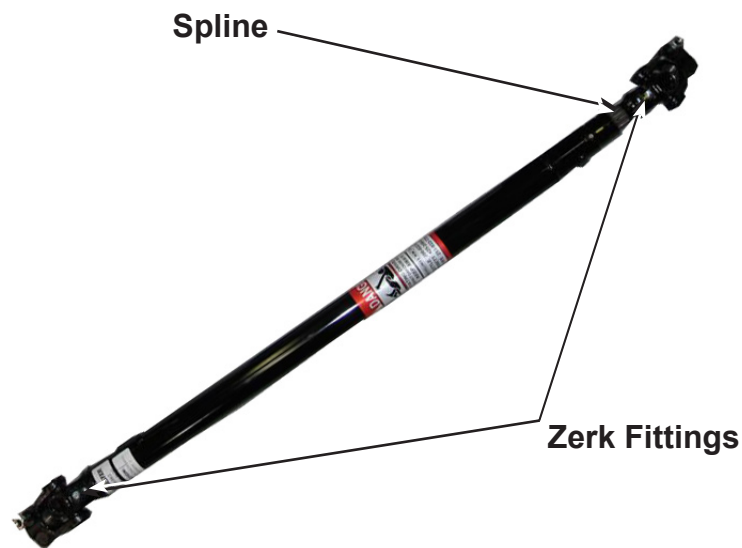


Figure 10-1. Zerk Fittings and Spline Locations on Drive Shaft

Every 500 operating hours, apply lubricant to the drive shaft's zerk fittings at clutch and blower flange U-joints. The drive shaft splines should also be lubricated with a bearing grease with an application temperature range of -4°F to $+347^{\circ}\text{F}$ (-20°C to $+175^{\circ}\text{C}$); the drive shaft manufacturer recommends Mobil Delvac Xtreme Service™ grease as the lubricant.

NOTICE

HydraMaster flexible drive shaft assemblies have two universal joints, one on either end of the drive shaft. The above mentioned lubrication interval refers to both universal joints.

Troubleshooting

HEATING SYSTEM

1.0. Vehicle overheats and shuts off CDS

Refer to vehicle dealer for diagnosis and repair.

2.0. Vehicle overheats

2.1. Faulty thermostat in vehicle.	Refer to dealer
2.2. Faulty water pump on vehicle	Refer to dealer
2.3. Faulty radiator (plugged) limited water flow	Refer to dealer
2.4. Faulty fan clutch, limited air-flow.	Refer to dealer

3.0. Unable to achieve normal cleaning temperature

3.1. There is hard water or chemical build-up in the heat exchangers.	This will not allow the heat to transfer properly. Descale and flush as necessary.
3.2. Cleaning solution flow is too great.	Measure flow at tool.
	3.2.1. The jet in the cleaning tool is too large or worn out. Test the tool for water flow and replace or repair jet as necessary.
	3.2.2. Cleaning solution pressure is too high. Adjust pressure to normal. Inspect pressure gauge for accurate reading.
3.3. The system thermal valve is stuck open.	Remove recovery tank lid and check for premature flow from thermal valve hose at tank. The machine must be at or below normal operating temperature for this test. Replace or repair as necessary.
3.4. The CDS is being operated at too low rpm or too low vacuum setting.	The system must be at full operating rpm and full vacuum load to achieve full operating temperature. These values must be set per manufacture's specifications. Adjust vacuum or rpm as necessary.

4.0. System attains normal heat but drops off sharply

4.1. Solution flow at cleaning tool is too high. Orifice in tool is too large or worn out.	Test flow of tool. Repair or replace as necessary.
4.2. The rpm of machine is set too low.	Adjust as necessary.
4.3. Recirculation orifice plugged, giving incorrect reading at gauge.	Clean filter screen and inspect orifice. Clean or replace as necessary.
4.4. Cleaning solution pressure is too high.	Adjust pressure to normal. Inspect pressure gauge for accurate reading.
4.5. Hard water deposits are in the system.	Descale system as directed in this Owner's Manual (see Perform Descaling As Required subsection).

MISCELLANEOUS**1.0. Vehicle radiator overflows into coolant overflow container while machine is in use.**

1.1. Internal leak in coolant heat exchanger.	Pressure test each heat exchanger separately to determine which heat exchanger is faulty. This process requires heated water and high pressure to simulate the same conditions that are causing the leak. Refer to qualified service technician if necessary.
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CDS 4.8/4.6 MAINTENANCE LOG

MAX HRS	DAILY SERVICE	OIL RECOMMENDATIONS					
		BLOWER	PUMP	ENGINE			
8	ENGINE OIL - check	BLOWER		PneuLube™			
8	GARDEN HOSE SCREEN -inspect, clean	PUMP		SAE15W40			
8	MACHINE - general inspection	ENGINE		See vehicle owner's manual for recommendations			
8	VACUUM TANK INLET FILTER - clean						
8	BLOWER INLET - spray with lubricant						
WEEKLY SERVICE		DATE & HOURS					
25	VEHICLE/CDS- check for leaks						
25	PUMP OIL - check						
25	BELTS & PULLEYS - check for wear						
25	HIGH PRESS. LINES-INTERNAL - check for chafing						
25	BLOWER INLET FILTER - remove and clean						
25	GARDEN HOSE SCREEN - inspect, clean						
25	CHEMICAL CONTAINER- remove & clean						
25	VAC. RELIEF VALVE - inspect, clean, lube						
25	VACUUM TANK - clean						
25	CHEMICAL SYSTEM - flush with vinegar						
25	ENGINE RPM- check with CDS unit operating						
25	FLOAT SWITCHES - check for debris						
MONTHLY SERVICE							
N/A	ENGINE OIL - change every 2,000 miles						
100	ENGINE AIR CLEANER - inspect						
100	BATTERY TERMINALS - clean as needed						
QUARTERLY SERVICE (3 MONTHS)							
400	BLOWER OIL - change						
	PUMP OIL - change						
400	VEHICLE FUEL LINES - check for chaffing or wear						
400	CDS WIRING HARNESS - check for chafing or wear						
400	VEHICLE WIRING HARNESS - check for chafing or wear						
400	CDS FASTENERS - check blower, drive shaft, front end						
500	DRIVE SHAFT - grease spline (if so equipped)						
400	BEARINGS/POWER PACK PILLOW BLOCK - grease						
400	CHEMICAL PUMP - inspect						
400	CHEMICAL PUMP DIAPHRAGM - check for wear						
400	CHEMICAL PUMP VALVES - check for wear						
YEARLY							
	VEHICLE - complete service						
	COOLING SYSTEM - flush						
	TRANSMISSION FLUID - change						
500	DRIVE SHAFT - grease U-Joints and Splines						

11 - How to Order Parts

To order warranty replacement parts or repairs, it is important that you read this section which includes:

- Warranty Parts Orders
- Parts Orders
- Emergencies
- One Final Note

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.

HydraMaster 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 (425) 775-7275, 8 a.m. to 5 p.m. Monday through Friday (PST).

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.

HydraMaster warranty covers only defective materials and/or workmanship for the periods listed. Diagnostic reimbursement is specifically excluded.

12 - Warranty Information

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

BLOWER

- Failure to lubricate impellers daily with an oil-based lubricant, to lubricate bearings, to maintain proper oil levels, or 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 AND TOOL

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

WATER HEATING SYSTEM

- Over-pressurization of the system (recommended maximum working pressure - 1,200 psi).
- Failure to protect against freezing.

HARD WATER DEPOSITS

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

WARRANTY PROCEDURE

Warranty coverage is available to you through your local distributor. Please refer to the Golden Guarantee© Limited Warranty document shipped to you with the Owner's Guide.

If you have moved to a new area or have purchased a used machine and need information regarding your local distributor, call HydraMaster at (425) 775-7272 or email us at: custsvc@hydramaster.com.

When calling your distributor, be sure to have the machine's information; model and serial number, ready for the service representative.

FOR YOUR REFERENCE:

Model No. _____

Serial No. _____

Date of Purchase: _____

Purchased From (Distributor): _____

13 - Accessories and Chemical Solutions

HydraMaster's machine accessories are the most innovative collection available in the cleaning industry. For example, our RX-20 Rotary Extractors have changed the shape of steam cleaning. In addition, our hoses, reels and tanks are of the finest quality construction.

Our carpet care and hard floor care chemical solutions have been specially prepared, not only to give you exceptional cleaning, but also to optimize your truckmount's operation and reliability. HydraMaster's chemical solutions will help maintain your machine's water pump and water heating systems at peak efficiency and also help ensure fewer breakdowns.

HydraMaster's full line of machine accessories and chemicals can enhance cleaning performance while reducing your labor costs, and include:

- Upholstery Tools
- Wands
- Vacuum Hoses
- Tanks
- Van Accessories
- Hose Reels
- Carpet Care Detergents
- Rinse Agents
- Pre-Sprays
- Hard Floor Care Detergents
- De-Foamers and Descalers
- Deodorizers and Disinfectants
- Spotting Agents

For more information, refer to the following pages or visit our website at www.hydramaster.com.

To order genuine HydraMaster accessories and chemical solutions, call your nearest authorized HydraMaster Distributor.