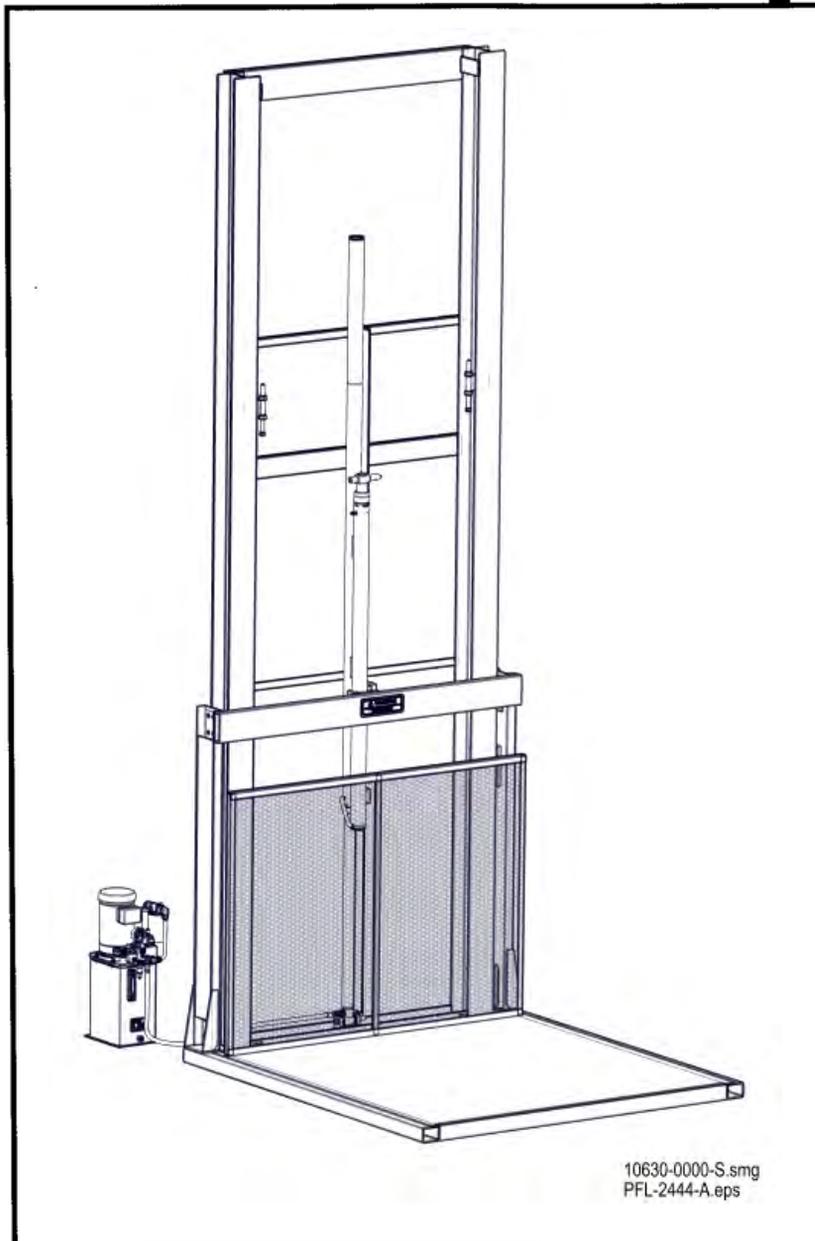


# PFLOW VERTICAL LIFTS

The Nation's Largest Manufacturer of Vertical Lifts

# **PFlow** Industries, Inc.



## **OWNER'S MANUAL**

## **SERIES D**

**THE ILLUSTRATIONS IN THIS MANUAL  
ARE NOT TO SCALE OR DETAIL AND  
ARE FOR REFERENCE  
ONLY**

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**Documentation**

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**System Modifications/Disclaimer**

Mechanical or electrical modifications performed on the VRC not approved by PFlow Industries, Inc. may also void any warranty and/or service agreements. Please contact the PFlow Sales or Service Department at one of the numbers listed above for assistance with service modifications.

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## INTRODUCTION

Thank you for purchasing a PFLOW INDUSTRIES, INC., Series D, Vertical Reciprocating Conveyor (VRC). As the nation's largest manufacturer of VRCs, we are confident that your unit will provide you with many years of reliable service.

**CODE REQUIREMENTS** - VRCs are NOT elevators. Your unit is designed for the movement of materials only, up to its rated capacity, from one level to the next. VRCs have their own national code (ANSI/ASME B20.1) and are specifically exempt from the National Elevator Code. All electrical designs and components are in accordance with National Electric Code (NEC) requirements. Local codes may require initial inspection of the installation and periodic inspection and testing of the unit.

Some states require special components and have specific guidelines regarding how the equipment must be installed, inspected, and tested. If we know in which state the equipment will be located, and if we are kept informed of state and local requirements, Pflow will incorporate the components into the order, as approved by the customer, and also provide any pertinent information, as called out on the general arrangement drawing, related to the installation of the equipment. We will not be on site for the testing, but we strongly advise that the installer be there.

If at any time you have questions about your state's requirements, please feel free to call.

## NOTE

*The information and illustrations in this manual are intended only as an aid to understanding the VRC's general installation. It does not cover every possible contingency or circumstance regarding non-standard options or site conditions.*

If you have a problem, call Pflow at (414) 352-9000, between 8:30 A.M. and 5:00 P.M., CST, Monday through Friday. Ask for the Product Support Department and have your serial number ready.

**Parts** - Pflow Industries maintains a complete stock of, or has access to, all replacement components. We keep detailed records of all equipment sold. If something is damaged in shipment, is defective or missing, contact us immediately.

**Service** - Our Product Support Department is available to assist your maintenance personnel with any questions or problems they may have regarding the equipment.

**Warranty** - Our warranty procedures can be found in the back of this manual. Prior authorization must be obtained from Pflow before commencing work of any kind.

**Feedback** - Let us know how we are doing. A questionnaire is included in the installation manual. Please fill it out and return it to us. We can't prevent a problem if we are not aware of it.

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# D Series

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## SAFETY

To ensure your safety and the safety of those around you, it is important that you read, understand, and follow ALL the safety precautions relative to a particular task. Safety precautions in this manual are labeled with the alert symbol followed by the word DANGER, WARNING or CAUTION.

### DANGER

When you see this symbol, it means that serious injury or death is likely to occur if the instructions are not followed carefully.

### WARNING

When you see this symbol, it means that the potential for personal injury is high if directions are not followed carefully.

### CAUTION

When you see this, it means that the potential for damage to the equipment is high if directions are not followed carefully.

### NOTE

*This term is used to provide additional information to help clarify instructions.*

### DANGER

**HIGH VOLTAGE.** Failure to follow proper procedures when performing electrical installation or service may result in serious injury or death.

### DANGER

**DO NOT ride this equipment.** Riding may result in injury or death. VRCs ARE NOT ELEVATORS.

### DANGER

**DO NOT walk or work under a raised platform.**

### DANGER

**If you can open a gate when the unit is not at that level, or the unit will operate with a gate open, a safety device is not working and could result in serious injury or death.**

### WARNING

**DO NOT operate the unit if either the gates or interlocks are not functioning properly.**

### CAUTION

**Paint overspray on cylinder rod will damage seals and void warranty.**

### CAUTION

**DO NOT exceed rated capacity.**

### WARNING

**When you have finished using the VRC, do not leave the carriage at the upper level.**

## Electrical Safety Precautions

### **⚠ DANGER**

Always assume that a circuit is not safe until you are sure that it is dead. Make sure that it cannot be energized after you start working on it. Follow OSHA procedures for locking out the control panel ANYTIME maintenance or service is being performed on the unit. Put a lock and tag on disconnects, breakers, and/or pulled fuses.

- Use a voltage tester on circuits - **DO NOT USE YOUR FINGERS**. Use fuse pullers to change a fuse; **NEVER** use fingers, pliers or screwdrivers. Covers on exposed electrical devices or wires **MUST** be installed to protect personnel from injury or shock.
- **ALL** metal connection boxes, switch boxes, starting boxes, transformer shells, and motor frames must be grounded to prevent shock to personnel.
- When using a portable electric meter, **DO NOT** connect one wire and leave other wires dangling loose. Anyone touching it will receive a shock through the meter.
- Before powering a circuit on, make sure that all is clear. This is necessary in order to protect personnel from injury and to prevent damage to the equipment.
- Avoid accidental contact with equipment or conductors which are known to be live or are **NOT** known to be dead. If it is necessary to work on equipment while it is hot, extra care must be observed. Always test and repair equipment that indicates a warning of unsafe conditions by giving a nonfatal shock. **NEVER** assume that because the warning shock is nonfatal, the next shock will also be nonfatal.
- **TAKE TIME TO BE CAREFUL!** Following safety precautions and using common sense will prevent injury, mutilation, or death.

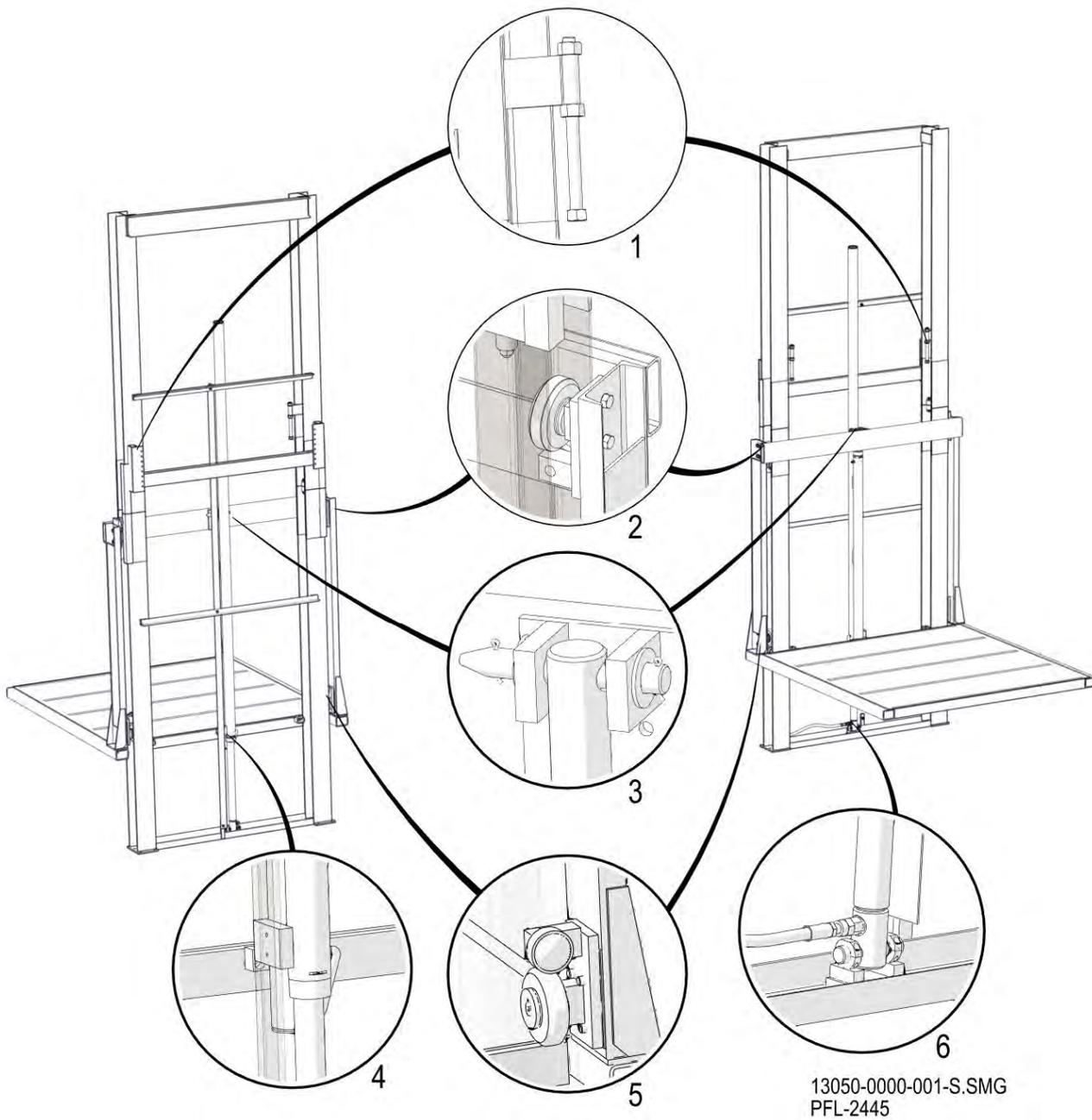
## Safety Precautions When Working on Live Circuits or Equipment:

When electrical repair or maintenance work is required that prohibits de-energizing the circuits involved, extreme measures of safety must be used. The work should be accomplished only by well-supervised personnel who are fully aware of the dangers involved. Every care should be taken to protect the person performing the work and to use all practical safety measures. The following precautions **MUST** be taken:

- The person doing the work should not wear a wristwatch, rings, watch chain, metal articles, necklaces or loose clothing which might make accidental contact with live parts or throw some part of his body into contact with live parts.
- Clothing and shoes should be as dry as possible.
- Insulate the worker from ground by covering any adjacent grounded metal, with which he might come in contact, with insulating material. Suitable insulating materials are dry wood, rubber mats, dry canvas, dry phenolic material, or even heavy, dry paper in several thickness. Be sure that it has no holes and no conducting materials embedded in it. Cover sufficient area so that adequate space is permitted for worker movement.
- Cover working metal tools with an insulating rubber tape (not friction tape) as much as is practical.
- **DO NOT** stick a bare screwdriver or other tool into a hot fuse box.

# Series D

## COMPONENT LOCATION



- 1 - Carriage Stop Jackscrew
- 2 - Upper Wheelblock
- 3 - Upper Cylinder Mount
- 4 - Cylinder Twist Pad
- 5 - Lower Wheelblock
- 6 - Cylinder - velocity fuse & Hose fit up.

Figure 1

## MECHANICAL OVERVIEW

Each Series D Vertical Reciprocating Conveyor (VRC) has a column weldment, hydraulic motor/pump unit, hydraulic actuating mechanism, a moving platform (commonly referred to as a carriage) with interlocked safety gates or doors, and enclosures (not shown).

The **COLUMN WELDMENT** consists of two vertical columns and a cross member at the top, middle, and bottom, all of which are pre-welded at the factory. See Figure 2.

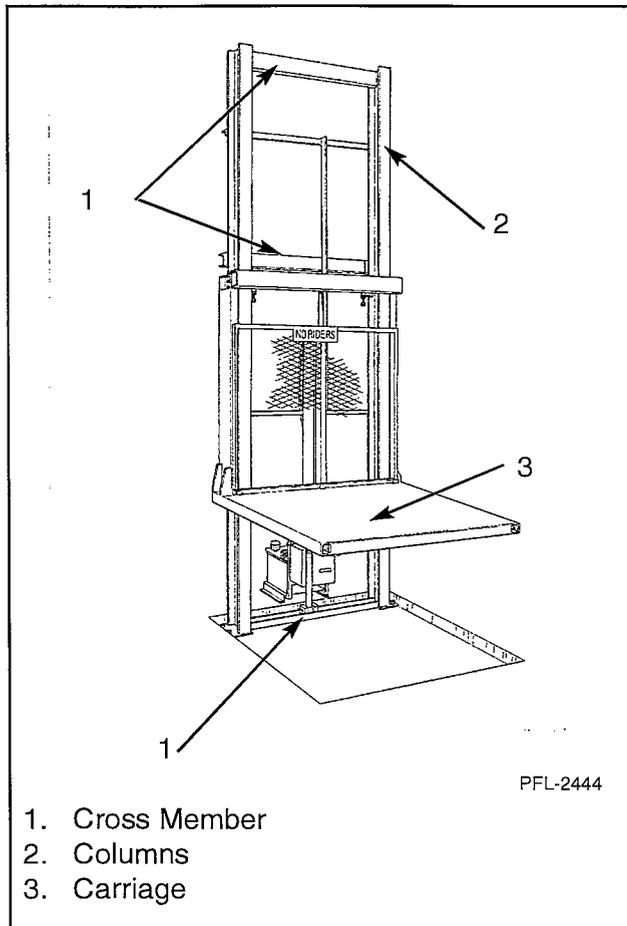


Figure 2

The **HYDRAULIC MOTOR/PUMP UNIT** consists of a motor, gear pump, flow control valve, pressure switch, reservoir, air (breather) cap and oil filter. (See Figure 3.) The exact location of items on the unit can be found in the Parts section of this manual. A detailed description of how they function is found in Sequence of Operation.

### NOTE

*For servicing and safety purposes, we recommend locating the pump unit outside of the enclosures.*

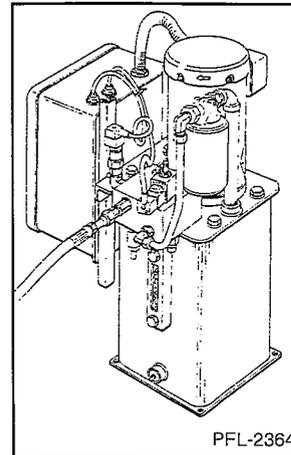


Figure 3

### NOTE

*The location of the pump unit may present a problem with the operation. Please consult our Product Support Department before making a change.*

The **CARRIAGE** (platform) consists of a deck, uprights, header, removable rear rail, and four wheelblocks. See Figure 4.

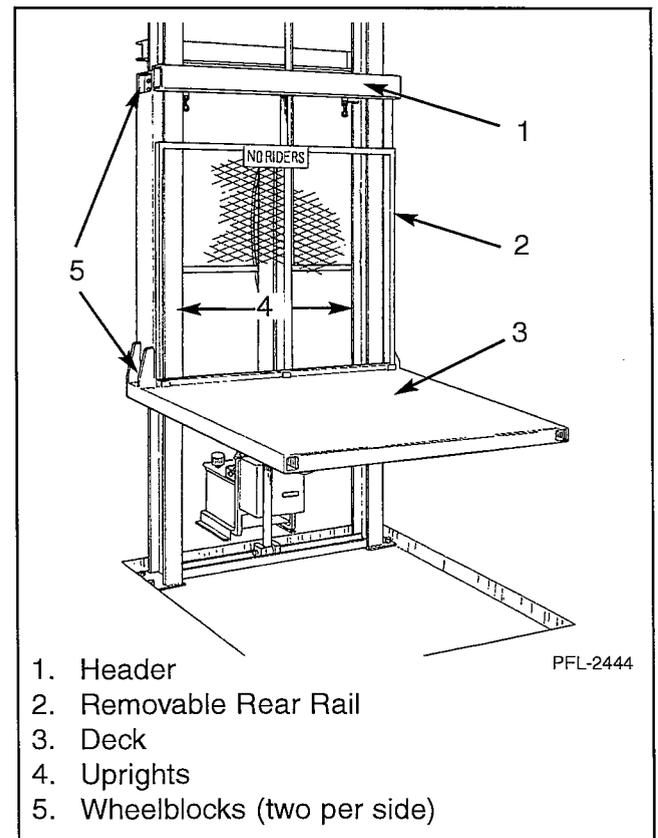
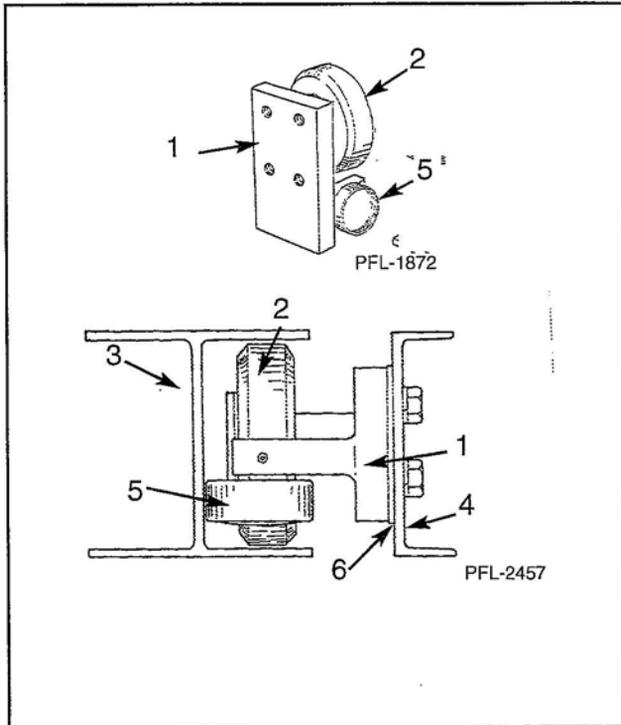


Figure 4

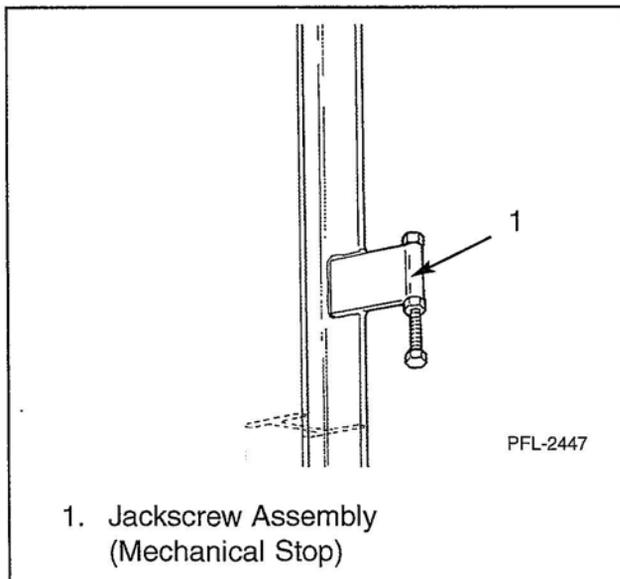
# D Series

The wheelblocks are bolted to the uprights. The wheels ride within the lift columns, and guide rollers keep the wheels and carriage the proper distance apart for smooth travel. See Figure 5.



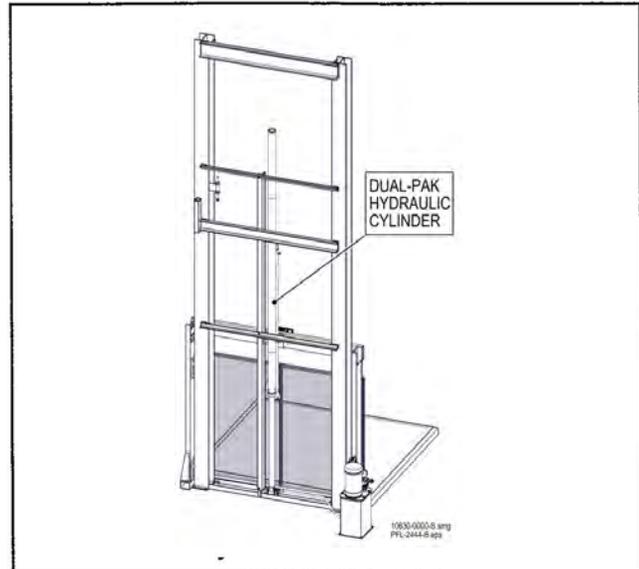
**Figure 5**

Upward travel of the carriage is limited by positive mechanical stops (jackscrew assembly) that ensure positive leveling with the upper deck. See Figure 6.



**Figure 6**

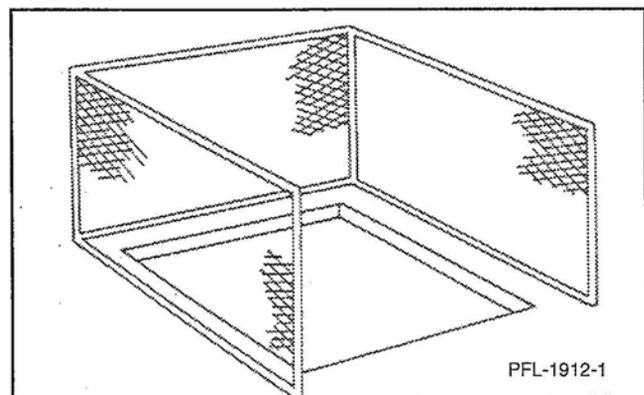
The **HYDRAULIC ACTUATING MECHANISM** is driven by a Dual-Pak cylinder. The Dual-Pak cylinder attaches to the bottom of the column weldment and to the top of the carriage. When the cylinder extends, it pushes the carriage up. The Sequence of Operation offers a detailed explanation of how this is accomplished. See Figure 7.



**Figure 7**

A velocity fuse prevents uncontrolled descent in the event of a hydraulic hose rupture. See Parts section for the exact location.

In accordance with ANSI/ASME B20.1, Pflow Industries supplies standard **ENCLOSURE PANELS** to be installed around the unit as required by site conditions. See Figure 8.



**Figure 8**

The panels are manufactured of 1-1/2" angle iron frames and 18-gauge flattened expanded metal which will reject a ball 1/2" in diameter. Our standard panels are 8' tall.

# Mechanical Overview

A safety **GATE** or door must be provided at each opening in the lift area at each level. The gate must be interlocked both mechanically and electrically with the operation of the unit. This prevents movement of the platform when a gate is open and the opening of a gate when the lift is not present at that level. See Figure 9.

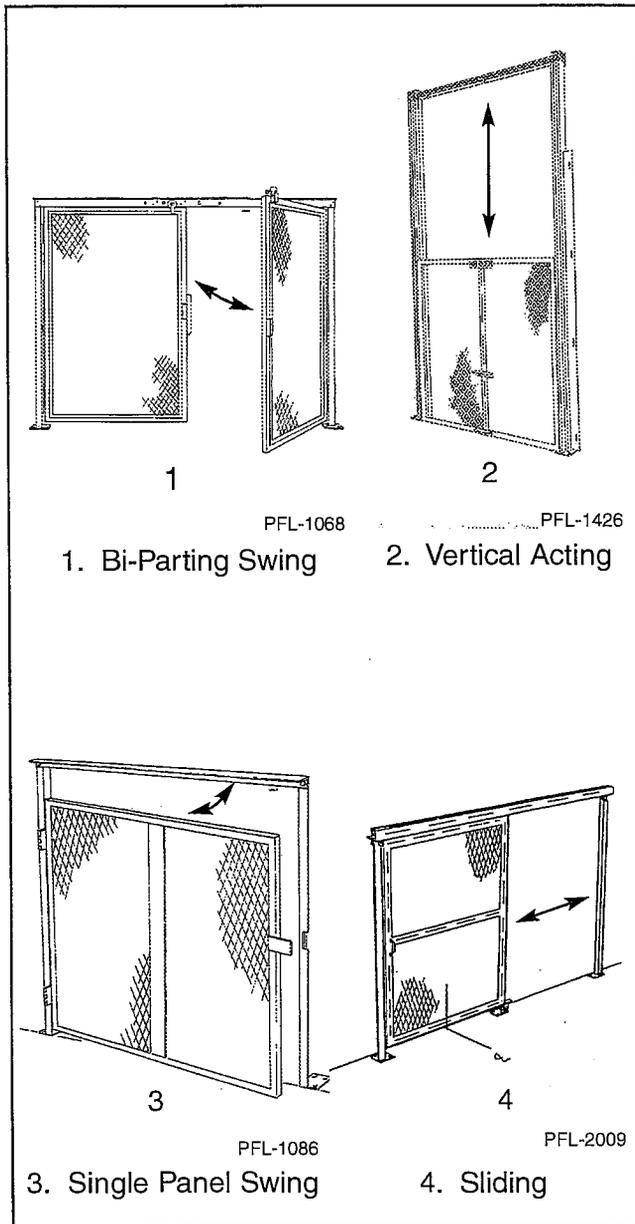


Figure 9

Pflow industries uses various styles of interlocks depending upon the gate type and application. The Parts section of this manual contains views with part numbers. See Figure 10.

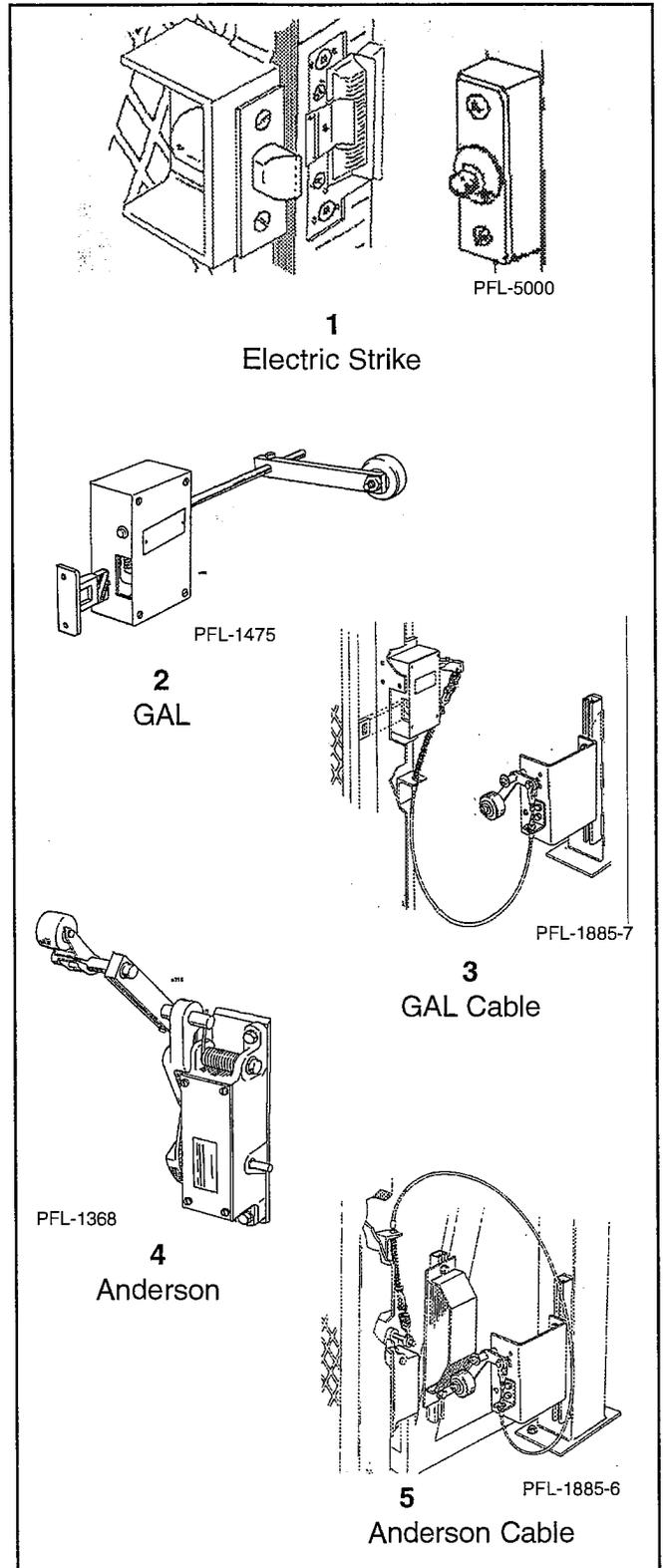


Figure 10

# D Series

## ELECTRICAL OVERVIEW

### NOTE

The following is a standard description of the electrical wiring of the VRC ONLY. It DOES NOT include specifics on options available or ordered. A copy of the schematic can be found in a manila envelope in the parts crate.

All electrical devices are tied into the **MAIN CONTROL PANEL**. It contains a fused transformer, which reduces the high voltage needed for the motor down to the voltage required to operate the control circuit, motor starter and push button stations. Overload heaters are provided to protect the motor should excessive current draw cause overheating. The fixed timing relay is used to time the solenoid to lower the lift to the first level. See Figure 11.

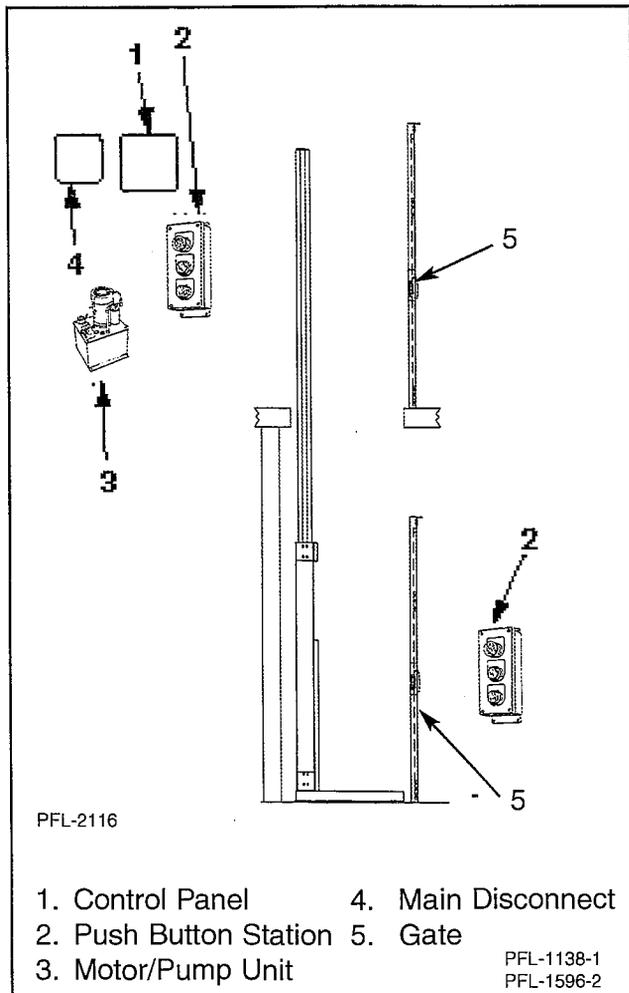


Figure 11

**PUSH BUTTON STATIONS.** One station is normally supplied for each level. ANSI/ASME B20.1 code requires that they be remotely located so they cannot be activated by someone standing on the carriage. Each station has an UP, DOWN, and EMERGENCY STOP button.

The UP and DOWN switches are momentary contact. This allows the operator to depress the button and let go. The EMERGENCY STOP button is pushed to activate but will stay in and must be pulled back out for the unit to operate.

Required by NEC code, the **MAIN DISCONNECT** should be fused, lockable, and located within line of sight of the control panel. (Not supplied by Pflow.)

The **MOTOR/PUMP** unit has three electrical components: a motor, a pressure switch, and an electrically actuated valve. The control panel and motor pump will be pre-mounted to a stand that must be located within 15 feet of the unit.

### ⚠ WARNING

All gates or doors accessing the lift area must be electro-mechanically **INTERLOCKED**. This requires electrical contacts to prevent the lift from operating if a gate is open when the carriage is at that level and mechanical locks to lock the gate until the carriage is at that landing.

Different types and styles of interlocks are supplied depending upon the type of gate and on-site conditions. Standard styles incorporate from one to four electrical components per gate.

## SEQUENCE OF OPERATION

### NOTE

For the unit to operate:

- All gates must be closed.
- Loads cannot hang over the edge or sides of the carriage.
- The load must be within the specified limit.

1. When the UP button at the push button station is pressed (Figure 12), the control circuit to the motor starter (motor contactor) is completed. The coil of the motor starter (Figure 13) magnetically closes the high voltage contacts completing the power circuit to the motor.

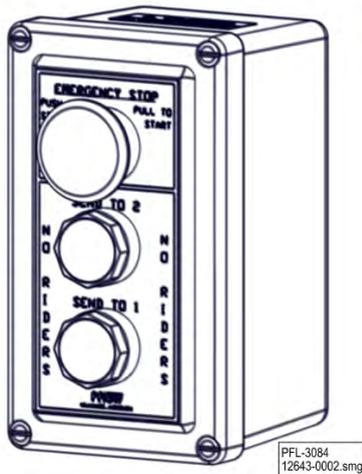


Figure 12

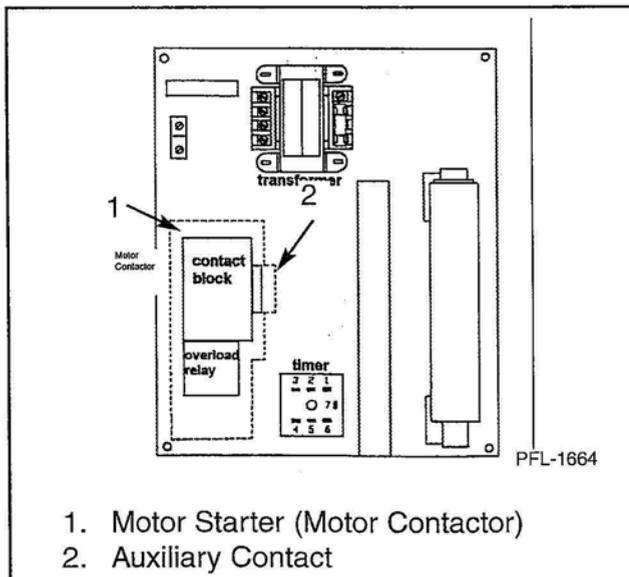


Figure 13

2. The motor then rotates, and the two enmeshed gears in the gear pump interact to lift the hydraulic fluid from the reservoir and force it past a line check valve into the hydraulic system where the fluid is now pressurized. See Figure 14.



Figure 14

3. Hydraulic fluid travels through a flexible supply hose to the supply port on the Dual-Pak cylinder. See Figure 15.

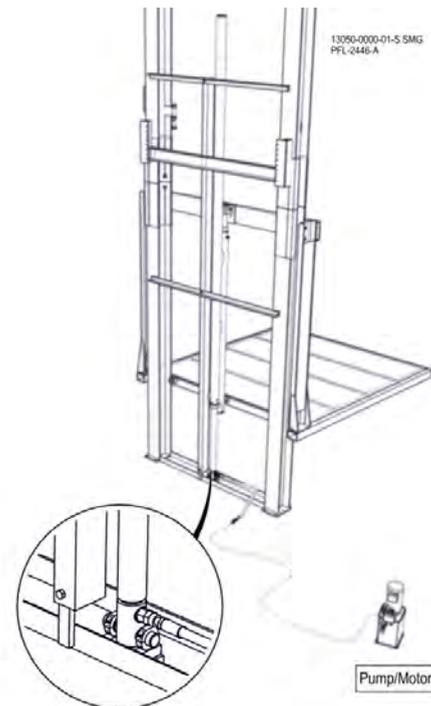
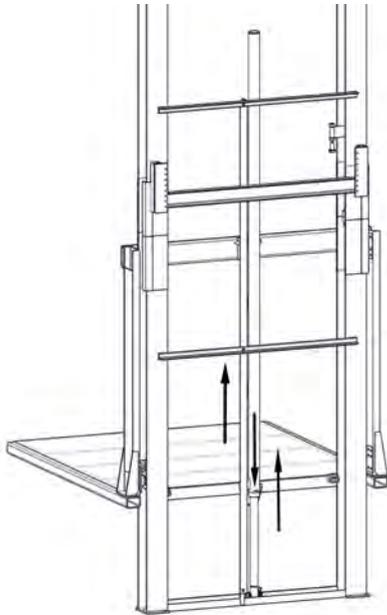


Figure 15

# Series D

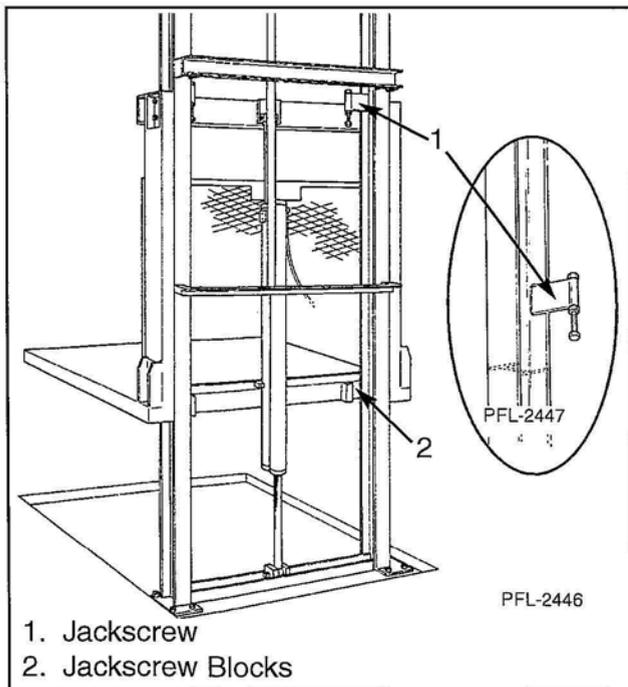
- Fluid enters the Dual-Pak cylinder and acts against the rod causing it to extend and lift the carriage. See Figure 16.



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**Item 16**

- When the jackscrew blocks contact the stops, an increase in hydraulic pressure occurs in the cylinder and the supply line. See Figure 17.

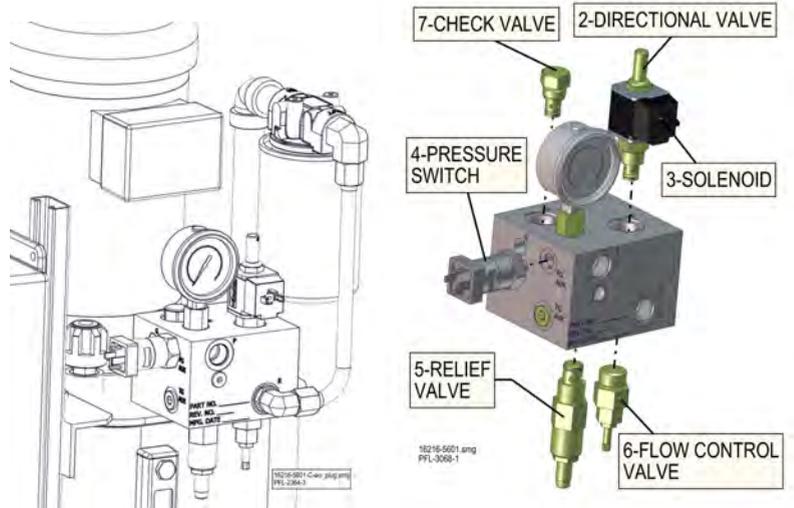


1. Jackscrew  
2. Jackscrew Blocks

PFL-2446

**Figure 17**

- This increase in pressure is sensed by the pressure switch and is shown on the pressure gauge. The switch activates, interrupting the control circuit to the motor starter, shutting down the hydraulic pump unit. See Figure 18.

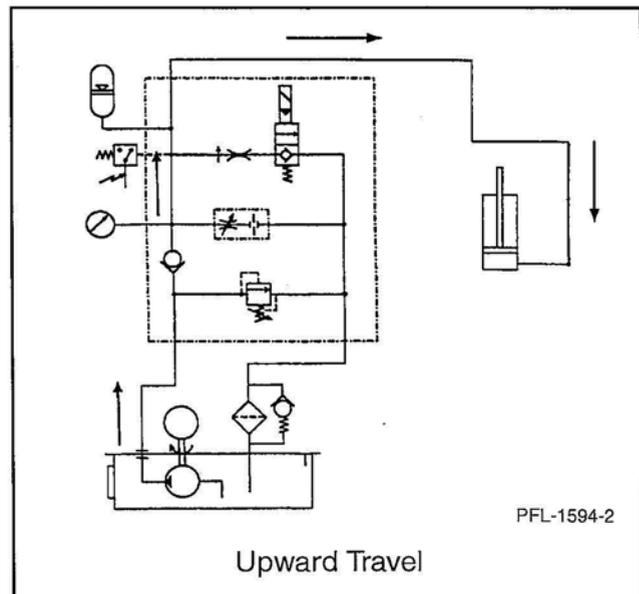


**Figure 18**

- When the pump stops, the line check valve closes capturing the fluid behind it in the lines and cylinders. This holds the carriage at the second level. See Figure 19.

### NOTE

When the EMERGENCY STOP button is depressed, the system will respond as in Step 7.

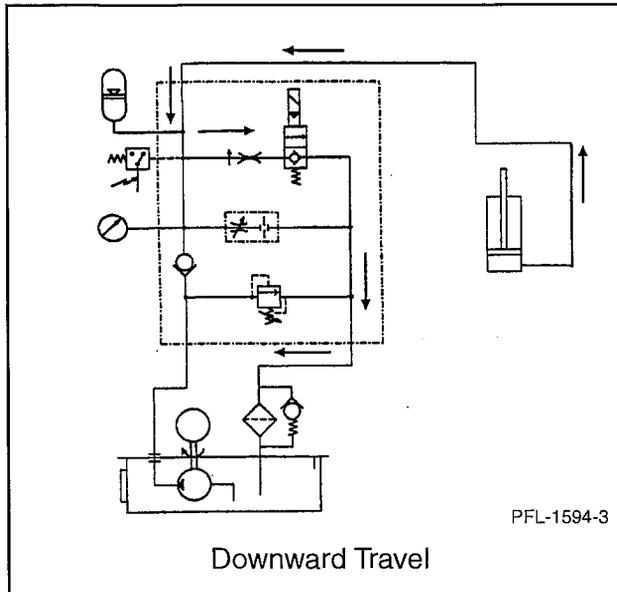


Upward Travel

PFL-1594-2

**Figure 19**

- When the DOWN button is pressed, a solenoid on the dump valve energizes actuating the dump valve to allow the hydraulic fluid in the supply line and cylinder to return to the reservoir through the oil filter. See Figure 20.



**Figure 20**

- As the oil leaves the cylinder, the weight of the carriage retracts the rod, lowering the carriage. The return fluid passes through the flow control orifice which correctly restricts the fluid movement to control the carriage down speed.
- The timing relay found in the control panel (Figure 13) is activated, holding the dump valve open. This timer is pre-set to allow enough time for the carriage to descend to the first level. The dump valve closes when either the timer “times out” or the next time the UP button is pressed. This completes one full cycle of operation.

# D Series

## OPERATION

BEFORE OPERATING THE LIFT, PLEASE READ, UNDERSTAND AND FOLLOW ALL THE SAFETY PRECAUTIONS LISTED BELOW.

### **▲ DANGER**

Malfunctioning interlocks may allow the door to be opened when the carriage is not present. **YOU MUST MAKE SURE CARRIAGE IS PRESENT BEFORE WALKING THROUGH DOORWAY.** If the carriage is not present, you could fall into the empty shaftway and be seriously injured or die!

### **▲ DANGER**

Door must be closed and locked unless carriage is present. Door interlock must be operational. It prevents door from being opened when carriage is not present. Door restricts personnel from falling into opening or from being struck by moving parts that could result in serious injury or death!

### **▲ DANGER**

DO NOT ride this equipment. Riding may result in serious injury or death! VRCs ARE NOT ELEVATORS.

### **▲ DANGER**

DO NOT walk or work under a raised platform.

### **▲ WARNING**

Only trained persons shall be permitted to operate or maintain this equipment. Improper operation or maintenance may cause serious injury or death!

### **▲ WARNING**

If at any time proper operation or performance of your Pflow VRC is in question, DO NOT USE IT! Notify your supervisor or the proper maintenance people immediately.

### **▲ WARNING**

Always return the carriage to the lowest level when the VRC is not in use.

### **CAUTION**

DO NOT allow loads to overhang the sides of the carriage. This will result in damage to the equipment and merchandise.

### **CAUTION**

DO NOT exceed the rated capacity.

### **TO OPERATE LIFT**

- Close gate.
- Depress and release the appropriate push button to move the carriage to the desired floor. The carriage will stop when it reaches the appropriate level.
- When the unit has arrived at the appropriate level and comes to a complete stop, open the gate.
- If an emergency occurs when the carriage is moving, push the EMERGENCY STOP button. The button will keep the lift inoperative until the button is pulled back out. See Figure 21.

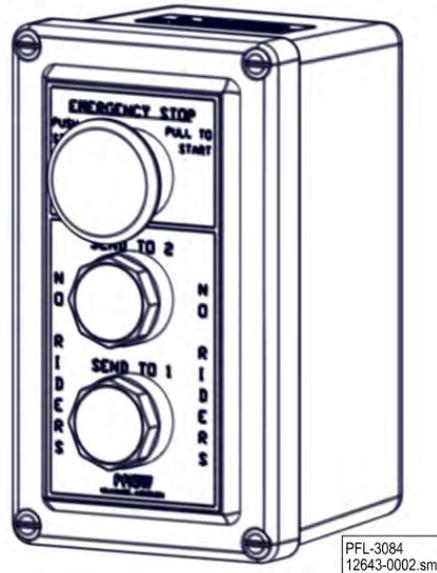


Figure 21

### **NOTE**

Service must be performed by authorized personnel only. Read the Owner's Manual before operating the equipment. For service, contact your local representative.

## SERVICE

### Maintenance and Troubleshooting of Pump Unit

#### NOTE

*The life of the hydraulic components is directly proportional to system cleanliness. If the oil is kept clean, is in good chemical condition, and its viscosity meets the operating temperature range, it should be left in the unit.*

#### MAINTENANCE CHECK

1. Reservoir - Check the fluid level and make sure it is up to the full mark.
2. Inlet Line - Check for frays and kinks. Make sure the connections are secure and leak-proof.
3. Oil Viscosity - Do not use fluid that is too thick. Heat, high pressure, and contamination all speed up oxidation which results in gum, sludge, plugged valves, and excessive wear on the components.
4. Fluid - If it is cloudy, off-color, contains suspended sediment, or liquid layers, then changing the fluid is recommended.
5. Check and/or change the oil filter. Ten microns or less is recommended.

#### FILLING THE RESERVOIR

#### NOTE

*Hydraulic oil with a Saybolt viscosity of between 100 and 150 SSU or ISO 32 at operating temperatures with a non-foaming additive should be used.*

*Extreme temperatures below 32°F or above 100°F and corrosive atmosphere may affect oil requirements. Consult Pflow Industries for assistance.*

1. Wipe off the fill plug and the filler nozzle with a clean, lint-free cloth.
2. Watch for metallic chips, bits of waste, and other contaminants that may cause damage to the system.

3. Use a ten micron filter on the filler nozzle when adding oil.
4. The reservoir should be tightly closed after filling the system.

#### CLEANING THE RESERVOIR

#### NOTE

*The reservoir is a settling basin for any contamination. It is important to remove all accumulated sediment from the bottom. Wipe down the interior to remove any further impurities. The inside cover of the reservoir should also be checked. Large reservoirs can be a source of rust contamination due to condensation. The vibration of the pump unit results in the rust flaking off into the fluid.*

#### Maintenance Schedule

Your VRC requires consistent minimal and basic periodic attention. It is recommended that you keep a record during inspection and make a periodic evaluation of lubricating needs to reflect any increase in service that may be required. Problems must be addressed immediately as they may affect the safety devices.

#### NOTE

*Observe cycle day's schedule based on whichever comes first. High usage and corrosive environments will require more frequent maintenance and possibly different lubricants. (Check with your lubrication supplier for your particular needs.) Additional options, as ordered by the customer, may require maintenance and are not included in the above information.*

If you have any questions or problems, please feel free to contact either your local service representative or our Product Support Department for assistance.

## D Series

INSPECT	NO. OF CYCLES/DAYS	ITEM	ACTION	REFERENCE
	1000/90	Bolts	Check for any loose bolts and tighten	Parts
	1000/90	Interlocks	Inspect and test	Parts
	2000/90	Cylinder Fittings/ Hoses	Inspect for leaks	Parts
	2000/90	Wheelblock Wheels	Inspect for wear and rotation interference	Parts
	2000/90	Guide Wheels	Inspect for wear and rotation interference	Parts
	2000/90 6000/360	Hydraulic Oil Filter	Change after first 1000/30 then 6000/360 thereafter	Parts
	1 year	Reservoir	Drain and clean tank; Change oil and filter	Flushing Hydraulic System
	1000/90	Gates/Interlocks	Inspect for proper operation	

### Manual Release Valve

#### CAUTION

#### For Emergency Use Only!

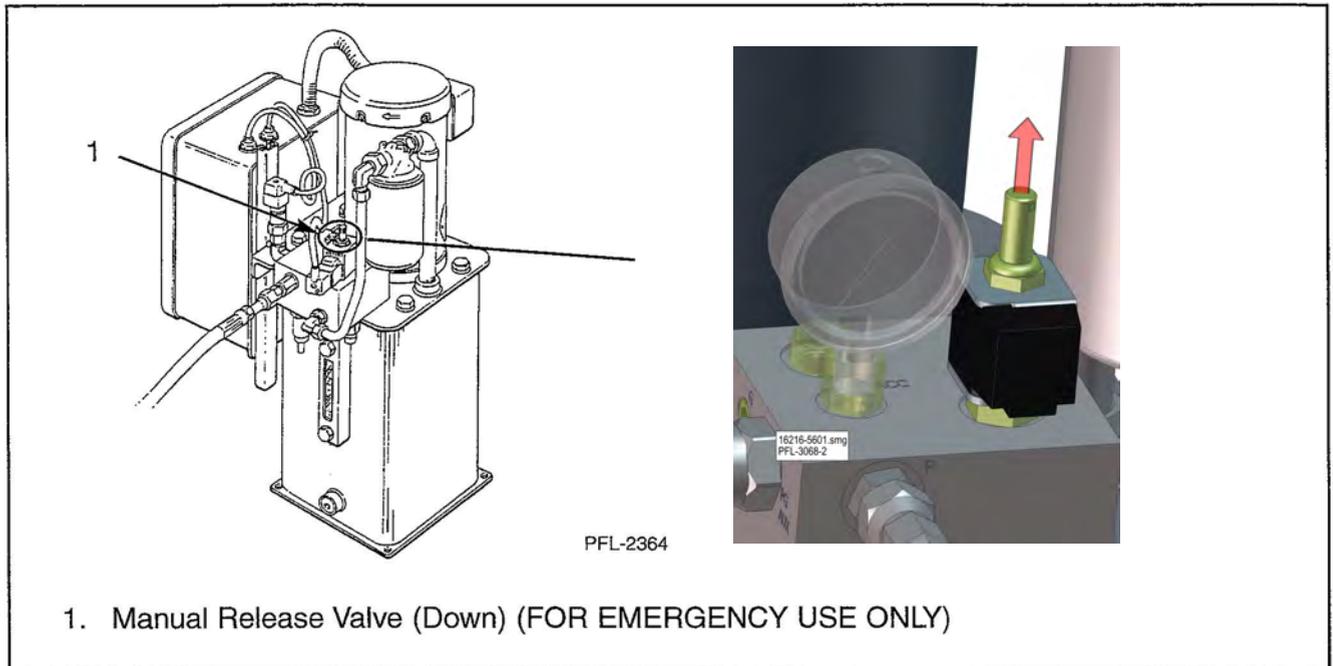
The down solenoid, also referred to as a dump valve, is equipped with a manual release valve. See Figure 22. This is to be used only in emergency situations when a load is stuck in upward mid-travel and the only way to free the load is to bring the unit down.

#### WARNING

**Make sure that NO ONE is present in the enclosed area beneath the lift when operating this valve.**

1. To open or operate the manual release valve, turn it counterclockwise. This will allow the unit to descend.
2. Once the platform has reached the floor, turn the valve clockwise and close snugly.

If you have any questions or problems, please contact our Product Support Department for assistance.



**Figure 22**

## Flushing Hydraulic System

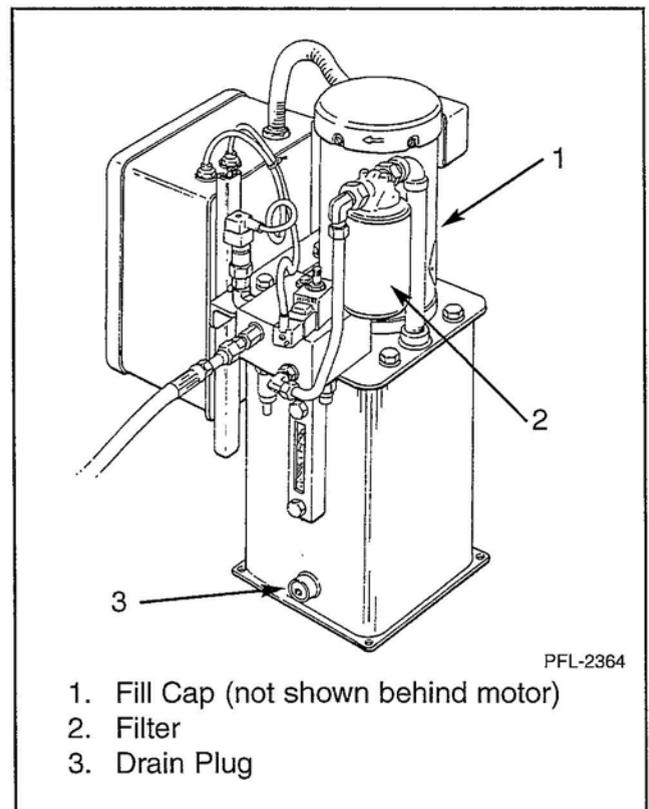
### NOTE

*For prolonged service life, contamination must be periodically removed from hydraulic systems. Taking steps during the installation and daily operations to prevent contaminants from entering the system will help to prevent component failure and system down time.*

If contamination is evident in fluid samples, there is a good chance that accumulation has occurred somewhere within the system "plumbing." These deposits interfere with the operation of the unit and must be flushed with a light viscosity oil containing a rust inhibitor to protect the metal surfaces from rust formation after the hot flushing oil has been drained out.

1. Lower the carriage to the floor. Make sure the cylinders are fully extended.
2. Turn off power and lock out the disconnect.
3. Drain the system by removing plug near bottom of reservoir. See Figure 23. When draining the system, it is desirable to remove ALL of the used oil. Allow sufficient time for thorough draining so that a minimum of the old oil remains in the system. In most cases, bleeding at the lowest point in the system will help. It is also advisable to drain only after the oil is

fully warmed up (about 150°F). By doing this, oil impurities do not have a chance to settle and can be removed with the drained oil. The fluid should then be drained while it is hot.



**Figure 23**

## D Series

4. Clean out the reservoir.
5. Refill the unit with oil. Before removing the filler cap to add oil to the hydraulic system, wipe off the fill plug and the filler nozzle with a clean, lint-free cloth. The safest way to pour oil from a container into a reservoir is to use a 10-micron filter on the filler nozzle. It is especially important to watch for metallic chips, bits of waste and other contaminants that may cause damage to the hydraulic system. The reservoir should be tightly closed after filling the system.
6. Remove lock and restore power.
7. Flush system. This is done by circulating a small percentage of special petroleum solvent cleaner with the fluid charge long enough to loosen and remove the deposits (10 to 50 hours depending on the condition). A careful watch on the filters will indicate when the system is clean.

### NOTE

*Hydraulic oil with a Saybolt viscosity of 150 SSU or ISO 32 at operating temperatures with a non-foaming additive should be used.*

- Solvents - Fluid suppliers are the best source for solvents. Solvents such as alcohol, kerosene, and carbon tetrachloride are low in viscosity and tend to: a) reduce the viscosity of the new fluid, b) may not hold the washed out contaminants in suspension and may deposit them in another part of the system.
8. Repeat steps 1 to 5.
  9. Replace the oil filter.
  10. Take all necessary steps to put the unit back into operation.

If you have any questions or problems, contact our Product Support Department for further assistance.



**FIGURE 23-A  
CHECK MOTOR ROTATION &  
MOTOR ARROW**

## TROUBLESHOOTING

Before troubleshooting please observe all of the precautions in the Safety section at the front of this manual.

The following is a list of common problems and solutions:

SYMPTOM	POSSIBLE CAUSE	SUGGESTED SOLUTION	REF.
Lift doesn't operate when controls (push buttons) are activated.	Gate of door is open or ajar.	Check all gates/doors to make sure they are closed.	Mechanical Overview
	Down solenoid bad.	Inspect; replace solenoid.	
	Main disconnect is off.	Check to see if there is a reason before turning back on.	
	Pressure switch activated.	Inspect; replace pressure switch.	
	Thermal overload has tripped.	Press reset button. If it trips again, determine cause. Motor is overheating.	
	Control fuse is blown.	Replace fuse after determining cause.	
	Power circuit between disconnect and starter is dead.	Use a voltmeter to check voltage. Repair as needed.	
Motor starts and carriage raises, but motor stops before second level.	Safety gate has been opened.	Close gate. Check to see why this has happened.	Mechanical Overview
	Object encountered.	Identify the problem. Remove or repair as needed.	
	Piston (cylinder) interference.	Remove object. Repair if needed.	
	Thermal overload has tripped.	Check for pump binding.	
	Pressure switch has activated.	Pressure switch setting is too low. Lower lift and restart reading gauge for 1,500-PSI maximum. Readjust if it stops at a lower PSI.	Parts
	Carriage is overloaded.	Lower and remove excess weight.	
Motor/pump runs but carriage does not raise, and there is no pressure shown on gauge.	Oil in reservoir is less than 3/4 full.	Add oil to proper level.	Maintenance and Troubleshooting of Pump Unit
	Motor rotation is incorrect.	Contact your electrician.	
	Relief valve setting is too low.	Increase spring pressure by turning stem clockwise a few times. DO NOT OVER or FULLY TIGHTEN. Damage will result. A few turns should show pressure on the gauge.	
	Pump is cavitating.	Oil supply is low; fill reservoir. Oil is too heavy; change to proper viscosity oil.	
	Contamination/pickup tube is plugged.	Open reservoir; inspect pickup tube, clean if required.	

# D Series

SYMPTOM	POSSIBLE CAUSE	SUGGESTED SOLUTION	REF.
Motor/pump runs, but carriage does not raise, and there is erratic or low pressure shown on gauge.	Oil is foaming.	Air is leaking into suction line because of loose fittings. Check all fittings. Water or incompatible oils causing foaming. Drain and replace with proper type oil.	Maintenance and Troubleshooting of Pump Unit
	Low oil level.	Add to proper level.	
Carriage raises, but will not lower.	Mechanical interference.	Identify the problem. Remove and repair as needed.	Parts-Hydraulic Layout
	Dump valve not actuating.	Depress the DOWN button and listen carefully. If it does not click, it is not operating. Then proceed with: 1. Using a voltmeter, determine that the solenoid is receiving current when the button is pressed. If it is not, check the operation of the timing relay and then the motor starter (contacts in the control circuit). 2. If the solenoid is receiving current, check the end of the solenoid coil with a screwdriver. When energized, there will be a magnetic pull. If no magnetic pull is present, replace the solenoid.	
	Velocity fuse triggered.	Check for hose break or fitting leak. If none found, attempt to increase pressure in cylinders by pressing UP button.	
Motor/pump keeps running after pressure reaches the relief valve setting.	Relief valve set too low.	Readjust relief valve. Consult Product Support Department for instructions.	Parts
	Pressure switch set too high.	Readjust.	
	Bad pressure switch.	Replace switch.	
Carriage drifts down from raised position. (NOTE: 3-4 inches overnight is normal.)	Internal leakage.	Contamination is keeping the dump valve from seating. Remove solenoid coil and valve spool. Clean spool and seat with the recommended solvent or cleaner. Dry with a lint-free cloth. Replace coil and spool. Test. Inspect oil in reservoir.	Maintenance and Troubleshooting of Pump Unit
		Oil is bypassing the piston seals. Remove and clean seals. If worn, replace. Inspect breather for leakage.	
Carriage is spongy or bouncy.	Air in cylinders.	Cycle lift numerous times to remove air from cylinder.	
		Relieve air from cylinder with bleeder plug. If the problem does not resolve itself, call our Product Support Department.	

# Troubleshooting

SYMPTOM	POSSIBLE CAUSE	SUGGESTED SOLUTION	REF.
Carriage lowers but stops early.	Debris in the pit.	Clean out pit.	Maintenance and Troubleshooting of Pump Unit
	Dump valve not working properly.	See "Carriage raises but it will not lower" for instructions.	
Rough or noisy operation.	Travel interference.	Identify. Remove or repair as needed.	
	Drive component interference.	Identify. Remove or repair as needed.	
	Wheel guide rollers worn.	Inspect, lubricate, and replace as needed. Determine why they wore out.	Parts
	Carriage is not level.	Determine cause and correct.	
Pump stops suddenly.	Major internal pump has failed.	Examine the pump and rebuild or replace as necessary.	Maintenance and Troubleshooting of Pump Unit
Excessive pump noise.	Damaged or worn pump.	Contact Product Support Department, Pflow Industries.	
	Cavitation*	Add hydraulic fluid to reservoir.	
	Aeration**	Add hydraulic fluid to reservoir.	

\* **Cavitation** is a vacuum in the fluid caused by a restricted or sharp bend in the inlet line, a clogged filter, or by fluid that is too high in viscosity. The characteristic sound of cavitation is a high-pitched "scream." The noise increases with the degree of cavitation and with increased operating pressure.

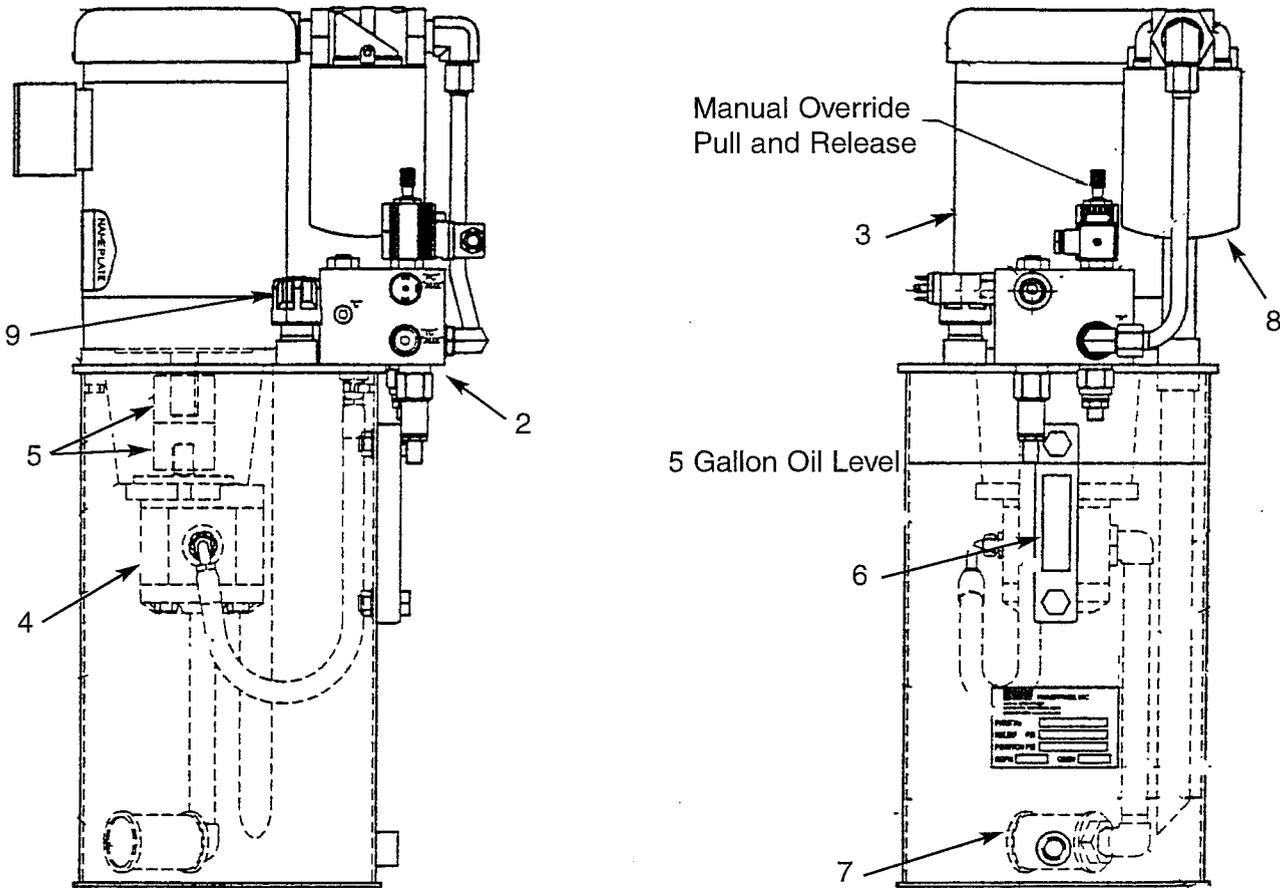
\*\* **Aeration** is the presence of excessive air, usually in the form of bubbles, disbursed through the fluid caused by a damaged inlet or return line; a loose or defective fitting(s) or seal(s); damaged or worn cylinder rod, packing, or seals; cracked junction blocks, tees, or piping; fluid level too low; air trapped in filter or excessive air trapped after adding fluid. Overheating or jerky and uneven movement in the pump or cylinders are the obvious symptoms of aeration.

If you need further assistance, please call the Product Support Department of PFLOW INDUSTRIES, INC.; (414) 352-9000.

# D Series

## PARTS

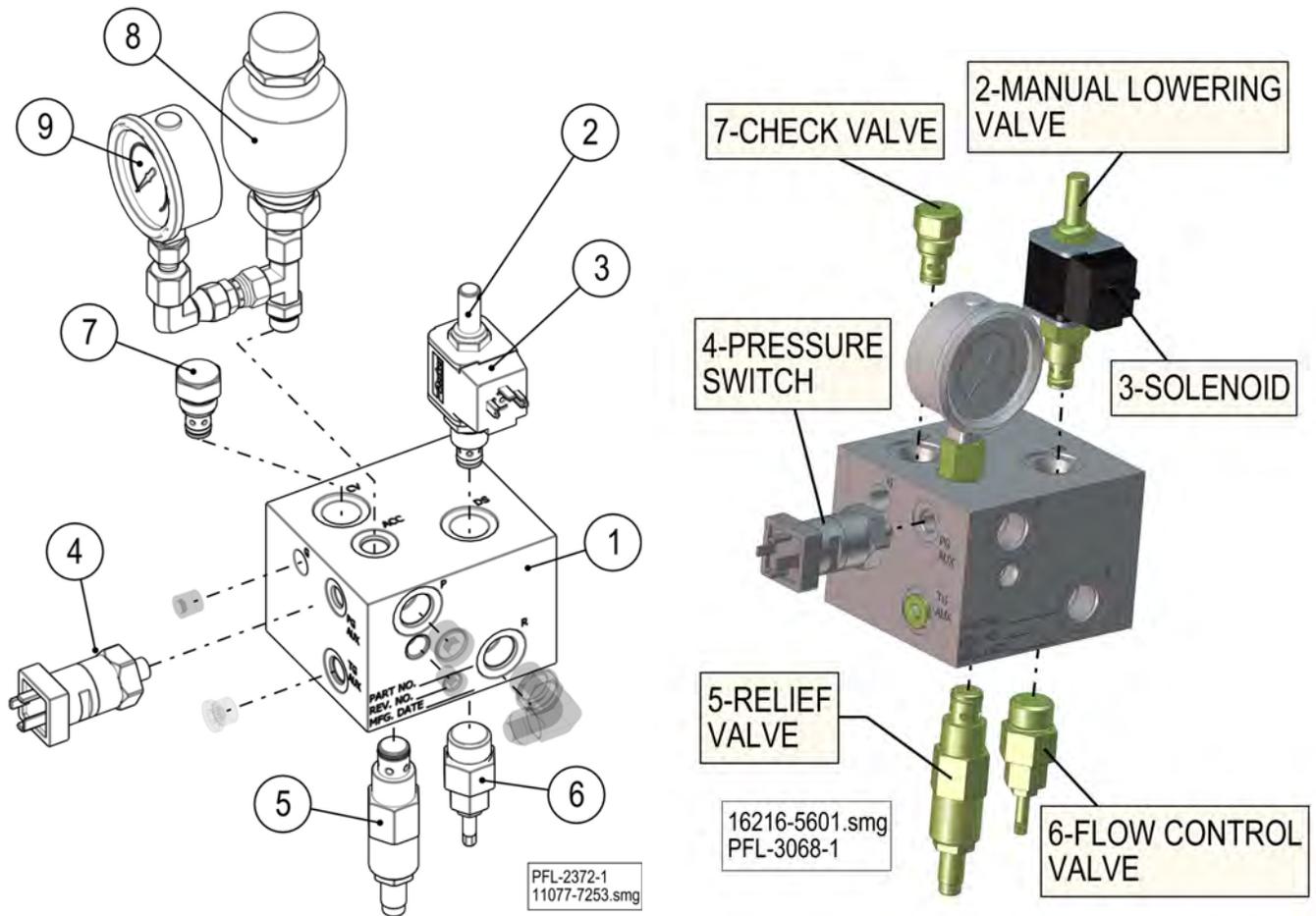
### Hydraulic Pump and Motor Assembly



PFL-2362

Item	Qty.	Part No.	Description
1	1	Contact Factory	Hydraulic Pump and Motor Assembly
2	1	11078-0016	Manifold Block Assembly
3	1	Contact Factory	Motor Assembly, Pump
4	1	Contact Factory	Pump Assembly, Hydraulic
5	1	11078-0017	Coupling, Motor Half
		11078-0018	Coupling, Pump Half
		11078-0019	Insert, Coupling
6	1	11078-0013	Gauge, Oil Sight
7	1	11078-0012	Strainer, Hydraulic Oil
8	1	11078-0011	Filter, Hydraulic Oil
9	1	11078-0008	Breather, Oil Fill

Parts  
Manifold Block Assembly



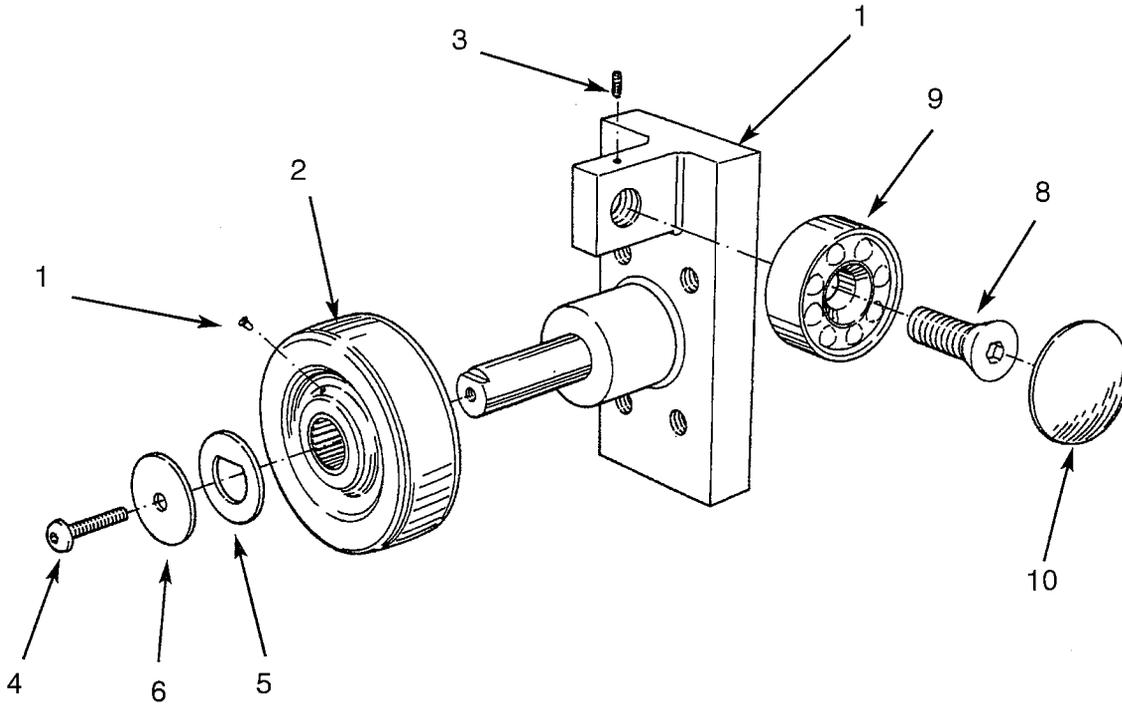
Item	Qty.	Part No.	Description
1	1	11078-0016	Manifold Block Assembly
2	1	11078-0002	Valve, Down with Manual Release
3	1	11078-0005	Coil, Down Valve - 24 V
4	1	11078-0006	Switch, Pressure
5	1	11078-0004	Valve, Relief
6	1	11078-0001	Valve, Flow Control
7	1	11078-0003	Valve, Check
8	1	11078-0014	Accumulator (Optional)
9	1	11078-0015	Gauge, Pressure (Optional)
10	1	Local Item	Elbow, 1/4" NPT Street

# D Series

## Wheelblock Assemblies

### NOTE

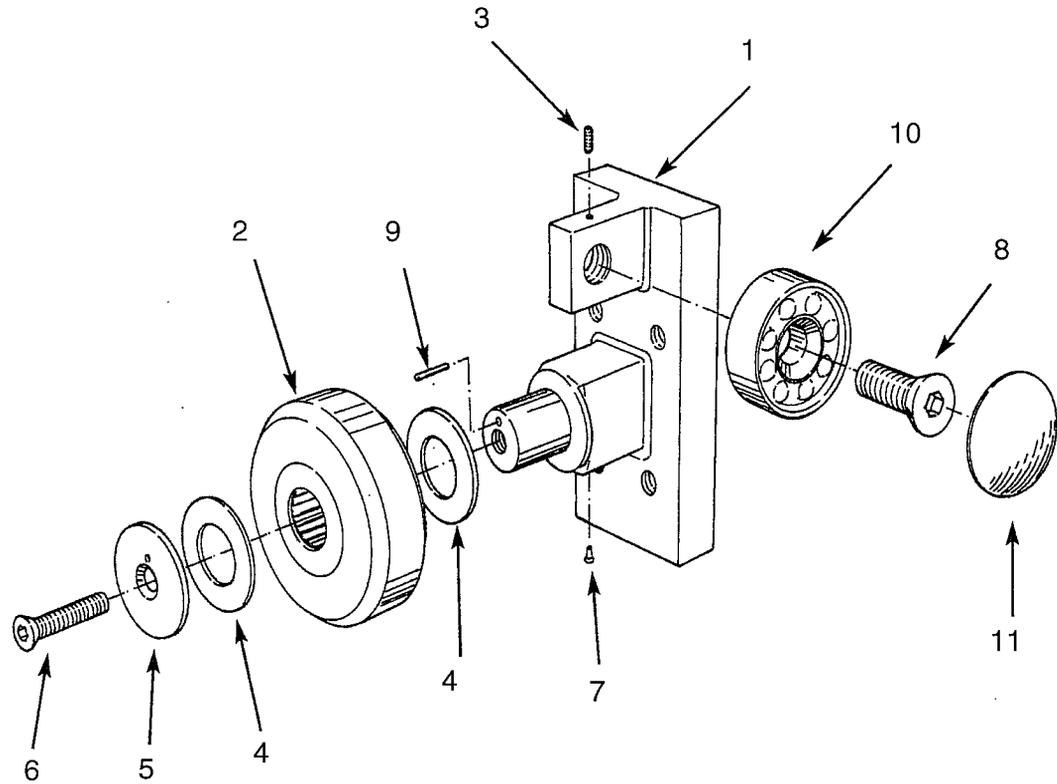
*For complete assemblies - consult factory*



PFL-1868

### Phenolic

Item	Qty.	Part No.	Description
1	1	10037-0000	Wheelblock Weldment
2	1	2591-0001	Wheel, Phenolic 5-1/4
3	1	6759-0008	Screw, 1/4-20 x 5/8" lg.
4	1	2888-0010	Screw, 1/4-20 x 5/8" lg.
5	1	8774-0000	D-Washer
6	1	5222-0000	Washer, Flat
7	1	9975-0006	Plug/Cap
8*	1	9698-0001	Screw, 1"-8 x 2 1/2" lg.
9*	1	12167-0001	Guide Wheel, 2.94"
10*	1	7633-0001	Cap, Inner
		*7954-0001	Guide Wheel Kit (includes Items 8, 9, & 10)



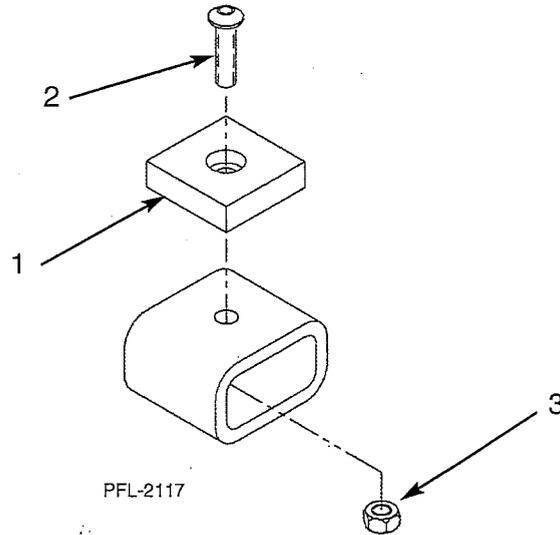
PFL-1869

**5-1/4 Steel With Roller Bearing**

Item	Qty.	Part No.	Description
1	1	10076-0000	Wheelblock Weldment
2	1	6381-0001	Wheel, Steel 5-1/4 w/seals
3	1	6759-0008	Screw, 1/4-20 x 5/8" lg.
4	2	3622-0000	Washer, Thrust
5	1	3629-0000	Washer, Retainer
6	1	4299-0016	Screw, FHSC 1/2-13
7	1	9975-0006	Plug/Cap
8*	1	9698-0001	Screw, FHSC 1"-8 x 2 1/2" lg.
9	1	5209-0012	Pin, Roll, 3/16 x 3/4" lg.
10*	1	12167-0001	Guide Wheel, 2.94"
11*	1	7633-0001	Cap, Inner
		*7954-0001	Guide Wheel Kit (includes items 8, 10 & 11)

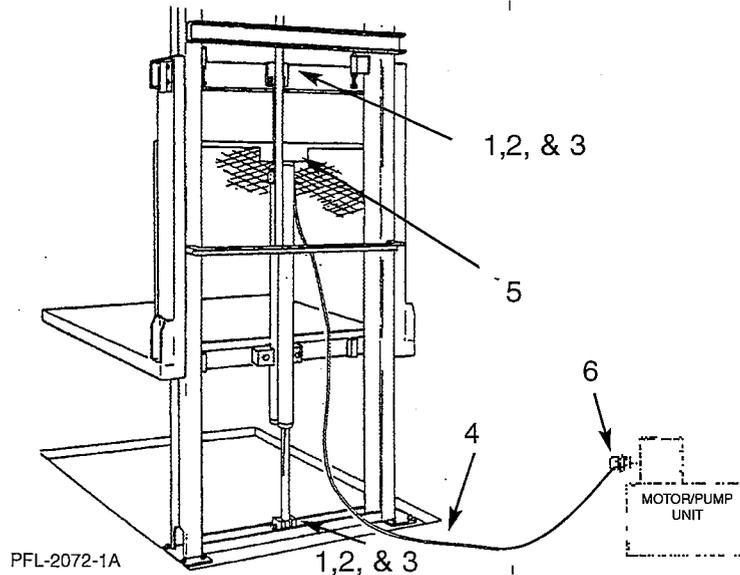
# D Series

## Carriage Stop



Item	Qty.	Part No.	Description
1	1	8272-0000	Pad, UHMW, Hydraulic Carriage Mounting
2	1	6709-0020	Screw, BHSC, 5/16-18 x 1 1/4" LG
3	1	6708-0010	Nut, Lock, Nylon, 5/16-18 UNC

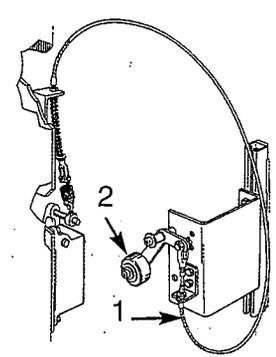
## Dual Pak Cylinder Assembly and Hydraulic Components



Item	Qty.	Part No.	Description
1	4	2522-0000	Pin, Cotter, 5/32 x 1 1/4 LG
2	2	8829-0000	Pin, Clevis, 1" Dia.
3	4	6296-0021	Washer, Flat, Std. 1"
4	1	8625-0024	Hose Assembly
5	1	8889-0006	Velocity Fuse
6	1	9859-0000	Fitting, #8 SAE O-ring to #8 ORFS

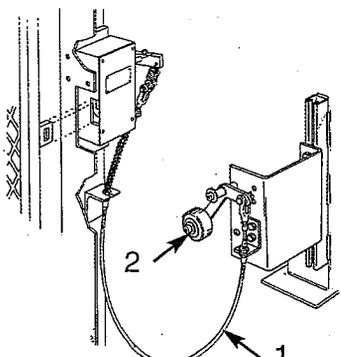
The **INTERLOCK** is a device used to mechanically prevent the gate from opening. Below are the standard types of interlocks supplied. As this is a safety device, replacement components are only available as shown below. Some configurations may vary by application.

**ANDERSON CABLE**



PFL-1885-6A

**GAL CABLE**

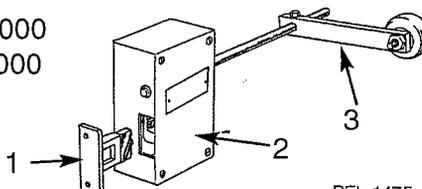


PFL-1885-7A

1. Control Cable Assembly  
10' - #9292-0120  
15' - #9292-0180  
25' - #9292-0300  
30' - #9292-0360
2. Roller Arm Assembly #9280-0000  
Wheel Only #9284-0040

**GAL (Left Hand Shown)**

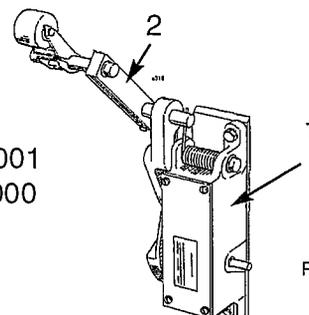
RH #2690-0000  
LH #2691-0000



PFL-1475

1. Keeper #3838-0000
2. Contact Block (inside) #3832-0000
3. Arm w/Roller #4342-0000

**ANDERSON (Right Hand Shown)**

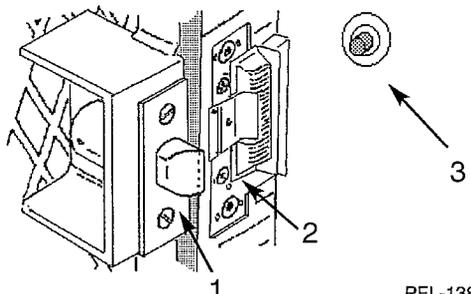


RH #2678-0001  
LH #2678-0000

PFL-1368

1. Contact Block (inside)
2. Arm #6950-0000

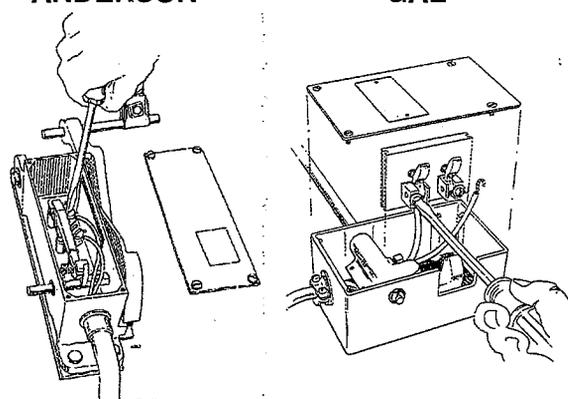
**ELECTRIC STRIKE**



PFL-1389

1. Spring Latch #7566-0000
2. Strike #9169-0000
3. Button #9096-0000

**ANDERSON                      GAL**

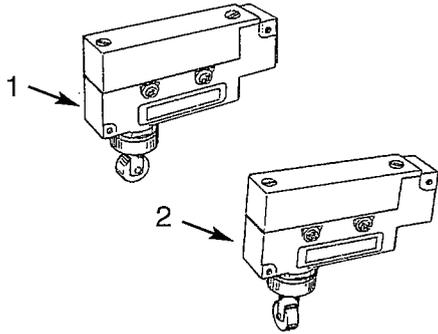


PFL-1401                      PFL-1250

See schematic for proper wiring instructions.

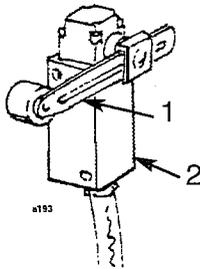
## D Series

A **GATE STATUS SWITCH** is supplied when the contacts are not being used. If required, it will be mounted to the gate post or header. Normally the GAL and Anderson interlocks do not use this switch. Specific order requirements may dictate otherwise.



PFL-1293

1. Roller Plunger (parallel) #6220-0000
2. Roller Plunger (perpendicular) #6216-0000



PFL-1205

1. Adjustable Roller Arm #2891-0005
2. Switch #2893-0005

# Recommended Storage Requirements

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## RECOMMENDED STORAGE REQUIREMENTS

### ENVIRONMENT

All components should be stored indoors. The area of storage should be kept at a constant temperature above 55 degrees and relative humidity of approximately 40%, free from heavy dust and contaminants. Outdoor storage is NOT recommended.

### STACKING

Except for placing the parts container and bracing on the empty carriage, stacking of the various gate components is strictly forbidden. Enclosure and gate panels will warp. Objects on top of the columns may cause severe damage.

**LONG-TERM STORAGE**, more than two months after shipment, will require that the following maintenance procedures be performed every sixty days from date of shipment:

1. SAFETY CAMS are a part of the WHEEL-BLOCK ASSEMBLY and should be lubricated with a non-detergent oil and rotated to ensure free operation.
2. The MOTOR PUMP UNIT ships full of oil and must remain in this condition to prevent the reservoir from rusting.
3. CYLINDERS must be stored horizontally in a constant environment with all ends and ports capped and rotated 180 degrees every two months.
4. ELECTRICAL COMPONENTS should be plugged to prevent moisture and other contaminants from entering them. Store in a dry place to prevent corrosion.
5. PARTS CRATE must remain sealed and dry.

For units stored longer than six months, it is recommended that you contact the Product Support Department of Pflow Industries for additional information that may be available prior to starting up your unit.

Our warranty policy does not cover damage as a result of improper storage.

# D Series

## ELECTRICAL TERMINOLOGY AND APPLICATIONS

### Ruling Bodies:

NEMA - National Electrical Manufacturers Association - (National testing and manufacturing standards body of electrical apparatus.)

UL - Underwriters Laboratories, Inc. - (Independent testing laboratory - some cities require UL control panels and electrical apparatus.)

JIC - Joint Industry Council - (Advisory group to provide standards for production equipment, safety and dependability.)

NFPA - National Fire Protection Association - (Ruling board of NEC - sets national fire/safety standards for equipment/plants.)

CSA - Canadian Standards Association - (Regulatory agency of Canada - CSA required stamp on electrical devices in Canada.)

ANSI - American National Standards Institute - (Adopts code; sets committees.)

ASME - American Society of Mechanical Engineers - (Writes codes - Secretariat for ANSI.)

NEC - National Electrical Code - (Advisory board to NFPA - their recommendation/codes are usually adopted throughout the USA.)

OTHERS - GM, Ford, Dupont, etc. Customers may have special plant specifications incorporating several ruling bodies or their own electrical code specifications.

### Pflow's Standard

NEMA type 1 classification is a general purpose, indoor only, usage. Only COMMERCIAL users generally accept this type: i.e., retail stores, mini storage, warehouses, etc.

#### NOTE

*INDUSTRY does not accept (this NEMA type 1): i.e., auto manufacturing, chemical manufacturing, and paper manufacturing.*

All other Pflow units are NEMA 12 classification in regard to the controls, push button stations, and electrical design built under the following standards:

JIC: EMP-1 Electrical standards for mass production equipment.

JIC: Electrical standards for general purpose machine tools.

NFPA 79: Electrical standard for industrial machinery

NEMA type 12 classification is an indoor only usage with gasket protection from dust, dirt, fiber flyings, dripping water, and external condensation of non-corrosive liquids.

#### NOTE

*If JIC is to be strictly adhered to, they require that all devices be minimum NEMA 12, rigid conduit, specific wire coloring, etc. (controls and field wiring).*

#### NOTE

*You should note that the NEMA rating of equipment is based on the electrical device(s) with the lowest NEMA type.*

EXAMPLES: 1) If we provide a JIC NEMA 12 standard control package with an Anderson or VA gate interlock, our NEMA rating goes to NEMA type 1; and we lose our JIC rating. 2) If we provide a GAL interlock, which has exposed electrical contacts, we rate no NEMA rating and lose our JIC rating. 3) If we provide EMT conduit or don't provide the proper JIC electrical field wiring techniques, we lose our JIC rating.

### Outdoor Application

Outdoor units or electrical devices exposed to severe weather conditions should not be rated less than NEMA type 4. This is a watertight, dust-tight indoor-outdoor classification that will provide protection against splashing water, seepage of water, falling or hose-directed water, and severe external condensation.

### Corrosive Application

The Chemical Industry on the whole usually specifies a minimum NEMA type 4X. A NEMA 4X rating is similar to a NEMA 4 with added corrosion resistance.

# Electrical Terminology and Applications

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## Hazardous Locations

Hazardous locations are an extremely specialized electrical classification. Few electrical experts exist in this field. All explosion-proof hazardous locations must be handled on an individual job site condition.

The NEC has three classes (I, II, III), - two divisions, (1 and 2) and seven group designations (A, B, C, D, E, F, and G).

### Class Definitions:

**CLASS I Locations:** Those in which flammable gasses or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures.

**CLASS II Locations:** Those where the presence of combustible dust presents a fire or explosion hazard.

**CLASS III Locations:** Those where easily ignitable fibers or flyings are present but not likely to be suspended in the air in quantities sufficient to produce ignitable mixtures.

### Division Definitions:

**DIVISION 1** is an extremely dangerous explosive condition that exists normally.

**DIVISION 2** is a dangerous explosive condition that could exist but usually does not.

**GROUP** designations are given by the NFPA, State Fire Marshals, insurance companies or consulting engineering firms according to the gasses/dust, etc. in the area and the spark or temperature needed to produce an explosion.

Currently, in order to provide competitive pricing in the hazardous location area, we are producing "intrinsically safe" control packages. Intrinsically safe is defined as: electrical devices provided cannot produce a spark or temperature hot enough to ignite the surrounding gasses/dust, etc.

## Optional Control Packages and Devices for Hazardous Locations

NEMA type 7, Class I, Division 1 and 2, Group A, B, C, or D enclosures shall be capable of withstanding the pressures resulting from an internal explosion of specified gas and shall contain such an explosion sufficiently so that an explosive gas mixture existing in the atmosphere will not be ignited.

NEMA type 9 is similar to NEMA type 7 but is rated for dust ignition-proof - Class II, Division 1 and 2, Groups E, F, or G.

**INTERNTIONALLY LEFT BLANK**

## PARTS AND LABOR

### Parts:

Structure..... Lifetime  
Manufactured Components..... 1 Year  
Purchased Components..... 1 Year

### Labor:

Structure.....Lifetime  
Manufactured Components..... 1 Year  
Purchased Components..... 90 Days

## WARRANTY

The warranty period begins 30 days after shipment. All warranty work must be pre-authorized by PFlow Industries' Product Support Department prior to starting work. All billing must be in accordance with our Warranty Procedures. Replacement of defective parts will be handled in accordance with PFlow's Return Goods Authorization policy. If PFlow Industries determines that equipment failures were caused by abuse, improper installation, or lack of maintenance, they will not be covered. PFlow Industries will not accept consequential losses (missed production, etc.), premium time labor, or air freight charges. Manufactured items are defined as those components manufactured and/or assembled by PFlow. Structure is defined as columns and carriage (excluding carriage side guards). Purchased items are those components that are used as supplied by vendors. Gates and enclosures are excluded and covered for 90 days parts and labor. This warranty applies to all models and may not be modified or extended except by written authorization from PFlow Industries, Inc.

- Manufactured items are defined as those components manufactured and or assembled by PFlow.
- Structure is defined as a columns and carriage.
- Purchased items are those components that are used as supplied by vendors.

## PRE-AUTHORIZATION

PFlow Industries must be notified of the problem before we can authorize the repair. We need to determine the cause of the problem, who should be doing the work and what is involved. If it is our decision to have your organization or your subcontractor do the work, you will be given an authorization number which must be referenced on all subsequent paperwork. During our non-working hours, we ask that you notify us by phone or FAX during the next business day. Issuance of an authorization number does not guarantee approval and or payment.

## INVOICES

1. You have 30 days past the date the work was completed to submit an invoice for approval. If approved, payment is made 30 days from the date of approval.
2. A deduction from outstanding payments to PFlow for warranty is NEVER authorized and will result in a 10% processing fee.
3. Invoices received without sufficient information will be returned. They will be reconsidered for approval when complete documentation is received. All invoices must include, in detail, the following:
  - Description of the problem.
  - PFlow serial number.
  - Labor hours expended resolving the problem.
  - Rater per hour.
  - Travel time incurred.
  - Date the work was performed.
  - Copies of receipts for materials purchased locally or labor sub-contracted.

## COMMENTS

- PFlow Industries is not responsible for payment made on claims prior to our approval.
- Local purchase of components must be pre-authorized.
- Where distance and or experience may be more cost-effective, PFlow Industries reserves the right to use alternate organizations.
- Labor is defined as a maximum of two hours travel per call, plus reasonable onsite repair time as determined by PFlow Industries

Notes

Thank you for giving us the opportunity to serve you. We appreciate your business and want to make sure we meet your expectations. Please help us by taking a few minutes to tell us about the equipment and service that you have received so far. Please answer the questions and return this form to PFlow Industries, Inc. Product Support Department. If more space is needed, please use the reverse side of this page.

1	Did you receive the equipment in good condition?	Yes	No	
	If No, please describe any damage.			
2	Did you receive the equipment shipment complete as expected?	Yes	No	
	If No, what was missing?			
3	Was the equipment manufactured correctly?	Yes	No	
	If No, describe concerns in the workmanship.			
4	Did it match the General Arrangement (GA) drawing?	Yes	No	
5	Was the unit (i.e., lift, gates, and enclosures) dimensionally correct (did it fit)?	Yes	No	
	If No, describe in detail any problem areas			
6	After the completion of the electrical installation, was it necessary to return for final adjustments, testing, and training?	Yes	No	
	If No, were you able to hook up temporary power to test the unit and make all final adjustments?		Yes	No
	If Yes, were there any electrical problems that you were made aware of?			
7	Were there any issues with any of the electrical components?	Yes	No	
	If Yes, describe			
8	Was the electrical field wiring completed as required?	Yes	No	
	If No, describe			
9	Were you able to test the unit at full capacity?	Yes	No	
10	Did you test all the gates to ensure proper operation and interlock operation?	Yes	No	
11	<b>Comments:</b>			
<b>PFlow Job Number</b>				<b>Date</b>
<b>Customer/User</b>				
<b>Questionnaire completed by</b>				<b>email</b>
<b>Company</b>				<b>Phone</b>

**PFlow Industries, Inc.** • 6720 N. Teutonia Avenue • Milwaukee, WI. 53209  
Phone - Main Switchboard: (414) 352-9000 • Product Support Dept: Fax - (414) 247-9834; email: psd@pflow.com

Notes



Notes



# MATERIAL SAFETY DATA SHEET

F78XXL13851-4357  
00 01

DATE OF PREPARATION  
Dec 21, 2013

## SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NUMBER

F78XXL13851-4357

### PRODUCT NAME

Fast Dry Acrylic Enamel, FDA PFlow Blue VOC

### MANUFACTURER'S NAME

THE SHERWIN-WILLIAMS COMPANY  
101 Prospect Avenue N.W.  
Cleveland, OH 44115

### Telephone Numbers and Websites

<b>Regulatory Information</b>	(216) 566-2902
<b>Medical Emergency</b>	(216) 566-2917
<b>Transportation Emergency*</b>	(800) 424-9300
<i>*for Chemical Emergency ONLY (spill, leak, fire, exposure, or accident)</i>	

## SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

% by Weight	CAS Number	Ingredient	Units	Vapor Pressure
4	64742-89-8	<b>V. M. &amp; P. Naphtha</b>		
		ACGIH TLV	300 PPM	12 mm
		OSHA PEL	300 PPM	
		OSHA PEL	400 PPM STEL	
9	108-88-3	<b>Toluene</b>		
		ACGIH TLV	20 PPM	22 mm
		OSHA PEL	100 ppm (Skin)	
		OSHA PEL	150 ppm (Skin) STEL	
4	100-41-4	<b>Ethylbenzene</b>		
		ACGIH TLV	20 PPM	7.1 mm
		OSHA PEL	100 PPM	
		OSHA PEL	125 PPM STEL	
22	1330-20-7	<b>Xylene</b>		
		ACGIH TLV	100 PPM	5.9 mm
		ACGIH TLV	150 PPM STEL	
		OSHA PEL	100 PPM	
		OSHA PEL	150 PPM STEL	
24	67-64-1	<b>Acetone</b>		
		ACGIH TLV	500 PPM	180 mm
		ACGIH TLV	750 PPM STEL	
		OSHA PEL	1000 PPM	
4	110-19-0	<b>Isobutyl Acetate</b>		
		ACGIH TLV	150 PPM	12.5 mm
		OSHA PEL	150 PPM	
1	108-65-6	<b>1-Methoxy-2-Propanol Acetate</b>		
		ACGIH TLV	Not Available	1.8 mm
		OSHA PEL	Not Available	
3	112926-00-8	<b>Amorphous Precipitated Silica</b>		
		ACGIH TLV	10 mg/m3 as Dust	
		OSHA PEL	6 mg/m3 as Dust	
2	14807-96-6	<b>Talc</b>		
		ACGIH TLV	2 mg/m3 as Resp. Dust	
		OSHA PEL	2 mg/m3 as Resp. Dust	
4	13463-67-7	<b>Titanium Dioxide</b>		
		ACGIH TLV	10 mg/m3 as Dust	
		OSHA PEL	10 mg/m3 Total Dust	
		OSHA PEL	5 mg/m3 Respirable Fraction	
0.3	1333-86-4	<b>Carbon Black</b>		
		ACGIH TLV	3.5 MG/M3	
		OSHA PEL	3.5 MG/M3	

## SECTION 3 — HAZARDS IDENTIFICATION

### ROUTES OF EXPOSURE

INHALATION of vapor or spray mist.  
EYE or SKIN contact with the product, vapor or spray mist.

### EFFECTS OF OVEREXPOSURE

**EYES:** Irritation.

**SKIN:** Prolonged or repeated exposure may cause irritation.

**INHALATION:** Irritation of the upper respiratory system.

May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

Prolonged overexposure to hazardous ingredients in Section 2 may cause adverse chronic effects to the following organs or systems:

- the liver
- the urinary system
- the hematopoietic (blood-forming) system
- the cardiovascular system
- the reproductive system

### SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

### MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

### CANCER INFORMATION

For complete discussion of toxicology data refer to Section 11.

### HMIS Codes

<b>Health</b>	2*
<b>Flammability</b>	3
<b>Reactivity</b>	0

## SECTION 4 — FIRST AID MEASURES

**EYES:** Flush eyes with large amounts of water for 15 minutes. Get medical attention.

**SKIN:** Wash affected area thoroughly with soap and water.  
Remove contaminated clothing and laundry before re-use.

**INHALATION:** If affected, remove from exposure. Restore breathing. Keep warm and quiet.

**INGESTION:** Do not induce vomiting. Get medical attention immediately.

## SECTION 5 — FIRE FIGHTING MEASURES

<b>FLASH POINT</b> 1 °F TCC	<b>LEL</b> 0.9	<b>UEL</b> 13.1	<b>FLAMMABILITY CLASSIFICATION</b> RED LABEL -- Extremely Flammable, Flash below 21 °F (-6 °C)
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### EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Foam

### UNUSUAL FIRE AND EXPLOSION HAZARDS

Closed containers may explode when exposed to extreme heat.

Application to hot surfaces requires special precautions.

During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

### SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used.

Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

## SECTION 6 — ACCIDENTAL RELEASE MEASURES

### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate the area.

Remove with inert absorbent.

## SECTION 7 — HANDLING AND STORAGE

### STORAGE CATEGORY

DOL Storage Class IB

### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Contents are EXTREMELY FLAMMABLE. Keep away from heat, sparks, and open flame. Vapors will accumulate readily and may ignite explosively.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

## SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

### PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation.

Avoid contact with skin and eyes. Avoid breathing vapor and spray mist.

Wash hands after using.

This coating may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m<sup>3</sup> (total dust), 3 mg/m<sup>3</sup> (respirable fraction), OSHA PEL 15 mg/m<sup>3</sup> (total dust), 5 mg/m<sup>3</sup> (respirable fraction).

### VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

### RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

### PROTECTIVE GLOVES

Wear gloves which are recommended by glove supplier for protection against materials in Section 2.

### EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

### OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

## SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

<b>PRODUCT WEIGHT</b>	7.84 lb/gal	939 g/l
<b>SPECIFIC GRAVITY</b>	0.94	
<b>BOILING POINT</b>	132 - 325 °F	55 - 162 °C
<b>MELTING POINT</b>	Not Available	
<b>VOLATILE VOLUME</b>	77%	
<b>EVAPORATION RATE</b>	Slower than ether	
<b>VAPOR DENSITY</b>	Heavier than air	
<b>SOLUBILITY IN WATER</b>	Not Available	
<b>VOLATILE ORGANIC COMPOUNDS (VOC Theoretical - As Packaged)</b>		
	4.90 lb/gal	588 g/l
	3.52 lb/gal	422 g/l
	Less Water and Federally Exempt Solvents Emitted VOC	

## SECTION 10 — STABILITY AND REACTIVITY

**STABILITY** — Stable

**CONDITIONS TO AVOID**

None known.

**INCOMPATIBILITY**

None known.

**HAZARDOUS DECOMPOSITION PRODUCTS**

By fire: Carbon Dioxide, Carbon Monoxide

**HAZARDOUS POLYMERIZATION**

Will not occur

## SECTION 11 — TOXICOLOGICAL INFORMATION

**CHRONIC HEALTH HAZARDS**

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Ethylbenzene is classified by IARC as possibly carcinogenic to humans (2B) based on inadequate evidence in humans and sufficient evidence in laboratory animals. Lifetime inhalation exposure of rats and mice to high ethylbenzene concentrations resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations. There is no evidence that ethylbenzene causes cancer in humans.

IARC's Monograph No. 93 reports there is sufficient evidence of carcinogenicity in experimental rats exposed to titanium dioxide but inadequate evidence for carcinogenicity in humans and has assigned a Group 2B rating. In addition, the IARC summary concludes, "No significant exposure to titanium dioxide is thought to occur during the use of products in which titanium is bound to other materials, such as paint."

Carbon Black is classified by IARC as possibly carcinogenic to humans (group 2B) based on experimental animal data, however, there is insufficient evidence in humans for its carcinogenicity.

## TOXICOLOGY DATA

CAS No.	Ingredient Name			
64742-89-8	V. M. & P. Naphtha	LC50 RAT LD50 RAT	4HR	Not Available Not Available
108-88-3	Toluene	LC50 RAT LD50 RAT	4HR	4000 ppm 5000 mg/kg
100-41-4	Ethylbenzene	LC50 RAT LD50 RAT	4HR	Not Available 3500 mg/kg
1330-20-7	Xylene	LC50 RAT LD50 RAT	4HR	5000 ppm 4300 mg/kg
67-64-1	Acetone	LC50 RAT LD50 RAT	4HR	Not Available 5800 mg/kg
110-19-0	Isobutyl Acetate	LC50 RAT LD50 RAT	4HR	Not Available 13400 mg/kg
108-65-6	1-Methoxy-2-Propanol Acetate	LC50 RAT LD50 RAT	4HR	Not Available 8500 mg/kg
112926-00-8	Amorphous Precipitated Silica	LC50 RAT LD50 RAT	4HR	Not Available 4500 mg/kg
14807-96-6	Talc	LC50 RAT LD50 RAT	4HR	Not Available Not Available
13463-67-7	Titanium Dioxide	LC50 RAT LD50 RAT	4HR	Not Available Not Available
1333-86-4	Carbon Black	LC50 RAT LD50 RAT	4HR	Not Available Not Available

## SECTION 12 — ECOLOGICAL INFORMATION

## ECOTOXICOLOGICAL INFORMATION

No data available.

## SECTION 13 — DISPOSAL CONSIDERATIONS

## WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers. Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

## SECTION 14 — TRANSPORT INFORMATION

Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (ocean, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport.

## US Ground (DOT)

5 Liters (1.3 Gallons) and Less may be Classed as LTD. QTY. OR ORM-D  
Larger Containers are Regulated as:  
UN1263, PAINT, 3, PG II, (ERG#128)

## DOT (Dept of Transportation) Hazardous Substances &amp; Reportable Quantities

Acetone 5000 lb RQ  
Ethylbenzene 1000 lb RQ  
Toluene 1000 lb RQ  
Xylenes (isomers and mixture) 100 lb RQ

## Bulk Containers may be Shipped as (check reportable quantities):

RQ, UN1263, PAINT, 3, PG II, (XYLENES (ISOMERS AND MIXTURE)),  
(ERG#128)

## Canada (TDG)

UN1263, PAINT, CLASS 3, PG II, (ERG#128)

**IMO**

5 Liters (1.3 Gallons) and Less may be Shipped as Limited Quantity.  
 UN1263, PAINT, CLASS 3, PG II, (-17 C c.c.), EmS F-E, S-E

**IATA/CAO**

UN1263, PAINT, 3, PG II

**SECTION 15 — REGULATORY INFORMATION**

**SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION**

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
108-88-3	Toluene	9	
100-41-4	Ethylbenzene	4	
1330-20-7	Xylene	22	

**CALIFORNIA PROPOSITION 65**

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

**TSCA CERTIFICATION**

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

**SECTION 16 — OTHER INFORMATION**

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

# MATERIAL SAFETY DATA SHEET

B50XXW10463-4357  
00 01

DATE OF PREPARATION  
Dec 21, 2013

## SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NUMBER**

B50XXW10463-4357

**PRODUCT NAME**

UNIVERSAL PRIMER, White B50-WZ1

**MANUFACTURER'S NAME**

THE SHERWIN-WILLIAMS COMPANY  
101 Prospect Avenue N.W.  
Cleveland, OH 44115

**Telephone Numbers and Websites**

<b>Regulatory Information</b>	(216) 566-2902
<b>Medical Emergency</b>	(216) 566-2917
<b>Transportation Emergency*</b>	(800) 424-9300
<i>*for Chemical Emergency ONLY (spill, leak, fire, exposure, or accident)</i>	

## SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

% by Weight	CAS Number	Ingredient	Units	Vapor Pressure
2	108-88-3	<b>Toluene</b>		
		ACGIH TLV	20 PPM	22 mm
		OSHA PEL	100 ppm (Skin)	
		OSHA PEL	150 ppm (Skin) STEL	
1	100-41-4	<b>Ethylbenzene</b>		
		ACGIH TLV	20 PPM	7.1 mm
		OSHA PEL	100 PPM	
		OSHA PEL	125 PPM STEL	
7	1330-20-7	<b>Xylene</b>		
		ACGIH TLV	100 PPM	5.9 mm
		ACGIH TLV	150 PPM STEL	
		OSHA PEL	100 PPM	
		OSHA PEL	150 PPM STEL	
2	64742-95-6	<b>Light Aromatic Hydrocarbons</b>		
		ACGIH TLV	Not Available	3.8 mm
		OSHA PEL	Not Available	
2	95-63-6	<b>1,2,4-Trimethylbenzene</b>		
		ACGIH TLV	25 PPM	2.03 mm
		OSHA PEL	25 PPM	
35	67-64-1	<b>Acetone</b>		
		ACGIH TLV	500 PPM	180 mm
		ACGIH TLV	750 PPM STEL	
		OSHA PEL	1000 PPM	
3	14807-96-6	<b>Talc</b>		
		ACGIH TLV	2 mg/m3 as Resp. Dust	
		OSHA PEL	2 mg/m3 as Resp. Dust	
25	471-34-1	<b>Calcium Carbonate</b>		
		ACGIH TLV	10 mg/m3 as Dust	
		OSHA PEL	15 mg/m3 Total Dust	
		OSHA PEL	5 mg/m3 Respirable Fraction	
7	13463-67-7	<b>Titanium Dioxide</b>		
		ACGIH TLV	10 mg/m3 as Dust	
		OSHA PEL	10 mg/m3 Total Dust	
		OSHA PEL	5 mg/m3 Respirable Fraction	

## SECTION 3 — HAZARDS IDENTIFICATION

**ROUTES OF EXPOSURE**

INHALATION of vapor or spray mist.  
EYE or SKIN contact with the product, vapor or spray mist.

**EFFECTS OF OVEREXPOSURE**

**EYES:** Irritation.

**SKIN:** Prolonged or repeated exposure may cause irritation.

**INHALATION:** Irritation of the upper respiratory system.

May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

Prolonged overexposure to hazardous ingredients in Section 2 may cause adverse chronic effects to the following organs or systems:

- the liver
- the urinary system
- the cardiovascular system
- the reproductive system

**SIGNS AND SYMPTOMS OF OVEREXPOSURE**

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**

None generally recognized.

**CANCER INFORMATION**

For complete discussion of toxicology data refer to Section 11.

**HMIS Codes**

<b>Health</b>	2*
<b>Flammability</b>	3
<b>Reactivity</b>	0

**SECTION 4 — FIRST AID MEASURES**

**EYES:** Flush eyes with large amounts of water for 15 minutes. Get medical attention.

**SKIN:** Wash affected area thoroughly with soap and water.

Remove contaminated clothing and launder before re-use.

**INHALATION:** If affected, remove from exposure. Restore breathing. Keep warm and quiet.

**INGESTION:** Do not induce vomiting. Get medical attention immediately.

**SECTION 5 — FIRE FIGHTING MEASURES****FLASH POINT**

-2 °F TCC

**LEL**

0.7

**UEL**

12.8

**FLAMMABILITY CLASSIFICATION**

RED LABEL -- Extremely Flammable, Flash below 21 °F (-6 °C)

**EXTINGUISHING MEDIA**

Carbon Dioxide, Dry Chemical, Foam

**UNUSUAL FIRE AND EXPLOSION HAZARDS**

Closed containers may explode when exposed to extreme heat.

Application to hot surfaces requires special precautions.

During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

**SPECIAL FIRE FIGHTING PROCEDURES**

Full protective equipment including self-contained breathing apparatus should be used.

Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

**SECTION 6 — ACCIDENTAL RELEASE MEASURES****STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Remove all sources of ignition. Ventilate the area.

Remove with inert absorbent.

**SECTION 7 — HANDLING AND STORAGE****STORAGE CATEGORY**

DOL Storage Class IB

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE**

Contents are EXTREMELY FLAMMABLE. Keep away from heat, sparks, and open flame. Vapors will accumulate readily and may ignite explosively.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally.

Keep out of the reach of children.

## SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

### PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation.

Avoid contact with skin and eyes. Avoid breathing vapor and spray mist.

Wash hands after using.

This coating may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m<sup>3</sup> (total dust), 3 mg/m<sup>3</sup> (respirable fraction), OSHA PEL 15 mg/m<sup>3</sup> (total dust), 5 mg/m<sup>3</sup> (respirable fraction).

### VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

### RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

### PROTECTIVE GLOVES

Wear gloves which are recommended by glove supplier for protection against materials in Section 2.

### EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

### OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

## SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

<b>PRODUCT WEIGHT</b>	9.62 lb/gal	1153 g/l
<b>SPECIFIC GRAVITY</b>	1.16	
<b>BOILING POINT</b>	132 - 360 °F	55 - 182 °C
<b>MELTING POINT</b>	Not Available	
<b>VOLATILE VOLUME</b>	73%	
<b>EVAPORATION RATE</b>	Slower than ether	
<b>VAPOR DENSITY</b>	Heavier than air	
<b>SOLUBILITY IN WATER</b>	Not Available	
<b>VOLATILE ORGANIC COMPOUNDS (VOC Theoretical - As Packaged)</b>		
3.28 lb/gal	394 g/l	Less Water and Federally Exempt Solvents
1.58 lb/gal	190 g/l	Emitted VOC

## SECTION 10 — STABILITY AND REACTIVITY

### STABILITY — Stable

### CONDITIONS TO AVOID

None known.

### INCOMPATIBILITY

None known.

### HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide

### HAZARDOUS POLYMERIZATION

Will not occur

## SECTION 11 — TOXICOLOGICAL INFORMATION

### CHRONIC HEALTH HAZARDS

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Ethylbenzene is classified by IARC as possibly carcinogenic to humans (2B) based on inadequate evidence in humans and sufficient evidence in laboratory animals. Lifetime inhalation exposure of rats and mice to high ethylbenzene concentrations resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations. There is no evidence that ethylbenzene causes cancer in humans.

IARC's Monograph No. 93 reports there is sufficient evidence of carcinogenicity in experimental rats exposed to titanium dioxide but inadequate evidence for carcinogenicity in humans and has assigned a Group 2B rating. In addition, the IARC summary concludes, "No significant exposure to titanium dioxide is thought to occur during the use of products in which titanium is bound to other materials, such as paint."

## TOXICOLOGY DATA

CAS No.	Ingredient Name			
108-88-3	Toluene	LC50 RAT LD50 RAT	4HR	4000 ppm 5000 mg/kg
100-41-4	Ethylbenzene	LC50 RAT LD50 RAT	4HR	Not Available 3500 mg/kg
1330-20-7	Xylene	LC50 RAT LD50 RAT	4HR	5000 ppm 4300 mg/kg
64742-95-6	Light Aromatic Hydrocarbons	LC50 RAT LD50 RAT	4HR	Not Available Not Available
95-63-6	1,2,4-Trimethylbenzene	LC50 RAT LD50 RAT	4HR	Not Available Not Available
67-64-1	Acetone	LC50 RAT LD50 RAT	4HR	Not Available 5800 mg/kg
14807-96-6	Talc	LC50 RAT LD50 RAT	4HR	Not Available Not Available
471-34-1	Calcium Carbonate	LC50 RAT LD50 RAT	4HR	Not Available Not Available
13463-67-7	Titanium Dioxide	LC50 RAT LD50 RAT	4HR	Not Available Not Available

## SECTION 12 — ECOLOGICAL INFORMATION

## ECOTOXICOLOGICAL INFORMATION

No data available.

## SECTION 13 — DISPOSAL CONSIDERATIONS

## WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers. Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

## SECTION 14 — TRANSPORT INFORMATION

Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (ocean, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport.

## US Ground (DOT)

5 Liters (1.3 Gallons) and Less may be Classed as LTD. QTY. OR ORM-D  
Larger Containers are Regulated as:  
UN1263, PAINT, 3, PG II, (ERG#128)

## DOT (Dept of Transportation) Hazardous Substances &amp; Reportable Quantities

Acetone 5000 lb RQ  
Xylenes (isomers and mixture) 100 lb RQ

## Bulk Containers may be Shipped as (check reportable quantities):

RQ, UN1263, PAINT, 3, PG II, (XYLENES (ISOMERS AND MIXTURE)),  
(ERG#128)

## Canada (TDG)

UN1263, PAINT, CLASS 3, PG II, (ERG#128)

## IMO

5 Liters (1.3 Gallons) and Less may be Shipped as Limited Quantity.  
UN1263, PAINT, CLASS 3, PG II, (-19 C c.c.), EmS F-E, S-E

## IATA/ICAO

UN1263, PAINT, 3, PG II

## SECTION 15 — REGULATORY INFORMATION

### SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	1	
1330-20-7	Xylene	7	
95-63-6	1,2,4-Trimethylbenzene	2	
	Zinc Compound	1	0.7

### CALIFORNIA PROPOSITION 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

### TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

## SECTION 16 — OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

# MATERIAL SAFETY DATA SHEET

F78XXL13851-4357  
00 01

DATE OF PREPARATION  
Dec 21, 2013

## SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NUMBER**

F78XXL13851-4357

**PRODUCT NAME**

Fast Dry Acrylic Enamel, FDA PFlow Blue VOC

**MANUFACTURER'S NAME**

THE SHERWIN-WILLIAMS COMPANY  
101 Prospect Avenue N.W.  
Cleveland, OH 44115

**Telephone Numbers and Websites**

<b>Regulatory Information</b>	(216) 566-2902
<b>Medical Emergency</b>	(216) 566-2917
<b>Transportation Emergency*</b>	(800) 424-9300
<i>*for Chemical Emergency ONLY (spill, leak, fire, exposure, or accident)</i>	

## SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

% by Weight	CAS Number	Ingredient	Units	Vapor Pressure
4	64742-89-8	<b>V. M. &amp; P. Naphtha</b>		
		ACGIH TLV	300 PPM	12 mm
		OSHA PEL	300 PPM	
		OSHA PEL	400 PPM STEL	
9	108-88-3	<b>Toluene</b>		
		ACGIH TLV	20 PPM	22 mm
		OSHA PEL	100 ppm (Skin)	
		OSHA PEL	150 ppm (Skin) STEL	
4	100-41-4	<b>Ethylbenzene</b>		
		ACGIH TLV	20 PPM	7.1 mm
		OSHA PEL	100 PPM	
		OSHA PEL	125 PPM STEL	
22	1330-20-7	<b>Xylene</b>		
		ACGIH TLV	100 PPM	5.9 mm
		ACGIH TLV	150 PPM STEL	
		OSHA PEL	100 PPM	
		OSHA PEL	150 PPM STEL	
24	67-64-1	<b>Acetone</b>		
		ACGIH TLV	500 PPM	180 mm
		ACGIH TLV	750 PPM STEL	
		OSHA PEL	1000 PPM	
4	110-19-0	<b>Isobutyl Acetate</b>		
		ACGIH TLV	150 PPM	12.5 mm
		OSHA PEL	150 PPM	
1	108-65-6	<b>1-Methoxy-2-Propanol Acetate</b>		
		ACGIH TLV	Not Available	1.8 mm
		OSHA PEL	Not Available	
3	112926-00-8	<b>Amorphous Precipitated Silica</b>		
		ACGIH TLV	10 mg/m3 as Dust	
		OSHA PEL	6 mg/m3 as Dust	
2	14807-96-6	<b>Talc</b>		
		ACGIH TLV	2 mg/m3 as Resp. Dust	
		OSHA PEL	2 mg/m3 as Resp. Dust	
4	13463-67-7	<b>Titanium Dioxide</b>		
		ACGIH TLV	10 mg/m3 as Dust	
		OSHA PEL	10 mg/m3 Total Dust	
		OSHA PEL	5 mg/m3 Respirable Fraction	
0.3	1333-86-4	<b>Carbon Black</b>		
		ACGIH TLV	3.5 MG/M3	
		OSHA PEL	3.5 MG/M3	

## SECTION 3 — HAZARDS IDENTIFICATION

### ROUTES OF EXPOSURE

INHALATION of vapor or spray mist.  
EYE or SKIN contact with the product, vapor or spray mist.

### EFFECTS OF OVEREXPOSURE

**EYES:** Irritation.

**SKIN:** Prolonged or repeated exposure may cause irritation.

**INHALATION:** Irritation of the upper respiratory system.

May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

Prolonged overexposure to hazardous ingredients in Section 2 may cause adverse chronic effects to the following organs or systems:

- the liver
- the urinary system
- the hematopoietic (blood-forming) system
- the cardiovascular system
- the reproductive system

### SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

### MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

### CANCER INFORMATION

For complete discussion of toxicology data refer to Section 11.

### HMIS Codes

<b>Health</b>	2*
<b>Flammability</b>	3
<b>Reactivity</b>	0

## SECTION 4 — FIRST AID MEASURES

**EYES:** Flush eyes with large amounts of water for 15 minutes. Get medical attention.

**SKIN:** Wash affected area thoroughly with soap and water.  
Remove contaminated clothing and laundry before re-use.

**INHALATION:** If affected, remove from exposure. Restore breathing. Keep warm and quiet.

**INGESTION:** Do not induce vomiting. Get medical attention immediately.

## SECTION 5 — FIRE FIGHTING MEASURES

<b>FLASH POINT</b>	<b>LEL</b>	<b>UEL</b>	<b>FLAMMABILITY CLASSIFICATION</b>
1 °F TCC	0.9	13.1	RED LABEL -- Extremely Flammable, Flash below 21 °F (-6 °C)

### EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Foam

### UNUSUAL FIRE AND EXPLOSION HAZARDS

Closed containers may explode when exposed to extreme heat.

Application to hot surfaces requires special precautions.

During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

### SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used.

Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

## SECTION 6 — ACCIDENTAL RELEASE MEASURES

### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate the area.

Remove with inert absorbent.

## SECTION 7 — HANDLING AND STORAGE

### STORAGE CATEGORY

DOL Storage Class IB

### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Contents are EXTREMELY FLAMMABLE. Keep away from heat, sparks, and open flame. Vapors will accumulate readily and may ignite explosively.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally.

Keep out of the reach of children.

## SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

### PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation.

Avoid contact with skin and eyes. Avoid breathing vapor and spray mist.

Wash hands after using.

This coating may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m<sup>3</sup> (total dust), 3 mg/m<sup>3</sup> (respirable fraction), OSHA PEL 15 mg/m<sup>3</sup> (total dust), 5 mg/m<sup>3</sup> (respirable fraction).

### VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

### RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

### PROTECTIVE GLOVES

Wear gloves which are recommended by glove supplier for protection against materials in Section 2.

### EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

### OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

## SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

<b>PRODUCT WEIGHT</b>	7.84 lb/gal	939 g/l
<b>SPECIFIC GRAVITY</b>	0.94	
<b>BOILING POINT</b>	132 - 325 °F	55 - 162 °C
<b>MELTING POINT</b>	Not Available	
<b>VOLATILE VOLUME</b>	77%	
<b>EVAPORATION RATE</b>	Slower than ether	
<b>VAPOR DENSITY</b>	Heavier than air	
<b>SOLUBILITY IN WATER</b>	Not Available	
<b>VOLATILE ORGANIC COMPOUNDS (VOC Theoretical - As Packaged)</b>		
4.90 lb/gal	588 g/l	Less Water and Federally Exempt Solvents
3.52 lb/gal	422 g/l	Emitted VOC

## SECTION 10 — STABILITY AND REACTIVITY

**STABILITY** — Stable

**CONDITIONS TO AVOID**

None known.

**INCOMPATIBILITY**

None known.

**HAZARDOUS DECOMPOSITION PRODUCTS**

By fire: Carbon Dioxide, Carbon Monoxide

**HAZARDOUS POLYMERIZATION**

Will not occur

## SECTION 11 — TOXICOLOGICAL INFORMATION

**CHRONIC HEALTH HAZARDS**

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Ethylbenzene is classified by IARC as possibly carcinogenic to humans (2B) based on inadequate evidence in humans and sufficient evidence in laboratory animals. Lifetime inhalation exposure of rats and mice to high ethylbenzene concentrations resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations. There is no evidence that ethylbenzene causes cancer in humans.

IARC's Monograph No. 93 reports there is sufficient evidence of carcinogenicity in experimental rats exposed to titanium dioxide but inadequate evidence for carcinogenicity in humans and has assigned a Group 2B rating. In addition, the IARC summary concludes, "No significant exposure to titanium dioxide is thought to occur during the use of products in which titanium is bound to other materials, such as paint."

Carbon Black is classified by IARC as possibly carcinogenic to humans (group 2B) based on experimental animal data, however, there is insufficient evidence in humans for its carcinogenicity.

## TOXICOLOGY DATA

CAS No.	Ingredient Name			
64742-89-8	V. M. & P. Naphtha	LC50 RAT LD50 RAT	4HR	Not Available Not Available
108-88-3	Toluene	LC50 RAT LD50 RAT	4HR	4000 ppm 5000 mg/kg
100-41-4	Ethylbenzene	LC50 RAT LD50 RAT	4HR	Not Available 3500 mg/kg
1330-20-7	Xylene	LC50 RAT LD50 RAT	4HR	5000 ppm 4300 mg/kg
67-64-1	Acetone	LC50 RAT LD50 RAT	4HR	Not Available 5800 mg/kg
110-19-0	Isobutyl Acetate	LC50 RAT LD50 RAT	4HR	Not Available 13400 mg/kg
108-65-6	1-Methoxy-2-Propanol Acetate	LC50 RAT LD50 RAT	4HR	Not Available 8500 mg/kg
112926-00-8	Amorphous Precipitated Silica	LC50 RAT LD50 RAT	4HR	Not Available 4500 mg/kg
14807-96-6	Talc	LC50 RAT LD50 RAT	4HR	Not Available Not Available
13463-67-7	Titanium Dioxide	LC50 RAT LD50 RAT	4HR	Not Available Not Available
1333-86-4	Carbon Black	LC50 RAT LD50 RAT	4HR	Not Available Not Available

## SECTION 12 — ECOLOGICAL INFORMATION

## ECOTOXICOLOGICAL INFORMATION

No data available.

## SECTION 13 — DISPOSAL CONSIDERATIONS

## WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers. Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

## SECTION 14 — TRANSPORT INFORMATION

Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (ocean, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport.

## US Ground (DOT)

5 Liters (1.3 Gallons) and Less may be Classed as LTD. QTY. OR ORM-D  
Larger Containers are Regulated as:  
UN1263, PAINT, 3, PG II, (ERG#128)

## DOT (Dept of Transportation) Hazardous Substances &amp; Reportable Quantities

Acetone 5000 lb RQ  
Ethylbenzene 1000 lb RQ  
Toluene 1000 lb RQ  
Xylenes (isomers and mixture) 100 lb RQ

## Bulk Containers may be Shipped as (check reportable quantities):

RQ, UN1263, PAINT, 3, PG II, (XYLENES (ISOMERS AND MIXTURE)),  
(ERG#128)

## Canada (TDG)

UN1263, PAINT, CLASS 3, PG II, (ERG#128)

**IMO**

5 Liters (1.3 Gallons) and Less may be Shipped as Limited Quantity.  
 UN1263, PAINT, CLASS 3, PG II, (-17 C c.c.), EmS F-E, S-E

**IATA/CAO**

UN1263, PAINT, 3, PG II

**SECTION 15 — REGULATORY INFORMATION**

**SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION**

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
108-88-3	Toluene	9	
100-41-4	Ethylbenzene	4	
1330-20-7	Xylene	22	

**CALIFORNIA PROPOSITION 65**

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

**TSCA CERTIFICATION**

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

**SECTION 16 — OTHER INFORMATION**

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

# MATERIAL SAFETY DATA SHEET

B50XXW10463-4357  
00 01

DATE OF PREPARATION  
Dec 21, 2013

## SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NUMBER**

B50XXW10463-4357

**PRODUCT NAME**

UNIVERSAL PRIMER, White B50-WZ1

**MANUFACTURER'S NAME**

THE SHERWIN-WILLIAMS COMPANY  
101 Prospect Avenue N.W.  
Cleveland, OH 44115

**Telephone Numbers and Websites**

<b>Regulatory Information</b>	(216) 566-2902
<b>Medical Emergency</b>	(216) 566-2917
<b>Transportation Emergency*</b>	(800) 424-9300
<i>*for Chemical Emergency ONLY (spill, leak, fire, exposure, or accident)</i>	

## SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

% by Weight	CAS Number	Ingredient	Units	Vapor Pressure
2	108-88-3	<b>Toluene</b>		
		ACGIH TLV	20 PPM	22 mm
		OSHA PEL	100 ppm (Skin)	
		OSHA PEL	150 ppm (Skin) STEL	
1	100-41-4	<b>Ethylbenzene</b>		
		ACGIH TLV	20 PPM	7.1 mm
		OSHA PEL	100 PPM	
		OSHA PEL	125 PPM STEL	
7	1330-20-7	<b>Xylene</b>		
		ACGIH TLV	100 PPM	5.9 mm
		ACGIH TLV	150 PPM STEL	
		OSHA PEL	100 PPM	
		OSHA PEL	150 PPM STEL	
2	64742-95-6	<b>Light Aromatic Hydrocarbons</b>		
		ACGIH TLV	Not Available	3.8 mm
		OSHA PEL	Not Available	
2	95-63-6	<b>1,2,4-Trimethylbenzene</b>		
		ACGIH TLV	25 PPM	2.03 mm
		OSHA PEL	25 PPM	
35	67-64-1	<b>Acetone</b>		
		ACGIH TLV	500 PPM	180 mm
		ACGIH TLV	750 PPM STEL	
		OSHA PEL	1000 PPM	
3	14807-96-6	<b>Talc</b>		
		ACGIH TLV	2 mg/m3 as Resp. Dust	
		OSHA PEL	2 mg/m3 as Resp. Dust	
25	471-34-1	<b>Calcium Carbonate</b>		
		ACGIH TLV	10 mg/m3 as Dust	
		OSHA PEL	15 mg/m3 Total Dust	
		OSHA PEL	5 mg/m3 Respirable Fraction	
7	13463-67-7	<b>Titanium Dioxide</b>		
		ACGIH TLV	10 mg/m3 as Dust	
		OSHA PEL	10 mg/m3 Total Dust	
		OSHA PEL	5 mg/m3 Respirable Fraction	

## SECTION 3 — HAZARDS IDENTIFICATION

**ROUTES OF EXPOSURE**

INHALATION of vapor or spray mist.  
EYE or SKIN contact with the product, vapor or spray mist.

**EFFECTS OF OVEREXPOSURE**

**EYES:** Irritation.

**SKIN:** Prolonged or repeated exposure may cause irritation.

**INHALATION:** Irritation of the upper respiratory system.

May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.

Prolonged overexposure to hazardous ingredients in Section 2 may cause adverse chronic effects to the following organs or systems:

- the liver
- the urinary system
- the cardiovascular system
- the reproductive system

**SIGNS AND SYMPTOMS OF OVEREXPOSURE**

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**

None generally recognized.

**CANCER INFORMATION**

For complete discussion of toxicology data refer to Section 11.

**HMIS Codes**

<b>Health</b>	2*
<b>Flammability</b>	3
<b>Reactivity</b>	0

**SECTION 4 — FIRST AID MEASURES**

**EYES:** Flush eyes with large amounts of water for 15 minutes. Get medical attention.

**SKIN:** Wash affected area thoroughly with soap and water.

Remove contaminated clothing and launder before re-use.

**INHALATION:** If affected, remove from exposure. Restore breathing. Keep warm and quiet.

**INGESTION:** Do not induce vomiting. Get medical attention immediately.

**SECTION 5 — FIRE FIGHTING MEASURES****FLASH POINT**

-2 °F TCC

**LEL**

0.7

**UEL**

12.8

**FLAMMABILITY CLASSIFICATION**

RED LABEL -- Extremely Flammable, Flash below 21 °F (-6 °C)

**EXTINGUISHING MEDIA**

Carbon Dioxide, Dry Chemical, Foam

**UNUSUAL FIRE AND EXPLOSION HAZARDS**

Closed containers may explode when exposed to extreme heat.

Application to hot surfaces requires special precautions.

During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

**SPECIAL FIRE FIGHTING PROCEDURES**

Full protective equipment including self-contained breathing apparatus should be used.

Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

**SECTION 6 — ACCIDENTAL RELEASE MEASURES****STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Remove all sources of ignition. Ventilate the area.

Remove with inert absorbent.

**SECTION 7 — HANDLING AND STORAGE****STORAGE CATEGORY**

DOL Storage Class IB

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE**

Contents are EXTREMELY FLAMMABLE. Keep away from heat, sparks, and open flame. Vapors will accumulate readily and may ignite explosively.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally.

Keep out of the reach of children.

## SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

### PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation.

Avoid contact with skin and eyes. Avoid breathing vapor and spray mist.

Wash hands after using.

This coating may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m<sup>3</sup> (total dust), 3 mg/m<sup>3</sup> (respirable fraction), OSHA PEL 15 mg/m<sup>3</sup> (total dust), 5 mg/m<sup>3</sup> (respirable fraction).

### VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

### RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

### PROTECTIVE GLOVES

Wear gloves which are recommended by glove supplier for protection against materials in Section 2.

### EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

### OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

## SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

<b>PRODUCT WEIGHT</b>	9.62 lb/gal	1153 g/l
<b>SPECIFIC GRAVITY</b>	1.16	
<b>BOILING POINT</b>	132 - 360 °F	55 - 182 °C
<b>MELTING POINT</b>	Not Available	
<b>VOLATILE VOLUME</b>	73%	
<b>EVAPORATION RATE</b>	Slower than ether	
<b>VAPOR DENSITY</b>	Heavier than air	
<b>SOLUBILITY IN WATER</b>	Not Available	
<b>VOLATILE ORGANIC COMPOUNDS (VOC Theoretical - As Packaged)</b>		
3.28 lb/gal	394 g/l	Less Water and Federally Exempt Solvents
1.58 lb/gal	190 g/l	Emitted VOC

## SECTION 10 — STABILITY AND REACTIVITY

### STABILITY — Stable

### CONDITIONS TO AVOID

None known.

### INCOMPATIBILITY

None known.

### HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide

### HAZARDOUS POLYMERIZATION

Will not occur

## SECTION 11 — TOXICOLOGICAL INFORMATION

### CHRONIC HEALTH HAZARDS

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Ethylbenzene is classified by IARC as possibly carcinogenic to humans (2B) based on inadequate evidence in humans and sufficient evidence in laboratory animals. Lifetime inhalation exposure of rats and mice to high ethylbenzene concentrations resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations. There is no evidence that ethylbenzene causes cancer in humans.

IARC's Monograph No. 93 reports there is sufficient evidence of carcinogenicity in experimental rats exposed to titanium dioxide but inadequate evidence for carcinogenicity in humans and has assigned a Group 2B rating. In addition, the IARC summary concludes, "No significant exposure to titanium dioxide is thought to occur during the use of products in which titanium is bound to other materials, such as paint."

## TOXICOLOGY DATA

CAS No.	Ingredient Name			
108-88-3	Toluene	LC50 RAT LD50 RAT	4HR	4000 ppm 5000 mg/kg
100-41-4	Ethylbenzene	LC50 RAT LD50 RAT	4HR	Not Available 3500 mg/kg
1330-20-7	Xylene	LC50 RAT LD50 RAT	4HR	5000 ppm 4300 mg/kg
64742-95-6	Light Aromatic Hydrocarbons	LC50 RAT LD50 RAT	4HR	Not Available Not Available
95-63-6	1,2,4-Trimethylbenzene	LC50 RAT LD50 RAT	4HR	Not Available Not Available
67-64-1	Acetone	LC50 RAT LD50 RAT	4HR	Not Available 5800 mg/kg
14807-96-6	Talc	LC50 RAT LD50 RAT	4HR	Not Available Not Available
471-34-1	Calcium Carbonate	LC50 RAT LD50 RAT	4HR	Not Available Not Available
13463-67-7	Titanium Dioxide	LC50 RAT LD50 RAT	4HR	Not Available Not Available

## SECTION 12 — ECOLOGICAL INFORMATION

## ECOTOXICOLOGICAL INFORMATION

No data available.

## SECTION 13 — DISPOSAL CONSIDERATIONS

## WASTE DISPOSAL METHOD

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers. Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

## SECTION 14 — TRANSPORT INFORMATION

Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (ocean, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport.

## US Ground (DOT)

5 Liters (1.3 Gallons) and Less may be Classed as LTD. QTY. OR ORM-D  
Larger Containers are Regulated as:  
UN1263, PAINT, 3, PG II, (ERG#128)

## DOT (Dept of Transportation) Hazardous Substances &amp; Reportable Quantities

Acetone 5000 lb RQ  
Xylenes (isomers and mixture) 100 lb RQ

## Bulk Containers may be Shipped as (check reportable quantities):

RQ, UN1263, PAINT, 3, PG II, (XYLENES (ISOMERS AND MIXTURE)),  
(ERG#128)

## Canada (TDG)

UN1263, PAINT, CLASS 3, PG II, (ERG#128)

## IMO

5 Liters (1.3 Gallons) and Less may be Shipped as Limited Quantity.  
UN1263, PAINT, CLASS 3, PG II, (-19 C c.c.), EmS F-E, S-E

## IATA/ICAO

UN1263, PAINT, 3, PG II

## SECTION 15 — REGULATORY INFORMATION

### SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	1	
1330-20-7	Xylene	7	
95-63-6	1,2,4-Trimethylbenzene	2	
	Zinc Compound	1	0.7

### CALIFORNIA PROPOSITION 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

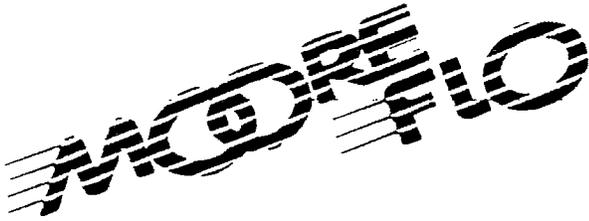
### TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

## SECTION 16 — OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.



# HYDRAULIC OIL AW

MOORE FLO HYDRAULIC OIL AW is formulated for use in industrial and mobile equipment hydraulic systems. It exceeds the requirements of hydraulic equipment manufacturers such as Cincinnati Milacron P68, P69, P70; Denison HF-1, HF-2, HF-0, Vickers 35VQ25, Sperry Vickers 1-286-S, and Ford M6C32.

## MOORE FLO FEATURES

- . Contains a premium anti-wear additive.
- . Includes a demulsifying additive to separate water rapidly.
- . Combats rust corrosion and oxidation.
- . Contains zinc-type anti-wear agents to help minimize wear in high-speed, high-pressure vane, gear and piston pumps.
- . Remains stable even when exposed to moisture or extreme temperatures.
- . Contains anti-foam agents for controlled release of entrained air.
- . Compatible with common filter media.

## BENEFITS

- . Prolongs hydraulic system life.
- . Reduces maintenance costs.
- . Available in five grades to meet requirements for most hydraulic systems.

### TYPICAL PROPERTIES

### ISO GRADE

	32	46	68
Density, kgfm <sup>3</sup> @ 15oc	865	868	870
Kinematic Viscosity (D445)			
eSt@ 40°C	33	46	70
@ 100°C	5.2	6.4	8.2
Viscosity Index (D2270)	95	95	95
Flash Point (COG), oc	190	200	214
Pour Point, °C	-36	-33	-30
Color (ASTM)	2.5	3.0	3.5
Vickers 35VQ25	Pass	Pass	Pass
Denison HF-0	Pass	Pass	Pass
Rust Protection			
Distilled Water	Pass	Pass	Pass
Syn. Sea Water	Pass	Pass	Pass
Oxidation, (D943), hr	2100+	2100+	2100+
Demulsibility (D1401)			
oil/water/cuff (minutes)		40/37/3(20)	
Copper Corrosion (D130)	1	1	

## HOMAN AW HYDRAULIC OILS

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### DESCRIPTION

Homan AW Hydraulic Oils contain the latest thermally stable zinc antiwear additive system. They are non-foaming and provide superior protection against rust and oxidation. Their temperature performance is excellent.

### BENEFITS

Homan AW Hydraulic Oils will provide long-term, trouble-free service in high output hydraulic systems operating at high temperatures, pressures, and speeds.

### APPLICATIONS

Homan AW Hydraulic Oils may be used in general purpose lubricant applications where straight mineral oils and conventional rust and oxidation inhibited oils are recommended.

### Properties

### Typical Values

<b>ISO GRADE</b>	<b>32</b>	<b>46</b>	<b>68</b>	<b>100</b>	<b>150</b>
API Gravity	31.4	30.2	29.8	29.4	28.4
Flash Point, 0°F	403	420	450	490	478
Viscosity, eSt @ 1000	5.35	6.54	8.35	11.8	14.4
Viscosity, SUS @ 210°F	44.2	48.1	54.3	64.4	77.1
Viscosity, eSt @ 40°C	32.2	44.4	65.2	101	149
Viscosity, SUS @ 100°F	164	227	338	526	782
Viscosity Index	98	97	96	95	94
Color, ASTM	1.0	1.0	3.0	3.0	3.5
Pour Point, 0°F	-25	-30	-15	-10	-5

Homan AW Hydraulic Oils exceed the following requirements:

Cincinnati Milacron Specifications: P-68, P-70, and P-69

Denison Requirement: HF-0

Vickers Requirements: 1-286-S Data Sheet & M2950-S  
spec132

**MOORE OIL COMPANY, INC.**

4033 W. CUSTER AVENUE  
MILWAUKEE, WI 53209-9247

**MATERIAL SAFETY DATA SHEET NUMBER 122**

**IDENTITY: HOMAN AW32 HYDRAULIC**

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**SECTION I**

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MANUFACTURER NAME: Homan Corporation  
ADDRESS: 3650 South Homan Avenue  
Chicago, Illinois 60632

TELEPHONE NUMBER: (773) 523-0250  
EMERGENCY NUMBER: Chemtrac 24 Hours (800) 424-9300

DATE PREPARED: JANUARY 7, 2001

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**SECTION II-HAZARDOUS INGREDIENTS/IDENTITY INFORMATION**

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HAZARDOUS COMPONENTS: Not applicable for this product.

National Fire Protection Association (NFPA) - Hazard Identification

Health	<u>Flammability</u>	Reactivity	Basis
1	1	0	Recommended Homan Corp.

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**SECTION 111-PHYSICAUCHEMICAL CHARACTERISTICS**

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BOILING POINT: IBP Approximately 555 F

SPECIFIC GRAVITY (H2O-1): 0.87-0.88

VAPOR PRESSURE (mm Hg): Less than 0.1 mm @ 20 C

MELTING POINT: Pour Point approximately -36°C

VAPOR DENSITY (AIR-1): Greater than 5

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EVAPORATION RATE: (Butyl Acetate=1) Less than 0.01

SOLUBILITY IN WATER: Negligible; less than 0.1% @ 1 atmosphere and 25 C

APPEARANCE AND ODOR: Light yellow liquid nil to bland odor

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**SECTION IV-FIRE AND EXPLOSION HAZARD DATA**

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FLASH POINT: 410° F Cleveland Open Cup

FLAMMABLE LIMITS: Estimated Values LEL: 0.7% UEL: 7.0%

EXTINGUISHING MEDIA: Foam water spray (fog), dry chemical carbon dioxide

SPECIAL FIRE FIGHTING PROCEDURES: Use water spray, dry chemical foam or carbon dioxide. Use water to keep fire-exposed containers cool.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Treat as a petroleum oil fire.

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**SECTION V-REACTIVITY DATA**

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STABILITY: \_\_\_\_\_ Unstable \_\_\_\_\_X\_\_\_\_\_ Stable

Conditions to Avoid:

INCOMPATIBILITY: Strong Oxidizing agents-liquid Chlorine, Concentrated oxygen, Sodium & Calcium Hypochlorites.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Combustion may yield fumes, smoke, oxides of sulfur & nitrogen carbon monoxide & HC1.

HAZARDOUS POLYMERIZATION: \_\_\_\_\_ May Occur \_\_\_\_\_X\_\_\_\_\_ Will Not Occur

Conditions to Avoid:

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**SECTION VI-HEALTH HAZARD DATA**

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HEALTH HAZARDS (ACUTE OR CHRONIC): Minimal Toxicity.

MSD122

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ROUTES OF ENTRY/SIGNS AND SYMPTOMS:

EYE CONTACT: May cause slight irritation but does not cause permanent damage.

SKIN CONTACT: Contact with hot material may cause thermal burns.

INHALATION: Exposure to high oil mist concentrations may lead to oil pneumonia.

INGESTION: May cause nausea and vomiting. May act as a laxative. May irritate gastrointestinal tract. Does not cause permanent damage.

CARCINOGENICITY: Non-carcinogenic

WTP?:

IARC MONOGRAPHS?:

OSHA REGULATED?:

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None Known

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**SECTION VII-PRECAUTIONS FOR SAFE HANDLING AND USE**

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STEPS TAKEN FOR RELEASE OR SPILL OF MATERIAL: Contain spill, absorb, pump or wipe up. Remove remainder with solvent or detergent and water. Keep out of sewers and waterways.

WASTE DISPOSAL METHOD: May be given to an approved waste hauler. Observe local, state, and federal regulations for disposal of petroleum lubricant.

PRECAUTIONS IN HANDLING AND STORING: Do not store near heat, sparks, flame or strong oxidants.

OTHER PRECAUTIONS: If misting occurs, control of exposures to 5 mg/m<sup>3</sup> or less is recommended.

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**SECTION VIII-CONTROL MEASURES**

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RESPIRATORY PROTECTION: Use supplied-air protection in confined or enclosed spaces, if needed.

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VENTILATION:

- LOCAL EXHAUST: Use to capture vapor/mist if necessary.
- SPECIAL: No smoking or open lights.
- MECHANICAL: Use in confined areas.
- OTHER: Use explosion-proof machinery.

PROTECTIVE GLOVES: Use chemical-resistant gloves.

EYE PROTECTION: Use splash goggles or face shield.

PROTECTIVE CLOTHING OR EQUIPMENT: Use chemical-resistant apron or impervious clothing.

WORK/HYGIENIC PRACTICES: Minimize breathing mists. Practice good personal hygiene.