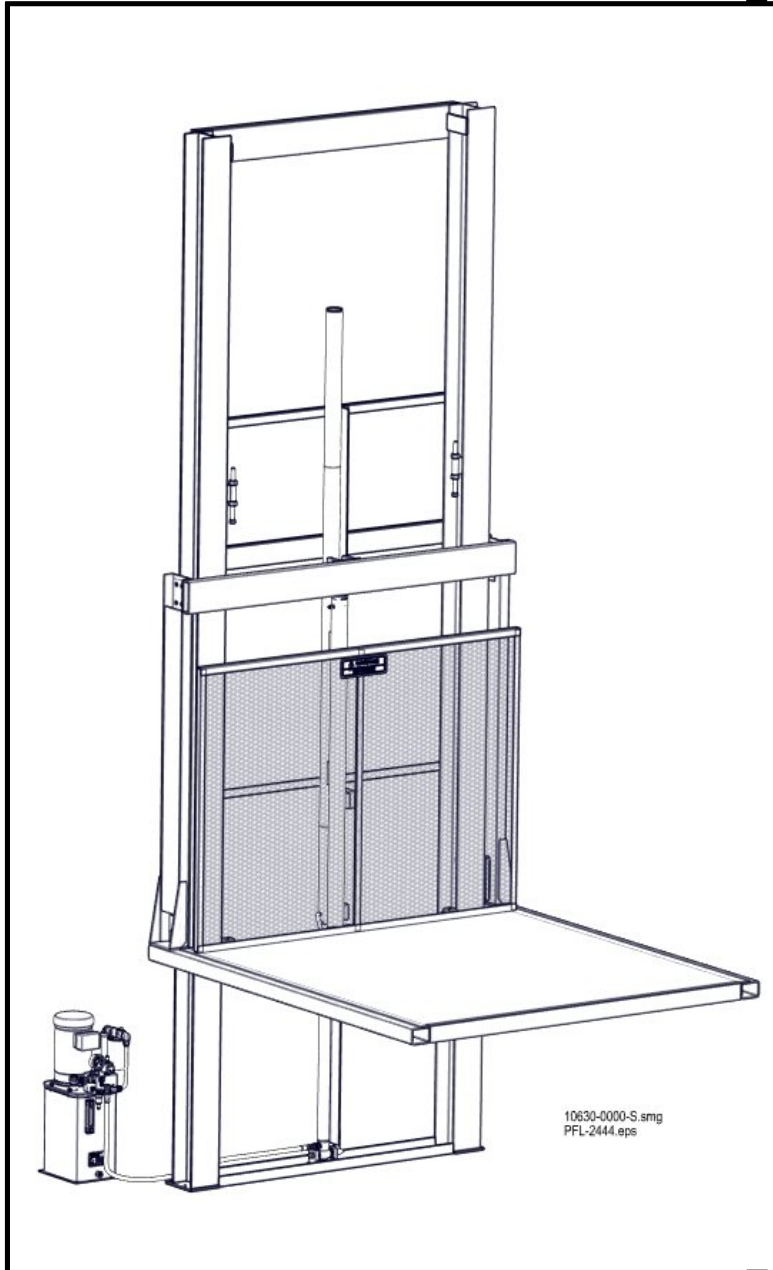


PFLOW VERTICAL LIFTS

The Nation's Largest Manufacturer of Vertical Lifts

PFlow
Industries, Inc.



INSTALLATION INSTRUCTIONS

SERIES D

READ THIS MANUAL IN ITS ENTIRETY AND
VERIFY JOB SITE DIMENSIONS AGAINST THE
PFlow GENERAL ARRANGEMENT DRAWING
BEFORE STARTING THE INSTALLATION.

The illustrations depicted in this manual are not to
scale or to detail and are for reference only.

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Electrical Engineering	Jonathan Kumbera	111	-
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DOCUMENTATION

PFlow Industries reserves the right to make changes or improvements to the standard VRC model line at any time.

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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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B129	Bi-Parting Swing Gate	-
B130	Swing Gate	-
B201	Single & Bi-Panel VA Gate	-
B139	Sliding Gate	-

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Bulletin # / Drawing #	Description	Rev.
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B269	Anderson or GAL Interlocks – Cantilever	-
B270	Limit Switch Mounting – Cantilever	-
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MATERIAL SAFETY DATA SHEETS

Sherwin Williams, Fast Dry Acrylic Enamel, FDA Pflow Blue VOC

Sherwin Williams, Universal Primer, White

Sherwin Williams, Blue Aerosol

Moore Flo Hydraulic Oil - Product Data

Moore Oil Company - Homan AW 32 Hydraulic

INTRODUCTION

Thank you for purchasing a PFLOW INDUSTRIES, INC., Series D, Vertical Reciprocating Conveyor (VRC). 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. Call Pflow Industries for more information in the event an inspection is required for your equipment.

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 this manual. Prior authorization must be obtained from Pflow before commencing work of any kind.

Feedback - Let us know how we are doing. Each installation manual contains a questionnaire. 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

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 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.

Equipment Arrival and Unpacking

EQUIPMENT ARRIVAL AND UNPACKING

You will need a fork truck capable of lifting approximately 2,000 lbs. Larger units may require a higher lifting capacity fork truck. To ensure complete shipments, Pflow Industries takes pictures of the unit, contents of the parts crate, and individual boxes. See Figures 1-3.

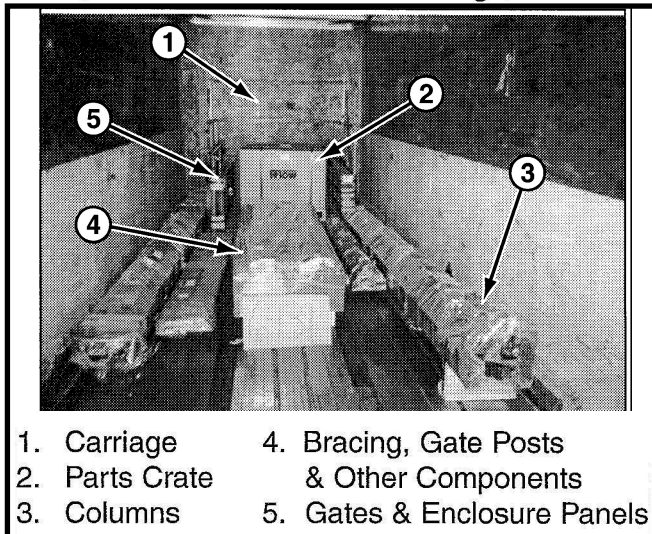


Figure 1

NOTE

The material in the boxes, cartons, etc. was loaded complete, in good condition and so delivered to the carrier agent.

Verify that the number of items on the Bill of Lading agrees with the number of items delivered to you. Check all pieces to determine if damage has occurred during transit. The carrier agent is responsible for, and should be notified immediately of, any visible loss or damage that has occurred. If damaged, the shipment must be signed for as such. Where loss or damage appears, call on the carrier agent to inspect the shipment before unloading it and make notation of condition of contents on freight bill. A claim for loss or damage should be presented to the carrier agent without delay, and a complete statement of facts should be in your possession. All hidden damage must be reported directly to the freight carrier within seven days of delivery. Pflow Industries is not responsible for shipping / receiving damage once the equipment has left the factory nor will we file any claims for damage that may occur.

If you believe anything is missing, contact our Product Support Department immediately. Failure to notify us may affect completion time of the installation. Our warranty does not cover lost time and/or additional trips for missing or damaged components.

All replacement components or labor that may be needed as a result of any damage will require a purchase order and compliance with our RGA procedures. This number should be obtained from Pflow Industries.

Figure 2 shows the typical contents of the parts crate.

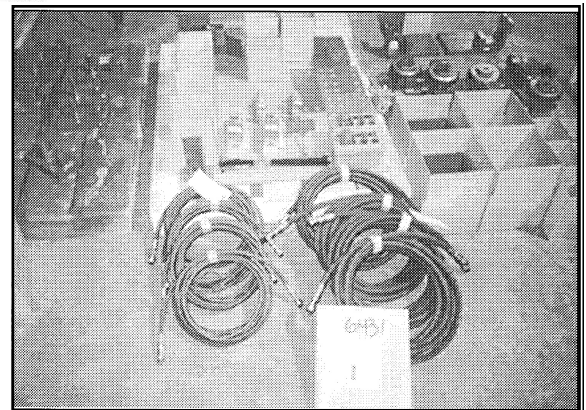


Figure 2

The shipping packet can be found inside the parts crate. This packet contains the owner's manual, installation instructions, general arrangement drawing, a copy of the schematic, and additional information as may be applicable to the installation.

An additional copy of the schematic can be found inside the control panel. See Figure 3.

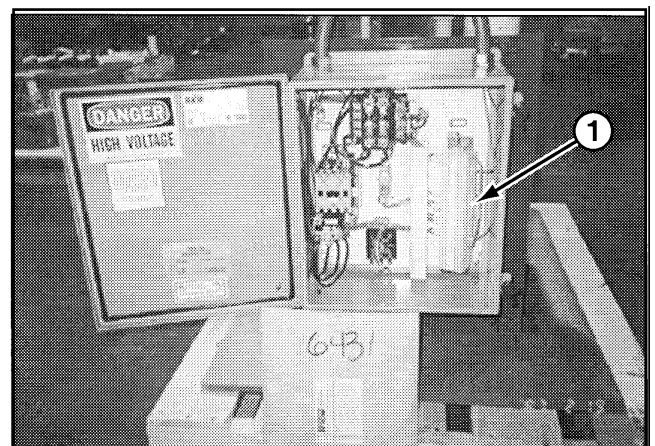


Figure 3

PRE-INSTALLATION CHECKLIST

Site conditions can mean the difference between an installation that is smooth and one that is difficult.

We have provided a general checklist to help set up your installation. We recommend that the installer, or someone with installation experience, discuss not only these items but all other concerns directly with the people on site.

A pre-installation visit is always recommended and considered to be included in the responsibilities of the mechanical installer.

WARNING

Safety should always be first and foremost in your mind on this or any job. Besides following safe working procedures, items required by OSHA may include: a hard hat, safety shoes, safety glasses and belt, fire extinguisher, and other safety equipment.

Mechanical Installer Responsibilities

- Complete mechanical erection of the equipment as sold by Pflow, called out on the general arrangement (GA) drawing and in accordance with all instructions within this installation manual.
- Return trip upon completion of the electrical installation for final checkout, adjustments and training. (See Completion Checklist.)
- On non-union sites, mounting of all electrical devices.

Customer Responsibilities

- Unloading and transportation of the equipment to the installation area.
- Storage (if applicable). If unit is stored indoors or long-term storage is required, consult Pflow Industries for storage procedures required to keep warranty in effect.
- All necessary site work to prepare for the installation such as pit, floor opening, adequate bracing locations, and shaftway openings.
- Any site/building modifications necessary to get the equipment to the installation area.

- Adequate pick point or lifting mechanism capable of lifting the heaviest load. If weight of load is in question, please call Pflow Industries.

If you have any questions or concerns, please contact our Product Support Department prior to start of work.

- ___ Can the equipment pass through all doorways, hallways, etc.?
- ___ Can you use the customer's fork truck? Is the truck's capacity sufficient?
- ___ Are safety meetings required?
- ___ Are there any work procedure/safety guidelines particular to the job site?
- ___ Is welding permitted? Is a "hot permit" required? Is a fire watch required?
- ___ Is there a pick point capable of lifting the necessary components?
- ___ What hours are you allowed to work on site?
- ___ Who is the authorized site contact?
- ___ Is this a union or non-union site?
- ___ Bracing requirements - Will additional materials be required?
- ___ Is temporary power available within 10 ft. of the unit?
- ___ Do you have a well-lit area to work in?
- ___ Is the installation area ready (pit complete, floor opening cut and/or finished, etc.)?
- ___ Are shaftway openings complete?
- ___ Are there any discrepancies between the site dimensions/application and the Pflow GA drawings? Has this information been provided to Pflow?
- ___ Will customer doors and/or shaftway openings be completed prior to your arrival?
- ___ Will other trades or in-plant production cause conflict with your proposed work schedule?
- ___ Special welding requirements if you have special coatings, i.e., epoxy paint, hot galvanized, etc.
- ___ Verify the site voltages match the control panel.

D Series

TOOLS REQUIRED FOR VRC INSTALLATION

The following is a list of tools we feel are necessary to install a VRC in a professional and expedient manner. This is only a guideline. Individual sites and applications may require additional items as needed. If you have any questions regarding these items, contact Pflow Industries.

Welding machine and equipment.
(i.e., helmet, gloves, rods, etc.)

Cutting torch with tanks

Fire extinguisher

Forklift - 2,000# capacity or alternative

Chain fall - 2,000# capacity minimum

Come-A-Long

Cables or hook chains with 1,000# or
greater capacity

Disk grinder

"C" clamps

Drift punch

5/8"-11 N.C. tap

Carpenter's square

4' Level

SAE 30W non-detergent motor oil

Socket set - 1/2" drive, sockets to 1-1/8"

Hammer drill and bits for 1/4", 3/8", and
1/2" anchors, 4" min.

Hack saw, reciprocating saw, or portable
band saw

Drill and drill bits

Extension cords

Portable light

Sledge hammer

Allen wrenches to 3/8"

Open or box end wrenches to 1-1/4"

Chalk line

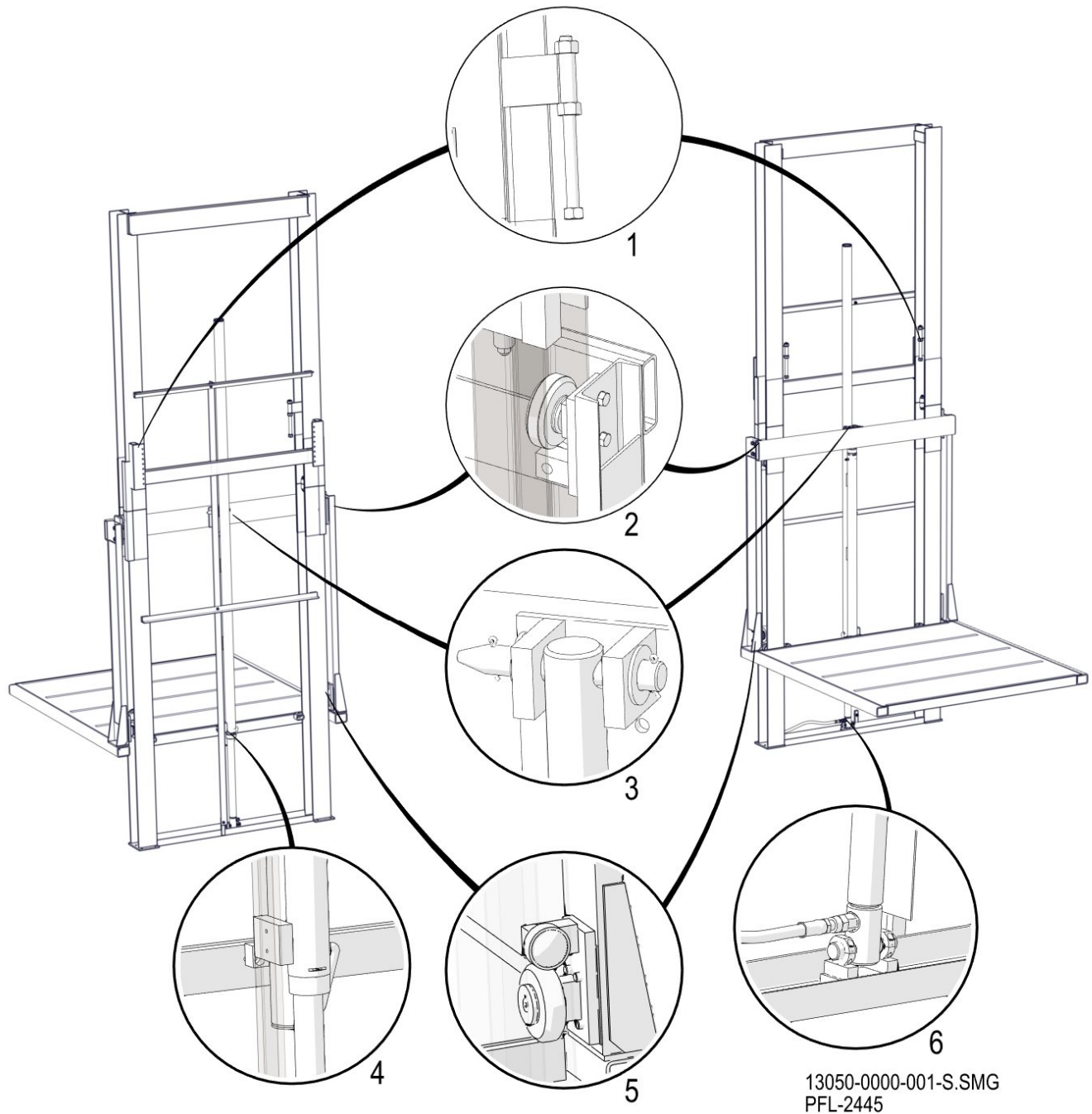
Plumb bobs

Grease gun

25' Measuring tape

Rags

Mechanical Installation Instructions



13050-0000-001-S.SMG
PFL-2445

- 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

INSTALLATION INSTRUCTIONS

Unit Placement

1. The load/unload edges of the carriage should be 1" away from the edge of the upper floor level; and if there is a pit, the same dimensions apply (unless otherwise noted on GA). See Figure 2.

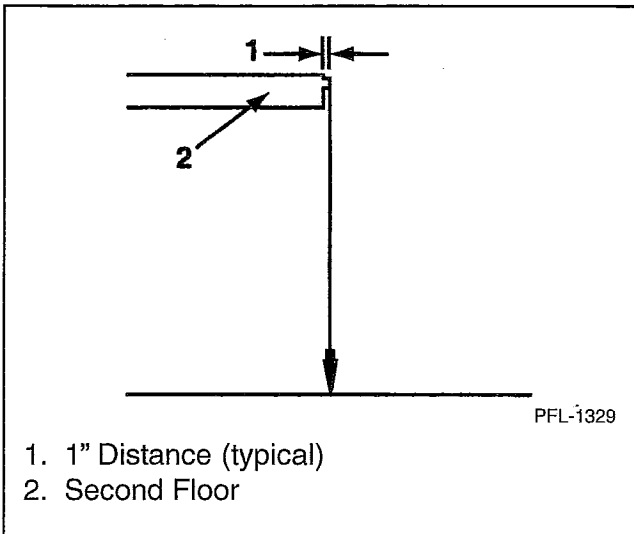


Figure 2

2. To verify this location on the lower level, drop a plumb bob 1" away from the edge and mark that point on the lower floor. Do this for each load/unload side.

CAUTION

If there are any protrusions (from floor, wall, etc.), they will have to be removed. Plumb lines have to be positioned beyond the protrusion or the carriage WILL NOT clear after installation. Floor may have to be extended to get the proper distance from floor to carriage.

3. Mark the center of the opening. See Figure 3.
4. Drop a plumb bob from point A and mark point B. See Figure 4.
5. Drop a plumb bob and mark points C and D. See Figures 5, 6, and 7.

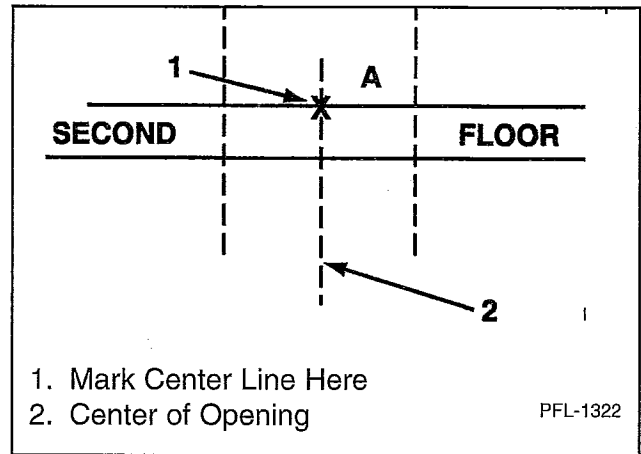


Figure 3

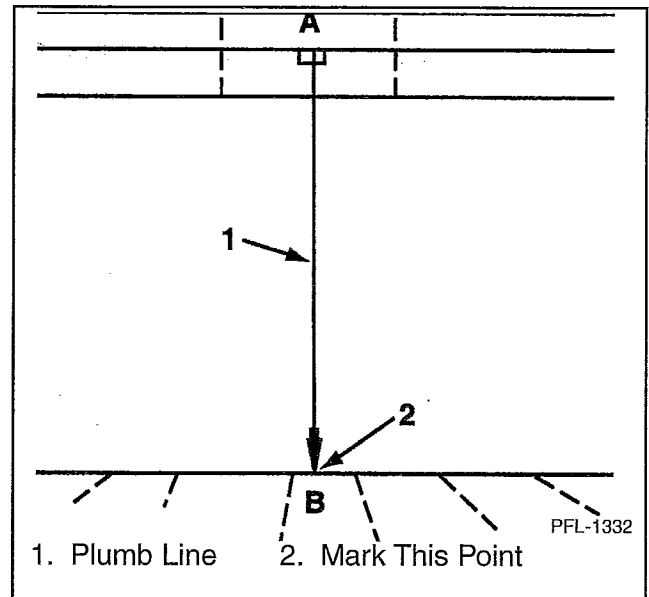


Figure 4

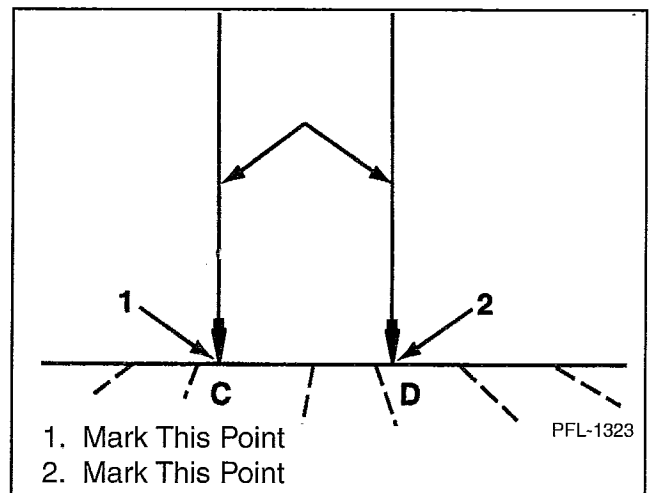


Figure 5

Mechanical Installation Instructions

6. Locate three (3) marks: C, B, and D. See **Figure 6**.

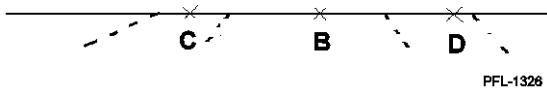


Figure 6

7. Snap a chalk line between marks C and D and through mark B.
8. See the G/A drawing for orientation of carriage. Align corresponding edge of the carriage with line C, B, and D. See **Figure 7**.

NOTE

If the carriage goes through a floor and clearances are tight, you might want to position the carriage after the columns have been assembled and raised into place.

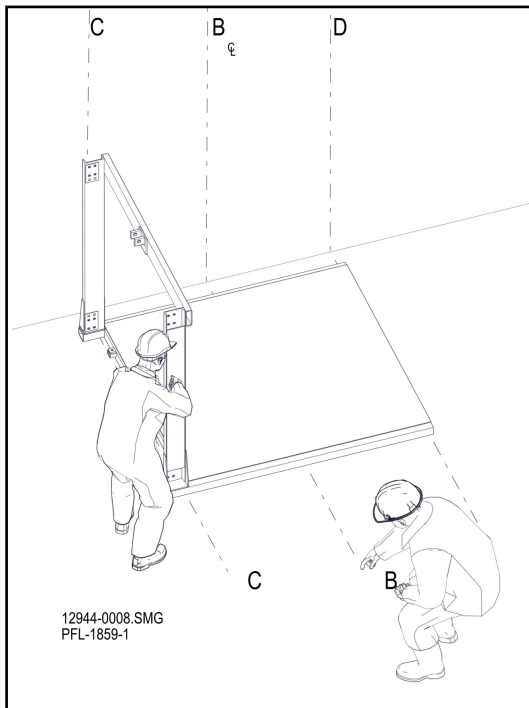


Figure 7

NOTE

Your installation may differ from this illustration.

Columns

NOTE

In shaftway applications, the column weldment may have to go in before the carriage depending on installation the clearance available. If so, temporarily brace the column weldment in its approximate position. Then proceed with locating the carriage.

1. Remove the rear panel from the carriage to allow easier access to the columns. See **Figure 8**.

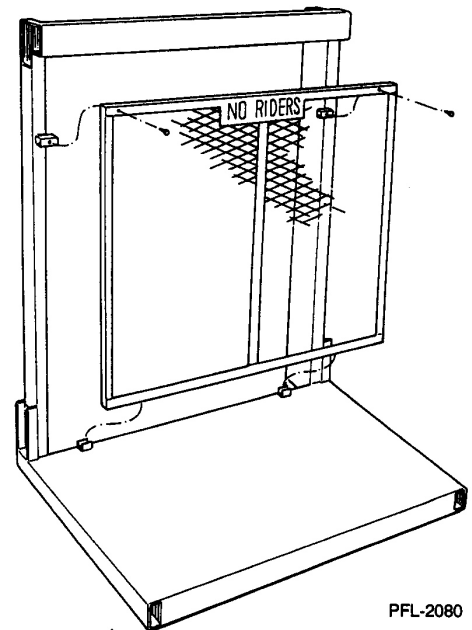


Figure 8

2. Temporarily brace the carriage or mark its position on the floor before proceeding. When the column weldment is brought into position, it may bump the carriage out of alignment.
3. If your column weldment requires field splicing, assemble the two halves of the column weldment with the hardware supplied in the splice kit. See drawing #9672-0000 in this manual. The weld is shown in the splice kit instructions.

D Series

4. Mount jackscrews and jam nuts onto column weldment. See Figure 9.

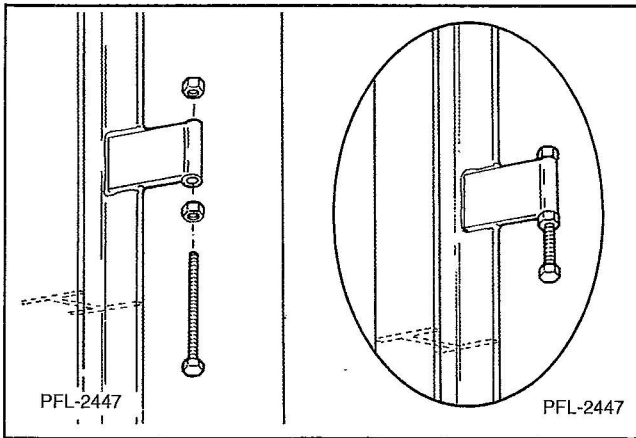


Figure 9

5. Set jackscrews so there is about the same amount of screw protruding from each end of the tube for now. The jackscrews will be adjusted later to level the carriage at the upper floor.
6. Attach the UHMW cylinder guide to the lower backside of the carriage using 3/8" bolts, lockwashers, and flat washers. See Figure 10.

NOTE

The holes are offset toward the bottom.

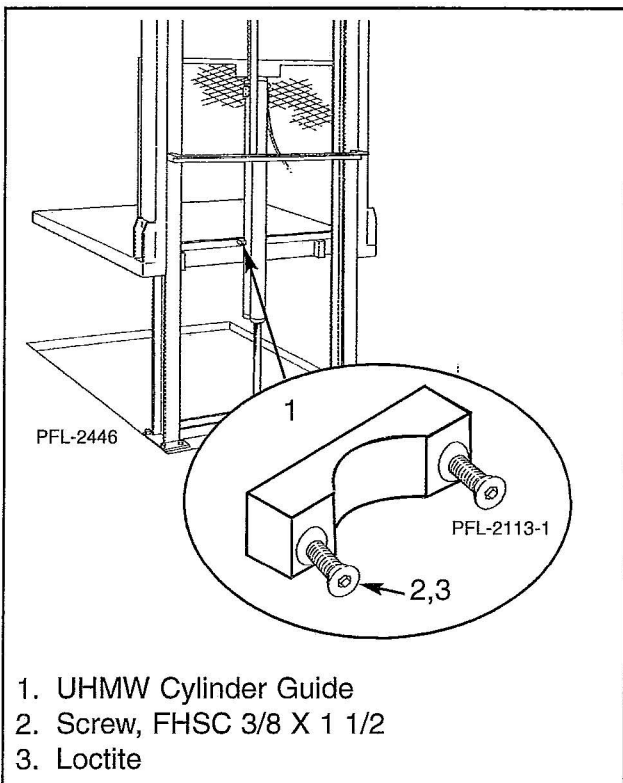


Figure 10

Wheelblocks

1. Install the two upper carriage wheelblocks with the guide rollers facing down. Then install the two lower carriage wheelblocks with the guide rollers facing up. See Figure 11.

NOTE

The wheelblocks should be temporarily secured to prevent them from falling back out until the carriage is in place. Sometimes this is not possible. If you have to raise the upper wheelblock to the top of the carriage and are having difficulty doing this, a rope around the wheelblock may assist in raising the wheelblock to the top of the carriage.

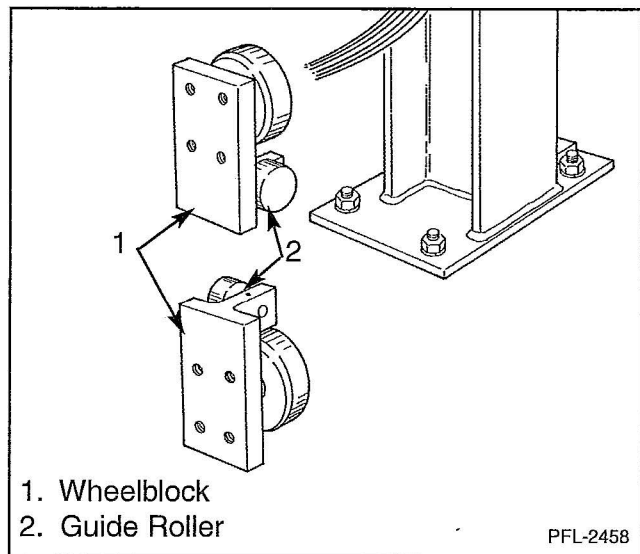


Figure 11

Mounting Dual-Pak Hydraulic Cylinder

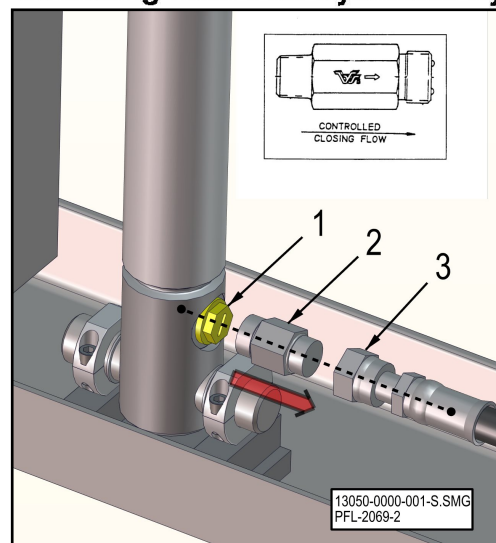


Figure 12

See Drawing No.
13050-000-001-B
1-PLUG - REMOVE
2-VELOCITY FUSE
3-HOSE

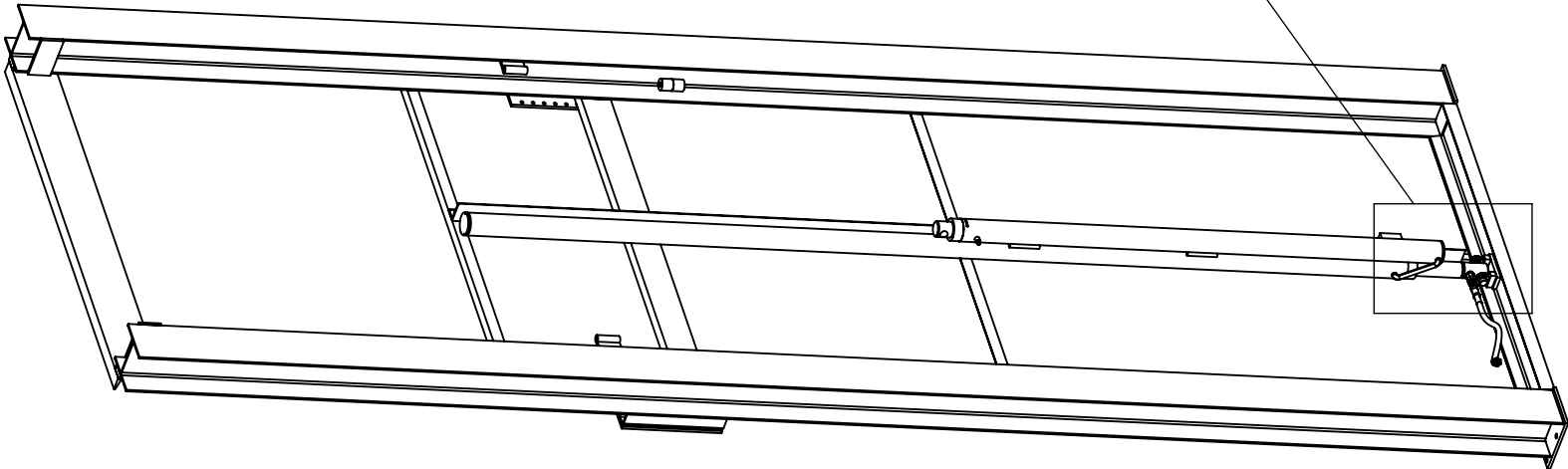
Pflow p/n 12824-xxxxx
Ported hollow rod - Dual Pack cylinder

This syle of Dual Pack cylinder has a lower hollow rod and rod port which allows the fitup of the hydraulic hose at the bottom of the lift frame.

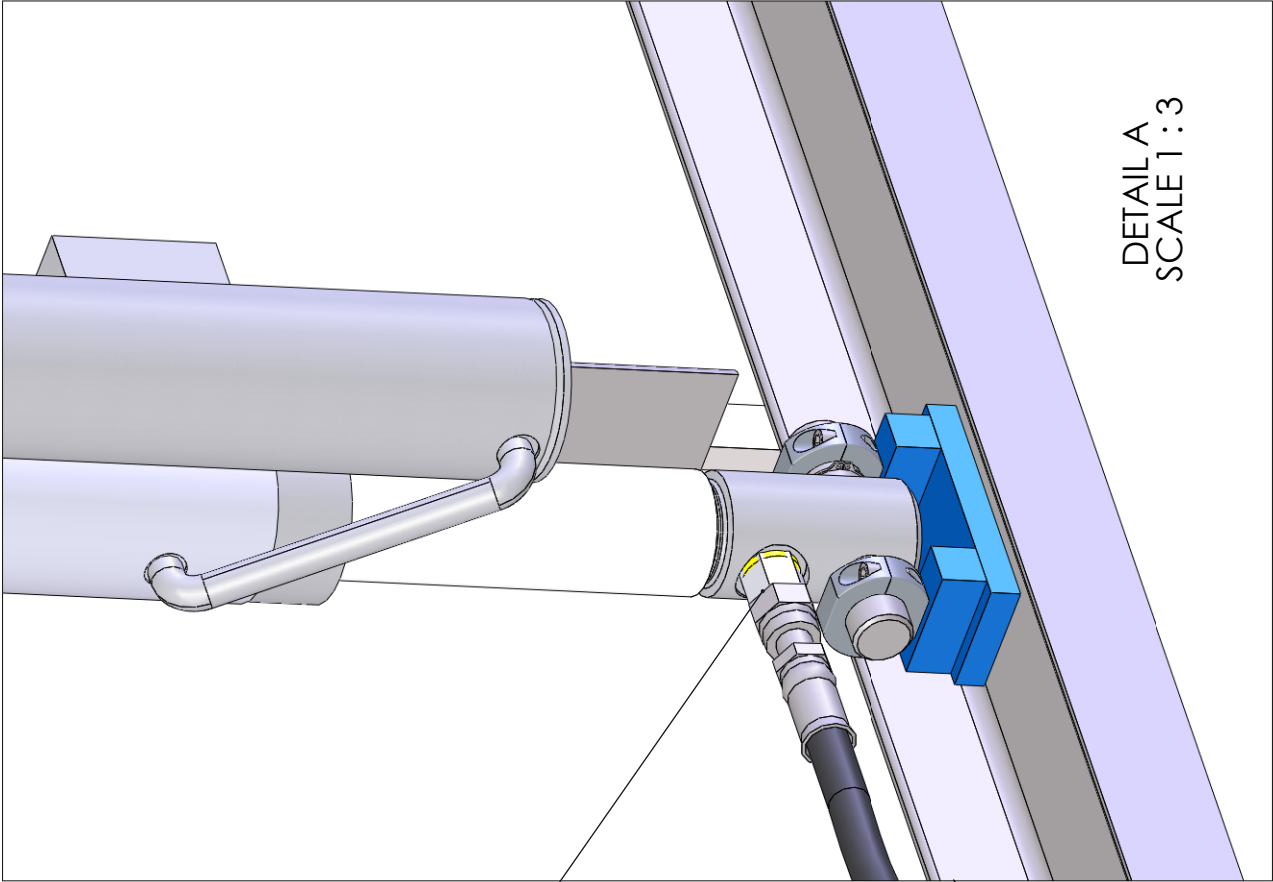
The hydraulic hose remains stationary at the bottom of the lift frame.

Some hydraulic Dual Pack cylinders have the hose port on the top of the cylinder casing.

Dual Pack cylinders without the hollow rod and the hollow rod hose port have a hose port at the top of the cylinder casing. This requires the hose to travel up and down with the cylinder casing.



HYDRAULIC
VELOCITY FUSE &
HOSE PORT



DETAIL A
SCALE 1 : 3

HYDRAULIC CYLINDER WITH PORTED HOLLOW ROD

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PFlow PFLOW INDUSTRIES, INC. 414-352-9000
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Milwaukee, WI 53209 info@pflow.com

TITLE
SERIES D ASSY, DUAL PACK
CYLINDER p/n 12824-xxxx FIT-UP

UNLESS OTHERWISE INDICATED : ALL DIMENSIONS ARE IN INCHES. TOLERANCES :FRACTIONAL ±1/16 DECIMAL .XX ±.03 .XXX ±.015 ANGULAR : ±1° MACH. SURFACE FINISH : 250 DO NOT SCALE DRAWING! ✓	DATE 02-24-2009	SCALE NTS	DRAWING NUMBER 13050-0000-001-B	SHT 1	REV
				OF 1	-
MATERIAL					
REFERENCE (NUMBER)	DRAWN -	CHECKED			

Mechanical Installation Instructions

2. Mount the cylinder. For proper installation, from the front of the lift, the supply port will be on the left side and the tapped block will be on the right side. Make sure this is correct before proceeding. Mount the bottom of the cylinder to the column weldment clevis. See Figures 12 and 13.

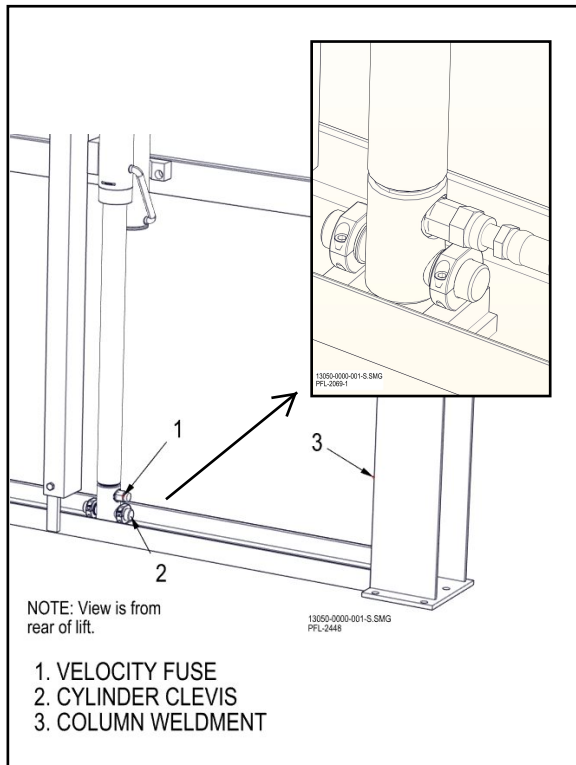


Figure 13

3. Temporarily tie off the top of the cylinder to the column weldment during column placement.

Carriage/Column Placement

1. Check the general arrangement drawing for proper orientation and install the carriage/column accordingly.

NOTE

The front of the lift is always the side opposite the uprights. See Figure 14. A cantilever carriage can be loaded or unloaded from any of three sides depending on which sides are equipped with railings.

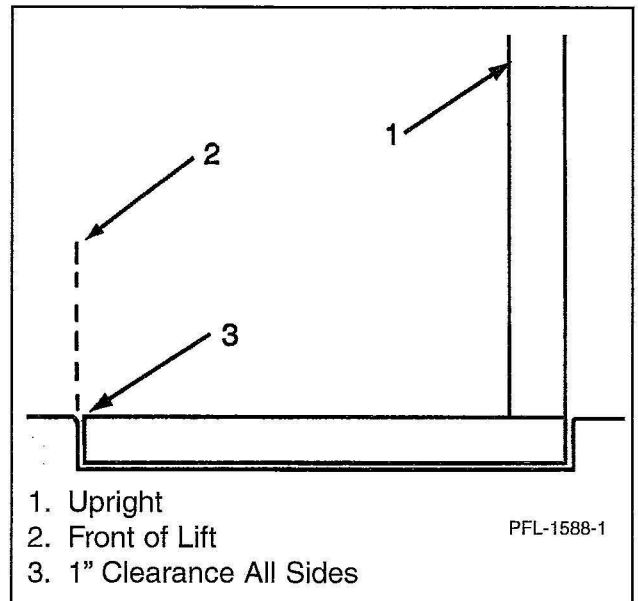


Figure 14

2. Slide the column weldment with wheelblocks up to the carriage. Temporarily brace the column weldment while mounting the wheelblocks to the carriage. See Figure 15.
3. Mount the wheelblocks to the carriage upright using 5/8" x 1 1/4" HHC screws with washers and lockwashers. See Figure 15.

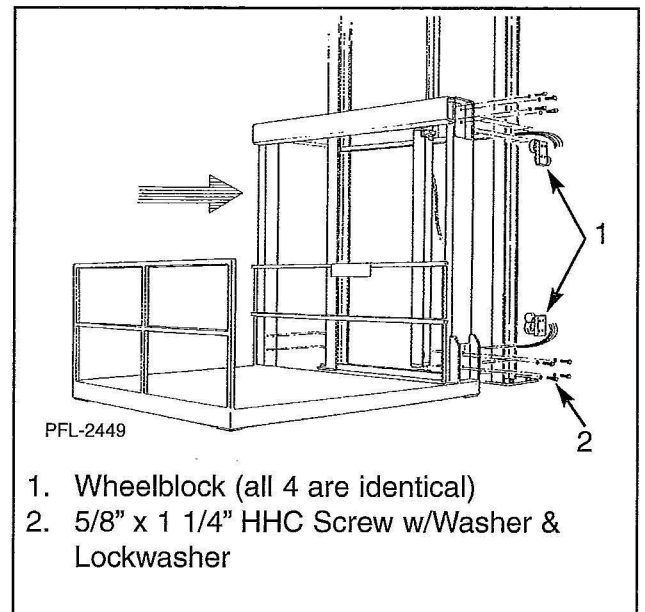


Figure 15

D Series

Checking Alignment

CAUTION

Rechecking the alignment is critical. Incorrect alignment will result in problems during operation and damage to the equipment.

1. Plumb column in both directions. See Figure 16.

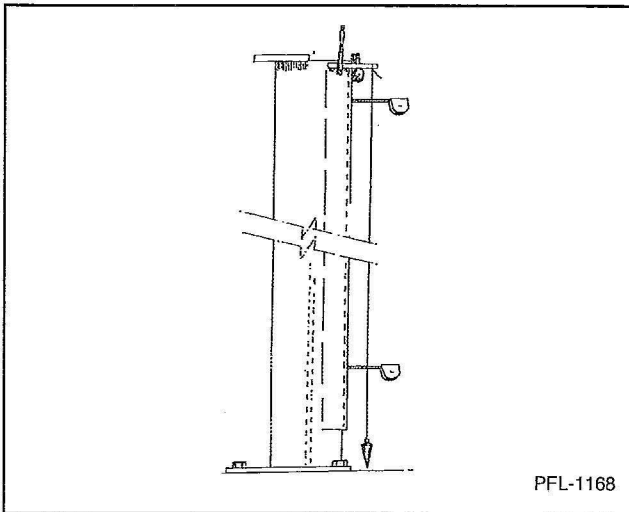


Figure 16

2. Check and compare any applicable dimensions on the general arrangement drawing to actual site dimensions.
3. Maintain a minimum of 1/16" clearance between guide roller and closed side of column. Add or remove shim if necessary. See Figure 17.

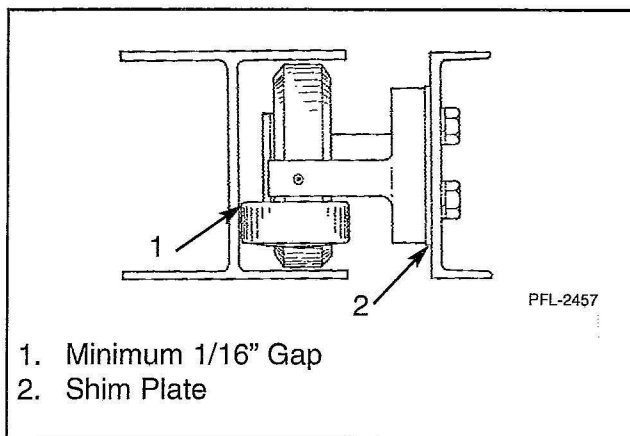


Figure 17

Mounting the Cylinder Top Pin

1. Mount top of cylinder to carriage clevis with 1" pin. See Figure 18.

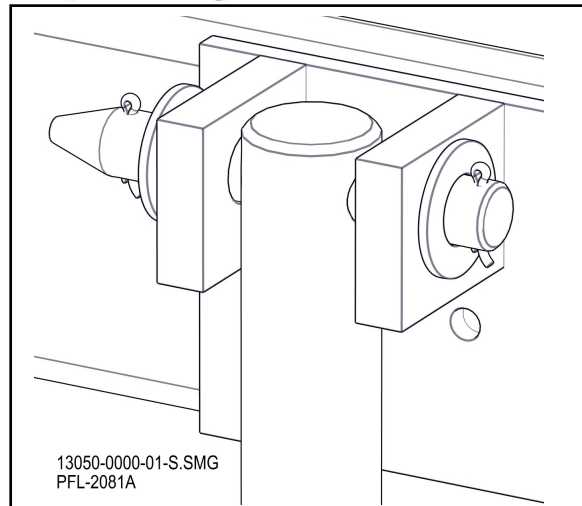


Figure 18

Anti-Twist Kit

1. Mount UHMW (slide) block to tapped block on cylinder with 5/16 x 2 1/2" long bolts, washers and lockwashers. See Figure 19.
2. Check to make sure UHMW block is not binding on guide angle.
3. Make sure that the UHMW block is not coming off the bottom of the guide angle. There should be approximately 3" of guide angle visible below the block. See Figure 19.

NOTE

UHMW (slide) block can be turned 180 degrees for better fit.

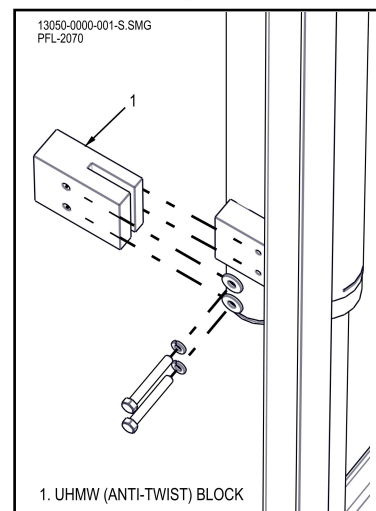


Figure 19

Mechanical Installation Instructions

Anchoring and Bracing

NOTE

The following illustrations are for reference only. Site conditions may require a different alternative to the ones we suggest.

Side-to-side and front-to-back bracing of the unit and bracing at the upper floor level are required. Seismic requirements will be different, and a separate drawing is usually provided in the shipping packet. Bracing of the unit and enclosures is the responsibility of the installer.

It is the customer's responsibility to make sure that the site conditions have a structure of adequate strength to brace to, as indicated on the GA drawing, to withstand the forces.

For a two-level unit, Pflow will supply:

- (2) 10' lengths of 4" channel (unpainted)
- (2) 4-hole pads (unpainted)
- (1) 10' length of 1-1/2" x 1-1/2" x 3/16" angle per gate (unpainted)
- (2) Cans of spray paint

Each additional level will be supplied with the following:

- (1) 10' length of channel
- (1) 10' length of angle per gate
- (2) 4-hole pads

We do not supply bolts nor guarantee that the above material will be sufficient for the application. It is the installer's responsibility to check the information included in the shipping packet prior to commencing work. Specific bracing instructions may be provided.

1. Make sure the carriage is level on the floor. Recheck column spacing and wheelblock clearance. If everything checks out, anchor the base plates to the floor using 3/8" anchors. (Depth of holes should always be deeper than anchor bolts.) See Page 17 for bracing suggestions.

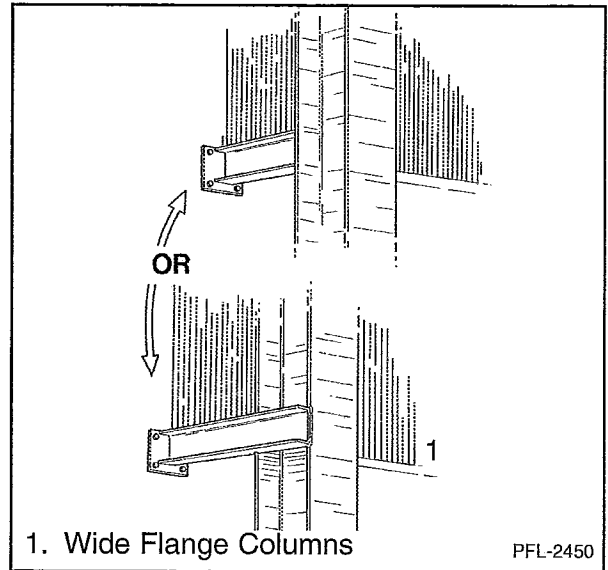


Figure 20

Any bracing across the back of the columns must be spaced out a minimum of 3/4". Small channels may be supplied in the parts crate or use alternate bracing. See Figure 21.

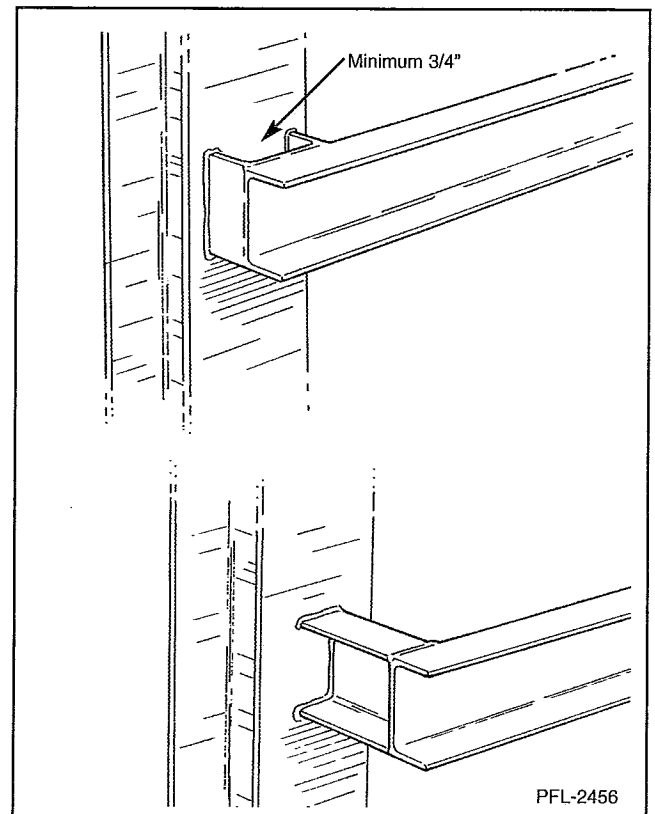


Figure 21

D Series

Guidelines for Anchoring

Welding to a Curb Angle (Figure 22)

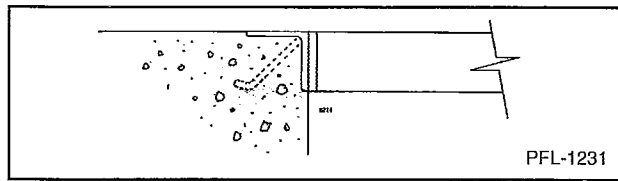


Figure 22

Using a Tie Plate (Figure 23)

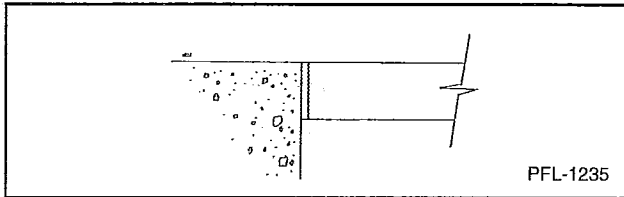


Figure 23

Anchoring to Wooden Floors (Figures 24, 25, and 26.)

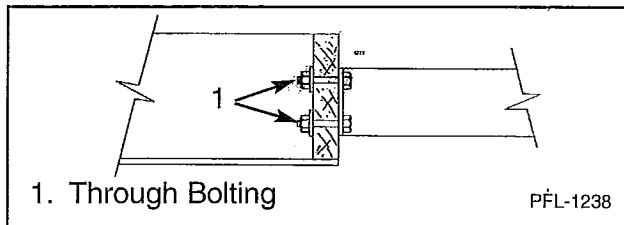


Figure 24

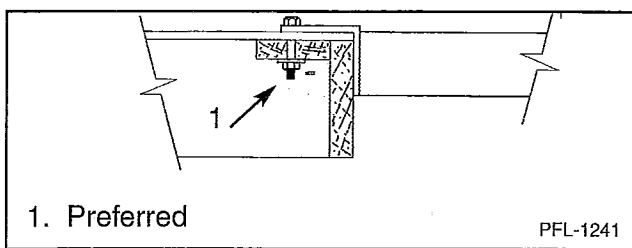


Figure 25

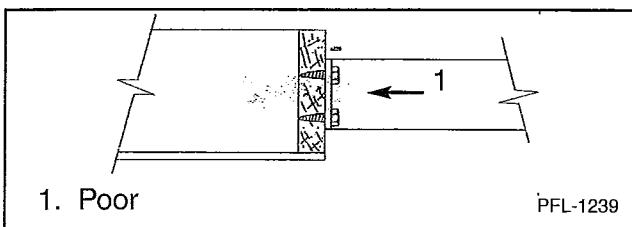


Figure 26

Anchoring to Block Walls (Figures 27 and 28)

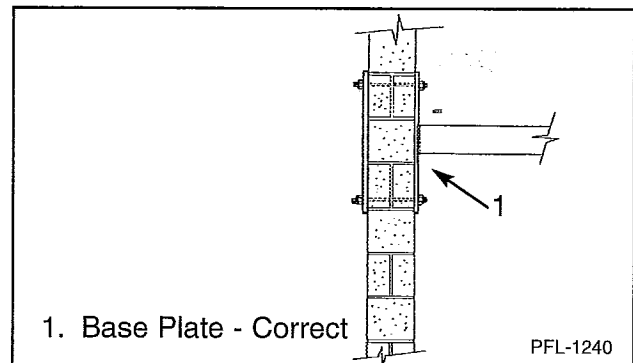


Figure 27

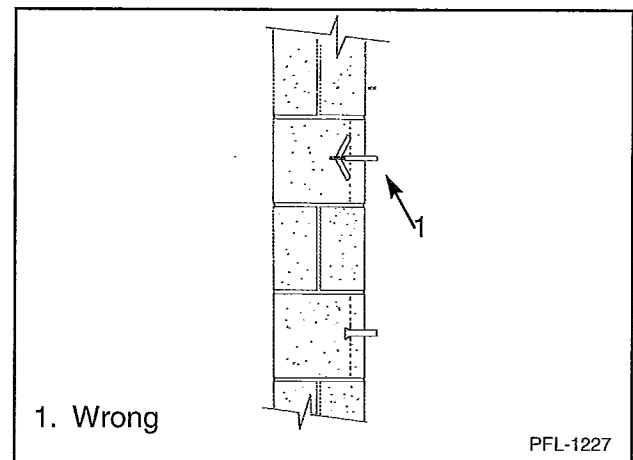


Figure 28

Anchoring Base Plate to Solid Floor (Figure 29)

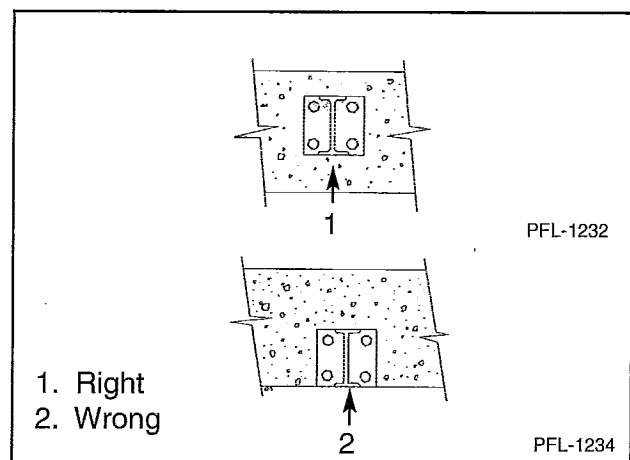


Figure 29

2. The following "Guidelines for Bracing" show how to attach bracing to the building. Proceed with the final bracing. Tack bracing into position.

Mechanical Installation Instructions

Guidelines for Bracing

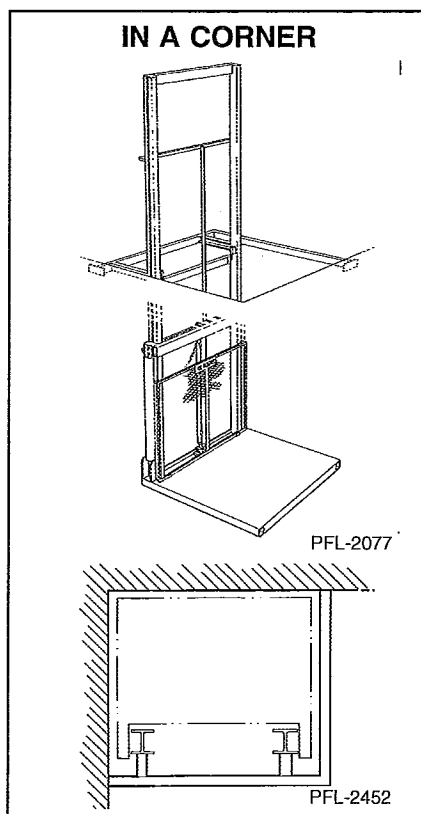


Figure 30

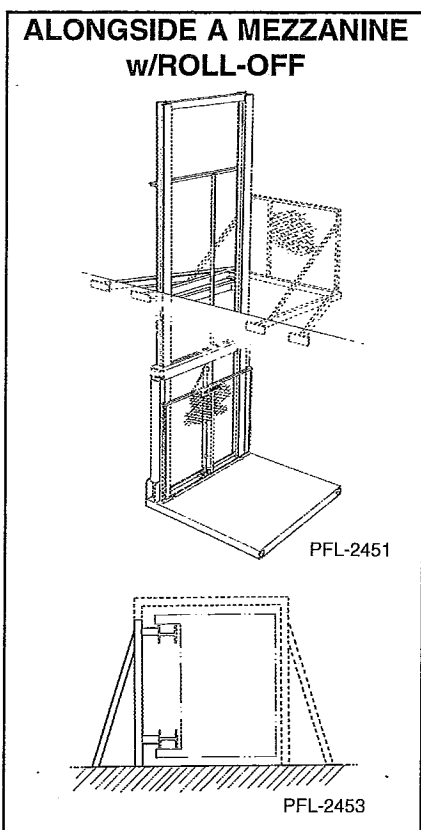


Figure 31

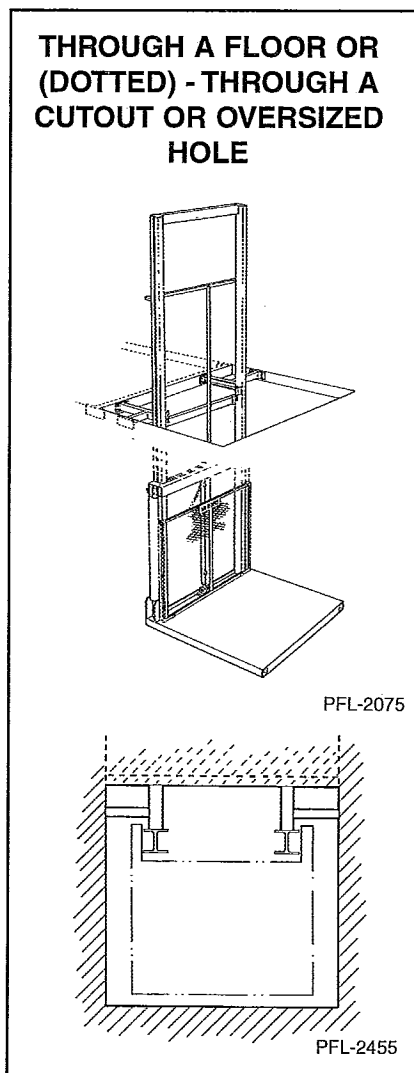


Figure 32

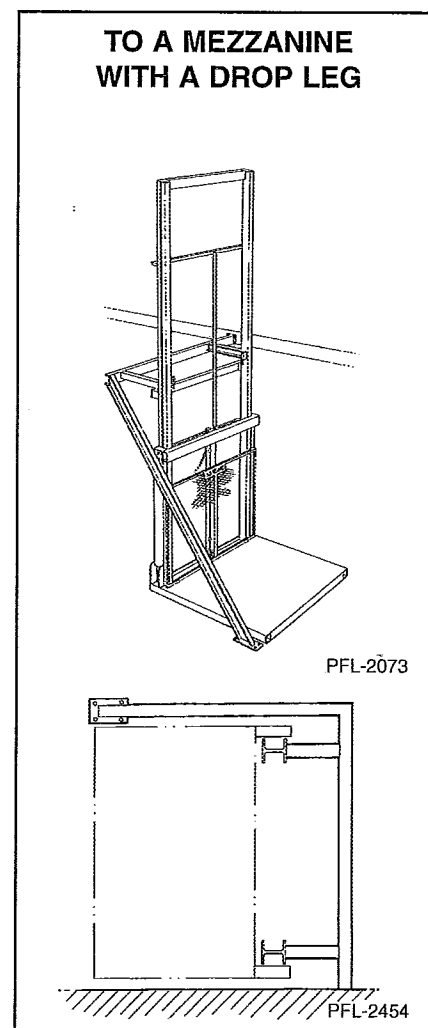


Figure 33

D Series

Final Steps to Complete Installation

1. Recheck column spacing at the bottom, middle, and top and wheelblock clearance.
2. Final weld header on each column. A qualified electrician should, if possible, temporarily wire the motor to allow operation of the lift and to check for smooth operation. Final weld all bracing. Recheck spacing after welding.
3. Remount the rear panel to the carriage.

CAUTION

DO NOT WORK UNDER THE CARRIAGE UNLESS IT IS PROPERLY AND SAFELY SUPPORTED.

4. Attach the UHMW pads to the underside of the carriage at the four corners. If carriage is in a pit, it may be necessary to shim under the UHMW pads to level the carriage with the floor. See Figure 34.

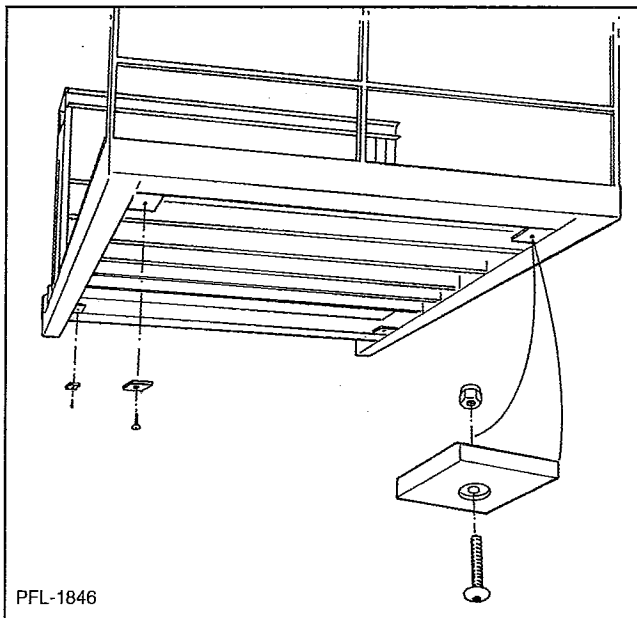


Figure 34

6. Proceed with the installation of the gates and interlocks, enclosures, and additional options as required. See the OPTIONS section in the back of this manual for installation instructions.
7. Complete the Installation Completion Checklist.

5. Using jackscrews, level the carriage at the upper floor level. Tighten the jam nuts when finished.

Mechanical Installation Instructions

INSTALLATION COMPLETION CHECKLIST

Please make sure all of the following steps are complete:

- ☐ The VRC is braced from front to back and from side to side.
- ☐ The gates and enclosures are braced.
- ☐ Touch up all welds, marks, scrapes, etc. with paint.
- ☐ Route hoses to prevent interference during travel.
- ☐ Check fittings and hoses for leakage.
- ☐ Make sure that all electrical connections are properly made.
- ☐ Check that the unit stops level at each floor.
- ☐ Is there excessive noise during travel?
- ☐ Does the carriage "rock" during travel?
- ☐ Do a full load test.
- ☐ Safety Check #1 -
 - ☐ You should not be able to open a gate when the unit is not present.
 - ☐ You should not be able to operate the unit with a gate open.
 - ☐ Did you check each level for the above items?
- ☐ Are there any unsafe conditions that exist?
 - If so, please contact Pflow Industries immediately and report them.
- ☐ Post all operational signs.
- ☐ Remove all debris.
- ☐ Instruct the customer on the proper operation.
- ☐ Instruct the user on proper loading.
- ☐ Instruct the customer on procedures if there is a problem.
- ☐ Complete the Installation Questionnaire and Acceptance Certification. Return both to Pflow Industries.

Hydraulic Installation Instructions

HYDRAULIC SYSTEM INSTALLATION AND TROUBLESHOOTING

Installation of the Hydraulic Pump and Motor Assembly

CAUTION

Do not power up the pump motor until all push button stations, gate interlocks and all hydraulic hoses are connected. Never override any electrical component or manually operate the motor starter to run the lift. If you experience problems, call Pflow Industries Product Support Department for assistance.

Install the hydraulic pump and motor on a level, static, and solid foundation and at the recommended floor level listed on the GA drawing that applies to this installation.

Install in a location that is easily accessible. Keep in mind that service and inspection will be an important component to the life of the hydraulic system.

Place in a position that the oil breather cap, manifold block, pressure gauge, pressure switch and oil filter are visible and accessible.

Install in a location that is and will remain clean. Do not install in a pit or in any area that will restrict quality ventilation. The ambient temperature of the hydraulic pump's location may have a great influence on its operation and on the life of the hydraulic system. Condensation is a major problem to any hydraulic system. Avoid hot spots.

CAUTION

Keep the area clean at all times, even during installation.

The word "contamination" cannot be stressed enough. Before connecting any fitting or hose, be sure it is clean. There are plugs/caps in every open port, fitting, and hose end for a good reason: They are to keep out contamination! **A small, almost undetectable, amount of joint compound, dirt, lint, paint, or any other contaminant can cause problems in the hydraulic system.** Those problems can be very difficult to troubleshoot on a new system, causing wasted and lost time.

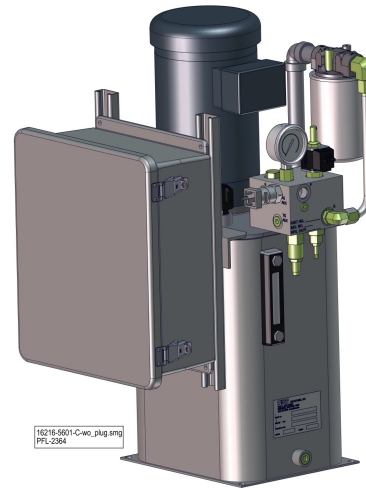


Figure 1

*The line from the pump to the cylinders should be attached after lift installation is complete.

Hose Nomenclature:

- **WP Working Pressure:** Pressure at which a given hose may be operated safely.
- **Test Pressure:** The pressure that a hose is guaranteed to withstand.
- **Burst Pressure:** The pressure at which the hose is rendered useless for use.
- **Date Code:** Date of manufacture

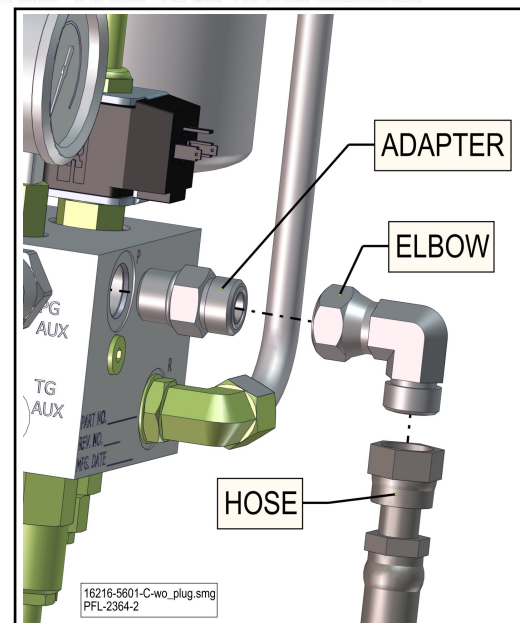


FIGURE 1-A
WITHOUT SHUT-OFF
*NOTE

See Installation of Hoses and Fittings,
Page 22.

D Series

Installation of Hoses and Fittings

- Keep the shipping protection (caps/plugs) installed in the hose fitting ends until you are ready to connect the hoses. Cleanliness is the basis of a properly operating hydraulic system.
- Clean the hose ends and the mating connection carefully and thoroughly before connecting.
- The line from the pump to the cylinders should be attached after lift installation is complete.
- Hoses should have adequate slack to allow movement when pressure is applied.
- Never pull any hose taut.
- **Do not** twist or place hoses in sharp bends in your hydraulic layout.
- Be sure all O-rings are in place.
- **Do not** over-torque the O-ring face seal fittings.
- O-ring face seal fittings are sensitive to over- and under-torque. Torque to proper specifications (i.e., for 3/8" fittings 30 ft.-lb.; for 1/2" fittings 40 ft.-lb.).
- The torque method of assembly is strongly recommended. If torque wrenches are not available, an alternate method of assembly is the Flats From Wrench Resistance (F.F.W.R.) method. Wrench tighten the nut onto the fitting body until wrench resistance is reached. Tighten one-half to three-quarter turns to seat the O-ring.
- **Do not** use Teflon tape or sealant on the ends of fittings with O-rings.
- Install the velocity fuse into the supply port of the cylinder. This is an SAE O-ring port.

NOTE
IMPORTANT!
The arrow on the velocity fuse **MUST** point away from the cylinder.

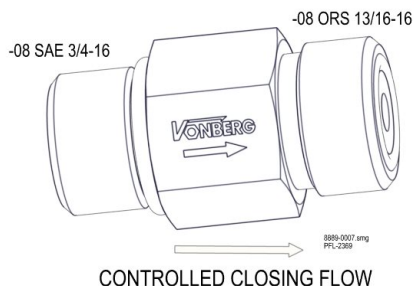


Figure 2

Velocity Fuse

- The velocity fuse is a hydraulic safety device and is **not to be tampered with**. The velocity fuse GPM (gallon-per-minute) closing setting is carefully calculated for your lift. If it requires replacement, it is very important that you contact Pflow Industries with the lift serial number to ensure that a correct velocity fuse is supplied.
- The velocity fuse is inscribed with an arrow. The arrow must point away from the cylinder. The velocity fuse is a hydraulic fluid shut-off. In the event a hose breaks or if a severe surge in hydraulic velocity occurs, the out-rush flow of hydraulic fluid is stopped. It closes and remains closed due to the weight of the carriage. Once the line pressure in the reverse direction overcomes the pressure on the velocity fuse (carriage weight) then the velocity fuse opens again, and allows flow in both directions.

⚠ DANGER

Never attempt to remove the velocity fuse or any hydraulic fittings or hoses if the velocity fuse is in the closed position. The hydraulic fluid is under high pressure when the velocity fuse is in the closed position and can cause serious injury if released. Always open the manual-lowering valve to release the pressure before working on the hydraulic system; it may be under pressure. Replace the problem hose, close the manual lowering valve, and depress the UP button to equalize the pressure on the velocity fuse and the cylinder.

⚠ DANGER

Hydraulic oil under pressure is extremely dangerous.

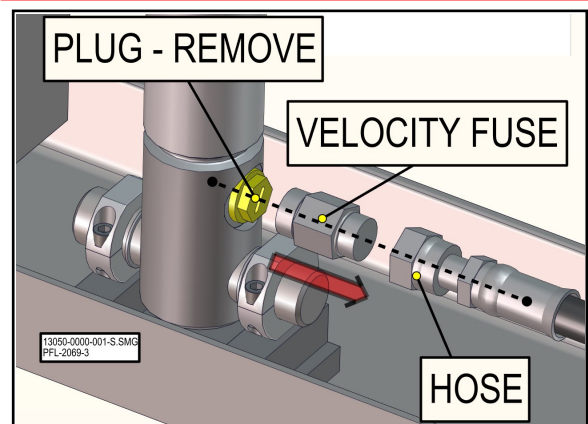


FIGURE 2-A

Hydraulic Installation Instructions

Safety

⚠ DANGER

Hydraulic oil under pressure is extremely dangerous.

Never loosen any hydraulic fitting or hydraulic control component when the hydraulic unit is under pressure.

Never attempt to loosen or remove any component of the hydraulic system when the carriage platform is raised from the ground; it will be under pressure.

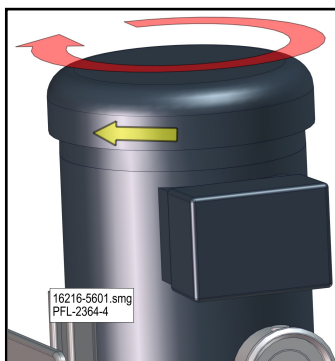
Never step under a raised carriage.

If the lift carriage cannot be lowered by gravity, secure the carriage at its stuck position before attempting to walk on or under the carriage. After the carriage is secured, open the manual-lowering valve to release the pressure; the hydraulic system may be under pressure.

At Startup

At startup, be sure there is oil in the hydraulic tank and that the motor is operating in the correct rotation. If the motor is not operating in the correct rotation, stop the motor immediately. Have a qualified electrician inspect and correct the wiring of the motor.

**FIGURE 2-B
VERIFY MOTOR
ROTATION &
MOTOR ARROW**



Run the lift up. This is not a one-person operation. Pay very close attention to the pressure gauge (optional on some units). Be prepared to stop the lift if there are any indications of leaks, binding, or overtravel. Take your time; doing things correctly during initial startup will reduce your troubleshooting time if any problem should exist.

IF YOU EXPERIENCE A PROBLEM, DO NOT START ADJUSTING THE PRESSURE SWITCH OR PRESSURE RELIEF VALVE.

Do the following troubleshooting checklist items first. Call Pflow Industries Product Support Department for assistance.

Check for binding of the carriage, rollers, wheels, or other obstructions:

- Are the beams plumb, true, and square?
- Are the cylinder rods moving smoothly?

Check for less obvious causes:

- Is there paint on the cylinder piston rod?
- Are the hydraulic hoses connected correctly?
- Is the velocity fuse in the correct position (arrow pointing away from cylinder)?
- Are there leaks at the joint connections?
- On the hydraulic fittings that have O-rings, are the O-rings present?
- O-ring face seal fittings are sensitive to over- and under-torque. Refer to torque spec on page 22.
- Is there contamination in the oil?
- Is the correct voltage at the hydraulic manifold solenoid?
- Is the correct voltage at the motor?
- Is the manual down valve open or partially open? For proper operation, the manual down valve needs to be completely closed.

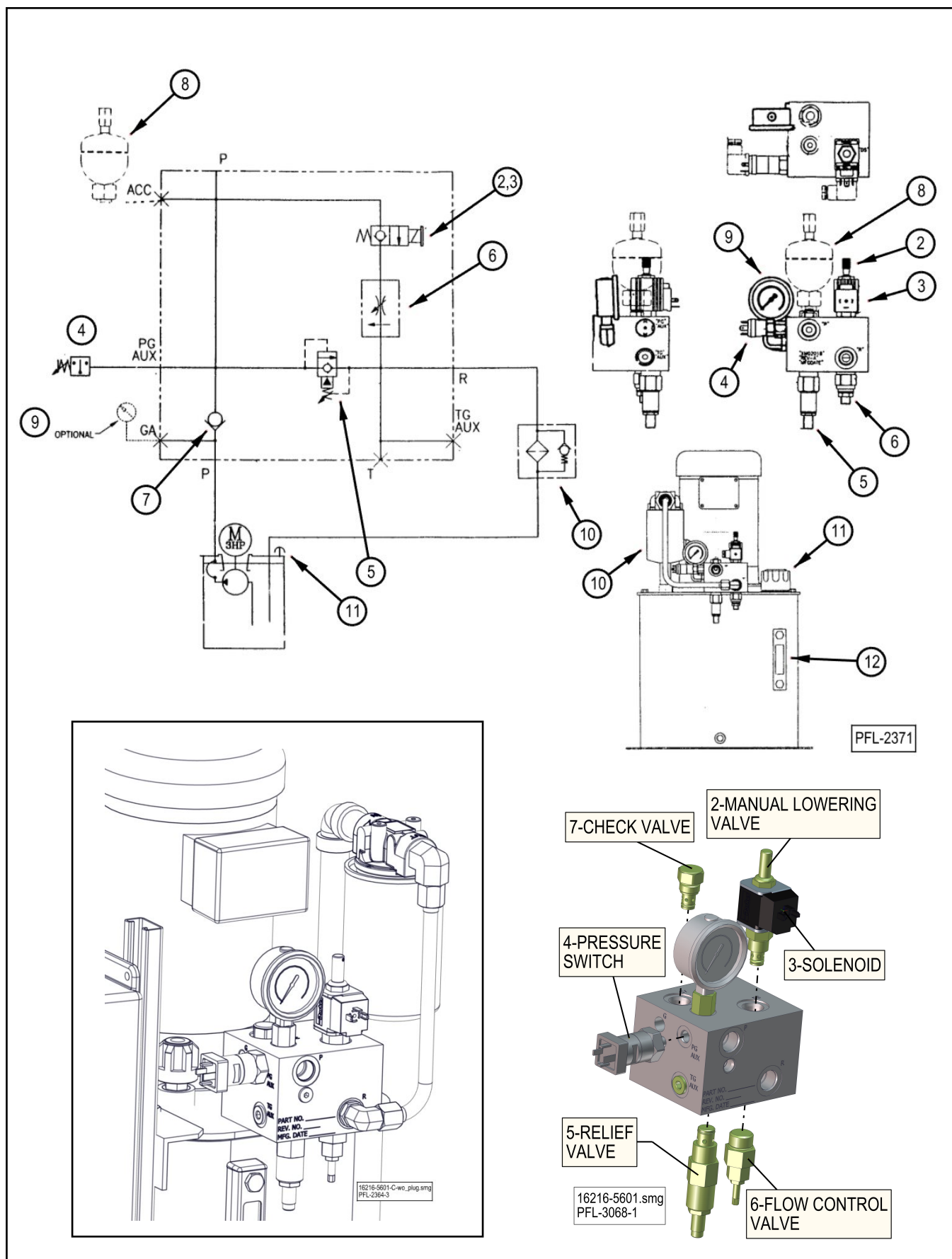


Figure 3

Hydraulic Installation Instructions

Adjusting the Pressure Switch

Reference Page 24, Figure 3, Item 4

- The pressure switch is preset to operating pressure at the hydraulic unit manufacturing facility during their setup and test; therefore, it should not be necessary to adjust the pressure.
- Adjustment procedures will vary for each unique hydraulic unit. As a rule-of-thumb, the pressure switch setting will be lower than the relief valve setting.
- Adjusting (increasing pressure) above the established factory setting for your hydraulic unit to increase the lifting capacity can cause damage to the hydraulic unit and cylinders. Increasing the pressure above the established settings infringes on the safety factors established for the lift and hydraulic components.
- **Never exceed the factory pressure switch settings. Contact the factory with any questions about pressure settings and lifting capacity.**
- Adjusting (increasing pressure) above the established factory setting for your hydraulic unit **will not increase the lifting speed.**

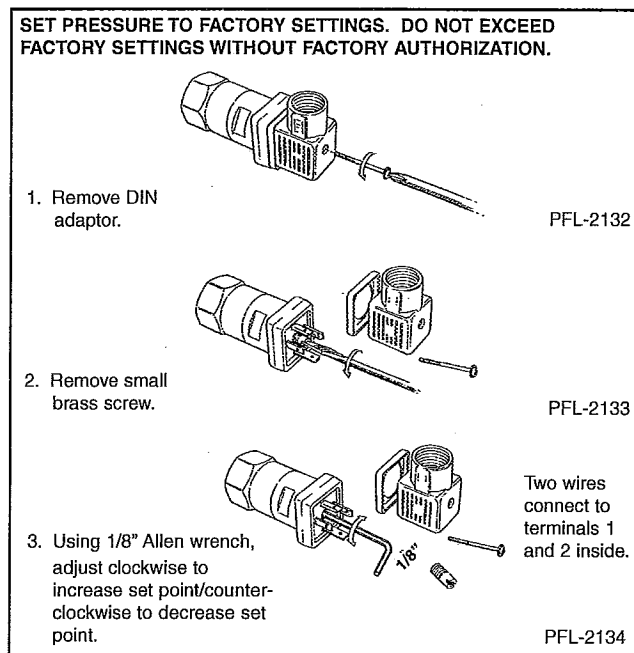


Figure 4

Adjusting the Pressure Relief Valve

Reference Page 24, Figure 3, Item 5

- The relief valve is preset to operating pressure relief at the hydraulic unit manufacturing facility during their setup and test; therefore, it should not be necessary to adjust the relief (bypass) pressure setting.
- Adjustment procedures will vary for each unique hydraulic unit. As a rule-of-thumb, the relief valve setting is higher than the pressure switch setting.
- Pressure relief valve adjustment requires the loosening of the locknut before setting the relief (bypass) pressure setting.

Check Valve

Reference Page 24, Figure 3, Item 7

- There is no adjustment for the check valve. The check valve stops the reverse flow of fluid. The check valve is normally spring-loaded; and, if for some reason it is not functioning, a good cleaning will generally place it back in operating condition. Replace it if a cleaning does not stop the reverse flow of fluid. Fluid can also return to the tank if the manual lowering valve is not properly seated.

Flow Control Valve

Reference Page 24, Figure 3, Item 6

- The flow control valve is adjustable. It is factory set and should not be adjusted to increase the lowering speed of the lift. The flow is carefully calculated for safe lowering speed of the carriage platform. The flow rate is not to be changed for any reason without the approval of Pflow Industries. It is a safety feature that is not to be compromised.

Fill Cap/Breather

Reference Page 24, Figure 3, Item 11

- The fill cap/breather allows air movement between atmosphere and the reservoir, filters air, and can be opened to add hydraulic fluid.

D Series

Manual Lowering Valve

Reference Page 24, Figure 3, Item 2

- The manual-lowering valve is to be used to lower the carriage platform or to relieve pressure from the system in an emergency when the electric down solenoid valve is not functioning. The manual-lowering valve is at the top of the down solenoid and can open and close the down valve seat by pulling up on the knob. To prevent the fluid from flowing back to the tank during normal operation, be sure that the valve is completely closed. A valve that is not completely closed can cause challenging troubleshooting problems such as the lift not being able to lift its rated capacity.

WARNING

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

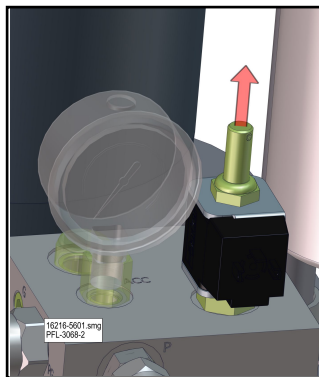


FIGURE 5
Manual Lowering
Valve
FOR EMERGENCY
USE ONLY!

Pull knob up to manually lower carriage.

Hydraulic Oil Filter

Reference Page 24, Figure 3, Item 10

- The hydraulic oil filter should be changed at regular intervals. The filter element must not be less than 10 micron. Pflow Industries stocks replacement filters.

Hydraulic Accumulator - (Optional Equipment)

Reference Page 24, Figure 3, Item 8

- The hydraulic accumulator functions as a shock absorber 750 psi.

Sight Gauge

Reference Page 24, Figure 3, Item 12

- The sight gauge is a visual oil level indicator. It may not indicate full due to the size of the tank and the hydraulic oil requirement for each lift.

Oil level should be checked with carriage at lowest level.

Down Solenoid Valve

Reference Page 24, Figure 3, Items 2 and 3

- The down solenoid valve, sometimes referred to as a “dump valve,” is an electrical device consisting of a coil and plunger with manual lowering. The plunger is the part inside the coil that moves when energized with electricity. The plunger, in its neutral state, closes the hydraulic circuit to the hydraulic cylinders placing the cylinders in a hold position and is the only device holding the hydraulic fluid in the cylinders except for the velocity fuse. When energized, the plunger releases the hydraulic fluid allowing the cylinders to descend and the fluid to return to the tank. A down contact button, generally located in a push button station, when activated, releases (opens) the down plunger.
- It is very important to know the operating voltage of the hydraulic pump motor and the hydraulic down solenoid valve. The pump motor may range from 208 volts AC to 575 volts AC, while the hydraulic solenoid may be 24 volts AC to 115 volts AC. Never use electrical current lesser or greater than its rated capacity.
- Protect the solenoid from excessive heat, atmospheric contaminants, and all liquid sprays.

Solenoid Valve Troubleshooting

(Things to check for)

- Dirty oil will clog the fluid passageways and may contain varnish or fine particles that will not allow the plunger or check valve to seat properly and allow fluid to pass.
- Operating pressure is too high and does not allow the solenoid to lift the plunger to seat the valve.
- Check for proper operating voltage. It will be 24 volt or 115 volt. Low voltage, excess voltage, or voltage spikes will cause problems and, ultimately, failure of the coil. Solenoid coils are commonly rated for 85 percent of operating voltage. Measure the voltage at the solenoid with a voltmeter. Keep in mind that utility inlet line voltage can drop during peak loads, and malfunctions can be expected when this occurs.

Hydraulic Installation Instructions

Solenoid Valve Troubleshooting (Cont'd)

- Check for a broken lead, loose connection, or burnt coil. Test for potential with a VOM meter.
- Check for circuit sources outside the solenoid valve. Use your wiring schematic to trace back to in-line electrical components that feed current to the solenoid.

Diagnosing Pump Unit Problems

- Check the rotation direction of the pump motor. Bump motor for approximately 30 seconds. If lift does not go up, swap two motor leads to change motor direction (i.e., take T1 and swap it to T2, take T2 and swap it to T1).

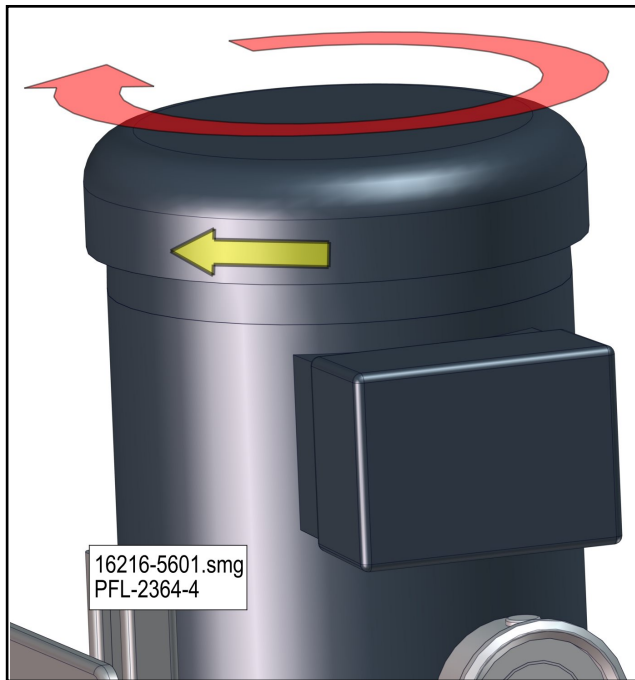


FIGURE 6
CHECK MOTOR ROTATION
& MOTOR ARROW

- Check the pressure relief valve for proper setting.
- Pressure relief setting too low can cause the hydraulic oil to go in the bypass.
- Pressure switch setting too high can cause great damage to the total hydraulic system as well as the lift.
- Any normally closed component in the manifold block that is inadvertently held open may be a source of trouble in the hydraulic system.
- Check the down solenoid valve, manual-lowering valve, and check valve.
- Check for stuck parts such as the check valve, pressure relief valve, and solenoid valve. Check for excessive wear and worn O-rings.
- Check for foaming (air bubbles or cream color) of the oil. Air or water may be in the oil.
- Air may be created in the system by loose or improperly connected fittings.
- Check for air leaks at the manifold by squirting oil from an oilcan at all the control fittings and at the manifold base.
- Check the oil level with the lifting carriage platform at its lowest level.
- Contaminants such as lint, paint, gum, sludge, and dirt can easily clog the filtering system and cause problems that are difficult to isolate in the manifold block components. Keep the area around the hydraulic unit clean. Keep the oil, oil filter, and air breather filter clean.

NOTE

Contamination is a major cause of trouble for a hydraulic system. It is difficult to see, but it causes the most failures.

- Water may enter the system through condensation or by wash down of equipment.

Acceptance Certification - VRC

We accept the above equipment as being properly installed, tested, and performing to our satisfaction. This form covers both the mechanical and electrical installation of the equipment for the purpose of quality assurance by PFlow Industries, and in no way releases either PFlow Industries, Inc. or the installing contractor(s) of their warranty obligations. If there are any exceptions or unresolved items, please note.

PFlow Unit Number:	Job Name:	Date:
Site Mailing Address:		
Site City:	Site State:	Site Zip Code:
Customer Contact Name:	Contact Title:	
Customer Contact Phone: () - Ext.	Customer contact e-mail:	

Tests Successfully Performed: Yes <input type="checkbox"/> No <input type="checkbox"/>		Customer Initials	Equipment start-up date:
Load test: at _____ % of lift capacity		Operation Test Yes <input type="checkbox"/> No <input type="checkbox"/>	
Gate/Interlock Operation: Yes <input type="checkbox"/> No <input type="checkbox"/>		Other:	
Comments:			

Personnel Instructed on the Operation	
Name:	Company:
Name:	Company:

Accepted By		Acceptance Date:
Name:	Name:	
Title:	Title:	
Company:	Company:	
Phone:	Phone:	
PFLOW PERSONNEL / REPRESENTATIVE / INSTALLER PRESENT:		
Name:		Company:

Please return a copy of this form to the PFlow Product Support Department.

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

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?			
7	Were the electrical components a concern?	Yes	No	
	If Yes, describe			
8	Was the electrical field wiring completed as required?	Yes	No	
	If No, describe			
9	Where 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	Comments:			
PFlow Job Number		Date		
Customer/User				
Questionnaire completed by		email		
Company		Phone		

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

Questionnaire

Notes

OPTIONS

Gate Identification

Prior to shipment, all gate panels, posts, interlock components, etc., are color coded for each level. When two (2) gates are on one level, they will be coded with the same color. Please use the information available on the general arrangement drawing and in your installation manual to separate the components.

The colors per level will always remain the same. They are:

LEVEL	COLOR
1st (bottom)	Green
2nd	Yellow
3rd	Red
4th	Blue
5th	Orange
6th and higher	White

Each tag will be marked with the following:

- A. Pflow Serial Number
- B. Customer Project Number
- C. Pflow Part Number and Description
- D. Initials of Inspector
- E. Levels higher than 6 will include the number of the appropriate level

If you have any questions, please feel free to contact the Product Support Department for assistance.

Bi-Parting Swing Gate Installation Instructions

IDENTIFY COMPONENTS

Gate components, posts, panels, header assembly, interlocks, will be color coded with tags. Each gate will be a different color.

GREEN - LOWER LEVEL

YELLOW - SECOND LEVEL

RED - THIRD LEVEL

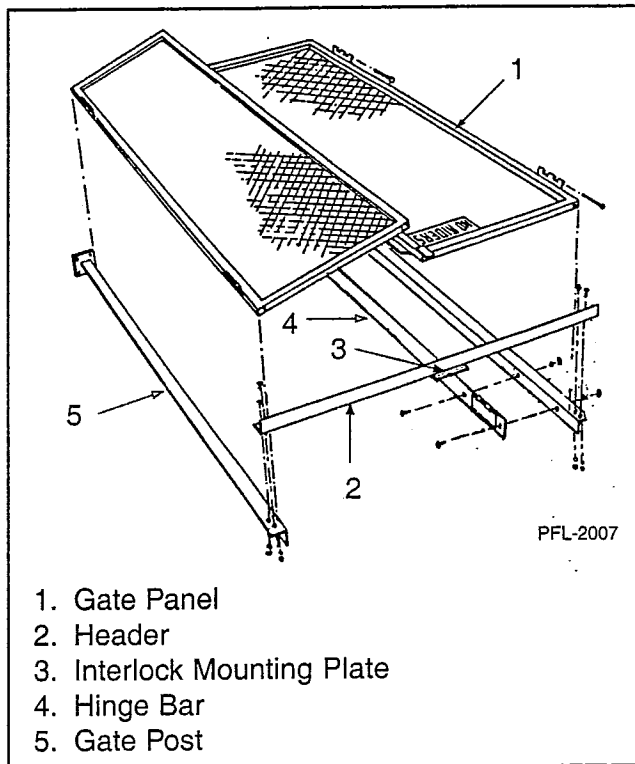


Figure 1

The preferred method of installing a bi-parting swing-type gate is to pre-assemble the gate on the floor and then stand it up. The following instructions are for pre-assembly of the gates. If for some reason pre-assembly is not possible, use these instructions as a general guide for the assembly, positioning, and securing the gates.

1. Lay the gate posts on the floor parallel to each other. See Figure 1.
2. Place the angle iron "header" at the top of the gate posts and bolt in position with hardware provided.
3. Place the gate panels in position between the gate posts and hinge bars.

4. Locate and mark the center of the gate panel (where panels meet in the center.)
5. Locate and mark center of the carriage. Using a carpenter square held on the front edge of the carriage, mark a chalk line on the floor to assure the center of the gate is on the center line of the carriage. See Figure 2.

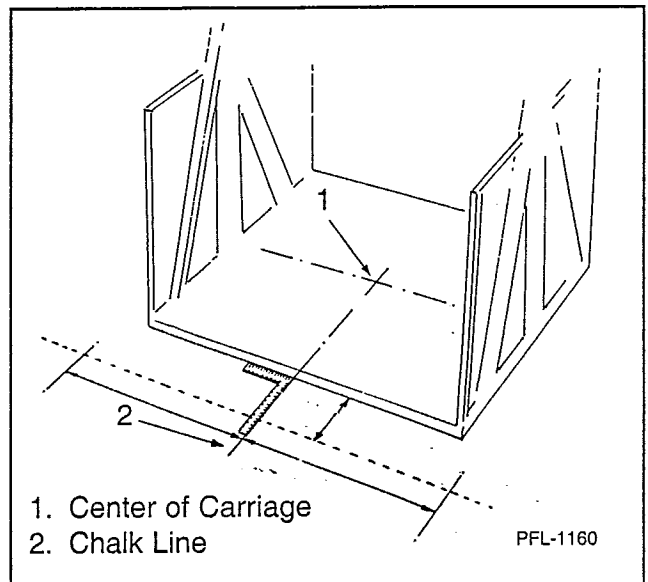


Figure 2

6. The ideal position of the gate is 6" from inside of gate panels to carriage. However, the gate can be located anywhere within a range of 4" minimum from inside of gate panel to carriage and a maximum of 6" from inside of gate panels to carriage. See Figure 3.

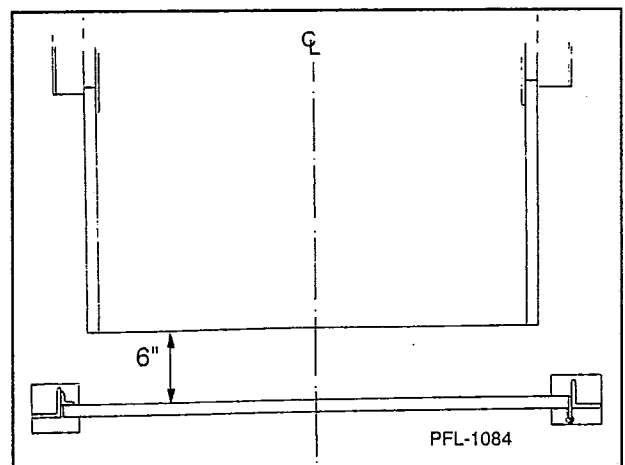


Figure 3

Bi-Parting Swing Gate Installation Instructions

When the gate panel to carriage measurement has been determined, snap a chalk line to identify gate position parallel to the carriage.

NOTE

Length of enclosure panels may be the determining factor in gate location.

7. Raise the gate assembly. Position the gate assembly so the center of the gate is located on the center of the carriage line and the inside of gate panel is on the chalk line parallel to the carriage.

8. Using 3/8" anchors 3 1/2" long, drill and anchor gate post base plates to the floor.

NOTE

Depth of holes should always be deeper than the length of the anchor bolt.

9. Plumb the gate using a plumb bob or a four foot or longer level. See Figure 4.

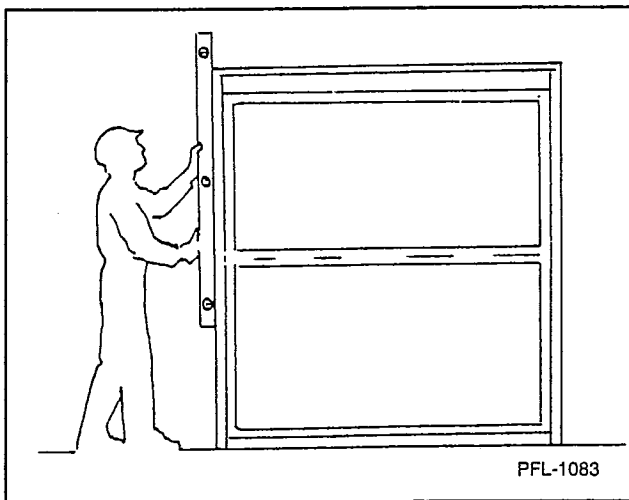


Figure 4

10. With the gate posts plumb, measure from gate post to VRC column. Cut two support braces and install as illustrated (1 1/2" x 1 1/2" x 1/4" angle iron or similar).

11. Tighten all bolts.

12. Weld angle iron header to gate posts. See Figure 5.

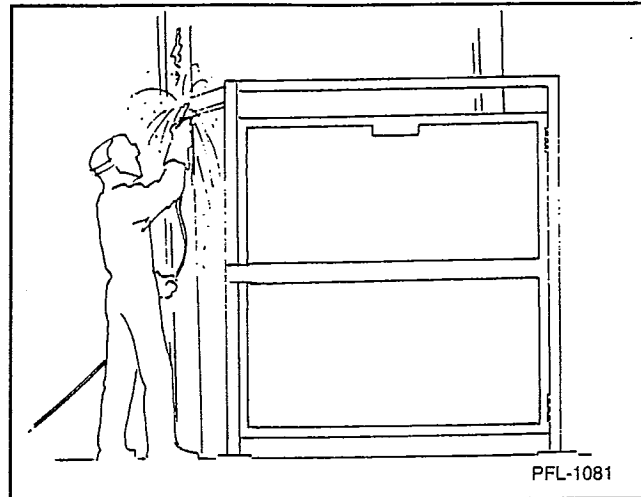


Figure 5

13. Check gate operation.

14. Install magnet. (A magnet belongs on each gate.) Put bolt through magnet. Turn inside nut (closest to magnet) until 1/16" clearance is obtained between nut and magnet. Take magnet with bolt and nut and put the protruding end of bolt through mounting hole. Take the other nut and lockwasher and mount the magnet. Hold the bolt and tighten mounting nut (outside nut). The 1/16" clearance is necessary to allow for variations of magnets striking the area. If given clearance is not included, magnet will not hold gate closed and may result in a broken magnet. See Figure 6.

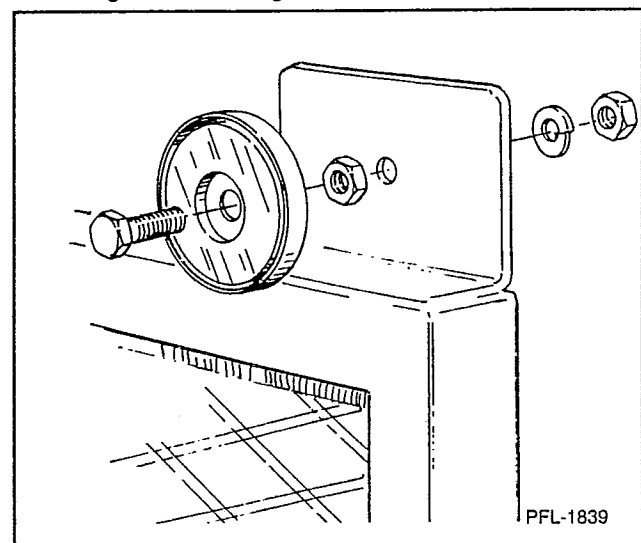


Figure 6

15. Install gate interlock.

Swing Gate Installation Instructions

IDENTIFY COMPONENTS

Gate components, posts, panels, header assembly, interlocks, will be color coded with tags. Each gate will be a different color.

GREEN - LOWER LEVEL

YELLOW - SECOND LEVEL

RED - THIRD LEVEL

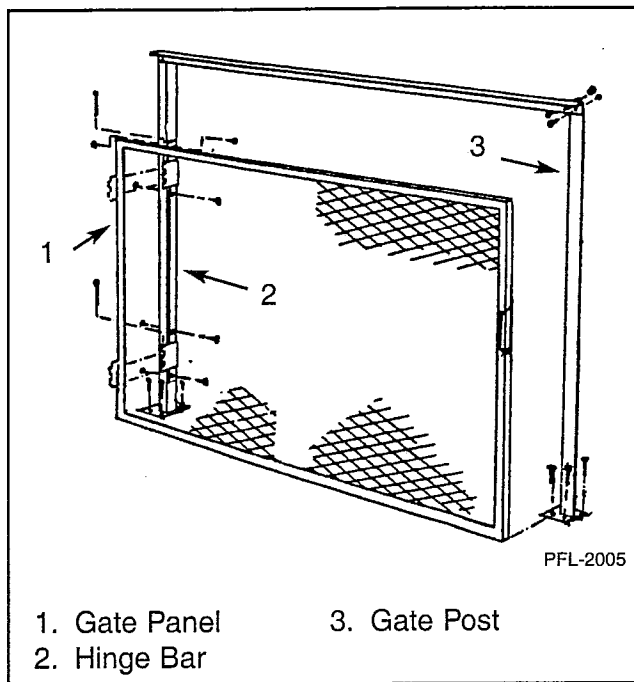


Figure 1

The preferred method of installing a swing gate is to pre-assemble the gate on the floor and then stand it up. The following instructions are for pre-assembly of the gates. If for some reason pre-assembly is not possible, use these instructions as a general guide for the assembly, positioning, and securing the gates.

1. Lay the gate posts on the floor parallel to each other. See Figure 1.
2. Place the angle iron "header" at the top of the gate posts and bolt in position with hardware provided. See Figure 2.
3. Place the gate panels in position between the gate posts and hinge bars. See Figure 2.

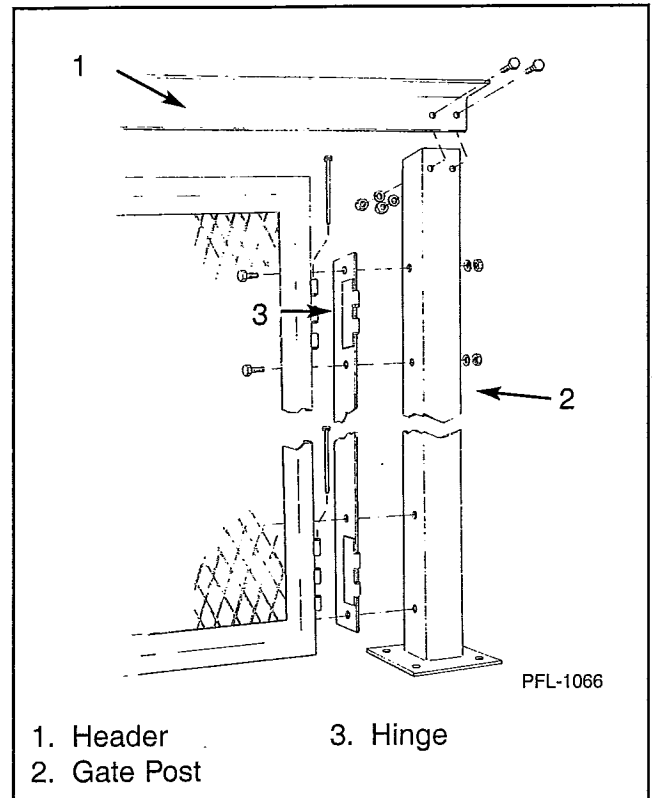


Figure 2

4. Locate and mark the center of the gate panel (where panels meet in the center.)
5. Locate and mark center of the carriage. Using a carpenter square held on the front edge of the carriage, mark a chalk line on the floor to assure the center of the gate is on the center line of the carriage. See Figure 3.

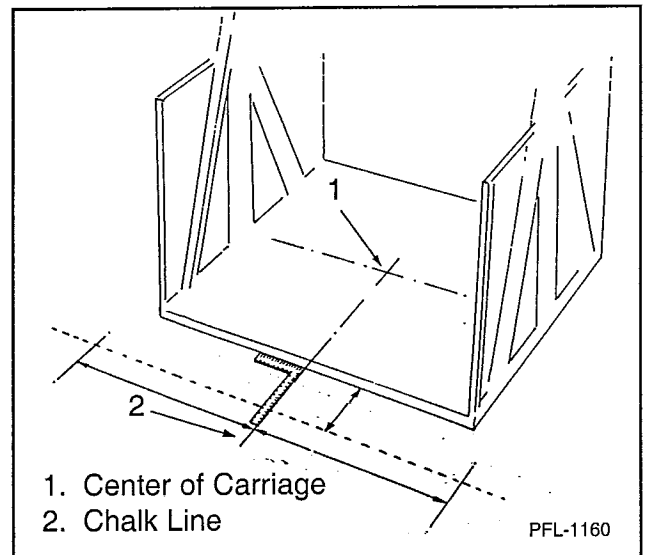


Figure 3

Swing Gate Installation Instructions

6. The ideal position of the gate is 6" from inside of gate panels to carriage. However, the gate can be located anywhere within a range of 4" minimum from inside of gate panel to carriage and a maximum of 6" from inside of gate panels to carriage. See Figure 4.

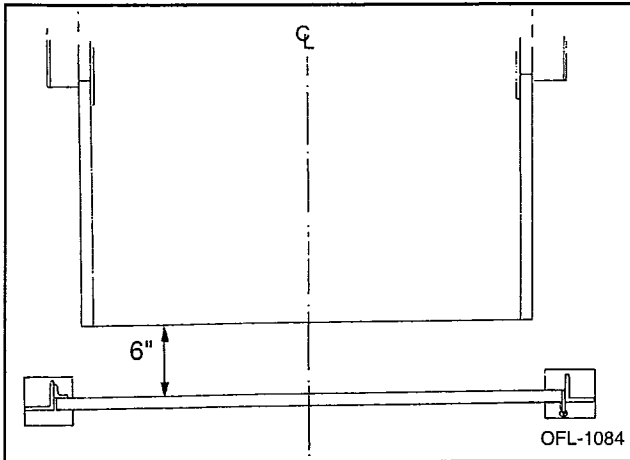


Figure 4

When the gate panel to carriage measurement has been determined, snap a chalk line to identify gate position parallel to the carriage.

NOTE

Length of enclosure panels may be the determining factor in gate location.

7. Raise the gate assembly. Position the gate assembly so the center of the gate is located on the center of the carriage line and the inside of gate panel is on the chalk line parallel to the carriage.
8. Using 3/8" anchors 3 1/2" long, drill and anchor gate post base plates to the floor.

NOTE

Depth of holes should always be deeper than the length of the anchor bolt.

9. Plumb the gate using a plumb bob or a four foot or longer level. See Figure 5.

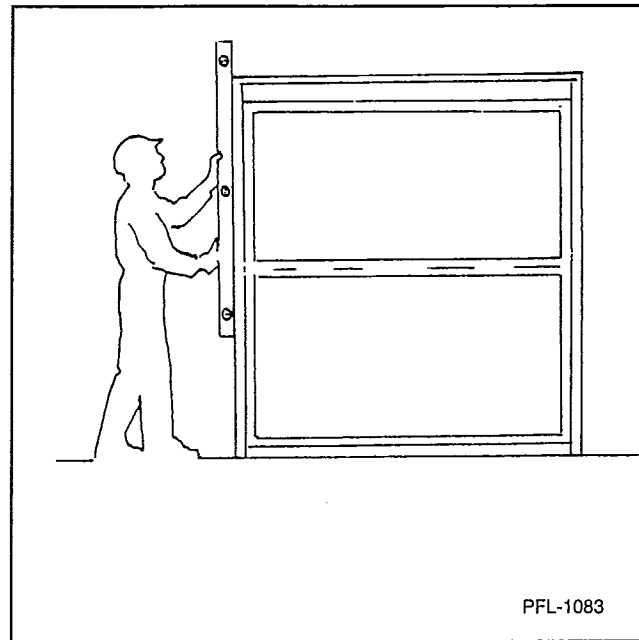


Figure 5

10. With the gate posts plumb, measure from gate post to VRC column. Cut two support braces and install as illustrated (1 1/2" x 1 1/2" x 1/4" angle iron or similar).
11. Tighten all bolts.

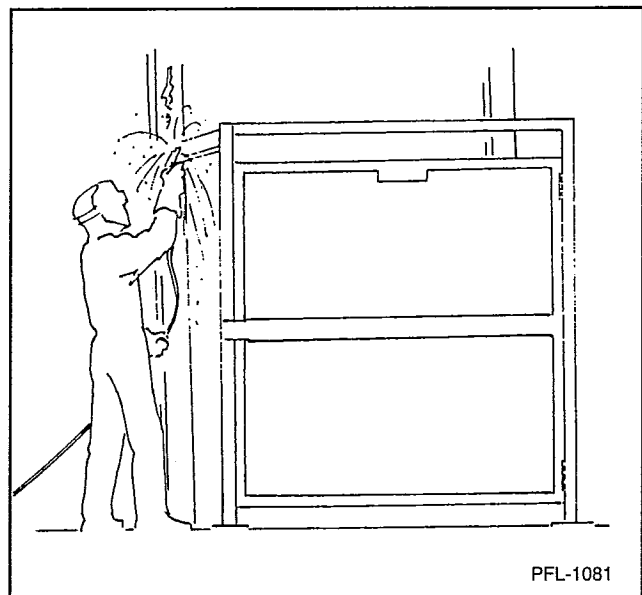


Figure 6

12. Weld angle iron header to gate posts. See Figure 6.
13. Check gate operation.

Swing Gate Installation Instructions

14. Install magnet. Put bolt through magnet. Turn inside nut (closest to magnet) until 1/16" clearance is obtained between nut and magnet. Take magnet with bolt and nut and put the protruding end of bolt through mounting hole. Take the other nut and lock-washer and mount the magnet. Hold the bolt and tighten mounting nut (outside nut). The 1/16" clearance is necessary to allow for variations of magnets striking the area. If given clearance is not included, magnet will not hold gate closed and may result in a broken magnet. See Figure 7.

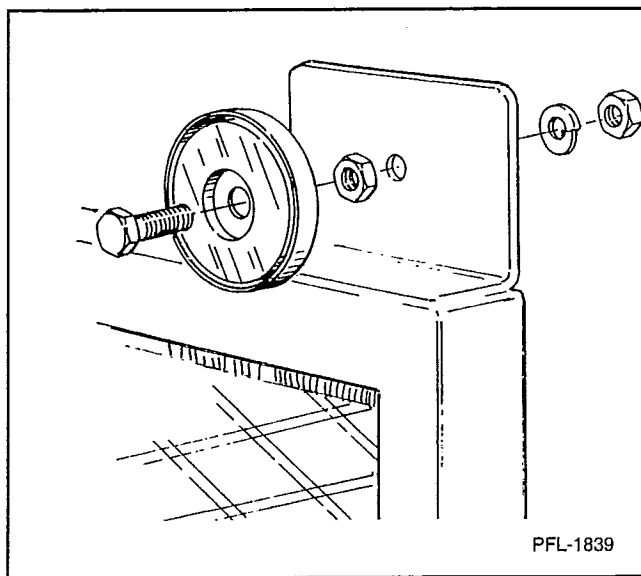


Figure 7

15. Install gate interlock.

Single & Bi-Panel VA Gate Installation Instructions

IDENTIFY COMPONENTS

Gate components (posts, panels, header assembly, interlocks) will be color coded with tags for the appropriate level. **GREEN** = LOWER LEVEL; **YELLOW** = SECOND LEVEL; **RED** = THIRD LEVEL. Each gate will be tagged with a different color. Hardware will be in boxes marked for each level gate.

Before beginning installation of the gate, match up all gate components with their floor placement as determined by the general arrangement (GA) drawing. Assembly is easiest if there is room to lay the components out. As this is not always possible, please see Helpful Hints for Upright Assembly.

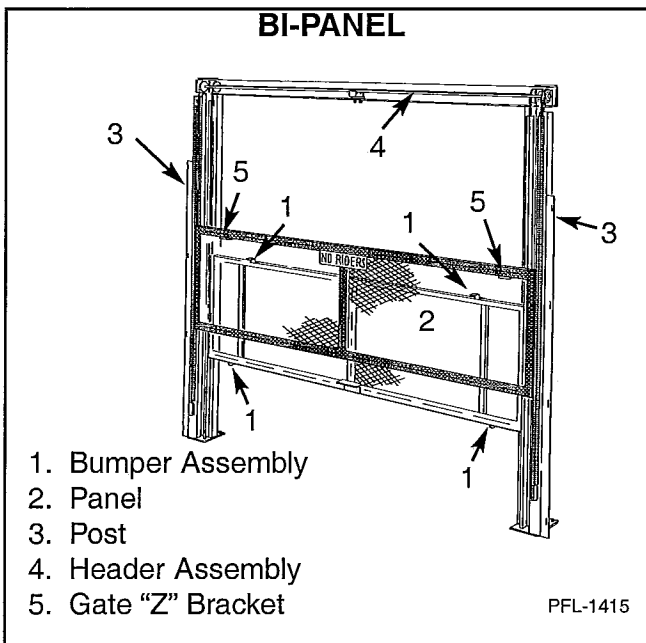


Figure 1

NOTE

Smaller panel is the lower panel and will be closer to the carriage.

HELPFUL HINTS FOR UPRIGHT ASSEMBLY

- Set up one post at a time. (Tie a long length of string to the last few links of chain. This will help retrieve the chain if it accidentally falls down the tube during installation.)
- Take out the counterweight shipping bolt. Slide weight above bolt and reinstall bolt.
- Make sure each post is plumb.

- With header on and chain weaved through the sprockets, you should have one to two feet of chain hanging over the sprockets. Lift panel up to meet this chain. Heavier panels may require the use of a forklift or come-along around the header.

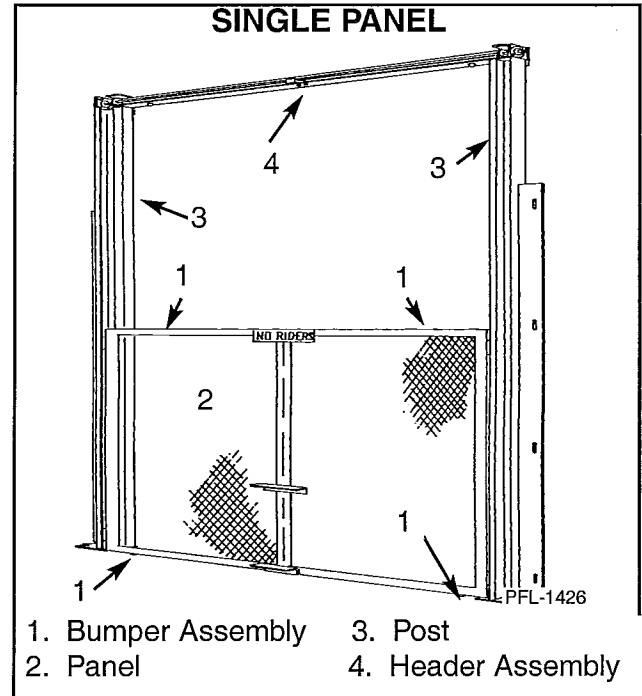


Figure 2

NOTE

On some applications, the panel may be in two pieces and require assembly in the field.

1. Attach gate components to the panels as shown. See Figures 3, 4, and 5.

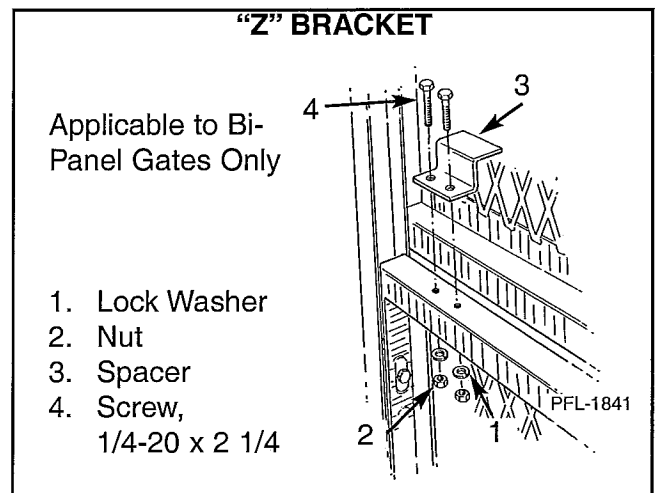


Figure 3

Single & Bi-Panel VA Gate Installation Instructions

BUMPER ASSEMBLY

THIS ASSEMBLY COMES AS ONE PIECE and is applicable to both style gates.

1. Bumper
2. Bumper Mounting Bracket

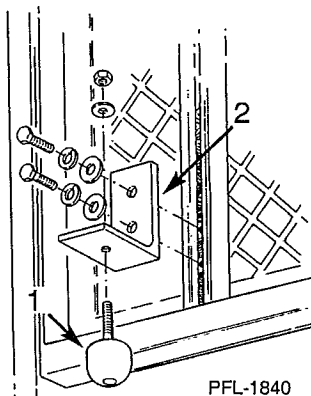
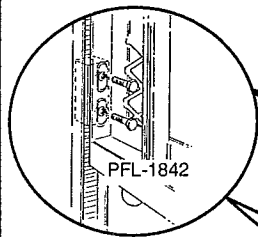


Figure 4

UHMW BLOCKS



2 UHMW Blocks per side for each gate panel - applicable to both style gates.

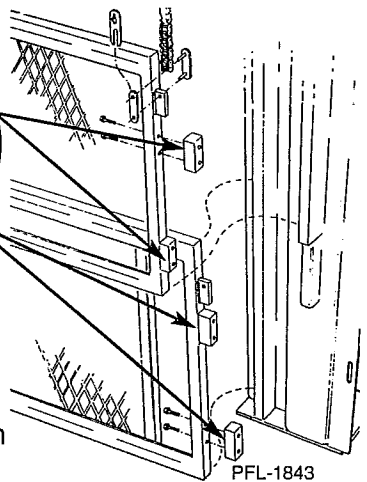


Figure 5

NOTE

Plastic UHMW blocks slide over bolt threads.

2. Lay out the framework in the proper arrangement. See Figure 6.

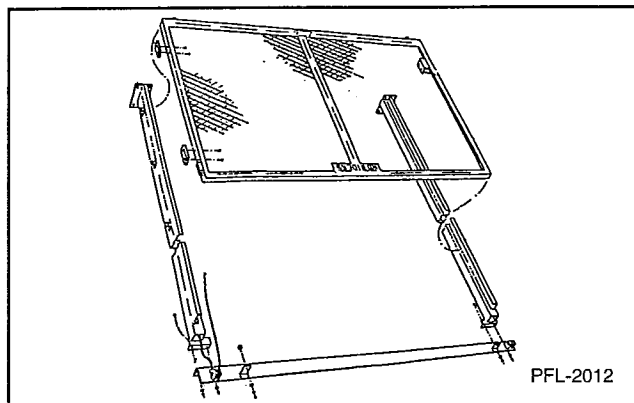


Figure 6

3. Position the header with the sprockets facing up. Bolt into place using four (4) 3/8-16 x 1 1/4" long bolts with lock washers and nuts. See Figures 7, 8, and 9.

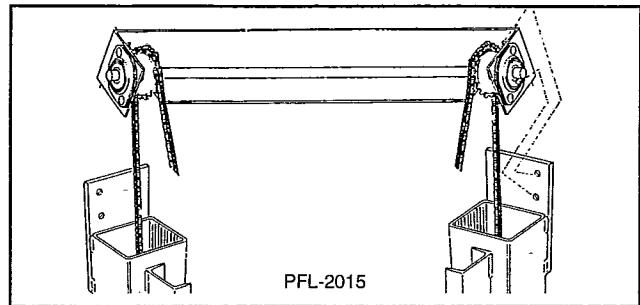
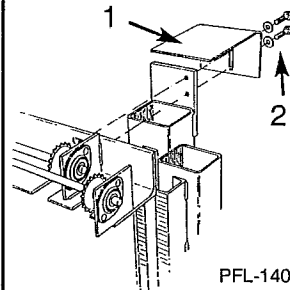


Figure 7

BI-PANEL

SINGLE PANEL



1. Chain Anti-Jump Guide
2. 3/8 x 1/4 Screw w/Flat & Lock Washers

Figure 8

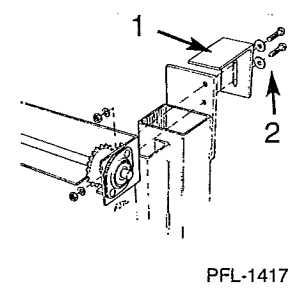


Figure 9

4. Remove the #50 master links from the #35 chain sticking out of each gate post and thread the chain over the sprockets on the header. See Figure 10.

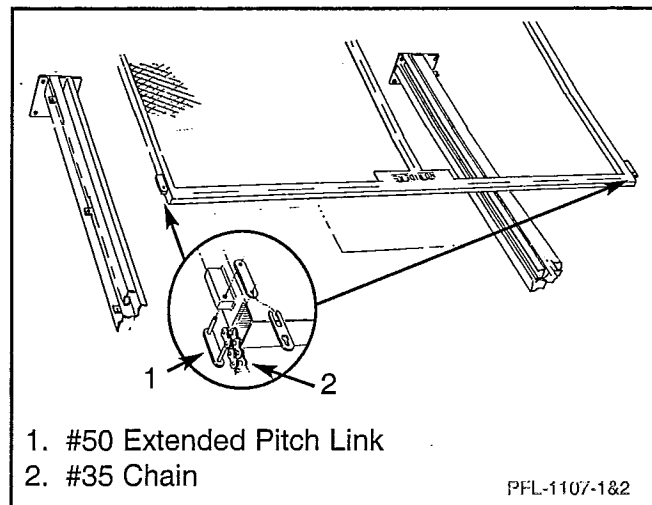


Figure 10

Single & Bi-Panel VA Gate Installation Instructions

NOTE

Remove the counterweight shipping bolt, slide the counterweight above the bolt, position, and re-install the bolt. Tie a length of string to the end of the #35 chain to assist in pulling the chain out of the tube if it should fall down into the tube.

5. Place the panel(s), with all components installed, into the track of the gate posts.
6. Slide the panel up to the header and re-connect the master links removed in Step #4 (Figure 10). Make sure that the length of chain on each side is equal. See Figure 11.

NOTE

When raising the panels, have one to two feet of chain hang over the sprockets.

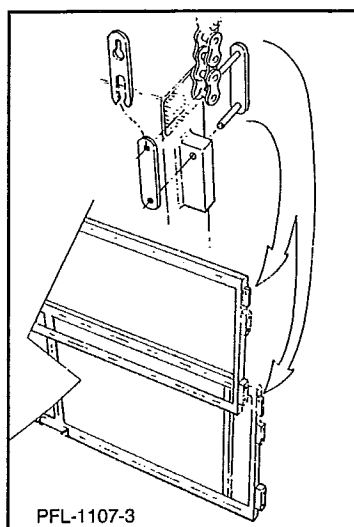


Figure 11

7. Stand gate assembly upright and place in position. Place the back face of the gate post on the chalk line 6" from the face of the carriage. See Figures 12 and 13. Some states require the gate closer to the carriage. Where necessary, adjust accordingly.

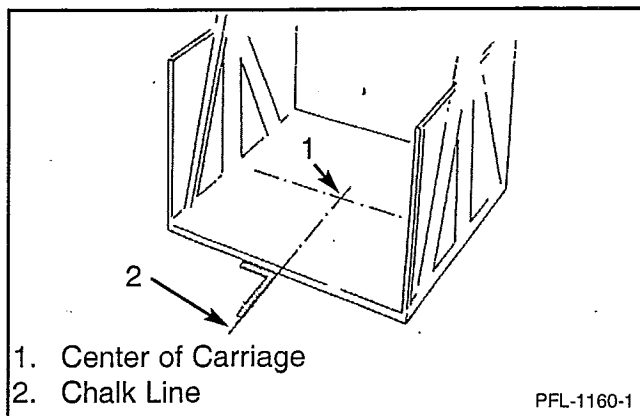


Figure 12

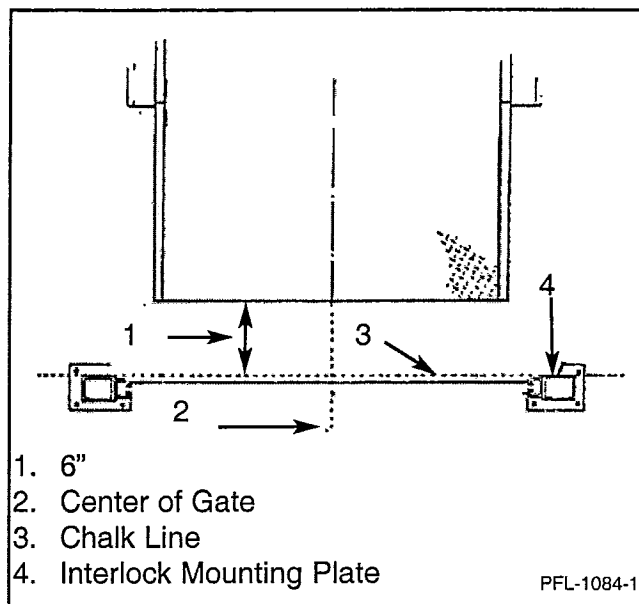


Figure 13

NOTE

The use of a forklift or come-along may be required to place heavier gate assemblies into position.

8. Make sure the posts are plumb in both directions. See Figure 14.

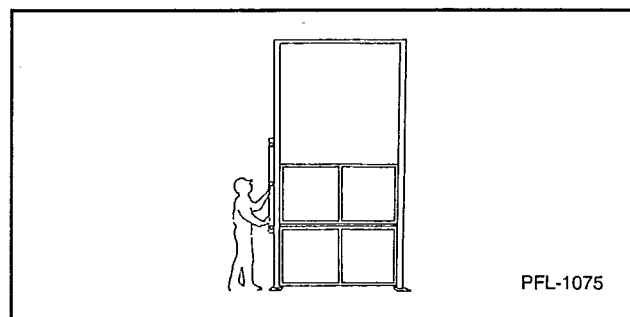


Figure 14

9. Temporarily brace the posts to the enclosure panels, building, or lift, as required.
10. Move the gate panels up and down and check that the panels move freely during travel from top to bottom of the posts. Lift the gate panel approximately two feet to check the counterbalancing. The gate should remain in that position.

Single & Bi-Panel VA Gate Installation Instructions

- A. If the gate continues to raise, add steel bar stock to the bottom center of the panel inside the frame. Recheck and repeat as needed
- B. If the gate drops, contact Pflow Industries for instructions.

NOTE

Carriage gates must also be tested during operation. Routine vibration during travel may affect the weight required and necessitate adjustments.

- 11. If everything runs smoothly, brace the posts and anchor the base plates securely to the floor. See Figure 15.

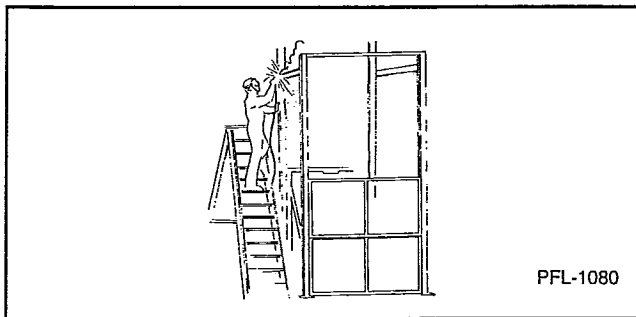


Figure 15

- 12. Make sure that the chain anti-jump guard is installed as close to the chain as possible without rubbing. See Figures 8 and 9.

Installation of INTERLOCKS and GATE STATUS SWITCHES, where applicable, are covered in other bulletins. Refer to the Table of Contents in your installation manual.

Sliding Gate Installation Instructions

IDENTIFY COMPONENTS

Gate components, posts, panels, header assembly, interlocks, will be color coded with tags. Each gate will be a different color.

GREEN - LOWER LEVEL

YELLOW - SECOND LEVEL

RED - THIRD LEVEL

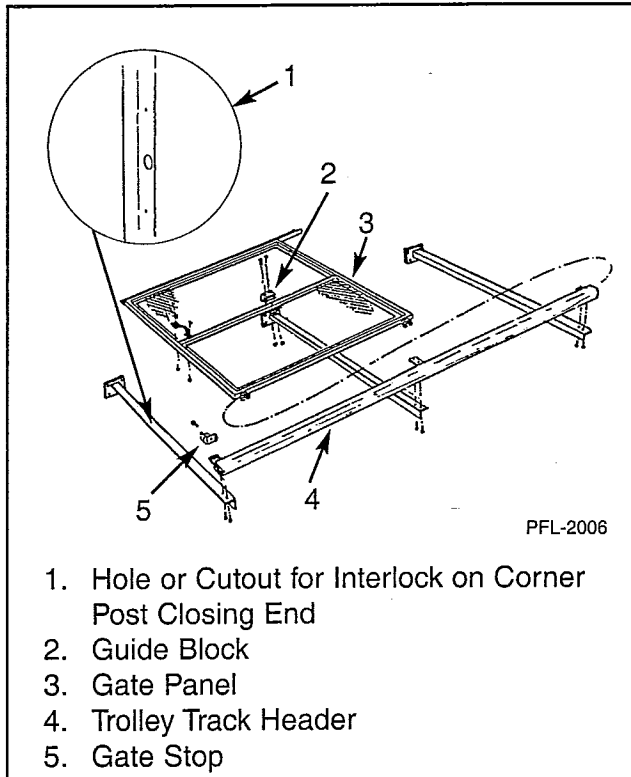


Figure 1

The preferred method of installing a sliding gate is to pre-assemble the gate on the floor and then stand it up. The following instructions are for pre-assembly of the gates. If for some reason pre-assembly is not possible, use these instructions as a general guide for the assembly, positioning, and securing of the gates.

1. Lay the gate posts on the floor parallel to each other with the gate post that has the hole or cutout for the interlock on the closing end. The middle post should have two holes near the base plate for mounting the guide block. See Figure 1.

2. Bolt the trolley track header to the gate posts, and slide the gate panel into the trolley track header.
3. Bolt guide block to middle post. See Figure 2.

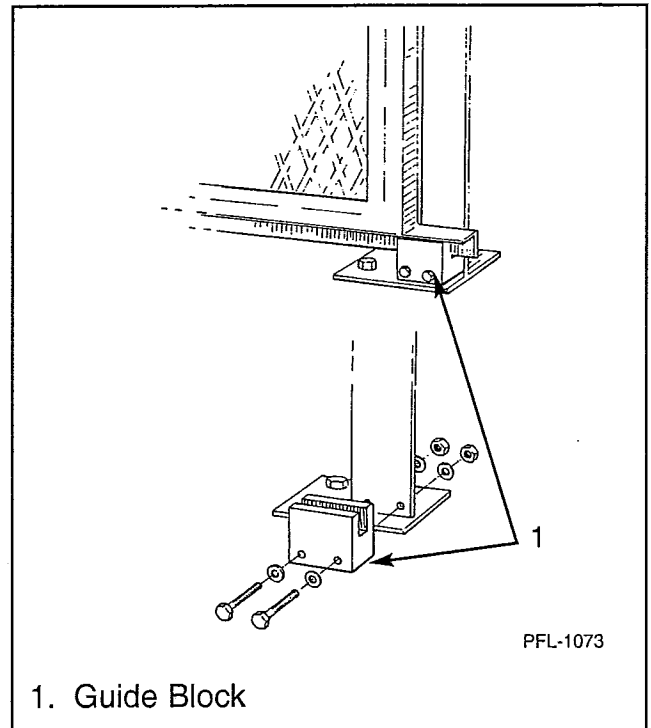


Figure 2

4. Slide gate to its closed position. Locate and mark center of the gate. See Figure 3.

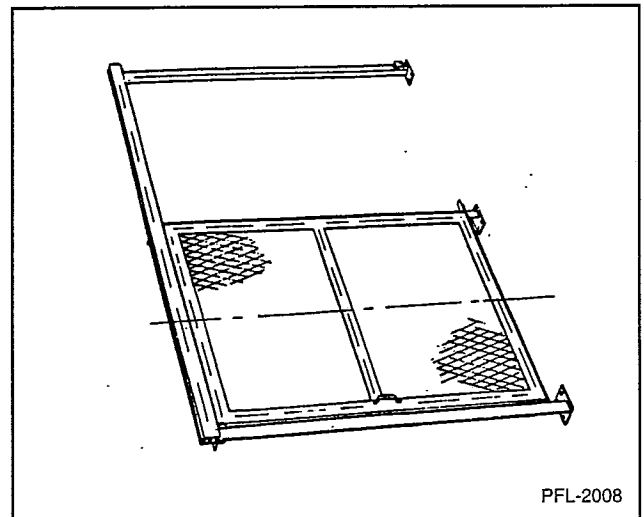


Figure 3

Sliding Gate Installation Instructions

5. Locate and mark center of carriage. Using a carpenter square held on the front edge of the carriage, mark a chalk line on the floor to ensure center of the gate is on the center line of the carriage. See Figure 4.

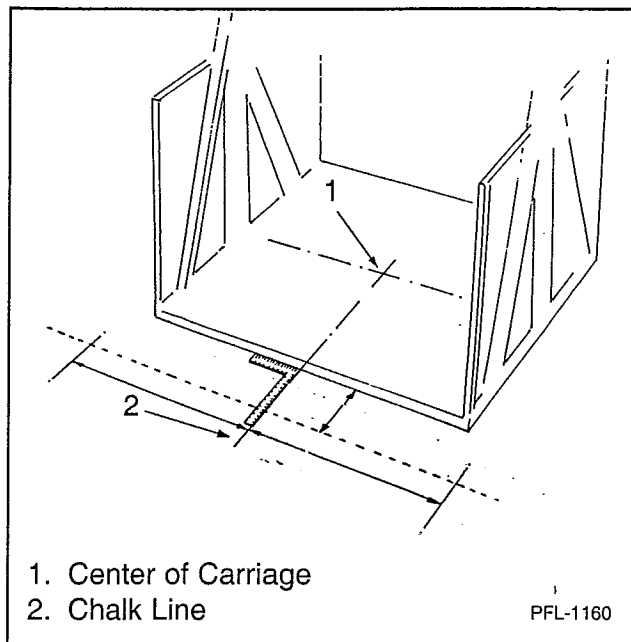


Figure 4

6. The ideal position of the gate is 6" from inside of gate to carriage. However, the gate can be located anywhere within a range of 4" minimum from the inside of the gate post to carriage and a maximum of 6" from inside of gate post to carriage.

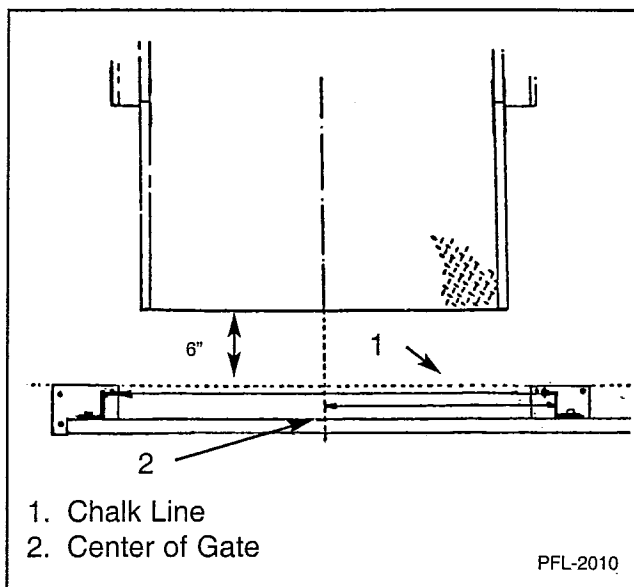


Figure 5

When the gate post to carriage measurement has been determined, snap a chalk line to identify the gate position parallel to the carriage. See Figure 5.

NOTE

Length of enclosure panels may be a determining factor in gate location. Check GA drawing for enclosure placement.

7. Raise the gate assembly. The track and gate are to be on the outside. Position the gate assembly so the center of the closed gate is located on the center of the carriage parallel to the carriage and the inside of the gate posts' base plates are on the chalk line. See Figure 6.

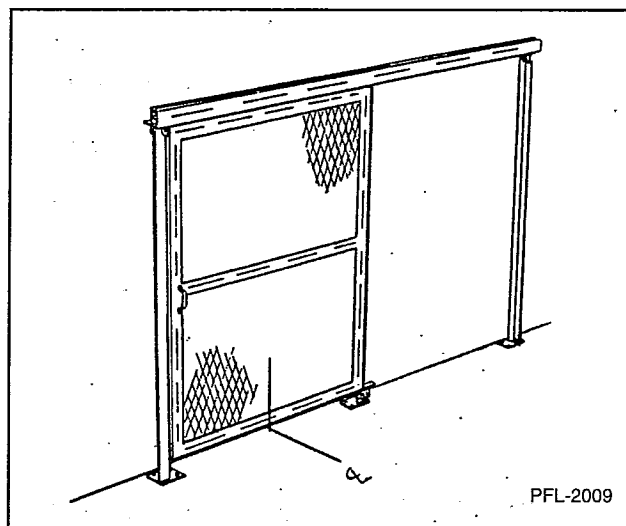


Figure 6

8. Using 3/8" anchors 3 1/2" long, drill and anchor gate post gate plates to the floor.

NOTE

Depth of holes should always be deeper than the length of the anchor bolt.

9. Plumb the gate using a plumb bob or a four foot or longer level. See Figure 7.

Sliding Gate Installation Instructions

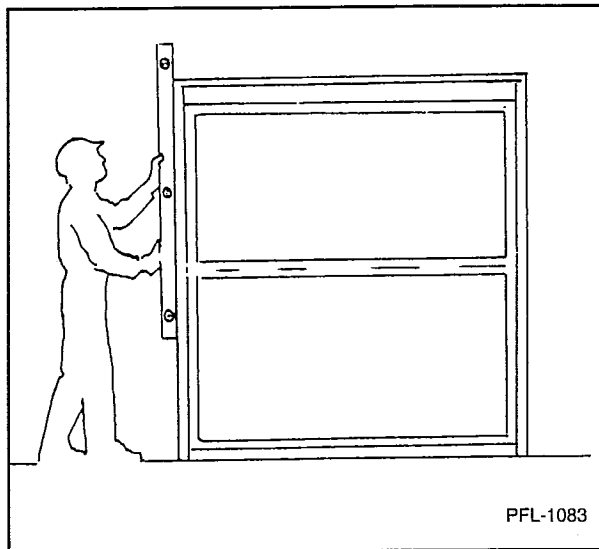


Figure 7

10. With the gate posts plumb, measure from gate post to VRC column. Cut two support braces and install as illustrated (1 1/2" x 1 1/2" angle iron or similar).
11. Tighten all bolts.
12. Weld angle iron header to gate posts. See Figure 8.

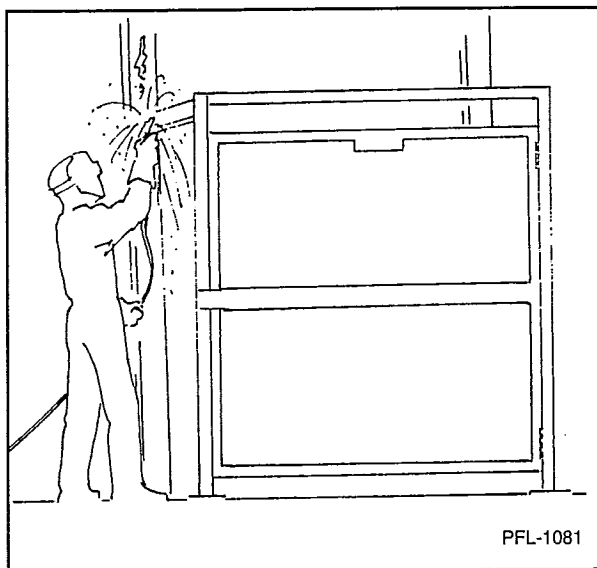


Figure 8

13. Check gate operation. Additional bracing may be necessary.
14. Install gate interlock.

Gate Interlock Information

Gate Cable Interlock Installation Instructions

**READ THIS BULLETIN IN ITS ENTIRETY
BEFORE STARTING INSTALLATION.**

GENERAL DESCRIPTION

The cable interlock consists of four main items:

1. CARRIAGE MOUNTED CAM

The cam is mounted on the carriage to activate the roller assembly. It must be positioned to allow the roller to move freely on the inclined cam face and to allow the pull cable to activate the interlock. See Figure 1.

2. COLUMN MOUNTED ROLLER ASSEMBLY

The roller assembly is mounted on the lift column. It must be positioned to limit the pull cable travel. See Figure 1.

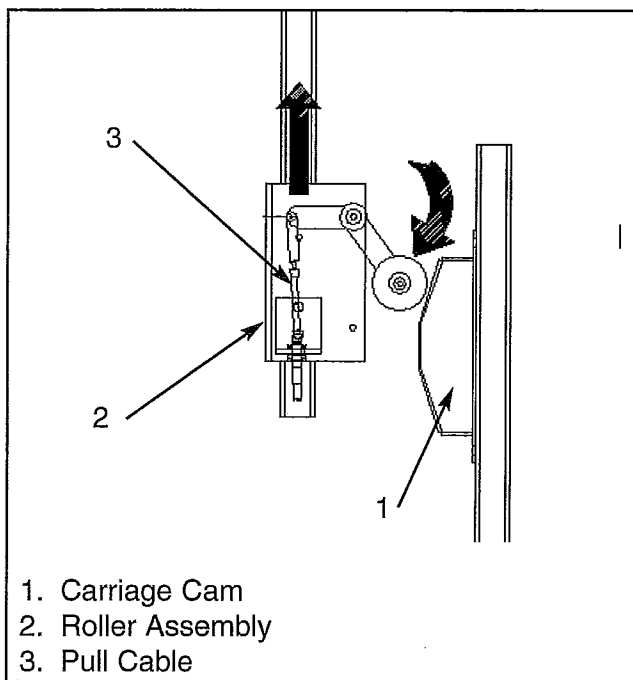


Figure 1

NOTE

Do not allow the clevis to bottom out or overextend. The required travel is approximately 3/4" - 1". The maximum cable travel is 2".

3. PULL CABLE

The pull cable is a utility cable with threaded stainless steel end rods. The cable has a maximum 2" stroke. See Figures 1 and 2.

If travel is extended beyond 2", cable damage will occur.

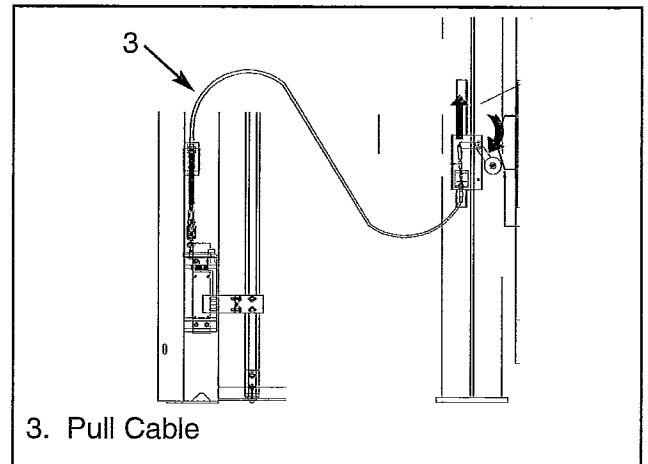


Figure 2

4. GATE CABLE INTERLOCK ASSEMBLY

The gate cable interlock assembly is attached to the gate post. The stroke of the cable is adjusted to permit the interlock to release the gate latch. See Figure 3.

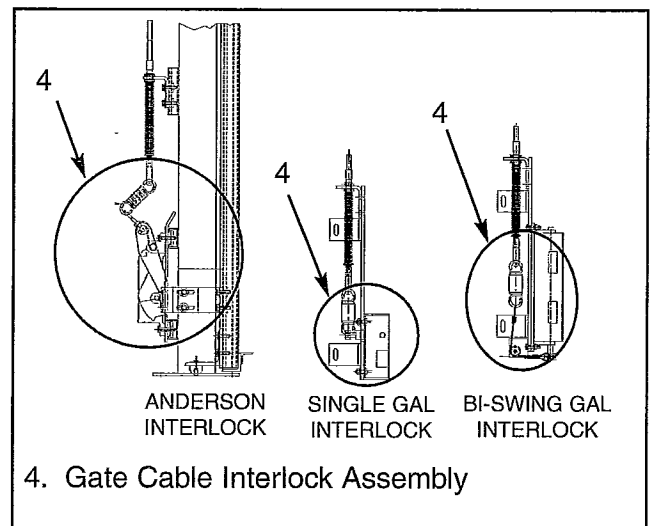


Figure 3

⚠ WARNING

Cables are lubricated for the life of the cable. Do not remove the seals or lubricate the cable. Cables are designed to be non-repairable. Do not attempt to repair the cable. Protect the cable from physical damage by paint, kinking, vibration, etc., which may damage the cable.

Gate Cable Interlock Installation Instructions

INTERLOCK ASSEMBLY ADJUSTMENT

1. The tension on the compression spring should be adjusted by positioning the cable on the angle bracket. The activation of the interlock is also adjusted by the position of the set collar. See Figure 4.

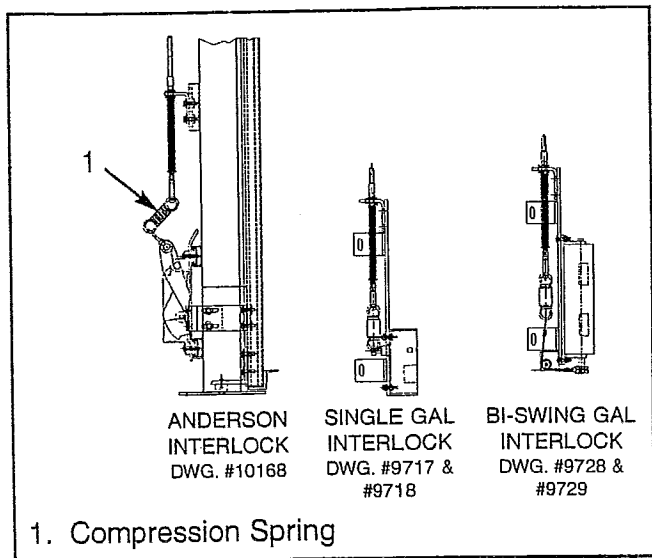


Figure 4

CABLE ADJUSTMENT WITH ROLLER ARM

1. Mount the carriage cam to allow $\frac{3}{4}$ "-1" cable travel (2" maximum cable travel). Make sure the roller wheel clears the edge of the cam. Center the cable travel at the center of the full cable stroke by positioning the cable in the bracket angle. See Figure 5.

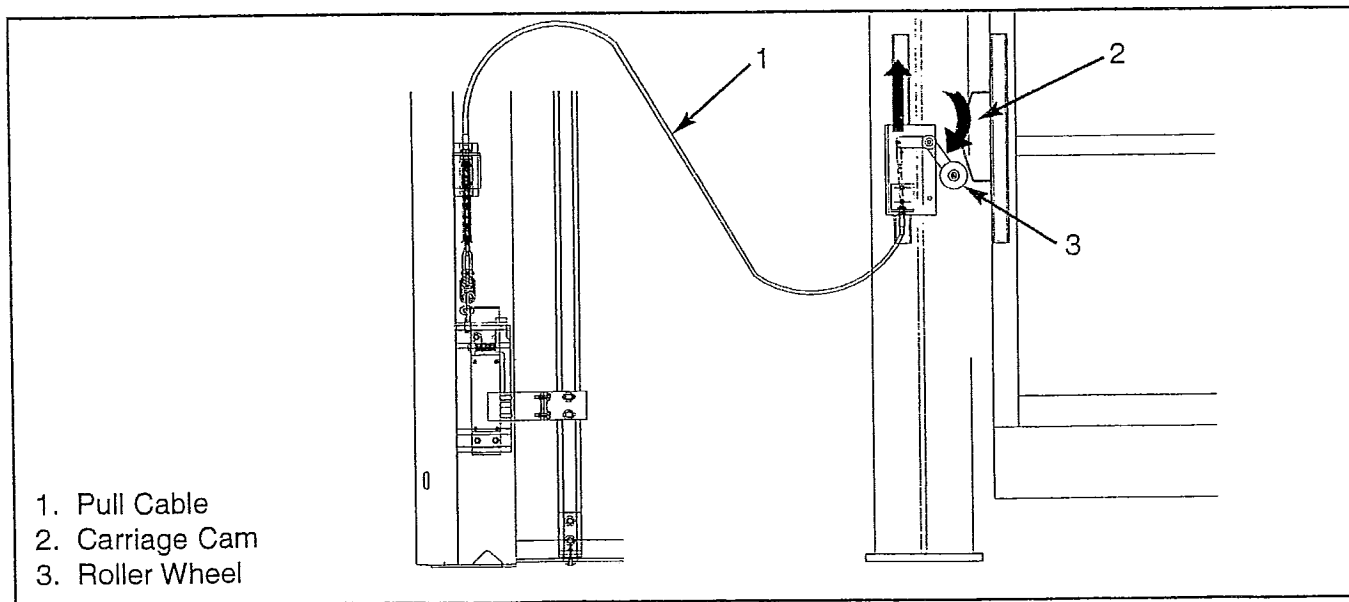


Figure 5

⚠ WARNING

Proper engagement of the roller and cam is critical. The roller arm should pull the cable out of the sleeve. Improper alignment could cause the roller arm to push the cable into the sleeve causing it to bend and break.

2. Edge of cam must not be past center of wheel toward bracket. See Figure 6.

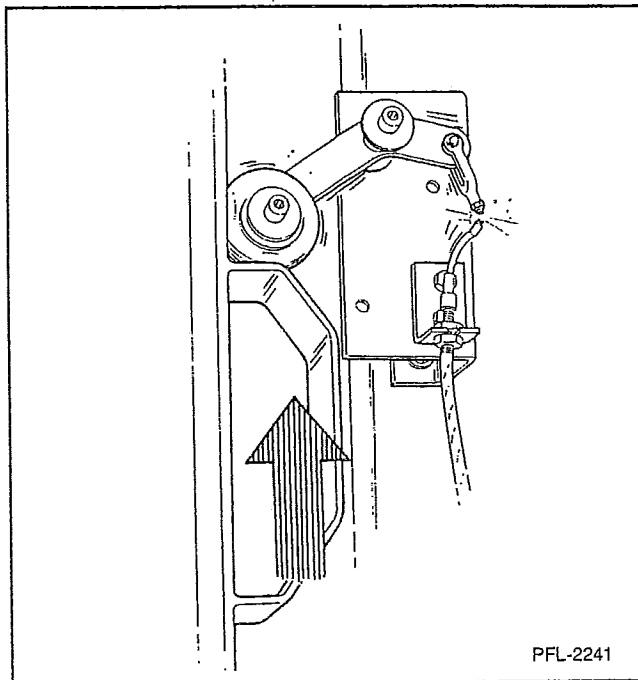


Figure 6

Gate Cable Interlock Installation Instructions

POSITION OF THE ROLLER ARM ON THE LIFT COLUMN

1. The position of the roller on the cam is very important. The roller must roll freely on the cam incline. See Figure 7.

CAUTION

Do not allow the roller to hang up on the top/bottom horizontal surface of the cam.

Proper engagement of the roller and cam is critical. The roller arm should pull the cable out of the sleeve. Improper alignment will cause the roller arm to push the cable into the sleeve causing it to bend and break.

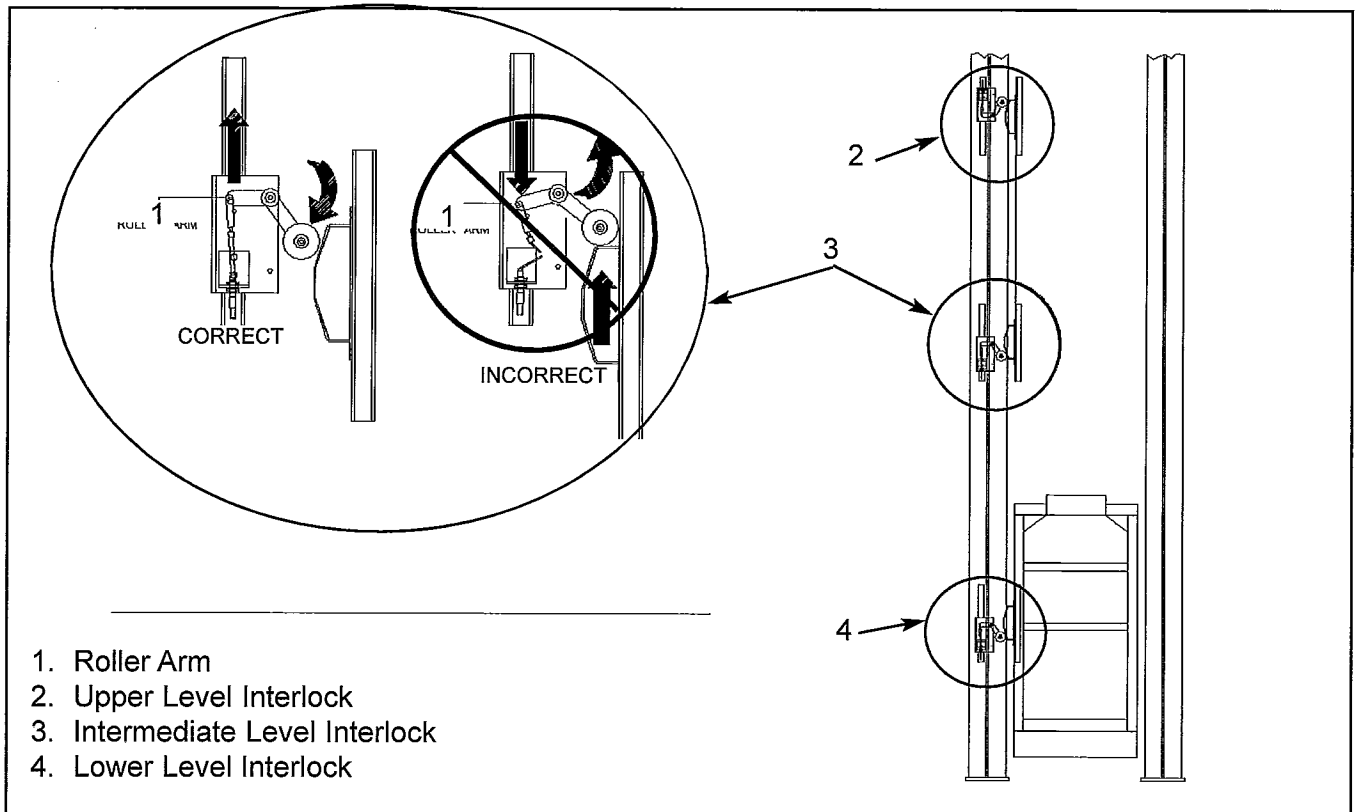


Figure 7

2. At the top and bottom levels, the roller arm assembly should be oriented so the cam hits the roller wheel arm in the pivot direction. See Figure 8.

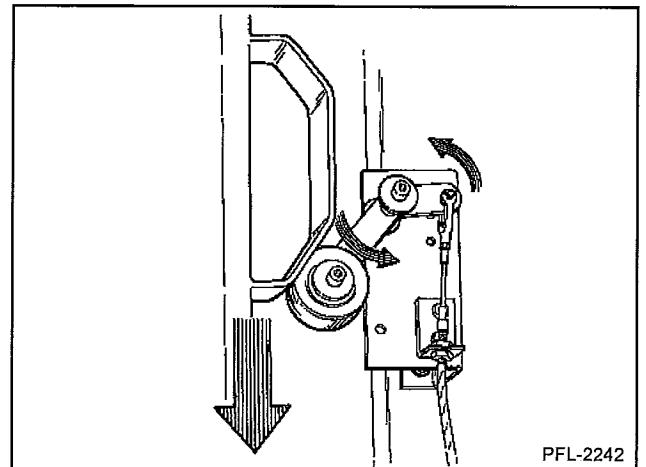


Figure 8

Gate Cable Interlock Installation Instructions

3. If you need to change roller arm assembly to opposite configuration, unbolt angle and pivot arm and reassemble in new location. See Figure 9.

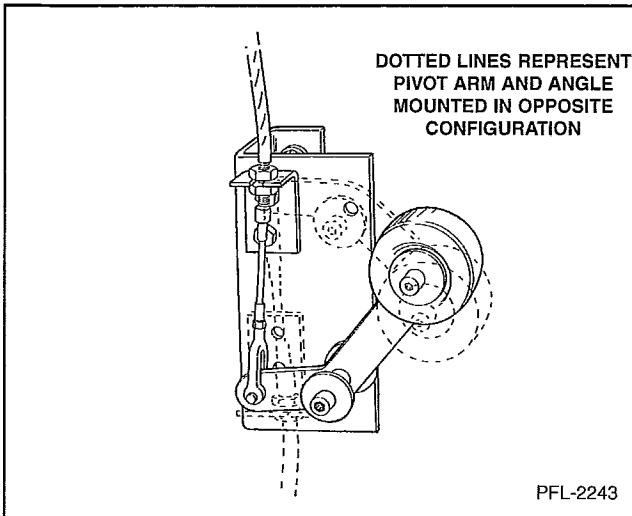


Figure 9

NOTE

Only on the intermediate levels, the cam will hit the roller arm going in both directions, so alignment is important. See Figure 7.

The edge of the cam must be past center of wheel (away from bracket) to allow pivot arm to rotate. See Figure 10.

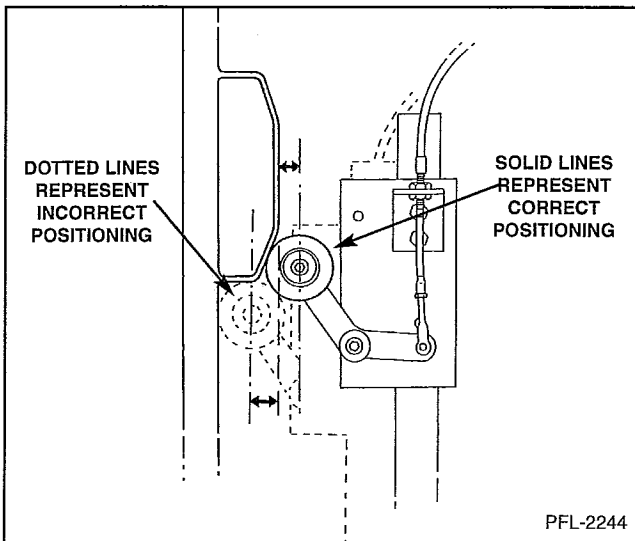


Figure 10

If cam hits under the wheel not allowing the arm to pivot, the cable will break. See Figure 6.

Anderson or GAL Cable Interlocks - Cantilever

FOR USE ON ROLLED COLUMN SERIES D & FM UNITS
(See reverse side for installation instructions.)

Anderson Cable Interlock - Cantilever

For Use on Vertical Acting & Bi-Panel Vertical Acting Gates

GAL Cable Interlock - Cantilever

For use on Sliding & Single Panel Swing Gates

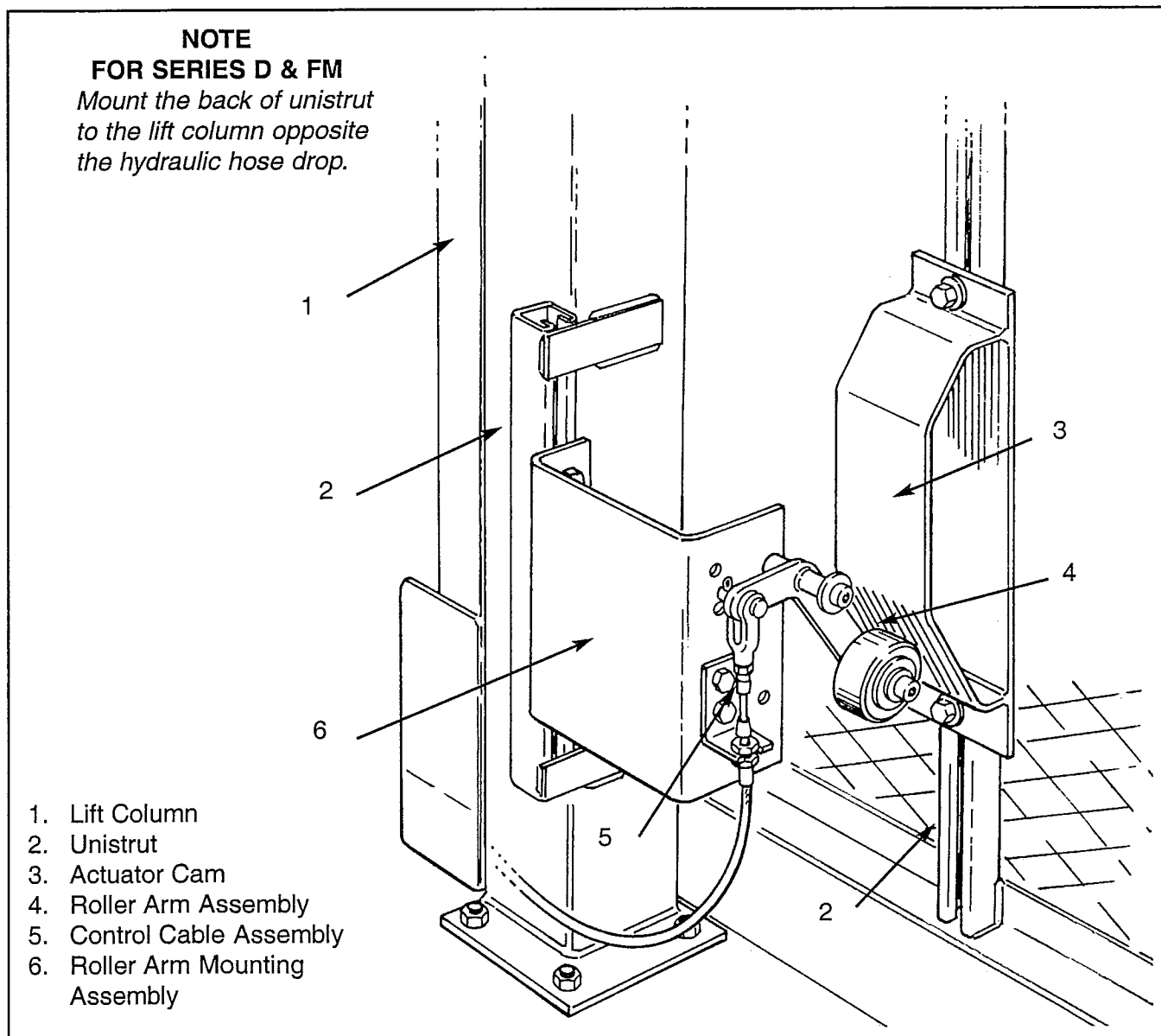


Figure 1

The cable interlock is attached to unistrut mounted to the back of the lift column opposite the pump unit. The actuator cam is attached to unistrut mounted to the back of the carriage opposite the pump unit. Make sure the interlock cable roller assembly and the actuator cam align properly before welding. Once you have an understanding of how these devices work together, you can proceed to weld both devices in place. If you have any questions, or require assistance, please contact the Product Support Department.

Pflow Industries, Inc., 6720 N. Teutonia Avenue, Milwaukee, WI 53209
Phone (414) 352-9000; Fax 352-9002

Anderson or GAL Cable Interlocks - Cantilever

FOR USE ON ROLLED COLUMN SERIES D & FM UNITS

1. Mount unistrut to the back of the column opposite the pump unit using the brackets provided. See Figure 2.

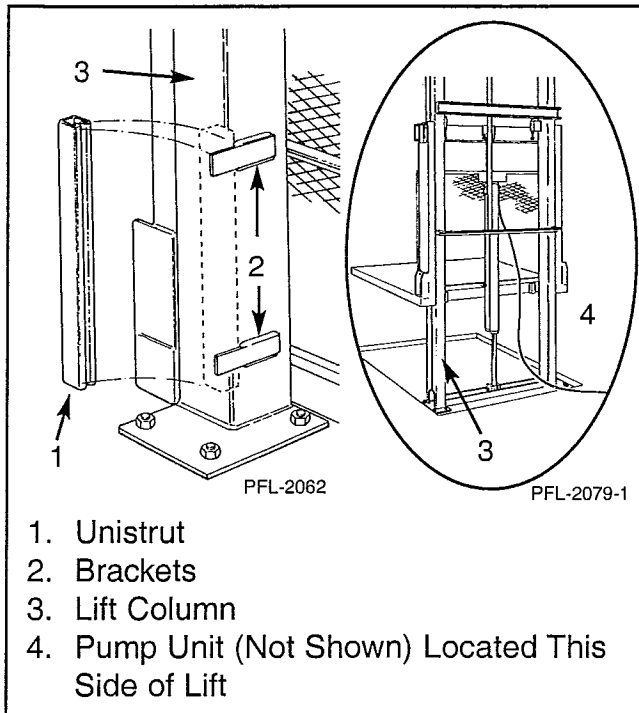


Figure 2

2. Attach the interlock cable roller assembly to the unistrut using spring nuts and bolts. See Figure 3.

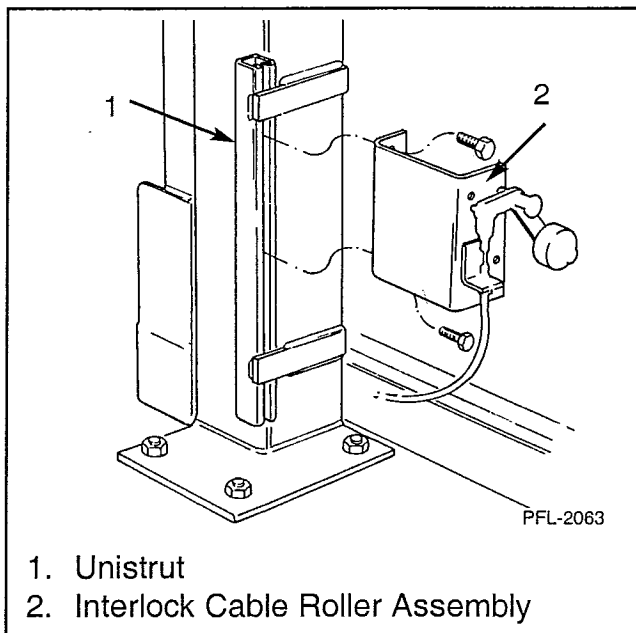


Figure 3

3. Install the piece of angle provided and a piece of unistrut on the back of the carriage. Depending on where the pump unit is located, you may do this installation on either side of the carriage as shown. See Figure 4.

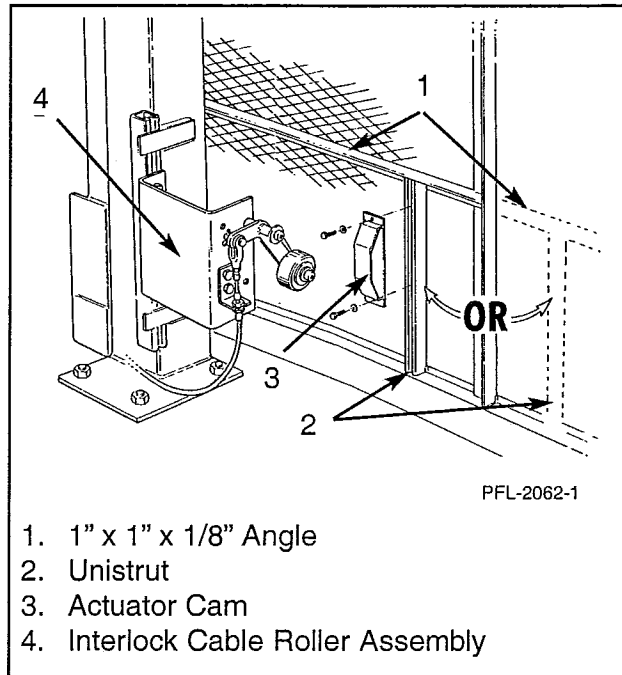


Figure 4

4. Make sure the interlock cable roller assembly and the actuator cam align properly. Attach the actuator cam to the unistrut using 3/8" hex head screws with washers and lockwashers. See Figure 4.
5. Weld angle at points shown. Weld unistrut to the angle and to the bottom of the carriage. See Figure 5.

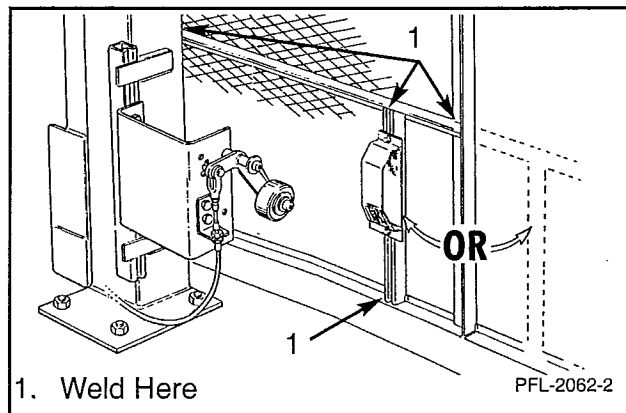
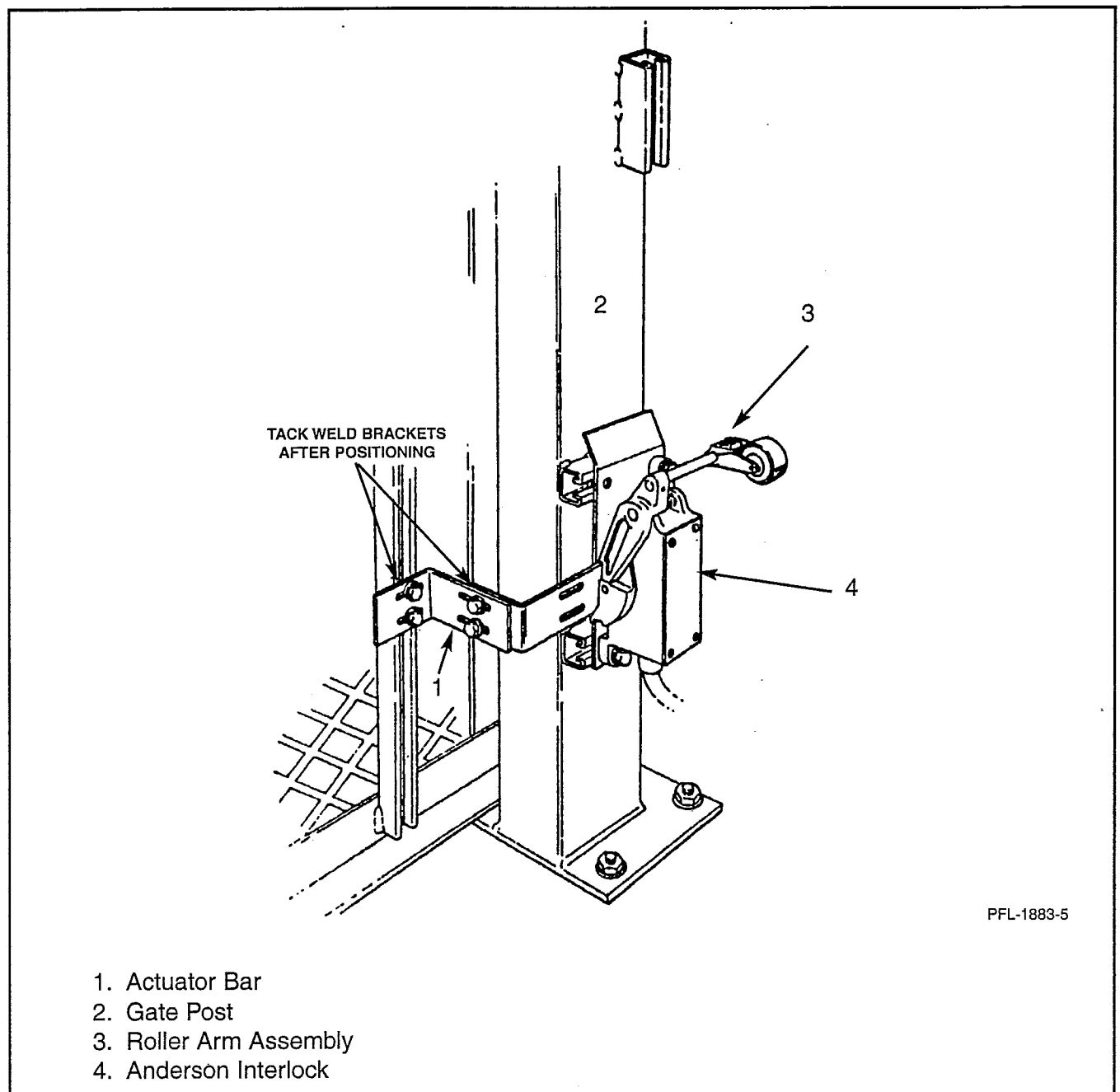


Figure 5

Anderson Interlock for Vertical Acting Gate

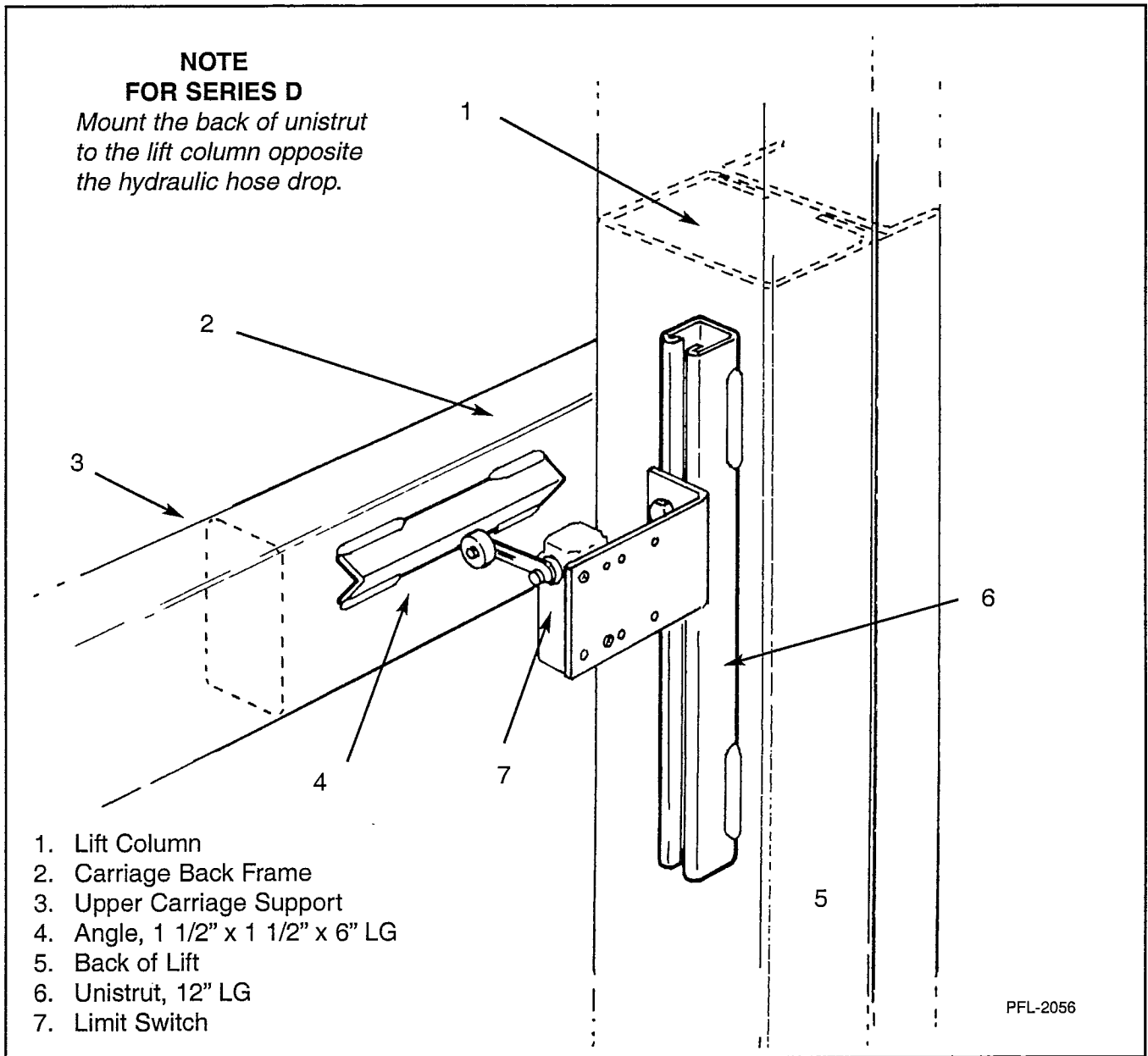


If you have any questions, or require assistance, please contact the Product Support Department.

Pflow Industries, Inc., 6720 N. Teutonia Avenue, Milwaukee, WI 53209
Phone (414) 352-9000; Fax (414) 352-9002

Limit Switch Mounting - Cantilever

FOR USE ON ROLLED COLUMN SERIES D UNITS



NOTE: Make sure the angle and unistrut are in the correct position before welding them in place.

1. Weld 1 1/2" x 1 1/2" angle to back of upper carriage support.
2. Weld unistrut to inside of lift column
3. Attach limit switch to unistrut.

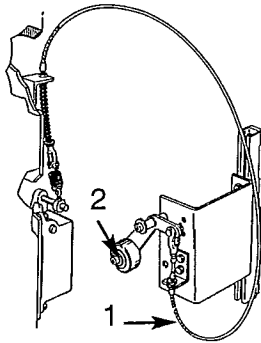
If you have any questions, or require assistance, please contact the Product Support Department.

Pflow Industries, Inc., 6720 N. Teutonia Avenue, Milwaukee, WI 53209
Phone (414)352-9000; Fax (414) 352-9002

Interlocks & Gate Status Switches

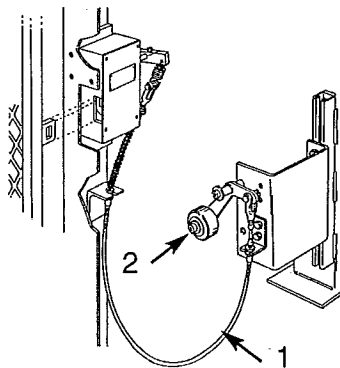
The **INTERLOCK** is a device used to mechanically prevent the gate from opening. Below are the standard types of interlocks supplied. As this is a safety device, replacement components are only available as shown below. Some configurations may vary by application.

ANDERSON CABLE



PFL-1885-6A

GAL CABLE

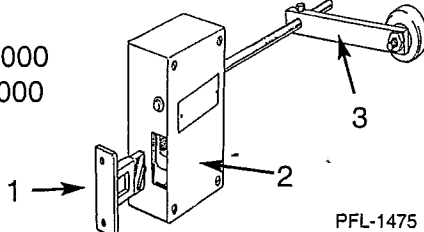


PFL-1885-7A

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

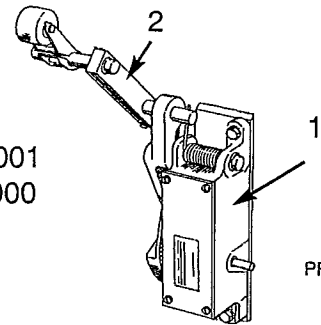


PFL-1475

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

ANDERSON (Right Hand Shown)

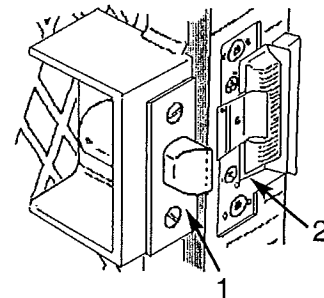
RH #2678-0001
LH #2678-0000



PFL-1368

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

ELECTRIC STRIKE

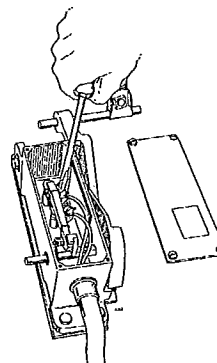


PFL-1389

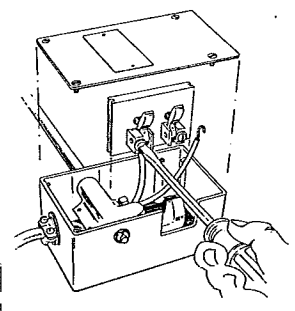
1. Spring Latch #7566-0000
2. Strike #9169-0000
3. Button #9096-0000

ANDERSON

GAL



PFL-1401

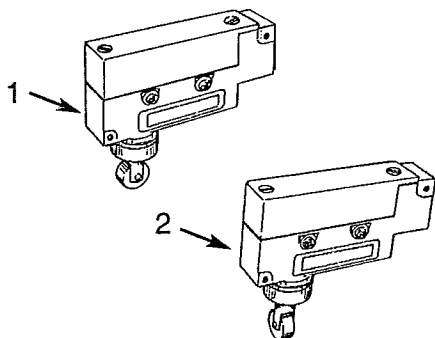


PFL-1250

See schematic for proper wiring instructions.

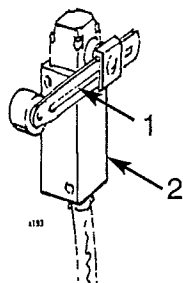
Interlocks & Gate Status Switches

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. Arm #2891-0005
2. Switch #2893-0005

Enclosure Panels

In accordance with ANSI B20.1, Pflow Industries supplies standard enclosure panels to be installed around the unit as required by site conditions. Our panels are manufactured of 1-1/2" angle iron frame and 15 gauge flattened expanded metal which will reject a ball 2" in diameter.

The general arrangement drawing provides a "Plan View" for each level. This will show the proper placement and appropriate size for layout and installation purposes. Applications that require full height enclosures will have an additional drawing in the shipping packet. Modifications for site obstructions are best done in the field by the installer. See Figure 1.

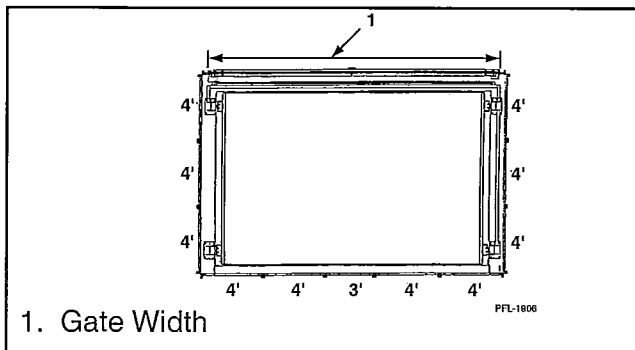


Figure 1

Standard panels are 8' high in compliance with OSHA requirements. Total height includes 1-1/2" legs. These panels are to be mounted to the floor. See Figure 2.

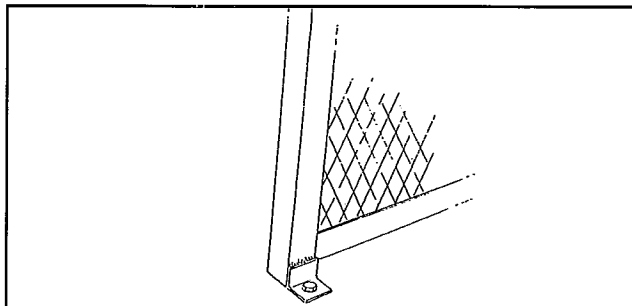


Figure 2

When stacking panels, as in full height applications or a transom above a gate, panels without legs are used on top of our regular panels.

Enclosures must be braced to the VRC or building structure by the mechanical installer. Use of structural angle is suggested.

Stiffeners are provided whenever two panels in excess of 6" meet. See Figure 3.

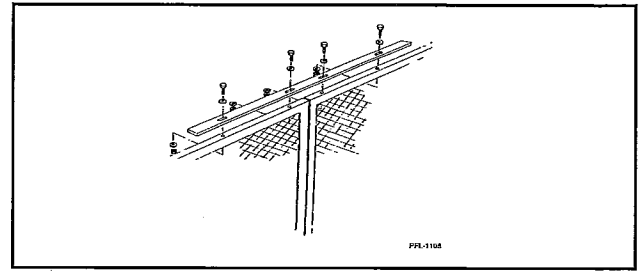


Figure 3

Filler panels are used to fill a gap of less than 6". See Figure 4.

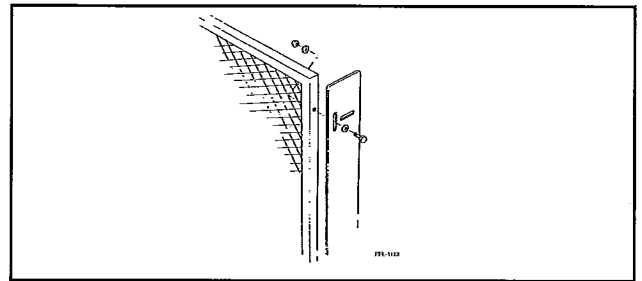


Figure 4

Corner angles are required for 90 degree attachment of panels. See Figure 5.

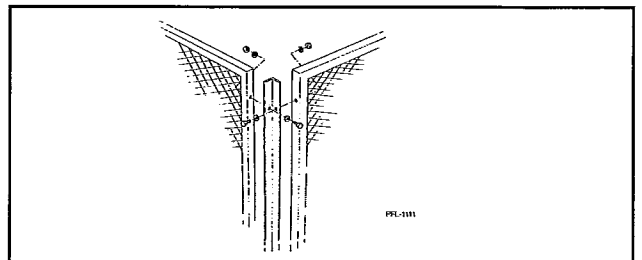


Figure 5

Wall attachment kits are provided when a gate or panel meets an existing wall. See Figure 6.

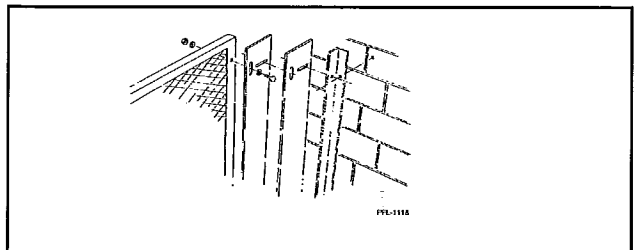


Figure 6

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

Regulatory Information	(216) 566-2902
Medical Emergency	(216) 566-2917
Transportation Emergency*	(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	V. M. & P. Naphtha ACGIH TLV OSHA PEL OSHA PEL	300 PPM 300 PPM 400 PPM STEL	12 mm
9	108-88-3	Toluene ACGIH TLV OSHA PEL OSHA PEL	20 PPM 100 ppm (Skin) 150 ppm (Skin) STEL	22 mm
4	100-41-4	Ethylbenzene ACGIH TLV OSHA PEL OSHA PEL	20 PPM 100 PPM 125 PPM STEL	7.1 mm
22	1330-20-7	Xylene ACGIH TLV ACGIH TLV OSHA PEL OSHA PEL	100 PPM 150 PPM STEL 100 PPM 150 PPM STEL	5.9 mm
24	67-64-1	Acetone ACGIH TLV ACGIH TLV OSHA PEL	500 PPM 750 PPM STEL 1000 PPM	180 mm
4	110-19-0	Isobutyl Acetate ACGIH TLV OSHA PEL	150 PPM 150 PPM	12.5 mm
1	108-65-6	1-Methoxy-2-Propanol Acetate ACGIH TLV OSHA PEL	Not Available Not Available	1.8 mm
3	112926-00-8	Amorphous Precipitated Silica ACGIH TLV OSHA PEL	10 mg/m3 as Dust 6 mg/m3 as Dust	
2	14807-96-6	Talc ACGIH TLV OSHA PEL	2 mg/m3 as Resp. Dust 2 mg/m3 as Resp. Dust	
4	13463-67-7	Titanium Dioxide ACGIH TLV OSHA PEL OSHA PEL	10 mg/m3 as Dust 10 mg/m3 Total Dust 5 mg/m3 Respirable Fraction	
0.3	1333-86-4	Carbon Black ACGIH TLV OSHA PEL	3.5 MG/M3 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

Health	2*
Flammability	3
Reactivity	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

FLASH POINT 1 °F TCC	LEL 0.9	UEL 13.1	FLAMMABILITY CLASSIFICATION 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/m3 (total dust), 3 mg/m3 (respirable fraction), OSHA PEL 15 mg/m3 (total dust), 5 mg/m3 (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

PRODUCT WEIGHT	7.84 lb/gal	939 g/l
SPECIFIC GRAVITY	0.94	
BOILING POINT	132 - 325 °F	55 - 162 °C
MELTING POINT	Not Available	
VOLATILE VOLUME	77%	
EVAPORATION RATE	Slower than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	Not Available	
VOLATILE ORGANIC COMPOUNDS (VOC Theoretical - As Packaged)		
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 & 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/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	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

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

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

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

Health	2*
Flammability	3
Reactivity	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**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/m³ (total dust), 3 mg/m³ (respirable fraction), OSHA PEL 15 mg/m³ (total dust), 5 mg/m³ (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

PRODUCT WEIGHT	9.62 lb/gal	1153 g/l
SPECIFIC GRAVITY	1.16	
BOILING POINT	132 - 360 °F	55 - 182 °C
MELTING POINT	Not Available	
VOLATILE VOLUME	73%	
EVAPORATION RATE	Slower than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	Not Available	
VOLATILE ORGANIC COMPOUNDS (VOC Theoretical - As Packaged)		
	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 & 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

IDENTIFICATION
Effective Date: January 1, 2013

Manufactured By: Sherwin Williams
6125 W. Douglas Avenue
Milwaukee, WI 53218 1596 USA

24-Hour Emergency Telephone
Domestic US: 1-800-373-7542 International: 1-484-951-2432 Haz Mat Services

Trade Name: **F78XXL13851-4357 2871-0003 PFLOW BLUE PAINT**
Mfg. Part Number: **20016 00341 F78XXL13851-4357 2871-0003 PFLOW BLUE PAINT**

II. HAZARDOUS INGREDIENTS

CAS #67-64-1 Acetone	Weight %: 20 – 50 Footnote (1)
ACGIH TLV: 500 ppm TWA OSHA PEL: 1000 ppm TWA VAPOR PRESSURE: 185 MM Hg60F	ACGIH STEL: 1000 ppm OSHA CEILING: LEL: 2.6% OSHA PEAK:
CAS #75-28-5 Isobutane	Weight %: 5 - 20
ACGIH TLV: NE OSHA PEL: NE VAPOR PRESSURE: 3.1 atm	ACGIH STEL: OSHA CEILING: LEL: 1.6% OSHA PEAK:
CAS # 74-98-6 Propane	Weight %: 5 -20
ACGIH TLV: 2500 ppm TWA OSHA PEL: 1000 ppm TWA VAPOR PRESSURE: 7150mmHg@20c	ACGIH STEL: OSHA CEILING: LEL: OSHA PEAK:
CAS # 1330-20-7 Xylene	Weight %: 5 – 20 Footnote (1)
ACGIH TLV: 100 ppm TWA OSHA PEL: 100 ppm TWA VAPOR PRESSURE: 6.6mmHg@20c	ACGIH STEL: 150 ppm OSHA CEILING: LEL: 1% OSHA PEAK:
CAS # 100-41-4 Ethyl Benzene	Weight %: 1 - 5
ACGIH TLV: 100 ppm TWA OSHA PEL: 100 ppm TWA VAPOR PRESSURE:	ACGIH STEL: 125 ppm OSHA CEILING: LEL: OSHA PEAK:
CAS # 123-42-2 Diacetone Alcohol	Weight %: 1 - 5 Footnote (1)
ACGIH TLV: 50 ppm TWA OSHA PEL: 50 ppm TWA VAPOR PRESSURE: 1 mm	ACGIH STEL: 75 ppm OSHA CEILING: LEL: 1.8% OSHA PEAK:
CAS #64742-95-6 Aromatic 100	Weight %: 1 - 5 Footnote (1)
ACGIH TLV: OSHA PEL: VAPOR PRESSURE: 2.7 mmHg@20c	ACGIH STEL: OSHA CEILING: LEL: 0.9% OSHA PEAK:

Warning Messages:

- (1) Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Chronic exposure may cause damage to the central nervous system, respiratory system, lung, eye, skin, liver, gastro intestinal tract, spleen, kidneys and blood.
- (2) See Section IX for reportable Hazardous Air Pollutants.

III. PHYSICAL DATA

BOILING RANGE: -43-356 degree Farenheight

EVAPORATION RATE: Propellant: Faster then ether SOLVENT: Slower than ether

PERCENT VOLITILE BY VOLUME: 87.34% WEIGHT PER GALLON: 6.64 LBS.

VAPOR DENSITY: Propellant is lighter than air Solvent is heavier than air

ACTUAL VOC (lb/gal): 3.59

EPA VOC (lb/gal): 4.59

EPA VOC: (g/L): 550.07

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: -156 Degree Farenheight
 - 105 Degree Celsius

LEL: Refer to Section II

FLAMMABILITY CLASSIFICATION: CLASS 1A

HAZARD CLASSIFICATION: FLAMMABLE

CONSUMER COMMIDTY: ORM-D

EXTINGUISHING MEDIA: *carbon dioxide, dry chemical, or fire foam”

UNUSUAL FIRE AND EXPLOSION HAZARDS: With excessive heat, can will rupture from internal pressure and discharge flammable contents. Vapors may ignite explosively. Keep away from heat, sparks and flame. Do not smoke. Extinguish all flames and pilot lights, turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone. Prevent build up of vapors by opening all windows and doors to achieve cross-ventilation.

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 auto ignition or explosion when exposed to extreme heat.

V. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: See Section II.

EFFECTS OF OVEREXPOSURE:

Inhalation – Anesthetic

Irritation of the respiratory tract or acute nervous system. Depression caused by headache, dizziness, staggering gait, confusion, unconsciousness, dizziness

Acute – High vapor concentrations are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness, unconsciousness, and other central nervous system effects, including death. Product has a low order of acute oral and dermal toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

Chronic- Xylene contains ethyl benzene which has been classified as a possible carcinogen to humans, group 2B, by the International Agency for the Research on Cancer (IARC), based on sufficient evidence in laboratory animals but inadequate evidence for cancer in humans. Prolonged or repeated overexposure to ethyl benzene may cause the following: kidney effects, liver effects, lung effects, thyroid effects, testicular effects, pituitary effects.

MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: consult physician

PRIMARY ROUTE (S) OF ENTRY: Eyes, Ingestion, Skin and Inhalation

EMERGENCY AND FIRST AID PROCEDURES:

INHALATION: Remove to fresh air.

EYES: Flush immediately with large amounts of water for at least 15 minutes. Talk to a physician for medical treatment.

SKIN: Wipe off with towel. Wash with soap and water. Remove contaminated clothing.

INGESTION: If swallowed, call a physician immediately. Remove stomach contents by gastric suction or induce vomiting only as directed by medical personnel. Never give anything by mouth to an unconscious person.

HMIS Rating

Health 3, Flammability 4, Physical Hazard 0, Personal Protection G

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks.

VI. Reactivity Data

STABILITY: STABLE

Hazardous Polymerization: *will not occur*

INCOMPATIBILITY: oxidizing agents, halogens, strong reducing agents and strong bases.

HAZARDOUS DECOMPOSITION PRODUCTS: When heated to decomposition, toxic fumes are formed.

CONDITIONS TO AVOID: Fire, burning, and welding

VII. SPILL OR LEAK PROCEDURES

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

Remove all sources of ignition (flames, hot surfaces and electrical, static or frictional sparks). Avoid breathing vapors. Ventilate area. Use non-sparking tools. Remove with inert absorbent.

WASTE DISPOSAL METHOD: Dispose of in accordance with local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: For casual use none required. To avoid breathing vapors or spray mist, open windows and doors or use other means to ensure fresh air entry during application and drying. If you experience eye watering, headaches or dizziness, increase fresh air or wear respiratory protection (NIOSH/MSHA approved) or leave the area. Avoid contact with eyes, skin and clothing.

VENTILATION: Provide general dilution or local exhaust ventilation in volume and pattern to keep TLV and LEL of most hazardous ingredients in Section II, below acceptable limits.

PROTECTIVE GLOVES: Permeation resistant gloves (butyl rubber, nitrile rubber) should be used. Cover as much of the exposed skin area as possible with appropriate clothing.

EYE PROTECTION: Splash proof eye and goggles. In emergency situations, use eye goggles with a full-face shield.

OTHER PROTECTIVE EQUIPMENT: Protective clothing such as coveralls or lab coats must be worn

HYGENIC PRACTICES: See section V

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:

Do not store above 120 degrees F. Store large quantities in buildings designed and protected for storage of NFPA Class 1A flammable liquids.

OTHER PRECAUTIONS: Do not spray in eyes. Do not puncture or incrate cans. Do not stick a pin or nay sharp objects into opening of can. Finger must not protrude over spray button.

LIST OF HAZARDOUS AIR POLLUTANTS SUBJECT TO THE PROVISIONS OF THE CLEAN AIR ACT, TITLE I SECTION 112 'National Emission Standards for Hazardous Air Pollutants':

Ingredient	CAS#	Wt% of HAPS In product	Pounds HAPS/ Gal product
Xylene	1330-20-7	15.0 %	1.0
Ethyl Benzene	100-41-4	3.4 %	0.2

X. STABILITY & REACTIVITY

Not available at this time

XI. TOXICOLOGICAL INFORMATION

No information available at this time

XII. ECOLOGICAL INFORMATION

No information available at this time.

XIII. DISPOSAL INFORMATION

Disposal should be made in accordance with local, state and federal regulations.

XIV. TRANSPORTATION INFORMATION

US Department of Transportation

Proper shipping name: Aerosols Flammable

UN ID Number: UN1950

International Air Transport Association

Proper Shipping name: Aerosols, Flammable

Hazardous Class: 2.1

UN ID Number: UN1950

International Maritime Organization

Proper Shipping name: Aerosols, Flammable

Hazardous Class: 2

UN ID Number: UN1950

Please consult 49CFR to ensure that shipments comply with regulations. Exceptions may be applied and can be found in 49CFR subchapter C.



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, kgfm3 @ 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

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				
ISO GRADE	32	46	68	100	150
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

SECTION I

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

SECTION II-HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

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.

SECTION 111-PHYSICAUCHEMICAL CHARACTERISTICS

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

N: 15713-0020

MSD 122

msd122

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

SECTION IV-FIRE AND EXPLOSION HAZARD DATA

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.

SECTION V-REACTIVITY DATA

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 & HCl.

HAZARDOUS POLYMERIZATION: _____May Occur _____X_____Will Not Occur

Conditions to Avoid:

SECTION VI-HEALTH HAZARD DATA

HEALTH HAZARDS (ACUTE OR CHRONIC): Minimal Toxicity.

MSD122

MSD122

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

SECTION VII-PRECAUTIONS FOR SAFE HANDLING AND USE

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/m³ or less is recommended.

SECTION VIII-CONTROL MEASURES

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

N: 15713-0020
MSD 122

MSD122

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.