VERTICAL RECIPROCATING CONVEYOR MANUAL
(V-LIFT™ - DIRECT ACTING HYDRAULIC)

- INSTALLATION INSTRUCTIONS
- OPERATING INSTRUCTIONS
- MAINTENANCE & TROUBLE SHOOTING
- PARTS LIST

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SAFETY

To ensure your safety and the safety of those around you, it is important that you read, understand and follow all the safety precautions. Safety precautions in this manual are labeled DANGER, WARNING or CAUTION.

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 the gate open, a safety device is not working and could result in serious injury or death.

CAUTION
DO NOT exceed rated capacity.

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

ELECTRICAL SAFETY PRECAUTIONS

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

Safety precautions when working on live circuits or equipment:

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

General Operation
The VRC is designed for the movement of freight only and is not intended for riders/passengers.

The carriage platform is guided on two main vertical support columns. There is one double hydraulic cylinder located between the columns connected to the carriage platform and lower portion of support columns. The carriage platform is raised by extending the cylinder rods and lowered by retracting the cylinder rods. There is a direct correlation between the movement of the cylinder and carriage (direct acting). There is no reduction ratio.

IMPORTANT: All safety gates must be closed before the lift can operate.

EQUIPMENT COMPONENTS

Note: see next page for component location.

Carriage Platform
The carriage platform is the moveable platform where material is loaded for transport to another level.

Guide Columns
The guide columns consist of two 6" wide flange beams used to support and guide the carriage platform during operation.

Wheelblocks
The wheelblocks contain the roller assemblies which guide the carriage platform within the guide columns.

Hydraulic Power Unit
The power unit consists of a hydraulic gear pump driven by an electric motor mounted to a hydraulic reservoir. The gear pump provides pressure to raise the carriage platform. Adjustable pressure relief valve and pressure switch protect against excessive pressure from overloading or jam conditions. The power unit is remotely mounted along with the main control panel.

Safety Gates and Enclosures
Where applicable, safety gates and enclosures are located at all access points of the carriage platform. Electrical interlock switches on each gate prevent the lift from operating until all gates are closed. Gates remain closed and locked while the carriage platform is raised or lowered and until it stops at the desired location.

Free-fall Protection
A velocity fuse protects the carriage from a free-fall condition due to a hose rupture. The velocity fuse is connected to the double hydraulic cylinder.

Carriage Positioning
The carriage platform stops at the upper landing by two mechanical stops. The mechanical stops also prevent over travel. At the lower landing the carriage platform stops on the floor (or pit where applicable).

Control Panel and Call/Send Stations
A control panel mounted to the hydraulic power unit stand contains the transformer and other components required for lift operation.

Call/send stations are located at each level. Stations consist of up, down and emergency stop buttons.
Adjustable Carriage Stops

L.H. Guide Column

R.H. Guide Column

Double Acting Hyd. Cylinder

Support Braces

Wheelblocks

Carriage Platform Assembly

Remote mounted power unit with control panel
EQUIPMENT ARRIVAL AND UNPACKING

A fork truck with a lifting capacity of 2000 lb. (or alternative) will be required to off-load the delivery truck. Material is typically delivered on a flatbed trailer.

Verify the number of items on the Bill of Lading agrees with the number of items delivered. 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 damage that has occurred. If damaged, the shipment must be signed for as such. All hidden damage must be reported directly to the freight carrier.

Contact Wildeck, Inc. immediately if new components need to be sent out to replace the damaged components. Completion time of the installation may be affected by the delivery of the new components. Wildeck warranty does not cover lost time and/or additional trips due to damaged components.

Carefully unpack the VRC. Identify and match all parts with the parts list provided with the shipment. Each component is tagged.

Call Wildeck, Inc. if any parts are missing or not specified on the parts list.

Do not proceed with installation until all parts and quantities are accounted for and are accurate.
PRE-INSTALLATION CHECKLIST

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

Mechanical Installer Responsibilities

- Complete mechanical erection of the equipment as sold by Wildeck, Inc., called out on the general arrangement drawing and in accordance with all instructions within this manual.

- Return trip upon completion of the electrical installation for final checkout, adjustments and training.

Customer Responsibilities

- Unloading and transportation of the equipment to the installation area, unless coordinated with mechanical installer.

- If unit requires storage, consult Wildeck, Inc. 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 contact Wildeck, Inc.

If you have any questions or concerns, please contact Wildeck, Inc. 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?
- Is there a pick point capable of lifting the necessary components?
- Are safety meetings required?
- Are there any work procedure/safety guidelines particular to the job site?
- 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 welding permitted? Is a “hot permit” required? Is a fire watch required?
- Special welding requirements if you have special coatings, i.e. hot galvanized, etc.
- Is temporary power available near the installation area?
- 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 Wildeck general arrangement drawing? Had this information been provided to Wildeck?
- 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?
INSPECTION OF SITE

- Compare the dimensions as called out on the general arrangement drawing to the actual site conditions. Report any discrepancies to Wildeck immediately.

- Some areas to look for that could be a problem include:
  - pit size and/or out of square
  - overhead clearance
  - gate clearances
  - floor-to-floor clearance
  - floor opening size and/or out of square
  - proper alignment of floor opening and pit

- Check for any protrusions that could interfere with either the installation or operation of the VRC.

TOOLS REQUIRED FOR VRC INSTALLATION

The following is a list of tools Wildeck considers necessary to install a VRC in a professional and expedient manner. Individual sites and applications may require additional items as needed. If you have any questions regarding these items, contact Wildeck, Inc.

- 2000 lb. capacity fork truck or alternative
- Chain fall (2000 lb. capacity minimum) or Come-A-Long
- Cables or hook chains with 1000 lb. or greater capacity
- "C" clamps
- Drift pin
- Carpenter’s square
- 4 ft. level
- Socket set – sockets to 1 ½"
- Hammer drill and bits
- Hack saw, reciprocating saw or portable band saw
- Drill and bits
- Extension cords
- Portable light
- Sledge hammer
- Allen wrenches
- Open or box end wrenches to 1 ½”
- Chalk line
- Plumb bob
- Grease gun
- 25 ft. measuring tape
- Rags
- Oil catch pan

Optional Tools

- Welding machine and equipment (helmet, rods, gloves, etc.)
- Cutting torch with full tanks
- Disc grinder
- Fire extinguisher
**Installation Instructions**

**STEP # 1 - Installing Guide Columns**

**NOTE:** Carriage platform may need to be set in place prior to installing guide columns, if space is restricted.

Prior to erecting guide columns, it is recommended to attach carriage stops to columns. Final adjustments to stops to be made at the end of installation.

It may be advantageous to attach bracing to guide columns prior to erecting columns, refer to step # 4.

Erect guide columns and position as shown. Refer to the General Arrangement drawing for guide angle to guide angle (G.A. to G.A.) and floor edge to guide angle distances.

**IMPORTANT:** Guide columns must be plumb in both directions: side-to-side and front-to-back. G.A. to G.A. distance must be held top to bottom.
STEP # 2 - Attaching Crossmember Channels

Attach crossmember channels to guide columns to ensure G.A. to G.A. distance is held top to bottom.

Do not fully tighten bolts on lower crossmember channel. Adding shims may be required to provide the proper clearance between guides and hydraulic cylinder. Refer to step # 12.

Secure crossmember channels to guide columns using:
Hex Hd. Cap Screws, 1/2-13 x 1-1/2"
Flat Washers, 1/2"
Lock Washers, 1/2"
Hex Nuts, 1/2-13
Attach stiffener braces to backside of mounting tabs. Braces to overlap each other.

**WARNING:** Installing stiffener braces to inside of mounting tabs will interfere with the movement of the hydraulic cylinder.

Stiffener bracing is used to help eliminate sway of the unit.

Secure stiffener braces to guide columns using:
- Hex Hd. Cap Screws, 1/2-13 x 2"
- Flat Washers, 1/2"
- Lock Washers, 1/2"
- Hex Nuts, 1/2-13
Determine location where braces will be attached to floor/bldg. structure (refer to General Arrangement drawing) and mark guide columns accordingly. Drill Ø1/2" mounting holes in columns for braces.

In place of bolted connections, braces can be welded to the guide columns and floor/bldg. structure by a certified welder. Minimum E70 Electrode material required (low Hydrogen preferred).

See following diagrams for other recommended brace connections to floor.

For bolted connections:
- Secure braces to guide columns using:
  - Hex Hd. Cap Screws, 1/2-13 x 1-1/2"
  - Flat Washers, 1/2"
  - Lock Washers, 1/2"
  - Hex Nuts, 1/2-13

- Secure braces to floor/building structure using:
  - Hex Hd. Cap Screws, 3/8-16 x 1-1/2"
  - Flat Washers, 3/8"
  - Lock Washers, 3/8"
  - Hex Nuts, 3/8-16

NOTE: Wheels run along outside flanges of guide columns, do NOT bolt anything to outside flanges of columns.
Installation Instructions

STEP # 4 - Optional Brace Connections

ANCHORING TO CONCRETE FLOOR

CONCRETE BLOCK
(through bolt with backing plate)

WELD TO CURB ANGLE
STEP # 4 - Optional Brace Connections Continued

WOOD JOIST - PREFERRED
(through bolt through floor)

WOOD JOIST - ACCEPTABLE
(through bolt with backing plate)

WOOD JOIST - NOT RECOMMENDED
(lag bolt into joist)
Refer to the Power-Stud+ Installation Specifications in Appendix A5 & A6 of this manual.

1. Using a standard Ø1/2" ANSI drill bit. Drill anchor holes into the base material to a depth of at least 4". Blow the holes clean of dust and other material.

2. Place washer onto anchor and thread on nut. Drive anchor into hole to a minimum of 3-3/4" deep. Tighten the nut using a 3/4" wrench to the appropriate installation torque making sure the washer and nut are firmly seated against the base plate.

3. Be sure all anchors are at the required embedment depth and that the maximum torque has not been exceeded.

4. Recheck guide columns for plumb side-to-side and front to back.
STEP # 6 - Installing Wheelblocks into Guide Columns

Prior to installing carriage, install wheelblocks into guide columns through gap at base of columns. Position wheelblocks so that the guide rollers are towards the front of the lift and located on either side of the guide angle as shown in the Top View.

**NOTE:** Mounting hardware is sent attached to the wheelblocks, remove prior to installing carriage.

Insert wheelblocks through gap at base of the guide columns.
Prior to installing carriage, attach cylinder guide assembly to lower crossmember channel. Refer to drawing # 3829 in Appendix B of this manual for detail on the cylinder guide assembly.

Slide lower cylinder mount bracket into position behind the guide columns. Do not bolt to columns at this point as shims maybe required to plumb hydraulic cylinder. Refer to step # 14.

NOTE: If room permits, lower cylinder mount bracket can be placed into position after carriage/cylinder assembly has been installed.

Secure cylinder guide to crossmember channel using:
- Hex Hd. Cap Screws, 3/8-16 x 1-1/2"
- Flat Washers, 3/8"
- Lock Washers, 3/8"
- Hex Nuts, 3/8-16
STEP # 8 - Attaching Hydraulic Cylinder to Carriage

Attach cylinder guides to carriage prior to installing hydraulic cylinder. Refer to drawing # 3829 in Appendix B of this manual.

It is NOT recommended to attach hydraulic hose and velocity fuse to cylinder until after carriage has been installed into it's proper position. Possible damage to velocity fuse or hose may occur while positioning carriage.

NOTE: Use rope or cable to secure cylinder while positioning carriage. See step # 9 for further details.

Secure cylinder guides to carriage using:
Hex Hd. Cap Screws, 3/8-16 x 3"
Nylocks, 3/8-16

Secure hydraulic cylinder to carriage using:
(1) Clevis Pin, 1" dia.
(3) Flat Washers
(1) Hairpin Cotter Pin
Installation Instructions

STEP # 9 - Securing Hydraulic Cylinder to Carriage

Hang chain/cable through channel on back of carriage

Secure hydraulic cylinder to carriage with chain or cable to prevent cylinder from swaying and cylinder rods from extending while positioning carriage.
STEP # 10 - Installing Carriage

NOTE: When access to the front of the lift is restricted, bring carriage assembly in from the side (as shown) making sure the carriage uprights and hydraulic cylinder clear the guide columns.

Make sure carriage is centered with the guide columns before shifting the carriage back towards the columns, align carriage uprights with guide columns.

Safely block up and secure carriage to allow room for attaching wheelblocks to carriage and attaching hydraulic cylinder to lower cylinder mount bracket.

Wheelblocks are installed into both guide columns prior to carriage installation

Lower cylinder mount bracket set into position but not secured to guide columns

Carriage/Cylinder Assembly

Lifting Points:
When installing carriage, lift from underneath and/or from the crossmember tube.
While carriage is safely blocked up, attach wheelblocks to carriage uprights.

**DANGER:** Possible bodily injury can occur if carriage is not properly blocked up and secured from shifting. Use of drift pin recommended when attaching wheelblocks to carriage.

Secure wheelblocks to carriage using:
Hex Hd. Cap Screws, 5/8”-11 x 1-1/4"
Lock Washers, 5/8"
STEP # 12 - Attaching Hydraulic Cylinder to Lower Mount

While carriage is safely blocked up and wheelblocks have been attached to carriage, remove rope/cable securing cylinder to carriage allowing lower cylinder rod to extend between the gussets of the lower cylinder mount bracket. Attach cylinder to bracket with clevis pin.

**NOTE:** Removing the plug at the top of the cyl. will help lower the cylinder rod into position.

**NOTE:** It maybe advantageous to connect the velocity fuse and hydraulic hose to the cylinder prior to attaching the cylinder to the lower cylinder mount bracket, see step #13.

Make sure there is equal spacing btwn. guides and cylinder, add shims where necessary. Then fully tighten bolts holding crossmember channel to guide columns.
1. Connect o-ring side of velocity fuse to cylinder port using 7/8" wrench.
   **NOTE:** Arrow on velocity fuse should point away from cylinder (towards hose).

2. Connect female swivel of hose to velocity fuse using 7/8" wrench. Do not over tighten.

**IMPORTANT:** Do NOT use Teflon tape or pipe dope on SAE or JIC threads.
While carriage is safely blocked up and hydraulic hose has been connected to the cylinder and the cylinder attached to the lower cylinder mount bracket. Plumb cylinder by adding shims between the guide columns and the lower cylinder mount bracket.

**CRITICAL:** The hydraulic cylinder must be parallel to the guide columns in both directions: side-to-side and front-to-back.

Secure lower cylinder mount bracket to guide columns using:
- Hex Hd. Cap Screws, 5/8-11 x 2"
- Flat Washers, 5/8"
- Lock Washers, 5/8"
- Hex Nuts, 5/8-11

Add shims to plumb cylinder front-to-back

Secure bracket to guide columns once cylinder is plumb
CRITICAL: The hydraulic cylinder must NOT be under load while bleeding the cylinder.

It is recommended that the carriage be safely blocked up and secured when bleeding the cylinder to allow access to the lower portion of the cylinder.

ATTENTION: The hydraulic hose is to be connected to the cylinder but not to the power unit at this point.

1. Remove SAE #4 plugs from ends of cyl., one at each end.

2. Place a catch pan underneath the open port at the bottom of the cylinder and the open end of the hydraulic hose.

3. Add hydraulic fluid to the cylinder thru the open port at the top of the cylinder. Refer to Appendix A2 of this manual for type of hydraulic fluid to use.

4. Fill until fluid starts to exit both the hose and open port at the bottom of cylinder.

5. Cap the open end of hydraulic hose and plug bottom port of cylinder. Continue to fill cylinder until fluid starts to exit the top port, then plug port. Do not overtighten plugs. Do not apply Teflon tape to plugs on cylinder.

6. Attach hydraulic hose to power unit. See step # 16 for further details.
Secure male swivel on hydraulic hose (with 11/16" wrench) to port on the side of the manifold as shown above. Do not use Teflon tape or pipe dope on threads.

Attach return line (1/8" dia. tube) to barb fitting on tank. Attach other end of tube to cylinder, see page 25.

Clean up any spilt hydraulic fluid.

Recheck all hose connections for tightness and verify all electrical work has been completed correctly before running power unit.

**NOTE:** The return line is not critical in the operation of the VRC. This line allows fluid to return back to tank if there were an internal seal failure in the hydraulic cylinder. It is recommended that this line be installed.
Installation Instructions

STEP # 17 - Connecting Return Line

Attach 1/8" dia. tube to Tee fitting located near the bottom of the hydraulic cylinder.

The other end of the hose to be attached to the fitting on the reservoir, see previous page.

NOTE: The 1/8" dia. tube will travel with the movement of the cylinder. Route hose so that it does not catch on anything during VRC operation.
1. After controls have been installed by a licensed electrician, send carriage to upper level.

2. Use 'E' stop button to stop carriage 1" to 2" below upper floor level. **NOTE:** make sure stops are at their highest position before sending carriage up.

3. Measure distance from upper floor to carriage deck.

4. Adjust stops so they are the same distance above the carriage crossmember tube. **NOTE:** rubber pads are mounted to the crossmember tube to soften the stop.

5. Send carriage up until carriage crossmember contacts the stops and the pressure switch on the power unit activates, shutting off the motor.

6. Check that the carriage deck is level and flush with the upper floor and that both stops are contacting the crossmember tube. Adjust stops where necessary.
INSTALLATION COMPLETION CHECKLIST

Make sure all 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 carriage 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 Checks:

  ☐ Gates should not be able to open when the carriage is not present at that level.

  ☐ VRC should not be able to operate when any gate is open.

☐ Are there any unsafe conditions that exist? Contact Wildeck, Inc. immediately.

☐ Post all operational signs.

☐ Remove all debris.

☐ Instruct the customer on the proper operation.

☐ Instruct the customer on procedures for when a problem occurs.
OPERATING INSTRUCTIONS

Before operating the lift, please read, understand and follow all the safety precautions listed below.

**DANGER**

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

**DANGER**

Malfunctioning interlocks may allow the door to be opened when the carriage is not present. You must make sure carriage is present before walking through doorway. If the carriage is not present, you could fall into the empty shaftway and be seriously injured or die!

**DANGER**

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

**DANGER**

DO NOT walk or work under a raised platform.

**WARNING**

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

**WARNING**

If at any time proper operation or performance of the equipment is in question, DO NOT use it. Notify your supervisor or the proper maintenance people immediately.

**WARNING**

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

**CAUTION**

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

**CAUTION**

DO NOT exceed the rated capacity.

**TO OPERATE:**

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

NOTE: The life of the hydraulic components is directly proportionate to the cleanliness of the system. If the fluid is kept clean, in good condition and its viscosity meets requirements, replacement of fluid is then not required.

MAINTENANCE CHECK

1. Reservoir – Check the fluid level and make sure it is up to the full mark.

2. Hose – Check for frays and kinks. Make sure the connections are secure and leak-proof.

3. Oil Viscosity – Do not use fluid that is too thick (See Appendix A3). Heat, high pressure and contamination all speed up oxidation which results in plugged valves and excessive wear on the components.

4. Fluid – If it is cloudy, off-color, contains suspended sediment or liquid layers then changing the fluid is recommended.

FILLING THE RESERVOIR

1. Wipe off the fill plug and the filler nozzle with a clean, lint-free cloth.

2. Watch for metallic chips, bits of waste and other contaminants that may cause damage to the system.

3. Use a ten micron filter on the filler nozzle when adding oil.

4. The reservoir should be tightly closed after filling the system.

CLEANING THE RESERVOIR

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

1. Lower the carriage to the floor, making sure the cylinder rods are fully retracted.

2. Turn off power and lock out the disconnect.

3. Drain the system by removing plug near the bottom of reservoir. It is advisable to drain only after the fluid is fully warmed up. By doing so, fluid impurities do not have a chance to settle and can be removed with the drained fluid.

4. Clean out the reservoir.

5. Refill the unit with new fluid per steps under FILLING THE RESERVOIR.

6. Remove lock and restore power.

Refer to Appendix A3 for proper hydraulic fluid to use on this unit.
### MAINTENANCE SCHEDULE

<table>
<thead>
<tr>
<th>LUBRICATE</th>
<th>INSPECT</th>
<th>ADJUST</th>
<th>NUMBER OF CYCLES/DAYS</th>
<th>ITEM</th>
<th>DUTY</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>2000/90</td>
<td></td>
<td></td>
<td>WHEELBLOCK WHEELS</td>
<td>GREASE THROUGH FITTINGS.²</td>
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<td></td>
<td></td>
<td>INSPECT FOR WEAR.</td>
</tr>
<tr>
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<td>2000/90</td>
<td></td>
<td></td>
<td>GUIDE ROLLERS</td>
<td>INSPECT FOR WEAR AND ROTATION INTERERENCE.</td>
</tr>
<tr>
<td>3</td>
<td>2000/90</td>
<td></td>
<td></td>
<td>CYLINDER FITTINGS/HOSES</td>
<td>INSPECT FOR WEAR/LEAKS. TIGHTEN FITTINGS.</td>
</tr>
<tr>
<td>4</td>
<td>1 YR.</td>
<td></td>
<td></td>
<td>RESERVOIR</td>
<td>DRAIN AND CLEAN TANK CHANGE OIL.³ &amp; ⁴</td>
</tr>
</tbody>
</table>

1.) Observe cycle or days schedule based on whichever comes first.
2.) Use Lithium axle grease.
3.) Use non–detergent, petroleum base ISO viscosity grade 32.
   (See Acceptable Hydraulic Fluids, Appendix A2)
4.) Anti–wear with 100–200 viscosity.
   (See Material Safety Data Sheet Bulletins)
## HYDRAULIC FLUID

<table>
<thead>
<tr>
<th>Amoco</th>
<th>Rykon AW 32</th>
</tr>
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<tbody>
<tr>
<td>Arco</td>
<td>Duro AW S-150</td>
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<td>Texaco</td>
<td>Rando HD 32</td>
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</table>

Acceptable hydraulic fluids are not limited to the above list. Any hydraulic fluids meeting the following ISO viscosity gate (VG 32) are acceptable.

### PROPERTIES

| VI (the 200 fluids are MEHF products) | 100 | 200 |
| KV at 100°C, cSt | 5.36 | 7.16 |
| KV at 40°C, cSt | 32.0 | 32.0 |
| Temperature for 860 cSt, °C | -7 | -19 |
| KV at 100°C after 40 minutes Sonic, cSt, ASTM D 5621 | - | 6.26 |
| KV at 80°C after 40 minutes Sonic, cSt, ASTM D 5621 | - | 9.07 |
| KV at 40°C after 40 minutes Sonic, cSt, ASTM D 5621 | - | 28.0 |
| VI after 40 minutes Sonic, cSt, ASTM D 5621 | - | 184 |
| NFPA T2/13.13.2002 Grade | 1,32-32 | 1,22-46 |

### DEFINITIONS

- **ASTM**: American Society of Testing and Materials
- **cSt**: CentiStokes (mm²/s)
- **ISO**: International Organization for Standardization
- **KV**: Kinematic Viscosity
- **MEHF**: Maximum Efficiency Hydraulic Fluids
- **NFPA**: National Fire Protection Association
- **VI**: Viscosity
IDENTITY
PETRAULIC (all grades)

Section I
Manufacturer's Name
Benz Oil

Address (Number, Street, City, State, and ZIP Code)
2724 W. Hampton Avenue
Milwaukee, WI 53209

Chemtrec 24 Hour Emergency Telephone Number
(800) 424-9300

Telephone Number For Information
(414) 442-2900

Date Prepared
May 28, 2002
June 18, 2001

Signature of Preparer

MSD 32

Section II - Ingredients/Identity Information
Components OSHA PEL ACGIH TLV Other Limits Recommended %
Mineral Oil 5 mg/M3 5 mg/M3 >95
Proprietary non-hazardous additives <0.05

This product is not a WHMIS regulated substance.

SARA Section 313 Toxic Chemical Release Reporting: Not Applicable, no title 313 reportable chemicals are present in this product at greater than 1% (or 0.1% for Carcinogens). OSHA & ACGIH have set the exposure limit for mineral oil at 5 mg/M3 for all mist in air.

Section III - Physical/Chemical Characteristics
Boiling Point (minimum) 500°F Specific Gravity (H2O = 1) 0.9
Vapor Pressure (mm Hg) 0.01 Melting Point NA
Vapor Density (AIR = 1) 5 Evaporation Rate (Butyl Acetate = 1) <0.01

Solubility in Water
Very slight at room temperature

Appearance & Odor
Light brown or yellow oily liquid with a mild odor

Section IV - Fire and Explosion Hazard Data
Flash Point (C.O.C.) °F 400 min Flammable Limits LEL UEL
Carbon dioxide, water, spray, foam, dry chemical

Special Fire Fighting Procedures
Use self contained breathing apparatus for fighting fires in enclosed areas.

Unusual Fire and Explosion Hazards
Directly spraying extinguishing media onto hot burning products may cause frothing and spreading of fire.
Section V - Reactivity Data

<table>
<thead>
<tr>
<th>Stability</th>
<th>Conditions to Avoid</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unstable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stable</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Incompatibility (Materials to Avoid)

Avoid contact with strong oxidants such as chlorine gas

Hazardous Decomposition or Byproducts

Fumes, smoke, CO₂, SO₃, NOₓ, when combusted

<table>
<thead>
<tr>
<th>Hazardous Polymerization</th>
<th>May Occur</th>
<th>Conditions to Avoid</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Will Not Occur</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Section VI - Health Hazard Data

<table>
<thead>
<tr>
<th>Route(s) of Entry:</th>
<th>Inhalation?</th>
<th>Skin?</th>
<th>Ingestion?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Health Hazards (Acute and Chronic)

Product has a low order of acute, oral, and dermal toxicity. Product contacting the eyes may cause irritation. Repeated skin contact may cause skin irritation or dermatitis because these types of products tend to remove natural emollients from the skin.

Carcinogenicity:

<table>
<thead>
<tr>
<th>NTP?</th>
<th>IARC Monographs?</th>
<th>OSHA Regulated?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td></td>
<td>NO</td>
</tr>
</tbody>
</table>

Signs and Symptoms of Exposure

Reddening and irritation of eyes or skin

Medical Conditions Generally Aggravated by Exposure

Pre-existing dermatitis or skin diseases

Emergency and First Aid Procedure

Skin contact: Wash with a mild soap containing lanoline or other emollients.  
Eye contact: Flush eyes with clear water for 15 minutes and contact a physician if irritation persists.

Section VII - Precautions for Safe Handling and Use

Steps to be Taken in Case Material is Released or Spilled

Recover free product. Add sand, earth, or other absorbent to spill.  
Minimal skin contact. Keep product out of sewers and waterways.  
Advise authorities if product has entered or may enter sewers, watercourses or extensive land areas.

Waste Disposal Method

Dispose of material in a licensed landfill or incineration facility in accordance with local, state, and federal regulations.

Precautions to be Taken in Handling and Storage

Store away from heat, sparks and other ignition sources. “Empty” containers retain residual oil. Do not pressurize, cut, weld, solder, drill, grind or expose drums to other ignition sources.

Other Precautions

Section VIII - Control Measures

Respiratory Protection (Specify Type)

Organic vapor mask should be used if mechanical ventilation is insufficient.

<table>
<thead>
<tr>
<th>Ventilation</th>
<th>Local Exhaust</th>
<th>Special</th>
<th>NA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical(General)</td>
<td>To meet TLV</td>
<td>Other</td>
<td>NA</td>
</tr>
</tbody>
</table>

Protective Gloves

Use oil resistant gloves to avoid prolonged or repeated skin contact.

Other Protective Clothing or Equipment

Use splash goggles or face shield when eye contact may occur.  
Use chemical resistant apron to avoid contaminating regular clothing if needed.

Work/Hygiene Practices

Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned.
# INSTALLATION SPECIFICATIONS

## Installation Table for Power-Stud+ SD2

<table>
<thead>
<tr>
<th>Anchor Property/Setting Information</th>
<th>Notation</th>
<th>Units</th>
<th>3/8&quot;</th>
<th>1/2&quot;</th>
<th>5/8&quot;</th>
<th>3/4&quot;</th>
<th>1&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anchor diameter</td>
<td>$d_o$</td>
<td>in.</td>
<td>0.375 (9.5)</td>
<td>0.500 (12.7)</td>
<td>0.625 (15.9)</td>
<td>0.750 (19.1)</td>
<td>1.000 (25.4)</td>
</tr>
<tr>
<td>Minimum diameter of hole clearance</td>
<td>$d_h$</td>
<td>in.</td>
<td>7/16 (11.1)</td>
<td>9/16 (14.3)</td>
<td>11/16 (17.5)</td>
<td>13/16 (20.6)</td>
<td>1-1/8 (28.6)</td>
</tr>
<tr>
<td>in fixture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal drill bit diameter</td>
<td>$d_{bit}$</td>
<td>in.</td>
<td>3/8 ANSI</td>
<td>1/2 ANSI</td>
<td>5/8 ANSI</td>
<td>3/4 ANSI</td>
<td>1 ANSI</td>
</tr>
<tr>
<td>Minimum nominal embedment depth</td>
<td>$h_{nom}$</td>
<td>in.</td>
<td>2-3/8 (60)</td>
<td>2-1/2 (64)</td>
<td>3-3/4 (95)</td>
<td>3-7/8 (124)</td>
<td>4 (102)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effective embedment</td>
<td>$h_{ef}$</td>
<td>in.</td>
<td>2 (51)</td>
<td>2 (51)</td>
<td>3-1/4 (83)</td>
<td>3-1/4 (83)</td>
<td>4-1/4 (108)</td>
</tr>
<tr>
<td>Minimum hole depth</td>
<td>$h_{o}$</td>
<td>in.</td>
<td>2-5/8 (67)</td>
<td>2-3/4 (70)</td>
<td>4 (102)</td>
<td>4-1/4 (108)</td>
<td>4-1/4 (108)</td>
</tr>
<tr>
<td>Minimum concrete member thickness</td>
<td>$h_{min}$</td>
<td>in.</td>
<td>4 (102)</td>
<td>4-1/2 (114)</td>
<td>5-3/4 (146)</td>
<td>5-3/4 (146)</td>
<td>6-1/2 (165)</td>
</tr>
<tr>
<td>Minimum overall anchor length</td>
<td>$l_{anchor}$</td>
<td>in.</td>
<td>3 (76)</td>
<td>3-3/4 (95)</td>
<td>4-1/2 (114)</td>
<td>4-3/4 (121)</td>
<td>6 (152)</td>
</tr>
<tr>
<td>Minimum edge distance</td>
<td>$c_{min}$</td>
<td>in.</td>
<td>2-1/2 (64)</td>
<td>4 (102)</td>
<td>4 (102)</td>
<td>4-1/4 (108)</td>
<td>4-1/4 (108)</td>
</tr>
<tr>
<td>Minimum spacing distance</td>
<td>$s_{min}$</td>
<td>in.</td>
<td>3-1/2 (89)</td>
<td>6 (152)</td>
<td>4 (102)</td>
<td>4-1/4 (108)</td>
<td>4-1/4 (108)</td>
</tr>
<tr>
<td>Critical edge distance</td>
<td>$c_{c}$</td>
<td>in.</td>
<td>8 (203)</td>
<td>8 (203)</td>
<td>10 (254)</td>
<td>8 (203)</td>
<td>15-3/4 (400)</td>
</tr>
<tr>
<td>Installation torque</td>
<td>$T_{inst}$</td>
<td>ft.-lb. (N-m)</td>
<td>20 (27)</td>
<td>40 (54)</td>
<td>60 (81)</td>
<td>110 (149)</td>
<td>225 (305)</td>
</tr>
<tr>
<td>Torque wrench socket size</td>
<td></td>
<td>in.</td>
<td>9/16</td>
<td>3/4</td>
<td>15/16</td>
<td>1-1/8</td>
<td>1-1/2</td>
</tr>
<tr>
<td>Nut height</td>
<td></td>
<td>in.</td>
<td>21/64</td>
<td>7/16</td>
<td>35/64</td>
<td>41/64</td>
<td>55/64</td>
</tr>
</tbody>
</table>

1. For installations through the soffit of steel deck into concrete, see the installation detail. Anchors in the lower flute may be installed with a maximum 1-inch offset in either direction from center of the flute. In addition, anchors shall have an axial spacing along the flute equal to the greater of $3h_{ef}$ or 1.5 times the flute width.

---

## Power-Stud+ SD2 Anchor Detail

![Power-Stud+ SD2 Anchor Detail Diagram](diagram.png)

---

## Head Marking

### Legend
- **Letter Code** = Length Identification Mark
- **'+' Symbol** = Strength Design Compliant Anchor
- **Number Code** = Carbon Steel Body and Stainless Steel Expansion Clip

### Length Identification

<table>
<thead>
<tr>
<th>Mark</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>1-1/2&quot;</td>
<td>2&quot;</td>
<td>2-1/2&quot;</td>
<td>3&quot;</td>
<td>3-1/2&quot;</td>
<td>4&quot;</td>
<td>4-1/2&quot;</td>
<td>5&quot;</td>
<td>5-1/2&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>Up to but not including</td>
<td>2&quot;</td>
<td>2-1/2&quot;</td>
<td>3&quot;</td>
<td>3-1/2&quot;</td>
<td>4&quot;</td>
<td>4-1/2&quot;</td>
<td>5&quot;</td>
<td>5-1/2&quot;</td>
<td>6&quot;</td>
<td>6-1/2&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mark</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>6-1/2&quot;</td>
<td>7&quot;</td>
<td>7-1/2&quot;</td>
<td>8&quot;</td>
<td>8-1/2&quot;</td>
<td>9&quot;</td>
<td>7-1/2&quot;</td>
<td>8&quot;</td>
<td>8-1/2&quot;</td>
<td>9&quot;</td>
</tr>
<tr>
<td>Up to but not including</td>
<td>7&quot;</td>
<td>7-1/2&quot;</td>
<td>8&quot;</td>
<td>8-1/2&quot;</td>
<td>9&quot;</td>
<td>9-1/2&quot;</td>
<td>8&quot;</td>
<td>8-1/2&quot;</td>
<td>9&quot;</td>
<td>9-1/2&quot;</td>
</tr>
</tbody>
</table>

Length identification mark indicates overall length of anchor.
Installation Instructions for Power-Stud+ SD2

1.) Using the proper drill bit size, drill a hole into the base material to the required depth. The tolerances of the drill bit used should meet the requirements of ANSI Standard B212.15.

2.) Remove dust and debris from the hole.

3.) Position the washer on the anchor and thread on the nut. If installing through a fixture, drive the anchor through the fixture into the hole. Be sure the anchor is driven to the minimum required nominal embedment depth, \( h_{\text{nom}} \).

4.) Tighten the anchor with a torque wrench by applying the required installation torque, \( T_{\text{inst}} \).

Installation Detail for Power-Stud+ SD2 Installed Through Soffit of Steel Deck into Concrete
TROUBLE SHOOTING

A systematic trouble shooting procedure will help reduce downtime should a problem occur.

A complete understanding of the equipment and how it works will help make efficient trouble shooting progress.

Faulty Dump Valve Performance

Listen carefully to the dump valve while the DOWN button is pressed. You should hear the dump valve ‘click’ as it opens and closes. If the valve does not ‘click’, the valve may be defective.

Use drawing #2850, Appendix B in this manual for reference.

1. Use a voltmeter to determine if the dump valve solenoid is receiving current when the DOWN button is pressed. If not, check (A) operating condition of the timing relay switch, and/or (B) the motor starter contacts in the control circuit.

2. If the solenoid is receiving current, it should be energized. Check the end of the pull solenoid with a screw driver for magnetic pull. Replace solenoid if no magnetic pull is evident.

Activated controls do not start lift motor.

<table>
<thead>
<tr>
<th>SITUATION</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Safety gate(s) open</td>
<td>Close gate(s)</td>
</tr>
<tr>
<td>B. Main electrical disconnect off</td>
<td>Consult maintenance staff before turning on.</td>
</tr>
<tr>
<td>C. Motor overload tripped</td>
<td>Motor is overheating, repair as required.</td>
</tr>
<tr>
<td>D. Blown control fuse</td>
<td>Determine cause. Replace fuse.</td>
</tr>
<tr>
<td>E. Power circuit between disconnect and starter is dead</td>
<td>WARNING Dangerous high voltage potential exists. Use extreme care when testing.</td>
</tr>
<tr>
<td></td>
<td>Check voltage with voltmeter. Repair as needed.</td>
</tr>
</tbody>
</table>
Motor starts, carriage raises but both stop before second level is reached.

<table>
<thead>
<tr>
<th>SITUATION</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Safety gate(s) open</td>
<td>Close gate(s)</td>
</tr>
<tr>
<td>B. Object encountered</td>
<td>Remove, repair as required.</td>
</tr>
<tr>
<td>C. Cylinder rod interference</td>
<td>Remove object, repair as required.</td>
</tr>
<tr>
<td>D. Motor overload tripped</td>
<td>Pump binding, repair as required.</td>
</tr>
<tr>
<td>E. Pressure switch has activated</td>
<td>Pressure switch setting is too low. Lower lift and re-start.</td>
</tr>
<tr>
<td></td>
<td>NOTE: Pressure and relief settings are calibrated per specific loads and applications. Contact Wildeck, Inc.</td>
</tr>
<tr>
<td></td>
<td>Readjust if carriage stops at lower pressure setting. Refer to drawing # 2850, Appendix B.</td>
</tr>
<tr>
<td>F. Unlevel carriage is jamming</td>
<td>Damaged wheelblock. Repair or replace wheelblock.</td>
</tr>
</tbody>
</table>

Motor and pump run but carriage does not raise. No pressure indicated on gauge.

<table>
<thead>
<tr>
<th>SITUATION</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Fluid in reservoir is less than ¾ full</td>
<td>Add fluid. Maintain at proper level.</td>
</tr>
<tr>
<td>B. Motor rotation is incorrect</td>
<td>WARNING Dangerous high voltage potential exists. Use extreme care.</td>
</tr>
<tr>
<td></td>
<td>Change two (2) motor leads to correct problem.</td>
</tr>
<tr>
<td>C. Relief valve setting is too low</td>
<td>Increase spring pressure setting. Refer to drawing # 2850, Appendix B.</td>
</tr>
<tr>
<td></td>
<td>CAUTION Do not over tighten as damage may result.</td>
</tr>
</tbody>
</table>
D. Pump cavitating
1. Fluid supply too low. Fill reservoir.
2. Fluid too heavy. Change to proper viscosity. See Hydraulic Fluids section for proper type.

E. Relief valve stuck open
Contamination. Remove relief valve and clean or replace. Drain and flush system.

F. Dump valve energized or stuck open
**WARNING** Harmful voltage potential exists. Use care.
Check wiring and pressure switch. Remove dump valve. Clean and replace if contaminated. Drain and flush system.

**Motor and pump run but carriage does not raise. Erratic or low pressure shown on gauge.**

<table>
<thead>
<tr>
<th>SITUATION</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Fluid is foaming</td>
<td>1. Loose fitting causing air to leak into pump suction line (inside reservoir). Tighten fitting.</td>
</tr>
<tr>
<td></td>
<td>2. Low fluid level. Add fluid to proper level.</td>
</tr>
<tr>
<td></td>
<td>3. Water or incompatible fluids causing foaming. Drain and replace with non-foaming fluid.</td>
</tr>
</tbody>
</table>

**Carriage raises but will not lower.**

<table>
<thead>
<tr>
<th>SITUATION</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Mechanical interference of cylinder rods.</td>
<td>Remove interference.</td>
</tr>
<tr>
<td>B. Dump valve is not actuating</td>
<td>See Faulty Dump Valve Performance at the beginning of this section.</td>
</tr>
<tr>
<td>C. Velocity fuse triggered</td>
<td>Check for hose break or fitting leak. If none is found, attempt to increase cylinder pressure by pressing the UP button.</td>
</tr>
</tbody>
</table>
**Carriage drifts down from raised position.**

(NOTE: Drift of a few inches overnight is normal, but should not drift during normal usage.)

<table>
<thead>
<tr>
<th>SITUATION</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Internal leak is causing slow pressure drop.</td>
<td>1. Contamination is keeping check valve from seating. Refer to Faulty Dump Valve Performance at the beginning of this section.</td>
</tr>
<tr>
<td></td>
<td>2. Contamination is keeping dump valve from seating. Refer to Faulty Dump Valve Performance at the beginning of this section.</td>
</tr>
<tr>
<td>B. External leak</td>
<td>1. Fittings and/or hose leak. Add Teflon tape to threads or replace with new fittings or hose.</td>
</tr>
<tr>
<td></td>
<td>2. Piston seals leak on cylinder. Have cylinder re-sealed at local hydraulic service shop or replace with new hydraulic cylinder.</td>
</tr>
</tbody>
</table>

**Carriage is spongy or bouncy.**

<table>
<thead>
<tr>
<th>SITUATION</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Air in cylinder</td>
<td>Compressing air in system causes oil surge when dump valve opens. Refer to Step #15 Bleeding Air Out of Hydraulic Cylinder in the Installation Instructions section of this manual.</td>
</tr>
<tr>
<td></td>
<td><strong>CAUTION</strong> Do not raise carriage against stops until air is eliminated.</td>
</tr>
<tr>
<td></td>
<td>Be careful not to allow lift to raise fully during this procedure.</td>
</tr>
</tbody>
</table>

**Carriage lowers but stops early.**

<table>
<thead>
<tr>
<th>SITUATION</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Object encountered</td>
<td>Remove, repair as required.</td>
</tr>
<tr>
<td>B. Cylinder rod interference</td>
<td>Remove object, repair as required.</td>
</tr>
<tr>
<td>C. Timing relay failure</td>
<td>Remove and replace.</td>
</tr>
</tbody>
</table>
D. Dump valve solenoid not de-energizing or dump valve is not closing
Refer to Faulty Dump Valve Performance at the beginning of this section.

**Rough or noisy operation**

<table>
<thead>
<tr>
<th>SITUATION</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Travel interference</td>
<td>Remove obstructions or correct problem. Make repairs if required.</td>
</tr>
<tr>
<td>B. Drive component interference</td>
<td>Remove obstructions or correct problem. Make repairs if required.</td>
</tr>
<tr>
<td>C. Worn wheel guide rollers</td>
<td>Inspect, lubricate and replace as needed. Determine cause and correct.</td>
</tr>
<tr>
<td>D. Carriage is not level</td>
<td>Determine cause and correct.</td>
</tr>
<tr>
<td>E. Motor fan cover</td>
<td>Damaged fan cover, repair as required.</td>
</tr>
</tbody>
</table>

**Motor and pump keep running after pressure reaches the relief valve setting.**

<table>
<thead>
<tr>
<th>SITUATION</th>
<th>RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Relief pressure set too low</td>
<td>Readjust relief setting. Refer to drawing # 2850, Appendix B. NO TE: Pressure and relief settings are calibrated per specific loads and applications. Contact Wildeck, Inc.</td>
</tr>
<tr>
<td>B. Pressure switch setting too high</td>
<td>Readjust pressure switch.</td>
</tr>
<tr>
<td>C. Faulty pressure switch</td>
<td>Replace switch.</td>
</tr>
</tbody>
</table>
APPENDIX B

SPARE PARTS DRAWINGS
BILL OF MATERIALS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY.</th>
<th>DESCRIPTION</th>
<th>PART No.</th>
<th>SUFFIX</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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R.H. LOWER WHEEL BLOCK ASSEMBLY
PHENOLIC WHEEL

DATE: 2-19-91
DRN BY: DFK

REV 1
BILL OF MATERIALS

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L.H. LOWER WHEEL BLOCK ASSEMBLY
PHENOLIC WHEEL

DATE: 8-13-91
DRN BY: DFK

1071 REV 1
BILL OF MATERIALS

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R.H. LOWER WHEEL BLOCK ASSEMBLY
STEEL WHEEL

DATE: 8-13-91
DRN BY: DFK

1074 1
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L.H. LOWER WHEEL BLOCK ASSEMBLY
STEEL WHEEL

DATE: 8-13-91
DRN BY DFK

1075 REV 1
CHAMFERS OF UHMW GUIDES TO BE LOCATED AS SHOWN

SIDE VIEW
APPENDIX D

ELECTRICAL
APPENDIX E

OPTIONAL CARRIAGE ACCESSORIES

Contact your local dealer or Wildeck, Inc. for pricing on the following add-on accessories.
Optional Carriage Accessories: Carriage Guarding

NOTE: No modifications to the carriage assembly will be required.

Available side guarding:
- 1-1/2" square hand rail (std.)
- 14 Ga. sheet metal
- 20 Ga. galvanized tread plate

Available guarding heights:
- 48" high (shown)
- full load height

Sheet metal or galv. tread plate panels get bolted to existing carriage hand rails.

Sheet metal panels are painted to match the existing carriage.

NOTE: Wildeck can only supply panels painted to the original color of the carriage. Where the carriage has been re-painted, it's the customer's responsibility to paint the panels to match.
**NOTE:** Position of diagonal load bars will vary by application.

**ATTENTION:** Simple modifications to carriage assembly will be required.

Diagonal load bar assembly pre-assembled with holes predrilled into mounting angle for ease of installation. Mounting hardware provided.

Diagonal load bar constructed of 1-1/2" sq. tubing (coated in Safety Yellow).

Spring latch used to hold diagonal load bar in open position.

Carriage openings greater than 7’ require a spring assisted diagonal load bar (not shown).
Optional Carriage Accessories: Swing Gate

**NOTE:** Swing gates available for carriage openings up to 6' wide.

**NOTE:** Gate swing direction and maximum swing angle will vary by application.

**ATTENTION:** Simple modifications to carriage assembly will be required. Electrical work will also be required.

Swing gate assembly pre-assembled with holes predrilled into mounting angle for ease of installation. Mounting hardware provided.

Gate panel constructed of a 1-1/2” square tube frame with exp. metal mesh standard. Sheet metal and galvanized tread plate also available.

Status switch provided to detect when gate panel is closed & latched telling the VRC it is ready to run.

Full load height and 48” high gate panels available. 48” high gate panel shown, full load height panel available on carriages with full load height side guarding.
Optional Carriage Accessories: Full Load Height Guarding with Roof Panels

NOTE: Configuration of side guarding will vary by application.

NOTE: Roof panels require full load height guarding.

ATTENTION: Simple modifications to carriage assembly will be required.

Roof panels constructed of 1-1/2" sq. angle iron frame with exp. metal mesh.

Upper rail assembly constructed of 1-1/2" & 2" sq. tube framing with either sheet metal or galvanized tread plate panels. Upper rail assembly designed to interconnect with the existing carriage side rails. Mounting hardware provided.