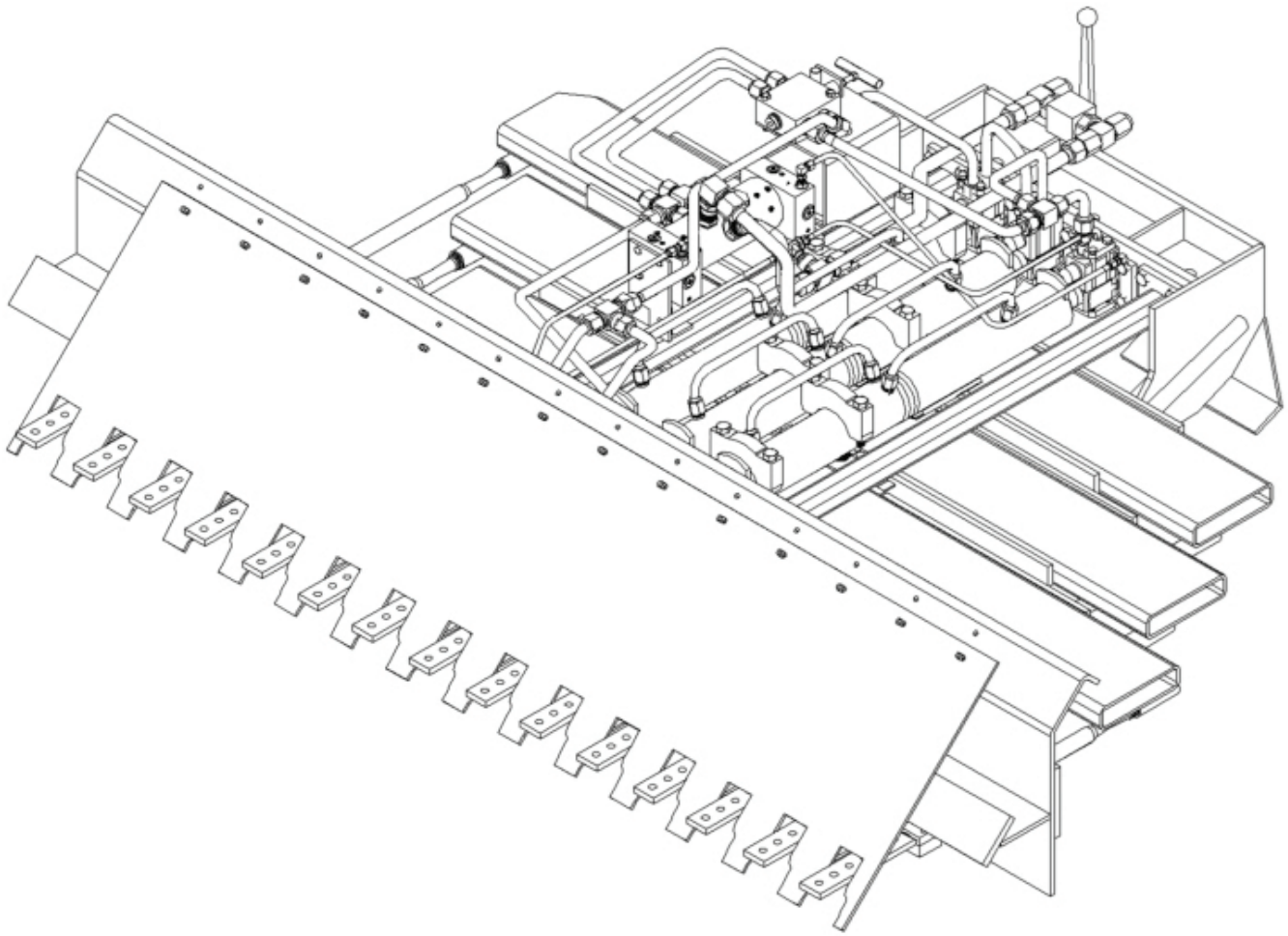
KEITH
MANUFACTURING CO

LeakProof III

KEITH Manufacturing Co.
www.KeithWalkingFloor.com
World Headquarters
Toll-Free: 800-547-6161
Phone: 541-475-3802



OWNER / OPERATOR MANUAL

Original Instructions

Released: 2023-04-17 DOC06436 Rev B

Table of Contents

Introduction

We at KEITH Manufacturing Co. are very happy you have decided to equip your trailer with the KEITH® *WALKING FLOOR*® system. We take great pride in manufacturing the simplest, lowest maintenance self-unloading system available. Installing the KEITH® *WALKING FLOOR*® system in your trailer provides you with the versatility to load or unload virtually any type of material.

The following pages contain information on the operation of your KEITH® *WALKING FLOOR*® system. Further support and safety documents (manuals, brochures, and product specs) can be viewed or downloaded from our website at www.KeithWalkingFloor.com.

In addition, we have provided general information on the type of hydraulic wet kit that will be needed to operate your system. Please contact a KEITH sales representative or visit our website for more specific recommendations regarding pumps, filters, pressure relief valves and approved equivalent equipment. It is critical to adhere to the outlined hydraulic wet kit specifications. Failure to follow the guidelines concerning required operation pressures can lead to system failure due to excessive heat buildup.

Please review the entire manual before operating the KEITH® *WALKING FLOOR*® system. If you have any questions, please call 541-475-3802 or email Sales@KeithWalkingFloor.com where our support team will happily assist you.

Thank you again for putting your trust in our company!

Sincerely,

R. Mark Foster
President

DOC06344 Rev A

KEITH® Standard Drive *WALKING FLOOR*® Unloading System Limited Warranty

1 Year Limited Warranty

KEITH Manufacturing Co. hereby warrants, to the first owner of a new **KEITH® Standard Drive Unloading System** from the factory or selling distributor, that the product shall be free from defects in material and workmanship for a period of **one year** after delivery or sale to the first registered owner. This warranty does not cover normal wear and tear and maintenance. A warranty card must be filled out and returned to KEITH Manufacturing Co. to activate this warranty.

Unloading system must only be used as recommended by KEITH Manufacturing Co. for normal use and service. This means the loading and/or unloading of uniformly distributed, non-corrosive material, properly restrained and secured, on properly maintained public roads, with gross vehicle weights not in excess of factory rated capacity. For stationary installations, normal use and service means the conveying of uniformly distributed, noncorrosive materials, with weights not in excess of factory rated capacity. The system must be installed according to **KEITH Manufacturing Co.** installation instructions. Preventative maintenance must be performed at regular intervals as specified in **KEITH Manufacturing Co.** manuals. ***See below for circumstances that void the KEITH limited warranty.***

Sole and Exclusive Remedy: If the product covered hereby fails to conform to the above stated warranty, **KEITH Manufacturing Co.'s** sole liability under this warranty and the owner's sole and exclusive remedy is limited to repair or replacement of the defective part(s) at a facility authorized by **KEITH Manufacturing Co.**

THE WARRANTY SET FORTH ABOVE IS EXPRESSLY MADE IN LIEU OF ANY OTHER WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY. KEITH MANUFACTURING CO. MAKES NO WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR WARRANTIES OF MERCHANTABILITY. FURTHER, KEITH MANUFACTURING CO. WILL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES SUCH AS, BUT NOT LIMITED TO, THE LOSS OF USE OF THE PRODUCT, DAMAGE TO THE PRODUCT, ATTORNEY'S FEES AND THE LIABILITY IN RESPECT TO ANY OTHER REASON.

TORT DISCLAIMER: KEITH MANUFACTURING CO. EXCLUDES ANY LIABILITY IN TORT WITH RESPECT TO THEIR PRODUCTS, INCLUDING ANY LIABILITY BASED ON STRICT LIABILITY IN TORT AND NEGLIGENCE.

If This Warranty Violates Law: To the extent any provision of this warranty, contravenes the law of any jurisdiction, that provision shall be inapplicable in such jurisdiction and the remainder of the warranty shall not be affected thereby.

Warranty Return Policy

Any defective part(s) must be shipped freight prepaid to the nearest **KEITH** facility. Please contact **KEITH** for additional information on proper locations. Before returning any item for repair or replacement, contact **KEITH Manufacturing Co.** at 1-800-547-6161 or TechDept@KeithWalkingFloor.com for a "Returned Goods Authorization" (RGA) number. Make sure the RGA number is on the outside of the shipping carton and all paperwork is included.

The following information is needed:

a. Company name
b. Contact name
c. Address
d. Phone number
e. Part number
f. Quantity
g. Reason for return
h. Customer's account number

The following circumstances void the KEITH Limited Warranty:

- Unloading system is not installed properly.
- Wet kit is not as recommended by KEITH or using an end dump or dump truck wet kit.
- Malfunction or problems caused by equipment which was not supplied by KEITH.
- Malfunction caused by improper repair work or repair work which is carried out by third parties.
- Malfunction caused using contaminated oil or oil of the wrong type.
- Malfunction caused by excessive heat over 140 °F [60 °C] due to a bad hydraulic pump on the truck or hydraulic wet kit or improper operation of the unloading system, for example, not fully opening and closing the ball valve.
- Defects in electrical components caused by incorrect connection and/or incorrect voltage levels.
- Preventative maintenance is not performed at regular intervals as specified in KEITH manuals.
- Malfunction caused by corrosive materials.
- Malfunction caused by overloading or improper use as stated in KEITH manuals.

Examples of wear items which are not covered by KEITH Limited Warranty:

- Floor seals
- Floor bearings
- Floor slats
- End plugs in slats
- Filter elements and components

Revised March 2022 DOC06367 Rev. B

Warranty Registration Card

Note: To validate the warranty, the registration information must be filled out completely and returned to KEITH within ten (10) days of purchase and/or installation.

Please fill out the Warranty Registration form on our website at www.KeithWalkingFloor.com or fill out the Warranty Registration Card below and mail or email it to:

KEITH Manufacturing Co.
P.O. Box 1
Madras, OR 97741-0001

TechDept@KeithWalkingFloor.com

This warranty registration card must be completed and on file at KEITH in order for the warranty period to begin on the purchase date. If no purchase date is registered, the beginning of the warranty will automatically revert to the manufacture date.

Name / Company Name: _____

Address: _____

City, State / Prov.: _____ Postal Code: _____

Country:_____

Phone: _____

E-Mail: _____

SYSTEM DATA:

Date of Purchase: _____

Model / Serial Number: _____

Purchased From: _____

Type of Material Loaded/Unloaded: _____

I have fully read the KEITH Manufacturing Co. warranty information and fully understand and agree to the terms of the warranty.

Name: _____ Date: _____ Signature: _____

1.0 Safety

WARNING: The large forces exerted by the floor when moving can result in damage to equipment which may result in serious injury or death. Always ensure that this manual has been read and fully understood by the operator. We advise that the operator keeps this manual with the vehicle at all times. Always ensure that 'best practice' is employed when using our systems. If in any doubt do NOT use this equipment and seek further assistance from your company's safety officer.

!!CAUTION!!
To Prevent Possible Injury or Death

1. DO NOT Operate the floor with the doors closed.
2. DO NOT Stand behind the trailer or in the discharge area.
3. DO NOT Make adjustments to the unloading mechanism with the floor operating.
4. DO NOT Operate the unloader when protective covers and screens are not in place.
5. DO NOT Go underneath the trailer.
6. DO NOT Leave the trailer unattended while the unloader is in operation.

ALWAYS:

1. Disconnect the trailer from the hydraulic power unit (P.T.O.) before service and maintenance.
2. Shut off the power supply before going underneath the trailer.
3. Stay away from any oil leaks when hydraulic pressure is high.
4. Shut off the hydraulic power take off unit (P.T.O.) before moving the trailer.

!!Keep your hands, body parts and loose clothing away from the floor slats and drive mechanism when the unloading system is in operation!!

2.0 Specifications

2.1 General Wet Kit Specifications

Transmission:	This wet kit is designed for a Fuller 13 or 15 speed transmission. All of the following information applies to this transmission. (P.T.O. specifications may vary with other transmissions. Please check with KEITH® Manufacturing Co. for specifications)
Oil:	Chevron AW46 hydraulic oil or equivalent.
P.T.O.:	Chelsea series 442/489 bottom mount (6 or 8 bolt) 118% Power Take Off (electric over speed is highly recommended), or Muncie P.C. 65 with electric over speed.
Pump:	Commercial P-51 A297BE (Spl.) 25-25 (2” four bolt suction) with Anchor W43-32-32 flange.
Filter:	Filter should be 10 micron on the return line. Filter should be a double element Zinga (or equivalent.) Filter head #DF-15-25. MF 2215-25-0-2-0 Filter element #LE-10 or LE-30. (The filter element should be changed after 6 hours initially, and then every 6 months thereafter. This may vary with the operating environment.)
Hydraulic Reservoir:	Should hold approximately 1 gallon of oil for every liter per minute you plan to pump, i.e. 40 GPM = 40 gallon reservoir. Reservoir should hold a minimum of 40 gallons of oil.
Suction Line:	Suction line from the tank to the steel tubing should be no more than 1 meter in length and a minimum of 2” inside diameter. Example: SAE-100R4. (This type of line has a spiral wire to keep the hose from collapsing under suction.)
Pressure Line:	Hose from truck to trailer should be 3/4” 16 SAE-100R2.
Return Line:	Hose from trailer to filter should be 3/4” 16 SAE-100R1. Hose from filter to tank should be 1-1/4” 20 SAE-100R1.
***Pressure Relief Valve:**	Example: Cross #RD12D

Note: It is critical that this relief valve is set at no less than 2800 PSI and no more than 3000 PSI.

2.2 Floor to Wet Kit Diagram

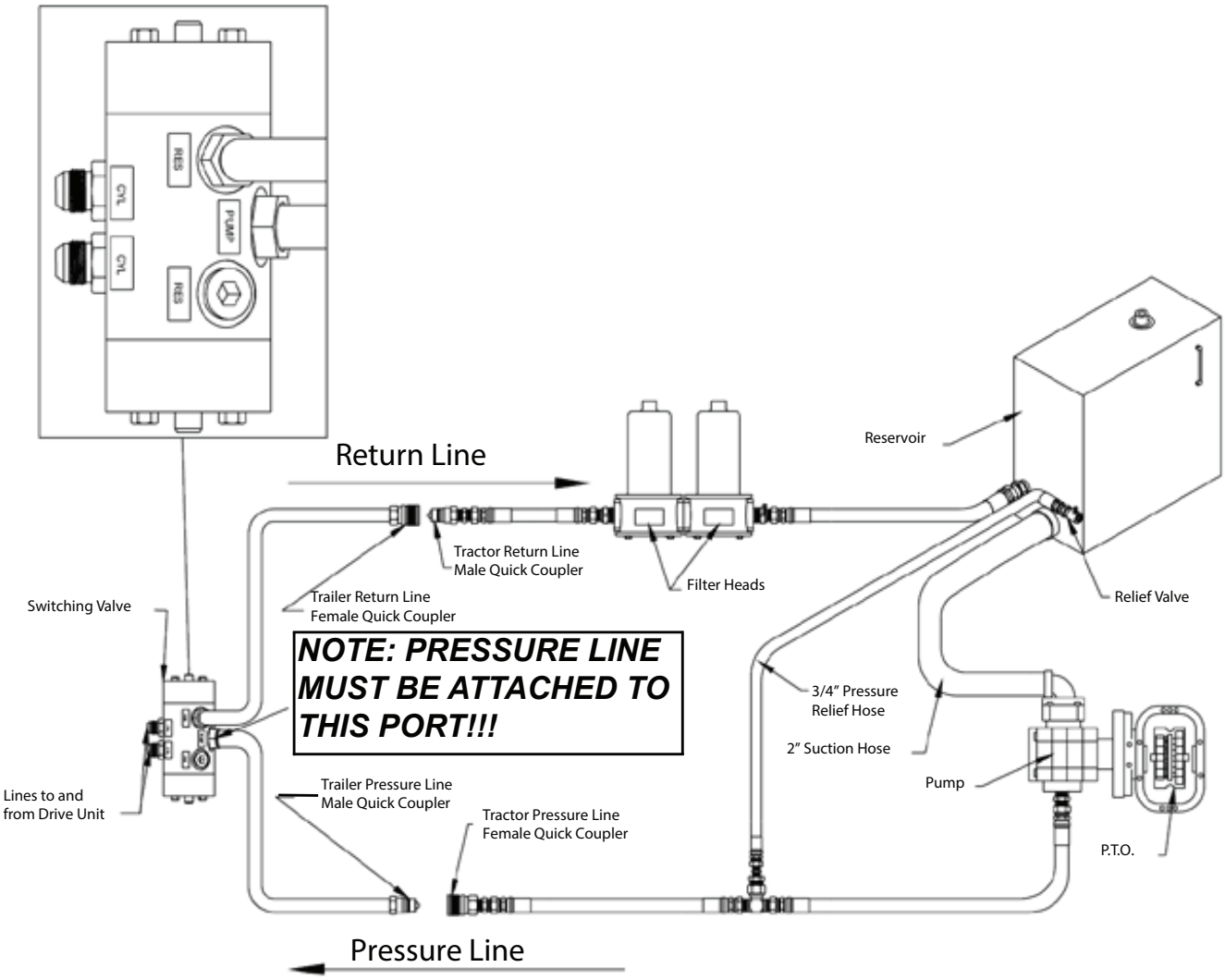
NOTE: Refer to Parts Catalog for additional information on fittings.

To have proper operation of your KEITH® *WALKING FLOOR* Unloader, the following check list and diagram must be followed. This is critical or your warranty may be voided.

TRACTOR: 1) Male quick coupler to be on the return line
(Line through filter to tank).
2) Female quick coupler to be on pressure line
(Line from pump).

TRAILER: 1) Female quick coupler to be on return line
(Line from switching valve port stamped “RES”)
2) Male quick coupler to be on pressure line
(Line to switching valve port stamped “PUMP”).

If you have any questions of problems, call KEITH Manufacturing Co. (541) 475-3802 or (800) 547-6161



2.3 Floor Speed vs Pump Flow Rate

With a Fuller 13 or 15 speed transmission, a bottom mount 118% series 442/489 Chelsea power take off, and a Commercial p-51 pump with a 2 1/2" gear, the tractor unload RPM in relation to floor movement is as follows*.

Truck RPM	Pump Output	Floor Movement
950 RPM	30 gallon	7.3 ft/minute
1270 RPM	40 gallon	9.8 ft/minute
1430 RPM	45 gallon	11.1 ft/minute
1750 RPM	55 gallon	13.3 ft/minute
1900 RPM	60 gallon	14.6 ft/minute

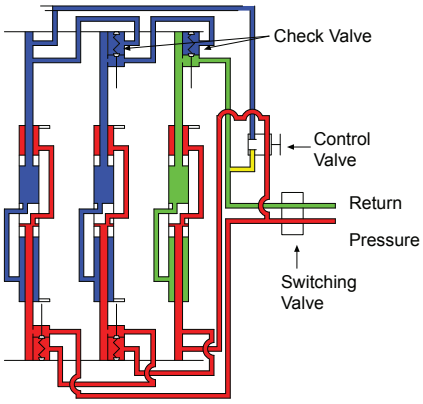
Above specifications are for KEITH® LEAKPROOF III Drive units with 80mm bore cylinders. These are approximate feet per minute only and should be used strictly as a guide.

3.0 Operation

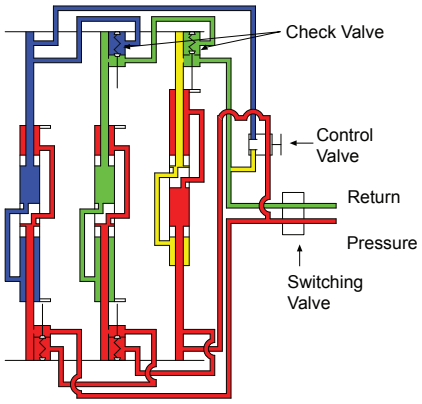
3.1 Oil Flow Diagram

Oil Flow Diagram (Phase #1 through #4) Unloading LEAKPROOF III DRIVE

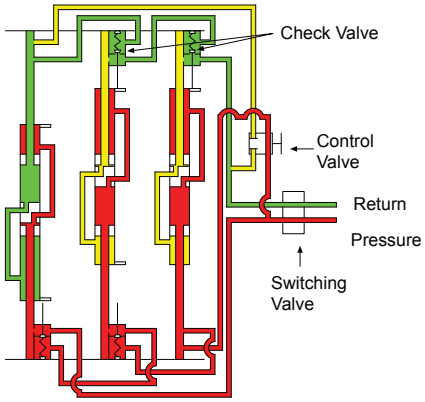
Pressure Return Blocked Return Oil Standing Oil



Phase 1
Pressure in the rear of all cylinders as shown in ■.
■ Open to return.
■ Blocked by check valves.
Note: Phase 1 requires more pressure than phase 4.

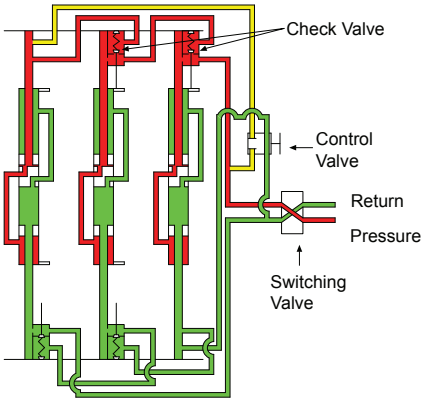


Phase 2
The #1 cylinder completes its full stroke, opening the check valve and allowing the oil in the #2 cylinder to escape as shown in ■. (■ Shows standing oil.)
Pressure still in rear of all cylinders as shown in ■.
■ Blocked by check valve.
Note: Phase 2 requires more pressure than phase 1.



Phase 3
The #2 cylinder completes its full stroke, opening the check valve and allowing the oil in the #3 cylinder to escape to return as shown in ■. (■ Shows standing oil.)
Pressure still in rear of all cylinders as shown in ■.
Note: Phase 3 requires more pressure than phase 2.

KEITH® RUNNING FLOOR II™ - OIL FLOW DIAGRAM, revised May, 2001



Phase 4
When the #3 cylinder completes its stroke, the pressure and return are switched by the switching valve, transferring the pressure to the front of all cylinders as shown in ■. All cylinders are open to return as shown in ■. All cylinders move to rear of trailer together, moving the load.
Note: Phase 4 requires less pressure than phases 1, 2, or 3.

3.2 Start-Up

Before starting your new KEITH® LEAKPROOF III unloader, a quick start-up check should be made.

- ✓ Is your entire system plumbed to the plumbing diagram?
- ✓ *Pump: Will it pump 30-35 GPM at pressure?
- ✓ *Relief Valve: Is it set between 2800 to 3000 PSI?
- ✓ Oil: Have you filled the reservoir?
- ✓ P.T.O.: Is it engaged?
- ✓ Quick Disconnects: Are they completely engaged?
- ✓ Ball Valve: Is the ball valve on the drive unit closed?
- ✓ Is the pressure line on the trailer attached to the pressure line on the tractor and the return line attached to the return line?

The pressure and return lines must attach to their proper ports on the switching valve.

***Note: If the information about your pump and relief valve is not available, a pressure/flow check will help determine this information. Be sure that your entire wet kit system meets the requirements of the hydraulic wet kit specifications in this booklet.**

3.3 Standard Operating Procedures

UNLOADING

1. To unload with your KEITH LEAKPROOF III Drive, engage the P.T.O. then bring the tractor engine up to the predetermined unloading RPM.
2. Pull the control valve handle all the way out. (See Diagram A.)
3. Make sure that the ball valve, located between the pressure and return lines, is in the closed position. (See Diagram B.) This ball valve is used for the emergency shut-off. Your trailer floor should now be operating.
4. To stop the floor at any time during the loading or unloading process, switch the ball valve to the open position. (See Diagram B.)

LOADING

1. To manually load with your bidirectional KEITH LEAKPROOF III Drive, simply turn the control valve handle parallel to the ground and push it under the valve body. (See Diagram A.) Then follow instructions 1,3 and 4 listed above.

!!NOTE!! Make sure trailer doors are open <u>BEFORE</u> starting the floor or serious damage may occur.

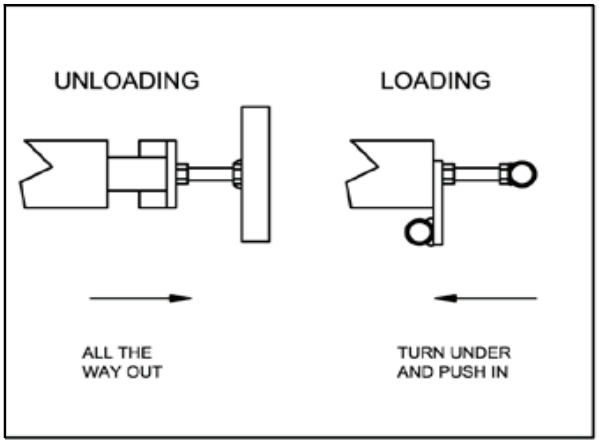


Diagram A: Control Valve (Manual Version)

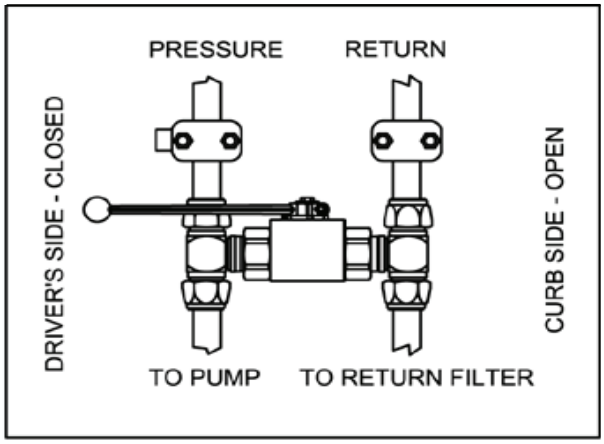
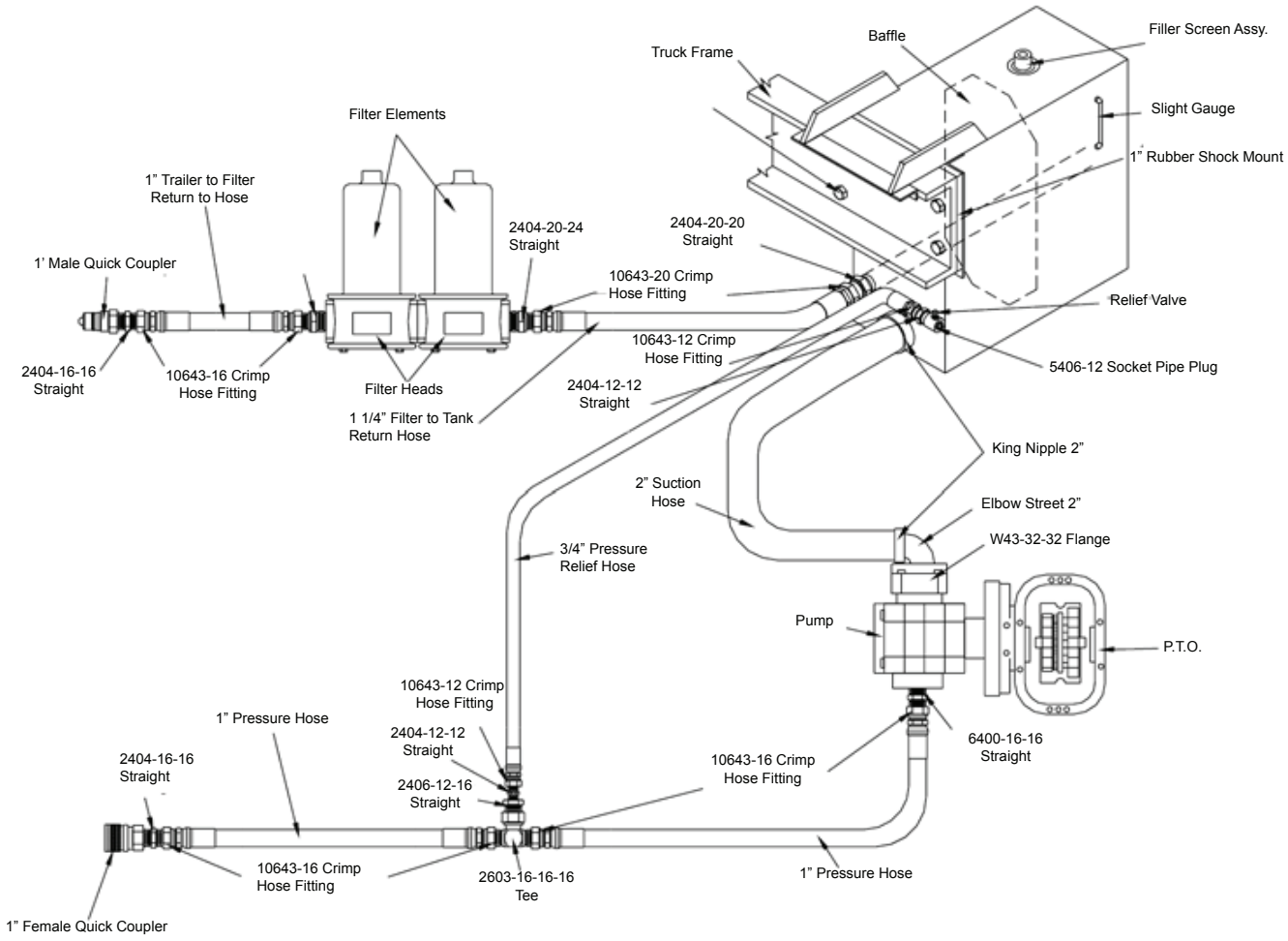


Diagram B: Ball Valve

(View in **Closed Position.** Push handle to the **curb side to open.**)

[View is from beneath the trailer.]



4.0 Maintenance

4.1 Life Extending Practices

- For proper operation of your new LEAKPROOF III equipped trailer and wet kit, make sure the pressure and return lines are hooked up in the correct sequence.
- Change the hydraulic return filter element after the first (6) hours of operation and then every six (6) months. This may vary with the operating environment.
- During the first two (2) weeks of operation, it will be necessary to check and tighten all floor bolts. Floor bolts should be checked regularly for proper torque, in accordance with a preventive maintenance program, as loose floor bolts will cause serious damage to floor slats.
- After the first week of operation, you must check and tighten the lower cross-drive clamps that fasten the cross-drives to the cylinder. Also check the end cylinder rod plates that fasten the cylinders to the drive frame.
- During the first several weeks of operation, examine the check valve and tube clamps to ensure that they are securely fastened.

4.2 Bolt Torque Requirements

Bolt Description	Size	Torque Values
Floor Bolts	1/2”-13 UNC Hex Cap Bolt	75 ft-lbs [101 Nm]
Clevis Clamp Bolt	3/8”-16 UNC Hex Cap Bolt	30 ft-lbs [40 Nm]
Barrel Clamp Bolts	3/4”-10 UNC Hex Cap Bolt	135 ft-lbs [183 Nm]
Rod end plates	5/8”-11 UNC Hex Cap Bolt	35 ft-lbs [183 Nm]
Check valve and tube clamp bolts	5/16”-18 UNC Hex Cap Bolt	20 ft-lbs [27 Nm]

5.0 Troubleshooting

5.1 Switching Valve

Unloading

Problem: Floor does not run at all.

Check: All items on START-UP check list. (See Start-Up check list, above.)

Problem: Cycle starts then floor stops.

Specific trouble: Driver's side cylinder (#1) extends toward the front of the trailer, center cylinder (#2) extends toward the front of the trailer, passenger side cylinder extends toward the front of the trailer; then the system stops.

Solution: The (#6) check valve has malfunctioned. Replace the check valve.

Specific trouble: All three cylinders retract toward the rear of the trailer; then the system stops.

Solution: The (#1) check valve has malfunctioned. Replace the check valve.

Note: If floor stops in the full rear position and the switching valve has switched, you may not have enough oil pressure. Less pressure is required to move the load than to pull the slats 1/3 at a time under the load.

5.2 Check Valve

Unloading

Problem: Does not cycle correctly.

1. Specific trouble: Cylinders (#1) and (#2) extend together toward the front of the trailer while unloading.

Solution: The check valve at the forward end of the cylinder (#1) has malfunctioned. Replace the check valve.

2. Specific trouble: Cylinders (#2) and (#3) extend together toward the front of the trailer while unloading.

Solution: The check valve at the forward end of the cylinder (#2) has malfunctioned. Replace the check valve.

3. Specific trouble: All cylinders extend together toward the front while unloading.

Solution: The control valve is bypassing or the check valves at the front of the (#1) & (#2) cylinders have malfunctioned. First replace the control valve. Then if the problem persists, replace the check valves.

Loading

Problem: Does not cycle correctly.

Specific trouble: Cylinders (#2) and (#3) extend together toward the rear of the trailer while loading.

Solution: The check valve at the rear end of the cylinder (#3) has malfunctioned. Replace the check valve.

Specific trouble: Cylinders (#1) and (#2) extend together toward the rear of the trailer while loading.

Solution: The check valve at the rear end of the cylinder (#2) has malfunctioned. Replace the check valve.

Specific trouble: All cylinders extend together toward the rear while loading.

Solution: The control valve is bypassing or the check valves at the rear end of the (#2) & (#3) cylinders have malfunctioned. First replace the control valve. Then if the problem persists, replace the check valves.

Note: When empty, some trailers will cycle in sequence forward 1-2-3, then back 3-2-1, (instead of all slats moving together.) This is not a malfunction; no repairs are needed. When a load is put on a trailer, the drag will cause the floor to sequence properly.

5.3 Check Valve Replacement

Replacing a KEITH® LEAKPROOF III Drive check valve is a simple procedure. The tools required to do this are:

(1) 1/2” socket
(1) 6” or 12” extension
(1) ratchet

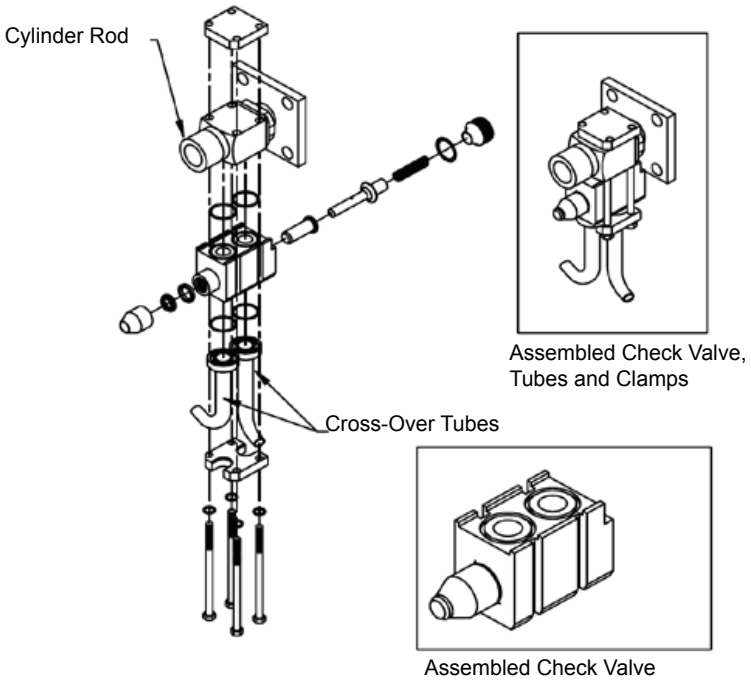
DISASSEMBLY

Before removing any bolts, run the cylinder away from the check valve in order to free it. Next remove the four 5/16” x 5-1/2” bolts and the tube clamp. Loosen the other end of the tubes and remove the check valve.

ASSEMBLY

First, make sure all of the surfaces are clean and the O-Rings are in their proper places. Put the new check valve in place making sure it seats flat on the rod end. Put the tube clamp back on the 5/16” x 5-1/2” bolts back in. Make sure the tubes fit snugly back into the tube clamp and tighten the 5/16” x 5-1/2” bolts down. Tighten the other ends of the cylinder cross-over tubes and run the floor to check for leaks.

*See check valve assembly parts list in the Parts Catalog to identify parts by given numbers.



5.4 Technical Support

Please have the following information readily available before contacting KEITH for support:

- Model Number (Located on the Serial Plate of the drive unit) (See 3.3 Component Location Diagram)
- Serial Number (Located on the Serial Plate on the drive unit) (See 3.3 Component Location Diagram)
- Quantity & length of floor slats
- Vehicle make and unit installer

KEITH Technical Support Contact Information:

Website: www.KeithWalkingFloor.com
Email: TechDept@KeithWalkingFloor.com
Toll-Free: 800-547-6161
Phone: +1-541-475-3802

6.0 Contact Information - KEITH Manufacturing Co.

World Headquarters - USA
401 NW Adler St.
P.O. Box 1
Madras, OR 97741
Toll-Free: 800-547-6161
Phone: +1-541-475-3802
Email: Sales@KeithWalkingFloor.com

Europe
Barneveld, The Netherlands
Phone: +31-342-422007
Email: EuroSales@KeithWalkingFloor.com

Canada
Brantford, ON
Phone: +1-519-756-9178
Email: CanadaSales@KeithWalkingFloor.com

México
Guadalajara, Jal.
Phone: +52-333-616-5079
Email: KMC_Mexico@KeithWalkingFloor.com

Australia
Waverley Gardens, VIC
Phone: +61-3-9562-2190
Email: AUSales@KeithWalkingFloor.com

Not all parts or services available in all regions. Contact your regional office for information on available parts and services.

(Final Page)