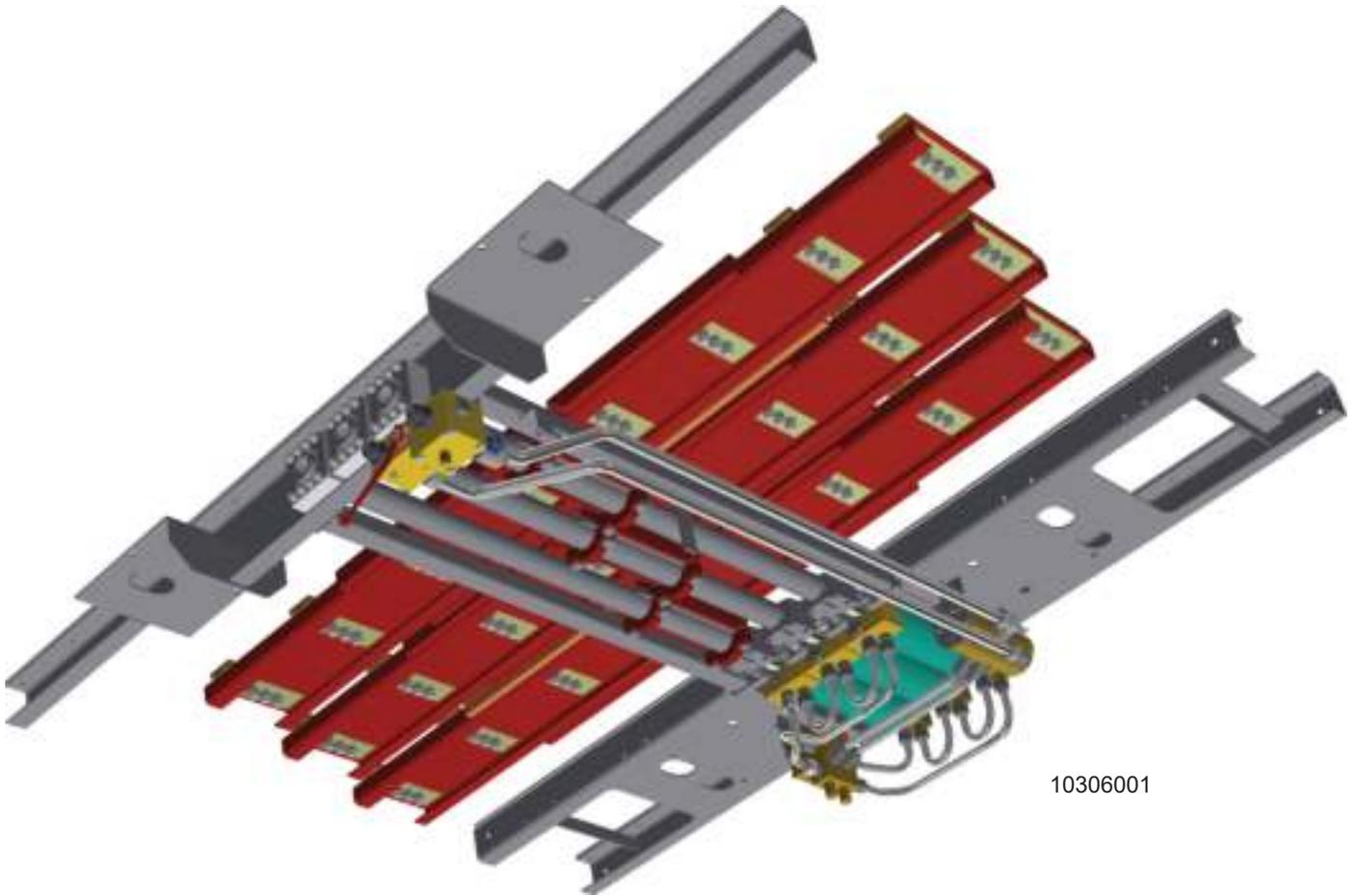




# WORKHORSE

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



10306001



## OWNER / OPERATOR MANUAL

Original Instructions

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## 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](http://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](mailto: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 | e. Part number               |
| b. Contact name | f. Quantity                  |
| c. Address      | g. Reason for return         |
| d. Phone number | 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

### 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](http://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.

## 2.0 Specifications

### 2.1 Hydraulic Drive Unit

<b>Cylinders</b>	3
Standard Diameter	∅ 102 mm
Stroke Length	200 mm
<b>Weight</b>	477 kg
<b>Capacity</b> ∅ 102 mm	26.300 kg. @ 140 bar
<b>Pump</b>	
Pressure	210 bar maximum
Flow Rate	110 l/min maximum

2.2 General Wet Kit Specifications

Always consult the supplier of your drive unit to ensure you choose the correct hydraulic power unit. Figure 2.2 shows the components of the hydraulic installation in a hydraulic diagram.

- |                           |                                       |                                |
|---------------------------|---------------------------------------|--------------------------------|
| 1 Bleed                   | 5 PTO                                 | 9 Return filter                |
| 2 Hydraulic reservoir     | 6 Return line from filter             | 10 Return / Pressure tubing 1" |
| 3 Suction tubing, Min. 2" | 7 Exhaust tubing, Min 3/4"            | 11 Quick coupling (M)          |
| 4 Pump                    | 8 Pressure relief valve, Max. 210 BAR | 12 Quick coupling (F)          |

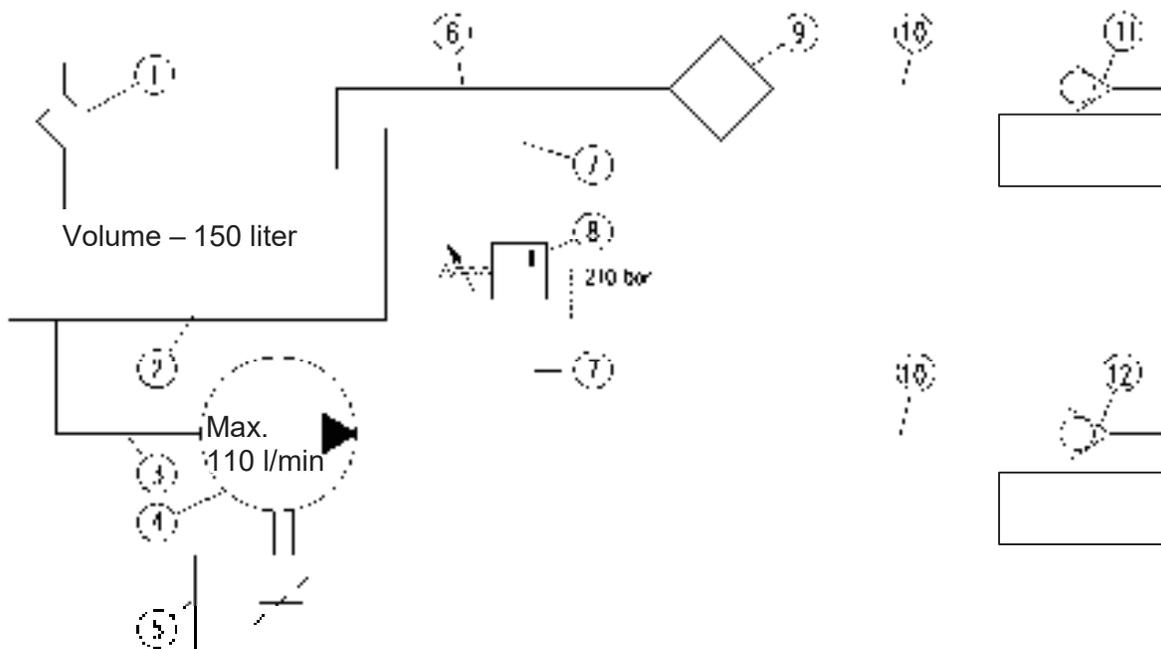


Figure 2.1 Hydraulic Diagram

The hydraulic installation must meet the following requirements:

**PUMP/ PTO:** The quantity of oil that will be pumped in the system determines the loading and unloading time; the oil pressure determines the maximum total weight that can be handled.

The KEITH® WALKING FLOOR® Workhorse System is designed for a recommended maximum oil flow of 110 l/minute. And a recommended maximum speed of 2.6 m/min.

A high power take-off (PTO) ratio (greater than 1:1) reduces the size of the pump for a given rotational speed. This is generally the best alternative, technically as well as financially. Compare the performance of the motors in order to be certain that the motor can drive the pump. Also, check that the rotational speed of the motor will not be greatly reduced by the load. Compare the maximum permitted loading of the PTO with that of the pump.

**OIL:**

The hydraulic oil must be of high quality, suitable for a pressure of 210 bar. The ISO viscosity must be 46 (for example Chevron AW 46 hydraulic oil), while in cold conditions a viscosity of 32 must be used. Conditions of extreme cold demand hydraulic fluids of aviation quality.

**RESERVOIR:**

The volume of oil in the reservoir must be equal to or greater than the oil flow per minute.

The reservoir must be filled to a level of 80-90%. Suction and return tubing must be placed so that cavitations will be prevented. The filler cap must have a bleed capability.

**PRESSURE RELIEF VALVE:**

The hydraulic installation must have a pressure relief valve that is adjusted to 210 bar. Ensure that the pressure relief valve is capable of sustaining the oil flow.



**WARNING:** The correct adjustment of the pressure relief valve is very important. If this is too low it is possible that the system will not load or unload; if it is too high, the system may be damaged.

Measures to follow:

**FILTER:**

The filter in the return tubing must have a degree of filtration of 10 microns. In conditions of extreme cold it is better to use filtration of 25 microns. Ensure that the nominal flow volume of the filter is the same as the maximum oil flow that can occur in the system.

**HYDRAULIC PLUMBING:**

All hoses must be suitable for a pressure of at least 300 bar.

Suction Plumbing: in order to prevent cavitations, the oil flow to the suction inlet of the pump must be unhindered. This requires suction tubing with a sufficient diameter (at least 2" [50 mm] that is as short as possible (not more than 60" [1524 mm]), with out constrictions. Cavitations can also be caused by bends or elbows in the pipe work – a straight line is best. Ensure that the hose cannot collapse with the suction.

Pressure Plumbing: the hose from the tractor to the trailer must be 1" [25 mm].

Return Plumbing: the hose from the trailer to the filter must also be 1" [25 mm]. The hose from the return filter to the reservoir must be at least 1¼" [32 mm].

**QUICK-COUPLINGS:**

- |          |   |
|----------|---|
| Tractor: | Male on return (to the reservoir)                           |
|          | Female on pressure (from the pump)                          |
| Trailer: | Female on return (from the "TANK" port on the filter block) |
|          | Male on pressure (to the "PUMP" port on the filter block)   |

### 3.0 Operation

#### 3.1 Use of the **WALKING FLOOR®** system

The system is built up from a number of separate components. These components are assembled in such a way that they are only suitable for the conveying purpose described in the sales contract. Should you wish to convey other materials then please contact the supplier of your trailer.

#### 3.2 How It Works

The KEITH® **WALKING FLOOR®** system can be used for loading and unloading most materials.

Moving the load with the system is based on the friction between the load and the floor. The floor consists of a number of *floor slats* placed side-by-side (the width of the floor determines the precise number of slats required).

- |                  |                       |                   |
|------------------|-----------------------|-------------------|
| 1 X-DRIVE (3)    | 3 ON / OFF VALVE      | 5 SWITCHING VALVE |
| 2 MOUNTING BLOCK | 4 LOAD / UNLOAD BLOCK | 6 CYLINDER (3)    |

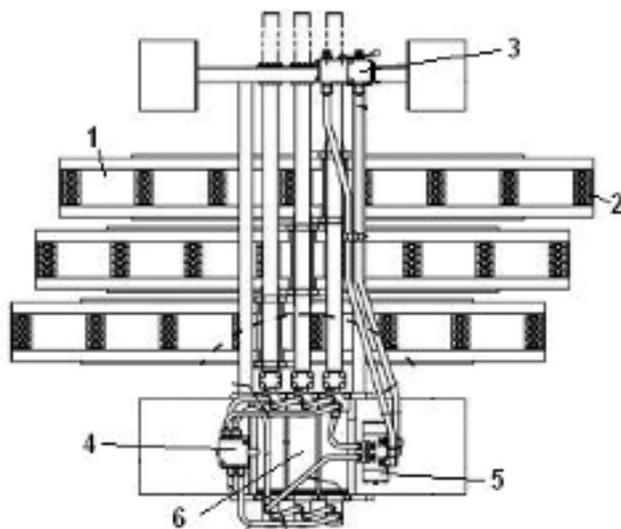


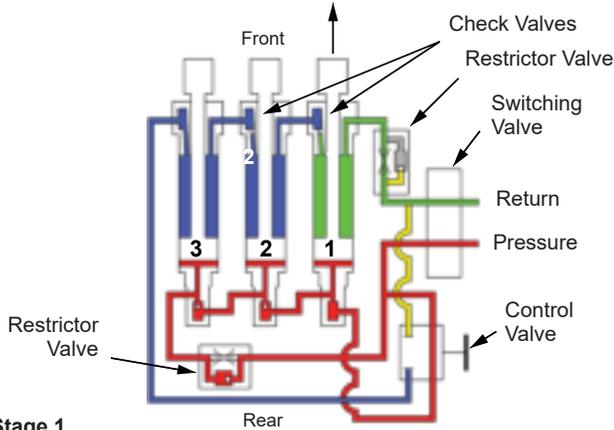
Figure 3.1: KEITH® **WALKING FLOOR®** Workhorse drive-unit

Three double-acting *hydraulic cylinders* move the floor slats in a cycle with four phases. The forces exerted by the cylinders are transferred to the slats by three *cross drives*. Each cross drive moves 1/3 of the total number of floor slats.

The floor slats slide over plastic *sliding bearings* that support both the upper part and the sides of the slat. Different floor slats, varying in width, surface area and material, have been developed to provide optimum operation with various types of load. The unloading cycle is composed of the following four phases, the loading cycle is the opposite. (section 3.3).

3.3 Oil Flow Diagram

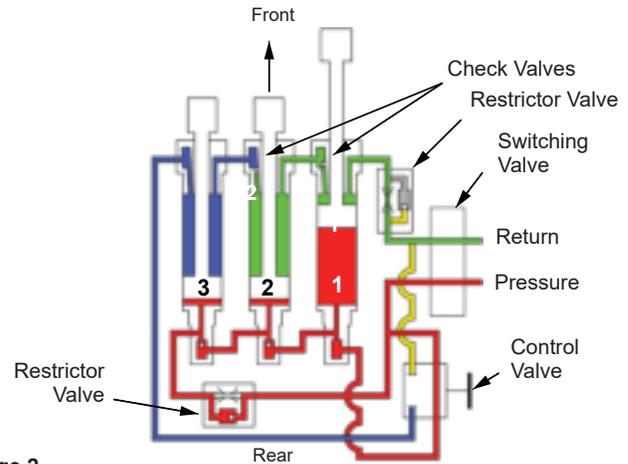
UNLOADING CYCLE



Stage 1

- Pressure in the rear of all cylinders.
- Cylinder #1 is open to return, causing it to move. (Load does not move.)
- Blocked by check valves.

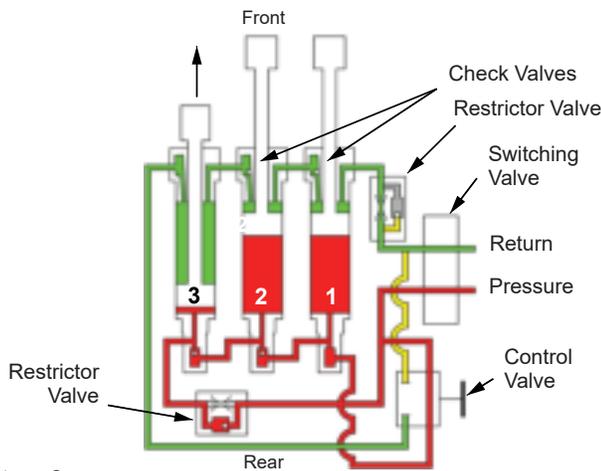
**Note:** Stage 1 requires more pressure than stage 4.



Stage 2

- Pressure still in rear of all cylinders.
- Cylinder #1 completes its full stroke, opening the check valve, allowing the oil in cylinder #2 to escape, causing it to move. (Load does not move.)
- Blocked by check valve.

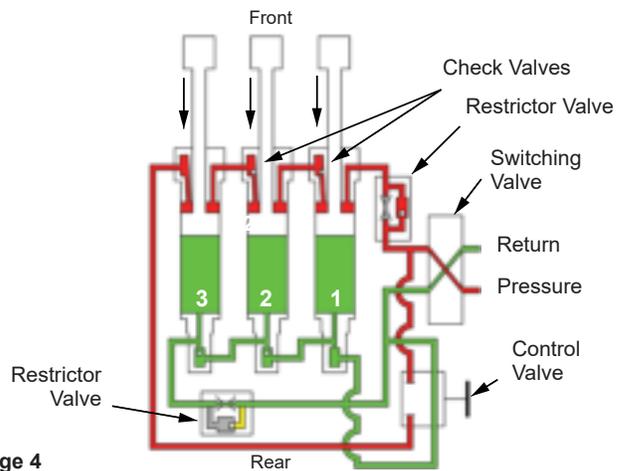
**Note:** Stage 2 requires more pressure than stage 1.



Stage 3

- Pressure still in rear of all cylinders.
- Cylinder #2 completes its full stroke, opening the check valve, allowing the oil in cylinder #3 to escape to return, causing it to move. (Load does not move.)

**Note:** Stage 3 requires more pressure than stage 2.



Stage 4

- Cylinder #3 completes its stroke, shifting the switching valve, which reverses pressure and return, transferring the pressure to the front of all cylinders.
- All cylinders are now open to return and move to the rear of the trailer together, moving the load.

As the cylinders complete their stroke, cylinder #1 shifts the switching valve, which reverses pressure and return, transferring the pressure to the rear of all cylinders again and the cycle starts over.

**Note:** Stage 4 requires less pressure than stages 1, 2, or 3.

The position of the two control valves (internal) determines the loading or the unloading cycle. A manual or electrical load- / off- / unload valve operates these valves.

The (un)loading time is determined by the speed of action of the cylinders, which depends on oil flow to the cylinders and the cylinder size. The force the cylinders transfer to the floor determines the maximum load, which can be (un)loaded. The cylinder force is dependent on the oil pressure and the cylinder size.

The pump determines both the flow and the maximum oil pressure, and therefore the (un)loading time and the weight, which can be handled. To protect the system, the pressure relief valve, set at 210 bar, limits the pressure.

**NOTE:**

- For faster (un)loading, the oil flow must be increased; pressure has no influence on (un)loading time.
- The system operating pressure is determined by the load resistance and not by the pressure relief valve setting of the pump.
- Conveying products for which the system has not been designed can cause damage to the system. We therefore advise you to contact your supplier about this first.

### 3.4 Standard Operating Procedures

#### 3.4.1 Safety

**WARNING:** The large force exerted by the floor can result in damage to equipment and serious injury or death. Always ensure that this manual has been read and understood by the operator. Take the following precautionary measures:



- First open the doors before switching on the pump.
- Make sure that nobody is under the system when the pump is switched on.
- Ensure that during unloading no people or animals are in the immediate neighborhood of the location where the load can end up. We suggest that no one should be within 16' [5 m] of the discharge danger zone.
- Ensure that there is always someone close to the emergency switch during loading and unloading.
- Always switch off the pump during maintenance or service activities.
- Always switch off the pump when the vehicle is being driven and when the system is not in use.

Two modes of operation are possible: *manual* and *electrical*; the person operating the system during loading or unloading must be able to see the place where the load will be placed.

### 3.4.2 General Tips

- Depending on the type of load, a part of it can remain on the floor after the unloading operation. This can be prevented by the use a CleanSweep® tarp system, a moving headboard or a piece of canvas, possibly attached to a moving head board or attached to the front bulkhead with clips.
- In order to limit the effect of friction between the floor and the load, (so as to protect the load or the floor) a piece of canvas can be laid over the whole floor and fixed at the front to the moving headboard. With a simple arrangement it is possible to roll it up at the rear during unloading.
- The speed of the floor can be changed by changing the speed of the motor. Ensure that the maximum permitted pumping rate is not exceeded.
- Ensure that the material can be freely unloaded: do not push against the material stacked behind the floor.
- Take care that the load does not damage the front wall or headboard. The force exerted by the moving load can be considerable!
- In frosty conditions, stop the three cylinders at the beginning of the unloading movement. As soon as unloading starts, the floor slats will move together to the tail end of the trailer and will detach the load from the side walls.

### 3.4.3 Manual Controls

#### *Starting the floor operation:*

1. Open the trailer doors.
2. Attach the hydraulic quick couplings to one another.
3. Turn on the PTO and bring the engine to the desired number of revolutions (rpm).

#### *Unloading / Loading:*

1. Select the desired operation to be performed by the system; unload / load.
2. Set the on/off handle in position; on. The floor will now begin to function.

#### *Stopping:*

1. Set the on/off handle in the position; off. The floor will now stop.

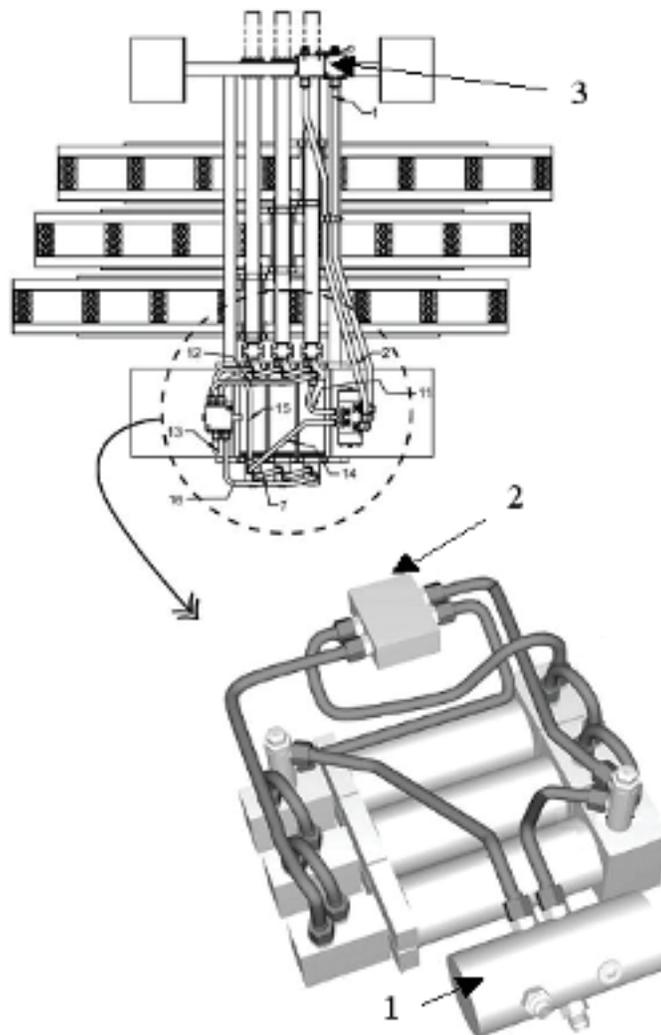


Figure 3.3: Manual operation

1. Switching valve
2. Manual Load/Unload valve
3. Manual On/Off valve

### 3.4.4 Electric Controls

#### *Starting the floor operation:*

1. Open the trailer doors.
2. Attach the hydraulic quick couplings to one another.
3. Turn on the PTO and bring the engine to the desired number of revolutions (rpm).

#### *Unloading / Loading:*

1. Set the control push button for the system in the desired position; unload / load.
2. Set the on/off switch on the control box in the position; *on*  
The floor will now begin to function.

#### *Stopping:*

1. Set the on/off switch on the control box in the position; *off*

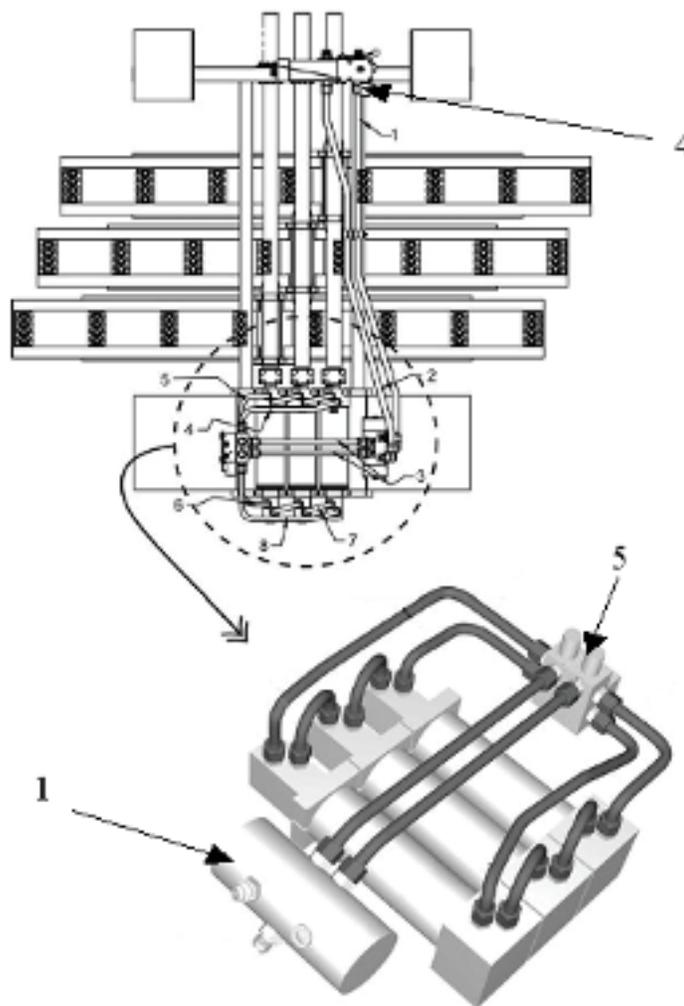


Figure 3.4: *Electric operation*

1. Switching valve
4. Electric On/Off valve
5. Electric Load/Unload valve

### 3.4.5 Emergency Stop

The system with an optional KEITH® electrical control box is provided with an emergency stop push button. If a dangerous situation arises during the operation of the floor it can be stopped immediately with the emergency stop.

#### Manual operation in an emergency

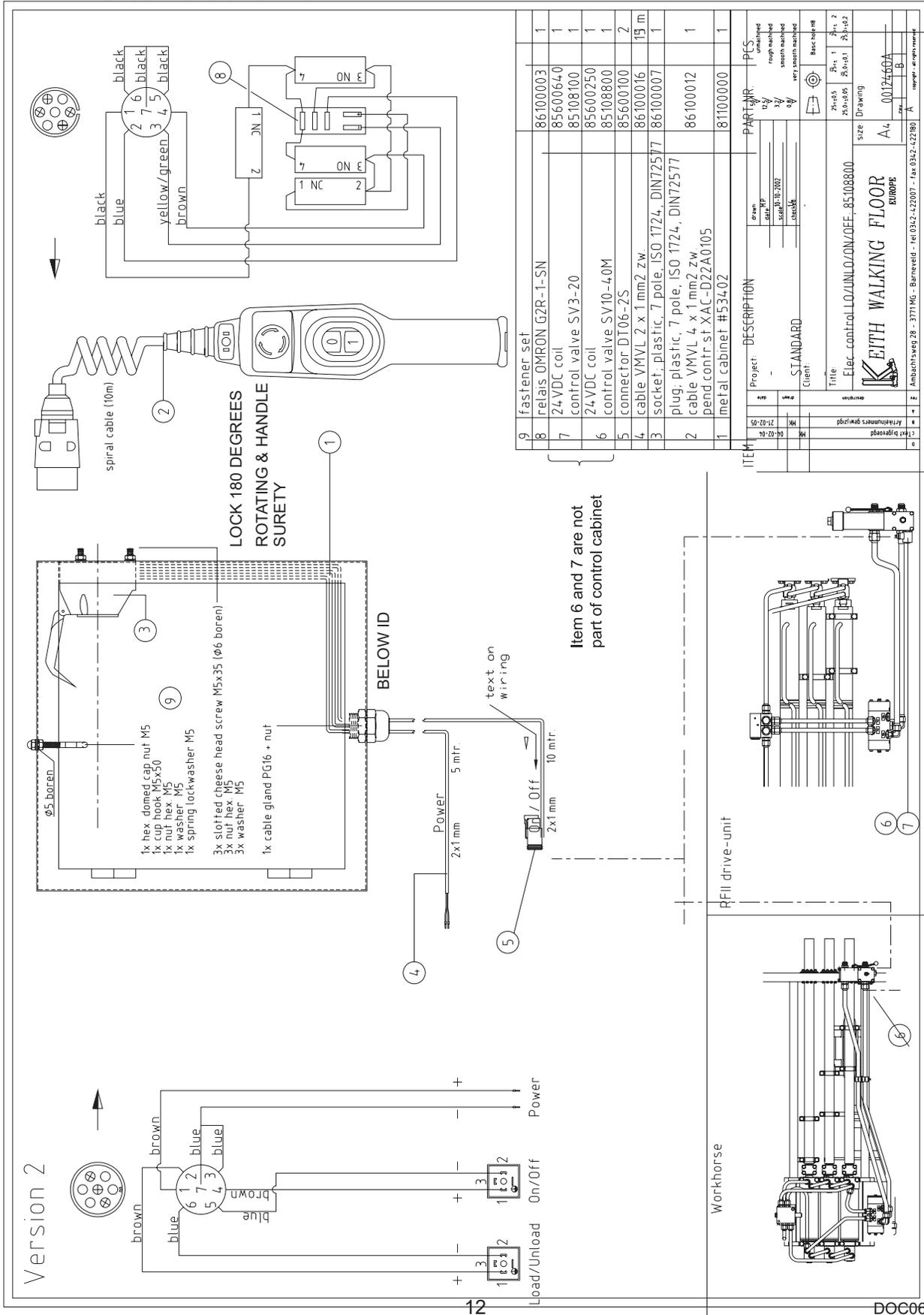
In case of an interruption in the electrical power supply, the system can be switched on/ off manually. Operate the handle on the block between the pressure and return connection.

#### Switching off

1. Stop the floor
2. Switch the PTO off and uncouple the quick couplings, if necessary.



3.4.7 Electrical Control On / Off



### 3.5 Components



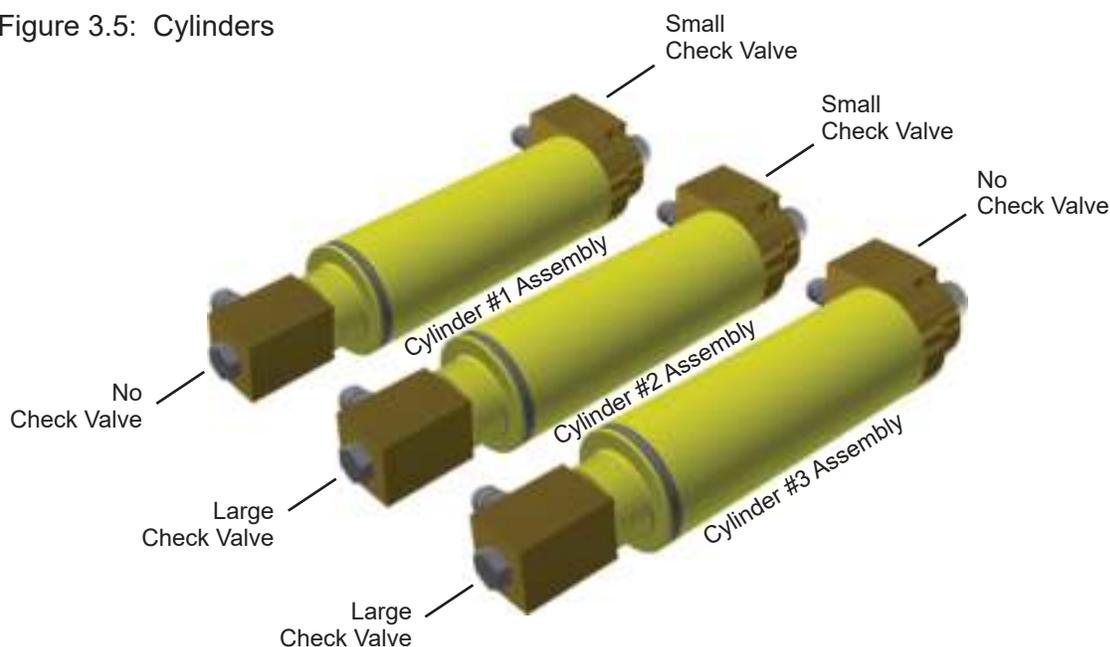
**WARNING:** The large force and pressure caused by the hydraulic forces in the system can cause serious injuries. Always switch off the pump during maintenance or service work.

#### 3.5.1 Cylinder

The three cylinders are the drive elements in the KEITH® *WALKING FLOOR*® system.

The cylinders are attached to the frame by a bolt construction. Each piston rod, or extension of the piston rods, are attached to a cross drive with two clamps.

Figure 3.5: Cylinders



The above figure shows the difference between the cylinder compilation.

For possible repair of a cylinder, in all cases a #2 cylinder will be supplied. Besides the replacement for a #2 cylinder, this cylinder can be modified for the purpose of a cylinder #1 or #3. For modification to cylinder #1, the plug, check valve and the spring at the rear end of the cylinder needs to be removed. When a cylinder #3 is needed, the check valve, spring and plug needs to be removed at the front of the cylinder. Reinstall the plug into the cylinder after removing the check valve and spring.

After replacement of a cylinder, followed by a full sequence of loading and/or unloading at full load:

Check the torque of the bolts with which the cylinder is attached to the frame - torque 170 Nm.

Check the torque of the bolts in the cylinder clamps - torque 170 Nm. Check the system for leaks.

**3.5.2 Check Valve**

The four check valves are the sensors of the KEITH® WALKING FLOOR® system. The check valve detects when the cylinder has reached the end of its stroke and opens in order to allow the oil from the following cylinder to flow to the reservoir. The check valves are located at the front and rear of the cylinder in the heads on top of the cylinders. The valves are operated by the piston or piston rod inside the cylinders.

**3.5.3 Switching Valve**

The only function of the switching valve is to change the pressure from one side of the cylinders to the other side. This ensures that the cylinders move in the opposite direction. The switching valve is mechanically operated at the end of the stroke of cylinder No.1 and cylinder No. 3.

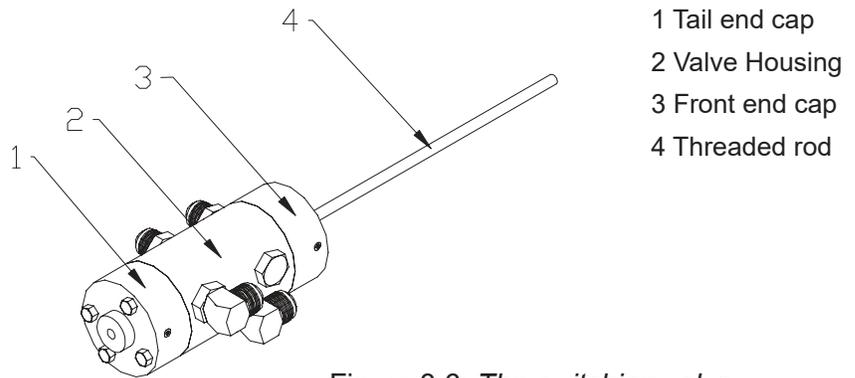
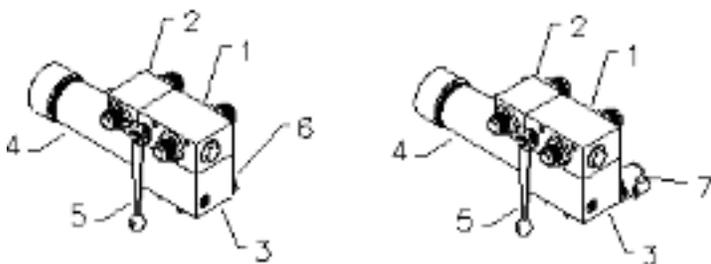


Figure 3.6: The switching valve

**3.5.4 On / Off Valve**

The valve, manually and/ or electrically operated, sets the floor in operation. In the <OFF> position the oil flows via the valve directly back to the reservoir. The system will not operate if the pressure and return plumbing is not correctly connected.



Manual

Electric

Figure 3.7: The On / Off valve

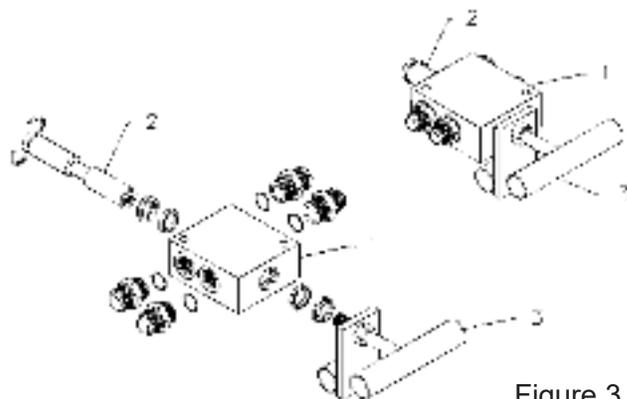
### 3.5.5 Control Valve

This valve, which is manually operated, determines the direction of movement of the system.

The valve has two positions:

- Fully Withdrawn ; unloading
- Fully Depressed; loading.

Before the floor system is started the correct direction must be set.



- 1 Valve housing
- 2 Valve coil
- 3 Handle

Figure 3.5.5.a: *The Manual Control valve*

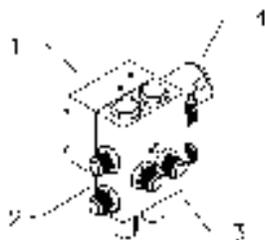


Figure 3.5.5.b: *The Electric Control valve* 1 Pilot valve housing

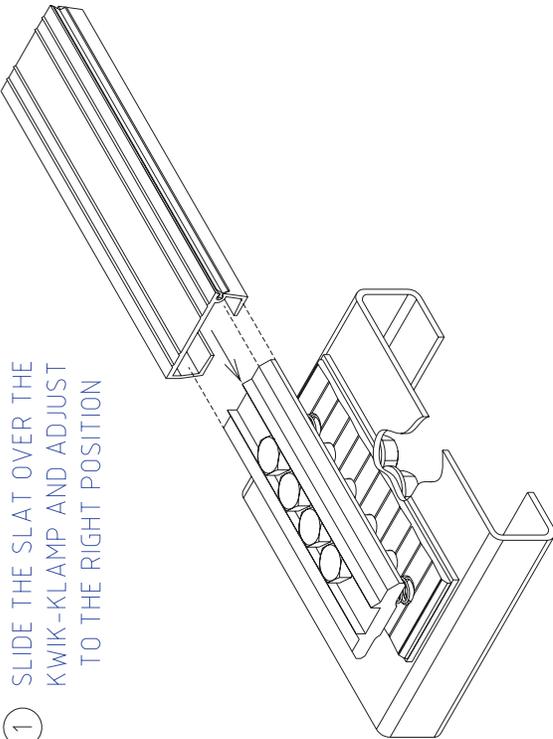
### 3.5.6 Hydraulic Plumbing

All hydraulic plumbing is internally completely hollow. A considerable part of the hydraulic circuit is internal; the external plumbing for both manual and electrical operation are shown in respectively figures 3.4.3 and 3.4.4. Ensure, when work is being carried out on the system, that all couplings, covers and plugs make a good seal ("O" – ring or flat seal).

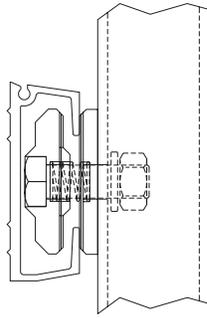
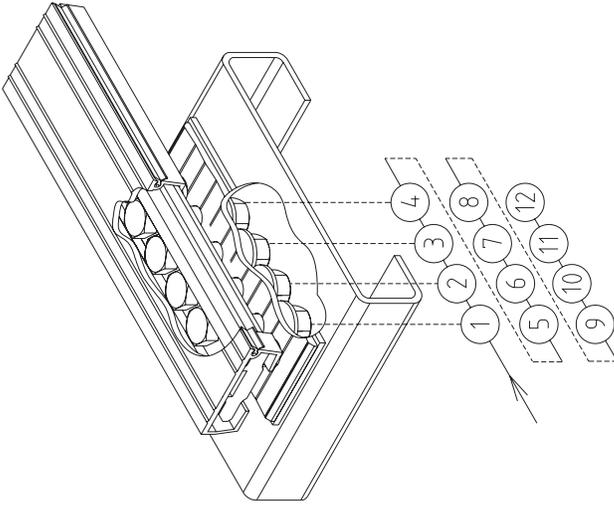
3.5.7 Installation of the floor slat with Kwik-Klamp® System

INSTALLATION OF SLATS WITH THE KWIK-KLAMP SYSTEM

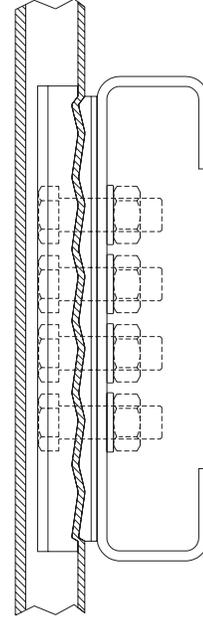
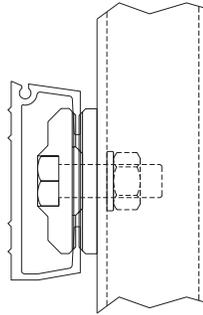
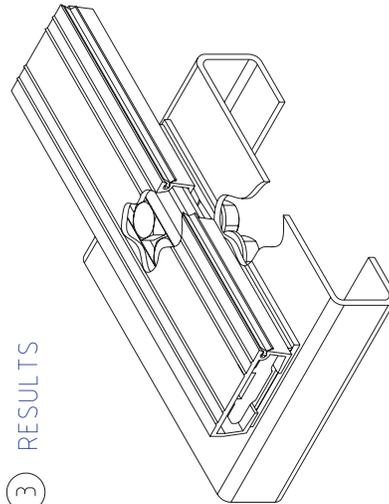
1 SLIDE THE SLAT OVER THE KWIK-KLAMP AND ADJUST TO THE RIGHT POSITION



2 MOUNTING: EACH OF THE 4 BOLTS HAS TO BE TIGHTENED WITH A TORQUE OF 200 Nm, FROM 1 TO 12, THIS IS 3x EACH BOLT



3 RESULTS



Project	STANDARD	Scale	1:1
Author	STANDARD	Date	02.03.18
Checked		By	
Approved		By	
Title			
INSTALL SLATS WITH THE KWIKK-LAMP			
KETH WALKING FLOOR			
Drawing			
001940A (E)			
A1			
Finkenweg 28 • 37110G, Springe • Tel. 0512-232897 • Fax 0512-232898			

## 4.0 Maintenance



**WARNING:** The large force and pressure can cause serious injuries. Always switch off the pump during maintenance or service work.

Two conditions that contribute to the life of the KEITH® *WALKING FLOOR*® system are:

- Clean oil, free from contamination
- Correct torque for the bolts. The bolts of the cylinder clamps and of the floor profiles must be checked regularly.

The following maintenance must be carried out:

- after the system has been working for 6 hours;
  - every half year or after every 150 operating hours whichever is sooner.
1. General inspection of the system and the floor.
    - ✓ Inspect the system for damage.
    - ✓ Check for oil leaks.
    - ✓ Check the system for smooth operation.
    - ✓ Check the temperature. No single part may be warmer than 60°C (it must be possible to touch all parts with the bare hand).
  2. Change the oil filters:
    - a. Filter in the return plumbing of the hydraulic installation. Optional:
    - b. Filter in the pressure plumbing (FA 20ME MXW2-GDL20, 20 microns).  
Unscrew the filter housing. Clean up any oil that has leaked. Fit a new filter.
  3. Check the torque of the cylinder bolts.
    - a. Cylinder clamps: Torque: 170 Nm.
    - b. Bolts which connect the cylinder to the frame : 200 Nm

## 5.0 Troubleshooting



**WARNING:** The large force and pressure can cause serious injuries. Always switch off the pump during maintenance or service work. If you experience problems with the operation of your KEITH® WALKING FLOOR® system this section can help you to find a solution and to make small adjustments. Before you go further, first check whether one of the following most frequently encountered problems is applicable:

- ✓ oil\* : is the reservoir full?
- ✓ pump\* : does it pump the necessary quantity of oil at 210 bar?
- ✓ connections\* : is the system connected as shown in the hydraulic diagram (figure 2.2)?
- ✓ pressure relief valve\* : is this adjusted to 210 bar?
- ✓ PTO\* : is this switched on?
- ✓ quick couplings : are they properly connected?
- ✓ on/ off valve : is this on?
- ✓ electrical operation : is there sufficient voltage?  
: is the emergency button pulled out?

\*see the specification for the hydraulic installation (chapter 3).

**IMPORTANT:** When you perform welding on the system, the part on which welding is performed must be directly connected to earth. A pressure meter can be connected to the system.

### PROBLEM A: The cycle begins, then the floor stops:

1. All cylinders move backward, then the system stops.  
Cause #1: The switching valve is not switching correctly.  
Solution: Check the adjustment. (Figure 5.1).  
Cause #2: Insufficient pressure.  
Solution: Check the pressure and the position of the pressure relief valve.
2. Cylinder 1 moves forward, cylinder 2 moves forward, cylinder 3 moves forward, then the system stops.  
Cause: The switching valve is not switching correctly.  
Solution: Check the adjustment. (Figure 5.1).
3. The floor functions perfectly without a load or with a light load, but not with a heavy load.  
Cause #1: Insufficient pressure.  
Solution: Check the pressure and the setting of the pressure relief valve.  
Cause #2: The switching valve is not switching correctly.  
Solution: Check the adjustment. (Figure 5.1).

**N.B.:** Cylinder 1 is the cylinder on the driver's side, for vehicles driving on the right.  
Cylinder 1 is the cylinder on the passenger's side, for vehicles driving on the left.



1. Switching valve
2. Flat Washer M10
3. Nut M10
4. Plastic stop ring
5. threaded rod M10
6. Bracket

*Figure 5.1 : Adjustment of the switching valve*

**PROBLEM B: Cycle runs incorrectly for unloading:**

1. Cylinders 1 and 2 move together to the front.  
Cause: The check valve on the front of cylinder 1 is not functioning correctly.  
Solution: Repair the check valve.
2. Cylinders 2 and 3 move together to the front.  
Cause: The check valve on the front of cylinder 2 is not functioning correctly.  
Solution: Repair the check valve.
3. All cylinders move together to the front.  
Cause #1: The load/unload valve is not functioning correctly.  
Solution: Repair the load/unload valve.  
Cause #2: The check valve on the front of cylinders 1 and 2 is not functioning correctly.  
Solution: Repair the check valve.

**PROBLEM C: The loading cycle runs incorrectly:**

1. Cylinders 3 and 2 move together to the rear.  
Cause : The check valve on the rear of cylinder 3 is not functioning correctly.  
Solution: Repair the check valve.
2. Cylinders 2 and 1 move together to the rear.  
Cause: The check valve on the rear of cylinder 2 is not functioning correctly.  
Solution: Repair the check valve.
3. All cylinders move together to the rear.  
Cause #1: The load/unload valve is not functioning correctly.  
Solution: Repair the load/unload valve.  
Cause #2: The check valve on the front of cylinders 2 and 3 is not functioning correctly.  
Solution: Repair the check valve.

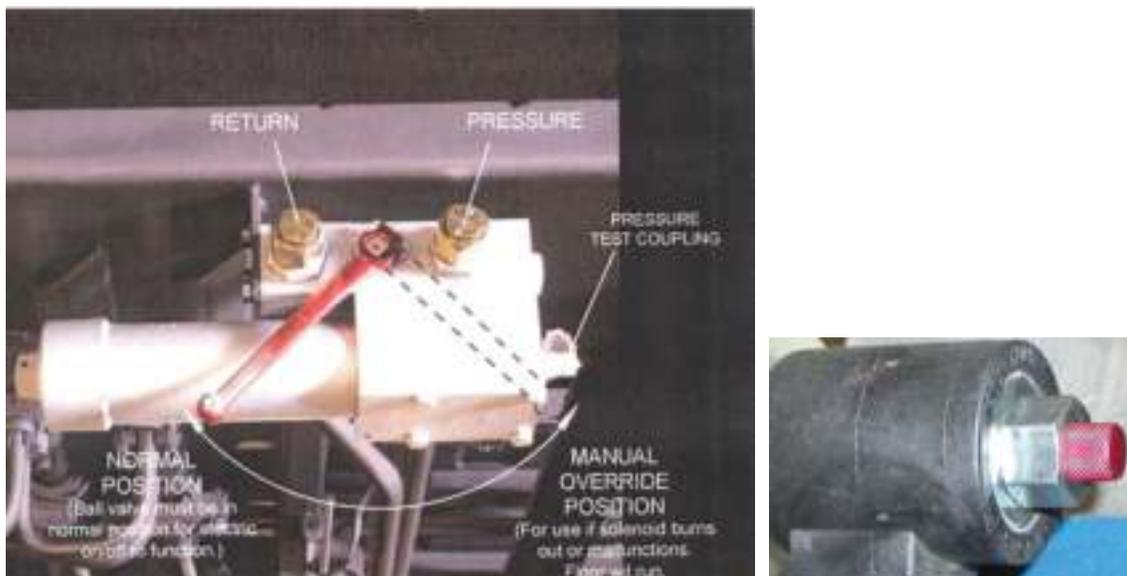
## 5.1 Emergency Provision

### 5.1.1 Electric On / Off Valve

The on/ off valve, controlled electrically, starts and stops the operation of the floor. In the <OFF> position, the oil flows via the valve directly back to the oil reservoir. NOTE: the system will not work if the pressure- and return hydraulic piping are not correctly connected.

Situation: It is not possible to control the electric on/ off valve.

**Solution:** Place the red handle so it is pointing to the opposite direction of the system; in other words the manual override position (see figure 5.2). The oil shall now flow directly through the system. The Floor will start moving if the pump is switched on. The system will now unload. The floor can be switched into the loading direction by pressing and turning the red button of the coil of the electric control valve. By pressing and turning the red button to the right, the floor will unload again. This will only work when there is no electric power on the coil of the electric load / unload valve. If the red handle is placed in its normal position, meaning pointing toward the system, then the oil flow is blocked and the floor movement will stop.



*The functioning of the handle*

*The red button on the coil*

*Figure 5.2 : The electric on / off valve*

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