

KEITH
MANUFACTURING CO

KEITH® Running Floor II® Drive
Pressure Seal® Flooring
Installation Manual

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Chapter 1 INTRODUCTION

Pressure seal floor measurements:

	centers
27 slat movement = 96.892 inches	3.592 inches
26 slat movement = 94.75 inches	3.650 inches
25 slat movement = 91.10 inches	3.650 inches
24 slat movement = 90.463 inches	3.781 inches

This manual explains procedures for installing the KEITH® Running Floor II® unloading system with Pressure Seal® flooring only. Many variables affect the installation, but the general process remains constant. Details of the installation vary according to trailer features, kit selections, and installer preferences. Optional sets of instructions are given for some operations to allow for flexibility.

This manual focuses on the installation of the system with 3 1/2" flooring. Installation time varies and is between 50 and 100 hours, depending upon the experience of the installer and the adaptability of the trailer. If the trailer is not yet built, there are some trailer preparations found (Chapter 2) that will save time and effort. One person with welding skills can complete the entire installation.

An efficient installation requires appropriate tools and accessible materials. A list of tools is found in Appendix 1. Appendix 2 lists materials. Several reference drawings accompany this manual. The KEITH Running Floor II® owner's manual contains more detailed information about the system and operation procedures.

Direct any questions to KEITH Mfg. Co. or one of our international offices listed on the cover of this manual.



WARNING: Installing the *WALKING FLOOR*® system will require some alterations to your trailer. Changes made without approval of the trailer manufacturer may void the trailer's warranty.

Chapter 2 TRAILER PREPARATIONS

The trailer requires preparation before the system is installed. Planning ahead for the installation requirements of the *WALKING FLOOR* system saves significant preparation time, especially when building a new trailer.

2.1 Drive unit compatibility

There are two styles of Running Floor II[®] drive units. The trailer's frame determines which style should be used. Check the compatibility of the drive unit with the trailer manufacturer before making any alterations to the trailer.

If the frame rails extend the full length of the trailer (Figure 1), use a drive unit without frame rails (Figure 2).

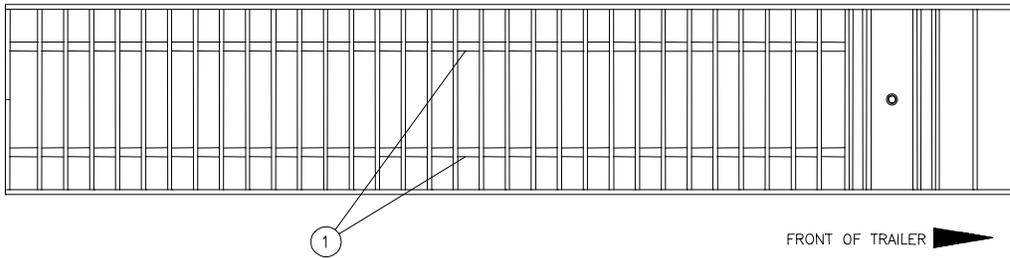


Figure 1

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1. CENTER FRAME

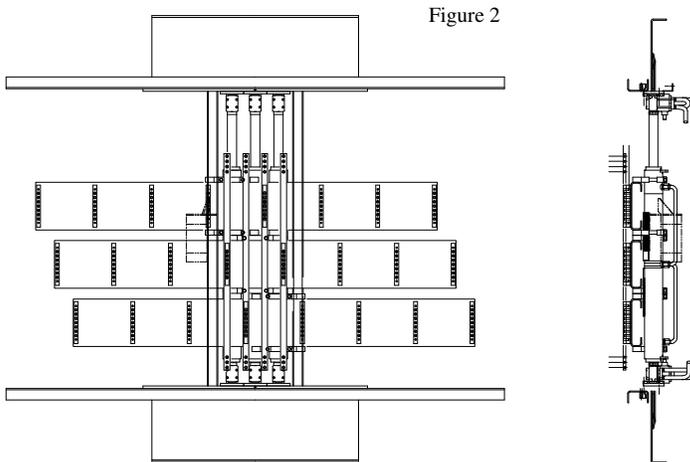
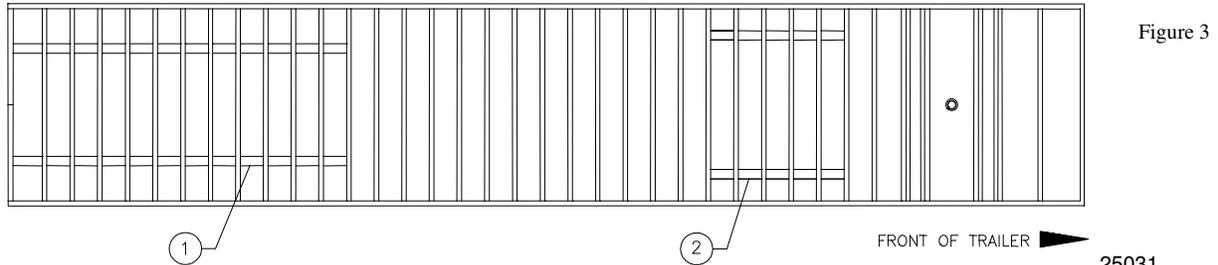


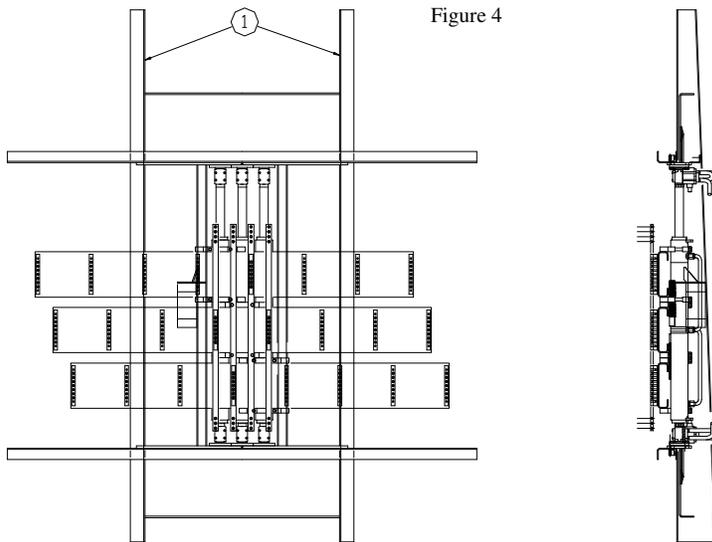
Figure 2

25029b

If the trailer is "frameless" (Figure 3), use a drive unit equipped with tapered frame rails (Figure 4).



- 1. AXLE FRAME
- 2. LANDING GEAR FRAME



- 1. TAPERED FRAME RAIL

25028b

NOTE: Manufacturers of frameless trailers may want to consider extending their axle rails far enough forward so that a frameless drive unit can be installed (extend 113" for 10" stroke).

Chapter 3 discusses the drive unit installation process in more detail.

2.2 Trailer alignment

1. Adjust the trailer to meet these conditions:

- A) The trailer must be **straight** to allow for proper parallel movement of the slats. Determine straightness by sighting down a floor slat positioned in the trailer.

Measure across the inside front of the trailer. Find and mark the center. Measure across the inside middle of the trailer. Find and mark the center. Measure across the inside rear of the trailer. Find and mark the center. Use a tight string line, clamped at the front and rear center marks. The string line can then be compared to the middle center mark to determine if the trailer is straight. Anything over 1/8" must be straightened.

- B) The cross-members on which the sub-deck mounts must be level, because the friction based principle of the *WALKING FLOOR* system requires a flat floor. If there are deviations exceeding 1/8", make corrections. Ensure that the last beam of the trailer at the rear door threshold is level with the cross-members.

2.3 Bracing

Trailer bracing prevents warping.

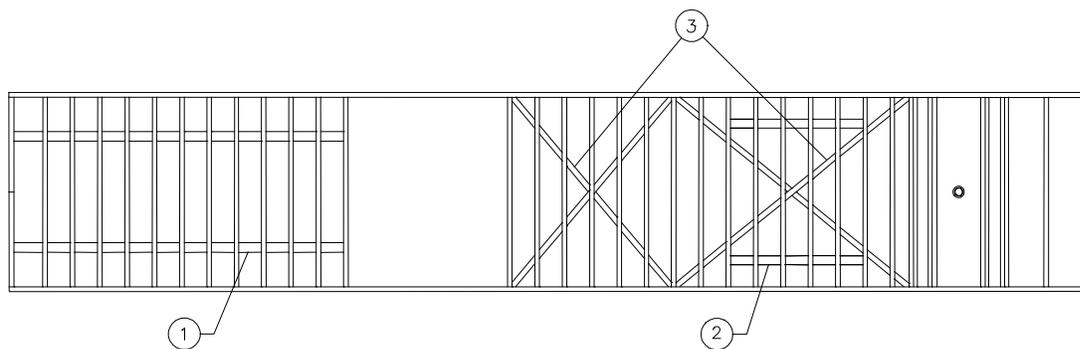


Figure 5

25032

1. AXLE FRAME
2. LANDING GEAR FRAME
3. BRACES

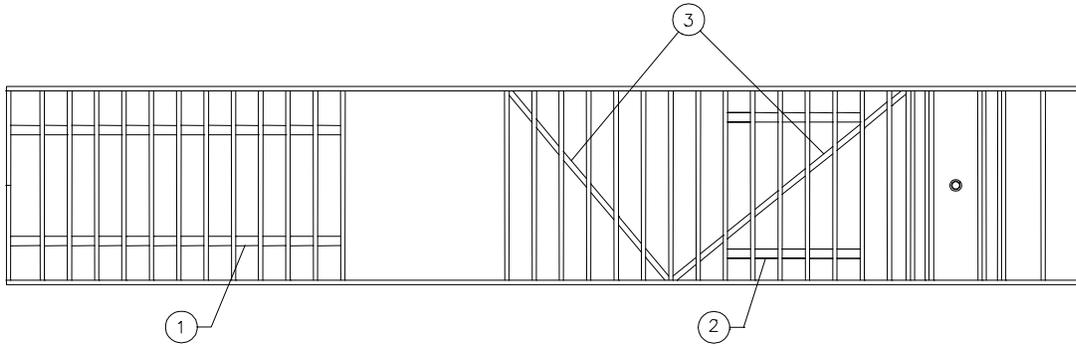


Figure 6

25032a

1. Install bracing as shown in Figures 5 or 6.

It is best to add bracing before removing the old floor, because the floor keeps the trailer straight. If flat bar is used, make a cross-bracing (Figure 5) because it will buckle easily under compression, without the cross-bracing. Steel angle does not require a cross. (Figure 6) Make sure there is enough wheel clearance when installing steel angle. The bracing should reach to the drive opening. Weld or bolt the braces to each intersecting cross-member.

2. Remove old flooring.

2.4 Hydraulic tubing locations

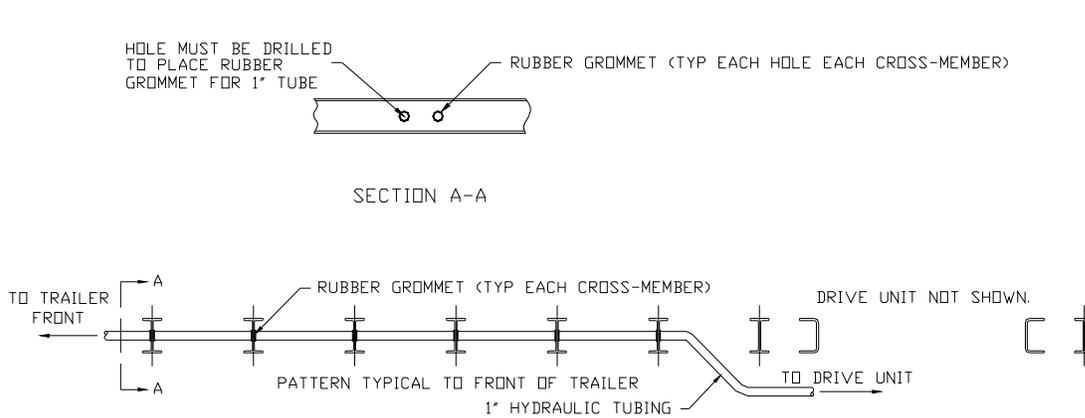
Hydraulic pressure, generated by the tractor's wet kit, powers the drive unit. Tubing must connect the drive unit to the tractor.

1. Consider the location of the hydraulic tubing. Chapter 6 provides more information on this subject. A central location is preferable for the quick-couplers in front of the trailer. This keeps hose lengths shorter, if they stay connected while driving.

There are two options available:

- A) Routing the hydraulic tubing through the cross-members (Figure 7). Make two 1-3/8" holes per cross-member. The holes should be close to the sides of the trailer to maintain the structural integrity of the cross-members. Access holes must be cut or drilled through the nose of the trailer, in line with where the tubes will pass through cross-members. Patch the holes after the tubing is in place. The tubes may drop below the cross-members anywhere behind the landing gear and attached to the under side of cross-members.

Figure 7



25017a

B) Routing the tubing underneath the cross-members. This option is not recommended, as it can cause problems with truck tire clearance and it makes the tubing very vulnerable.

2. Make sure that brake lines and electrical wires will not interfere with moving parts. If necessary, reroute them to protect them from damage.

2.5 Cross-members

Cross-members function as support for the sub-deck.

1. Compare the trailer cross-member height to the formed channel cross-member height on the drive unit. They should be the same. If they differ, contact KEITH Mfg. Co. or one of our international offices.
2. Reposition cross-members if necessary.
The rearmost cross-member should be mounted a minimum of 17" inside the trailer doors. The foremost cross-member should be about 17" away from the front wall.

NOTE: Holes for the hydraulic tubing should be made through cross-members before they are mounted on a new trailer.

2.6 Shimming

A common hindrance to the installation of a *WALKING FLOOR* system is a section near the kingpin that is higher than the rest of the cross-members. Shimming overcomes this problem.

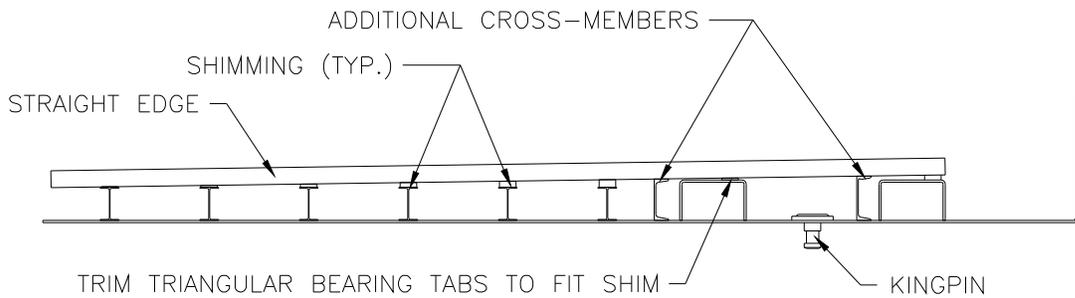
1. Install shim material.
Flat bar is good shim material. Weld 1/4" x 2" angle iron to existing cross-members for extra height. Some cases require additional cross-members. The top of the

front-most shim should be higher than all other shims or cross-members. Gradually decrease shim height to the level of the standard cross-members. Rest a straight edge on the shim tops to help plan the transition (Figure 8).

IMPORTANT:

Very critical: Sub-deck must have full support at every cross-member. This is to be achieved through shimming.

Figure 8



25043

Chapter 3 DRIVE UNIT

Drive unit installation in a center frame trailer differs from an installation in a frameless trailer. Chapter 3 examines the two installations separately.

3.1 Center frame trailer

1. Decide on the location of the drive unit.

The drive unit should be installed as close to the rear of the trailer as is practical.

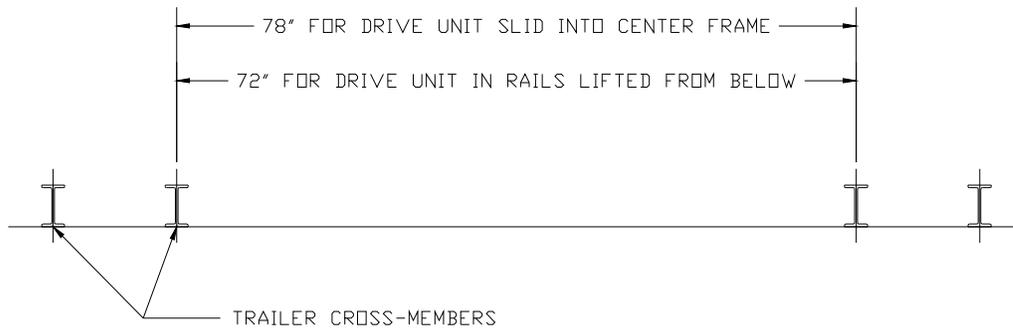
2. Position drive unit.

The drive should be positioned, but not welded. Remove the formed cross-members from the drive unit. The system can be lifted into an open top trailer from above with a crane.

NOTE: A minimum drive gap of 78" is necessary to maneuver the drive unit (Figure 9).

Figure 9

DRIVE GAP



25016

If the trailer top is closed or a lifting mechanism is not available, use the following method:

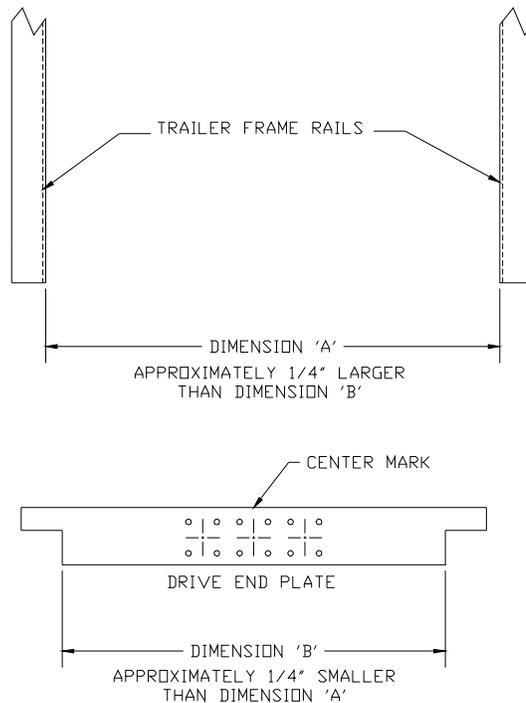
- a. Set a sheet of plywood inside the rear of the trailer.
- b. Place blocking on the sheet to protect hydraulic tubing.
- c. Lay the drive unit on the sheet.
- d. Slide the sheet forward into the drive gap.
- e. Raise the rear of the unit so the front stiffener plate will fit under the forward cross-member.
- f. Slide the unit forward so the rear stiffener clears the rear cross-member.
- g. Lower the unit and slide to position.

Replace the formed cross-members after setting the drive end plates on the trailer frame rails (Figure 10). The formed cross-members should be tightened to a torque of 125 ft.-lbs.

IMPORTANT:

Do not damage piston rods. Do not lift drive unit by the hydraulic crossover tubes on the cylinders or any other hydraulic components.

Figure 10



25025b

3. Align and level drive unit.

The drive unit has two center marks located on the drive end plate, one at each end. The center marks are on the center top, above the number two cylinder mount plate (Figure 10). The center marks can be used to align the drive with the center-line of the trailer.

Front to rear alignment

Center the drive unit in the drive gap. The cross-drives should be parallel to the trailer cross-members.

Perform the remaining steps of Section 3.1 and Section 3.3 ONLY after the sub-deck is installed in CHAPTER 4.

Side to side alignment

The drive shoes must be centered between the sub-deck members. Check two shoes on each side and one on each end of the drive (Figure 11).

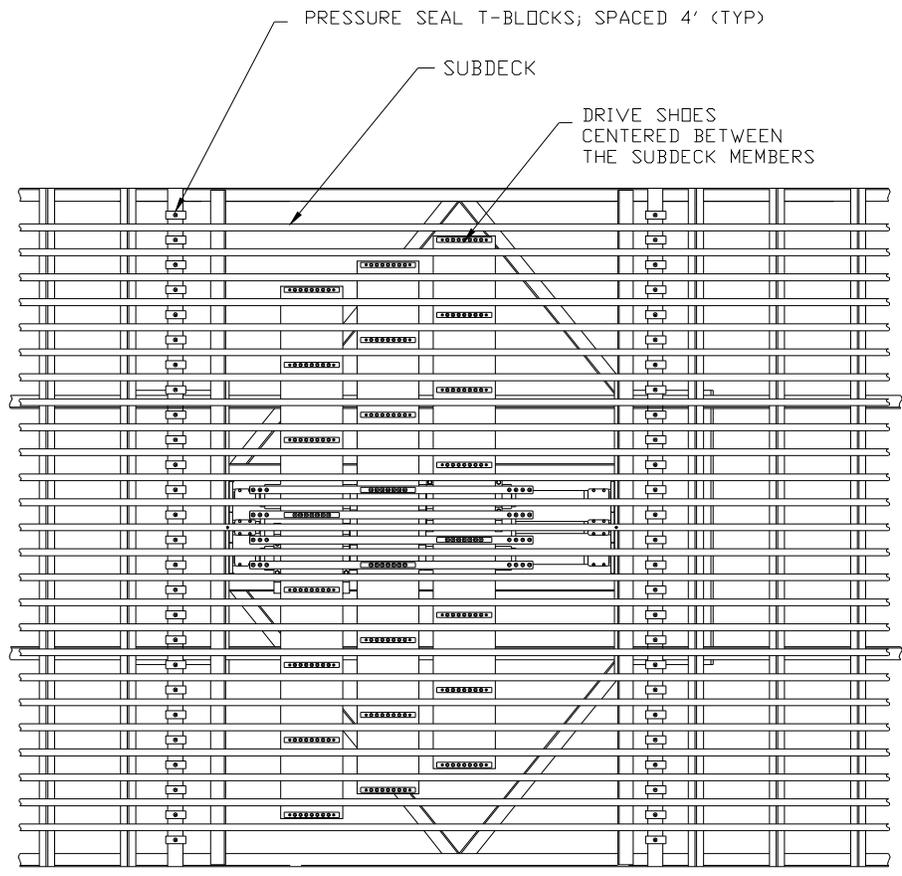


Figure 11

25045c

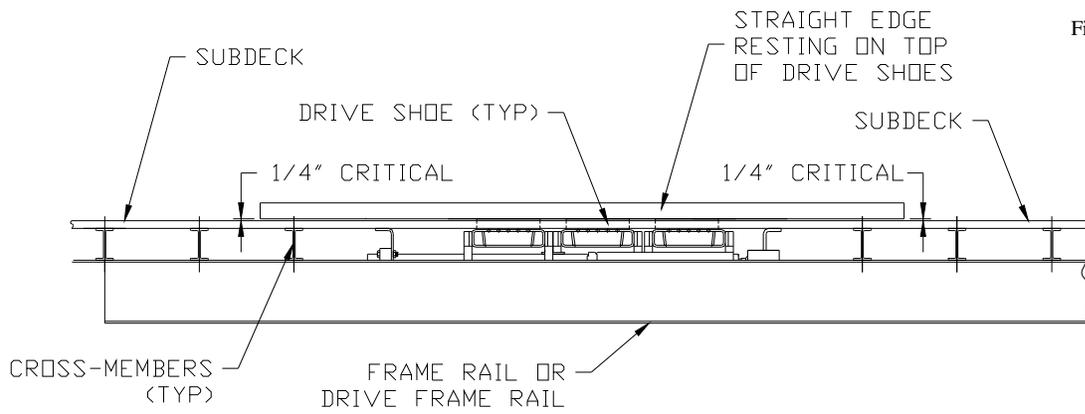


Figure 12

25034c

Height (Figure 12)

Lay a straight edge across the top of the drive shoes, the drive shoes must be 1/4" higher than the top of the sub-deck, check both sides and both ends.

This 1/4" dimension is critical. If the drive unit is low you need to shim to proper height. The ends of the formed cross-members should rest on the trailer side rails.

4. Weld the drive unit in place.

Weld according to reference drawing C-10797A. Remember to connect sub-deck members to the drive unit's formed cross-members.

5. Install cross-drive support tubes as shown in reference drawing C-10797A.

Slide the support tubes into position between cross-drives and trailer frame rails.

Place the tubes where they will support the cross-drives over a full stroke. The steel tubes can be shimmed to create a close drive-to-UHMW fit. Do not shim too much, as an extremely tight fit could tear the UHMW from the steel. Bolt the tubes in place with one 3/8" x 1" bolt at each end.

3.2 Frameless trailer

NOTE: Manufacturers of frameless trailers may want to consider extending their axle rails far enough forward so that a frameless drive unit can be installed (extend 113" for 10" stroke).

1. Position drive unit in the drive gap.

Check to be sure drive unit dimensions fit the location. The rail heights should be close, (Figure 13) and dimension "A" should equal dimension "B" (Figure 14). The system can be lifted from above with a crane or from below with a forklift. Raise the tapered drive frame rail tight against the bottom of the cross-members.

IMPORTANT:

Do not damage piston rods. Do not lift drive unit by the hydraulic crossover tubes on the cylinders or any other hydraulic components.

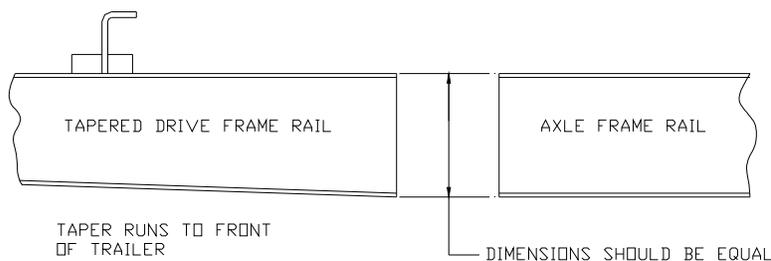


Figure 13

25013c

NOTE: Exact alignment of drive shoes, centered between sub-deck members, is more important than alignment of the drive unit frame with the trailer's axle rails.

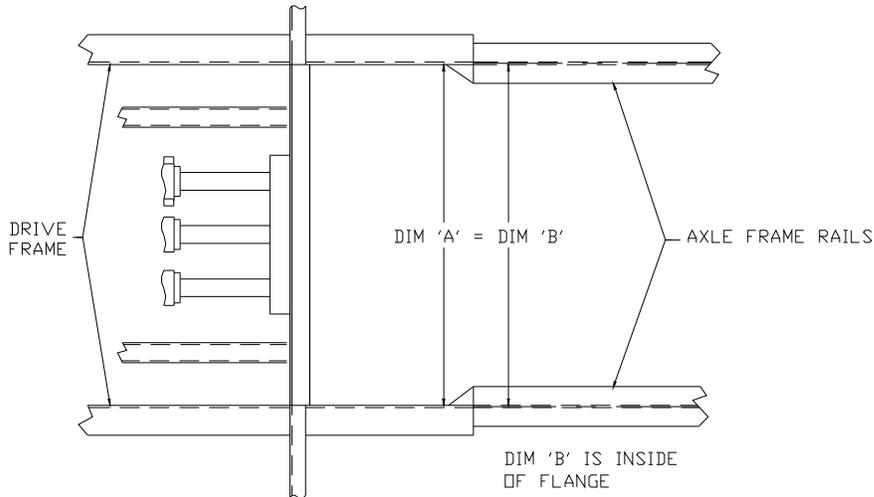


Figure 14

25012b

2. Align and level drive unit.

The drive unit has two center marks located on the drive end plate, one at each end. The center marks are in the center top above the number two cylinder mount plate. (Figure 10)

The center marks can be used to align the drive with the center-line of the trailer.

Front to rear alignment

Butt the tapered drive frame rails tight against the ends of the axle frame rails (Figures 13 and 14). A transfer plate may be placed between the two rails, if a flat surface does not exist on either the drive frame rail or the axle frame rail.

Perform the remaining steps of Section 3.2 and Section 3.3 ONLY after the sub-deck is installed in CHAPTER 4.

Side to side alignment

The drive shoes must be centered between the sub-deck members. Check two shoes on each side and one on each end of the drive (Figure 15).

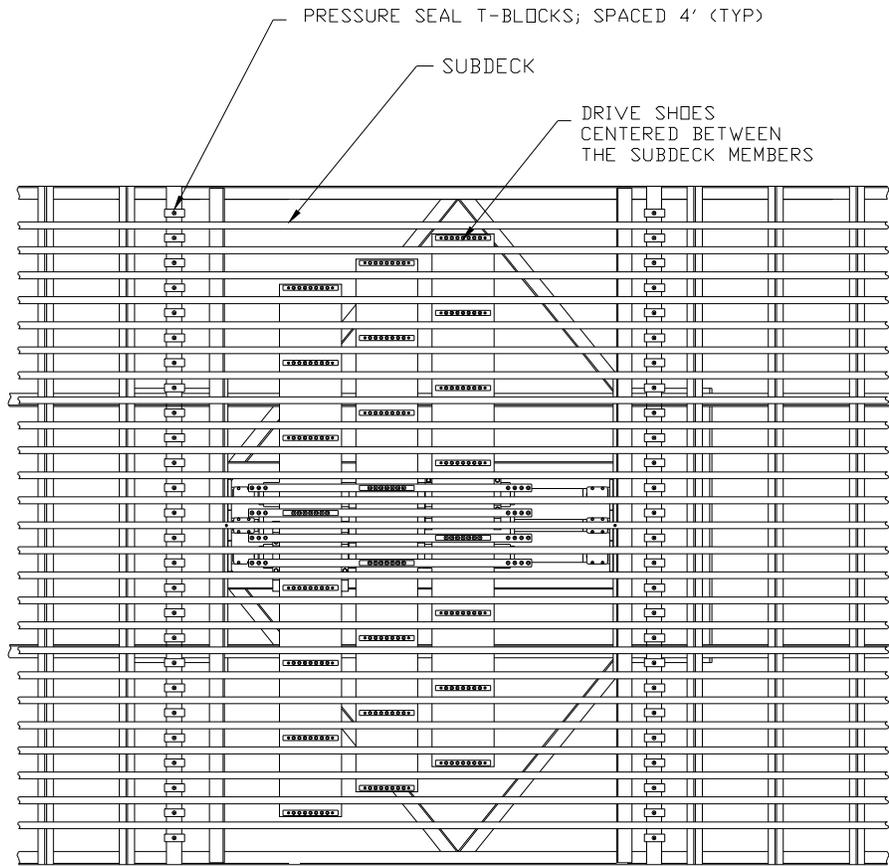


Figure 15

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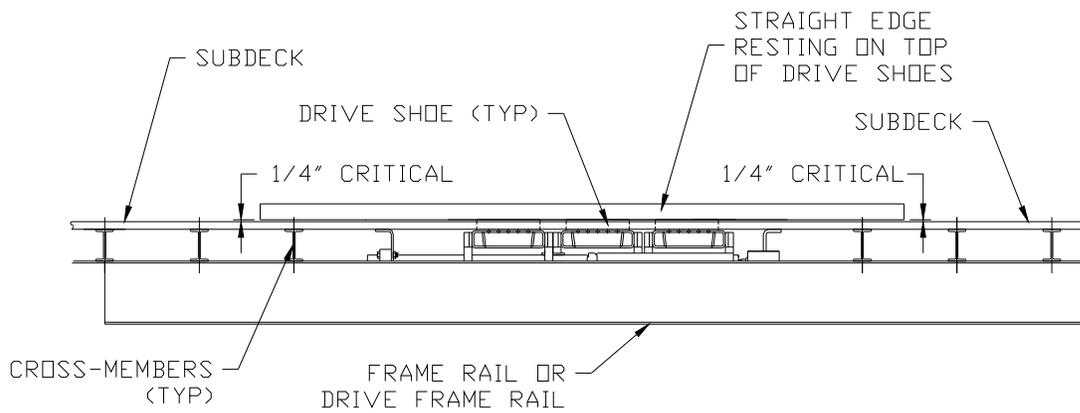


Figure 16

25034c

Height (Figure 16)

- a. Lay a straight edge across the top of the drive shoes. The drive shoes must be 1/4" higher than the top of the sub-deck. Check both sides and both ends.
This 1/4" dimension is critical. If the drive unit is low, you need to shim to proper height. The ends of the formed cross-members should rest on the trailer side rails.
 - b. Adjustments may be made by shimming or grinding ears of the drive unit end plates. Raise or lower the drive unit accordingly.
3. Weld the drive unit in place.
Weld according to reference drawing C-10797A. Remember to connect sub-deck to the drive unit's formed cross-members.
 4. Install cross-drive support tubes as shown in reference drawing C-10797A.
Slide the support tubes into position between cross drives and trailer frame rails. Place the tubes where they will support the cross-drives over a full stroke. The steel tubes can be shimmed to create a close drive-to-UHMW fit. Do not shim too much, as an extremely tight fit could tear the UHMW from the steel. Bolt the tubes in place with one 3/8" x 1" bolt at each end.

3.3 Painting

The factory paints drive units with gray oxide primer.

1. Confirm that the drive unit is coated well with primer.
2. Treat the drive unit and sub-deck with a finishing paint.

IMPORTANT:

Make sure that the following parts are protected when painting: cylinder chrome rods, switching valve chrome rod, serial number plate and any decals.

Chapter 4 SUB-DECK

A special jig for the pressure seal sub-deck!

The sub-deck is the structure directly above the cross-members and underneath the floor slats. The sub-deck consists of aluminum profiles or 1" x 1" square tubing. The sub-deck mounts on top of the cross-members, from the rear of the trailer to the front of trailer over the top of the cross-drives. Each shoe on the cross-drive is centered between sub-deck pieces. UHMW bearing strips, in rolls (at full length of sub-deck) attach to the sub-deck.

"T"- HOLD DOWN BEARING

There is a special jig for drilling holes between sub-deck members. Use a drill bit the same size as the jig pilot hole. Attach the "T" hold down with self-tapping screws that are supplied.

This “T” hold down bearing is installed every (4’) four feet. Starting from the rear of the trailer, at the end of the sub-deck, measure in (14”) fourteen inches for the first “T” hold down bearing and stop (4’) four feet toward the rear side of the cross-drives. Next start (4’) four feet in front of the cross-drives and then every (4’) four feet, stopping (24”) twenty four inches from the front bulk head or front of trailer.

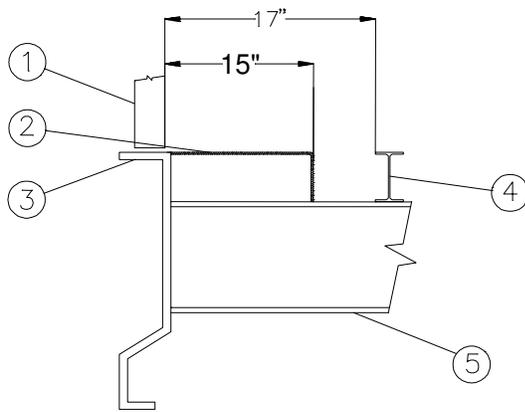
4.1 Baffle plate

A baffle plate extends forward from the door threshold to prevent material from sifting through the floor when slats are in the forward position.

1. Determine the dimensions of the baffle plate (Figure 17).

The baffle plate must be level with the cross-members and is welded to the inside of the last beam of the trailer (threshold). The thickness depends on the type of load. For light materials (e.g. sawdust), use 14 gauge. 12 gauge is recommended for heavy, abrasive materials (e.g. solid waste). The plate bends down 12” inside the closed door, leaving an opening so that material will not build up underneath the slats. For fine materials, the baffle plate connects to the nearest cross-member to prevent material from sifting through. Holes may be cut in the plate to let small amounts of fine material drop through. This prevents buildup from exerting upward pressure on slats.

Standard Baffle plate



1 TRAILER DOOR
3 DOOR THRESHOLD
5 MAIN TRAILER FRAME

2 BAFFLE PLATE
4 LAST CROSSMEMBER

25033

2. Cut and form the baffle plate to the proper dimensions. Install the baffle plate. Weld the plate in position. Then grind welds flat. Make sure it is level with the cross-members.

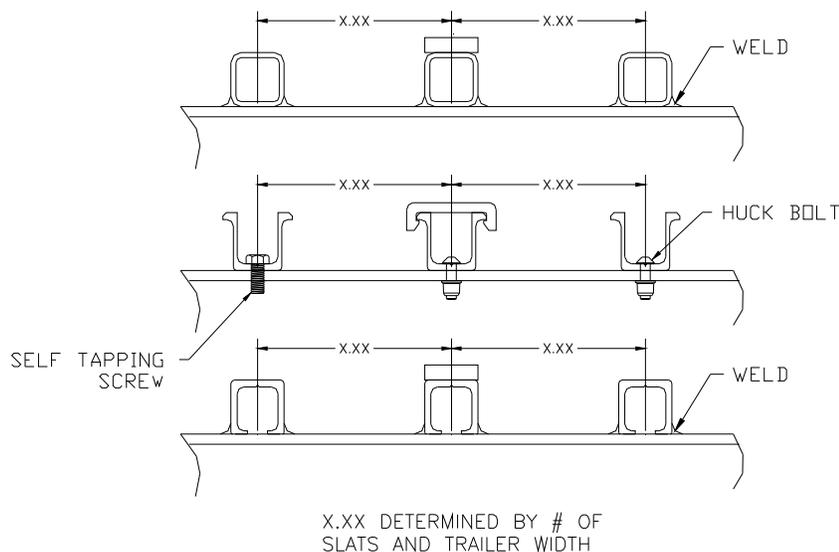
4.2 Sub-deck

The sub-deck is the structure directly above the cross-members and underneath the floor slats. The sub-deck consists of 1" square tubing or shaped aluminum profiles. Plastic bearing strips attach to the sub-deck and provide bearing support for the floor slats.

The proper installation of the sub-deck is critical. The sub-deck is applied only after the drive unit is positioned and before the drive unit is attached to the trailer. See, Drive Unit (Chapter 3)

1. Cut sub-deck to the proper length, according to your trailer measurements and your end sub-deck selection. Proper sub-deck length is 6-1/2" less than the inside dimension of the trailer with the door(s) closed. Sub-deck starts 1/2" inside of door and stops 6" back from the bulk head or front inside of trailer.
2. Position and mount the sub-deck for pressure seal flooring.

Figure 18



25041b

3. Start at the rear of the trailer. Lay the two outside sub-deck pieces in the trailer and separate them with **special** spacing jigs. Center the jigs so the sub-deck pieces are the same distance from the sidewalls. Lay out the remaining sub-deck pieces across the width of the trailer, spacing them with jigs. Keep the jigs above the cross-members and clamp the jig and sub-deck to every other cross-member.

1. Make sure that the slats will fit properly between the side support and the outermost sub-deck member. This step will help determine the width of the side support required.
2. Weld the side support.
Welds should be 1/8" fillet, 3/4" to 1-1/4" long at each cross-member, top (side support to wall) and bottom (side support to cross-member) of side support. Grind the top weld on the side support flush so the bearing strip can be attached to the top of the side support.
3. Attach side seal to side seal support, make sure all bolt / screw heads are below flush with the top surface of the side seal.

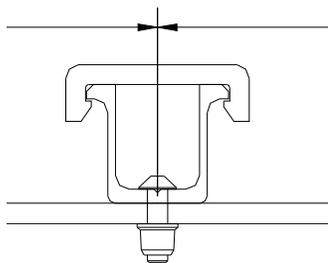
Chapter 5 FLOORING

After the paint dries, the flooring can be installed. The slats slide on plastic bearings. Hold-down bearings mounted throughout the trailer keep the slats down. The aluminum floor slats are drilled and counter-sunk, then bolted to shoes on the cross drives.

5.1 Bearing Strips

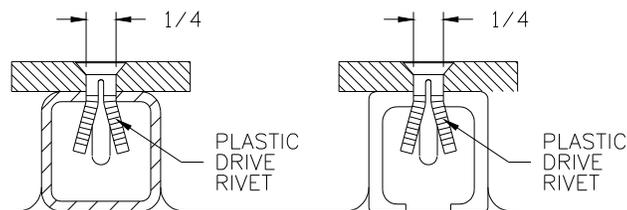
1. Cut the bearing strips as long as the sub-deck.
2. Lay the bearing strips on top of the sub-deck.
3. If using 2234 sub-deck, snap UHMW bearings down onto the aluminum extrusion (Figure 20). Attach the bearing strip to the sub-deck and the floor. See drawing D-47013 in Appendix 3
4. Attach the bearing strip to the square tubing or aluminum "C" channel using plastic drive rivets (Figure 21).
Drill 1/4" holes through the bearing strip and the tubing. Countersink with an 82° bit to accommodate the 1/4" plastic drive rivet. Begin the rivets 1" from the end. Install the first rivet and stretch the bearing strip over the length of the sub-deck. Install the second rivet 2" plus stroke length away and then every (2') two feet. Rivets may be closer if desired. Outside bearing strips should have rivets every 6".

Figure 20



25041b

Figure 21



25047

5.2 Floor slats

1. Determine the length of floor slats.

The slats have to reach from 1/2" from the doors to a minimum of 14" from the closest point on the front wall at floor level. This implies that the maximum length of the slats is 14-1/2" shorter than the inner length of the trailer. For example, maximum slat length for a 10" stroke unit in a 45' trailer (inner length = 44' 7-1/2") is 43'-5".



WARNING: Make sure that the slats do not bump the front wall; watch for round shaped walls. Be particularly careful with bull nosed trailers.

2. Cut floor slats to length.

If a wear plate is mounted on one end of the floor slat, cut the surplus from the opposite end.

3. De-burr the ends of the floor slats.

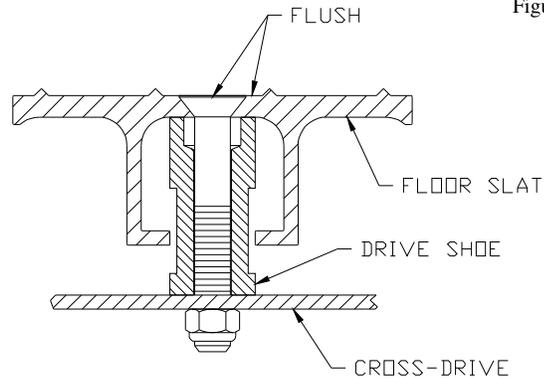
Installing floor slats.

IMPORTANT:

Cylinders must be collapsed toward the rear of the trailer.

- a. Align the rear end of all slats 1/2" from inside of doors and make sure that all cylinders are collapsed to the rear of the trailer.
- b. Drill holes in the slats from underneath through the drive shoes. (Some holes may need to be drilled from above, if slats are over frame rails.)
- c. Countersink the holes so that the floor bolts are flush with the floor top (Figure 22).

Figure 22



25048

IMPORTANT:

Do not over-countersink. This will make a weak connection and cause the floor slat to come loose. Use extra caution when countersinking thin flooring. Do not countersink 6" wide slats. They need pre-countersunk bolt plates, as shown in reference drawing A-25167.

- d. Bolt floor slats down tightly.
Use Countersunk Socket Head Cap Screws with Nylock nuts.
5/16" bolts attach 3-1/2" flooring to the shoes.

IMPORTANT:

Correct torque on floor bolts is necessary for long floor life. Torque specs are located in Appendix 5.

5.3 Front shield

1. Determine dimensions (Figure 23).
The width is equal to the inner trailer width. The front shield is angled about 45 degrees. When the floor slats are in the rear position, the slide strip must still lie fully on top of the floor slats.
2. Fabricate front shield. (KEITH Mfg. Co. supplies this in most cases.)
Form the shield and attach angle steel for support. Rivet the plastic slide strip to the shield.
3. Mount front shield.
Attach steel angles to the sides of the trailer.
Bolt the shield to the front wall.
Provide clean-out holes below the slope shield.

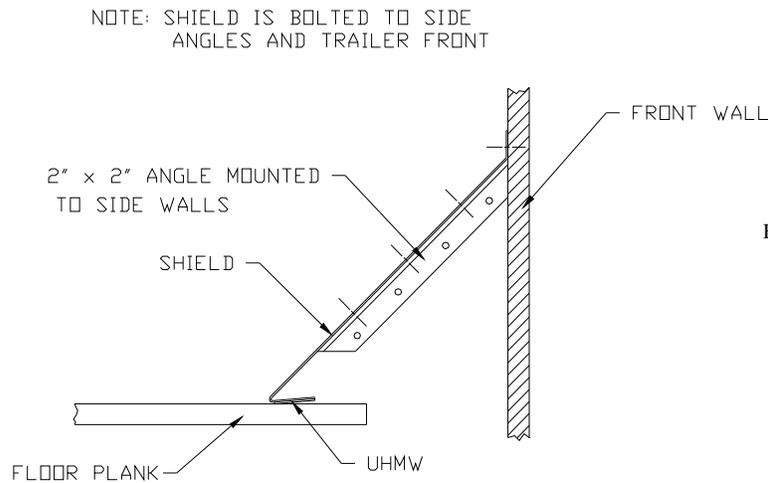


Figure 23

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Chapter 6 HYDRAULIC TUBING

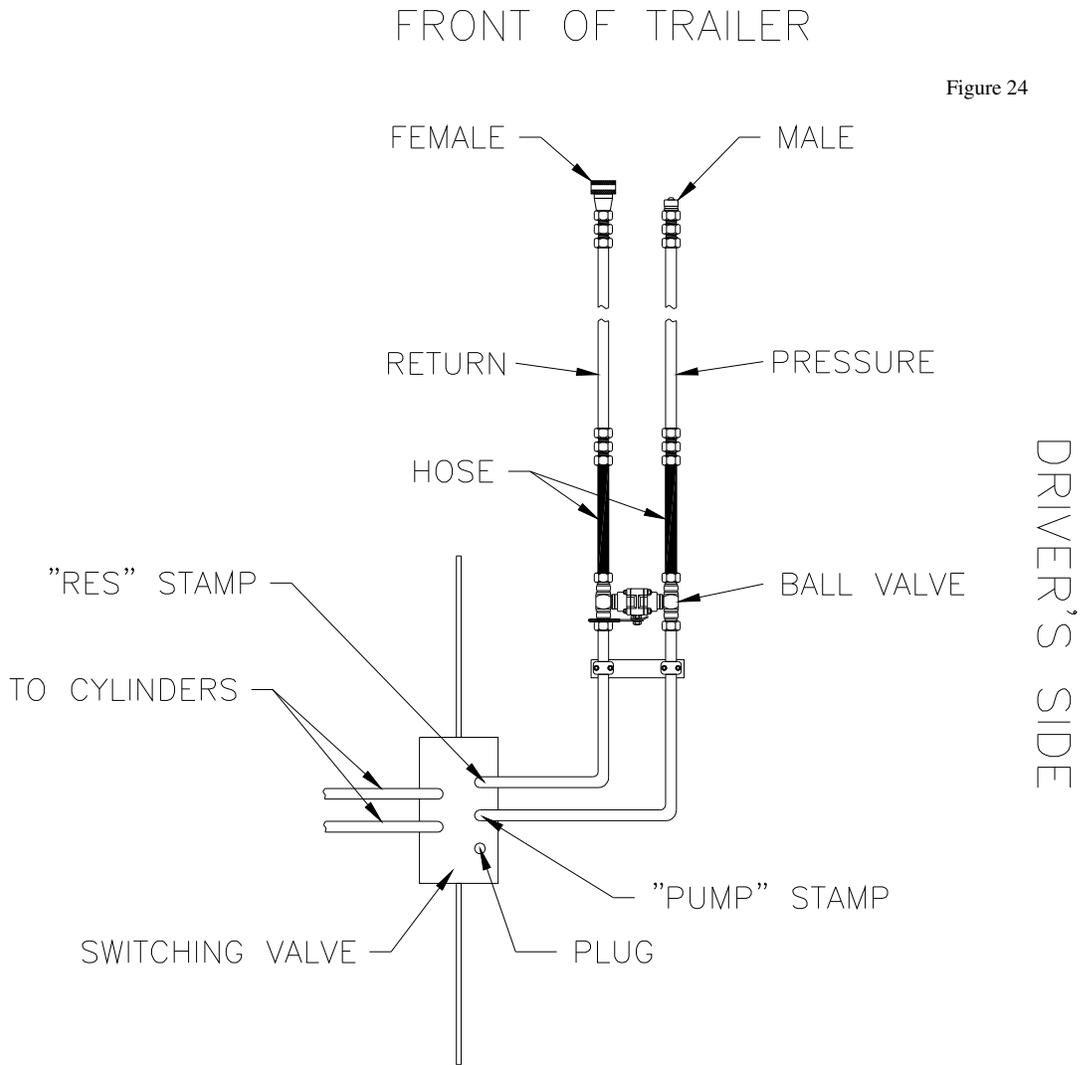
Section 2.4 discusses the location of hydraulic tubing.

IMPORTANT:

All components and tubing must be kept absolutely clean to prevent dirt from entering the system.

1. Determine tube locations and lengths.
Keep bends to a minimum. Make all bends with sweeping elbows to reduce heat build up.
2. Cut tubes to length.
3. Position tubes.
Use rubber grommets or PVC tubes to protect the tubing when installing tubes through cross-members.
1" hoses can be used to connect the tubes to the drive unit.
4. Mount quick couplers at front of trailer.
Connect the male coupler on the pressure line (line to switching valve port stamped "pump"). Connect the female coupler to the return line (line to switching valve port stamped "res") (Figure 24). Apply hydraulic sealant.
5. Connect tubes to drive unit.
Connect the pressure line to switching valve port labeled "PUMP" and return line to switching valve port labeled "RES". Make sure that rubber hoses are not twisted

NOTE: The switching valve will by-pass, if the pressure and return lines are connected backward.



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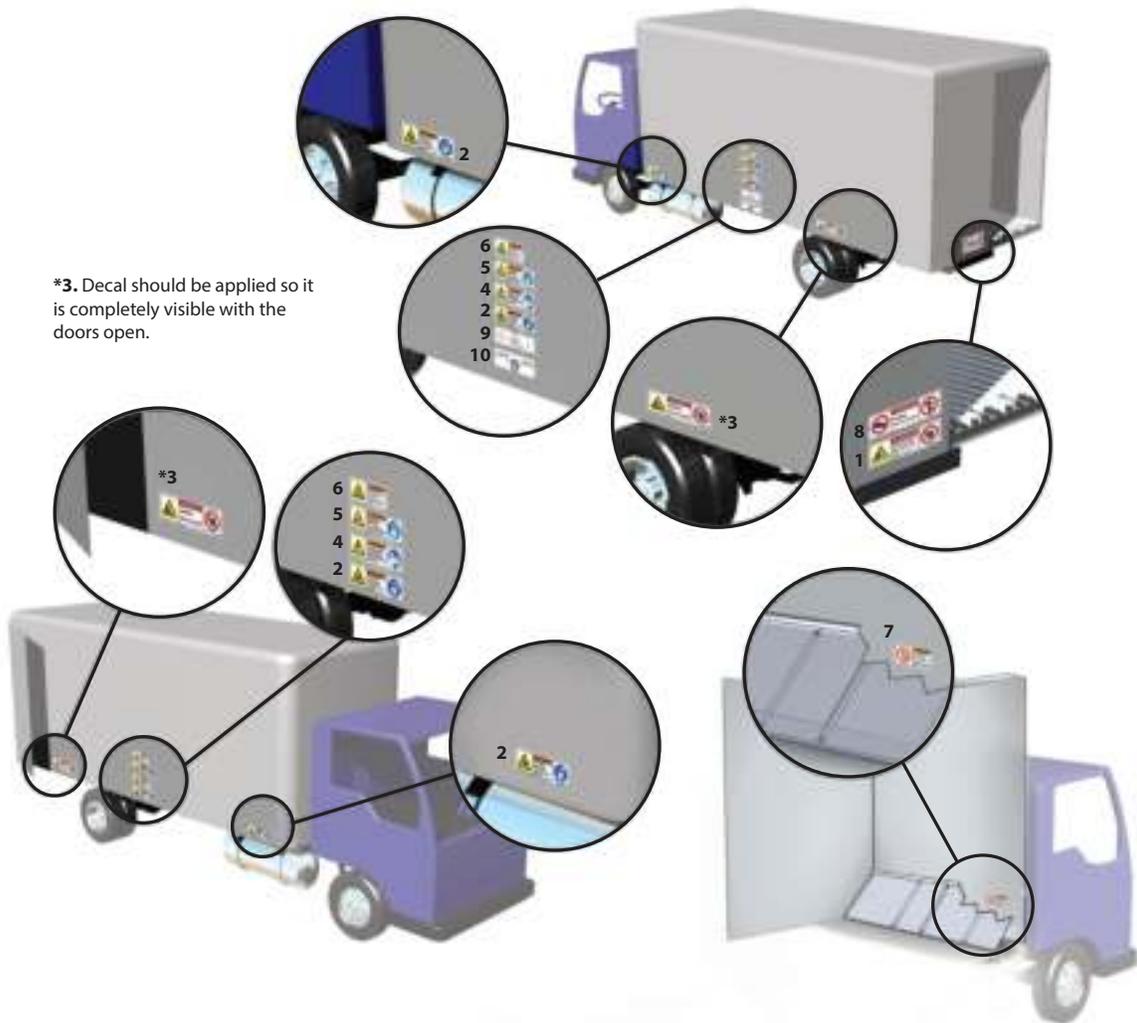
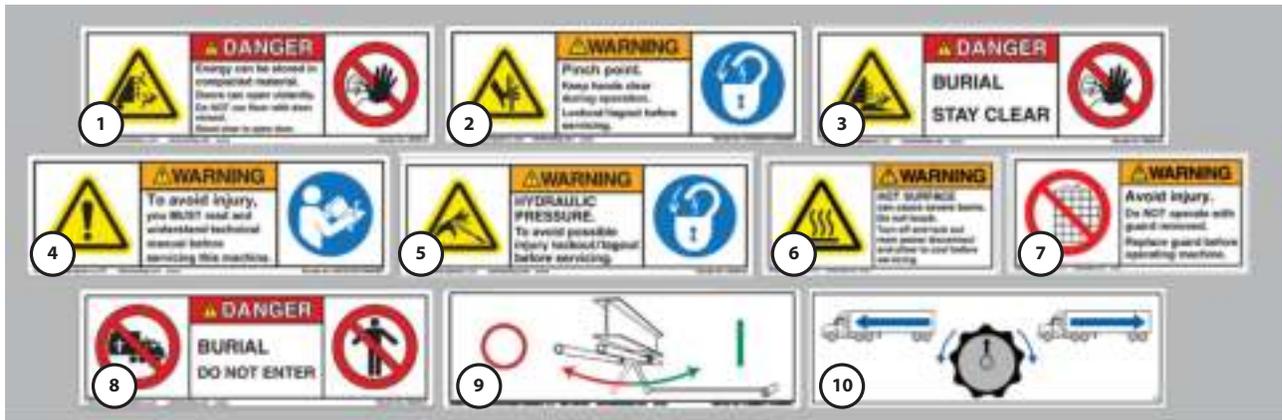
Chapter 7 MISCELLANEOUS

7.1 Trailer wires and lines

Make sure that wires and lines cannot be damaged by moving parts. Mount them so they cannot rub against other parts. Check proper light and brake performance.

7.2 Caution decals

Affix caution decals to the trailer.



*3. Decal should be applied so it is completely visible with the doors open.

KMD DECAL KIT #84804009	SIZE	QUANTITY PER KIT	ITEM #
1. Danger/Stored Energy (English)	6" x 2"	1	84804101
2. Pinch Point (English)	6" x 2"	4	84804124
3. Danger/Burial (English)	6" x 2"	2	84804100
4. Read Manual (English)	6" x 2"	2	84804123
5. Hydraulic Pressure (English)	6" x 2"	2	84804128
6. Warning Hot Surface (English)	4" x 2"	2	84804127
7. Guard (English)	4" x 2"	1	84804126
8. Danger/Burial Do Not Enter (English)	6" x 2"	1	84804132
9. Ball Valve	6" x 2"	1	84804129
10. Control Valve (LH)	6" x 2"	1	84803904
N.A. Placement Instruction Guide	N.A.	1	84803901

7.3 Front guard

A front guard should be attached below the front end of the slats. This area is a pinch point and must be protected. A screen or plate similar to the rear baffle plate is adequate if one does not already exist.

7.4 CleanSweep Tarp System (optional)

Some loads leave residual material on the floor after unloading. A KEITH Mfg. Co. CleanSweep system may be used. The CleanSweep system combines a tarp with an air or hydraulic winch that will retract the tarp after unloading.

APPENDIX 1

TOOLS

Tools provided by KEITH Mfg. Co.

- Spacer jigs (for alignment of the sub-deck)

Basic tools not supplied with kit

- End wrench set up to 1-1/2"
- 3/8" ratchet set with 12" extension
- Allen wrenches
- Hacksaw
- Hand grinder
- 25' tape measure
- 20 C-clamps 11 R
- 3/8" and/or 1/2" hand drill, bit set, 1 3/8" hole saw
- Straight edges
- Dead blow hammer

Special tools

- Flow meter
- Flaring tool for 1" pipe
- 5/16" drill bit, 12" long
- Countersink bit, 82° with 1/2" shank, 3/4" single flute
- Torque wrench up to 50 ft-lbs
- Torque wrench up to 180 ft-lbs
- Mig welder (wire welder)
- Rivet gun
- Overhead crane (hoist or forklift)
- Circular saw
- Cutting torch
- Floor slat stomper

Optional tools

- Kneepads
- Band saw

Miscellaneous

- Hydraulic sealant
- Paint

APPENDIX 2 MATERIALS

Standard kit

- Drive unit
- Floor slats
- Slide strips (NOT with T-blocks or slat plugs)
- Ball seal
- 1-1/2" screws (for ball seal)
- Slide bearings
- Hold down bearings
- Floor bolts, Nylock nuts
- Slide strip (for self-fabrication of front shield)
- Caution decals

NOT provided with standard kit

- Sub-decking (1" x 1" steel tubing or aluminum profile)
- 1" hydraulic tubing
- Hydraulic quick couplers
- Hydraulic hose (for connecting drive unit to tubes)
- Steel plate (12 gauge or 14 gauge to fabricate baffle plate)
- Steel profile (side seal support)
- Front shield

Options

- Splash seal
- Aluminum wear strips
- Tube clamps
- Plastic T-blocks
- Tubing end caps
- Floor slat plugs
- Rubber grommets
- 1" I.D. PVC pipe

APPENDIX 3 REFERENCE DRAWINGS

Appendix 3 includes scaled down copies of the reference drawings. Full-scale reference drawings also accompany the installation manual.

Reference drawings accompanying installation manual

- C-60900 Drive installation, frame in tapered rails.
- C-60902 Drive installation into full frame trailer.
- A-25167 Application of a counter-sunk bolt plate at drive shoe for flooring at 6" centers.
- D-47013 Installation of Pressure Seal flooring sub-deck
- B-10706CA Installation detail for front shield.
- K-47013 The winged T-Block may be attached to the threshold or the slat.

APPENDIX 4 CHECK LIST

Carefully check the items on this list. They are essential for optimal floor performance.

Before installation

1. The trailer should be straight.
2. The trailer should have cross bracing.
3. Cross-members should be level with other cross-members and kingpin plate.

During installation

4. The sub-deck must be centered in the trailer.
5. The drive unit must be properly aligned.
 - a. The top of the drive shoes must be 1/4" higher than the top of the sub-deck.
6. The cylinders must be entirely collapsed before drilling bolt holes through floor slats.
7. A front guard should be attached below the front end of the slats. This area is a pinch point and must be protected.
8. The slide bearings should seat properly on the sub-deck and the flooring should seat properly on the bearings.

After installation

9. The pressure and return lines should connect to the correct switching valve ports.
10. Caution decals should be visible.

Run the system following the instructions in the owner's manual.

After operation

11. Check for leaks and unnecessary rubbing.
12. Refer to the owner's manual and adjust the switching valve.

**APPENDIX 5
TORQUE CHART**

BOLT	LOCATION	GRADE	TORQUE (ft. lbs.)
1/4-20	Tube Clamp at Ball Valve	5	8
5/16-18	Tube Clamp to Cylinder	5	20
5/16-18	Check Valve	5	20
5/16-18	Flooring	8	22
3/8-16	Flooring	8	42
5/8-11	Barrel Clamp	5	135
5/8-11	Drive End Plate	5	135