Warren Elevating 5th Wheels

Operation and Maintenance Manual

FW-30, FW-45, & FW-25HL6

TABLE OF CONTENTS

CAUTION: Before operating or before performing any service or maintenance on this Warren Product, all appropriate OSHA regulations must be observed.

Safety Notice

Proper service and repair are important to the safe, reliable, operation of Warren's products. Operation and servicing procedure recommended by Warren are in this manual and are effective for proper use of this product. Some of these operations may require the use of tools or blocking devices specifically designed for the purpose. Special tools should be used when and as recommended. It is important to note that warnings against the use of specific operations or methods that can damage the product or render it unsafe are stated in this manual. It is also important to understand these warnings are not exhaustive. Warren could not possibly know, evaluate, and advise the service trade of all conceivable ways in which operation or service might be done or of the possible hazardous consequences of each way. Accordingly, anyone who uses operational procedure, service procedures, or tools whether recommended by Warren or not, must first satisfy himself thoroughly that neither his safety nor the product safety will be compromised or jeopardized by the selected procedure.

Preface

This Operation and Maintenance Manual is to assist in the correct operation and maintenance of the Warren Elevating 5th wheels by providing information for installation, operation, service, and maintenance. Please read this manual thoroughly before proceeding to use the equipment.

The economic life of any piece of equipment is directly related to the care and maintenance it receives. Use this manual as a reference in seeing that this unit receives proper care and is correctly operated.

The use of genuine Warren parts is recommended for best equipment service as well as insuring that our warranty policy is not voided.

If additional information is required or should you desire to have a qualified service facility work on this unit, contact your local Warren Distributor.

Name _____
Address _____
_____
Phone _____
Fax _____

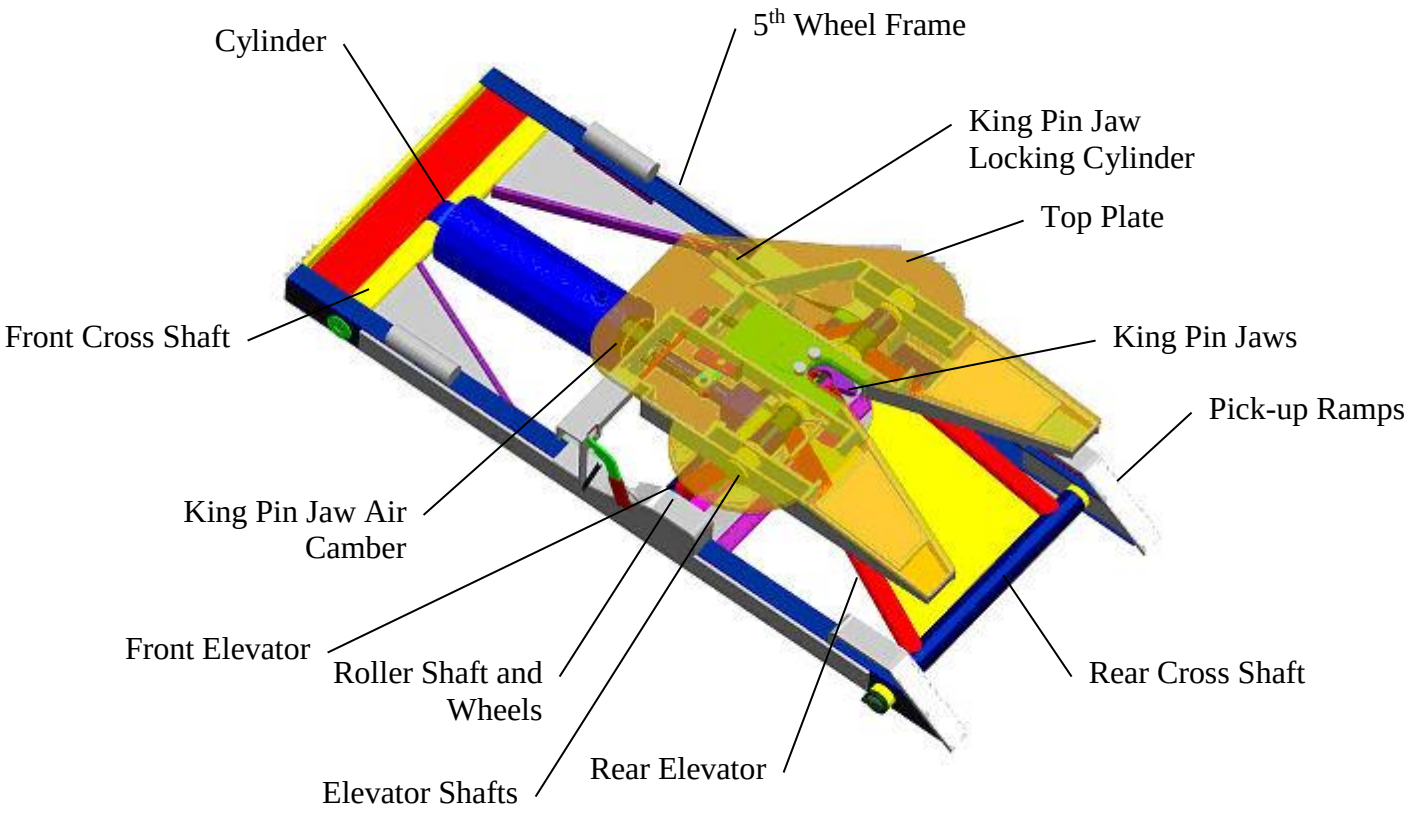
Warren reserves the right to make changes in our units at anytime without incurring any obligation whatsoever to change units already in the field.

Please Note Cautions

Special attention should be paid to all the caution notes and directions to help make your installation as safe and efficient as possible.

Determine Tractor Compatibility

Many tractors are compatible with Warren Elevating 5th Wheels; however, your tractor may have different design and dimensional characteristics that affect its compatibility or installation procedures. If you have problems or questions applying the installation procedures to your tractor, please contact your local Warren Distributor before attempting to install the unit on the tractor.



General Information

1. All Warren 5th wheels come with an air shift direct drive pump. Ensure your PTO, transmission, and pump are compatible. The Warren supplied pump is **counter clockwise (CCW)** rotating.
2. Install PTO. Run engine to check PTO installation.
3. Install hydraulic pump.
4. Install controls in cab for pump and PTO.
5. Prepare tractor frame and install steel angles on tractor frame.
6. Fit and install 5th wheel on tractor (attach 5th wheel frame to steel angles installed in Step 5).
7. Make pick up ramps.
8. Connect air and hydraulic lines to 5th wheel.
9. Put oil in cylinder(s) and tank.
10. Inspect and test unit under loaded trailer.
11. If you decide to repaint 5th wheel and/or pick up ramps, ensure warning labels and operating decals are clearly visible.
12. Follow maintenance and service instructions.

Pre-Installation Instructions

Important: Before starting the installation carefully complete all the pre-installation installation steps.

Check Tractor C.A.

Refer to the Table 1 to ensure you will be operating the elevating 5th wheel within its operating parameters.

C.A. refers to the distance from the last above-frame obstruction (i.e. transmission mount, muffler, etc.) behind tractor cab to center of single or tandem axles. This area must be kept clear for mounting the 5th wheel assembly. If there is no above frame obstruction, the CA. is the distance from the back of the cab to the center of the single or tandem axles.

Make sure the tractor you are planning to use has the proper C.A. and gross weight capacity to match the lifting 5th wheel model you have received.

Table 1: 5th Wheel C.A.[1] Requirements and Gross Weight[2] Capacity

5th Wheel Model	Minimum Recommended Tractor C.A. Dimension Trailer King Pin Setting[3] Ins., (mm.) 36(914) 42(1067)	Gross Weight Capacity Lbs. (Kg.)[2]
FW-30	72 inch (1829 mm) 78 inch (1982 mm)	60,000 (27,218)
FW-45	72 inch (1829 mm) 78 inch (1982 mm)	90,000 (40,909)
FW-25HL6	84 inch (2134 mm) 90 inch (2286 mm)	50,000 (22680)

Footnotes

1. CA. refers to the distance tram last above-frame obstruction (i.e. transmission mount, muffler, etc.) behind tractor cab to center of single or tandem axles. Most trailers have a 36 in. or 42 in. king pin setting. Add dimension for refrigeration unit.
2. Gross Weight Capacity refers to total weight — trailer and contents.
3. Trailer King Pin Setting. This is the distance from trailer king pin to trailer front (including refrigeration unit). This and tractor C.A. determines whether there is adequate clearance from the back of the cab to the front of the trailer. As with any 5th wheel, adequate space is necessary for clearing trailer corners when turning.
   Most standard trailers have 36 or 42 inch king pin setting. Your trailers may differ. Be sure to add extra clearance for refrigeration unit or other equipment which may extend beyond trailer front.

Check for Power Take Off Capability and Location

The installation of a Warren 5th wheel requires the addition of a PTO to the tractor.
Check the tractor transmission to see which opening you will use for the PTO. Most transmissions have two PTO openings. Order the PTO based on which opening has easier access. Check to make sure that your tractor has a PTO drive gear installed. Some Mack© transmissions do not have a PTO drive gear installed. It can be installed by a truck transmission shop or Mack©

dealer. Allison transmissions require special PTO's. Consult Warren or your PTO supplier for information on these PTO's.

All Warren 5th Wheels are equipped with air shift direct mount pumps with counter clockwise (CCW) rotation unless otherwise specified. If this is not compatible with the truck, contact your Warren dealer to see if Warren can accommodate your truck's requirements. Ensure the pump (CCW) and PTO rotation and connection are compatible.

You can order your 5th wheel without a pump and use your own. There are several ways that your pump may be connected. Please contact Warren or your distributor if you have questions about the correct way to hook up a non-standard pump. In all cases, you should use a 10 micron filter in the system.

Check 5th Wheel Capacity (Refer to Table 1.)

Make sure the 5th wheel you have received is the proper model, and that it has the proper gross weight capacity for you application. Gross weight refers to total lifting weight — including trailer and contents.

Check Parts and Assemblies

Though we take great effort to ensure your order is packed carefully, ensure all required parts and assemblies have been included in the shipment. Refer to the packing list enclosed with the shipment.

Operating Controls

Unless special ordered, all Warren 5th wheels have full air controls. We have determined this provides the most reliable and trouble-free operation. If you have special ordered other controls or have special requirements, please contact your Warren dealer for special instructions.

Check Parts and Materials Obtained Locally

You will need the following items which are not included with your 5th wheel shipment.

1. Power Take Off: See information above. Warren recommends a single speed, dual gear heavy duty, direct mount, air shift PTO. On direct mount pumps, be sure that the PTO and pump rotations will work together properly. The Warren supplied pump is counter clockwise (CCW) rotating.
2. PTO ratios. Single cylinder 5th wheel models (FW-30): 80-90 % of engine speed. Twin cylinder models (FW-45): 90- 110 % of engine speed.
3. Flat stock steel and steel angles, for pick-up ramps, brackets, reinforcing plates and other requirements. You will need about 175 inches of steel angle for a bolt-on installation. The steel angles should be either 3/8 by 3 1/2 by 4 inches, or 1/4 by 3 1/2 by 4 inches.
4. Hydraulic oil. Oil should meet or exceed the following criteria.

Type	Mineral Oil, Paraffin Base, Solvent Extracted
Viscosity index @ 100ºF	90 or higher
Viscosity SUS @ 100ºF	150-300 (32-65 CST)

Aniline Point	165 min.
Anti-foam additives	Yes
Anti-oxidant additives	Yes

Note: This oil is recommended for normal climatic conditions within the continental United States. Where sustained temperatures are 0 degrees F. and lower or in excess of 90+ degrees F., this oil should be removed and replaced with one of a viscosity rating suitable to the ambient temperature of your region. For a suitable replacement, consult your local oil distributor or dealer.

CAUTION: NEVER USE A DETERGENT OIL OR USED OIL IN THE HYDRAULIC SYSTEM.

Check Tools and Supplies Required

Make sure you have the following tools on hand for installation.

- Overhead hoist 2-ton min., and chain with hooks.
- Two steel saw horses
- Acetylene torch
- Heavy duty arc welder 300 amp. Min.
- Welding rods or wire
- Power drill with various bits
- Power hand grinder
- Sledge hammer
- Pipe wrenches
- Open-end wrenches (U.S. sizes)
- Various Allen wrenches.
- Six large C clamps - 8 to 10 in. min.
- Center punch
- Chalk
- Tape measure
- Straight edge
- Grease gun with suitable grease
- Selection of fasteners including Grade 8 bolts, 5/8 in. lock nuts and washers
- Black paint

CAUTION: Safety Precautions

Before you begin any step in installation, be sure you understand the following notes carefully.

Keep hands and any other part of the body away from the elevating sections when the unit is in raised position.

After elevating the 5th wheel plate to raised position, always leave the hoist in supporting (hold) position.

Whenever the 5th wheel plate is in elevated or raised position, it must be securely propped or blocked so it cannot fall on anyone while making repairs or adjustments. Do not depend on the hoist alone. Blocking recommendation: Use a C clamp in front of each roller. Refer to Fig. 9.

On all tractors, you must disconnect all battery cables and tape the cable ends before doing any welding on the tractor or fifth wheel. On gasoline powered tractors, you must also remove fuel tanks, drain fuel lines and plug fuel lines before doing any welding, grinding or burning on or near the tractor.

Installation Introduction

Two Methods Available

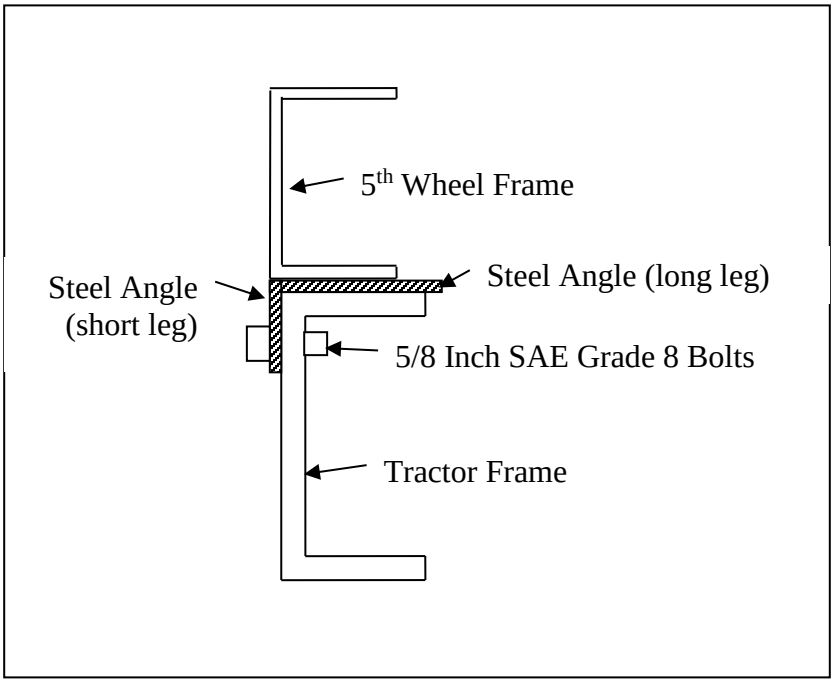
Note for FW-25HL6

Method 1 is the only method for FW-25HL6!

Method 1

Lay the angle with the long leg (4") on the top of the frame, and the short leg (3 1/2') down the side of the frame. This steel angle will increase the down height of the 5th wheel by its thickness. The 5th wheel will be installed on the tractor frame using steel angles. The angles will be bolted

to the tractor, and then the 5th wheel frame will be welded to steel angles. This is the easiest



installation.

Figure 1 Installation method 1 using 1 piece of angle steel

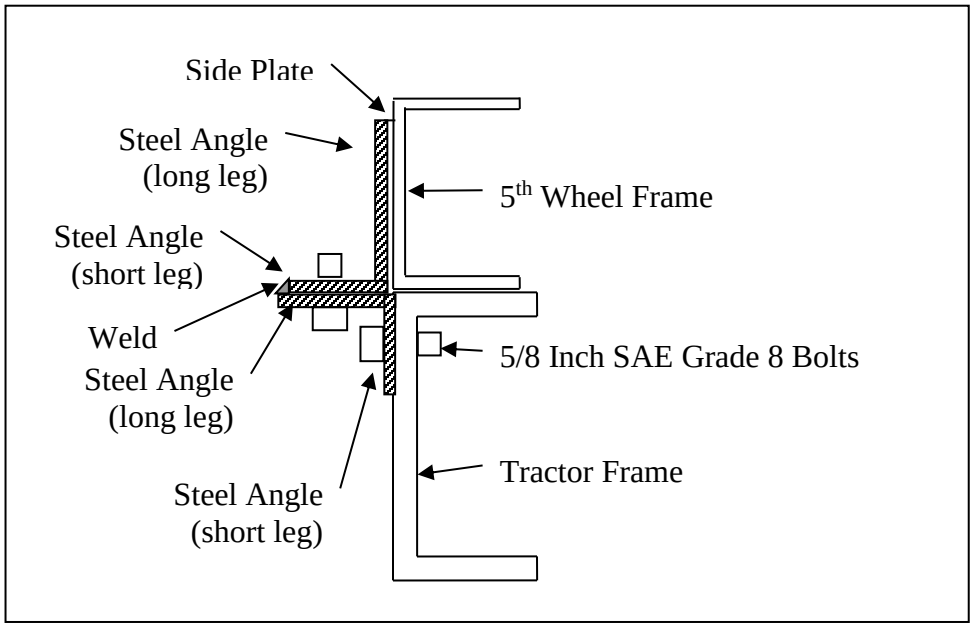


Figure 2 Installation method 2 using two pieces of angle steel

Method 2

If the lowest down height is required, use two steel angles on each side. Position the 5th wheel frame directly on top of the tractor frame. Bolt one, angle against the side of the tractor frame with the short leg down, and the long leg facing outward. Position the second angle on-top of the first angle with the long leg up, and the short leg facing outward. Weld the second angle to the 5th wheel frame. Bolt the two angles together in several places, and then weld the two angles together.

Introduction to Operating Controls

As a standard, your 5th wheel has been provided with an air shifting hydraulic pump. The control valve, air lines, and fittings are also included. Also standard is an air control valve. This push button will prevent the driver from running the PTO while driving, and therefore, result in longer pump and PTO life.

King Ping Jaw Release
Included with all 5th wheel models is an air valve for the king pin jaw release. Instructions for installing this valve will be found as part of the installation procedure later in this manual.

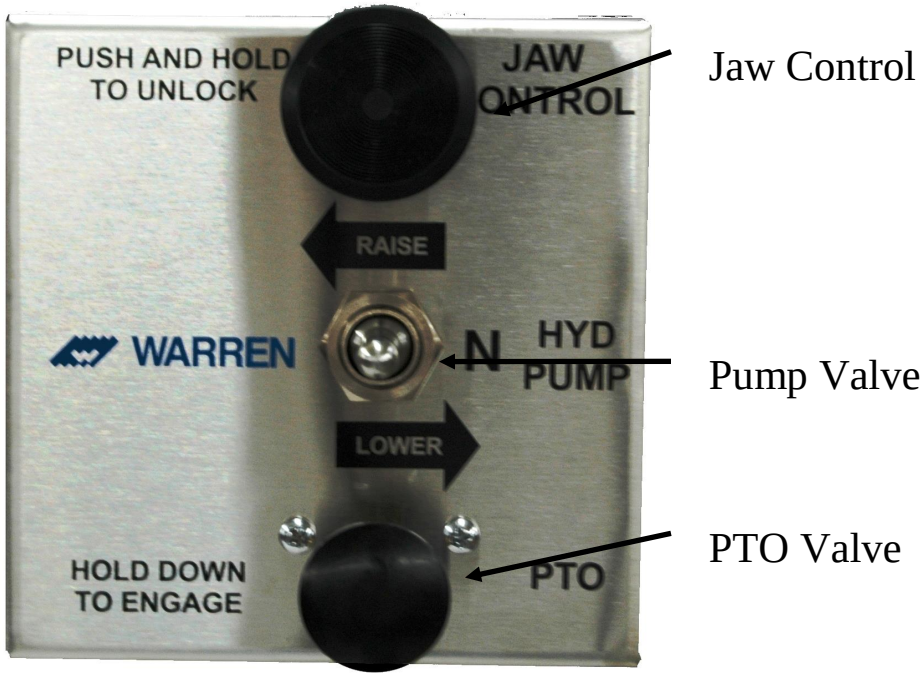


Image 1 Console

Power Take-Off

Power Take Off Installation

Install and adjust PTO according to the manufacturer's instructions.

NOTE: The Warren supplied pump is counter clockwise rotating (CCW).

NOTE: PTO shaft rotation direction on direct mount type pumps. Opposite engine rotation PTO's require counter clockwise pumps. Engine rotation PTO's require clockwise pumps. If in doubt, consult your PTO supplier.

NOTE: For direct mount pumps, fabricate a support is included. We recommend this to hold the pump in the proper position. This will help eliminate vibration and strain on the pump, PTO, and transmission

Installation

Air Control System

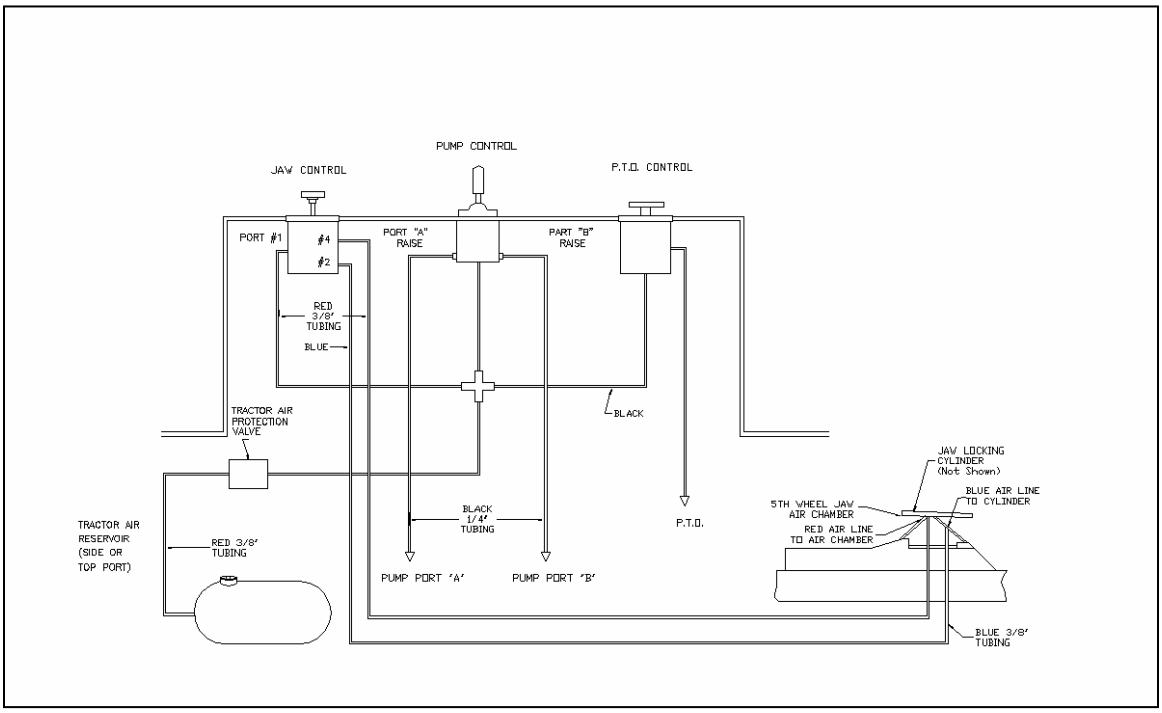


Figure 3 Pneumatic control diagram

Notes and Cautions

The use of a pressure protection value will prevent the tractor's air reservoir from bleeding should an air line break. Therefore, it is very important to have this installed on or close to the air tank.

If you are supplying your own air shift pump, you **MUST** install a restrictor valve to limit 5th wheel decent speed. Allowing the 5th wheel to lower too quickly can cause damage to the contents of the trailer and can cause damage to the 5th wheel assembly. There is a restrictor valve included with each Warren air shift pump. **DO NOT REMOVE THIS VAVLE.**

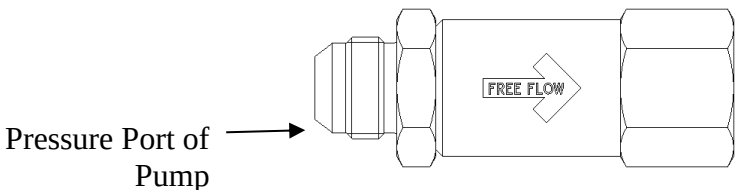


Figure 4 Restrictor valve Do not remove!

Installation of the 5th Wheel on Tractor

CAUTION: Before welding, grinding or burning on any GASOLINE-POWERED tractor, remove all fuel tanks, then drain and plug all fuel lines.

CAUTION: On ALL tractors, disconnect battery cables and tape cable ends to prevent damage from welding.

Prepare Tractor Frame

Be sure the top surfaces of the tractor frame are clean and rust-free.
Mark the tractor frame directly above the center of the single axles, or above the center of the tandem axles. Use a center punch to make a mark at D, (Figure 4).

Prepare for Bolt-On installation

As mentioned in the "Installation Introduction" section, you will be bolting steel angles to the tractor frame and then welding the 5th wheel frame to the steel angles.
The length of the steel angles should extend from about 3 inches in front of the 5th wheel frame to the very rear of the tractor frame rails. Before installing the steel angles, temporarily place the 5th wheel assembly on the tractor frame to make measurement marks on the tractor frame.

Position 5th Wheel Assembly for FW-30 & FW-45 (see Figures 4a and 5a)

Using an overhead hoist and a suitable safety chain, lift the entire 5th wheel assembly and lower it carefully onto the tractor frame. Position the assembly so the center of the king pin jaws is ahead of the axle(s) center according to the dimensions indicated for your model on Table 2a.
Proper positioning of the 5th wheel assembly on the tractor frame is important because the 5th wheel plate moves back (away from cab) when rising; the 5TH WHEEL JAWS, IN A FULLY RAISED POSITION, (Figure 5a) MUST NEVER BE BEHIND THE CENTER OF THE AXLE(S).

It is important that when fully raised, the center of the 5th wheel jaws must never be behind the center of the axles. You must remember that the 5th wheel, when down (Figure 4a); will be at least 6 inches forward of the raised position. You must provide clearance at the back of the tractor cab for the trailer when it is pulling a trailer having a long king pin setting.
If the 5th wheel frame does not fit completely flush on the tractor frame, do not be concerned. You will fix this in a later step.

When you are sure the king pin jaws are positioned the correct distance ahead of your axle(s) center, make chalk marks on the tractor frame at the following locations:

(NOTE: Make the marks across the top flange for the tractor frame, down the outside, across the bottom flange, and up the inside of the tractor frame.)

Then, measure from the forward mark A to the very rear of the tractor frame. This is the length of the steel angle(s) you will need on each side.

Table 2a.
Minimum forward position of 5th wheel Jaws center (D) In relation to axle(s) center (F) when unit is down position.

5th Wheel Model Model (Down Position)	**Position of Jaws (C) in Relation to Center of axle(s) center (D). ins., (mm)**	
FW-30 & FW-45	C to D, Ahead	6(152)

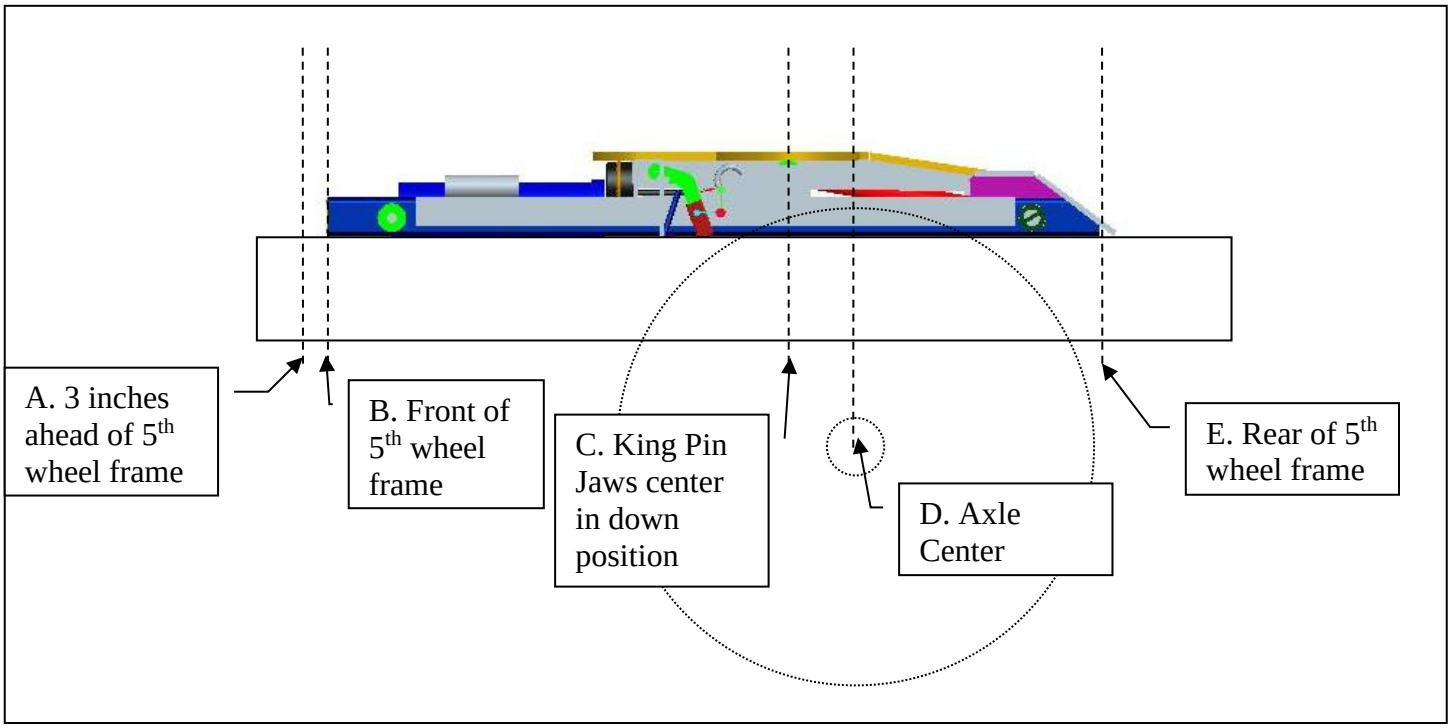


Figure 4a. FW-30 & FW-45 5th wheel in down position

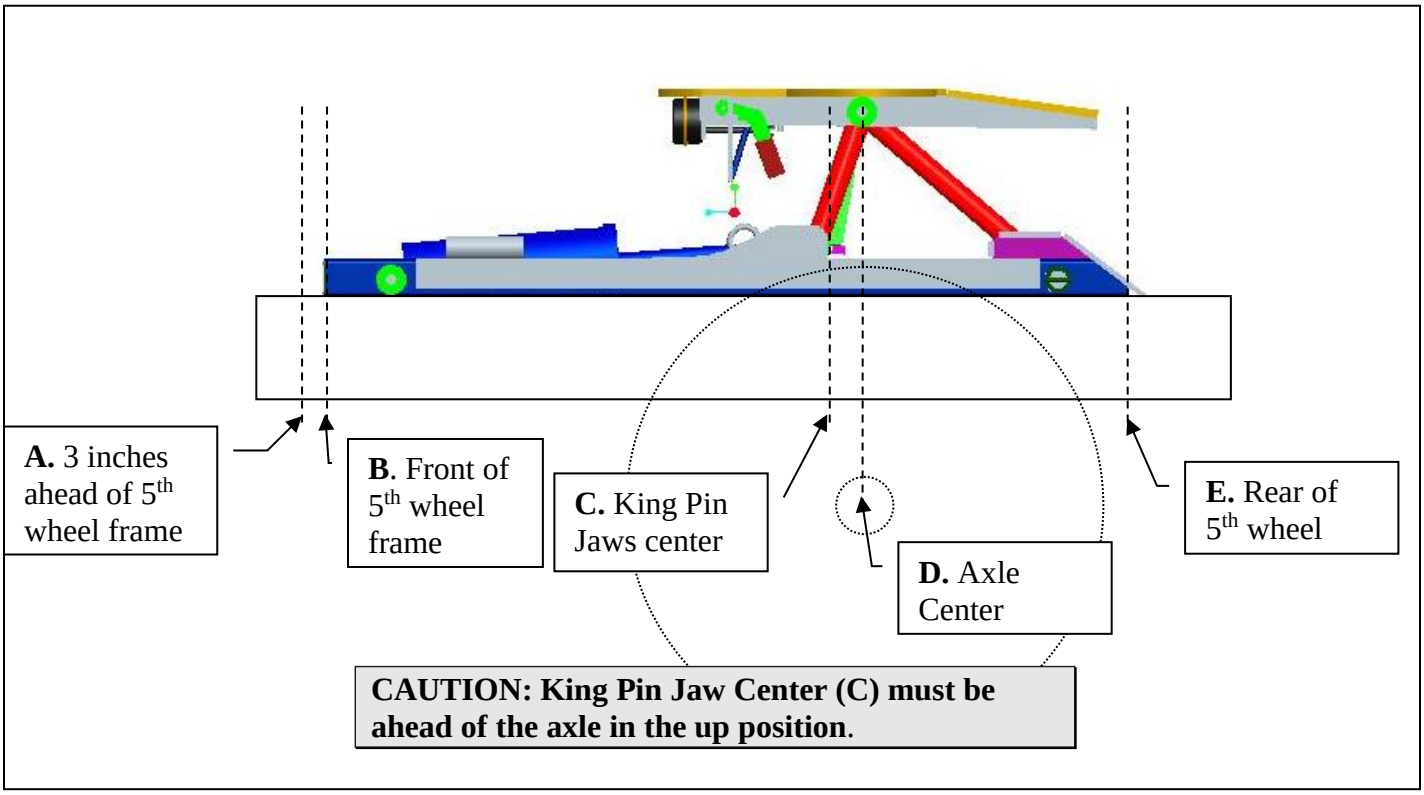


Figure 5a. FW-30 & FW-45 5th wheel in up position

Position 5th Wheel Assembly for FW-25HL6 (see Figure 4b)

Using an overhead hoist and a suitable safety chain, lift the entire 5th wheel assembly and lower it carefully onto the tractor frame. Position the assembly so the center of the king pin jaws is in line with axle(s) center according to the dimensions indicated for your model on Table 2b.
Proper positioning of the 5th wheel assembly on the tractor frame is important because the 5th wheel plate moves forward (toward the cab) when rising.

You must provide clearance at the back of the tractor cab for the trailer when it is pulling a trailer having a long king pin setting. If the 5th wheel frame does not fit completely flush on the tractor frame, do not be concerned. You will fix this in a later step. When you are sure the king pin jaws are positioned in line with your axle(s) center, make chalk marks on the tractor frame at the following locations:

(NOTE: Make the marks across the top flange for the tractor frame, down the outside, across the bottom flange, and up the inside of the tractor frame.)

Then, measure from the forward mark A to the very rear of the tractor frame. This is the length of the steel angle(s) you will need on each side.

Table 2b.
Minimum forward position of 5th wheel Jaws center (D) In relation to axle(s) center (F) when unit is down position.

5th Wheel Model Model (Down Position)	**Position of Jaws (C) in Relation to Center of axle(s) center (D). ins., (mm)**	
FW-25HL6	C and D aligned	0

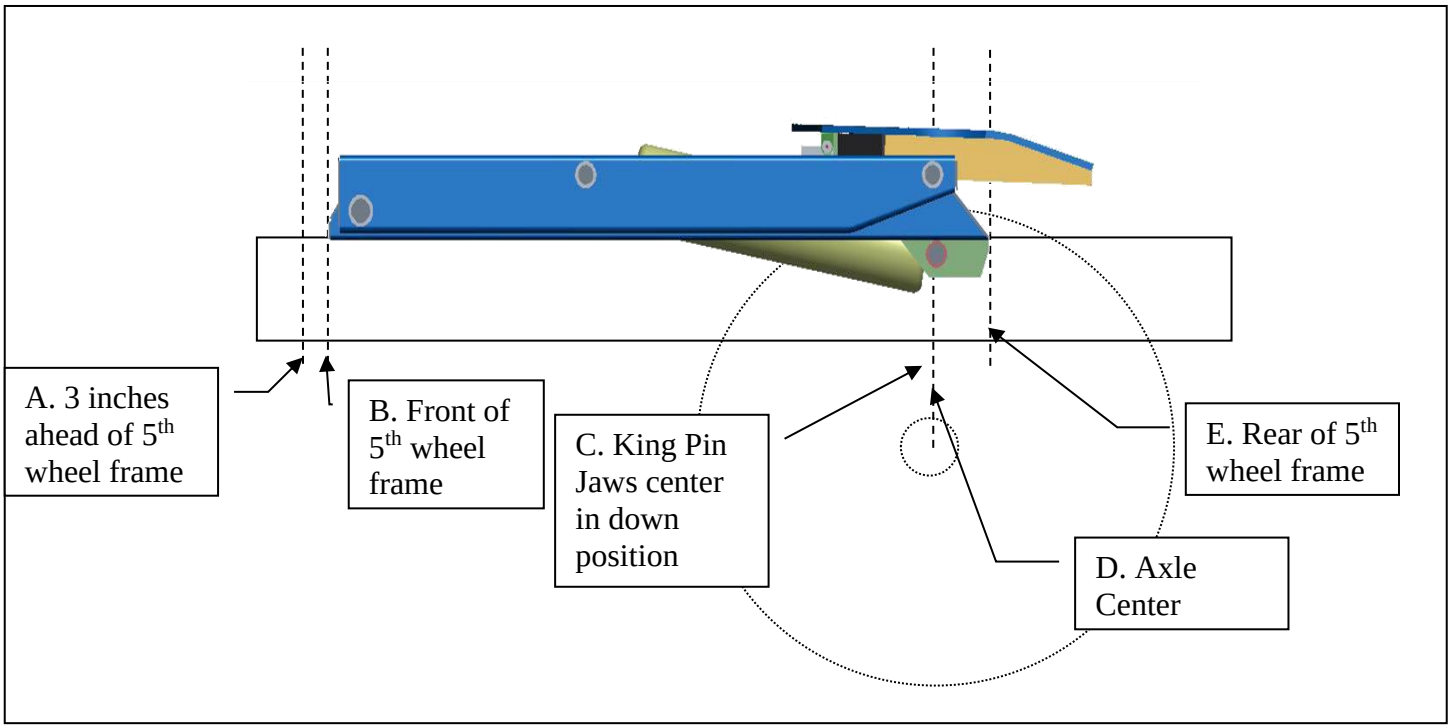


Figure 4b. FW-25HL6 5th wheel in down position

All Models — Mark Interfering Cross Members

Here, you will be checking for proper clearance between cylinder(s) and cross members. You will be marking cross members for any necessary alterations.

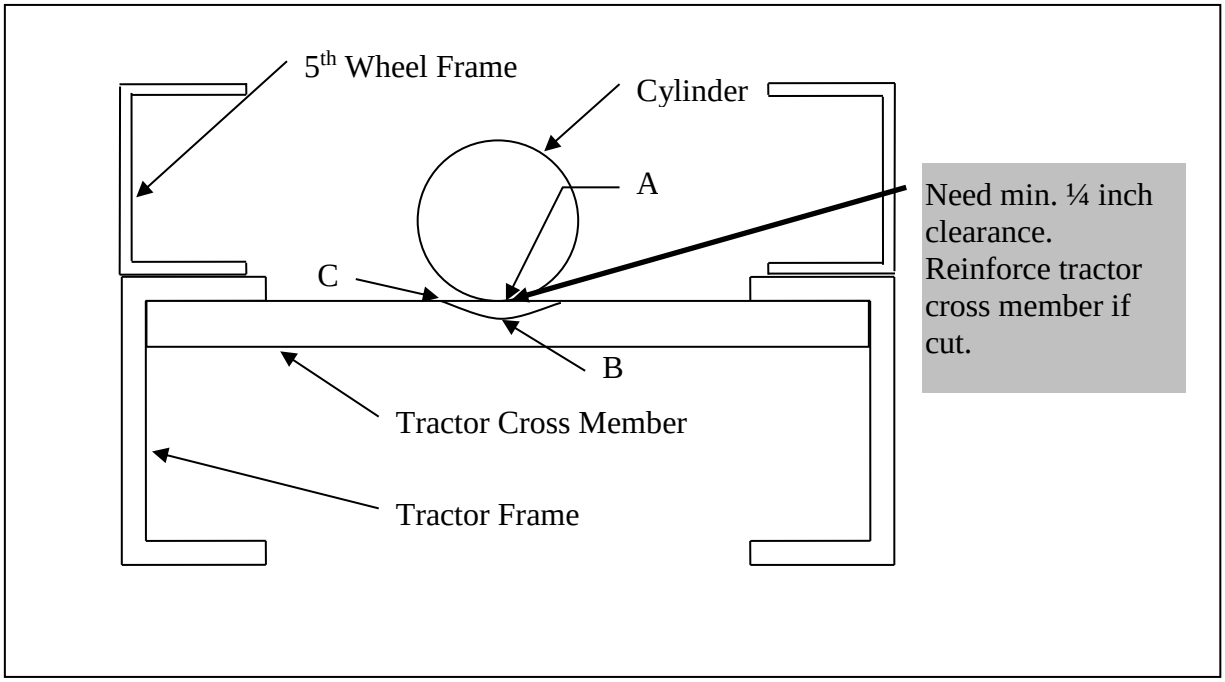


Figure 6 Cross member and cylinder clearance.

There must be at least 1/4 Inch clearance between any cylinder and cross member when the unit is in down position.

NOTE: On all models, cylinders come closest to cross members when the unit is in down position. Actual contact, or less than 1/4 inch clearance will require alteration of the cross member.

On any tractor with an air suspension, **BE SURE** to drain all air from the air suspension before making these marks. **BE SURE** that all air is out of the air bags during the entire measuring procedure. If the air bags refill during measuring, your measurements will be wrong. If you do not measure and check the cross members properly, the cylinder may hit the cross members or other parts later.

Check for Actual Contact

When the 5th wheel is in the exact position where you want to install it, check for interference from any cross members or other components. Remember that the suspension (whether spring or air type) will move as the tractor is driven over rough surfaces. You must have adequate clearance between the lifting fifth wheel and all tractor components. You should also keep in mind that hydraulic hoses and fittings will be installed on each end of the hydraulic cylinder(s). While checking for clearance, drain all air from air suspension components. Be sure that air is drained during the entire checking procedure.

NOTE: If the 5th wheel frame fits flush on the tractor frame rails. Check any gap between the two frames may be caused by a cylinder resting on a cross member. Check each cross member

carefully. If there is not at least a 1/4 clearance between the 5th wheel cylinder(s) and any cross member, some modification must be done to the cross member. If you find interference on a cross member, you can remove a crescent shaped section from a cross member, then reinforce this cut section.

To Mark a cross Member for Alteration

Measure the gap between the tractor frame and the 5th wheel frame. That dimension plus 1/4 inch should be removed from the cross member where it touches the cylinder. Make a mark on the top edge of the cross member (A) exactly where it touches the cylinder. Straight down below the first mark, make second mark (B) on the side of the member. The distance from the first mark to the second mark should be equal to the gap between frames PLUS 1/4 inch.

EXAMPLE: if the gap between the frames is 1 inch, add another 1/4 inch, making the second mark 1 1/4 inch below the first. Now, using the first mark (at top edge) as a center, draw an arc (C) running from each side of the second mark to the top of the cross member. This crescent-shaped section will be removed in later steps.

Check for clearance (regardless of actual contact). If you do not find a gap between frames, check the space between cylinder and cross member. If space is not at least 1/4 inch, the cross member will require alteration as described above. However, in this case, the crescent-shaped section to be removed must be at east 1/4 inch deep.
After marking for cross member alteration, remove 5th wheel assembly from tractor.

Make Tractor Frame Alterations

Alter Cross members

If a cross member requires alteration to clear hydraulic cylinder(s), proceed as follows:

CAUTION: Be sure air or electrical supply lines or other components are out of the way and protected before proceeding.

If your tractor has a gasoline engine, remove fuel tanks and plug fuel lines before doing any welding, burning or grinding. On any tractor, disconnect battery cables and wrap cable ends to insulate.

Using a torch, cut out crescent-shaped section (A) as previously marked.
The, reinforce the cut-out area by welding a strip properly shaped (B) to fit.

Installing Steel Angles

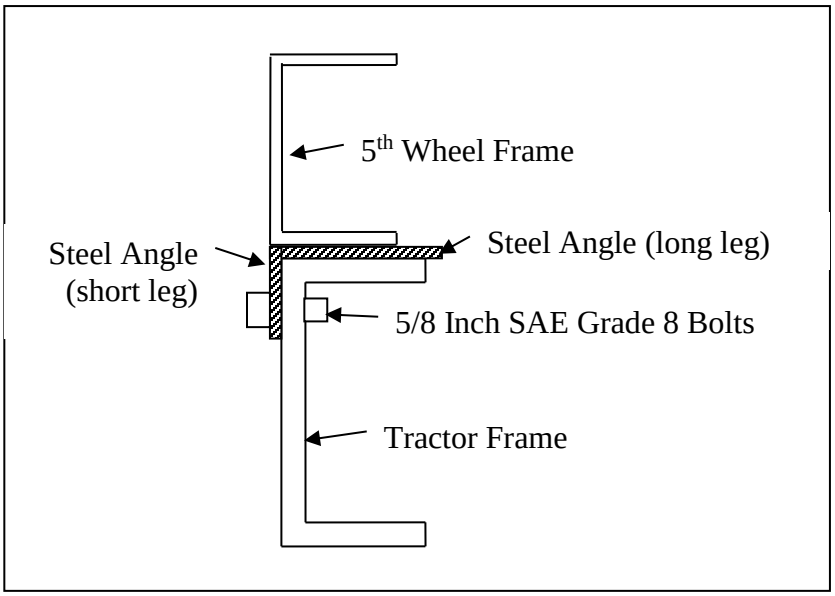


Figure 1 Installation method 1 using 1 piece of angle steel

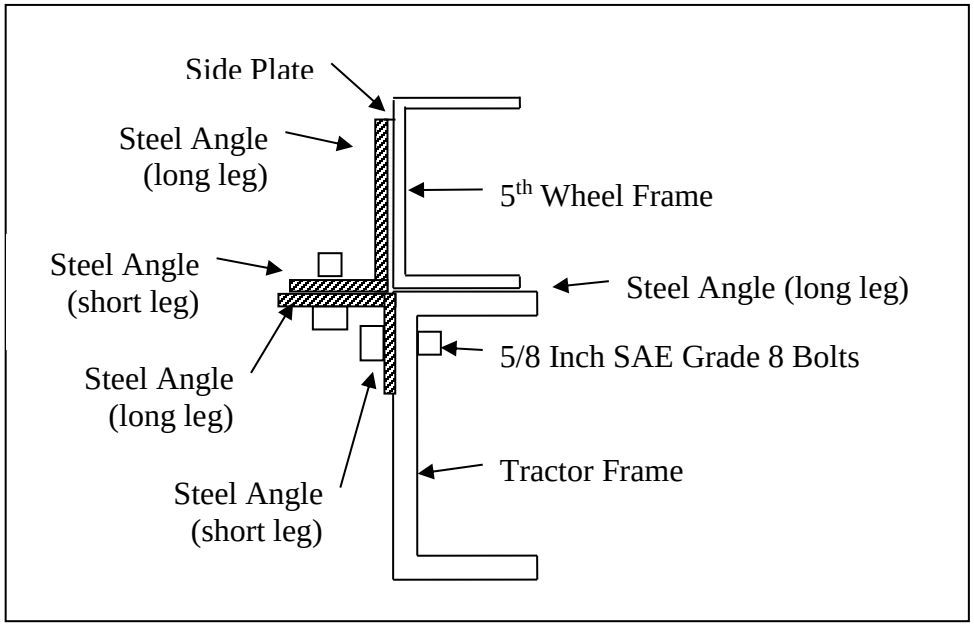


Figure 2 Installation method 2 using s angle pieces of angle steel

You will now decide angles on each side

When To Use One Angle Per Side (Fig. 1)

FW-25HL6 requires this method!

Using one angle per side will increase the down height of the 5th wheel by the thickness of the steel angle. Use one angle per side when the lowest down height is not critical.

When To Use Two Angles Per Side (Fig. 2)

Using two angles per side will provide the lowest 5th wheel down height because it permits the 5th wheel frame to fit directly against the tractor frame.

How to Install Steel Angles

Whether you are installing one angle per side or two angles per side, cut the angles the proper length.

The angles should be long enough to extend from about 3 inches ahead of the 5th wheel frame, to the rear of the tractor frame.

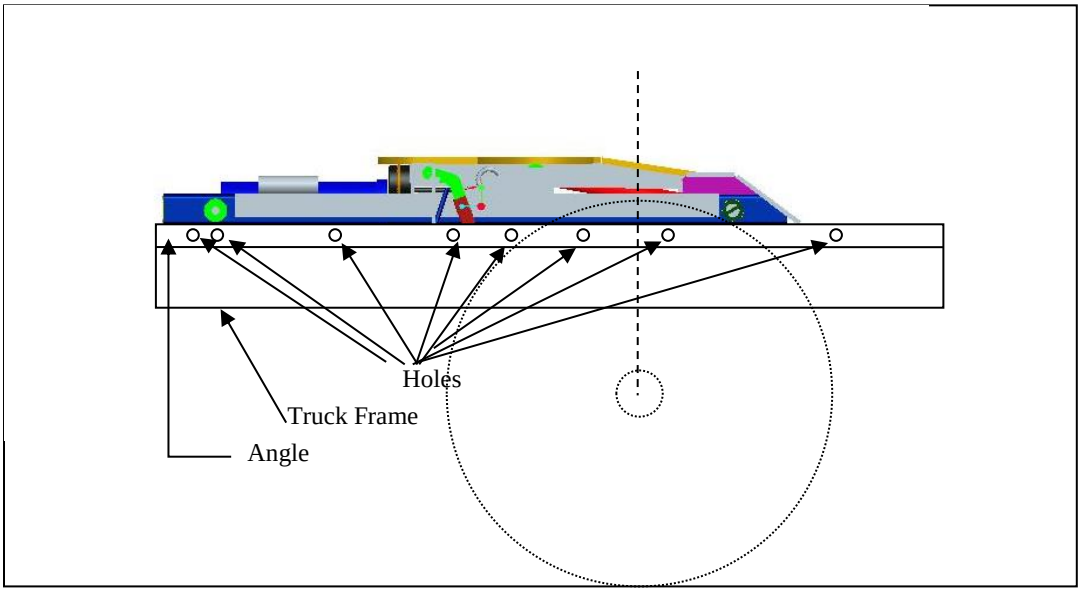


Figure 7a Fitting steel angle to tractor frame and hole locations for FW-30 & FW-45.

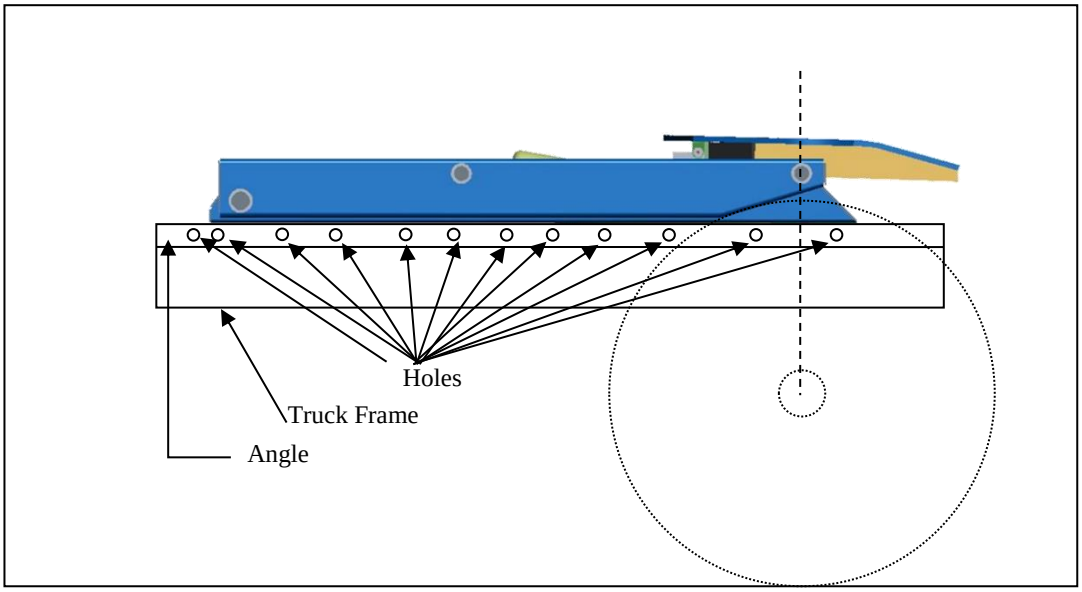


Figure 7b Fitting steel angle to tractor frame and hole locations for FW25-HL6.

If One Angle Per Side (Fig. 1)

If installing one angle per side, be sure the 4 inch leg is on top of the frame, and the 3 1/2 inch leg is pointing down. Place an angle on each side and clamp tightly so each leg fits snug against the tractor frame, top and side.

Cut out the angles to fit around any obstructions such as bolts, spring hangers, etc.
After clamping, go to “Drill Bolt Holes”.

If Two Angles Per Side (Fig. 2)

If installing two angles per side, install the lower angle first — on each side. Be sure the lower angle is positioned with the 4 inch leg pointing away from the tractor frame, and the 3 1/2 inch leg is pointing down. Clamp the lower angle in place, aligned with the top edge of the tractor frame.

Cut out the angles to fit around any obstructions such as bolts, spring hangers, etc.
After clamping, go to “Drill Bolt Holes”. NOTE: The top angle in two angle installations will be installed later.

Drill Bolt Holes

With the angles properly positioned and clamped, mark the angles for at least 8 bolt holes along the side for the FW-30 & FW-45, 12 bolts for the FW-25HL6. First mark, then drill a pilot hole, and then an 11/16 inch hole at the locations indicated in Figure 7. Also drill any additional holes where you feel additional bolts may be needed.

Bolt the angles to the tractor frame using 5/8 inch SAE Grade 8 bolts, nuts and lock washers. We recommend using Loctite® on the nuts.

Mounting 5th Wheel Assembly on Tractor

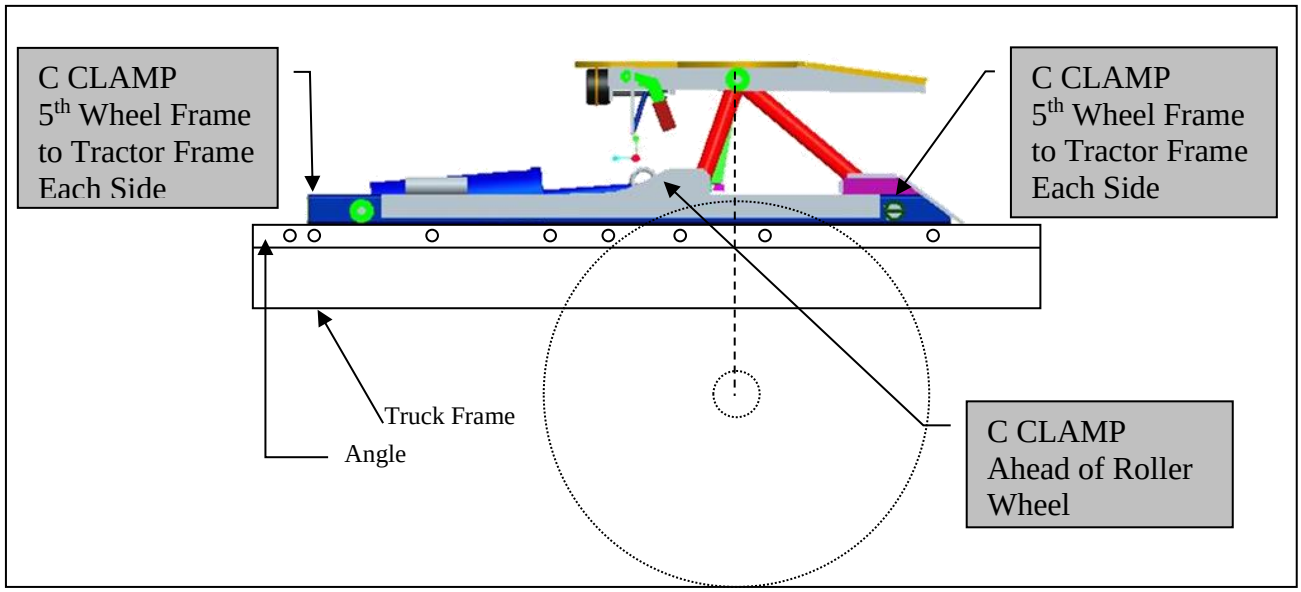
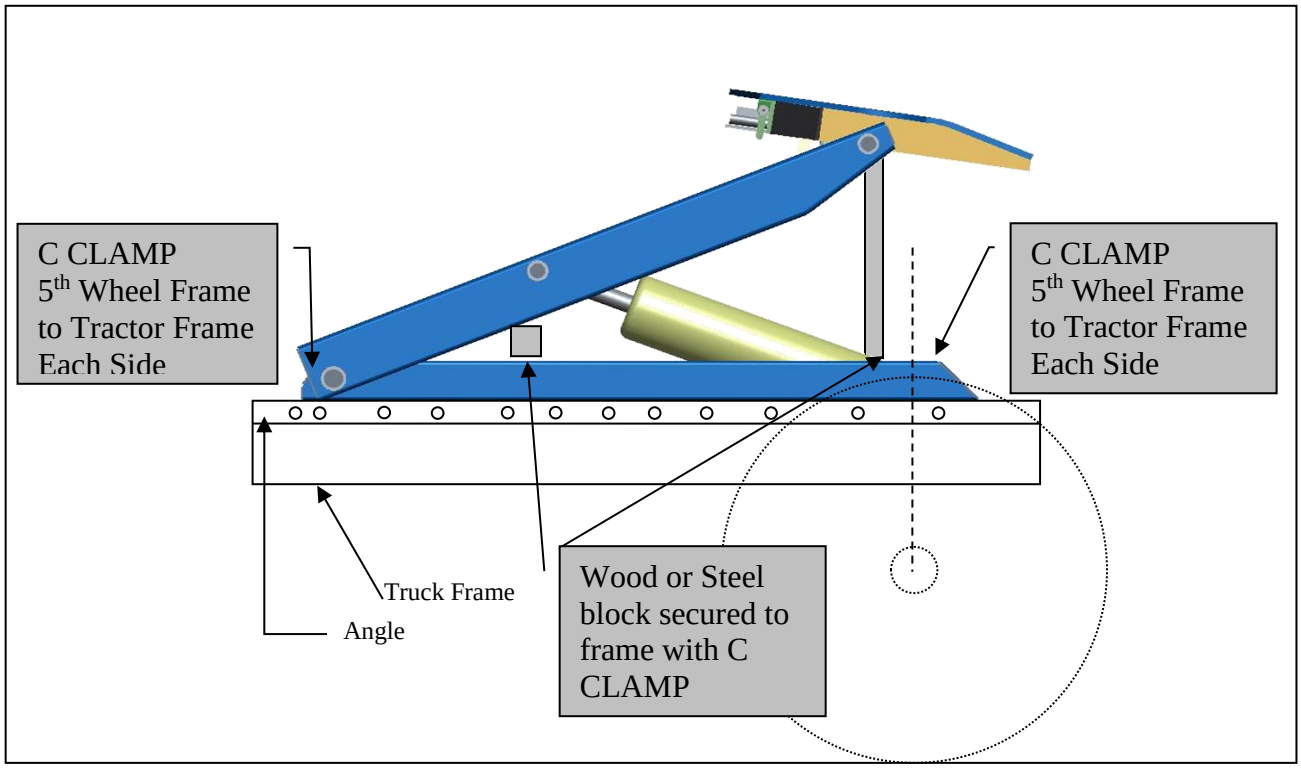


Figure 8. Proper clamping and blocking of the FW-30 & FW-45

Figure 8b. Proper clamping and blocking of the FW-25HL6

You are now ready to place the 5th wheel assembly on the steel angles you have installed on the tractor frame. Carefully pick up the 5th wheel and lift it above the tractor frame. Be sure any hoses are clear, and then lower the 5th wheel onto the tractor. Adjust the position of the 5th wheel. For



the FW-30 & FW-45 the center of king ping should in front of the center of the axle(s) 6 inches when in the down position. For the FW-25HL6, the center of king ping should line up with the center of the axle(s) when in the down position.

When aligned, place a "C"-clamp on each corner of the 5th wheel frame (a total of four clamps). Tighten each "C"-clamp until the 5th wheel frame is in contact with the steel angles all the way along the tractor frame.

Get two more clamps ready. Place the hook of the overhead hoist into the 5th wheel jaws. Slowly raise the 5th wheel plate to its maximum lifting height.

CAUTION: Keep all parts of your body away from elevating sections.

While raising the 5th wheel, carefully observe the moving parts under the 5th wheel. Make sure the cylinder(s), hoses and front elevator have adequate (1/4 inch) clearance while raising the 5th wheel.

CAUTION: After raising the 5th wheel plate (on all models), place clamps and/or block to secure the plate from returning to collapsed (down) position (Fig. 9a and b). Do not depend on the hoist alone to keep the plate in raised position. Keep all pans of your body away from elevating sections!

WARNING: The clamps are vitally important. They help keep the 5th wheel in a raised position. Failure to secure the clamps properly could result in serious injury.

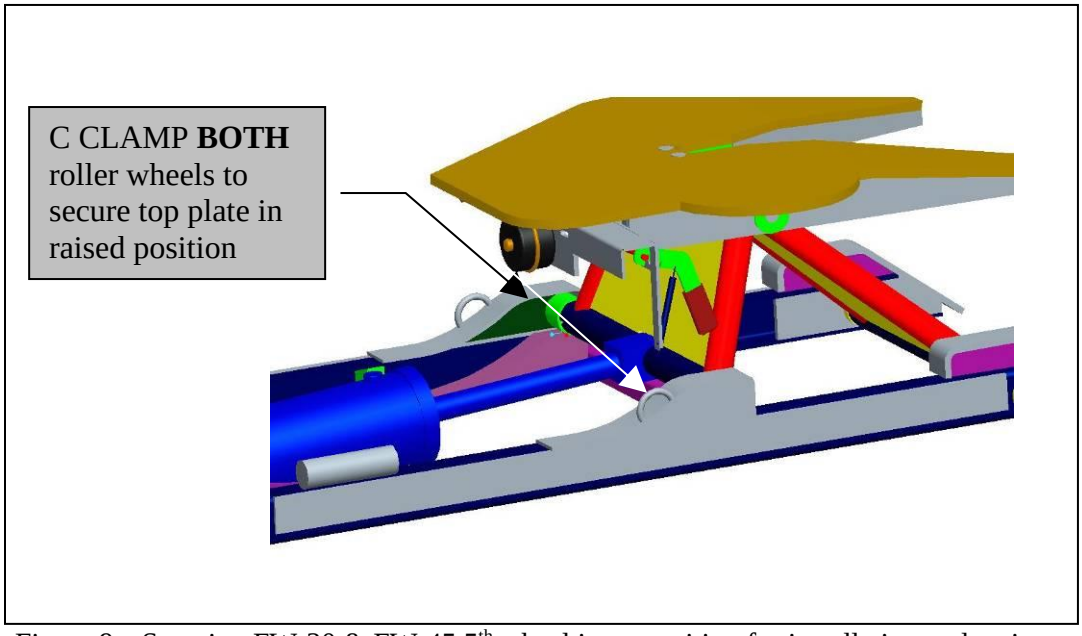


Figure 9a. Securing FW-30 & FW-45 5th wheel in up position for installation and maintenance

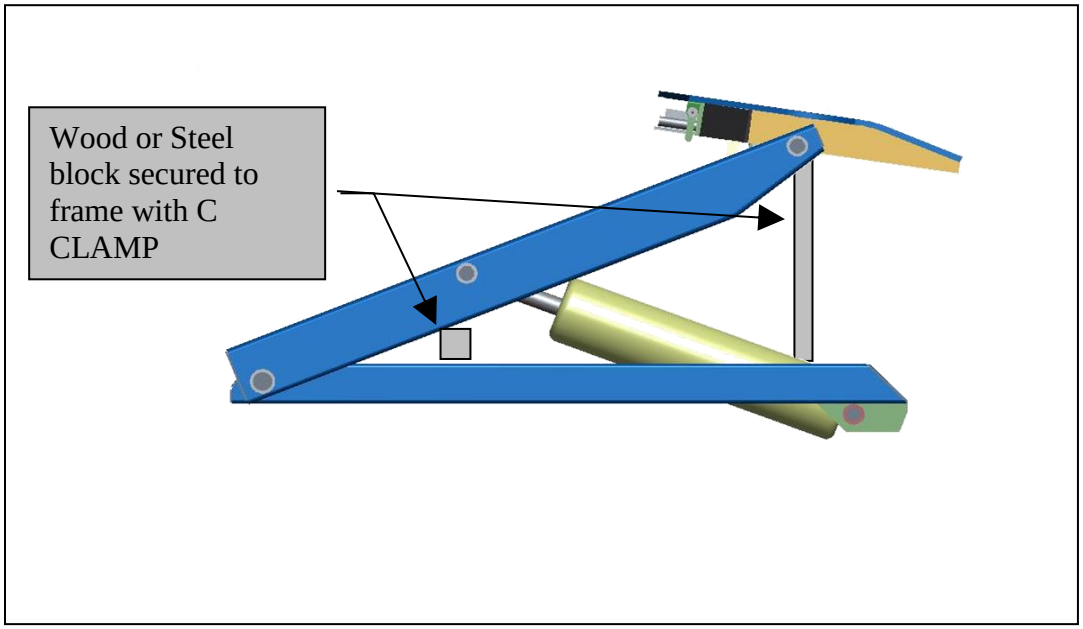


Figure 9b. Securing FW-25HL 5th wheel in up position for installation and maintenance

On Installations Using Two Steel Angles Per Side

After positioning the 5th wheel in the exact position, clamp the 5th wheel down to the tractor frame as explained above. Then place the top angle into its proper location. Securely clamp the top angle to the 5th wheel frame, and then clamp the top angle to the bottom angle.
Be sure that the clamps are tight and that all spaces are removed. On some 5th wheel frames, it may be necessary to add additional clamps to tighten the frames together. **CLAMP 5th WHEEL DOWN SECURELY AND EVENLY**.

Next, you will be bolting the .angles together. Make 4 evenly spaced marks between the top and bottom angles on one side of the tractor frame. Make these marks on the other side of the tractor frame. Drill 11/16" holes through both angles on each side of the tractor frame. Secure the angles together using 5/8" SAE Grade 8 bolts, lock washers and Nylock nuts. We recommend also using Loctite® on the bolts. Once the bolts are secure, weld the top angle to the 5th wheel frame. Use 4-6 inch skip welds to secure the angle to the 5th wheel frame.

Finally, skip weld the two angles together. Again, use 4-6 inch skip welds. The bolts and welds together will provide extra security. Remove all clamps after the welds cool completely.

On Installations Using One Angle Per Side

Skip weld 5th Wheel Frame to Steel Angles with minimum 50% coverage.

Lower 5th Wheel Plate to Collapsed (Down) Position

To lower the 5th wheel plate safely, remove the filler plug and vent from the top of the cylinder(s). Remove the pipe plug from the other end of the cylinder.

Be sure to keep all parts of your body away from the moving parts of the fifth wheel. Next, remove the clamps that hold the roller wheel into a raised position.
Be sure that the overhead hoist is supporting the top plate. Using a long pry-bar, slowly force the roller wheels into a down position. Use the chain hoist as a brake to keep the fifth wheel plate from lowering too fast. **KEEP ALL PARTS OF YOUR BODY AWAY FROM PINCH POINTS!** When the 5th wheel is fully lowered, disconnect the hoist.

Install Pickup Ramps

WARNING: Do not attempt to put the tractor into service without adding pick up ramps as directed.

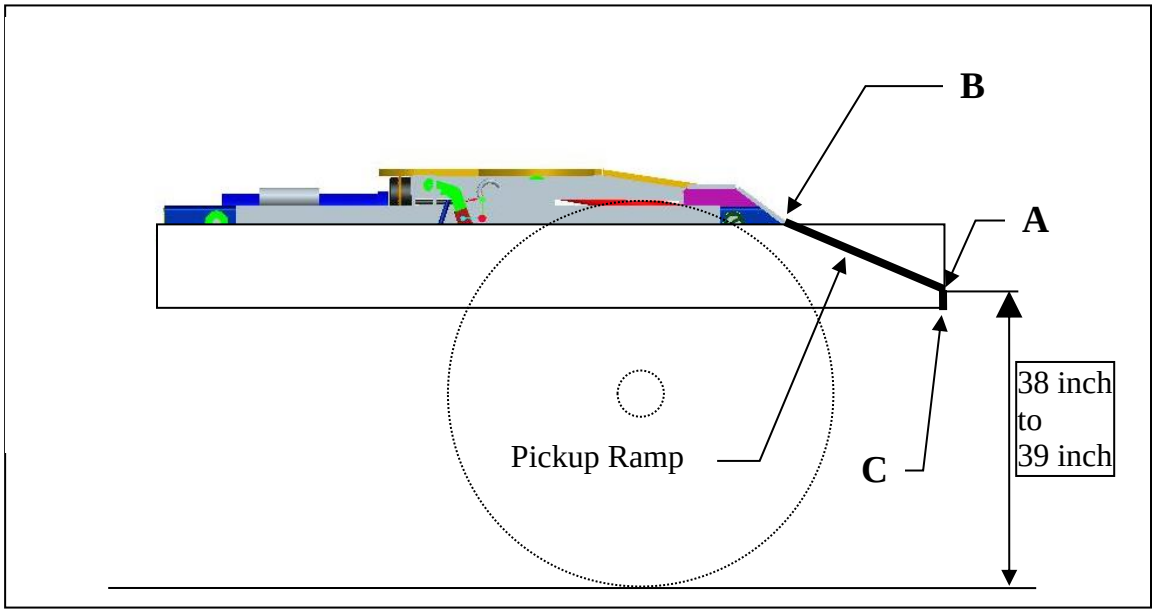


Figure 10 Installation of Pickup Ramps

Prepare Tractor Frame

Make a mark at the end of the tractor frame (on side) approximately 38 to 39 inches from the ground.

Position a straight edge running from point A on the tractor frame to the end of the pickup ramp on the 5th wheel frame (B). Draw a line along where the straight edge.

Cut off the A-B section of the tractor frame.

NOTE: You may not want to cut the tractor frame to install pick-up ramps. To avoid cutting, make the pickup ramps slope to the top of the tractor frame. The more gradual the slope, the better.

Install Ramps

Using 1/2 x 3 inch flat stock, cut stock long enough to go from A to B leaving enough extra to go down the face of the frame to C. Begin by welding at point B.
Weld from B to A.
Heat point A and bend stock over the end of the tractor frame to E.
Weld from point A to E.
Cut off excess stock if any.
If there are any gaps between the pickup ramp and truck frame, cut 3/8 inch stock to make a brace centered under the pickup ramp.

Severe Duty Applications

If your 5th Wheel will be used in severe duty, it may require additional bracing. Please contact your installer or Warren Truck and Trailer for more information.

Connect Hydraulic Hoses, Pump

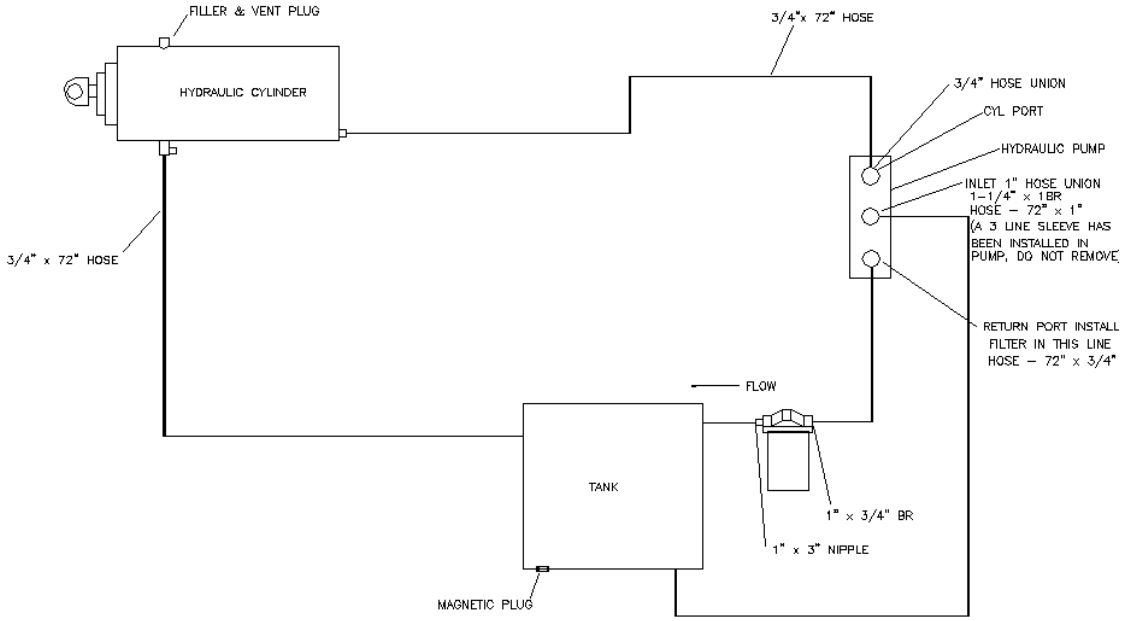


Figure 11. Hydraulic layout for FW-30

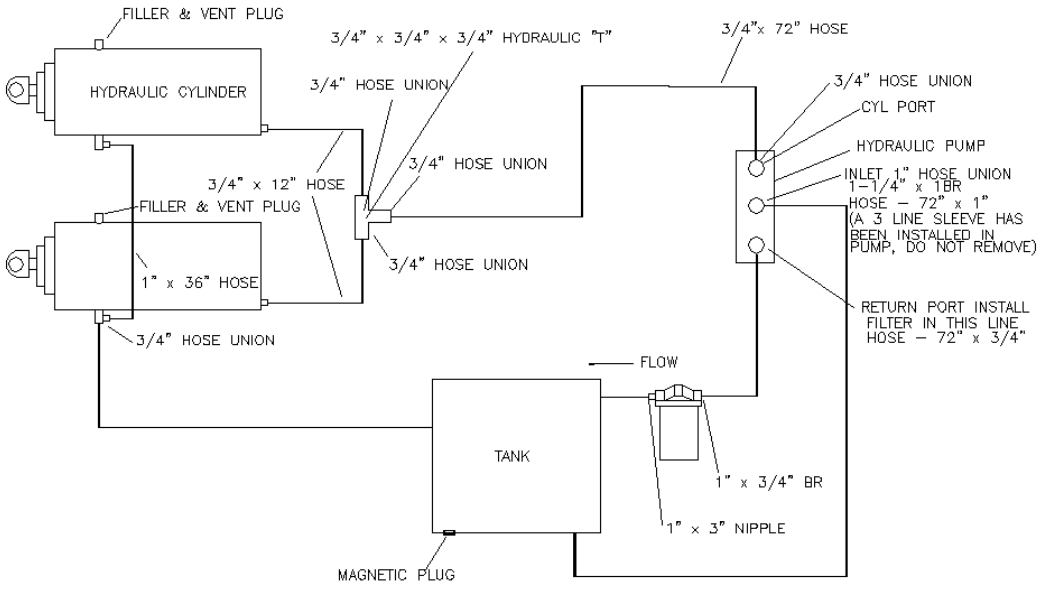


Figure 12. Hydraulic layout for FW-45 & FW-25HL6

Connect the hydraulic hoses from the 5th wheel to the hydraulic pump. BE SURE TO HOOK UP THE HOSES EXACTLY AS SHOWN.
HAND TIGHTEN FILTER AND CHECK THE OIL LEVEL AFTER RUNNING THE PUMP THE FIRST TIME.

NOTE: Each tank is supplied with a magnetic plug located in one port. The use of this plug will help extend the service life of the unit.

Prepare Tractor For Service

If lifting hooks are interfering or causing other issues, use an acetylene torch to remove them Re-install all tractor components that were removed during installation. Hook up fuel lines and replace batteries and battery cables.

Fill Tank and Cylinder(s)

We recommend using hydraulic oil with minimum specifications stated earlier in this manual and suited to your operating conditions and temperatures. To fill the cylinder(s), start with the unit in fully lowered position. Fill the cylinder(s) full. Put the filler cap(s) with vent back into place. Fill tank with oil. Start the tractor, put the PTO in gear and move the pump control to the 'raise" position. Slowly raise the unit to its full height. Take the PTO out of gear. Lower the fifth wheel down by backing under a trailer with the pump control in the "lower" position. If you do not have a trailer nearby, have the driver put the pump into the "lower" position while a mechanic uses the pry bar to help lower the fifth wheel. Check oil level in tank and add if necessary.

Final Installation Steps

After you are sure that the fifth wheel operates properly, wipe down the unit to remove any dirt or oil. Touch up paint around welded area and newly installed metal. Cover the cylinder breathers so that they do not get filled with paint.

Ensure protective face sheets from the warning decals located on the outside of the unit are removed. Make sure that each decal is uncovered and that each decal is readable.
Apply the operating instruction decal inside of the cab in an area where the driver can clearly read it. You may also have other decals or labels that are supplied with the unit. These should be applied inside the cab near the controls.

Grease the top of the fifth wheel plate.

Warren suggests the use of a safety step deck plate (not supplied) to the area on top of the frame where the driver will stand when hooking up trailer air lines and electrical lines.
When delivering the fifth wheel to the user, be sure to give them the operating instruction along with this installation and service manual.

Check Out Installation

The 5th wheel installation should be thoroughly checked out before the unit is coupled with a trailer. Then, it should be checked out while handling a loaded trailer.
Check components and Operation
PICK UP RAMPS:

- Be sure the pick up ramps are properly installed to help slide the trailer up to the 5th wheel height. This is essential!

Framing and Reinforcing Members:

- Are welds and fasteners tight?

Cylinder(s) and Front Elevators

- Does the unit move up and down freely without rubbing or contacting other components?

Power Take Off:

- Has transmission oil been replaced?
- Does the PTO run smoothly and quietly?
- Are there any leaks between the PTO and transmission or the PTO output shaft?

Hydraulic System:

- Are there any leaks at pump output shaft, bushing reducers, hose unions or hoses?
- Are hydraulic cylinder(s) leak-free?
- Is tank full of oil?
- Are all hoses properly routed and tied down to prevent pinches and wearing?

Check Out Performance

All 5th wheel assemblies are checked and thoroughly tested for proper locking before shipping. However, it is imperative that before the unit is released for service it be thoroughly checked out for coupling ability, and for the ability of the king pin jaws to properly lock. This is extremely important, not only for safe operation, but for efficient performance as well.

Coupling and Locking

Operator Instructions

1. Open the king pin jaws by pushing the air control button in the cab.
2. Align the tractor with the trailer.
3. Raise the 5th wheel plate until it is 1 to 2 inches above the bottom of the trailer king pin plate. Make sure the pick up ramps are properly aligned and slanted to permit smooth coupling.
4. Back the tractor under the trailer, bringing the jaws into contact with the trailer pin with some force. Backing speed should be 2 or 3 mph.
5. You may hear a snap, one sign that the jaws may have locked. ***However, this is not a sure sign.*** Release the air control for the Jaw Release
6. When you think that you are locked, hook up the trailer air lines.
7. Visually check the lock status. Do this by looking at 1 inch round rod extending from the front center of the 5th wheel plate.
    a. If the jaws have locked, the rod will extend from 1/2 to 1 inch beyond the front of the plate.
    b. If the jaws are unlocked, the rod will extend more than 1 inch beyond the front of the plate.
8. If you will be traveling on the road, engage the Road Lock by pulling up on the handle and sliding the rod in toward the center of the chassis frame. If the rod will not move over and engage, you are not fully locked! In this case, repeat the coupling and locking operation once again, making sure you are using reasonable speed to provide enough force to lock the jaws.
9. Test the locking and coupling. If you think the jaws are locked, attempt to pull the tractor away from the trailer with the trailer brakes set. To do this, get back into the cab and apply the trailer brakes only. Put the tractor in gear and try to move forward — slowly. If the tractor does not move, the jaws are locked.
10. If the tractor moves away from the trailer, the jaws are not locked. In this case, repeat the coupling and locking operation once again, making sure you are using reasonable speed to provide enough force to lock the jaws.
11. If the jaws still do not lock, refer to “Repairs” section later in this manual.

Locking and Coupling Examples

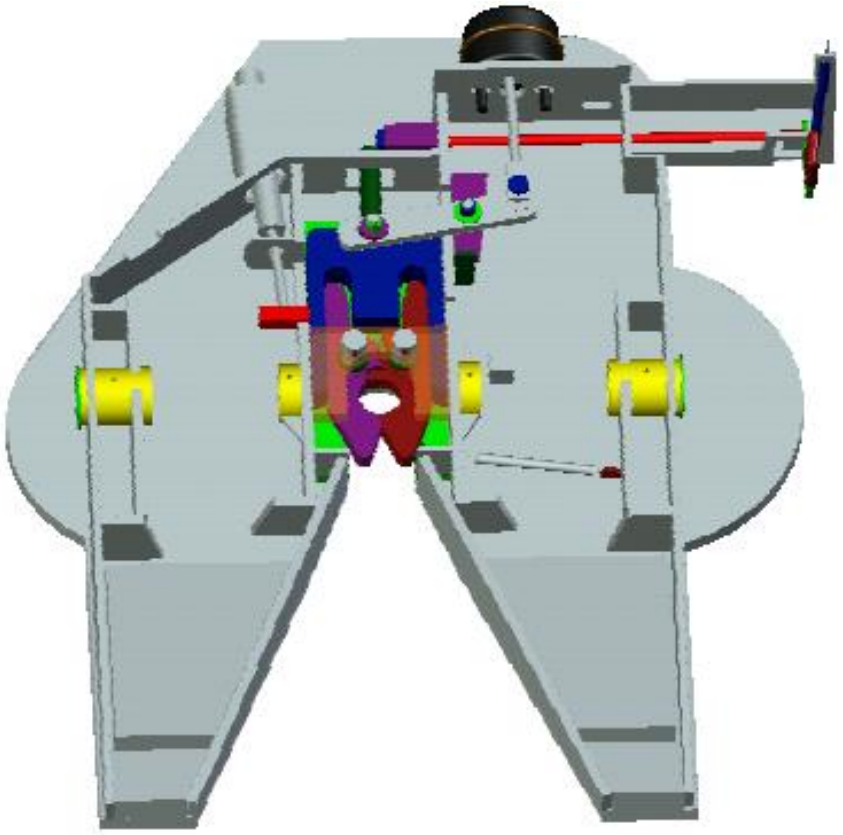


Image 1: Bottom View of 5th Wheel Locking Jaws With The Jaw Fork Fully Engaged

Note that you ***ARE*** able to engage the road lock in this view. The jaw fork is fully engaged in the back of the king pin jaws. See picture below for actual photo of fully engaged jaw fork

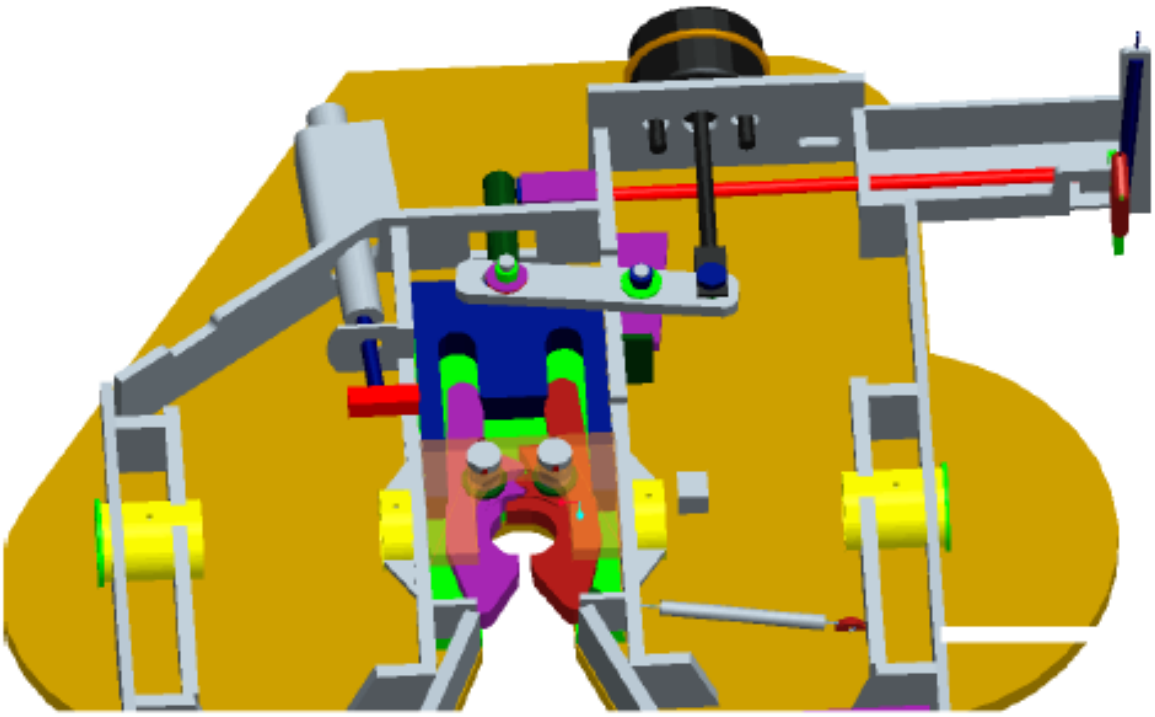


Image 2: Bottom View of 5th Wheel Locking Jaws When The Jaw Fork Is Not Fully Engaged

Note that you **ARE NOT** able to engage the road lock in this view. The jaw fork is not fully engaged in the back of the king pin jaws although the king pin jaws are "locked" around the king pin.Notice that the rod on the jaw fork extends past the square bar on the road lock. In this case, it is possible for the jaw fork to be forcibly pushed out of the locked position with excessive pull or a side load on the king pin jaws. This is especially true if other components in the assembly are weak, malfunctioning, broken, or missing. The pictures below are actual images of this condition. Note that you could hear the "snap" of the jaw around the king pin (see below), but this unit was not securely locked!

Final Locking Test

When you are sure the jaws are locking properly, test coupling and locking at various angles up to 45 degrees, left and right. If this final test is successful, the unit is ready for service.

Check Raising and Lowering

Raise the trailer by engaging the PTO, then by operating the hydraulic pump. Be sure the 5th wheel raises and lowers smoothly.

Final Systems Test

While the trailer is being lifted, re-check the hydraulic and pneumatic systems, and the operation of the 5th wheel, the pump and PTO

Maintenance

As with any mechanical equipment, maintenance and lubrication are very important for long service life.

Before putting the unit into daily operation, record the model number and serial number in a permanent file.

Lubrication Maintenance

There are a number of grease fittings located throughout the 5th wheel assembly. It is easier to see the fittings when the unit is new.

CAUTION: Failure to provide an adequate supply of grease will result in premature wear and damage. This is especially true on the cross shafts that carry heavy loads. A lack of lubrication will void the warranty.

Lubrication recommendation: We recommend using excellent quality grease for longest service life.

For normal operations, we recommend that you grease the unit monthly. In extreme duty applications, where salt or sand may be a problem, you should grease the unit more often. You may also want to consider the use of automatic lubrication systems as supplied by various manufacturers.

Hydraulic Maintenance

Monthly: Check the oil level in the tank. With the unit in a fully lowered position and the engine off, remove the filler cap(s). The oil level should be about 2 inch below the cylinder top. Carefully clean the filler vent cap and vent before replacing.
Monthly: Check all of the hoses and fittings for leaks, cracks or deterioration. Replace as needed.
Yearly: Drain all oil from system. Remove oil filter. Replace filter with a new filter element, then refill tank and cylinder(s) with new oil.

Mechanical Maintenance

Weekly: Test the locking assembly for correct king pin locking. Make sure that the fifth wheel locks every time.
Monthly: Check all mounting brackets and bolts to be sure that they are tight. Be sure that the in-cab controls and PTO light are working correctly.

Service Conditions and Problems

If new unit will not lift empty or loaded trailers:

- Check oil level in the tank.
- Check to be sure that the pump is fully shifting into the "raised" position.
- Check hydraulic lines to ensure no pinch points.

If new unit will raise light loads but not heavy loads:

Listen near the pump. If you hear a chattering noise when the unit stops lifting, the pressure relief valve may be opening too early. The relief valve may need adjustment or replacement. The recommended maximum pressure is 2000 psi. Please call us for adjustment instructions.

If unit has been working properly, and now it will not lift:

After checking all of the above items, the following might be the problem:
Damaged cylinder
Worn pump, causing cavitation of oil
Blockage in hydraulic system
Relief valve is opening, due to very heavy load or relief valve damage

If unit will not stay in a raised position:

Cylinder may be damaged. Piston may be cracked or barrel might be severely scored.
Spool valve in pump might be damaged or may not be shifting fully.
Check valve may be stuck open due to debris.

If elevators are cracking:

Tractor is being operated over rough terrain, especially at high speeds.
Tractor is being driven on public roads for long distances in a raised position.
Trailer load is exceeding rated load for 5th wheel.
Bearings and shafts are not being lubricated on regular intervals.

Jaws will not lock:

Jaws, fork or wear plate are damaged.
Air chamber is damaged or an incorrect type of air chamber has been installed on an older fifth wheel. Driver is not backing under the trailer with enough force.

Oil blowing out of cylinder vent when lowering:

Check oil level in tank. Be sure that the level is about 2" below the top of the cylinder.
On air shift pumps, there should be a restrictor valve on the pressure port of the pump. Check to be sure that this valve is present. This valve makes the fifth wheel come down slowly. If you have supplied your own pump, make sure that a flow restrictor is installed.
Check for any hydraulic leaks that might be drawing in air.

Repairs

If the locking jaws need repair

It is very important that the 5th wheel jaws be correctly installed and adjusted. Failure to properly install these parts will result in dropped trailers. This could result in personal injury and property damage. You must be sure that any repairs be done properly.
Your Warren distributor has the parts and knowledge required to repair your Warren 5th wheel. We recommend that you call your distributor or Warren if you have any questions on the best ways to check your 5th wheel.

Replacement of other components

Instructions for replacement of major parts, like elevators, shafts and roller wheels are included when you purchase these parts. These repairs must only be done mechanics that are familiar with vehicle repair.

Correct Locking Procedure

Back the tractor up in front of the trailer. Raise the 5th wheel plate so that the plate is 2-3 inches higher than the front of the trailer king pin plate. Back under the trailer at about 3 miles per hour. When you think that you are locked, hook up the trailer air lines. Test the lock by applying the trailer brakes, then attempt to pull the tractor forward. If the trailer is held back, you are locked. We have also provided a visual check. A round bar (part of the jaw fork) extends out of the front of the 5th wheel plate. Next to this round bar is a square bar. In a locked position, the round bar should not extend out past the square bar.

OPERATING CAUTIONS:

1. Keep all people away from the front, back and sides of the tractor/trailer when coupling, raising, lowering or moving the vehicle. Keep all parts of your body away from all moving parts.

Keep workers away from the back of the trailer near dock doors or other areas when operating the 5th wheel.

2. Be sure that the tractor is locked to the trailer. Make sure that the fifth wheel is securely locked before attempting to move the tractor/trailer.

3. Be sure that the lifting 5th wheel is ABOVE the level of the trailer king pin plate before attempting to couple. The 5th wheel should be several inches above the trailer king pin plate.

Because the 5th wheel may be lower or higher than the standard 5th wheels that you may now be using, you must be sure that the 5th wheel is raised slightly before attempting to couple to any trailer.

4. Do not push the king pin Jaw control valve until you want to release the trailer. As soon as you push down this valve, the trailer will drop.

5. Before traveling on public roads, put the Road Lock into a 'locked' position. Do not pull a trailer on public roads unless the road lock is in the locked position.

6. Engage the PTO only when lifting. Take the PTO out of gear when not lifting. Do not move the tractor trailer with the PTO in gear. Leaving the PTO in gear when not lifting will cause damage to the pump and PTO

WARREN Locking Assembly Repair and Adjustment Instructions

IMPORTANT: The locking assembly must be carefully adjusted to insure safety. Failure to properly repair and adjust these parts will result in accidents!

USE ONLY AUTHORIZED WARREN REPLACEMENT PARTS. DO NOT USE A STANDARD TYPE 9 BRAKE CHAMBER TO REPLACE THE WARREN AIR CHAMBER. IT WILL NOT WORK!!!.

Tools Required For Repair

Overhead hoist, acetylene torch, power grinder, sledge hammer, open-ended wrenches, pliers, 2 large 'C' clamps, power drill, pressure washer or steam clean machine.

Locking Assembly Inspection

Back tractor in front of a loaded trailer. Raise 5th wheel two or three inches higher that the trailer king pin plate. Back under the trailer with some force. Speed should be about 3 miles per hour. King pin will close jaws and fork should slide into a locked position.
Look at jaw fork rod that is sticking out from the front of the 5th wheel plate. The fork rod should stick out less than one inch. This means that the jaw fork has slid in fully. The 5th wheel will now be locked.

If the fork rod extends less than one inch, hook up the tractor air lines, then get back in the cab. Apply the trailer brakes and attempt to pull the tractor forward. If the tractor is held back, you are properly locked.

If the fork rod is sticking out more than 1 inch, YOU ARE NOT LOCKED! Try backing under the trailer again. Use more force while backing. Check fork rod again after backing under. If it still protrudes more than one inch, the fork needs adjustment. Hit the fork into a locked position with a sledge hammer. Release the trailer by holding down the jaw control button and then pull the tractor forward. TAKE THE 5th WHEEL OUT OF SERVICE AND REPAIR IMMEDIATELY.

Locking Assembly Repair

Bring the tractor into the shop.
Repair procedure: Raise the 5th wheel to maximum height. (In the case of high lifting 5th wheels, raise to a convenient working height, NOT TO EXCEED 45 DEGREES ABOVE HORIZONTAL.

DO NOT LET THE 5th WHEEL PLATE FLIP OVER OR AIR LINES WILL BE DAMAGED. ON SPOTTING MODELS WITH ROLLER WHEELS, PLACE A CLAMP IN FRONT OF THE ROLLER WHEELS TO KEEP PLATE IN A RAISED POSITION. ON OTHER MODELS, USE A SECURE BRACE AND OVERHEAD HOIST TO KEEP THE PLATE BLOCKED IN AN UP POSITION.

Pressure wash the entire 5th wheel assembly. Be sure to clean the locking assembly carefully. Manually close the jaws, allowing the fork to slide in. Now, attempt to open the jaws by hand by pulling the jaw fork bolt forward. If you can open the jaws by hand, you must replace the air chamber, DO NOT USE A STANDARD TYPE 9 AIR CHAMBER! USE ONLY A WARREN SPECIAL AIR CHAMBER!

Check for any sloppiness in the locking assembly by pushing and pulling the fork bolt. Any looseness can be corrected by replacing the linkage components and adjusting air chamber clevis. Notice the linkage connecting the jaw fork to the Warren Air Chamber. First, remove linkage components: flat washer, bushings and linkage bar. Remove the long air cylinder that extends from the front of the 5th wheel plate.

To remove the jaw fork, grasp the fork and pull it toward the front of the 5th wheel plate. After the fork has passed the wear plate, tip it down and remove it.

Remove the jaw pins by driving them out from the bottom. Then, remove the jaws and jaw pins and clean all the parts carefully.

Put the jaws, pins, fork, and linkage and linkage bushings on a bench. Inspect all components carefully. Look for cracks and wear. The king pin hole on the jaws (when closed) is 2.00 inches (plus +1/32 minus-zero) when new. Wear of greater than 1/8 inch from these specifications calls for replacement of the jaws. The wear pattern will be oval shaped with more wear found along the length that the width of the jaws. Replace jaw pins if excessive wear is found. The pins should be 1 1/8 inch diameter.

If the fork is cracked or badly worn it should be replaced. Inspect the linkage and linkage bushing. Replace if worn.

Inspect the wear plate on the 5th wheel. This is the steel plate that the jaws rest on. If the plate is worn thin, it should be replaced. (Instructions for this repair are included with a new wear plate.) Re-install the jaws and the jaw pins with the 3 inch counterbored surface facing the ground. Be sure that the top of the jaw pins are slightly below the top surface of the 5th wheel plate. If the pins stick out above the 5th wheel plate, you must counterbore the jaw pin holes. (If a counterbore is needed, use a 1 5/16 inch counterbore.)

Place the fork into the assembly and see if it slides easily into the locked position. If you are inspecting a locking assembly that was not operating properly and you are not replacing with new parts, you should grind the fork where any marks are present. Make sure that the fork will slide easily into the locked position. A new fork will normally need some grinding to fit properly. Install in this order: fork, flat washer, steel bushing, linkage, flat washer, and Nylock nut. Loosely install the other end of the linkage in the air chamber clevis. Install the pivot bolt and nut. Tighten the Nylock pivot nut fully, and then back the nut off about 3/4 of a turn so that the linkage can pivot freely on the bolt.

Tighten the fork Nylock nut, and then back it off so that the tat washer under it can turn freely. Adjust the clevis on the air chamber so that you must pull the air chamber shaft out about 1/8 inch to put the clevis pin through the linkage and clevis. Use a 5/8 inch open end wrench as a lever to force the clevis out so that the pin will go through. When the pin goes through, use a new cotter pin to secure it.

IT IS IMPORTANT THAT SPRING PRESSURE FROM THE AIR CHAMBER WILL ALWAYS BE APPLIED TO THE LINKAGE. BE SURE THAT YOU PULL OUT THE CLEVIS THE CORRECT AMOUNT. BE SURE THAT THERE IS NO SLOPPINESS IN THESE PARTS!

DO NOT TIGHTEN THE NUTS TOO TIGHTLY OR THE FIFTH WHEEL WILL NOT LOCK!

Hook up the spring on one jaw to the hook or anchor bolt on the 5th wheel plate. Re-install the air cylinder. Hook up all air lines. Inspect your work at this point. Start the tractor engine and build up tractor air pressure to 100 psi, Push the jaw release button in the cab. This prepares the 5th wheel for service. Be sure that the jaws open fully.

Test the 5th wheel under a loaded trailer. Repeat the entire locking procedure. If the fork does not go in all the way, hit the fork rod, remove the fork and grind the fork where it is binding. DO NOT GRIND THE JAWS, only the fork.

Final Locking Test

When you are sure that the 5th wheel is locking properly, try coupling to the trailer at a 35 to 45 degree angle. When the 5th wheel can lock at any angle, it is ready to be put back in service. Please call us if we can be of any help.

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Talco, TX 75487
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Phone: 888-734-4400
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www.warrentruckandtrailer.com

Warranty

WARREN TRUCK AND TRAILER, LLC., (hereinafter called Warren) warrants each new trailer, dump body and item of hydraulic equipment manufactured by it to be free from defects in material and workmanship under normal use and service with loads not exceeding the vehicle manufacturer's rated capacity for a period of 12 months after delivery to the original purchaser direct or by an authorized distributor.

Exclusions from Warranty. This Warranty shall not apply to:

(1) components manufactured by persons other than Warren (such as hydraulic pumps, motors, valve, bearings, etc.) beyond warranty, if any, which may be made by such manufacturer,

(2) any unit which shall have been subject to misuse, negligence, alteration or accident or which shall have been repaired by anyone other than Warren or its authorized service distributor in any way so as in the judgment of Warren to affect adversely its performance or reliability, or

(3) normal maintenance services.

Purchaser's Exclusive Remedies. Warren's sole obligation under this warranty will be to repair or replace, at its option, any warranted unit or part as described above which shall be returned to Warren's factory or authorized service distributor and which examination shall disclose to Warren's satisfaction to have been defective. Freight or other transportation costs to and from the factory or authorized service distributor must be paid by the purchaser. Warren will not assume any charges for repairs made by anyone other than Warren or its authorized service distributor.

Exclusion of other Warranties. No other warranty is made by Warren and in particular Warren **makes NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.** Warren neither assumes nor authorizes any person to assume for it any liability other than described herein.

Limitations of Actions. Without extending the period of warranty stated above, any action for breach of warranty must be commenced within one year of the breached claimed or forever barred.

Limitation of Damages. The purchaser's remedy stated above shall be exclusive for any and all claims against Warren whether based on contract, negligence, tort, or any other theory. In no event shall Warren be liable for any consequential damages which may result from any defect or failure of a unit or part.