

Bedding Conveyor Patent Number: 4,462,747

Bedding Conveyor
Installation Instructions
Electric control style

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Introduction

Please read these instructions thoroughly before beginning the installation of your new Felco Bedding Conveyor. There are some unique aspects to a bedding conveyor installation that are quite different from most other attachment installations. Because the conveyor is attached to the car body, special considerations are given to hydraulic supply and 360 degree rotation of the upper house. The hydraulic circuit and mounting technique are rather simple, but can be confusing if you do not fully understand what is trying to be accomplished.

In this manual, we will go through all the steps to mount and plumb a bedding conveyor to an excavator. Because there are so many different makes and models available, the information provided is generic to excavators in general. You may find that your particular excavator may be somewhat different from what is explained or drawn in this manual. If you have any problems, Felco has technicians available from 8:00 AM to 5:00 PM Mountain time Monday through Friday. It is a toll free call at 1-800-221-5427.

General Requirements

The easiest location to install the conveyor would be a well-equipped shop with plenty of room and equipment. But, the conveyor can be installed in the field, if necessary, with a minimum of tools and other conveniences.

You should allow 40 to 80 man hours of labor to install the conveyor. The most productive utilization of labor is to have a qualified welder with all the proper tools for welding and a qualified heavy

equipment mechanic with the proper tools for working on hydraulics and electrical systems.

Plenty of blocking to position the conveyor on the excavator is necessary and a come-a-long is helpful to have, also for positioning the conveyor. At least 4 yards of bedding material is needed to test run the conveyor when the installation is complete.

Step 1: Mounting Conveyor

Positioning the conveyor and welding all of the mounting brackets will take the most amount of time. It is best to start with both the mechanic and welder working together to get the conveyor in position and the mounting hardware tack-welded in place. Once the mounting hardware is tack-welded in place, set the conveyor on the ground and move the excavator away from the conveyor so that the welder can start doing the final welding and the mechanic can start the hydraulic plumbing.

Felco requires the conveyor to be mounted with the discharge end of the conveyor at the sprocket end of the tracks. Start by placing the conveyor on the ground with the discharge end flat. Walk the excavator over the top of the conveyor with the tracks in the proper

position. Raise the conveyor up to the car body, giving yourself as much ground clearance as possible. You may need to trim the skirt board rubber to allow the conveyor to raise up as far as you need. Check for tail swing clearance at the counterweight. Make sure you have approximately 3" of clearance and that the discharge end is approximately even with the end of the tracks. Also check the conveyor position for level to the car body and centered between the tracks. At this point you are ready to tack-weld the mounting hardware in position.

Depending on the size of your excavator, you will either have eyes that weld to the car body or a mounting beam that is positioned between the tracks. Skip forward to Mounting Beam Procedure if you have a mounting beam.

Mounting Eyes - Hopper End

Refer to figure #1098 & 3133 to help in positioning the hardware for the hopper end of the conveyor. There are 1 5/8" flat washers provided in the kit for use with the mounting pins that can be used as spacers at this point to allow for clearance to aid in ease of mounting and dismounting the conveyor. The eyes

provided by Felco are made to fit a variety of excavators and will probably need to be trimmed to fit your particular machine. The whole weight of the conveyor is on these two pins, so therefore you should put the equivalent of three passes with 1/8" 7018 welding rod all around.

Mounting Beam Procedure

The mounting beam is used primarily on larger excavators to allow the pin connections to be located within the proper distance of the hopper to prevent damage to the conveyor. The maximum distance from the front of the hopper to the beam is 8 feet. Keep the distance as short as possible for maximum support.

Refer to figure #1099 & 3120 for proper positioning of the mounting beam brackets that are welded to the vertical side of the track frames. The mounting beam is bolted to the brackets so that if the conveyor is not being used the beam can be removed. These brackets need to be welded with the equivalent of three passes of 1/8" 7018 welding rod.

Mounting Eyes - Discharge End

Refer to figure #1098 & 1099 & 3132 to help in positioning the hardware at the discharge end of the conveyor. Again, use the flat washers as spacers and trim the eyes to fit. There is actually up pressure on these eyes and therefore one pass with the equivalent of 1/8" 7018 is

all that is necessary. In the same figures is shown the "jam blocks" that are welded to the top of the conveyor and allowed to bump against the bottom of the car body for added support and stability.

Step 2: Hydraulic Plumbing

Once again, the best way to handle the two different jobs of welding and plumbing is to lower the conveyor to the ground and walk the excavator away from the conveyor after the mounting brackets have been tack welded in place.

Most of the hydraulic and electrical work will be done under the car body in the cavity around the center swivel. Refer to hydraulic schematic #2011 and

to figure #3121 to assist in proper installation of the components.

The hydraulic supply for the conveyor is obtained from one of the track motors. You will be installing a selector valve in-line with one track motor circuit. The valve is electrically actuated by a switch in the cab. The operator, after engaging the switch, will then have to step on the travel pedal of the motor you have tapped into. The conveyor is set up to

only turn in one direction, therefore the operator will have to press the pedal in the correct direction. Once that has been determined, the conveyor will run.

The conveyor's motor has a splined shaft which is inserted into the gear box at the hopper end of the conveyor. There are three hoses to attach to the motor. The motor should be positioned in the gear box such that the two largest ports that are next to each other are on top. These two ports are the pressure and return lines. The pressure line will be attached to the port furthest away from the conveyor frame. The smaller port on the bottom of the motor is the case drain line. On the other end of the hoses that attach to these ports will be hydraulic quick couplers. Arrange the quick couplers on the pressure and return lines so that there is one male end on one hose and one female end on the other. The case drain hose does not matter if it has the male or female end. Secure these three hoses in place with three hose brackets supplied in the kit.

The selector valve will be mounted in the cavity of the car body. Depending on your particular excavator, you will have either hoses or steel tubes for hydraulic lines going to and from the track motors. You will be taking one line from one track motor and installing the selector valve into that line. You will need to install a tee in the other line of the same track motor circuit.

The selector valve's ports are labeled "A", "B", and "P". The port labeled "P" needs to have a hose that comes from the center swivel to the valve. The port labeled "A" will have a hose hooked to it and then to the track motor. The port labeled "B" will have a hose that goes out to a quick coupler that will match up with the pressure line of the conveyor. The selector valve also has a case drain port, labeled "Y", that needs to be teed into the case drain of the conveyor and track motors. Note: There are two other ports on the valve labeled "T" and "X" which are to remain plugged.

As mentioned earlier, you will need to install a tee in the other line of the same track motor circuit. On the leg of the tee for the conveyor you will need to attach a check valve oriented so that the return oil from the conveyor can free flow back into the excavator's circuit but reverse pressure cannot flow backwards through the conveyor circuit. There will be a short hose in the kit that attaches to the check valve. The other end of the hose will attach to a high pressure filter. The filter has a mounting bracket that will need to be welded once the position of the filter is determined. The filter has an arrow on it that indicates the direction of flow. Check to verify the oil will be flowing the correct direction through the filter. The incoming port of the filter has a hose attached to it that goes out to a quick coupler that matches up with the return line coupler of the conveyor motor.

Step 3: Electrical Installation

Refer to Figure #2387 to help in installing the electrical contact assembly. The electrical contact assembly takes some “fussing” to get them set up correctly. Also, before you begin, visually inspect the area around the swing bearing to see if there is anything that may be in the way of the contact assemblies. Some machines have house locks that make it difficult to install the electrical contacts.

Start with the Brass rail assembly. This assembly will attach to the house on the outer rim of the swing bearing. It is helpful to the operator if this assembly is located in an area where he will be able to see them from the cab. The rail assembly comes from the factory with a pre-formed radius. This radius will have to be adjusted to match your excavator. Hold the assembly in place and measure the distance from the swing bearing to the rails in at least four spots along the length of the rails. You can then adjust the radius by bending the rails over your knee or the edge of a work bench. Once again, take your time and be “fussy” about this. Once the radius has been adjusted weld the two angle iron mounting tabs in position and bolt the rails in place.

The next step is to install the roller assembly. The legs of the roller assembly will need to be cut to length. Also, this assembly will be tilted in towards the rail assembly. There is a plate and angle iron bracket that allows the roller assembly to be removable. Once the legs have been cut to length, tilt the assembly into the rails so that you have good spring tension against the rails and the roller block is parallel to the rails. Weld the plate and angle iron bracket in place.

Test the contact assembly by rotating the house back and forth. You may need to adjust the screw on the roller assembly so that the roller block does not catch on the rail assembly. Once the roller and rail assemblies have been checked for proper contact and interference, rotate the house 360 degrees and check that there are not any other obstructions that will damage the contact assemblies.

Wire the foot switch and valve plug. Open the bottom of the switch and connect to the “NO” and “C” posts. On the valve plug connect to the 2 outside pins, Pin #1 and #2. Polarity doesn’t matter, you just need a hot lead and a ground.

Step 4: Mounting and Testing

Start by first adjusting the tension on the belt. Both the drive pulley and nose pulley have adjuster bolts to increase the belt tension. A good rule of thumb for belt tension is to check the belt at the curve of the conveyor. At this bend in the conveyor the belt will bow upwards with more tension. If you press down on this bow with your hand you can estimate the amount of distance the belt rises off the belt supports. A good starting point is to have the belt rise 3" to 4" above the belt supports. Once the conveyor is loaded with bedding material you may need to increase the belt tension to keep the drive pulley from slipping.

With everything done, mounting the conveyor to the excavator should be a relatively quick and simple task. Start by walking the excavator over the conveyor. Swing the house so that you can use the bucket to lift the hopper end of the conveyor. There are eye holes on the very end of the conveyor for attaching either a chain or cable sling. Use the buckets lifting eye and lift the hopper end of the conveyor until you can insert the pins into the mounting brackets. If you have a mounting beam, insert the pins into the eyes closest to the car body first and then lower the bucket slightly until you can get the other

two pins in. Once the rear pins have been put in, lower the bucket until the discharge end of the conveyor comes up and you can insert those pins.

With the conveyor now mounted to the excavator, all that is left is to connect the quick couplers together. Route the hydraulic lines up and over the car body.

Install brackets or clips as necessary to keep the hoses in place. Rotate the house so that the contacts are making contact and you are ready to test the conveyor.

There are a few simple tests that should be done to make sure the conveyor is running properly. To test the hydraulic circuit you should have at least two gauges, one 0 to 300 PSI and one 0 to 6000 PSI.

Start by running the belt slowly at low idle for at least 5 to 10 revolutions. While the belt is turning check the alignment of the belt on the drive pulley and the nose pulley. Adjust the pulleys as necessary so the belt is centered on the pulleys.

Once the belt has been adjusted, go to full throttle and check the conveyor speed. It is handy to use the lace in the belt as a marker and count the revolutions of the belt. Correct belt speed will range from 10 to 15 RPM.

At the conveyor motor, tee the two pressure gauges into the hydraulic lines. Tee the 0 to 300 PSI gauge into the case drain line. Tee the 0 to 5000 PSI gauge into the pressure line. The pressure line is the one furthest away from the conveyor. A normal reading for the case drain line would be 25 PSI or less. A normal reading for the pressure line can range between 1800 and 2500 PSI empty and 2100 to 3200 PSI for a loaded belt.

Troubleshooting

There are some common errors and problems that can occur when installing a bedding conveyor. Refer to this section if the conveyor does not run properly when you are testing it.

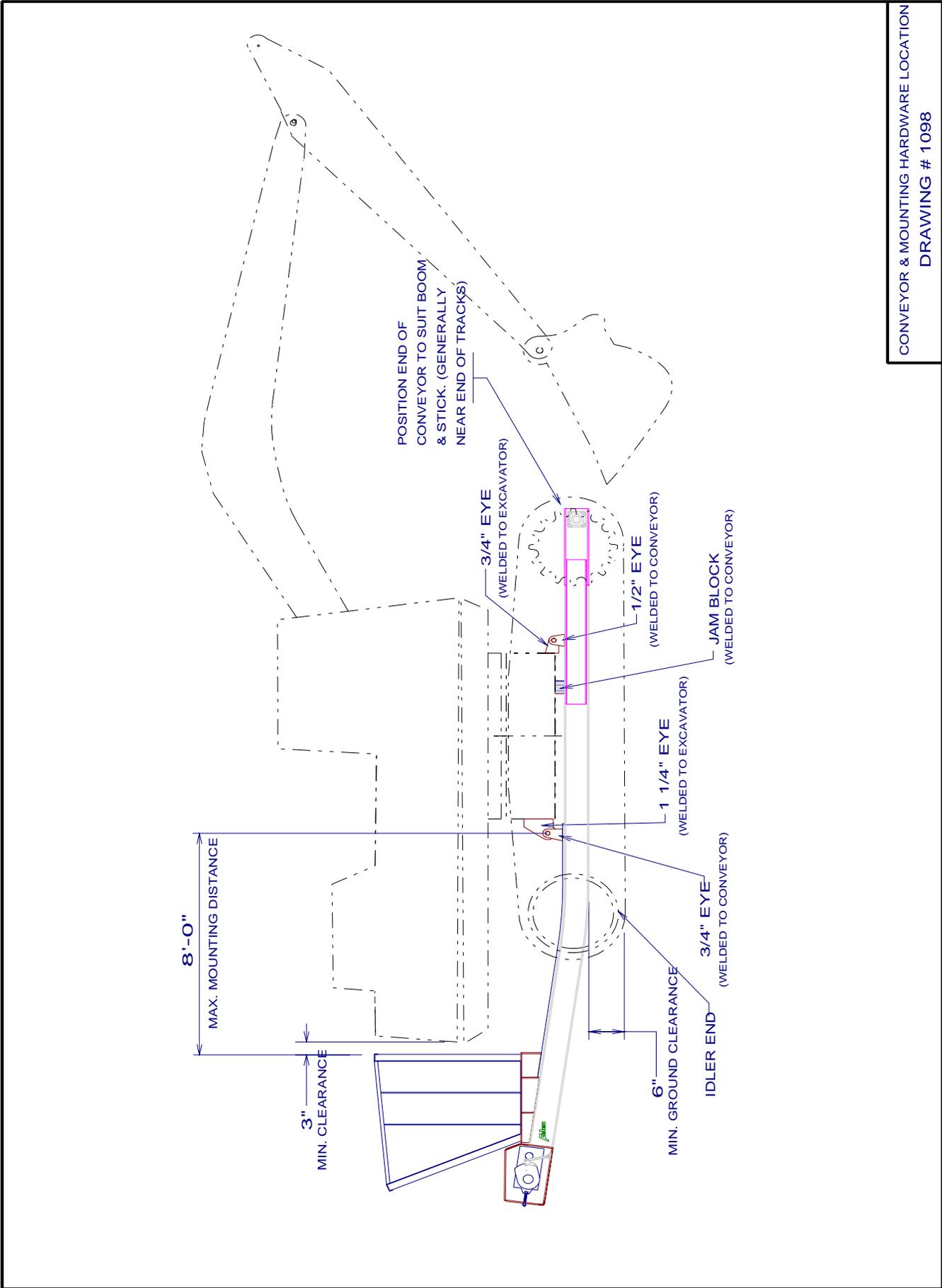
Problem: With the toggle switch engaged and travel pedal depressed nothing happens.

Things to check: You may just need to increase the engine RPM's to get the conveyor to turn. If the track is not turning that means the valve is working. Try depressing the pedal in the other direction. If still nothing happens you will need to check some of the hydraulic components. Start by checking the quick couplers to make sure they are fully engaged. Check the drive pulley to see if it is spinning but not turning the belt. If this is the case, you will need to increase the tension on the belt. If still nothing happens, check the check valve to make sure it is installed in the proper direction. Check the selector valve to make sure the case drain line is hooked

up and that the other lines are connected to the correct ports. If still nothing happens, check the skirtboard rubber. The skirtboard rubber needs to have 1/8" to 1/4" clearance between itself and the belt. If it has become pressed down tight to the belt it will act as a brake and not allow the belt to turn.

Problem: With toggle switch engaged and travel pedal depressed the track turns.

Check: First check to see if the track turns when the toggle switch is not engaged. This would indicate that the "A" and "B" port hoses on the selector valve are reverse of what they need to be. If the track turns no matter if the toggle switch is engaged or not would indicate a problem with the electrical circuit. Use a test light or meter to make sure you have 24 VDC on both sides of the electrical contact assembly and at the selector valve.



CONVEYOR & MOUNTING HARDWARE LOCATION
 DRAWING # 1098

EXCAVATOR
CARBODY

TRIM TO FIT
CARBODY

PIN

COTTER PIN

3/16" CLEARANCE
BOTH SIDES

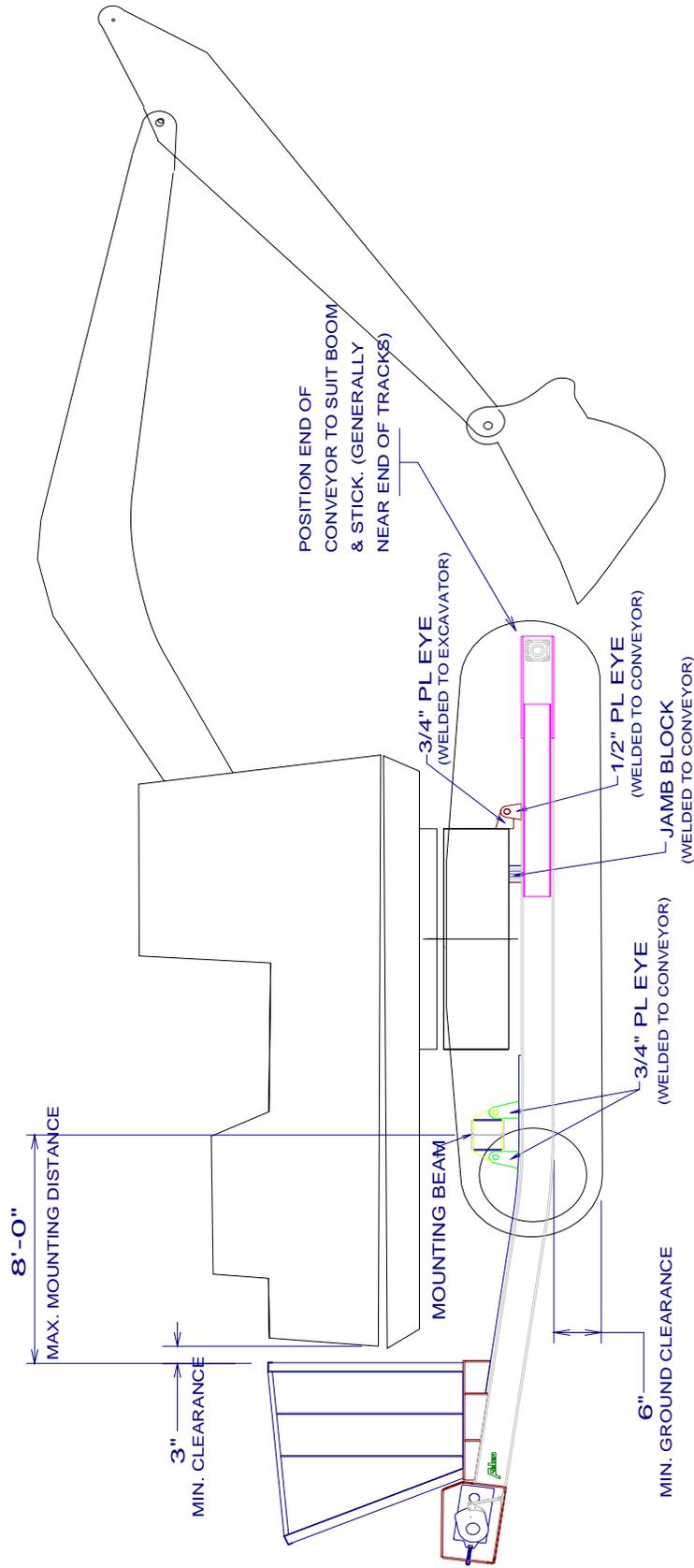
TRIM AS REQUIRED
AND CENTER ON BEAM

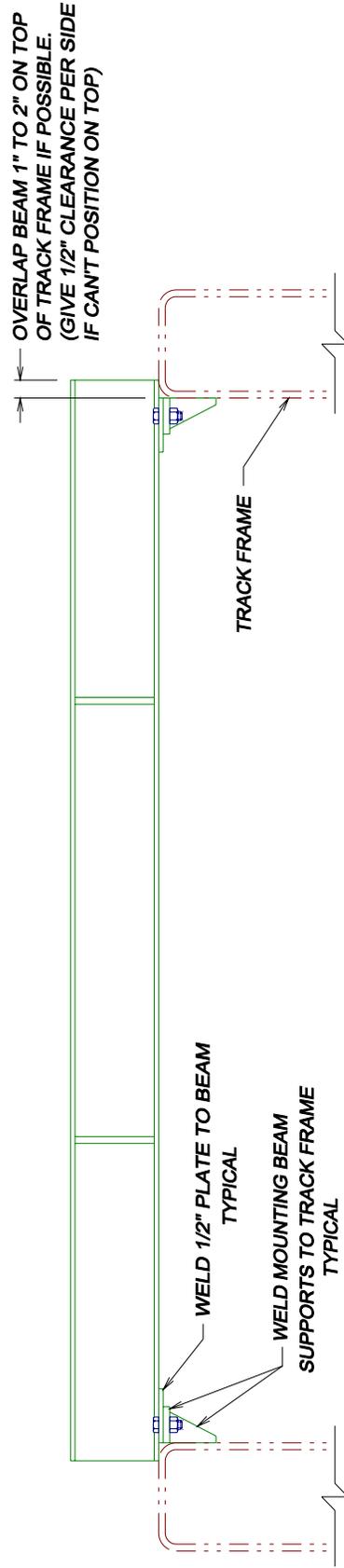
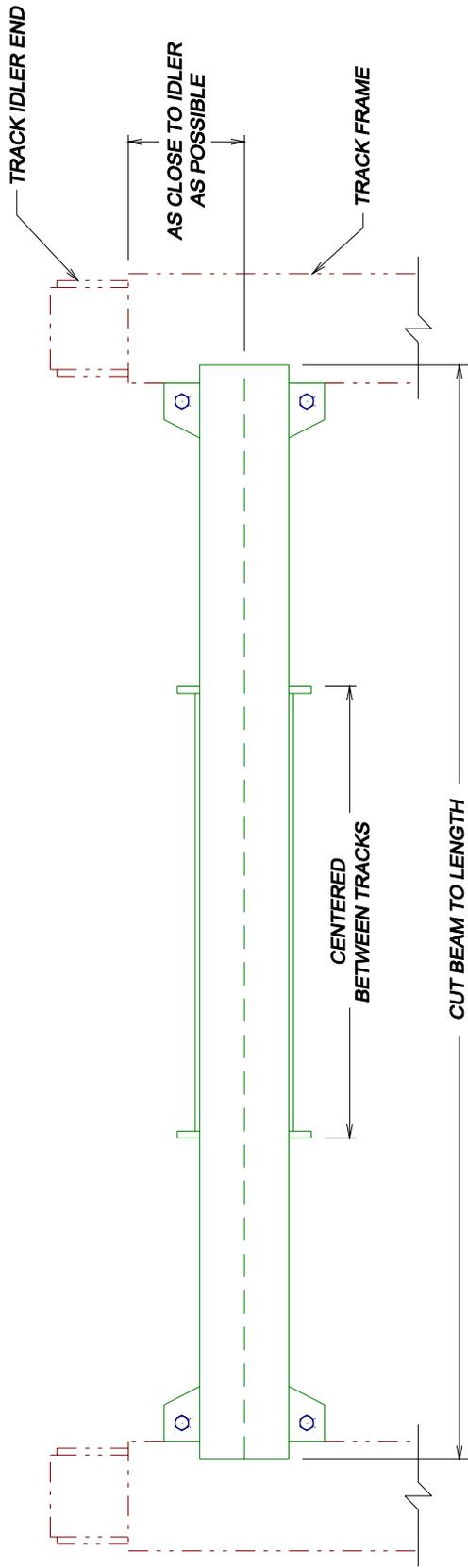
CONVEYOR MAIN
FRAME BEAM

TYP

TYP

REAR MOUNTING EYE DETAIL
DRAWING # 3133





**MOUNTING BEAM
DRAWING # 3120**

EXCAVATOR
CARBODY

TRIM TO FIT
CARBODY

PIN

COTTER PIN

3/16" CLEARANCE
BOTH SIDES

JAM BLOCK
(WELD TO CONVEYOR)

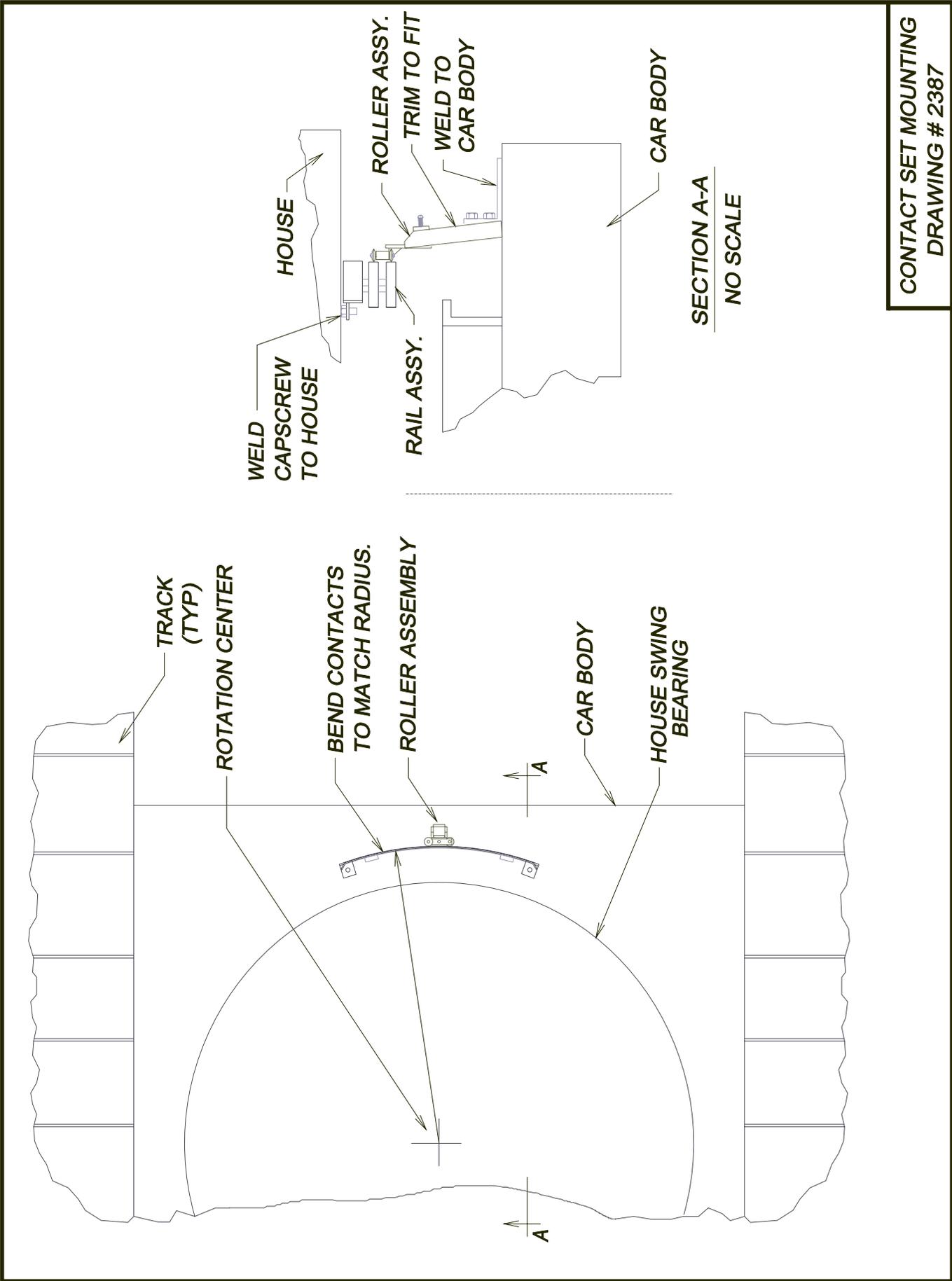
TRIM AS REQUIRED
AND CENTER ON BEAM

CONVEYOR MAIN
FRAME BEAM

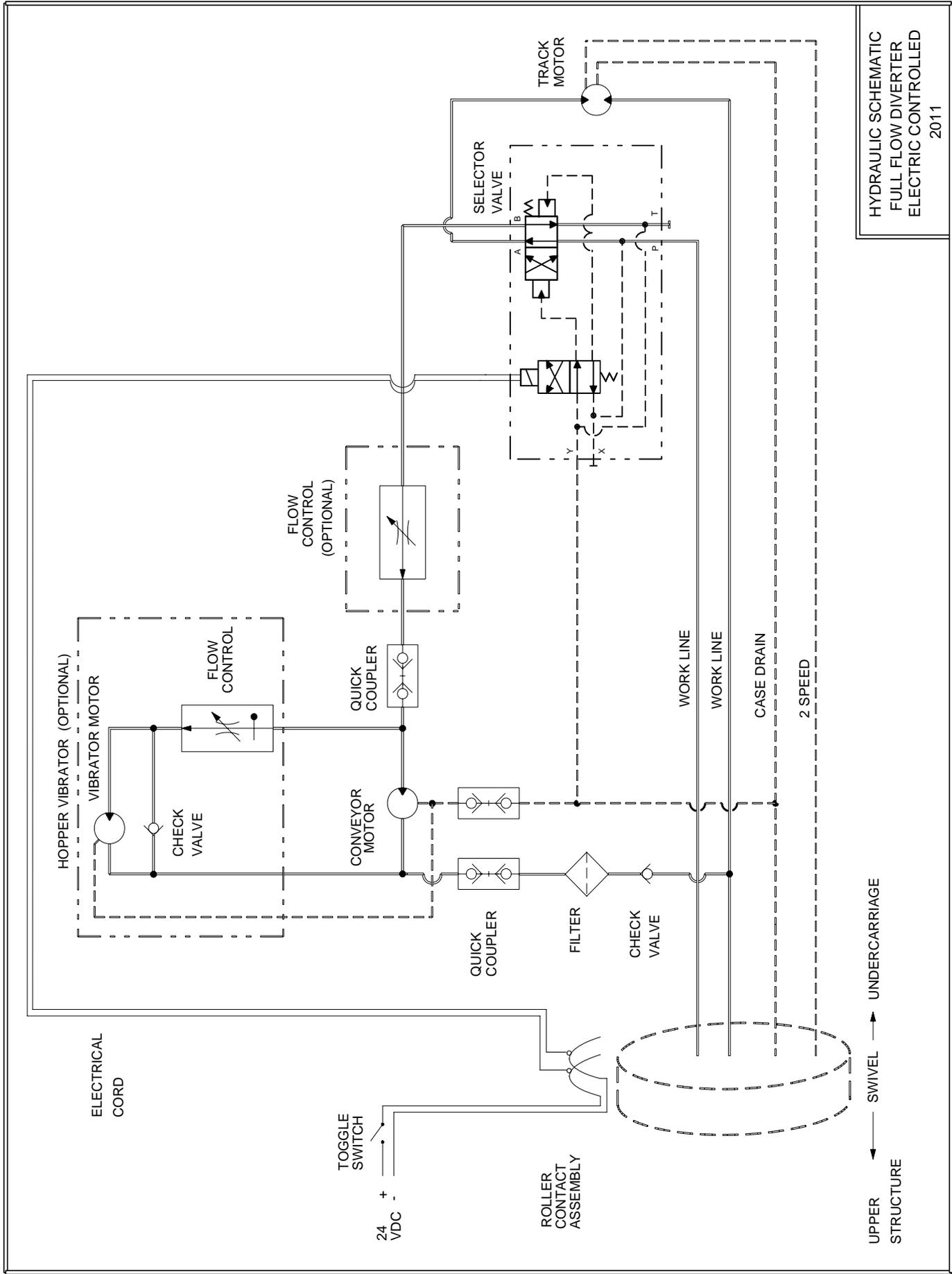
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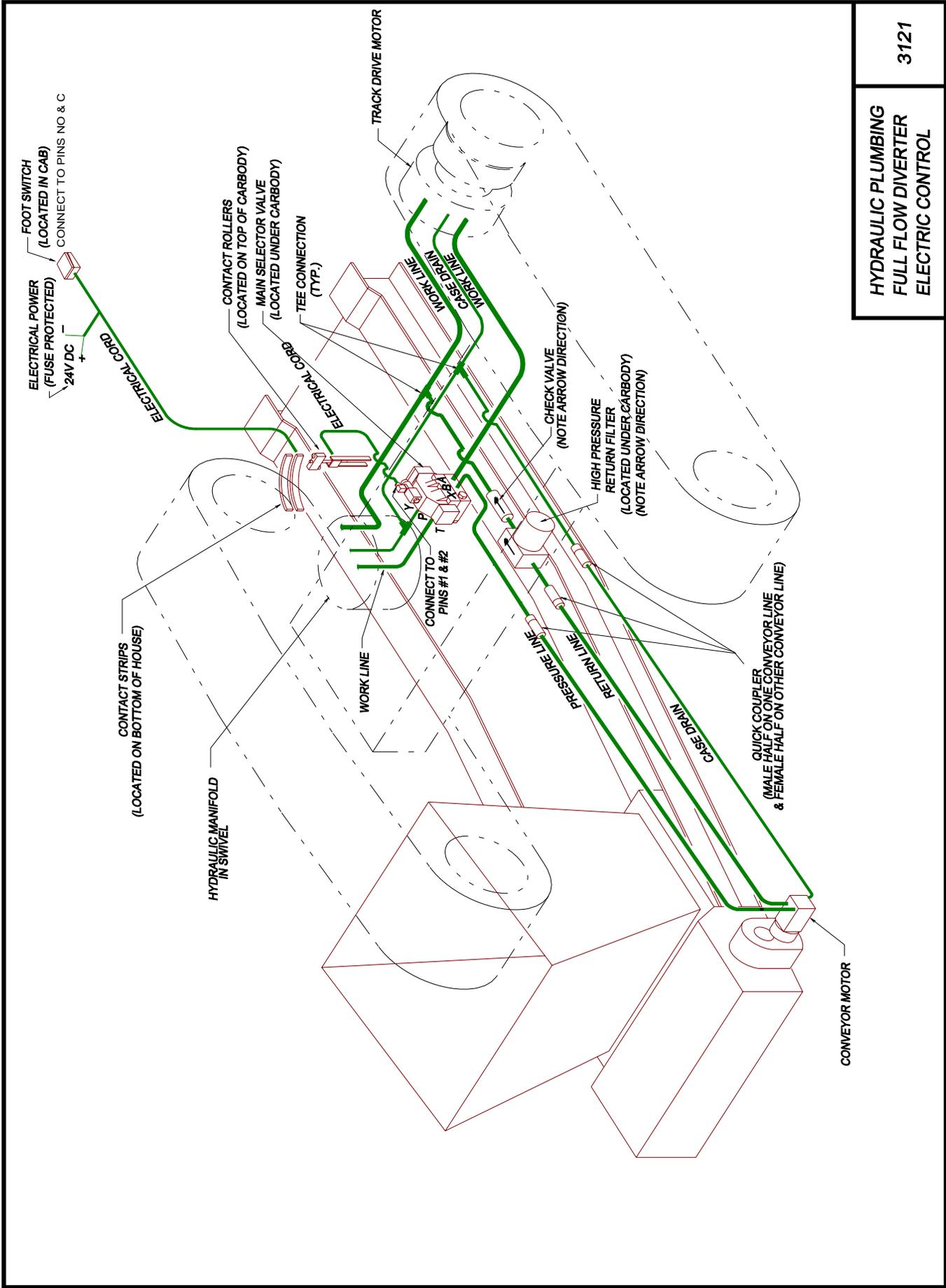
FRONT MOUNTING EYE DETAIL
DRAWING # 3132



CONTACT SET MOUNTING
DRAWING # 2387



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 FULL FLOW DIVERTER
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HYDRAULIC PLUMBING
 FULL FLOW DIVERTER
 ELECTRIC CONTROL

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