



LaserWash 360 Plus Installation Manual

FOR USE WITH LW 360 PLUS MACHINE SERIAL NUMBERS 1500 AND GREATER



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1 General

This section contains a general description of what is covered by this manual.



WARNING – READ PDQ MANUAL 10060135, SAFETY AND INTRODUCTION FOR IMPORTANT SAFETY INFORMATION PRIOR TO BEGINNING THE PROCESS DESCRIBED IN THIS MANUAL SECTION. 10060135, SAFETY AND INTRODUCTION, IS PROVIDED AS PART OF THE OWNER/OPERATOR MANUAL, THE DISTRIBUTOR MANUAL, AND IS AVAILABLE ON THE INTERNET AT www.pdqinc.com.



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NOTE: All drawings, data, and specifications contained in this manual are subject to change without notice. Results may vary.

NOTE: For the latest manual updates go to www.pdqinc.com.

1.1 Overall Installation Process

The following is a summary of the installation process. Please note that the order of the process may vary.

- Install Frame System (Freestanding or Wall Mounted)
- Install Bridge
- Install Pump Station
- Install Entrance Services
- Install Bay Equipment
- Install Signs

1.2 Loose Parts Kit Usage

The wash system is shipped with a kit of parts (PDQ Part No. 11080137) used throughout the installation process to connect pieces of the system together. It also includes miscellaneous smaller items that are assembled and installed during the process or used to operate the wash. Table 1 lists these loose parts and where in the installation process they are used. Table 1 may be used to sort the loose parts and organize them for use in the installation process. Some of the items listed below are included inside kits that are part of kit 11080137.

Table 1 – Loose Parts Usage

PDQ Part Number	Part Description	Quantity	Used for...
04450024	STRAIN-RELIEF,.138-.315",W/LOCKNUT,NYLON	6	Bay Box
04450018	STRAIN-RELIEF,M25,.354-.669",PLSTC	2	Bay Box
06020052	BELT,HTD-8M,20MM,BRIDGE-DRIVE,LW360PLUS	1	Bridge Belt
06340042	BLOCK,BELT-RETAINER,8mmPITCH,20mmWIDE	2	Bridge Belt
06141529	BRACKET,BELT-TENSION,BRIDGE,SST,TDMSL	2	Bridge Belt
06160473	COVER,BELT,RETAINER,MAX20mmWIDTH	2	Bridge Belt
06060033	BUMPER,END-STOP,POLYURETHANE,1/2"ID,TDMSL	4	Bridge Truck/Stop
11150048	TRUCK,BRIDGE,LASERWASH/LASERJET	4	Bridge Truck/Stop
05190050	KIT,FASTENER,BELT/TRUCKS,LW360PLUS	1	Bridge Truck/Stop/Belt
05190051	KIT,FASTENER,E-CHAIN-SYSTEM,LW360PLUS	1	E-chain
11150057	ROLLER,SUPPORT,E-CHAIN,BRIDGE,LW360PLUS	2	E-chain
04610009	BATTERY,AAA	2	Operation
04540049	REMOTE-CONTROL,INFRARED,38KHZ,NEC-CODE	1	Operation
10060245	SERVICE-DOC,REMOTE-QUICK-REF,LAM,LW360P	1	Operation
67605-B	PLUG,1NPT,SQ-HD,BRS	2	Pump Tank Feed & Weep
M690001	BOLT,SHEAR,3/8-16x4.50,SST,LW4K-ARCH	2	Spray Arch
05190049	KIT,FASTENER,SPRAY-ARCH,LW360PLUS	1	Spray Arch
64080-4M	NOZZLE,FAN,1503,1/4"NPT,SST	8	Spray Arch
64082-4M	NOZZLE,FAN,1504,1/4"NPT,SST	9	Spray Arch
64116-4M	NOZZLE,FAN,2503,1/4"NPT,SST	1	Spray Arch
64118-4M	NOZZLE,FAN,2504,1/4"NPT,SST	3	Spray Arch
64152-4M	NOZZLE,FAN,4003,1/4"NPT,SST	1	Spray Arch
67603-S	PLUG,1/2NPT,SQ-HD,SST	1	Spray Arch
06241122	PLATE,ECHAIN,ZIP-TIE-BAR,LW20	2	E-chain

1.3 Electrical Connections

All electrical connections are to be made using the applicable electrical schematic. These are available on the PDQ website www.pdqinc.com. Table 2 lists the schematic applicable to the site voltages available.

Table 2 - Electrical Schematic Documents

Schematic Document Number	Schematic Description	Schematic Usage
10030098	SCHEMATIC,ELECTRICAL,SYSTEM,LW20	All 208V, 230V, 460V, 575V 60 Hz and 400V 50Hz wash installations

2 Frame System Installation

This section covers the installation of all frame systems available. This includes the standard Wall Mount and the optional Free Standing Frame mounting systems.

2.1 Key Factors to Consider

- Refer to the applicable Site Planning guide for recommended and minimum building requirements. If the wash bay is too short for the standard rails to fit, they must be shortened. This will reduce the capacity of the wash to clean long vehicles.

2.2 Key Installation Steps

- Determine if rail length modification is necessary for the wash bay.
- Modify rail length (if required).
 - Verify direction of rail.
 - Relocate holes and notches in rails.
- Install Frame System (one of the following).
 - Installation of Wall Mounted Frame.
 - Mark bracket locations on the wash bay wall.
 - Install wall brackets and associated components.
 - Install main rails.
 - Level, plumb, and set spacing for main rails.
 - Installation of Free Standing Frame.
 - Mark location of Free Standing Frame in the wash bay.
 - Assemble entrance and exit leg arches.
 - Erect entrance and exit leg arches.
 - Assemble frame support arches.
 - Erect frame support legs.
 - Install main rails.
 - Level, plumb, and set spacing for main rails.
 - Anchor entrance and exit leg arches and frame support arches.
 - Install Free Standing Frame grounding straps.

2.3 Special Tools

- Concrete drill for installing floor anchors or drilling through the wash bay walls (appropriate for the wall material).
- Transit, laser level, or other device for establishing the level plane for aligning the main rails.
- Saw for cutting rails, if required, and for trimming stainless steel tie rods (wall mount installations).
- String and chalk line for marking frame locations and aligning assemblies.

2.4 PDQ Supplied Parts

- Frame brackets
- Frame rails (2)

- Frame assembly fasteners
- Grounding wire kit (Free Standing Frame Only)

2.5 Site Supplied Parts

- Floor anchors (Free Standing Frame installations)
- Shims for leg adjustment (Free Standing Frame installations)

2.6 Modifying Rail Length to Accommodate Shorter than Standard Wash Bays

This process is only needed in special cases when the standard rail system is too long for the wash building.

The following are minimum bay lengths required for standard installation (without Stand Alone Dryer):

- Wall Mounted rail: 28' - 4" (8.64m)
- Wall Mounted rail (with Advanced Instructional Sign): 30' - 6" (9.30m)
- Free Standing Frame: 29' - 6" (8.99m)
- Free Standing Frame (with Advanced Instructional Sign): 30' - 9.43m (9.43m)

2.6.1 Key Installation Steps

- Determine the correct length of the rail. See Site Planning Manual for details regarding bay and vehicle lengths.
- Verify direction of rails.
 - Arrow drilled on exit end of rails.
- Cut main rails to proper length.
- Relocate holes in rails for attached components as necessary.
 - Bridge end stops
 - Belt tensioning brackets
 - Truck notches
 - Rail end support bracket (Free Standing Frame only)
- Modify E-chain length if necessary.
 - When rails are shortened from the entrance end of the wash bay, no E-chain modification is needed.
- Modify E-chain tray length if necessary.
 - When rails are shortened from the entrance end of the wash bay, no tray modification is needed.
- Locate wall mounting angle bracket positions (wall mounted frames only).
- Proceed with the rest of the installation as described.

2.6 Step 1 Determine the Necessary Length of the Rail and the Amount of Rail Length Reduction Needed

- See Site Planning Guide for details regarding bay and vehicle lengths.
- Verify direction of rails, Figure 1.
 - Arrow drilled on exit end of rails.
 - Length reduction should be performed on entrance end of rails.

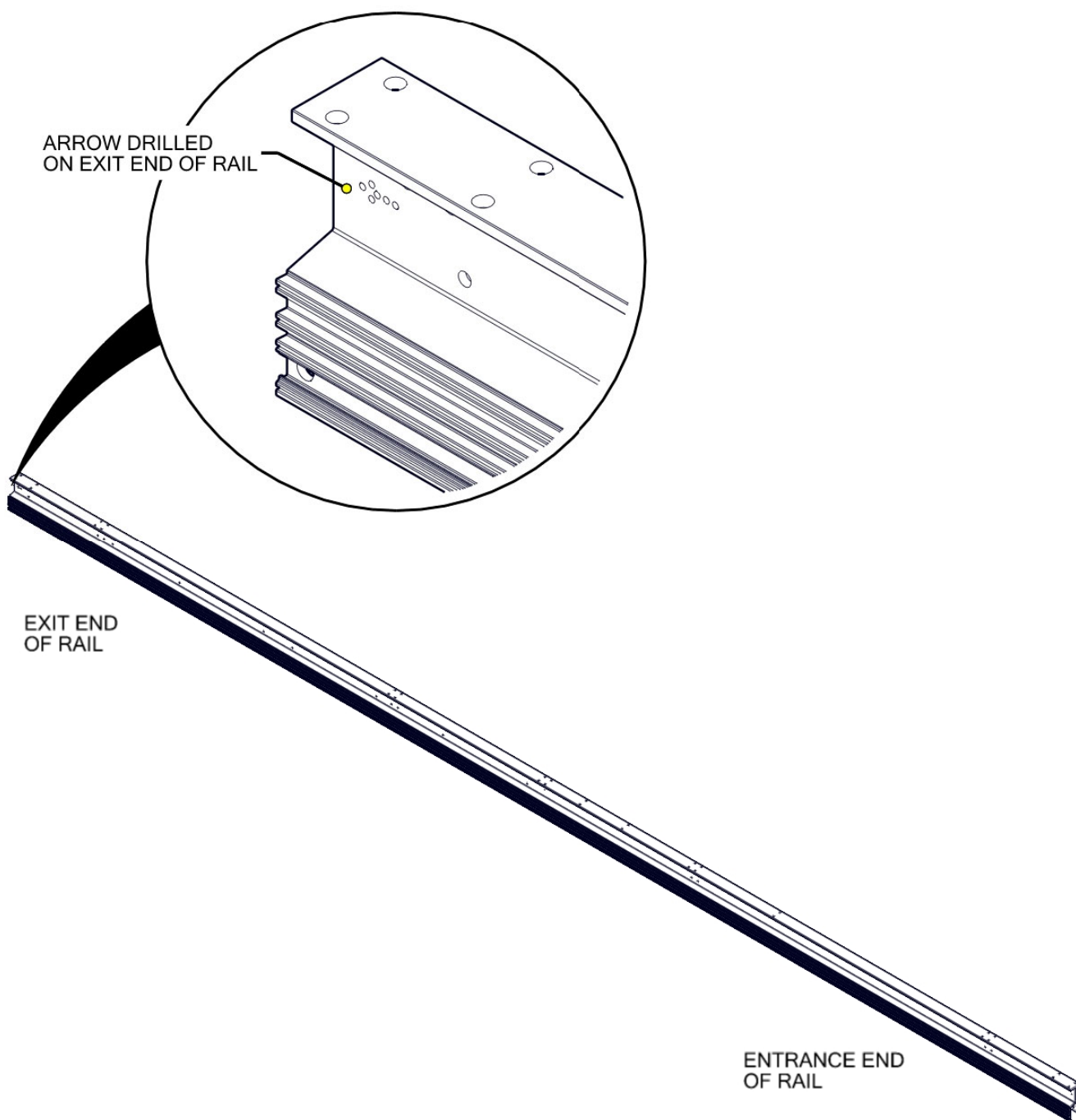


Figure 1 – Direction of Rail

For Free Standing Frame Installations:

- The rail length is determined directly by the length of the wash bay.
- To determine the modified length of rail:

$$355 \text{ in (9017mm)} - \text{Bay Length} = \text{Rail Length Reduction}$$

For Wall Mounted Installations:

- The rail must have a minimum of 3 in (76mm) clearance between the bay wall and the rail at each end of the wash bay.
- To determine the modified length of rail:

$$\text{Bay Length} - 6 \text{ in (152mm)} = \text{Modified Rail Length for Wash Bay}$$

$$\text{Rail Length Reduction} = 334 \text{ in (8484mm)} - \text{Modified Rail Length for Wash Bay}$$

When determining which rail end(s) need to be shortened, consider the following:

- It is preferred to shorten the rail from the entrance end as this will not require modification to the E-chain and E-chain tray length.
- If the rail is shortened from the entrance end only, note that the E-chain fixed end and hose/cable routing will not be on the center of the modified frame.
- When the frame rail is shortened from both ends, it is recommended to remove the same amount of rail to keep frame system symmetric about the center of the rail.

If the Rail Length Reduction is...	Amount to cut from Entrance End of Rail	Amount to cut from Exit End of Rail
Less than 25.75 in (654mm)	Rail Length Reduction	None
25.75 in (654mm) to 51.50 in (1308mm)	Rail Length Reduction/2	Rail Length Reduction/2
Greater than 51.50 in (1308mm)	Consult PDQ Tech Services	

NOTE:	Dimensions in Figure 2 indicate the maximum amount available for shortening from rail ends without relocating wall mounting brackets.
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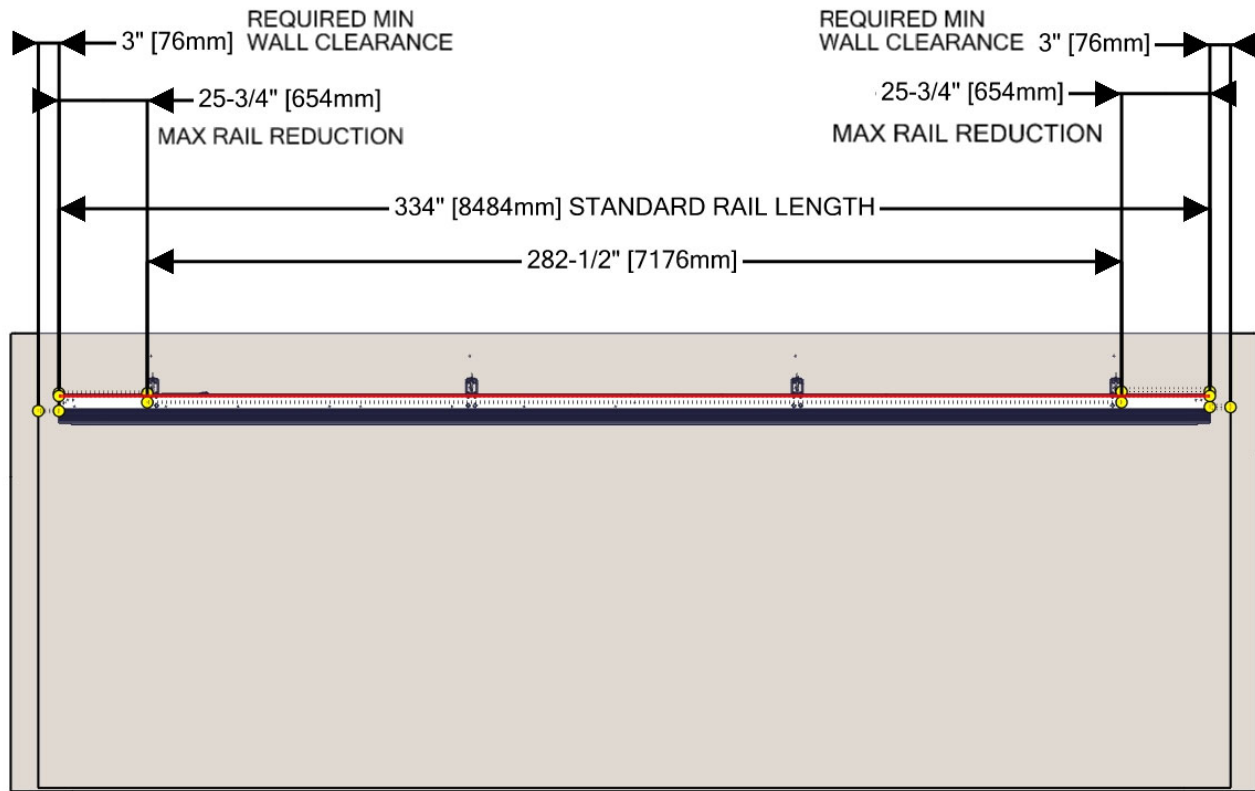


Figure 2- Rail Modification Dimensions

2.6 Step 2 Relocate Holes on the Rails

After cutting the rail, the holes used for mounting the end stops and belt tensioning brackets, plus rail end brackets and grounding straps for Free Standing Frames, must be drilled in the correct locations from the end of the rail. See Figure 3 for hole sizes and locations.

	When the rail is shortened, the holes shown in Figure 3 must be relocated to the distance shown from the rail end.
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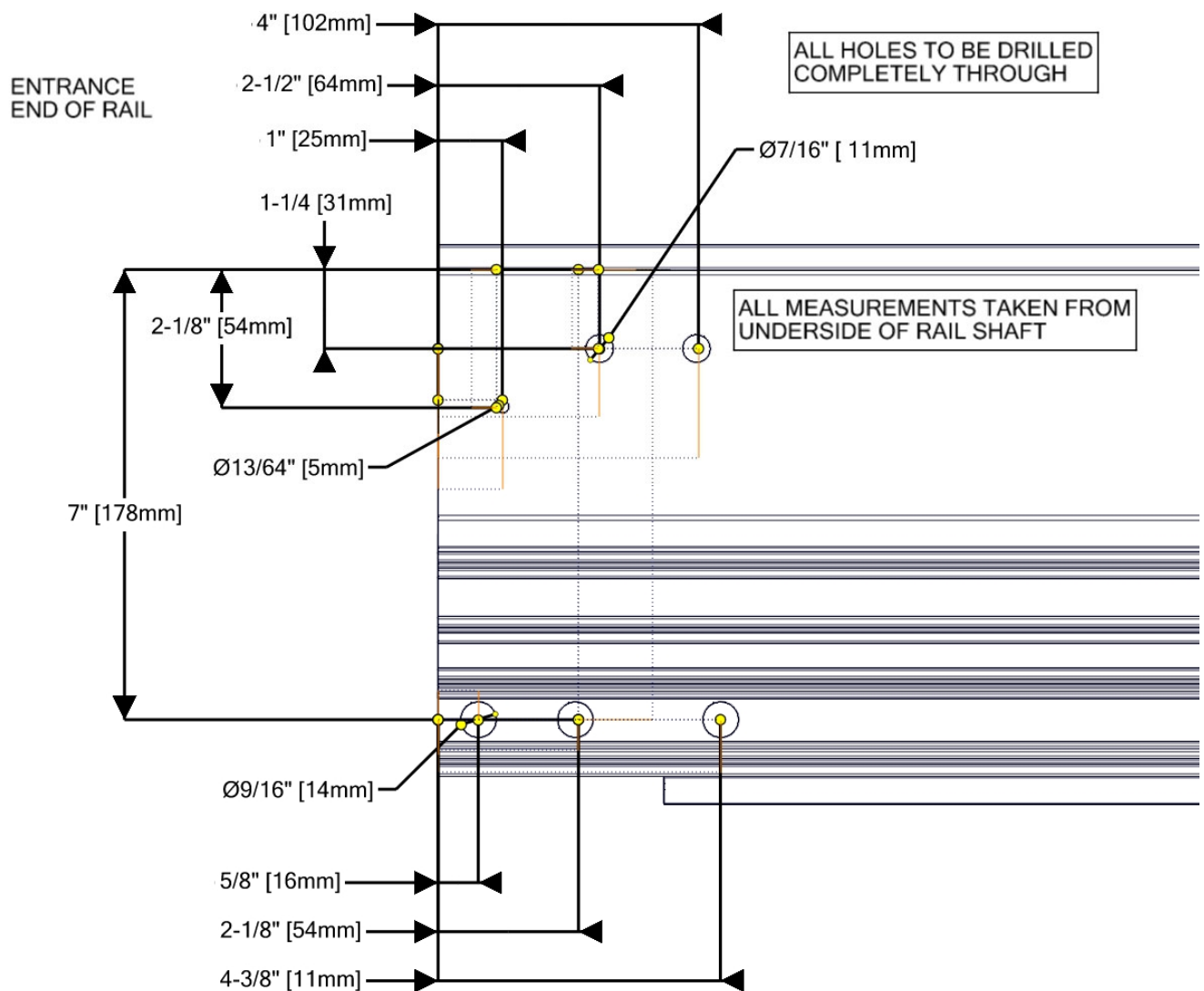


Figure 3- Relocate Rail Holes for Each End that is Shortened

2.6 Step 3 Modify E-chain Length (if necessary)

When the main frame rails are shortened from the exit end of the wash bay, the E-chain must be shortened. For every 3.5 in (89mm) the rails are shortened at the exit end, two links (one inner and one outer) must be removed from the E-chain. Always verify and ensure the bridge movement at extents after the shortened E-chain is connected. This must be verified before final hose cable connections are made. Add or remove links and adjust hoses and cable in the E-chain as necessary.

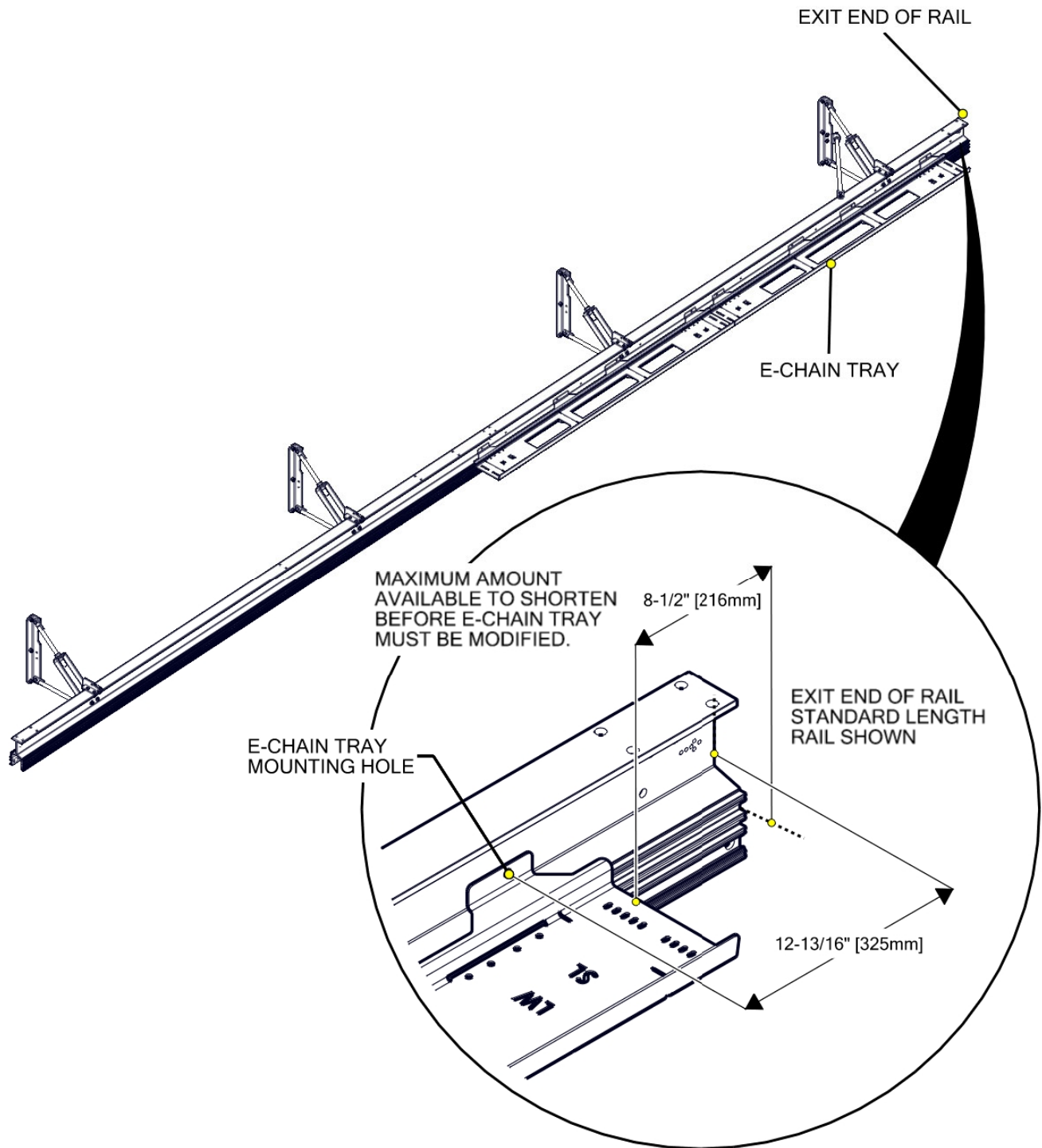


If the rails are shortened at the exit end of the wash bay and the E-chain is not modified accordingly, the bridge may experience binding during motion and the E-chain may collide with the wash bay wall leading to machine damage.

2.6 Step 4 Modify E-chain Tray (if necessary)

In some cases, when the main frame rails are shortened from the exit end of the wash bay, the E-chain tray must be shortened. Figure 4 shows the important items to be aware of when making these modifications. Figure 4 shows the case where the E-chain is mounted on the left-hand rail, but if it is mounted on the right-hand rail the dimensions are the same when measured from the exit end.

- If the rail length is reduced by more than 8.5 in (216mm), then the E-chain tray must be shortened.
- If the rail length is reduced by more than 12.81 in (325mm), then the last hole for mounting the E-chain tray to the rail will be affected and must be re-drilled.

**Figure 4 - Modify E-chain Tray**

3 Wall Mounted Frame System Installation

This section only applies to installations where the Wall Mount System is used. If the optional Free Standing Frame is to be installed, skip this section, and proceed to section 3.3.

3.1.1 Key Installation Steps

- Establish the proper locations for the wall mount brackets.
- Drill top holes and mark other wall angle bracket holes. Drill remaining wall angle holes.
- Secure the wall angle brackets to the wall.
- Assemble rail support components to the wall brackets.
- Align rail attachment brackets for width and correct rail spacing.
- Cut excess tie rod material to proper length.
- Install main frame rails to the rail attachment brackets.
- Check the rail installation. The rails must be straight, plumb, parallel and the correct distance apart.
- Tighten all fasteners.



WARNING – CONSULT WITH A QUALIFIED STRUCTURAL ENGINEER PRIOR TO MOUNTING THE WASH SYSTEM TO ANY BUILDING COMPONENT TO ENSURE THE STRUCTURE IS ADEQUATE TO SUPPORT THE WEIGHT AND FORCES APPLIED TO THE BUILDING DURING WASH OPERATION.



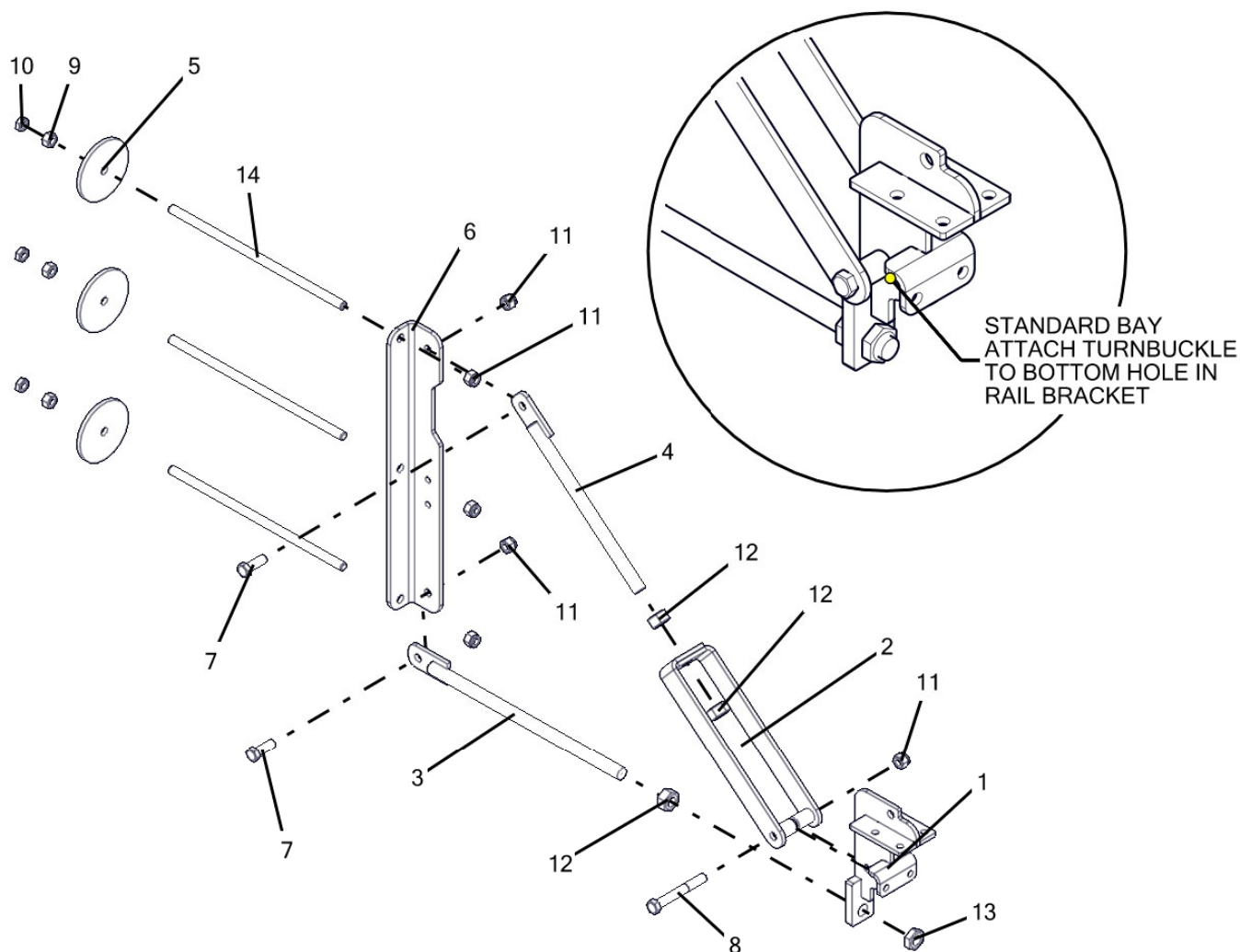
WARNING – ALL MACHINE COMPONENTS HANDLED DURING INSTALLATION, MAINTENANCE, AND/OR SERVICE MUST BE HANDLED WITH A DEVICE APPROPRIATELY RATED AND IN SUITABLE CONDITION TO LIFT AND/OR HANDLE THE WEIGHT OF THE COMPONENT. WHEN COMPONENTS ARE HANDLED BY HAND, USE PROPER LIFTING TECHNIQUES TO AVOID INJURY.

3.1 Step 1 Determine the Wall Mount Kit to be Used for the Installation.

The wall mount kit to be installed is different depending on the wash bay width. Proper selection of the kit must be made at the site planning stage and must be ordered with the machine. There are three different wall mount kit assemblies:

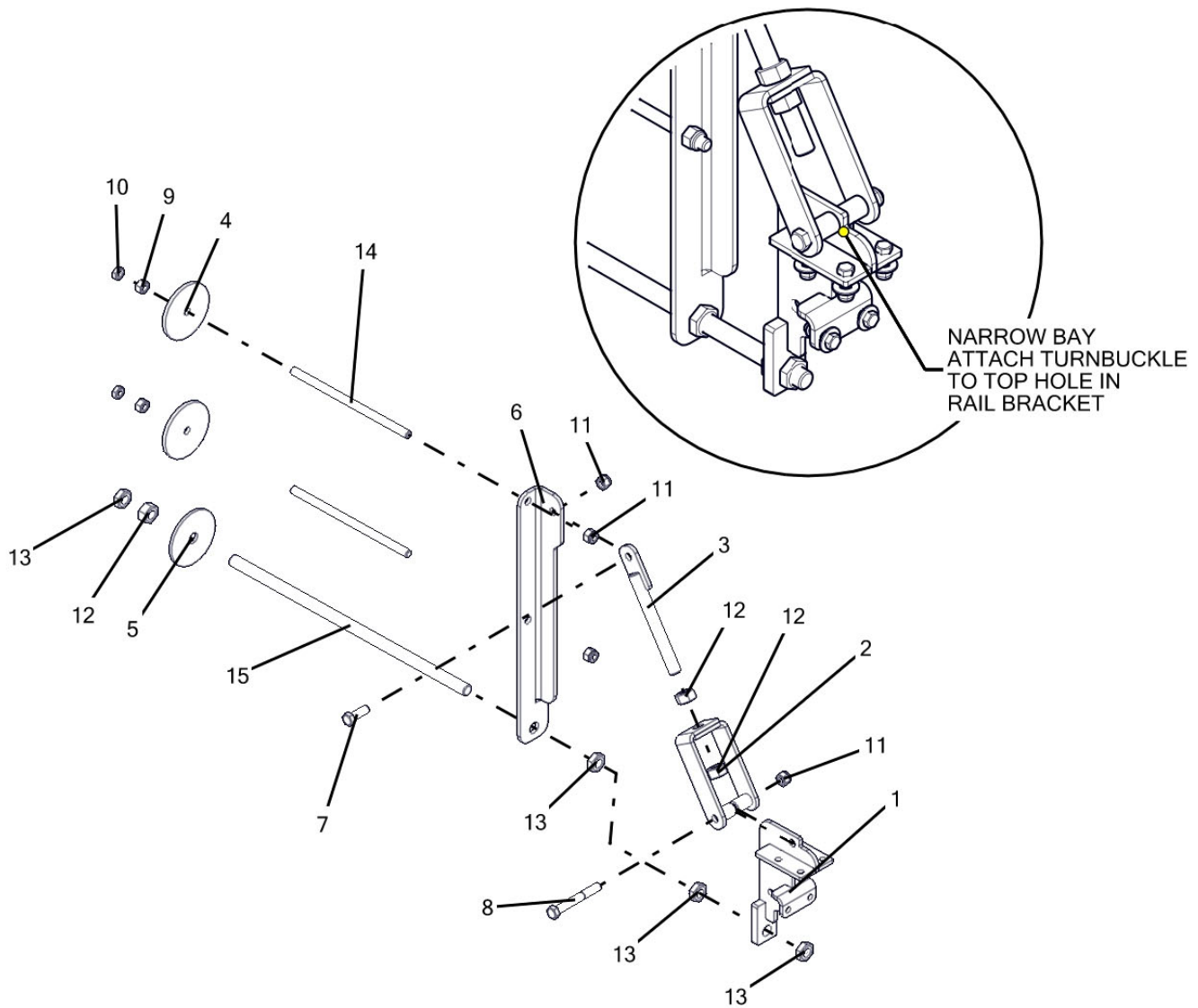
PDQ PART NO.	USAGE
09050055	Standard Bay, FRAME,KIT,WALL-MT, 14'1" to 16'1",LW20 [4.29m to 4.90m]
09050054	Narrow Bay, FRAME,KIT,WALL-MT, 13'6" to 14'4",LW20 [4.11m to 4.37m]
09050056	Wide Bay, FRAME,KIT,WALL-MT, 16'1" to 18'1",LW20 [4.90m to 5.51m]

The proper height for the wall mount bracket holes varies with the type of wall mount kit used. Determine which kit is being used for the installation. Figure 5, Figure 6, and Figure 7 show the component details.



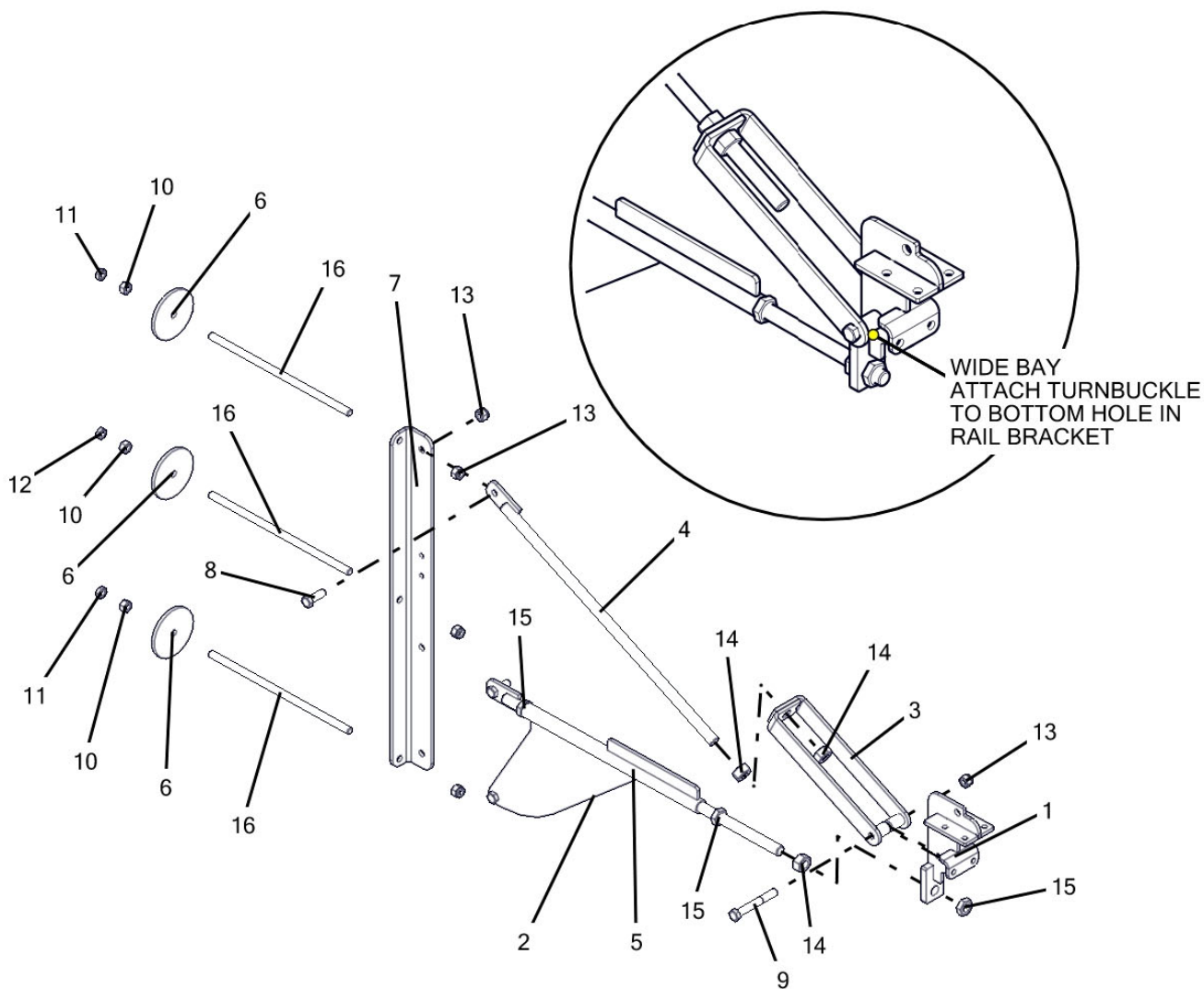
BOM ID	Qty	PartNo	Description
1	1	06140880	BRACKET,RAIL-ATTACH,WALL-MTG,SST
2	1	M310093-S	BRACKET,RAIL-SUPPORT,WALL-MOUNT,SST
3	1	M390122-S	TIE-ROD,3/4NCx16.75,RAIL-MOUNT,SST
4	1	M390124-S	TIE-ROD,3/4NCx14.62,RAIL-MOUNT,SST
5	3	06240952	PLATE,BACKING,WALL-MNT,1/2"-RD,SST
6	1	06270117	ANGLE,WALL-MNT,NORMAL-BAY,SST
7	2	70257-HCS	SCREW,1/2-13x1.50,HHCS,SST
8	1	70267-HCS	SCREW,1/2-13x4.00,HHCS,SST
9	3	71015-HCS	NUT,1/2-13,HEX,SST
10	3	71015-JCS	NUT,1/2-13,HEX,JAM,SST
11	6	71015-NCS	NUT,1/2-13,HEX,LOCK,SST
12	3	71018-HCS	NUT,3/4-10,HEX,SST
13	1	71018-JCS	NUT,3/4-10,HEX,JAM,SST
14	3	M390020-S	THREADED-ROD,1/2-13x14.00,SST

Figure 5 - Wall Mount Components, (14' 1" to 16' 1" (4.29m to 4.90m) Wash Bay Width)



BOM ID	Qty	PartNo	Description
7	1	70257-HCS	SCREW, 1/2-13x1.50, HHCS, SST
8	1	70267-HCS	SCREW, 1/2-13x4.00, HHCS, SST
9	2	71015-HFS	NUT, 1/2-20, HEX, SST
10	2	71015-JCS	NUT, 1/2-13, HEX, JAM, SST
11	4	71015-NCS	NUT, 1/2-13, HEX, LOCK, SST
12	3	71018-HCS	NUT, 3/4-10, HEX, SST
13	4	71018-JCS	NUT, 3/4-10, HEX, JAM, SST
1	1	06140880	BRACKET, RAIL-ATTACH, WALL-MTG, SST
2	1	06140891	BRACKET, RAIL-SUPPORT, SHORT, SST
3	1	06180058	TIE-ROD, 3/4NCx8.12, RAIL-MOUNT, SST
4	2	06240952	PLATE, BACKING, WALL-MNT, 1/2"-RD, SST
5	1	06240954	PLATE, BACKING, WALL-MNT, 3/4"-RD, SST
6	1	06270118	ANGLE, WALL-MNT, NARROW-BAY, SST
14	2	M390020-S	THREADED-ROD, 1/2-13x14.00, SST
15	1	M390035-S	THREADED-ROD, 3/4-10x21.00, SST

Figure 6- Wall Mount Components, Narrow (13' 6" to 14' 4" (4.11m to 4.37m) Wash Bay Width)



BOM ID	Qty	PartNo	Description
1	1	06140880	BRACKET,RAIL-ATTACH,WALL-MTG,SST
2	1	06370121	PIPE,SUPPORT,W/GUSSET,3/4,TIE-ROD
3	1	M310093-S	BRACKET,RAIL-SUPPORT,WALL-MOUNT,SST
4	1	M390121-S	TIE-ROD,3/4NCx,24.75,RAIL-MOUNT,SST
5	1	M390123-S	TIE-ROD,3/4NCx28.75,RAIL-MOUNT
6	3	06240952	PLATE,BACKING,WALL-MNT,1/2"-RD,SST
7	1	06270116	ANGLE,WALL-MNT,WIDE-BAY,SST
8	3	70257-HCS	SCREW,1/2-13x1.50,HHCS,SST
9	1	70267-HCS	SCREW,1/2-13x4.00,HHCS,SST
10	3	71015-HCS	NUT,1/2-13,HEX,SST
11	2	71015-JCS	NUT,1/2-13,HEX,JAM,SST
12	1	71015-JFS	NUT,1/2-20,HEX,JAM,SST
13	7	71015-NCS	NUT,1/2-13,HEX,LOCK,SST
14	3	71018-HCS	NUT,3/4-10,HEX,SST
15	3	71018-JCS	NUT,3/4-10,HEX,JAM,SST
16	3	M390020-S	THREADED-ROD,1/2-13x14.00,SST

Figure 7- Wall Mount Components, Wide (16' 1" to 18' 1" (4.90m to 5.51m) Wash Bay Width)

3.1 Step 2 Establish and Mark the Line for the Top Holes for the Wall Mounting Brackets

The location of the height from the highest point on the wash bay floor to the top holes for the wall mount brackets is shown in Figure 8. Determine the height to use for the wash bay and mark this line on the wall (Bracket Support Line).



WHEN MEASURING THE HEIGHT OF THE BRACKET SUPPORT LINE BE SURE TO MEASURE FROM THE HIGHEST POINT ON THE WASH BAY FLOOR. USE A TRANSIT, LASER LEVEL, OR OTHER APPROPRIATE DEVICE FOR ESTABLISHING THIS LINE.

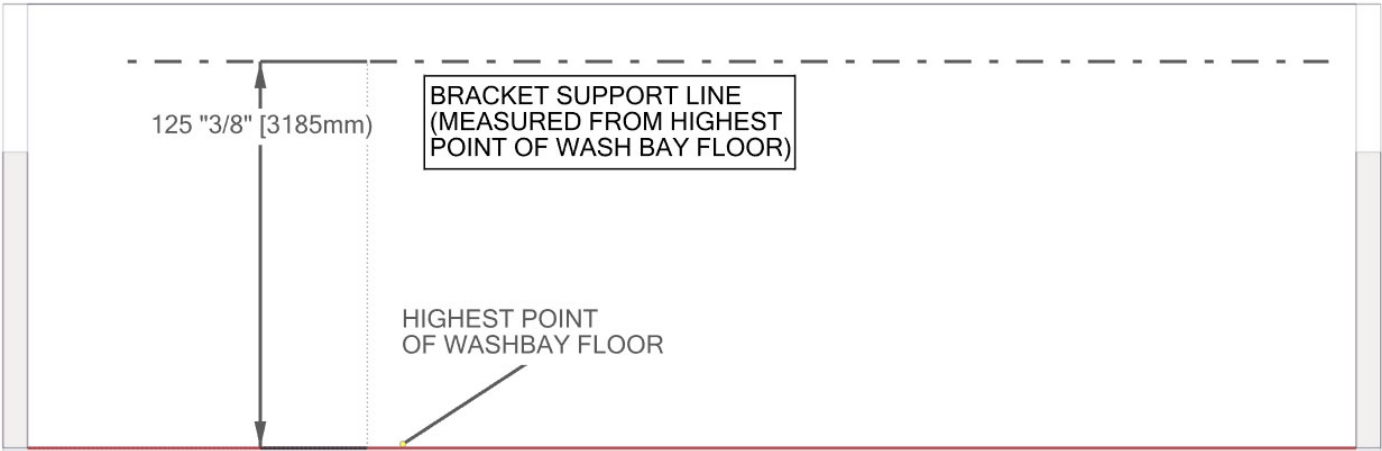


Figure 8- Wall Bracket Top Hole Height, Side View

3.1 Step 3 Establish the Proper Locations Along the Wash Bay for the Wall Mount Brackets

Determine the location of the main frame rails in the wash bay along the length of the bay. These locations do not vary with the type of wall mount mounting kit used. Use the centerline of the length of the rails as a starting point for the wall mount bracket hole location.

NOTE:	If the rail was shortened to accommodate a shorter than standard wash bay, the centerline of the length of the rail may no longer be the centerline of the bracket spacing. • If the rail is shortened equally at both the entrance and exit ends, then the rail centerline will be located at the bracket assembly centerline. • If the rail is shortened at only the entrance end, then the rail centerline will be $\frac{1}{2} * (\text{Rail Length Reduction})$ closer to the exit end.
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Figure 9 shows how to locate the wall mount bracket holes from the centerline of the main rails and from the wash bay floor. Once the locations are established for the top holes, drill a hole for each top bracket fastener into the wall.

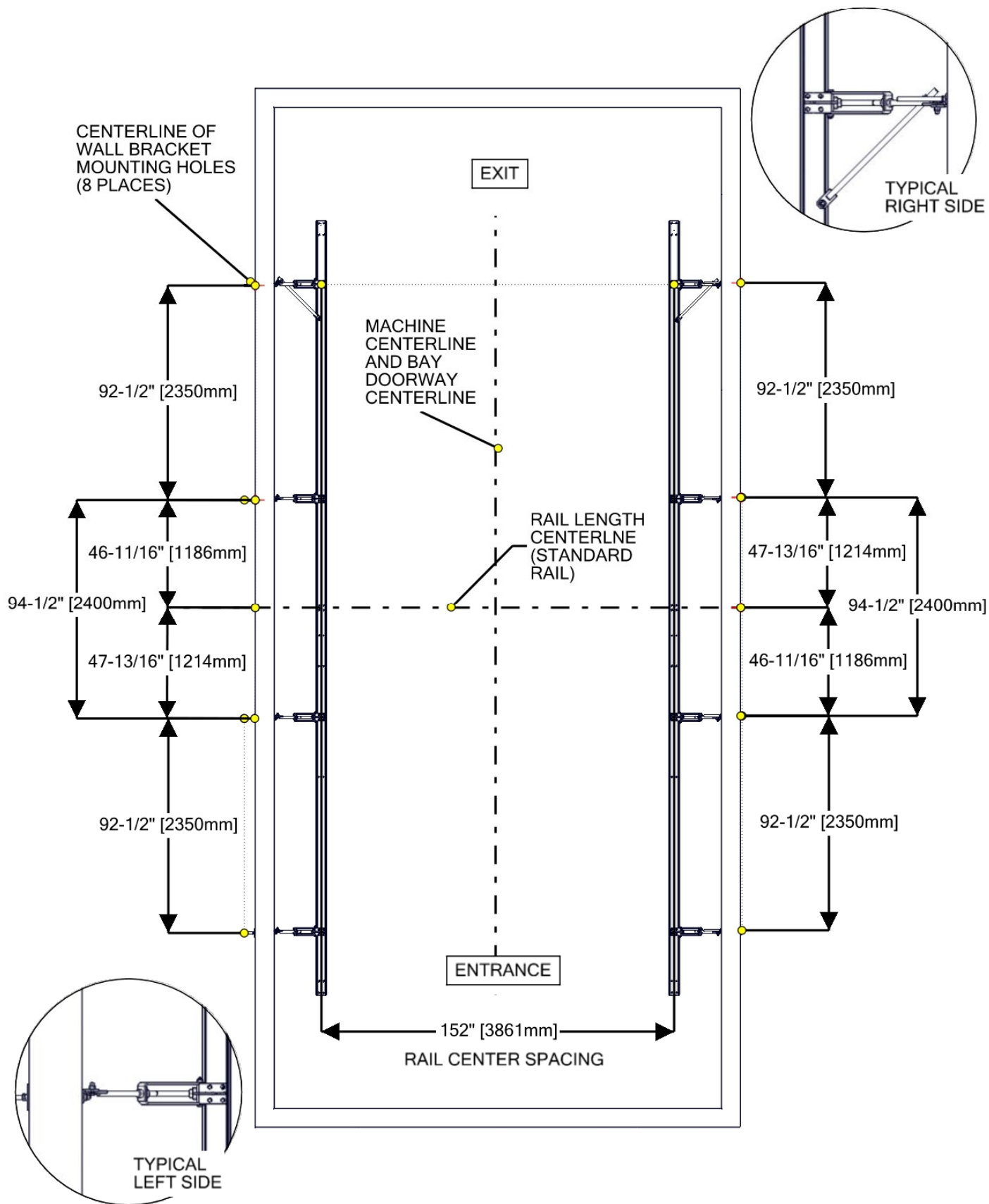
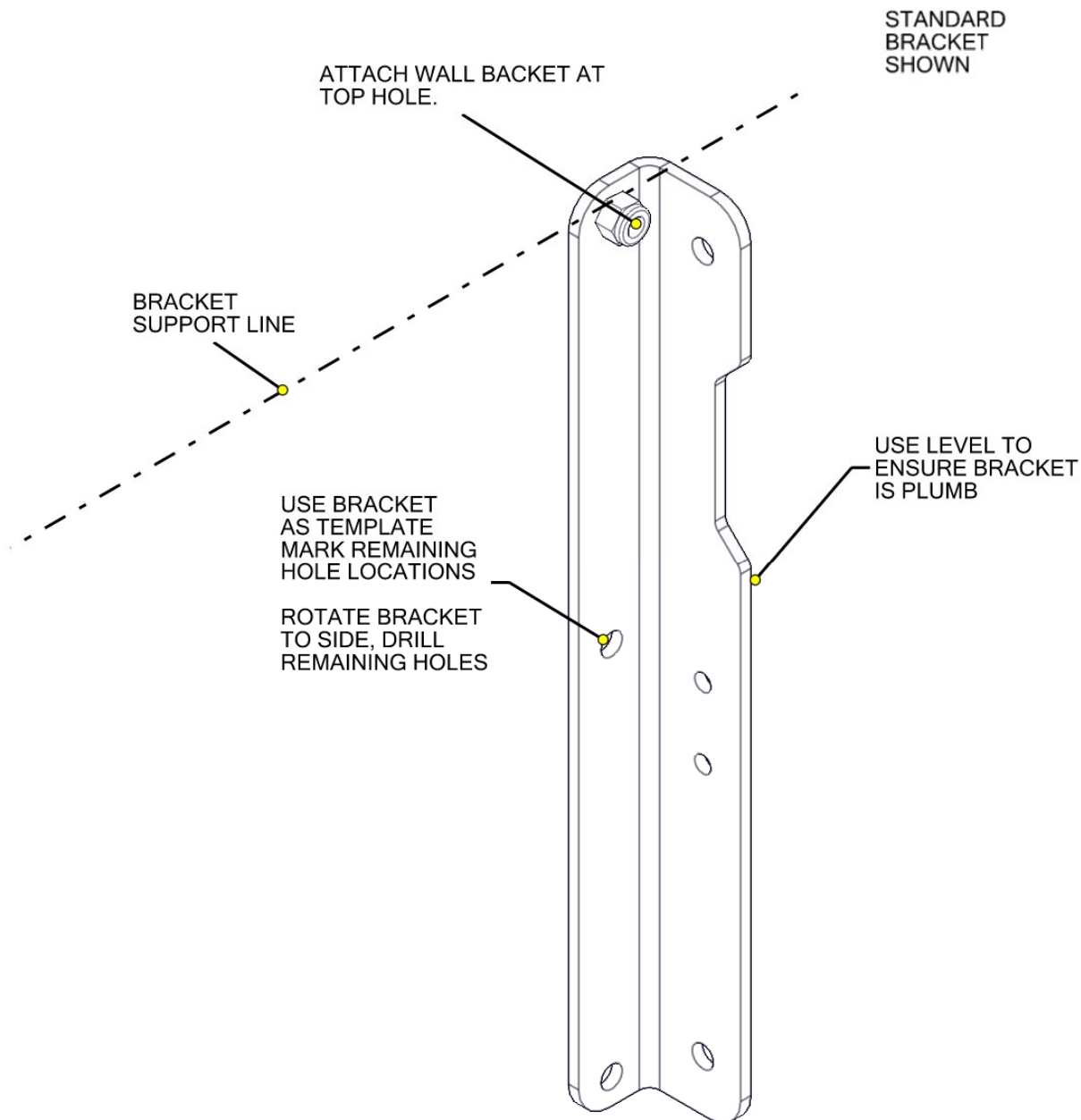


Figure 9- Wall Mount Bracket Hole Location, Top View

3.1 Step 4 Install Brackets in Top Holes and Drill Remaining Wall Bracket Holes

- Install the wall mount brackets into the top holes using the applicable parts and fasteners shown in Figure 5, Figure 6, and Figure 7, depending on the wash bay width and the wall mount kit ordered for the installation.
- Make sure the brackets are plumb (see Figure 10).
- Mark the remaining holes using the bracket as a template to locate them.
- Drill the remaining mounting holes.

**Figure 10- Locating and Drilling Remaining Wall Mount Holes**

3.1 Step 5 Secure the Wall Angle Brackets to the Wall

Use the fasteners shown in Figure 5, Figure 6, and Figure 7 to secure the wall brackets to the wash bay wall.

3.1 Step 6 Assemble Rail Support Components to the Wall Brackets

Assemble the remaining parts of the wall mount assemblies as shown in Figure 5, Figure 6, and Figure 7.

3.1 Step 7 Align Rail Attachment Brackets for Width and Correct Rail Spacing

Prior to installing the main rail, the bracket assemblies must be adjusted to the correct spacing across the wash bay. Align all brackets on each side of the wash bay with each other. Use a string line and level to make sure the brackets are level, aligned, and plumb.

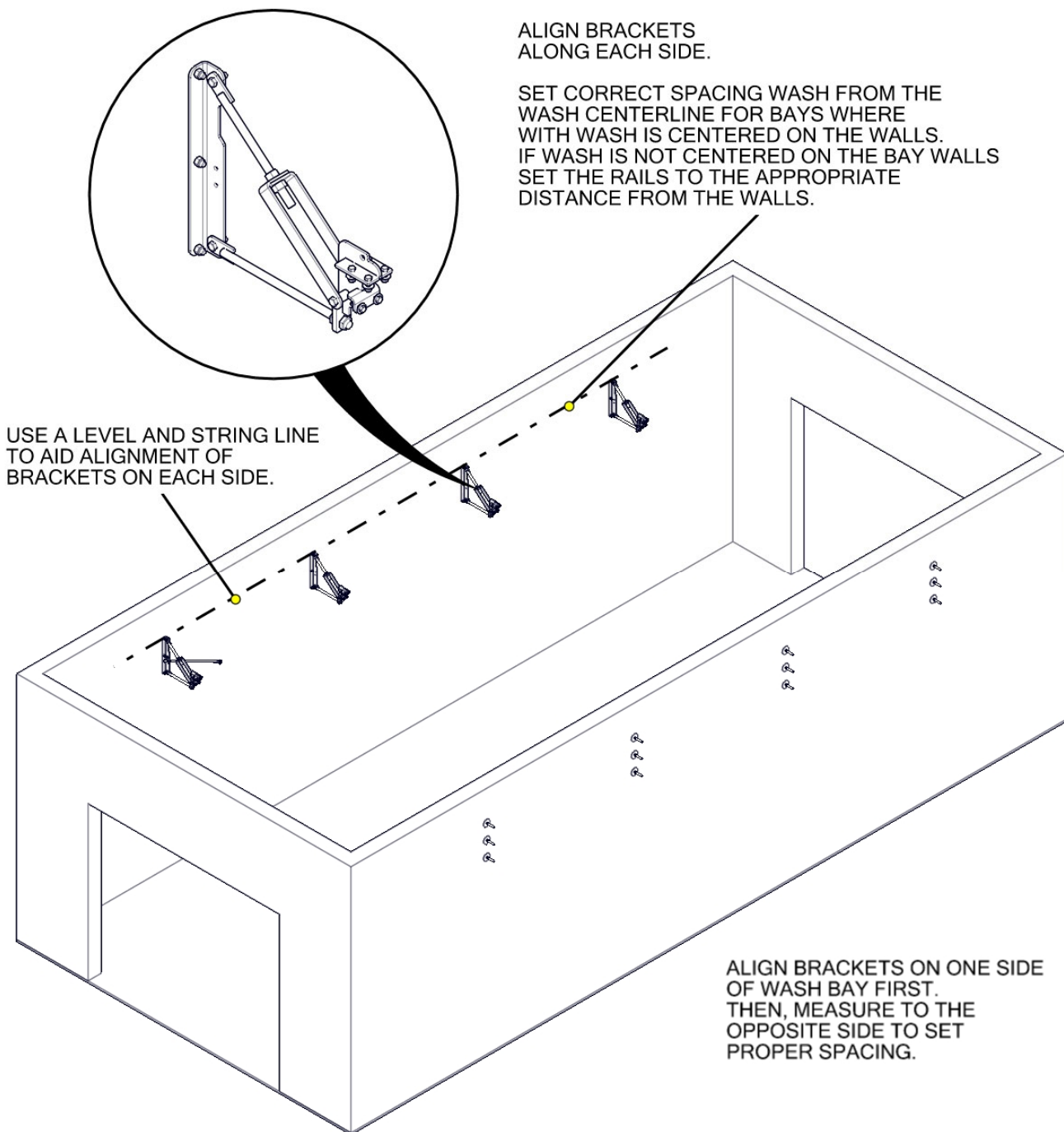


Figure 11 - Align Wall Brackets Along the Wash Bay Walls

3.1 Step 8 Verify Spacing and Cut Excess Tie Rod Length to Proper Length

Figure 12 (standard bay width), Figure 13 (narrow bay width), and Figure 14 (wide bay) show details that must be considered when verifying spacing and cutting excess tie rod length for the wall mount assemblies.

- When setting the Across the Bay spacing, 152 in (3861mm), consider the location of the bay entrance doorway. The center of this spacing should be in line with the center of the doorway to the entrance into the wash bay so that as users enter, the vehicle is centered on the rail spacing and therefore centered on the wash width. This situation may be different for In-Bay pump station installations where the wash width is not centered on the rail spacing.
- After adjustment, the lower tie rods are cut to length. This is done before installing the rails to provide clearance for the rail when it is raised into position. Trim excess length from the threaded wall rods.
- Alignment is to be done before attaching rail.

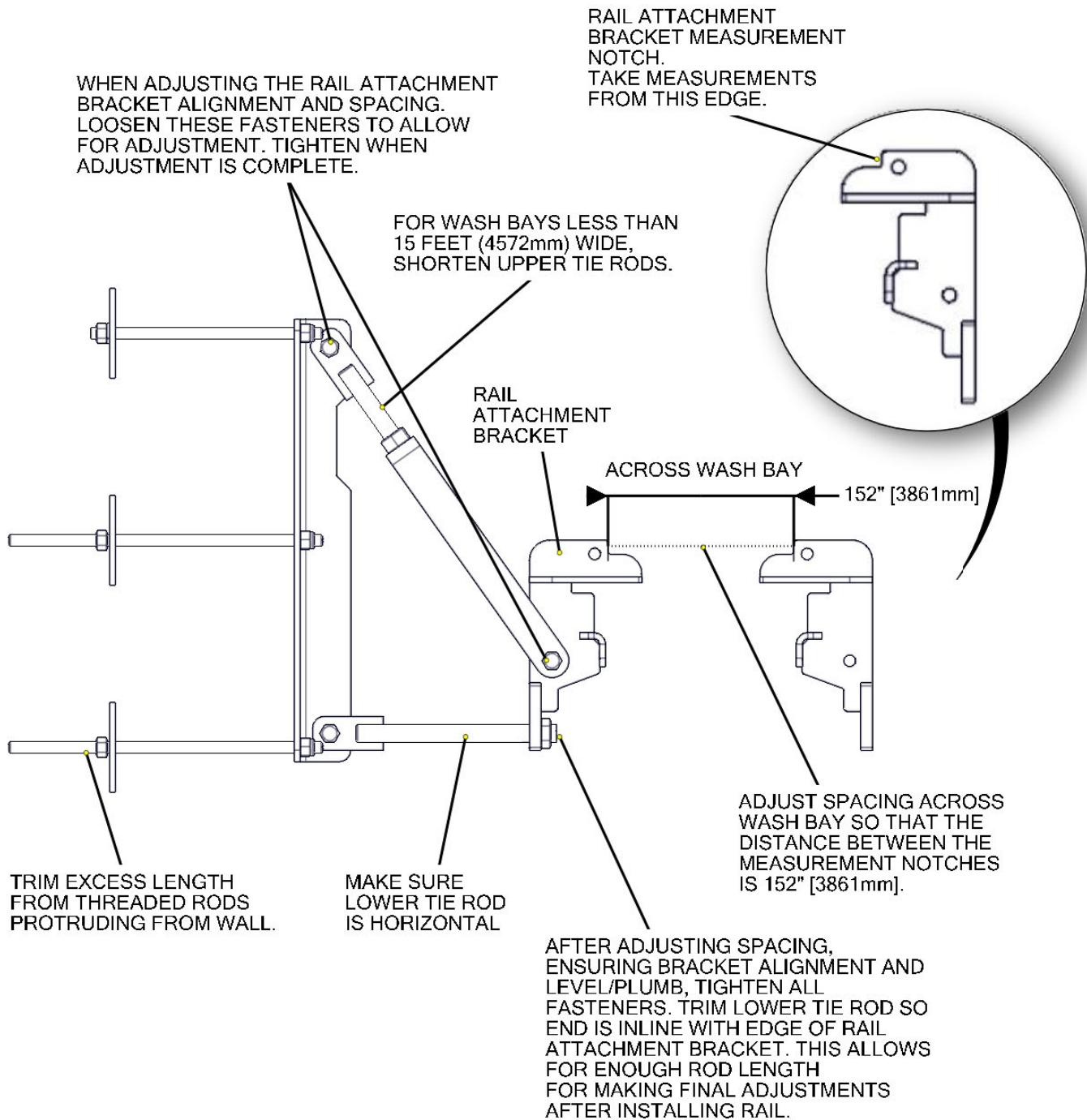


Figure 12- Align Brackets and Trim Rods, Standard Width Bay

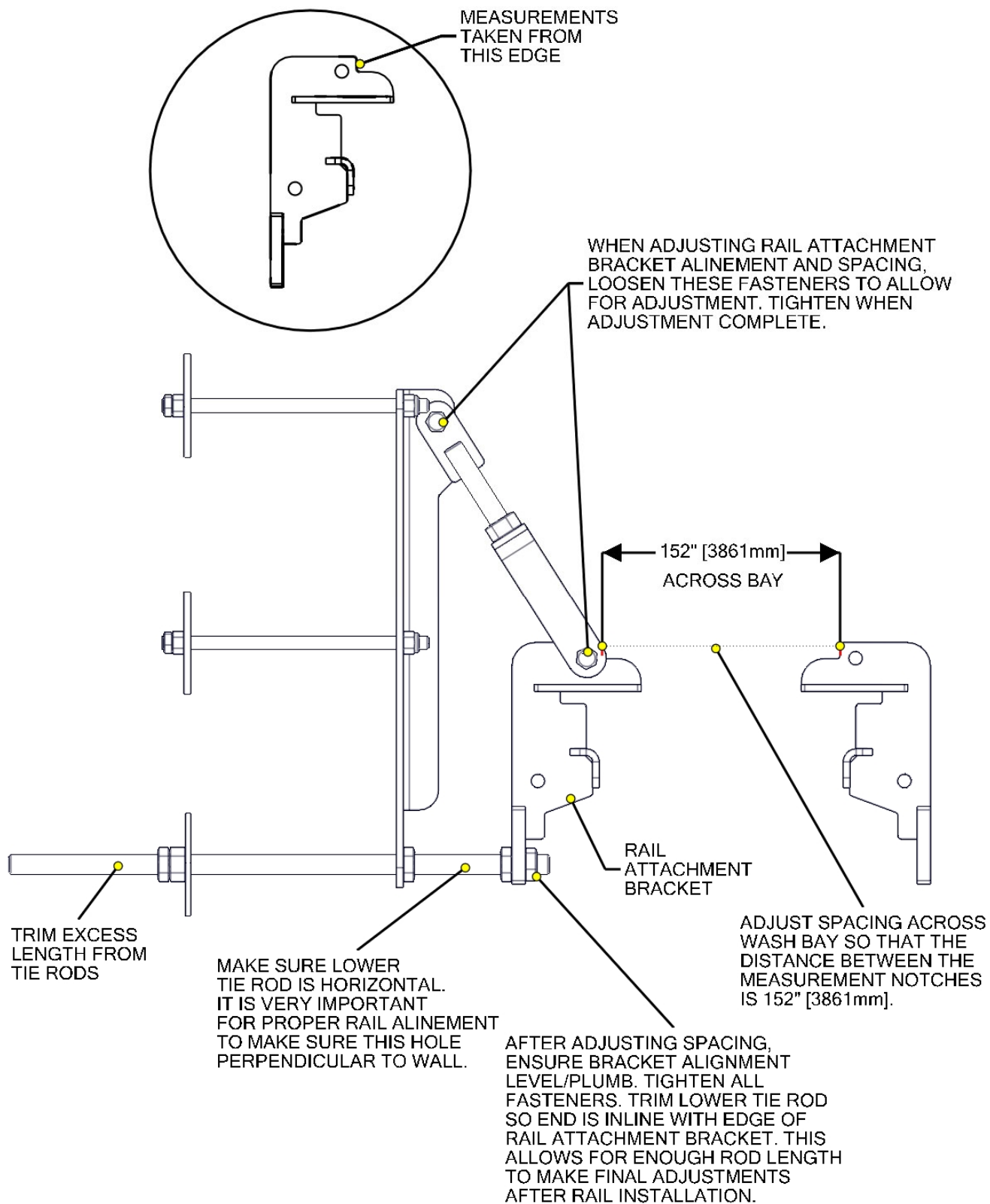
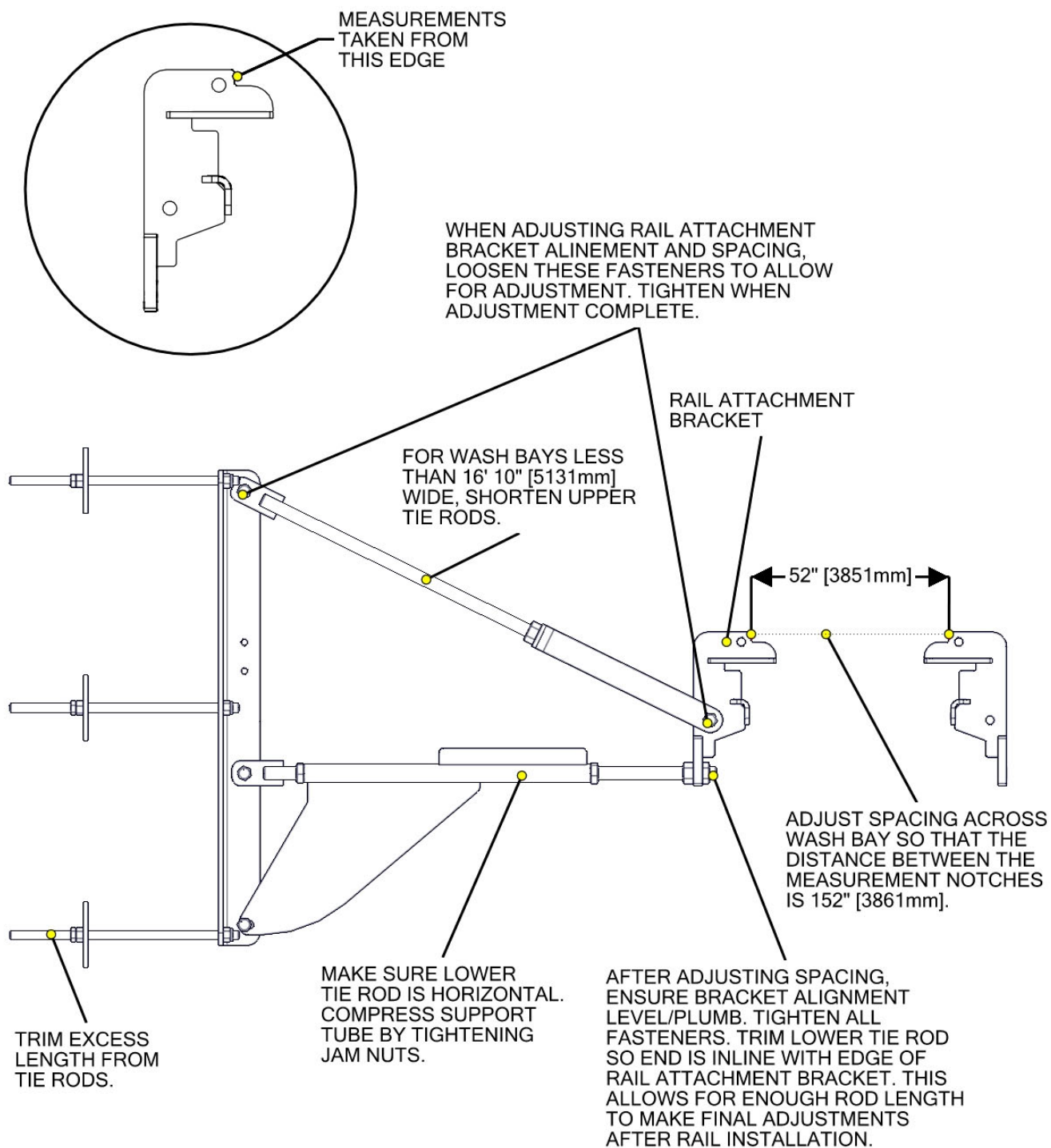


Figure 13 - Align Brackets and Trim Rods, Narrow Width Bay

**Figure 14- Align Brackets and Trim Rods, Wide Bay**

3.1 Step 9 Attach Main Rails to the Wall Bracket Assemblies

Using an appropriate lifting device, raise the main rails to the wall bracket assemblies on each side of the bay. Each rail weighs approximately 210 lbs. (95 kg). Fasten with supplied fasteners.

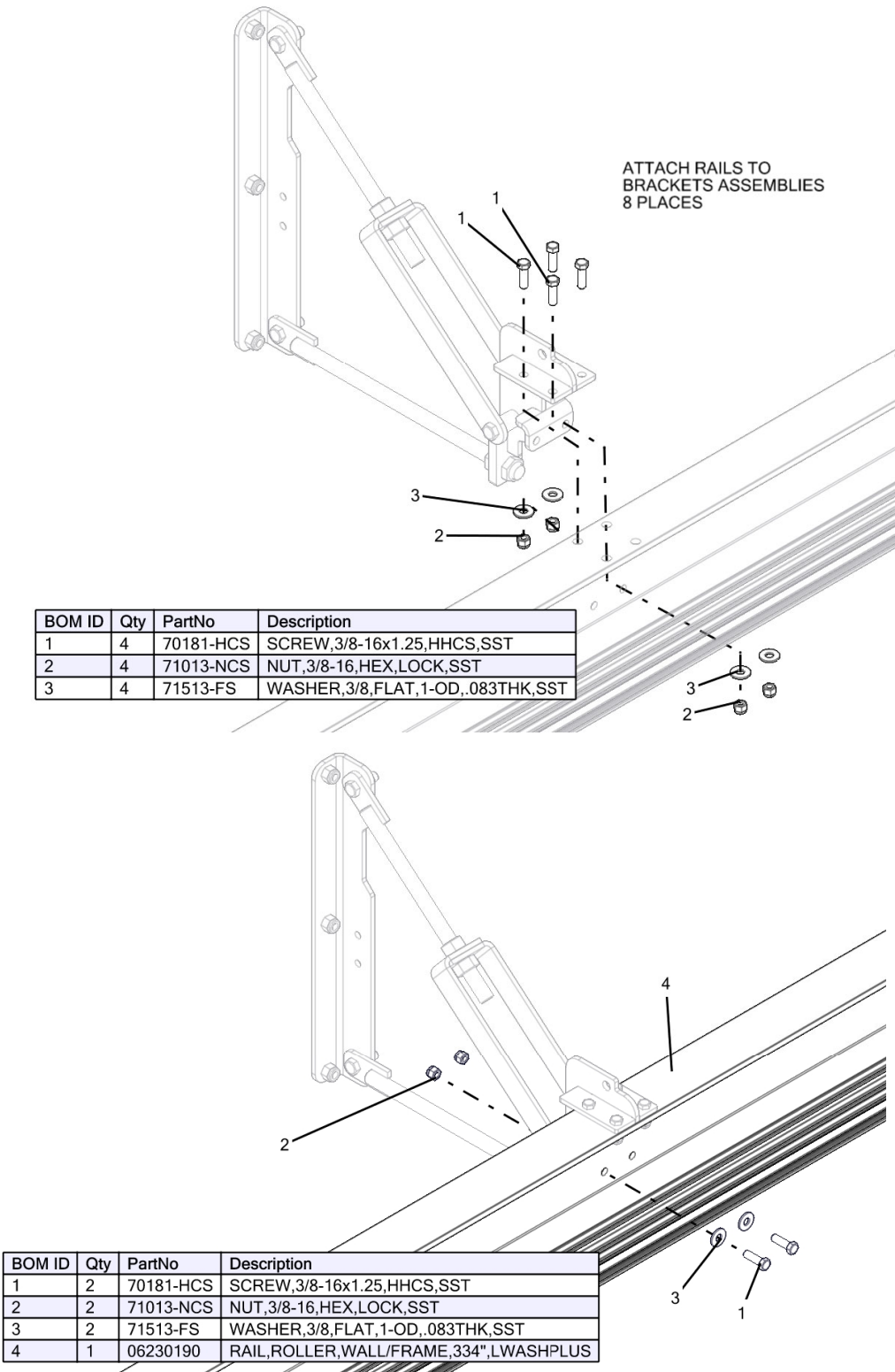
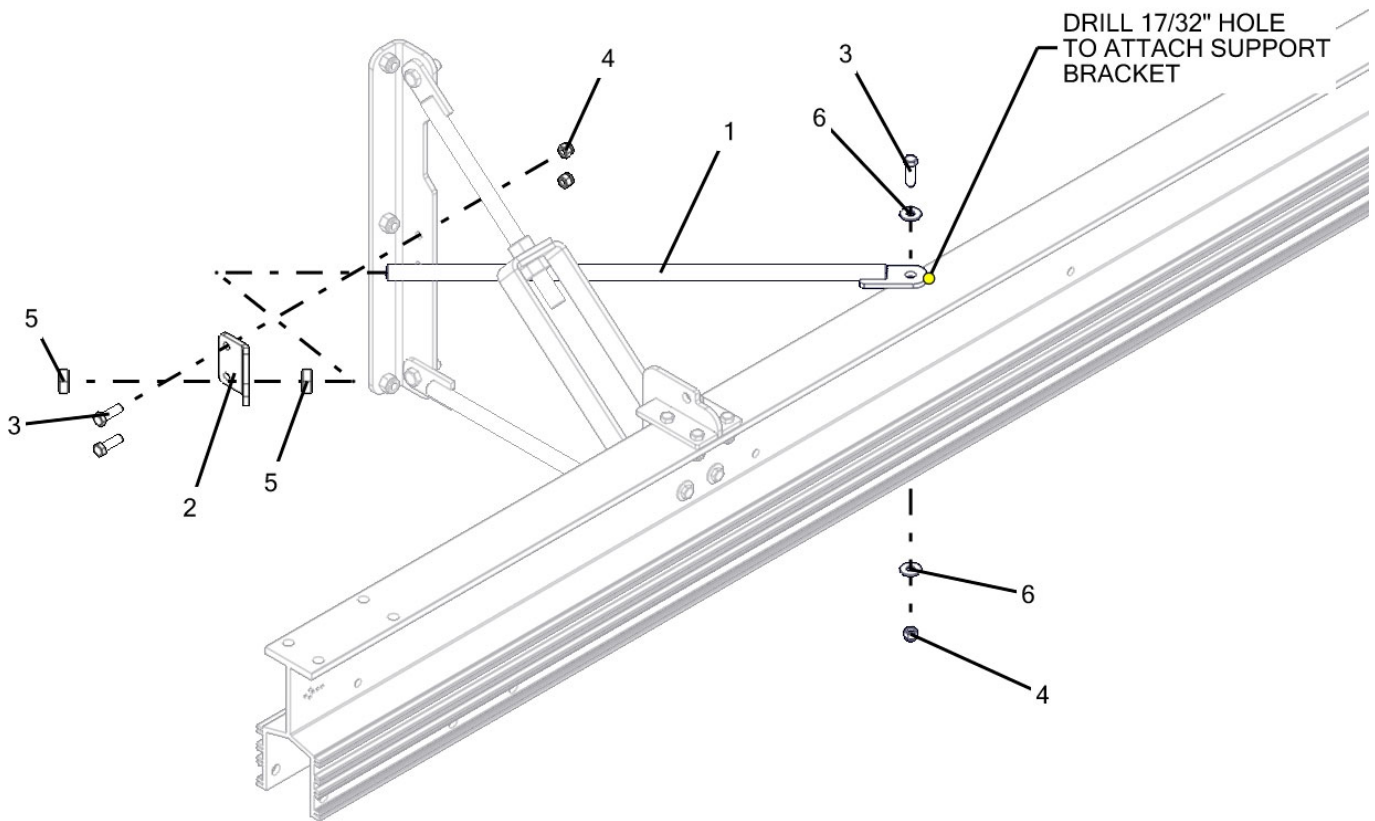


Figure 15- Attach Rails to Wall Brackets

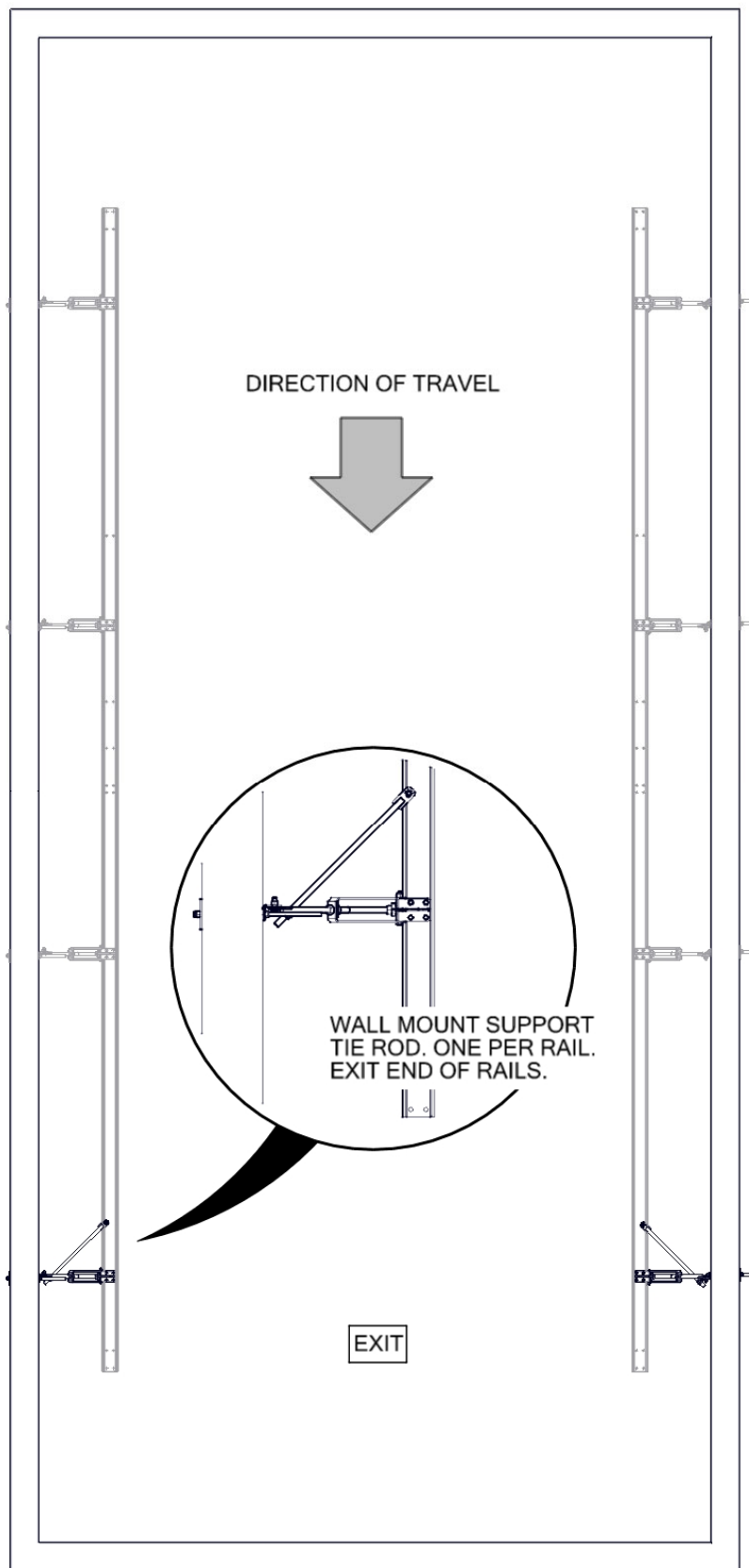
3.1.1 Step 1 Attach Rail Support Tie Rods

Attach the rod mount bracket to the wall mount bracket closest to the exit side of the wash bay. Attach rail support tie rod to the rod mount bracket. Mark hole location on outside of rail, in line with other outside rail holes. Drill 17/32" hole to mount the rail side of the tie rod. One per rail. See Figure 16 and Figure 17.



BOM ID	Qty	PartNo	Description
3	3	70181-HCS	SCREW,3/8-16x1.25,HHCS,SST
4	3	71013-NCS	NUT,3/8-16,HEX,LOCK,SST
5	2	71018-JCS	NUT,3/4-10,HEX,JAM,SST
6	2	71513-FS	WASHER,3/8,FLAT,1-OD,.083THK,SST
2	1	06141528	BRACKET,WALL-MNT,ROD-MNT,HORIZ,SST
1	1	M390121-S	TIE-ROD,3/4NCx,24.75,RAIL-MOUNT,SST

Figure 16 – Attach Rail Support Tie Rods

**Figure 17 – Rail Support Tie Rod Locations**

3.1 Step 10 Check and Make Final Rail Adjustments

With the rails attached to the wall brackets, recheck the rail spacing, height, and levelness. Adjust tie rods as needed.

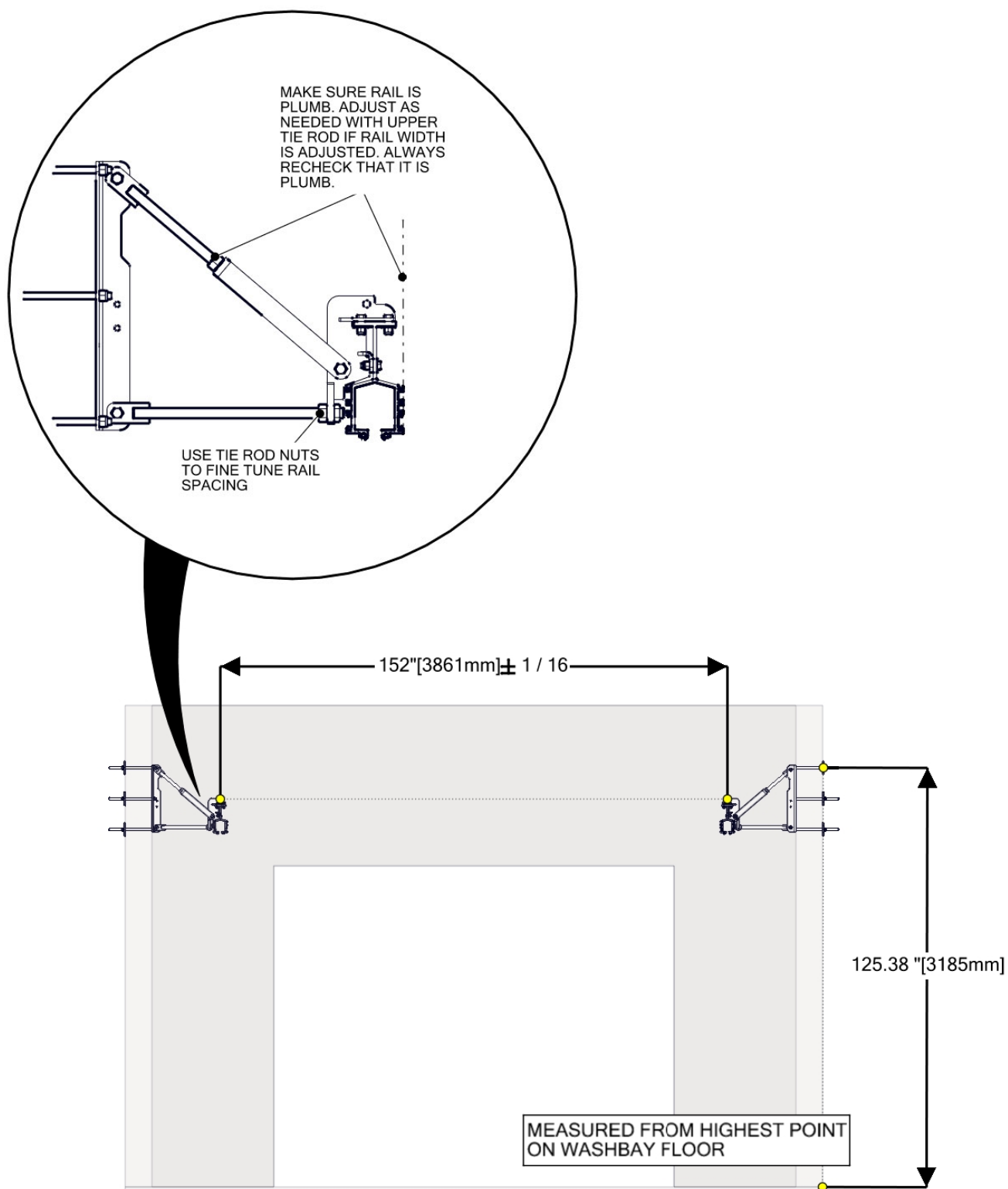


Figure 18- Final Rail Alignment and Rail Spacing

3.2 Wall Mounted Frame Installation When Reusing Existing Brackets

For sites replacing a LaserWash 360, LaserWash 360 Plus, LaserWash 4000 or a LaserWash M5, the wall mount brackets may be reused. This may only be done after a thorough inspection of the existing wall brackets shows them to be in like-new condition. In this case a kit including the necessary parts to adapt the existing brackets to fit with the main rails may be ordered. Table 3 shows the kit available for an 8-Bracket system without LaserWind, Docking or Onboard Dryer A 12-Bracket wall mount system cannot be reused for a LaserWash 360 Plus serial numbers 1500 and up.

3.2.1 Key Factors to Consider

- If the existing wall mount brackets are damaged or corroded, they should be replaced.
- Kits are available for LaserWash 360, LaserWash 360 Plus, LaserWash 4000 or a LaserWash M5 sites where the original installation used the 8-point bracket attachment system.

3.2.2 Key Installation Steps

- Remove previous rail, festoon brackets etc.
- Wall angle brackets will remain in their existing locations. Loosen and replace fasteners connecting tie rods to wall angles.
- Tie-rod assemblies will be shortened to the proper length to accommodate new rail spacing and alignment.
- Follow the process for aligning rail attachment brackets, shortening the tie rods, and mounting of the extruded rail as defined in the sections for new wall mount installations.



WARNING – CONSULT WITH A QUALIFIED STRUCTURAL ENGINEER PRIOR TO MOUNTING THE LASERWASH TO ANY BUILDING COMPONENT TO ENSURE THE STRUCTURE IS ADEQUATE TO SUPPORT THE WEIGHT AND FORCES APPLIED TO THE BUILDING DURING WASH OPERATION.



WARNING – ALL MACHINE COMPONENTS HANDLED DURING INSTALLATION, MAINTENANCE, AND/OR SERVICE MUST BE HANDLED WITH A DEVICE APPROPRIATELY RATED AND IN SUITABLE CONDITION TO LIFT AND/OR HANDLE THE WEIGHT OF THE COMPONENT. WHEN COMPONENTS ARE HANDLED BY HAND, USE PROPER LIFTING TECHNIQUES TO AVOID INJURY.

3.2.3 Special Tools

- Transit, laser level, or other device for establishing the level plane for aligning the main rails.
- Saw for cutting aluminum rails (if shortening required) and for cutting excess length from stainless steel tie rods (for wall mount installations).

3.2.4 PDQ Supplied Parts, Reuse Kits Available

Table 3 – Wall Mount Kits for Reusing Previous Wall Mounts

PDQ PART NO.	DESCRIPTION	USAGE
09050057	FRAME,KIT,RETRO,WALL-MT,14'1"-16'1",LW20	Existing sites where there are (8) sets of wall mounting brackets to reuse.

3.2.5 Eight Point Wall Mount Reuse

- Each kit includes eight rail attachment brackets.
- For each 8-point wall mount reuse kit, the fastener kit used for a complete wall mount installation is provided. This means some fasteners are included that may not be needed in the reuse situation.
- Refer to Figure 4 (standard width), Figure 6 (narrow width), and Figure 7 (wide width) for bracket assembly details and to Figure 15 for rail installation.

3.3 Free Standing Frame Installation Process

This section describes the steps for installing the Free Standing Frame.

3.3.1 Key Factors to Consider

- Refer to the Site Planning guide for recommended and minimum building requirements. If the wash bay is too short for the standard rails to fit, they must be shortened. This will reduce the capacity of the wash to clean long vehicles.
- When the bridge is ordered with an Integrated Dryer, the Free Standing Frame includes six legs. If the Integrated Dryer is not ordered, the frame includes four legs.
- Always consider if floor components such as heating lines are present to ensure these do not interfere with the mounting locations for the frame legs. Refer to the Site Planning manual for details.

3.3.2 Special Tools

- Concrete drill for installing floor anchors.
- Transit, laser level, or other device for establishing the level plane for aligning the main rails.

3.3.3 PDQ Supplied Parts

The Free Standing Frame option is available in two versions. The four legged version is used for machines without an Integrated Dryer and six legged version is required for machines with an Integrated Dryer.

PDQ PART NO.	DESCRIPTION	USAGE
09050050	FRAME, LEG-MOUNT-6, SST, LW2020+INTD	Used with Integrated Dryer option
09050051	FRAME,LEG-MOUNT-4,SST,LW2020	Standard version; used without Integrated Dryer

- Each kit includes the key frame members and their associated fasteners.
- Harness kit and fasteners for providing an electrical ground path between frame members.



WARNING! - FAILURE TO PROPERLY INSTALL THE FREESTANDING FRAME GROUNDING HARNESSES COULD RESULT IN ELECTRICAL SHOCK, SERIOUS INJURY, OR DEATH.

3.3.4 Site Supplied Parts

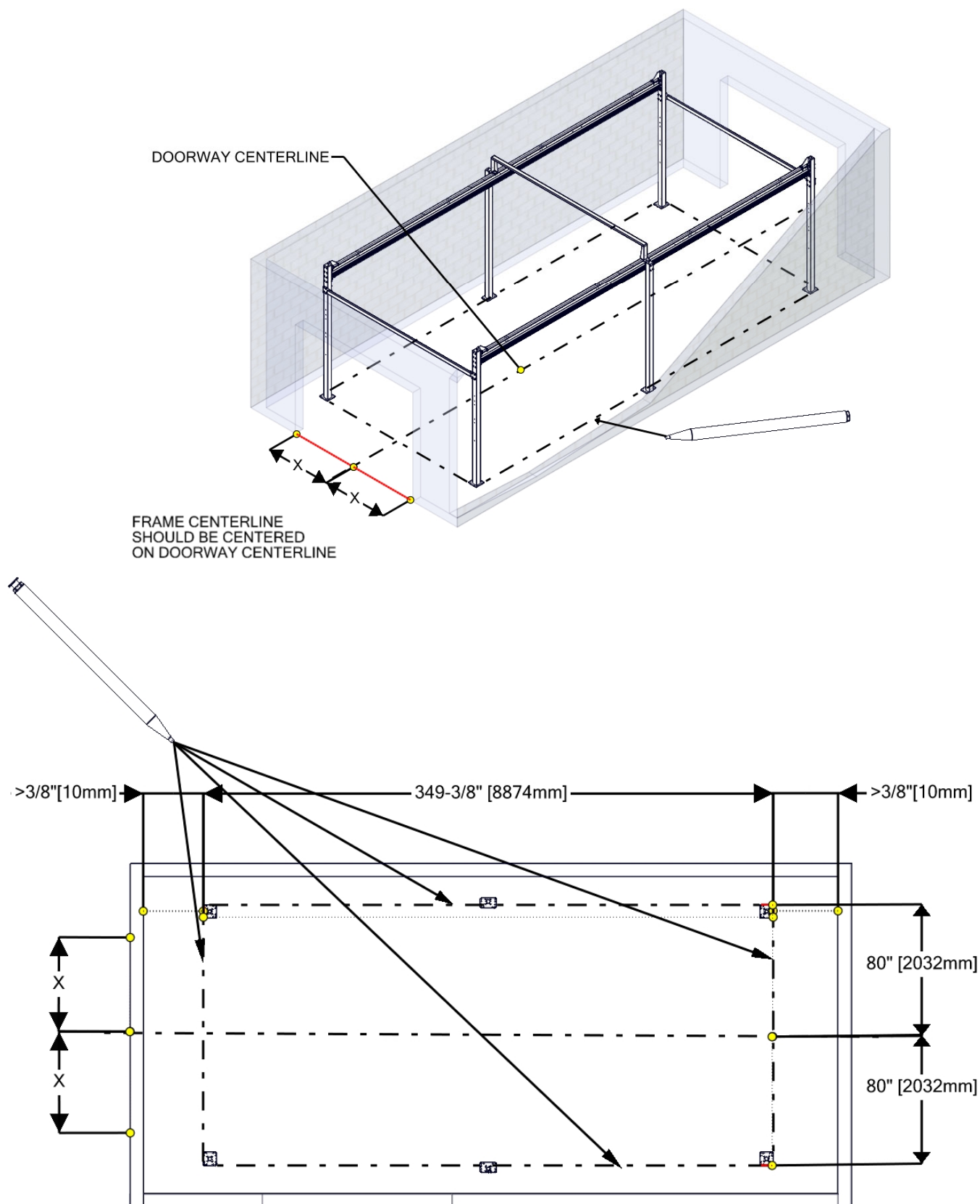
- Floor anchors for securing the legs to the wash bay floor.
 - (16) required for the four legged frame; (24) required for the six-legged frame
 - Anchors are available from PDQ:
 - Part No. 05180025, ½ - 13 UNC steel anchors, 4.5 in (114 mm) long
 - Part No. 05180026, ½ - 13 UNC steel anchors, 5.5 in (140 mm) long
- Shims must be supplied to place beneath the mounting feet for the legs to allow for leveling and making the legs plumb.

3.3.5 Key Installation Steps

- Determine the location for the frame in the carwash bay, and mark lines on the floor to indicate the location.
- Assemble entrance and exit leg arches.
- Erect entrance and exit leg arches in the marked locations.
- Raise the rails into position and fasten them to the leg arches at the four corners.
- Measure and adjust the height of the rails to ensure all four corners are in a common horizontal level plane.
- Set the spacing between the rails.
- (6-Legged Frame only) Install the center cross beam and center leg mounting brackets
- (6-Legged Frame only) Install center legs to each side of the frame.
- (6-Legged Frame only) Verify rails are level and adjust rail height at center.
- Install (2) bridge trucks in each rail.
- Install the rail end brackets to each end of the rails.
- Install end stops in each end of each rail.
- Tighten all fasteners.
- Install the electrical grounding wires at each corner of the frame and the center cross beam and rails.

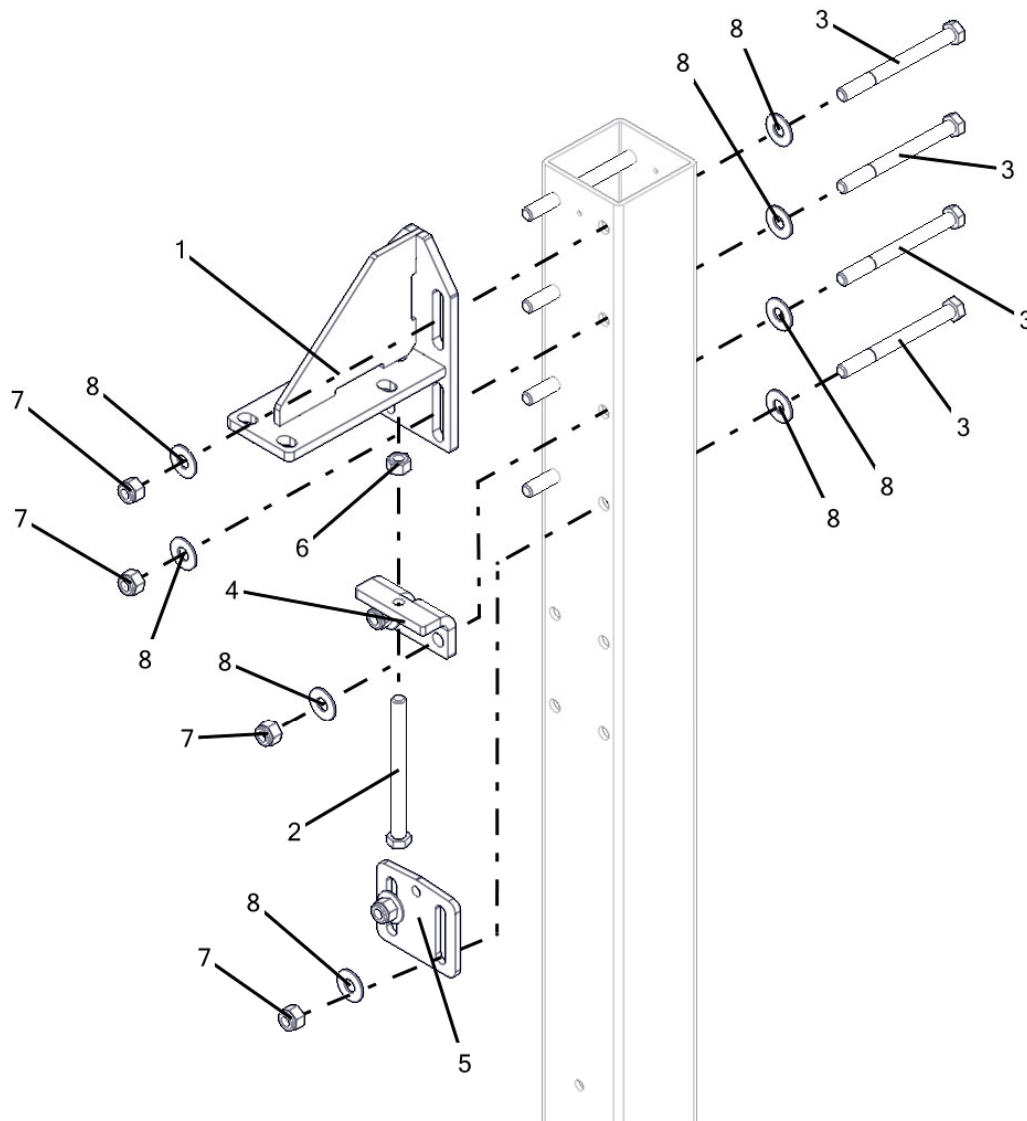


WARNING! – FAILURE TO PROPERLY INSTALL THE FREESTANDING FRAME GROUNDING HARNESSSES COULD RESULT IN ELECTRICAL SHOCK, SERIOUS INJURY, OR DEATH.

3.3.5 Step 1 Determine Frame Location in the Wash Bay and Mark Lines on the Floor**Figure 19-Mark Frame Location in Wash Bay**

3.3.5 Step 2 Build (4) Corner Leg Rail Mount Assemblies

Assemble rail mounting brackets to (4) corner legs. Figure 20.



BOM ID	Qty	PartNo	Description
1	1	06141664	BRACKET,RAIL-ATTACH,LEG-MTG,SST,LW360P
2	1	05040215	SCREW,1/2-13x6.00,HHCS,SST,FULL-THD
3	8	05040220	SCREW,1/2-13x5.50,HHCS,SST
4	1	06140913	BRACKET,RAIL-ATTACH,ADJUSTMENT,SST
5	1	06141665	BRACKET,RAIL-ATTACH,LEG-SPRT,SST,LW360P
6	1	71015-HCS	NUT,1/2-13,HEX,SST
7	8	71015-NCS	NUT,1/2-13,HEX,LOCK,SST
8	17	71515-FSS	WASHER,1/2,FLAT,SST

Figure 20 – Corner Leg Rail Mount Assembly

3.3.5 Step 3 Build (2) Leg Arch Assemblies

NOTE:

The height of rail bracket will dictate the height of the rail and therefore the height of the tallest vehicle that can safely use the carwash.

Build (2) leg assemblies as shown in Figure 21. When assembling, position the height of the rail brackets per Figure 22. This height will set the wash clearance height as shown in the table in Figure 22.

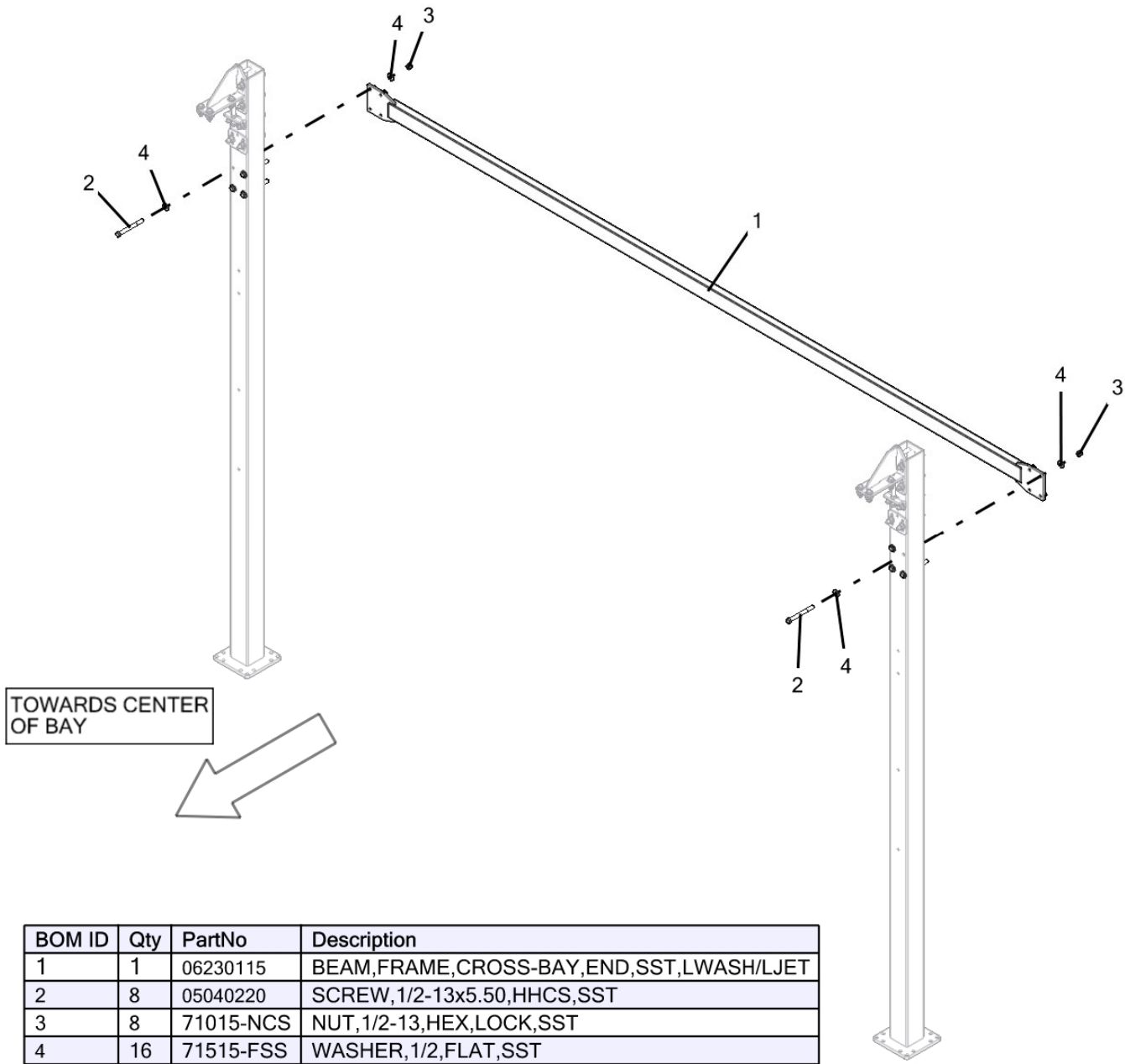


Figure 21 – Cross Beam and Legs

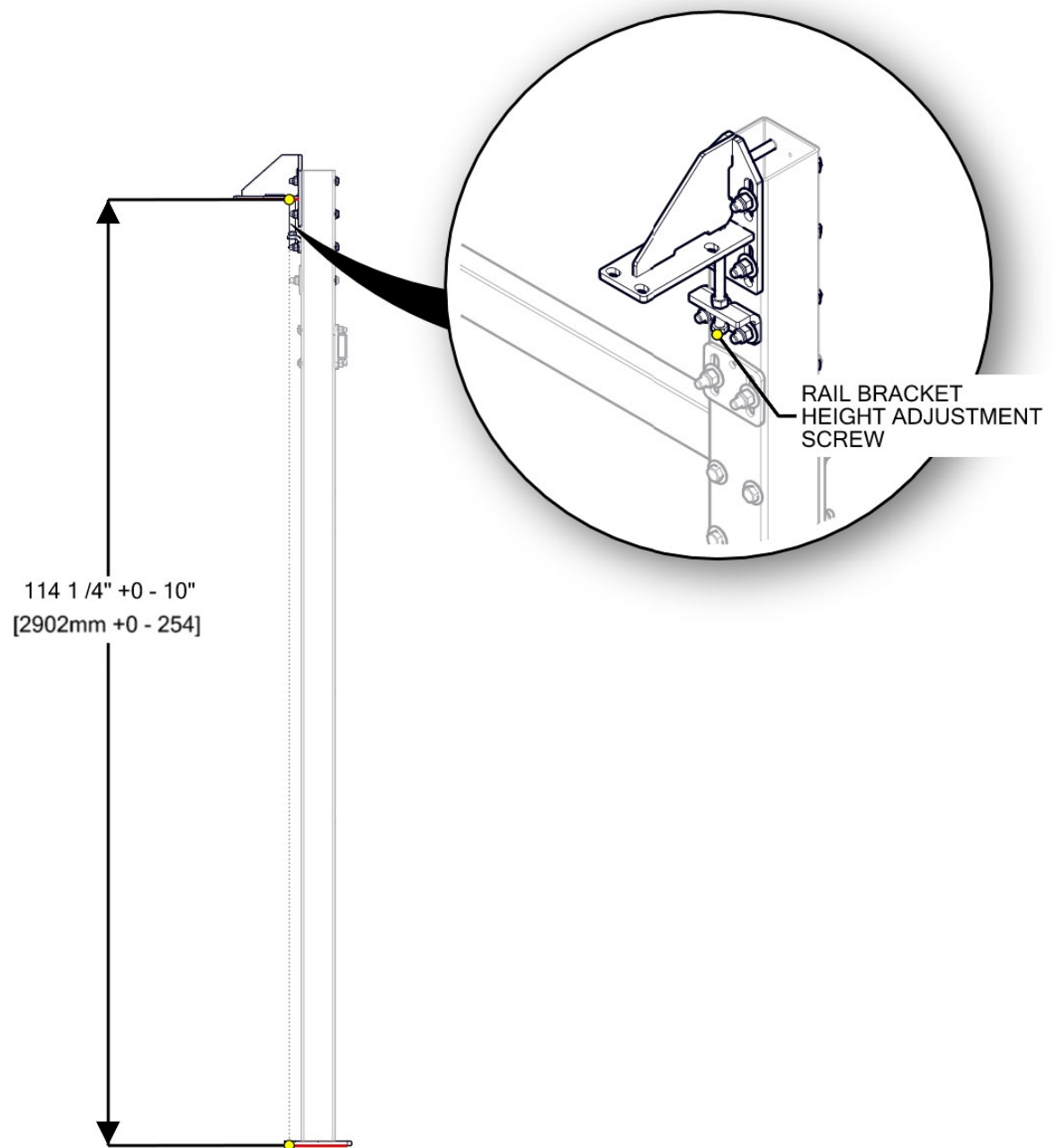


Figure 22 - Leg Arch Height Adjustment

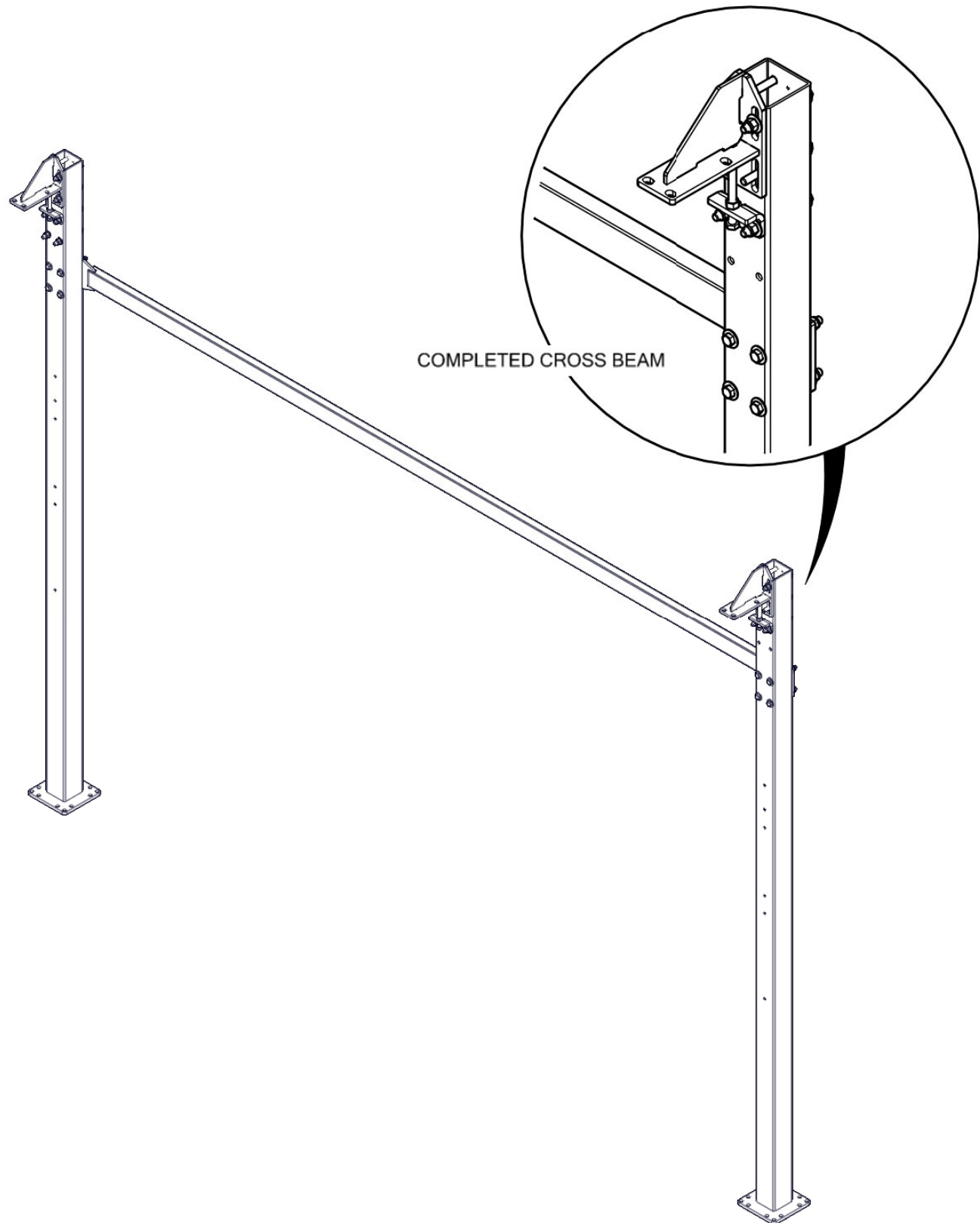
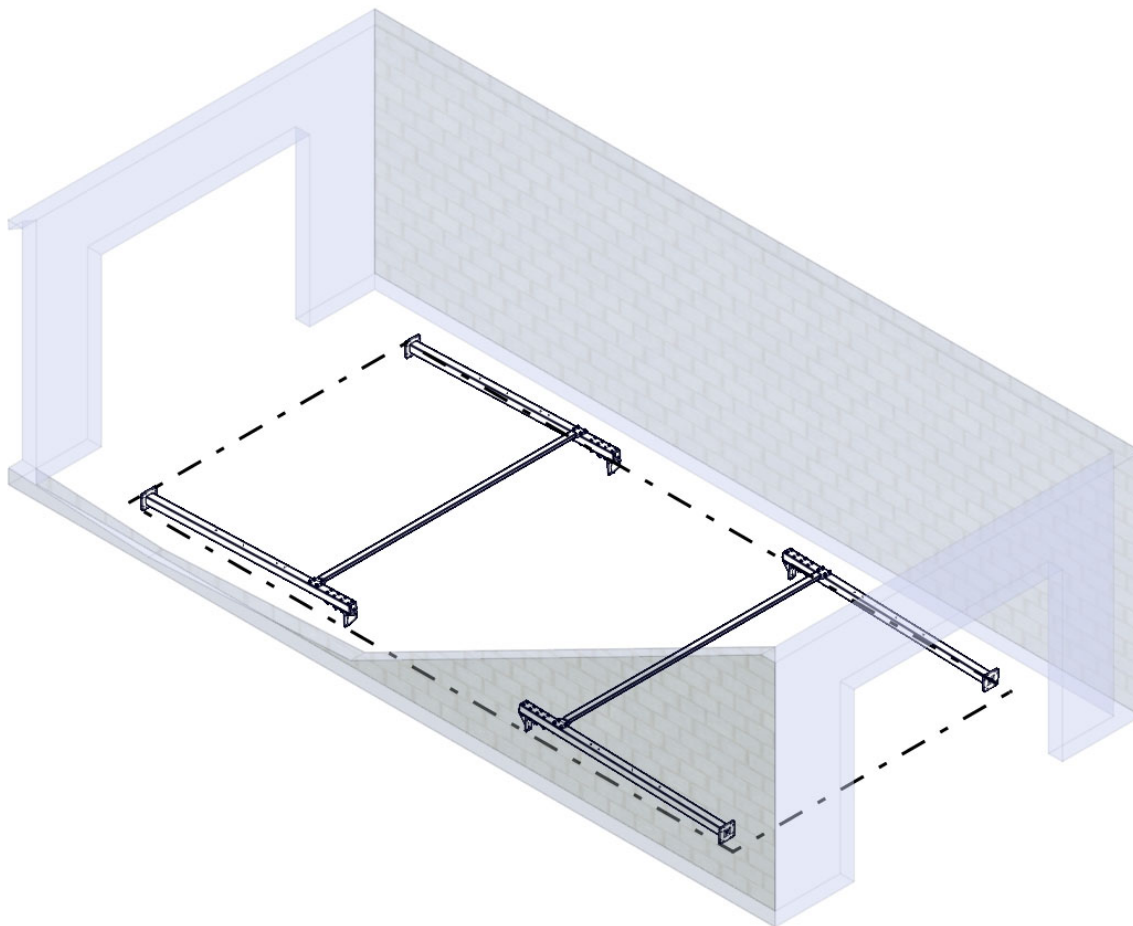


Figure 23 - Completed Leg Assembly

3.3.5 Step 4 Place the Leg Assemblies in the Carwash Bay in the Approximate Locations Marked**Figure 24 - Place Leg Arches in Wash Bay****3.3.5 Step 5 Erect the Leg Assemblies for the Entrance End**

- As the leg arch is raised, maintain the proper dimension between the legs.
- Check to ensure the legs are plumb. Shims may be placed beneath the base of the leg. Shims and floor anchors are not supplied, Figure 25.
- Make sure the legs are vertical and fasten them to the floor using site supplied floor anchors.

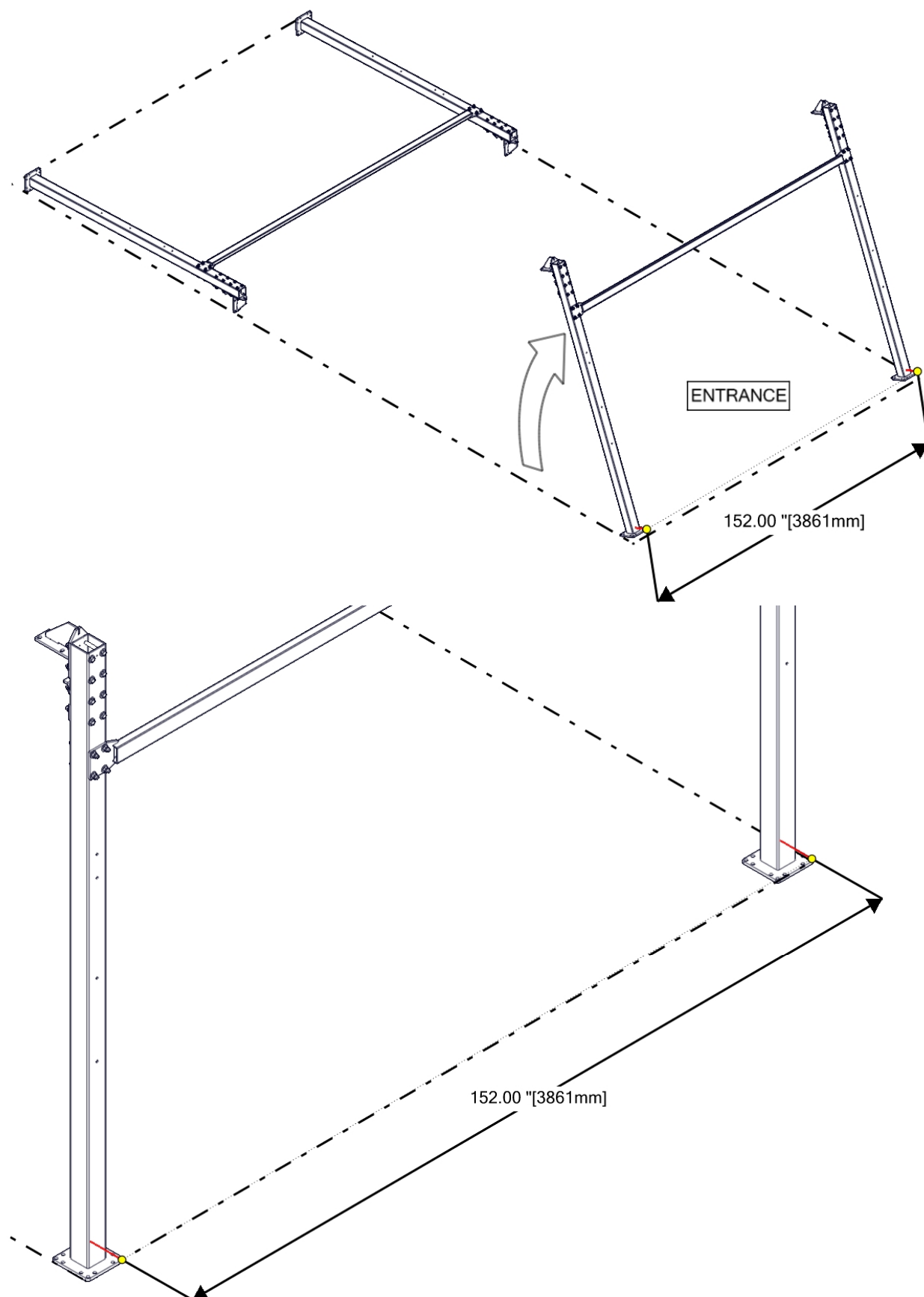
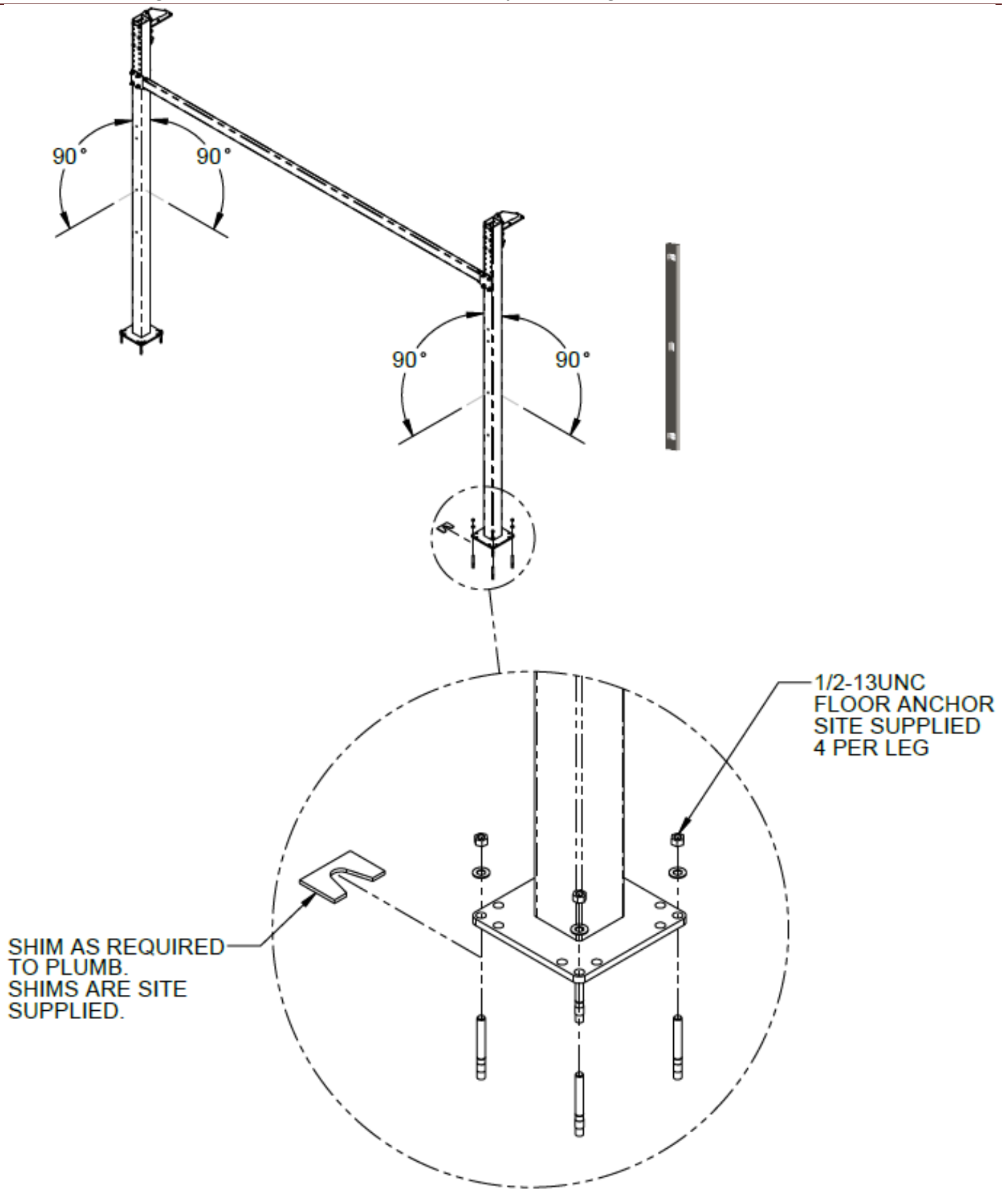
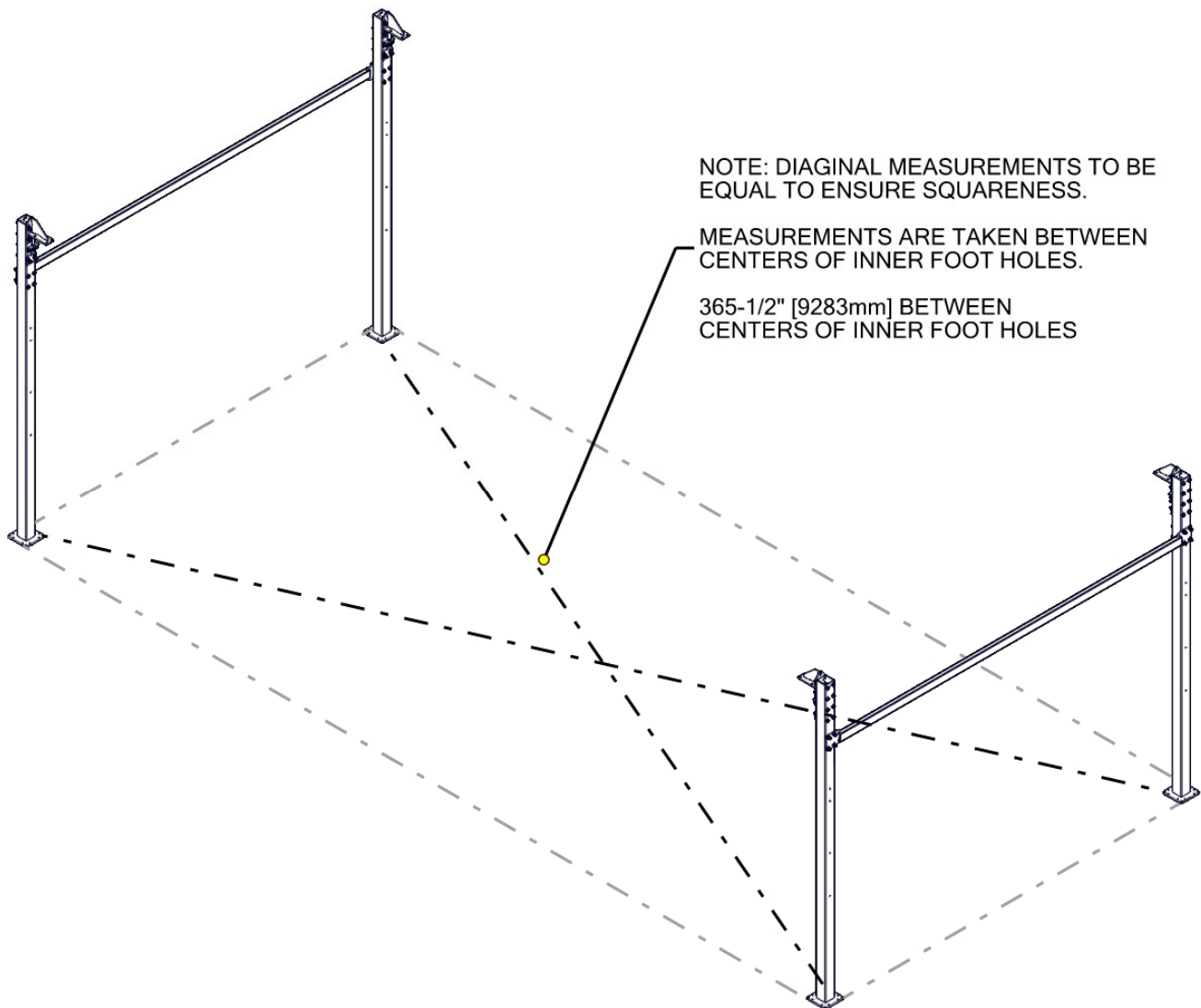


Figure 25 - Erect Entrance Leg Arch

**Figure 26 - Anchor Leg Arch**

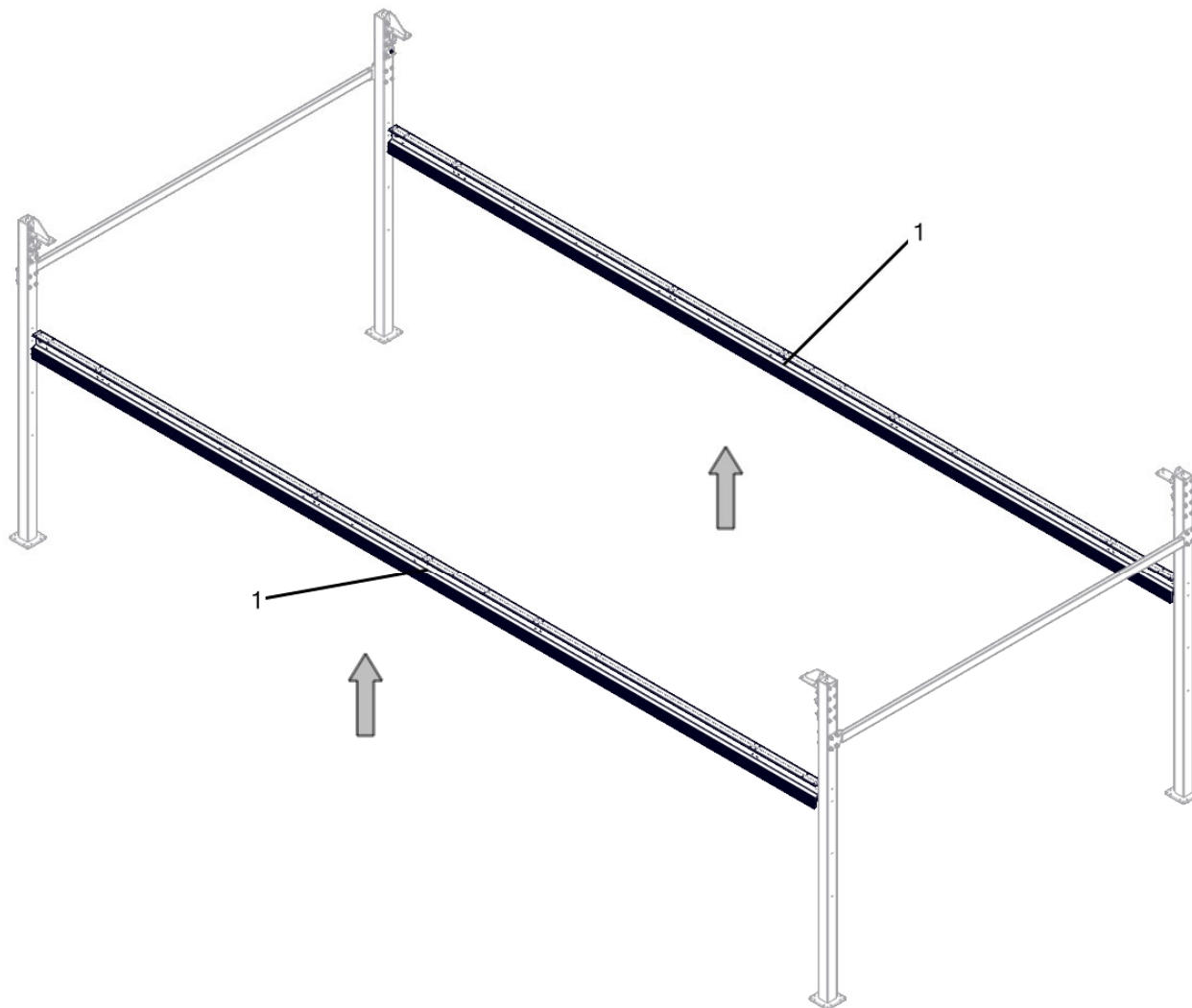
3.3.5 Step 6 Erect the Leg Arch for the Exit End

- As the leg arch is raised, maintain the proper dimension between the legs.
- Measure and adjust the diagonal distance from the entrance end legs until the diagonal distances are equal, Figure 27. Maintain this dimension throughout this step.
- Check to ensure the legs are plumb. Shims may be placed beneath the base of the leg. Shims and floor anchors are not supplied. Anchor the legs as shown in Figure 26.
- Make sure the legs are vertical and fasten them to the floor using site supplied floor anchors.

**Figure 27 - Erect Exit Leg Arch**

3.3.5 Step 7 Raise the Rails into Position and Fasten Them to the Leg Arches

Using an appropriate lifting device, raise each main rail into position at the corner brackets of the leg arches. Each rail weighs approximately 210 lbs. (95 kg). Attach the rails at the four corners using the parts shown in Figure 29.



BOM ID	Qty	PartNo	Description
1	2	06230190	RAIL,ROLLER,WALL/FRAME,334",LWASHPLUS

Figure 28 - Lift Main Rails into Position

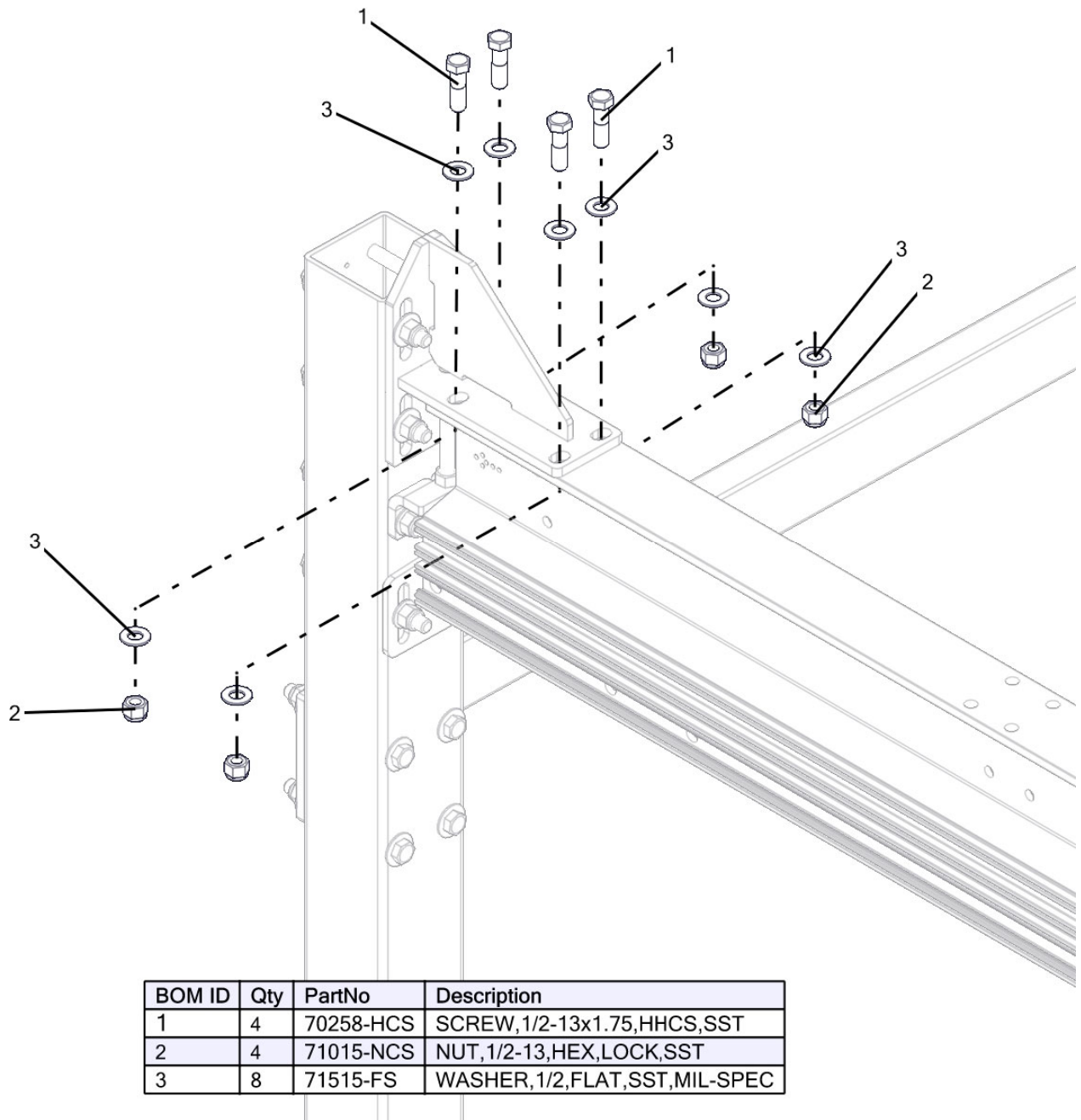
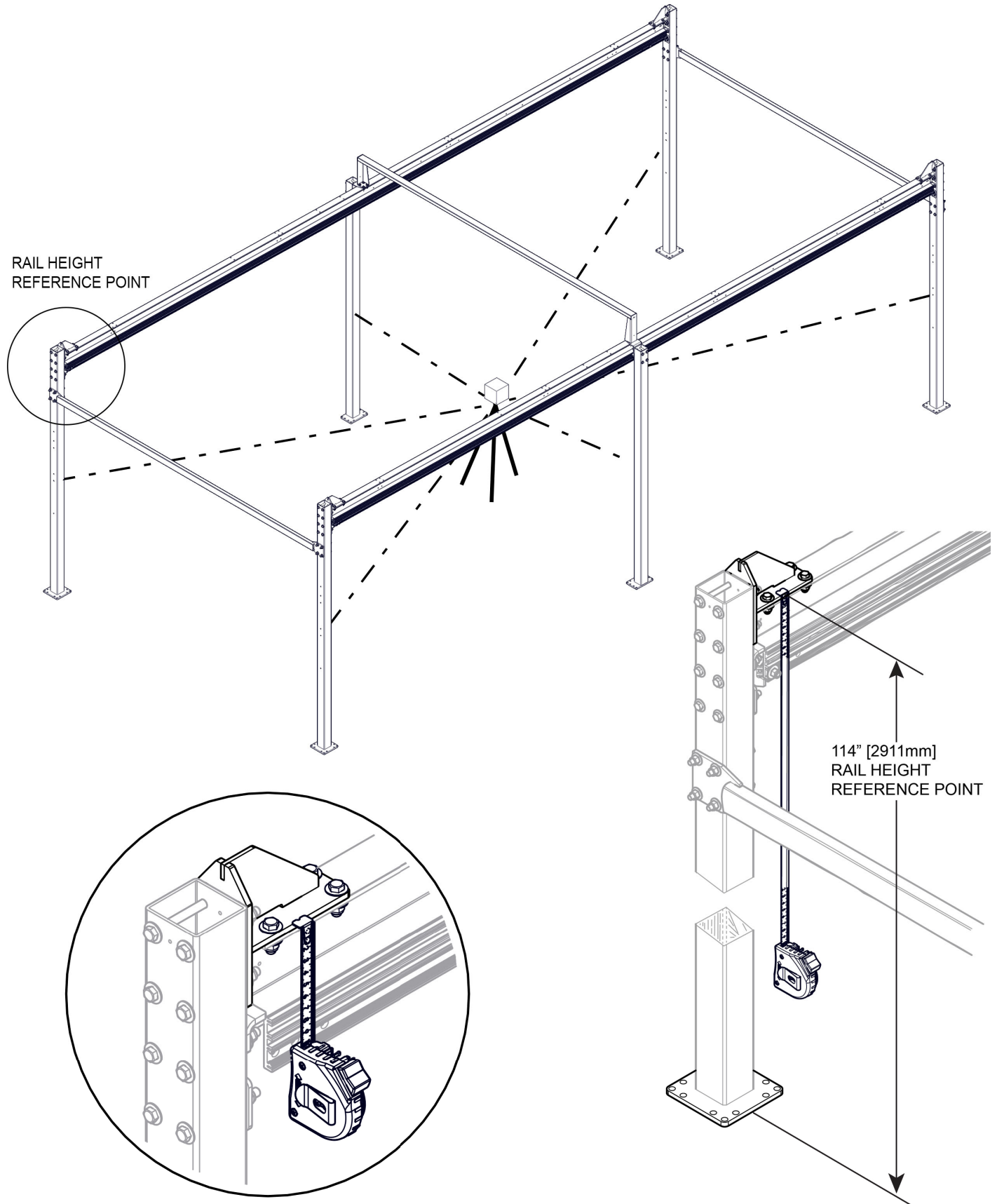


Figure 29 - Attach Main Rails to Corner Brackets

3.3.5 Step 8 Level the Rails

- Using a device such as a transit or laser level, measure and adjust the height of the rails to ensure all four corners are in a common horizontal level plane, Figure 30.
- All four corners are to be level and at an equal height relative to one another within $\pm 1/8$ in (3 mm), Figure 30.
- Adjust the rail height by slightly loosening the corner brackets and turning the leveling screw located beneath the corner bracket at each corner. Retighten the lock nut and rail corner bracket fasteners after adjusting, Figure 31.

**Figure 30 - Level the Main Rails**

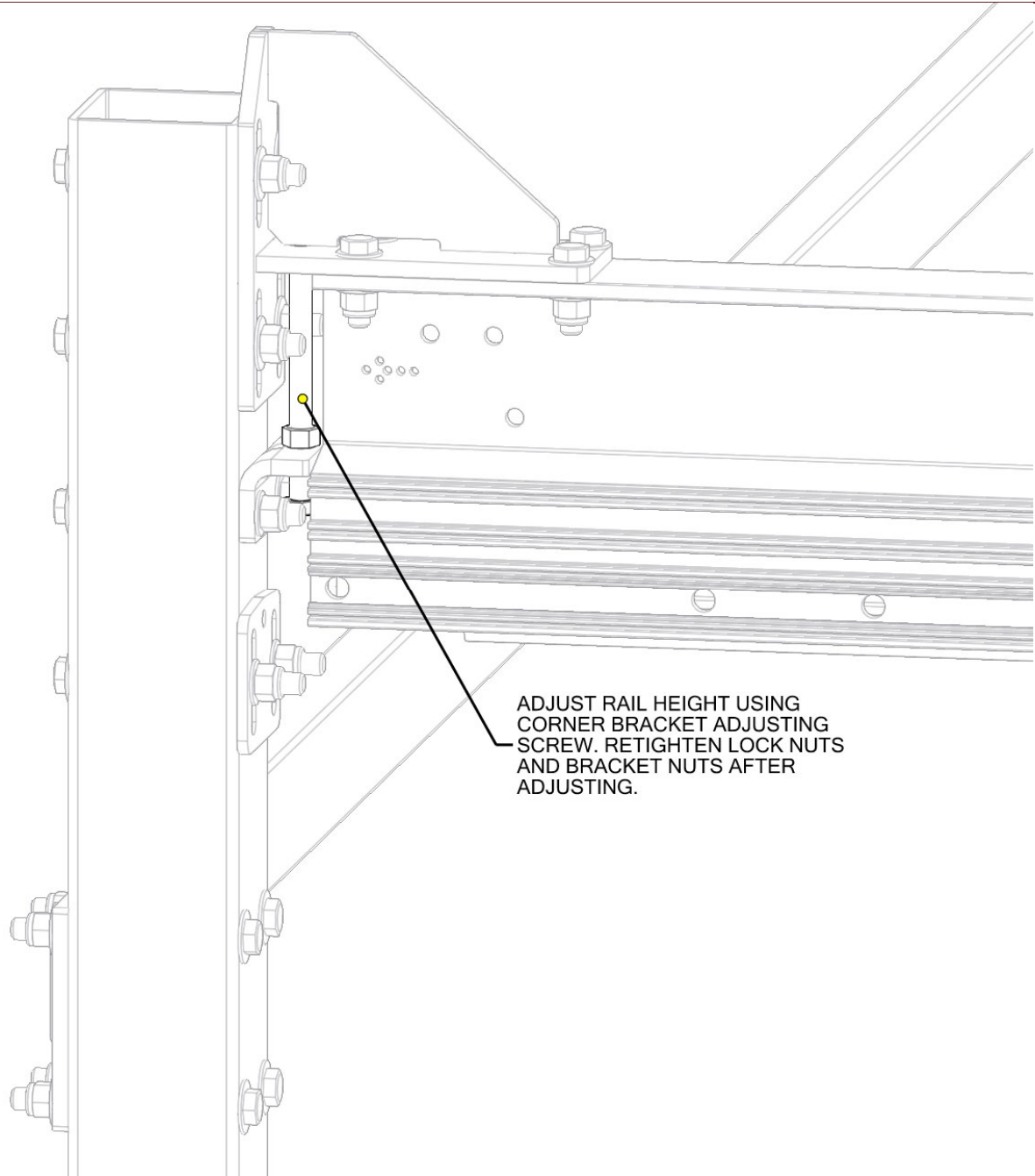
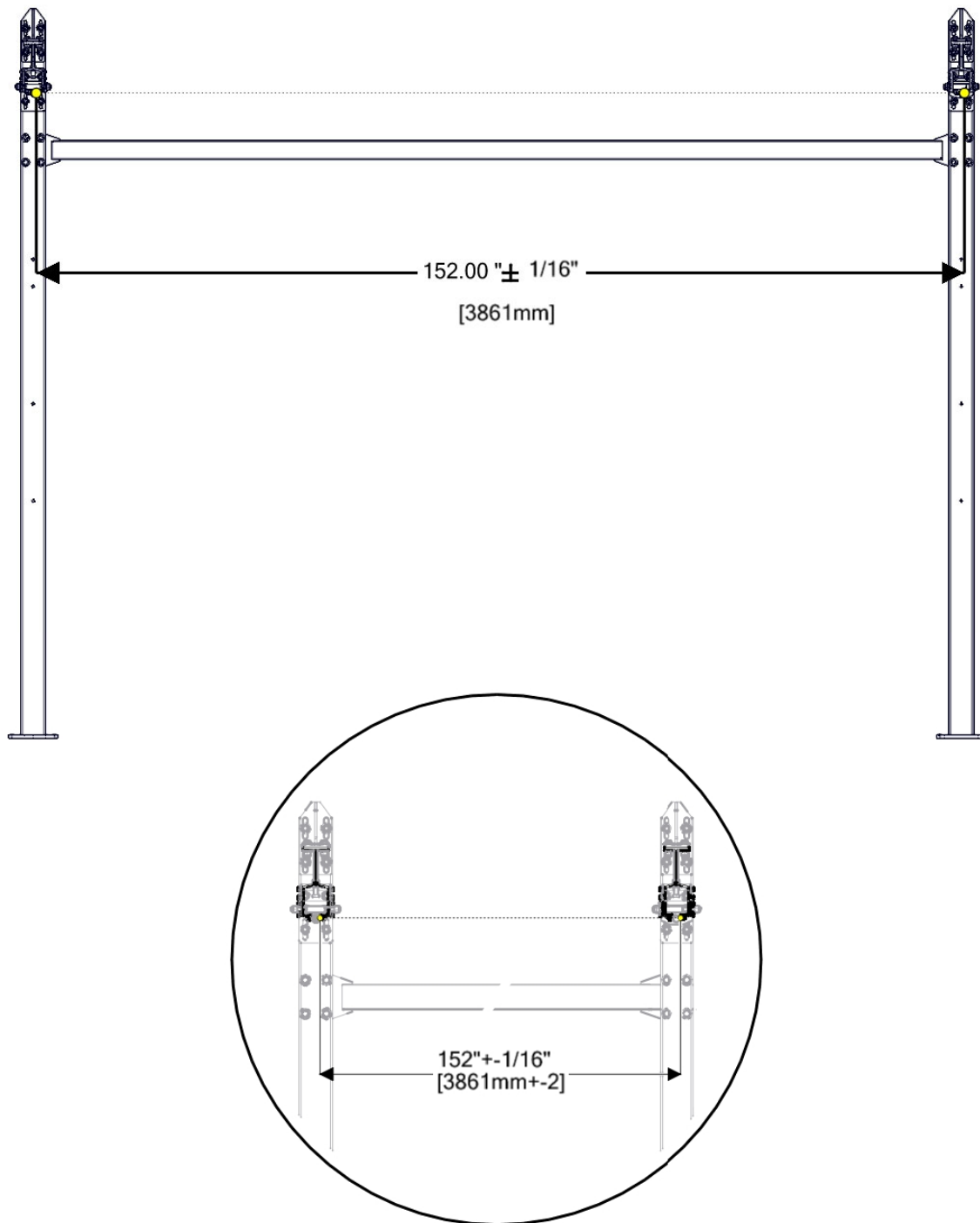


Figure 31 - Adjust Rail Height at Each Corner

3.3.5 Step 9 Adjust the Distance Between the Rails at the Entrance End and the Exit End

- Check the distance between the rails at the entrance and exit end. The rails should be equally spaced apart at both points as shown in Figure 32.
- Adjust the spacing as required by loosening the fasteners that attach the rails to the corner brackets and moving the rails in the bracket slots. Retighten after adjusting.

**Figure 32- Set Rail Spacing All Along Length**

3.3.5 Step 10 Install Center Cross Beam (all frames) and Center Leg Mounting Bracket to Left Rail (6-Legged Frame Only)

NOTE:

If installing a 4-legged Free Standing Frame, Bracket 06230110 is not included and not to be installed.

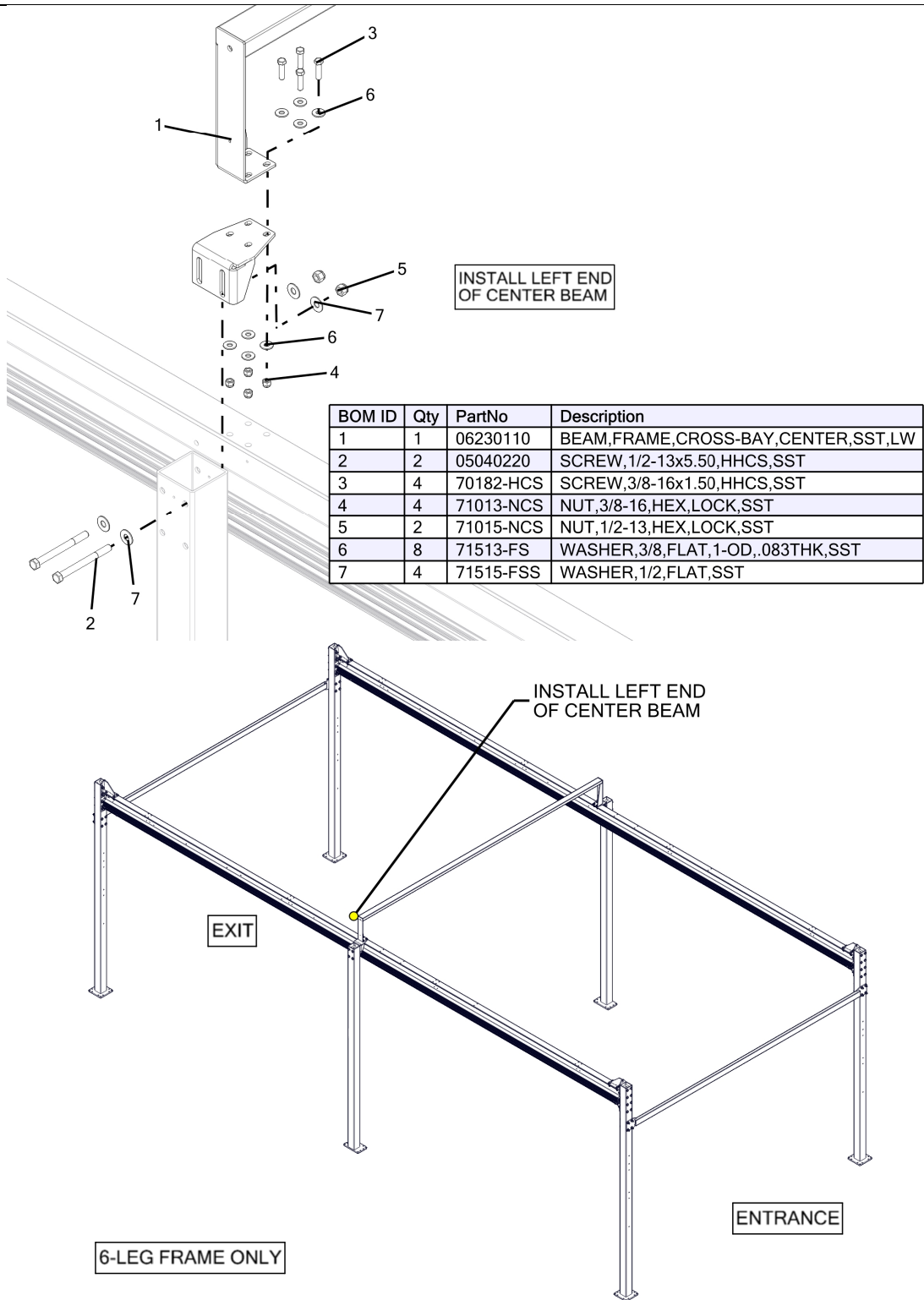


Figure 33 - Install Left End of Center Beam (all frames) and Leg Bracket (6-Legged Frame Only)

3.3.5 Step 11 Verify Center Rail Spacing (all frames)

Hold the rail spacing as shown in Figure 34 while performing the next step (attaching the right end of center cross beam).

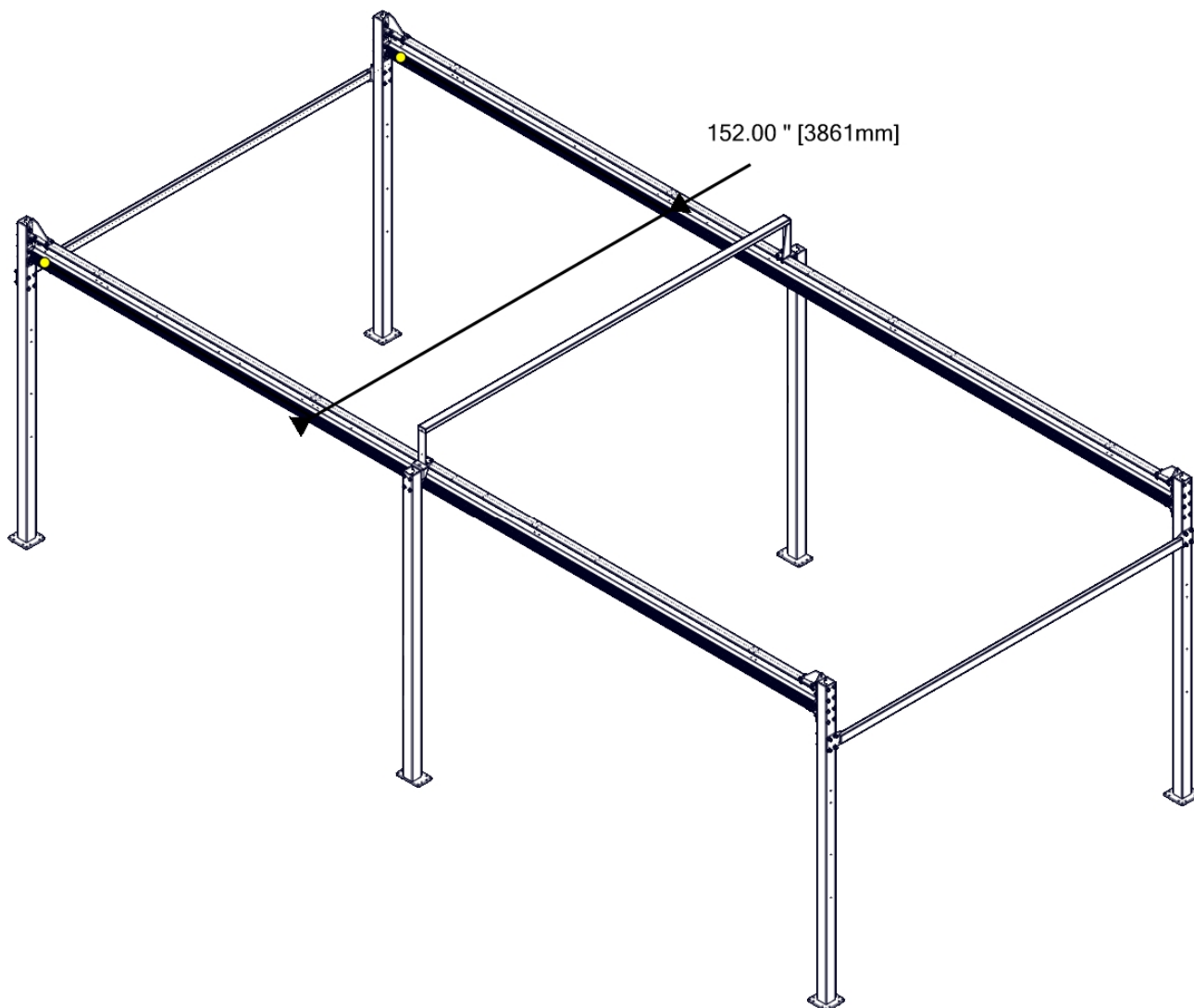
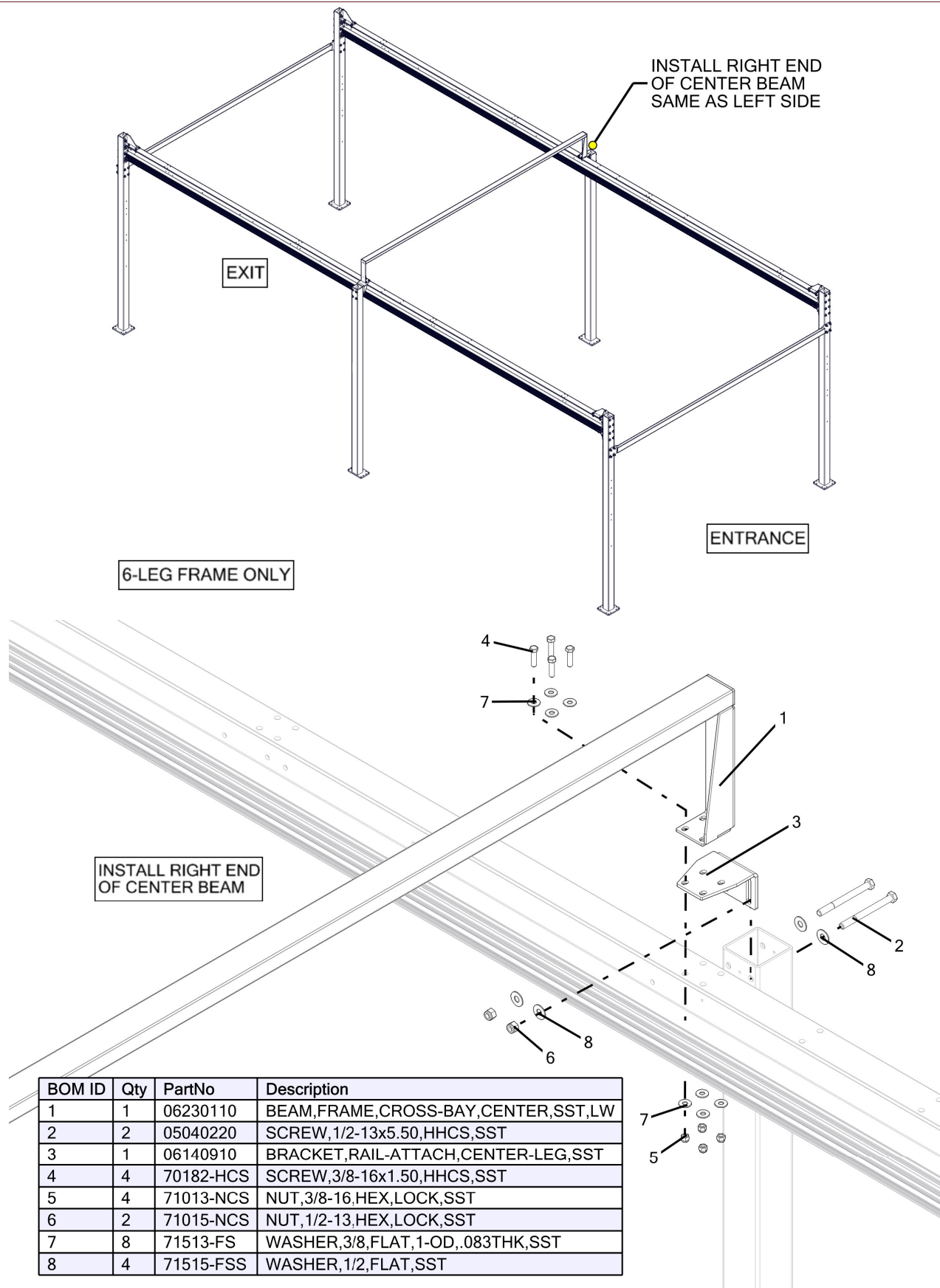


Figure 34 –Maintain Center Rail Spacing (6-Legged Frame Only)

3.3.5 Step 12 Fasten the Right End of the Center Cross Beam (all frames) and Install the Center Leg Mounting Bracket to the Right Rail (6-Legged Frame Only)

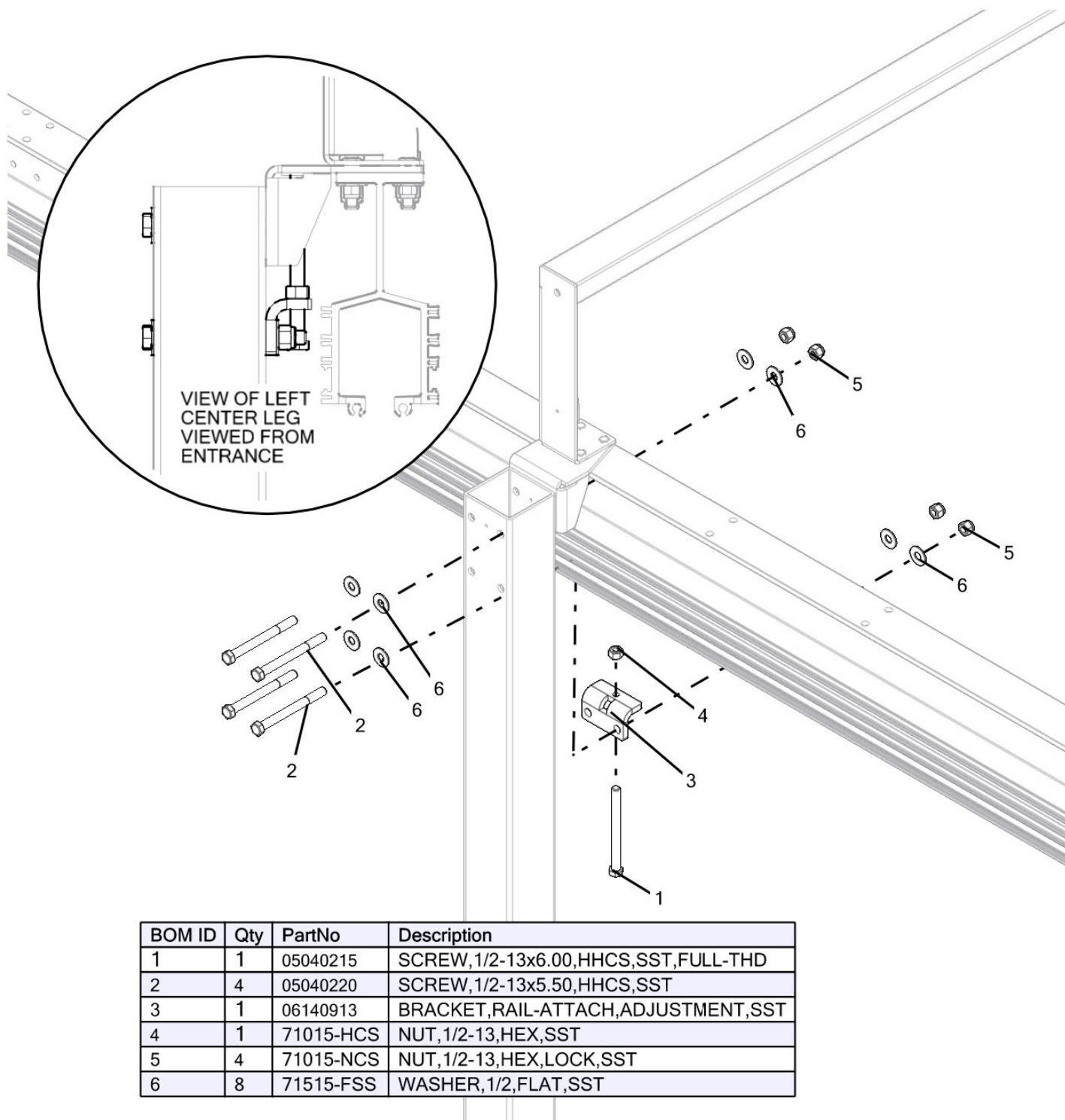
NOTE:	If installing a 4-legged Free-Standing Frame, Bracket 06230110 is not included and not to be installed.
--------------	--

Maintain the dimension between the rails and attach the right end of the center cross beam and center leg mounting bracket.

**Figure 35 - Install Right End of Center Beam (all frames) and Leg Bracket (6-Legged Frame Only)**

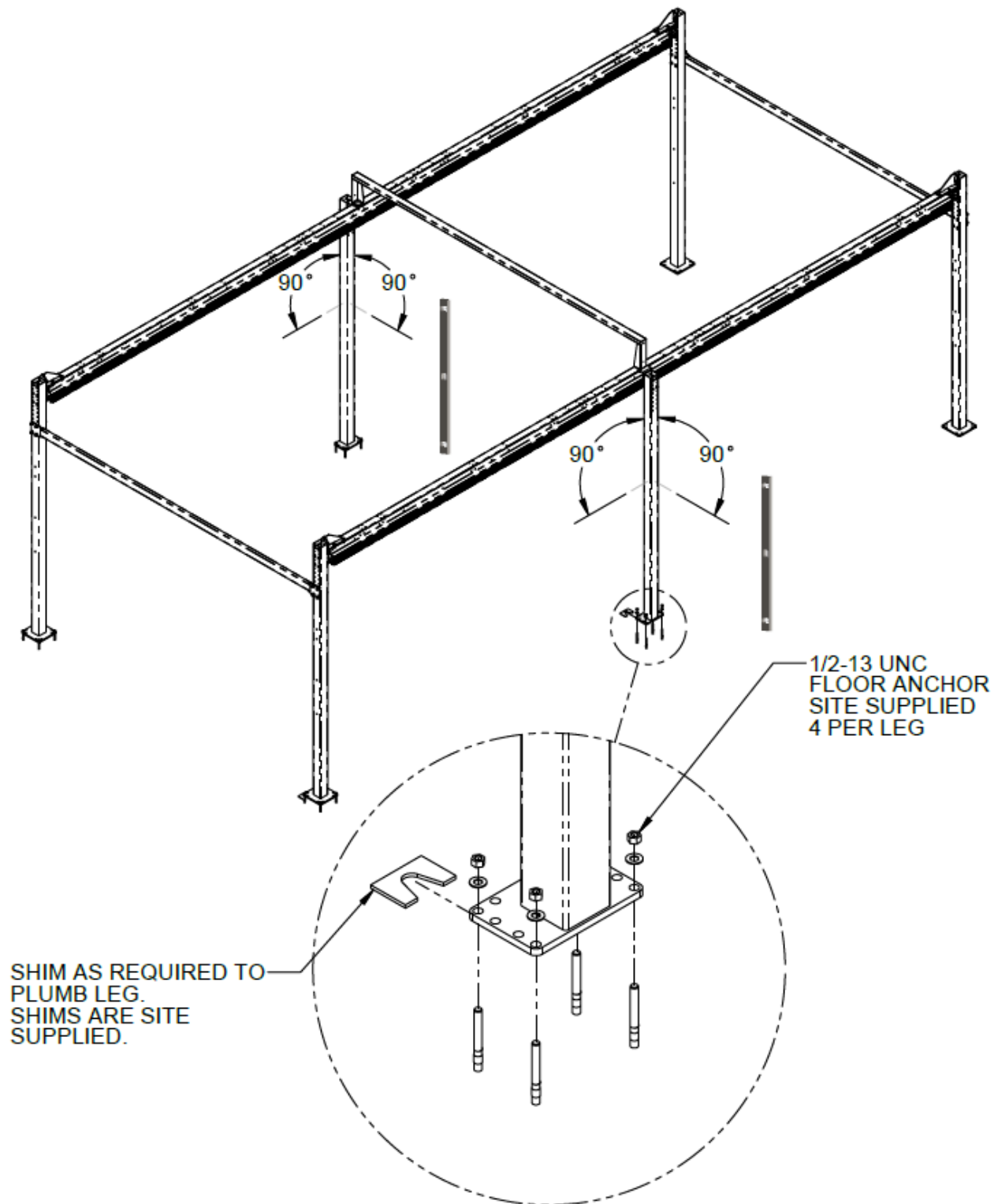
NOTE: If installing a 4-legged Free-Standing Frame, skip to section 2.9.5 Step 15.**3.3.5 Step 13 (6-Legged Frame Only) Install Center Legs to Each Side of the Frame**

When installing the center legs to the attachment brackets, install the height adjusting screw bracket to the inside face of the leg.

**Figure 36 - Install Center Legs and Height Adjusting Screws and Brackets (6-Legged Frame Only)**

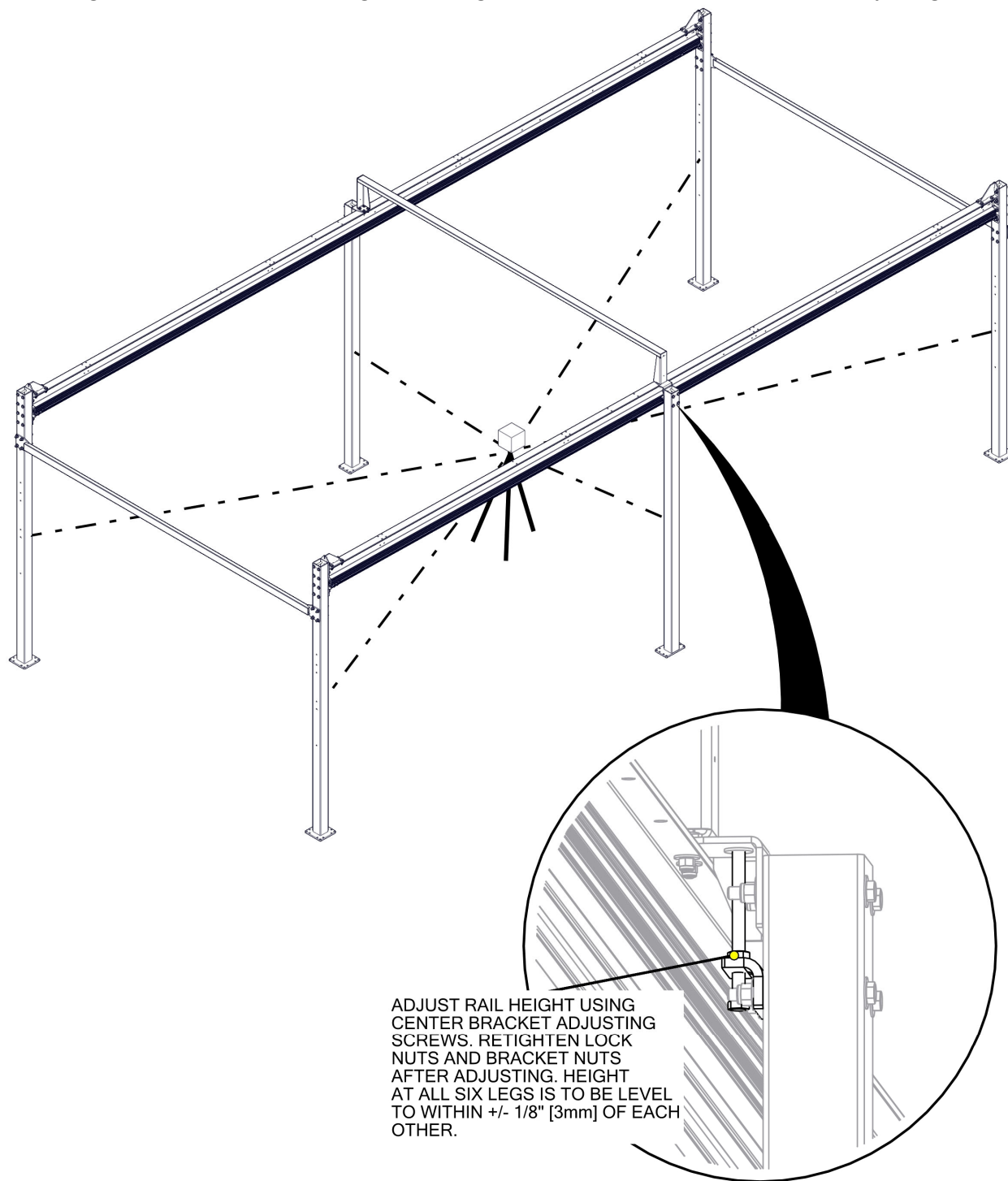
3.3.5 Step 14 (6-Legged Frame Only) Anchor Center Legs to the Wash Bay Floor

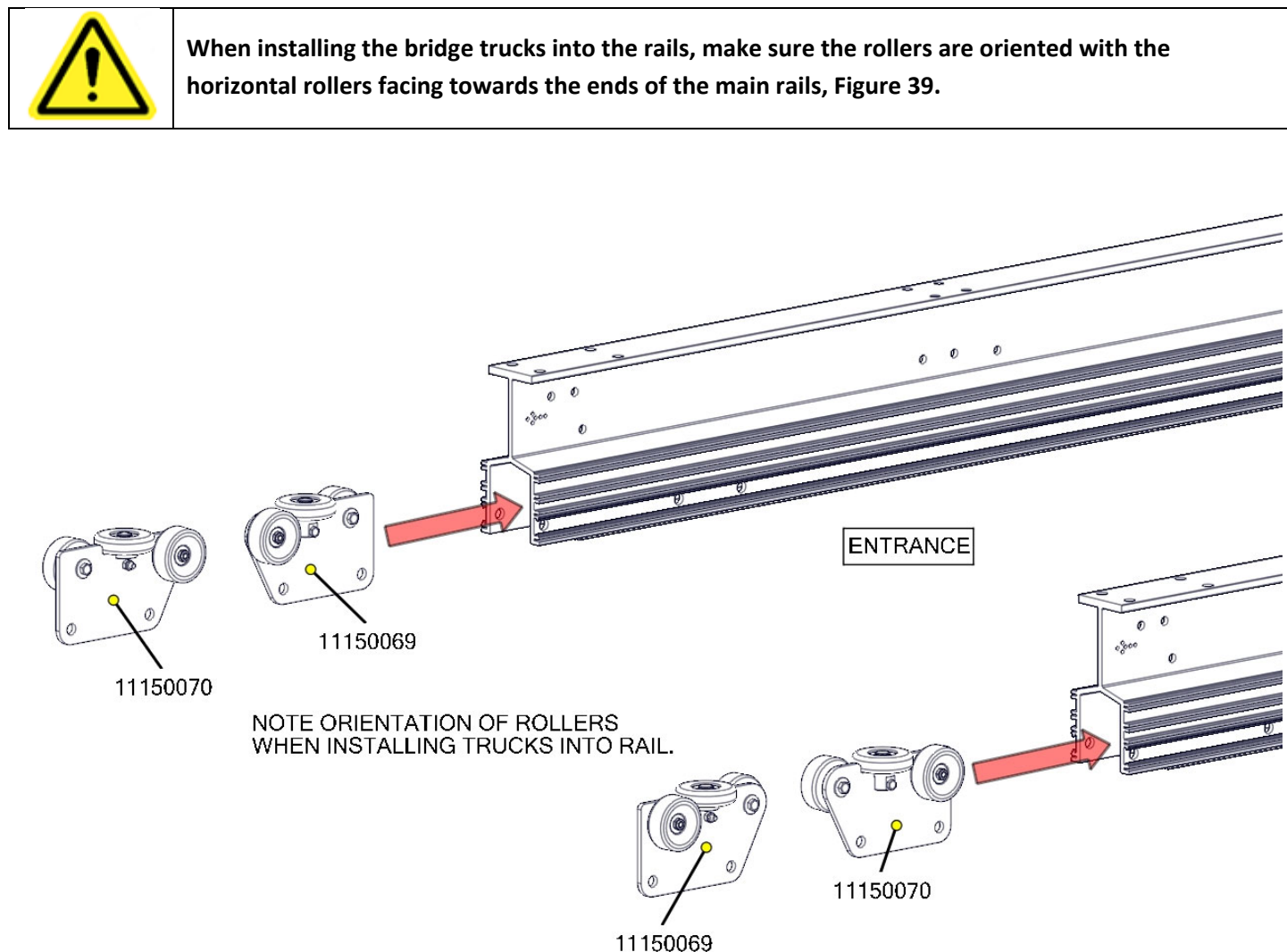
- Check to ensure the legs are plumb. Shims may be placed beneath the base of the leg. Shims and floor anchors are not supplied.
- When the legs are vertical, fasten them to the floor using site supplied floor anchors.

**Figure 37 - Anchor Center Legs (6-Legged Frame Only)**

3.3.5 Step 15 (6-Legged Frame Only) Verify Rails are Level and Adjust Rail Height at the Center

- Using a device such as a transit or laser level, measure and adjust the height of the rails to ensure the center of each rail is in a common horizontal level plane with the four corners.
- Each center point is to be level and at an equal height with the corners within $\pm 1/8$ in (3 mm).
- Adjust the rail height by loosening the center leg brackets and turning the leveling screw located beneath the center leg bracket on each side. Retighten the leg bracket fasteners and lock nuts after adjusting.

**Figure 38 - Adjust Rail Height at the Center (6-Legged Frame Only)**

3.3.5 Step 16 Install (2) Bridge Trucks in Each Rail**Figure 39 - Truck Orientation**

- Bridge trucks are shipped with the loose parts kit.
- Install the first truck by pivoting it into the end of the rail as shown in Figure 40.
- Install the second truck by pivoting it into the end of the rail as shown in Figure 41.
- Install the other two trucks into the opposite rail in a similar manner.

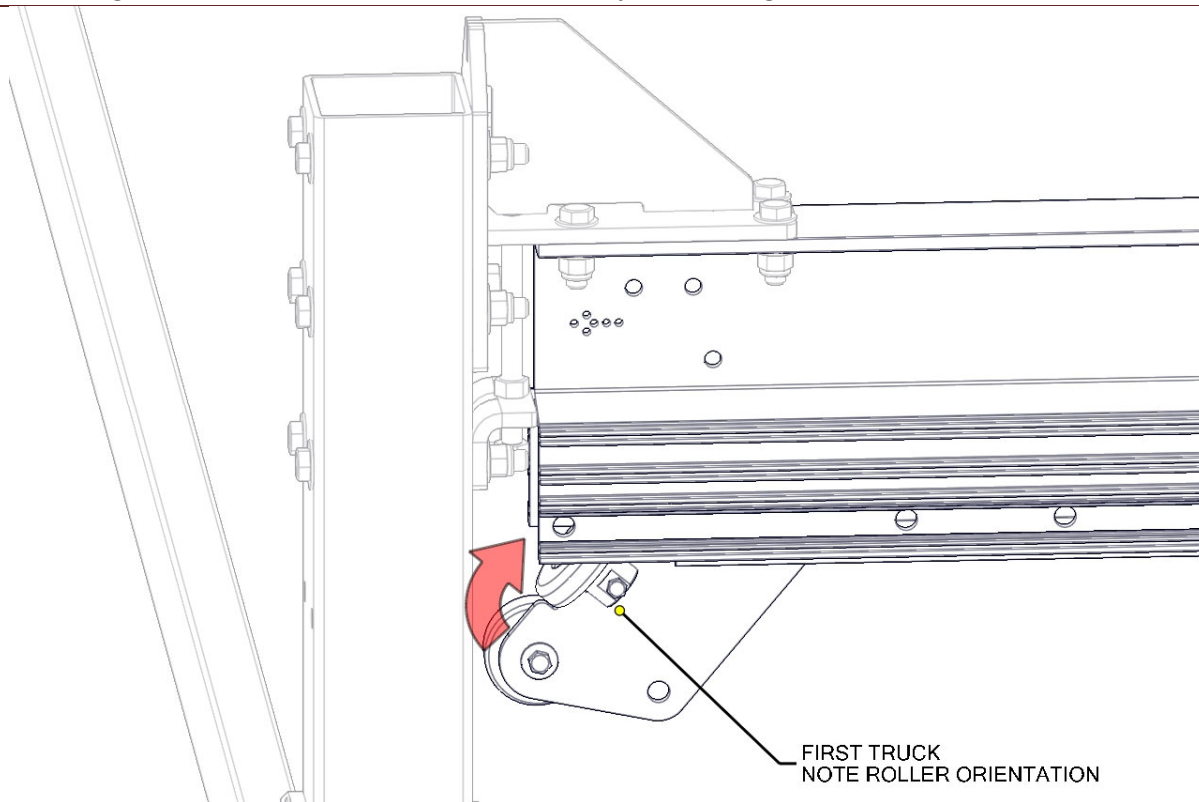


Figure 40 - Install the First Truck

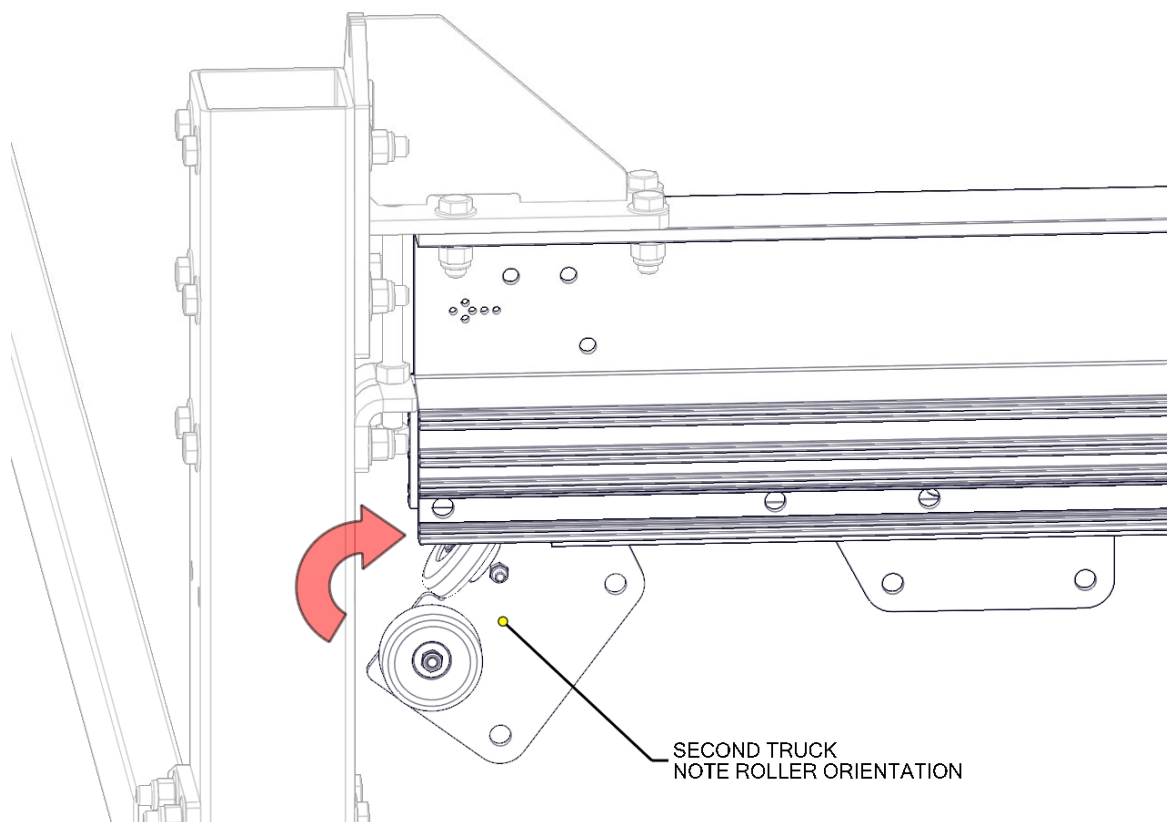


Figure 41 - Install the Second Truck

3.3.5 Step 17 Install the Rail End Brackets to Each End of Each Rail.

- At each corner of the frame where the rail is attached to the leg, install the rail end bracket, Figure 42.
- Ensure #4 (1/2-13 x 2.25 screw) is tight against the leg in each corner and the jam nuts are tight to hold it in place. This will tighten the rail against the leg to provide a stiffer connection and prevent wobble during operation.

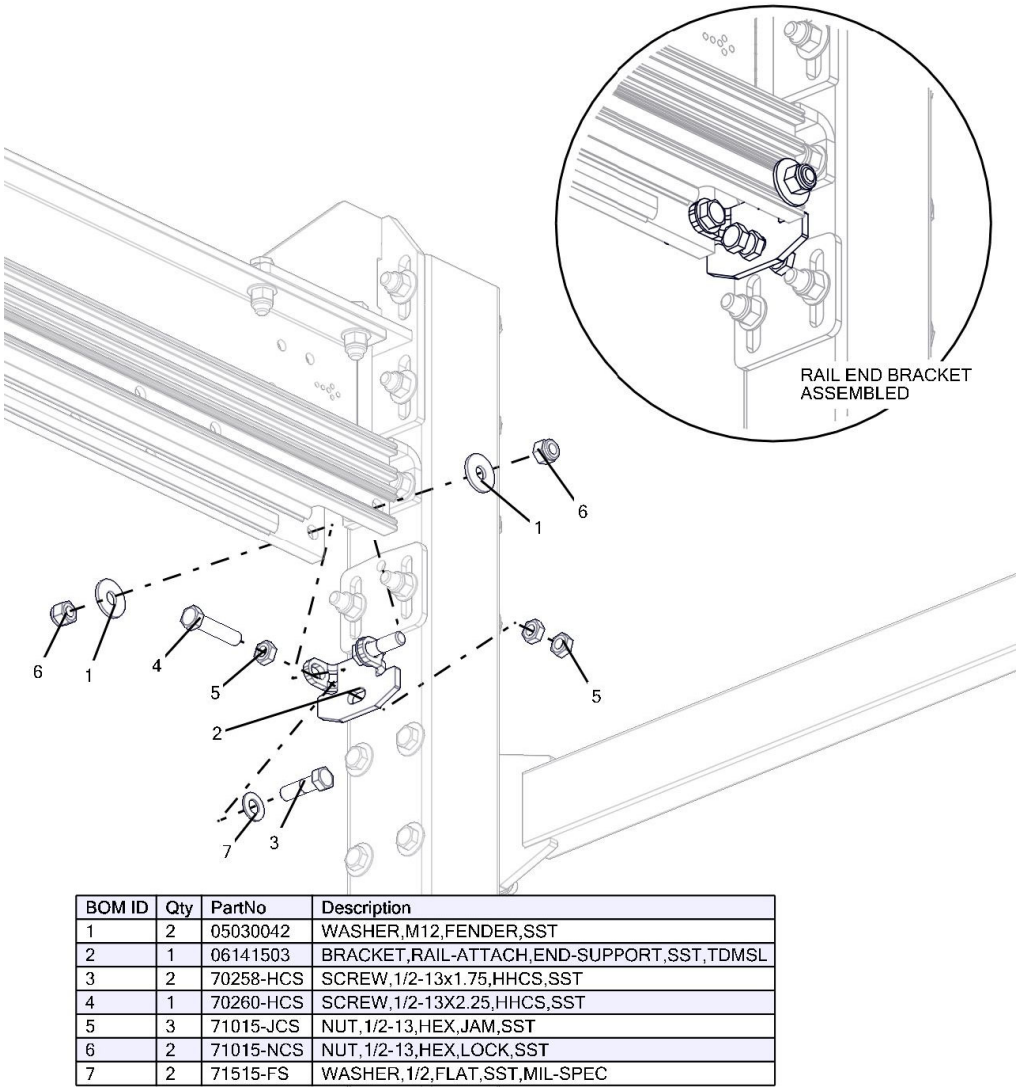
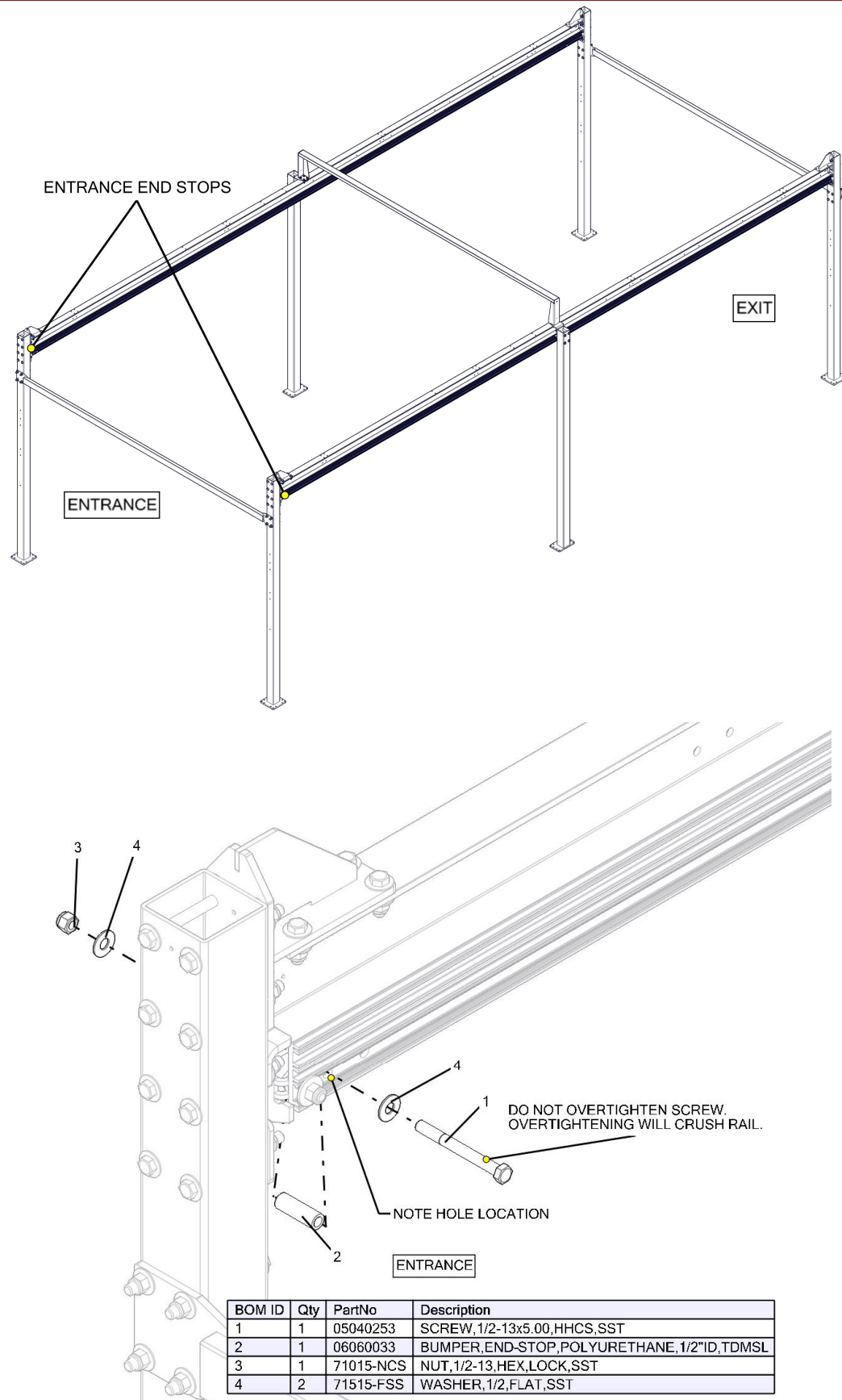


Figure 42 - Rail End Bracket Assembly (each corner)

3.3.5 Step 18 Install the Bridge End Stops in the Main Rails

- The end stop parts are included in the main shipped loose kit.
- To prevent crushing the main rail, use caution to not overtighten the end stop screws.
- Install the end stops (two total assemblies) as shown at the entrance end of the frame in the second from the endmost hole at the end of each rail, Figure 43.
- Install the end stops (two total assemblies) as shown at the exit end of the frame, Figure 44.

End stop location at the exit end of the rails is dependent on options ordered, Figure 44.

**Figure 43 - Install Entrance End Stops at Each Corner at the Entrance**

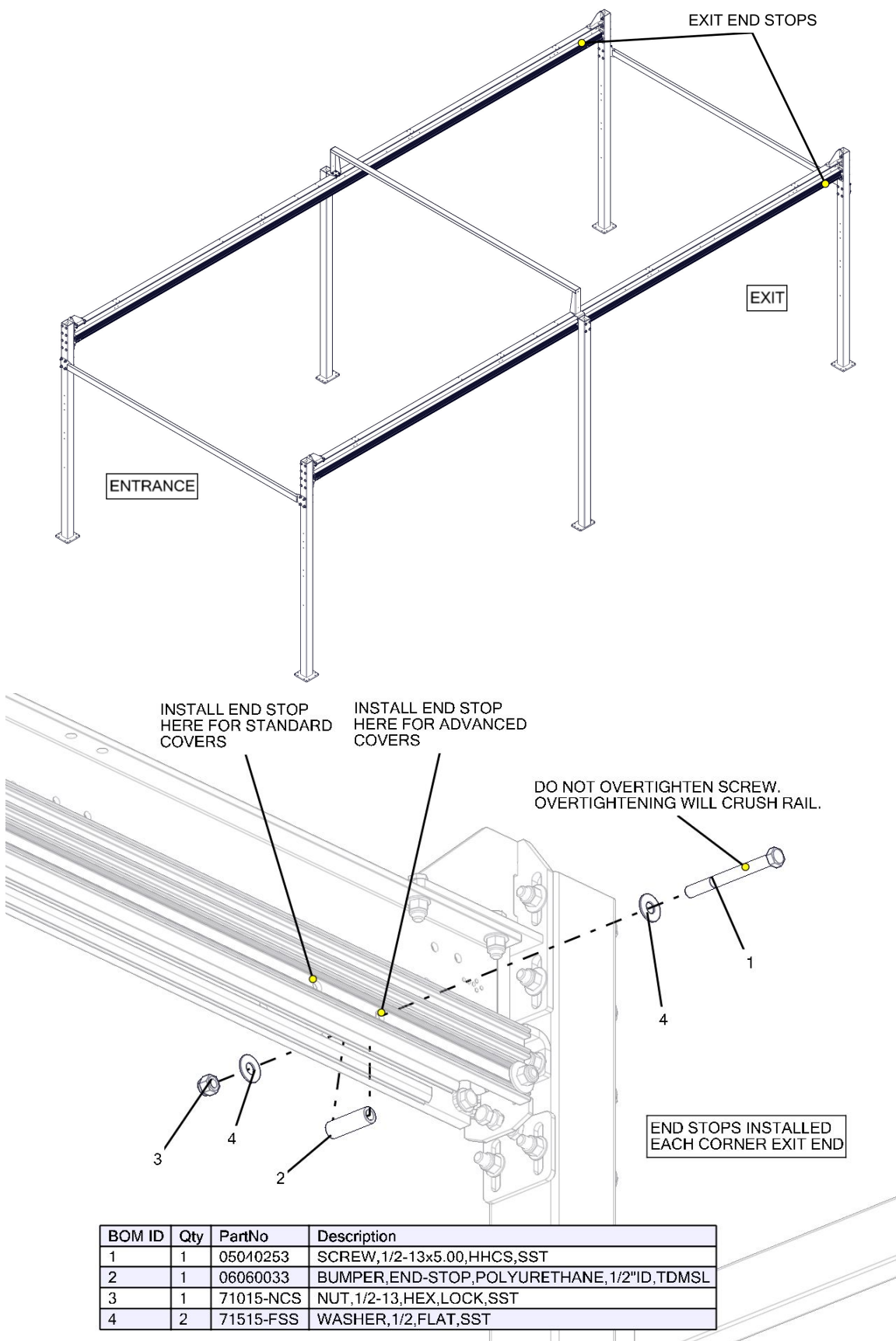


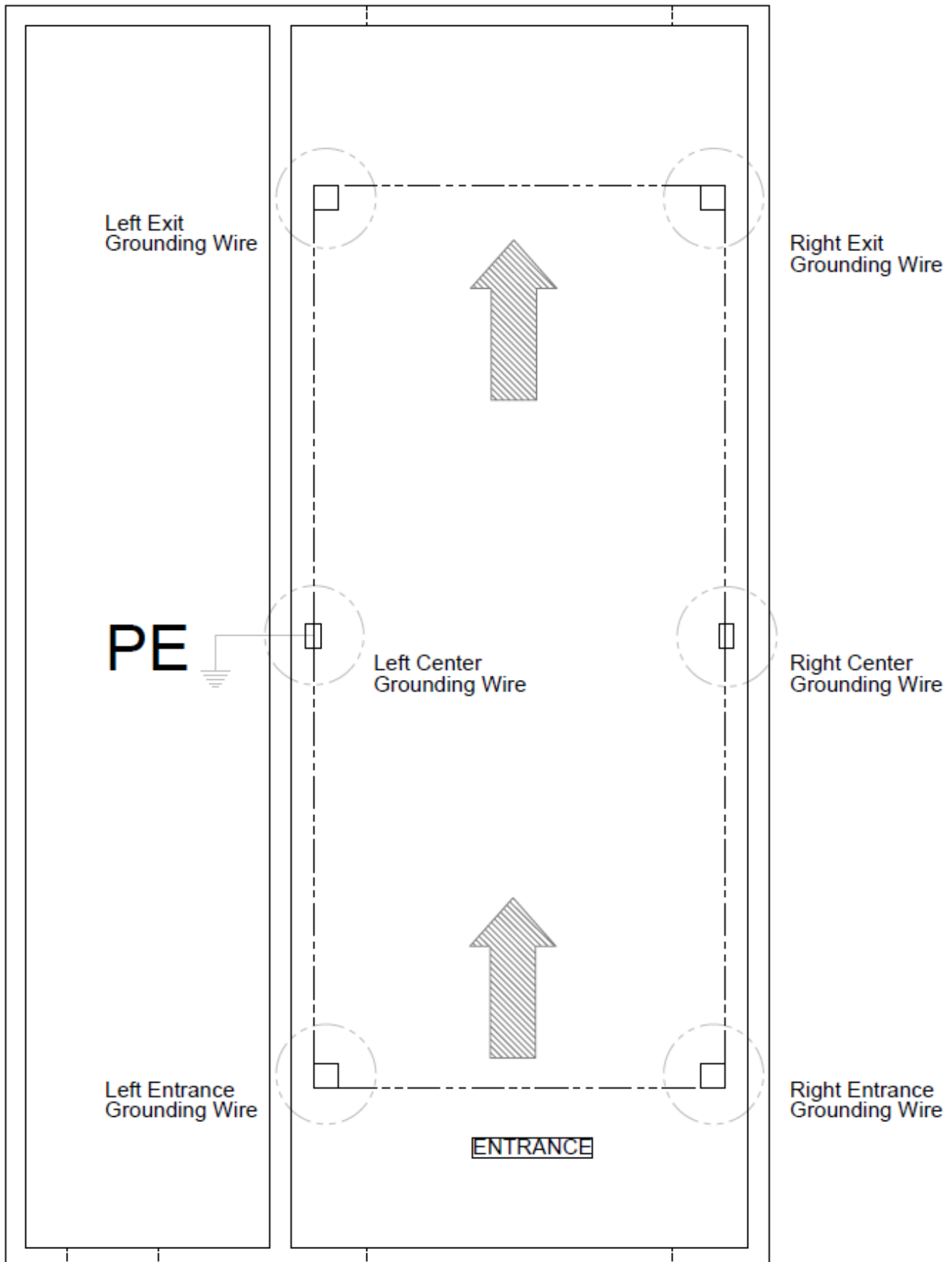
Figure 44 - Install Exit End Stops at Each Corner at the Exit

3.3.5 Step 19 Install the Electrical Grounding Wires at Each Corner of the Frame and the Center Cross Beam, Legs, and Rails.

- Install the supplied ground wires from the grounding wire kit at each corner of the frame as shown in Figure 45 through Figure 49.
- For 6-Legged Frames, install the supplied ground wires for the center legs, Figure 49.
- Attach the ground wire included in the kit between the center of the rail closest to the E-chain junction box and the terminal shown to make a permanent earth ground (PE) to ensure proper frame grounding, Figure 48 and Figure 49.



WARNING! - FAILURE TO PROPERLY INSTALL THE FREESTANDING FRAME GROUNDING HARNESSSES COULD RESULT IN ELECTRICAL SHOCK, SERIOUS INJURY, OR DEATH.

**Figure 45 - Frame Grounding Locations**

73726-THC
SCREW, 1/4-14x.75, HWHTEC, ZP
INSTALL IN PREDRILLED HOLE
IN LEG

04080222
HARNESS, KIT, GROUNDING,
FREESTANDING-FRAME

73726-THCZ
SCREW, 1/4-14x.75, HWHTEC, ZP
INSTALL IN PREDRILLED HOLE
IN RAIL

LEFT ENTRANCE GROUNDING WIRE

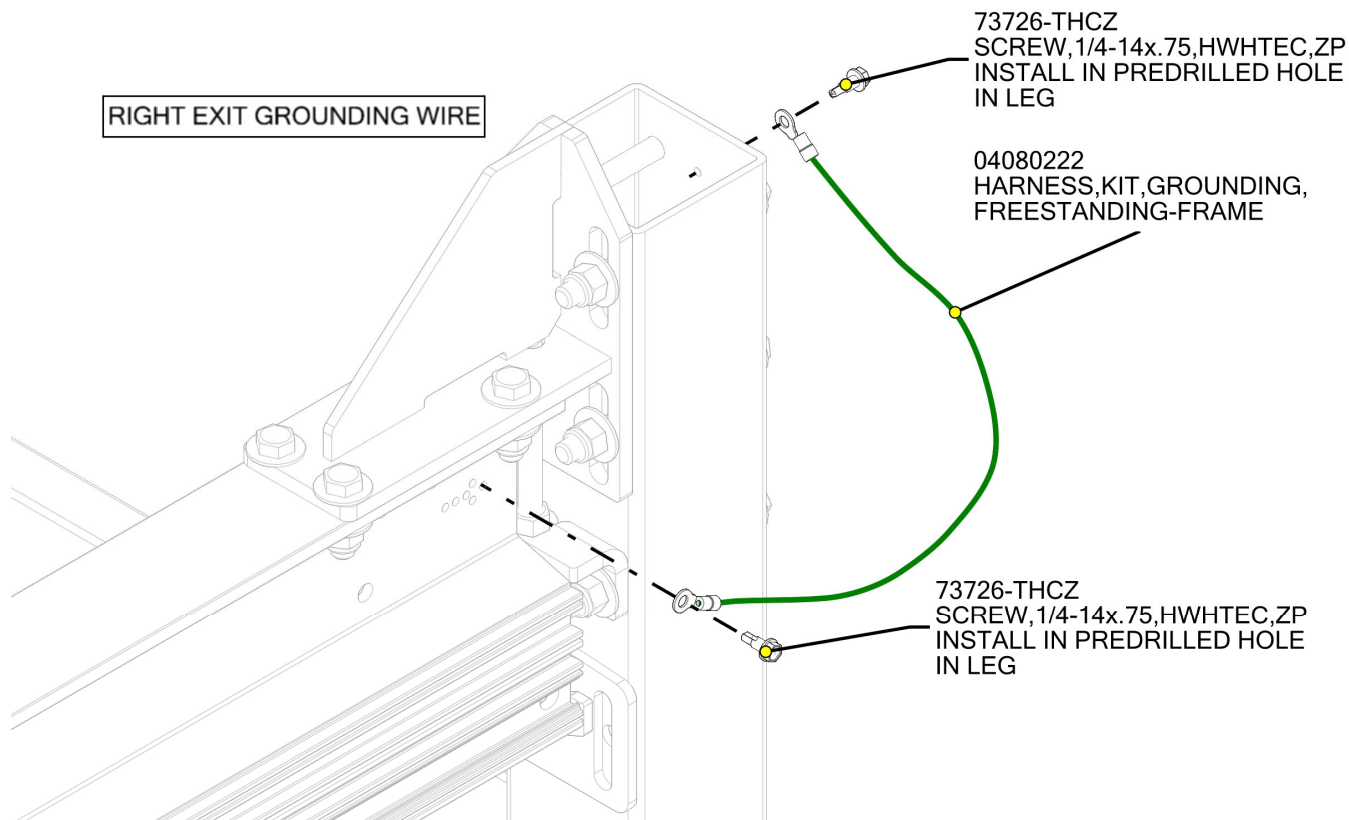
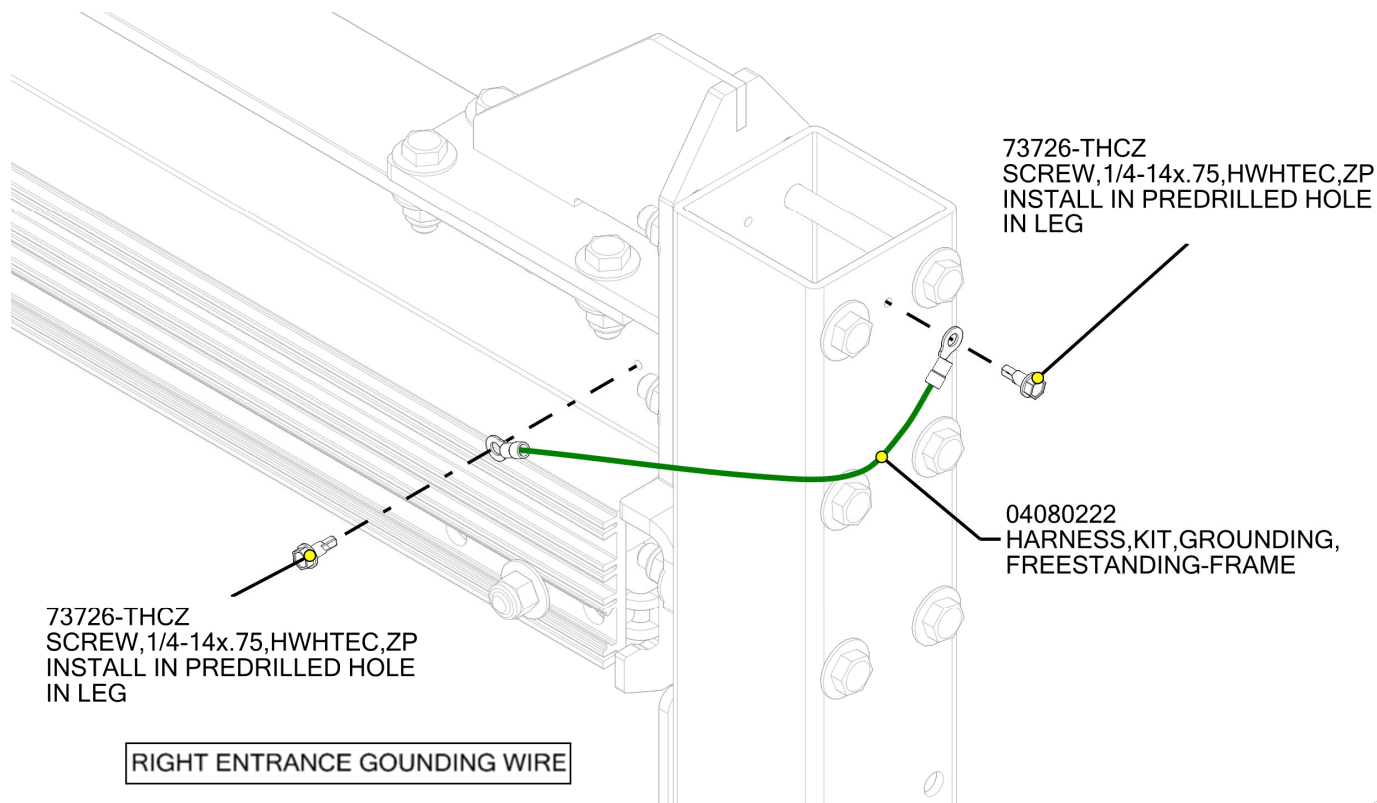
73726-THCZ
SCREW, 1/4-14x.75, HWHTEC, ZP
INSTALL IN PREDRILLED HOLE
IN LEG

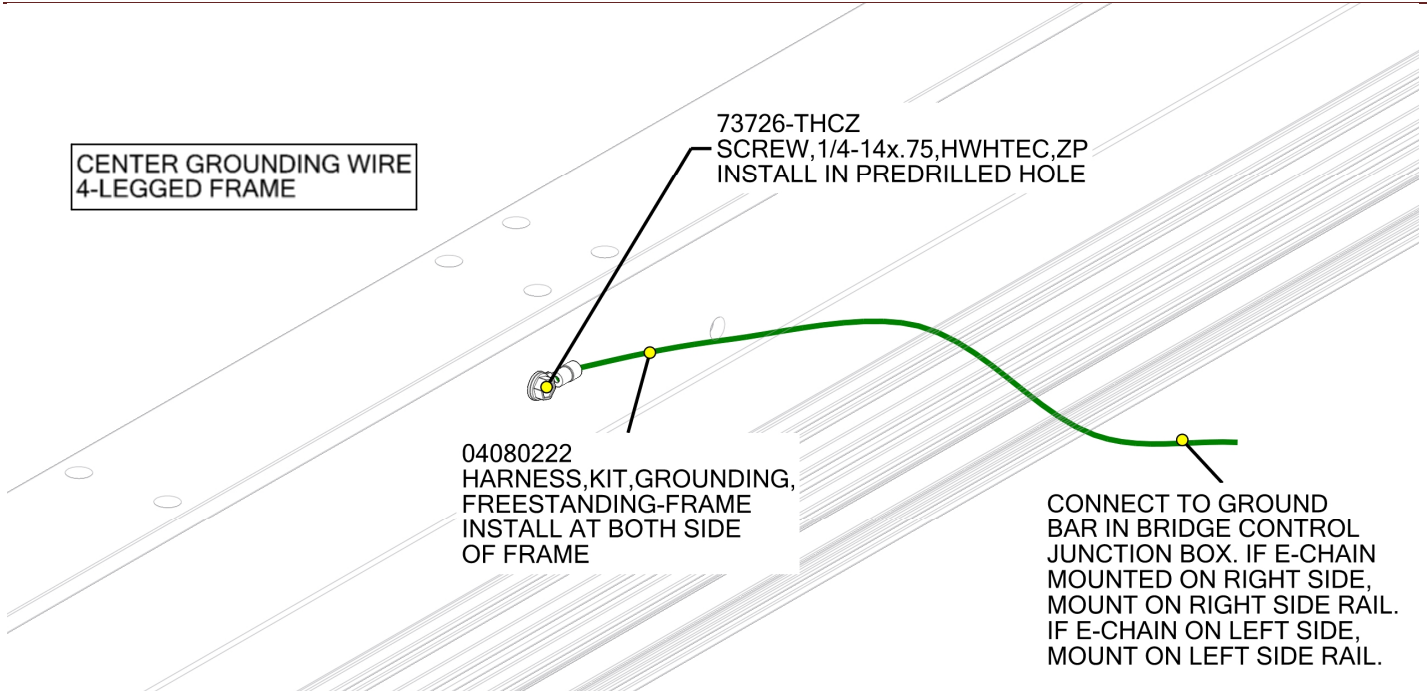
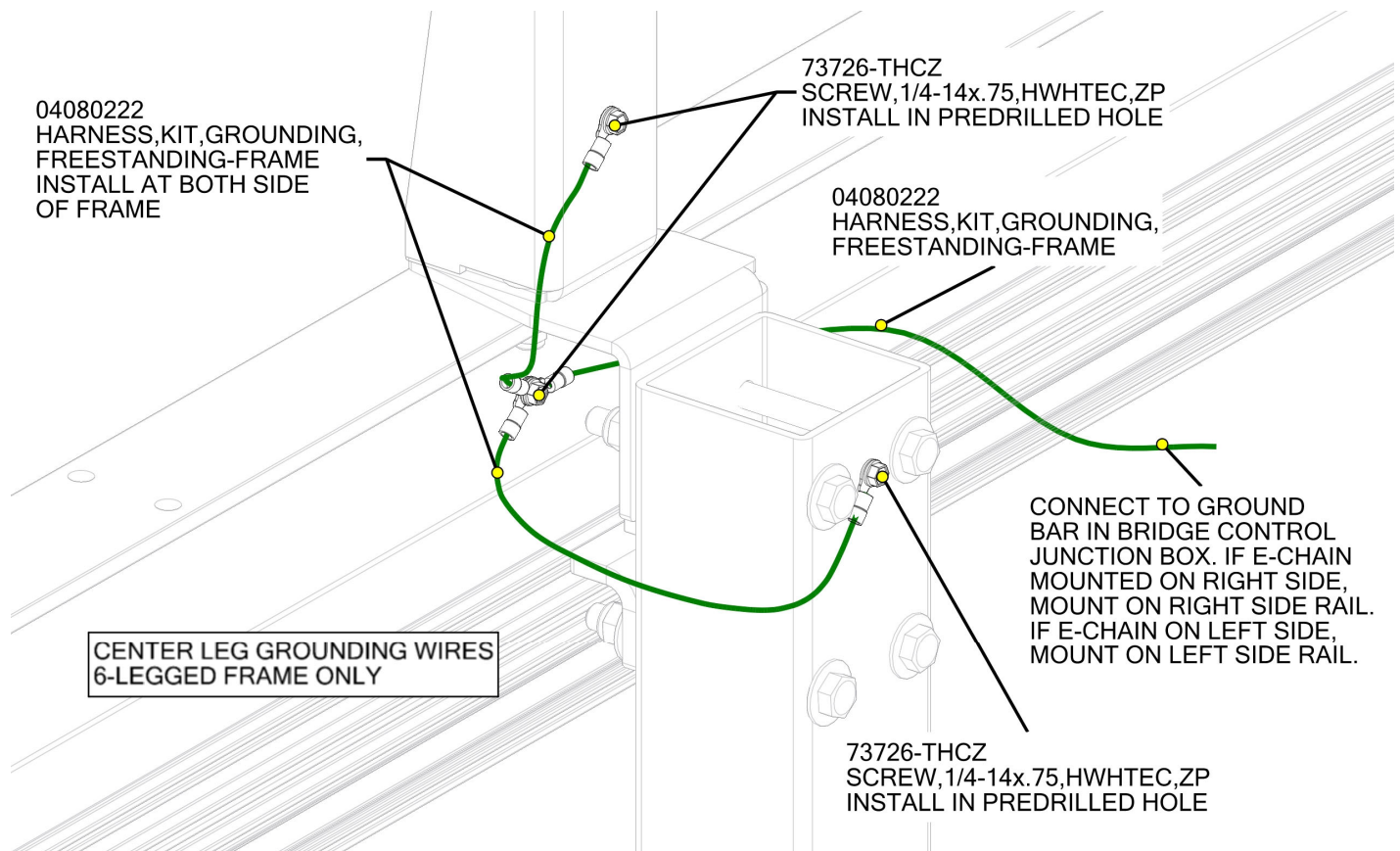
04080222
HARNESS, KIT, GROUNDING,
FREESTANDING-FRAME

73726-THCZ
SCREW, 1/4-14x.75, HWHTEC, ZP
INSTALL IN PREDRILLED HOLE
IN LEG

LEFT EXIT GROUNDING WIRE

Figure 46 - Install Grounding Wires at the Left Corners

**Figure 47 - Install Grounding Wires at the Right Corners**

**Figure 48 - Install Center Grounding Wire for 4-Legged Frame****Figure 49 - Install Grounding Wires at the Center Legs (6-Legged Frame Only)**

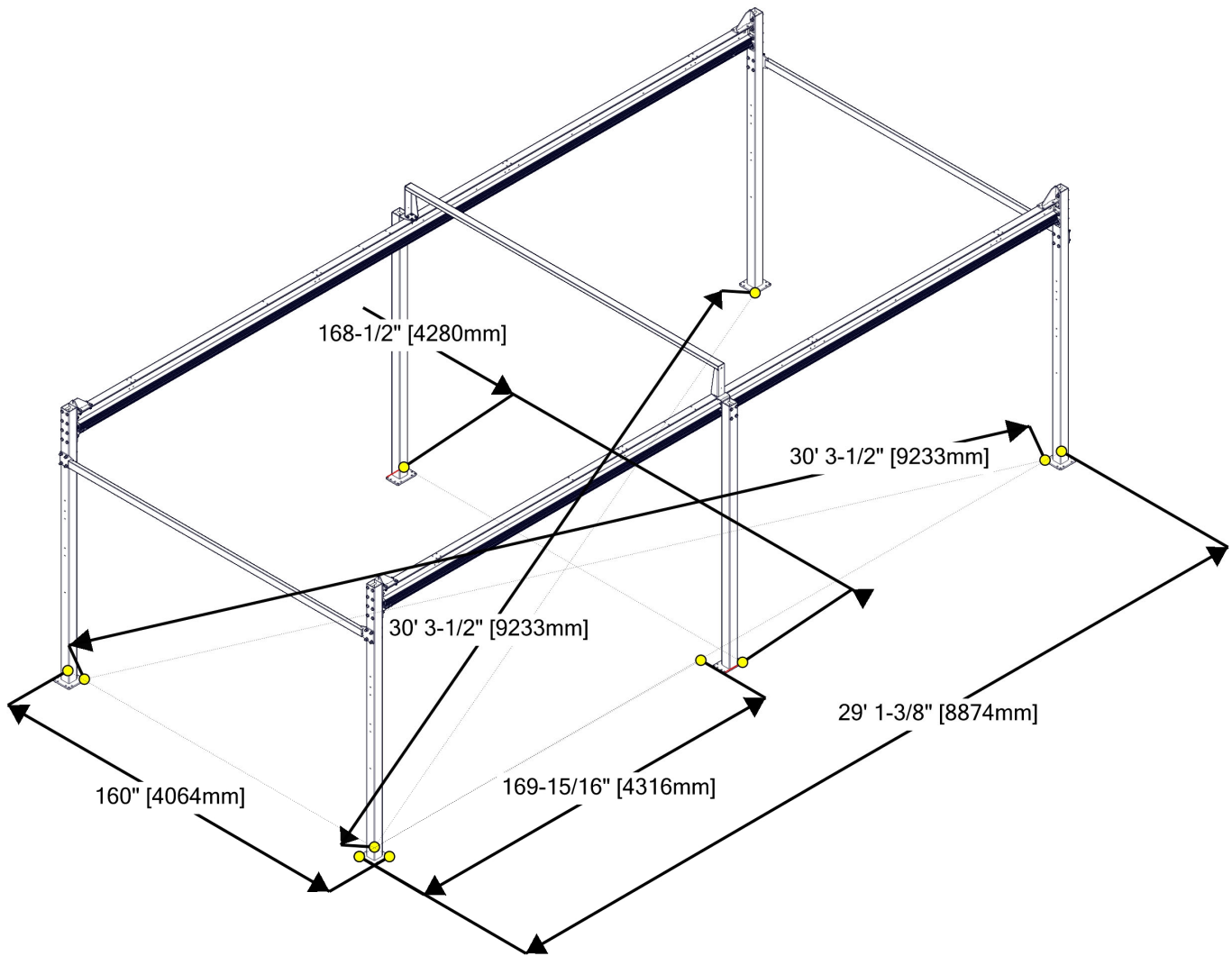


Figure 50 - Complete Frame (6-Legged Frame Shown)

4 Bridge Installation

This section provides instructions for installing the Bridge. Details include connecting the bridge to the frame system, mounting bridge end stops, connection of the E-chain fluid and electrical lines, and attaching the drive belt. The standard bridge is shipped with most of the covers in place. If the Advanced Cover option is ordered, the covers are shipped separate and need to be installed on site.

4.1 Key Factors to Consider

- Prior to starting the bridge installation process, make sure that the frame system installation is complete, and the rails are aligned properly in the wash bay.
- Prior to starting the bridge installation process, make sure that E-chain system installation is completed.
- The bridge is assembled based on the customer order requirements for E-chain entry side (left-hand or right-hand side). **This decision cannot be made during installation!** If the E-chain entry side is required to be changed at the time of installation, additional parts must be ordered and installed resulting in installation delays. Please contact PDQ Parts Sales for more information.
- The lifting weight of the wash bridge, **fully crated as shipped**, is as follows, based on a fully optioned machine.
 - Wash Bridge with Integrated Dryer, Fully Crated: 1850 lbs (839 kg).
 - Wash Bridge without Integrated Dryer, Fully Crated: 1475 lbs (670 kg).
- The lifting weight of a fully optioned wash bridge **when lifting to the rails** during installation:
 - Bridge with Integrated Dryer, including pallet and shipping legs: 1660 lb (752 kg).
 - Bridge without Integrated Dryer, including pallet and shipping legs: 1235 lb (560 kg).
 - Bridge with Integrated Dryer (without pallet and shipping legs): 1335 lb (606 kg).
 - Bridge without Integrated Dryer (without pallet and shipping legs): 910 lb (420 kg).
- With wash bay widths 14' (4.27 m) and greater, the bridge shipping pallet can be used to move the bridge through the doors into wash bay, rotated 90°, and lifted up to the rails.
- If the wash bay is less than 14' (4.27 m) and the bridge needs to be rotated, it needs to be removed from the shipping pallet prior to rotation. With wash bays 13'-6" to 14' (4.11 m – 4.27 m) wide and the bridge is required to be rotated 90° inside the wash bay, the following components must be removed:
 - Bottom bridge covers between rails (remove prior to removing from pallet)
 - Blue end covers and their outermost exit side mounting brackets (remove prior to removing from pallet)
 - Shipping pallet, and legs.



WARNING – ALL MACHINE COMPONENTS HANDLED DURING INSTALLATION, MAINTENANCE, AND/OR SERVICE MUST BE HANDLED WITH A DEVICE APPROPRIATELY RATED AND IN SUITABLE CONDITION TO LIFT AND/OR HANDLE THE WEIGHT OF THE COMPONENT. WHEN COMPONENTS ARE HANDLED BY HAND, USE PROPER LIFTING TECHNIQUES TO AVOID INJURY.



WARNING –DISABLE AND LOCKOUT/TAGOUT THE INCOMING POWER SOURCE PRIOR TO TERMINATING ANY ELECTRICAL CONNECTIONS DURING INSTALLATION.

4.2 Key Installation Steps

- Install the bridge trucks into the main rails.
- Install the bridge end stops into the main rails.
- Place the bridge in the wash bay, lifting the bridge and the shipping pallet with a forklift.
- Install Advanced Covers options if utilizing.
- Lift the bridge up to the rails and attach the bridge to the truck plates previously installed in the main rails.
- Remove the shipping pallet and shipping legs.
- Connect the E-chain to the bridge.
- Verify free motion of the bridge and E-chain
- Secure fluid lines and cables at both end of the bridge E-chain.
- Install bridge belt tensioning assemblies.
- Install bridge drive belt.
- Install the spray arch.
- Terminate the fluid connections on the bridge.
- Terminate the electrical connections on the bridge.

**WARNING – HIGH LEAKAGE CURRENT****EARTH CONNECTION ESSENTIAL BEFORE CONNECTING MAINS SUPPLY**

4.3 Special Tools

- Appropriate lifting equipment to safely move into the wash bay and lift the bridge from the bay floor to the main rails.
 - The bridge shipping pallet is 52 in (1321 mm) deep. Appropriate long lifting forks are to be used for the lift.

NOTE:

To ensure proper lifting of the bridge pallet, make sure the length of the lifting forks of the forklift used to raise the bridge pallet are long enough to fully secure the pallet on the forks.

- Moving dollies for moving the wash bridge in the wash bay and rotating the bridge if a forklift cannot be used.
- If the wash bay is too narrow and the bridge must be disconnected from the shipping pallet prior to bringing it into the wash bay, wooden blocking to use between bridge rails and lifting forks

4.4 PDQ Supplied Parts

- Wash bridge on the shipping pallet
- Spray arch top and side assemblies

NOTE:

Many of the parts included in the Loose Parts kit are used during the bridge installation process. See Table 1 – Loose Parts Usage for the parts included in this kit and their usage.

4.5 Site Supplied Parts

- Cable ties to secure lines
- Edge protector molding to protect cables and fluid lines from sharp edges.
- O-Ring lubricant for installing spray arch.

4.6 Preparing for Bridge Installation

4.6 Step 1 Install the Bridge Trucks (Wall Mounted Frames)

The step applies to sites where the main rails are installed using the wall mounted frame system. If the freestanding frame system is used, the bridge trucks should be installed during the process of erecting the frame. See 3.3.5 Step 16 for details on this process.



When installing the bridge trucks into the rails, make sure the rollers are oriented with the horizontal rollers facing towards the ends of the main rails, Figure 51).

- Install the bridge trucks inside the rails, Figure 51). Make sure the trucks are oriented with the horizontal rollers away from each other (facing the ends of the main rails).
- Position the trucks on the entrance side of the E-chain trays, where the bridge will be lifted. It is best to lift the bridge in the area to the entrance side of the E-chain trays so that the bridge does not hit the trays as it is lifted into position.

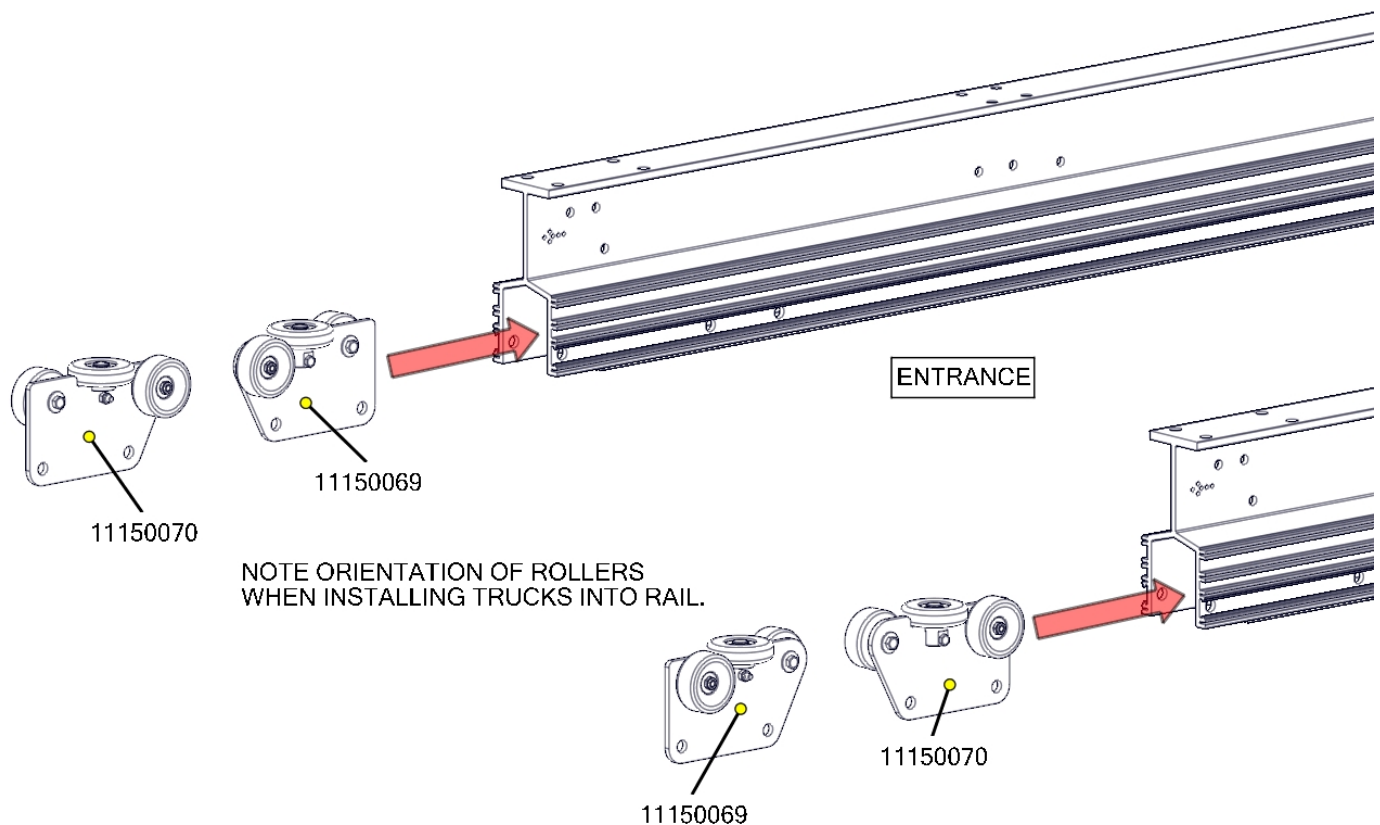


Figure 51 - Install Trucks into Main Rails

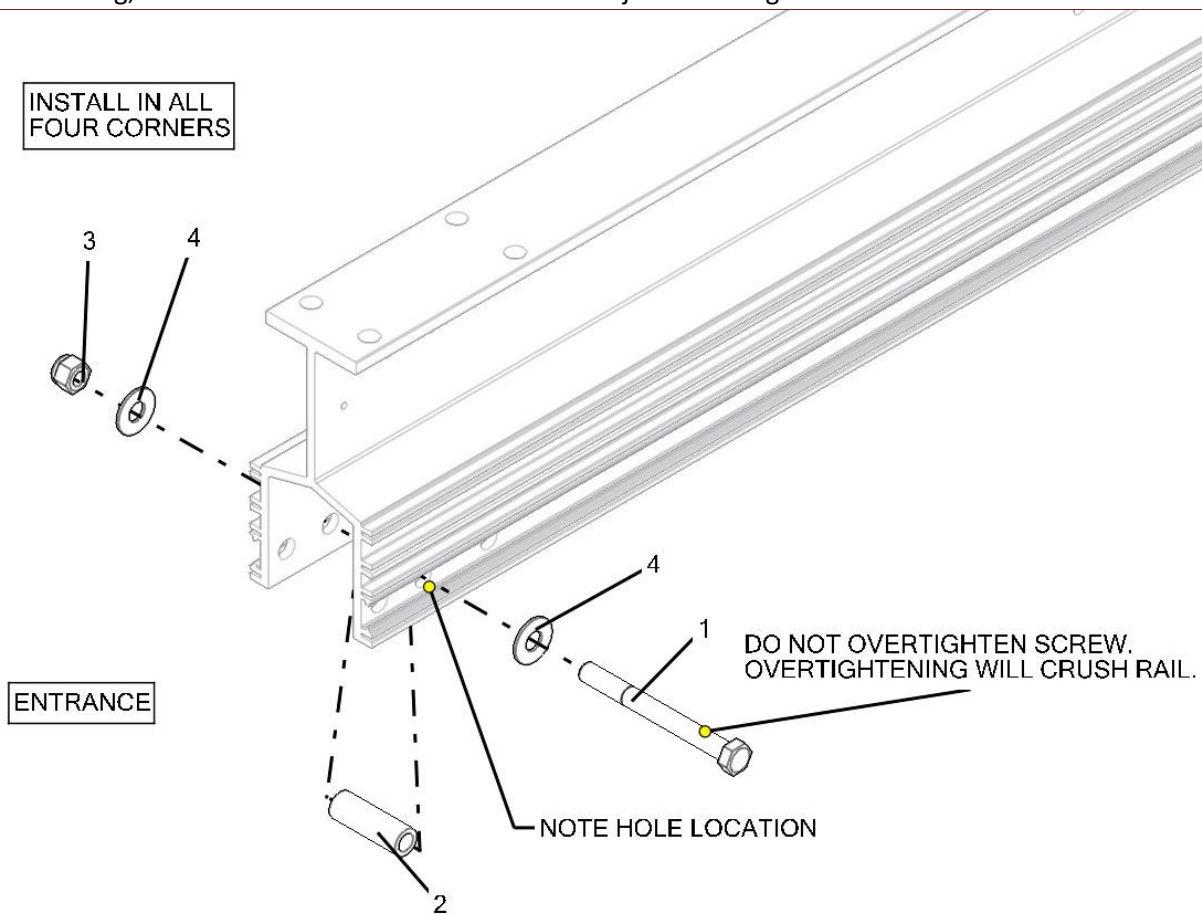
4.6 Step 2 Install the End Stops (Wall Mounted Frames)

The step applies to sites where the main rails are installed using the wall mounted frame system. If the freestanding frame system is used, the end stops should be installed during the process of erecting the frame, see 3.3.5 Step 18.

- Install end stops into rails as shown in Figure 52.
- The end stop parts are included in the main loose parts kit.
- To prevent crushing the main rail, use caution to not overtighten the end stop screws.
- Install the end stops (two total assemblies) as shown at the entrance end of the frame in the second from the endmost hole at the end of each rail, Figure 52.
- Install the end stops (two total assemblies) as shown at the exit end of the frame in the end of each rail, Figure 53.

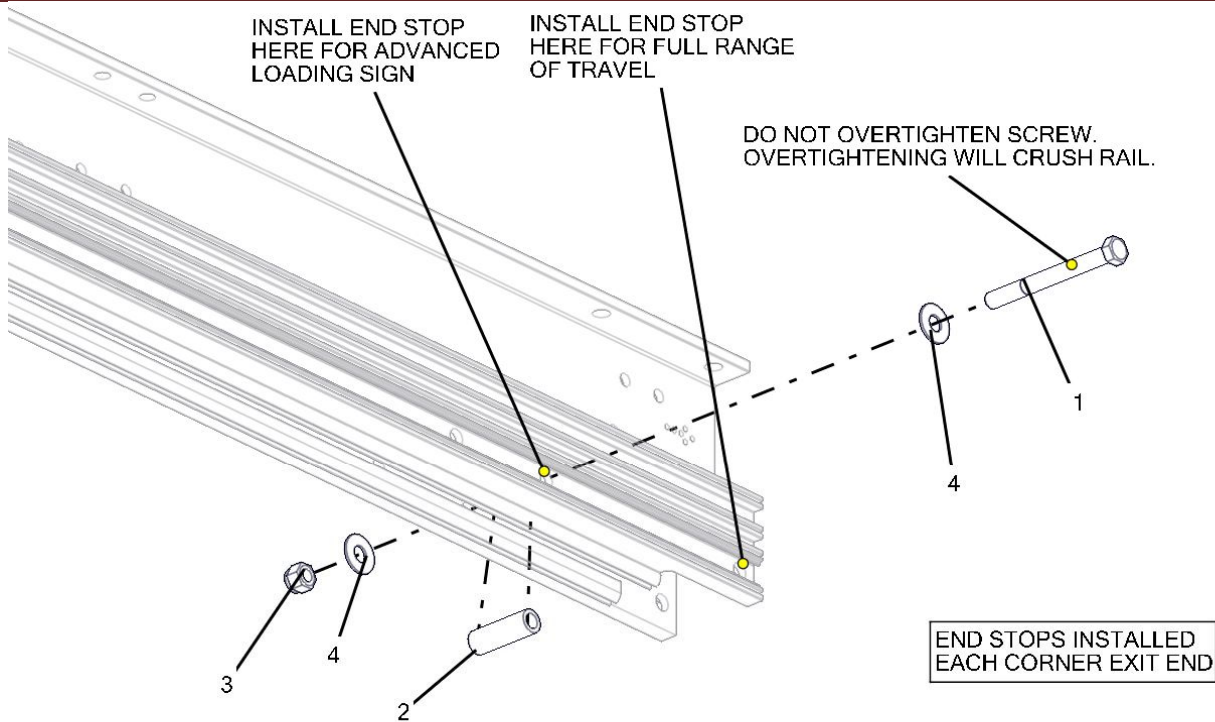


End stop location at the exit end of the rails is dependent on options ordered. Refer to Figure 53.



BOM ID	Qty	PartNo	Description
1	1	05040253	SCREW, 1/2-13x5.00, HHCS, SST
2	1	06060033	BUMPER, END-STOP, POLYURETHANE, 1/2" ID, TDMSL
3	1	71015-NCS	NUT, 1/2-13, HEX, LOCK, SST
4	2	71515-FSS	WASHER, 1/2, FLAT, SST

Figure 52 - Install End Stops, Entrance End Shown In Detail



BOM ID	Qty	PartNo	Description
1	1	05040253	SCREW, 1/2-13x5.00, HHCS, SST
2	1	06060033	BUMPER, END-STOP, POLYURETHANE, 1/2"ID, TDMSL
3	1	71015-NCS	NUT, 1/2-13, HEX, LOCK, SST
4	2	71515-FSS	WASHER, 1/2, FLAT, SST

Figure 53 – Install End Stops, Exit End Shown In Detail

4.7 Place the Bridge in the Wash Bay

4.7 Step 1 Determine How the Bridge will be Handled Inside the Wash Bay

- How the bridge is moved and handled inside the wash bay depends on the width of the wash bay.
- The bridge requires a 14' (4.27 m) wash bay width to rotate it 90° while inside the wash bay, after moving the bridge through the bay doors. See Figure 54 and Figure 55 for bay width dimensions in this case.
- When the wash bay width is less than 14' (4.27 m) and the bridge needs to be rotated within the bay, components must be removed prior to rotating. The bridge must be removed from the shipping pallet and will therefore not be lifted using the shipping pallet. See Figure 54 and Figure 55 for bay width dimensions.
- Note the orientation of the bridge when positioning it in the wash bay. Make sure that the entrance side of the bridge is positioned towards the entrance end of the wash.



When placing the bridge into the wash bay, locate it toward the entrance side of the main rails so that the E-chain support trays are not in the way of lifting and attaching the bridge to the trucks.



If the Advanced Cover System option is utilized, the covers ship separately. Install Advanced Cover System after bridge is placed in the wash bay and before lifting to rails.

NOTE:

The lifting weights of the bridge with and without the pallet are as follows, based on a fully optioned machine:

Bridge with Integrated Dryer, including pallet and shipping legs: 1660 lbs (752 kg).

Bridge without Integrated Dryer, including pallet and shipping legs: 1235 lbs (560 kg).

Bridge with Integrated Dryer: 1335 lbs (606 kg).

Bridge without Integrated Dryer: 910 lbs (413 kg).

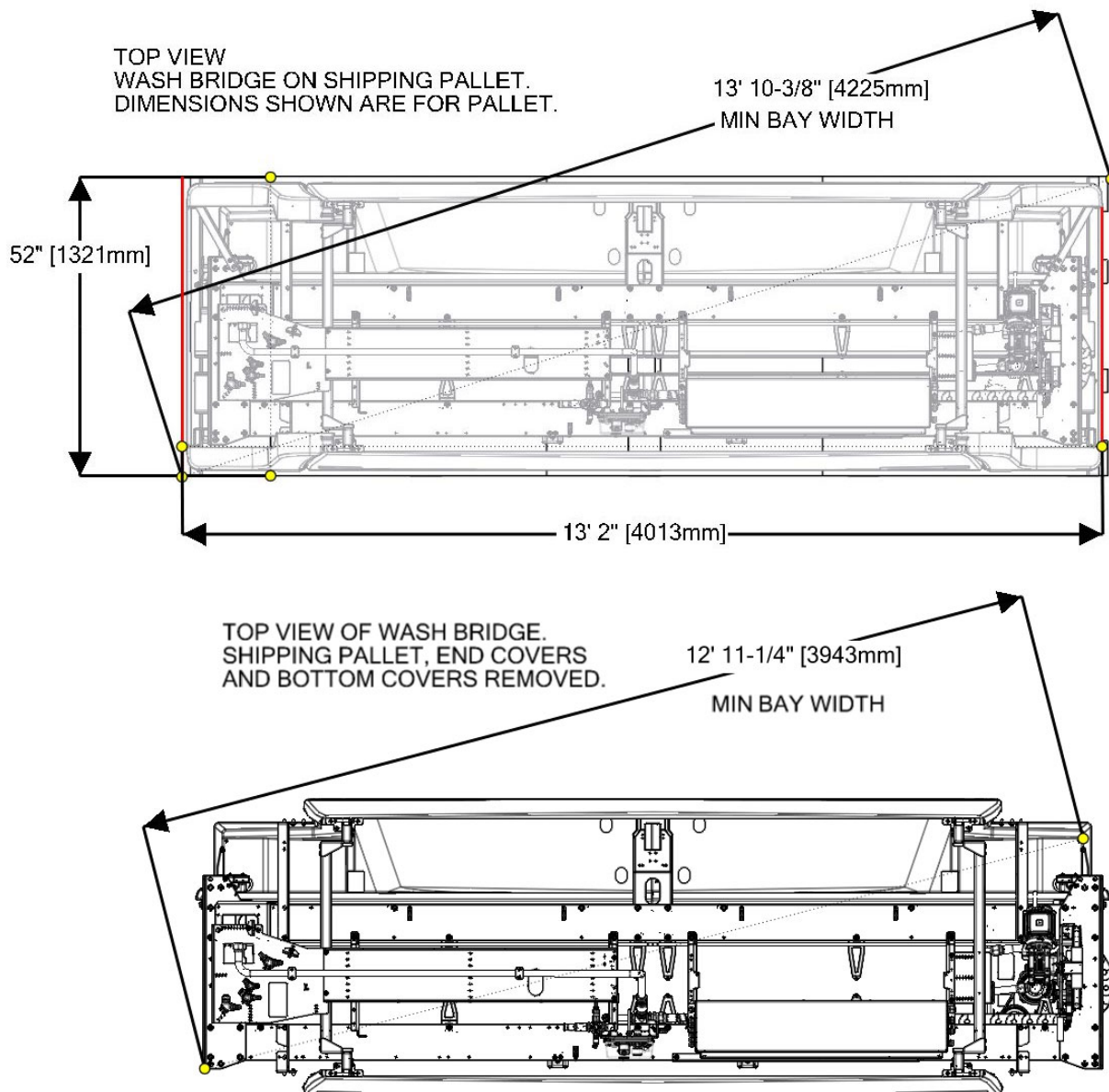


Figure 54 - Bay Width Dimensions Required for Bridge Installation, Standard Covers

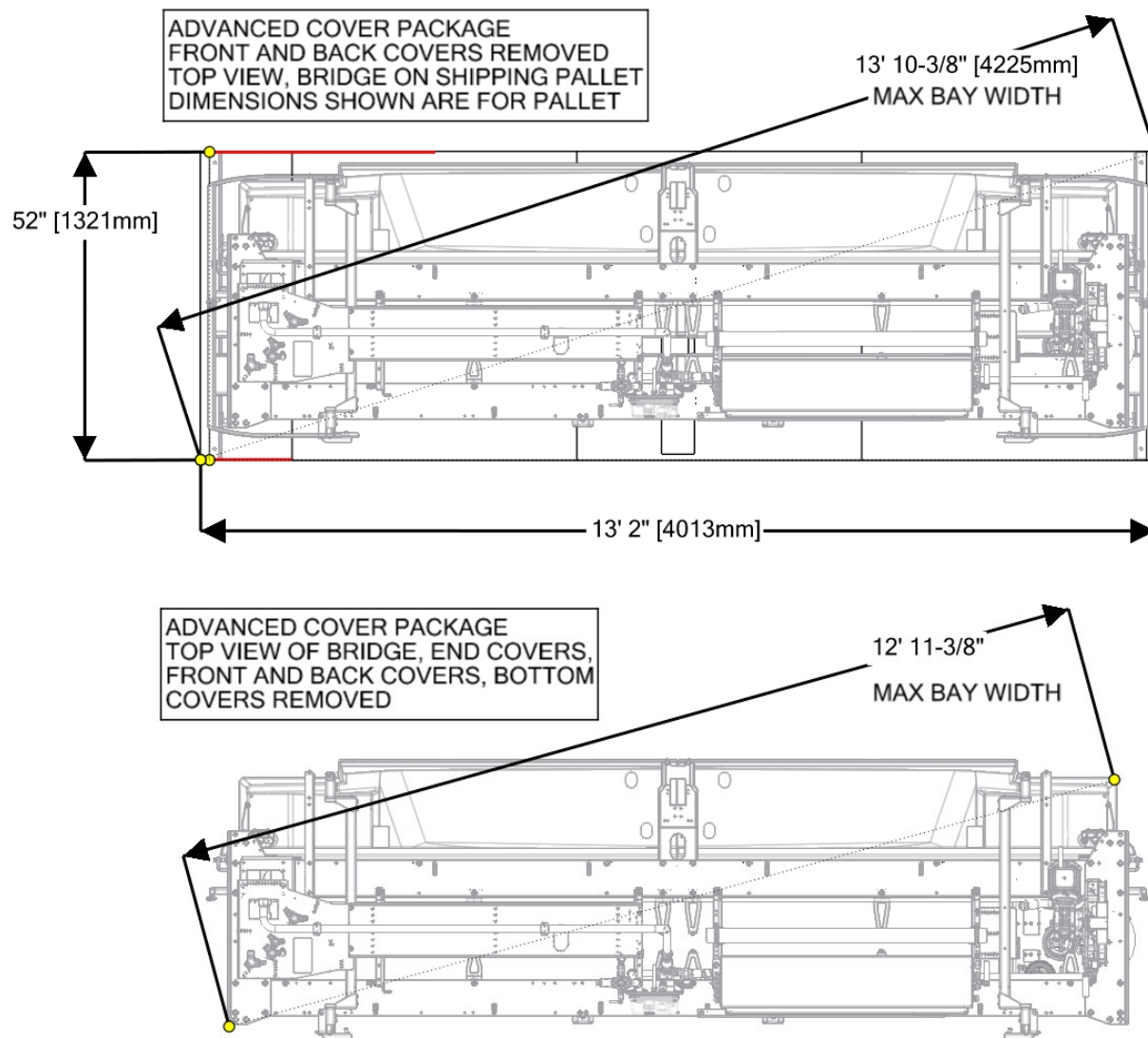


Figure 55 - Bay Width Dimensions Required for Bridge Installation, Advanced Covers

4.7 Step 2 Transporting and Handling the Bridge with the Shipping Pallet

Using a forklift, transport the bridge and its shipping pallet into the wash bay, Figure 56. As an alternative, if appropriately rated moving dollies are available, these may be used to push the bridge into the wash bay and to rotate it into the proper lifting position. Position the bridge, Figure 56.



If the optional Advanced Cover Package is being utilized, see 4.7.1 Step 1 before lifting bridge to rails. Installation of the Advanced Cover Package covers is recommended before the bridge is lifted to the rails.

BRIDGE FOR LEFT SIDE E-CHAIN SHOWN.

USE APPROPRIATE RATED LIFTING DEVICE.
ENSURE LOAD IS BALANCED WHILE LIFTING.

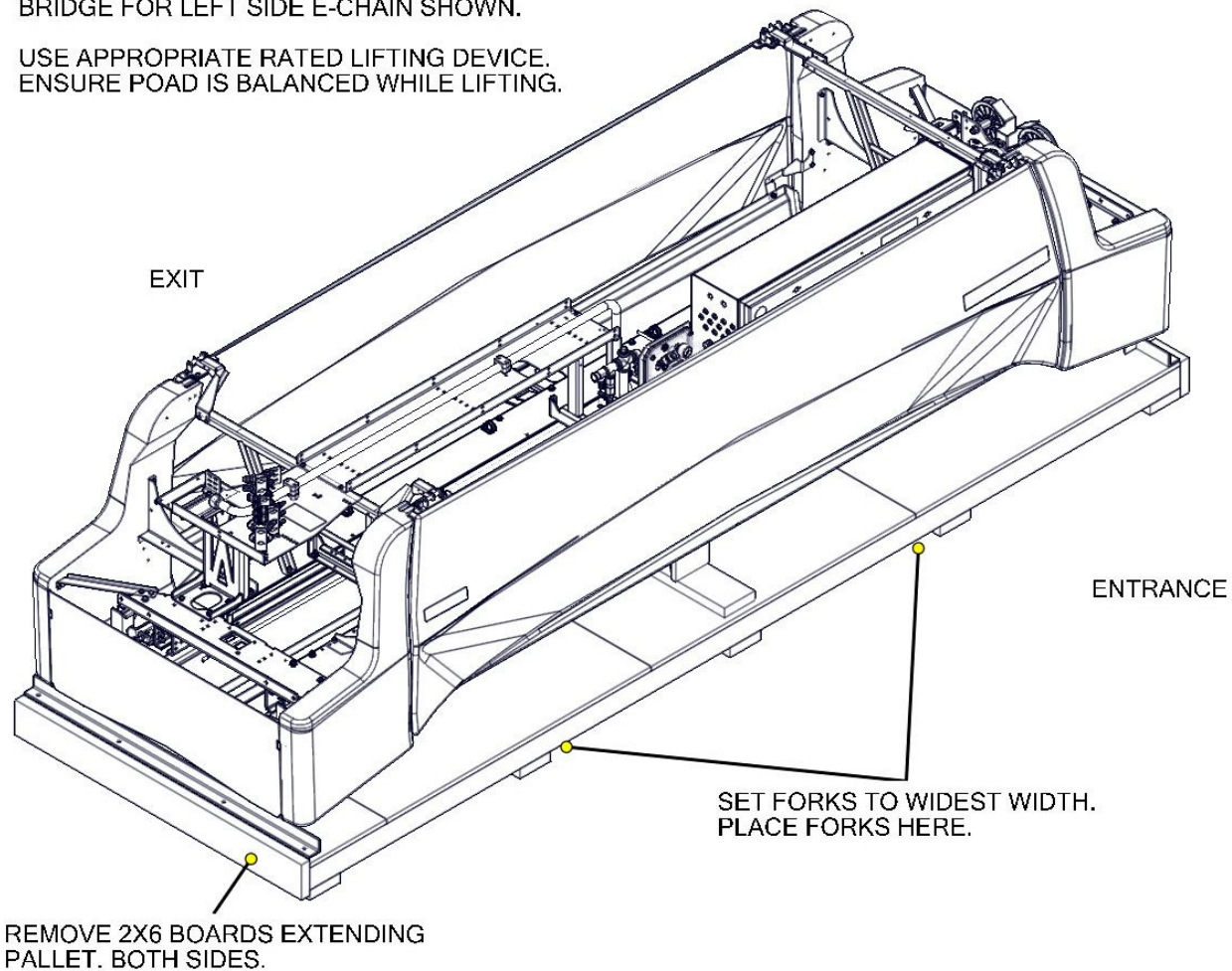


Figure 56 - Lifting the Wash Bridge. Fork Positions When Lifting with the Shipping Pallet

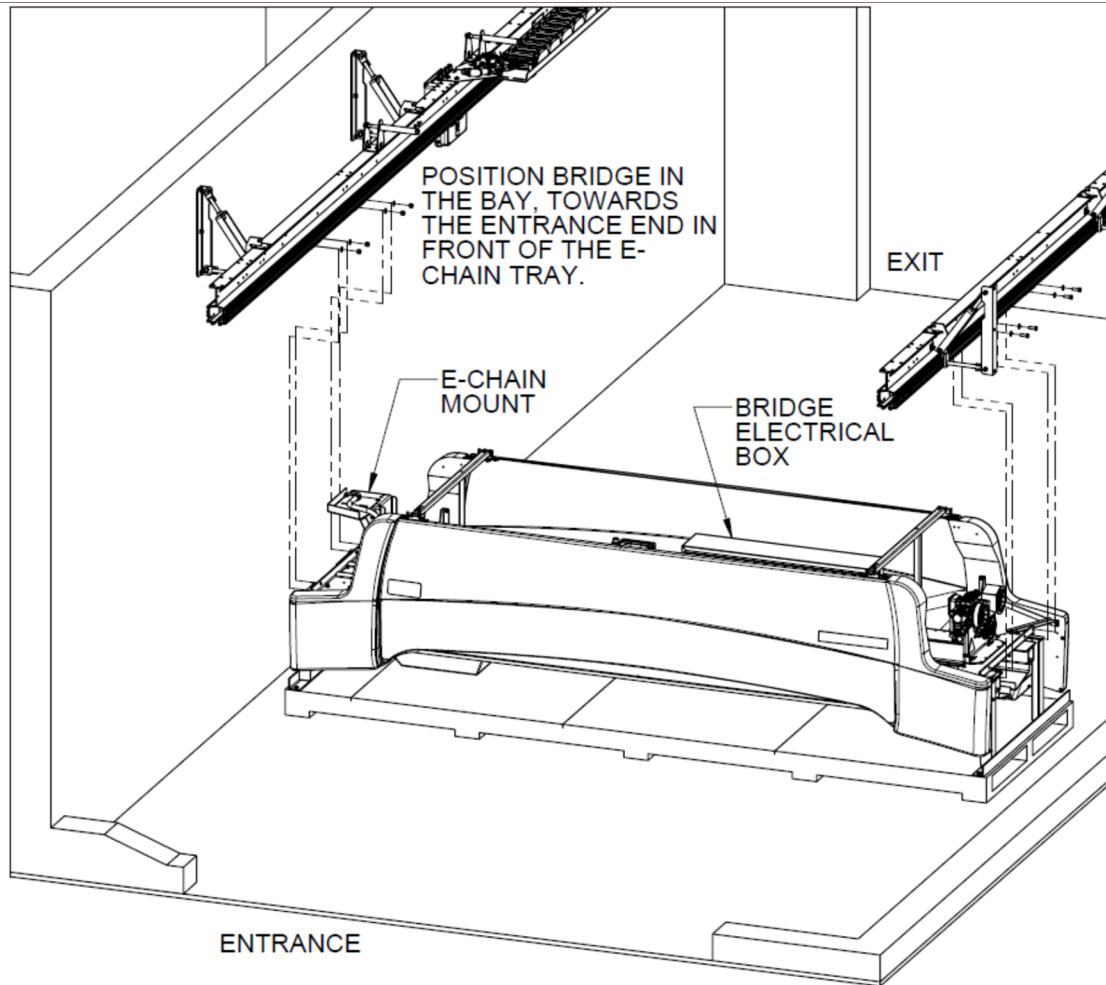


Figure 57 - Bridge in the Wash Bay Ready for Lifting

4.7.1 Advanced Cover Package Installation (Optional Equipment)

If the Advanced Cover Package is ordered, the covers are shipped separate from the bridge and will need to be installed. Installation of the covers is recommended before the bridge is lifted to the rails.

4.7.1 Step 1 Install Front and Back Covers

Install the front and back covers to the bridge frame.

- Lift the center cover and slide the hinges onto the hooks of the hinge brackets on the bridge, Figure 58 and Figure 59.
- Slide the catch plate over the hinge, line up the holes with the hinge brackets and secure with screws, Figure 60.

4.7.1 Step 2 Connect LaserGlow

If covers are equipped with LaserGlow, rout the glow bar harnesses to the bridge electrical box. The label on the side of the electrical box will show the harness strain relief location.

- Harnesses are labeled with terminal positions on the LED controller boards.
- Secure harnesses as necessary to prevent rubbing on sharp edges.

4.7.1 Step 3 Secure Advanced Covers

The front, entrance cover can be securely closed by fastening the two rubber latches located on the front corners of the cover to the brackets on the bridge. The exit cover can be secured using a screw and locking jam nut through the bottom of the cover to the latch brackets on the exit side of the bridge.

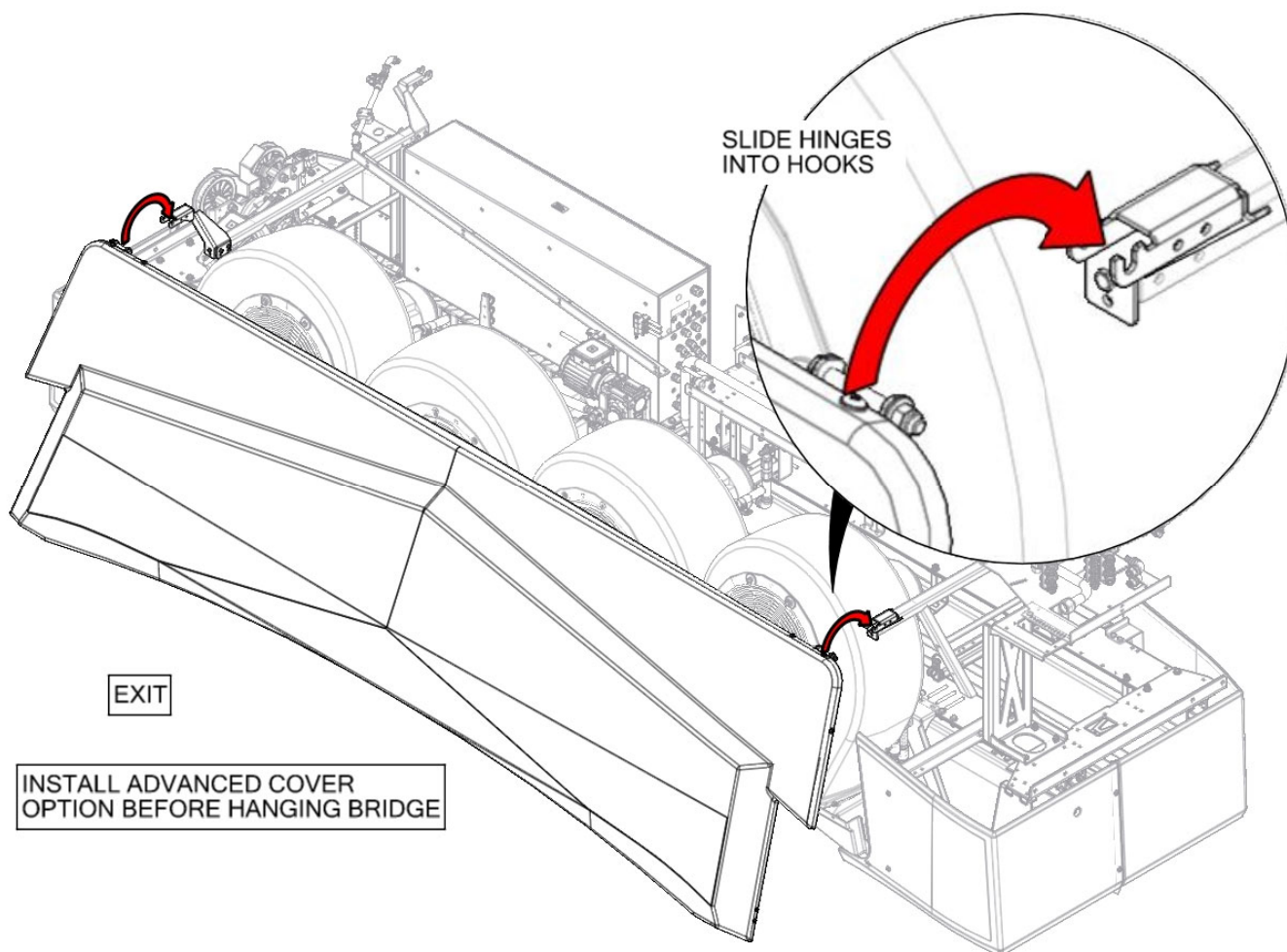


Figure 58 – Advanced Covers, Back Cover Installation

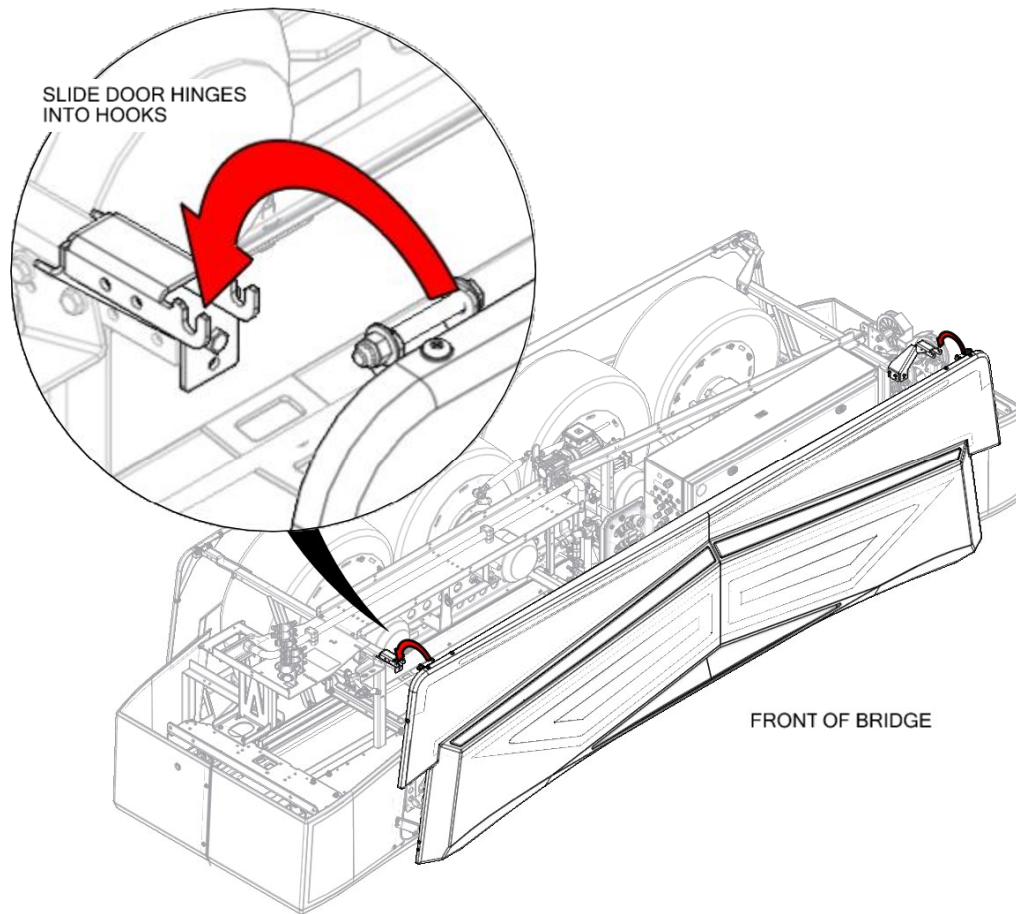


Figure 59 – Advanced Covers, Front Cover Installation

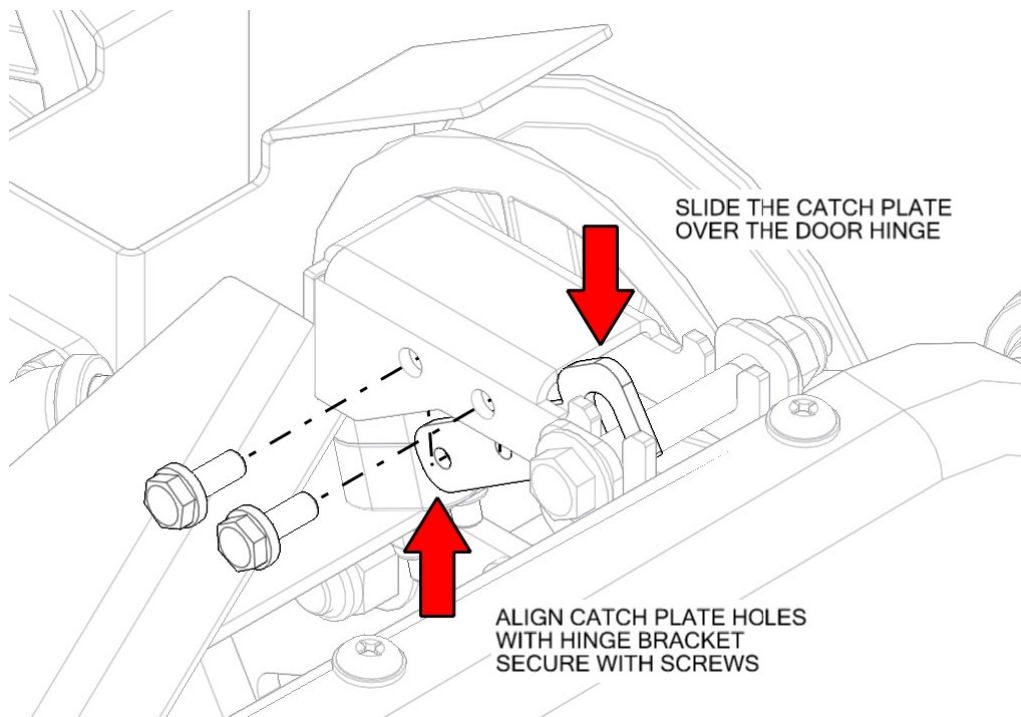


Figure 60 – Hinge Catch Bracket

4.7 Step 3 Transporting and Handling the Bridge without the Shipping Pallet

When the wash bay width is less than 14' (4.27 m) and the bridge needs to be rotated within the bay, components must be removed prior to rotating to reduce the diagonal width of the bridge to accommodate rotating it in the wash bay. The bridge must be removed from the shipping pallet and the following components must be removed:

- Bottom bridge covers between the trolley rails (remove prior to removing from pallet)
- End covers and cover brackets on the exit side (remove prior to removing from pallet)
- Shipping pallet and legs.

After the bottom covers between the trolley rails are removed, wooden blocking may be used between the rails and forklift forks to provide a lifting point for the bridge. The bridge can then be lifted with a forklift with the shipping legs and pallet removed. For more details on blocking and lifting points without a pallet, see Figure 61 and Figure 62.

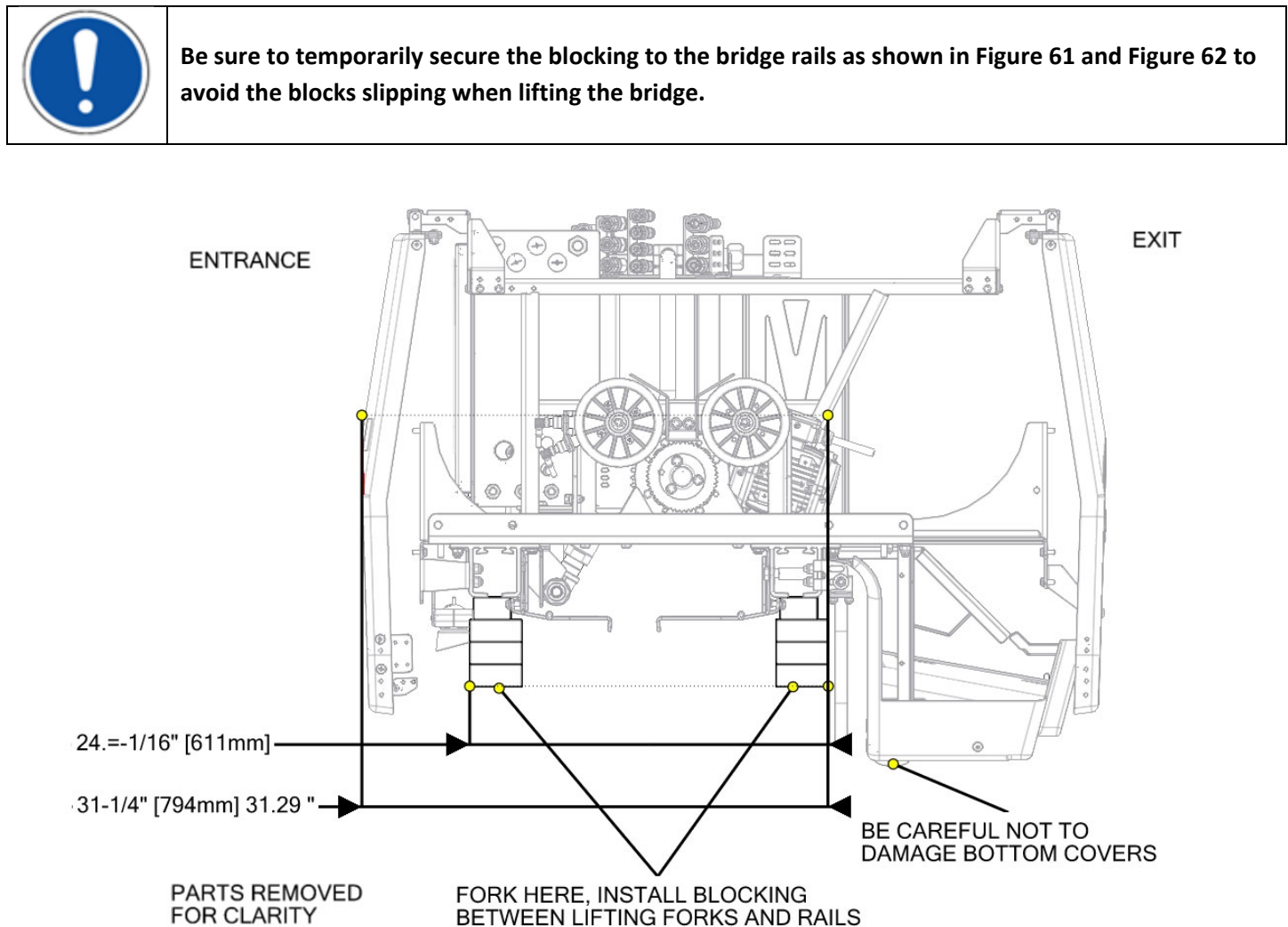


Figure 61 - Lifting the Wash Bridge, Fork Positions when Lifting Under Trolley Rails

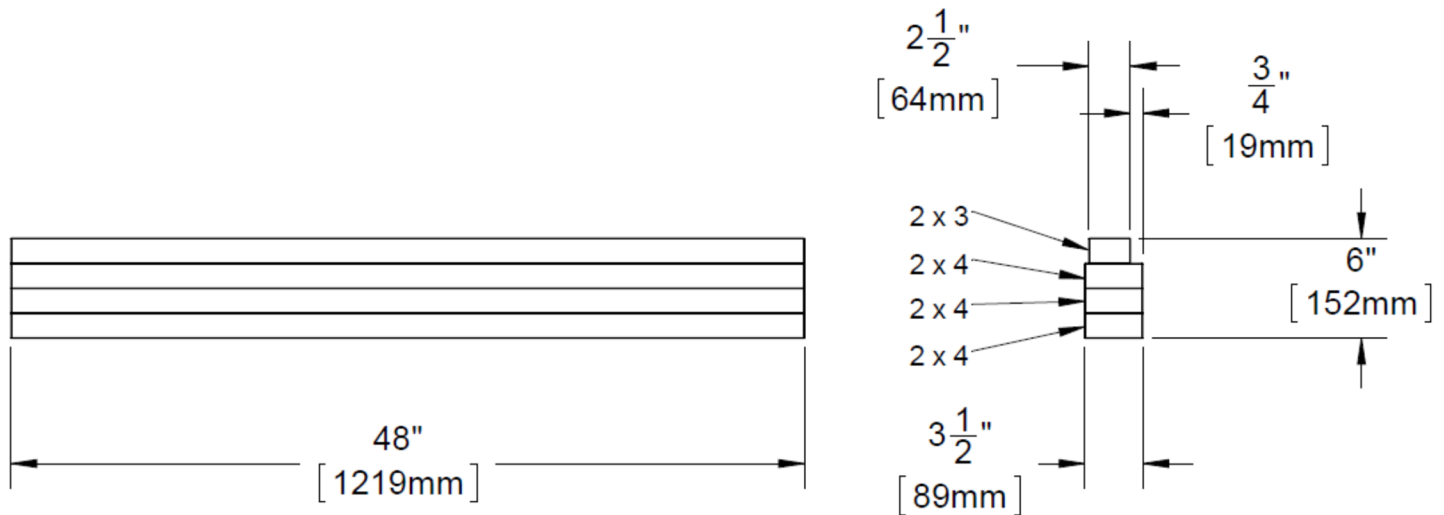


Figure 62 - Blocking Size Recommended, Two (2) Required, when Lifting Under Trolley Rails

4.8 Lift the Bridge and Connect it to the Trucks

4.8 Step 1 Lift the Bridge Into Position Next to the Trucks

- Using a forklift, raise the bridge up to the rails. Long forklift forks are needed to properly lift the bridge especially when using the shipping pallet that is 52" (1321 mm) deep.
- Position the bridge end plate holes in line with the trucks already inside the rails. **Be sure the truck plates are located to the outside surface of the bridge end plates.**

NOTE:	To ensure proper free bridge motion, and prevent premature wear on the bridge rollers, be sure to install the bridge to the trucks with the truck plates located to the outside of the bridge end plates.
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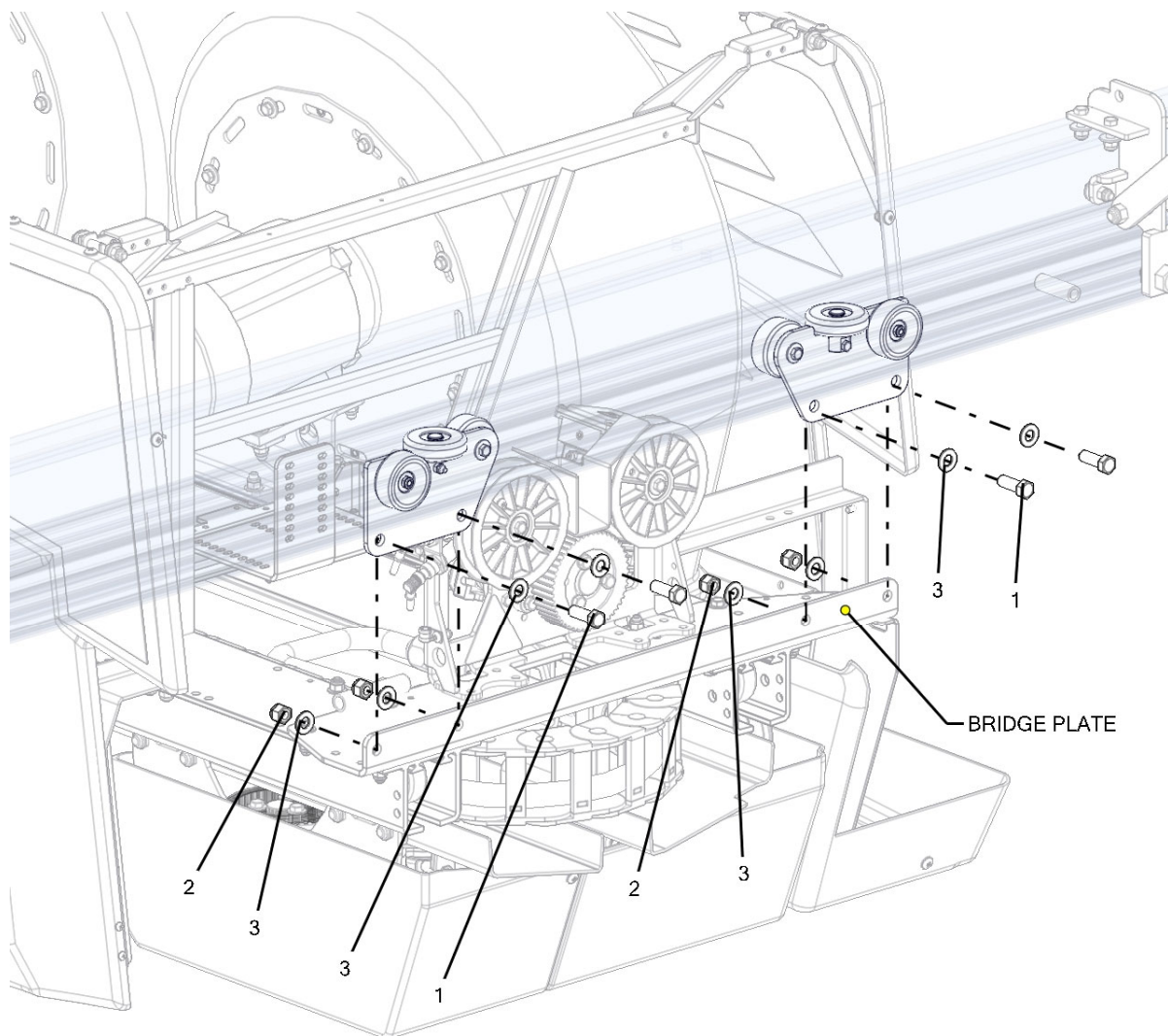
4.8 Step 2 Connect the Bridge to the Trucks

- Connect the bridge end plates to the trucks using the fasteners included in the loose parts kit as shown in Figure 63 and Figure 64. Connect all fasteners, drawing the truck plates against the end plates, but do not fully tighten until after the next step.
- Lower the forklift slightly so that some of the bridge weight is suspended from all four trucks to seat the fasteners between the trucks and end plates. This makes sure the trucks and fasteners are assembled with the bolt clearance pulled to the bottom for proper load carrying. Look at the trucks and make sure the horizontal guide rollers are in the horizontal position and not tipped.
- Fully secure all trucks to the end plates by tightening all truck fasteners.

 	<u>WARNING</u> – WHEN LIFTING THE BRIDGE USING A FORKLIFT, IT IS RECOMMENDED TO LIFT THE BRIDGE WITH THE SHIPPING PALLET. FOR NARROW BAY INSTALLATIONS, BOTTOM COVERS CAN BE REMOVED AND BRIDGE CAN BE LIFTED FROM THE RAILS. PROTECTION AND BLOCKING IS REQUIRED BETWEEN THE RAILS AND LIFTING FORKS.
--	---

	<u>WARNING</u> – PRIOR TO INSTALLING BRIDGE TO TRUCKS MAKE SURE END STOPS ARE PROPERLY INSTALLED AND FASTENED TO MAIN MACHINE RAILS TO PREVENT THE BRIDGE FROM TRAVELLING PAST THE END OF THE RAILS AND FALLING FROM RAILS.
---	---

 	<u>CAUTION</u>– AFTER THE BRIDGE IS ATTACHED TO TRUCKS AND BEFORE THE MAIN BELT IS INSTALLED, THE BRIDGE WILL ROLL VERY FREELY ALONG THE MAIN RAILS. TO AVOID UNEXPECTED BRIDGE MOVEMENT AND POTENTIAL CRUSHING HAZARD WHILE CONTINUING THE INSTALLATION PROCESS, SECURE THE BRIDGE IN A FIXED POSITION USING A CLAMP OR OTHER DEVICE.
--	--



BOM ID	Qty	PartNo	Description
1	4	70257-HCS	SCREW, 1/2-13x1.50, HHCS, SST
2	4	71015-NCS	NUT, 1/2-13, HEX LOCK, SST
3	8	71515-FS	WASHER, 1/2, FLAT, SST, MIL-SPEC

Figure 63 - Lift the Wash Bridge and Attach to the Trucks

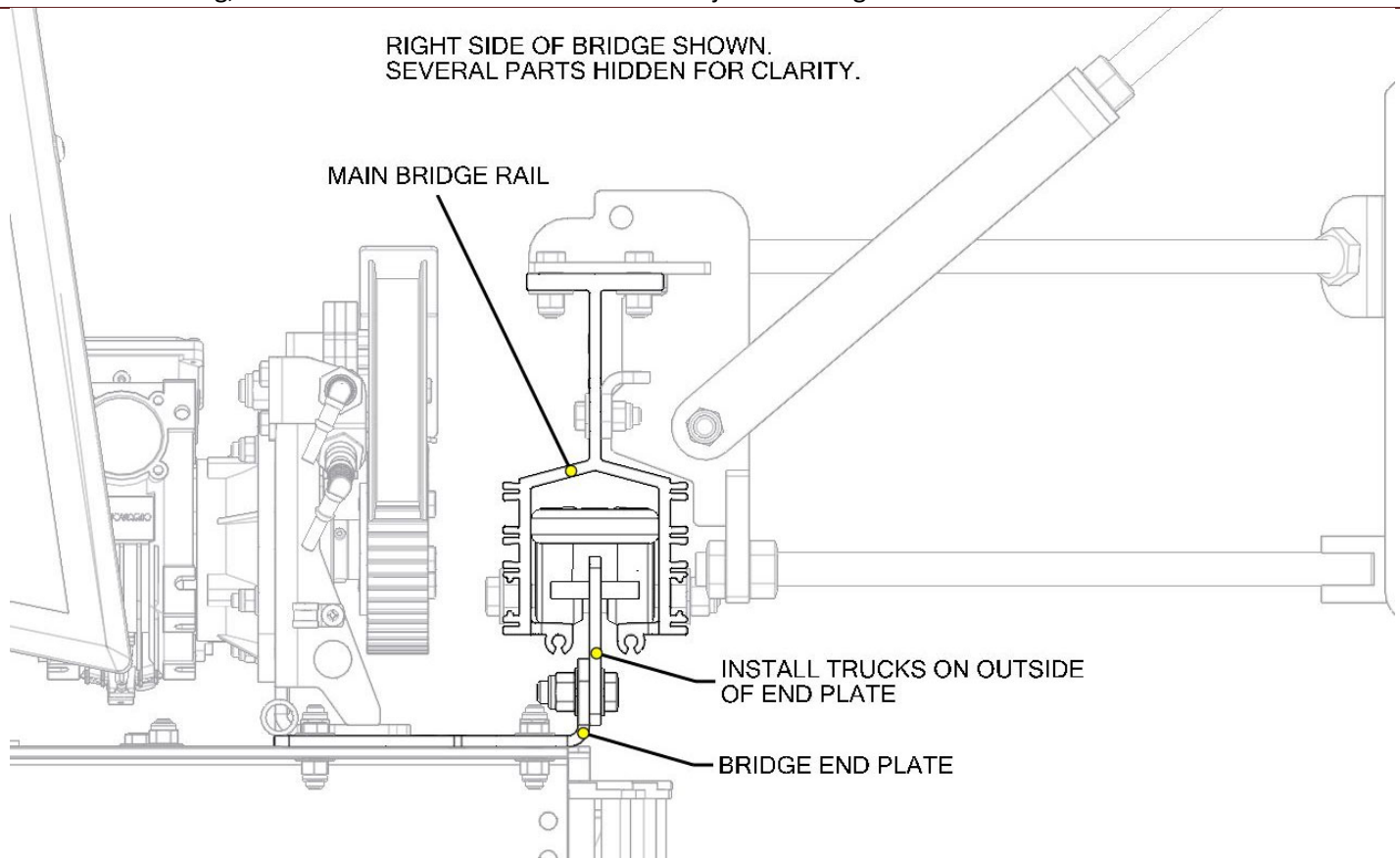


Figure 64 – End Plate to Truck Attachment Detail

4.9 Disconnect Shipping Legs and Pallet from the Bridge

Once the bridge is attached to the trucks, remove the shipping material by disconnecting the shipping legs from the bridge end plates. Screws connecting shipping legs to the end plate can be removed from the top of the plate. The shipping legs are made using weld nuts, so tool access from the underside is not required.

When lowering the pallet and legs, be careful not to damage the bottom covers below the shipping legs. Disconnecting the shipping legs from the pallet will allow them to be taken out and around the bottom covers, Figure 65.

- Disconnect the fasteners holding the shipping legs to the end plates of the bridge.
- Carefully lower the pallet to allow space for removal of the shipping legs.
- Remove the shipping leg wood screws from the pallet. This allows removal of the legs from the end of the bridge. Fold the shipping legs down and set them on the pallet.
- Lower the pallet and legs down together. The shipping materials may be discarded.

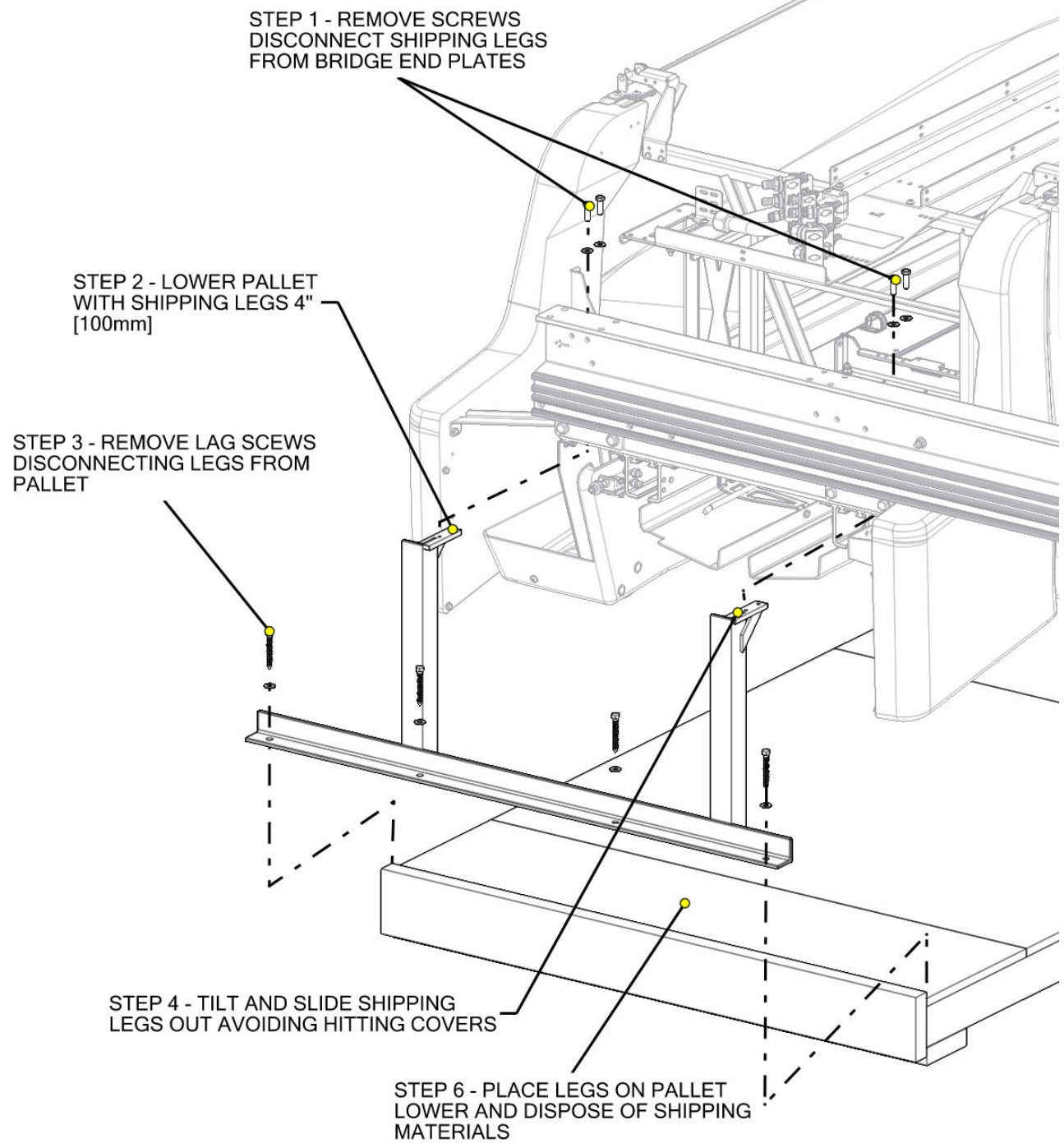


Figure 65 - Disconnecting Shipping Legs and Pallet

5 E-chain System Installation

This section covers installation of the main bridge E-chain. This includes the E-chain support trays, support rollers, fluid bulkhead, electrical junction box, and E-chain.

5.1 Key Factors to Consider

- Frame installation with the main bridge runway rails must be completed before installing the E-chain system.
- The E-chain is preloaded at PDQ based on the options ordered. The E-chain is loaded the same way for both left and right side installation.
- The fixed end bulkhead and the Wash Bridge are assembled based on the customer order for the E-chain side. **This decision cannot be made during installation!** This cannot be changed at the time of installation without purchasing and installing additional components.
- The cable length from the fixed frame end of the E-chain is approximately 8' (2.44 m). The bridge control junction box must be mounted close enough to the fixed end of the E-chain so that this length will reach the connection points inside the box. Always allow distance for proper routing and connection to terminals within the box.
- The preloaded E-chain weight is 120 lbs. (54 kg) with all options.



WARNING –DISABLE AND LOCKOUT/TAGOUT THE INCOMING POWER SOURCE PRIOR TO TERMINATING ANY ELECTRICAL CONNECTIONS DURING INSTALLATION.

NOTE:

All diagrams in this section are shown for a bay with the E-chain mounted on the left side (when looking from the entrance end towards the exit end). **For right side E-chain mounting, use the same dimensions and mounting holes on the rail at the right side of the wash bay.**

5.2 Key Installation Steps

- Locate the mounting holes for the E-chain trays on the main rail and attach the trays to the rail.
- Install the E-chain support rollers.
- Install E-chain bulkhead assembly.
- Install bridge control junction box and the dryer distribution panel.
- Lift E-chain into the tray and connect to the tray.
- Connect fluid lines to the bulkhead.
- Connect fluid lines to the bridge bulkhead.
- Route cables and make electrical connections to the junction box terminals.

5.3 Special Tools

- Appropriate lifting equipment to safely lift and place the E-chain into the support tray.

5.4 PDQ Supplied Parts

- E-chain trays
- Bulkhead manifold

- Bridge control junction box
- Preloaded E-chain
- Associated fasteners and hardware for installation

5.5 Site Supplied Parts

- Fasteners and hardware to mount bridge control junction box (typically mounted to the wash bay wall).

5.6 E-chain Support Installation

5.6 Step 1 Determine the Side of the Wash Bay for E-chain Installation

Verify from the customer order, or by looking at the bridge assembly, which side the E-chain system is to be installed. Typically, the main E-chain is located on the same side as the equipment room or the in-bay equipment such as the in-bay pump station.

The decision of the side for mounting the E-chain must be made prior to ordering the machine. The wash bridge and bulkhead are factory assembled with either the left or right side E-chain configuration. If the E-chain side needs to be changed in the field, additional parts must be ordered and installed. Please contact PDQ Parts Sales if this situation occurs.

5.6 Step 2 Install the E-chain Support Trays

Once the E-chain side is determined, mount the E-chain trays to the main rail as shown in Figure 66. The E-chain support trays are always mounted at the exit end of the wash. Please note that if the main rails were shortened to accommodate a shorter wash bay, modifications to the E-chain tray may be necessary. Refer to Section 2.6 for more information.

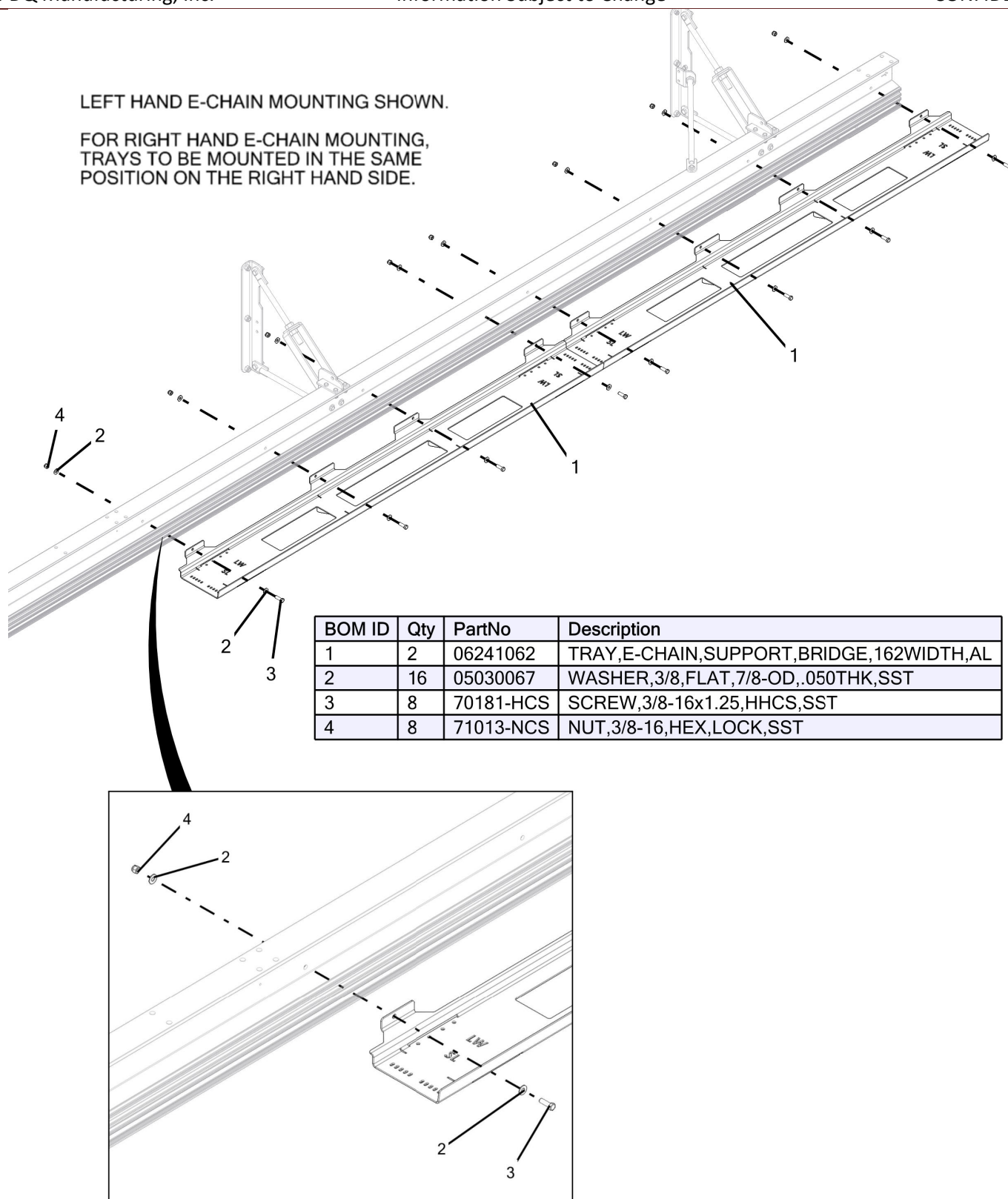


Figure 66 - Install E-chain Support Trays

5.6 Step 3 Install the Support Roller Assemblies

Install two E-chain support roller assemblies to the rail in the pre-drilled holes, Figure 67 and Figure 68. Install each support roller on the top of the rail with fasteners shown installed in the center of the roller assembly mounting bracket slots. The brackets are slotted to allow for adjustment during bridge installation. This may be needed when checking the clearance over the extent of bridge travel. Position of the roller assembly will be optimized and secured after the bridge is installed.

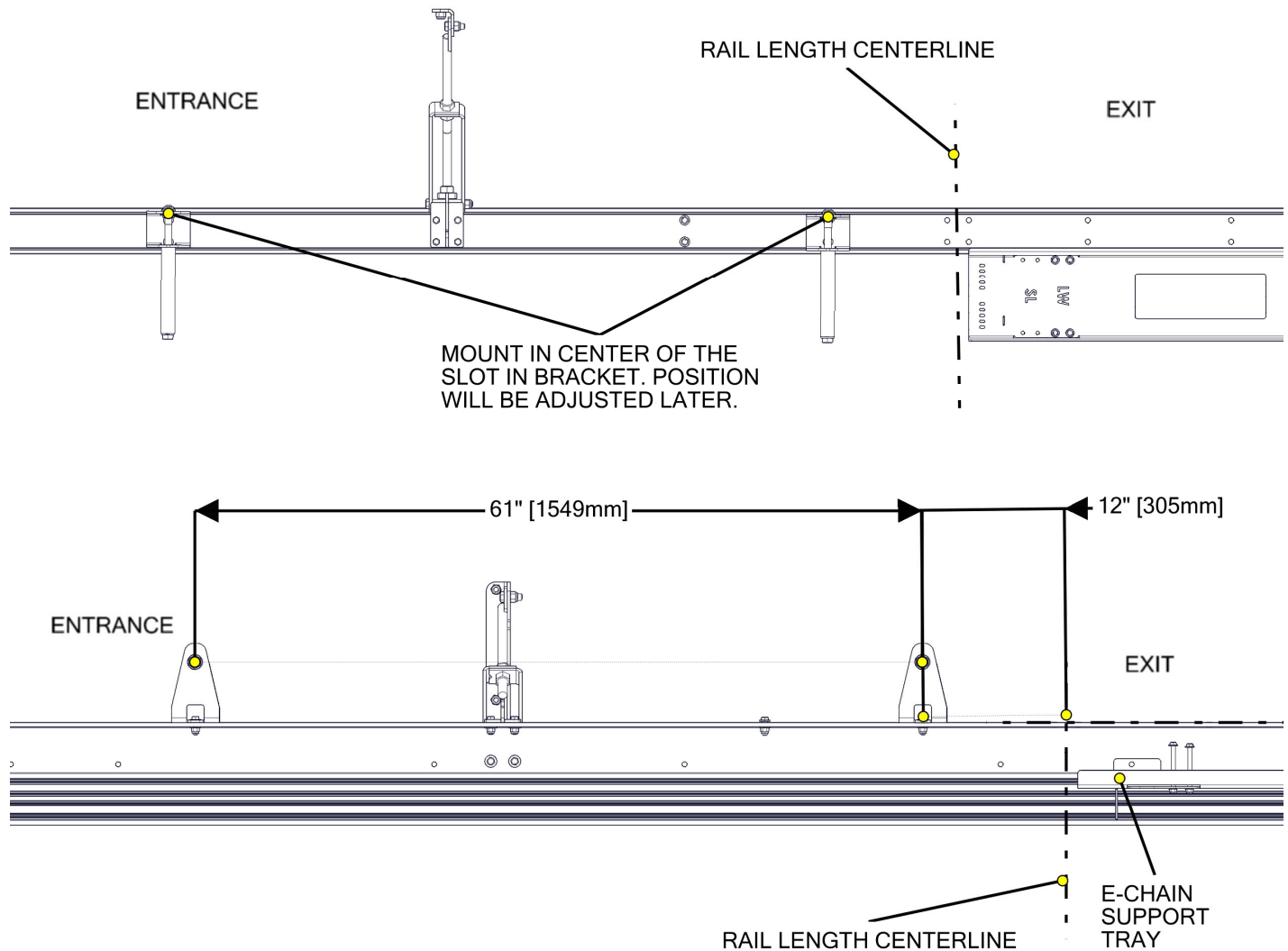
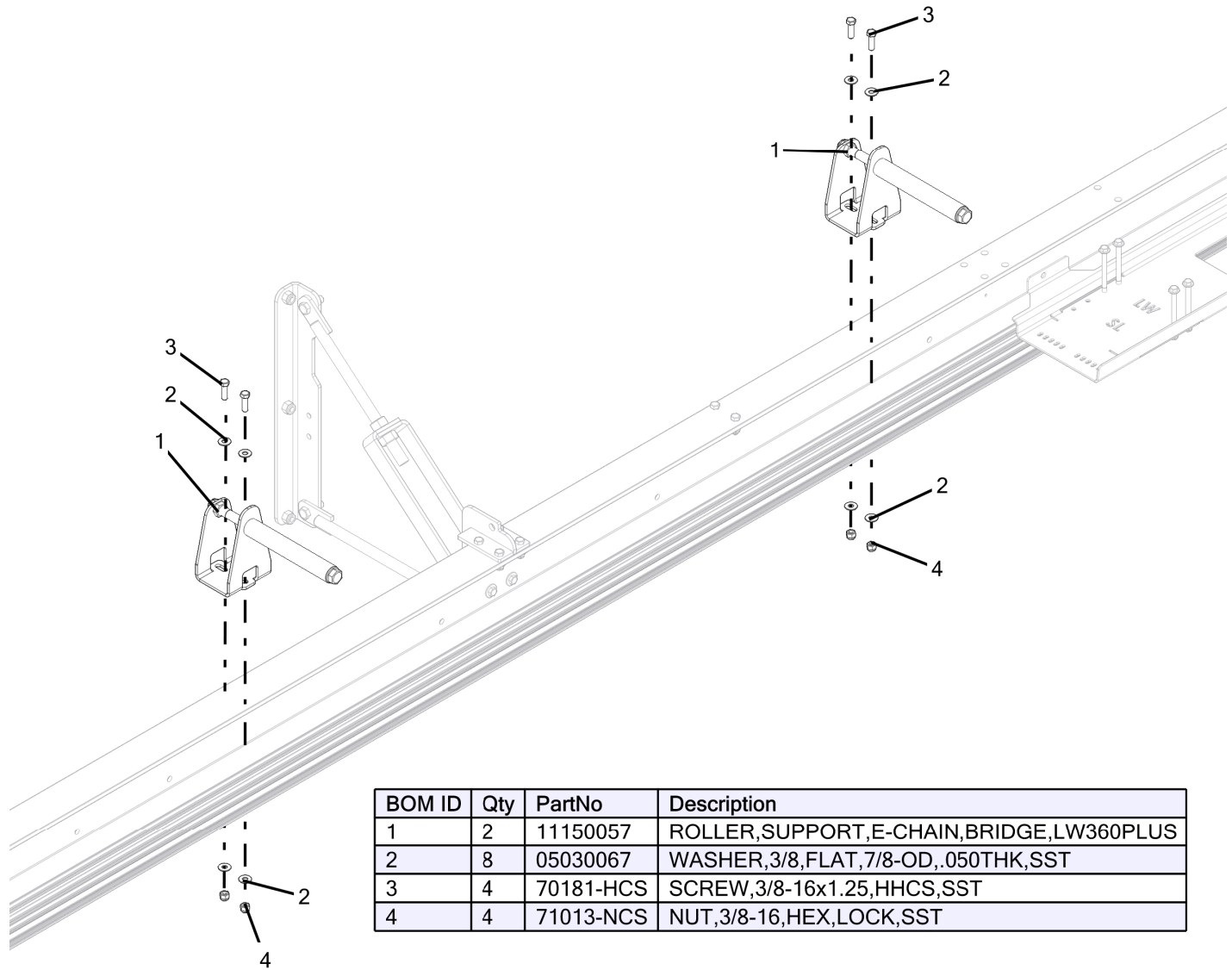
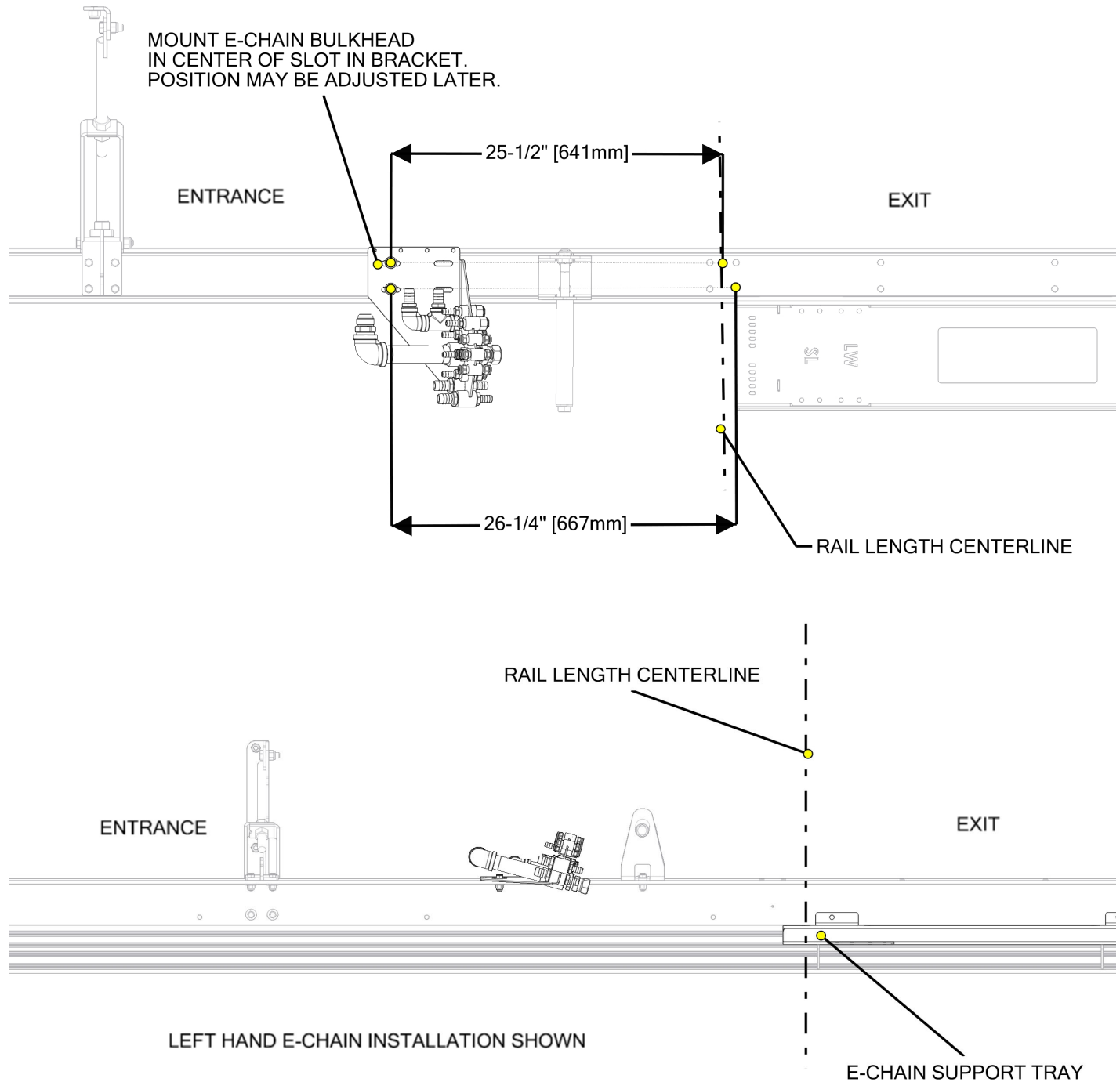


Figure 67 - E-chain Support Roller Positions

**Figure 68 - E-chain Support Roller Assembly**

5.6 Step 4 Install the Fixed End Bulkhead

Install the E-chain bulkhead on the top of the rail in the pre-drilled holes as shown in Figure 69 and Figure 70. Install the bulkhead on the top of the rail with fasteners shown installed in the center of the bulkhead mounting bracket slots. **Do not** fully tighten the fasteners at this time, further adjustment may be needed when the E-chain high-pressure hose is connected.

**Figure 69 - E-chain Bulkhead Position**

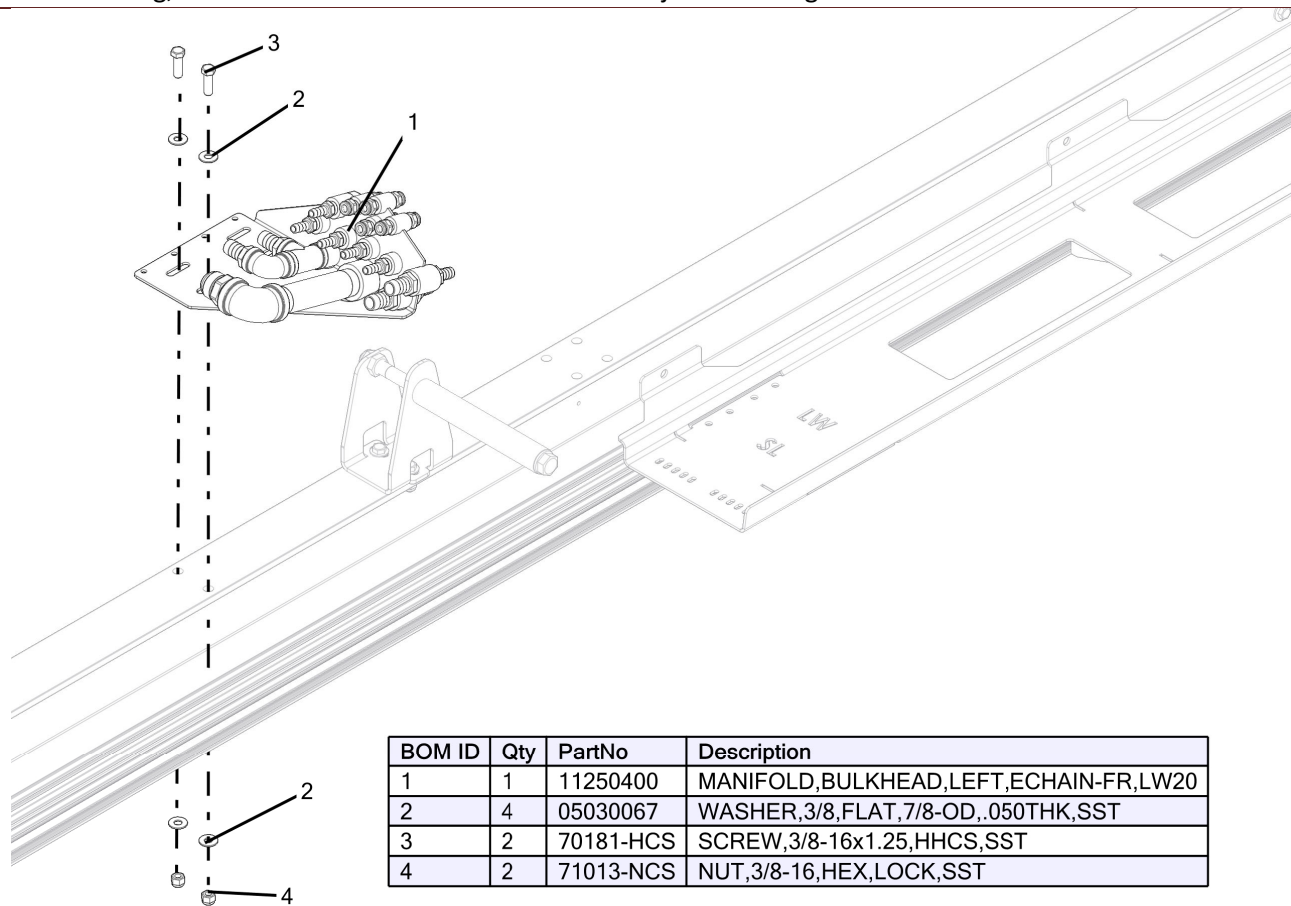


Figure 70 - Install E-chain Bulkhead

5.6 Step 5 Install the Bridge Control and Dryer Distribution Panel Junction Boxes

A bridge control junction box is required for all wash systems. A separate, dryer distribution panel is required for site that utilize the integrated dryer. The following guidelines should be considered for the installation of the junction boxes:

- The junction boxes can be located in the wash bay or equipment room. Install the junction box in the best place to protect it from the wet wash environment. If the junction box is located in the wash bay area, be aware of the main E-chain and bridge movement and position it so that it is clear of all moving parts of the wash.
- All the frame end cables from the E-chain that connect to the junction box are 8' (2.44m) in length. Consider proper wire and conduit routing for cables going into the junction box.
- The incoming high voltage power feed wiring for the bridge, dryer feed #1 and dryer feed #2 must meet local electrical codes and regulations.
- The junction boxes must have proper access for internal inspection service.
- **Do not drill holes on the top of the box.**
- The installer must provide proper mounting and fastening hardware for the junction box based on the building construction. The junction box enclosure has four pre-drilled 5/16 in (8mm) diameter mounting holes.
- An example is provided in Figure 71. For narrow wash bays, please note proper clearance to with Wash Bridge. If required see alternative mounting positions.

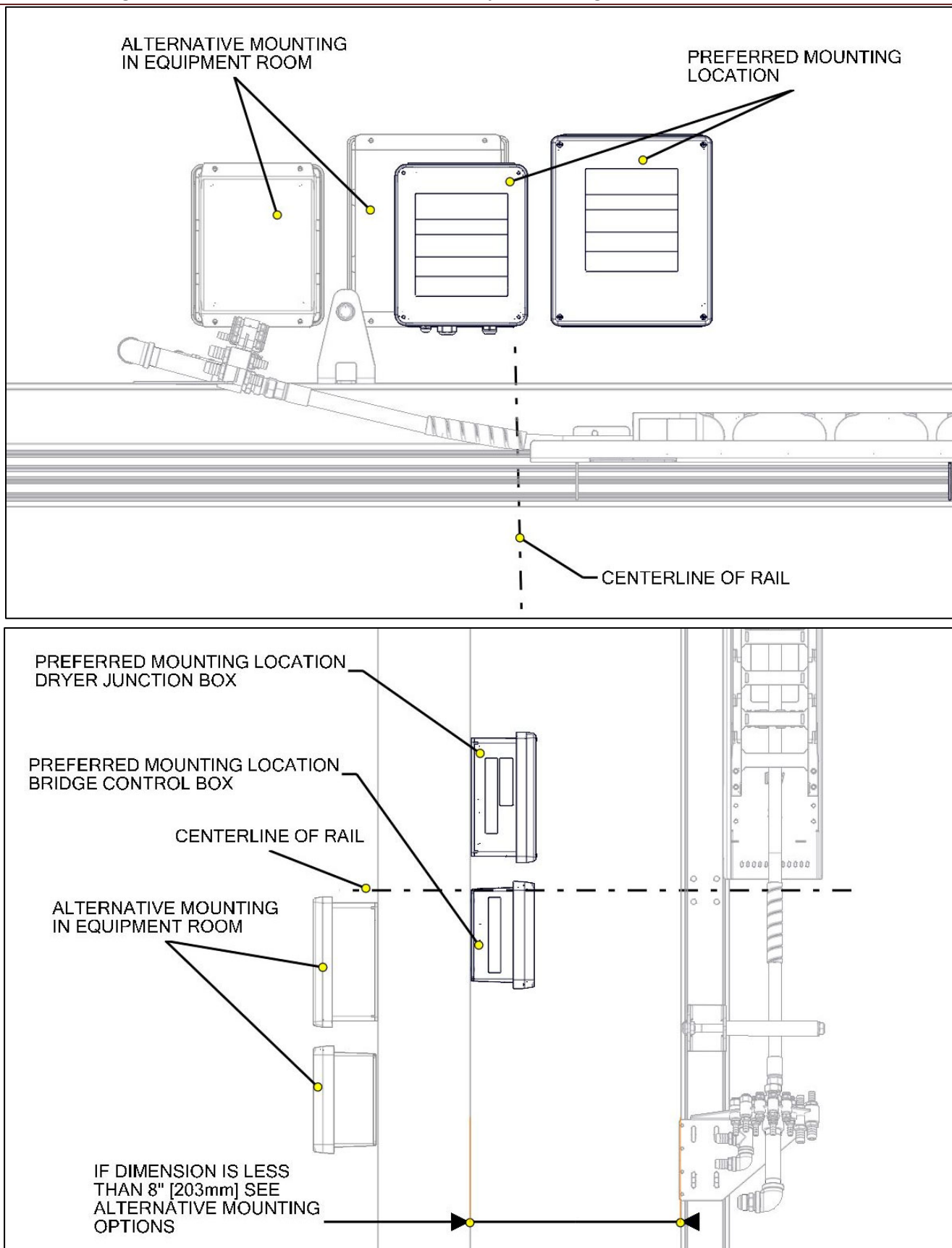


Figure 71 – Bridge Control and Dryer Distribution Junction Box Location

5.7 Lift and Connect the E-chain Assembly

5.7 Step 1 Prepare the E-chain

The E-chain assembly is labeled at each end to indicate the end that is attached to the frame (FRAME) and the end that is attached to the bridge (MACHINE). Orient the E-chain such that the frame end (labeled: FRAME) is facing the entrance end of the wash and the rest of the E-chain is rolled on the top and towards the exit end of the wash.

Check to ensure the proper lengths of cables, hoses, and tubes extend from the frame end of the E-chain prior to installation. The dimensions below are the lengths that should be extending beyond the end of the E-chain.

- Cables: 96 in (2440 mm)
- High-pressure 3/4" hose: 14.5 in (370 mm)
- Low-pressure fluid lines: 18 in (455 mm)

Vertical separators should not be tight against the hoses or cables. Confirm that separators did not shift during shipping. Verify that there is no visible damage to cables or E-chain caused during shipping and handling.

5.7 Step 2 Lift the E-chain and Attach it to the Support Tray

- Using an appropriate safe lifting method and device, lift the E-chain and place it in the trays. Be sure the end of the E-chain labeled as "FRAME" is located at the center of the wash bay.

NOTE:	The fully loaded E-chain weighs approximately 120 lbs (54 kg). Use an appropriate lifting device to safely lift and place the E-chain assembly into the support tray.
--------------	---

- Unroll and extend the E-chain along the length of the tray, leaving the E-chain curled over itself with the end labeled "MACHINE" on the top.
- Using the fasteners provided, connect the "FRAME" end of the E-chain to the tray holes as shown in Figure 72.

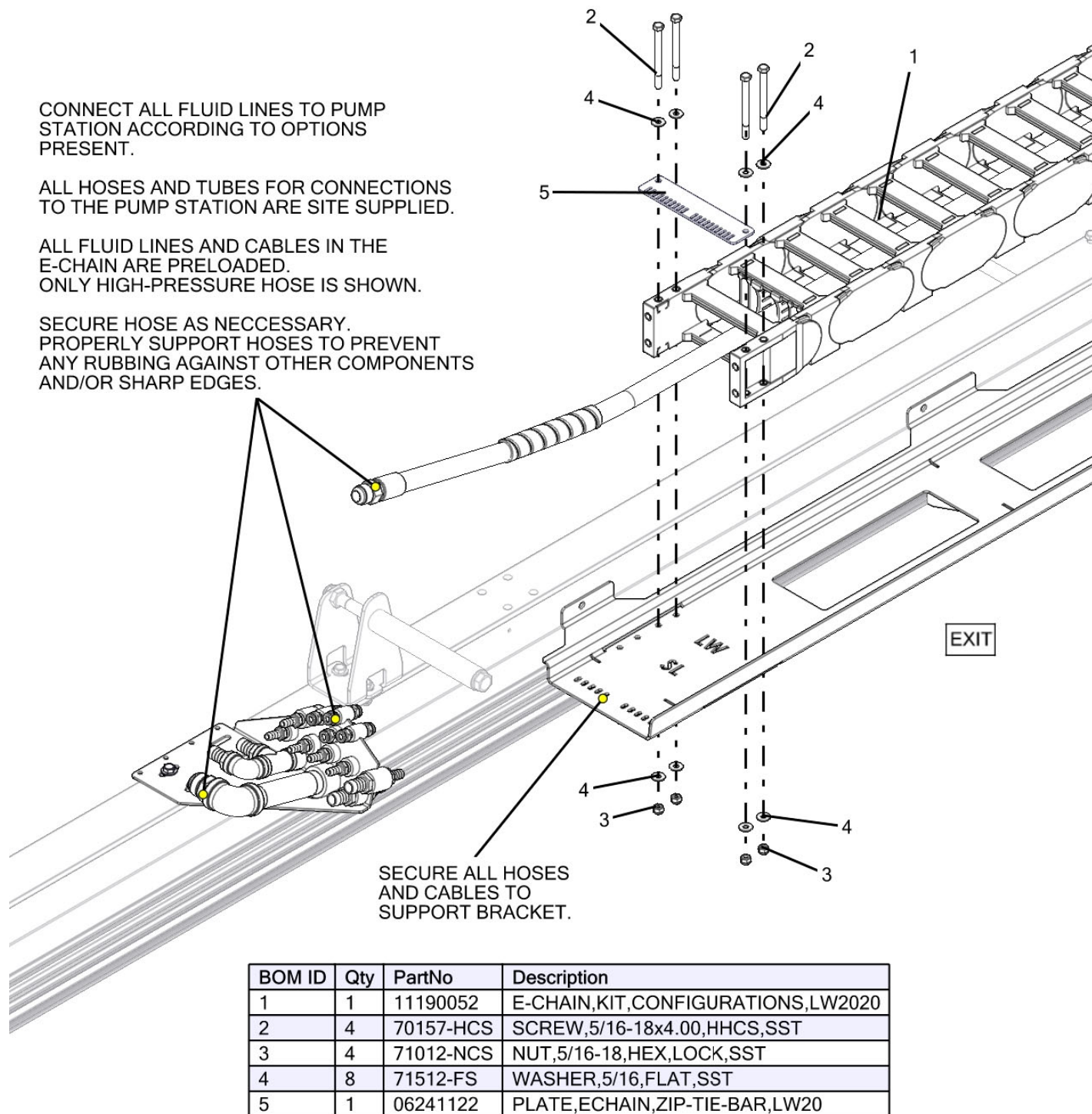


Figure 72 – Frame End E-chain Mounting

Table 4 – Frame End E-chain Mounting

11190 053 QTY.	11190 054 QTY.	11190 055 QTY.	11190 056 QTY.	11190 057 QTY.	LABEL TEXT	PART #	DESCRIPTION	CUT LENGTH +/- 1/2"
1		1	1		37W30 DRYER #1	1140047	CABLE,10-4,PVC,301/32-STRD,COP,3BLK,1GRN	37' - 10"
1			1		37W35 DRYER #2	1140047	CABLE,10-4,PVC,301/32-STRD,COP,3BLK,1GRN	37' - 10"
1		1	1	1	37W40 DRYER #3	1140047	CABLE,10-4,PVC,301/32-STRD,COP,3BLK,1GRN	37' - 10"
1			1	1	37W45 DRYER #4	1140047	CABLE,10-4,PVC,301/32-STRD,COP,3BLK,1GRN	37' - 10"
1	1	1	1	1	36W20 BRIDGE PWR	1140047	CABLE,10-4,PVC,512/38-STRD,COP,3BLK,1GRN	37' - 10"
1	1	1	2	2	36W10 SYS STOP	1140048	CABLE,12-4,PVC,512/38-STRD,COP,3BLK,1GRN	37' - 10"
1	1	1	2	2	36W01 ETHERNET	4080651	CABLE,ETHERNET,HIGH-FLEX,,RJ45-ENDS	
2	2	2	1	1		75103	CLAMP,HOSE,#12,.75H,SST	
2	2	2	1	1		75101	CLAMP,HOSE,#6,.38-.50H,SST	
1	1	1	1	1		6160520	COVER,CABLE,SPIRAL,2'LONG,ECHAIN,LW360P	
1	1	1	1	1		6050155	E-CHAIN,BRIDGE,47-LINK,150,E4-56,LW20	
1	1	1	1	1	MAIN ARCH	1130029	HOSE,.50,300PSI,BLUE,PVC-CMPD,SYN-YRN	18' - 4"
1	1	1	1	1	PROD ARCH	1130030	HOSE,.625,200PSI,BLUE,PVC-CMPD,SYN-YRN	18' - 4"
1	1	1	1	1		3340152	HOSE,BRIDGE,HP,3/4",SPIRAL,LW20	
1	1	1	1	1		11190052B	LABEL,SET,E-CHAIN,END- IDENTIFICATION,LW2020	
1	1	1	1	1		11190052A	LABEL,SET,E-CHAIN,LINE-IDENTIFICATION,208- 230V,LW2020	
1	1	1	1	1	DETERGENT#1	1120019	TUBING,1/2"ODx.06W,150PSI@70°F,LLDPE,BLK	18' - 4"
1	1	1	1	1	DETERGENT#2	1120019	TUBING,1/2"ODx.06W,150PSI@70°F,LLDPE,BLK	18' - 4"
1	1	1	1	1	FOAMING WAX	1120019	TUBING,1/2"ODx.06W,150PSI@70°F,LLDPE,BLK	18' - 4"
1	1	1	1	1	SUPER SEALANT	1120019	TUBING,1/2"ODx.06W,150PSI@70°F,LLDPE,BLK	18' - 4"
1	1	1	1	1	FRONT PREP	1120019	TUBING,1/2"ODx.06W,150PSI@70°F,LLDPE,BLK	18' - 4"
1	1	1	1	1	COMP AIR	1120016	TUBING,3/8ODx1/16"WALL,230PSI@70F,LLDPE, BLACK	18' - 4"
1	1	1	1	1	3X COLOR #1	1120016	TUBING,3/8ODx1/16"WALL,230PSI@70F,LLDPE, BLACK	18' - 4"
1	1	1	1	1	3X COLOR #2	1120016	TUBING,3/8ODx1/16"WALL,230psi@70F,LLDPE, BLACK	18' - 4"
1	1	1	1	1	3X COLOR #3	1120016	TUBING,3/8ODx1/16"WALL,230psi@70F,LLDPE, BLACK	18' - 4"
1	1	1	1	1	OVERGLOW	1120012	TUBING,5/8ODx.06W,100psi@70F,LLDPE,BLACK	18' - 4"

5.7 Step 3 Connect High-Pressure Hose and Fluid Lines from E-chain to Bulkhead

- Connect the High-Pressure hose to the bulkhead manifold installed on the rail. Route the high-pressure hose so there is no sag in the hose. The hose must have a smooth curved shape and go straight into the E-chain as well as align naturally with the bulkhead fitting. If needed, push the hose into the E-chain to achieve this. This is to prevent rubbing and premature wear. It should not be necessary to apply excessive force to line up and connect the high-pressure hose to bulkhead fitting. See Figure 73 for correct and incorrect hose routing.



THE PREVENT RUBBING, PREVENT PREMATURE WEAR, AND ENSURE HOSE LIFE. WHEN ROUTING THE HIGH-PRESSURE HOSE FROM THE E-CHAIN TO THE BULKHEAD, THE HOSE MUST NOT HAVE SAG, MUST ROUTE SMOOTHLY AND ALIGN NATURALLY WITH THE BULKHEAD FITTING.

- Connect all other tubing and hoses to the bulkhead manifold. The lines are all labeled from the factory and are to be connected to the corresponding fittings as shown on Figure 72 and Figure 74.
- For the best fit and seal with the push-to-connect fittings on the bulkhead, it is recommended to trim tube ends slightly shorter with a clean, perpendicular cut.

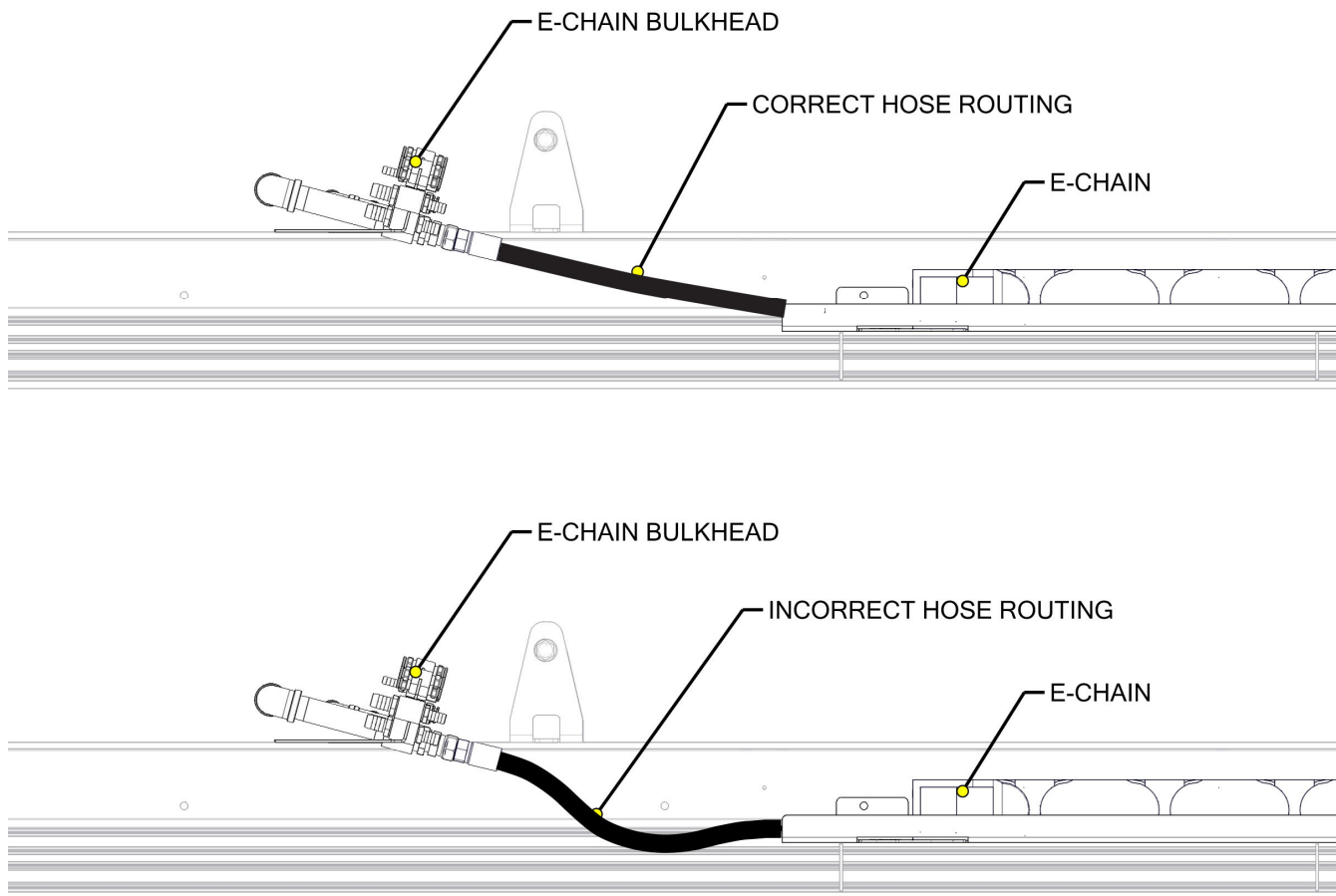
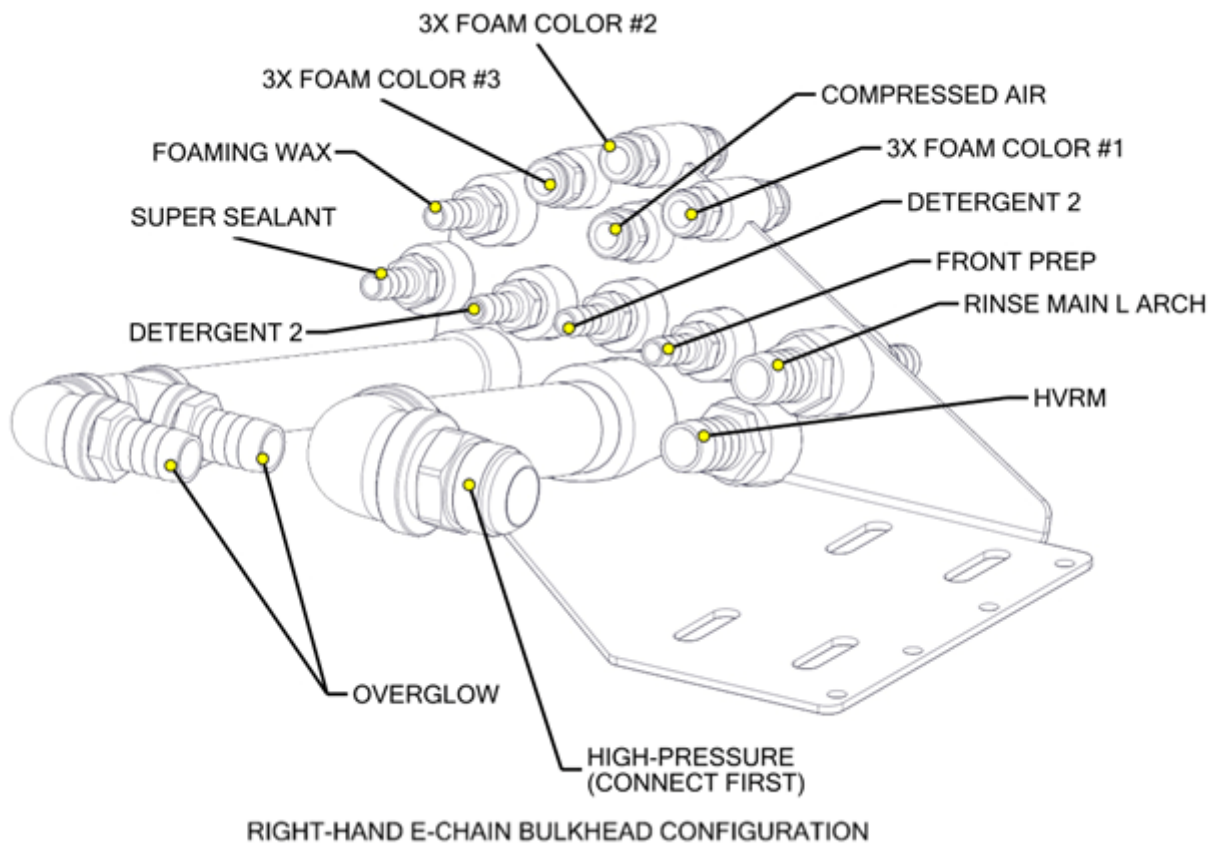
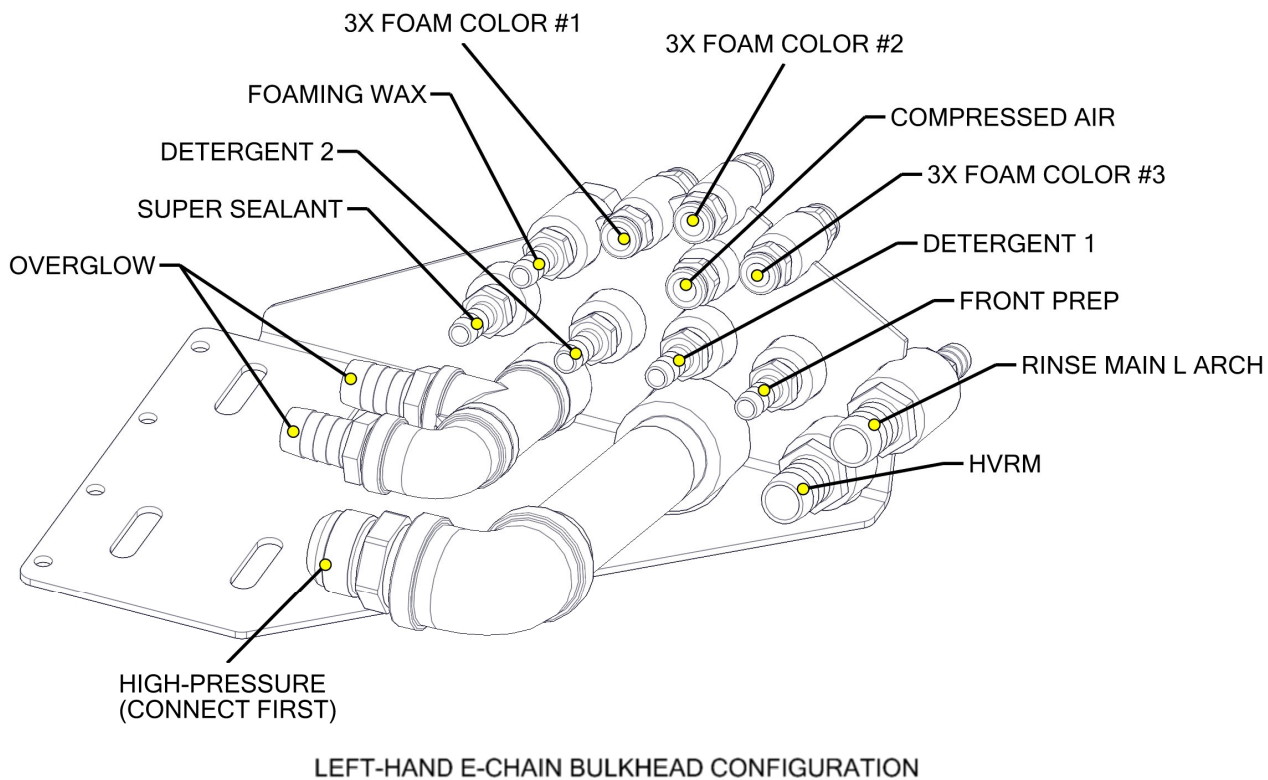


Figure 73 - E-chain Hose Routing Path-Correct and Incorrect

**Figure 74 - Bulkhead Connection Diagram**

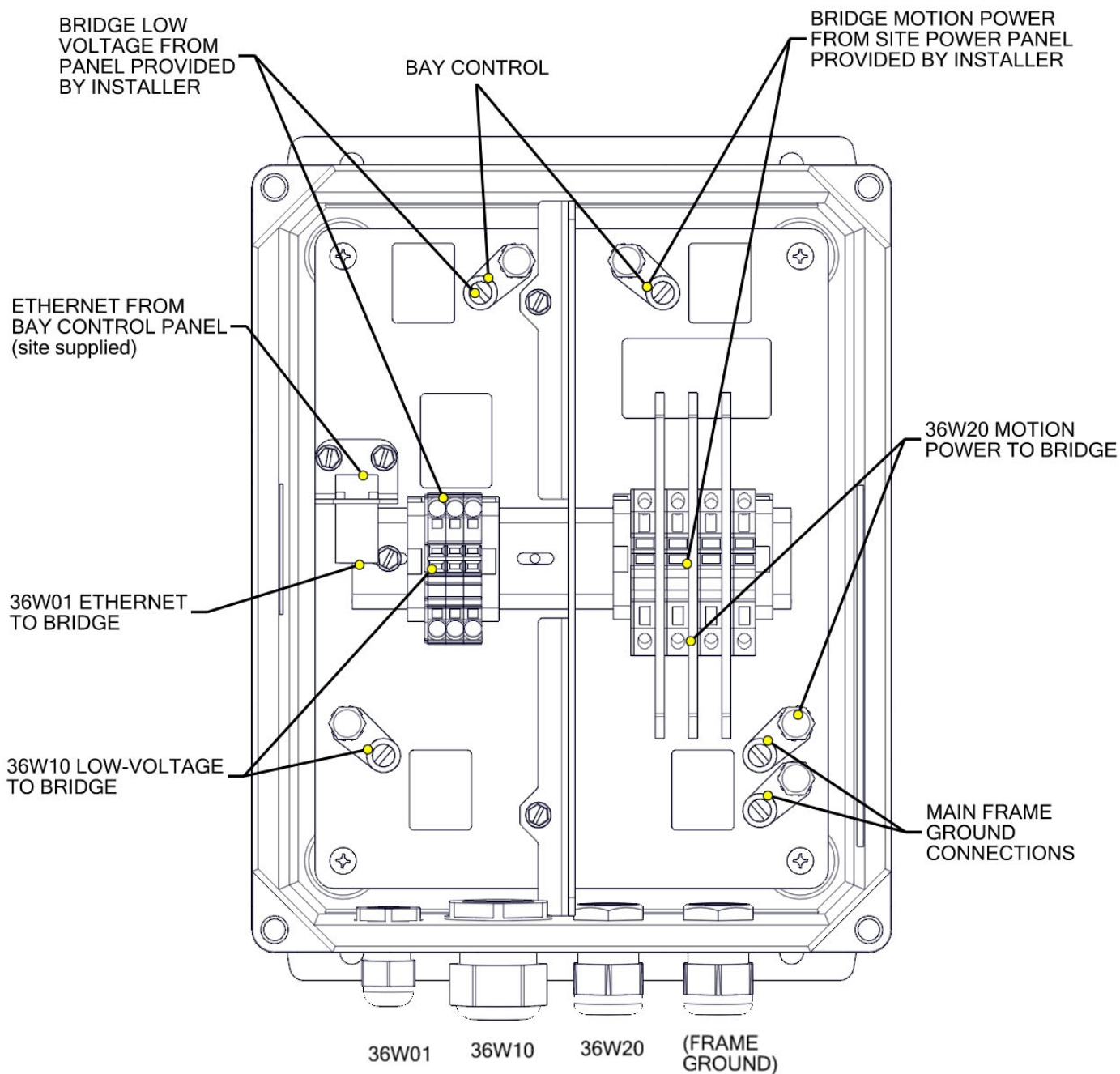
5.7 Step 4 Connect Bridge Main E-chain Electrical Cables to the Junction/Distribution Box[es]

WARNING –LOCKOUT/TAGOUT THE UPSTREAM DISCONNECTING MEANS PRIOR TO TERMINATING ANY ELECTRICAL CONNECTIONS DURING INSTALLATION.

- Route the Ethernet cable (36W01), low-voltage cable (36W10), and motion power cable (36W20) over the main rail and to the control power junction box.
- If 208V or 230V integrated dryers are included, route the four dryer power cables (37W30, 37W35, 37W40, 37W45) over the main rail and to the dryer power distribution panel.
- If 400V, 460V, or 575V integrated dryers are included, route the two dryer power cables (37W30, 37W40) over the main rail and to the dryer power junction box.
- Strain relief fittings for each cable are provided (packaged and placed inside each junction/distribution box). Drill holes as necessary (to match the cables included in the E-chain) and install strain relief fittings. Do not drill holes on the top of the box. Route the cables into the junction box through the strain relief fittings.
 - Note: if fittings other than those provided are to be used, they must be of the same Type rating as the enclosure or of a compatible Type rating that does not reduce the overall enclosure Type rating.
 - Note: the junction boxes have internal barriers to separate the left and right halves of each box – each cable must enter on the correct half of the box. Cables cannot cross the internal barrier, and the barrier cannot be removed.
- Terminate each cable as indicated on sheet F-2 of the Field Wiring section of the overall machine Electrical Schematics set.
 - Terminal numbers are marked inside the junction/distribution box[es]. Wire numbers coincide with labels on the outer jacket of cables as well as numbers printed on the individual conductors of each cable.
- Install and terminate site power supply connections to the junction/distribution box[es] as appropriate. Refer to sheet F-1 of the Field Wiring section of the overall machine Electrical Schematics set. All wire dimensions provided are for informational purposes only – the installer shall be responsible for selecting and utilizing conductors, wire, cable, wiring methods, and/or any other aspect of electrical interconnection that is both appropriate for each installation as well as is in conformance with all applicable laws, regulations, directives, codes, and/or similar criteria.



ALL WIRING SHALL CONSIST OF COPPER CONDUCTORS WITH A TEMPERATURE RATING OF AT LEAST 75°C. SELECTION OF CONDUCTOR SIZES SHALL BE DONE USING 60°C AMPACITY RATINGS. REFER TO 'FIELD WIRING' LABELS WITHIN EACH ENCLOSURE TO OBTAIN MINIMUM/MAXIMUM WIRE SIZE (GAUGE) OF EACH TERMINATION POINT AS WELL AS TERMINAL TIGHTENING TORQUE (WHEN APPLICABLE).

DO NOT DRILL THROUGH TOP OF BOX**Figure 75 – Bridge Control Power Junction Box Terminals**

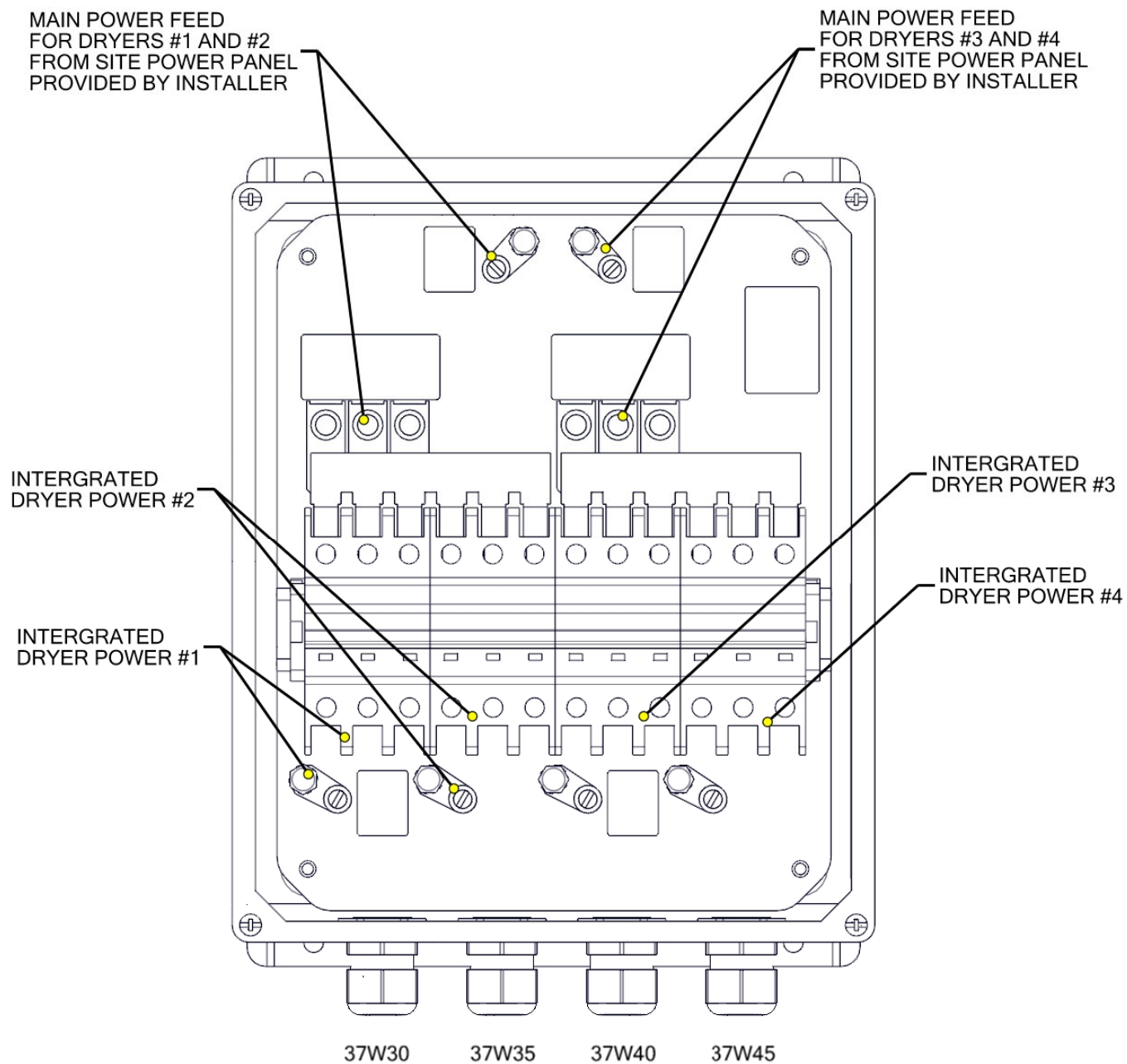


Figure 76 – Bridge Dryer Power Distribution Panel Terminals

5.8 Connect E-chain at the Bridge End

After the bridge is connected to the trucks, lift, and pull the E-chain machine end over the mounting bracket, Figure 77. If necessary, manually push the bridge along the rails so it is closer to the moving E-chain end. This will make it easier to position the E-chain end on the top of the bracket.

- Attach the E-chain to the bracket with fasteners provided in the loose parts kit, Table 1.
- Connect the high-pressure hose to the fitting at the end of the stainless steel tube on the bridge.
- Route all other fluid lines and cables on both sides of the tube.

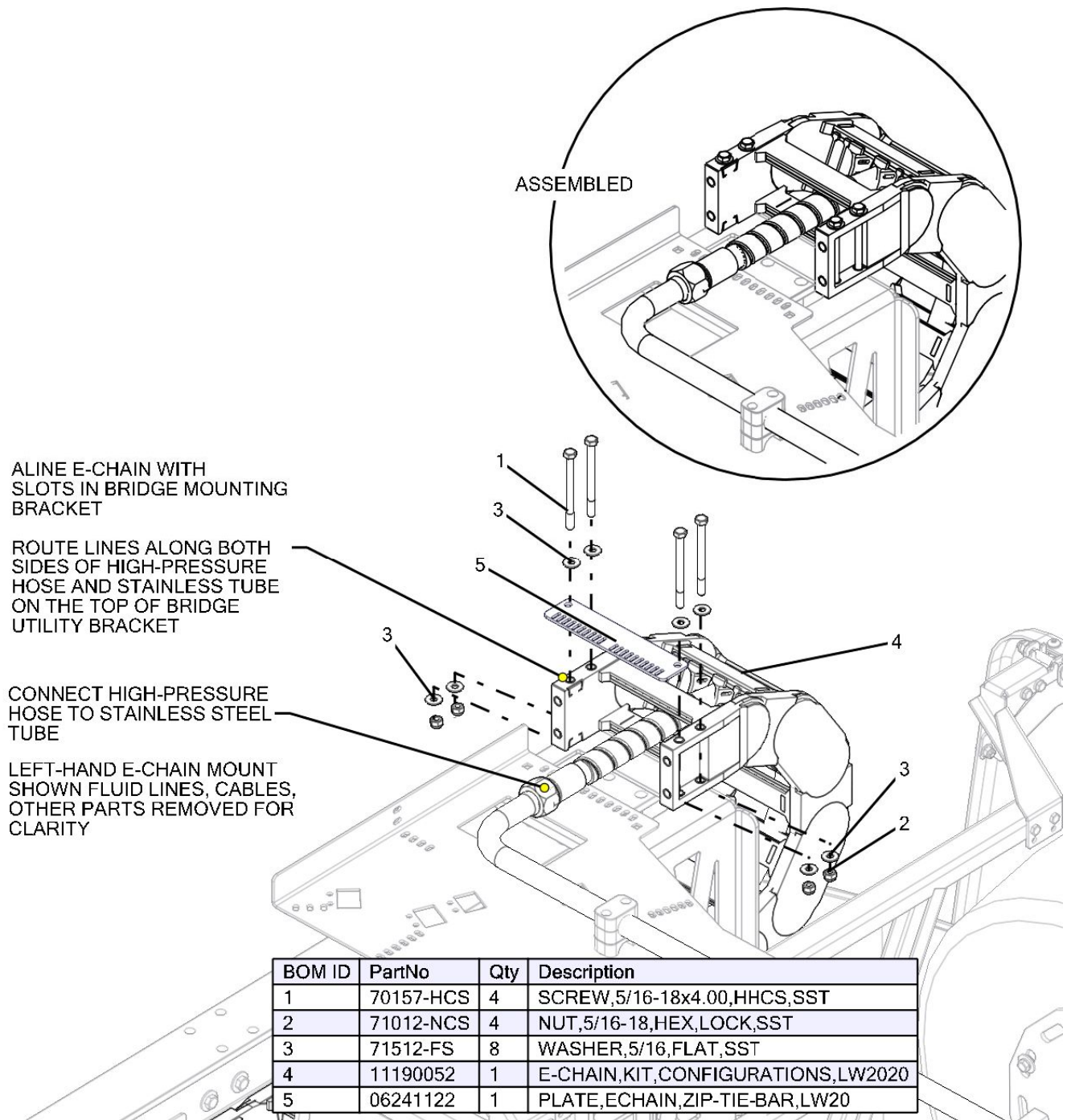


Figure 77 - Connect E-chain to Bridge

5.9 Connect Fluid Lines From E-chain to Bridge

Terminate the fluid lines from the E-chain to the corresponding connection on the bridge bulkhead, Figure 78. Lines are to be terminated and secured at both ends of the bridge E-chain.

- Keep fluid lines on the same side of the high-pressure hose as they were at the exit of the E-chain.
- All fluid lines from the bridge bulkhead to their applicator manifolds within the bridge, are preinstalled during manufacturing.

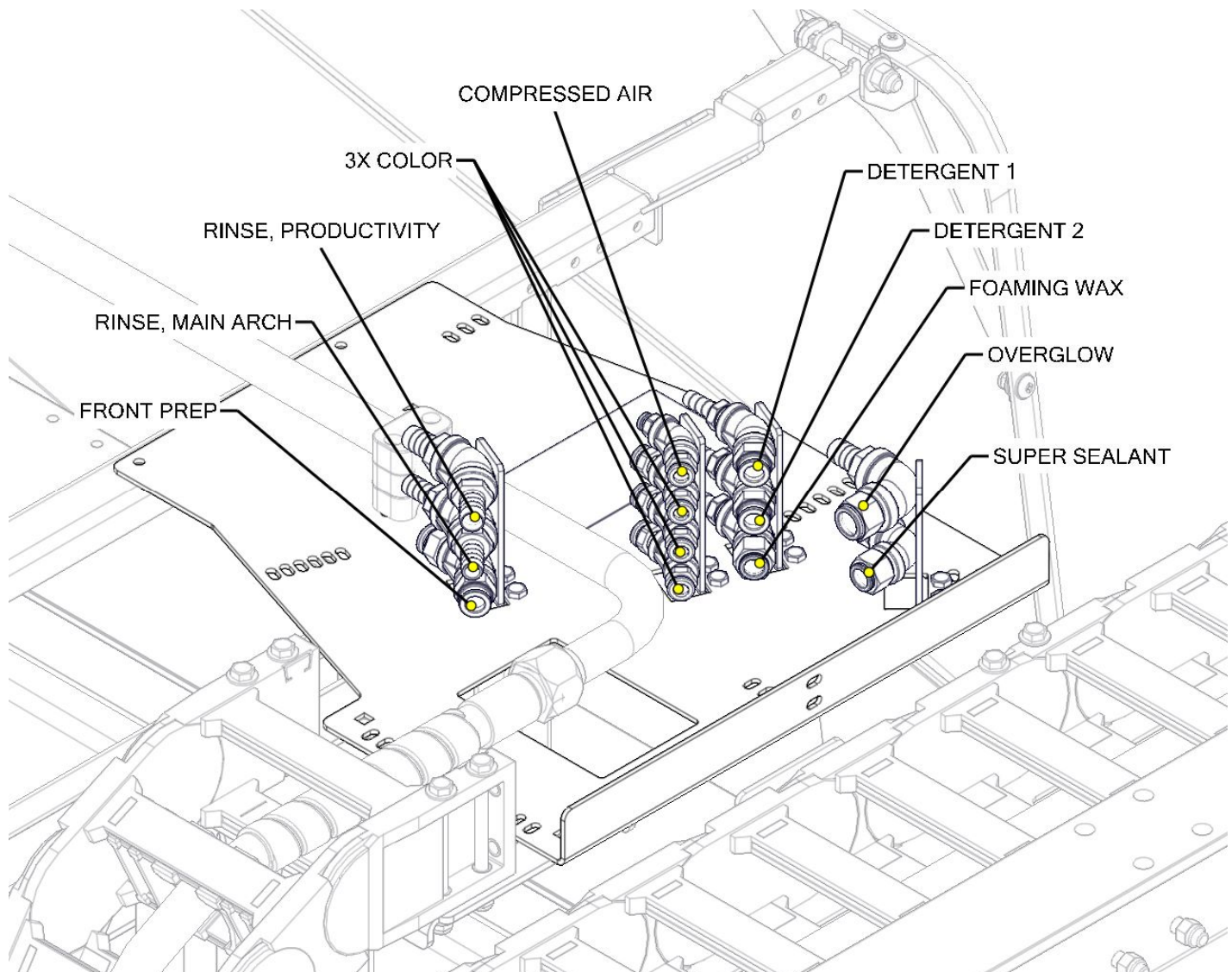


Figure 78 – Bridge Bulkhead Fluid Connections

5.10 Route Bridge Cable Lines

Route bridge cables from the E-chain to general location of their termination points on the bridge, Figure 79. Do not cut any lines to length or make any terminations at this point. Route cables along their intended final paths. Lines are to be terminated and secured after they are all secured at both ends of the bridge E-chain.



When routing cables, make sure they route straight from the E-chain and follow the high-pressure stainless steel tube on the side as they were when they exited the E-chain. Never cross the high-pressure hose or stainless steel tube over the top of the mounting bracket at the exit of the E-chain. Keeping a straight path at the exit of the E-chain will prevent excessive loads due to pulling and stretching. Excessive loads can cause unnecessary and early wear of cables.

- Low voltage cables will enter the main electrical enclosure from the left side of the enclosure.
- High voltage cables will enter the main electrical enclosure from the right side of the enclosure.



DO NOT DRILL ANY NEW HOLES ON THE ENCLOSURE. PROVIDED HOLES AND STRAIN RELIEF FITTINGS MUST BE USED. DRILLING NEW HOLES AND USING ALTERNATIVE FITTINGS CAN DEFEAT THE UL-508 RATING OF THE ENCLOSURE.

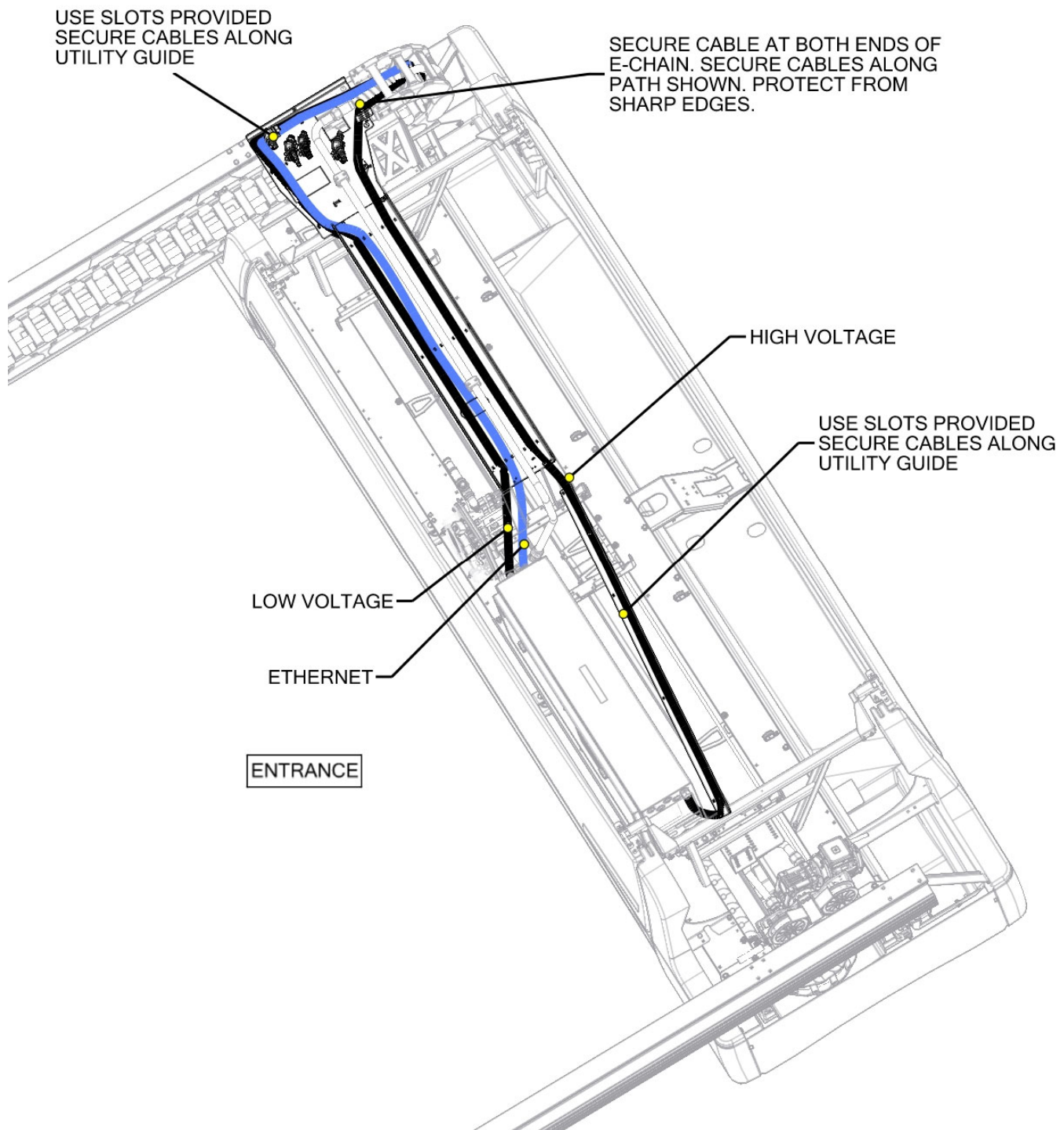


Figure 79 - Route Hoses and Cables through Bridge

5.11 Test E-chain and Bridge Motion and Secure Lines

5.11 Step 1 Test the E-chain and Bridge for Clearance During Motion



WARNING – PRIOR TO INSTALLING BRIDGE TO TRUCKS MAKE SURE END STOPS ARE PROPERLY INSTALLED AND FASTENED TO MAIN MACHINE RAILS TO PREVENT THE BRIDGE FROM TRAVELLING PAST THE END OF THE RAILS AND FALLING FROM RAILS.



WARNING – SECURE ALL COVERS AND CHECK ALL FASTENERS PRIOR TO MOVING BRIDGE. FAILURE TO DO SO COULD CAUSE INJURY OR DAMAGE TO EQUIPMENT. HAZARDOUS MOVING PARTS ARE LOCATED BEHINDS GUARDS ON THIS EQUIPMENT. DO NOT OPERATE THIS EQUIPMENT WITHOUT ALL GUARDS AND COVERS IN PLACE. ALL FASTENERS ON GUARDS MUST BE TIGHTENED WITH A TOOL TO A TORQUE OF 2.3Nm MINIMUM.

- Remove the clamps or other devices used to prevent the bridge from rolling along the main rails.
- Manually push the bridge with the E-chain attached over the entire distance of travel.
 - While moving the bridge watch to make sure all parts of the system move freely and without interference. Adjust as needed.
- Evaluate the space around the machine for any obstructions that could limit the motion of the machine throughout the wash envelope.
 - If entrance to exit motion must be limited, move the main rail end stops in the main rails. If trolley and arch motion in the side-to-side direction must be limited, see Section 5.15.

5.11 Step 2 Adjust the E-chain Support Rollers

When testing the bridge motion, monitor the E-chain position relative to the support rollers.

- Adjust the E-chain support roller left or right as needed.
 - Each roller should be positioned so that the bridge E-chain bracket moves over the top of the roller to make sure the E-chain is properly positioned over the rollers throughout the bridge motion.
- Make sure the E-chain does not ride off the end of the roller throughout its range of motion.
 - Check that the support roller is perpendicular to the E-chain. When the rollers are in the proper final position, tighten fasteners to secure, Figure 80.
- Verify that all cables and lines routed from pump station or site panels are properly routed and do not interfere with the E-chain throughout its full range of motion.
 - If required, adjust fluid lines coming from the pump station to the bulkhead and secure them.

NOTE:

With a new machine, it is normal for the E-chain to not touch the support roller. Under normal conditions, the E-chain will tend to sag after an initial break-in period. At that point, the rollers will start to support the E-chain over its length. This is especially critical when the bridge travels to the entrance end of the wash bay.

- Once free motion is confirmed, position the bridge at the exit end of the wash bay. Reinstall the clamps as necessary to prevent the bridge from moving in the rails.



CAUTION– AFTER THE BRIDGE IS ATTACHED TO TRUCKS AND BEFORE THE MAIN BELT IS INSTALLED, THE BRIDGE WILL ROLL VERY FREELY ALONG THE MAIN RAILS. TO AVOID UNEXPECTED BRIDGE MOVEMENT AND POTENTIAL CRUSHING HAZARD WHILE CONTINUING THE INSTALLATION PROCESS, SECURE THE BRIDGE IN A FIXED POSITION USING A CLAMP OR OTHER DEVICE.

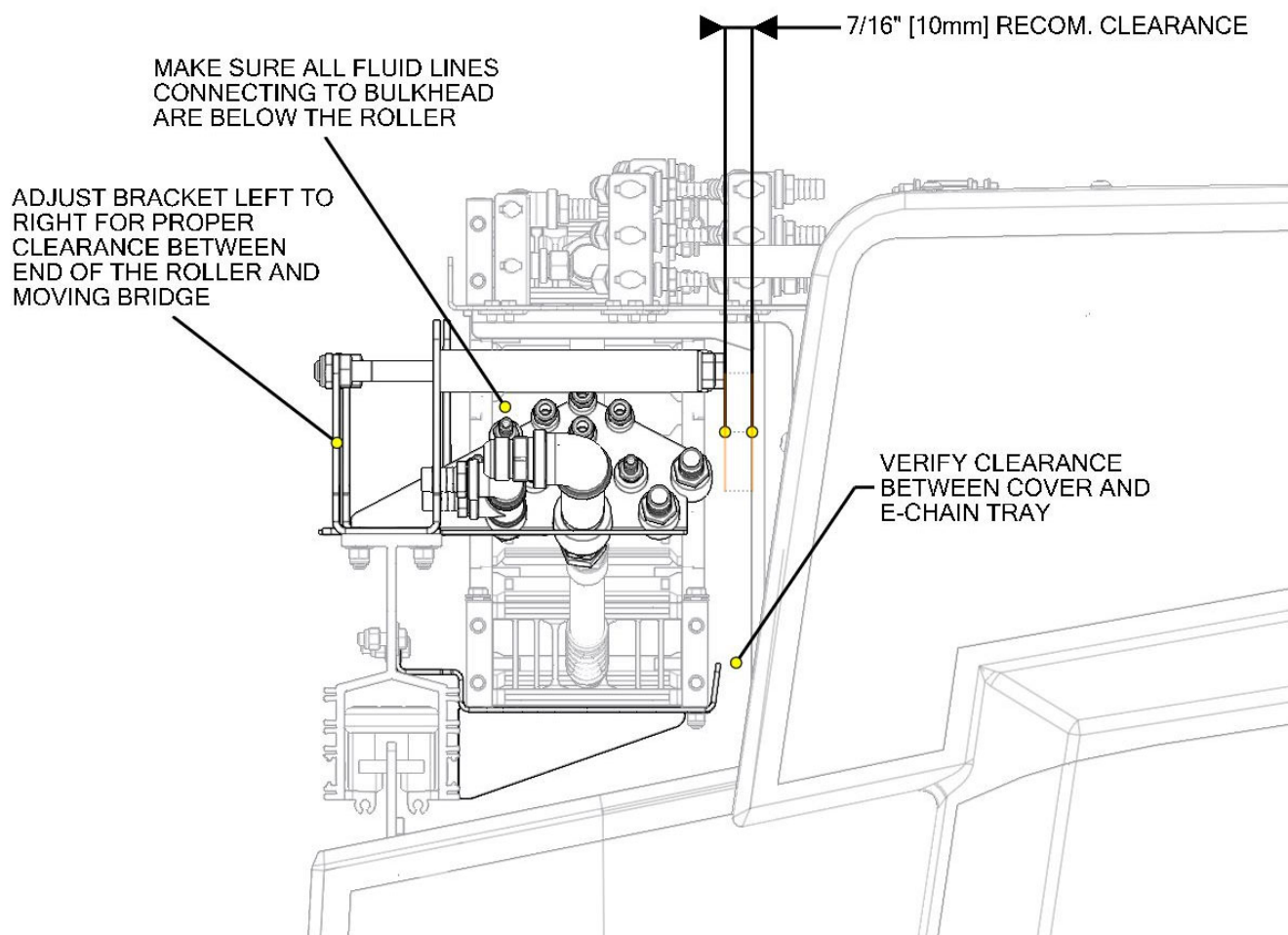


Figure 80 – E-chain Roller Adjustment and Clearance

5.11 Step 3 Secure the Fluid Lines at Each End of the E-chain

Securing the ends of the hoses and cables at each end of the E-chain is necessary to prevent premature wear and damage to the cables and hoses as the E-chain moves.

It is important to secure the fluid lines at both ends of the E-chain. This will help prevent cables and fluid lines from moving during bridge motion and causing premature wear and damage.

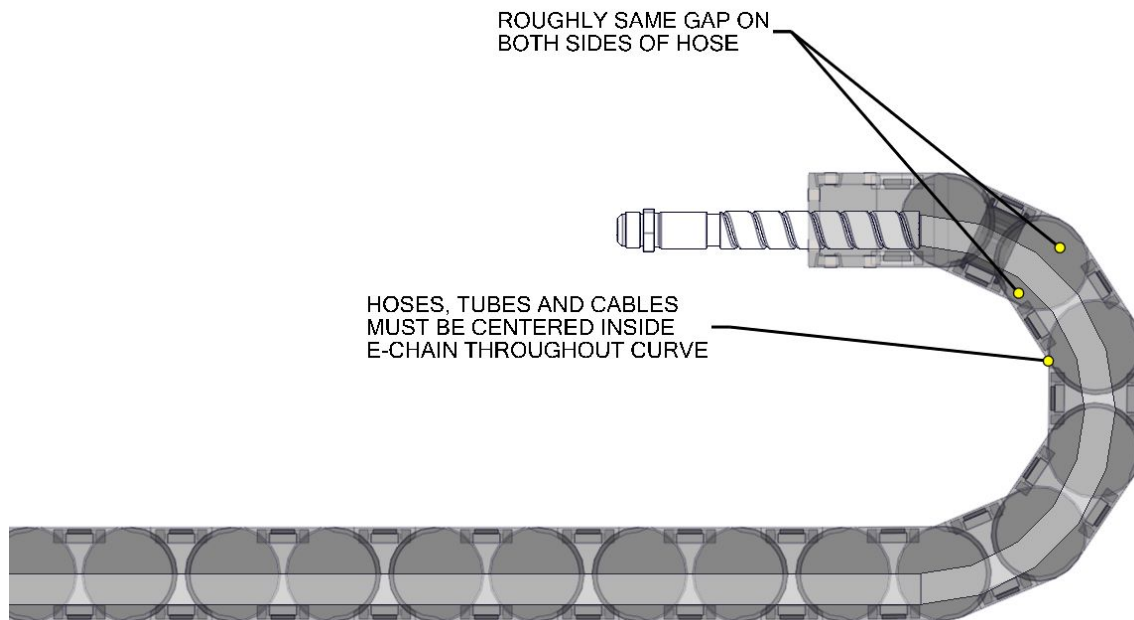


Figure 81 - Proper Loading of E-chain

E-chain High-Pressure Hose

THE HIGH-PRESSURE HOSE MUST BE PROPERLY POSITIONED INSIDE THE E-CHAIN TO PREVENT THE HOSE FROM WEARING AGAINST THE INSIDE OF THE E-CHAIN AND CAUSING DAMAGE TO THE HOSE OR THE E-CHAIN.

- It is important to position and secure the high-pressure hose into the correct position within the E-chain. The hose should always travel in the middle of the E-chain at the E-chain curve, Figure 81. The hose should not be pushed tight against the E-chain cross bars on the outside. The hose should also not be pulled tight against the cross bars on the inside of the E-chain.
- Adjust the hose position at the bridge end by loosening the tube clamp and pushing or pulling the stainless tube inside the clamp as shown in Figure 81. This will change the hose position inside the E-chain. If the straight section of the stainless tube is not long enough to provide enough adjustment, then adjust the position by sliding the fixed end bulkhead in its slotted mounting holes, shown in Figure 82.
- Tighten the bulkhead mounting fasteners once the high-pressure hose has been adjusted into its proper position in the E-chain and the hose fittings are connected at both ends.
- Move the bridge back and forth between both ends of wash bay. Verify the high-pressure hose position at both ends of the wash bay.

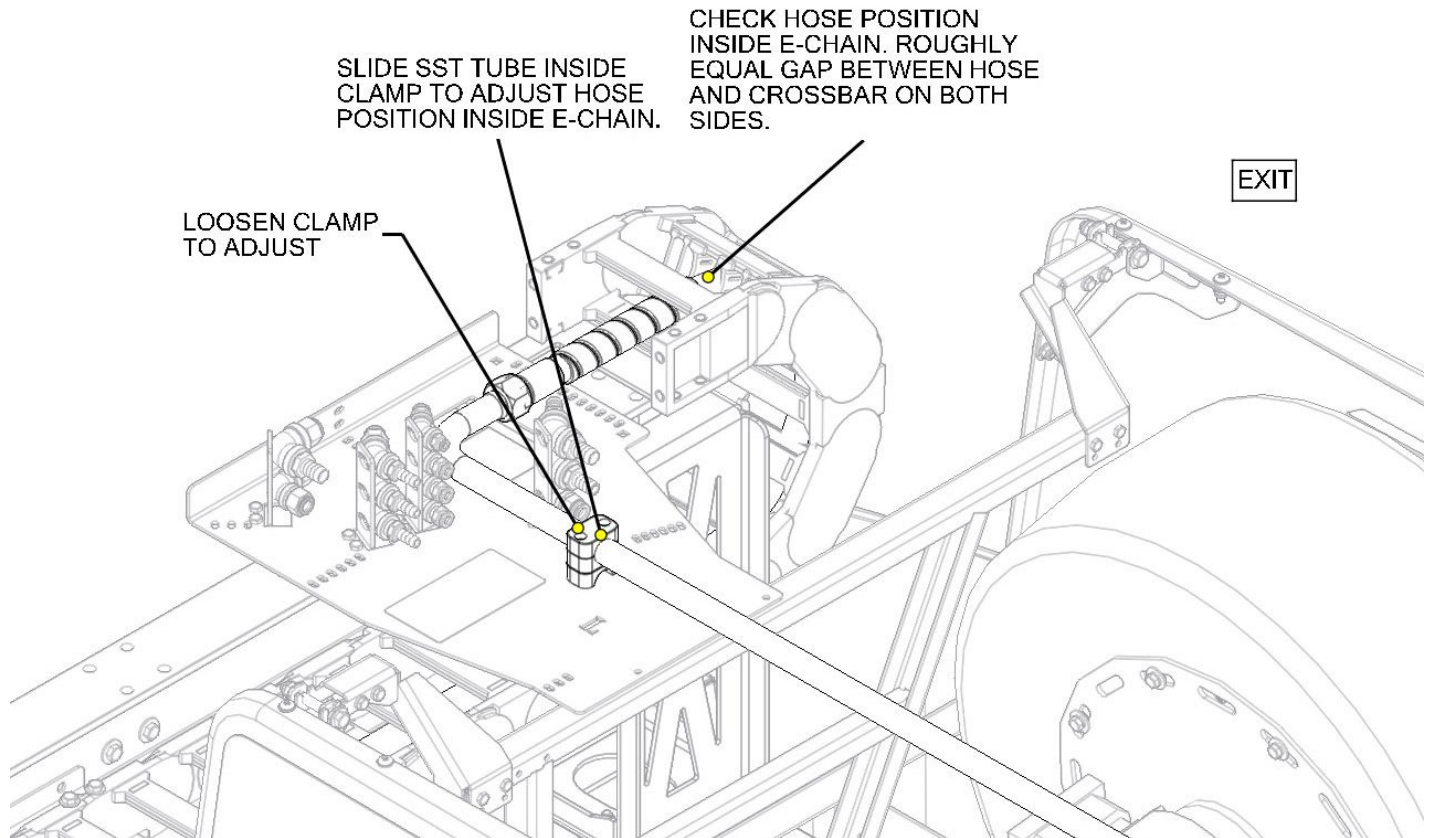


Figure 82 – High-pressure Hose Adjustment in Main E-chain

Cables and Other Fluid Lines

- Adjust all the other cables, tubes, and hoses inside the E-chain. Push or pull each line at the moving end of the E-chain. It is important that all the lines throughout the E-chain are in the middle of the E-chain through the curve, Figure 81. All lines should be relaxed and not twisted relative to each other.
- Move the bridge back and forth between both ends of wash bay. Check for cable and fluid line position at both ends of the wash bay.
- When proper position is established, secure cables and fluid lines firmly at both ends of the E-chain as shown in Figure 83 and Figure 84. Use cable ties (site provided) to secure them on the E-chain cable tie fingers or the slots in the tray and the mounting bracket. Each cable and fluid line should be secured with an individual cable tie.

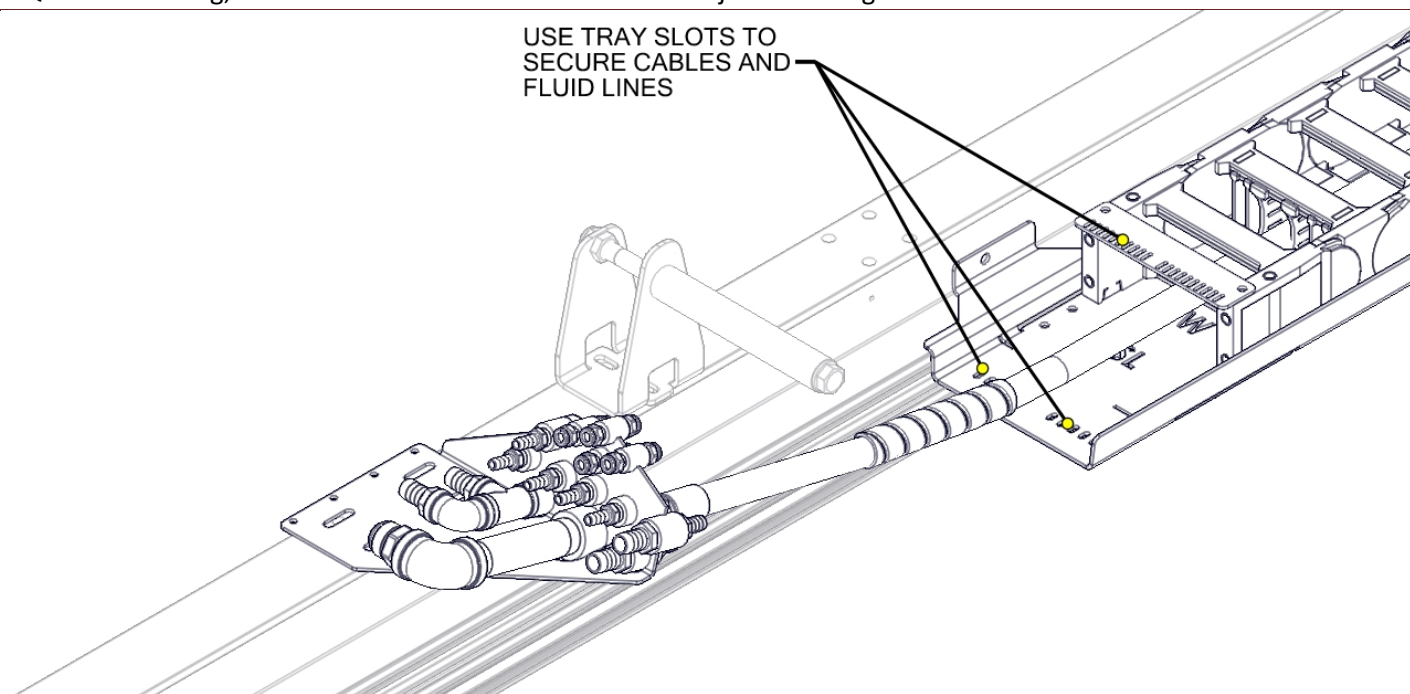


Figure 83 - Securing Cables and Fluid Lines at the Fixed End of the E-chain

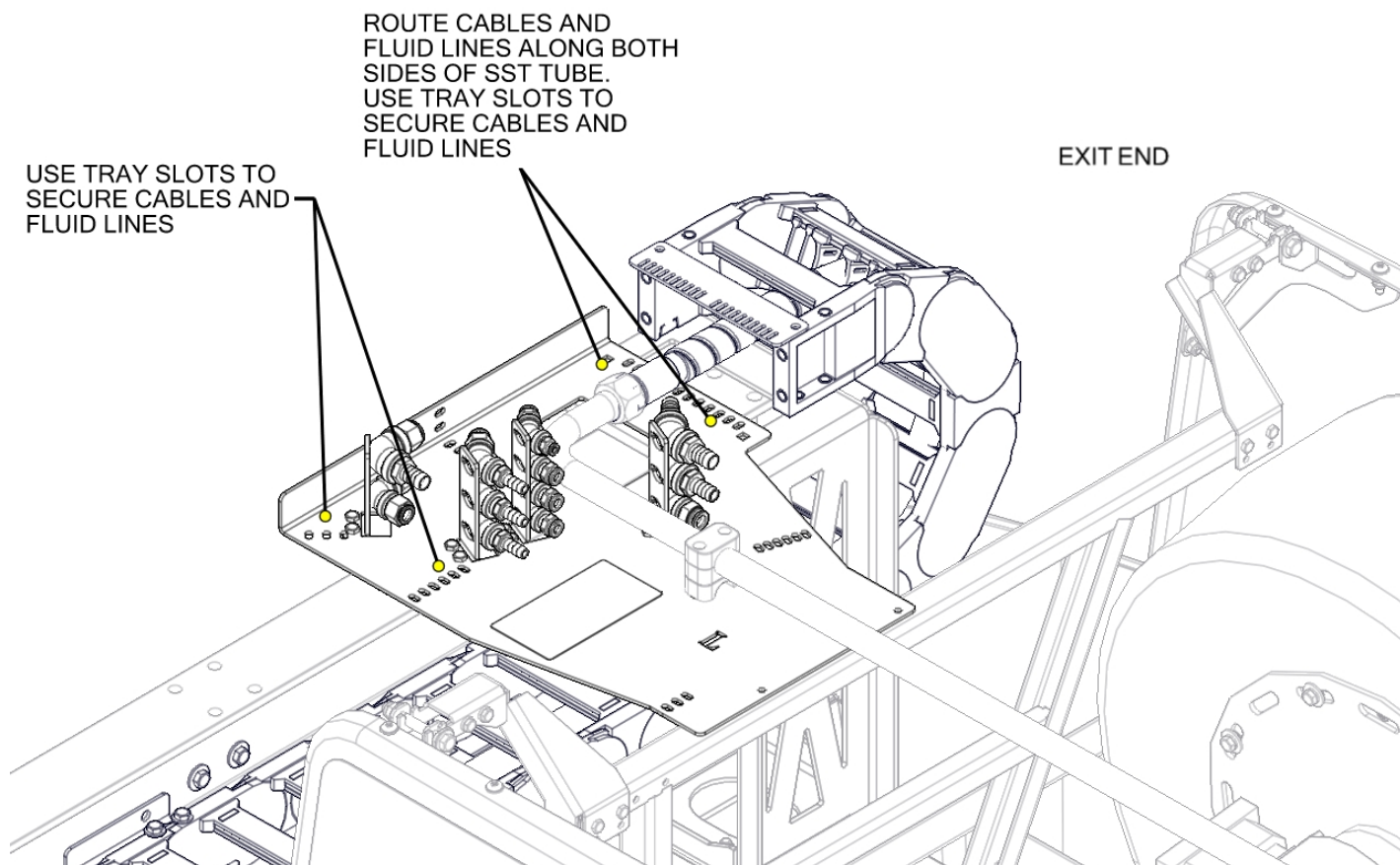


Figure 84 - Securing Cable and Fluid line at the Moving End of the E-chain

5.12 Terminate the Electrical Connections in the Bridge



WARNING –LOCKOUT/TAGOUT THE UPSTREAM DISCONNECTING MEANS PRIOR TO TERMINATING ANY ELECTRICAL CONNECTIONS DURING INSTALLATION.



POWER SOURCES – THIS PRODUCT SHALL BE OPERATED ONLY FROM THE TYPE OF SOURCE INDICATED ON THE MANUFACTURER’S IDENTIFICATION LABEL. INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES, REGULATIONS, AND/OR SIMILAR DIRECTIVES.

- Secure all cables and protect them from contact with any sharp edges.
- Refer to the labels located on the inside end walls of the bridge enclosure to confirm which strain-relief fitting to use for each cable entry into the enclosure.
- If any cable strain-relief fittings are shipped loose inside the enclosure, remove the hole-plug from the enclosure and replace it with appropriate fitting provided.
- Be sure to tighten all strain relief fittings securely when installing cables.
- Connect the cables included in the E-chain to the appropriate termination points in the Bridge Control Panel enclosure. Terminate bridge motion power, low-voltage (and system-stop), Ethernet communication, and dryer power (if equipped), refer to Figure 85.
- Terminate each cable as indicated on sheet F-2 of the Field Wiring section of the overall machine Electrical Schematics set.
 - Terminal numbers are marked inside the Bridge Control Panel enclosure. Wire numbers coincide with labels on the outer jacket of cables as well as numbers printed on the individual conductors of each cable .



DO NOT DRILL ANY NEW HOLES ON THE ENCLOSURE. PROVIDED HOLES AND STRAIN RELIEF FITTINGS SHALL BE USED. DRILLING NEW HOLES AND USING ALTERNATIVE FITTINGS CAN DEFEAT THE TYPE RATING OF THE ENCLOSURE.

ENCLOSURE ASSEMBLY WITH ALL OPTIONS IN SHOWN
MACHINE BEING INSTALLED MAY HAVE DIFFERENT SET
OF COMPONENTS PRESENT

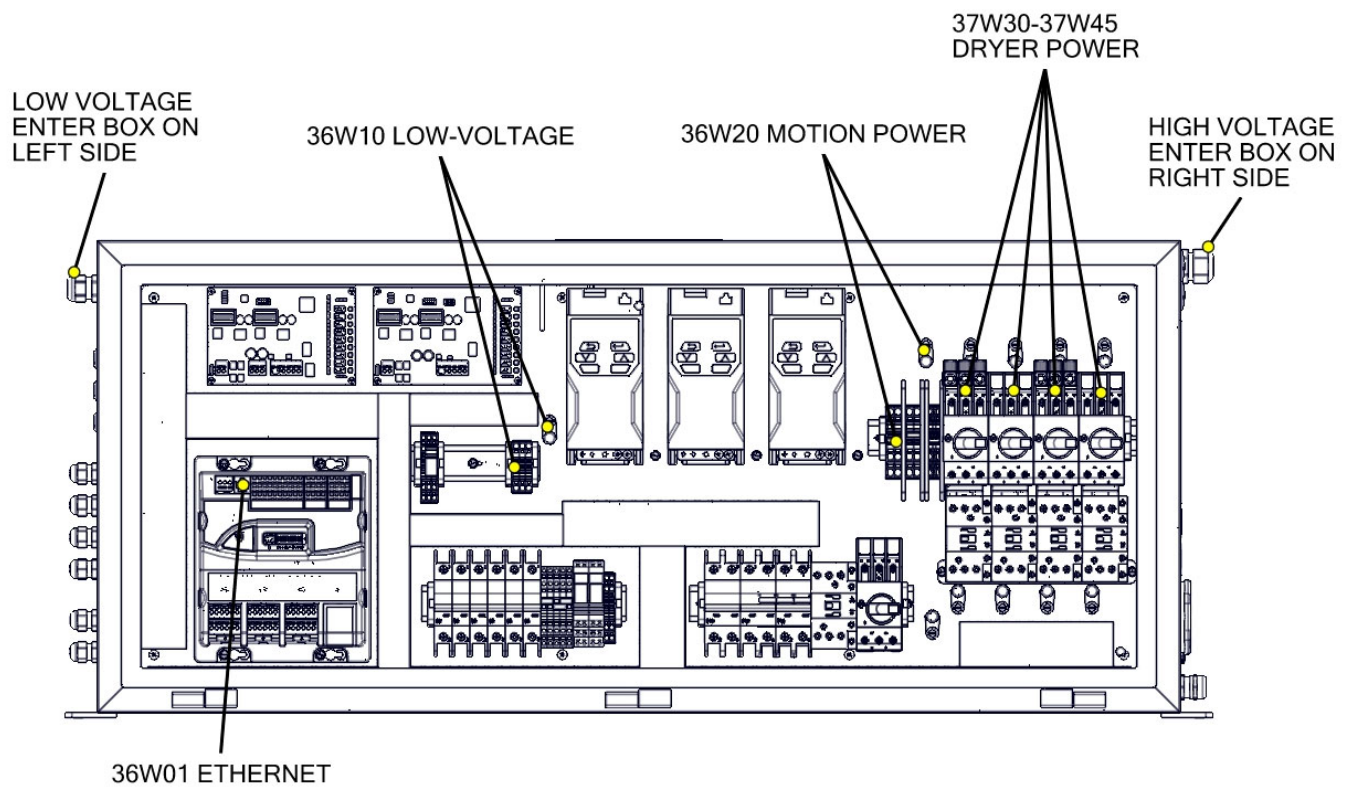


Figure 85 - Bridge Electrical Cable Terminations

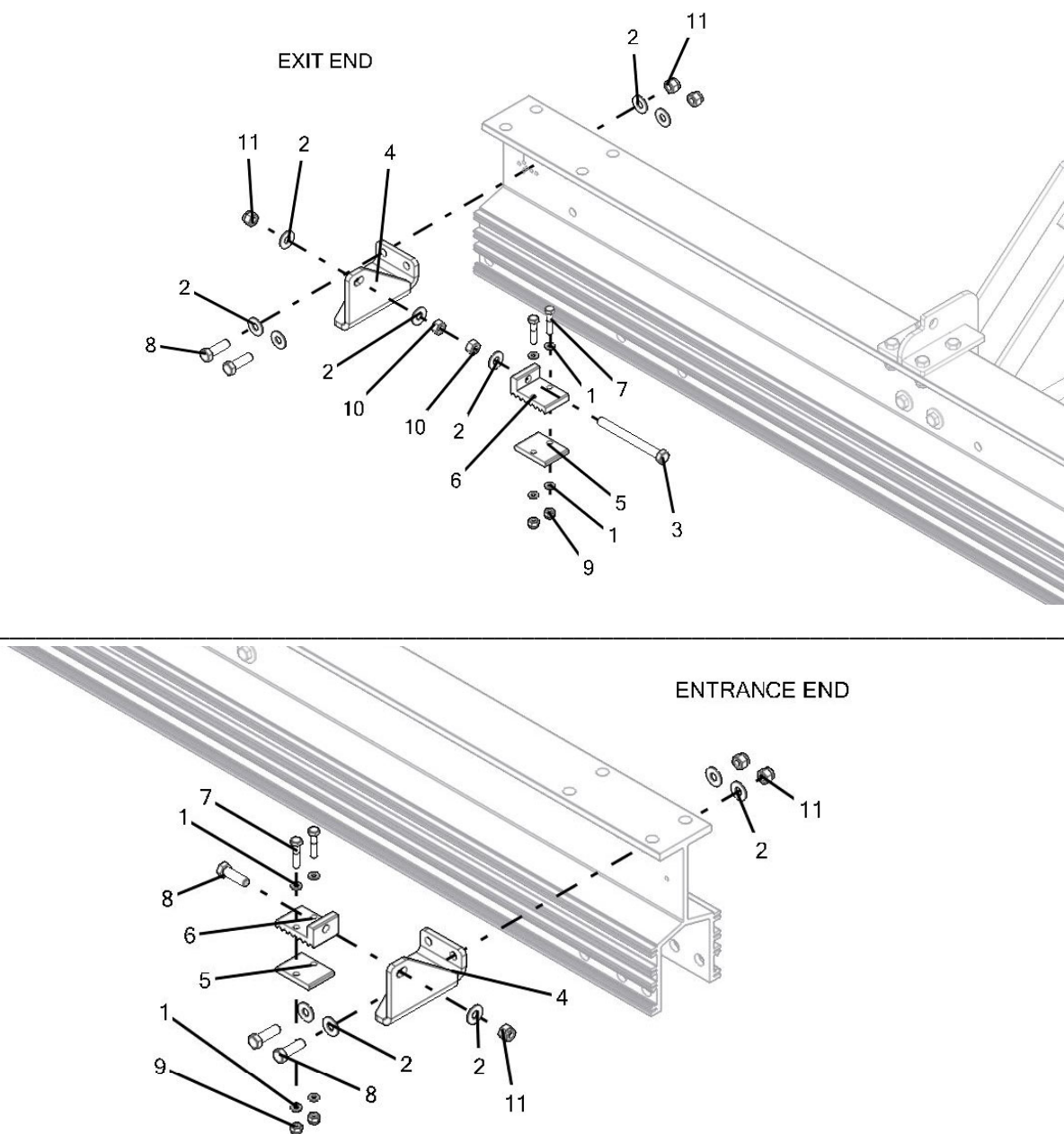
5.13 Install the Bridge Drive Belt

All parts used for the installation of the bridge drive belt are included in the loose parts kit, Table 1.

5.13 Step 1 Install Bridge Drive Belt Tension Bracket

Prior to installing the bridge drive belt, confirm the free motion of the bridge and E-chain along the main frame rails. All the cables and fluid lines must be secured at both ends of the bridge E-chain.

- Install the bridge belt tensioning bracket components, Figure 86.
- Belt tensioning components are always installed on the opposite rail from where the E-chain is installed.
- When installing the 3/8-16 x 4.00 fully threaded screw, engage it into the nuts the minimal amount just enough for the screw threads to protrude past the nut. This will allow the maximum amount of tension adjustment later when the belt is installed.



BOM ID	PartNo	Qty	Description
1	05030016	8	WASHER,M6,FLAT,SST
2	05030067	12	WASHER,3/8,FLAT,7/8-OD,.050THK,SST
4	06141529	2	BRACKET,BELT-TENSIONING,BRIDGE,SST,TDMSL
5	06160473	2	COVER,BELT,RETAINER,MAX20mmWIDTH
6	06340042	2	BLOCK,BELT-RETAINER,8mmPITCH,20mmWIDE
7	70111-HCS	4	SCREW,1/4-20x1.25,HHCS,SST
8	70181-HCS	5	SCREW,3/8-16x1.25,HHCS,SST
9	71011-NCS	4	NUT,1/4-20,HEX,LOCK,SST
11	71013-NCS	6	NUT,3/8-16,HEX,LOCK,SST

Figure 86 - Bridge Drive Belt Tension Bracket Installation

5.13 Step 2 Install the Bridge Drive Belt

Manually move the bridge to the entrance end of the wash bay. Route the belt through the drive and idler pulleys as shown in Figure 87 and Figure 88.

- Attach one end of the belt to the clamp assembly at the entrance end of the main rail. Make sure the maximum number (five) teeth of the belt are engaged in the belt clamp and tighten the belt in the clamp, Figure 88.
- Extend the belt to the bridge with the teeth facing up. Wrap the belt over the first idler pulley between the pulley flanges.
- Continue to wrap the belt around the drive pulley with the teeth fully engaged. Wrap the belt around the second idler pulley as shown in Figure 87.
- Extend the belt to the exit end of the rail, pull it tight, and clamp it in the second belt clamp assembly with the maximum number (five) teeth engaged, Figure 88.
- When the belt is installed there will be extra length extending from the exit end clamp towards the exit. The belt should be straight and flat along the length of the rail. Final tension will be applied in the next step.

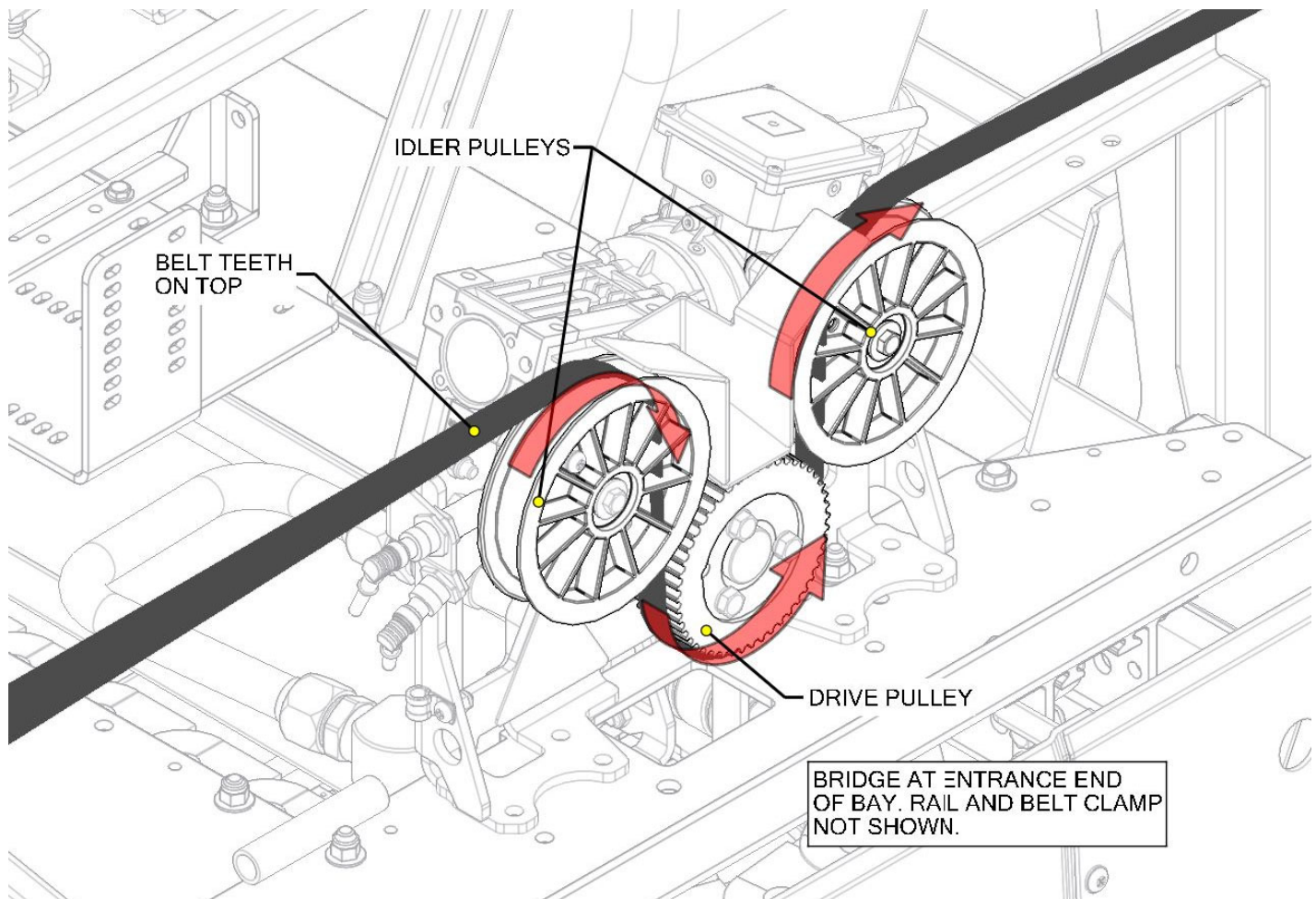
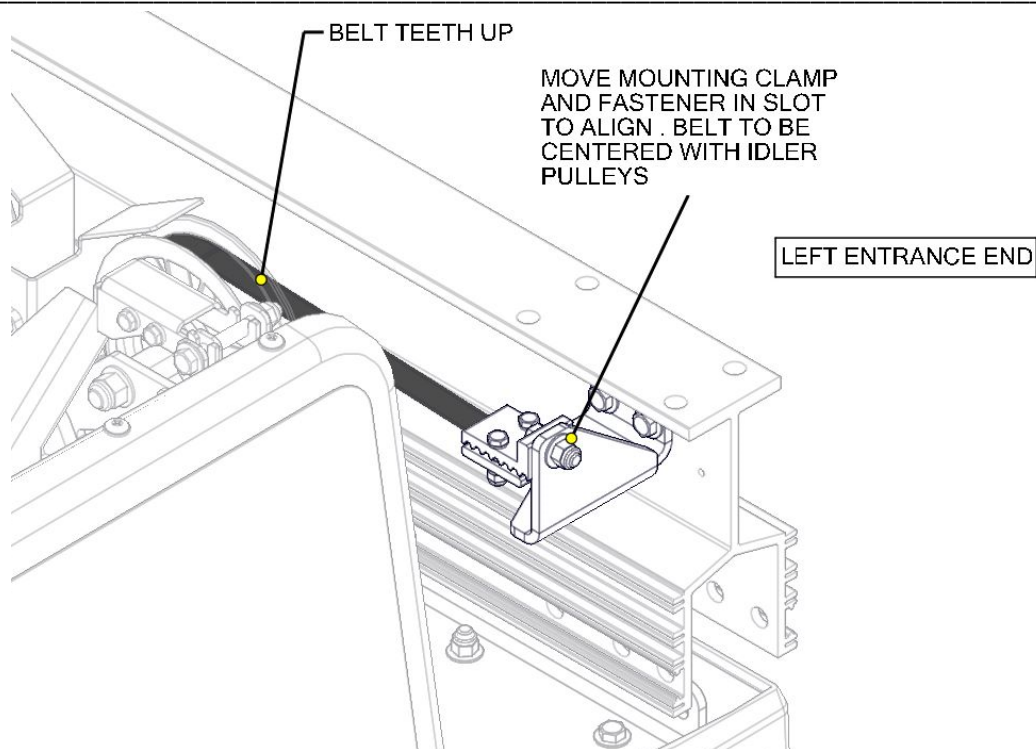
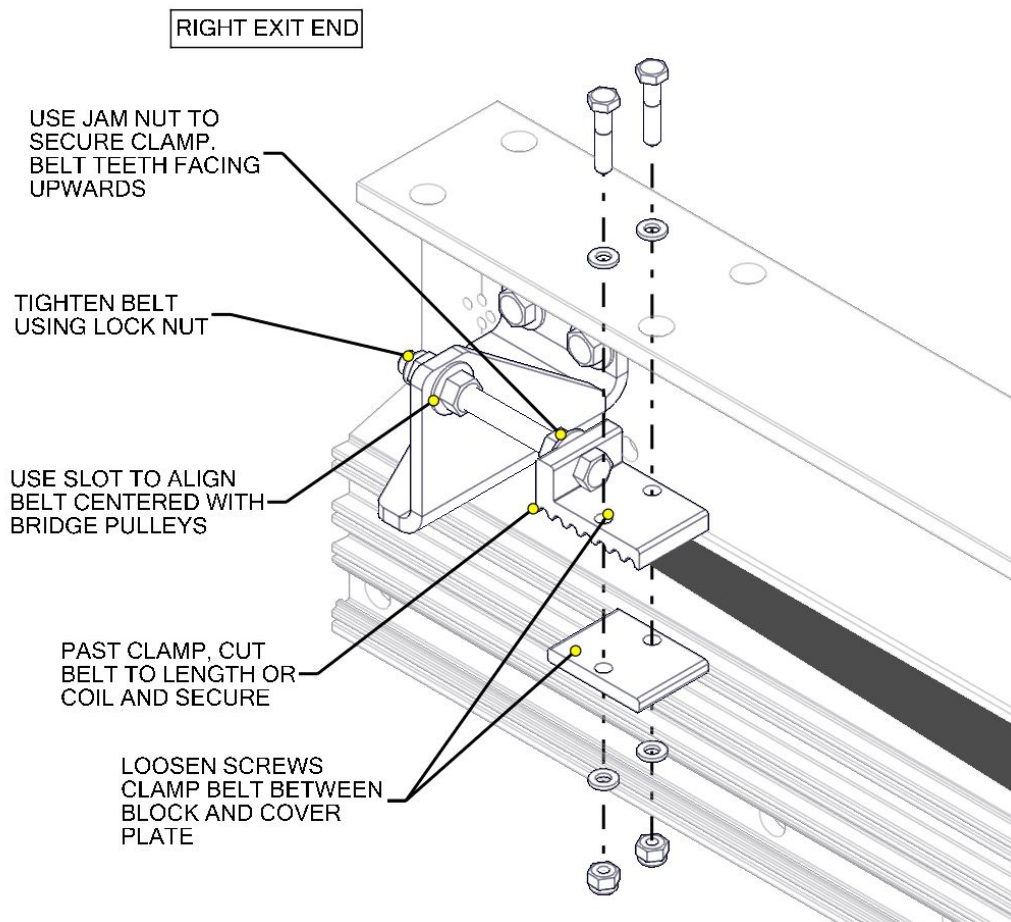


Figure 87 – Bridge Drive Belt Routing

**Figure 88 - Connect and Align Bridge Drive Belt at Both Ends**

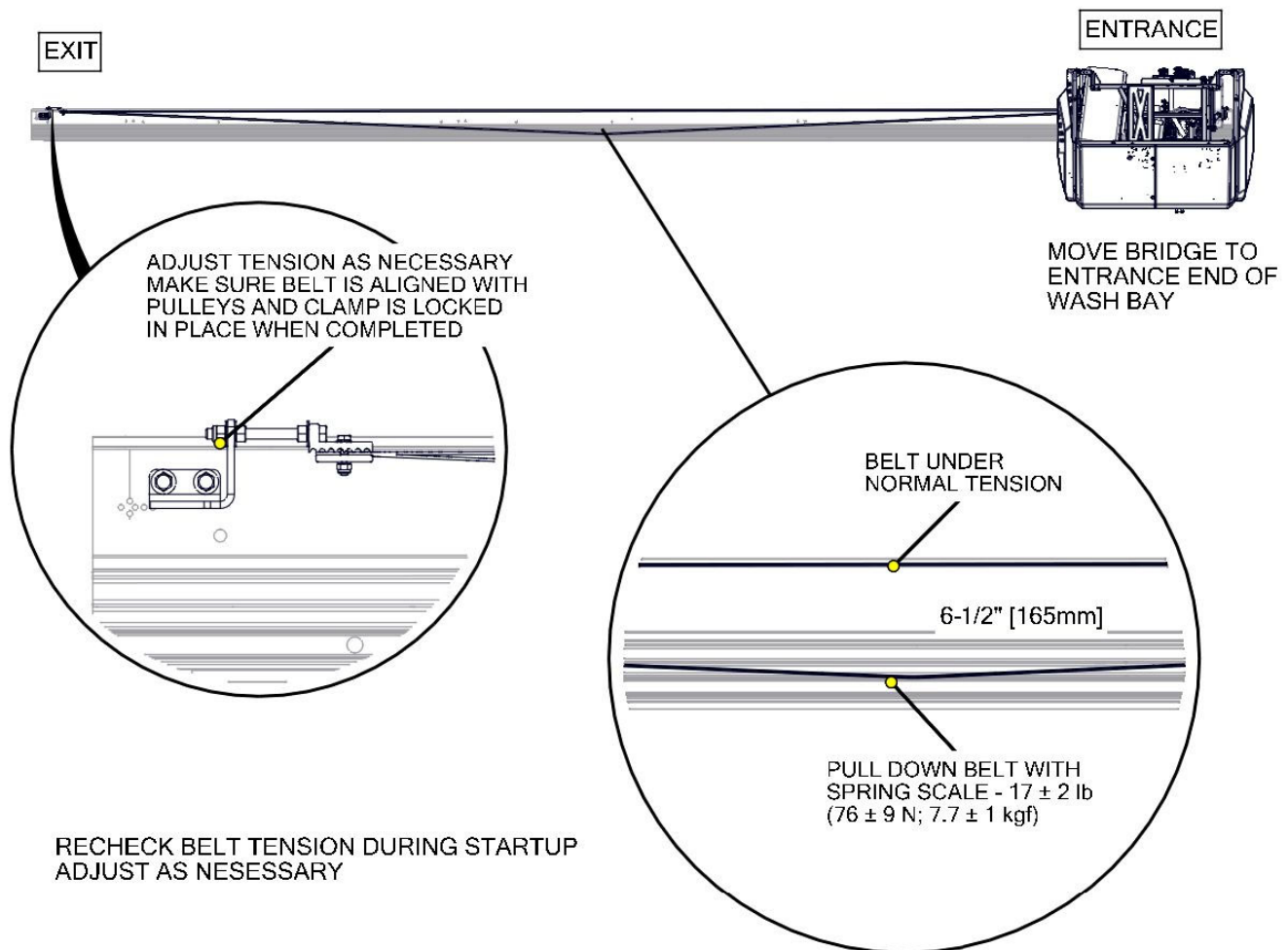
5.13 Step 3 Tension the Bridge Drive Belt

Bridge belt tightening is done from the exit end. Always move the bridge to the entrance end of the wash bay when tightening the belt. Make sure the longer tensioning bolt is located at the exit end due to the longer distance from the idler pulley to the belt mounting point.



Check the bridge belt tension using a spring scale. Bridge is to be at the entrance end when setting and checking tension. Pull the belt with the scale at the center of the rail as shown. When in proper tension, 17 ± 2 lbf (76 ± 9 N or 7.7 ± 1 kg) of force is required to deflect the belt 6 - 1/2" in (165mm) downward.

- With the bridge located at the entrance end of the wash bay, locate the center of the main rail.
- Tension the belt by tightening the nuts at the end of the belt clamp assembly to pull the belt tight so that it runs straight along the main rail without sagging.
- Use a spring scale hooked to the belt at the center of the main rail to pull downward 6 - 1/2" in (165mm). For reference, the belt is pulled 6 - 1/2" in (165mm) downward when the belt is in line with the bottom of the vertical web of the aluminum rail (see note and diagram in Figure 89).
- Proper tension is achieved when the spring scale measures 17 ± 2 lb (76 ± 9 N; 7.7 ± 1 kgf) of force when deflected 6 - 1/2" (165 mm). Adjust the tension as needed by tightening or loosening the adjusting screw.

**Figure 89 - Bridge Belt Tensioning**

5.14 Install and Adjust Spray Arch (Standard Arch)

The spray arch is shipped separate from the bridge and must be connected to the trolley. Install the spray arch, Figure 90.

- Install the top arch to the trolley arch rotate shaft. Be careful not to damage O-ring seals when sliding the arch port over the arch shaft on the trolley. It is recommended to lightly lubricate seals with O-ring lubricant for ease of installation.
- Remove the shear bolt from the side arch prior to installing.
- Remove the nut at the end of break-away shaft on the top arch. Install the side arch onto shaft on top arch assembly. Be careful not to damage O-ring seals when placing bore over the shaft. It is recommended to lightly lubricate seals with O-ring lubricant for ease of installation.
- The side arch is designed to deflect in the direction of nozzle spray in the event of a vehicle impact. The arch is held in the proper wash position during normal operation by the arch shear bolt. If deflection occurs and the shear bolt breaks, the arch is designed to hold itself in the deflected position by the ratcheted arch bracket. Adjustment of this bracket is required to ensure it will hold the arch in the deflected position at all angles of deflection.
 - Deflect the arch in the direction away from the direction of nozzle spray. Make sure the arch latches in each position and no interference with the fixed parts of the arch occurs other than for latching. If adjustment is needed, loosen the arch bracket, adjust, and retighten.
 - This will be re-tested at the startup phase when machine power is applied.
- The side arch is designed to deflect side-to-side in the event of an impact with a vehicle and return automatically to its operating position. To allow this to work properly, the rubber spring/bumper must be adjusted to provide the proper tension to the pivoting joint between the top and side arches.
 - Deflect the arch side-to-side in each direction and tighten the nut on the spring so that the arch consistently returns to its operating position when manually pushed to the side and released.
 - This will be re-tested at the startup phase when machine power is applied.
- Install the side arch shear bolt as shown, Figure 90. Note: The shear bolt will be removed during the startup process when the arch impact sensors are adjusted.
- Nozzles for the spray arch are not installed at this time but will be installed after flushing the arch of debris at the time of wash startup.

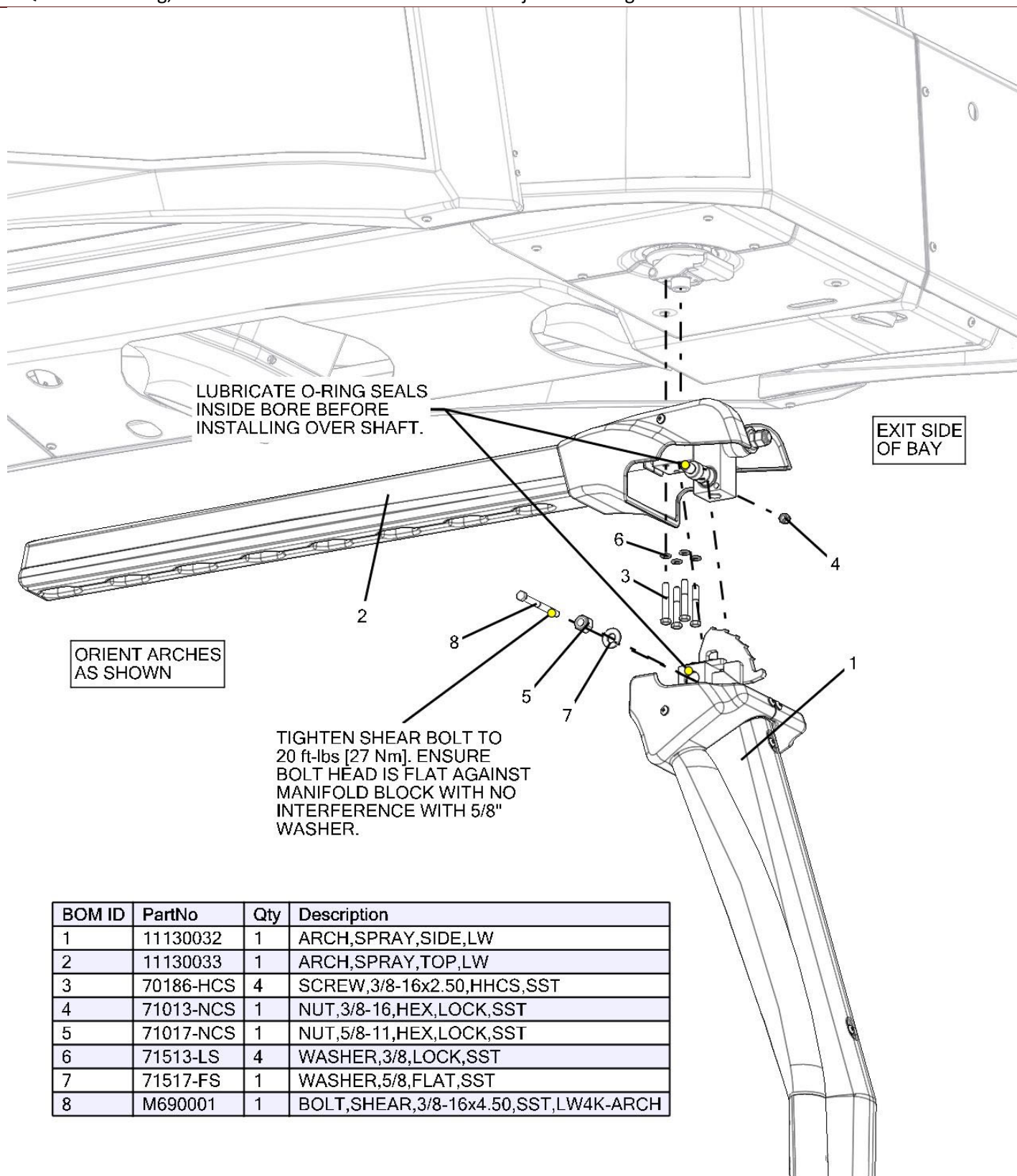
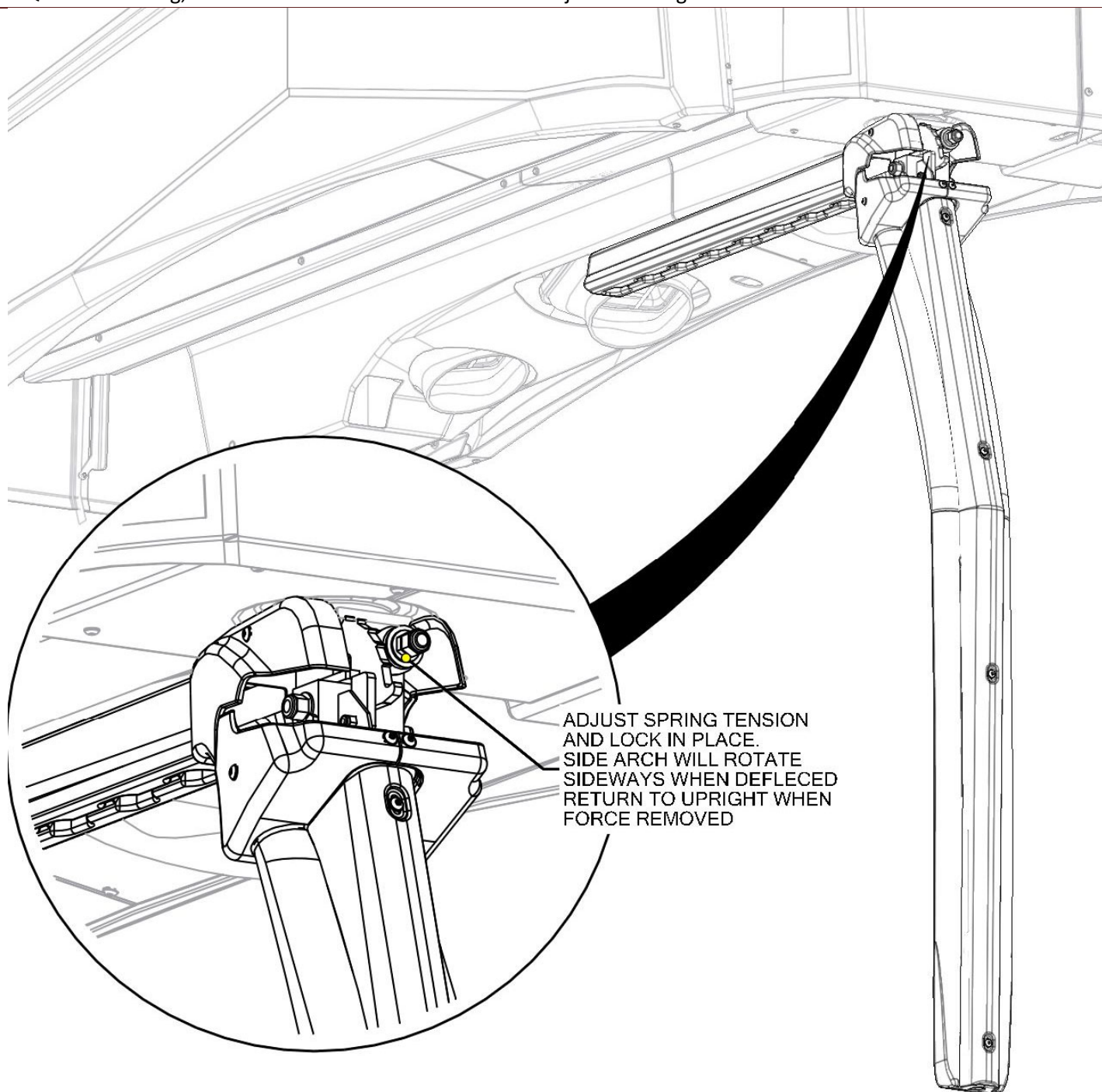


Figure 90 - Install the Spray Arch to the Trolley

**Figure 91 - Side Arch Assembled**

5.15 Relocate the Trolley End Stops (for Narrow Wash Bays Only)

The bridge is assembled with the trolley end stops set to allow the maximum travel distance for the trolley. This allows the maximum side-to-side washing width. In certain situations, in-bay equipment, or other obstructions in the wash bay, may not allow enough room to use this full travel without the spray arch colliding with obstacles. These cases may include:

- Free Standing Frame ordered with an Integrated Dryer. In this situation, the trolley travel must be reduced to prevent the arch from hitting the center frame legs.
- In-Bay Pump Station in a narrow wash bay. The trolley motion must be restricted to prevent the arch from hitting the in-bay pump station.
- Narrow wash bays where the distance between the center of the trolley rail and the side wall of the wash bay is less than 6'-10" (2.08m).
- Side ultrasonic sensors mounted on the wall in a narrow wash bay.

After power has been applied to the wash, use the remote control to move the bridge and trolley around the wash bay to assess if any items that could limit the wash envelope are present. If these cases exist, refer to Figure 92 for direction on moving the trolley end stops. It is permissible to move only one of the trolley end stops on either left or right side of the bridge while leaving the other end stop in its original position. A typical example of this is an in-bay pump station on one side of the bay. This allows the wash to maintain the largest wash envelope possible.

It is recommended to allow approximately 4" (102 mm) additional clearance between the back of the arch and any bay mounted obstructions. During the wash it is normal for the bottom of the side arch to flex and move outwards due to high-pressure spray. This additional clearance ensures no collision will occur during the high-pressure cycle.

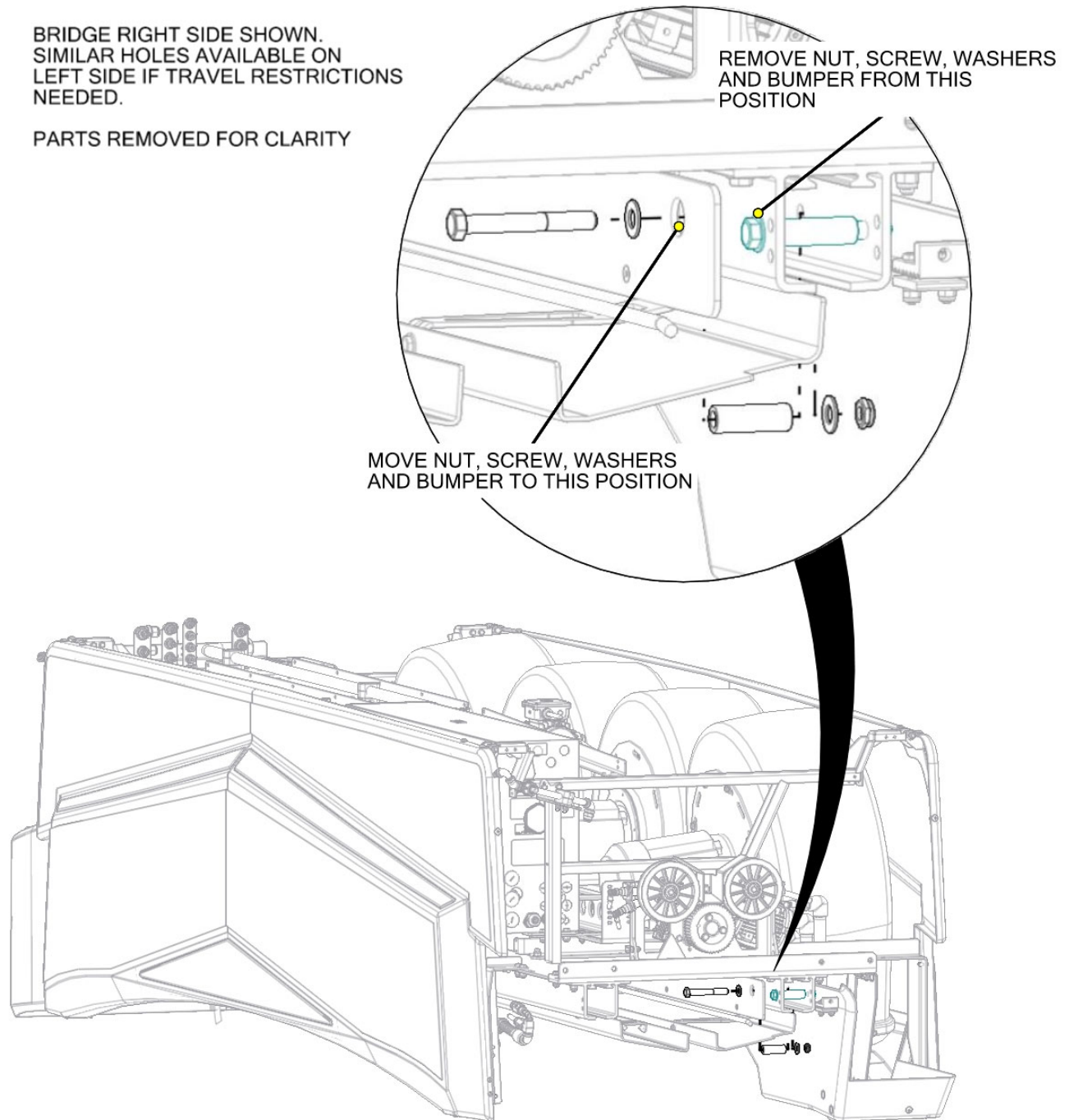


Figure 92 - Relocate the Trolley End Stop

6 Pump Station

This section provides instructions for installing the pump station. This includes positioning and leveling, completing incoming and outgoing fluid connections, solution line connections, and electrical connections.

6.1 Key Factors to Consider

- Location of pump station in the equipment room, or in the wash bay, should be as close as possible to the E-chain bulkhead to minimize hose lengths between pump station and bulkhead. Longer hose lengths will diminish machine performance.

6.2 Key Installation Steps

- Remove pump station from shipping pallet and install rubber mounting feet.
- Position pump station in equipment room, or wash bay, as close to the centerline of the machine rails as possible.
- Level pump station by adjusting nuts on rubber mount feet.
- Connect incoming water lines.
- Connect outgoing water lines.
- Connect solution lines to injectors.
- Confirm pump solution chemical routing to high-pressure or low-pressure pump.
- Setup weep system (optional)
- Route and terminate the electrical connections.
- Pump station covers (optional)
- Pump station installation is complete.

NOTE:

The lifting weight of the pump station pallet is as follows, based on a fully optioned machine:
Pump Station on Shipping Pallet: 1,250 lbs (570 kg).



WARNING – ALL MACHINE COMPONENTS HANDLED DURING INSTALLATION, MAINTENANCE, AND/OR SERVICE MUST BE HANDLED WITH A DEVICE APPROPRIATELY RATED AND IN SUITABLE CONDITION TO LIFT AND/OR HANDLE THE WEIGHT OF THE COMPONENT. WHEN COMPONENTS ARE HANDLED BY HAND, USE PROPER LIFTING TECHNIQUES TO AVOID INJURY.

6.3 Special Tools

- No specialized tools required for pump station installation.

6.4 PDQ Supplied Parts

- Pump Station
- Foot valves and injector metering tip kits for each injector.

6.5 Site Supplied Parts

- Hoses between pump station and E-chain bulkhead or in-bay manifolds
- Hoses between site water supplies
- Hose clamps

6.6 Pump Station Installation

6.6 Step 1 Position Pump Station in the Wash Bay or Equipment Room

Ideally, the pump station should be installed on the same side of the wash as the bridge E-chain. Position the pump station so that outlet connections (on the left half of the pump station) are as close to the center of the machine frame as possible, see Figure 93. This will make for the shortest possible hose connections to the E-chain bulkhead.

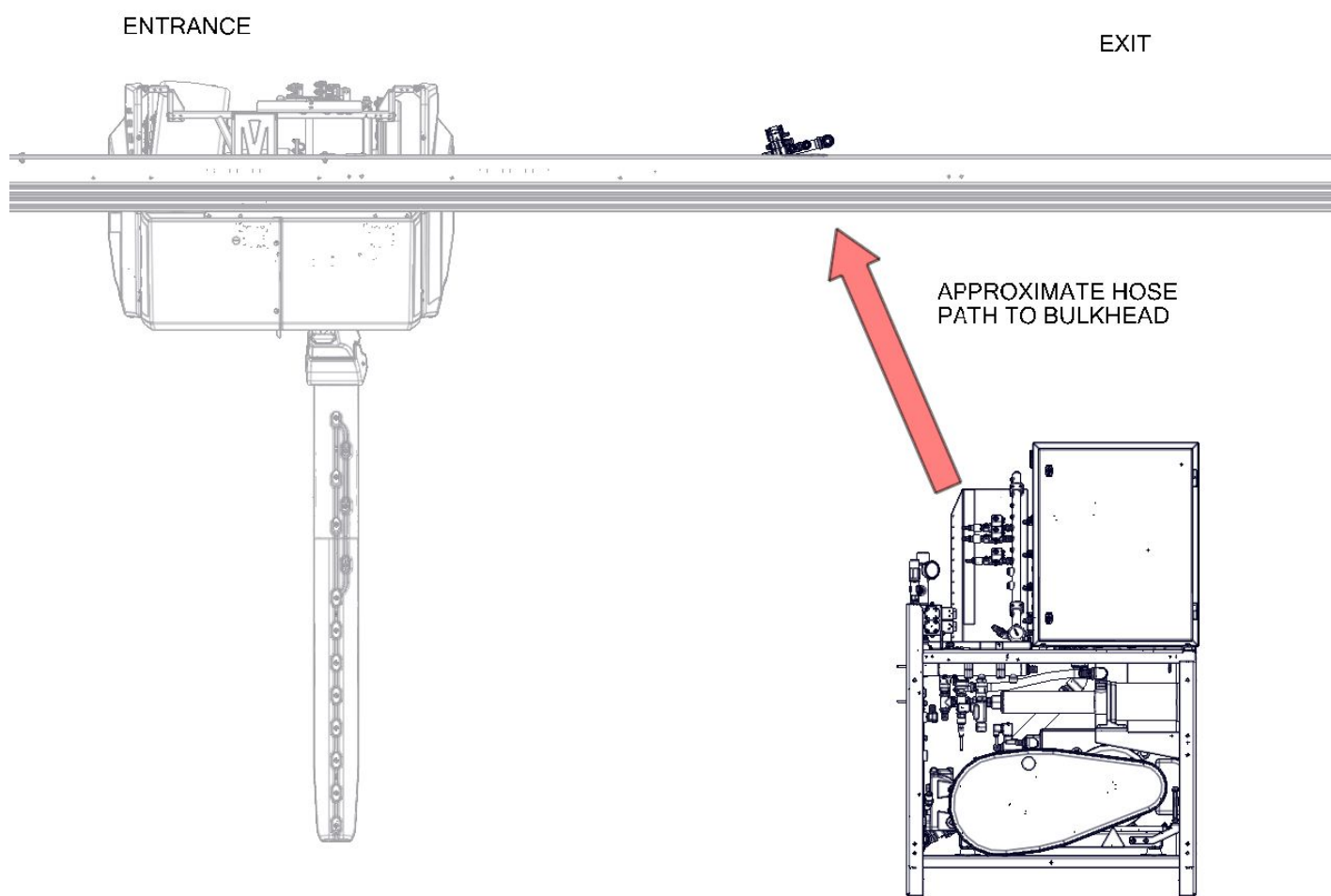
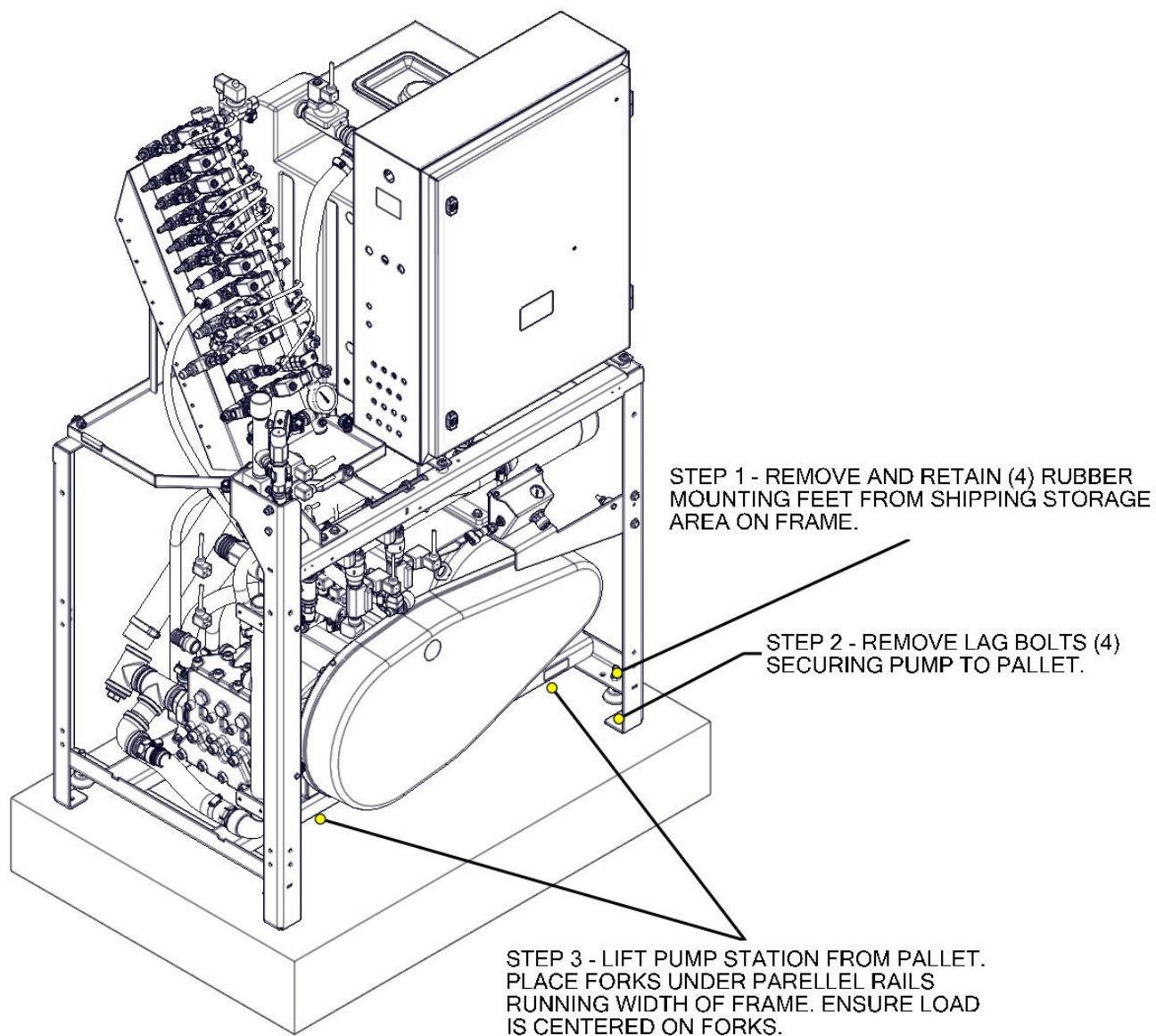


Figure 93 - Position Pump Station

6.6 Step 2 Remove Pump Station from Shipping Pallet and Install Rubber Mounting Feet**Figure 94 - Remove Pump Station from Pallet**

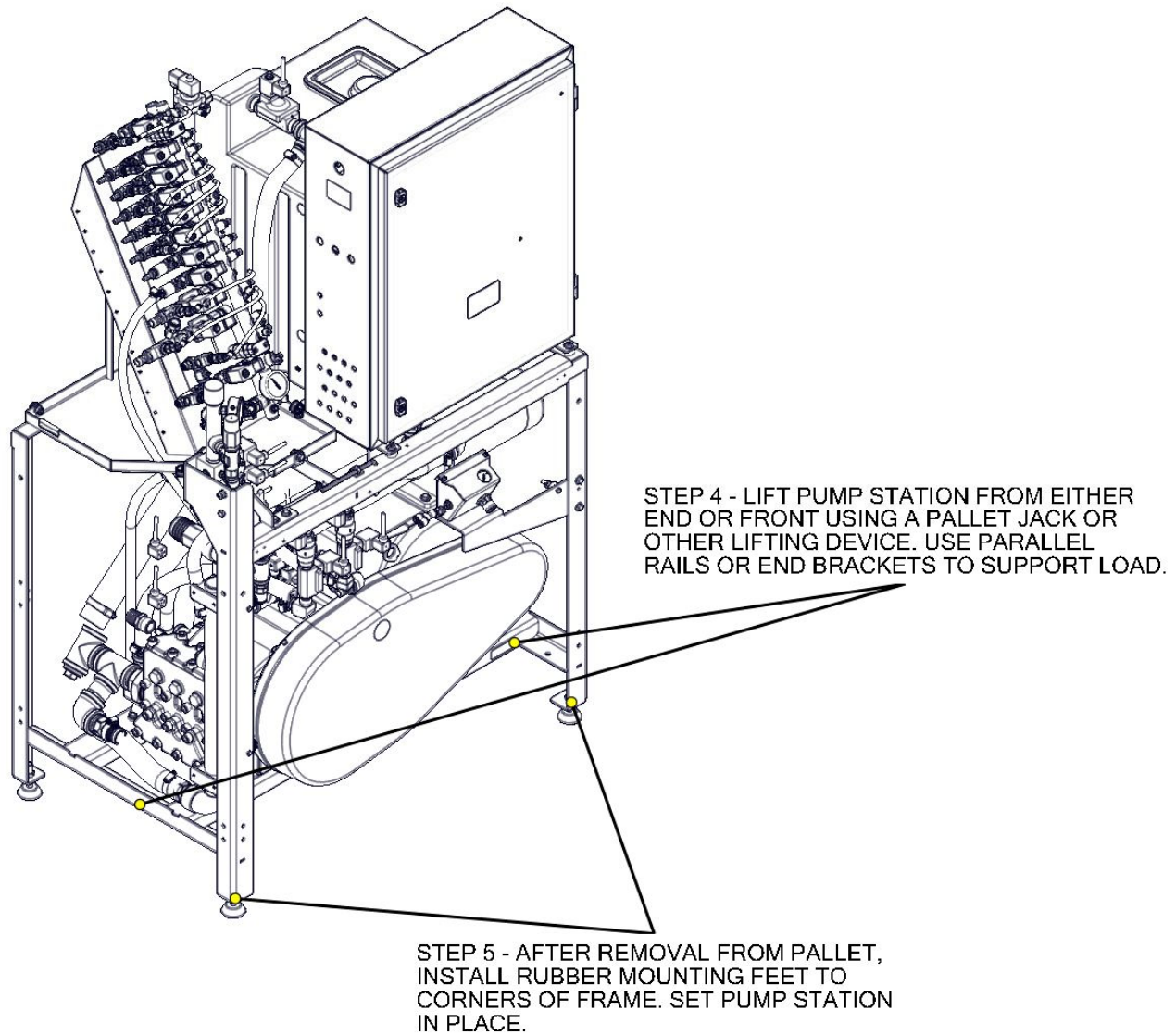


Figure 95 - Install Rubber Mounting Feet

6.6 Step 3 Level the Pump Station

Once pump station is placed, level by adjusting the rubber mounting feet, Figure 96.

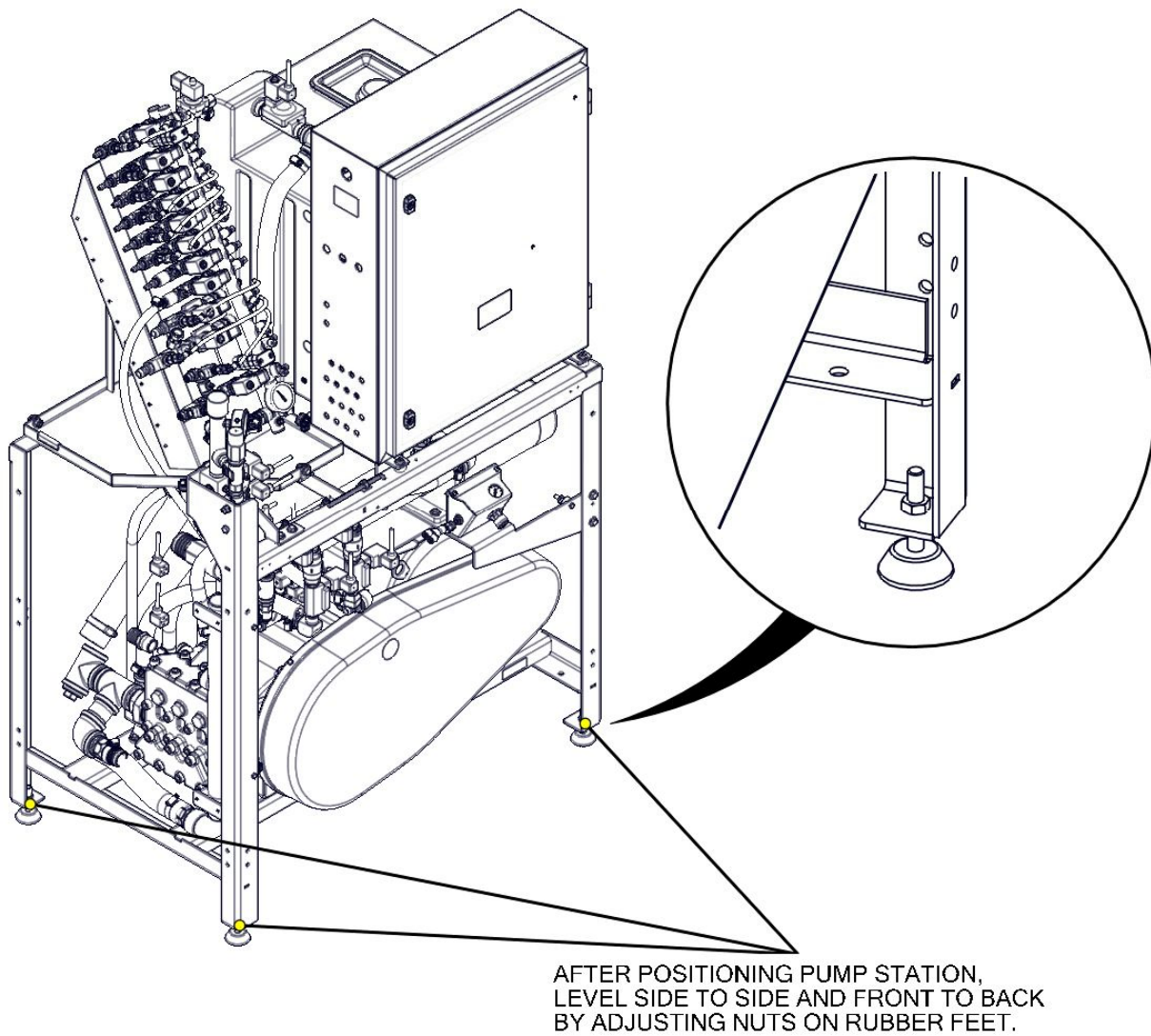


Figure 96 - Level Pump Station by Adjusting Height of Rubber Mount Feet

6.6 Step 4 Connect the Incoming Water Lines

The standard pump station requires one fresh water supply line to be connected to the inlet manifold. This provides water to the onboard water tank (if equipped) and the low-pressure pump (as well as the water heater and weep system if these options are ordered). As options, up to two additional pressure fed inlets may be included. These inlets are typically connected to other water sources such as reclaim systems or hot water. If the spot free option is ordered, a connection is supplied for feeding spot free water from a site supplied storage tank.

NOTE:

When installing the optional pressure fed water sources, keep track, and label the inlets with the water type connected. This information will be needed during machine setup to correctly program water inlet options. Secure hoses to hose barbs with stainless steel hose clamps (supplied by installer).



ALL FLUID CONNECTIONS MADE TO THE PUMP STATION MUST BE MADE WITH FLEXIBLE LINES TO ABSORB MACHINE VIBRATIONS AND PREVENT LEAKS. NO RIGID PLUMBING SHALL BE CONNECTED DIRECTLY TO THE PUMP STATION.

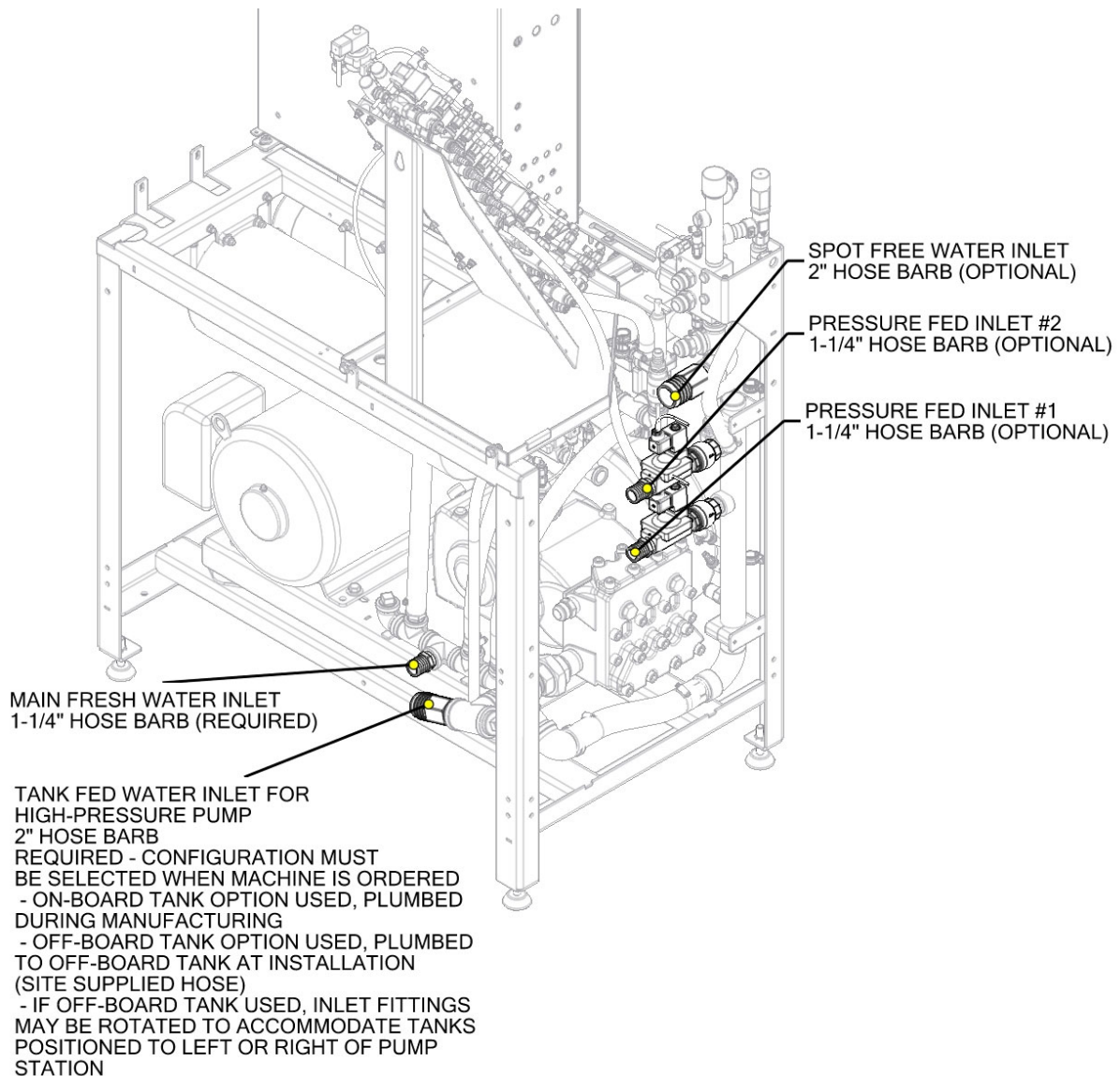


Figure 97 - Incoming Water Supplies to Pump Station (viewed from the rear of the pump station)

As an alternative when the onboard tank option is ordered, a non-softened fresh water supply may be plumbed directly to the inlet valve for the tank and a softened water supply may be plumbed to the 1-1/4" hose barb for the Main Fresh Water Inlet as shown in Figure 97. In this case, the hose between the inlet manifold and the tank inlet is removed and the plug supplied with the loose parts kit is installed in the manifold where the tank feed hose was originally installed. With this alternative, the high-pressure pump is fed with non-softened water and the low-pressure pump is fed with softened water for better solution performance. See Figure 98 for the steps for converting the factory installed assembly and the requirements for the water supply.

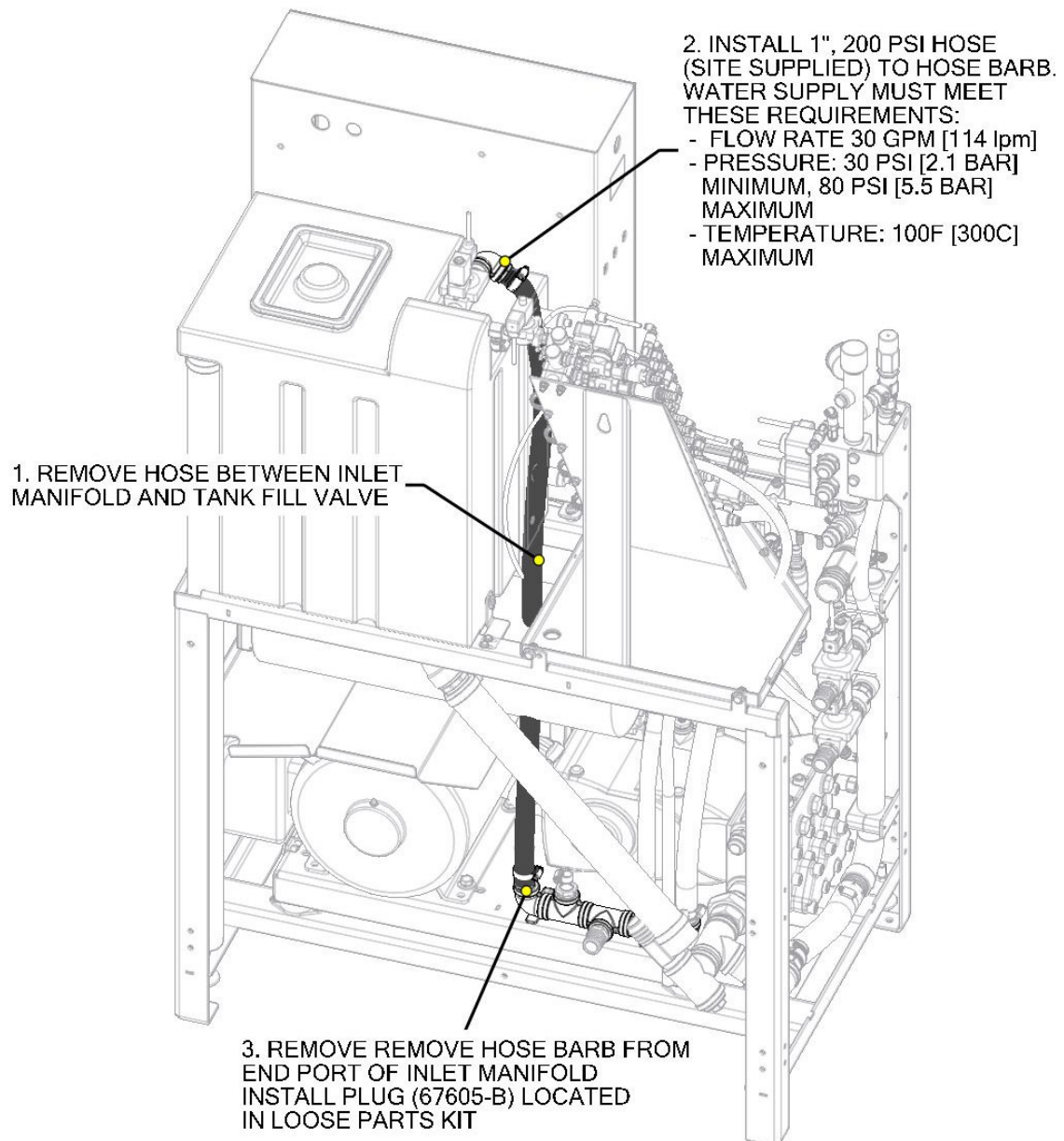


Figure 98 - Alternative On-Board Tank Feed Using Non-Softened Water

6.6 Step 5 Connect Outgoing Water Lines

Route the fluid lines from the pump station to the bulkhead manifold installed on the main frame rail. Hoses and tubing for these lines are site supplied. See Figure 99 for a list of connection sizes between the pump station and the E-chain bulkhead. See Figure 100 for details regarding the outgoing spot free rinse connections to the bridge if those options are ordered. See Figure 101 for details regarding the high-pressure connections to bridge and underbody option.

SERVICE	CONNECTION SIZE FOR SITE HOSE
TIRE CHEMICAL	3/8" HOSE
RUST INHIBITOR	1/2" HOSE
FOAMING WAX	3/8" HOSE
SUPER SEALANT	3/8" HOSE
FRONT PREP	3/8" HOSE
DETERGENT #2	3/8" HOSE
DETERGENT #1	3/8" HOSE
PUMP SOLUTION #2	NA
PUMP SOLUTION #1	NA
OVERGLOW PURGE	3/4" HOSE
OVERGLOW	3/4" HOSE
3X FOAMING WAX	3/8" HOSE

SECURE ALL HOSES TO PREVENT RUBBING AGAINST OTHER COMPONENTS AND SHARP EDGES.

SECURE HOSES TO HOSE BARBS WITH SS HOSE CLAMPS (SITE SUPPLIED).

RUST INHIBITOR AND TIRE CHEMICAL ROUT TO APPLICATION MANIFOLDS IN WASH BAY. ALL OTHER HOSES ROUT TO E-CHAIN BULKHEAD.

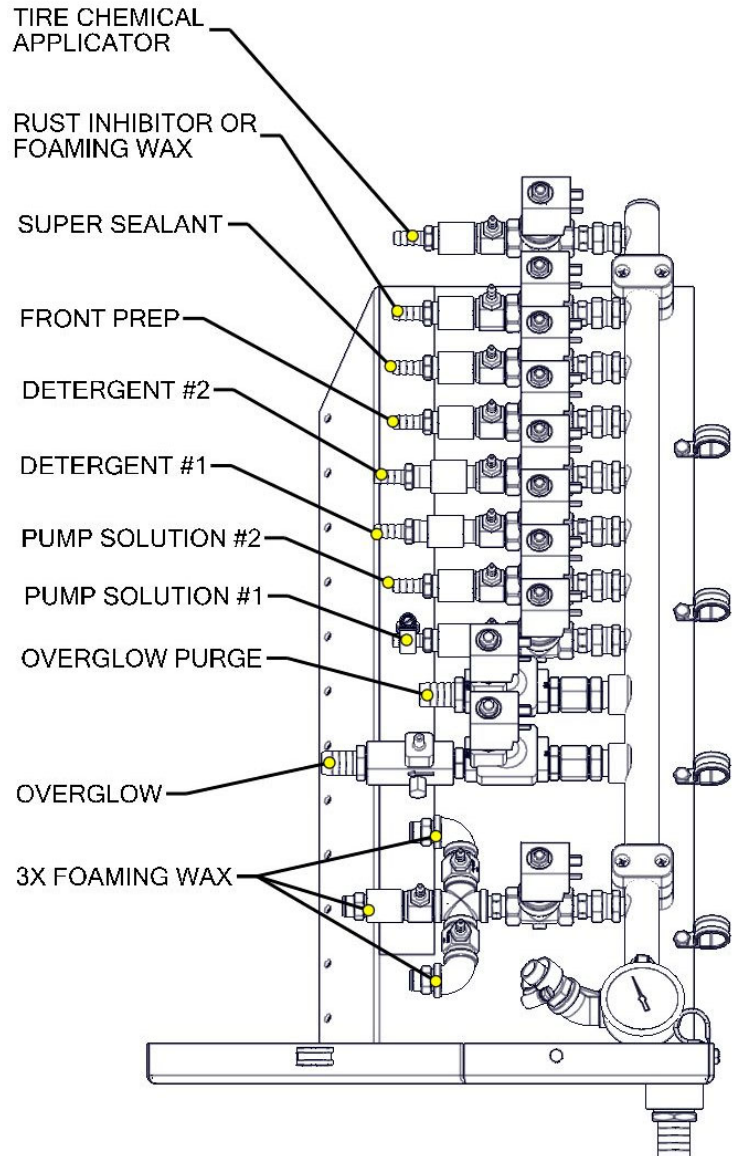


Figure 99 - Outgoing Hose Connections from Chemical Manifold

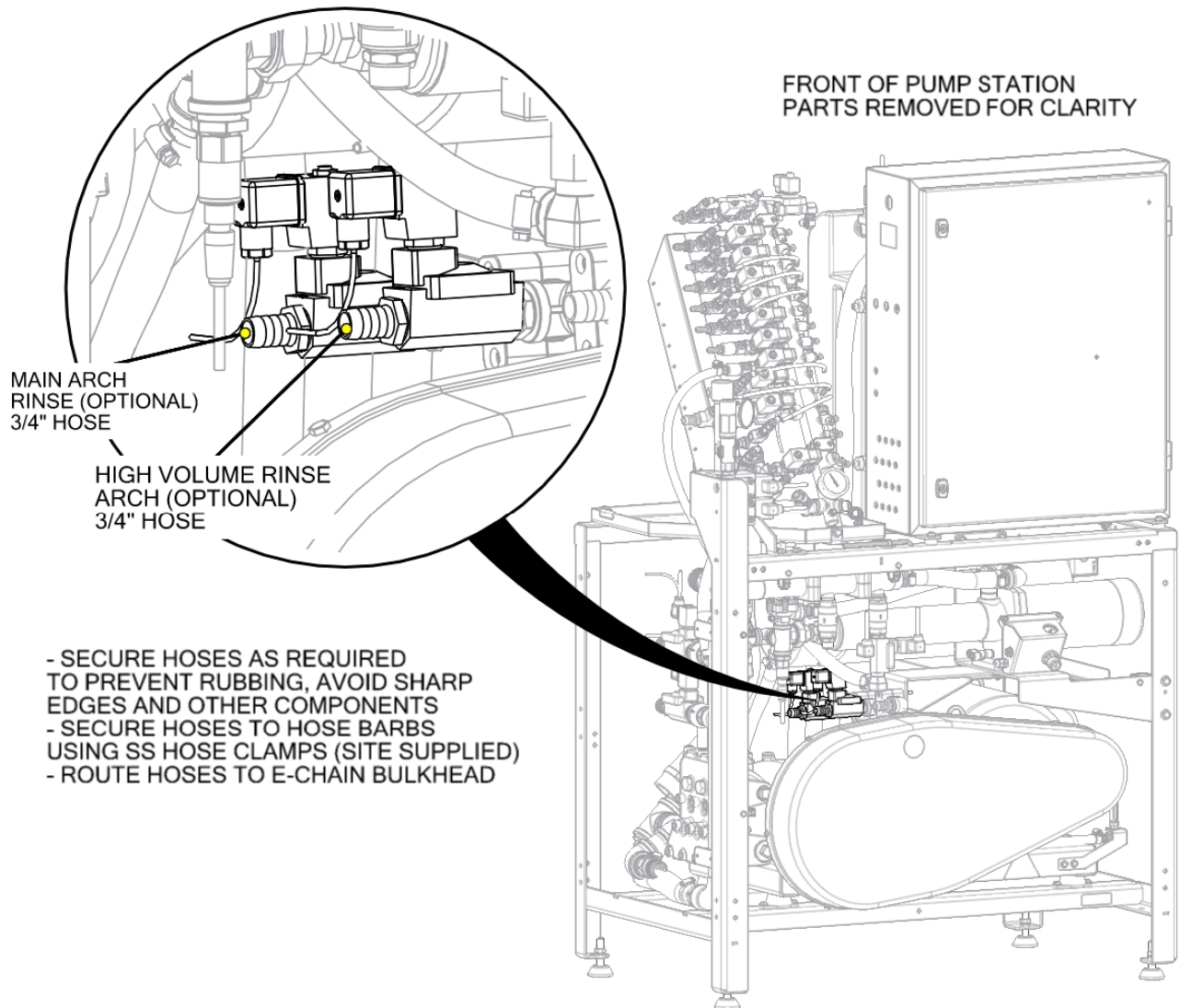


Figure 100 - Outgoing Spot Free Hose Connections

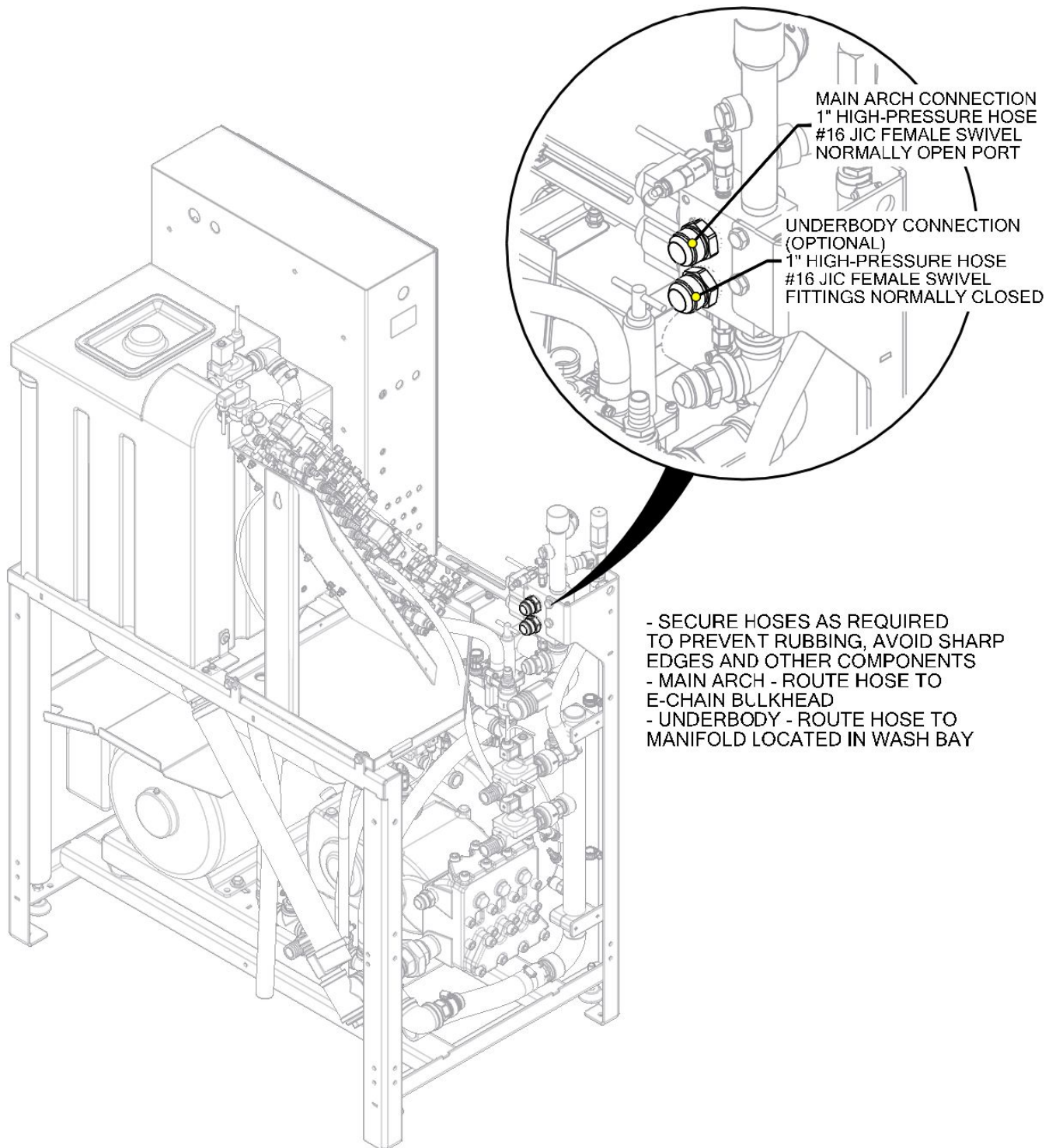
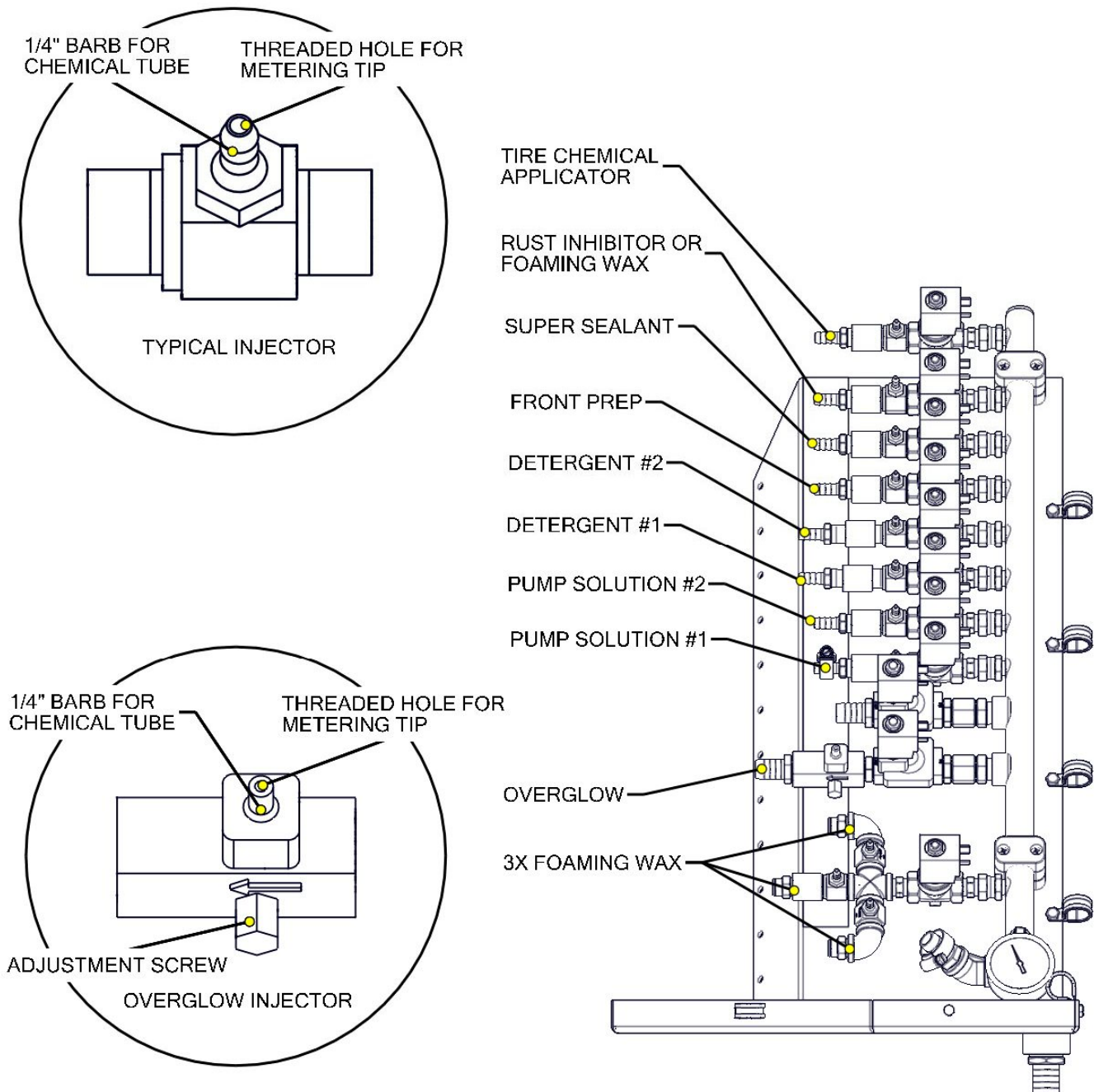


Figure 101 - Outgoing High-Pressure Hose Connections

6.6 Step 6 Connect Solution Lines to Injectors

Locate the foot valve, clear tube assembly and metering tip kit supplied for each injector. Arrange the wash solution supply containers (site supplied) near the pump station. Install the appropriate colored metering tip into the threaded hole of the injector inlet to achieve the desired dilution ratio for each chemical. Push the clear tube onto the appropriate injector's barbed inlet and submerge the foot valve into the supply container.

**Figure 102 - Connect Solution Lines to Injectors**

6.6 Step 7 Confirm Pump Solution Hoses to Desired Location in High-Pressure or Low-Pressure Inlet Manifold.

The pump station has one solution service that feeds back into the inlet of the pump by default. This will be plumbed into the high-pressure inlet manifold by PDQ from the factory. A second pump solution can be purchased as an option and will also be plumbed into the high-pressure inlet manifold.

The low-pressure manifold has two ports that are plugged with 1/4" NPT brass plugs. Depending on how the site intends to use this feature, it may be desirable to change which pump is used to apply a service. By swapping the plugs and hose barbs it is possible to change which pump will apply the service. See Figure 103 below. For example, a high-pressure detergent would require the hose to be connected upstream of the high-pressure pump, but a drying agent applied through the optional high volume rinse arch would require the hose to be connected upstream of the low-pressure pump.

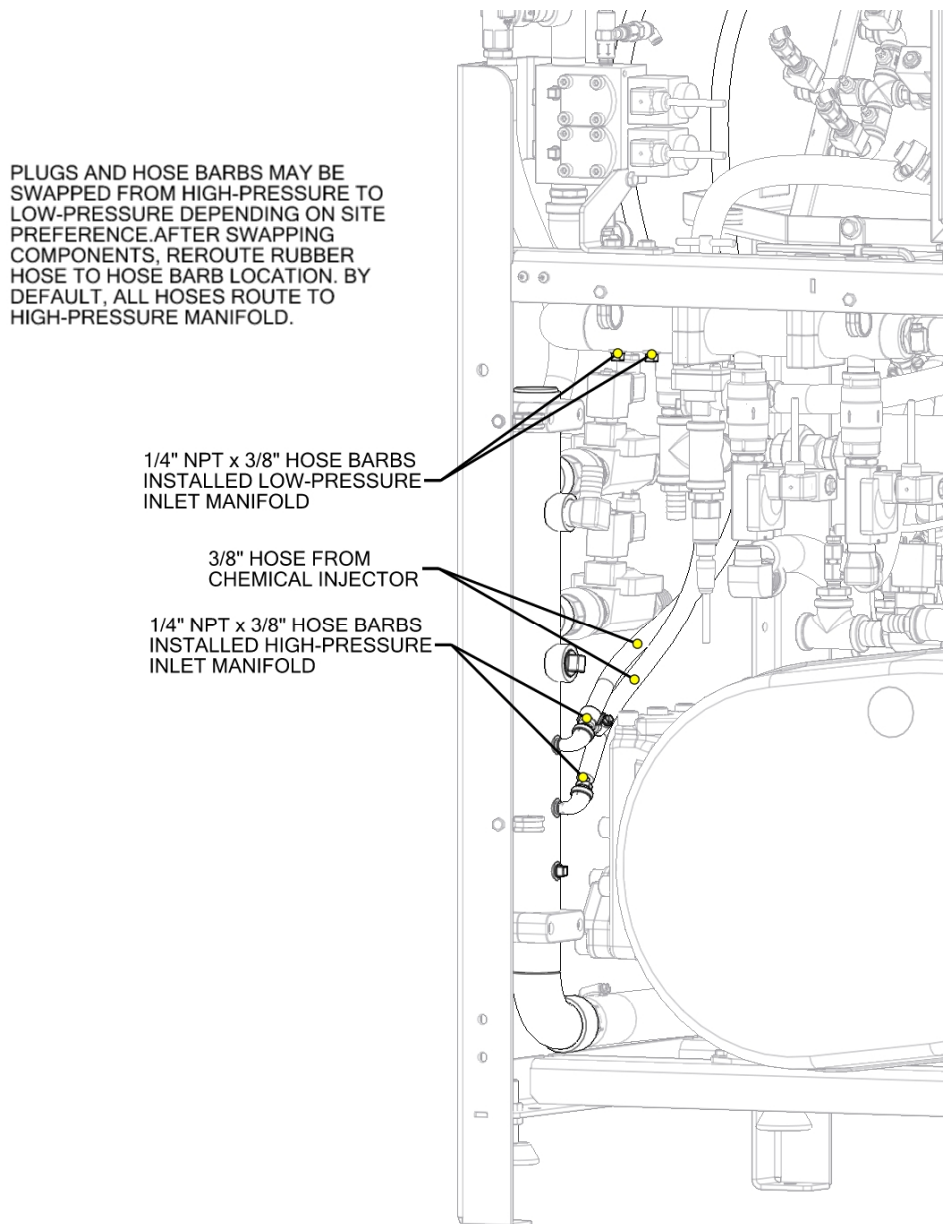


Figure 103 - Pump Solution Routing to High or Low-Pressure Pumps

6.6 Step 8 Adjust Weep System Valves (Optional)

Systems supplied with the optional weep system will have an additional weep valve which is fed from the freshwater inlet manifold on the pump station. Each service that is present on the pump station has an adjustable needle valve on the weep manifold. During start up the weep system should be activated, and each needle valve adjusted to allow adequate water flow through the system to prevent freezing, Figure 104.

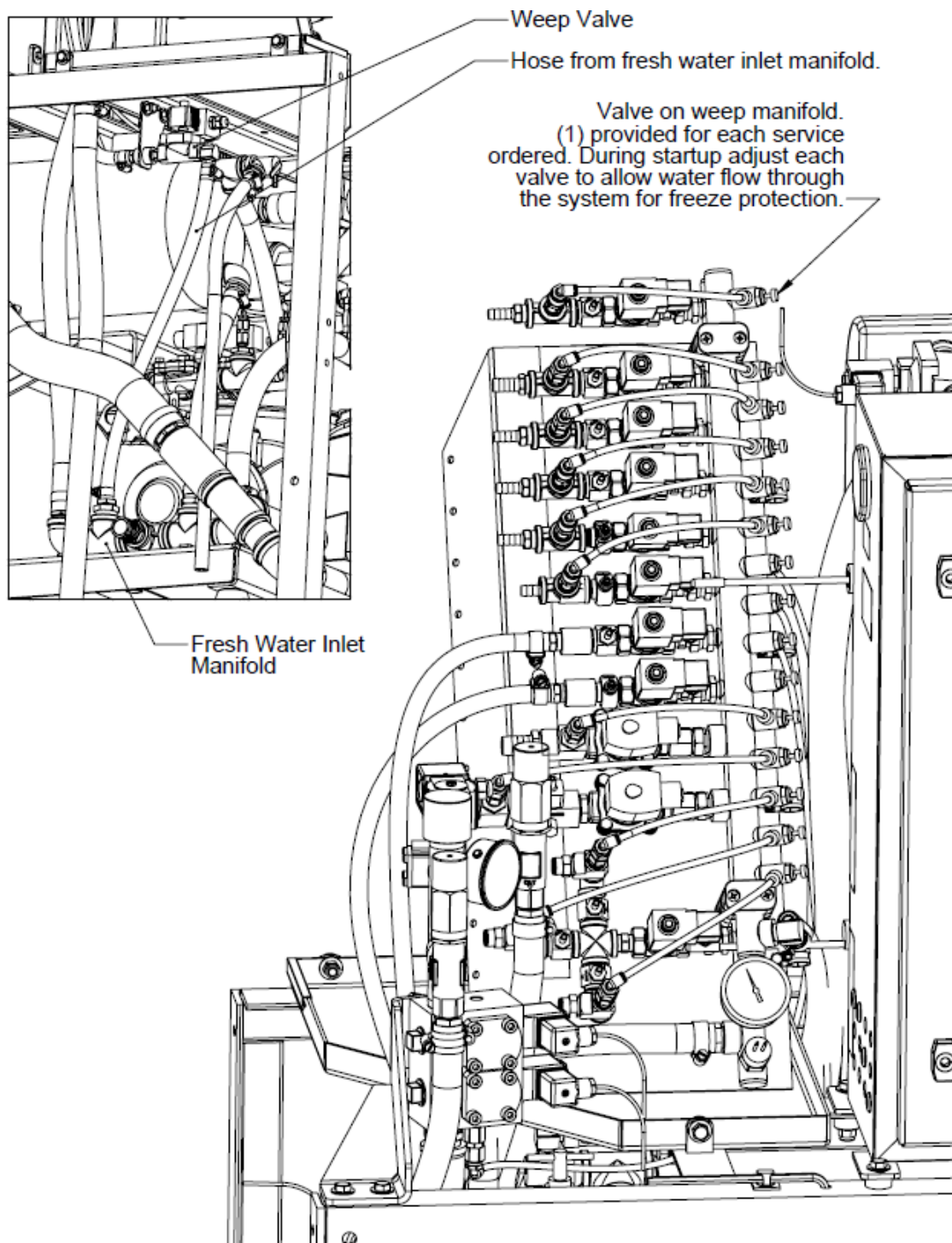


Figure 104 - Optional Weep System Pump Station Components

As an alternative when the weep option is ordered, a non-softened site fresh water supply may be plumbed directly to the weep valve instead of the softened water supply fed to the weep valve from the Main Fresh Water Inlet (shown in Figure 97). In this case, the hose between the inlet manifold and the weep valve is removed and the plug supplied with the weep option is installed in the manifold where the weep hose was originally installed. With this alternative, the weep system is fed with non-softened water and the low-pressure pump is fed with softened water for better solution performance. See Figure 105 for the steps for converting the factory installed assembly and the requirements for the water supply.

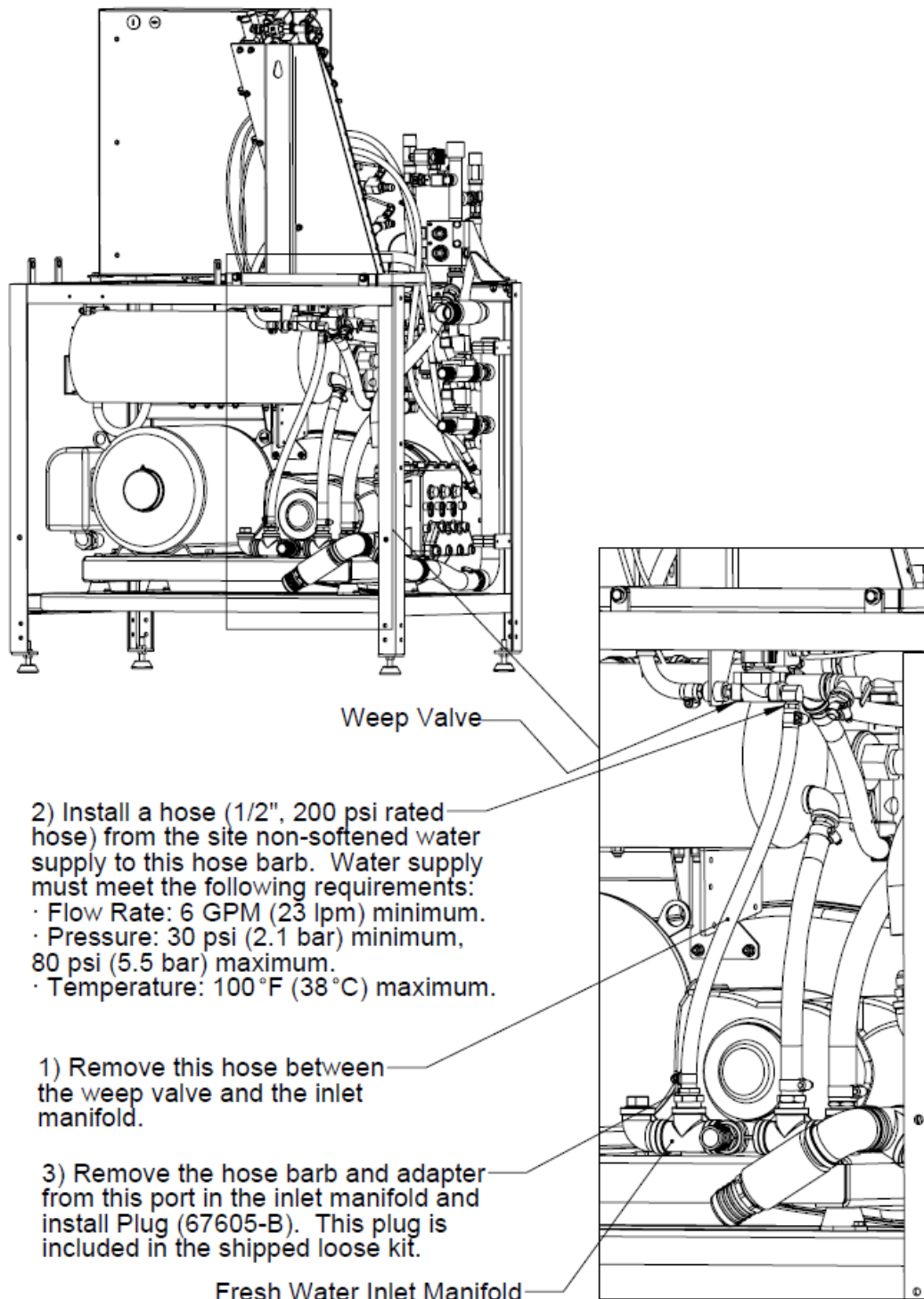


Figure 105 - Alternative Weep Water Feed Using Non-Softened Water

6.6 Step 9 Route and Terminate the Pump Station Electrical Connections

WARNING – LOCKOUT/TAGOUT THE UPSTREAM DISCONNECTING MEANS PRIOR TO TERMINATING ANY ELECTRICAL CONNECTIONS DURING INSTALLATION.



POWER SOURCES – THIS PRODUCT SHALL BE OPERATED ONLY FROM THE TYPE OF SOURCE INDICATED ON THE MANUFACTURER’S IDENTIFICATION LABEL. INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES, REGULATIONS, AND/OR SIMILAR DIRECTIVES.

Install circuits to/from and terminate cables/wires in the Pump Control Panel as specified on the applicable sheets of the Field Wiring section of the overall machine Electrical Schematics set.



Power and data circuits shall never be installed in shared raceways, conduits, etc. unless specifically required. For example, 24V power and RS-485 data circuits shall be run in separate conduits, even if they begin and end at the same locations/enclosures/devices.

Note: Some circuits included in the below list may also be described in other sections of this manual.

- Site power supplies (208V-575V) in from site power panel[s]/disconnects – Sheet F-1
- 24VAC power distribution / system-stop out to Bay Control Panel – Sheet F-4
- Machine network Ethernet in from Bay Control Panel – Sheet F-4
- System-stop / reset circuit – Sheet F-4
- Low-pressure pump gravity tank low-level circuit – Sheet F-10

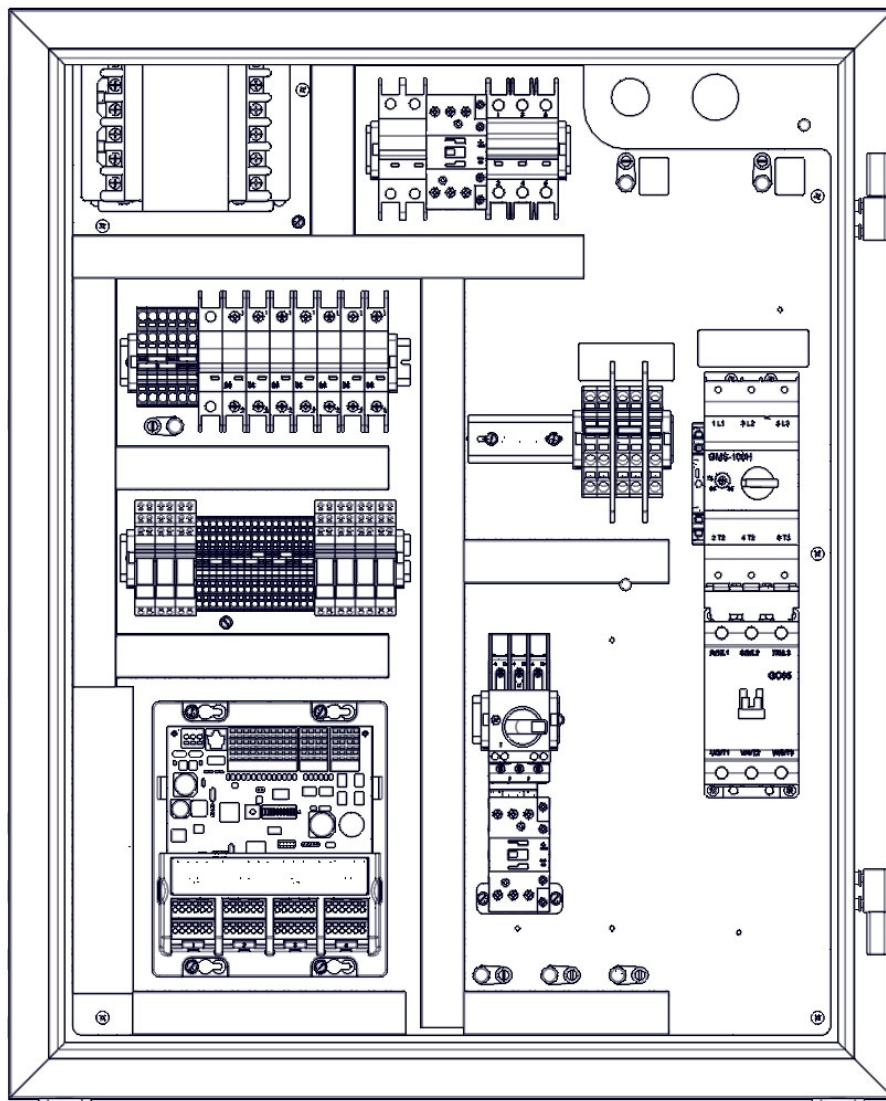


Figure 106 – Pump Control Box

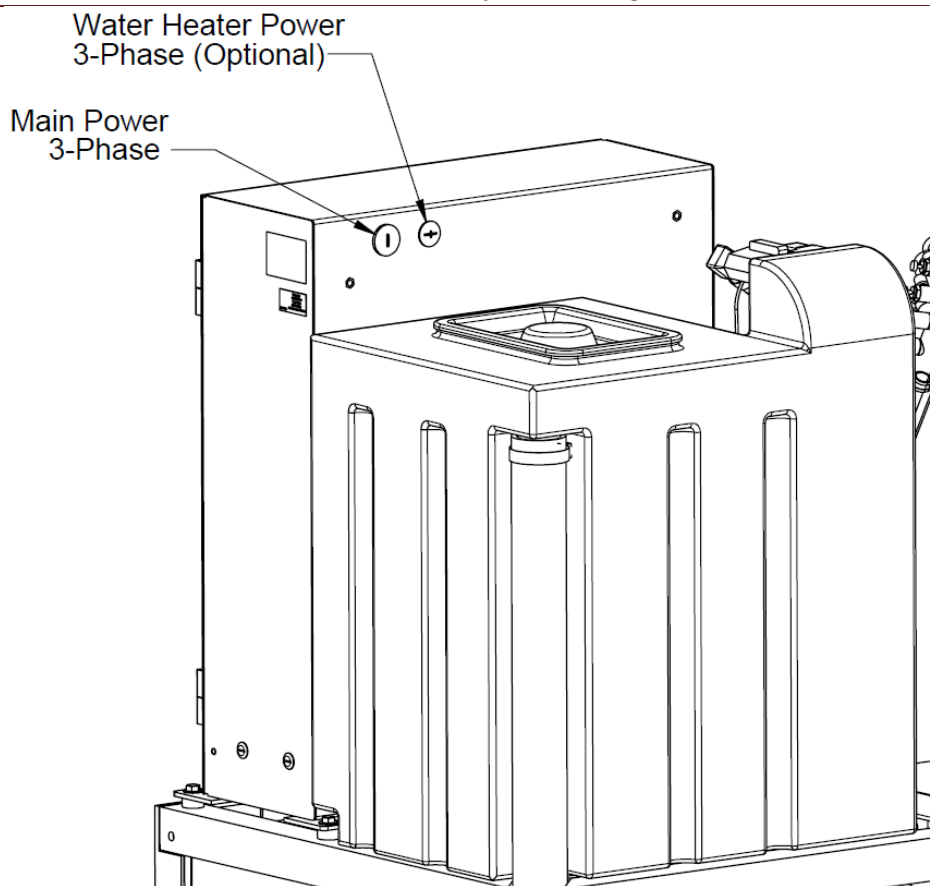


Figure 107 - Pump Station Electrical Routing High Voltage

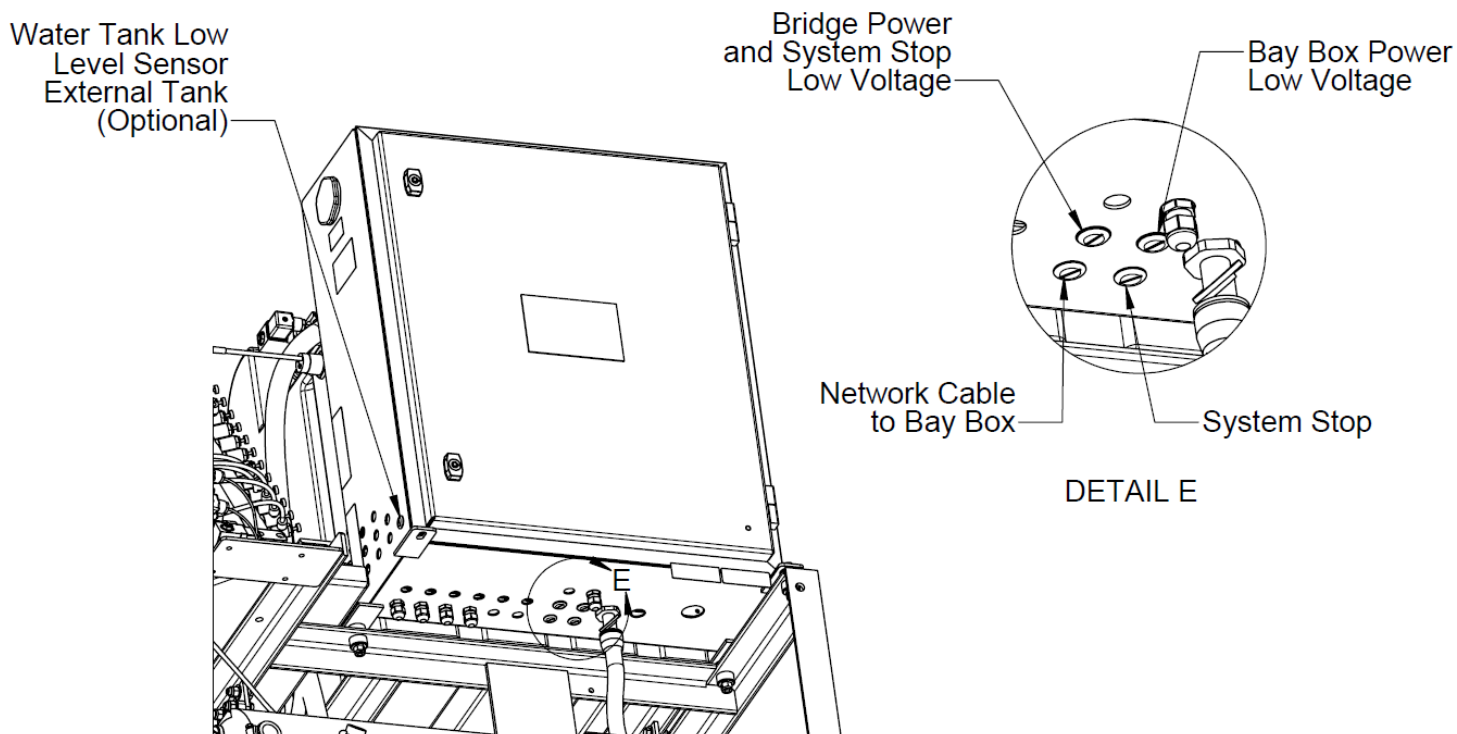
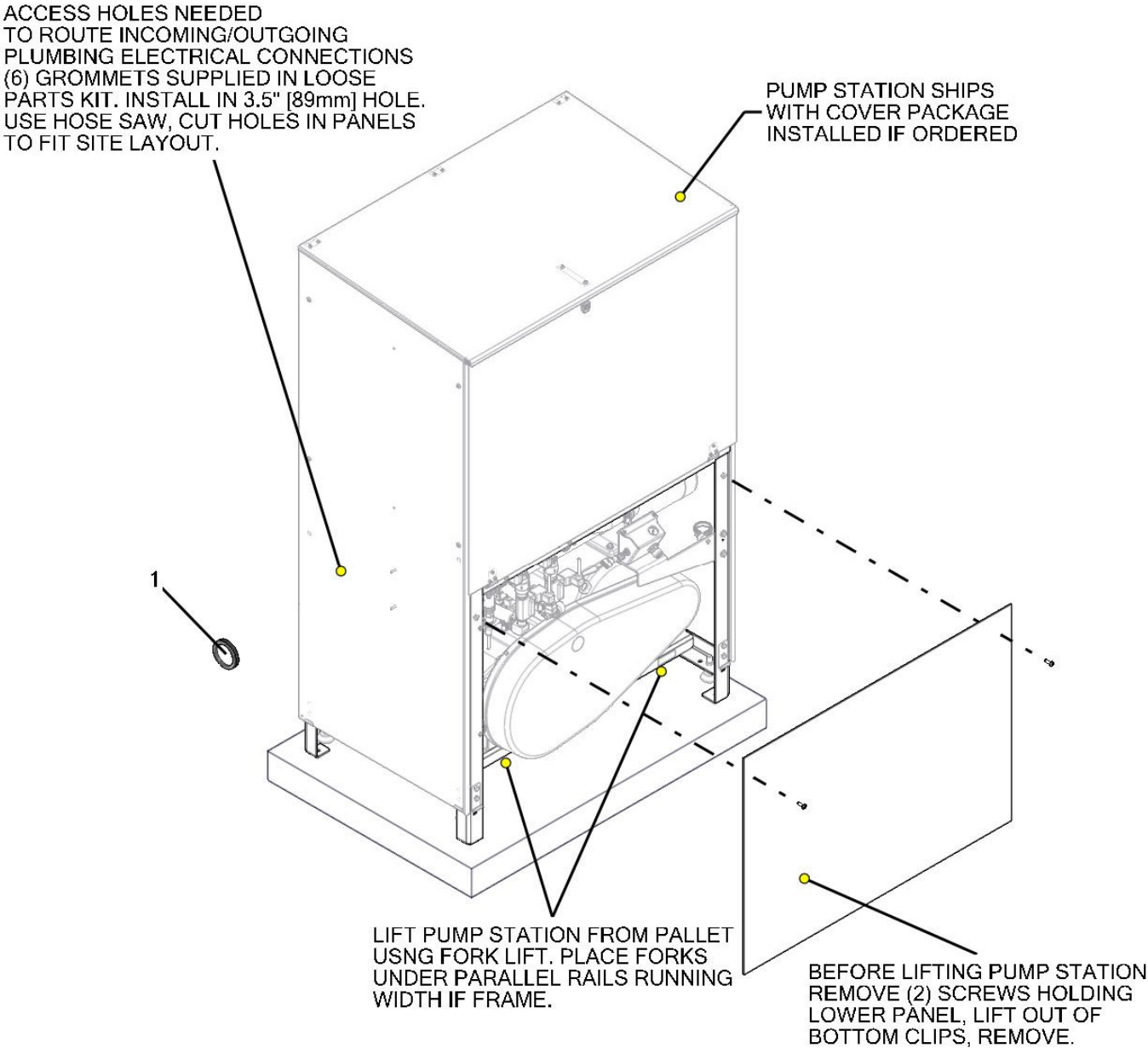


Figure 108 - Pump Station Electrical Routing Low Voltage

6.6 Step 10 Install Pump Station Covers (optional)

Optional pump station covers are shown below in Figure 105. Access holes are required for incoming and outgoing water and electrical connections. Rubber grommets are supplied to protect the hoses or conduit from edge of cutouts made in the cover panels. Location of holes will be determined on site and placed where appropriate. Remove pump station from pallet as shown below in Figure 105. Refer to 5.6 Step 1 for installation steps after removing from pallet.



BOM ID	PartNo	Qty	Description
1	06310008	1	GROMMET,16x98x8mm,NEOPRENE

Figure 109 - Pump Station Cover Package

7 Entrance Service Options

This section provides instructions for installing Entrance Service options. The options are:

- Drive Through Underbody Manifold
- Drive Through Rust Inhibitor Manifold
- Gatling Guns
- Wheel Cleaner
- Side Combo Cleaners
- Activation Sensors for Entrance Services

7.1 Key Factors to Consider

- When installing the drive through underbody, note the position of the manifold relative to other bay equipment. For example, if the bay has doors at the entrance, the underbody may spray on the door mechanism and cause issues with door operation, especially in cold climates.
- When determining the location for drive through underbody, consider the mounting locations for the activation sensors. Be sure to establish the sensor mounting location when determining the manifold location for proper system function. Do not put the sensors in direct line with the underbody manifold. The sensors should be mounted in front of the manifold.
- Take note of floor heat lines prior to installing the manifold. Be sure to locate the manifold so that the floor anchors do not interfere with the floor heat lines.
- If Gatling Guns are to be installed, refer to the section on Gatling Gun installation for details on modifying the underbody manifold prior to installing the manifold.
- The underbody manifold is shipped without the nozzles installed. Once the manifold is installed and plumbed, it is important to flush the manifold to clear any debris as part of the start-up process. This should be done without the nozzles installed. Be sure to install the nozzles in the correct orientation after flushing.
- Be aware of the direction of sunshine when installing photo eyes for underbody activation. Orient the eyes at an angle but avoid direct sunlight from falling on the receiving photo eye to avoid inconsistent photo eye performance.

7.2 Drive Through Underbody Manifold Installation

7.2.1 Key Installation Steps

- Determine the best location for the underbody manifold in the wash bay.
- Anchor the underbody manifold to the wash bay floor.
- Install the supply hose between the manifolds and the fluid source.
- Install the activation sensors (if required), see section 6.7.

7.2.2 Special Tools

- Hammer drill for anchoring manifolds

7.2.3 PDQ Supplied Parts

The following underbody systems are available; all are optional:

- High-Pressure Drive Through Underbody with Side Blasters (P/N 09120059)
- High-Pressure Drive Through Underbody without Side Blasters (P/N 09120061)
 - For use with Gatling Guns
- High-Pressure Drive Through Underbody Manifold Reuse (P/N 09120060)
 - For use in wash bay reload sites where the existing underbody wash bay manifold will be reused (NOTE: Compatible with LaserWash 4000, LaserWash M5, and LaserWash 360 wash bay manifolds)

Entrance door eyes can be used to activate the underbody. Sites without entrance door eyes can use the following to activate underbody:

- Ultrasonic Sensor Wall Mounted (P/N 09160056)
- Ultrasonic Sensor Wall Mounted with Heat (P/N 09160057)
- Ultrasonic Sensor Stand Mounted (P/N 09160058)
- Ultrasonic Sensor Stand Mounted with Heat (P/N 09160059)

- Photo Eye Sensor Activation Wall Mount (P/N 09100038)
- Photo Eye Sensor Activation Wall Mount with Heat (P/N 09100039)
- Photo Eye Sensor Activation Stand Mount (P/N 09100040)
- Photo Eye Sensor Activation Stand Mount with Heat (P/N 09100041)

7.2.4 Site Supplied Parts

The following items are referenced in this section of the instructions but must be supplied by the wash site:

- Supply hose to connect the underbody manifold to the water source. See Table 5 for details specific to the type of underbody manifold installed. Length of the hose is specific to site configuration.

Table 5 - Site Supplied Hose for Underbody Manifold

Underbody Type	HOSE	FROM	TO
High-pressure, Drive Through	1" 2000 psi (138 bar)	High-pressure Changeover Valve on Pump Station FITTING INSTALLED ON LaserWash 360 Plus: #16 MJIC	Underbody Manifold FITTING INSTALLED ON LaserWash 360 Plus: #16 MJIC

7.2 Step 1 Determine the Best Location for the Underbody Manifold in the Wash Bay

- Prior to mounting, check the side of the wash bay from which water will be fed to the manifold when installed. The assembly may be configured to feed the water from the right-hand or left-hand side of the wash bay.
 - To change the feed side, either rotate the manifold 180 degrees from the orientation shown in Figure 110, or disassemble the manifold at the end of each of the side blaster assemblies.
 - Switch the positions of the end cap and the inlet check valve assembly.
 - Reassemble with the inlet parts properly oriented for the wash bay situation.

- Locate the manifold at the entrance end of the wash bay with the center of the main pipe centered between the main bridge rails. Locate the manifold in the direction of traffic flow according to the Key Factors listed above.
- The manifold may be mounted directly to the wash bay floor or in a trench to recess it beneath the floor level. If a trench is used, this should be made approximately 102 in (2.59m) long, 1.5 in (38mm) wide, and 1 in (25mm) deep. See Figure 111 for mounting options.

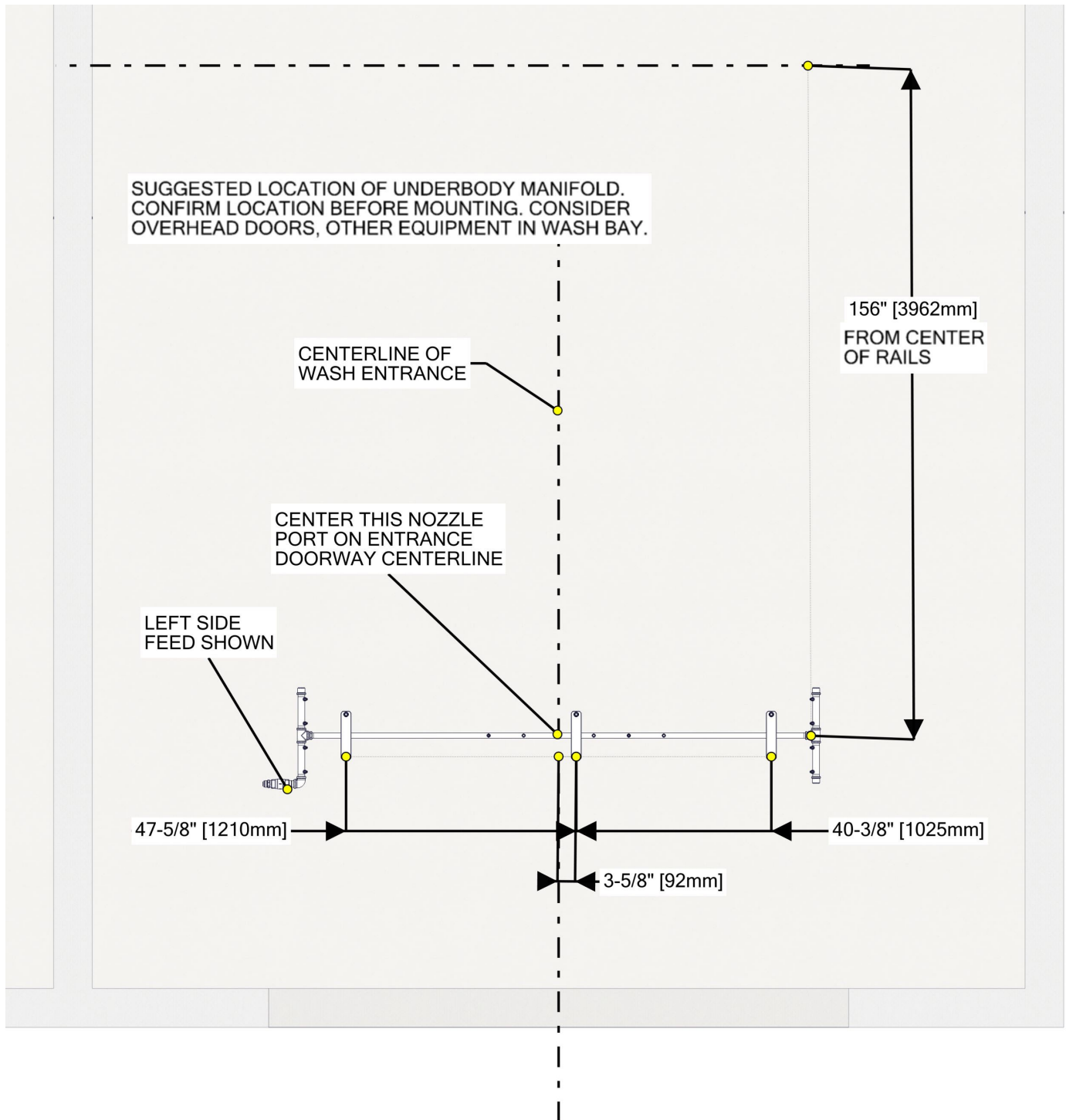


Figure 110 – Locate and Mount Underbody Manifold in Wash Bay

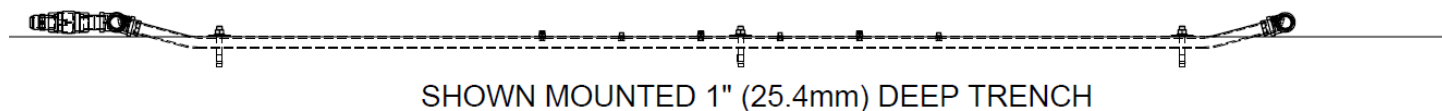
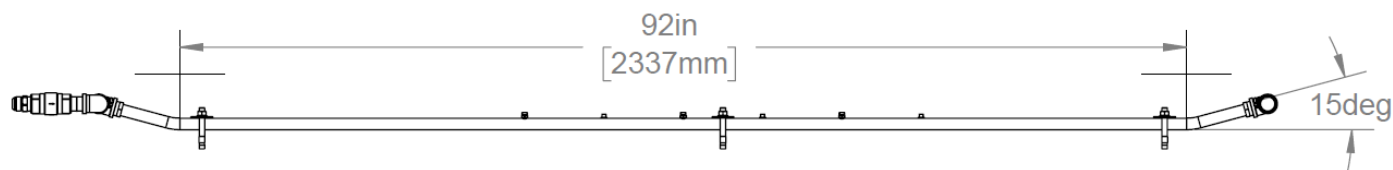


Figure 111 – Drive through Underbody Manifold Floor Mounting Options

7.2 Step 2 Anchor the Underbody Manifold to the Wash Bay Floor.

Secure the manifold to the wash bay floor using the supplied floor anchors.

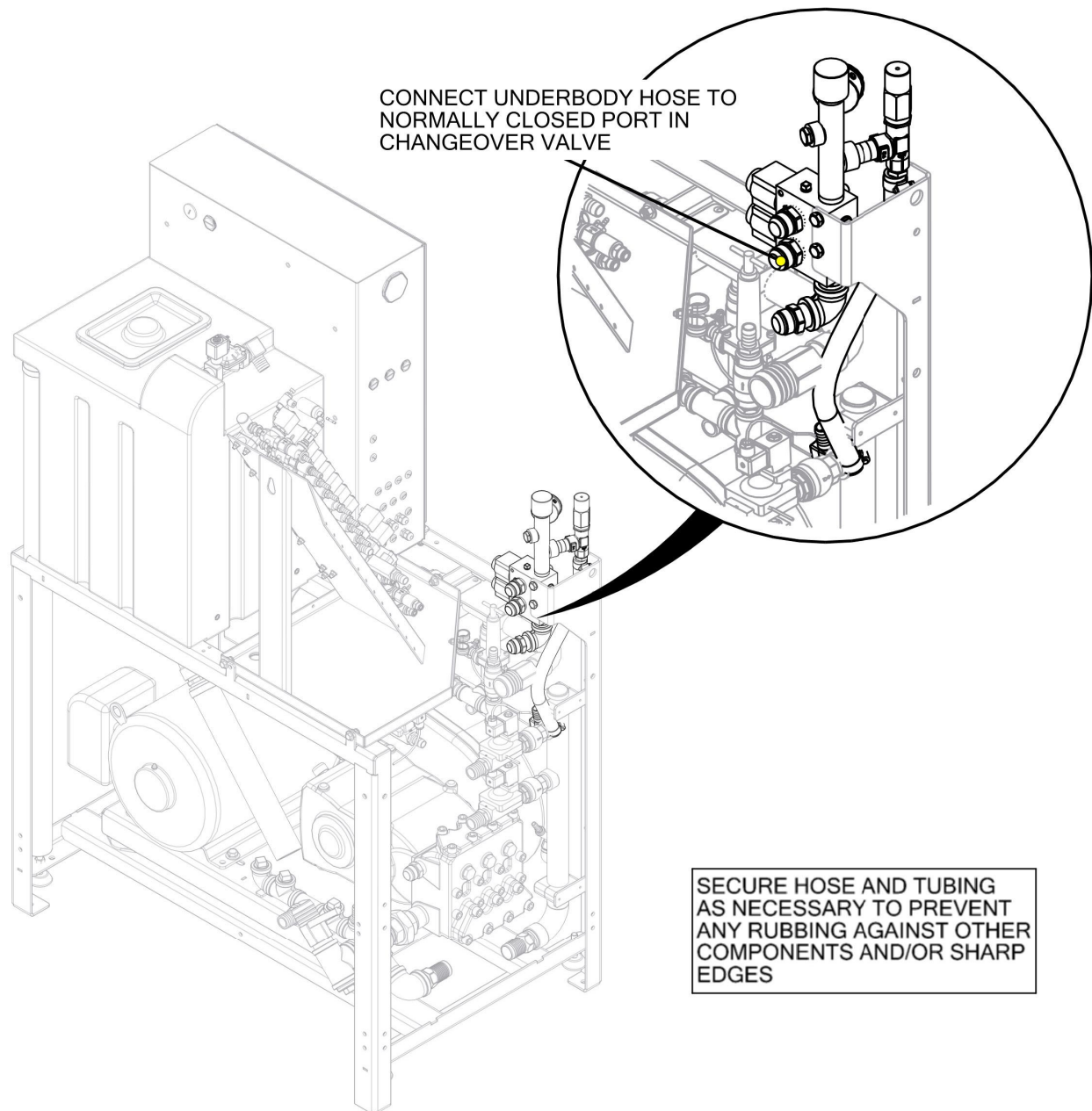


Figure 112 – High-Pressure Drive Through Underbody with Side Blasters

7.2 Step 3 Install the High-Pressure Supply Hose

- Connect the site supplied hose between the normally closed outlet on the changeover valve on the pump station, Figure 113, and the inlet on the underbody manifold.
- Route the hose and secure it so that the hose does not interfere with vehicle traffic and walkways.

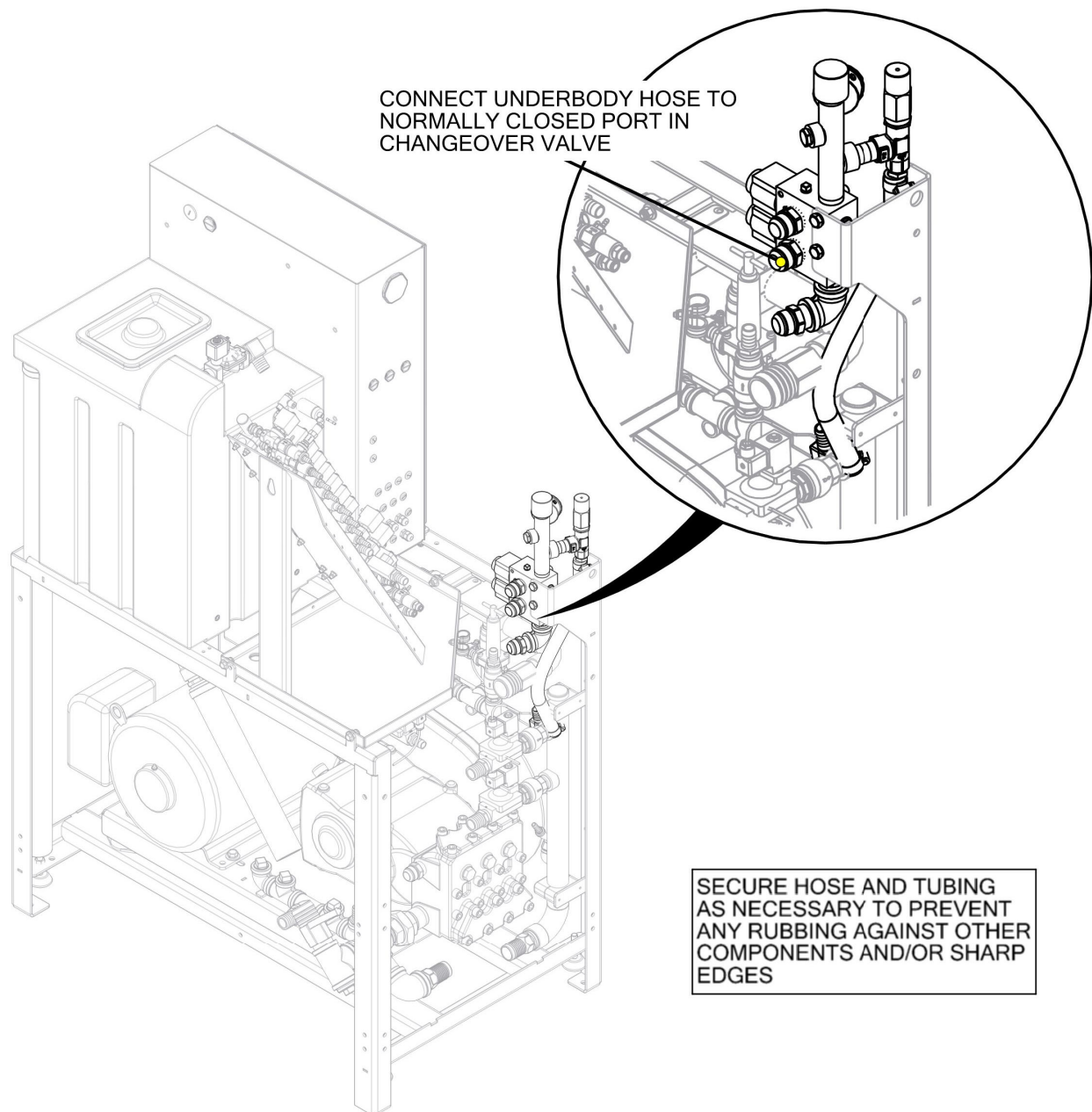


Figure 113 – High-Pressure Underbody Hose Connection to Changeover Valve in High-pressure Pump Station

7.2 Step 4 Install Nozzles in High-Pressure Drive Through Underbody Manifold

NOTE: This step is to be completed after startup. Water should be flushed through the manifold to remove debris from the system.

- After startup, and the manifold is flushed of debris, install the nozzles in the orientation shown. See Figure 114 for proper nozzle assembly, right side feed shown. See Figure 110 for left side feed.

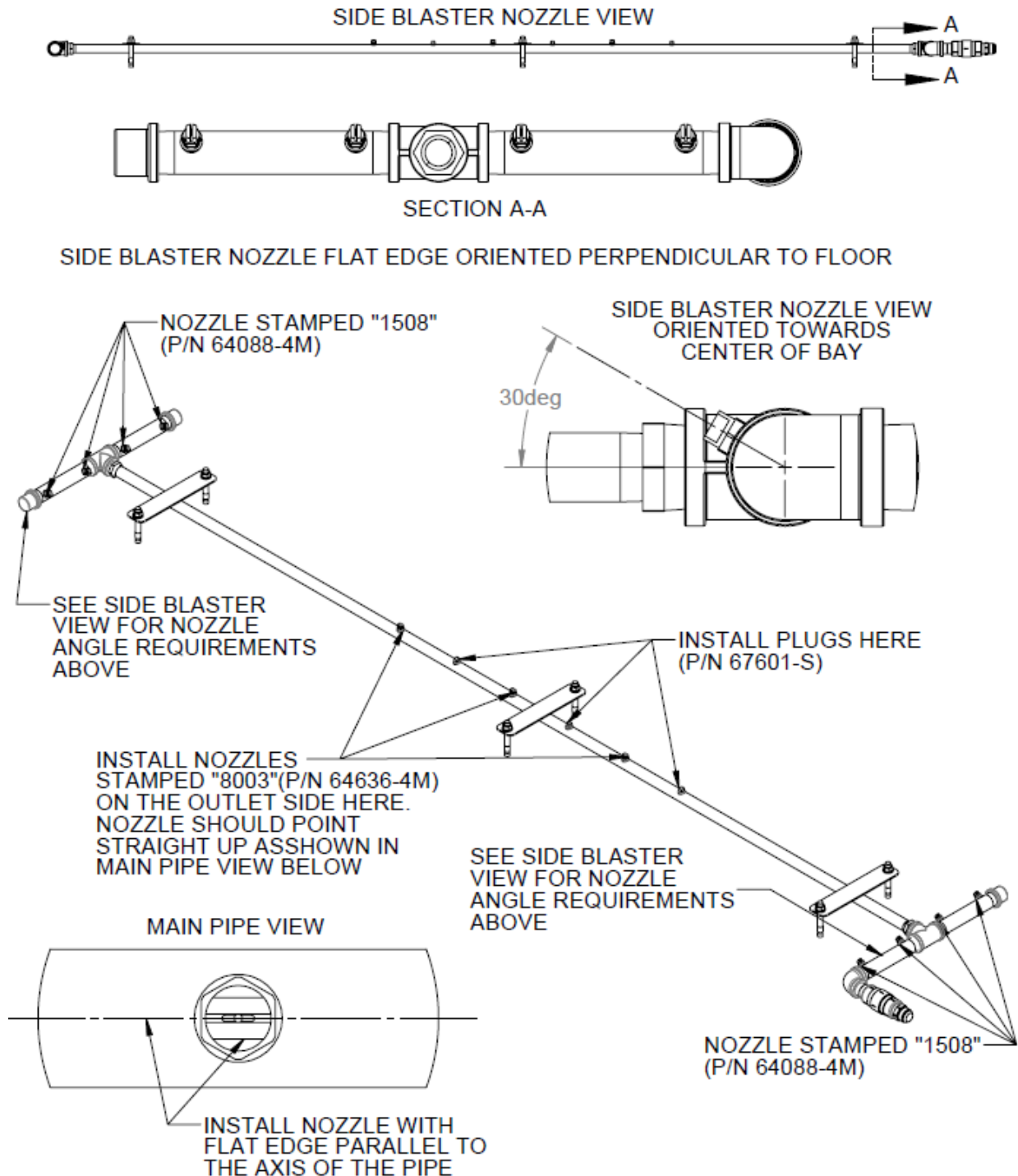


Figure 114 - High-pressure Drive Through Underbody Nozzle Assembly (Right Side Feed shown)

7.3 Drive Through Rust Inhibitor Installation

The Rust Inhibitor manifold is only available with the high-pressure underbody manifold. The machine software activates the underbody pump and rust inhibitor pump simultaneously.

When the Rust Inhibitor option is installed, the option to apply foaming wax through the main arch is not available. Only one or the other of these options can be supported in a specific machine.

7.3.1 Key Factors to Consider

- When installing the drive-through rust inhibitor, note the position of the manifold relative to other bay equipment. For example, if the bay has doors at the entrance, the rust inhibitor may spray onto the door mechanism and cause issues with door operation, especially in cold climates.
- Take note of floor heat lines prior to installing the manifold. Be sure to locate the manifold so that the floor anchors do not interfere with the floor heat lines.
- The rust inhibitor manifold is shipped without the nozzles installed. Once the manifold is installed and plumbed, it is important to flush the manifold to clear any debris as part of the start-up process. This should be done without the nozzles installed. Be sure to install the nozzles in the correct orientation after flushing.

7.3.2 Key Installation Steps

- Determine the best location for the rust inhibitor manifold in the wash bay.
- Anchor the manifold to the wash bay floor.
- Install the supply hose between the manifold and the fluid source.

7.3.3 Special Tools

- Hammer drill for anchoring manifolds

7.3.4 PDQ Supplied Parts

The wash is available with the following rust inhibitor systems.

- Low-Pressure Rust Inhibitor Applicator (P/N 09120014)
- Low-Pressure Rust Inhibitor Weep (P/N 09170056)

7.3.5 Site Supplied Parts

The following items are referenced in this section of the instructions but must be supplied by the wash site.

Supply hose to connect the rust inhibitor manifold to the pump station, see Table 6. The length of the hose is specific to the site configuration. The site must also supply hose clamps for this hose.

Table 6 - Site Supplied Hose for Rust Inhibitor Manifold

Option	HOSE	FROM	TO
Rust Inhibitor	1/2" 200 psi (13.8 bar)	Low-Pressure Outlet Fitting in Pump Station FITTING INSTALLED: ½" HOSE BARB	Rust Inhibitor Manifold FITTING INSTALLED: ½" HOSE BARB, ½" MNPT

7.3 Step 1 Determine the Best Location for the Rust Inhibitor Manifold in the Wash Bay

Locate the Rust Inhibitor Manifold using the dimensions recommended in Figure 115.

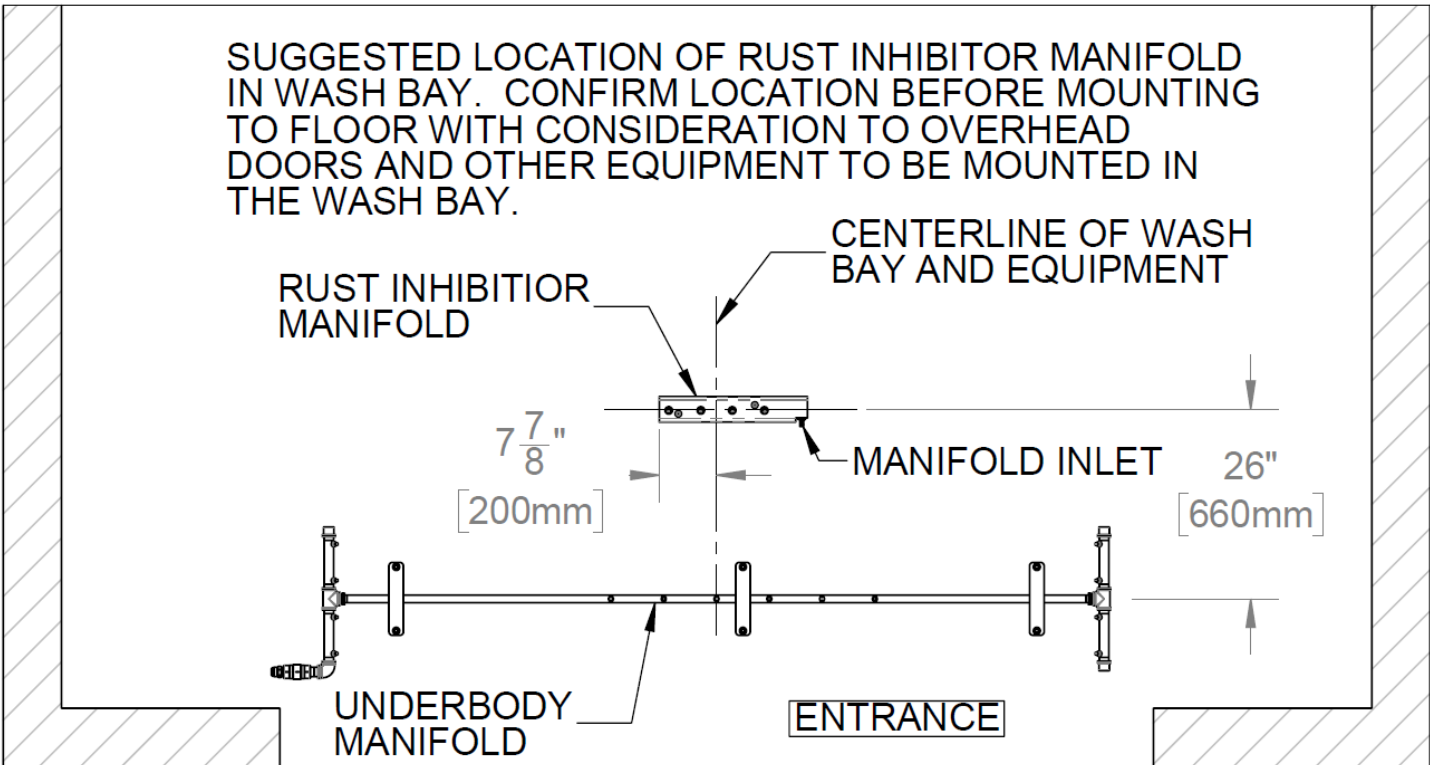
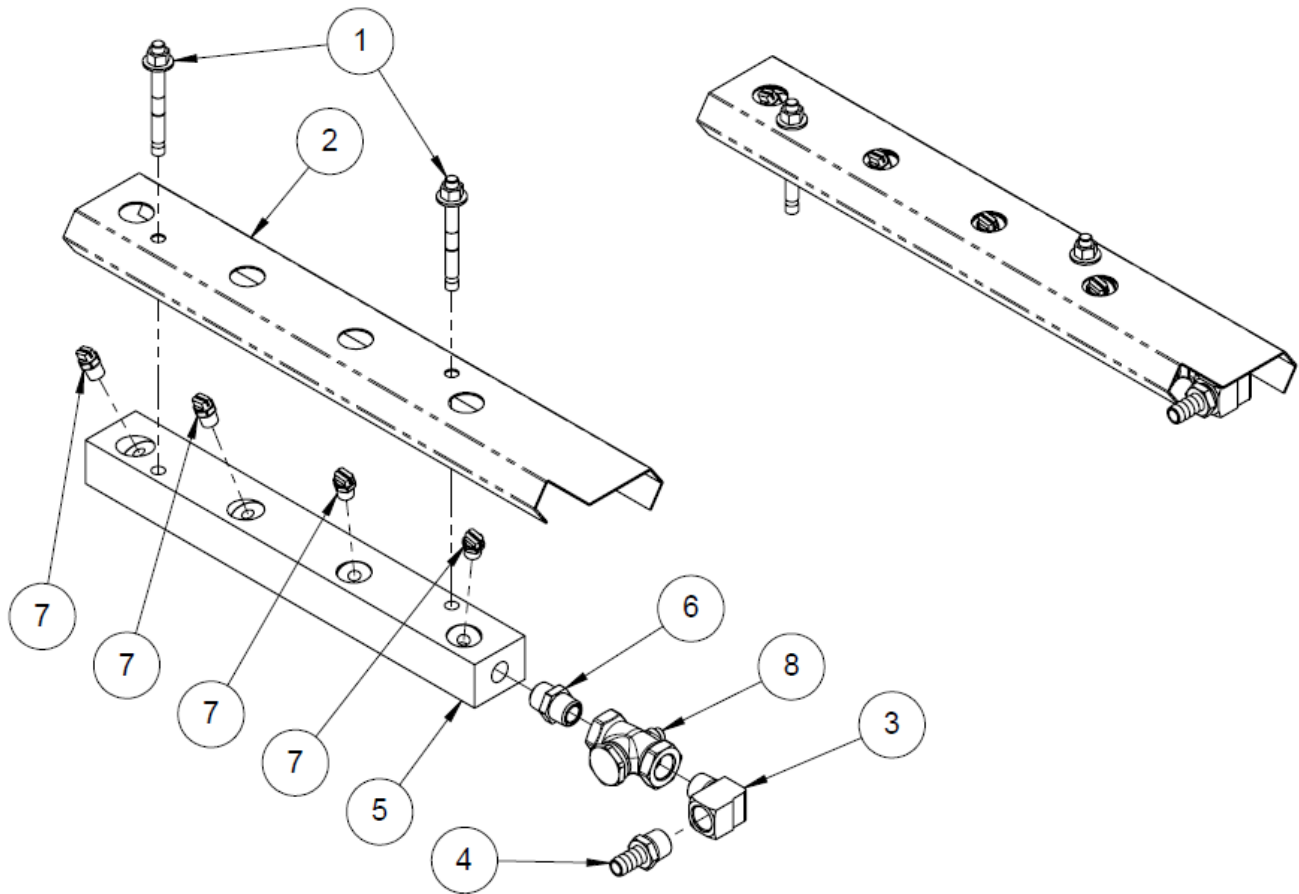


Figure 115 - Locate and Mount Rust Inhibitor Manifold in Wash Bay

7.3 Step 2 Mount the Drive Through Rust Inhibitor Manifold to the Floor of the Wash Bay

Secure the manifold to the wash bay floor using the supplied floor anchors, see Figure 116.

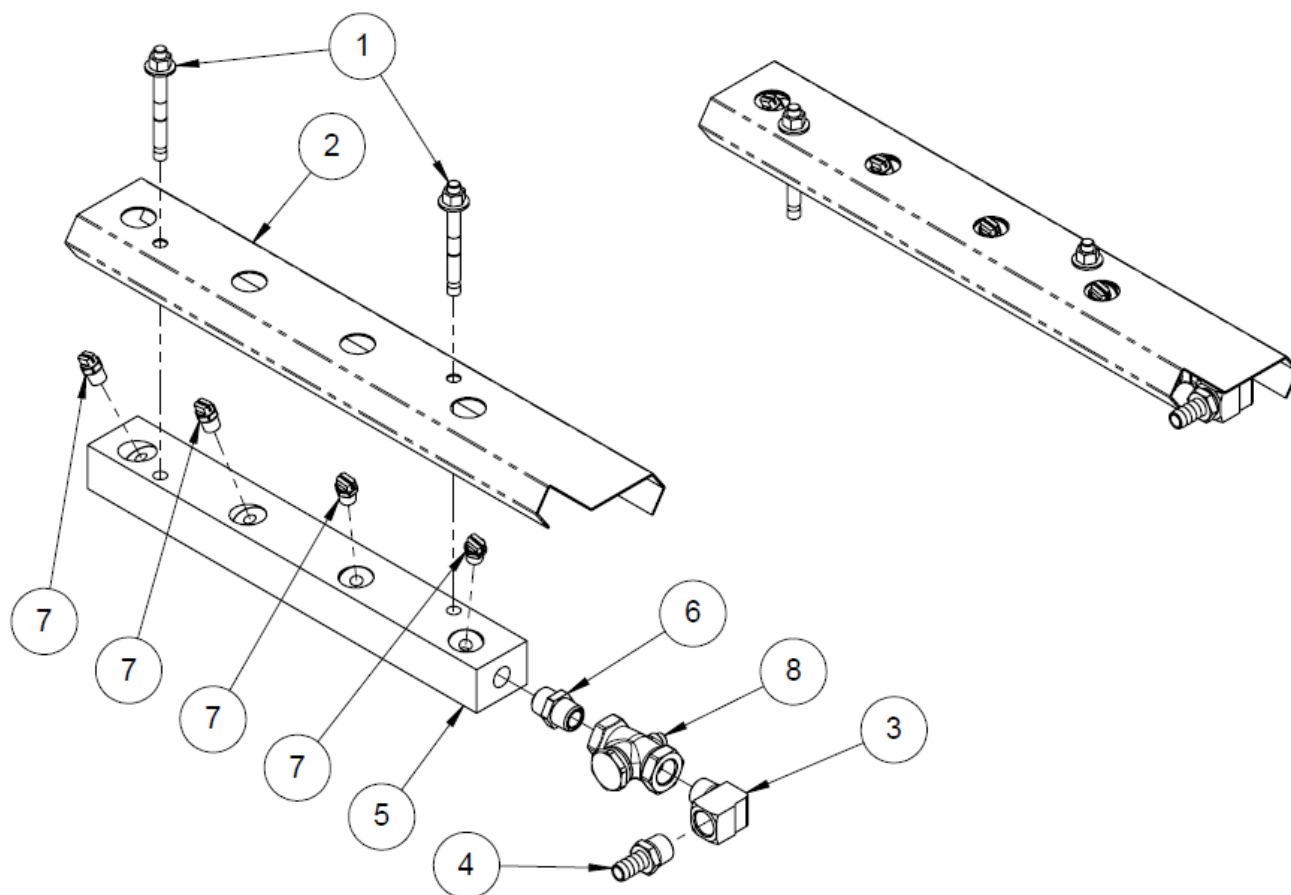


ITEM	QTY	PART #	DESCRIPTION
1	2	05090007	ANCHOR,STUD,3/8-16UNCx3.75",SST
2	1	M500132	COVER,RUST-INHIBITOR,16GA-SST
3	1	67491-4B	ELBOW,STREET,1/2NPT,90DEG,SC40,BRS
4	1	68117-MHB	HOSE-BARB,1/2Hx1/2MNPT,BRS
5	1	M690151	MANIFOLD,5-PORT,RUST-INHIBITOR,PVC
6	1	67058-4N	NIPPLE,HEX,1/2NPT,NYL
7	4	03230002	NOZZLE,SPRAY,4008,1/4MPT,SST
8	1	63118	VALVE,CHECK,1/2FNPT,250PSI,BRONZE

Figure 116 - Rust Inhibitor Manifold

7.3 Step 3 Install the Low-Pressure Supply Hose

- Connect the site supplied ½" hose to hose barb of the Rust Inhibitor Manifold and secure it with a hose clamp with clamp.
- Route the hose across bay to the pump station. When routing the hose take appropriate steps to protect the hose from vehicle travel during wash operation.
- Connect the ½" hose to pump station and secure it with a hose clamp, Figure 117.



ITEM	QTY	PART #	DESCRIPTION
1	2	05090007	ANCHOR,STUD,3/8-16UNCx3.75",SST
2	1	M500132	COVER,RUST-INHIBITOR,16GA-SST
3	1	67491-4B	ELBOW,STREET,1/2NPT,90DEG,SC40,BRS
4	1	68117-MHB	HOSE-BARB,1/2Hx1/2MNPT,BRS
5	1	M690151	MANIFOLD,5-PORT,RUST-INHIBITOR,PVC
6	1	67058-4N	NIPPLE,HEX,1/2NPT,NYL
7	4	03230002	NOZZLE,SPRAY,4008,1/4MPT,SST
8	1	63118	VALVE,CHECK,1/2FNPT,250PSI,BRONZE

Figure 117 - Rust Inhibitor Hose Connection to Pump Station

7.4 Electric Gatling Gun Installation

Electric Gatling Guns can be ordered with the High-Pressure Drive-Through Underbody without Side Blasters. The following instructions may be completed along with the installation of the underbody manifold.

7.4.1 Key Factors to Consider

In addition to the key factors for underbody installation referenced in Section 6.2.1, the following considerations must be made for installing Gatling Guns.

- For best results, the Gatling Guns should be installed so the vehicle passes in front of them after the underbody manifold but before the entrance end of the path of travel of the wash spray arch.
- When installing Gatling Guns, the Gatling Gun assemblies must be mounted outside the wash envelope so that they do not interfere with spray arch travel.
 - For narrow wash bays, mount the Gatling Guns close to the entrance of the wash and outside the path of the spray arch.
- Take note of floor heat lines prior to installing the manifold and the Gatling Gun assemblies. Be sure to locate them so that the floor anchors do not interfere with the floor heat lines.
- The underbody manifold and Gatling Guns are shipped without the nozzles installed. Once installed and plumbed, it is important to flush the manifold and Gatling Guns to clear any debris as part of the start-up process. This should be done without the nozzles installed. Be sure to install the nozzles in the correct orientation after flushing.

7.4.2 Key Installation Steps

- Determine the best location for the Gatling Gun in the wash bay.
- Anchor the Gatling Guns to the wash bay floor.
- Install the supply hose between the manifold and the water source.
- Install and connect the Gatling Gun electrical control box.

7.4.3 Special Tools

- Hammer drill for anchoring manifolds and Gatling Gun assemblies

7.4.4 PDQ Supplied Parts

- High-Pressure Drive-Through Underbody without Side Blasters (P/N 09120061)
- Electric Gatling Gun System (P/N 09190009 (60Hz) or 09190011 (50Hz)) including the Gatling Gun assemblies (2), control box, and fittings for integrating this into the underbody manifold.

7.4.5 Site Supplied Parts

The following items are referenced in this section of the instructions but must be supplied by the wash site.

- Supply hose to connect the underbody manifold to the pump station. The length of the hose is specific to the site configuration. Refer to Table 5 for hose requirements.
- Hoses to connect the Gatling Guns to the underbody manifold.
 - The hose length will be specific to the wash bay and the underbody/Gatling Gun placement.

- The hoses must be ½" and rated for 2000 psi (138 bar) minimum and have #8 Female JIC swivel fittings on each end.
- Wall anchors for mounting the Gatling Gun control box. Four (4) fasteners are required. The mounting holes in the box are .31 in (7.94mm) diameter.
- Wire and conduit for power and control.

7.4 Step 1 Modify the Underbody Manifold

Prior to installing the High-Pressure Underbody Manifold, the following modifications must be made using the parts supplied for proper interface with the Gatling Gun assemblies. In addition, refer to 7.2 Step 1 for instructions on feed side and mounting location for the underbody manifold.

- Install the supplied fittings to the feed end of the manifold, Figure 118.
- Install the supplied adapter, bushing, and coupling to the end opposite the feed end of the manifold, Figure 118.
- Install the tee and nipple between the check valve and hose fitting assembly on the underbody manifold. Install the adapter and bushing.
- Do not install nozzles or plugs until startup, after the system has been flushed. Once the system is flushed and after startup, install the supplied nozzles in the underbody manifold and the Gatling Gun manifolds.

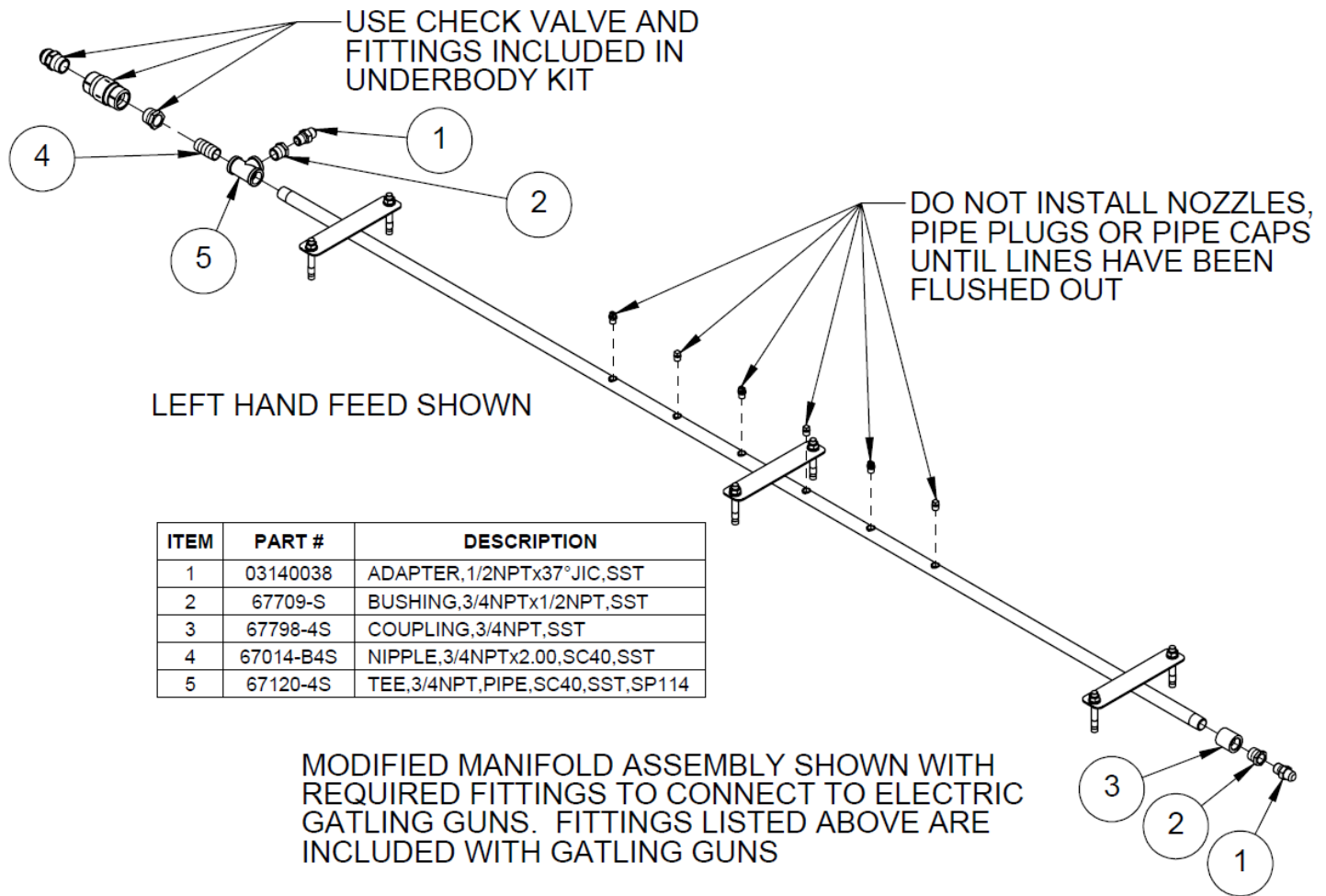


Figure 118 - High-pressure Underbody Manifold Modified for Gatling Guns

7.4 Step 2 Locate and Anchor the Underbody Manifold and Gatling Guns in the Wash Bay

- Figure 119 shows the minimum and recommended location for positioning the underbody and Gatling Guns in the wash bay. Figure 119 is shown with the narrowest permissible wash bay where Gatling Guns could be installed anywhere within the bay without interfering with the wash envelope.
- Determine the location for the Gatling Guns and underbody manifold. Refer to Section 6.2 for mounting instructions for the underbody manifold.
- Anchor the Gatling Gun assemblies to the wash bay floor using the supplied floor anchors, Figure 120,.

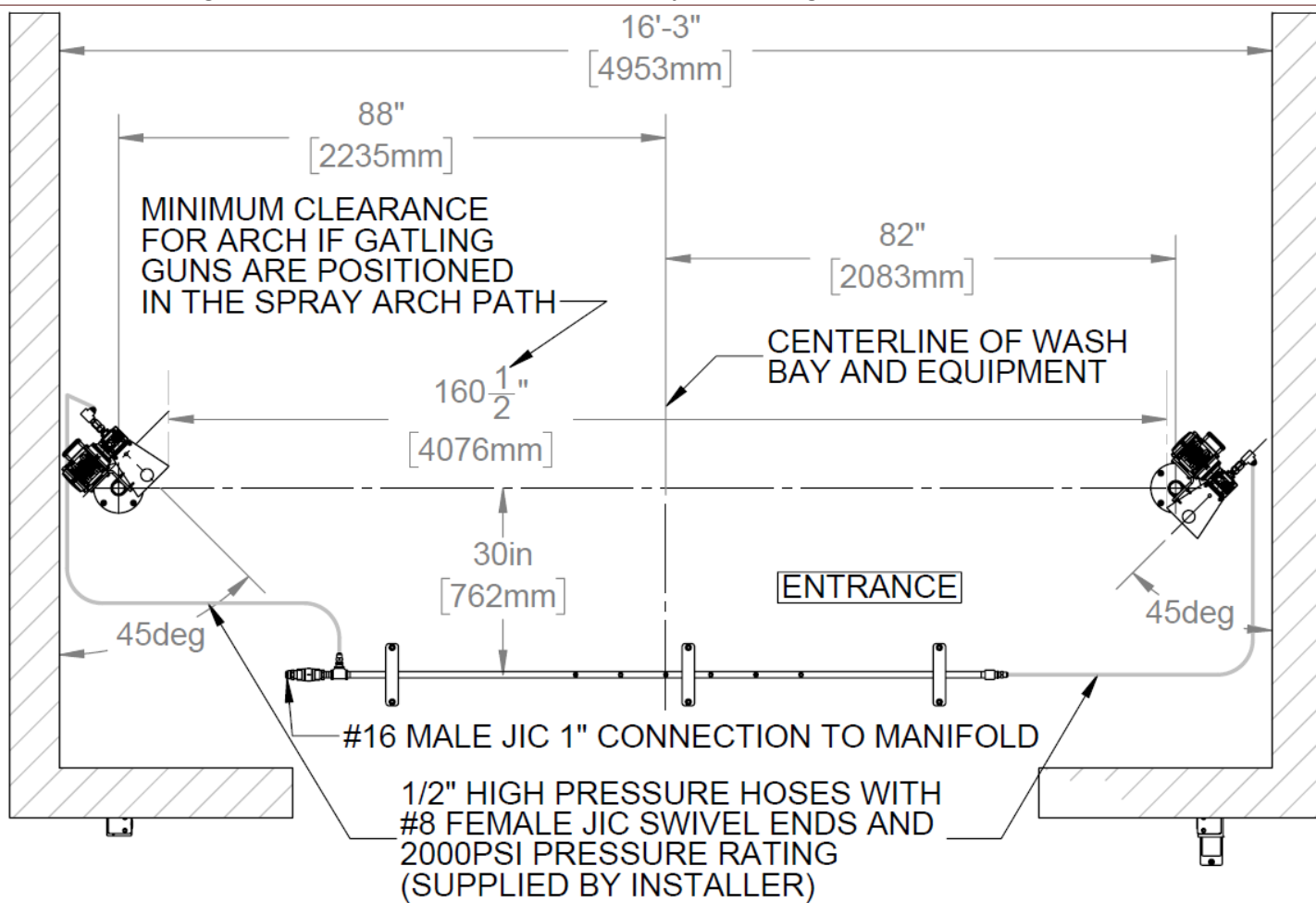


Figure 119 - Gatling Gun System Location - MINIMUM SIZE WASH BAY

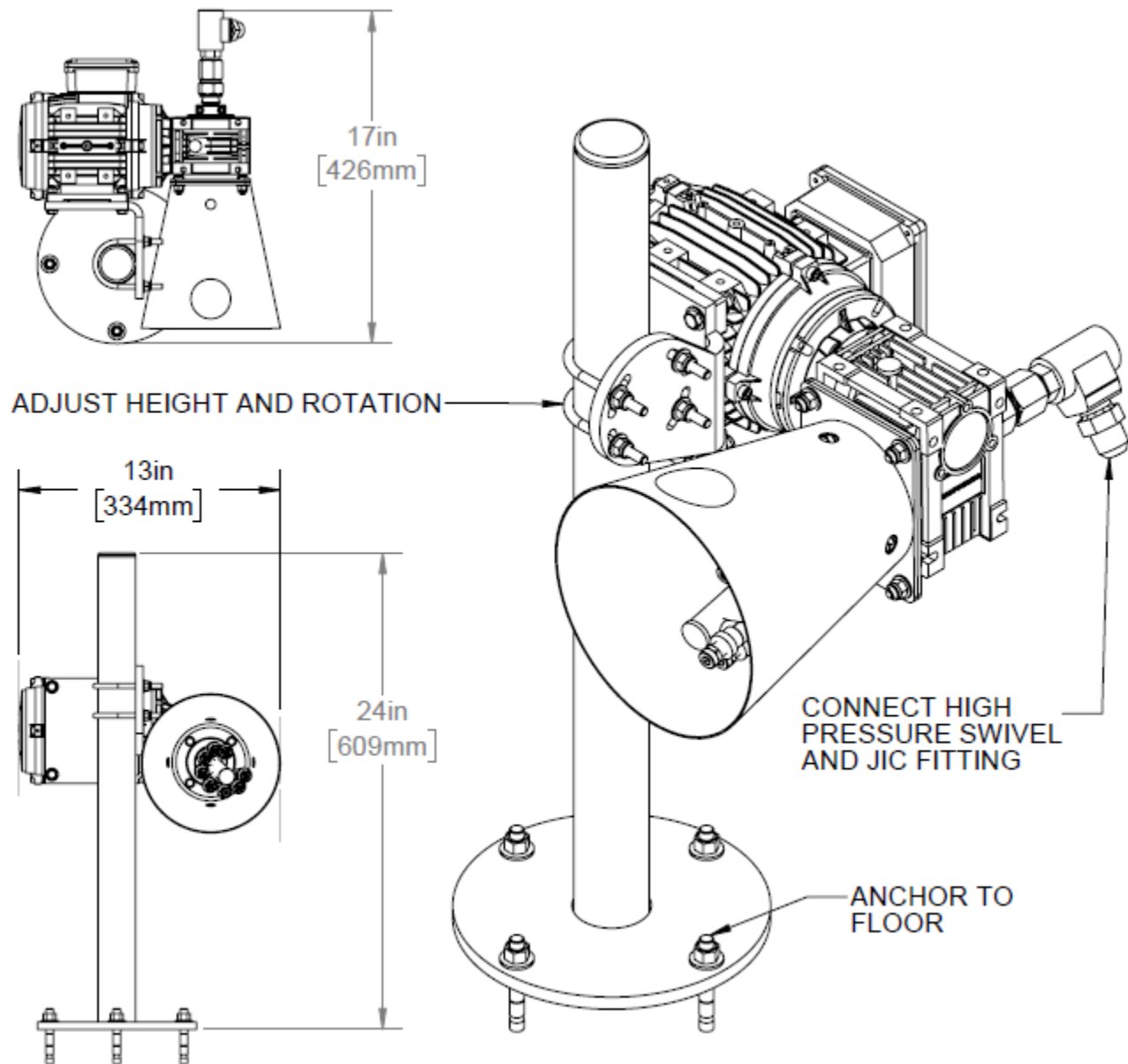


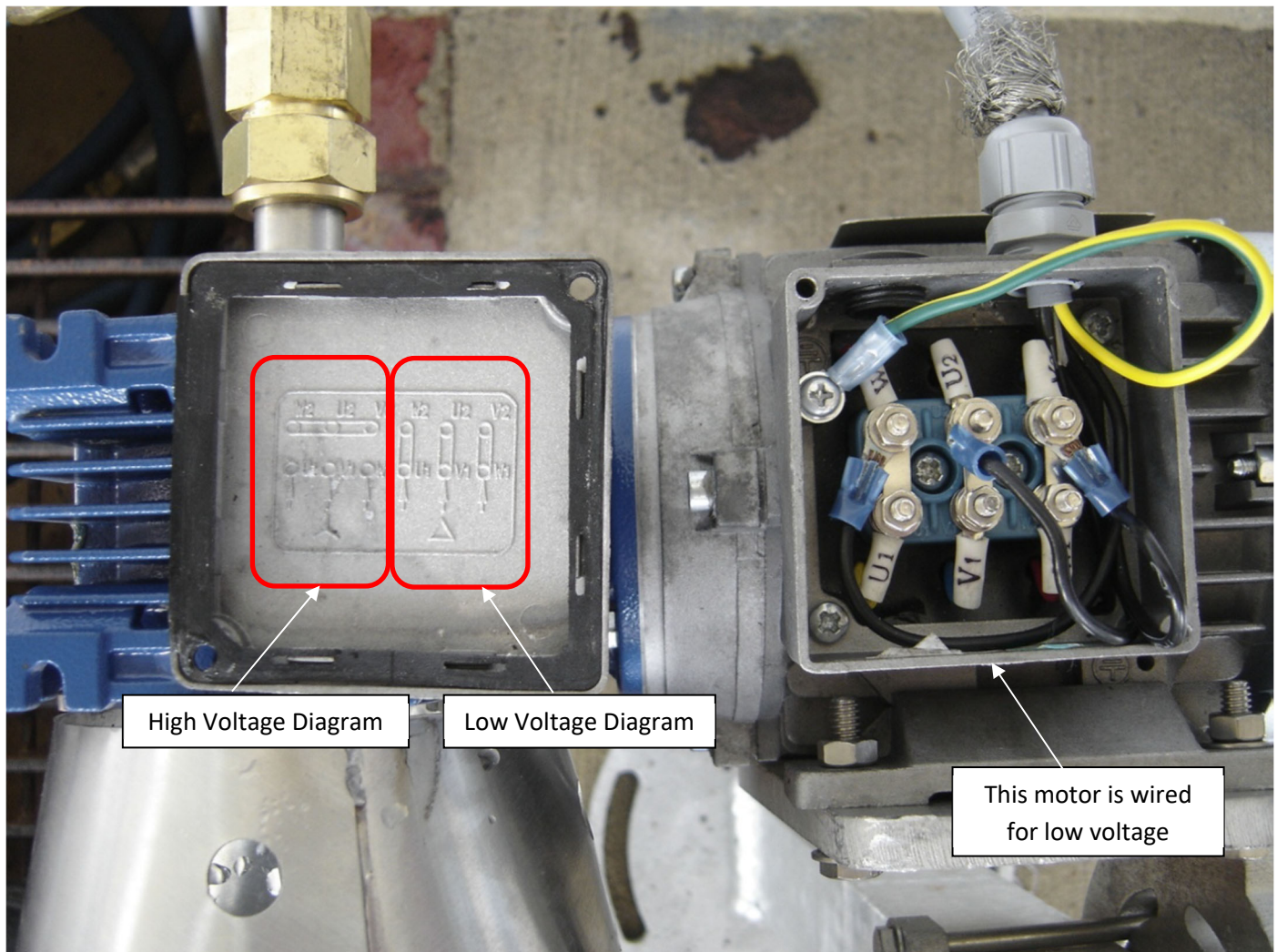
Figure 120 - Gatling Gun Assembly

7.4 Step 3 Connect Plumbing for Gatling Guns

- Using site supplied hoses, connect a hose to the fitting on the end of each Gatling Gun assembly.
- Route each hose to the appropriate end of the underbody manifold. Secure and route the hose in a manner that does not interfere with the wash bridge or with vehicle traffic.
- Connect the manifold end of each hose to the JIC fitting added to the underbody manifold.
- Connect the underbody manifold to the high-pressure pump station as described in section 6.2 Step 3.

7.4 Step 4 Route and Terminate Gatling Gun Electrical Connections

- Mount the Gatling Gun control box to the wash bay wall using site supplied fasteners. Select a location for the box that protects it from the wet wash environment and allows easy routing of wires from the site power panel, the bay box, and the Gatling Gun motors.
- Wire power and the control wires to the control box as shown in Figure 121 and Figure 122. Do not drill holes in the top of the electrical enclosure.
- When connecting to the motors, make sure the jumper terminals are properly configured for the low voltage (208/230V sites) or high voltage (400V sites). Refer to the diagram on the inside of the cover for the Gatling Gun motor, Figure 121.
- For proper wire terminations, refer to the applicable Electrical Schematic, Table 2.

**Figure 121 - Gatling Gun Motor Wiring**

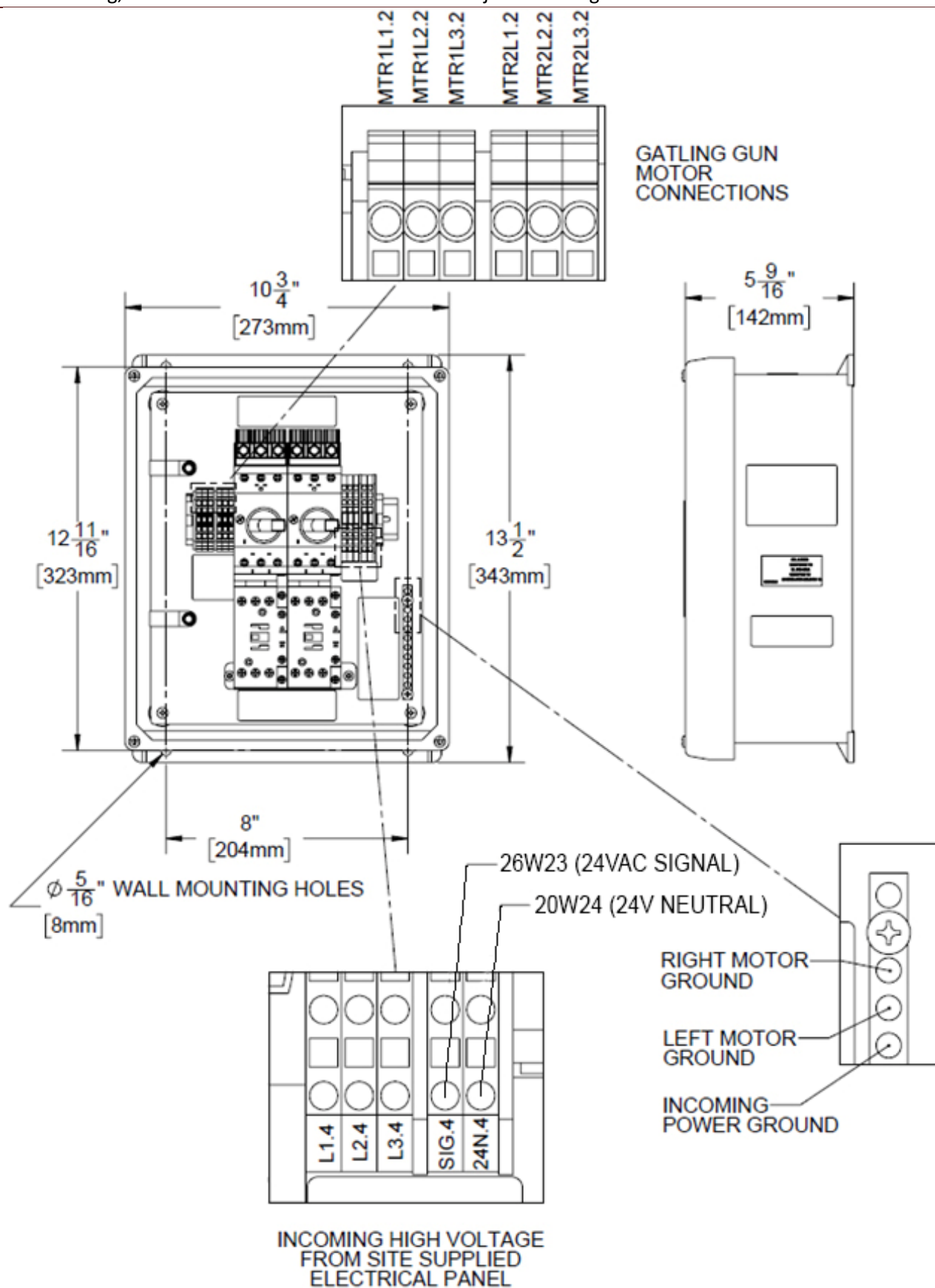


Figure 122 - Gatling Gun Control Box

7.5 Wheel Cleaner Installation

This section provides instructions for installing the Wheel Cleaner.

7.5.1 Key Factors to Consider

- When installing the Wheel Cleaner, note the position of the manifold relative to other bay equipment. For example, if the bay has doors at the entrance, the manifolds may spray onto the door mechanism and cause issues with door operation, especially in cold climates.
- When determining the location for the Wheel Cleaner, consider the mounting locations for the activation sensors. Be sure to establish the sensor mounting location while determining the manifold location for proper system function.
- Take note of floor heat lines prior to installing the manifold. Be sure to locate the manifold so that the floor anchors do not interfere with the floor heat lines.
- Methods of applicator activation and application:
 - Door/Underbody – This will allow for only a single stripe of chemical to be applied lengthwise to the vehicle. Length of chemical application is based on how the on/off delays are set in the wash setup.
 - Pressure Switch – This will allow for a tire-only chemical application to be applied. The length of chemical application based on how the on/off delays are set in wash setup.

7.5.2 Key Installation Steps

- Locate and mount the Wheel Cleaner applicators and optional activation pressure switch and optional cross-bay fluid supply manifold in the wash bay.
- Install all fluid lines.

7.5.3 Special Tools

- Hammer drill for anchoring manifolds and Wheel Cleaner Applicator assemblies

7.5.4 PDQ Supplied Parts

Depending on how the wheel cleaner option is ordered, the following will be supplied by PDQ

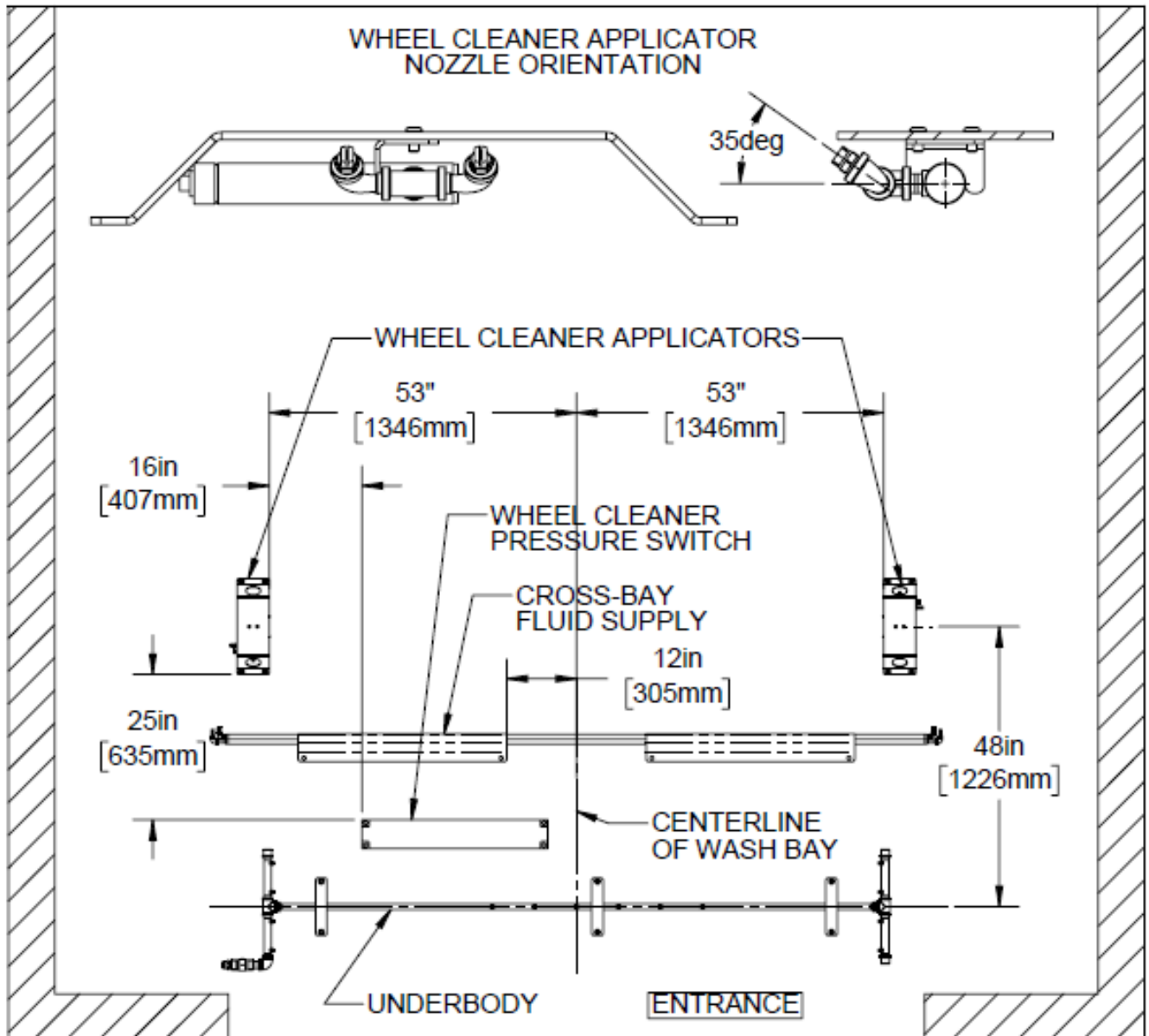
- Wheel Cleaner Applicator (P/N 11130036)
- Pressure Switch (P/N 31009)
- Cross-Bay Fluid Supply (P/N 11250345)

7.5.5 Site Supplied Parts

- Items required for installation:
 - Hose for chemical supply to the wheel cleaner applicator (3/8" 200 psi (13.8 bar) rated; PDQ Part No. 03340015)
 - Tube for air supply to foaming wheel cleaner applicator (3/8" 230 psi (15.9 bar) rated; PDQ Part No. 01120016)
- Items required to extend pressure switch cable if necessary (see procedure for details)
 - Cable, 14GA wires PDQ P/N 01140012
 - Butt Connectors PDQ P/N 60071
 - Shrink Tubing, .25" dia PDQ P/N 05060002
 - Shrink Tubing, .38" dia PDQ P/N 05060003
 - Hose Clamps PDQ P/N 75101

7.5 Step 2 Locate and Mount the Wheel Cleaner Applicators and Floor Pressure Switch

- Use Figure 123 as a reference for where to mount the Wheel Cleaner applicators and the Pressure Switch and Cross-Bay Fluid Supply manifold (when ordered). This is a suggested layout. Other, more suitable locations may be available. The applicator nozzles are intended to point towards the center of the bay.
- NOTE: If machine employs Low Profile Cleaning Towers ensure the Wheel Cleaner Applicators are mounted at least 4' (1.22m) from the towers to avoid the wheel clean chemical from being washed away prematurely. See Figure 124.
- Mount all items to the floor using anchor bolts provided.

**Figure 123 - Wheel Cleaner Applicators and Pressure Switch Mounting Locations**

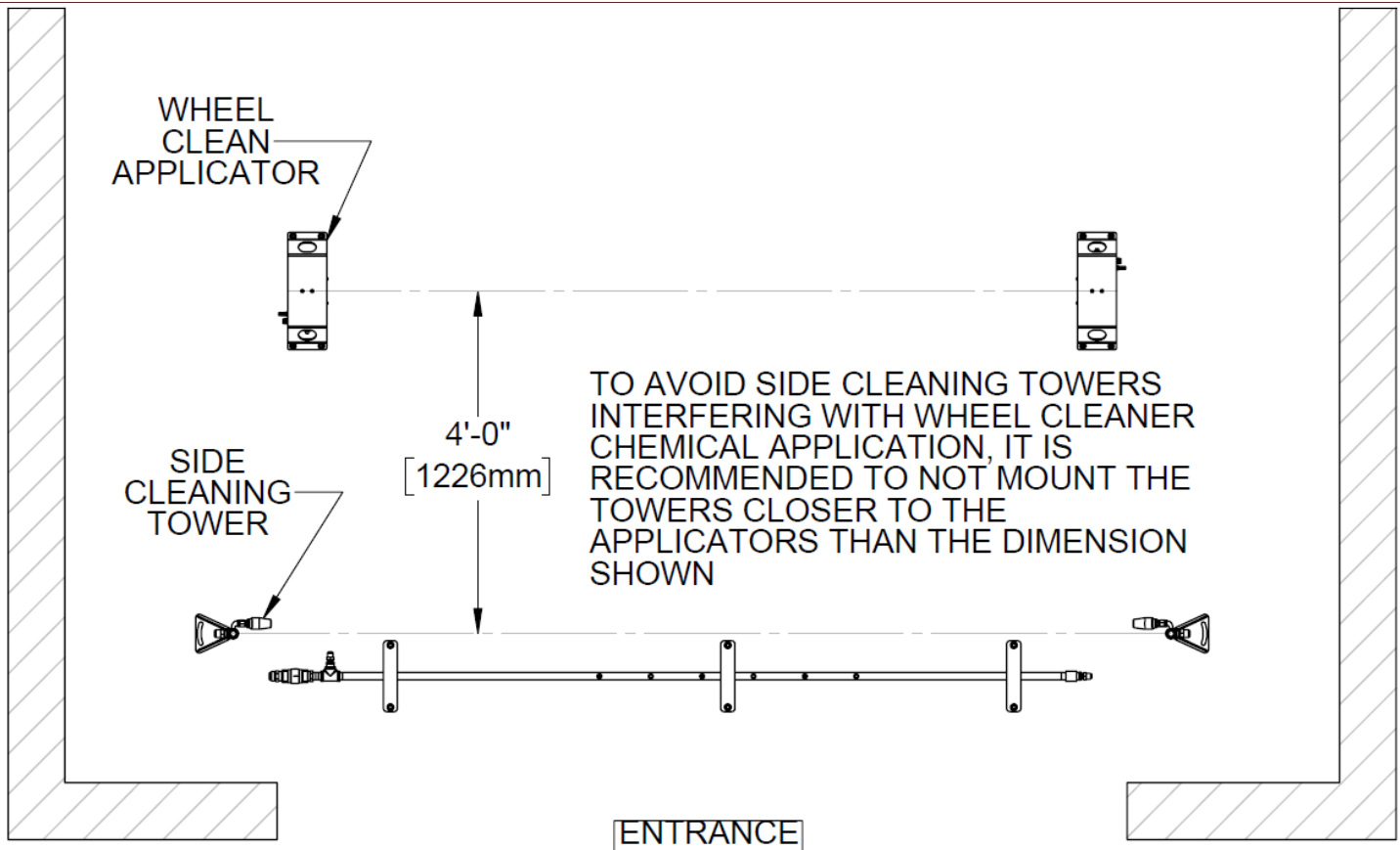


Figure 124 - Side Cleaning Towers Installed with Wheel Cleaner Applicators

7.5 Step 3 Install Hose and Tubing

Table 7 – Site Supplied Hose and Tubing for Wheel Cleaner

Option	HOSE	FROM	TO
Wheel Cleaner Solution	3/8" 200 psi (13.8 bar) PDQ Part No. 03340015	Low-Pressure Outlet Fitting in Pump Station Fitting installed: 3/8" hose barb	Solution Separation Tee supplied: 3/8" hose barb 1/4" MNPT

Option	TUBING	FROM	TO
Wheel Cleaner Air	3/8" 230 psi (15.9 bar) PDQ Part No. 01120016	Low-Pressure Outlet Fitting IN Pump Station Fitting installed: 3/8" Push-to-Connect Fitting	Air Separation Tee supplied: 3/8" Push-to-Connect Fitting 1/4" MNPT

- Attach hose and tubing to the applicators.
 - **Solution Hose**
 - Install the Tee Assembly provided at the output of the wheel cleaner solution manifold with a piece of hose, Figure 125.
 - Route hose from the T-fitting to the 3/8" hose barb on the applicator furthest from the pumping unit. Take note of the length of hose used.
 - Cut the same hose length used to connect the furthest applicator and route and connect it to the applicator closest to the pumping unit. Coil the excess hose in the equipment room or bay.
 - **Air Tube**
 - Install the Tee Fitting provided at the output of the wheel cleaner air manifold with a short piece of tube, Figure 125.
 - Route hose from the T-fitting to the 3/8" tube push-to-connect fitting on the applicator furthest from the pumping unit. Take note of the length of tube used.
 - Cut the same tube length used to connect the furthest applicator and route and connect it to the applicator closest to the pumping unit. Coil the excess tube in the equipment room.



For proper distribution of solution from each applicator, hose and tubing length from the tee to each of the applicators must be of equal length +/- 2'.

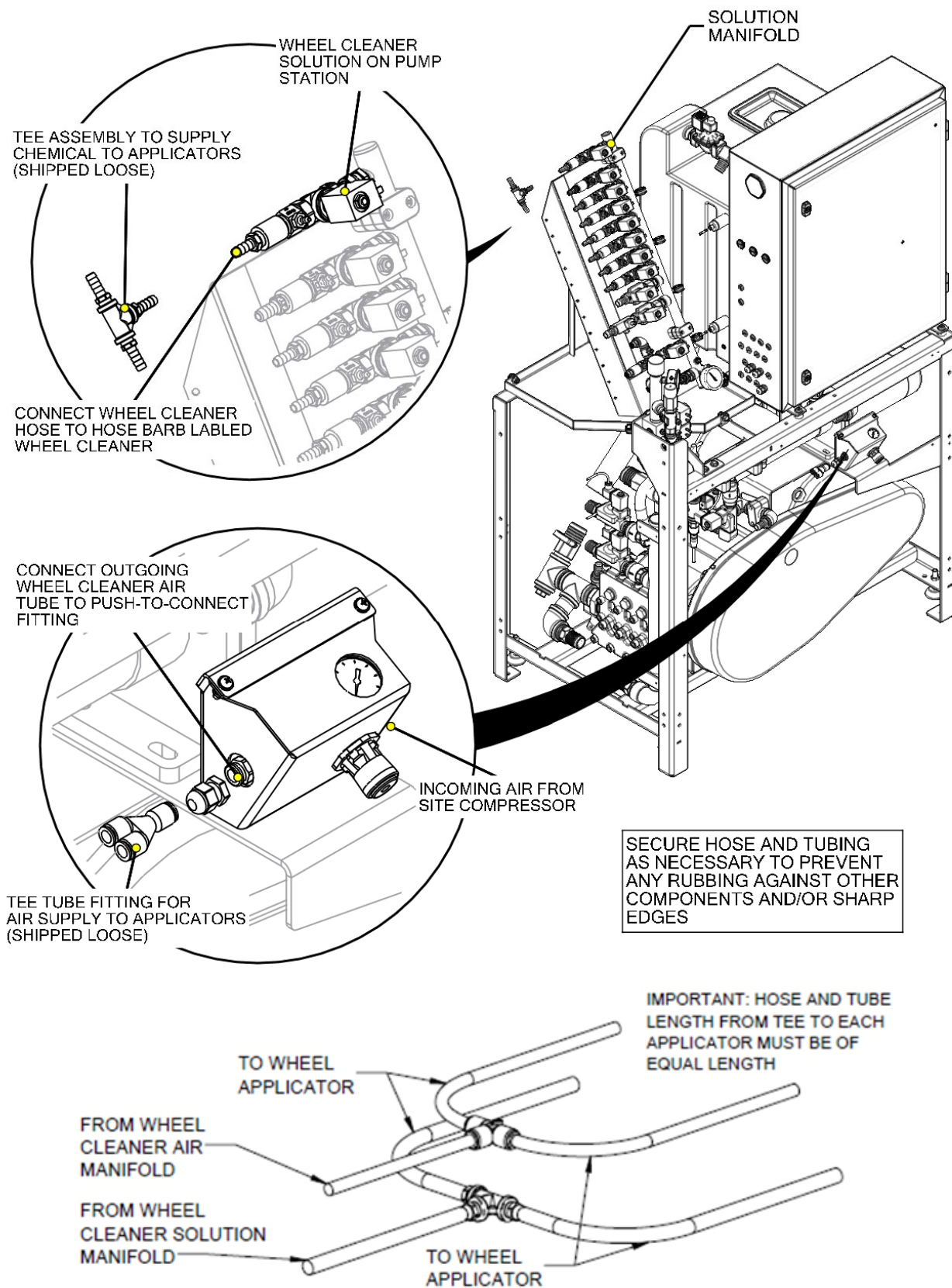


Figure 125 - Wheel Cleaner Solution and Air Supply Installation
7.5 Step 4 Connect Floor Pressure Switch (Optional)

- Route the wires from the Floor Pressure Switch in the wash bay to the node in the pump station electrical enclosure through the hole in the left side of the electrical enclosure. Connect to the location shown in Table 8 and as shown in the electrical schematic, Table 2.
 - NOTE: It may be necessary to extend the length of the floor switch cable. This can be done by using a 2-wire (14GA) cable, 2 butt connectors, 2 pieces of 0.25" diameter shrink tubing (one over each wire at the point of connection), and 1 piece of 0.38" diameter shrink tubing (over the cable at the point of connection).

Table 8 – Wheel Cleaner Floor Pressure Switch Connection

WHEEL CLEANER CONNECTION									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	CABLE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Wheel Cleaner Floor Pressure Switch	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	24 VAC NEUTRAL	Floor Pressure Switch	BLK	BAY CONTROL PANEL	23N18.2A
							RED		18X34.16

* Wire gauge sizes are recommended minimums only. This must be sized according to applicable building code.

7.6 High-Pressure Low Profile Side Cleaning Towers

The Side Cleaning Tower system includes side tower manifolds and fittings to connect them to the underbody manifold. The underbody manifold without side blasters must be ordered with the Side Cleaning Tower system.

7.6.1 Key Factors to Consider

- For best results, the Side Cleaning Tower system should be installed so the vehicle passes in front of them after the underbody manifold but before the entrance end of the path of travel of the wash spray arch.
- When installing the Side Cleaning Towers, the Side Cleaning Tower assemblies should be mounted outside the wash envelope so that they do not interfere with spray arch travel.
 - If the wash bay is narrow, the Side Cleaning Towers must be installed completely to the entrance side of the wash and the zone where the spray arch travels.
- Take note of floor heat lines prior to installing the manifold and the Side Cleaning Tower assemblies. Be sure to locate them so that the floor anchors do not interfere with the floor heat lines.

7.6.2 Key Installation Steps

- Determine cleaning tower manifold location and mount it to the wash bay floor.
- Modify the underbody manifold and connect side cleaning tower manifolds.

7.6.3 Special Tools

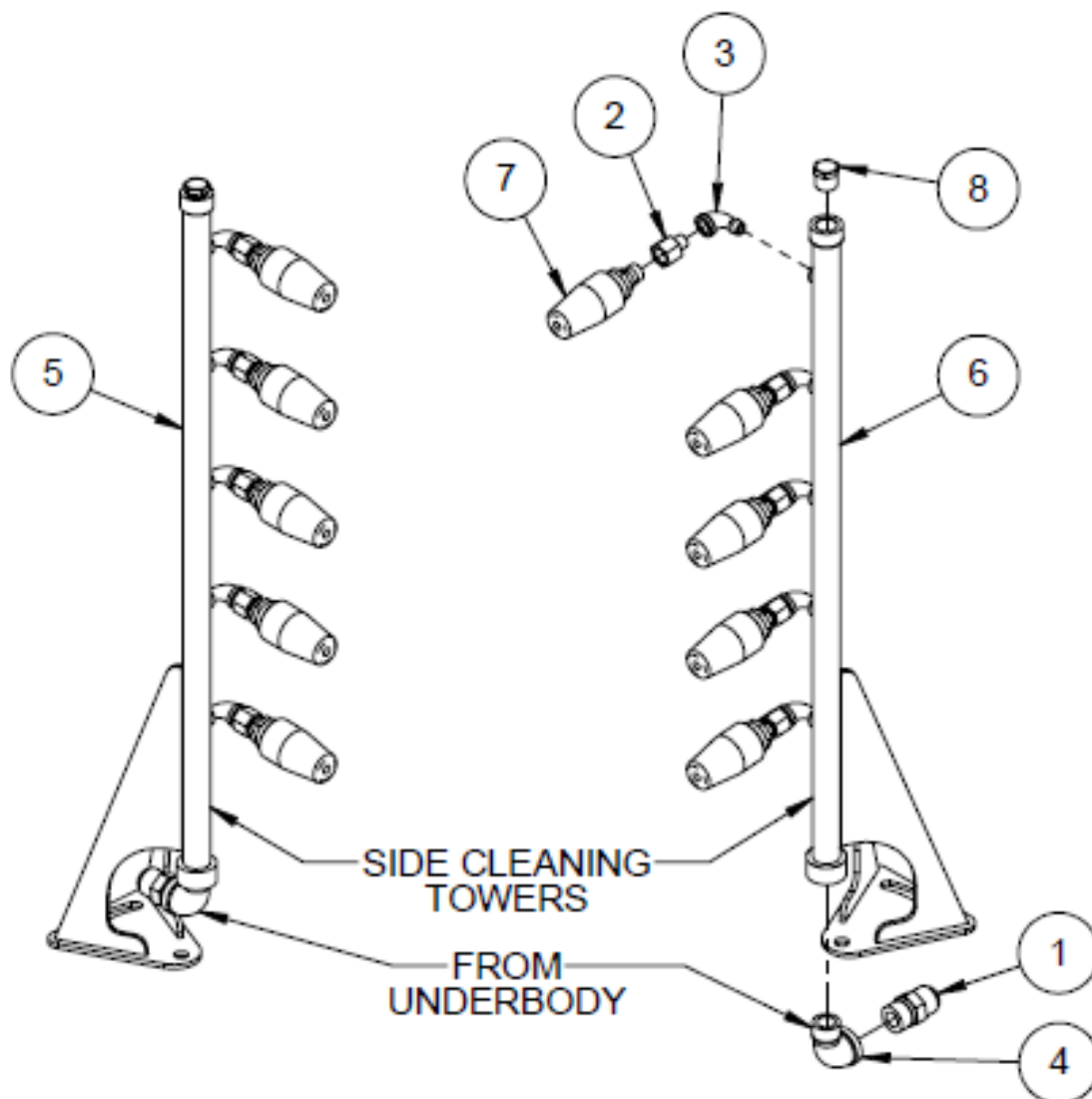
- Hammer drill for anchoring side cleaning towers to concrete if applicable.

7.6.4 PDQ Supplied Parts

- Two assembled side cleaning tower manifolds
- Stainless steel floor anchors
- Hardware to connect to the underbody manifold

7.6.5 Site Supplied Parts

- $\frac{3}{4}$ " hose rated for 2000 psi (138 bar) minimum pressure with #12 female JIC swivel fittings to connect each tower to the ends of the underbody manifold.
 - Typically, 2 hoses are required each 3 feet (914 mm) to 6 feet (1829 mm) long depending on location of tower installation.



ITEM	PART #	DESCRIPTION
1	44568	ADAPTER,#12JIC,37MX3/4MPT,Z-PLT
2	67914-B	ADAPTER,3/8NPTx1/4NPT,BRS
3	67487-4S	ELBOW,STREET,1/4NPT,90DEG,SC40,SST
4	67493-4S	ELBOW,STREET,3/4NPT,90DEG,SC40,SST
5	03220350-LH	MANIFOLD,WELDMENT,TOWER,LOWPRO,LH
6	03220350-RH	MANIFOLD,WELDMENT,TOWER,LOWPRO,RH
7	03230077	NOZZLE,ROTATING,20DEG-6.5,BRASS
8	67653-S	PLUG,1/2NPT,HEX-HD,SST

Figure 126 – High-pressure Lower Profile Side Cleaning Towers

7.6 Step 1 Modify the Underbody Manifold

Prior to installing the High-Pressure Underbody Manifold, the following modifications must be made using the parts supplied for proper interface with the Side Cleaning Tower assemblies. In addition, refer to 6.2 Step 1 for instructions on feed side and mounting location for the underbody manifold.

- Install the supplied fittings to the feed end of the manifold as shown in Figure 127.
- Install the supplied adapter, bushing, and coupling to the end opposite the feed end of the manifold. See Figure 127. Install the tee and nipple between the check valve and hose fitting assembly on the underbody manifold. Install the bushing and adapter.
- Do not install nozzles or plugs until startup after the system has been flushed. Once the system is flushed after startup, install the supplied nozzles in the underbody manifold.

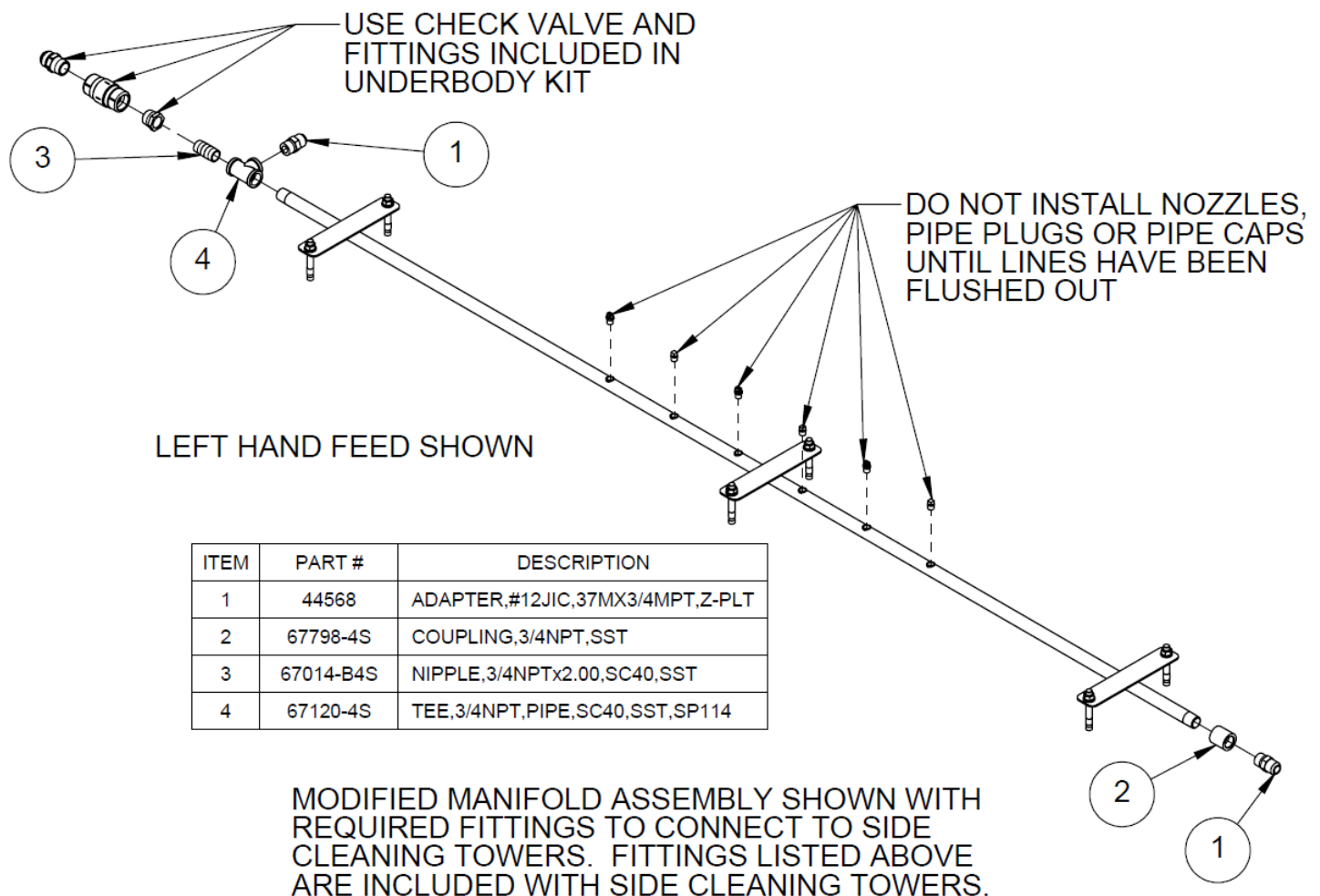
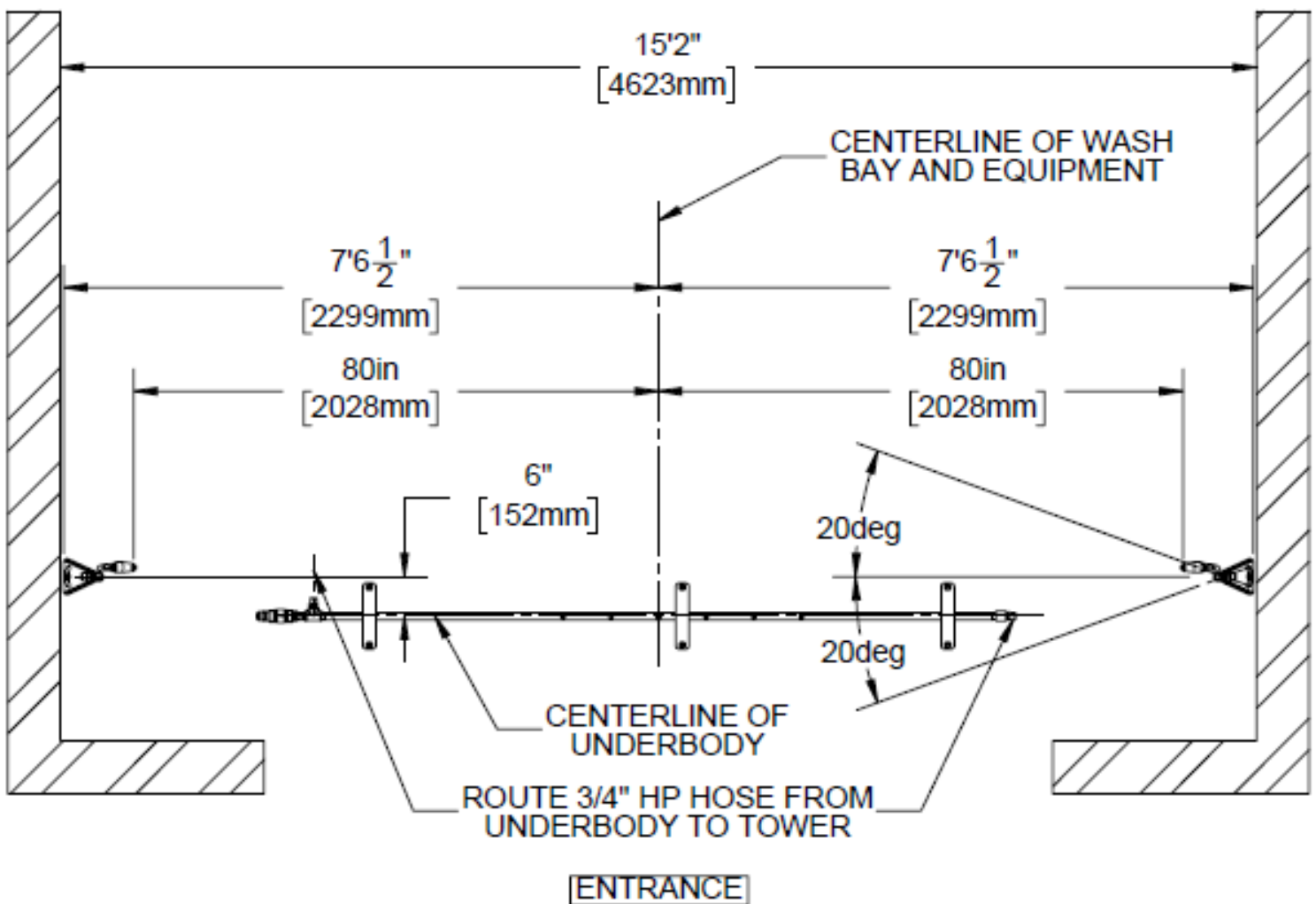


Figure 127 – High-Pressure Underbody Manifold Modified for Side Cleaning Towers

7.6 Step 2 Locate and Mount the Side Cleaning Towers

- Side Cleaning Towers are to be mounted close to the entrance side of the wash such that the side arch of the wash will pass in front of the towers, the towers must be located far enough to the outside of the wash centerline to ensure the side arch does not impact the towers. See Figure 128 for the minimum bay dimensions and location dimensions for sites where the towers must be located in this situation.
- For sites where the Side Cleaning Towers may be mounted far enough to the entrance side of the wash where the side arch of the wash does not pass in front of the towers, the Side Cleaning Towers may be installed closer to the wash centerline. See Figure 129 for this situation.
- Install the towers and mount all items to the floor using anchor bolts provided.

**Figure 128 - Side Cleaning Tower Location - INSIDE WASH ENVELOPE**

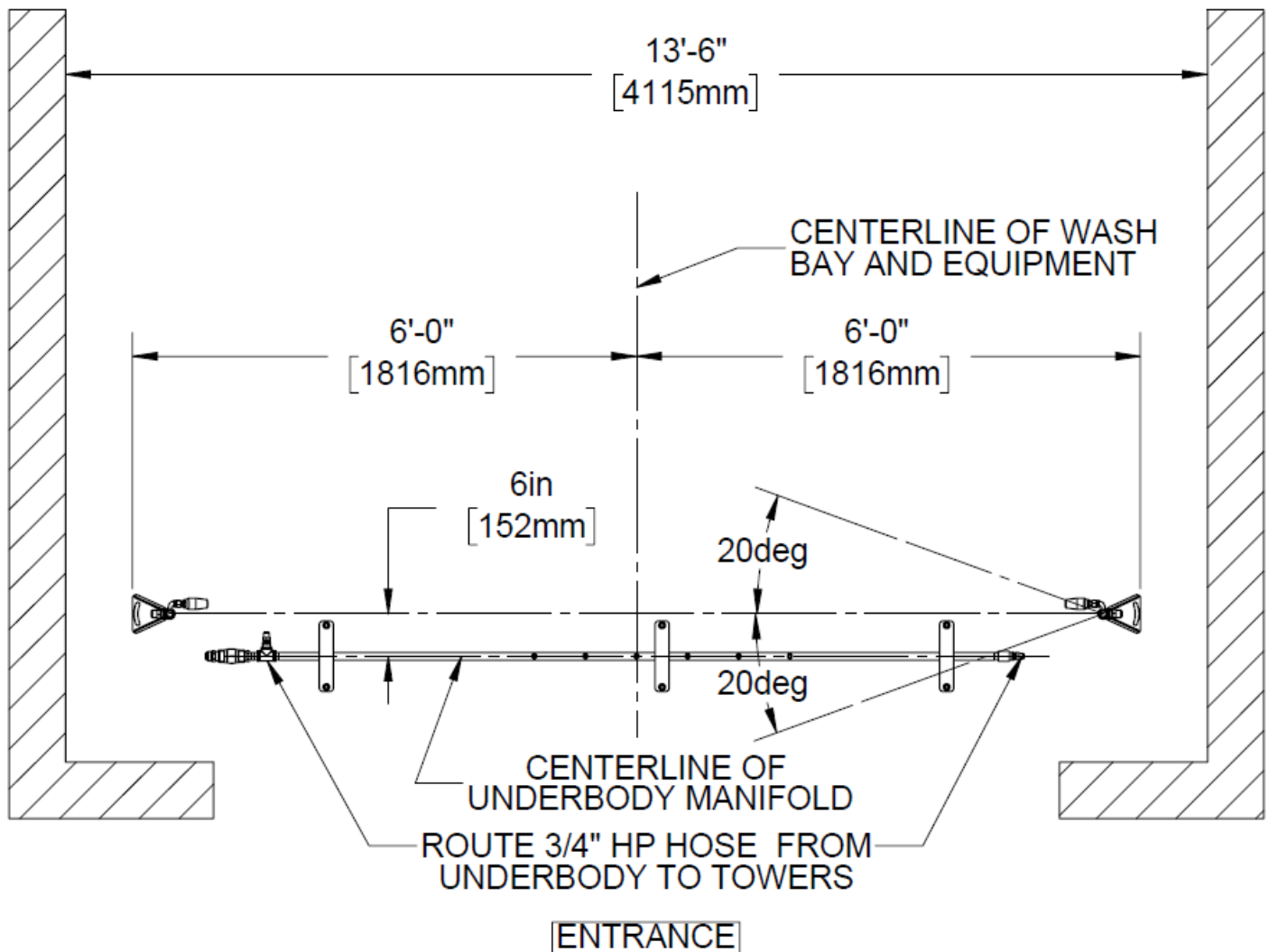


Figure 129 - Side Cleaning Tower Location – ENTRANCE SIDE OF WASH ENVELOPE

7.6 Step 3 Install the High-pressure Hoses

- Install 3/4" high-pressure hoses from the underbody manifold on each side to the appropriate tower, Figure 128 and Figure 129.
- After water is applied to the system during machine startup, remove tower plugs then flush the manifolds by activating the undercarriage service.
- Re-install plugs, Figure 126.

7.7 Ultrasonic Drive-Through Underbody Activation Sensor Installation

The Ultrasonic Drive-Through Underbody Activation system is a system that may be ordered for wall mounting or the optional stands may be used where wall mounting is not feasible. The sensor assemblies are also available with optional heaters for cold climates. These assemblies are typically used for sites where door controls are not used, and the door sensors are therefore not available to use for activating the underbody manifold.

7.7.1 Key Factors to Consider

- Determine the mounting position based on the wash bay situation. If bay is wider than 18 feet or has window where sensors need to be, site will need to employ stands for mounting.
- Take note of floor heat lines prior to installing stand mounted ultrasonic systems. Be sure to locate the stands so that the floor anchors do not interfere with the floor heat lines.

7.7.2 Key Installation Steps

- Determine the ultrasonic sensor mounting location and mount the assemblies.
- Route and terminate ultrasonic sensor wiring.

7.7.3 Special Tools

- Hammer drill for anchoring sensor mounting brackets to concrete and 3/8” concrete anchors if applicable.

7.7.4 PDQ Supplied Parts

- The underbody activation kits are available in the following assemblies.
 - Underbody Ultrasonic Activation, Wall Mountable, without Heat: PDQ Part No. 11410033
 - Underbody Ultrasonic Activation, Wall Mountable, with Heat: PDQ Part No. 11410034
 - Underbody Ultrasonic Activation, with Stand Mounts, without Heat: PDQ Part No. 11410035
 - Underbody Ultrasonic Activation, with Stand Mounts, with Heat: PDQ Part No. 11410036

7.7 Step 1 Determine the Ultrasonic Sensor Mounting Location and Mount Brackets

NOTE:	When determining the best placement for the Ultrasonic Underbody Activation Sensors, keep in mind that excessive water spray from the Undercarriage, Gatling Guns, or Side Combo Cleaner Towers may interfere with sensors.
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- Figure 130 shows the preferred mounting positions for the wall mounted ultrasonic sensor assemblies.
 - Measure and mark the wash bay walls to establish the sensor locations.
 - Use the sensor mounting bracket as a template to mark the center locations on the wash bay walls for the anchors.
 - Drill holes into the wall for the wall anchors.
 - Mount the sensor assemblies to the walls while taking note of the direction of the strain relief for the sensor cable. Be sure this is pointed in the best direction to accommodate the bay wiring. Ensure the sensor face protrudes from the cover as shown in Figure 130.
 - Align the sensors so that they point towards each other. This requires that the sensor on the left side of the bay be pointed upward and the sensor on the right side of the bay be pointed downward. Loosen the screws that pass through the sensor cover to allow them to be adjusted. Retighten after aligning.

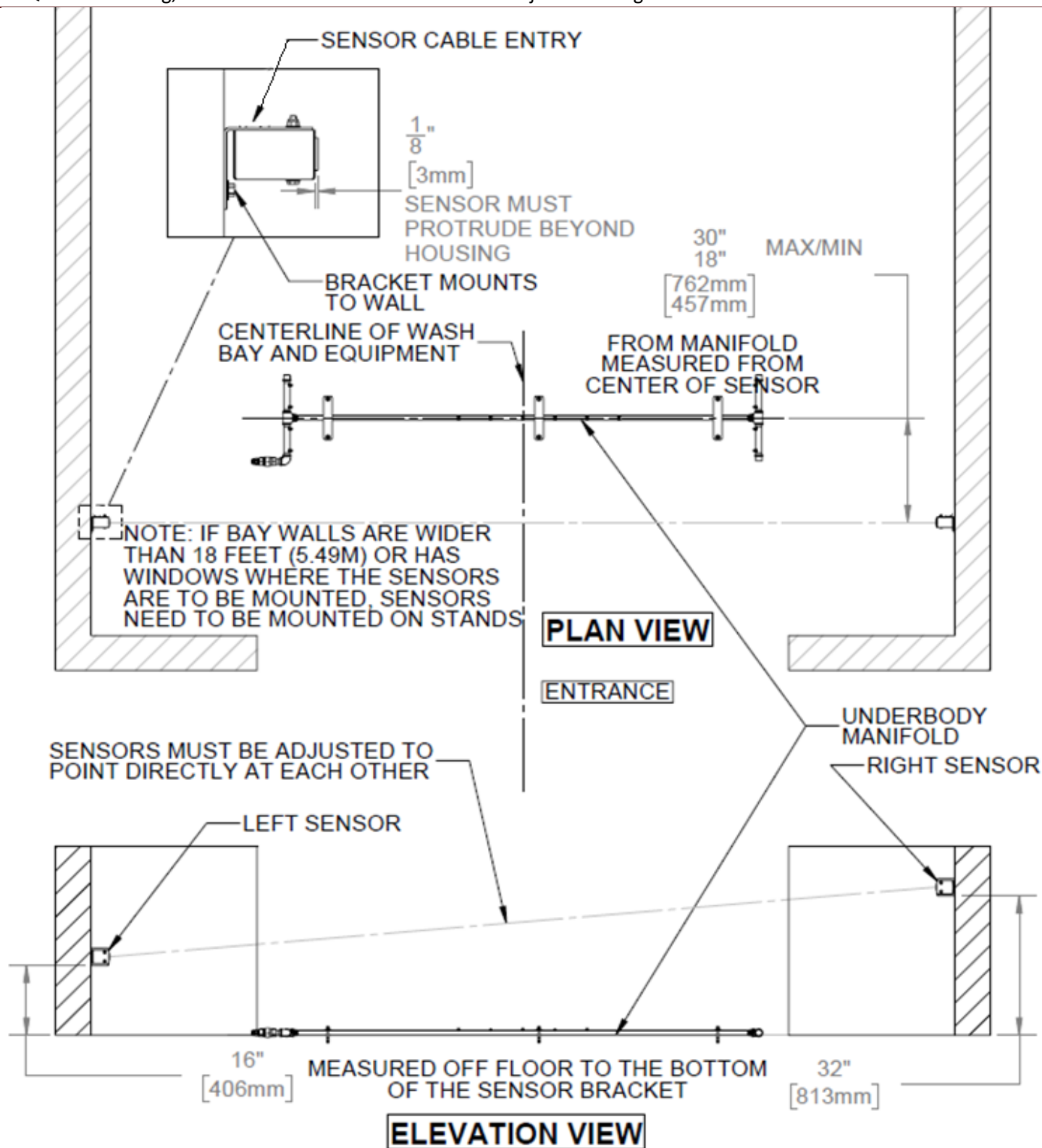


Figure 130 - Wall Mounted Ultrasonic Underbody Activation Sensor Location

- Figure 131 shows the preferred mounting positions for the stand mounted ultrasonic sensor assemblies.

- Measure and mark the wash bay floor to establish the sensor locations. Be sure to consider the location of floor heat lines when establishing the stand locations. Be sure the floor anchors do not interfere with the floor heat lines.
- Use the sensor mounting stand as a template to mark the center locations on the wash bay floor for the anchors.
- The stand mounted assemblies are provided with (2) 3/8" x 1 7/8" long sleeve anchors. If these anchors are not appropriate for the floor material, the site is responsible for providing appropriate anchors.
- Drill holes into the floor for the anchors.
- Mount the sensor assemblies to the floor while taking note of the direction of the strain relief for the sensor cable. Be sure this is pointed downward. Ensure the sensor face protrudes from the cover as shown in Figure 131.
- Adjust the position of one of the sensor assemblies (left-hand side as shown in Figure 131) so that it is in the lowest set of upper holes.
- Align the sensors so that they point towards each other. This requires that the sensor on the left side of the bay be pointed upward and the sensor on the right side of the bay be pointed downward. Loosen the screws that pass through the sensor cover to allow them to be adjusted. Retighten after aligning.

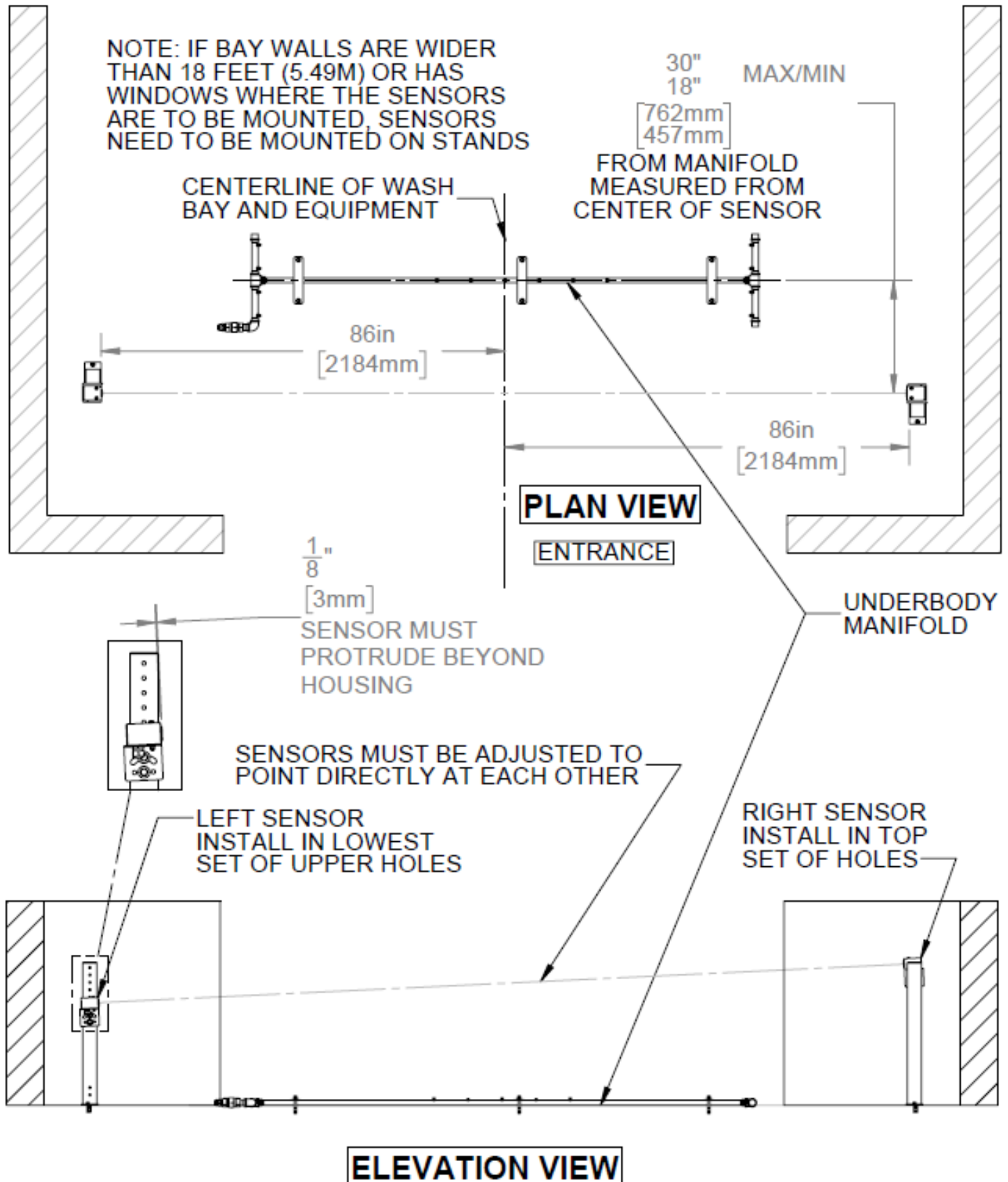


Figure 131 - Stand Mounted Ultrasonic Underbody Activation Sensor Location

7.7 Step 2 Route and Terminate Ultrasonic Sensor Wiring

- Ensure the sensor cable is routed through the conduit/strain-relief opening of the ultrasonic bracket/housing.
- Route the cable to the Bay Control Panel per applicable electrical code (which may require it to be contained within a conduit, for example) and terminate per **Error! Reference source not found.** of the Field Wiring section of the overall machine Electrical Schematics set.
- The sensors are supplied with a 60 foot (18.3m) long cable. If the cable is not long enough to reach the Bay Control Panel, the cable may be lengthened up to a maximum of 120 feet of total length. When doing this, the following process must be followed exactly to ensure proper function of the ultrasonic sensors. See Figure 132 for a diagram showing the process below.



WHEN ADDING CABLE LENGTH TO THE ULTRASONIC CABLE, ONLY THE EXACT SAME CABLE AS THAT WHICH IS USED FOR THE ORIGINAL ULTRASONIC MAY BE USED. FAILURE TO USE THE EXACT SAME CABLE WILL RESULT IN AN IMPEDENCE MISMATCH AND CAUSE REFLECTIONS FROM THE SPLICE LEADING TO INCORRECT SENSOR READINGS.

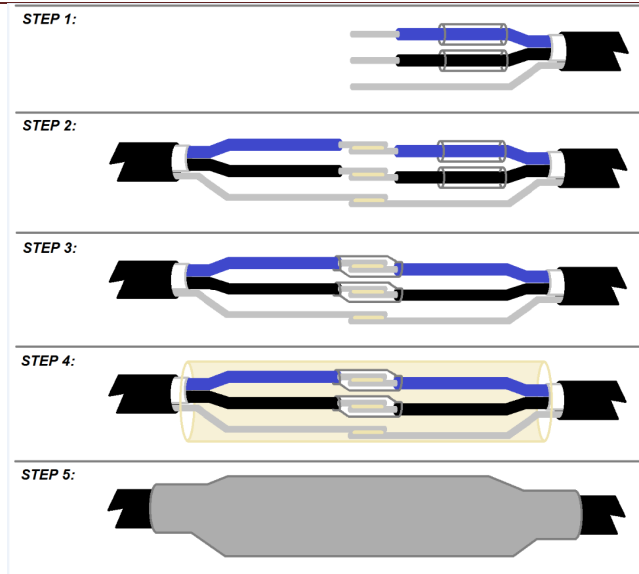


WHEN SPLICING WIRE TO THE ULTRASONIC CABLE, FOLLOW THE PROCESS BELOW TO ENSURE PROPER FUNCTION OF THE CABLE.



ADDING CABLE LENGTH TO THE ULTRASONIC SENSOR IS NEVER RECOMMENDED AS ULTRASONIC SENSOR PERFORMANCE WILL BE REDUCED – THIS SHOULD ONLY BE USED AS A FALLBACK MEASURE IN CASES WHERE THE BAY CONTROL PANEL COULD NOT BE SUITABLY LOCATED NEAR THE SENSORS.

- Strip the cable and prepare heat-shrink tubing that will eventually cover the black and blue wire connections.
- Solder the black, blue, and shield wire connections individually between the sensor cable and the added cable.
- Install the heat-shrink over the black and blue connections.
- Wrap a foil tape around the entire splice area (copper type is preferred, but HVAC aluminum foil tape is acceptable).
- Install an overall heat-shrink tubing to contain and protect the entire splice.
- If the heat option for the sensors is ordered, route and connect heaters using site-supplied wiring methods to the Bay Control Panel. Refer to Sheet F-7 of the Field Wiring section of the overall machine Electrical Schematics set.

**Figure 132 - Ultrasonic Cable Splicing Process Steps**

7.8 Photo-eye Drive Through Underbody Sensor Installation

The Photo-eye Drive Through Underbody Activation system is a system that may be ordered for wall mounting. The sensor assemblies are also available with optional heaters for cold climates. These assemblies are typically used for sites where door controls are not used, and the door sensors are therefore not available to use for activating the underbody manifold.

7.8.1 Key Factors to Consider

- Determine the mounting position based on the wash bay situation.

7.8.2 Key Installation Steps

- Determine the Photo-eye sensor mounting location and mount the assemblies.
- Route and terminate Photo-eye sensor wiring.

7.8.3 Special Tools

- Hammer drill for anchoring sensor mounting brackets to concrete if applicable.

7.8.4 PDQ Supplied Parts

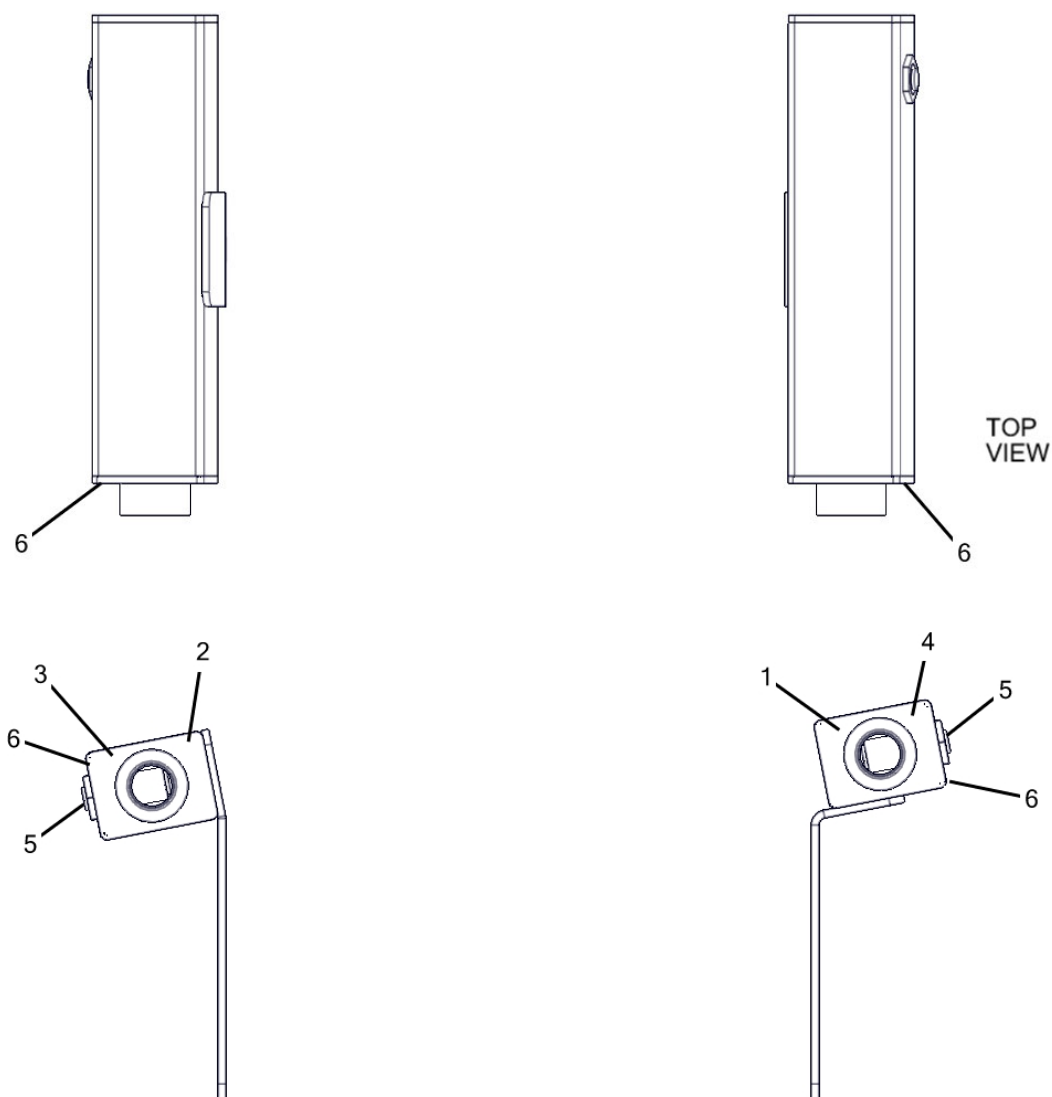
- The underbody activation kits are available in the following assemblies.
 - Underbody Activation Kit – Photo-eye, PDQ Part No. 09160038
 - Underbody Photo-eye Heat, PDQ Part No. 09160039

7.8 Step 1 Determine the Photo-eye Sensor Mounting Location and Mount Housings

NOTE:

Be aware of the direction of sunshine when installing photo-eyes. Orient the eyes at an angle as shown but avoid direct sunlight from falling on the receiving photo-eye to avoid inconsistent photo-eye performance.

- The mounting position of the sensors is important to the proper function of the system. Determine this position based on the wash bay situation.
- Figure 133 and Figure 134 show the photo-eye sensor assemblies and the preferred mounting positions for securing them to the wash bay walls.
- Measure and mark the wash bay wall to establish the sensor locations.
- Use the sensor housings (P/N 06050163 and 06050164) as a template to mark the center locations on the wash bay walls for the site supplied anchors. The housings are designed to accommodate the use of 3/8" (M10) wall anchors.
- Assemble the sensors into the housings as shown in Figure 133.
- Mount the housings to the wall using site supplied wall anchors. Always mount the transmitting photo-eye assembly (gray cable) so that it is in the low position pointing upward.



BOM ID	PartNo	Qty	Description
1	11410045	1	SENSOR,PHOTOEYE,WALL-MNT,P/S,SVCE-ACTVTR
2	11410047	1	SENSOR,PHOTOEYE,WALL-MNT,D/S,SVCE-ACTVTR
3	06050163	1	HOUSING,SNSR,PHOTOEYE,D/S,SVCE-ACTVTR,LW
4	06050164	1	HOUSING,SNSR,PHOTOEYE,P/S,SVCE-ACTVTR,LW
5	93176	2	PHOTO-EYE,THRU-BEAM,SET,14MM,CARLO
6	M690000	2	CAP,1-1/2X2,TUBE,UHMW

PHOTO ELECTRIC EYE IDENTIFICATION:
TRANSMITTER CABLE HAS A GREY JACKET,
RECEIVER HAS A BLACK JACKET

Figure 133 – Underbody Activation Photo-eye Assembly

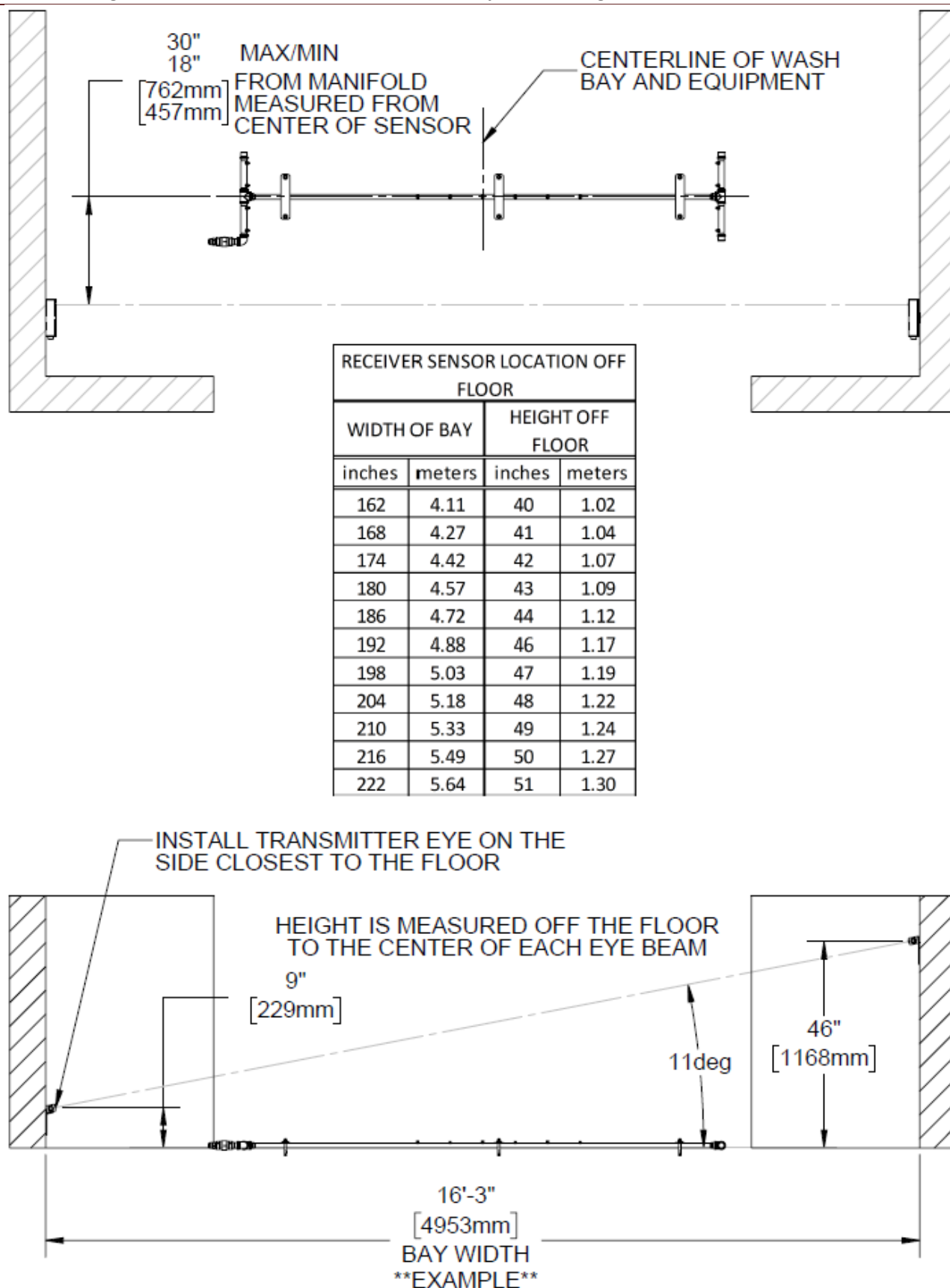


Figure 134 – Photo-eye Underbody Activation Sensor Location

7.8 Step 2 Install the Photo-eye Control Box[es]

- The Photo-eye kits for entrance door, underbody activation, and/or exit door sensing each include a control enclosure containing a photo-eye amplifier. This enclosure must be mounted within range of the photo-eye cables, the photo-eye cables are 49.2 ft (15m) long. Typically, the enclosure will be mounted on the inside wall of the wash bay and on the side of the wash bay nearest the Bay Control Panel.
- The photo-eye amplifier enclosure has (4) pre-drilled 5/16" (11mm) diameter mounting holes. The enclosure can be used as a template to mark the hole locations on the wall. Drill holes to the correct size and depth for the site-supplied wall anchors used.
- Attach the photo-eye enclosure to the wall using site-supplied anchors.

7.8 Step 3 Wire the Photo-eyes

- Route each photo-eye cable to the amplifier enclosure per applicable electrical code (which may require it to be contained within a conduit, for example).
- To wire the photo-eye cables to the relay base, the amplifier must first be removed from the base.
- Site-supplied wiring and wiring methods must be used to connect the amplifier to the Bay Control Panel.
- Connect and terminate all photo-eye wiring per Sheet F-7 of the Field Wiring section of the overall machine Electrical Schematics set.

8 Bay Equipment Installation

This section provides instructions for installing the support equipment needed to operate the wash. This includes the standard bay box enclosure, side ultrasonic sensors, and system stop button as well as the optional door controls and temperature sensors and the optional Long Vehicle Loading System.

8.1 Key Factors to Consider**Bay Box**

- The Bay Box should be located inside in an area where it can easily interface with other items such as the pump station, bay sign, side measurement ultrasonic sensors, and optional items like the door controls, entrance sign and countdown timer.
- The Bay Box can be located in the wash bay or equipment room.
- If the Bay box is located in the wash bay area be aware of the main E-chain movement, bridge movement and the arch rotation.
- The Bay Box must connect to the E-chain junction box using a site supplied CAT-5e communication cable.
- The Bay Box will need to be easily accessed for service.

Ultrasonic Sensors

- If the wall material does not support mounting the sensor assemblies, then the stand mounted sensors must be used.
- If the walls are positioned such that the distance between the center of the trolley rails of the bridge and the wall is greater than 98.4 in (2500mm), then the stand mounted sensors must be used. For proper function, the ultrasonic sensors cannot be mounted greater than 98.4 in (2500mm) from the center of the trolley rails.

System Stop Button

- The system stop button is used to stop all machine motion in the event of a problem during operation.

- The system stop button is intended to be used by any person that may be in the vicinity of the wash while it is operating. This may include service technicians, wash users/consumers, or other bystanders.
- The system stop button must be located, depending on site conditions, in an accessible location to those who will need to use it.

8.2 Key Installation Steps

- Mount the Bay Box to the wall.
- Terminate wiring between the bay box and the other enclosures.
- Mount the side ultrasonic sensors to the bay walls or install using the floor mounted stands (optional).
- Terminate wires for the side ultrasonic sensors at the Bay Box.
- Mount the system stop button to the bay wall.
- Terminate wiring between the system stop button and pump station control box.
- Terminate communications cables at the hub board in the Bay Box.
- (Optional) Install and terminate the temperature sensors.
- (Optional) Install and terminate door control equipment.
- (Optional) Install Long Vehicle Loading System.

8.3 Special Tools

- Drill for mounting components to the wash bay walls or floor (dependent on wall material).

8.4 PDQ Supplied Parts

- Bay Box (Standard)
- Side Ultrasonic Sensors (Standard)

8.5 Site Supplied Parts

- Mounting fasteners for wall and floor mounted components such as the bay box, system stop button box, Precision Loading junction box, and door controls
- Conduit fittings
- Cable & wire

8.6 Install the Bay Box

8.6 Step 1 Mount the Bay Box to the Wall

- The bay box is to be mounted to the wall with the side with the decal shown in Figure 135 facing up.
- The Bay Box enclosure has 4 pre-drilled mounting plates. The enclosure can be used as a template to mark the hole locations on the wall.
- Drill holes to the correct size and depth according to the requirements for the site supplied fasteners used.
- Attach the Bay Box enclosure to the wall using site supplied fasteners as illustrated in Figure 136.

NOTICE	AVIS	02240107 rev00
Do not drill holes in top of enclosure; doing so will void warranty.	Ne percez pas de trous dans le haut du boîtier; cela annulerait la garantie.	

Figure 135 - Bay Box Top Decal

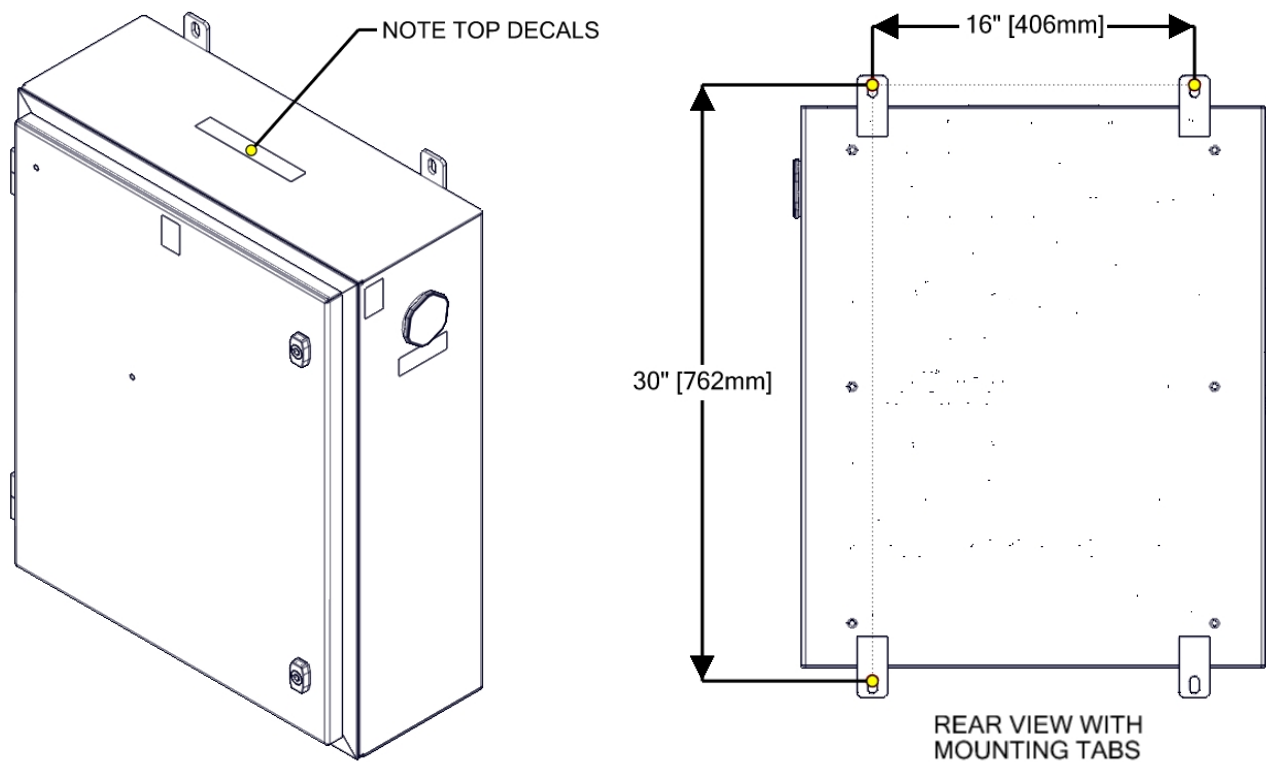


Figure 136 - Bay Box Mounting

8.6 Step 2 Bay Control Panel Wire Terminations



POWER SOURCES – THIS PRODUCT SHALL BE OPERATED ONLY FROM THE TYPE OF SOURCE INDICATED ON THE MANUFACTURER’S IDENTIFICATION LABEL. INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES, REGULATIONS, AND/OR SIMILAR DIRECTIVES.




WARNING –LOCKOUT/TAGOUT THE UPSTREAM DISCONNECTING MEANS PRIOR TO TERMINATING ANY ELECTRICAL CONNECTIONS DURING INSTALLATION.



DO NOT DRILL HOLES IN THE TOP OF THE BAY CONTROL PANEL, DOING SO WILL VOID THE WARRANTY.

Install circuits to/from and terminate cables/wires in the Bay Control Panel as specified on the applicable sheets of the Field Wiring section of the overall machine Electrical Schematics set.



Power and data circuits shall never be installed in shared raceways, conduits, etc. unless specifically required. For example, 24V power and RS-485 data circuits shall be run in separate conduits, even if they begin and end at the same locations/enclosures/devices.

Some circuits included in the below list may also be described in other sections of this manual.

- 24VAC Power Distribution – NOTE: The following three circuits must enter/exit the Bay Control Panel on the upper left side, as indicated in the diagram below, no other circuits shall be routed in this area, and these circuits shall not be routed through any other internal area of the Bay Control Panel:
 - 24VAC power / system-stop from Pump Control Panel – Sheet F-4
 - 24VAC power / system-stop to Bridge Control Power Junction Box – Sheet F-4
 - 24VAC power / system-stop to Accessory Node – Sheet F-4
- Ethernet communications:
 - Machine network to Pump Control Panel – Sheet F-4
 - Machine network to Bridge Control Power Junction Box – Sheet F-4
 - Machine network to Wash Activation Panel – Sheet F-4
 - Machine network to Accessory Node Panel – Sheet F-4
 - Site network from site router/switch/gateway/etc. – Sheet F-9
 - Site network to Access/PC – Sheet F-9
- RS-485 communications:
 - RS-485 to BayGlow isolator – Sheet F-3
 - RS-485 to Bay Sign (all versions) – Sheet F-5
 - RS-485 to Advanced Confirmation Sign – Sheet F-5
 - RS-485 to Deluxe Count-Down Timer – Sheet F-6
- Audio connection:
 - Audio to Bay Sign (all versions) – Sheet F-5
- Sensor connections:
 - Bay temperature sensor – Sheet F-7
 - Outside temperature sensor – Sheet F-7
 - Side-measure ultrasonic sensors – Sheet F-9
 - Underbody ultrasonic sensors – Sheet F-9
- Other connections:
 - 12VDC to BayGlow isolator – Sheet F-3
 - 24VAC power to Wash Activation Panel – Sheet F-4
 - 24VAC power to Bay Sign (all versions) – Sheet F-5
 - 24VAC power to Advanced Confirmation Sign – Sheet F-5

- 24VAC power to Entrance Sign – Sheet F-6
- 24VAC power to Count-Down Timer (all versions) – Sheet F-6
- 24VAC signal to Basic Count-Down Timer – Sheet F-6
- 24VAC power to amplified photo-eyes (entrance, underbody, exit) – Sheet F-7
- 12VDC signal[s] from amplified photo-eyes (entrance, underbody, exit) – Sheet F-7
- 12VDC power to loading eyes (precision or long-vehicle) – Sheet F-8
- 12VDC signal[s] from loading eyes (precision or long-vehicle) – Sheet F-8
- 24VAC heater power to loading eyes – Sheet F-8
- 24VAC heater power to side-measure ultrasonic sensors – Sheet F-9
- 24VAC heater power to underbody ultrasonic sensors – Sheet F-9
- 12VDC signals from simple push-button activation panel – Sheet F-9
- 24VAC signal to secondary (entrance AND in-place) underbody valve – Sheet F-9
- Isolated door control outputs (entrance, exit) – Sheet F-10
- 24VAC signals to stand-alone dryers – Sheet F-10

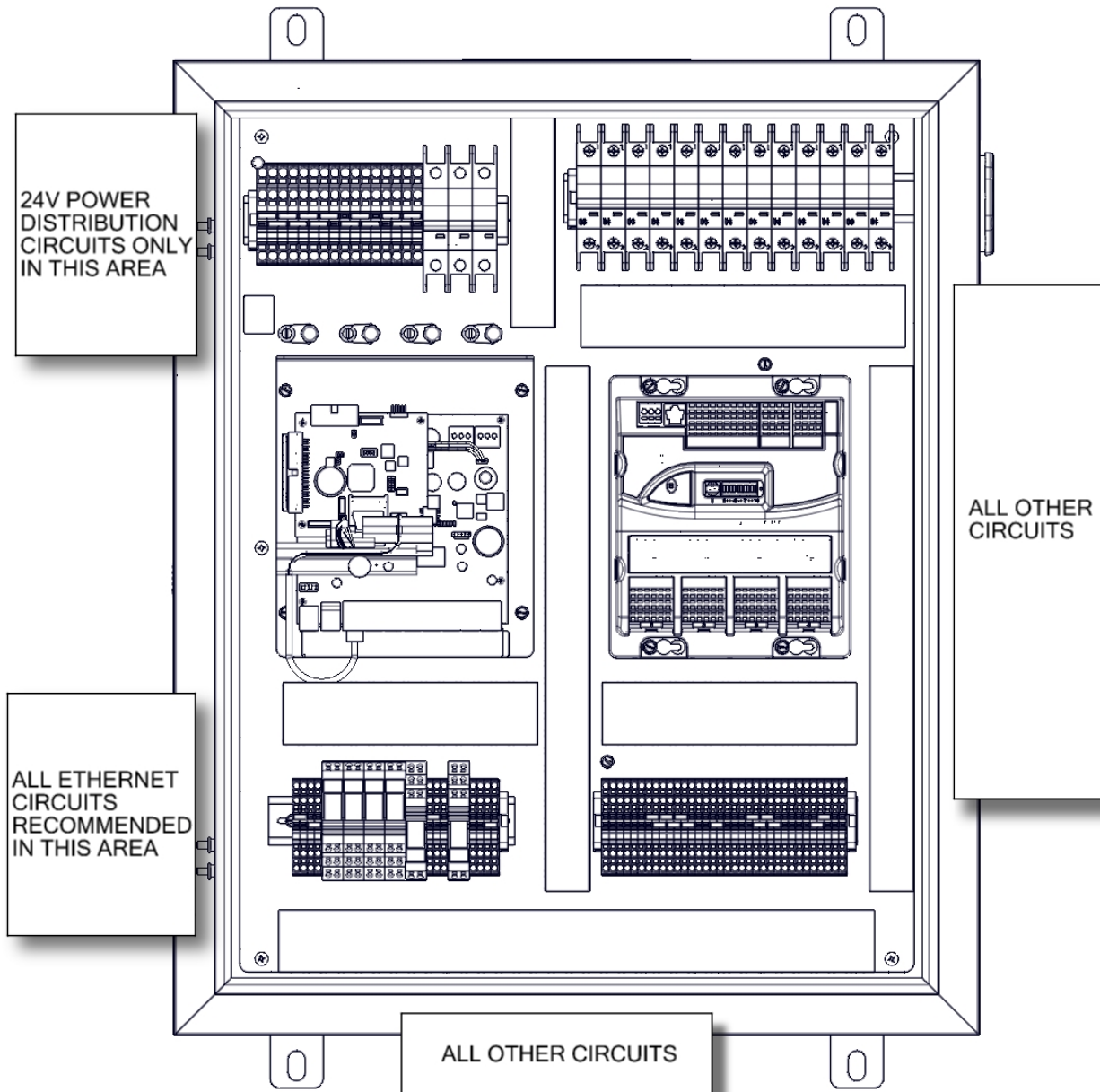


Figure 137 –Bay Box (Advanced Options Included)

8.7 Side Measurement Ultrasonic Sensor Installation

Side measurement ultrasonic sensors have two styles of mounting: Wall mounted, Figure 138, and Stand mounted Figure 139.

- The wall mounted sensor part numbers are 11410033 and 11410034. The 11410034 units includes the heat option, Figure 138.
- The stand mounted sensor part numbers are 11410035 and 11410036. The 11410036 units include the heat option, Figure 139.



THE SENSOR FACE MUST PROTRUDE A MINIMUM OF 1/8" (3.2mm) PAST THE SENSOR HOUSING WITHOUT TOUCHING THE HOUSING.

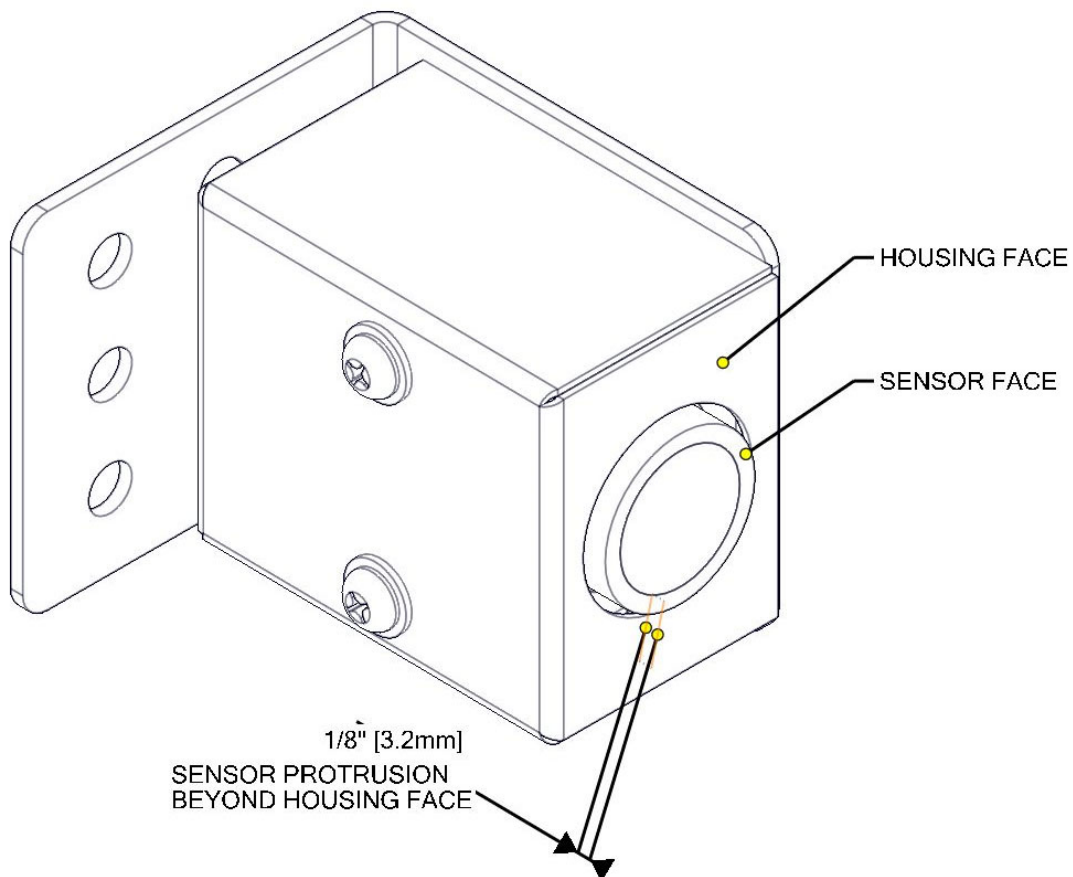


Figure 138 – Wall Mounted Ultrasonic Sensor assembly

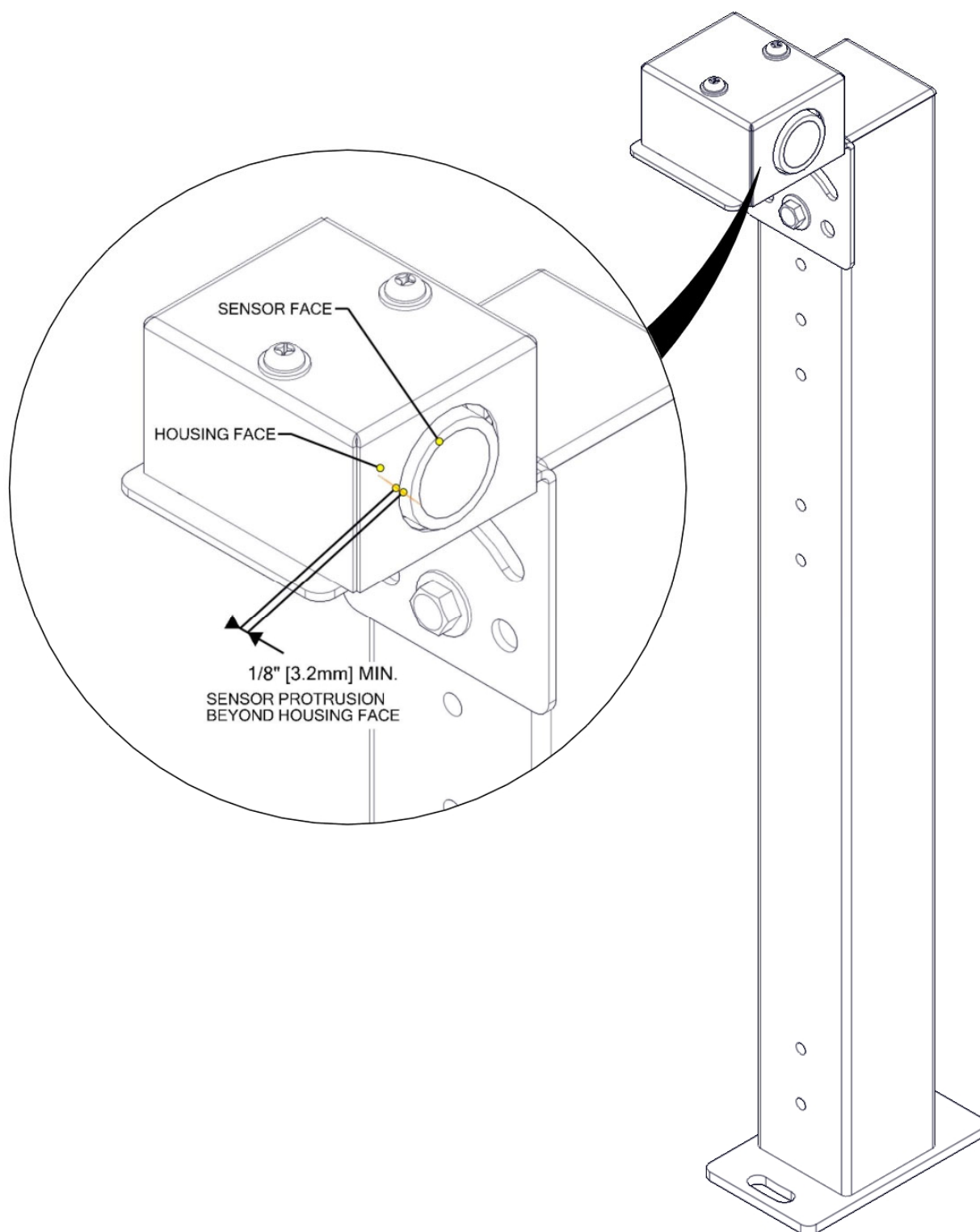


Figure 139 – Stand Mounted Ultrasonic Sensor Assembly

8.7 Step 1 Position and Mount the Ultrasonic Sensor Assemblies

- Wall mounted or stand mounted sensors are installed in the wash bay per the dimensions shown in Figure 140. Regardless of if the sensors are wall mounted or stand mounted, the location for mounting uses the same dimensions from the main rail centerline as shown in Figure 140.
- If using the wall mounting style for the sensors, the greatest distance across the width of the wash bay that the sensors can be from the of center the trolley rails is 98.4 in (2500mm). If this distance cannot be achieved because the walls are too widely spaced, stand mounted sensors must be used.
- The wall mounted sensors are attached to the wash bay by using site supplied fasteners. Stand mounted sensors require site supplied fasteners to attach stands to the wash bay floor.
- Use the sensor mounting bracket or stand as a template to mark the center locations on the wash bay walls or floor for the anchors.
- When mounting the sensor assemblies to the walls take note of the direction of the large hole for the sensor cable. Be sure this is pointed in the best direction to accommodate the bay wiring.
- When mounting the stand mounted sensors, take note of the direction of the large hole for the sensor cable. Be sure this is pointed downward.

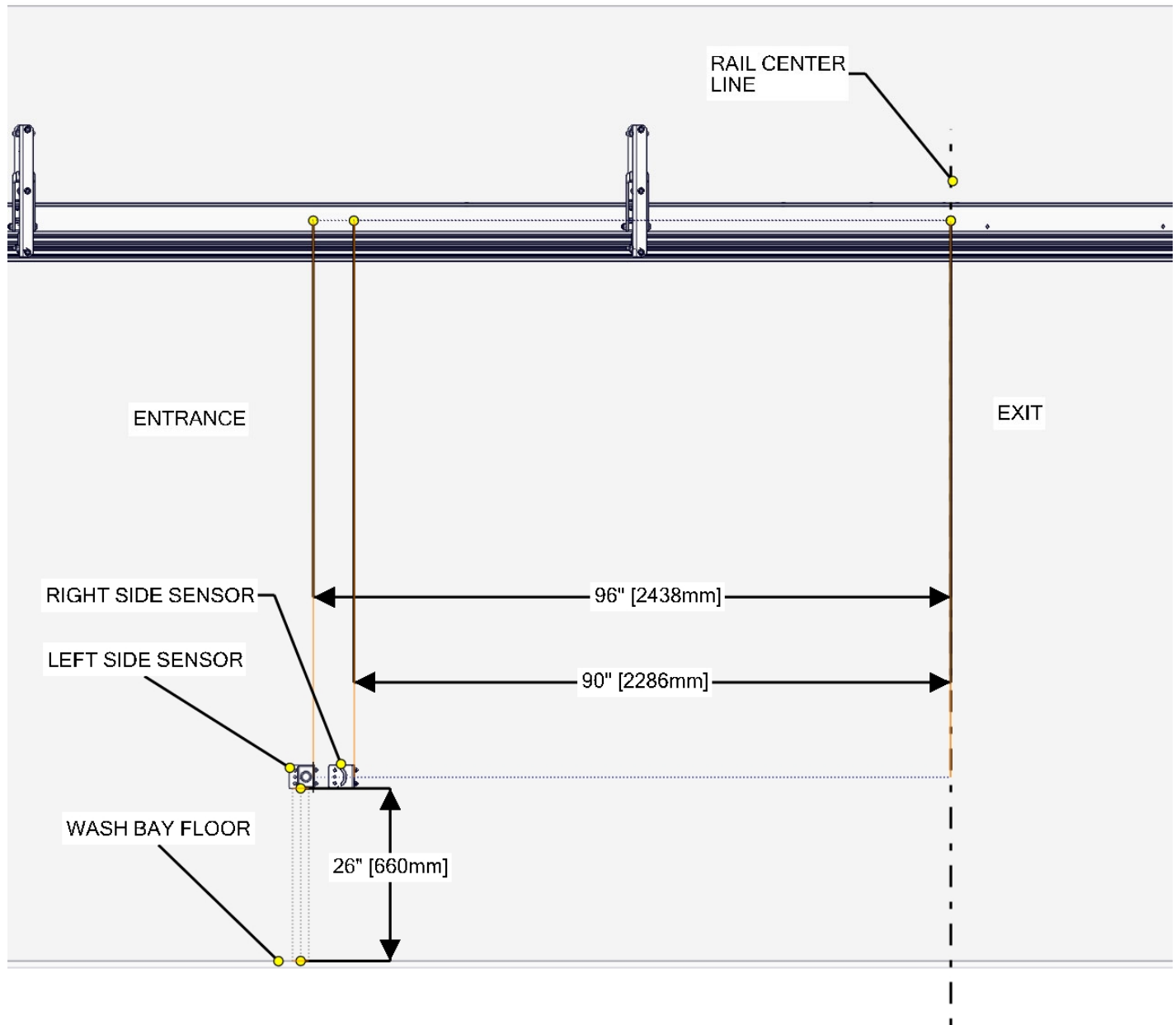


Figure 140 - Side Measurement Ultrasonic Locations

8.7 Step 2 Terminate the Ultrasonic Sensor Wires

Refer to 7.7 Step 2, Route and Terminate Ultrasonic Sensor Wiring.

8.8 System Stop Button Installation

The system stop button is intended to be used by any person that may be in the vicinity of the wash while it is operating. This may include, but is not limited to, service technicians, wash users/consumers, or other bystanders. The system stop button must be located, depending on site conditions, in an easily accessible location to those who will need to use it. One system stop button box is included as standard equipment with every wash. Additional units may be purchased as optional.

Two types of system stop boxes are supplied. For 400V 50 Hz sites, the systems stop box (PDQ Part No. 11010173) includes a reset button as shown in Figure 141. For all other markets, the system stop button (PDQ Part No. 11010113) includes a stop button only as shown in Figure 142.

8.8 Step 1 Mount the System Stop Button Enclosure

- Determine the best mounting location for the system stop button box for easy access while car wash is operating.
- The system stop button box is to be mounted to the wall in the orientation shown in Figure 137 or Figure 138 so that the words and symbols are oriented properly.
- The system stop button enclosure has 4 pre-drilled 1/4" (6mm) diameter mounting holes. The mounting hole pattern is shown in Figure 143. Use these dimensions to mark the mounting hole locations on the wash bay wall.
- Drill holes to the correct size and depth according to the requirements for the site supplied fasteners used.
- Remove the cover from the system stop box. Attach the system stop button box to the wall using site supplied fasteners.
- Terminate the system stop box wires and replace the cover after wiring is complete.

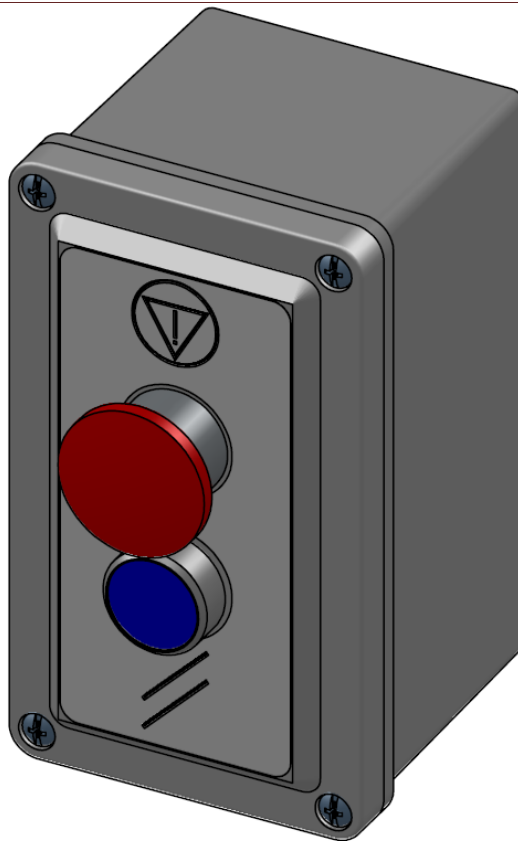


Figure 141 - System Stop Button with Reset



Figure 142 - System Stop Button without Reset

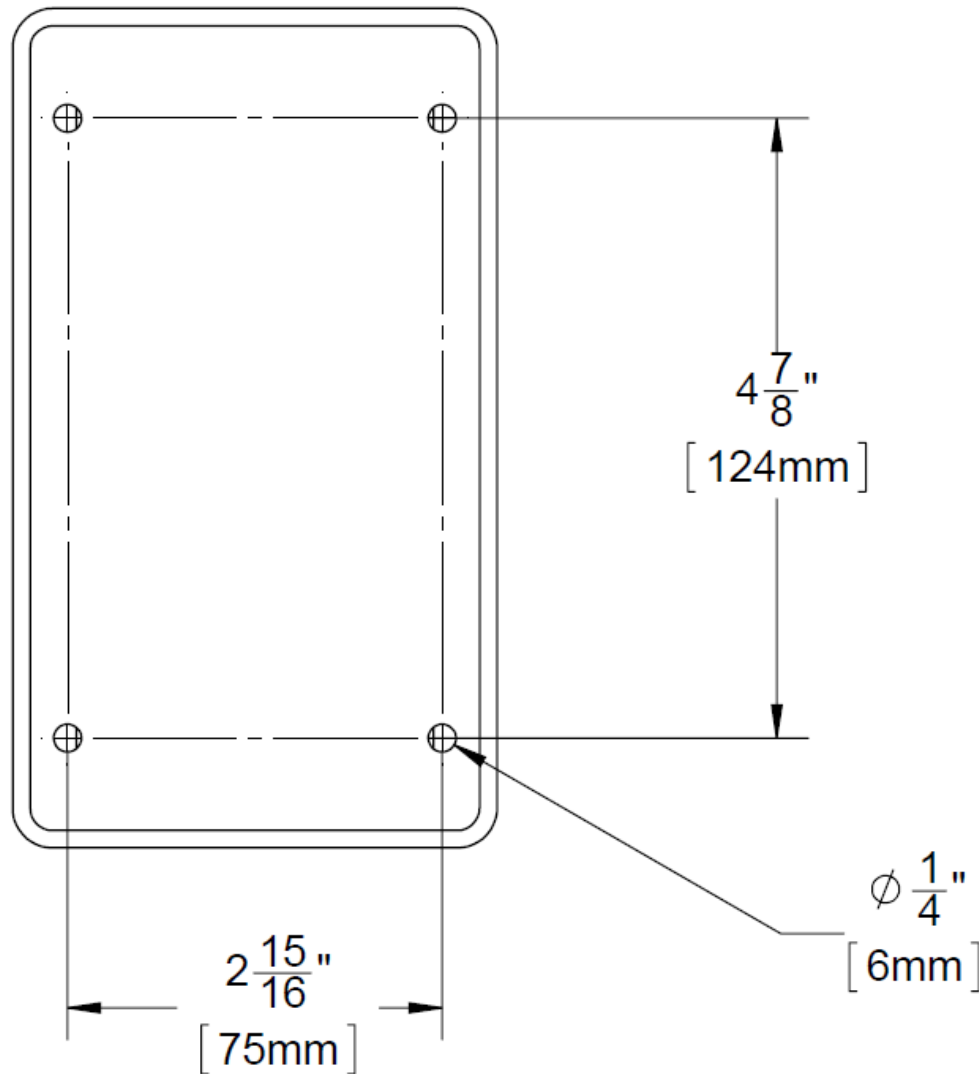


Figure 143 - System Stop Button Box Mounting Holes

8.8 Step 2 Terminate the System Stop Button Wires

Wire numbers coincide with numbers listed on the applicable schematic, Table 2.

For sites using the system stop button box with the reset button

- Terminate wires for the system stop box as described in section 8.6 Step 2. If more than two system stop boxes are used, wire the additional units to the last unit in the system using similar designations as System Stop No. 2.
- Terminal numbers are shown in Figure 144 for PDQ Part No. 11010173.

For sites using the system stop button box without the reset button

- Terminate wires for the system stop box as described in section 8.6 Step 2. If more than two system stop boxes are used, wire the additional units to the last unit in the system using similar designations as System Stop No. 2.
- Terminal numbers are shown in Figure 145 for PDQ Part No. 11010113.

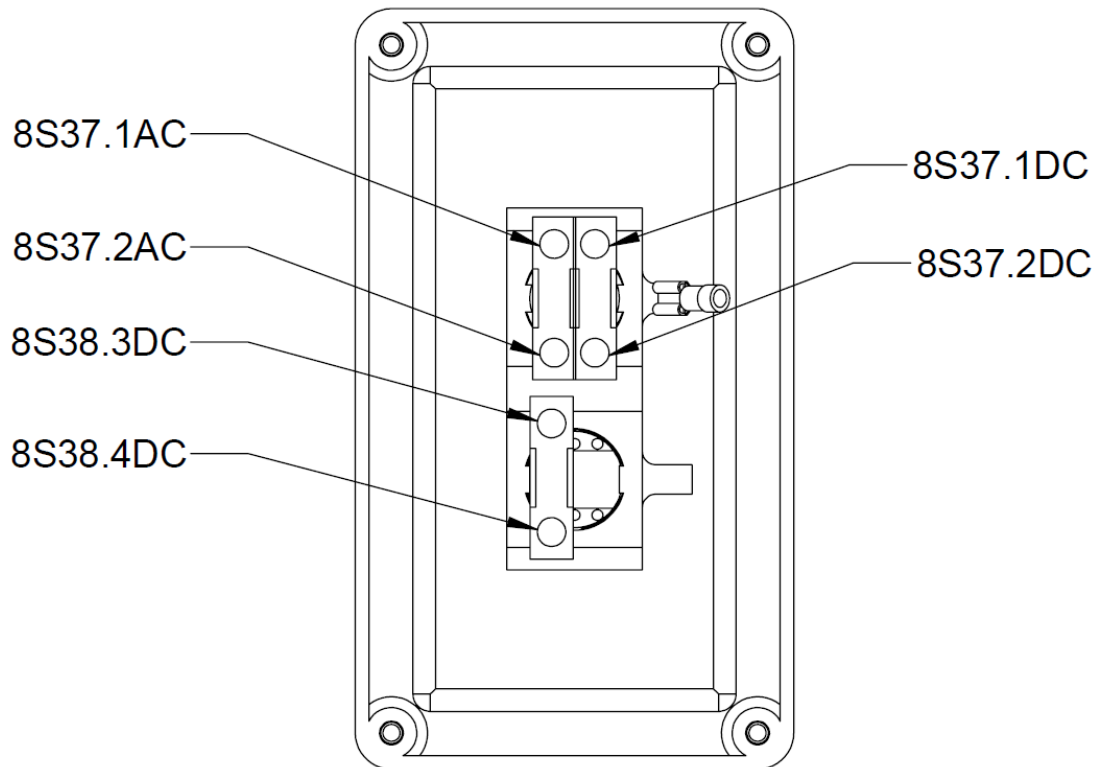


Figure 144 - Terminal Designations for System Stop Button Box with Reset

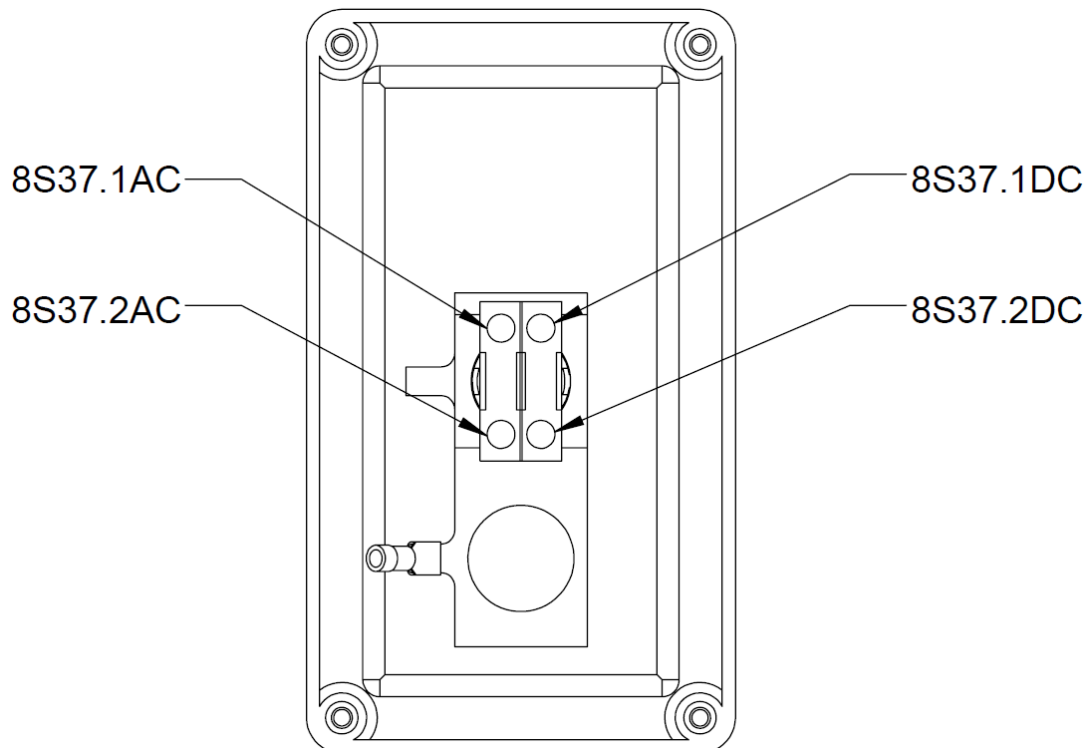


Figure 145 - Terminal Designations for System Stop Button Box without Reset

8.9 Door Control Installation

Door controls consist of Photo-eye sensors to indicate an object in the doors' path, a temperature sensor for determining outside temperature for use in determining when to close the doors in cold weather, and control enclosures and junction boxes to send the signal to the bay node.

Door control packages are available in one of the following kits.

- Basic Door Controls (Part No. 09230054). This package includes one set of Photo-eyes to be mounted at the exit of the wash bay. This system can also be set up to start a Stand Alone Dryer located at the wash bay exit.
- Deluxe Door Controls (Part No. 09110055). This package includes two set of Photo-eyes. One set is to be mounted at the exit of the wash bay and one set is mounted at the entrance end. This system can also be used to trigger the drive through undercarriage located at the wash bay entrance.

8.9 Step 1 Mount the Door Photo-eye Control Enclosures

Depending on the door control package ordered, a separate entrance door and exit door control enclosure that contains the photo eye amplifier will be mounted. These enclosures must be mounted within range of the photo-eye cables.

Typically, the enclosures will be mounted above the rail height and on the same side of the wash bay as the bay box.

- Determine the correct location for mounting the control enclosures.
- The control enclosures have 4 pre-drilled 5/16" (8mm) diameter mounting holes. The enclosure can be used as a template to mark the hole locations on the wall. Drill holes to the correct size and depth.
- Attach the control enclosures to the wall using site supplied fasteners.
- Check the settings for the photo-eye amplifier inside the enclosure to ensure they are set correctly as follows.
 - The dial setting is set to AUTO
 - The DIP switches are set to the OFF position.

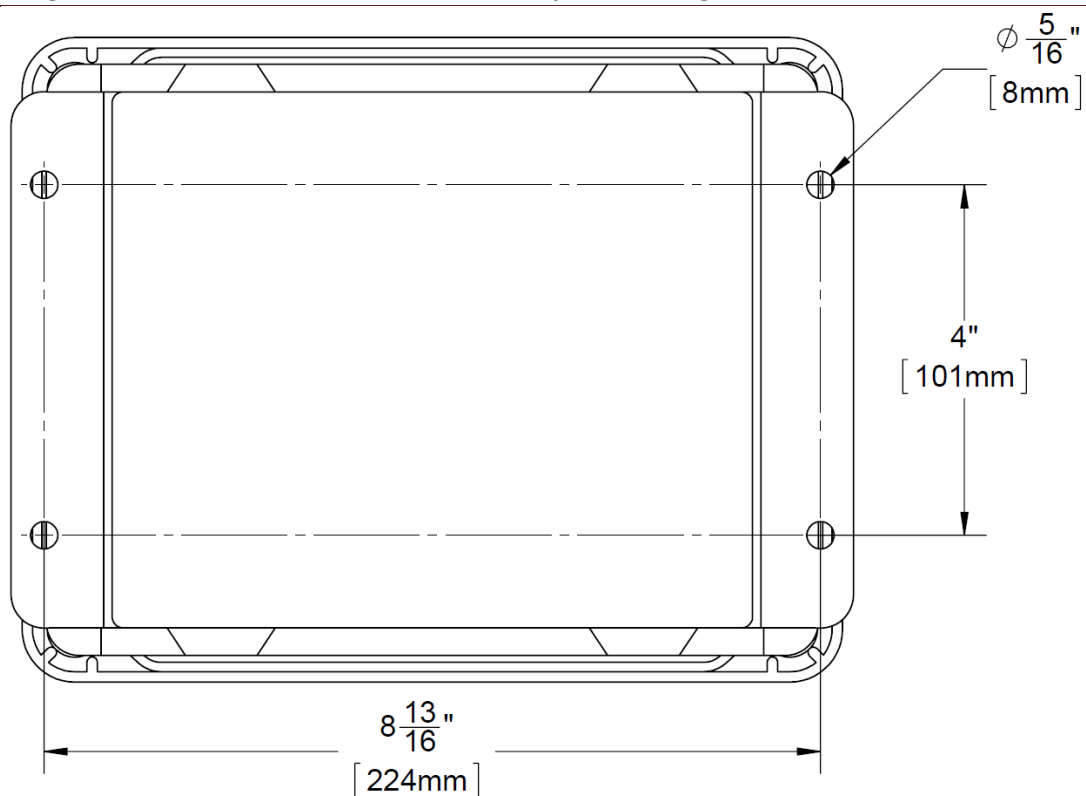


Figure 146 - Photo-eye Control Enclosure Mounting

8.9 Step 2 Locate and Mount Enclosures for Photo-eyes

The typical mounting for the photo eyes is shown below in Figure 147 for the inside of the exit wall of the wash bay and Figure 148 for the inside of the entrance wall of the wash bay.

- Each Photo-eye kit is supplied with an enclosure for each Photo-eye receiver and transmitter.
 - The enclosure will support the connection of fittings with ½" NPT pipe threads. This will allow the connection of the supplied strain relief for installing the Photo-eye and support site supplied conduit fittings.
 - The enclosure includes plugs for use to seal unused fitting holes. Ensure a plug is installed in each unused hole to ensure water-tightness.
 - Each enclosure includes mounting tabs for easy wall mounting.
- Measure and mark the location for mounting the photo eye enclosures.
- Install the mounting tabs to the enclosure. Use the holes in the mounting tabs as a template to mark the hole locations on the wall. Drill holes to the correct size and depth for the site supplied fasteners.
- Attach the photo eye enclosures to the wall using site supplied fasteners.

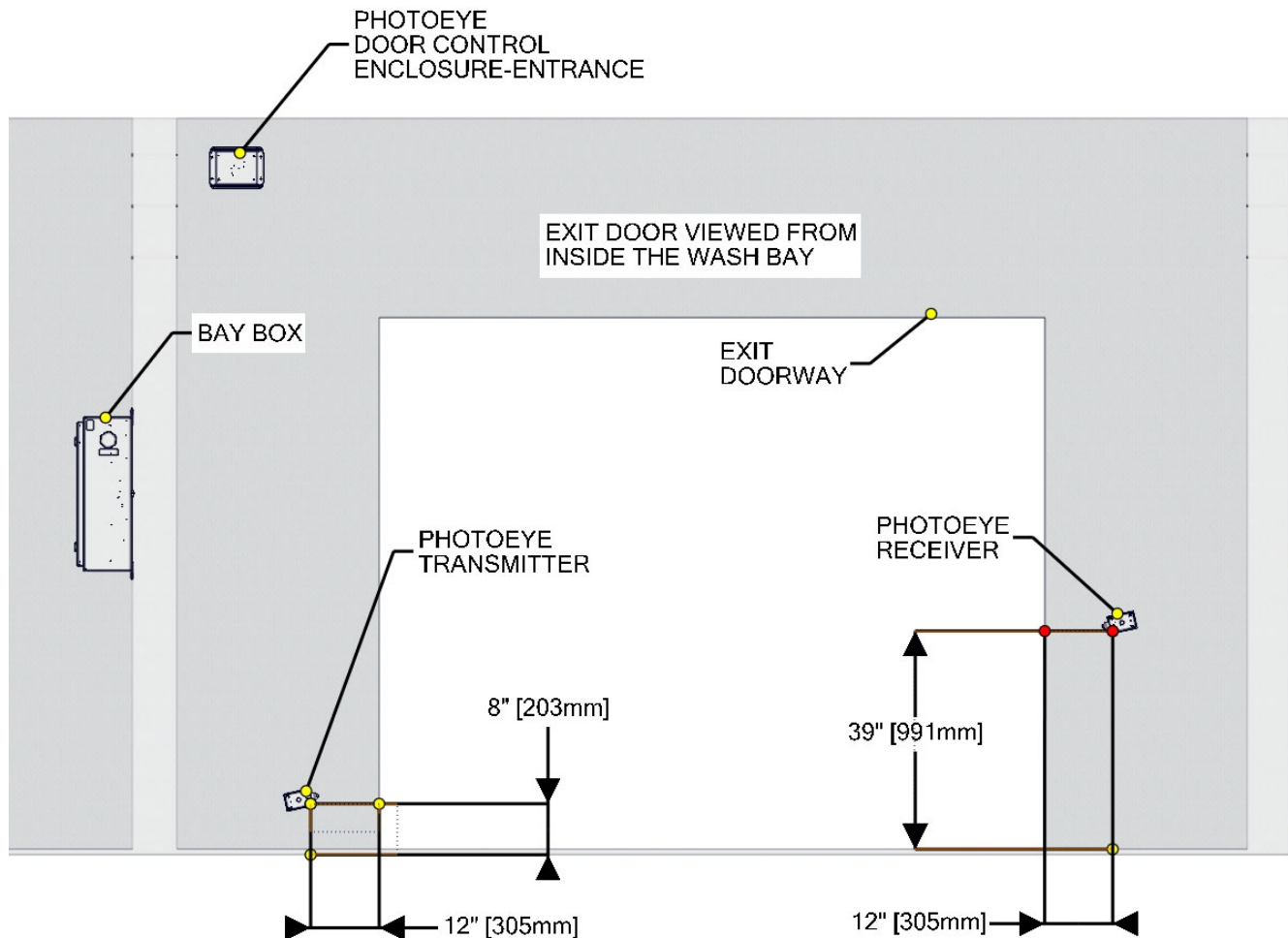


Figure 147 - Door Eye Mounting on Interior Exit End wall

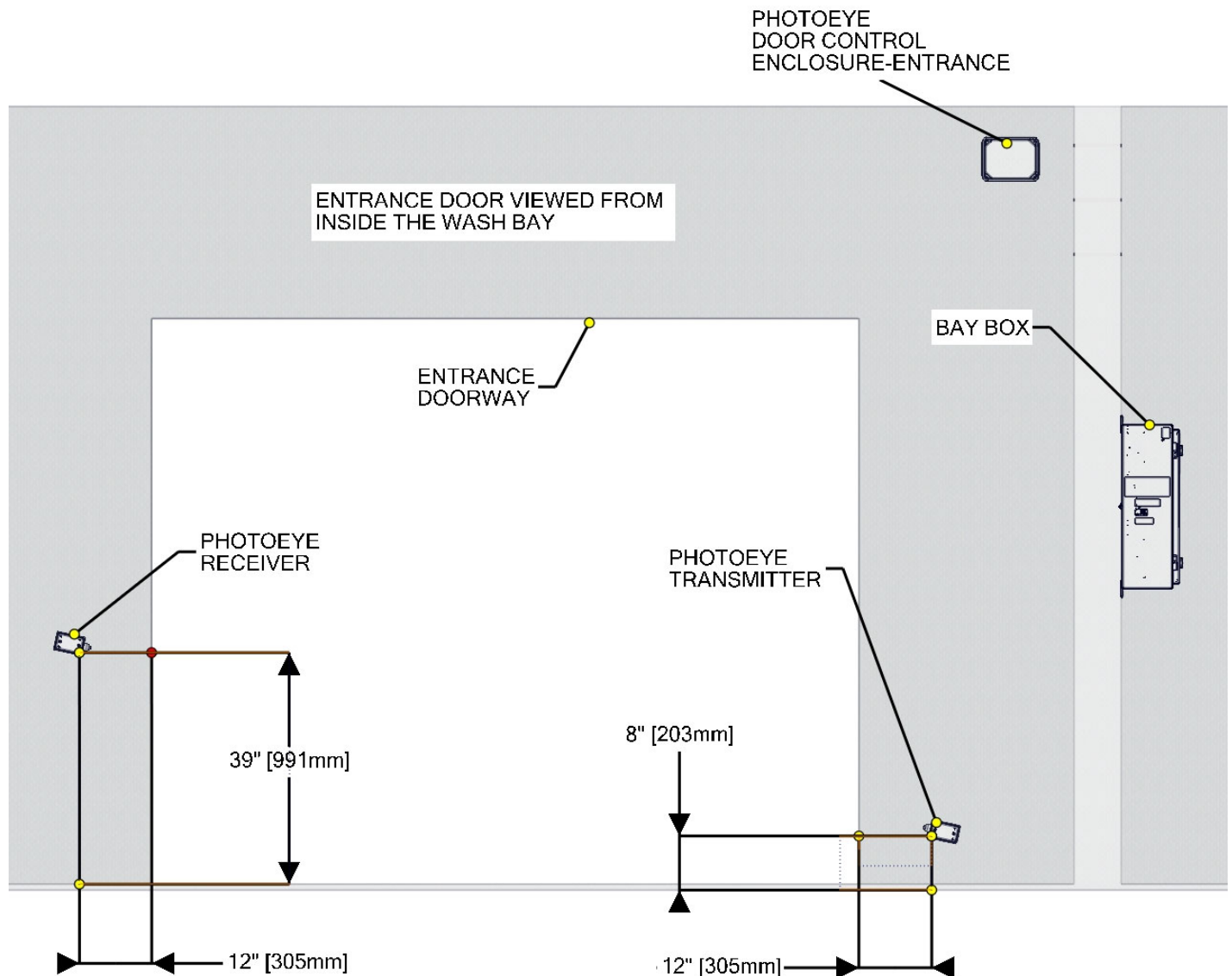


Figure 148 -Door Eye Mounting on Interior Entrance End wall

8.9 Step 3 Assemble and Install Photo-eyes into Enclosures

NOTE:

Be aware of the direction of sunshine when installing Photo-eyes. Orient the eyes at an angle as shown but avoid direct sunlight from falling on the receiving Photo-eye to avoid inconsistent Photo-eye performance.

- Assemble the Photo-eyes and the enclosures as shown in Figure 149. Note which eye is the receiving Photo-eye (black cable) and transmitting Photo-eye (gray cable). Make sure the Photo-eyes point directly at each other.

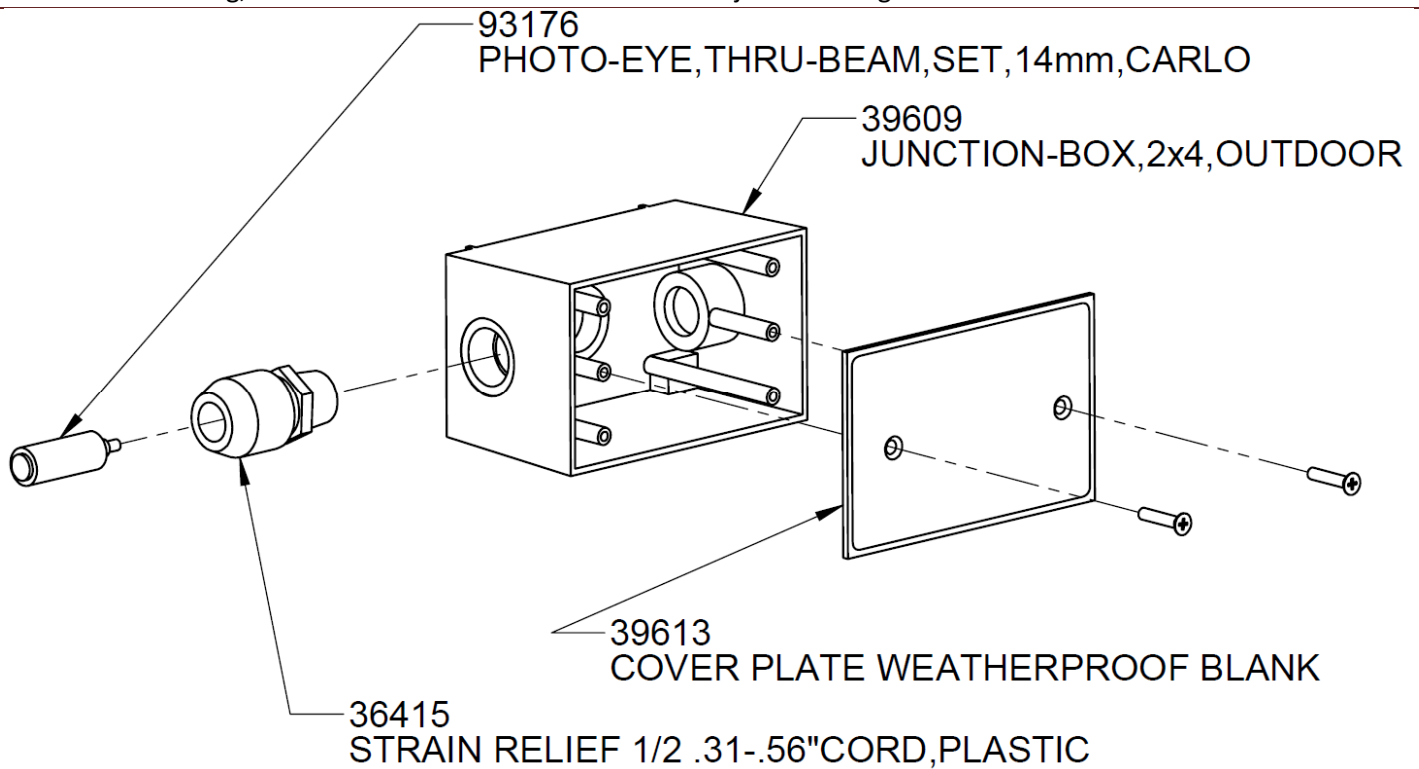


Figure 149 - Door Control Photo-eye Assembly

8.9 Step 4 Terminate the Door Control Wires

Door control system wires are terminated as described in section 8.6 Step 2. Terminal numbers are marked inside the door control and bay box enclosures. Wire numbers coincide with numbers listed on the applicable schematic, Table 2.

- Route the photo eye cables to the door control junction box using site supplied conduit and fittings. The wires for the Photo-eyes are terminated on the control relay. The amplifier must be removed from the base to access the terminals.
- The interface wiring from both, the entrance door control box and the exit door control box, terminate inside the bay box. Install this connection using site supplied conduit, fittings, and wire.

8.10 Temperature Sensor Installation

Temperature sensors are used for two purposes. If the weep option is ordered, a temperature sensor is included to start the weep function when the bay temperature drops below the set point temperature. If the door control option is installed, a temperature sensor is included to close the exit and entrance doors when the outside temperature drops below the set point temperature.

NOTE:	THE <u>OUTSIDE</u> TEMPERATURE SENSOR CONTROLS THE <u>DOOR FUNCTION</u> AND THE <u>BAY</u> TEMPERATURE SENSOR CONTROLS THE <u>WEEP FUNCTION</u>.
--------------	---

8.10 Step 1 Mount the Temperature Sensors

- **Bay temperature sensor mounting**-The bay temperature sensor should be located inside of the wash bay, near the center wash bay and above the rail height.
- **Outside temperature sensor mounting**-The outside temperature sensor should be located outside of the wash bay in a location that is not in direct sun light, effected by wind, rain and snow.

8.10 Step 2 Terminate the Temperature Sensor Wires

- Route the cables for the sensors in a way that protects them from interfering with the wash and wash process.
- Both the bay and the outside temperature sensors are wired to the bay node. The terminals for these sensors are located in the TB2 section of the node board. Note that the shield wire and the black wire are terminated together in the same terminal location.
- Terminate the wires for the sensors as described in section 8.6 Step 2. Terminal numbers are marked inside the applicable enclosure. Wire numbers coincide with numbers listed on the applicable schematic, Table 2.

8.11 Precision Loading Parking System

The Precision Parking system consists of Photo-eyes along with housings, brackets, and stands for mounting them to the wash bay floor. The Photo-eyes are used in place of the bridge mounted ultrasonic sensors to detect the vehicle presence and position during the loading and parking process at the beginning of the wash. The Photo-eye sensors allow for more precise vehicle detection vs. the standard ultrasonic sensors. In wash bays where the length available for the wash is limited and the main rail length is reduced from standard it may be necessary to allow the vehicle to load as far toward to the exit as possible so that long vehicles can be washed in a shorter wash bay. In this case, the Precision Loading system may be used.

8.11 Step 1 Determine and Mark the Location for the Precision Loading Eye Assemblies

Figure 156 shows a plan view of the wash bay with the Precision Loading Eyes in the recommended location. Figure 151 shows the view of the system from the exit end of the bay looking toward the entrance and Figure 165 shows the system in the elevation view.

When determining the location for transmitting and receiving assemblies, it is important to pay specific attention to the direction of sunlight entering the wash bay. Always position the Photo-eyes so that direct sunlight does not fall on the receiving Photo-eyes. It is also recommended that the receiving Photo-eyes be positioned at the high side location with the sensors pointing downward.

The Photo-eye assemblies are designed to be floor mounted. Be sure to locate the floor stands in a place where the floor anchors will not interfere with site equipment such as floor heat.

- Measure and mark the locations for the floor stands and shown in Figure 151 and Figure 158.
- Place the floor stands in the positions marked.
- As a temporary step, use a weight placed on the base of the floor stand to hold the stand in the upright position. Do not anchor the floor stands to the wash bay floor until the startup process. During this process, the Precision Loading system will be tested, and final positioning will be established.
- Once the final position is established, the floor stands will be anchored to the wash bay floor using site supplied floor anchors.

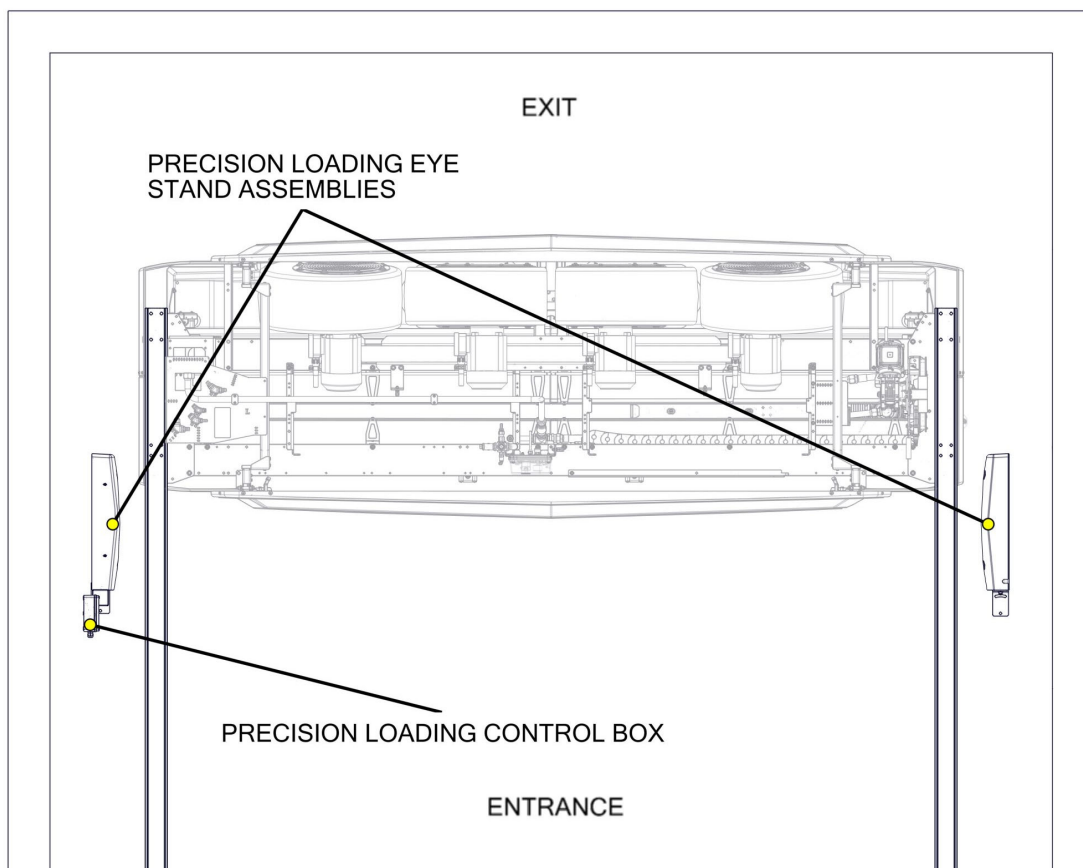


Figure 150 - Precision Loading System - Plan View

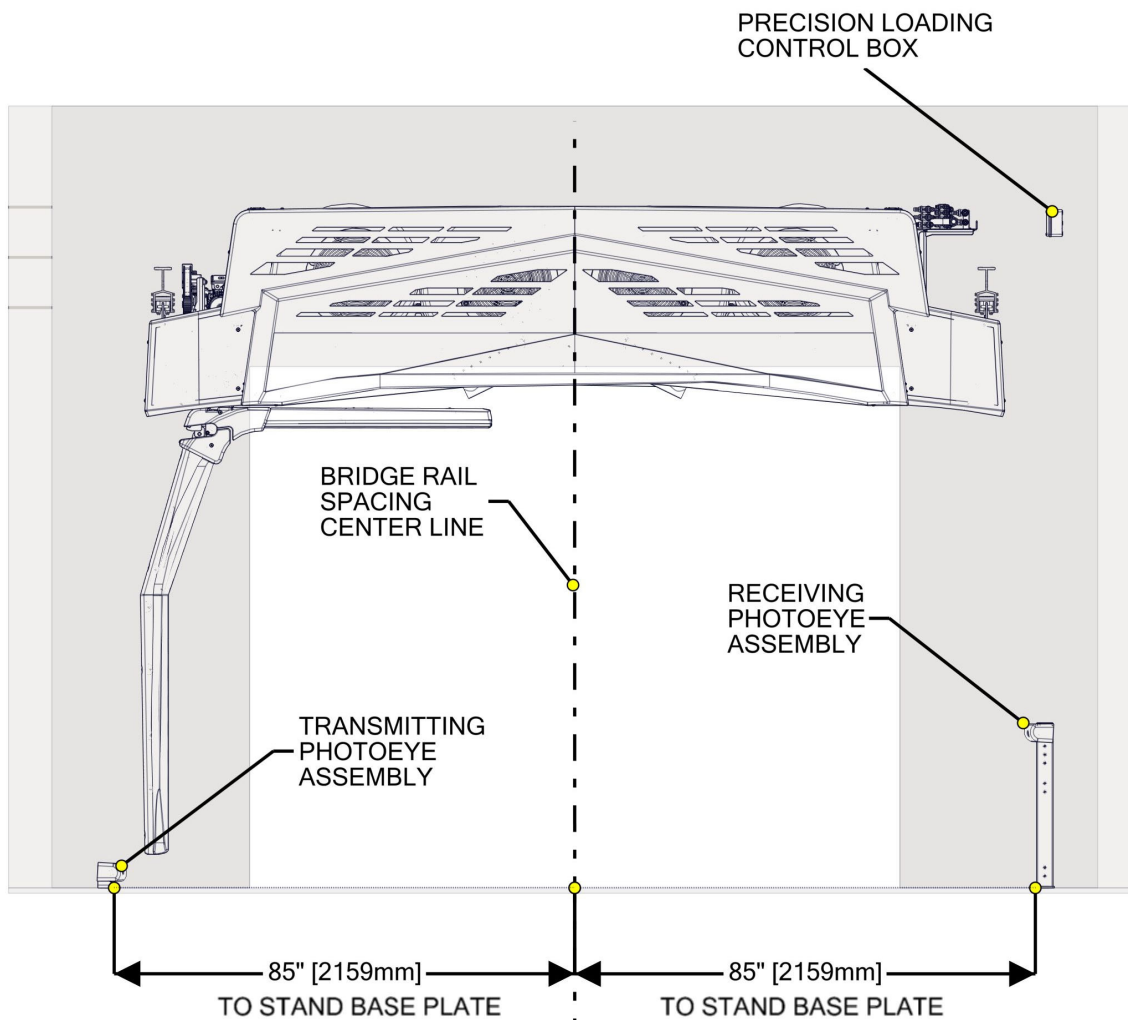


Figure 151 - Precision Loading System - Exit View

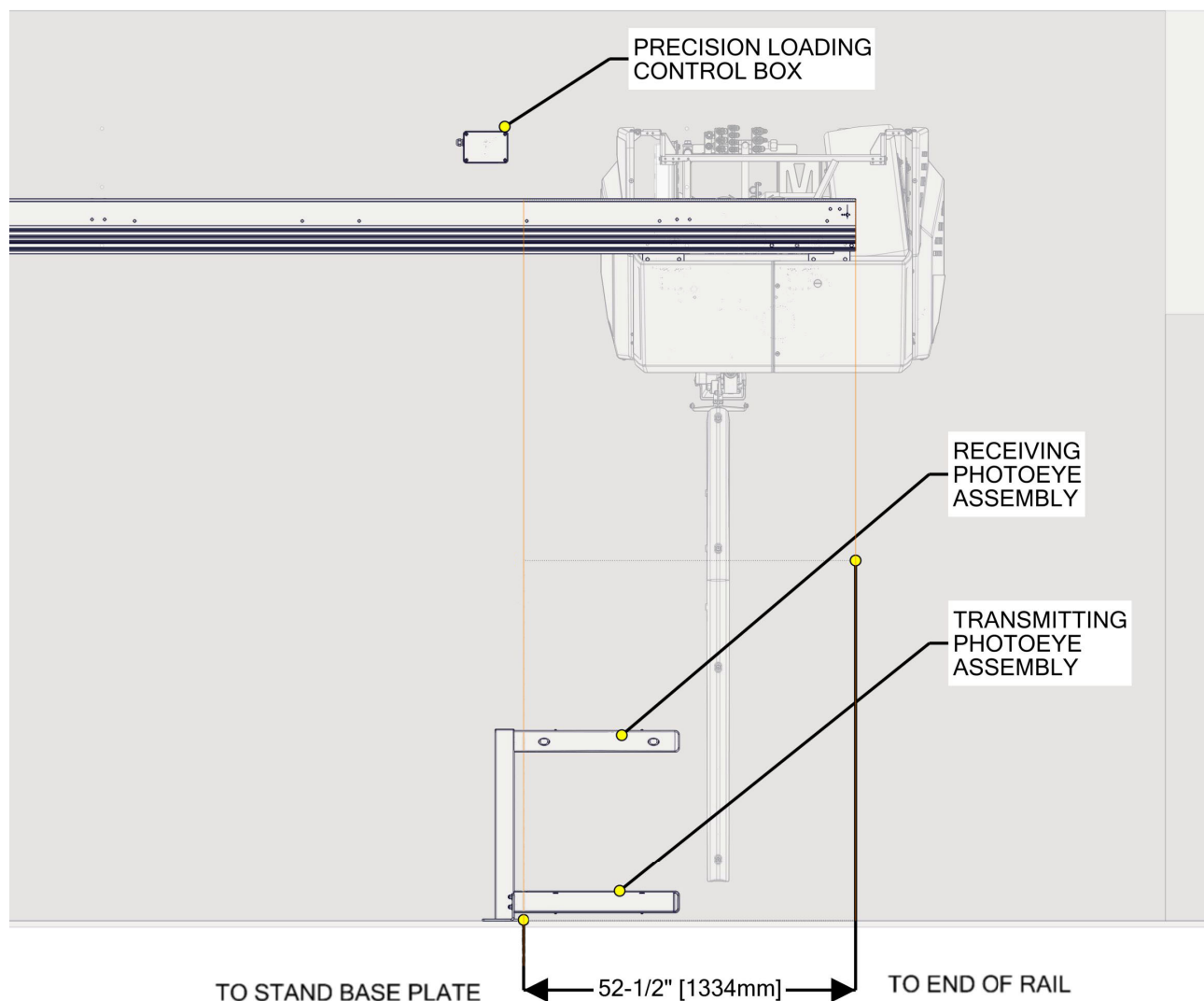
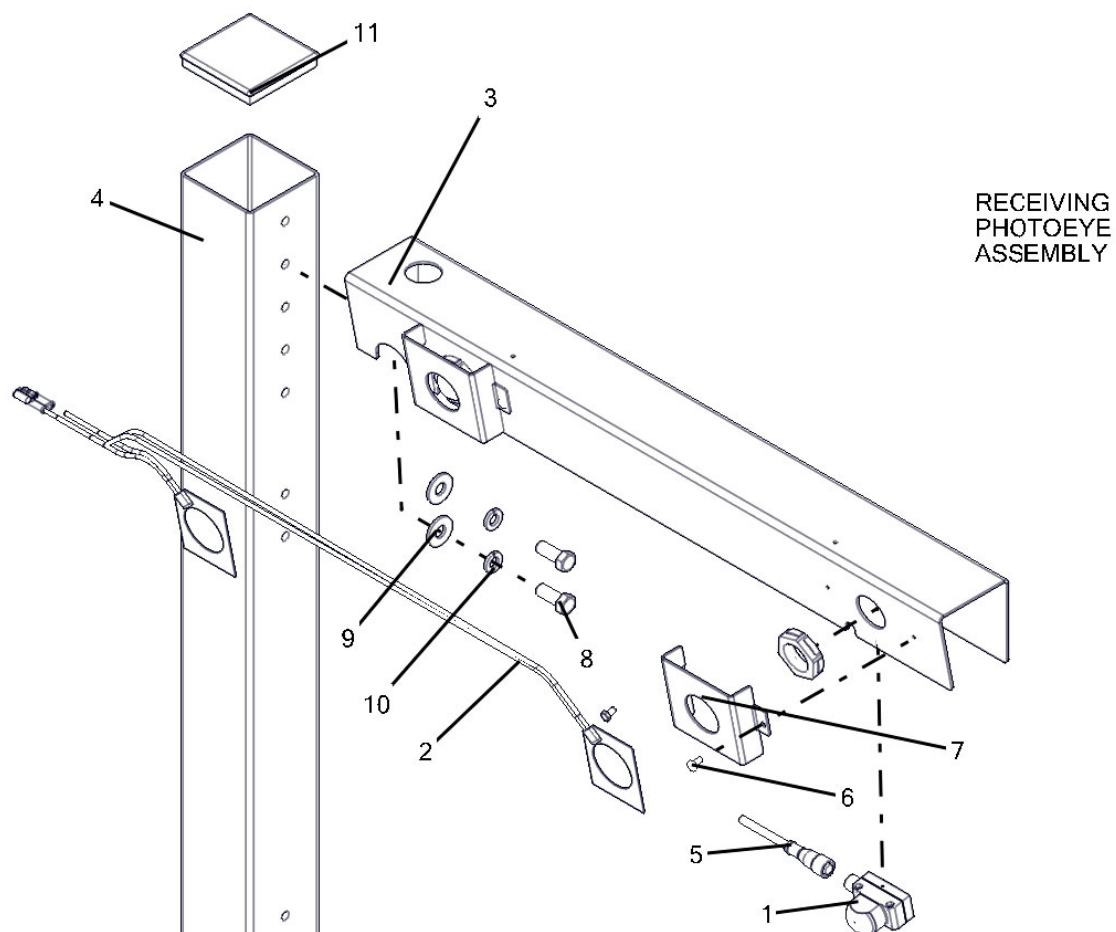


Figure 152 - Precision Loading Eye - Elevation View

8.11 Step 2 Assemble the Precision Loading Eyes to the Arm Brackets

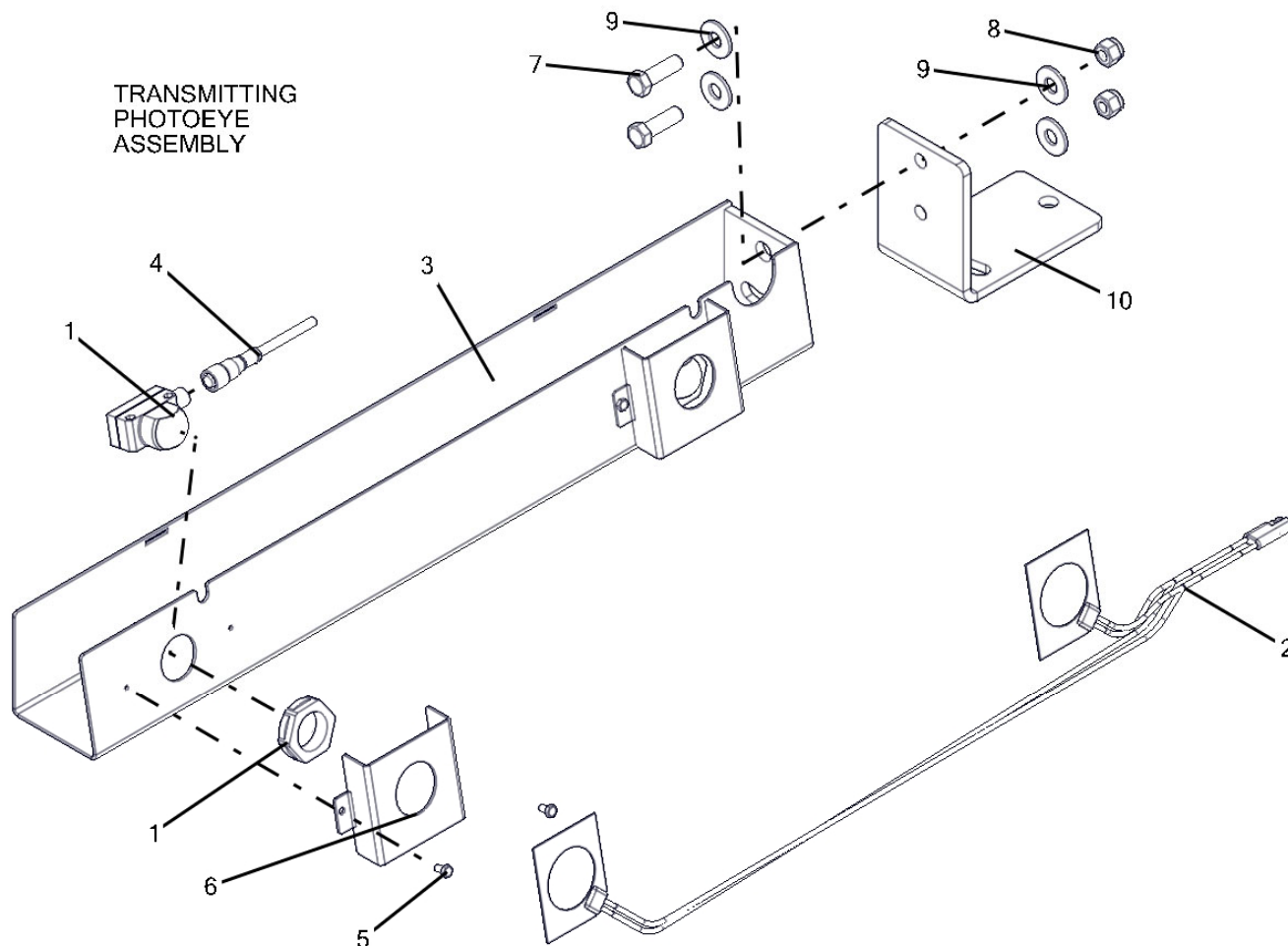
Assemble the transmitting and receiving Photo-eye assemblies as shown in Figure 163. If the optional sensor heat is purchased, install the heaters as shown; otherwise omit these from the assembly process.

Attach the eye assemblies to the floor stands as shown, Figure 153 and Figure 154.



BOM ID	PartNo	Qty	Description
1	04070004	2	PHOTO-EYE,THRU-BEAM,RCVR,30mm,BANNER-QS
2	04080035	1	HARNESS,HEATER,VT,SENSOR,HEAT,30MM
3	06050010	1	HOUSING,VT,LOADING-EYE-MOUNT,SST
4	06250183	1	FRAME,WLD,STAND,VEH-DET-EYE,SST,LW20
5	04080006	2	CORDSET,12mm,5/22AWG,FEM,60',PVC
6	05040411	4	SCREW,M4x8mm,HHCS,SST
7	06050014	2	HOUSING,HEATER,VT-LOADING,LW4K
8	70180-HCS	2	SCREW,3/8-16x1.00,HHCS,SST
9	71513-FS	2	WASHER,3/8,FLAT,1-OD,.083THK,SST
10	71513-LS	2	WASHER,3/8,LOCK,SST
11	M690049	1	CAP,3.00x3.00x.083 TUBE,ABS,BLK

Figure 153 - Receiver Photo-eyes Assembly



BOM ID	PartNo	Qty	Description
1	04070003	2	PHOTO-EYE, THRU-BEAM, XMTR, 30mm, BANNER-QS
2	04080035	1	HARNESS, HEATER, VT, SENSOR, HEAT, 30MM
3	06050010	1	HOUSING, VT, LOADING-EYE-MOUNT, SST
4	04080006	2	CORDSET, 12mm, 5/22AWG, FEM, 60', PVC
5	05040411	4	SCREW, M4x8mm, HHCS, SST
6	06050014	2	HOUSING, HEATER, VT-LOADING, LW4K
7	70181-HCS	2	SCREW, 3/8-16x1.25, HHCS, SST
8	71013-NCS	2	NUT, 3/8-16, HEX, LOCK, SST
9	71513-FS	4	WASHER, 3/8, FLAT, 1-OD, .083THK, SST
10	06141766	1	BRKT, STAND-MNT, VEH-DET-PHOTOEYE, SST, LW20

Figure 154 – Transmitting Photo-eye Assembly

8.11 Step 3 Install the Precision Loading Covers

Route the wires within the arm bracket toward the floor stand out of the arm. Install covers over the Photo-eye arm assembly, Figure 155.

Refer to 8.12 Step 3, Loading Eye (Precision or Long Vehicle) Connections, to complete installation.

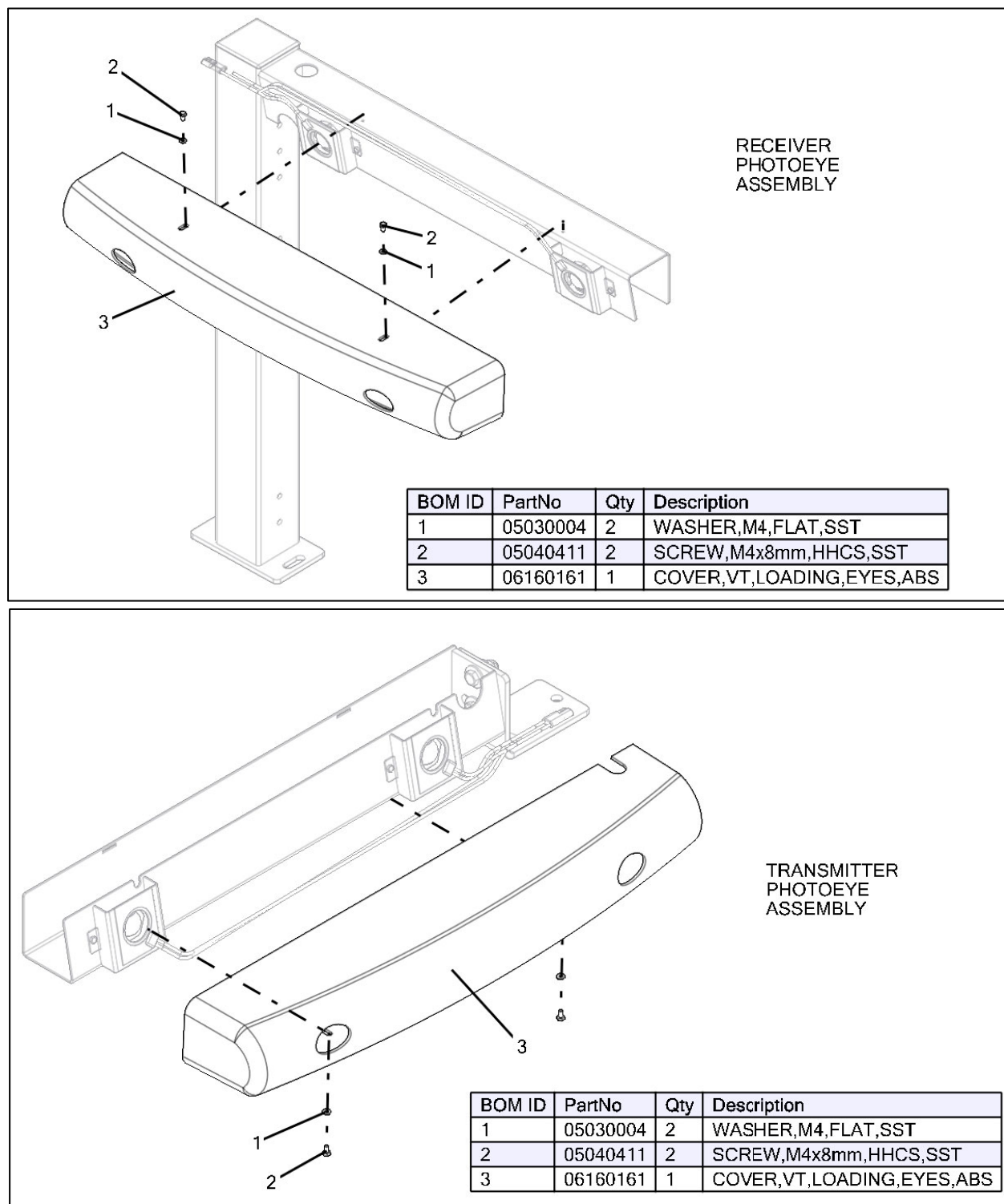


Figure 155 - Assemble Covers to Photo-eye Arms

8.12 Long Vehicle Loading and Exit/Auxiliary Service Photo-eyes

The Long Vehicle Loading and Exit/Auxiliary Service Photo-eyes consists of Photo-eyes along with housings, brackets, and stands for mounting them to the wash bay floor and or walls and have different system names depending on where the Photo-eyes are installed in the car wash.

The Long Vehicle Loading Photo-eyes are used in addition to the bridge mounted ultrasonic sensors to detect the vehicle presence and position during the loading and parking process at the beginning of the wash. The Photo-eye sensors allow for more precise vehicle detection vs. the standard ultrasonic sensors. In wash bays where the length available for the wash is limited and the main rail length is reduced from standard it may be necessary to allow the vehicle to load as far toward to the exit as possible so that long vehicles can be washed in a shorter wash bay. In this case, the Long Vehicle Loading System may be used.

Exit/Auxiliary Photo-eyes can be used for situations where vehicle detection is needed, examples of this are Drive Thru Dryer Shutoff for an open bed pick up or to activate an exit service such as a tire shiner.

8.12 Step 1 Determine and Mark the Location for the Vehicle Detect Photo-eyes

When determining the location for transmitting and receiving assemblies, it is important to pay specific attention to the direction of sunlight entering the wash bay. Always position the Photo-eyes so that direct sunlight does not fall on the receiving Photo-eyes. It is also recommended that the receiving Photo-eyes be positioned at the high side location with the sensors pointing downward.

The Photo-eye assemblies are designed to be floor mounted or wall mounted. Be sure to locate the floor stands in a place where the floor anchors will not interfere with site equipment such as floor heat.

- Wall mounted or stand mounted Photo-eyes are install in the wash per the dimensions shown in Figure 156, Figure 157, Figure 158 and Figure 159.
- Wall mounted Photo-eyes are attached to the wash bay walls by using site supplied fasteners.
- Stand mounted Photo-eyes are mounted to the wash bay floor using site supplied fasteners.

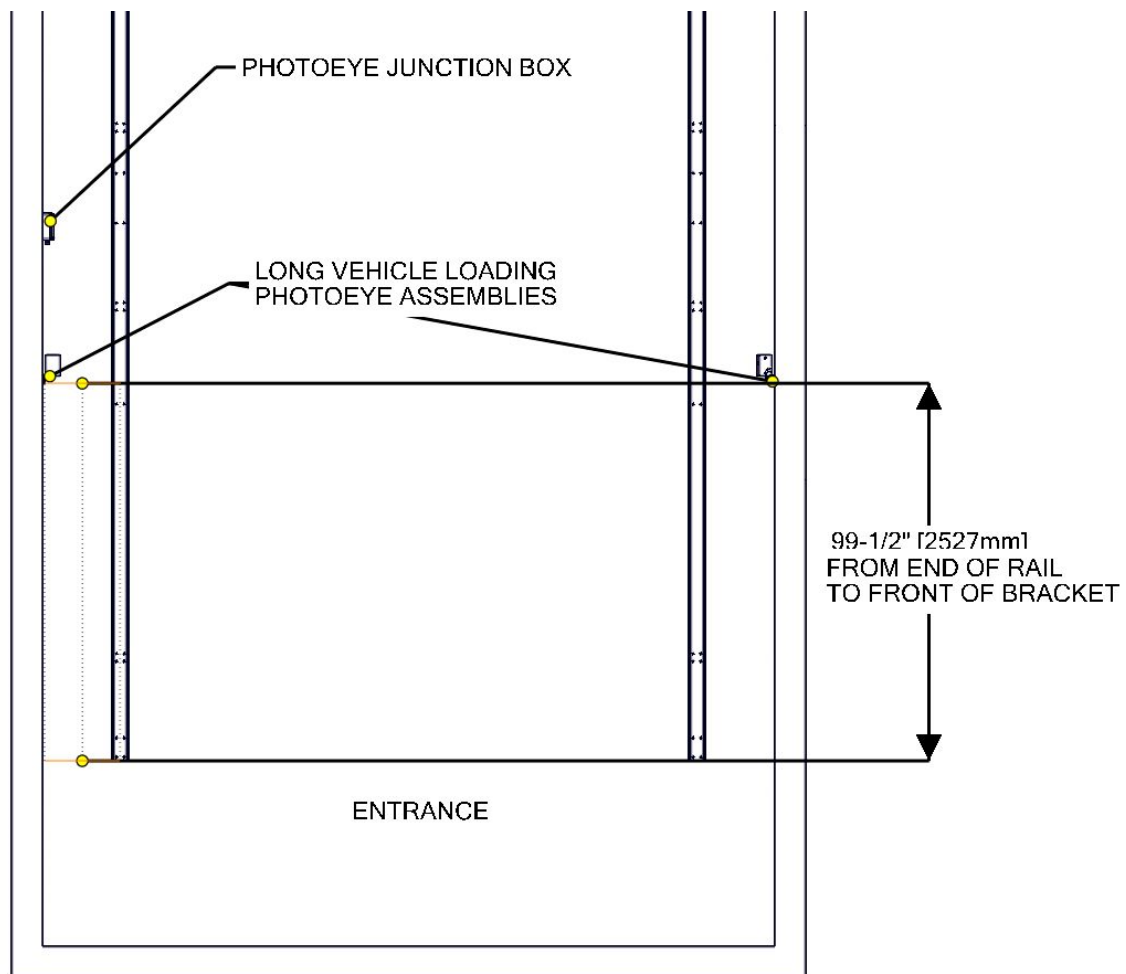


Figure 156 – Long Vehicle Loading Wall Mounted Photo-eyes - Plan View

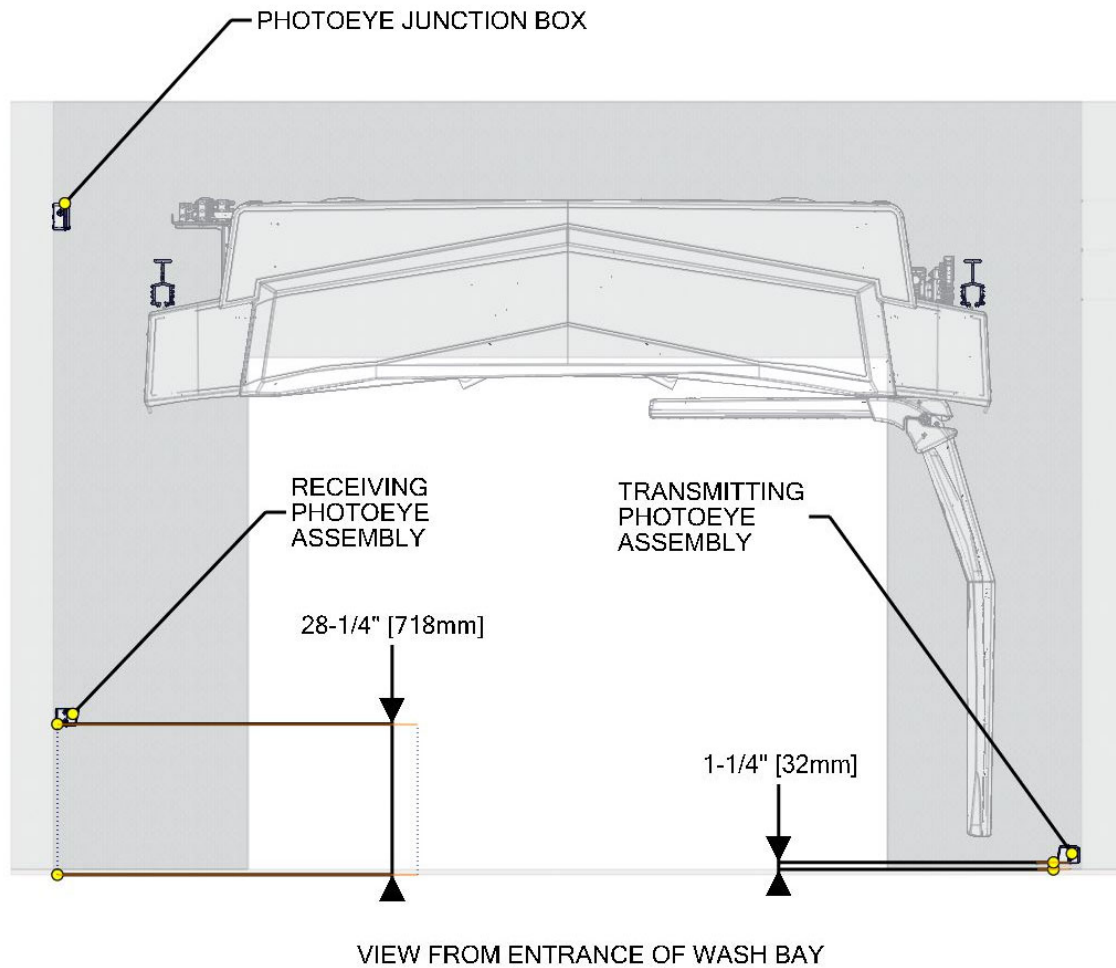


Figure 157 - Long Vehicle Loading Wall Mounted Photo-eyes - Front View

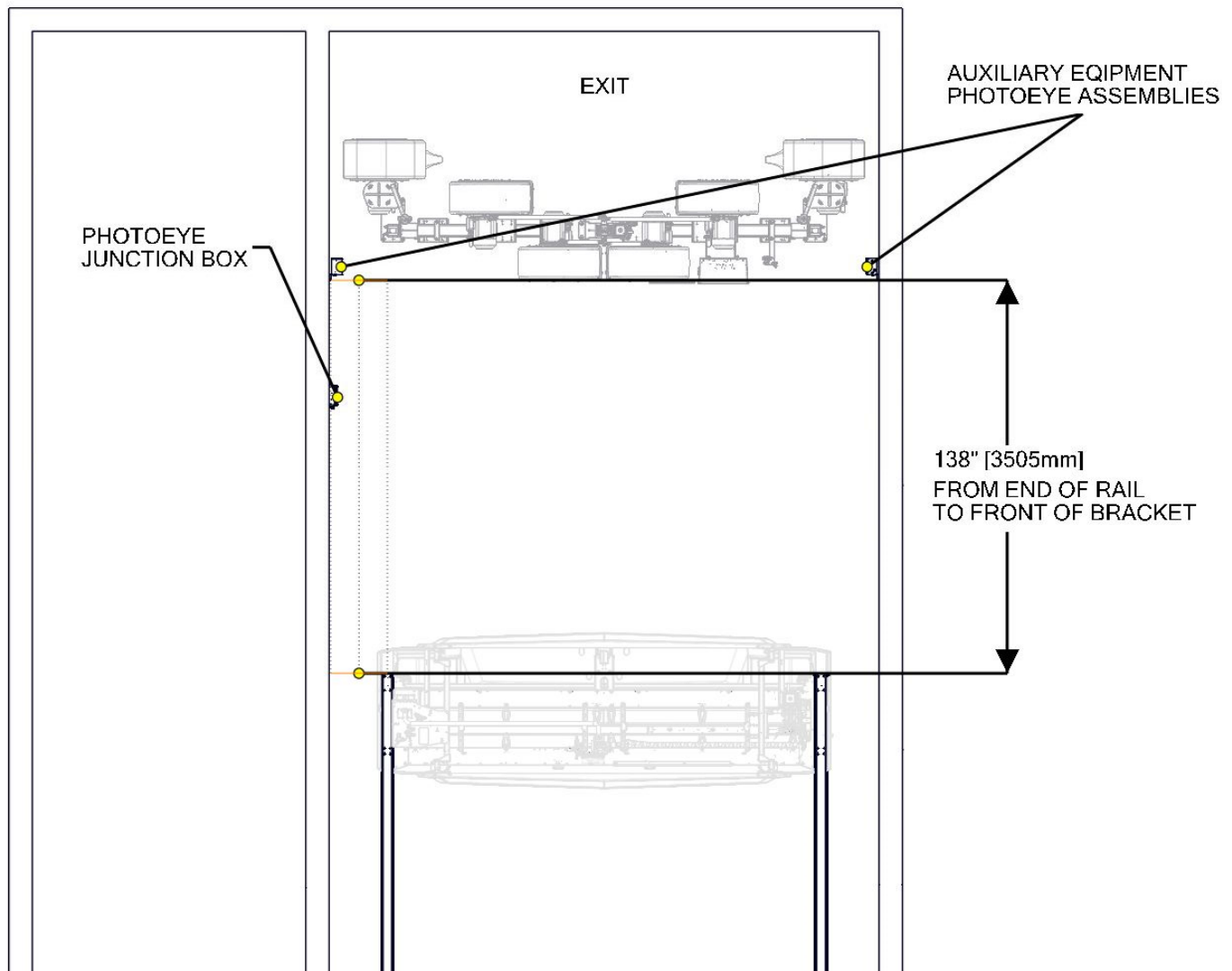


Figure 158 – Auxiliary Service Vehicle Detection Photo-eyes - Plain View

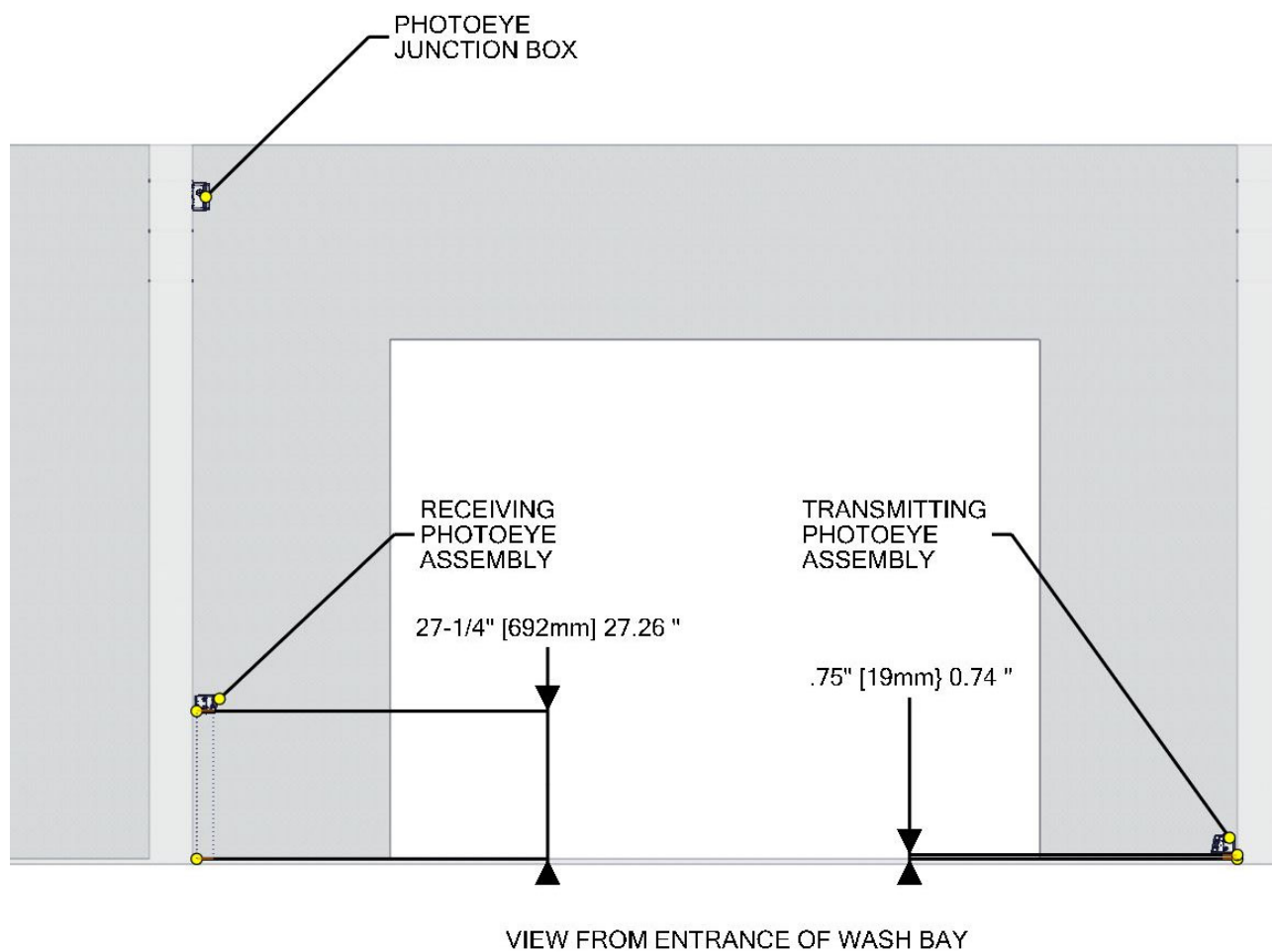


Figure 159 - Auxiliary Service Vehicle Detection Photo-eyes, Wall Mount - Front View

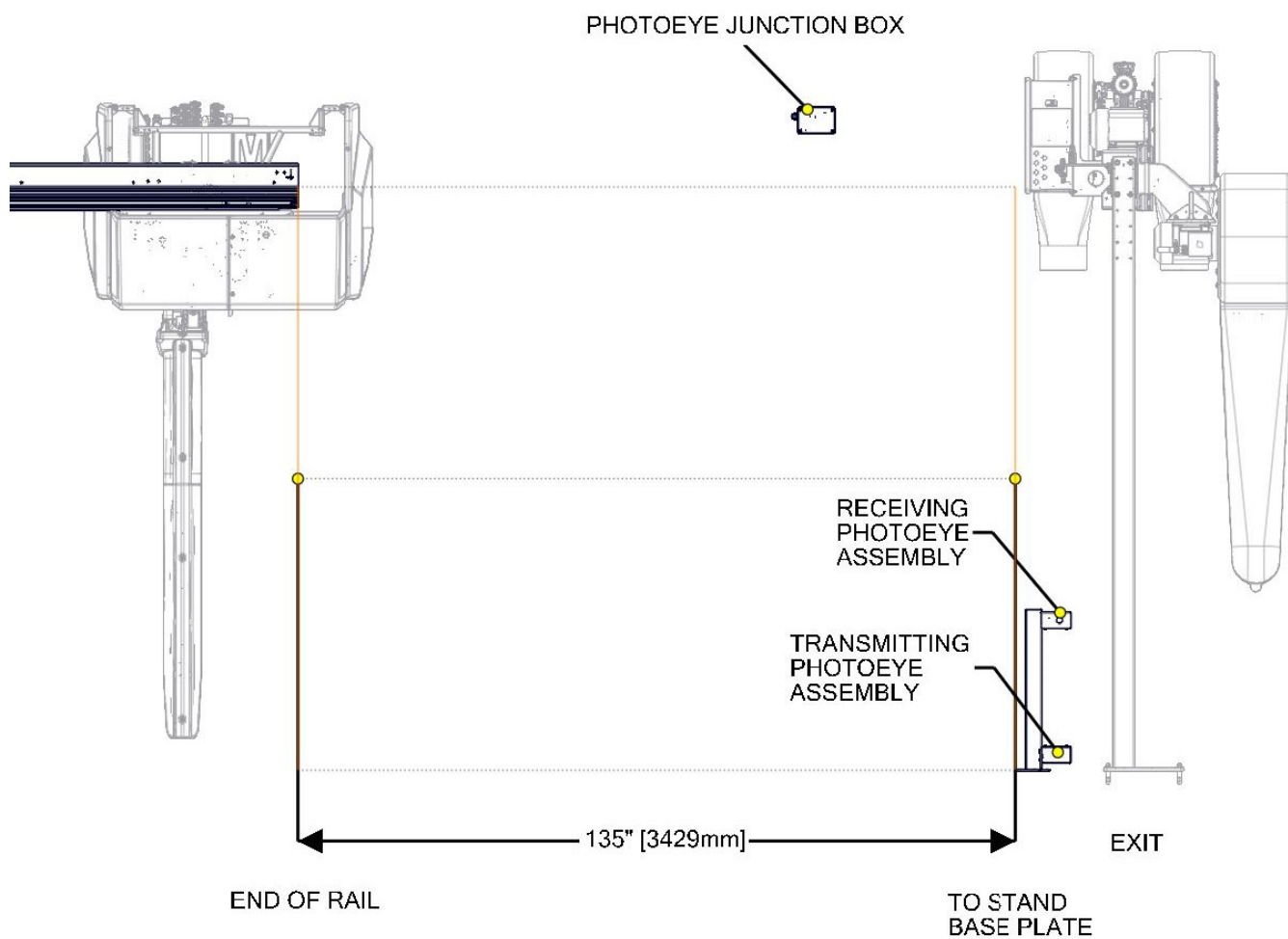


Figure 160 - Auxiliary Service Vehicle Detection Photo-eyes, Stand Mount - Side View

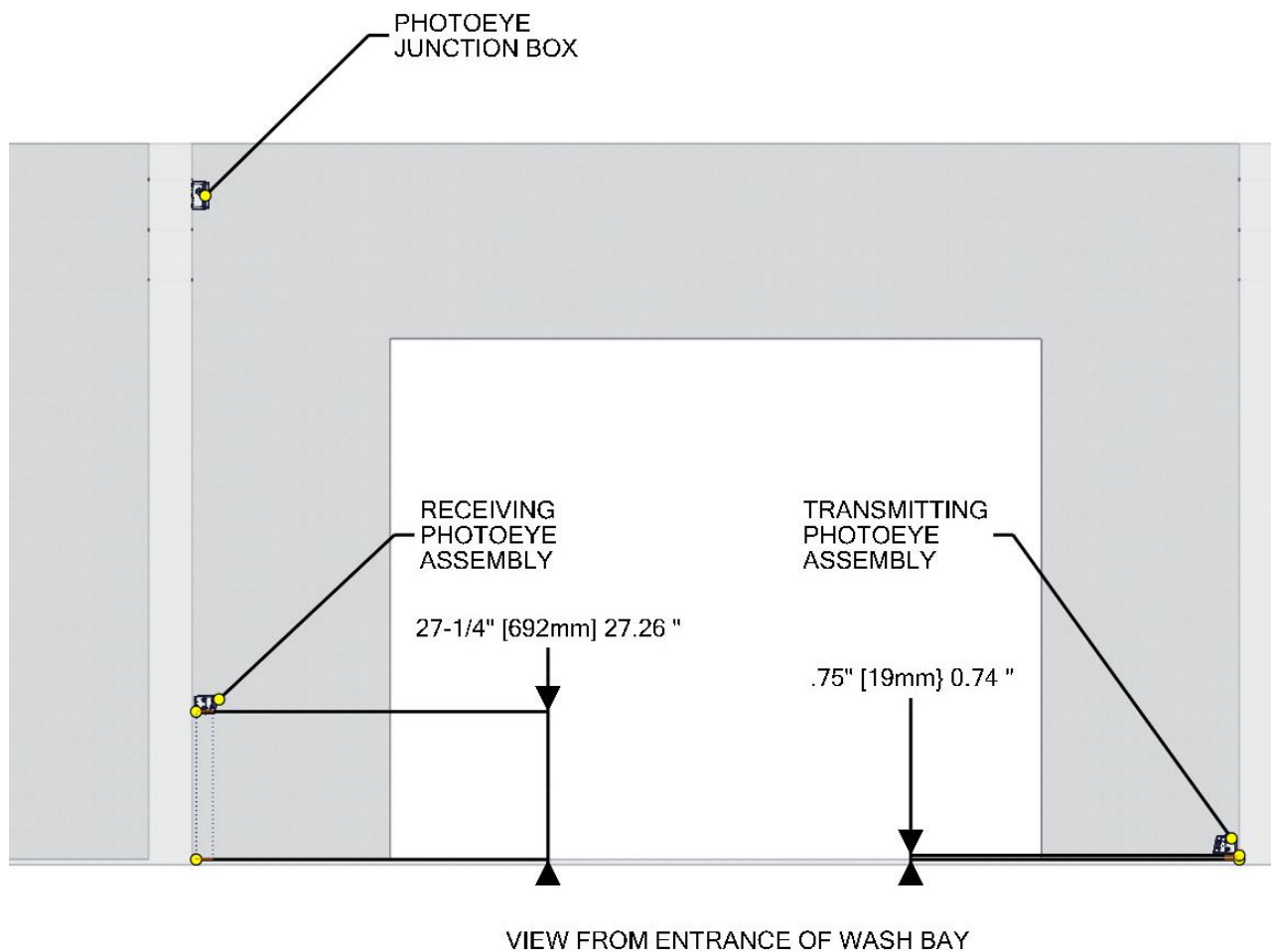


Figure 161 - Auxiliary Service Vehicle Detection Photo-eyes, Stand Mount - Front View

8.12 Step 2 Assemble the Photo-eye Assemblies to the Arm Brackets

Assemble the transmitting and receiving Photo-eye assemblies to the mounting option. Figure 162 for wall mount option or Figure 163 and Figure 164 for floor mount option. Images shown with optional sensor heat.

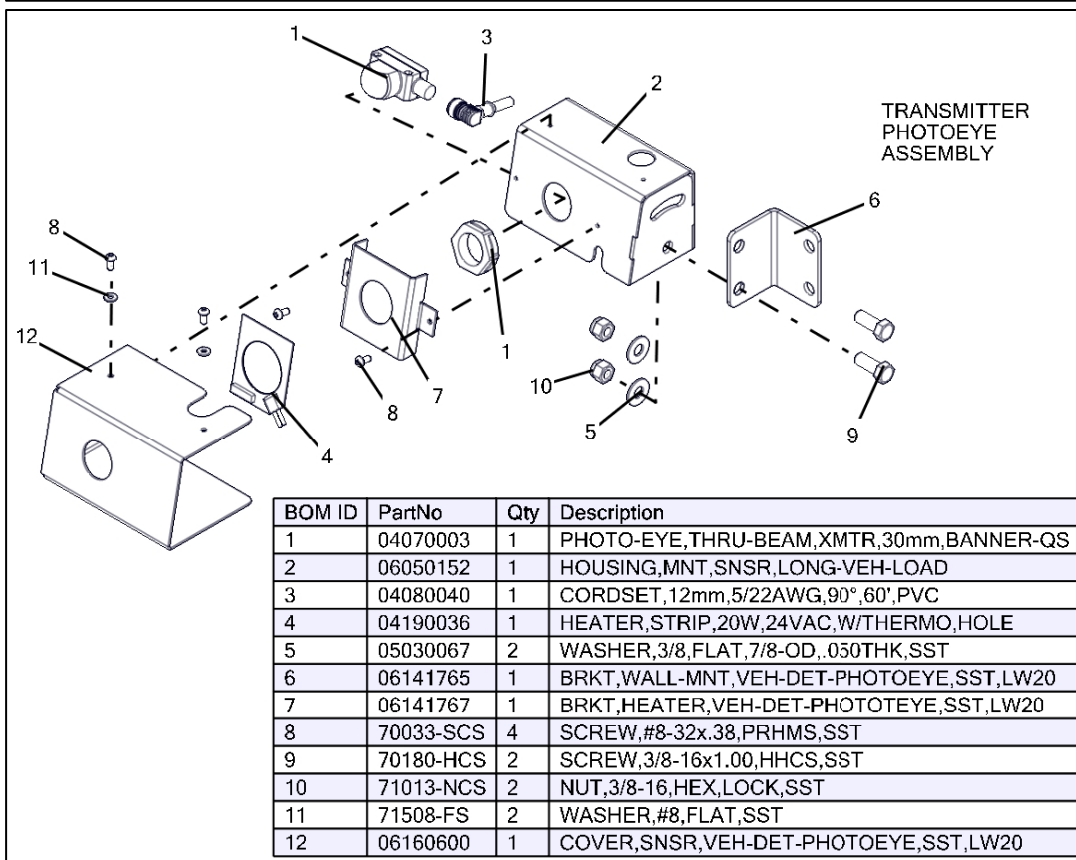
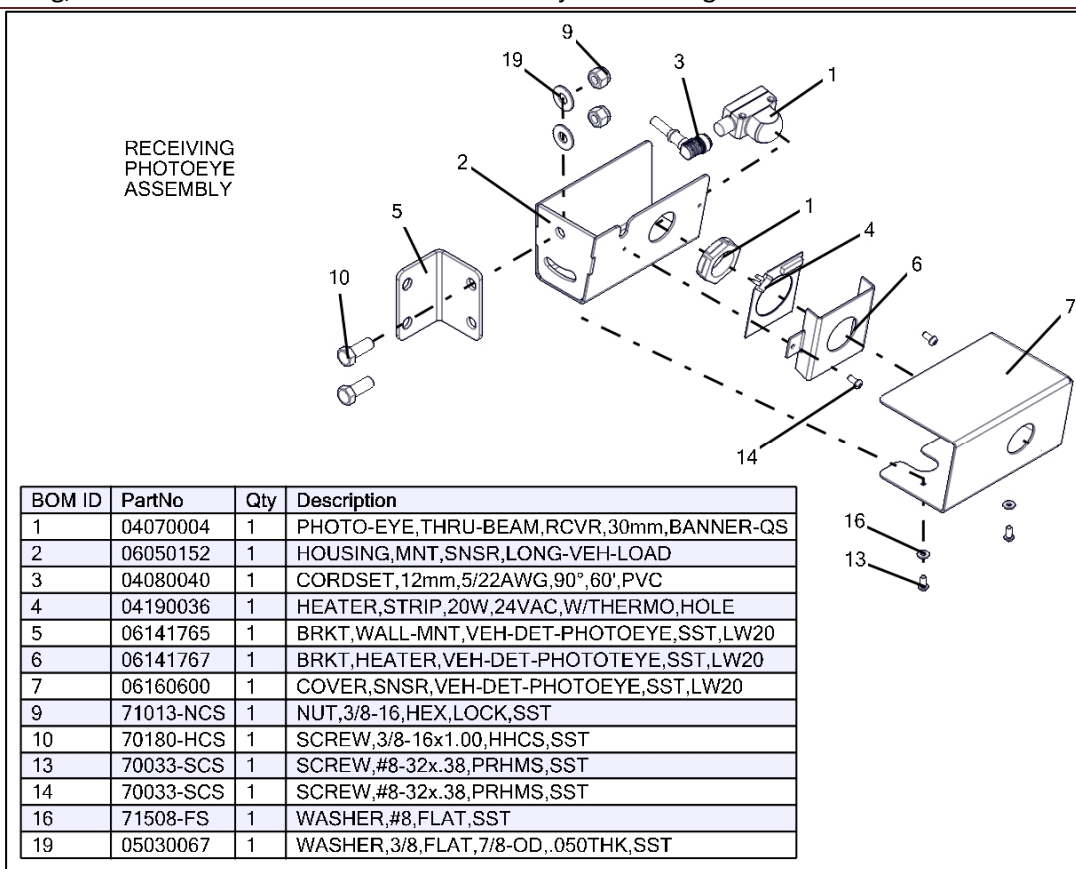


Figure 162 – Photo-eye Assemblies, Wall Mount

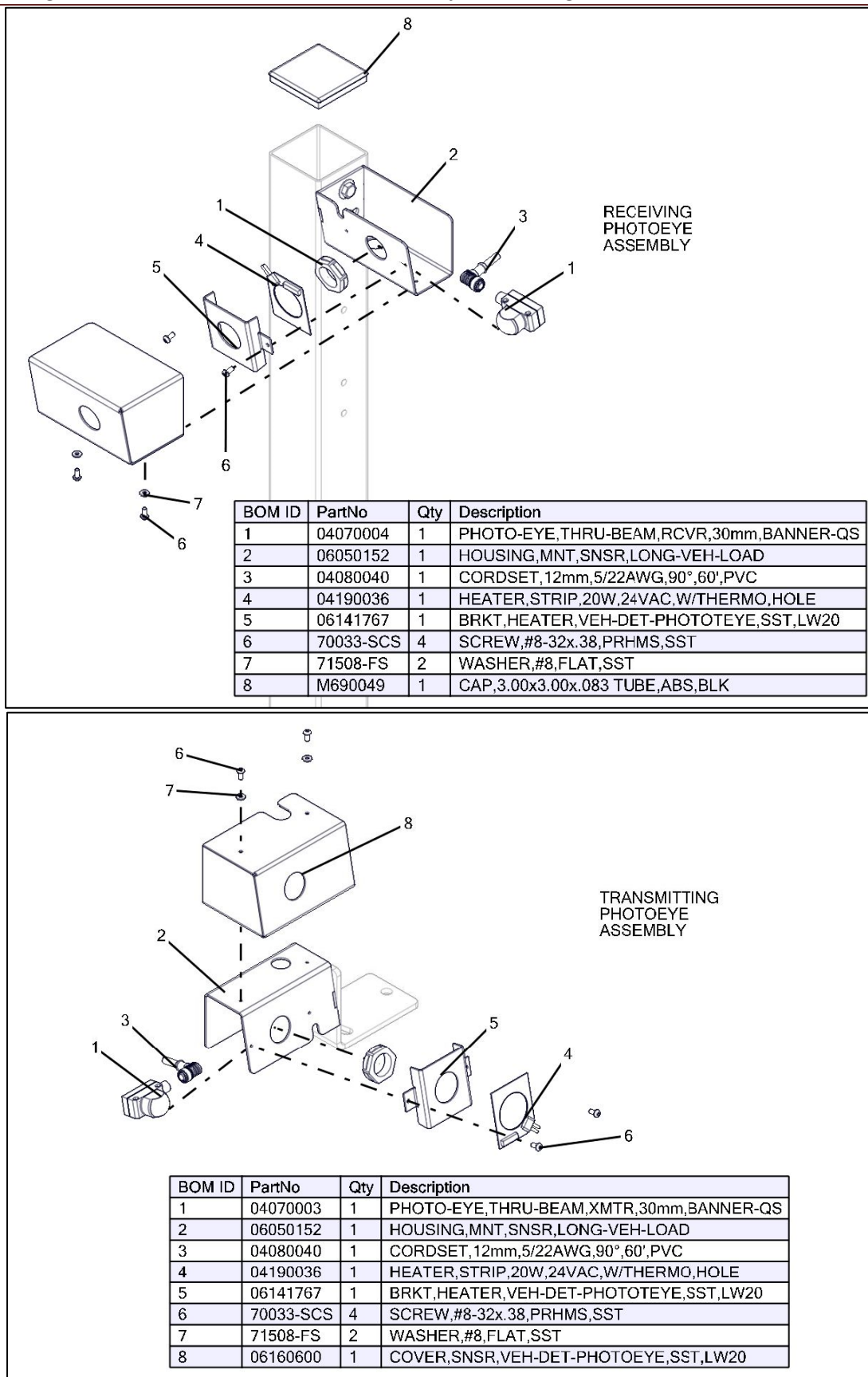


Figure 163 – Photo-eye Assemblies, Floor Mount

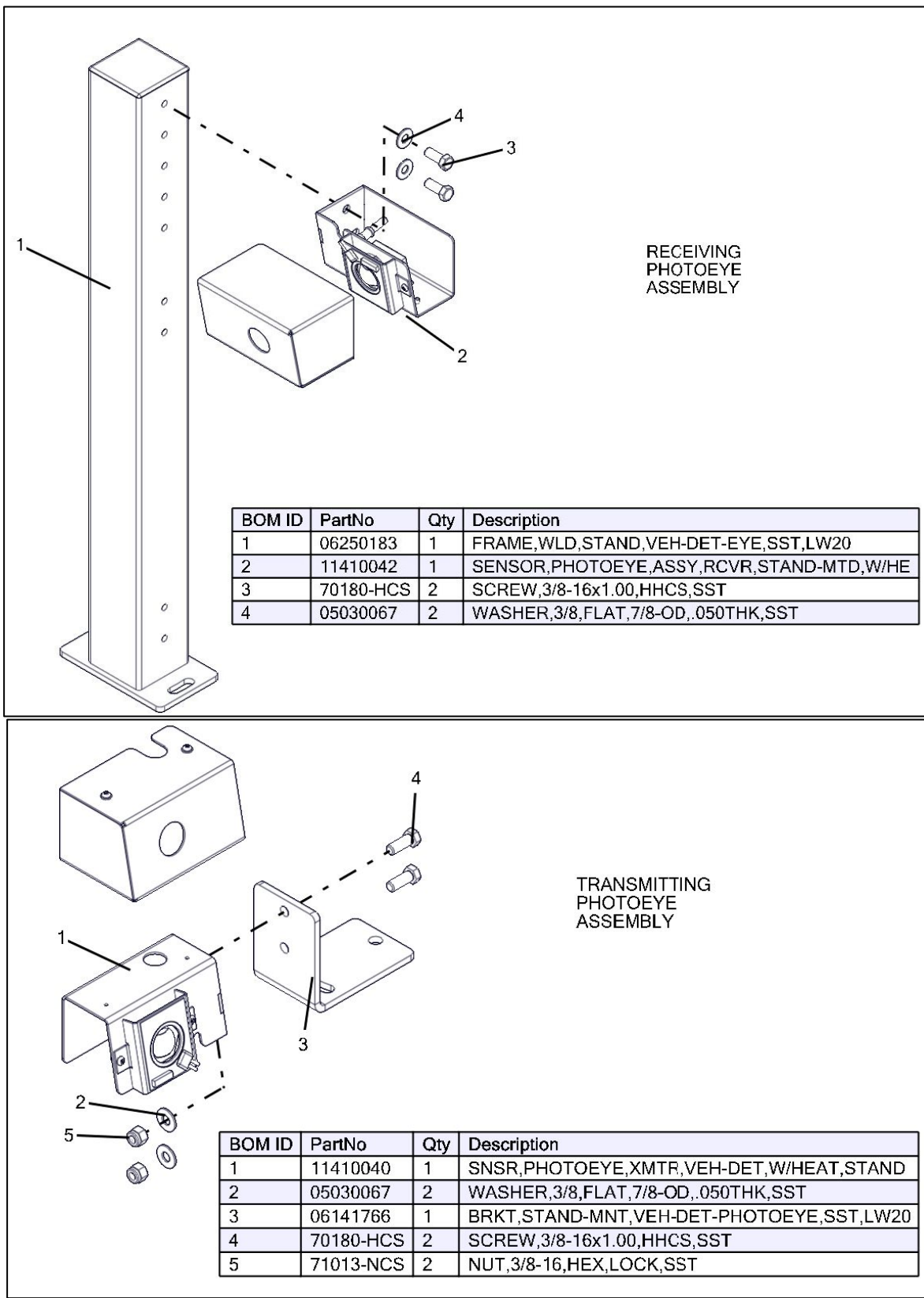


Figure 164 - Assemble Photo-eye Assemblies to Floor Stands, Floor Mount

8.12 Step 3 Loading Eye (Precision or Long Vehicle) Connections

- Route the cables for the Precision, or Long Vehicle Loading, sensors in a way that protects them from interfering with the wash and wash process and is also compliant with all applicable codes/regulations/etc.
- The loading sensors are wired to the Loading Eye Junction Box. One 7-conductor 18 GA cable 45 ft (13.7m) long is provided with the kit that may, if compliant to applicable code, be used to connect the Loading Eye Junction Box to the Bay Control Panel, otherwise a site-supplied wiring method is required.
- For Precision Loading Eyes, the “Stop” photo-eye pair is the set closest to the wash entrance, and the “Back-up” photo-eye pair is the set closest to the wash exit.

Terminate the cables/wires per Sheet F-8 of the Field Wiring section of the overall machine Electrical Schematics set.

9 Sign Installation

This section provides instructions for installing the signage. This includes mounting the signs and all electrical connections.

9.1 Key Factors to Consider

- Signs must be clearly visible to the wash user.
- Audio messages coming from the signs must be easily heard by the wash user.
- Signs must not interfere with any moving parts of the wash.
- Signs must not interfere with traffic flow of wash users.
- Signs must be located to minimize the effects of sunlight causing glare on the sign face making it difficult to read.
- Signs must be located close enough to the user to easily read the words (when words are included on the sign).
- The signs can be mounted to the wash bay wall. If this is not feasible because of the wall situation, then the floor stands may be required.

9.2 Key Installation Steps

- Determine the best location for mounting the in-bay, confirmation, and entrance signs.
- Mount the In-Bay or optional Advanced Instructional sign.
- Wire the In-Bay sign with the 24VAC power, audio sign and RS-485 communications or wire the optional Advanced Instructional sign with 24VAC power, audio wires and communication cables.
- Mount and wire the Service Confirmation Sign (optional).
- Mount and wire the Entrance Sign (optional).
- Mount the Entrance Operating Instructional Sign.
- Mount and wire the Countdown Timer (optional).
- Mount and wire the Clearance Sign (optional).

NOTE:

Fasteners for mounting equipment to the walls of the wash bay or equipment room are not included with the equipment. The choice of fastener is determined by the installer so that the proper fastener is used for the wall material to which the equipment is mounted.

9.3 Special Tools

- Drill for installing wall mount fasteners for signs

9.4 PDQ Supplied Parts

The following signs may be supplied with the machine depending on the options ordered.

- Basic In-Bay Sign. Standard. This sign has an LED display with symbols for Drive Forward, Stop, and Backup to instruct the wash user during the parking process. PDQ Part No. 09020115
- Deluxe In-Bay Sign. Optional sign that may be used instead of the Basic In-Bay Sign. This sign has English language words (other languages available) for Drive Forward, Stop, and Backup along with LED chevrons pointing to the words to instruct the wash user during the parking process. PDQ Part No. 09020120.
- Advanced Instruction Sign. Optional sign that may be used instead of the Basic or Deluxe In-Bay Sign. This sign features LED back lit wording and is mounted to the end of the rails in the center of the wash bay. This helps customers park centered in the wash bay. PDQ Part No. 09020052.

	IF THE 09020252 ADVANCED INSTRUCTIONAL SIGN IS ORDERED, AND A SERVICE CONFIRMATION SIGN IS DESIRED, THE 09020293 ADVANCED SERVICE CONFIRMATION SIGN IS REQUIRED. THE ADVANCED INSTRUCTIONAL SIGN IS NOT COMPATIBLE WITH THE 09020116 SERVICE CONFIRMATION. IF THE ADVANCED SERVICE CONFIRMATION SIGN OR ADVANCED INSTRUCTIONAL SIGN ARE BEING INSTALLED AS RETROFITS, IN ADDITION TO THE SIGN AND APPROPRIATE FRAME MOUNTING KIT, RETROFIT KIT NUMBER 11350466 WILL NEED TO BE ORDERED AS UPDATES TO THE BAY BOX ARE REQUIRED TO SUPPORT THE NEW SIGNS.
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- Service Confirmation Sign. Optional. This sign has English language words (other languages available) highlighted by LED chevrons to inform the wash user during the wash which wash services have been completed. PDQ Part No. 09020116.
- Advanced Service Confirmation Sign. Optional. This sign has LED lights that backlight the current wash service in process. The Advanced Service Confirmation Sign works with the current Basic and Deluxe Instructional Sign as well as the Advanced Instructional Sign. PDQ Part No. 09020293.
- Entrance Sign. Optional. This sign has an LED display with symbols for Drive Forward and Stop/Wash Busy/Wash Closed to instruct the wash user outside the entrance to the wash. PDQ Part No. 09020117.
- Entrance Operating Instruction Sign. Optional. This sign has English language words (other languages available) with instructions for how to use the wash. PDQ Part No. 09020127.
- Countdown Timer. Optional. This sign is used with a Stand Alone Dryer to indicate to the wash user the remaining run time for the dryer as the user passes beneath it. This is available in English language and versions with no words (symbols only). It is also available in a basic version with the time display and a deluxe version with the time display and drive forward chevron.
- Clearance Sign. Optional. This sign is installed at the wash entrance to indicate overhead clearance restrictions and warn users with high clearance vehicles prior to entering the wash. This sign is available with or without a stand and with or without lighting. It is also available with English and other languages and with imperial and metric height dimensions.
- Sign Stand for Floor Mounting. Optional. This option provides a metal pedestal that may be used for mounting the In-Bay, Entrance, Service Confirmation Sign, or Countdown Timer to the floor of the wash bay or to the pavement outside the wash bay. This is used when wall mounting is not feasible. PDQ Part No. 09100113.

9.5 Site Supplied Parts

- Mounting hardware for securing the sign to the wash site structure
- Wire and conduit for installing electrical lines between the sign and the other interconnecting control boxes in the system.

9.6 Determine Sign Locations

Installation should begin with determining the best placement for the signs. Figure 165, Figure 166, Figure 167 and Figure 168 show the general locations recommended for the signs. Actual location should be determined based on the Key Factors to Consider, listed in 9.1.

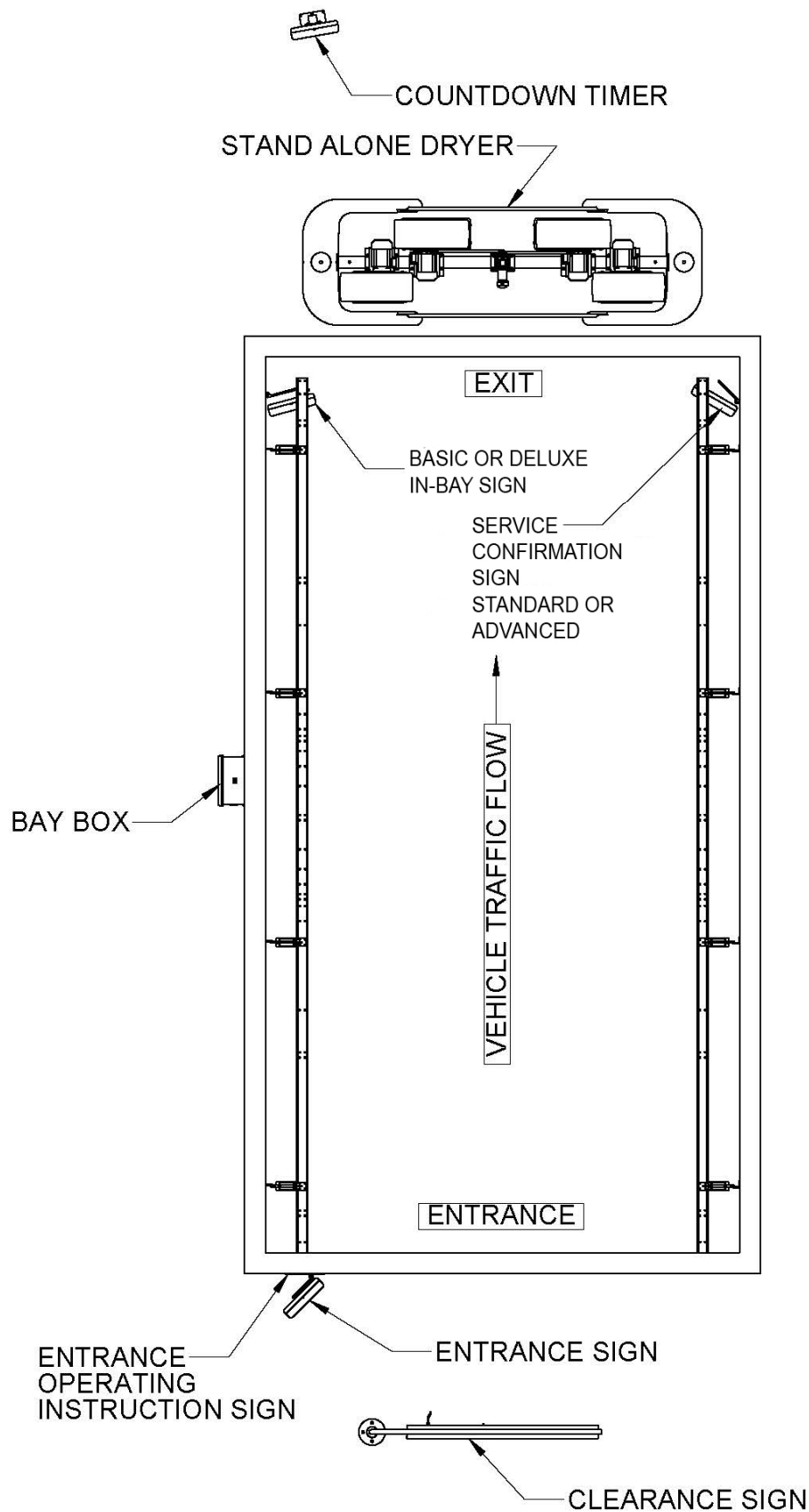


Figure 165 – Sign Locations, Basic or Deluxe In-Bay Signs, Plan View

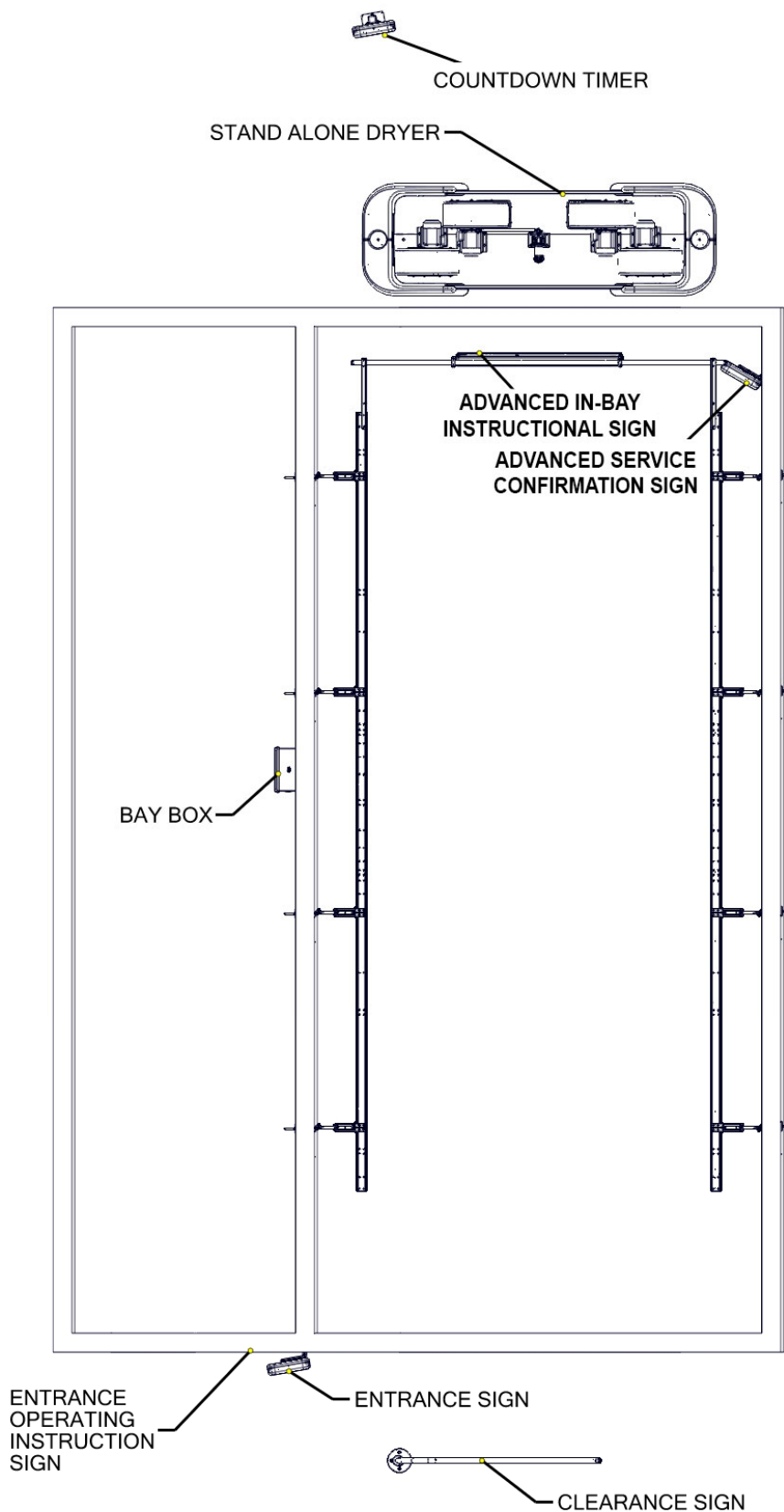


Figure 166 – Sign Locations, Advanced In-Bay Signs, Plan View

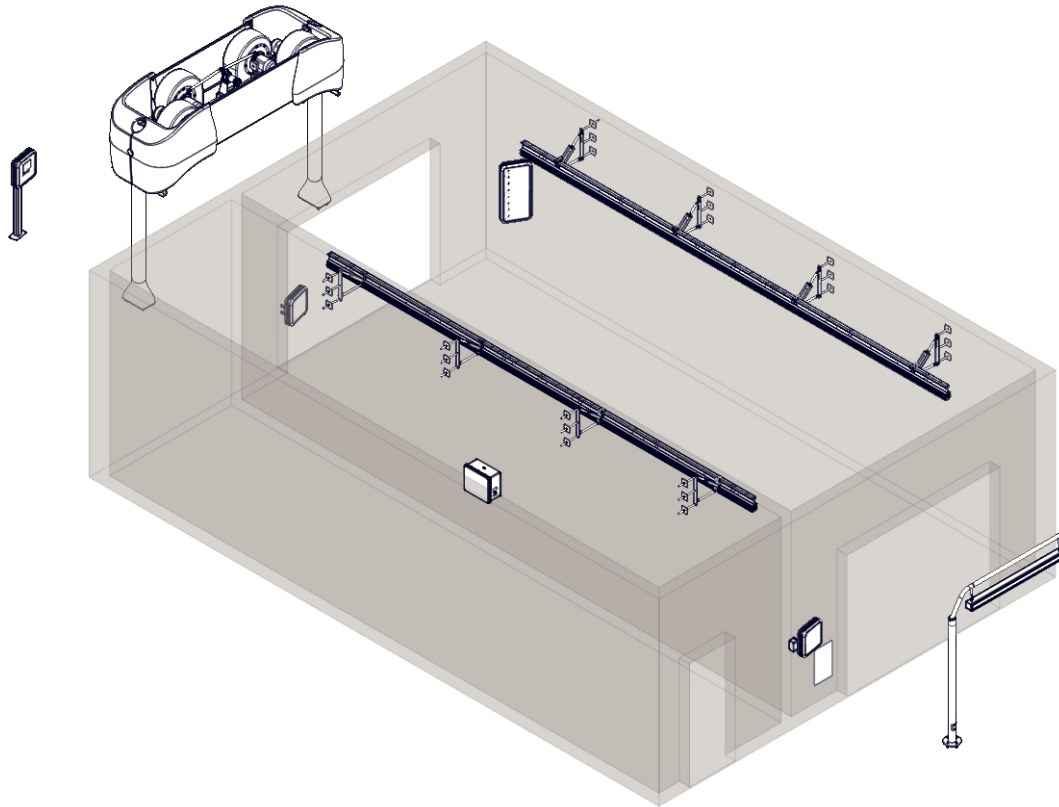


Figure 167 - Sign Placement in Wash Bay

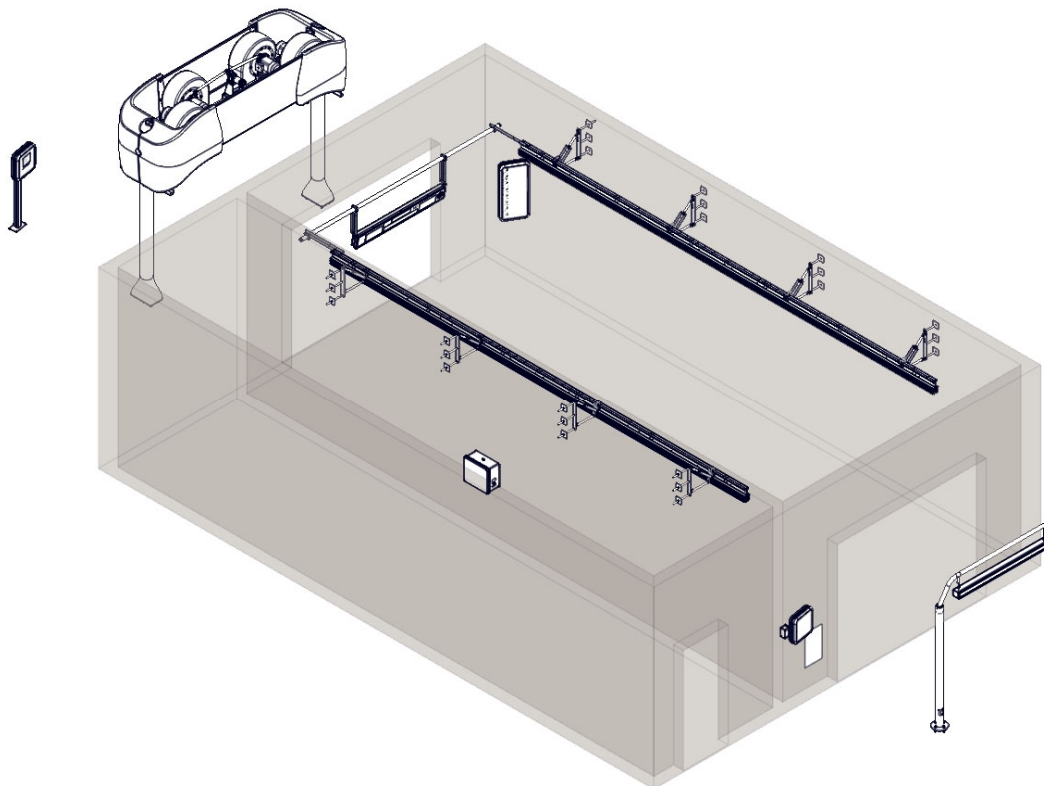


Figure 168 – Sign Placement in Wash Bay, Advanced In-Bay Signs

9.7 In-Bay Sign Installation (Basic or Deluxe)

(Proceed to Section 9.8 for Advanced Instructional Sign Installation)



Figure 169 - Basic In-Bay Sign



Figure 170 - Deluxe In-Bay Sign—English Version

9.7 Step 1 Prepare the In-Bay Sign for Mounting (Basic or Deluxe)

Prior to mounting the sign, the fittings for the wires for the sign must be installed to the sign housing.

- A conduit connector must be added to both the In-Bay sign and the Bay Box. The connectors and conduit is site supplied. If a Service Confirmation Sign is also being installed, then two conduit runs are required into the sign.
- To add the connector to the In-Bay sign housing:
 - Remove the fasteners securing the sign face to the sign base and remove the sign face.
 - Remove the sign circuit board from the stand-off fasteners for the Basic In-Bay Sign only. Use care to not damage the circuit board or its fasteners. See Figure 171 for the Basic In-Bay Sign and Figure 172 for the Deluxe In-Bay Sign.
 - The back cover of the sign enclosure has center marks to aid in the drilling process. Drill one or two holes to the size needed for the site supplied conduit connector. Caution must be taken not to damage the audio speaker. See the detail views in Figure 171 and Figure 172.
 - After installing conduit connectors, reinstall the sign board and the sign face.

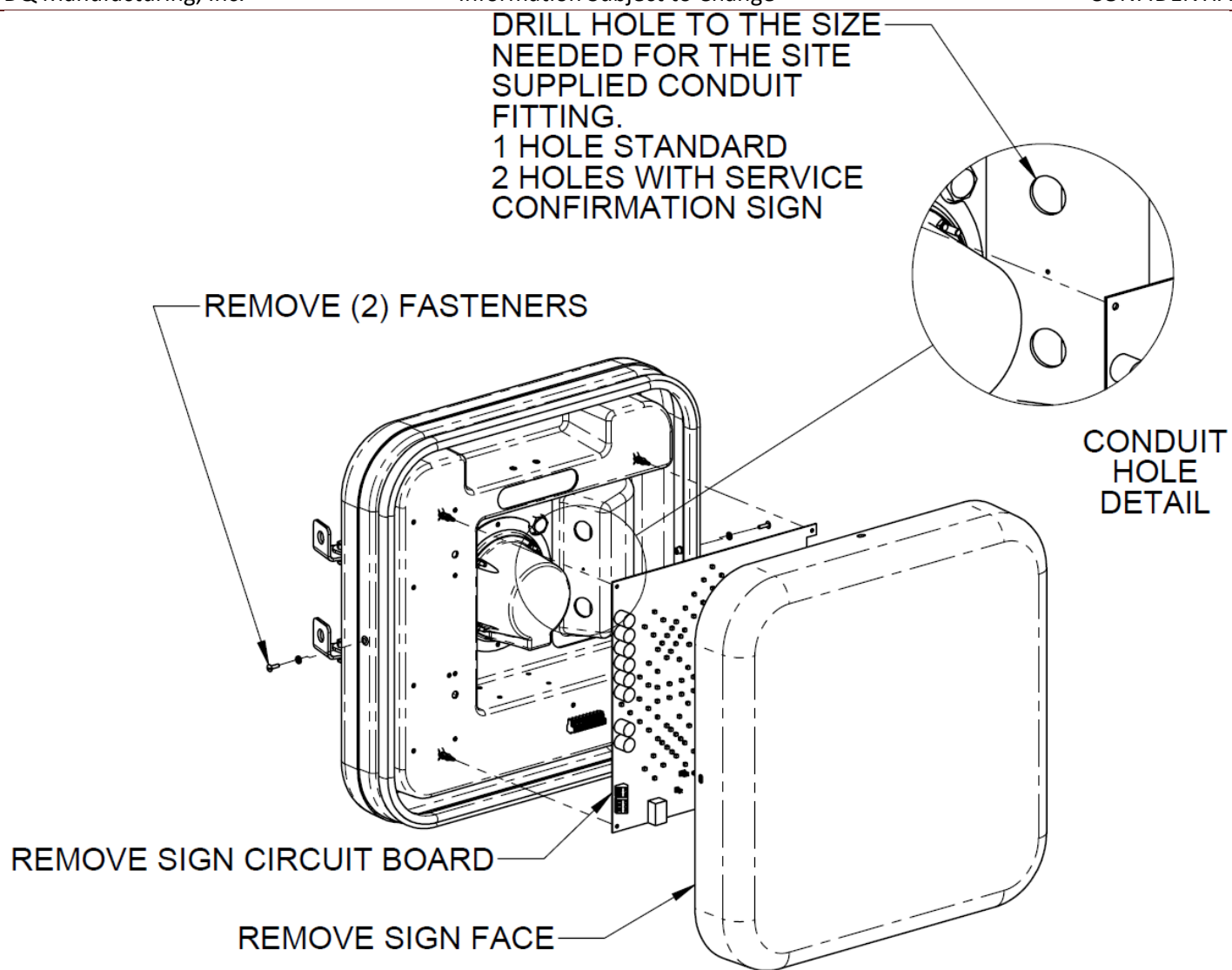


Figure 171 – Basic In-Bay Sign Preparation for Installation

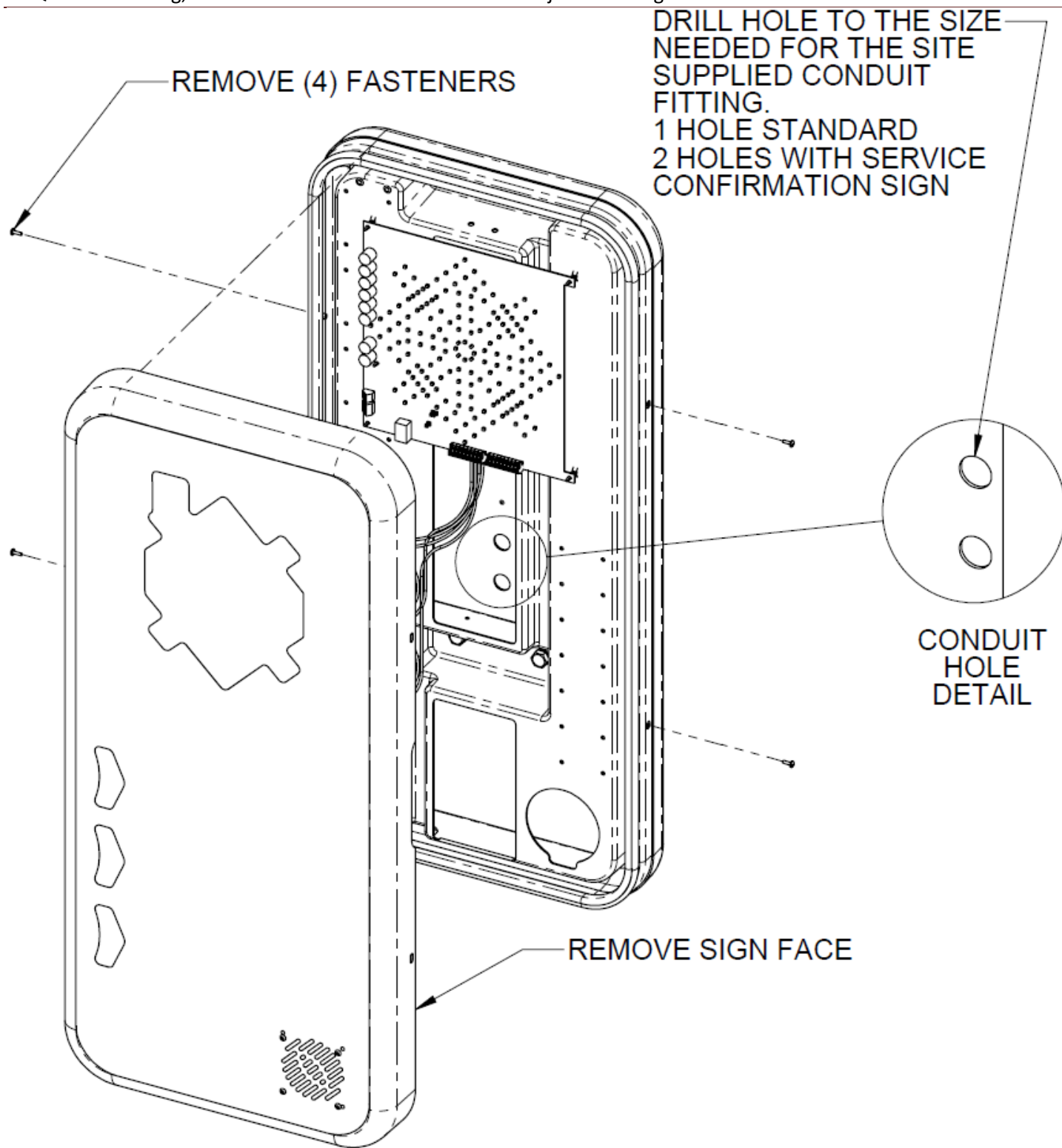


Figure 172 - Deluxe In-Bay Sign Preparation for Installation

9.7 Step 2 Mount the In-Bay Sign to the Wall (Basic or Deluxe)

- The sign is built with the wall mount brackets oriented for mounting to the left side wall of the wash bay. If it is necessary to mount it to the right side wall, the brackets may be disassembled and flipped so that the mounting holes point in the proper direction for mounting to the right wall. When reassembling the brackets, always be sure the long brackets attached to the sign back are assembled on top of the smaller wall brackets, Figure 173.
- Determine the proper height for the In-Bay Sign based on the wash bay situation.
 - For the Basic In-Bay sign, the recommended height is 75 in (1905mm) from the floor to the lowest mounting hole. The second hole is located 4 ½" (114.3mm) above the first hole. This mounting will allow enough height for the service confirmation sign to be installed directly below the in-bay sign if desired.
 - For the Deluxe In-Bay Sign, the recommended height is 59 in (1499mm) from the floor to the lowest mounting hole. The second hole is located 16 in (406mm) above the first hole.
- Mounting the sign to the wash bay wall requires two installer-supplied fasteners to secure the sign to the wall. Use the appropriate fasteners for the wall material. Mount the sign securely to the wall, Figure 174.
- Adjust the sign position in the best direction for the wash user's visibility. The fasteners between the sign brackets may be loosened to allow the sign to be tilted side to side. Retighten the fasteners after adjusting.

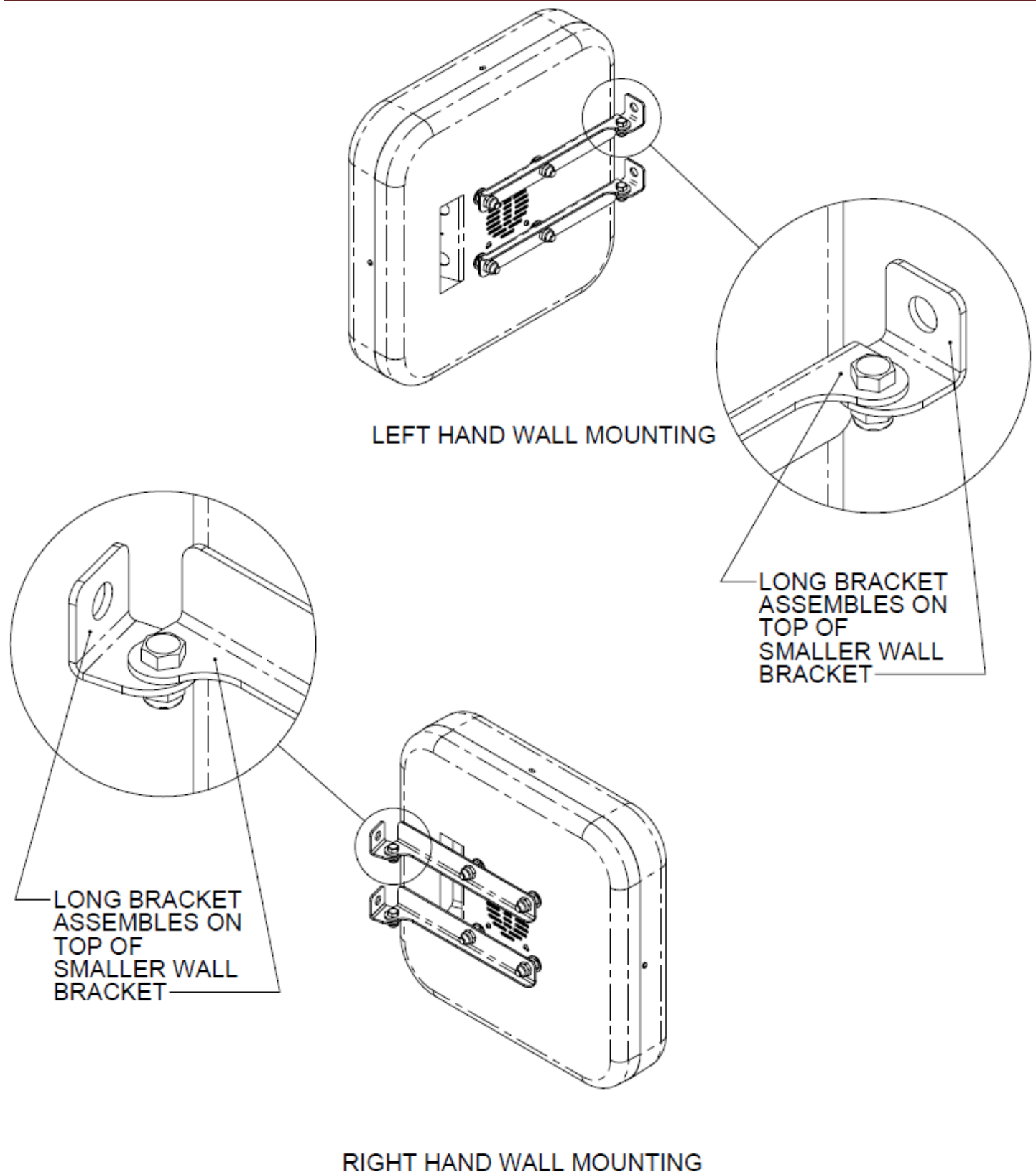


Figure 173 - Sign Wall Mount Brackets for Left and Right Wall Mounting

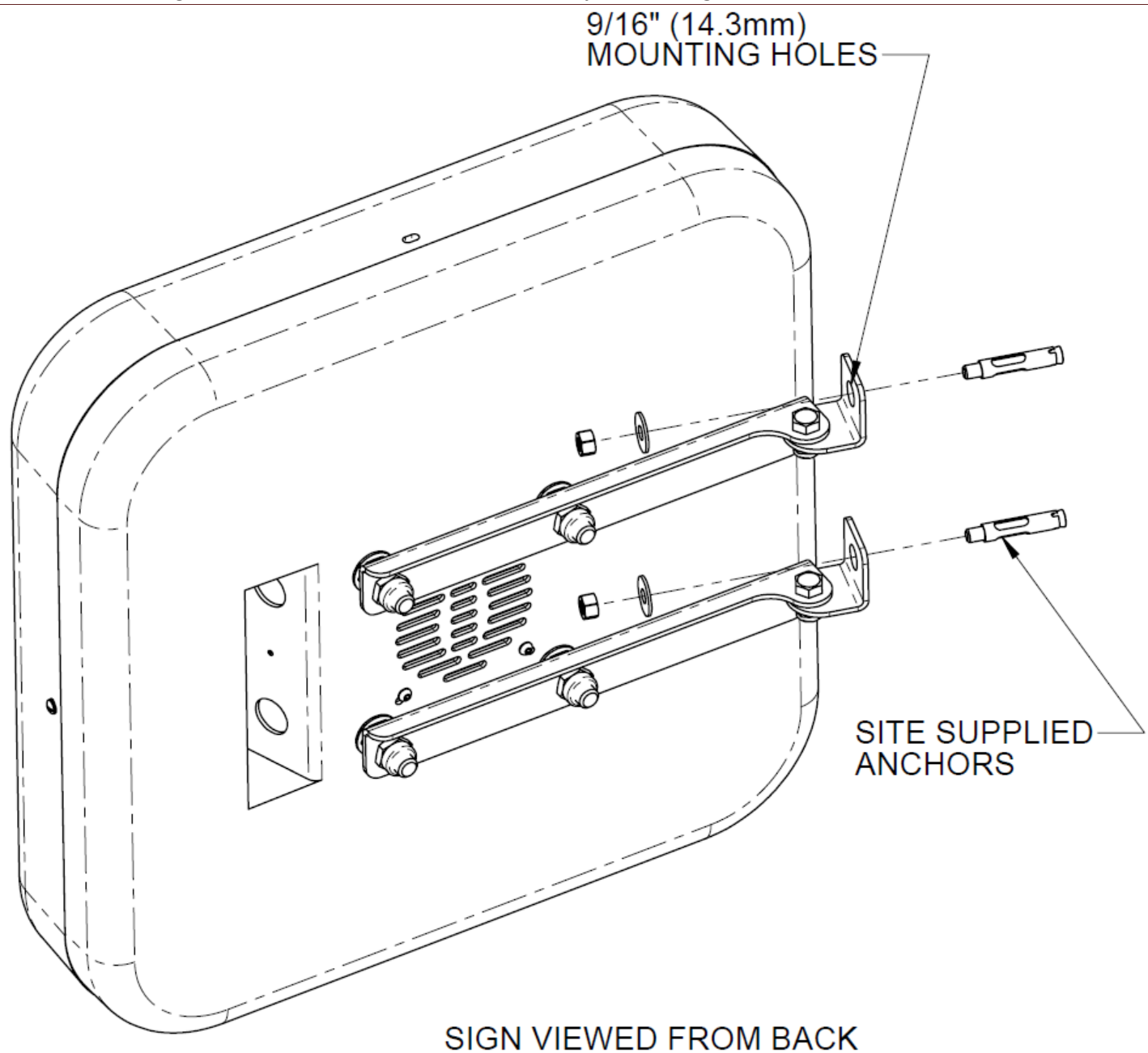


Figure 174 - Wall Mounting the In-Bay Sign

9.7 Step 3 Wire the In-Bay Sign

If the site includes the optional classic Service Confirmation Sign, this is wired to the In-Bay sign. The optional Advanced Service Confirmation Sign is wired to the Bay Control Box. Refer to Section 9.14 for all sign wiring instructions.

9.8 Advanced Instructional Sign Installation

Figure 175 shows the Advanced Instructional Sign. This sign is used to instruct the wash user on the steps to use the wash.

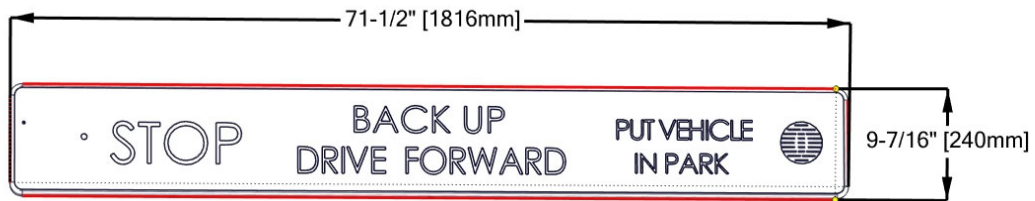


Figure 175- Advanced In-Bay Instructional Sign

9.8.1 Step 1 Prepare Sign for Mounting

Prior to mounting the sign, the fittings for the wires for the sign must be installed to the sign housing.

- A conduit connector must be added to both the Advanced Instructional sign and the Bay Box. The connectors and conduit are site supplied. If a Service Confirmation Sign is also being installed, then another conduit run is required from the Bay Box to the Service Confirmation Sign.
- To add the connector to the Advanced Instructional sign housing:
 - Remove the fasteners securing the sign face to the sign base and remove the sign face.
 - Remove the conduit hole plug located on the back of the sign base, Figure 176.
 - After installing conduit connector, reinstall the sign face.

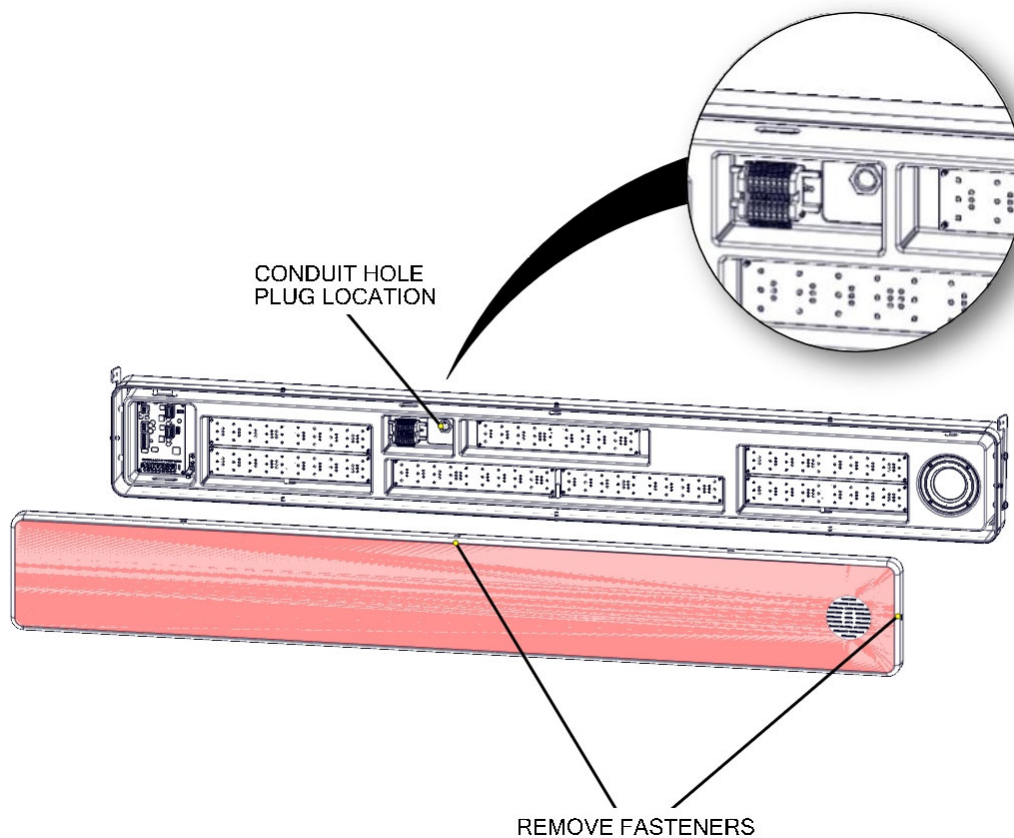


Figure 176 – Advanced Instructional Sign Preparation for Installation

9.8.1 Step 2 Mount Advanced Instructional Sign to Frame

The Advanced Instructional Sign is mounted to the exit end of the wash frame, centered between the rails. The Advanced Instructional Sign may be mounted to either a wall mount or a Free Standing frame.



THE ADVANCED INSTRUCTIONAL SIGN REQUIRES 26" (66cm) OF CLEARANCE FROM THE EXIT END OF THE RAIL FOR A WALL MOUNT FRAME AND 16" (41cm) OF CLEARANCE FROM THE EXIT END OF THE FRAME LEG FOR A FREE STANDING FRAME FOR INSTALLATION.

- The sign is in clear view of the user entering the wash.
- Secure the sign to the frame using site supplied fasteners per frame type.

Free Standing Frame Installation –

- For a Free Standing frame installation, the Instructional Sign is mounted to the frame at the exit end of the wash per Figure 177 and Figure 178.

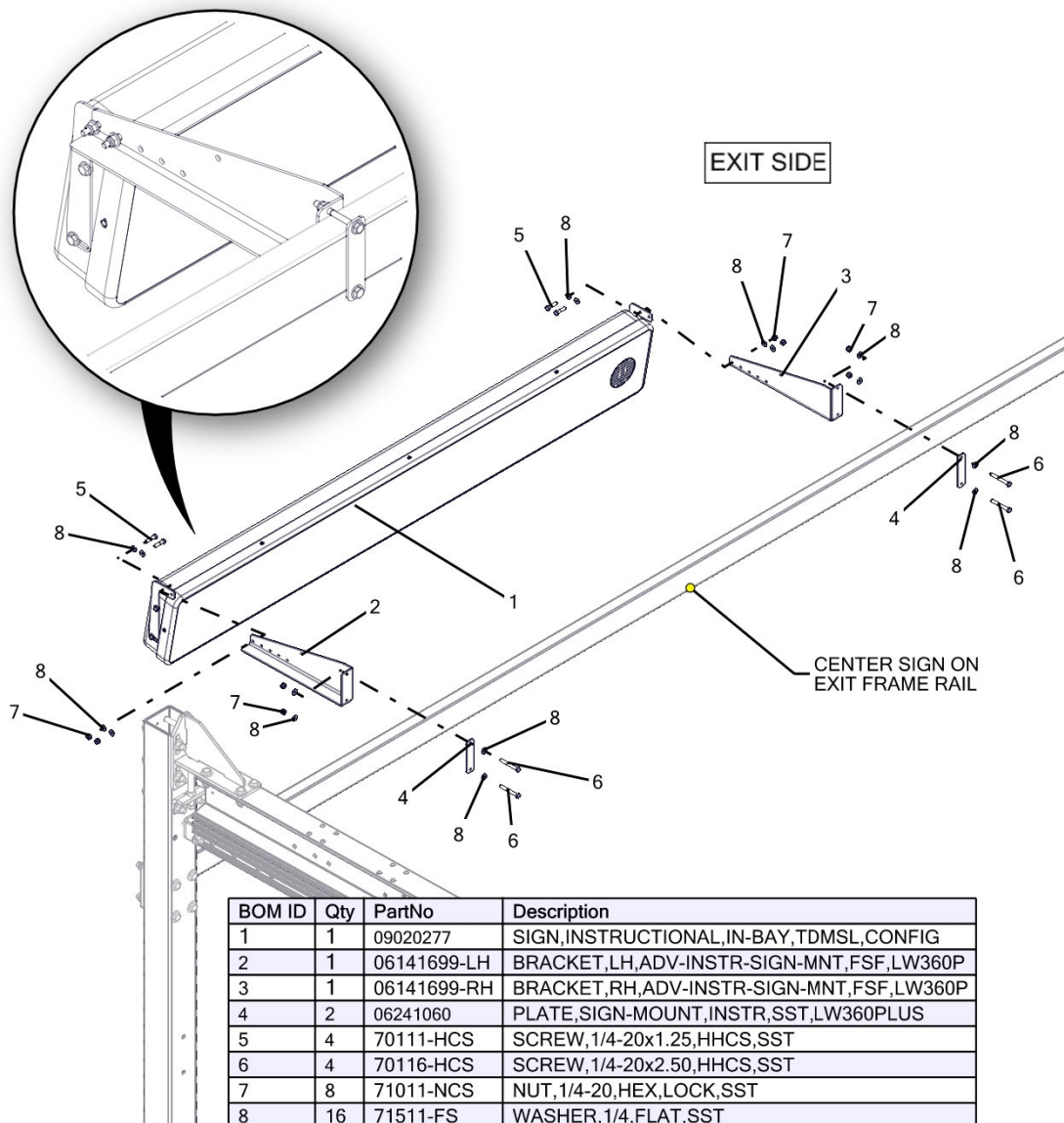


Figure 177 – Advanced In-Bay Instructional Sign Free Standing Frame Installation

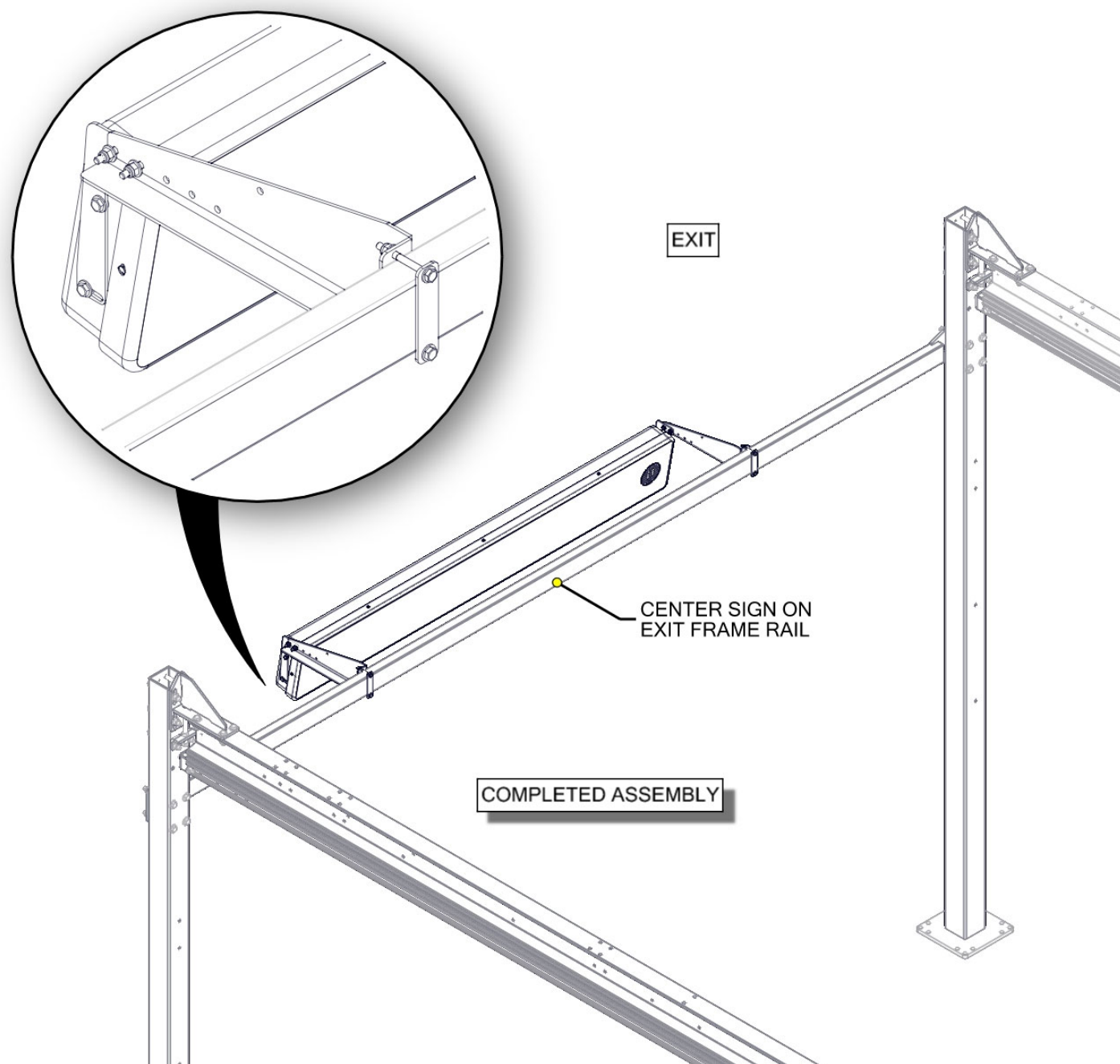
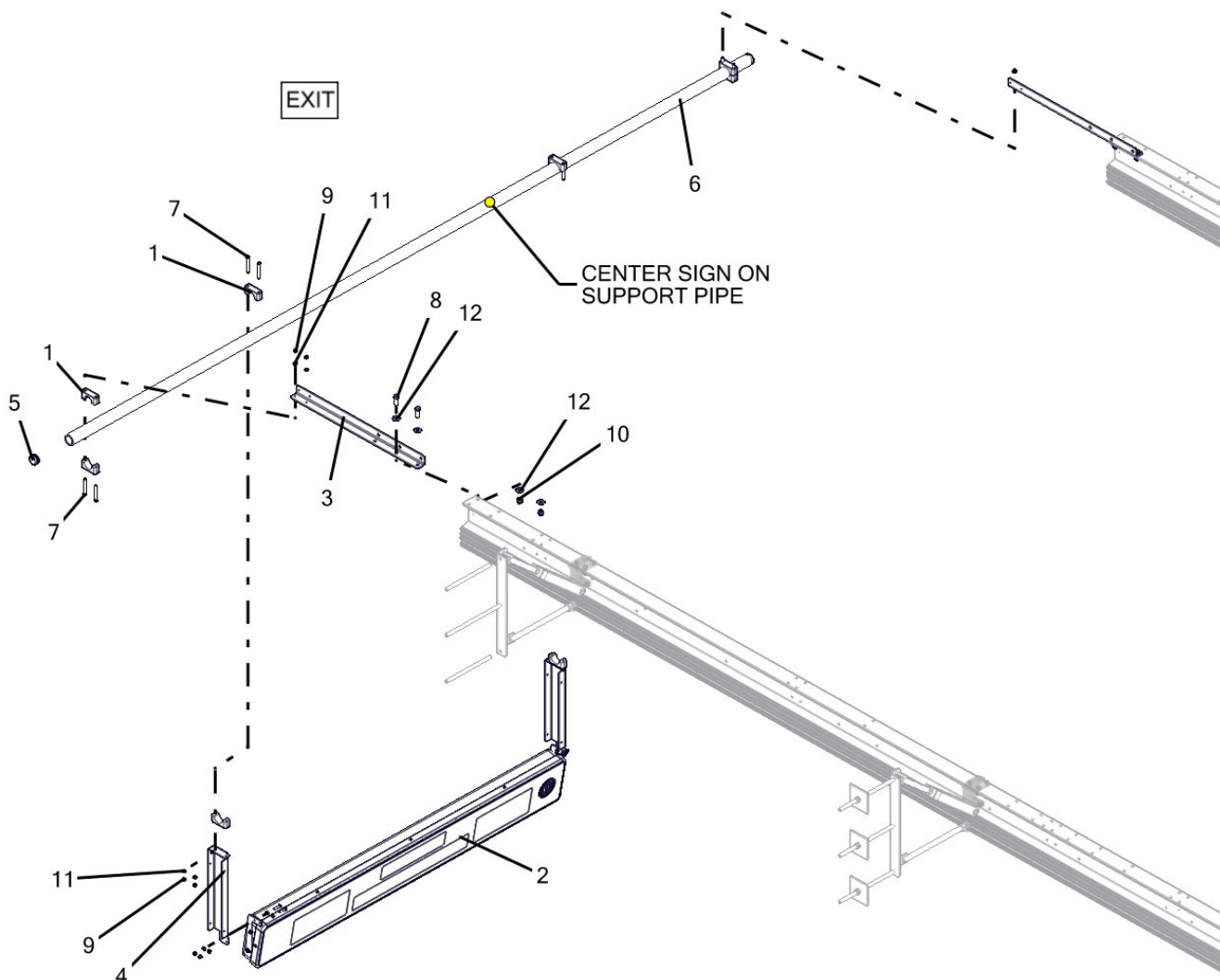


Figure 178 – Advanced In-Bay Instructional Sign Free Standing Frame Completed Assembly

Wall Mount Frame Installation –

- For a wall mount frame, a bracket is installed between the rails at the exit end of the wash. The Advanced Instructional sign is mounted to the bracket, Figure 179 and Figure 180.



BOM ID	Qty	PartNo	Description
1	4	05050067	CLAMP,PIPE,1-1/2,PP,STANDARD
2	1	09020277	SIGN,INSTRUCTIONAL,IN-BAY,TDMSL,CONFIG
3	2	06141697	BRACKET,WALL-MNT,INSTR-SIGN,SST,LW360P
4	2	06141698	BRACKET,WALL-MNT,INSTR-SIGN,VERT,LW360P
5	2	06160573	COVER,END-CAP,PIPE,WALL-MNT,SIGN
6	1	06370124	PIPE,SUPPORT,WALL-MNT,INSTR-SIGN,SST
7	8	70118-SCS	SCREW,1/4-20x3.00,PPHMS,SST
8	4	70257-HCS	SCREW,1/2-13x1.50,HHCS,SST
9	8	71011-NCS	NUT,1/4-20,HEX,LOCK,SST
10	4	71015-NCS	NUT,1/2-13,HEX,LOCK,SST
11	8	71511-FS	WASHER,1/4,FLAT,SST
12	8	71515-FSS	WASHER,1/2,FLAT,SST

Figure 179 – Advanced In-Bay Instructional Sign Wall Mount Installation

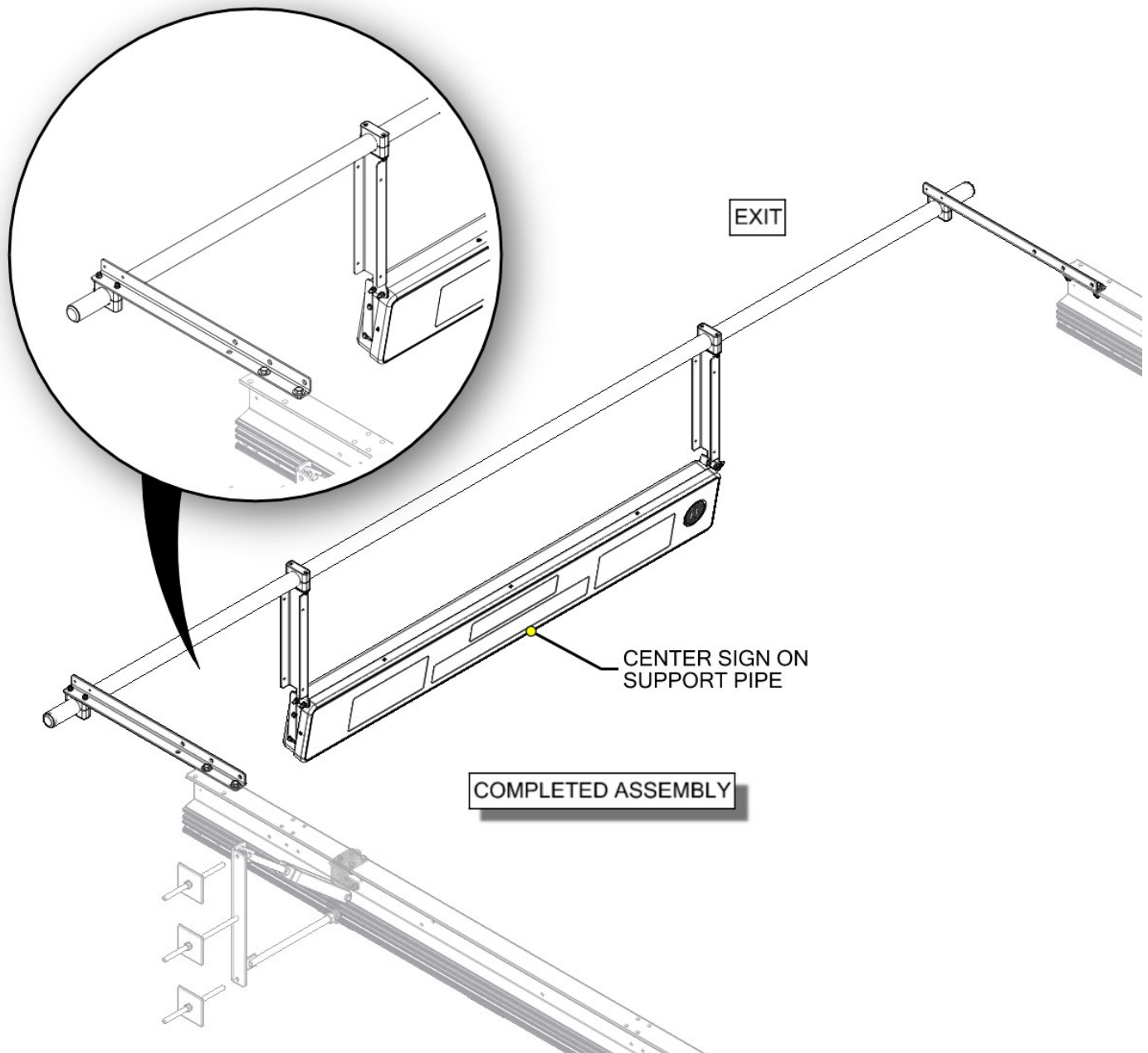


Figure 180 - Advanced In-Bay Instructional Sign Wall Mount Assembly

9.8.1 Step 3 – Adjust Sign Visibility

- Angle the Advanced Instructional Sign towards the floor of the wash for maximum visibility, Figure 181.

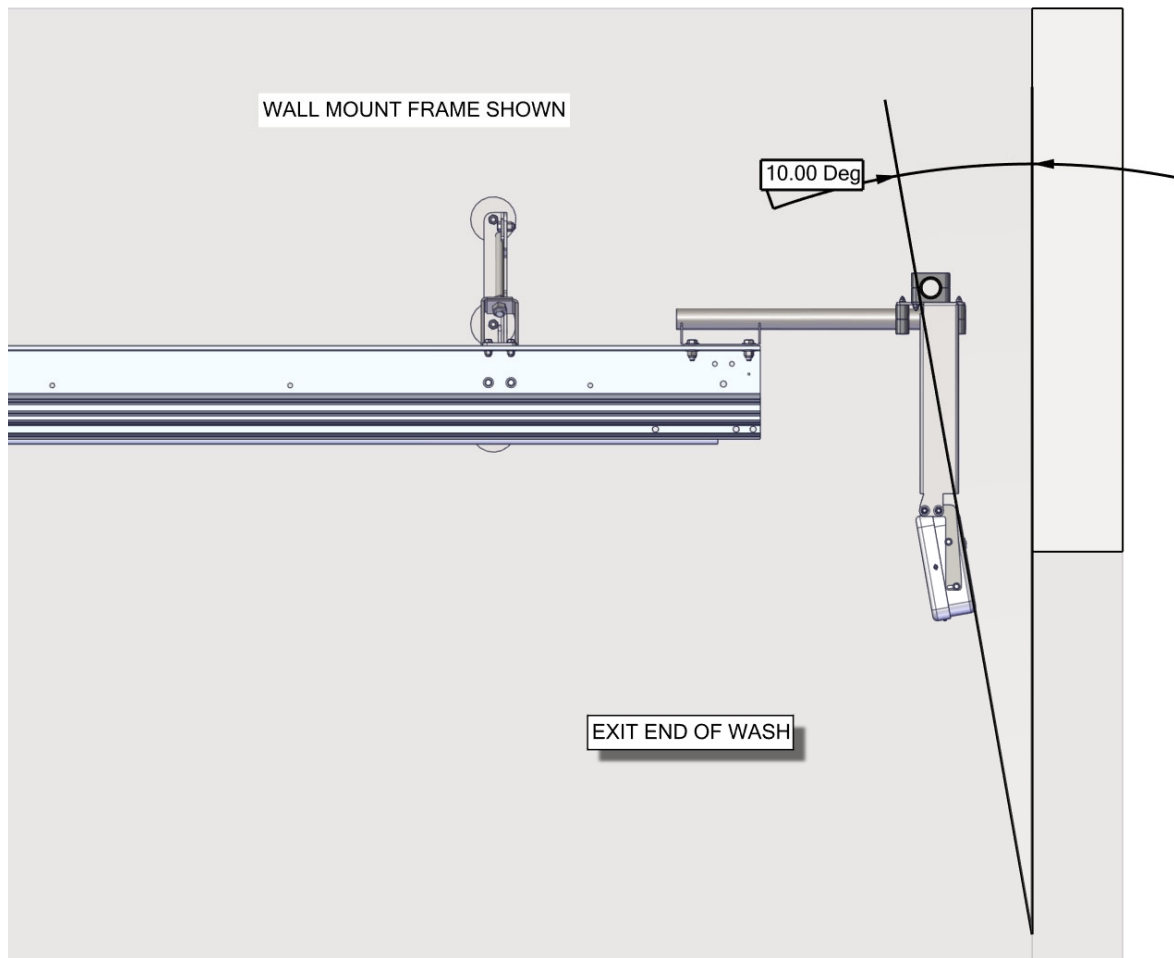


Figure 181 – Angle Instructional Sign

9.9 Service Confirmation Sign Installation (Basic, Deluxe or Advanced Service Confirmation)



IF THE 09020252 ADVANCED INSTRUCTIONAL SIGN IS ORDERED, AND A SERVICE CONFIRMATION SIGN IS DESIRED, THE 09020293 ADVANCED SERVICE CONFIRMATION SIGN IS REQUIRED. THE ADVANCED INSTRUCTIONAL SIGN IS NOT COMPATIBLE WITH THE 09020116 SERVICE CONFIRMATION SIGN.



Figure 182 - Service Confirmation Sign – English Version

9.9 Step 1 Prepare the Service Confirmation Sign for Mounting

Prior to mounting the sign, the fittings for the wires for the sign must be installed to the sign housing.

- A conduit connector must be added to the Service Confirmation Sign. The connectors and conduit are site supplied.
- To add the connector to the Service Confirmation Sign housing:
 - Remove the fasteners securing the sign face to the sign base and remove the sign face.
 - **Advanced Service Confirmation Sign Only** - Remove top two LED boards and controller board before drilling access holes. Figure 184.
 - The back cover of the sign enclosure has center marks to aid in the drilling process. Drill one hole to the size needed for the site supplied conduit connector. See the detail view in Figure 183 or Figure 184.
 - After installing conduit connectors, reinstall the sign face.

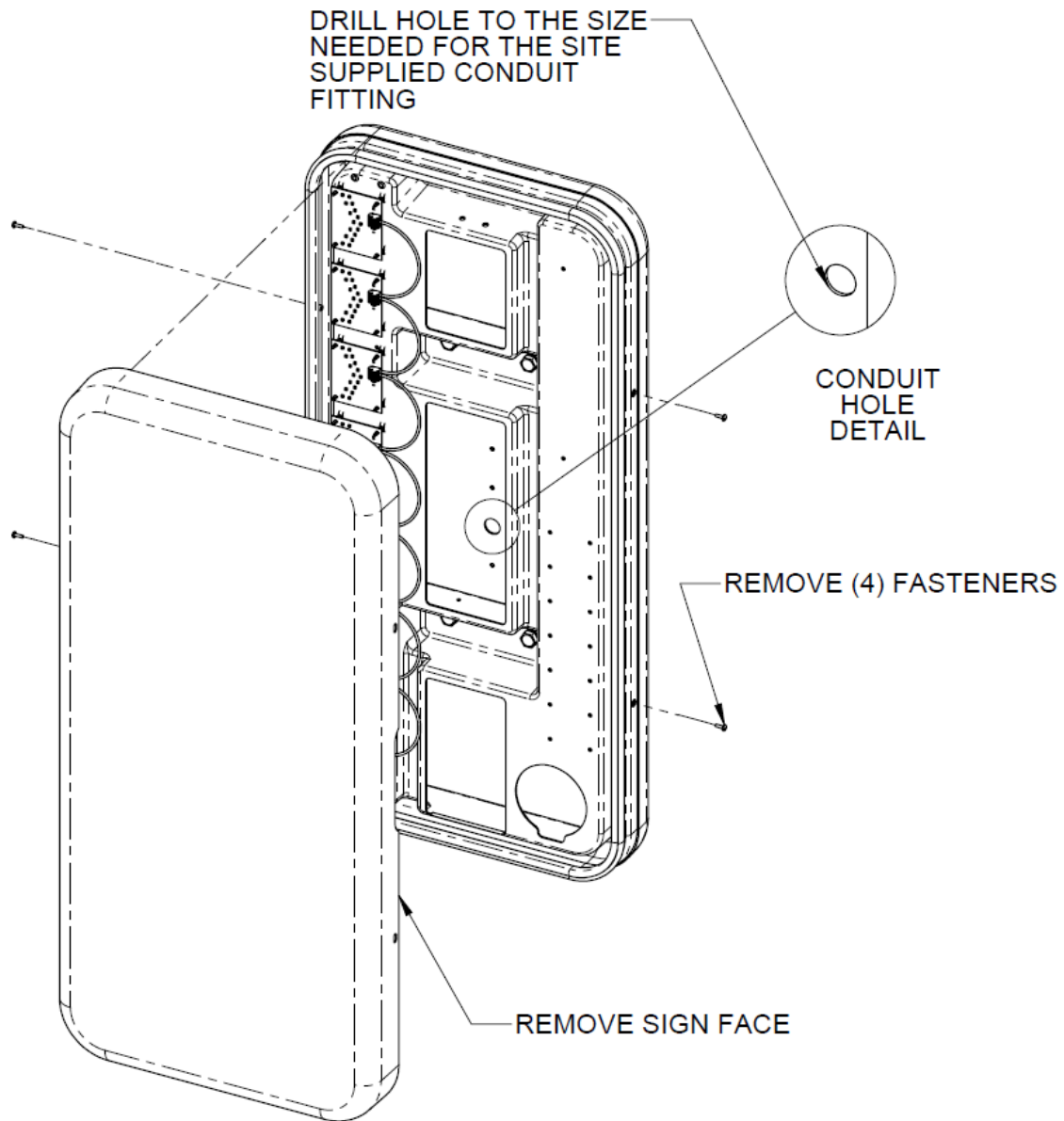


Figure 183 -Service Confirmation Sign Preparation for Installation, Basic or Deluxe

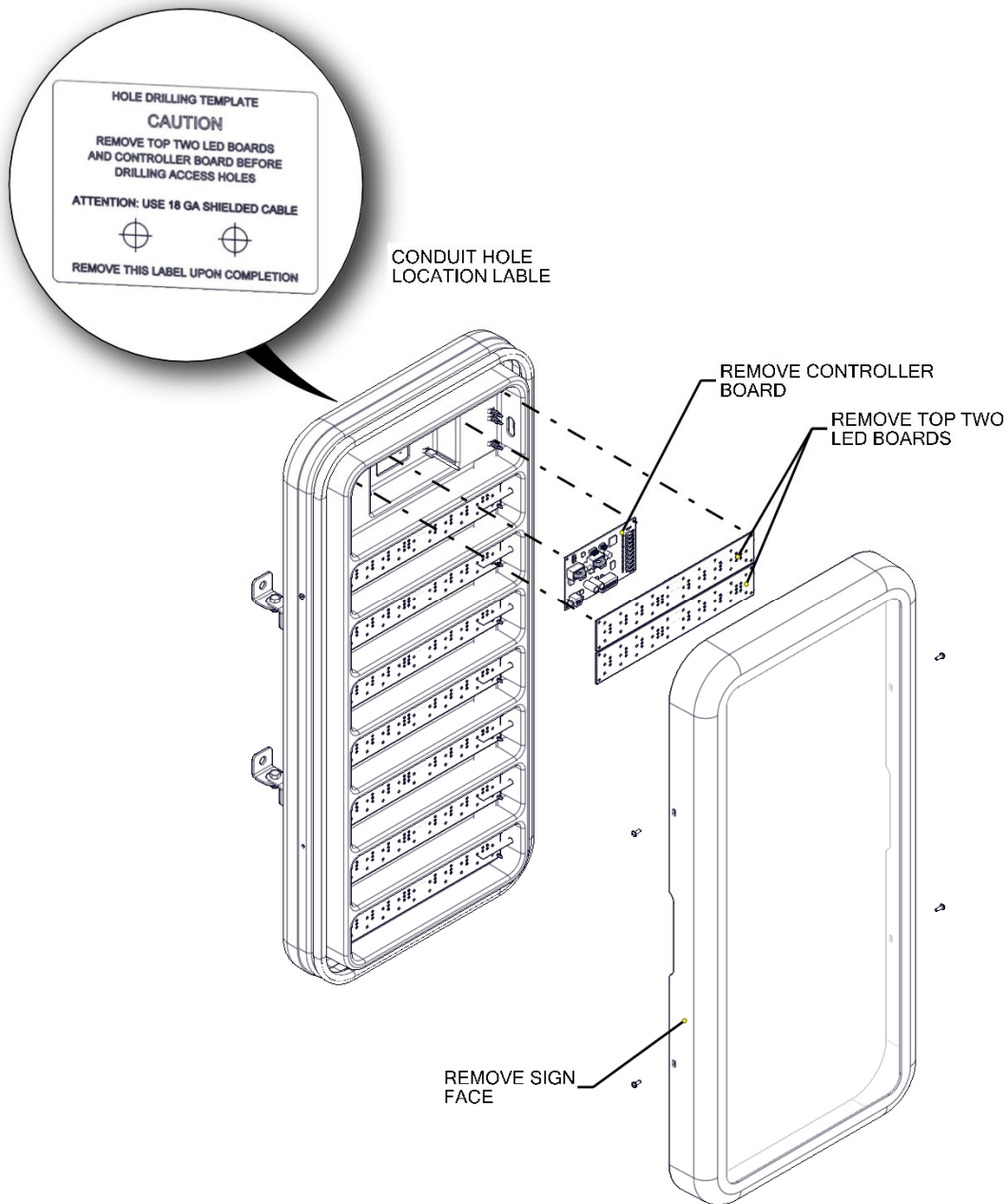


Figure 184 – Advanced Service Confirmation Sign Preparation for Installation

9.9 Step 2 Mount the Service Confirmation Sign to the Wall

- The sign is built with the wall mount brackets oriented for mounting to the left wall of the wash bay. If it is necessary to mount the sign to the right wall, the brackets may be disassembled and flipped so that the mounting holes point in the proper direction for mounting to the right wall. When reassembling the brackets, always be sure the long brackets attached to the sign back are assembled on top of the smaller wall brackets, Figure 185.
- Determine the proper height for the Service Confirmation Sign based on the wash bay situation.
 - If the Basic In-Bay Sign is mounted on the same side of the wash bay as the desired location for the Service Confirmation Sign, the Service Confirmation Sign may be mounted directly below the Basic In-Bay Sign.

- Alternatively, the recommended height for the Service Confirmation Sign is 59 in (1499mm) from the floor to the lowest mounting hole. The second hole is located 16 in (406mm) above the first hole.
- Mounting the sign to the wash bay wall requires two installer-supplied fasteners to secure the sign to the wall. Use the appropriate fasteners for the wall material. Mount the sign securely to the wall.
- Adjust the sign position in the best direction for the wash user’s visibility. The fasteners between the sign brackets may be loosened to allow the sign to be tilted side to side. Retighten the fasteners after adjusting.

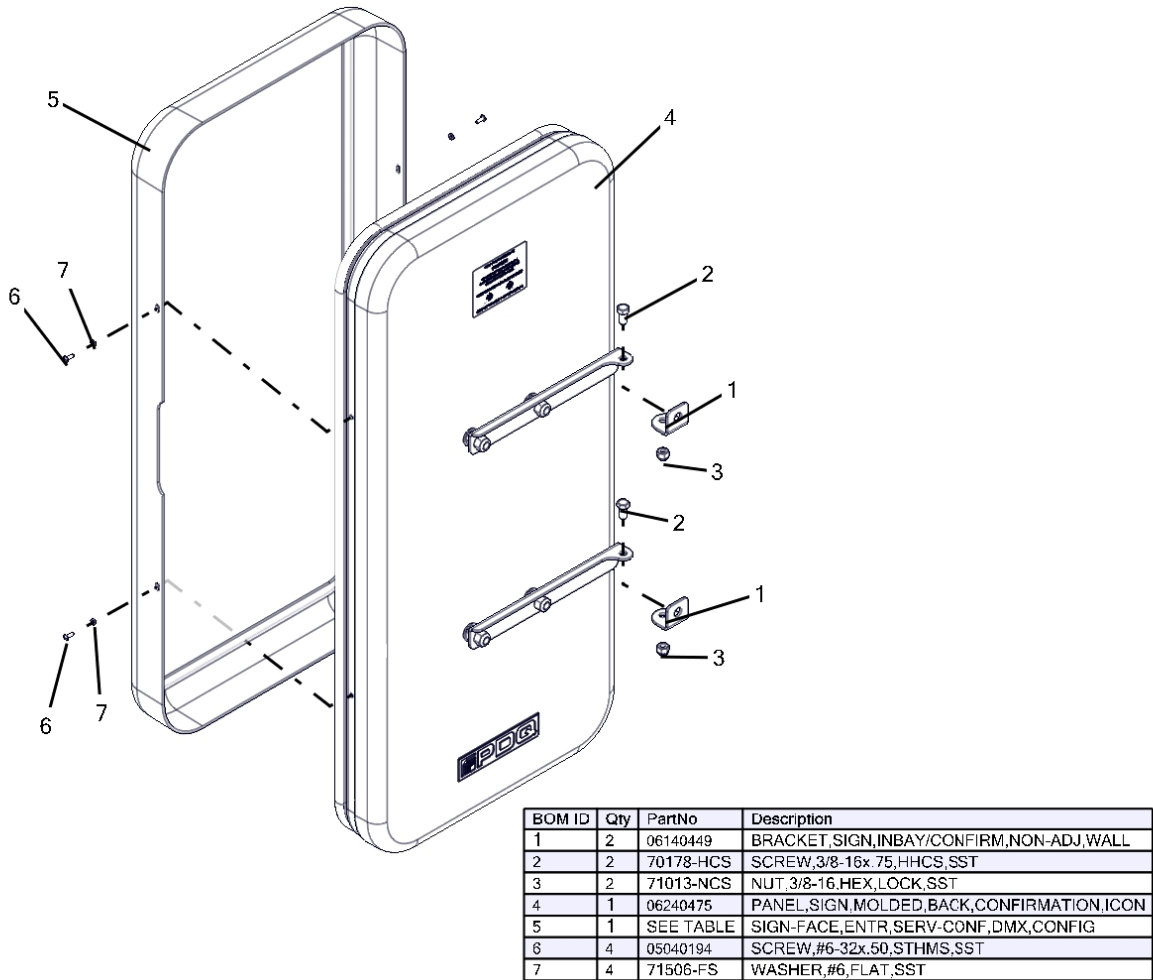


Figure 185 – Service Confirmation Sign

9.9 Step 3 Wire the Service Confirmation Sign

The Classic Service Confirmation Sign is wired to the In-Bay sign. The Advanced Service Confirmation Sign is wired to the Bay Sign. Be sure to consider this when terminating connections. Refer to Section 9.14 for all sign wiring instructions.

9.10 Entrance Sign Installation

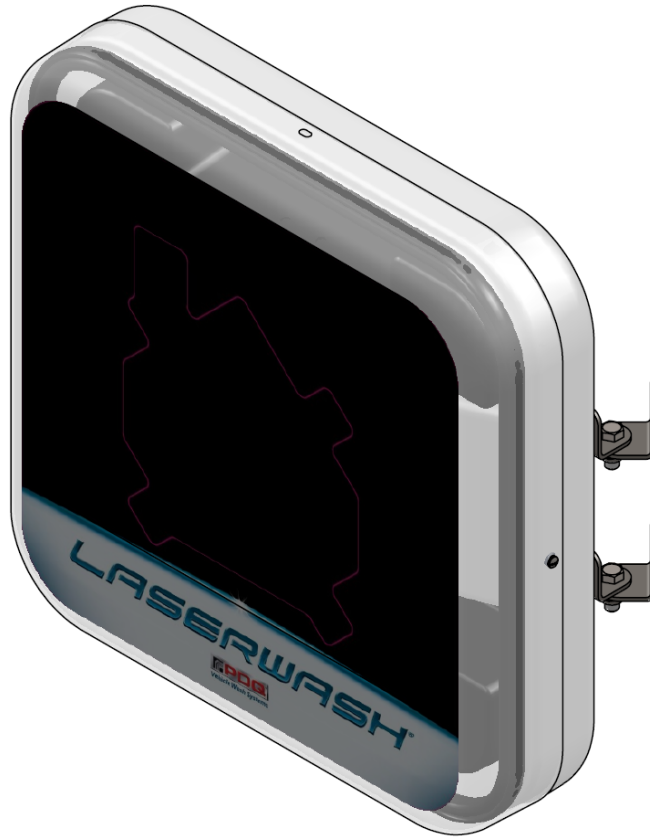


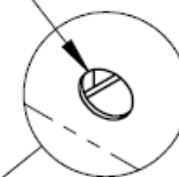
Figure 186 – Entrance Sign

9.10 Step 1 Prepare the Entrance Sign for Mounting

Prior to mounting the sign, the fittings for the wires for the sign must be installed to the sign housing.

- A conduit connector must be added to both the Entrance Sign and the Bay Box. The connectors and conduit are site supplied.
- To add the connector to the Entrance Sign housing, Figure 187:
 - Remove the fasteners securing the sign face to the sign base and remove the sign face.
 - Remove the sign circuit board from the stand-off fasteners. Use care to not damage the circuit board or its fasteners.
 - The back cover of the sign enclosure has center marks to aid in the drilling process. Drill one hole to the size needed for the site supplied conduit connector.
 - After installing conduit connector, reinstall the sign board and the sign face.

DRILL HOLE TO THE SIZE
NEEDED FOR THE SITE
SUPPLIED CONDUIT
FITTING.



CONDUIT
HOLE
DETAIL

REMOVE (2) FASTENERS

REMOVE SIGN CIRCUIT BOARD

REMOVE SIGN FACE

Figure 187 - Entrance Sign Preparation for Installation

9.10 Step 2 Mount the Entrance Sign to the Wall

- The sign is built with the wall mount brackets oriented for mounting to the left wall of the wash bay. If it is necessary to mount the sign to the right wall, the brackets may be disassembled and flipped so that the mounting holes point in the proper direction for mounting to the right wall. When reassembling the brackets, always be sure the long brackets attached to the sign back are assembled on top of the smaller wall brackets, Figure 173. As an alternative mounting, the Entrance Sign may be mounted above the entrance door to the wash bay.
- Determine the proper height for the Entrance Sign based on the wash bay situation.
 - The recommended height for the Entrance sign is 75 in (1905mm) from the floor to the lowest mounting hole. The second hole is located 4 ½" (114.3mm) above the first hole.
- Mounting the sign to the wash bay wall requires two installer-supplied fasteners to secure the sign to the wall. Use the appropriate fasteners for the wall material similar to Figure 174. Mount the sign securely to the wall.
- Adjust the sign position in the best direction for the wash user's visibility. The fasteners between the sign brackets may be loosened to allow the sign to be tilted side to side. Retighten the fasteners after adjusting.

9.10 Step 3 Wire the Entrance Sign

Refer to Section 8.14 for all sign wiring instructions.

9.11 Entrance Operating Instruction Sign Installation

Figure 188 shows the optional Entrance Operating Instruction Sign. This sign is used to instruct the wash user on the steps to use the wash. If the wash site chooses not to use this sign and order a different sign to serve this purpose, this sign should include the steps listed on the Entrance Operating Instruction Sign, Figure 188.

- Determine the best location for the Entrance Operating Instruction Sign. It should be placed in clear view of the user waiting to enter the wash. It should be placed close enough to the queuing area so that the user can read the text on the sign.
- Secure the sign to a wash site structure using site supplied fasteners.

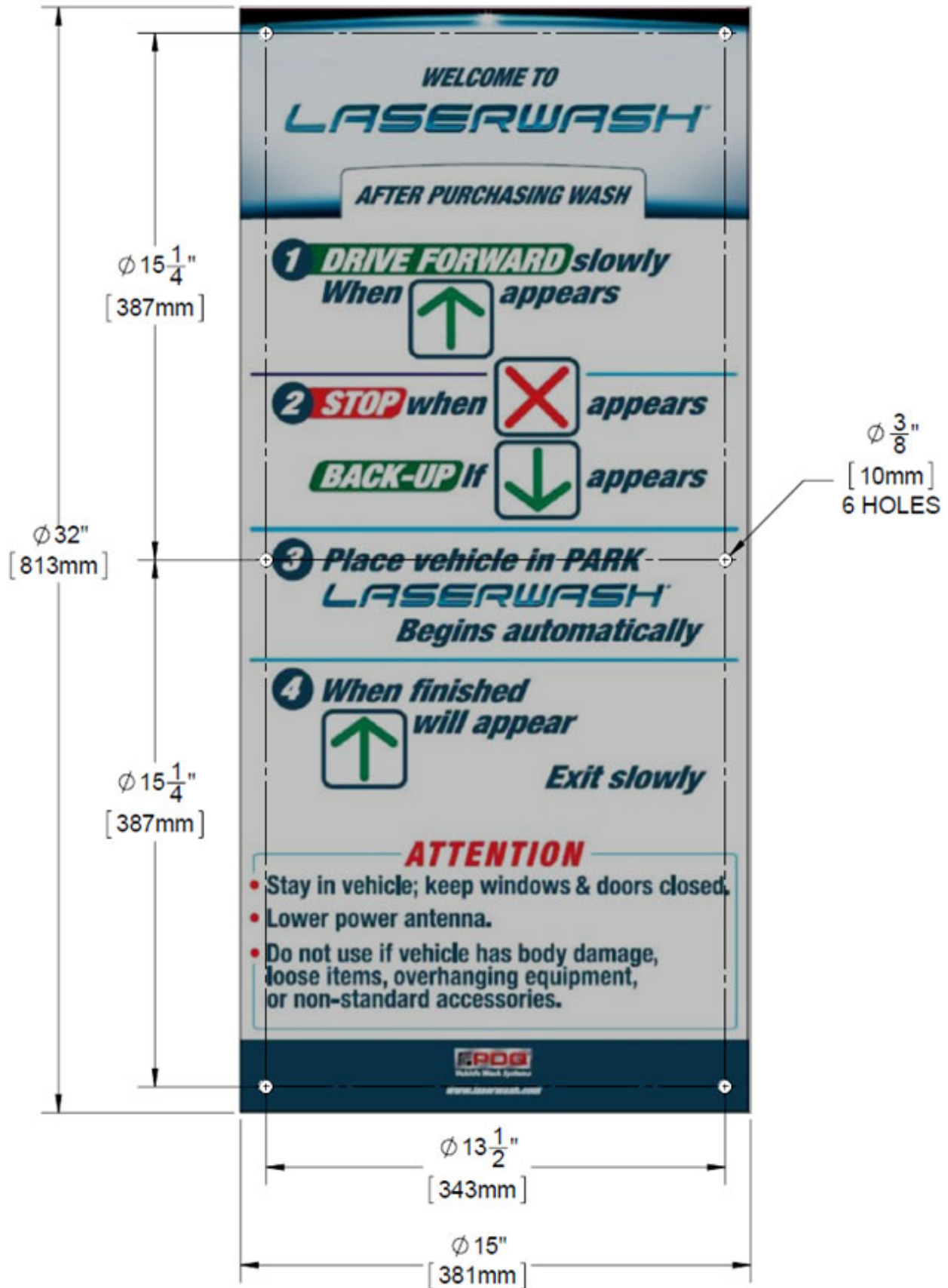


Figure 188 - Entrance Operating Instruction Sign

9.12 Countdown Timer Sign Installation

When installing the Countdown Timer Sign, install the unit using the manual provided with the timer (PDQ Manual Part No. 10060003). This manual is also available from the PDQ website (www.pdqinc.com). The Countdown Timer Sign is wired to the Bay Box. Refer to Section 9.15 for all sign wiring instructions.

9.13 Stand Mounting the Sign

If the situation in the wash bay does not make installing the In-Bay Sign to the wash bay wall possible, then the optional Stand Kit may be installed. This instruction may be used to install any sign using the sign stand kit. Figure 189.

- Locate the position for the sign on the wash bay floor or pavement.
- Mark the holes for the sleeve anchors supplied with the stand mount.
- Drill the holes for the sleeve anchors and install them into the pavement.
- Secure the stand to the floor or pavement with the anchors.
- Install the sign to the stand post.
- Adjust the angle of the sign for the best viewing for the wash user and tighten the bracket fasteners.

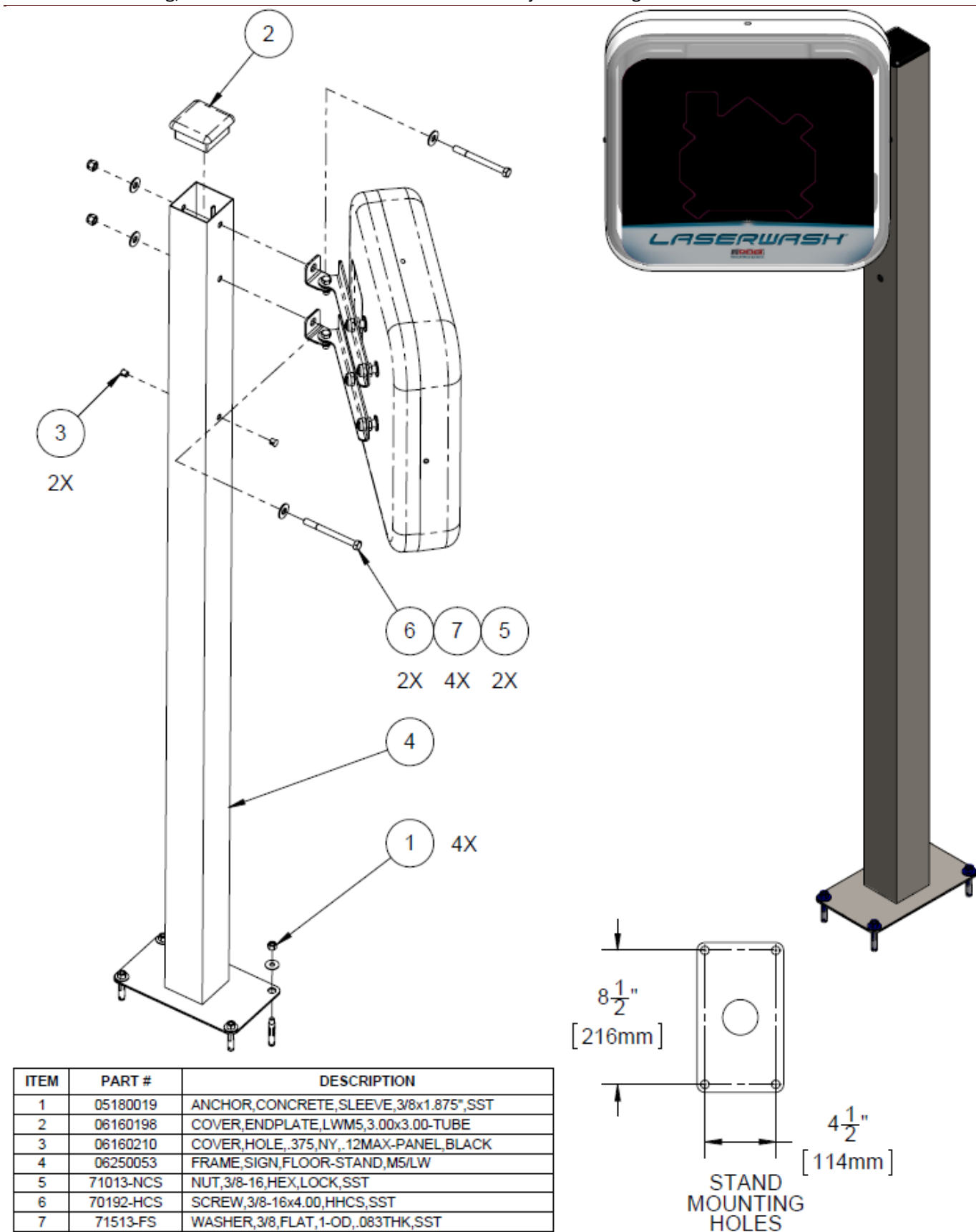


Figure 189 - Sign Stand Mounting Kit Installation

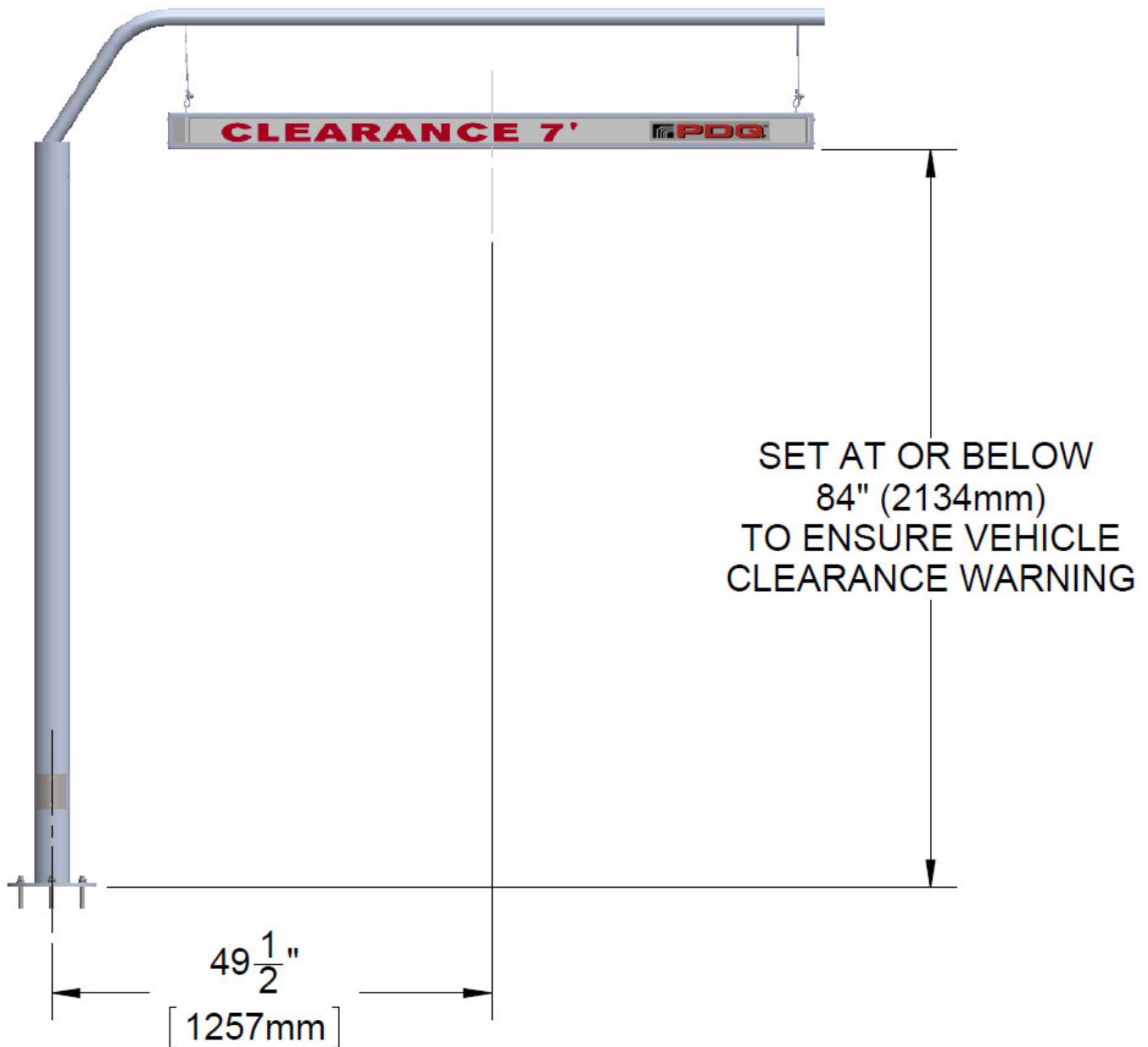
9.14 Clearance Sign Installation

The Clearance Sign is intended to hang above the path of the vehicle entering the wash to act as a warning and a check to make sure the vehicle height does not exceed the available clearance beneath the wash during operation.

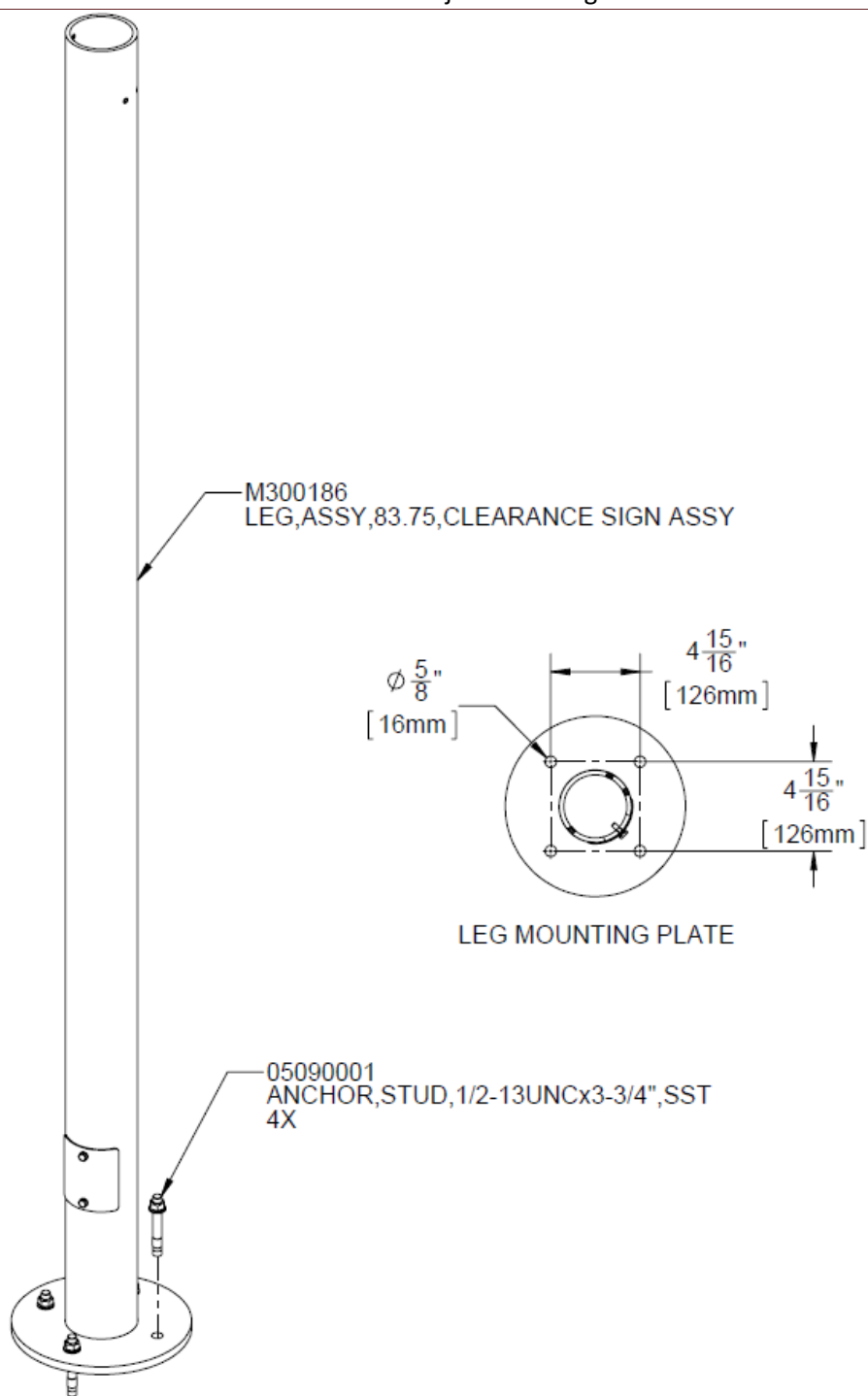
9.14.1 Hanging Clearance Sign Installation (signs without stand)

The Hanging Clearance Sign is built with coated cable or chains for hanging the sign at the wash bay site.

- Select the best structure of the wash bay from which to hang the sign. Typically, this may be the entrance doorway if it is tall enough to fit the sign beneath the top of the doorway.
- Install (2) site supplied hooks and/or screw eyes to the underside of the structure where the sign will hang.
 - For the non-lighted sign, the screw eyes should be placed 42 in (1067mm) apart so that the chains hang straight down when the sign is installed.
 - For the lighted sign, the screw eyes should be placed 60 ½" (1537mm) apart so that the cables hang straight down when the sign is installed.
- For Clearance Signs with cables for hanging:
 - Cut the supplies cable in half.
 - Thread each piece of cable through an eye in the top of the clearance sign. Form a loop in the end of each cable and attach (1) wire rope clip U-bolt to the end of each cable.
 - Lift the Clearance Sign up to the screw eyes installed in the building structure.
 - Thread each cable end through the installed eyes in the building. Form a loop in the end of each cable and attach (1) wire rope clip U-bolt to the end of each cable. Do not tighten fully, but enough to hold the sign while setting the height.
 - Measure the height from the pavement beneath the sign to the underside of the Clearance Sign. Adjust the length of the cable by pulling the loop along the cable length until the sign is level and the height of the underside of the sign is at most 84 in (2134mm) from the pavement below, Figure 190.
 - Securely tighten each wire rope clip U-bolt.
- For Clearance Signs with chains for hanging:
 - Attach the sign chains to the eyes installed in the building with hooks.
 - Adjust the length of each chain so the sign is level and until the height of the underside of the sign is at most 84 in (2134mm) from the pavement below, Figure 190.

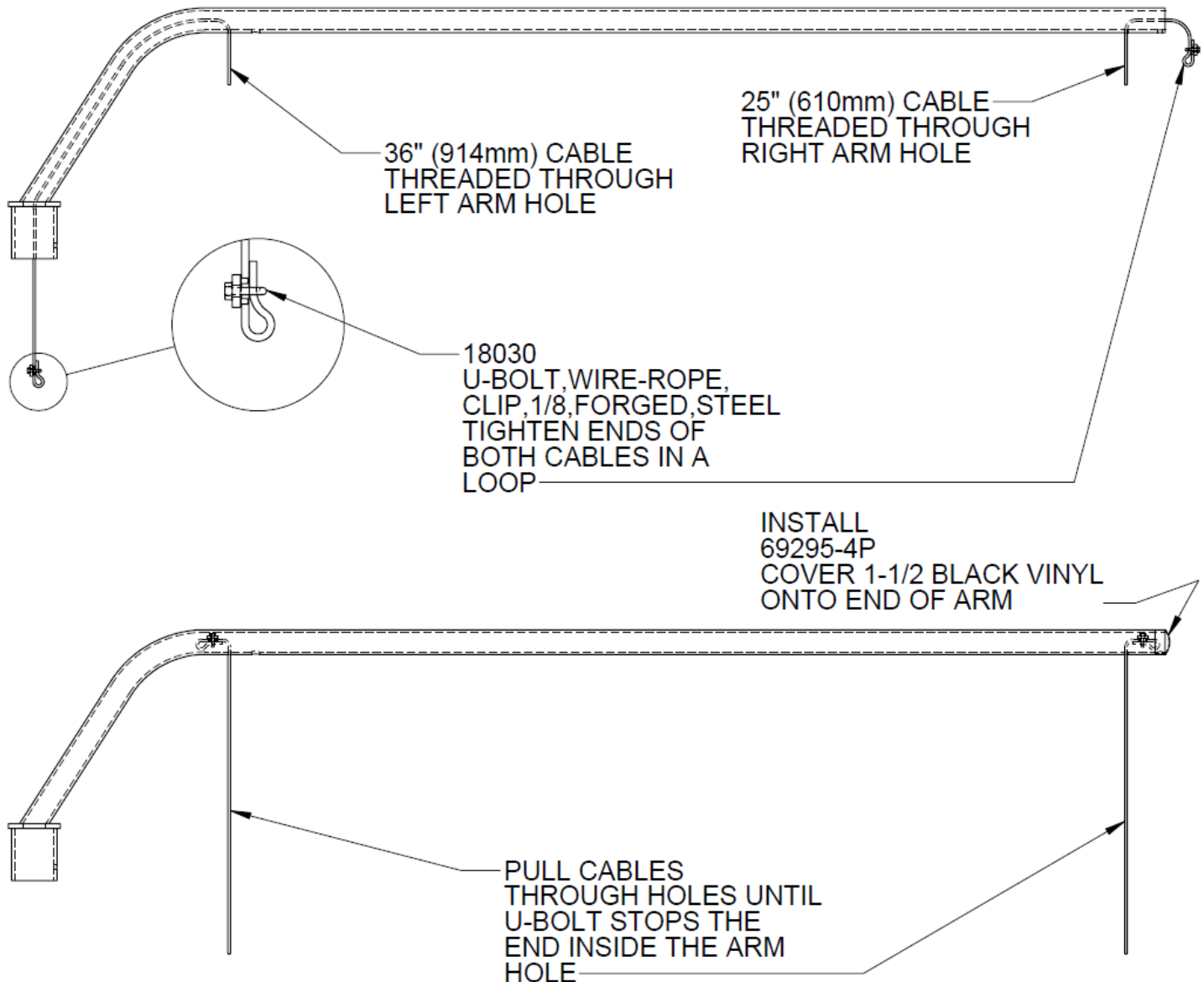
9.14.2 Stand Mounted Clearance Sign Installation (signs with stand)**Figure 190 - Stand Mounted Clearance Sign****9.14.2 Step 1 Install the Clearance Sign Stand Leg**

- Determine and mark the location for the Clearance Sign Stand at the entrance of the wash. The distance between the center of the clearance sign and the post, Figure 190.
- Mark and drill holes in the pavement for the $\frac{1}{2}$ -13 UNC x 3 $\frac{3}{4}$ long anchor studs included with the sign for mounting the post.
- Secure the post to the pavement using the anchor studs, Figure 191.

**Figure 191 - Mount Clearance Signpost**

9.14.2 Step 2 Prepare the Sign Arm for Installation onto the Leg

- Thread a 36 in (914mm) length of nylon coated cable through the left hole in the sign arm, inside the arm tube, and out through the post cap, Figure 192.
- Form a loop in the end of the cable and attach (1) wire rope clip U-bolt to the end and tighten it completely onto the cable.
- Thread a 24 in (610mm) length of nylon coated cable through the right hole in the sign arm, inside the arm tube, and out through the end of the arm, Figure 192.
- Form a loop in the end of the cable and attach (1) wire rope clip U-bolt to the end and tighten it completely onto the cable.
- Pull both cables from the unclamped end until the U-bolt clamp reaches the arm hole and stops the cable.

**Figure 192 - Thread Cables Through Sign Arm**

9.14.2 Step 3 Install the Clearance Sign Arm to the Leg

- Assemble the Clearance Sign Arm to the leg by installing the arm base into the top of the leg tube.
- Position the arm so that it points perpendicular to the flow direction of vehicle traffic into the wash bay.
- Tighten the arm to the leg using the set screws.

9.14.2 Step 4 Install the Clearance Sign to the Sign Arm

- Attach the Clearance Sign to each cable by looping the end of the cable through the eyes on the top of the sign.
- Form a loop in the end of each cable and attach (1) wire rope clip U-bolt to the end of each cable. Do not tighten fully, but enough to hold the sign while setting the height.
- Measure the height from the pavement beneath the sign to the underside of the Clearance Sign. Adjust the length of the cable by pulling the loop along the cable length until the sign is level and the height of the underside of the sign is at most 84 in (2134mm) from the pavement below, Figure 190.
- Securely tighten each wire rope clip U-bolt.

9.14.3 Wire the Clearance Sign (lighted signs only)

If the Hanging Clearance Sign is the lighted version, wire the power to the sign from the sight power.

- The Lighted Clearance Sign is made with 20 ft (6.1m) of 16-3 SJO cord prewired into the sign.
- If the sign is Stand Mounted, route the cable through the arm and leg by passing it through the holes in the arm and down the leg.
- Route site power to the sign as described in Section 9.15.

9.15 Wiring the Signs

	POWER SOURCES – THIS PRODUCT SHALL BE OPERATED ONLY FROM THE TYPE OF SOURCE INDICATED ON THE MANUFACTURER’S IDENTIFICATION LABEL. INSTALLATION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES, REGULATIONS, AND/OR SIMILAR DIRECTIVES.
 	WARNING –LOCKOUT/TAGOUT THE UPSTREAM DISCONNECTING MEANS PRIOR TO TERMINATING ANY ELECTRICAL CONNECTIONS DURING INSTALLATION.
	DO NOT DRILL HOLES IN THE TOP OF ANY PDQ-PROVIDED ENCLOSURE, DOING SO WILL VOID THE WARRANTY.
	POWER AND DATA CIRCUITS SHALL NEVER BE INSTALLED IN SHARED RACEWAYS, CONDUITS, ETC. UNLESS SPECIFICALLY REQUIRED. THIS MEANS THAT, FOR EXAMPLE, 24V POWER AND RS-485 DATA CIRCUITS SHALL BE RUN IN SEPARATE CONDUITS, EVEN IF THEY BEGIN AND END AT THE SAME LOCATIONS/ENCLOSURES/DEVICES.

Install circuits to/from and terminate cables/wires in each sign as specified on the applicable sheets of the Field Wiring section of the overall machine Electrical Schematics set.

Some circuits included in the below list may also be described in other sections of this manual.

- Bay Sign (all versions):
 - 24VAC power from Bay Control Panel – Sheet F-5
 - RS-485 data from Bay Control Panel – Sheet F-5
 - Audio signal from Bay Control Panel – Sheet F-5
- Classic Confirmation Sign:
 - 24VDC signals from basic/deluxe Bay Sign – Sheet F-5
- Advanced Confirmation Sign:
 - 24VAC power from Bay Control Panel – Sheet F-5
 - RS-485 data from Bay Control Panel – Sheet F-5
- Entrance Sign:
 - 24VAC power from Bay Control Panel – Sheet F-6
 - 24VAC signals from Bay Control Panel – Sheet F-6
- Basic Count-Down Timer:
 - 24VAC power from Bay Control Panel – Sheet F-6
 - 24VAC signal from Bay Control Panel – Sheet F-6
- Deluxe Count-Down Timer:
 - 24VAC power from Bay Control Panel – Sheet F-6
 - RS-485 data from Bay Control Panel – Sheet F-6



WARNING – SECURE ALL COVERS AND CHECK ALL FASTENERS PRIOR TO MOVING BRIDGE. FAILURE TO DO SO COULD CAUSE INJURY OR DAMAGE TO EQUIPMENT.

10 Document Change Log



Below is a brief and generic description of the changes to this manual document. This is intended to give a history of the changes and guide the reader to the area impacted by each revision. Not all the individual change details within the document are listed and indicated.



READ THIS MANUAL COMPLETELY BEFORE ATTEMPTING INSTALLATION.
If problems occur, please call PDQ Manufacturing, Inc. and ask to speak to a service technician.

Rev	Pages	Description	Completed By	Checked by	Date
00	All	Initial Release	DEK	SJH	09/02/21
01	31	Correct wall mount bracket hole locations. ECN 5566	DEK	SJH	06/02/22
02	66, 67, 79, 91	Updated trucks. ECN 6264	DEK	NPhipps	10/24/24