



LaserWash 360 Plus Installation Manual

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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.



WARNING – READ THIS MANUAL COMPLETELY BEFORE ATTEMPTING THE PROCESS DESCRIBED HEREIN. IF QUESTIONS RESULT OR PROBLEMS OCCUR PLEASE CALL PDQ MANUFACTURING, INC. AND ASK TO SPEAK TO A SERVICE TECHNICIAN.



WARNING! – INSTALLATION, SERVICE, MAINTENANCE, AND REPAIR OF THIS EQUIPMENT IS INTENDED TO BE PERFORMED BY A QUALIFIED AND TRAINED TECHNICIAN FAMILIAR WITH THIS EQUIPMENT. CONTACT PDQ MANUFACTURING, INC. FOR INFORMATION ON FACTORY TRAINING.

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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 LaserWash 360 Plus 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 LaserWash 360 Plus Loose Parts Kit Usage

The LaserWash 360 Plus is shipped with a kit of parts (PDQ Part No. 11080112) 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 11080112.

Table 1 – LaserWash 360 Plus 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
06020028	BELT,HTD-8M,20x11000mm,BRIDGE-DRIVE	1	Bridge Belt
06340042	BLOCK,BELT-RETAINER,8mmPITCH,20mmWIDE	2	Bridge Belt
06141504	BRACKET,BELT-TENSION,BRIDGE,LW/TANDEM	2	Bridge Belt
06160473	COVER,BELT,RETAINER,MAX20mmWIDTH	2	Bridge Belt
06060024	BUMPER,END-STOP,RUBBER,1/2"ID	4	Bridge Truck/Stop
11150048	TRUCK,BRIDGE,LASERWASH/LASERJET	4	Bridge Truck/Stop
05190050	KIT,FASTENER,BELT/TRUCKS,LW360PLUS	1	Bridge Truck/Stop/Belt
11010281	JUNCTION-BOX,PRE-LOAD-ECHAIN,50/60HZ,LW	1	E-chain
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

1.3 Electrical Connections

All electrical connections are to be made using the applicable LaserWash 360 Plus electrical schematic. These are available on the PDQ website www.pdqinc.com . Table 2 lists the schematic applicable to the site voltages for which the LaserWash 360 Plus is available.

Table 2 - Electrical Schematic Documents

Schematic Document Number	Schematic Description	Schematic Usage
10030078	SCHEMATIC,ELEC,208/230V,60HZ,LW360P	All 208V, 230V, 460V and 575V 60 Hz wash installations
10030080	SCHEMATIC,ELECTRICAL,400V,50HZ,LW360P	All 400V 50Hz wash installations
10030081	SCHEMATIC,ELECTRICAL,380V,60HZ,LW360P	All 380V 60Hz wash installations

2 Frame System Installation

This section covers the installation of all frame systems available from PDQ for the LaserWash 360 Plus. This includes the standard wall mount and the optional Free Standing Frame mounting systems.

2.1 Key Factors to Consider

- Refer to the LaserWash 360 Plus 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).
- 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 Freestanding Frame.
 - Mark location of Free Standing Frame in the wash bay.
 - Assembly entrance and exit leg arches.
 - Erect and mount entrance and exit leg arches.
 - Install main rails.
 - Level, plumb, and set spacing for main rails.
 - Install Free Standing Frame grounding straps.

2.3 Special Tools

- Concrete drill or other means of drilling through the wash bay walls (appropriate for the wall material) for wall mounted frames.
- Concrete drill for installing floor anchors (for Free Standing Frame installation).
- 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).
- 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 LaserWash 360 Plus rail system is too long for the wash building. If the wash bay is longer than the minimum required length, rail modification is not necessary; skip this step and proceed to Section 2.7, 2.8, or 2.9.

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

- Wall mounted rail: 340 in (8636mm)
- Freestanding frame: 355 in (9017mm)

2.6.1 Key Installation Steps

- Determine the correct length of the rail. See Site Planning Manual for details regarding bay and vehicle lengths.
- Cut main rails to proper length.
- Drill new holes in the rails for attached components as necessary. This includes:
 - Bridge end stops
 - Belt tensioning brackets
 - 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

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 only because 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 1 indicate the maximum amount available for shortening from rail ends without relocating wall mounting brackets.
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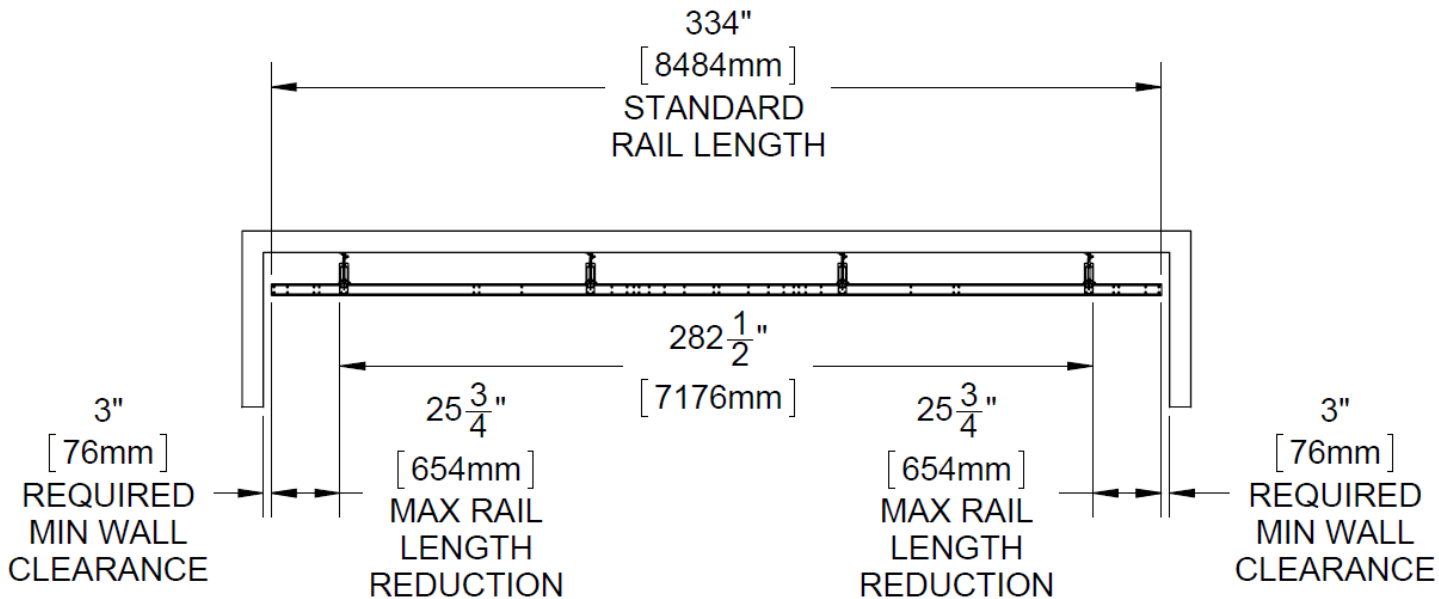


Figure 1- Rail Modification Dimensions

2.6 Step 2 Redrill Holes on the Rails for Attaching Components to the Shortened Rail

After cutting the rail, the holes used for mounting the end stops and belt tensioning brackets (and 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 2 for hole sizes and locations.

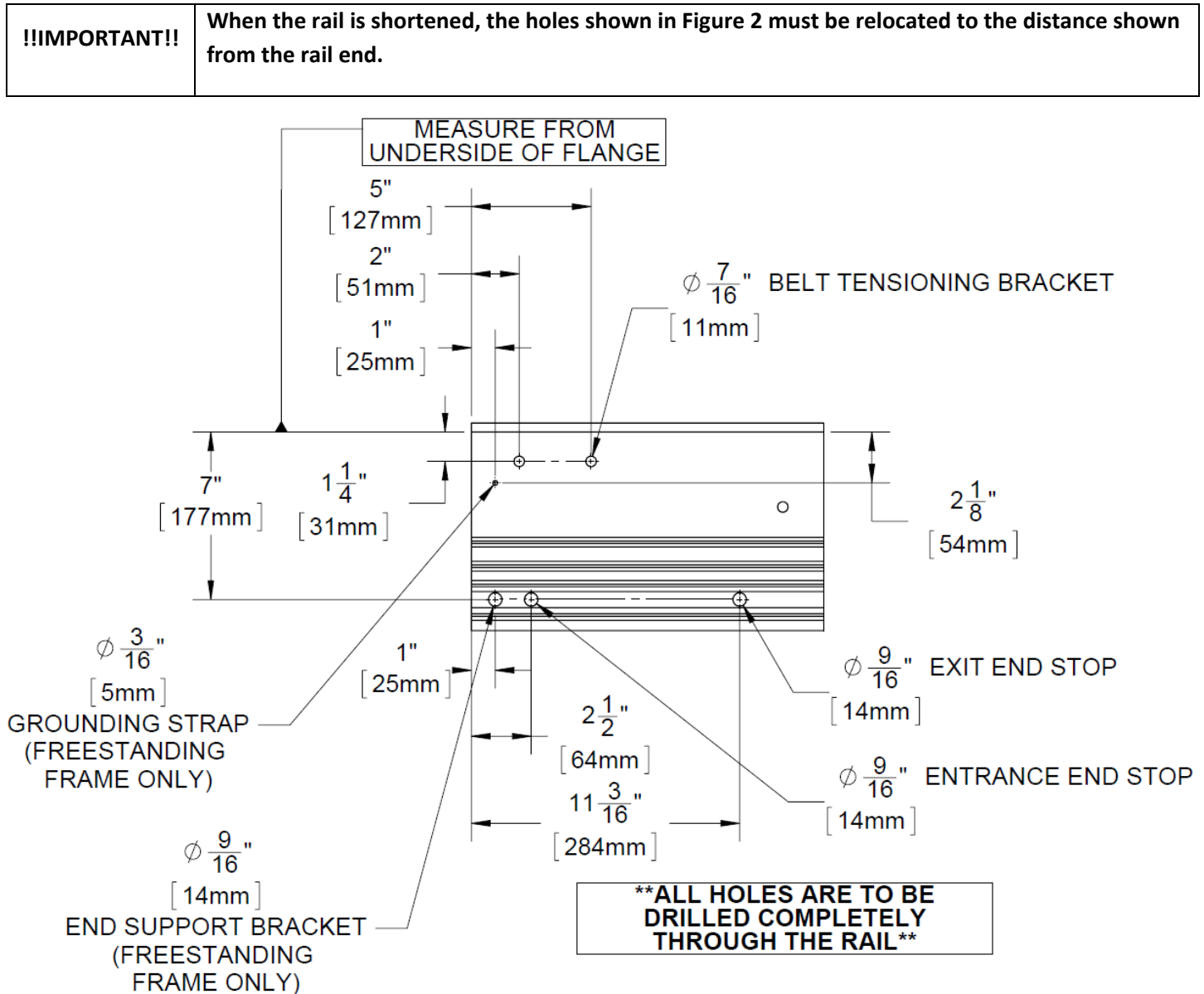


Figure 2- Relocate Rail Holes for Each End that is Shortened

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.

!!IMPORTANT!!	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 3 shows the important items to be aware of when making these modifications. Figure 3 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 redrilled.

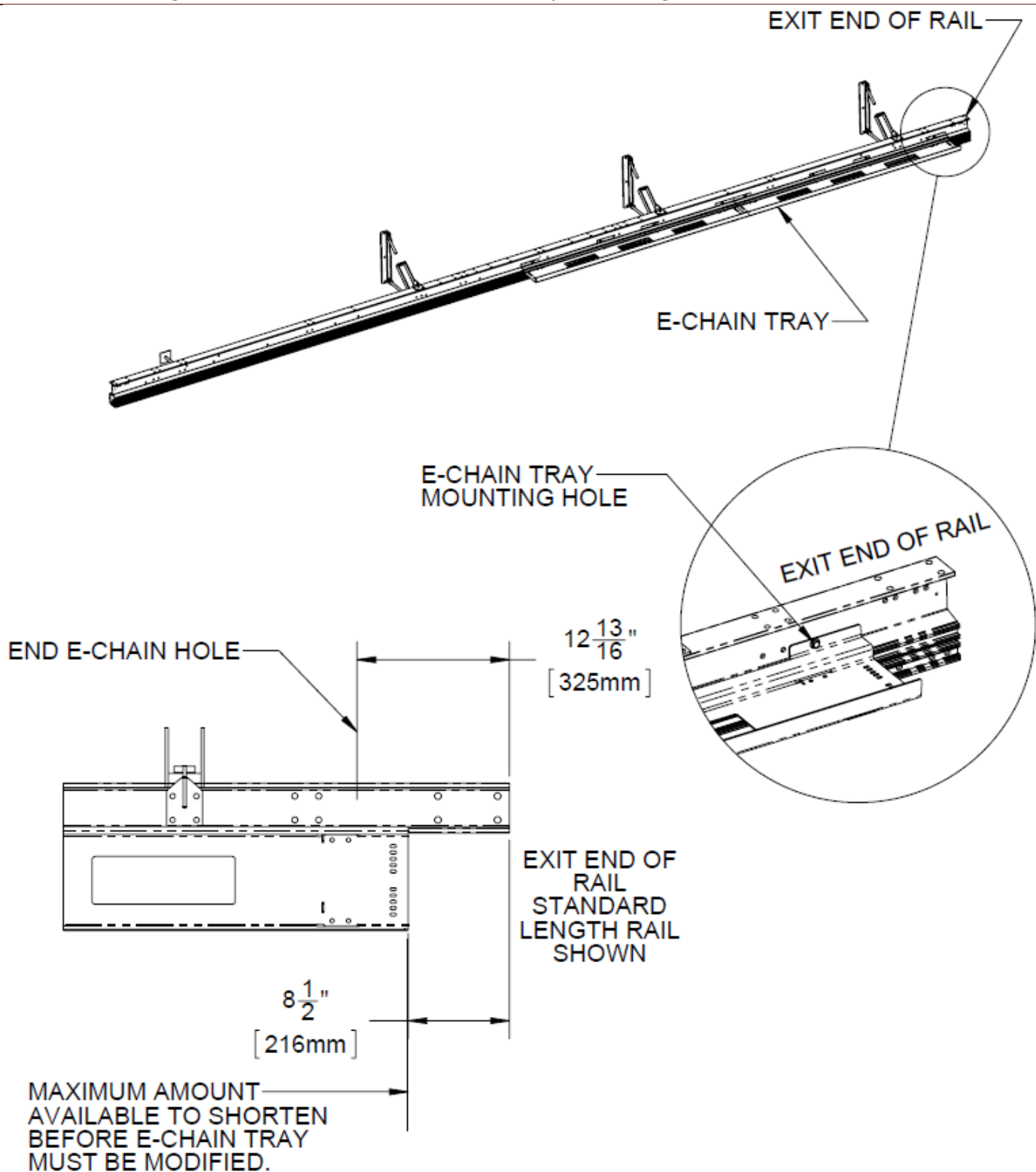


Figure 3-Modify E-Chain Tray

2.7 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 2.9.

2.7.1 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 LASERWASH TO ANY BUILDING COMPONENT TO ENSURE THE STRUCTURE IS ADEQUATE TO SUPPORT THE WEIGHT AND FORCES APPLIED TO THE BUILDING DURING WASH OPERATION.



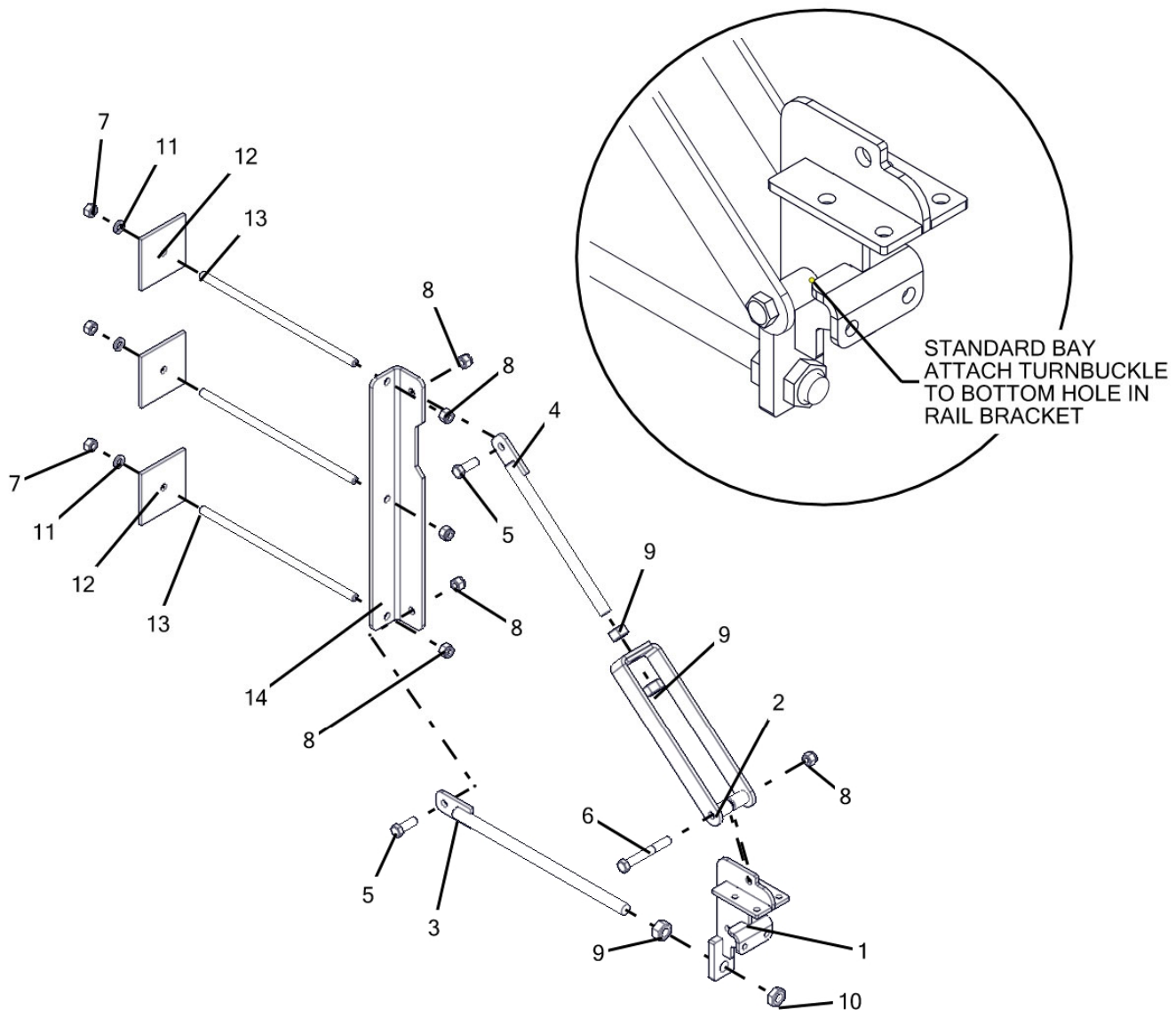
WARNING – ALL MACHINE COMPONENTS HANDLED DURING INSTALLATION, MAINTENANCE, AND/OR SERVICE MUST BE HANDLED WITH A DEVICE APPROPRIATELY RATED AND IN SUITABLE CONDITION TO LIFT AND/OR HANDLE THE WEIGHT OF THE COMPONENT. WHEN COMPONENTS ARE HANDLED BY HAND, USE PROPER LIFTING TECHNIQUES TO AVOID INJURY.

2.7 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:

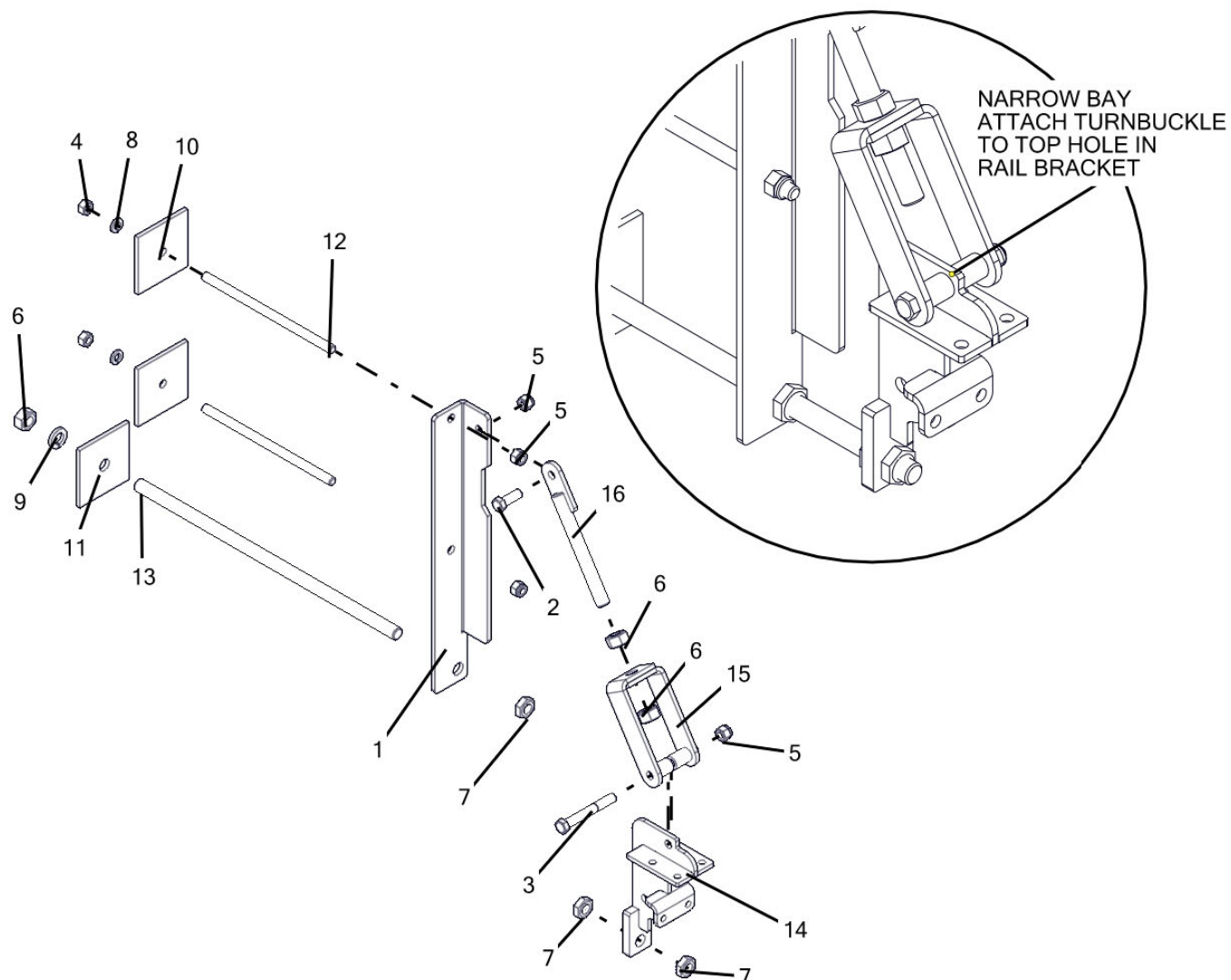
PDQ PART NO.	USAGE
09050020	Standard Bay Width for bays that are 14'4" to 16'1" wide [4.37m to 4.90m]
09050025	Narrow Bay Width for bays that are 13'6" to 14'4" wide [4.11m to 4.37m]
09050023	Wide Bay Width for bays that are 16'1" to 18'1" wide [4.90m to 5.51m]

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 4, Figure 5, and Figure 6 show the component details.



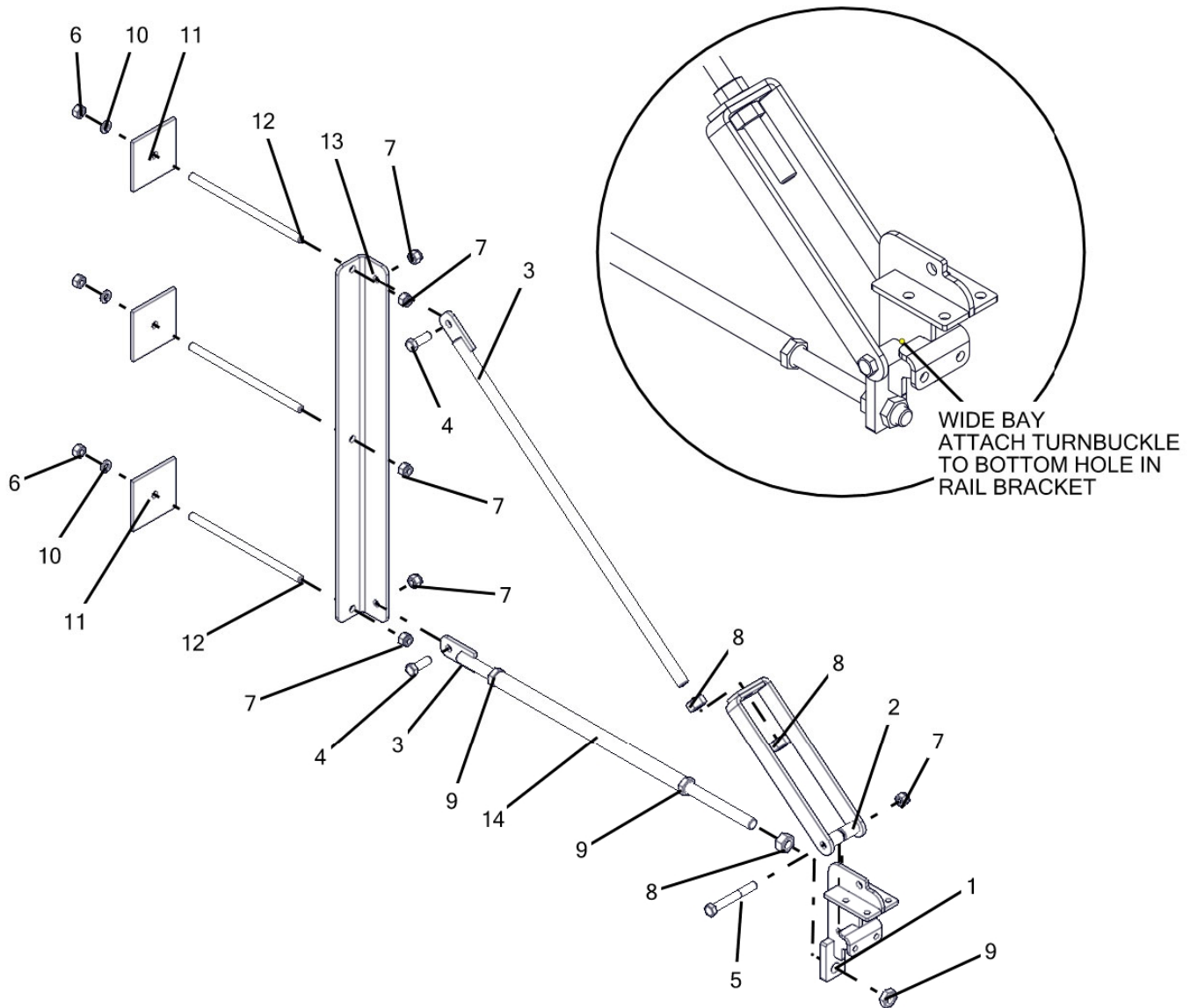
BOM ID	Qty	PartNo	Description
1	1	06140880	BRACKET,RAIL-ATTACH,WALL-MTG,SST
2	1	M310093-S	BRACKET,RAIL-SUPPORT,WALL-MOUNT,SST
3	1	M390122-S	TIE-ROD,3/4NCx16.75,RAIL-MOUNT,SST
4	1	M390124-S	TIE-ROD,3/4NCx14.62,RAIL-MOUNT,SST
5	2	70257-HCS	SCREW,1/2-13x1.50,HHCS,SST
6	1	70267-HCS	SCREW,1/2-13x4.00,HHCS,SST
7	3	71015-HCS	NUT,1/2-13,HEX,SST
8	6	71015-NCS	NUT,1/2-13,HEX,LOCK,SST
9	3	71018-HCS	NUT,3/4-10,HEX,SST
10	1	71018-JCS	NUT,3/4-10,HEX,JAM,SST
11	3	71515-LS	WASHER,1/2,LOCK,SST
12	3	M330033-S	PLATE,BACKING,.25x4.00x4.00,SST,1/2-RODS
13	3	M390020-S	THREADED-ROD,1/2-13x14.00,SST
14	1	M530029-S	ANGLE WALL MOUNT ST STL

Figure 4 - Wall Mount Components, Standard (14' 4" to 16' 1" (4.37m to 4.90m) Wash Bay Width)



BOM ID	Qty	PartNo	Description
1	1	06140892	BRACKET,ANGLE,WALL-MT,NARROW,SST,LW
2	1	70257-HCS	SCREW,1/2-13x1.50,HHCS,SST
3	1	70267-HCS	SCREW,1/2-13x4.00,HHCS,SST
4	2	71015-HCS	NUT,1/2-13,HEX,SST
5	4	71015-NCS	NUT,1/2-13,HEX,LOCK,SST
6	3	71018-HCS	NUT,3/4-10,HEX,SST
7	3	71018-JCS	NUT,3/4-10,HEX,JAM,SST
8	2	71515-LS	WASHER,1/2,LOCK,SST
9	1	71518-LS	WASHER,3/4,LOCK,SST
10	2	M330033-S	PLATE,BACKING,.25x4.00x4.00,SST,1/2-RODS
11	1	M330052-S	PLATE,BACKING,.25x4.00x4.00,SST,3/4-RODS
12	2	M390020-S	THREADED-ROD,1/2-13x14.00,SST
13	1	M390035-S	THREADED-ROD,3/4-10x21.00,SST
14	1	06140880	BRACKET,RAIL-ATTACH,WALL-MTG,SST
15	1	06140891	BRACKET,RAIL-SUPPORT,SHORT,SST
16	1	06180058	TIE-ROD,3/4NCx8.12,RAIL-MOUNT,SST

Figure 5- 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	M310093-S	BRACKET,RAIL-SUPPORT,WALL-MOUNT,SST
3	2	M390123-S	TIE-ROD,3/4NCx28.75,RAIL-MOUNT
4	2	70257-HCS	SCREW,1/2-13x1.50,HHCS,SST
5	1	70267-HCS	SCREW,1/2-13x4.00,HHCS,SST
6	3	71015-HCS	NUT,1/2-13,HEX,SST
7	6	71015-NCS	NUT,1/2-13,HEX,LOCK,SST
8	3	71018-HCS	NUT,3/4-10,HEX,SST
9	3	71018-JCS	NUT,3/4-10,HEX,JAM,SST
10	3	71515-LS	WASHER,1/2,LOCK,SST
11	3	M330033-S	PLATE,BACKING,.25x4.00x4.00,SST,1/2-RODS
12	3	M390020-S	THREADED-ROD,1/2-13x14.00,SST
13	1	M530042-S	ANGLE,WALL-MOUNT,18-0-BAY,STD-LW4K,SST
14	1	M580012	PIPE,.75x18,SST

Figure 6- Wall Mount Components, Wide (16' 1" to 18' 1" (4.90m to 5.51m) Wash Bay Width)

2.7 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 7 for standard and narrow wash bays and in Figure 8 for wide wash bays. Determine the correct height to use for the wash bay and mark this line on the wall (Bracket Support Line).

!!!IMPORTANT!!	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.
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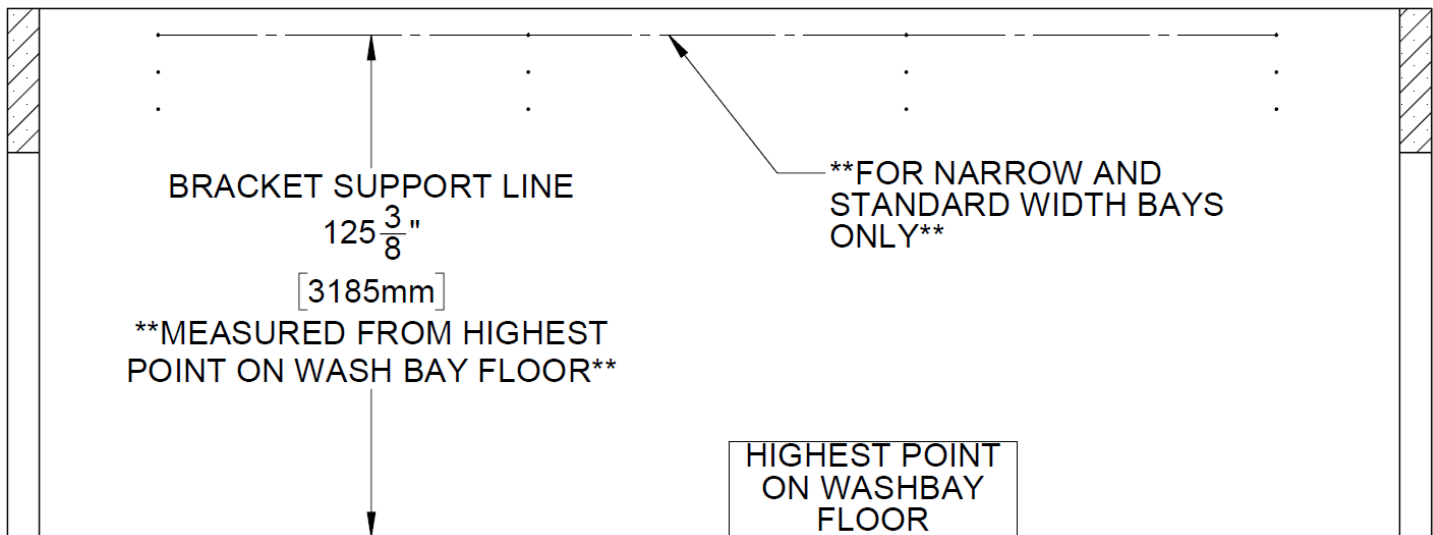


Figure 7- Wall Bracket Top Hole Height for Narrow and Standard Bay (16’1” [4.90m] and less), Side View

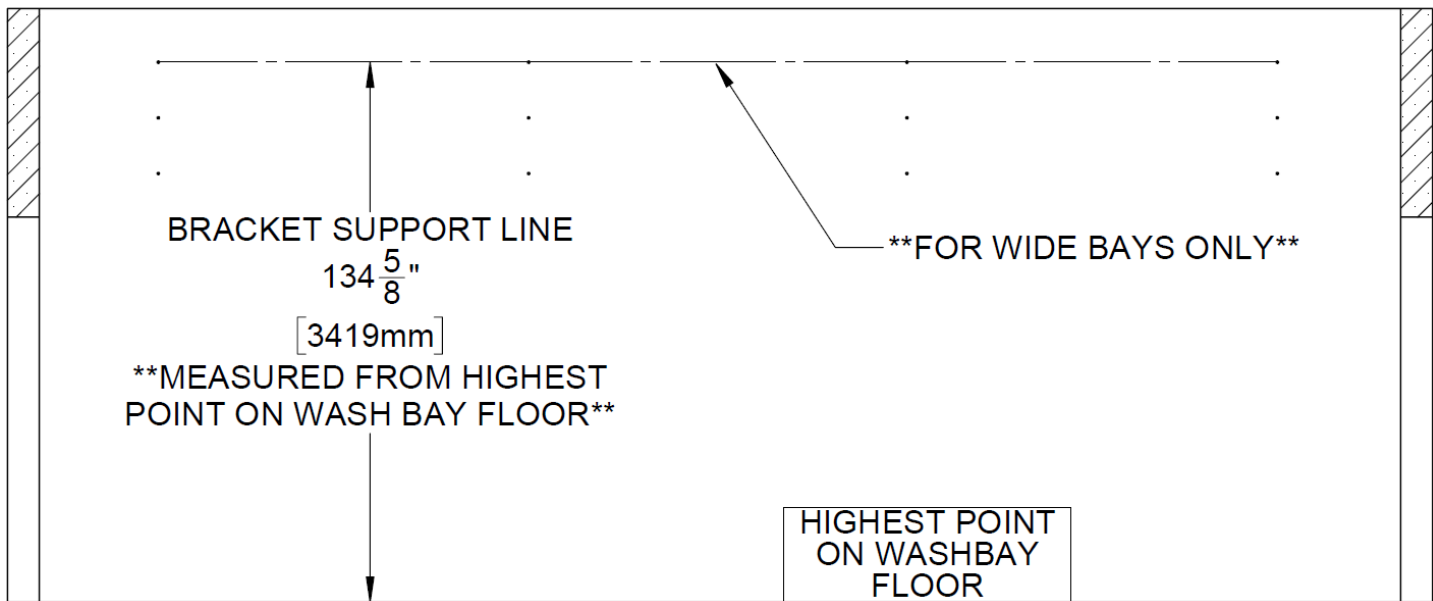


Figure 8- Wall Bracket Top Hole Height for Wide Bay (16’1” [4.90m] to 18’1” [5.51m]), Side View

2.7 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.

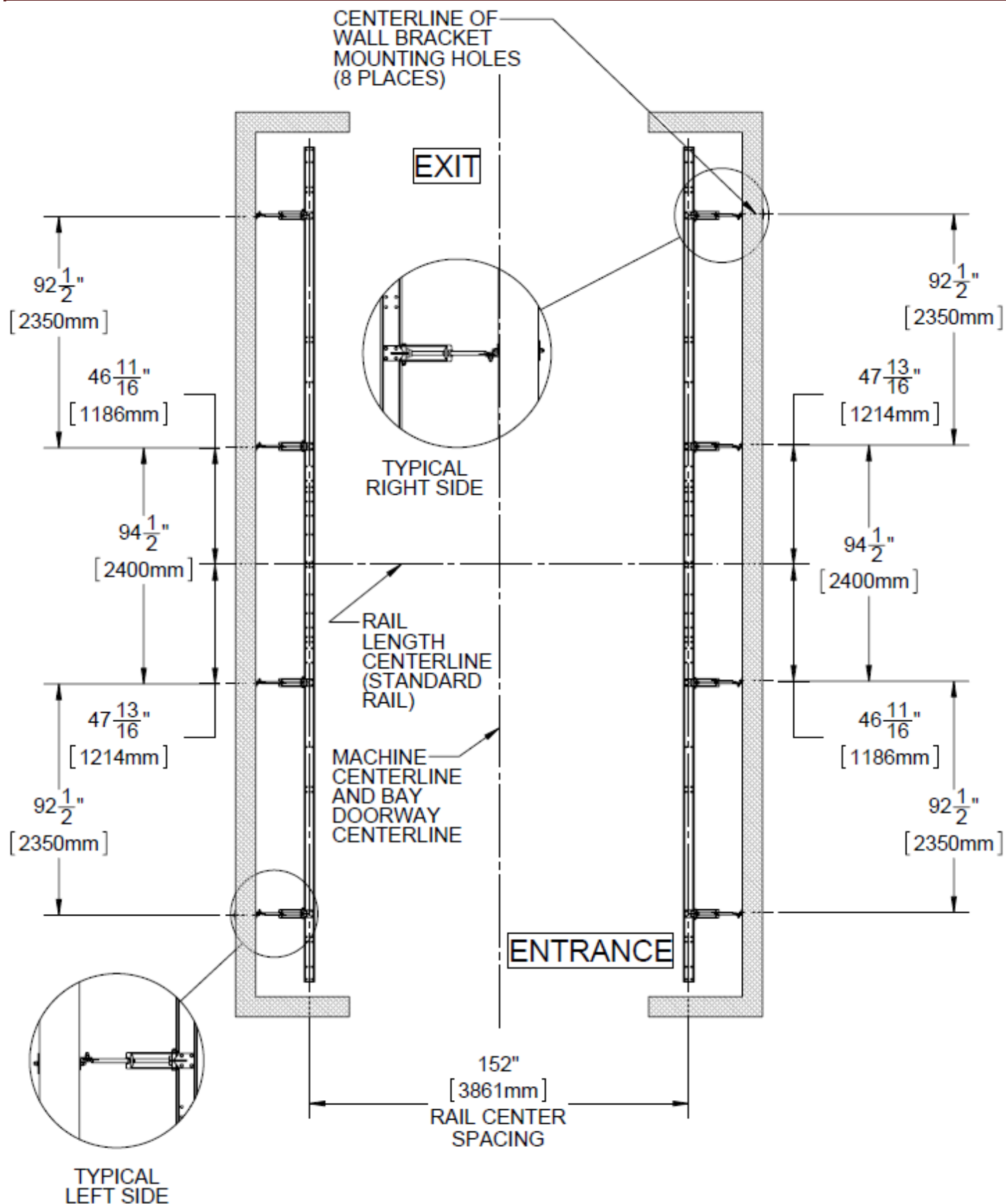


Figure 9- Wall Mount Bracket Hole Location, Top View

2.7 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 4, Figure 5, and Figure 6, 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.

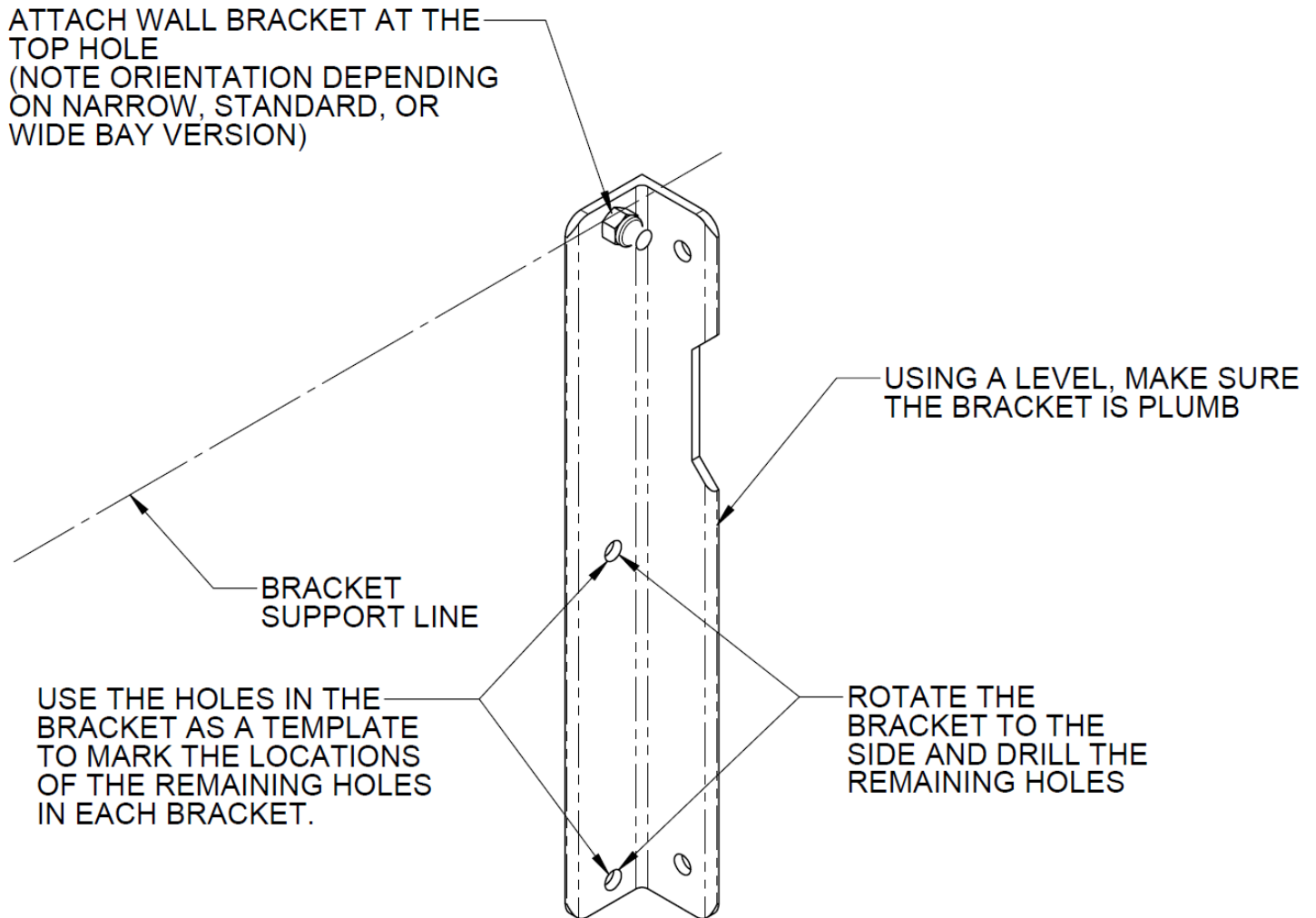


Figure 10- Locating and Drilling Remaining Wall Mount Holes

2.7 Step 5 Secure the Wall Angle Brackets to the Wall

Use the fasteners shown in Figure 4, Figure 5, or Figure 6 to secure the wall brackets to the wash bay wall.

2.7 Step 6 Assemble Rail Support Components to the Wall Brackets

Assemble the remaining parts of the wall mount assemblies as shown in Figure 4, Figure 5, and Figure 6.

2.7 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.

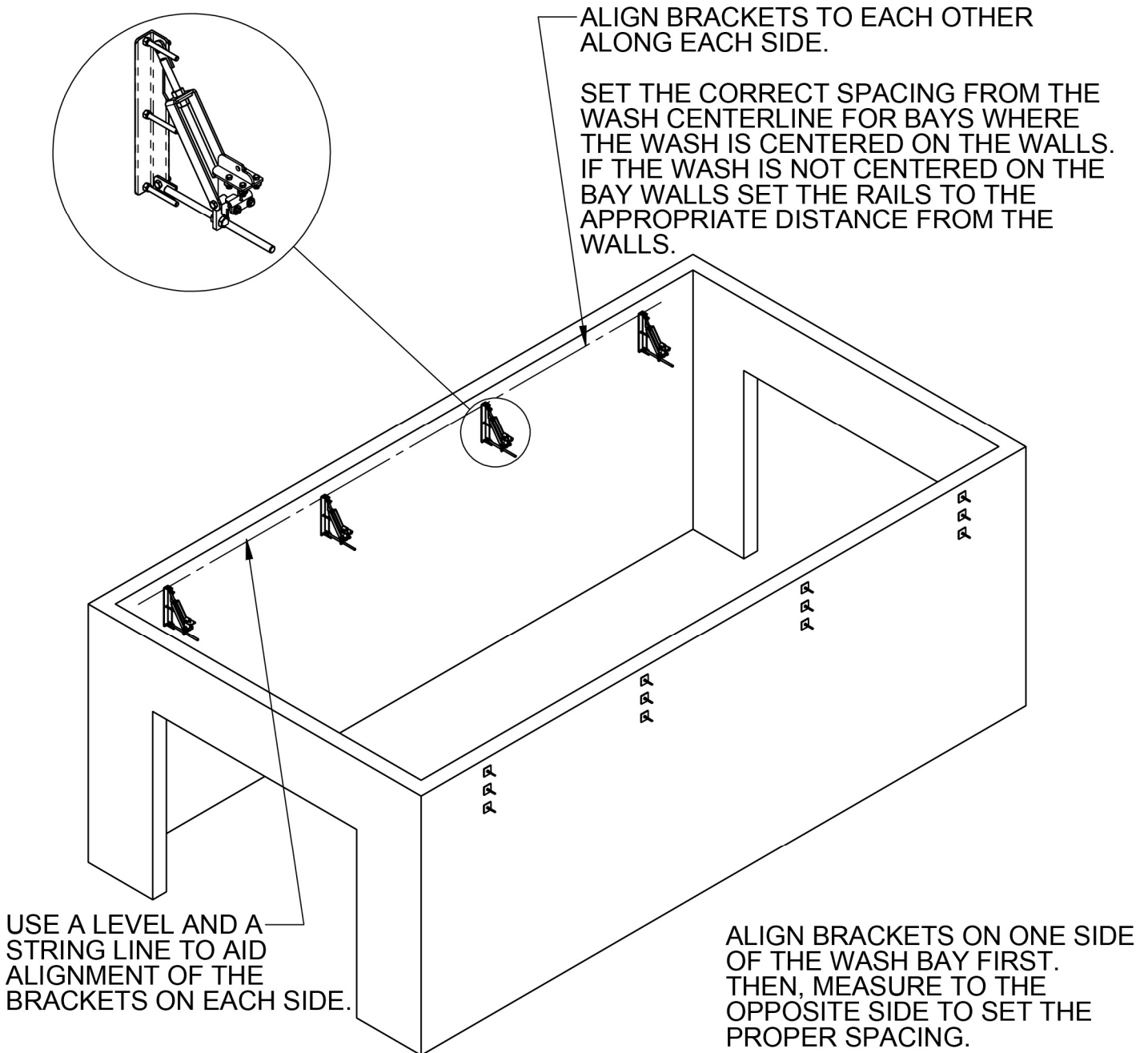


Figure 11 - Align Wall Brackets Along the Wash Bay Walls

2.7 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.

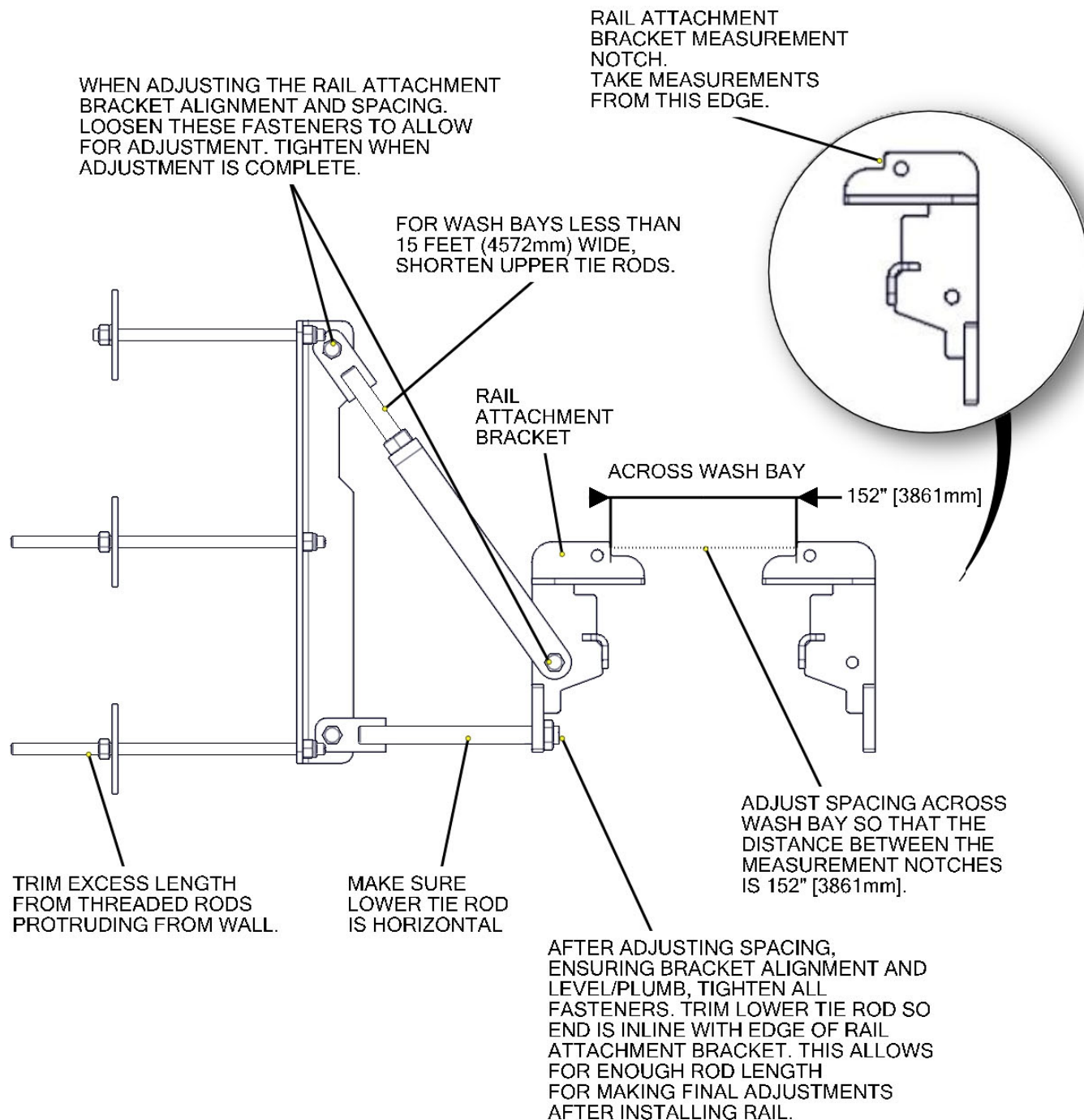


Figure 12- Align Brackets and Trim Rods, Standard Width Bay

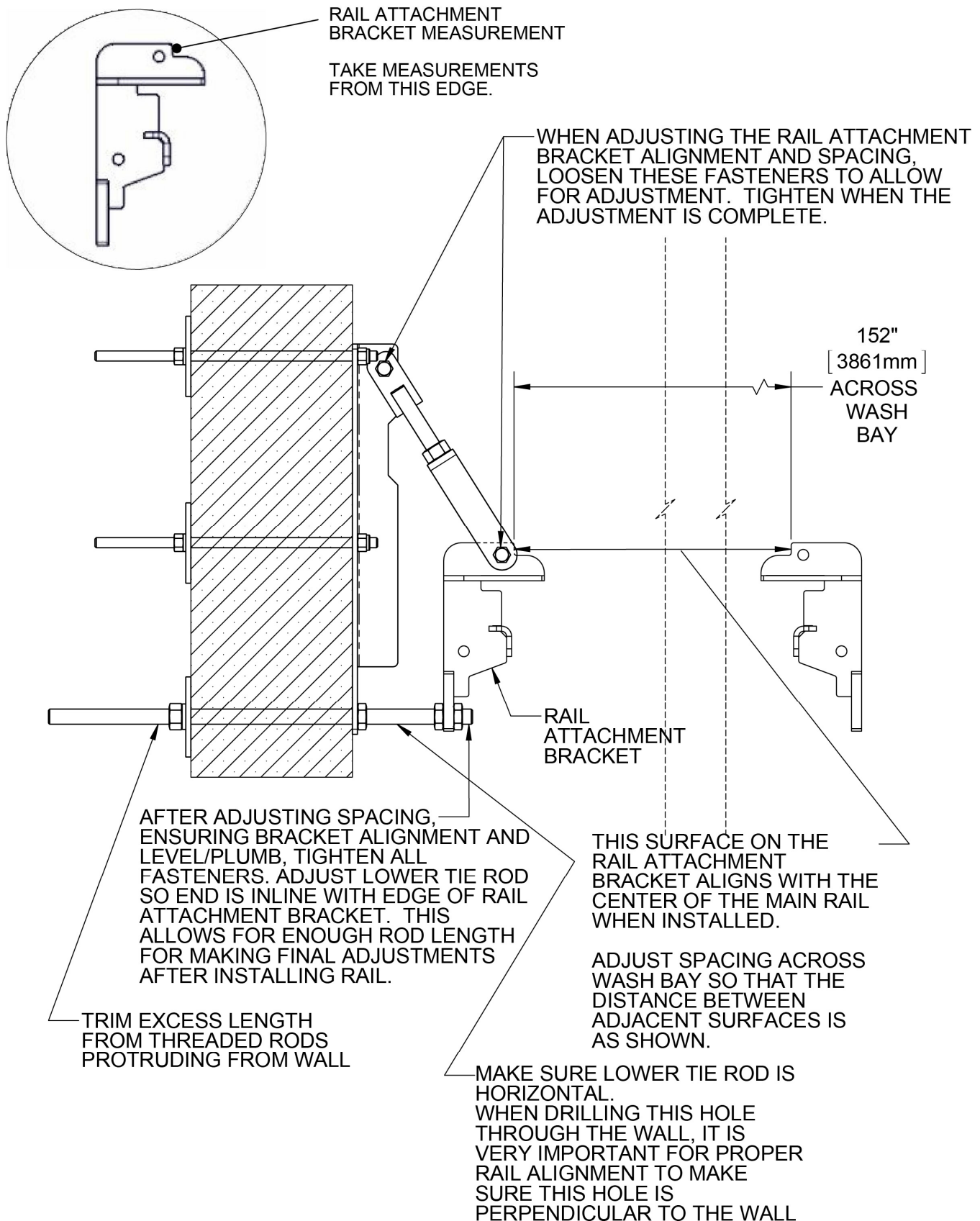


Figure 13 - Align Brackets and Trim Rods, Narrow Width Bay

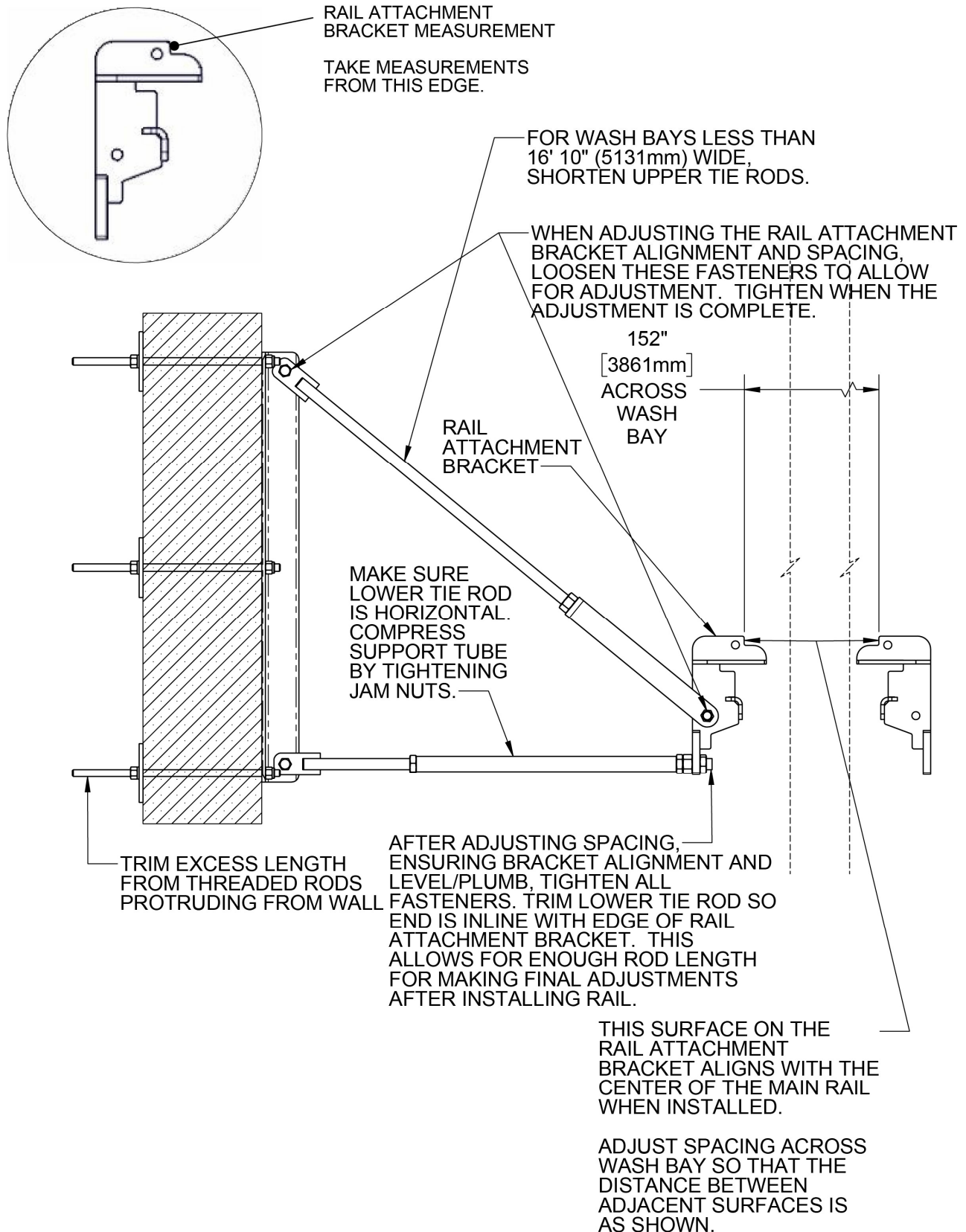


Figure 14- Align Brackets and Trim Rods, Wide Bay

2.7 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.

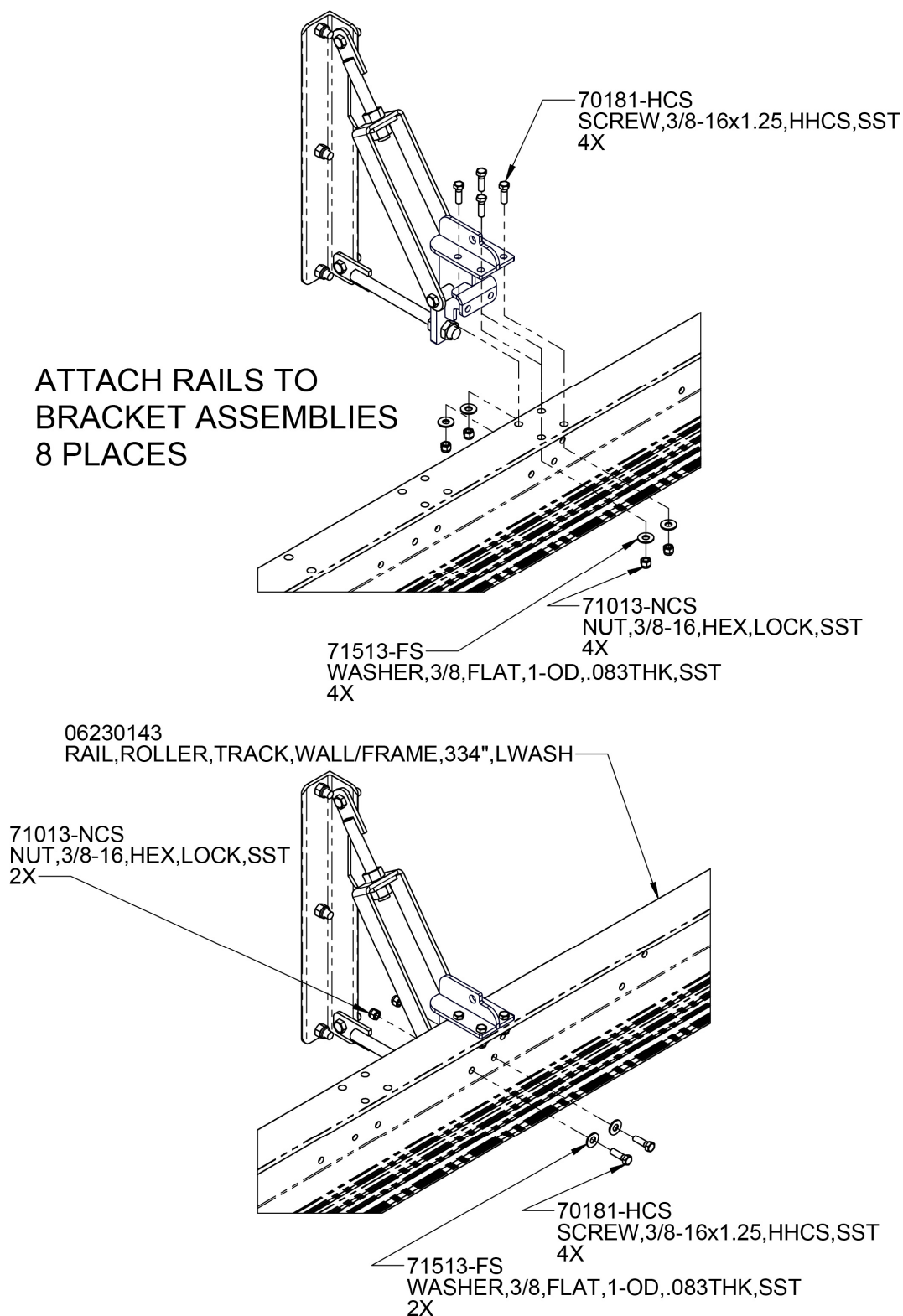


Figure 15- Attach Rails to Wall Brackets

2.7 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.

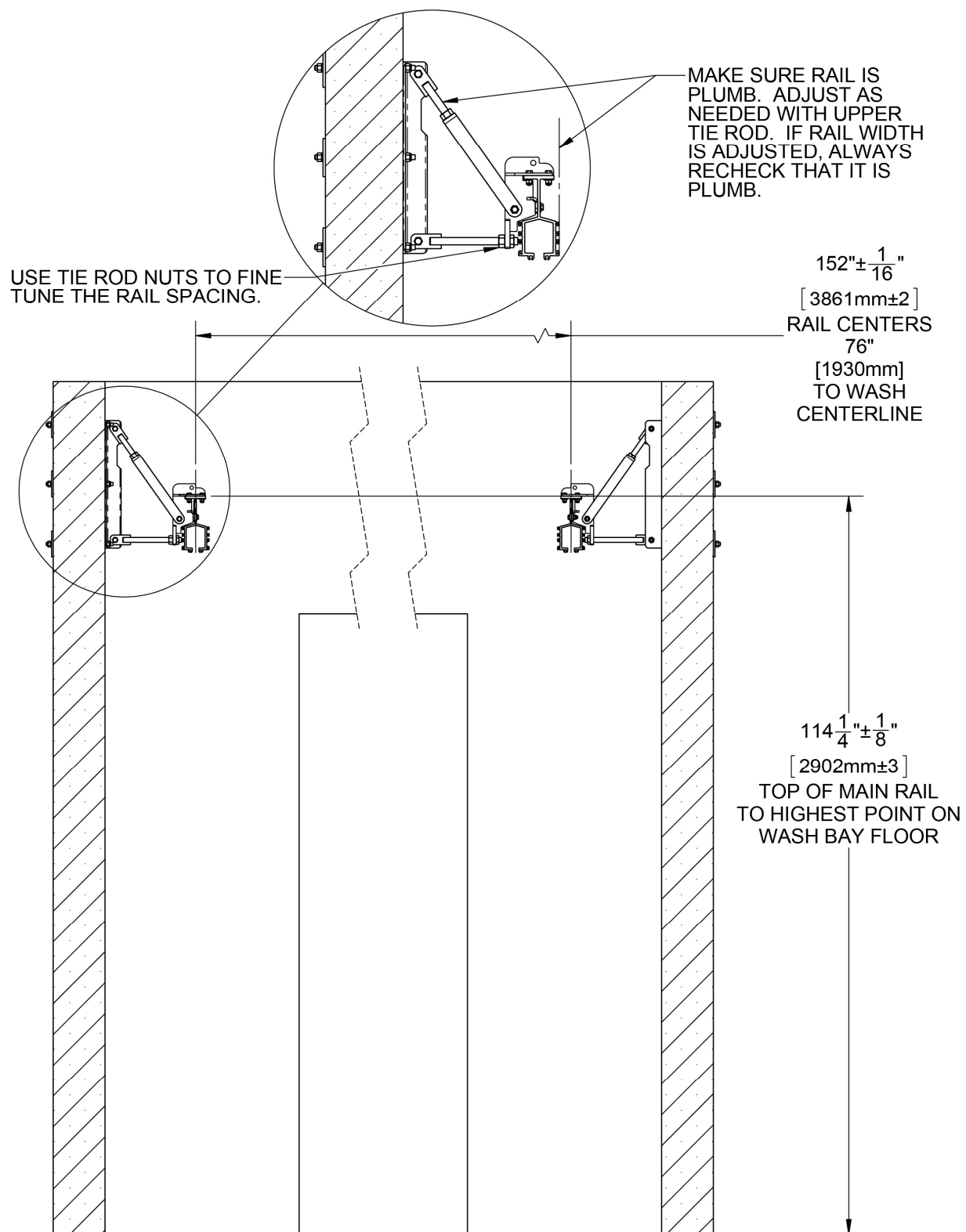


Figure 16- Final Rail Alignment and Rail Spacing

2.8 Wall Mounted Frame Installation When Reusing Existing Brackets

For wash sites where a LaserWash 4000 or a LaserWash M5 are being replaced by a LaserWash 360 Plus, existing wall mounting components can be reused providing they are in good condition. In these cases, the reuse kit includes only the parts and fasteners needed to attach the main LaserWash 360 Plus rail to these existing wall mounted brackets.

2.8.1 Key Factors to Consider

- If the existing wall mount brackets are damaged or corroded, they should be replaced.
- Kits are available for LaserWash 4000 and LaserWash M5 sites where the original installation used the 12-point or 8-point bracket attachment system.

2.8.2 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 for LaserWash 360 Plus.
- 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.

2.8.3 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).

2.8.4 PDQ Supplied Parts

The following wall mount reuse kits are available with LaserWash 360 Plus:

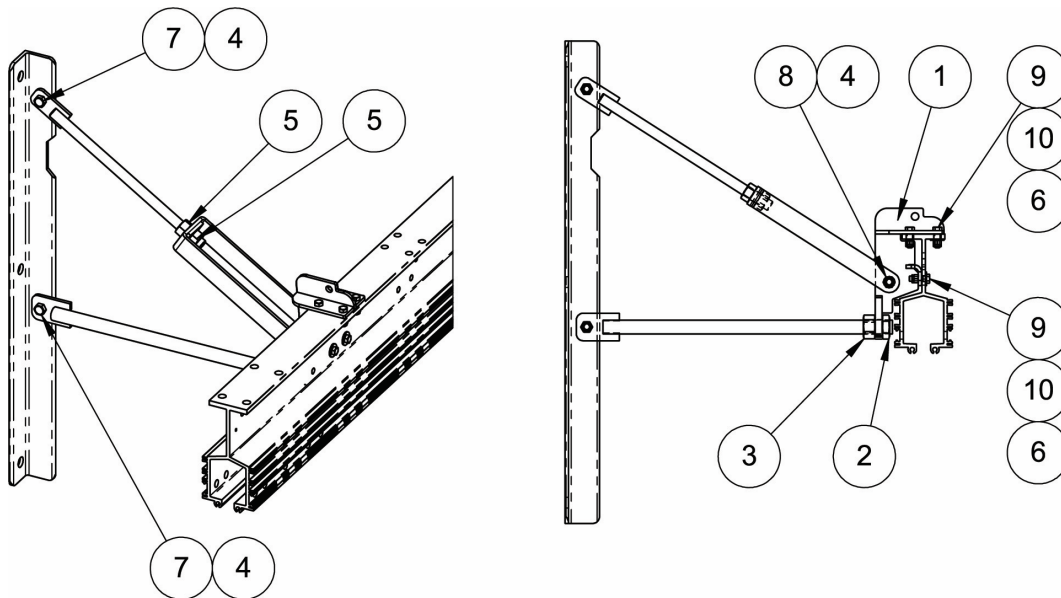
PDQ PART NO.	DESCRIPTION	USAGE
09050021	FRAME,KIT,RETRO,WALL-MT,8-BRKT,LASERWASH	Existing sites where there are (8) sets of wall mounting brackets to reuse.
09050022	FRAME,KIT,RETRO,WALL-MT,12BRKT,LASERWASH	Existing sites where there are (12) sets of wall mounting brackets to reuse.

2.8.5 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 5 (narrow width), and Figure 6 (wide width) for bracket assembly details and to Figure 15 for rail installation.

2.8.6 Twelve Point Wall Mount Reuse

- Each kit contains twelve rail attachment brackets with larger lower holes to accommodate the lower 1-inch threaded tie rod on the reused wall bracket assemblies.
- The fastener kit included in the 12-point system includes the items shown in Figure 17.
- Assemble the new brackets with the rail as shown in Figure 17.
- Refer to Figure 15 for rail installation.



ITEM	PART #	DESCRIPTION
1	06140880	BRACKET,RAIL-ATTACH,WALL-MTG,1"-ROD,SST
2	71020-JCS	NUT,1-8,HEX,JAM,SST
3	71020-HCS	NUT,1-8,HEX,SST
4	71015-NCS	NUT,1/2-13,HEX,LOCK,SST
5	71018-HCS	NUT,3/4-10,HEX,SST
6	71013-NCS	NUT,3/8-16,HEX,LOCK,SST
7	70257-HCS	SCREW,1/2-13x1.50,HHCS,SST
8	70267-HCS	SCREW,1/2-13x4.00,HHCS,SST
9	70181-HCS	SCREW,3/8-16x1.25,HHCS,SST
10	71513-FS	WASHER,3/8,FLAT,1-OD,.083THK,SST

Figure 17 - Wall Mount Re-use Kit for 12-point Installations

2.9 Free Standing Frame Installation Process

This section describes the steps for installing the LaserWash 360 Plus Free Standing Frame.

2.9.1 Key Factors to Consider

- Refer to the LaserWash 360 Plus 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 LaserWash 360 Plus 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 LaserWash 360 Plus Site Planning manual for details.

2.9.2 Special Tools

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

2.9.3 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
09050029	FRAME,LEG-MOUNT-6,GALV-STL,LWASH+INTD	Used with Integrated Dryer option
09050034	FRAME,LEG-MOUNT-4,GALV-STL,LJET/LWASH	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.

2.9.4 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.

2.9.5 Key Installation Steps

- Determine the location for the frame in the carwash bay, and mark lines on the floor to indicate the location.
- Build (2) leg assemblies.
- Erect the 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.
- 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.

2.9.5 Step 1 Determine Frame Location in the Wash Bay and Mark Lines on the Floor

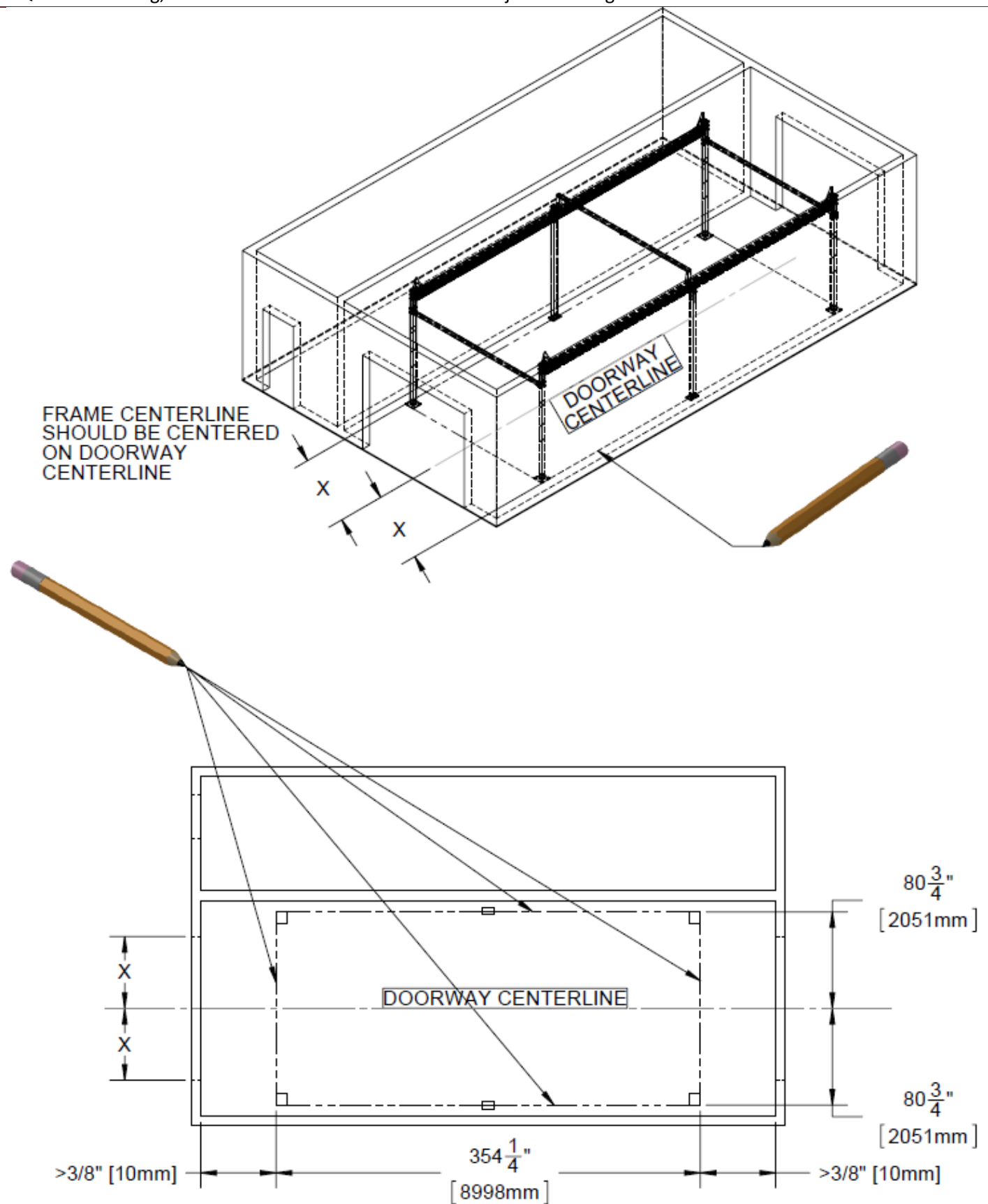


Figure 18-Mark Frame Location in Wash Bay

2.9.5 Step 2 Build (2) Leg 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 19 using the parts shown in Figure 20. When assembling, position the height of the rail brackets per Figure 21. This height will set the wash clearance height as shown in the table in Figure 21.

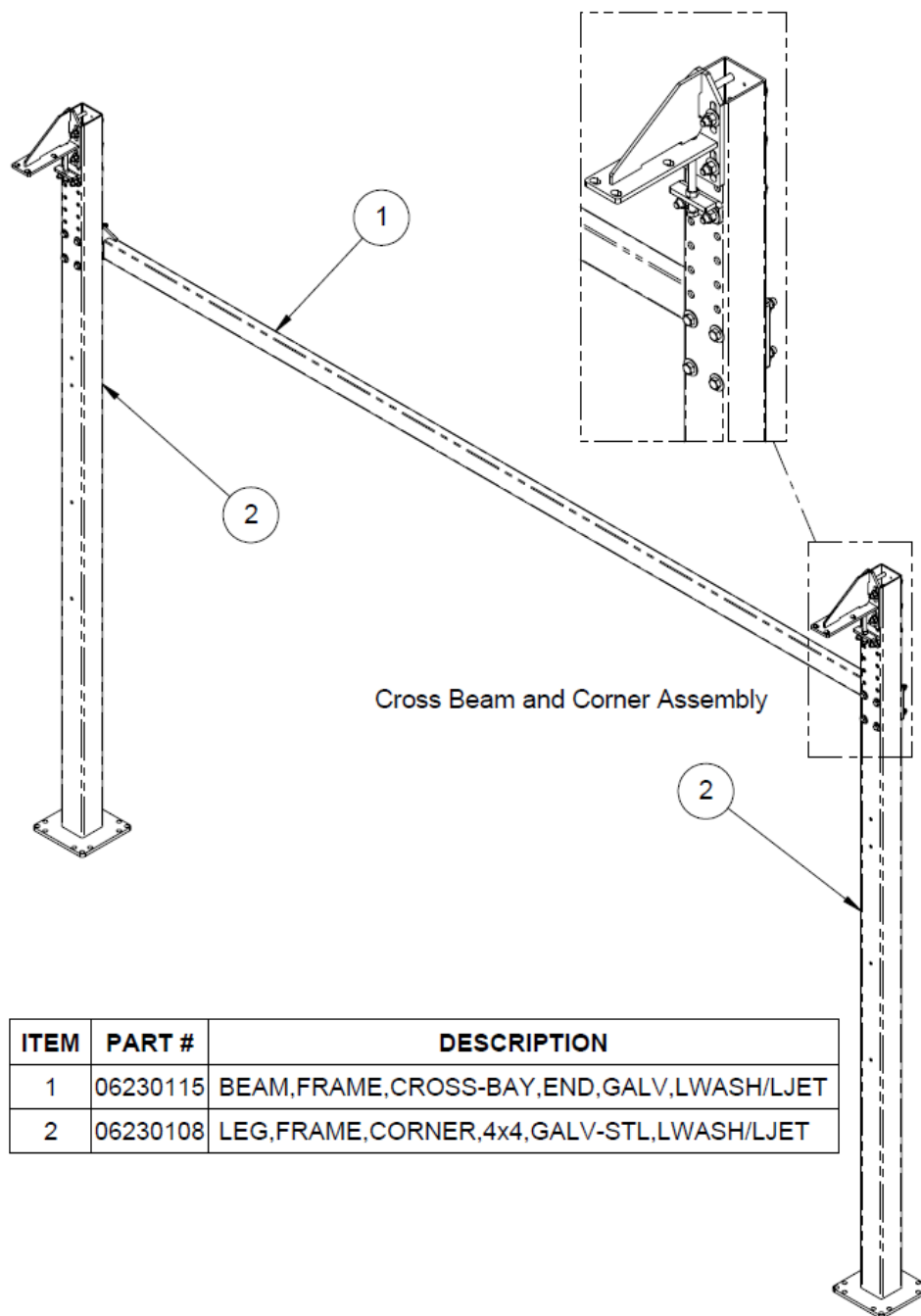


Figure 19 – Cross Beam and Legs

ITEM	PART #	DESCRIPTION
1	06230115	BEAM,FRAME,CROSS-BAY,END,GALV,LWASH/LJET
2	06140913	BRACKET,RAIL-ATTACH,ADJUSTMENT,SST
3	06140909	BRACKET,RAIL-ATTACH,LEG-MTG,GALV-STL
4	06230108	LEG,FRAME,CORNER,4x4,GALV-STL,LWASH/LJET
5	71015-NCS	NUT,1/2-13,HEX,LOCK,SST
6	71015-HCS	NUT,1/2-13,HEX,SST
7	05040220	SCREW,1/2-13x5.50,HHCS,SST
8	05040215	SCREW,1/2-13x6.00,HHCS,SST,FULL-THD
9	71515-FSS	WASHER,1/2,FLAT,SST

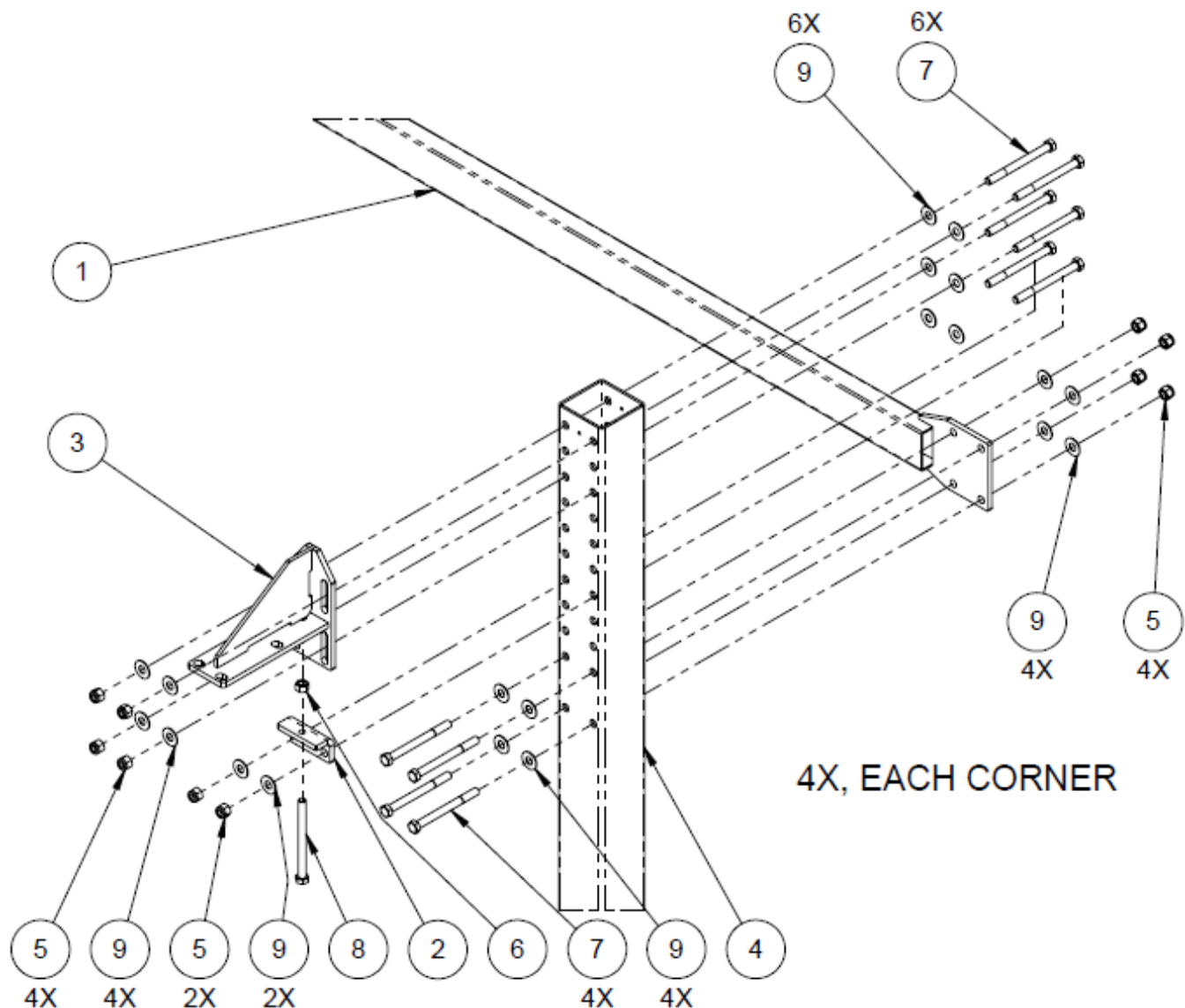
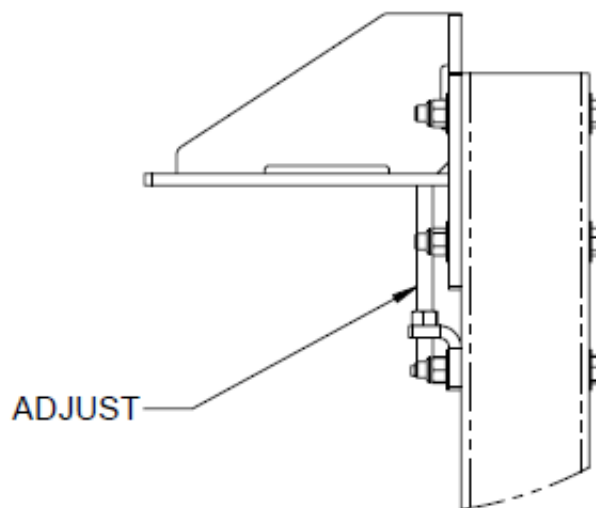
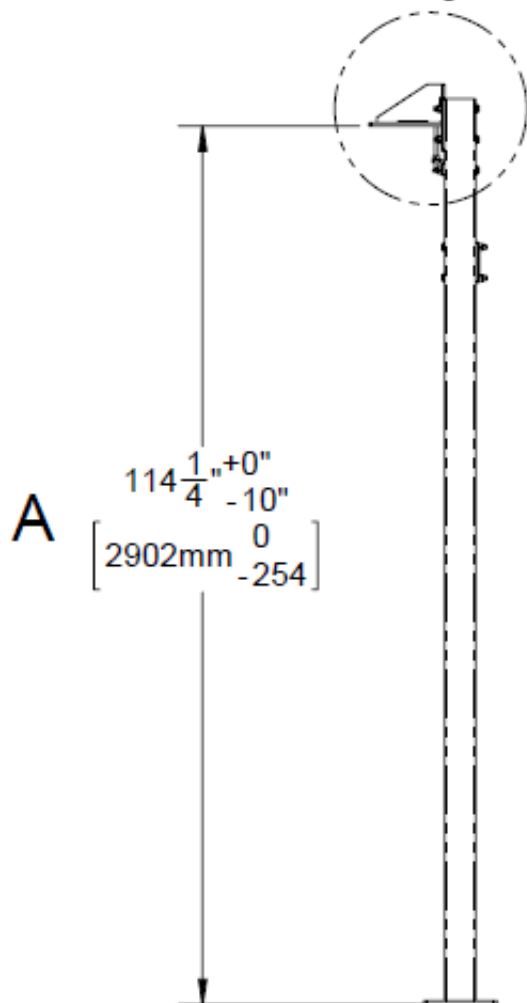


Figure 20 - Cross Beam to Leg Assembly

Rail Bracket Height Adjustment



Rail Bracket Height Adjustment

A		B		C	
mm	in	mm	in	mm	in
2902	114.25	2134	84	3200	126
2877	113.25	2108	83	3175	125
2851	112.25	2083	82	3150	124
2826	111.25	2057	81	3124	123
2800	110.25	2032	80	3099	122
2775	109.25	2007	79	3073	121
2750	108.25	1981	78	3048	120
2724	107.25	1956	77	3023	119
2699	106.25	1930	76	2997	118
2673	105.25	1905	75	2972	117
2648	104.25	1880	74	2946	116

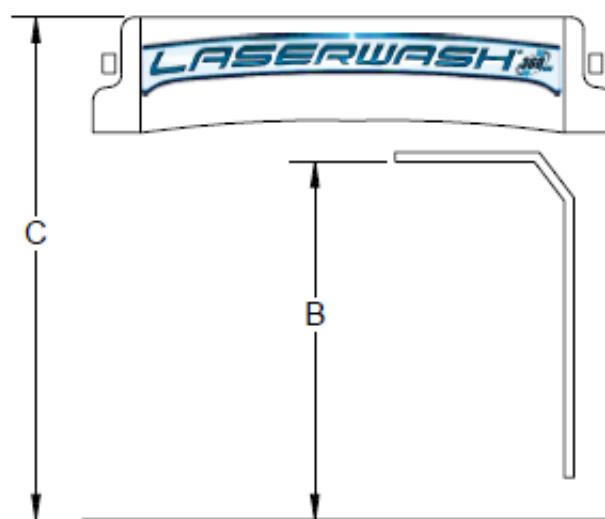


Figure 21 - Leg Arch Height Adjustment

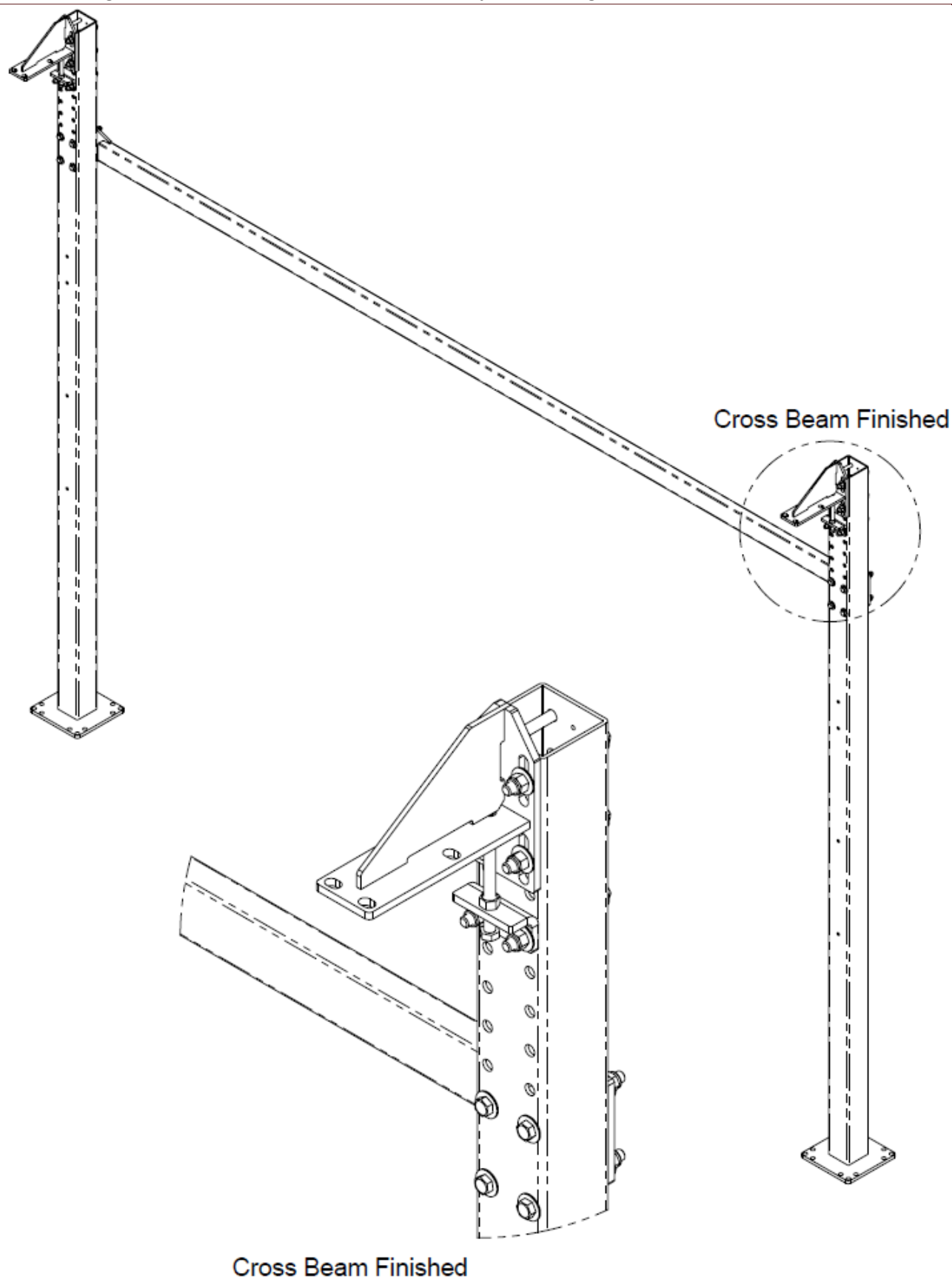
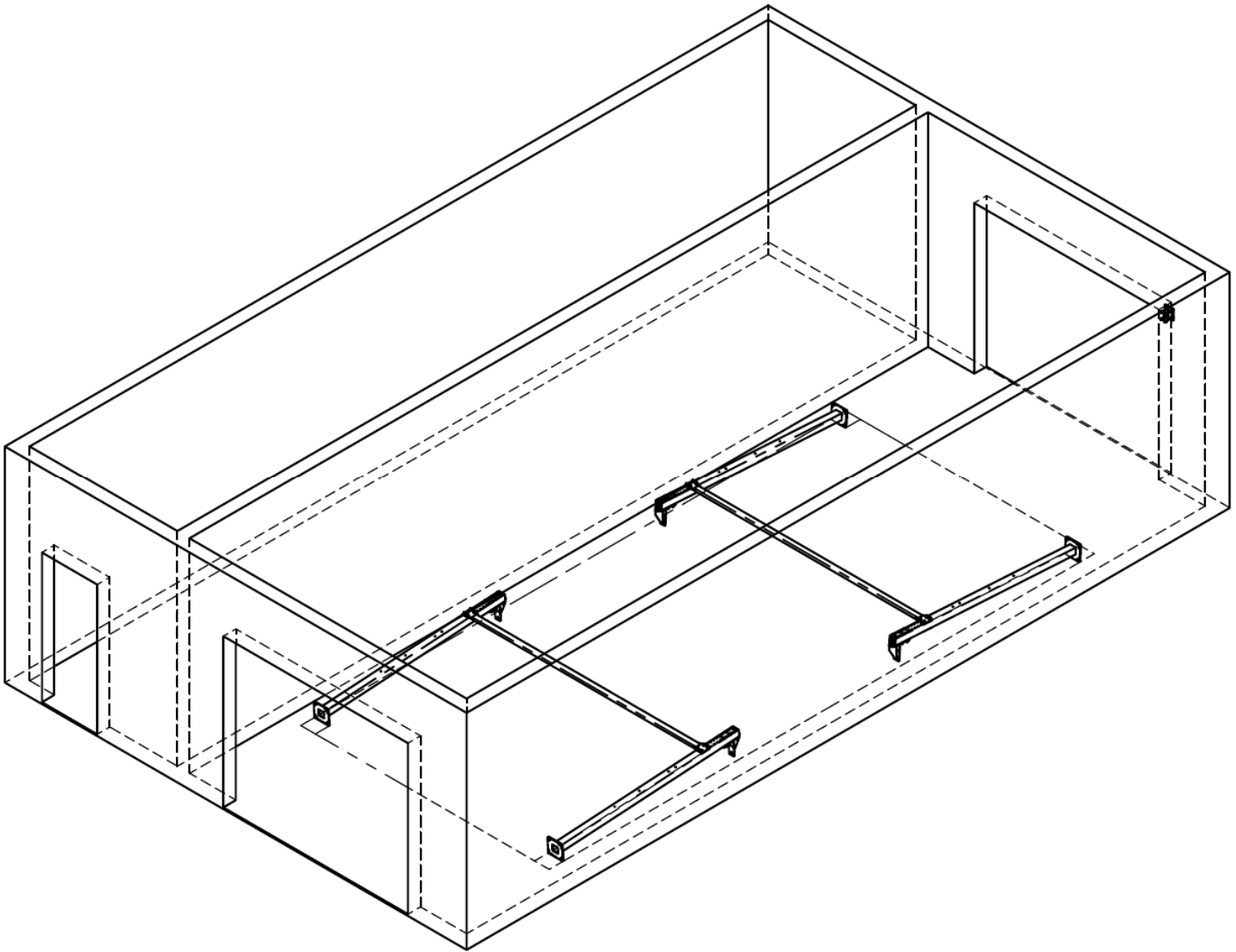


Figure 22 - Completed Leg Assembly

2.9.5 Step 3 Place the Leg Assemblies in the Carwash Bay in the Approximate Locations Marked**Figure 23 - Place Leg Arches in Wash Bay****2.9.5 Step 4 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.
- Make sure the legs are vertical and fasten them to the floor using site supplied floor anchors.

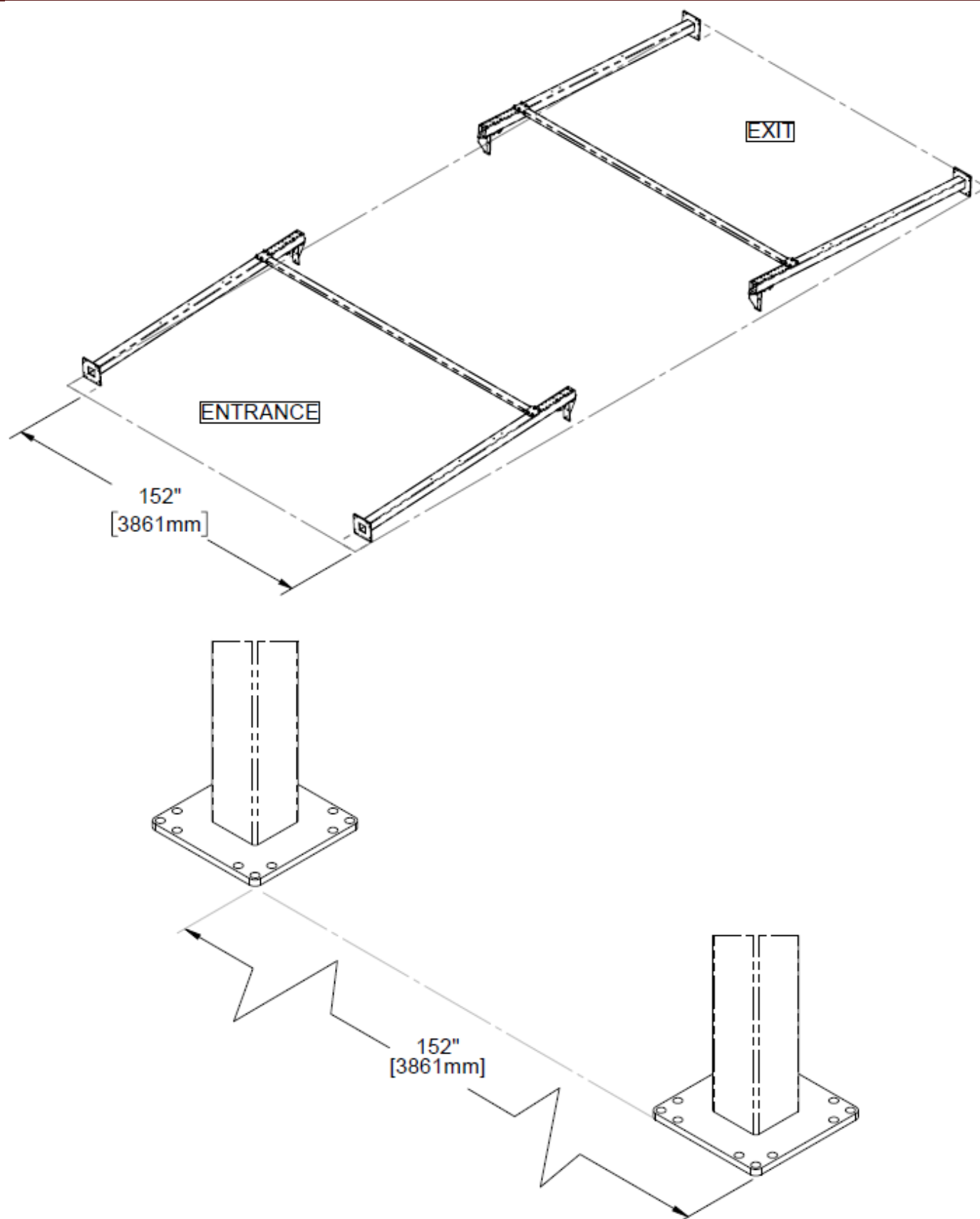
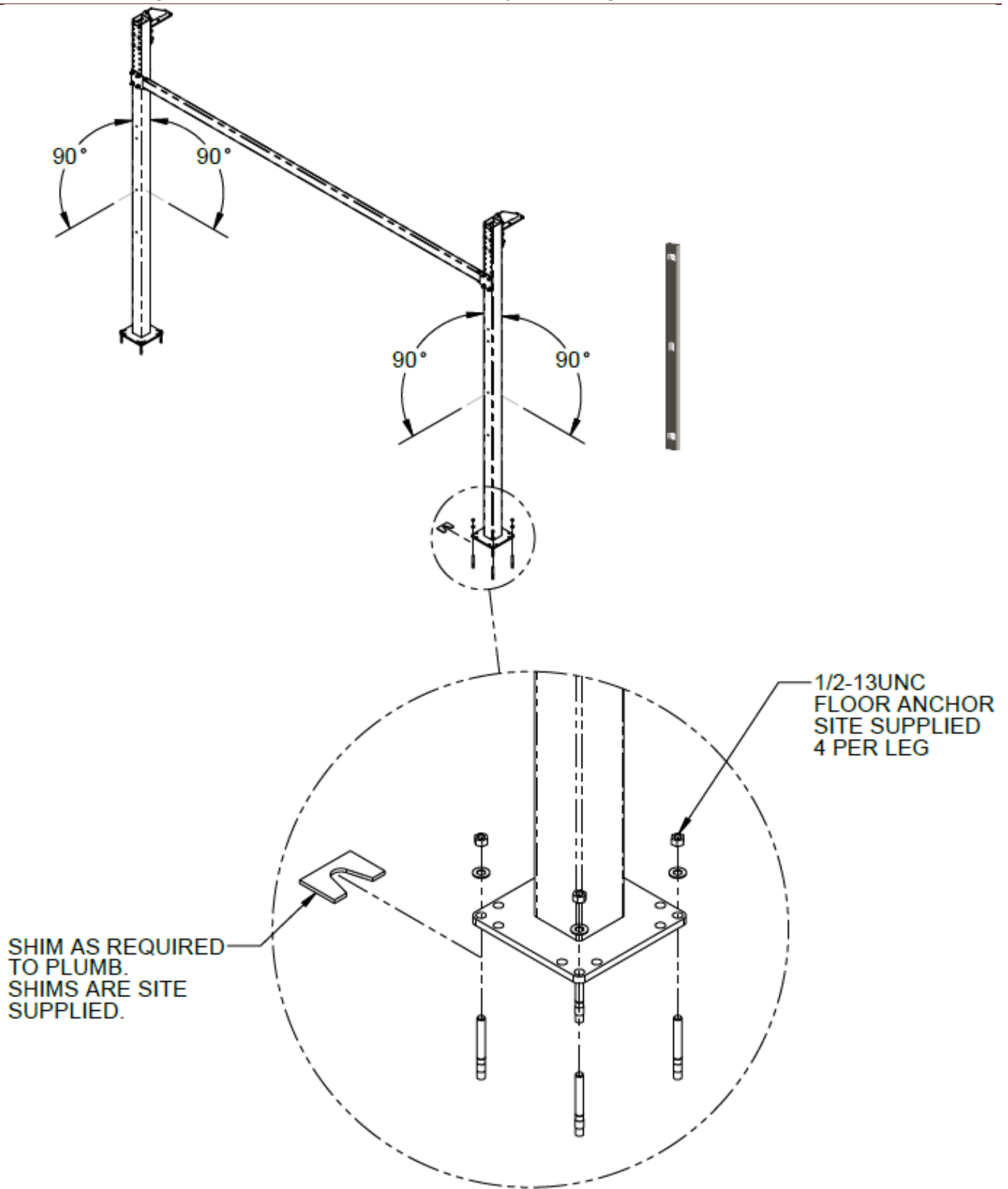
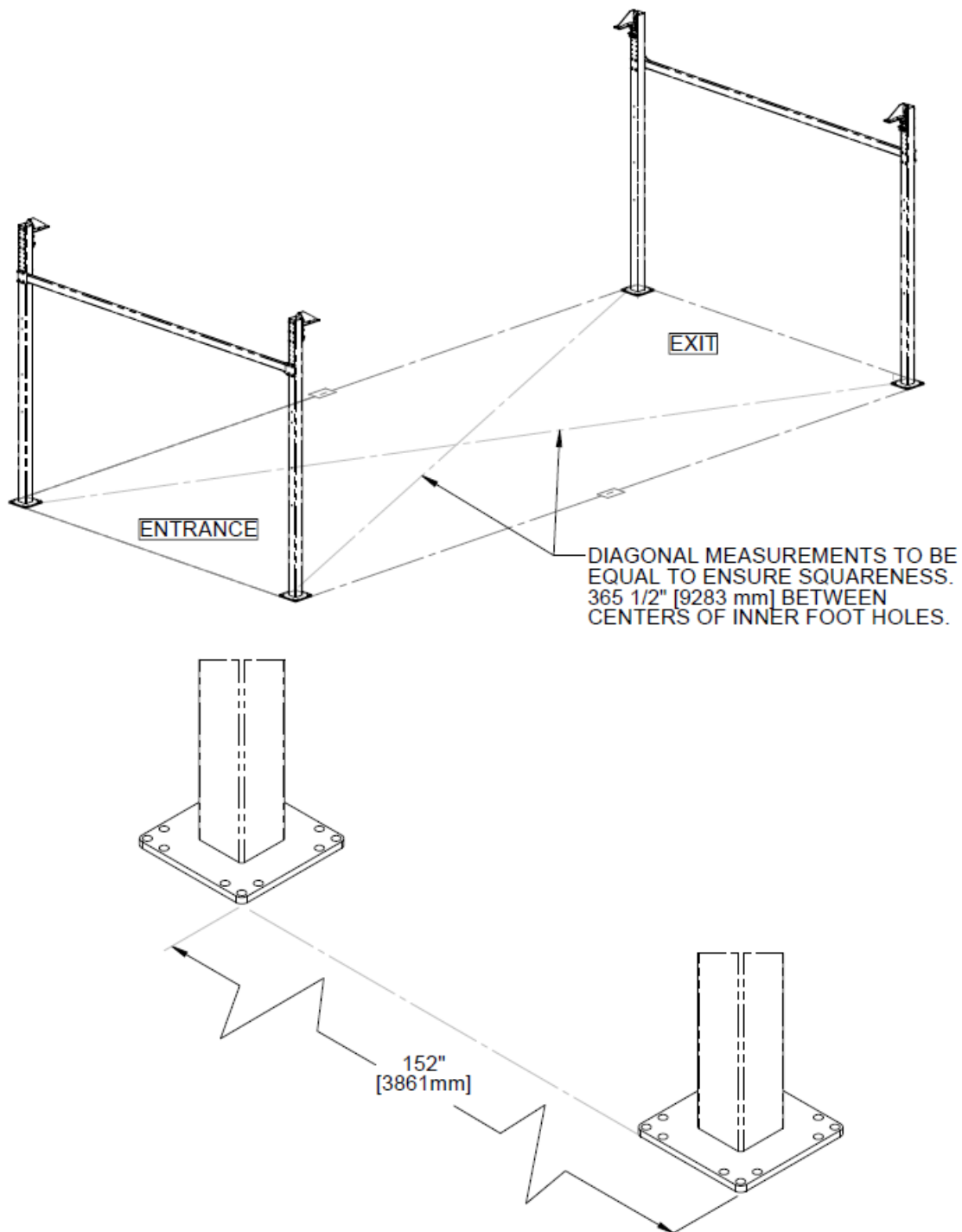


Figure 24 - Erect Entrance Leg Arch

**Figure 25 - Anchor Leg Arch**

2.9.5 Step 5 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 (See Figure 26). Maintain this dimension throughout this step.
- Shims may be placed beneath the base of the leg. Shims and floor anchors are not supplied.
- 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 25.
- Make sure the legs are vertical and fasten them to the floor using site supplied floor anchors.

**Figure 26 - Erect Exit Leg Arch**

2.9.5 Step 6 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 28.

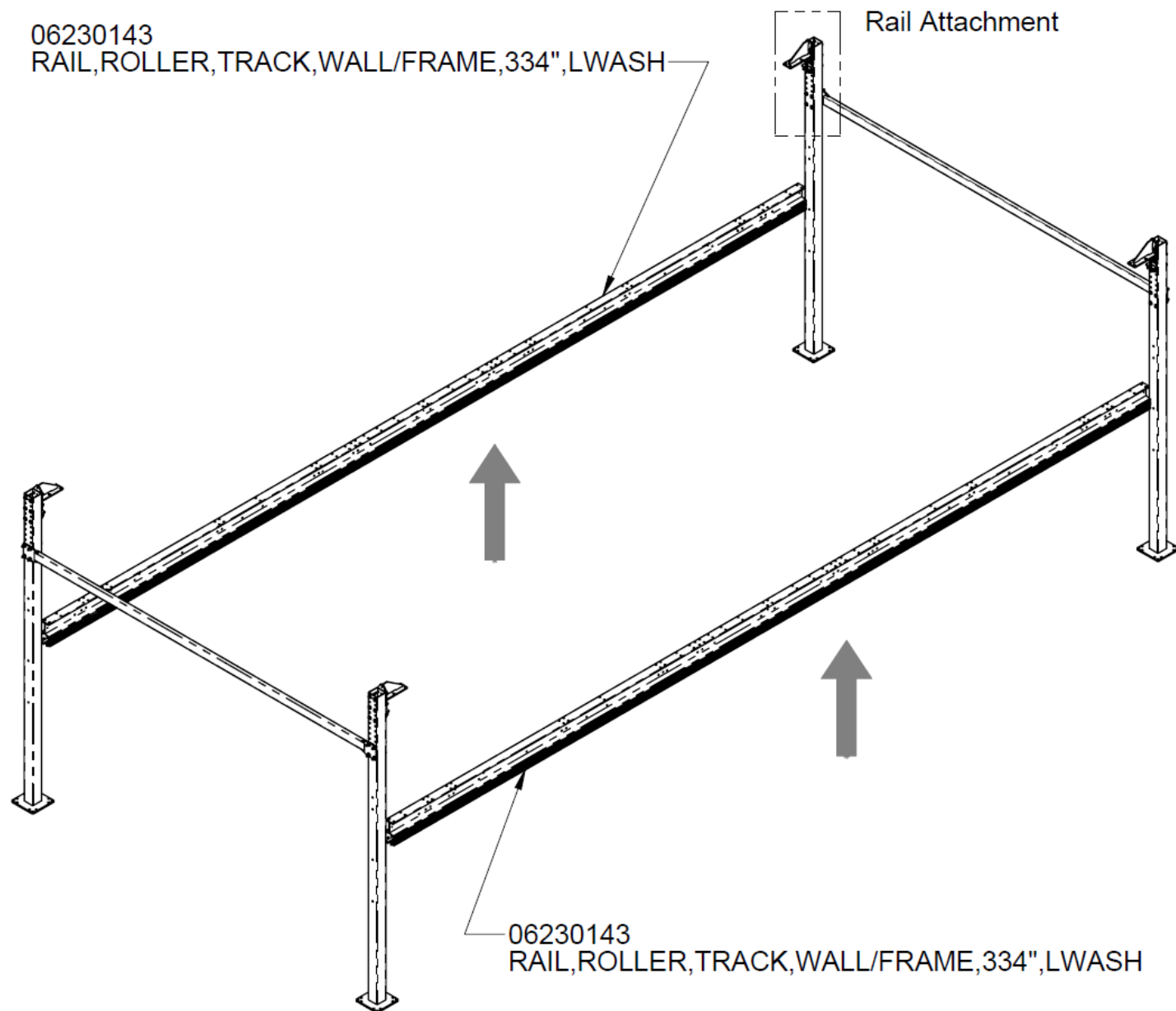


Figure 27 - Lift Main Rails into Position

70258-HCS
SCREW, 1/2-13x1.75, HHCS, SST
16X

71515-FSS
WASHER, 1/2, FLAT, SST
16X

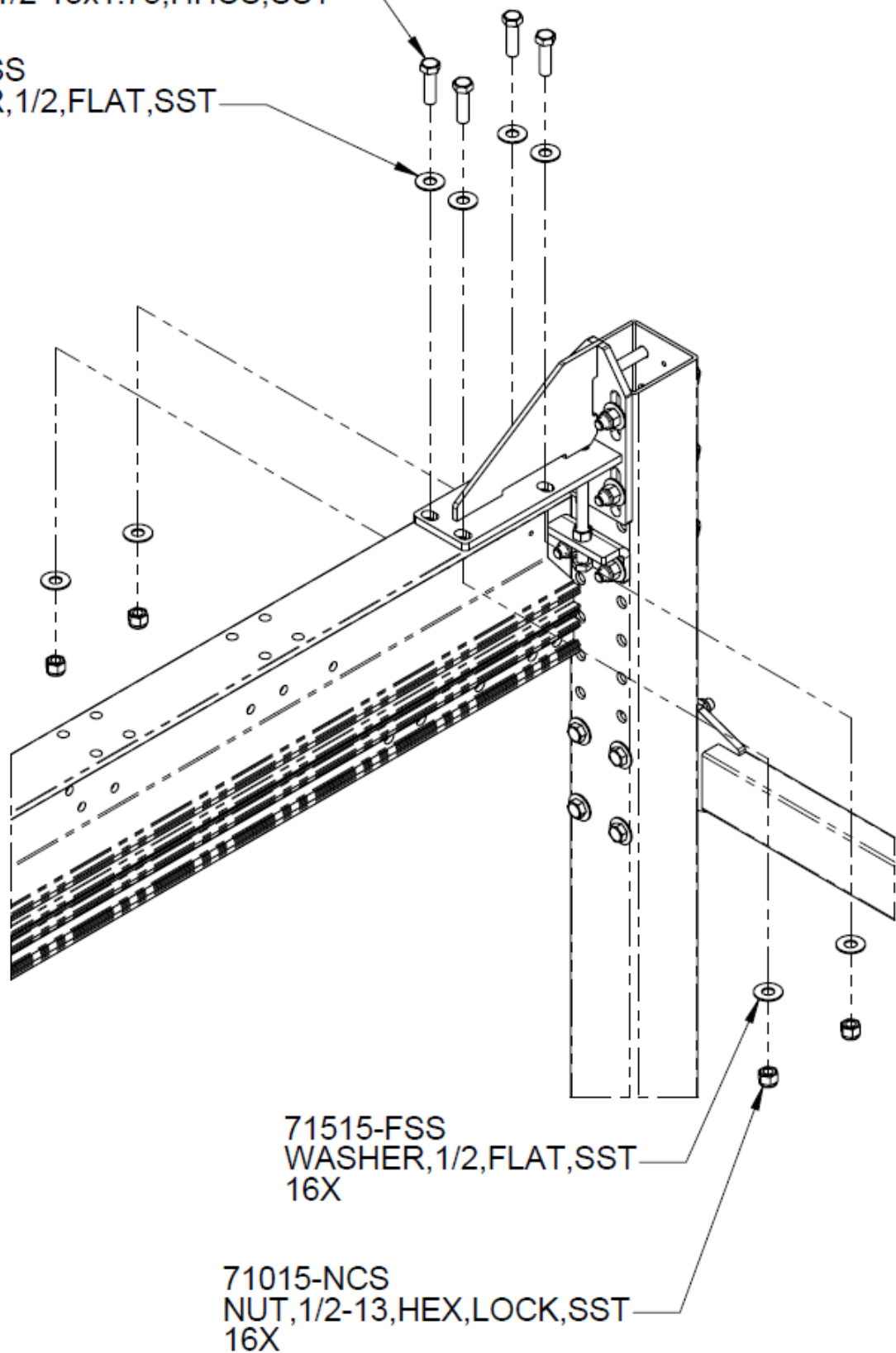
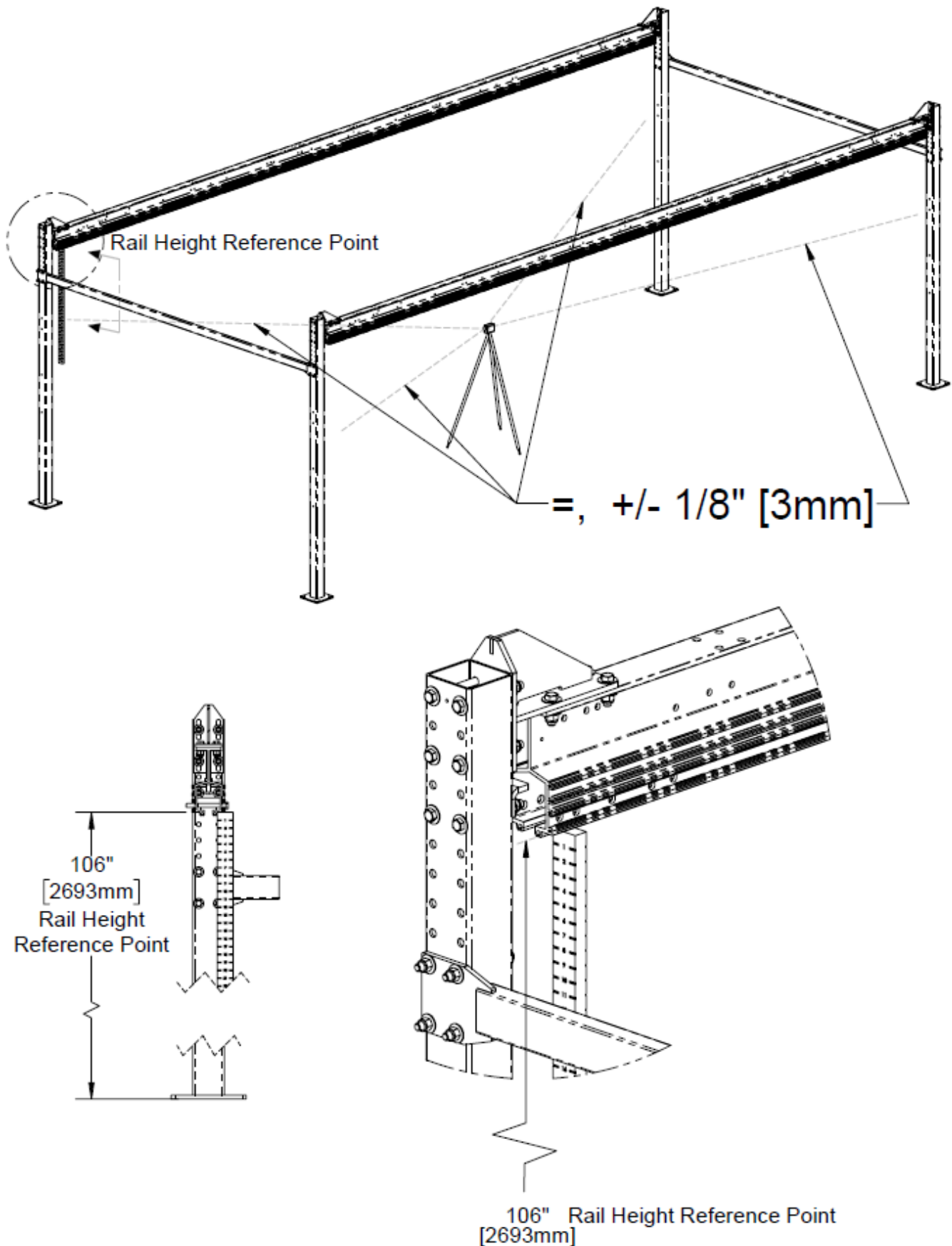


Figure 28 - Attach Main Rails to Corner Brackets

2.9.5 Step 7 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 29).
- All four corners are to be level and at an equal height relative to one another within +/- 1/8 in (3 mm) (Figure 29).
- 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 30).

**Figure 29 - Level the Main Rails**

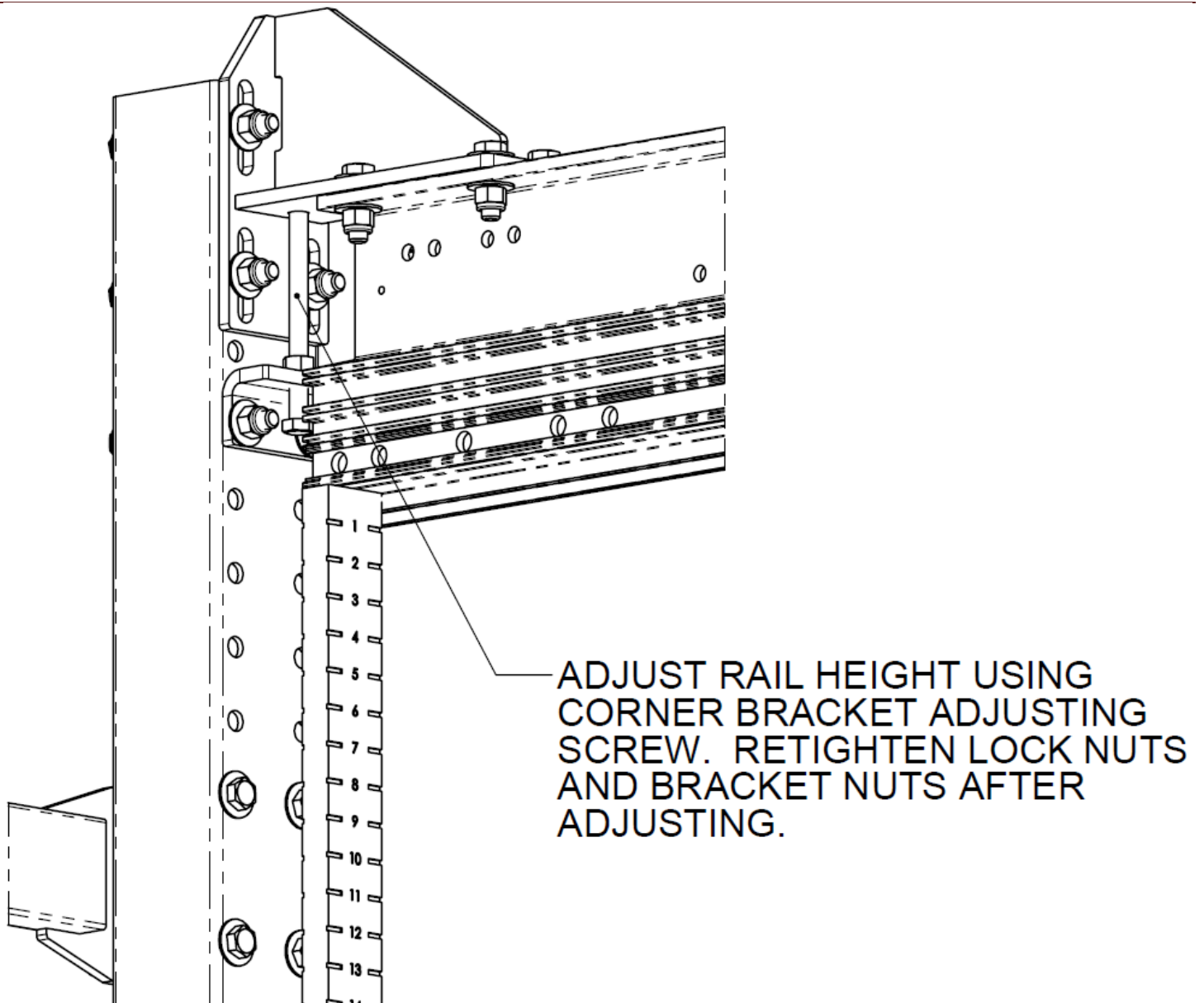
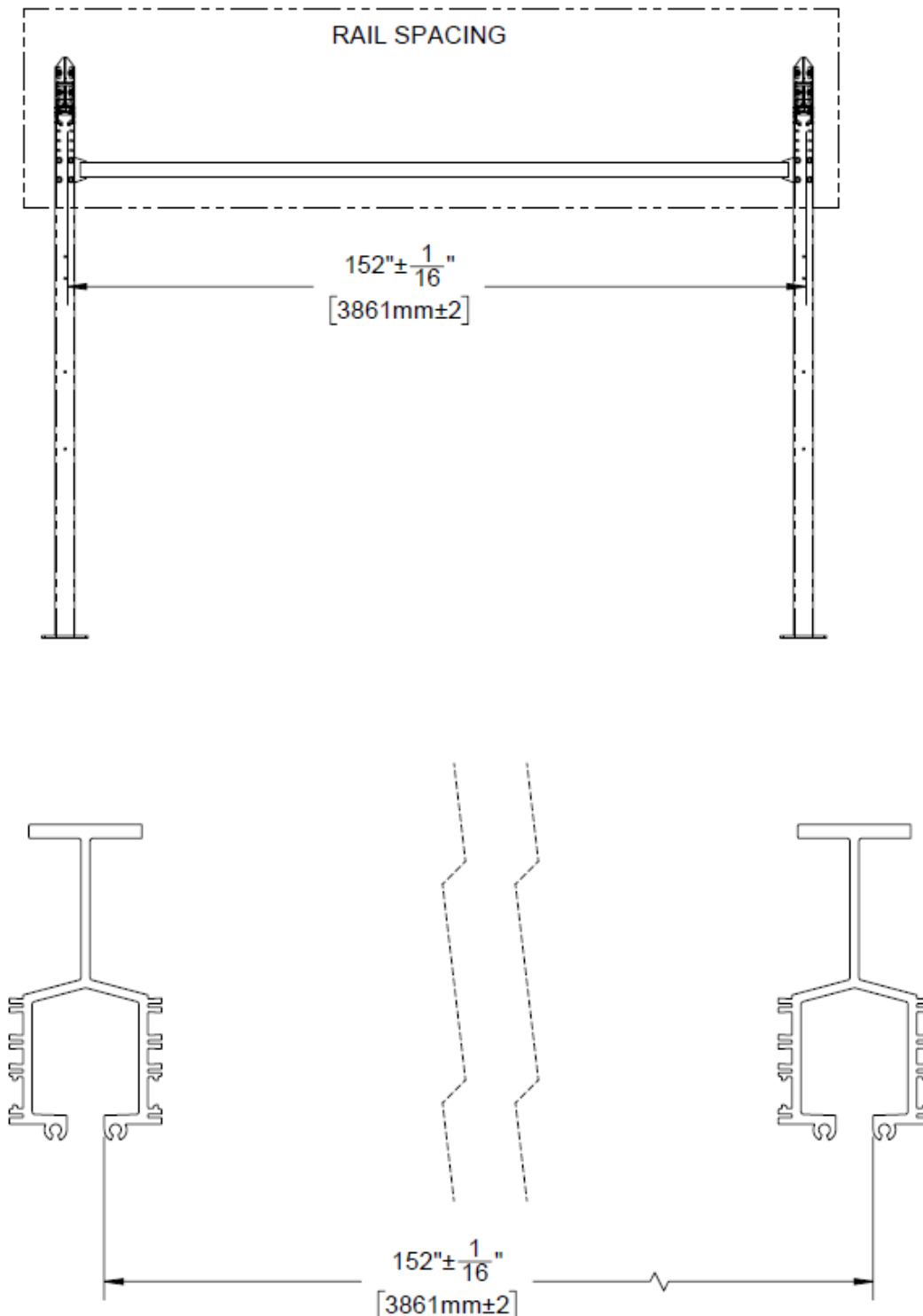


Figure 30 - Adjust Rail Height at Each Corner

2.9.5 Step 8 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 31.
- 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 31- Set Rail Spacing**

2.9.5 Step 9 Install Center Cross Beam (all frames) and Center Leg Mounting Bracket to Left Rail (6-Legged Frame Only)**NOTE:**

If installing a 4-legged freestanding frame, Bracket 06140910 is not included and not to be installed.

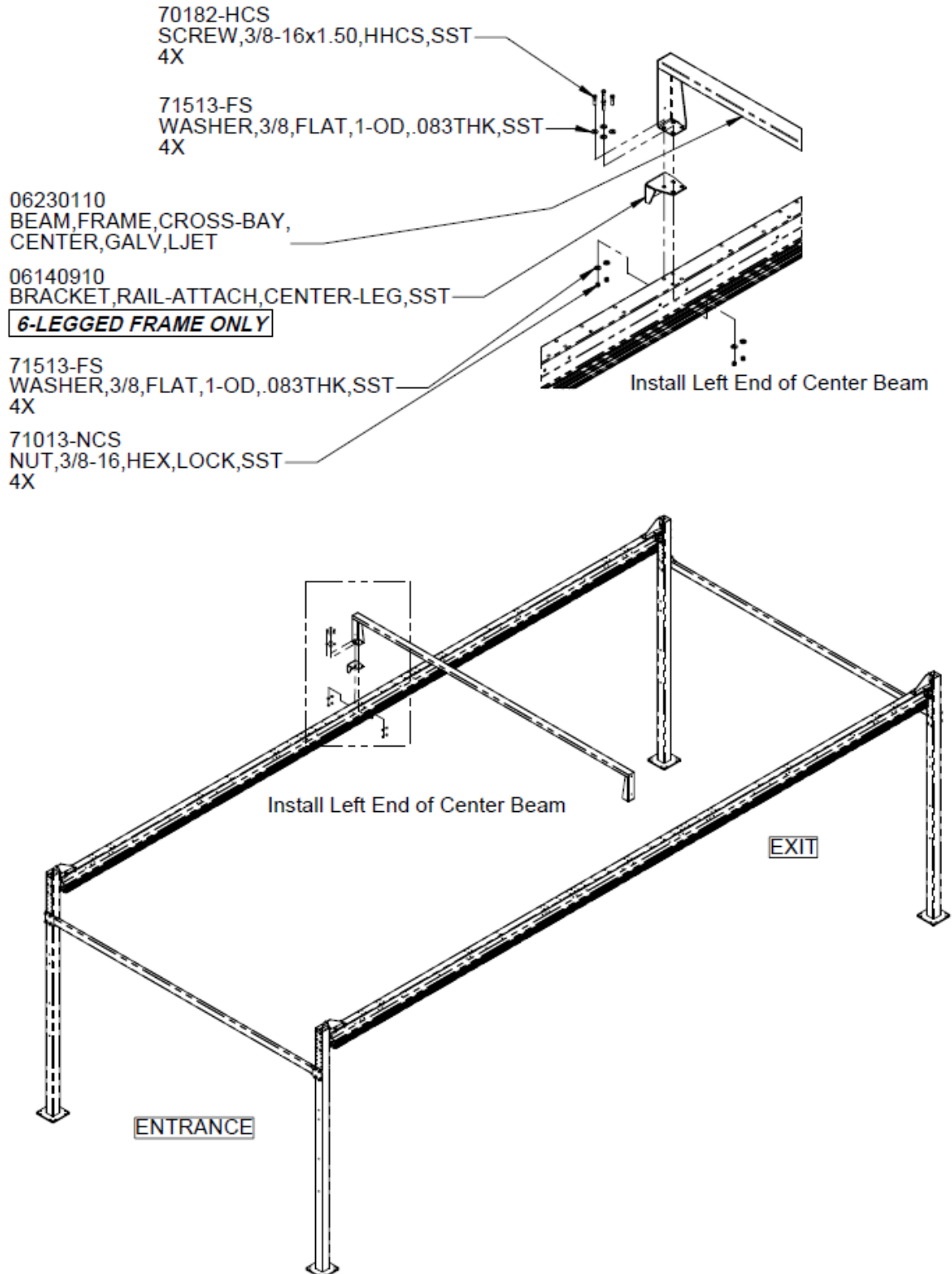


Figure 32 - Install Left End of Center Beam (all frames) and Leg Bracket (6-Legged Frame Only)

2.9.5 Step 10 Verify Center Rail Spacing (all frames)

Hold the rail spacing as shown in Figure 33 while performing the next step (attaching the right end of center cross beam).

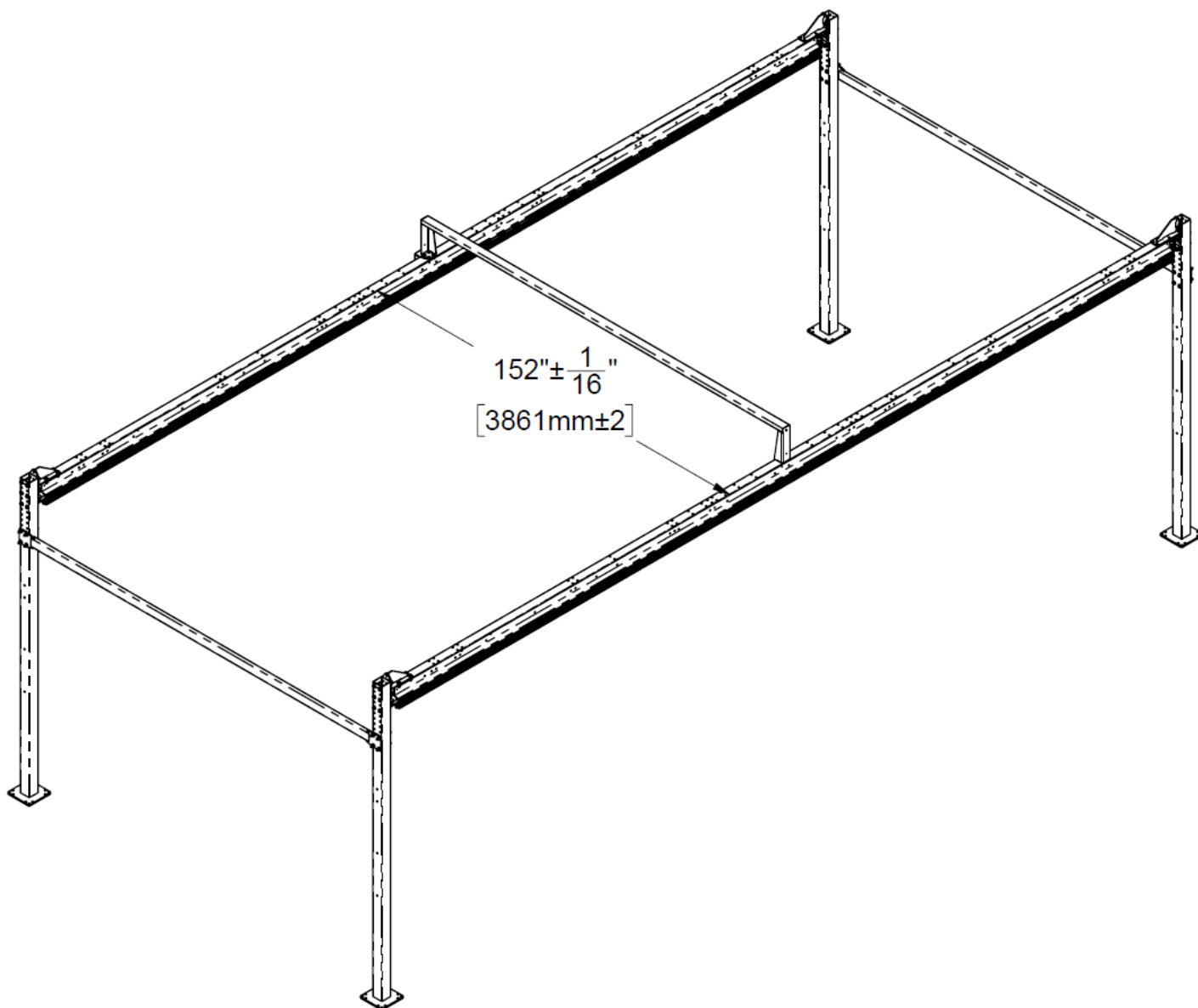


Figure 33 –Maintain Center Rail Spacing (6-Legged Frame Only)

2.9.5 Step 11 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 freestanding frame, Bracket 06140910 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.

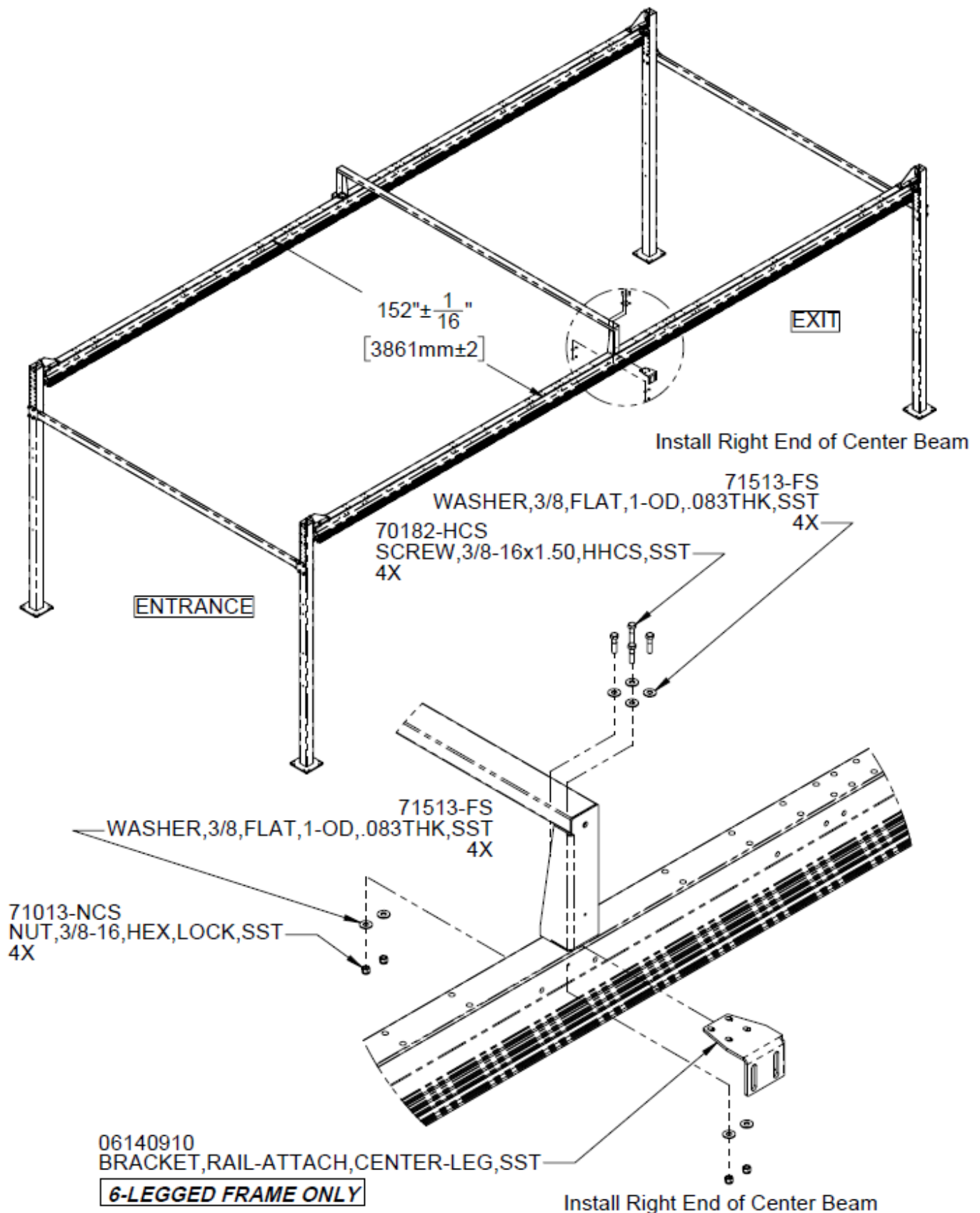


Figure 34 - Install Right End of Center Beam (all frames) and Leg Bracket (6-Legged Frame Only)

NOTE: If installing a 4-legged freestanding frame, skip to section 2.9.5 Step 15.

2.9.5 Step 12 (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.

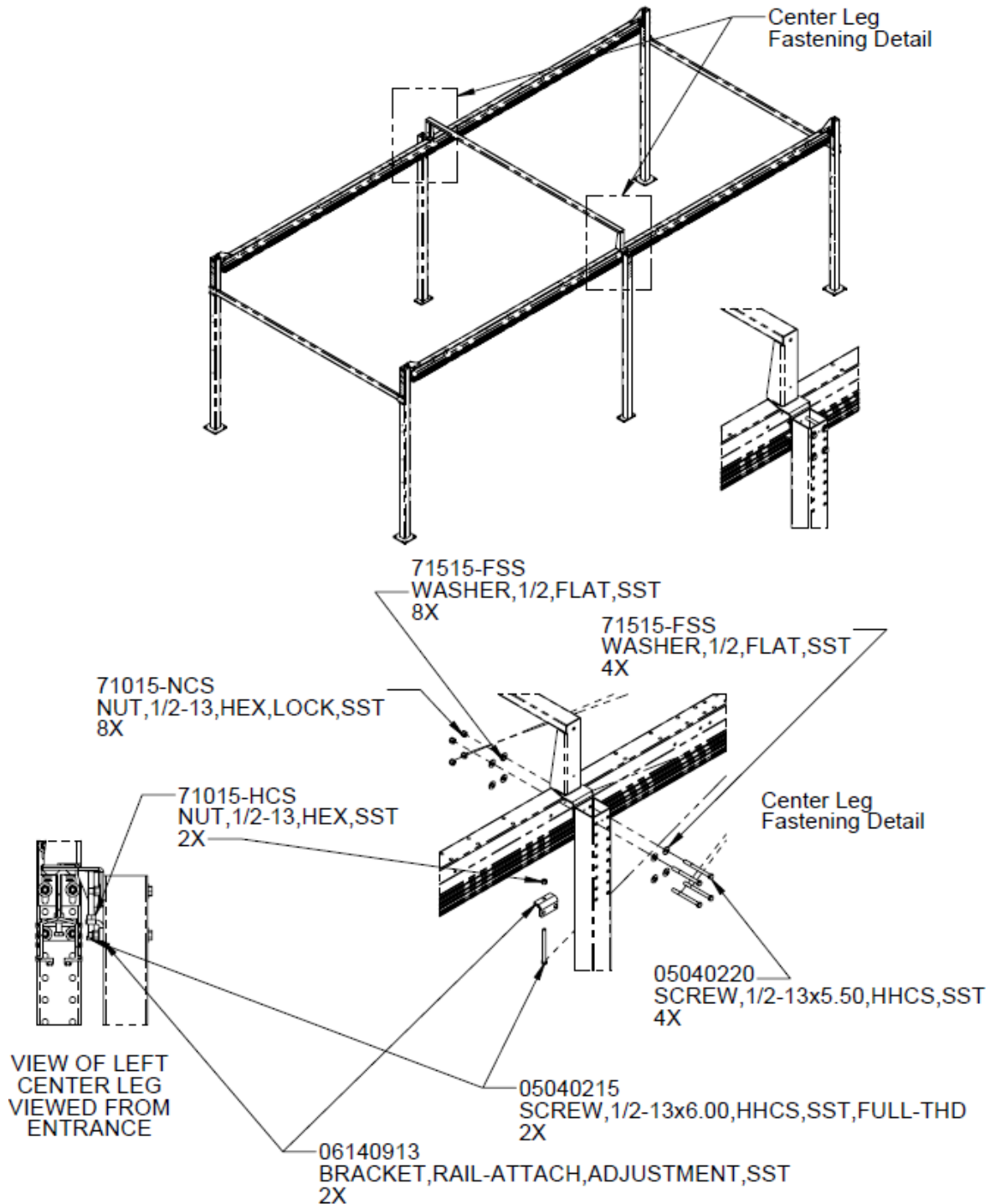
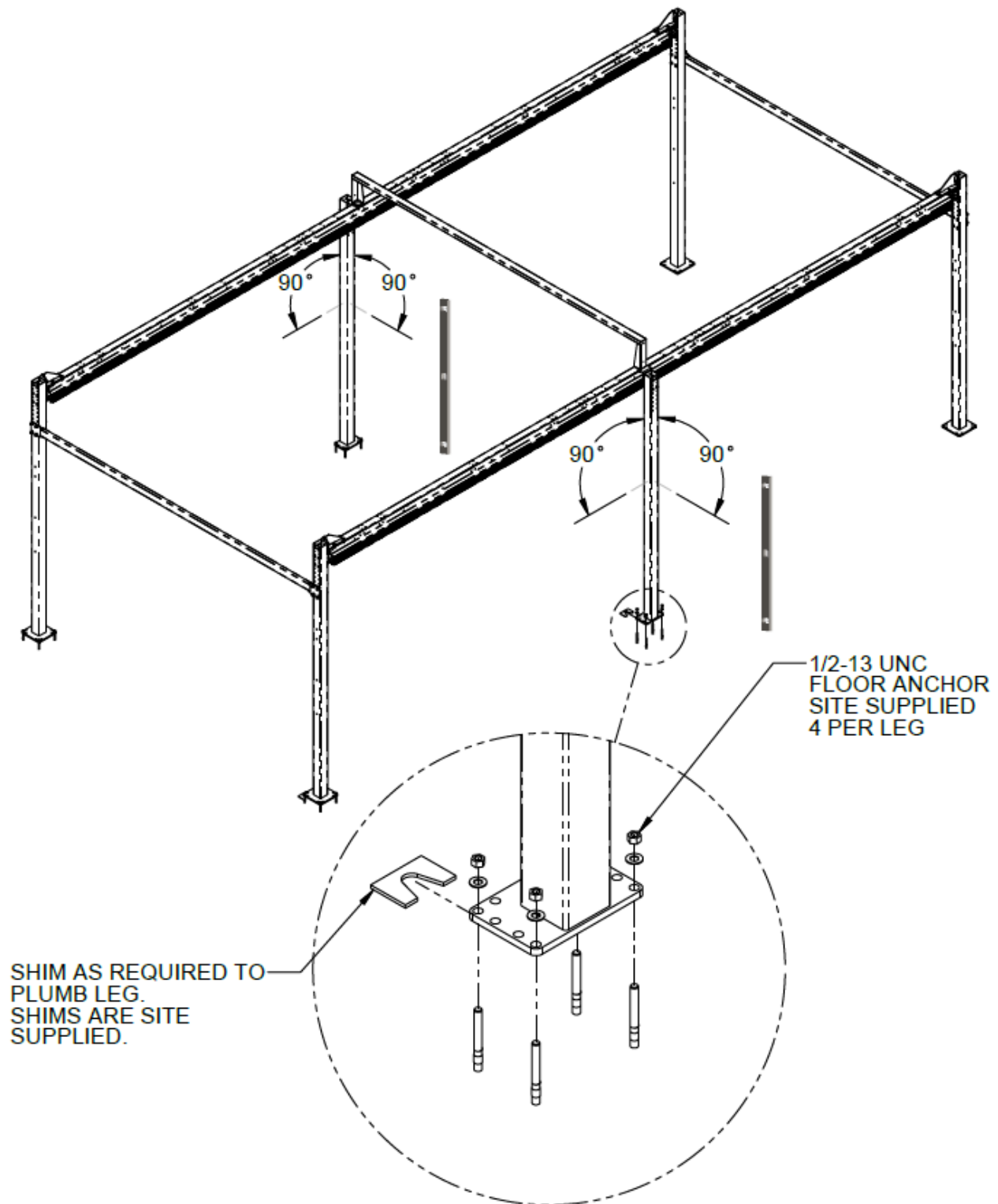


Figure 35 - Install Center Legs and Height Adjusting Screws and Brackets (6-Legged Frame Only)

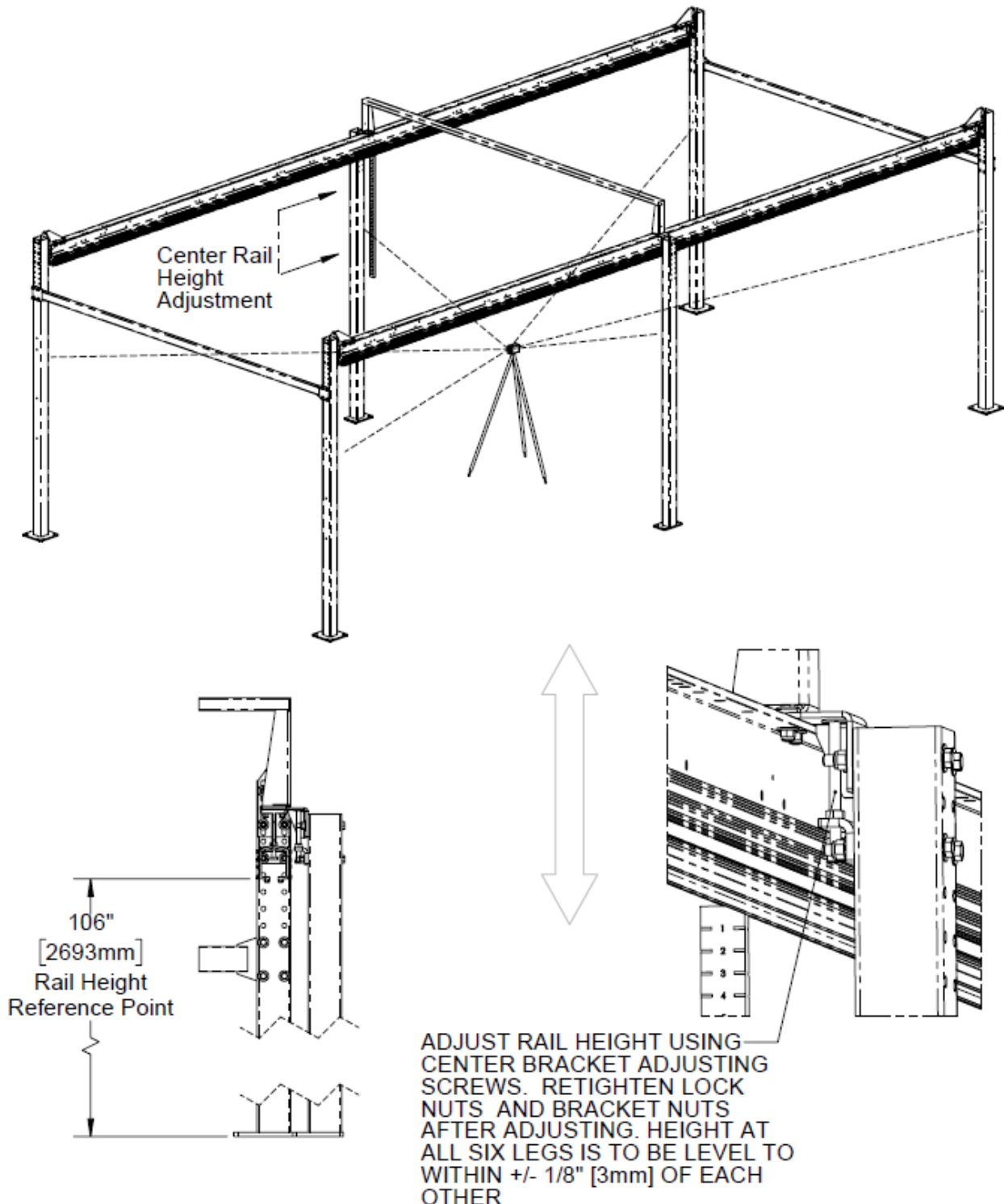
2.9.5 Step 13 (6-Legged Frame Only) Anchor Center Legs to the Wash Bay Floor

- 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 36 - Anchor Center Legs (6-Legged Frame Only)**

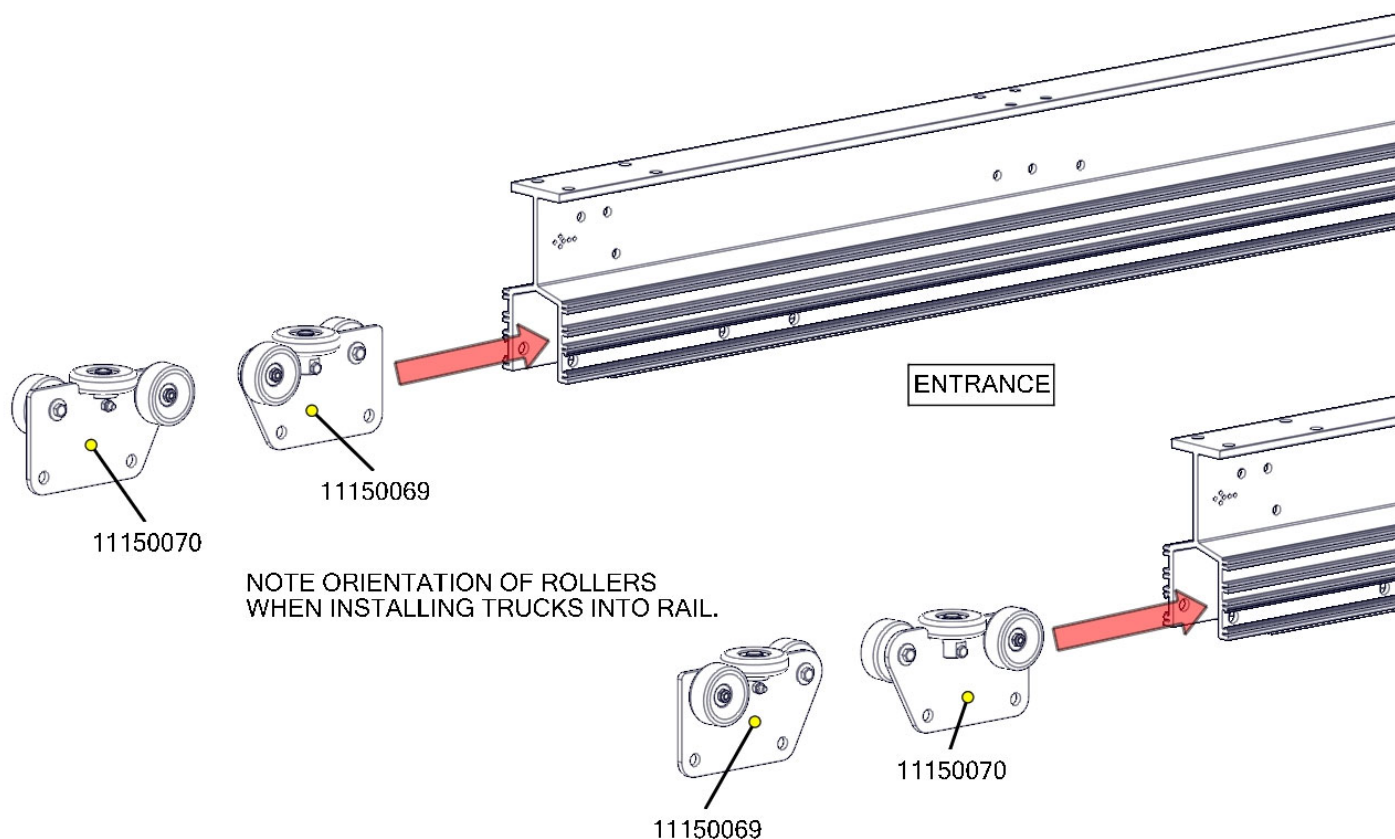
2.9.5 Step 14 (6-Legged Frame Only) Verify Rails are Level and Adjust Rail Height at the Center

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

2.9.5 Step 15 Install (2) Bridge Trucks in Each Rail**!!!IMPORTANT!!**

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 (See Figure 38).

**Figure 38 - 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 39.
- Install the second truck by pivoting it into the end of the rail as shown in Figure 40.
- Install the other two trucks into the opposite rail in a similar manner.

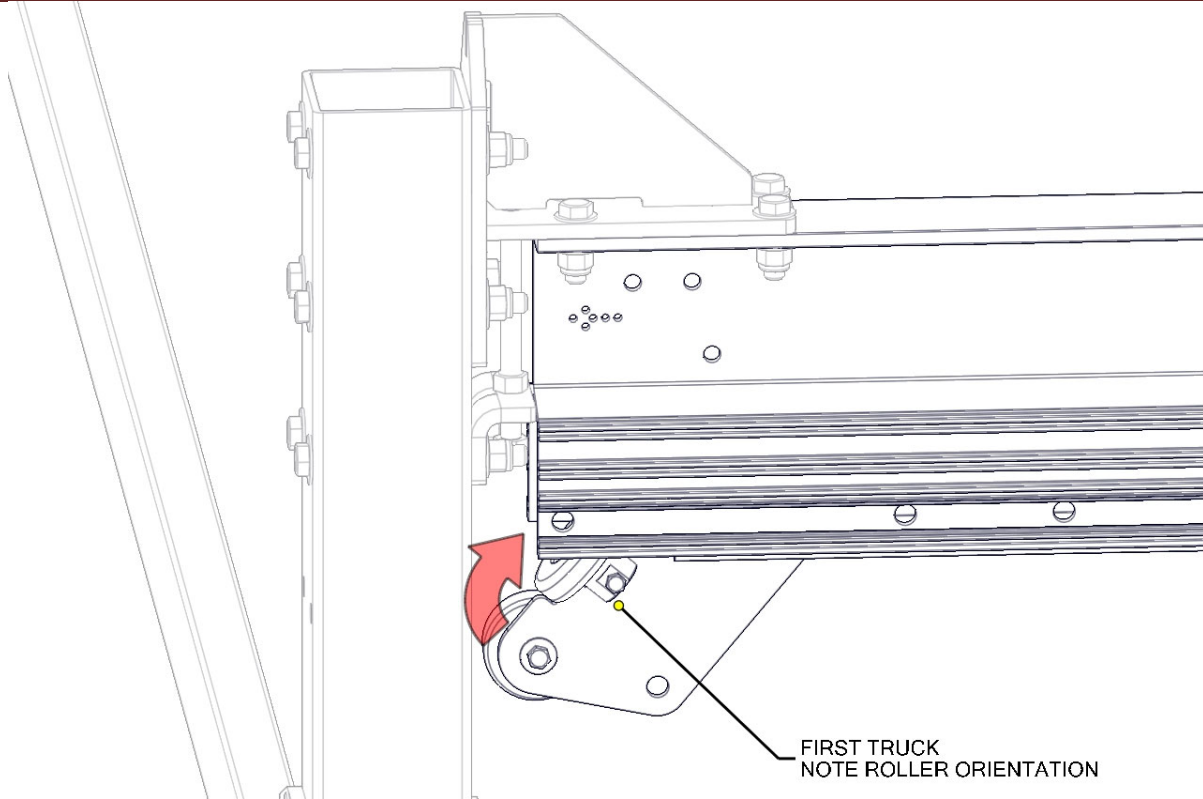


Figure 39 - Install the First Truck

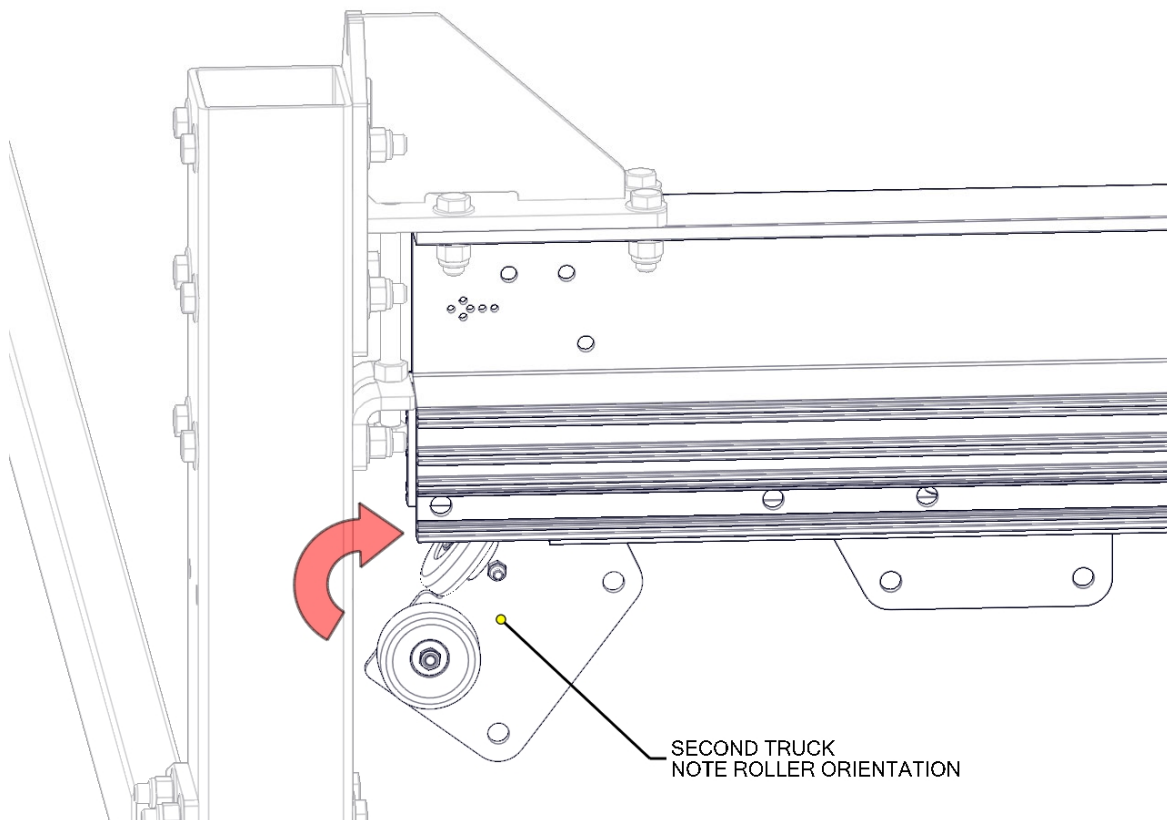
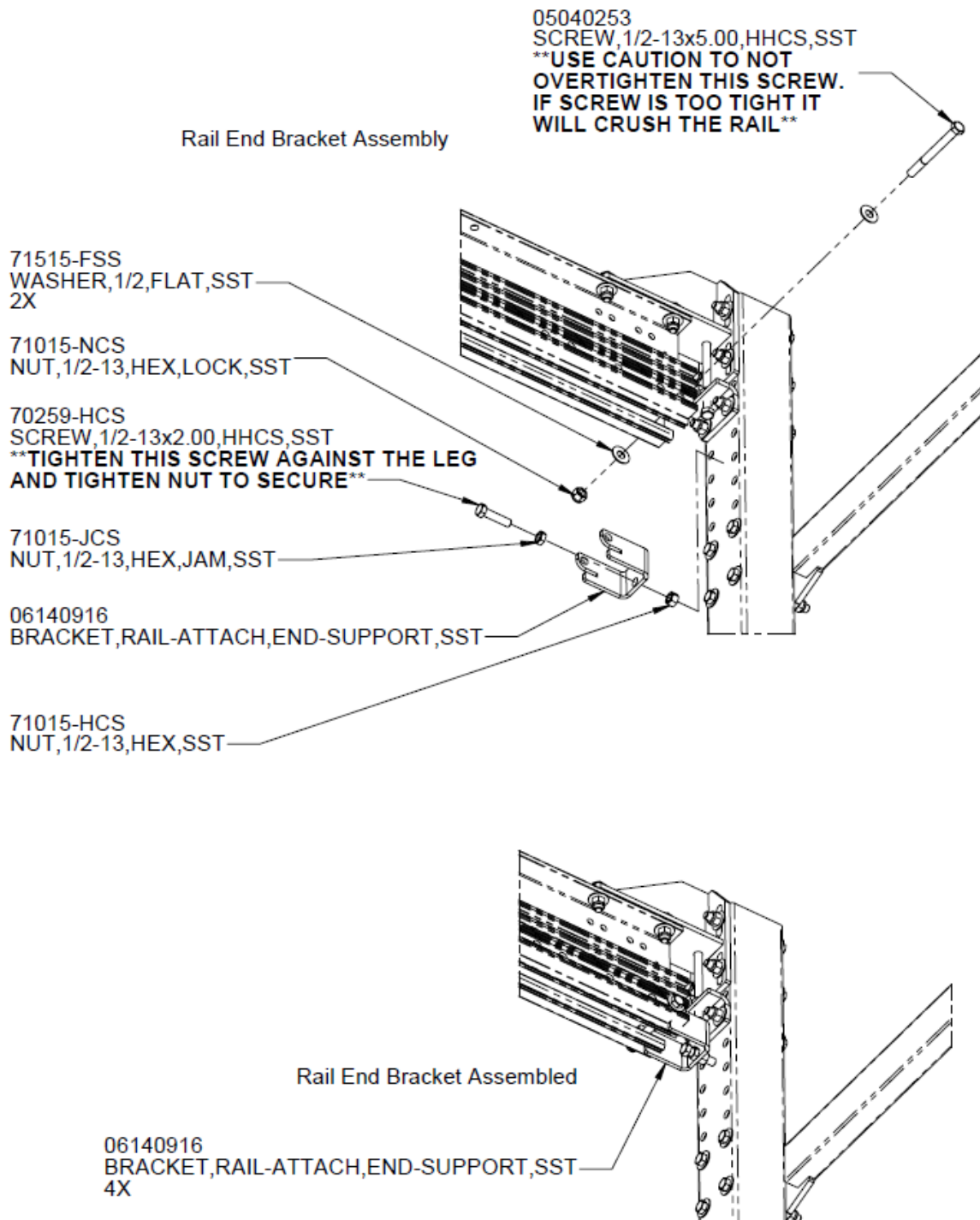


Figure 40 - Install the Second Truck

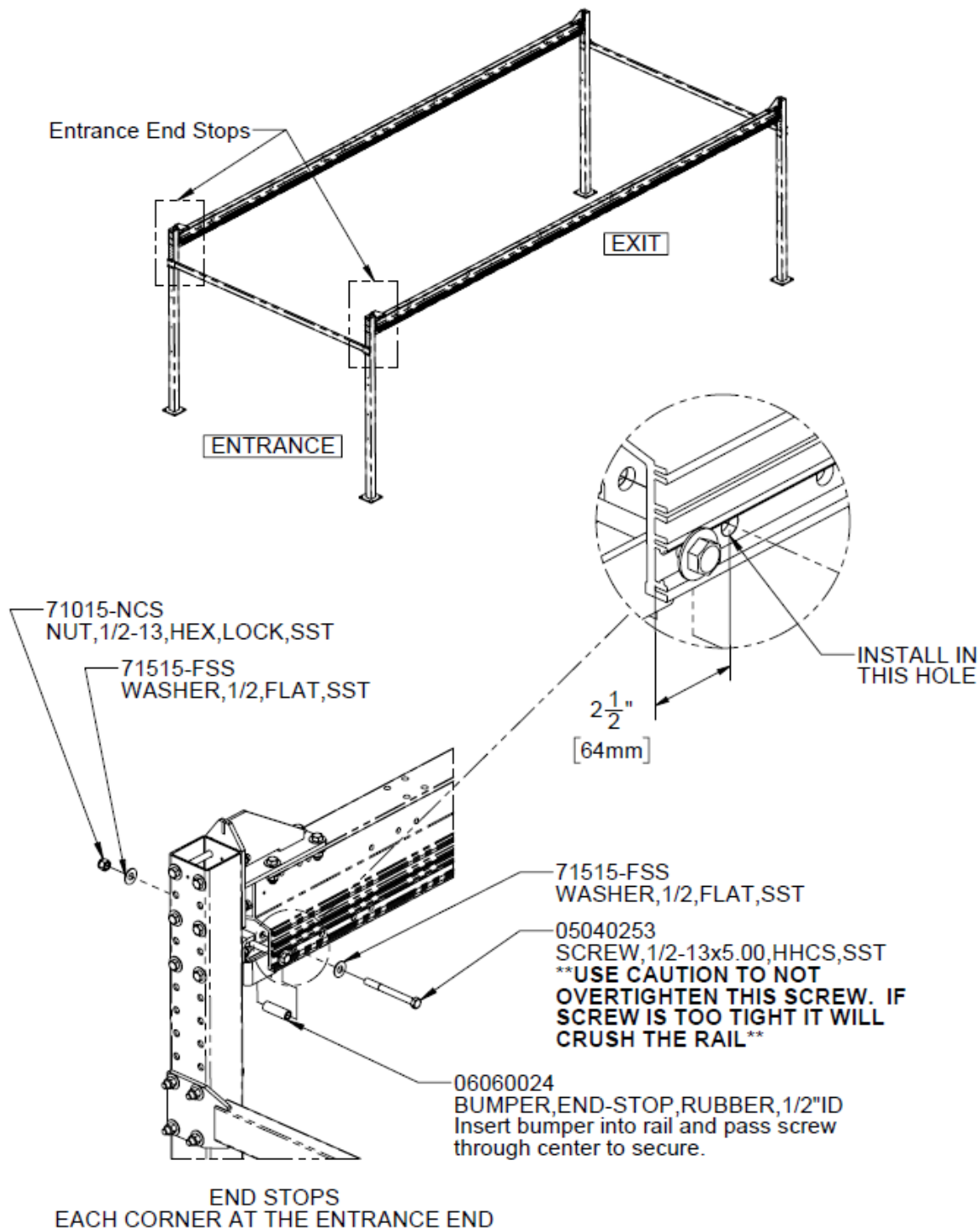
2.9.5 Step 16 Install the Rail End Brackets to Each End of Each Rail.

- At each corner of the frame where the rail is attached to the leg, install the end bracket as shown in Figure 41.
- The ½-13 UNC x 5.00 screw is to be installed in the end hole on the main rail. To prevent crushing the main rail, use caution to not overtighten this screw.
- Ensure the ½-13 x 2.00 screw is tight against the leg in each corner and the jam nut is tight to hold it in place. This will tighten the rail against the leg to provide a stiffer connection and prevent wobble of the frame during operation.

**Figure 41 - Rail End Bracket Assembly (each corner)**

2.9.5 Step 17 Install the Bridge End Stops in the Main Rails

- The end stop parts are included in the main shipped loose kit for the LaserWash 360 Plus.
- 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 42).
- Install the end stops (two total assemblies) as shown at the exit end of the frame in the fourth from the endmost hole at the end of each rail (Figure 43).

**Figure 42 - Install Entrance End Stops at Each Corner at the Entrance**

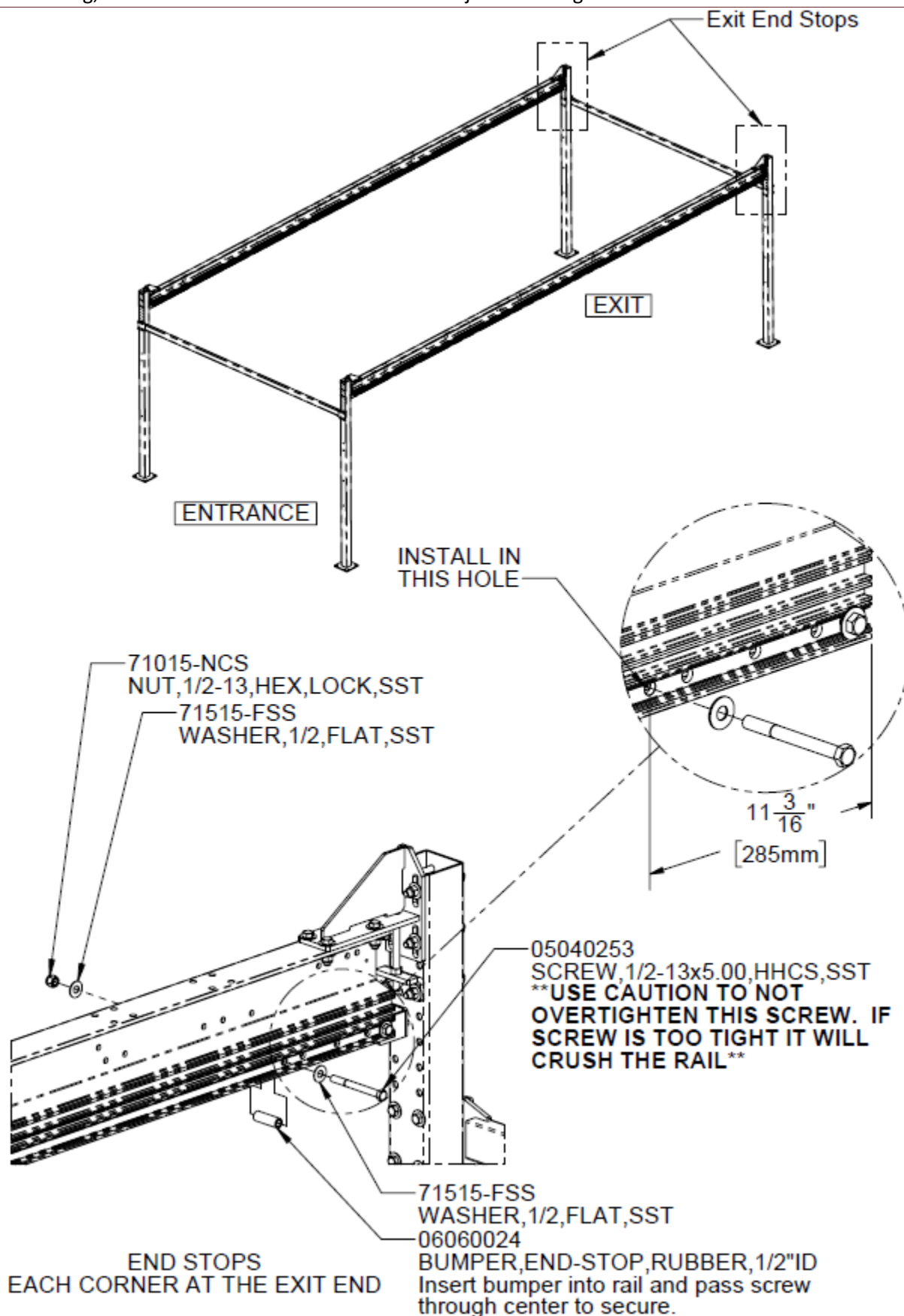


Figure 43 - Install Exit End Stops at Each Corner at the Exit

2.9.5 Step 18 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 44 through Figure 46.
- For 6-Legged Frames, install the supplied ground wires for the center legs (Figure 48).
- 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 47 and Figure 48).



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

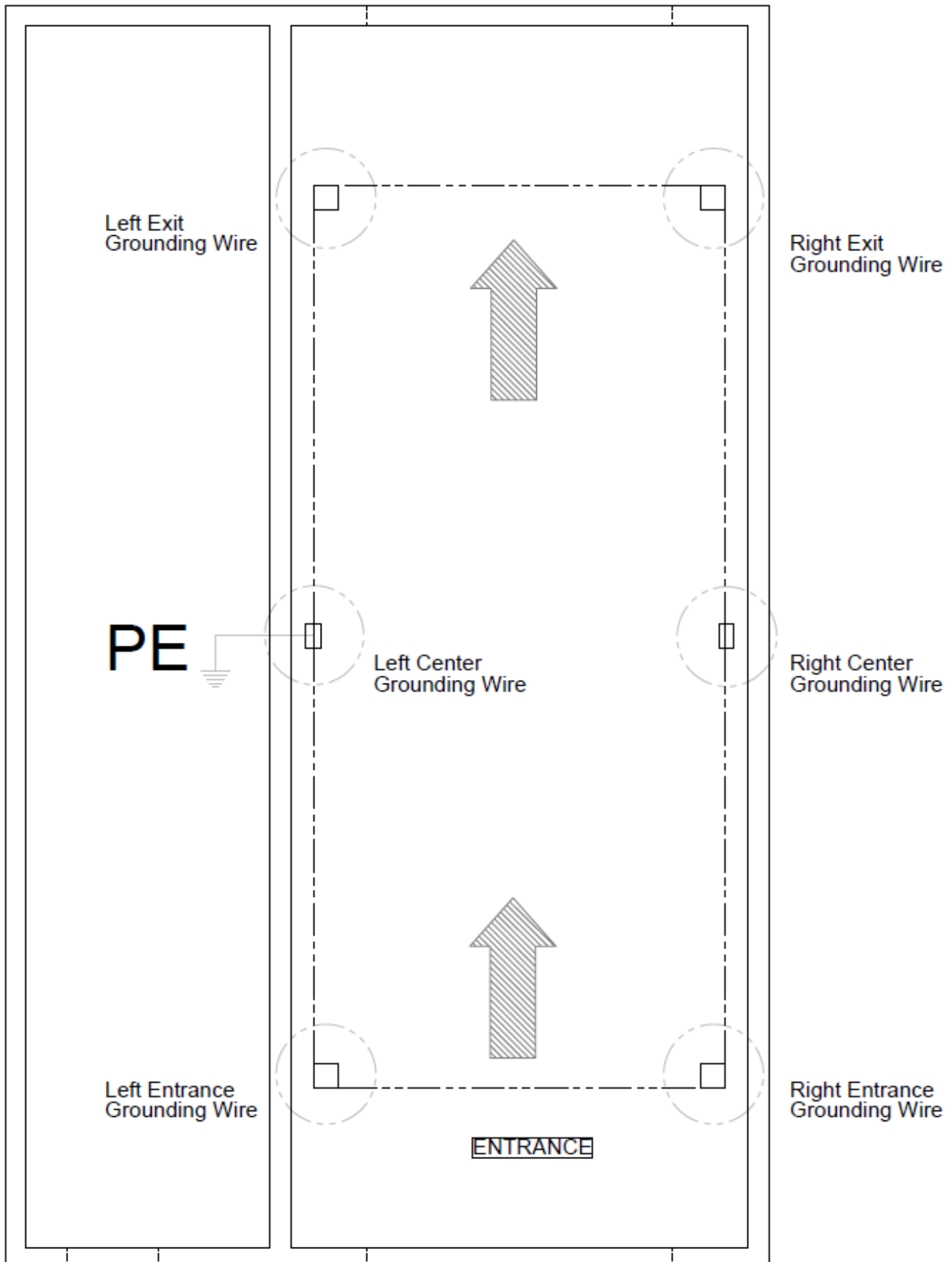
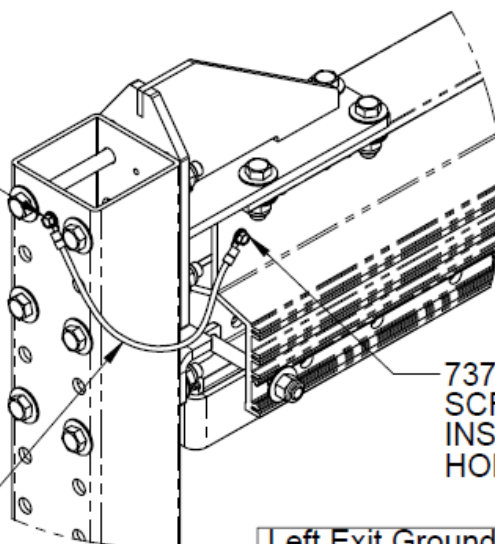


Figure 44 - Frame Grounding Locations

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

04080222
HARNESS, KIT, GROUNDING,
FREESTANDING-FRAME

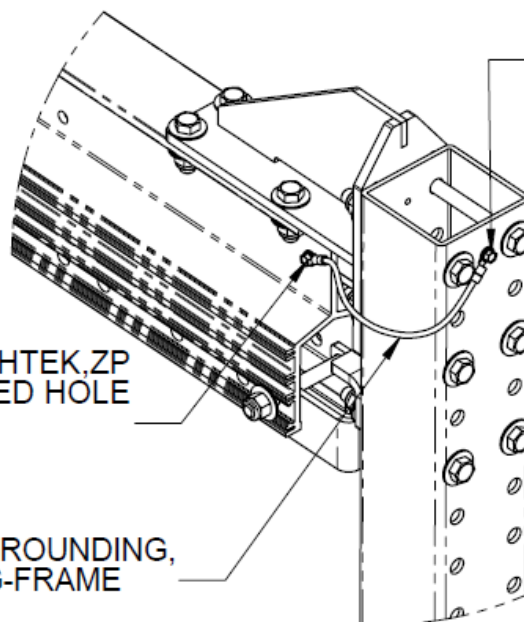


73726-THCZ
SCREW, 1/4-14x.75, HWHTEK, ZP
INSTALL IN PREDRILLED
HOLE IN RAIL.

Left Exit Grounding Wire

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

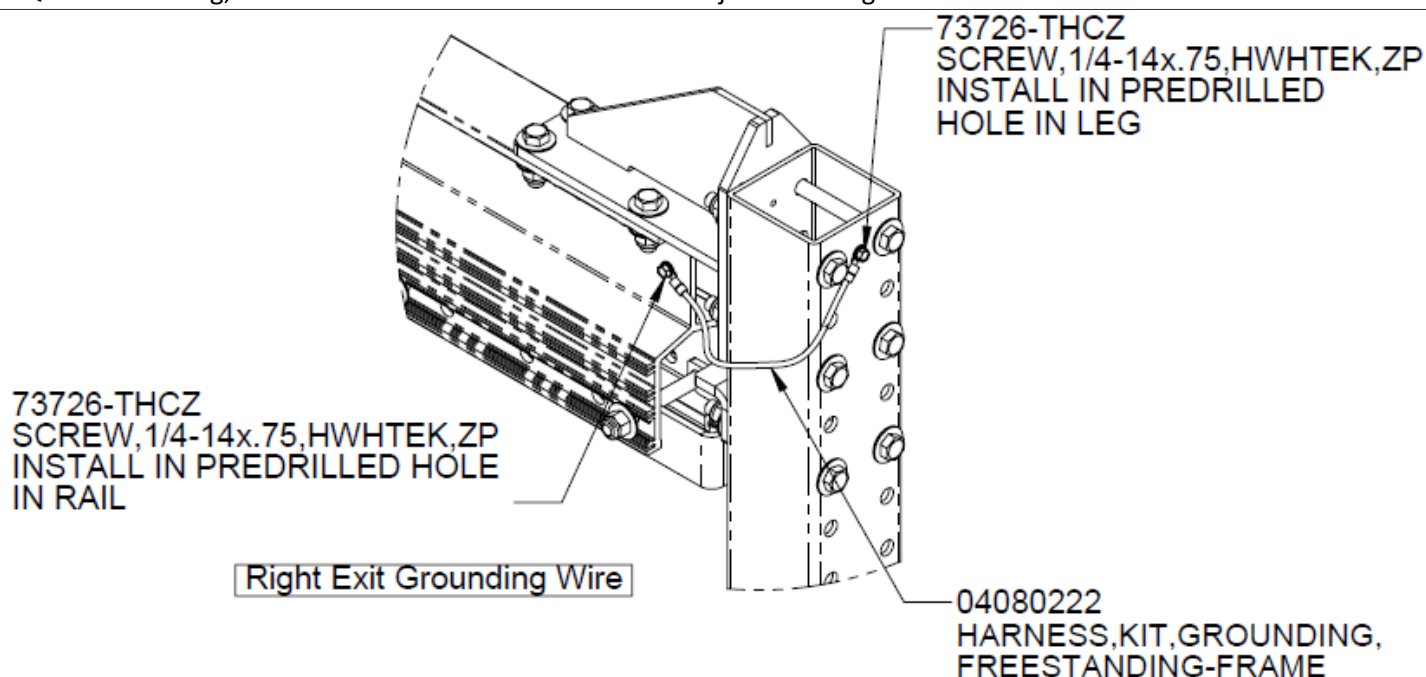
04080222
HARNESS, KIT, GROUNDING,
FREESTANDING-FRAME



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

Left Entrance Grounding Wire

Figure 45 - Install Grounding Wires at the Left Corners



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

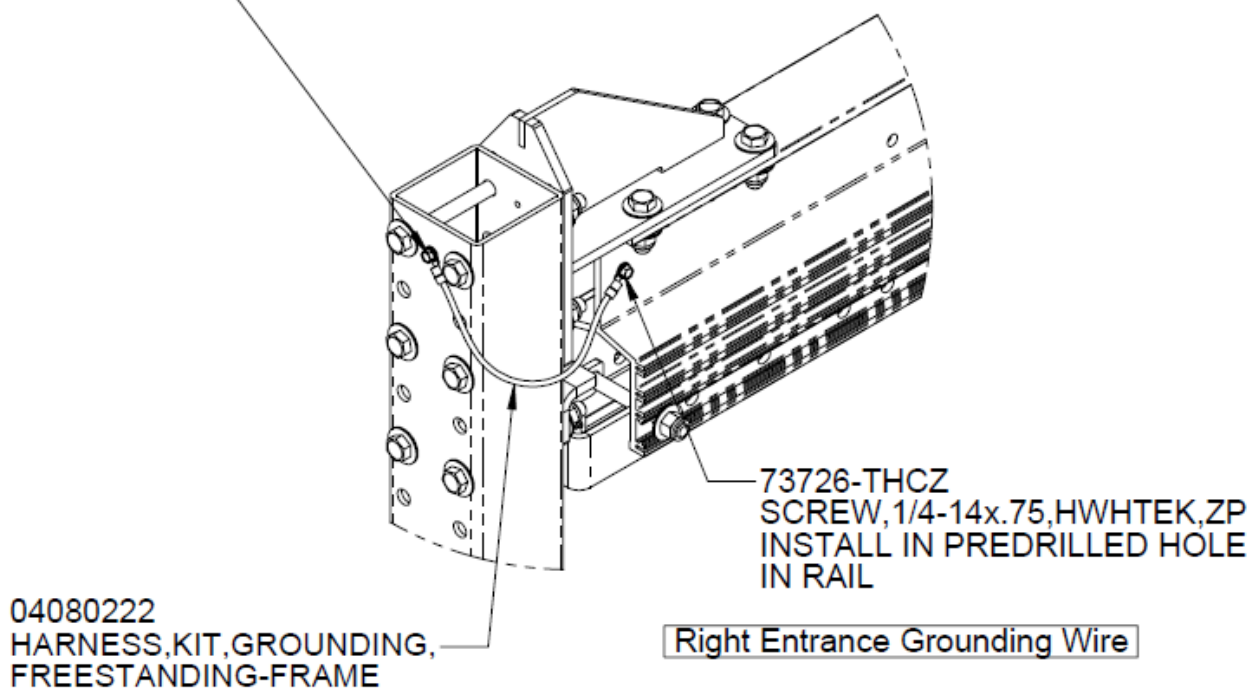


Figure 46 - Install Grounding Wires at the Right Corners

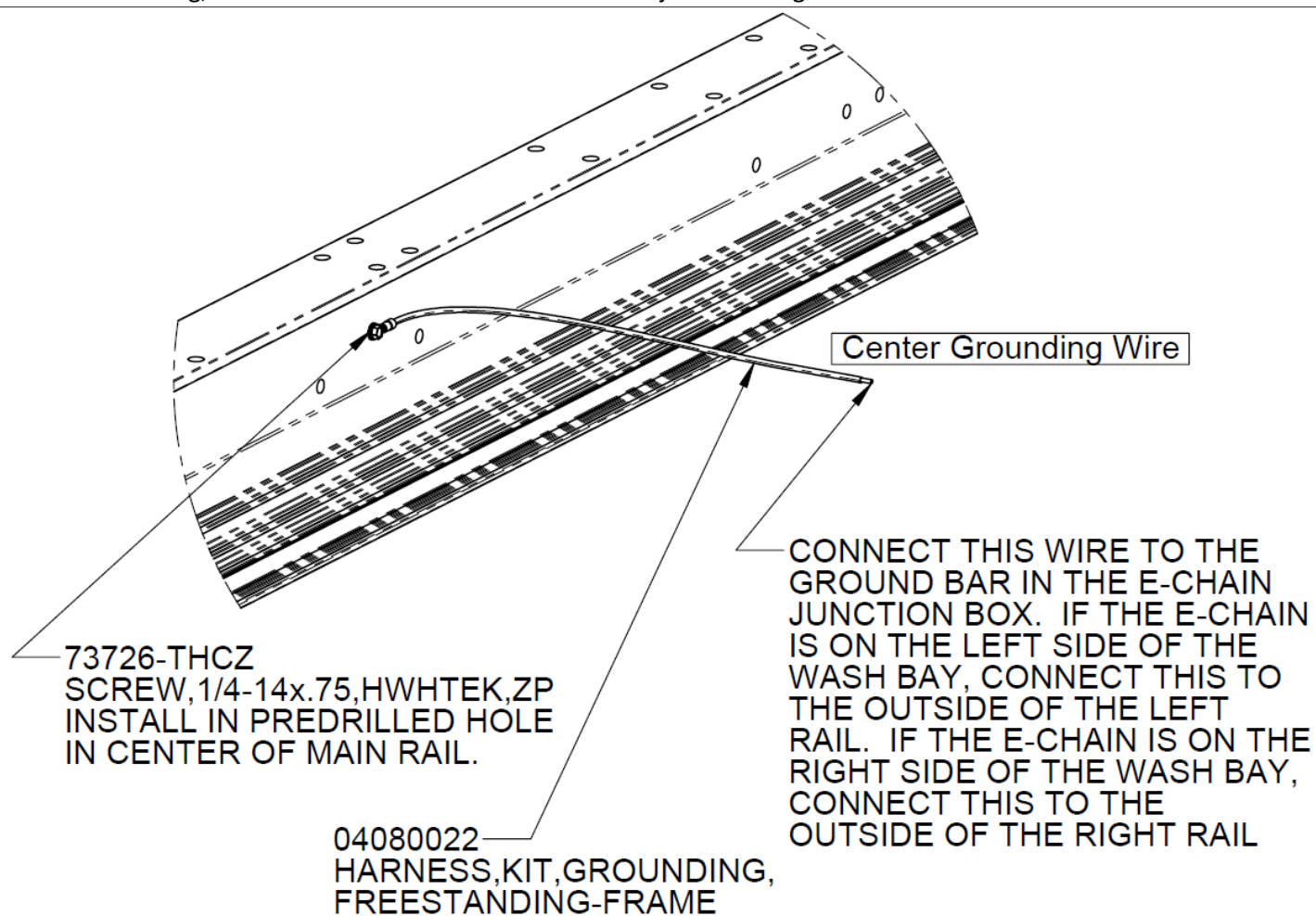


Figure 47 - Install Center Grounding Wire for 4-Legged Frame

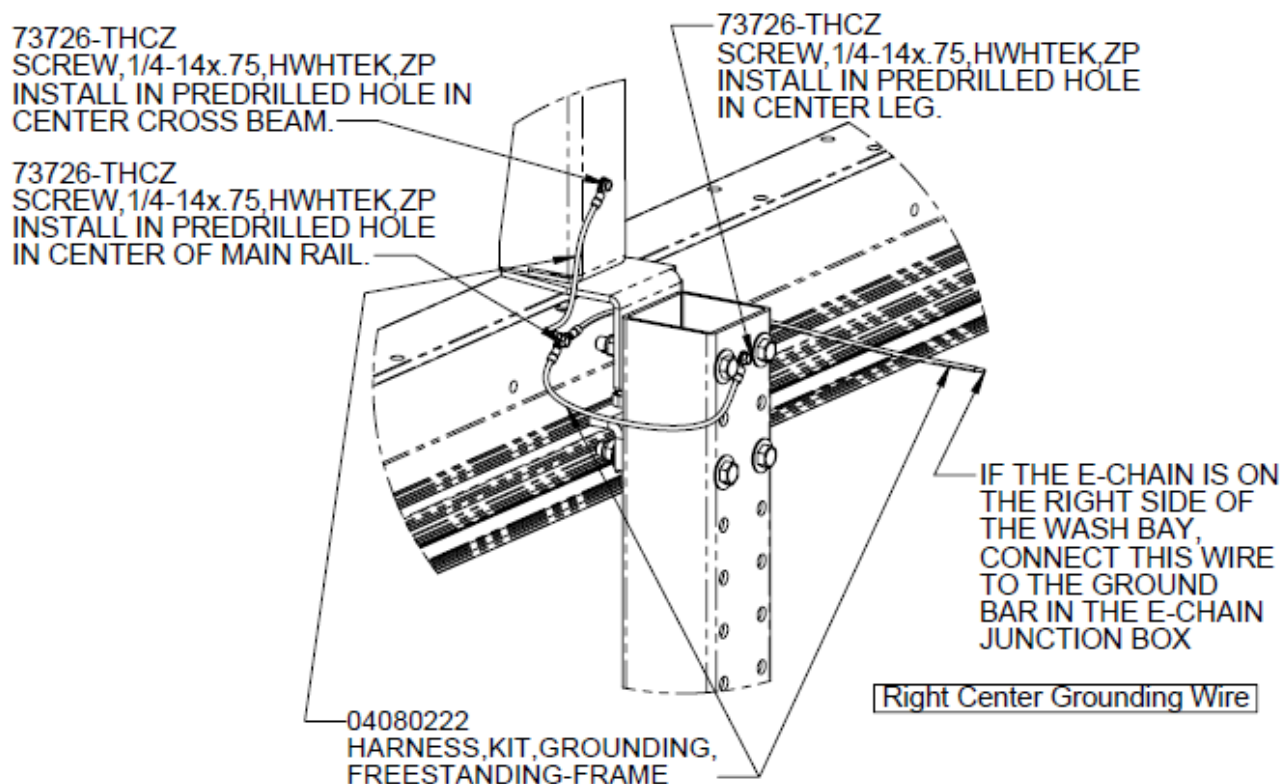
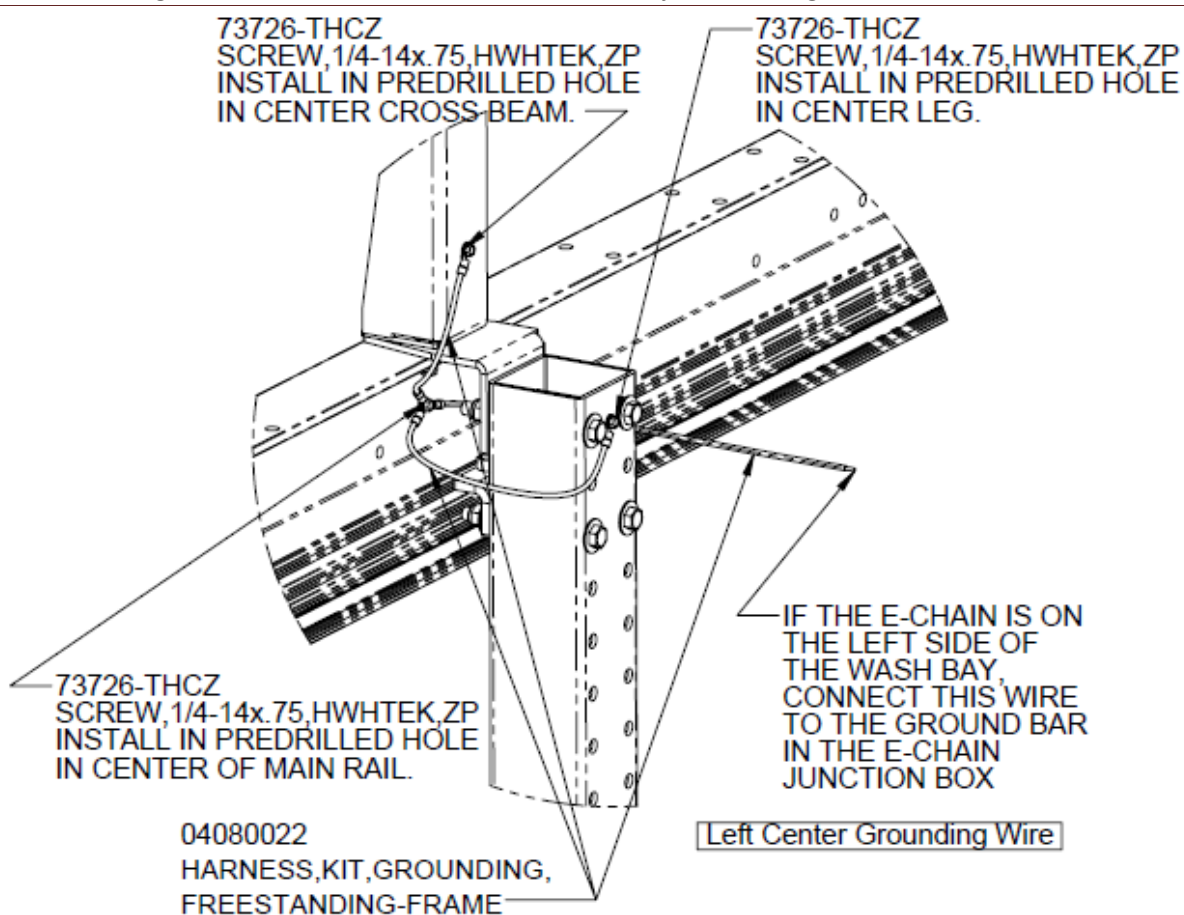


Figure 48 - Install Grounding Wires at the Center Legs (6-Legged Frame Only)

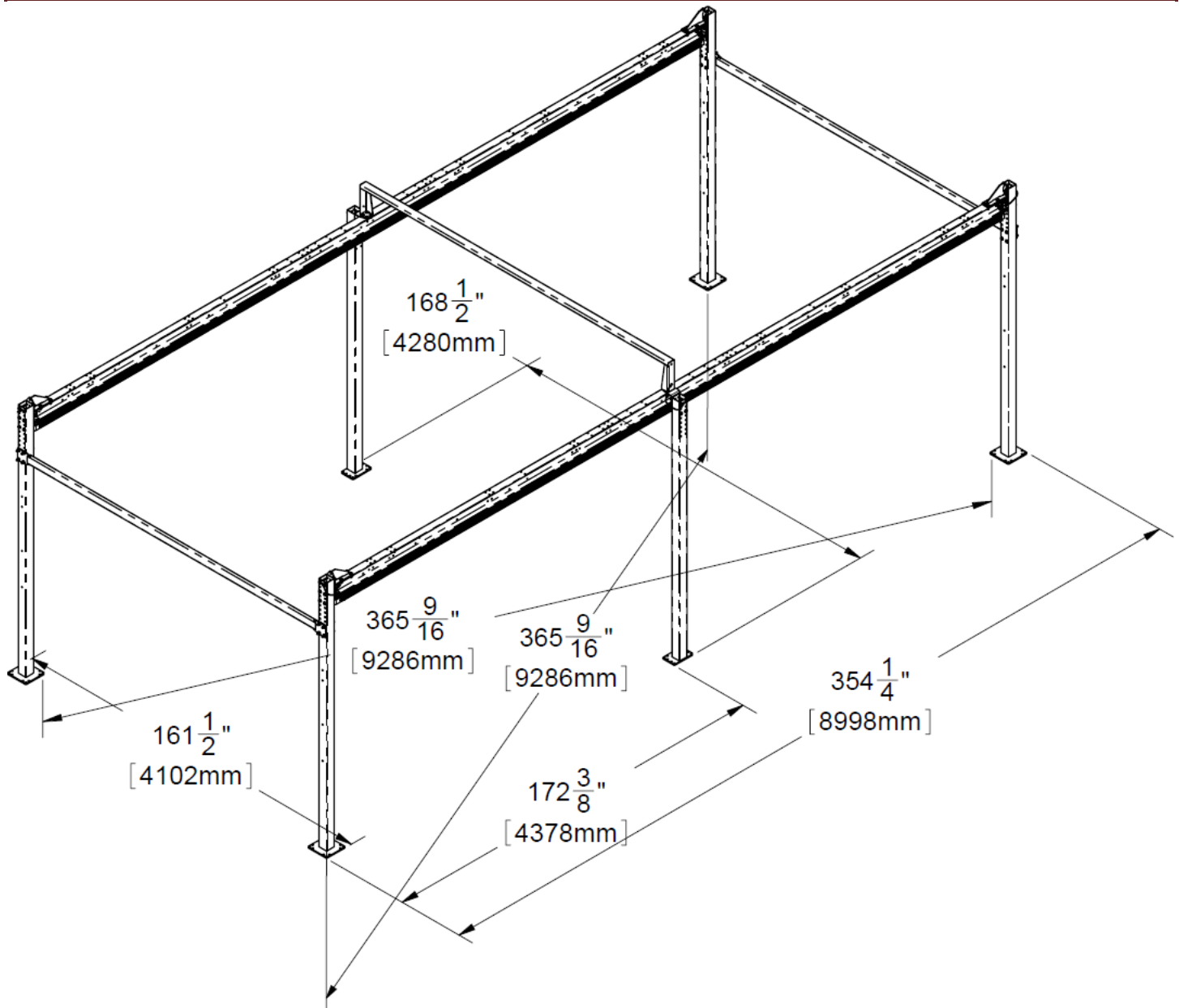


Figure 49 - Complete Frame (6-Legged Frame Shown)

3 E-Chain System Installation

This section covers installation of the LaserWash 360 Plus main bridge e-chain. This includes the e-chain support trays, support rollers, fluid bulkhead, electrical junction box, and e-chain.

3.1 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 that the customer 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 e-chain 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.**

3.2 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 e-chain junction box.
- Lift e-chain into the tray and connect to the tray.
- Connect fluid lines to the bulkhead.
- Route cables and make electrical connections to the junction box terminals.

3.3 Special Tools

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

3.4 PDQ Supplied Parts

- E-chain trays
- Bulkhead manifold
- E-chain junction box
- Preloaded e-chain
- Associated fasteners and hardware for installing to the LaserWash 360 Plus

3.5 Site Supplied Parts

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

3.6 E-Chain Support Installation

3.6 Step 1 Determine the Side of the Wash Bay for E-Chain Installation

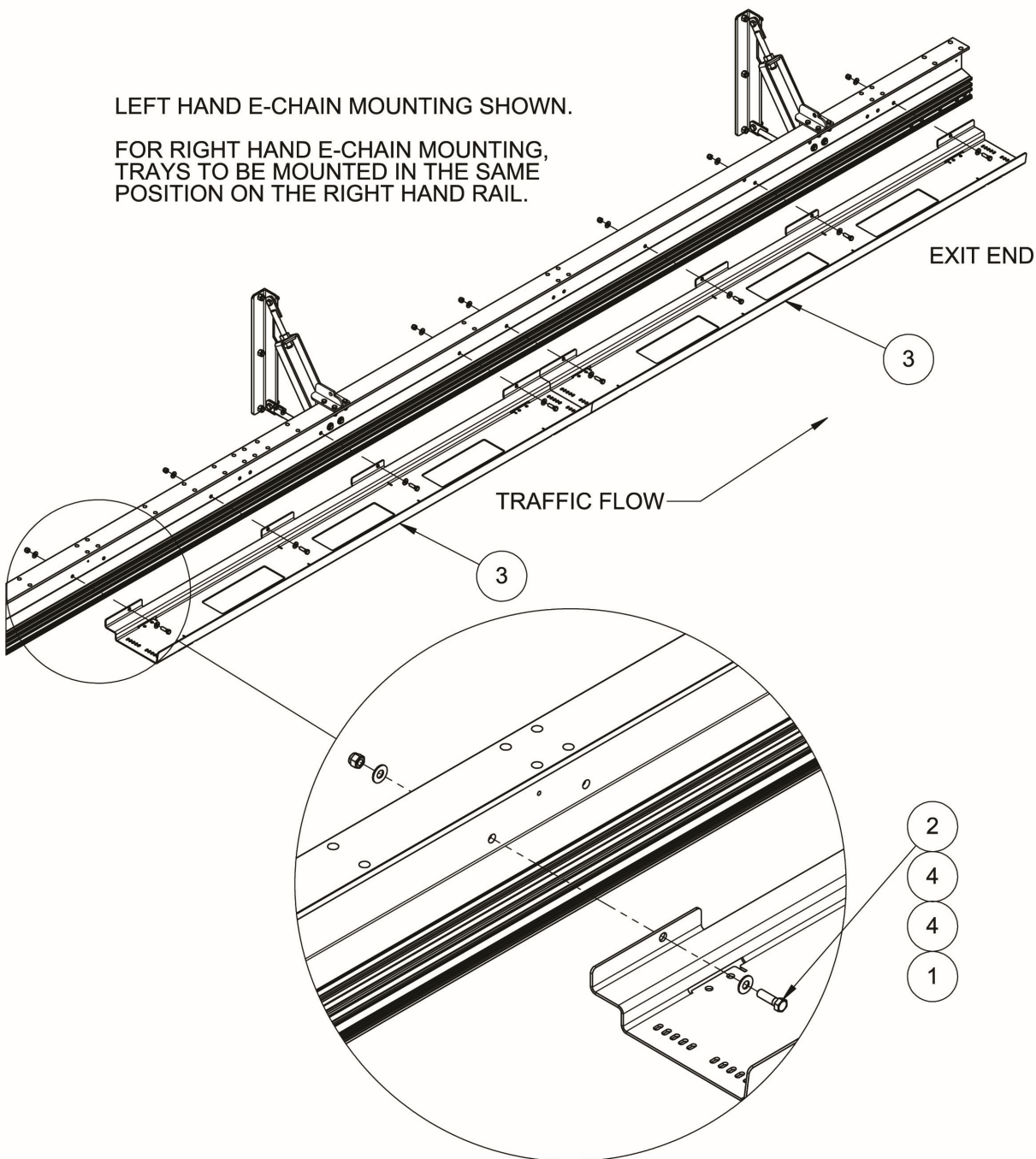
Verify from the customer order, or by looking at the bridge assembly, which side the e-chain system is to be installed. Typically, the main e-chain is located on the same side as the equipment room or the inbay equipment such as the inbay pump station.

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.

3.6 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 50. 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.

ITEM	QTY.	PART #	DESCRIPTION
1	8	71013-NCS	NUT,3/8-16,HEX,LOCK,SST
2	8	70181-HCS	SCREW,3/8-16x1.25,HHCS,SST
3	2	06240851	TRAY,E-CHAIN,SUPPORT,W/RAIL#0009,LW360P
4	16	05030067	WASHER,3/8,FLAT,7/8-OD,.050THK,SST

**Figure 50 - Install E-Chain Support Trays**

3.6 Step 3 Install the Support Roller Assemblies

Two e-chain support roller assemblies are to be installed in the pre-drilled holes as shown in Figure 51 and Figure 52. 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.

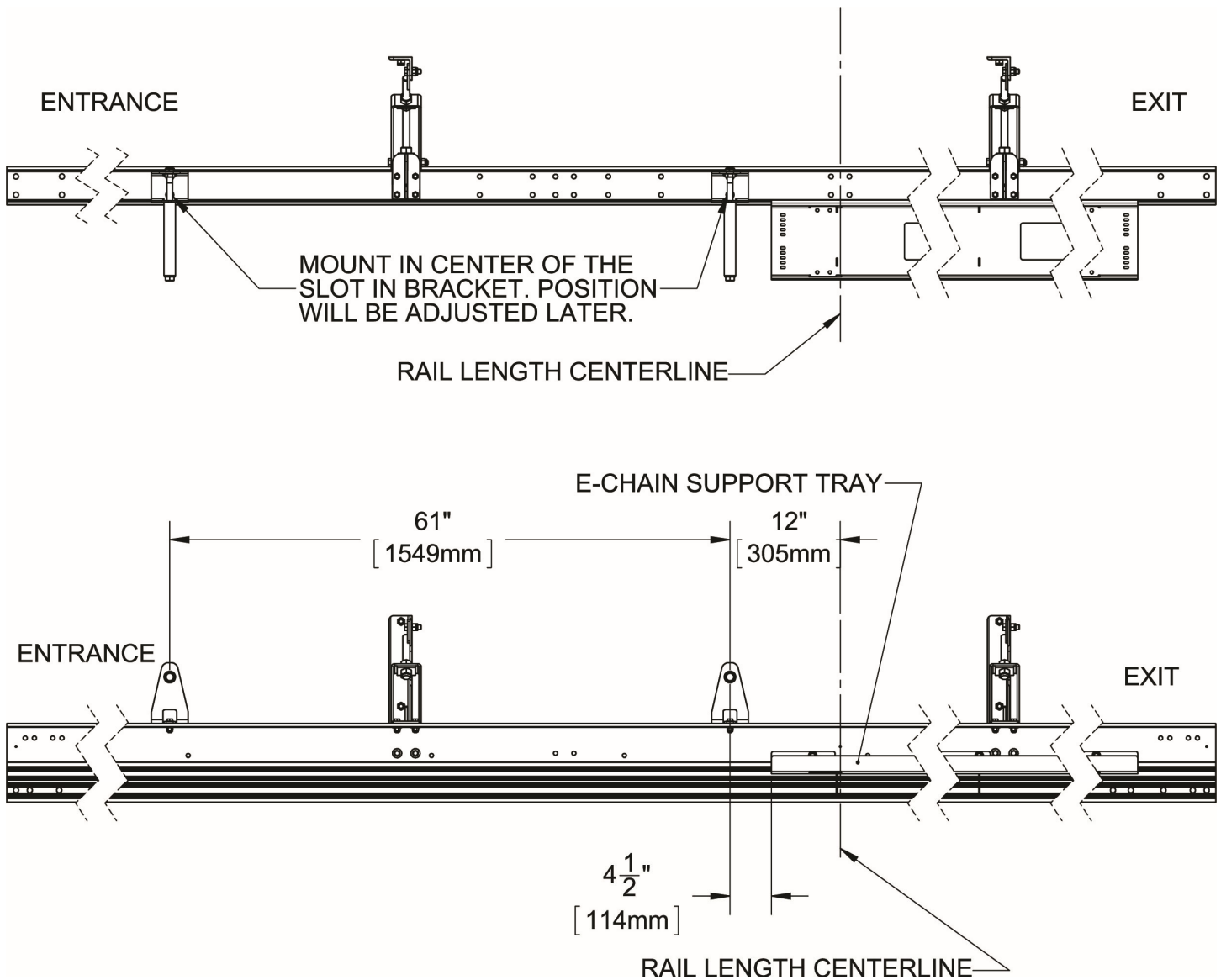
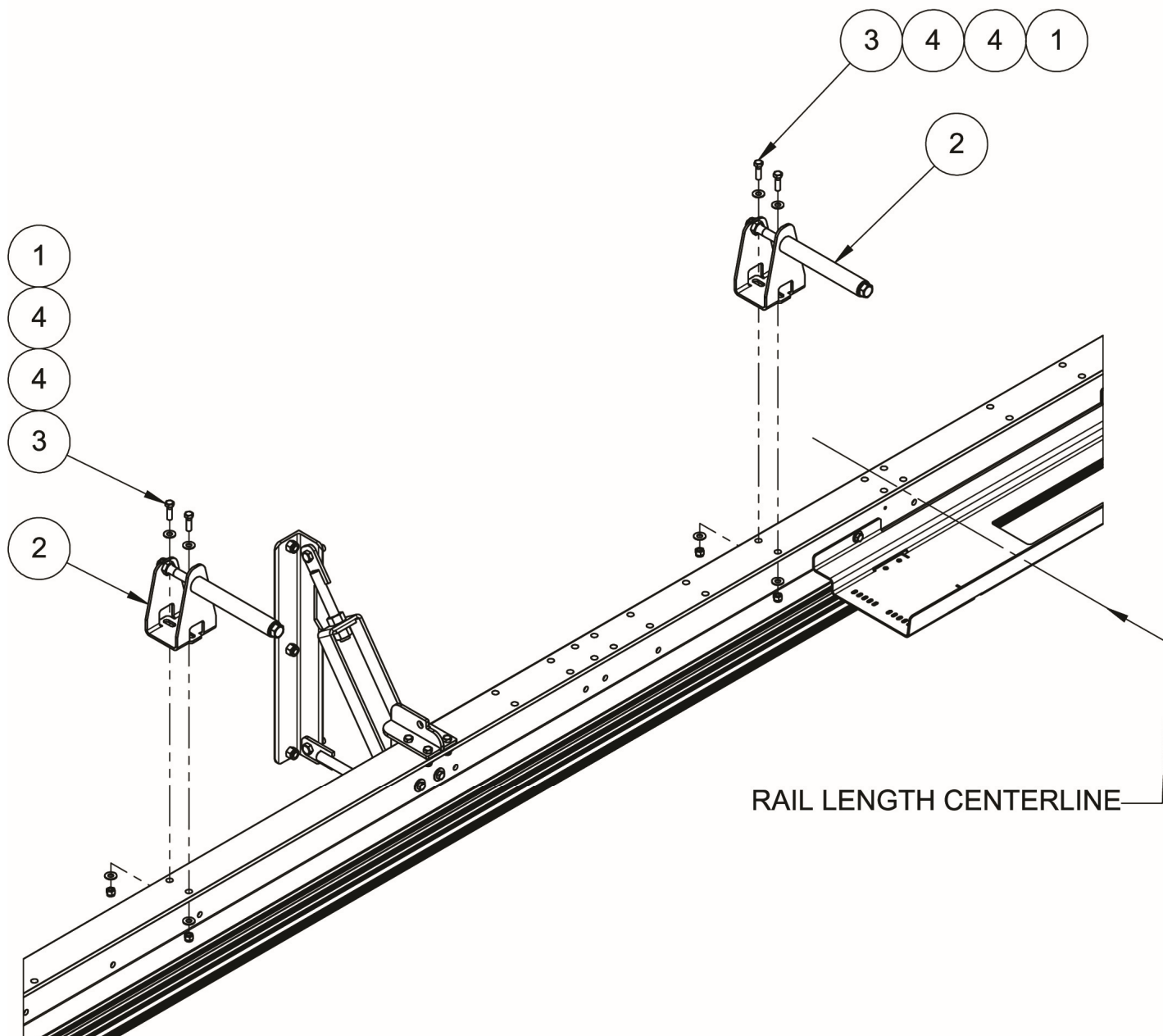


Figure 51 - E-chain Support Roller Positions

ITEM	QTY.	PART #	DESCRIPTION
1	4	71013-NCS	NUT, 3/8-16, HEX, LOCK, SST
2	2	11150057	ROLLER, SUPPORT, E-CHAIN, BRIDGE, LW360PLUS
3	4	70181-HCS	SCREW, 3/8-16x1.25, HHCS, SST
4	8	05030067	WASHER, 3/8, FLAT, 7/8-OD, .050THK, SST

**Figure 52 - E-chain Support Roller Assembly**

3.6 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 53 and Figure 54. 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 because further adjustment may be needed when the e-chain high pressure hose is connected.

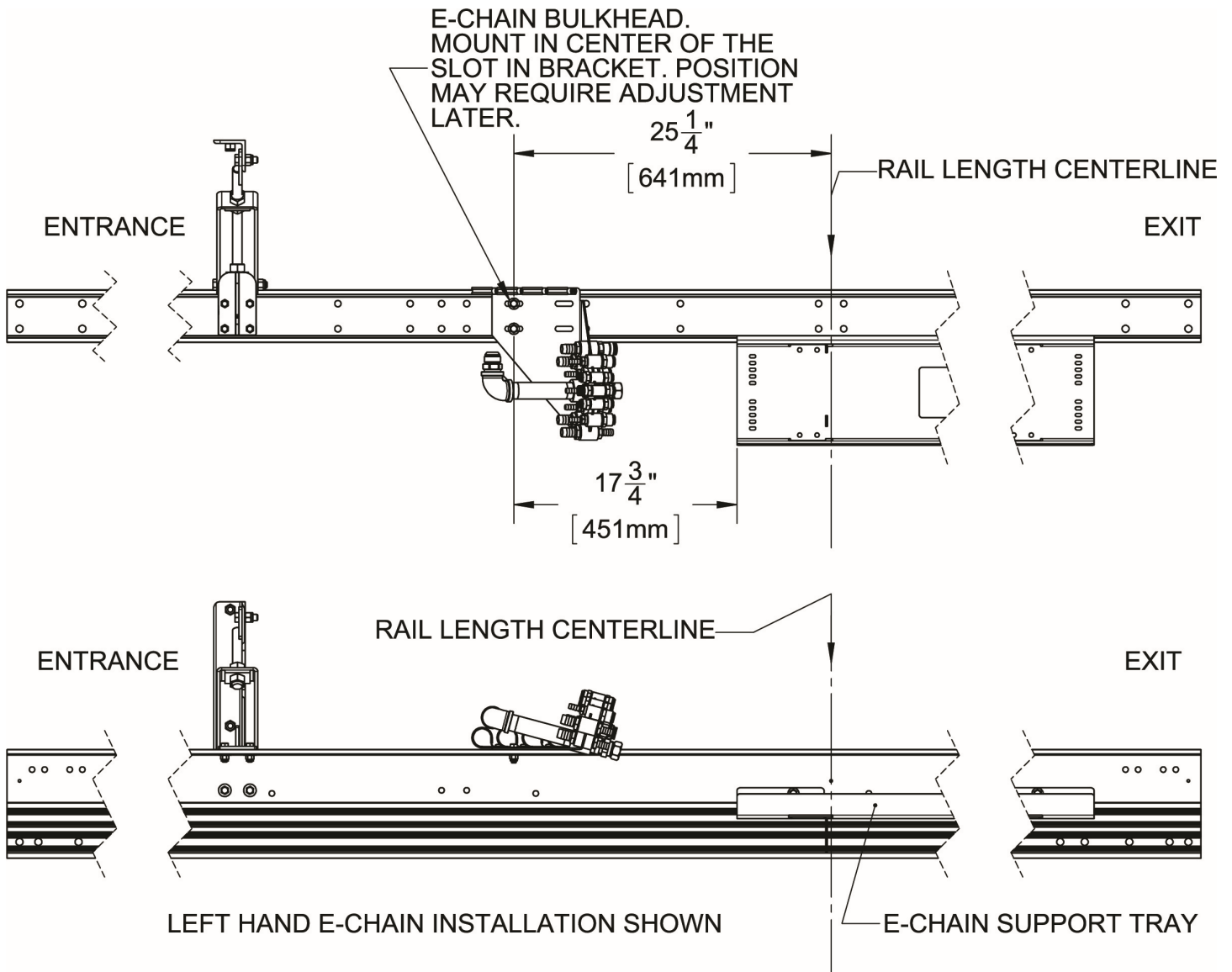


Figure 53 - E-chain Bulkhead Position

ITEM	QTY.	PART #	DESCRIPTION
1	1	11250216-LH	MANIFOLD,BULKHEAD,E-CHAIN,LEFT,LW360P
2	2	71013-NCS	NUT,3/8-16,HEX,LOCK,SST
3	2	70181-HCS	SCREW,3/8-16x1.25,HHCS,SST
4	4	05030067	WASHER,3/8,FLAT,7/8-OD,.050THK,SST

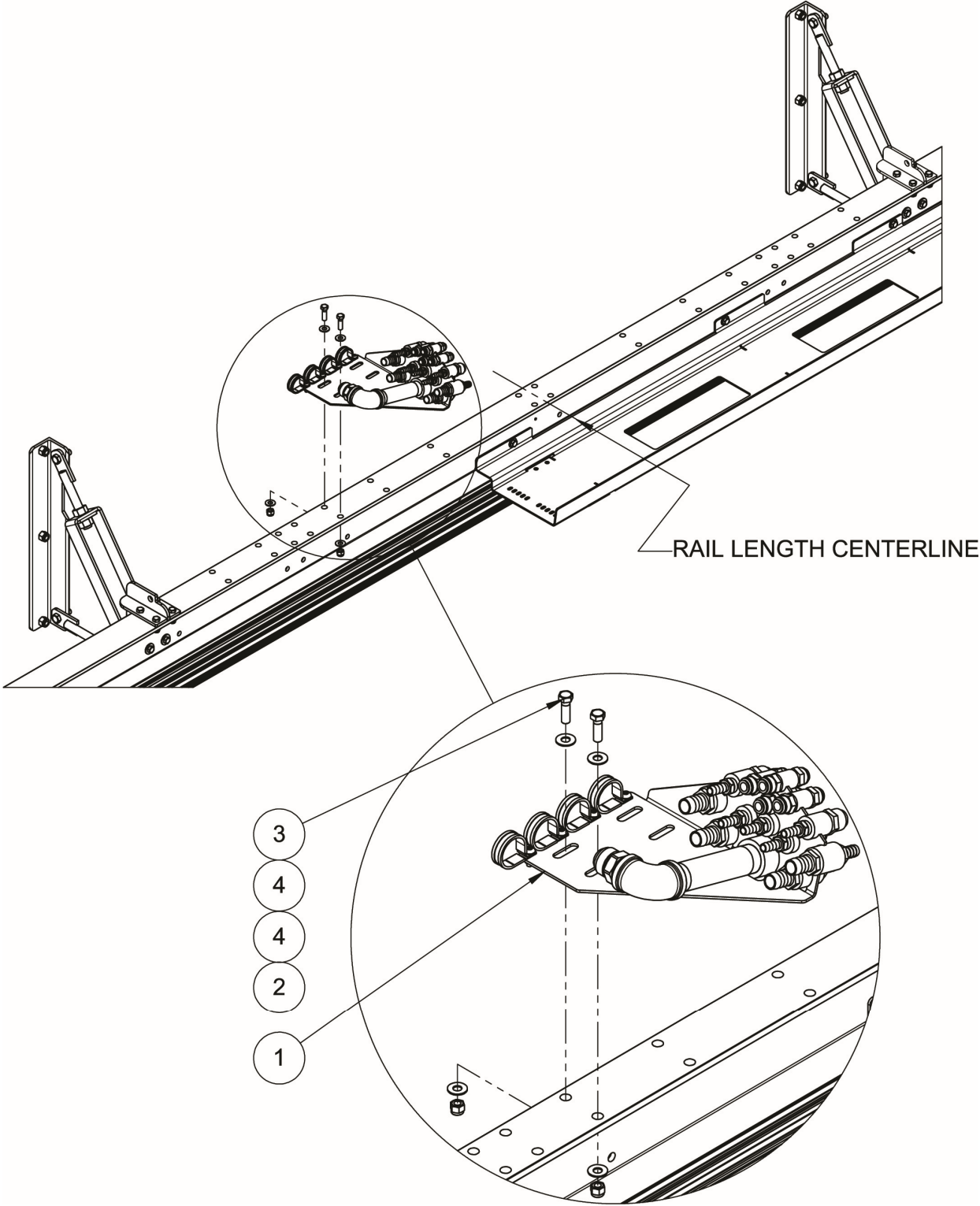


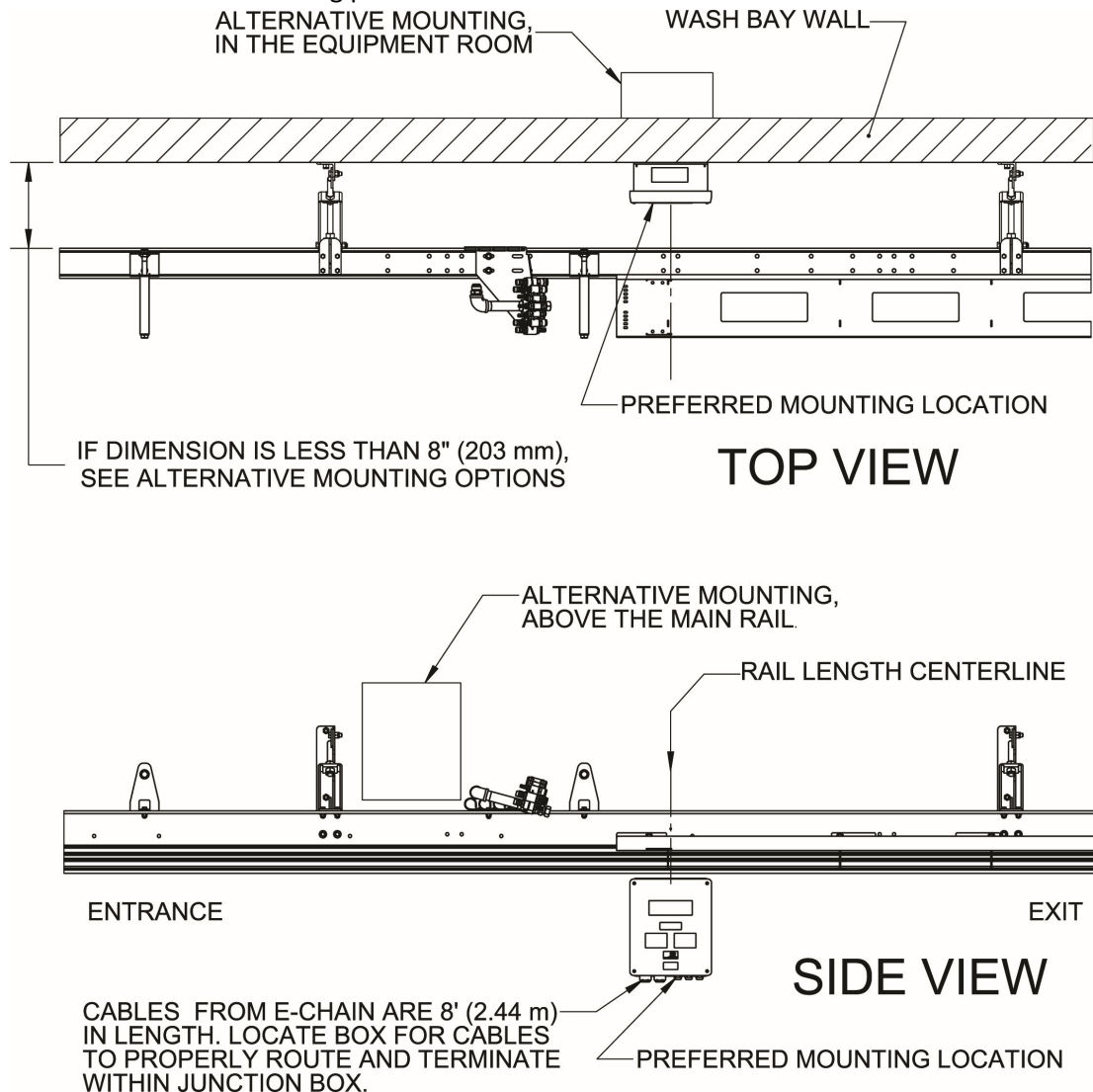
Figure 54 - Install E-Chain Bulkhead

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3.6 Step 5 Install the E-Chain Junction Box

- The following guidelines should be considered for the installation of the bridge e-chain junction box:
- The junction box 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 box 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 55. For narrow wash bays, please note proper clearance to with Wash Bridge. If required see alternative mounting positions.

**Figure 55 – E-Chain Junction Box Location**

3.7 Lift and Connect the E-chain Assembly

3.7 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.

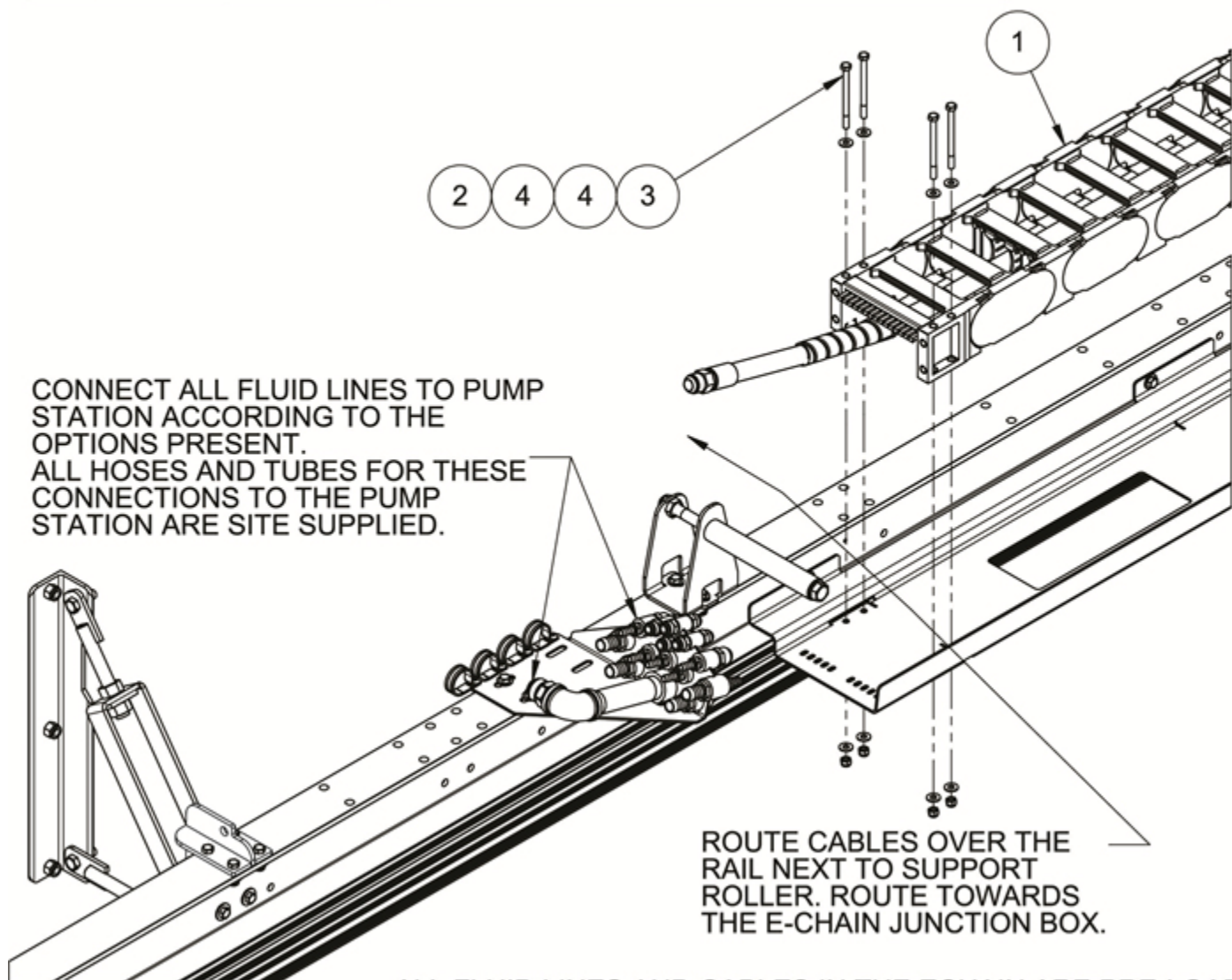
3.7 Step 2 Lift the E-Chain and Attach it to the Support Tray

- 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 56.

ITEM	QTY.	PART #	DESCRIPTION
1	1		SEE TABLE FOR ECHAIN CONFIGURATIONS
2	4	71012-NCS	NUT,5/16-18,HEX,LOCK,SST
3	4	70157-HCS	SCREW,5/16-18x4.00,HHCS,SST
4	8	71512-FS	WASHER,5/16,FLAT,SST



ALL FLUID LINES AND CABLES IN THE ECHAIN ARE PRE-LOADED AT PDQ.
ONLY THE HIGH PRESSURE HOSE IS SHOWN; OTHERS ARE HIDDEN FOR CLARITY.

11190 038 QTY.	11190 039 QTY.	11190 040 QTY.	11190 041 QTY.	11190 043 QTY.	11190 044 QTY.	LABEL TEXT	PART #	DESCRIPTION	CUT LENGTH +/- 1/2"
1	1	-	-	1	-	40W31 BRIDGE PWR	01140030	CABLE,12-4,PVC,512/38-STRD,COP,3BLK,1GRN	35' - 4"
-	-	1	-	-	1	40W33 DRYER #1	01140030	CABLE,12-4,PVC,512/38-STRD,COP,3BLK,1GRN	35' - 4"
-	-	1	-	-	-	40W36 DRYER #2	01140030	CABLE,12-4,PVC,512/38-STRD,COP,3BLK,1GRN	35' - 4"

PDQ Manufacturing, Inc.						ORIGINAL INSTRUCTIONS Information Subject to Change		CONFIDENTIAL	
-	-	1	1	-	1	40W31 BRIDGE PWR	01140031	CABLE,12-5,PVC,56/25- STRD,COP,4BLK,1GRN	35' - 4"
1	1	1	1	1	1	40W38 SYS STOP	01140040	CABLE,14-5,PVC,600V,.45- DIA,4-BLK,1-GRN	35' - 4"
1	-	-	-	1	-	40W33 DRYER #1	01140024	CABLE,8-4,PVC,301/32- STRD,COP,3BLK,1GRN	35' - 4"
1	-	-	-	-	-	40W36 DRYER #2	01140024	CABLE,8-4,PVC,301/32- STRD,COP,3BLK,1GRN	35' - 4"
1	1	1	1	1	1	ETHERNET	04080308	CABLE,ETHERNET,HIGH- FLEX,404",RJ45-ENDS	
4	4	4	4	4	4		75101	CLAMP,HOSE,#6,.38-.50H,SST	
1	1	1	1	1	1		06160520	COVER,CABLE,SPIRAL,2'LON G,ECHAIN,LW360P	
1	1	1	1	1	1		06050119	E-CHAIN,BRIDGE,46- LINK,IGUS,E4-56,LW360P	
1	1	1	1	1	1	PROD ARCH	03130029	HOSE,.50,300PSI,BLUE,PVC- CMPD,SYN-YRN	25' - 10"
1	1	1	1	1	1	MAIN ARCH	03130029	HOSE,.50,300PSI,BLUE,PVC- CMPD,SYN-YRN	25' - 10"
1	1	1	1	1	1		03340134	HOSE,BRIDGE,HP,3/4"x195",S PIRAL,LW360P	
1	1	1	1	1	1		11190037	LABEL,SET,E-CHAIN,END- IDENTIFICATION,LW360P	
1	1	1	1	1	1		11190037	LABEL,SET,E-CHAIN,LINE- IDENTIFICATION,LW360P	
1	1	1	1	1	1	DETERGENT#1	01120019	TUBING,1/2"ODx.06W,150PSI @70°F,LLDPE,BLK	25' - 10"
1	1	1	1	1	1	DETERGENT#2	01120019	TUBING,1/2"ODx.06W,150PSI @70°F,LLDPE,BLK	25' - 10"
1	1	1	1	1	1	FOAMING WAX	01120019	TUBING,1/2"ODx.06W,150PSI @70°F,LLDPE,BLK	25' - 10"
1	1	1	1	1	1	SUPER SEALANT	01120019	TUBING,1/2"ODx.06W,150PSI @70°F,LLDPE,BLK	25' - 10"
1	1	1	1	1	1	FRONT PREP	01120019	TUBING,1/2"ODx.06W,150PSI @70°F,LLDPE,BLK	25' - 10"
1	1	1	1	1	1	COMP AIR	01120016	TUBING,3/8ODx1/16"WALL,23 0PSI@70F,LLDPE,BLACK	25' - 10"
1	1	1	1	1	1	3X COLOR #1	01120016	TUBING,3/8ODx1/16"WALL,23 0PSI@70F,LLDPE,BLACK	25' - 10"
1	1	1	1	1	1	3X COLOR #2	01120016	TUBING,3/8ODx1/16"WALL,23 0psi@70F,LLDPE,BLACK	25' - 10"
1	1	1	1	1	1	3X COLOR #3	01120016	TUBING,3/8ODx1/16"WALL,23 0psi@70F,LLDPE,BLACK	25' - 10"
1	1	1	1	1	1	OVERGLOW-CHEM	01120012	TUBING,5/8ODx.06W,100psi@ 70F,LLDPE,BLACK	25' - 10"
1	1	1	1	1	1	OVERGLOW- PURGE	01120012	TUBING,5/8ODx.06W,100psi@ 70F,LLDPE,BLACK	25' - 10"

Figure 56 – Frame End E-Chain Mounting

3.7 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 57 for correct and incorrect hose routing.

!!!IMPORTANT!!	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 NATUALLY WITH THE BULKHEAD FITTING.
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- 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 58.
- 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.

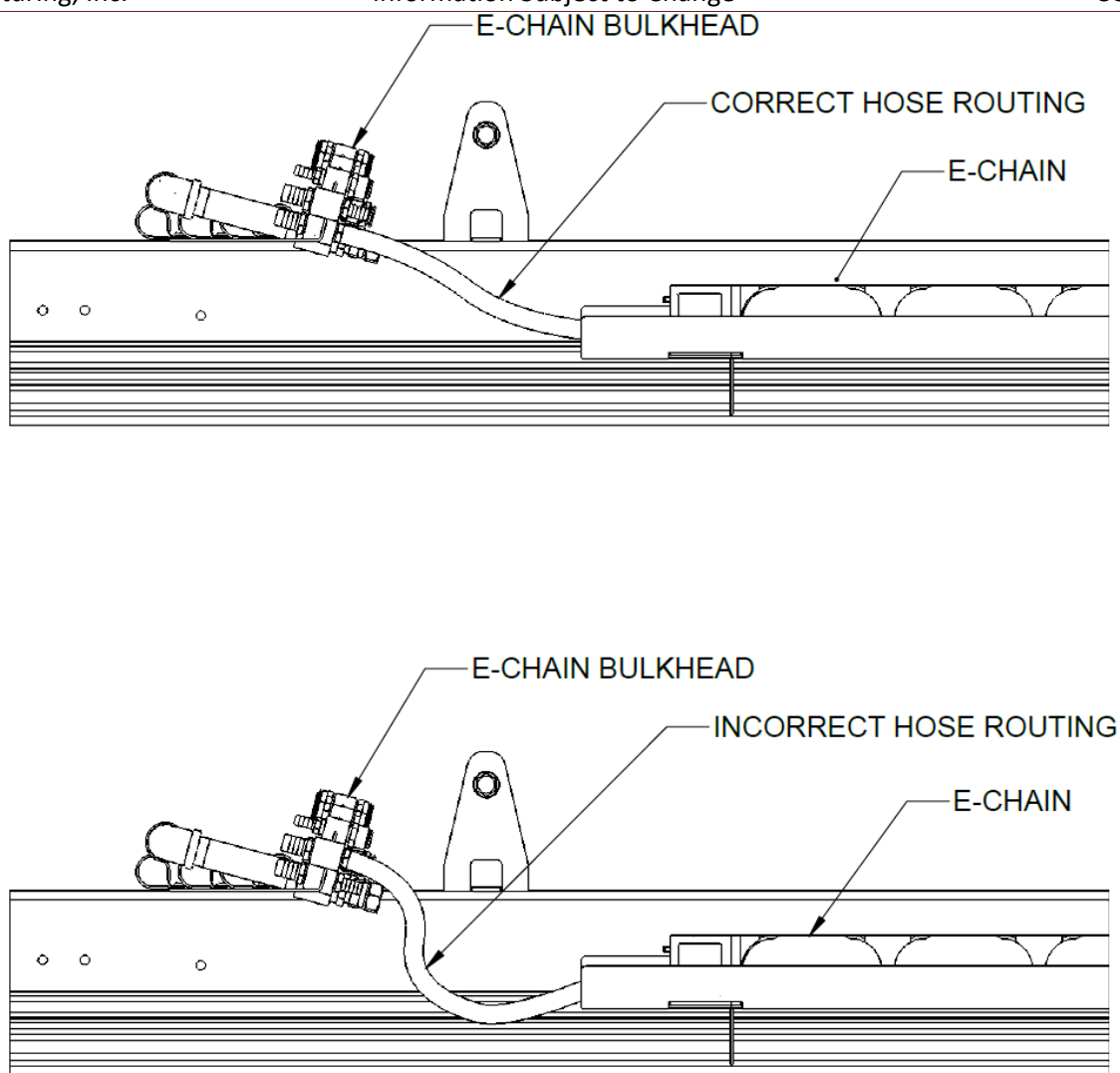


Figure 57 - E-Chain Hose Routing Path-Correct and Incorrect

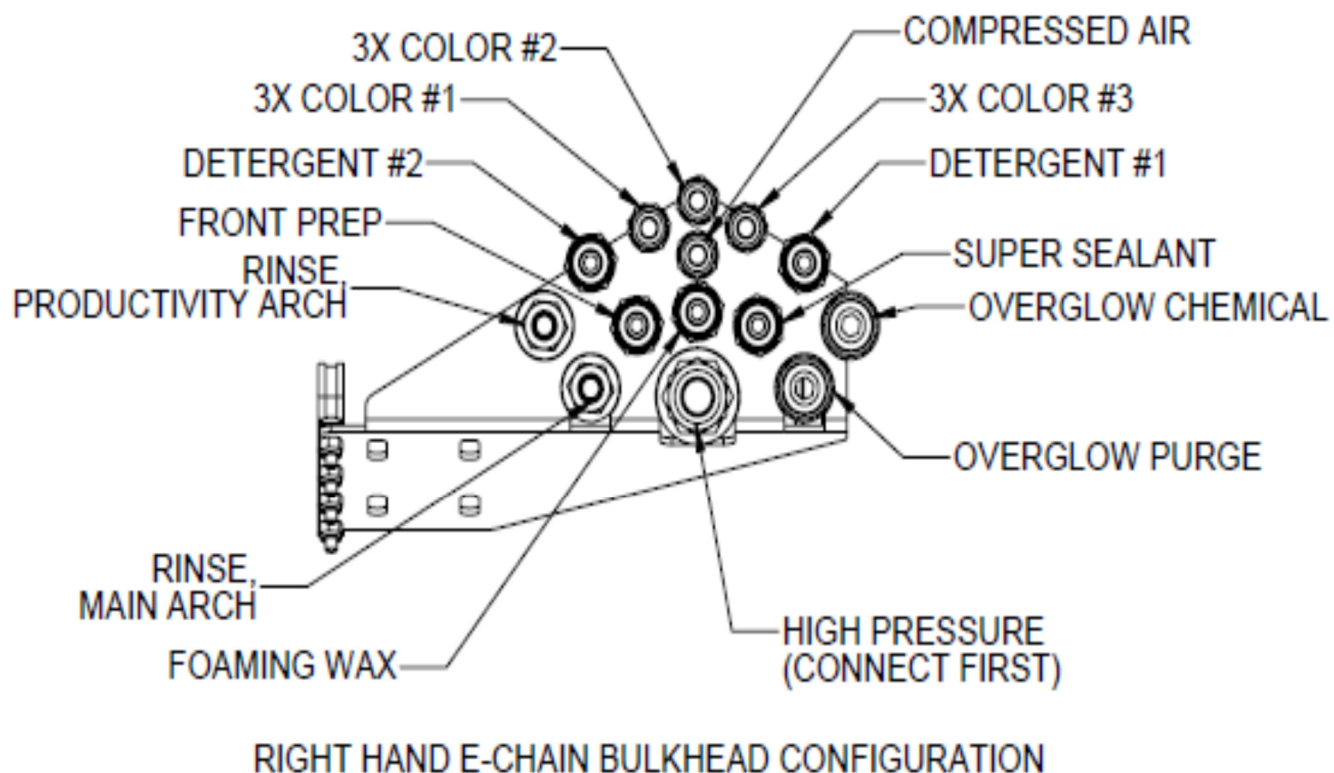
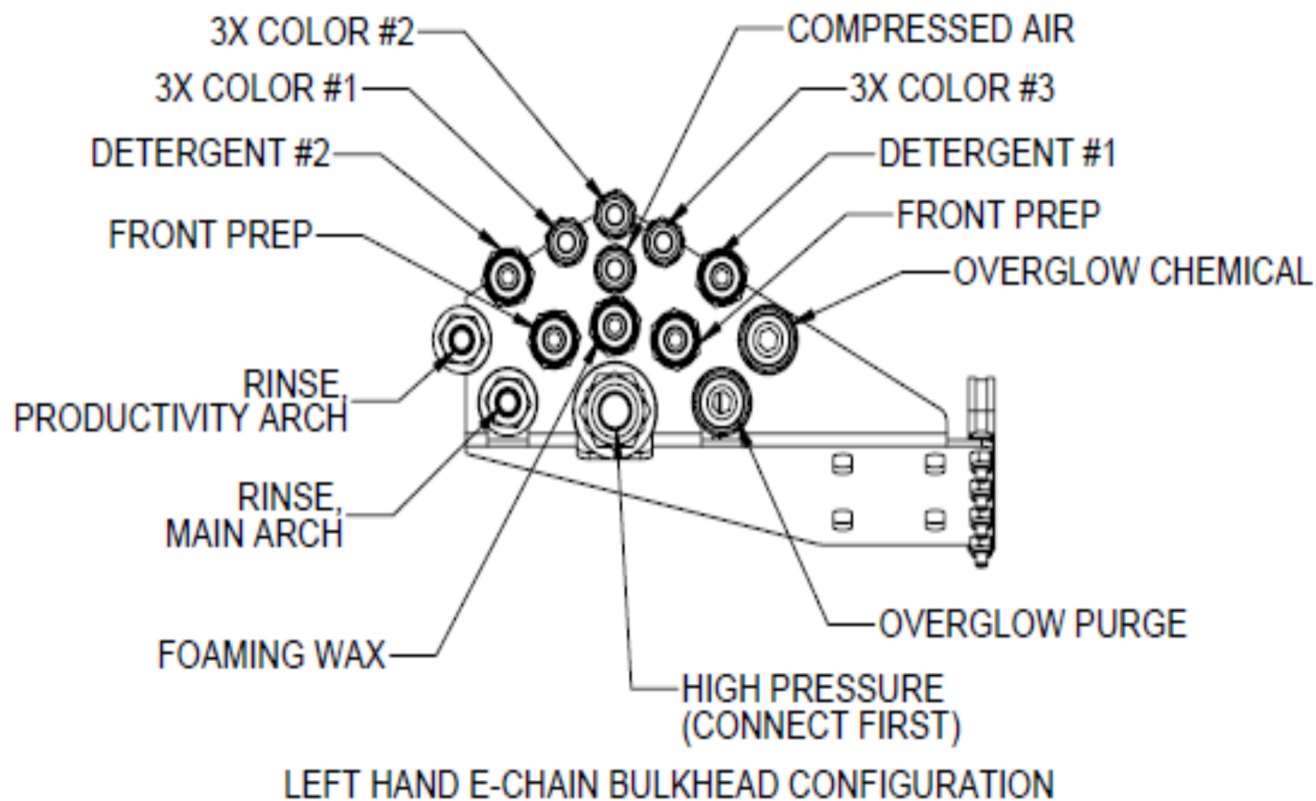


Figure 58 - Bulkhead Connection Diagram

3.7 Step 4 Connect Electrical Cables to the E-Chain Junction Box

- Route the e-chain cables over the main rail to the e-chain junction box.
- Strain relief fittings for each cable are provided (packaged and placed inside the junction 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.
- Complete wire connections referring to the applicable field wiring reference in the LaserWash 360 Plus Electrical Schematic (see Table 2).
 - Terminal numbers are marked inside the junction box. Wire numbers coincide with labels on the e-chain cables and the numbers marked on the individual wires in the cables.
 - Complete connections of the cables from the e-chain to the e-chain junction box as shown in Table 3 (for 208/230VAC 60 Hz sites), Table 5 (for 460VAC 60 Hz sites) or Table 6 (for 575VAC 60 Hz sites) as applicable.
 - Complete remaining connections to the e-chain junction box from the site power panel as shown in Table 3. The wire for these connections is site supplied.

!!IMPORTANT!!	ALL SITE SUPPLIED WIRE TO THE E-CHAIN JUNCTION BOX FOR THE WASH BRIDGE POWER IS TO BE A SOLID STRANDED COPPER CONDUCTOR WITH 600 V INSULATION THAT MEETS FEDERAL, STATE, AND LOCAL CODES. TEMPERATURE RATING MINIMUM 60°C. TERMINALS ARE RATED FOR 20 TO 8AWG – 600V – 41A
!!IMPORTANT!!	ALL SITE SUPPLIED WIRE TO THE E-CHAIN JUNCTION BOX FOR THE INTEGRATED DRYER POWER IS TO BE A SOLID STRANDED COPPER CONDUCTOR WITH 600 V INSULATION THAT MEETS FEDERAL, STATE, AND LOCAL CODES. TEMPERATURE RATING MINIMUM 60°C. TERMINALS ARE RATED FOR 24 TO 6AWG – 600V – 76A
!!IMPORTANT!!	ALL SITE SUPPLIED WIRE TO THE E-CHAIN JUNCTION BOX FROM THE PUMP STATION FOR THE WASH BRIDGE LOW VOLTAGE POWER IS TO BE A SOLID STRANDED COPPER CONDUCTOR WITH 600 V INSULATION THAT MEETS FEDERAL, STATE, AND LOCAL CODES. TEMPERATURE RATING MINIMUM 60°C. TERMINALS ARE RATED FOR 28 TO 14AWG – 600V – 15A

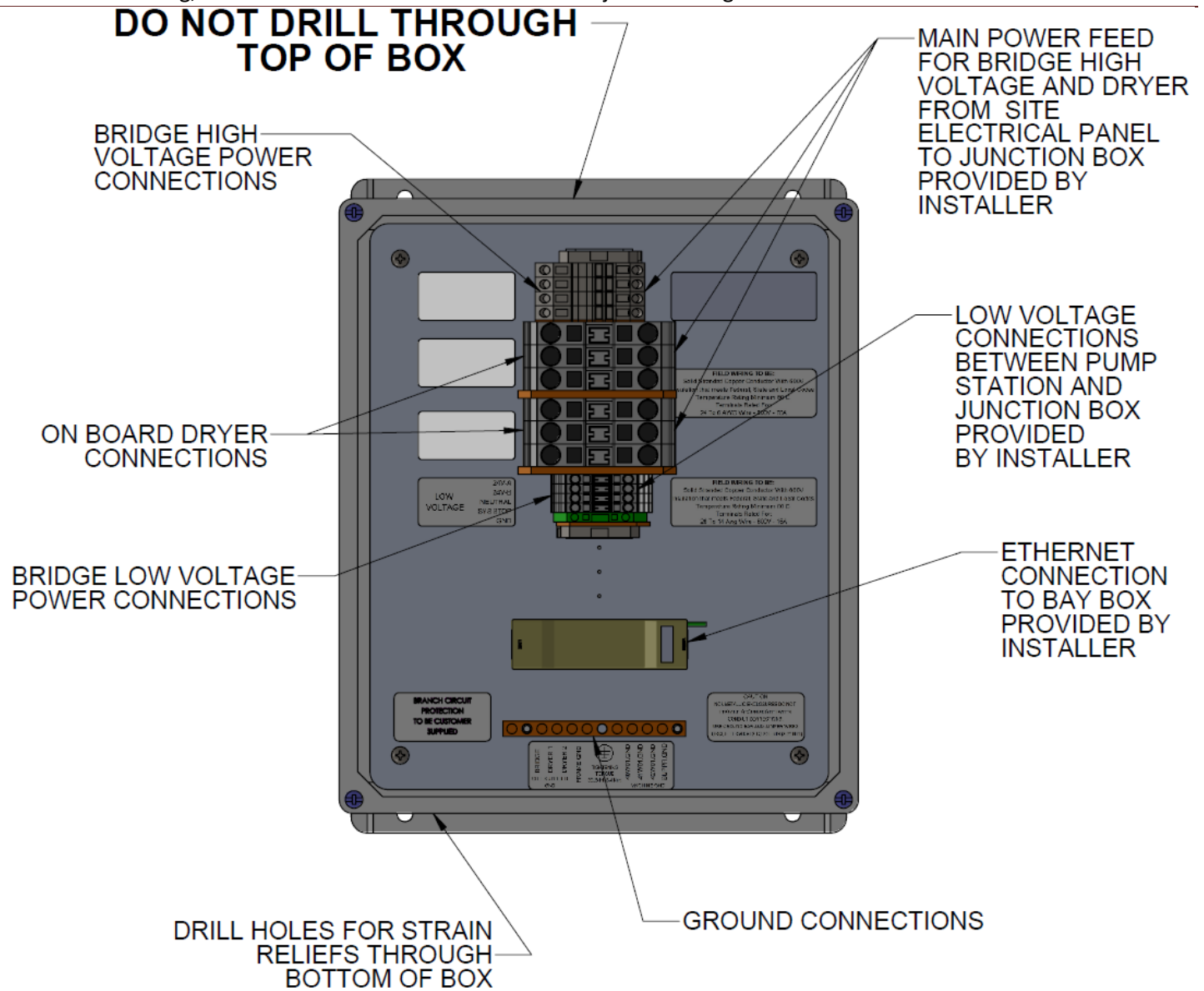


Figure 59 – E-chain Junction Box Terminals

Table 3 - E-Chain Junction Box Electrical Connections for 208/230V 60 Hz Sites

E-CHAIN JUNCTION BOX CONNECTIONS 208/230VAC									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Bridge High Voltage	STANDARD	12 GA 75°C SITE SUPPLIED	20A	208/230V	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	BRG PWR L1
					L2		SITE		BRG PWR L2
					L3		SITE		BRG PWR L3
					GND		SITE		BRG PWR GND
Integrated Dryer Feed #1 High Voltage	OPTIONAL	6 GA 75°C SITE SUPPLIED	50A	208/230V	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	DRYER FEED 1-L1
					L2		SITE		DRYER FEED 1-L2
					L3		SITE		DRYER FEED 1-L3
					GND		SITE		DRYER FEED GND
Integrated Dryer Feed #2 High Voltage	OPTIONAL	6 GA 75°C SITE SUPPLIED	50A	208/230V	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	DRYER FEED 2-L1
					L2		SITE		DRYER FEED 2-L2
					L3		SITE		DRYER FEED 2-L3
					GND		SITE		DRYER FEED GND
Bridge Low Voltage	STANDARD	14 GA 75°C SITE SUPPLIED	15A	24VAC	8W05	PUMP STATION	8F05.2	E-CHAIN JUNCTION BOX	BRG PHA
					9W05		9F05.2		BRG PHB
					10W05		3X21.3		NEU
					8W28		3X03.3		SYS
Network Communication	STANDARD	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A		22W42	BAY BOX	22A13.P6	E-CHAIN JUNCTION BOX	40N18.1
Free Standing Frame Ground	OPTIONAL	SUPPLIED WITH FRAME KIT				CENTER OF FRAME RAIL		E-CHAIN JUNCTION BOX	FRAME GND

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

Table 4 - E-Chain Junction Box Electrical Connections for 400V 50 or 60 Hz Sites

E-CHAIN JUNCTION BOX CONNECTIONS 400 VAC 50Hz OR 60Hz									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Bridge High Voltage	STANDARD	12 GA 75°C SITE SUPPLIED	20A	400 VAC	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	BRG PWR L1
					L2		SITE		BRG PWR L2
					L3		SITE		BRG PWR L3
					N		SITE		BRG PWR N
					GND		SITE		BRG PWR GND
Integrated Dryer Feed #1 High Voltage	OPTIONAL	12 GA 75°C SITE SUPPLIED	20A	400 VAC	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	DRYER FEED 1-L1
					L2		SITE		DRYER FEED 1-L2
					L3		SITE		DRYER FEED 1-L3
					GND		SITE		DRYER FEED GND
Integrated Dryer Feed #2 High Voltage	OPTIONAL	12 GA 75°C SITE SUPPLIED	20A	400 VAC	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	DRYER FEED 2-L1
					L2		SITE		DRYER FEED 2-L2
					L3		SITE		DRYER FEED 2-L3
					GND		SITE		DRYER FEED GND
Bridge Low Voltage	STANDARD	14 GA 75°C SITE SUPPLIED	15A	24VAC	8W05	PUMP STATION	8F05.2	E-CHAIN JUNCTION BOX	BRG PHA
					9W05		9F05.2		BRG PHB
					10W05		3X21.3		NEU
					8W28		3X03.3		SYS
Network Communication	STANDARD	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A		22W42	BAY BOX	22A13.P6	E-CHAIN JUNCTION BOX	40N18.1
Free Standing Frame Ground	OPTIONAL	SUPPLIED WITH FRAME KIT				CENTER OF FRAME RAIL		E-CHAIN JUNCTION BOX	FRAME GND

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

Table 5 - E-Chain Junction Box Electrical Connections for 460V 60 Hz Sites

E-CHAIN JUNCTION BOX CONNECTIONS 460 VAC									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Bridge High Voltage	STANDARD	12 GA 75°C SITE SUPPLIED	20A	208/230V	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	BRG PWR L1
					L2		SITE		BRG PWR L2
					L3		SITE		BRG PWR L3
					GND		SITE		BRG PWR GND
Integrated Dryer Feed #1 High Voltage	OPTIONAL	10 GA 75°C SITE SUPPLIED	25A	460 VAC	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	DRYER FEED 1-L1
					L2		SITE		DRYER FEED 1-L2
					L3		SITE		DRYER FEED 1-L3
					GND		SITE		DRYER FEED GND
Integrated Dryer Feed #2 High Voltage	OPTIONAL	10 GA 75°C SITE SUPPLIED	25A	460 VAC	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	DRYER FEED 2-L1
					L2		SITE		DRYER FEED 2-L2
					L3		SITE		DRYER FEED 2-L3
					GND		SITE		DRYER FEED GND
Bridge Low Voltage	STANDARD	14 GA 75°C SITE SUPPLIED	15A	24VAC	8W05	PUMP STATION	8F05.2	E-CHAIN JUNCTION BOX	BRG PHA
					9W05		9F05.2		BRG PHB
					10W05		3X21.3		NEU
					8W28		3X03.3		SYS
Network Communication	STANDARD	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A		22W42	BAY BOX	22A13.P6	E-CHAIN JUNCTION BOX	40N18.1
Free Standing Frame Ground	OPTIONAL	SUPPLIED WITH FRAME KIT				CENTER OF FRAME RAIL		E-CHAIN JUNCTION BOX	FRAME GND

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

Table 6 - E-Chain Junction Box Electrical Connections for 575V 60 Hz Sites

E-CHAIN JUNCTION BOX CONNECTIONS 575 VAC									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Bridge High Voltage	STANDARD	12 GA 75°C SITE SUPPLIED	20A	208/230V	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	BRG PWR L1
					L2		SITE		BRG PWR L2
					L3		SITE		BRG PWR L3
					GND		SITE		BRG PWR GND
Integrated Dryer Feed #1 High Voltage	OPTIONAL	10 GA 75°C SITE SUPPLIED	20A	575 VAC	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	DRYER FEED 1-L1
					L2		SITE		DRYER FEED 1-L2
					L3		SITE		DRYER FEED 1-L3
					GND		SITE		DRYER FEED GND
Integrated Dryer Feed #2 High Voltage	OPTIONAL	10 GA 75°C SITE SUPPLIED	20A	575 VAC	L1	SITE POWER PANEL	SITE	E-CHAIN JUNCTION BOX	DRYER FEED 2-L1
					L2		SITE		DRYER FEED 2-L2
					L3		SITE		DRYER FEED 2-L3
					GND		SITE		DRYER FEED GND
Bridge Low Voltage	STANDARD	14 GA 75°C SITE SUPPLIED	15A	24VAC	8W05	PUMP STATION	8F05.2	E-CHAIN JUNCTION BOX	BRG PHA
					9W05		9F05.2		BRG PHB
					10W05		3X21.3		NEU
					8W28		3X03.3		SYS
Network Communication	STANDARD	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A		22W42	BAY BOX	22A13.P6	E-CHAIN JUNCTION BOX	40N18.1
Free Standing Frame Ground	OPTIONAL	SUPPLIED WITH FRAME KIT				CENTER OF FRAME RAIL		E-CHAIN JUNCTION BOX	FRAME GND

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

4 Bridge Installation

This section provides instructions for installing the LaserWash 360 Plus 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 as described in Section 2 of this manual.
- Prior to starting the bridge installation process, make sure that e-chain system installation is complete as described in Section 3 of this manual.
- 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, when it is fully crated as it is shipped is as follows, based on a fully optioned machine.
 - Wash Bridge with Integrated Dryer, Fully Crated: 1950 lbs (885 kg).
 - Wash Bridge without Integrated Dryer, Fully Crated: 1475 lbs (670 kg).
- The lifting weight of a fully optioned wash bridge as it is when lifting it 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: 1185 lb (538 kg).
 - Bridge with Integrated Dryer (without pallet and shipping legs): 1335 lb (606 kg).
 - Bridge without Integrated Dryer (without pallet and shipping legs): 860 lb (390 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.
- Install the bridge e-chain mounting bracket to the bridge end plate.
- Connect the e-chain to the bridge.
- Route hoses and cables from the e-chain to their termination points on the bridge.
- Install the spray arch.
- 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.
- Terminate the fluid connections on the bridge.
- Terminate the electrical connections on the bridge.
- Bridge installation complete.

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 fork lift cannot be used.
- Wooden blocking between bridge rails and lifting forks, 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.

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 LaserWash 360 Plus Loose Parts kit are used during the bridge installation process. See Table 1 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 2.9.5 Step 15 for details on this process.

!!!IMPORTANT!!

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 (See Figure 60).

- Install the bridge trucks inside the rails (see Figure 60). 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.

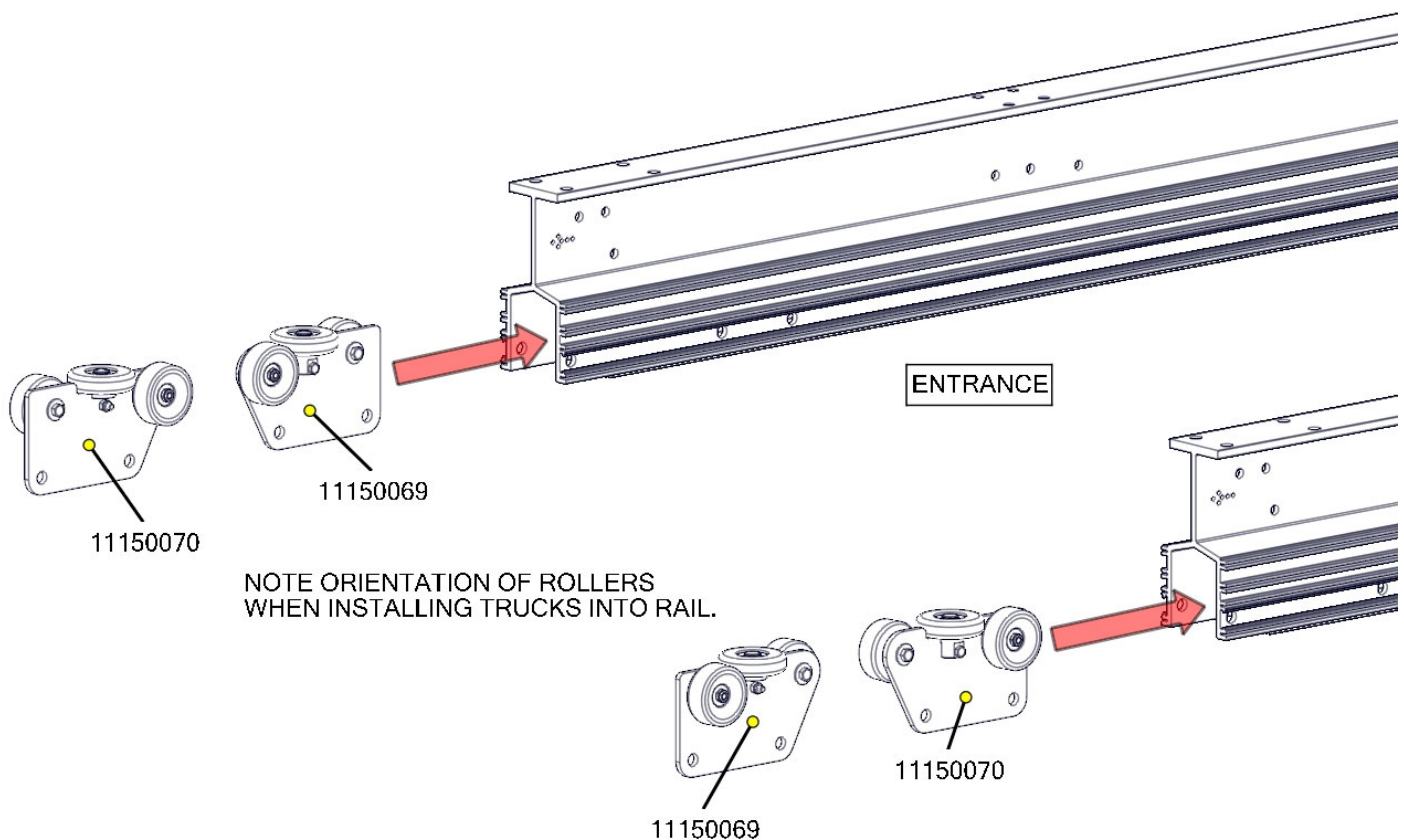


Figure 60 - Install Trucks into Main Rails

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

- Install end stops into rails as shown in Figure 61.
- The end stop parts are included in the main shipped loose kit for the LaserWash 360 Plus.
- 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 62.
- Install the end stops (two total assemblies) as shown at the exit end of the frame in the fifth from the endmost hole at the end of each rail,
- Figure 62.

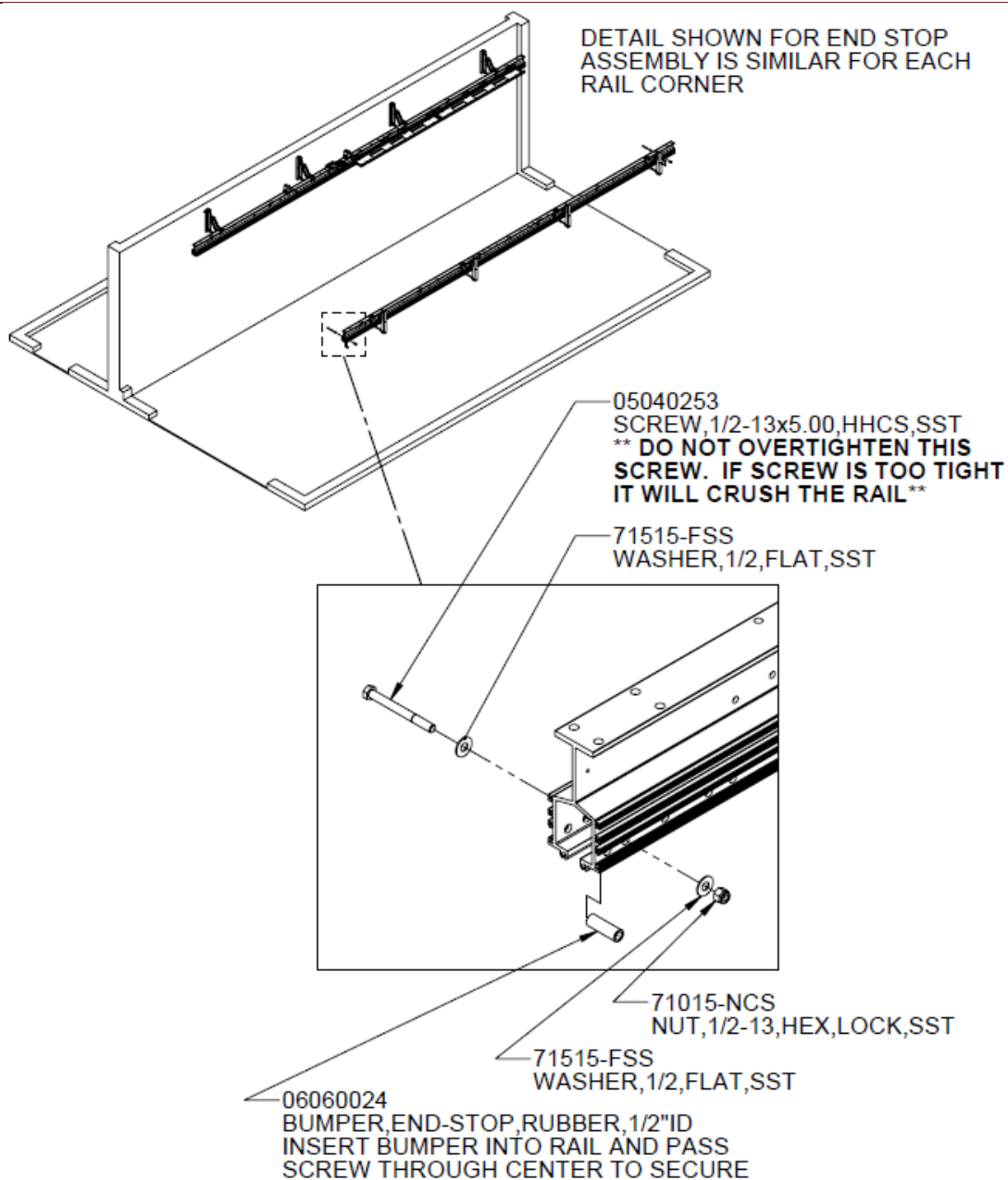


Figure 61 - Install End Stops, Entrance End Shown In Detail

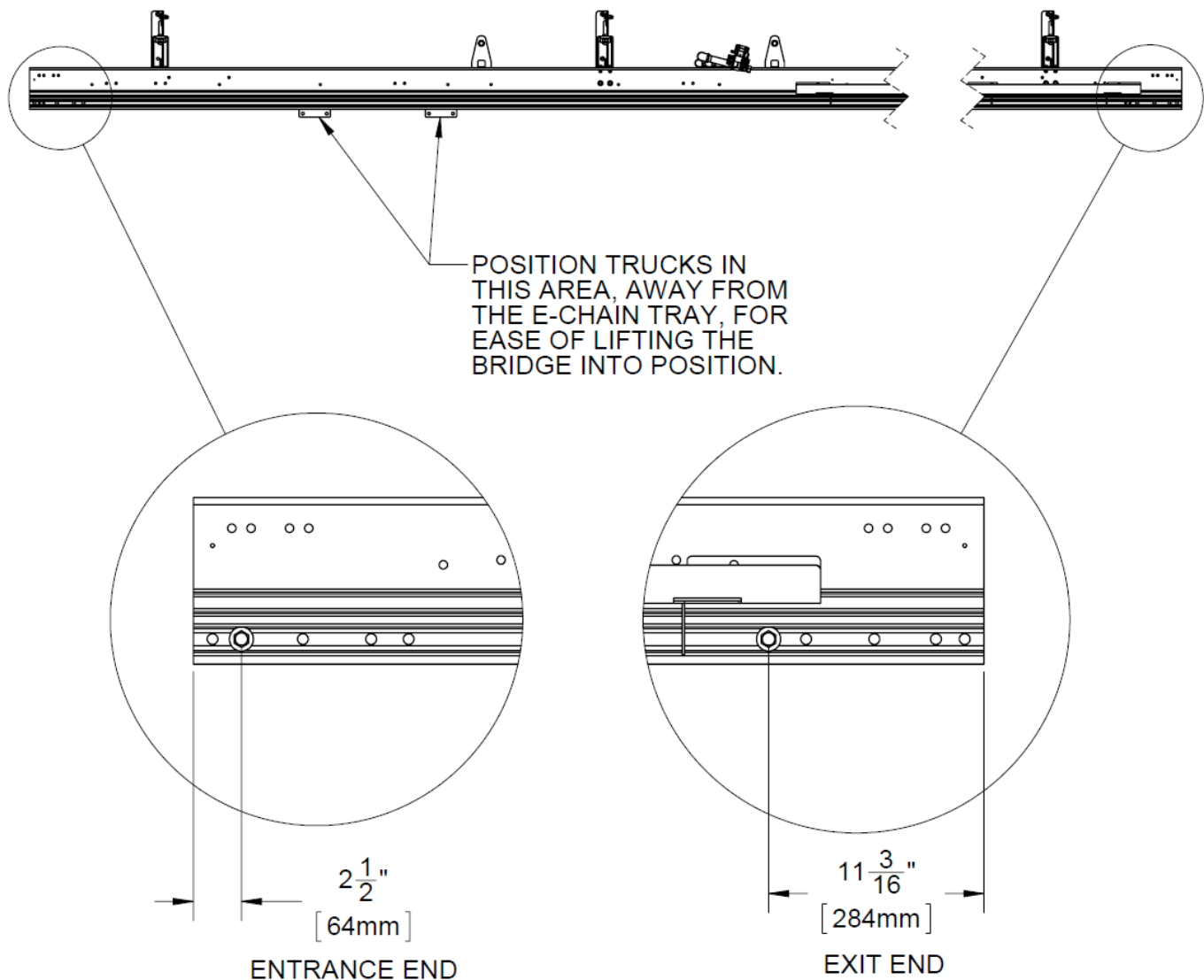


Figure 62 - End Stop Positions

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 63 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. See Figure 63 for bay width dimensions in this case. Also, in this case, the bridge must be removed from the shipping pallet and will therefore not be lifted using the shipping pallet.

- 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.

!!!IMPORTANT!!	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.
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!!!IMPORTANT!!	If the Advanced Cover System option is utilized, the covers ship separately. Install Advanced Cover System <u>after</u> bridge is placed in the wash bay and <u>before</u> lifting to rails.
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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: 1185 lbs (538 kg). Bridge with Integrated Dryer: 1335 lbs (606 kg). Bridge without Integrated Dryer: 860 lbs (390 kg).
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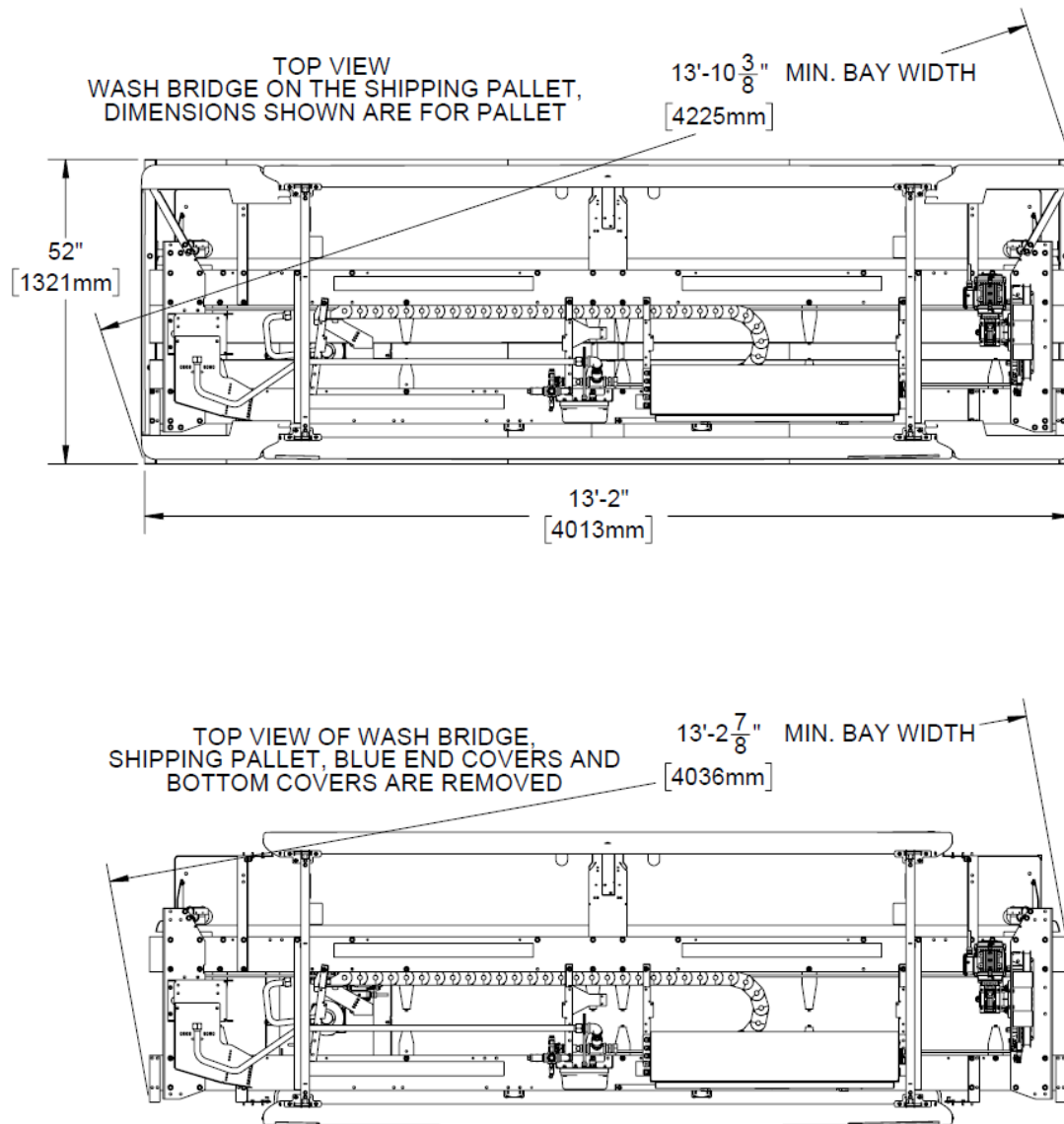


Figure 63 - Bay Width Dimensions Required for Bridge Installation.

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 as shown in Figure 64. 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 as shown in Figure 65.

!!!IMPORTANT!!

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

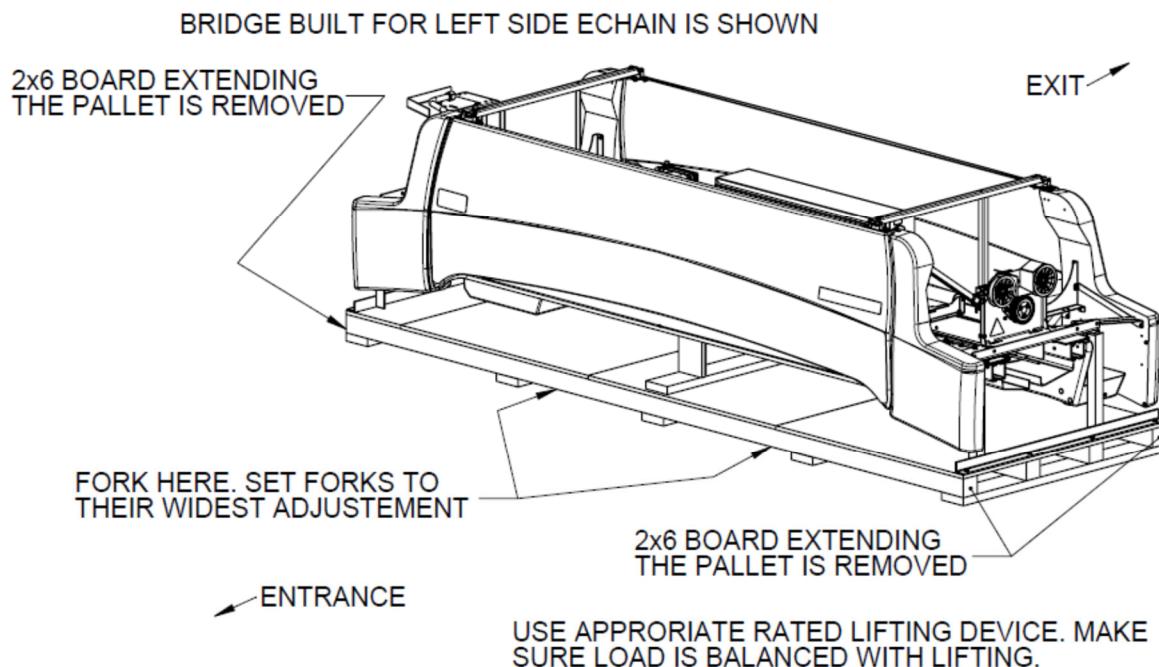


Figure 64 - Lifting the Wash Bridge. Fork Positions When Lifting with the Shipping Pallet

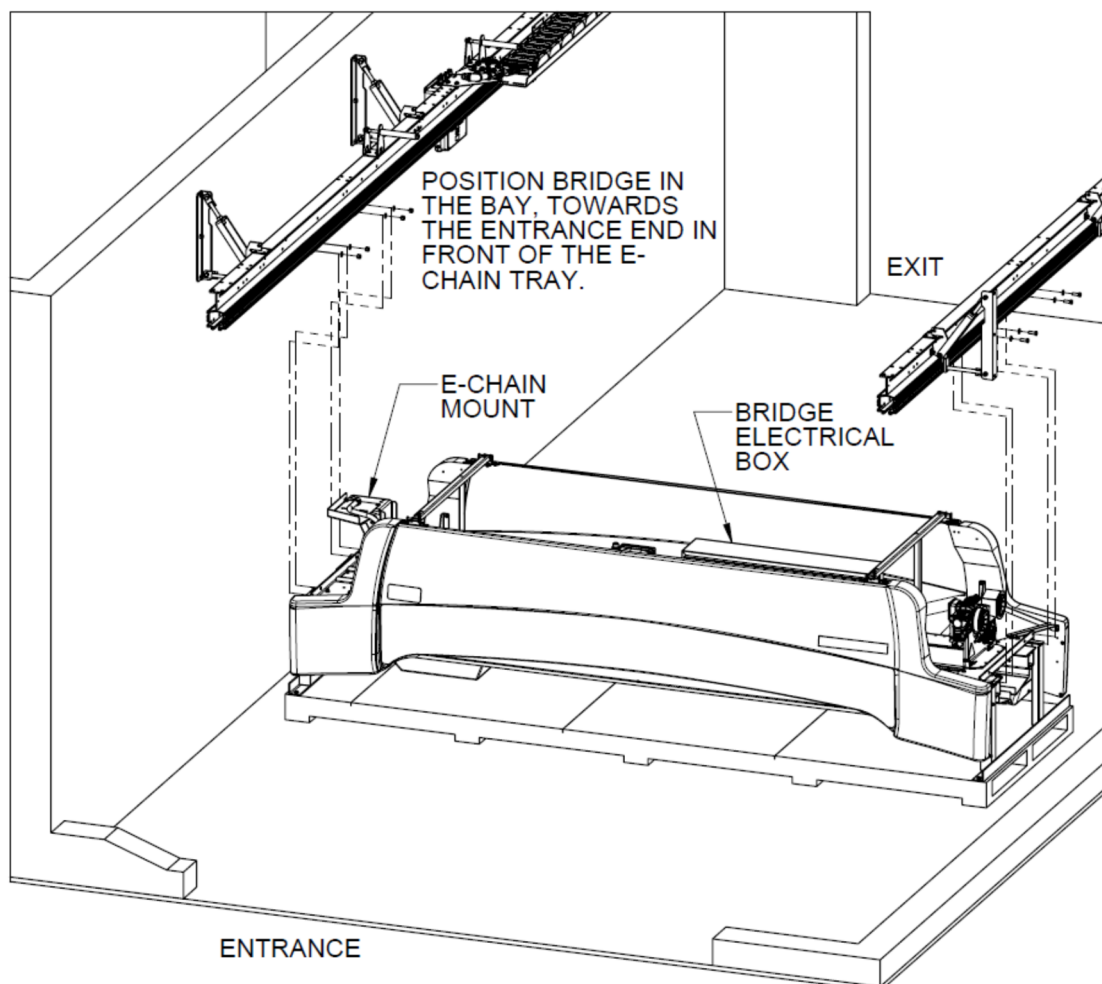


Figure 65 - Bridge in the Wash Bay Ready for Lifting

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 center cover frames on the bridge, Figure 66 and Figure 67.
- Tighten the hinge catch brackets to hold the cover hinges in place, Figure 68.

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.

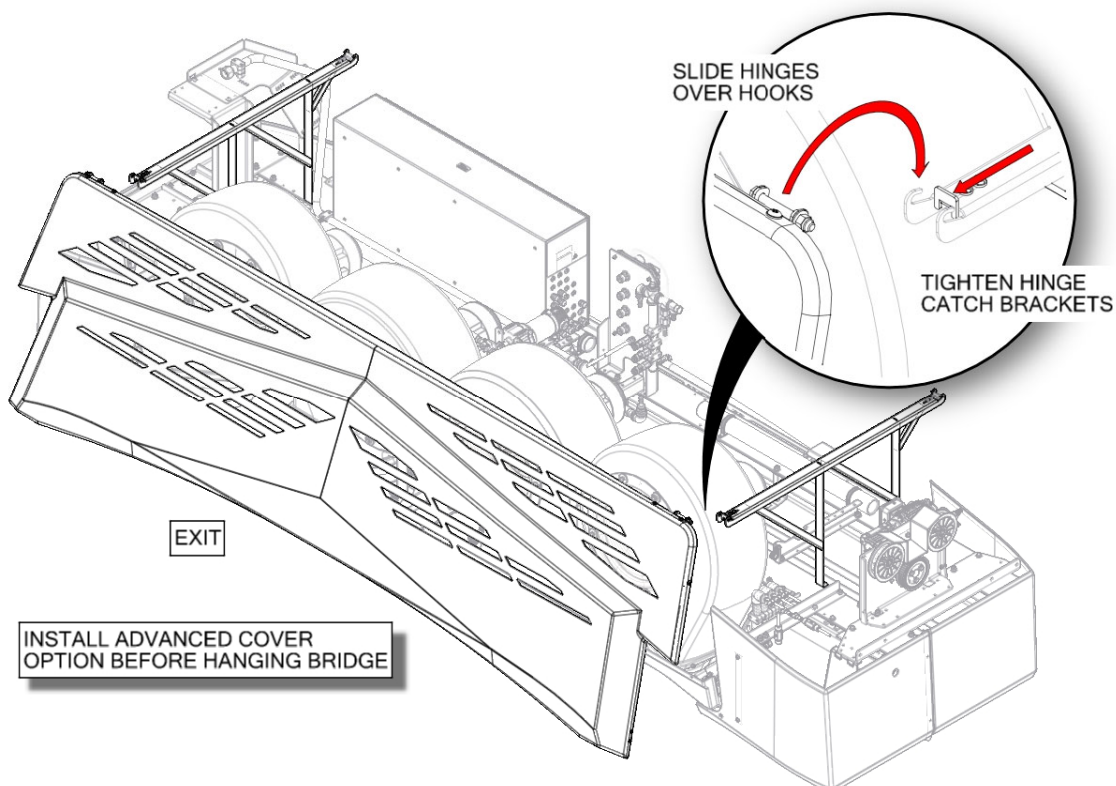


Figure 66 – Advanced Covers, Back Cover Installation

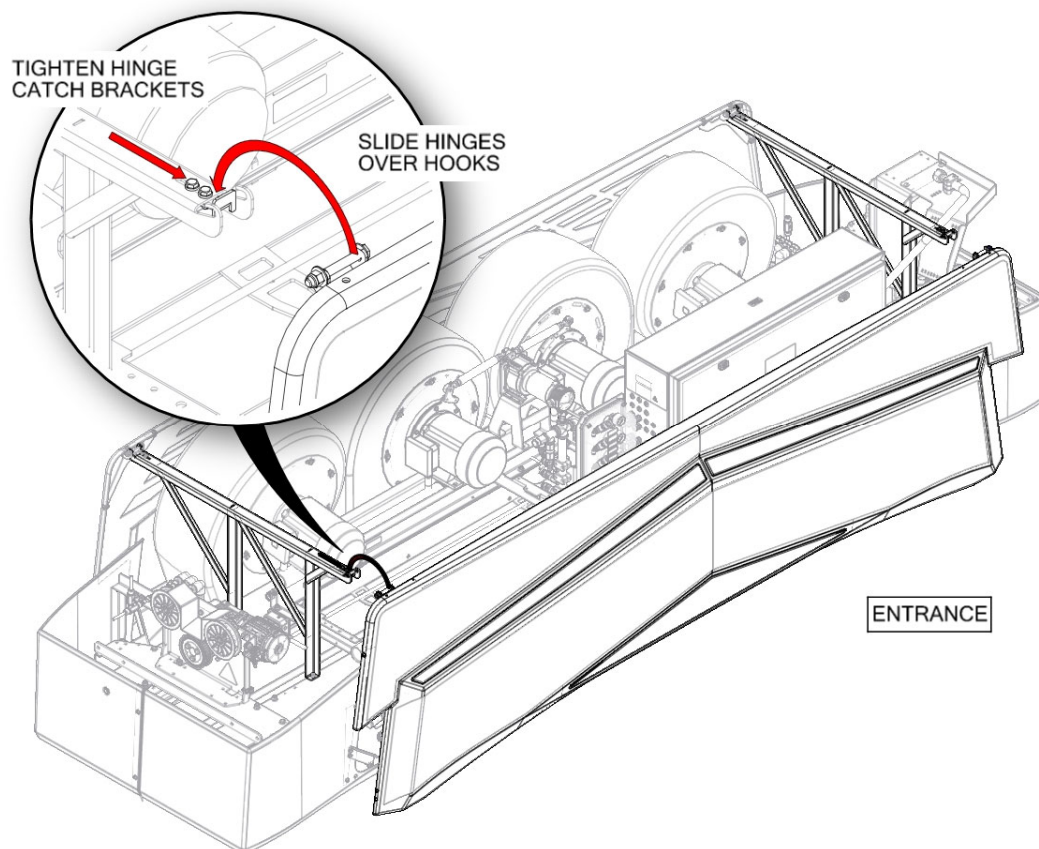


Figure 67 – Advanced Covers, Front Cover Installation

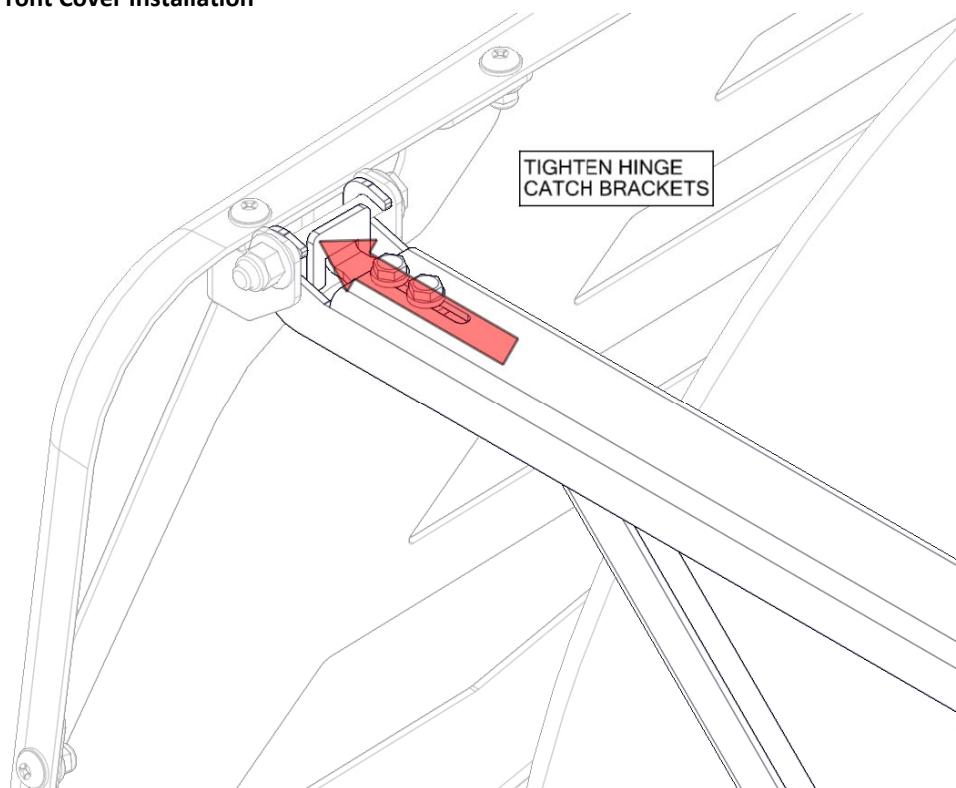


Figure 68 – Hinge Catch Bracket

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)
- Blue 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 fork lift forks to provide a lifting point for the bridge. The bridge can then be lifted with a fork lift with the shipping legs and pallet removed. For more details on blocking and lifting points without a pallet, see Figure 69 and Figure 70.



Be sure to temporarily secure the blocking to the bridge rails as shown in Figure 69 and Figure 70 to avoid the blocks slipping when lifting the bridge.

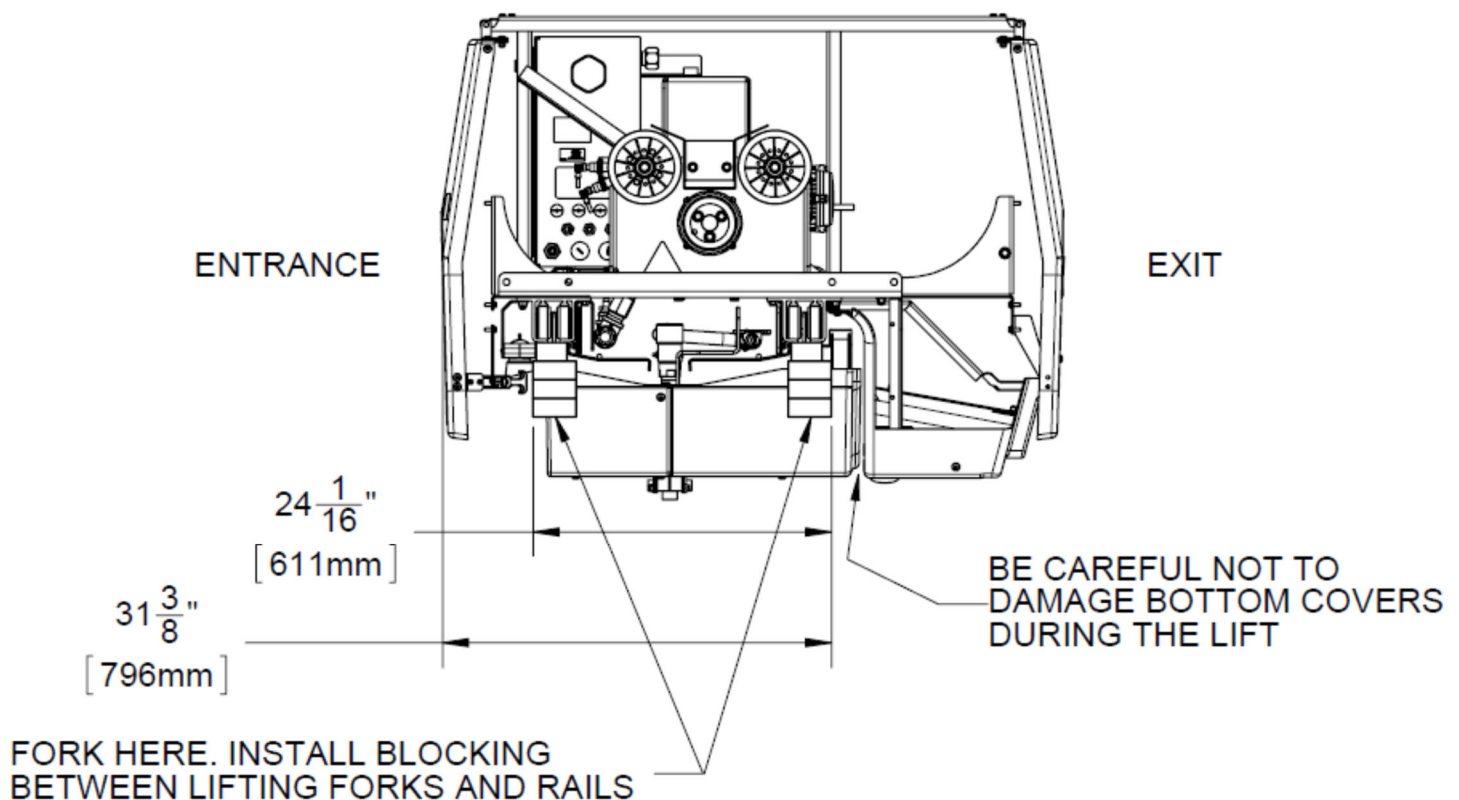


Figure 69 - Lifting the Wash Bridge, Fork Positions when Lifting Under Trolley Rails

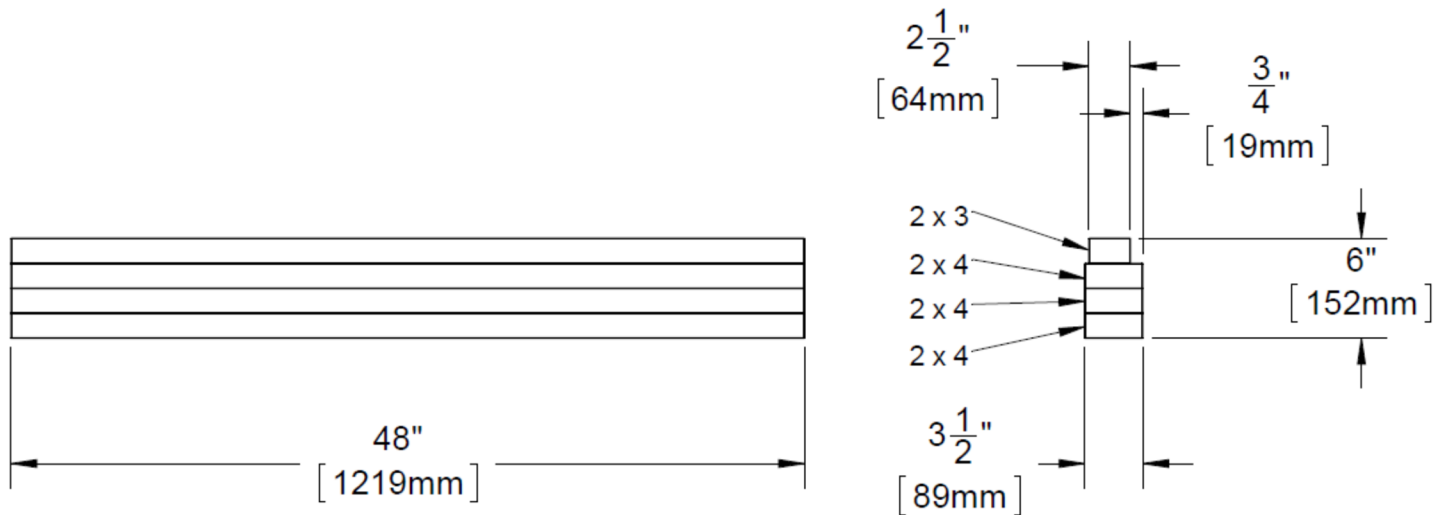


Figure 70 - Blocking Size Recommended, Two (2) Required, when Lifting Under Trolley Rails

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 fork lift 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.

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 71 and Figure 72. 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.

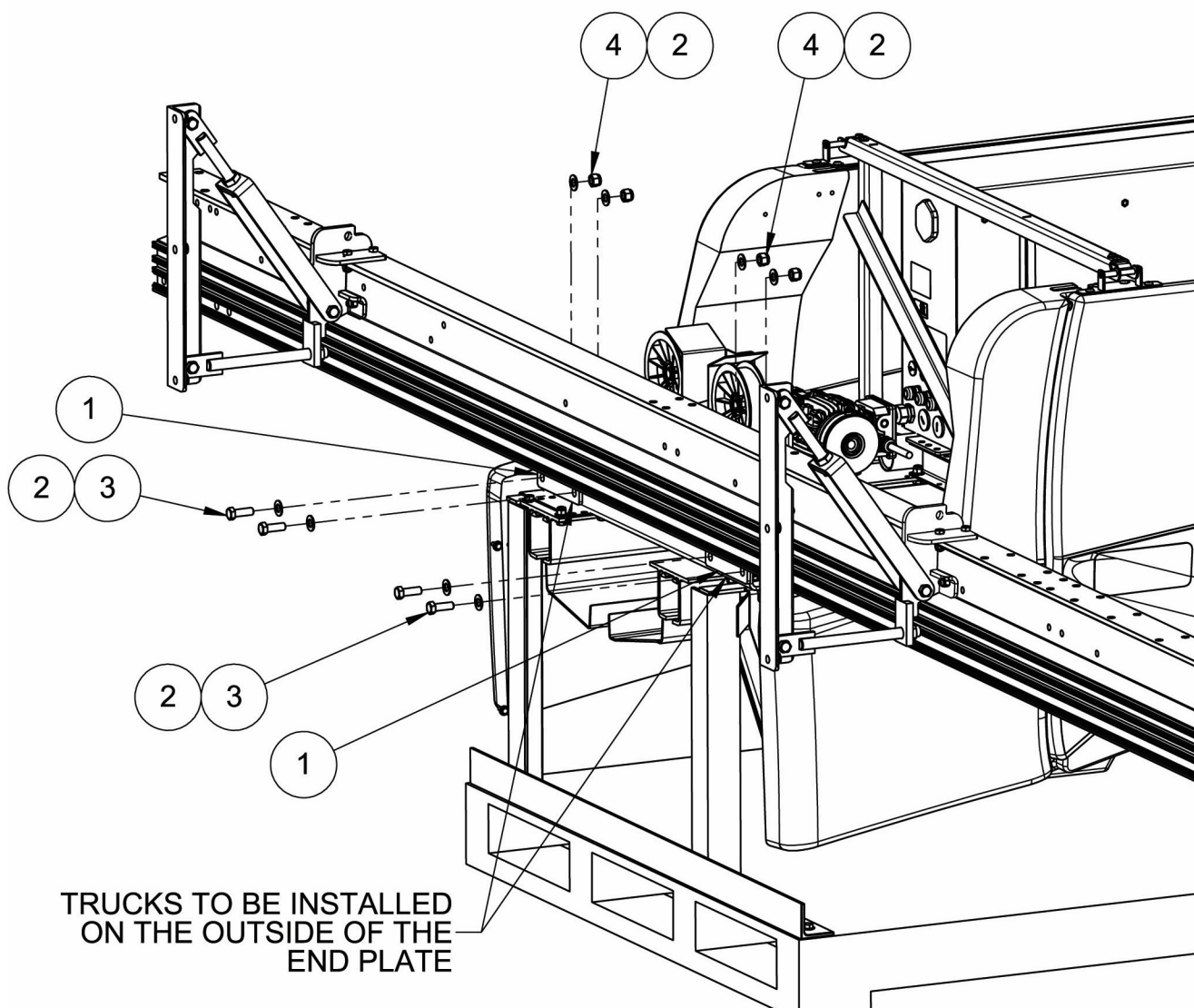


WARNING – WHEN LIFTING THE BRIDGE USING A FORKLIFT, IT IS RECOMMENDED TO LIFT THE BRIDGE WITH THE SHIPPING PALLET.

	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.
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	<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.
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 	<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.
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ITEM	QTY.	PART #	DESCRIPTION
1	4	11150048	TRUCK,BRIDGE,LASERWASH/LASERJET
2	16	71515-FS	WASHER,1/2,FLAT,SST,MIL-SPEC
3	8	70257-HCS	SCREW,1/2-13x1.50,HHCS,SST
4	8	71015-NCS	NUT,1/2-13,HEX,LOCK,SST

Figure 71 - Lift the Wash Bridge and Attach to the Trucks

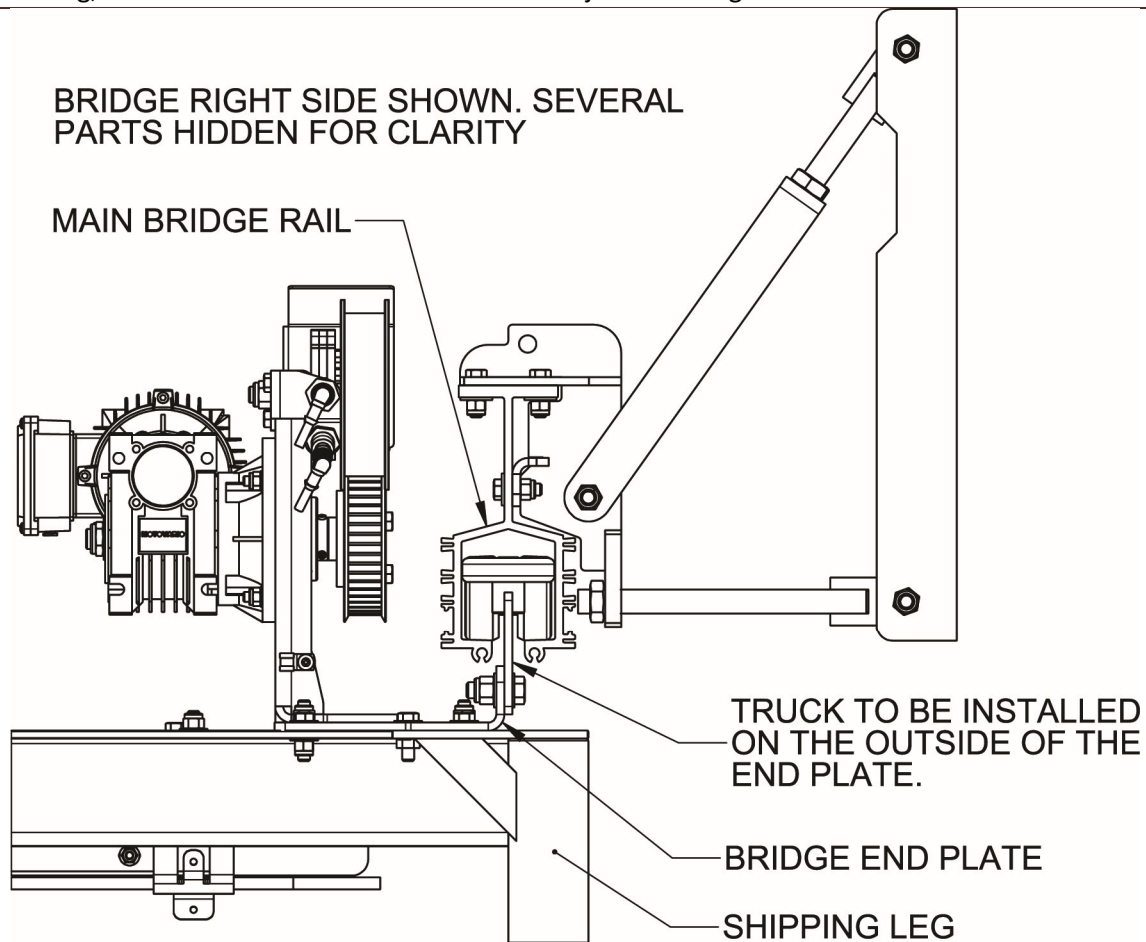


Figure 72 – End Plate to Truck Attachment Detail

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 (see Figure 73).

- 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.

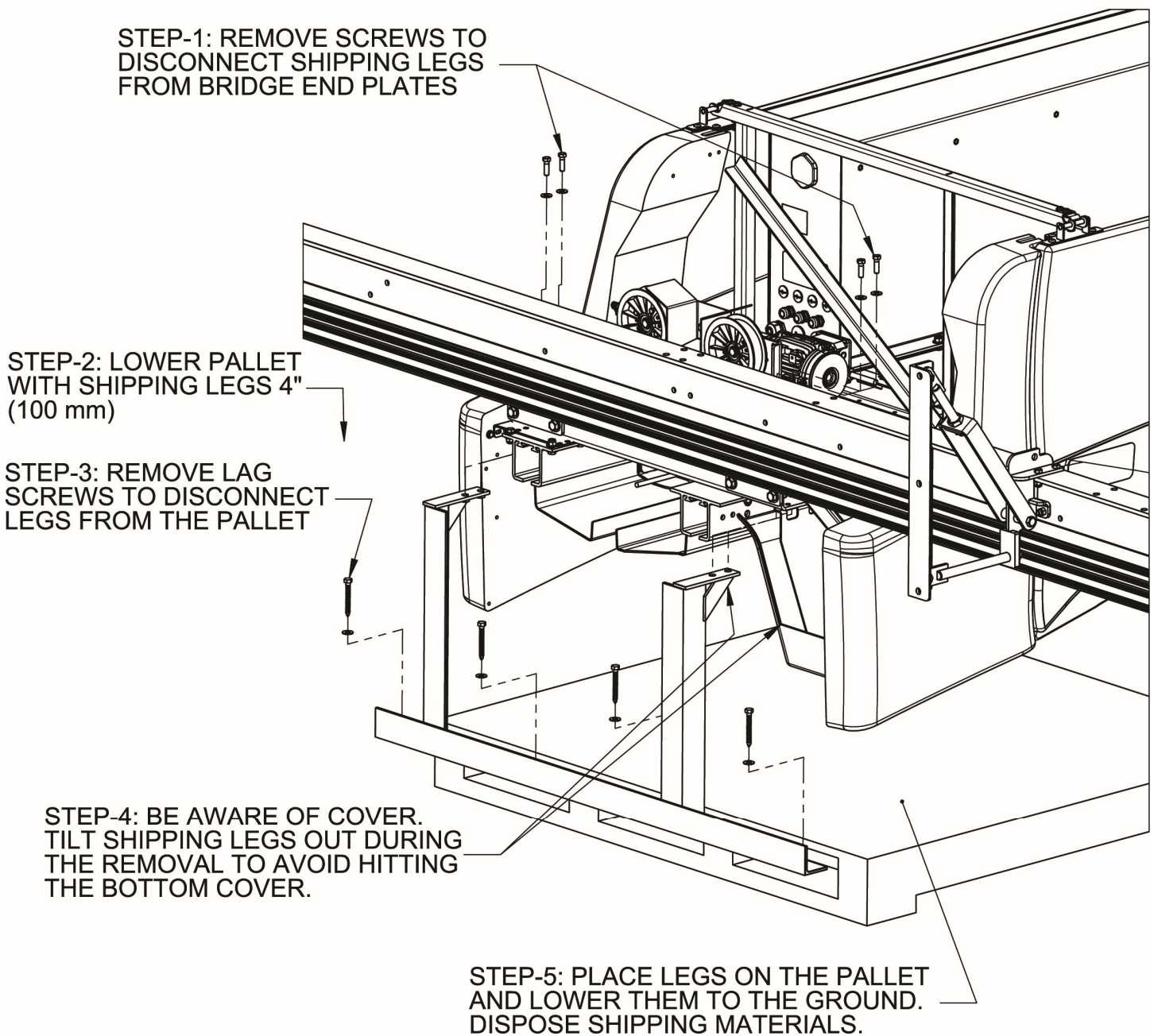
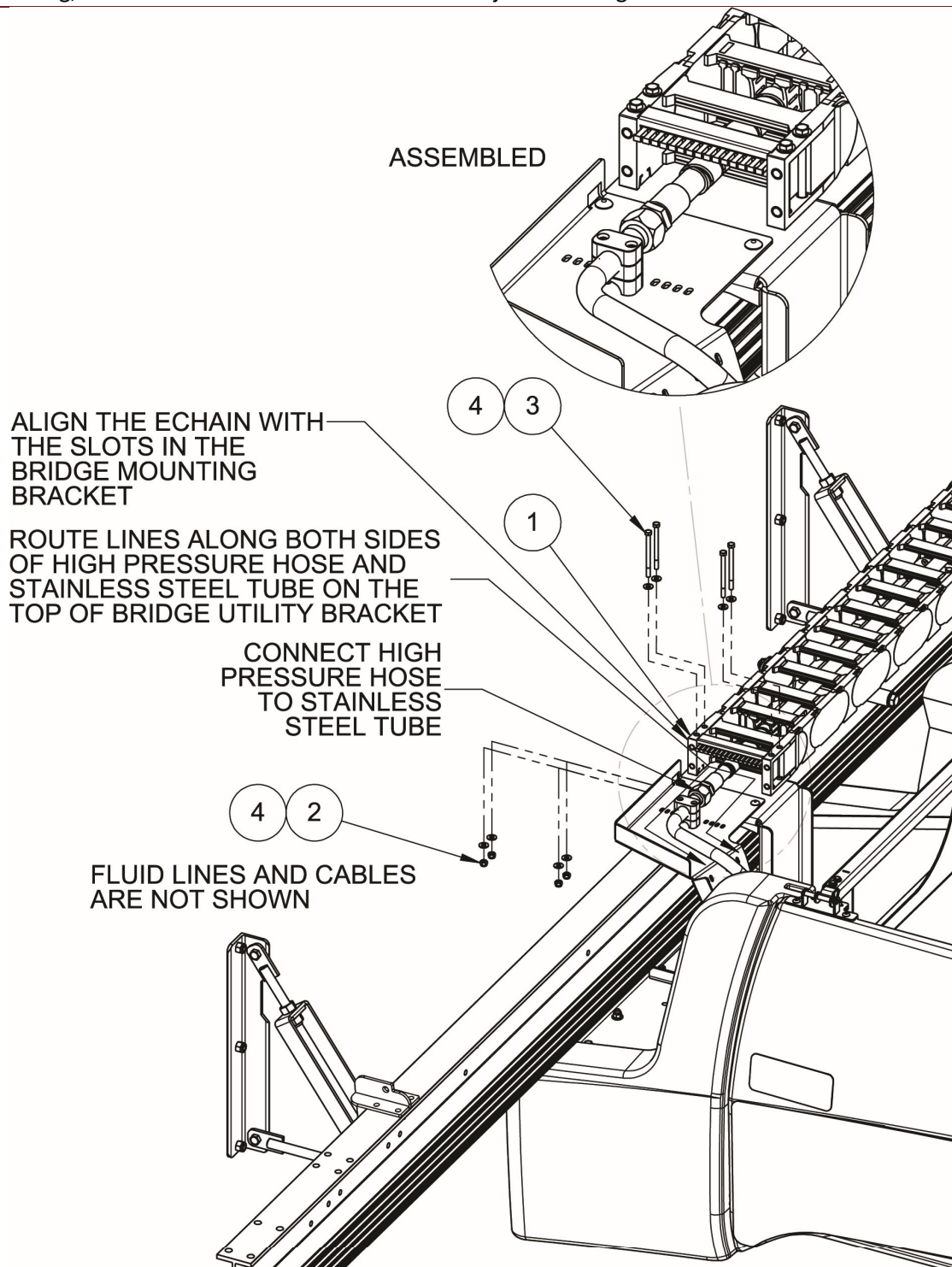


Figure 73 - Disconnecting Shipping Legs and Pallet

4.10 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 (see Figure 74). 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 (see 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.



ITEM	QTY.	PART #	DESCRIPTION
1	1	11190037	E-CHAIN,KIT,CONFIGURATIONS,LW360PLUS
2	4	71012-NCS	NUT,5/16-18,HEX,LOCK,SST
3	4	70157-HCS	SCREW,5/16-18x4.00,HHCS,SST
4	8	71512-FS	WASHER,5/16,FLAT,SST

Figure 74 - Connect E-chain to Bridge

4.11 Route Cables and Fluid Lines

Route all hoses and cables from the e-chain to general location of their termination points on the bridge (see Figure 75). Do not cut any lines to length or make any terminations at this point. Route hose and 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.

- All the fluid lines are to be routed to the center of the bridge. Route all fluid lines along the path of the stainless steel tube keeping the lines on the same side of the stainless steel tube as the side where they were at the exit of the e-chain.

!!!IMPORTANT!!	When routing fluid lines and 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 with the lines and cables 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 the hoses and cables.
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- 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.
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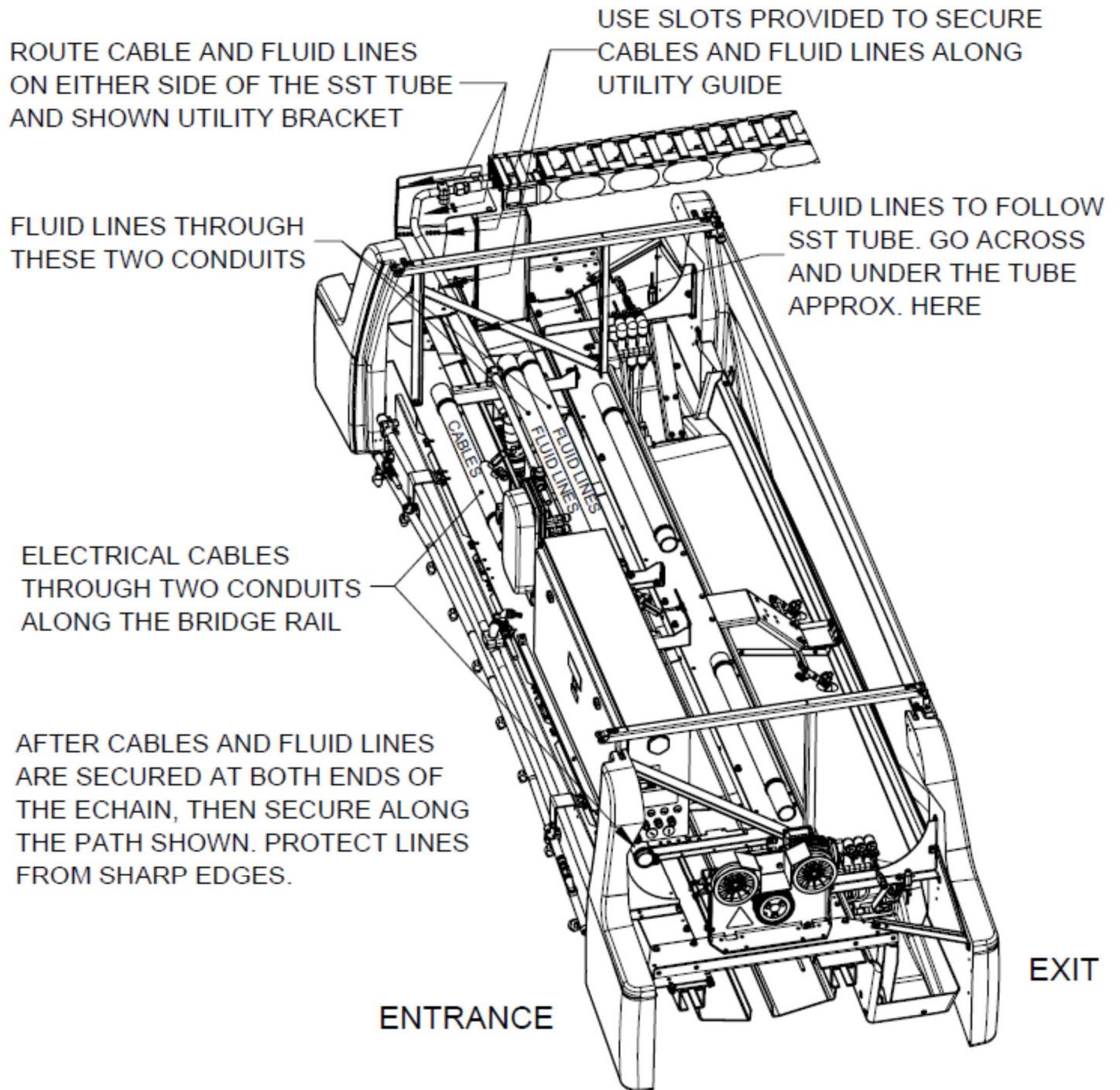


Figure 75 - Route Hoses and Cables through Bridge Conduits

4.12 Test E-Chain and Bridge Motion and Secure Lines

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

Make sure the end stops are installed properly in the ends of the main rails.



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.

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 to eliminate all interference.

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 4.16.

4.12 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 of the end of the roller throughout its range of motion. Also, check that the support roller is perpendicular to the e-chain. When the rollers are in the proper final position, tighten fasteners to secure them in place. Refer to Figure 76.

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 not to 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.

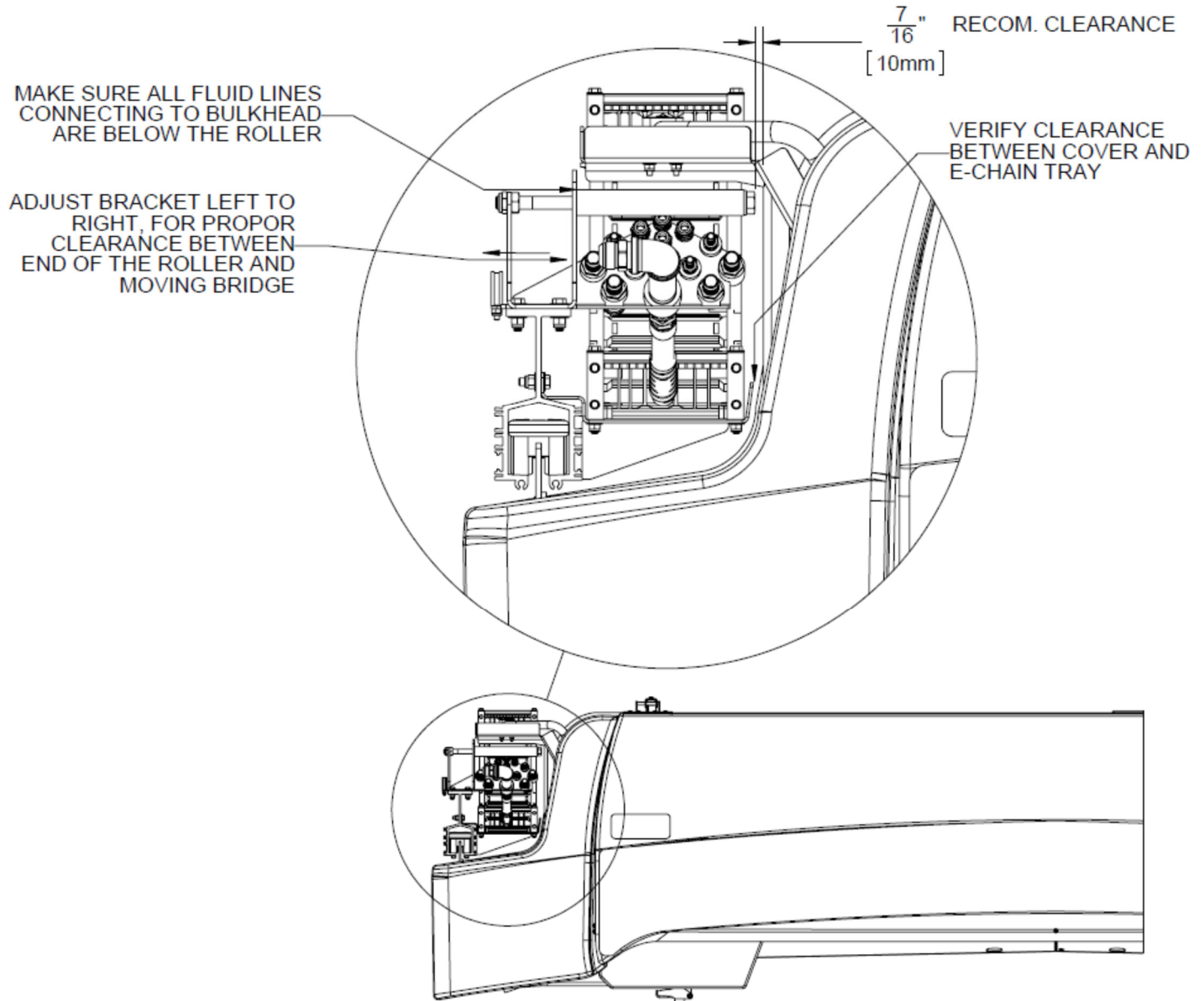


Figure 76 – E-chain Roller Adjustment and Clearance

4.12 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 over time.

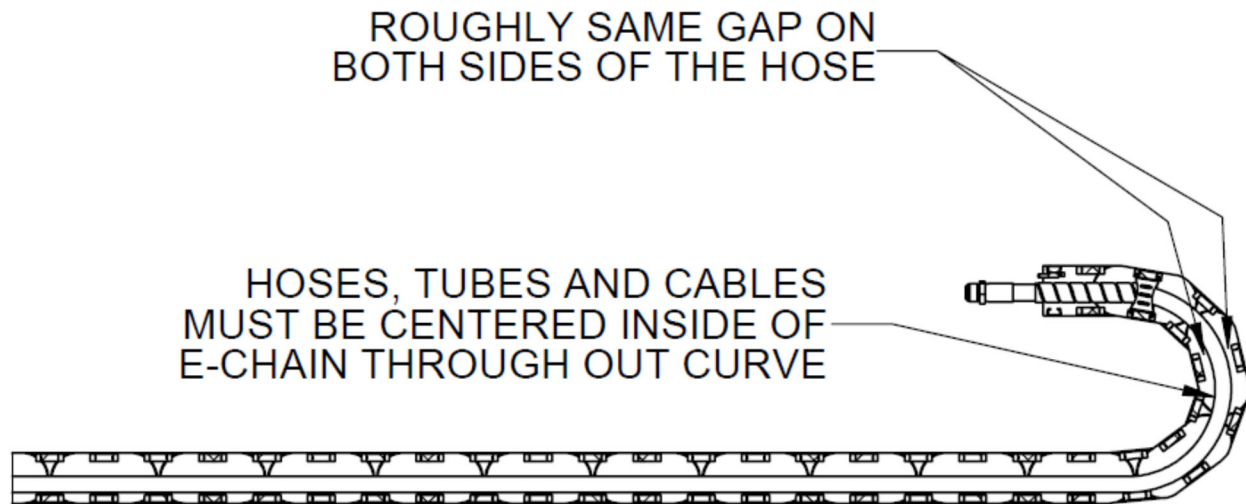


Figure 77 - Proper Loading of E-chain

E-Chain High Pressure Hose

!!!IMPORTANT!!

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 (see Figure 77). 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 78. 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 54.
- 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 the both ends of the wash bay.

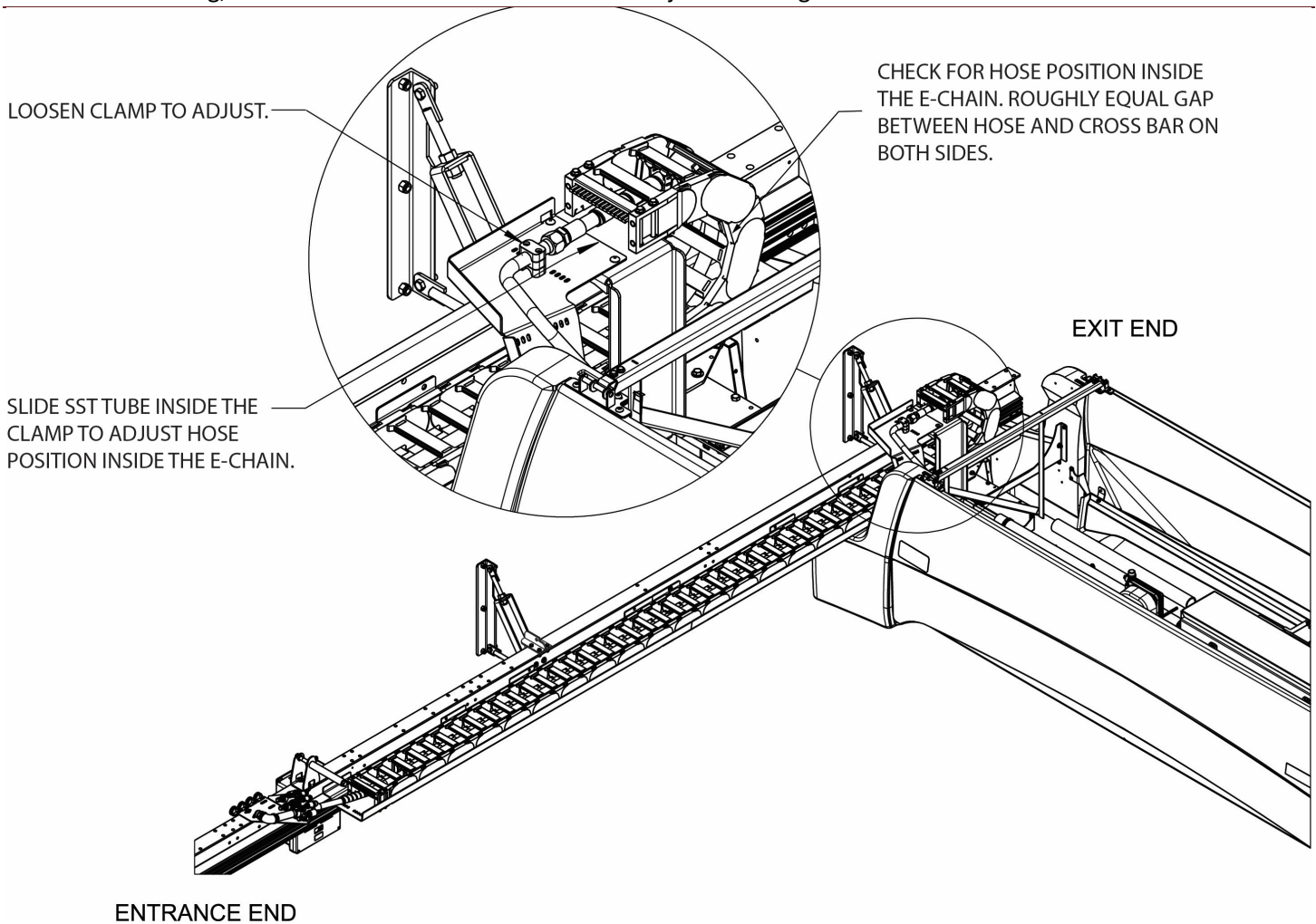


Figure 78 – High Pressure Hose Adjustment in Main E-chain

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 located in the middle of the e-chain through the curve (see Figure 77). 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 79 and Figure 80. 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.

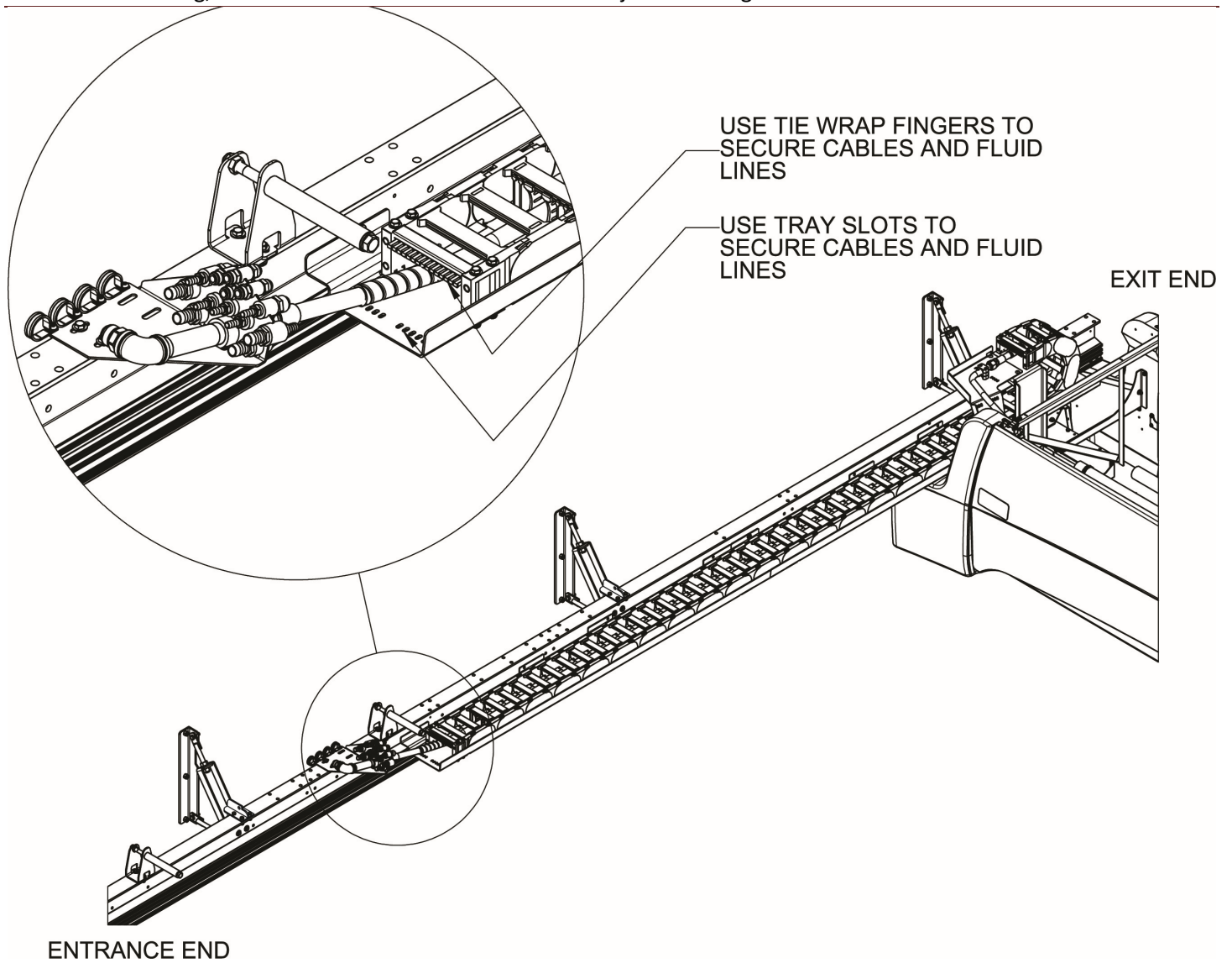


Figure 79 - Securing Cables and Fluid Lines at the Fixed End of the E-chain

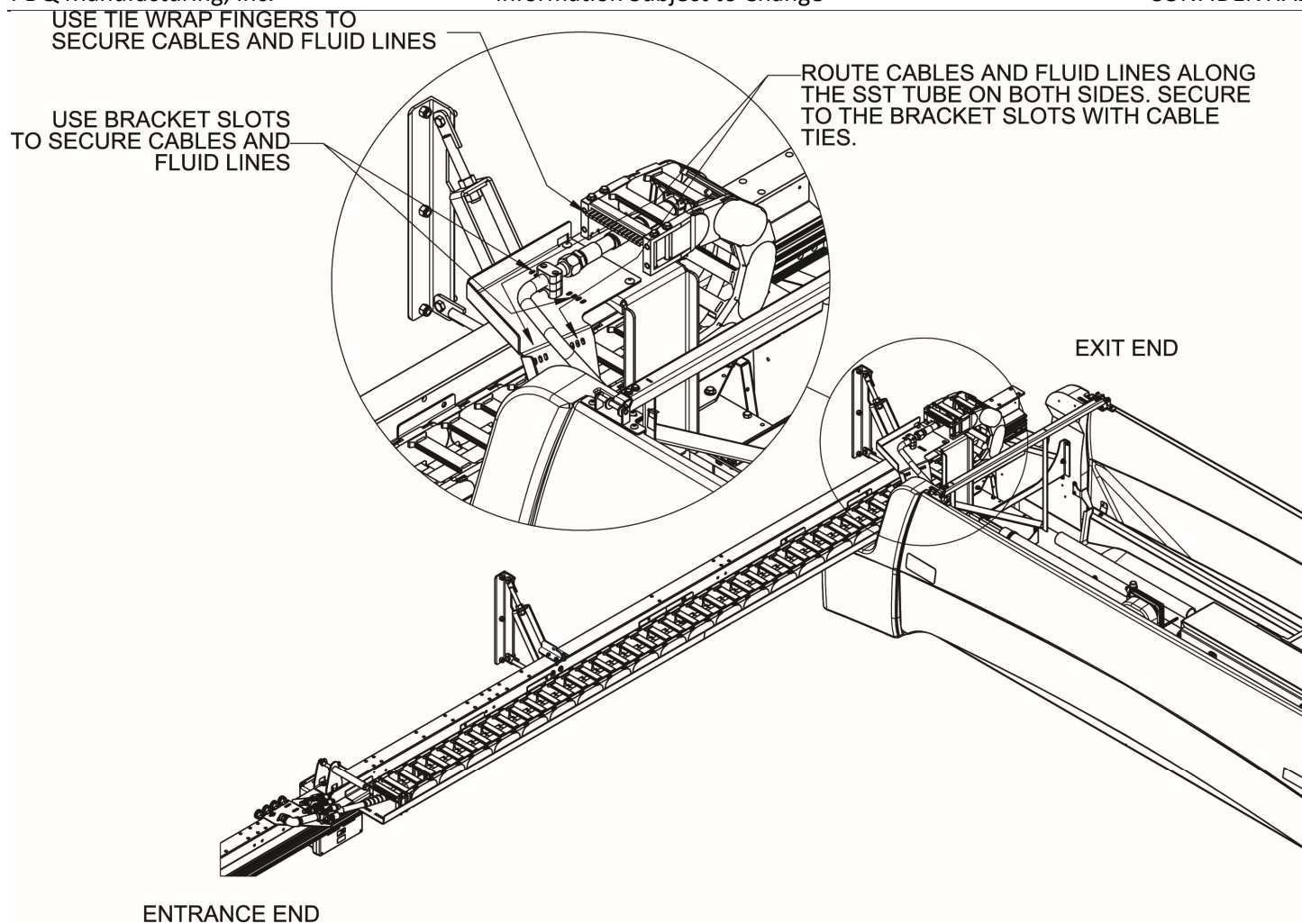
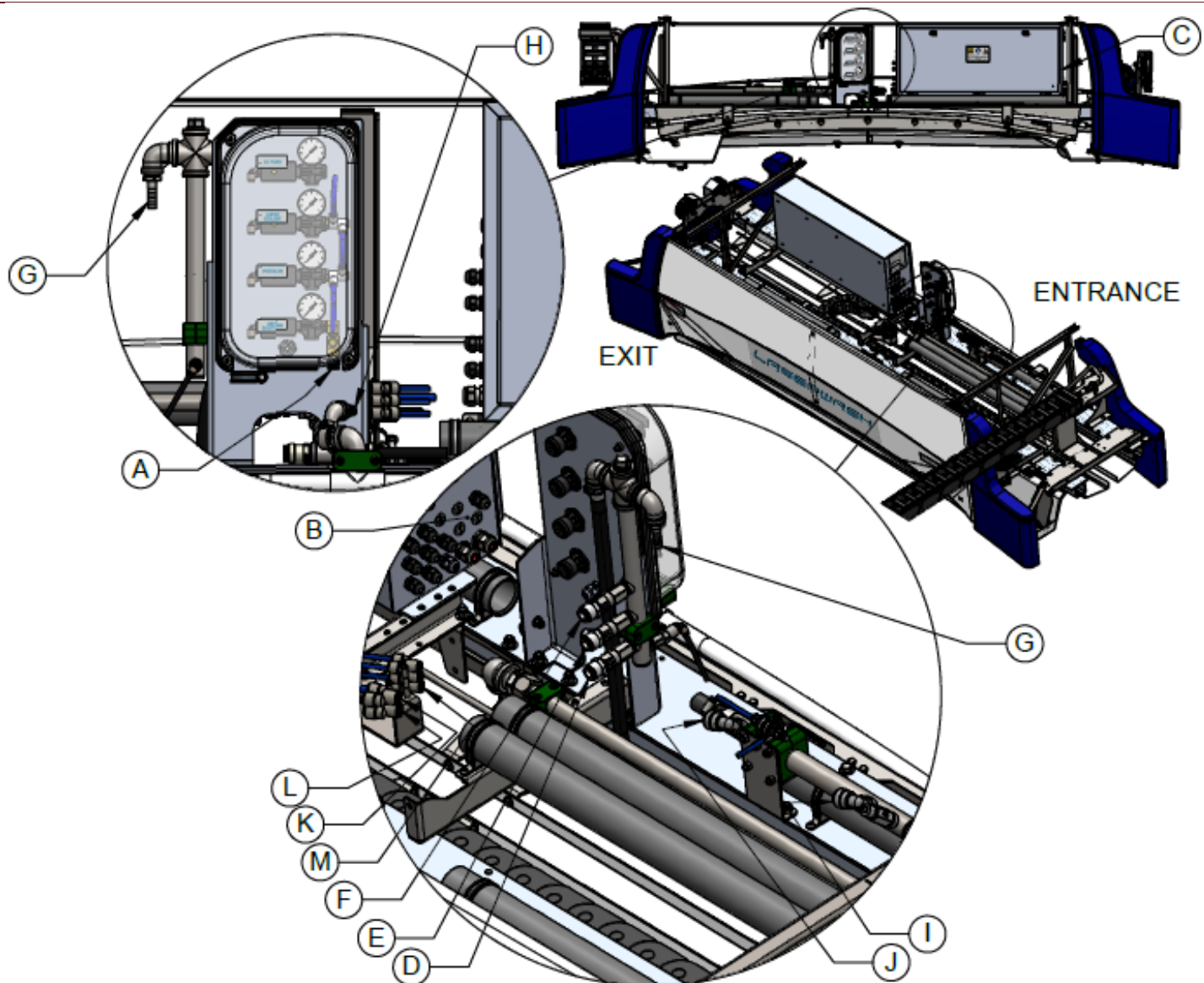


Figure 80 - Securing Cable and Fluid line at the Moving End of the E-chain

4.13 Terminate the Fluid Connections in the Bridge

- After all lines through the e-chain are secured finish the routing inside the bridge to final termination point for each line and cable.
- Secure each line and cable inside the bridge so that it is routed neatly and will not interfere with any moving parts of the wash.
- Cut the fluid lines to the length and connect to the fittings indicated in Figure 81.



POINT	CONNECTION	NOTES
A	Compressed air	Base machine - 3/8" Tubing
B	Low Voltage cable	See label on enclosure. Ethernet + System Stop/Low Volt
C	High voltage cable	See label on enclosure. Power for Bridge, Dryer #1 and #2
D	Detergent 1	Base machine - 1/2" Tubing - Thru L-Arch
E	Detergent 2	Option - 1/2" Tubing - Thru L-Arch
F	Foaming Wax	Option - 1/2" Tubing - Thru L-Arch
G	Rinse - Main Arch	Option - 1/2" Hose - Thru L-Arch
H	Rinse - Productivity	Option - 1/2" Hose - Thru Overhead rinse manifold
I	OverGlow	Option - 5/8" Tubing - Thru Overhead application manifold
J	Overglow Purge	Option - 5/8" Tubing - Thru Overhead application manifold
K	Front Prep	Option - 1/2" Tubing - Thru application manifolds
L	Super Sealant	Option - 1/2" Tubing - Thru application manifolds
M	3X Color Foam	Option - 3 x 3/8" Tubing - Thru application manifolds

Figure 81 - Fluid Connections from E-Chain to Bridge

4.14 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 SHOULD BE OPERATED ONLY FROM THE TYPE OF SOURCE INDICATED ON THE MANUFACTURER’S IDENTIFICATION LABEL. INSTALLATION SHOULD BE IN COMPLIANCE WITH APPLICABLE SECTIONS OF THE NATIONAL ELECTRIC CODE. CONSULT YOUR LOCAL BUILDING CODE BEFORE INSTALLING.

- Route all electrical cables to the bridge enclosure through the conduits and holes provided (see Section 4.11 Route Cables and Fluid Lines).
- 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 see 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.
- Make sure to tighten all strain relief fittings securely when installing cables.
- Connect the cables included in the e-chain to the appropriate termination points on the bridge enclosure. Terminate bridge power, system stop, Ethernet communication, and dryer power (if equipped), See Figure 82.
- Perform connections as described in Table 7. Terminal numbers are marked inside the bridge enclosure. Wire numbers coincide with numbers listed on the applicable schematic (Table 2)



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.

ENCLOSURE ASSEMBLY WITH ALL OPTIONS IS SHOWN.
MACHINE BEING INSTALLED MIGHT HAVE DIFFERENT
SET OF COMPONENTS PRESENT.

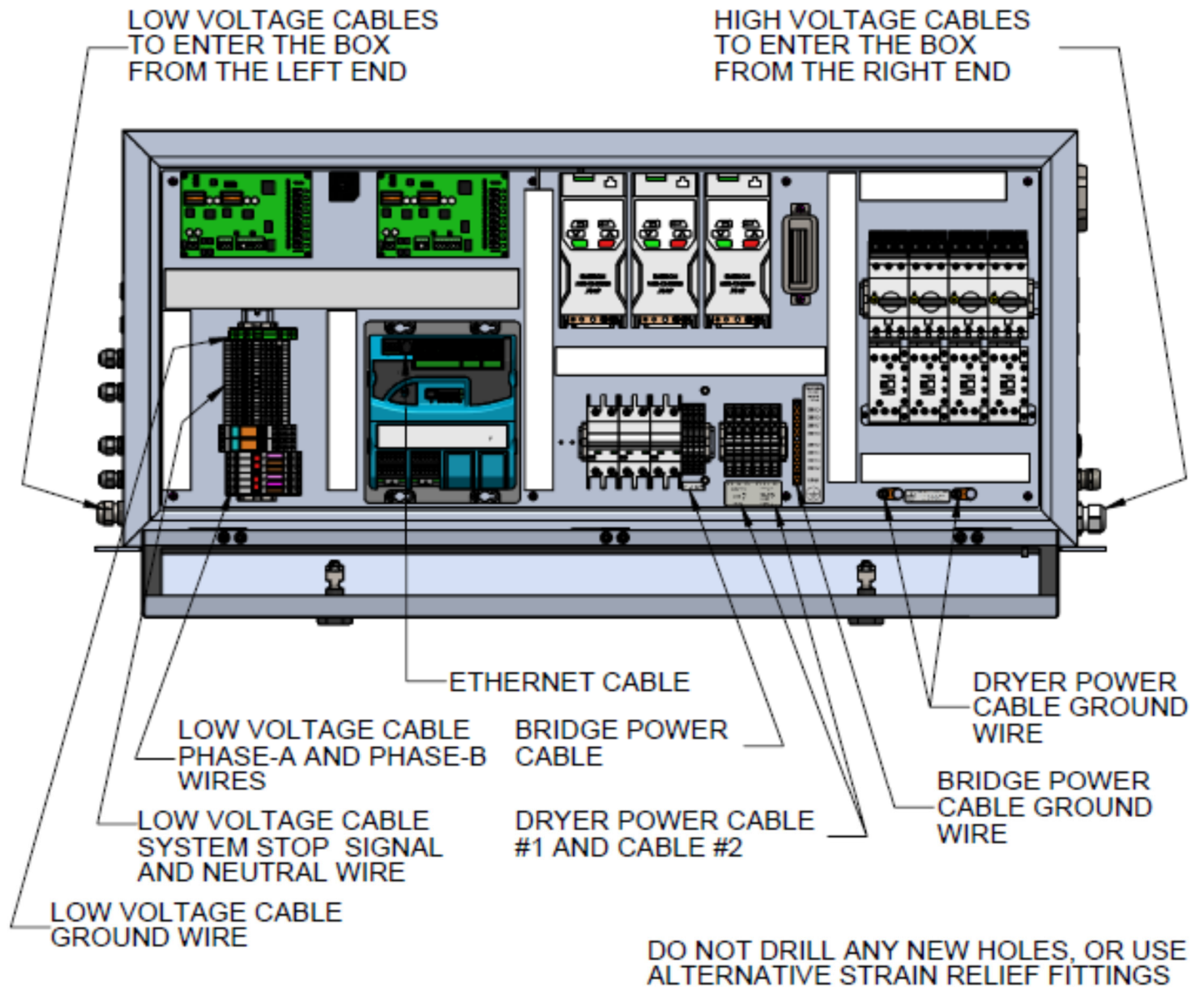


Figure 82 - Bridge Electrical Cable Terminations

Table 7 - Bridge E-Chain Electrical Connections for 203/230/460/575 VAC 60 Hz Sites

BRIDGE CONTROL BOX CONNECTIONS 208/230/460/575VAC 60 Hz									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Bridge High Voltage	STANDARD	SUPPLIED IN E-CHAIN 40W31	20A	208/230V	40W31.1	E-CHAIN JUNCTION BOX	BRG PWR L1	BRIDGE	38X01.1
					40W31.2		BRG PWR L2		38X02.1
					40W31.3		BRG PWR L3		38X03.1
					40W31.G/Y		BRG PWR GND		38X11.1
Bridge Low Voltage	STANDARD	SUPPLIED IN E-CHAIN 40W38	15A	24VAC	40W38.1	E-CHAIN JUNCTION BOX	BRG PHA	BRIDGE	45F06.1
					40W38.2		BRG PHB		46F05.1
					40W38.3		NEU		39X09.1
			3A		40W38.4		SYS		39X05.1
					40W38.G/Y		GND		39XGND.1
Network Communication	STANDARD	SUPPLIED IN E-CHAIN ETHERNET	3A		40W35	E-CHAIN JUNCTION BOX	40N18.2	BRIDGE	48N15.J1
Integrated Dryer Feed #1 High Voltage	OPTIONAL	SUPPLIED IN E-CHAIN 40W33	50A	208/230V	40W33.1	E-CHAIN JUNCTION BOX	DRYER FEED 1-L1	BRIDGE	38X05.1
			25A	460V	40W33.2		DRYER FEED 1-L2		38X06.1
			20A	575V	40W33.3		DRYER FEED 1-L3		38X07.1
					40W33.G/Y		DRYER FEED GND		43X06.1
Integrated Dryer Feed #2 High Voltage	OPTIONAL	SUPPLIED IN E-CHAIN 40W36	50A	208/230V	40W36.1	E-CHAIN JUNCTION BOX	DRYER FEED 2-L1	BRIDGE	38X08.1
			25A	460V	40W36.2		DRYER FEED 2-L2		38X09.1
			20A	575V	40W36.3		DRYER FEED 2-L3		38X010.1
					40W36.G/Y		DRYER FEED GND		44X06.1

Table 8 - Bridge E-Chain Electrical Connections for 400 VAC 50 Hz Sites

BRIDGE CONTROL BOX CONNECTIONS 400 VAC 50 Hz									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Bridge High Voltage	STANDARD	SUPPLIED IN E-CHAIN 40W31	20A	400 VAC	40W31.1	E-CHAIN JUNCTION BOX	BRG PWR L1	BRIDGE	38X01.1
					40W31.2		BRG PWR L2		38X02.1
					40W31.3		BRG PWR L3		38X03.1
					40W31.4		BRG PWR N		38X04.1
					40W31.G/Y		BRG PWR GND		38X11.1
Bridge Low Voltage	STANDARD	SUPPLIED IN E-CHAIN 40W38	15A	24VAC	40W38.1	E-CHAIN JUNCTION BOX	BRG PHA	BRIDGE	45F06.1
					40W38.2		BRG PHB		46F05.1
					40W38.3		NEU		39X09.1
			3A		40W38.4		SYS		39X05.1
					40W38.G/Y		GND		39XGND.1
Network Communication	STANDARD	SUPPLIED IN E-CHAIN ETHERNET	3A		40W35	E-CHAIN JUNCTION BOX	40N18.2	BRIDGE	48N15.J1
Integrated Dryer Feed #1 High Voltage	OPTIONAL	SUPPLIED IN E-CHAIN 40W33	20A	400 VAC	40W33.1	E-CHAIN JUNCTION BOX	DRYER FEED 1-L1	BRIDGE	38X05.1
					40W33.2		DRYER FEED 1-L2		38X06.1
					40W33.3		DRYER FEED 1-L3		38X07.1
					40W33.G/Y		DRYER FEED GND		43X06.1
Integrated Dryer Feed #2 High Voltage	OPTIONAL	SUPPLIED IN E-CHAIN 40W36	20A	400 VAC	40W36.1	E-CHAIN JUNCTION BOX	DRYER FEED 2-L1	BRIDGE	38X08.1
					40W36.2		DRYER FEED 2-L2		38X09.1
					40W36.3		DRYER FEED 2-L3		38X010.1
					40W36.G/Y		DRYER FEED GND		44X06.1

Table 9 - Bridge E-Chain Electrical Connections for 400 VAC 60 Hz Sites

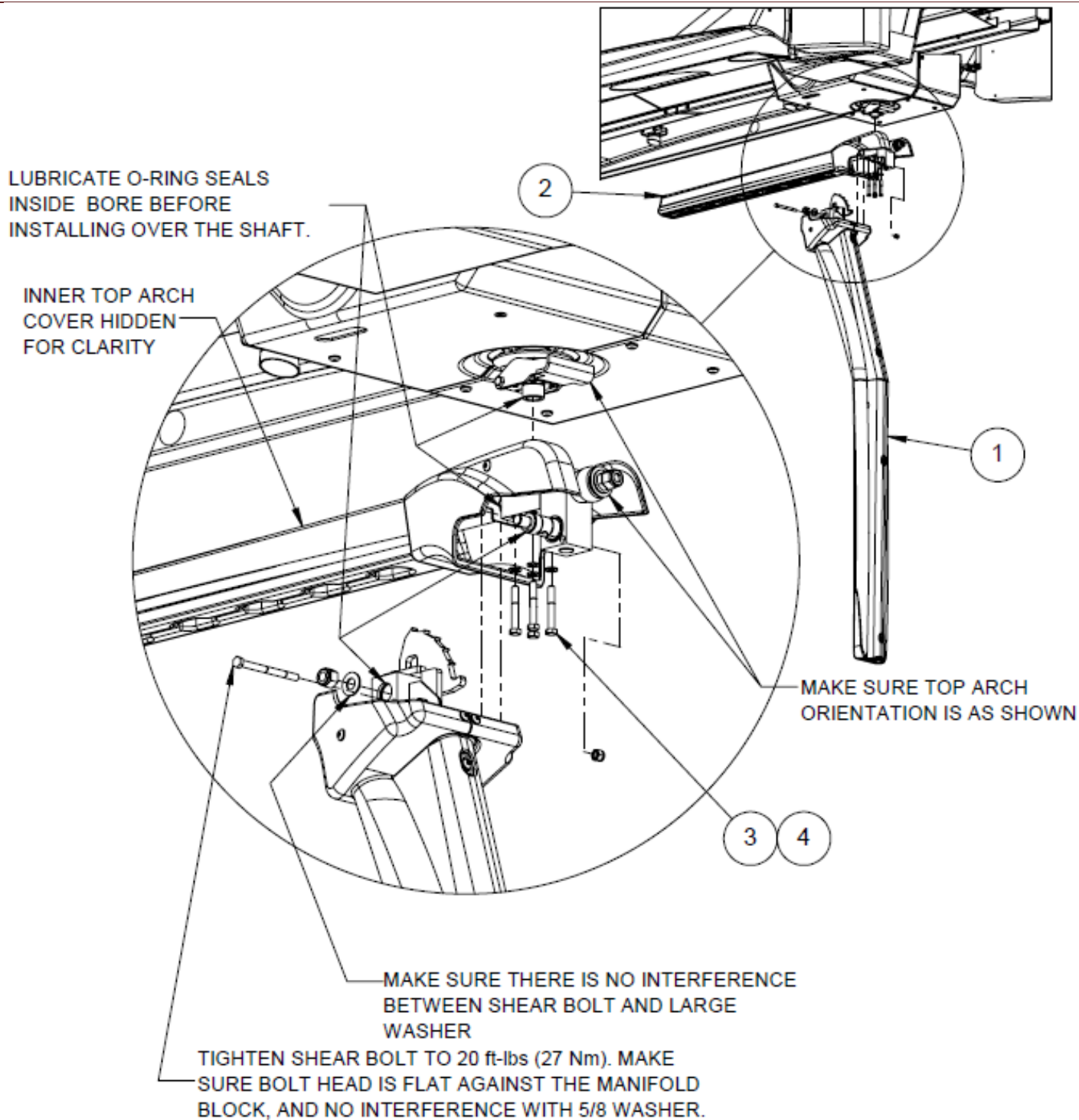
BRIDGE CONTROL BOX CONNECTIONS 400 VAC 60 Hz									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Bridge High Voltage	STANDARD	SUPPLIED IN E-CHAIN 40W31	20A	400 VAC	40W31.1	E-CHAIN JUNCTION BOX	BRG PWR L1	BRIDGE	38X01.1
					40W31.2		BRG PWR L2		38X02.1
					40W31.3		BRG PWR L3		38X03.1
					40W31.4		BRG PWR N		38X04.1
					40W31.G/Y		BRG PWR GND		38X11.1
Bridge Low Voltage	STANDARD	SUPPLIED IN E-CHAIN 40W38	15A	24VAC	40W38.1	E-CHAIN JUNCTION BOX	BRG PHA	BRIDGE	45F06.1
					40W38.2		BRG PHB		46F05.1
					40W38.3		NEU		39X09.1
			3A		40W38.4		SYS		39X05.1
					40W38.G/Y		GND		39XGND.1
Network Communication	STANDARD	SUPPLIED IN E-CHAIN ETHERNET	3A		40W35	E-CHAIN JUNCTION BOX	40N18.2	BRIDGE	48N15.J1
Integrated Dryer Feed #1 High Voltage	OPTIONAL	SUPPLIED IN E-CHAIN 40W33	30A	400 VAC	40W33.1	E-CHAIN JUNCTION BOX	DRYER FEED 1-L1	BRIDGE	38X05.1
					40W33.2		DRYER FEED 1-L2		38X06.1
					40W33.3		DRYER FEED 1-L3		38X07.1
					40W33.G/Y		DRYER FEED GND		43X06.1
Integrated Dryer Feed #2 High Voltage	OPTIONAL	SUPPLIED IN E-CHAIN 40W36	30A	400 VAC	40W36.1	E-CHAIN JUNCTION BOX	DRYER FEED 2-L1	BRIDGE	38X08.1
					40W36.2		DRYER FEED 2-L2		38X09.1
					40W36.3		DRYER FEED 2-L3		38X010.1
					40W36.G/Y		DRYER FEED GND		44X06.1

4.15 Install and Adjust Spray Arch

The LaserWash 360 Plus spray arch is shipped separate from the bridge and must be connected to the trolley. Install the spray arch as shown in Figure 83.

- 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 in Figure 83. 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.



ITEM	PART #	DESCRIPTION
1	11130032	ARCH,SPRAY,SIDE,LW
2	11130033	ARCH,SPRAY,TOP,LW
3	70186-HCS	SCREW,3/8-16x2.50,HHCS,SST
4	71513-LS	WASHER,3/8,LOCK,SST

Figure 83 - Install the Spray Arch to the Trolley

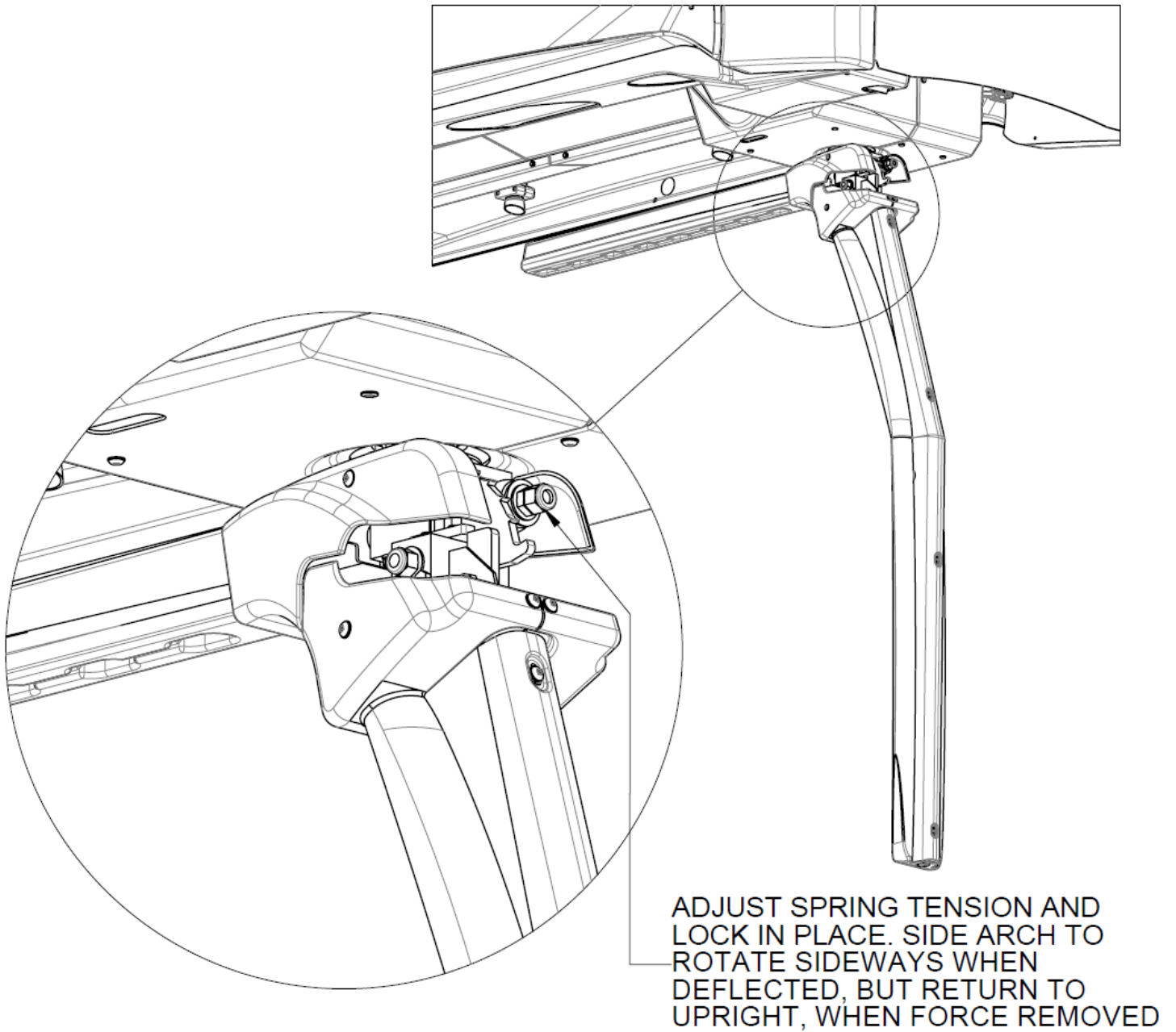


Figure 84 - Side Arch Assembled

4.16 Relocate the Trolley End Stops (for Narrow Wash Bays)

The LaserWash 360 Plus 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 in the wash bay to use this full travel without the spray arch colliding. 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 85 for direction on moving the trolley end stops. With the LaserWash 360 Plus 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.

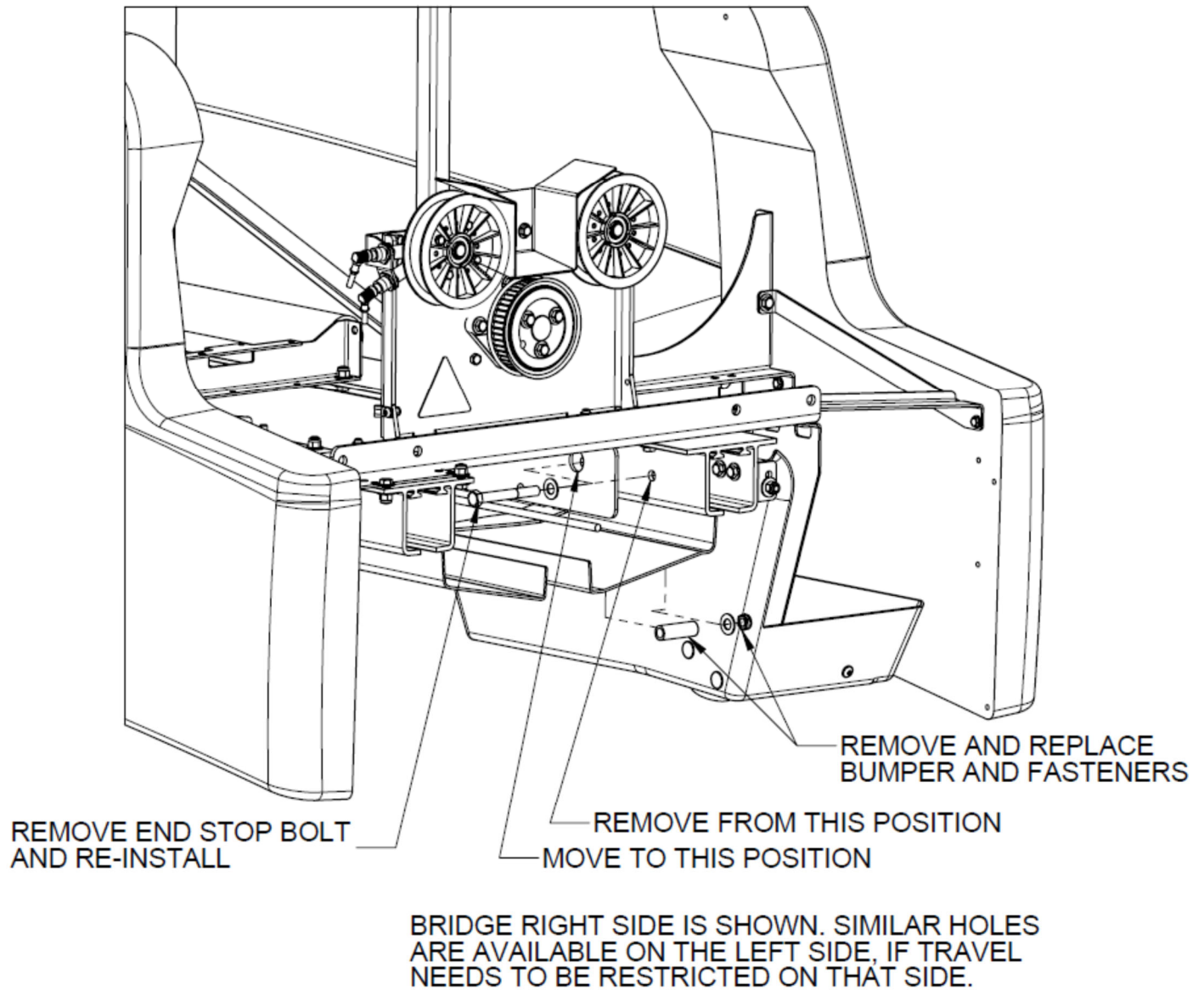


Figure 85 - Relocate the Trolley End Stop

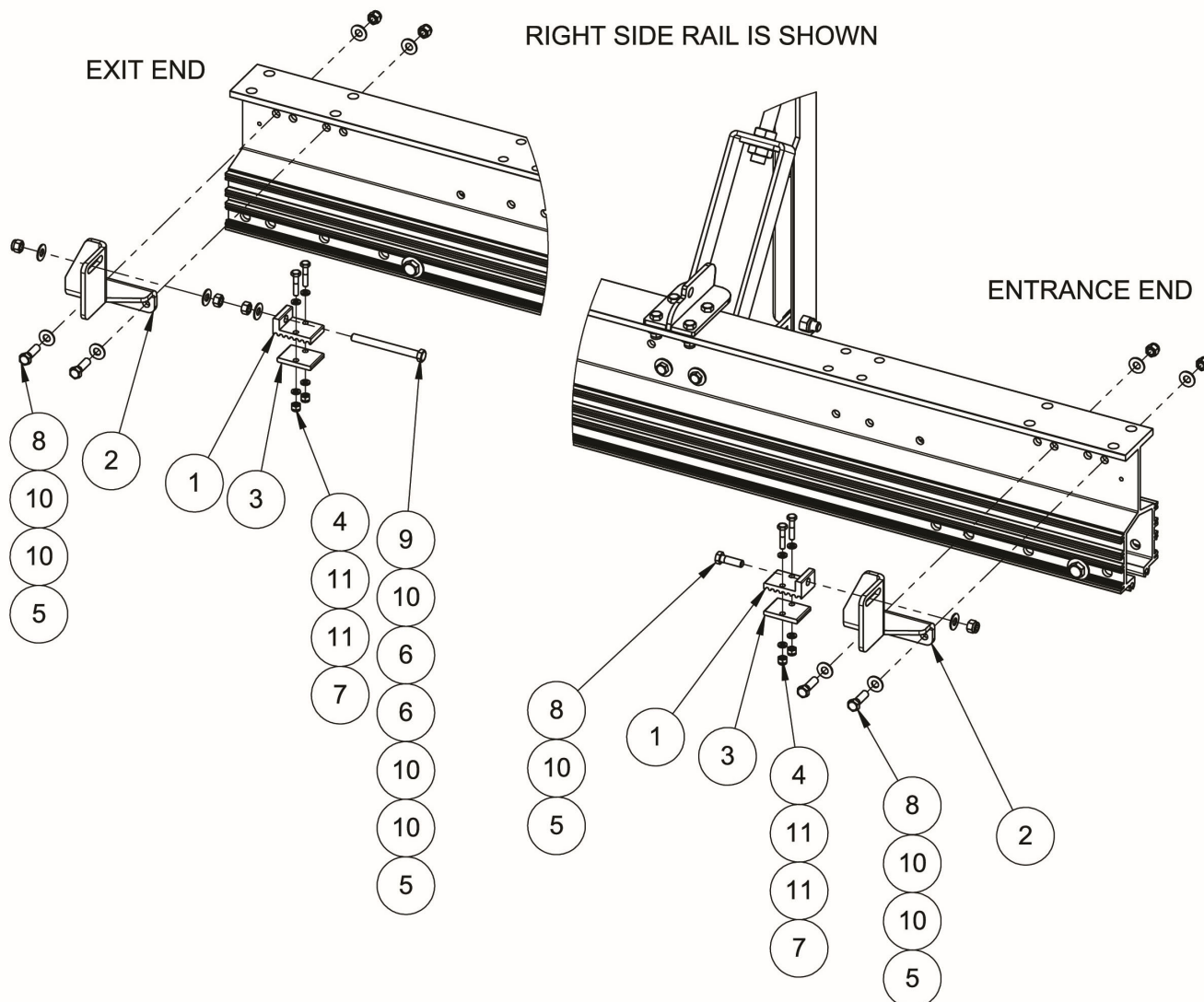
4.17 Install the Bridge Drive Belt

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

4.17 Step 1 Install Bridge Drive Belt Tension Bracket

Prior to installing the bridge drive belt, make sure to 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 as shown in Figure 86. The 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.



ITEM	QTY.	PART #	DESCRIPTION
1	2	06340042	BLOCK,BELT-RETAINER,8mmPITCH,20mmWIDE
2	2	06140937	BRACKET,BELT-TENSIONING,BRIDGE,LW/TANDEM
3	2	06160473	COVER,BELT,RETAINER,MAX20mmWIDTH
4	4	71011-NCS	NUT,1/4-20,HEX,LOCK,SST
5	6	71013-NCS	NUT,3/8-16,HEX,LOCK,SST
6	2	71013-HCS	NUT,3/8-16,HEX,SST
7	4	70111-HCS	SCREW,1/4-20x1.25,HHCS,SST
8	5	70181-HCS	SCREW,3/8-16x1.25,HHCS,SST
9	1	05040265	SCREW,3/8-16x4.00,HHCS,FULL-THD,SST
10	12	05030067	WASHER,3/8,FLAT,7/8-OD,.050THK,SST
11	8	05030016	WASHER,M6,FLAT,SST

Figure 86 - Bridge Drive Belt Tension Bracket Installation

4.17 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 (see 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 (see 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.

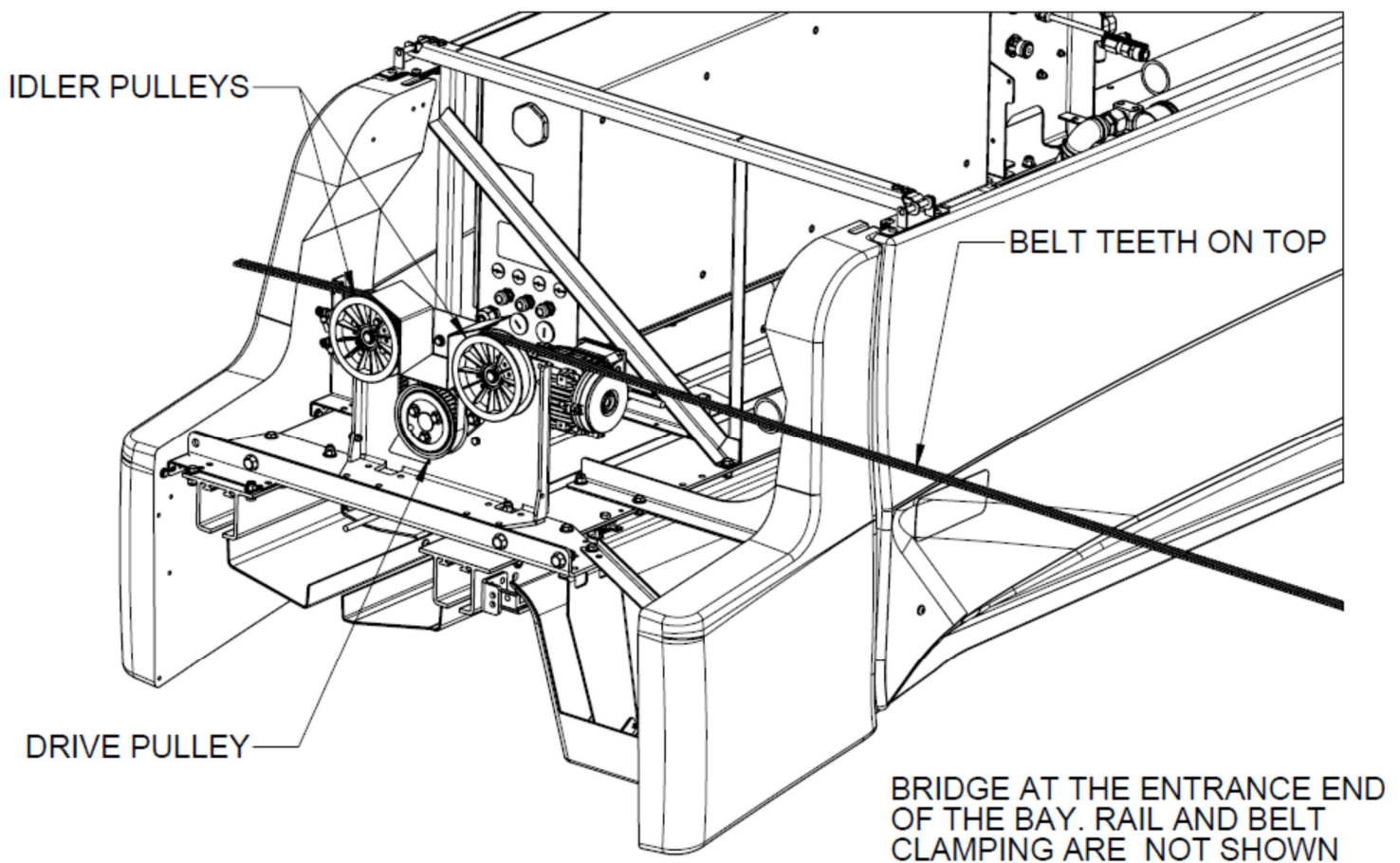


Figure 87 – Bridge Drive Belt Routing

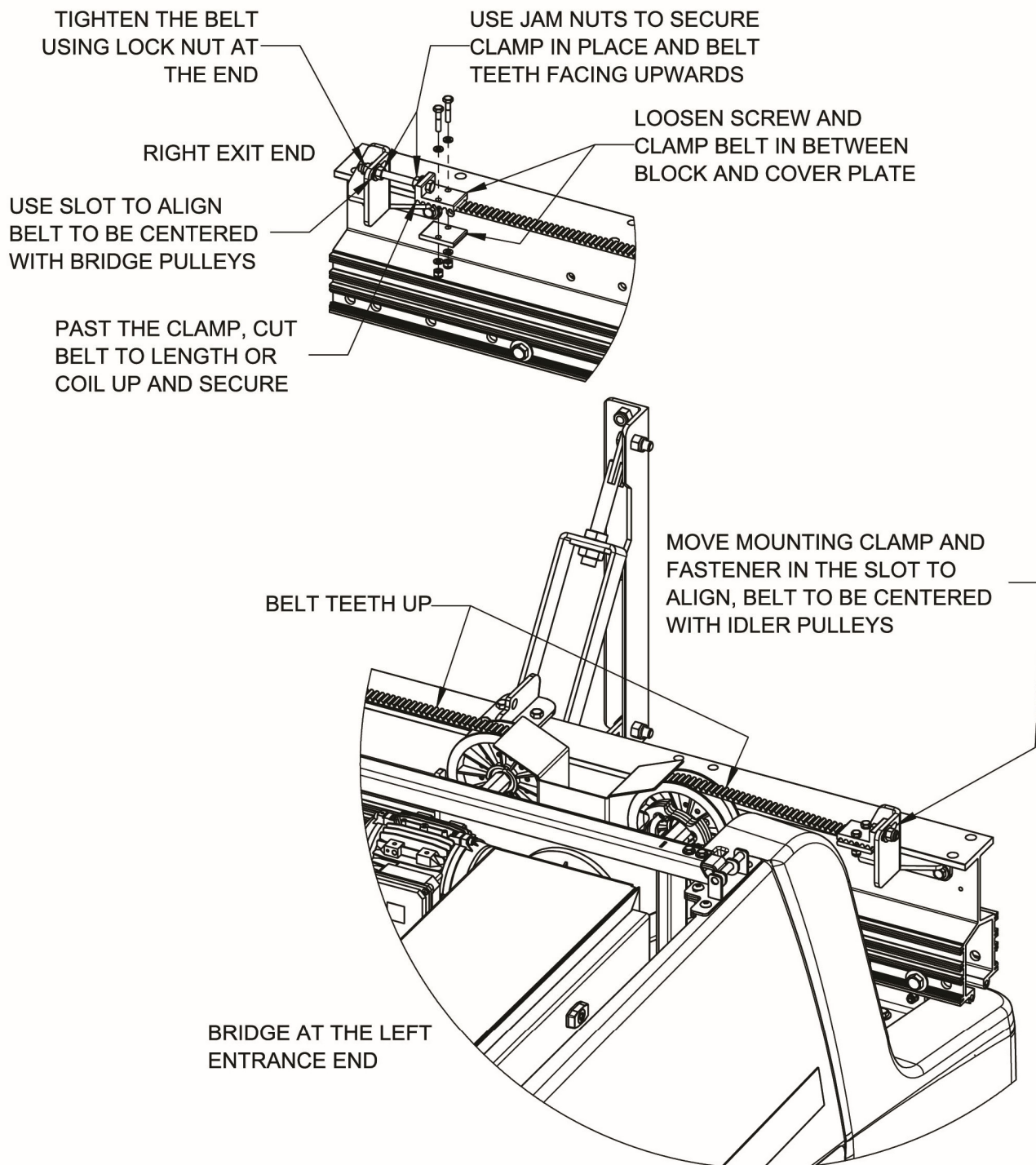


Figure 88 - Connect and Align Bridge Drive Belt at Both Ends

4.17 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.

!!!IMPORTANT!!	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.

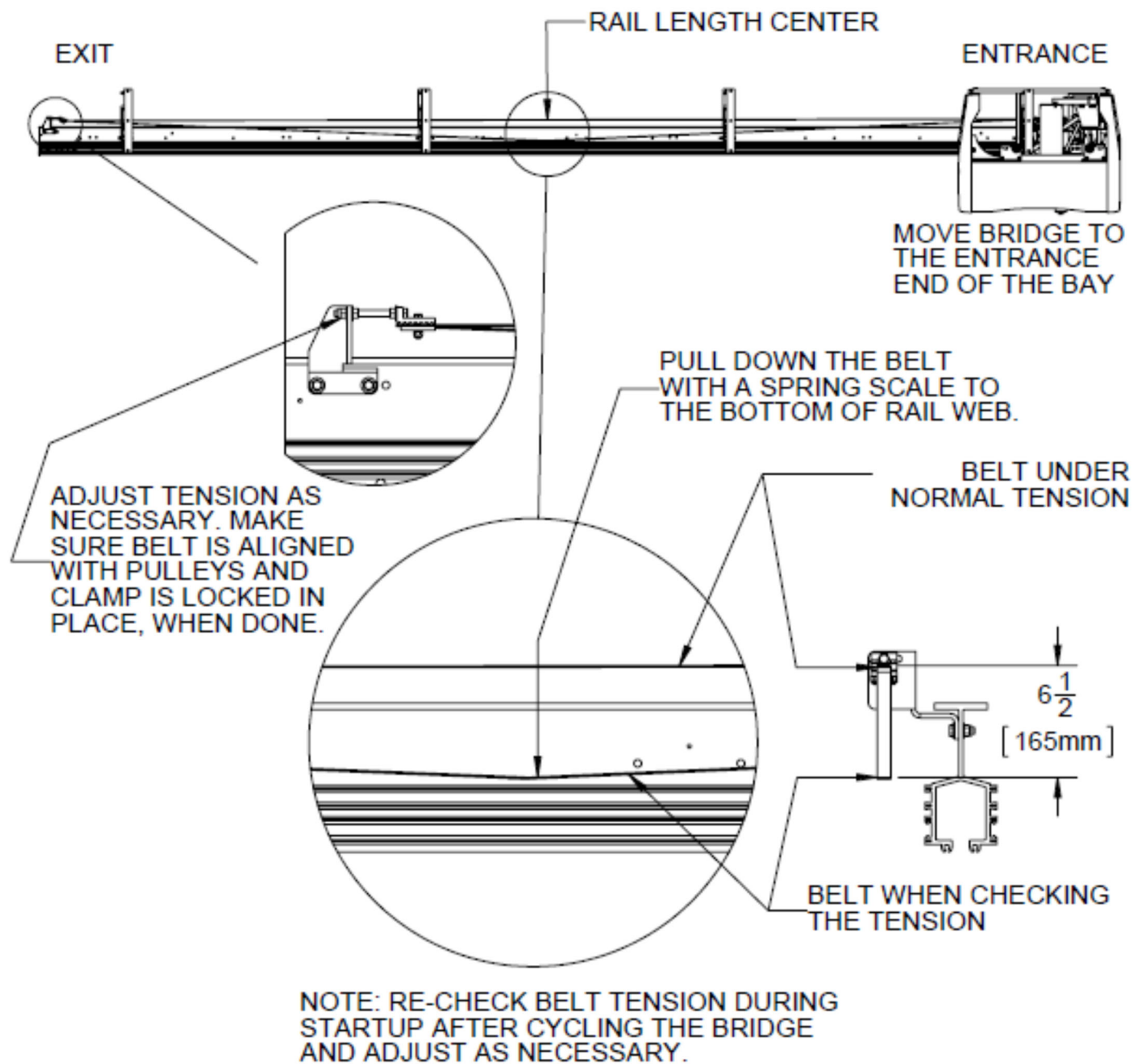


Figure 89 - Bridge Belt Tensioning

5 Pump Station

This section provides instructions for installing the LaserWash 360 Plus Pump Station. This includes Pump Station positioning and leveling, completing incoming and outgoing fluid connections, solution line connections, and electrical connections.

5.1 Key Factors to Consider

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

5.2 Key Installation Steps

- Remove pump station from shipping pallet and install rubber mounting feet.
- Position pump station in wash bay or equipment room 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.

5.3 Special Tools

- No specialized tools required for pump station installation.

5.4 PDQ Supplied Parts

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

5.5 Site Supplied Parts

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

5.6 Pump Station Installation

5.6 Step 1 Remove Pump Station from Shipping Pallet and Install Rubber Mounting Feet

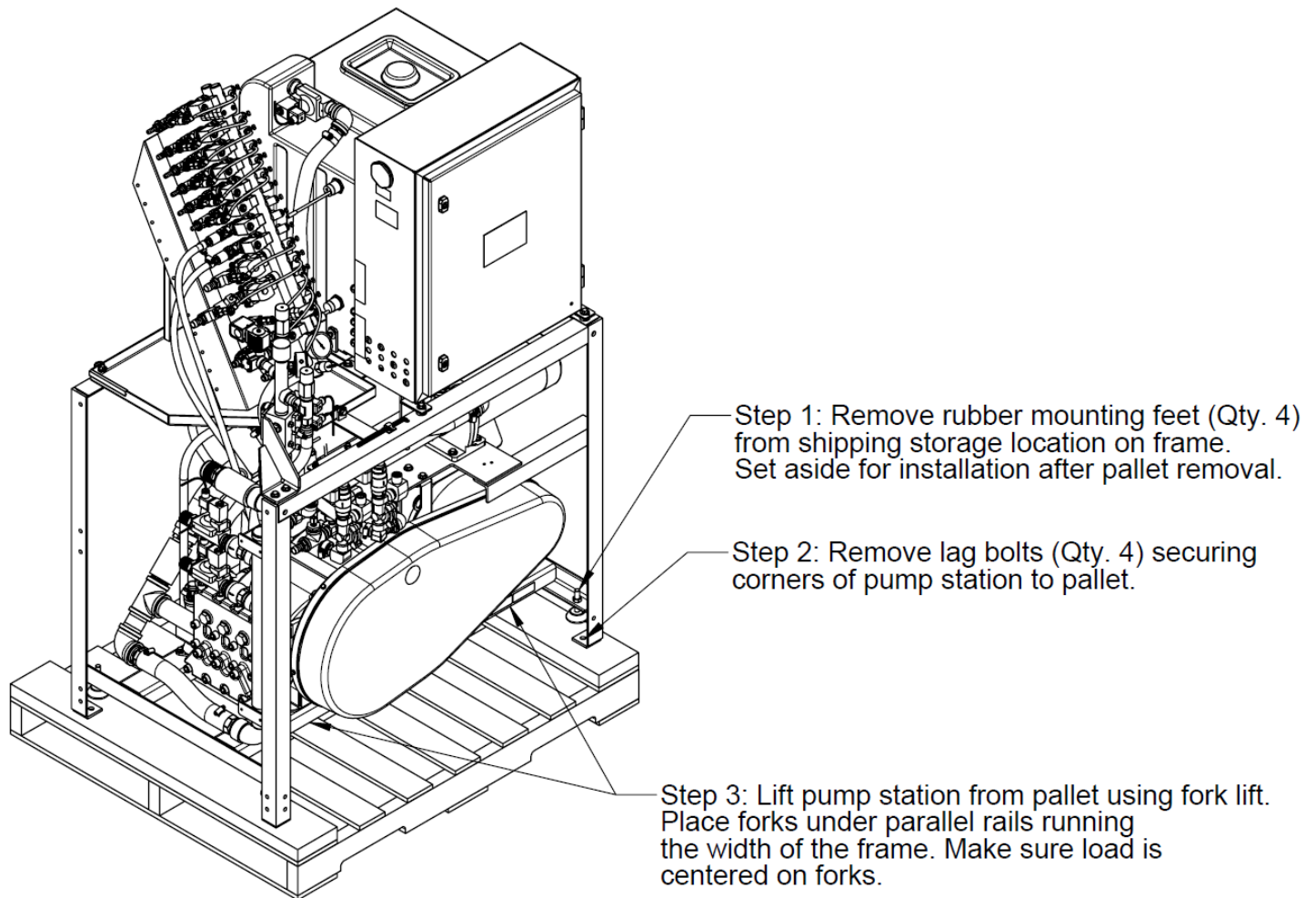


Figure 90 - Remove Pump Station from Pallet

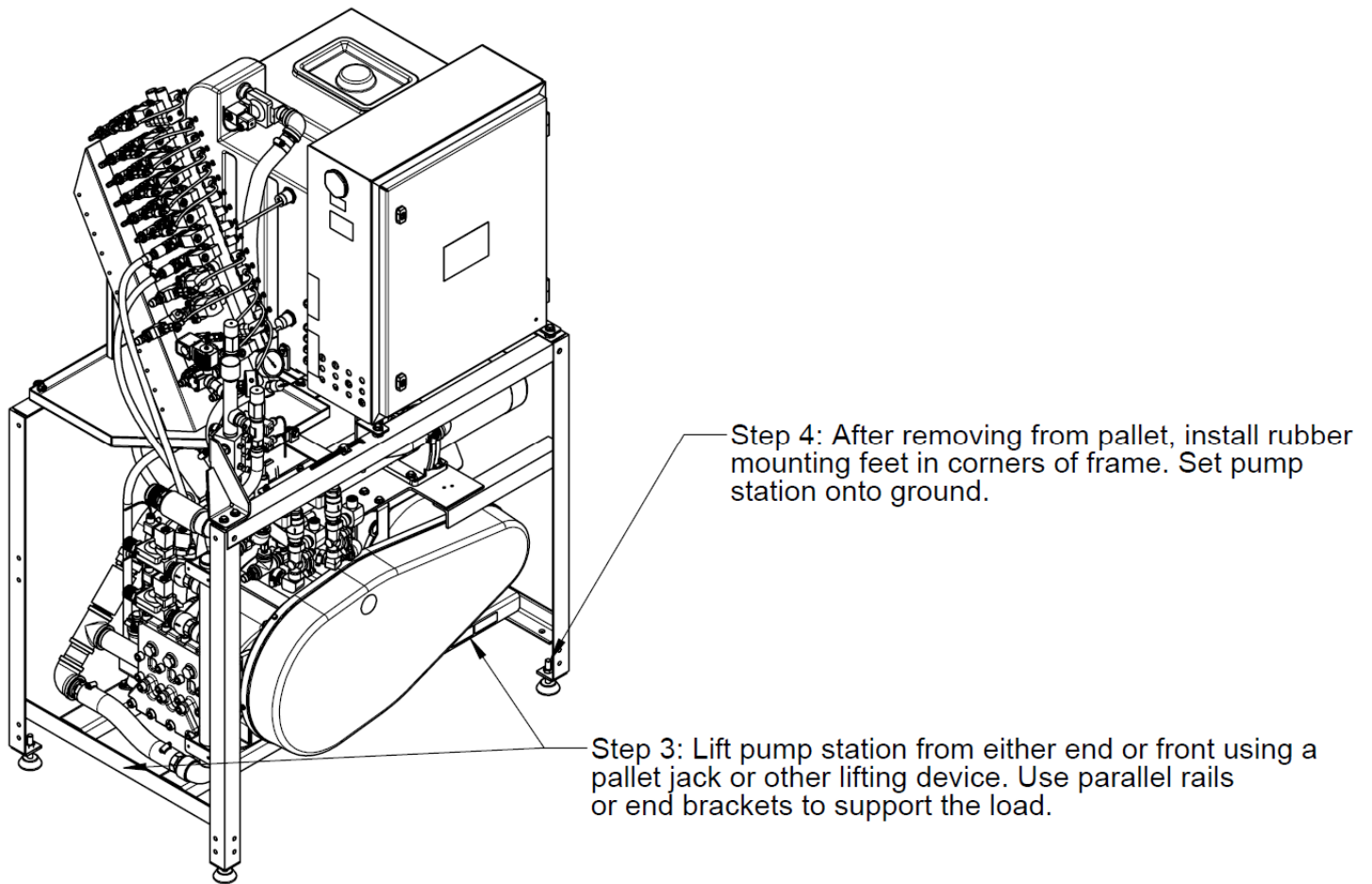


Figure 91 - Install Rubber Mounting Feet

5.6 Step 2 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 92. This will make for the shortest possible hose connections to the e-chain bulkhead.

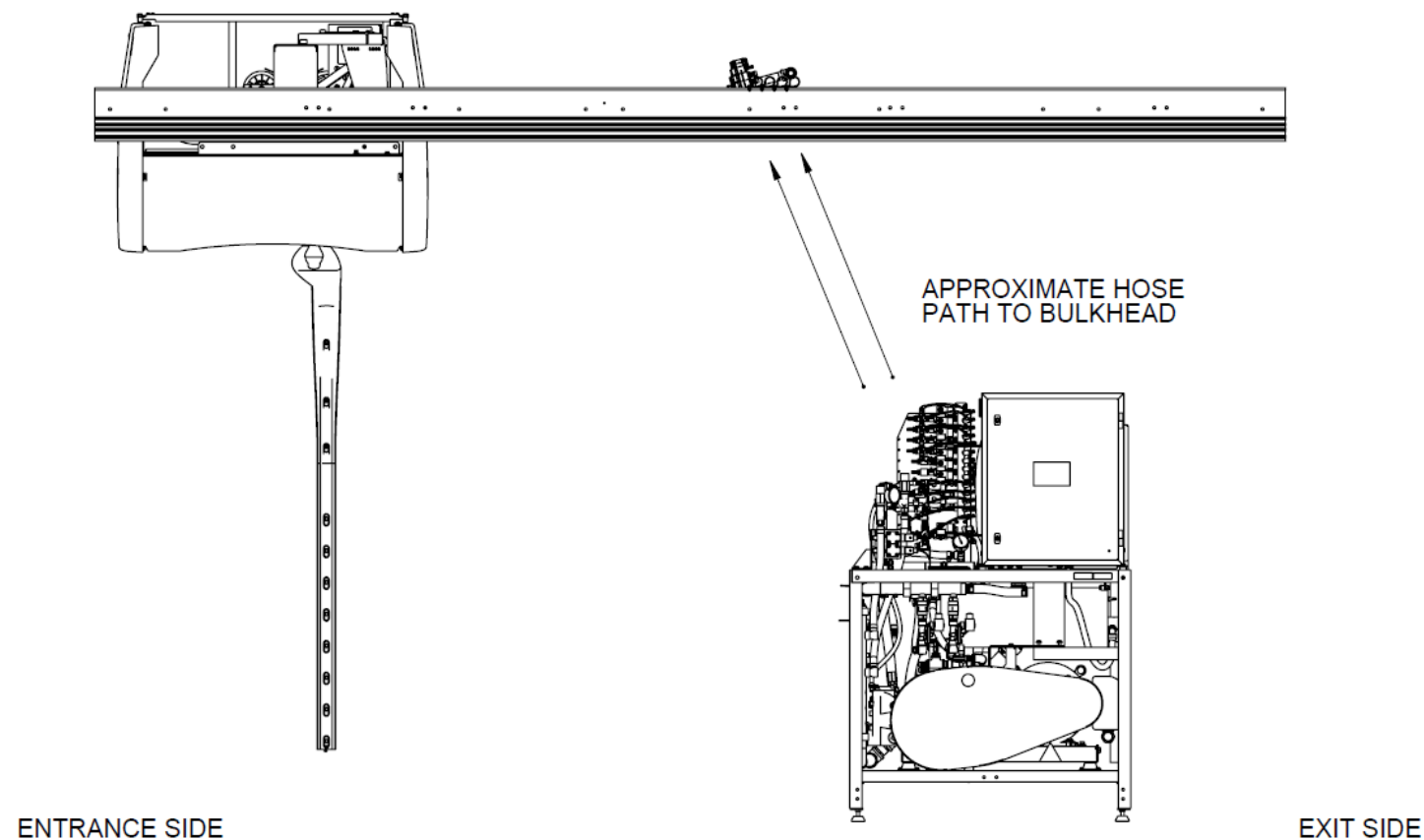
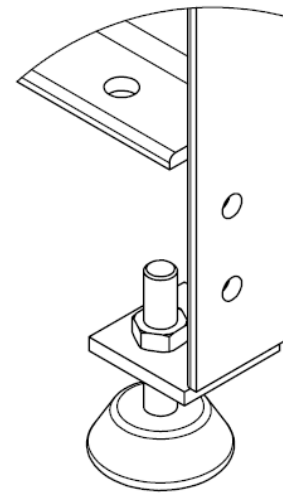
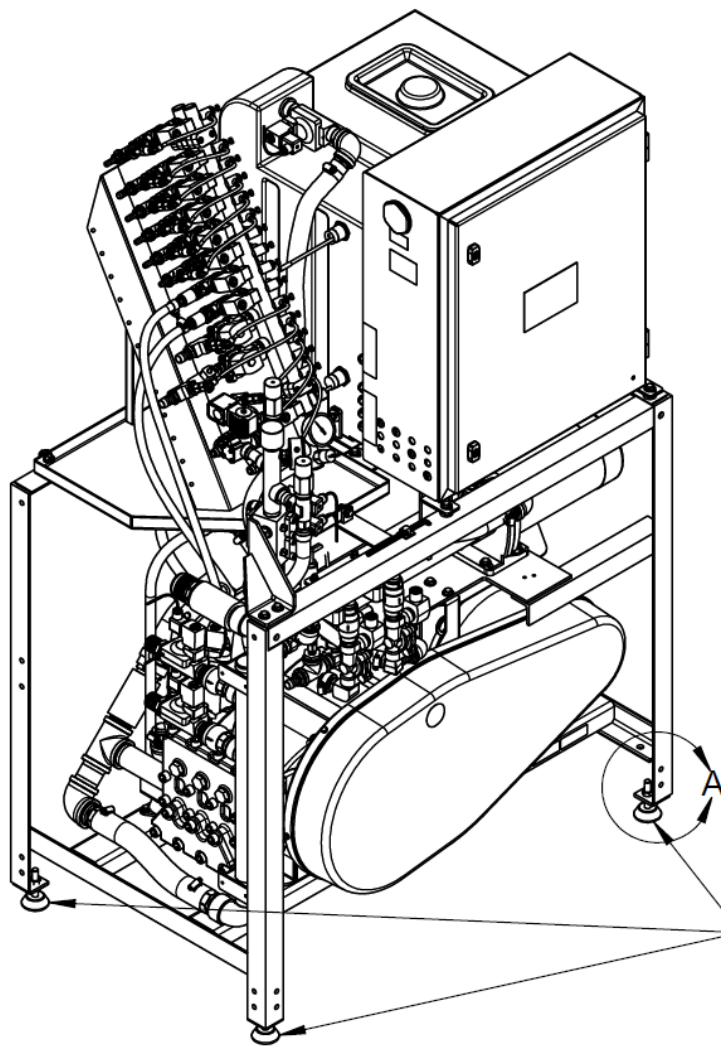


Figure 92 - Position of Pump Station

5.6 Step 3 Level the Pump Station**DETAIL A**

After positioning pump station, level side to side and front to back by adjusting nuts on rubber mounting feet.

Figure 93 - Level Pump Station by Adjusting Height of Rubber Mount Feet

5.6 Step 4 Connect the Incoming Water Lines

The standard LaserWash 360 Plus 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).

!!IMPORTANT!!

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.

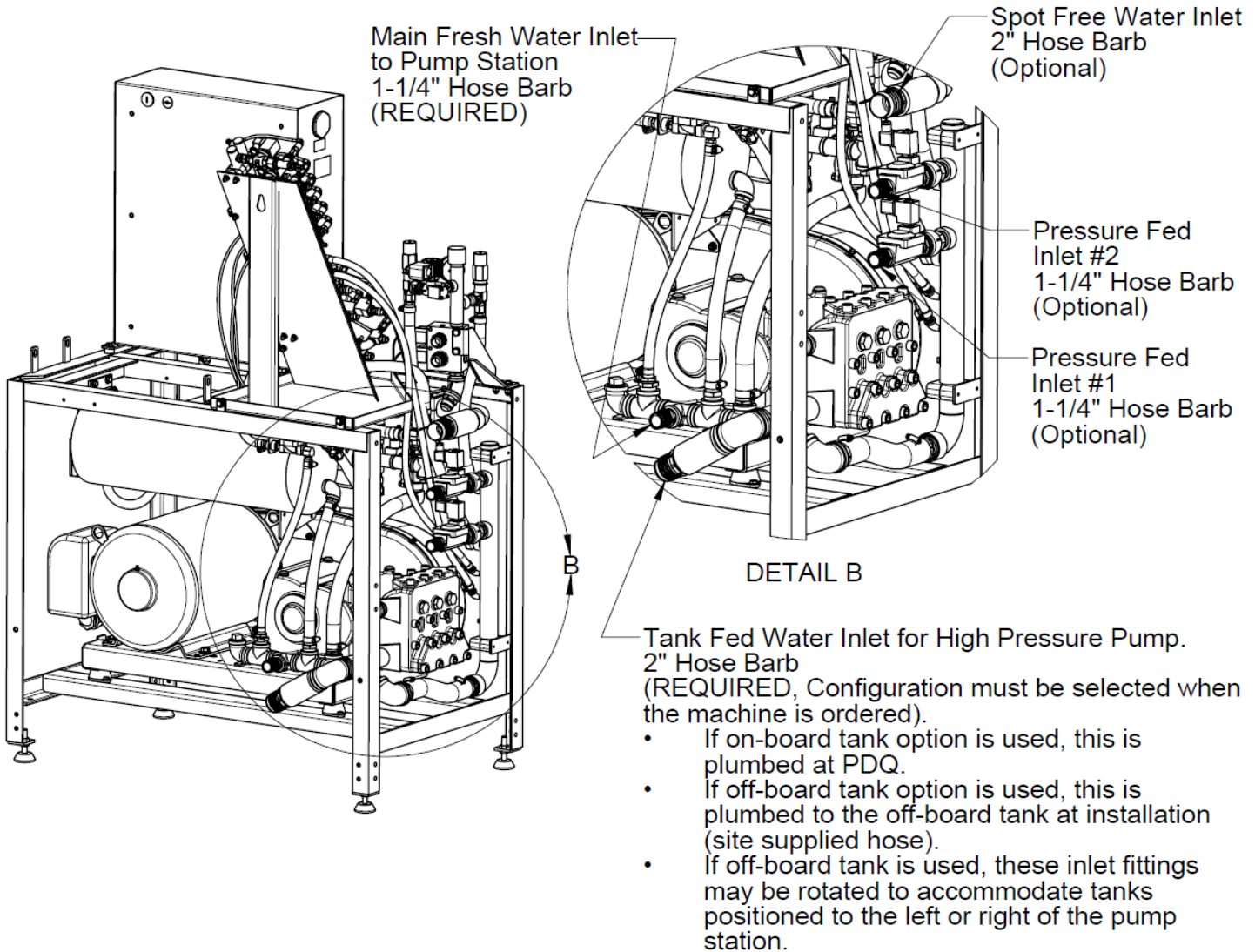


Figure 94 - Incoming Water Supplies to Pump Station (viewed from the rear of the pump station)

As an alternative when the onboard tank option is ordered, a non-softened site 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 94. 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 95 for the steps for converting the factory installed assembly and the requirements for the water supply.

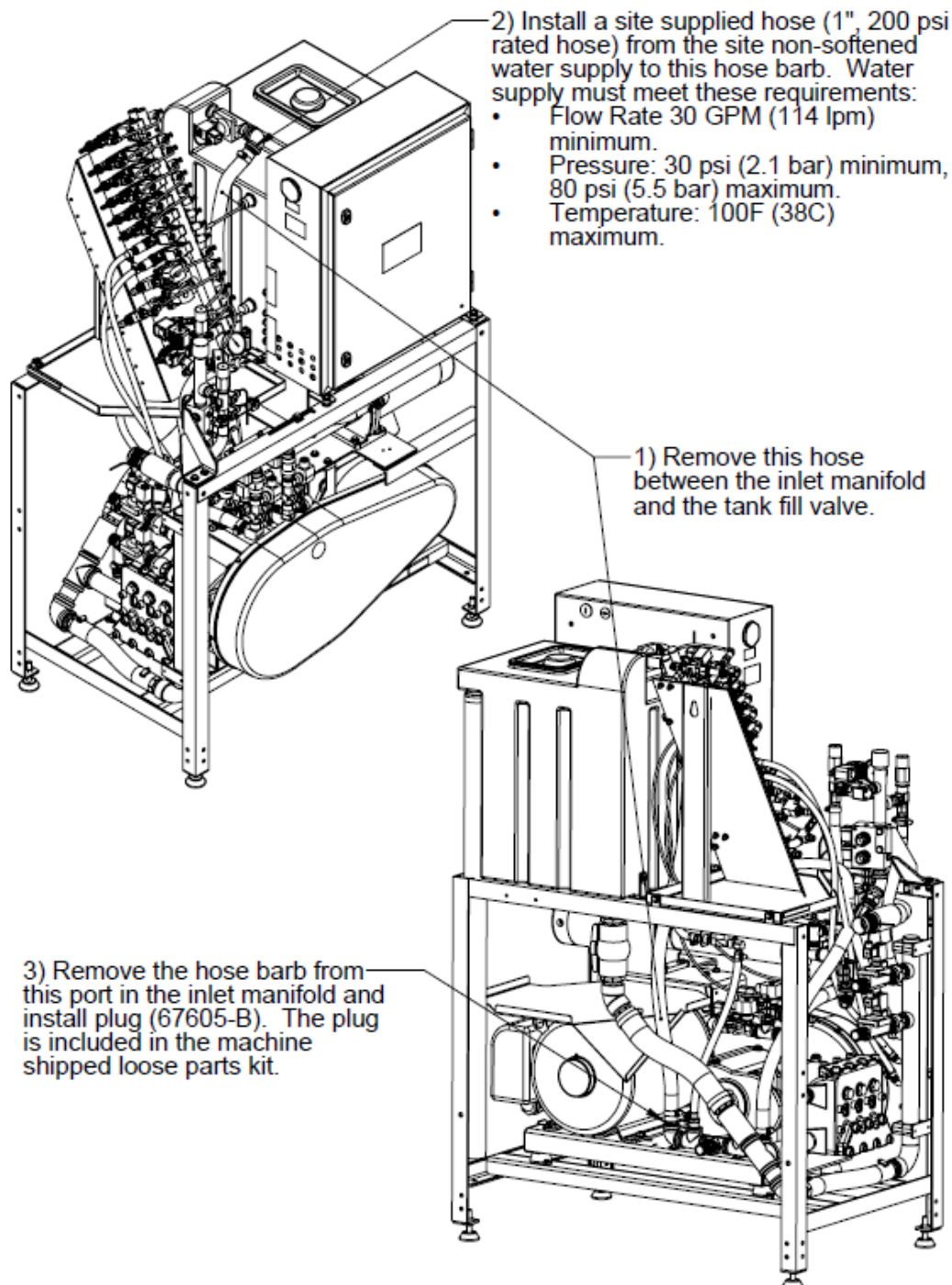


Figure 95 - Alternative On-Board Tank Feed Using Non-Softened Water

5.6 Step 5 Connect Outgoing Water Lines

Route the fluid lines from the LaserWash 360 Plus pump station to the bulkhead manifold installed on the main frame rail. Hoses and tubing for these lines are site supplied. See Figure 96 for a list of connection sizes between the pump station and the e-chain bulkhead. See Figure 97 for details regarding the outgoing spot free rinse connections to the bridge if those options are ordered. See Figure 98 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	N/A
Pump Solution #1	N/A
Overflow Purge	3/4" Hose
Overflow	3/4" Hose
3X Foaming Wax	3/8" Tube

- Secure all hoses as required to prevent them from rubbing against other components and sharp edges.
- Secure hoses to hose barbs with stainless steel hose clamps (provided by installer).
- All hoses are routed to the e-chain bulkhead except for Rust Inhibitor and Tire Chemical which are routed to the application manifolds located in the wash bay.

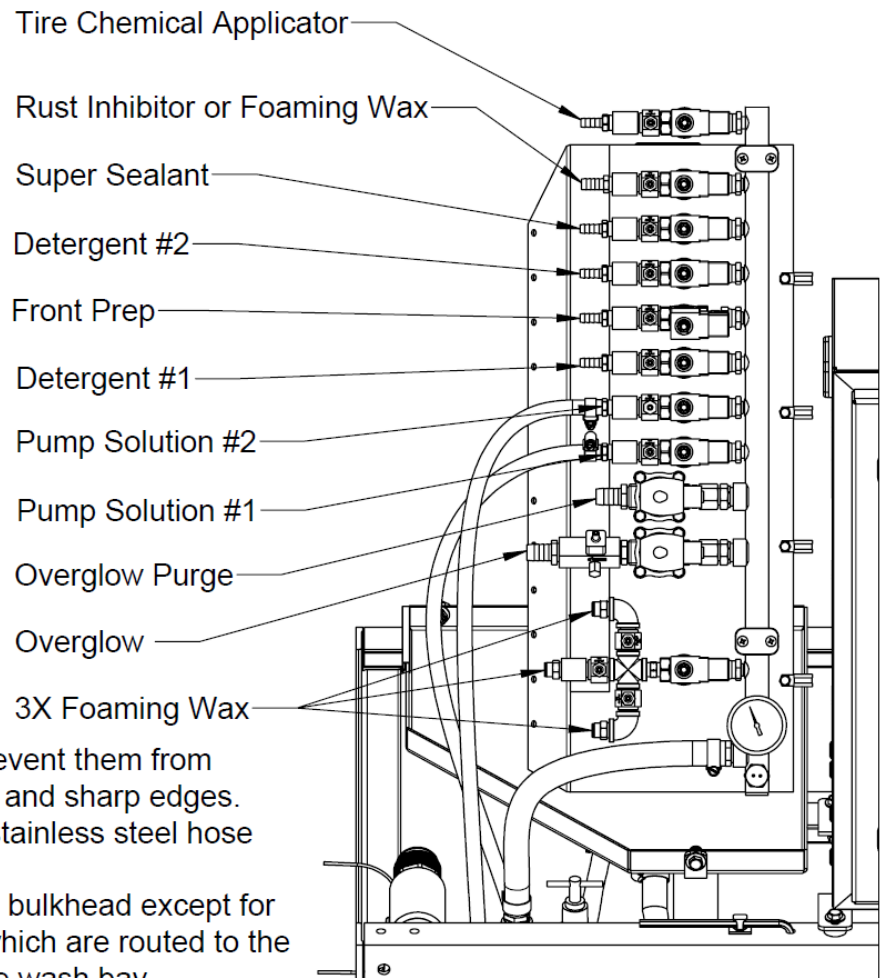


Figure 96 - Outgoing Hose Connections from Chemical Manifold

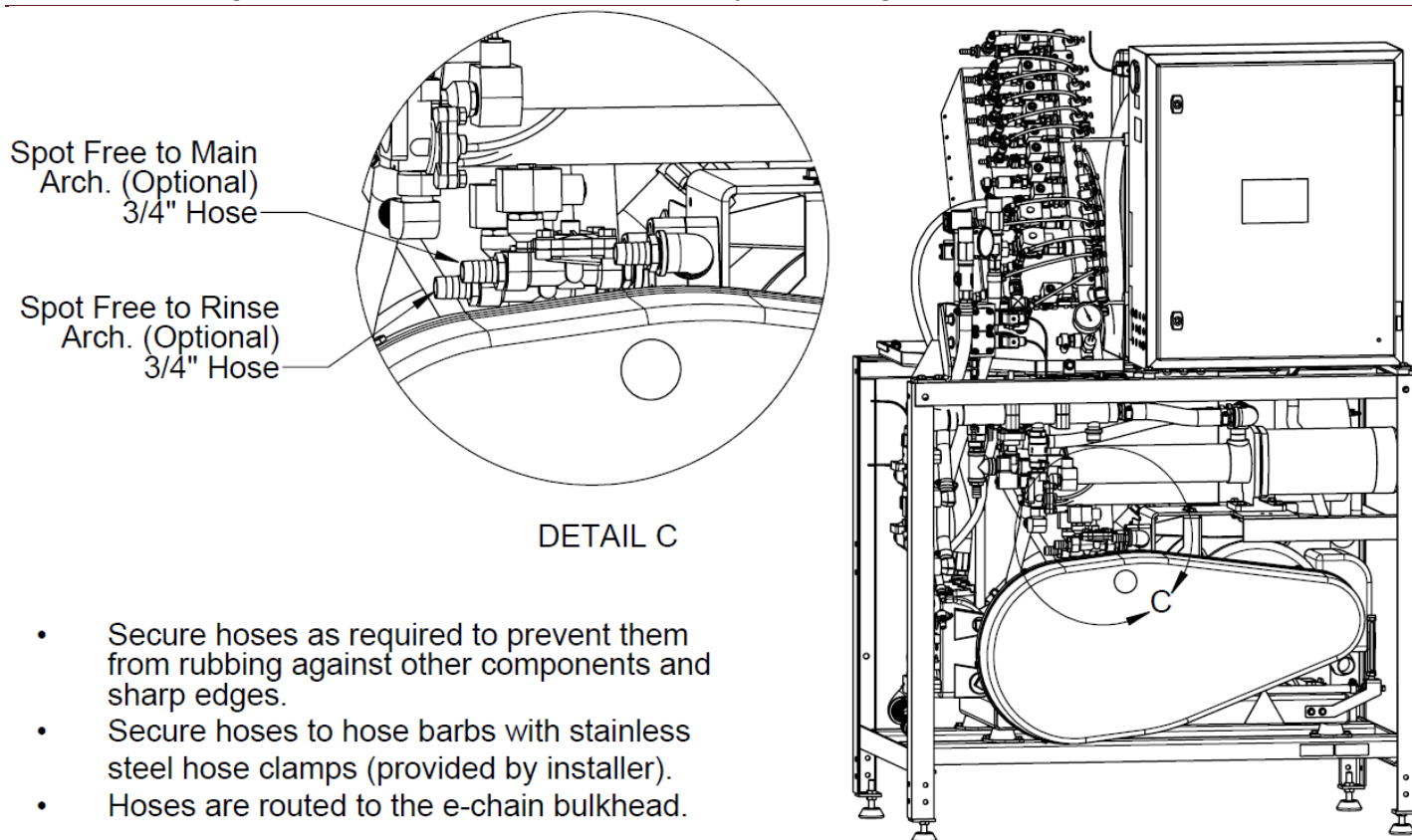


Figure 97 - Outgoing Spot Free Hose Connections

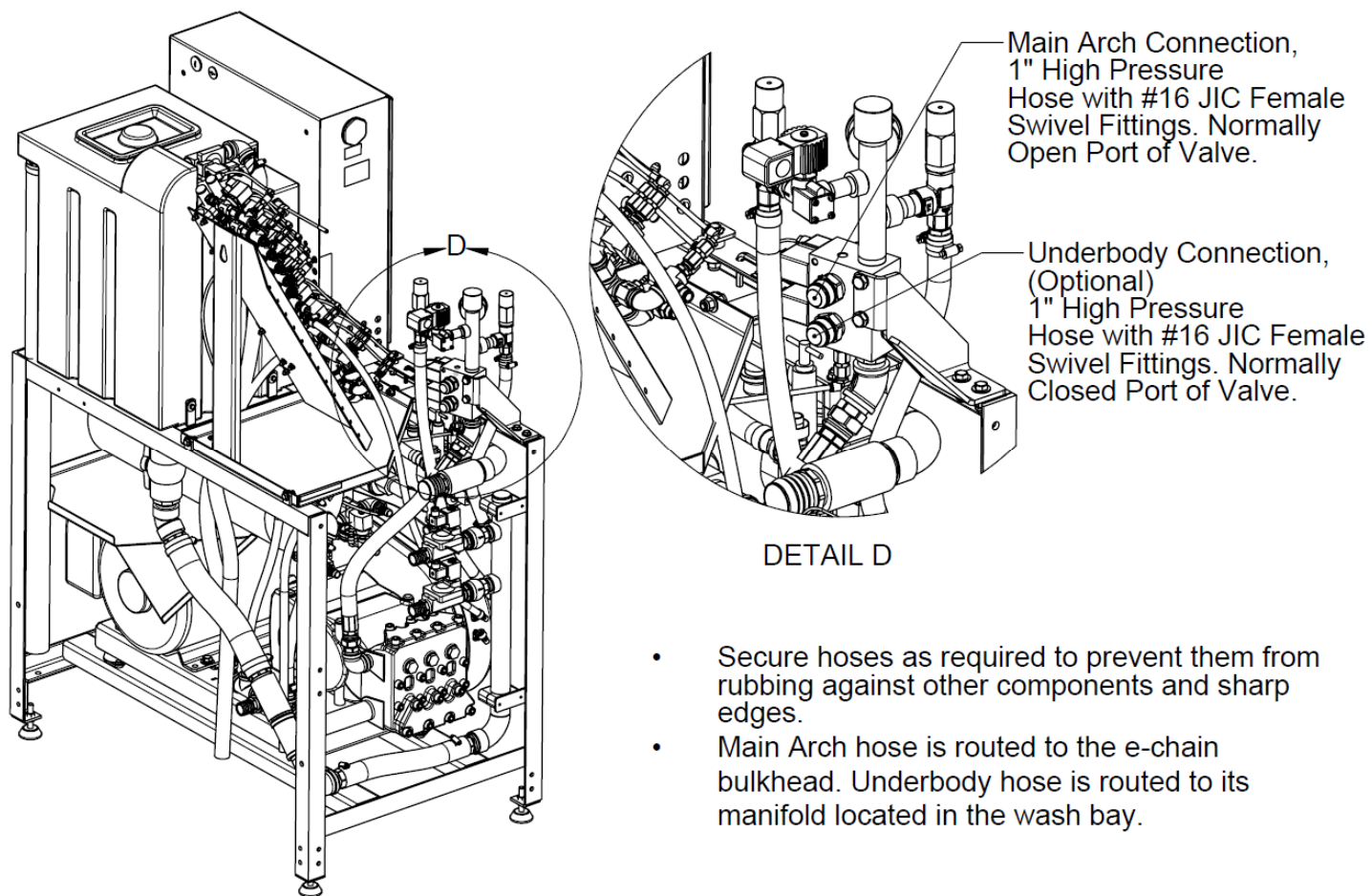


Figure 98 - Outgoing High Pressure Hose Connections

5.6 Step 6 Connect Solution Lines to Injectors

Locate the foot valve and clear tube assembly and metering tip kit supplied for each injector with the pump station. 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.

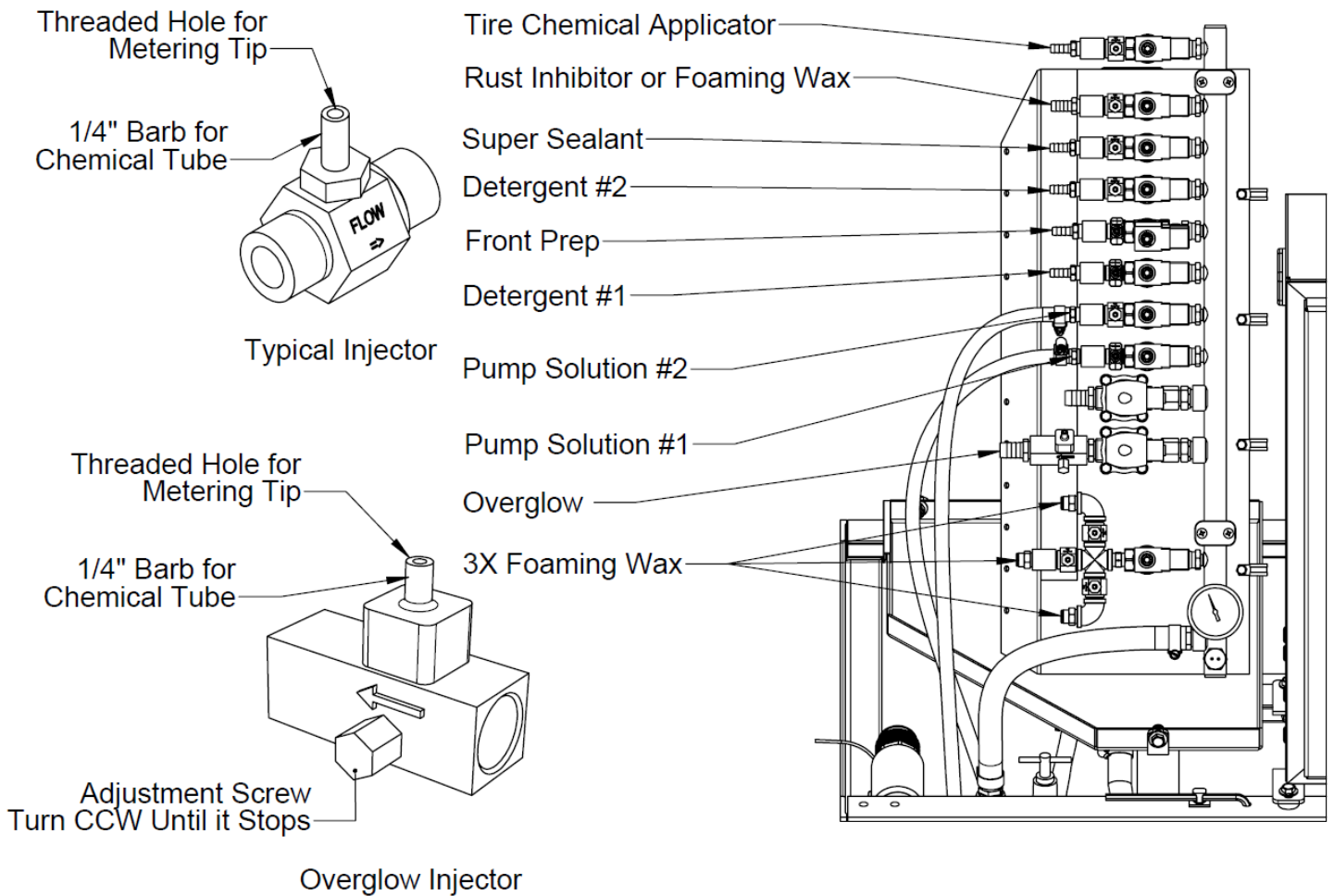


Figure 99 - Connect Solution Lines to Injectors

5.6 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 as part of the base machine. 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 uses 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 100 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.

Plugs and hose barbs can be swapped from high pressure manifold to low pressure manifold depending on site preference. After swapping components reroute the rubber hose to new hose barb location. By default all hoses will route to high pressure manifold from PDQ.

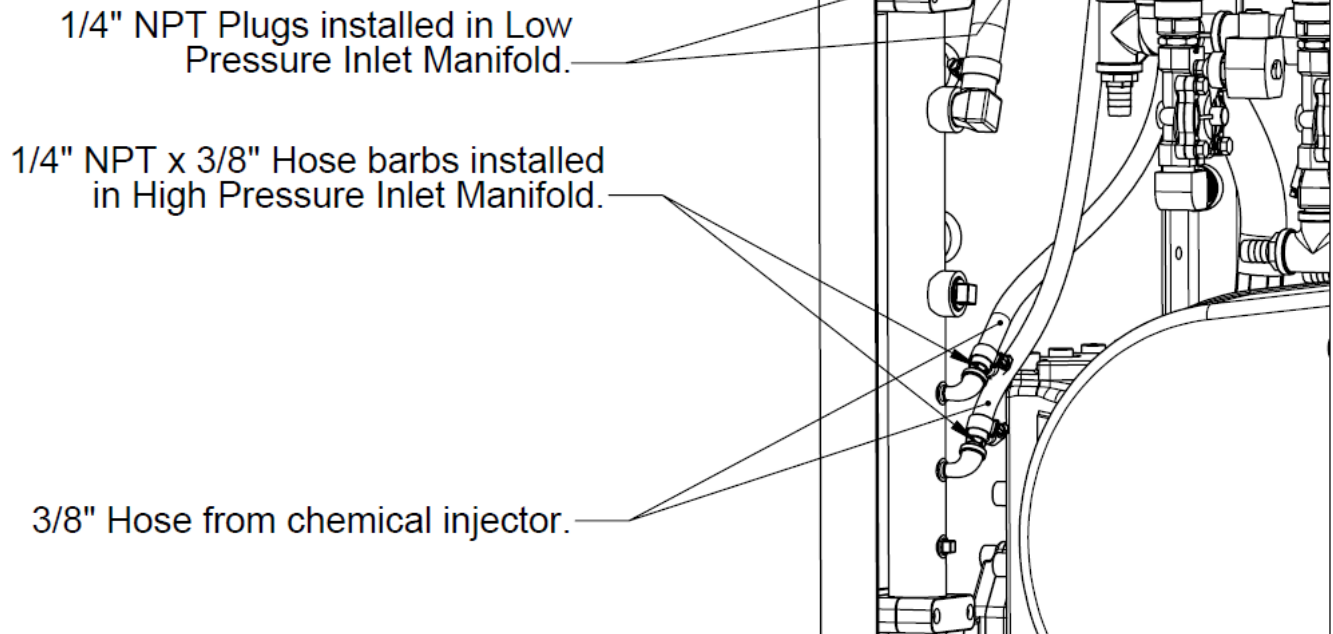


Figure 100 - Pump Solution Routing to High or Low Pressure Pumps

5.6 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 fresh water 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. See Figure 101 below.

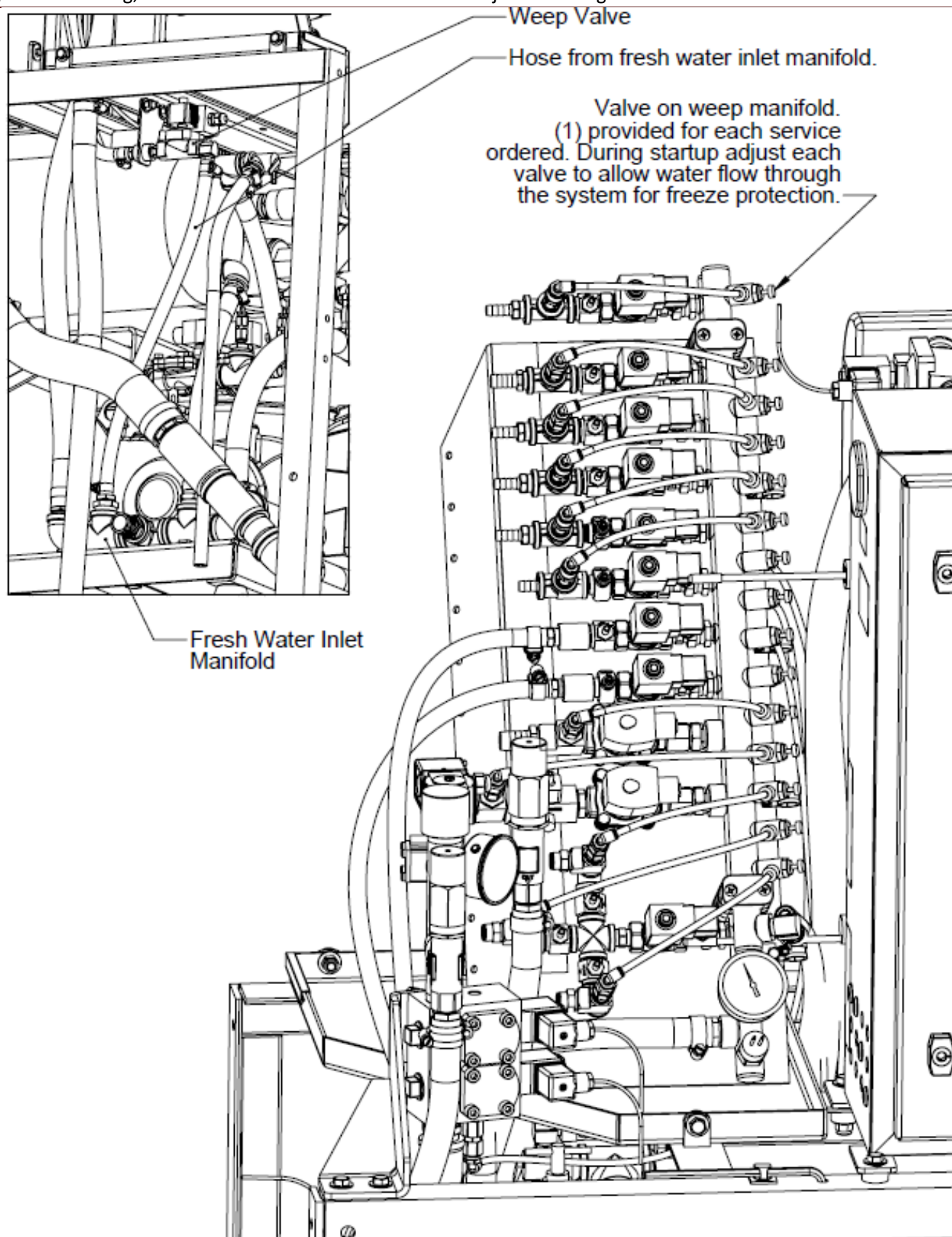


Figure 101 - Optional Weep System Pump Station Components

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 94). 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 102 for the steps for converting the factory installed assembly and the requirements for the water supply.

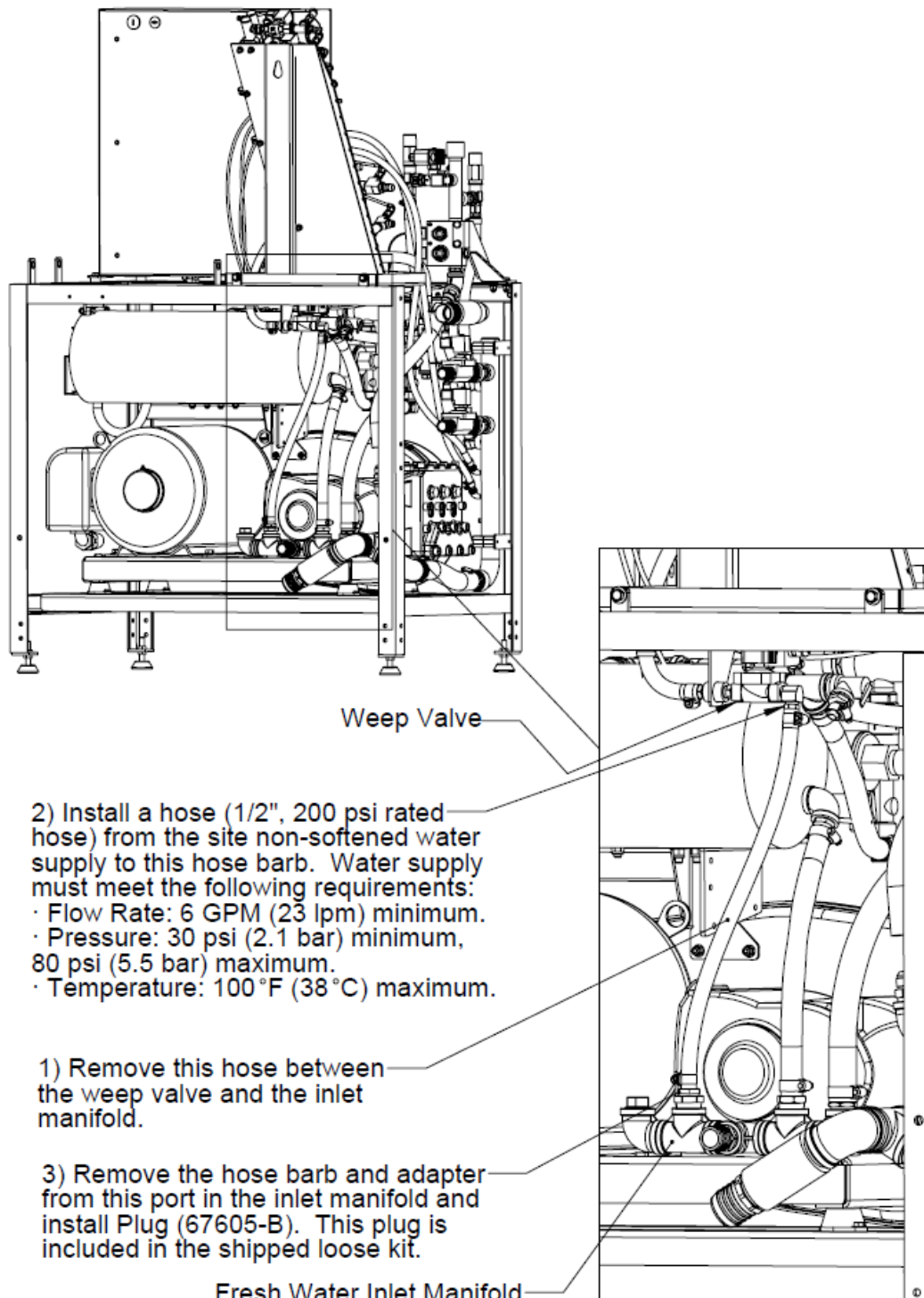


Figure 102 - Alternative Weep Water Feed Using Non-Softened Water

5.6 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.

Connect site power and perform interconnections as described below in Table 10 through Table 14. Terminal numbers are marked inside the applicable enclosure. Wire numbers coincide with numbers listed on the applicable schematic (Table 2) See Figure 103 and Figure 104 for routing locations.



POWER SOURCES – THIS PRODUCT SHOULD BE OPERATED ONLY FROM THE TYPE OF SOURCE INDICATED ON THE MANUFACTURER’S IDENTIFICATION LABEL. INSTALLATION SHOULD BE IN COMPLIANCE WITH APPLICABLE SECTIONS OF THE NATIONAL ELECTRIC CODE. CONSULT YOUR LOCAL BUILDING CODE BEFORE INSTALLING.

Table 10 - Pump Station Electrical Connections for 208V 60 Hz Sites

PUMP STATION 208 VAC 60 Hz CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Pump Station High Voltage	STANDARD	3 GA 75°C SITE SUPPLIED	105A	208 VAC	L1	SITE POWER PANEL	SITE	PUMP STATION	1X01.1
					L2		SITE		1X02.1
					L3		SITE		1X03.1
					GND		SITE		4X04.1
Bridge Low Voltage	STANDARD	14 GA 75°C SITE SUPPLIED	15A	24 VAC	8W05	E-CHAIN JUNCTION	BRG PHA	PUMP STATION	8F05.2
					9W05		BRG PHB		9F05.2
					10W05		NEU		3X21.3
					8W28		SYS		3X03.3
Bay Box Low Voltage	STANDARD	12 GA 75°C SITE SUPPLIED	12A	24 VAC	8W02	BAY BOX	18X01.4	PUMP STATION	8F02.2
					9W02		18X02.4		9F02.2
					10W02		18X03.4		3X21.4
					4W35		18X00.1		2X08.4
System Stop/System Reset	STANDARD	18 GA 75°C SITE SUPPLIED	3A	24 VAC 12VDC	8W22	SYSTEM STOP	8S37.1AC	PUMP STATION	3X02.3
					8W25		8S37.1DC		3X04.1
					8W40		8S37.2AC		3X03.1
					13W07		8S37.2DC		3X08.4
Pump Station Communication	STANDARD	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A	N/A	22W40	BAY BOX	22A13.P5	PUMP STATION	12N12.J1
Water Heater	OPTIONAL	8 GA 75°C SITE SUPPLIED	35A	208 VAC	L1	SITE POWER PANEL	SITE	PUMP STATION	1X04.2
					L2		SITE		1X05.2
					L3		SITE		1X06.2
					GND		SITE		2X08.5

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

Table 11 - Pump Station Electrical Connections for 230V 60 Hz Sites

PUMP STATION 230 VAC 60 Hz CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Pump Station High Voltage	STANDARD	3 GA 75°C SITE SUPPLIED	100A	230 VAC	L1	SITE POWER PANEL	SITE	PUMP STATION	1X01.1
					L2		SITE		1X02.1
					L3		SITE		1X03.1
					GND		SITE		4X04.1
Bridge Low Voltage	STANDARD	14 GA 75°C SITE SUPPLIED	15A	24 VAC	8W05	E-CHAIN JUNCTION	BRG PHA	PUMP STATION	8F05.2
					9W05		BRG PHB		9F05.2
					10W05		NEU		3X21.3
					8W28		SYS		3X03.3
Bay Box Low Voltage	STANDARD	12 GA 75°C SITE SUPPLIED	12A	24 VAC	8W02	BAY BOX	18X01.4	PUMP STATION	8F02.2
					9W02		18X02.4		9F02.2
					10W02		18X03.4		3X21.4
					4W35		18X00.1		2X08.4
System Stop/System Reset	STANDARD	18 GA 75°C SITE SUPPLIED	3A	24 VAC 12VDC	8W22	SYSTEM STOP	8S37.1AC	PUMP STATION	3X02.3
					8W25		8S37.1DC		3X04.1
					8W40		8S37.2AC		3X03.1
					13W07		8S37.2DC		3X08.4
Pump Station Communication	STANDARD	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A	N/A	22W40	BAY BOX	22A13.P5	PUMP STATION	12N12.J1
Water Heater	OPTIONAL	8 GA 75°C SITE SUPPLIED	35A	230 VAC	L1	SITE POWER PANEL	SITE	PUMP STATION	1X04.2
					L2		SITE		1X05.2
					L3		SITE		1X06.2
					GND		SITE		2X08.5

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

Table 12 - Pump Station Electrical Connections for 400V Sites

PUMP STATION 400 VAC 50 or 60 Hz CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Pump Station High Voltage	STANDARD	4 GA 75°C SITE SUPPLIED	60A	400 VAC	L1	SITE POWER PANEL	SITE	PUMP STATION	1X01.1
					L2		SITE		1X02.1
					L3		SITE		1X03.1
					N				1X07.1
					GND		SITE		4X04.1
Bridge Low Voltage	STANDARD	14 GA 75°C SITE SUPPLIED	15A	24 VAC	8W05	E-CHAIN JUNCTION	BRG PHA	PUMP STATION	8F05.2
					9W05		BRG PHB		9F05.2
					10W05		NEU		3X21.3
					8W28		SYS		3X03.3
Bay Box Low Voltage	STANDARD	12 GA 75°C SITE SUPPLIED	12A	24 VAC	8W02	BAY BOX	18X01.4	PUMP STATION	8F02.2
					9W02		18X02.4		9F02.2
					10W02		18X03.4		3X21.4
					4W35		18X00.1		2X08.4
System Stop/System Reset	STANDARD	18 GA 75°C SITE SUPPLIED	3A	24 VAC 12VDC	8W22	SYSTEM STOP	8S37.1AC	PUMP STATION	3X02.2
					8W25		8S37.1DC		3X04.1
					8W35		8S38.3DC		3X07.3
					8W40		8S37.2AC		3X03.1
					13W07		8S37.2DC		3X08.4
					13W09		8S38.4DC		3X08.3
Pump Station Communication	STANDARD	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A	N/A	22W40	BAY BOX	22A13.P5	PUMP STATION	12N12.J1
Water Heater	OPTIONAL	10 GA 75°C SITE SUPPLIED	20A	400 VAC	L1	SITE POWER PANEL	SITE	PUMP STATION	1X04.1
					L2		SITE		1X05.1
					L3		SITE		1X06.1
					GND		SITE		2X08.5

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

Table 13 - Pump Station Electrical Connections for 460V 60 Hz Sites

PUMP STATION 460 VAC 60 Hz CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Pump Station High Voltage	STANDARD	6 GA 75°C SITE SUPPLIED	50A	460 VAC	L1	SITE POWER PANEL	SITE	PUMP STATION	1X01.1
					L2		SITE		1X02.1
					L3		SITE		1X03.1
					GND		SITE		4X04.1
Bridge Low Voltage	STANDARD	14 GA 75°C SITE SUPPLIED	15A	24 VAC	8W05	E-CHAIN JUNCTION	BRG PHA	PUMP STATION	8F05.2
					9W05		BRG PHB		9F05.2
					10W05		NEU		3X21.3
					8W28		SYS		3X03.3
Bay Box Low Voltage	STANDARD	12 GA 75°C SITE SUPPLIED	12A	24 VAC	8W02	BAY BOX	18X01.4	PUMP STATION	8F02.2
					9W02		18X02.4		9F02.2
					10W02		18X03.4		3X21.4
					4W35		18X00.1		2X08.4
System Stop/System Reset	STANDARD	18 GA 75°C SITE SUPPLIED	3A	24 VAC 12VDC	8W22	SYSTEM STOP	8S37.1AC	PUMP STATION	3X02.3
					8W25		8S37.1DC		3X04.1
					8W40		8S37.2AC		3X03.1
					13W07		8S37.2DC		3X08.4
Pump Station Communication	STANDARD	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A	N/A	22W40	BAY BOX	22A13.P5	PUMP STATION	12N12.J1
Water Heater	OPTIONAL	8 GA 75°C SITE SUPPLIED	35A	208 VAC	L1	SITE POWER PANEL	SITE	PUMP STATION	1X04.2
					L2		SITE		1X05.2
					L3		SITE		1X06.2
					GND		SITE		2X08.5

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

Table 14 - Pump Station Electrical Connections for 575V 60 Hz Sites

PUMP STATION 575 VAC 60 Hz CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Pump Station High Voltage	STANDARD	8 GA 75°C SITE SUPPLIED	35A	575 VAC	L1	SITE POWER PANEL	SITE	PUMP STATION	1X01.1
					L2		SITE		1X02.1
					L3		SITE		1X03.1
					GND		SITE		4X04.1
Pump Station High Voltage – Solution Pump and Control Transformer	STANDARD	12 GA 75°C SITE SUPPLIED	15A	208/230 VAC	L1	SITE POWER PANEL	SITE	PUMP STATION	1X04.2
					L2		SITE		1X05.2
					L3		SITE		1X06.2
					GND		SITE		2X08.5
Pump Station High Voltage – Solution Pump and Control Transformer WITH Water Heater	OPTIONAL	6 GA 75°C SITE SUPPLIED	50A	208/230 VAC	L1	SITE POWER PANEL	SITE	PUMP STATION	1X04.2
					L2		SITE		1X05.2
					L3		SITE		1X06.2
					GND		SITE		2X08.5
Bridge Low Voltage	STANDARD	14 GA 75°C SITE SUPPLIED	15A	24 VAC	8W05	E-CHAIN JUNCTION	BRG PHA	PUMP STATION	8F05.2
					9W05		BRG PHB		9F05.2
					10W05		NEU		3X21.3
					8W28		SYS		3X03.3
Bay Box Low Voltage	STANDARD	12 GA 75°C SITE SUPPLIED	12A	24 VAC	8W02	BAY BOX	18X01.4	PUMP STATION	8F02.2
					9W02		18X02.4		9F02.2
					10W02		18X03.4		3X21.4
					4W35		18X00.1		2X08.4
System Stop/System Reset	STANDARD	18 GA 75°C SITE SUPPLIED	3A	24 VAC 12VDC	8W22	SYSTEM STOP	8S37.1AC	PUMP STATION	3X02.3
					8W25		8S37.1DC		3X04.1
					8W40		8S37.2AC		3X03.1
					13W07		8S37.2DC		3X08.4
Pump Station Communication	STANDARD	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A	N/A	22W40	BAY BOX	22A13.P5	PUMP STATION	12N12.J1

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

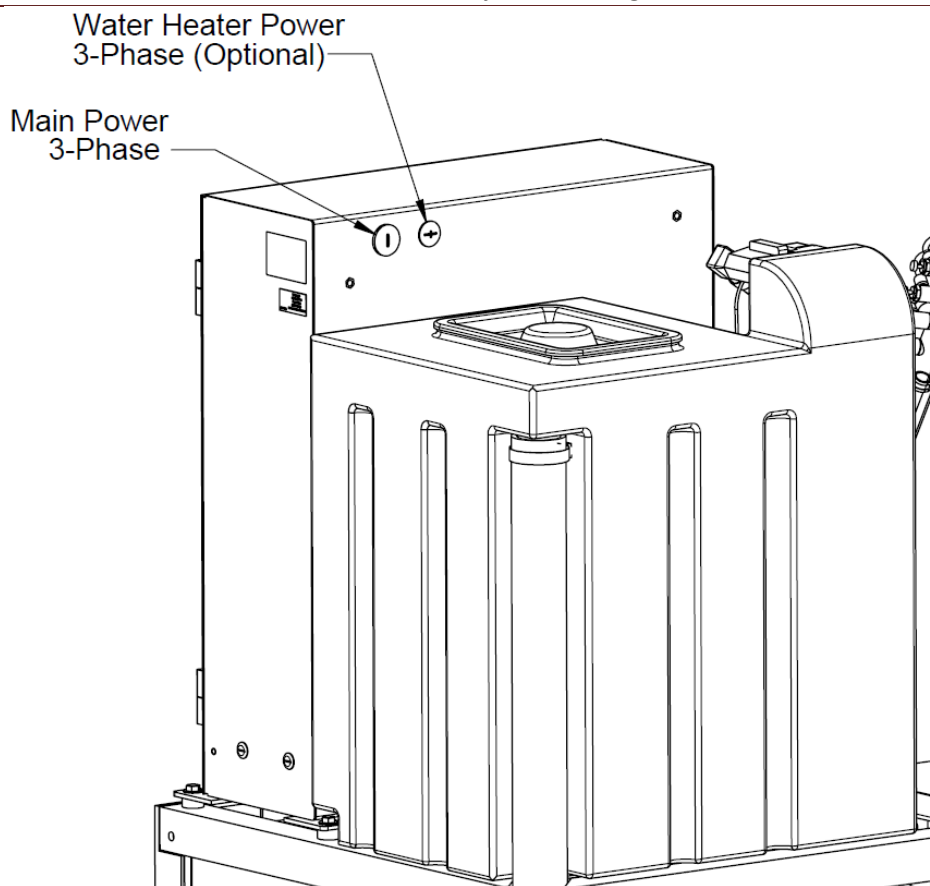


Figure 103 - Pump Station Electrical Routing High Voltage

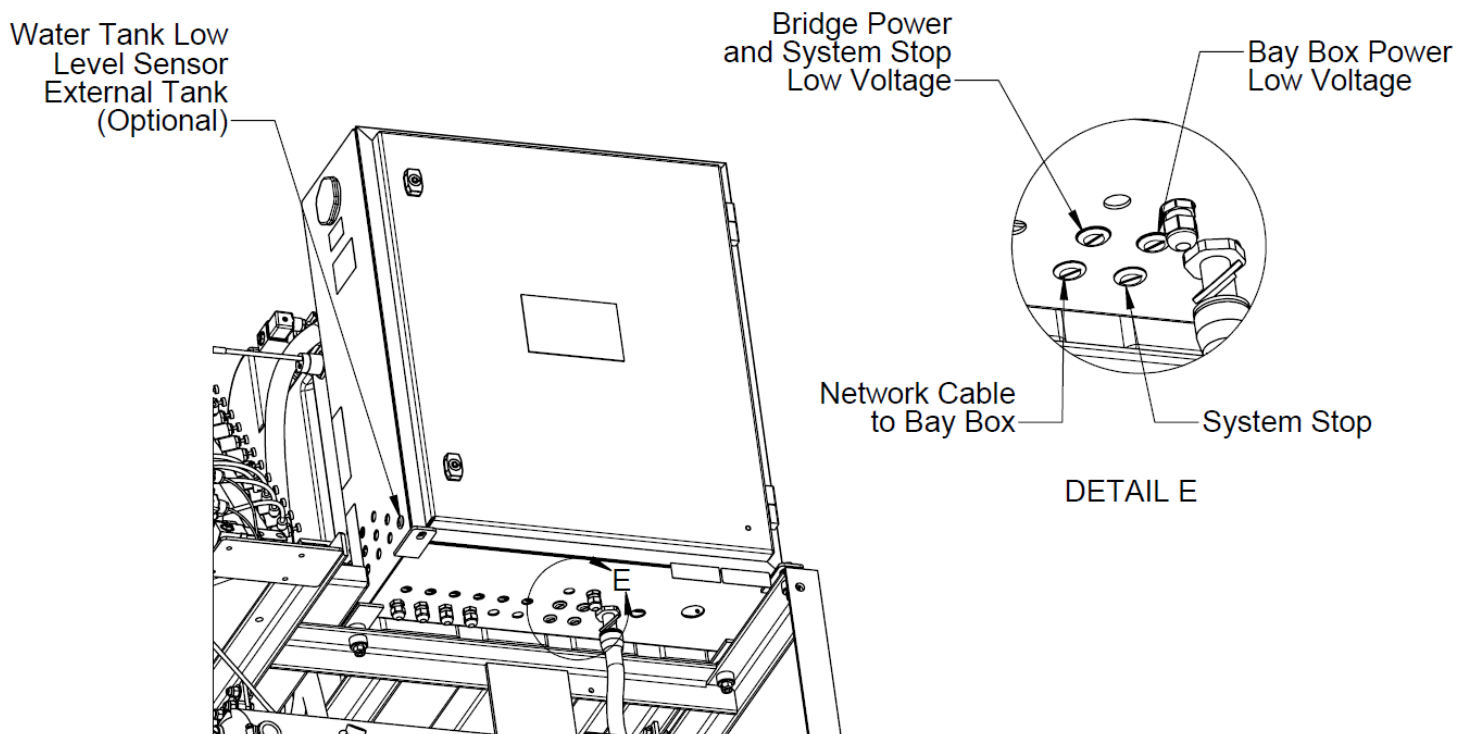


Figure 104 - Pump Station Electrical Routing Low Voltage

5.6 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.

ITEM	QTY.	DESCRIPTION
1	1	GROMMET,16x98x8mm,NEOPRENE

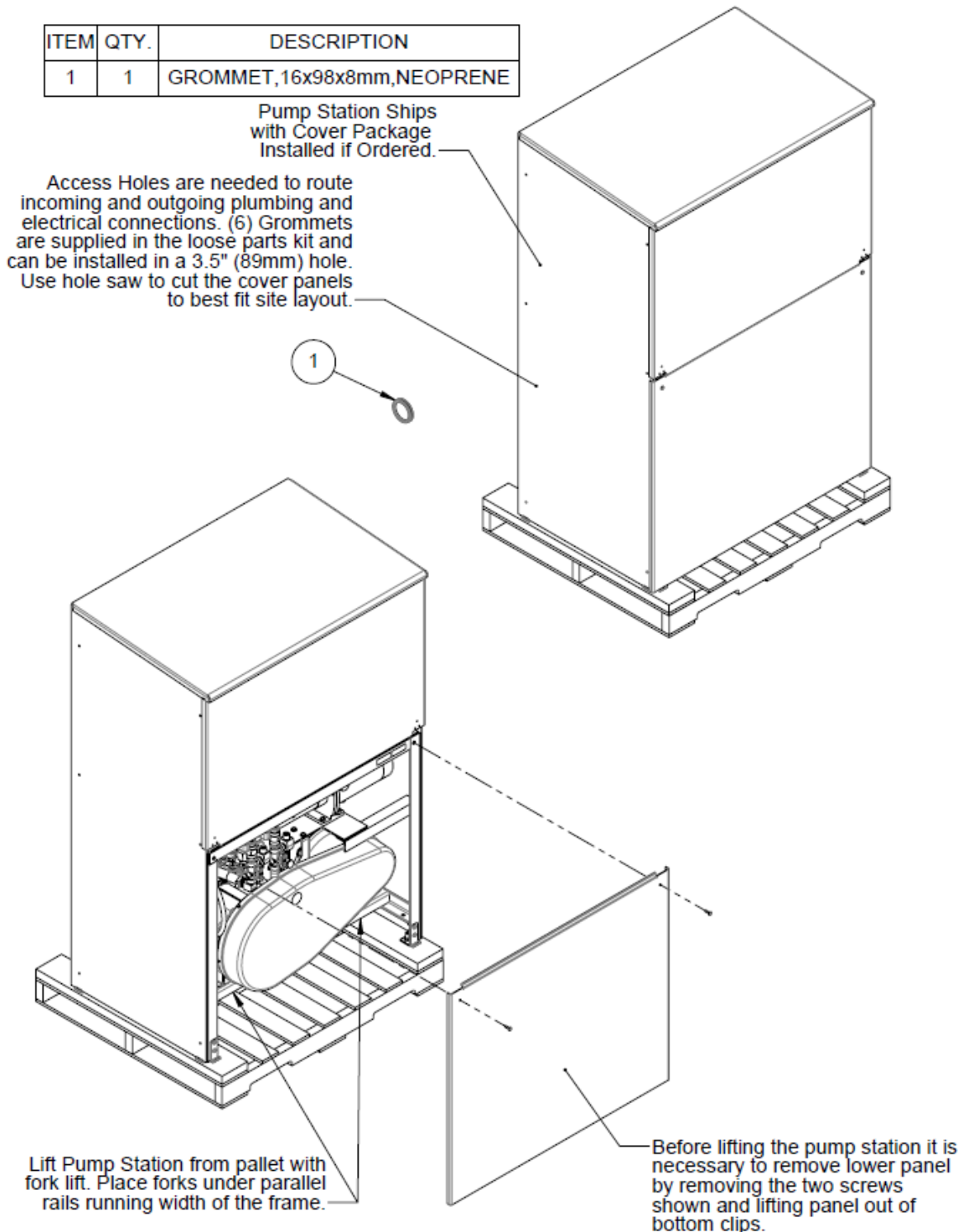


Figure 105 - Pump Station Cover Package

6 Entrance Service Options

This section provides instructions for installing LaserWash 360 Plus 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

6.1 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 onto 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.

6.2 Drive Through Underbody Manifold Installation

6.2.1 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.

6.2.2 Special Tools

- Hammer drill for anchoring manifolds

6.2.3 PDQ Supplied Parts

The LaserWash 360 Plus is available with the following underbody systems; all are options for the wash.

- High Pressure Drive Through Underbody with Side Blasters (P/N 09120040 (60Hz) or 09120043 (50Hz))
- High Pressure Drive Through Underbody without Side Blasters (P/N 09120041 (60Hz) or 09120044 (50Hz))
 - For use with Gatling Guns
- High Pressure Drive Through Underbody Manifold Reuse (P/N 09120034 (60Hz) or 09120042 (50Hz))
 - For use in wash bay reload sites where the existing underbody wash bay manifold will be reused (NOTE: This works with LaserWash 4000, LaserWash M5, and LaserWash 360 wash bay manifolds)

The LaserWash 360 Plus is also available with the following underbody activation sensor systems for use with drive through manifolds. Entrance door eyes can be used to activate the underbody. However, sites without entrance door eyes can use the following to activate underbody:

- Ultrasonic Underbody Activation System (P/N 09160018)
- Photo eye Underbody Activation System (P/N 09100009)

6.2.4 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 15 for details specific to the type of underbody manifold installed. The length of the hose is specific to the site configuration.

Table 15 - 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

6.2 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 106, 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 107 for mounting options.

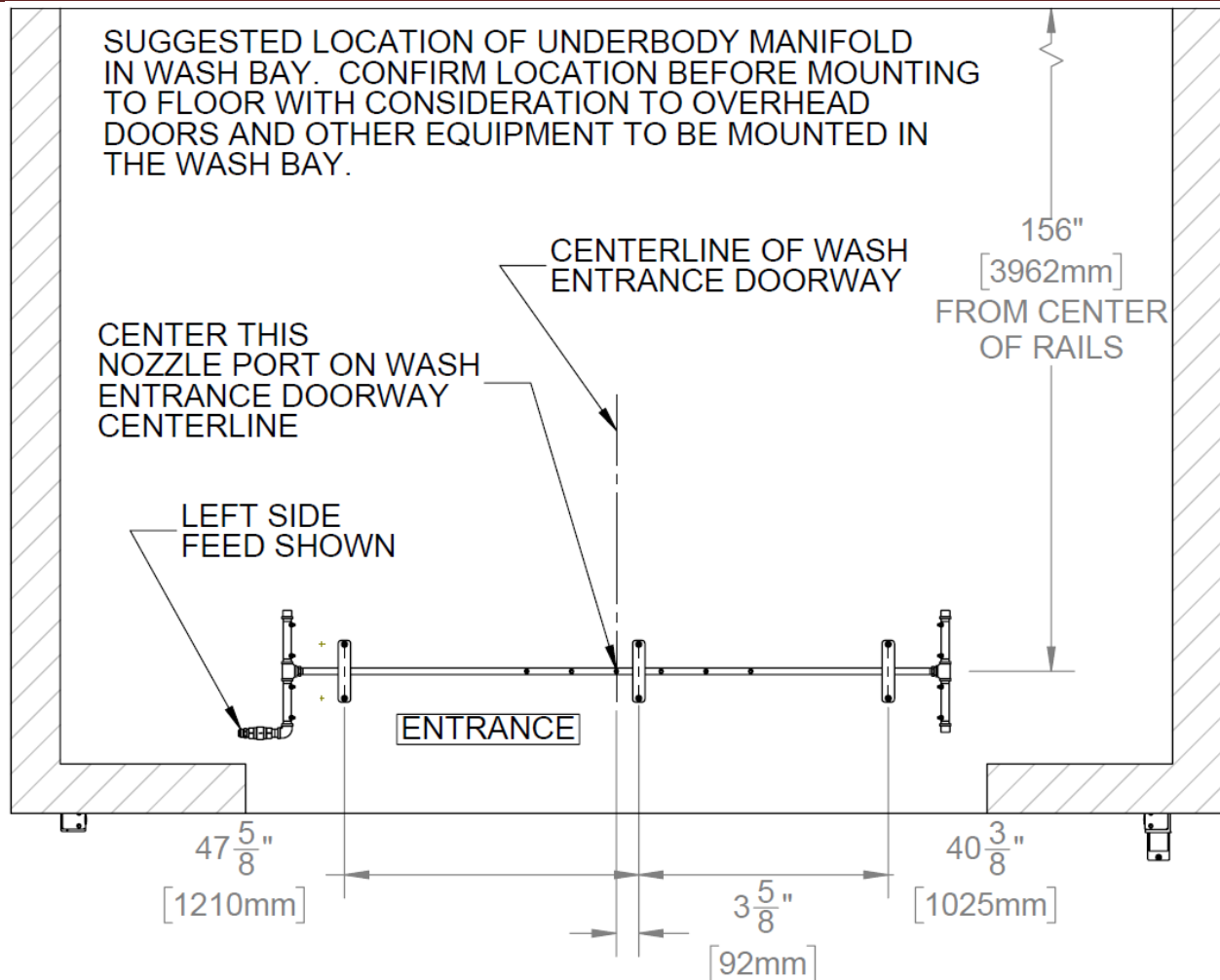


Figure 106 – Locate and Mount Underbody Manifold in Wash Bay

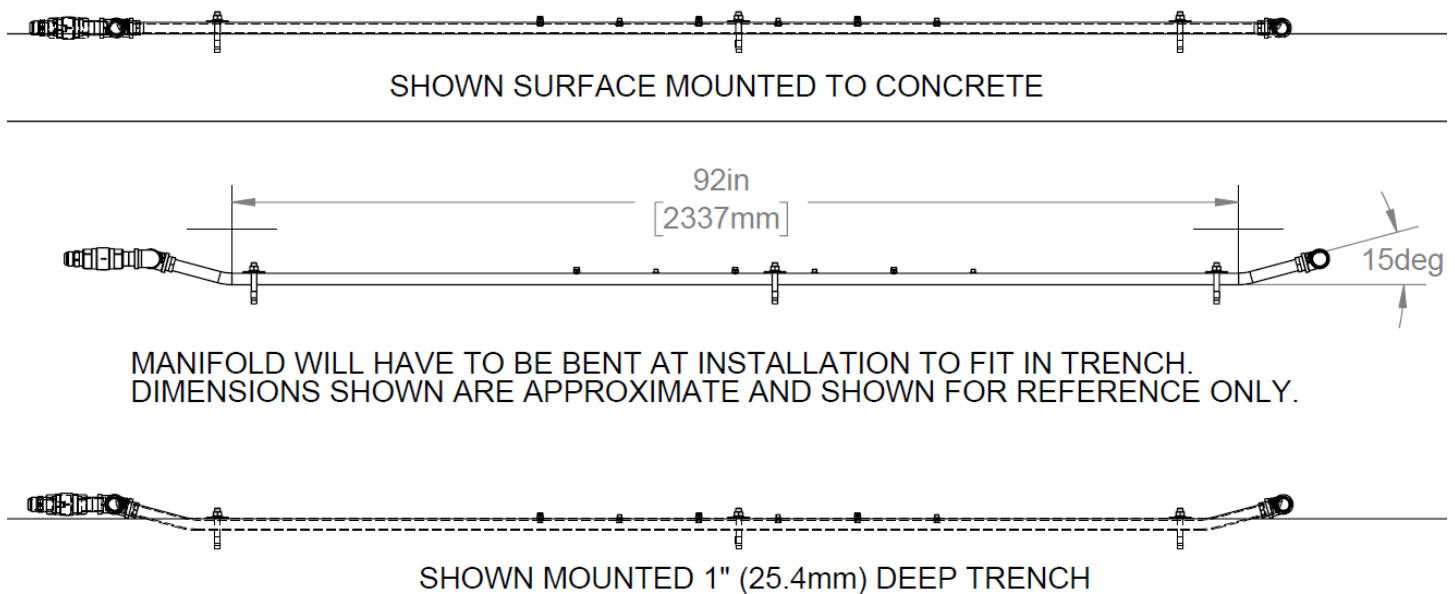


Figure 107 – Drive through Underbody Manifold Floor Mounting Options

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

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

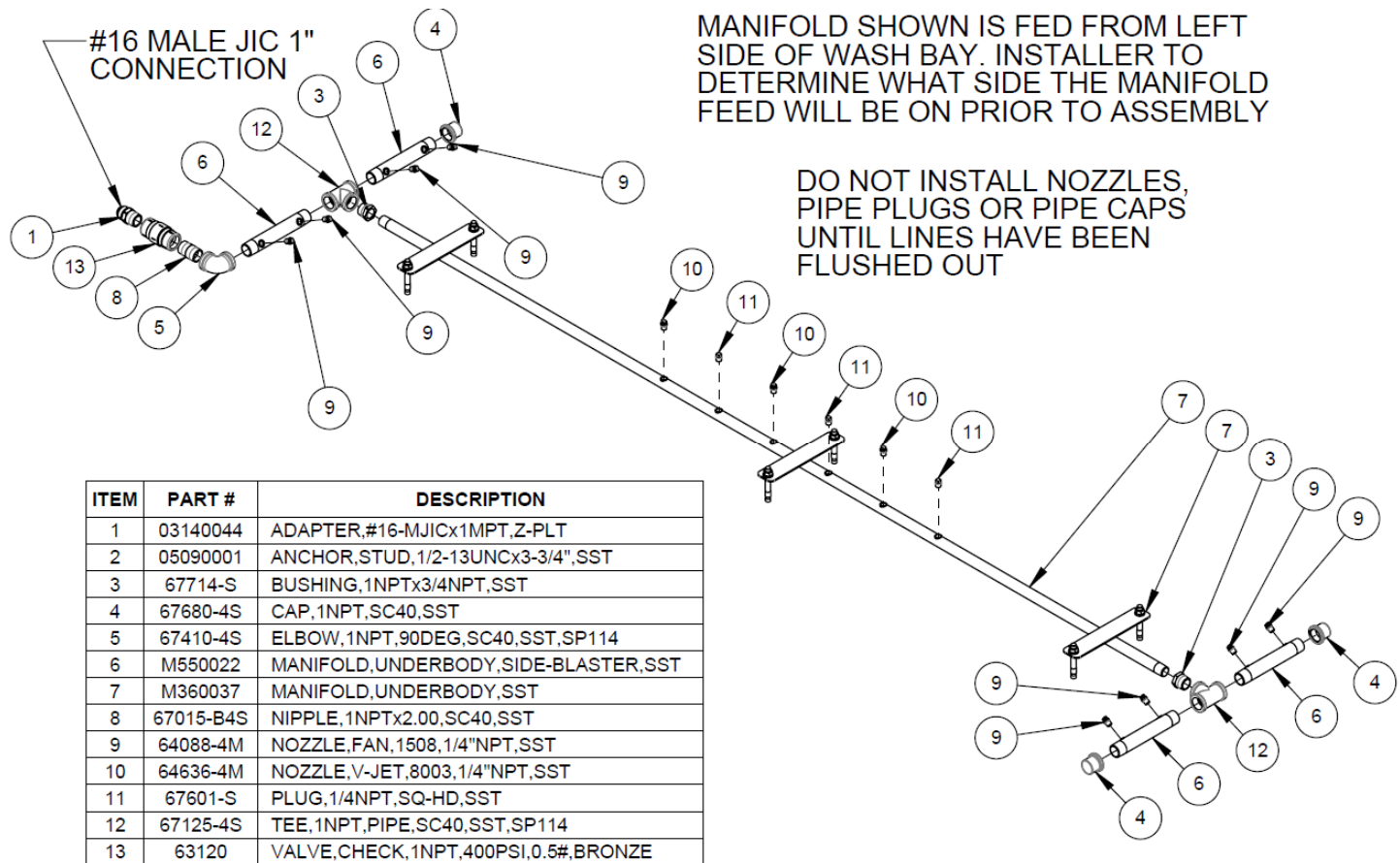


Figure 108 – High Pressure Drive Through Underbody with Side Blasters

6.2 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 (See Figure 109) 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.

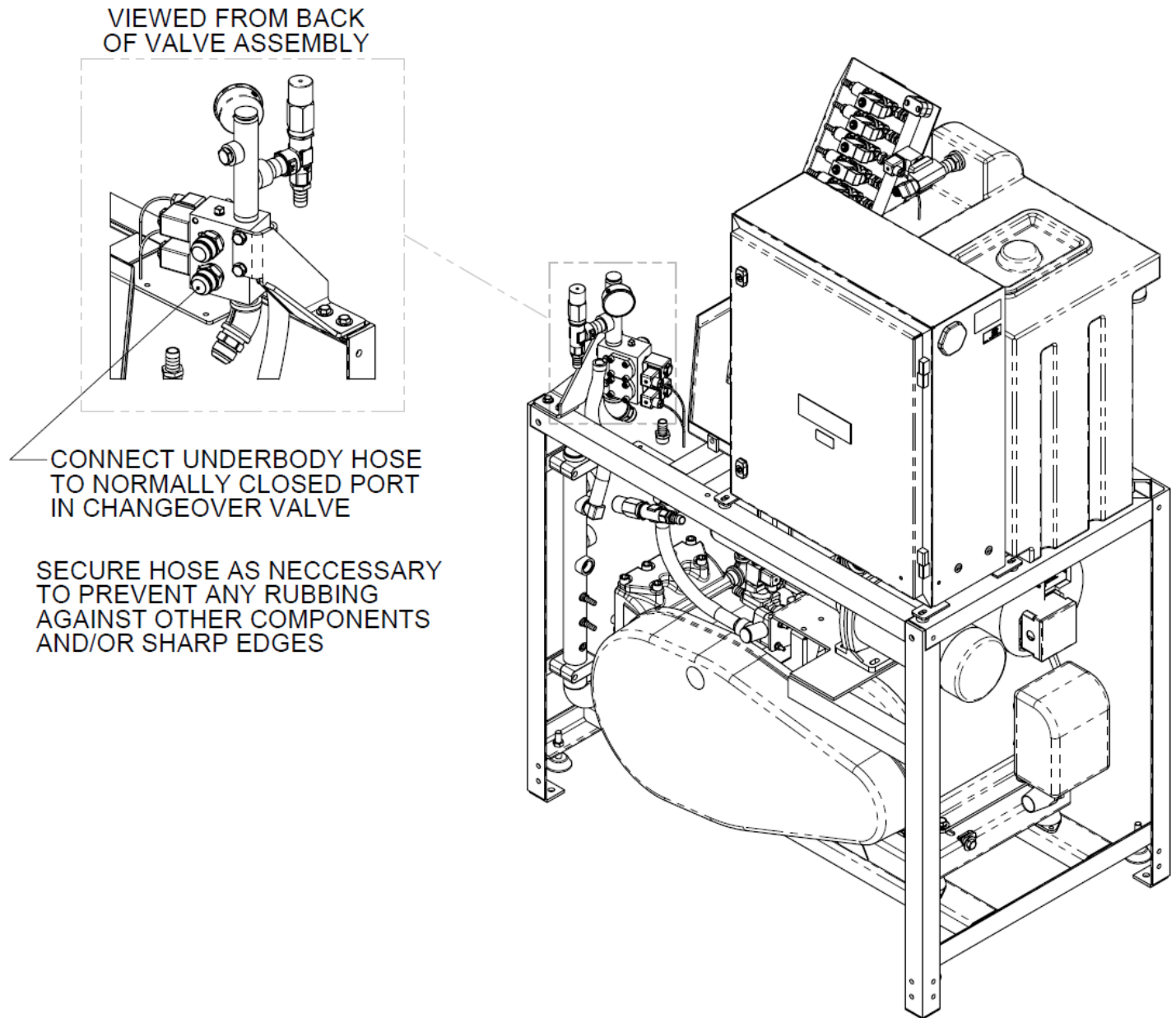


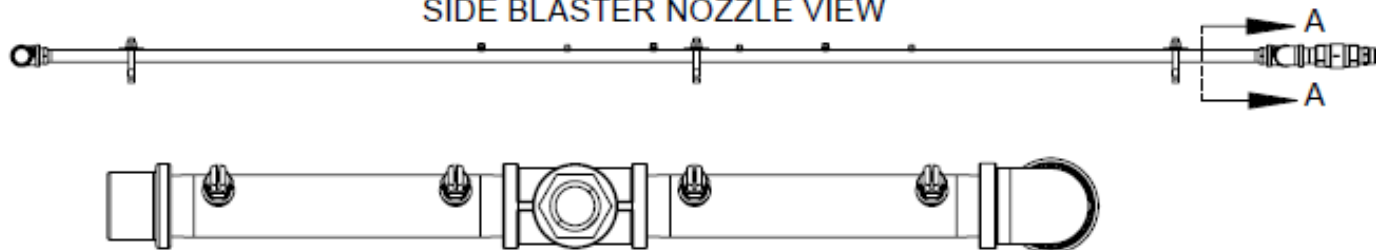
Figure 109 - High Pressure Underbody Hose Connection to Changeover Valve in High Pressure Pump Station

6.2 Step 4 Install Nozzles in High Pressure Drive Through Underbody Manifold

NOTE:	This step is to be completed after LaserWash 360 Plus startup. Water should be flushed through the manifold to remove debris from the system.
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- After LaserWash 360 Plus startup, and the manifold is flushed of debris, install the nozzles in the orientation shown. See Figure 110 for proper nozzle assembly, right side feed shown. See Figure 106 for left side feed.

SIDE BLASTER NOZZLE VIEW



SECTION A-A

SIDE BLASTER NOZZLE FLAT EDGE ORIENTED PERPENDICULAR TO FLOOR

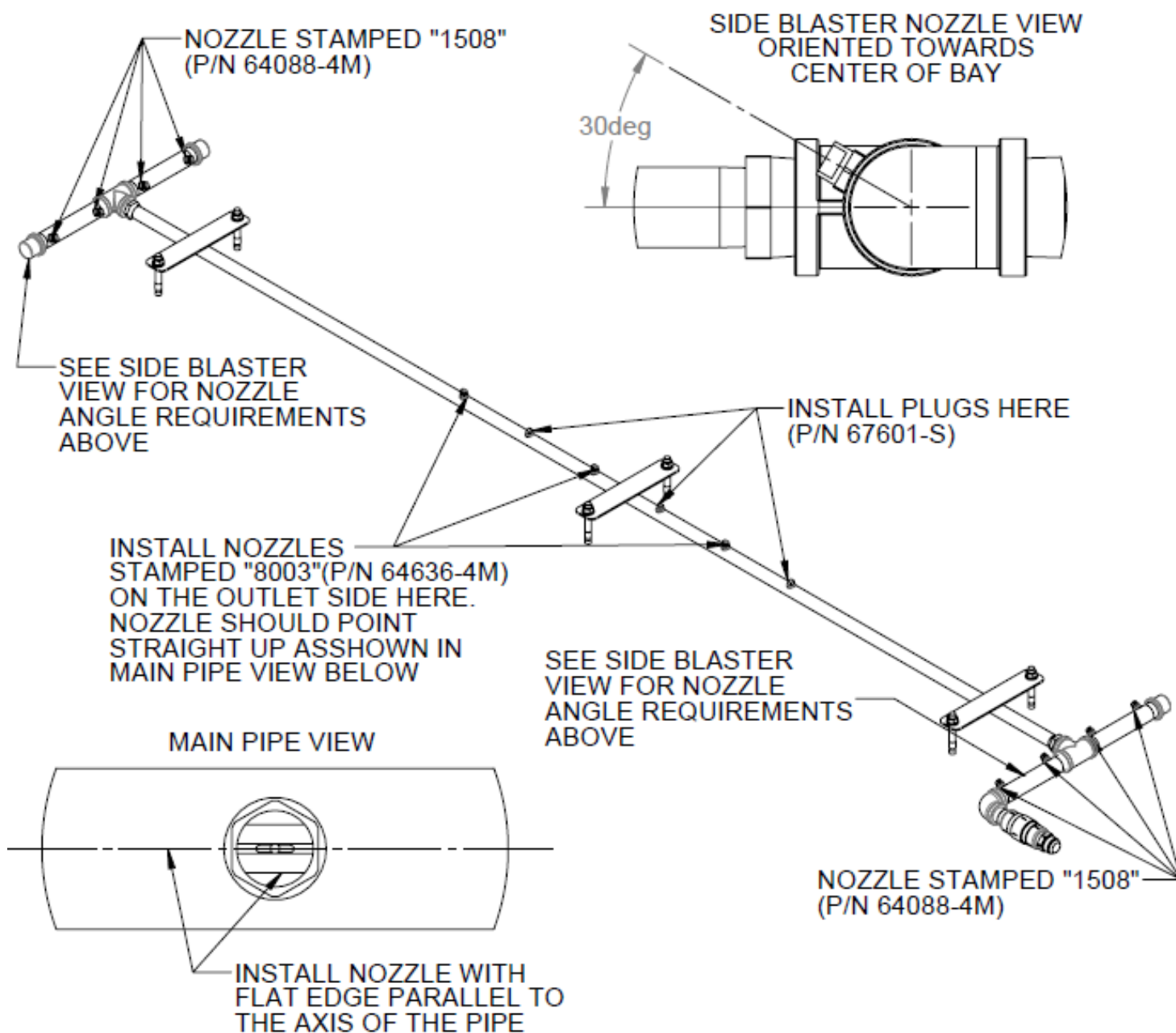


Figure 110 - High Pressure Drive Through Underbody Nozzle Assembly (Right Side Feed shown)

6.3 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.

6.3.1 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.

6.3.2 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.

6.3.3 Special Tools

- Hammer drill for anchoring manifolds

6.3.4 PDQ Supplied Parts

The LaserWash 360 Plus is available with the following rust inhibitor systems.

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

6.3.5 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 16. The length of the hose is specific to the site configuration. The site must also supply hose clamps for this hose.

Table 16 - 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 ON LaserWash 360 Plus: ½" HOSE BARB	Rust Inhibitor Manifold FITTING INSTALLED ON LaserWash 360 Plus: ½" HOSE BARB, ½" MNPT

6.3 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 111.

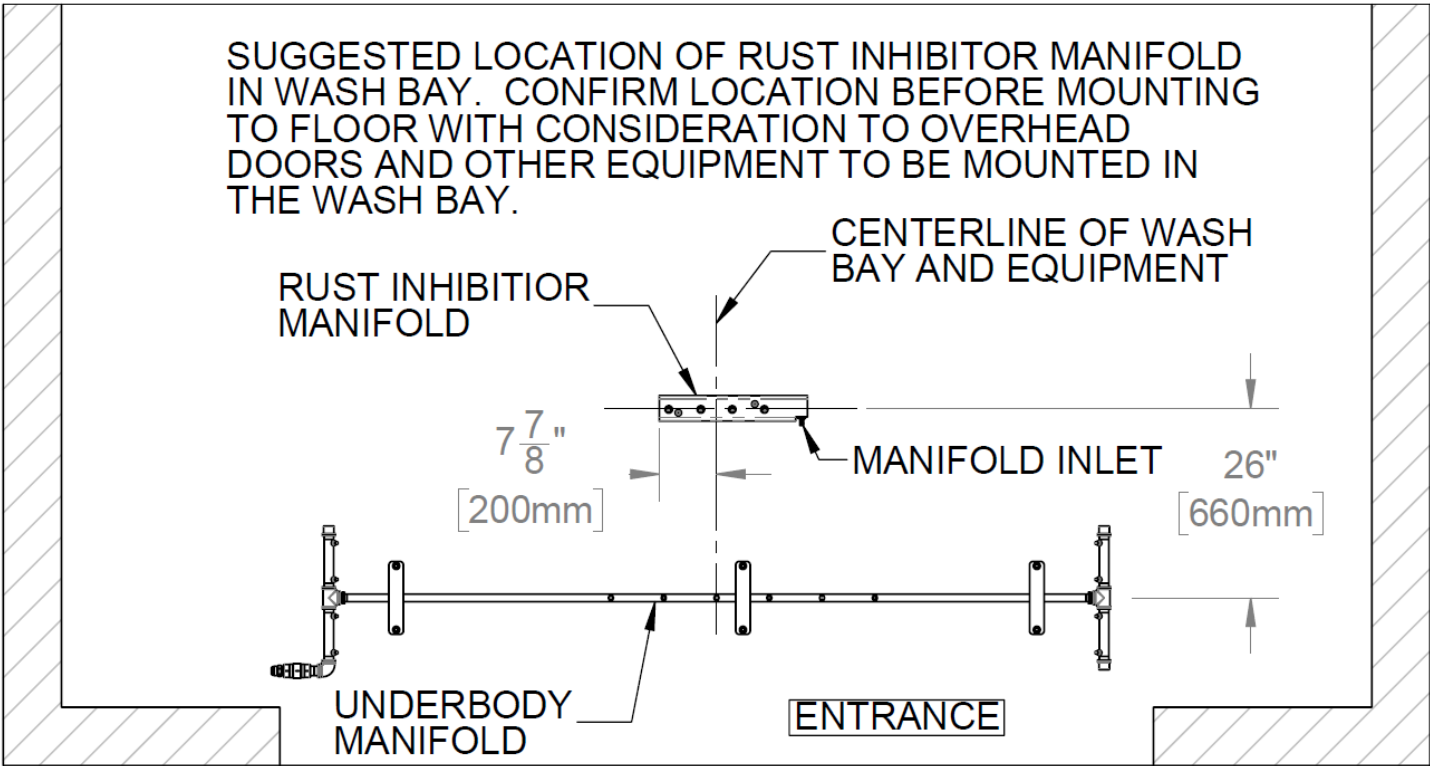
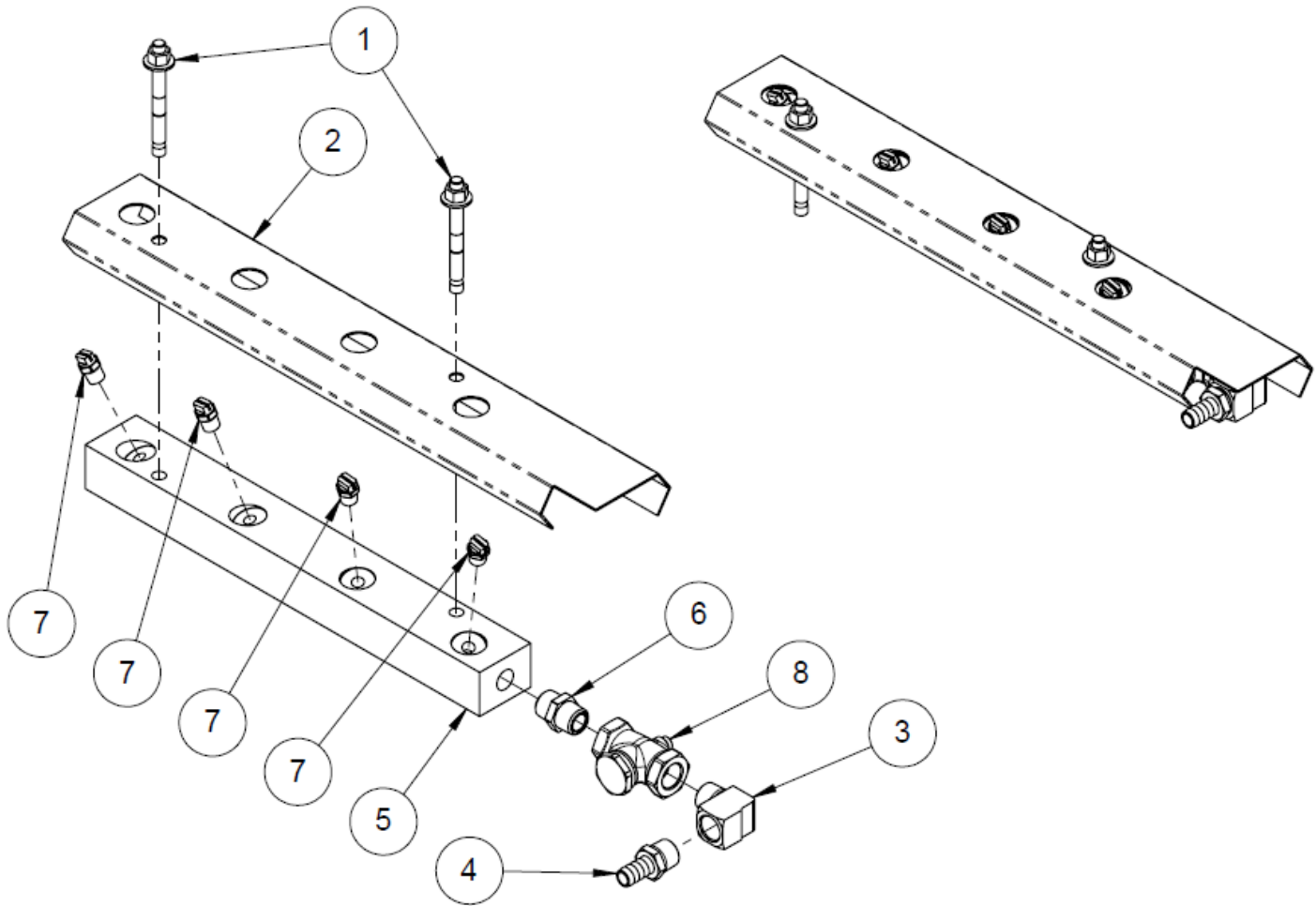


Figure 111 - Locate and Mount Rust Inhibitor Manifold in Wash Bay

6.3 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 112.



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 112 - Rust Inhibitor Manifold

6.3 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 (see Figure 113).

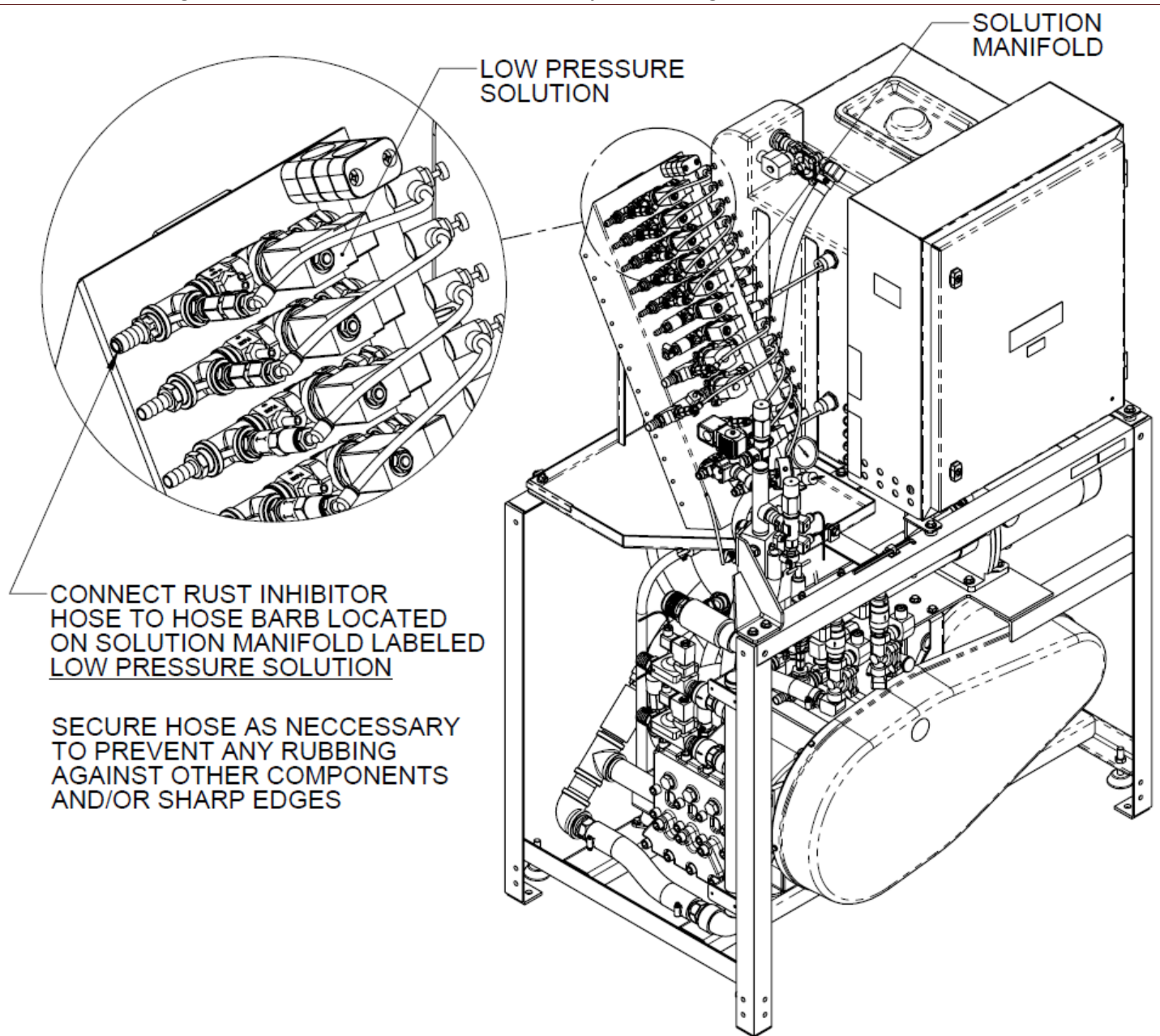


Figure 113 - Rust Inhibitor Hose Connection to Pump Station

6.4 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.

6.4.1 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 of the LaserWash 360 Plus so that they do not interfere with spray arch travel.
 - If the wash bay is narrow, the Gatling Guns must be installed completely to the entrance side of the wash and the zone where the spray are travels.
- 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.

6.4.2 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.

6.4.3 Special Tools

- Hammer drill for anchoring manifolds and Gatling Gun assemblies

6.4.4 PDQ Supplied Parts

- High Pressure Drive Through Underbody without Side Blasters (P/N 09120041 (60Hz) or 09120044 (50Hz))
- 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.

6.4.5 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 LaserWash 360 Plus pump station. The length of the hose is specific to the site configuration. Refer to Table 15 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.

6.4 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 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 114.
- Install the supplied adapter, bushing, and coupling to the end opposite the feed end of the manifold. See Figure 114.
- 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 after startup, install the supplied nozzles in the underbody manifold and the Gatling Gun manifolds.

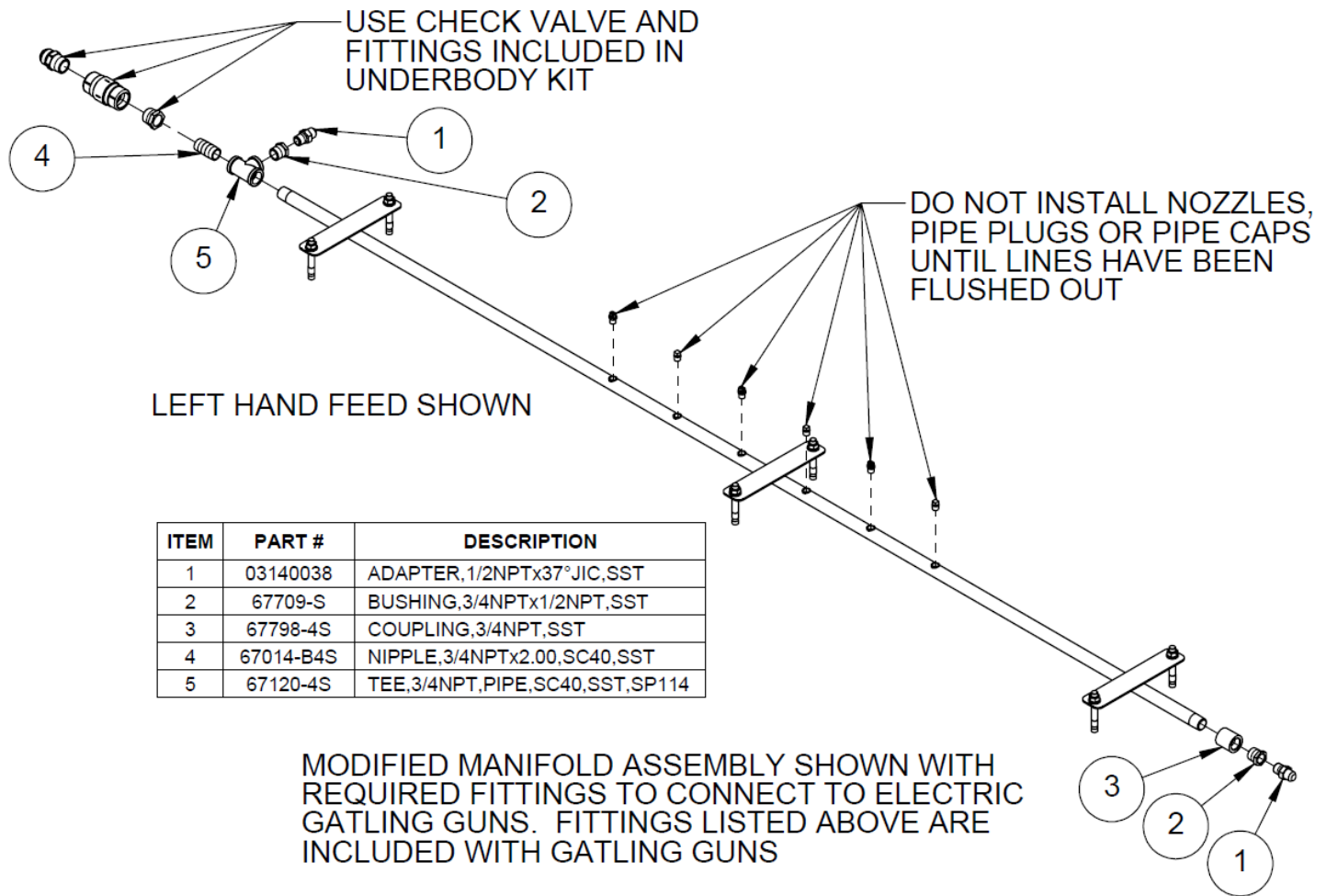


Figure 114 - High Pressure Underbody Manifold Modified for Gatling Guns

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

- Figure 115 shows the minimum and recommended location for positioning the underbody and Gatling Guns in the wash bay. Figure 115 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 (see Figure 116).

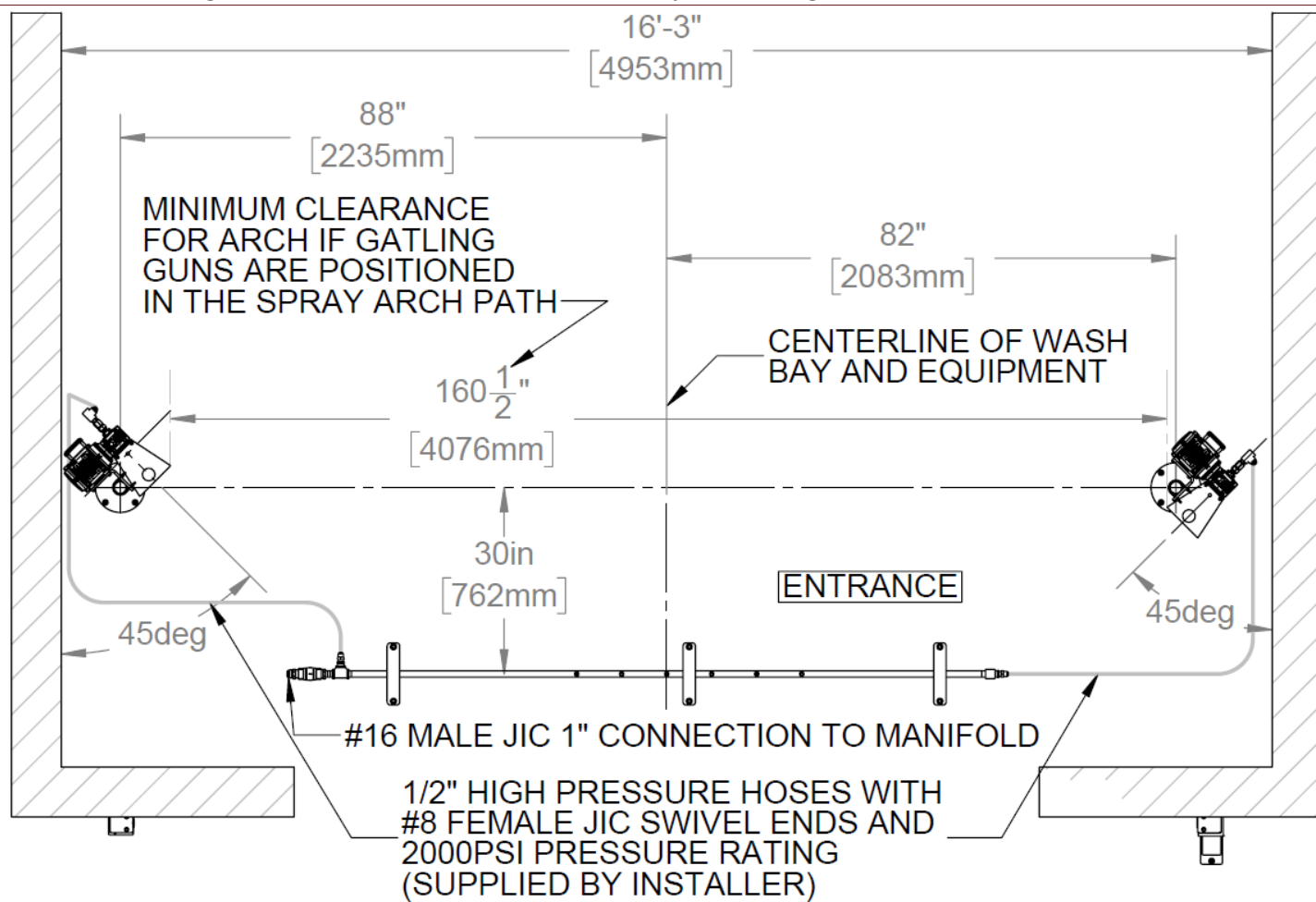


Figure 115 - Gatling Gun System Location - MINIMUM SIZE WASH BAY

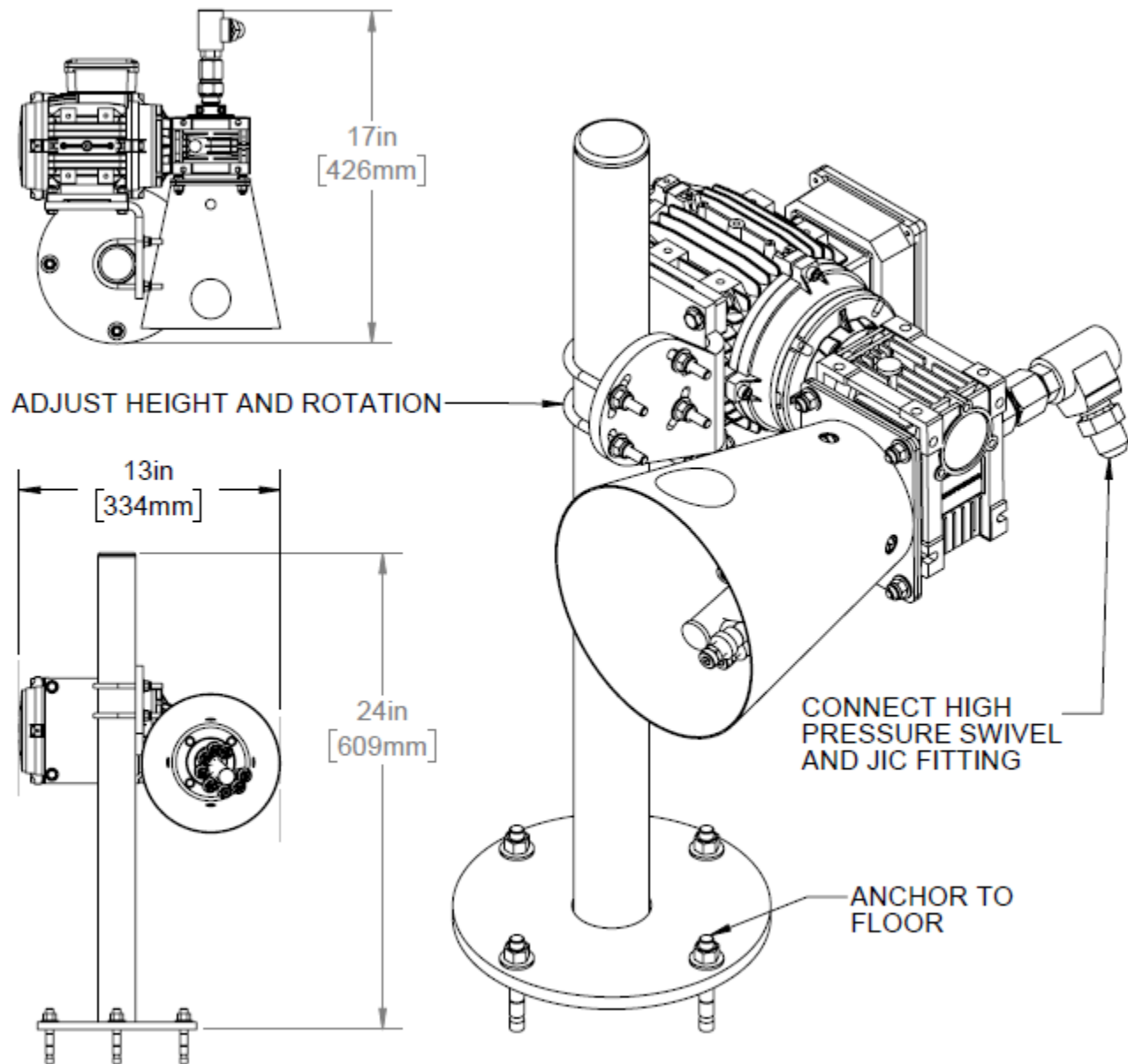


Figure 116 - Gatling Gun Assembly

6.4 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 LaserWash 360 Plus 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.

6.4 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 118 and Table 17 or Table 18. 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 shown on Figure 117.
- For proper wire terminations, refer to the applicable LaserWash 360 Plus Electrical Schematic (see Table 2).

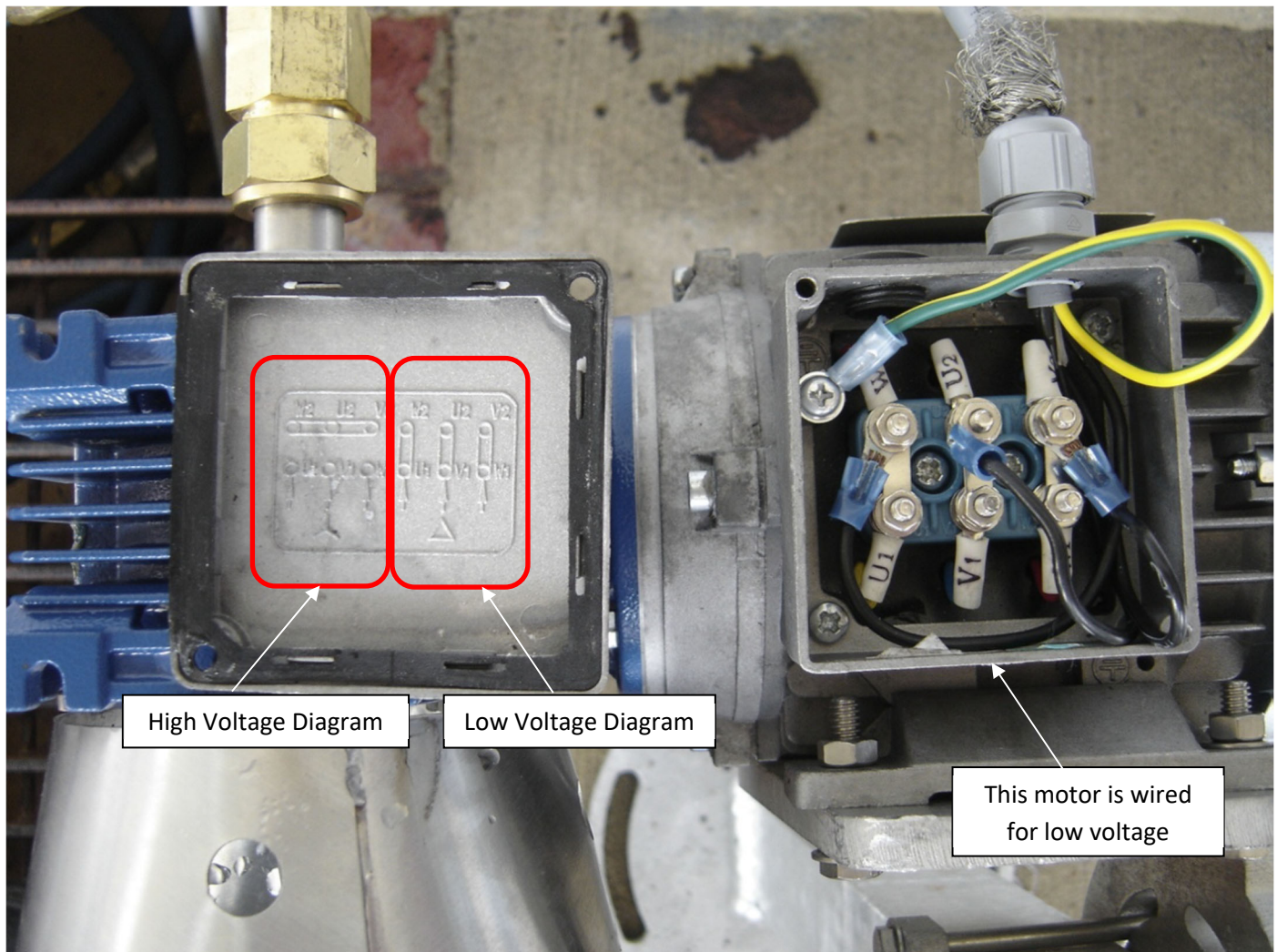
**Figure 117 - Gatling Gun Motor Wiring**

Table 17 - Gatling Gun Electrical Connections for 208/230V 60 Hz Sites

GATLING GUN 208/280 VAC 60 Hz CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Gatling Gun Power	OPTIONAL	14 GA 75°C SITE SUPPLIED	5A	208/230 VAC	L1	SITE POWER PANEL	SITE	GATLING GUN ENCLOSURE	L1.4
					L2		SITE		L2.4
					L3		SITE		L3.4
					GND		SITE		GND BAR
Gatling Gun Motor #1	OPTIONAL	14 GA 75°C SITE SUPPLIED	2.2A	208/230 VAC		MOTOR #1	U2	GATLING GUN ENCLOSURE	MTR1L1.2
							V2		MTR1L2.2
							W2		MTR1L3.2
							GND		GND BAR
Gatling Gun Motor #2	OPTIONAL	14 GA 75°C SITE SUPPLIED	2.2A	208/230 VAC		MOTOR #2	U2	GATLING GUN ENCLOSURE	MTR2L1.2
							V2		MTR2L2.2
							W2		MTR2L3.2
							GND		GND BAR
Gatling Gun Control	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W26	BAY BOX	23N03.2A	GATLING GUN ENCLOSURE	SIG.4
					26W28		23N03.2B		24N.4

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

Table 18 - Gatling Gun Electrical Connections for 400V Sites

GATLING GUN 400 VAC CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Gatling Gun Power	OPTIONAL	14 GA 75°C SITE SUPPLIED	5A	400 VAC	L1	SITE POWER PANEL	SITE	GATLING GUN ENCLOSURE	L1.4
					L2		SITE		L2.4
					L3		SITE		L3.4
					GND		SITE		GND BAR
Gatling Gun Motor #1	OPTIONAL	14 GA 75°C SITE SUPPLIED	1.2A	400 VAC		MOTOR #1	U2	GATLING GUN ENCLOSURE	MTR1L1.2
							V2		MTR1L2.2
							W2		MTR1L3.2
							GND		GND BAR
Gatling Gun Motor #2	OPTIONAL	14 GA 75°C SITE SUPPLIED	1.2A	400 VAC		MOTOR #2	U2	GATLING GUN ENCLOSURE	MTR2L1.2
							V2		MTR2L2.2
							W2		MTR2L3.2
							GND		GND BAR
Gatling Gun Control	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W26	BAY BOX	23N03.2A	GATLING GUN ENCLOSURE	SIG.4
					26W28		23N03.2B		24N.4

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

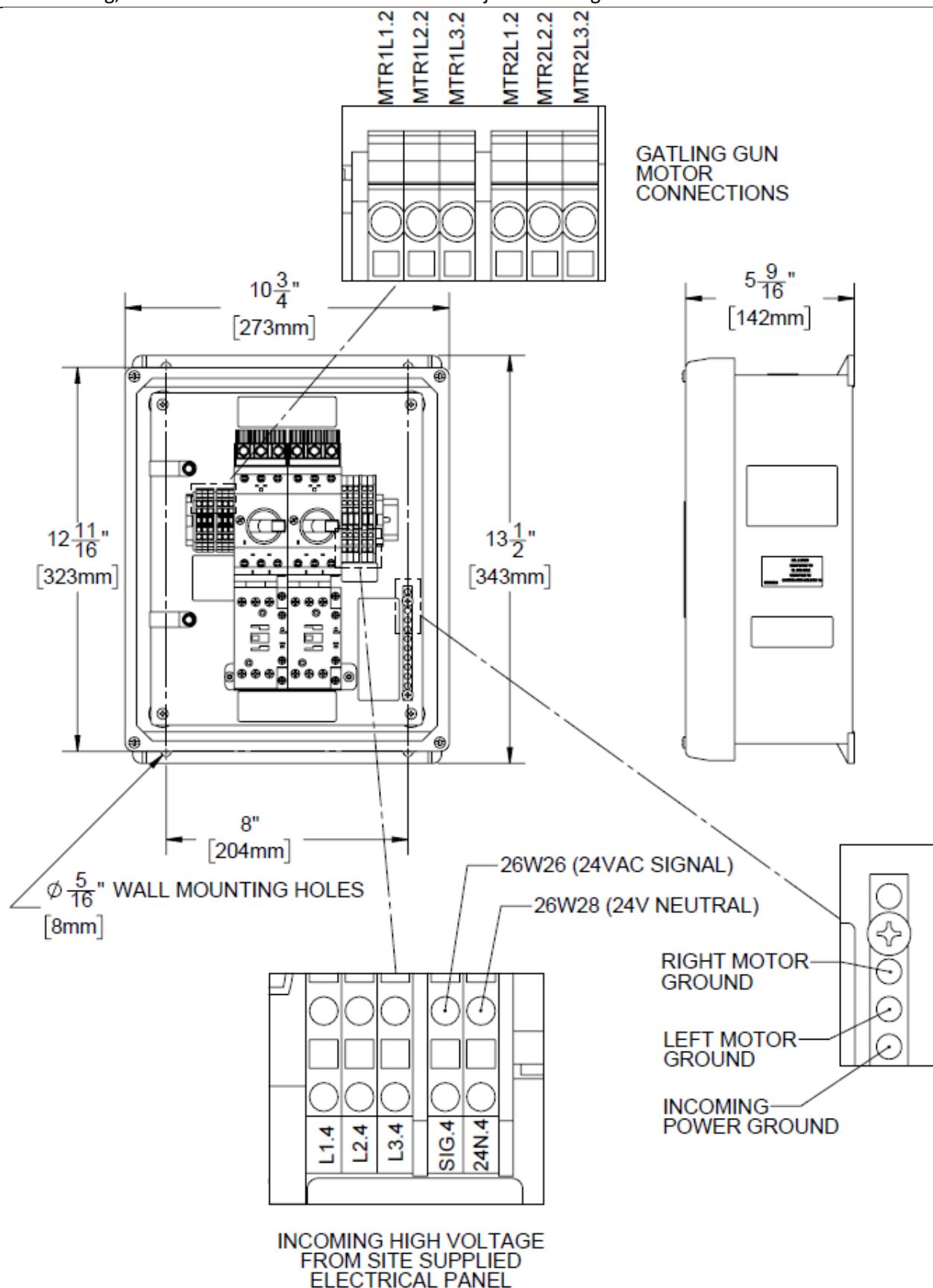


Figure 118 - Gatling Gun Control Box

6.5 Wheel Cleaner Installation

This section provides instructions for installing Wheel Cleaner on the LaserWash 360 Plus.

6.5.1 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.

6.5.2 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.

6.5.3 Special Tools

- Hammer drill for anchoring manifolds and Wheel Cleaner Applicator assemblies

6.5.4 PDQ Supplied Parts

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

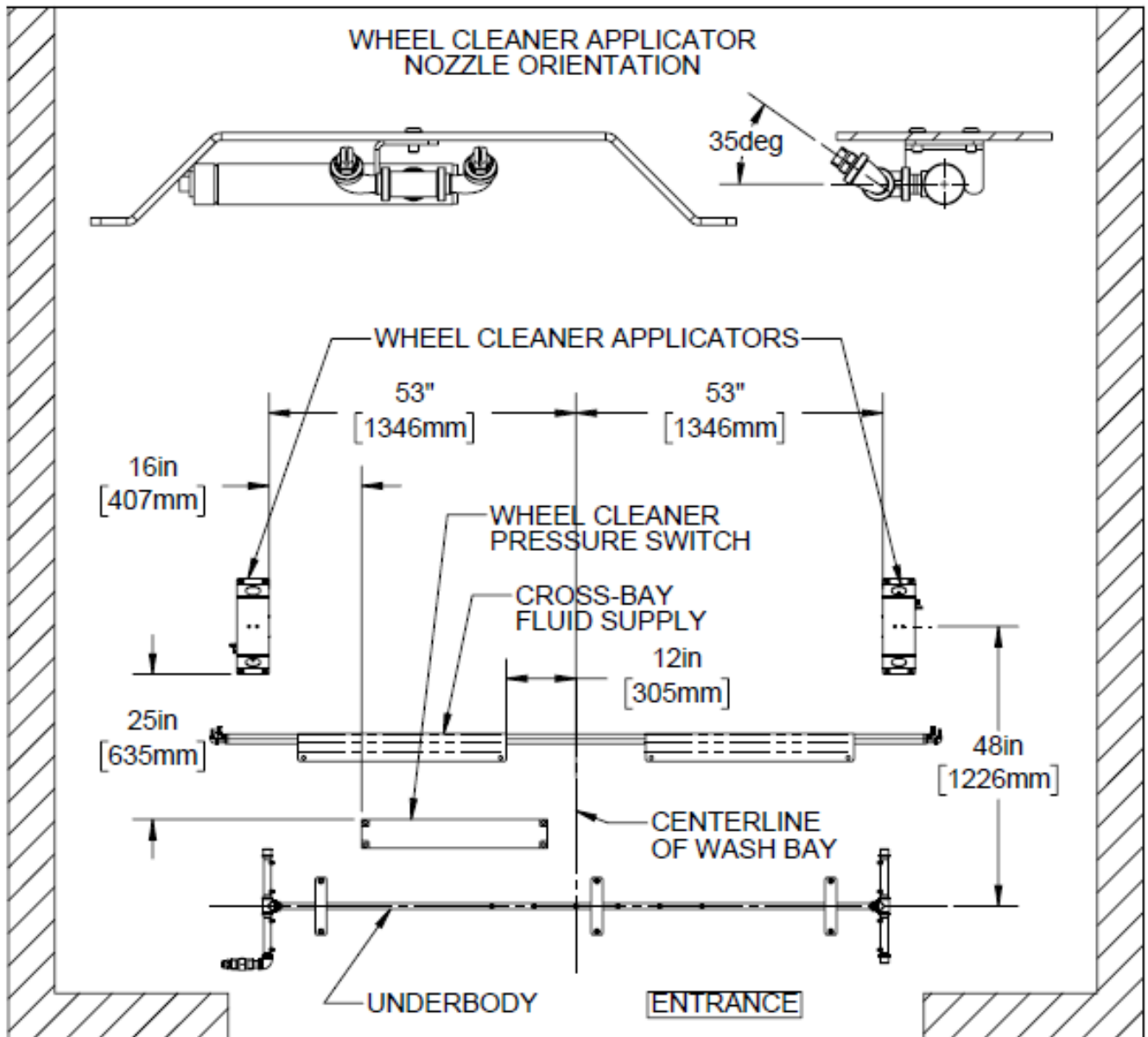
- Wheel Cleaner Applicator (P/N 11130036)
- Pressure Switch (P/N 31009)
- Cross-Bay Fluid Supply (P/N 11250345)

6.5.5 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

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

- For the LaserWash 360 Plus use Figure 119 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 120.
- Mount all items to the floor using anchor bolts provided.

**Figure 119 - Wheel Cleaner Applicators and Pressure Switch Mounting Locations**

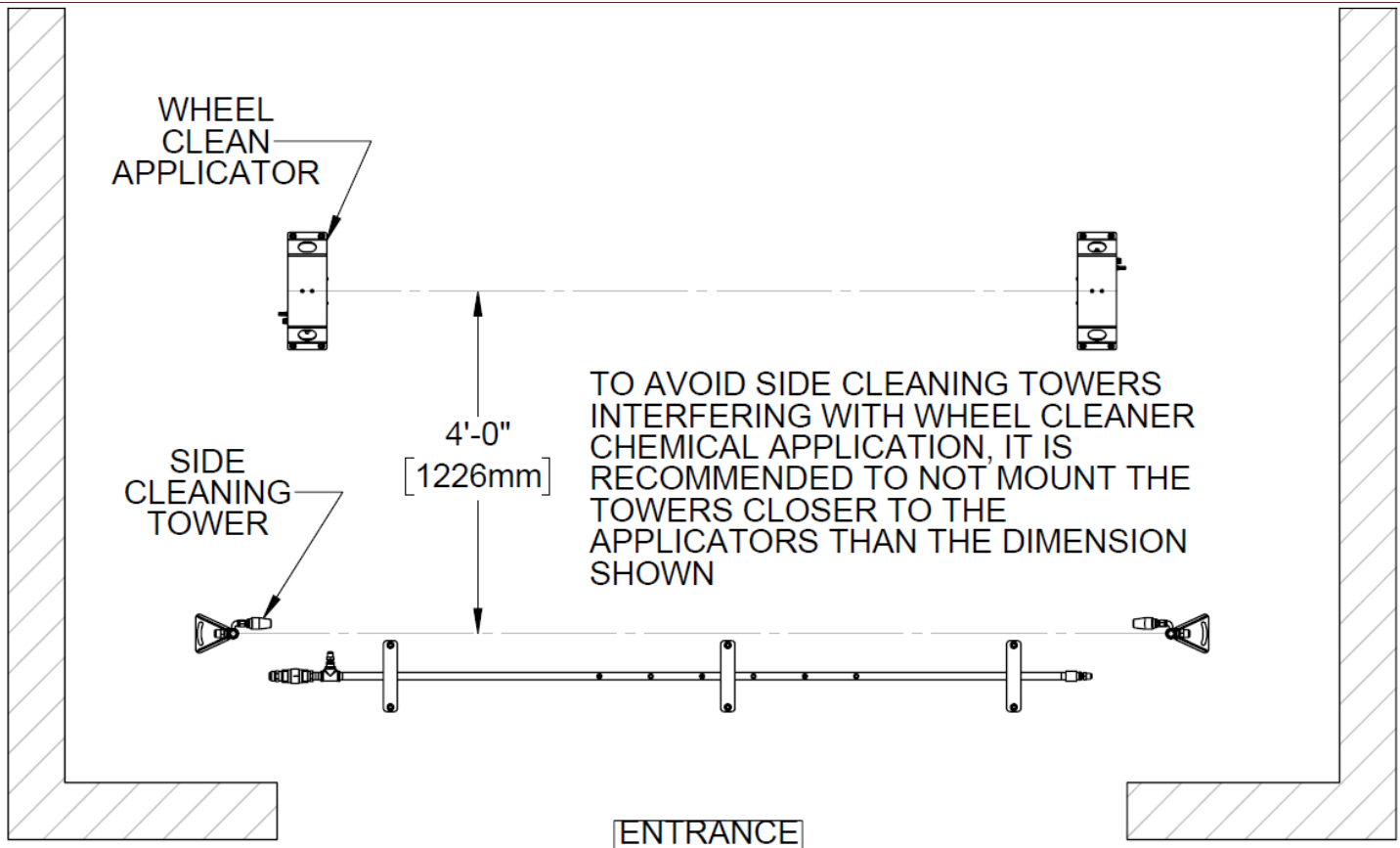


Figure 120 - Side Cleaning Towers Installed with Wheel Cleaner Applicators

6.5 Step 3 Install Hose and Tubing

Table 19 – Site Supplied Hose and Tubing for Wheel Cleaner

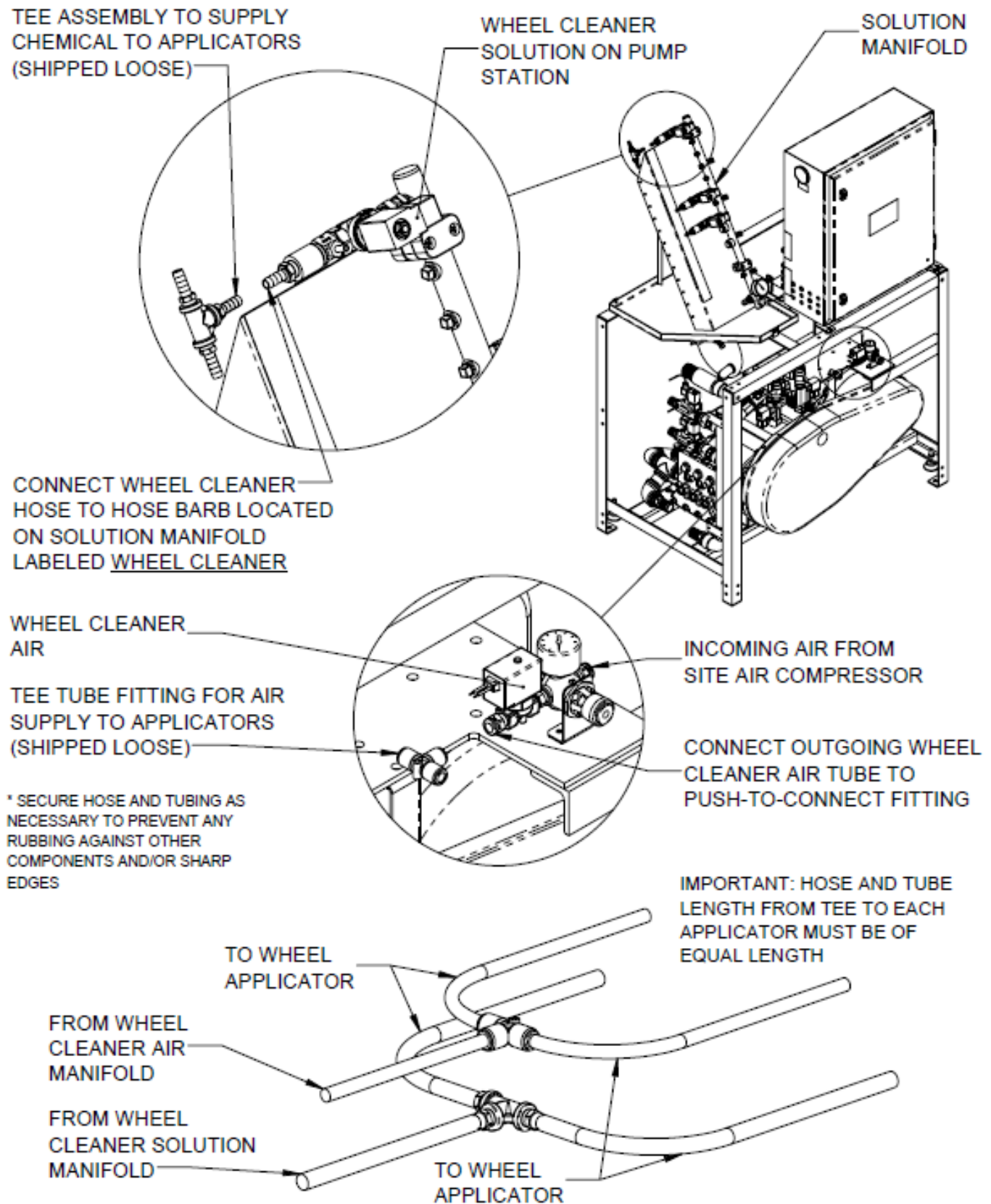
Option	HOSE	FROM	TO
Wheel Cleaner Solution	3/8" 200 psi (13.8 bar) PDQ Part No. 03340015	Low Pressure Outlet Fitting in Pump Station Fitting installed on LaserWash 360 Plus: 3/8" hose barb	Solution Separation Tee supplied with LaserWash 360 Plus: 3/8" hose barb 1/4" MNPT

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 on LaserWash 360 Plus: 3/8" Push-to-Connect Fitting	Air Separation Tee supplied with LaserWash 360 Plus: 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, see Figure 121.
 - 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, see Figure 121.
 - 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.

!!!IMPORTANT!!

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 121 - Wheel Cleaner Solution and Air Supply Installation**

6.5 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 20 and as shown in the LaserWash 360-Plus electrical schematic (see 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 20 – 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	13W10	Floor Pressure Switch	BLK	Pump Station Node	12N12.TB2 .3B
							RED		12N12.TB2 .3C

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

6.6 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.

6.6.1 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 of the LaserWash 360 Plus 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.

6.6.2 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.

6.6.3 Special Tools

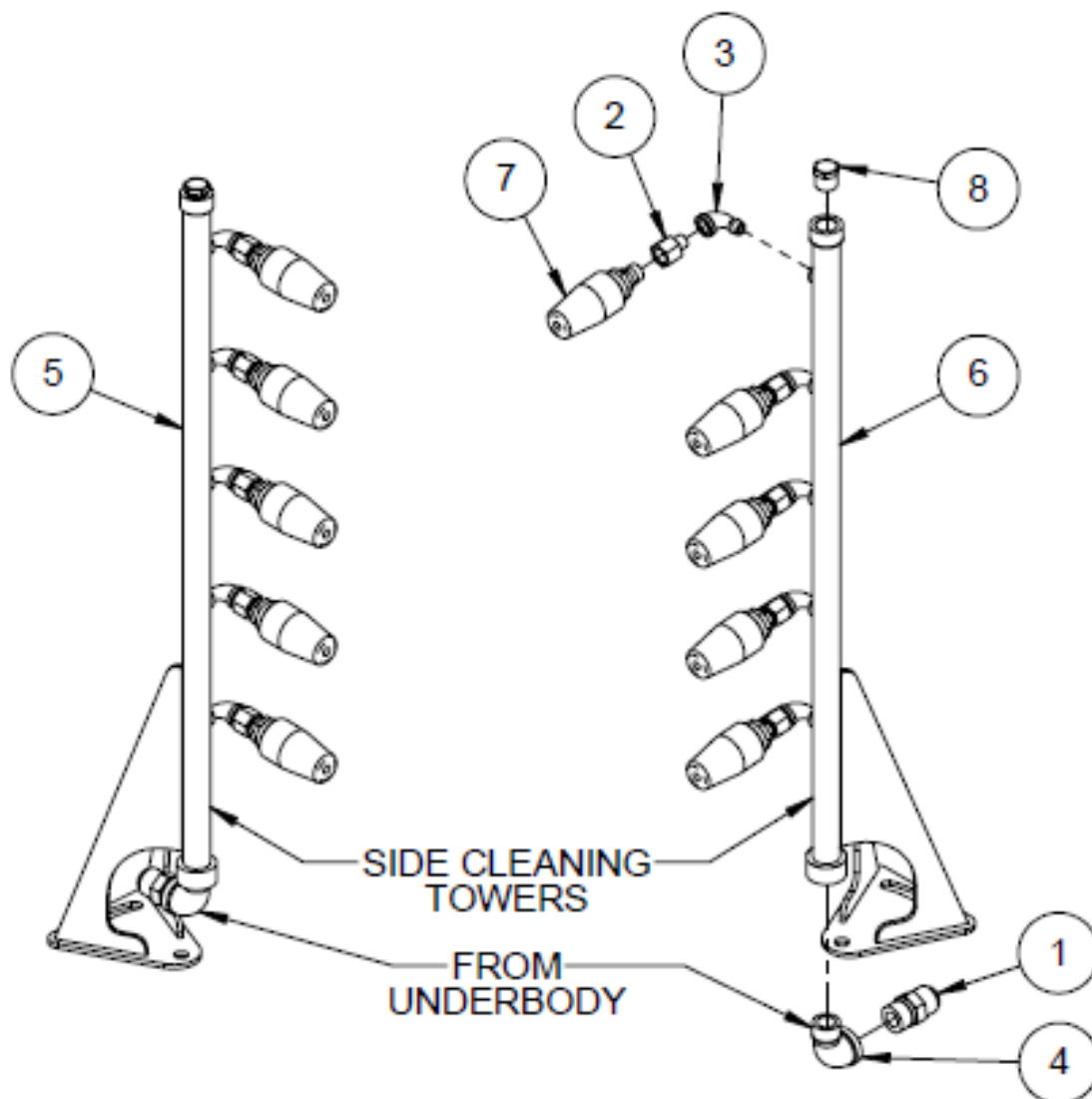
- Hammer drill for anchoring combo cleaner towers to concrete if applicable.

6.6.4 PDQ Supplied Parts

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

6.6.5 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 122 – High Pressure Lower Profile Side Cleaning Towers

6.6 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 123.
- Install the supplied adapter, bushing, and coupling to the end opposite the feed end of the manifold. See Figure 123. 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.

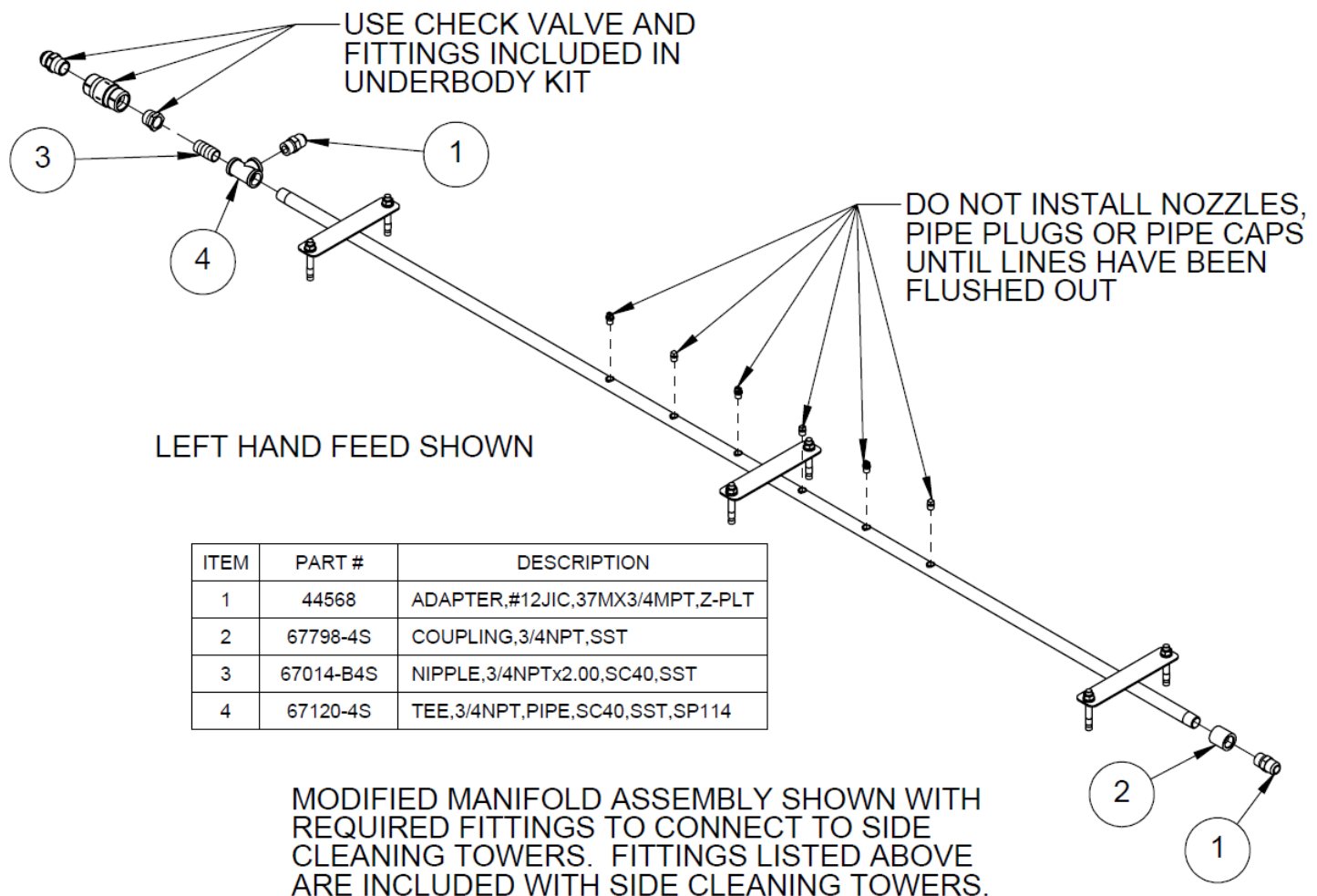
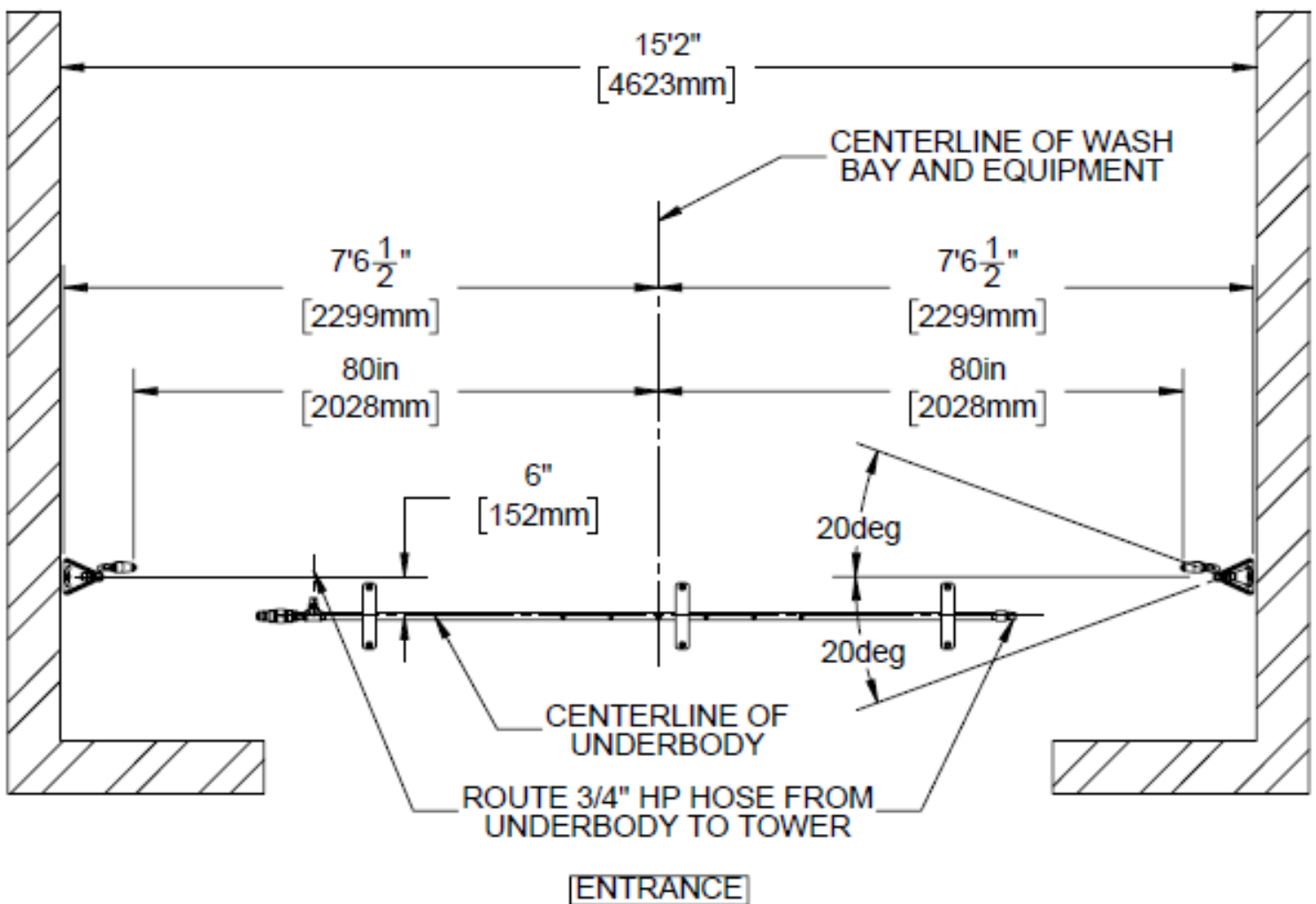


Figure 123 - High Pressure Underbody Manifold Modified for Side Cleaning Towers

6.6 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 124 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 125 for this situation.
- Install the towers and mount all items to the floor using anchor bolts provided.

**Figure 124 - Side Cleaning Tower Location - INSIDE WASH ENVELOPE**

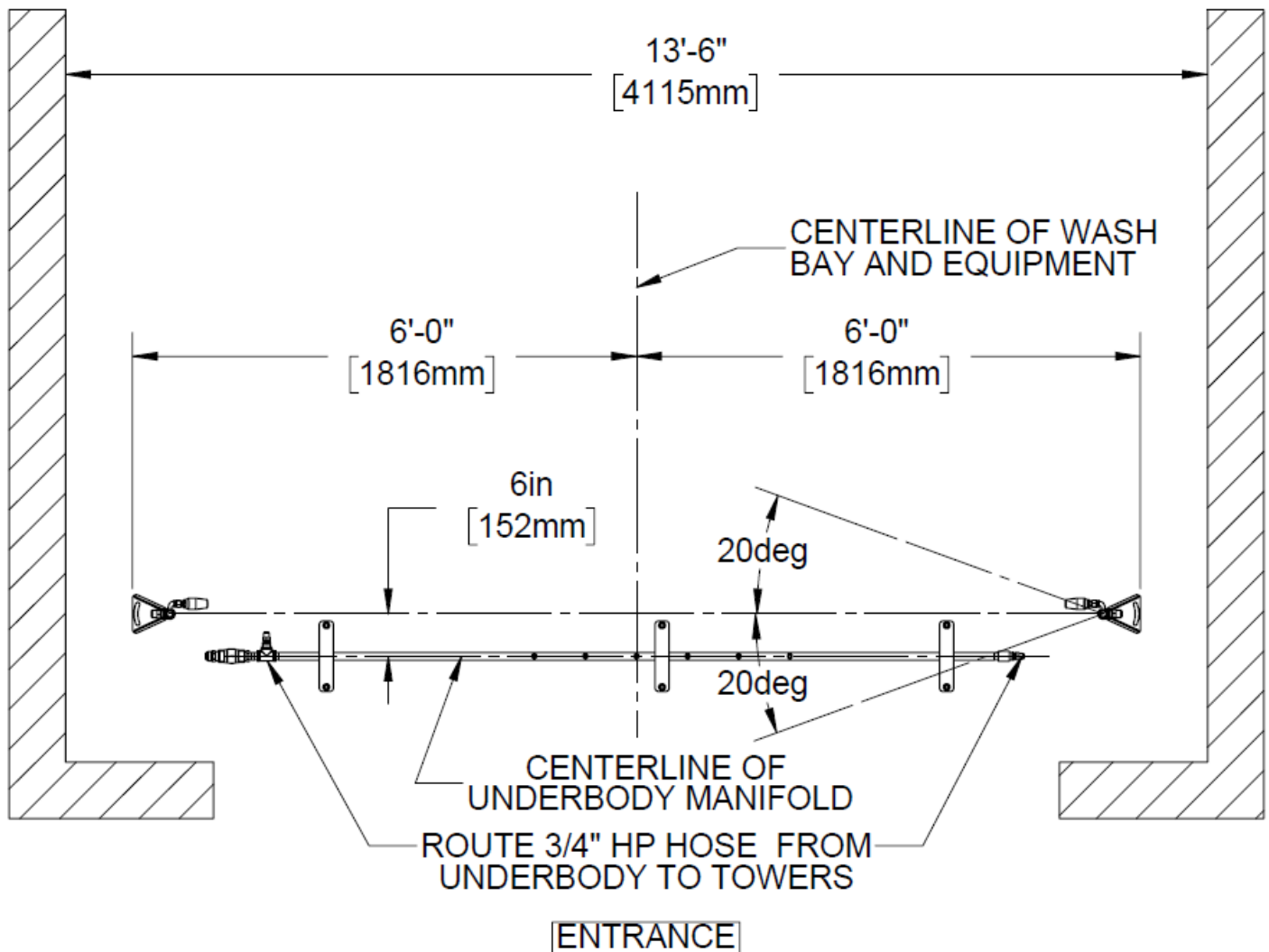


Figure 125 - Side Cleaning Tower Location – ENTRANCE SIDE OF WASH ENVELOPE

6.6 Step 3 Install the High Pressure Hoses

- Install 3/4" high pressure hoses from the underbody manifold on each side to the appropriate tower (see Figure 124 and Figure 125).
- 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 as shown in Figure 122.

6.7 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.

6.7.1 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.

6.7.2 Key Installation Steps

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

6.7.3 Special Tools

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

6.7.4 PDQ Supplied Parts

- The underbody activation kits are available in the following assemblies.
 - Underbody Ultrasonic Activation, Wall Mountable, without Heat: PDQ Part No. 11410022
 - Underbody Ultrasonic Activation, Wall Mountable, with Heat: PDQ Part No. 11410024
 - Underbody Ultrasonic Activation, with Stand Mounts, without Heat: PDQ Part No. 11410023
 - Underbody Ultrasonic Activation, with Stand Mounts, with Heat: PDQ Part No. 11410025

6.7 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 126 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.
 - The wall mounted assemblies are provided with (2) 3/8" x 1 7/8" long sleeve anchors. If these anchors are not appropriate for the wall material, the site is responsible for providing appropriate 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 126.

- 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.

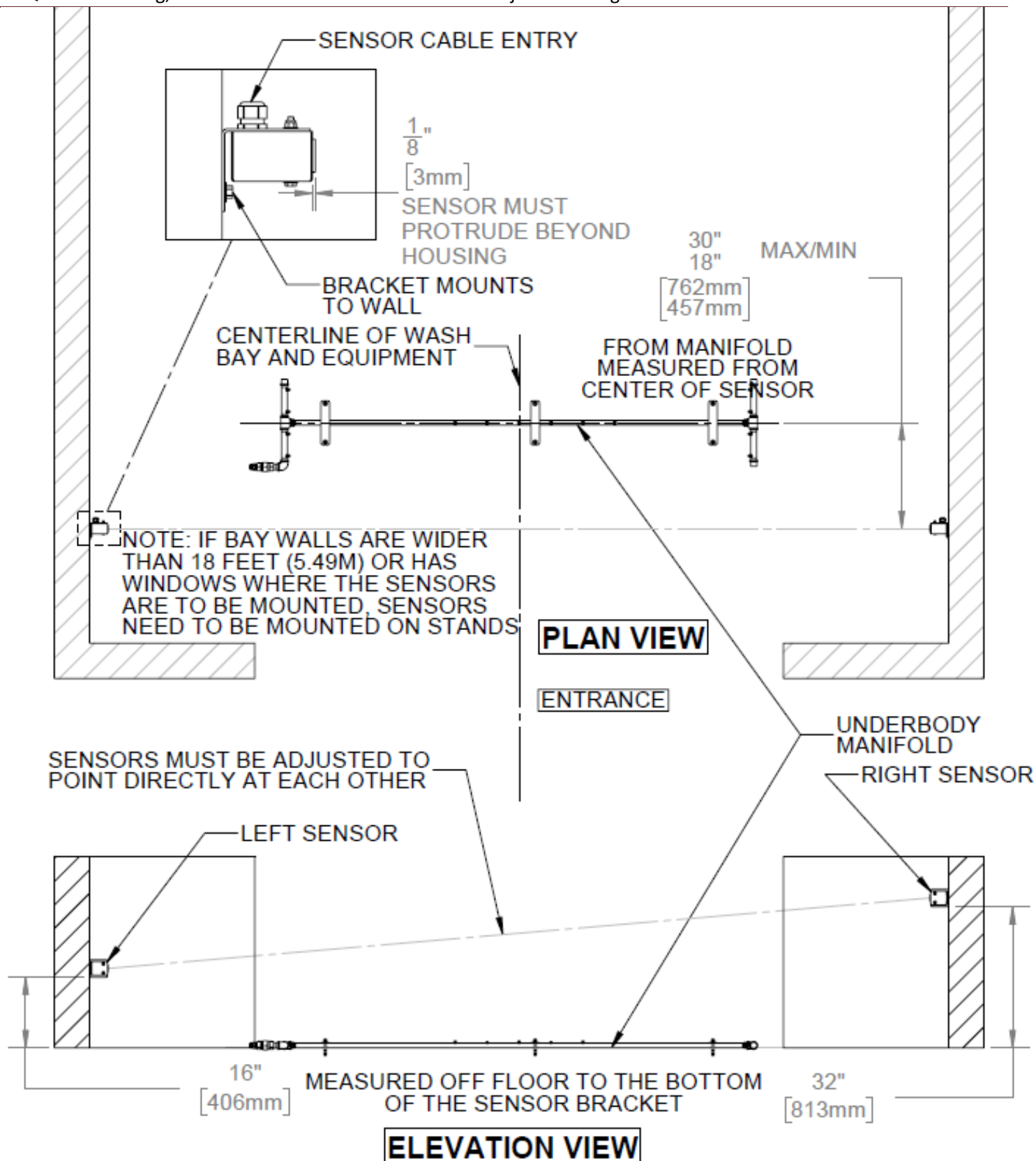


Figure 126 - Wall Mounted Ultrasonic Underbody Activation Sensor Location

- Figure 127 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 127.
 - Adjust the position of one of the sensor assemblies (left hand side as shown in Figure 127) 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.

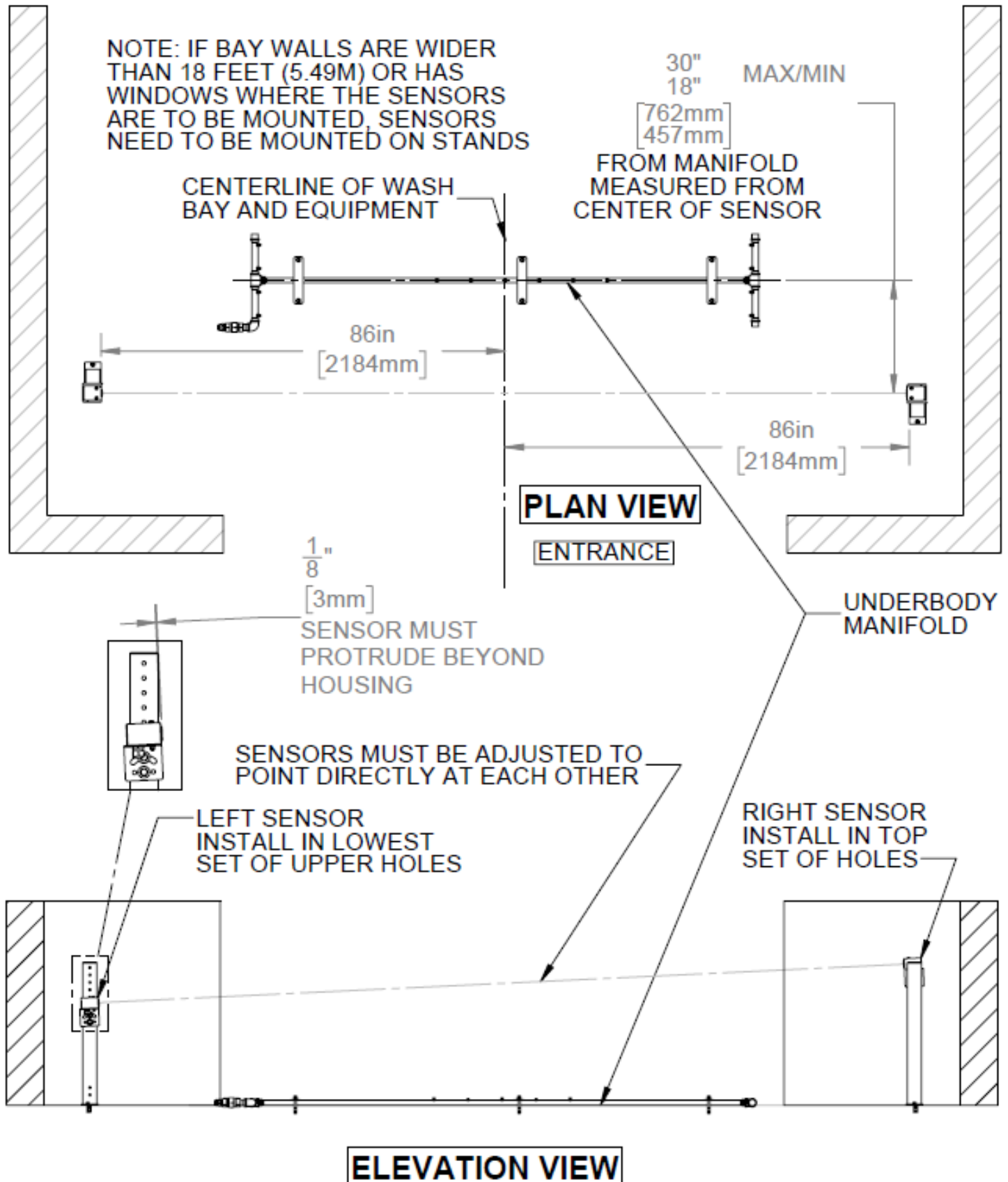


Figure 127 - Stand Mounted Ultrasonic Underbody Activation Sensor Location

6.7 Step 2 Route and Terminate Ultrasonic Sensor Wiring

- Make sure the sensor wire is routed through the strain relief.
- Route the wire to the bay box and terminate per Table 21.
- The sensor are supplied with a 60 foot (18.3m) long cable. If the cable is not long enough to reach the bay box, the cable may be lengthened. When doing this, the following process must be followed exactly to ensure proper function of the ultrasonic sensors. See Figure 128 for a diagram showing the process below.

!!!IMPORTANT!!	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.
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!!!IMPORTANT!!	WHEN SPLICING WIRE TO THE ULTRASONIC CABLE, FOLLOW THE PROCESS BELOW TO ENSURE PROPER FUNCTION OF THE CABLE.
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NOTE:	WHEN ADDING CABLE LENGTH TO THE ULTRASONIC CABLE, ULTRASONIC SENSOR PERFORMANCE WILL BE REDUCED. USE PROPER PLANNING FOR PLACEMENT OF THE BAY BOX CLOSE ENOUGH TO THE SENSORS TO AVOID AND/OR MINIMIZE THE NEED TO ADD LENGTH.
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- 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 heater wire through the strain relief. Connect it to the bay box using site supplied wire as shown in Table 21.

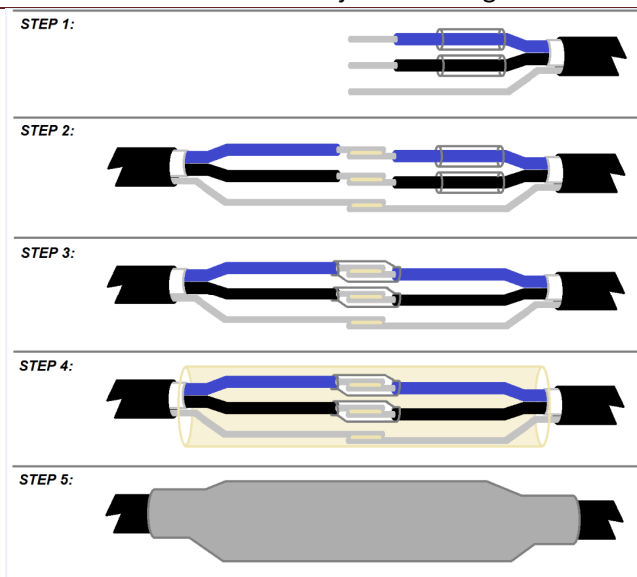


Figure 128 - Ultrasonic Cable Splicing Process Steps

Table 21 - Underbody Ultrasonic Activation Sensor Electrical Connections

UNDERBODY ULTRASONIC ACTIVATION SENSOR CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Left Ultrasonic Underbody Activation Sensor	OPTIONAL	Supplied with Sensor	3A	12 VDC	24W31.BLK	LEFT SENSOR	24B31	BAY BOX	23N01.TB4.1A
					24W31.BLU				23N01.TB4.1B
					24W31.SHLD				23N01.TB4.1C
Right Ultrasonic Underbody Activation Sensor	OPTIONAL	Supplied with Sensor	3A	12 VDC	24W39.BLK	RIGHT SENSOR	24B39	BAY BOX	23N01.TB4.3A
					24W39.BLU				23N01.TB4.3B
					24W39.SHLD				23N01.TB4.3C
Left Ultrasonic Underbody Activation Sensor Heat	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W19	LEFT SENSOR HEATER	26J19.RED	BAY BOX	18X15.4
							26J19.BLK		18X16.4
Right Ultrasonic Underbody Activation Sensor Heat	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W16	RIGHT SENSOR HEATER	26J16.RED	BAY BOX	18X15.3
							26J16.BLK		18X16.3

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

6.8 Photoeye Drive Through Underbody Sensor Installation

The Photoeye 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.

6.8.1 Key Factors to Consider

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

6.8.2 Key Installation Steps

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

6.8.3 Special Tools

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

6.8.4 PDQ Supplied Parts

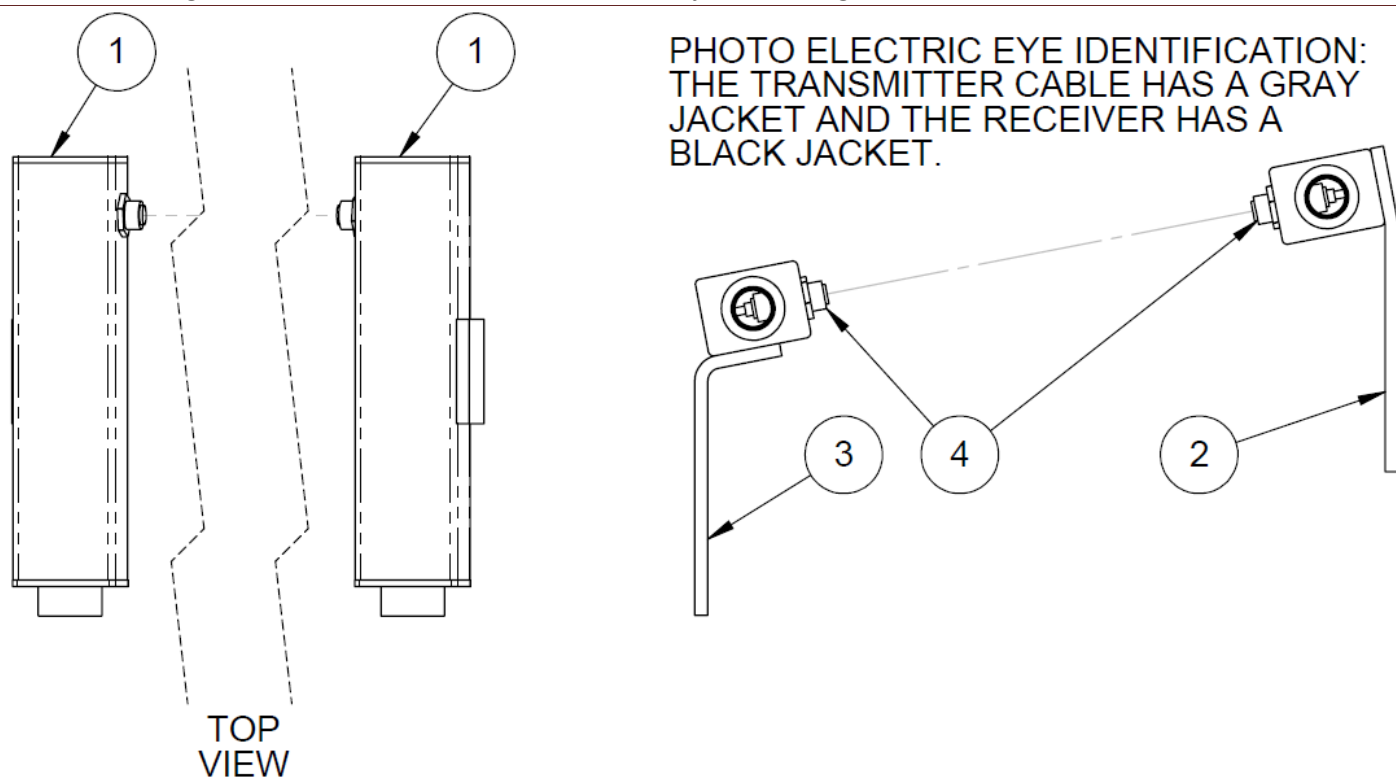
- The underbody activation kits are available in the following assemblies.
 - Underbody Activation Kit – Photoeye, PDQ Part No. 09100009
 - Underbody Photoeye Heat, PDQ Part No. 09100074

6.8 Step 1 Determine the Photoeye Sensor Mounting Location and Mount Housings

NOTE:

Be aware of the direction of sunshine when installing photoeyes. Orient the eyes at an angle as shown but avoid direct sunlight from falling on the receiving photoeye to avoid inconsistent photoeye 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 129 and Figure 130 show the photoeye 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 M390004 and M390005) 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 in to the housings as shown in Figure 129.
- Mount the housings to the wall using site supplied wall anchors. Always mount the transmitting photoeye assemble (gray cable) so that it is in the low position pointing upward.



ITEM	PART #	DESCRIPTION
1	M690000	CAP, 1-1/2X2, TUBE, UHMW
2	M390004	HOUSING, SENSOR, D/S, UNDERCARRIAGE
3	M390005	HOUSING, SENSOR, P/S, UNDERCARRIAGE
4	93176	PHOTO-EYE, THRU-BEAM, SET, 14MM, CARLO

Figure 129 – Underbody Activation Photoeye Assembly

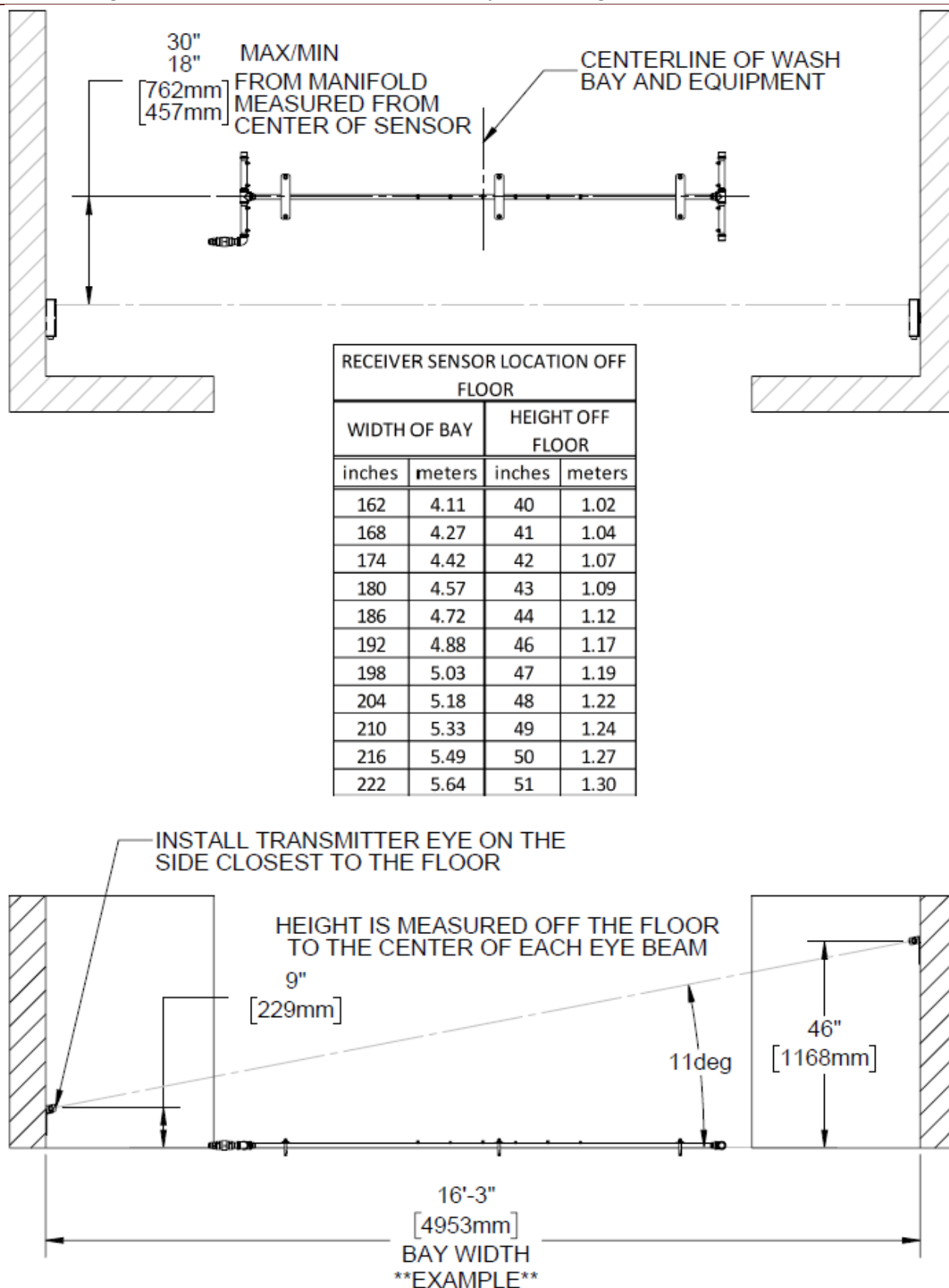


Figure 130 - Photoeye Underbody Activation Sensor Location

6.8 Step 2 Install the Photoeye Control Box

- The photoeye control enclosure contains the photo eye amplifier. This enclosure must be mounted within range of the photo eye cables. The photoeye 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 box.
- The photo eye 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.

6.8 Step 3 Wire the Photoeyes

- To wire the photo eye cables to the relay base the amplifier must be removed from the base.
- Site supplied wiring must be used to wire the amplified to the bay box.
- Route the wire to the bay box and terminate per Table 22
- If the heat option for the sensors is ordered, route heater wire and connect it to the bay box using site supplied wire as shown in Table 22.

Table 22 - Underbody Photoeye Activation Sensor Electrical Connections

UNDERBODY PHOTOEYE ACTIVATION SENSOR CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Transmitting Photoeye Underbody Activation Sensor	OPTIONAL	Supplied with Sensor	3A	24 VAC	GRAY CABLE	TRANSMITTING SENSOR 34B40	GRAY.WHT	PHOTOEYE CONTROL BOX	34N41.5
							GRAY.SHD		34N41.7
Receiving Photoeye Underbody Activation Sensor	OPTIONAL	Supplied with Sensor	3A	24 VAC	BLACK CABLE	RECEIVING SENSOR 34B42	BLK.WHT	PHOTOEYE CONTROL BOX	34N41.6
							BLK.SHD		34N41.8
Underbody Photoeye Power	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W20	PHOTOEYE CONTROL BOX	51	BAY BOX	18X06.2
					20W17		50		18X03.9
Underbody Photoeye Control	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	12 VDC	25W07	PHOTOEYE CONTROL BOX	62	BAY BOX	23N01.TB2.2B
					25W08		48		23N01.TB2.2C
Transmitting Photoeye Underbody Activation Sensor Heat	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W19	LEFT SENSOR HEATER	26J19.RED	BAY BOX	18X15.4
							26J19.BLK		18X16.4
	OPTIONAL	18 GA	3A	24 VAC	26W16		26J16.RED	BAY BOX	18X15.3

ORIGINAL INSTRUCTIONS									
PDQ Manufacturing, Inc.			Information Subject to Change					CONFIDENTIAL	
Receiving Photoeye Underbody Activation Sensor Heat		75°C SITE SUPPLIED				RIGHT SENSOR HEATER	26J16.BLK		18X16.3

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

7 Bay Equipment Installation

This section provides instructions for installing the support equipment needed to operate the LaserWash 360 Plus. 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 Precision Loading Parking System.

7.1 Key Factors to Consider

Bay Box

- The Bay Box should be located inside in an area where it can easily interface with other LaserWash 360 Plus 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.

7.2 Key Installation Steps

- Mount the Bay Box to the wall.
- Terminate wiring between the bay box and the other LaserWash 360 Plus 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 Precision Loading system.

7.3 Special Tools

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

7.4 PDQ Supplied Parts

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

7.5 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

7.6 Install the Bay Box

7.6 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 131 facing up.
- The Bay Box enclosure has 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 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 132.

**DO NOT DRILL HOLES
IN TOP OF THIS BOX
DOING SO WILL VOID
WARRANTY**

02020074

Figure 131 - Bay Box Top Decal

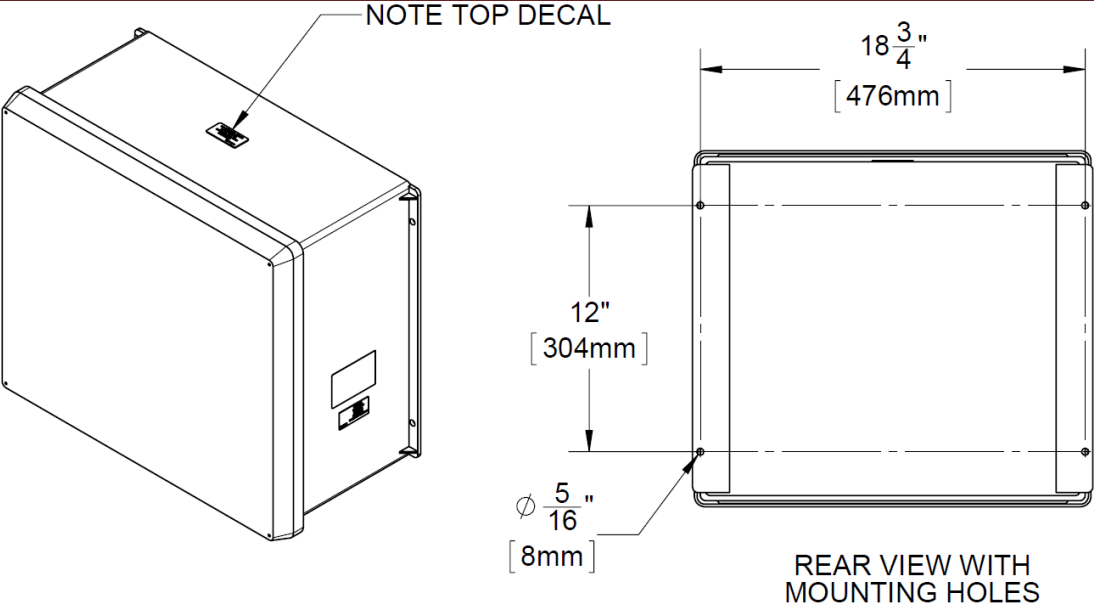


Figure 132 - Bay Box Mounting

7.6 Step 2 Wire Terminations in Bay Box

	POWER SOURCES – THIS PRODUCT SHOULD BE OPERATED ONLY FROM THE TYPE OF SOURCE INDICATED ON THE MANUFACTURER’S IDENTIFICATION LABEL. INSTALLATION SHOULD BE IN COMPLIANCE WITH APPLICABLE SECTIONS OF THE NATIONAL ELECTRIC CODE. CONSULT YOUR LOCAL BUILDING CODE BEFORE INSTALLING.
	WARNING –LOCKOUT/TAGOUT THE UPSTREAM DISCONNECTING MEANS PRIOR TO TERMINATING ANY ELECTRICAL CONNECTIONS DURING INSTALLATION.
!!!IMPORTANT!!	DO NOT DRILL HOLES IN THE TOP OF THE BAY BOX. DOING SO WILL VOID THE WARRANTY

Terminate wires to the bay box as described below in Table 23. Terminal numbers are marked inside the applicable enclosure. Wire numbers coincide with numbers listed on the applicable schematic (Table 2).

Table 23 - Bay Box Electrical Connections

BAY BOX CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Network Communication	STANDARD	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A		22W42	E-CHAIN JUNCTION BOX	40N18.1	BAY BOX	22A13.P6
Pump Station Communication	STANDARD	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A	N/A	22W40	PUMP STATION	12N12.J1	BAY BOX	22A13.P5
Bay Box Low Voltage	STANDARD	12 GA 75°C SITE SUPPLIED	12A	24 VAC	8W02	PUMP STATION	8F02.2	BAY BOX	18X01.4
					9W02		9F02.2		18X02.4
					10W02		3X21.4		18X03.4
					4W35		2X08.4		18X00.1
Left Measurement Ultrasonic Sensor	STANDARD	Supplied with Sensor	3A	12 VDC	24W35.BLK	LEFT SENSOR	24B35	BAY BOX	23N01.TB4.2A
					24W35.BLU				23N01.TB4.2B
					24W35.SHLD				23N01.TB4.2C
Right Measurement Ultrasonic Sensor	STANDARD	Supplied with Sensor	3A	12 VDC	24W43.BLK	RIGHT SENSOR	24B43	BAY BOX	23N01.TB4.4A
					24W43.BLU				23N01.TB4.4B
					24W43.SHLD				23N01.TB4.4C
Site Supplied Computer Communication	OPTIONAL	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A	N/A	22W30	SITE COMPUTER		BAY BOX	22A13.P1
ACCESS Communication	OPTIONAL	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A	N/A	22W34	ACCESS UNIT		BAY BOX	22A13.P2
Wash Activation Node Communication	OPTIONAL	CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A	N/A	22W44	WASH ACTIVATION NODE		BAY BOX	22A13.P7
Left Measurement Ultrasonic Sensor Heat	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W43	LEFT SENSOR HEATER	26J43.RED	BAY BOX	18X11.4
							26J43.BLK		18X12.4

BAY BOX CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Right Measurement Ultrasonic Sensor Heat	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W39	RIGHT SENSOR HEATER	26J39.RED	BAY BOX	18X11.3
							26J39.BLK		18X12.3
Gatling Gun Control	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W26	GATLING GUN ENCLOSURE	SIG.4	BAY BOX	23N03.2A
					26W28		24N.4		23N03.2B
Wheel Cleaner Signal	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W30	WHEEL CLEANER ENCLOSURE	1X03.1	BAY BOX	23N03.3A
					26W32		1X04.1		23N03.3B
Left Ultrasonic Underbody Activation Sensor	OPTIONAL	Supplied with Sensor	3A	12 VDC	24W31.BLK	LEFT SENSOR	24B31	BAY BOX	23N01.TB4.1A
					24W31.BLU				23N01.TB4.1B
					24W31.SHLD				23N01.TB4.1C
Right Ultrasonic Underbody Activation Sensor	OPTIONAL	Supplied with Sensor	3A	12 VDC	24W39.BLK	RIGHT SENSOR	24B39	BAY BOX	23N01.TB4.3A
					24W39.BLU				23N01.TB4.3B
					24W39.SHLD				23N01.TB4.3C
Left Ultrasonic Underbody Activation Sensor Heat	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W19	LEFT SENSOR HEATER	26J19.RED	BAY BOX	18X15.4
							26J19.BLK		18X16.4
Right Ultrasonic Underbody Activation Sensor Heat	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W16	RIGHT SENSOR HEATER	26J16.RED	BAY BOX	18X15.3
							26J16.BLK		18X16.3
Underbody Photoeye Power	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W20	PHOTOEYE CONTROL BOX	51	BAY BOX	18X06.2
					20W17		50		18X03.9
Underbody Photoeye Control	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	12 VDC	25W07	PHOTOEYE CONTROL BOX	62	BAY BOX	23N01.TB2.2B
					25W08		48		23N01.TB2.2C
Transmitting Photoeye	OPTIONAL	18 GA 75°C	3A	24 VAC	26W19	LEFT SENSOR HEATER	26J19.RED	BAY BOX	18X15.4

BAY BOX CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE* SITE SUPPLIED	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
							26J19.BLK		18X16.4
Underbody Activation Sensor Heat									
Receiving Photoeye Underbody Activation Sensor Heat	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W16	RIGHT SENSOR HEATER	26J16.RED	BAY BOX	18X15.3
							26J16.BLK		18X16.3
Basic Door Control Package	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W17	EXIT DOOR CONTROL BOX	51	BAY BOX	18W06.3
					20W14		50		18W03.11
				12 VDC	25W15		62		23N01.TB2.4B
					25W16		48		23N01.TB2.4C
Deluxe Door Control Package	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W17	EXIT DOOR CONTROL BOX	51	BAY BOX	18W06.3
					20W14		50		18W03.11
				12 VDC	25W15		62		23N01.TB2.4B
					25W16		48		23N01.TB2.4C
			3A	24 VAC	21W37	ENTRANCE DOOR CONTROL BOX	51	BAY BOX	18X09.4
					20W23		50		18X03.7
				12 VDC	25W03		62		23N01.TB2.1B
					25W04		48		18X10.4
Ultimate Door Control Package	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W17	EXIT DOOR CONTROL BOX	51	BAY BOX	18W06.3
					20W14		50		18W03.11
				12 VDC	25W15		62		23N01.TB2.4B
					25W16		48		23N01.TB2.4C
			3A	24 VAC	21W37	ENTRANCE DOOR CONTROL BOX	51	BAY BOX	18X09.4
					20W23		50		18X03.7
				12 VDC	25W03		62		23N01.TB2.1B
					25W04		48		18X10.4
Bay Temperature Sensor	OPTIONAL	Supplied with Sensor	3A	12 VDC	25W38	BAY TEMPERATURE SENSOR	RED	BAY BOX	23N01.TB2.10B
							BLACK		23N01.TB2.10C
							SHIELD		23N01.TB2.10C
Outside Temperature Sensor	OPTIONAL	Supplied with Sensor	3A	12 VDC	25W34	OUTSIDE TEMPERATURE SENSOR	RED	BAY BOX	23N01.TB2.9B
							BLACK		23N01.TB2.9C
							SHIELD		23N01.TB2.9C
Basic In-Bay Sign	STANDARD	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W34	BASIC IN-BAY SIGN	28A13.24V	BAY BOX	18X08.4
					20W20		28A13.N		18X03.8
		18 GA	3A	12 VDC	22W02.BLK		RS-45.A		22A13.1

BAY BOX CONNECTIONS

MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
		TWISTED PAIR SITE SUPPLIED			22W02.WHT		RS-45.B		22A13.2
					22W02.SHD				22A13.3
		22 GA, 7 CONDUCTOR WITH RJ-11 JACK ON ONE END, RJ-11 PLUG ON ONE END, SITE SUPPLIED			22W28		28B10		22A13
Deluxe In-Bay Sign	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W34	DELUXE IN-BAY SIGN	29A17.24V	BAY BOX	18X08.4
					20W20		29A17.N		18X03.8
		18 GA TWISTED PAIR SITE SUPPLIED	3A	12 VDC	22W02.BLK		RS-45.A		22A13.1
					22W02.WHT		RS-45.B		22A13.2
					22W02.SHD				22A13.3
		22 GA, 7 CONDUCTOR WITH RJ-11 JACK ON ONE END, RJ-11 PLUG ON ONE END, SITE SUPPLIED			22W28		29B10		22A13
Entrance Sign	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W39	ENTRANCE SIGN	32A16.24V	BAY BOX	18X09.3
					20W11		32A16.N		18X03.12
				12 VDC	26W01		32A16.J1.3		23N02.1A
					26W04		32A16.J1.2		23N02.2A
Basic Countdown Timer	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W03	BASIC COUNTDOWN TIMER	33A18.J6.1	BAY BOX	18X04.4
					20W05		33A18.J6.2		18X03.16
				12 VDC	27W42		33A18.J2.2		23N05.6A
					27W44		33A18.J2.3		23N05.6B
Deluxe Countdown Timer	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W03	DELUXE COUNTDOWN TIMER	33A18.J6.1	BAY BOX	18X04.4
					20W05		33A18.J6.2		18X03.16

BAY BOX CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
		18 GA TWISTED PAIR SITE SUPPLIED	3A	12 VDC	24W07.BLK		33A18.J1.1		23N01.TB3.2B
					24W07.WHT		33A18.J1.2		23N01.TB3.2C
					24W07.SHD		33A18.J1.3		N/A
Stand Alone Dryer	OPTIONAL	16 GA 75°C SITE SUPPLIED	3A	24 VAC	27W27	STAND ALONE DRYER MOTOR STARTER CONTROL BOX	DRYER #1.A1	BAY BOX	23N05.2A
					27W30		DRYER #2.A1		23N05.3A
					27W34		DRYER #3.A1		23N05.4A
					27W38		DRYER #4.A1		23N05.5A
					26W34		DRYER #5.A1		23N03.4A
					26W38		DRYER #6.A1		23N03.5A
					20W03		CTRL NEUTRAL		18X03.20
In Place Underbody	OPTIONAL	16 GA 75°C SITE SUPPLIED	3A	24 VAC	26W18	HIGH PRESSURE UNDERBODY CONTROL VALVE (PUMP STATION)	27Y16.A1	BAY BOX	18X18.4
					20W18		27Y16.A2		18X03.10
Wash Activation Node	OPTIONAL	16 GA 75°C SITE SUPPLIED	3A	24 VAC	21W13	WASH ACTIVATION BOX	1X01.4	BAY BOX	18X06.4
					20W08		1X02.4		18X03.15
					20W44		PANEL GROUND		18X00.3
		CAT-5e with RJ-45 plugs each end SITE SUPPLIED	3A	N/A	22W44		WASH ACT J1		22A13.P7
Precision Loading Power and Signal	OPTIONAL	Supplied with Kit	3A	24 VAC	25W27.1	PRECISION LOADING JUNCTION BOX	51X05.1	BAY BOX	18X19.4
				12 VDC	25W27.2		51X06.1		18X03.13
					25W27.3		51X02.1		23N01.TB2.7B
					25W27.4		51X04.1		23N01.TB2.8B
					25W27.5		51X01.1		23N01.TB2.7A
					25W27.6		51X03.1		23N01.TB2.7C

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

7.7 Side Measurement Ultrasonic Sensor Installation

Side measurement ultrasonic sensors have two styles of mounting: Wall mounted (see Figure 133) and Stand mounted (see Figure 134).

- The wall mounted sensor part numbers for the LaserWash 360 Plus are 11410015 and 11410016. The 11410016 units includes the heat option (see Figure 133).
- The stand mounted sensor part numbers for the LaserWash 360 Plus are 11410017 and 11410018. The 11410018 units include the heat option (see Figure 134).

!!!IMPORTANT!!

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

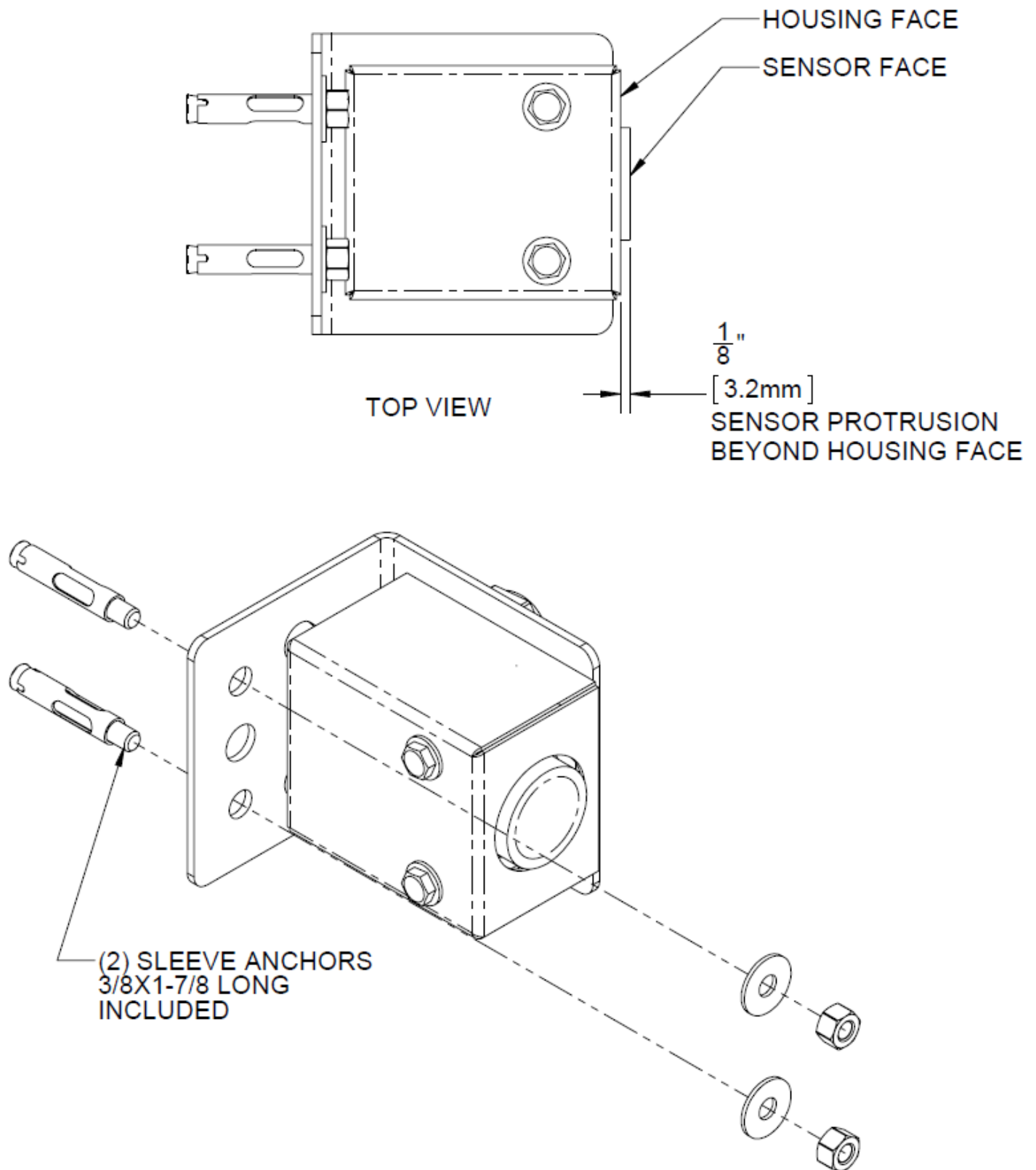
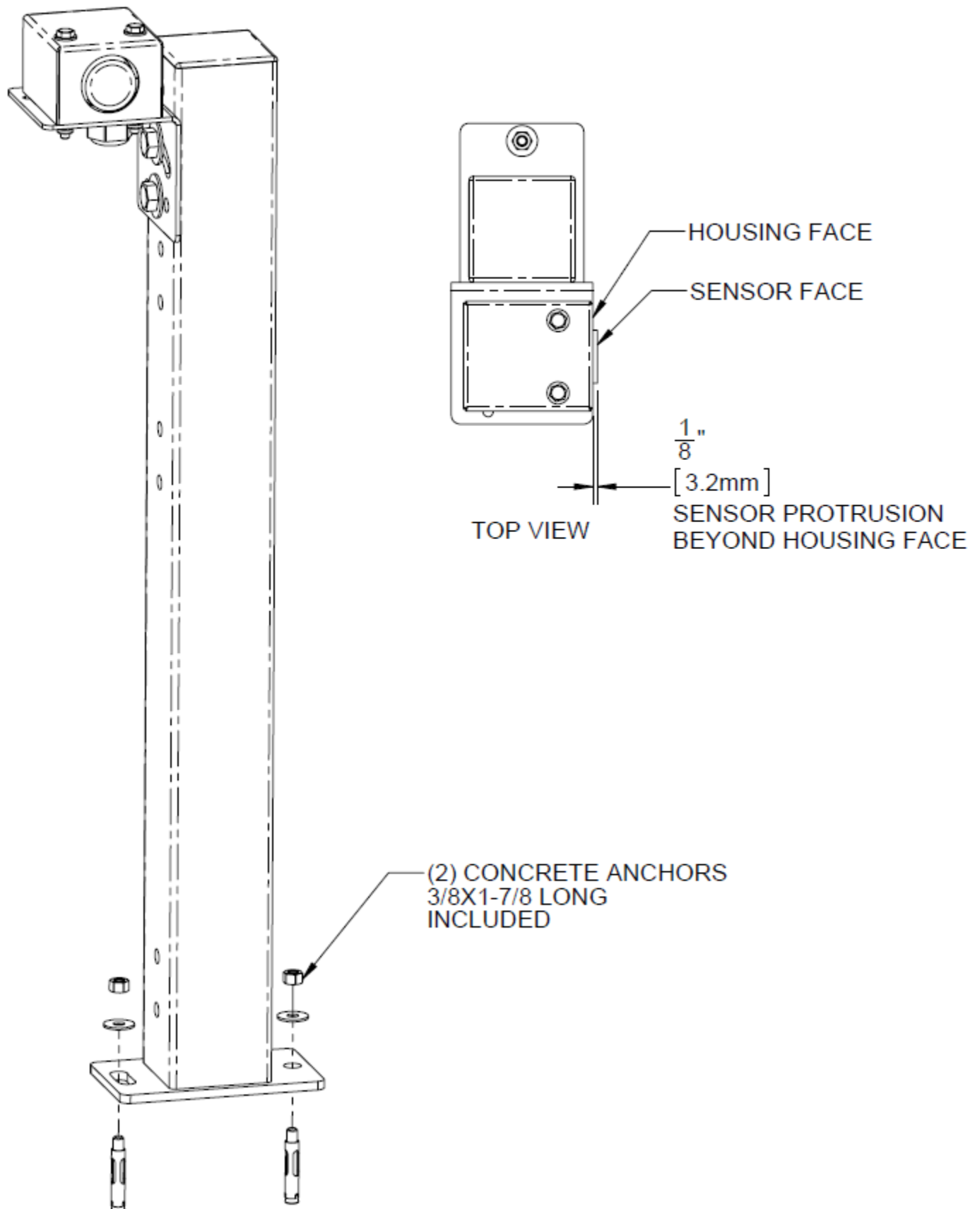


Figure 133 – Wall Mounted Ultrasonic Sensor assembly

**Figure 134 – Stand Mounted Ultrasonic Sensor Assembly**

7.7 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 135. Regardless 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 135.
- 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 the sleeve anchors supplied with the assembly or site supplied fasteners. Stand mounted sensors are supplied sleeve anchors or 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 strain relief 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 strain relief for the sensor cable. Be sure this is pointed downward.

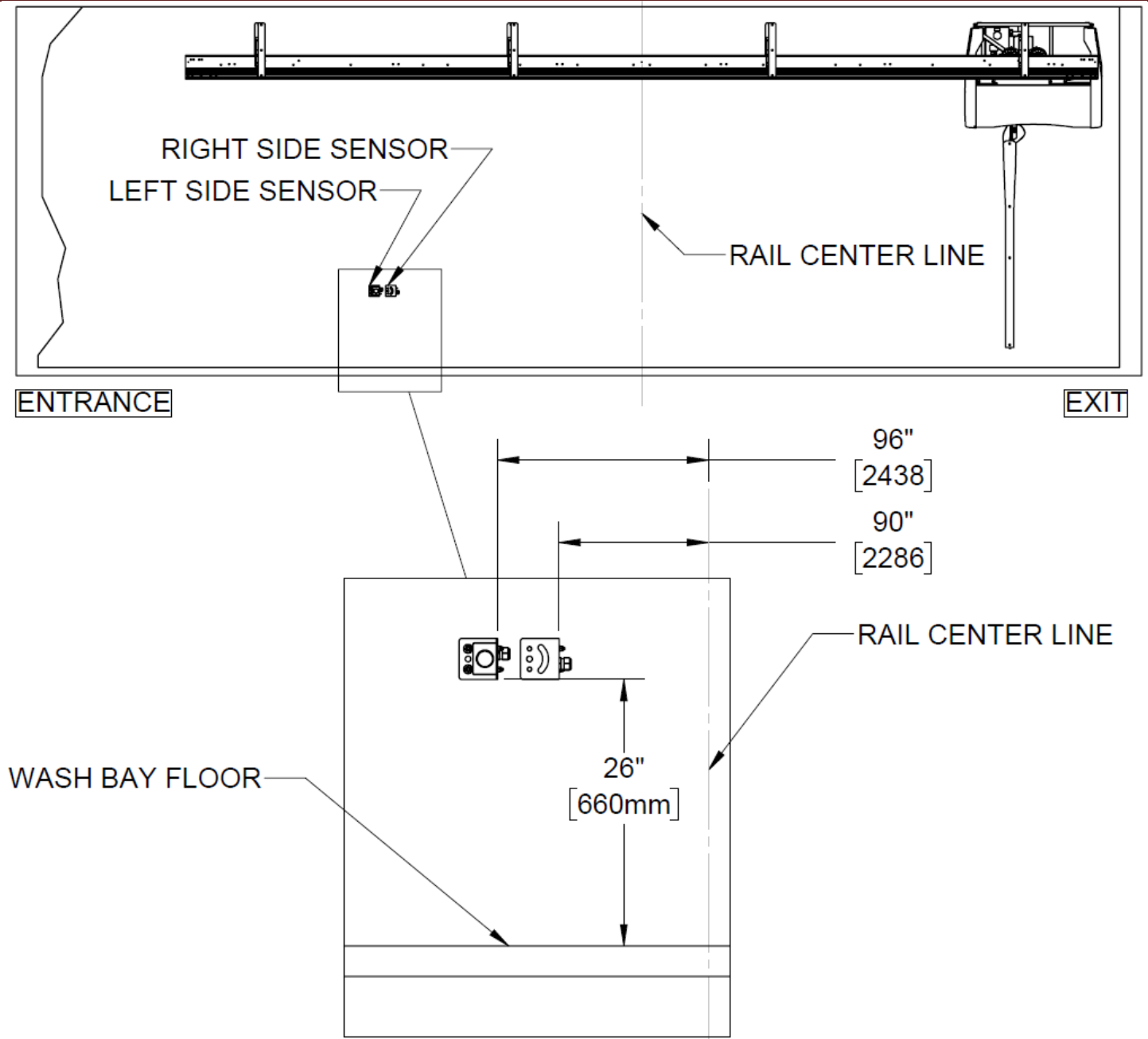


Figure 135 - Side Measurement Ultrasonic Locations

7.7 Step 2 Terminate the Ultrasonic Sensor Wires

Terminate the wires for the sensors as described below in Table 24. Terminal numbers are marked inside the applicable enclosure. Wire numbers coincide with numbers listed on the applicable schematic (Table 2).

- Make sure the sensor wire is routed through the strain relief.
- Route the wire to the bay box and terminate per Table 24.
- The sensor is supplied with a 60 foot (18.3m) long cable. If the cable is not long enough to reach the bay box, the cable may be lengthened. When doing this, the following process must be followed ***exactly*** to ensure proper function of the ultrasonic sensors. See Figure 128 for a diagram showing the process below.

!!!IMPORTANT!!	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.
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!!!IMPORTANT!!	WHEN SPLICING WIRE TO THE ULTRASONIC CABLE, FOLLOW THE PROCESS BELOW TO ENSURE PROPER FUNCTION OF THE CABLE.
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NOTE:	WHEN ADDING CABLE LENGTH TO THE ULTRASONIC CABLE, ULTRASONIC SENSOR PERFORMANCE WILL BE REDUCED. USE PROPER PLANNING FOR PLACEMENT OF THE BAY BOX CLOSE ENOUGH TO THE SENSORS TO AVOID AND/OR MINIMIZE THE NEED TO ADD LENGTH.
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- 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 the heater wire through the strain relief. Connect it to the bay box using site supplied wire as shown in Table 24Table 21.

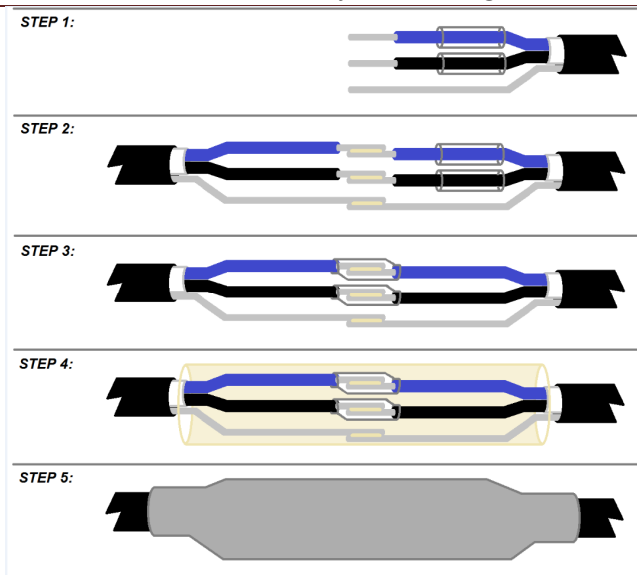


Figure 136 - Ultrasonic Cable Splicing Process Steps

Table 24 - Side Measurement Ultrasonic Sensors Electrical Connections

SIDE ULTRASONIC SENSOR CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Left Measurement Ultrasonic Sensor	STANDARD	Supplied with Sensor	3A	12 VDC	24W35.BLK	LEFT SENSOR	24B35	BAY BOX	23N01.TB4.2A
					24W35.BLU				23N01.TB4.2B
					24W35.SHLD				23N01.TB4.2C
Right Measurement Ultrasonic Sensor	STANDARD	Supplied with Sensor	3A	12 VDC	24W43.BLK	RIGHT SENSOR	24B43	BAY BOX	23N01.TB4.4A
					24W43.BLU				23N01.TB4.4B
					24W43.SHLD				23N01.TB4.4C
Left Measurement Ultrasonic Sensor Heat	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W43	LEFT SENSOR HEATER	26J43.RED	BAY BOX	18X11.4
							26J43.BLK		18X12.4
Right Measurement Ultrasonic Sensor Heat	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	26W39	RIGHT SENSOR HEATER	26J39.RED	BAY BOX	18X11.3
							26J39.BLK		18X12.3

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

7.8 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 easy accessible location to those who will need to use it. One system stop button box is included as standard equipment with every LaserWash 360 Plus. Additional units may be purchased as optional.

Two types of system stop boxes are supplied with LaserWash 360 Plus. For 400V 50 Hz sites, the systems stop box (PDQ Part No. 11010173) includes a reset button as shown in Figure 137. For all other markets, the system stop button (PDQ Part No. 11010113) includes a stop button only as shown in Figure 138.

7.8 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 139. 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.

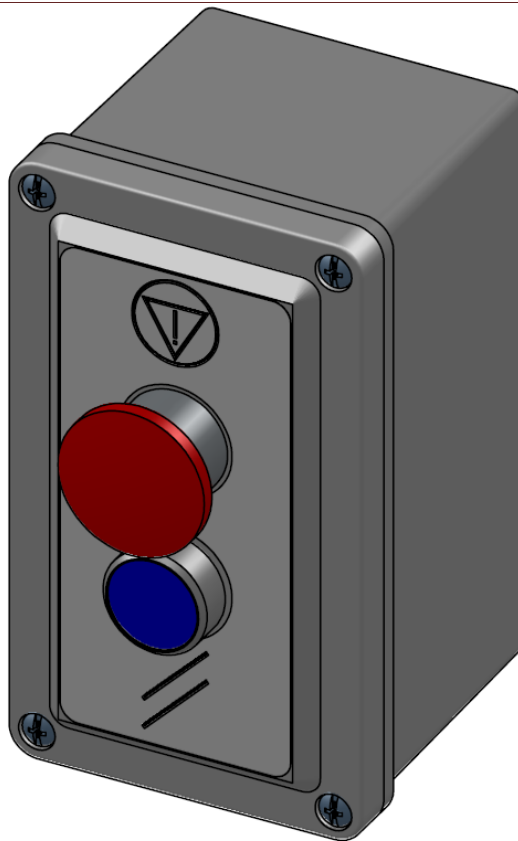


Figure 137 - System Stop Button with Reset



Figure 138 - System Stop Button without Reset

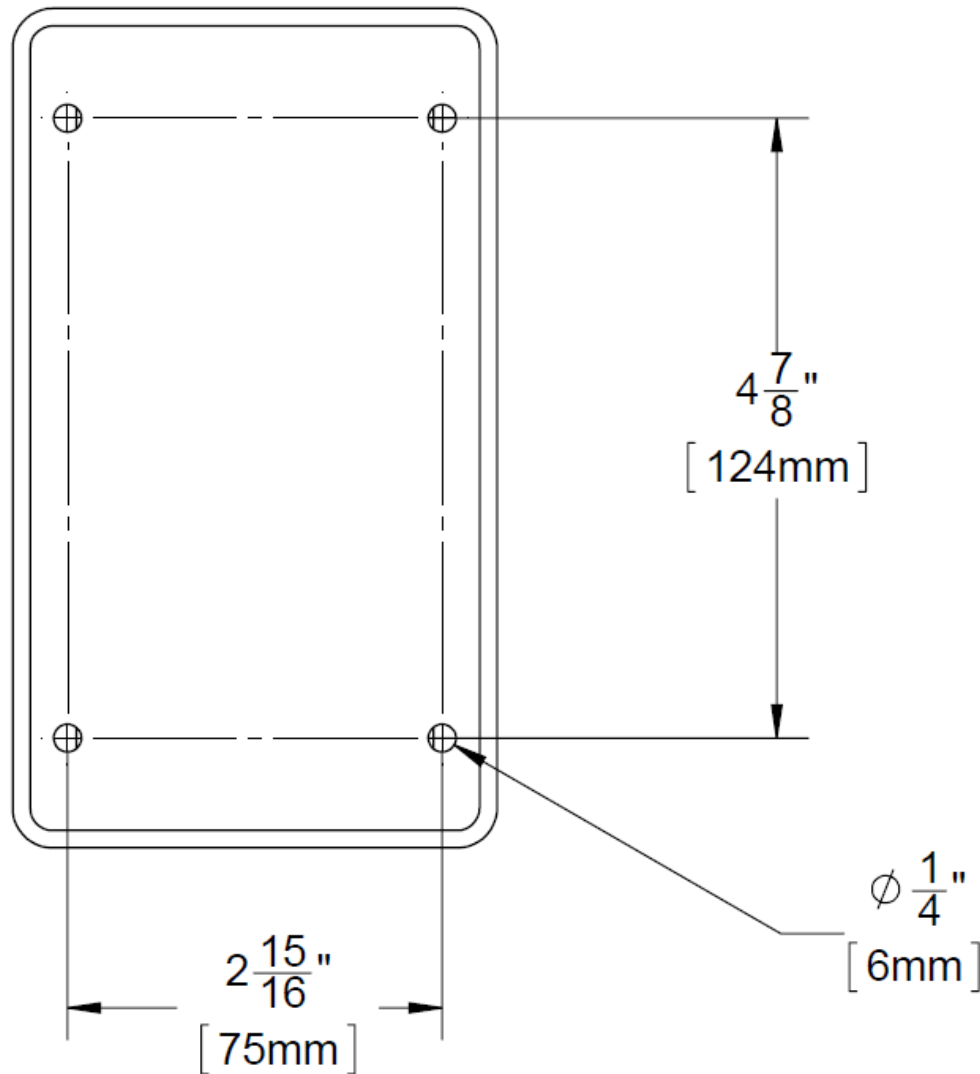


Figure 139 - System Stop Button Box Mounting Holes

7.8 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 Table 25. 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 140 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 Table 26. 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 141 for PDQ Part No. 11010113.

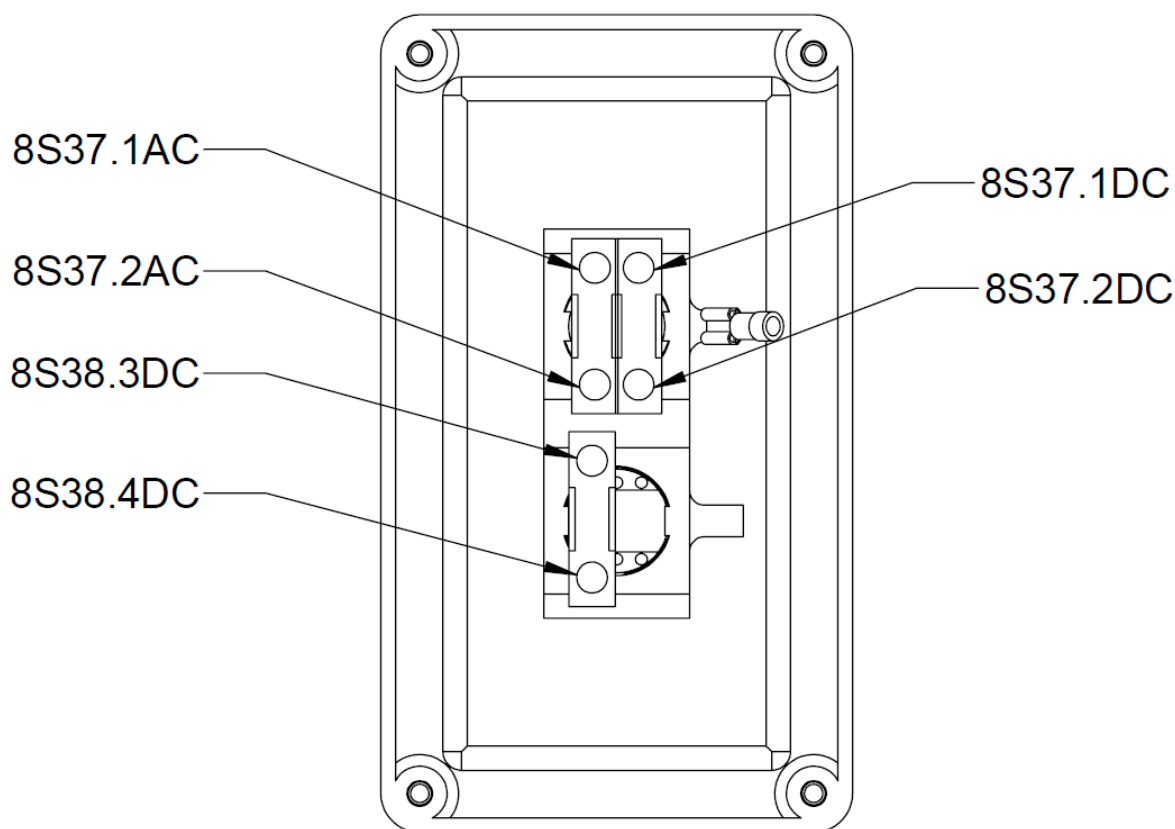


Figure 140 - Terminal Designations for System Stop Button Box with Reset

Table 25 - Electrical Connections for System Stop Button Boxes with Reset

SYSTEM STOP BUTTON BOX CONNECTIONS, WITH RESET									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
One System Stop/System Reset Unit	STANDARD	18 GA 75°C SITE SUPPLIED	3A	24 VAC 12VDC	8W22	PUMP STATION	3X02.3	SYSTEM STOP	8S37.1AC
					8W25		3X04.1		8S37.1DC
					8W35		3X07.3		8S37.3DC
					8W40		3X03.1		8S37.2AC
					13W07		3X08.4		8S37.2DC
					13W09		3X08.3		8S37.4DC
Two System Stop/System Reset Units	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC 12VDC	8W22	PUMP STATION	3X02.3	SYSTEM STOP (OPTIONAL)	8S37.1AC
					8W25		3X04.1		8S37.1DC
					8W27		3X07.4		8S37.3DC
					13W11		3X08.2		8S37.4DC
					8W35		3X07.3	SYSTEM STOP (STANDARD)	8S37.3DC
					13W07		3X08.4		8S37.2DC
					13W09		3X08.3		8S37.4DC
					8W33	SYSTEM STOP	8S37.2AC	SYSTEM STOP (STANDARD)	8S37.1AC
					8W32	(OPTIONAL)	8S37.2DC		8S37.1DC

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

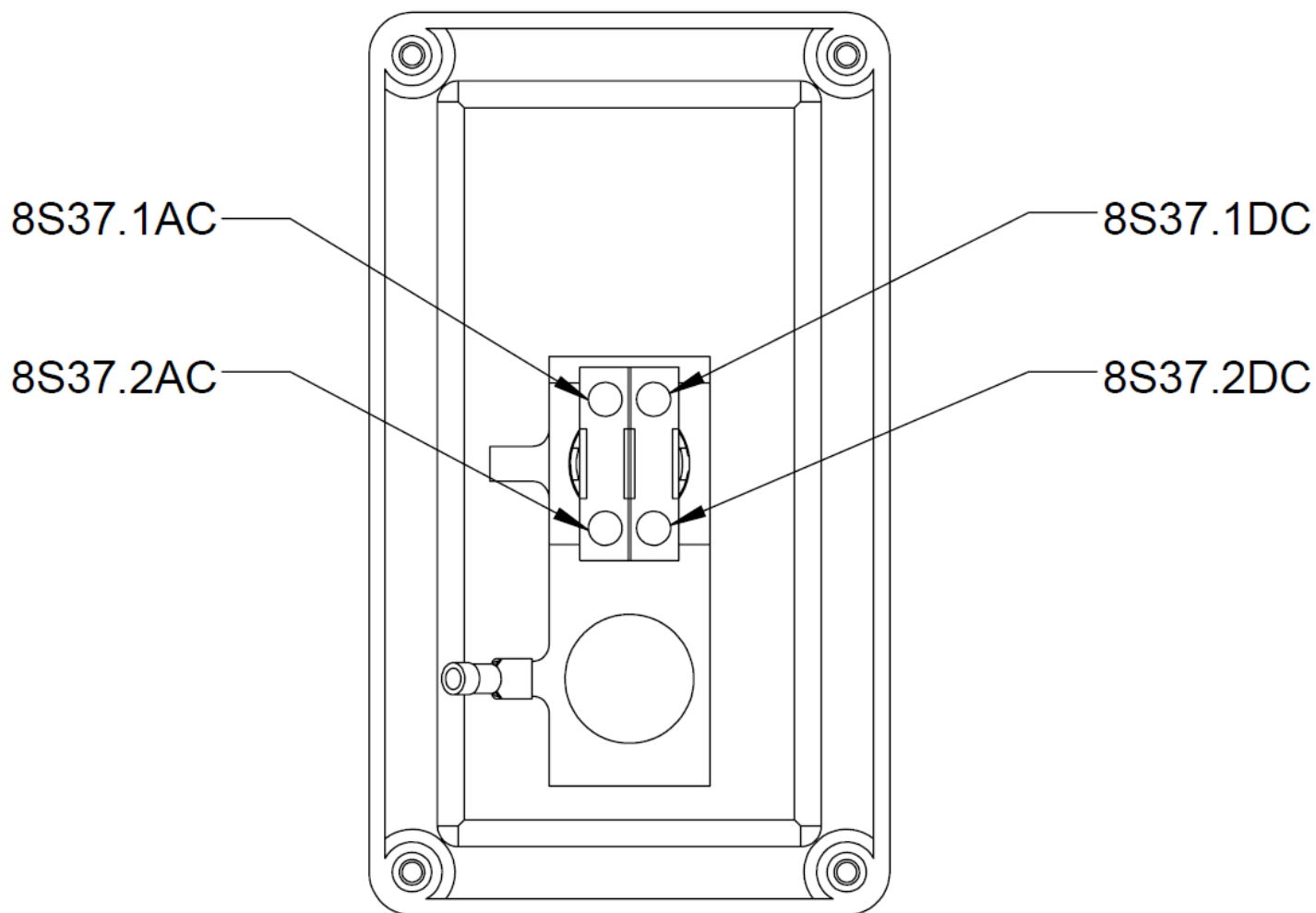


Figure 141 - Terminal Designations for System Stop Button Box without Reset

Table 26 - Electrical Connections for System Stop Button Boxes without Reset

SYSTEM STOP BUTTON BOX CONNECTIONS, WITHOUT RESET									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE GAUGE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
One System Stop Unit	STANDARD	18 GA 75°C SITE SUPPLIED	3A	24 VAC 12VDC	8W22	PUMP STATION	3X02.3	SYSTEM STOP	8S37.1AC
					8W25		3X04.1		8S37.1DC
					8W40		3X03.1		8S37.2AC
					13W07		3X08.4		8S37.2DC
Two System Stop Units	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC 12VDC	8W22	PUMP STATION	3X02.3	SYSTEM STOP (OPTIONAL)	8S29.1AC
					8W25		3X04.1		8S29.1DC
					8W40		3X03.1	SYSTEM STOP (STANDARD)	8S37.2AC
					13W07		3X08.4		8S37.2DC
					SITE	SYSTEM STOP (OPTIONAL)	8S37.2AC	SYSTEM STOP (STANDARD)	8S37.1AC
					SITE		8S37.2DC		8S37.1DC

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

7.9 Door Control Installation

Door controls consist of photoeye 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. 09230005). This package includes one set of photoeyes 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. 09110013). This package includes two set of photoeyes. 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.
- Ultimate Door Controls (Part No. 09230004). This package includes a set of photoeyes for the entrance and for the exit. It also includes a floor loop vehicle detector to add additional safety for longer wash bays.

7.9 Step 1 Mount the Door Photoeye 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.

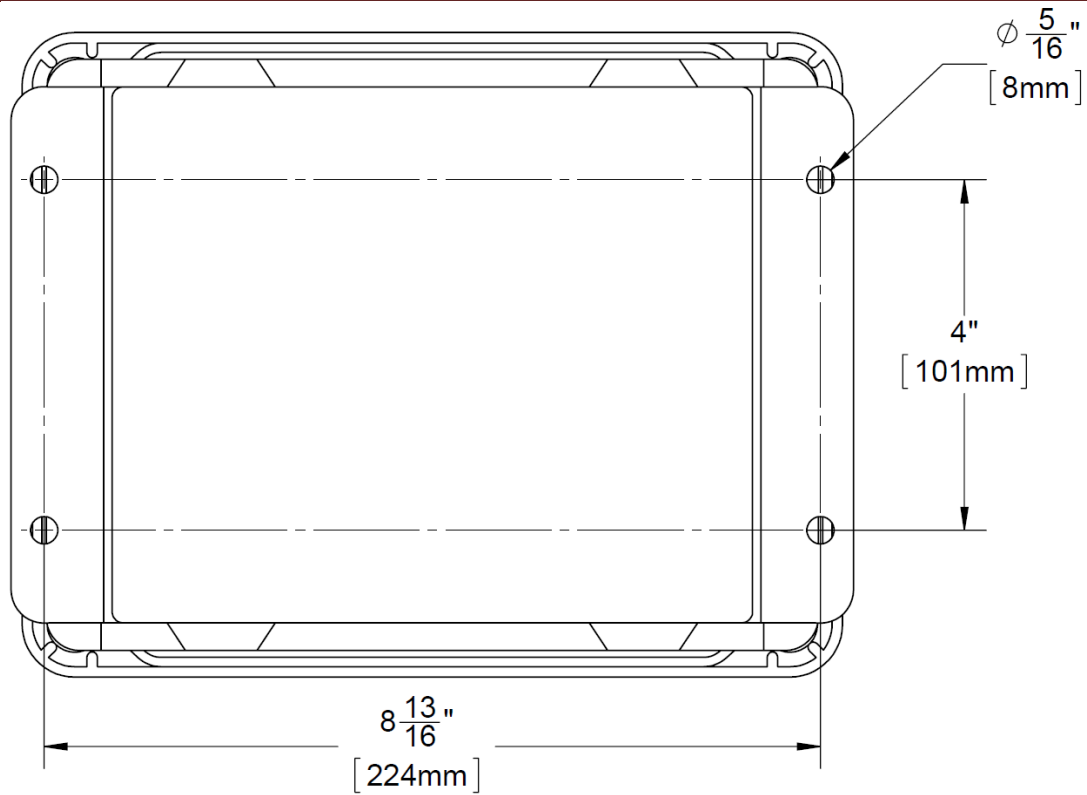


Figure 142 - Photoeye Control Enclosure Mounting

7.9 Step 2 Locate and Mount Enclosures for Photoeyes

The typical mounting for the photo eyes is shown below in Figure 143 for the inside of the exit wall of the wash bay and Figure 144 for the inside of the entrance wall of the wash bay.

- Each photoeye kit is supplied with an enclosure for each photoeye receiver and transmitter.
 - The enclosure will support the connection of fittings with $\frac{1}{2}$ " NPT pipe threads. This will allow the connection of the supplied strain relief for installing the photoeye 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.

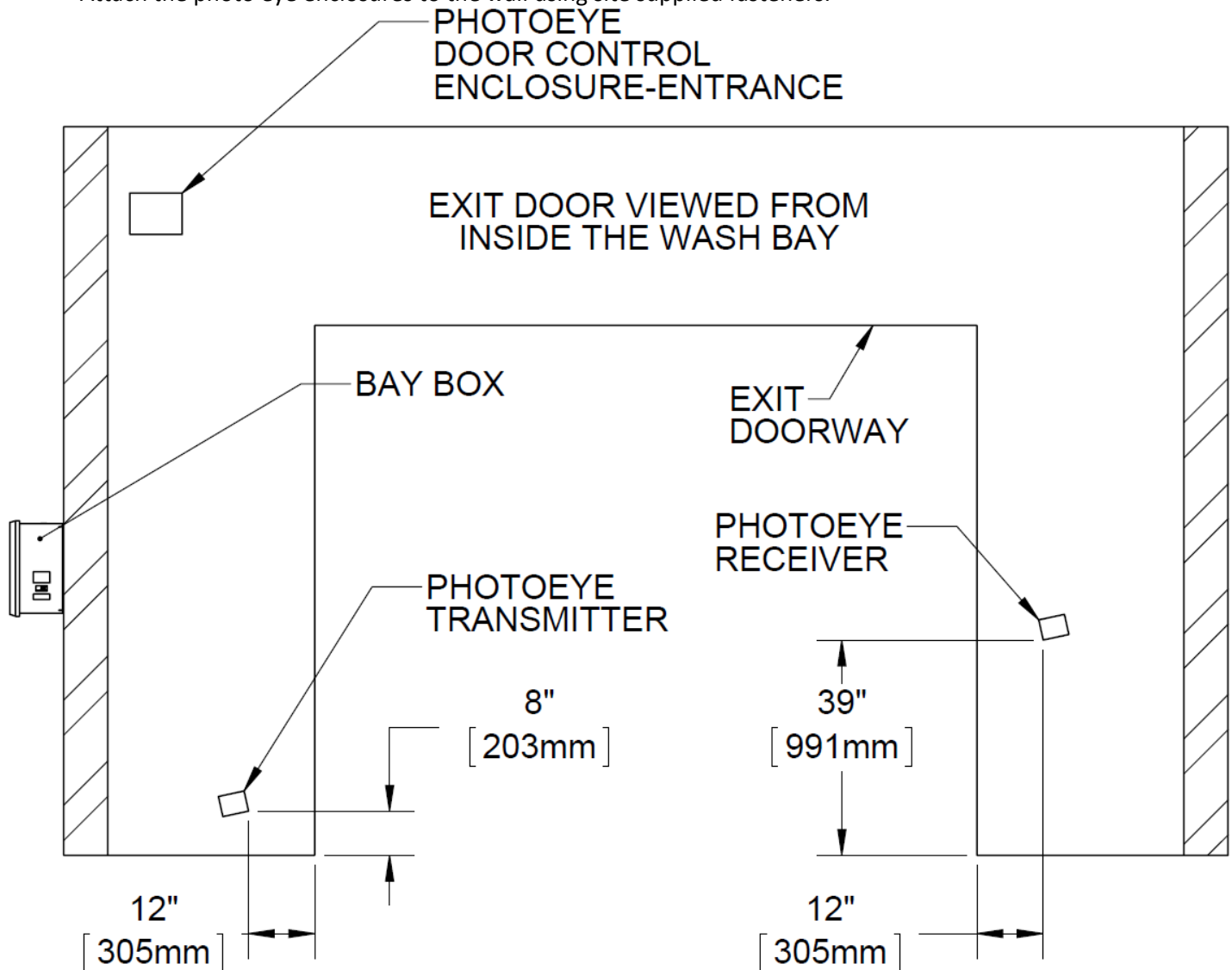


Figure 143 - Door Eye Mounting on Interior Exit End wall

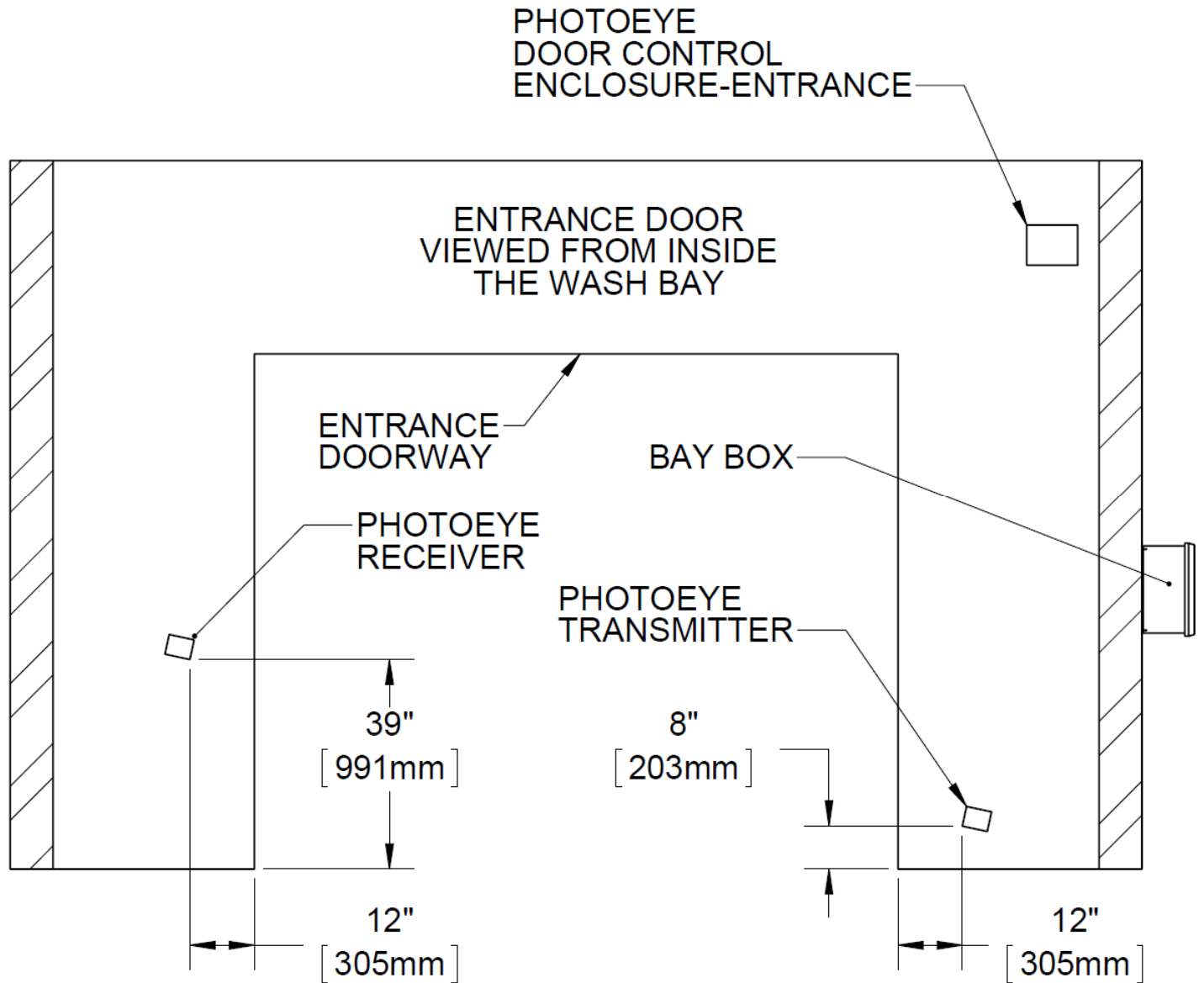


Figure 144 -Door Eye Mounting on Interior Entrance End wall

7.9 Step 3 Assemble and Install Photoeyes into Enclosures

NOTE:

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

- Assemble the photoeyes and the enclosures as shown in Figure 145. Note which eye is the receiving photoeye (black cable) and transmitting photoeye (gray cable). Make sure the photoeyes point directly at each other.

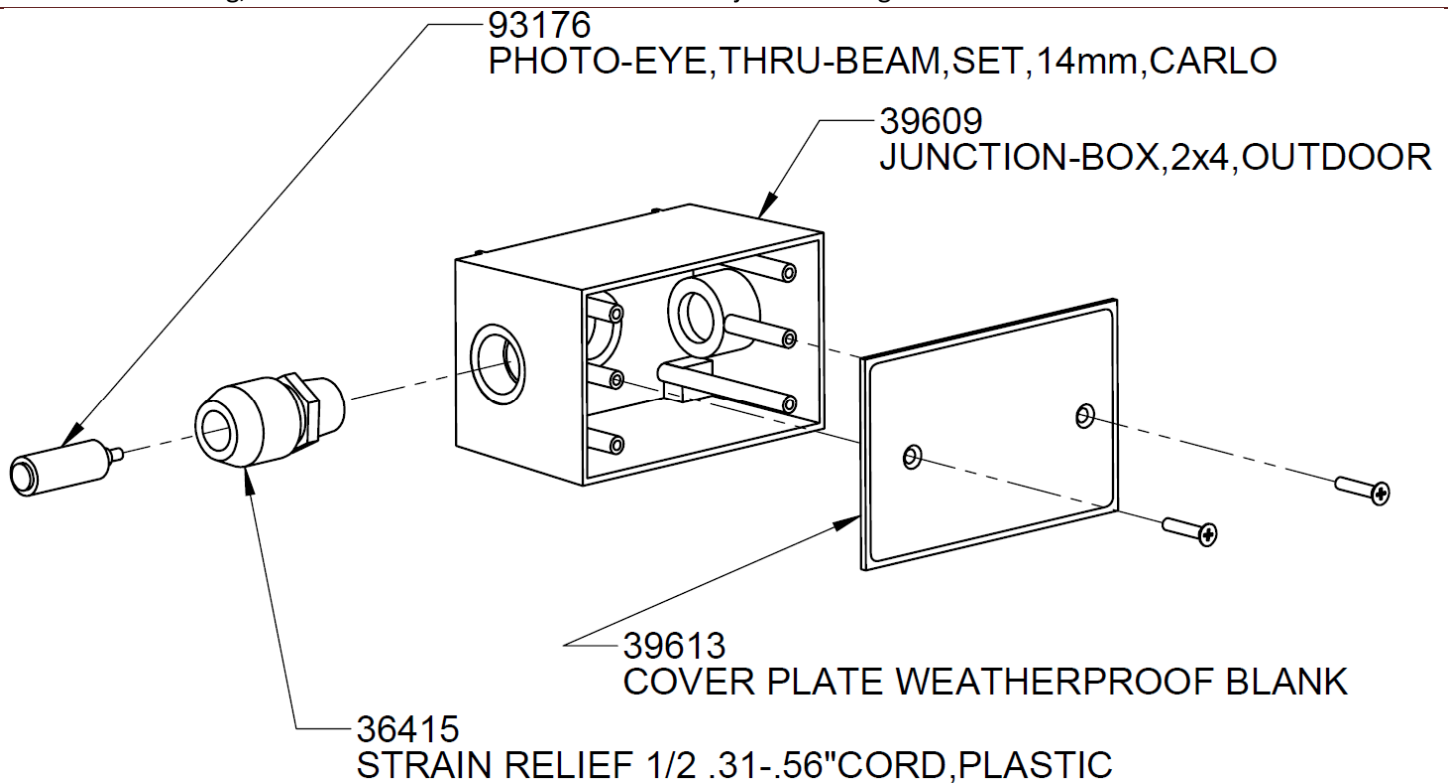


Figure 145 - Door Control Photoeye Assembly

7.9 Step 4 Install the Floor Loop Detector (Ultimate Door Control Package Only)

The floor loop detector is only included with the Ultimate Door Control Kit. It is installed at the exit of longer wash bays to detect a vehicle as it moves out of the wash bay beyond the machine parking sensors and prior to it reaching the area of the exit door photoeyes.

- Measure and mark the location of the floor loop detector on the wash bay floor as shown in Figure 146. Locate the exit edge of the loop pad at least 48 in (1219mm) but not more than 108 in (2743mm) from the exit of the wash bay.
- Secure the floor loop detector to the floor of the wash bay.
 - Make sure the floor loop detector is positioned so the wire routes to the side closest to the location of the bay box.
 - The floor loop detector may be anchored to the wash bay floor using the anchors provided with the kit. For sites where floor heat line locations may interfere with the anchor locations, the floor loop may be adhered to the floor using epoxy adhesive supplied by the site.

!!!IMPORTANT!!

IF THE WASH BAY HAS FLOOR HEAT LINES INSTALLED, USE SITE SUPPLIED EPOXY ADHESIVE TO ANCHOR THE FLOOR LOOP DETECTOR AND THE CABLE COVER TO AVOID DAMAGE TO THE FLOOR HEAT SYSTEM FROM CONCRETE ANCHORS.

- If floor anchors are to be used:
 - Mark (16) holes in the outer edge of the floor loop detector as shown in Figure 147.
 - Drill 7/16" (11mm) diameter holes for the floor anchors.
 - Use the drilled floor loop detector, positioned in the marked location, as a template to mark the location of the holes for the floor anchors.
 - Drill 3/8" (9.5mm) holes for the floor anchors and install them into the floor.
 - Secure the floor loop pad to the floor over the anchors.

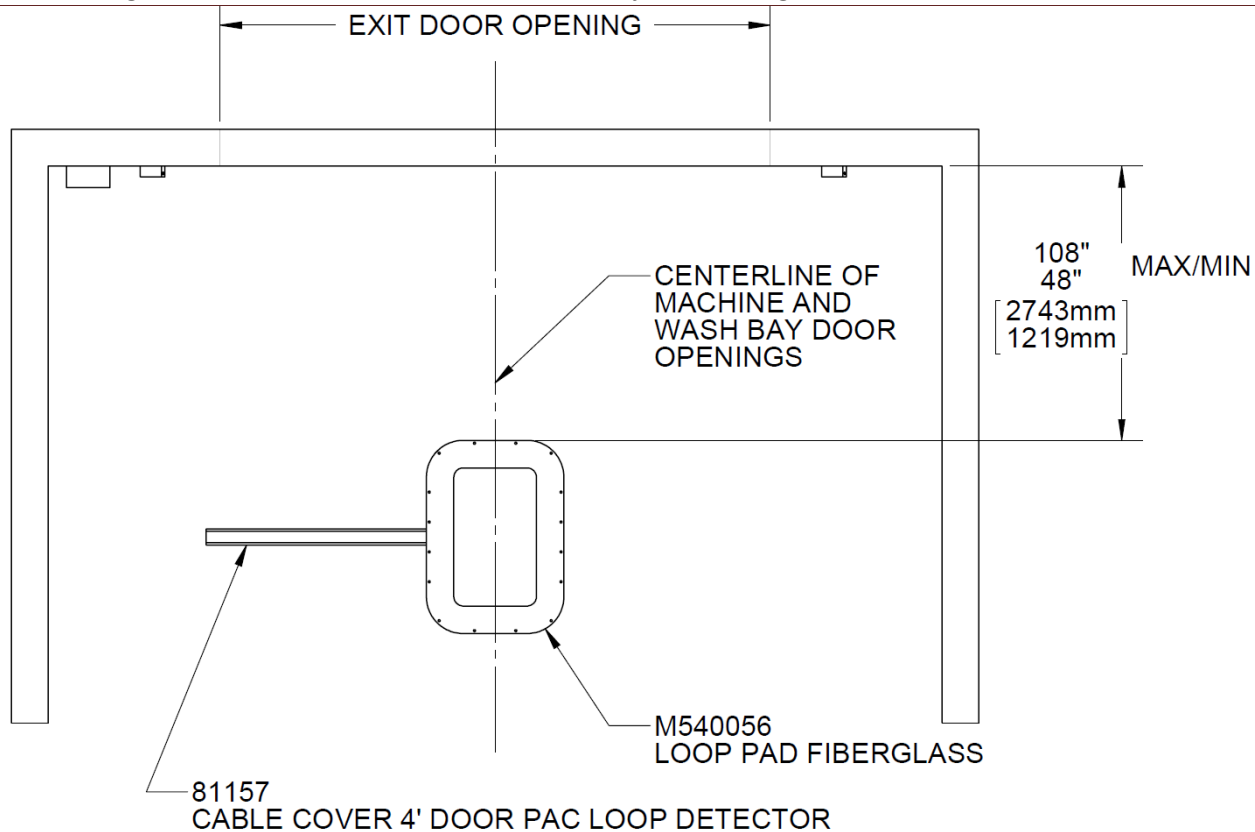


Figure 146 - Floor Loop Detector Location

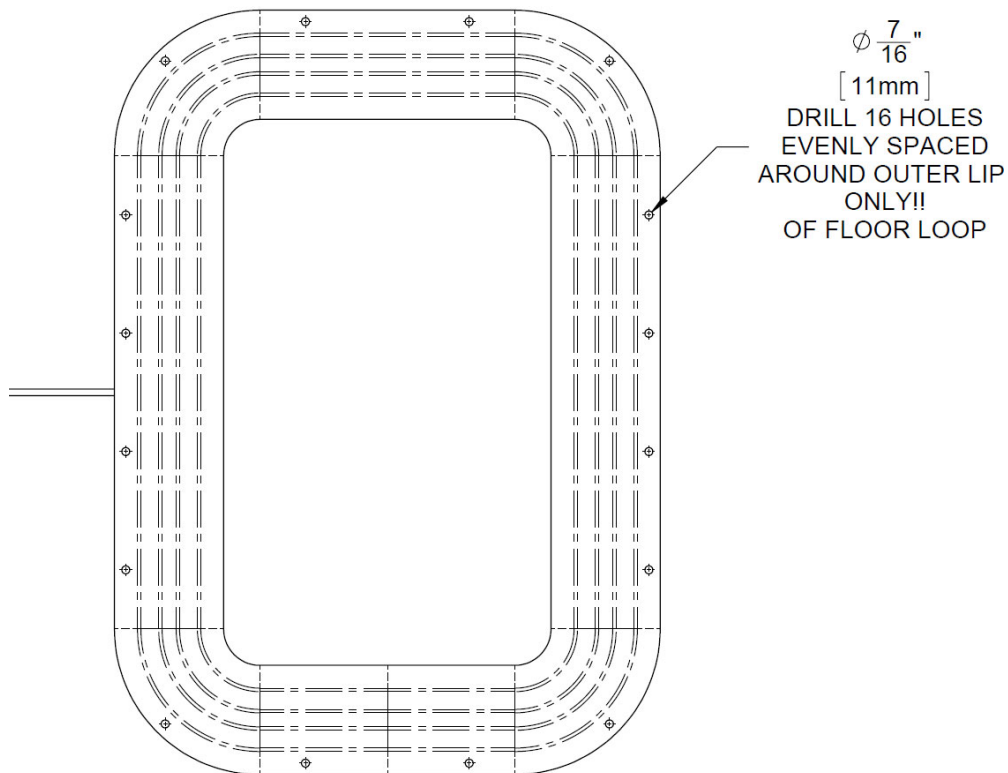


Figure 147 - Floor Loop Detector Mounting Holes

- Route the cable for the floor loop detector along the floor toward the exit door control box.
- Place the cable cover over the floor loop detector cable to prevent damage to the cable as vehicles drive over it. The cable protector has a groove in the underside where the cable is intended to fit.
 - Locate the cable protector by butting the end of the cable protector against the edge of the floor loop detector.
 - Secure the cable protector to the wash bay floor using site supplied epoxy adhesive or by installing the remaining floor anchors from the door control kit using the process previously described. Do not drill holes near the center so that they intersect the cable groove.
- Cut off any excess length from each anchor stud to avoid damage to vehicle tires.

7.9 Step 5 Terminate the Door Control Wires

Door control system wires are terminated as described below in Table 27. 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 photoeyes 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.

Table 27 - Door Control Electrical Connections

DOOR CONTROL CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Entrance/Exit Door Photoeye Transmitter Sensor	OPTIONAL	Gray Cable Supplied with Sensor	50 mA	3V (square wave)		DOOR PHOTOEYE TRANSMITTER SENSOR	WHITE	DOOR CONTROL BOX	5
							SHIELD		7
Entrance/Exit Door Photoeye Receiver Sensor	OPTIONAL	Black Cable Supplied with Sensor	11 mA	8 V (square wave)		DOOR PHOTOEYE RECEIVER SENSOR	WHITE	DOOR CONTROL BOX	6
							SHIELD		8
Floor Loop Detector Sensor	OPTIONAL	Supplied with Sensor	3A	24 VAC		FLOOR LOOP DETECTOR SENSOR	BLACK	DOOR CONTROL BOX	7
							WHITE		8
Basic Door Control Package	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W17	BAY BOX	18W06.3	EXIT DOOR CONTROL BOX	51
					20W14		18W03.11		50
				12 VDC	25W15		23N01.TB2.4B		62
					25W16		23N01.TB2.4C		48
Deluxe Door Control Package	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W17	BAY BOX	18W06.3	EXIT DOOR CONTROL BOX	51
					20W14		18W03.11		50
				12 VDC	25W15		23N01.TB2.4B		62
					25W16		23N01.TB2.4C		48
			3A	24 VAC	21W37	BAY BOX	18X09.4	ENTRANCE DOOR CONTROL BOX	51
					20W23		18X03.7		50
				12 VDC	25W03		23N01.TB2.1B		62
					25W04		18X10.4		48
Ultimate Door Control Package	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W17	BAY BOX	18W06.3	EXIT DOOR CONTROL BOX	51
					20W14		18W03.11		50
				12 VDC	25W15		23N01.TB2.4B		62
					25W16		23N01.TB2.4C		48
			3A	12 VDC	25W11		23N01.TB2.3B		63
				24 VAC	21W37	BAY BOX	18X09.4	ENTRANCE DOOR CONTROL BOX	51
					20W23		18X03.7		50
				12 VDC	25W03		23N01.TB2.1B		62
					25W04		18X10.4		48

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

7.10 Temperature Sensor Installation

Temperature sensors are used for two purposes. If the weep option is installed with the pump station, 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 OUTSIDE TEMPERATURE SENSOR CONTROLS THE DOOR FUNCTION AND THE BAY TEMPERATURE SENSOR CONTROLS THE WEEP FUNCTION.

7.10 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.

7.10 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 below in Table 28. Terminal numbers are marked inside the applicable enclosure. Wire numbers coincide with numbers listed on the applicable schematic (Table 2).

Table 28 - Temperature Sensor Electrical Connections

TEMPERATURE SENSOR CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
Bay Temperature Sensor	OPTIONAL	Supplied with Sensor	3A	12 VDC	25W38	BAY TEMPERATURE SENSOR	RED	BAY BOX	23N01.TB2.10B
							BLACK		23N01.TB2.10C
							SHIELD		23N01.TB2.10C
Outside Temperature Sensor	OPTIONAL	Supplied with Sensor	3A	12 VDC	25W34	OUTSIDE TEMPERATURE SENSOR	RED	BAY BOX	23N01.TB2.9B
							BLACK		23N01.TB2.9C
							SHIELD		23N01.TB2.9C

7.11 Precision Loading Parking System

The Precision Parking system consists of photoeyes along with housings, brackets, and stands for mounting them to the wash bay floor. The photoeyes 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 photoeye 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.

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

Figure 148 shows a plan view of the wash bay with the Precision Loading Eyes in the recommended location. Figure 149 shows the view of the system from the exit end of the bay looking toward the entrance and Figure 154 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 photoeyes so that direct sunlight does not fall on the receiving photoeyes. It is also recommended that the receiving photoeyes be positioned at the high side location with the sensors pointing downward.

The photoeye 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 149 and Figure 150.
- 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 LaserWash 360 Plus 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.

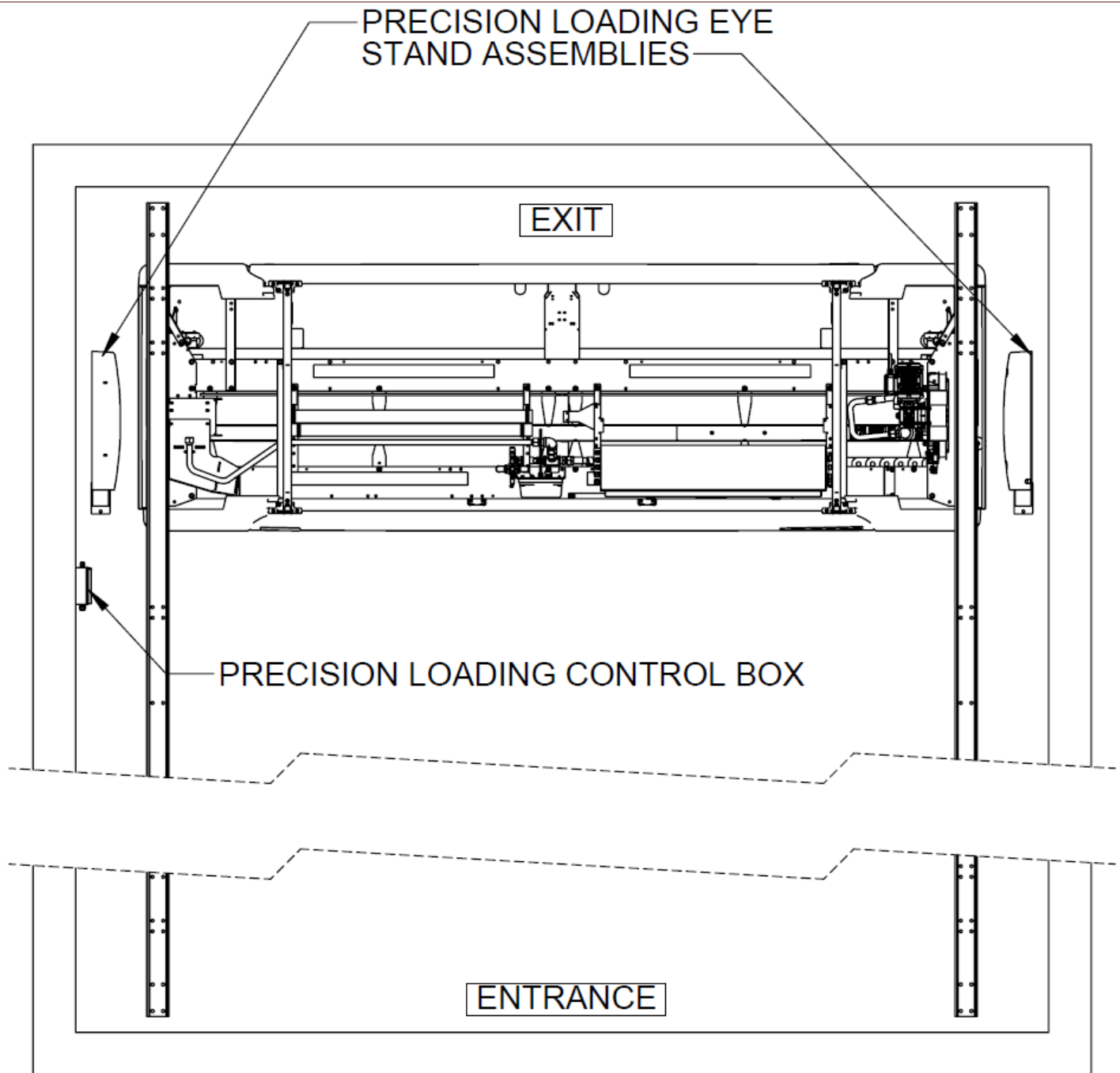


Figure 148 - Precision Loading System - Plan View

PRECISION LOADING CONTROL BOX

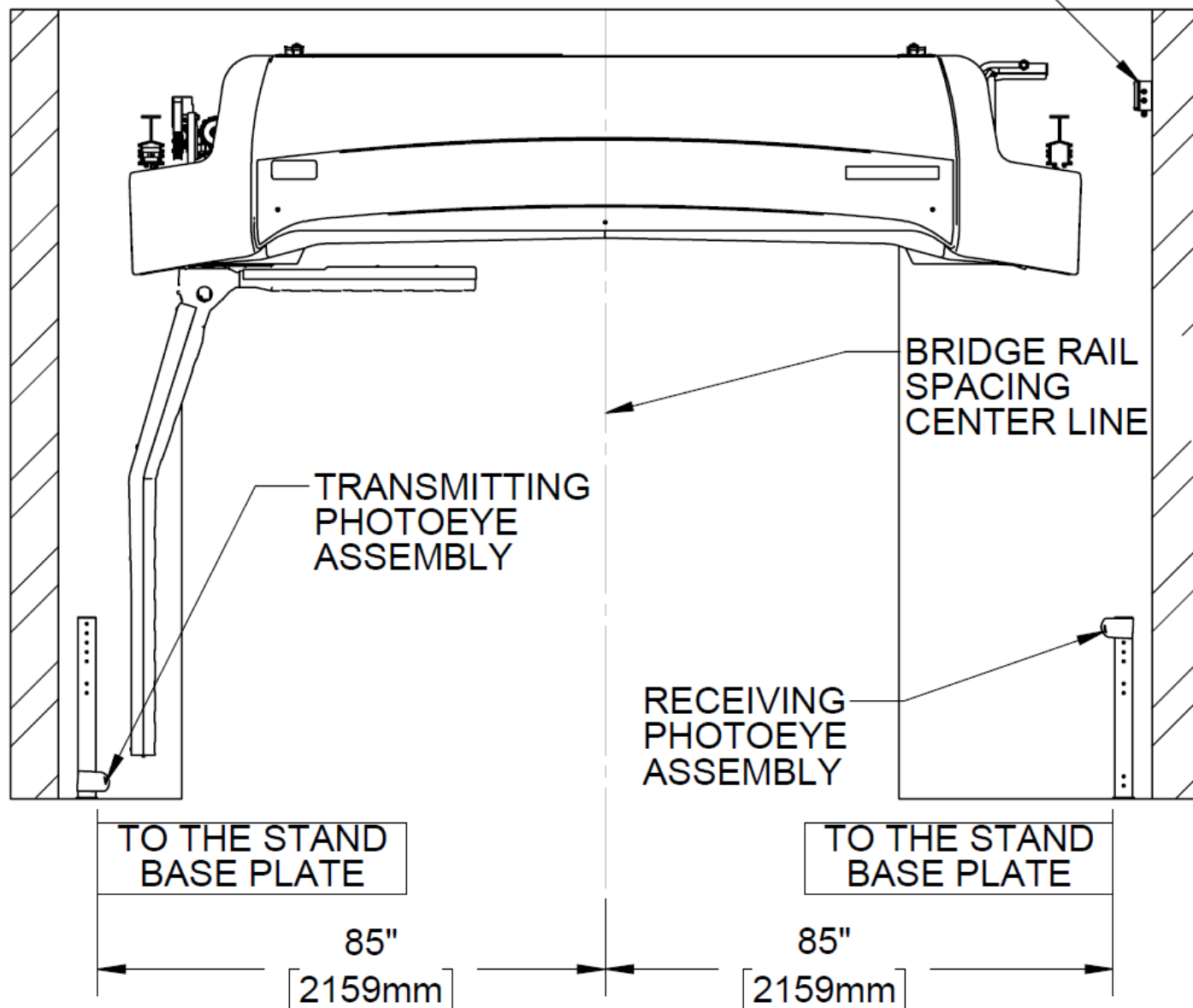


Figure 149 - Precision Loading System - Exit View

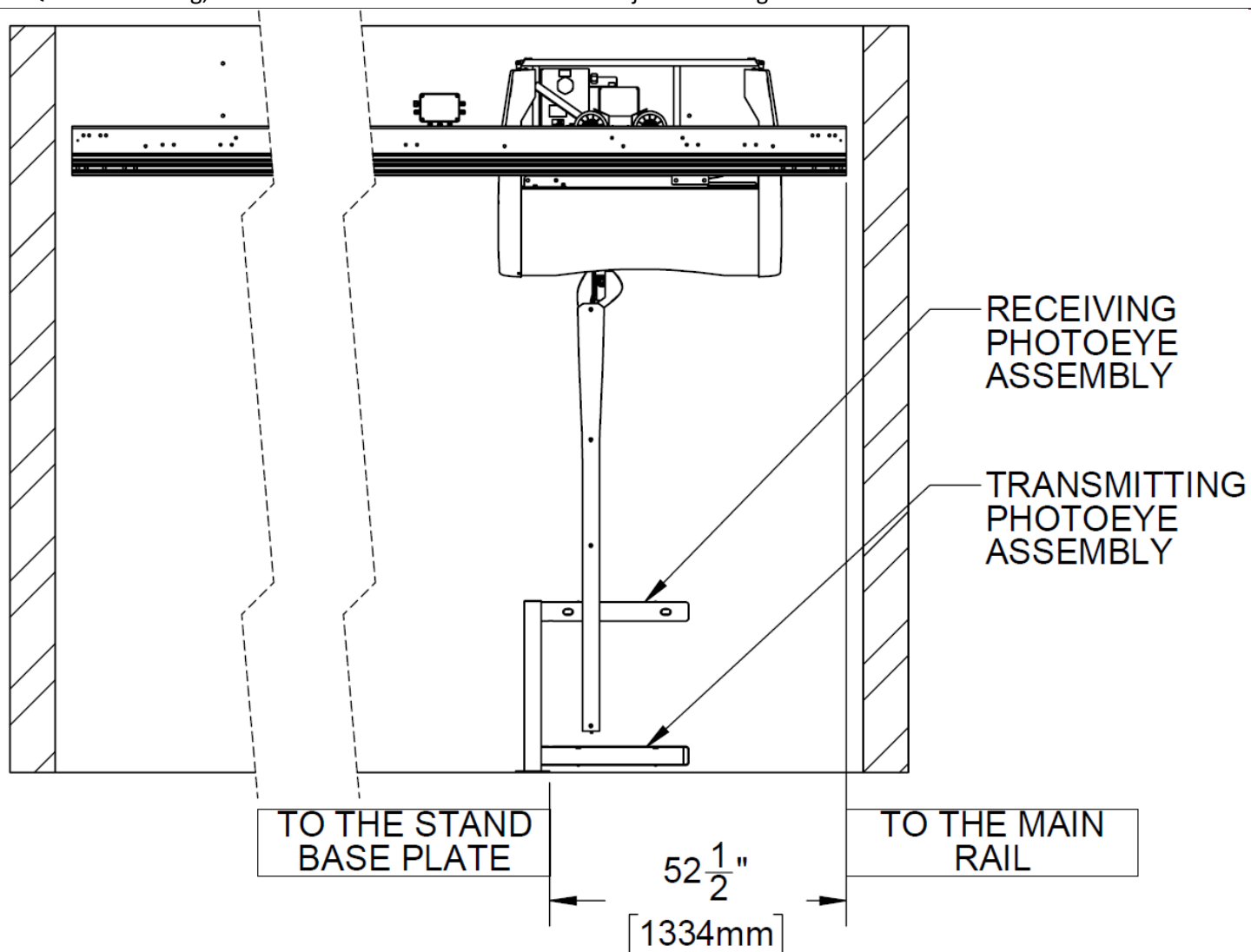
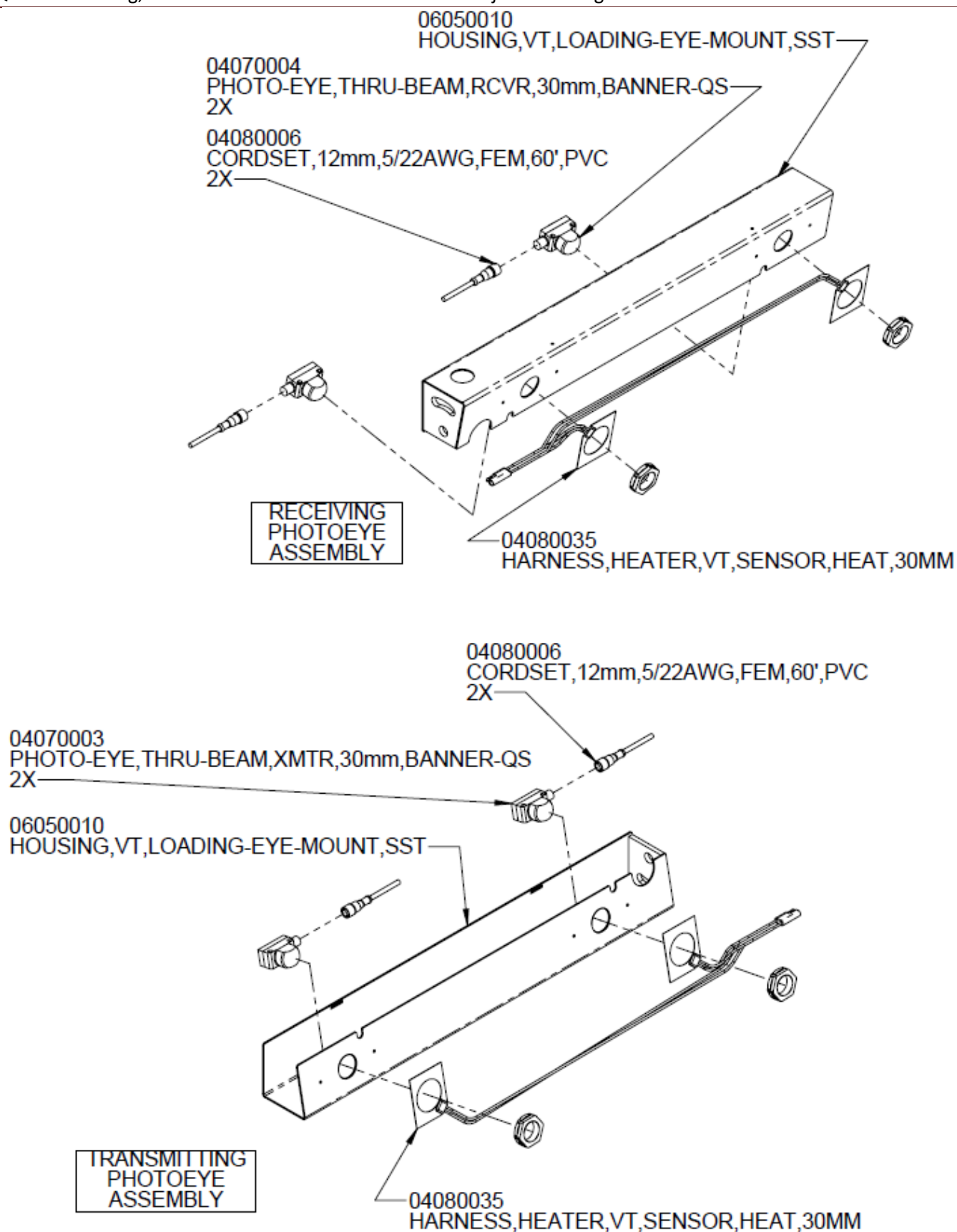


Figure 150 - Precision Loading Eye - Elevation View

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

Assemble the transmitting and receiving photoeye assemblies as shown in Figure 151. If the optional sensor heat is purchased, install the heaters as shown; otherwise omit these from the assembly process.

**Figure 151 - Assemble Photoeyes to Arm Brackets**

7.11 Step 3 Assemble the Precision Loading Eye Assemblies to the Floor Stands

Attach the eye assemblies to the floor stands as shown in Figure 152.

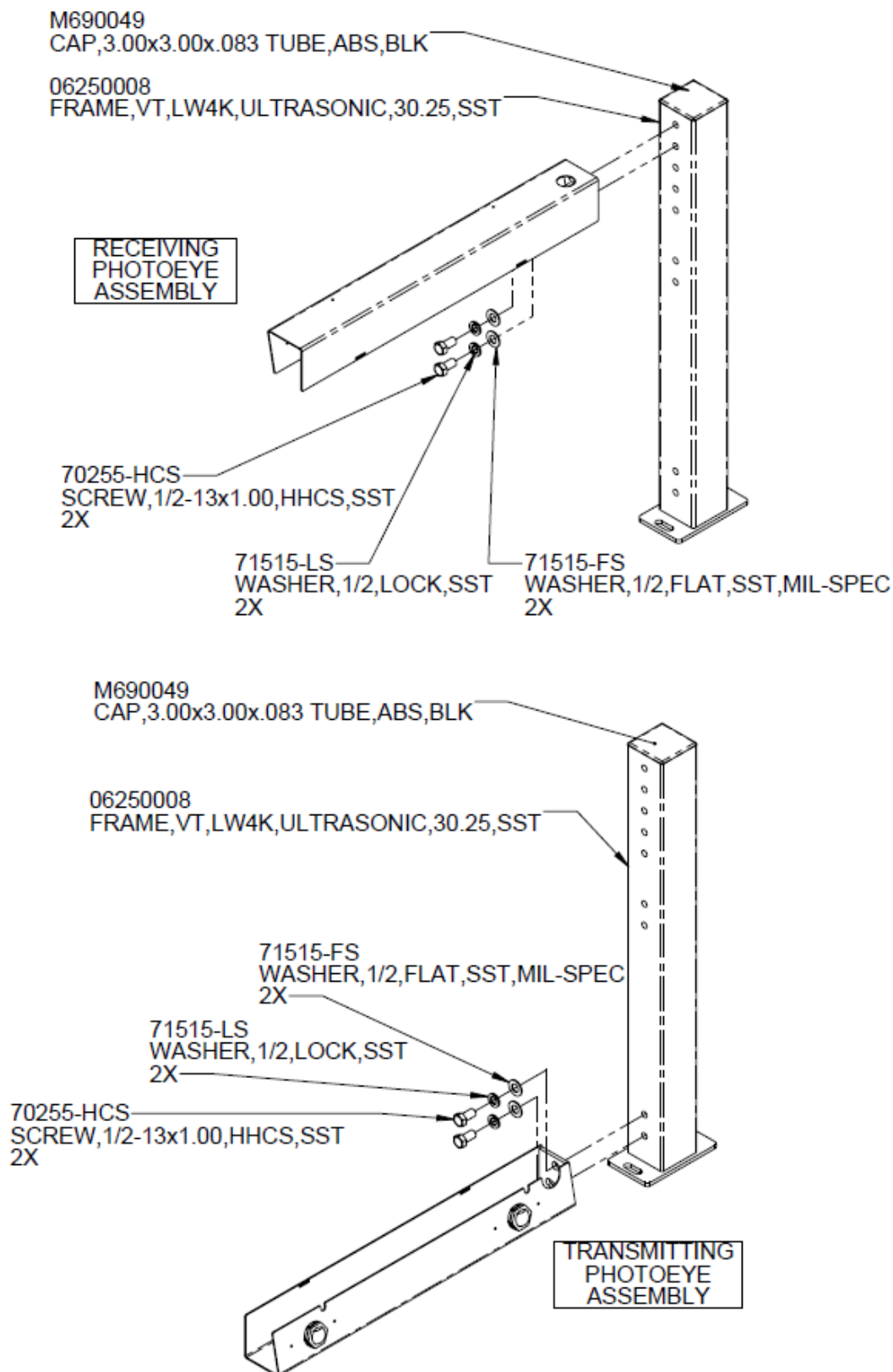


Figure 152 - Assemble Precision Loading Arm Assemblies to Floor Stands

7.11 Step 4 Install the Precision Loading Covers

Route the wires within the arm bracket and toward the floor stand and out of the arm. Install the white plastic covers over the photoeye arm assemblies as shown in Figure 153.

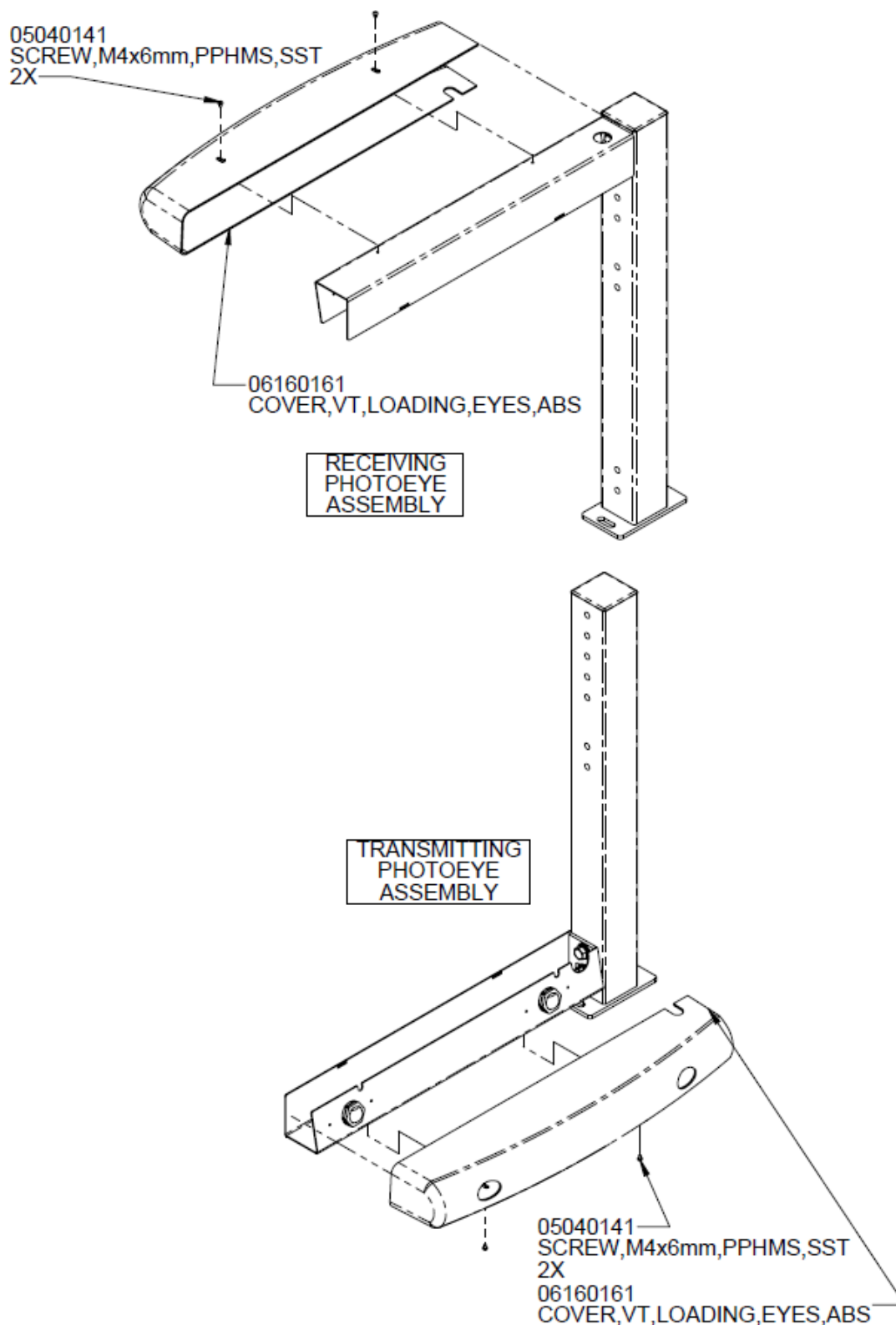


Figure 153 - Assemble Covers to Photoeye Arms

7.11 Step 5 Install the Precision Loading Junction Box

The Precision Loading system includes a junction box with the wire termination points. This box will be connected to the LaserWash 360 Plus Bay Box, so it is recommended that the Precision Loading control box be mounted on the same side of the wash bay as the Bay Box.

- Locate the Precision Loading junction box as shown in Figure 148 and Figure 149.
- Remove the cover for the box and use the holes in the box as a template to mark their location on the wash bay wall.
- Drill holes appropriate for the fasteners for the box (site supplied).
- Secure the box to the wash bay wall.

7.11 Step 6 Route Precision Loading Sensor Wires and Terminate Electrical Connections

- Route the cables for the Precision Loading sensors in a way that protects them from interfering with the wash and wash process.
- The Precision Loading sensors are wired to the Precision Loading junction box. One 7-conductor 18 GA cable 45 ft (13.7m) long is provided with the kit.
- The Precision Loading junction box is wired to the LaserWash 360 Plus Bay Box using site supplied wire and conduit.
- The Stop photoeye pair is the set closest to the wash entrance. The Back-up photoeye pair is the set closest to the wash exit.

Terminate the wires as described below in Table 29. Terminal numbers are marked inside the applicable enclosure. Wire numbers coincide with numbers listed on the applicable schematic (Table 2).

Table 29 - Precision Loading Electrical Connections

PRECISION LOADING									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL/ WIRE NO.	ENCLOSURE	TERMINAL NO.
Precision Loading Power and Signal	OPTIONAL	Supplied with Kit	3A	24 VAC	25W27.1	PRECISION LOADING JUNCTION BOX	51X05.1	BAY BOX	18X19.4
					25W27.2		51X06.1		18X03.13
				12 VDC	25W27.3		51X02.1		23N01.TB2.7B
					25W27.4		51X04.1		23N01.TB2.8B
					25W27.5		51X01.1		23N01.TB2.7A
					25W27.6		51X03.1		23N01.TB2.7C
Precision Loading Stop Photoeye Transmitter	OPTIONAL	Supplied with Sensor	3A	12 VDC	35W04	STOP SENSOR TRANSMITTER	35W04.BRN	PRECISION LOADING JUNCTION BOX	51X01.12
							35W04.WHT		51X01.11
							35W04.BLU		51X03.8
							35W04.GRY		51X01.10
Precision Loading Stop Photoeye Receiver	OPTIONAL	Supplied with Sensor	3A	12 VDC	35W10	STOP SENSOR RECEIVER	35W10.BRN	PRECISION LOADING JUNCTION BOX	51X01.9
							35W10.WHT		51X01.8
							35W10.GRY		51X01.7
							35W10.BLK		51X02.4
							35W10.BLU		51X03.7
Precision Loading Backup Photoeye Transmitter	OPTIONAL	Supplied with Sensor	3A	12 VDC	35W21	BACKUP SENSOR TRANSMITTER	35W21.BRN	PRECISION LOADING JUNCTION BOX	51X01.5
							35W21.WHT		51X03.5
							35W21.BLU		51X03.4
							35W21.GRY		51X01.4
Precision Loading Backup Photoeye Receiver	OPTIONAL	Supplied with Sensor	3A	12 VDC	35W26	BACKUP SENSOR RECEIVER	35W26.BRN	PRECISION LOADING JUNCTION BOX	51X01.3
							35W26.WHT		51X03.3
							35W26.BLK		51X04.4
							35W26.GRY		51X01.2
							35W26.BLU		51X03.2
Precision Loading Sensor Heat	OPTIONAL	Supplied with Kit	3A	24 VAC	35W33	TRANSMITTER HEATER	35J32/36.1	PRECISION LOADING JUNCTION BOX	51X05.4
					35W41		RECEIVER HEATER		35J32/36.2
						35J40/44.1			51X05.3

8 Sign Installation

This section provides instructions for installing the LaserWash 360 Plus signs. This includes mounting the signs and all electrical connections.

8.1 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.

8.2 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.

8.3 Special Tools

- Drill for installing wall mount fasteners for signs

8.4 PDQ Supplied Parts

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

- Basic In-Bay Sign. Standard for LaserWash 360 Plus. 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.

!!!IMPORTANT!!!	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 for LaserWash 360 Plus. 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 for LaserWash 360 plus. 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 for LaserWash 360 Plus. 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 for LaserWash 360 Plus. This sign has English language words (other languages available) with instructions for how to use the wash. PDQ Part No. 09020127.
- Countdown Timer. Optional for LaserWash 360 Plus. 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 for LaserWash 360 Plus. 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 for LaserWash 360 Plus. 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.

8.5 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 LaserWash 360 Plus system.

8.6 Determine Sign Locations

Installation should begin with determining the best placement for the signs. Figure 154, Figure 155, Figure 156 and Figure 157 show the general locations recommended for the signs. Actual location should be determined based on the Key Factors to Consider, listed in 8.1.

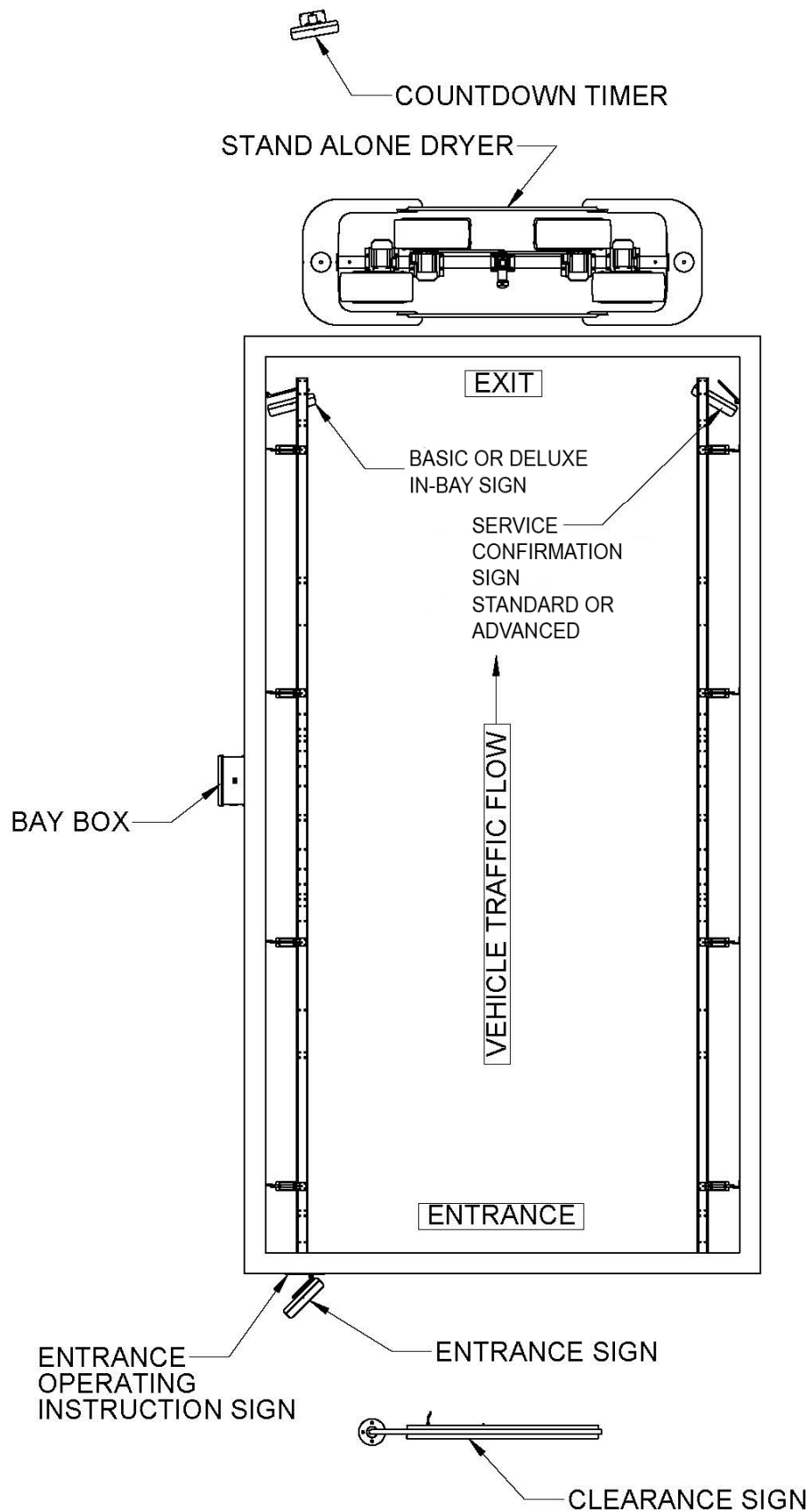


Figure 154 – Sign Locations, Basic or Deluxe In-Bay Signs, Plan View

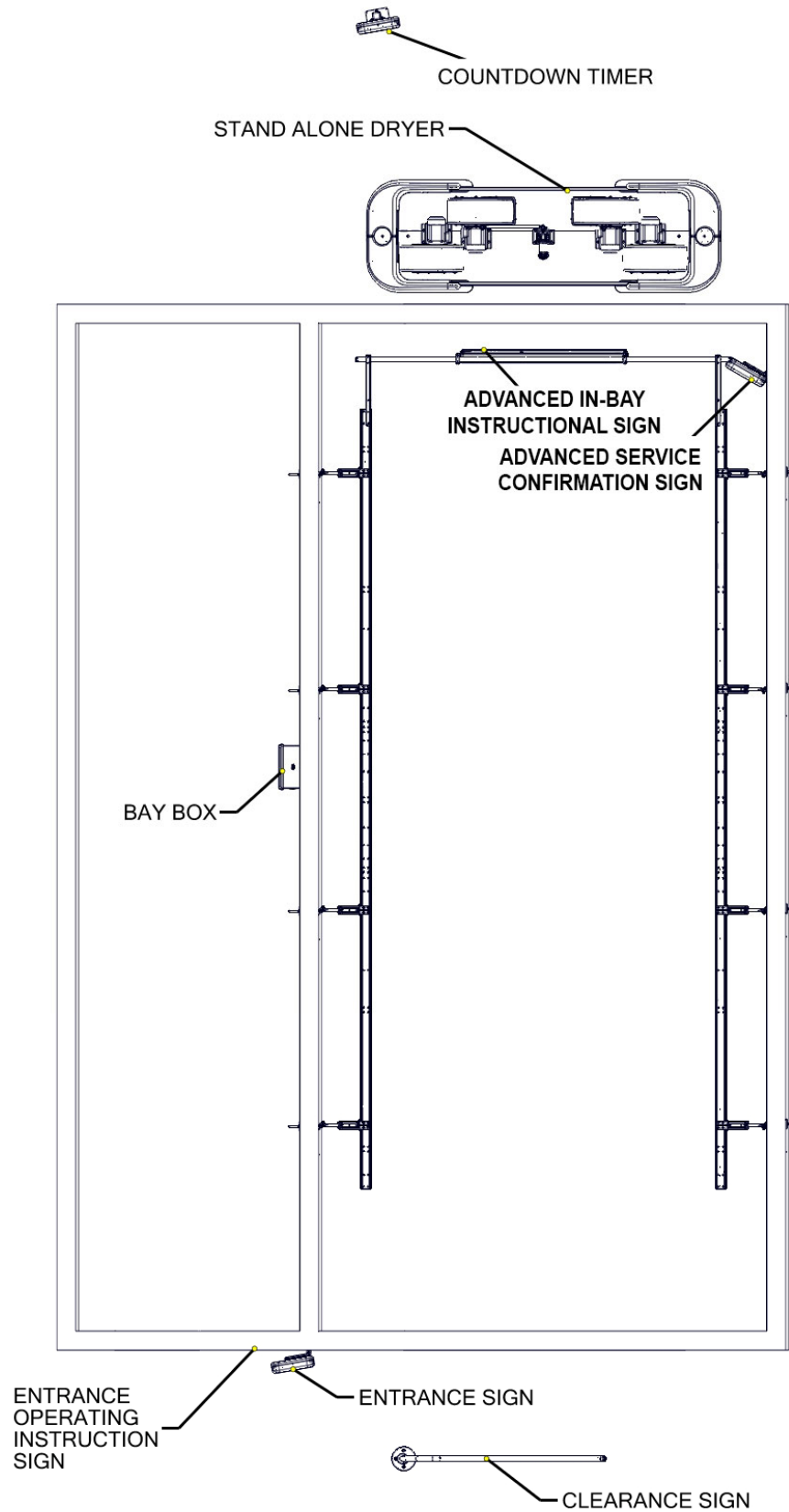


Figure 155 – Sign Locations, Advanced In-Bay Signs, Plan View

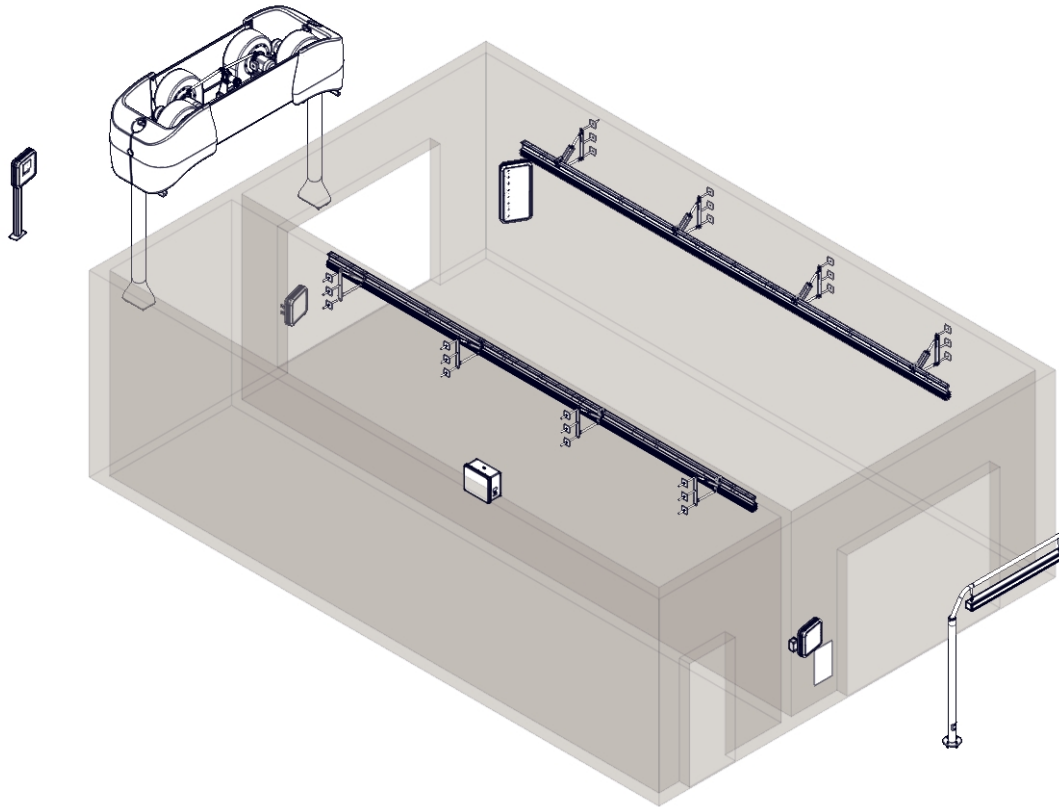


Figure 156 - Sign Placement in Wash Bay

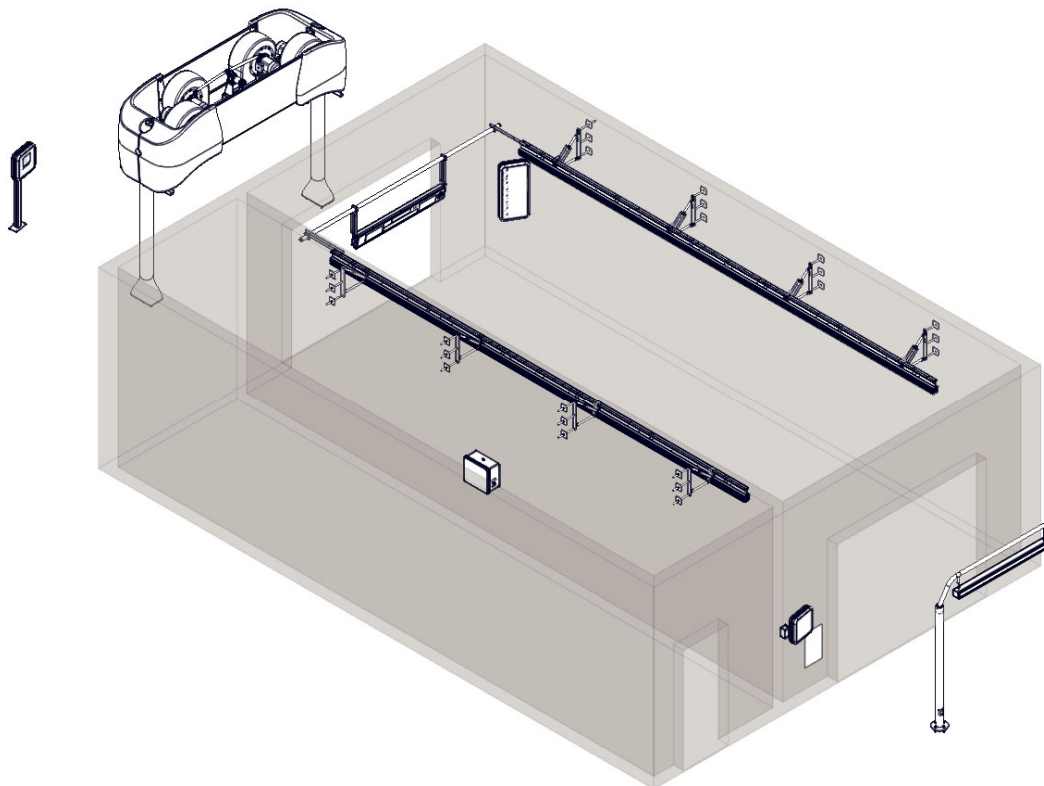


Figure 157 – Sign Placement in Wash Bay, Advanced In-Bay Signs

8.7 In-Bay Sign Installation (Basic or Deluxe)

(Proceed to Section 0 for Advanced Instructional Sign Installation)



Figure 158 - Basic In-Bay Sign



Figure 159 - Deluxe In-Bay Sign—English Version

8.7 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 160 for the Basic In-Bay Sign and Figure 161 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 160 and Figure 161.
 - After installing conduit connectors, reinstall the sign board and the sign face.

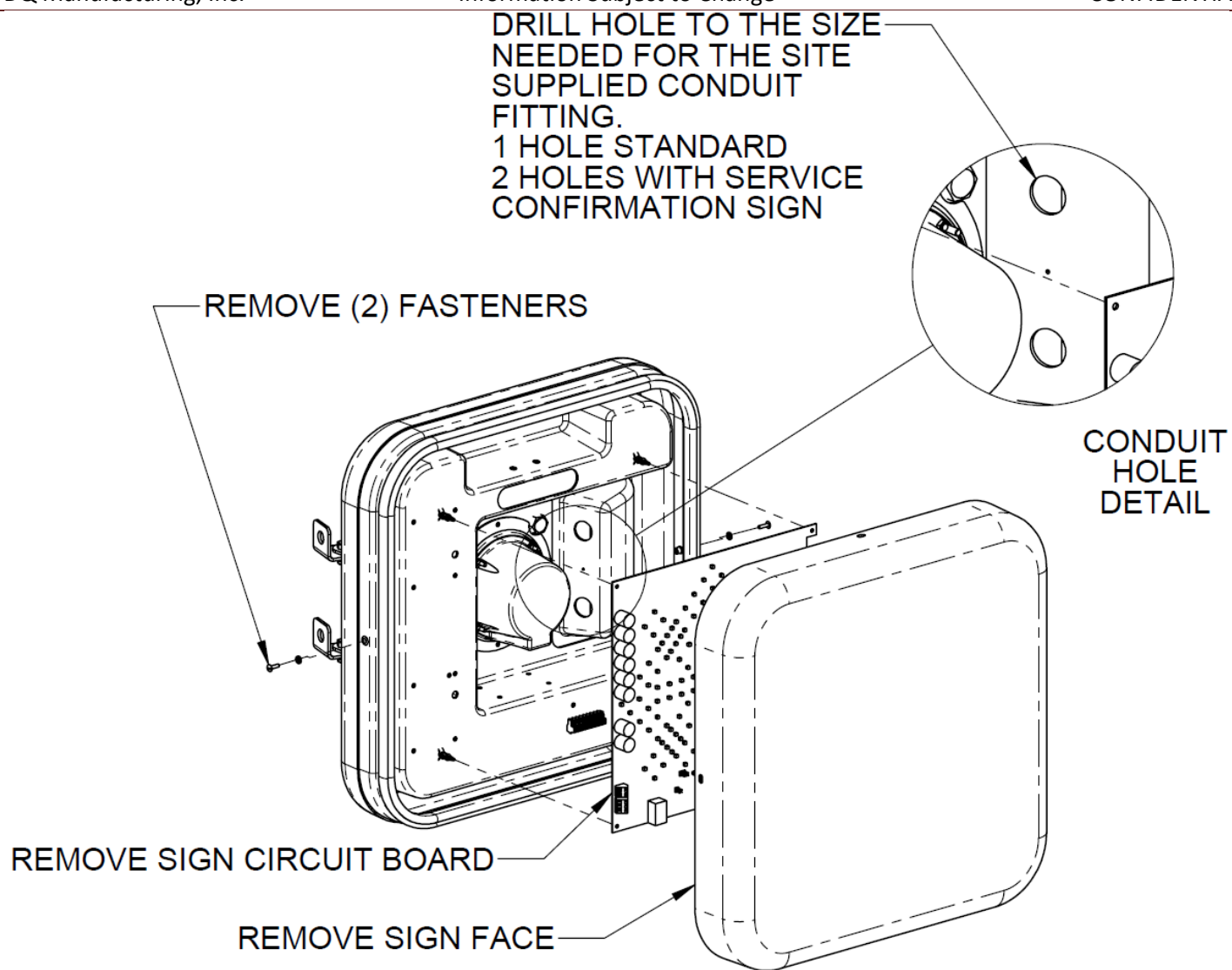


Figure 160 – Basic In-Bay Sign Preparation for Installation

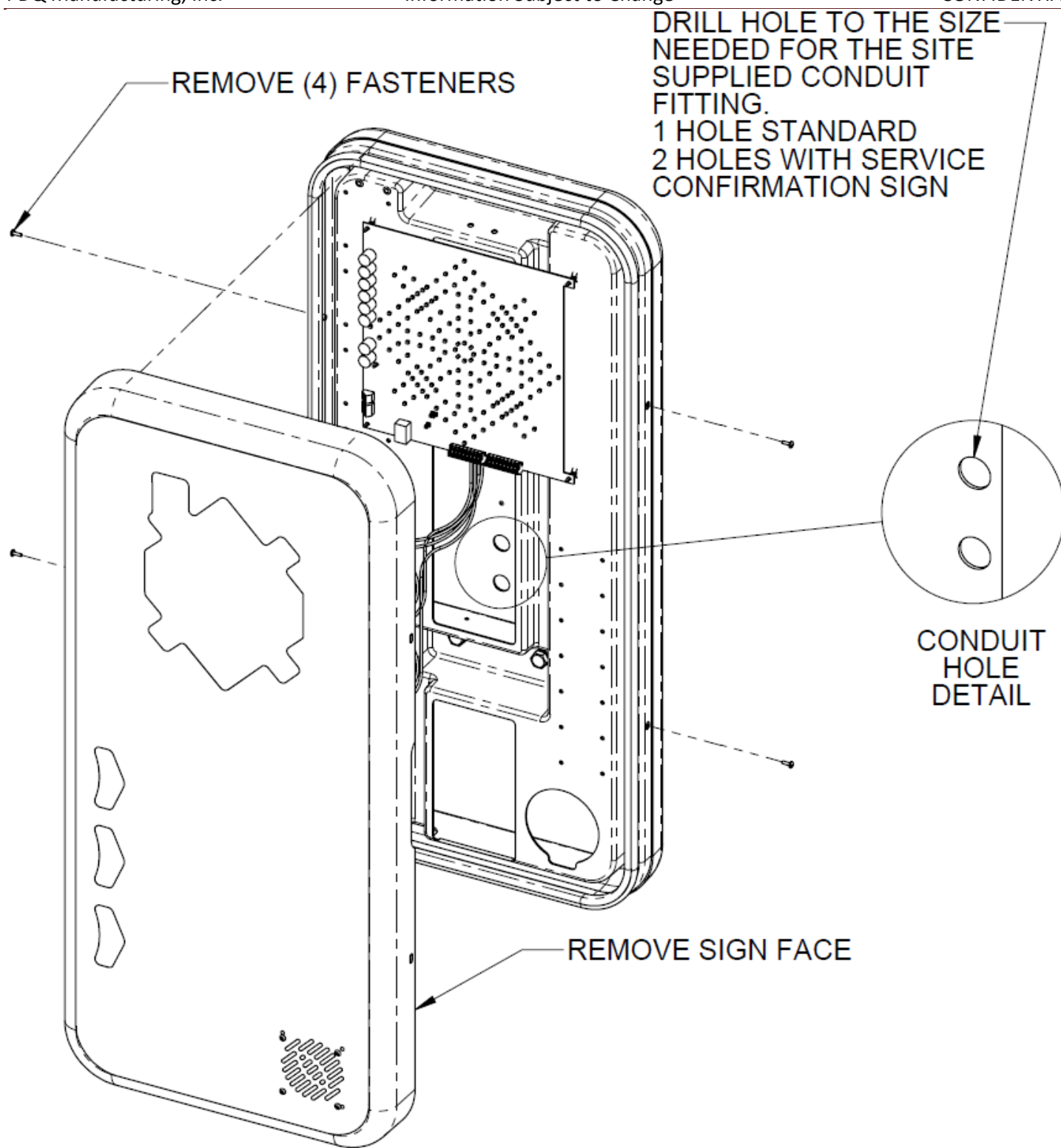


Figure 161 - Deluxe In-Bay Sign Preparation for Installation

8.7 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 wall of the wash bay. If it is necessary to mount it 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 (see Figure 162).
- 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 similar to as shown in Figure 163. 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.

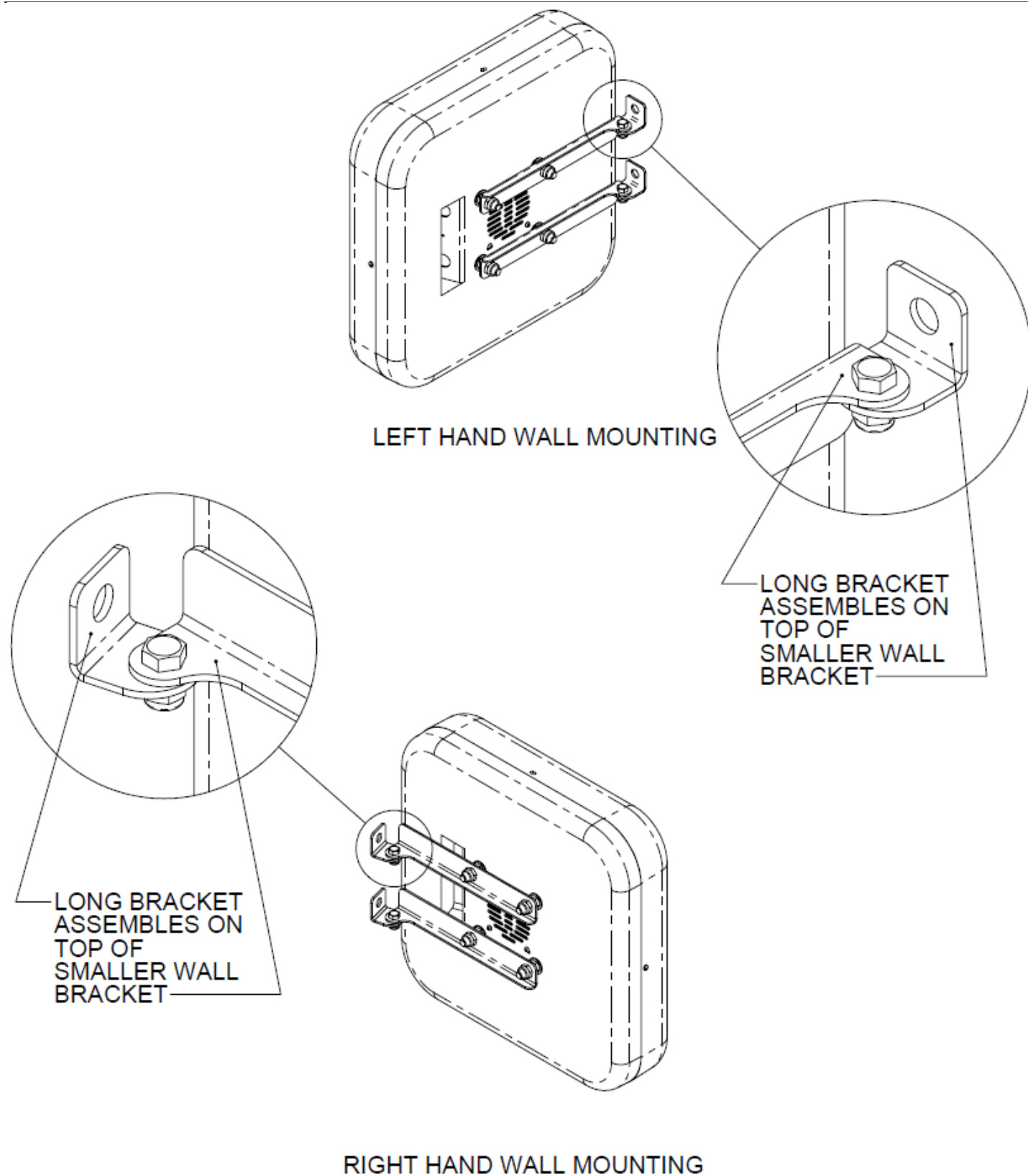


Figure 162 - Sign Wall Mount Brackets for Left and Right Wall Mounting

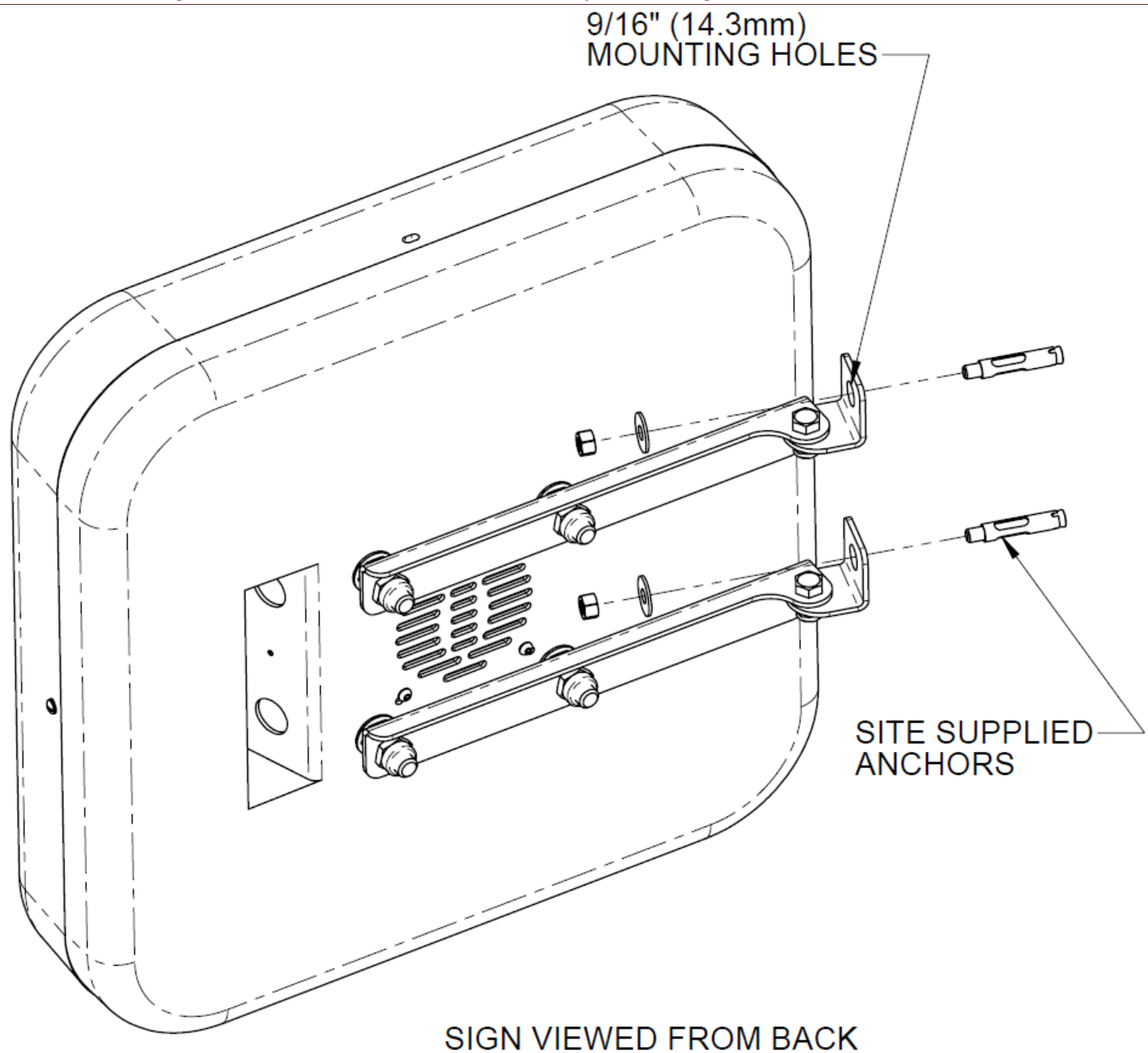


Figure 163 - Wall Mounting the In-Bay Sign

8.7 Step 3 Wire the In-Bay Sign

If the site includes the optional Service Confirmation Sign, this is wired to the In-Bay sign. Be sure to consider this when termination connections inside the In-Bay Sign. The In-Bay Sign is also wired to the Bay Box. Refer to Section 8.14 for all sign wiring instructions.

8.8 Advanced Instructional Sign Installation

Figure 164 shows the Advanced Instructional Sign. This sign is used to instruct the wash user on the steps to use the wash.

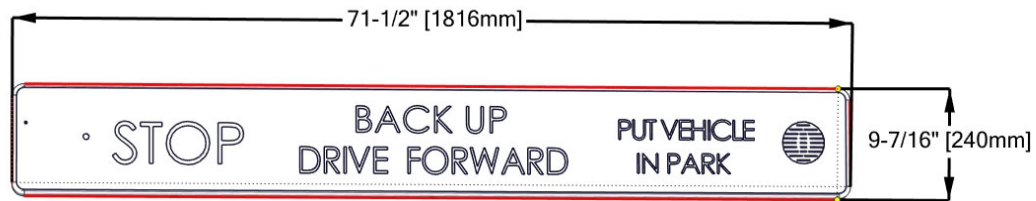


Figure 164- Advanced In-Bay Instructional Sign

8.8.1 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 165. Caution must be taken not to damage the circuit board and the audio speaker.
 - After installing conduit connector, reinstall the sign face.

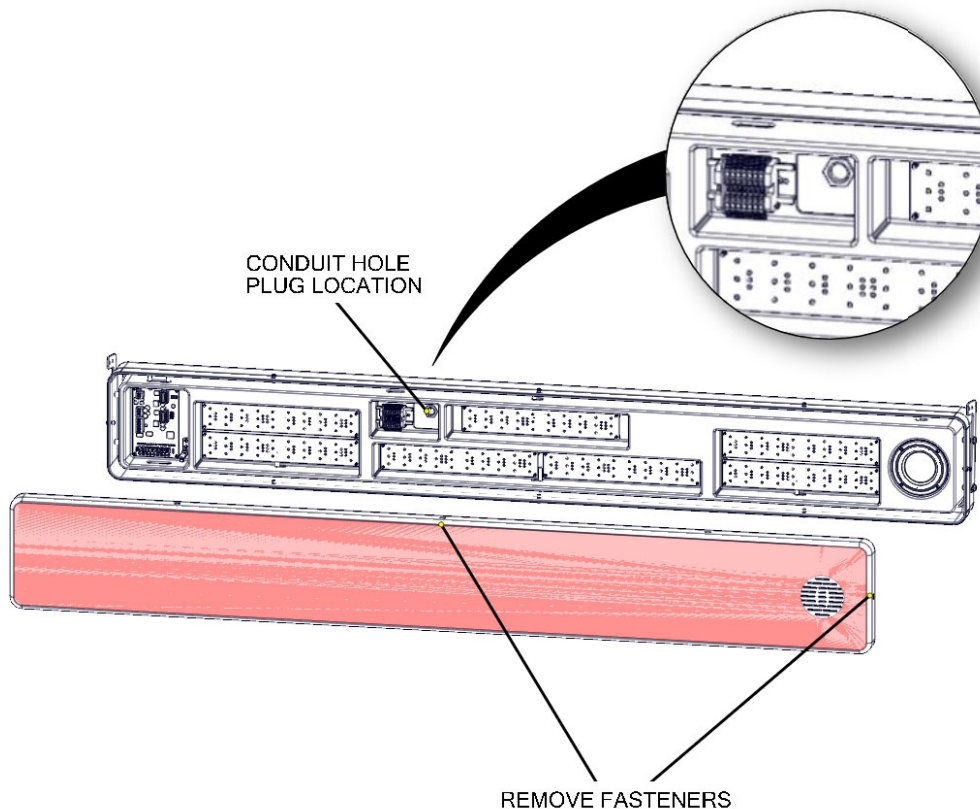


Figure 165 – Advanced Instructional Sign Preparation for Installation

8.8.1 Step 2 Mount Advanced Instructional Sign to Frame

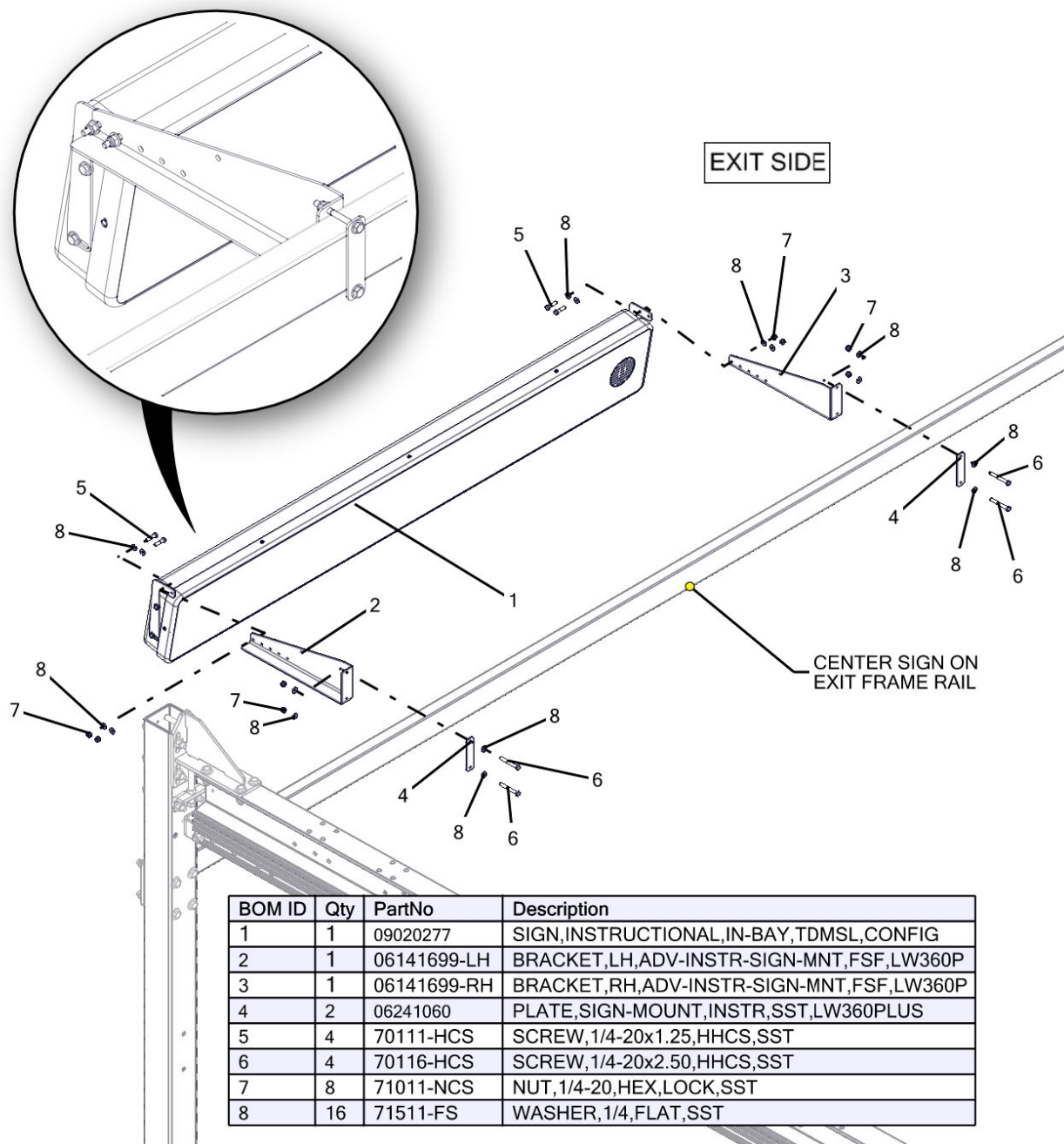
The Advanced Instructional Sign is mounted to the exit end of the wash frame, centered between the rails. The Advanced Instructional Sign may be mounted to either a wall mount or a freestanding frame.

!!!IMPORTANT!!	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.
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- 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.

Freestanding Frame Installation –

- For a freestanding frame installation, the Instructional Sign is mounted to the frame at the exit end of the wash per Figure 166 and Figure 167.

**Figure 166 – Advanced In-Bay Instructional Sign Freestanding Frame Installation**

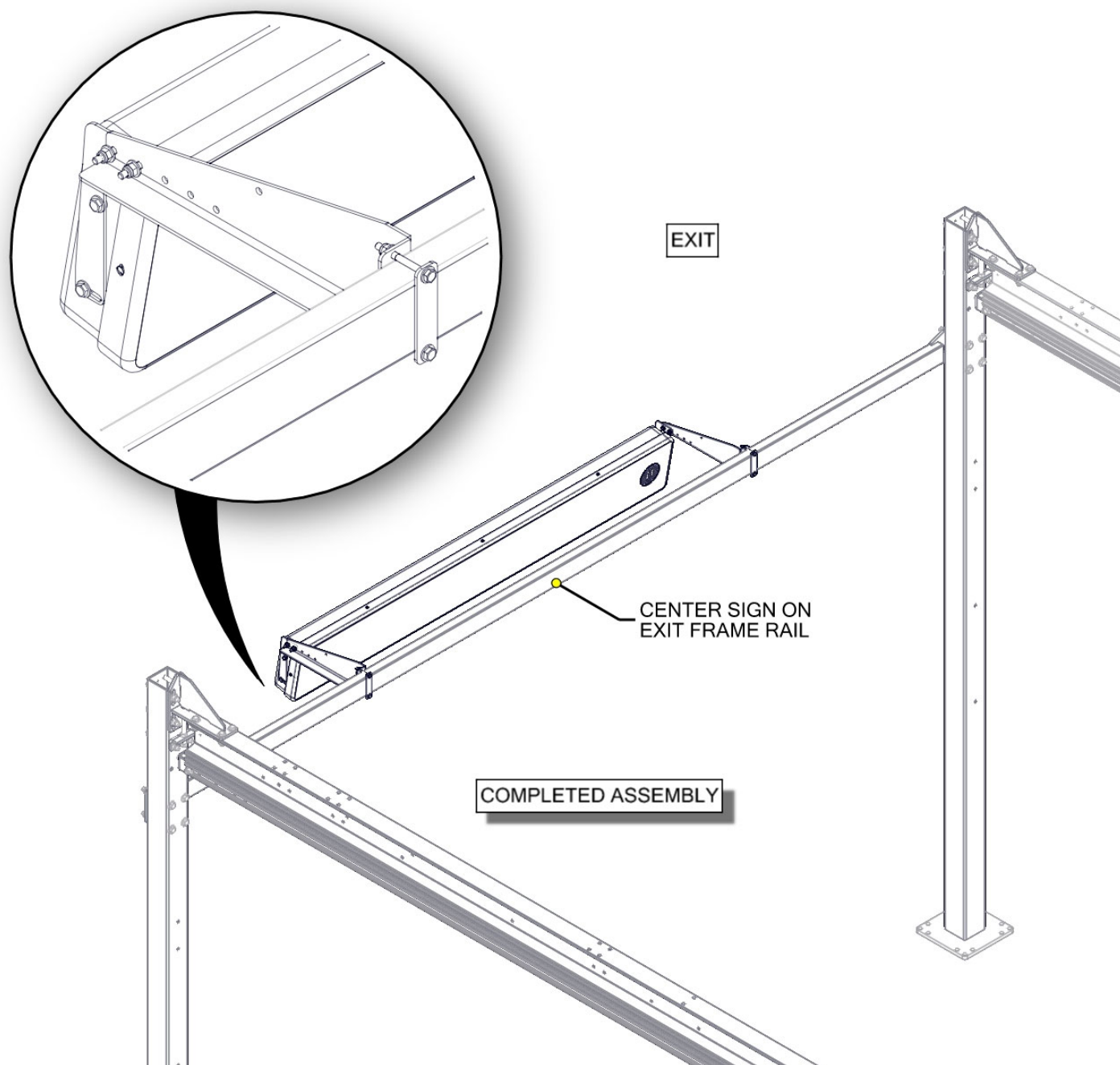
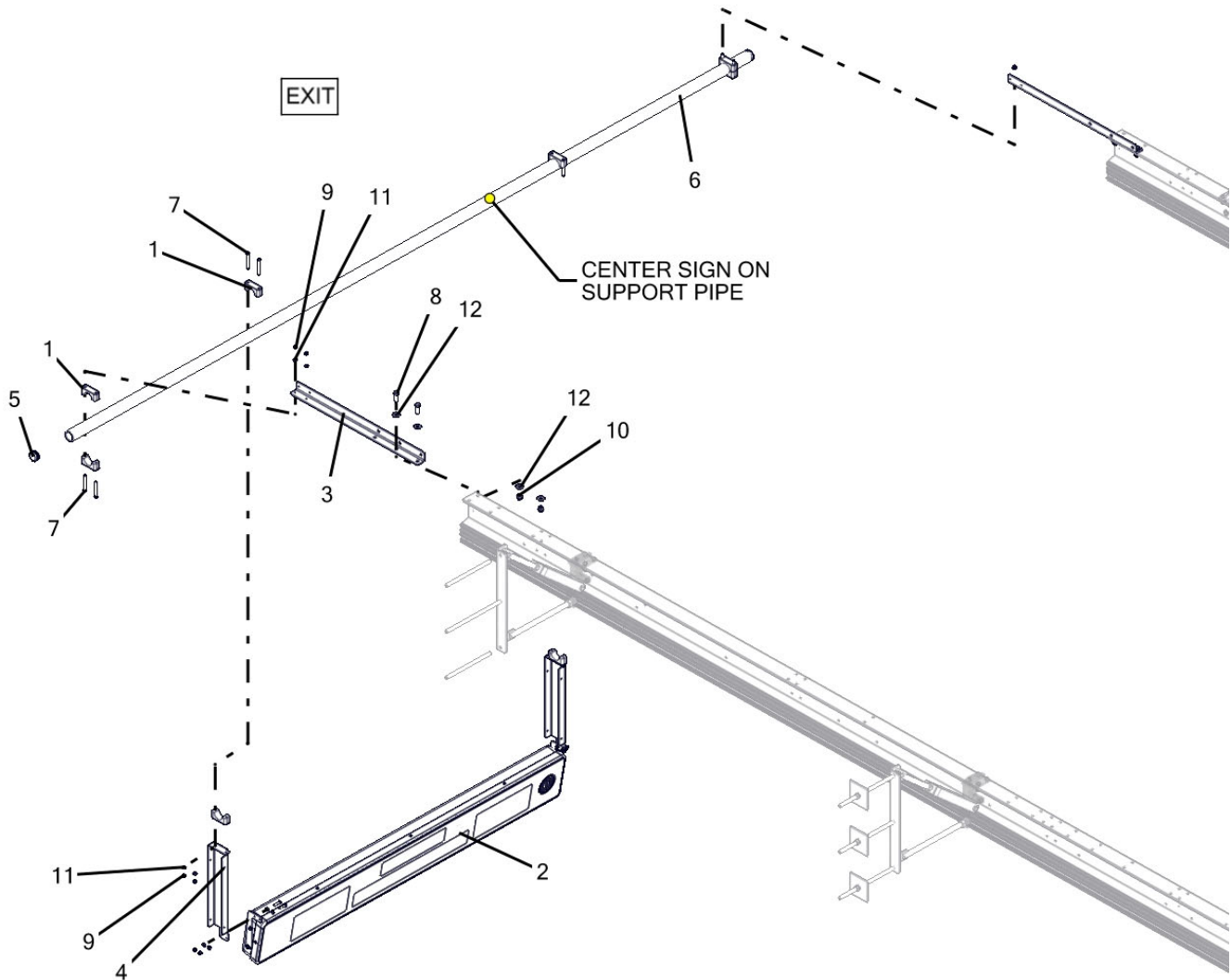


Figure 167 – Advanced In-Bay Instructional Sign Freestanding Frame Completed Assembly

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 168 and Figure 169.



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 168 – Advanced In-Bay Instructional Sign Wall Mount Installation

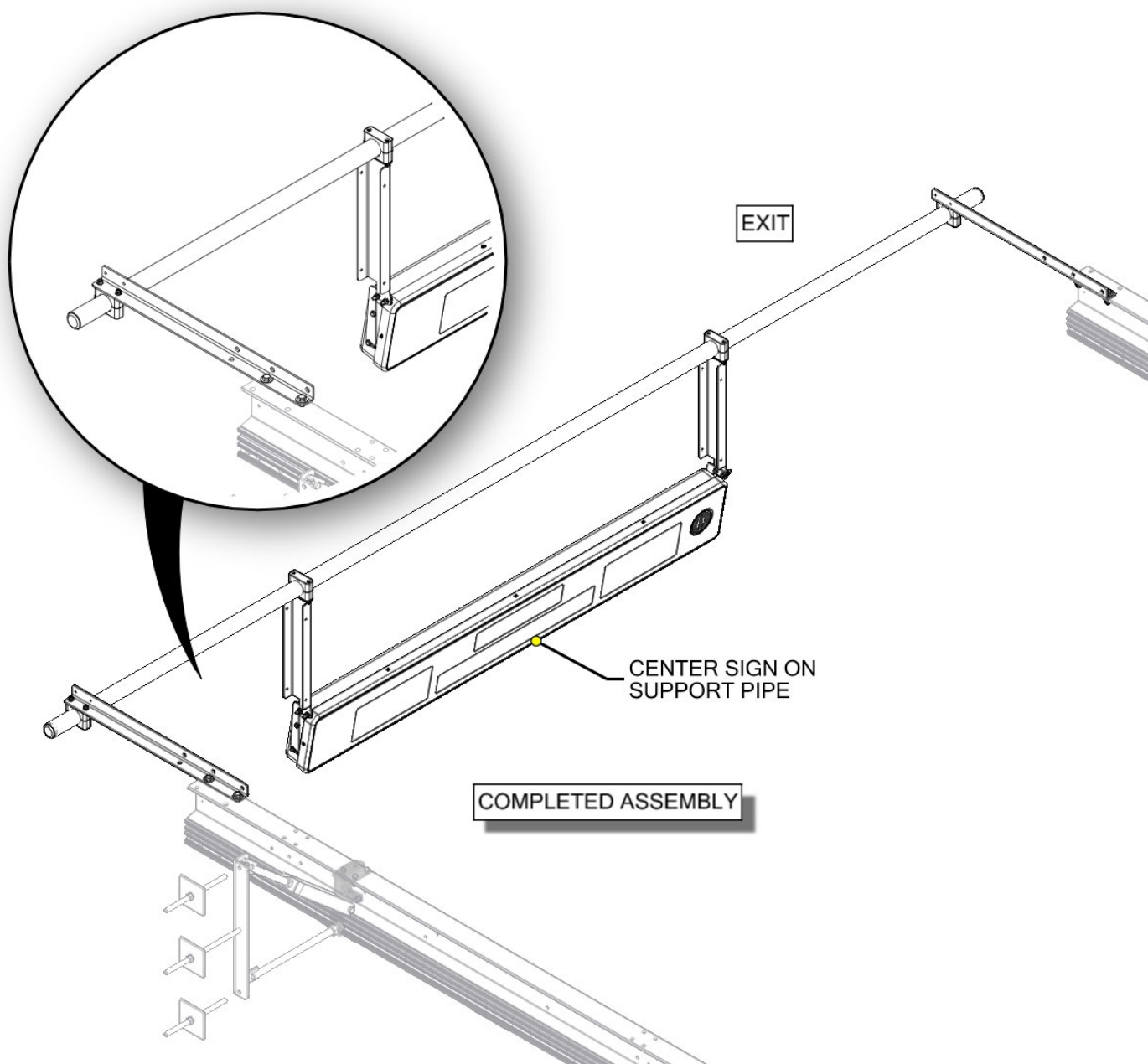
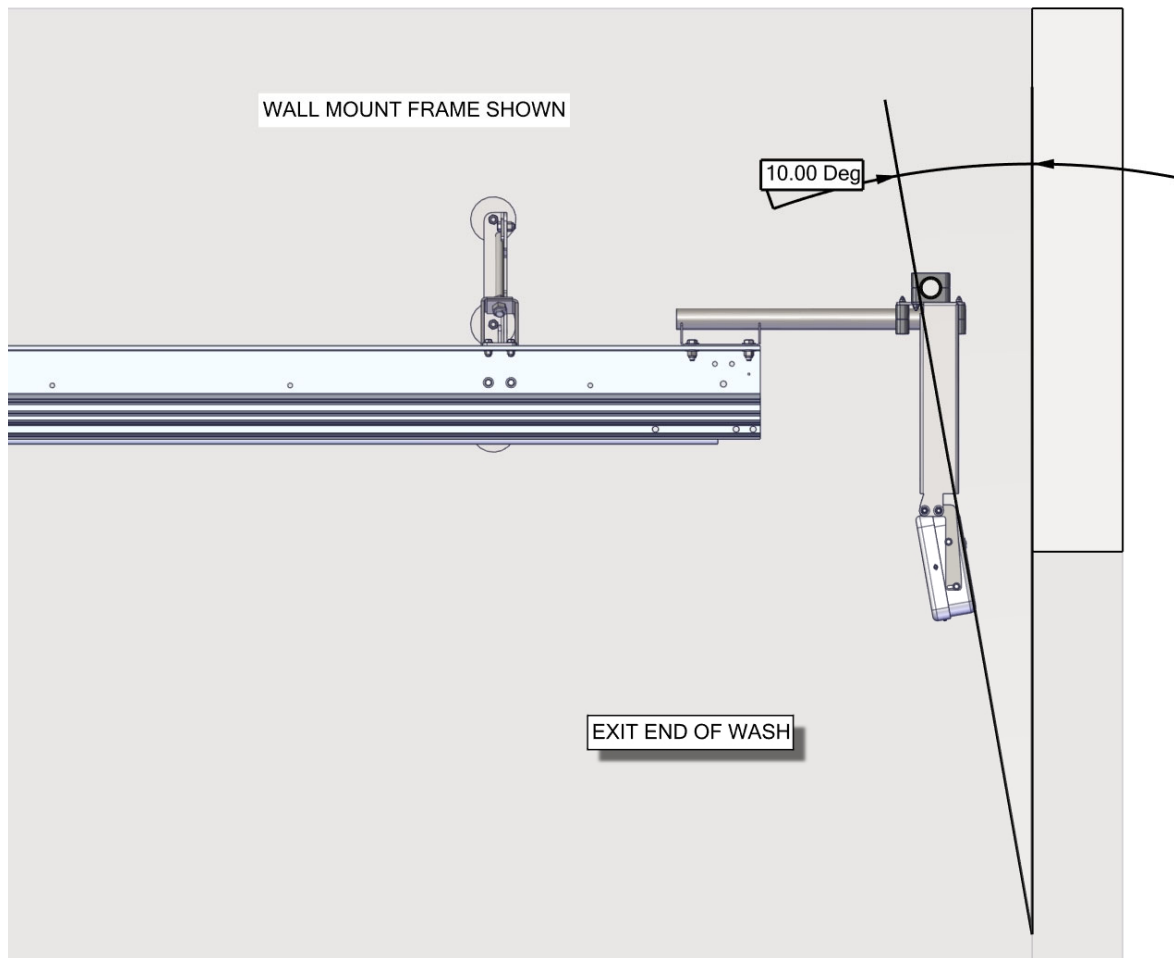


Figure 169 - Advanced In-Bay Instructional Sign Wall Mount Assembly

8.8.1 Step 3 – Adjust Sign Visibility

- Angle the Advanced Instructional Sign towards the floor of the wash for maximum visibility, Figure 170.

**Figure 170 – Angle Instructional Sign**

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

!!!IMPORTANT!!

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 171 - Service Confirmation Sign – English Version

8.9 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 173.
 - 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 172 or Figure 173.
 - After installing conduit connectors, reinstall the sign face.

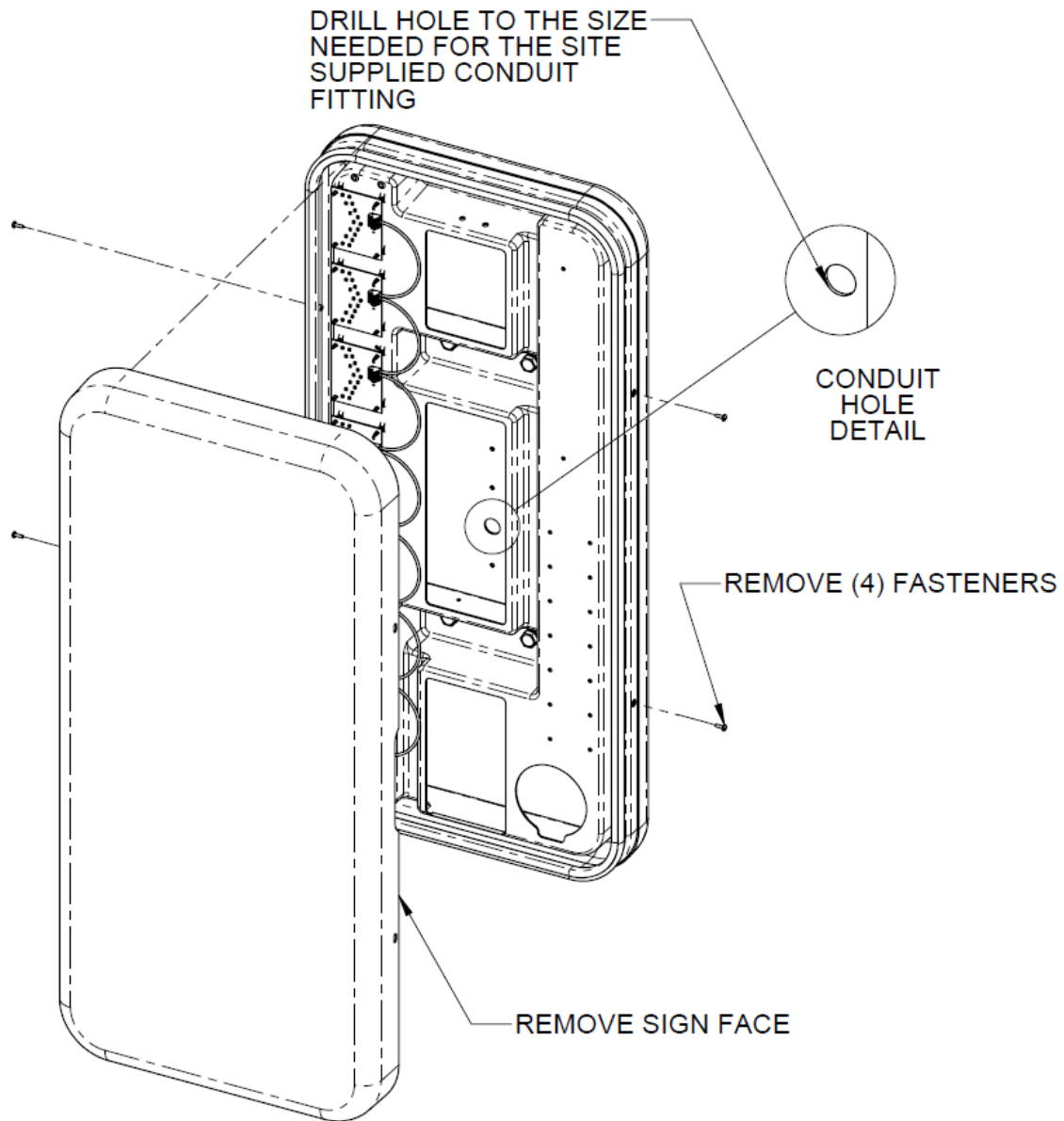


Figure 172 -Service Confirmation Sign Preparation for Installation, Basic or Deluxe

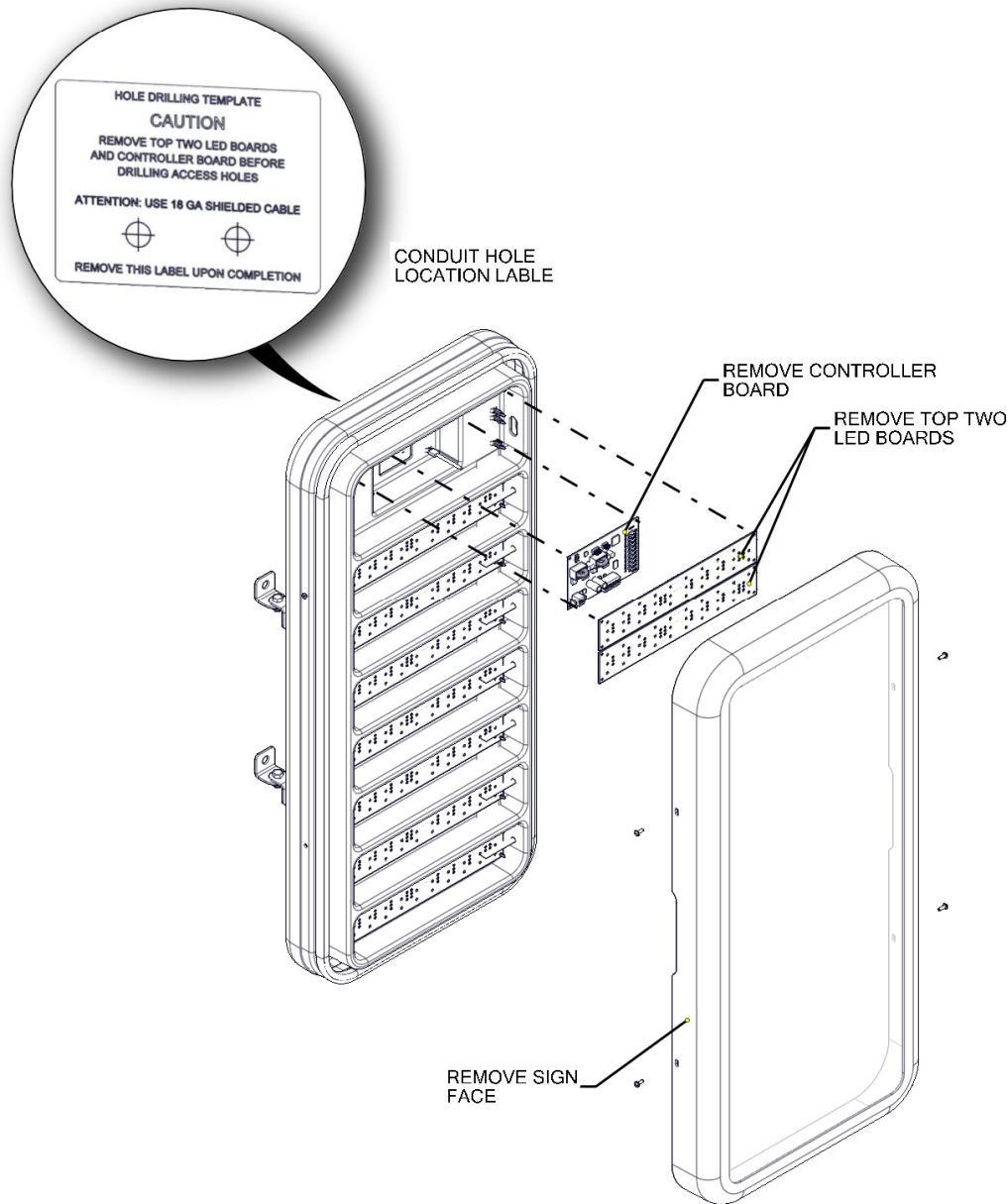


Figure 173 – Advanced Service Confirmation Sign Preparation for Installation

8.9 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 it 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 174.
- 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.

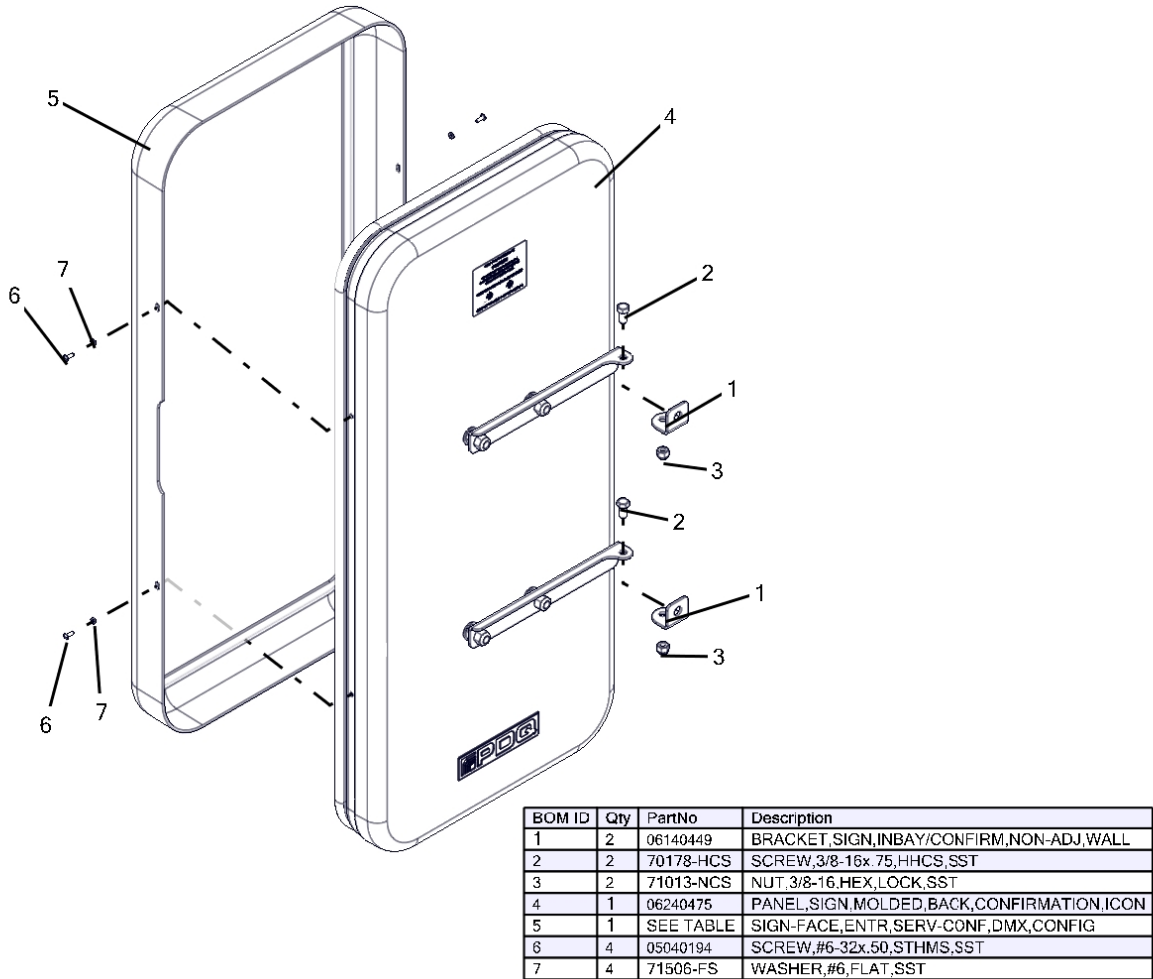


Figure 174 – Service Confirmation Sign

8.9 Step 3 Wire the Service Confirmation Sign

The Service Confirmation Sign is wired to the In-Bay sign. Be sure to consider this when terminating connections inside the In-Bay sign. Refer to Section 8.14 for all sign wiring instructions.

8.10 Entrance Sign Installation

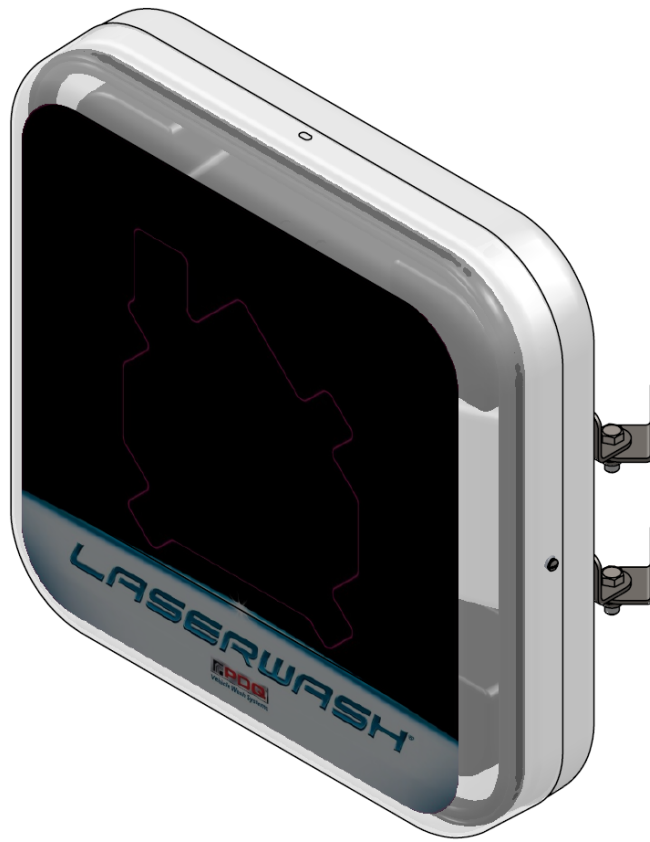


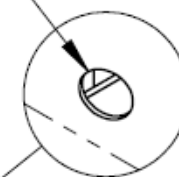
Figure 175 – Entrance Sign

8.10 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 is site supplied.
- To add the connector to the Entrance sign housing (see Figure 176):
 - 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

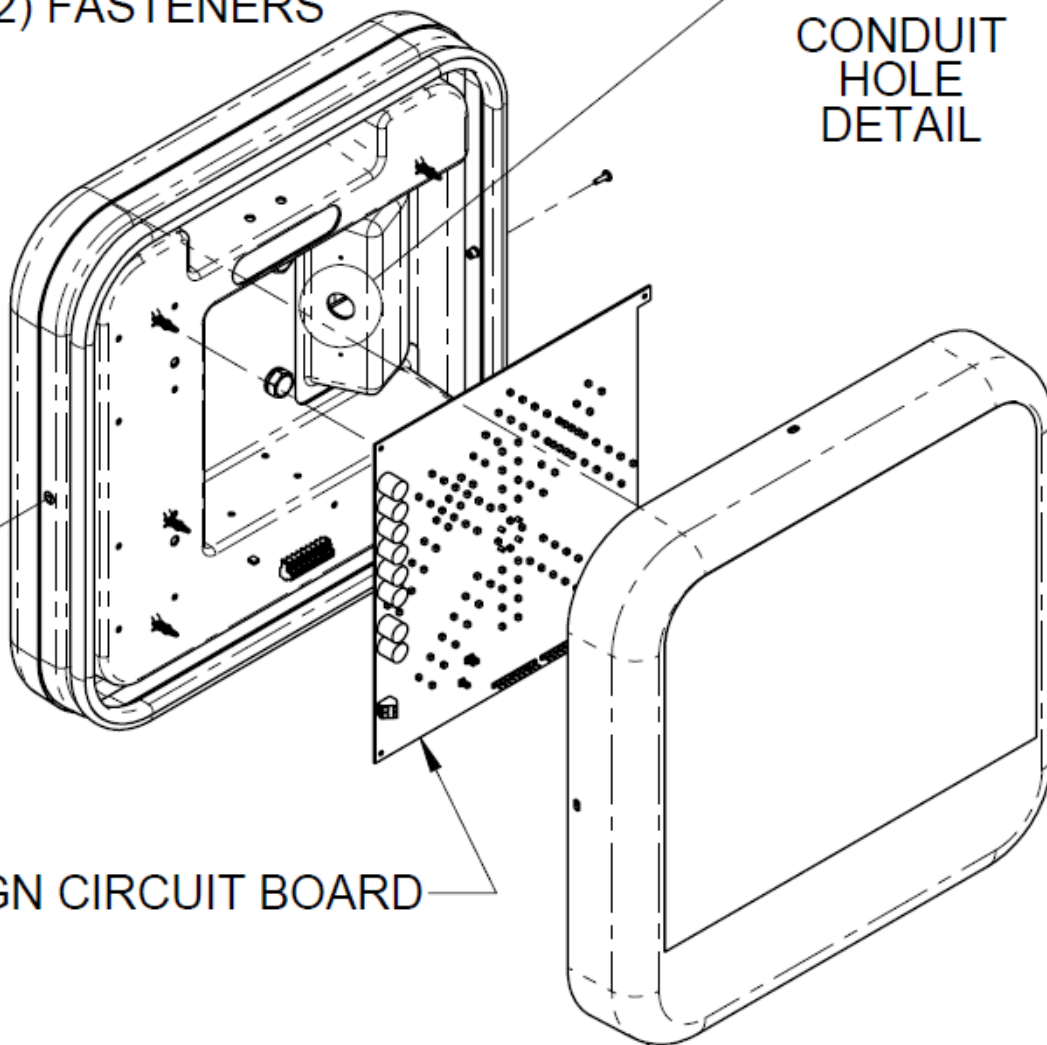


Figure 176 - Entrance Sign Preparation for Installation

8.10 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 it 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 (see Figure 162). 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 as shown in Figure 163. 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.

8.10 Step 3 Wire the Service Confirmation Sign

The Entrance sign is wired to the Bay Box. Refer to Section 8.14 for all sign wiring instructions.

8.11 Entrance Operating Instruction Sign Installation

Figure 177 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 (see Figure 177).

- 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.

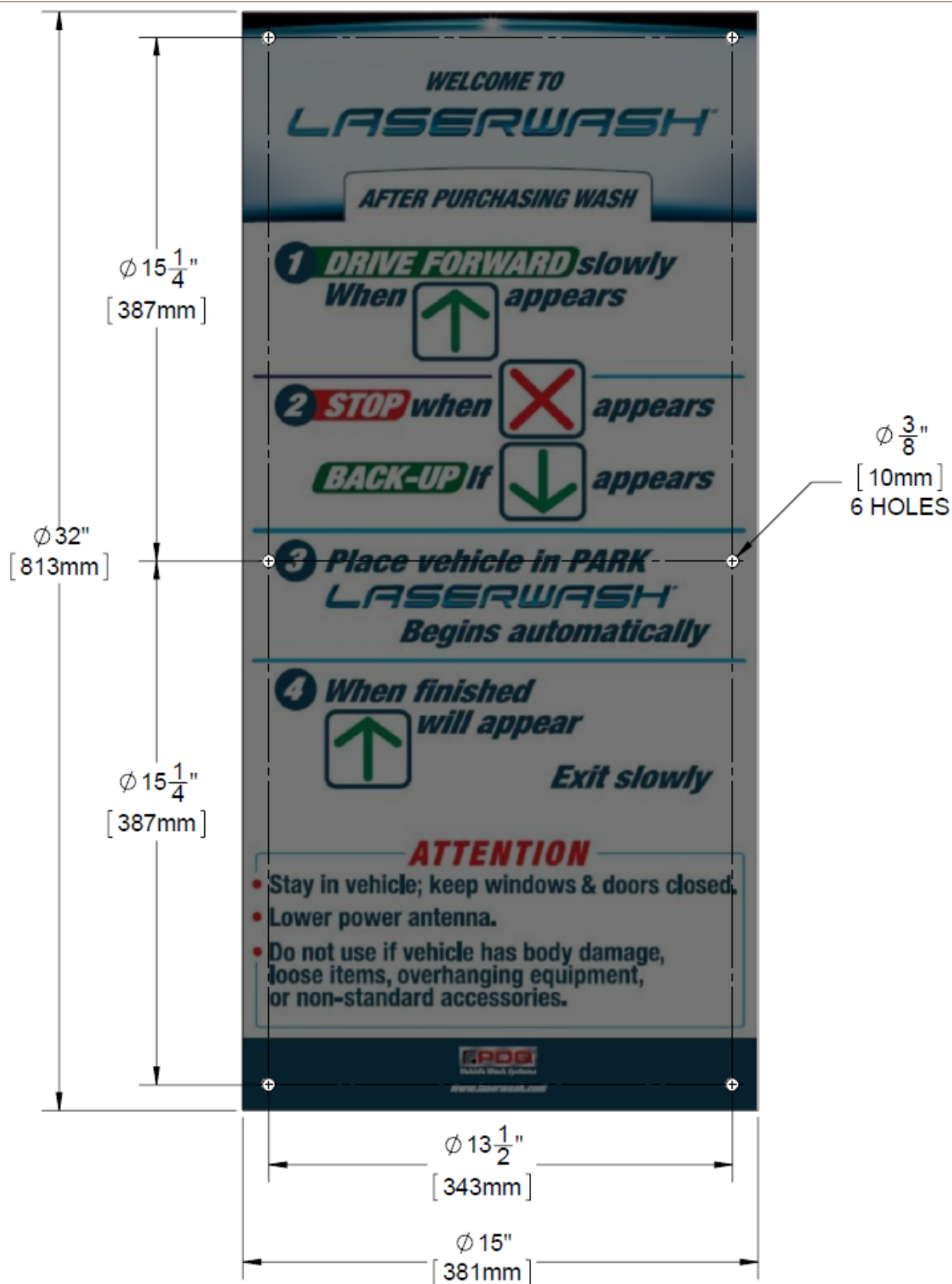


Figure 177 - Entrance Operating Instruction Sign

8.12 Countdown Timer Sign Installation

When installing the Countdown Timer Sign with the LaserWash 360 Plus, 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 8.15 for all sign wiring instructions.

8.13 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 LaserWash 360 Plus sign using the sign stand kit. Figure 178.

- 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.

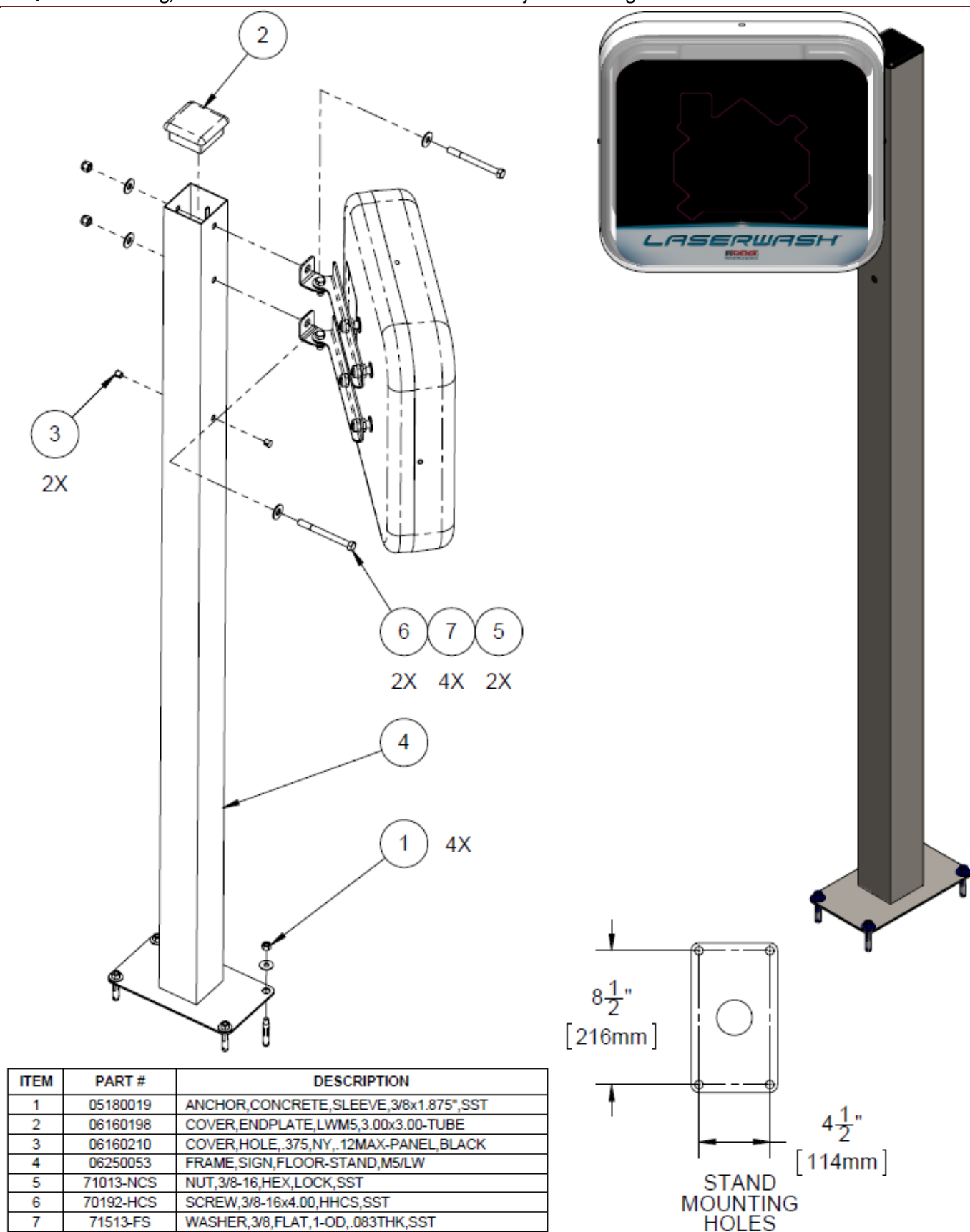


Figure 178 - Sign Stand Mounting Kit Installation

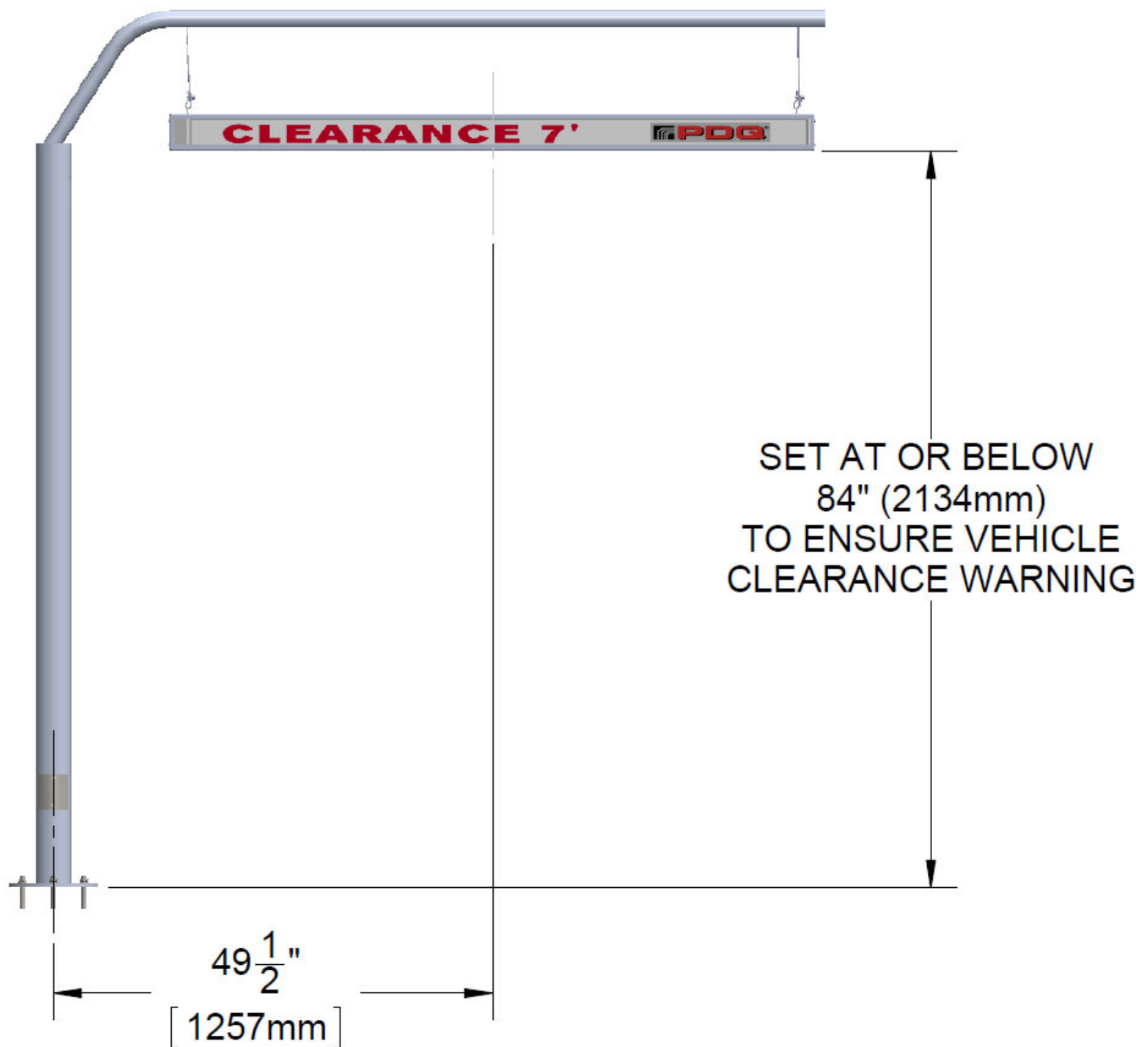
8.14 Clearance Sign Installation

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.

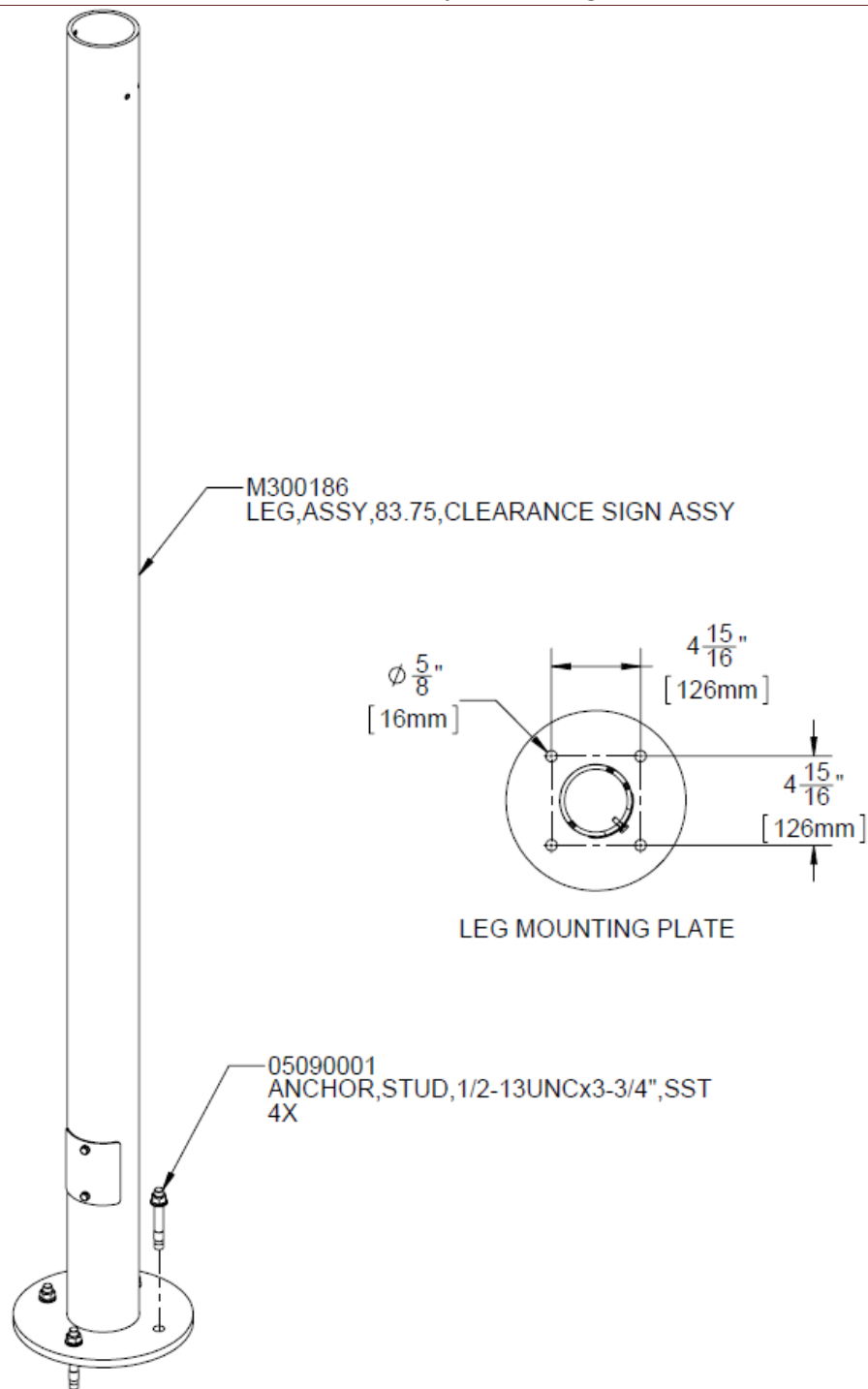
8.14.1 Hanging Clearance Sign Installation (signs without stand)

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 (See Figure 179).
 - 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 (See Figure 179)

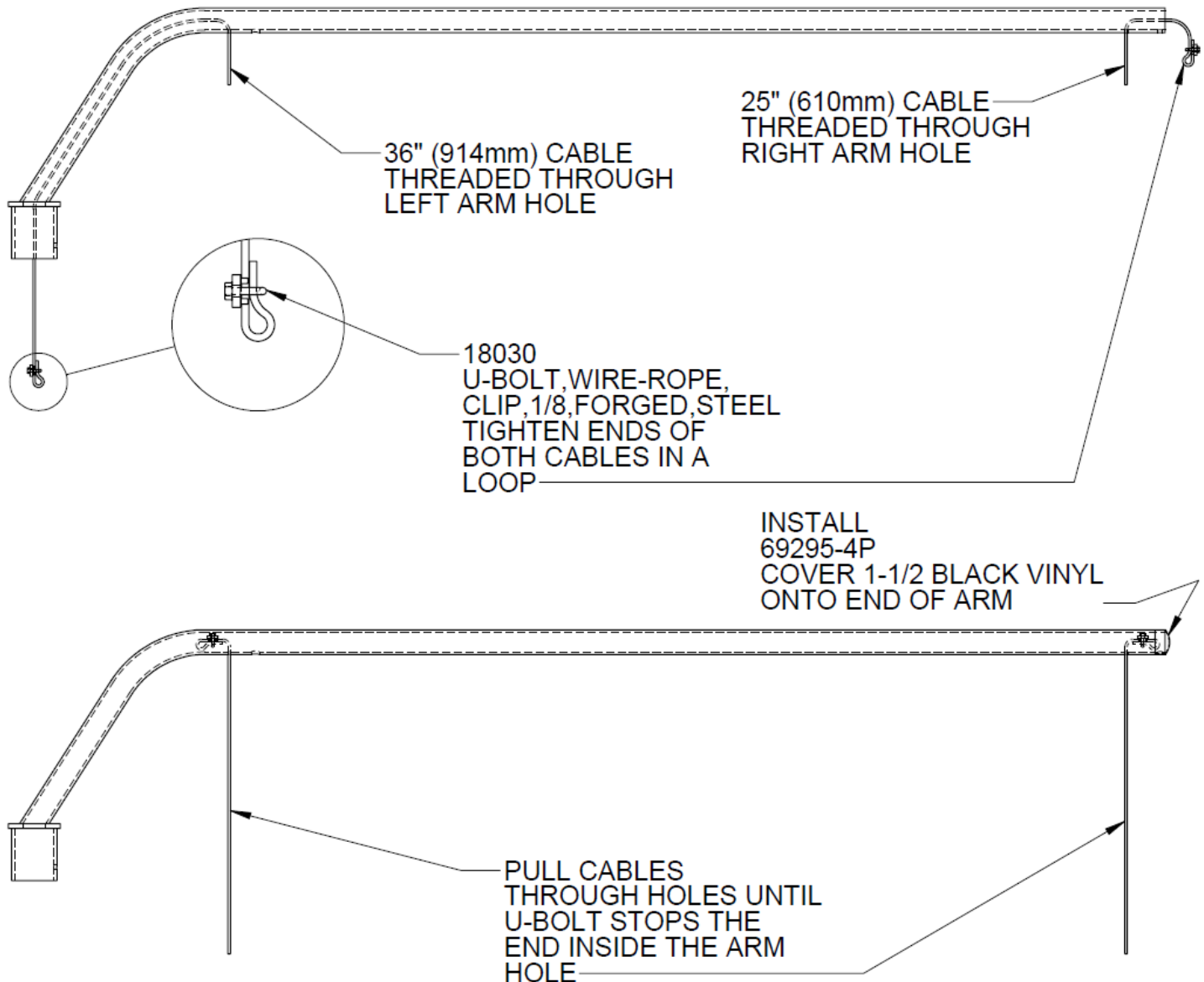
8.14.2 Stand Mounted Clearance Sign Installation (signs with stand)**Figure 179 - Stand Mounted Clearance Sign****8.14.2 Step 1 Install the Clearance Sign Stand Leg**

- 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 is shown in Figure 179.
- 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 (see Figure 180).

**Figure 180 - Mount Clearance Sign Post**

8.14.2 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 as shown in Figure 181.
- 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 as shown in Figure 181.
- 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 181 - Thread Cables Through Sign Arm**

8.14.2 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.

8.14.2 Step 4 Install the Clearance Sign to the Sign Arm

- 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 (See Figure 179).
- Securely tighten each wire rope clip U-bolt.

8.14.3 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 8.15.

8.15 Wiring the Signs

	POWER SOURCES – THIS PRODUCT SHOULD BE OPERATED ONLY FROM THE TYPE OF SOURCE INDICATED ON THE MANUFACTURER’S IDENTIFICATION LABEL. INSTALLATION SHOULD BE IN COMPLIANCE WITH APPLICABLE SECTIONS OF THE NATIONAL ELECTRIC CODE. CONSULT YOUR LOCAL BUILDING CODE BEFORE INSTALLING.
 	WARNING –LOCKOUT/TAGOUT THE UPSTREAM DISCONNECTING MEANS PRIOR TO TERMINATING ANY ELECTRICAL CONNECTIONS DURING INSTALLATION.
NOTE:	DO NOT DRILL HOLES IN THE TOP OF THE BAY BOX. DOING SO WILL VOID THE WARRANTY.

Terminal numbers are marked inside the applicable enclosure. Wire numbers coincide with numbers listed on the applicable schematic (**Table 2**).

Table 30 - Sign Electrical Connections

SIGN CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
In-Bay Sign (Basic or Deluxe)	Basic - STANDARD Deluxe - OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W34	BAY BOX	18X08.4	BASIC or DELUXE IN-BAY SIGN	28A13.24P-B
					20W20		18X03.8		28A13.24N
		18 GA TWISTED PAIR SITE SUPPLIED		12 VDC	22W02.BLK		22A13.1		RS-485.A
					22W02.WHT		22A13.2		RS-485.B
					22W02.SHD		22A13.3		
		20 GA, 6 CONDUCTOR WITH RJ-11 JACK ON ONE END, RJ-11 PLUG ON ONE END, SITE SUPPLIED			22W23		22A13,J5		28B10 or 29B10
Advanced In- Bay Instructional Sign	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W34	BAY BOX	21F45.2	ADVANCED IN-BAY INSTRUCTIONAL SIGN	24V.2
					20W20		18X03.8		24N.2
		18 GA TWISTED PAIR SITE SUPPLIED		12 VDC	22W02.BLK		22A13.1		COMA.2
					22W02.WHT		22A13.2		COMB.2
					22W02.SHD		22A13.3		SHID.2
		18 GA 75°C SITE SUPPLIED			22W26		18X24.4		SPK+.2
					22W27		18X25.4		SPK-.2
Service Confirmation Sign	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VDC	28W24	BASIC OR DELUXE INBAY SIGN	28A13.J5.1	SERVICE CONFIRMATION SIGN	30A20.3
					28W25		28A13.J5.7		30A26.3
					28W26		28A13.J5.6		30A25.3
					28W27		28A13.J5.5		30A24.3
					28W28		28A13.J5.4		30A23.3
					28W29		28A13.J5.3		30A22.3
					28W30		28A13.J5.2		30A21.3
					28W31		28A13.J5.8		30A27.3
					28W32		28A13.J5.9		30A20.1

SIGN CONNECTIONS									
MACHINE SUPPLY	STANDARD OR OPTIONAL	WIRE*	LOAD	VOLTAGE	WIRE NUMBER	FROM		TO	
						ENCLOSURE	TERMINAL NO.	ENCLOSURE	TERMINAL NO.
ADVANCED WASH CONFIRMATION SIGN	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24VAC	21W19	BAY BOX	21F20.2	ADVANCED INBAY INSTRUCTIONAL SIGN	68N20.24V
					20W15		18X03.10		68N20.N
					24W05.BLK		18X22.2		68N20.CH0.B
					24W05.WHT		18X23.2		68N20.CH0.A
					24W05.SHLD		18X21.4		
Entrance Sign	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W39	BAY BOX	18X09.3	ENTRANCE SIGN	32A16.24V
				12 VDC	20W11		18X03.12		32A16.N
					26W01		23N02.1A		32A16.J1.3
					26W04		23N02.2A		32A16.J1.2
Countdown Timer	OPTIONAL	18 GA 75°C SITE SUPPLIED	3A	24 VAC	21W03	BAY BOX	18X04.3	COUNTDOWN TIMER	33A18.J6.1
					20W05		18X03.16		33A18.J6.2
					27W42		23N05.6A		33A18.J2.2
					27W44		23N05.6B		33A18.J2.3
		18 GA TWISTED PAIR SITE SUPPLIED			24W07.BLK		23N01.TB 3.2B		33A18.J1.1
					24W07.WHT		23N01.TB 3.2C		33A18.J1.2
					24W07.SHD		N/A		33A18.J1.3
Lighted Clearance Sign	OPTIONAL	16 GA 75°C SITE SUPPLIED	0.7A	120VAC	N/A	LIGHTED CLEARANCE SIGN	N/A	SITE POWER PANEL	N/A

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



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

9 Document Change Log

!!IMPORTANT!!	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.
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Rev	Pages	Description	Completed By	Checked by	Date
00	All	Initial Release	PKRESSIN	K.UKKOLA	1/28/16
01	All	Update sections 6.5 and 6.6; Various corrections	NPHIPPS	PKRESSIN	3-19-18
02	All	Updated wall mount bracket illustrations	DKERR	MBURICH	7-5-2018
03	25, 26, 27, 28, 86, 87, 115, 262	Various changes per Project 9164.	DKERR	MBURICH	6/10/19
04	17	Updated nozzle part numbers per Project 9483	DKERR	MBURICH	8/8/19
05	103-107, 239-261, 273, 274	Added the Advanced Covers and Advanced Signage options, project 9475.	DKERR	MBURICH	9/25/19
06	64, 65, 98	Replaced trucks. ECN 6264	DKERR	NPhipps	10/24/24