Water Wizard TOUCHLESS AUTOMATIC 2.0

Wheel Scrub Retrofit Installation

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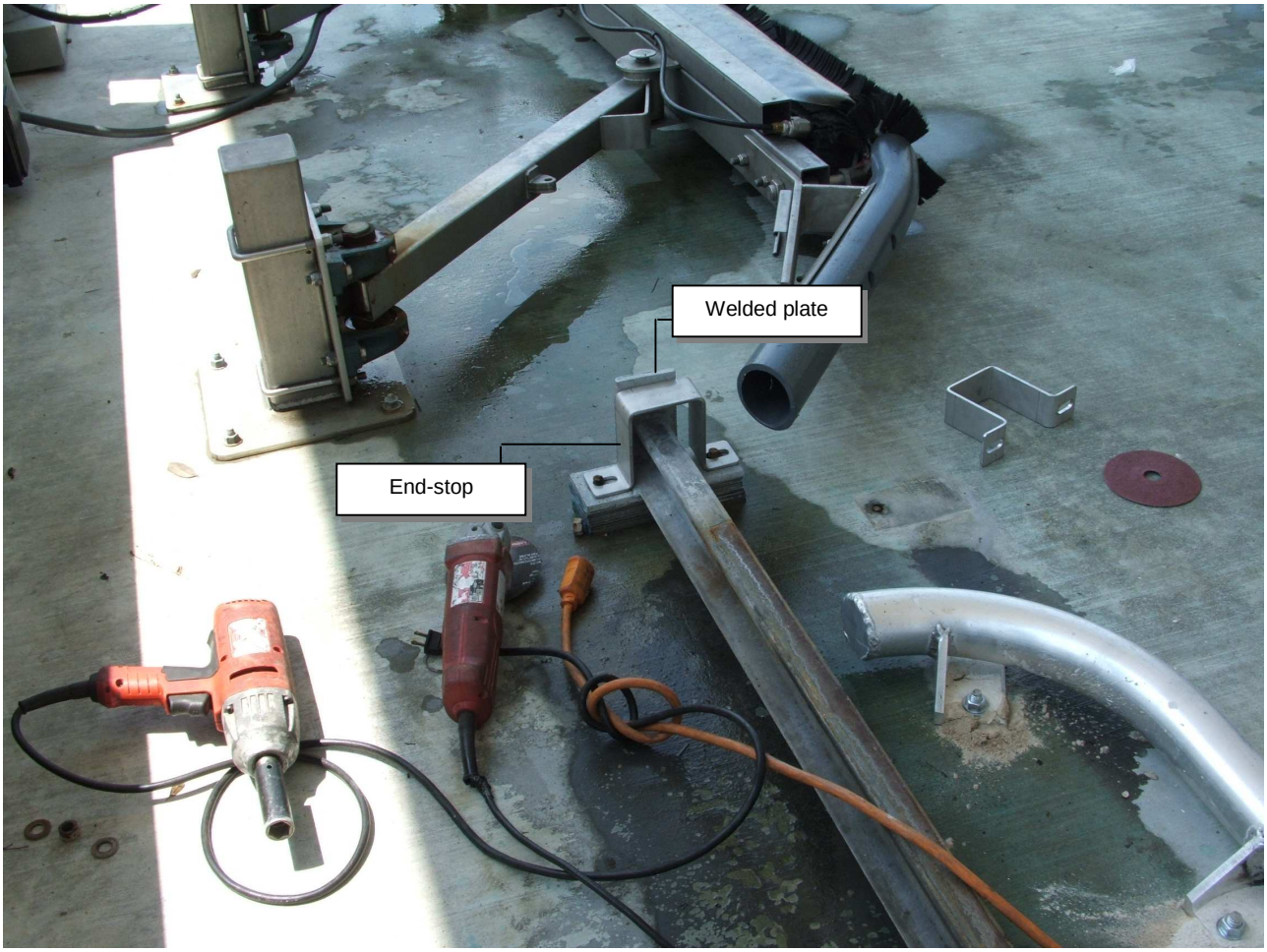
Water Wizard 2.0

Wheel Scrub Brush Retrofit Installation

- Remove existing guide rails



- Remove nuts on the exit end of each track
- Place new end-stops in position
- Mark the welded plate ¼" below the top of the new end-stop

- Using an appropriate grinder wheel, cut the welded end-stop plate off on the reference line previously marked (1/4” below the top of the new end-stop)

- Install the new end-stops

- Install eye box ramps over all existing eye boxes

- Install new guide rails according to included Bay Layout print

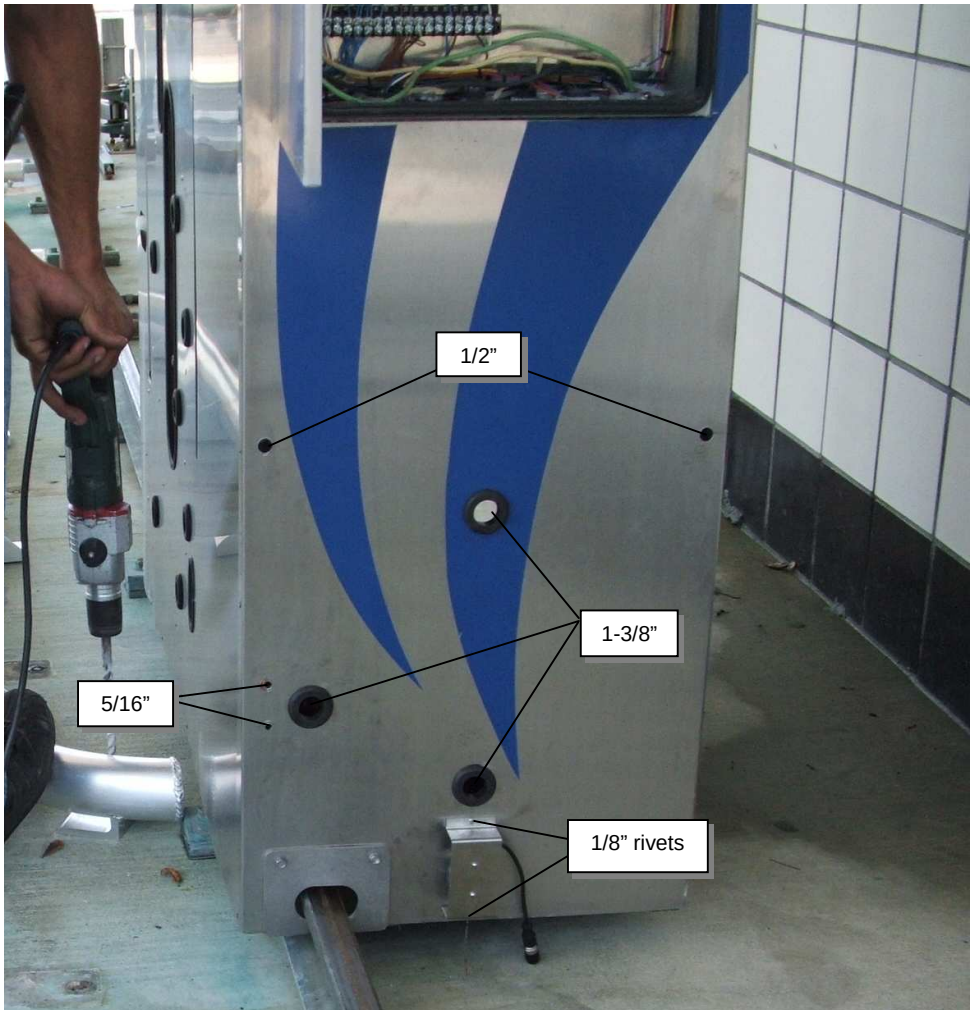
- Lay out hole locations according to provided print

NOTE: Using an electrical knock-out punch is the best way to make the 1-3/8” grommet holes in the skin panels. Use a 1” knock-out die for the grommet holes.

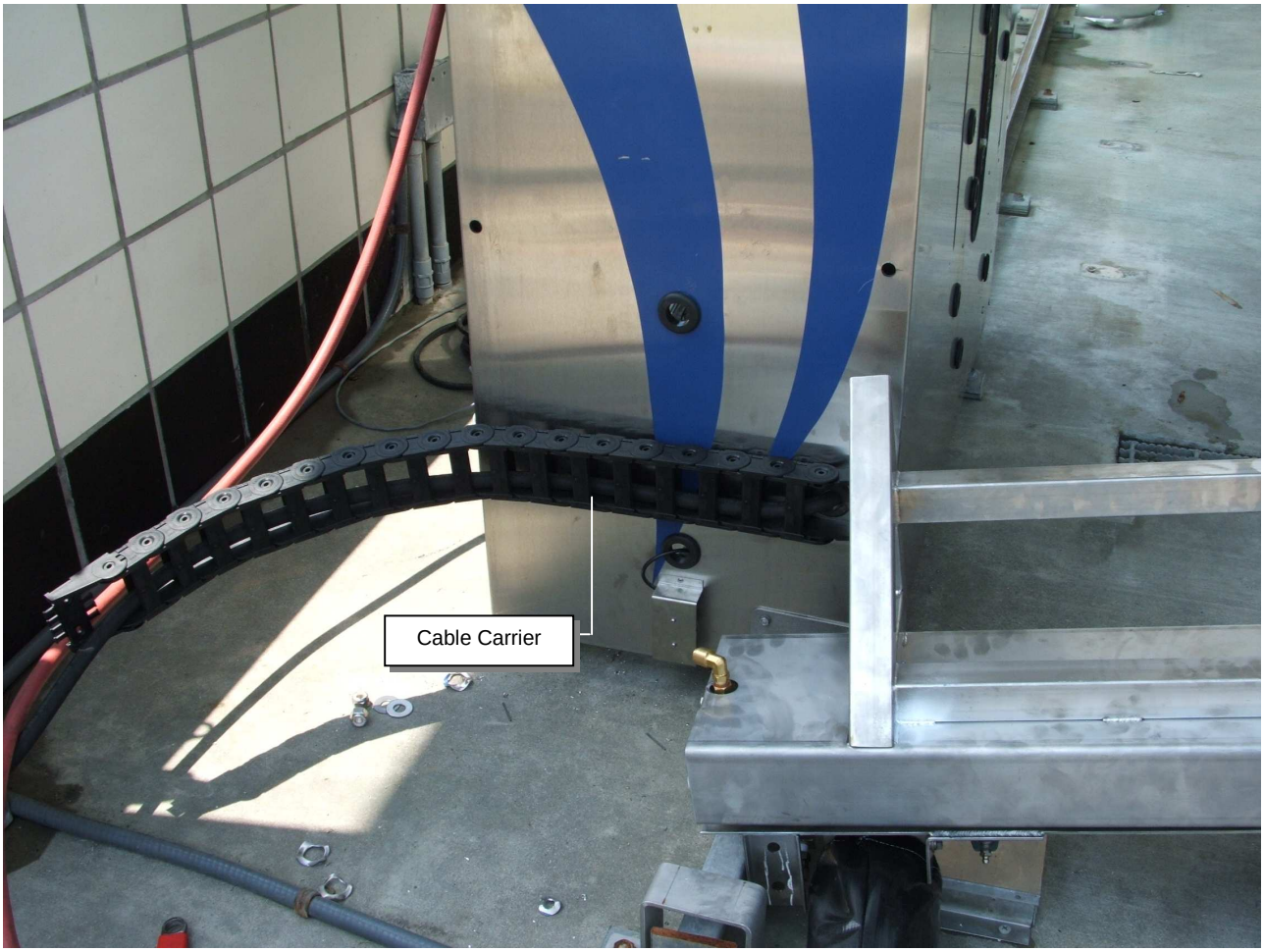
- Pilot drill all holes using 1/8” drill bit

- Increase the hole sizes to 5/16” on all holes except for the two bottom holes
- The two bottom holes are for the eye brackets which install using 1/8” rivets

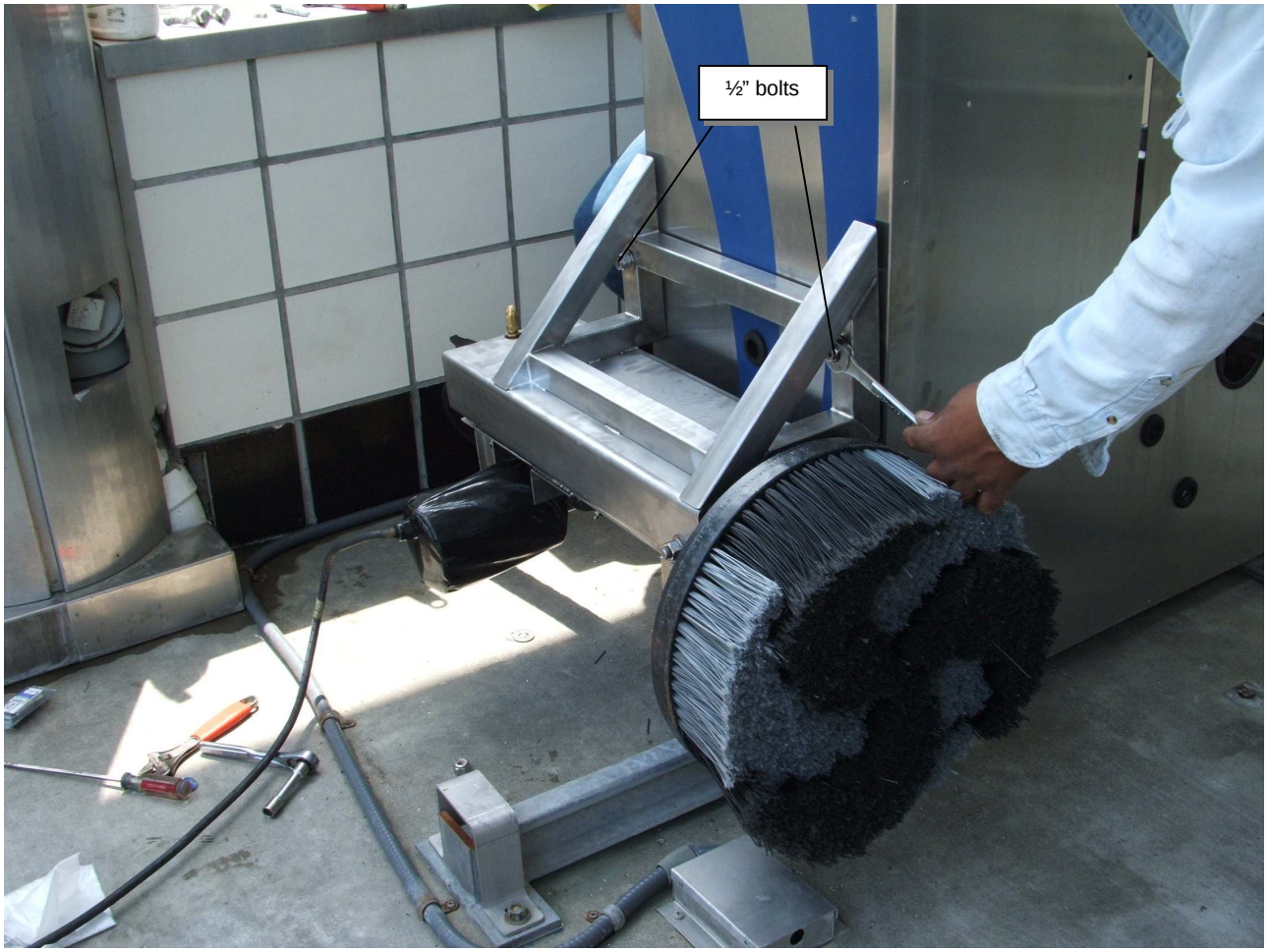
NOTE: All 5/16” or larger holes drilled into the Gantry frame must be drilled completely through the tubing.



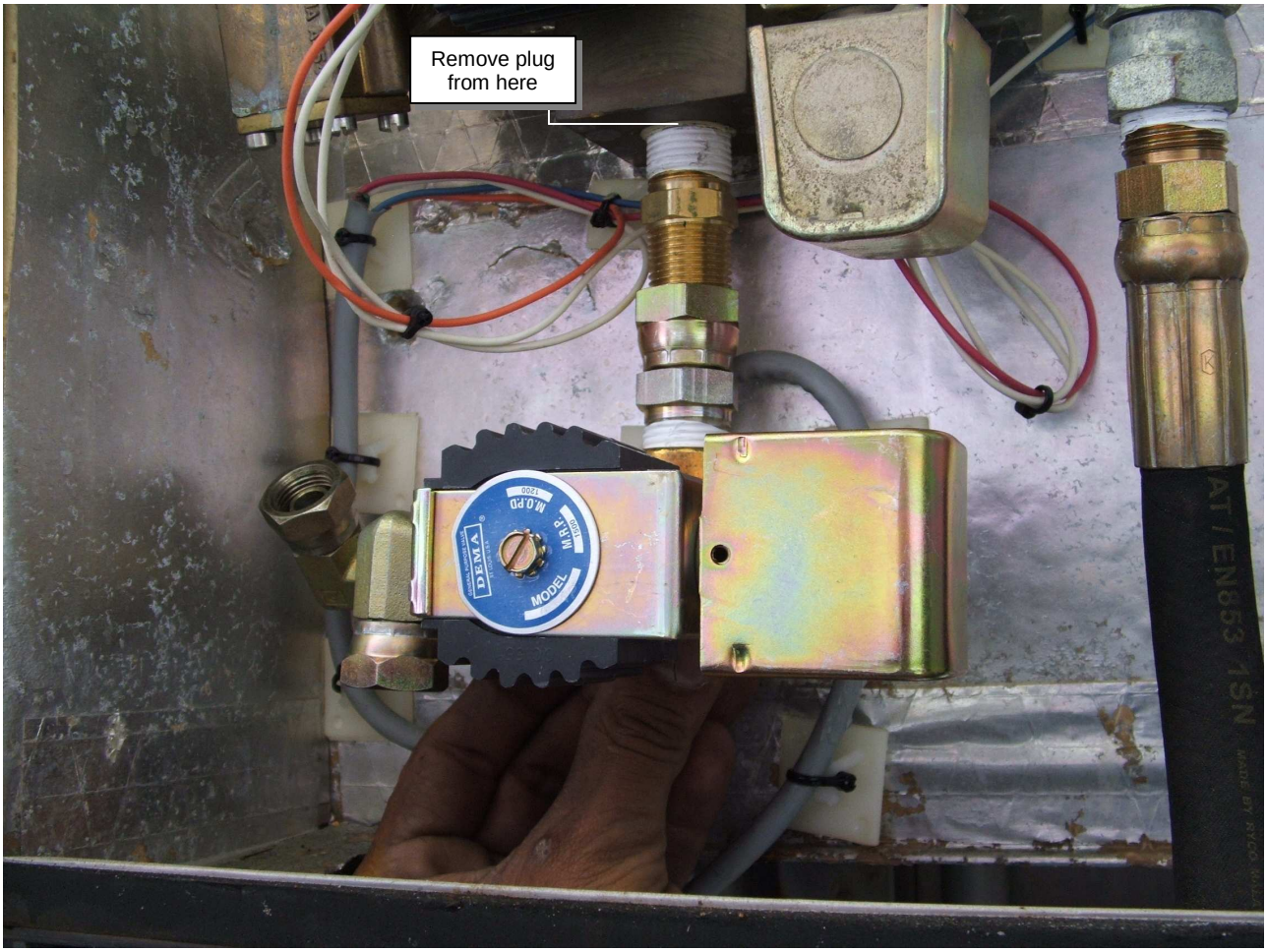
- Increase hole sizes as marked in photo (debur 1-3/8” holes and install grommets)
- Install eye brackets using the 1/8” rivets



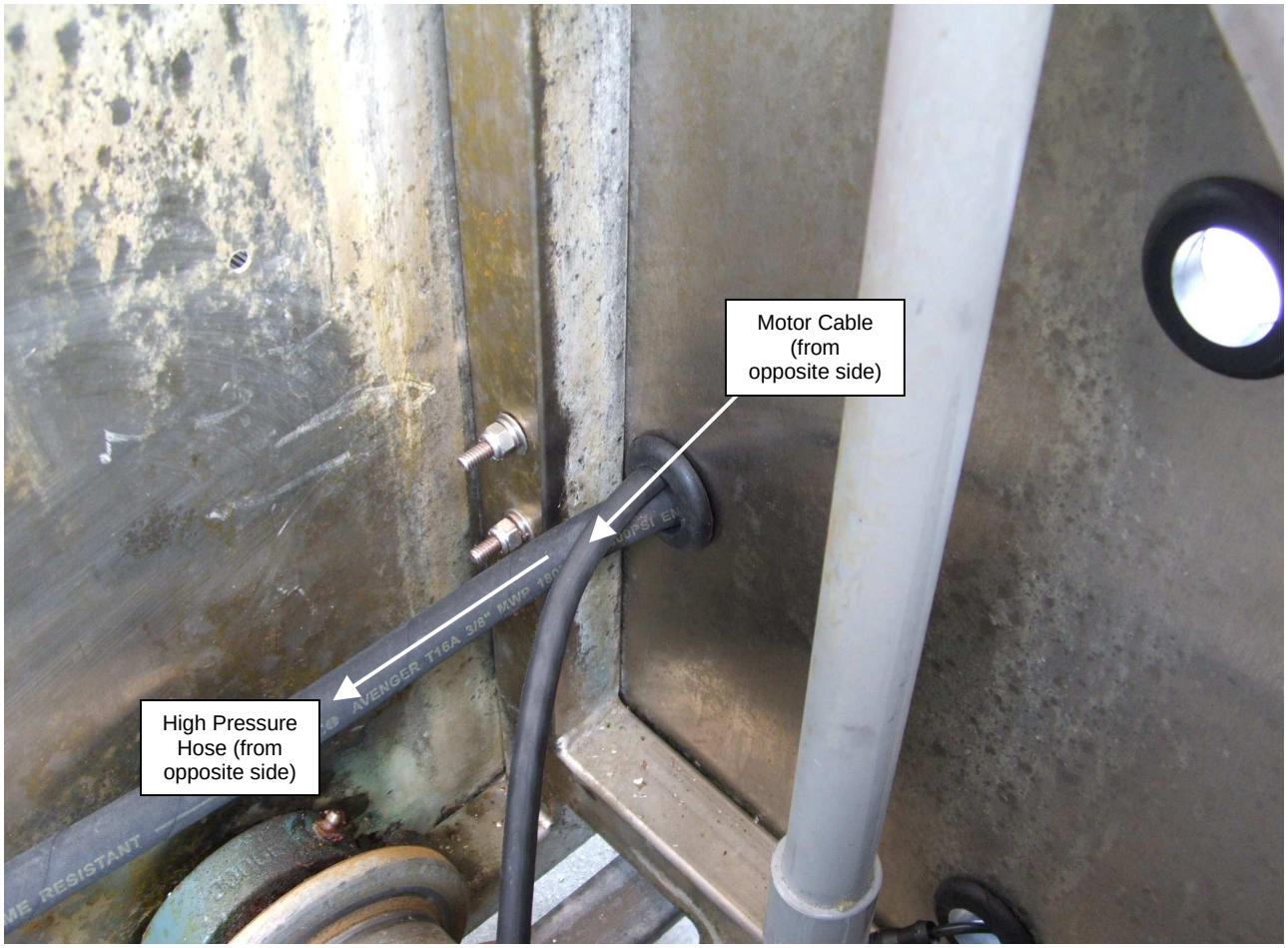
- Install cable carriers to Gantry as shown above with the ¼" hardware provided



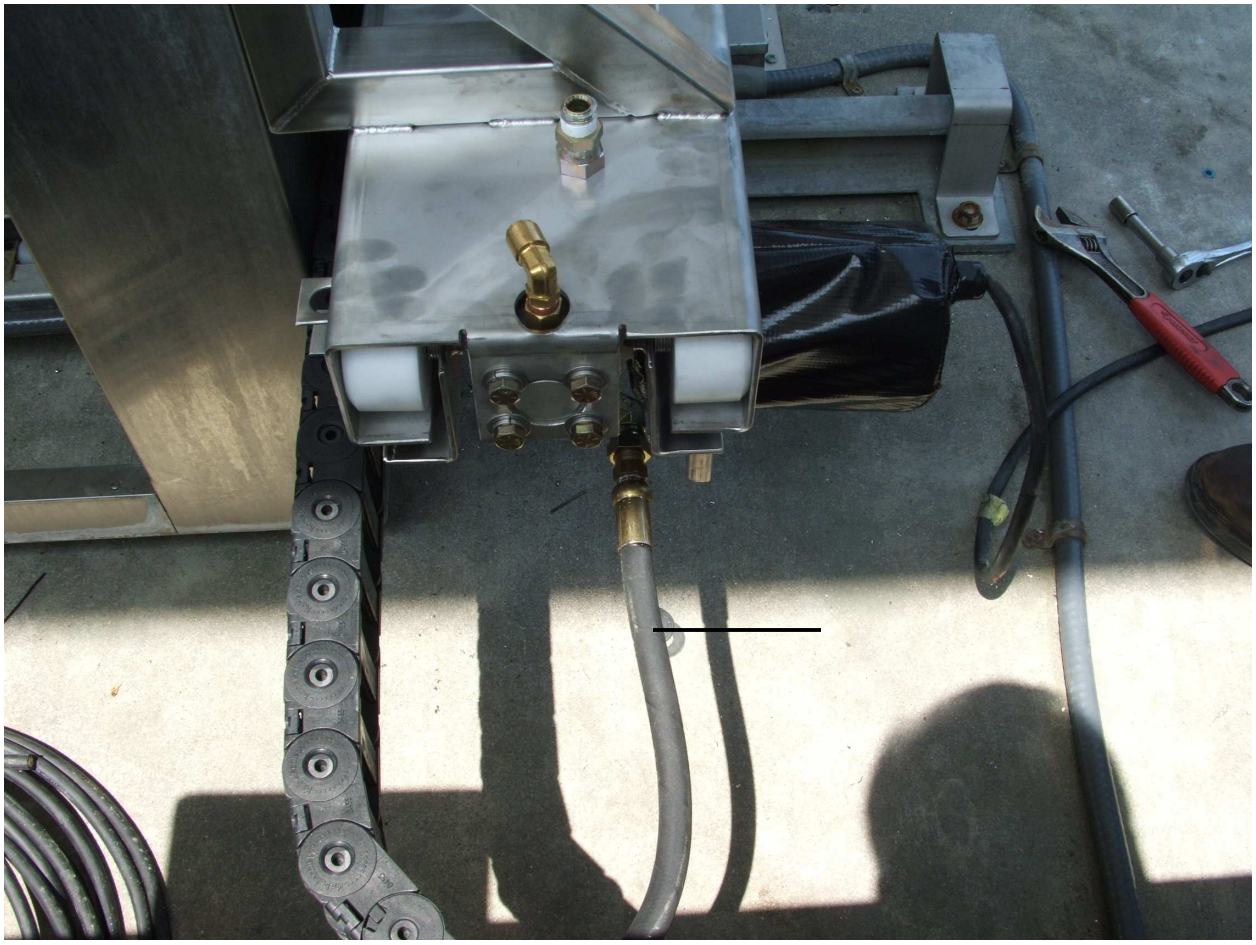
- Install wheel scrub assemblies with the ½" hardware provided



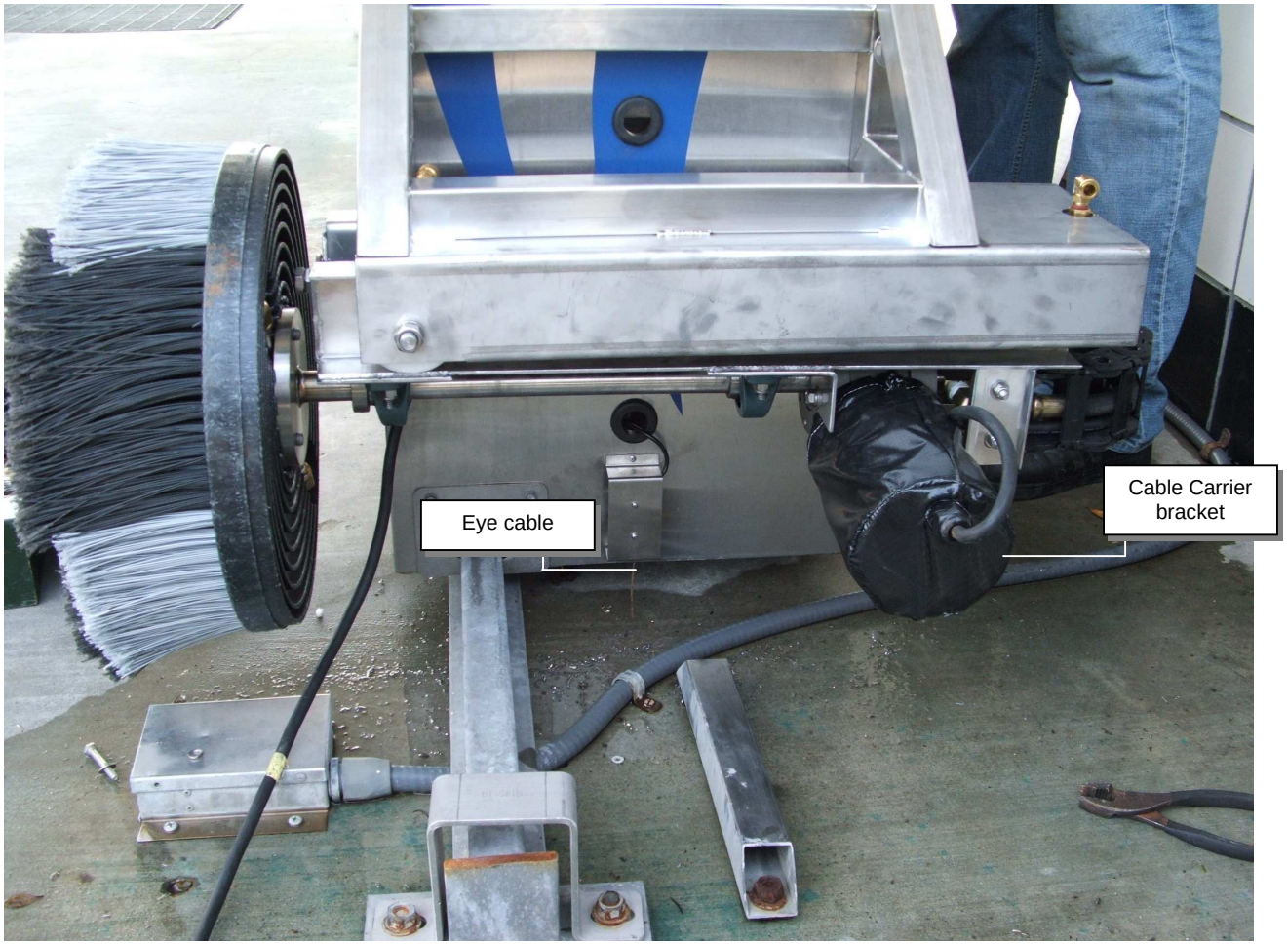
- In High Pressure Valve Box, remove plug and install fittings and valve as shown



- From Gantry passenger side, install high pressure hose and motor cable as shown above



- Installed Wheel Scrub Brush with cable carrier in place
- See drawing on page 36 for high pressure plumbing configuration.

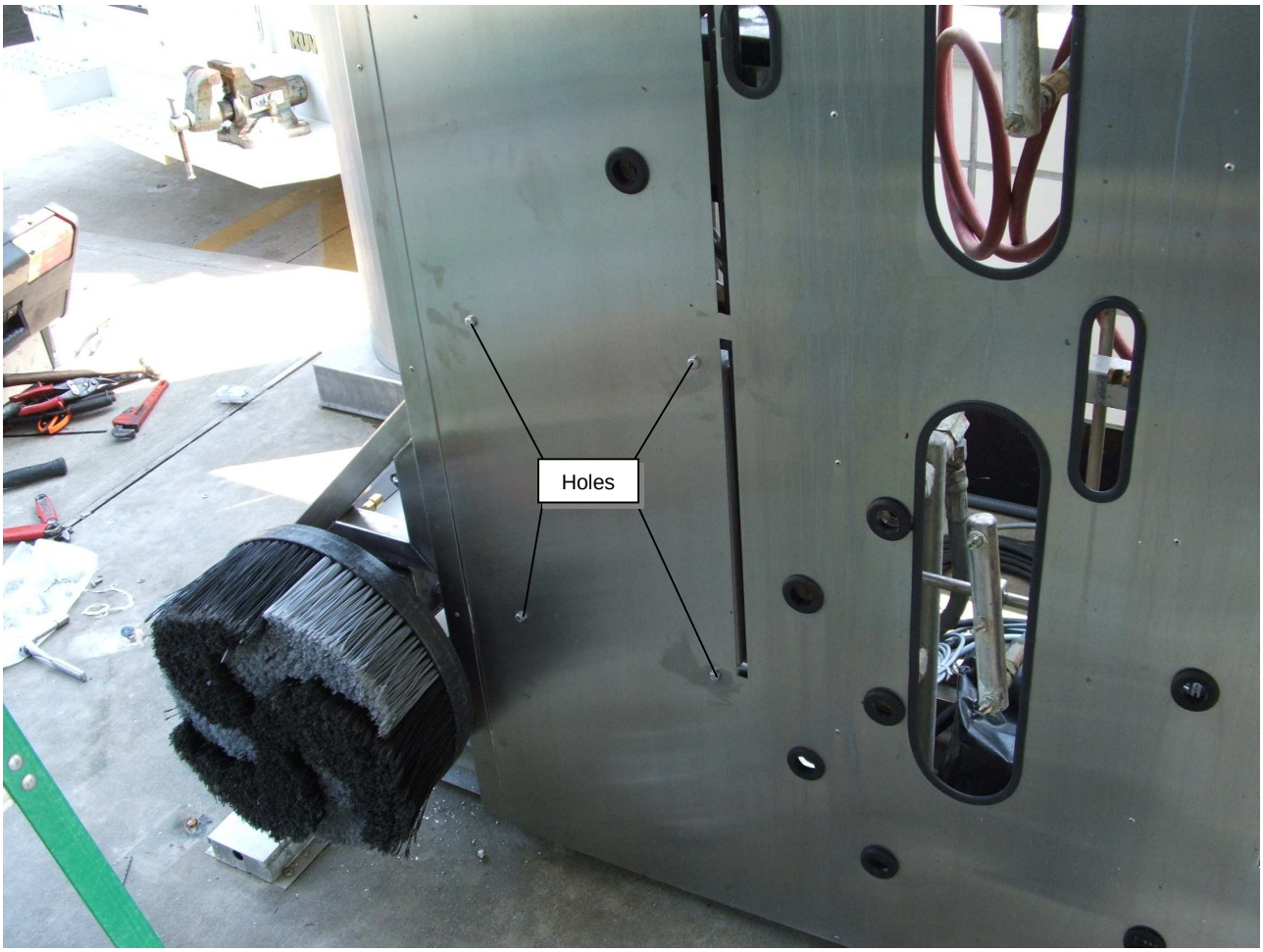


- Place eye cable through grommet as shown above
- Mount cable carrier to bracket as shown above
- Secure hose on one side of carrier and cable on the other (make sure they are not twisted)

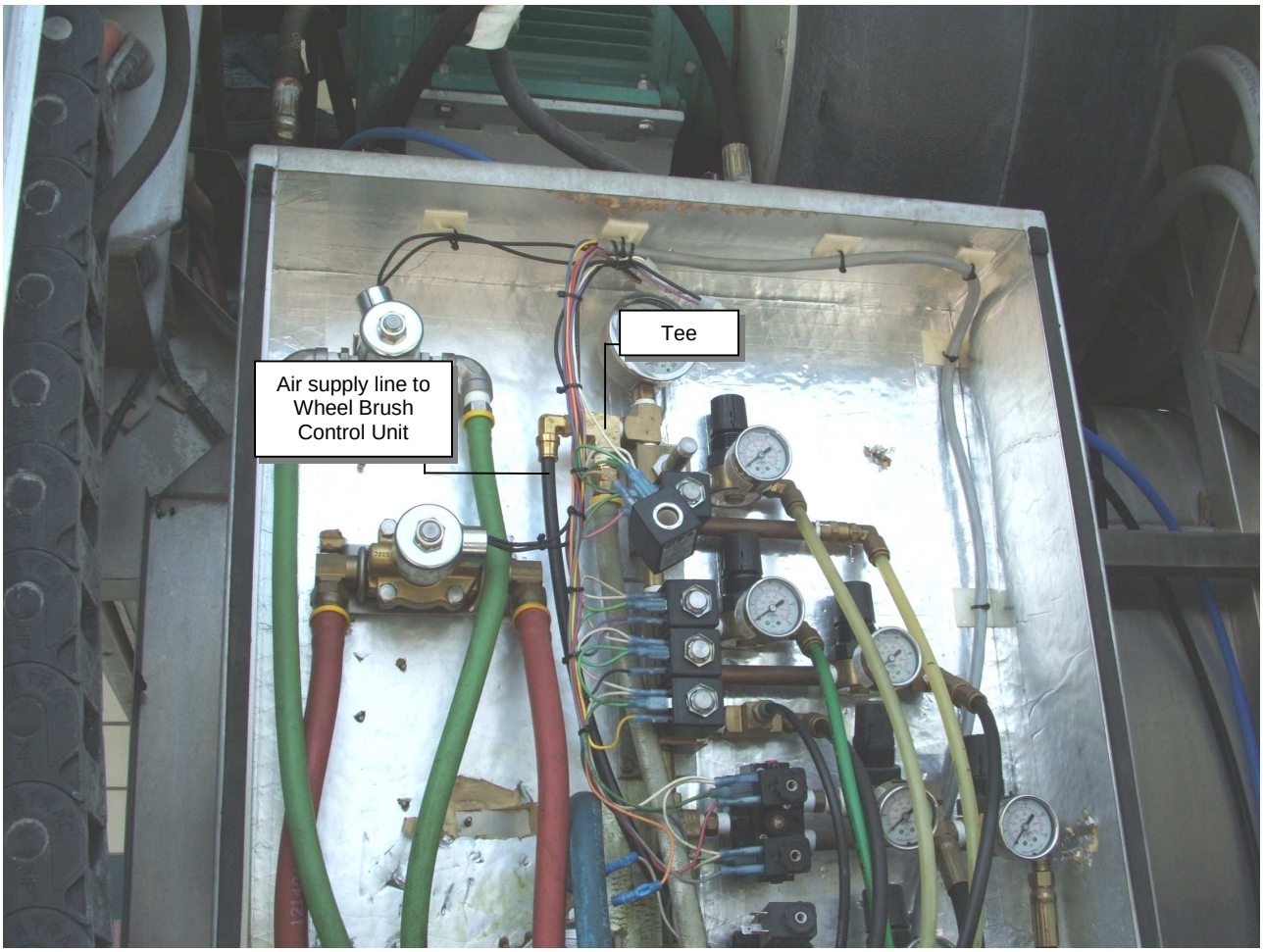
- Install Wheel Scrub Control Unit in the location shown above

NOTE: The production version of this unit is in a slightly smaller box and the panel is arranged differently. The door also hinges on the opposite side. See next page for photo of production box!

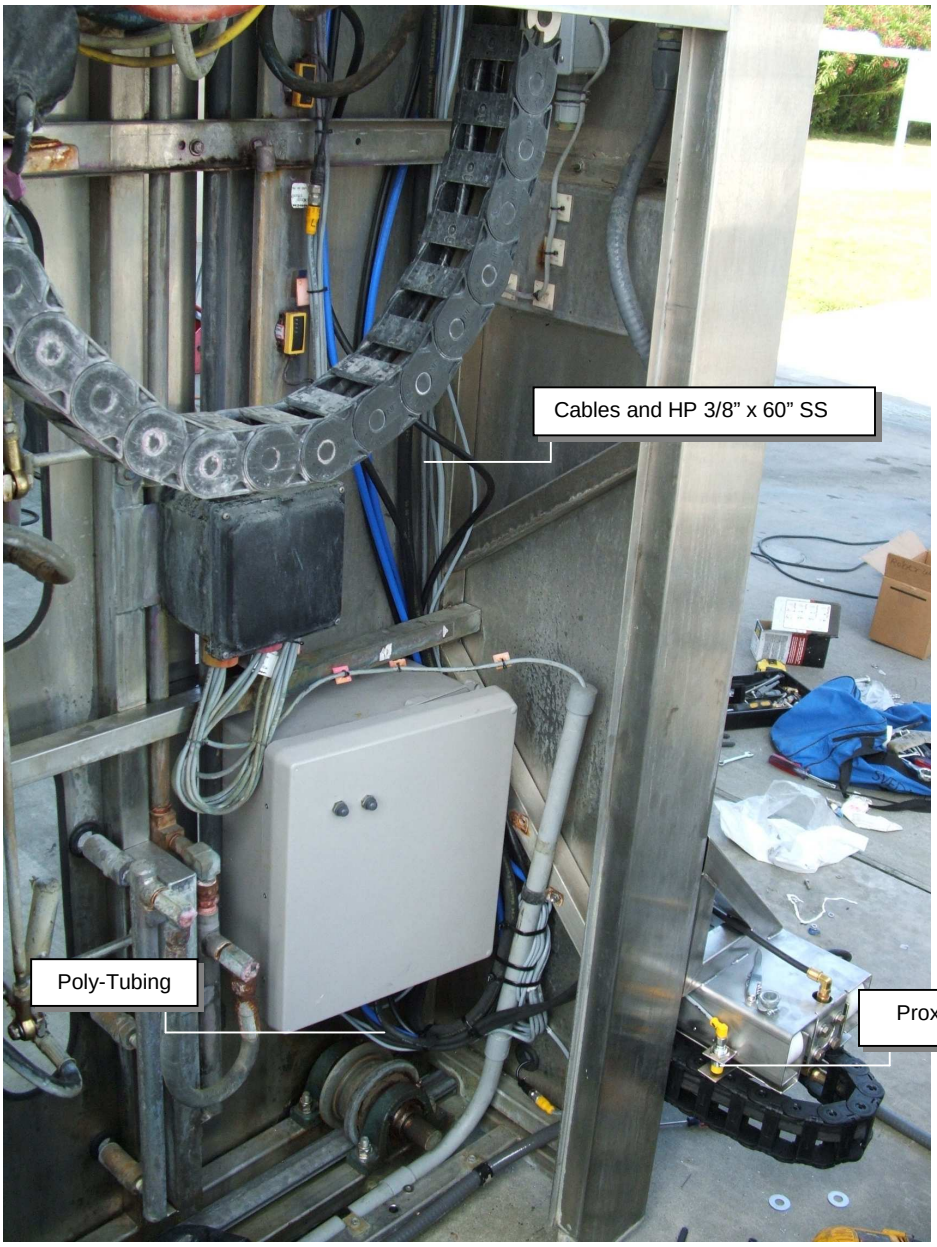
Production Unit Box



- Mark and drill holes to mount the Wheel Scrub Control Unit as shown in photo above (use ¼" hardware provided)

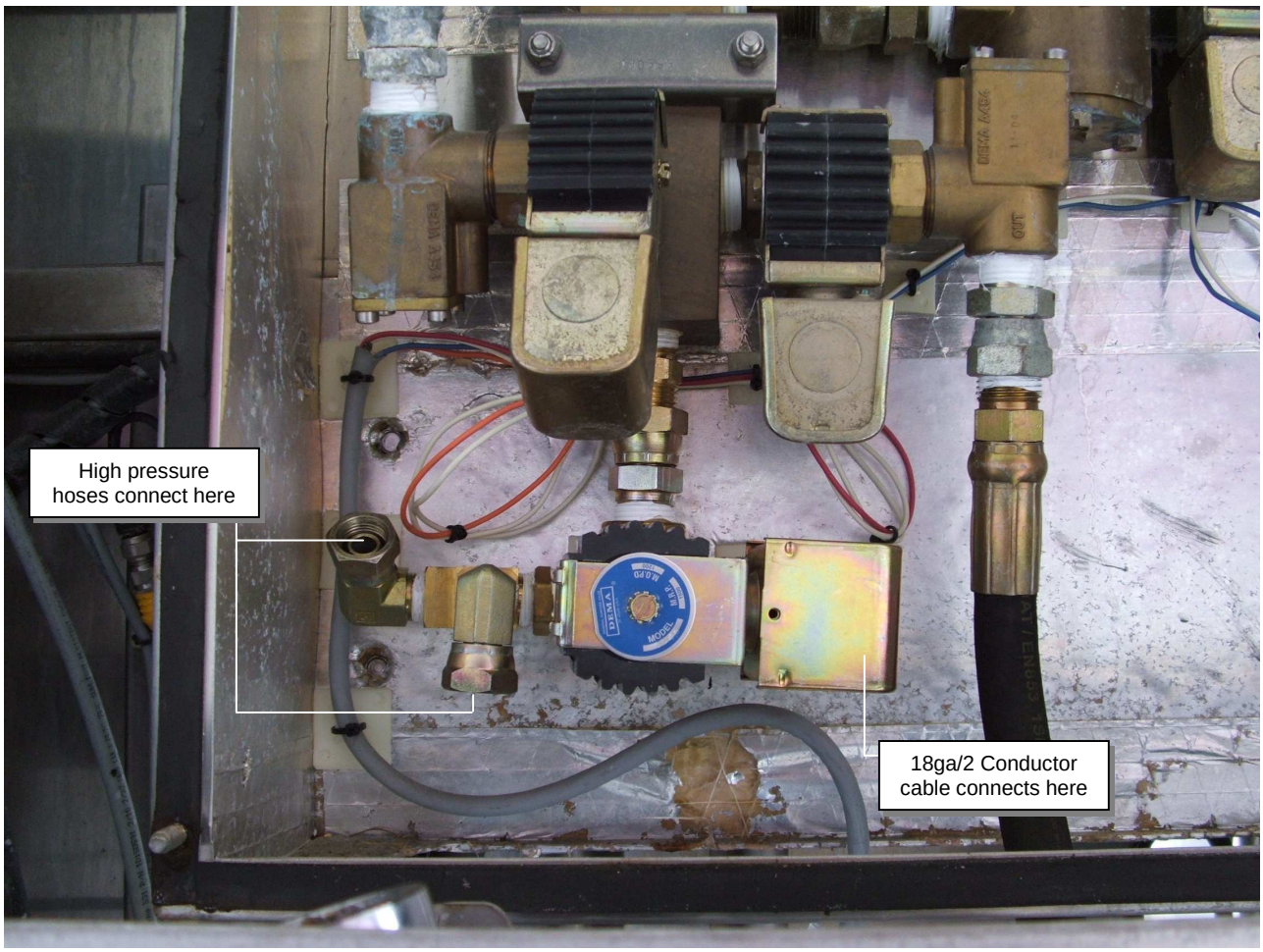


- Install Tee as shown in photo above
- Install air supply line from connection shown in photo above to the Wheel Brush Control Unit

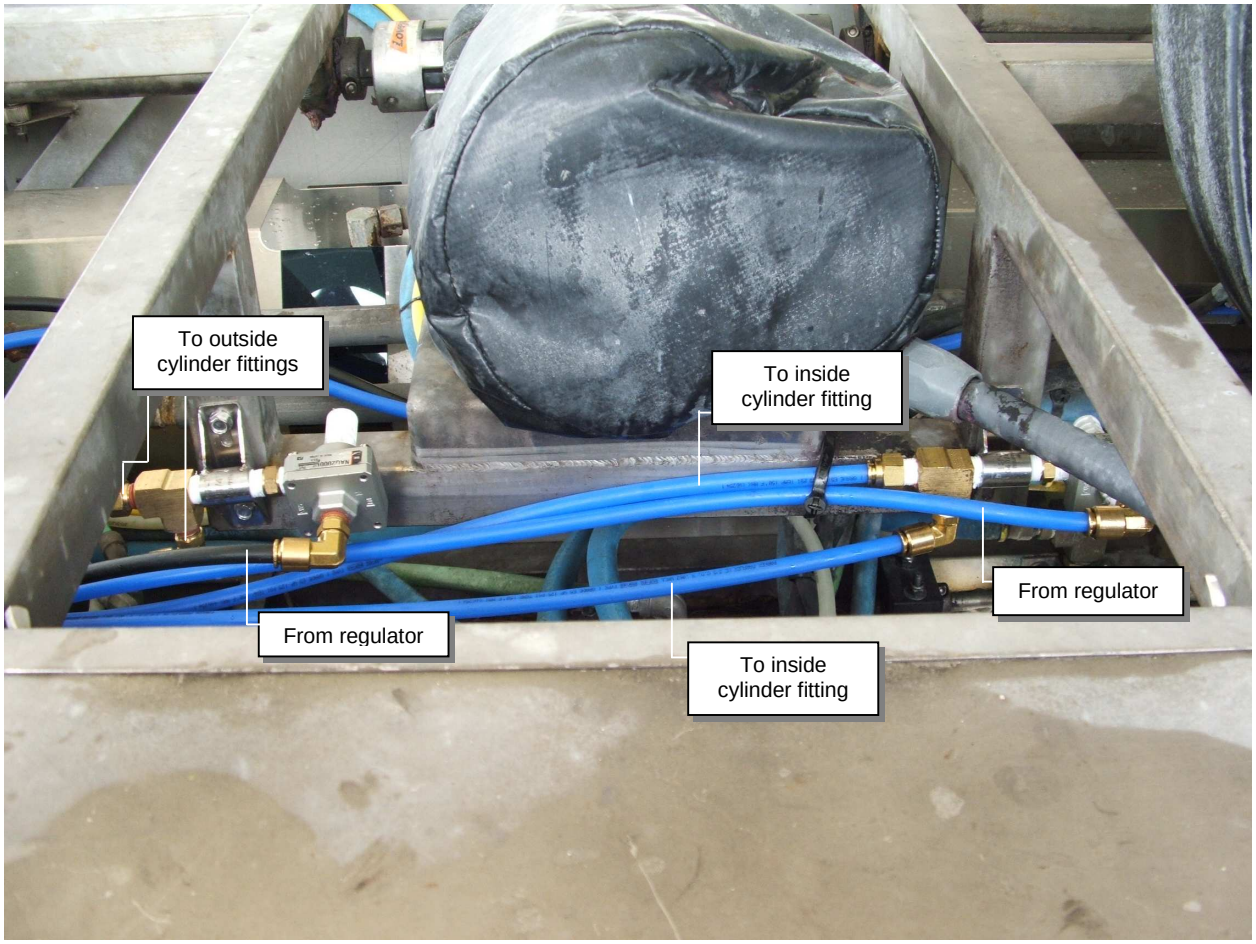


- Install Poly-Tubing per Flow Diagram provided
- Pull cables and high pressure hose across the top of Gantry (stay away from moving parts)
- Install Proxes with ¼” gap between them and the target

NOTE: Cable from this motor must be connected directly to the T1, T2, T3 terminals on the VFD.

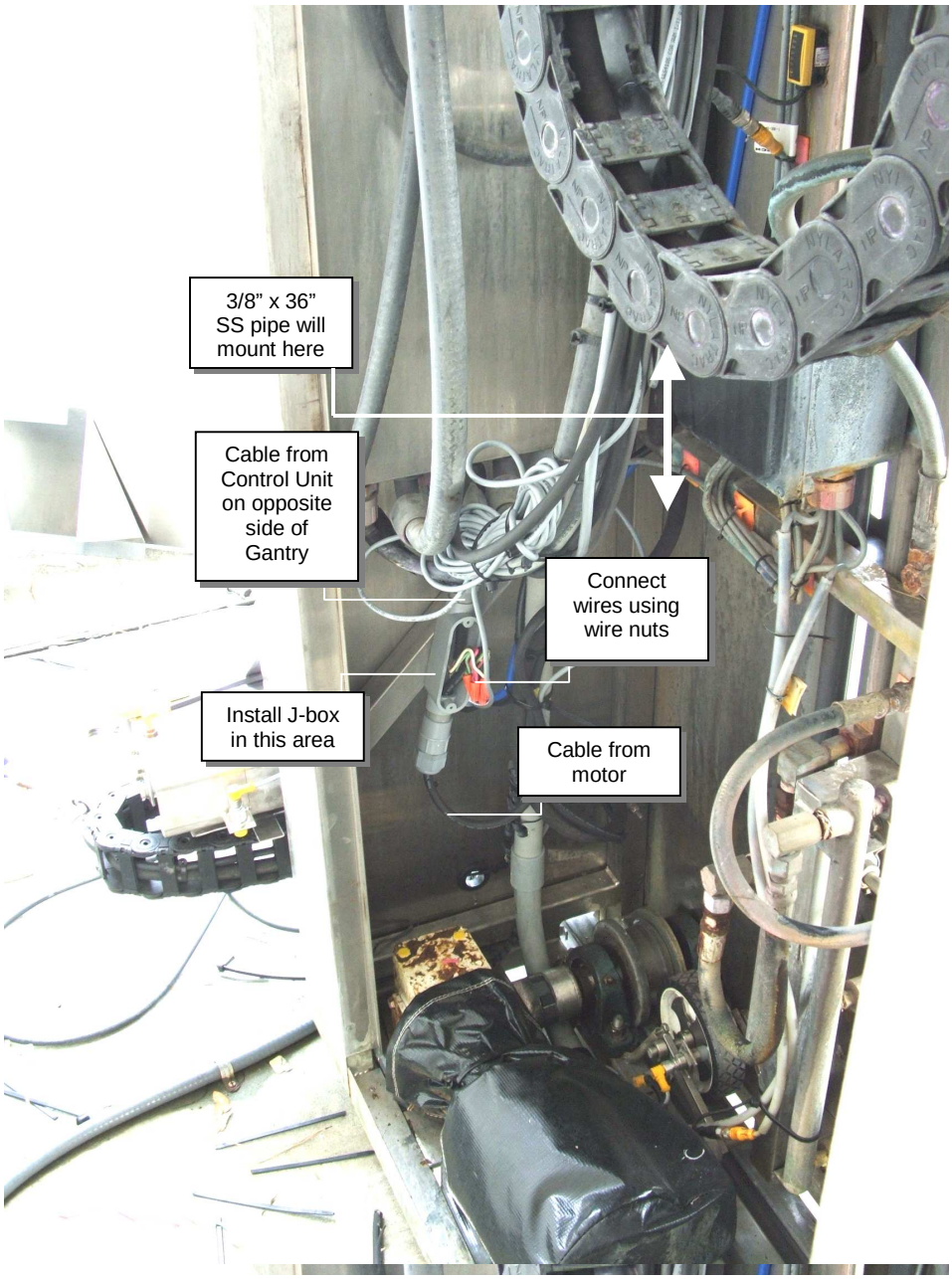


- Install High Pressure Wheel Scrub hoses
- Connect 18ga/2 Conductor cable from the Wheel Scrub Control Unit to the solenoid wires



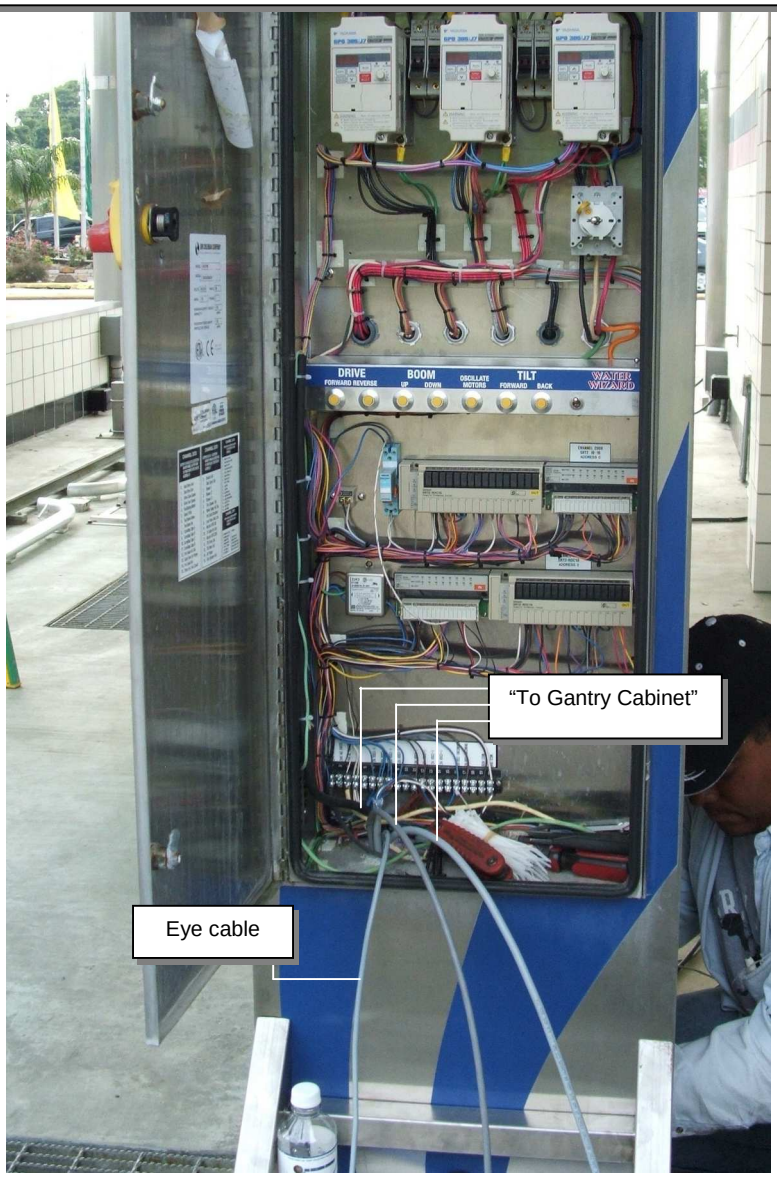
- Install the Quick Exhaust Valves as shown and plumb them according to the Flow Diagram provided

- Install tubing and prox cable as shown

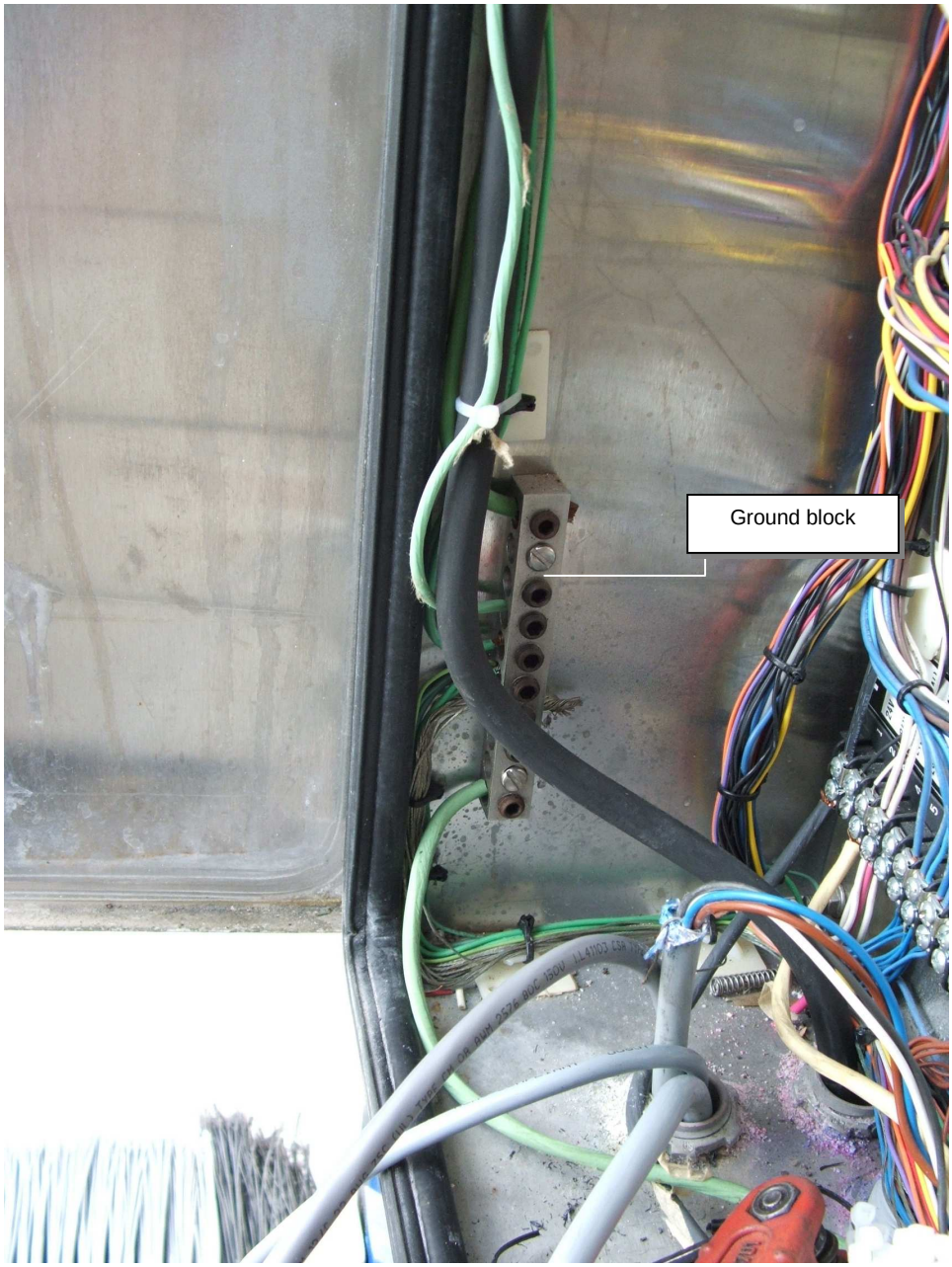


- Install small J-box with tech screws provided
- Connect wires using wire nuts

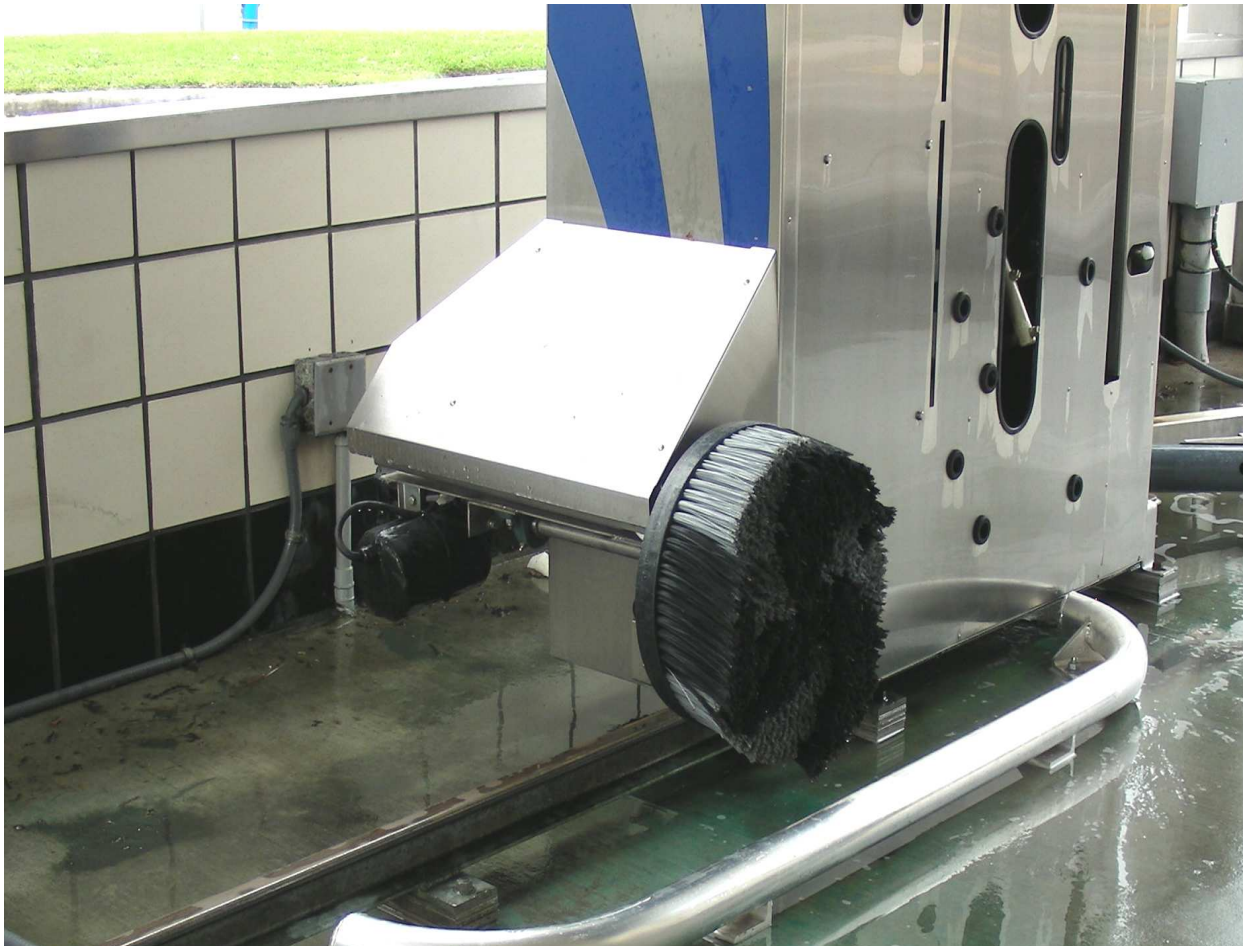
NOTE: Turn power off at the Electrical Control Center inside the equipment room at this time!



- Pull the individual eye cable provided into cabinet
- Pull wires labeled "To Gantry Cabinet" into cabinet
- Terminate all wires according to the schematic provide



- Terminate all ground wires (green or un-insulated) to the ground block as shown



- Completed Wheel Scrub Brush Retrofit Installation

WATER WIZARD 2.0

Special Instructions when loading version 2.32 or 2.33

If your unit already has version 2.29 or 2.30, then the jumpers on channel 2011 have already been installed.

An Omron CJ1M-**CPU13** PLC is required to load version 2.32 or higher. Prior to loading software version 2.32 there are two jumpers that must be installed for two future safety circuits. Turn off the power to the Electrical Control Center (ECC). Find the SRT2-ID16 in the ECC panel labeled "Channel 2011 (Input)". It is located on the left side of the panel near the center. Connect a wire, preferably blue in color, from the 24 VDC (-) on the 24 VDC Terminal Strip to input numbers 13 and 14 on this SRT2-ID16. There **may** be one jumper to **remove** in the **Gantry** Control Panel on an SRT2-ID16, input "Channel 2010" on terminal # 8. If there is a blue 18ga. wire on this terminal, trace this wire until you find the other end, at the blue relay and remove this wire completely. If there is not a blue 18ga wire on this terminal then it has already been removed so no further action would be required. Once the wiring changes have been completed and this page has been read in their entirety, perform the software loading procedure for both the Red Lion HMI and the Omron PLC.

Instructions for loading OMRON PLC and Red Lion memory module

SAVING EXISTING RECIPES and REVENUE *(Recipes and Revenue are stored in the PLC NOT the Red Lion) It is suggested to use a memory card other than the program card.*

1. With power on to the PLC, insert a memory card into the slot in the PLC. Press the F5/Log In Page button and log in using the owner password. Press F6/Memory Card and select Recipe Mode then press Save Recipes twice. Remove the memory card with power still on. **DO NOT CYCLE POWER ON & OFF.**

RED LION Operator Interface

1. Turn off power to the display. Plug memory card into the slot located on the side of the Red Lion.
2. Turn on power to display. Wait for display to load program from memory card. (Observe text – LOADING CF). Once the screen is back to the main screen make sure the HMI number matches the version number you are loading.
3. After program is loaded, turn off power and remove card from display. Turn power back on.

OMRON PLC (Loading Program Instructions)

1. Turn off power to PLC. Open cover plate (located above the memory card slot) on CJ1M-**CPU13** PLC module. Here you'll see 8 switches numbered 1-8 from top to bottom. Turn on DIP SW 7. (push switch to left position). Insert memory card into slot. Card is properly seated when the eject button is even with the top.
2. Turn on power to PLC. Wait for "busy" light to extinguish (about 5 to 10 seconds) and the main screen is up.
3. Turn off power to PLC. Remove memory card. Turn off DIP SW 7 (push switch to right position).
4. Turn on power to PLC.

DOWNLOADING SAVED RECIPES

1. With power on to the PLC, insert the memory card. Press the F5/Log In Page button and log in using the owner password. Press F6/Memory Card and select Recipe Mode then press Load Recipes twice.
2. Remove the memory card with power on. **DO NOT CYCLE POWER ON & OFF**

INITIALIZING THE SYSTEM and WHEEL BRUSH ALIGNMENT

1. Perform a “Wheel Test”. This test can be accessed in the “F7 Tech Menu” of the Red Lion Interface Panel. This test will allow the PLC to store the correct length of travel for each of these components. ***THIS MUST BE DONE TO ENSURE PROPER OPERATION.***

Wheel Scrub Features and Set-up Instructions

You must have software version 2.32 and have performed the special instructions required.

The primary change in this version is the addition of the Wheel Scrub option and its associated controls and settings. You will find a new recipe bit titled “Wheel Brushes” in the Program Recipe menu. A custom recipe is required to apply this function to a wash recipe. You cannot perform the wheel brush step on the first pass of a wash recipe. The wheel brush photo eye must first find the rear wheel position.

Air Pressure Adjustments

There are two air regulators to move the brushes in and out, one of them to extend and one to retract. The extend regulator adjustment is very critical and should be adjusted to the lowest possible operating pressure, usually about 20 psi. Very little pressure is required to clean the vehicle wheels and too much air pressure could cause unnecessary load and wear on the wheel brush spindle gearmotors. The retract regulator should be adjusted so the brushes return smoothly but positively into their home position, usually about 30 psi.

Timers

There are also two new timers and two new counters associated with this option. Under “F2-Timers & Counters” on the Red Lion, go to the “Adjust Timers” menu (Menu Option 0) and press the “Enter” button. Now press the “Next” button repeatedly until you get to the end of the menu. Press the “Prev” button three times and you will see a timer called “Wheel Brush Dwell”. This timer determines how long the brush will stay engaged in the wheel in each direction (clockwise & counter-clockwise). This is factory set to 3 seconds.

Press the “Next” button to advance to the “Wheel Brush Retract Dwell” timer. This timer determines how long the brush disengages from the wheel between direction changes. This timer is factory set to 1 second. You want the brushes to disengage the wheel slightly while it changes directions. If it does not, you would want to increase this timer value.

Counters

Since we always know where the front tire will be because of the Treadle, we use that to our advantage. Under “F2-Timers & Counters”, go to “Adjust Gantry Counts” menu (Menu Option 1) and press the “Enter” button. There you will see an adjustable counter titled “Treadle Position”.

Setting Front Wheel Counter

To set this counter, put the gantry in manual mode (turn toggle switch in gantry panel ‘on’), and manually position the gantry until the wheel brush is perfectly aligned with the center of the treadle eye. It is best if there is a vehicle parked properly on the treadle plate to achieve the best result. Manually extend the wheel brush to assure you are in the proper position. The manual push buttons for the Wheel Brush are located to the right of the manual toggle switch. One will extend the wheel brush and the other will spin the brush.

Once you have achieved this position go back to the Red Lion and press the arrow key that is located directly below the center of the screen, below the word “Off” on the display. This word will then change to “On”. You will see the value under the word “Treadle” change. You have now set where the wheel brush will position at the front tire when the wheel brush function is performed in a wash recipe.

Setting Rear Wheel Counter

The wheel brush photo eye will locate the rear wheel position in pass 1. This position is also adjustable. Watch it wash a variety of vehicles to determine if the rear wheel position should be adjusted.

If you determine that this adjustment must be done, Under “F2-Timers & Counters”, go to “Adjust Gantry Counts” menu (Menu Option 1) and press the “Enter” button. Now press the “Next” button repeatedly until you get to the end of the menu. Press the “Prev” button one time and there you will see a counter called “Rear Wheel Offset”. This counter is factory set to ‘6 cnts’.

If you need to adjust the rear wheel brush position closer to the front of the vehicle, you should decrease this counter. If you need to adjust the rear wheel brush position closer to the rear of the vehicle, you should increase this counter.

The range of adjustment is between 0 counts and 15 counts. You should not need to set it any lower than 4 counts or any higher than 8 counts. With all of the different sizes and styles of tires and wheels, it is virtually impossible to find the exact center of every wheel. You should make the adjustment to find the center of the average size wheel in your market area.

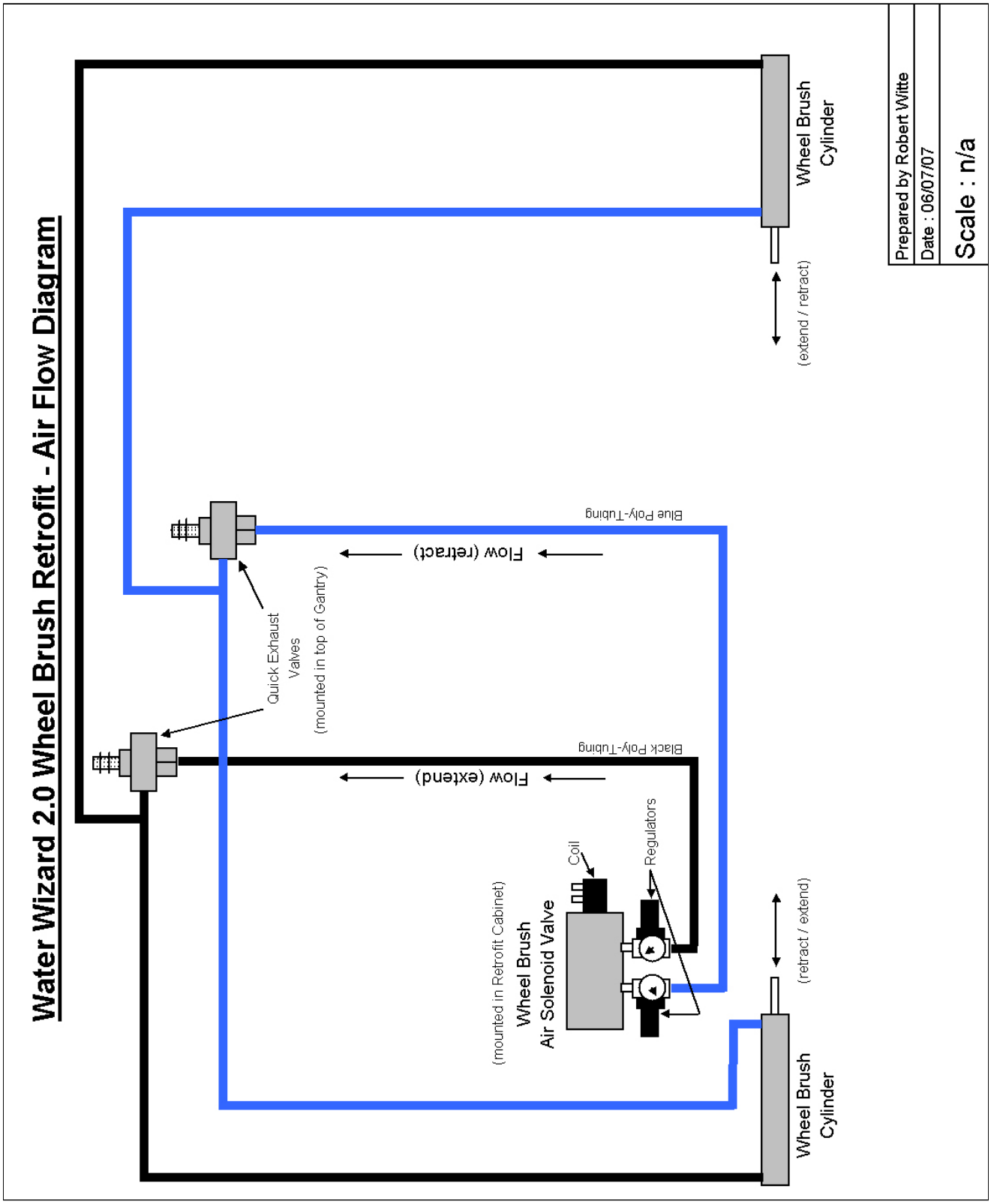
NOTES:

On Input card 2010:

- The input #14 is the Wheel Brush eye. This should be ON unless something is blocking the eye.
- Input #8 is the Wheel Brush Home position proximity switch. This should be ON if the wheel brush is fully retracted to the home position.
- The ROC 08 output card for the Wheel Brush should be set to an address of 10
- ***WHEEL BRUSH MUST BE TURNED ON IN BOTH THE RECIPES AND THE F8 - SITE DATA SCREEN BEFORE IT WILL OPERATE.***

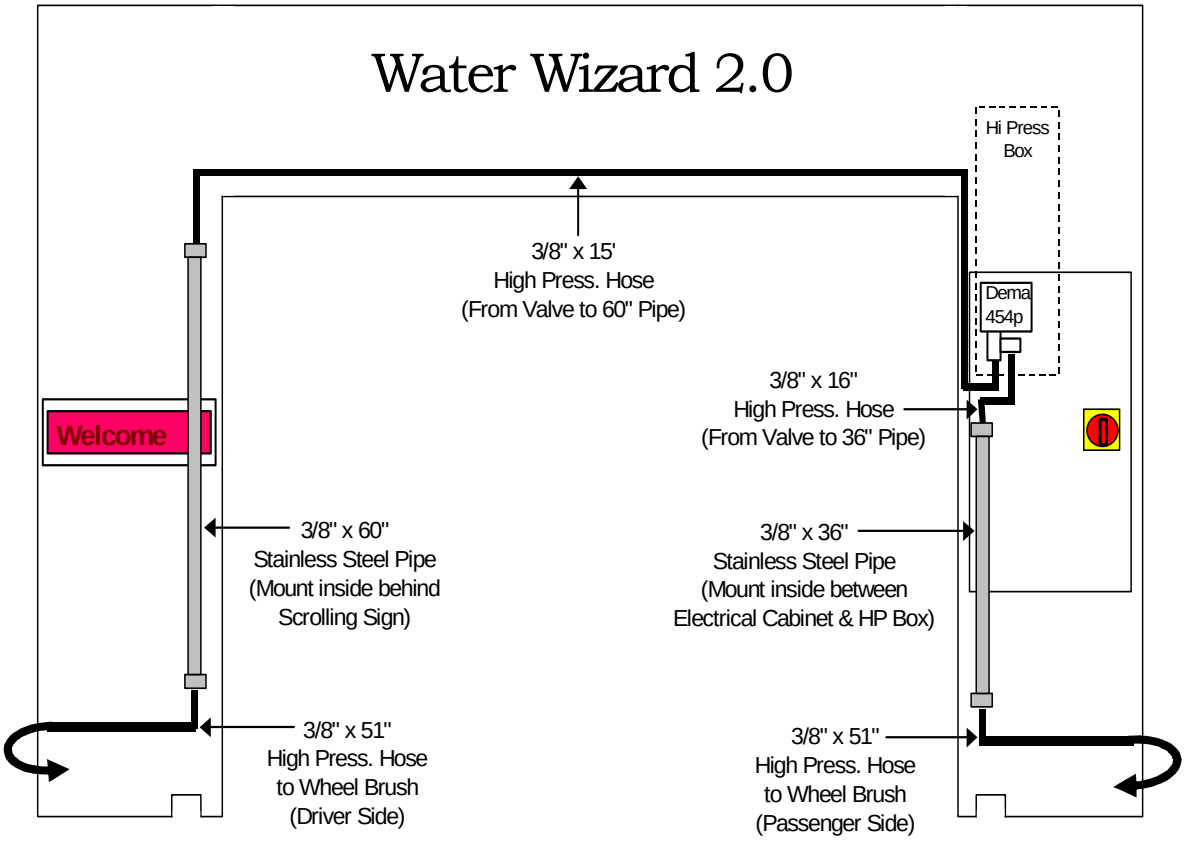
Retrofit Wheel Brush Installation Kit for Water Wizard 2.0

	QTY	DESCRIPTION
	1	Set of Retrofit Instructions
	1	Compact Flash Card w/ version 2.32 or higher**
		**** Must have a CPU13 to load this version ****
Mechanical:	1 set	Wheel Brush Assembly, pre-assembled
	1 set	WW 2.0 Wheel Brush Assy. Covers
	1	Retrofit Wheel Brush Electrical Cabinet, pre-wired
	1	Set of Low Profile 4 piece Guide Rails
	4	Track End Stops
	4	Eye Box Ramps
	2	Eye Brackets
	2	KS Cable Carrier 0455 x 17 links
Plumbing:	1	Dema 454p Solenoid Valve
	2	Quick Exhaust Valve Assembly
	1	1/4" Street Tee
	1	1/4"npt x 3/8" male flare, straight fitting
	1	1/4"npt x 3/8" poly tube, 90 degree fitting
Hi Press Plumbing Revised 10/02/08	1	3/8" x 15' Hi Press Hose
	2	3/8" x 51" Hi Press Hose
	1	3/8" x 16" Hi Press Hose
	1	3/8" x 60" SS Pipe w/ welded coupling
	1	3/8" x 36" SS Pipe w/ welded coupling
	50'	3/8" PolyFlow Tubing, Blue
	50'	3/8" PolyFlow Tubing, Black
	1	1/2" Brass Hex Nipple
	1	1/2" Male x Female Pipe Swivel
	3	3/8" Male x Female Pipe Swivel, 90*
	1	3/8" Male x Female Pipe Swivel
	1	3/8" Street Tee
	1	1/2" x 3/8" Threaded Bushing
Electrical:	2	Proximity Switches
	1	Banner 8 ch. Receiver Eye w/ Mounting Hardware
	1	Banner 8 ch. Emitter Eye w/ Mounting Hardware
	1	Eye Cable, 6 meter / 6 conductor (RKCV 6T-6/S618)
	1	Small PVC J-Box w/ cover and SO Cord Grips installed
	6'	14ga. Wire, Green
	10	Crimp Caps, Small
	4	Wire Nuts, Yellow
	4	Ring Terminals, Yellow
Hardware:	20	Ty-Wraps, Large
	30	Ty-Wraps, Small
	6'	Small Spiral Wrap
	6	Grommet for 1.375" Hole
	8	SS Tech Screws, 3/8" Head
	6	1/8" SS Structural Rivets
	8	8-32 x 1/2" SS Machine Machine Screws
	8	8-32 Nylon Lock Nuts
	18	#12 Phillips Head Lag Screws
	18	Blue Anchors (for #12 Screws)
	4	1/4-20 x 3/4" SS Hex Bolts
	4	1/4-20 x 1" SS Hex Bolts
	4	1/4-20 x 2.5" SS Hex Bolts
	12	1/4" Flat Washer
	12	1/4-20 Nylon Lock Nuts
	4	1/2" x 4.5" SS Bolts
	8	1/2 Flat Washer
	4	1/2" Nylon Lock Nuts
	30	1/2" X 5 1/2" Concrete Anchor Bolts

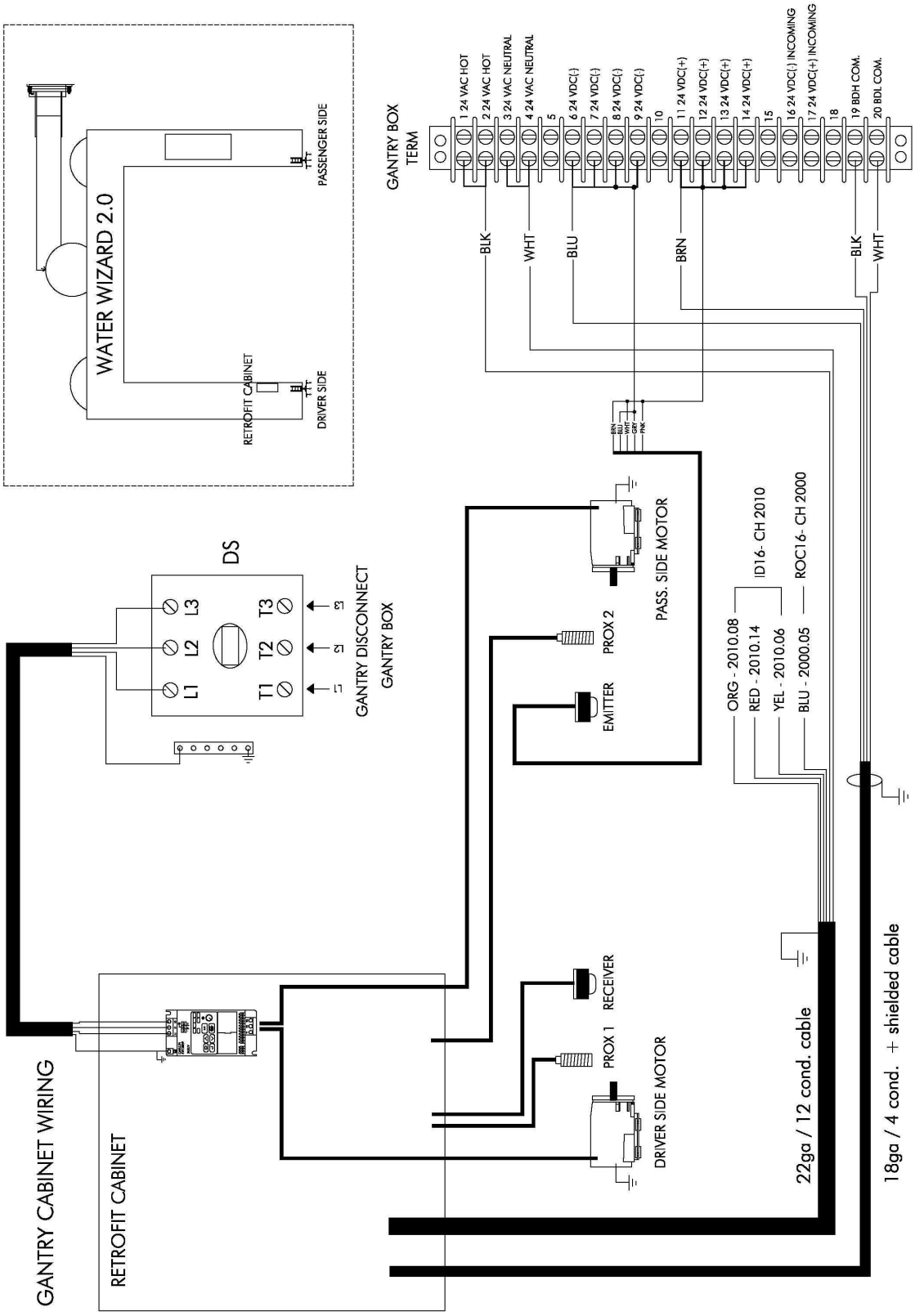

Water Wizard 2.0 Wheel Brush Retrofit - Air Flow Diagram
Prepared by Robert Witte
Date : 06/07/07
Scale : n/a
Wheel Brush Cylinder
(extend / retract)
Blue Poly-Tubing
Flow (retract)
Quick Exhaust Valves
(mounted in top of Gantry)
Black Poly-Tubing
Flow (extend)
Coil
Regulators
(mounted in Retrofit Cabinet)
Wheel Brush Air Solenoid Valve
(retract / extend)
Wheel Brush Cylinder

Water Wizard 2.0 Wheel Scrub Retrofit - High Pressure Plumbing Revision

View: From Entrance End of Bay



Note: The original retrofit plumbing did not use the pipes shown above. It used 2 long hoses that ran from the valve directly to each wheel brush. This new configuration will make hose replacement much easier and less costly.


WATER WIZARD 2.0
PASSENGER SIDE
DRIVER SIDE
RETROFIT CABINET
GANTRY BOX TERM
1 24 VAC HOT
2 24 VAC HOT
3 24 VAC NEUTRAL
4 24 VAC NEUTRAL
5
6 24 VDC(-)
7 24 VDC(-)
8 24 VDC(-)
9 24 VDC(-)
10
11 24 VDC(+)
12 24 VDC(+)
13 24 VDC(+)
14 24 VDC(+)
15
16 24 VDC(-) INCOMING
17 24 VDC(+) INCOMING
18
19 BDH COM.
20 BDL COM.
BLK
WHT
BLU
BRN
BLK
WHT
DS
L1 L2 L3
T1 T2 T3
GANTRY DISCONNECT
GANTRY BOX
PASS. SIDE MOTOR
PROX 2
EMITTER
ORG - 2010.08
RED - 2010.14
YEL - 2010.06
BLU - 2000.05
ID16- CH 2010
ROC16- CH 2000
GANTRY CABINET WIRING
RETROFIT CABINET
RECEIVER
PROX 1
DRIVER SIDE MOTOR
22ga / 12 cond. cable
18ga / 4 cond. + shielded cable