



Operators Manual

1/46 Township drive
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Maintenance

Mr Magic STORM Wash Maintenance Check List

Follow the recommended service schedule. Keep a log of all repairs and service

	Every Week Inspection	Date Completed
WASH BAY	<input type="checkbox"/> Visually check jets on presoak bar <input type="checkbox"/> Check air regulator under cabinet, drain excess water (See Page 8)	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
PLANT ROOM		

	Fortnightly Inspection	Date Completed
WASH BAY	<input type="checkbox"/> Add a light spray of "Motorcycle Chain Lube" to drive rails in bay	<hr/>
PLANT ROOM		

	Every Month Maintenance	Date Completed
WASH BAY	<input type="checkbox"/> Inspect & clean photo eye lenses on gantry (See Page 25) <input type="checkbox"/> Clean exterior panels of machine <input type="checkbox"/> Clean photo eye lenses on Boom (Page 25) <input type="checkbox"/> Lubricate Blower Pivot Bearings & Swivel Rod Ends (See Page 24) <input type="checkbox"/> Check oil level and top up oiler on changeover valve (see page 20)	<hr/> <hr/> <hr/> <hr/> <hr/>
PLANT ROOM	<input type="checkbox"/> Check pressure setting on vertical product pump (See page 9) <input type="checkbox"/> Check pressure setting on all high pressure pumps 800psi (See page 10) <input type="checkbox"/> Check and top up underbody valve oiler (See page 19)	<hr/> <hr/> <hr/>

	Every 3 Month Maintenance	Date Completed
WASH BAY	<input type="checkbox"/> Grease all undercarriage bearings (See page 22) <input type="checkbox"/> Grease bearings on Boom (See Page 21) <input type="checkbox"/> Grease boom swivels (See page 21) <input type="checkbox"/> Tighten all dyna bolts holding track guide rails	<hr/> <hr/> <hr/> <hr/>
PLANT ROOM		

	Every 6 Month Maintenance	Date Completed
WASH BAY	<input type="checkbox"/> Lubricate tractor feed contents with Lanolin spray (See page 23)	<hr/>
PLANT ROOM	<input type="checkbox"/> Clean 1/2" Y water strainer on inlet of Product Pump (Page 14) <input type="checkbox"/> Clean 2" fresh water stainless steel Y strainer on inlet manifold (Page 14)	<hr/> <hr/>

	Every 12 Month Maintenance	Date Completed
WASH BAY	<input type="checkbox"/> Replace ACID and ALKALINE check valves (Page 26)	<hr/>
PLANT ROOM	<input type="checkbox"/> Replace air filter in bottom of the validator (Page 15) <input type="checkbox"/> Replace oil in high pressure pump (See page 18) <input type="checkbox"/> Replace Acid Venturi (See page 59) <input type="checkbox"/> Clean filter in electrical cabinet fan. Top left hand side (See page 16) <input type="checkbox"/> Replace WAX Diaphragm every 12 Months (Page 26)	<hr/> <hr/> <hr/> <hr/> <hr/>

Suggested Spare Parts

ITEM	DECSRIPTION	QTY
1	3/4" Hyd Hose with Fittings and Spiral Wrap 725mm (Top Arm Feed to Swivel)	1
2	3/4" Hyd Hose with Fittings 810mm (On Arm Top Feed)	1
3	3/8" Hyd Hose with Fittings 725mm (Pre-Soak Acid Feed)	1
4	1/2" Hyd Hose with Fittings 725mm (Bottom Arm Feed)	2
5	Sensor Leads	2
6	10mm Nylon Tube (2 Meters)	1
7	Boom Break Away Joiners	2
8	Boom Pre Soak / Acid Norgren Tee's	2
9	1/4" Stainless Check Valves	2
10	Hydra-Flex Turbo Rebuild kits	2
11	Grey Venturi	1
12	1/4" Nickle Nipples	4
13	12mm - 3/8" BSP S/S Nylon Push Lock Fitting	1
14	10mm - 1/4" BSP S/S Nylon Push Lock Fitting	1
15	3/8" Soleniod Diaphram	2
16	3/8" 24VAC Soleniod	1
17	1/2" S/S Arm Swivel	1
18	3/8" S/S Arm Swivel	1
19	Underbody Trigger Hose 1500mm	1



Tips

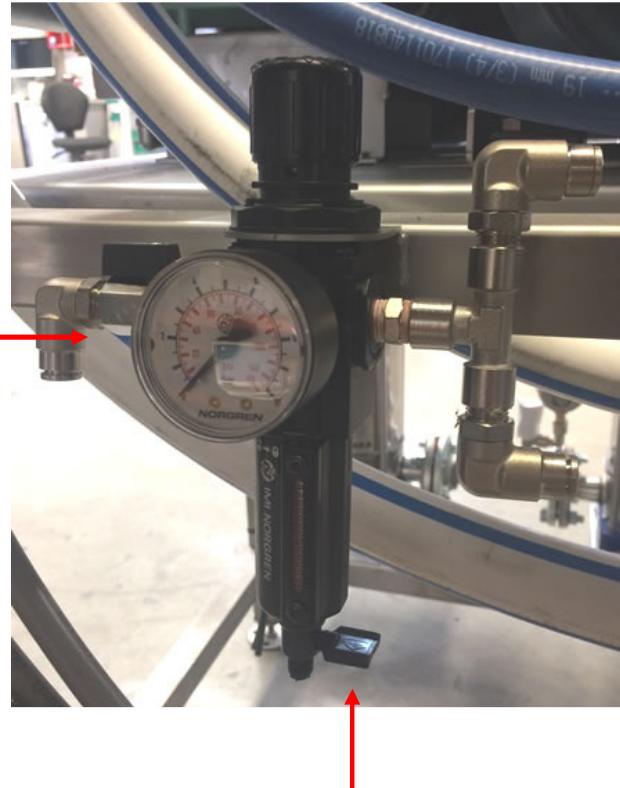
- Use cold water for pre-soak in hot summers above 34 deg, if the pre-soak dries on the car it will mark it and may have to be polished off.
- Cars with ultraviolet sun damage (chalky paint, white streaks) should not enter the wash
- Cars with old pin stripes should not enter the wash
- Reset Machine
 - clear bay area
 - go into functions on computer software (Hit Esc)
 - select menu 4
 - select item 5 (reset machine)
- To Clear a logged wash (ie wash is selected on validator and no car to go through)
 - Hit minus on the keyboard will remove logged wash
 - Or the logged wash will reset after a period of 6min
- Do not turn power OFF the validator / entry system overnight
 - If power is removed from the validator / entry system overnight, you must remove the power supply from inside the validator and store inside your office in a dry area.
-

Pressure Settings

Main Air Supply Pressure

The main air supply pressure is adjusted using the regulator shown on right. This regulator is located on left hand end of the pump stand, under the control cabinet.

This pressure should be adjusted to **100 Psi**. The adjustment is completed by lifting the black control knob on top, and then turning until the correct reading is displayed on the gauge. Then push knob back into place.



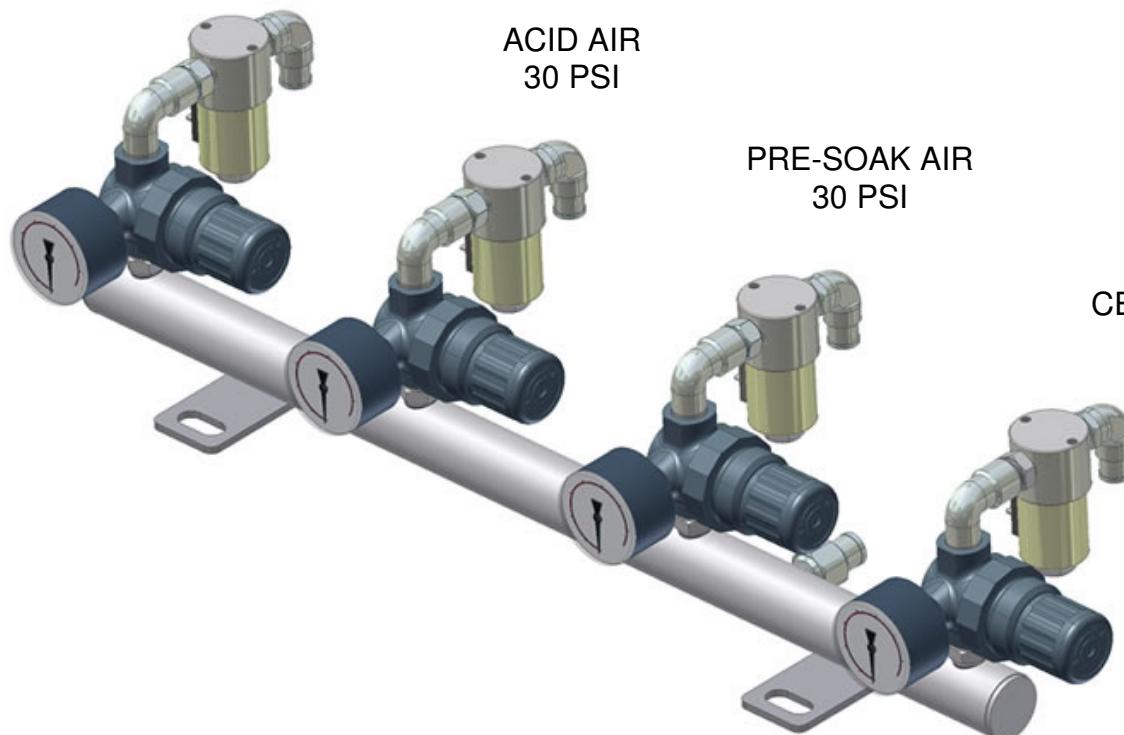
Air Mix Pressures

TRI COLOR AIR
30 PSI

ACID AIR
30 PSI

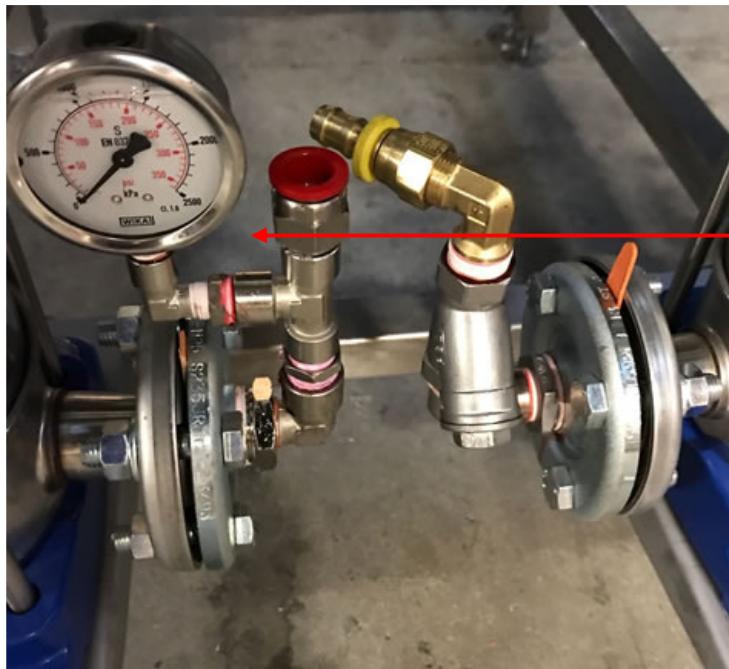
PRE-SOAK AIR
30 PSI

CERAMIC AIR
30 PSI



Pressure Settings

SPOT FREE WATER PRESSURE



Spot Free water pressure
will be Approx **180 PSI**

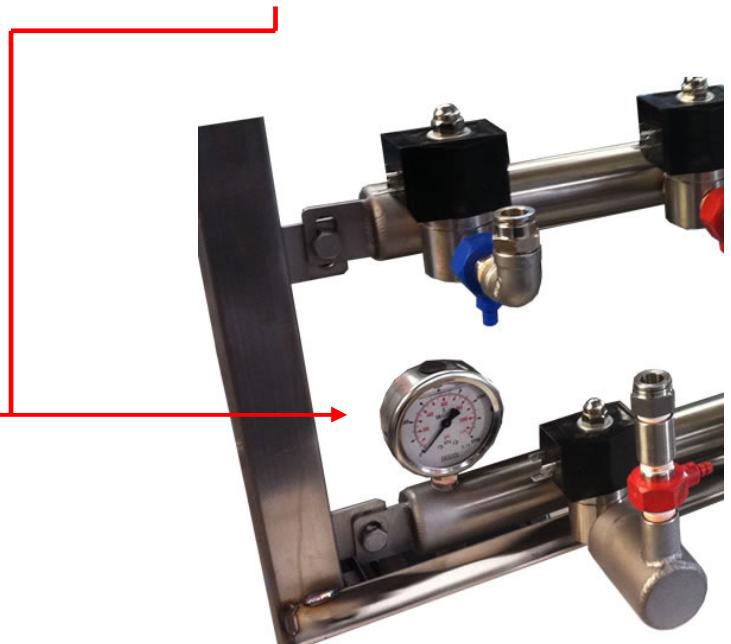
There is no adjustment for
this pressure setting

PRODUCT WATER PRESSURE

Unjust the pressure by turning this
handle in and out. Product water
regulator pressure needs to be set to



165 PSI



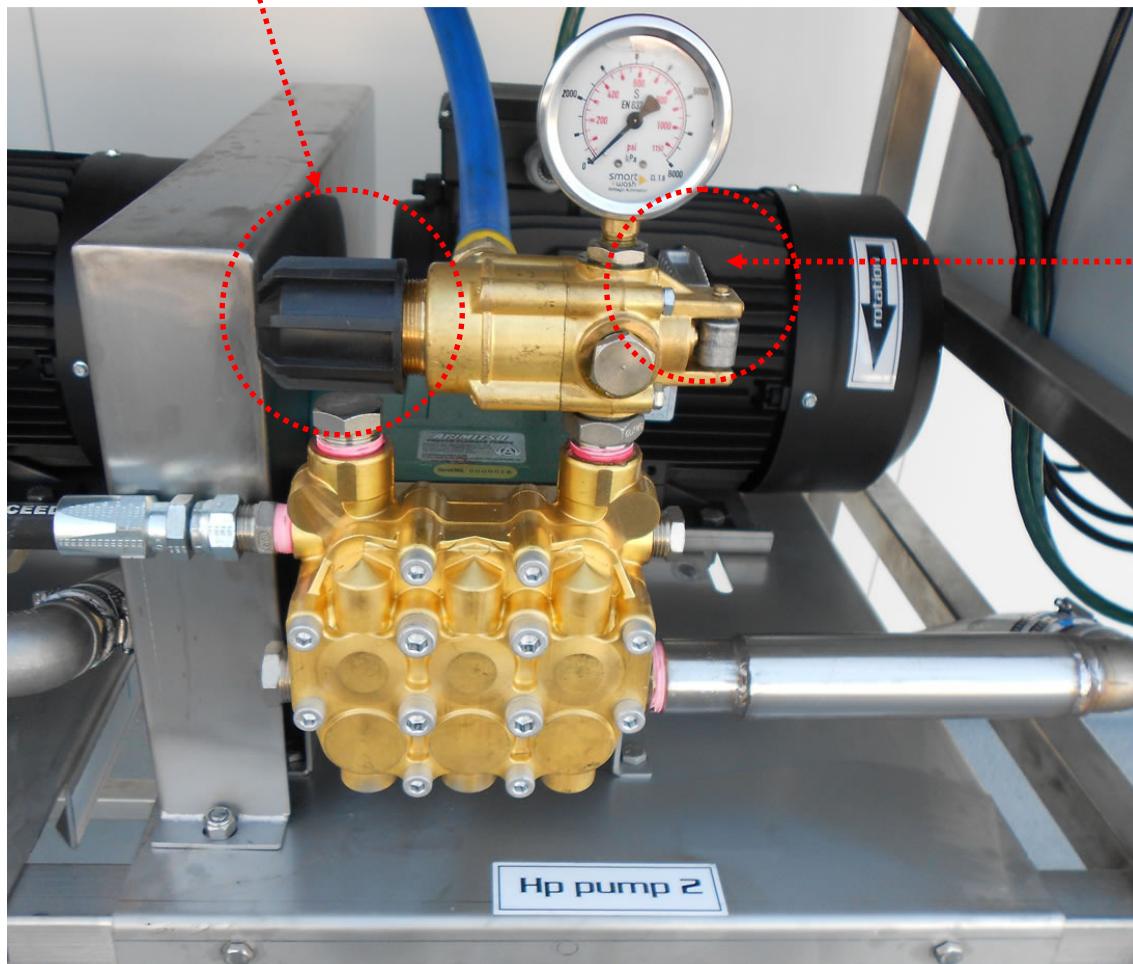
Pressure Settings

Main High Pressure Blast

Main water pressure is adjusted using the regulator shown below. This regulator is found on the pump stand mounted on top of the right hand main pump.

Adjust regulator by turning this knob. This regulator must be set to

800 PSI



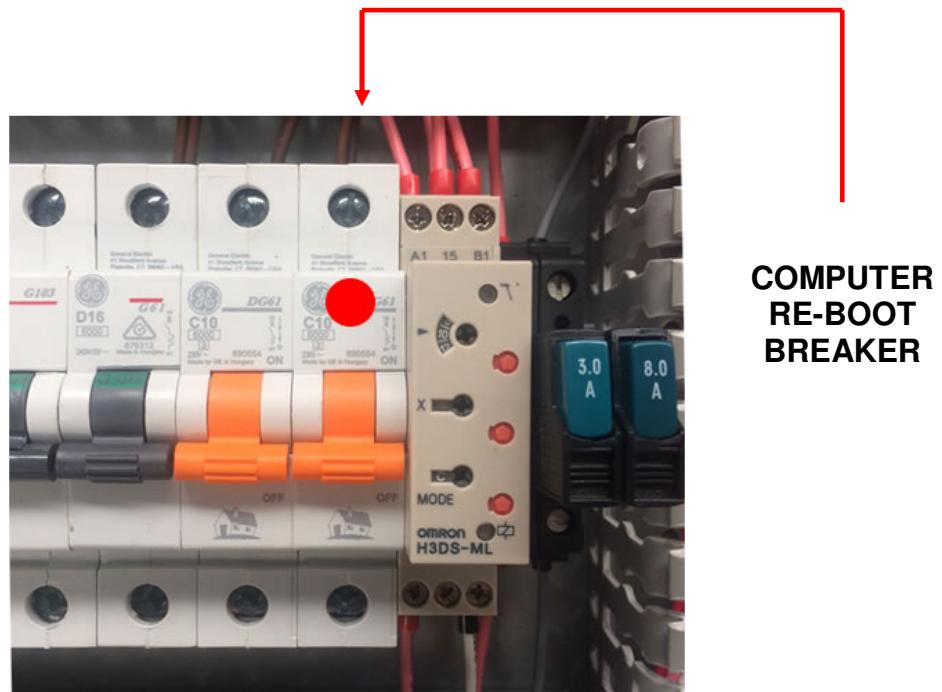
UNLOADER LEVER

This is the unloader lever, this lever can be thrown/operated to enable more water to bypass the main pump. This is used when you want to check for blocked turbo's, by operating this lever and at the same time having the pump running, only a small amount of water is sent to the turbo's. By doing this you are able to see which turbo's are blocked and need cleaning. Once turbo's have been cleaned OR replaced, put the unloader lever back into operating position as shown in photo above.

ReBoot

Computer Reboot

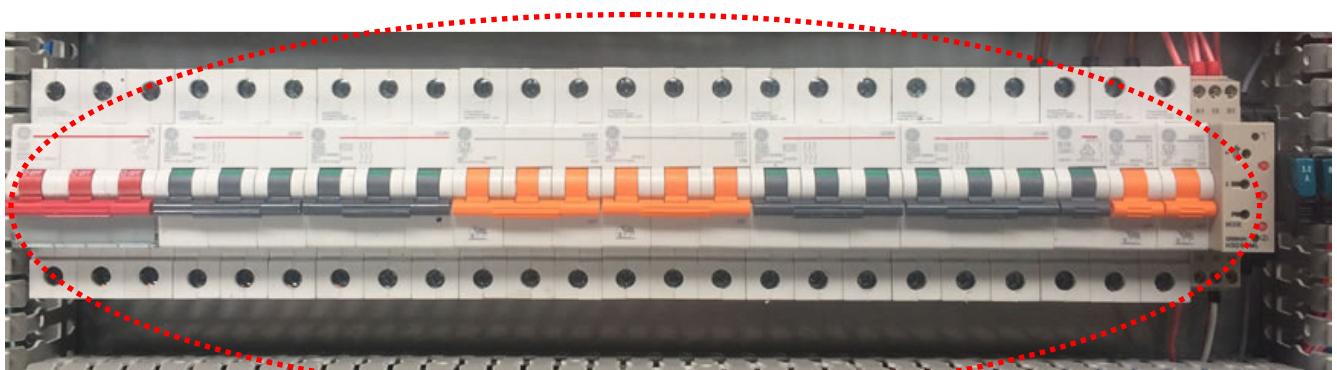
1. Turn off reboot circuit breaker, marked with the red dot.
2. Wait 5 seconds
3. Turn circuit breaker back to ON position



Total System Reboot

1. Turn off all circuit breakers shown
2. Wait for 20 seconds
3. Turn all circuit breakers back to ON position

**DROP ALL
BREAKERS**



Machine / Wash Failure

If machine has malfunctioned and stopped for any reason the computer will have recorded and logged the last known movements. This information will remain on the computer screen **only** until you reboot the computer.

Please write down the number and information of the last 4 different codes. This must be done before you reboot. After you reboot all memory will be erased.

There could be several reasons for the machine to stop, some of the simple reasons are.

Power interruptions - Debris on tracks - Tractor Feed Jam
- Motor Failure - Machine malfunction - Sensor malfunction
Inverter Tripped (check in electrical cabinet, do a cold –reboot)

Firstly reboot the machine as outlined on previous page.

After program has re-booted it will once again be at the "Wash Cars" menu

Boom Reposition

If the wash boom is standing up vertical in its home position, it will NOT need to be re-positioned and you can proceed to the "Gantry Repositioning" step.

If the wash boom is NOT standing up vertical in its home position, it will need to be re-positioned before the gantry can be moved and the wash re-started.

When repositioning the boom, it is by far preferable to do this after you have cleared the bay and removed any car that may be in the bay.

If the car cannot be moved from the bay, then the boom may have to be repositioned with the car left in the bay. (ie car is obstructed by the boom position and cannot leave the bay)

Steps to reposition the **BOOM**

1. Hit the ESC key on the keyboard in the pump stand electrical cabinet
2. Then select menu option **(4) REPOSITION GANTRY**
3. IF the boom is leaning towards the bay EXIT and the REAR of the car, select menu option **(9) BOOM towards exit**

OR

4. IF the boom is leaning towards the bay EXIT and the FRONT of the car, select menu option **(7) BOOM towards entry**

A warning on the screen will ask you to ensure that the bay is clear, going through this procedure will move the boom back to its home position automatically.

Gantry Reposition

Only when the boom is standing vertical, and in its home position will you be able to reposition the gantry to its home position to restart the wash.

If the boom is not in its home position (ie standing vertical) you will not be able to move and reposition the gantry. Boom reposition first, then gantry reposition.

When repositioning the gantry, make sure that any obstruction, including cars must be cleared from the bay. (ie bay must be empty)

Steps to reposition the **GANTRY**

1. Hit the ESC key on the keyboard in the pump stand electrical cabinet
2. Then select menu option **(4) REPOSITION GANTRY**
3. IF the gantry is towards the bay ENTRY and the REAR of the car,
select menu option **(8) YFWD** (moves gantry towards bay exit)

OR

4. IF the gantry is towards the bay EXIT and the FRONT of the car,
select menu option **(2) YREV** (moves gantry towards bay entry)

A warning on the screen will ask you to ensure that the bay is clear, going through this procedure will move the gantry back to its home position automatically.

5. Then select ESC on the keyboard several times to get back to menu 1
6. Then select menu item 1, " Wash Cars "

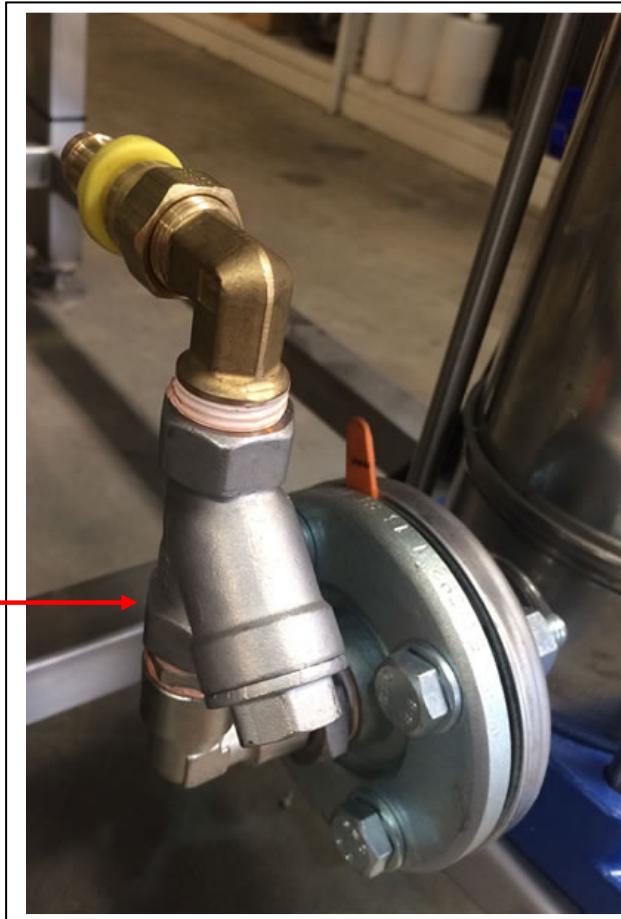
You are now ready to wash cars as normal.

Filters

Hot water inlet strainer

On the hot water inlet side of the product water mixing pump there is 1/2" or 3/4" stainless steel Y strainer.

The Y strainer shown on right has a removable element that will need regular cleaning. How often this needs to be cleaned will depend on the quality of your water.



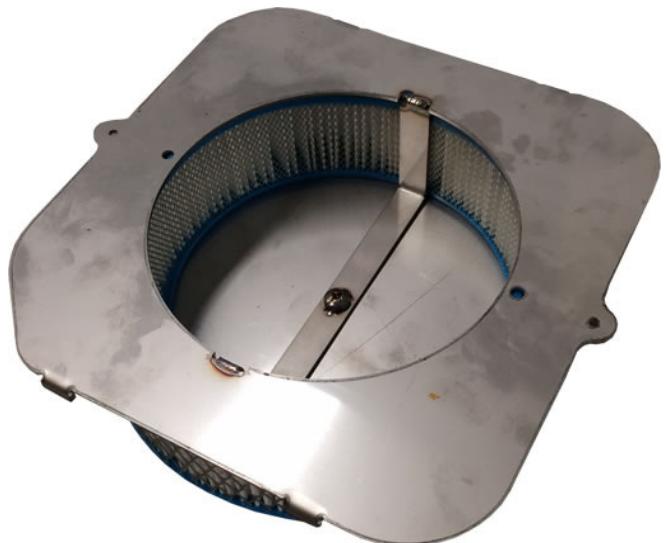
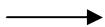
Low pressure inlet filter

On the inlet side of the main high pressure pump is a 2" stainless steel Y strainer. The Y strainer shown on right has a removable element that will need regular cleaning. How often this needs to be cleaned will depend on the quality of your fresh water.



Air Filters

Replace air filter in
bottom of the validator
every 12 months



Fan Filter Clean

Every 12 months, remove and clean the white mesh filter that is under the plastic clip on cover installed in the electrical cabinet.



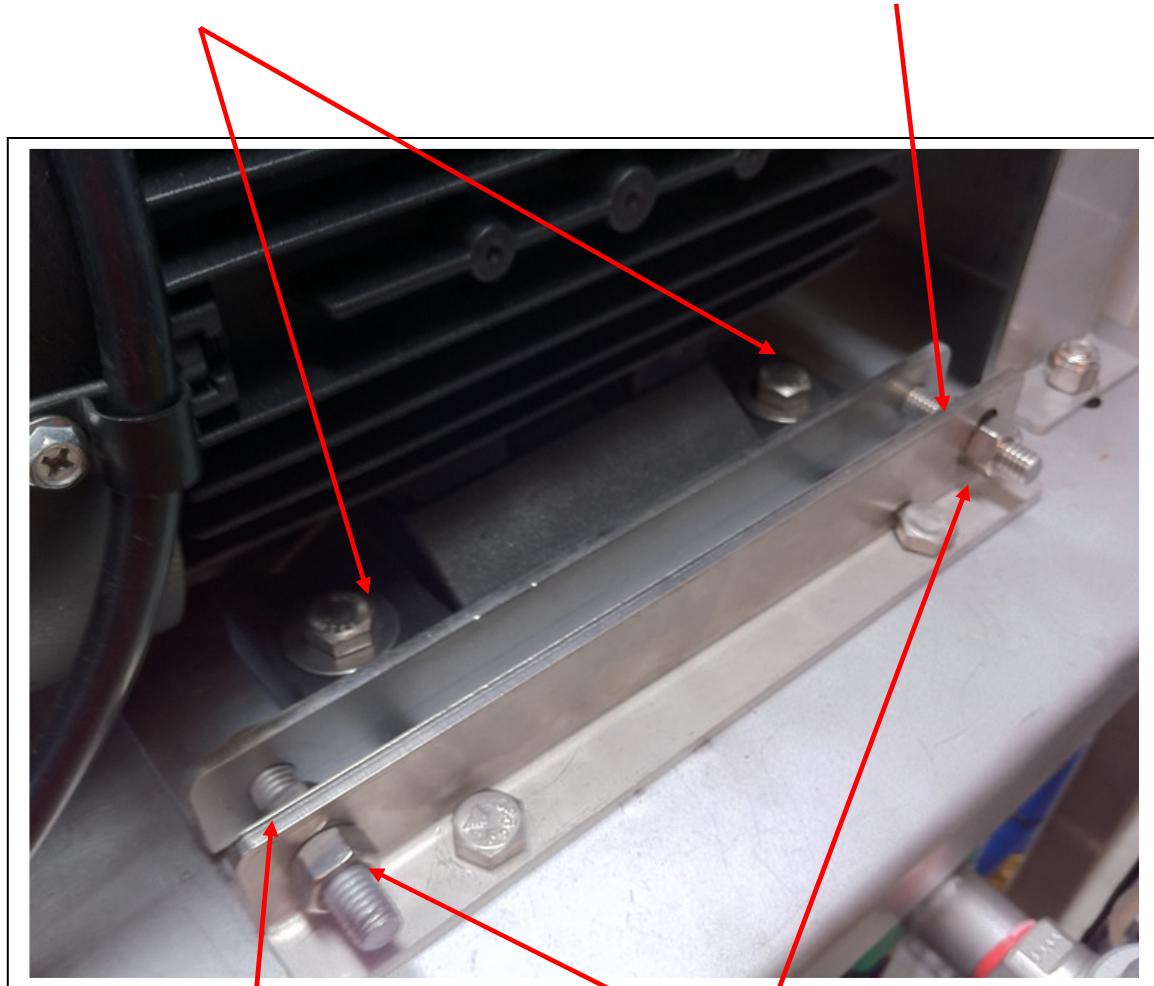
Belt Adjustment

The drive belts are to be kept firm. Belts should appear straight with no sag.

- Release electric motor bolts 3/4 of a turn.
- Keep motor square to the pulleys at all times.
- Loosen adjustment bolts locking nuts
- Turn belt adjustment NUTS in small increments.
- Check belts, they need to feel firm.
- Retighten electric motor bolts
- Retighten adjustment bolt locking nuts
-

Electric Motor Bolts
2 On each side of motor
Must loosen 4 bolts

Locking Nut



Locking Nut

Belt Adjustment Nuts

High Pressure Pump Oil Change

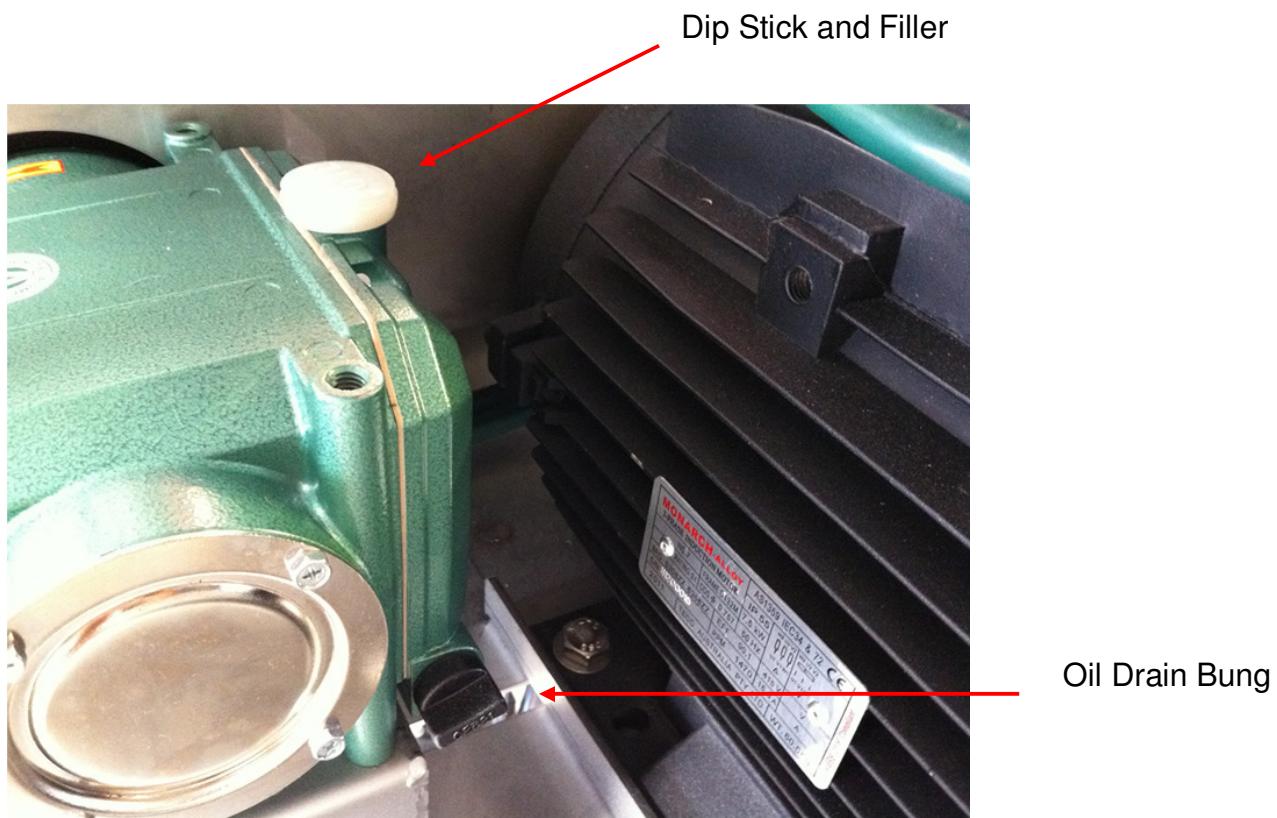
The high pressure pumps x 2 require an oil change every 12 months

Oil Volume : 1100mls

Oil Type: Penrite 4 Stroke small engine mono grade SAE30

Warning: Do not fill above bottom line

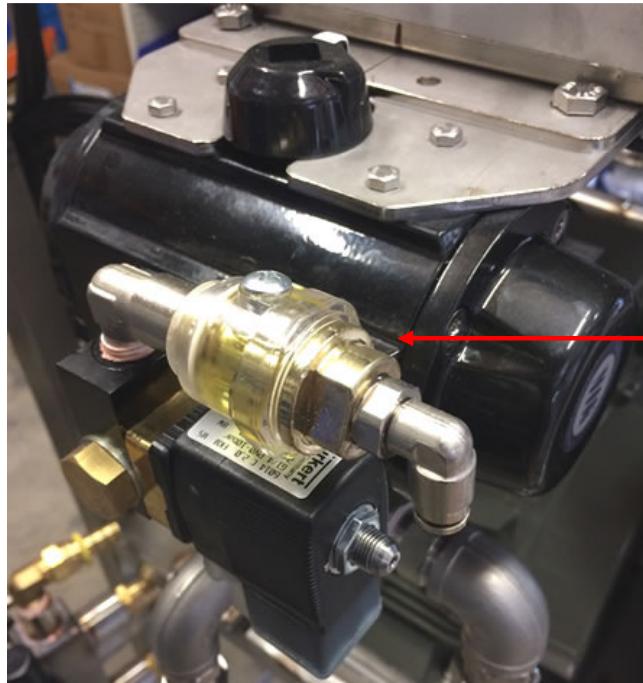
Periodically check the oil level to ensure that pumps have sufficient oil to operate. Oil level can be checked using the dip stick.



Ensure oil is between the H
and the L marks on the dip
stick

Under body Valve Lubrication

On a regular basis check the level of oil in the small oiler on the pump stand underbody valve

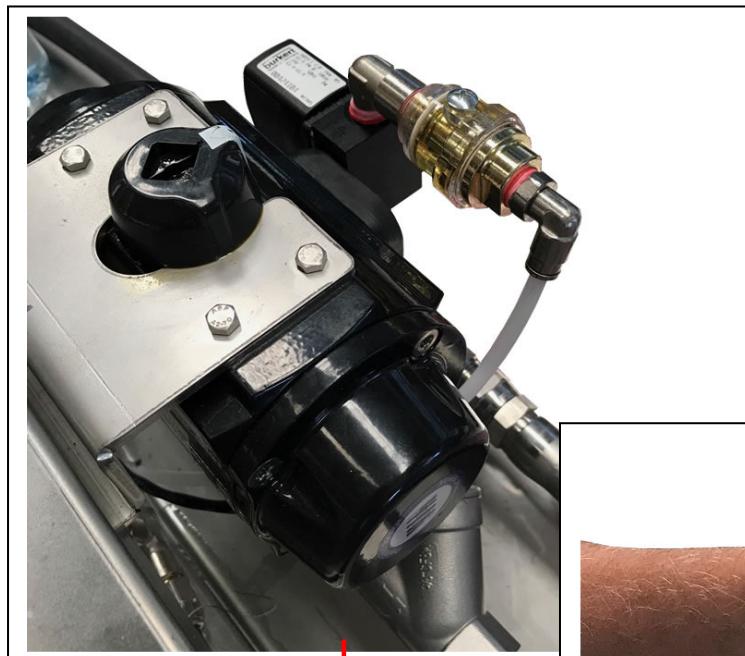


Top Up Oil level as per
"Maintenance Check List"
page 5.

Regardless of how fast the oil is consumed, only replace the oil on the time schedule mentioned on page 5.



Changeover Valve Lubrication

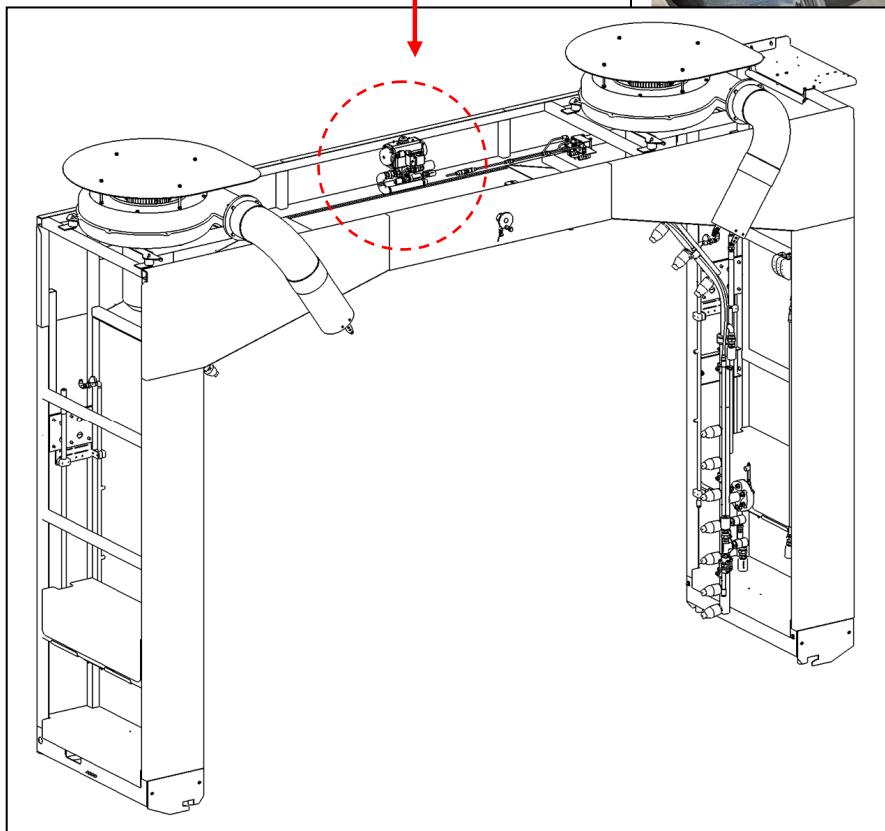


Valve is located in the top of the wash gantry as shown below



Top Up Oil level as per
"Maintenance Check List"
page 5.

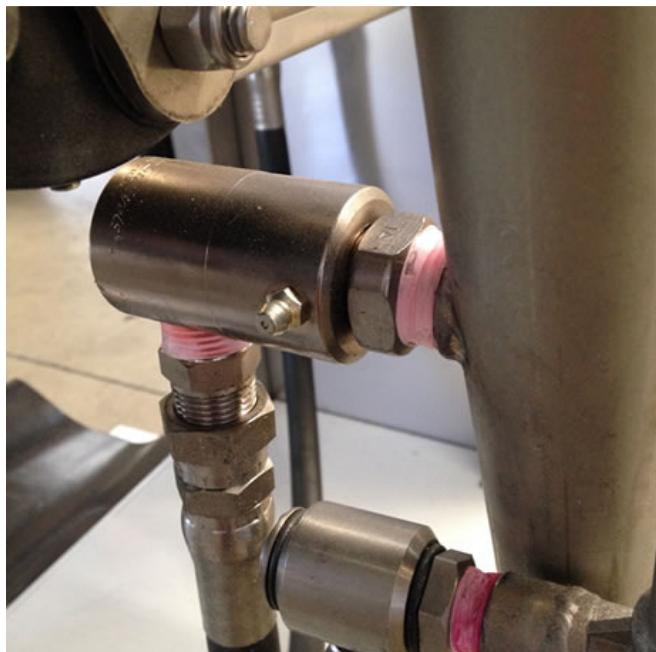
Regardless of how fast the oil is consumed, only replace the oil on the time schedule mentioned on page 5.



Grease Boom Swivels

On a regular basis (3 Monthly) grease the swivels on the boom arm with a good quality grease.

This will help reduce moisture in the valve and prolong the life of the swivels.



Grease Boom Bearings

On a regular basis (3 Monthly) grease the bearings on the boom arm with a good quality grease.

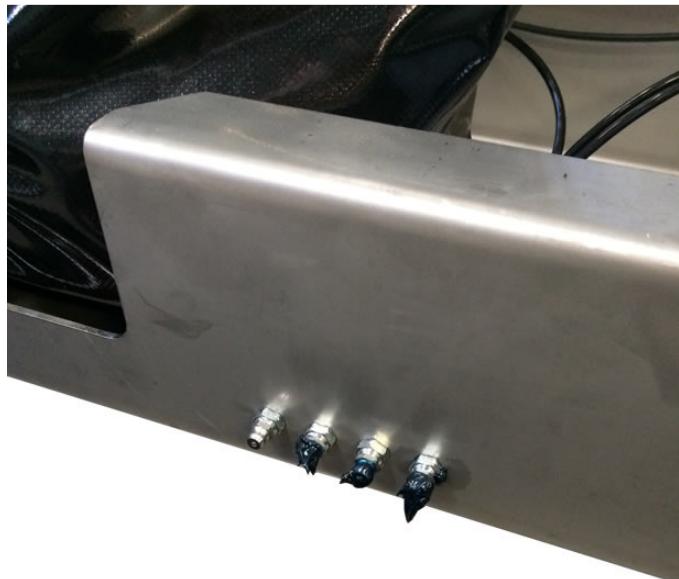
This will help reduce moisture in the valve and prolong the life of the bearings.



Grease Undercarriage Bearings

On a regular basis (3 Monthly) grease the bearings in the undercarriage with a good quality grease.

This will help reduce moisture entering the bearings and causing premature failure



Tractor Feed Lubrication

On a regular basis (6 Monthly) spray the tractor feed and it's contents with a good quality LANOLIN Spray.

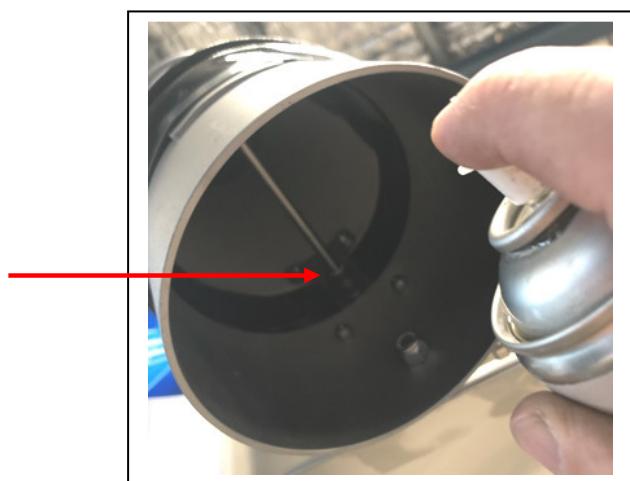
Spray the entire length of the tractor feed using a very liberal amount.

Regular lubrication of the tractor feed and contents will prolong it's lifespan saving on replacement cost.

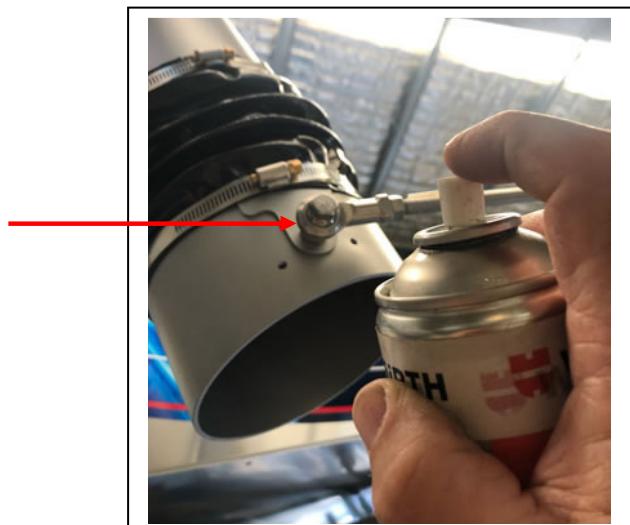


Blower Parts Lubrication

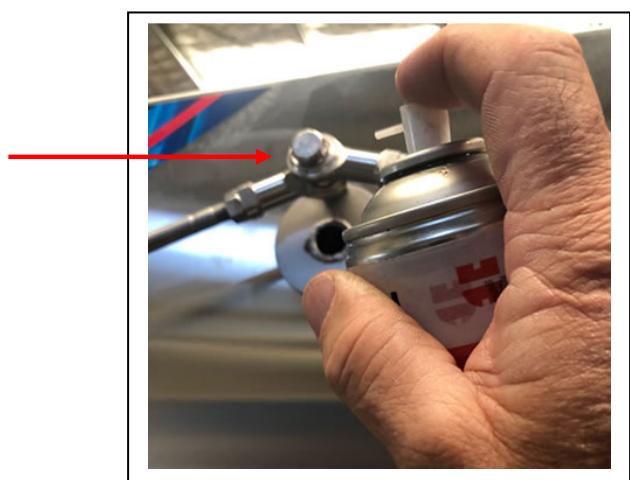
On a regular basis, (Monthly) spray the blower pivot nozzles bushes with a good quality LANOLIN spray.



On a regular basis, (Monthly) spray the blower push rod ends with a good quality LANOLIN spray.



On a regular basis, (Monthly) spray the blower push rod ends with a good quality LANOLIN spray.



Clean Boom Photo Eyes

On a regular basis (3 Monthly) wipe and clean the safety photo eye's (light beam) on the boom.

Having clean photo's eye's will help ensure correct operation of this safety feature.

Use a damp cloth only or even your finger, wipe the lens of the photo eye.



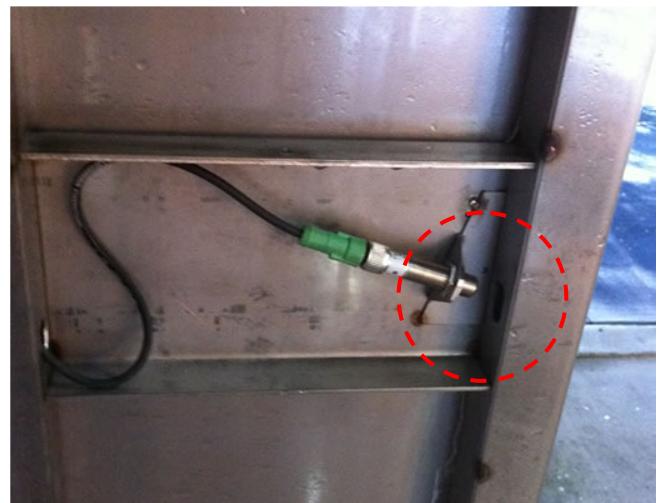
Clean Gantry Photo Eyes

On a regular basis (Monthly) wipe and clean the photo eye's (light beam) on the GANTRY.

Having clean photo's eye's will help ensure correct operation of the wash.

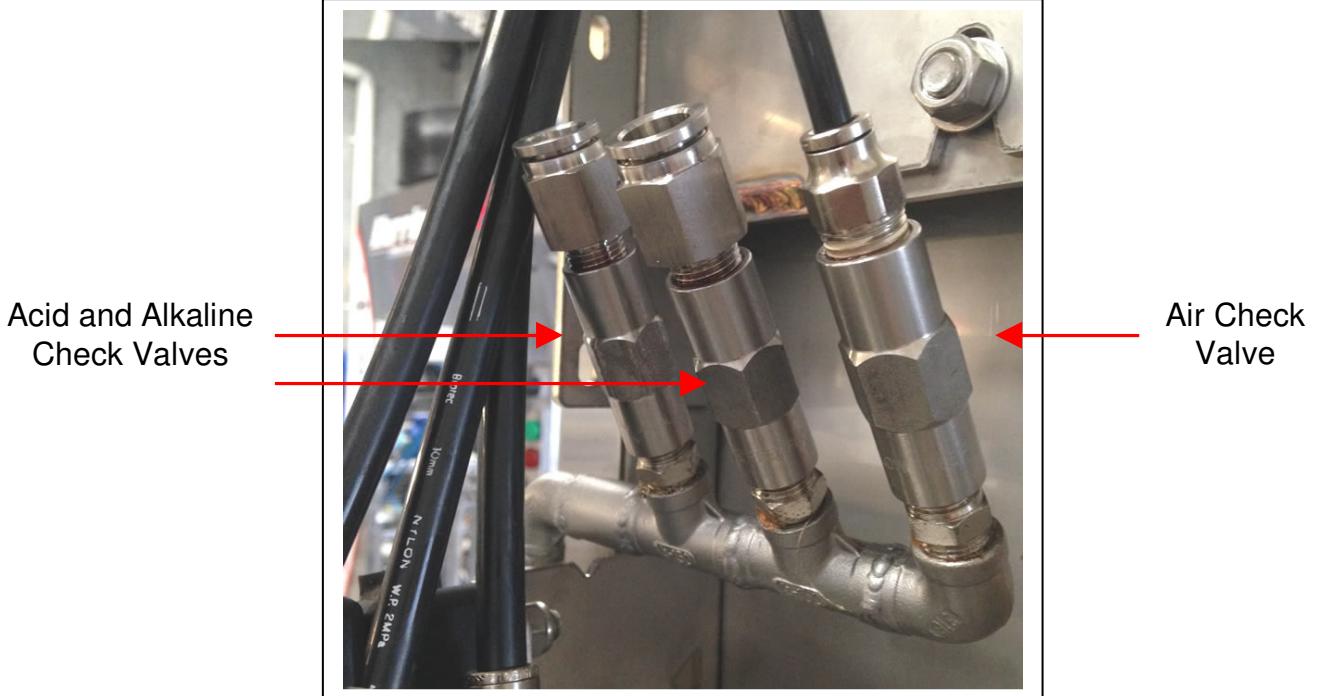
Use a damp cloth only or even your finger, wipe the lens of the photo eye.

There is two on each side of the machine.



Product Check Valves

Acid and Alkaline check valves need to be replaced every 12 months. This is to ensure premium performance is maintained.

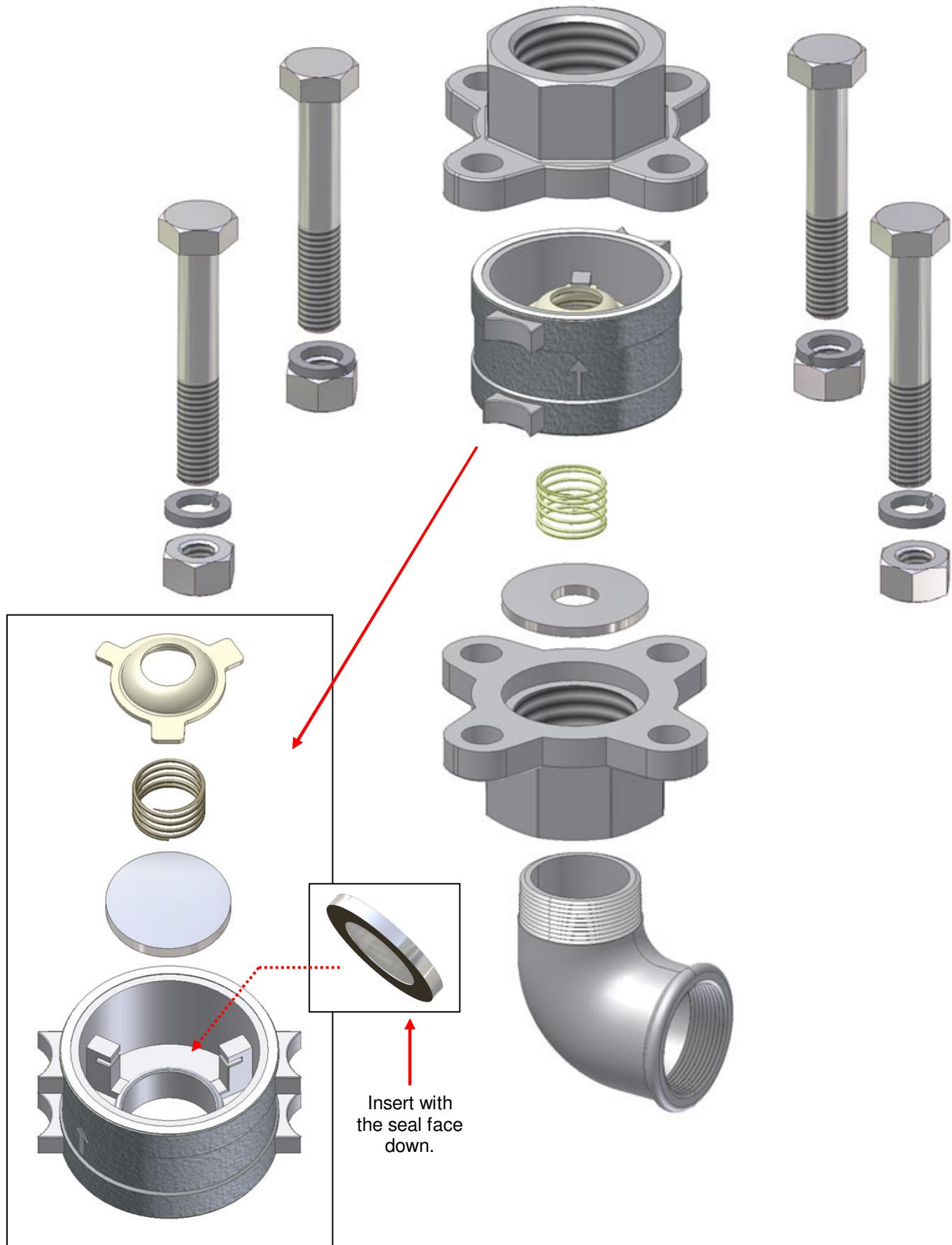


Wax Solenoid

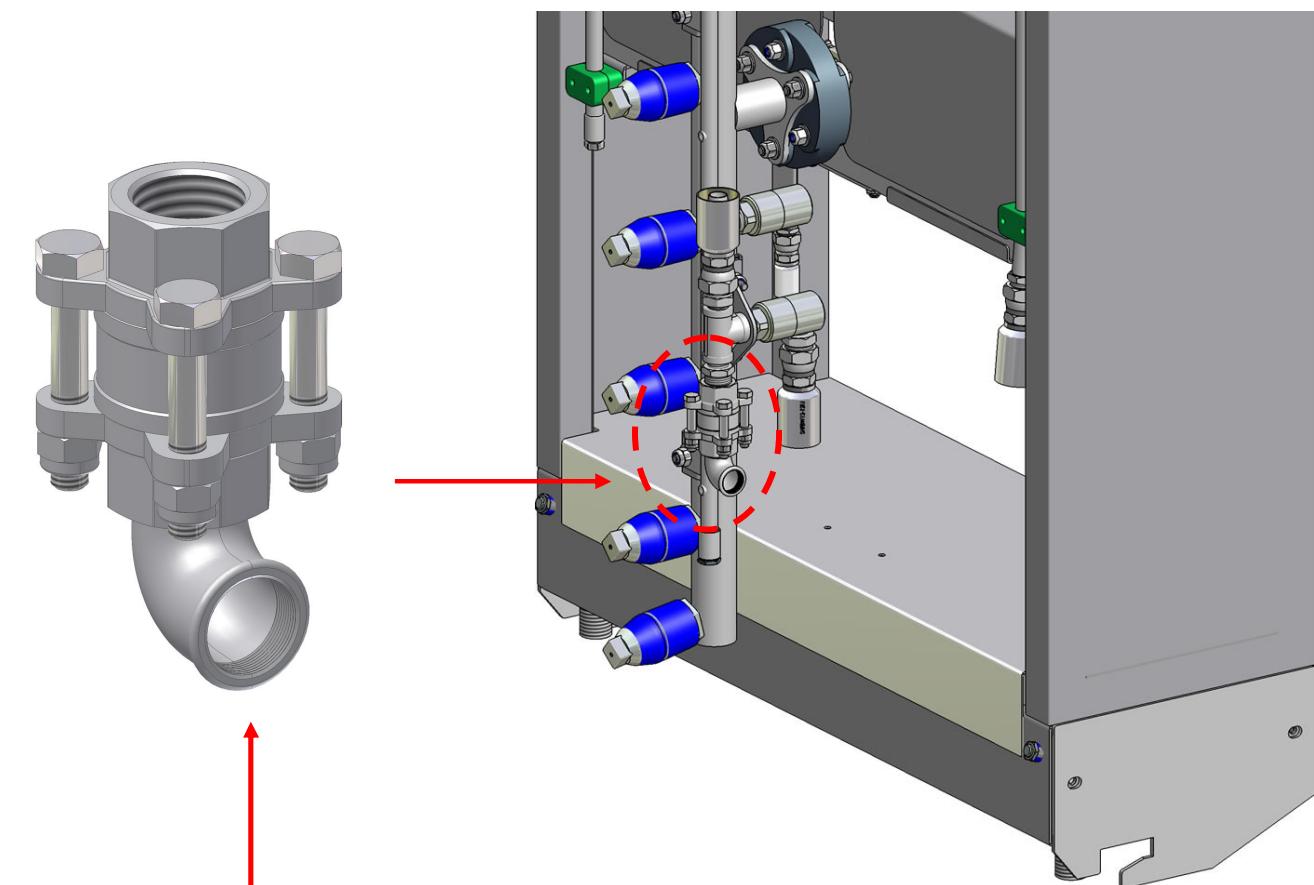
The wax solenoid will need to have its Diaphragm replaced every 12 months.



Boom Dump Valve



Boom Dump Valve



BOOM DUMP VALVE

The reason for this valve being here is so that when the "High Pressure Wash Pass" has finished, it will release the residual water remaining in the boom. This is needed so that when the next high pressure pass starts, there will be no water in the boom and therefore the high pressure pumps can re-start with ease. The pumps will not start correctly with the boom full of water.

So at the end of the high pressure wash pass, this valve operates and lets the boom flush water out. It will run water until the boom is empty.

After the boom is empty, there may be slight dribbles of water come out of this dump valve,
BUT water should not run constantly

WARNING

If you see water constantly running from this dump valve then you will have a faulty
 3/4" High Pressure Check Valve.

See Next Page

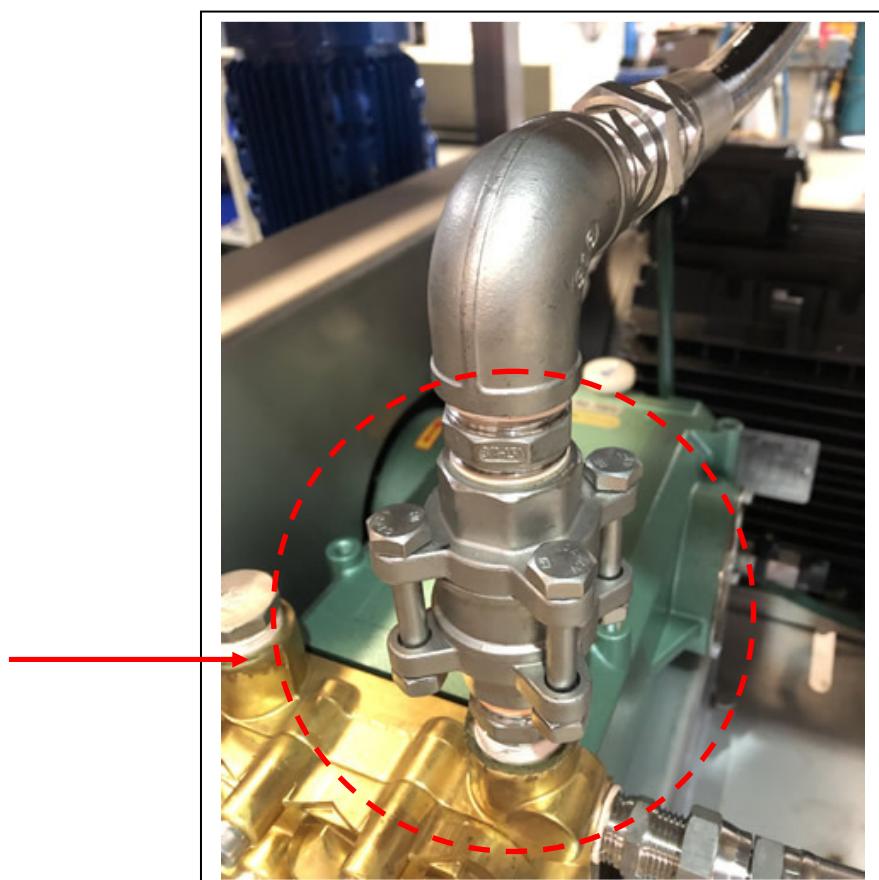
3/4" High Pressure Check Valve

The 3/4" high pressure check valve is located on the outlet of the bottom high pressure pump.

The reason for this check valve is to STOP your blast tank water from pushing through the high pressure pumps and then running out of the dump valve at the boom. (See previous page)

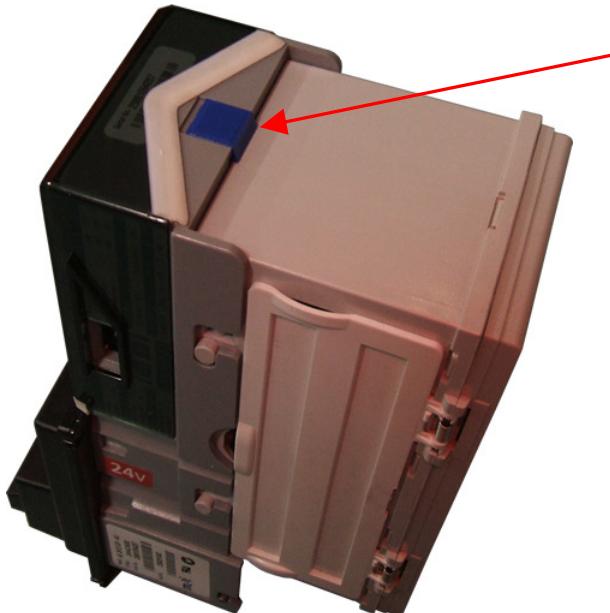
If this valve does not seat and seal correctly you will see water constantly running from the dump valve out on the boom. (See previous page)

3/4" High Pressure
Check Valve.



Mars Note Validator

If the note acceptor shows signs of decreased performance, it may be in need of cleaning.

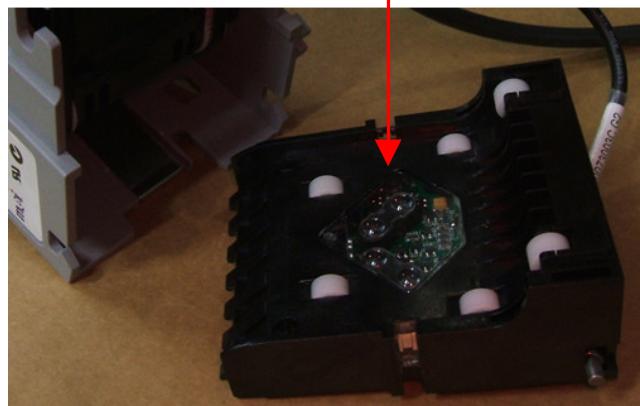


To remove the stacker from the note acceptor, press the blue catch forward and slide the rear compartment up.



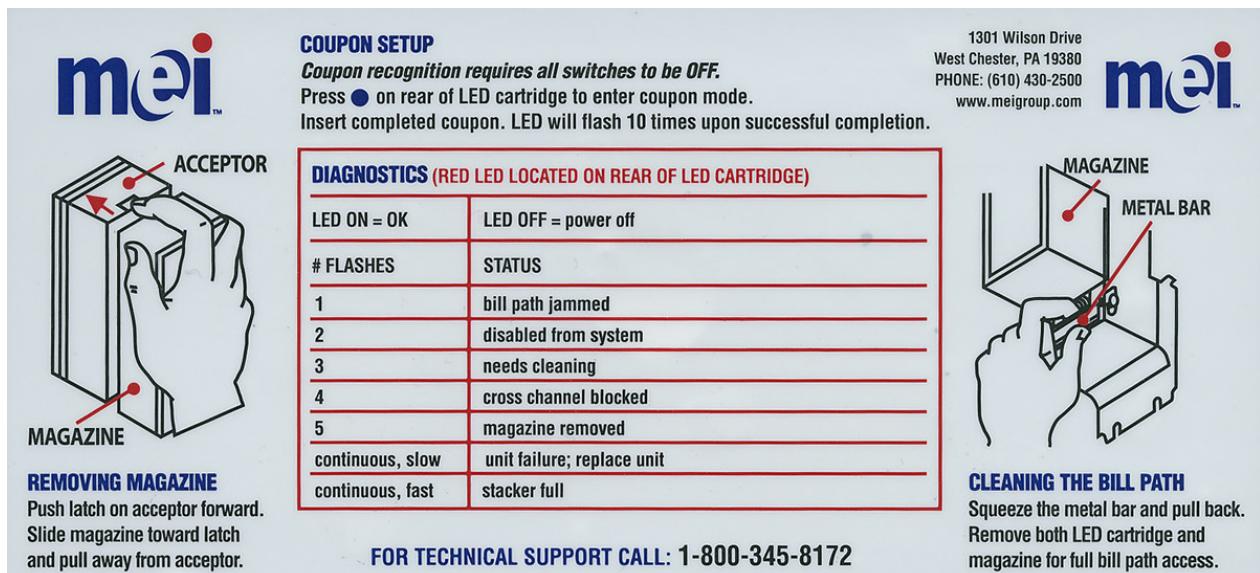
To remove the lower sensor block, raise the locator pin shown above and slide the sensor block out

Remove unit and clean with a slightly moist cloth. Pay special attention to the optical lights. Do not use harsh solvents.



Mars Note Validator Fault Codes

The MEI note acceptor has built in diagnostics; this comes in the form of a flashing indicator light. The type of fault can be determined by the number of times this indicator light flashes. Below is the table to reference when trying to determine what fault the MEI note acceptor has. The label below is also stuck to the back of the note acceptor magazine.



The magazine that holds the notes must be clipped into its normal position to ensure you get an accurate fault code.

If the magazine is removed or dislodged in any way, the only fault code that you will receive will be No 5, magazine removed.

Fault code indicating light



Coin Validator Removal

WARNING
**DISCONNECT POWER FROM UNIT
 BEFORE PROCEEDING**

Open the rear door of the validator. The coin validator is mounted in the top right hand corner. Shown on right. Unscrew the two thumb screws to remove the plate shown.

Thumbscrews



Once the backing plate has been removed, the note validator will slide out into your hand.

If you want to clean the coin validator, unplug the ribbon cable at the interface board so that the unit can be removed completely.

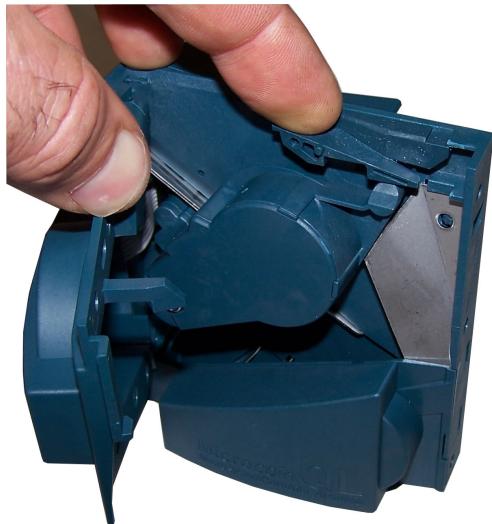
If you are programming the coin validator, it needs to remain plugged in and powered ON while you complete your programming.

To replace the coin validator, plug the ribbon cable back into the interface board, (ensure it's plugged in the correct way round) slide the coin validator into its mounting bracket, wriggle slightly to get the front lugs into there resting place. Slide on the rear backing plate previously removed, (only goes on way round, look at photo above) validator lugs should protrude out through the holes in backing plate as shown above. Screw on the two thumb screws finger tight only.

Coin Validator Cleaning

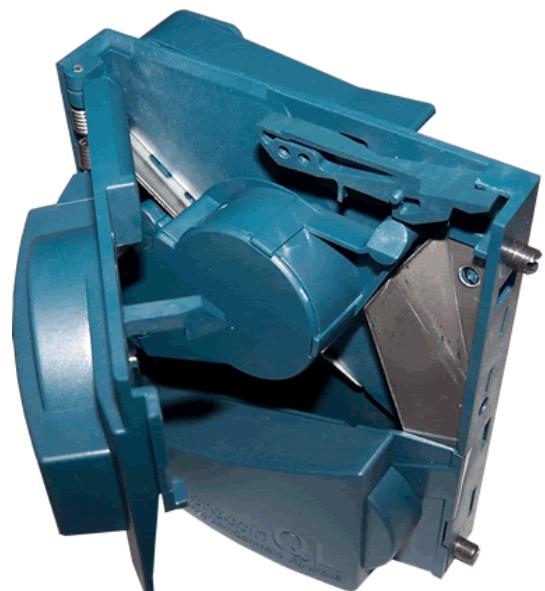
Once the coin acceptor has been removed, it can be opened for cleaning.

The coin acceptor is opened as shown on the right, the side that opens is spring loaded, and will close it self when released.



Open the side completely as shown on left. This will allow ease of cleaning.

Using a soft damp cloth, wipe the inside area that you can see in photo on left. Do not use detergents.



Once the unit has been cleaned, it is a simple case of re-inserting the unit in the reverse order that it was removed in.

Coin Validator Coin Activation

If the coin acceptor does not accept a coin then it may be because the line for that particular coin is switched OFF. Ie coin is disabled. To turn a line ON and to enable a coin, press the button once, (light will flash green) then drop the coin in. To disable a coin, press the button twice, (light will flash red) then drop the coin in.



Service agent refer to -

Micro Systems Controls
Melbourne
Ph (03) 9646 6446

Sydney
Ph (02) 4731 6655

Coin Validator

Coin Activation

- ✓ The Microcoin QL-Timer can be programmed using its On-Board Programming, OBP, facility.
- ✓ Each OBP feature can be accessed by a series of button presses, using the OBP programming button, which is located below the LED indicators.
- ✓ Please use a **firm** and **rapid** button press to access each Mode. You will be shown a unique "M" Led flash sequence to indicate the selected Mode.

Feature	Description	Visual Indicators
<u>Enable Coin</u>	Press button once. Pass the coin to be enabled through the QL. If successful, Led will go steady GREEN	 M 1 2 3  M 1 2 3
<u>Disable Coin</u>	Press button twice. Pass the coin to be disabled through the QL. If successful, Led will go steady GREEN	 M 1 2 3  M 1 2 3
<u>Program Multi Coin</u>	Press button 3 times Press Button to get to required Cat number Displayed on side of unit Pass 10 Coins through the QL LED flashes ORANGE After the 10 th coin or token has passed through LED will go steady ORANGE Display should now show number "1" This is the credit multiplier, Number 1. (1 pulse = \$1) Press & Hold Button, LED will go steady GREEN	 M 1 2 3  M  M  1

Power Supply 240Vac Removal

WARNING

Do not remove or disconnect the 240v power from the validator **OVERNIGHT**.

During the day and for short periods is ok.

Removing power overnight can cause condensation and moisture to build up inside the power supply.

If this occurs there can be short circuits develop when the unit is eventually re powered.

If power is disconnected overnight, remove the power supply from the validator and store in a dry area inside the plant room or office.



Sensors

Photo Light Beams

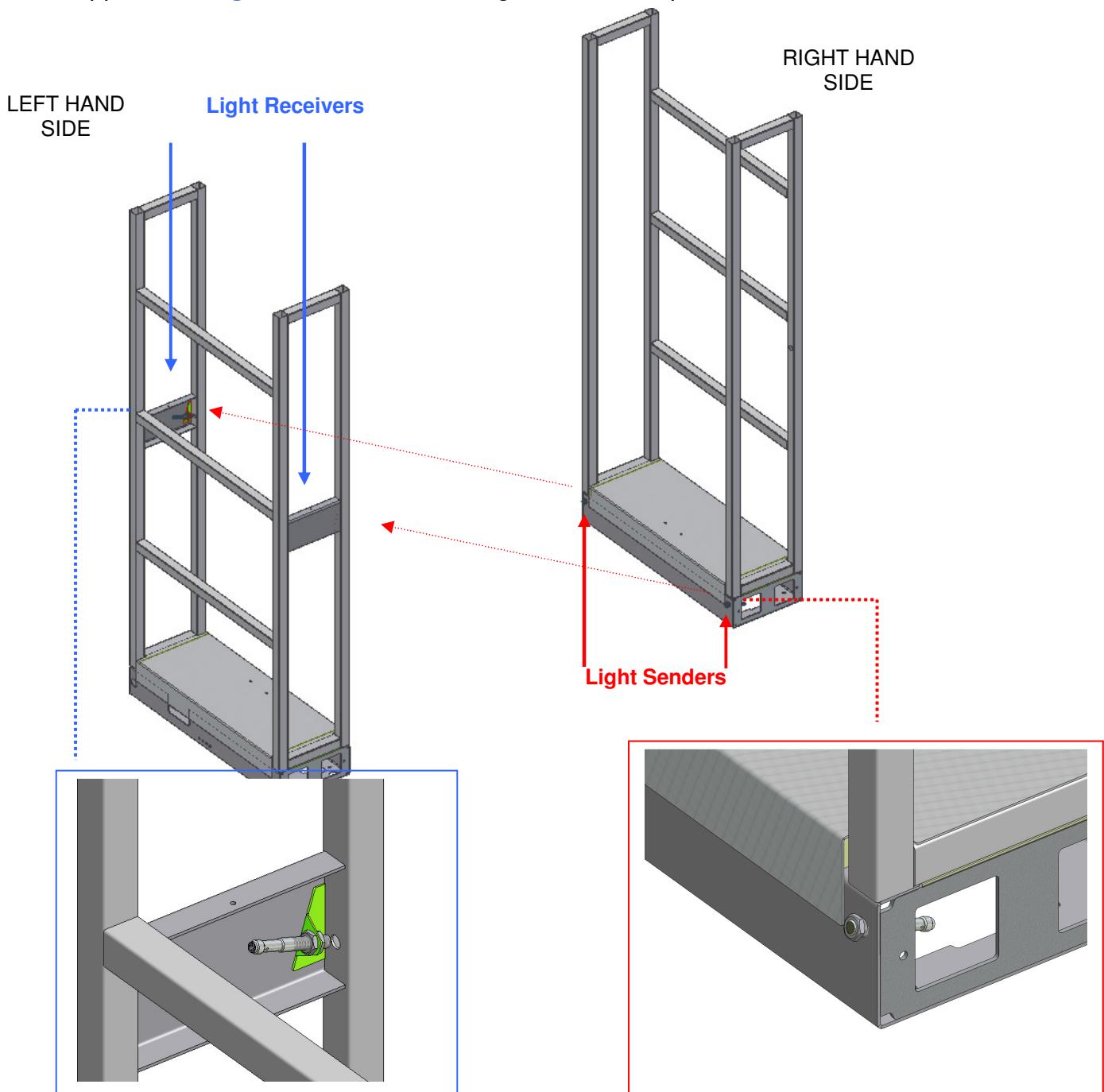
(Light Sender)

These are located on the RIGHT hand side, down low in gantry leg

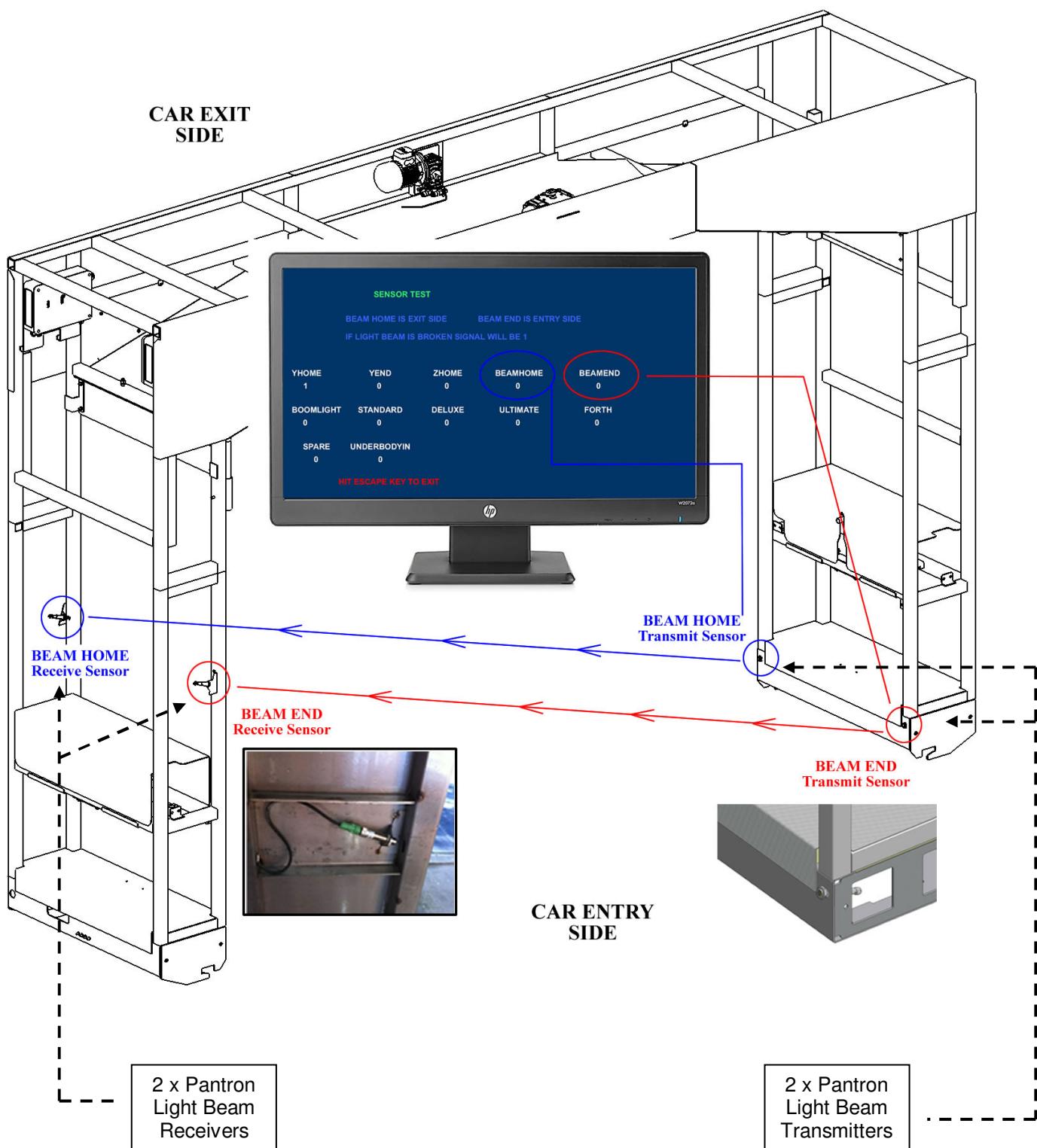
(Light Receiver)

These are located on the LEFT hand side, high in the gantry leg

The function of these light sensors, is for the **light senders** to send a beam of light to the **light receivers**. When the **light receivers** see this light beam, they then in turn send a signal to the computer. Only when a car enters the wash, is this light beam from one side to the other broken, the **light receivers** cannot see the light beam coming from the **light senders**. When this happens, the **light receivers** send a signal to the computer that a car is in the wash.



Sensors Beam Home & Beam End



Sensors

Inductive Proximity Sensors YEND & YHOME

These sensors work by detecting metal when it is close. When metal is present a small light on the sensor will glow, this sends a signal to the computer. These sensors can be tested using a function on the computer inside the electrical cabinet.

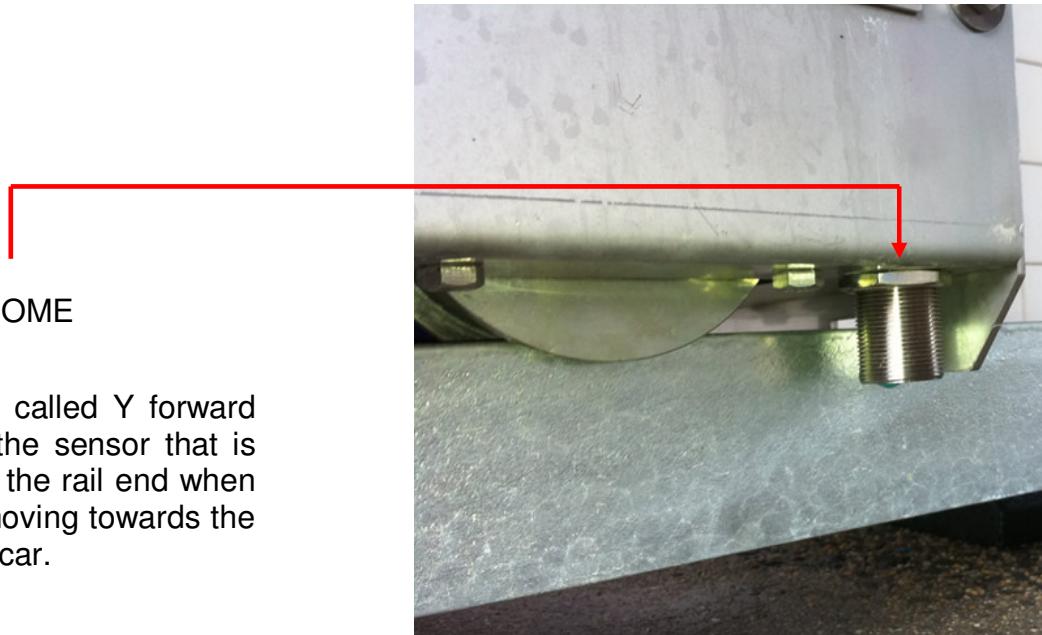
On the keyboard hit the Escape key, this will take you from wash cars to the main menu. On the main menu select option 2 which is sensor test. Here you will see all the sensors listed, if the sensor has a number 1 beside it, it means that it is **ON**. If the sensor has a number 0 beside it, it means that the sensor is turned **OFF**. Another way to test the sensor is to see if it glows when metal is brought within its field. (See sensor test later in manual)



Lower Left Side Of Gantry

Y END

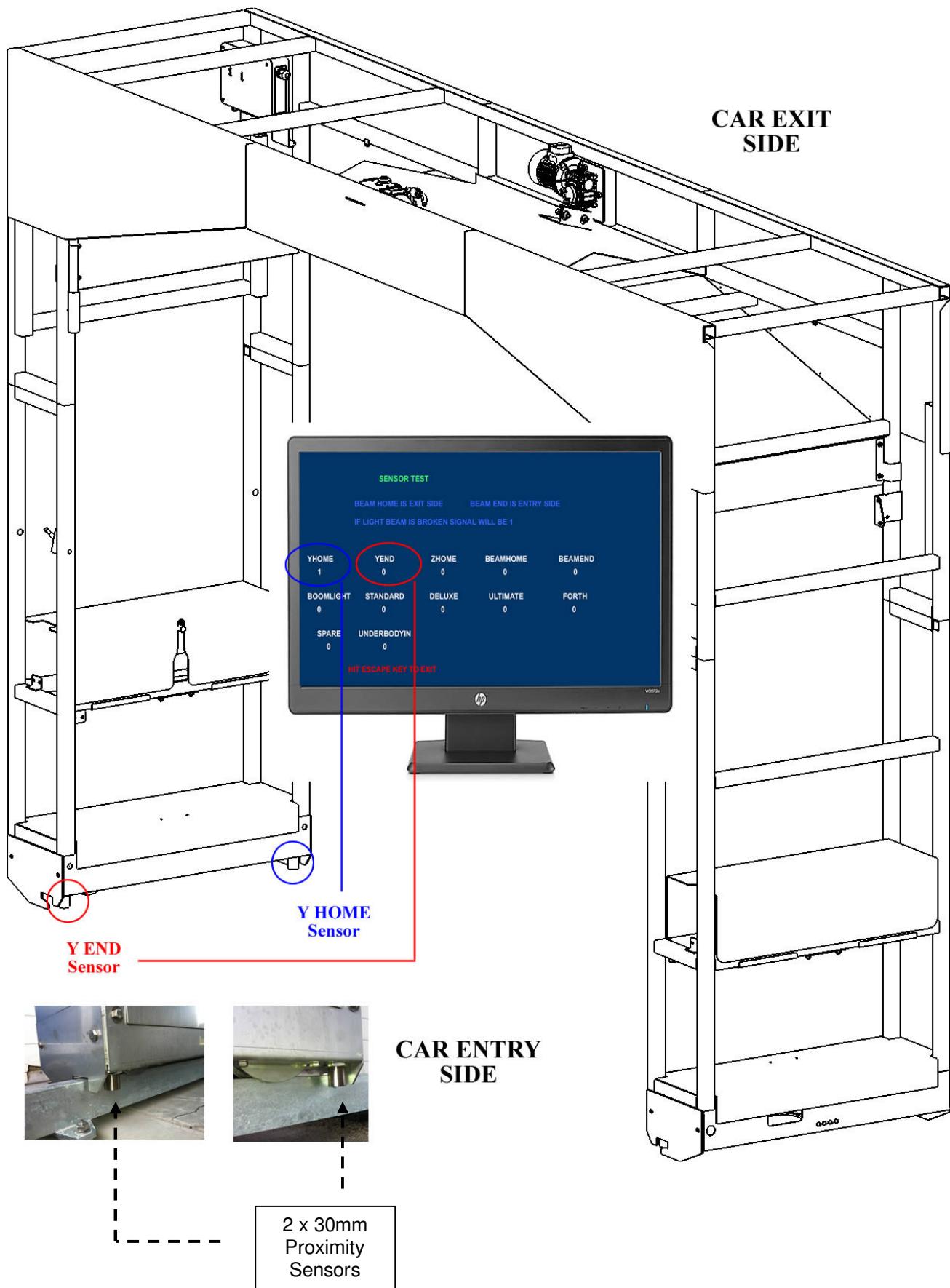
This sensor is called Y reverse because it is the sensor that is used to detect the rail end when the gantry is moving towards the REAR of the car.



Y HOME

This sensor is called Y forward because it is the sensor that is used to detect the rail end when the gantry is moving towards the FRONT of the car.

Sensors Y Home & Y End

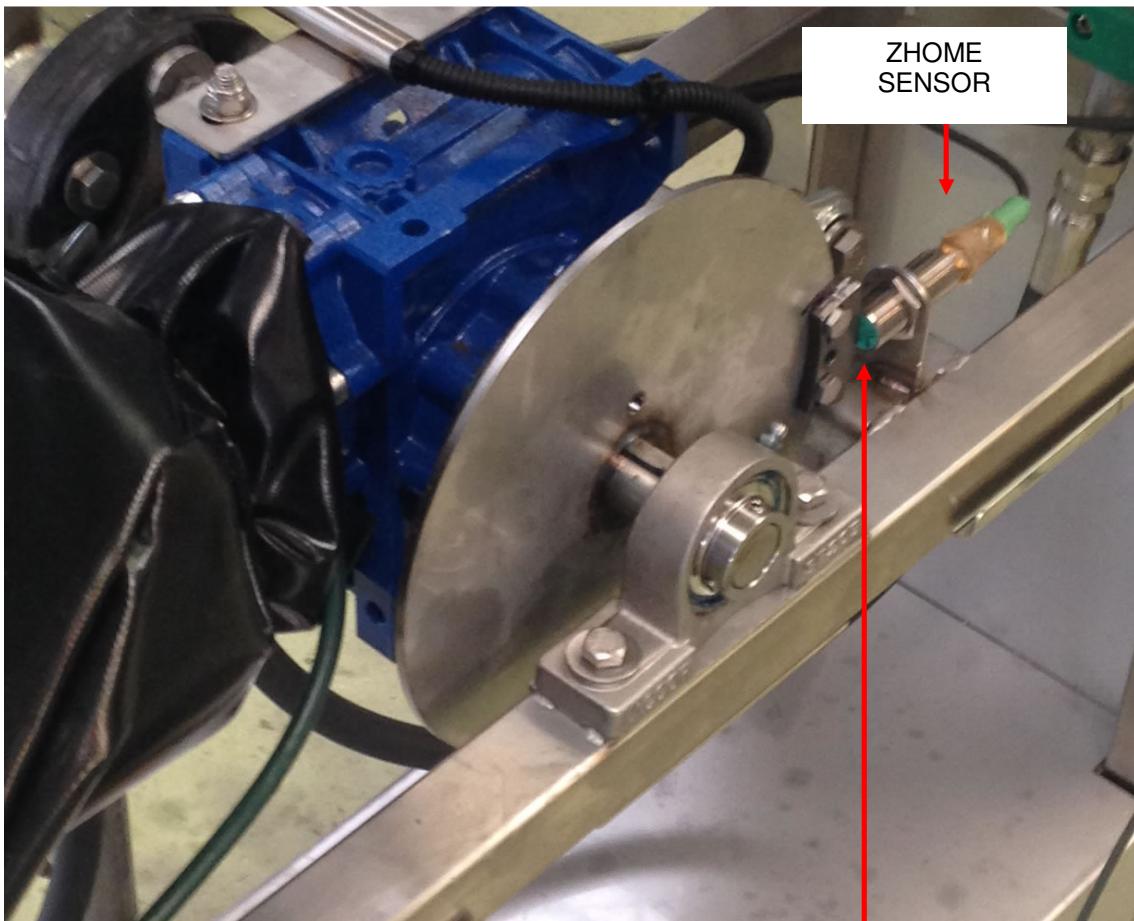


Sensors

Inductive Proximity Sensors ZHOME

This sensor also works by detecting metal when it is close. When metal is present a small light on the sensor will glow, this sends a signal to the computer. This sensor can be tested using a function on the computer inside the electrical cabinet.

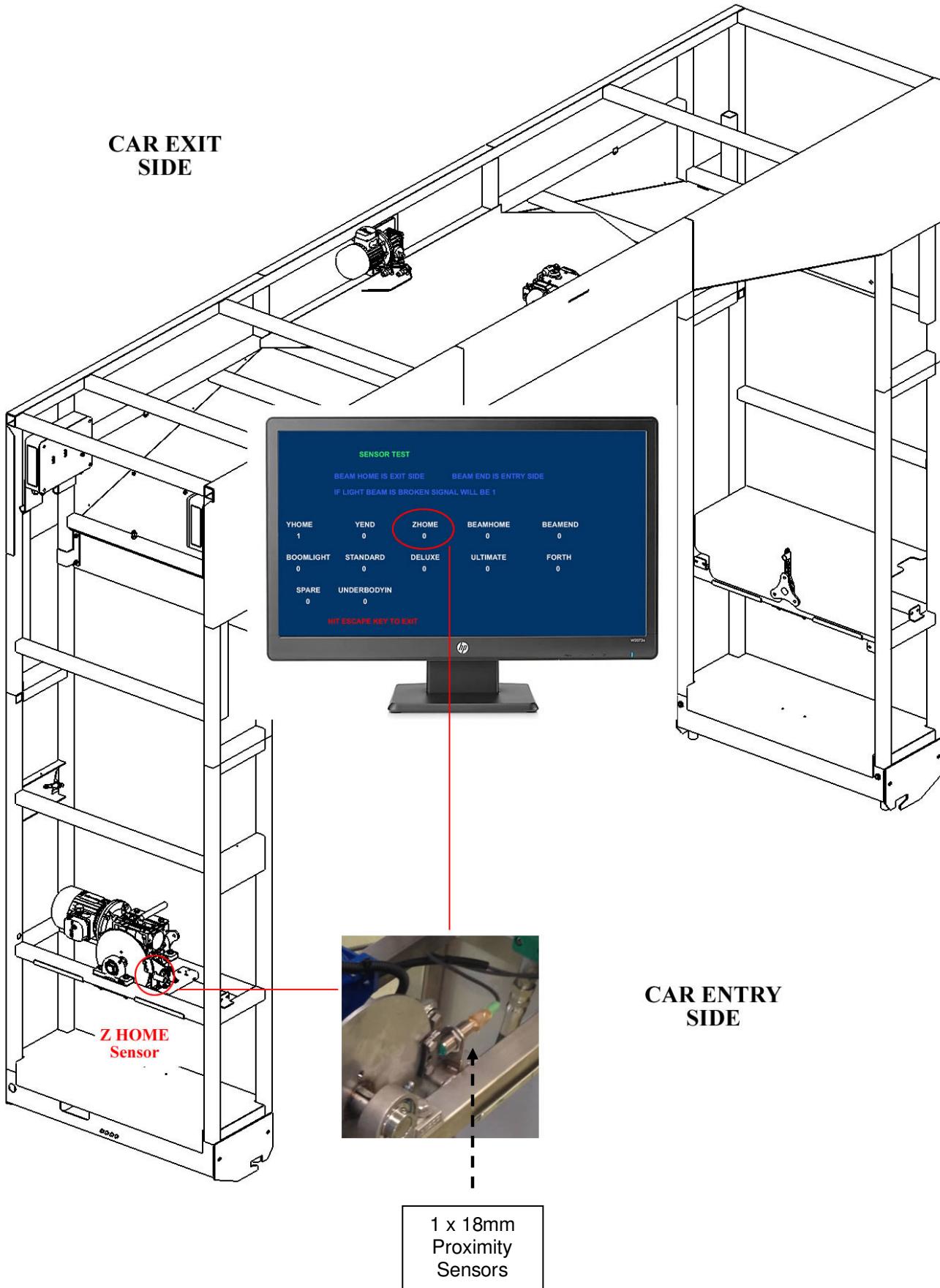
On the keyboard hit the Escape key, this will take you from wash cars to the main menu. On the main menu select option 2 which is sensor test. Here you will see all the sensors listed, if the sensor has a number 1 beside it, it means that it is **ON**. If the sensor has a number 0 beside it, it means that the sensor is turned **OFF**. Another way to test the sensor is to see if it glows when metal is brought within its field.



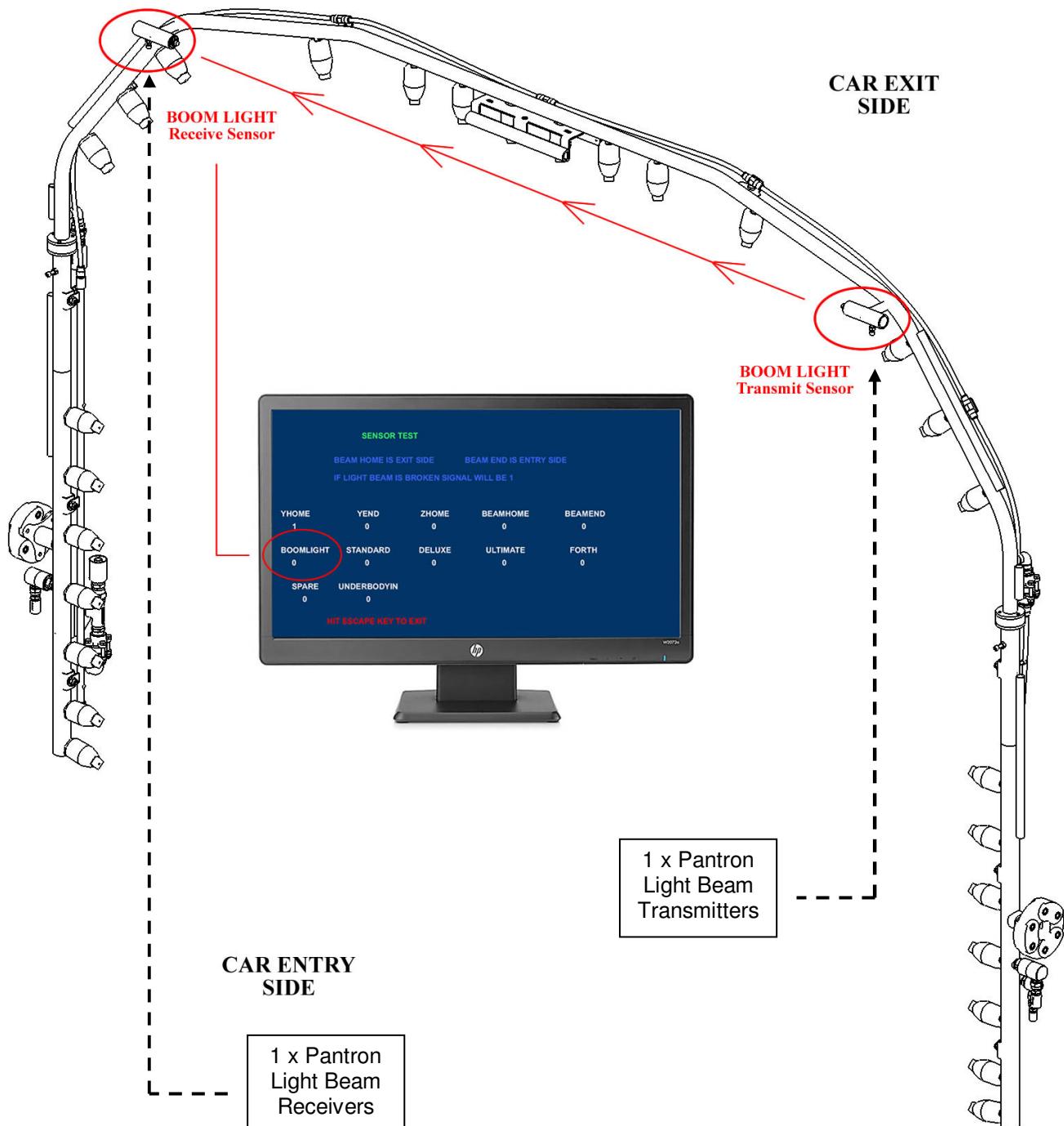
SET GAP BETWEEN THE
END OF THE SENSOR
AND THE METAL
TRIGGER SENSOR AT

3MM

Sensors Z Home



Sensors Boom Light



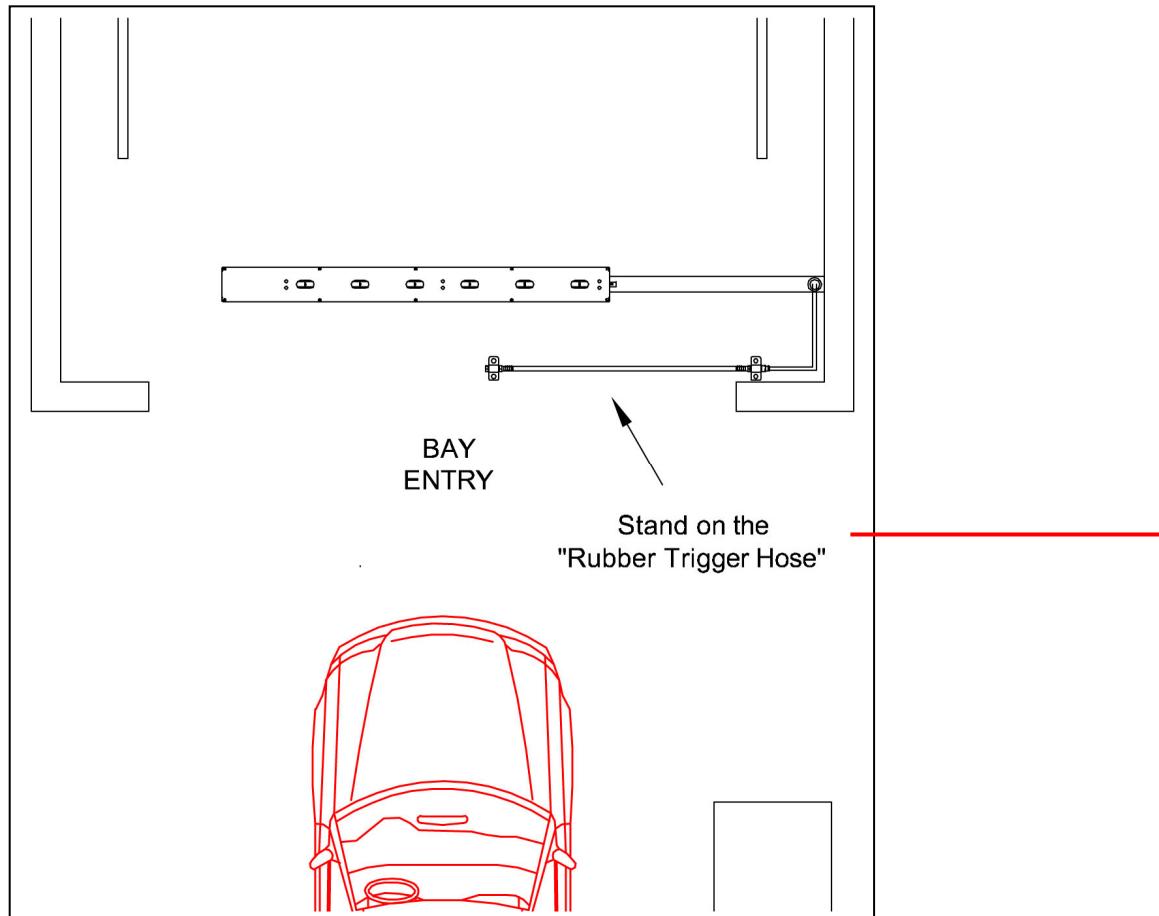
Sensors Underbody Test

To test the underbody function.

At the control cabinet, enter the sensor test menu. Show on right

Have another person go out to the wash bay and stand on the "Rubber Trigger Hose" at the bay entrance.

When this hose is stood on or driven over, the digit on the sensor test screen should turn from "0" to a "1"



Sensors Underbody Test (Water In Line)

If standing on the Rubber Trigger Hose does not change the sensor test digit from 0 to 1 it may be water in the line

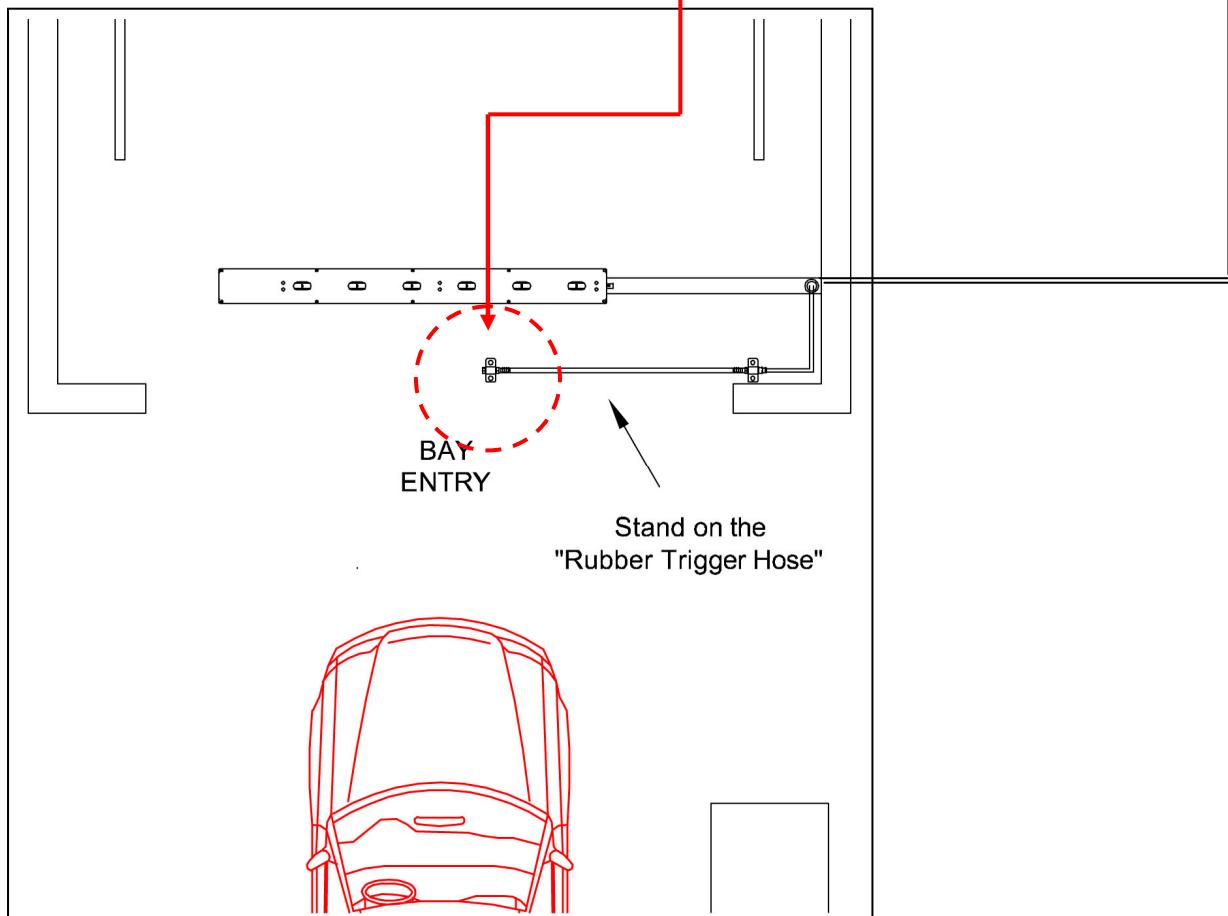
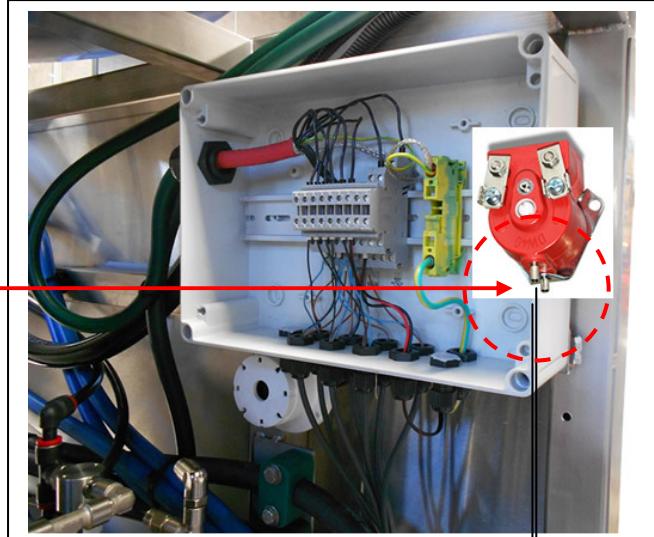
1. Water in the Trigger Hose

Disconnect the hose from the trigger switch located inside the Inputs box on the end of the gantry. Shown on right

Also disconnect the rubber trigger hose in the centre of the wash bay.

Then blow air through the entire line to remove any water.

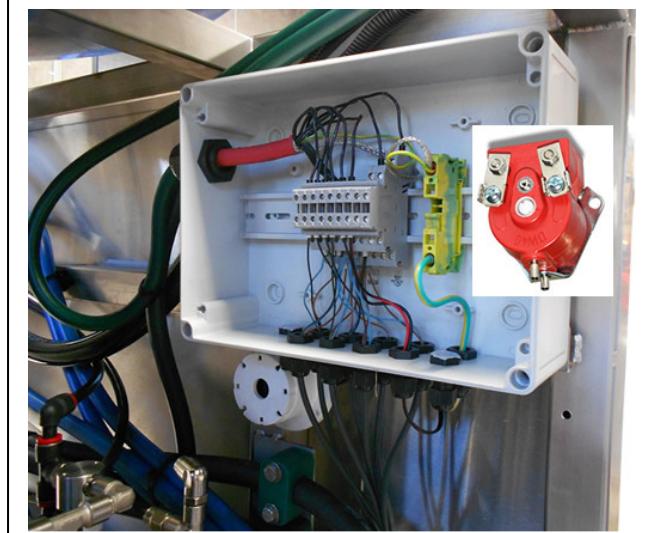
Reconnect both ends and re test as per previous page.



Sensors Underbody Test (Switch Adjustment)

If standing on the Rubber Trigger Hose does not change the sensor test digit from 0 to 1 it may be switch adjustment

2. Trigger Switch Adjustment



The underbody trigger switch inside the inputs box (shown on right) has an adjustment screw located in the middle of the unit.

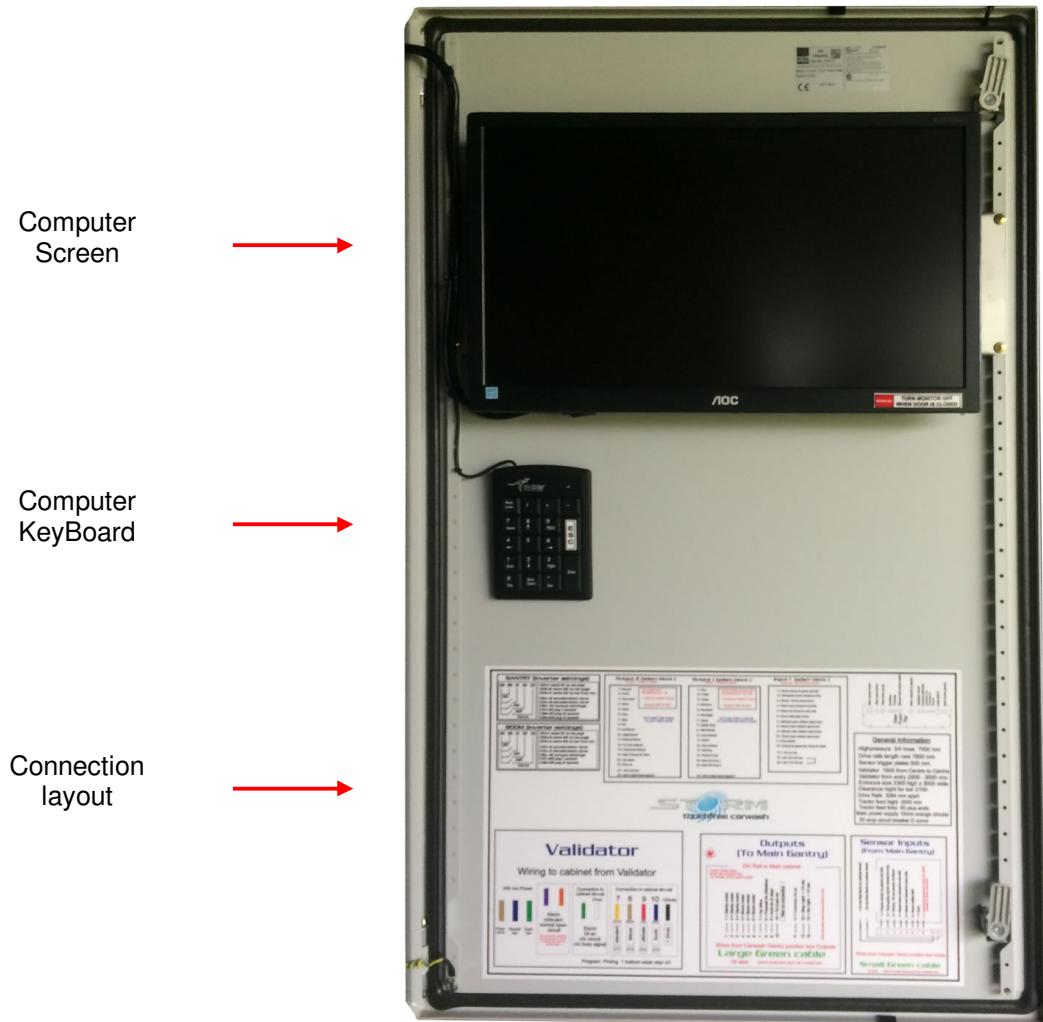
SWITH ADJUSTMENT

This switch may need its contacts adjusted at some time.
To do this

1. Screw in the middle screw until contacts make contact. (ie touch) and the underbody sensor test digit moves from 0 to a 1
2. Once you have the sensor test digit saying 1, back off the screw slightly This would be about a 2 minute increment if you were looking at a clock face
3. Test the switch by driving or stepping on the vacuum line and seeing if you get the sensor test digit to change from 0 to a 1 and back to 0 again.

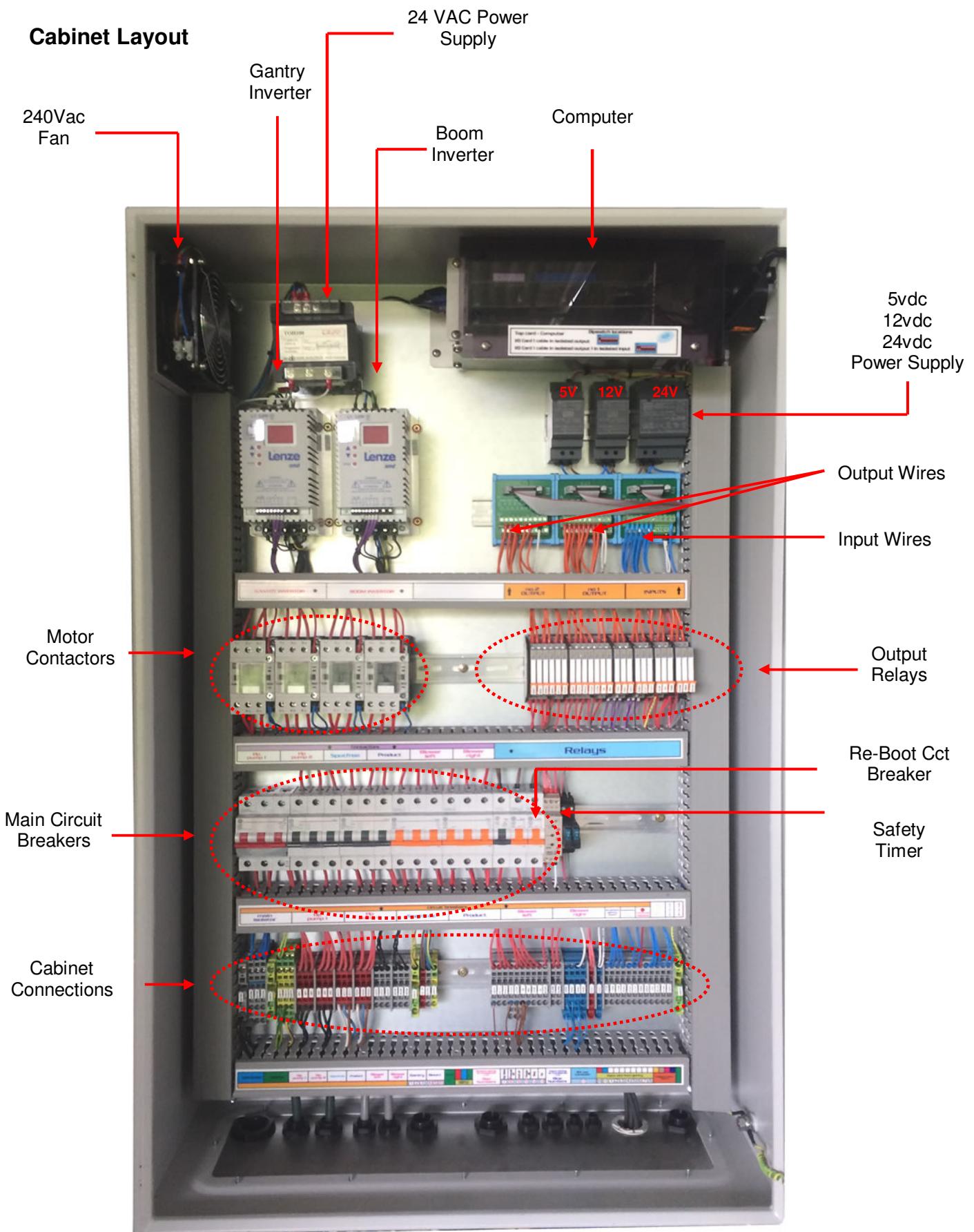
Electronics

Cabinet Layout

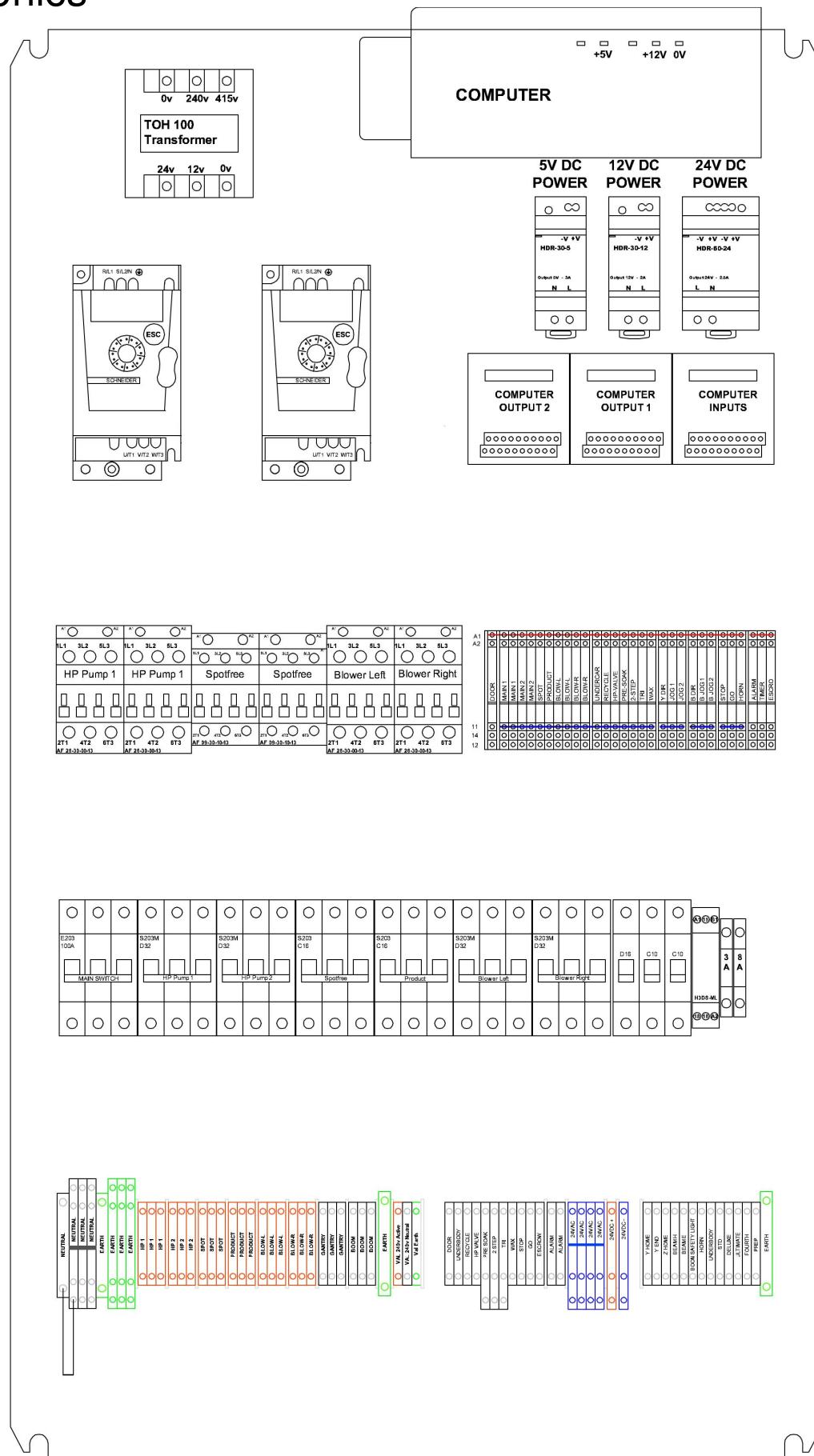


Electronics

Cabinet Layout



Electronics



Safety Timer

The Mr Magic Storm car wash has built into it a timer function. This timer function is referred to as the safety timer. The device that controls this function is an Omron H3DS-ML unit wired into the electrical control cabinet. See picture on previous pages. The wiring of this device can be seen in the wiring section later in this manual.

This timing device is adjustable, by rotating the dials on its face, you can set the amount of time that this timer will count. (See next page) It can be set to count anywhere from 0.1 seconds to 100 hrs. In this application, Mr Magic Storm, the timer is pre-set to 10Min. This is the time setting REQUIRED for the Storm car wash. It is not necessary to adjust this timer and should not be altered from factory settings as set by Mr Magic.

The reason for this timing function is to have a back up for the computer. Ie if for some unforeseen circumstances, the computer does not end the wash cycle, (power spike, momentary power blip etc) the timer will cut in and end the wash. It is this reason that it is referred to as a safety timer.

The way this timer works is as follows,

1. When the Storm car wash electrical cabinet is powered up, the safety timer is automatically powered on.
 - a. This is achieved by -ve dc common connected to terminal A2. (See wiring details attached)
 - b. This is achieved by + 24vdc connected to terminal A1. (See wiring details attached)
2. The safety timer remains powered on in this state, to confirm that the timer has power connected; a small LED light will be on. This small LED is located to the bottom right hand side of the safety timer label on the front of the unit. This LED light must be on when pump stand electrical cabinet is powered up. If this LED light is not on, then power is not getting to the timer A1 and A2 and the car wash will not start.
3. The next part starts when a customer logs a wash, ie puts money in the validator and selects what wash function they require. When the wash sequence starts, initiated wash and beam broken, the computer program momentarily operates the green relay named timer, this timer relay closes its contacts thus connecting +24vdc to pin B1 on the Omron timer device momentarily. (See wiring details attached).
4. When the safety timer gets this +24vdc connected to its B1 terminal, the safety timer begins its countdown, in this Mr Magic example the device counts down from 10min to Zero.
5. At the same time that the safety timer starts to count, it also outputs +24vdc from its terminal pin 18, this pin 18, now with +24vdc on it, is wired to the common rail on the input side to all the green 24v relays, less the end three on the right. (See wiring details attached) It is this connection that gives all (most) of the green relays one half of their power to switch on other wash functions.
6. It is also this +24vdc coming out of the safety timer's pin 18, that gives this timer its control over the wash ending at the 10min mark. Because if the wash cycle has not completed for any reason, the safety timer will remove the +24vdc from its pin 18 when it has counted down to zero.
7. By removing the +24vdc from its pin 18, it has removed this voltage from the input common bar of the green relays thus they will all drop out and the wash stops.
8. If this happens, some thing has happened to make the wash last longer than 10min. This could be a fault condition within the computer, either a momentary power fail or spike or surge.
9. If this happens, follow the " Fault Procedures " in this document.
10. Remember, LED light must be on when wash is powered up.
11. Safety timer does not need to be adjusted; it is correctly set at 10min by factory and tested.

Safety Timer (Omron)

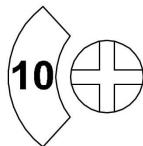
SAFETY TIMER

Can be purchased at most local electrical wholesalers.

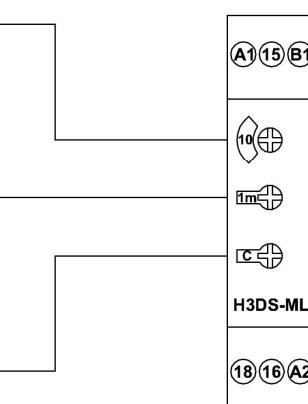
Brand: Omron
Model: H3DS-ML



**SET TOP DIAL TO
10**



**Omron
H3DS-ML**



**SET MIDDLE DIAL TO
1m**



**SET BOTTOM DIAL
C**



Cabinet Wiring Connections

Outputs to main gantry

Outputs (To Main Gantry)

Din Rail in Main cabinet

EARTH SHIELDING
MUST BE CONNECTED
TO FRAME WITH EARTH WIRE

1	—	1 = Gantry motor
2	—	2 = Gantry motor
3	—	3 = Gantry motor
4	—	4 = Boom motor
5	—	5 = Boom motor
6	—	6 = Boom motor
7	—	7 = Hp Valve
8	—	8 = Presoak Air (Alkaline)
9	—	9 = Acid air (2 step)
10	—	10 = Tri-Color-Air
		Wax no connection
11	—	11 = Common 24 ac
12	—	12 = Stop Light + 12 vdc
13	—	13 = Go Light + 12 vdc

Wires from gantry cable numbers printed on wires

Wires from Carwash Gantry junction box Outputs

Large Green cable

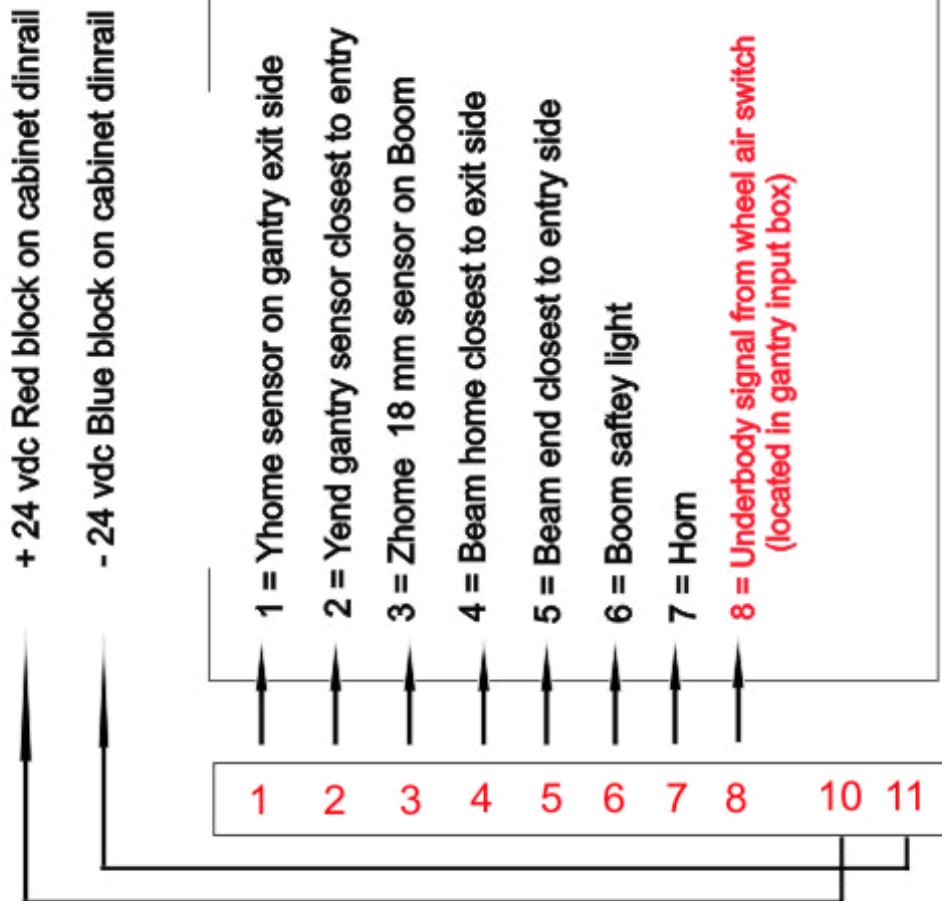
18 wire

EARTH SHIELDING MUST BE CONNECTED

Cabinet Wiring Connections

Sensor inputs from main gantry

Sensor Inputs (From Main Gantry)



Wires from Carwash Gantry junction box Inputs

Small Green cable

12 wire EARTH SHIELDING MUST BE CONNECTED

Cabinet Wiring Connections

Wiring to cabinet from validator

Validator

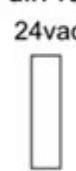
Wiring to cabinet from Validator

240 vac Power



Power active Neutral bar Earth bar

Connection in cabinet din-rail



24vac
Escro
24 ac
n/o circuit
n/c busy signal



Alarm
note-jam
normal open
circuit

No connection required
do not connect to alarm
on dinrail for external
phone dialer

Connection in cabinet din-rail

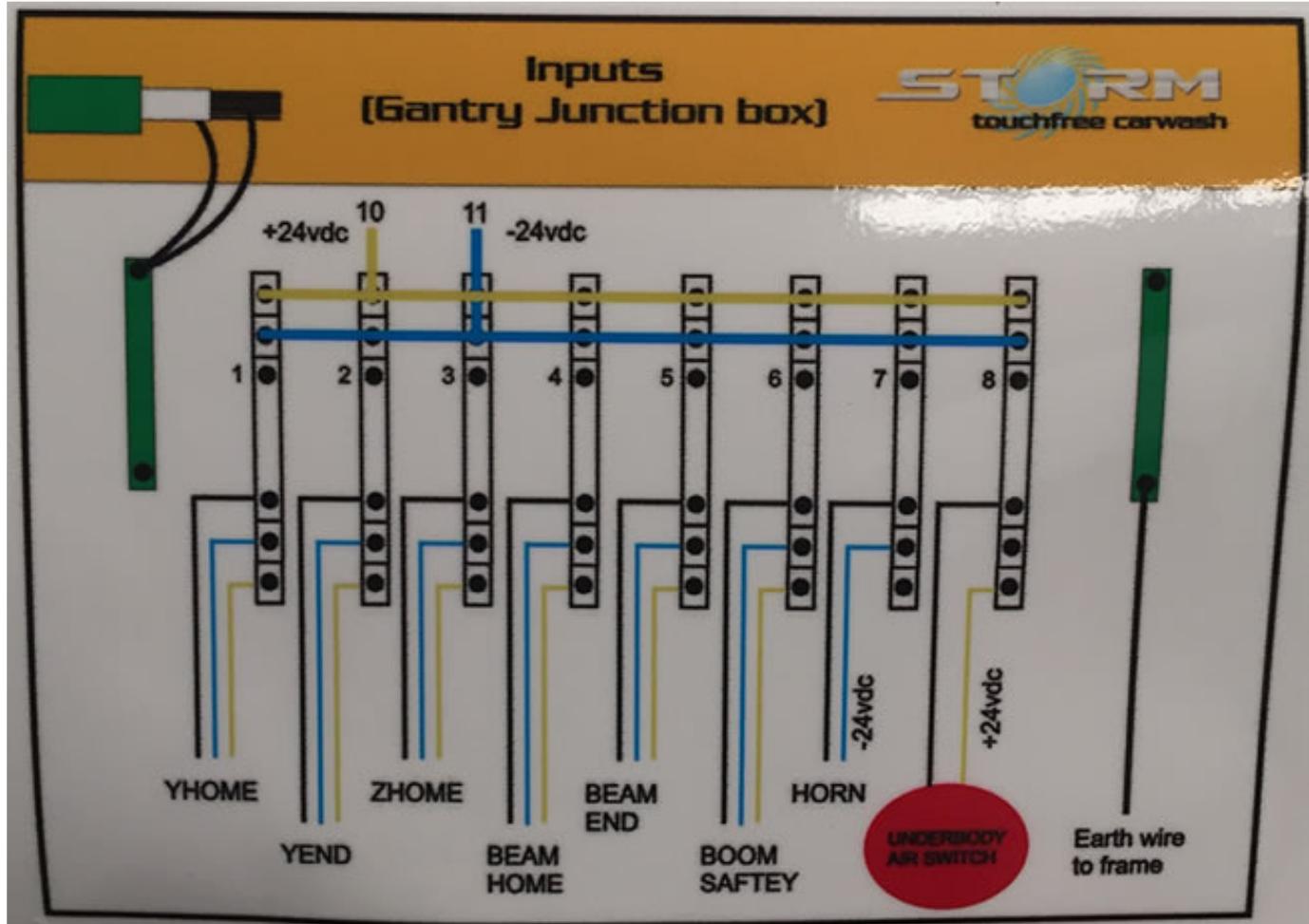
7 8 9 10 +24vdc

YELLOW	BROWN	PINK	BLUE	BLACK
standard	deluxe	ultimate	fourth	+ 24vdc
CT1	CT2	CT3	CT4	

Program Pricing 1 bottom wash also ct1

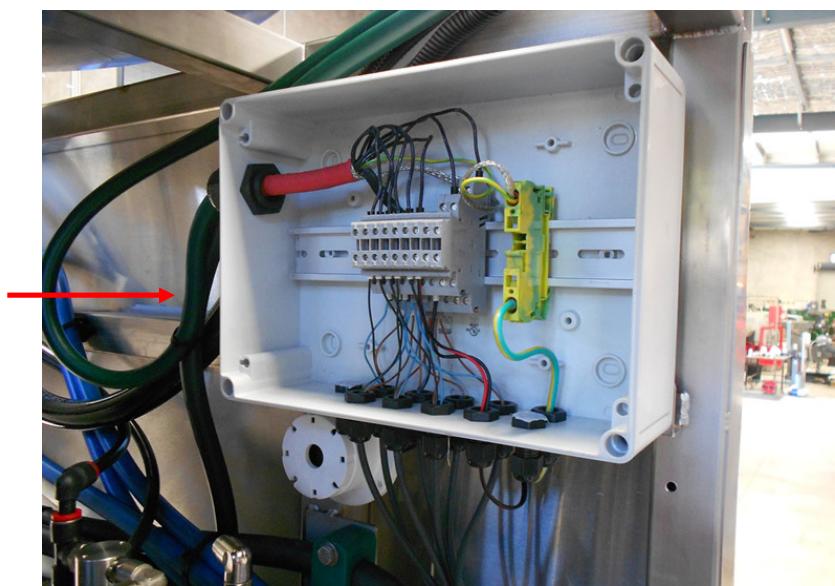
Gantry Wiring Connections

Inputs Junction Box Sensor Wires



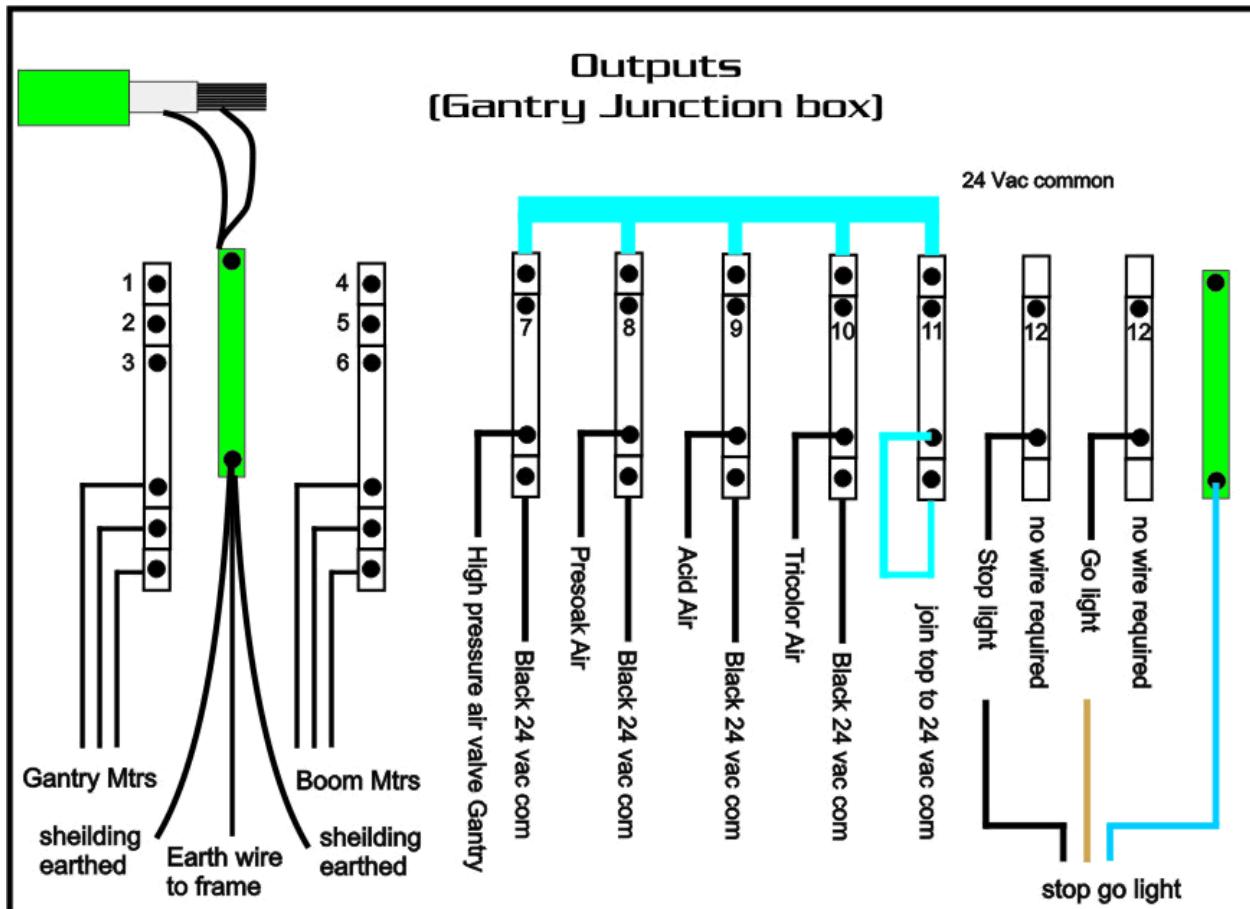
Inputs Gantry Junction Box

This junction box is located in the top left side of the gantry. Located on the inside of the front panel.



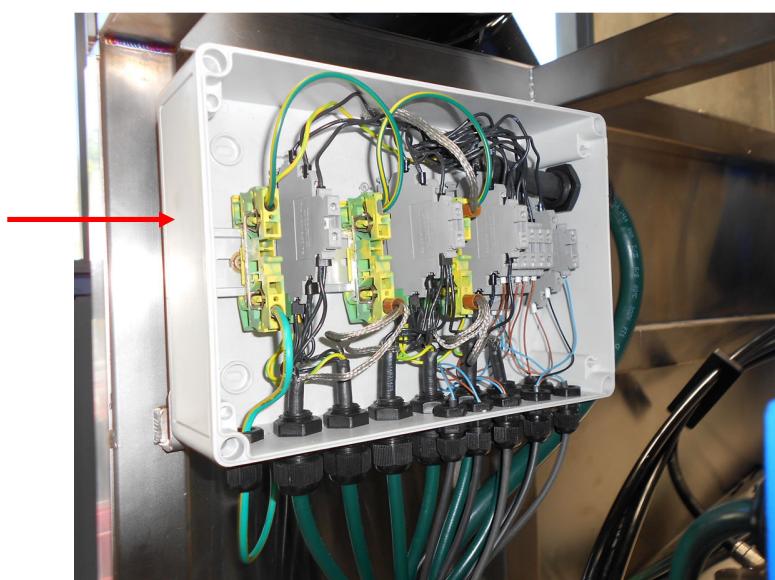
Gantry Wiring Connections

Outputs Junction Box Wires



Outputs Gantry Junction Box

This junction box is located in the top left side of the gantry. Located on the inside of the rear panel.



Fault Procedures

If the Storm Wash fails and stops while washing a car -

1. Clear the bay, ie remove car being washed
2. Record exactly where the Storm gantry is sitting in the bay (txt photo if possible)
3. Turn on the computer monitor (located inside the electrical cabinet on pump stand)
4. Record last four lines on the display (ie bottom 4 lines)
5. Re-position gantry to home location if not already home (procedure in manual)
6. Re-boot computer (procedure in manual)
7. Test operation of wash (ie put car through the wash process)
8. If same fault appears repeat steps 1-5 then Goto step 9.
9. Complete a “Total System Re-Boot” (procedure in manual)
10. Test operation of wash (ie put car through the wash process)
11. If fault re-appears, close wash temporarily.
12. Carry out “Sensor Test Procedure (procedure in manual)
13. If any sensor test fails, replace faulty sensor.
14. If all sensors test O/K as per procedure, contact Mr Magic for assistance

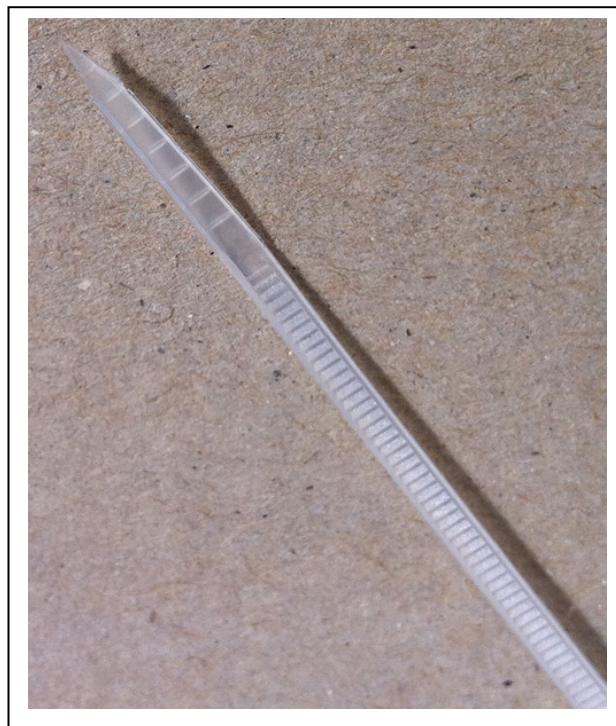
Jet Cleaning

It is important that jet cleaning be done correctly to ensure that you receive maximum life from these parts.

Incorrect jet cleaning will reduce the effectiveness and life span of your jets.

1. Jets cannot be cleaned correctly while still in position
2. Remove the jet, these will unscrew from their position, use correct sized spanner
3. Remove – Clean – Replace one jet at a time, this prevents jets being put back into incorrect position
4. Hold jet up to daylight and look through the hole, anything blocking hole will be visible
5. Tap jet onto bench to try to dislodge blockage
6. Use a cut plastic tie to run through the jet hole to dislodge the blockage
7. You can also used compressed air the blow through the hole in the jet
8. Hold jet up to daylight again, if cleaned correctly you should be able to see through the jet hole
9. Coat jet thread with suitable sealant
10. Replace the jet into it's correct position, DO NOT OVERTIGHTEN

A plastic cable tie with a sharp point cut on it's end is very good for cleaning blockages from jets.



Product Venturi's

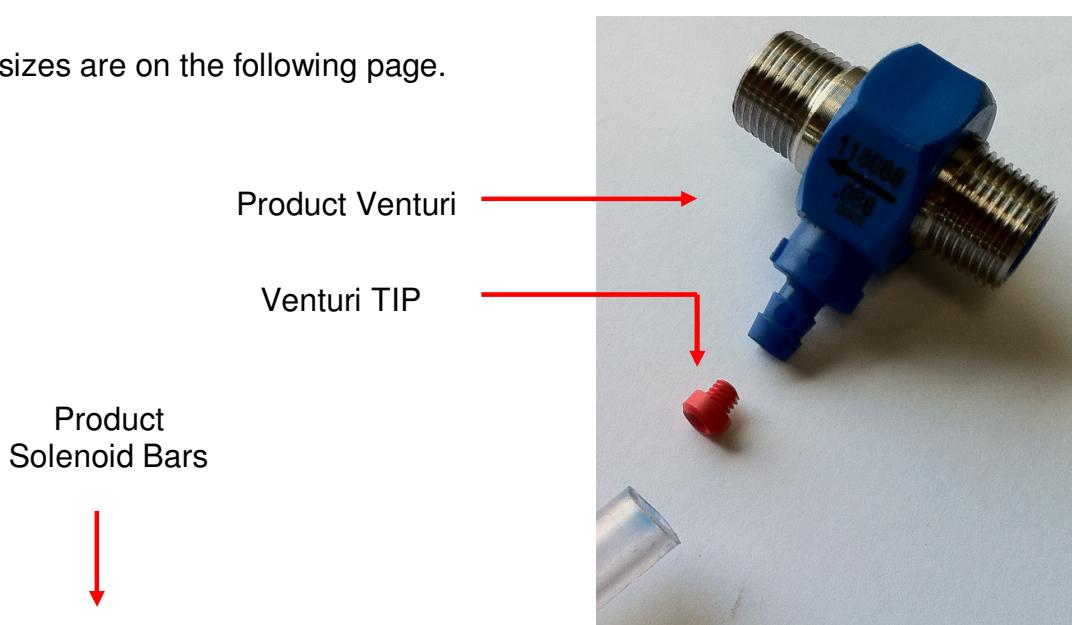
The product venturi's are what mixes the chemical product with the water as it is being pumped to the spray jets.

The amount of product being added to the water is determined by the "TIP" that is screwed into this venture.

Adjusting the amount of product is achieved by changing the TIP to a different size, all tips are color coded depending on its mixing ratio.

To change a TIP, pull clear product line off the venture hose barb, unscrew the now exposed TIP and screw in the replacement, push clear product line back onto the venture hose barb.

Tip color and sizes are on the following page.



NOTE

The ACID venturi will need to be replaced every 12 months. This is a consumable part that wears because of the products used.

Product Metering Settings

Tip Selection

(Selection based on)
0.086 venturi

Color	Tip Color	Ratio	My Settings
	tan	307 : 1	
	orange	215 : 1	
	turquoise	134 : 1	
	pink	98 : 1	
	light blue	66 : 1	
	brown	59 : 1	
	red	46 : 1	
	white	43 : 1	
	green	38 : 1	
	blue	31 : 1	
	yellow	22 : 1	
	black	17 : 1	
	purple	10 : 1	
	grey	7.6 : 1	
none	none	6 : 1	

Product Tip Settings Standard

Below are the STANDARD venturi sizes and tip settings for the Mr Magic Storm, suitable as a base starting point. All sites can vary slightly either side of these recommendations but listed below is a starting point.

Rainbow Venturi Single	.057	Red		Top Solenoid Bar
Rainbow Venturi Single	.057	Red		
Rainbow Venturi Single	.057	Red		

Ceramic Venturi Single	.083	Grey		Bottom Solenoid Bar
Wax Venturi Single	.083	Grey		
Acid Venturi Dual	.083	Grey		
Pre-Soak Venturi Dual	.083	Grey		

Product Tip Settings

Tri Color

Tan tip

Acid Pre-Soak

Aqua tip
22 Drops

Rhino Brite Plus

Tan tip

SupaSat

Pre Soak		
Alkaline	No Tip or Grey	50 Drops
Surfactant	Pink Tip	Must use HA

Lustra

Performix		
Pre Soak	Yellow Tip	

Blue Coral

Solid power	Purple tip
-------------	------------

Auto Kleen

Sling shot		
Pre-Soak	Red tip	
Tyre	Green tip	

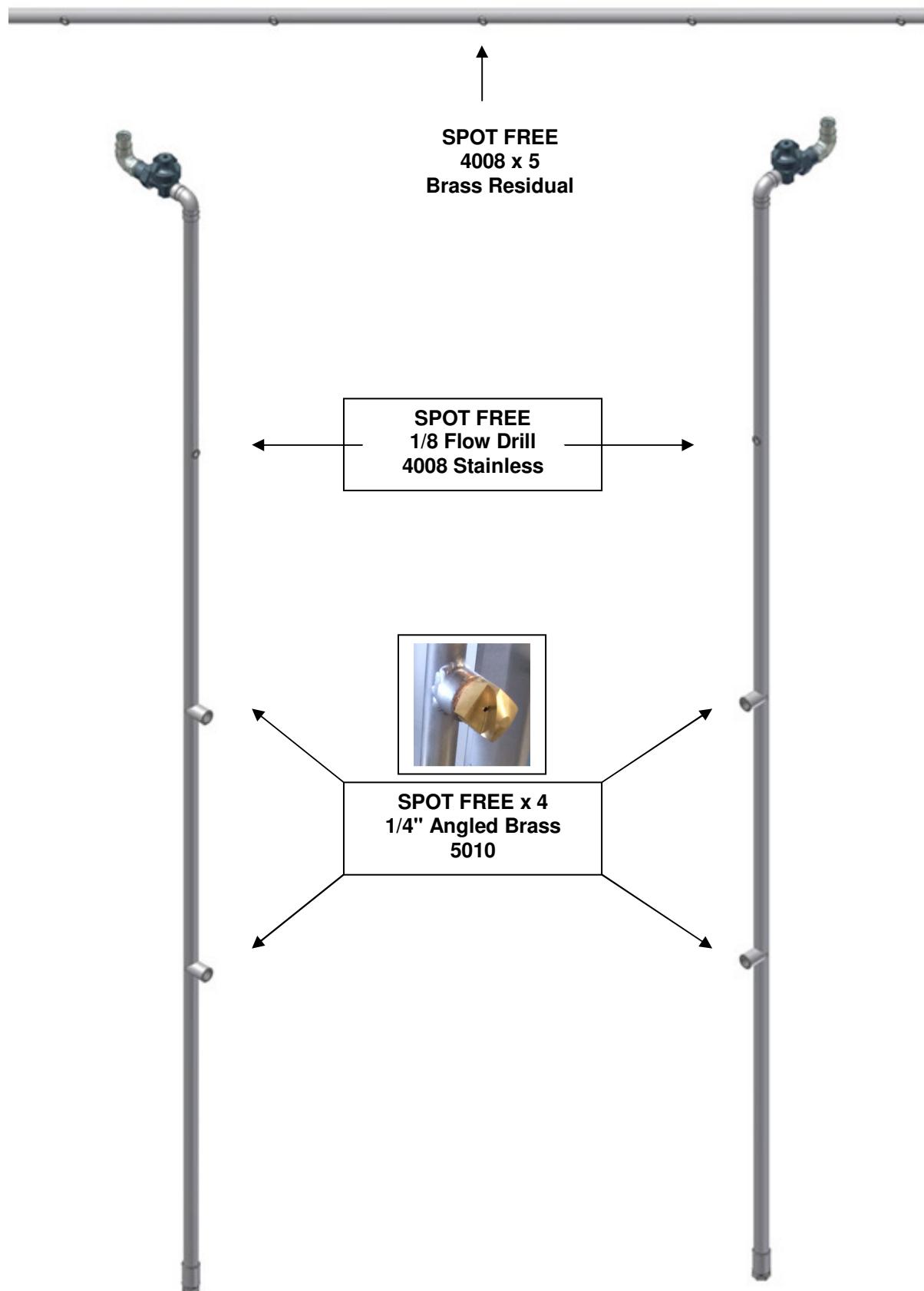
Castle Chemicals

Splish Spalsh	Light blue tip
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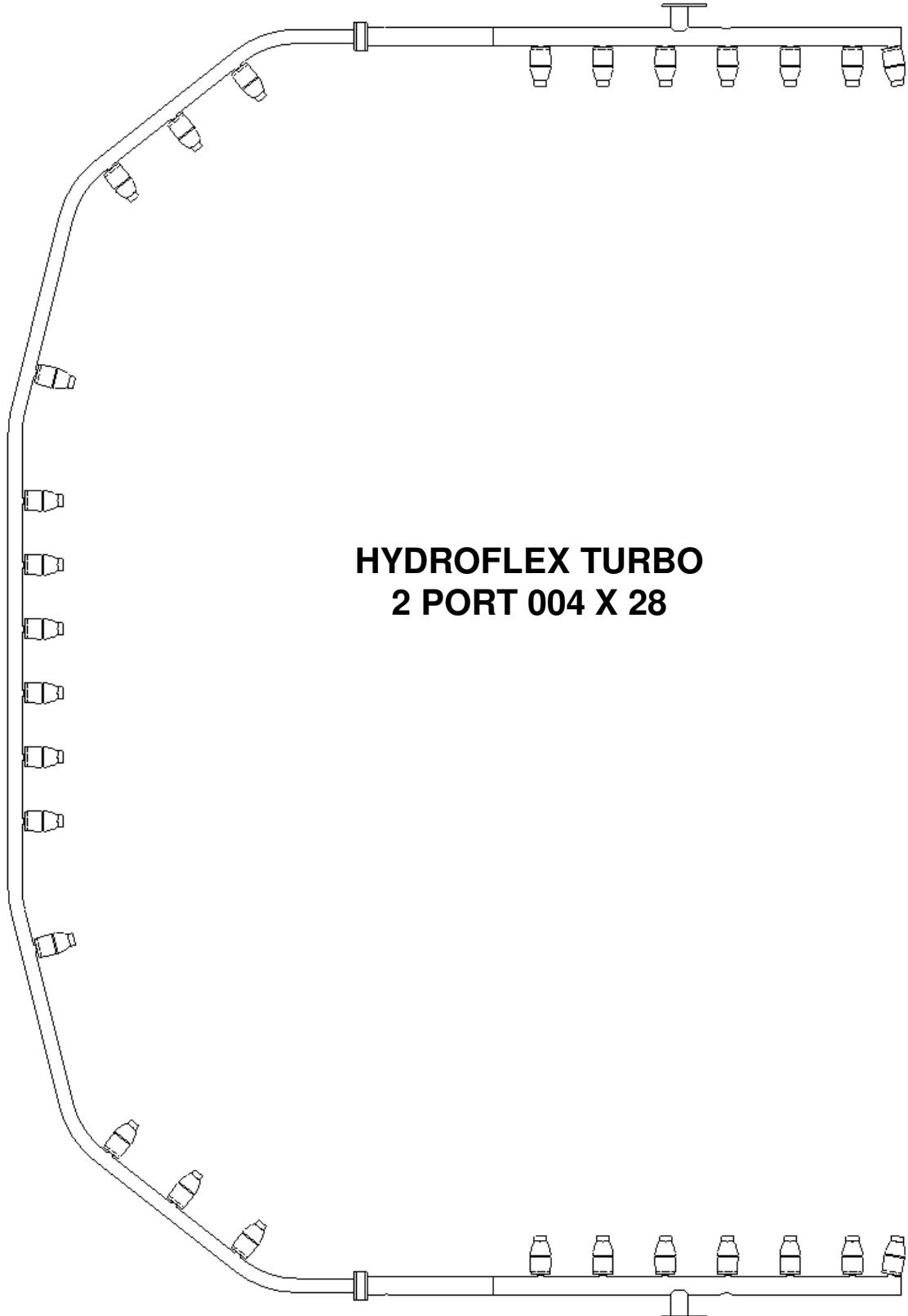
HYDRAFLEX, INC METERING TIP KIT FOR 1/4" HOSE BARBS 8-32 INTERNAL THREAD		
5.40 Gpm (0.125" Nozzle)		
Tip Color	Ratio	OZ/GAL
Tan	764 : 1	0.17
Orange	536 : 1	0.24
Turquoise	336 : 1	0.38
Pink	244 : 1	0.52
Light Blue	166 : 1	0.77
Brown	150 : 1	0.85
Red	116 : 1	1.10
White	108 : 1	1.18
Green	94 : 1	1.36
Blue	77 : 1	1.66
Yellow	52 : 1	2.48
Black	40 : 1	3.18
Purple	21 : 1	6.03
Grey	16 : 1	8.14
None	10 : 1	13.19

d tests are recommended.

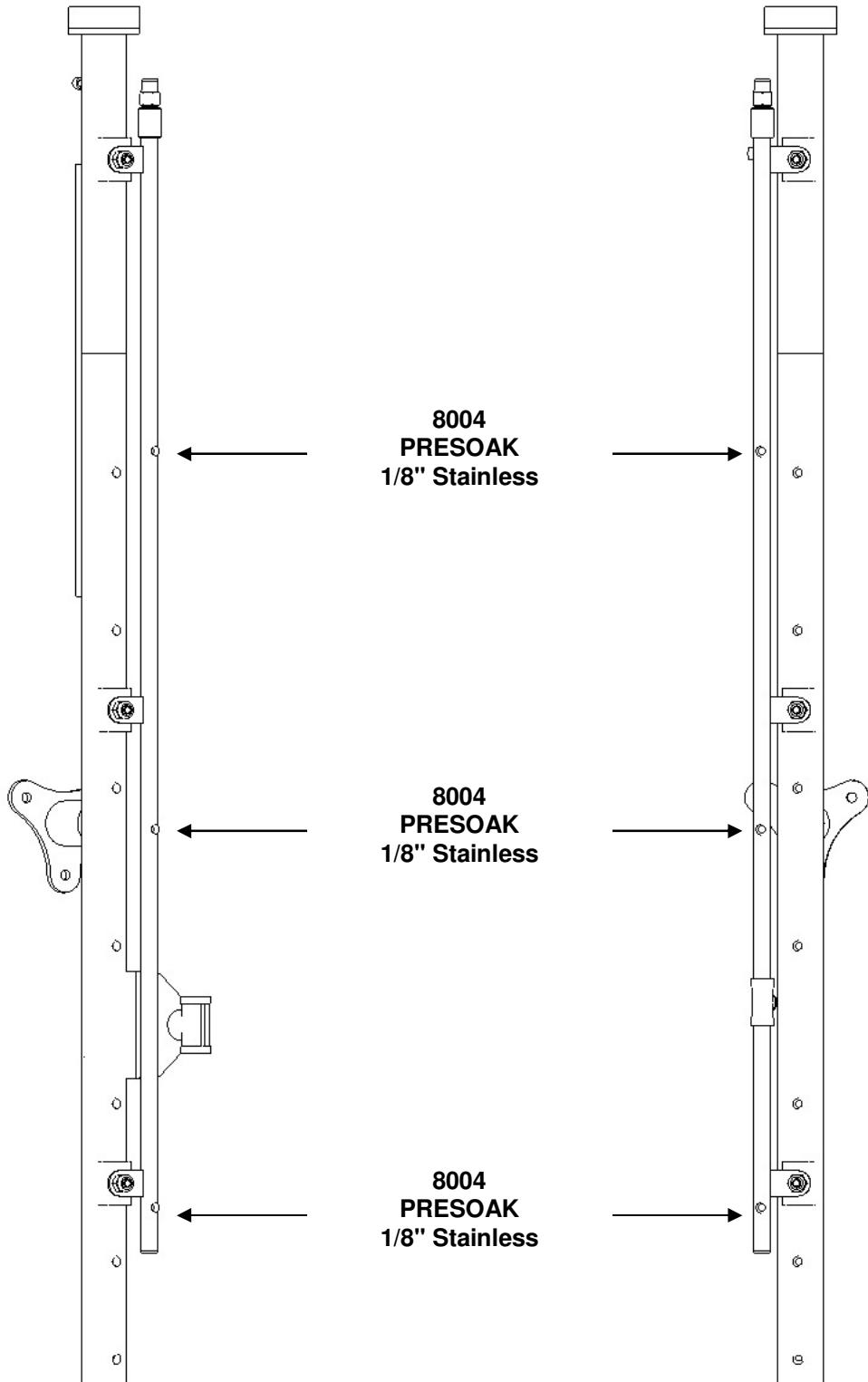
Gantry Jet Location & Sizes



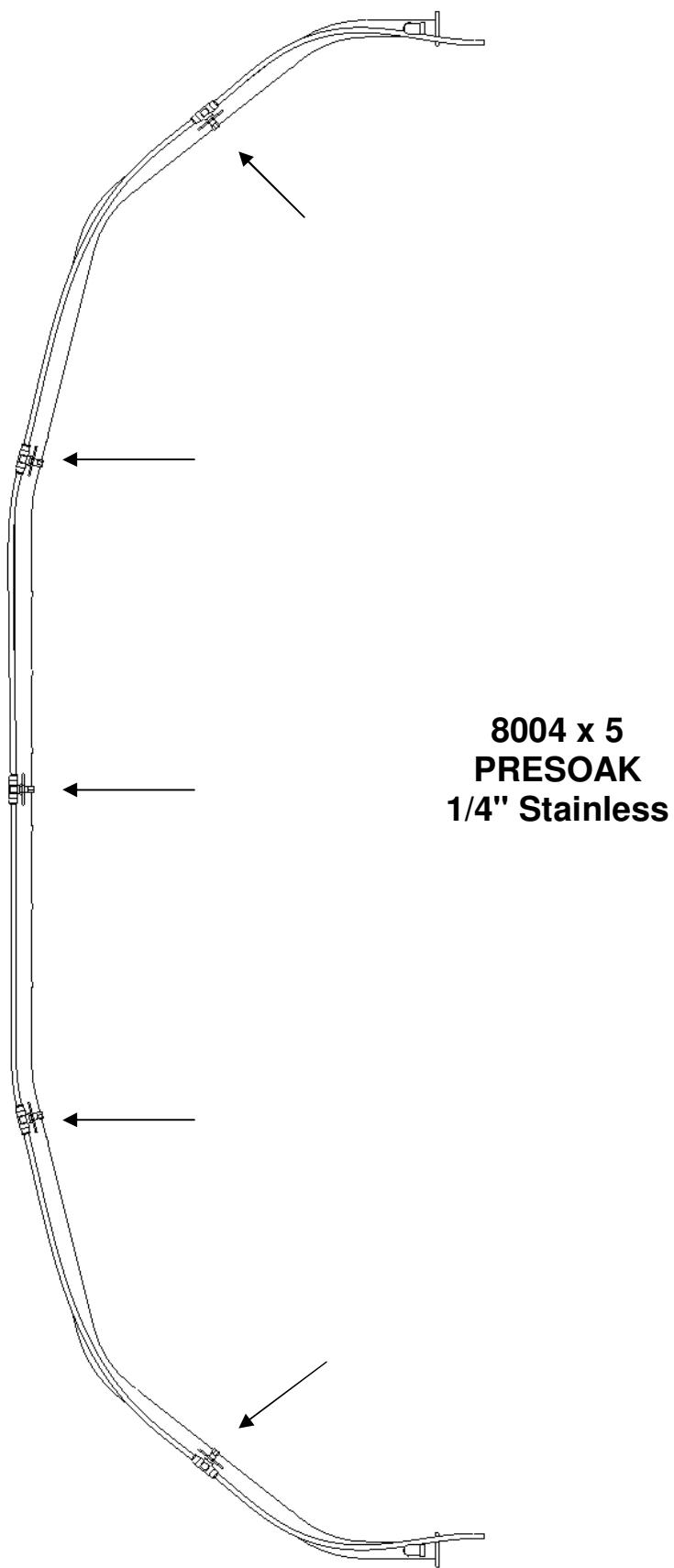
Boom Turbo Sizes



Boom Presoak Jet Sizes



Boom Presoak Top Jet Sizes



Wash Jet Sizes

BOOM ARM TURBO's **004 hydroflex turbo two port x 28 units**

BOOM ARM SIDE PRE-SOAK JETS **6 x 8004 1/8 stainless steel**

BOOM ARM TOP PRE-SOAK JETS **5 x 8004 1/4 stainless steel**

GANTRY SIDE SPOTFREE JETS **2 x 4008 1/8 stainless steel**

GANTRY SIDE SPOTFREE JETS **4 x 5010 x 1/4 angle brass. (At 4 x Sockets)**

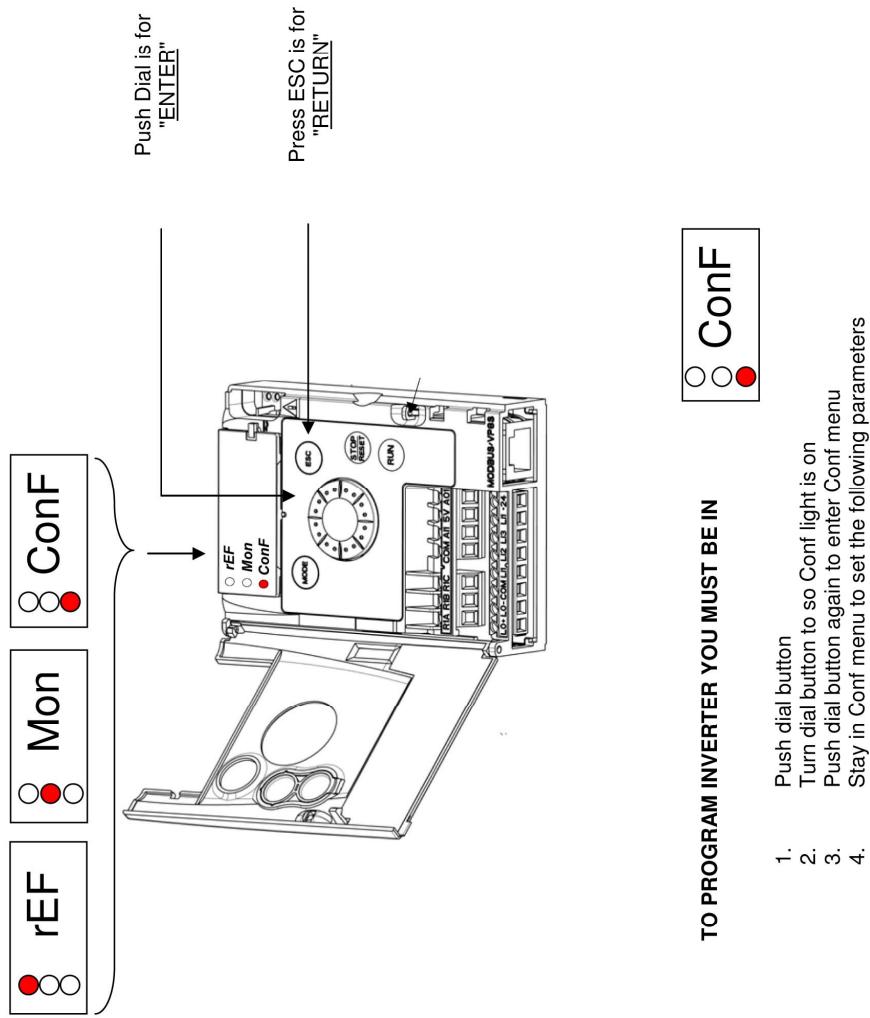
GANTRY TOP SPOTFREE JETS **5 x 4008 brass with residual holder 1/8**

UNDERBODY BAR **6 x 5006 1/4" BSP Stainless Steel**

WAX / CERAMIC BAR **8 x 5004 1/8" BSP Stainless Steel**

Inverter Settings

PROGRAMMING SCHNEIDER ATVH075M2



Inverter Settings

Schneider ATV12H075M2

Pushing dial is for : ENTER
Hit : ESC to return one

Must set Parameters

Wire: L11 to 12 normally closed of YREV or BREV
 Wire: L12 to 14 normally open of YREV or BREV
 Wire: L13 to 14 normally open JOG 1
 Wire: L14 to 14 normally open JOG 2

- Acceleration Time**
(1) Push turn dial : turn to > confi push > turn to ACC push > (set Boom 0.5 sec) (set Gantry 0.8 sec)
- Deceleration Time**
(2) : turn to > confi push > turn to dEC push > (set Boom 0.3 sec) (set Gantry 0.8 sec)
- (3) : turn to > confi push > turn to LSP push > Low Speed Set to 0.0 Hz
- (4) : turn to > confi push > turn to HSP push > Default High Speed Set to 50.0 Hz
for drive to know basic speed referece is coming from type of control digital input
- (5) : turn to > confi push > turn to FULL push > turn to CtL > Fr1 push > Default Set to AI1
- (6) : turn to > confi push > turn to FULL push > turn to I_O > turn to tCC Set to 2C
set change from 24vdc low to high before change
- (7) : turn to > confi push > turn to FULL push > I-O > turn to tCt push > Set to LEL
set so drive knows to use speeds
- (8) : turn to > confi push > turn to FULL push > turn to CFG push > Set to SPD Hold for 2 sec to save
set dynamic acceleration and deceleration ramps
- (9) : turn to > confi push > turn to FULL > drC > CTT push > Set to PErF
assign as the input
- (10) : turn to > confi push > turn to FULL > FUn > PSS push > PS2 Default Set to L 3H
assign as the input
- (11) : turn to > confi push > turn to FULL > FUn > PSS push > PS4 Default Set to L 4H
Speeds Boom Speeds Gantry
- (12) : turn to > confi push > turn to FULL > FUn > PSS push > SP2 Set to 18 hz Set to 14 hz
Speeds Boom Speeds Gantry
- (13) : turn to > confi push > turn to FULL > FUn > PSS push > SP3 Set to 32 hz Set to 28 hz
Speeds Gantry
- (14) : turn to > confi push > turn to FULL > FUn > PSS push > SP4 Set to 48 hz
These settings should be Ok but need to be checked
- (15) Push turn dial : turn to > confi push > turn to full push > turn dRc push > bfr push > set 50 hz
- (16) Push turn dial : turn to > confi push > turn to nPr push > set .75 kw
- (17) Push turn dial : turn to > confi push > turn to nCr push > set 3.5 amps

Menu Explanation

STORM ===== BUTTON 5 SETTINGS 1 ======
SELECT NUMBER TO ACCESS CHANGES **ON OR OFF**

PRESS 1 2 STEP SETTINGS ON / OFF 0

By turning this on, you will have 2 applications of pre soak. 1 pass normally low ph
2 pass high ph. If this is turned off you will have two passes of high pre soak.

PRESS 2 BLOWER SPEED 0

By turning this on you will get .the second pass running home at 50 hz not 16 hz
will help with time

PRESS 3 BUG WASH EXTRA PRESSOAK ON FRONT 0

By turning this on you will get the pre soak to stay on as the boom goes over the
front and down to the ground ready for high pressure at front of car

PRESS 4 MIRROR FAST SPOTFREE PAST 0

By turning this on spot free will go all the way to the front at 35 hz otherwise it will
slow up around the mirror area and jog on 16 hz to help clean mirrors

PRESS 5 PREP OR DWELL TIME IN SECONDS 0

By adding or subtracting time in seconds, you can adjust the amount of time that
the wash will stop and wait after pre soak has been applied before starting the high
pressure pass. Adds time for pre soak to work more, but don't leave it too long as it
will dry and you won't get pre soak stains off

PRESS 6 BLOWER PAUSE TIME ON SCREEN 0

By adding or subtracting time in seconds, you can adjust how long the gantry will
pause and therefore spend extra time blowing on the windscreen helps with the
quality of the dry

PRESS 7 UNDERBODY ADD TIME 0

By adding or subtracting time in seconds, you can alter the time that the underbody
high pressure operates, remember that once the back wheel hits the sensor any
time will convert back to 3 seconds regardless but if they shoot in far too quick this
also can be fooled

PRESS 8 BOOM GOING UP AT EXIT SIDE ALIGNMENT 0

By adding or subtracting time in seconds, you can adjust the vertical position that
the boom stops at. If the boom does not quite go far enough up so that it stands
nice and vertical then you must ADD a small amount of time.

PRESS 9 BOOM GOING UP AT ENTRY SIDE ALIGNMENT 0

By adding or subtracting time in seconds, you can adjust the vertical position that
the boom stops at. If the boom does not quite go far enough up so that it stands
nice and vertical then you must ADD a small amount of time.

Menu Explanation

STORM ====== BUTTON 6 SETTINGS 2 ======
SELECT NUMBER TO ACCESS CHANGES **ON OR OFF**

PRESS 1 BOOM GOING DOWN EXIT SIDE TO GROUND 0

By adding or subtracting time in seconds, you can adjust how close the boom stops to the ground at the EXIT side of the bay. If the boom hits the ground you will have to subtract a small amount of time. If the boom stops too far from the ground you will have to add a small amount of seconds. Don't allow boom to hit the ground as it will wear out components

PRESS 2 BOOM GOING DOWN ENTRY SIDE TO GROUND 0

By adding or subtracting time in seconds, you can adjust how close the boom stops to the ground at the ENTRY side of the bay. If the boom hits the ground you will have to subtract a small amount of time. If the boom stops too far from the ground you will have to add a small amount of seconds. Don't allow boom to hit the ground as it will wear out components

PRESS 3 FOURTH WASH MODE 0

If you have a 4th wash selection, this will have to be turned ON for it to work. It will remove blowers from 3rd wash and just have tricolor then the four will have blowers and tricolor

PRESS 4 BLOWER MODE 0

If you wash has blowers, this will have to be turned ON for them to work

PRESS 5 EXTRA WHEEL WASH 0

If this is turned ON, the gantry will travel slower 16 hz at the front wheels on the high pressure pass AFTER the Tri colour application.

PRESS 6 SPEED FAST NO PAUSING ON FRONT HP 0

If this is turned on, the boom will not do any pausing while on high pressure washing at the front of the car. If this is turned OFF, the boom with add in pauses of 2 sec every index while completing the high pressure wash at the front of the car.

PRESS 7 TIME DELAY HP FRONT 0

By adding or subtracting time in seconds, you can adjust how long the pauses are when the boom is indexing, washing the front of the car on high pressure.

PRESS 8 SPARE 0

PRESS 9 SLOW PASS BONNET HP 0

By turning this on, you will slow the gantry speed to 16 hz when the high pressure starts coming back at front of bonnet back to windscreen.

Menu Explanation

STORM ====== BUTTON 7 SETTINGS 3 ======
SELECT NUMBER TO ACCESS CHANGES **ON OR OFF**

PRESS 1 SLOWER THAN STANDARD SECONDS PRESOAK PASS 0

By turning this on, you will slow the gantry speed when it is applying the second pass of pre soak going forward. You will get more pre soak on the car as it now runs at 35 hz instead of 50 hz.

PRESS 2 RECYCLE SET TO 50% OR 100% RECYCLE WATER 0

PRESS 3 SET FOR HIGH VEHICLES EXITING TIGHT SITES 0

PRESS 4 SET CERAMIC ON 0

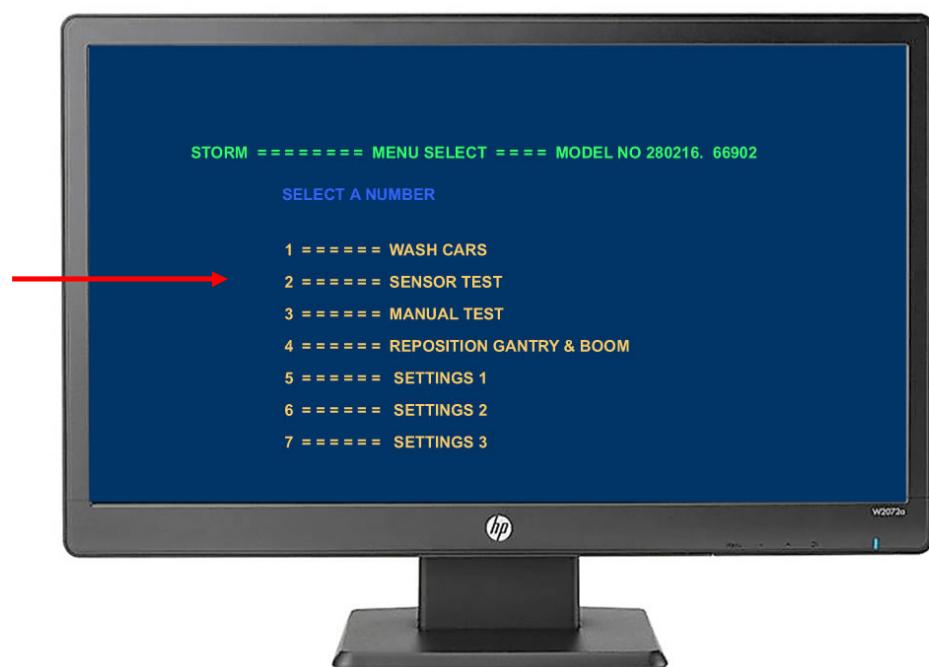
Sensor Test

From the start menu,
press the
ESCAPE

key to enter the menu
selections



From the menu
shown, press the
NUMBER 2
button on the keyboard
to select the Sensor Test
function.



Sensor Test

This screen is the sensor test screen. It is at this screen you can perform manual testing of several sensors on the Storm automatic car wash.



YHOME

This sensor is located on the lower LEFT leg of the wash gantry, on the exit side of the machine. Ie it is this sensor that detects the end of the rail on the exit of the bay. See page 39.

YEND

This sensor is located on the lower LEFT leg of the wash gantry, on the entry side of the machine. Ie it is the sensor that detects the end of the rail on the entry side of the bay. See page 39.

ZHOME

This sensor is located in the left leg of the gantry. It is near the motor that rotates the boom arm. See page 41-42.

BEAMHOME

This sensor is located on the left and right legs of the wash gantry. They are on the EXIT side of the gantry legs. See page 38.

BEAMEND

This sensor is also located on the left and right legs of the wash gantry. They are on the ENTRY side of the gantry legs. See page 38

UNDERBODYIN

This belongs to the underbody. This sensor is the rubber vacuum hose located at the entrance of the wash bay. See page 44 - 46

FUNCTION TESTING

Shown on right are function test that can also be completed while on this screen.

STANDARD

This is not a sensor but a test that you can do to ensure that the computer is receiving a wash signal from the validator when you select the bottom wash

DELUXE

This is not a sensor but a test that you can do to ensure that the computer is receiving a wash signal from the validator when you select the middle wash

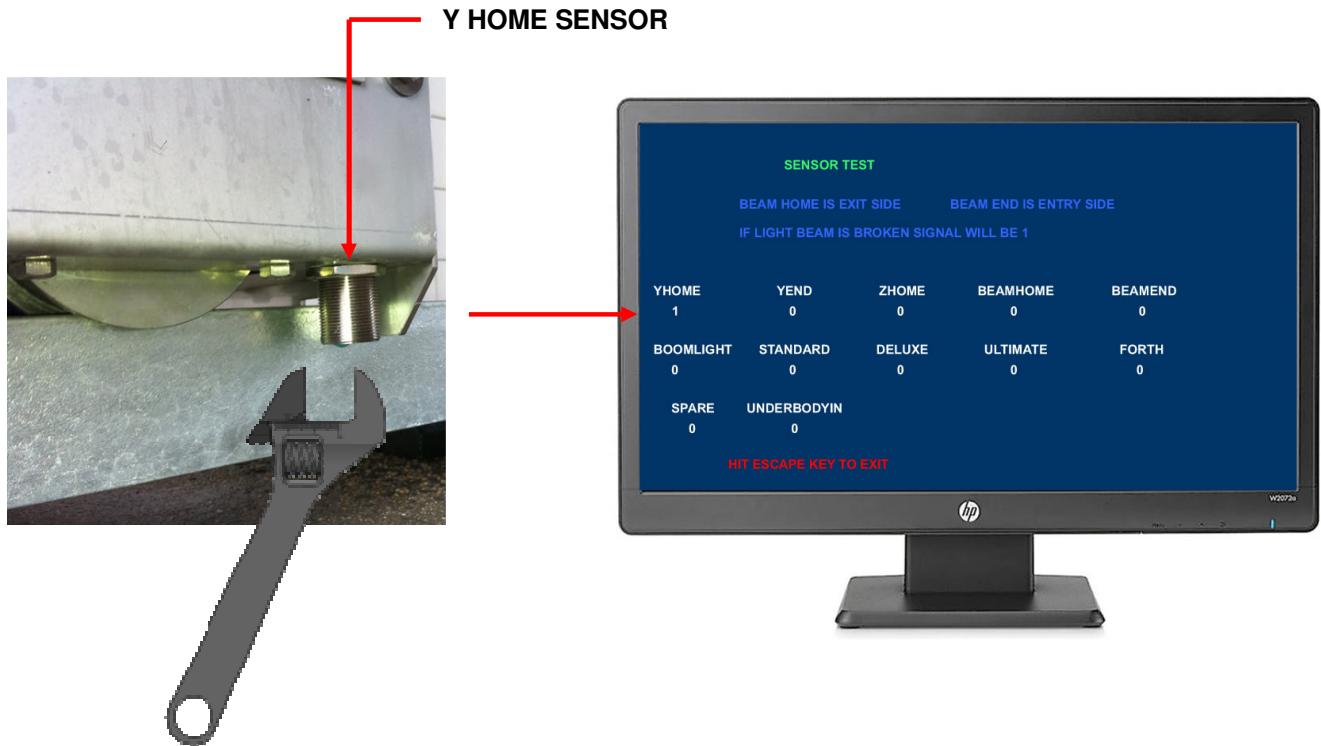
ULTIMATE

This is not a sensor but a test that you can do to ensure that the computer is receiving a wash signal from the validator when you select the top wash

FOURTH

This is not a sensor but a test that you can do to ensure that the computer is receiving a wash signal from the validator when you select the fourth wash if added to system.

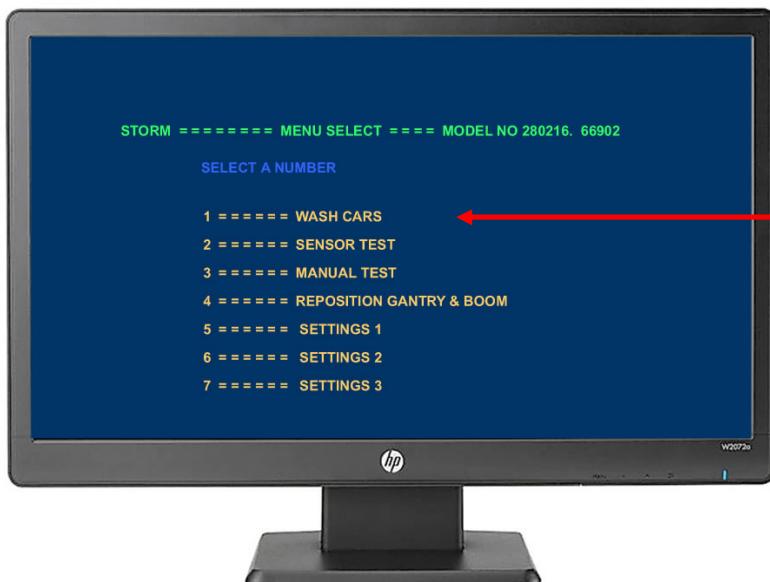
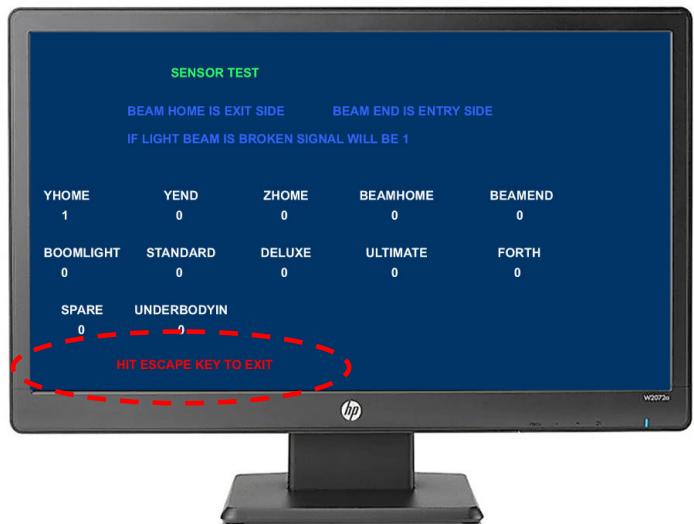
Sensor Test (Example)



- A. To test the YHOME sensor, start with gantry in the home position.
ie ready to wash a car.
- B. Then use a metal object (shifter works) and place it close to the sensor
- C. Check on the computer screen at label YHOME to see if the number has changed to a "1"
- D. When the metal object is removed from near the sensor the screen will display a "0" below the YHOME label.
- E. If the metal causes the signal at the computer screen to change from 0 to 1 then back to 0 when removed then the sensor is working correctly.
- F. If the metal object does not cause the signal at the computer screen to change from "0" to "1" and back then the sensor may be faulty.
- G. If the sensor appears faulty, change the sensor for a new one and repeat this test procedure.
- H. Once you have satisfactorily completed the sensor test and all sensors are working then you can close this test and return to the main menu.

Return to Wash Cars from Sensor Test

When sensor test is complete, return to the previous menu by hitting the **ESCAPE** key on the keyboard.



From this menu hit the **NUMBER 1** button on the keyboard to return to washing cars.

At this screen you are now ready to wash cars.



Boom Position Adjustment at GROUND

From the start menu,
press the
ESCAPE
key to enter the menu
selections



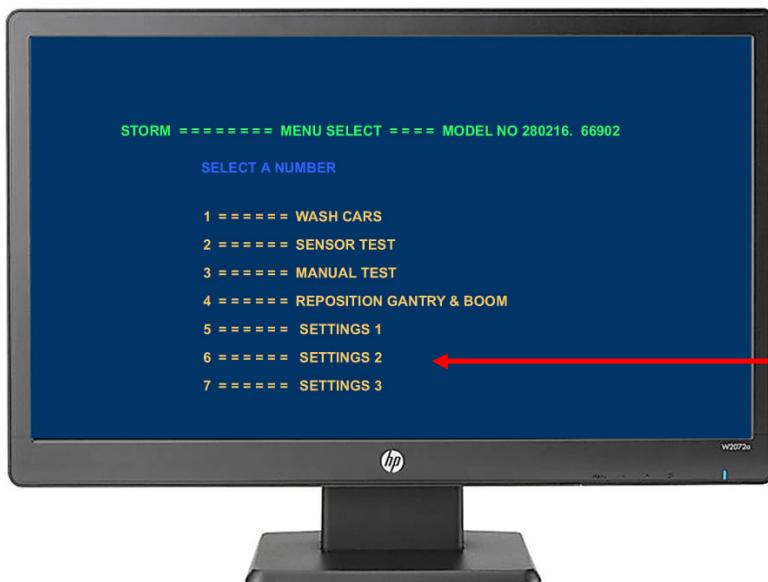
STORM ===== MENU SELECT ===== MODEL NO 280216. 66902

SELECT A NUMBER

- 1 ===== WASH CARS
- 2 ===== SENSOR TEST
- 3 ===== MANUAL TEST
- 4 ===== REPOSITION GANTRY & BOOM
- 5 ===== SETTINGS 1
- 6 ===== SETTINGS 2
- 7 ===== SETTINGS 3



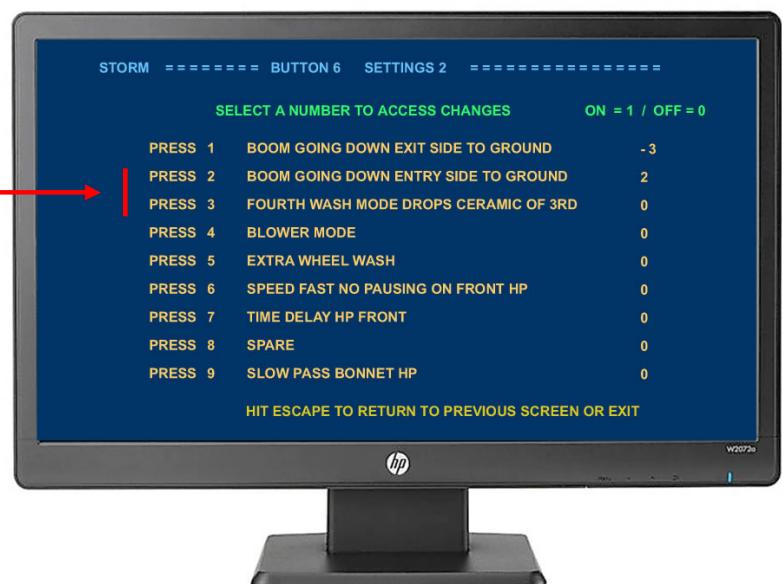
From this menu hit the
NUMBER 6
button on the keyboard to
select the reposition gantry
and boom function



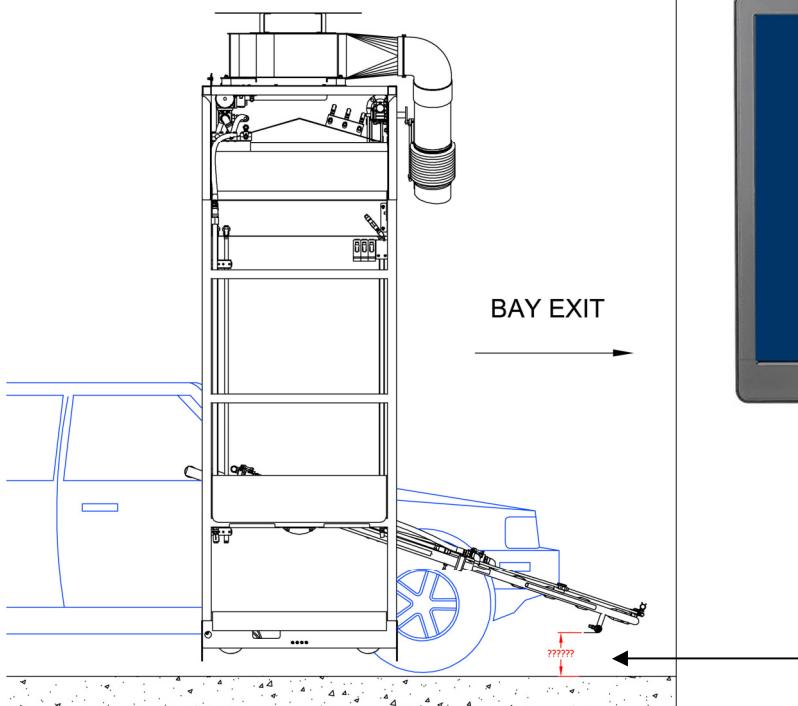
At this screen you
either press
Button 1
OR
Button 2
on the keyboard.



This will depend on
wether you are
adjusting the boom
at the
Entry or Exit
side of the bay



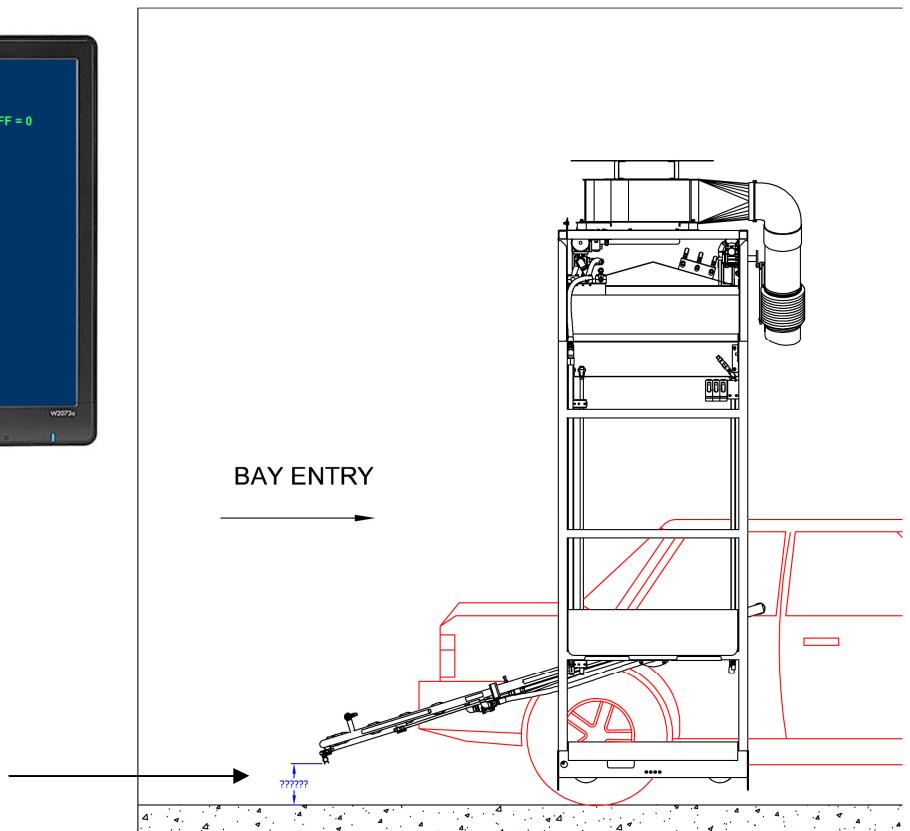
Boom Position Adjustment at GROUND



From the menu above, you press
Button 1
on the keyboard to set the
adjustment of the boom at the
Bay Exit Side (Front of Car)
See image on the left.



From the menu above, you press
Button 2
on the keyboard to set the
adjustment of the boom at the
Bay Entry Side (Back of Car)
See image on the right.



Boom Position Adjustment at GROUND

At this screen you have to input an amount of seconds, either

Extra seconds

OR

Less seconds

in order to change how long the boom travels towards the ground.

Example: 1

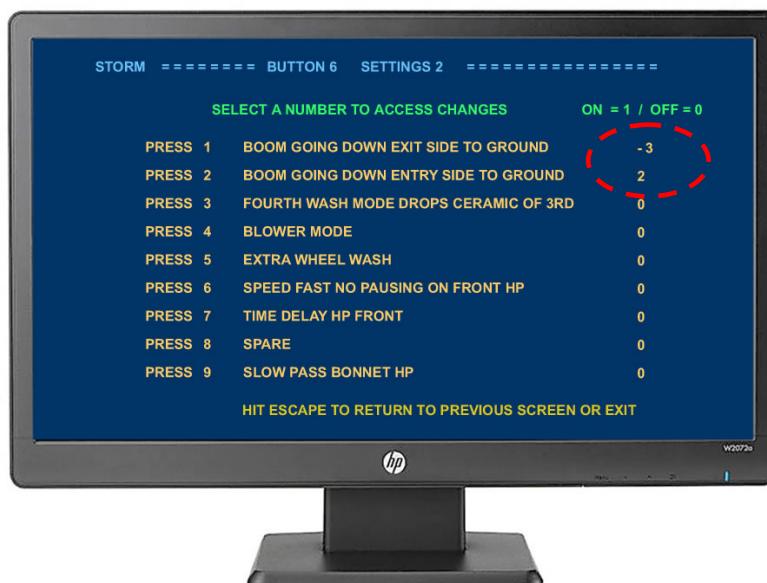
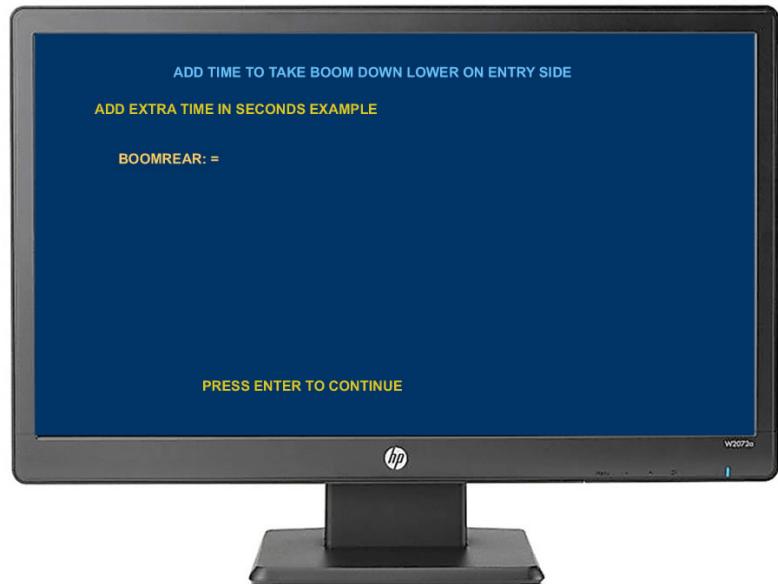
If the boom is too close or hitting the ground or floor of the bay, you need to remove or lessen the amount of seconds the boom travels towards the ground.

Ie: - 3

Example: 2

If the boom is not close enough to the ground or floor of the bay, you need to ADD a second or two to make the boom continue to move towards the ground.

Ie 2



Once you have adjusted the seconds as in the above step, it is recorded and displayed back on the Settings 2 page. See image on left.

In this example shown on the left, the boom has had 3 seconds REMOVED from its travel time when it moves towards the ground at the bay exit side.

It has also had 2 seconds ADDED to its travel time when it moves towards the ground at the bay entry side.