

# ULTRAX 12

## Top 4 Repairs and Terminology and Part Numbers




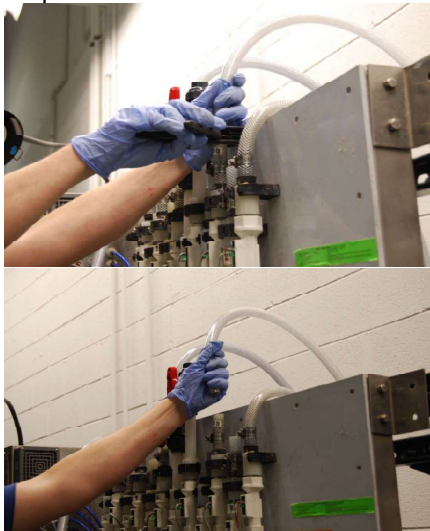
## Flow Switch Cap Repair and New True Union Ball Valve Install

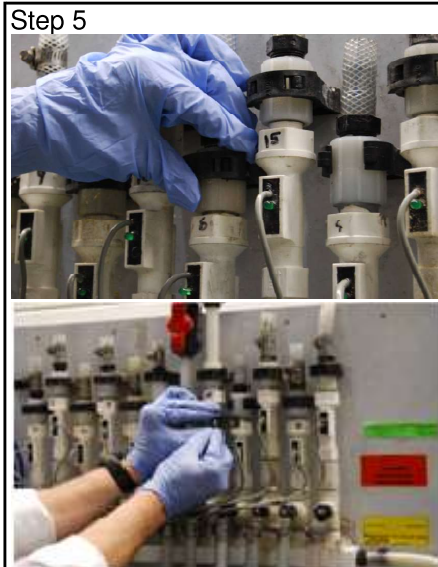
Revised	6/22/2010	Author	ULTRAX Kaizen Event		
Controlled	Version 2	Effective	2/1/2008		
		Expiration	N/A		

Related documents:

### Comments

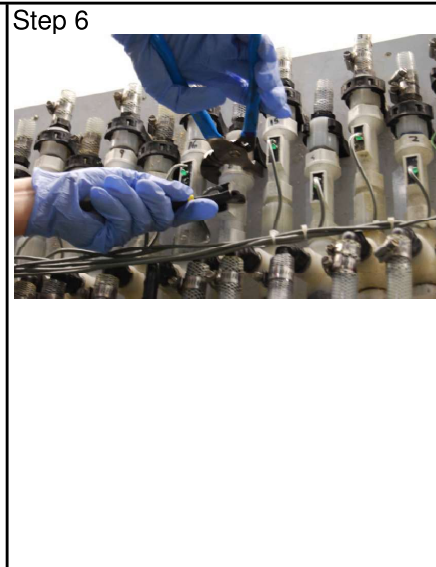
If the leak is occurring from the top of the flow switch, the flow switch O-Ring needs to be replaced or the cap maybe cracked. Proper PPE should be worn: safety glasses, gloves, and apron. Replace Cap and O-Ring when the washer is between loads or at the end of the day.

Step	Instructions	Step	Instructions
<p>Step 1</p> 	<p>Obtain an O-ring and new cap assembly prior to starting procedure.</p> <p>(IMG_3282)</p>	<p>Step 2</p>	<p>See instructions for new flow switch cap assembly.</p>
<p>Step 3</p>	<p>Follow proper lockout tagout procedure.</p>	<p>Step 4</p> 	<p><b>Caution: washer should be in hold/stop mode. There is potential for water to flush back from the washer when you cut the hose.</b></p> <p>Using the hose cutter, cut the hose just above the hose barb that is on top of the flow switch.</p> <p>(DSC_0432, DSC_0433)</p>



Remove the strap from the front of the cobra clamp.

(DSC\_0378, DSC\_544)



Use an adjustable crescent wrench to securely hold the base of the flow switch body.

(DSC\_0383)



Attention: there is a spring under the cap. While removing the cap, make sure you do not lose it.

(DSC\_0393)






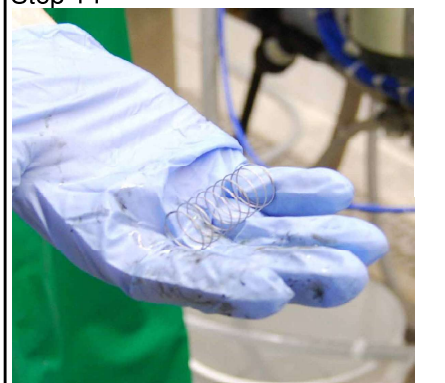







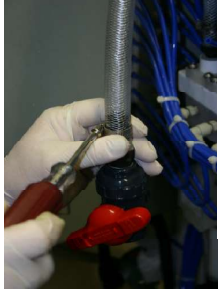
Continue to secure the body of the flow switch.



Use small channel locks while turning the cap to the right (clock wise).

Caution: because you can break the seal on the port seat of the washer diverter manifold, make sure the switch does not turn,

(DSC\_0383)

<p>Step 9</p> 	<p>Slowly remove the cap. Once it has been loosened, catch/remove the spring and place it in an easily accessible area. (DSC_0392)</p>	<p>Step 10</p> 	<p>Using a mini screwdriver, pry the O-ring off of the flow switch's upper threads.  (DSC_0398)</p>
<p>Step 11</p> 	<p>Wipe down the top of the flow switch.  (DSC_0399)</p>	<p>Step 12</p> 	<p>Replace the O-ring by gently pushing it over the threads.  (DSC_0401)</p>
<p>Step 13</p> 	<p>Install a new cap assembly into the cobra clamp.  (DSC_459)</p>	<p>Step 14</p> 	<p>Inspect the spring prior to inserting into the flow switch for any damage.  The spring should be in a single piece.  If damaged or broken, insert a new spring. (DSC_0395B)</p>

<p>Step 15</p> 	<p>Squeeze the spring and insert it between the cap assembly and top of the flow switch. (DSC_0425)</p>	<p>Step 16</p> 	<p>Securely holding the flow switch body at the base, hand tighten the cap.  (DSC_0463)</p>
<p>Step 17</p> 	<p>Obtain the true union valve assembly, and verify that the O-ring is properly set in the body of the valve.  <b>Attention: do not proceed without the O-ring being set properly .</b> (DSC_0479)</p>	<p>Step 18</p> 	<p>Use the CIP lube on the hose barb, which is attached to the true union ball valve. (IMG_3262)</p>
<p>Step 19</p> 	<p>Verify that the hose clamp is on the hose that is going to the washer before forcing hose onto the true union valve assembly. (IMG_3263)</p>	<p>Step 20</p> 	<p>Tighten the hose clamp using the proper size nut driver. (IMG_3264)</p>

<p>Step 21</p> 	<p>Reassemble and hand tighten the true union valve.</p> <p><b>Caution: over tightening will damage or crack the union nut.</b> (IMG_3265)</p>	<p>Step 22</p> 	<p>Verify that the true union valve is in the open position.</p> <p>(IMG_3266)</p>
<p>Step 23</p>	<p>Undo lockout tagout procedure.</p>	<p>Step 24</p>	<p>Restart the washer, and check for any leaks.</p>
<p><b>Comments</b></p>			

# Port Seat Leaks VI

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Related documents:

**Comments**

When changing the port seat, be cautious not to bump the adjacent flow switch. It's very easy to unseat the other port seat, which will create another leak. When replacing the port seat, use the new style port seat with the stainless steel band. Proper PPE is required: glasses, gloves, and apron.

Step	Instructions	Step	Instructions
Step 1	Follow lockout tagout procedure.	Step 2	Prepare and organize all of the tools and parts required for the job.  (DSC_0550)
Step 3	Release cobra clamp strap.  (DSC_0378, DSC_0544)	Step 4	When moving the retaining plate out of position, snip the cable ties to allow for easier access.  (DSC_0497)



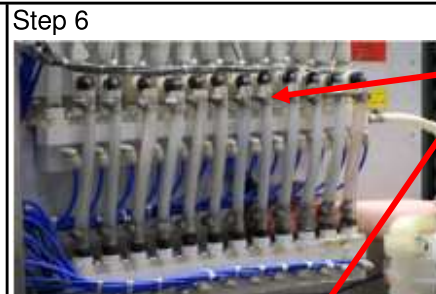


**Caution: washer should be in hold/stop mode. There is a potential for water to flush back from the washer when you cut the hose.**



Using the hose cutter, cut the hose just above the hose barb on top of the flow switch.

(DSC\_0432, DSC\_0433)

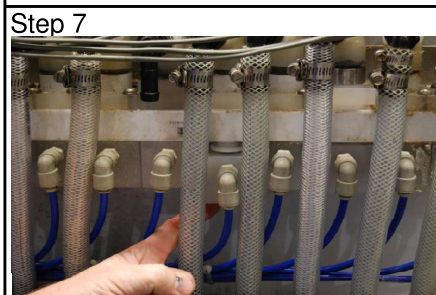


Use a 5/32" hex driver to loosen the four bolts from the diverter wash manifold retaining plate of leaking port seat.



If the retaining plate is attached to the mounting bracket, see removing retaining plate from mounting bracket.

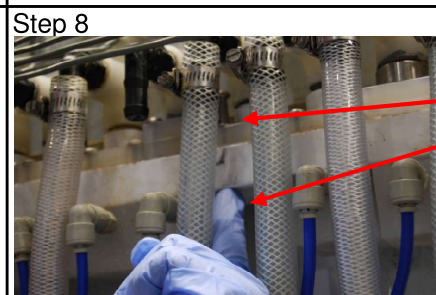
(DSC\_0311, DSC\_0543)



Remove the actuator from the washer diverter manifold.

Pull the actuator straight down.

(DSC\_0617, DSC\_0616)





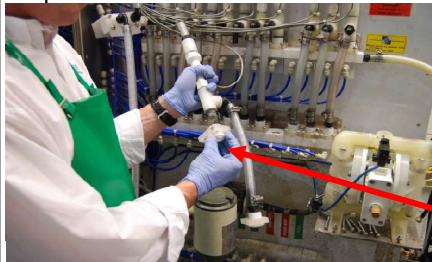
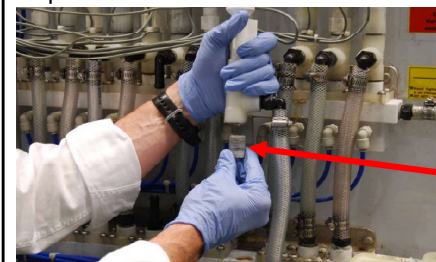









Using your fingers, push the screws up through the actuator hole.


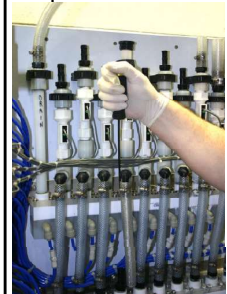




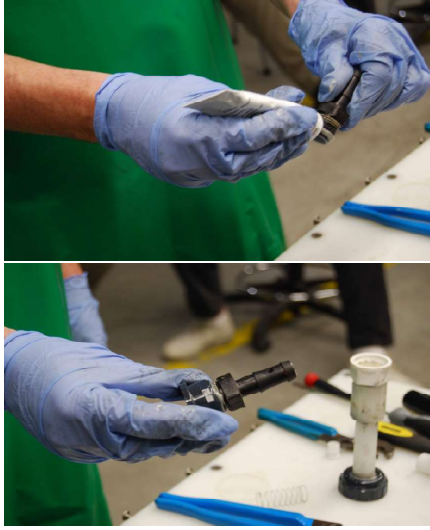

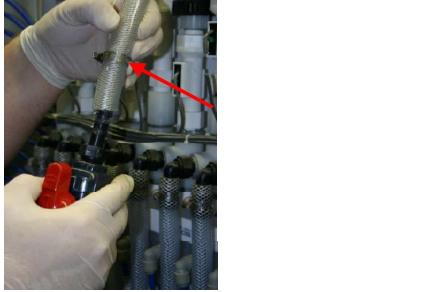
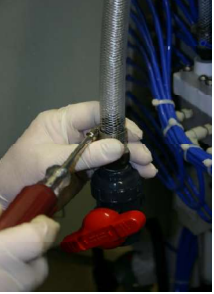

Remove the bolts from the retaining plates: needle nose pliers may help in the removal of the rear bolts.




(DSC\_0619, DSC\_504)

<p>Step 9</p> 	<p>While lifting assembly up, pull forward to snap out of the cobra clamp.</p> <p>Untangle from wires to allow for easier access.</p> <p>(DSC_0513)</p>	<p>Step 10</p> 	<p>Pull the flow switch assembly under and in front of the wires without tearing the remaining wires out of the remaining flow switches. (DSC_0514)</p>
<p>Step 11</p> 	<p>Using two large channel locks, remove the hose barb from the top of the flow switch.</p> <p>(DSC_0562)</p>	<p>Step 12</p> 	<p>Take the two large channel locks and place one on the tee and one on the port seat.</p> <p>(DSC_0516)</p>
<p>Step 13</p> 	<p>Proceed to loosen the port seat from the tee.</p> <p>Discard port seat and return the retaining plate to Spindle Technologies.</p> <p>(DSC_0518)</p>	<p>Step 14</p> 	<p>Remove the 1/2" X close nipple using a channel lock if it is still in the tee.</p> <p>Discard 1/2" X close nipple.</p> <p>(DSC_0518,DSC_0520)</p>

<p>Step 15</p>  	<p><b>Warning: do not use a wrench. It will ruin the threads.</b></p> <p>Silaprene the new 1/2" X close nipple on the tee side only, and insert a finger tight into the tee.</p> <p>(DSC_0522,DSC_0523)</p>	<p>Step 16</p> 	<p>Attach the new style port seat with retaining plate to the other end of the 1/2" X close nipple. Hand tighten.</p> <p>No sealant is required on port seats with stainless steel band.</p> <p>(DSC_0528)</p>
<p>Step 17</p> 	<p>Using two large channel locks, tighten until snug.</p> <p>(DSC_0530)</p>	<p>Step 18</p> 	<p>Gently move the flow switch assembly back behind the wires without pulling out the other flow switch wires.</p> <p>(DSC_0534b)</p>
<p>Step 19</p> 	<p>Place the flow switch assembly back into the cobra clamp.</p> <p>(IMG_3246)</p>	<p>Step 20</p> 	<p><b>Caution: do not force actuator up into the manifold. There is a lip that is the seal and can be damaged.</b></p> <p>Reinsert the actuator back into the washer diverter manifold. (IMG_3249)</p>

<p>Step 21</p> 	<p>Reinsert the bolts loosely into the retaining plate.</p> <p>If you lose the washer, do not worry about looking for it. (IMG_3255)</p>	<p>Step 22</p> 	<p>Use a 5/32" hex driver to tighten the bolts in a diagonal manner until snug. Give the bolts one extra 1/2" turn.</p> <p>This allows the seat to properly sit on the Teqcom manifold. (IMG_3256)</p>
<p>Step 23</p> 	<p>Reinstall the cobra clamp strap. (IMG_3252)</p>	<p>Step 24</p> 	<p><b>Caution: do not lose the O-ring.</b></p> <p>Obtain the 1/2" true union ball valve, and remove the union nut from one of the ends without losing the O-ring. (IMG_3260)</p>
<p>Step 25</p> 	<p>Silaprene the threads on one end of the 1/2" X 3" nipple, and insert and thread into the valve union nut that was removed in the previous step. Thread the two together until hand tight. Using large channel locks, give it a half turn. (DSC_0437)</p>	<p>Step 26</p> 	<p>Verify that the retaining nut is in correct position to properly connect to the valve. (DSC_0439)</p>

<p>Step 27</p> 	<p>Silaprene the other end of the 1/2" X 3" nipple, and insert and thread into the flow switch coupling. Use the small channel locks to securely hold the flow switch. Proceed to thread until hand tight. Using the large channel locks, add a 1/2" turn. (DSC_0442)</p>	<p>Step 28</p> 	<p>Silaprene the appropriate sized new hose barb. Thread the hose barb into the other end of the true union valve. Proceed to thread until hand tight. Using the large channel locks, add a 1/2" turn. (DSC_0452, DSC_0454)</p>
<p>Step 29</p> 	<p>Liberally CIP lube the hose barb. (IMG_3262)</p>	<p>Step 30</p> 	<p>Verify that the hose clamp is on the hose prior to forcing the hose onto the hose barb. (IMG_3263)</p>
<p>Step 31</p> 	<p>Tighten the hose clamp using a proper size nut driver. (IMG_3264)</p>	<p>Step 32</p> 	<p><b>Caution: do not proceed without O-ring being seated properly.</b></p> <p>Verify that the O-ring is still properly seated in body of valve.</p>

<p>Step 33</p> 	<p><b>Warning: over tightening will damage or crack the union nut.</b></p> <p>Reassemble, and hand tighten the true union valve. (IMG_3265)</p>	<p>Step 34</p> 	<p>Verify that the true union valve is in the open position.  (IMG_3266)</p>
<p>Step 35</p>	<p>Undo lockout tagout procedure.</p>	<p>Step 36</p>	<p>Restart the washer, and check for any leaks.</p>
<p>Step 37</p> 	<p>Cable tie the flow switch wires for neatness, and wipe down any debris off of the ULTRAX.  (IMG_3275)</p>		
<p><b>Comments</b></p>			




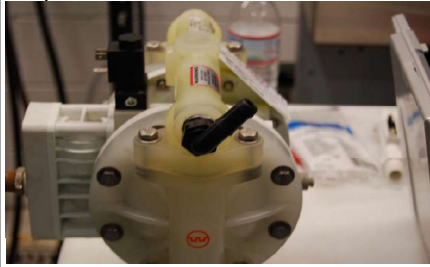




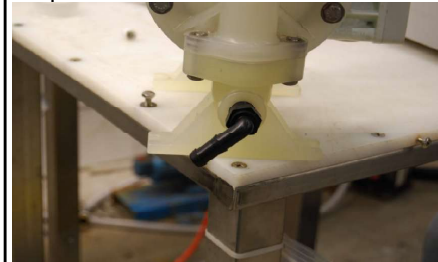




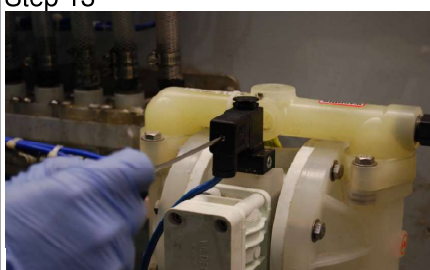
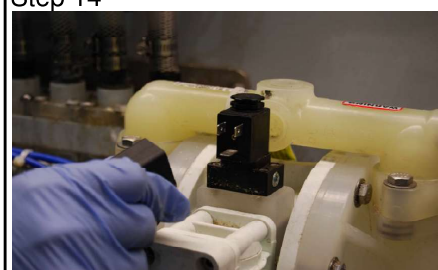
# Replacing the DD Pump





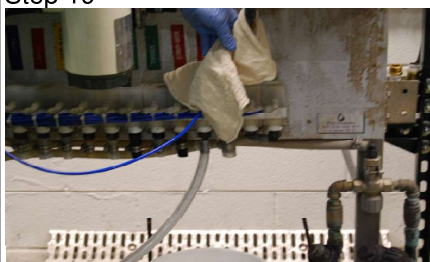


Revised	6/22/2010	Author	ULTRAX Kaizen Event		
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		Expiration	N/A		







Related documents:



## Comments

Step	Instructions	Step	Instructions
Step 1	Locate emergency eye wash station.	Step 2 	Prepare new pump. Wrap the air bush with Teflon tape. After hand tightening, give one final half turn. (DSC_0670)
Step 3 	Wrap the air quick disconnect with Teflon tape (DSC_0674)	Step 4 	Put the new muffler on by hand tightening only. (DSC_0678)
Step 5 	Identify the position of the hose barb on the old pump. (DSC_0681)	Step 6 	Siliprene and tighten the hose barb to the same position as the old pump. (DSC_679)

<p>Step 7</p> 	<p>Repeat. (DSC_0680)</p>	<p>Step 8</p> 	<p>Attention: wear a face shield, glasses, and gloves while identifying the last chemical that went through the pump. (DSC_083)</p>
<p>Step 9</p> 	<p>Disable the airflow to the system and disconnect the air lines quick connect. (DSC_0647)</p>	<p>Step 10</p> 	<p>Make sure all of the washers on the wash floor are on hold and that the power to the ULTRAX is off. (Ellis Panel 1)</p>
<p>Step 11</p> 	<p>Assuming that the pump is under pressure, place a bucket underneath to collect any flow meter discharge. (DSC_0640)</p>	<p>Step 12</p> 	<p>Disconnect air from the back of the pump. (DSC_0651)</p>
<p>Step 13</p> 	<p>Using a small screw driver, unscrew the electrical connector. (DSC_0652)</p>	<p>Step 14</p> 	<p>After unscrewing the connector, pull the electrical connector off, and keep it. (DSC_0653)</p>

<p>Step 15</p> 	<p>Locate a 7/16" socket wrench. Loosen and take off the four nuts and four washers located at the pumps feet. (DSC_0654)</p>	<p>Step 16</p> 	<p>Using a shop towel to shield yourself, cut the hose at the lowest point using black tube cutters. (DSC_0658)</p>
<p>Step 17</p> 	<p>Using the black tube cutters, position the tube cutters at the highest point of the hose. (DSC_0660)</p>	<p>Step 18</p> 	<p>Use the shop towel to shield yourself and cut the hose at the highest point. (DSC_0662)</p>
<p>Step 19</p> 	<p>Drain all of the chemicals out. (DSC_0659)</p>	<p>Step 20</p> 	<p>Lift pump off of the base. (DSC_664)</p>
<p>Step 21</p> 	<p>Drop the pump into the five gallon bucket. (DSC_668)</p>	<p>Step 22</p>	<p>Remove the hose clamps. Take a box cutter and cut the remaining hose off of the two hose barbs.</p>

<p>Step 23</p> 	<p>Place the new pump on the base of the ULTRAX unit, and tighten the nuts and washers. (DSC_654)</p>	<p>Step 24</p> 	<p>Connect the acurex nose to the discharge flow meter at the inlet of the pump.(DSC_688) Applying CIP lube to the fittings will make it easier to push the hose onto the hose barb.</p>
<p>Step 25</p> 	<p>Connect the nylobrad to the discharged end of the pump at the inlet of the diverter. Applying CIP lube to the fittings will make it easier to push the hose onto the hose barb. (DSC_695)</p>	<p>Step 26</p>	<p>Tighten all the hose clamps. (DSC_0638)</p>
<p>Step 27</p> 	<p>Reconnect the air line to the back of the pump. (DSC_699)</p>	<p>Step 28</p> 	<p>Reconnect the electrical connector on the front of the pump and tighten set screw. (DSC_652)</p>
<p>Step 29</p> 	<p>Reconnect the system air. (DSC_646)</p>	<p>Step 30</p>	<p>Turn power back on.</p>

<p>Step 31</p> 	<p>Restart washers. (Ellis Panel 1)</p>	<p>Step 32</p> 	<p>If the pump is less than one-year-old, clean the pump and send it back to Spindle Technologies with details regarding how long it was in service or in the trash. (DSC_0668)</p>
<p>Step 33</p>	<p>Enter date of replacement into chemwatch.</p>		
<p><b>Comments</b></p>			











# Flow Switch Replacement

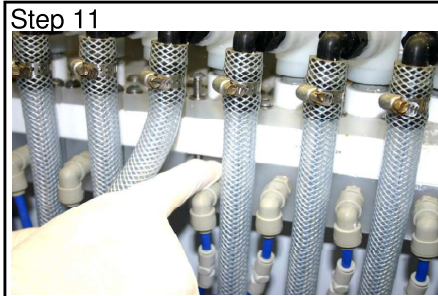
Revised	6/22/2010	Author	ULTRAX Kaizen Event		
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		Expiration	N/A		

Related documents:

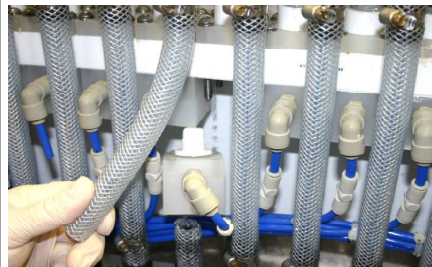
## Comments

Step	Instructions	Step	Instructions
Step 1	<p><b>Make sure power is off.</b></p> <p>Follow proper lockout tagout procedure.</p>	Step 2	<p>See instructions on building a new flow switch assembly.</p>
<p>Step 3</p> 	<p>Release the cobra clamp strap.</p> <p>(DSC_0378)</p>	<p>Step 4</p> 	<p><b>Warning: washer should be in hold/stop mode. There is potential for water to flush back from the washer when you cut the hose.</b></p> <p>Using the hose cutter, cut the hose that is just above the hose barb on top of the flow switch.</p> <p>(IMG_3227)</p>

<p>Step 5</p> 	<p>Snip cable ties to allow for easier access while moving the retaining plate out of position.</p> <p>(IMG_3229)</p>	<p>Step 6</p> 	<p><b>Attention: make sure the power off on the ULTRAX unit.</b> As close as possible to the switch, snip the wire of the flow switch being replaced.</p>
<p>Step 7</p> 	<p>Cut the hose using the hose cutter at the connection on the bottom of the diverter manifold bar.</p> <p>(IMG_3276)</p>	<p>Step 8</p> 	<p>Remove the hose clamp from the flush manifold with the nut driver.</p> <p>(IMG_3277)</p>
<p>Step 9</p> 	<p>Carefully slice the hose at the flush manifold barb so you do not damage the hose barb.</p> <p><b>Caution: cutting too deep will cause fluid to leak from the hose barb.</b></p> <p>(IMG_3278)</p>	<p>Step 10</p> 	<p>Using a 5/32" hex driver, loosen the four bolts from the washer diverter manifold retaining plate of the flow switch being replaced.</p> <p>If the retaining plate is attached to the mounting bracket, see removing retaining plate from mounting bracket instructions. (IMG_3235)</p>

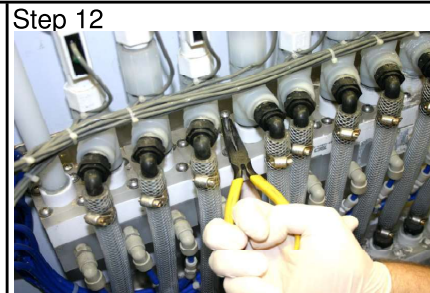


Remove the actuator from the washer diverter manifold.



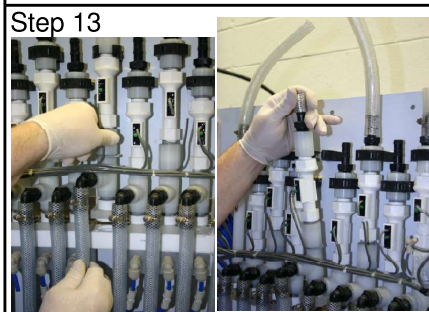
Pull the actuator straight down.

(IMG\_3236, IMG\_3237)



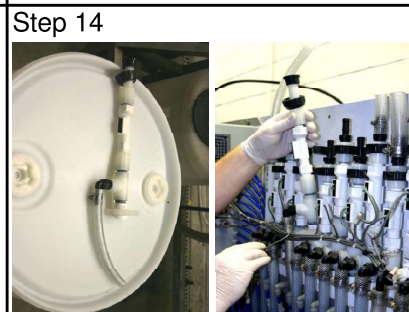
Using your fingers, push the screws up through the actuator hole.

Remove the bolts from the retaining plates: needle nose pliers may help in the removal of the rear bolts. (IMG\_3239)






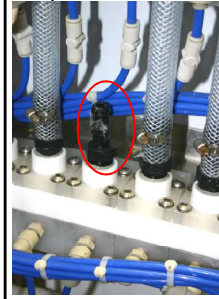



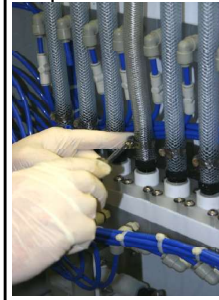



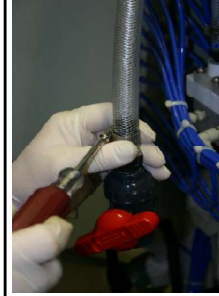
**Caution: during removal, make sure not to snag or pull on other flow switch wires.**




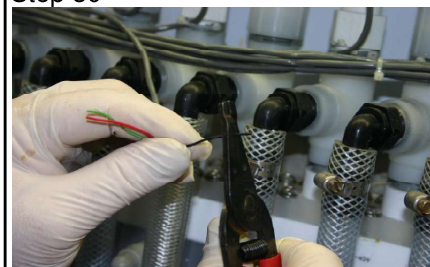
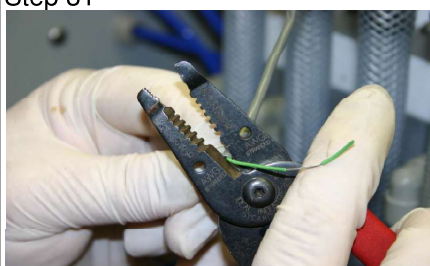
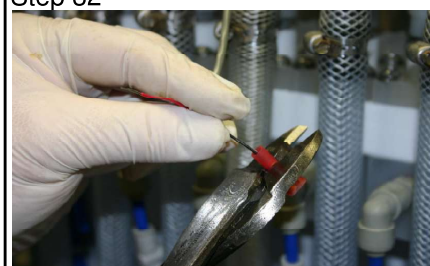
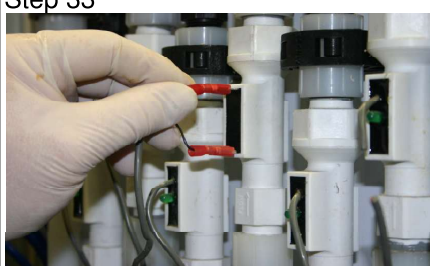

While lifting assembly upright, pull forward to snap out of cobra clamp, and put aside to reuse parts. (IMG\_3240, IMG\_3241)




Gently insert the new flow switch assembly behind the wires without pulling out the other flow switch wires. (IMG\_3253, IMG\_3254)

<p>Step 15</p> 	<p>Place flow switch assembly back into the cobra clamp.</p> <p>(IMG_3246)</p>	<p>Step 16</p> 	<p><b>Attention: do not force actuator up into the manifold. There is a lip that is the seal and can be damaged.</b></p> <p>Reinsert the actuator back into the washer diverter manifold.</p> <p>(IMG_3249)</p>
<p>Step 17</p> 	<p>Reinsert the bolts loosely into the retaining plate.</p> <p>If you lose a washer, do not worry about looking for it.</p> <p>(IMG_3255)</p>	<p>Step 18</p> 	<p>Use a 5/32" hex driver to tighten the bolts in a diagonal manner until they are snug. Give the bolts one extra 1/2" turn.</p> <p>This allows the seat to properly set on the Teqcom manifold. (IMG_3256)</p>
<p>Step 19</p> 	<p>Reinstall the cobra clamp strap.</p> <p>(IMG_3252)</p>	<p>Step 20</p> 	<p>CIP lube the hose barb liberally.</p> <p>(IMG_3257)</p>

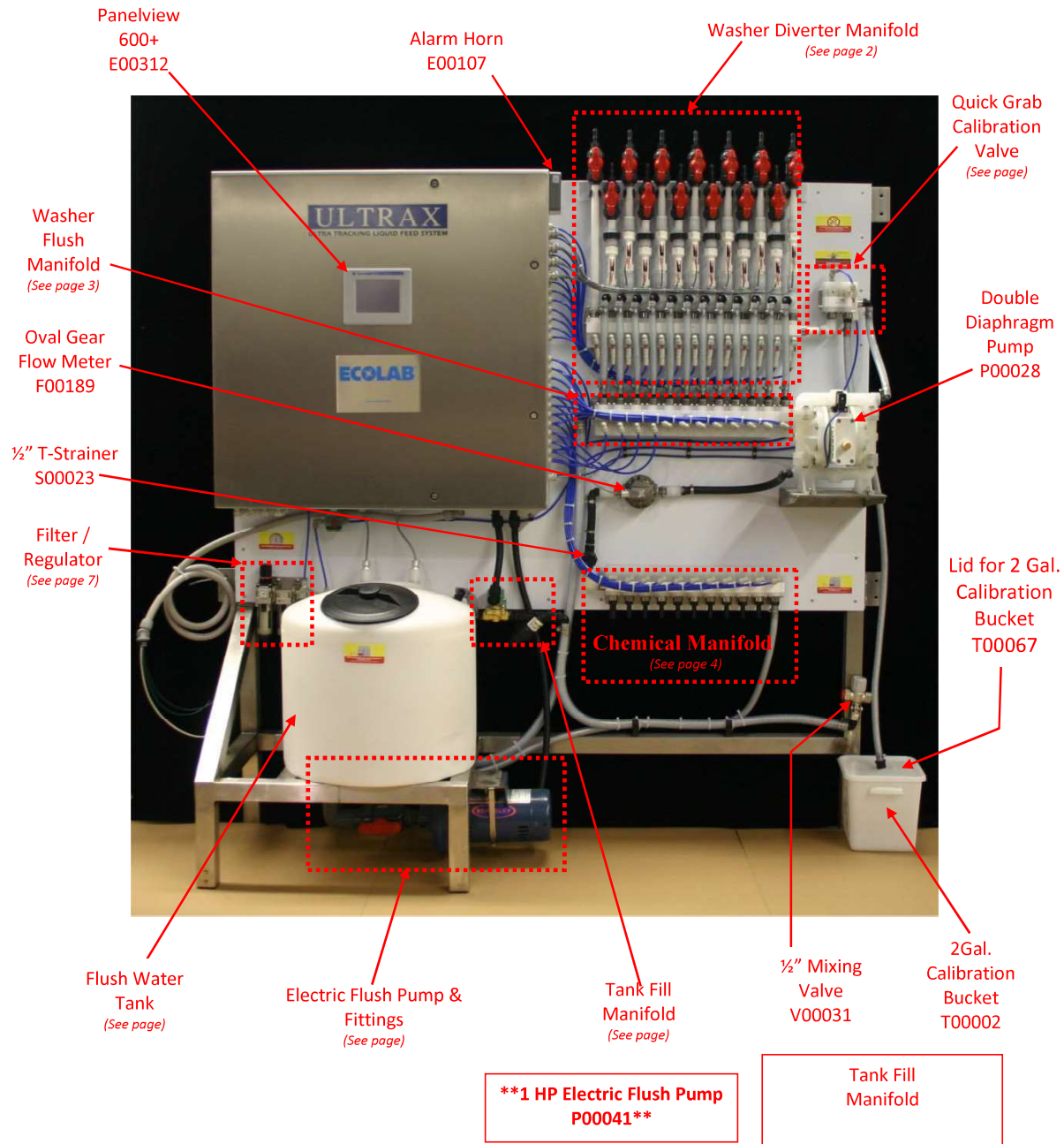
<p>Step 21</p> 	<p>Prior to forcing the hose onto the flush manifold barb, verify that the hose clamp is on the bottom end of the hose, attached to the new flow switch assembly. (IMG_3258)</p>	<p>Step 22</p> 	<p>Tighten the hose clamp using a proper size nut driver.</p> <p>(IMG_3259)</p>
<p>Step 23</p> 	<p><b>Caution: do not proceed without the O-ring being set properly.</b> Obtain the true union valve assembly and verify that the O-ring is still properly seated in the body of the valve. (IMG_3260)</p>	<p>Step 24</p> 	<p>CIP lube the hose barb attached to the true union ball valve.</p> <p>(IMG_3262)</p>
<p>Step 25</p> 	<p>Prior to forcing the hose onto the true union valve assembly, verify that the hose clamp is on the hose that is going to the washer.</p> <p>(IMG_3263)</p>	<p>Step 26</p> 	<p>Tighten the hose clamp using a proper size nut driver.</p> <p>(IMG_3264)</p>

<p>Step 27</p> 	<p>Reassemble the true union valve. Make sure you hand tighten only.</p> <p><b>Caution: over tightening will damage or crack the union nut.</b></p> <p>(IMG_3265)</p>	<p>Step 28</p> 	<p>Verify that the true union valve is in the open position.</p> <p>(IMG_3266)</p>
<p>Step 29</p> 	<p>Using the 16 gauge wire stripper, strip the wire sheath approximately 2". This allows for easier crimping.</p> <p>(IMG_3268)</p>	<p>Step 30</p> 	<p>Using the 24 gauge notch, strip approximately 1/2" off of the red and black wire.</p> <p>(IMG_3269)</p>
<p>Step 31</p> 	<p>Cut the green wire to the end of the gray sheath.</p> <p>(IMG_3271)</p>	<p>Step 32</p> 	<p>Grab a straight spade connector and insert the black wire into the spade connector. Crimp wire. Repeat the step for red wire.</p> <p>(IMG_3272)</p>
<p>Step 33</p> 	<p>Connect the spade connectors onto the new flow switch. It does not matter which color wire goes on which terminal.</p> <p>(IMG_3273)</p>	<p>Step 34</p> 	<p>Gently bend the wires down.</p> <p>(IMG_3274)</p>

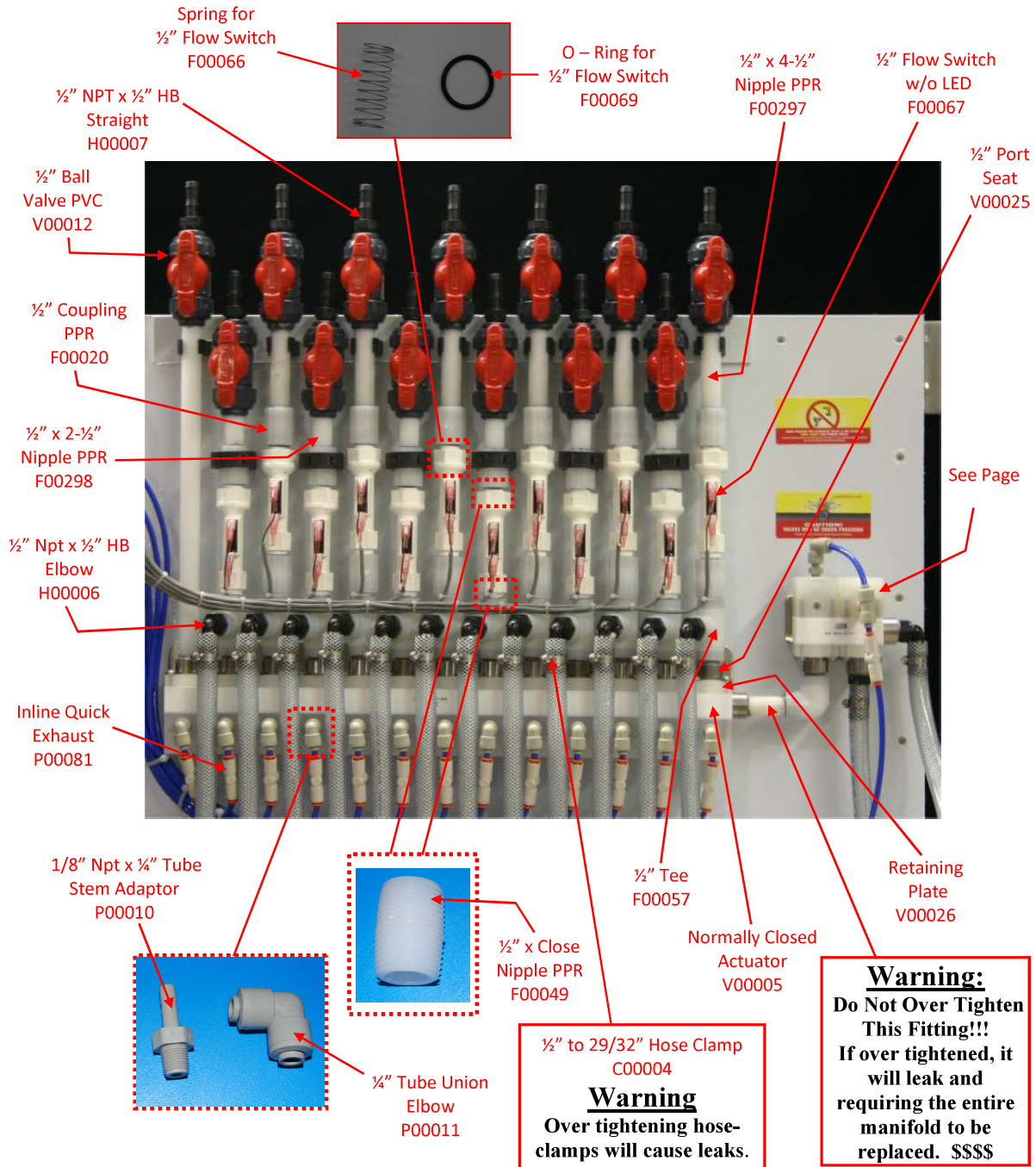
Step 35	Undo lockout tagout procedure.	Step 36	Restart the washer, and check for any leaks.
<p>Step 37</p> 	<p>Cable tie flow switch wires for neatness, and wipe down any debris off of the ULTRAX.</p> <p>(IMG_3275)</p>		
<p><b>Comments</b></p>			

# Ultrax 12

## Terminology and Part Numbers



# Washer Diverter Manifold



# Washer Flush Manifold

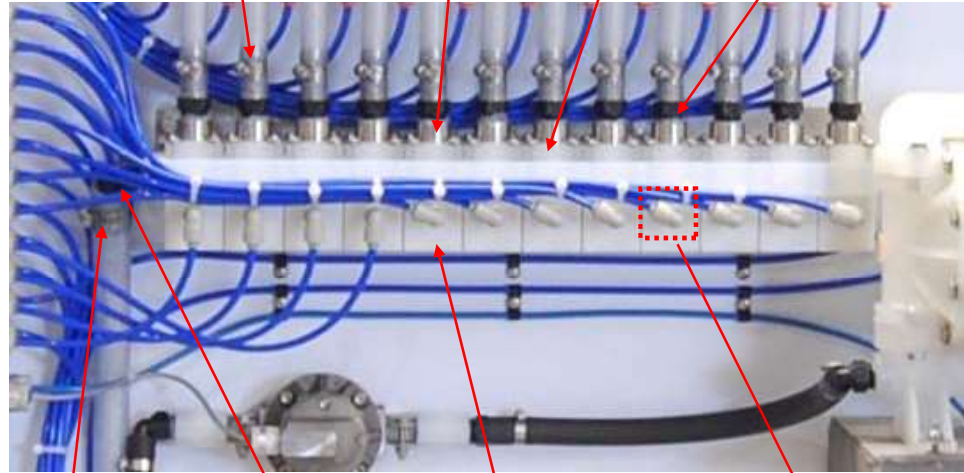
1/2" to 29/32" Hose Clamp  
C00004

**Warning**  
Over tightening hose-clamps will cause leaks.

1/2" Port Seat  
V00025

Retaining Plate  
V00026

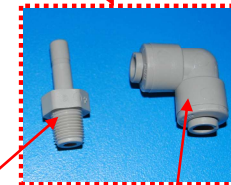
1/2" NPT x 1/2" HB  
Straight  
H00007



11/16" x 1-1/4"  
Hose Clamp  
1/2" Wide Band  
C00005

1/2" NPT x 3/4" HB  
Elbow  
H00009

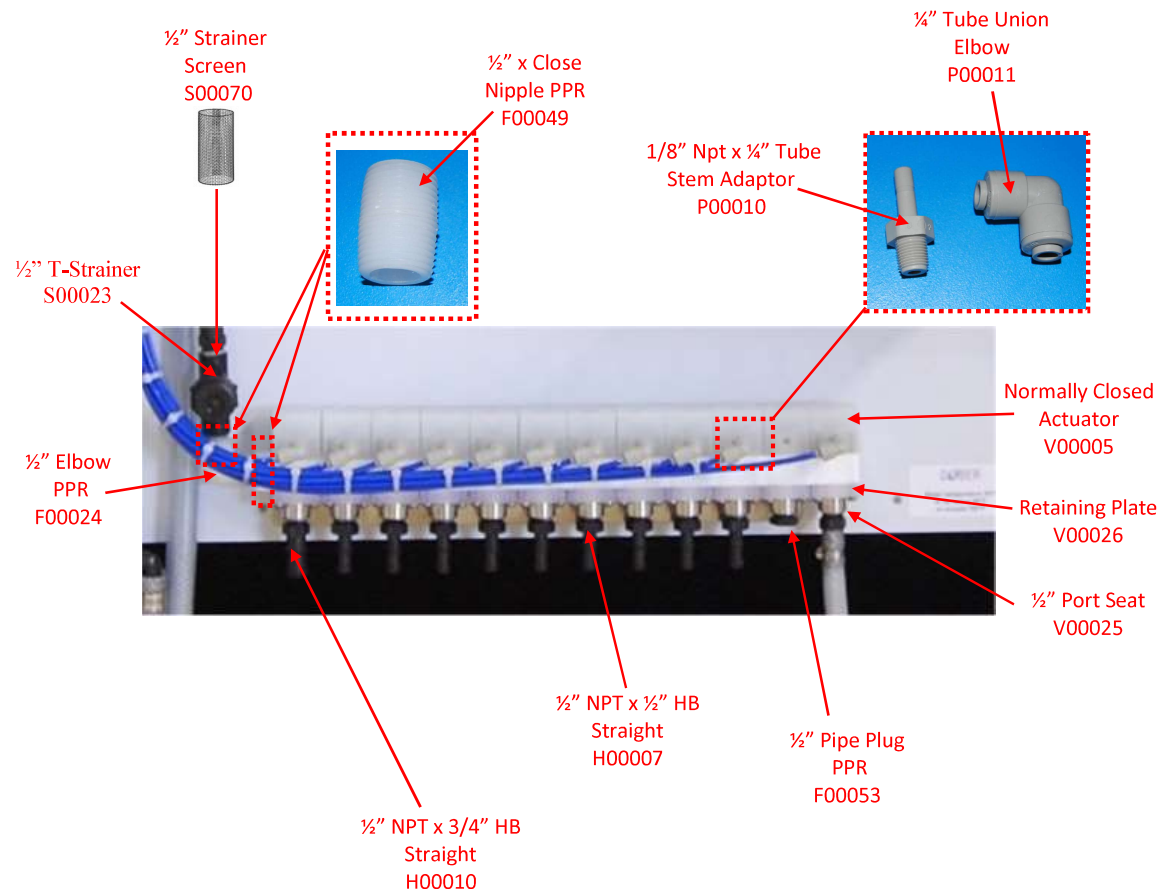
Normally Closed  
Actuator  
V00005



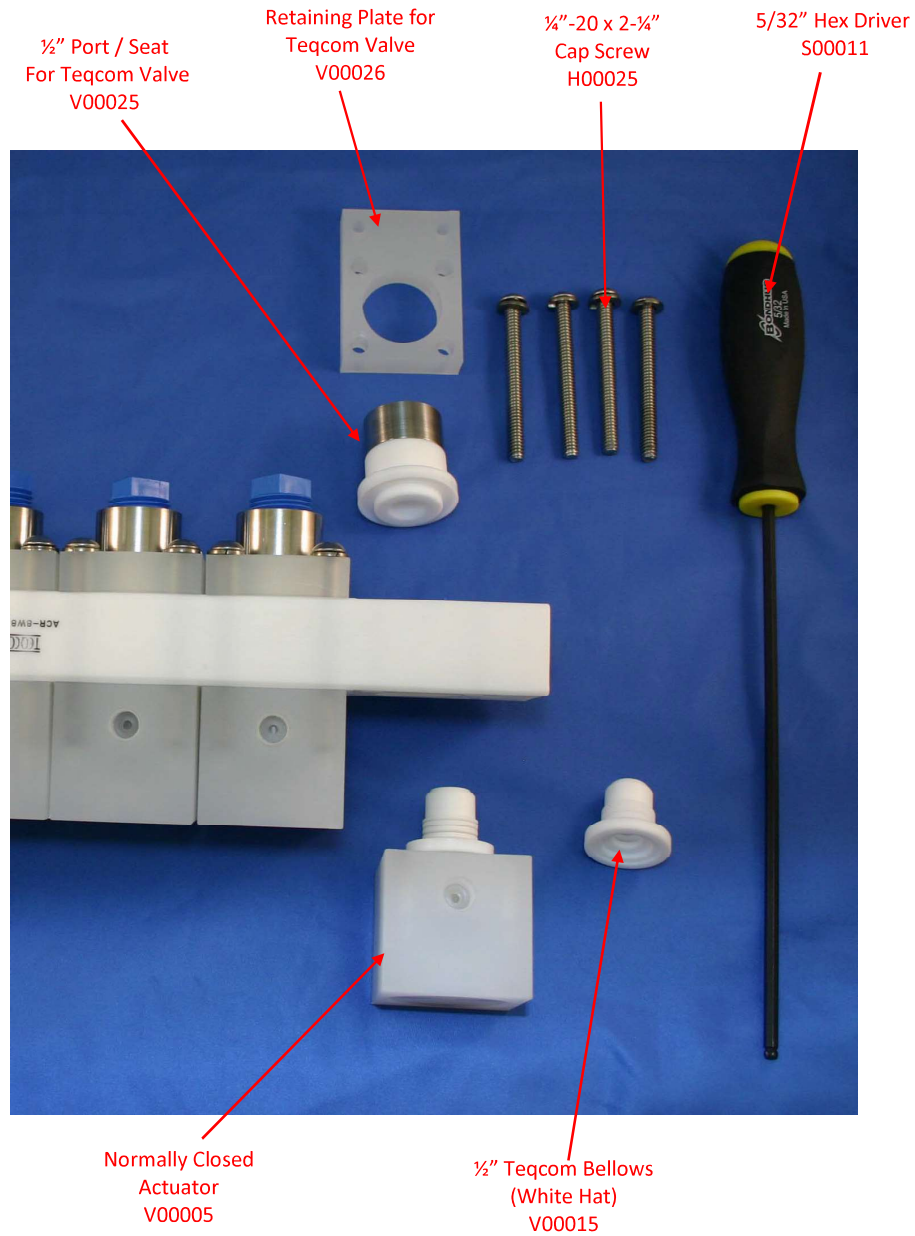
1/8" Npt x 1/4" Tube  
Stem Adaptor  
P00010

1/4" Tube Union  
Elbow  
P00011

# Chemical Manifold

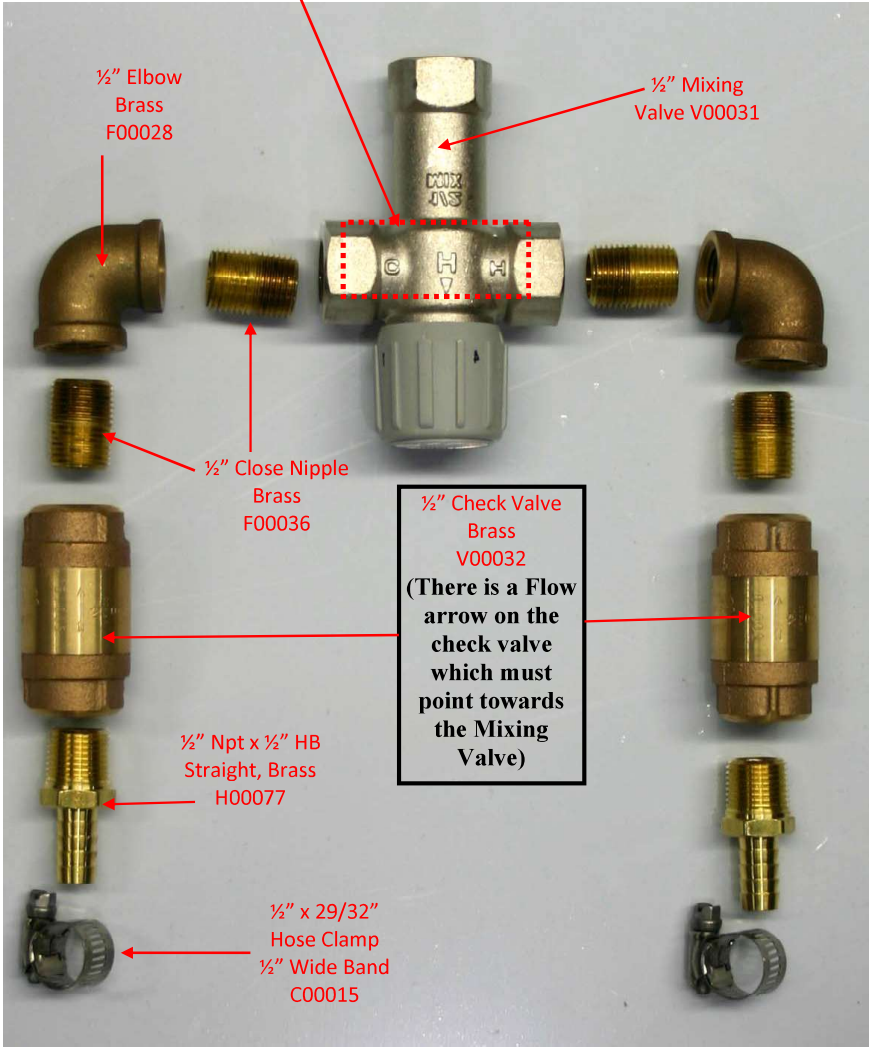


# Exploded View of a Teqcom Valve

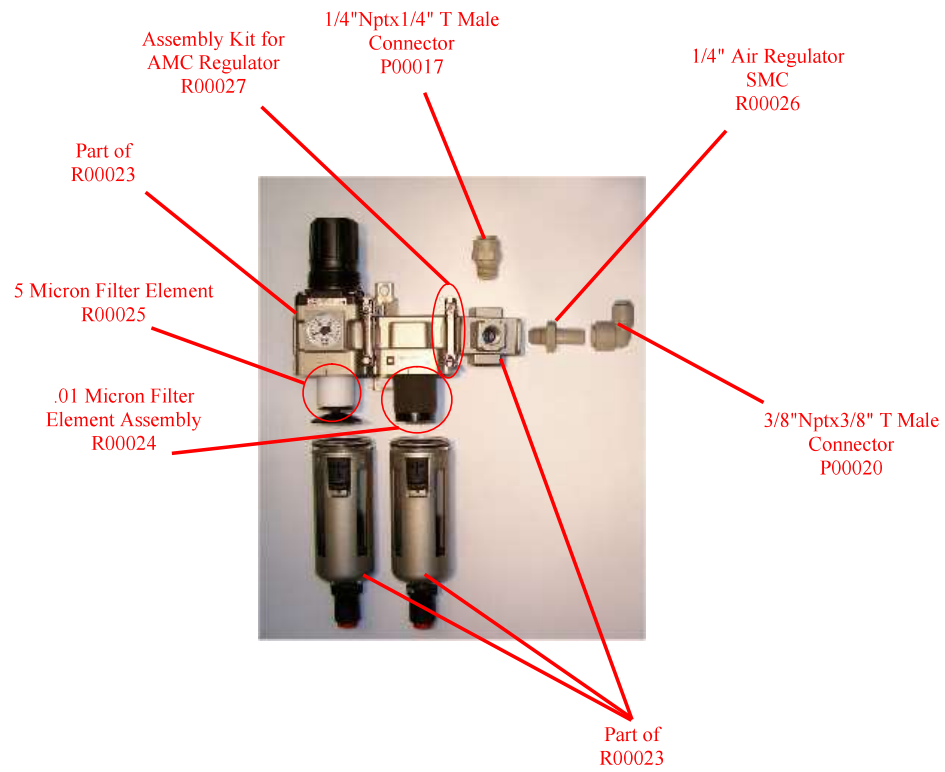


# Mixing Valve

**Note the C & H on the valve**  
C is for the Cold Water Connection  
&  
H is for the Hot Water Connection.



# Filter / Regulator

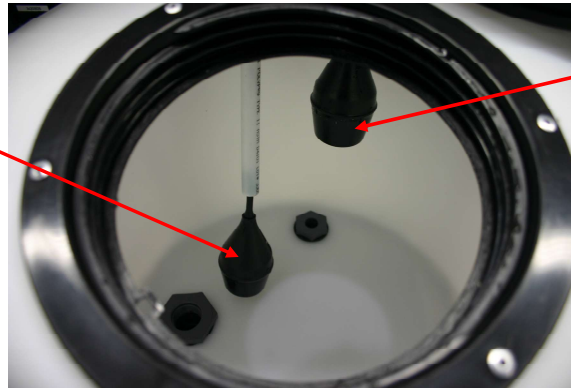


1/4" SMC Filter Regulator Combo R00023

## Flush Tank

**Low Level Tank  
Float  
F00062**

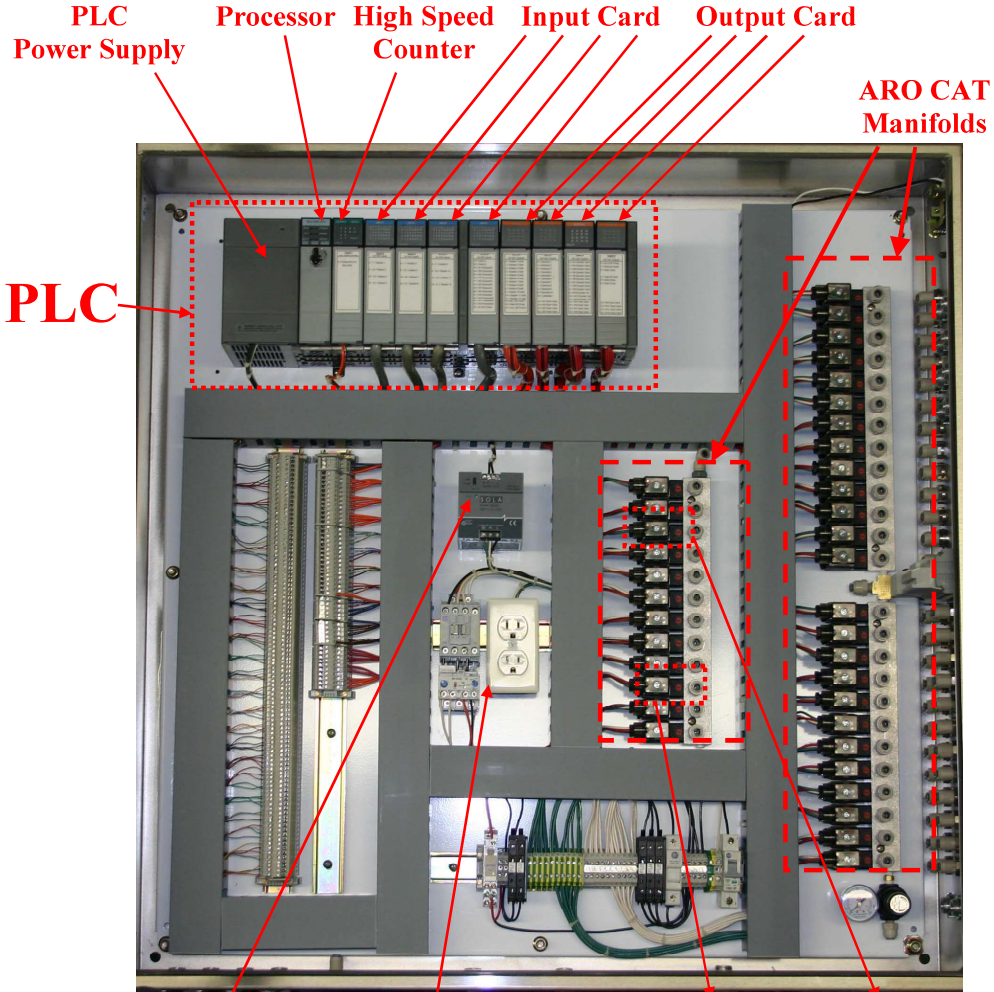
**This Float is for  
out of water  
alarm only! Has  
nothing to do  
with the filling  
of the tank.**



**High Level Tank  
Float  
F00062**

**This Float  
controls the  
ON / OFF  
of the tank fill  
valve.**

# Control Cabinet



**PLC**

**PLC Power Supply**

**Processor**

**High Speed Counter**

**Input Card**

**Output Card**

**ARO CAT Manifolds**

**24 VDC Power Supply E00281**

**Warning:**  
This outlet is for charging a Laptop Only!

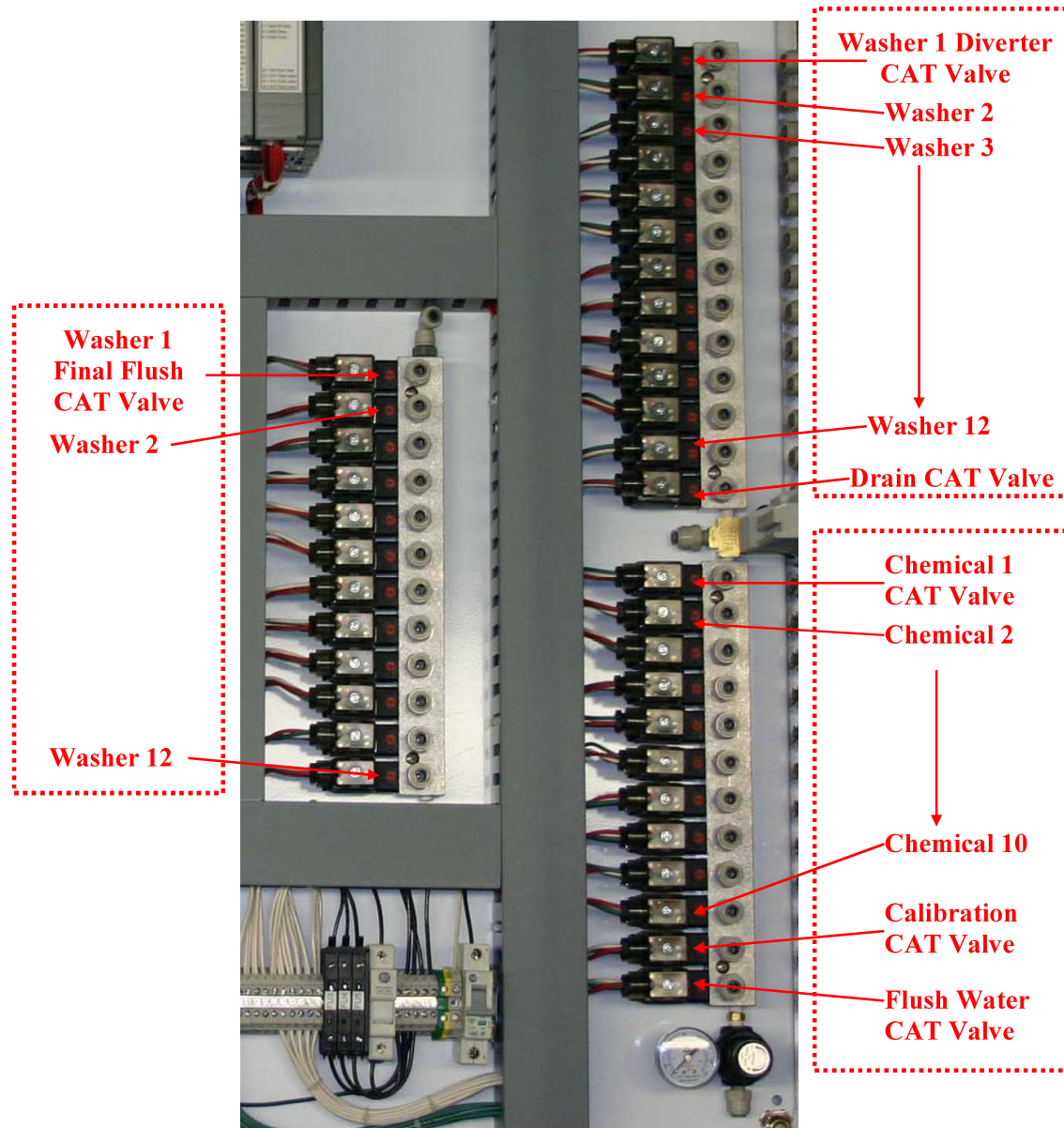


**Replacement CAT Solenoid V00115**



**Lighted Connector w/o Wires V00022**

Control Cabinet  
ARO CAT Valve  
Terminology and Part Numbers



# Control Cabinet Fuses & Motor Contactor Terminology and Part Numbers

**Warning:**  
The flush pump contactors and overloads are different depending on which size flush pump is on the Ultrax. Current Ultrax has a 1 hp and older machines had a ½ hp pump.

	Contactor	Overload
1 hp Pump	E00202	E00203
½ hp Pump	E00014	E00044

**Warning:**  
This outlet is for charging a Laptop Only!

