

WATERS MANUFACTURING ASSEMBLY PROCEDURE

PAGE 1 OF 40
279001685 REV P
DATE
2/20/2010

ITEM NUMBER
279001685

DESCRIPTION
ASSY, SAMPLE MANAGER, FTN

WRITTEN BY
S. CASEY

REVISION RECORD

<u>REV</u>	<u>AUTHORITY</u>	<u>NOTES</u>
A	S. CASEY	CM 9151787
B	H. Guilmain	ECO 9154849
C	H. Guilmain	ECO 9158149
D	J. Cappadoro	ECO 9159267
E	H. Guilmain	ECO 9159650
F	H. Guilmain	ECO 9168674
G	K. Fossey	ECO9180023
H	H. Guilmain	ECO 9180698
J	M. AUBIN	ECR 9190582
K	M. AUBIN	ECR 9190564
L	M. AUBIN	ECR 9194138
M	M. AUBIN	ECR 9199681
N	M. AUBIN	ECR 9211672
P	DESMOND ANN	ECR 9215664

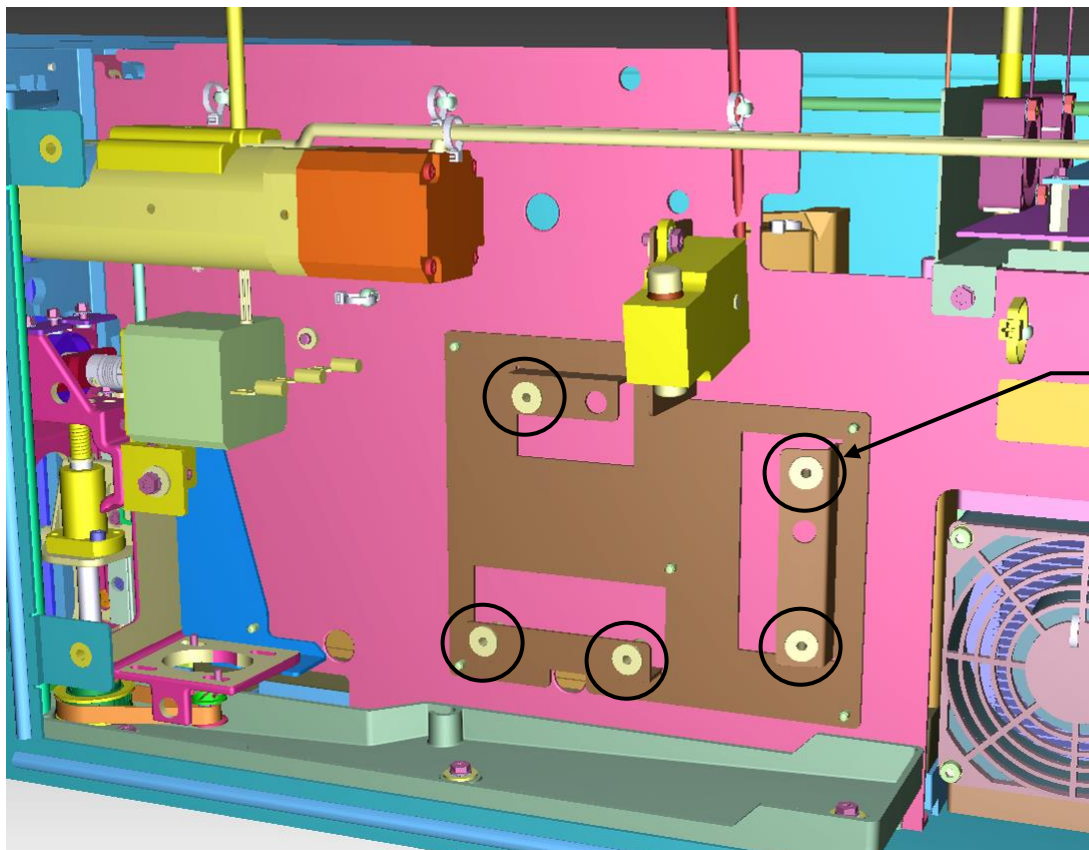


OPER **OPERATION DESCRIPTION**

TOOL NUMBER/DESCRIPTION

1.0 Install Well-nuts (WAT078856) as shown (5) places.

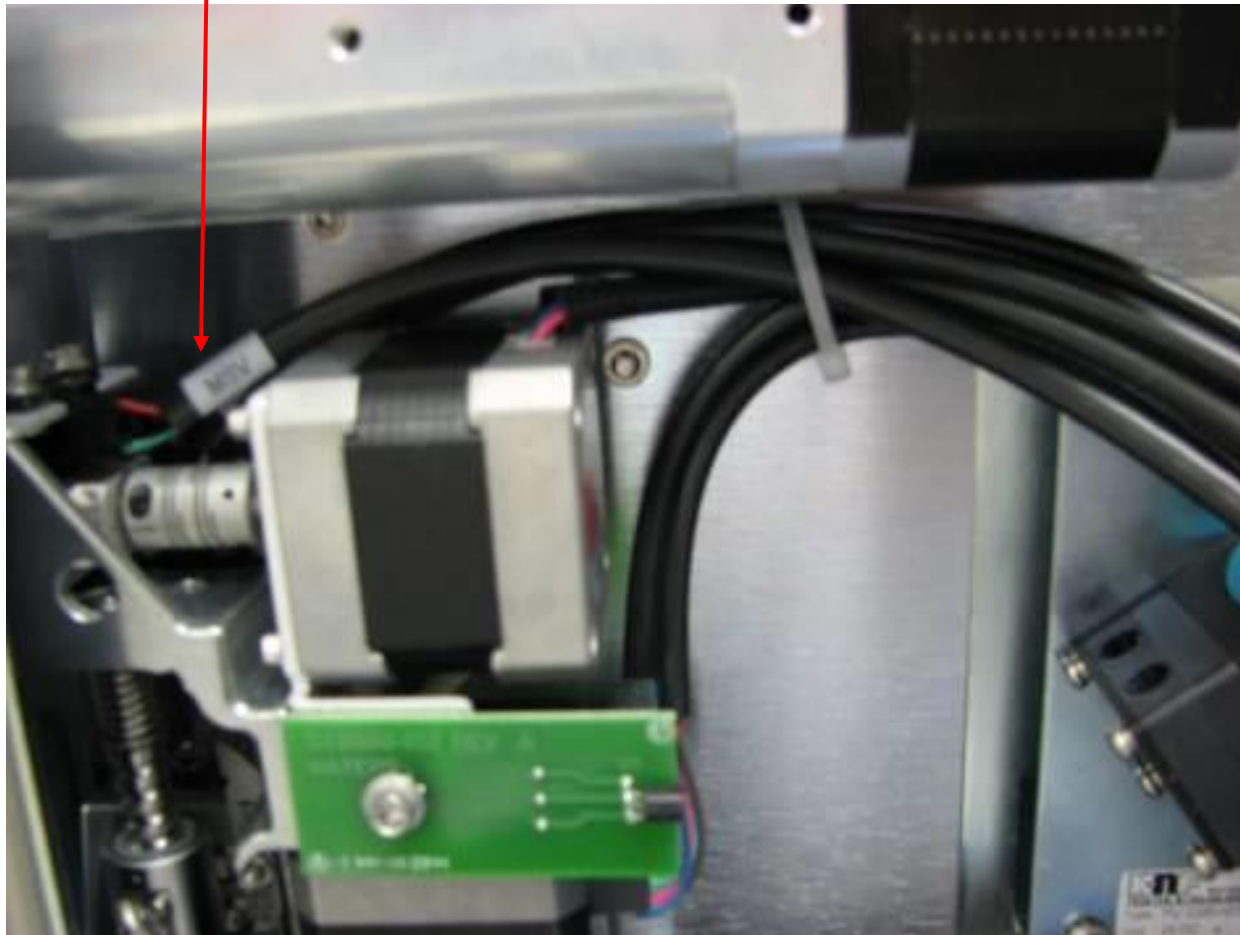
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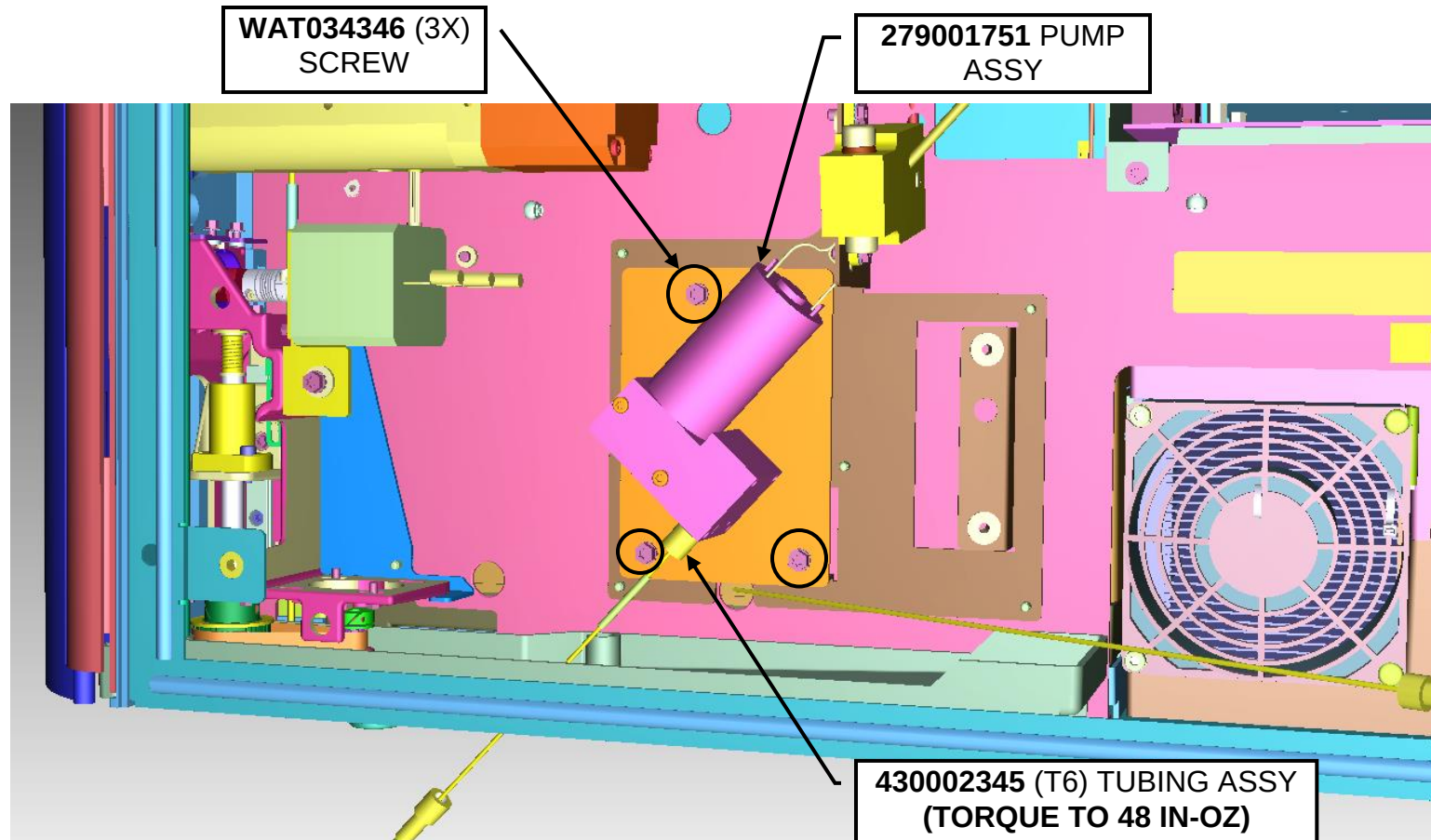
**WAT078856 (5X)
WELL-NUTS**

<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
1.1	Make sure shielding on all cables is pushed forward so wires are covered.	N/A

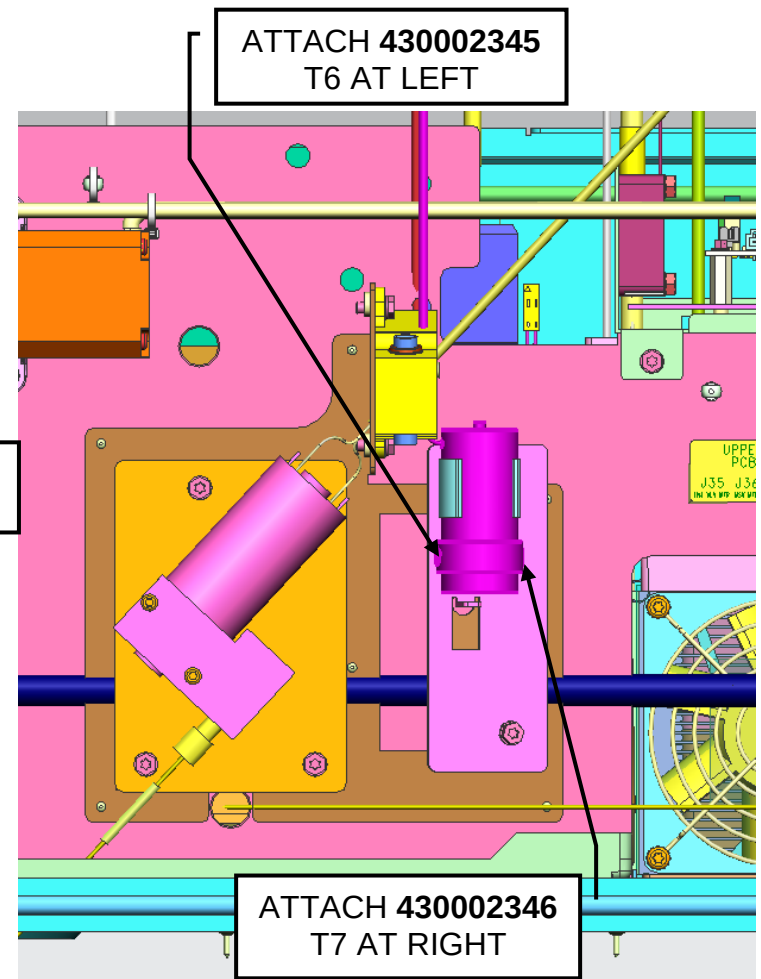
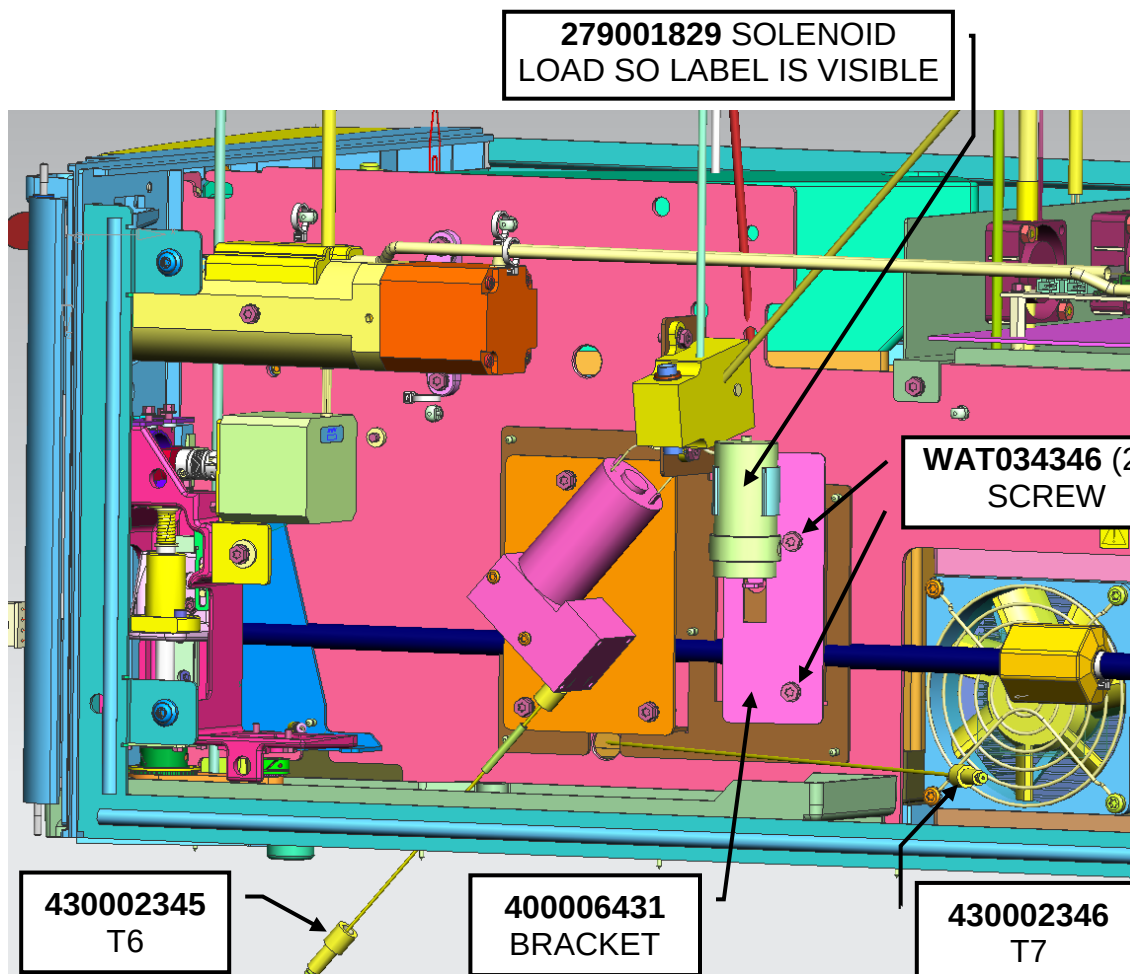
441000955 CABLE
MAKE SURE SHIELDING IS
PUSHED UP OVER WIRES



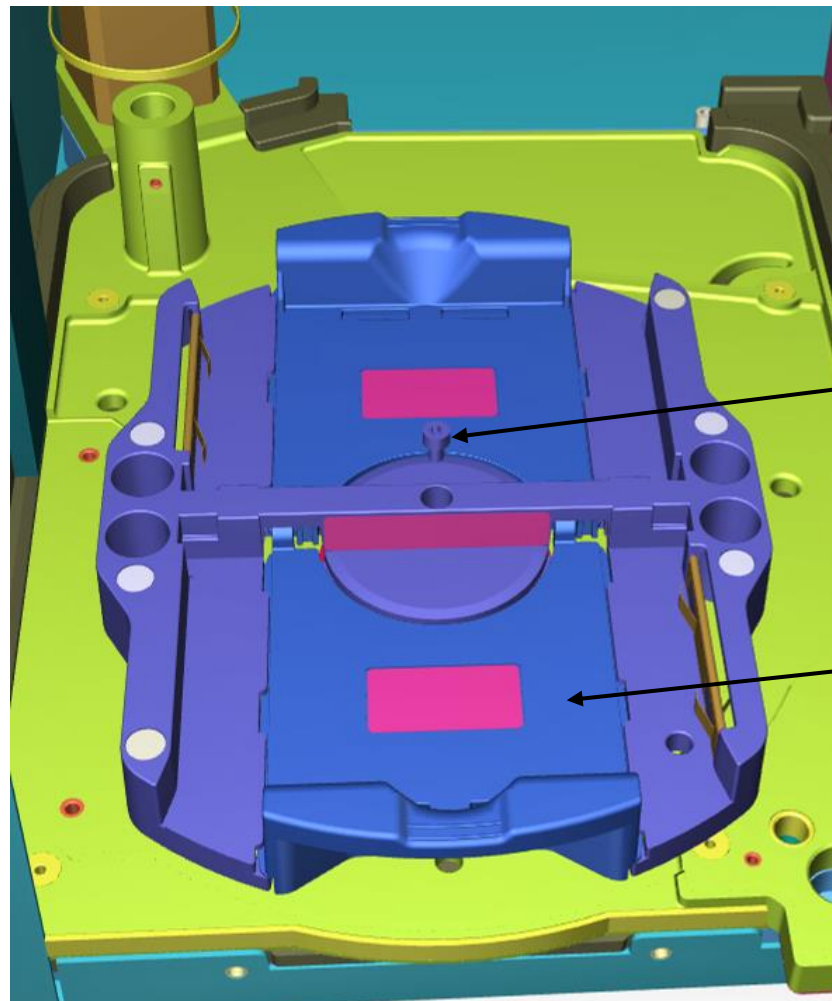
<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
1.2	Attach 430002345 (T6) tube to inside port of Vacuum Pump Assy (279001751). Use 999026375 Torque tool to tighten fitting. Install Pump Assembly as shown.	T20 Torx Driver 999026375 Torque Wrench 48 IN-OZ.



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
2.0	Install Solenoid (279001829) with Bracket (400006431) as shown. Route Vacuum pump cable behind Solenoid Bracket. Attach T6 Tubing (430002345) to left port of Solenoid Attach T7 Tubing (430002346) to right port of solenoid. Use Torque Wrench 999026375 to tighten both fittings. (48 IN-OZ)	T20 Torx 999026375 Torque Wrench 48 IN-OZ



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
3.0	Install Sample Platter Assembly (289005264) with (WAT413406) Screw and Loctite-242 (Blue) as shown, locating Pin on Theta Drive Plate into hole on bottom of Platter. Make sure Pin is in hole when tightening screw.	T20 Torx TORQUE TO 4 IN-LBS

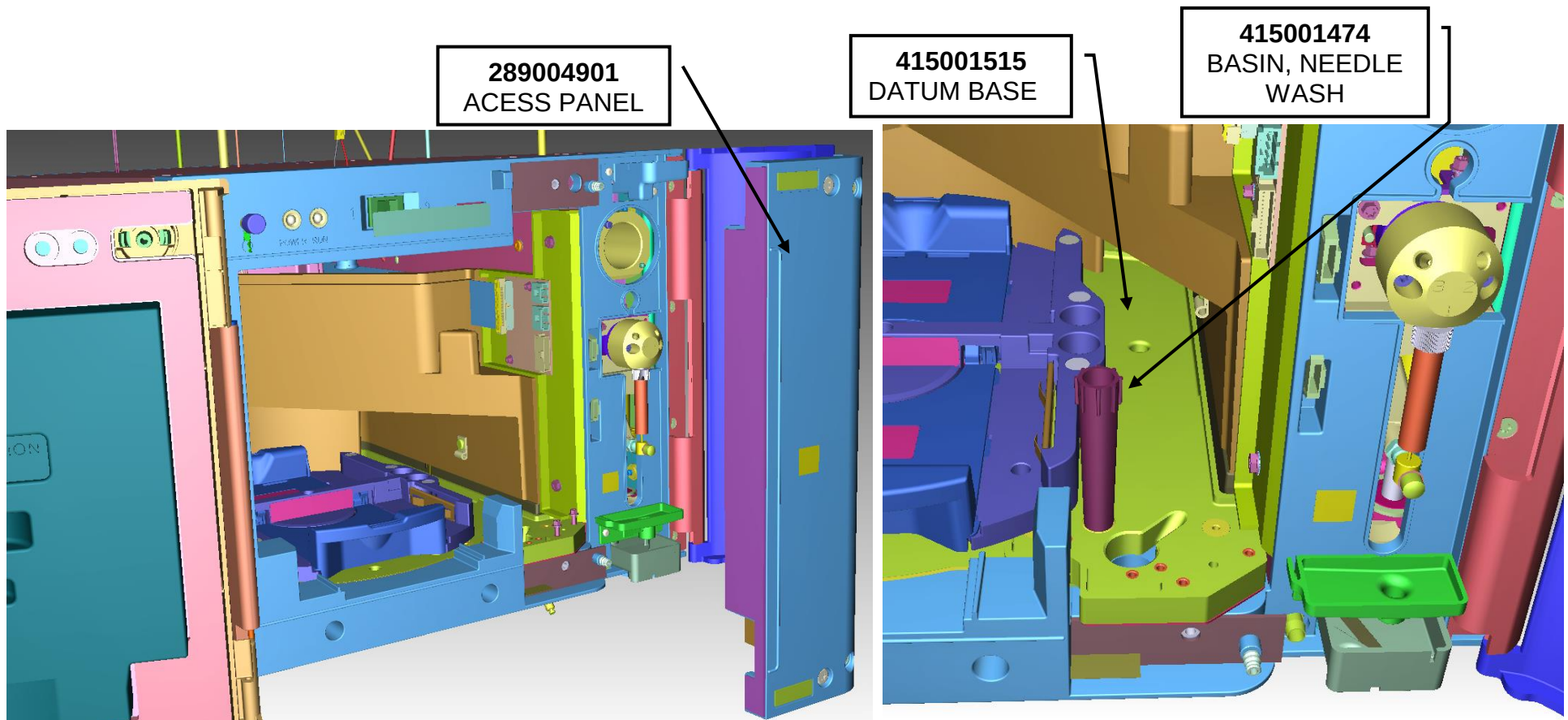


WAT413406 SCREW

**WAT005193 LOCTITE
(TORQUE TO 4 IN-LBS)**

**289005264
SAMPLE PLATTER**

<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
3.1	Remove Access Panel (289004901) from Bezel. Screw Basin, Needle Wash (415001474) into Datum Base (415001515).	T20 Torx



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
3.2	Scan Instrument Serial Number, Base Level Sample Manager, Load Cell and Inject Valve Cartridge Serial Numbers into Sigmasure using Top Level Product 186015017, SM-FTN.	N/A

<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
4.0	Connect 430002346 (T7) Tube to fitting on Needle Wash (289004794).	
5.0	Install Needle Wash Housing (289004794) into Datum Base (415001515). Secure with Screw (WAT081265), M3 X 10 SEMS.	T10 Torx
6.0	Connect Load Cell Cable to Board and place under guard NOTE: VERIFY LOAD CELL CABLE IS ROUTED CORRECTLY	



ROUTE LOAD CELL CABLE AS SHOWN

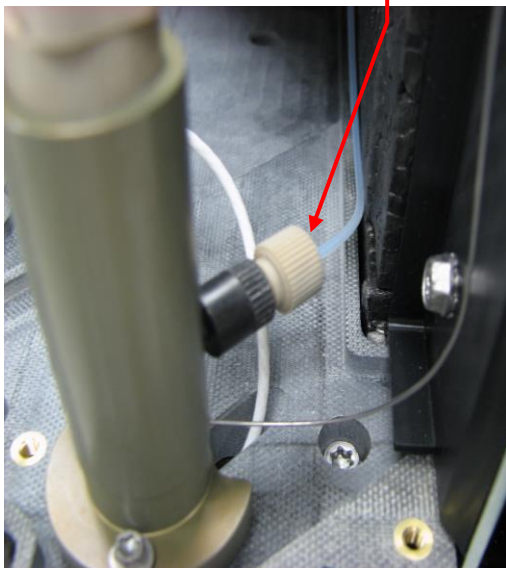


289004794
NEEDLE WASH HSG



WAT081265
M3 X 10

430002346
(T7) TUBE

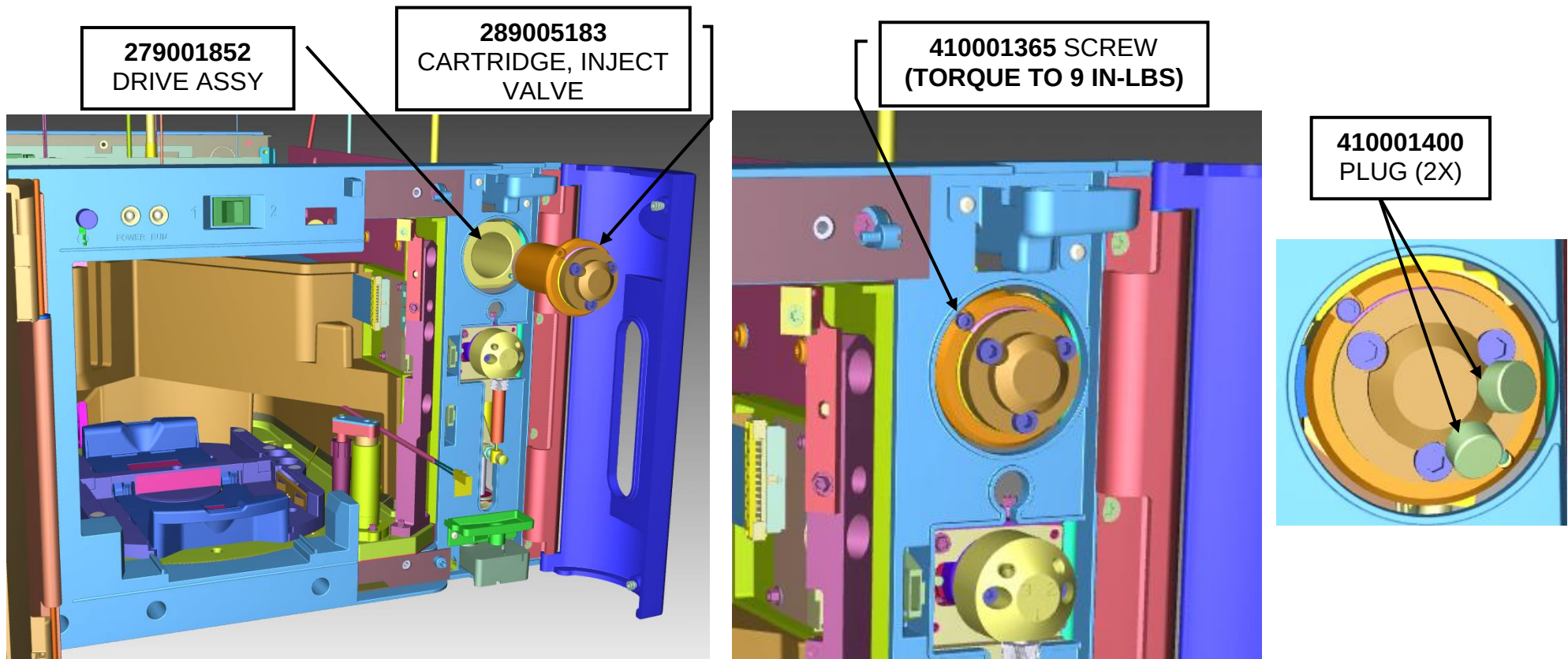


<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
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7.0	Slide Cartridge, Inject Valve, (289005183) into Drive Assy. (279001852). Secure Cartridge in Drive with screw (410001365). Torque to 9 IN-LBS. NOTE: ASSEMBLY (289005183) contains Critical clean parts. Handle parts during assembly, test, and packaging processes to Maintain the cleanliness of the fluid path per Waters spec 735001035.	5/16 Bit Torque to (9 IN-LBS)
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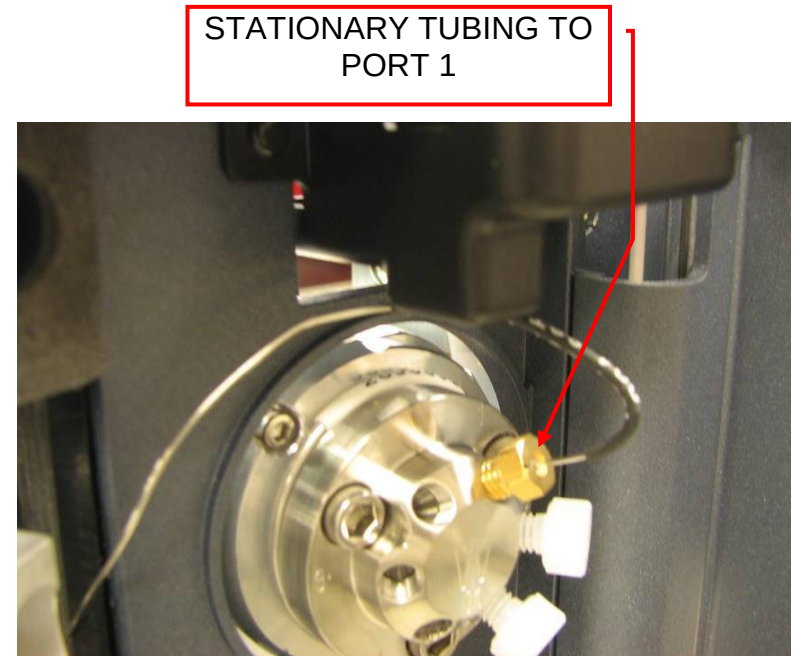
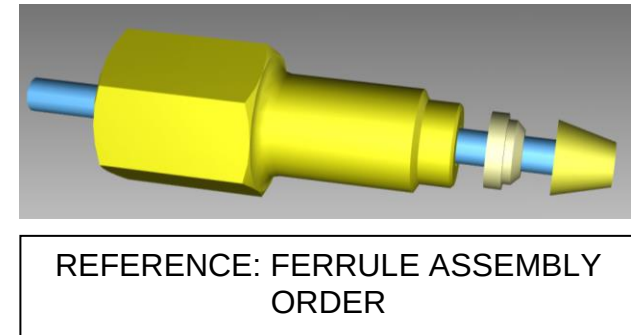
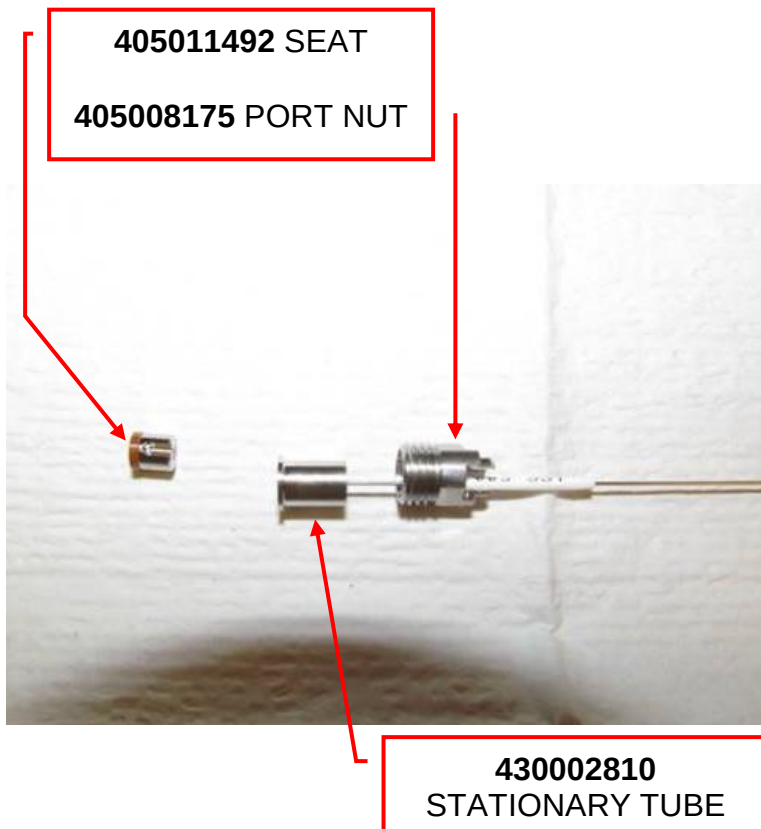
Screw (2) Plugs (410001400) into ports # 5 and #6.

NOTE: STEP IS OPTIONAL AT THIS POINT. PLUGS CAN BE INSTALLED AFTER FINAL TEST!

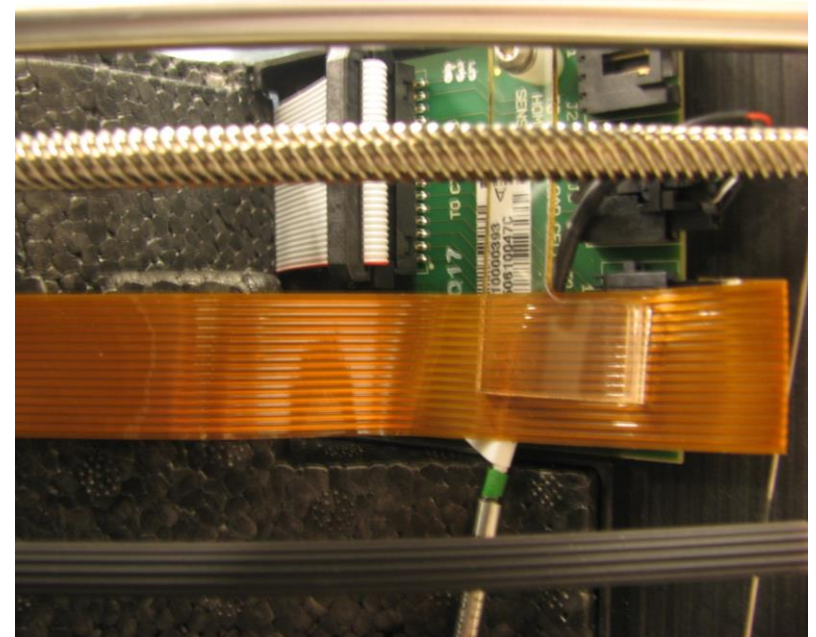
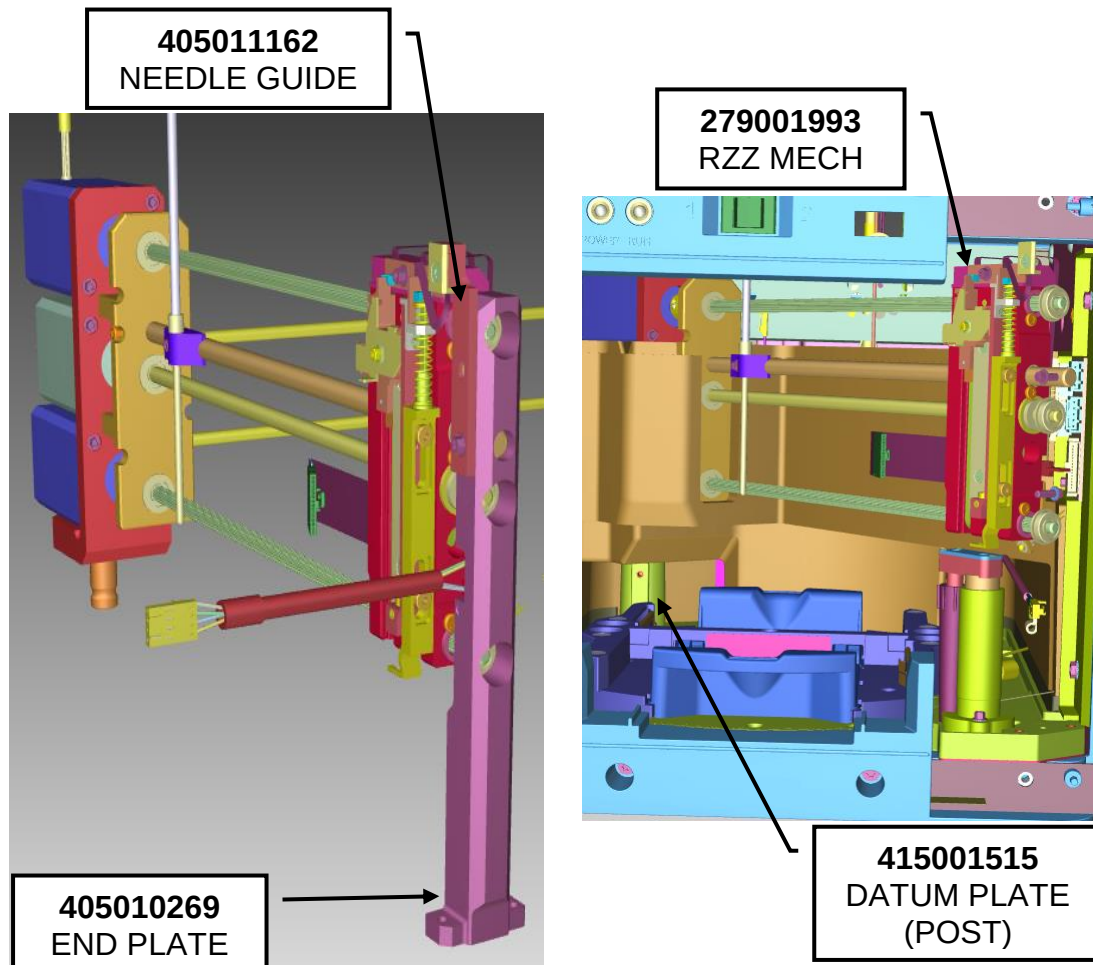


<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
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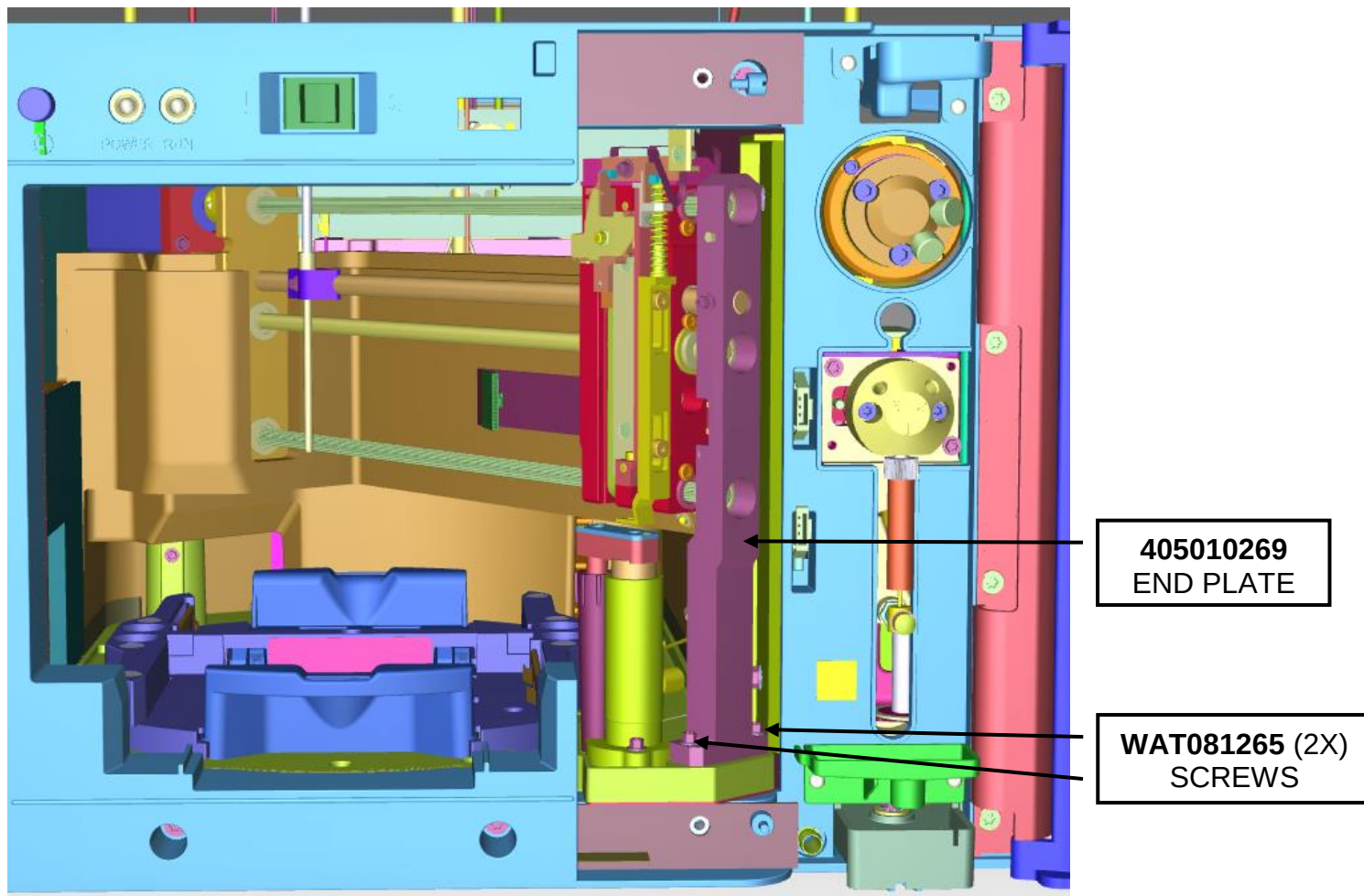
8.0	Connect Stationary Tubing to port #1 of Inject Valve as shown Finger tighten compression screw while holding in tube, mark with Sharpie and tighten $\frac{3}{4}$ turn.	Sharpie $\frac{1}{4}$ in. Open End Wrench
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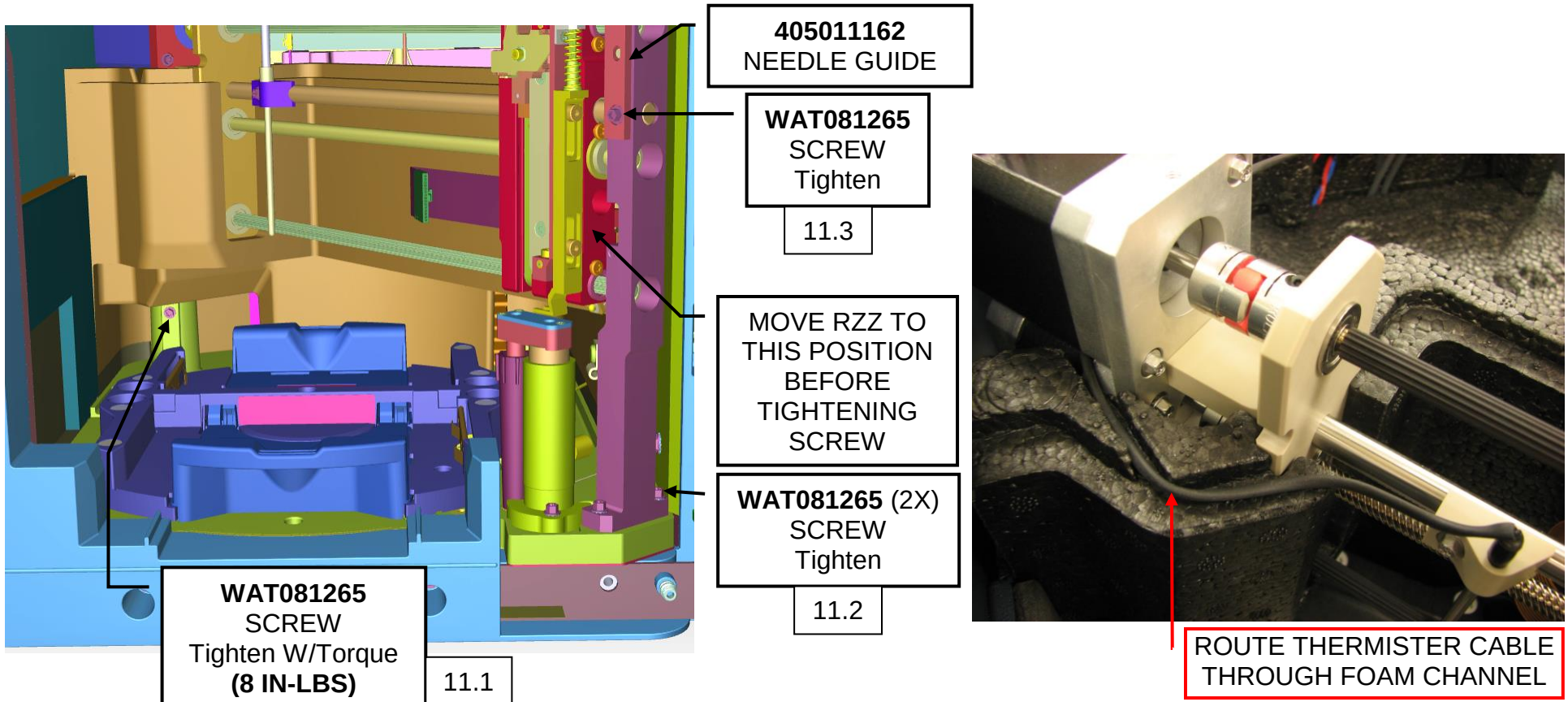
<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
9.0	Remove end plate (405010269) from RZZ Mech (279001993).	
9.1	Remove Needle guide (405011162) from RZZ (279001993).	T10 Torx
9.2	Reassemble RZZ Mech (279001993) onto post of Datum Base (415001515). Attach Flex Cable to PCB, then route under guard.	
NOTE: VERIFY CREASE IN FLEX CABLE IS SHARP AND CABLE RUNS STRAIGHT, HORIZONTALY, AS SHOWN		



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
10.0	Reassemble end plate (405010269) to onto RZZ Mech (279001993) And Datum Plate (415001515) Using (2) screws (WAT081265) as shown. NOTE:Leave screws loose! Attach Sensor Cable to 210000393 Board .	T10 Torx

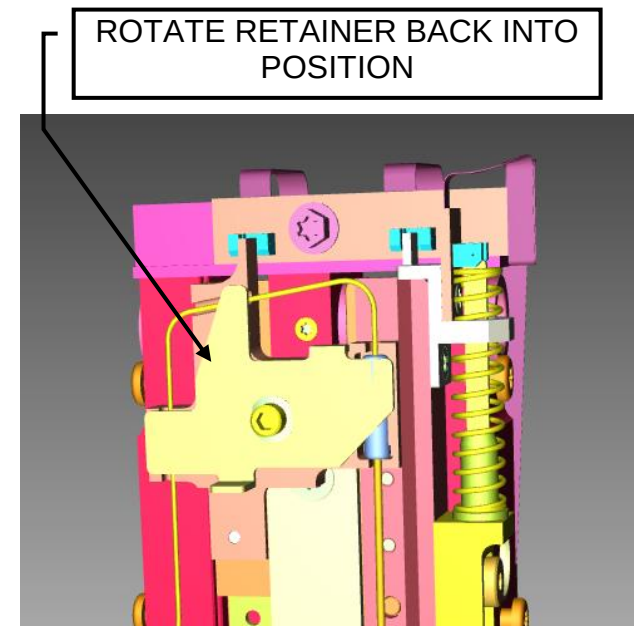
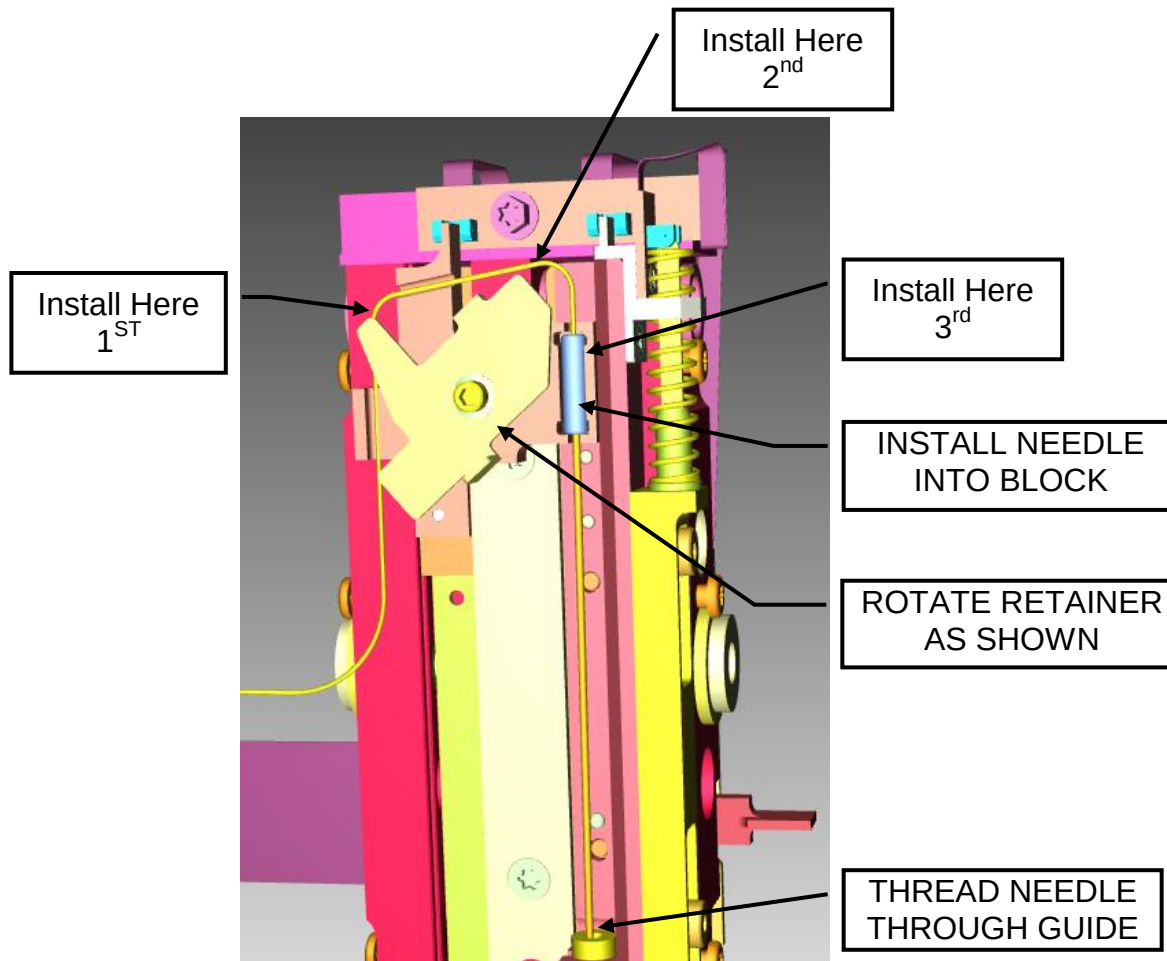


<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
11.0	Replace Needle Guide (405011162) and screw (WAT081265).	
11.1	NOTE:TIGHTEN SCREWS IN ORDER, AS SHOWN BELOW: Verify Assy is FIRMLY seated in post. Hold down while tightening screw (WAT081265) in post. (Torque to 8 IN-LBS)	T10 Torx (8 IN-LBS) Torque
11.2	Move RZZ ASSY out to Home position over Needle Wash ASSY. Verify pin on bottom of End Plate is seating in hole of Datum Base. Tighten (2) Screws in End Plate.	T10 Torx Driver
11.3	Tighten screw holding Needle Guide in place. Rotate Spline shafts and Leadscrew to ensure easy movement after tightening.	
12.0	Route Thermistor Cable through Foam channel and between motors as shown.	

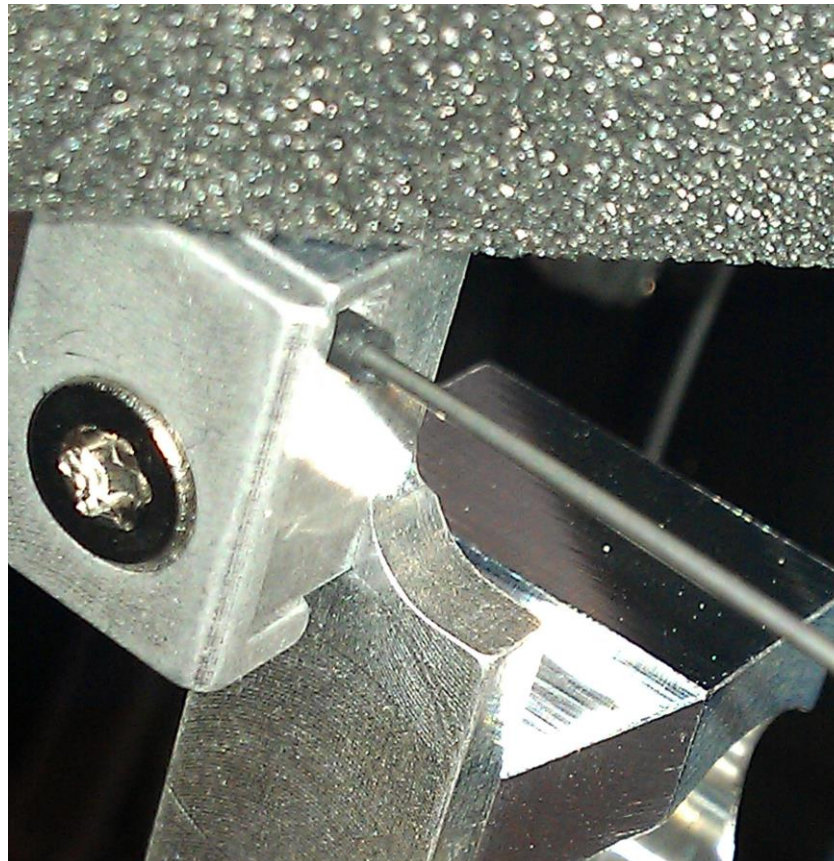


<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
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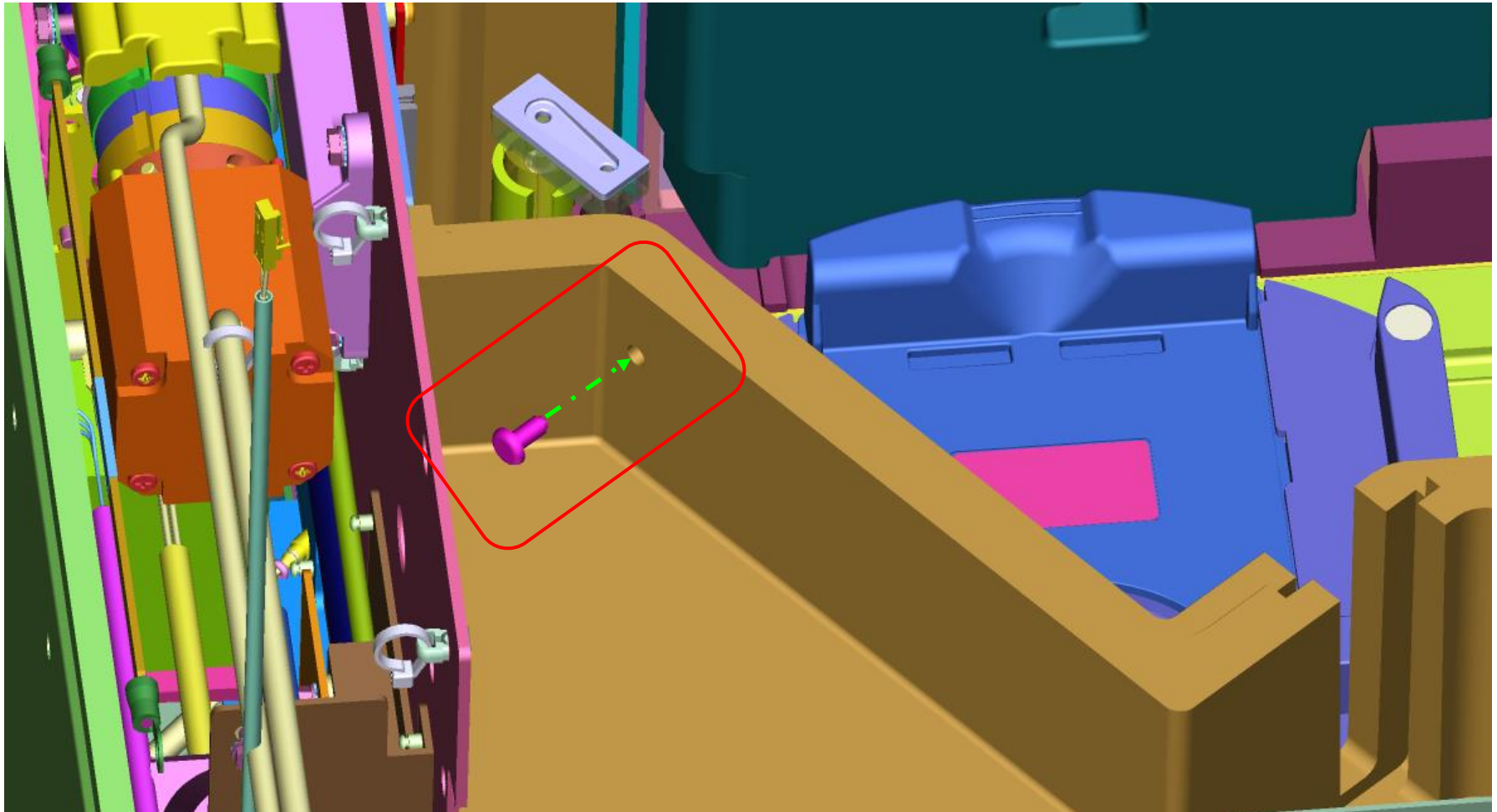
- | | | |
|------|---|-----|
| 13.0 | <p>Install Needle Assembly (430002640) to Needle Carriage Assembly in order as shown.</p> <p>Rotate Retainer and lower Stripper Guide Block.</p> <p>Install Needle into Block fitting into slots as shown.</p> <p>Close Retainer and Gently raise Stripper Guide Block threading Needle through Peek Guide.</p> | N/A |
|------|---|-----|



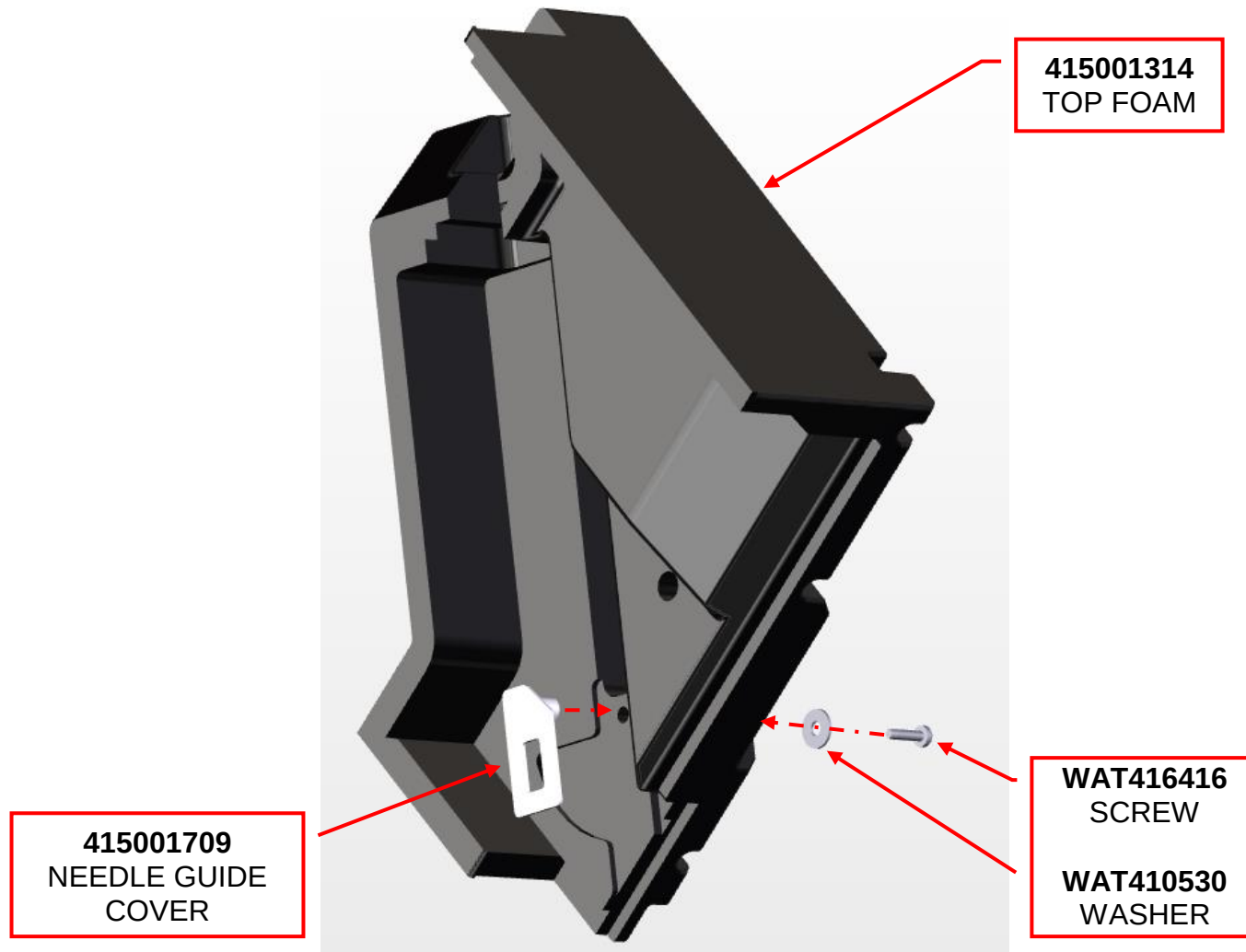
<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
14.0	Thread other end of Needle Assy (430002640) thru the guide on the clamp mounted on the End Plate. Allow Shrink Tubing to protrude apprx. .05 from the front edge of guide. Tighten guide. The Needle must run parallel to the RZZ Mech. Rods. NOTE: Slight rotation of Needle, before tightening guide, may be needed.	T10 Torx



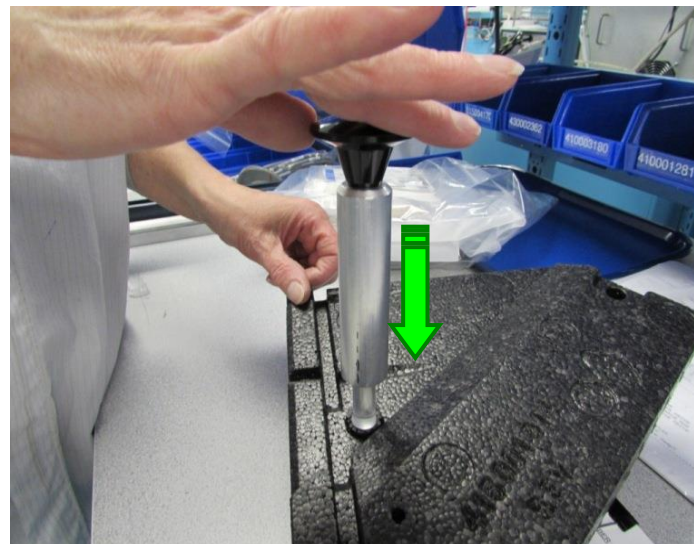
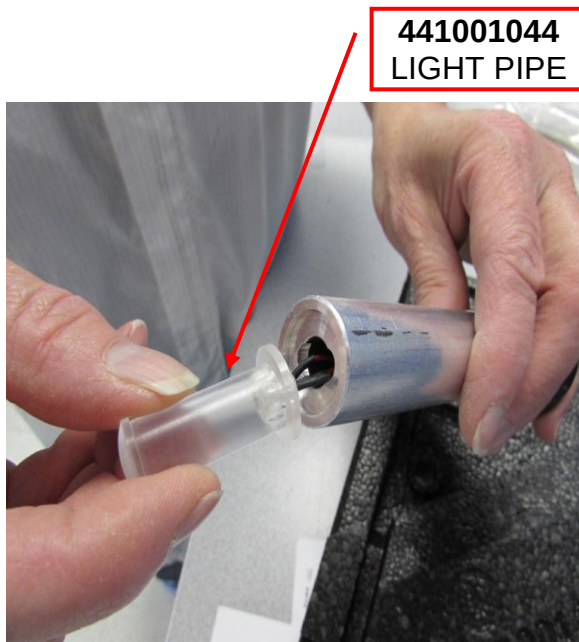
<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
15.0	Plug the open hole in the bottom foam (415001316) by inserting (1) WAT025249 (RIVET, SNAP, .256 MAX PANEL) as shown below:	N/A



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
16.0	Insert Internal Needle Guide Cover (415001709) into underside of Top Foam (415001314).	T20 TORX DRIVER
16.1	Secure Assy w/Screw (WAT416416), and Washer (WAT410530).	



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
16.2	Insert the (441001044) Light pipe into the 999034349 Light Pipe Fixture.	999034349 Light Pipe Fixture
16.3	Make sure to carefully line up the LED with the tool grooves to prevent damage.	
16.4	Insert the light pipe into the (415001314) foam as show in the figures below.	

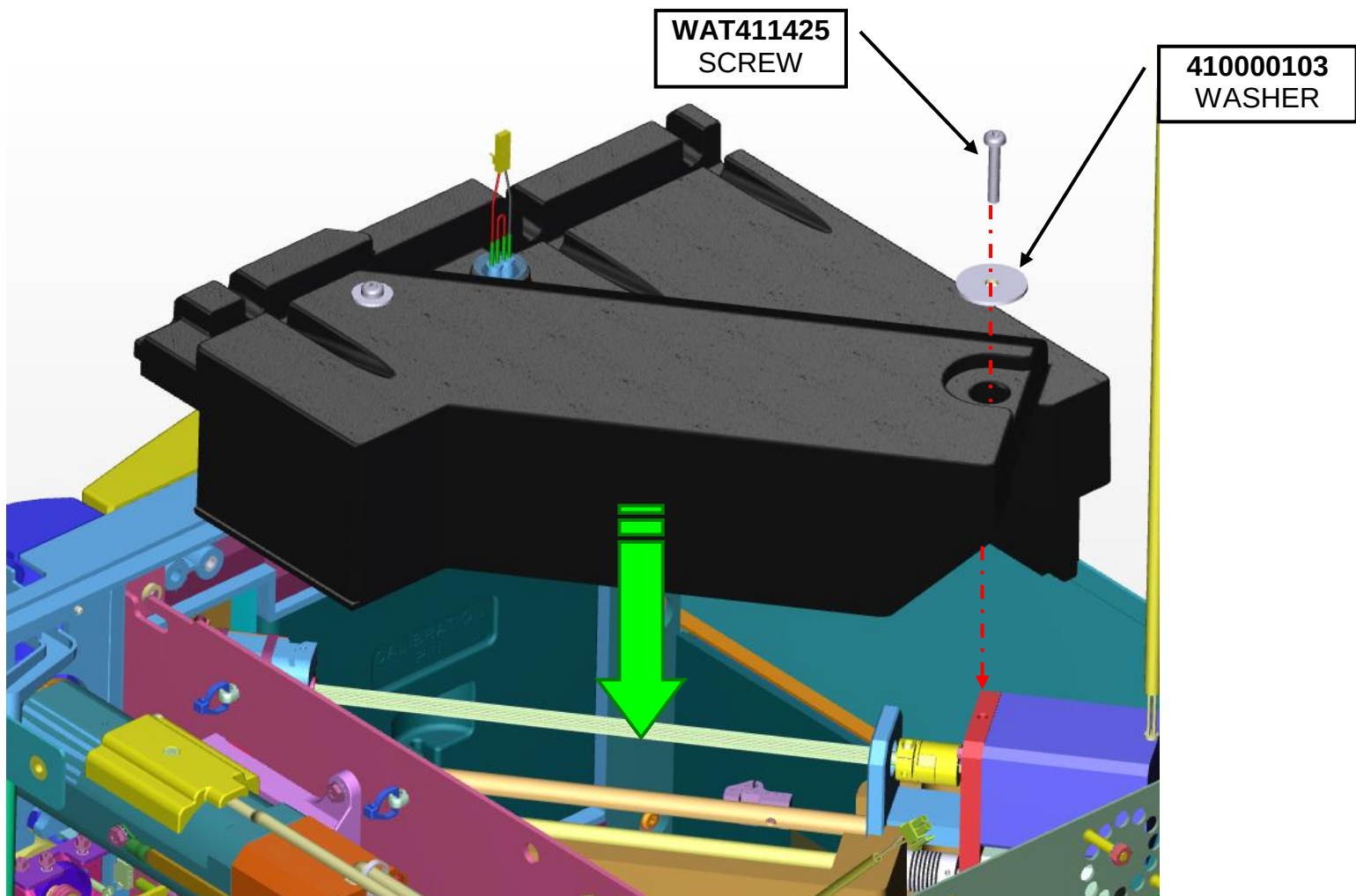


OPER OPERATION DESCRIPTION

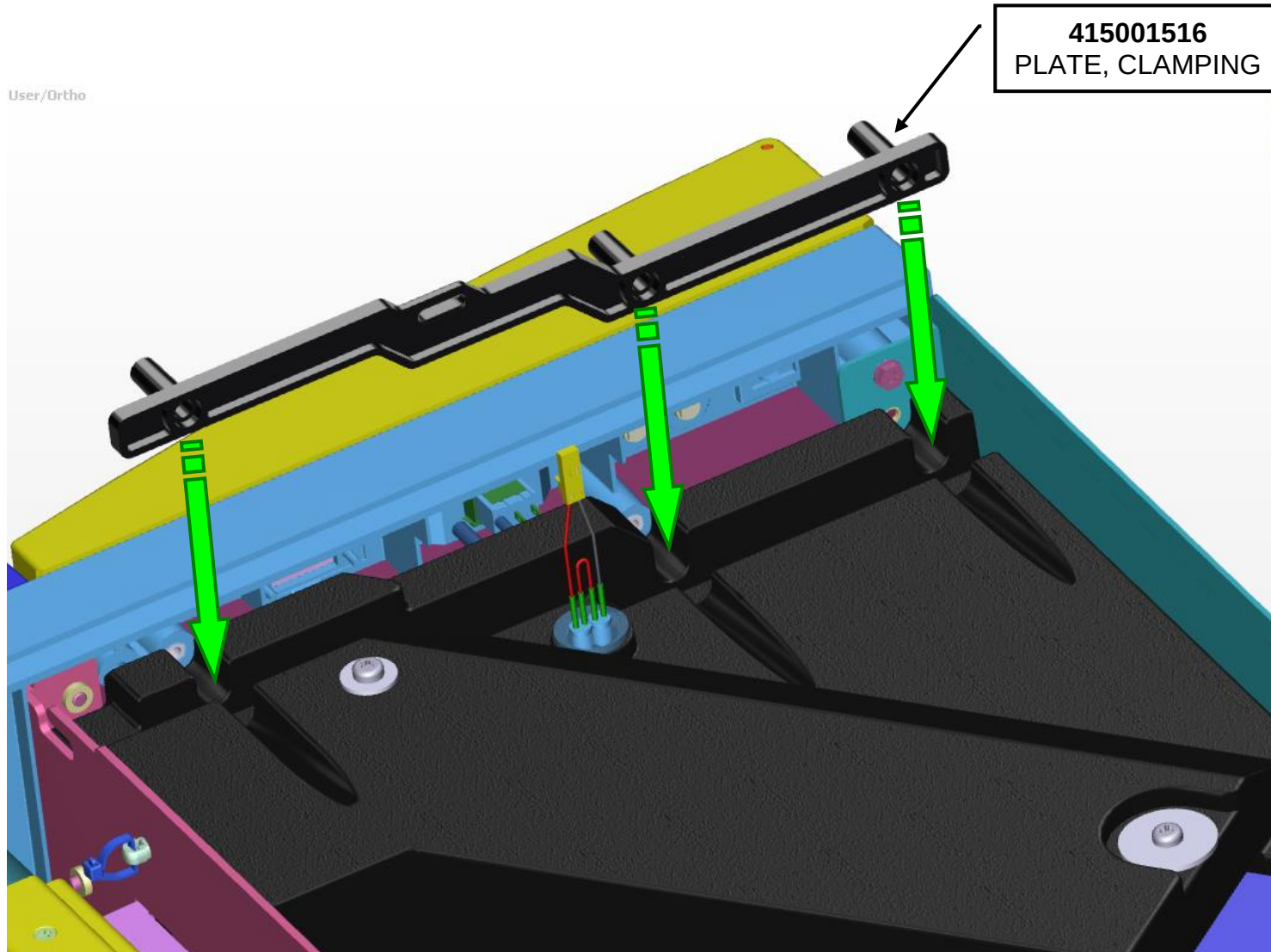
TOOL NUMBER/DESCRIPTION
T20 TORX DRIVER

17.0 Assemble Top Foam Assembly into unit.

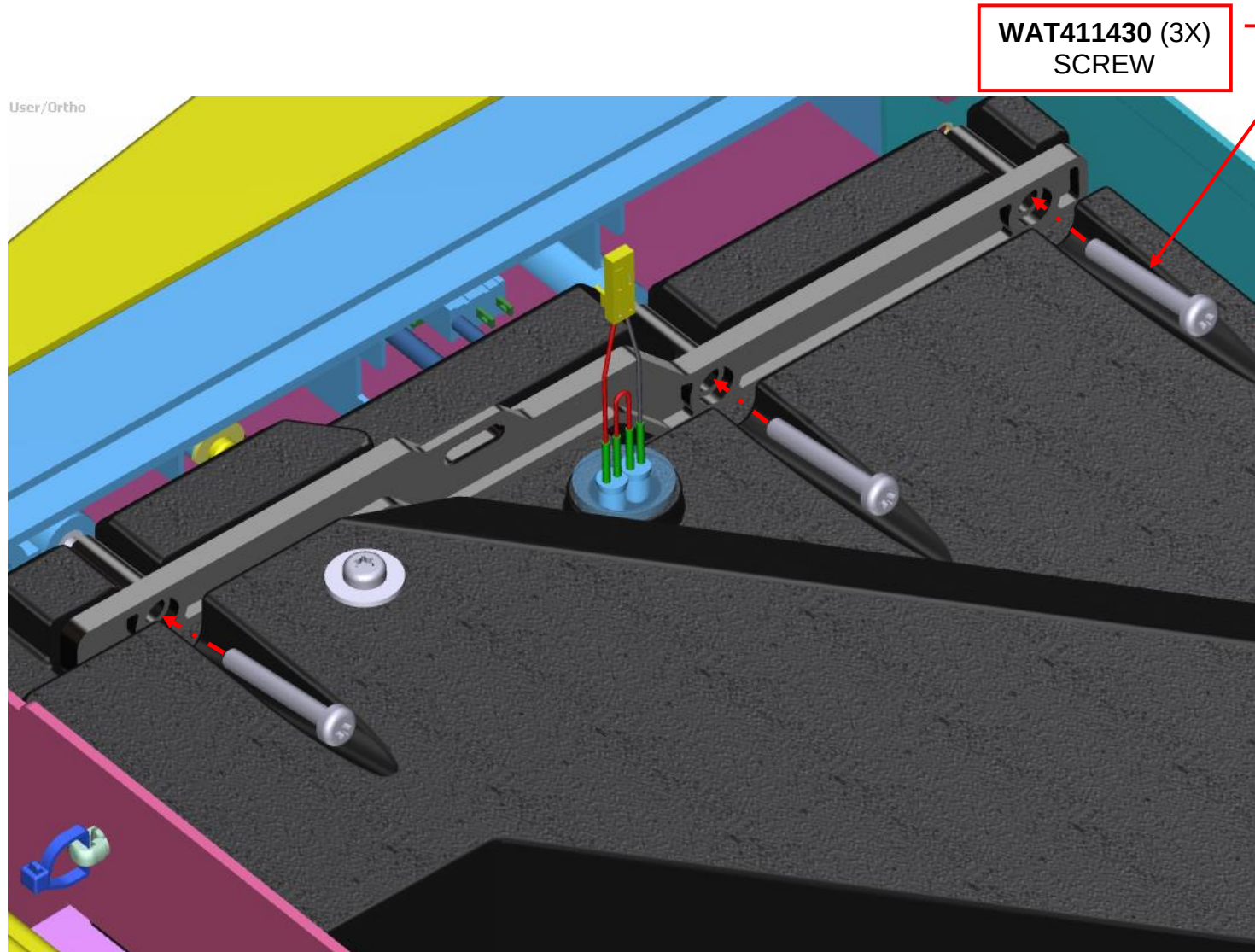
Secure with screw (WAT411425) and Washer (410000103) as shown.



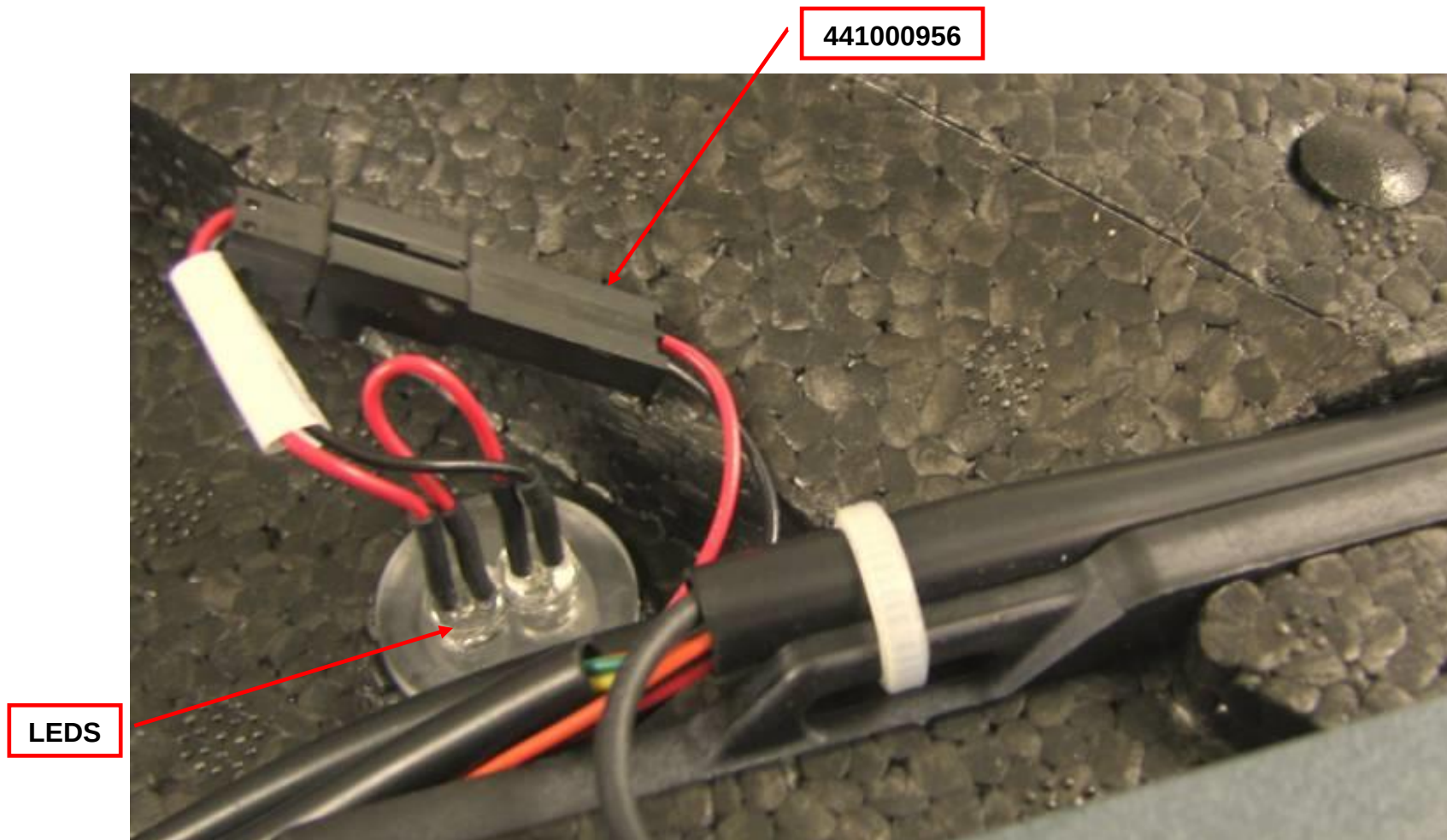
<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
18.0	Place Plate, Clamping (415001516) into Top Foam assembly trough as shown.	N/A



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
18.1	Assemble Plate, Clamping to Bezel with (3) Screws (WAT411430), pressing down on Foam as you tighten screws.	T20 TORX DRIVER

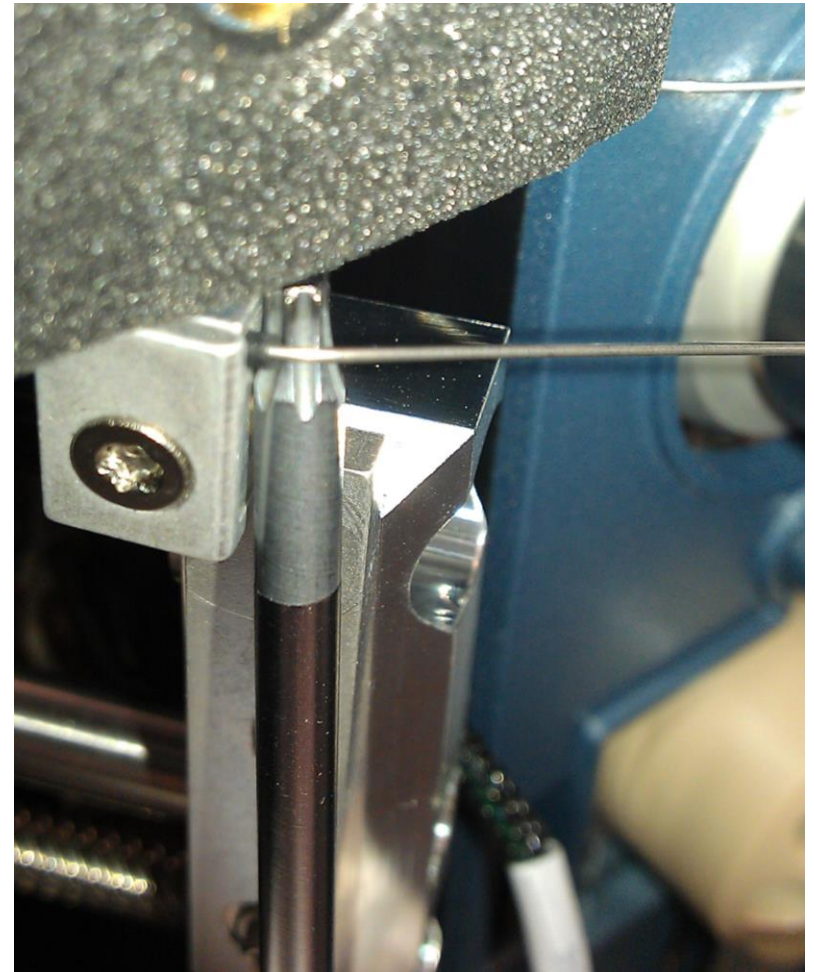


<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
19.0	Connect the Light Pipe to the Front Bezel Cable (441000956). (NOTE: Make sure the LEDs are firmly inside the Light Pipe.)	N/A



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
19.0	Insert Needle Assy (430002640) into channel on the underside of the top foam. Pivot or close the internal Needle guide to hold Needle Assy in place.	T10 Torx Driver
20.0	Bend Needle at guide/clamp to the Right , towards Port 4 on the inject valve. Use small rounded tool (like T10 Torx) shown in picture to aid in bend.	

415001709 - Needle Guide



WATERS MANUFACTURING ASSEMBLY PROCEDURE

PAGE 25 OF 40
279001685 REV P

<u>OPER</u>	<u>OPERATION DESCRIPTION</u>
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<u>TOOL NUMBER/DESCRIPTION</u>

- | | |
|------|---|
| 21.0 | Assemble Access Panel (289004901) to Bezel (279001730)
Secure with (2) captive screws |
| 22.0 | Make J Bend and connect Needle Tube to Port #4 of Inject Valve.
Finger tighten compression screw while holding in tube. Mark with Sharpie
And tighten $\frac{3}{4}$ turn with a $\frac{1}{4}$ " wrench. |
| 23.0 | Exercise Needle up & down, back & forth, to ensure proper movement. |

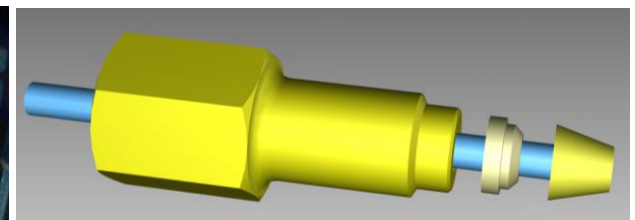
$\frac{1}{4}$ " WRENCH

T20 TORX DRIVER

NUT DRIVER

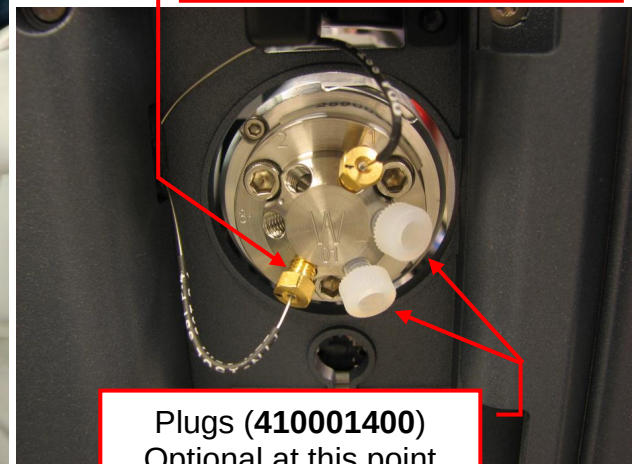
Sharpie

289004901
ACCESS PANEL



REFERENCE: FERRULE ASSEMBLY
ORDER

NEEDLE TUBE TO PORT #4



Plugs (410001400)
Optional at this point

<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
		CUTTERS
24.0	Route Cables along Bracket using tie-wraps and through slot in Chassis as shown	

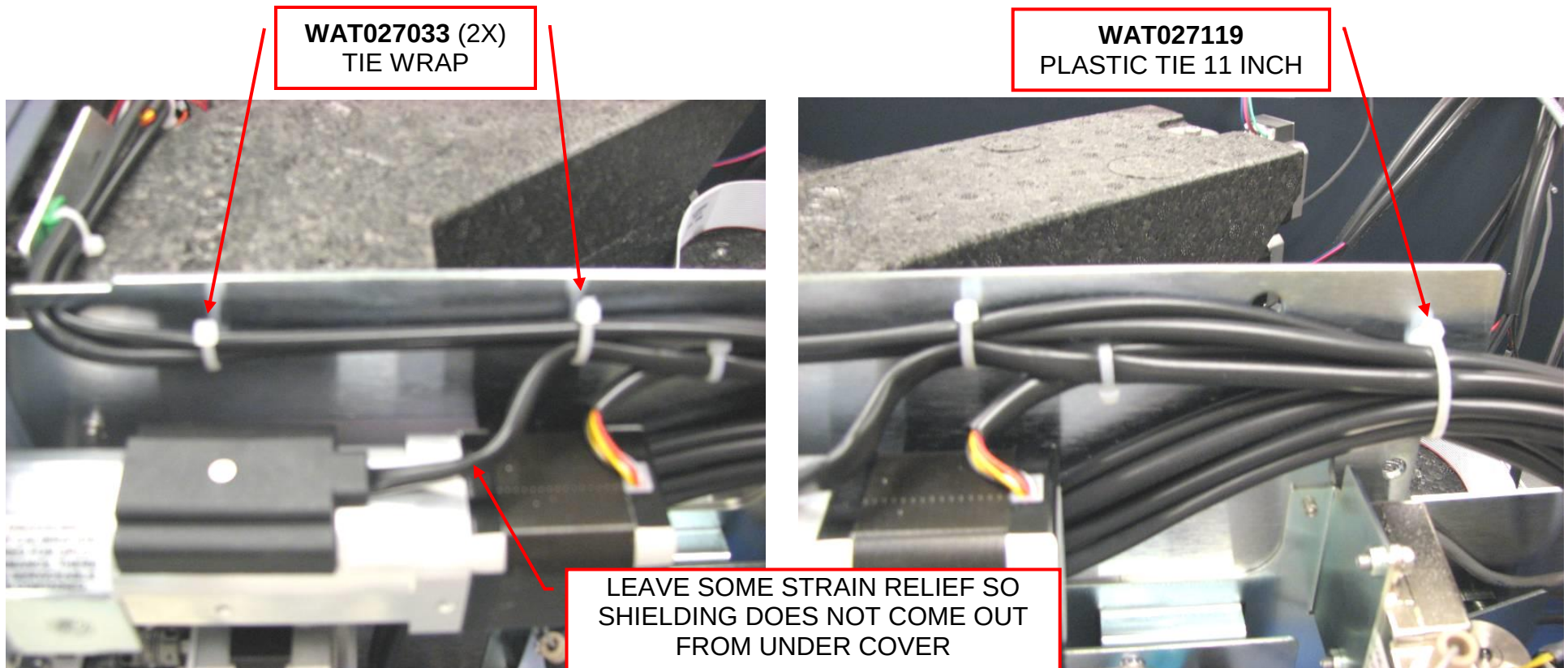


OPER **OPERATION DESCRIPTION**

TOOL NUMBER/DESCRIPTION

25.0 Route Cables from Front Bezel, Syringe Drive, Inject Valve and Ambient Temp sensor through cable ties as shown

CUTTERS



OPER OPERATION DESCRIPTION

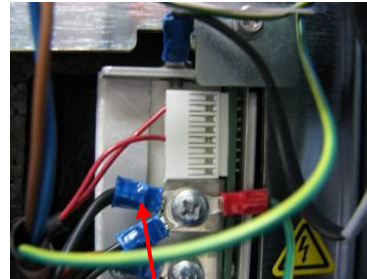
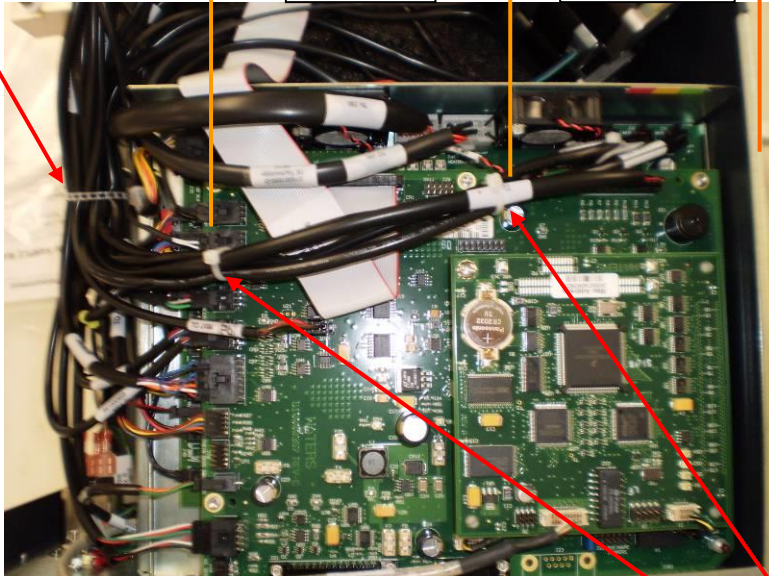
TOOL NUMBER/DESCRIPTION

26.0 Connect all Cables, Route and Tie Wrap as shown.

**WAT027119
CABLE TIE**

5 in.
APPRX

4 in.
APPRX



NOTE ORIENTATION OF
441000940 CABLE TO P/S

**WAT027033 (2X)
TIE WRAP**



Use ESD precautions when handling PCBs.

Cable Connection Table		
CABLE	TO	BOARD
441000958	J2	CPU
441000959	J100	CONTROLLER
441000940	-----	POWER SUPPLY
WASH PUMP	J44	DRIVER
SOLENOID	J43	DRIVER
TRANSDUCER	J9	CONTROLLER
441000941	J30	DRIVER
H/C	J34	DRIVER
H/C TEMP	J11	CONTROLLER
H/C FAN	J45	DRIVER
INJECT VALVE	J35	DRIVER
441000956	J2	CONTROLLER
279001844	J36	DRIVER
279001850	J37	DRIVER
AMBIENT TEMP SENSOR	J104	CONTROLLER
279001958 Heater	J47	DRIVER
441000955	J7	CONTROLLER
441000987	J14	CONTROLLER
279001737	J39	DRIVER
441000948	J15	CONTROLLER
441000954	J17	CONTROLLER
BOTTOM MOTOR	J32	DRIVER
MIDDLE MOTOR	J31	DRIVER
TOP MOTOR	J33	DRIVER
279000962 TEMP PROBE	J10	CONTROLLER
441000953	J6	CONTROLLER
NOTE LOCATION OF PIN #1		

WATERS MANUFACTURING ASSEMBLY PROCEDURE

PAGE 29 OF 40
279001685 REV P

OPER **OPERATION DESCRIPTION**

TOOL NUMBER/DESCRIPTION

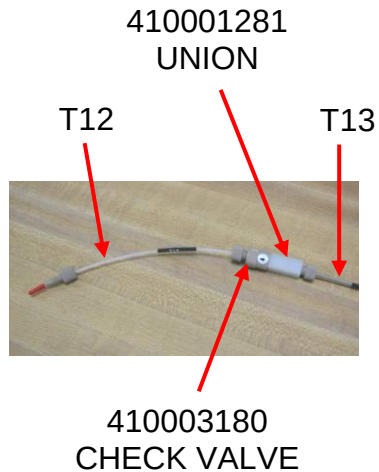
27.0 Assemble 430002362 (T12), Check Valve 410003180, Union 410001281, and 430002360 (T13) as shown

999026375 TORQUE WRENCH

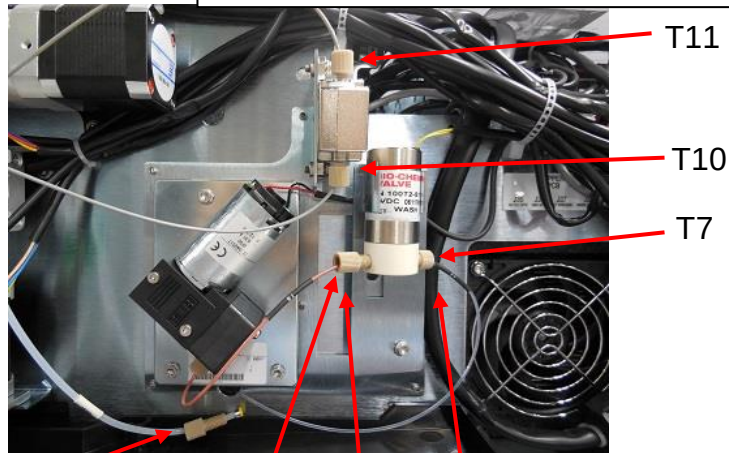
28.0 Connect Tubing, Route as shown

TUBING	FROM	TO
430002348 (T10)	SYRINGE DRIVE (PORT #3)	TRANSDUCER (BOTTOM PORT)
430002349 (T11)	INJECT VALVE (PORT #3)	TRANSDUCER (TOP PORT)
430002362 Assembly from step 29.0	INJECT VALVE (PORT #2)	DOWN THROUGH HINGE OF FLUIDICS DOOR
430002336	FROM TOP OF UNIT DOWN THROUGH HINGE THROUGH HOLE IN BEZEL	WASH PUMP (FRONT PORT) Torque to 48 IN-OZ (Do not connect the tubing, tubing to be connected in Operation 34.0)

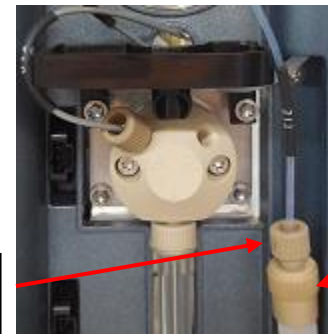
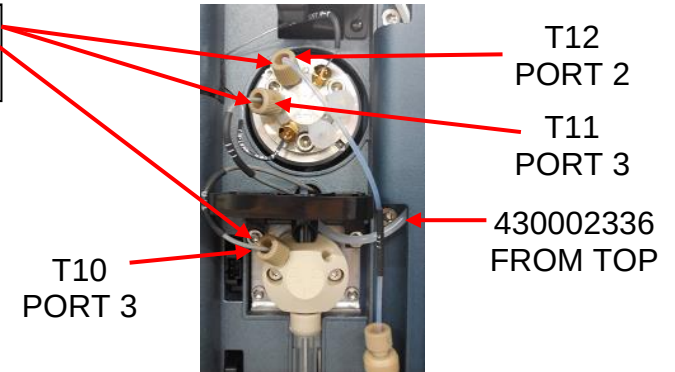
NOTE: USE 999026375 TORQUE WRENCH FOR PEEK FITTING (48 IN-OZ)



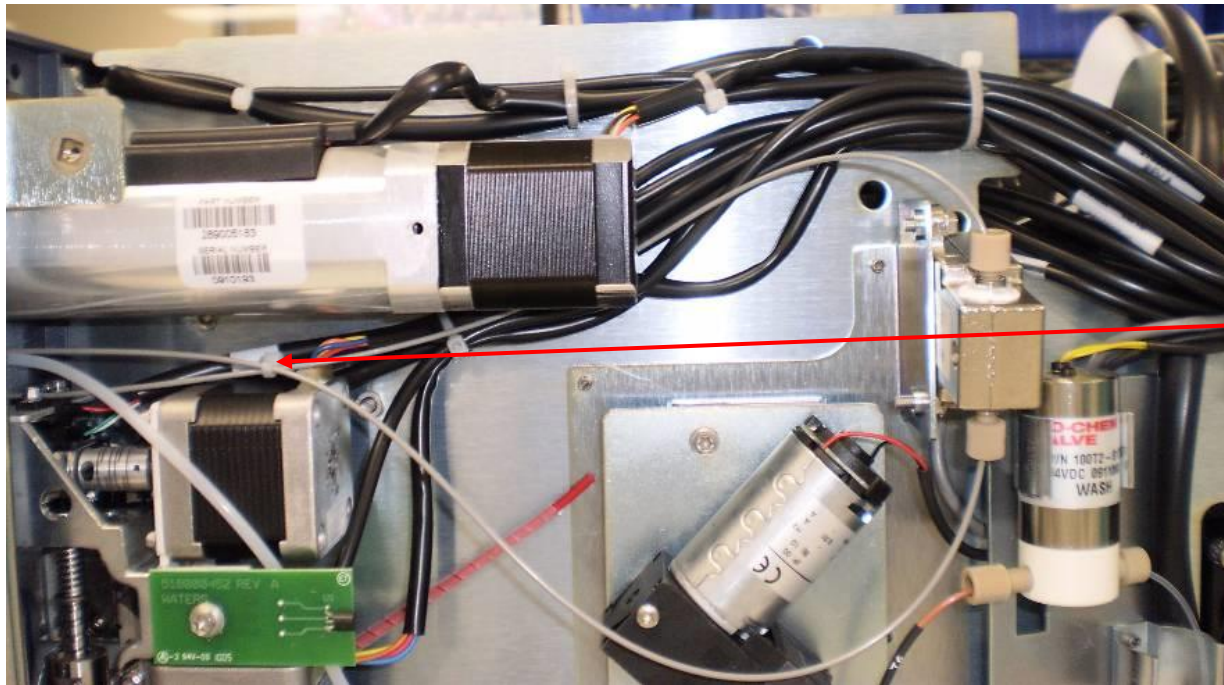
430002336 (Do not connect the tubing, tubing to be connected in operation 34.0)



NOTE: USE 999026375 TORQUE WRENCH FOR PEEK FITTING (48 IN-OZ)



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
28.1	Tie the tubings 430002348 (T10) & 430002349 (T11) with a cable tie as shown below.	CUTTERS



WAT027033
TIE WRAP

WATERS MANUFACTURING ASSEMBLY PROCEDURE

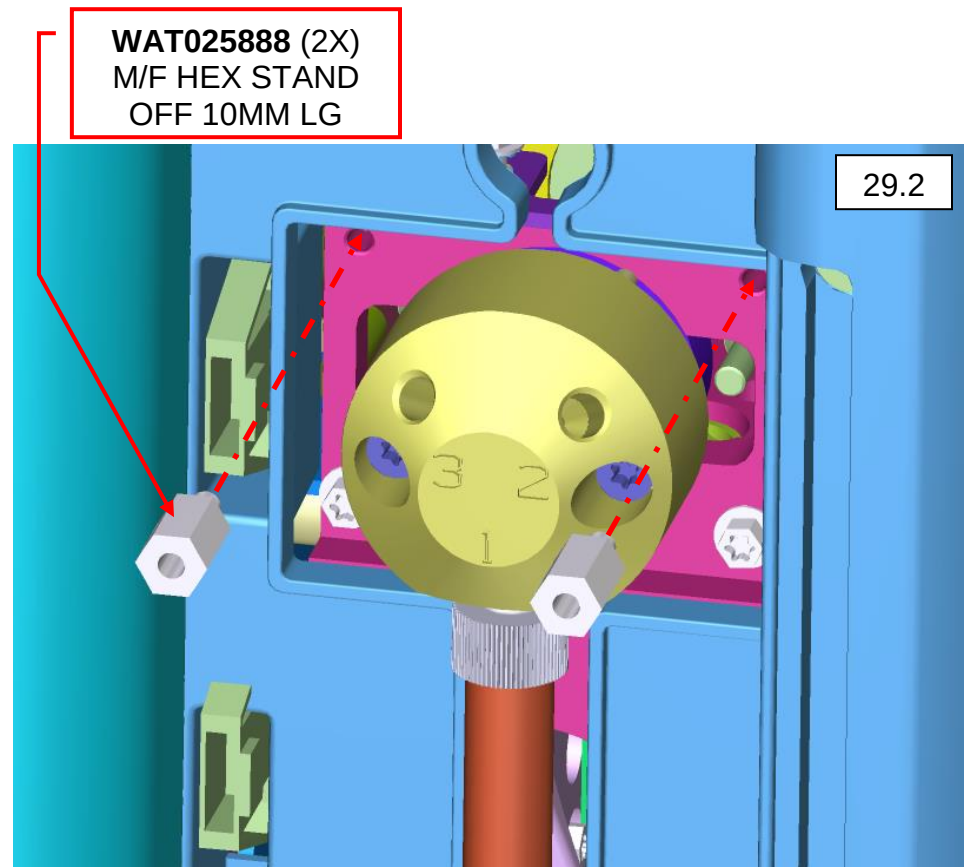
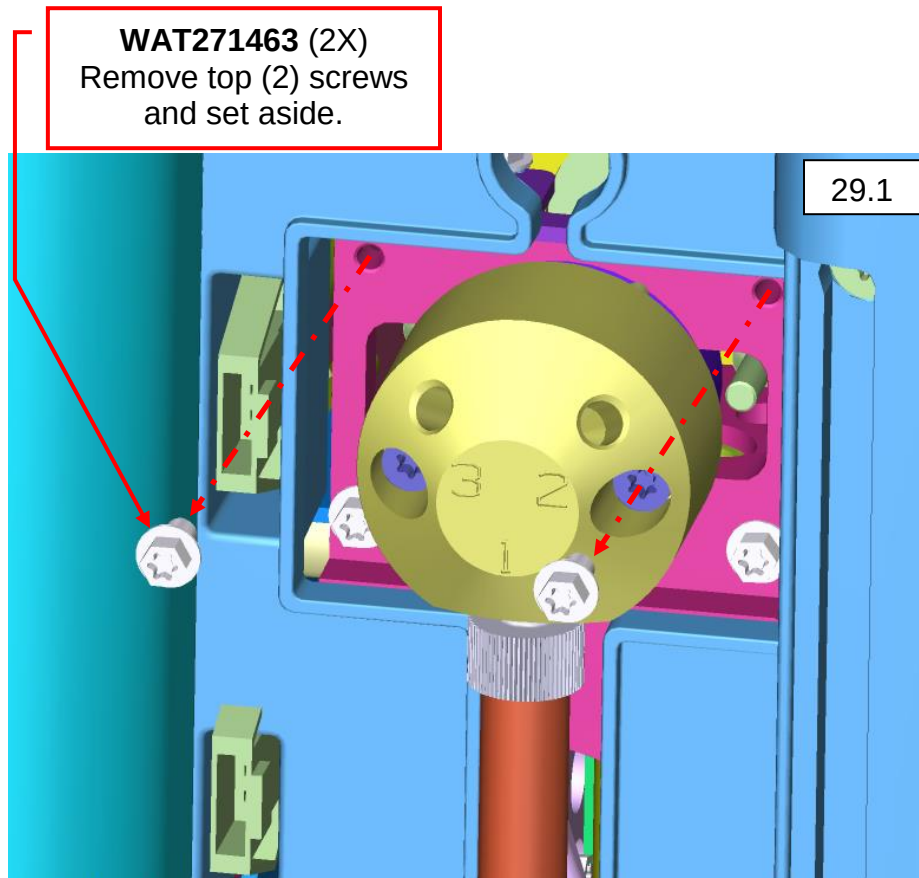
PAGE 31 OF 40
279001685 REV P

<u>OPER</u>	<u>OPERATION DESCRIPTION</u>
29.0	ASSEMBLE INJECT VALVE DRIP TRAY

<u>TOOL NUMBER/DESCRIPTION</u>
T10 Torx Driver
1/4" Nut Driver

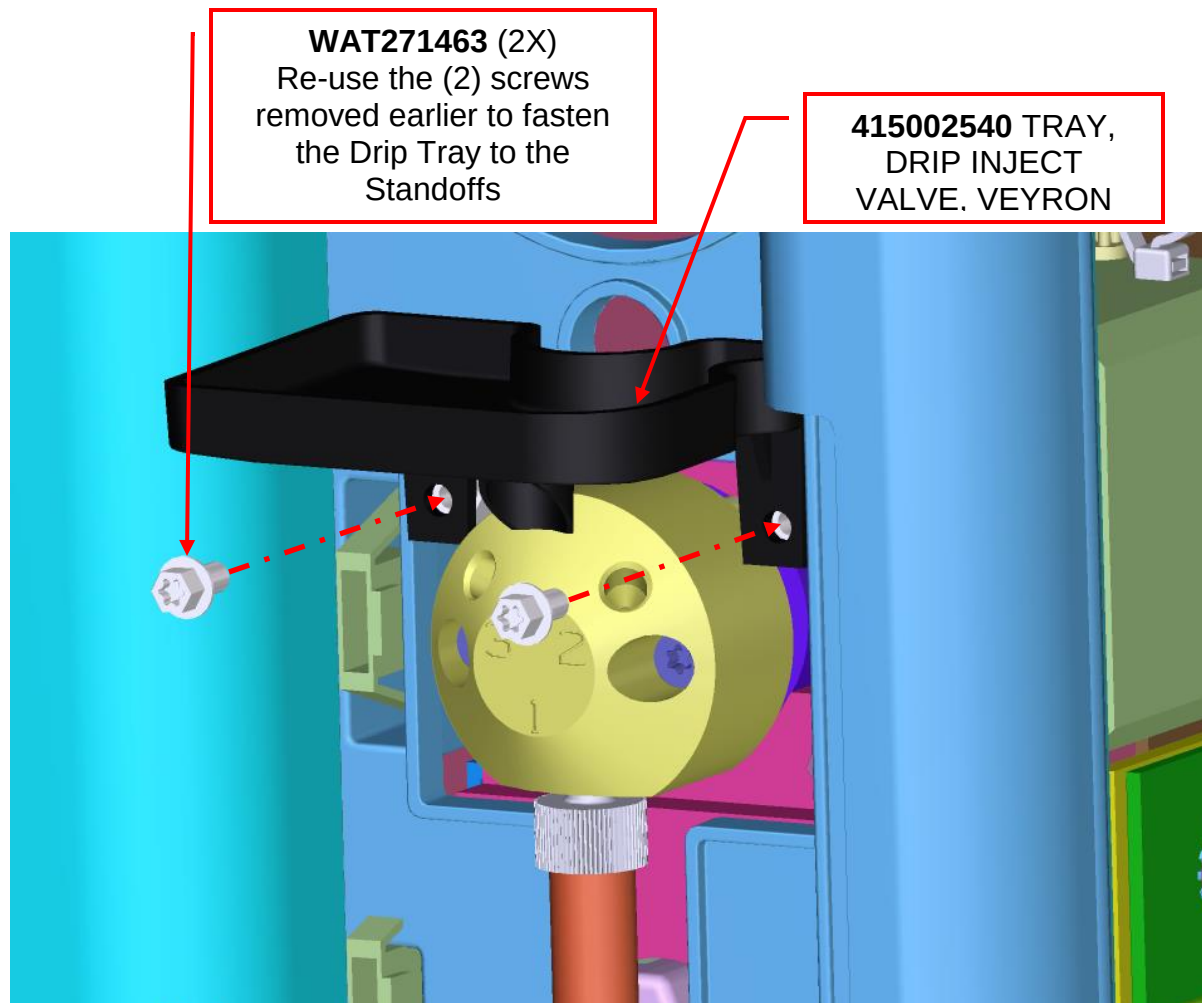
- 29.1 Remove top two Screws from the Syringe Valve Assembly and set aside.
- 29.2 Assemble (2) WAT025888 Hex Stand-offs into the top two holes of the Syringe Valve Assembly and hand tighten with a 1/4" Nut Driver.

(NOTE: For clarity purposes, tubing assemblies have been omitted from RH views.)



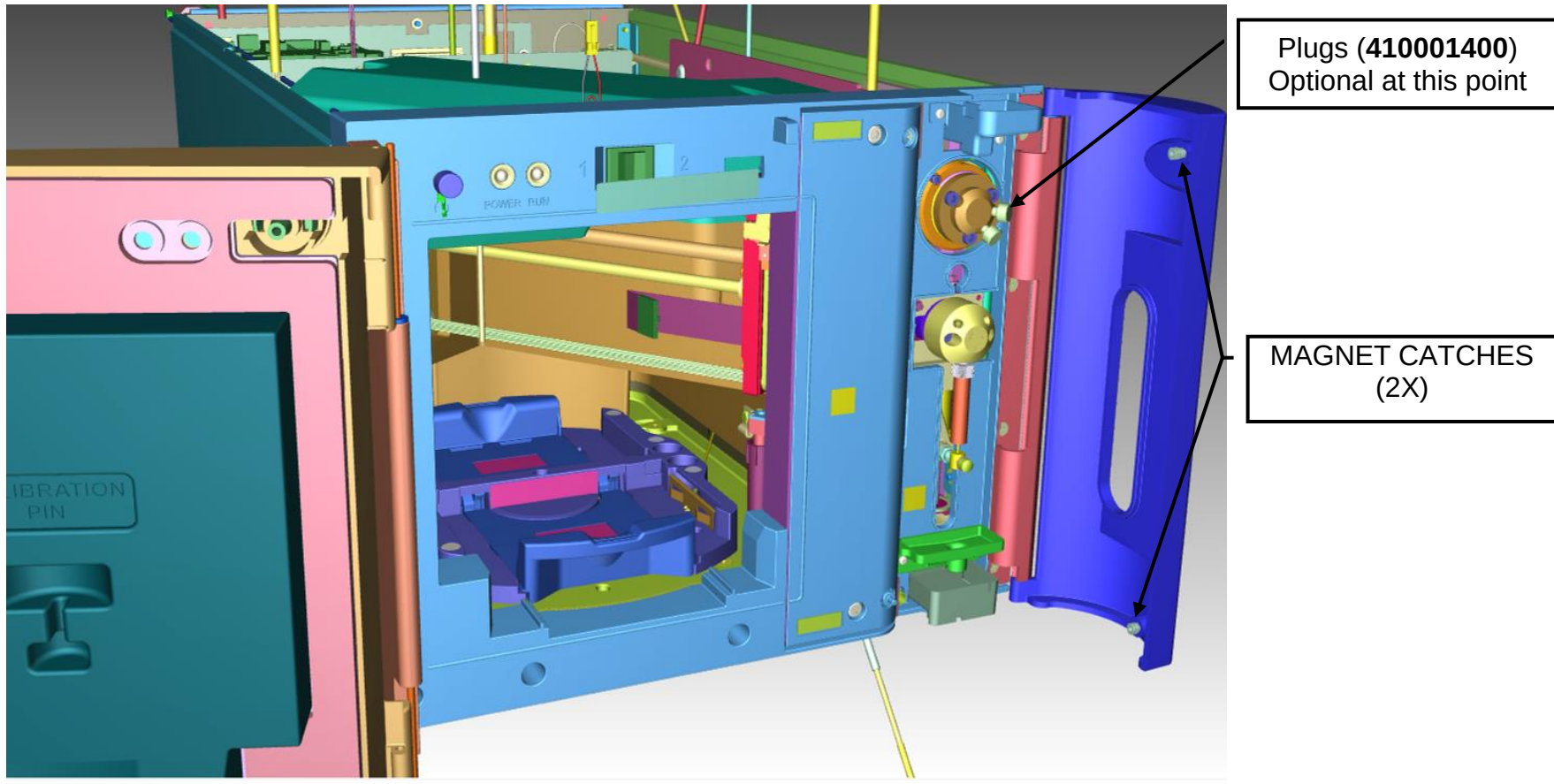
<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
29.0	ASSEMBLE INJECT VALVE DRIP TRAY, cont'd	T10 Torx Driver

- 29.3 Assemble Inject Valve Drip Tray to Stand-offs assembled earlier. Hand tighten using a T10 Torx Driver.



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
30.0	Remove Magnet Catches (2) on Fluidics Door. Apply small amount of Loctite (600000161) on threads of Magnet Catches Screw Magnet Catches into Fluidics Door –adjust to engage with magnets on Access Panel.	Slotted Screwdriver

NOTE: THIS STEP IS CALLED OUT ON DWG 279001990
Adjusting the magnets here helps compensate for tubing issues.

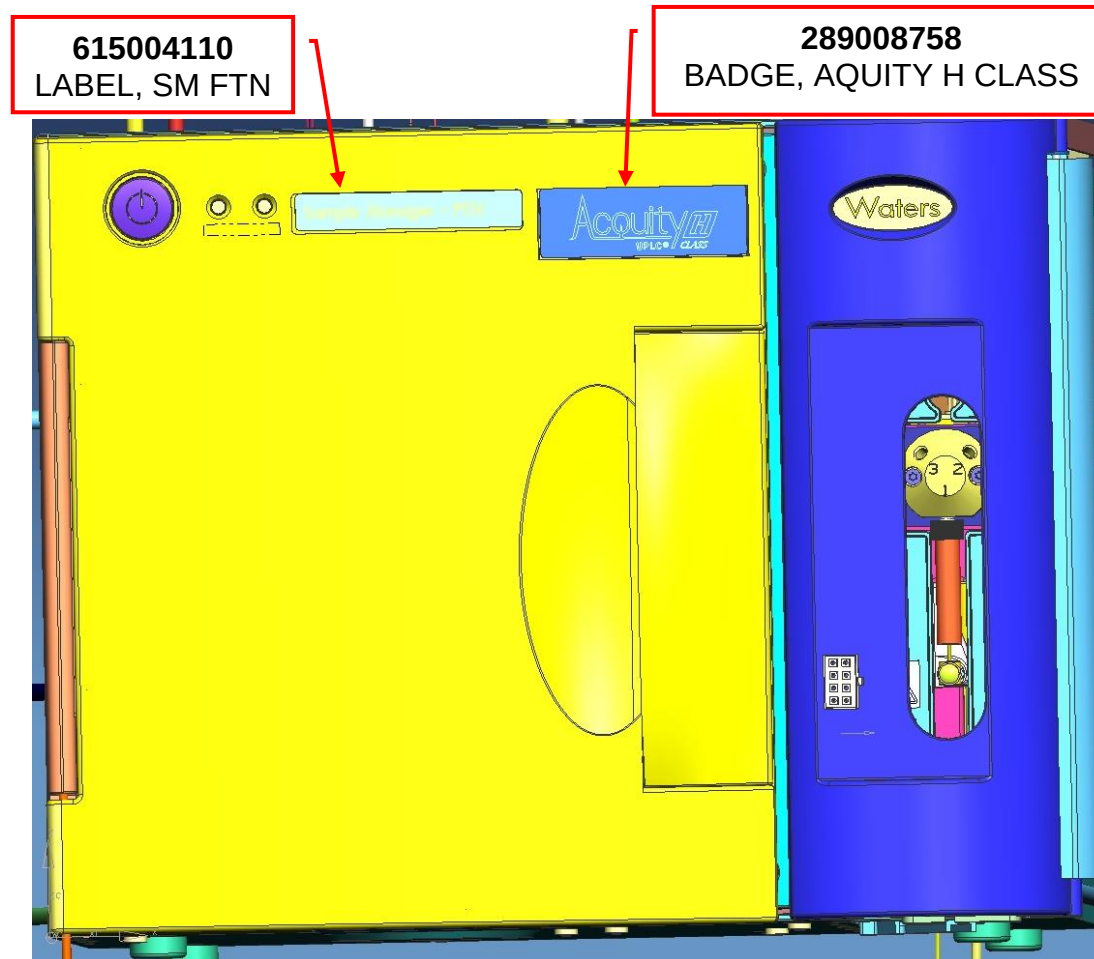


<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
31.0	ADHERE LABELS:	N/A
31.1	Add printed (CLEAR) S/N Label (WAT024406) to front Bezel where shown.	
31.2	Add printed (WHITE) S/N Label (WAT024406) to silkscreened area on rear panel of chassis as shown.	
31.3	Adhere ETL label (615003826) to silkscreened area on rear panel of chassis as shown.	



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
31.0	ADHERE LABELS:, cont'd	N/A

31.4 Add door labels (615004110) and (289008758) as shown.



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
32.0	PERFORM HIPOT TEST: Perform HIPOT GROUND LEAKAGE TEST per procedure WAT046538.	
33.0	PERFORM FINAL TEST: Test unit per procedure 735002984.	TE Tester TE83064

OPER **OPERATION DESCRIPTION**
34.0 Connect Tubing as shown.

TOOL NUMBER/DESCRIPTION
999026375 TORQUE WRENCH

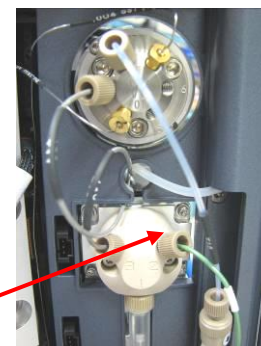
Connect Tubing, Route as shown

TUBING	FROM	TO
430002347 (T8)	SYRINGE DRIVE (PORT #2)	DOWN THROUGH HINGE OF FLUIDICS DOOR

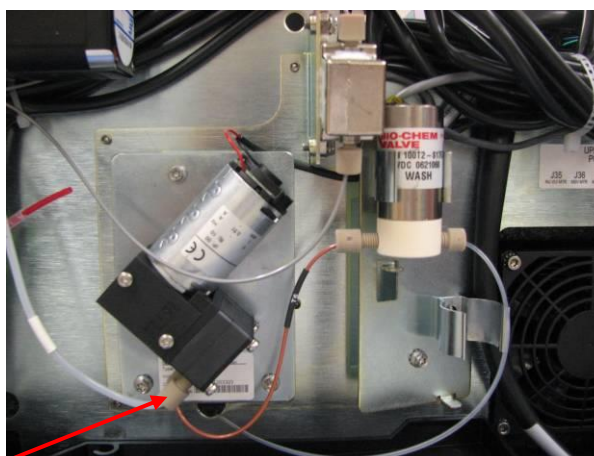


ROUTE T8 THROUGH
HINGE

Connect tubing 430002347 (T8) to SYRINGE
DRIVE (PORT #2)
NOTE: USE 999026375 TORQUE WRENCH
Torque to 48 IN-OZ



Connect tubing 430002336 to WASH PUMP (FRONT PORT)



NOTE: USE 999026375 TORQUE WRENCH
Torque to 48 IN-OZ

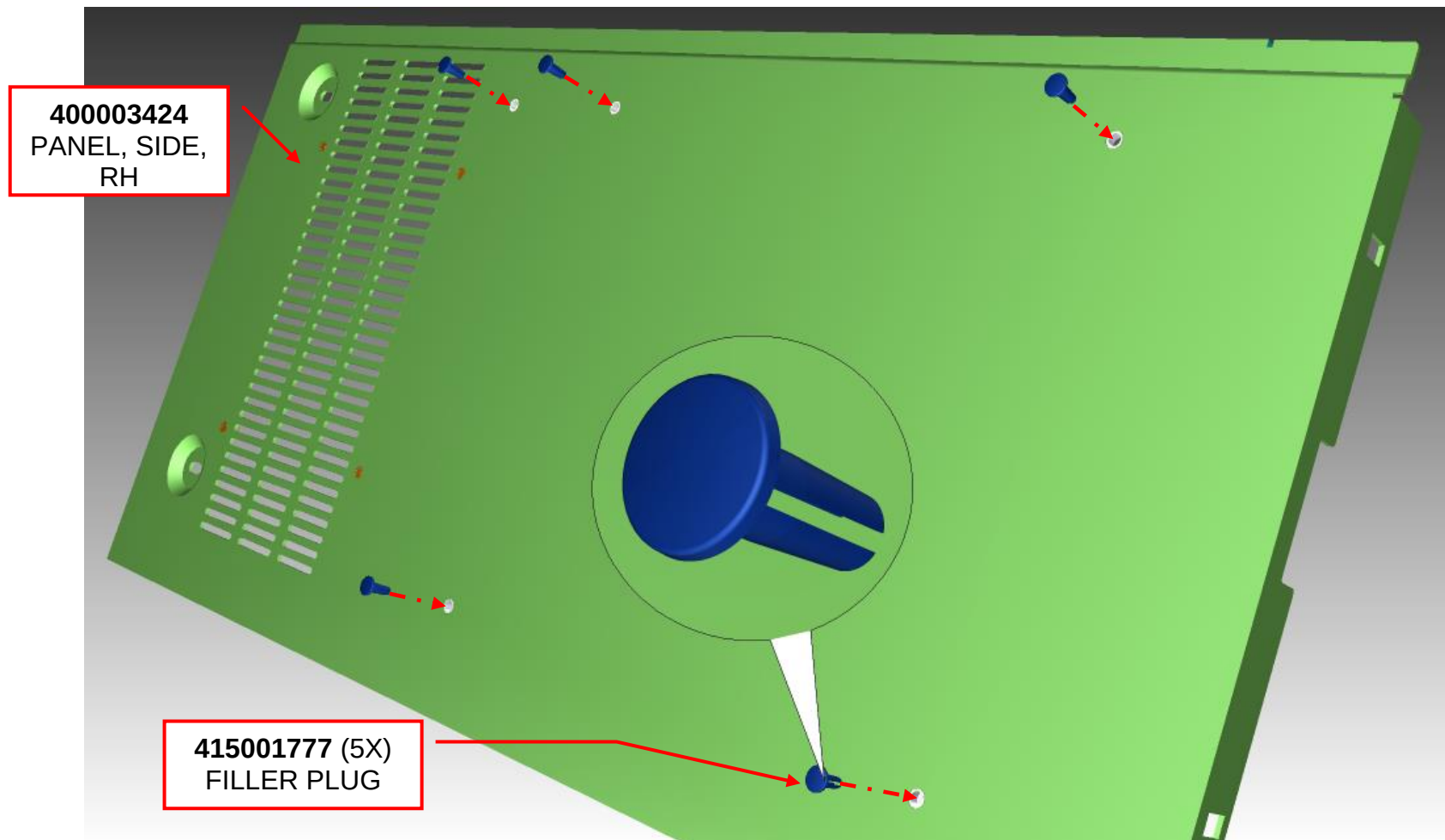
OPER
35.0

OPERATION DESCRIPTION
INSTALL FILLER PLUGS INTO RH PANEL

TOOL NUMBER/DESCRIPTION
N/A

<u>PART #</u>	<u>QTY</u>	<u>DESCRIPTION</u>
400003424	1	PANEL, SIDE, RH, AUTOSAMPLER
415002777	5	PLUG, HOLE, BLUE, .125 DIA/M4

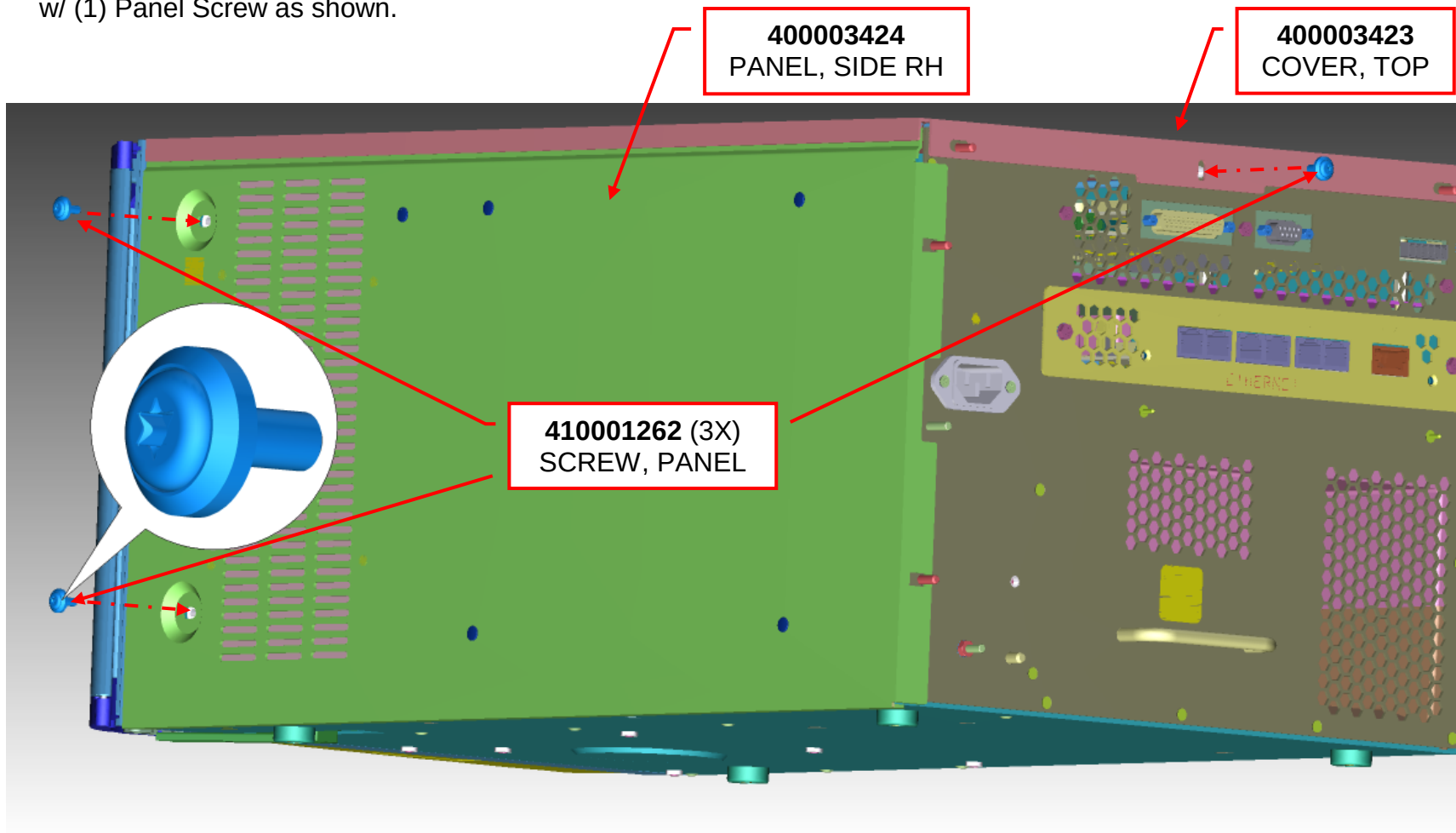
Press fit Plugs into open PEM holes in right side panel. (Press in until flush with Panel surface)



<u>OPER</u> 36.0	<u>OPERATION DESCRIPTION</u> INSTALL SIDE AND TOP PANELS	<u>TOOL NUMBER/DESCRIPTION</u> T20 TORX DRIVER
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<u>PART #</u>	<u>QTY</u>	<u>DESCRIPTION</u>
400003423	1	COVER, TOP, AUTOSAMPLER
410001262	3	SCREW, PANEL, M4 X 10 BLUE
400003424	1	PANEL, SIDE, RH, AUTOSAMPLER

Assemble Right Side Panel first w/ (2) Panel Screws then assemble Top Cover w/ (1) Panel Screw as shown.



<u>OPER</u>	<u>OPERATION DESCRIPTION</u>	<u>TOOL NUMBER/DESCRIPTION</u>
37.0	Replace plugs: Screw (2) Plugs (410001400) into ports # 5 and #6.	N/A
38.0	Roll tubing 430002347 (T8) & 430002360 (T13) then place them inside ZIP LOCK BAG (WAT024193). Tie ZIP LOCK BAG with a cable tie (WAT027033).	

END

