

T300/T300e/A300 ec-H2O NanoClean Affiliate Kit



This kit includes the necessary parts to convert a standard model into an ec-H2O™ NanoClean model.

INSTALLATION INSTRUCTIONS:

Installation Time: 2 Hours

Kit Installation Requirements: Tennant Service Application Software and USB cable.

Special Tools Required: Cartridge By-Pass Tool to test machine after install (provided separately).

PREPARE MACHINE FOR KIT INSTALL:

1. Drain the solution and recovery tanks.
2. Park the machine on a level surface, lower the scrub head and remove the key.
3. Remove batteries from machine.

FOR SAFETY: When handling batteries, wear protective gloves and eye protection. Avoid contact with battery acid.



Fig. 1

INSTALL ec-H2O MODULE:

1. Locate the factory installed ec-H2O wire harness wire-tied to the machine's main wire harness (Figure 2). Cut the wire-tie and remove the ec-H2O harness as shown.

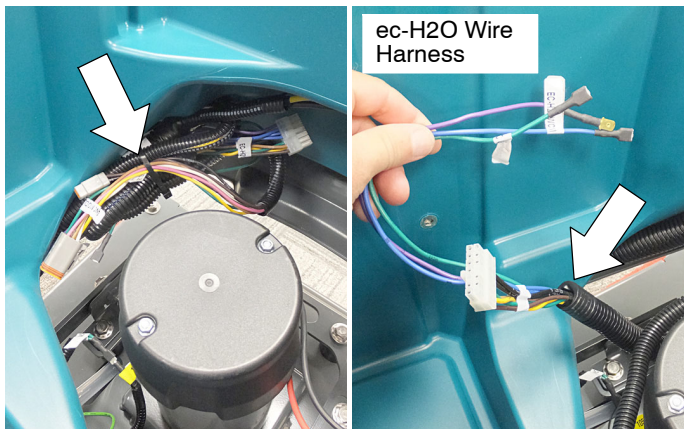


Fig. 2

2. Before mounting the ec-H2O module assembly to machine, connect ec-H2O wire harness to the module as described in step 3 and 4.
3. Connect the green static ground wire from the ec-H2O wire harness to the module as shown (Figure 3).

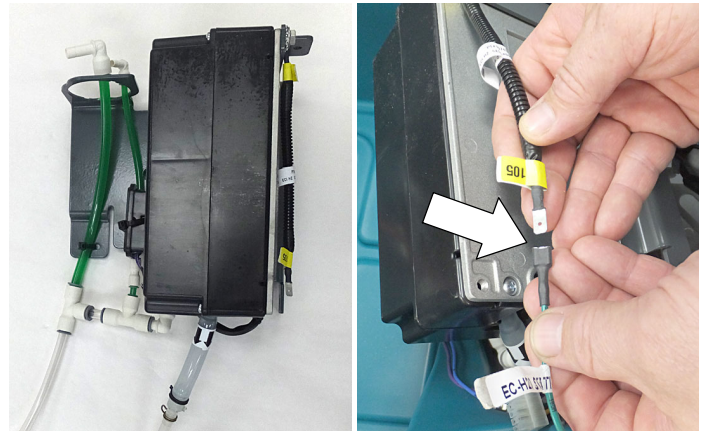


Fig. 3

4. Connect the module connector to the ec-H2O module and the blue and purple wires to the water conditioning pump (Figure 4).

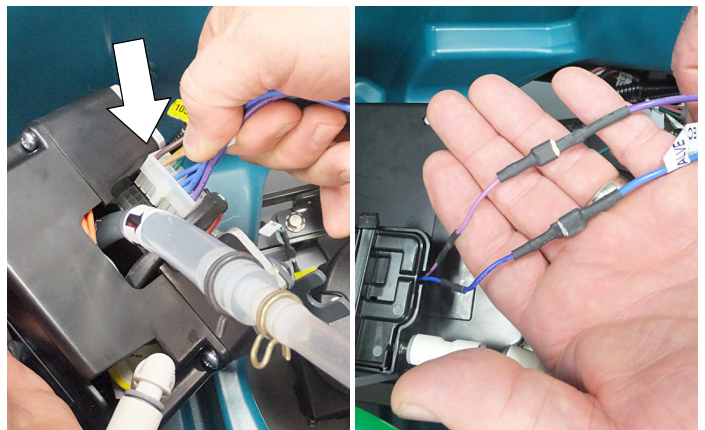


Fig. 4

5. Install the following ec-H2O module assembly mounting hardware as shown (Figure 5).



Fig. 5

- Mount the ec-H2O module assembly to machine using screws as shown (Figure 5).

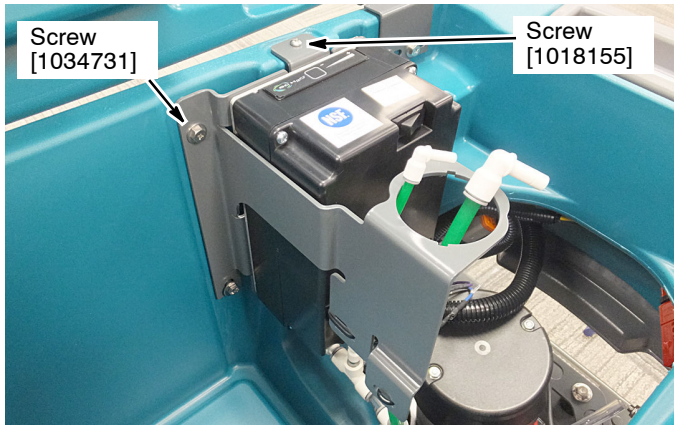


Fig. 6

INSTALL ec-H2O CONTROL CONSOLE SWITCH:

- Remove the two lower torx screws at bottom of control console and carefully lower console cover (Figure 7)

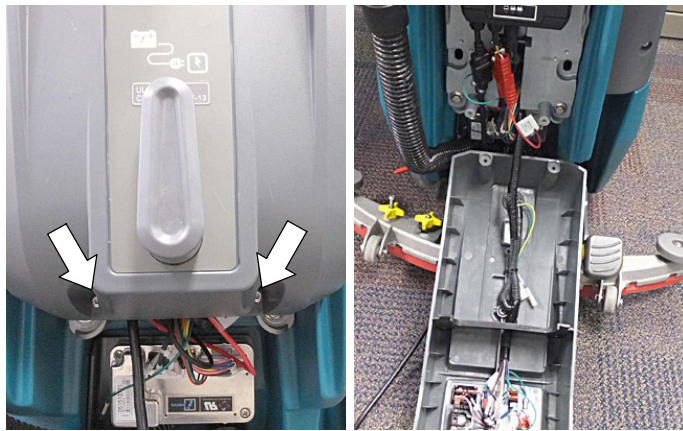


Fig. 7

- Locate the factory installed black and brown ec-H2O switch wires wire-tied to harness, cut wire-tie. Lift the console partition and route the two wires to the switch area as shown (Figure 8). Replace partition.

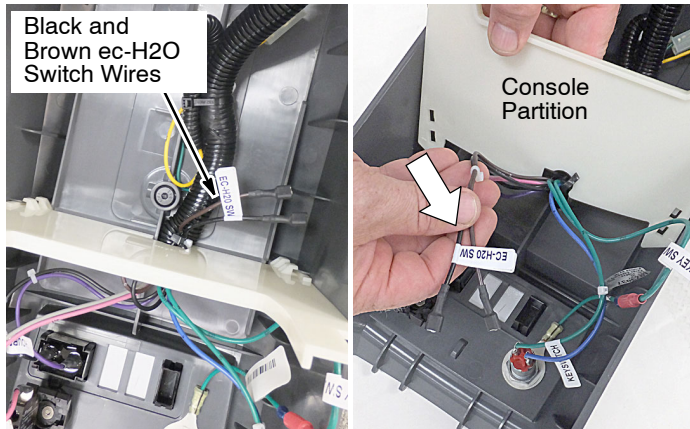


Fig. 8

- Remove the switch plug from the console and install the ec-H2O switch in the orientation as shown (Figure 9).

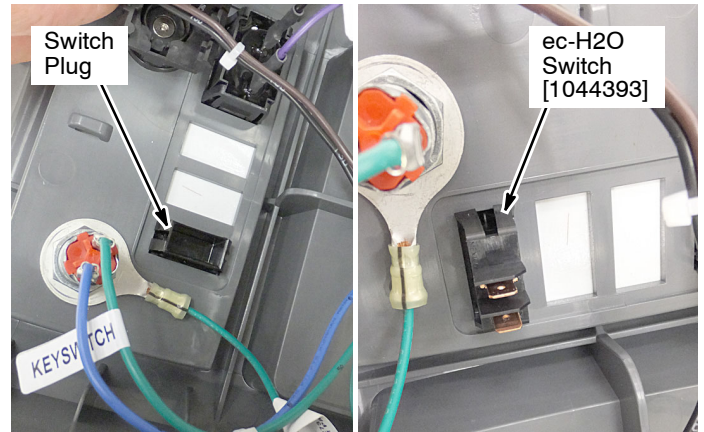


Fig. 9

- Connect the black and brown wires to the ec-H2O switch as shown (Figure 10).

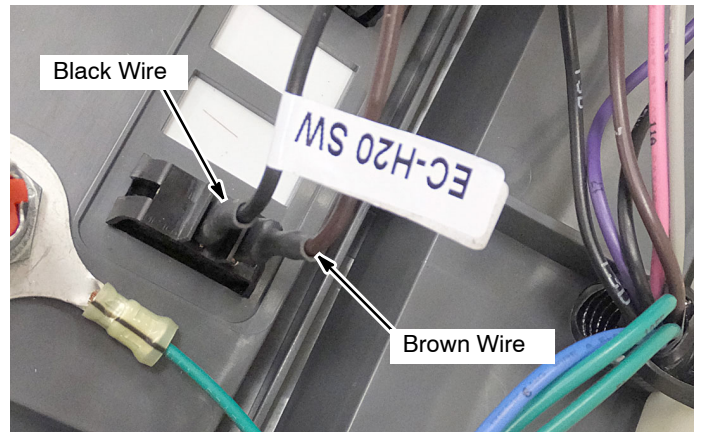


Fig. 10

- Replace the control console. When replacing console, engage the top half of the console first then align the lower screw mounting locations (Figure 11). Make sure the side panels align and engage correctly before replacing to lower torx screws.

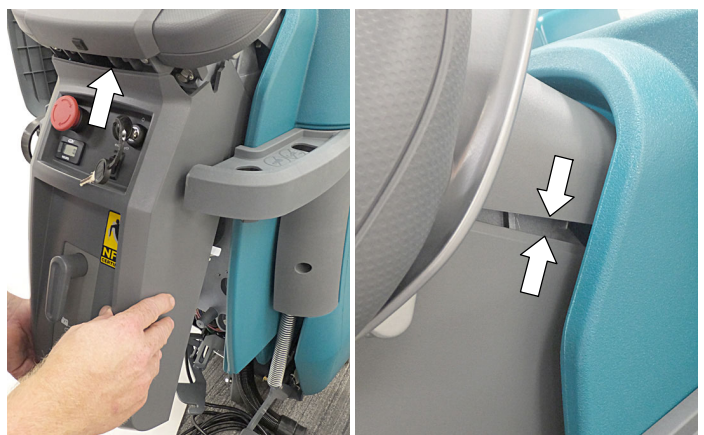


Fig. 11

INSTALL ec-H2O CIRCUIT BREAKERS AND RELAY:

1. Remove the two circuit breaker panel screws. Cut the wire-tie from the wire bundle to access the factory installed ec-H2O circuit breaker wires and relay connector (Figure 12).

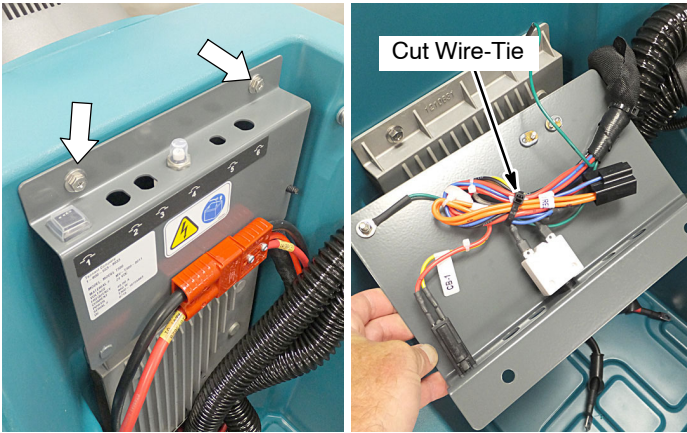


Fig. 12

2. Using circuit breaker boots, install the two 4.0 amp circuit breakers into the circuit breaker panel (Figure 13).

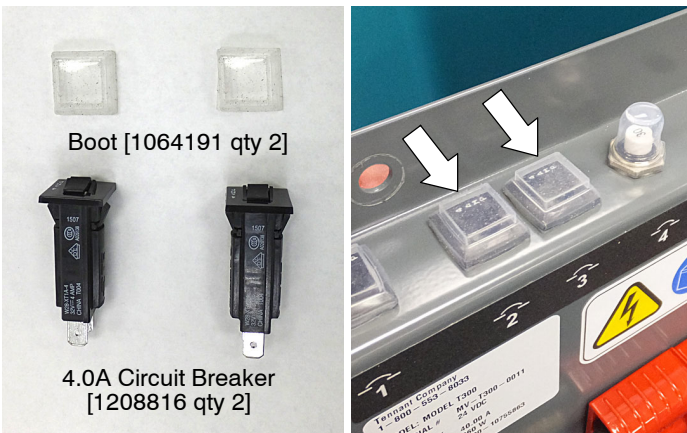


Fig. 13

3. Connect the following wires to circuit breakers as shown (Figure 14).

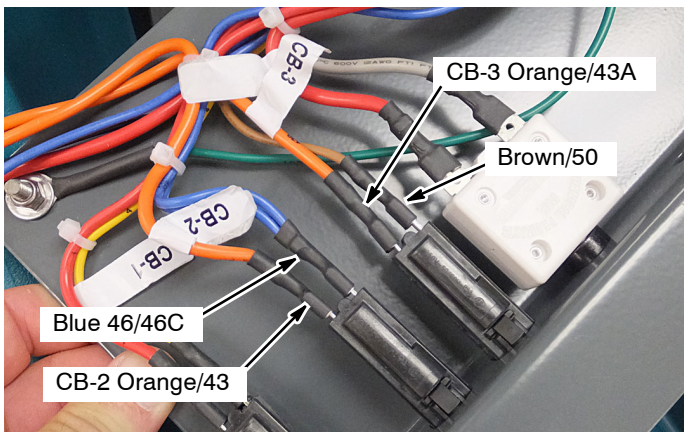


Fig. 14

4. Install the ec-H2O relay to the circuit breaker panel as shown and plug the harness relay connector into the relay (Figure 15).

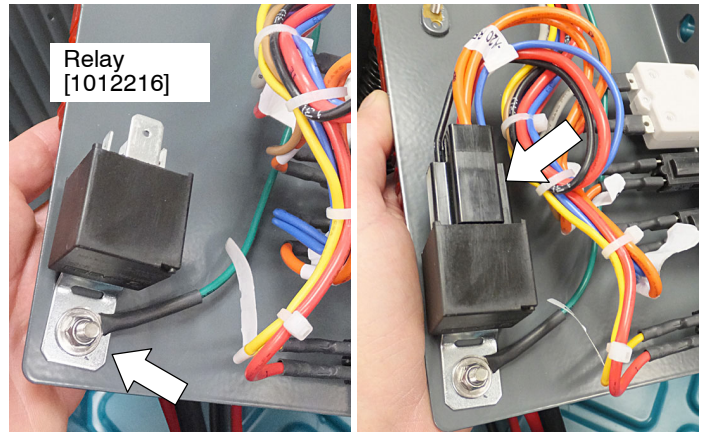


Fig. 15

5. Re-install the circuit breaker panel to machine (Figure 16).



Fig. 16

INSTALL ec-H2O NanoClean SOLUTION SYSTEM:

1. Remove the front shroud from the machine. Disconnect the ground wire, brush motor connector and solution hose connection from the scrub head (Figure 17).

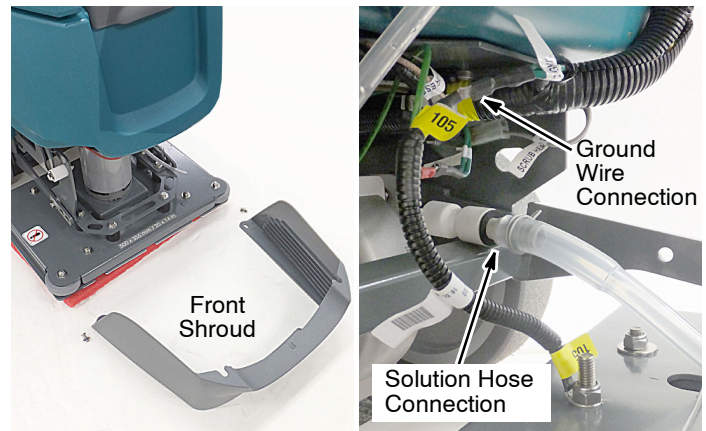


Fig. 17

- Remove the mounting hardware from the two scrub head lift arm brackets. Disconnect the torsion spring from scrub head (Figure 18).

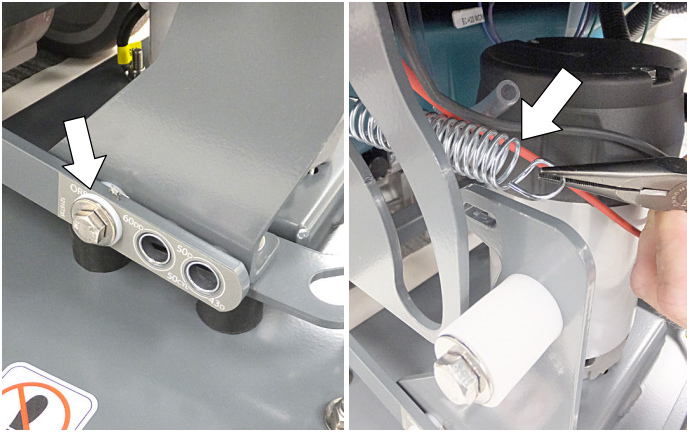


Fig. 18

- Remove the scrub head from machine. On a non-marring surface, with assistance, carefully lay the machine on its left side (Figure 19).

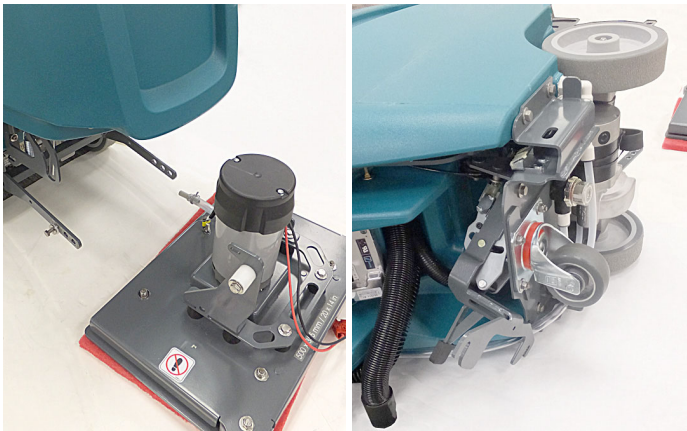


Fig. 19

- Disconnect the solution hose from T-fitting as shown. Press the black collar on fitting inward and pull the hose outward to remove hose from fitting (Figure 20).

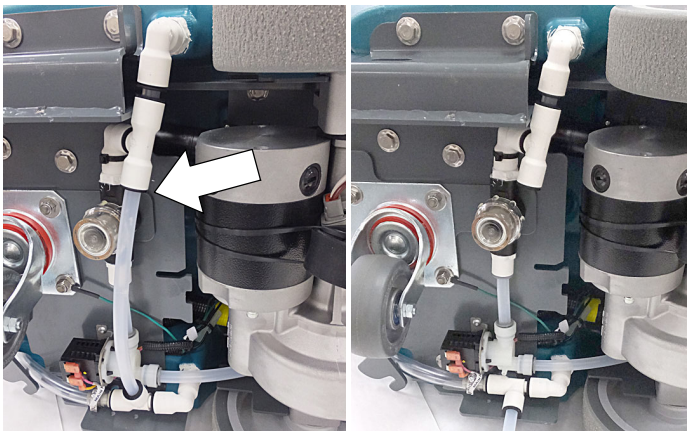


Fig. 20

- Cut the wire-tie and disconnect the elbow fitting from T-fitting as shown (Figure 21).

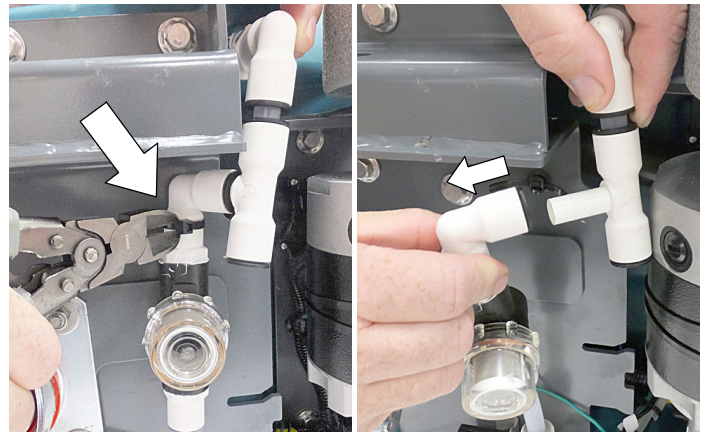


Fig. 21

- Remove the in-line filter assembly from machine (Figure 22). Install T-fitting and 5.7cm hose to filter as shown (Figure 22).

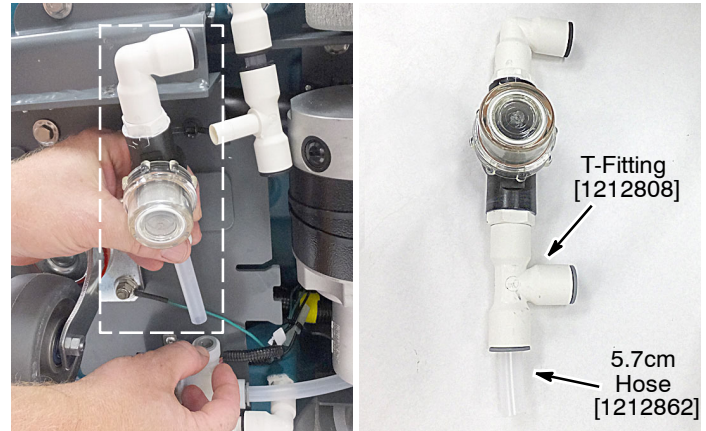


Fig. 22

- Using new wire-tie, reinstall the in-line filter assembly to T-fitting as shown (Figure 23).

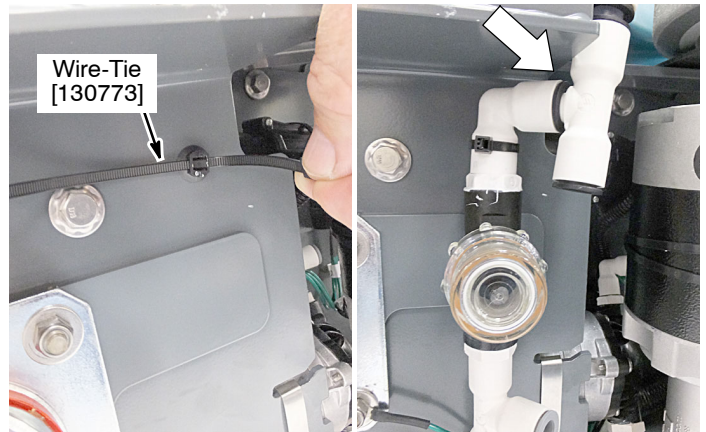


Fig. 23

8. Connect the in-line filter assembly to solenoid valve fitting and reconnect the existing hose as shown (Figure 24).

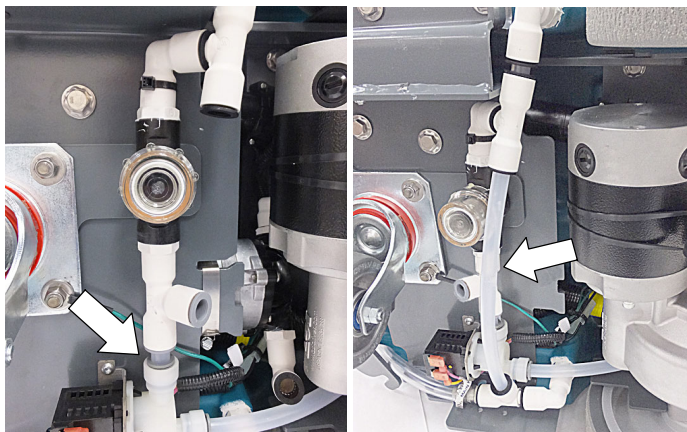


Fig. 24

9. Using thread sealer, install two elbow fittings to pump as shown below. To mount pump to machine, use large hose clamp. Fully unscrew clamp to route clamp around pump during installation (Figure 25).

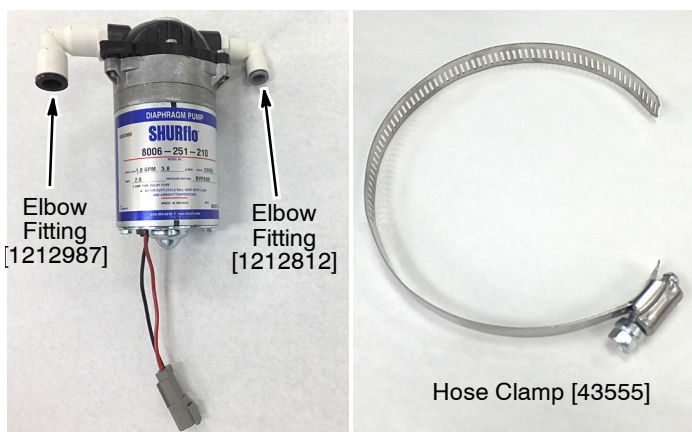


Fig. 25

10. Insert the pump assembly from the rear of machine and mount it to the machine frame tab with hose clamp as shown. Rotate the elbow fittings as shown (Figure 26).

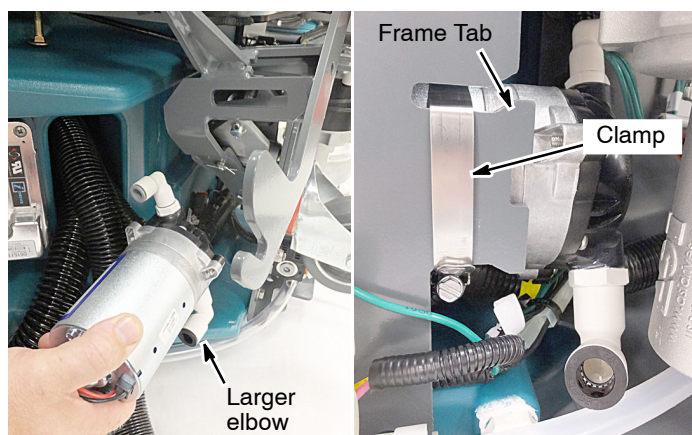


Fig. 26

11. Locate the the factory installed pump connector, capacitor connector and diode connector wire-tied to the main machine harness near pump (Figure 27). Cut the wire-tie to access the connectors.

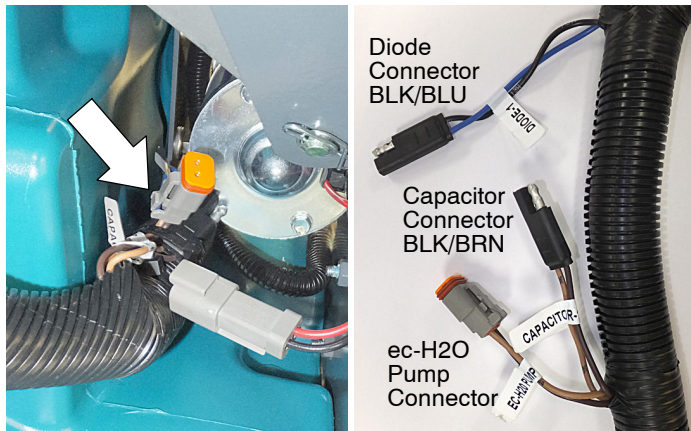


Fig. 27

12. Connect the pump connector to the ec-H2O pump. Plug the capacitor and diode into the machine harness as shown (Figure 28). Secure wire connections with wire-tie.

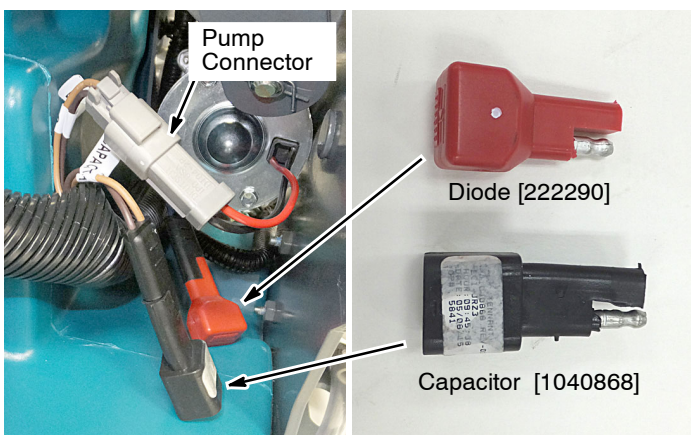


Fig. 28

13. Using elbow fitting and hose shown, connect to T-fitting and to the pump intake elbow fitting as shown (Figure 29).

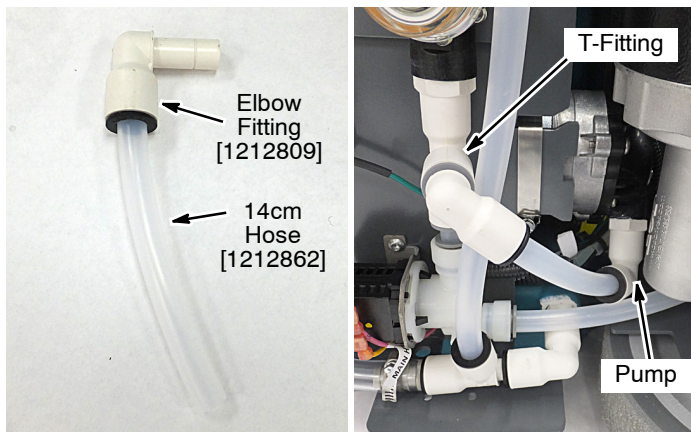


Fig. 29

14. At the scrub head location, remove the straight fitting from the solution tank outlet hose. Install T-fitting (Figure 30).

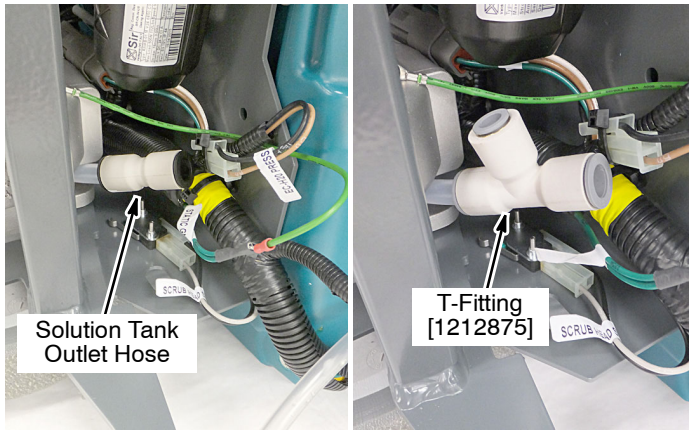


Fig. 30

15. At the scrub head location, route the Pump Outlet Hose Assembly to the pump (Figure 31). Fully insert hose into the pump outlet fitting. See Figure 35 for reference.

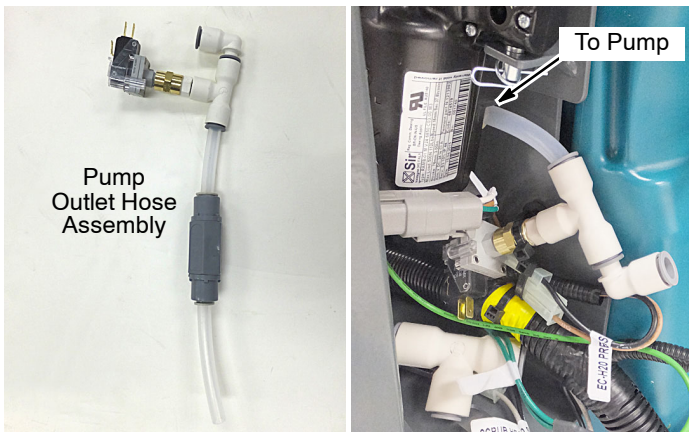


Fig. 31

16. Locate the factory installed pressure switch connector wire-tied to machine harness (Figure 32). Cut wire-tie and plug connector into the pressure switch as shown.

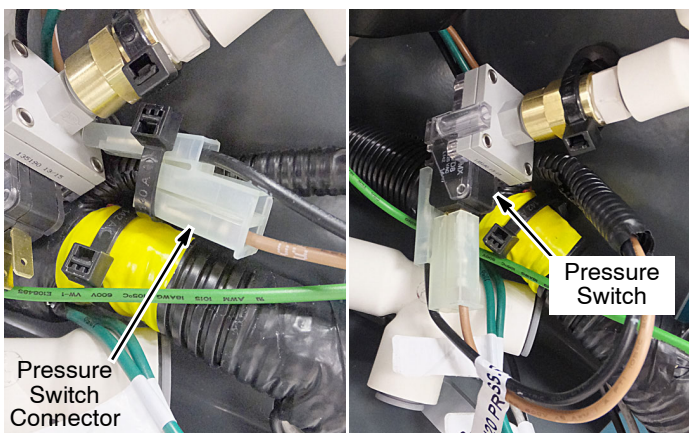


Fig. 32

17. Using the tree-clip wire-tie, secure the pressure switch to machine frame as shown (Figure 33).

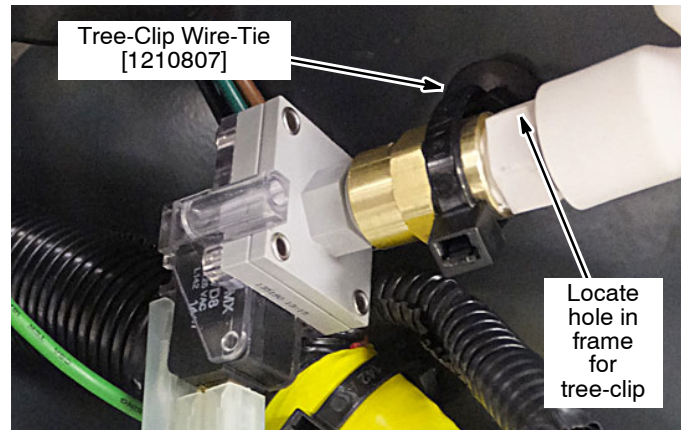


Fig. 33

18. Connect the two hoses from the ec-H2O module to the hose fittings as shown (Figure 34).

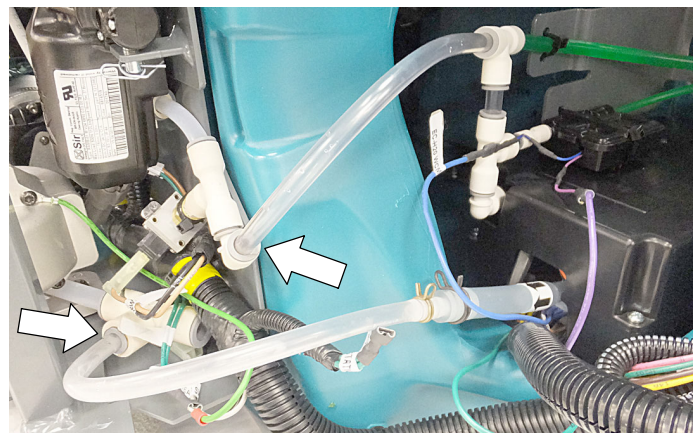


Fig. 34

For reference, ec-H2O solution system (Figure 35).

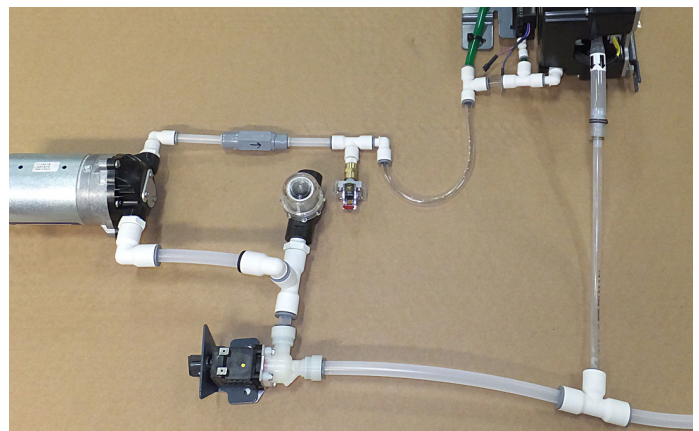
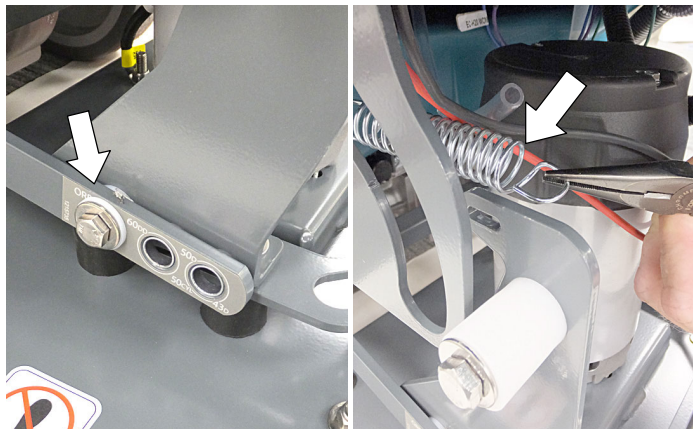


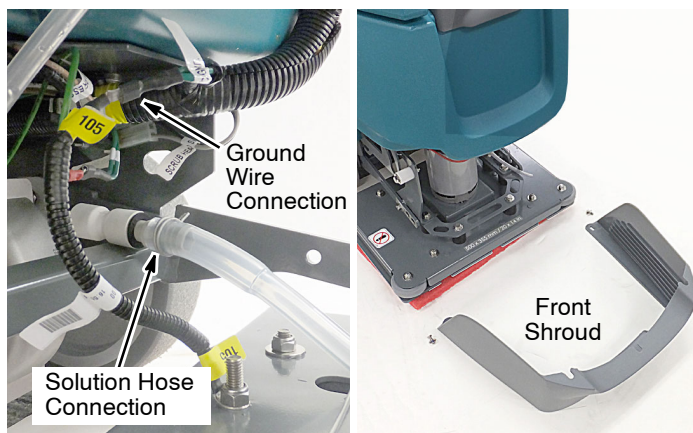
Fig. 35

RE-INSTALL SCRUB HEAD AND BATTERIES:

1. With assistance, carefully stand the machine upright.
2. Re-install the scrub head on machine (Figure 36). Reattach the scrub head lift arms and reconnect the torsion spring to scrub head.

**Fig. 36**

3. Reconnect the ground wire, brush motor connector and solution hose connection at scrub head. Re-install front shroud on machine (Figure 37).

**Fig. 37**

4. Carefully re-install batteries and connect battery cables.

FOR SAFETY: When handling batteries, wear protective gloves and eye protection. Avoid contact with battery acid.

REPROGRAM THE CONTROL BOARD:

The following Tennant Service Application Software is required to reconfigure the machine's control board to recognize the ec-H2O installed option.

The application software can be downloaded from the Tennant Application Catalog website. The software application is titled “**Service Diagnostics**” (Figure 38).

Icon on Desktop



Fig. 38

1. Start the Service Software Application program. After start up, the following screen will appear (Figure 39).

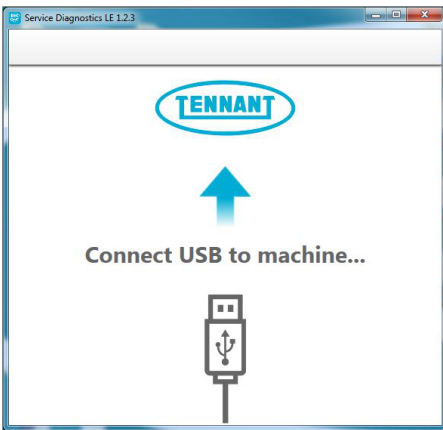


Fig. 39

2. Connect the USB cable to computer and to the USB port on machine as shown. Turn the key switch to the on position (Figure 40).

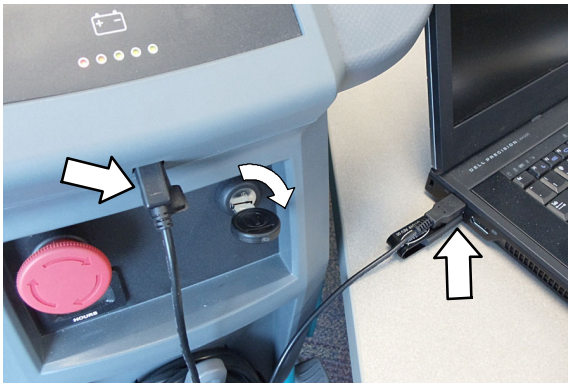


Fig. 40

3. The application software will then connect to the machine (Figure 41). If the application remains on the “Connecting to Machine...” screen for an extended period, cycle key or close and restart the application software. If it still fails to connect, restart the computer.

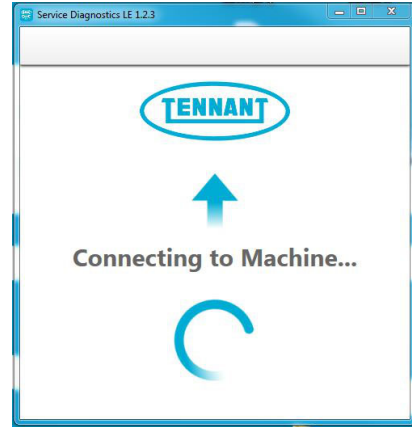


Fig. 41

4. From the Home Page, select the Configuration button (Figure 42).

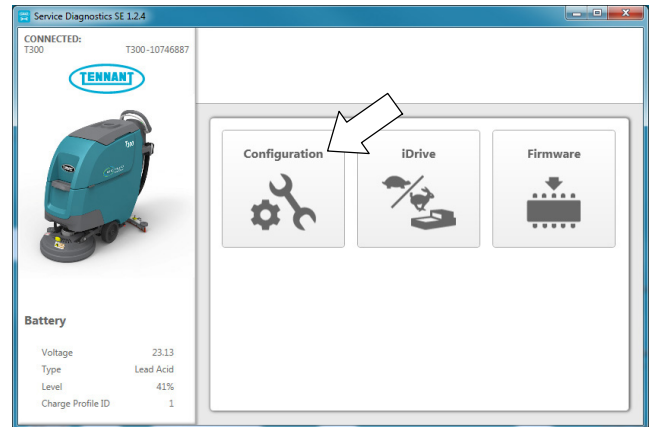


Fig. 42

5. Change the Cleaning Technology to “**ec-H2O NanoClean**” from the pull-down menu (Figure 43). Then press the down arrow button to program the machine. A green check will appear next to the down arrow button when programmed.

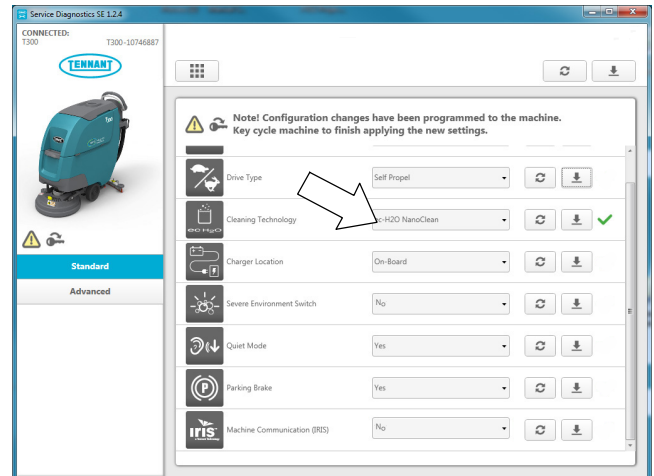


Fig. 43

6. Cycle the key to apply the new machine configuration. Disconnect the USB cable.

CHECK THE ec-H2O NanoClean SYSTEM FOR PROPER OPERATION:

To ensure the ec-H2O NanoClean system is operating properly, perform the following.

1. Connect the cartridge by-pass tool, provided separately, to the two green hoses as shown. Route the clear discharge hose to the floor. The use of the cartridge by-pass tool is to prevent activating the ec-H2O water conditioning cartridge during the check process (Figure 44).

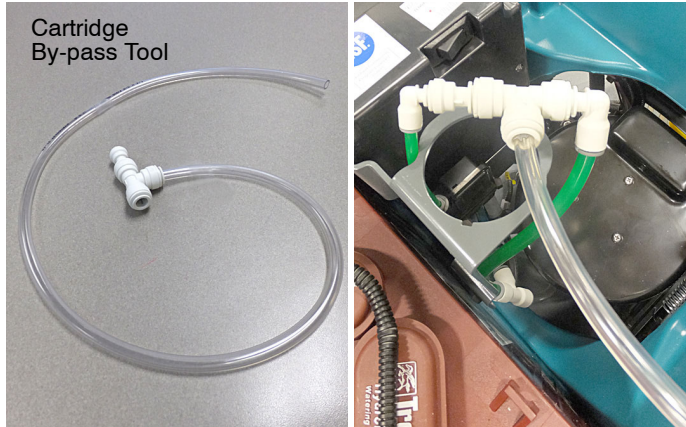


Fig. 44

2. Fill solution tank with cool clean water (less than 21°C/70°F). Do not add any conventional floor cleaning detergents, system failure may result.
3. Turn the key to the on (I) position. Verify that the 4 LED's on the module ripple left to right and then turn off, followed by displaying the current flow rate setting (Figure 45).



Fig. 45

4. Notice the “ec-H2O” indicator on control panel is turned on. The “ec-H2O” indicator will automatically turn on at start up (Figure 46). The ec-H2O switch will turn off the ec-H2O system.



Fig. 46

5. Operate the ec-H2O module in Manual Mode (See NOTE below). Verify that the ec-H2O system is putting water on the floor at the scrub head and at the By-Pass Tool hose.
6. Check all ec-H2O system hose connections for water leaks.

NOTE: To enter the module's Manual Mode, depress and hold the service switch for 20 seconds and release (Figure 47). The first and third green LEDs will alternate on and off indicating that you are in the Manual Mode and the ec-H2O pump will be operating. To exit the Manual Mode, depress the Service Switch for one second and release. The module will also exit the manual mode automatically after 7 minutes.

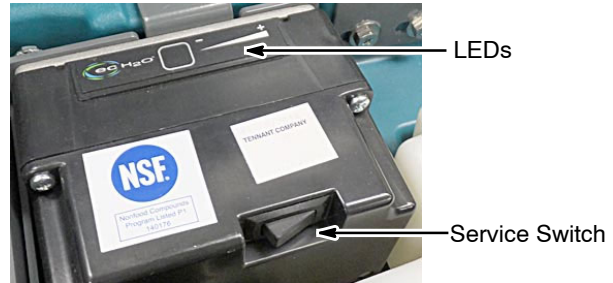


Fig. 47

9. After checking machine for proper operation or possible leaks, drain all tanks and vacuum out any residual water. With the ec-H2O module in Manual Mode, attach the hose from from the By-pass Tool to a vacuum unit and vacuum out any remaining water from module.
10. Exit the Manual Mode and remove the Cartridge By-pass Tool from machine. To exit Manual Mode, depress the Service Switch for one second and release.

INSTALL ec-H2O NanoClean WATER CONDITIONING CARTRIDGE:

1. Check the manufacture date on the Water Conditioning Cartridge before installing. The shelf-life of an un-installed cartridge is one year from manufacture date. Discard cartridge if shelf-life has expired. For replacement Cartridge, order p/n 9013646.
2. Fill in the installation date on the Water Conditioning Cartridge label (Figure 48).



Fig. 48

3. Remove the two plugs from cartridge. Press the gray collars inward and pull plugs outward to remove (Figure 49). Position the cartridge in the cartridge holder bracket as shown and connect green hoses to cartridge (Figure 49). Make sure the hose connectors are fully inserted.

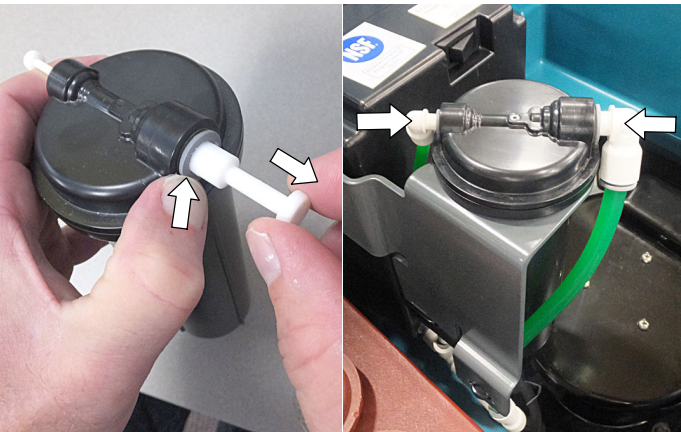


Fig. 49

Set Timer for Water Conditioning Cartridge:

Carefully read and understand the following steps before performing procedure.

1. Turn key to the on position.
2. Press and hold the service switch on the module for 10 seconds. After releasing the service switch, the three solution flow indicator lights will begin to (ripple) move back and forth.

Attention: If you hold the service switch too long, the 1st and 3rd lights will alternate on and off. If this happens, press and release the service switch and repeat step 2.

3. Within 5 seconds after releasing the service switch, while the three indicator lights are still moving back and forth (ripple), press the quickly release the solution flow button located on ec-H2O module.
4. The indicator lights will then blink three times to confirm timer has been set. Repeat process if the three indicator lights do not blink three times.

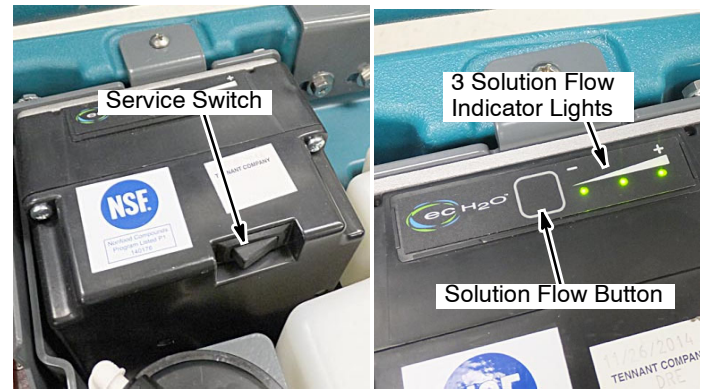


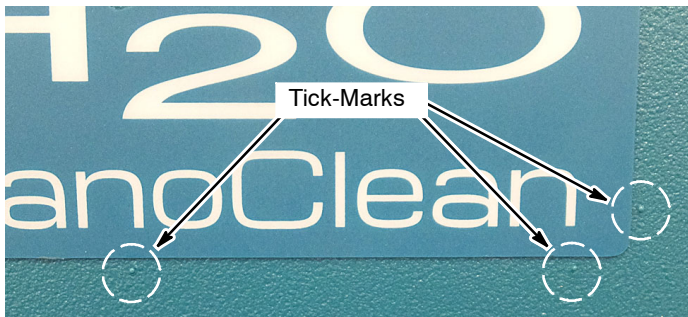
Fig. 50

INSTALL ec-H₂O NanoClean LABELS

Apply the new ec-H₂O NanoClean labels on machine as described below (Figure 51).



T300/T300e model: ec-H₂O NanoClean Label [1216520] Qty 2
A300 model: ec- H₂O NanoClean Label [1216533] Qty 2



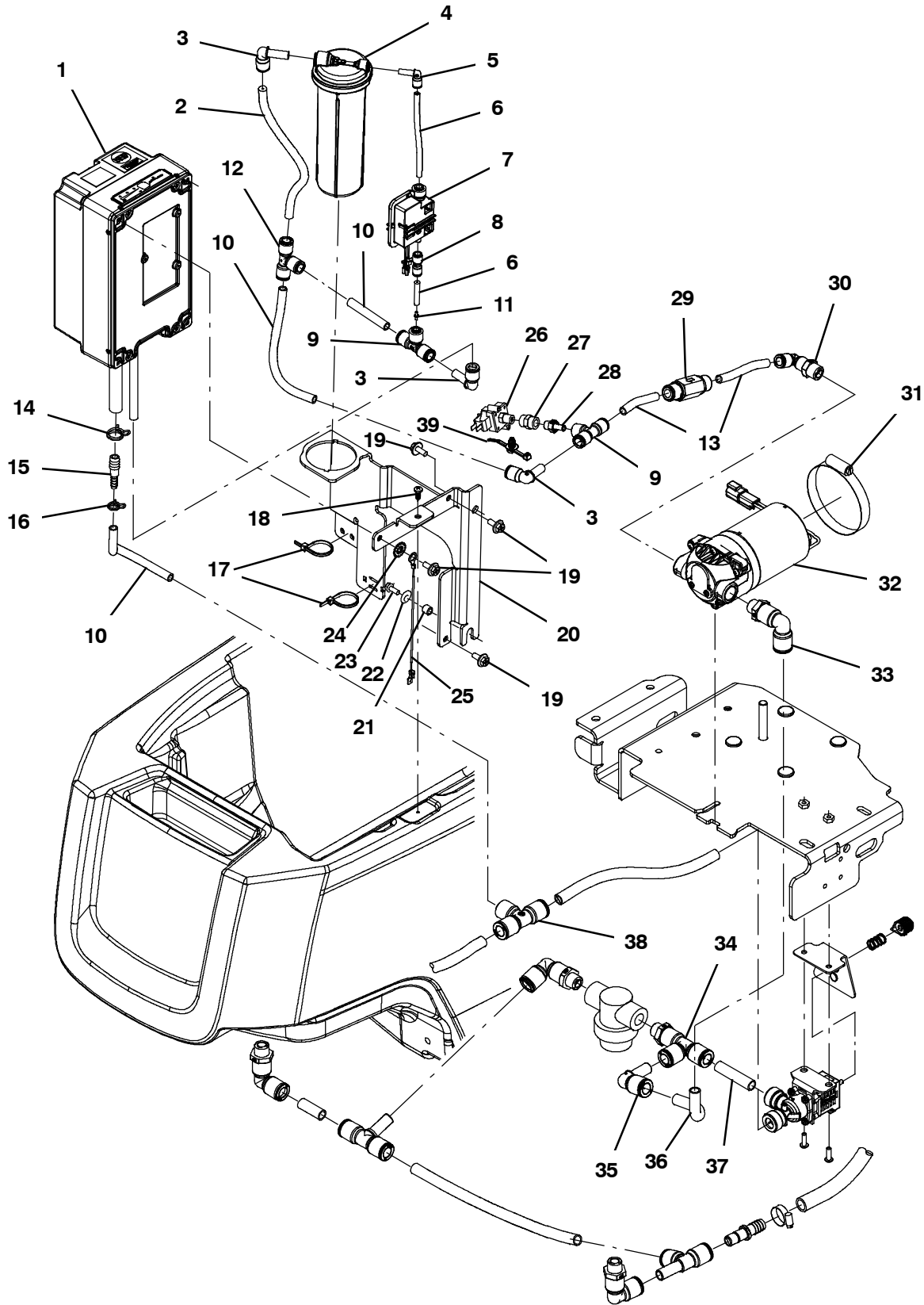
To properly position labels, align label with tick-marks in rotomold tank.



Attention, Solution Fill, ec-H₂O Label [1050003]

Fig. 51

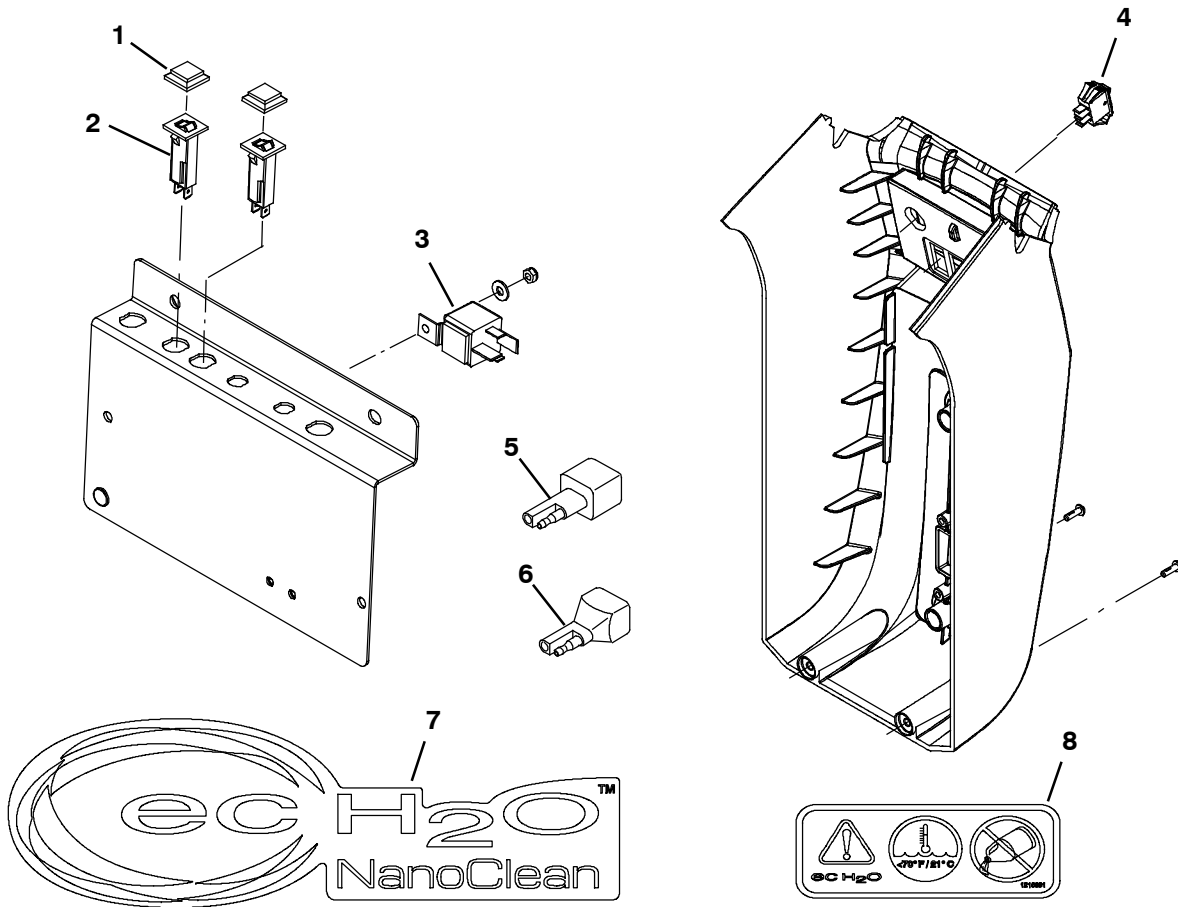
T300/T300e/A300 ec-H2O NanoClean Affiliate Kit Parts List



T300/T300e/A300 ec-H2O NanoClean Affiliate Kit Parts List

Ref.	Part No.	Description	Qty.
1	9011810	Module Kit, Replmt [Ec- H2o, B 02]	1
2	9014146	Hose, Afmkt, Pvc, 0.06id .38od, 05ft	1
3	1215186	Fitting, Plstc, E90, Qf06/Qm06	1
4	9013646	Cartridge, Ec- H2o Nanoclean Wcm, 270ml	1
5	1214339	Fitting, Plstc, E90, Qfo4/Qm04	1
6	9014147	Hose, Afmkt, Pvc, 0.06id .25od, 05ft	1
7	1216973	Pump Assy, Dispenser	1
8	1218192	Fitting, Plstc, Str, Qf04/Qf04	1
9	1212855	Fitting, Plstc, Tee, Qf04/Qf06/Qf06	2
10	1006415	Hose, Afmkt, Pvc, Clr, 0.25id, 03ft	1
11	1214972	Fitting, Orifice, Str, Bm01/Bm01	1
12	1212573	Fitting, Plstc, Tee, Qf06/Qf06/Qf06	1
13	9014148	Hose, Afmkt, Pe, .125id .25od, 06ft	1
14	607775	Clamp, Hose, Wir, .63 - .66, Blk	1
15	1039557	Fitting, Plstc, Str, Bm04/Bm06	1
16	613735	Clamp, Hose, Wir, .40 - .42, Yel	1
17	130773	Tie, Cable, Nyl, 11.0l, .14w, 3.0 Max. D	2
18	1018155	Screw, Pan, Phl, M5 X 0.80 X 16, Tcut, Ss	1
19	1034731	Screw, Hex, M6 X 1.00 X 16, Sems, Ss	4
20	1209249	Bracket, Mtg, Ec- H20 Module [T300]	1
21	140154	Sleeve, P/M, 0.25b 0.38d 0.3l, Pl	1
22	01684	Washer, Flat, 0.27B 0.69D .05, Ss	1
23	11329	Screw, Hex, M6 x 1.00 x 16, Nl, Ss	1
24	41140	Washer, Lock, Int- Ext, 0.25	1
25	1074344	Harness, Ele [Ring With .250m Tail]	1
26	1044335	Switch, Press, 6psi, Pm02	1
27	150307	Fitting, Brs, Str, Pf02/Pf02, Cplg	1
28	1216185	Fitting, Plstc, Str, Qm04/Pm02	1
29	1215527	Valve, Check, 1.0 Psi Qf06/Qf06	1
30	1212812	Fitting, Plstc, E90, Qf06/Pm06, Swivel	1
31	43555	Clamp, Hose, Wormdrive, 2.62- 3.50d	1
32	1210517	Pump, Soltn, Ele, 24vdc, 35 Psi	1
33	1212987	Fitting, Plstc, E90, Qf08/Pm06, Swivel	1
34	1212808	Fitting, Plstc, Tee, Qf08/Qf08/Pm06	1
35	1212809	Fitting, Plstc, E90, Qf08/Qm08	1
36	9014145	Hose, Afmkt, Pe, .375id .50od, 14cm l	1
37	9014145	Hose, Afmkt, Pe, .375id .50od, 5,7cm l	1
38	1212875	Fitting, Plstc, Tee, Qf06/Qf08/Qf08	1
39	1210807	Tie, Wire [w/ .25 Fir Tree-Clip	1

T300/T300e/A300 ec-H₂O NanoClean Affiliate Kit Parts List



Ref.	Part No.	Description	Qty.
1	1064191	Boot, Circuitbreaker	2
2	1208816	Circuitbreaker, 04.0a, Resetable	2
3	1012216	Relay, 24vdc, 070a, Spst No, Plug- In	1
4	1044393	Switch, Rocker, Spst Mom	1
5	1040868	Capacitor, Plug [.01 Uf, 200v]	1
6	222290	Diode, Elc, Plug	1
7	1216520	Label, Logo [ec- H2O NanoClean Tennant]	2
7	1216533	Label, Logo [ec- H2O NanoClean ALFA]	2
8	1050003	Label, User, Attention, Ec- H2o	1