



T500/T500e/A500 ec-H2O NanoClean® Affiliate Kit



This kit includes the necessary parts to add ec-H2O NanoClean technology to a standard model. It's intended for affiliate distributors install only.

INSTALLATION INSTRUCTIONS:

Installation Time: 2 Hours

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

Special Tools Required: None.

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 (Figure 1).

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

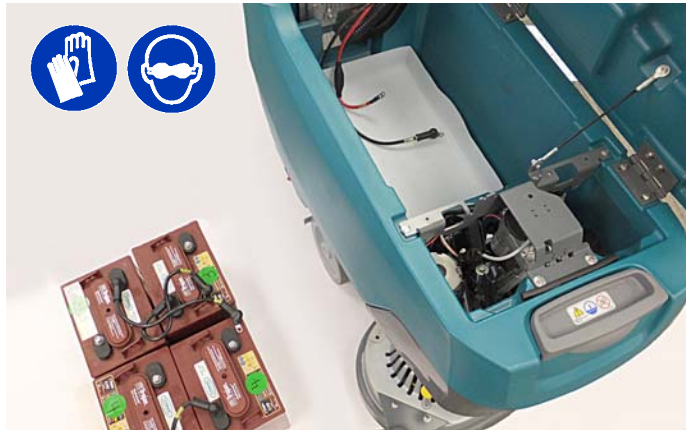


Fig. 1

INSTALL ec-H2O MODULE AND WATERING CONDITIONING MODULE:

1. Cut the intake hose on the ec-H2O module as specified and install hose fittings and clamps as shown (Figure 2)

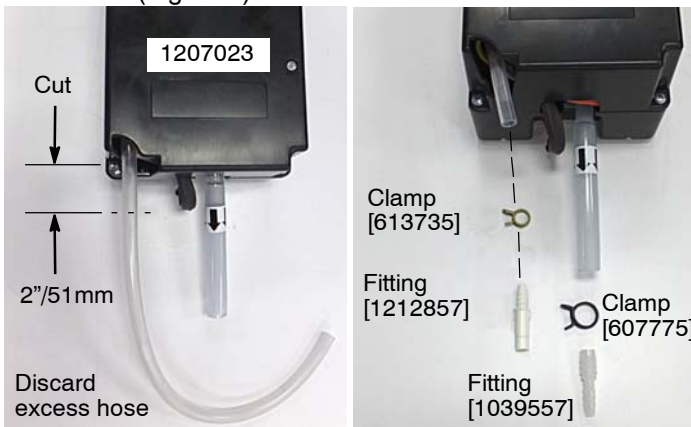


Fig. 2

2. Install the 21"/53.5 cm length hose, hose fitting and clamps to the ec-H2O module outlet hose as shown (Figure 3).

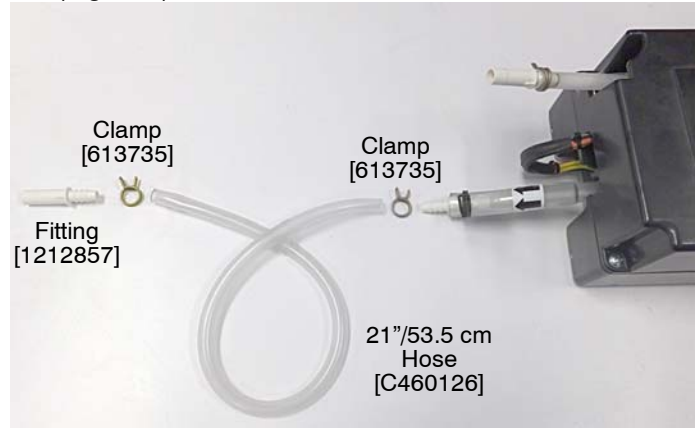


Fig. 3

3. Locate the factory installed ec-H2O wire harnesses cable-tied to the machine's main wire harness as shown (Figure 4). Cut cable-ties.

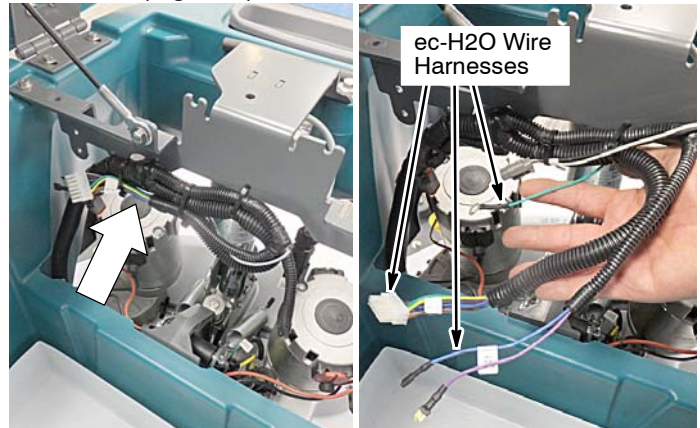


Fig. 4

4. Connect the white module harness connector to the ec-H2O module as shown (Figure 5).

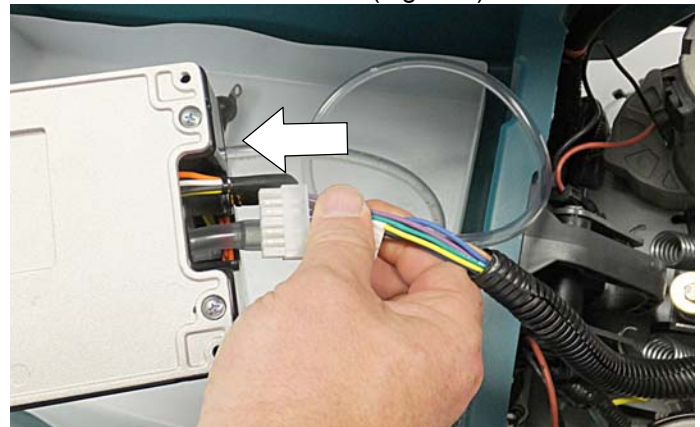


Fig. 5

- Mount the ec- H2O module to the machine bracket using hardware as shown (Figure 6). Connect ground wire using lock washer as shown.

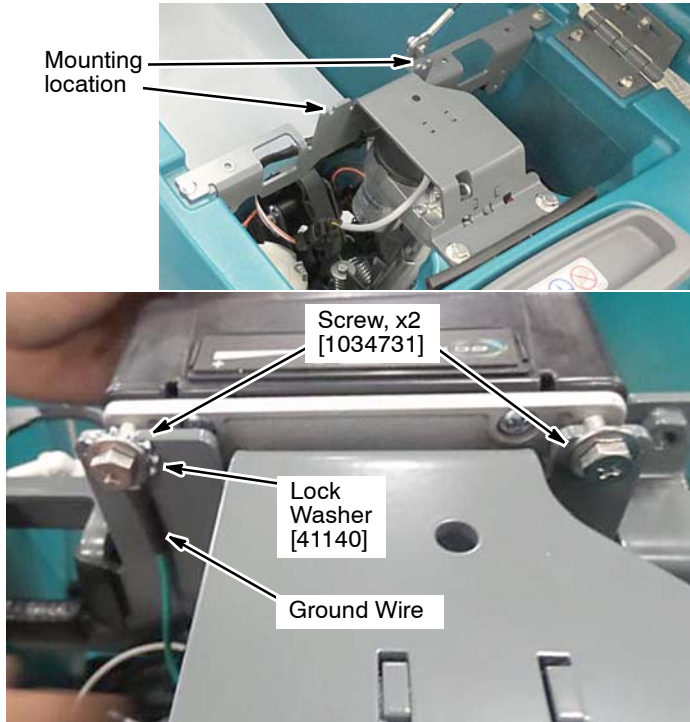


Fig. 6

- Mount the water conditioning module assembly to machine bracket using screw as shown (Figure 7).

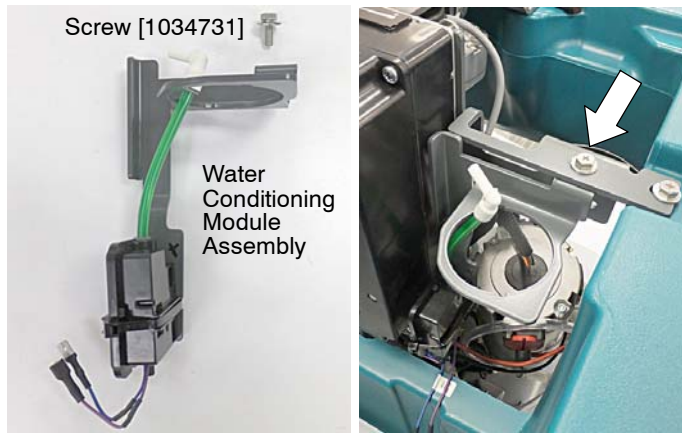


Fig. 7

- Connect the blue and purple wires to the water conditioning module (Figure 8).

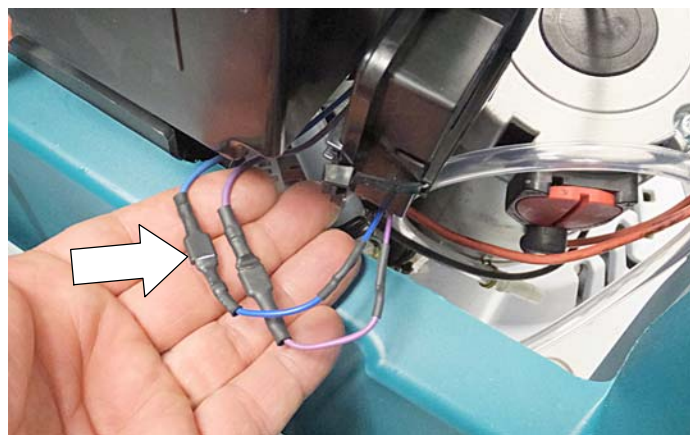


Fig. 8

INSTALL ec-H2O SWITCH IN CONTROL CONSOLE:

T500 Model:

- Remove the two lower torque screws at bottom of control console and carefully lower console cover as shown (Figure 9)

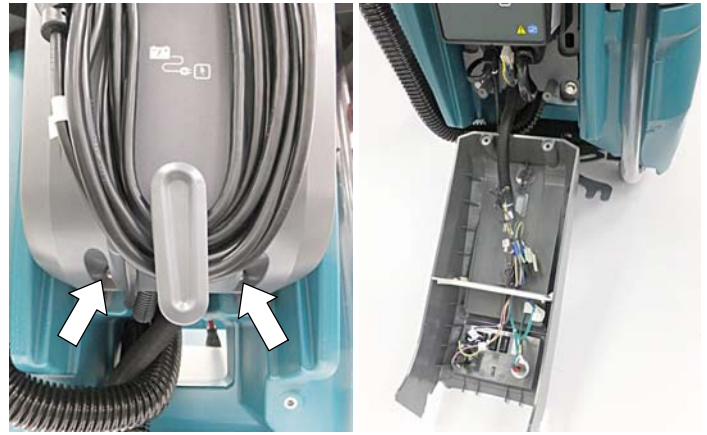


Fig. 9

- Locate the factory installed black and brown ec-H2O switch wires that are cable-tied to the main harness. Cut cable-ties. Lift the console partition and route the two wires to the switch area as shown (Figure 10). Replace partition.

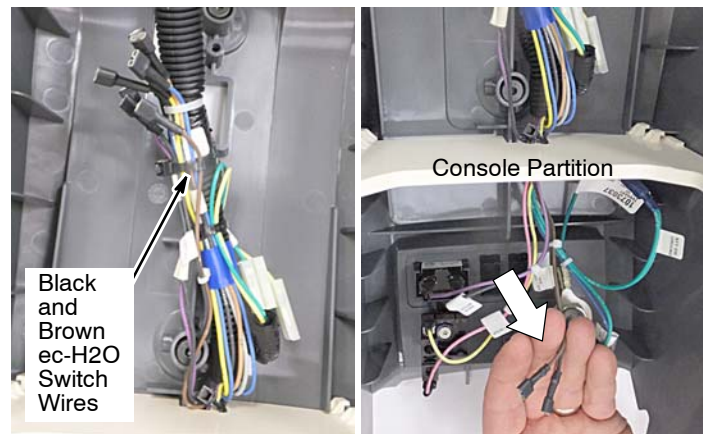


Fig. 10

- Remove the switch plug from console and install the ec-H2O switch in the orientation as shown. Connect the factory installed wires, black/2 and brown/13H, to switch as shown (Figure 11).

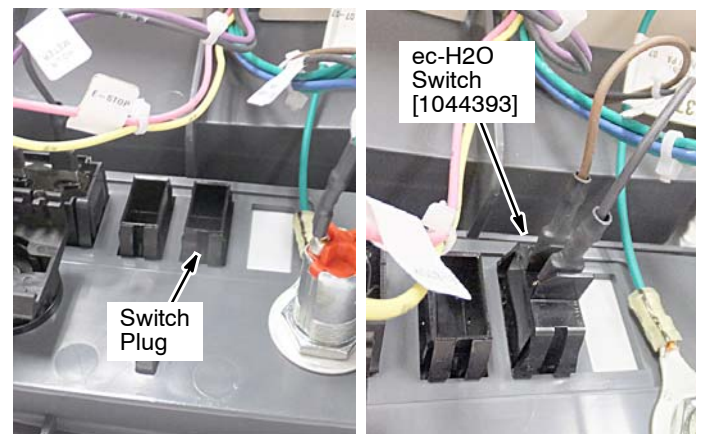


Fig. 11

- Replace the control console. When replacing console, engage the top half of the console first then align the lower screw mounting locations (Figure 12). Make sure the side panels align and engage correctly before replacing the lower torque screws.



Fig. 12

- Replace the control console. When replacing console, engage the top half of the console first then align the lower screw mounting locations (Figure 15). Make sure the side panels align and engage correctly before replacing the lower torque screws.



Fig. 15

T500e Model:

- Remove the two lower torque screws at bottom of control console and carefully lower console cover as shown (Figure 13)

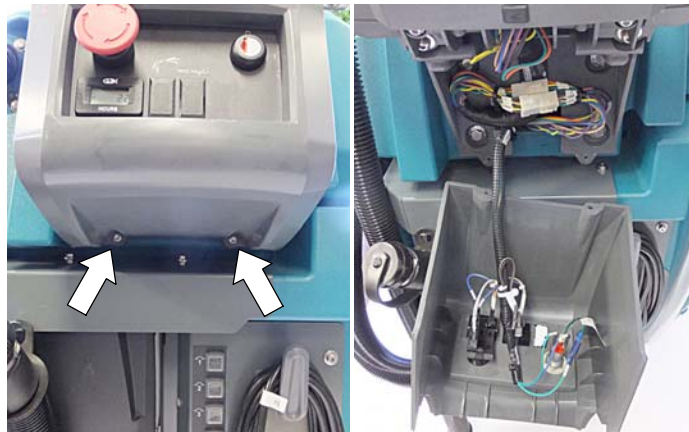


Fig. 13

- Remove the switch plug from console and install the ec-H2O switch in the orientation as shown. Connect the factory installed wires, black/2 and brown/13Y, to switch as shown (Figure 14).

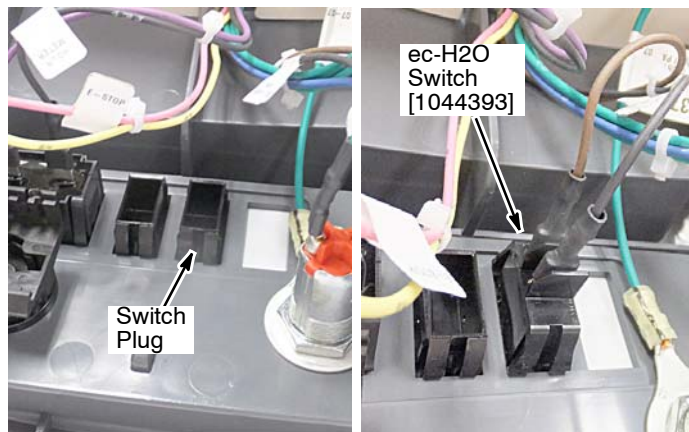


Fig. 14

INSTALL ec-H2O CIRCUIT BREAKER AND RELAY (T500e Models Only):

NOTE: T500 model - Circuit breaker is factory-installed. T500e models - If model is currently equipped with the automatic battery watering system, circuit breaker and relay installation is not required. The ec-H2O and ABW systems utilize the same circuit breaker and relay.

- Remove the charger cover bracket from machine. Three screws hold bracket in place (Figure 16).

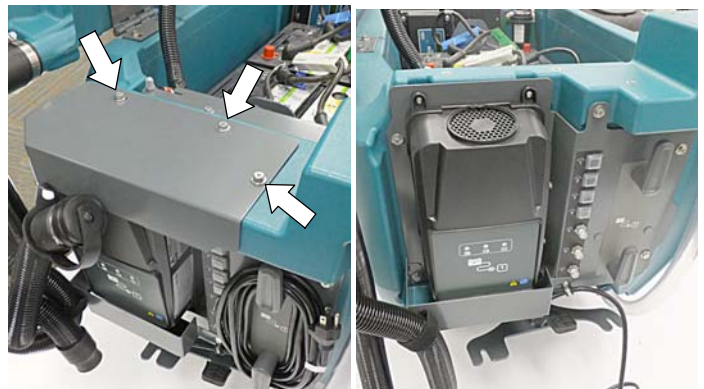


Fig. 16

- Remove five mounting screws from circuit breaker panel and carefully lower panel as shown (Figure 17).

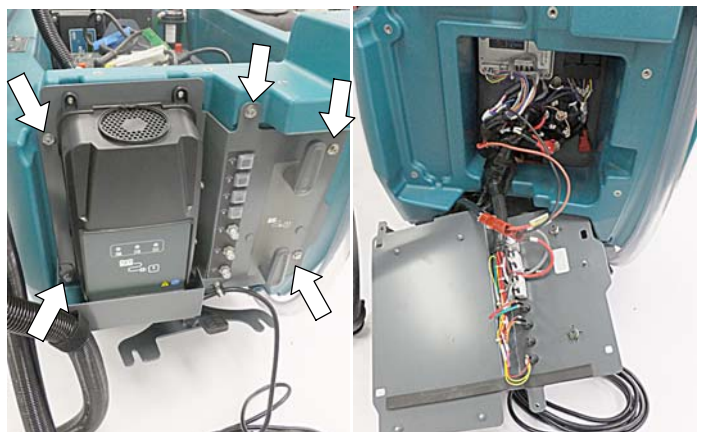


Fig. 17

- Remove circuit breaker plug from the CB-2 position and install the 10A circuit breaker and boot (Figure 18).

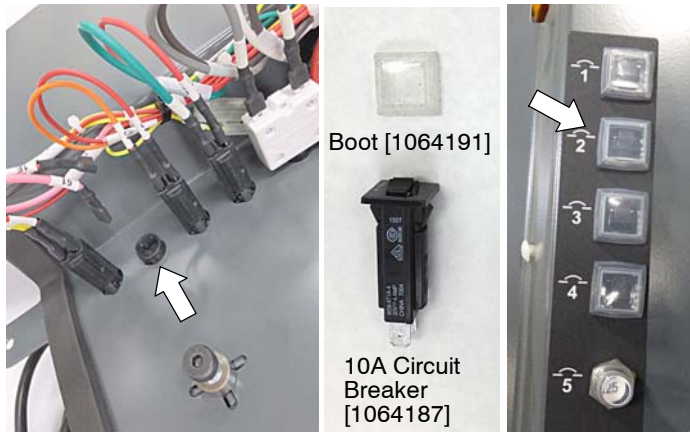


Fig. 18

- Locate the factory installed wires, pink/61 and red/E1, and connect them to the 10A circuit breaker as shown (Figure 19).

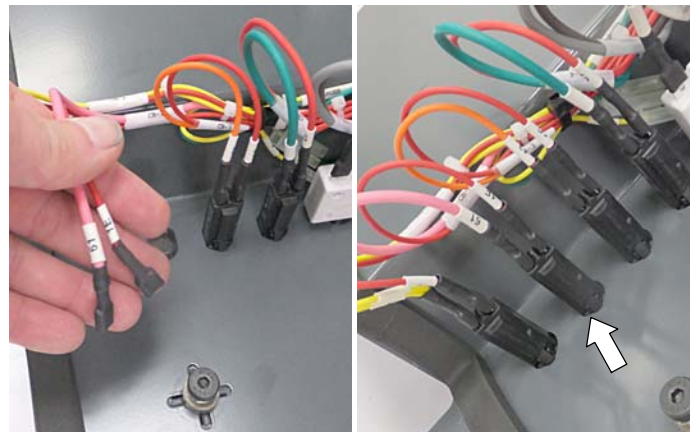


Fig. 19

- Locate the factory installed relay harness connector (Figure 20). The connector is labeled "ABW/ECH2O".

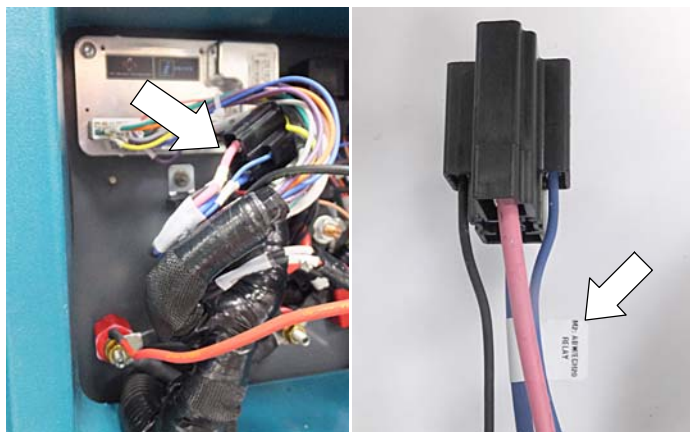


Fig. 20

- Plug the relay into the harness connector and mount the relay to the electrical panel using hardware as shown (Figure 21).

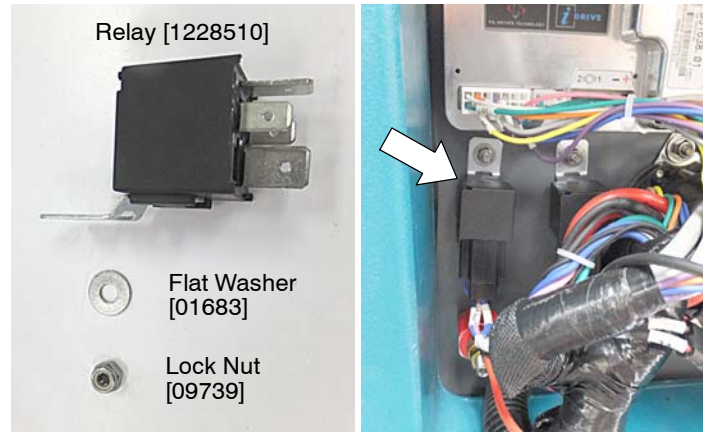


Fig. 21

- Reinstall circuit breaker panel and charger cover bracket (Figure 22).



Fig. 22

INSTALL ec-H2O NanoClean SOLUTION SYSTEM:

- Remove the front shroud and scrub head from machine (Figure 23). Refer to the Service Manual for scrub head removal instructions.

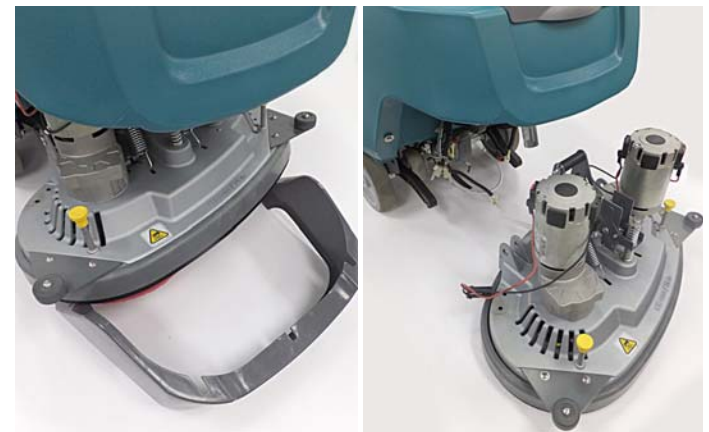


Fig. 23

2. On a non-marring surface, with assistance, carefully lay the machine on its left side to access bottom side of machine (Figure 24).



Fig. 24

3. Remove the solution hose as shown. Do not discard hose, it will be utilized in step 8. Press the gray collar on fittings inward and pull the hose outward to remove hose from fitting (Figure 25).

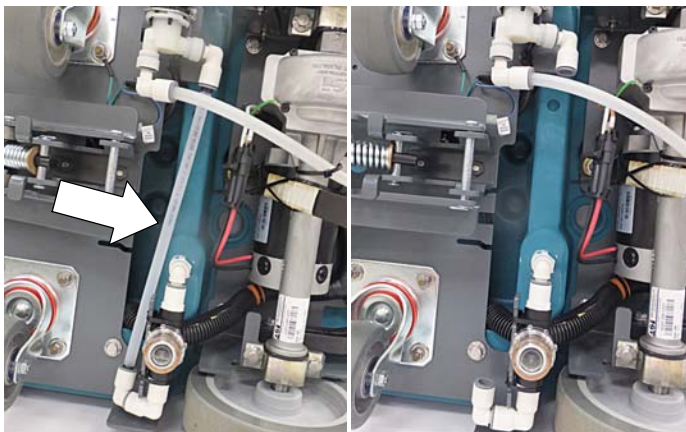


Fig. 25

4. Fully unscrew clamp to mount pump assembly to machine frame (Figure 26).



Fig. 26

5. 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 27).

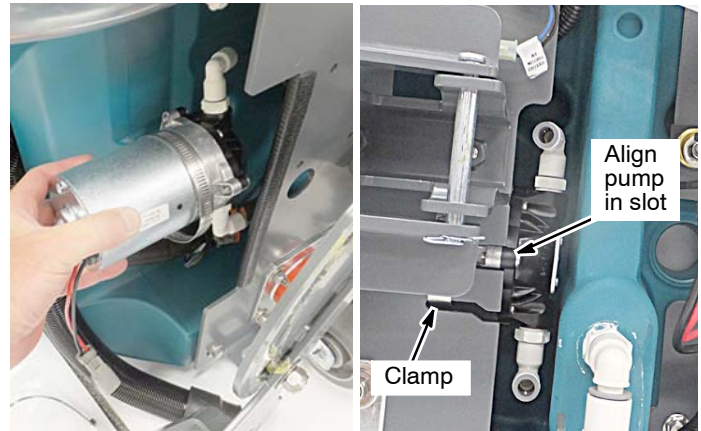


Fig. 27

6. Locate the the factory installed pump connector and capacitor connector cable-tied to the main machine harness near pump (Figure 28).

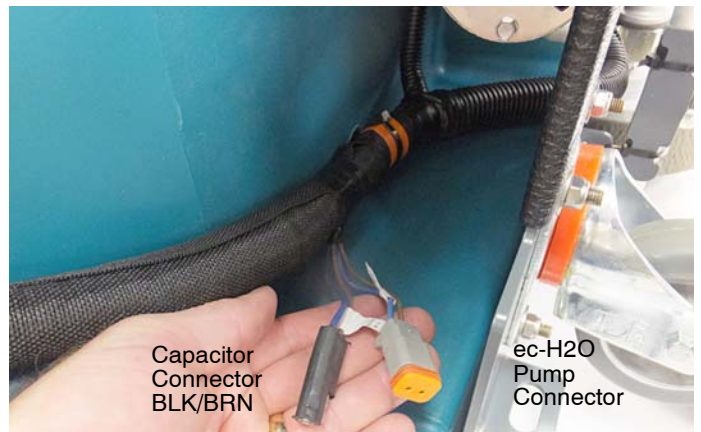


Fig. 28

7. Connect the pump connector to the ec-H2O pump. Plug the capacitor into the machine harness as shown (Figure 29). Secure wire connections with cable-tie.

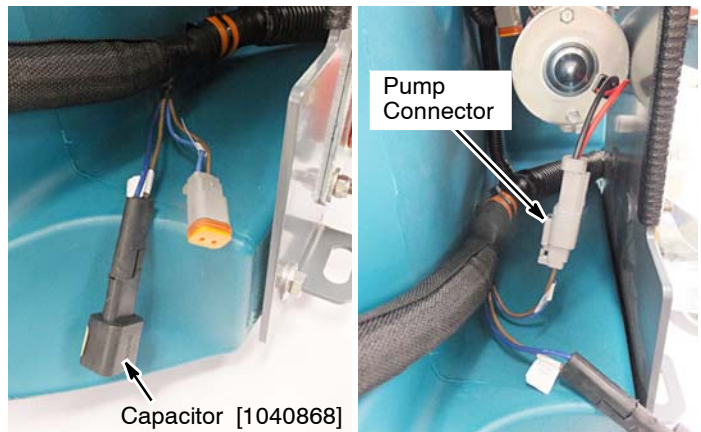


Fig. 29

- Using the removed hose from Step 3, cut the hose into two hose lengths (11.25"/28.5 cm and 3.75"/9.5 cm). Assemble hoses with kit hose and T-fitting as shown. Connect the hose assembly to solution system as shown (Figure 30).

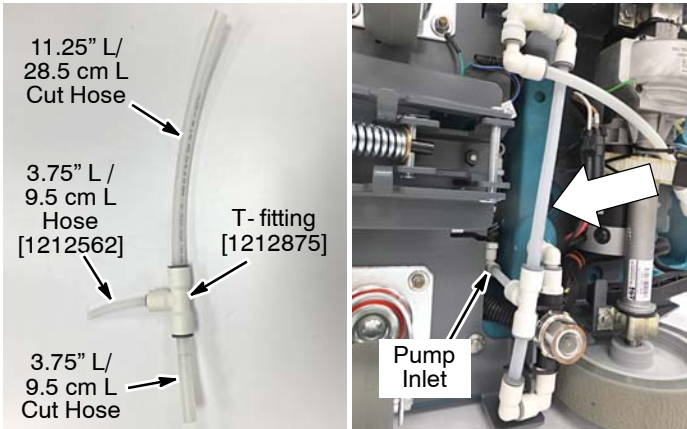


Fig. 30

- Assemble the ec-H2O solution hose assembly as shown (Figure 31).

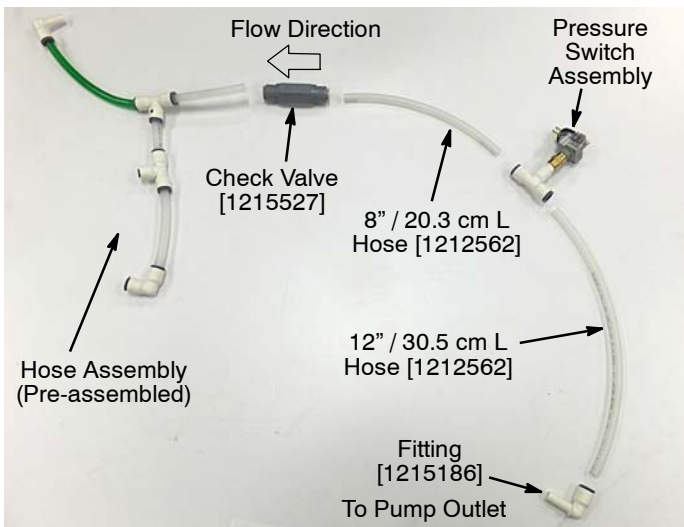


Fig. 31

- Connect the hose assembly to the pump outlet fitting and route the hose assembly behind the transaxle towards the ec-H2O module as shown (Figure 32 and 33).

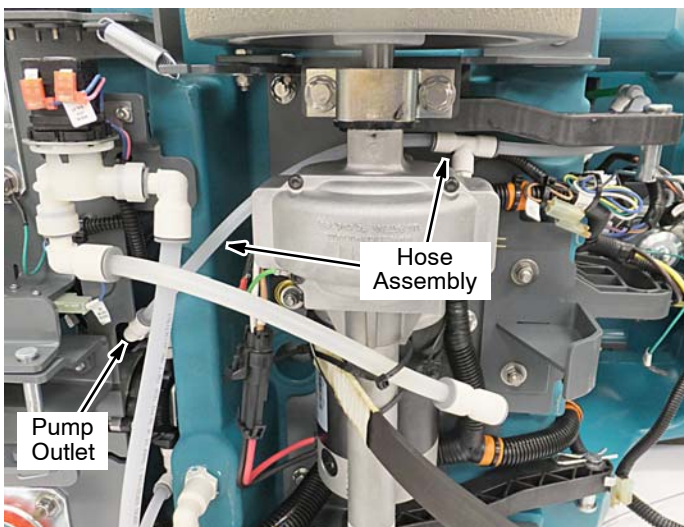


Fig. 32

- Connect the hose assembly to the water conditioning module and ec-H2O module as shown (Figure 33).

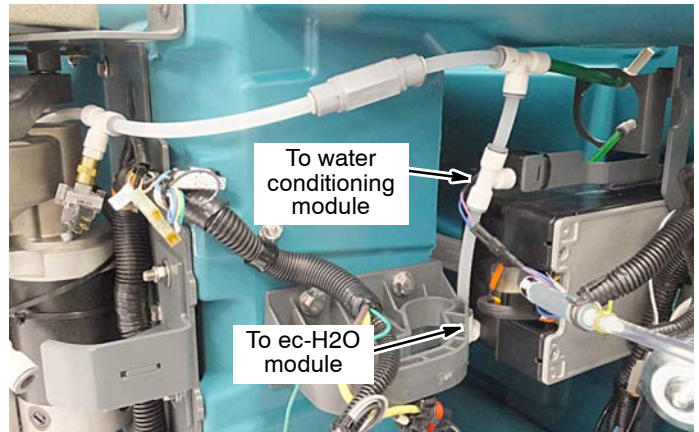


Fig. 33

- Locate the factory installed pressure switch cable-tied to the machine harness (Figure 34). Cut the cable-tie and plug the connector into the pressure switch as shown. Secure the pressure switch with a cable-tie.

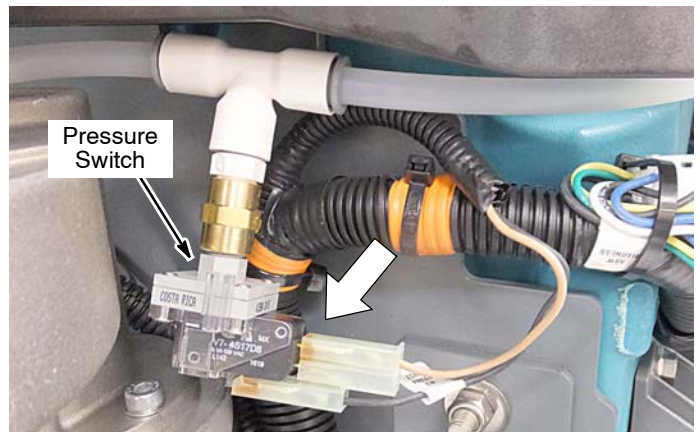


Fig. 34

- Remove the straight fitting from scrub head outlet hose and install T-fitting. Then connect the ec-H2O module outlet hose to the T-fitting as shown (Figure 35).

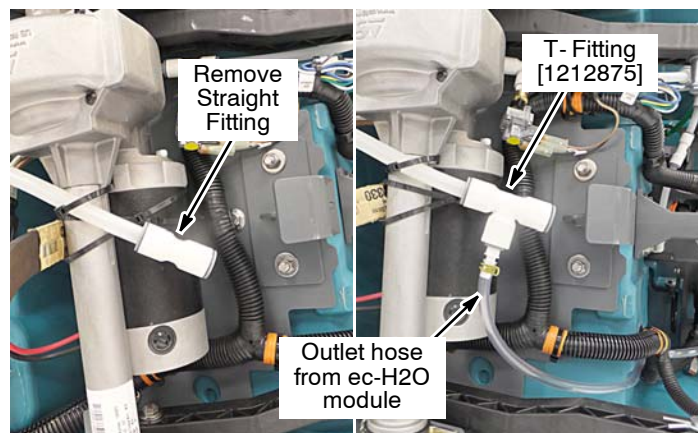


Fig. 35

RE-INSTALL SCRUB HEAD AND BATTERIES:

1. With assistance, carefully stand the machine upright.
2. Re-install the scrub head on machine (Figure 36).

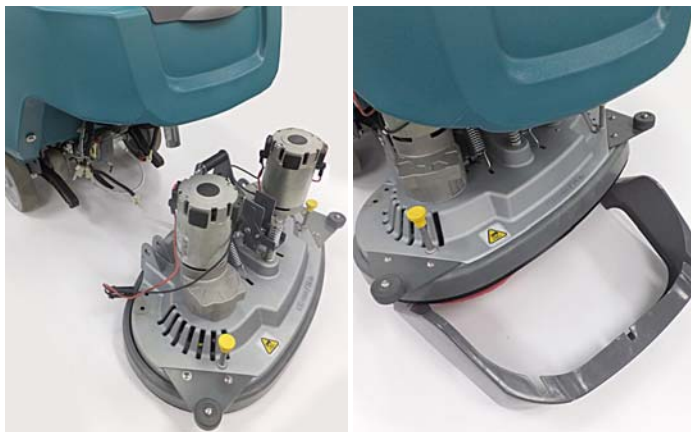


Fig. 36

3. Carefully re-install batteries and connect battery cables (Figure 37).



Fig. 37

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

RECONFIGURE THE MACHINE'S CONTROL BOARD FOR ec-H2O NanoClean CLEANING TECHNOLOGY:

Tennant Service Application Software is required to reconfigure the machine's control board to recognize the ec-H2O installed option (Figure 38).

NOTE: If the Service Application Software is currently installed on your computer, confirm or re-install the software to ensure latest software version is installed.

Icon on Desktop



Fig. 38

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

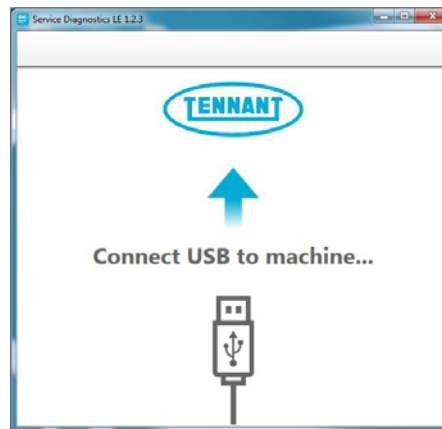


Fig. 39

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).

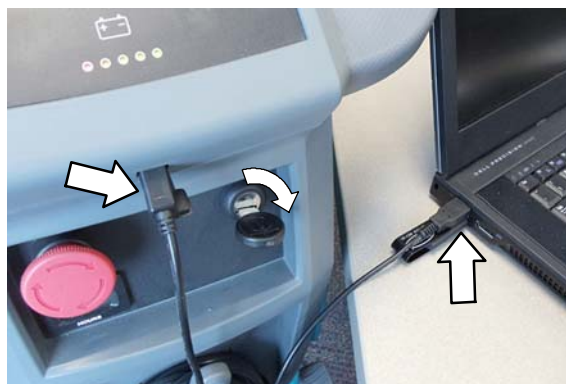


Fig. 40

- From the Home screen, select the “Configuration” button (Figure 41).

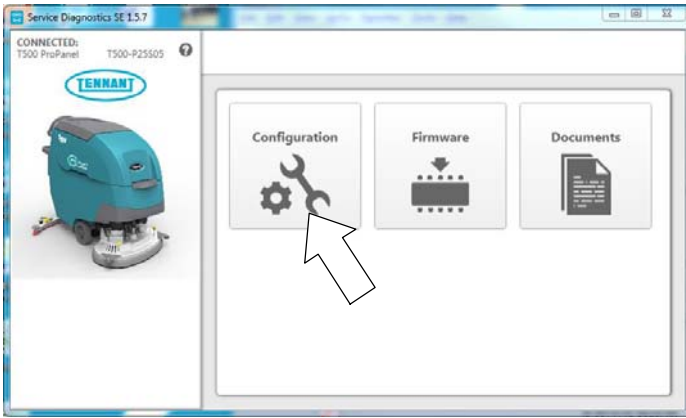


Fig. 41

- Change the Cleaning Technology to “**ec-H2O NanoClean**” from the pull-down menu (Figure 42). Then press the down arrow button to program the machine. A green check will appear next to the down arrow button when programmed.

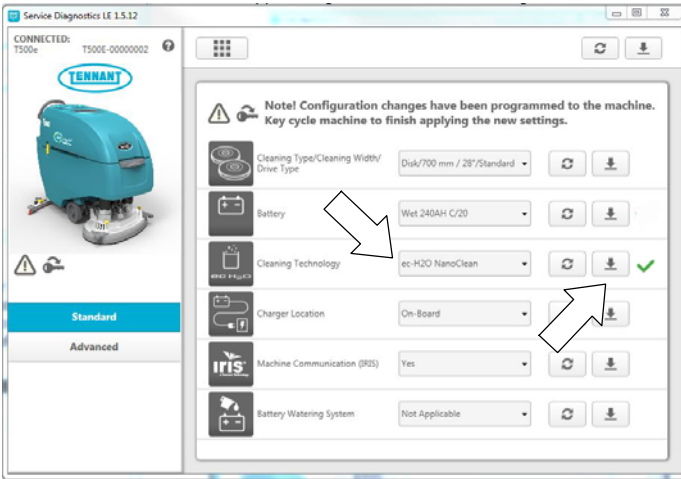


Fig. 42

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

FIRMWARE VERSION UPDATE:

To ensure the machine is equipped with latest FIRMWARE VERSION, perform the following procedure.

NOTE: If the Service Application Software is currently installed on your computer, confirm or re-install the software to ensure latest software version is installed.

- Start the Service Software Application program and connect the USB cable to the USB port on machine.
- If firmware updates are required, the “Firmware” button on the home screen will be highlighted in yellow as shown (Figure 41). Press the button to update the machine’s firmware.

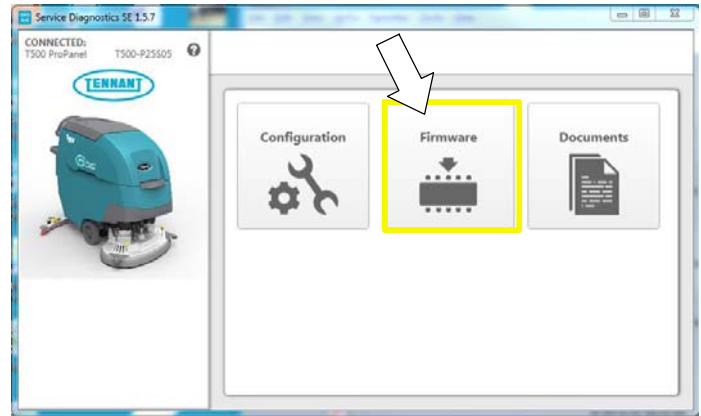


Fig. 43

Continue with the firmware update by pressing the yellow “Update” button as shown (Figure 44).

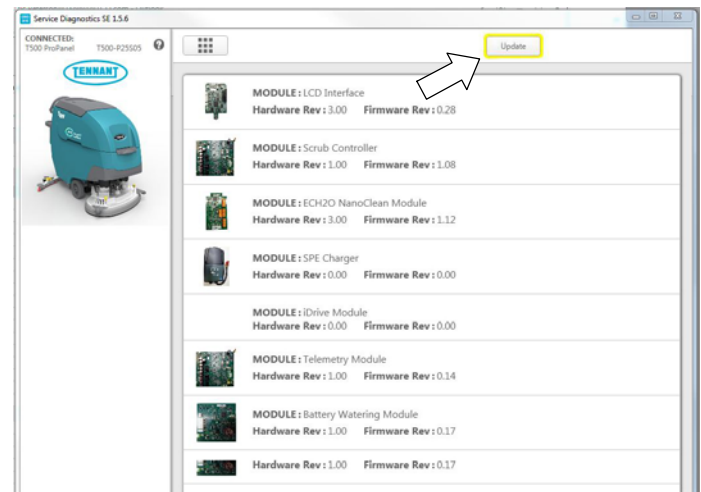


Fig. 44

- Cycle the key to apply the new firmware updates. 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, offered 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 45).



Fig. 45

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 LEDs on the module ripple left to right and then turn off, followed by displaying the current flow rate setting (Figure 46).



Fig. 46

4. Notice the “ec-H2O” indicator on control panel is turned on. The “ec-H2O” indicator will automatically turn on at start up (Figure 47). The ec-H2O switch will turn off the ec-H2O system.



Fig. 47

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 48). 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.

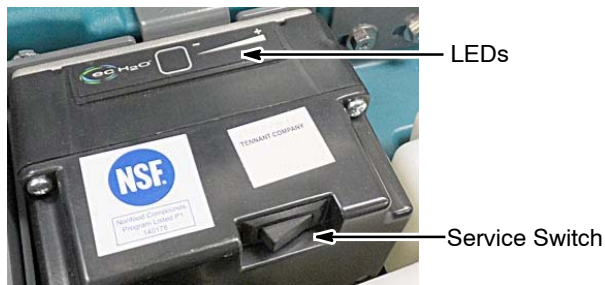


Fig. 48

7. 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.
8. 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 49).



Fig. 49

3. Remove the two plugs from cartridge. Press the gray collars inward and pull plugs outward to remove (Figure 50). Position the cartridge in the cartridge holder bracket as shown and connect green hoses to cartridge (Figure 50). Make sure the hose connectors are fully inserted.



Fig. 50

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), quickly press and release the solution flow button located on ec-H2O module.
4. The three indicator lights will then blink three times to indicate the timer has been set. Repeat process if the three indicator lights do not blink three times.

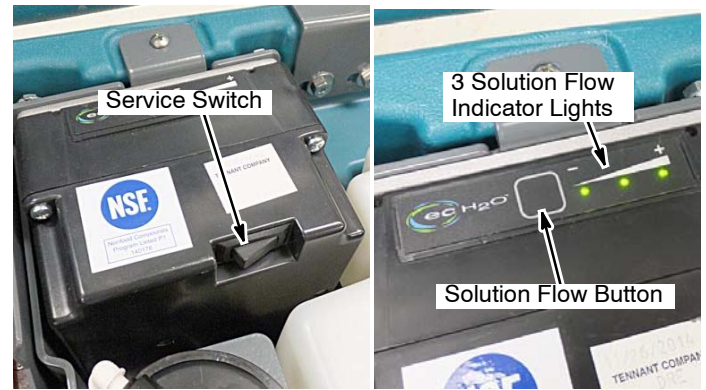


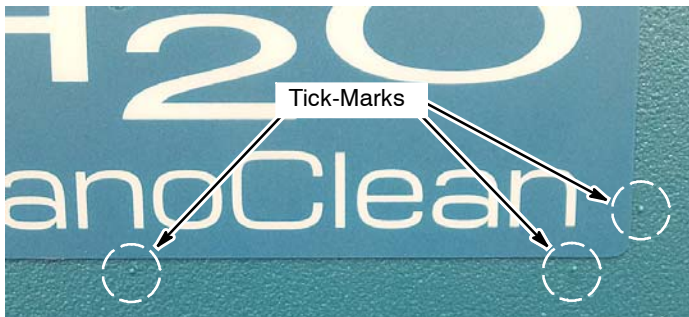
Fig. 51

APPLY ec-H₂O NanoClean LABELS

Apply the new ec-H₂O NanoClean labels on machine as described below (Figure 52).



T500/T500e model: ec-H₂O NanoClean Label [1216520] Qty 2
A500 model: ec- H₂O NanoClean Label [1216533] Qty 2



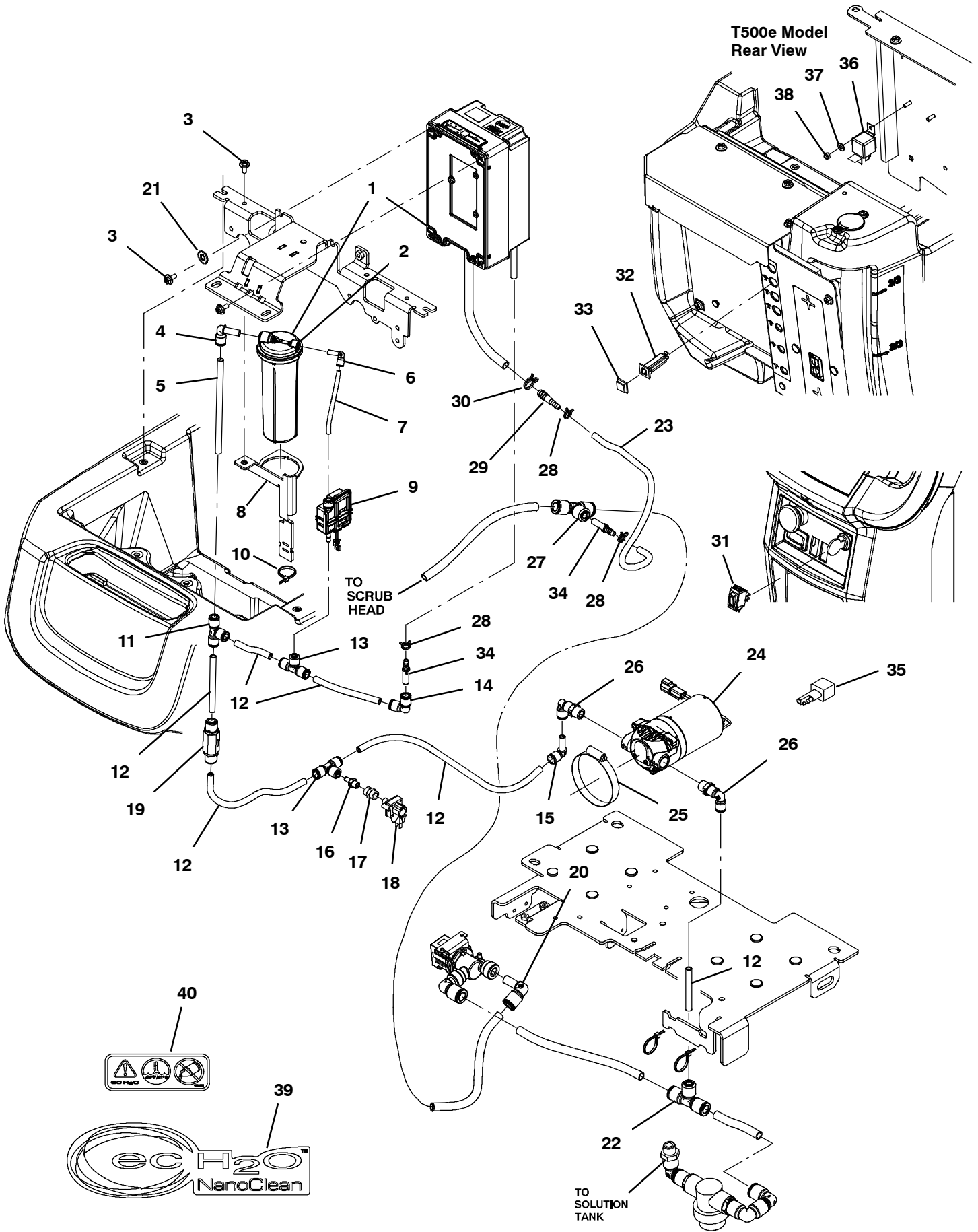
To properly position labels, align label with tick-marks in rotomold tank.



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

Fig. 52

T500/T500e/A500 ec-H2O NanoClean Kit Parts List



T500/T500e/A500 ec-H2O NanoClean Affiliate Kit Parts List

Ref.	Part No.	Description	Qty.
1	9011810	Module Kit, Replmt [Ec- H2o, B 02]	1
2	9013646	Cartridge, Ec- H2o Nanoclean Wcm, 270ml	1
3	1034731	Screw, Hex, M6 X 1.00 X 16, Sems, Ss	4
4	1215186	Fitting, Plstc, E90, Qf06/Qm06	1
5	9014146	Hose, Afrmkt, Pvc, 0.06id .38od, 05ft (Kit p/n 1218001)	1
6	1214339	Fitting, Plstc, E90, Qfo4/Qm04	1
7	9014147	Hose, Afrmkt, Pvc, 0.06id .25od, 05ft (Kit p/n 1216813)	1
8	1221926	Bracket Wldt, Mtg, Ec- H20 [T500]	1
9	1216973	Pump Assy, Dispenser	1
10	130773	Tie, Cable, Nyl, 11.0l, .14w, 3.0 Max. D	1
11	1212573	Fitting, Plstc, Tee, Qf06/Qf06/Qf06	1
12	9014148	Hose, Afrmkt, Nat, 0.25id 0.375od, 06ft (Kit p/n 1212562, 8" L & 12" L)	1
13	1212855	Fitting, Plstc, Tee, Qf04/Qf06/Qf06	2
14	1212856	Fitting, Plstc, E90, Qf06/Qf06	1
15	1215186	Fitting, Plstc, E90, Qf06/Qm06	1
16	1216185	Fitting, Plstc, Str, Qm04/Pm02	1
17	150307	Fitting, Brs, Cplg, Pf02/Pf02	1
18	1044414	Switch, Press, 15psi, Pm02	1
19	1215527	Valve, Check, 1.0 Psi Qf06/Qf06	1
20	1212809	Fitting, Plstc, E90, Qf08/Qm08	1
21	41140	Washer, Lock, int- ext, 0.25	1
22	1212875	Fitting, Plstc, Tee, Qf06/Qf08/Qf08	1
23	1014985	Hose, Afrmkt, Pvc, Clr, 0.25id, 08ft (kit p/n C460126)	1
24	1210517	Pump, Soltn, Ele, 24vdc, 35 Psi	1
25	43555	Clamp, Hose, Wormdrive, 2.62- 3.50d	1
26	1212812	Fitting, Plstc, E90, Qf06/Pm06, Swivel	2
27	1212875	Fitting, Plstc, Tee, Qf06/Qf08/Qf08	1
28	613735	Clamp, Hose, Wir, .40 - .42, Yel	3
29	1039557	Fitting, Plstc, Str, Bm04/Bm06	1
30	607775	Clamp, Hose, Wir, .63 - .66, Blk	1
31	1044393	Switch, Rocker, Spst, Mom	1
32	1064187	Circuitbreaker, 10.0a, Resetable (T500e Model Only)	1
33	1064191	Boot, Circuitbreaker (T500e Model Only)	1
34	1212857	Fitting, Plstc, Str, Qm06/Bm04	2
35	1040868	Capacitor, Plug [.01 Uf, 200v]	1
36	1228510	Relay, 24vdc, 80a, Spst No, Plug- In (T500e Only)	1
37	01683	Washer, Flat, 10, Ss (T500 Model Only)	1
38	09739	Nut, Hex, Lock, M5 X 0.80, NI, Ss (T500e Model Only)	1
39	1216520	Label, Logo [ec- H2O NanoClean Tennant]	2
39	1216533	Label, Logo [ec- H2O NanoClean ALFA]	2
40	1050003	Label, User, Attention, Ec- H2o	1