

T500 ec-H2O NanoClean® & Severe Environment™ Affiliate Kit



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

INSTALLATION INSTRUCTIONS:

Installation Time: 2.5 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)

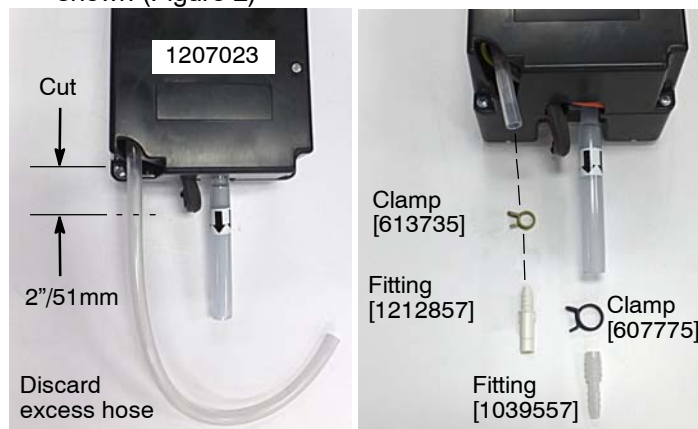


Fig. 2

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

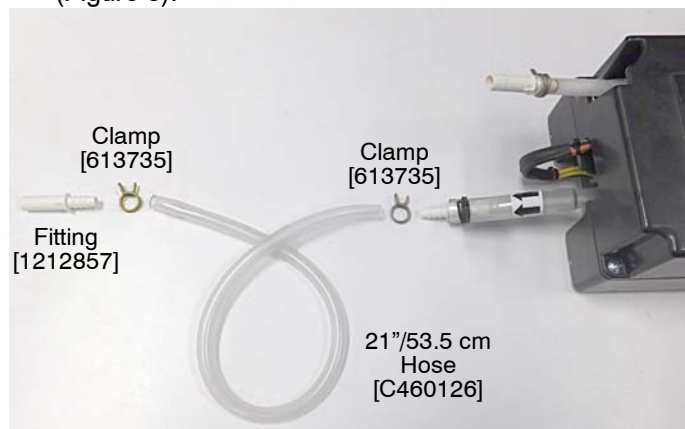


Fig. 3

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.

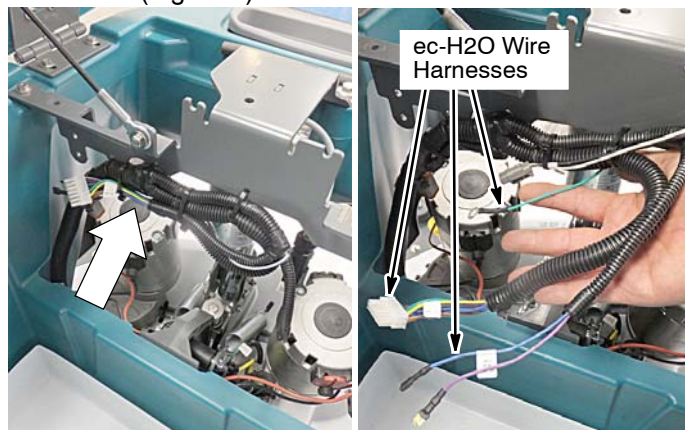


Fig. 4

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

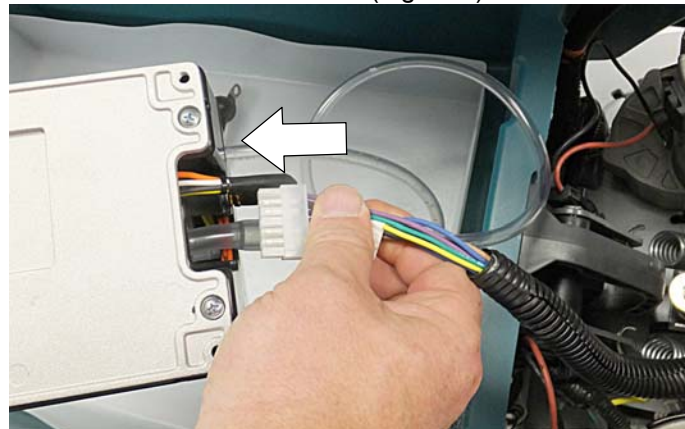


Fig. 5

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

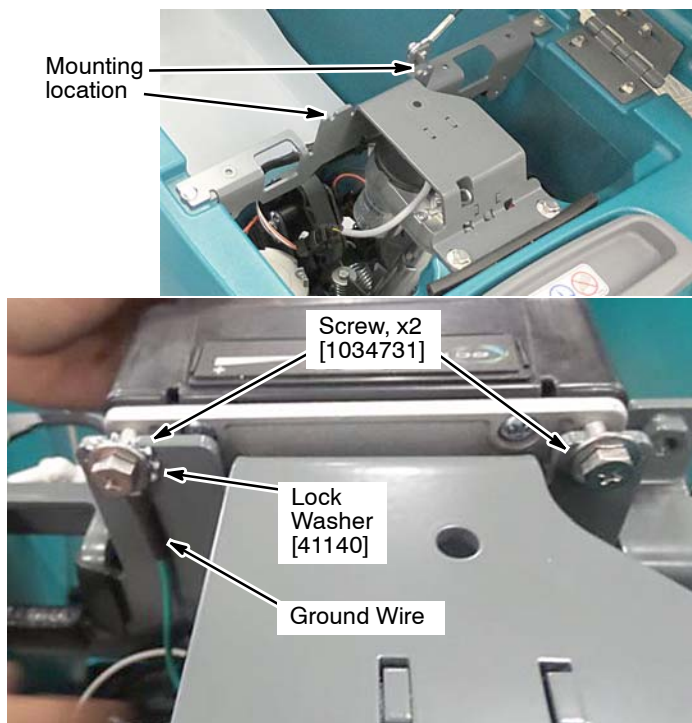


Fig. 6

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

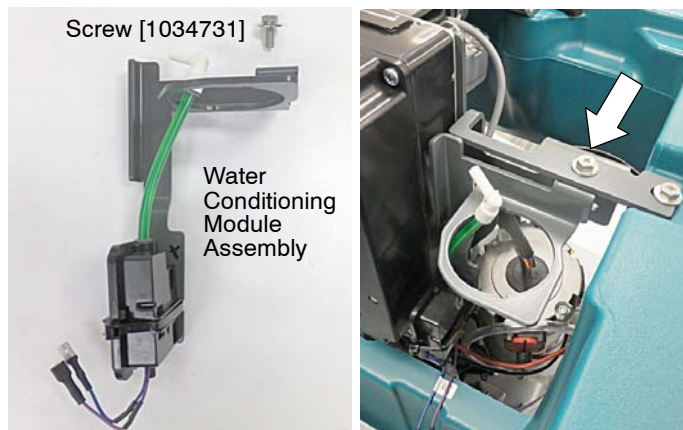


Fig. 7

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

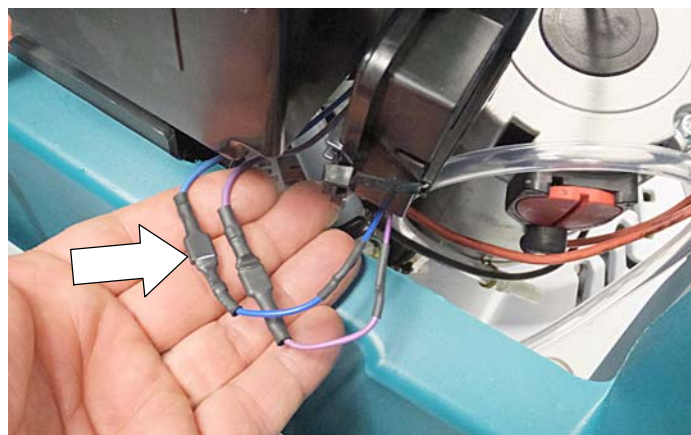


Fig. 8

INSTALL ec-H2O SWITCH IN CONTROL CONSOLE:

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

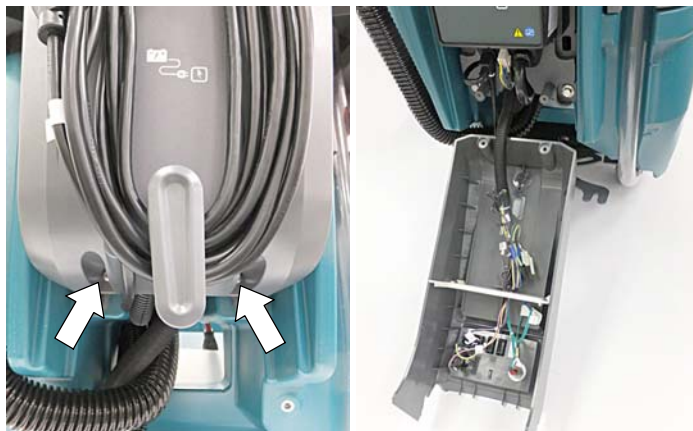


Fig. 9

- 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.

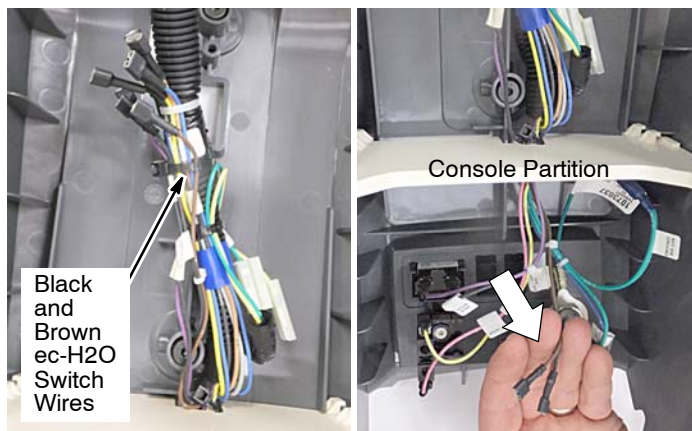


Fig. 10

- 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).

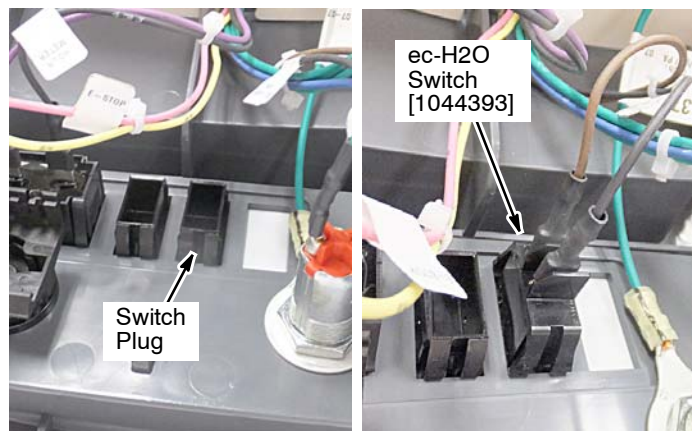


Fig. 11

4. 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

INSTALL ec-H2O NanoClean SOLUTION SYSTEM:

1. Remove the front shroud and scrub head from machine (Figure 13). Refer to the Service Manual for scrub head removal instructions.



Fig. 13

2. On a non-marring surface, with assistance, carefully lay the machine on its left side to access bottom side of machine (Figure 14).

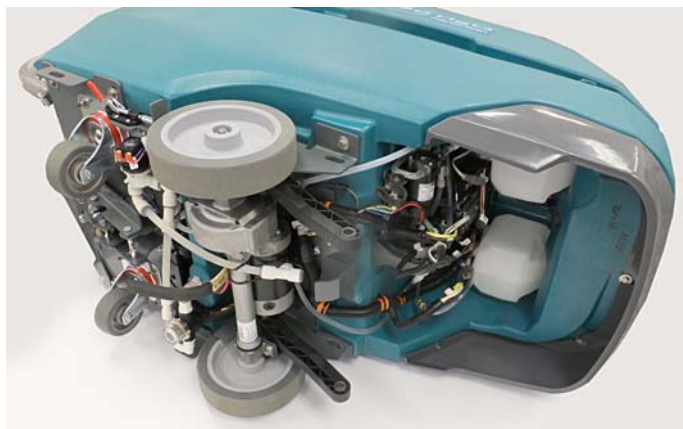


Fig. 14

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 15).

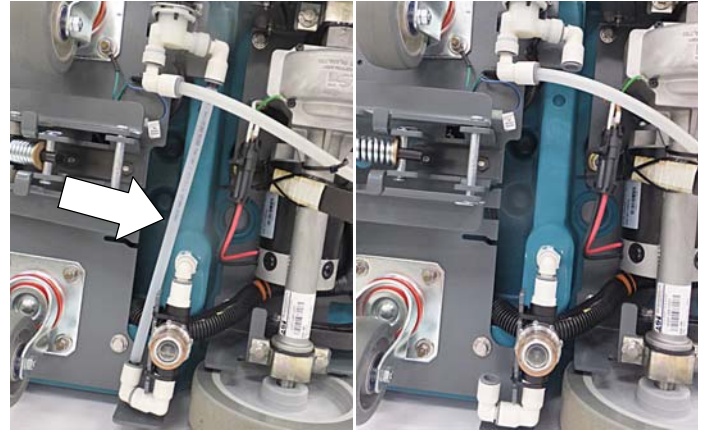


Fig. 15

4. Fully unscrew clamp to mount pump assembly to machine frame (Figure 16).



Fig. 16

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 17).

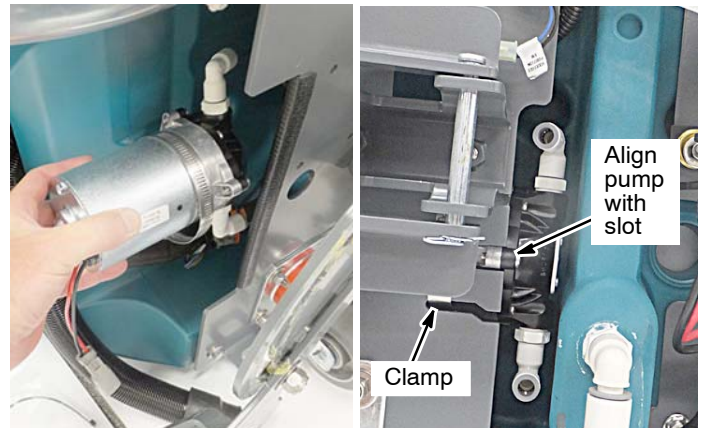


Fig. 17

6. Locate the the factory installed pump connector and capacitor connector cable-tied to the main machine harness near pump (Figure 18).

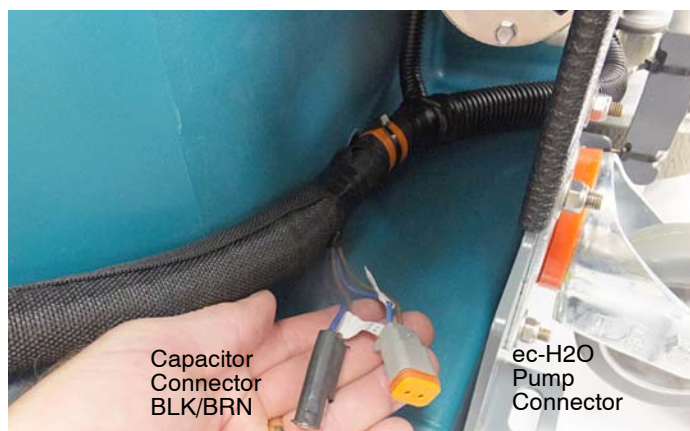


Fig. 18

7. Connect the pump connector to the ec-H2O pump. Plug the capacitor into the machine harness as shown (Figure 19). Secure wire connections with cable-tie.

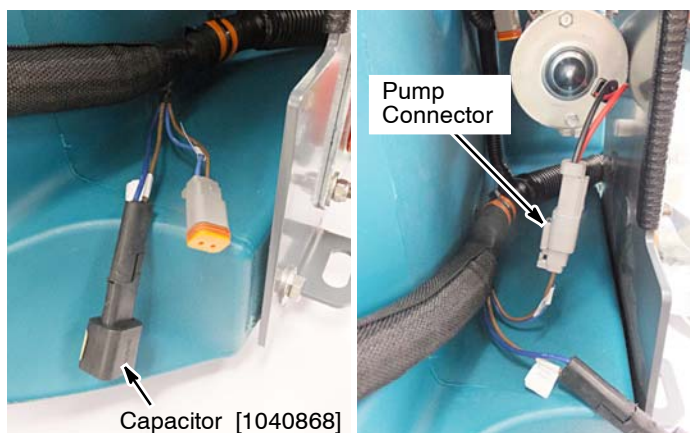


Fig. 19

8. 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 20).

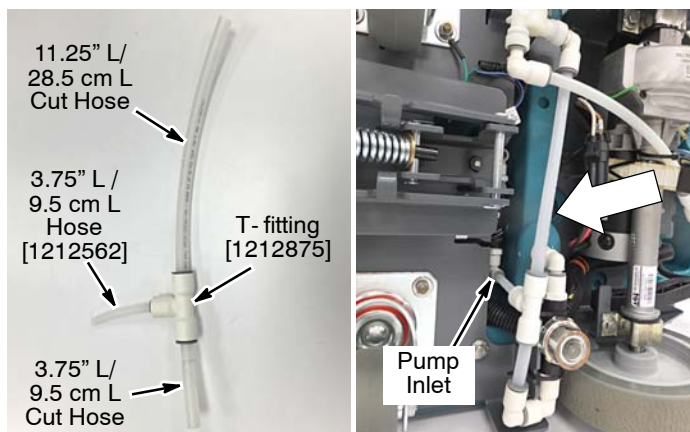


Fig. 20

9. Assemble the ec-H2O solution hose assembly as shown (Figure 21).

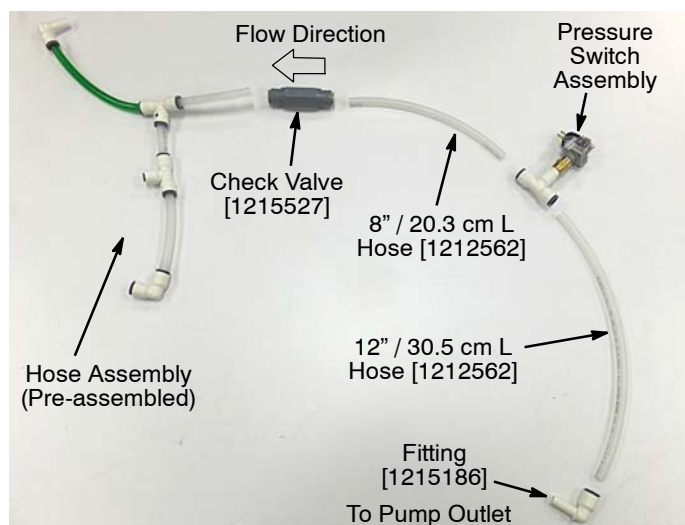


Fig. 21

10. 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 22 and 23).

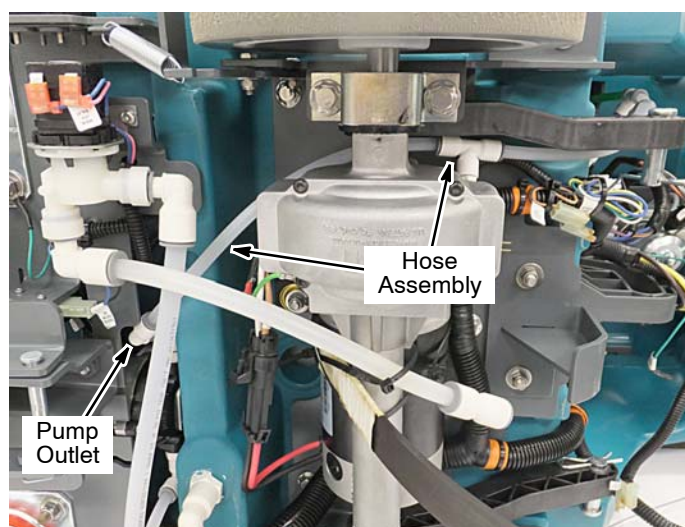


Fig. 22

11. Connect the hose assembly to the water conditioning module and ec-H2O module as shown (Figure 23).

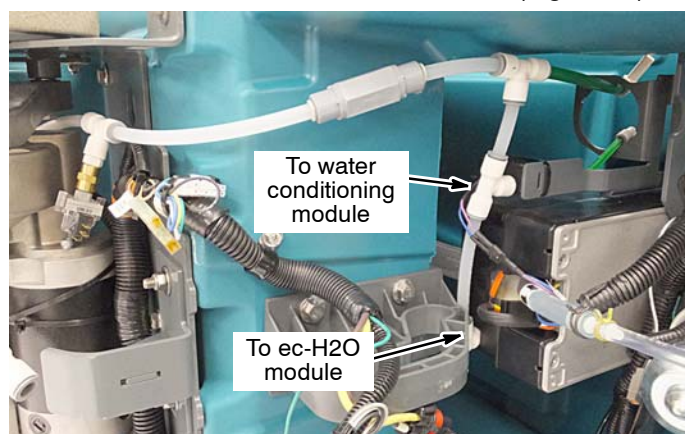


Fig. 23

12. Locate the factory installed pressure switch wire connector cable-tied to the machine harness (Figure 24). Cut the cable-tie and plug the wire connector into the pressure switch as shown. Secure the pressure switch assembly to the main wire harness with a cable-tie.

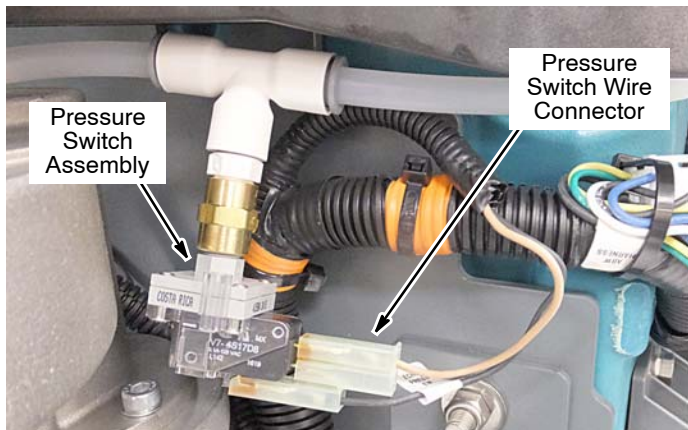


Fig. 24

13. 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 25).

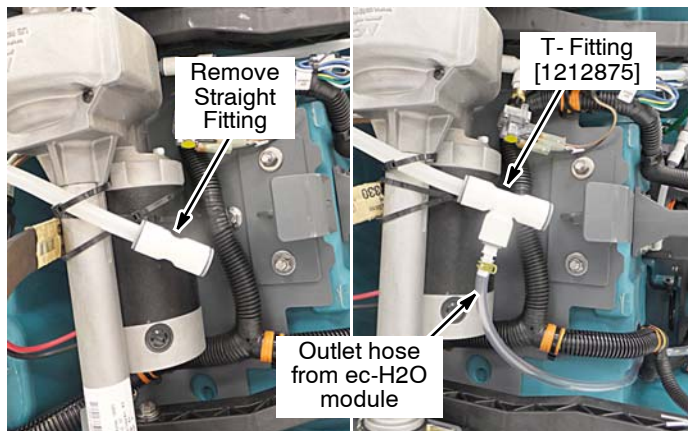
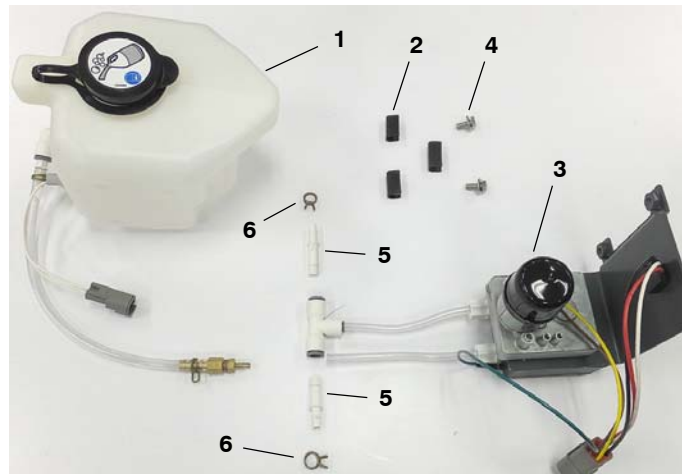


Fig. 25

14. With assistance, carefully stand the machine upright.

INSTALL THE SEVERE ENVIRONMENT (SE) TECHNOLOGY:

The following parts are required:



Severe Environment Technology Parts List

Ref	P/N	Description	Qty
1	n/a	Tank Assembly, Detergent, SE	1
2	C46140	Molding, Trim	3
3	n/a	SE Pump Assembly	1
4	1034731	Screw, Hex, M6 x 1.00 x 16, Sems, ss	2
5	1212857	Fitting, Plastic, Str, QM06/BM04	2
6	613735	Clamp, Hose, Wir, .40 - .42, yel	2

1. Before installing SE technology parts, carefully stand the machine upright.
2. Remove the T-fitting from the SE pump assembly and install two straight fittings to the T-fitting as shown (Figure 26). To remove T-fitting from hose, press the gray collar inward and pull the hose outward.

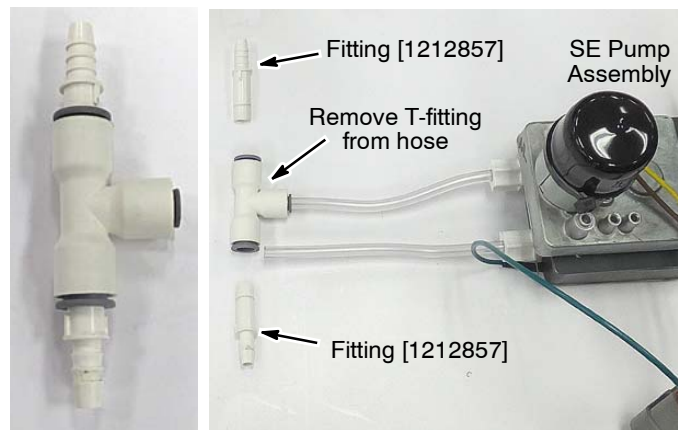


Fig. 26

3. Cut the ec-H2O module outlet hose as described and install new T-fitting as shown (Figure 27).

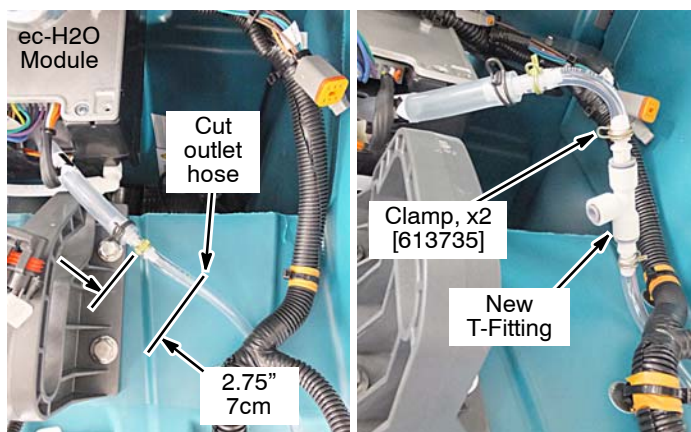


Fig. 27

4. Locate the Severe Environment wire harness connectors wire-tied to the main harness (Figure 28). Cut the cable-tie to access the connectors.



Fig. 28

5. Connect the SE pump assembly to the wire harness connector and connect the outlet hose to the new T-fitting as shown (Figure 29).

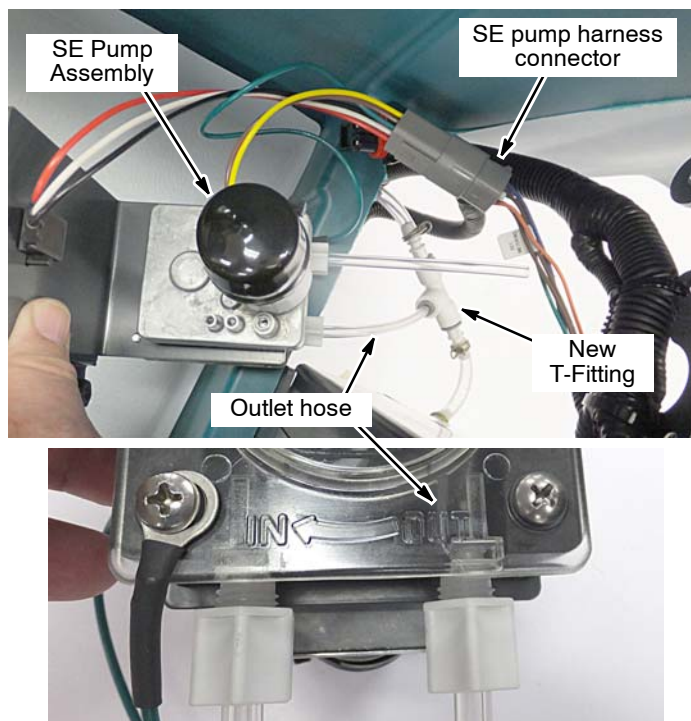


Fig. 29

6. Mount the SE pump assembly to the machine frame using hardware as shown (Figure 30).

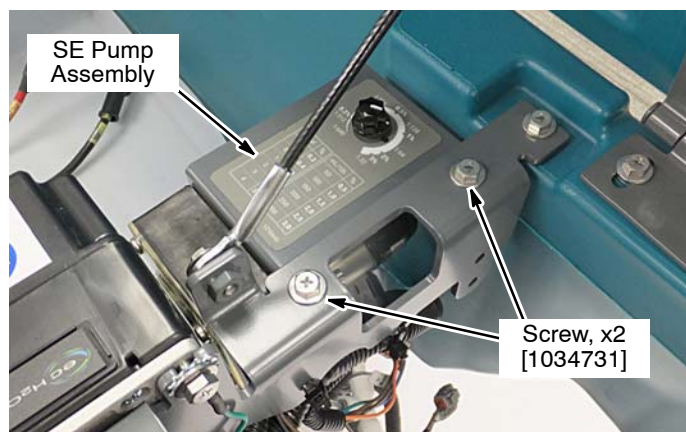


Fig. 30

7. Install three pieces of trim molding to the machine frame as shown (Figure 31).

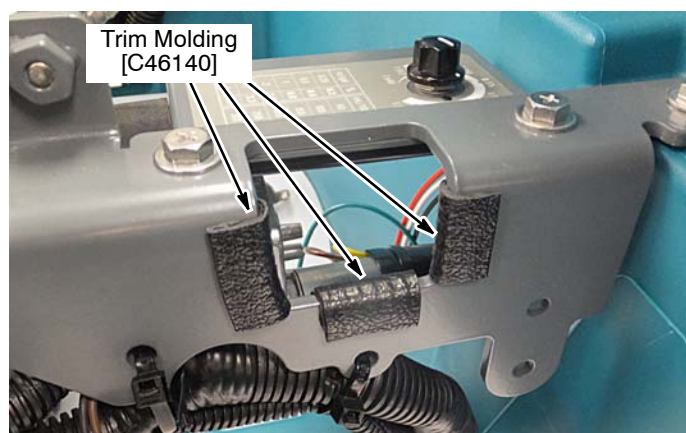


Fig. 31

8. Connect the SE detergent tank assembly wire harness connector to the located SE wire harness connector from Step 4 (Figure 32).

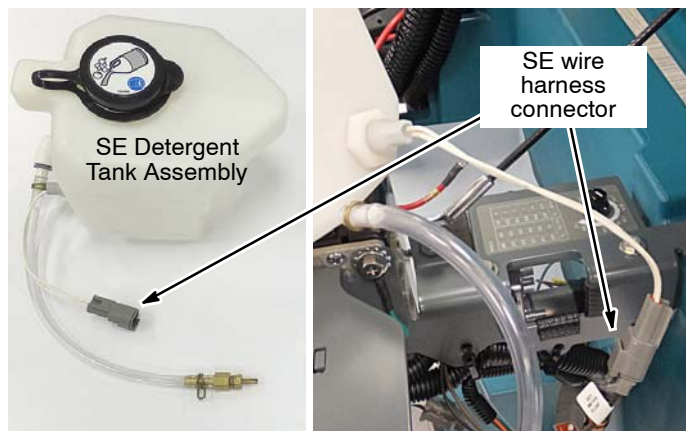


Fig. 32

9. Connect the SE detergent tank assembly outlet hose to the SE pump assembly (Figure 33).

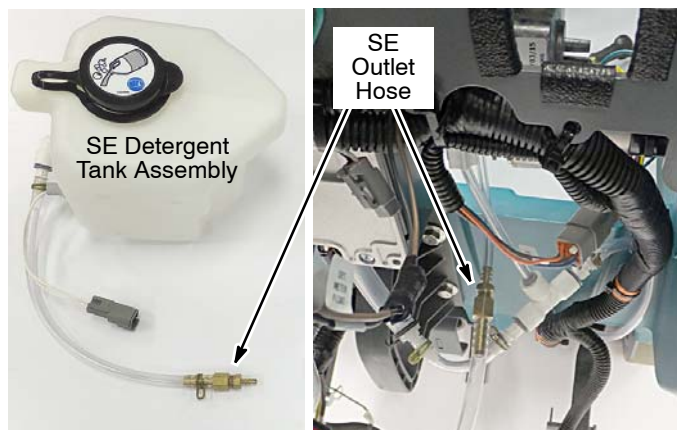


Fig. 33

10. Position the SE detergent tank assembly inside the machine as shown (Figure 34). Make sure outlet hose is not kinked or pinched.



Fig. 34

RE-INSTALL SCRUB HEAD AND BATTERIES:

1. Re-install the scrub head on machine (Figure 35).

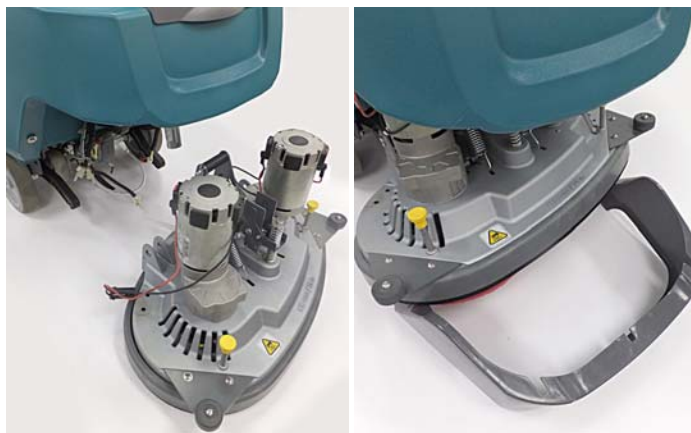


Fig. 35

2. Carefully re-install batteries and connect battery cables (Figure 36).

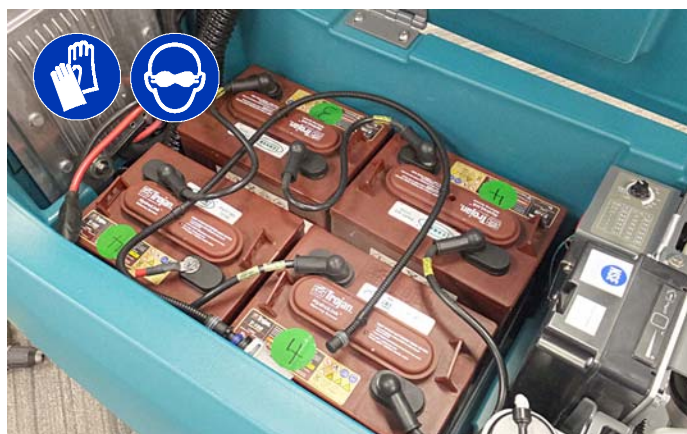


Fig. 36

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 and SEVERE ENVIRONMENT TECHNOLOGY:

Tennant Service Application Software is required to reconfigure the machine's control board to recognize the ec-H2O installed option (Figure 37).

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. 37

1. Start the Service Software Application program. After start up, the following screen will appear (Figure 38).

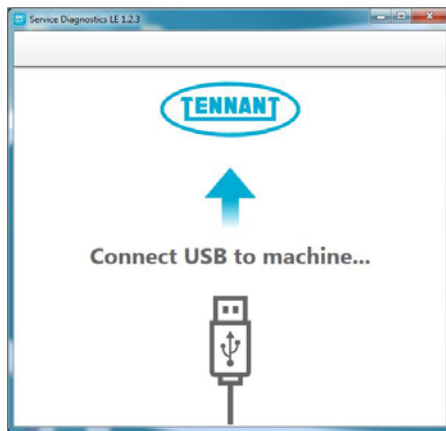


Fig. 38

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 39).

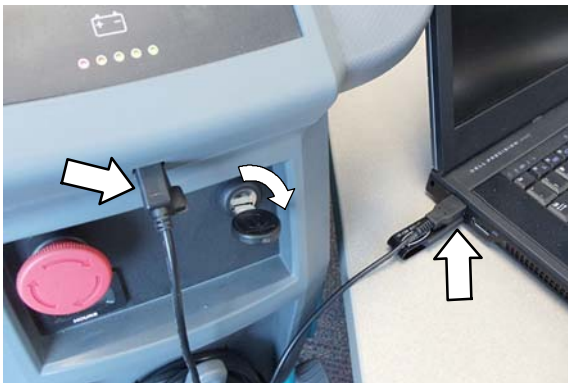


Fig. 39

3. From the Home screen, select the "Configuration" button (Figure 40).

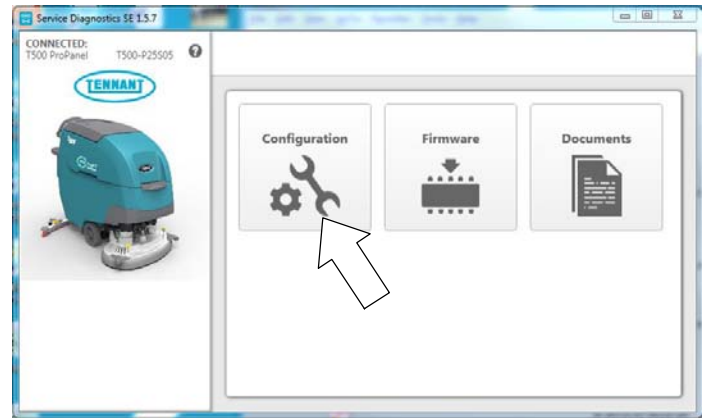


Fig. 40

4. Change the Cleaning Technology to "ec-H2O NanoClean" from the pull-down menu (Figure 41). Then press the down arrow button to program the machine. A green check will appear next to the down arrow button when programmed.

Change the Severe Environment Switch to "Yes" from the pull-down menu (Figure 41). Then press the down arrow button to program the machine. A green check will appear next to the down arrow button when programmed.

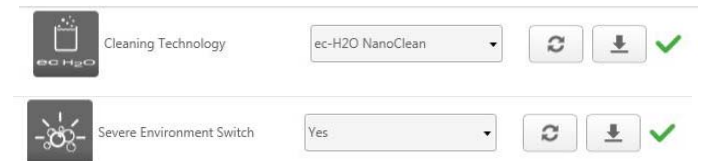
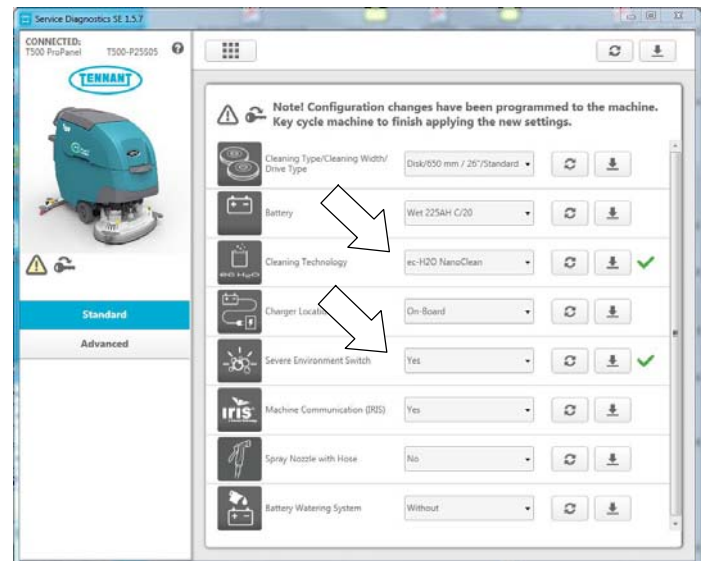


Fig. 41

5. 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.

1. Start the Service Software Application program and connect the USB cable to the USB port on machine.
2. If firmware updates are required, the "Firmware" button on the home screen will be highlighted in yellow as shown (Figure 40). Press the button to update the machine's firmware.

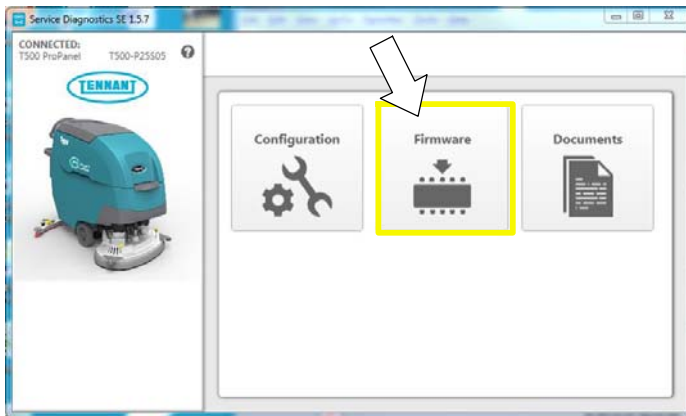


Fig. 42

Continue with the firmware update by pressing the yellow "Update" button as shown (Figure 43).

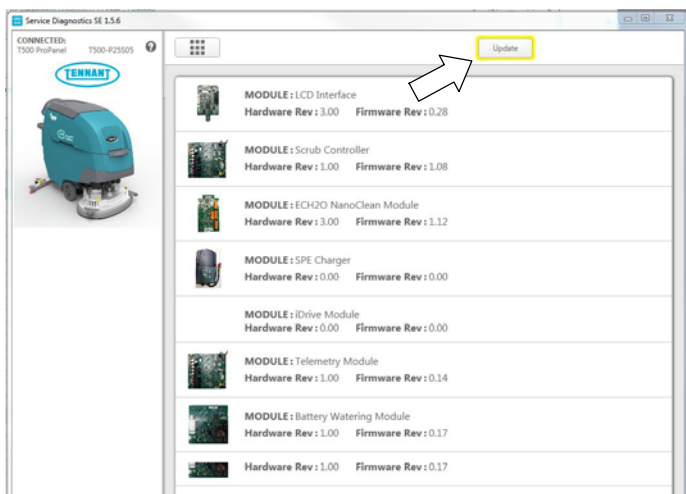


Fig. 43

3. 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 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 LEDs 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

- 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.
- 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.

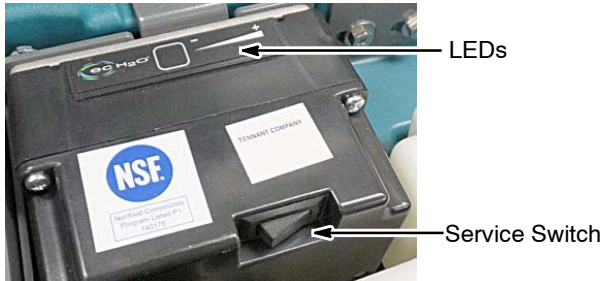


Fig. 47

- 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 the By-pass Tool to a vacuum unit and vacuum out any remaining water from module.
- 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:

- 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.
- Fill in the installation date on the Water Conditioning Cartridge label (Figure 48).



Fig. 48

- 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.

- Turn key to the on position.
- 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.

- 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.
- 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.

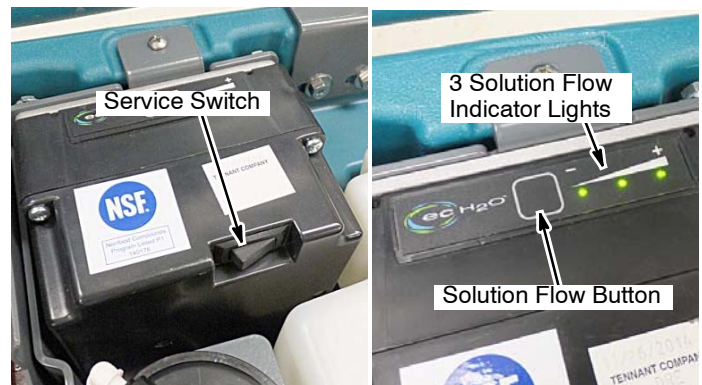


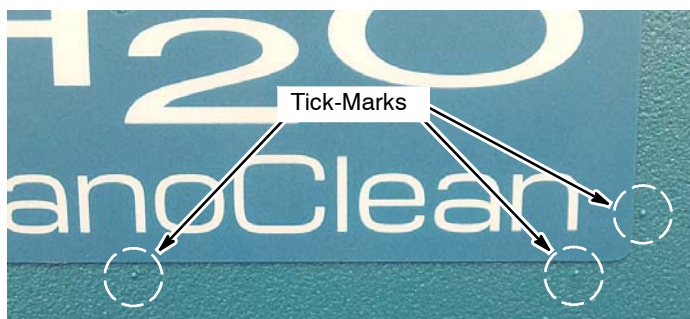
Fig. 50

APPLY ec-H₂O NanoClean LABELS

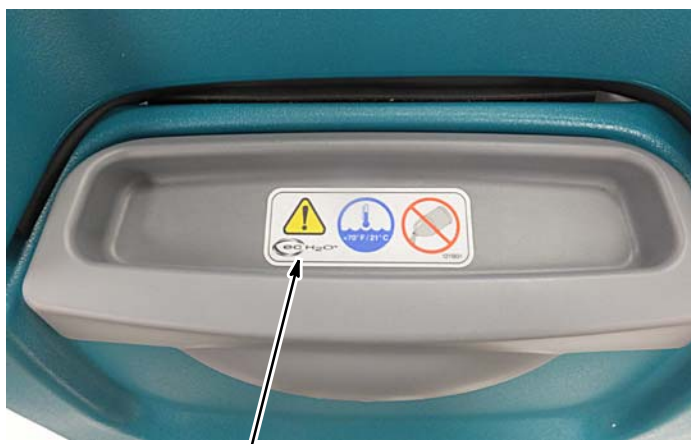
Apply the new ec-H₂O NanoClean labels on machine as described below (Figure 51).



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

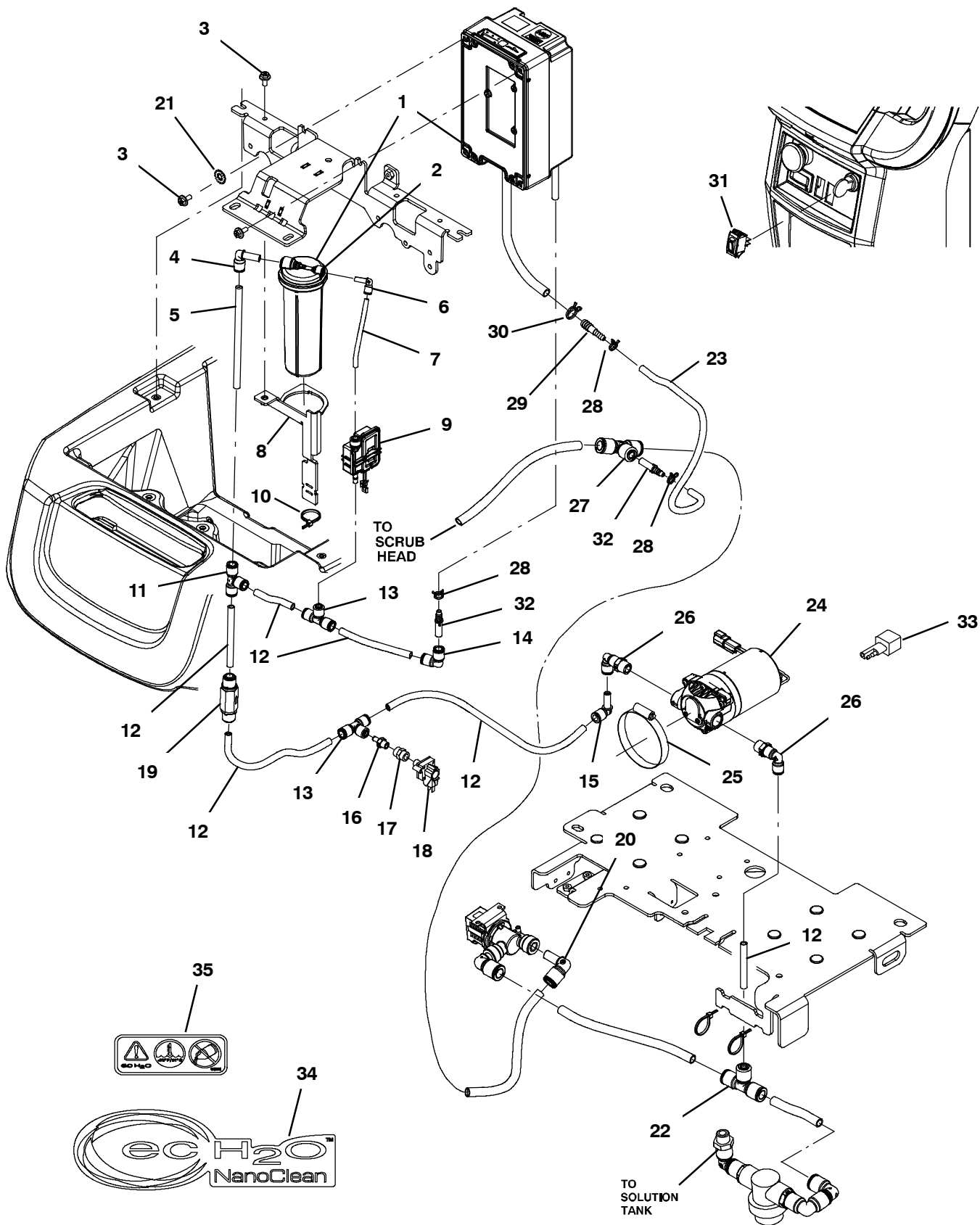


To properly position labels, align label with tick-marks in rotomold tank.



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

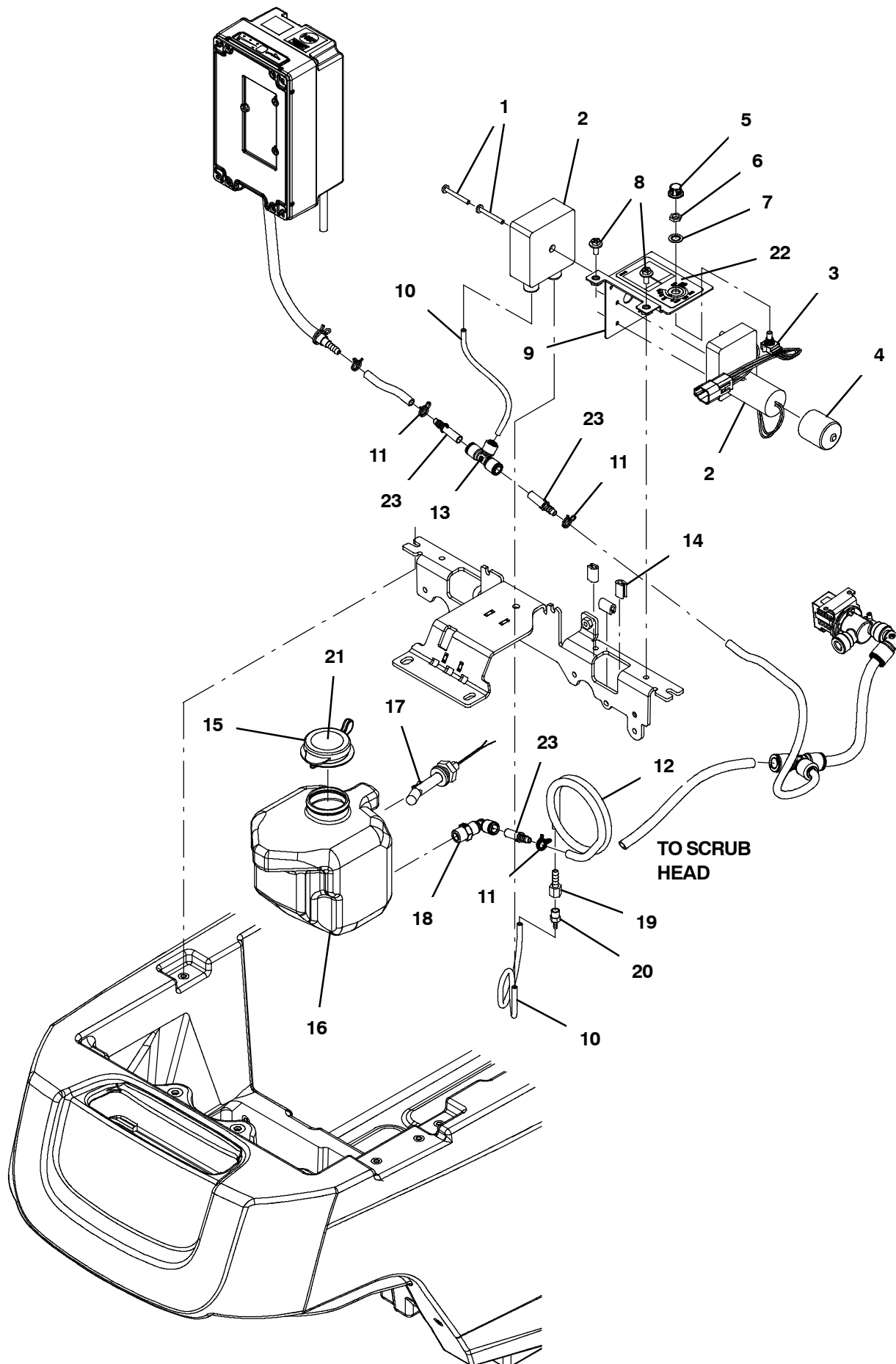
Fig. 51

T500 ec-H₂O NanoClean Affiliate Kit Parts List

T500 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- H2O [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	1212857	Fitting, Plstc, Str, Qm06/Bm04	2
33	1040868	Capacitor, Plug [.01 Uf, 200v]	1
34	1216520	Label, Logo [ec- H2O NanoClean Tennant]	2
35	1050003	Label, User, Attention, Ec- H2o	1

T500 Severe Environment Affiliate Kit Parts List



T500 Severe Environment Affiliate Kit Parts List

Ref.	Part No.	Description	Qty.
1	17185	Screw, Pan, Phl, M5 X 0.80 X 40, Ss	2
2	1215698	Pump Assy, Detgt, 24 Vdc [T300]	1
	1208721	Pump, Detgt, 24vdc, 120rpm	1
	1219077	Hose Kit, Detgt [0.5cc]	1
3	1211775	Potentiometer [5k, W/Leads And Conn.]	1
4	605064	Cap, Vinyl, 1.38 D 1.6l	1
5	630265	Knob, Rnd, 0.75d 0.50l 0.25b, Plstc	1
6	222607	Nut, Hex, Thin, .38- 32	1
7	43953	Washer, Lock, Int, 0.38, Ss	1
8	1034731	Screw, Hex, M6 X 1.00 X 16, Sems, Ss	2
9	1221487	Bracket Wldt, Pump, Detgt [T500]	1
10	613461	Hose, Pvc, Clr, 0.12id 0.25od 048.0l	1
11	613735	Clamp, Hose, Wir, .40 - .42, Yel	3
12	1006415	Hose, Afmkt, Pvc, Clr, 0.25id, 03ft	1
13	1212855	Fitting, Plstc, Tee, Qf04/Qf06/Qf06	1
14	1020168	Molding, Afmkt, Trim, Pvc, .08 .11, 01ft (Kit p/n C46140)	1
15	1224600	Cap, Snap, 2.17d [Blue]	1
16	1217453	Tank [2.5 Liter]	1
17	1212430	Sensor, Level, Liq, 30watt, Spst	1
18	1212812	Fitting, Plstc, E90, Qf06/Pm06, Swivel	1
19	150520	Fitting, Brs, Str, Bm04/Pf02	1
20	150524	Fitting, Brs, Str, Bm02/Pm02	1
21	1224989	Label, Detergent Metering Tank	1
22	1210440	Label, Opertnl, Detergent Metering	1
23	1212857	Fitting, Plstc, Str, Qm06/Bm04	3