

Technical Tips

(April 2017)

Product Information

MVE Stock Series

The MVE Stock Series provides the ultimate in security for the breeding industry and is primarily used to store semen and embryos. The freezers are designed for pull and pack shipment, with a wide neck opening for easy access. Although engineered for liquid storage, most MVE Stock Series can also be used to store in vapor.

Features include:

- Wide neck opening
- Lowest liftover height
- Largest LN2 Capacity
- Optional Battery Backup

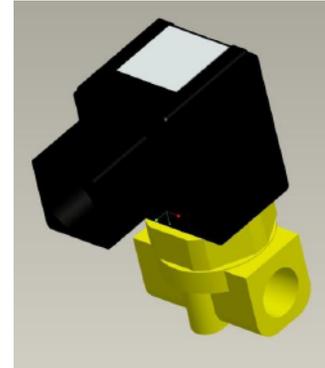


Helpful Hints/FAQ's

Solenoid Valves

Q: How do I replace the solenoid valves on the plumbing assembly?

A: All MVE freezers are equipped with 2 electromechanical solenoid valves that have been tested and approved by MVE for cryogenic use. These valves utilize a PTFE seal for optimal sealing in cryogenic environments. Over time, the normal thermal cycling that this seal is subject to will cause it to harden and lose its ability to seal completely. This will result in seepage past the sealing surface which can increase the LN2 consumption of the system, and in extreme cases result in an overfill situation. Thermal cycling through normal operation can also cause moisture ingress into the coil of the solenoid valve. Over time this may cause the connections and wiring in the coil to corrode and eventually fail. This will result in an inoperative solenoid valve.



SMC Solenoid Valve
(Current production)

NOTE: Over the life of MVE freezer, several different interchangeable 24VDC solenoids have been used. The current model is pictured above. Always use replacement solenoid valves from MVE. Substituting non-MVE components may result in inoperable valves and even damage to the TEC 3000 control system. Damage to the control system due to use of non-MVE parts will not be covered by warranty.

Thawing Freezer

Q: When should I thaw my freezer?

A: MVE recommends performing a complete defrost and moisture removal once every 60 months.

Q: How should I thaw my freezer?

A: In order to completely thaw and remove the moisture from the freezer you need to perform the following steps:

1. Remove freezer LN2 supply.
2. Unplug TEC 3000 main power and battery backup if equipped.
3. Open or remove lid from freezer.
4. Allow LN2 to completely evaporate and the freezer space to warm to room temperature. Placing a fan blowing into the freezer will accelerate this process.
5. After it has reached ambient temperature, thoroughly remove any moisture from the freezer space. This can be done with a wet/dry vacuum and towels. For High Efficiency models, open the hinged hatch on the bottom of the turn-tray to access the bottom of the freezer.
6. Once moisture has been removed from the freezer space, purge the plumbing assembly and annular lines with nitrogen gas. Compressed nitrogen or the gas use

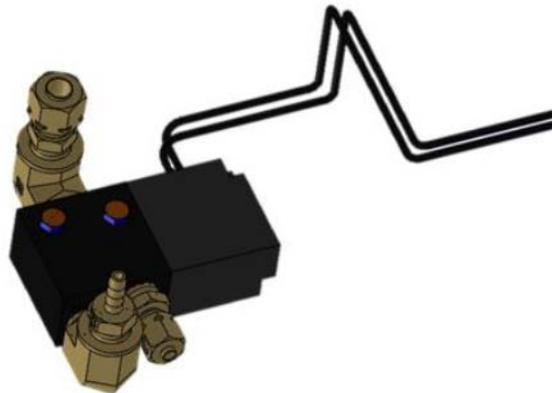
valve on a LN2 cylinder work best. Ensure the nitrogen gas pressure does not exceed 50 PSI (3.4 bar).

7. Plug in the TEC 3000 main power. Purge a transfer hose with nitrogen gas and connect the freezer plumbing via transfer hose to a compressed nitrogen supply or the gas use valve on a LN2 cylinder. Ensure gas bypass is disabled if equipped.
8. Press "Start Fill" and allow the freezer to purge for 30 seconds.
9. Press "Stop Fill"
10. Press "Start Fill" and allow the freezer to purge for 30 seconds.
11. Continue purge cycling for 30 seconds until the plumbing assembly and annular lines are clear and completely dry.

Purge Valve Replacement

CAUTION: Ensure that the LN2 supply valve is closed and the plumbing assembly is vented before removing the solenoid valves.

1. Remove plumbing shroud (on HE and HEco series) or rear access panel (on MVE series) to gain access to plumbing system.
2. Disconnect the Purge Valve wires from the TEC3000 wire harness.
3. Using an adjustable wrench, disconnect the copper tubing from the two fittings on the Purge Valve assembly.
4. Disconnect the clear vinyl tubing from the barbed fitting.
5. Remove the two bolts that mount the Purge Valve to the plumbing platform.
6. Repeat steps 1-5 in reverse order to install a new Purge Valve.



NOTE: In some cases, it may be necessary to purge the level sensing annular line separately. This can be done by connecting pressurized nitrogen gas directly to the freezer annular line fitting.

CAUTION: Ensure that the LN2 supply valve is closed and the plumbing assembly is vented before loosening the compression fittings and removing the annular line tube.

1. Loosen and remove the 1/4 inch compression fittings from the purge valve and the freezer annular line fitting.
2. Remove 1/4 inch copper tube and purge to clear any moisture.
3. Connect nitrogen gas source directly to the freezer's 3/8 inch FPT annular line connection.
4. Purge annular line with nitrogen gas, maintaining a pressure below 50 PSI (3.4 bar), until the line is clear and completely free of any moisture.

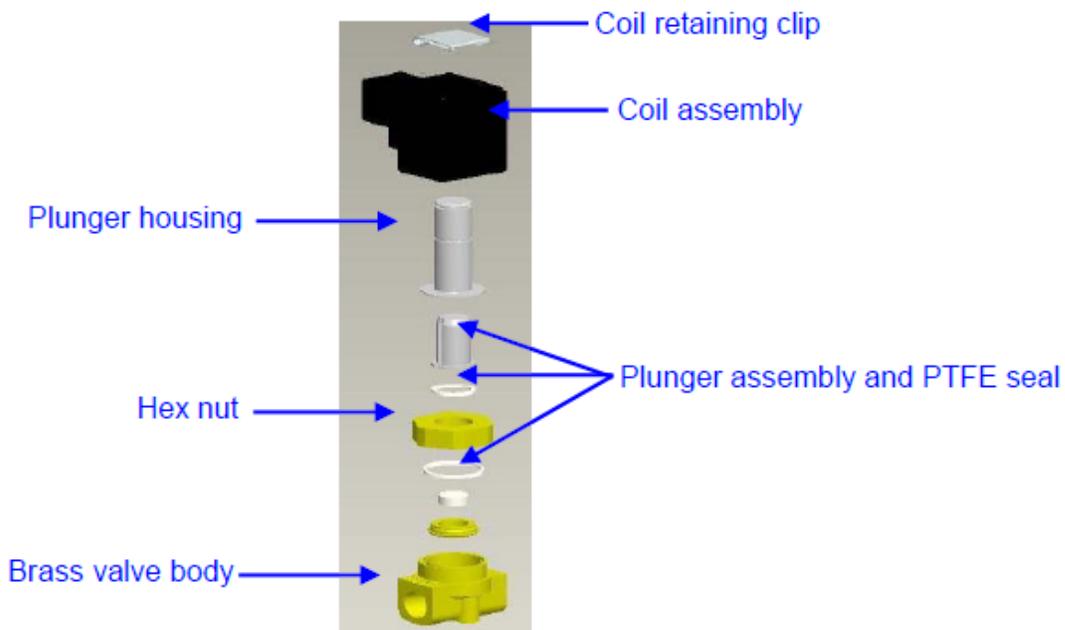
NOTE: If moisture is not completely removed from the freezer space and annular lines, ice will form when LN2 is reintroduced into the freezer. Ice blockage in the freezer space or annular lines will interfere with proper function of the freezer and level sensing system.

ENSURE ALL MOISTURE IS COMPLETELY REMOVED PRIOR TO INTRODUCING LN2

SMC (black) Solenoid Valve Replacement Rebuilding

1. Remove plumbing shroud (on HE and HEco series) or rear access panel (on MVE series) to gain access to plumbing system.
2. Remove coil-retaining clip by inserting a flathead screwdriver between the clip and the edge of the coil body. Twist the screwdriver, and the clip should slide off
3. Remove and discard the coil assembly.
4. Using a crescent wrench loosen hex nut and remove the plunger housing. Remove plunger housing and plunger assembly. Discard these parts.
5. Remove any debris that may have collected in brass valve body.
6. Inspect the brass valve body of the solenoid valve for nicks or damage. If the sealing surface appears to be in good condition, the valve body may be reused. If the sealing surface is damaged, the plumbing will need to be disassembled and the entire body will need to be replaced (this is not common).
7. Disassemble a new SMC valve (PN 14224611S) using the above procedure
8. Install the new plunger, plunger housing, and coil assembly onto the old valve body.
9. Assemble valve with new components in the reverse order.
10. Verify that no leaks are present using leak detect solution.
11. Open the LN2 supply valve and initiate a fill cycle by pressing "Fill Start". Allow the fill cycle to complete and verify that flow stops at the termination of the fill cycle.

CAUTION: Ensure that the LN2 supply valve is closed and the plumbing assembly is vented before removing the solenoid valves.



NOTE: If the brass valve body requires replacing, the freezer plumbing will need to be disassembled and the entire valve replaced (PN 14224611S). It is typically easier to start disassembling the plumbing assembly beginning at the fill tee for fill valve replacement or the gas bypass muffler for gas bypass valve replacement.

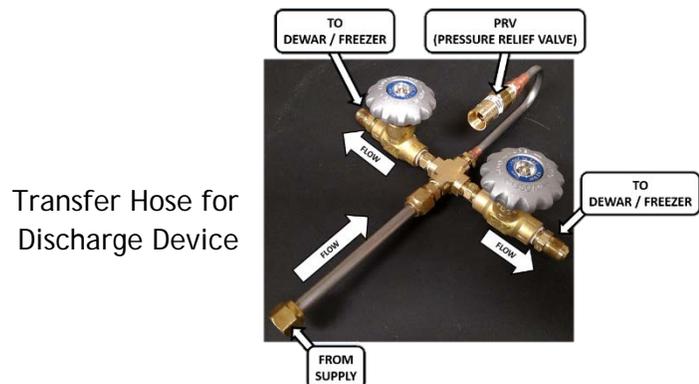
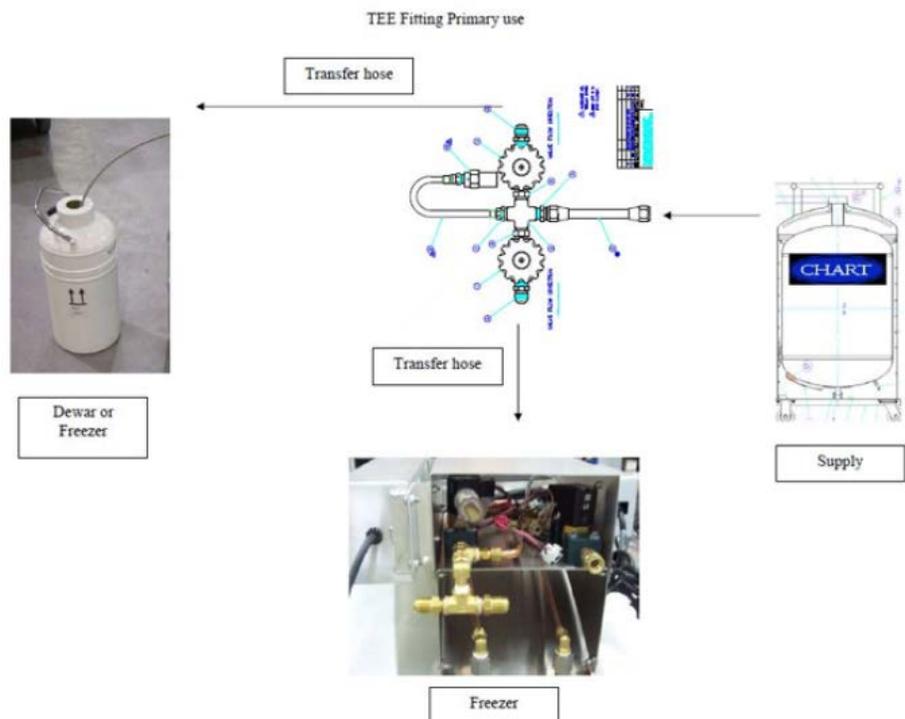
NOTE: When installing a complete new valve, ensure it is oriented correctly. An “N” is engraved on the side of the SMC brass valve body. The valve should be installed so that this “N” is on the inlet side of the valve.

NOTE: If an older style solenoid requires replacing, the freezer plumbing will need to be disassembled and the entire valve replaced by the current production SMC solenoid valve (PN 14224611S). It is typically easier to start disassembling the plumbing assembly beginning at the fill tee for fill valve replacement or the gas bypass muffler for gas bypass valve replacement.

Accessories

Tee Valve Assembly

The Tee Valve Assembly can connect to one supply tank enabling connections for multiple transfer hoses.



LN2 Transfer Hoses ½ ODT

Chart sells transfer hoses available in 4' and 6' lengths. Chart also sells a brass union fitting (P/N 1110862) which can join two transfer hoses.



Part Number	Description
9713159	4' (1.2 m) transfer hose
9713109	6' (1.8 m) transfer hose

PLEASE CONSULT THE APPLICABLE PRODUCT INSTRUCTIONS FOR USE FOR PRODUCT INDICATIONS, CONTRAINDICATIONS, WARNINGS, PRECAUTIONS, AND DETAILED SAFETY INFORMATION.