COMPRESSOR and FILL STATION Operations

September 2021

Questions? Contact Mike “Adrian” Guidry at mikeadrianguidry@gmail.com

SET-UP and START CHECKLIST

1. Inside Building Fill Station Valves-Set

1. Inside Building Fill Station Valves: Set the fill station valves so the air from the compressor goes into a storage bank or dive cylinders/tanks to prevent over-pressurization of the system when the compressor starts
   a. **COMP** Valve: **OPEN** (rotate counterclockwise)
   b. **Bank 1** Valve: **OPEN** (rotate counterclockwise)
   c. Bank Cylinder Valve(s): **OPEN** (rotate counterclockwise)
   d. **WHIPS** Valve(s): OPEN (rotate counterclockwise)

WHIP Valve

Bank 1 Valve

Note: You should have some tanks hooked up and ready to be filled as Banks should be already topped up (3200-3500 lbs). Don't exceed 3500

COMP Valve

Bank Cylinder Valve(s)

NOTE: Open all valves by turning full counterclockwise then ½ turn Clockwise

2.Outside Building

2. Outside Building: Wall Mounted Circuit Lock: ON (rotate switch clockwise to vertical)

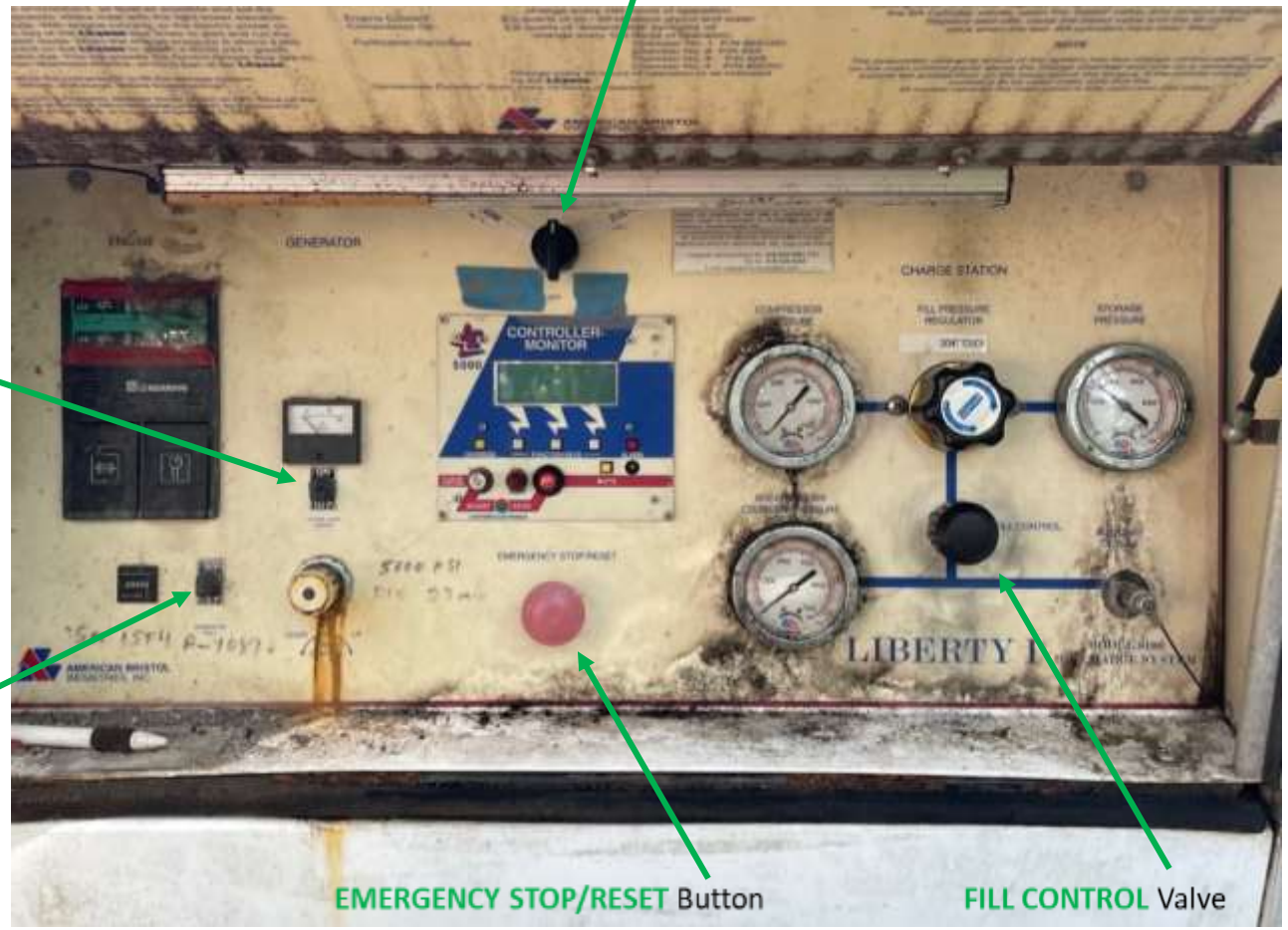
3. Padlocks: UNLOCKED

Note: you may want to return the key to the box now so you don't leave it in your pocket

4. Compressor Main Control Panel

4. Compressor Main Control Panel: **OPEN**

a. **GENERATOR ONLY** Switch: **OFF**
b. **FLOOD LIGHT ON/OFF** Switch: **OFF**
c. **EMERGENCY STOP/RESET** Button: **OUT**
d. Mode Select Switch: **OFF**
e. **FILL CONTROL** Valve: **CLOSED** (full clockwise)



5. Left Access Door

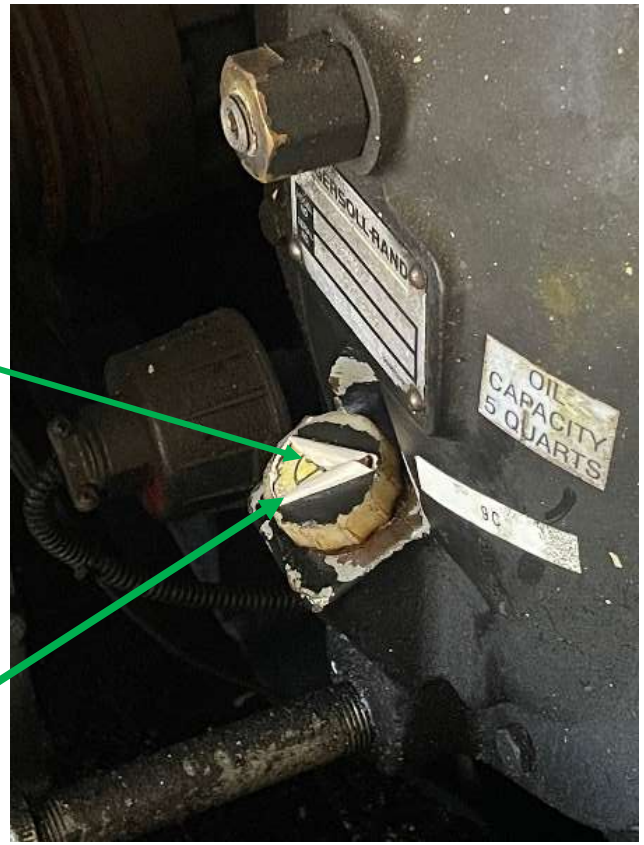
5.a. Compressor Oil Quantity Dipstick (9C): **CHECKED** (oil level between two hash marks)

i. If oil quantity is below the lower hash mark, add Anderol 500 oil (in back room, oil kept under work bench, funnel and measuring cup kept on bucket under the work bench)

ii. Do not overfill; recommend adding one cup at a time, then recheck

Bucket under work bench

Oil Quantity Dipstick



NOTE: If you are unsure about which oil to use, contact DF Mgmt

5. Left Access Door (continued)

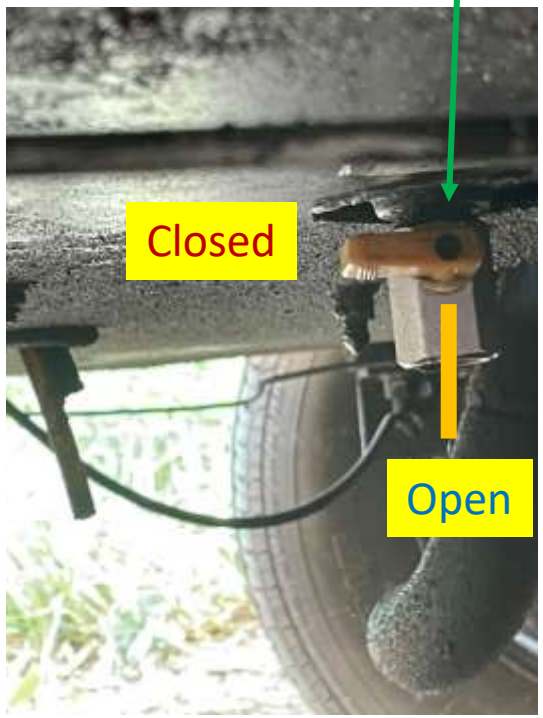
5. b. Condensate Container Switch Valve (9D): **OPEN** (rotate counterclockwise to vertical) and **DRAINED**

   i. This switch is located under the frame, in front of wheel axle

5. c. Condensate Container Switch Valve (9D): **CLOSED** (full clockwise to horizontal)

5. d. **GUEST** Battery Switch: **BOTH** (rotate)

Condensate Container Switch Valve



This switch valve is located under the frame, in front of left wheel axle

6. Right Access Door

6.a. **DRAIN VALVE** (10C): **OPEN** (turn counterclockwise) and **DRAINED**

i. Valve is located at the bottom of the white tube labeled "DRAIN VALVE"

6.b. **DRAIN VALVE** (10C): **CLOSED** (full clockwise)

6.c. ASME **STORAGE ISOLATION VALVE** (10F): **OPEN** (turn counterclockwise)

DRAIN Valve

Valve is located at the bottom of the white tube

8. Compressor Main Control Panel (pg 1)

8.a. Mode Selector Switch: **ELECTRIC** (rotate clockwise, single beep, red alarm light will flash once)

8.b. **FILL CONTROL** Valve: **OPEN** (rotate counterclockwise to full open)

i. Slowly turn the Fill Control Valve counterclockwise to open
ii. Air will start transferring from the ASME cylinders to the fill station
iii. If the **Breathing Air Cylinder** Pressure does not increase, ensure the charging station lid-locking handle is fully counterclockwise in the **LOCKED** position. This handle is located below main control panel

Mode Select Switch

Pressure increasing after opening

FILL CONTROL Valve

8. Compressor Main Control Panel (pg 2)

No Lights ON

8.c. LE5000 Controller/Monitor:

- i. **OVERRIDE** Key: NOT LIGHTED (DEPRESS OVERRIDE pushbutton to change)
- ii. **MUTE** Key: NOT LIGHTED (DEPRESS MUTE pushbutton to change)
- iii. DEPRESS ANY FUNCTION KEY (white pushbuttons)
- iv. DEPRESS **NORMAL**
- v. DEPRESS **AUTO**
- vi. DEPRESS **RUN** (compressor will start running/pumping)

Depress Left function key

Depress Left function key

Depress Left function key

Compressor Running in automatic mode
Condition Normal

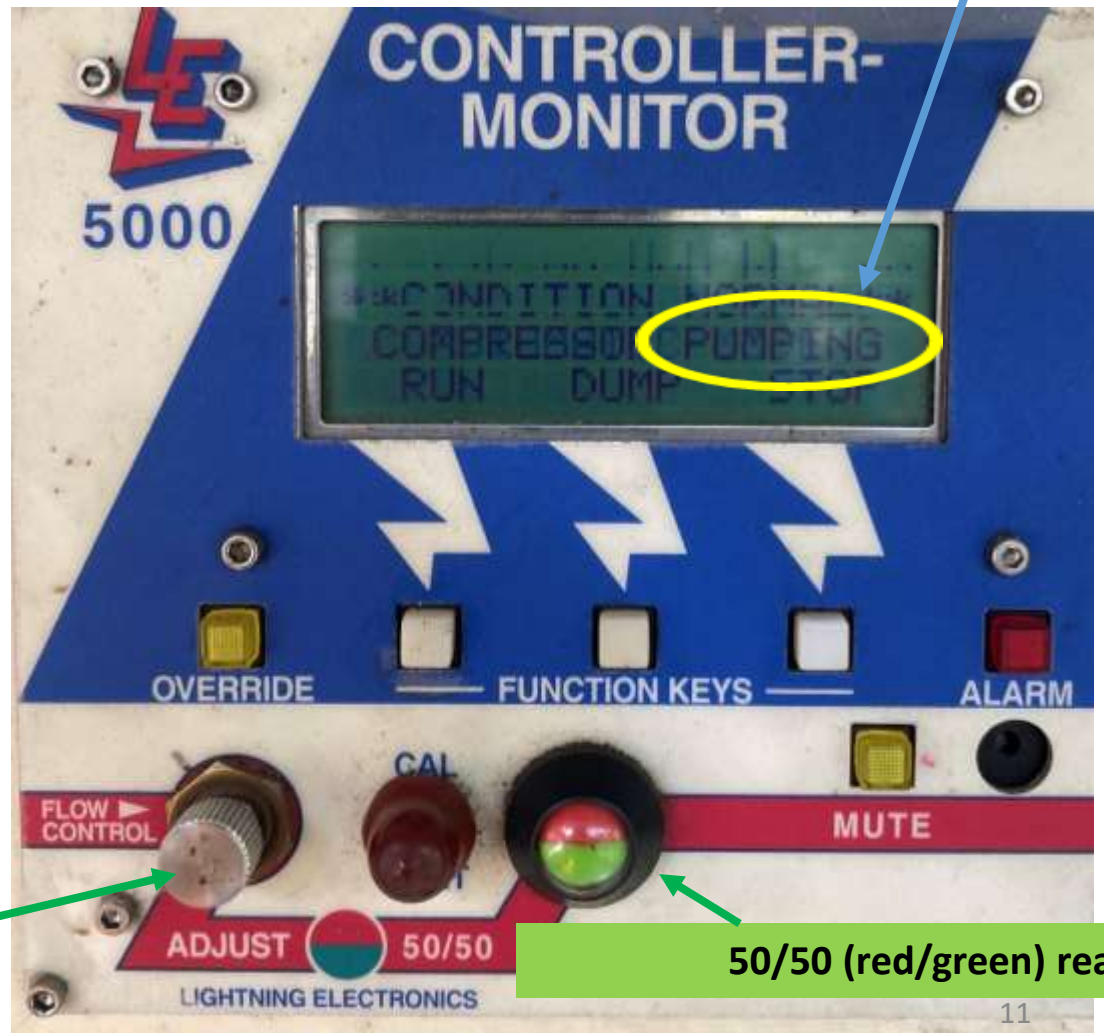
8. Compressor Main Control Panel (pg 3)

8. d. Flow Control Dial: **MONITOR first** then ADJUST if necessary

i. The flow control ball will rotate from red to red/green. The Flow Control dial should be adjusted at approximately 2000 psi, if required. Rotate the dial to adjust the Flow Control to obtain a 50/50 (red/green) reading

ii. This provides the correct sample flow rate to the carbon monoxide monitor

Compressor pumping



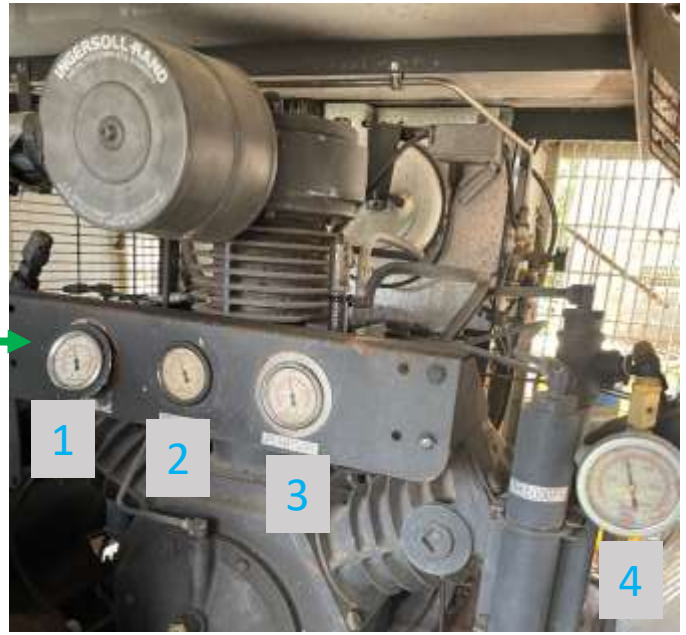
ADJUST if necessary

50/50 (red/green) reading

9. Four Stage and one Compressor Pressure Gauges: **OBSERVE**

View from left door near battery switch

9a. Compressor Stage pressure gauges will start rising in order, first (1) through fourth (4)



9b. The Compressor pressure gauge, on the compressor's main control panel, will start rising last.

10. Main Control Panel LE5000 Controller/Monitor : **OBSERVE**

10a. Monitor the LE5000 display for system condition warnings

10b. Normal operating limits are: ° F ≤ 390°; CO ≤ 010; DP ≤ -30

- NOTE: Notify Dive Flt management if having compressor issues

11. Fill Operations: Monitor

11a. Monitor the compressor, main control panel, and pressure gauges throughout fill operations

11b. WARNING! Do not let the Booster Bottles pressure rise above 3700 psi as it will trip the over-pressurization relief valve on the secondary filter pack, which may stick open.

As you fill tanks, blend air from bank and compressor till Booster Bottle (BB) Gauge reads approximately 2000-2500 then close Bank1 valve. You are now filling just with compressor. When BB gauge reads, 3400, open Bank1 and Close WHIP. Air is now going from compressor to bank cylinders.

Close individual tank valves and pull filled tanks off. Replace or follow shutdown checklist. Your tanks should cool down to 3000-3200.

SHUTDOWN Checklist

SHUTDOWN CHECKLIST (step 1)

1. **Compressor** Main Control Panel **FILL CONTROL** Valve: **CLOSED** (full clockwise)
   a. When the inside storage bank pressure reaches 3200 to 3500 psi, slowly turn the Fill Control Valve on the **compressor** clockwise to full closed

3500lbs

FILL CONTROL Valve

WARNING! Do not let the Booster Bottles pressure rise above 3700 psi as it will trip the over-pressurization relief valve on the secondary filter pack, which may stick open.

SHUTDOWN CHECKLIST (step 2)

2. Inside Building Fill Station Valves: **CLOSED** (full clockwise)

   CAUTION: To avoid over-pressurization, do not close the inside building fill station valves until <u>after</u> the compressor's FILL CONTROL Valve is closed.

a. **COMP** Valve: CLOSED (rotate clockwise)
b. **Bank 1** Valve: CLOSED (rotate clockwise)
c. Bank Cylinder Valve(s): CLOSED (rotate clockwise)

Bank1 Valve

COMP Valve

Bank Cylinder Valves

SHUTDOWN CHECKLIST (step 3)

3. Compressor: **COOL AND PURGE**

a. Allow the compressor to run and build up pressure until the compressor and storage pressures reach 4700 psi
   a. Normally takes 10-12 minutes

b. Once maximum pressure is reached, the compressor will run in a cool and purge mode for 2 minutes. The term “purging” will be displayed n the LE5000 Controller/Monitor instead of “pumping”. *Recently the compressor enters purge for only 25-35 seconds*

c. During this time, the compressor will run unloaded, purging the moisture separators, and cooling down the compressor stages

STORAGE IS FULL

COMPRESSOR PURGING

SHUTDOWN CHECKLIST (steps 3 continued & 4)

3. Compressor: **COOL AND PURGE**

d. After the 2-minute Cool & Purge cycle, the compressor will automatically shut- down. **IF COMPRESSOR DOES NOT SHUT DOWN AUTOMATICALLY IN 12 to 15 MINUTES, GO TO STEP 4, ELSE, GO TO STEP 5 WHEN COMPRESSOR SHUTS DOWN.** **IF "PURGING" CHANGES TO "PUMPING", GO TO STEP 4**

4. LE5000 Controller/Monitor: Depress **STOP** (right function key)

Normally the compressor will pump for 12-15 minutes then change to purging. You will hear a sound like air releasing. It will purge for roughly 30 seconds then go back to pumping. Select STOP at this time.

Purging changed to pumping

Depress right function key

Display after depressing STOP

SHUTDOWN CHECKLIST (step 5)

5. Main Control Panel:

a. **GENERATOR ONLY** Switch: **OFF**

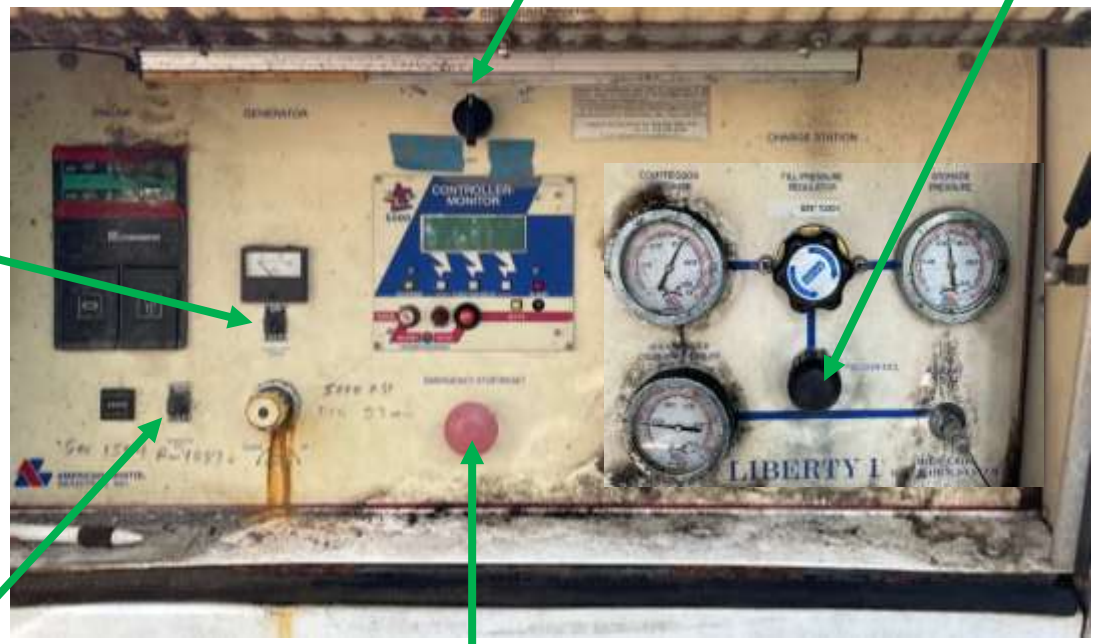
b. **FLOOD LIGHT ON/OFF** Switch: **OFF**

c. **EMERGENCY STOP/RESET** Button: **OUT**

d. Mode Select Switch: **OFF** (rotate counterclockwise to vertical)

e. **FILL CONTROL** Valve: Verify **CLOSED** (full clockwise)

f. Main Control Panel Access Door: **CLOSED**



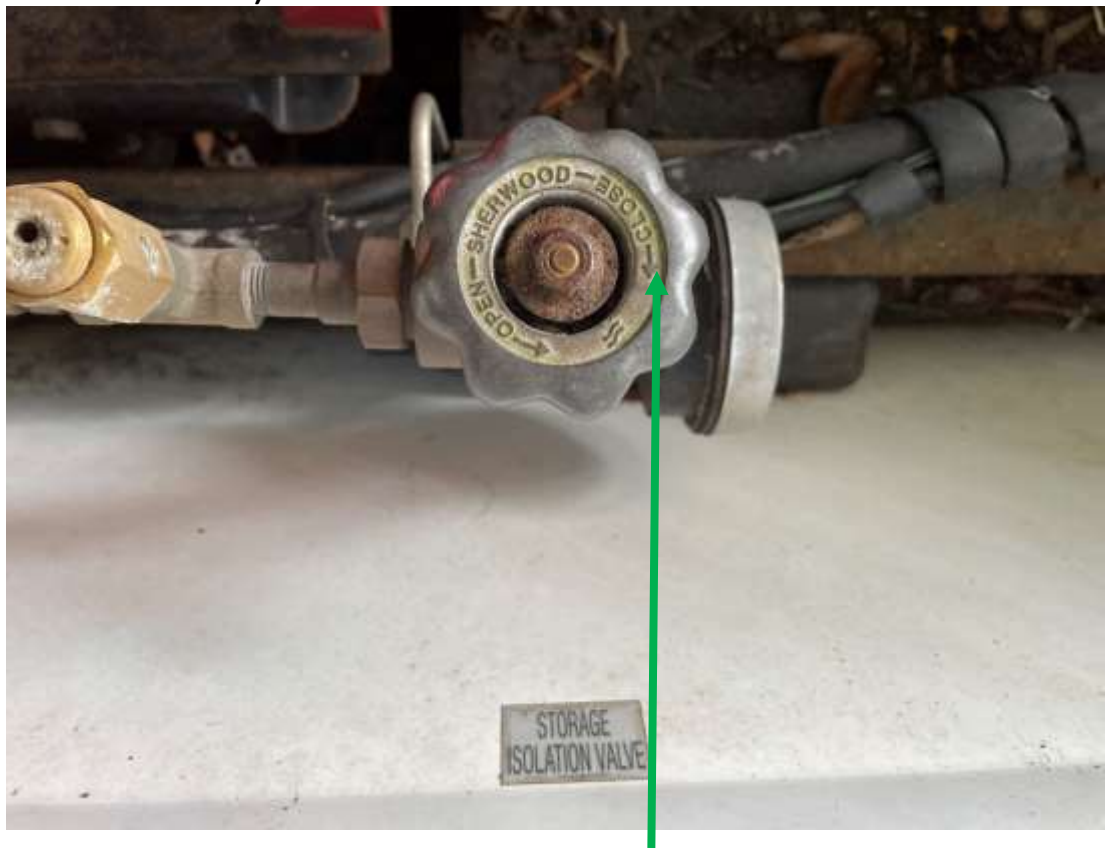
SHUTDOWN CHECKLIST (step 6)

6. Right Access Door: OPEN

a. ASME **STORAGE ISOLATION VALVE** (10F): **CLOSED** (full clockwise)

b. Right Access Door: **CLOSED**

c. Padlock: **LOCKED**



ASME **STORAGE ISOLATION VALVE** (10F)

SHUTDOWN CHECKLIST (step 7)

7. Left Access Door: **OPEN**

a. Condensate Container Switch Valve (9D): **OPEN** (rotate counterclockwise to vertical) **and DRAINED**
   i. This switch valve is located under the frame, in front of wheel axle

b. Condensate Container Switch Valve (9D): **CLOSED** (full clockwise to horizontal)

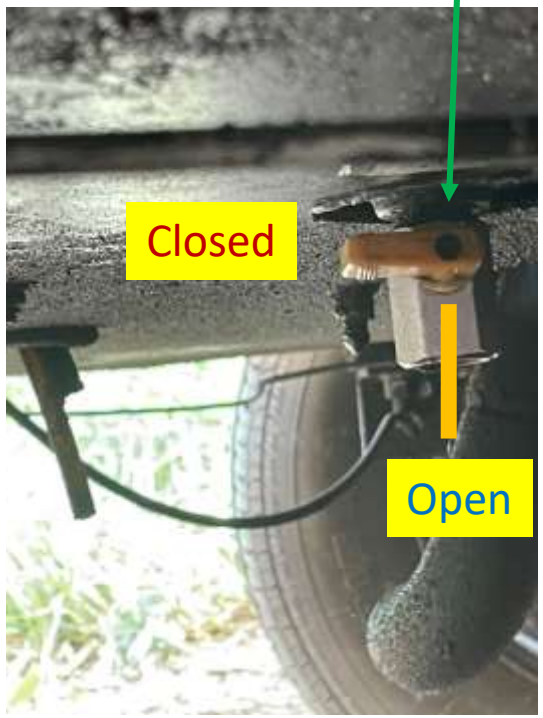
c. **GUEST** Battery Switch: **OFF** (Rotate)

d. Left Access Door: **CLOSED**

e. Padlock: **LOCKED**

GUEST Battery Switch

Condensate Container Switch Valve



This switch valve is located under the frame, in front of left wheel axle

SHUTDOWN CHECKLIST (step 8)

8. Wall Mounted Circuit Breaker: **OFF** (rotate switch counterclockwise to horizontal)

Wall Mounted Circuit Breaker: **OFF**

SHUTDOWN CHECKLIST (steps 9 & 10)

9. Compressor Log: **RECORD DATA**

   List start and shut down time along with total run time

   Check your math as we use the total run time to determine when to change the filters

   In note section, annotate if added oil and any issues you may have had with compressor

   NOTE: Contact Dive Flight Management if you have any compressor issues

10. Padlock keys: **RETURNED**

   Don't be the person to take the keys home!

SHUTDOWN CHECKLIST (step 11)

11. Inside Building Fill Station: Release Pressure within Fill Station

NOTE: Verify the Bank Cylinder Valves are CLOSED (turn clockwise) before releasing pressure in the Fill Station. You will do this by letting air out of the Fill station whip hoses

a. **COMP** Valve: OPEN (rotate counterclockwise)
b. **Bank 1** Valve: OPEN (rotate counterclockwise)
c. **WHIPS** Valve: OPEN (rotate counterclockwise)
d. Valve **1**, **2**, **3** or **4**: OPEN (rotate counterclockwise)
e. Fill hoses Bleed Valves: OPEN (rotate counterclockwise)

NOTE: You will hear air escaping through fill hoses and pressure decreasing on Fill Station Booster Bottle Pressure Gauge.

Bank 1 Valve

WHIPS Valve

Valve **1**, **2**, **3** or **4**

COMP Valve

SHUTDOWN CHECKLIST (step 11 continued)

11. Inside Building Fill Station:

Once the Booster Bottle Gauge reads ZERO, close all the valves

f. Fill hoses Bleed Valves: CLOSED (rotate clockwise)

g. Valve **1**, **2**, **3** or **4**: CLOSED (rotate clockwise)

h. **WHIPS** Valve: CLOSED (rotate clockwise)

i. **Bank 1** Valve: CLOSED (rotate clockwise)

j. **COMP** Valve: CLOSED (rotate clockwise)

Bank 1 Valve

WHIPS Valve

Valve **1**, **2**, **3** or **4**

COMP Valve