



Magnum Refrigerated Air Dryers

Models MSC4000 - MSC15000



ENGINEERING **YOUR** SUCCESS.

Introduction

These instructions must be thoroughly read and understood before installing and operating this product. Failure to operate this product in accordance with the instructions set forth in this manual can lead to unsafe operating conditions and may void warranty. For additional information, refer to this manual or contact the factory for recommendations. Please have the dryer serial number and model ready when contacting the factory.

Factory Contact Information

Phone 1-800-343-4048

For pricing, availability, and purchase orders: GSFOrders@parker.com

For technical support and aftermarket: GSFsupport@parker.com

For product applications and technical sales: FAFQuotes@parker.com

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1. Transport / Inspection

Before unpacking/uncrating your new dryer, inspect the carton/crate for damage. Please note any damage on the freight bill, and file notice of concealed damage if:

- (a) there are any dents or visibly broken parts
- (b) there is any sign of oil on the skid or floor

File these claims with the carrier immediately! Otherwise, proceed with unpacking/uncrating the unit.



1.1. Environmental & Location Considerations

Following these guidelines will help insure that your new dryer will provide safe and reliable service.

- Unless supplied for special conditions, all dryers must be located indoors in an area with an ambient temperature between 41 - 100°F (5-38°C) and free from explosive and corrosive fumes. Three (3) feet (92cm) of space must be allowed between all open grills, walls, or other objects.
- If the dryer is installed in a confined area, an exhaust system must be provided to eliminate re-circulation of hot atmospheric air.
- With air cooled dryers, high ambient temperatures affect the outlet dewpoint of the dryer. The unit must not operate in an ambient of over 115°F (46°C). If ambient temperature conditions are over 100°F (38°C), water cooled dryers are generally recommended.
- Unit must be installed indoors.
- On water-cooled units, install a strainer. Maximum water inlet pressure is 150 PSIG (10.4 BarG). Dryers are designed for 85°F (29°C) inlet water temperature. Higher water temperature reduces dryer capacity (consult the factory for water temperatures above 85°F (29°C)).
- Dryer must be installed on a flat concrete pad rated for the total weight of the dryer.

Cooling Water Quality to Condenser (Water Cooled) Requirements

Parameter	Concentration
Langelier Index	0-1
pH	7.5 - 9
Sulfate (SO ₄ ²⁻)	<50 ppm
Electrical Conductivity	10-500 µS/cm
Ammonia (NH ₃)	<1 ppm
Chloride (Cl ⁻)	< 50 ppm
Total Hardness	70 - 150 ppm CaCO ₃
Oxygen (O ₂)	<0.1 ppm
Iron (Fe)	<0.2 ppm
Nitrate (NO ₃ ⁻)	<2 ppm
Alkalinity (HCO ₃ ⁻)	70 - 300 ppm
Hydrogen Sulfide (H ₂ S)	<5 ppm
Free CO ₂	<5 ppm
Aluminum (Al)	<0.2 ppm

2. Dryer Installation

- **Never work on unit under pressure!**
- Never work on unit when power is connected.
- Do not over-pressurize unit.
- Install unit in a clean, cool (50° - 100°F / 10° - 38°C); well lighted location
- Do not shut unit off at disconnect switch except during service. Unit must be turned on and off by the panel switch located on the dryer.
- Do not operate dryer at abnormal conditions (high flow, high inlet temperature, high ambient, high inlet pressure, etc.)



2.1. Airline Plumbing

- Air piping must be supported independently of the dryer.
- If vibration is present, flexible metal hoses (or other vibration dampening methods) must be installed to prevent it from being transmitted to the dryer.
- Use unions or flange joints.
- Install a bypass line and gate valves to permit isolation of the dryer from the air system. This is done to provide easy service and/or removal of the dryer without interruption of air to the system.
- Make the connection to the draining system, avoiding connection in a closed circuit shared by other pressurized discharge lines. Check the correct flow of condensate discharges. Dispose of all condensate in conformity with current local environment regulations.
- Direction of flow through the dryer must be observed. A check valve on the outlet of the dryer to prevent back flow and false loading is recommended.



2.2. Electrical Connections

To be performed by a qualified person only. Risk of serious injury or death.

Observe Lock Out/Tag Out Procedure: Disconnect, lock out and tag all power at source prior to attempting repairs or adjustments to rotating machinery and prior to handling any ungrounded conductors.

Provide breach and short circuit protection as well as disconnect means per local and national codes.

Before connecting electrical power to the dryer check for correct voltage at the connection box.



All units must be externally grounded to protect against severe electrical shock.

- Check for correct voltage and phase at electrical connection box.
- Install a fused disconnect switch near the dryer per the local codes.
- Connect power to the main lugs of dryer disconnect switch located in the high voltage enclosure.
- Make sure no bare wire is exposed; replace box cover and screw closed.
- Caution: Wire the dryer separately from the air compressor.
The dryer must NOT cycle on and off with the air compressor.
- Phase rotation is only important if the dryer has a 3-phase condenser fans (MSC4000-15000).
Fans must PULL air through the condenser coil.
- Crankcase heaters are pre-wired from the factory to the line side of the compressor contactor.
When power is applied to the dryer, the heater will energize. Heaters must be energized at all times, therefore the main disconnect must be left on **except** when servicing the dryer. Heater must be energized for 12 hours prior to start-up and after prolonged shut down 2 hours or more).
The power must be left on at all times **except** when servicing.



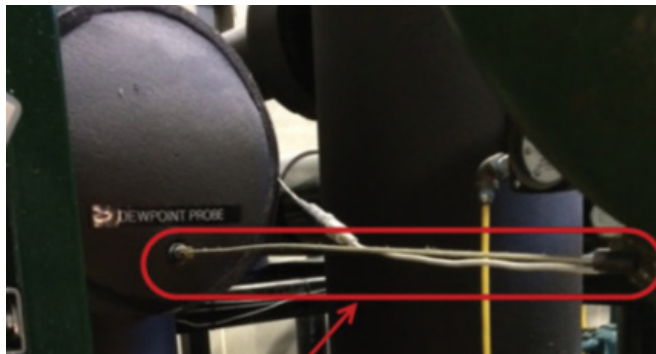
2.3. Installation of Dewpoint Probe

- Dryer will not run if Dewpoint Probe is not connected to the cable from the controller.
- Do NOT run the dryer without the probe installed as shown and described below!
- Install the probe into the evaporator.
- Do NOT bend!
- Install into the evaporator dully inserted past the tubesheet into one of the evaporator tubes.
- Note – When installing the probe, use a thread-lock sealant on the brass and steel threads.
- If probe is not installed correctly it WILL result in damage to the evaporator, consult factory if you are unsure.

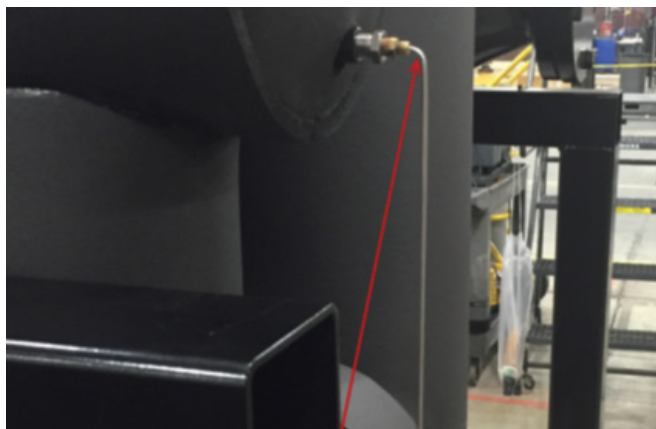


CORRECT INSTALLATION OF PROBE

PROBE GOES HERE AND MUST BE FULLY INSERTED AS SHOWN PAST THE TUBESHEET INTO AN EVAPORATOR TUBE. NOT FULLY INSERTING THE PROBE WILL RESULT IN SERIOUS PRODUCT FAILURE.



WRONG WAY - PROBE NOT FULLY INSTALLED
- WILL RESULT IN FAILURE!



WRONG WAY - DO NOT BEND PROBE TO INSTALL!

3. Start Up Procedure

Preliminary Checks

Before starting the dryer, verify that the compressed air valves are closed so there is no airflow through the dryer, the dryer supply voltage is correct, and there is sufficient water supply to the unit (water cooled). Also ensure unit is level at this time.

Start-Up Procedure

There should be NO air flow through the dryer before or during start-up. It is recommended that the dryer be installed with bypass piping to better service the unit. Inlet & outlet valves to the dryer should be closed with the by-pass valve open.

1. Units are shipped with the refrigeration service valve tagged with a "VALVE CLOSED" label. These tagged service valves must not be opened until the dryer is ready to be started and the main power is permanently applied. Only tagged service valves must be opened.
2. Locate tagged service valves and remove end cap from valve stem.
3. Using a refrigeration service or small crescent wrench, turn the valve stem counterclockwise until it stops. The valve will now be fully opened.
4. Before replacing the caps tighten the packing on all service valves (turn clockwise) if a leak is noticed. Replace cap.
5. After electrical connection (Refer to Section 2.2), apply power.
6. After power has been applied the control panel should say "OFF" and the crankcase heater will now start heating. THE CRANKCASE HEATER MUST BE SWITCHED ON 12 HOURS BEFORE STARTING THE DRYER. Failure to comply with this may cause serious damage to the compressor.
7. Open the condenser water supply and return valves on water-cooled units.
8. If necessary, bleed the air from the condenser water shell.

START THE DRYER BEFORE SUPPLYING AIR!!!

1. Press the "RUN" button to start the dryer. (See description of "Oil Management Mode" in Section 7.1, if the system goes into oil management mode upon start up)
2. Verify correct rotation of fans on air-cooled units. There is no rotation that needs to be checked on water-cooled units.
3. Wait until the dryer reaches cycling temperatures and pressures.
4. Do not pass air through the dryer until it stabilizes and cycles off (cycles 2-3 times).
 - Verify the liquid level in the surge tank sight glass for proper oil return! Adjustment is usually not required, and the refrigerant level must be verified after 24 to 48 hours of operation. Adjust as necessary, using the Level Master Control Valve (TXV). Counterclockwise raises the level & clockwise lowers the level. The oil level in the refrigeration compressor should be between $\frac{1}{4}$ and $\frac{3}{4}$ in the compressor sight glass when the compressor is loaded. Contact Customer Service if there are ANY questions. The refrigerant level will rise and fall during normal operation.



CAUTION: If liquid level is not operating within this site glass, there will be insufficient oil return and will cause refrigerant compressor damage or failure. If there is excessive liquid (overfill) in the surge tank, there could be liquid flood-back which could also cause refrigerant compressor damage or failure.

5. Once the dryer cycles off, you can now introduce compressed air to the dryer.
6. SLOWLY pressurize the dryer. Once completed slowly open the outlet valve, then close the bypass valve. The dryer is now on line.
 - **Note:** Fast opening of air valves could damage the heat exchangers. At this time, complete the following start up form.
7. Clean the condensate drain Y-Strainer after the first 8 hours of operation. (See section 5.0 Routine Maintenance)

(continued on page 8)

8. Restart dryer using this procedure after maintenance, power outage or prolonged periods of shutdown (2 hours or more).
 - **Note:** The refrigerant compressor may require additional oil added. Oil level will need to be verified at the same time as the expansion tank refrigerant level (within 24 to 48 hours) to ensure correct system operation and adjustment.

For units supplied with Refrigeration Oil Separator (STD on Watercooled units – MSC4000 & UP and STD on Aircooled MSC4000 & up)

- Change oil separator element 24-48 hours after initial start-up.
- An extra element for this change out is supplied with shipment.

3.1. When Operating Dryer

1. Turn dryer On and Off at control panel only.
2. Keep power to unit at all times except when servicing.
3. Start dryer prior to allowing air flow through unit.
4. Clean condenser when necessary.
5. Maintain ambient temperature between 41-100°F (5-38°C)
6. Keep inlet temperature under 101°F (38°C)
7. Check and clean Y-strainer regularly.
8. NEVER allow dryer to cycle ON/OFF with air compressor.

Start Up Checklist

Date of Start Up: _____ / _____ / _____

Date of Follow Up: _____ / _____ / _____

Customer Name: _____

Customer Location: _____

Dryer Type: _____

Model No: _____

Serial No: _____

Work Order No: _____

General Dryer

(A) Check and Record the Following (If Applicable):

OK Requires Repair or Adjustment

1. ☐ ☐ Inlet Air Temperature (<100°F/38°C) (°F/°C)

2. ☐ ☐ Inlet Air Pressure (PSIG / BarG)

3. ☐ ☐ Outlet Air Temperature (°F / °C)

4. ☐ ☐ Outlet Air Pressure (PSIG / BarG)

5. ☐ ☐ Pressure Drop Across Dryer (PSIG / BarG)

6. ☐ ☐ Refrigerant Level (at start) _____
(2nd)

7. ☐ ☐ Compressor Oil Level (at start) _____ (2nd)

8. ☐ ☐ Refrigerant Suction Temperature (°F/°C)

9. ☐ ☐ Refrigerant Suction Pressure (PSIG / BarG)

10. ☐ ☐ Refrigerant Discharge Temperature (°F/°C)

11. ☐ ☐ Refrigerant Discharge Press. (PSIG / BarG)

12. ☐ ☐ Condenser Out Refrig. Line Temp. F/°C

13. ☐ ☐ Condenser Water In Temp (°F/°C)

14. ☐ ☐ Condenser Water In Press. (PSIG / BarG)

15. ☐ ☐ Cooling Fan/s Rotation (Air Cooled)

16. ☐ ☐ Condensate piped to? _____

Notes / Data

System

(C) Pre-Filter (if installed)

Notes / Data

26. ☐ Filter Type _____

27. ☐ Pressure Drop Across Filter (PSIG/BarG) _____

28. ☐ Type of Condensate Drain (Manual / Timer / Float)

29. ☐ Condensate Drain Functional Check? Y / N _____

30. ☐ Condensate piped to? _____
(Management System / Dedicated Drain / Floor Drain / Outdoors)

(D) Moisture Separator/Coalescing Filter

31. ☐ Filter/s P# and Qty: Qty: _____ P# _____

32. ☐ Pressure Drop Across Filter (PSIG/BarG) _____

33. ☐ Primary Condensate Drain Auto Time? _____

34. ☐ Condensate Drains Functional Check? Y / N _____

35. ☐ Condensate piped to? _____
(Management System / Dedicated Drain / Floor Drain / Outdoors)

(E) Air Receiver

#1 #2 #3

36. ☐ Size of Air Receiver (Gallons) _____

37. ☐ Rated Pressure (PSIG/BarG) _____

38. ☐ Safety Valve/s Operational? Y / N _____

Rated @ (PSIG/BarG / Flow)

(#1) _____ / _____ (#2) _____ / _____ (#3) _____ / _____

39. ☐ Type of Condensate Drain (Manual / Timer / Float)

40. ☐ Condensate Drain Functional Check? Y / N _____

41. ☐ Condensate piped to? _____

(Management System / Dedicated Drain / Floor Drain / Outdoors)

(F) Air System Pressure Controller

42. ☐ System Controller Installed? Y / N Type: _____

43. ☐ Press. after Receiver or Controller (PSIG/BarG) _____

(G) Condensate Management

44. ☐ Installed? Y / N _____

45. ☐ Water Exiting System clean? Y / N _____

(H) System Use

46. ☐ High Volume Air Usage (Time of Day) _____ AM / PM

47. ☐ Low Volume Air Usage (Time of Day) _____ AM / PM

Electrical

(B) Check and Record the Following (If Applicable):

OK Requires Repair or Adjustment

22. ☐ ☐ Voltage (Full Load) A _____ B _____ C _____

D _____

E _____ F _____

23. ☐ ☐ Motor Amps (Full Load) U _____ V _____ W _____

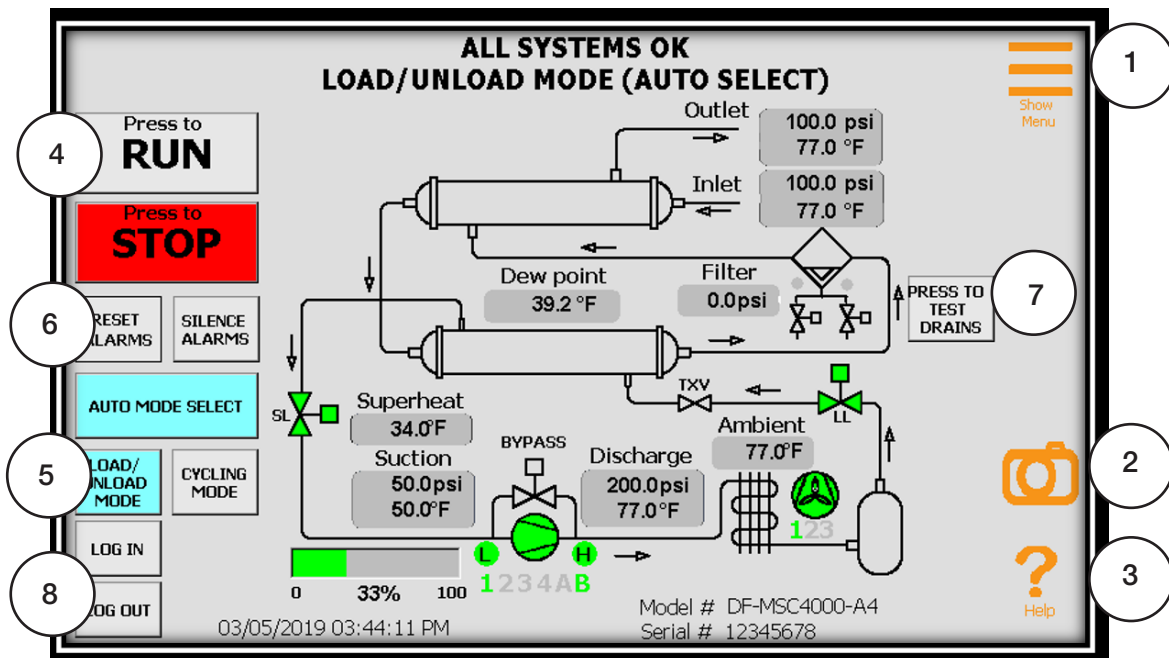
24. ☐ ☐ Pkg Amps (Full Load) L1 _____ L2 _____ L3 _____

25. ☐ ☐ Check Electrical Connections _____

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Customer Signature: _____

4. Controls / User Interface

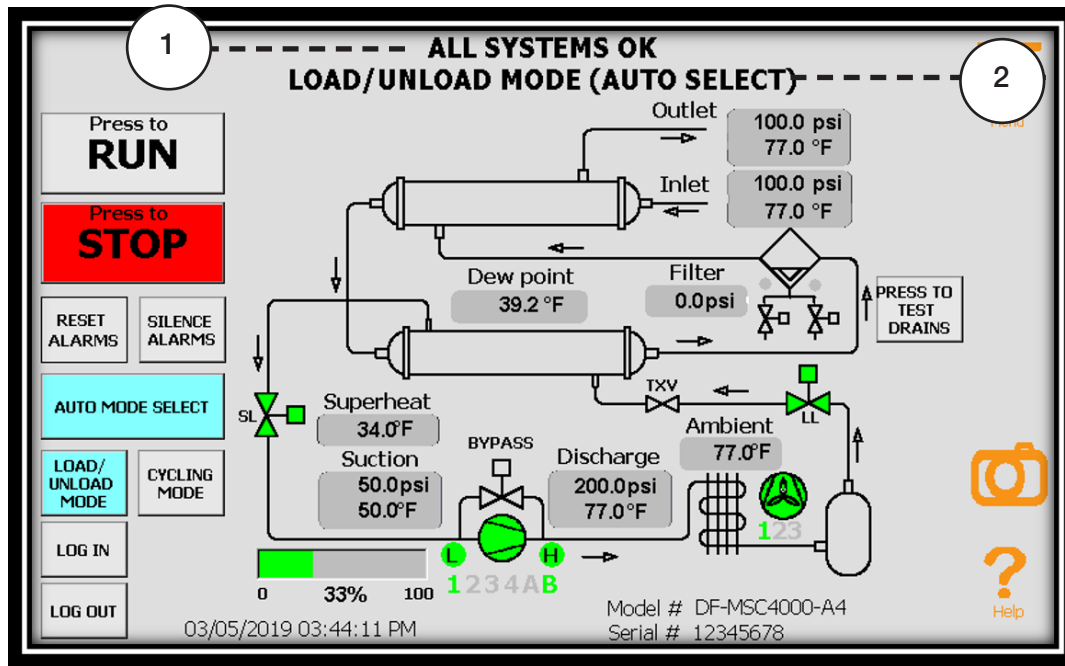


4.1 Main Display

User Controls

1. Menu Icon – Touch to display the menu icons on the sides of the display.
2. Snapshot Icon – Touch to save a snapshot of any screen to the flash drive.
3. Help Icon – Touch to display online help screens where available.
4. Run / Stop Keys
Run Key – Touch to start dryer if key is green.
Stop Key – Touch to stop dryer if key is red.
5. Mode Select Keys (Not included on dryers with variable drive or single mode dryers)
Auto-Mode Select – Touch to toggle auto select mode
Load/Unload Mode – Touch to switch to Load/Unload Mode
Cycling Mode – Touch to switch to Cycling Mode
6. Alarm Keys (M)
Alarm Reset Key – Touch to reset all active alarms.
Alarm Silence Key – Touch to silence the alarm screen and turn off the alarm relay.
7. Drain Test Key – Touch to test the drain valves.
8. Log In / Log Out Keys – Touch to log in and log out as required.
Supervisor default password is SUP (all caps)
The password may be changed by any person logging into the dryer. If the password is lost, however, the display panel must be completely reprogrammed by a service representative.

M Supervisor level access required

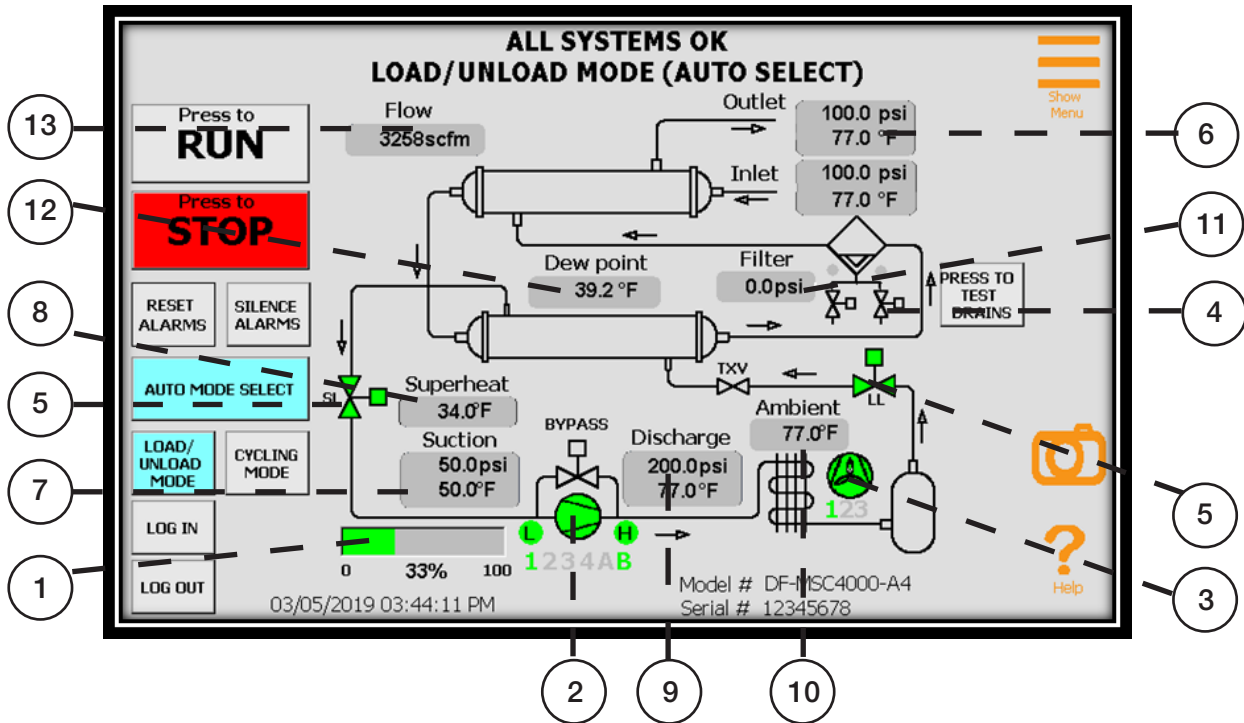


Status & State Messages

1. **Status Message Line** – Displays one or more of the following including any active alarms
 - ALL SYSTEMS OK** – There are no active alarms
 - ALARM SHUTDOWN** – An alarm condition has resulted in the dryer shutting down. Refer to Alarm screen for assistance.
 - PUMPDOWN IN PROGRESS** – The dryer will remove refrigerant from the suction lines while the dryer is off so that it does not restart under excessive load.
 - OIL RECOVERY MANAGEMENT ACTIVE** – In order to ensure enough oil is being returned to the compressor under low load conditions, the compressor is forced to run at 100% output on a periodic basis by temporarily increasing the dryer load.
 - HIGH HEAD PRESSURE LIMIT** – The discharge pressure is running close to the alarm limits. To avoid unnecessarily shutting down due to momentary high pressure, the dryer output will be reduced.
 - DRYER NOT CONFIGURED!** – The dryer must be configured before it will run.
 - ACTIVE ALARMS** – Refer to the Alarms Section for alarm messages displayed on this line.
2. **State Message Line** – Displays the current run mode of the dryer
 - DRYER OFF - PRESS RUN TO START**
 - RESET ALARMS TO ENABLE RUN** – The alarm must be reset by touching RESET ALARMS key before the dryer is allowed to restart.
 - VARIABLE SPEED MODE** – (VSD Dryers only) Currently running in variable speed mode. The following modes are not included on dryers with variable drives.
 - LOAD/UNLOAD MODE** – Currently running in Load/Unload mode.
 - LOAD/UNLOAD MODE – (AUTO SELECT)** – Currently running in Load/Unload mode. The dryer will switch to Cycling mode if the compressor runs unloaded for more than 5 minutes
 - CYCLING MODE** – Currently running in Load/Unload mode.
 - CYCLING MODE – (AUTO SELECT)** – Currently running in Cycling mode. The dryer will switch to Load/Unload mode if the dryer cycles on less than 15 minutes after the compressor shuts off.

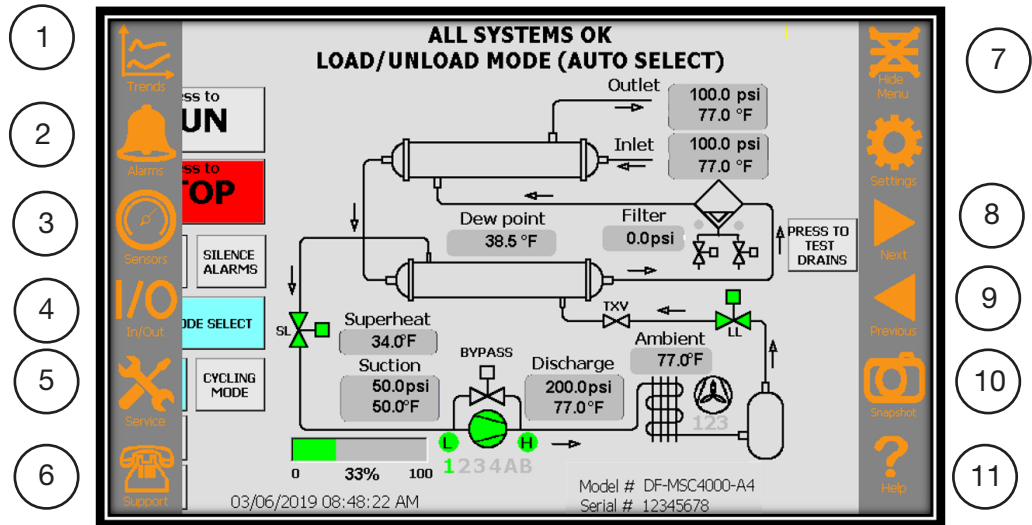
Main Screen Indicators

Direct Drive Models (-A4, -W4)



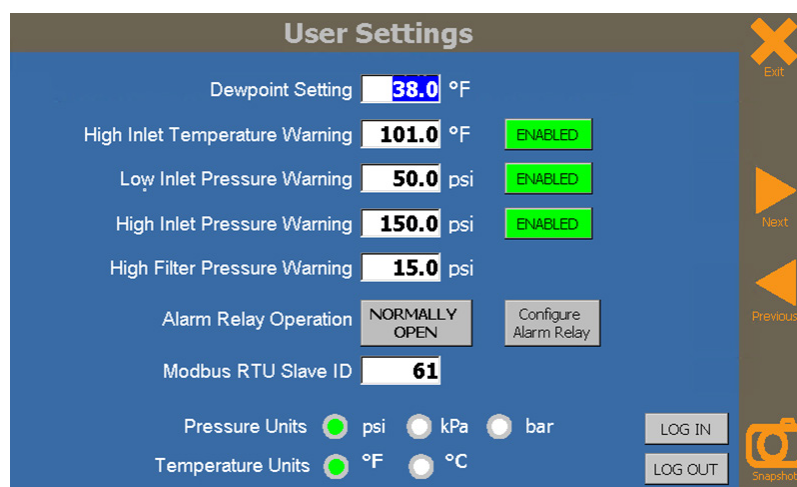
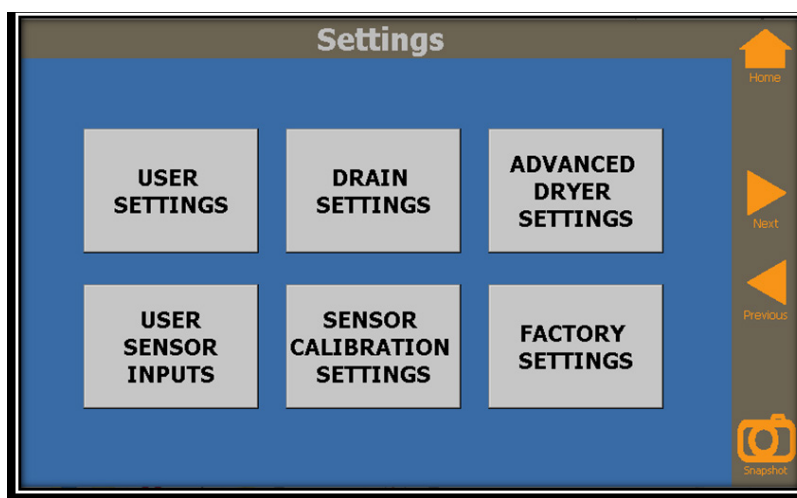
1. **Output Meter** – Shows the dryer output in percent
2. **Compressor Indicators**
Compressor State – The compressor icon will turn on if the compressor(s) is running.
Compressor state indicators 1 through 4 – On dryers with more than one compressor use corresponding indicators to determine which compressors are currently running.
Cylinder unloader state indicators A & B will turn on if the cylinders are loaded.
Unloader bypass valve indicator will turn on if the compressor is bypassed
3. **Fan Indicators (Air Cooled Models only)**
Fan State – The fan icon will turn on if any of the fans are running.
Multi-Fan indicators 1 through 3 – On dryers with more than 1 fan, use corresponding indicators to show which fans are currently running.
4. **Drains Indicators**
Drain valve icon will turn on if the drain is open.
Drain switch indicator will turn on when the drain switch closes.
5. **Suction Line Valve and Liquid Line States**
6. **Inlet and Outlet Pressure and Temperature**
7. **Suction Pressure and Temperature**
8. **Superheat Temperature**
9. **Discharge Pressure Sensor**
10. **Ambient Air/Water Temperature**
11. **Filter Differential Pressure**
12. **Dewpoint**
13. **User Sensors #1 and #2 (if enabled)**

Menu Icons



1. **Trending Icon** – Touch to access the trending screens
2. **Alarms Icon** – Touch to access the active alarms, alarm history, and alarm troubleshooting.
3. **Sensors Icon** – Touch to display real-time sensor values, including user sensors
4. **I/O Screens Icon** – Touch to access the states of the PLC Inputs and Outputs
5. **Service Icons** – Touch for access to service functions
6. **Support Icon** – Touch for access to dryer and support information
7. **Hide Menu Icon** – Touch to hide the menu icons
8. **Settings Icon** – Touch to access the setting screens
9. **Page Left and Page Right Icons** – Touch to step through the setting screens
10. **Snapshot Icon** – Touch this to save a snapshot of the entire display to the flash drive
11. **Help Icon** – Touch this to display help screens

4.2 Settings



User Settings

Dewpoint (M) – Set the target dew point from 36 to 50 degrees F.

High Inlet Temperature Warning (M)

Setting – Use to adjust the High Inlet Temperature Warning threshold

Enabled/Disabled – Touch to Disable or Enable the warning

Low Inlet Pressure Warning (M)

Setting – Touch to adjust the Low Inlet Pressure Warning threshold

Enabled/Disabled – Touch to Disable or Enable the warning

High Inlet Pressure Warning (M)

Setting – Touch to adjust the High Inlet Pressure Warning threshold

Enabled/Disabled – Touch to Disable or Enable the warning

High Filter Pressure Warning (M) – Touch to adjust the High Filter Pressure Warning threshold

Alarm Relay Operation (M) – Touch to toggle between normally open and normally closed relay operation.

Configure Alarm Relay (M) – Touch to enter Alarm Relay configuration screen (See alarms section)

Modbus RTU Slave ID(M) – Touch to set the Modbus RTU address of the HMI. Default is 61.

Note: If this setting is missing, then the address is set at 61 and cannot be changed.

M Supervisor level access required

Drain Settings

Drain #1 ☐ None ☐ Timed ☒ Level

Autotest Time Minutes

Drain Cycle Interval Seconds

Drain On Duration Seconds

Drain #2 ☐ None ☐ Timed ☒ Level

Autotest Time Minutes

Drain Cycle Interval Seconds

Drain On Duration Seconds

LOG IN

LOG OUT

Exit

Next

Previous

Snapshot

Drain Settings

Drain type (M)

Set to "None" if using pneumatic drains.

Set to "Level" if using solenoid demand float drains.

Autotest Time (M) – Set the time (between 30 to 1440 minutes) between Autotest cycles for drains which use a drain level switch. This will force the drain to open automatically regardless of whether the drain switch is closed or not.

Drain Cycle Interval (M) – Set the number of seconds between drain opening for drains which are running in Timed Drain mode.

Drain On Duration (M) – Set the number of seconds that the drain will remain open per drain cycle while for drains which are running in Timed Drain mode.

Note: Level drains which experience a drain fault will automatically switch to timed drain mode using the duration and interval times. Clearing the alarm will switch the drain back to level drain mode.

M	Supervisor level access required
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Advanced Settings

Note: Changing these settings may negatively affect the performance of the dryer or disable key monitoring functions. Be certain you understand the potential effects before changing these settings.

High Ambient/Water Temperature Alarm (M) – Touch to adjust the High Ambient or Water Temperature Alarm threshold

Enable Oil Level Monitoring Alarm (M) – Touch to disable/enable the oil level monitoring system alarm

Enable Oil Recovery Management Function (M) – Touch to disable/enable the oil recovery function. This function will periodically output the compressor at 100% to ensure that there is enough oil getting back to the compressor under low load conditions.

Pressure Units (M) – Select units for pressure values used for all displays and logs.

Temperature Units (M) – Select units for temperature values used for all displays and logs.

The following are only included on dryers with more than one compressor:

Compressor Auto-Switch Time (M) – Touch to adjust the auto switch time for cycling the compressor. This ensures that all compressors will be placed online at least once per 24 hours, thereby reducing balancing the wear across all compressors.

Enable Compressor #1 through #4 (M) – Touch to disable/enable each compressor. This allows a compressor to be taken offline for service.

M	Supervisor level access required
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User Sensor Settings

Sensor 1		Flow	Sensor 2		Aux 2
Sensor Input	ENABLED			DISABLED	
Sensor Units	scfm			units2	
Sensor Range - Max	5000			100.0	
Sensor Range - Min	0			0.0	
Offset Correction	0			0.0	
Sensor Value	3264			0.0	
Low Alarm Setpoint	4000	ENABLED		10.0	DISABLED
Low Alarm Timeout (secs)	5			5	
Low Alarm Auto Reset	ENABLED			DISABLED	
High Alarm Setpoint	90	ENABLED		90.0	DISABLED
High Alarm Timeout (secs)	5			5	
High Alarm Auto Reset	ENABLED			DISABLED	

Exit

Next

Previous

LOG IN

LOG OUT

Snapshot

There are two 4-20mA inputs on the PLC for the user.

Sensor Input 1 is settable from -32768 to 32767 with a resolution of one unit.

Sensor Input 2 is settable from -3276.8 to 3276.7 with a resolution of one tenth of a unit.

Sensor Description (M) – touch to open the on screen keyboard in order to enter a short description of the sensor (maximum 8 characters)

Sensor Input Enable (M) – touch to enable the sensor input and all associated functions

Sensor Units (M) – touch to open the on screen keyboard in order to enter a units of the sensor (maximum 4 characters)

Sensor Range (M) – Enter the minimum and maximum limits of the sensor range -32768 to 32767 units for sensor one, -3276.8 to 3276.7 units for sensor one

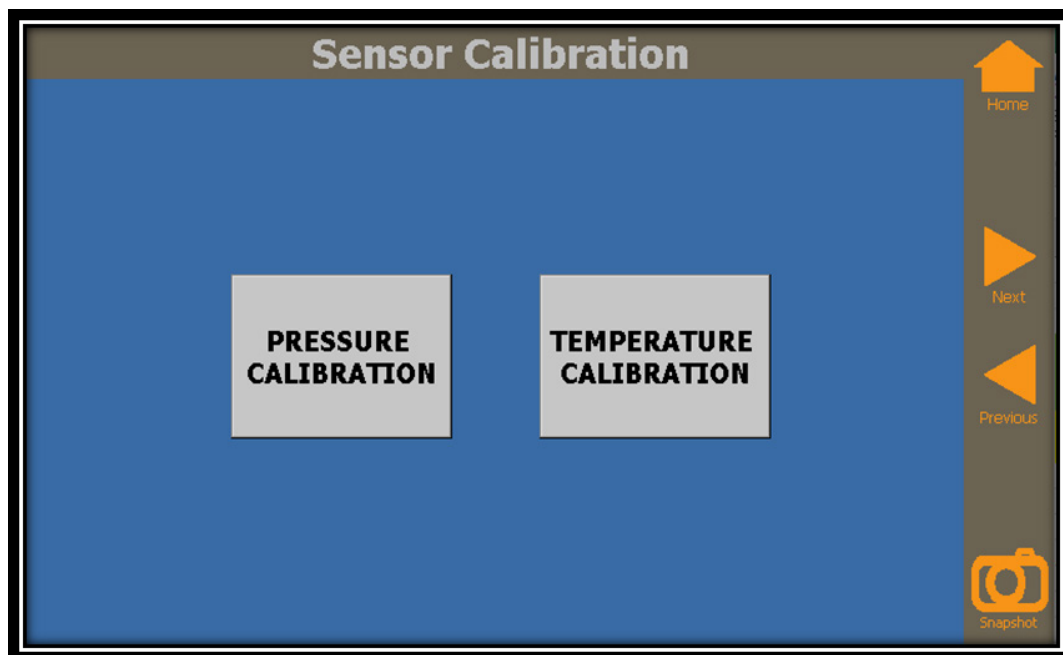
Offset Correction (M) – Enter an offset value for the sensor range.

Alarm Settings (M) – The following alarm settings are available for both low and high alarm thresholds for each sensor input.

- **Setpoint** – enter alarm threshold
- **Enable** – touch to enable or disable the alarm
- **Alarm timeout** – enter the number of seconds for the condition to be true before the alarm will occur
- **Auto Reset** – touch to enable the alarm to automatically reset when the condition is no longer true. Otherwise the alarm must be manually reset from the main screen.

M Supervisor level access required

Sensor Calibration



Pressure Sensors

Sensor	Range Min	Range Max	Offset Correction	Sensor Value
Inlet Pressure	0.0	200.0	0.0	100.0 psi
Outlet Pressure	0.0	200.0	0.0	100.0 psi
Suction Pressure	0.0	600.0	0.0	50.0 psi
Discharge Pressure	0.0	600.0	0.0	200.0 psi

Pressure Units: ☒ psi ☐ kPa ☐ bar

LOG IN LOG OUT Snapshot

The following settings apply to each pressure sensor.

Sensor Range (S) – Enter the minimum and maximum limits of the sensor range.

Offset Correction (S) – Enter an offset value for the sensor range.

Pressure Units (M) – Select units for pressure values used for all displays and logs.

M	Supervisor level access required
S	Service level access required

Temperature Sensors

Temperature Offset Calibration

	Offset Correction	Sensor Value
Ambient Temperature	0.0	77.0 °F
Dewpoint Temperature	0.0	39.9 °F
InletTemperature	0.0	98.0 °F
Outlet Temperature	0.0	63.0 °F
RefrigerationTemperature	0.0	77.0 °F
SuctionTemperature	0.0	39.2 °F

Temperature Units

°F°C

LOG IN

LOG OUT

Snapshot

Exit

Offset Correction (S) – Use to correct the offset for each temperature sensor.

Temperature Units (M) – Select units for temperature values used on all displays and logs.

M	Supervisor level access required
S	Service level access required

Factory Settings

These settings are to be changed only by the Dryer Manufacturer's Factory or Service Personnel and are included here for reference only.

Dryer Operation Select (F) – Use to select the dryer mode of operation for the controller

- Both Load/Unload and Cycling
- Load/Unload Operation Only
- Cycling Operation Only
- Variable Speed Drive Operation

Refrigerant Type (F) – The controller supports the following types of refrigerants: R22, R134a, R404a, & R717

Number of Compressor (F) – The controller can accommodate up to four compressors

of Unloading Cylinders (F) – The controller can accommodate up to two cylinders per compressor

Backup Compressor (F) – Set to enable one of the compressors to be treated as a backup compressor for dryers with 2 or more compressors.

Oil Pressure Switch (F) – Set to enable if the dryer has a mechanical oil pressure switch.

Compressor Staging (F) – Set to enable to turn on staging. Required on dryers with 2 or more active compressors.

Compressor Off Offset (F) – In cycling and VSD operation, the compressor will turn off when the dewpoint drops below the dewpoint setting by this amount.

Unload Delay (F) – In load/unload mode, the unloader will not open until after this delay

Pump down (F) – Enable this if the compressor is required to pump down while off.

Low Suction Alarm (F) – Low pressure threshold for the refrigerant that is used.

High Suction Alarm (F) – High pressure threshold for the refrigerant that is used.

Number of Fans (F) – The controller can accommodate up to 3 fans for dryers with air cooling. For water cooled dryers, set the number of fans to “NONE”.

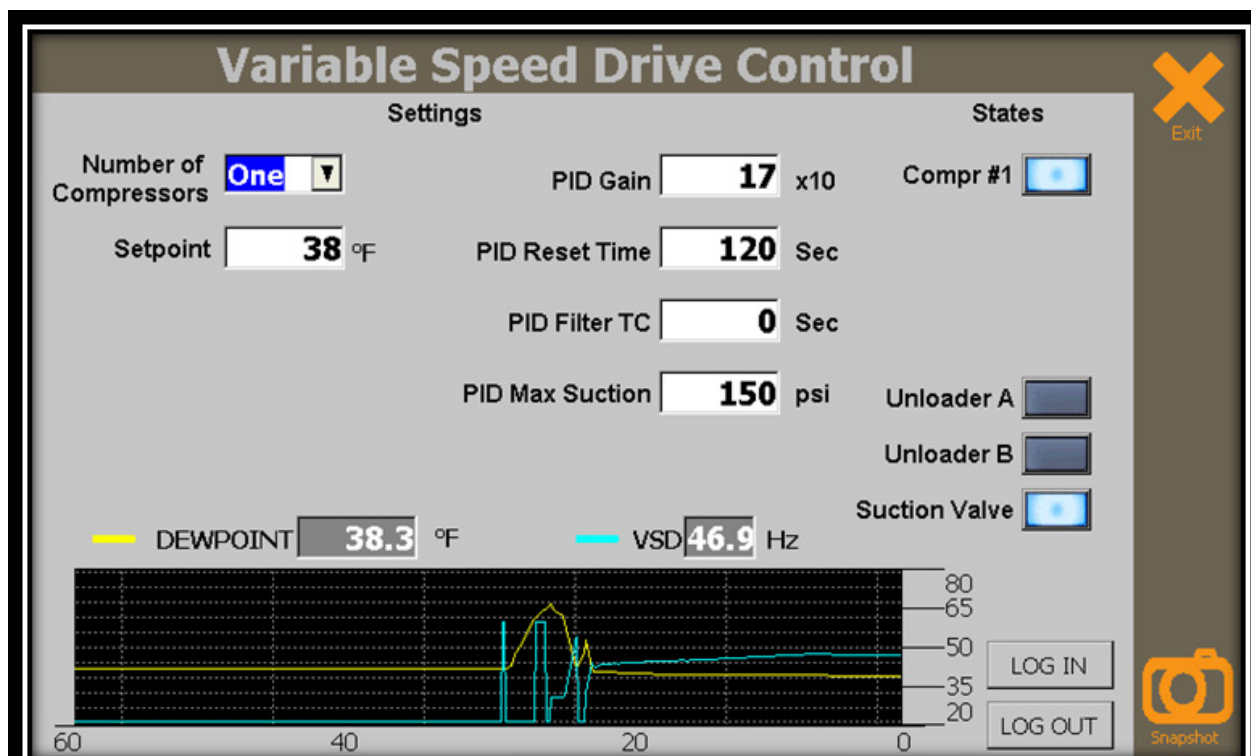
Fan On/Off thresholds (F) – For dryers that are air cooled, set each fans on and off setting based on refrigerant type that is used.

Store Factory Settings Key (M) – Captures the settings after the dryer settings have been updated

Restore Factory Settings Key (M) – Return the dryer to the state that it was at when the Store Factory Settings key was last pressed

Variable Speed Drive Settings key (S) – On dryers with a variable speed drive, touch this key to troubleshoot operation related to the compressor drive.

M	Supervisor level access required
S	Service level access required
F	Factory level access required



Factory Settings – Variable Speed Drive

These settings are to be changed only by the Dryer Manufacturer's Factory or Service Personnel and are included here for reference only.

Caution: Changes to these settings may result in unstable dryer response.

Number of Compressor (F) – The controller can accommodate up to four compressors

Dewpoint (M) – Set the target dew point from 36 to 50 degrees F. The dryer will attempt to regulate the dewpoint around this value.

Use the following to adjust the response of the variable speed drive based on the actual dewpoint and the target dewpoint setting -

PID Gain (F) – Use this to adjust the proportional response of the dryer.

PID Reset Time (F) – Use this to adjust the integral response of the dryer.

PID Filter TC (F) – Use this to filter the dewpoint input.

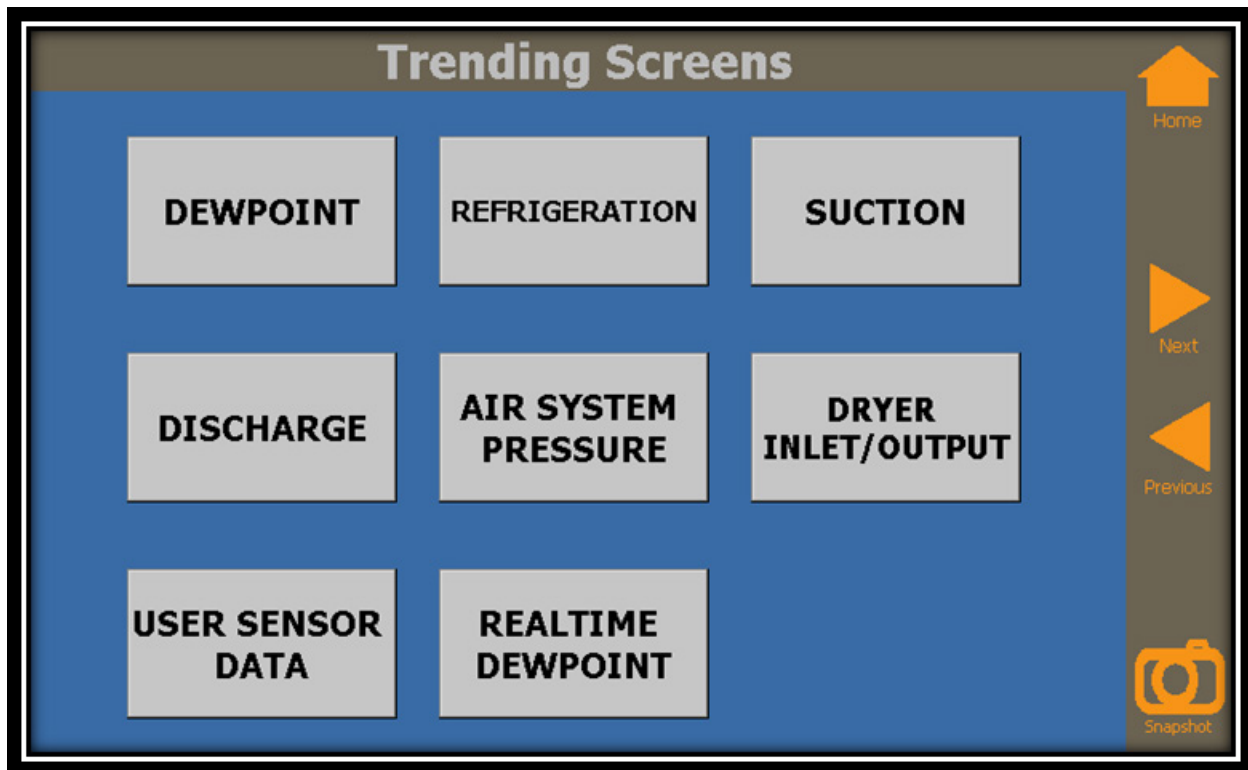
PID Max Suction TC (F) – This setting sets the upper suction pressure limit for the dryer. The controller will attempt to keep the pressure below this limit by reducing the speed of the compressor.

State Indicators – Indicators for the refrigeration outputs to assist in troubleshooting

Dewpoint vs VSD output real-time graph – 1 hour of real-time data shows correlation of changes in dewpoint to the speed of the compressor.

M	Supervisor level access required
F	Factory level access required

Warning! Logging in using the Service or Factory password may result in access to settings that, if improperly set, could negatively affect the operation and health of the dryer. Damage resulting as a result of improper settings by persons other than a qualified manufacturer representative may affect dryer warranty.



4.3 Trending

- There are 8 trend windows, each focusing on a different set of data.
- Most of the trending displays are historical data only and will not automatically update as new data is logged. To refresh the data, you must hit one of the zoom or page buttons.
- There is one REALTIME DEWPOINT trending screen which displays the latest hour of dewpoint data in real time.

DEWPOINT – Shows Dewpoint, Output %, Load %, and VSD output (VSD models only)

REFRIGERATION – Shows Superheat and Refrigeration Temp, Discharge & Suction pressures

SUCTION – Shows Superheat and Refrigeration Temperature & Suction pressure and temperature

DISCHARGE – Shows Discharge Pressure, Ambient/Water Temp, Suction Temp, & Superheat

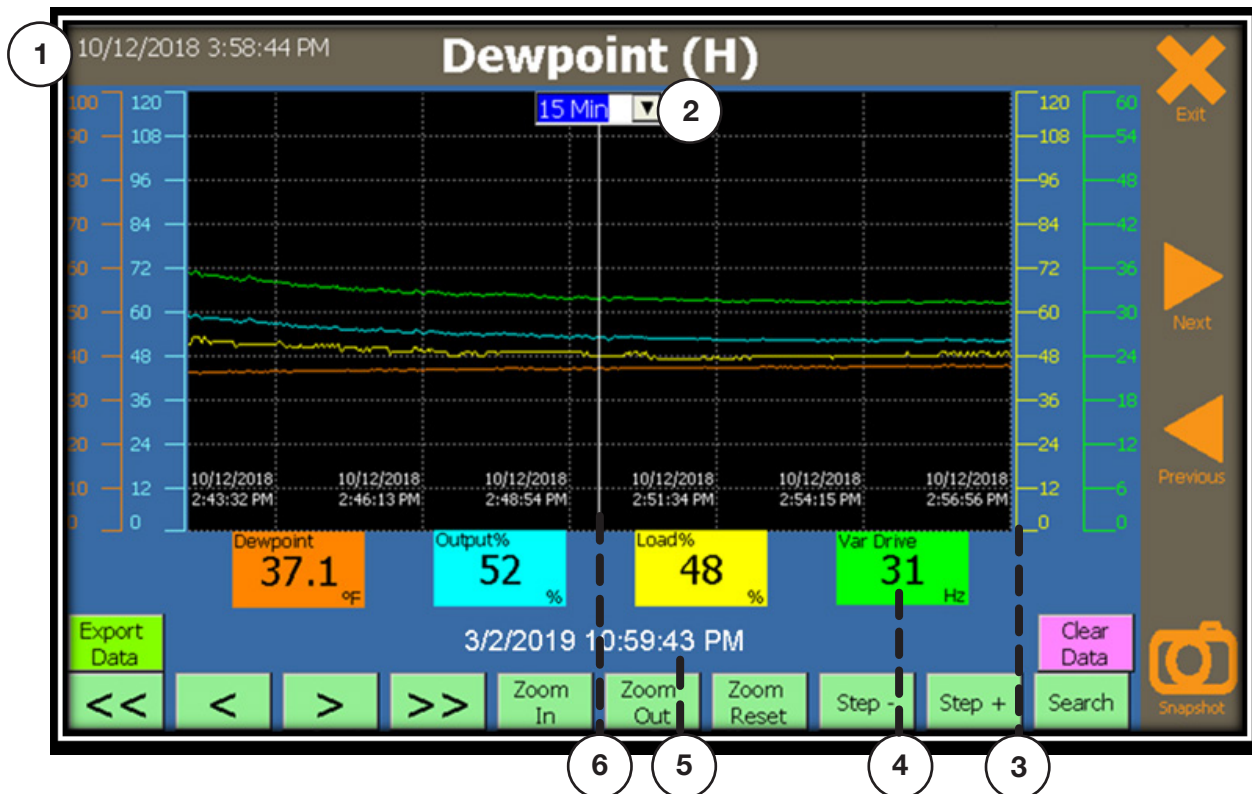
AIR SYSTEM PRESSURE – Shows Filter, Inlet, Outlet Pressure and Dewpoint

DRYER INLET/OUTLET – Shows inlet and outlet temperature and pressures

USER SENSOR DATA – Shows inlet pressure, dewpoint and user sensor data

REAL-TIME DEWPOINT – Shows Dewpoint, Output %, Load %, and VSD output (VSD models only)

Trend Elements



1. Current Time/ Date

Drop down time span select – select from spans of 10 minutes to 14 days.

2. Scale – shows the scale for the corresponding colored data.

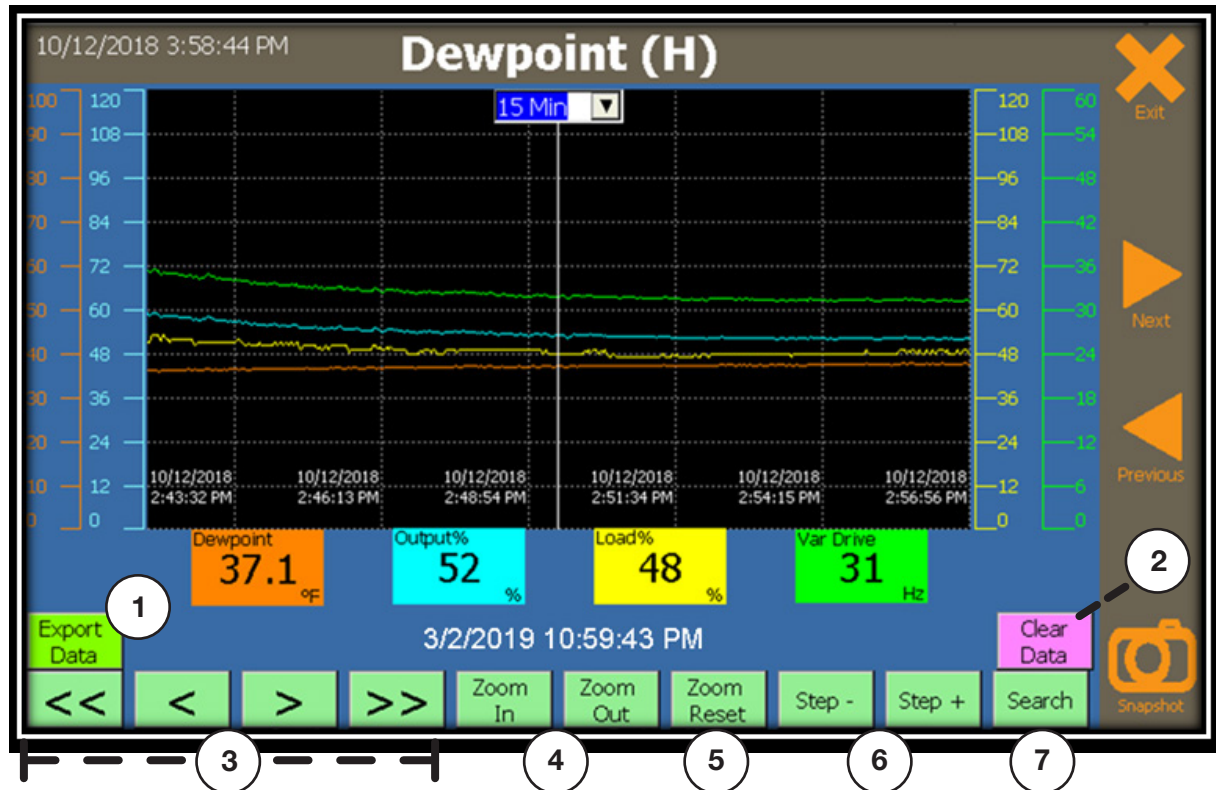
3. Value box – shows the value of the data at the cursor line.

4. Time at cursor line – displays the time of the data at the cursor line.

5. Cursor line – select a point on the trend to see what the actual values were at that point

- Touch the screen or use the Step+ and Step- keys to move the cursor line. When zooming in or out, the cursor line will locate itself at the center of the screen.
- Use Next and Previous Arrow keys to move between trend screens.
- Use the snapshot key to capture an image of the screen to the flash drive.

Trending - User Controls



1. **Export Data (M)** - Sends data to the Flash Port in Excel readable format
2. **Clear Data (M)** - Clear data log
3. **<<** - Moves to Start of data log
< - Page Left
> - Page Right
>> - Move to End of data log
4. **Zoom In** - Zoom In one level, centered around cursor
Zoom Out - Zoom Out one level, centered around cursor
5. **Zoom Reset** - Resets Zoom level to 4 Hours
6. **Step Cursor Left** - Moves cursor left one unit (resolution unit)
Step Cursor Right - Moves cursor right one unit (resolution unit)
7. **Search** - Opens a search window where a date and time can be entered

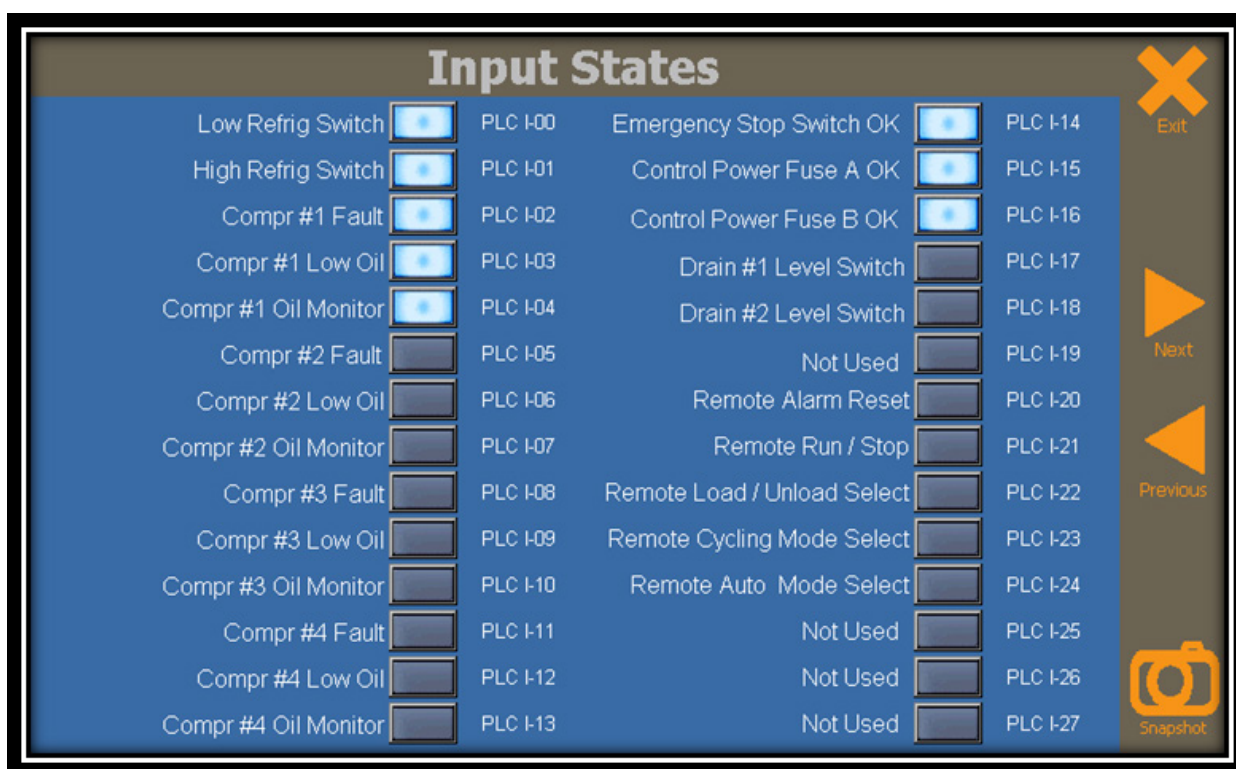
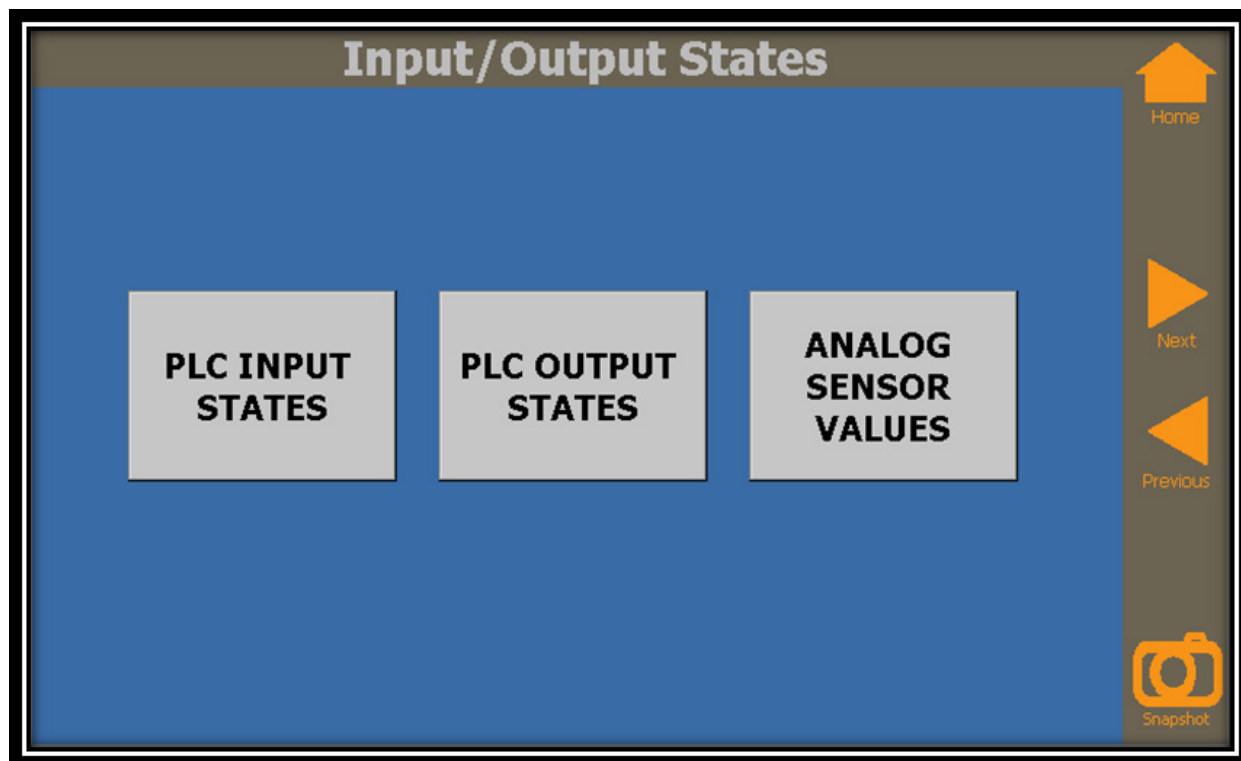
Exporting data takes a very long time (several minutes to an hour) and will render the display unresponsive until the download is complete. For this reason, do not download more data than is necessary.

Except for the REALTIME DEWPOINT screen, the trending displays are historical data only and will not automatically update as new data is logged. To see the latest data, you must touch the >> key.

Note: Changing the real time clock to a time that is prior to the latest logged value will suspend trend user interaction until the clock catches up to the previous time.

M Supervisor level access required

4.4 I/O Screens



Input States

Low Refrig Switch Sense Input

- **ON** indicates that the pressure at the low side of the compressor is above the mechanical setting of the low pressure switch.
- Indicator is off when the switch opens due to low refrigerant pressure.
- The switch resets automatically when the pressure rises above the switch threshold.

High Refrig Switch Sense Input

- Wired in series with the low pressure switch.
- **ON** indicates that the pressure at the high side of the compressor is below the mechanical setting of the high pressure switch and the pressure at the low side of the compressor is above the mechanical setting of the low pressure switch.
- **OFF** Indicates that either the low pressure switch or high pressure switch is open.
- The high pressure switch must be manually reset at the switch.

Compressor #1 through #4 Fault Sense Input

- Wired in series with the low and high pressure switches, corresponding compressor's PLC output relay, oil pressure switch, and thermal overload.
- Direct drive compressors – The fault relay is located on the starter over-load for the corresponding compressor and must be reset at the overload module.
- Variable Speed compressors – Alarm relay is located on the variable speed drive for the corresponding compressor and must be reset at the drives front panel.

Compressor #1 through #4 Low Oil Pressure Sense Inputs

- Wired in series with low and high pressure switches, and corresponding compressors PLC output relay.
- On indicates that there is adequate oil pressure for the corresponding compressor after an initial 120s delay.

Compressor #1 through #4 Oil Level Monitor Sense Inputs

- **ON** indicates that there is adequate oil level for the corresponding compressor.

Emergency Stop Switch OK

- Normally ON. **OFF** indicates the normally closed emergency stop switch has been pressed.

Control power Fuse 'A' & 'B'

- Normally ON. **OFF** indicates the corresponding fuse has opened.

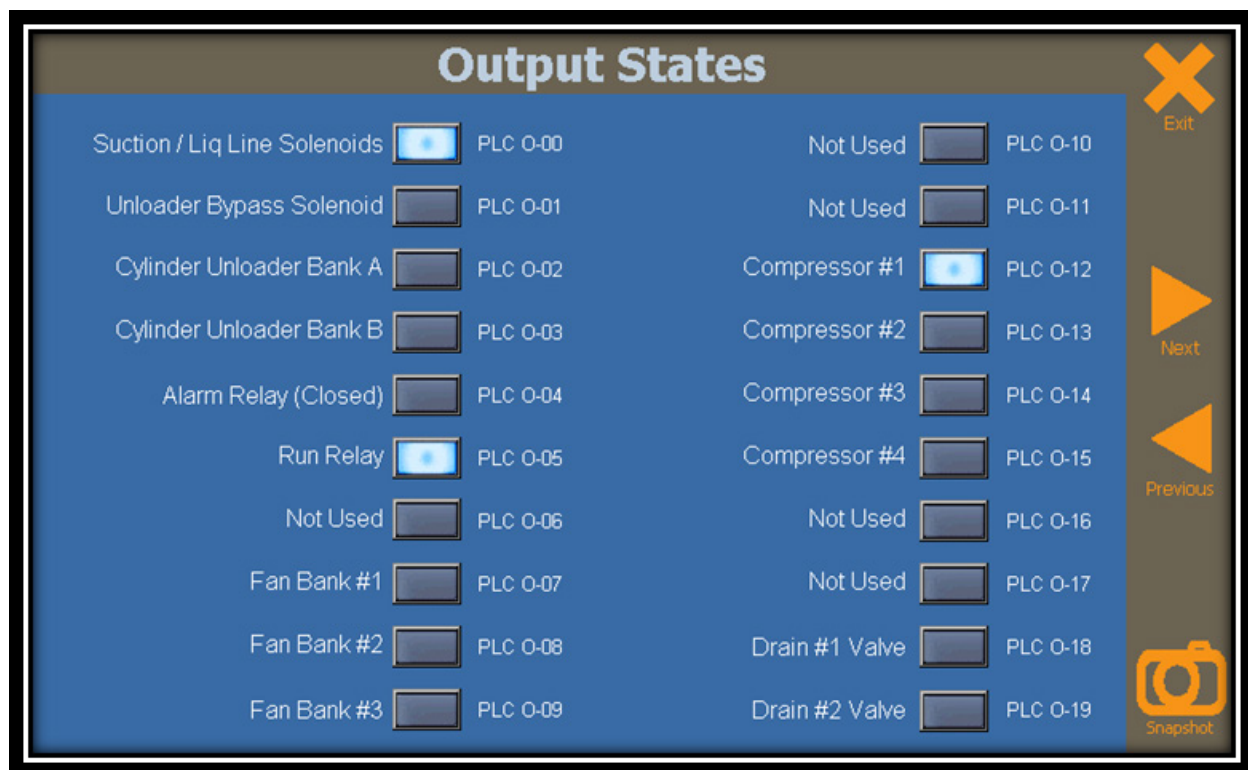
Drain Level Switch #1 & #2

- **ON** indicates the corresponding drains float switch is closed as a result of the demand drain reservoir being full.

Remote Switches

- Used for remotely controlling the dryer using external switches or external PLC relay outputs.

Refer to **Remote PLC Operation** section (page 60) for details.



Output States

Suction/Liquid Line Solenoids – ON indicates that the suction and liquid line valves are both open, indicating the refrigeration system is active.

Unloader Bypass Solenoid – ON indicates that the bypass valve across the compressor is open. Does not apply to dryers with variable speed drives.

Cylinder Unloader Banks A & B – ON indicates that compressor corresponding cylinder is unloaded.

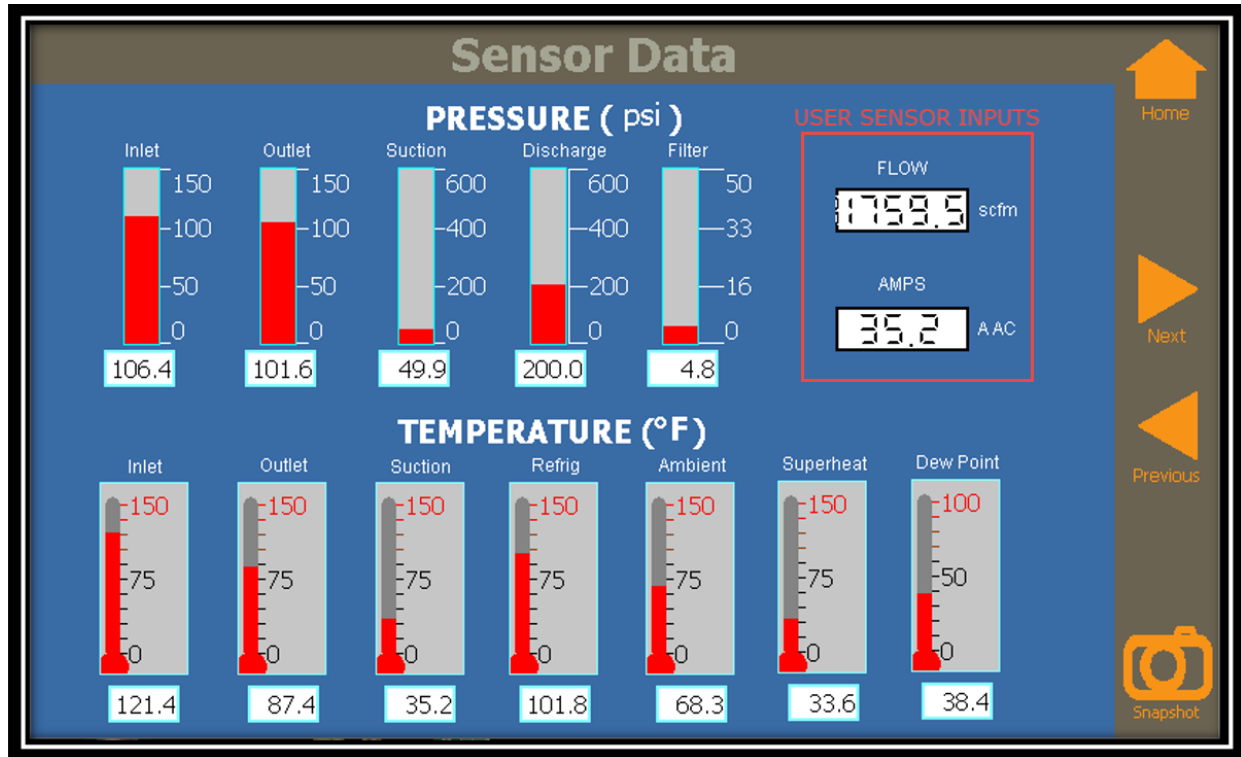
Alarm Relay – ON indicates that the alarm relay contacts are open. The alarm relay is set for normally open or normally closed operation in the User Settings screen.

Fan Bank #1 through #3 – ON indicates the corresponding fan is running. See the Factory Settings screen for fan pressure settings.

Compressor #1 through #4 – ON indicates the corresponding compressor control relay in the PLC is open.

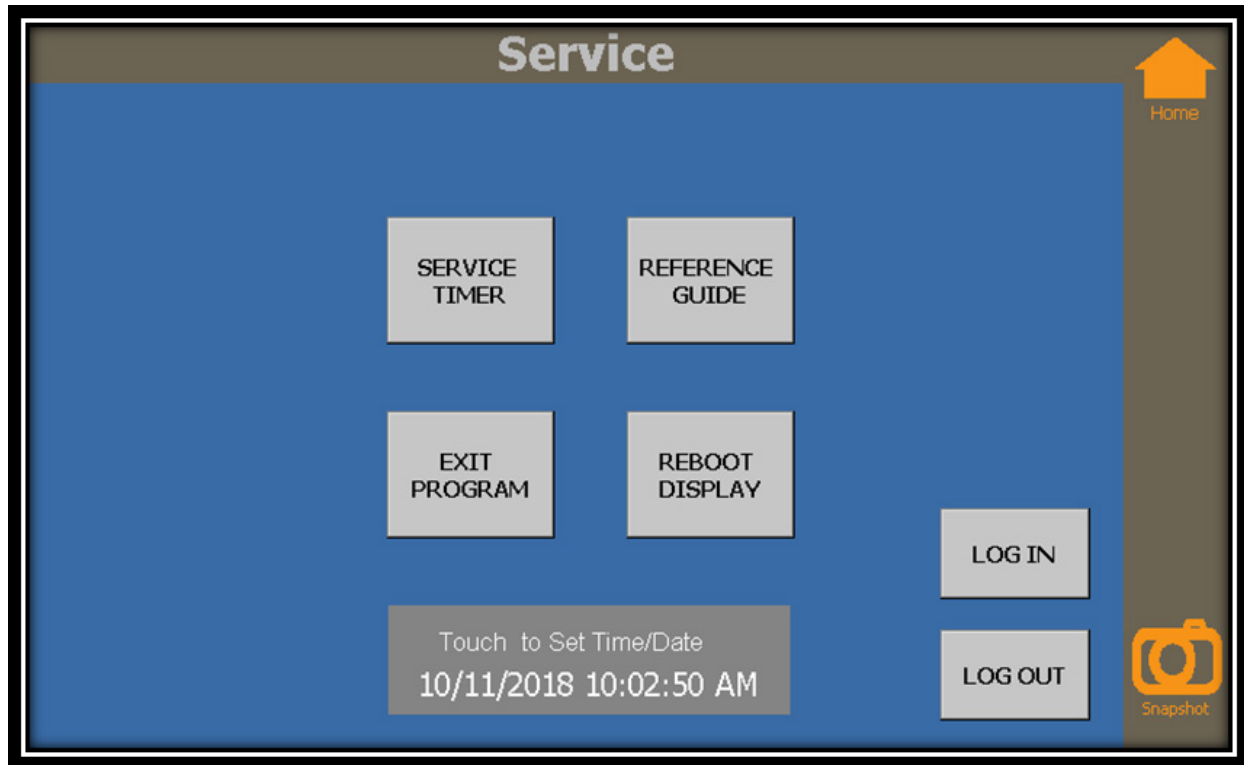
Drain #1 and #2 – ON indicates the corresponding drain valve is open.

4.5 Sensors



The Sensors screen displays all of the pressure and temperature sensor values in graphical form. Also displays the values of the optional user sensor inputs (shown in area indicated)

4.6 Service Screen



Service Timer (M)

Touch to access the service timer screen for setting the service timer and resetting the associated alarm. (See Service Timer section)

Reference Guide

Touch to access Reference Guide for access to maintenance schedule and information on dryer operation.

Reboot Display (M)

This is the preferred method of rebooting the display panel should it be necessary. An alternate method it to press the reset button on the bottom of the control box

Exit to System (S)

Exits the application so that system level settings, such as communications can be accessed.

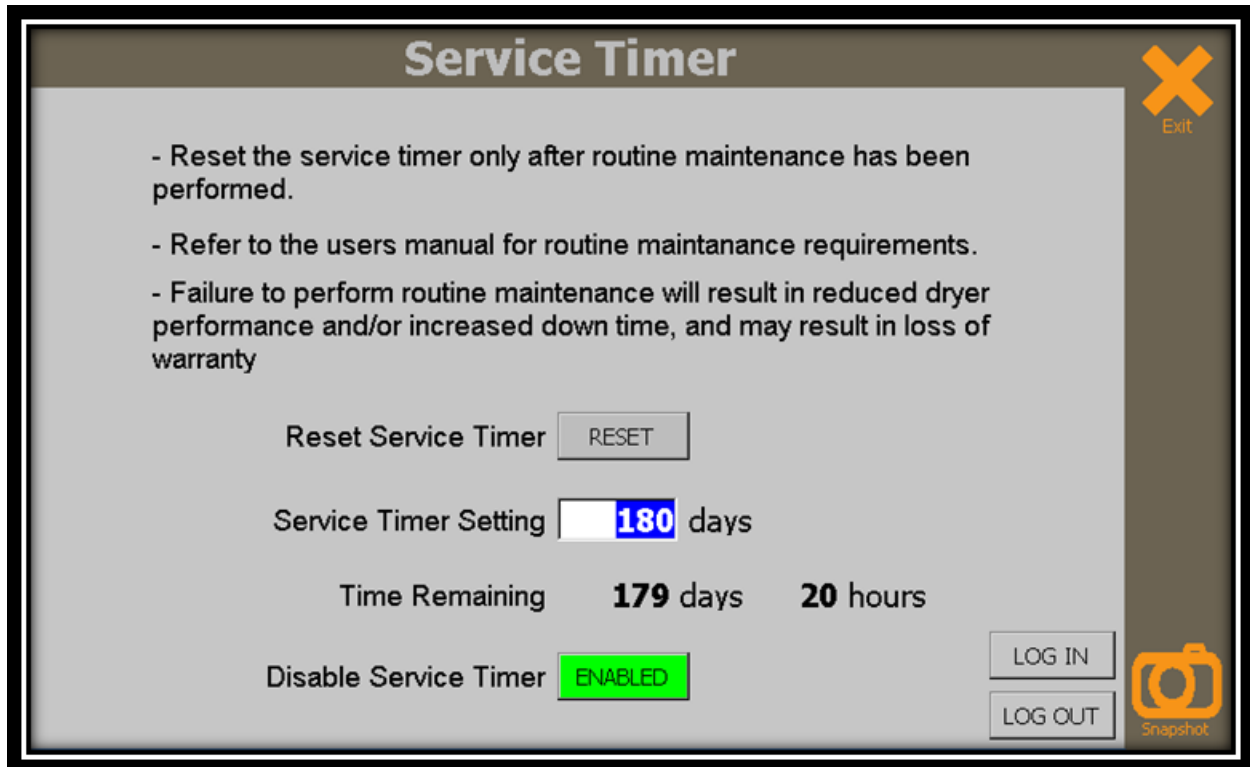
Time/Date Set (M)

Touch to change the time and date. (see Time/Date section)

Note: Changing the real time clock to a time that is prior to the latest logged value will suspend trend user interaction until the clock catches up to the previous time.

M	Supervisor level access required
S	Service level access required

Service Timer



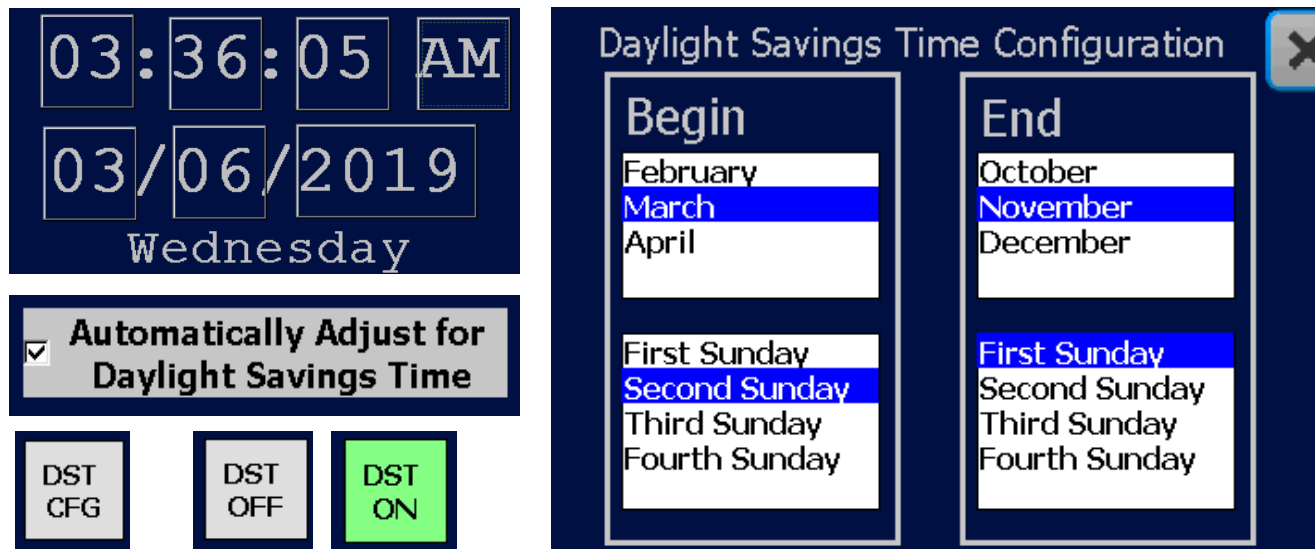
Reset Key (M) – Touch to reset the service timer and corresponding alarm.

Service Timer Setting (M) – Set the number of days between service intervals from 0 to 365 days. Set to 0 to see effects of alarm.

Disable Service Timer (M) – Touch to disable/enable the service timer function.

M Supervisor level access required

Real Time Clock



Changing the time and Date

Touch the time and date fields to change the corresponding time and date values

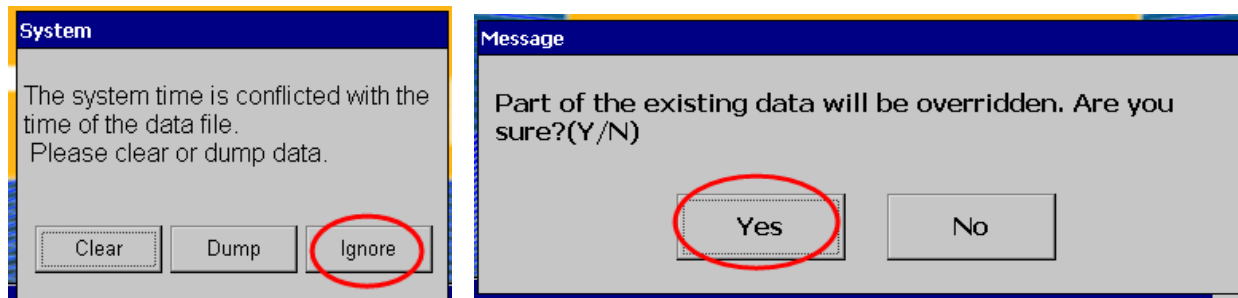
Setting Daylight Savings Time

Daylights savings time can be set to automatically adjust by selecting the setting.

Daylights savings time can be manually adjusted by touching the DST ON/OFF key.

Configuring the the DST rules for your region

Daylight saving time rules for your region can be configured by touching the DST CFG key.



System time conflict Warning

Note: Changing the real time clock to a time that is prior to the latest logged value will suspend trend user interaction until the clock catches up to the previous time.

In addition, if the display panel is rebooted before the clock catches up to the previous time the following message may appear while the display panel is booting up.

The message can be safely ignored by selecting the Ignore option, followed by selecting Yes when the follow-up message appears.

Warning!

Selecting the Clear or Dump options will delete all log data and potentially require rebooting the display panel.

Reference Guide

Reference Guide Contents

QUALIFIED PERSONNEL ONLY!

Notice: This guide supplements the dryer users manual and is for reference only. Consult the users manual for extensive guidance

[Dryer Operation - Standard Models](#)
[Dryer Operation - VSD Models](#)
[Routine Maintenance](#)

 Exit
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 Snapshot

Dryer Operation - Standard Model

 Exit
 Next
 Previous
 Snapshot

LOAD/UNLOAD OPERATION – Uses the suction and unloader bypass valves to control refrigeration, resulting in reduced compressor stop/starts and tighter dewpoint control. The compressor remains running as long as the dryer is turned ON.

Start refrigeration when the dewpoint rises 1°F (0.5°C) above the dewpoint setting by opening the suction valve and closing the primary unloader bypass valve 2 seconds later.

Stop refrigeration when the dewpoint falls 4°F (2.2°C) below the dewpoint setting by opening the unloader bypass valve and closing the suction valve.

CYCLING OPERATION – Turn on and off the compressor to control refrigeration. Results in lower power consumption under low dryer load conditions.

Start refrigeration when the dewpoint rises 4°F (2°C) above the dewpoint setting by opening the bypass and suction valves, turning on the compressor, then closing the bypass valve.

Stop refrigeration when the dewpoint falls to 34°F (1.1°C) by opening the bypass valve, closing the suction valve, and turning off the compressor.

AUTO-SWITCH MODE – Automatically switches between Load/Unload and Cycling operation based on dryer load.

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Dryer Operation - Standard Models

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CYLINDER UNLOADERS – The dryer may be equipped with one or two cylinder unloaders which will be used to control the compressor heads under normal loads.

Startup – Upon compressor start, unload both cylinders, wait 15 seconds, load first cylinder, wait another 15 seconds, then unload the second cylinder (if applicable)

Normal Operation – The cylinders will load and unload under the following conditions:
 Unload one head when the dewpoint falls to 3°F (1.6°C) above the dewpoint setting,
 Unload both heads when the dewpoint falls to 1°F (.5°C) above the dewpoint setting
 Load one head when the dewpoint rises to 3°F (1.6°C) above the dewpoint setting,
 Load both head when the dewpoint rises to 5°F (2.8°C) above the dewpoint setting,

Un-even wear prevention – in order to ensure that both cylinders wear evenly, the order at which they load/unload will swap whenever either changes state. If only one cylinder is loaded, it will swap with the other cylinder after 1 hour.

Minimum cylinder loading – Each head will be forced to load for a minimum of 5 seconds per hour regardless of dryer load.

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Dryer Operation - Standard Models

PUMP DOWN (if enabled) – When the STOP button is pressed, the suction valve will close and compressor will continue to run until the low pressure switch opens. Pump down will repeat if the pressure switch closes while the system is OFF.

If the low pressure switch does not open within 60 seconds, or if the pressure switch opens and closes 8 times in a single hour, a bad pump-down alarm will occur.

HIGH HEAD PRESSURE PROTECTION – If the head pressure is within 40psi of the high pressure alarm setting, the compressor capacity will be reduced by opening one of the cylinder heads. If the head pressure is within 20psi of the high pressure alarm setting, the compressor capacity will be further reduced by opening both of the cylinder heads.

OIL RECOVERY MODE – If the output of the dryer does not reach 100% for 1 minute within a 30-minute period (or 2 minutes after dryer start), the dryer will go into Oil Recovery mode. The compressor will turn off forcing the dewpoint to rise. Once the dewpoint rises 10 degrees above the dewpoint setting the compressor will restart fully loaded. The OIL RECOVERY MANAGEMENT MODE message will display on the status line for 3 minutes after the compressor starts or until the dewpoint drops below the dewpoint setting.

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Dryer Operation - VSD Models

VARIABLE SPEED COMPRESSOR OPERATION – Uses a variable speed drive controller to control the speed of the compressor based on dewpoint and load

Startup – Upon hitting the RUN button, the suction valve will open and the cylinders will unload. 2 Seconds later the compressor will start at 30Hz. The compressor frequency will remain at 30 Hz for 1 minute after startup then slowly ramp up to operating speed.

Stop Refrigeration when the dewpoint falls to 33°F (0.5°C) by closing the suction valve and turning off the compressor output to the drive.

Start refrigeration when the dewpoint rises 1°F (.5°C) above the dewpoint setting by opening the suction valve, unloading the cylinder(s) and starting the compressor after a 2 second delay.

PUMP DOWN (if enabled) – When the STOP button is pressed, the suction valve will close and compressor will continue to run until the low pressure switch opens. Pump down will repeat if the pressure switch closes while the system is OFF.

If the low pressure switch does not open within 60 seconds, or if the pressure switch opens and closes 8 times in a single hour, a bad pump-down alarm will occur.

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Dryer Operation - VSD Models

CYLINDER UNLOADERS – The dryer may be equipped with one or two cylinder unloaders which will be used to control the compressor heads under normal loads.

Startup – Upon compressor start, unload both cylinders, wait 15 seconds, then unload the second cylinder (if applicable)

Normal Operation – The cylinders will load and unload under the following conditions:

Load both cylinders when the dewpoint is $\geq 36^{\circ}\text{F}$ (2.2°C)

Load only one cylinder when the dewpoint is 35°F (1.6°C) and VSD is at 30Hz

Unload both cylinders when the dewpoint is $\leq 34^{\circ}\text{F}$ (1.1°C) and VSD is at 30Hz

Un-even wear prevention – in order to ensure that both cylinders wear evenly, the order at which they load/unload will swap whenever either changes state. If only one cylinder is loaded, it will swap with the other cylinder after 1 hour.

Minimum cylinder loading – Each head will be loaded for a minimum of 5 seconds per hour

HIGH HEAD PRESSURE – If the head pressure is within 40psi of the high pressure alarm setting, the compressor capacity will be reduced by limiting the output to the VSD.

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Dryer Operation - VSD Models

OIL RECOVERY MODE – If the output of the dryer does not reach 100% for 1 minute within a 30-minute period (or 2 minutes after dryer start), the dryer will go into Oil Recovery mode. The compressor will turn off forcing the dewpoint to rise. Once the dewpoint rises 10 degrees above the dewpoint setting the compressor will restart fully loaded. The OIL RECOVERY MANAGEMENT MODE message will display on the status line for 3 minutes after the compressor starts or until the dewpoint drops below the dewpoint setting.

Exit

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Routine Maintenance

Warning: Service to the dryer is to be performed by QUALIFIED PERSONNEL ONLY. For assistance refer to contact information in the Support Screen.

Notice: This guide supplements the dryer users manual and is for reference only. Consult the users manual before performing any maintenance or service.

[Maintenance Schedule](#)

[Coalescing Filter Element](#)

[Condensing Coil \(Air Cooled Units\)](#)

[Condenser \(Water Cooled Units\)](#)

[Fan \(AC Units\), High, and Low Pressure Switches](#)

[Compressor Oil Level](#)

[Drain Valve and Drain Line Y-Strainer](#)

Exit

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Maintenance Schedule

	WEEKLY	MONTHLY	BI-ANNUALLY	ANNUALLY
Coalescing Filter Element			Check	Replace
Condensing Coil (AC units)	Check/Clean	Check/Clean	Check/Clean	Check/Clean
Condenser (WC units)				Check/Clean
Drain Line Y-Strainer	Check/Clean	Check/Clean	Check/Clean	Check/Clean
High Pressure Switch		Check	Check	Check
Low Pressure Switch		Check	Check	Check
Fan Control Switches (AC units)		Check	Check	Check
Compressor Oil Level	Check	Check	Check	Check
Drain Solenoid		Check/Clean	Check/Clean	Check/Clean
Oil Separator Element*				Check

***Oil separator element should be changed 24-48 hours after initial start-up.**

Exit

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Snapshot

Routine Maintenance

Coalescing Filter Element - The coalescing filter element should be check Bi-Annually. Check the pressure drop across the dryer. If it is determined that there is a high pressure drop across the dryer, remove the filter element from the machine and inspect it. If the filter is dirty, replace it. The Coalescing filter should be replaced annually regardless of condition. As part of the yearly maintenance schedule

Condensing Coil (Air Cooled Units) - The condensing coil should be cleaned weekly. The condenser can be cleaned by using a vacuum or compressed air. If the condenser is not clean after it is blown out with compressed air or vacuumed contact the factory for assistance.

Condenser (Water Cooled Units) - The water cooled condenser should be checked annually and if necessary cleaned. To check the condenser, water flow to the condenser should be shut off, air flow to the machine should be shut off, and the unit should be taken out of run mode. The end bonnets then need to be removed exposing the tube side of the condenser. The tube side should be inspected for any debris and cleaned. If soft deposits are found they can be cleaned using the instructions in the dryer's user manual.






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Routine Maintenance

Fan Control (AC units only), High Pressure, Low Pressure Switches - The refrigeration pressure switches should be checked monthly to ensure that they are adjusted to the proper settings. Please refer to the applicable electrical drawings for your unit.

Compressor Oil Level - The oil level in the compressor should be checked weekly. The refrigeration system should never need oil unless the system is leaking or has been recently repaired. If it is determined that the system needs oil, refer to the dryer's user manual for instructions.

Drain Solenoid - The drain solenoid should be cleaned monthly or more often if needed. Remove air flow and pressure from the dryer prior to proceeding.

Drain Line Y-Strainer - The drain line y-strainer should be cleaned weekly. Air flow and air pressure should be removed from system before proceeding.

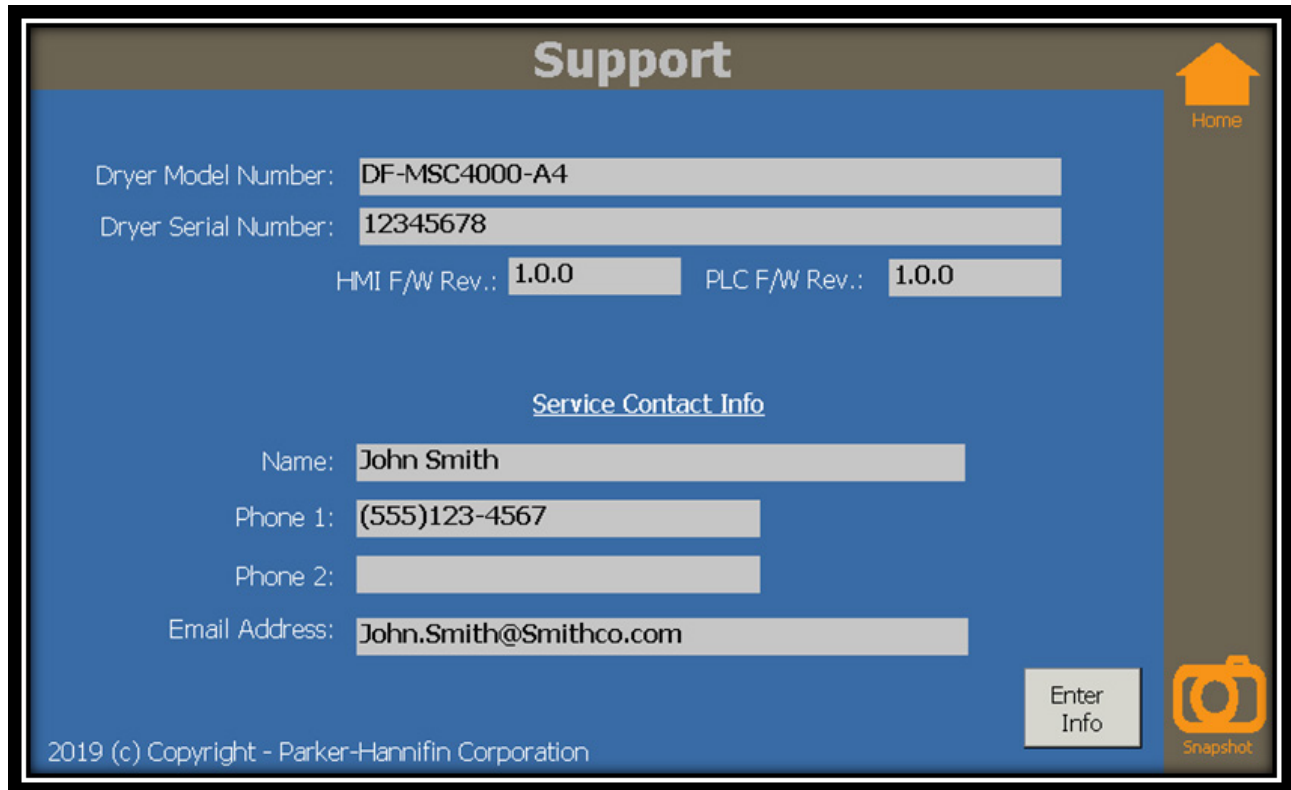





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4.7 Support Screen

Only users with Factory or Service level password can change this information.



The Support screen features a blue background with a grey header bar at the top containing the word "Support" in white. On the right side of the header bar is an orange home icon with the word "Home" below it. The main content area contains several input fields for device information: "Dryer Model Number:" with the value "DF-MSC4000-A4", "Dryer Serial Number:" with the value "12345678", "HMI F/W Rev.:" with the value "1.0.0", and "PLC F/W Rev.:" with the value "1.0.0". Below these fields is a section titled "Service Contact Info" in blue text. This section includes input fields for "Name:" (John Smith), "Phone 1:" ((555)123-4567), "Phone 2:" (empty), and "Email Address:" (John.Smith@Smithco.com). At the bottom left, there is a copyright notice: "2019 (c) Copyright - Parker-Hannifin Corporation". At the bottom right, there is a grey button labeled "Enter Info" and an orange camera icon with the word "Snapshot" below it.

Support

Home

Dryer Model Number: DF-MSC4000-A4

Dryer Serial Number: 12345678

HMI F/W Rev.: 1.0.0 PLC F/W Rev.: 1.0.0

Service Contact Info

Name: John Smith

Phone 1: (555)123-4567

Phone 2:

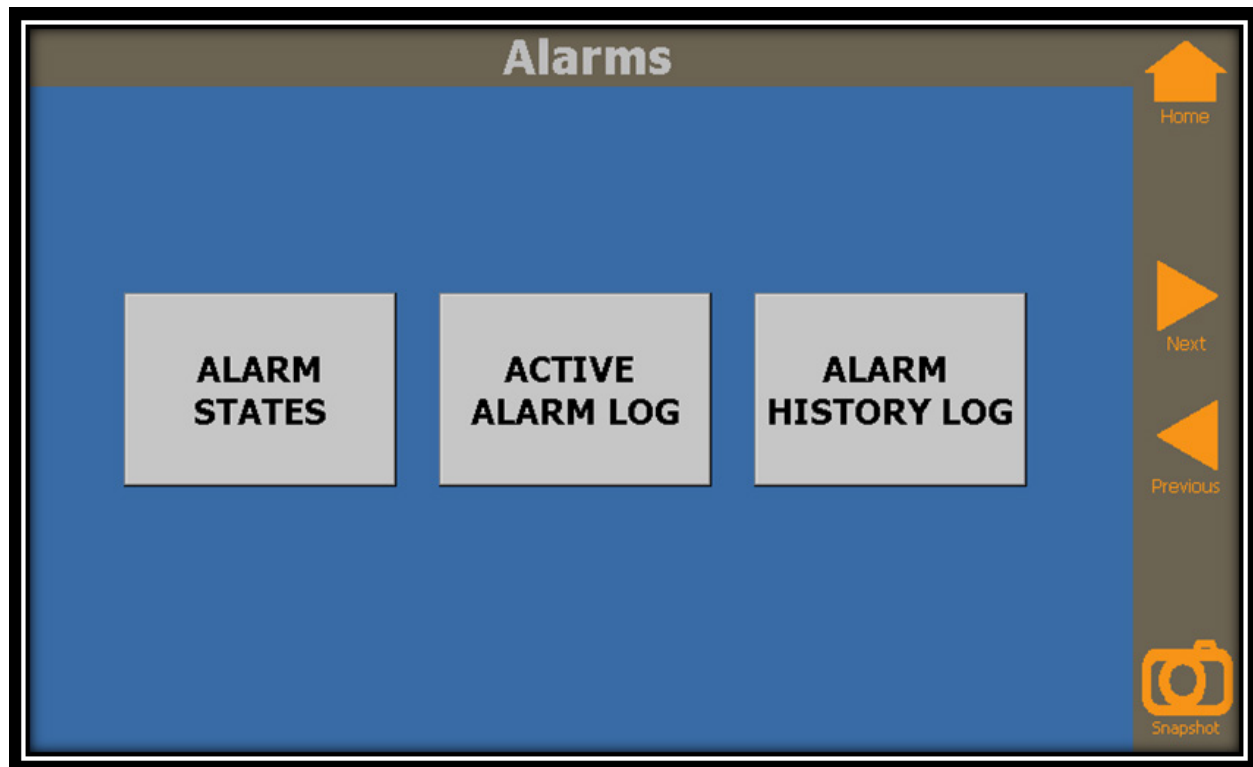
Email Address: John.Smith@Smithco.com

Enter Info

Snapshot

2019 (c) Copyright - Parker-Hannifin Corporation

4.8 Alarm Screens



Alarm States					
TOUCH ALARM INDICATOR FOR TROUBLESHOOTING HELP					
101 High Superheat	111 Compr#1 Fault	121 Control Power Fuse	144 Suction Temp Sensor	208 High Filter Pressure Drop	233 Low Aux Sensor 2
102 Bad Pumpdown	112 Compr#2 Fault	122 Sensor Power Fuse	201 High Dewpoint	209 Service Timer	234 High Aux Sensor 2
103 Frozen Evaporator	113 Compr#3 Fault	123 Emergency Stop	202 Low Inlet Pressure	221 Compr#1 Oil Level	235 Aux Sensor 1 Fault
104 Dryer Overload	114 Compr#4 Fault	131 Suction Pres Sensor	203 High Inlet Pressure	222 Compr#2 Oil Level	236 Aux Sensor 2 Fault
105 Suction Pressure	115 Compr#1 Low Oil Switch	132 Discharge Pres Sensor	204 High Inlet Temperature	223 Compr#3 Oil Level	241 Inlet Pres Sensor
106 Low Pres Switch	116 Compr#2 Low Oil Switch	141 Dewpoint Sensor	205 High Ambient/H2O	224 Compr#4 Oil Level	242 Outlet Pres Sensor
107 Discharge Pressure	117 Compr#3 Low Oil Switch	142 Condenser Temp Sensor	206 Drain #1 Switch	231 Low Aux Sensor 1	251 Inlet Temp Sensor
108 High Pres Switch	118 Compr#4 Low Oil Switch	143 Refrig Temp Sensor	207 Drain #2 Switch	232 High Aux Sensor 1	252 Outlet Temp Sensor

The table displays a grid of alarm indicators. The indicator '204 High Inlet Temperature' is highlighted in yellow. On the right side of the table, there is a vertical navigation bar with four icons: a red 'X' labeled 'Exit', a right-pointing triangle labeled 'Next', a left-pointing triangle labeled 'Previous', and a camera icon labeled 'Snapshot'.

Active Alarm States

Alarm indicators (codes 101 through 199) will display in RED.

Warning Indicators (code 201 through 299) will display in YELLOW.

Touch the indicator will display corresponding troubleshooting information.

Alarm History			
No.	Active Time	Type	Message
24	10/18/2018 9:43:50 AM	Logout	
23	10/18/2018 9:29:09 AM	Event	STOP
22	10/18/2018 9:29:09 AM	HiAlarm	209 PERFORM ROUTINE SERVICE
21	10/18/2018 9:29:09 AM	HiAlarm	102 BAD PUMPDOWN ALARM
20	10/18/2018 9:29:09 AM	HiAlarm	201 HIGH DEW POINT WARNING
19	10/18/2018 9:28:59 AM	LogEvent	HMI RESTART(3)
18	10/18/2018 9:28:56 AM	StartDa...	
17	10/18/2018 9:28:21 AM	PowerOn	
16	10/16/2018 9:31:25 AM	PowerOff	
15	10/12/2018 4:54:27 PM	Logout	
14	10/12/2018 4:42:22 PM	HiAlarm	102 BAD PUMPDOWN ALARM
13	10/12/2018 4:41:42 PM	HiAlarm	201 HIGH DEW POINT WARNING
12	10/12/2018 4:41:21 PM	Event	STOP
11	10/12/2018 4:41:15 PM	Normal	204 HIGH INLET TEMPERATURE WARNING
10	10/12/2018 4:41:13 PM	Event	USER RESET ALARMS
9	10/12/2018 4:38:17 PM	Login	
8	10/12/2018 4:17:50 PM	HiAlarm	209 PERFORM ROUTINE SERVICE

Clear History

Export Log Data

Up Arrow

Down Arrow

LOG IN

LOG OUT

Snapshot

Alarm History

Displays a log of all alarm and event activity since the last time the history log was cleared.

User Buttons

Page Up / Down – Move up and down through the log

Clear History (M) – Clears the log

Export Log Data (M) – Save history to Excel readable file on flash drive

Active Alarms		
No.	Active Time	Message
1	10/18/2018 9:29:09 AM	201 HIGH DEW POINT WARNING
2	10/18/2018 9:29:09 AM	102 BAD PUMPDOWN ALARM
3	10/18/2018 9:29:09 AM	209 PERFORM ROUTINE SERVICE

Reset Alarms

Down Arrow

Up Arrow

LOG IN

LOG OUT

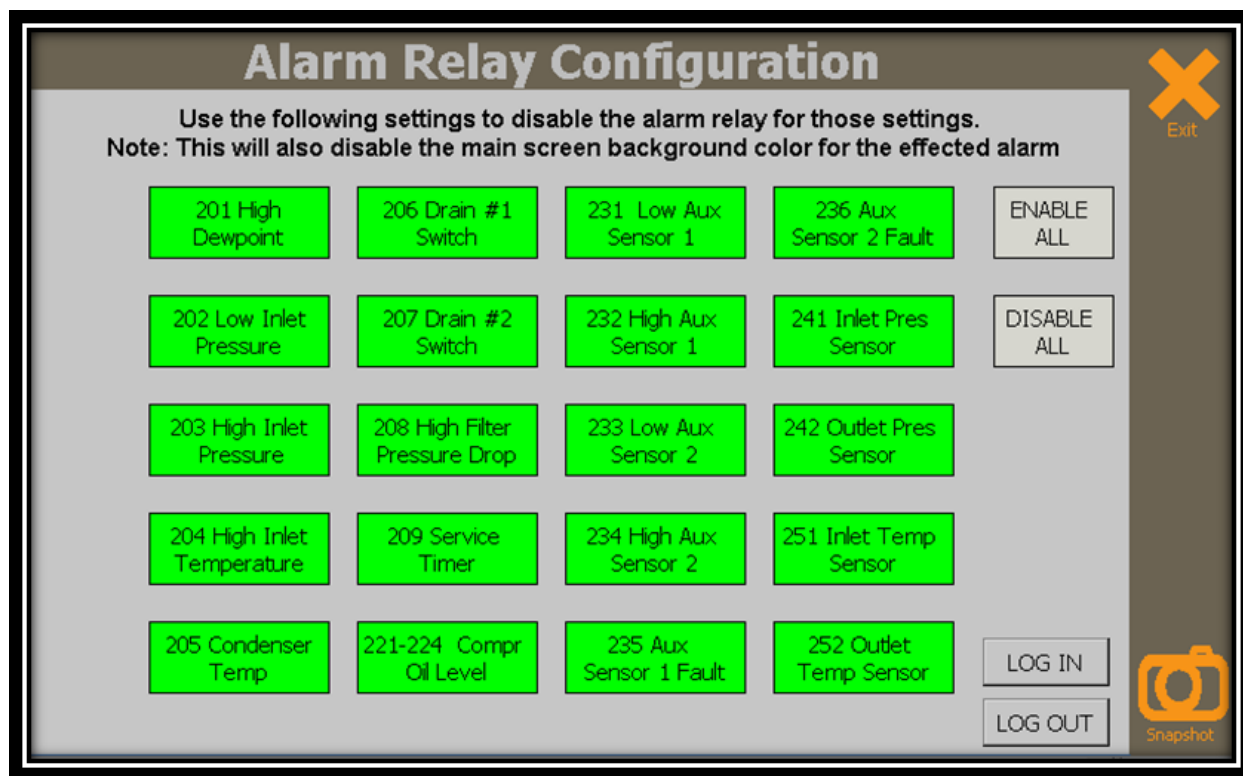
Snapshot

Active Alarm Screen

Displays time and state of all active alarms

Alarm Reset – Resets all active alarms

M Supervisor level access required



Alarm Relay

The alarm relay is triggered whenever there is a new alarm and reset when the alarm silence or alarm reset button is pressed.

The alarm state can bet set to normally open or normally closed operation in the USER SETTINGS screen. Regardless of this setting, the relay contacts will open when the dryer is powered off.

Low level warnings can be ignored with respect to the alarm relay and the main screen background color. This does not affect the alarm messages or logs.

The configuration screen is accessed from the User Settings screen by touching the Configure Alarm Relay key.

Touch the indicator to toggle between enabled and disabled.

Enable All (M) – touch to enable all of the conditions shown.

Disable All (M) – touch to disable all of the conditions shown.

M Supervisor level access required

Alarm Information Screens

The following are informational screens available by touching the icon for each alarm on the alarm state screen.

WARNING! All service should be performed by qualified personnel.

Bad Pump down Alarm (102)

Rules:

- Applies only to dryers with Pump-down factory setting enabled
- Protects the compressor on startup
- While dryer is off, set alarm if the dryer does not pump down within 1 minute of turning off dryer
- OR
- the dryer pumps down more than 8 times per hour
- There are no user settings associated with this alarm
- The alarm is manually reset from the main screen

Check:

- Low Pressure switch
- Suction leaks
- Bad suction valve
- Compressor or compressor cylinder unloader(s)
- Unloader bypass valve or solenoid not functioning properly
- (does not apply to models with variable speed drives)

Low Evaporator Temperature Alarm (103)

Rules:

- Shuts down the dryer if evaporator temperature (as measured by the dewpoint sensor) drops below 20°F (-7°C) for 10 minutes
- There are no user settings associated with this alarm
- The alarm is manually reset from the main screen

Check:

- Low ambient (< 40°F)
- Unloader bypass valve stuck closed or bad unloader solenoid coil (does not apply to models with variable speed drives)
- Check dewpoint probe accuracy

Dryer Overload Alarm (104)

Rules:

- Shuts down dryer if the dew point rises 40°F (22°C) higher than the dew point setting for 10 minutes
- Set point is tied to the dewpoint setting
- 36°F to 50°F (2°C to 10°C) setting corresponds to 76°F thru 90°F (24°C to 32°C) setpoint
- The alarm is manually reset from the main screen

Check:

- Unloader bypass valve stuck open (non-VSD only)
- Compressor is not starting (bad compressor, contactor, or drive)
- High ambient/water temperature
- High inlet temperature
- Low inlet pressure
- High flow across the dryer (dryer undersized)
- Check refrigeration valve, unloaders, and cylinders

Low Suction Pressure Sensor Alarm (105)

Rules:

- Shuts down the dryer if the Suction Pressure sensor value is at or below the factory setting while the compressor is running.
- Setting is dependent on refrigerant type and is set at the factory.
- There are no user settings associated with this alarm
- The alarm is manually reset from the main screen

Check:

- Sensor accuracy against calibrated refrigeration gauge
- Suction valve stuck closed
- Suction valve wiring
- Expansion valve operation
- Proper refrigerant charge
- Service valves are correct
- Correct low suction pressure setting in factory settings screen

Low Suction Pressure Switch Alarm (106)

Rules:

- Shuts down the dryer if the Low Pressure switch opens while the compressor is running
- The switch will automatically reset when the pressure rises
- The alarm is manually reset from the main screen

Check:

- Bad suction switch or wiring to PLC
- Switch is set to the correct pressure threshold for the refrigerant type
- Suction valve or liquid line valve stuck closed
- Suction or liquid line valve wiring
- Expansion valve operation
- Proper refrigerant charge
- Service valves are correct
- Correct low suction pressure setting in factory settings screen

High Discharge Pressure Sensor Alarm (107)

Rules:

- Shuts down the dryer if the Discharge Pressure sensor is at or above the factory setting while the compressor is running.
- The setting is dependent on the dryer refrigerant type and is set at the factory
- The alarm is manually reset from the main screen
- No user settings

Check:

- Condenser operation – check fan (AC units) or water valve (WC units)
- Check for high inlet temperature to dryer.
- Check for high ambient (AC units) or high water (WC units) temperature
- Liquid line solenoid stuck closed
- Liquid line filter clogged
- Refrigeration discharge check valve stuck
- Evaporator leak
- Defective or improperly set mechanical pressure switch
- Incorrect high pressure set alarm setting in factory settings
- Check for service valves that may have been left open

High Discharge Pressure Switch Alarm (108)

Rules:

- Shut down the dryer if the high pressure switch opens while the compressor is running
- The pressure switch must be manually reset at the switch before resetting the controller alarm
- The alarm must be manually reset from the main screen after resetting the switch

Check:

- Condenser operation – check fan (AC units) or water valve (WC units)
- Check for high inlet temperature to dryer.
- Check for high ambient (AC units) or high water (WC units) temperature
- Liquid line solenoid stuck closed
- Liquid line filter clogged
- Defective or improperly set mechanical pressure switch
- Evaporator leak/failure
- Ambient temperature too high or fans are blocked (AC units)
- Water temperature too high or insufficient flow (WC units)

Freeze Protection Alarm (110) Check Dewpoint Probe Warning (210)

Rules:

- Warning/Alarm if the dryer cycles/unloads due to low suction pressure but the dewpoint does not drop below the dewpoint setting.
 - o Warning – Occurs for THREE consecutive refrigeration cycles.
 - o Alarm – Occurs for FIVE consecutive refrigeration cycles.
- Suction Pressure Setting is dependent on refrigerant type and is set at the factory.
- Dewpoint setting is accessed from the User Settings Screen
 - Settable from 36°F to 50°F (2°C to 10°C)
- The alarm is manually reset from the main screen

Check:

- Check the dewpoint probe:
 - o Ensure proper dewpoint probe installation (see manual)
 - o Check dewpoint probe accuracy
 - o Check probe turbulator to make sure it's not missing
- If the dewpoint probe checks out as good, then check the following:
 - o Check refrigerant in surge tank sight glass (should be ¼ to ½ full).
 - o Check for evidence of a refrigerant leak

Compressor Fault Alarm (111-114) (Direct Drive Compressor Models)

Rules:

- Alarms if there is something wrong with the compressor or the compressor drive components or circuits.
- The compressor's internal thermal overload protection resets as the compressor cools
- Starter-overload must be manually reset from inside the electrical box before resetting alarm on display panel.

Check:

- If starter-overload (located inside electrical box) has tripped:
 - Check for shorted compressor motor windings
 - Check for loose connections on 460V 3 phase wiring starting at the Mains input to the dryer thru to the compressor
- If starter-overload has NOT tripped:
 - Check the thermal protection module inside the compressor's electrical box for loose connections or faulty operation
 - Loose wiring on compressor output circuit starting at the CM8 terminal at the PLC (circuit 20) and proceeding thru the compressor output relay (circuit 38)

Compressor Fault Alarm (111-114) (Variable Speed Compressor Models)

Rules:

- Shut down if the VSD alarm relay contacts open or if the compressor's internal overload contacts open
- The compressor's internal thermal overload protection resets as the compressor cools
- Drive alarm must be reset from the drives front panel before resetting alarm on panel
- Refer to the VSD documentation and the dryer user's manual for VSD alarm rules

Check:

- If the VSD drive has alarmed out as indicated on the VSD's front panel:
 - Check for alarm code on VSD front panel
 - Check for faulty 4-20mA signal to VSD
 - Check for incorrect settings on Variable Speed Drive (VSD units only)
 - Check for loose connections on 460V 3 phase wiring starting at the Mains input to the dryer thru to the compressor
- If there are no alarms on the VSD:
 - Check the thermal protection module inside the compressors electrical box for loose connections or faulty operation
 - Check for faulty VSD run control relay CR1
 - Loose wiring on compressor output circuit starting at the CM8 terminal at the PLC (circuit 20) and proceeding thru the compressor output relay (circuit 38)

Low Oil Pressure Switch Alarm (115-118)

Rules:

- Alarm if compressor oil switch has opened during refrigeration
- Oil Switch has a 120 second hardware delay on compressor start
- Oil Switch must be manually reset at the switch before resetting at the controller
- There are no user settings associated with this alarm
- The alarm must be manually reset from the main screen after resetting the switch

Check:

- Check compressor site glass for low oil.
Add oil and verify proper level after 1 hour of operation.
- Check refrigerant level in surge tank site glass
Level should be 1/4 to 1/2 full in loaded state
- Check level master valve (TXV) adjustment and operation.
- Check level master heater operation
- Verify oil switch operation against oil pressure using refrigeration gauges.
Replace oil switch if gauge reading contradicts oil switch performance

Control Power Fuse Alarm (121)

Rules:

- Shut down if either of the control fuses (F3 or F4) opens
- There are no user settings associated with this alarm
- The alarm can be manually reset from the main screen

Check:

- Check for proper fuse size
- Replace fuse with 2Amp 5x20mm time delay fuse
- Refer to dryer electrical schematic when troubleshooting control power circuit
- Prior to replacing fuse, check for
 - o Shorted coils
 - o Shorted coil cables
 - o Shorted contactors or wiring
 - o Shorted heaters

Sensor Power Fuse Alarm (122)

Rules:

- Alarm if sensor fuse F1 opens
- There are no user settings associated with this alarm
- The alarm can be manually reset from the main screen

Check:

- Replace with 1/4Amp 5x20mm fuse
- Refer to dryer electrical schematic when troubleshooting sensor power
- NOTE: Be careful that the orientation of all sensor connectors is marked before removing a connector from its sensor. Improperly oriented sensor cable may result in a short and potentially damage the sensor.
- Prior to replacing fuse, check for shorts in sensors or sensor cables.
 1. Remove sensor connectors from all sensors
 2. Check for short (< 50 ohms) between (circuit 12) and ground (circuit 11)
 3. If the short is no longer present, then install each connector one at a time and recheck for shorts until the shorted sensor is determined. Check for proper connector orientation before determining a sensor is bad.
 4. If the short is still present, check the power connections to the sensors

Emergency Stop (123)

Rules:

- The Emergency Stop switch has been pressed.
- The Emergency stop switch should only be used to prevent or minimize actual or impending danger to persons, machinery, or infrastructure.
- Pressing the emergency stop button immediately interrupts the refrigeration process by removing control power to compressor components and valves, in an uncontrolled manner.

Pressure Sensor Alarm (131,132) Pressure Sensor Warning (241,242)

Rules:

- Fault if pressure sensor input is less than 0.8V or greater than 5.2V.
- Discharge and Suction sensors faults (codes 131, 132) will shut down the dryer.
- Inlet and Outlet Pressure sensors faults (Code 241, 242) will only display warning.
- There are no user settings associated with this alarm
- The alarm is manually reset from the main screen

Check:

- Pressure sensor and sensor wiring
- Sensor cable shield is connected only to the chassis ground in the control cabinet and is left open on the sensor end.

Temperature Sensor Alarm (141-144) Temperature Sensor Warning (251-252)

Rules:

- Faults if temperature sensor input circuit senses an open or shorted input.
- Discharge, Suction, Ambient/H₂O, or Dewpoint temperatures faults (codes 141, 142, 143, or 144 will shut down the dryer.
- Inlet or Outlet temperature faults (codes 251 and 252) will only display warning
- There are no user settings associated with this alarm
- The alarm is manually reset from the main screen

Check:

- Check for shorted or open sensor leads.
- Cable shields are connected to chassis ground at the electrical box only and open at the sensor end.
- To check the thermistor, measure the resistance across the sensor leads and verify that it is between 10K (equates to 108°F) and 100K (equates to 20°F).
- To verify the input module, place a 10K resistor across temperature input terminals and verify it reads between 100°F and 120°F
- For codes 143 (dewpoint) and 144 (ambient/water), check the TX206TH NTC to 4-20mA transmitter module and wiring.

High Dewpoint Warning (201)

Rules:

- Warn if the dew point is 15°F (8°C) higher than the dew point setting for 20 seconds
- Will not trip during first 10 minutes after dryer starts
- Will not trip during Oil Recovery Management function
- Automatically resets 2 seconds after dewpoint falls 1°F below the trip point
- Set point is tied to the dewpoint setting
36°F to 50°F (2°C to 10°C) setting corresponds to 51°F to 65°F (11°C to 35°C)

Check:

- Clean condenser
- Check that dryer is not overloaded. The following can overload the dryer:
 - o High ambient temperature (AC units, > 100°F, 38°C)
 - o High cooling water temperature (WC units, > 85°F, 30°C)
 - o High inlet temperature (> 100°F, 38°C)
 - o High flow rate (> maximum rated flow)
 - o Low inlet pressure (Less than 100 psi, 6.9 bar)
- Check all contactors and solenoids for opens, shorts, or sticking operation.

Low Inlet Pressure Warning (202)

Rules:

- Warn if the Inlet Pressure is at or below the setting for 5 minutes
- Active only while dryer is running
- The warning can be disabled from the User Settings screen
- Setting accessed from the User Settings screen
Adjustable from 0 to 150 psi (10 bar)
Default setting is 60 psi (4 bar)
- Automatically resets if the pressure rises above the set point for 5 minutes
- Pressing alarm reset will reset the alarm and alarm timer

Check:

- Check compressed air system and valves preceding the dryer

High Inlet Pressure Warning (203)

Rules:

- Warn if the Inlet Pressure is at or above the setting for 5 minutes
- The warning can be disabled from the User Settings screen
- Setting accessed from the User Settings screen
 - Adjustable from 0 to 600 psi (44 bar)
 - Default setting is 150 psi (10 bar)
- Automatically resets if the pressure falls below the set point for 5 minutes
- Pressing alarm reset will reset the alarm and alarm timer

Check:

- Plant air compressor output set too high. System limit is 150psi (10bar) unless otherwise the dryer specification indicates otherwise.

High Inlet Temperature Warning (204)

Rules:

- Warn if the Inlet temperature rises to the setting for 60 seconds
- The warning can be disabled from the User Settings screen
- Setting accessed from the User Settings screen
 - Adjustable from 50 to 200°F (10 to 93°C).
 - Default setting is 101°F (38°C).
- Automatically resets if the temperature falls below the trip point for 60 seconds
- Pressing alarm reset will reset the alarm and alarm timer

Check:

- Compressed air system preceding dryer
- Plant air compressor after cooler is operating properly

High Ambient/Water Temperature Warning (205)

Rules:

- Warn if the ambient/water temperature sensor rises above the setting for 1 minute while the dryer is running
- Setting is accessed from the Advanced Settings screen
 - Adjustable from 50 to 150°F (10 to 65°C).
 - Default setting is 101°F (38°C).
- Automatically resets if the temperature falls below the trip point for 1 minute
- Pressing alarm reset will reset the alarm and alarm timer

Check:

- Fan not working (Air cooled systems only)
 - Water valve is not opening (Water cooled systems only)
 - Water tap not open (Water cooled systems only)
 - Water screen plugged (Water cooled systems only)
- Note: Insufficient cooling will reduce the capacity of the dryer

Drain Switch Warning (206,207)

Rules:

- Warn if the drain switch is closed for 10 seconds after the drain duration setting.
- Setting is tied to the drain duration setting.
 - Ex. Duration setting of 5 seconds corresponds to warning timeout of 15 seconds
- Automatically resets when switch opens
- Pressing alarm reset will reset the alarm and alarm timer
- In an attempt to clear any drain obstructions, the drain valve will pulse for 1 minute
- Drain operation will switch to cycling mode if the drain alarm does not clear on it's own

Check:

- Stuck drain valve
- Bad drain switch or wiring

High Filter Pressure Drop Warning (208)

Rules:

- Warning if the pressure drop across the dryer is at or above the setting for 10 minutes.
- Setting is accessed from the User Settings screen
 - Adjustable from 0 to 25 psid (1.7 bard)
 - Default setting is 15 psid (1 bard)
- Pressing alarm reset will reset the alarm and alarm timer

Check:

- Replace cold coalescing filter
- Check for high flow rate across the dryer
- Check excessive oil carryover from plant air compressor
- Check plant air compressor maintenance
- Refer to user's manual for additional information

Compressor Oil Level Monitoring System (221-224)

Rules:

- Monitors external normally closed alarm contacts of Oil Management Module which is located on side of compressor.
- Warning if contacts from oil management system opens for 2 seconds
- Warning automatically resets when the contacts close
- The Oil Monitoring System is Enabled from the Advanced Settings screen
- The warning can be manually reset from the main screen

Module LED's

Green – Power is supplied to the Oil Management Module

Yellow – Float sensor has determined that the oil level has been below ½ sight glass for 10 seconds. Fill solenoid has been activated

Red (continuously lit)– Oil level has remained below ½ sight glass for over 2 minutes after fill solenoid has been active. Alarm has been activated and will remain active until the oil level reaches ½ sight glass when alarm automatically resets.

Red (flashing) – There have been 5 auto rests alarms registered within a 30-minute period. Alarm contacts will remain active until the power to the module is manually removed.

Auxiliary Analog Input Warning (231-236)

There are two analog 4-20mA inputs for connecting to optional flow meters, or other devices.

Refer to the User Sensor Settings Screen to

- Enable input for inputs
- Set ranges for each input
- Set alarm low and high set points for each input
- Set timeout for each alarm (0 to 32767 seconds)
- Set auto or manual reset for each alarm

An input fault warning will occur if an enabled input is less than 3.2mA

4.9 Communications

WARNING! – DO NOT ATTEMPT TO CHANGE SETTINGS OR OTHERWISE OPERATE THE DRYER REMOTELY WITHOUT A FIRM UNDERSTANDING OF DRYER OPERATION. IMPROPER SETTINGS OR CONTROL MAY RESULT IN DAMAGE TO THE DRYER.

THE MODBUS PORT AND MODBUS REGISTERS ARE NOT PROTECTED FROM UNAUTHORIZED ACCESS ON THE NETWORK. ANY SECURITY CONCERNS SHOULD BE ADDRESSED BEFORE CONNECTING THE ETHERNET PORT TO THE NETWORK.

The display panel includes an Ethernet and a Serial port which can be used for Modbus communications. The Ethernet port can be used to access Modbus/TCP registers, as well as, VNC servers across multiple dryers. The Serial port can access Modbus RTU registers using either RS232 or RS422/485 hardware protocol.

VNC Server

The internal VNC server runs in the back ground by default. Any VNC Client may be used to access the dryer's VNC server via port 5900. Excessive network traffic or network interference may cause the VNC server to intermittently shut down. Rebooting the display panel via the Service menu or via Modbus register 40101 will restore the VNC Server after reboot.

Serial Modbus RTU Port

The serial port is located along the bottom edge of the HMI. This port supports full RS232, RS422, and RS485 hardware protocols. This port is NOT isolated. Proper cabling and isolation techniques are required to prevent electrical noise from entering the system through this port. Contact your local electrical parts distributor for assistance.

Other Serial Protocols

In order to connect the dryer to serial networks that use other protocols (such as ProfiBus or Device net) a gateway device will need to be connected to convert the Modbus RTU protocol to the desired protocol. Consult your systems integrator for assistance in specifying the correct device.

Ethernet

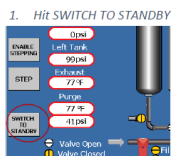
Proper cabling and isolation techniques are required to prevent electrical noise from entering the system through this port. Contact your local electrical parts distributor for assistance.

The Ethernet port is pre-configured to acquire its network IP address and configuration from the network's DHCP server. Use the following procedure to set a static IP address.

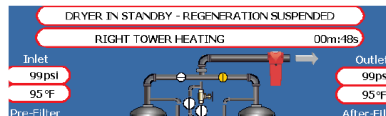
Configuring Static IP Settings

Step 1.

Place Dryer in Standby Mode

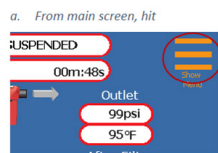


2. Wait for dryer to display standby message (maximum 2 minutes)



Step 2.

Exit dryer's HMI program



b. Select Service screen icon to open service



c. Hit EXIT PROGRAM to return to system



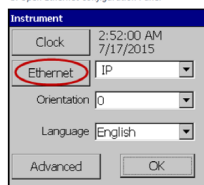
Step 3.

Configure the Ethernet communications for the dryer.

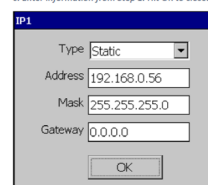
Note: A password may be required to perform the following steps. Contact customer support if the HMI requests a password in order to access the Instrument Settings.



b. Open Ethernet Configuration Panel



c. Enter information from Step 1. Hit OK to close.



ETHERNET TROUBLESHOOTING

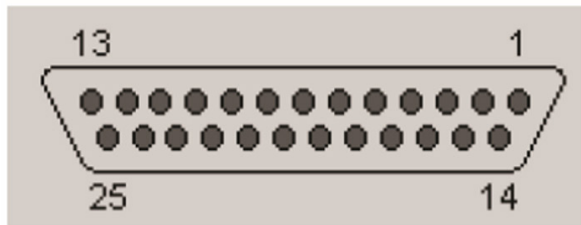
If the panel fails to connect, then either there is a problem with the connection, or one of the settings

From a computer on the same network, ping the dryer's address to make sure that the connection exists and is working correctly

If the panel does not respond to a ping

- Verify Ethernet settings for the panel (Refer to Ethernet Configuration section)
- Physically check the Ethernet connection to the dryer
- Verify that the computer has access to the address and port used in the Ethernet and VNC settings

Serial Modbus Port



DB25 Female Connector

ID Address	61
Baud Rate	38400 bps
Parity	None
Stop Bit	1 Bit

DB25 Female Connector
Communication Settings

Pin Number	Signal	Signal Name	Signal Direction	Type
1	FG	Frame Ground	-	-
2	TD	Transmit Data	Output	RS232C
3	RD	Receive Data	Input	RS232C
4	RTS	Request to Send	Output	RS232C
5	CTS	Clear to Send	Input	RS232C
6	DSR	Data Set Ready	Input	RS232C
7	SG	Signal Ground	-	5V-/ RS232C
8	DCD	Data Carrier Detect	Output	RS232C
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	TXDA	Transmit Data	Output	RS422/ RS485
13	TXDB	Transmit Data	Output	RS422/ RS485
14	RTSA	Request to Send	Output	RS422
15	RTSB	Request to Send	Output	RS422
16	-	-	-	-
17	-	-	-	-
18	CTSA	Clear to Send	Input	RS422
19	CTSB	Clear to Send	Input	RS422
20	DTR	Data Terminal Ready	Output	RS232C
21	5V+	5 V Power Supply +	Output	-
22	RI	Ring Indicator	Input	RS232C
23	-	-	-	-
24	RXDA	Receive Data	Input	RS422
25	RXDB	Receive Data	Input	RS422

Modbus Map

Modbus Address	Description	Range
1x0001	Control State - Load Unload Mode State	1 or 0
1x0002	Control State - Cycling Mode State	1 or 0
1x0003	Control State - Auto Mode State	1 or 0
1x0004	Control State - Running State	1 or 0
1x0005	Control State - Shutdown State	1 or 0
1x0006	Control State - Active Alarms State	1 or 0
1x0007	Control State - Remote Shutdown	1 or 0
1x0008	Control State - Pump Down in Progress	1 or 0
1x0009	Control State - Oil Recovery State	1 or 0
1x0010	Control State - High Head Pressure Limit State	1 or 0
1x0011	Control State - System Not Configured - System Model and/or Refrigerant type is not set	1 or 0
1x0012	Not used	-
1x0013	Not used	-
1x0014	Control State - Restart State	1 or 0
1x0015	Control State - PLC Reset State	1 or 0
1x0016	Reserved	1 or 0
1x0017	Alarm State - 201-High Dew point	1 or 0
1x0018	Alarm State - 101-Superheat Out of Range	1 or 0
1x0019	Alarm State - 102-Bad Pump down	1 or 0
1x0020	Alarm State - 103-Low Evaporator	1 or 0
1x0021	Alarm State - 104-Dryer Overload	1 or 0
1x0022	Alarm State - 105-Low Refrigeration Pressure	1 or 0
1x0023	Alarm State - 107-High Refrigeration Pressure	1 or 0
1x0024	Alarm State - 202-Low Inlet Air Pressure	1 or 0
1x0025	Alarm State - 203-High Inlet Air Pressure	1 or 0
1x0026	Alarm State - 204-High Inlet Air Temperature	1 or 0
1x0027	Alarm State - 205-High Ambient Air Temperature	1 or 0
1x0028	Alarm State - 206-Drain #1 Switch	1 or 0
1x0029	Alarm State - 207-Drain #2 Switch	1 or 0
1x0030	Alarm State - 208-High Filter Pressure Drop	1 or 0
1x0031	Alarm State - 108-High Discharge Pressure Switch	1 or 0
1x0032	Alarm State - 106-Low Suction Pressure Switch	1 or 0
1x0033	Alarm State - 111-Compressor #1 Fault	1 or 0
1x0034	Alarm State - 115-Compressor #1 Low Oil Pressure	1 or 0
1x0035	Alarm State - 221-Compressor #1 Oil Level	1 or 0
1x0036	Alarm State - 112-Compressor #2 Fault	1 or 0
1x0037	Alarm State - 116-Compressor #2 Low Oil Pressure	1 or 0
1x0038	Alarm State - 222-Compressor #2 Oil Level	1 or 0
1x0039	Alarm State - 113-Compressor #3 Fault	1 or 0
1x0040	Alarm State - 117-Compressor #3 Low Oil Pressure	1 or 0
1x0041	Alarm State - 223-Compressor #3 Oil Level	1 or 0
1x0042	Alarm State - 114-Compressor #4 Fault	1 or 0
1x0043	Alarm State - 118-Compressor #4 Low Oil Pressure	1 or 0
1x0044	Not used	-

1x0044	Alarm State - 224-Compressor #4 Oil Level	1 or 0
1x0045	Not used	-
1x0046	Not used	-
1x0047	Not used	-
1x0049	Alarm State - 231-Aux Input #1 - Low	1 or 0
1x0050	Alarm State - 232-Aux Input #1 - High	1 or 0
1x0051	Alarm State - 233-Aux Input #2 - Low	1 or 0
1x0052	Alarm State - 234-Aux Input #2 - High	1 or 0
1x0053	Not used	1 or 0
1x0054	Not used	1 or 0
1x0055	Not used	1 or 0
1x0056	Alarm State - 121-Control Fuse	1 or 0
1x0057	Alarm State - 122-Sensor Fuse	1 or 0
1x0058	Alarm State - 123-Emergency Stop	1 or 0
1x0059	Not used	-
1x0060	Not used	-
1x0061	Alarm State - 209-Service Timer	1 or 0
1x0062	Not used	-
1x0063	Not used	-
1x0064	Not used	-
1x0065	Alarm State - 241-Inlet Pressure Sensor Fault	1 or 0
1x0066	Alarm State - 242-Outlet Pressure Sensor Fault	1 or 0
1x0067	Alarm State - 131-Suction Pressure Sensor Fault	1 or 0
1x0068	Alarm State - 132-Discharge Pressure Sensor Fault	1 or 0
1x0069	Alarm State - 141-Dewpoint Sensor Fault	1 or 0
1x0070	Alarm State - 142-Ambient Temperature Sensor Fault	1 or 0
1x0071	Alarm State - 235-Aux User Sensor Input #1 Fault	1 or 0
1x0072	Alarm State - 236-Aux User Sensor Input #2 Fault	1 or 0
1x0073	Alarm State - 251-Inlet Temperature Sensor Fault	1 or 0
1x0074	Alarm State - 252-Outlet Temperature Sensor Fault	1 or 0
1x0075	Alarm State - 143-Refrigeration Temperature Sensor Fault	1 or 0
1x0076	Alarm State - 144-Suction Temperature Sensor Fault	1 or 0
1x0077	Not used	-
1x0078	Not used	-
1x0079	Not used	-
1x0080	Not used	-
1x0081	Output State - Suction & Liquid Line Valves Open	1 or 0
1x0082	Output State - Compressor Bypass Valve Open	1 or 0
1x0083	Output State - Cylinder Unloader A Unloaded	1 or 0
1x0084	Output State - Cylinder Unloader B Unloaded	1 or 0
1x0085	Output State - Alarm Relay Active	1 or 0
1x0086	Output State - Dryer Running	1 or 0
1x0087	Not used	-
1x0088	Output State - Fan Bank #1 Running	1 or 0
1x0089	Output State - Fan Bank #2 Running	1 or 0
1x0090	Output State - Fan Bank #3 Running	1 or 0
1x0091	Not used	-

1x0092	Not used	-
1x0093	Output State - Compressor #1 Running	1 or 0
1x0094	Output State - Compressor #2 Running	1 or 0
1x0095	Output State - Compressor #3 Running	1 or 0
1x0096	Output State - Compressor #4 Running	1 or 0
1x0097	Not used	-
1x0098	Not used	-
1x0099	Output State - Drain #1 Open	1 or 0
1x0100	Output State - Drain #2 Open	1 or 0
1x0101	Not used	-
1x0102	Input State - Low Refrigeration Pressure Switch Closed	1 or 0
1x0103	Input State - High Refrigeration Pressure Switch Closed	1 or 0
1x0104	Input State - Compressor #1 Overload Switch Closed	1 or 0
1x0105	Input State - Compressor #1 Low Oil Pressure Closed	1 or 0
1x0106	Input State - Compressor #1 Oil Monitoring System Alarm	1 or 0
1x0107	Input State - Compressor #2 Overload Switch	1 or 0
1x0108	Input State - Compressor #2 Low Oil Pressure	1 or 0
1x0109	Input State - Compressor #2 Oil Monitoring System Alarm	1 or 0
1x0110	Input State - Compressor #3 Overload Switch	1 or 0
1x0111	Input State - Compressor #3 Low Oil Pressure	1 or 0
1x0112	Input State - Compressor #3 Oil Monitoring System Alarm	1 or 0
1x0113	Input State - Compressor #4 Overload Switch	1 or 0
1x0114	Input State - Compressor #4 Low Oil Pressure	1 or 0
1x0115	Input State - Compressor #4 Oil Monitoring System Alarm	1 or 0
1x0116	Input State - Emergency Stop Switch Normal	1 or 0
1x0117	Input State - Control Power Sense Bank A Normal	1 or 0
1x0118	Input State - Control Power Sense Bank B Normal	1 or 0
1x0119	Input State - Drain Float Switch #1 Closed	1 or 0
1x0120	Input State - Drain Float Switch #2 Closed	1 or 0
1x0121	Not used	-
1x0122	Input State - Remote Alarm Reset Switch Closed	1 or 0
1x0123	Input State - Remote Run/Stop Switch Closed	1 or 0
1x0124	Input State - Remote Load/Unload Mode Switch Closed	1 or 0
1x0125	Input State - Remote Cycling Mode Switch Closed	1 or 0
1x0126	Input State - Remote Auto Mode Switch Closed	1 or 0
3x0001	Dryer Operation Mode 0 = Not Configured 1 = Load/Unload Mode 2 = Cycling Mode 5 = Load Unload Mode (Auto) 6 = Cycling Mode (Auto) 8 = Variable Speed Mode	0 to 8
3x0002	State of Operation 0 = Dryer Off 1 = Running in Load/Unload Mode 2 = Running in Cycling Mode 5 = Running in Load Unload Mode (Auto) 6 = Running in Cycling Mode (Auto) 8 = Running in Variable Speed Mode	0 to 4
3x0008	Inlet Pressure	0 to 200 psi
3x0009	Outlet Pressure	0 to 200 psi

3x0010	Suction Pressure	0 to 200 psi
3x0011	Discharge Pressure	0 to 200 psi
3x0012	Dewpoint Temperature	0 to 200 °F
3x0013	Ambient/Water Temperature	0 to 200 °F
3x0014	Optional Sensor Input #1	-32868 to 32867
3x0015	Optional Sensor Input #2 - resolution is 1/10 units	-32678 to 32767
3x0016	Inlet Temperature	0 to 200 °F
3x0017	Outlet Temperature	0 to 200 °F
3x0018	Suction Temperature	0 to 200 °F
3x0019	Refrigeration Temperature	0 to 200 °F
3x0020	Differential Filter Pressure	0 to 200 psi
3x0021	Superheat Temperature	0 to 100 °F
3x0022	Reserved	-
3x0023	Maintenance Service Timer Elapsed Hours	0 to 8760 hours
3x0024	Reserved	-
3x0025	Reserved	-
3x0026	Reserved	-
3x0027	Reserved	-
3x0028	Reserved	-
3x0029	Reserved	-
3x0030	Reserved	-
3x0031	Reserved	-
3x0032	Dryer Load Percent - 0 to 120%	0 to 120 %
3x0033	VSD Output - 0 = 30Hz, 255 = 60Hz	0 to 255
3x0034	Output Capacity - 0 to 100%	0 to 100 %
4x0001	Control Setting - Refrigeration Type 0 = Not configured 1 = R22a 2 = R134a 3 = R404a 4 = R717	0 to 4
4x0002	Control Setting - Dewpoint	34 to 50 °F
4x0003	Control Setting - Dryer Type Select 0 = Not configured 1 = Both Load/Unload & Cycling Modes 2 = Load/Unload Mode Only 3 = Cycling Mode Only 4 = Variable Speed Mode	0 to 4
4x0004	System Temperature Units 0 = °F 1 = °C	1 or 0
4x0005	System Pressure Units 0 = psi 1 = kPa 2 = bar	2 or 0
4x0006	Not used	-
4x0007	Not used	-
4x0008	Control Setting - Unloader Delay	0 to 30 seconds
4x0009	Control Setting - Thermal Bank Compressor On Offset	0 to 5 °F
4x0010	Control Setting - Thermal Bank Compressor Off Offset	-5 to 0 °F
4x0011	Control Setting - Multiple Compressor - Auto-Switch Time	0 to 168 hours

4x0012	Control Setting - Number of Compressors	1 to 4
4x0013	Control Setting - Number of Compressor Cylinders	0 to 2
4x0014	Control Setting - Number of Fan Banks	0 to 3
4x0015	Control Setting - Fan Bank#1 Off Pressure Setting	100 to 400 psi
4x0016	Control Setting - Fan Bank#1 On Pressure Setting	100 to 400 psi
4x0017	Control Setting - Fan Bank#2 Off Pressure Setting	100 to 400 psi
4x0018	Control Setting - Fan Bank#2 On Pressure Setting	100 to 400 psi
4x0019	Control Setting - Fan Bank#3 Off Pressure Setting	100 to 400 psi
4x0020	Control Setting - Fan Bank#3 On Pressure Setting	100 to 400 psi
4x0021	Control Setting - Drain 1 Type 0 = none 1 = timed 2 = level	0 to 2
4x0022	Control Setting - Drain 1 Interval - Seconds	10 to 3600 seconds
4x0023	Control Setting - Drain 1 Duration - Seconds	1 to 60 seconds
4x0024	Control Setting - Drain 1 Autotest - Minutes	30 to 1440 minutes
4x0025	Control Setting - Drain 2 Type 0 = none 1 = timed 2 = level	0 to 2
4x0026	Control Setting - Drain 2 Interval - Seconds	10 to 3600 seconds
4x0027	Control Setting - Drain 2 Duration - Seconds	1 to 60 seconds
4x0028	Control Setting - Drain 2 Autotest - Minutes	30 to 1440 minutes
4x0029	Control Setting - VSD Dewpoint Gain x 100	1 to 100
4x0030	Control Setting - VSD Output Filter Time Constant	0 to 300 seconds
4x0031	Control Setting - VSD Dewpoint Filter Time Constant	0 to 300 seconds
4x0032	Control Setting - VSD Max Suction PSI	0 to 150 psi
4x0033	Calibration - Sensor Min Set - Inlet Pressure	-1000 to 1000 psi
4x0034	Calibration - Sensor Min Set - Output Pressure	-1000 to 1000 psi
4x0035	Calibration - Sensor Min Set - Suction Pressure	-1000 to 1000 psi
4x0036	Calibration - Sensor Min Set - Discharge Pressure	-1000 to 1000 psi
4x0037	Not used	-
4x0038	Not used	-
4x0039	Calibration - Sensor Min Set - User Sensor #1	-32678 to 32767
4x0040	Calibration - Sensor Min Set - User Sensor #2	-32678 to 32767
4x0041	Calibration - Sensor Max Set - Inlet Pressure	-1000 to 1000 psi
4x0042	Calibration - Sensor Max Set - Outlet Pressure	-1000 to 1000 psi
4x0043	Calibration - Sensor Max Set - Suction Pressure	-1000 to 1000 psi
4x0044	Calibration - Sensor Max Set - Discharge Pressure	-1000 to 1000 psi
4x0045	Not used	-
4x0046	Not used	-
4x0047	Calibration - Sensor Max Set - User Sensor #1	-32678 to 32767
4x0048	Calibration - Sensor Max Set - User Sensor #2	-32678 to 32767
4x0049	Calibration - Sensor Offset Set - Inlet Pressure	-1000 to 1000 psi
4x0050	Calibration - Sensor Offset Set - Outlet Pressure	-1000 to 1000 psi
4x0051	Calibration - Sensor Offset Set - Suction Pressure	-1000 to 1000 psi
4x0052	Calibration - Sensor Offset Set - Discharge Pressure	-1000 to 1000 psi
4x0053	Calibration - Sensor Offset Set - Dewpoint Probe	-10 to 10 °F
4x0054	Calibration - Sensor Offset Set - Ambient/Water Temperature	-10 to 10 °F

4x0055	Calibration - Sensor Offset Set - User Sensor #1	-32678 to 32767
4x0056	Calibration - Sensor Offset Set - User Sensor #2	-32678 to 32767
4x0057	Calibration - Sensor Offset Set - Inlet Temperature	-10 to 10 °F
4x0058	Calibration - Sensor Offset Set - Outlet Temperature	-10 to 10 °F
4x0059	Calibration - Sensor Offset Set - Refrigeration Temperature	-10 to 10 °F
4x0060	Calibration - Sensor Offset Set - Suction Temperature	-10 to 10 °F
4x0061	Alarm Setting - High Inlet Temperature	0 to 200 °F
4x0062	Alarm Setting - High Outlet Temperature	0 to 200 °F
4x0063	Alarm Setting - High Refrigerant Temperature	0 to 200 °F
4x0064	Alarm Setting - High Ambient Temperature	0 to 150 °F
4x0065	Alarm Setting - Low Inlet Pressure	0 to 200 psi
4x0066	Alarm Setting - High Inlet Pressure	0 to 600 psi
4x0067	Alarm Setting - High Discharge Pressure	0 to 600 psi
4x0068	Alarm Setting - Low Suction Pressure	0 to 200 psi
4x0069	Alarm Setting - High Dryer Differential Pressure	0 to 25 psi
4x0070	Alarm Setting - User Sensor #1 Low Setpoint	-32678 to 32767
4x0071	Alarm Setting - User Sensor #1 High Setpoint	-32678 to 32767
4x0072	Alarm Setting - User Sensor #2 Low Setpoint	-32678 to 32767
4x0073	Alarm Setting - User Sensor #2 High Setpoint	-32678 to 32767
4x0074	Alarm Setting - Number of days for Service Maintenance Timer	0 to 365 days
4x0075	Alarm Setting - User Sensor #1 Low Setpoint Timeout	0 to 32767 seconds
4x0076	Alarm Setting - User Sensor #1 High Setpoint Timeout	0 to 32767 seconds
4x0077	Alarm Setting - User Sensor #2 Low Setpoint Timeout	0 to 32767 seconds
4x0078	Alarm Setting - User Sensor #2 High Setpoint Timeout	0 to 32767 seconds
4x0083	Alarm Setting - Enable Maintenance Timer	1
4x0084	Alarm Setting - Reset Maintenance Timer	1
4x0085	Control Setting - Load/Unload Key	1
4x0086	Control Setting - Thermal Bank Key	1
4x0087	Control Setting - Auto Mode Key	1
4x0088	Control Setting - Set Run Mode Off	1
4x0089	Reserved	-
4x0090	Control Setting - Store Factory Settings	1
4x0091	Control Setting - Recall Factory Settings	1
4x0092	Control Setting - Test Drains	1
4x0093	Reserved	-
4x0094	Control Setting - Pump-down Enabled	1 or 0
4x0095	Control Setting - Multiple Compressor - Compressor #1 Enable	1 or 0
4x0096	Control Setting - Multiple Compressor - Compressor #2 Enable	1 or 0
4x0097	Control Setting - Multiple Compressor - Compressor #3 Enable	1 or 0
4x0098	Control Setting - Multiple Compressor - Compressor #4 Enable	1 or 0
4x0099	Control Setting - Backup Compressor Enable	1 or 0
4x0100	Control Setting - Enable Compressor Staging	1 or 0
4x0101	Remotely Reboot the Display Panel Required if VNC server shuts down unexpectedly due to high network traffic	1
4x0102	Control Setting - Enable Oil Switch	1 or 0
4x0103	Control Setting - Enable Oil Recovery Management Function	1 or 0
4x0104	Control Setting - Enable User #1 Analog Input	1 or 0

4x0105	Control Setting - Enable User #2 Analog Input	1 or 0
4x0106	Alarm Setting - Silence alarms	1
4x0107	Alarm Setting - Reset all alarms	1
4x0108	Alarm Setting - High Inlet Temp Alarm Enable	1 or 0
4x0109	Alarm Setting - Low Inlet Pressure Alarm Enable	1 or 0
4x0110	Alarm Setting - High Inlet Pressure Alarm Enable	1 or 0
4x0111	Alarm Setting - Oil Level Monitoring System Alarm Enable	1 or 0
4x0112	Alarm Setting - Aux Sensor #1 Low Alarm Enable	1 or 0
4x0113	Alarm Setting - Aux Sensor #1 High Alarm Enable	1 or 0
4x0114	Alarm Setting - Aux Sensor #2 Low Alarm Enable	1 or 0
4x0115	Alarm Setting - Aux Sensor #2 High Alarm Enable	1 or 0
4x0116	Alarm Setting - Alarm Relay Output State	1 or 0
4x0117	Alarm Setting - Aux Sensor #1 Low Alarm Auto Reset Enable	1 or 0
4x0118	Alarm Setting - Aux Sensor #1 High Alarm Auto Reset Enable	1 or 0
4x0119	Alarm Setting - Aux Sensor #2 Low Alarm Auto Reset Enable	1 or 0
4x0120	Alarm Setting - Aux Sensor #2 High Alarm Auto Reset Enable	1 or 0

4.10 Remote PLC Operation

There are five inputs on the PLC dedicated to using external switches or relays to control the dryer operation. These inputs require a 120VAC signal. Refer to the dryers wiring schematic for details.

Alarm Reset (PLC input 20)

- wired to a normally open SPST pushbutton switch or momentary PLC relay contact
- resets all alarms on the forward edge of the signal transition from off to on.

Run/Stop (PLC input-21)

- wired to a SPST toggle switch or latched plc relay contact
- starts the dryer on the forward edge of the signal transition from off to on.
- stops the dryer on the trailing edge of the signal transition from on to off.

Load/Unload Mode Select (PLC input 22)

- wired to a normally open SPST pushbutton switch or momentary PLC relay contact
- switches to load/unload mode on the forward edge of the signal transition from off to on.

Cycling Mode Select (PLC input 23)

- wired to a normally open SPST pushbutton switch or momentary PLC relay contact
- switches to cycling mode on the forward edge of the signal transition from off to on.

Auto Mode Select (PLC input 24)

- wired to a SPST toggle switch or latched plc relay contact
- Auto-Mode is enabled on the forward edge of the signal transition from off to on.
- Auto-Mode is disabled on the trailing edge of the signal transition from on to off.

NOTE: Proper noise consideration must be taken to avoid introducing noise into the control system. All switches should have RC noise suppressors across the contacts. Wiring should be routed through metal conduits or shielded cables grounded at the PLC chassis ground.

5. Routine Maintenance

This section covers the various components that require periodic maintenance and/or replacement.

Coalescing Filter Element

The coalescing filter element should be check Bi-Annually.

The filter differential can be viewed on the controller HMI. If it is determined that there is a high pressure drop across the machine, remove the filter element from the machine and inspect it. If the filter is dirty, replace it. Ensure that air pressure is removed from the machine prior to removing the filter element.

The coalescing element should be changed annually. To change the filter element:

- Ensure that air pressure is removed from the machine!!
- Remove the bolts that secure the filter housing cover.
- Remove the wing nut that secures the filter cap to the element.
- Remove the filter cap.
- Remove the existing element from the housing.
- Install the replacement element.
- Reinstall the filter cap and wing nut
- Reinstall the filter cover.

Condensing Coil (Air Cooled Units)

The condensing coil should be cleaned weekly. Ensure that air pressure is removed from the system prior to cleaning the condenser. The condenser can be cleaned by using a vacuum or compressed air. If the condenser is not clean after it is blown out with compressed air or vacuumed contact the factory for assistance.

Condenser (Water Cooled Units)

The water cooled condenser should be checked and cleaned annually if necessary. To check the condenser, water flow to the condenser should be shut off, air flow to the machine should be shut off, and the unit should be taken out of a run mode. The end bonnets then need to be removed exposing the tube side of the condenser. The tube side should be inspected for any debris and cleaned. If soft deposits are found they can be cleaned using a pneumatic tube cleaning gun which forces plugs down the tubes. Some have a brush between two rubber plugs and others are specially designed plugs which scrape the tube walls as they travel down the tube. If scale is found special equipment is required to clean the tubes. These cleaning systems utilize a flexible shaft which rotates a brush as it is fed down the tube, they can also simultaneously flush out the tubes with water. There is a wide variety of brushes and tools available that attach to the shaft to clean both soft and hard deposits.

High Pressure, Low Pressure, & Fan Control (AC units only)

The refrigeration pressure switches should be checked monthly to ensure that they are adjusted to the proper settings. Please refer to the applicable electrical drawings for your unit.

Compressor Oil Level

The oil level in the compressor should be checked weekly. The refrigeration system should never need oil unless the system is leaking or has been recently repaired. If it is determined that the system needs oil, do the following:

- Run the dryer for a minimum of 2 minutes, if there is not a visible level of oil in the sight glass, proceed to the next step, if there is a visible level DO NOT add oil to the system.
- Using the appropriate oil pump add the proper oil (EMKARATE RL 32-3MAF, 150 SUS (ISO 32) (or equal) synthetic POE refrigeration oil for machines with R404 or R134a refrigerant) using the Schrader valve on the suction side of the compressor.
- Add oil until there is a visible level in the sight glass with the compressor running.

Drain Solenoid

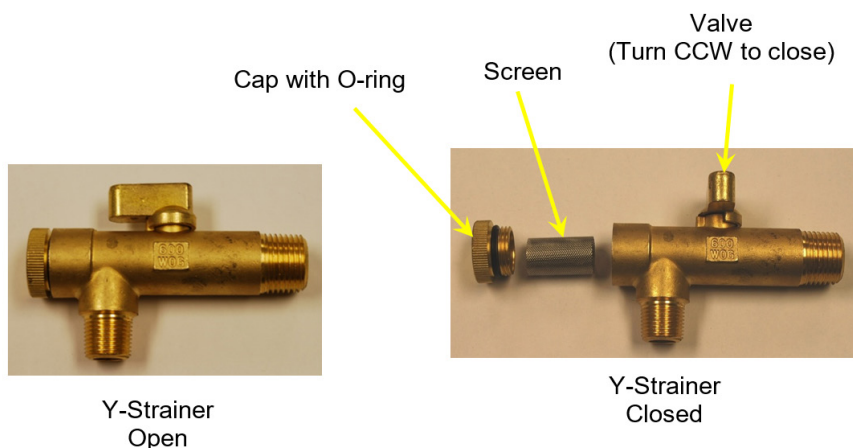
The drain solenoid should be cleaned monthly or more often if needed. Remove air flow and pressure from the dryer prior to proceeding.



Drain Line Y-Strainer

The drain line y-strainer should be cleaned weekly. Air flow and air pressure should be removed from system before proceeding. To clean the y-strainer:

- Ensure that air pressure is removed from the machine!!
- Turn the ball valve on the strainer assembly to the closed position
- Remove threaded cap at the end of the ball valve assembly.
- Clean the screen inside of the cap by rinsing it under water.
- Reinstall the screen and cap
- Return the ball valve to the open position



6. Maintenance Schedule

The maintenance chart below indicates the components that should be checked while performing routine maintenance on the dryer. The chart also indicates how often a specific check should be done.

Refrigerated Series Maintenance Schedule				
Part	Weekly	Monthly	Biannually	Annually
Coalescing Filter Element			Check	Replace
Condensing Coil (AC units)	Check/ Clean	Check/ Clean	Check/ Clean	Check/ Clean
Condenser (WC Units)				Check/ Clean**
Drain Line Y-Strainer	Check/ Clean	Check/ Clean	Check/ Clean	Check/ Clean
High Pressure Switch		Check	Check	Check
Low Pressure Switch		Check	Check	Check
Fan Control Switches (AC units)		Check	Check	Check
Compressor Oil Level	Check	Check	Check	Check
Drain Solenoid		Check/ Clean	Check/ Clean	Check/ Clean
Oil Separator Element				Check - change at 20 PSID

**Oil separator element should be changed 24-48 hours after initial start-up.



CAUTION

6.1. Maintenance Procedures

Before performing any maintenance on the machine ensure that air pressure is vented from the system. Also make sure that personnel performing the maintenance have read the maintenance section of the manual.

Some of the maintenance tasks will require the refrigeration system to run, but when not required, turn the unit off before proceeding. Refer to lock-out/tag-out procedures.

Upon completion of the maintenance tasks be sure that the machine has been properly reassembled prior to restarting and reintroducing air.

7. Alarms, Troubleshooting & Service

Alarm (100's) / Warning (200's)	Fault Code	Rules & Causes	Possible Remedy
COMPRESSOR FAULT (Variable Speed Drive models)	111-114	Rules: - Shut down if the VSD alarm relay contacts open - The compressor's internal thermal overload protection resets as the compressor cools - Drive alarm must be reset from drives front panel before resetting alarm on the controller - Refer to VSD documentation and the Dryer's specific electrical schematic for VSD alarm codes and rules. Causes: - Compressor starter-overload tripped - Compressor windings are shorted - Compressor is defective	- Check setting, reduce load on the dryer, check line voltage, check for loose wires or single phasing. Correct condition. - Check with ohmmeter. Replace compressor if shorted. - Replace compressor
LOW OIL PRESSURE	115-118	Rules: - Alarm if compressor oil switch has opened while compressor was running - Oil switch has a 120 second delay built-in - Oil switch must be manually reset at the switch before resetting the controller - There are no user settings associated with this alarm - The alarm must be manually reset from the main screen Causes: - Refrigerant Leak - Level master valve (TXV) out of adjustment. - Low refrigerant charge - Defective oil switch - Oil level is low - Level master valve (TXV) is defective - Level master heater is defective	- Locate leak. Repair and recharge. - Check surge tank sightglass (should be 1/4-1/2 full in loaded state). If not, consult factory. - Check surge tank sightglass (should be 1/4-1/2 full in loaded state). If not, consult factory. - Check actual oil pressure at the compressor with refrigeration gauges. Replace switch if necessary. - If surge tank sightglass is normal (should be 1/4-1/2 full in loaded state) add oil to compressor to be half full. Observe for 1 hour to verify it maintains level in the compressor sightglass. - Replace valve - Replace heater
CONTROL POWER FUSE	121	Rules: - Shut down if either of the control fuses (F3 or F4) opens - There are no user settings associated with this alarm - The alarm must be manually reset from the main screen Causes: - Shorted components - Blown fuse	Refer to electrical schematic when troubleshooting power circuit - Check coils, coil cables, contactors, wiring or heaters for shorts - Replace fuse after the above components have been checked (refer to electrical schematic when troubleshooting power circuit)
SENSOR POWER FUSE	122	Rules: - Shut down if sensor fuses (F1) opens - There are no user settings associated with this alarm - The alarm must be manually reset from the main screen Causes: - Shorted sensors - Bad power connection to sensor(s)	Refer to electrical schematic when troubleshooting power circuit Note: Be careful that the orientation of all sensor connectors are marked before removing a connector from its sensor. Improperly orientated sensor cable may result in a short and potentially damage the sensor - Remove all sensor connectors from sensors - Check for short - <50 ohms between circuit 12 & circuit 11 (ground) - If short is no longer present, then install each connector one at a time and recheck for shorts until the shorted sensor is found. Check for proper connector orientation before making final determination that a sensor is bad. - Check all power connections to the sensors

Alarm (100's) / Warning (200's)	Fault Code	Rules & Causes	Possible Remedy
SENSOR POWER FUSE	122	Rules: - Shut down if sensor fuses (F1) opens - There are no user settings associated with this alarm - The alarm must be manually reset from the main screen Causes: - Shorted sensors - Bad power connection to sensor(s)	Refer to electrical schematic when trouble shooting power circuit Note: Be careful that the orientation of all sensor connectors are marked before removing a connector from its sensor. Improperly orientated sensor cable may result in a short and potentially damage the sensor - Remove all sensor connectors from sensors 1a) Check for short - <50 ohms between circuit 12 & circuit 11 (ground) 1b) If short is no longer present, then install each connector one at a time and recheck for shorts until the shorted sensor is found. Check for proper connector orientation before making final determination that a sensor is bad. 2) Check all power connections to the sensors
EMERGENCY STOP	123	Rules: - The Emergency Stop switch has been pressed - The Emergency Stop switch should only be used in an emergency and is not to be used for turning the dryer on/off under normal circumstances - Pressing the Emergency Stop switch immediately interrupts the refrigeration process by removing power to the compressor and all valves - Using the Emergency stop switch for other than emergency situations may result in voiding the warranty of the dryer	
PRESSURE SENSOR ALARM & WARNING	131- 132 & 241- 242	Rules: - Fault if pressure sensor input is less than 0.8V or greater than 5.2V - Shuts down the dryer if the Discharge or suction sensors fault - Warn only if the Inlet and or Outlet pressure sensors fault - There are no user settings associated with this alarm - The alarm must be manually reset from the main screen Causes: - Defective sensor - Improper wiring	- Replace sensor - Check wiring per electrical schematic. Verify sensor cable shield is connected to power supply only and open on sensor end. Do not allow shield to short to chassis ground.
TEMPERATURE SENSOR ALARM & WARNING	141- 144 & 251- 253	Rules: - Faults if the temperature sensor input circuit senses an open or shorted circuit - Shuts down the dryer if the Discharge, Suction or Dew Point sensors fault - Warn only if the Inlet, Outlet or Condenser temperature sensors fault - There are no user settings associated with this alarm - The alarm must be manually reset from the main screen Causes: - Defective sensor - Shorted or sensor cable shorted - Bad input module	- Check thermistor, measure resistance across the leads and verify that it is between 10K (equal to about 108°F) and 100K (equal to about 20°F) - Make sure neither sensor lead is shorted to the cable shield - Verify the input module - place a 10K resistor across the temperature input terminals and verify it reads between 100°F and 120°F

Alarm (100's) / Warning (200's)	Fault Code	Rules & Causes	Possible Remedy
HIGH DEW POINT	201	Rules: - Always active except for 10 minutes after RUN is pressed - Ignored when dryer is displaying Oil Management message - Warn if the dew point is 15°F higher than the dew point setting for 20 seconds - Automatically resets 2 seconds after the dew point falls 1°F below the trip point - Set point is tied to the dewpoint setting Causes: - Dryer is off. - Thermal load is too high. - Condenser is dirty. - Contactors are not closing	- Press Load/Unload or Auto button. - Reduce compressed air quantity and/or inlet temperature. - Clean condenser - Check contacts and coils for opens, shorts or sticking. Replace if necessary.
HIGH INLET TEMP	204	Rules: - Warning if the inlet temperature rises to the setting for 5 minutes - The warning can be disabled from the User Setting screen - Setting can be accessed from the User Setting screen - Automatically resets if the temperature falls below the setting for 5 minutes - press alarm reset will reset the alarm and alarm timer Causes: - Inlet air temperature too high	Clean air compressor and/or improve room ventilation
HIGH CONDENSER TEMP	205	Rules: - Warning if the condenser temperature (ambient/water) rises above the setting for 5 minutes while the compressor is running - Setting can be accessed from the User Setting screen - Automatically resets if the temperature falls below the setting for 5 minutes - Press alarm reset will reset the alarm and alarm timer Causes: - Ambient/Water temperature too high - condenser fan not turning on - Cooling water flow insufficient	- Improve room ventilation or cooling water source temperature - Defective fan motor, blown fan motor fuses, defective fan pressure switch or wrong setting - Check cooling water delivery system for sufficient flow and pressure
DRAIN FAULT - 1 & 2	206-207	Rules: - Warning if the drain level switch is closed for 10 seconds after the drain duration setting - Setting is tied to the drain duration setting - Automatically resets when level switch opens - Pressing alarm reset will reset the alarm and alarm timer - In an attempt to clear any drain obstructions, the drain valve will pulse for 1 minute Causes: - Valve strainer clogged - Drain valve clogged - Solenoid defective - Level sensor defective	- Clean - Disassemble and clean - Replace - Replace

Alarm (100's) / Warning (200's)	Fault Code	Rules & Causes	Possible Remedy
HIGH DIFFERENTIAL PSI	208	Rules: • Warning if the pressure drop across the dryer is at or above the setting for 5 minutes • Setting is accessed from the User Settings screen • Pressing alarm reset on will reset the alarm and alarm timer Causes: 1) Coalescing filter is dirty 2) Excessive compressed air flow	1) Change filter (see serial sticker for part #) 2) Reduce flow
LOW INLET PRESSURE	202	Rules: • Warn if the Inlet Pressure is at or below the setting for 5 minutes • Active only while dryer is running • The Warning can be disabled or set from the User setting screen • Automatically resets if the pressure rises above the set point for 5 minutes • Pressing alarm reset will reset the alarm and alarm timer Causes: 1) Upstream air blockage 2) Compressed air consumption too high 3) Compressed air system malfunction	1) Check compressed air system upstream of dryer 2) Check compressed air system upstream of dryer 3) Check compressed air system upstream of dryer
HIGH INLET PRESSURE	203	Rules: • Warn if the Inlet Pressure is at or above the setting for 5 minutes • Active only while dryer is running • The Warning can be disabled or set from the User setting screen • Automatically resets if the pressure falls below the set point for 5 minutes • Pressing alarm reset will reset the alarm and alarm timer Causes: 1) Plant air output pressure set too high	1) Check plant compressed air system
SERVICE TIMER WARNING	209	Rules: • Timer will count down for the number of days set in the timer setting (default is 180 days, 1 to 365 days) • Setting and Reset are accesses from the Service Screen • Timer can be disabled • Days setting range is 1 to 365 days Causes: 1) Refer to Maintenance Schedule section of this user guide	
COMPRESSOR OIL LEVEL	221-224	Rules: • Monitor normally closed contacts of the Oil Management Module (located on compressor sightglass area) • Warning if contacts from Oil Management Module opens for 2 seconds • Warning automatically resets when contacts close • The Oil MonitoringSystem is enabled from theAdvanced Settings screen • The warning can be manually reset from the main screen Causes: 1) Low oil level in the compressor	1a) GREEN - Power is present at the module 1b) YELLOW - Float sensor has determined that the oil level is below 1/2 sightglass for 10 seconds and fill solenoid has been activated 1c) RED (continously lit) - Oil level has remained below 1/2 sightglass for over 2 minutes after fill solenoid has been active. This alarm will remain active until oil level reaches 1/2 sightglass and automatically resets 1d) RED (flashing) - There have been 5 auto reset alarms withing a 30 minute period. Alarm contact will remain active until the power to the module is manually removed and re-attached.

Alarm (100's) / Warning (200's)	Fault Code	Rules & Causes	Possible Remedy
AUXILIARY ANALOG INPUT WARNING	231-236	Rules: • There are 2 separate auxiliary 4-20mA inputs for connecting flow meters or other user devices. • Refer to User Sensor Settings screen for enabling, set points, ranges, etc. Causes: 1) Input is less than 3.2mA	

7.1. General Service / Troubleshooting

Evaporator Leaks

- If there is a leak between the tube and shell side of the evaporator, the usual symptom is high head pressure, because the air pressure is higher than the refrigerant pressure.
- To determine this, bypass airflow, stop dryer, and observe head pressure after it stabilizes. 20 minutes is sufficient. If the pressure is much higher than that corresponding to the ambient temperature, there is air in the system. Purge air at compressor discharge or receiver inlet to verify.
- Gross leak checking of the evaporator is done at the separator drain with air pressure off and at least an hour wait. If a leak is verified, it can often be fixed by removing the bonnets, locating the leak with bubble soap and re-rolling the leaky tubes. Split evaporator tubes can be plugged with special tapered brass plugs.

Oil Management Mode

- This is an optional feature that will help eliminate nuisance low oil pressure trips in constant low load situations. This feature is set to "ON" from the factory but can be turned off by the user decides not to use this feature. It can be turned enabled/disabled factory settings.
- When this mode is active it will ensure that the refrigerant level is raised to a sufficient level in the surge tank to ensure oil return to the compressor when the controller notices periods of constant low load. The controller will monitor the load and if it has not calculated load to be 100% for at least 60 seconds in the last 30 minutes it will activate. Once activated the display will show "Oil Management Mode" and then the refrigeration compressor will cycle off and wait for the dewpoint to rise to 50°F or the set point plus 10°F (whichever is greater). Once the system reaches the 50°F or set point plus 10°F it will start the compressor. During the restart the display will continue to say "Oil Management Mode" until either the dewpoint bottoms out and begins to rise again or the compressor turns off as it would in standard mode.
- During start-up or when dryer has been turned off and is being re-started this mode will prevent the compressor from running with low oil for more than two minutes after the system has been turned back on. Instead it times out after two minutes and forces the dryer into "Oil Management Mode" as described above.

Refrigerant System Isolation

- There are numerous isolation valves throughout the refrigeration system that will allow you to isolate components and only have to reclaim a small section of the refrigeration system. In most situations reclaiming the entire charge is NOT necessary and will not be covered under warranty.

7.2. Refrigerant Charging Procedure

Only qualified, experienced and certified refrigeration technicians should do repair work on these units. This section is a list of hints and instructions for the skilled serviceman and relating specifically to the Parker MSC refrigeration system. Recharging Dryer – Refrigerant, Oil and filter-dryers Refer to the dryer information tag on the front of the unit for the approximate charge needed for each unit. The relatively large charge is needed because of the flooded-shell evaporators. Use the following to assess the adequacy of the charge when unsure:

- The first check for proper charge is the surge tank (horizontal vessel on top of the Evaporator) sightglass (located on the end cap of the Surge Tank, NOT the sightglass near the TXV). It should $\frac{1}{4}$ to $\frac{3}{4}$ full during a loaded state. This is an indication that the unit is not undercharged but it could still be overcharged if you are experiencing high head pressure alarms.
- Because of the widely fluctuating pressures occurring when the MSC system unloads, it is impractical to use pressures or liquid line sight glass indications to determine correct charge. Gross undercharge results in a hot suction line and overheated compressor. Gross overcharge is indicated if the discharge and suction pressure rises greatly when the unit is loaded. Remember to clean the condenser before deciding on the charge.
- The liquid line sight glass should stay filled most of the time when the dryer is at or near full load. It is normal for the glass to break up when the condenser fan starts, when the load is light or when the unit (or cylinder head) unloads. It may take time to refill when it reloads. Do NOT charge to clear the glass; that will be too much.

Do not charge vapor. The charge should be installed as quickly as possible so oil is return to the compressor in a timely manner.

- If the system is short on refrigerant the it must be checked for leaks and repaired as necessary.
- Replace liquid filter-dryer whenever the system has been opened for service or exposed to air or water.
- If the system was repaired and or a section isolated and repaired it must be pulled into a vacuum (500 micron minimum) before charging refrigerant.
- All units have a charging fitting on the evaporator shell. The unit must be charged through this fitting and/or the liquid line service valve. The best way is to dump liquid into both ports with the dryer off, then start up and continue feeding a full stream of liquid into the evaporator until charged.
- Additional oil is added at the factory to compensate for the migration with the refrigerant. If a compressor is replaced, remove the drain plug from the evaporator shell to drain any excess oil trapped. If that isn't possible, it may be necessary to remove oil from the system after start-up. Excess oil is indicated by noisy and vibrating compressor operation. If a replacement evaporator is installed, oil should be added. Prolonged operation with insufficient charge or a bad TEV may cause oil to be trapped in the evaporator. If the compressor is still good, this oil will return within a few minutes of operation with the correct conditions. For R-134 or R404a applications use EMKARATE RL 32-3MAF, 150 SUS (ISO 32) (or equal) synthetic POE refrigeration oil.
- **Note:** 4000 SCFM & up: A complaint of pressure tripping only on start-up is usually due to air through the dryer when it is shut down or low cooling pressure rather than overcharge. This causes refrigerant to migrate backwards from the evaporator and overfill the high side of the system.

8. Technical Data

MSC-P Dryers (Standard MSC Dryers)

Water Cooled models

Model	Electrical	Compressor				Fan Motor			Dryer Only		Remote Condenser Only	
	V / Ph /Hz	Qty	HP	RLA	LRA	Qty	FLA	HP	MCA	Max. Fuse	MCA	Max. Fuse
MSC4000-W4P	460/3/60	1	22	37.2	176	N/A	N/A	N/A	47.5	70	N/A	N/A
MSC5000-W4P	460/3/60	1	25	44.0	218	N/A	N/A	N/A	56.0	90	N/A	N/A
MSC6000-W4P	460/3/60	1	30	51.2	245	N/A	N/A	N/A	65.0	110	N/A	N/A
MSC8000-W4P	460/3/60	1	40	73.9	350	N/A	N/A	N/A	93.4	150	N/A	N/A
MSC10000-W4P	460/3/60	1	50	96.2	425	N/A	N/A	N/A	121.3	175	N/A	N/A
MSC12500-W4P	460/3/60	2	33	53.2	275	N/A	N/A	N/A	120.7	150	N/A	N/A
MSC15000-W4P	460/3/60	2	35	64.4	275	N/A	N/A	N/A	145.9	200	N/A	N/A

Model	Refrigerant charge	Ambient Temperature*	Air Inlet Temperature*	Cooling Water Temperature*	Cooling Water Req'd. @ 85 F	Condenser Heat Rejection	MAWP	Connections		
	Lbs	Min./Max.	Min./Max.	Min./Max.	GPM	Btu/Hr		Air in/out	Water in/out	Drain
MSC4000-W4P	160	41-115°F (5-45°C)	41-131°F (5-55°C)	50-95°F (10-35°C)	56	249000	50-150 psig (3.5-10.3 barg)	8" FLG.	1 1/2"	1/2"
MSC5000-W4P	260				67	318000		8" FLG.	2"	
MSC6000-W4P	280				60	333000		8" FLG.	2"	
MSC8000-W4P	340				110	487000		10" FLG.	2 1/2"	
MSC10000-W4P	400				105	604000		10" FLG.	2 1/2"	
MSC12500-W4P	400				125	730000		12" FLG.	2 1/2"	
MSC15000-W4P	600				170	840000		12" FLG.	2 1/2"	

*Dryer capacity decreases as ambient temperature increases above 100°F (38°C) and or inlet temperature increases above 100°F (38°C). See DRYER CORRECTION FACTORS.

Air Cooled models

Model	Electrical	Compressor				Fan Motor			Dryer Only		Remote Condenser Only	
	V / Ph /Hz	Qty	HP	RLA	LRA	Qty	FLA	HP	MCA	Max. Fuse	MCA	Max. Fuse
MSC4000-A4P	460/3/60	1	25	44	218	2	7	1.5	56.0	90	15	15
MSC5000-A4P	460/3/60	1	30	51.2	245	2	7	1.5	65.0	110	15	15
MSC6000-A4P	460/3/60	1	35	64.4	275	2	7	1.5	81.5	125	15	15
MSC8000-A4P	460/3/60	1	50	96.2	425	3	10.5	1.5	121.3	175	15	20
MSC10000-A4P	460/3/60	2	30	51.2	245	4	14	1.5	116.2	150	15	20
MSC12500-A4P	460/3/60	2	35	64.4	275	6	21	1.5	145.9	200	21.9	30
MSC15000-A4P	460/3/60	2	40	73.9	350	6	21	1.5	167.3	225	21.9	30

Model	Refrigerant charge	Ambient Temperature*	Air Inlet Temperature*	Condenser Heat Rejection	MAWP	Connections	
	Lbs	Min./Max.	Min./Max.	Btu/Hr	Min./Max.	Air in/out	Drain
						150# RF Ansi Flg.	FNPT
MSC4000-A4P	160	41-115°F (5-45°C)	41-131°F (5-55°C)	261000	50-150 psig (3.5-10.3 barg)	8" FLG.	1/2"
MSC5000-A4P	260			311000		8" FLG.	
MSC6000-A4P	280			385000		8" FLG.	
MSC8000-A4P	340			549000		10" FLG.	
MSC10000-A4P	400			612000		10" FLG.	
MSC12500-A4P	400			788000		12" FLG.	
MSC15000-A4P	600			924000		12" FLG.	

*Dryer capacity decreases as ambient temperature increases above 100°F (38°C) and or inlet temperature increases above 100°F (38°C). See DRYER CORRECTION FACTORS.

MSC-PV Dryers (Standard MSC Dryers with Variable Speed Drive Option)

Water Cooled models

Model	Electrical	Compressor				Fan Motor			Dryer Only		Remote Condenser Only	
	V / Ph /Hz	Qty	HP	RLA	LRA	Qty	FLA	HP	MCA	Max. Fuse	MCA	Max. Fuse
MSC4000-W4PV	460/3/60	1	15	27.1	147	N/A	N/A	N/A	34.9	60	N/A	N/A
MSC5000-W4PV	460/3/60	1	22	37.2	176	N/A	N/A	N/A	47.5	70	N/A	N/A
MSC6000-W4PV	460/3/60	1	25	44.0	218	N/A	N/A	N/A	56.0	90	N/A	N/A
MSC8000-W4PV	460/3/60	1	35	64.4	275	N/A	N/A	N/A	81.5	125	N/A	N/A
MSC10000-W4PV	460/3/60	1	40	73.9	350	N/A	N/A	N/A	93.4	150	N/A	N/A
MSC12500-W4PV	460/3/60	1	50	96.2	425	N/A	N/A	N/A	121.3	200	N/A	N/A
MSC15000-W4PV	460/3/60	2	33	53.2	275	N/A	N/A	N/A	120.7	150	N/A	N/A

Model	Refrigerant charge	Ambient Temperature*	Air Inlet Temperature*	Cooling Water Temperature*	Cooling Water Req'd. @ 85°F	Condenser Heat Rejection	MAWP	Connections		
	Lbs	Min./Max.	Min./Max.	Min./Max.	GPM	Btu/Hr	Min./Max.	Air in/out	Water in/out	Drain
MSC4000-W4PV	160	41-115°F (5-45°C)	41-131°F (5-55°C)	50-95°F (10-35°C)	65	212000	50-150 psig (3.5-10.3 barg)	8" FLG.	1 1/2"	1/2"
MSC5000-W4PV	260				65	276000		8" FLG.	2"	
MSC6000-W4PV	280				75	297000		8" FLG.	2"	
MSC8000-W4PV	340				84	442000		10" FLG.	2 1/2"	
MSC10000-W4PV	450				118	524000		10" FLG.	2 1/2"	
MSC12500-W4PV	400				163	633000		12" FLG.	2 1/2"	
MSC15000-W4PV	490				176	748000		12" FLG.	2 1/2"	

*Dryer capacity decreases as ambient temperature increases above 100°F (38°C) and or inlet temperature increases above 100°F (38°C). See DRYER CORRECTION FACTORS.

Air Cooled models

Model	Electrical	Compressor				Fan Motor			Dryer Only		Remote Condenser Only	
	V / Ph /Hz	Qty	HP	RLA	LRA	Qty	FLA	HP	MCA	Max. Fuse	MCA	Max. Fuse
MSC4000-A4PV	460/3/60	1	20	33.2	176	2	3.5	1.5	42.5	70	15	15
MSC5000-A4PV	460/3/60	1	25	44	218	2	3.5	1.5	56.0	90	15	15
MSC6000-A4PV	460/3/60	1	30	51.2	245	2	3.5	1.5	65.0	110	15	15
MSC8000-A4PV	460/3/60	1	40	73.9	350	3	3.5	1.5	93.4	150	15	20
MSC10000-A4PV	460/3/60	1	50	96.2	425	3	3.5	1.5	121.3	175	15	20
MSC12500-A4PV	460/3/60	2	33	53.2	275	4	3.5	1.5	120.7	150	21.9	30
MSC15000-A4PV	460/3/60	2	35	64.4	275	6	3.5	1.5	145.9	200	21.9	30

Model	Refrigerant charge	Ambient Temperature*	Air Inlet Temperature*	Condenser Heat Rejection	MAWP	Connections	
	Lbs	Min./Max.	Min./Max.	Btu/Hr	Min./Max.	Air in/out	Drain
						150# RF Ansi Flg.	FNPT
MSC4000-A4PV	160	41-115°F (5-45°C)	41-131°F (5-55°C)	226000	50-150 psig (3.5-10.3 barg)	8" FLG.	1/2"
MSC5000-A4PV	260			296000		8" FLG.	
MSC6000-A4PV	280			313000		8" FLG.	
MSC8000-A4PV	340			451000		10" FLG.	
MSC10000-A4PV	450			568000		10" FLG.	
MSC12500-A4PV	400			684000		12" FLG.	
MSC15000-A4PV	490			814000		12" FLG.	

*Dryer capacity decreases as ambient temperature increases above 100°F (38°C) and or inlet temperature increases above 100°F (38°C). See DRYER CORRECTION FACTORS.

9. Spare Parts Lists

MSC-P Spare Parts List

Replacement parts	Model						
	MSC4000-*4P	MSC5000-*4P	MSC6000-*4P	MSC8000-*4P	MSC10000-*4P	MSC12000-*4P	MSC15000-*4P
Refrigerant compressor							
460V-3PH-60Hz (W/C)	DP16297-404-2	DP16298-404-1	DP16300-404-1	DP16303-404-1	DP16305-404-1	(x2) DP16302-404-1	(x2) DP16301-404-1
460V-3PH-60Hz (A/C)	DP16298-404-1	DP16300-404-1	DP16301-404-1	DP16305-404-1	(x2) DP16300-404-1	(x2) DP16301-404-1	(x2) DP16303-404-1
Compressor accessories							
Compressor unloader valve (W/C)	DP16303-S	DP16303-S	DP16303-S	(x2) DP16303-S	(x2) DP16303-S	(x4) DP16303-S	(x4) DP16303-S
Compressor unloader valve (A/C)	DP16303-S	DP16303-S	(x2) DP16303-S	(x2) DP16303-S	(x4) DP16303-S	(x4) DP16303-S	(x4) DP16303-S
Compressor unloader coil (W/C)	DP16303-CN4	DP16303-CN4	DP16303-CN4	(x2) DP16303-CN4	(x2) DP16303-CN4	(x4) DP16303-CN4	(x4) DP16303-CN4
Compressor unloader coil (A/C)	DP16303-CN4	DP16303-CN4	(x2) DP16303-CN4	(x2) DP16303-CN4	(x4) DP16303-CN4	(x4) DP16303-CN4	(x4) DP16303-CN4
Crankcase heater	DP16303-E	DP16303-E	DP16303-E	DP16303-E	DP16303-E	DP16303-E	
Refrigerant condenser							
Air-cooled	DP205-21-10	DP205-31-1	DP205-31-1	DP205-40-14	CF	CF	CF
Water-cooled	DP20135-1	DP20136-1	DP20141	DP20150-1	DP20160	DP20180-1	DP20170-A
Refrigerant relief valve (W/C)	DP20125-A	DP20125-A	DP20125-A	DP20125-A	DP20125-A	DP20125-A	DP20125-A
Refrigerant relief valve (A/C)	DP20125-A1	DP20125-A1	DP20125-A1	DP20125-A1	DP20125-A1	DP20125-A1	DP20125-A1
Fan motor	(x2) DP205-21-1M-1	(x2) DP205-21-1M-1	(x2) DP205-21-1M-1	(x3) DP205-21-1M-1	(x4) DP205-21-1M-1	(x6) DP205-21-1M-1	(x6) DP205-21-1M-1
Fan blade	(x2) DP205-21-1B	(x2) DP205-21-1B	(x2) DP205-21-1B	(x3) DP205-21-1B	(x4) DP205-21-1B	(x6) DP205-21-1B	(x6) DP205-21-1B
Water regulating valve	DP38125	DP38126	DP38126	DP38127	DP38127	DP38127-1	DP38127-1
Suction valve repair kit (W/C)	DP32126-H-RK	DP36163-2-RK	DP36163-2-RK	DP36164-2-1-RK	DP36164-2-1-RK	DP36164-2-1-RK	DP36164-2-1-RK
Suction valve repair kit (A/C)	DP36163-2-RK	DP36163-2-RK	DP36164-2-RK	DP36164-2-RK	DP36164-2-RK	DP36164-2-RK	CF
Suction valve coil (W/C)	DP32301	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL
Suction valve coil (A/C)	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL
Liquid line valve (W/C)	DP32110-H-RK	DP32110-H-RK	DP32110-H-RK	DP32121	DP32125-1	DP32125-1	DP32126-H
Liquid line valve (A/C)	DP32110-H-RK	DP32110-H-RK	DP32115-H-RK	DP32125-1	DP32125-1	CF	CF
Liquid line valve coil (W/C)	DP32301	DP32301	DP32301	DP32084-C	DP32084-C	DP32084-C	DP32301
Liquid line valve coil (A/C)	DP32301	DP32301	DP32301	DP32084-C	DP32084-C	CF	CF
Unloader valve (W/C)	DP32115-H-RK	DP32115-H-RK	DP32115-H-RK	DP32125-1	DP32125-1	DP32115-H-RK	DP32115-H-RK
Unloader valve (A/C)	DP32115-H-RK	DP32115-H-RK	DP32115-H-RK	DP32125-1	CF	CF	CF
Unloader valve coil (W/C)	DP32301	DP32301	DP32301	DP32084-C	DP32084-C	DP32301	DP32301

Replacement parts	Model						
	MSC4000-*4P	MSC5000-*4P	MSC6000-*4P	MSC8000-*4P	MSC10000-*4P	MSC12000-*4P	MSC15000-*4P
Unloader valve coil (A/C)	DP32301	DP32301	DP32301	DP32084-C	CF	CF	CF
Suction line exchanger (W/C)	DP484000	DP485500		DP488000-1	DP4812500	DP4815000	DP4816000-2-F
Suction line exchanger (A/C)	DP485500		DP488000-1	DP4812500	CF	CF	CF
Thermal expansion valve (W/C)	DP33015-4	DP33020-4	DP33025-4	DP33030-4	DP33038-4	DP33050-4	DP33070-4
Thermal expansion valve (A/C)	DP33020-4	DP33020-4	DP33025-4	DP33038-4	CF	CF	CF
Check Valve (W/C)	DP24105			DP24106	DP24107	DP24107-1	
Check Valve (A/C)	DP24105		DP24106	DP24107		DP24107-1	CF
Check Valve [receiver] (A/C)	DP24105		DP24106	DP24107		CF	CF
Liquid line drier core (W/C)	(x2) DP28315-C					(x4) DP28315-C	
Liquid line drier core (A/C)	(x2) DP28315-C	(x2) DP28315-C	(x2) DP28315-C	(x4) DP28315-C	(x4) DP28315-C	(x4) DP28315-C	(x4) DP28315-C
Suction filter core (W/C)	DP28315-B		DP28315-B-A	DP28315-B		(x2) DP28315-B	(x2) DP28315-B
Suction filter core (A/C)	DP28315-B		DP28315-B-A	DP28315-B	(x2) DP28315-B		
Liquid line sightglass (W/C)	DP30115			DP30116	DP30117		
Liquid line sightglass (A/C)	DP30115		DP30116	DP30117			CF
Oil pressure switch	DP40130						
High/low Refrig. PSI switch	DP40210						
PLC	DP5300-PLC						
HMI	DP5300-HMI						
POWER SUPPLY	TP2500-PS-24LP						
FUSE, 1/8 AMP	EF0025-TD						
FUSE, 1 AMP	EF0100-2-TD						
FUSE, 2 AMP	EF0200-2-TD						
MEMORY CARD	TP268X-SD						
Input Module, NTC	2008SC-NTC						
Input Module, ANALOG	2080-IF4						
Output Module, ANALOG	2080-OF2						
Dew point temperature probe	DP5060-P18	DP5060-P24	DP5060-P30-2	DP5060-P30-1			
Dew point probe cable	DP5060-C20						
Air inlet pressure transducer	TP2451						
Air outlet pressure transducer	TP2451						
Refrig. suction PSI transducer	TP2456						
Refrig. discharge PSI transducer	TP2456						

MSC-P Spare Parts List

Replacement parts	Model						
	MSC4000-*4P	MSC5000-*4P	MSC6000-*4P	MSC8000-*4P	MSC10000-*4P	MSC12000-*4P	MSC15000-*4P
Air inlet temperature probe	DP5060-T15						
Air outlet temperature probe	DP5060-T15						
Ambient/water temp. sensor	DP5060-T15						
Refrig. suction temp. sensor	DP5060-T15						
Refrig. liquid temp. sensor	DP5060-T15						
Drain level sensor (Lower Drain)	DP6060-S						
Drain control solenoid valve (Lower Drain)	TP8101-1P						
Drain valve, actuated ball valve (Lower Drain)	TP6605-5						
Drain level sensor (Upper Drain)	DP6060-S						
Drain valve (Upper Drain)	TP8005-1						
Valve strainer screen (Upper Drain)	KP5050						
Main disconnect switch (W/C)	ES3030			ES3050	ES3060	ES3060	ES3200
Main disconnect switch (A/C)	ES3030		ES3040	ES3060		ES3200	
Compressor starter / overload (W/C)	ES0022-1	ES0025-1	ES0030-1	ES0040-1	ES0050-1	(x2) ES0033-1	(x2) ES0035-1
Compressor starter / overload (A/C)	ES0025-1	ES0030-1	ES0035-1	ES0050-1	(x2) ES0030-1	(x2) ES0035-1	(x2) ES0040-1
Control transformer (460v/115v) (W/C)	ET0350					ET0750	
Control transformer (460v/115v) (A/C)	ET0350				ET0750		
Primary fuse for 460/115v transformer (W/C)	(x2) EF0200-TD					(x2) EF0400-TD	
Primary fuse for 460/115v transformer (A/C)	(x2) EF0200-TD				(x2) EF0400-TD		
Secondary fuse for 460/115v transformer (W/C)	EF0350-TD					EF0800-TD	
Secondary fuse for 460/115v transformer (A/C)	EF0350-TD				EF0800-TD		
Oil management solenoid (W/C)	DP45000-120V					(x2) DP45000-120V	
Oil management solenoid (A/C)	DP45000-120V				(x2) DP45000-120V		
Refrigerant oil separator element (W/C)	DP45020-E			DP45060-E			
Refrigerant oil separator element (A/C)	DP45020-E		DP45060-E				
Coalescing filter element	(x2) JE-C1600-30		(x3) JE-C1600-30	(x4) JE-C1600-30	(x3) JE-C2000-30	(x4) JE-C2000-30	(x3) JE-C3000-30

MSC-PV Spare Parts List

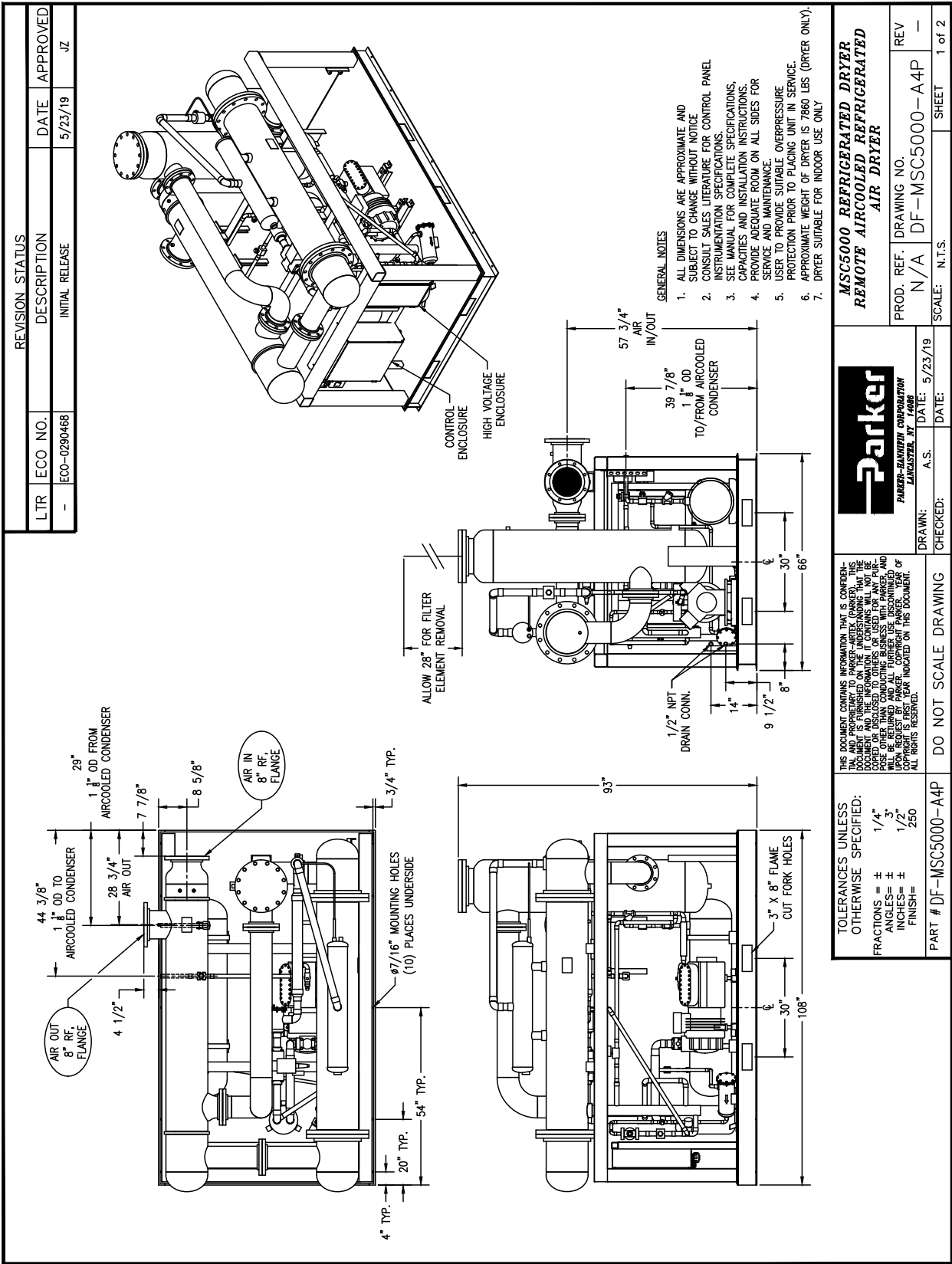
Replacement parts	Model						
	MSC4000-*4PV	MSC5000-*4PV	MSC6000-*4PV	MSC8000-*4PV	MSC10000-*4PV	MSC12000-*4PV	MSC15000-*4PV
Refrigerant compressor							
460V-3PH-60Hz (W/C)	DP16297-404-2	DP16298-404-1	DP16300-404-1	DP16303-404-1	DP16305-404-1	(x2) DP16302-404-1	(x2) DP16301-404-1
460V-3PH-60Hz (A/C)	DP16298-404-1	DP16300-404-1	DP16301-404-1	DP16305-404-1	(x2) DP16300-404-1	(x2) DP16301-404-1	(x2) DP16303-404-1
Compressor accessories							
Compressor unloader valve (W/C)	DP16296-S	DP16303-S	DP16303-S	(x2) DP16303-S	(x2) DP16303-S	(x2) DP16303-S	(x4) DP16303-S
Compressor unloader valve (A/C)	DP16303-S	DP16303-S	(x2) DP16303-S	(x2) DP16303-S	(x4) DP16303-S	(x4) DP16303-S	(x4) DP16303-S
Compressor un-loader coil (W/C)	DP16303-CN4	DP16303-CN4	DP16303-CN4	(x2) DP16303-CN4	(x2) DP16303-CN4	(x2) DP16303-CN4	(x4) DP16303-CN4
Compressor un-loader coil (A/C)	DP16303-CN4	DP16303-CN4	DP16303-CN4	(x2) DP16303-CN4	(x2) DP16303-CN4	(x4) DP16303-CN4	(x4) DP16303-CN4
Crankcase heater	DP16296-E	DP16303-E	DP16303-E	DP16303-E	DP16303-E	DP16303-E	DP16303-E
Motor protection module	DP16298-MP	DP16298-MP	DP16298-MP	DP16298-MP	DP16298-MP	DP16298-MP	DP16298-MP
Refrigerant condenser							
Air-cooled	DP205-21-2	DP205-21-14	DP205-31-1	TBD	TBD	TBD	TBD
Water-cooled	DP20135-2	DP20135-2	DP20136-1B	DP20150-1B	DP20155-B	DP20160-B	DP20180-1B
Refrigerant relief valve (W/C)	DP20125-A	DP20125-A	DP20125-A	DP20125-A	DP20125-A	DP20125-A	DP20125-A
Refrigerant relief valve (A/C)	DP20125-A1	DP20125-A1	DP20125-A1	DP20125-A1	DP20125-A1	DP20125-A1	DP20125-A1
Fan motor	(x2) DP205-21-1M-1	(x2) DP205-21-1M-1	(x2) DP205-21-1M-1	(x3) DP205-21-1M-1	(x3) DP205-21-1M-1	(x4) DP205-21-1M-1	(x6) DP205-21-1M-1
Fan blade	(x2) DP205-21-1B	(x2) DP205-21-1B	(x2) DP205-21-1B	(x3) DP205-21-1B	(x3) DP205-21-1B	(x4) DP205-21-1B	(x6) DP205-21-1B
Water regulating valve	DP38125	DP38126	DP38126	DP38127	DP38127	CF	CF
Suction valve repair kit (W/C)	DP32126-1	DP36163-2	DP36163-2	DP36164-2-1	DP36164-2-1	DP36164-2-1SOC-F	CF
Suction valve repair kit (A/C)	DP32126-1	DP36163-2	DP36163-2	DP36164-2-1	DP36164-2-1SOC-F	CF	CF
Suction valve coil (W/C)	DP32084-C	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL
Suction valve coil (A/C)	DP32084-C	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL	DP3616-COIL
Liquid line valve (W/C)	DP32110-H	DP32110-H	DP32110-H	DP32121	CF	CF	CF
Liquid line valve (A/C)	DP32110-H	DP32110-H	DP32110-H	DP32125-1	CF	CF	CF
Liquid line valve coil (W/C)	DP32301	DP32301	DP32301	DP32084-C	CF	CF	CF
Liquid line valve coil (A/C)	DP32301	DP32301	DP32301	DP32084-C	CF	CF	CF
Suction line heat exchanger (W/C)	DP483000-3	DP485500	DP485500	DP488000-1	DP488000-1	DP4812500	CF
Suction line heat exchanger (A/C)	DP484000	DP485500	DP485500	DP488000-1	CF	CF	CF
Level master expansion valve (W/C)	DP33012-4	DP33020-4	DP33020-4	DP33025-4	DP33038-4	DP33050-4	CF
Level master expansion valve (A/C)	DP33015-4	DP33020-4	DP33025-4	DP33038-4	DP33050-4	DP33050-4	CF

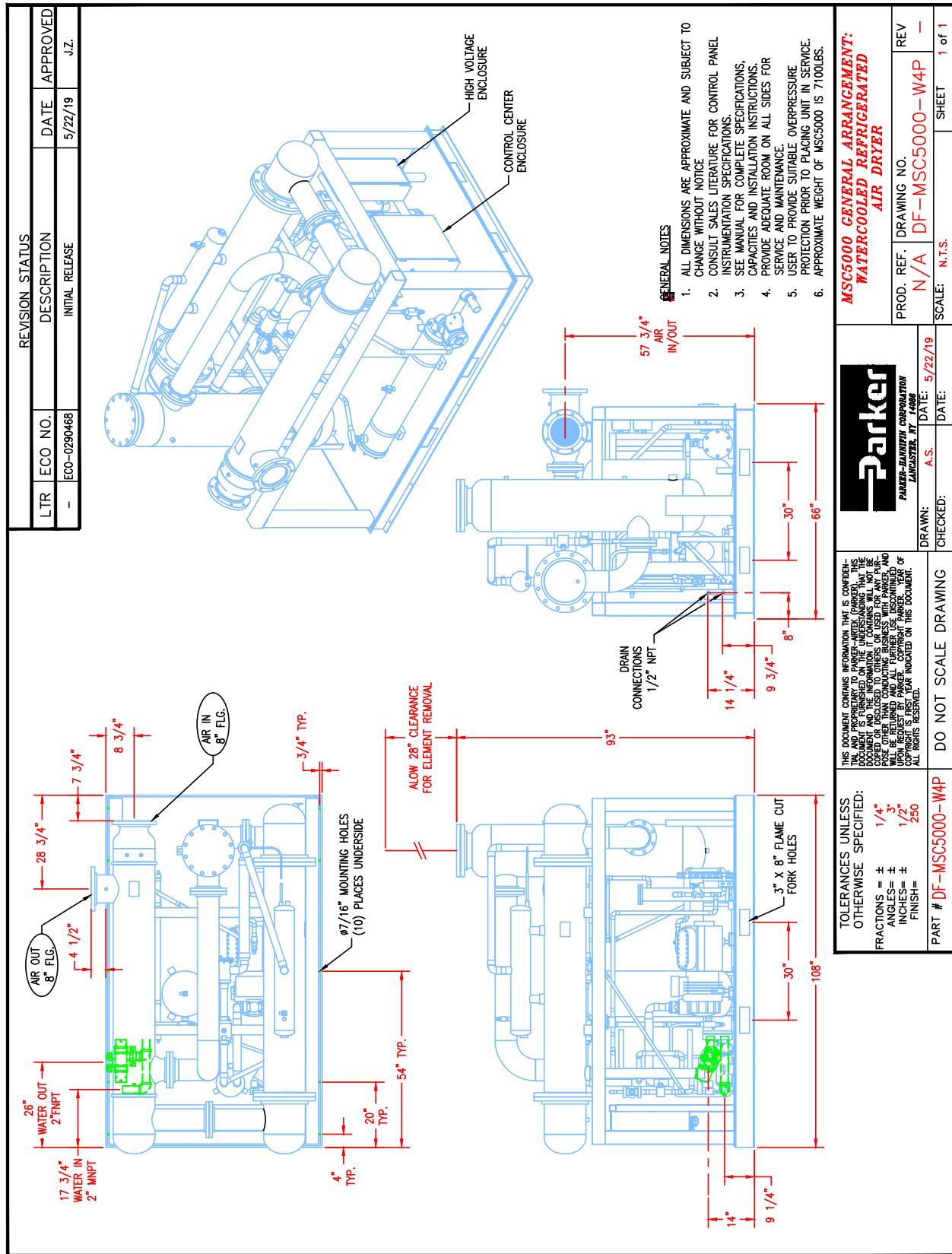
MSC-PV Spare Parts List

Replacement parts	Model						
	MSC4000-*4PV	MSC5000-*4PV	MSC6000-*4PV	MSC8000-*4PV	MSC10000-*4PV	MSC12000-*4PV	MSC15000-*4PV
Check Valve (W/C)	DP24105			DP24106	CF	CF	CF
Check Valve (A/C)	DP24105			DP24106	CF	CF	CF
Liquid line drier core (W/C)						(x4) DP28315-C	
Liquid line drier core (A/C)	(x2) DP28315-C				(x4) DP28315-C		
Suction filter core (W/C)	DP28315-B						(x2) DP28315-B
Suction filter core (A/C)	DP28315-B					(x2) DP28315-B	
Liquid line sightglass (W/C)	DP30115			DP30116		CF	CF
Liquid line sight-glass (A/C)	DP30115			DP30116	DP30117	CF	CF
Oil pressure switch	DP40130						
High/low Refrig. PSI switch	DP40210						
PLC	DP5300-PLC						
HMI	DP5300-HMI						
POWER SUPPLY	TP2500-PS-24LP						
FUSE, 1/8 AMP	EF0025-TD						
FUSE, 1 AMP	EF0100-2-TD						
FUSE, 2 AMP	EF0200-2-TD						
MEMORY CARD	TP2681-MEM						
Input Module, NTC	2008SC-NTC						
Input Module, ANALOG	2080-IF4						
Output Module, ANALOG	2080-OF2						
Dew point temperature probe	DP5060-P18	DP5060-P24	DP5060-P30-2	DP5060-P30-1	DP5060-P30-1	DP5060-P30-1	DP5060-P30-1
Dew point probe cable	DP5060-C20						
Air inlet pressure transducer	TP2451						
Air outlet pressure transducer	TP2451						
Refrig. suction PSI transducer	TP2456						
Refrig. discharge PSI transducer	TP2456						
Air inlet temperature probe	DP5060-T15						
Air Outlet temperature probe	DP5060-T15						
Ambient/water temp. sensor	DP5060-T15						
Refrig. suction temp. sensor	DP5060-T15						
Refrig. liquid temp. sensor	DP5060-T15						

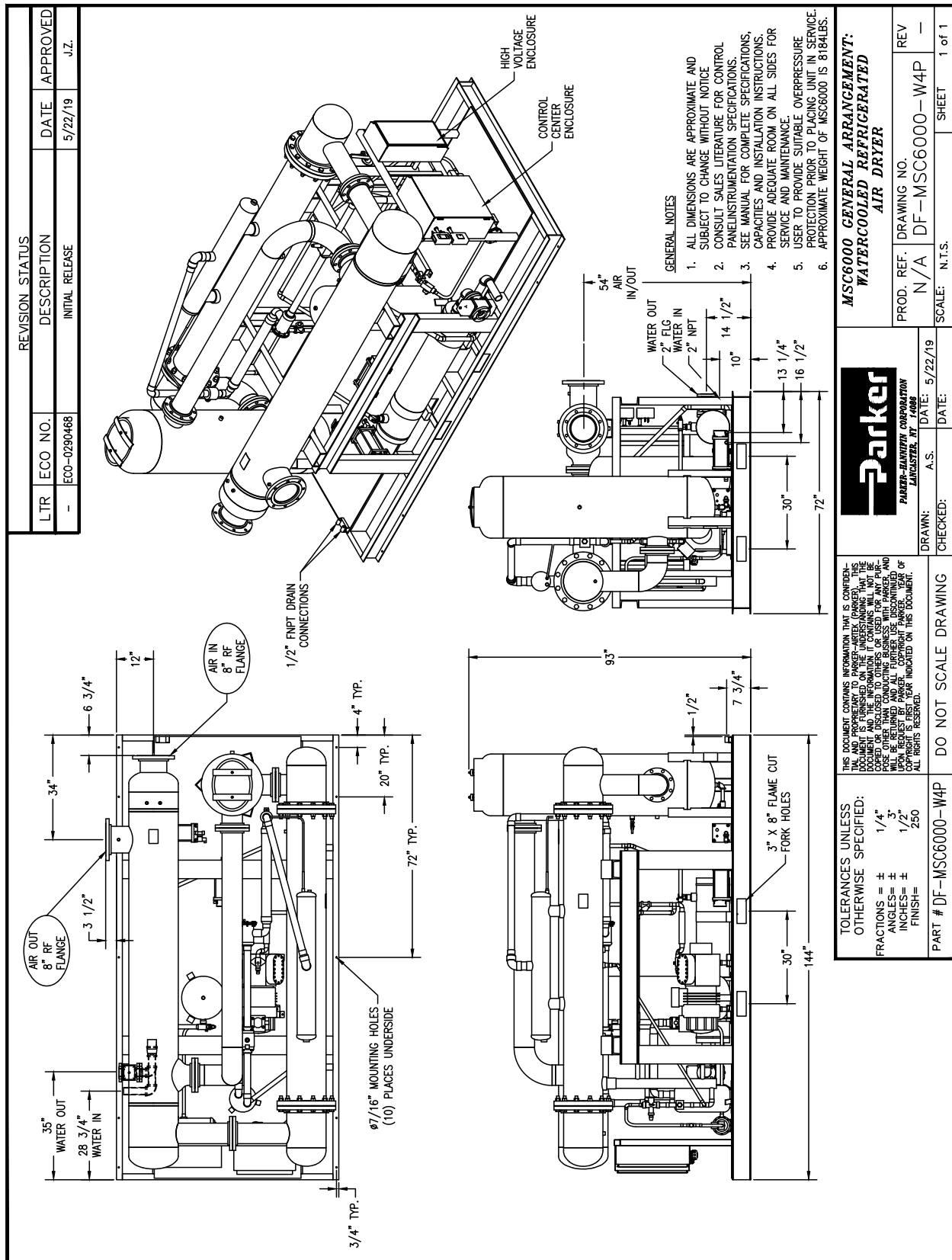
Replacement parts	Model						
	MSC4000-*4PV	MSC5000-*4PV	MSC6000-*4PV	MSC8000-*4PV	MSC10000-*4PV	MSC12000-*4PV	MSC15000-*4PV
Drain level sensor (Lower Drain)	DP6060-S					TBD	TBD
Drain control solenoid valve (Lower Drain)	TP8101-1P					TBD	TBD
Drain valve, actuated ball valve (Lower Drain)	TP6605-5						
Drain level sensor (Upper Drain)	DP6060-S					TBD	TBD
Drain valve (Upper Drain)	TP8005-1					TBD	TBD
Valve strainer screen (Upper Drain)	KP5050					TBD	TBD
Main disconnect switch (W/C)	ES3030			ES3040	ES3050	ES3060	
Main disconnect switch (A/C)	ES3030			ES3050	ES3060		ES3200
Variable Speed Drive (W/C)	EV0015-D-1	EV0300-1	EV0350-1	EV0400-1	TBD	TBD	(x2) EV0350-1
Variable Speed Drive (A/C)	EV0020-D-1	EV0350-1	EV0350-1	TBD	TBD	(x2) EV0350-1	
Control transformer (460v/115v) (A/C & W/C)	ET0350					ET0750	
Primary fuse for 460/115v transformer (A/C & W/C)	(x2) EF0200-TD					(x2) EF0400-TD	
Secondary fuse for 460/115v transformer (A/C & W/C)	EF0350-TD					EF0800-TD	
Oil management solenoid (W/C)	DP4500-120V						(x2) DP45000-120V
Oil management solenoid (A/C)	DP4500-120V					(x2) DP45000-120V	
Refrigerant oil separator element (W/C)	DP45020-E						
Refrigerant oil separator element (A/C)	DP45020-E						
Coalescing filter element	(x2) JE-C1600-30		(x3) JE-C1600-30	(x4) JE-C1600-30	(x3) JE-C2000-30	(x4) JE-C2000-30	(x3) JE-C3000-30







[illegible]



REVISION STATUS

LTR	ECO NO.	DESCRIPTION	DATE	APPROVED
-	ECO-0290468	INITIAL RELEASE	5/23/19	J.Z.

144"

35 3/8"

10 1/8"

12"

3 1/2"

AIR OUT 10" RF FLANGE

AIR IN 10" RF FLANGE

72"

4" TYP.

20" TYP.

72" TYP.

Ø7/16" MOUNTING HOLES (10) PLACES UNDERSIDE

ALLOW 28" FOR FILTER ELEMENT REMOVAL

95"

30"

3" X 8" FORK HOLES

7 7/8"

1/2"

54 7/8"

3 1/4" TYP.

13"

1/2" FNPT DRAIN CONNECTIONS

CONTROL ENCLOSURE

HIGH VOLTAGE ENCLOSURE

GENERAL NOTES

1. ALL DIMENSIONS ARE APPROXIMATE AND SUBJECT TO CHANGE WITHOUT NOTICE
2. CONSULT SALES LITERATURE FOR CONTROL PANEL
3. SEE MANUAL FOR COMPLETE SPECIFICATIONS, CAPACITIES AND INSTALLATION INSTRUCTIONS.
4. PROVIDE ADEQUATE ROOM ON ALL SIDES FOR SERVICE AND MAINTENANCE.
5. USER TO PROVIDE SUITABLE OVERPRESSURE PROTECTION PRIOR TO PLACING UNIT IN SERVICE.
6. APPROXIMATE WEIGHT OF MSC8000 IS 7525 LBS (DRYER ONLY).
7. REMOTE AIR CONDENSOR NOT SHOWN.
8. DRYER SUITABLE FOR INDOOR USE ONLY

MSC8000 GENERAL ARRANGEMENT
REMOTE AIRCOOLED REFRIGERATED
AIR DRYER

Parker
PARKER-HANFMAN CORPORATION
LANCASTER, NY 14086

DRAWN: A.S. DATE: 5/23/19
CHECKED: DATE:

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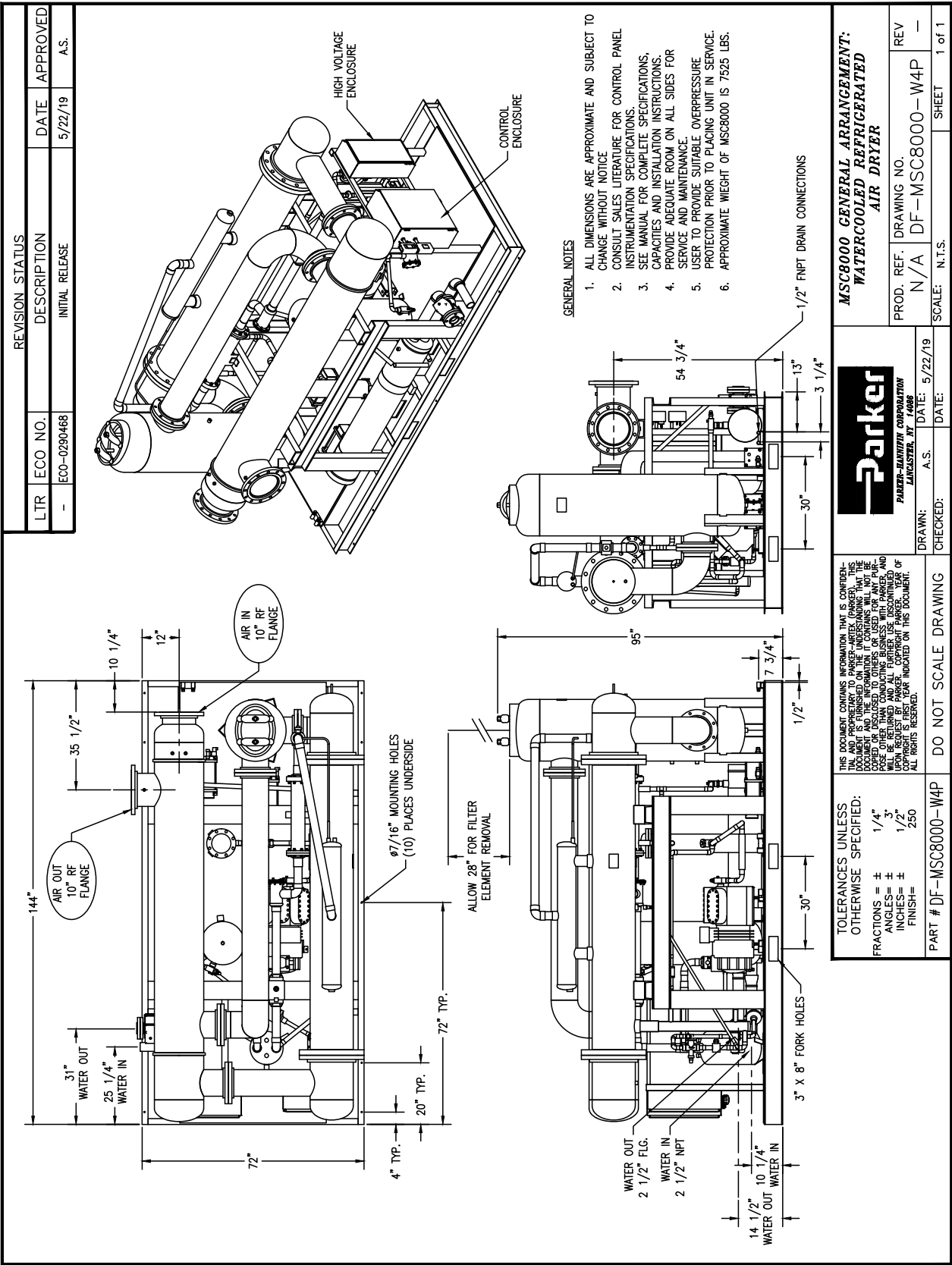
TOLERANCES UNLESS OTHERWISE SPECIFIED:
FRACTIONS = ± 1/4"
ANGLES = ± 3"
INCHES = ± 1/2"
FINISH = 250

PART # DF-MSC8000-A4P

DO NOT SCALE DRAWING

PROD. REF. N/A DRAWING NO. DF-MSC8000-A4P REV -

SCALE: N.T.S. SHEET 1 OF 2



65 3/8"

1 1/8" REFRIG. LINE FROM CONDENSER

43 3/8" REFRIG. LINE TO CONDENSER

1 1/8" REFRIG. LINE TO CONDENSER

1 1/8" REFRIG. LINE FROM CONDENSER

1/2" NPT DRAIN CONN.

9 1/2" AIR IN

3" x 8" FLAME CUT FORK HOLES

108"

30"

95"

57 3/4" AIR IN/OUT

42 7/8" REFRIG. LINE TO CONDENSER

35" REFRIG. LINE FROM CONDENSER

1 1/2" NPT DRAIN CONN.

10 7/8"

4" TYP.

20" TYP.

54" TYP.

3/4" TYP.

10 7/8"

4 1/8"

25"

2 1/4"

AIR OUT 8" RF. FLANGE

AIR IN 8" RF. FLANGE

Ø7/16" MOUNTING HOLES (10) PLACES UNDERSIDE

CONTROL PANEL ENCLOSURE

HIGH VOLTAGE ENCLOSURE

ALLOW 28" FOR FILTER ELEMENT REMOVAL

GENERAL NOTES

1. ALL DIMENSIONS ARE APPROXIMATE AND SUBJECT TO CHANGE WITHOUT NOTICE.
2. CONSULT SALES LITERATURE FOR CONTROL PANEL INSTRUMENTATION SPECIFICATIONS.
3. CAPACITIES ARE BASED ON 100% RELATIVE HUMIDITY, 70°F DRY BULB TEMPERATURE, AND 30" MERCURY BAROMETRIC PRESSURE. CAPACITIES AND INSTALLATION INSTRUCTIONS, PROVIDE ADEQUATE ROOM ON ALL SIDES FOR USER TO PROVIDE MAINTENANCE.
4. PROVIDE ADEQUATE ROOM ON ALL SIDES FOR USER TO PROVIDE MAINTENANCE.
5. USER TO PROVIDE SUITABLE OVERPRESSURE PROTECTION FOR THE DRYER.
6. APPROXIMATE WEIGHT OF DRYER IS 560 LBS (DRYER ONLY).
7. DRYER SUITABLE FOR INDOOR USE ONLY.

REVISION STATUS	DATE	APPROVED
DESCRIPTION	1/25/19	J.Z.
INITIAL RELEASE		

LTR	ECO NO.	DATE	APPROVED
-	0275901	1/25/19	J.Z.

PROD. REF.	DRAWING NO.	REV
N/A	DF-MSC4000-A4PV	-

SCALE	N.T.S.	SHEET	1 of 2

DO NOT SCALE	DRAWING	PART #	DF-MSC4000-A4PV

TOLERANCES UNLESS OTHERWISE SPECIFIED:	FRACTIONS	±	1/4"	±	3"	±	1/2"	±	250	FINISH

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4000 SCFM GENERAL ARRANGEMENT AIRCOOLED CYCLING DRYER w/ AB PLC & VSD OPTION	PROD. REF.	DRAWING NO.	REV
	N/A	DF-MSC4000-A4PV	-

REVISION STATUS

LTR	ECO NO.	DESCRIPTION	DATE	APPROVED
-	0275901	INITIAL RELEASE	1/25/19	J.Z.

4000 SCFM GENERAL ARRANGEMENT WATERCOOLED CYCLING DRYER w/ AB PLC & VSD OPTION

GENERAL NOTES:

1. ALL DIMENSIONS ARE APPROXIMATE AND SUBJECT TO CHANGE WITHOUT NOTICE
2. CONSULT SALES LITERATURE FOR CONTROL PANEL INSTRUMENTATION SPECIFICATIONS
3. SEE MANUAL FOR COMPLETE SPECIFICATIONS, CAPACITIES AND INSTALLATION INSTRUCTIONS
4. PROVIDE ADEQUATE ROOM ON ALL SIDES FOR SERVICE AND MAINTENANCE
5. USER TO PROVIDE SUITABLE OVERPRESSURE PROTECTION PRIOR TO PLACING UNIT IN SERVICE
6. APPROXIMATE WEIGHT OF DRYER IS 5680 LBS.

TOLERANCES UNLESS OTHERWISE SPECIFIED:

FRACTIONS	±
1/4"	±
3/8"	±
1/2"	±
1"	±

PART # DF-MSC4000-W4PV

DO NOT SCALE DRAWING

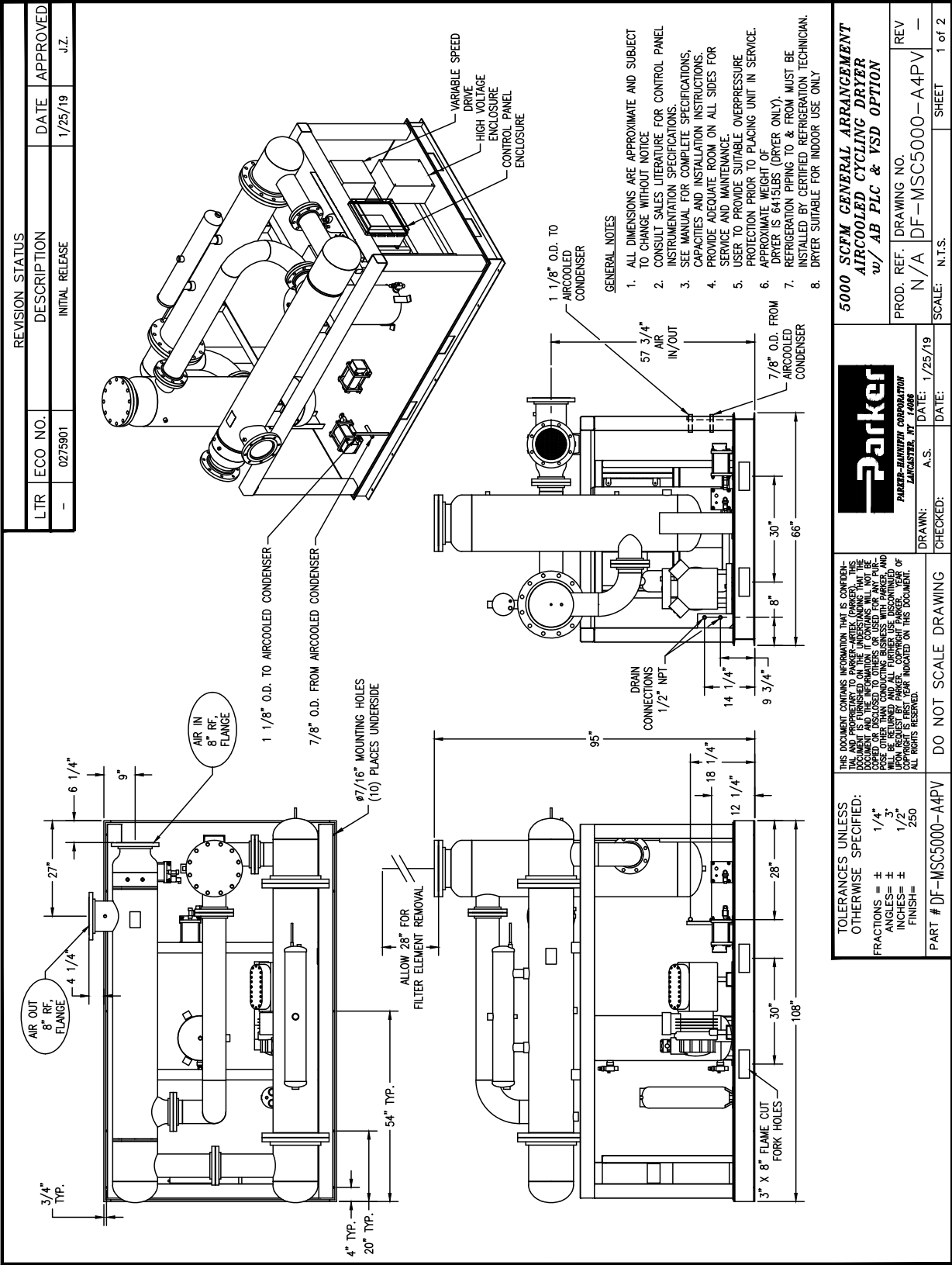
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DATE: 1/25/19

DATE: 1/25/19

SCALE: N.T.S.

SHEET 1 of 1



6000 SCFM GENERAL ARRANGEMENT AIR-COOLED CYCLING DRIVER w/ AB PLC & VSD OPTION

GENERAL NOTES

- ALL DIMENSIONS ARE APPROXIMATE AND SUBJECT TO CHANGE WITHOUT NOTICE
- CONSULT SALES LITERATURE FOR CONTROL PANEL INSTRUMENTATION SPECIFICATIONS
- FOR COMPLETE SPECIFICATIONS, CHARACTERISTICS AND INSTALLATION INSTRUCTIONS, PROVIDE SQUARE ROOM ON ALL SIDES FOR SERVICE AND MAINTENANCE
- DRYER IS 5300 LBS.
- PROTECTION PRIOR TO PLACING UNIT IN SERVICE
- APPROXIMATE HEIGHT OF DRYER IS 5300 LBS.
- REMOTE AIR COOLED CONDENSER IS BNH-S02-A015.
- REFRIGERATION PIPING TO & FROM MUST BE INSTALLED BY CERTIFIED REFRIGERATION TECHNICIAN.
- DRYER SUITABLE FOR INDOOR USE ONLY

TOLERANCES UNLESS OTHERWISE SPECIFIED:

FRACTIONS	± 1/4"
ANGLES	± 3°
INCHES	± 1/2"
FINISH	250

DO NOT SCALE DRAWING

PART # DF-MSC6000-A4PV

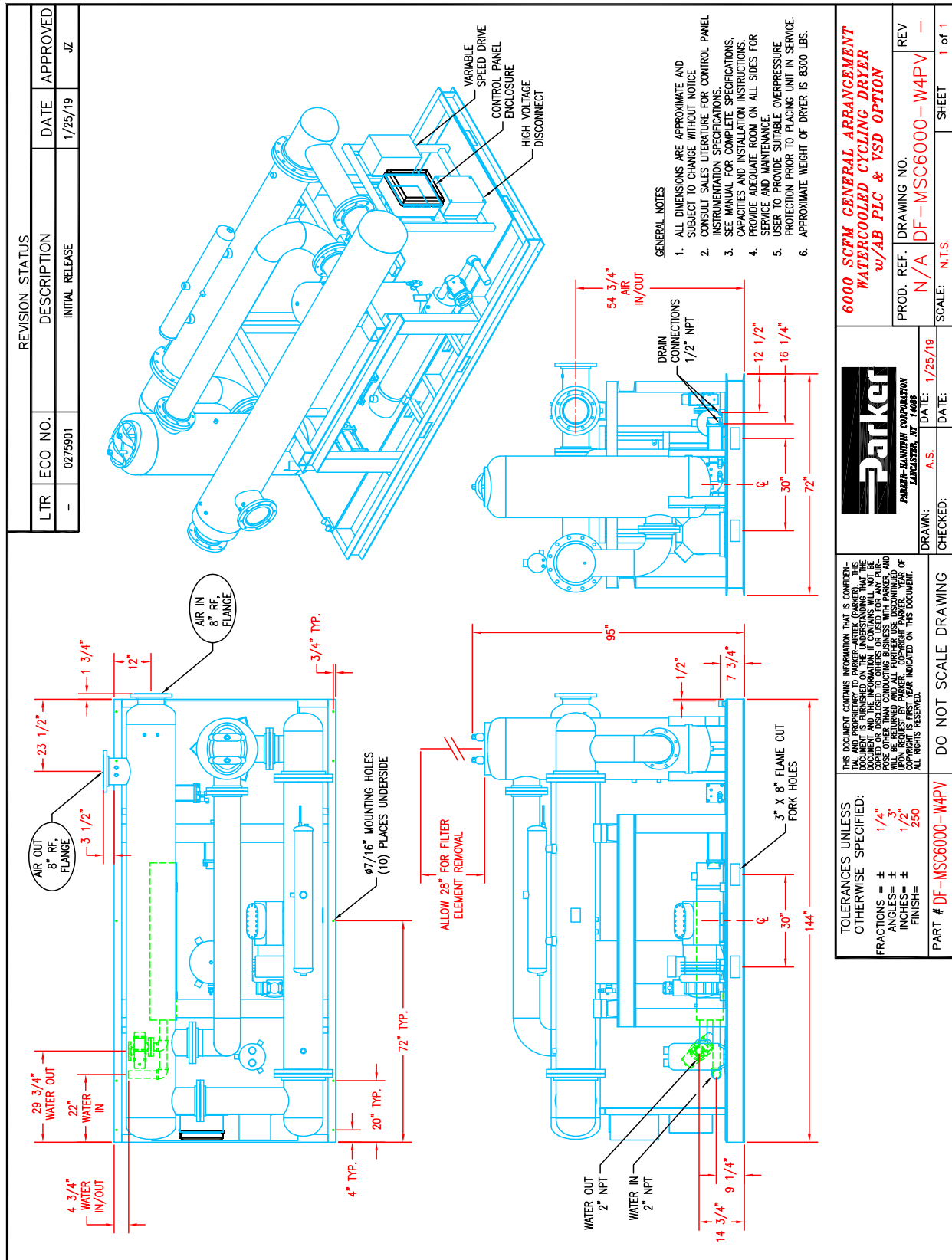
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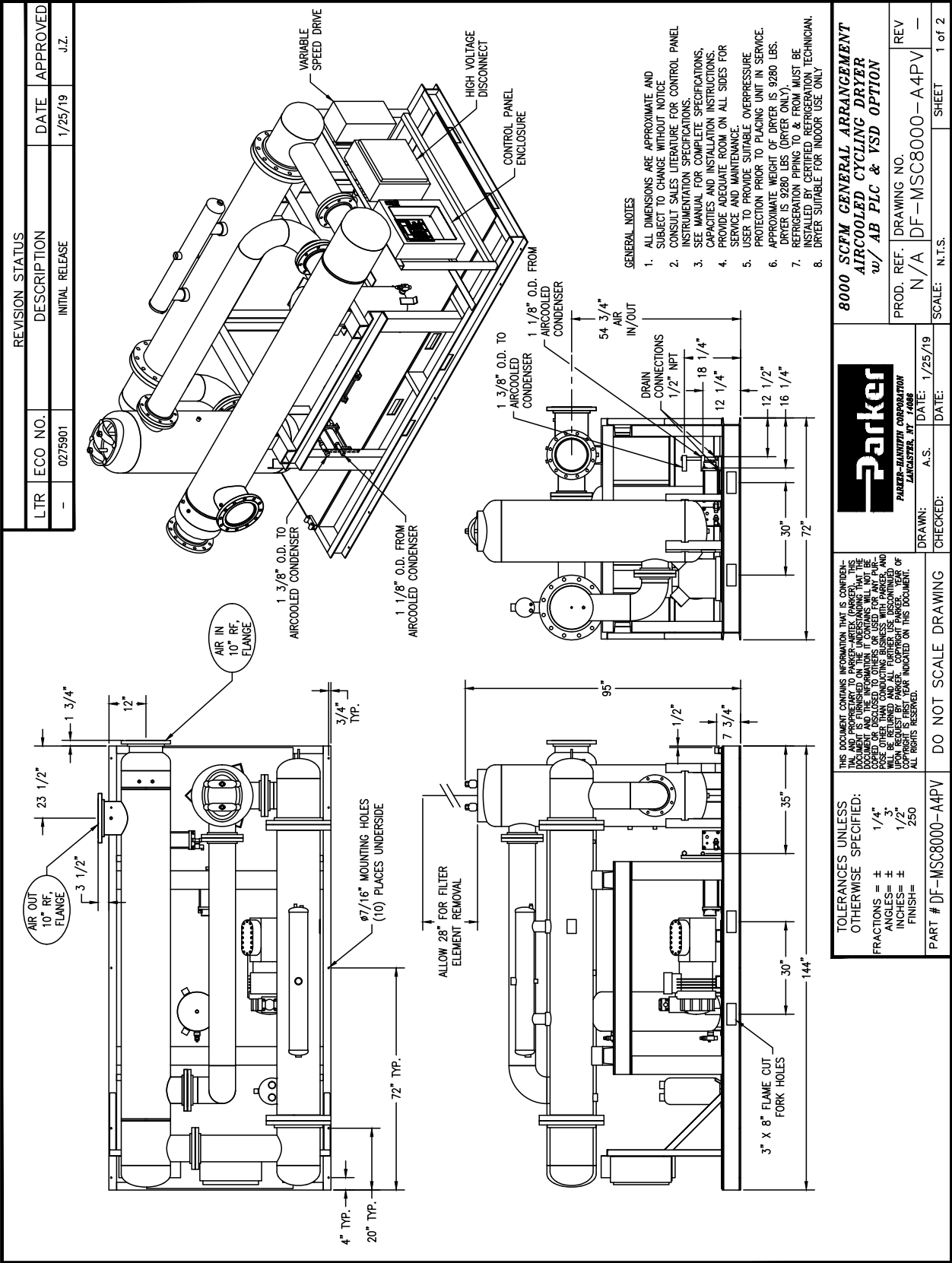
Parker
PARKER-AERTECH CORPORATION
LANCASTER, NY 14660

6000 SCFM GENERAL ARRANGEMENT AIR-COOLED CYCLING DRIVER w/ AB PLC & VSD OPTION

PROD. REF. N/A
DRAWING NO. DF-MSC6000-A4PV
REV. —

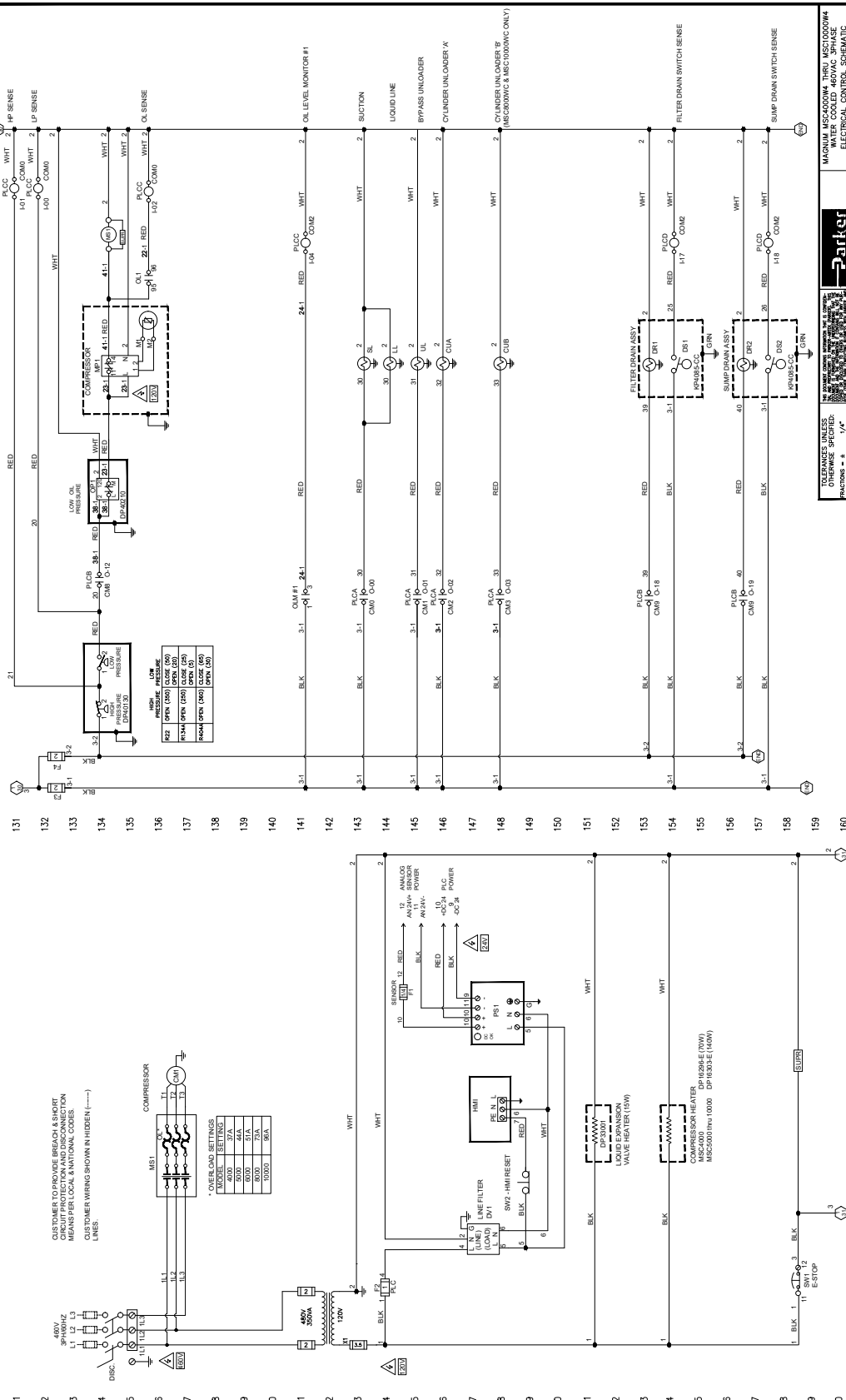
DRAWN: A.S.
CHECKED: 1/25/19
DATE: 1/25/19
SCALE: N.T.S.
SHEET 1 of 2



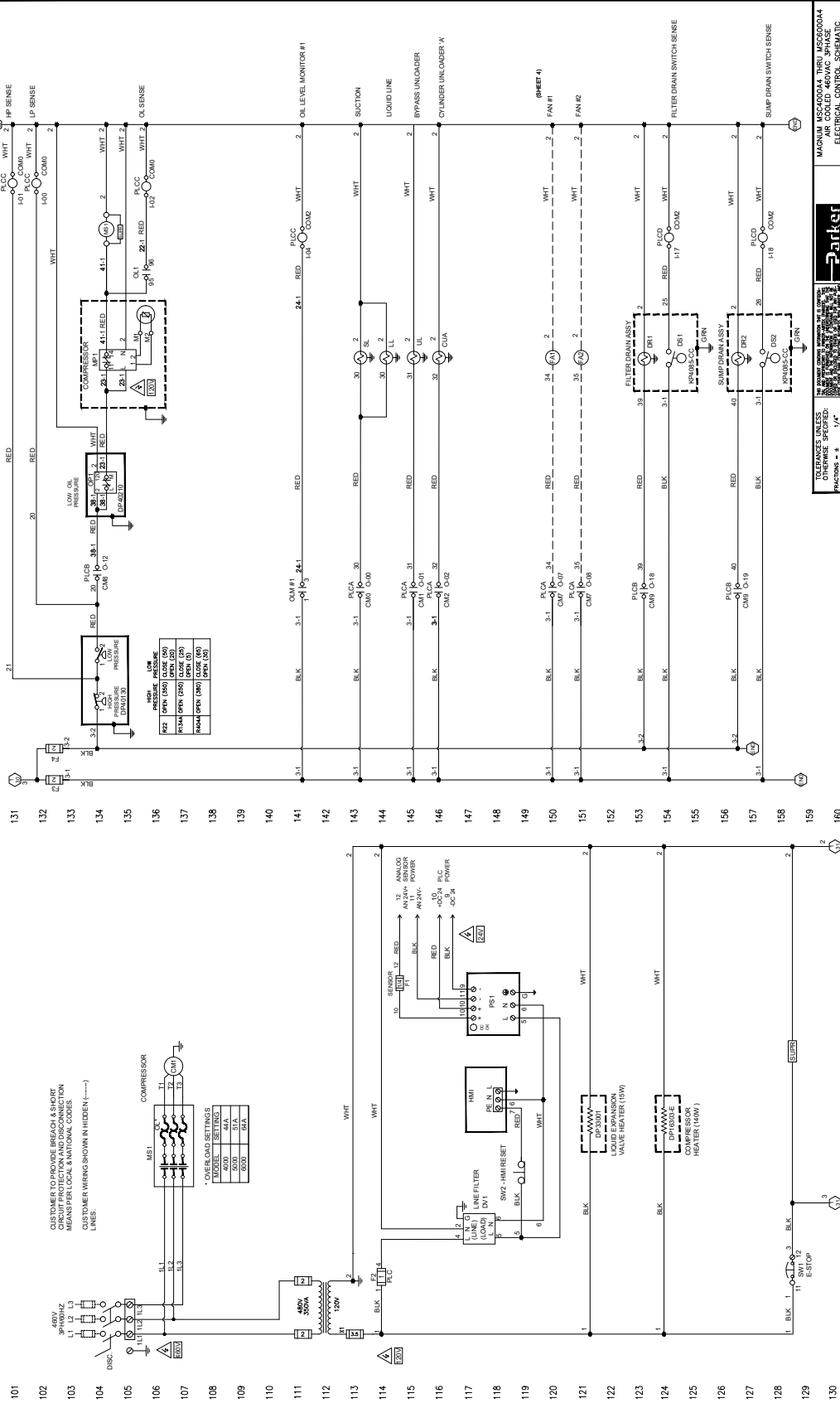


97

MAGNUM MSC400W4 THRU MSC1000W4 – ELECTRICAL CONTROL SCHEMATIC

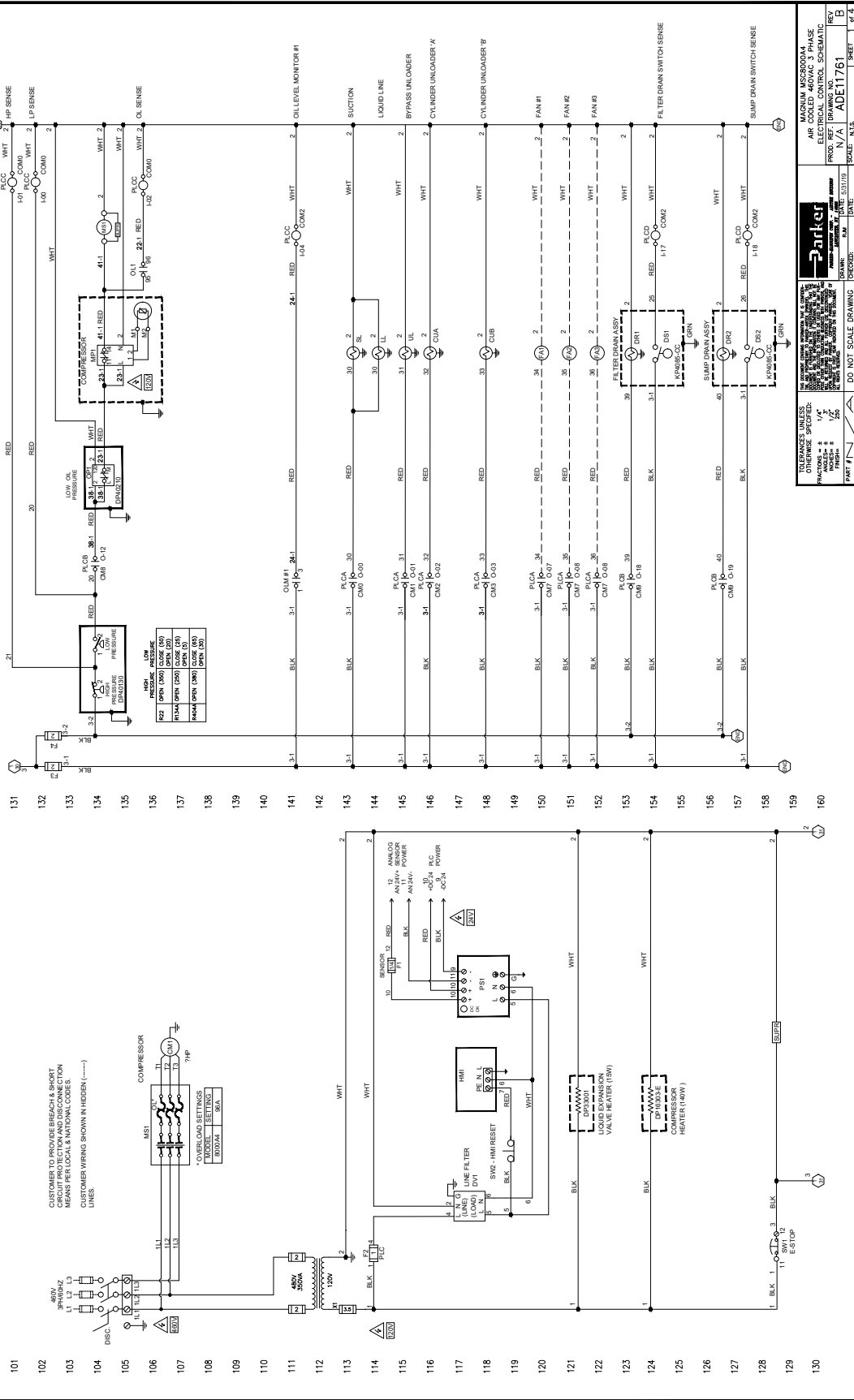
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MAGNUM MSC4000A4, MSC5000A4 – ELECTRICAL CONTROL SCHEMATIC



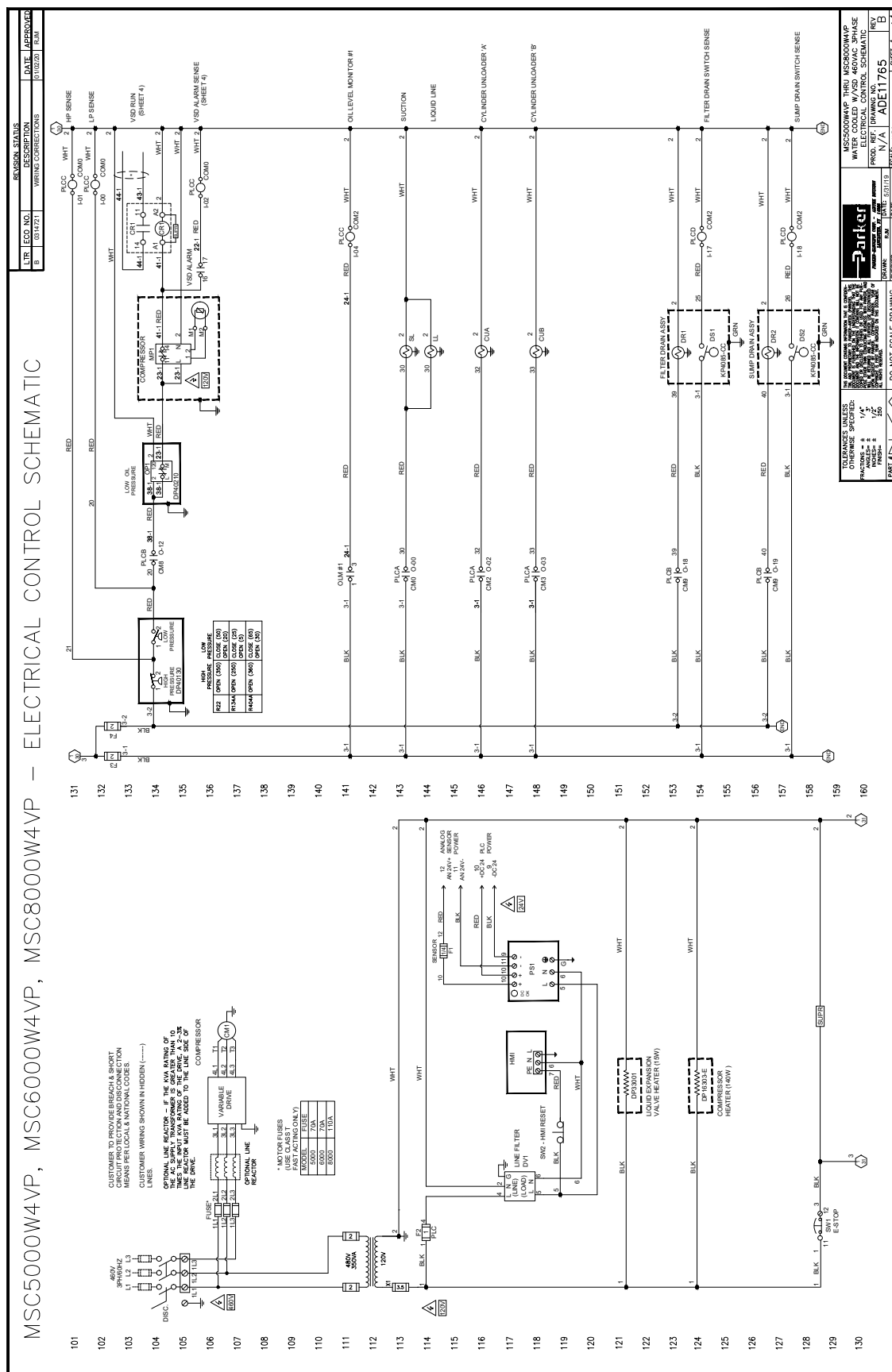
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PART # 1		DO NOT SCALE DRAWING		PROOF, REV. 1 N/A ADE11760 SCALE: N/A	
DATE: 03/10/19		DRAWN:		SHEET 1 OF 4	

MAGNUM MSC8000A4 – ELECTRICAL CONTROL SCHEMATIC



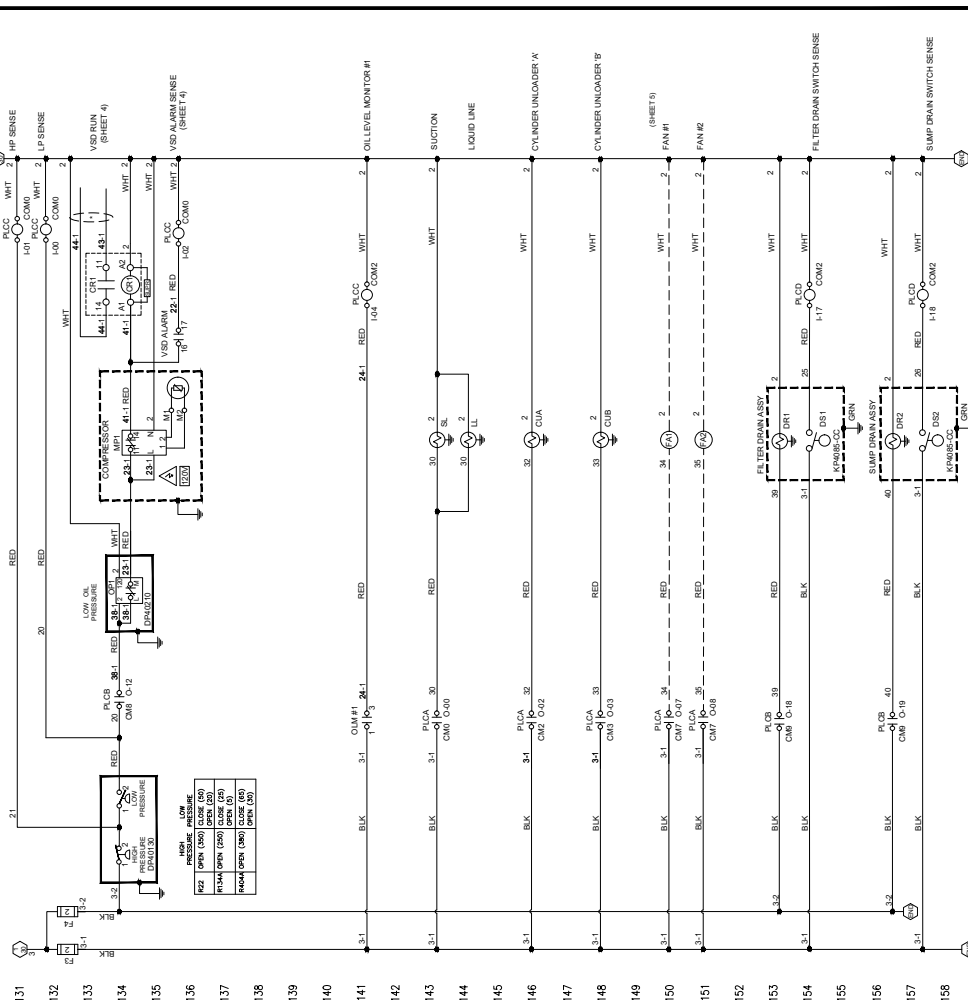
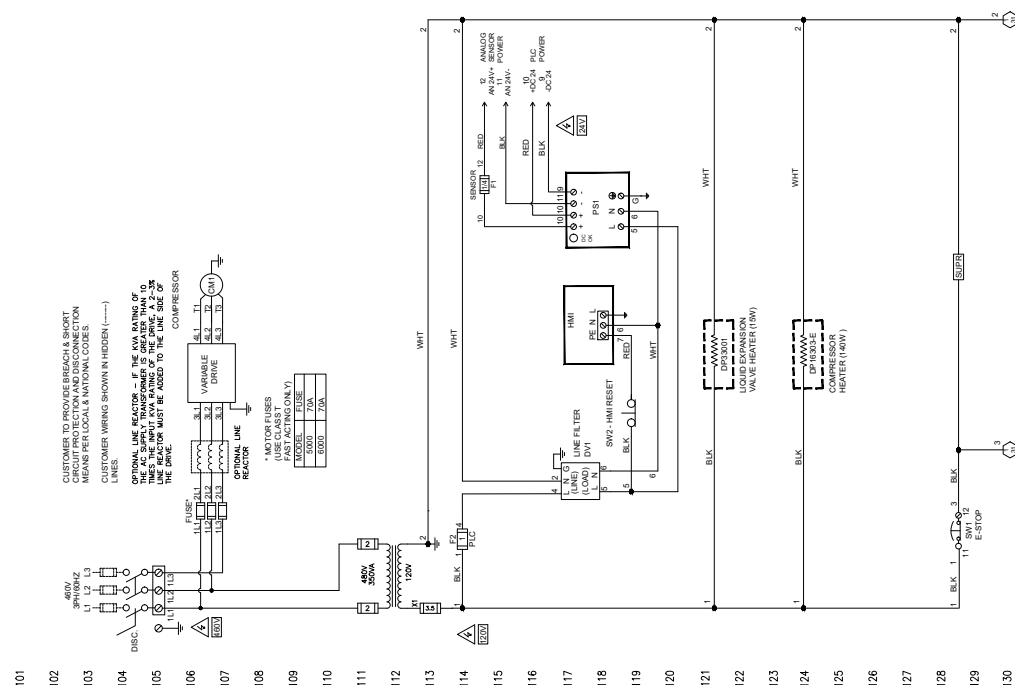


MSC5000W4VP, MSC6000W4VP, MSC8000W4VP – ELECTRICAL CONTROL SCHEMATIC





MAGNUM MSC5000A4VP & MSC6000A4VP – ELECTRICAL CONTROL SCHEMATIC



TOLERANCES UNLESS OTHERWISE SPECIFIED:				MSC-5200A4VP & MSC5000A4VP AIR COOLED W/SD 480VAC ELECTRICAL CONTROL SEMIOMATIC	
DIMENSIONS: ± 1/16" HOLE: ± 1/32" TOLERANCE: 1/2"		DO NOT SCALE DRAWING FOR DIMENSIONS		PROD. REF: IRBAMING N/A REV B DATE: 03/11/10 ADE11770	



11. Maintenance Charts

[illegible]

12. Warranty Registration

WARRANTY REGISTRATION



Important! E-mail today!

Send your Service Warranty form and it will be registered immediately.

We are here to help. For more information call the Service Department at 1-855-587-9323.

E-mail to: fafwarranty@parker.com

Model # _____ Serial # _____
 Company _____
 Address _____
 City _____ State/Province _____ Zip _____
 Telephone _____ Contact _____
 Title _____ Department _____
 Date Purchased _____ Date installed _____

Comments

Please indicate a response on a scale of (1) being the lowest to (5) being the highest

Condition of Arrival _____

Ease of Installation _____

Ease of Start-Up _____

Product Quality _____

Technical Assistance _____

Clarity of Instruction/Warranty Manual _____

Final Operation Check List

Initial air temperature is _____

Inlet PSIG is _____

The dewpoint temperature controller reads between _____ and _____

Air compressor HP _____, or Max SCFM is _____

Is the dryer a minimum of 3' from any structure on all sides?

Yes No

Has the Y strainer for drains been cleaned after the first 8 hours of operation?

Yes No

What are your thoughts on the operation of the dryer?

Why did you chose this manufacturer?

What could we do better?

Worldwide Filtration Manufacturing Locations

North America

Compressed Air Treatment

Industrial Gas Filtration and Generation Division

Lancaster, NY
716 686 6400
www.parker.com/igfg

Haverhill, MA
978 858 0505
www.parker.com/igfg

Engine Filtration

Racor

Modesto, CA
209 521 7860
www.parker.com/racor

Holly Springs, MS
662 252 2656
www.parker.com/racor

Hydraulic Filtration

Hydraulic & Fuel Filtration

Metamora, OH
419 644 4311
www.parker.com/hydraulicfilter

Laval, QC Canada
450 629 9594
www.parkerfarr.com

Velcon
Colorado Springs, CO
719 531 5855
www.velcon.com

Process Filtration

domnick hunter Process Filtration SciLog

Oxnard, CA
805 604 3400
www.parker.com/processfiltration

Water Purification

Village Marine, Sea Recovery, Horizon Reverse Osmosis

Carson, CA
310 637 3400
www.parker.com/watermakers

Europe

Compressed Air Treatment

domnick hunter Filtration & Separation

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+44 (0) 191 402 9000
www.parker.com/dhfn

Parker Gas Separations

Etten-Leur, Netherlands
+31 76 508 5300
www.parker.com/dhfn

Hiross Zander

Essen, Germany
+49 2054 9340
www.parker.com/hzfd

Padova, Italy
+39 049 9712 111
www.parker.com/hzfd

Engine Filtration & Water Purification

Racor

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+44 (0) 1924 487 000
www.parker.com/rfde

Racor Research & Development

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+49 (0)711 7071 290-10

Hydraulic Filtration

Hydraulic Filter

Arnhem, Holland
+31 26 3760376
www.parker.com/hfde

Urdala, Finland
+358 20 753 2500

Condition Monitoring Parker Kittiwake

West Sussex, England
+44 (0) 1903 731 470
www.kittiwake.com

Process Filtration

domnick hunter Process Filtration Parker Twin Filter BV

Birtley, England
+44 (0) 191 410 5121
www.parker.com/processfiltration

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+61 2 9634 7777
www.parker.com/australia

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www.parker.com/china

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www.parker.com/india

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www.johnfowlerindia.com

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www.parker.com/thailand

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www.parker.com/br

Pan American Division

Miami, FL
305 470 8800
www.parker.com/panam

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