REV02182024

ELECTRIC REFRIGERATED AIR DRYER		
MODEL#(s):	NDRCF1150030	810070051921
	NDRCF1150058	810070051938
CFM RATING:	NDRCF1150030	30CFM
	NDRCF1150058	58CFM
POWER REQ:	115V/1P/60 Hz	
LRA (AMPS):	NDRCF1150030	22.48 (6 FUSE)
	NDRCF1150058	33.7 (10 FUSE)

Owner's Manual

North Star electric, refrigerated air dryer systems

Limited Warranty

Dear Valued Customer:

The NorthStar Product you just purchased is built with the finest material and craftsmanship. Use this product properly and enjoy the benefits from its high performance. By purchasing a NorthStar product, you show a desire for quality and durability. Like all mechanical equipment this unit requires a due amount of care. Treat this unit like the high quality piece of machinery it is. Neglect and improper handling may impair its performance. Please thoroughly read the instructions and understand the operation before using your product. Always contact NorthStar Product Support at 1-800-270-0810 prior to having any service or warranty work performed, as some services performed by parties other than NorthStar approved service centers may void this warranty. This warranty is in lieu of any other warranty expressed or implied and NorthStar assumes no other responsibility or liability outside that expressed within this warranty.

Limited Warranty

NorthStar shall warranty any piece of equipment manufactured, or parts of equipment manufactured, to be free from defects in material or workmanship for a period of:

NorthStar Warranty		
Item #	**Consumer Warranty Period**	**Commercial Warranty Period**
810070051921 810070051938	4 years from date of purchase by user	2 years from date of purchase by user

"Consumer use" means personal residential household use by a consumer. "Commercial use" means all other uses, including use for commercial, income producing or rental purposes or when purchased by a business.

This warranty applies to the original purchaser of the equipment (verification of purchase, in the form of a receipt, is the responsibility of the buyer), is non-transferable, and covers parts and labor. Parts will be replaced or repaired at no charge, except when the equipment has failed due to lack of proper maintenance. If a part is no longer available, the part may be replaced with a similar part of equal function. Any misuse, abuse, alteration or improper installation or operations will void warranty. Determining whether a part is to be replaced or repaired is the sole decision of NorthStar. NorthStar will not provide for replacement of complete products due to defective parts. Any costs incurred due to replacement or repair of items outside of a NorthStar approved facility is the responsibility of the buyer and not covered under warranty. Transportation costs to and from service center is the responsibility of the customer.

In addition to the normal warranty, NorthStar shall warrant any normal wear item from defects in material or workmanship for a period of 90 days from the date of purchase by user. Normal wear items include, but are not limited to, belts and filter elements.

This warranty specifically excludes the following; failure of parts due to damage caused by accident, fire, flood, windstorm, acts of God, applications not approved by NorthStar in writing, corrosion caused by chemicals, use of replacement parts which do not conform to manufacturer's specifications, damage related to rodent and/or insect infestation and damage caused by vandalism. Additional exclusions: loss of running time, inconvenience, loss of income, or loss of use, including any implied warranty of merchantability of fitness for a specific use. Also, Power Equipment needs periodic parts and service to perform well, and this warranty does not cover instances when normal use has exhausted the life of a component or the motor.

This warranty does not cover any personal injury or damage to surrounding property caused by failure of any part. Repair or replacement of parts does not extend the warranty period.

Please fill in the following information and have it on hand when you call in:

Customer Number: _____

Date of Purchase: _____

NorthStar Serial Number: _____

Item Number: _____

CONTENTS

CALIFORNIA PROPOSITION 65

WARNING: This product or its power cord may contain chemicals known to the state of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

⚠ **WARNING**: This product can expose you to soots, tars, and mineral oils (untreated and mildly treated oils and used engine oils), which are known to the State of California to cause cancer.

For more information go to www.P65Warnings.ca.gov.

IMPORTANT SAFETY NOTES

When operating the air dryer, the operator must apply safe working methods and observe all local safety instructions and relevant regulations.

1. Prior to installation, the dryer and the compressed air system are to be depressurized and disconnected from the electrical main supply. NEVER start or operate the dryer under unsafe conditions. Tag the dryer, disconnect, and lock out all power to it to prevent accidental start-up until the condition is corrected.
2. The user is responsible for safe operating conditions. Parts and accessories must be replaced if inspection shows that safe operation cannot be assured.
3. Installation, operation, maintenance, and repair should only be accomplished by trained and authorized individuals in full compliance with all pertinent OSHA regulations and all applicable Federal, State & Local codes, standards, and regulations.
4. The minimum and maximum values stated must be observed, as well as all the safety precautions described in this manual.
5. If any statement in this manual does not comply with local legislation, the strongest standard is to be applied.
6. Keep a first aid kit in a convenient place. Seek medical assistance promptly in case of injury.

INFORMATION

Transportation

1. Use care and caution when transporting the dryer. Avoid dropping and any other physical abuse.
2. A forklift can be used to transport the dryers provided the forks are long enough to support its full width or length and caution is used throughout the move.

Positioning

1. The dryer must be installed vertically. A minimum of 19.6 in. clearance around the dryer is necessaryto allow good ventilation and easy access for servicing.
2. The ambient temperature in the room should not exceed 113°F and should not be below 39.2°F, takingthe heat radiated by the dryer into account.
3. (40 watts for each liter/sec under ISO 7183-A condition or 18 watts for each SCFM under ISO 7183-Bcondition).
4. There should be no chemicals in the atmosphere that will damage the copper source. (Ammonia gas etc.)

Installation

In addition to the general mechanical construction procedures and local regulations, the following instructions need to be emphasized:

1. Only authorized, trained and skilled engineers should install the compressed air dryer.
2. Safety devices, protecting covers or insulation in the dryers should never be dismantled or modified. Each pressure vessel or accessory installed outside the dryer with air above atmospheric pressure must be fitted with the required pressure relief safety valves.

Before Operating

The following guidelines must be observed before operating the air dryer:

1. Review all safety precautions.
2. The dryer connection piping measurements must be selected correctly.
3. The dryer connection piping must be adapted to the operating pressure.
4. Never operate the dryer at pressure above the maximum specified on the dryer label.
5. The drains should be opened to atmosphere. If the drains are connected to a pipe / hose, the diameter of the hose / pipe should be large enough to create no back pressure during drain. It is not recommended to reduce the diameter of the hose / pipe less than port that is given at the drain outlet of the unit.

The hose / pipe should be at atmospheric pressure at all time. Back pressure in relevant pipe will result in permanent damage on drain system and the affect function of the filters and / or dryers.

Qualified Service Personnel

1. Maintenance and repairs should only be performed when the air dryer is shut down and depressurizedand when the main power switch is turned off with power locked out.
2. Use only the appropriate tools for maintenance and repair.
3. Before dismantling a part under pressure, disconnect the pressure sources and depressurize thesystem.
4. Proceed carefully during maintenance and repair. Prevent dirt from entering by covering parts andorifices with a clean cloth, paper or tape. A receiver should never be welded or modified in any way.
5. Never leave tools, loose parts or cleaning rags in or on the air dryer.
6. Before returning the dryer into service, check the setting of the control and safety devices as well as the pressure and the temperature of the compressed air circuit.

User Maintenance

1. Keep the dryer clean.
2. Regularly check the correct operation of the condensate drain trap.
3. Every six months, check and clean the drain strainer by undoing the access screw and rinsing the filterwith tap water to remove the trapped dirt from the inside.
4. For air cooled dryers, clean the air condenser as soon as it's dirty or clogged.
5. For optional water-cooled condensers, use only clean water and install a water filter if needed. Usewater counter flow to clean condenser if need.
6. Check the trouble-shooting list in case of maintenance troubles.
7. Check operating pressures, temperatures, and time settings after maintenance. If operating and safetydevices function properly, the air dryer may be used.

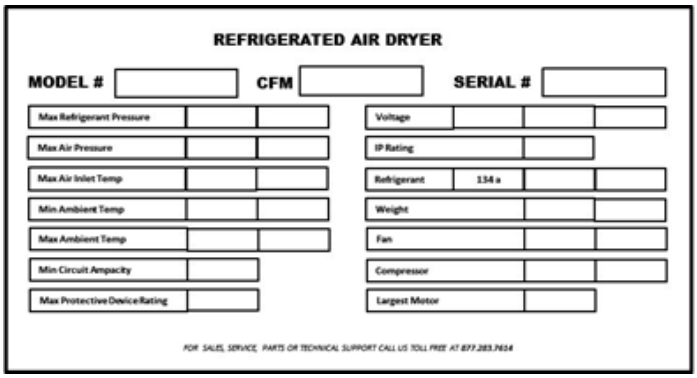
DRYER INTORDUCTION

This refrigerated compressed air dryer has been designed to remove water vapor from industrial compressed air.

1. This dryer has been designed for indoor operation only.
2. The minimum and maximum values stated must be observed, as well as the safety precautions described in this manual.

Dryer Label

The following label is affixed on the cabinet of the refrigerant compressed air dryer.



Model #:	Dryer Model No
CMF:	Cubic feet per minute
Serial #:	Dryer Serial No
Max Refrigerant Pressure:	Dryer maximum working pressure
Max. Air Pressure:	Maximum air pressure
Max. Air Inlet Temp.:	Maximum air inlet temperature
Min. Ambient Temp. :	Minimum ambient temperature
Max. Ambient Temp. :	Maximum ambient temperature
Min. Circuit Ampacity :	Minimum circuit ampacity
Max Protective Device Rating :	Maximum Protective device rating
Voltage:	Main supply voltage
IP Rating:	Protection rating
Refrigerant 134a :	Amount of refrigerant gas used
Weight :	Dryer weight
Fan :	Model of fan used
Compressor :	Model of compressor used

Refrigerant Circuit

- The refrigerant circuit can be divided in 3 parts:
- Low pressure section with an evaporator (heat exchanger) High-pressure section including: condenser, liquid receiver, (if installed) and the filter dryer.
- Control circuit including: compressor, expansion valve, by-pass valve (if installed), fan pressure switch (if installed)

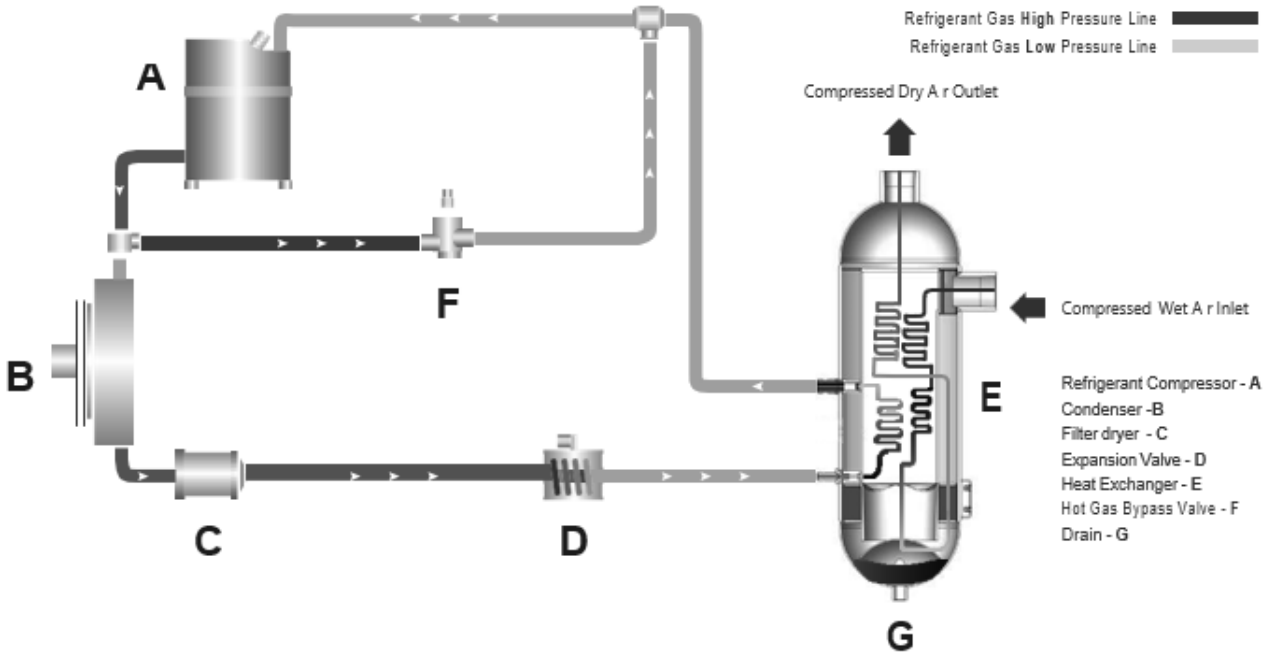
Refrigeration Circuit Operation

1. The compressor compresses gaseous refrigerant to a high temperature.
2. The hot refrigerant condenses in the condenser. Being liquefied it is stored in the liquid receiver (if installed).
3. The liquid is taken out the storage vessel and injected in the evaporator (heat exchanger) by an expansion valve. This expansion valve is protected by a filter, which removes particles and humidity that could be in the circuit.
4. The injected liquid fills in the refrigerant section of the air / refrigerant heat exchanger and evaporates by taking out the calories from the compressed air. The gaseous refrigerant is sucked in the compressor and the cycle carries on.
5. In order to keep the evaporation pressure steady, and thus the refrigerant temperature in the heat exchanger, a by-pass valve is injecting hot gaseous refrigerant in the circuit. On certain dryers, an automatic expansion valve regulates this.

Compressed Air Circuit Operation

1. The saturated hot compressed air flows into the economiser where it is pre-cooled by the out flowing dry chilled air. In the cold zone of the air refrigerant section it continues to cool down to dew point and enters the separator where condensates are collected. The outgoing chilled air is then warmed up in the economizer by the hot incoming air.
2. The condensates are collected after centrifugal separation and drained out through the automatic trap.
3. As long as the compressed air temperature does not drop below dew point, there will be no condensation in the air circuit.

Compressed Air Dryer Working Principle



Refrigerant Compressor

Increases the pressure and temperature of refrigerant. There are two types of compressors commonly used according to refrigerant capacity on this application:

- Piston type
- Screw or scroll type

Condenser

Dissipates the heat provided by evaporator and compressor. There are two type of condensers used on the application:

1. Air Cooled Type (standard) These condensers are designed to dissipate the heat to the ambient air.The fans are used to force the air flow through the fins to enhance the heat transfer.
2. Water Cooled Type (optional)These condensers are designed to dissipate the heat to a water flow. A shell and tube heat exchanger is used for this purpose.

Refridgerant Circuit Protection

1. Klixon: The single phase compressors are equipped with a klixon which is a thermal sensitive switch controlling the temperature of the compressor and possible overintensity.
2. In case of malfunction, the klixon trips but switches on again automatically as soon as the compressor has cooled down.
3. High Pressure Security Switch: Refrigerant line is considered as a pressure vessel. That is why it is protected against bursts by the help of manually reset switch. It is set to 362 psi for dryers working with R134a
4. Filter dryer: A refrigerant circuit is a closed circuit and total water removal in the refrigerant circuit is paramount in order to obtain a correct functioning.
5. To avoid problems, the refrigerant circuit must be vacuumed before loading the refrigerant.
6. It is equipped with a filter dryer, which also traps any solid particles, which may have migrated into the circuit during assembly.
7. Water-cooled dryers have a safety high-pressure switch.
8. In case of cooling water failure, the safety switch stops the dryer. When the safety switch has tripped out, it has to be manually reset before switching on the dryer.

Refrigerant Circuit Controls

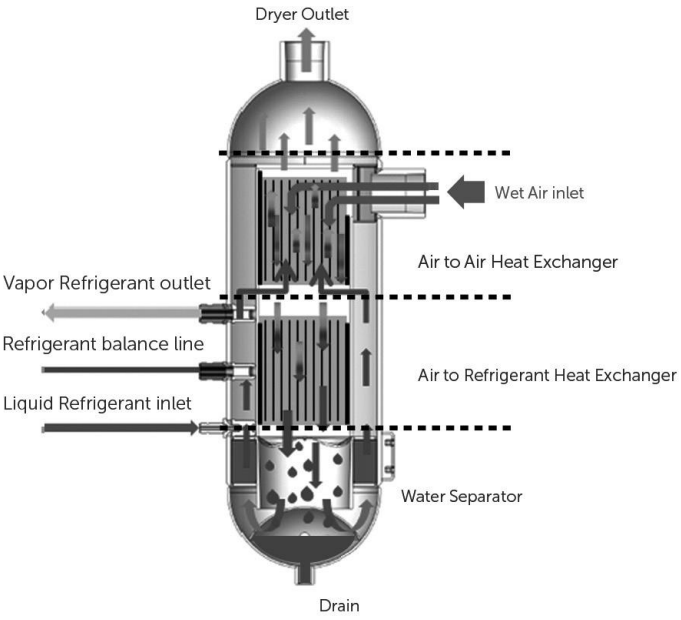
1. Liquid refrigerant injection: The liquid refrigerant is into the evaporator by a control valve. This valve is a thermostatic or pressostatic one maintaining a constant overheating of the refrigerant in the evaporator(s).
2. Constant evaporating pressure: In the dryers equipped with a bypass valve, the evaporating pressure is kept constant by a controlled injection of hot gas from the high-pressure side into the low-pressure section of the circuit.

Condensate Drain

Basic dismantling of the drain can be accomplished due to it being isolated from the air circuit under pressure with a ball valve. The drain must be depressurized before being dismantled.

Heat Exchanger Design

The dryers are equipped with a compact Mono Bloc Heat Exchanger module. This assembly has been specially designed to dry compressed air and is made of:



1. An Economiser which pre-cools the entering hot air with the out flowing cold air.
2. An air/refrigerant exchanger cooling down the compressed air.
3. A centrifugal separator concentrating all condensates and requiring no maintenance.

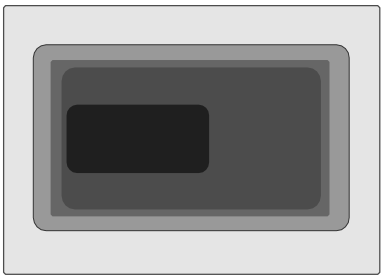
Accessories

1. Temperature switch: Temperature switch: Located inside the dryer, this temperature switch is adjustable from 32°F up to 95 °F.
2. Digital Controller –DigiPro: This device helps the dryer save energy when there is not any compressed air flow in the dryer. Information available; Dewpoint value, periodic maintenance interval display, status report, run time meter, temperature unit selection (°F or °C).

OPERATION

Control Panel for NDRCF Series

Monophase	Digital Controller
NDRCF1150030	Digi-Pro
NDRCF1150058	Digi-Pro



IMPORTANT

The Dryer has two Compressed Air Filter inside.

It is better to change filter element for the best efficiency when the alarm status is active.

It is recommended to keep replacement filter elements in your stock in order to replace them when needed.

ATTENTION

NDRCF range dryers have low pressure drop according its competitors.

Do not use NDRCF dryers together with other dryers which have higher pressure dropwithout getting the confirmation from our technical team.

During Operation

Regularly check the digital temperature on the Digi-Pro controller on the dryer**.**

WARNING

DO NOT leave the dryer off with compressor air flowing through it.

Initial Start Up/Restart After Long Rest

Set the rotary switch to “I” This preheats the dryer and turns the drain system on.

It is recommended to leave the dryer power on permanently, so the crankcase heater runs continuously.

IMPORTANT

Dryer must run for a MINIMUM of 4 hours prior to starting restarting after a long shut down or prior to first start up.

Daily Starting and Shut Down

1. Push on the ON button to start the dryer.
2. The start light or Dryer Active will indicate that the dryer is running.
3. To stop the dryer, first stop the airflow (either shut-down the air compressor or close the inlet/outlet or by-pass valve) When the air flow is stopped, set the rotary switch on “ 0 “ Set it again on “ I “ in order to keep the preheating on.

ELECTRICAL CONTROLLER

DigiPro

With the Digi-Pro series controllers, air dryers have the technology for both functionality and dynamism, as well as appearance. The multi-functional display provides an accurate digital dew point display as well as coded alarm monitoring of the refrigerant dryer.

Digital Controller Advantages

1. Digital dew point monitoring
2. Energy-saving mode display
3. Periodic maintenance interval display
4. Status report
5. Run time meter
6. Fahrenheit and Centigrade selection

Menu Buttons

SET	PROGRAM	To modify the parameter, press and release button set. The menu is used by service team. To disable the Key Lock: Press and hold the SET for 4 sec.
⏻	POWER	This button is used for starting and stopping the dryer. Press and hold for 4 seconds to start or stop.
∨	MENU	These buttons are used to navigate between screens and adjust values.
⛯	MANUAL DRAIN	This button is used for manual control of the drain output. Press and hold for 4 seconds to drain manually.

Alarm Display

Alarm Code	Alarm Description	Reason for Alarm
tAL	Low Temperature Alarm	Refrigerant line temperature is lower than specified set values
tAH	High Temperature Alarm	Refrigerant line temperature is higher than specified set values
FIL	Filter Change Alarm	Filter element needs to be replaced
SEr	General Service Alarm	General service time of the dryer
HPr	High Pressure Alarm	Refrigerant high line pressure is higher than specified set values
Pr1	Temperature Probe Alarm	Temperature sensor is faulty.
hFl	Working Hours Alarm	The dryer working hours allowed has been reached.

	DRYER ACTIVE MODE	This mark indicates that the dryer is performed in active state and drying.
	AUTOMATIC DRAIN MODE	Shows if the drain system is activated.
	ENERGY SAVING MODE	Shows if the energy saving mode is activated
°C	CELSIUS UNIT MODE	Indicates that Celsius temperature unit is selected.
°F	FAHRENHEIT UNIT MODE	Indicates that Fahrenheit temperature unit is selected.
	COMPRESSOR STANDBYE MODE	This mode shows that the dryer is ready for drying operation.
	SERVICE MODE	This mode shows that the dryer in the service time.

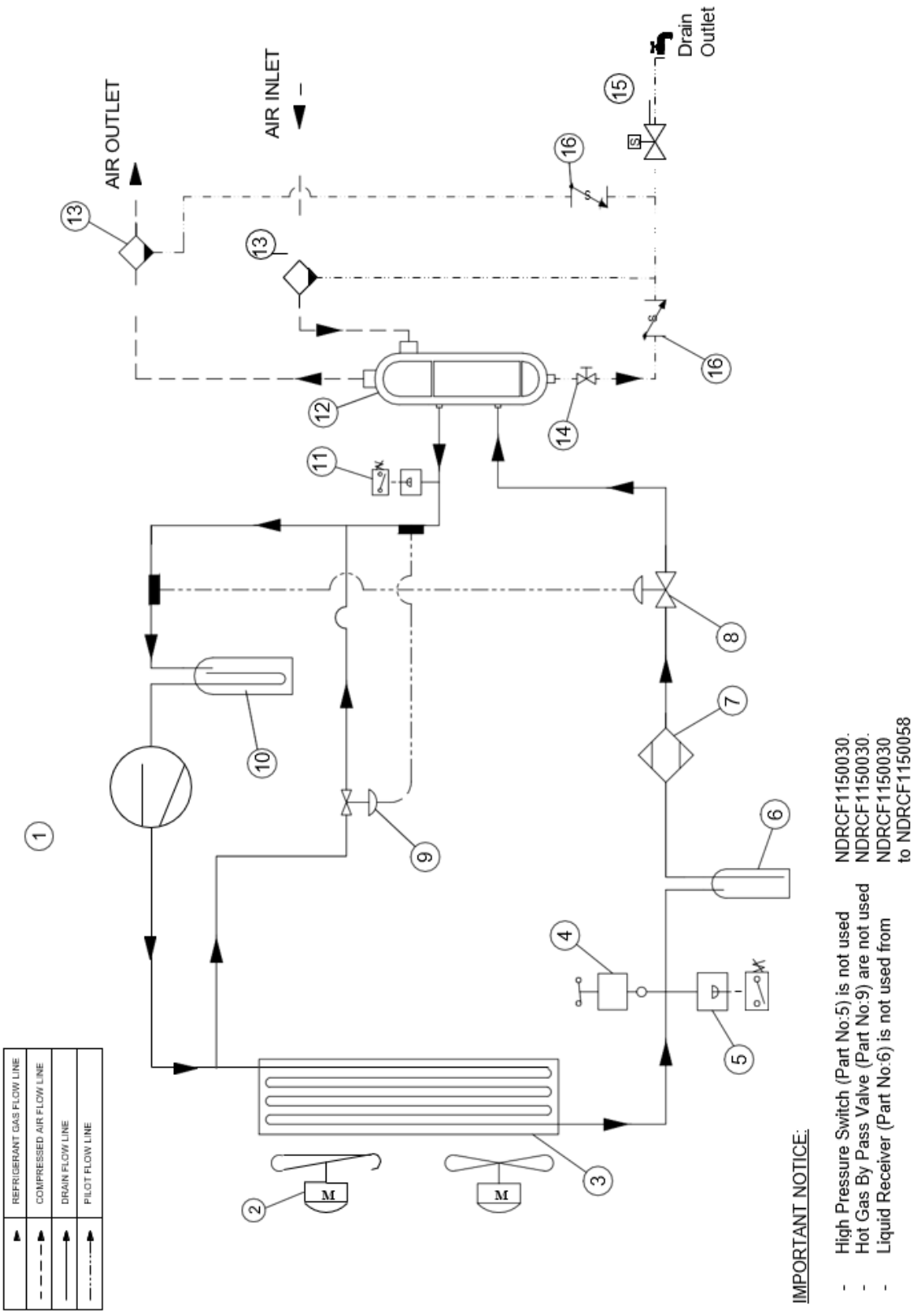
TECHNICAL SPECIFICATIONS

Model	Capacity (cfm)	Pressure drop (psig)	Size	Amount of Refrigerant (pounds)	Refrigerant gas	Noise Level (dB)
NDRCF1150030	30	2,8	1/2" NPT	0.7	R134a	<70
NDRCF1150058	58	1,6	3/4" NPT	1.2	R134a	<70

FOR ALL MODELS	
Nominal Working Pressure	100 psig
Maximum Working Pressure	230 psig
Maximum Ambient Temperature	122°F
Minimum Ambient Temperature	39°F
Maximum Inlet Temperature	140°F

DIAGRAMS

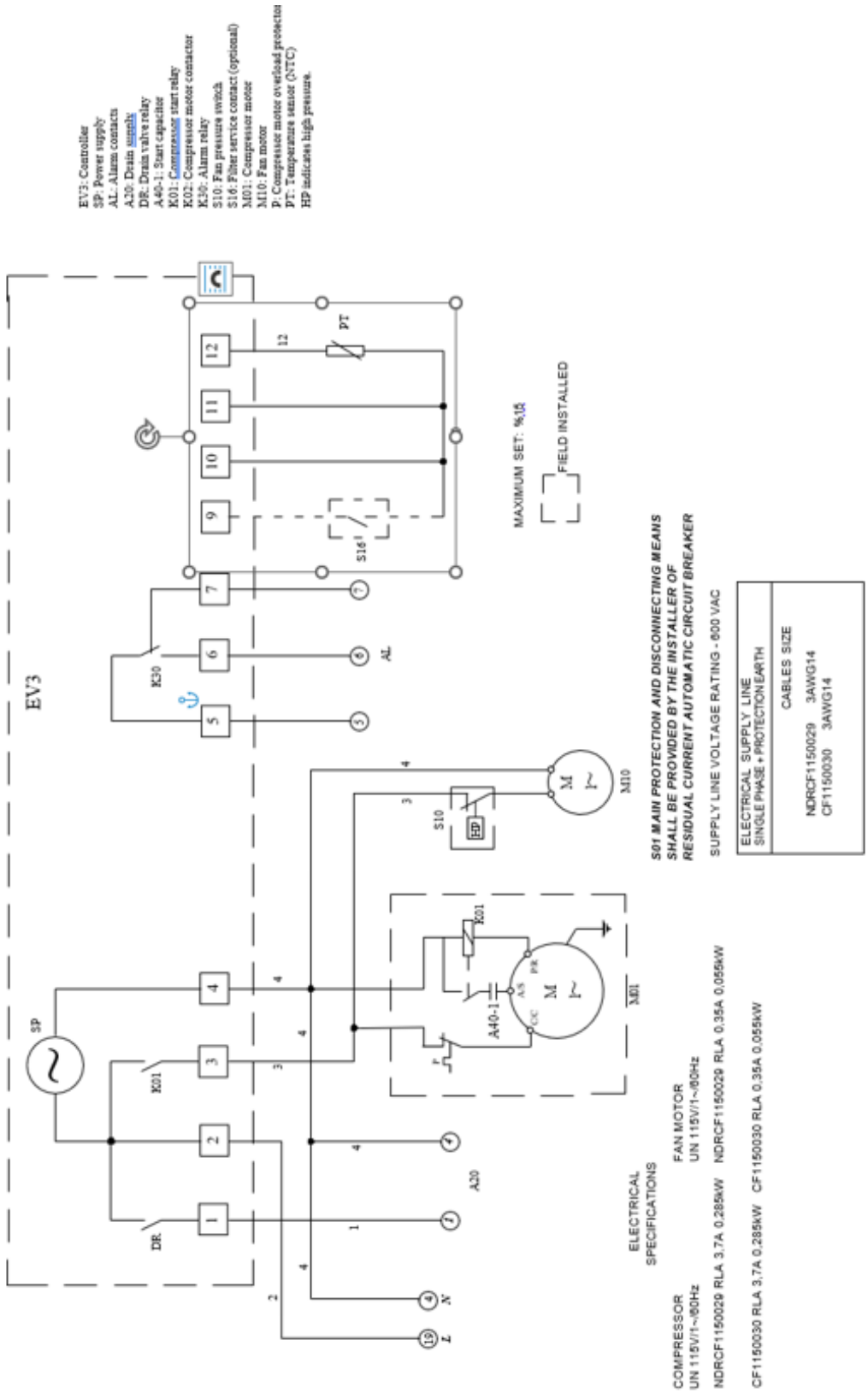
NDRCF1150030, NDRCF1150058 Air Flow



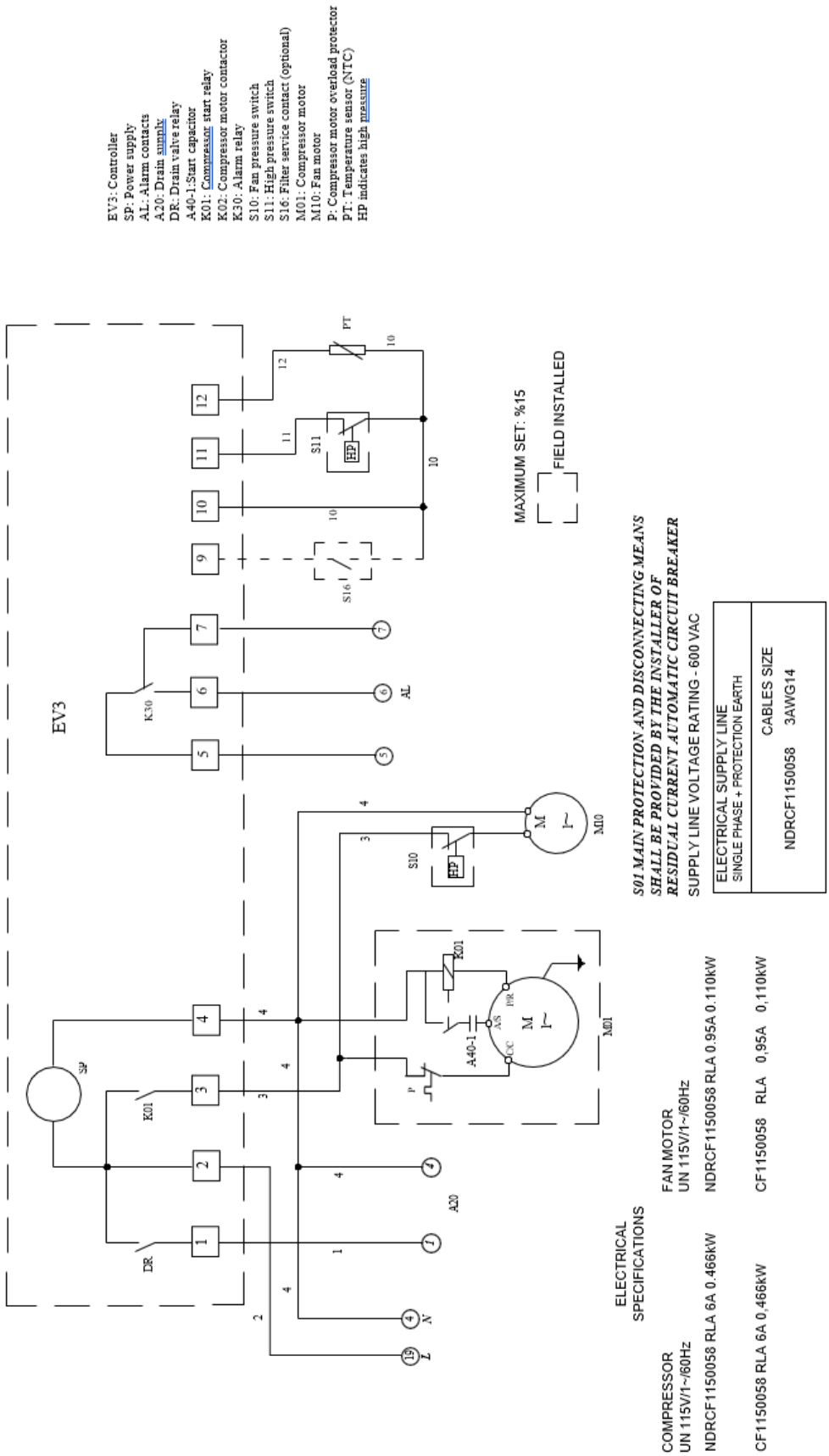
POS.	DESCRIPTION	QTY
1	COMPRESSOR	
2	FAN MOTOR	
3	CONDENSER	
4	FAN SWITCH	
5	HIGH PRESSURE SWITCH	
6	LIQUID RECEIVER	
7	FILTER DRIER	
8	EXPANSION VALVE	
9	BY-PASS VALVE	
10	LIQUID SEPARATOR	
11	LOW PRESSURE SWITCH	
12	HEAT EXCHANGER	
13	FILTER	
14	MANUEL VALVE	
15	SOLENOID VALVE	
16	CHECK VALVE	

Electrical Diagram

NDRCF1150030:

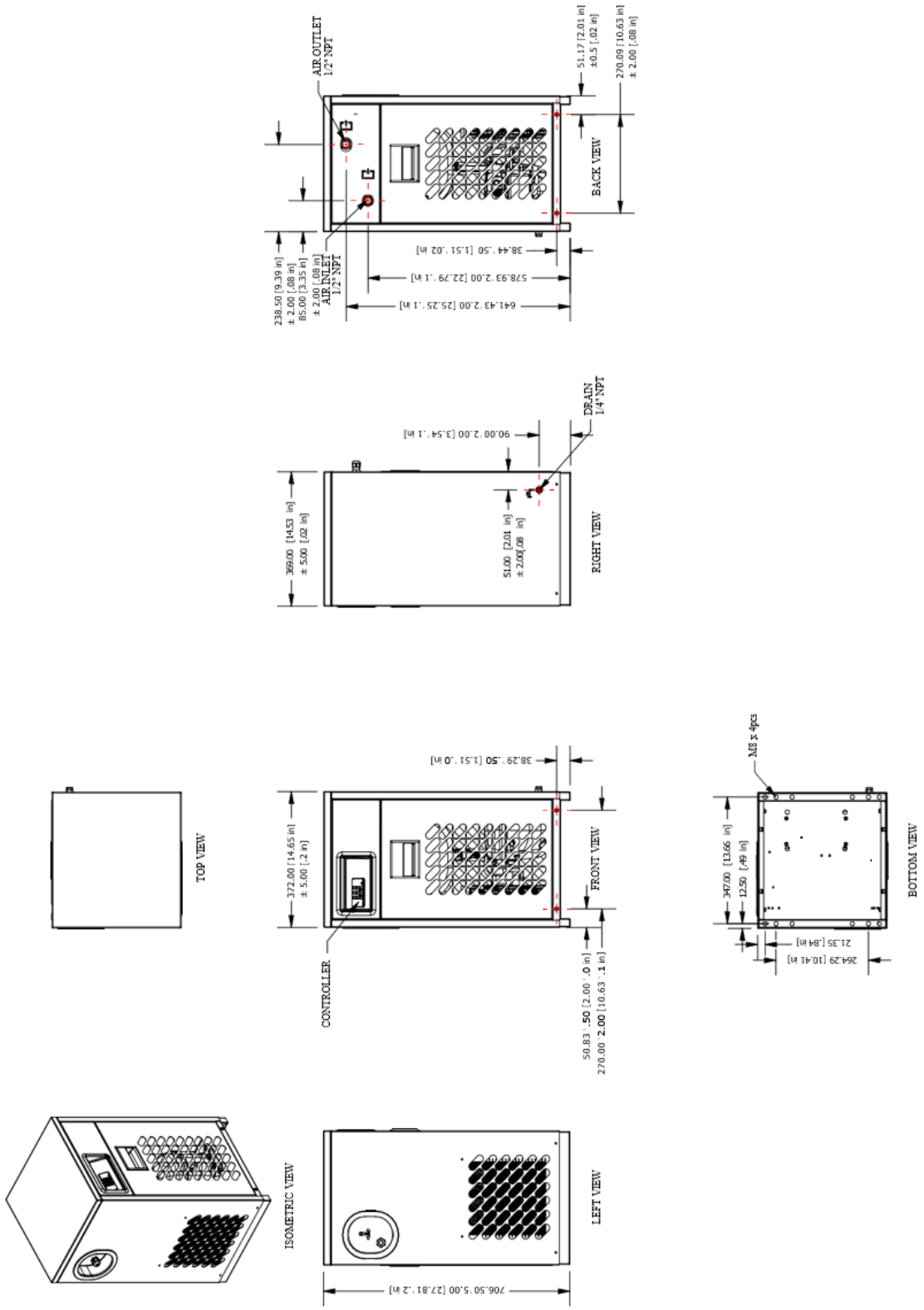


NDRCF1150058:

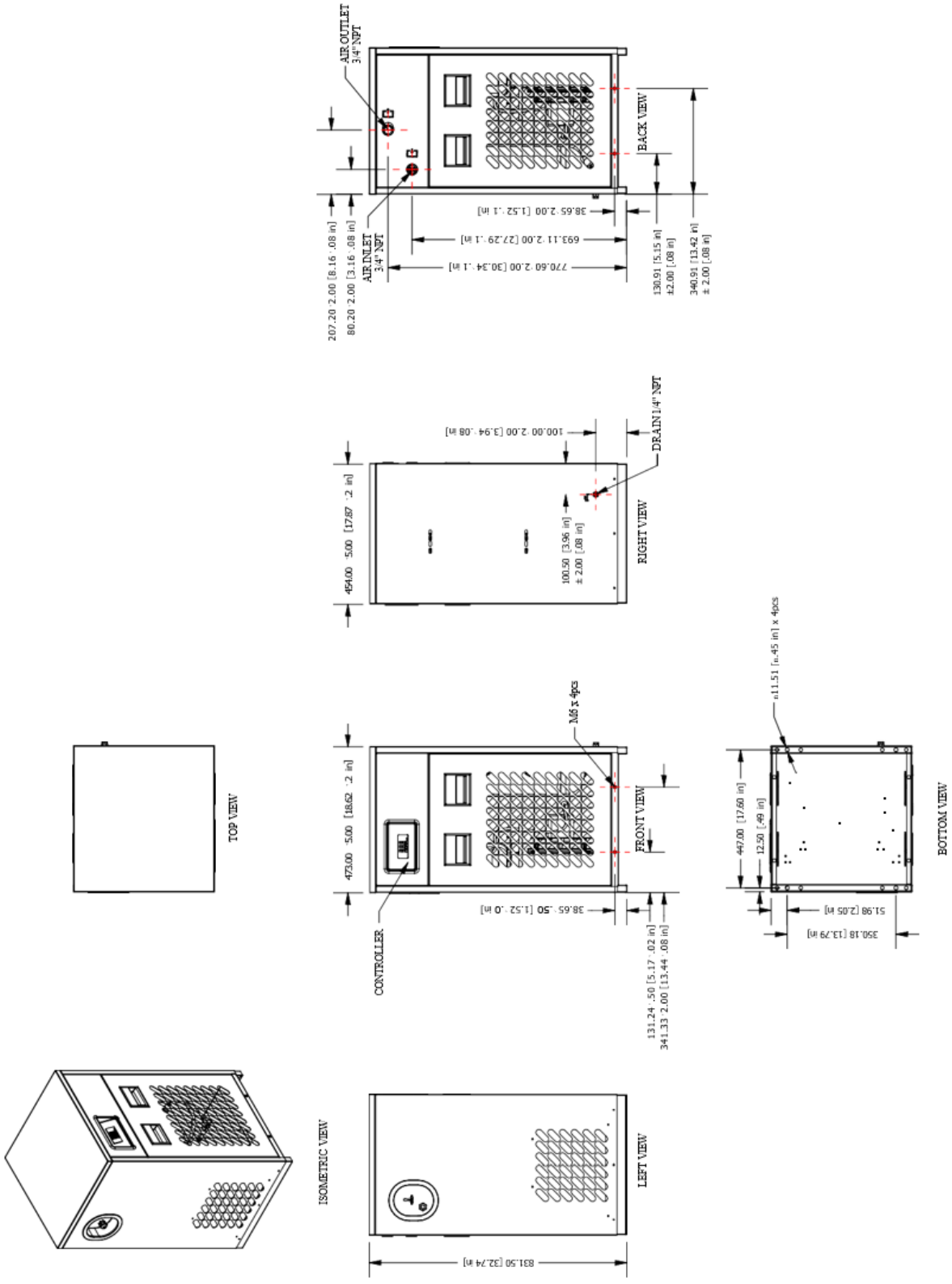


Dimensions

NDRCF1150030

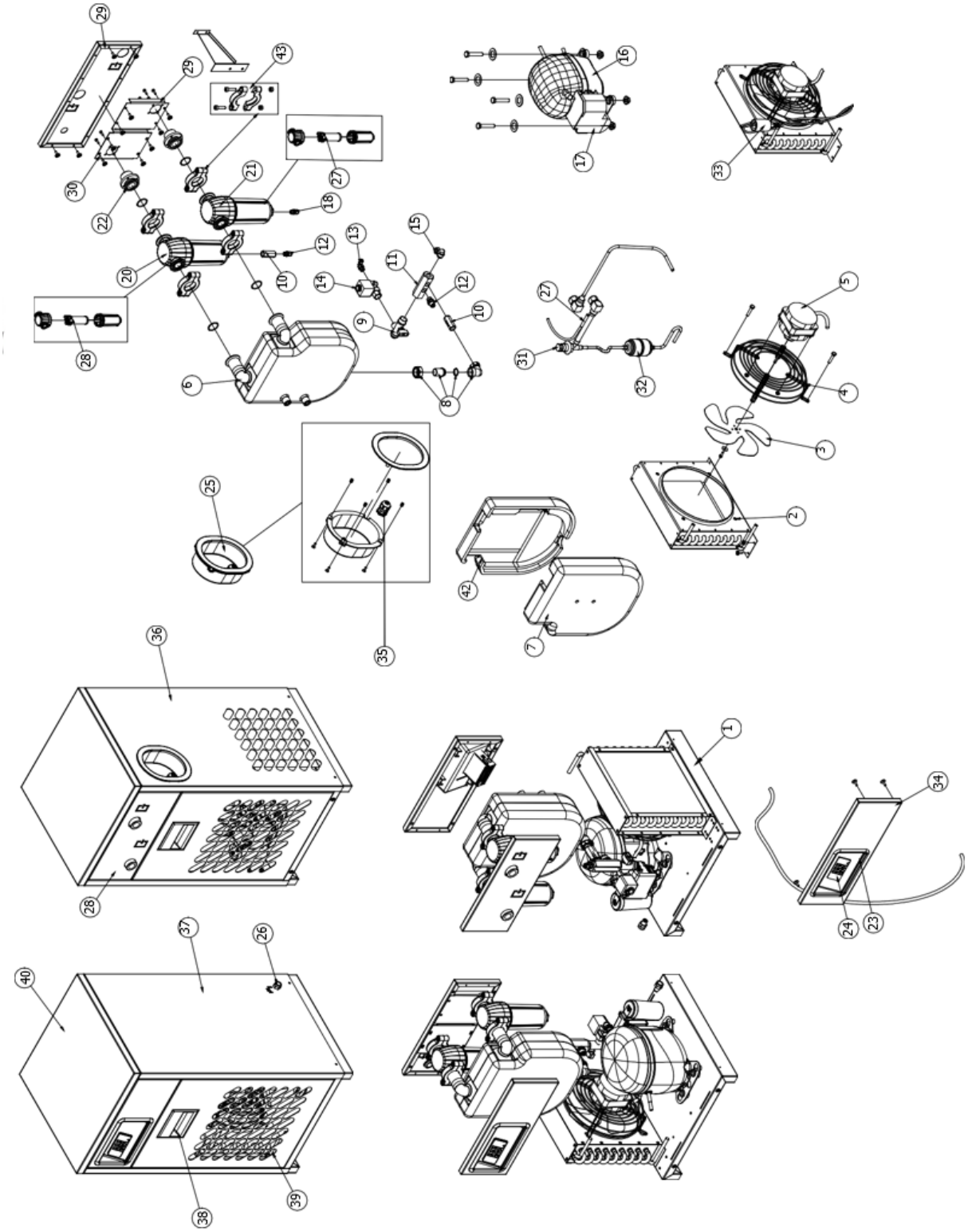


NDRCF1150058



Exploded Parts

NDRCF1150030



ITEM NO.	PART NO.	DESCRIPTION	QTY
43	1019759	G25-100 CLAMP KIT	4
42	1442270100	MK10-35 ISOLATION POLYSTYRENE TOP	1
41	1612250731	1/4"-4MM STRAIGHT FEMALE FITTINGS	1
40	1612264166	MK10-20-30-35-08-GON (7012 THICK RAGGED GREY)	1
39	1612264165	MK10-20-30-35-07-GON (7012 THICK RAGGED GREY)	2
38	1039220100	AIR DRYER HANDLE	2
37	1612264162	MK10-20-30-35-03-GON (7012 THICK RAGGED GREY)	1
36	1612285206	MK10-20-30-35-09-KTK (7012 THICK RAGGED GREY)	1
35	1023220100	POLYAMIDE CABLE UNION PG11	1
34	1612264164	MK10-20-30-35-06-GON (7012 THICK RAGGED GREY)	1
33	1026750100	12-9 BAR-FAN SWITCH	1
32	1026100100	MK10-90 FILTER DRYER	1
31	1025980100	MK10-60 EXPANSION VALVE	1
30	1612264149	MK10-20-30-35-05A-GON (GALVANIZED)	1
29	1612264150	MK10-20-30-35-05B-GON (GALVANIZED)	1
28	1612285232	MK10-20-30-35-10-KTK (7012 THICK RAGGED GREY)	1
27	1057380100	NTC SENSOR	1
26	1026290100	PASS UNION Ø6mm	1
25	1612273697	MK10-110 CABLE COLLECTION BOX	1
24	1057740100	DPR0 CONTROLLER 30A 115V	1
23	1057340100	DRYER FRONT PANEL	1
22	103885100	MK10-20-30 CONNECTION KIT NPT	2
21	1035799	ME-MKON-0065-3565/0123-Y-BM-PK	1
20	1035800	ME-MKON-0065-3565/0123-X-BM-PK	1
19	1035794	GKON-65-1/2-MY-A1/4-NSG-W-0000	1
18	1035793	GKON-65-1/2-MX-A1/4-NSG-W-0000	1
17	1062880100	MK10-20 COMPRESSOR 115/1/60 ELECTRIC BOX	1
16	1023900100	MK10-20 COMPRESSOR 115/1/60	1
15	1612250732	1/4"-4MM UNION - ELBOW	1
14	1026380100	MK10-80 115V 16Bar SOLENOID VALVE	1
13	1029740100	1/4"-6*8 METAL SWIVELLING ELBOW UNION	1
12	1034620100	1/4"-Ø6 STRAIGHT FEMALE FITTINGS	3
11	1022290100	MK10-150 COLLECTOR	1
10	1002090100	1/4" CHECK VALVE	2
9	1018430100	1/2"-1/4" FILTERED DRAIN	1
8	1002060100	1/2" CORNER UNION	1
7	1442260100	MK10-35 ISOLATION POLYSTYRENE LOWER	1
6	1017260100	MK10-35 EXCHANGER	1
5	1025120100	MK10-40 115V UL FAN MOTOR	1
4	1025260100	MK10-40 (Ø220) FAN GRILL	1
3	1025150100	MK10-40 (Ø200) FAN PROPELLER	1
2	1025060100	MK35 CONDENSER	1
1	1612264160	MK10-20-30-35-01-GON (7012 THICK RAGGED GREY)	1

PART LIST

31	EXPANSION VALVE	MK10-60 EXPANSION VALVE	1025410100
24	CONTROLLER	DPR0 CONTROLLER 30A 230V	1057350100
14	SOLENOID VALVE	MK10-130 230V 16BAR SOL. VALVE	1018440100
16	COMPRESSOR	MK10-20 COMP. 220-230/1/50-60	1024550100
5	FAN MOTOR	MK10-40 230/1/60 UL FAN MOTOR	1025290100

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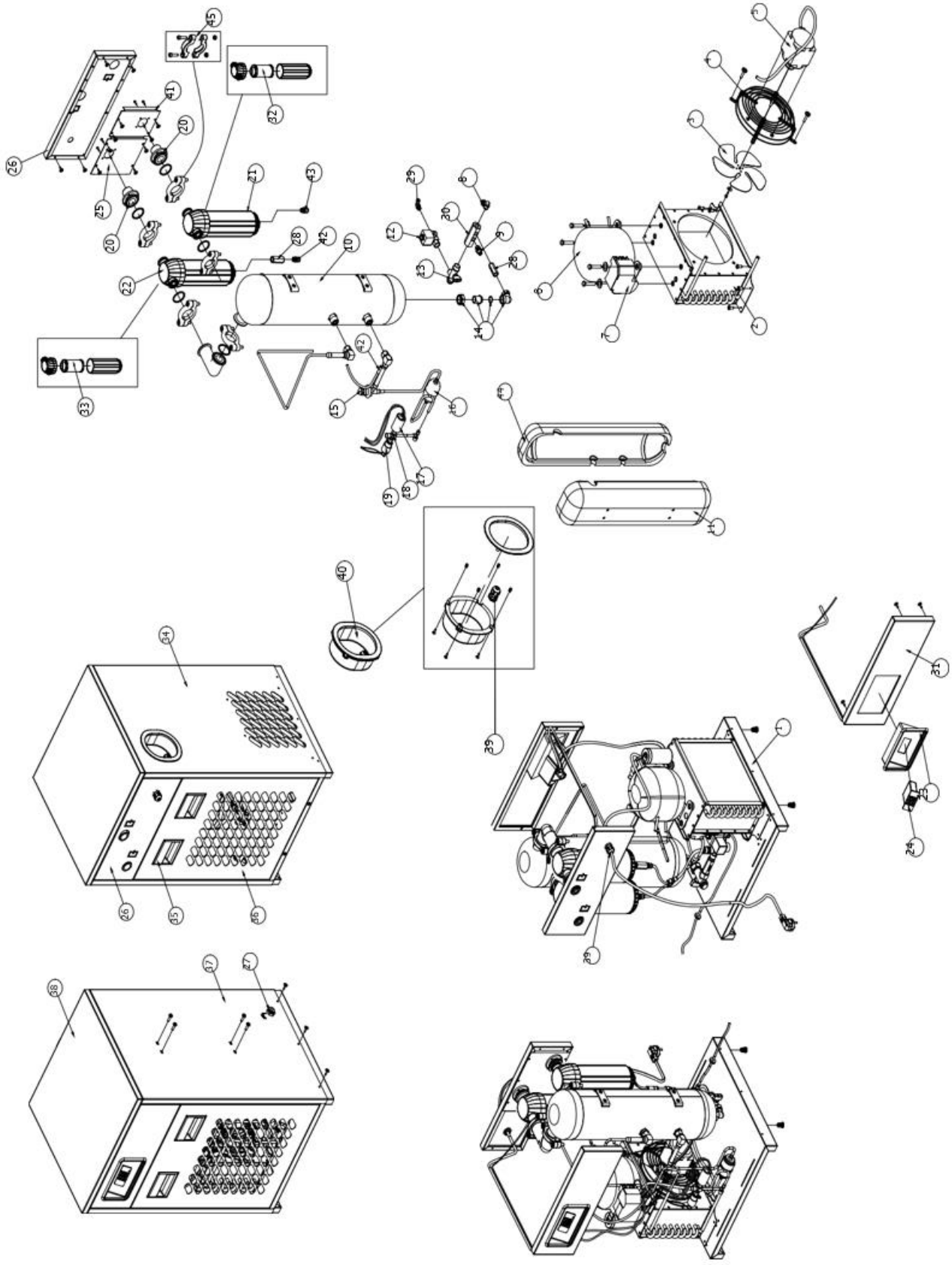


ITEM NO.	PART NO.	DESCRIPTION	QTY
45	1019819	G150-250 CLAMP KIT	5
44	1442350100	MK40-60 ISOLATION POLYSTYRENE TOP	1
43	1612250731	1/4"-4MM STRAIGHT FEMALE FITTINGS	1
42	1057380100	NTC SENSOR	1
41	1000670700	MK40-50-60-05B PANEL (GALVANIZED)	1
40	1612273697	MK10-110 CABLE COLLECTION BOX	1
39	1023220100	POLYAMIDE CABLE UNION PG11	1
38	1047510100	MK40-50-60-08 PANEL (7012 THICK RAGGED GREY)	1
37	1043740100	MK40-50-60-02 PANEL (7012 THICK RAGGED GREY)	1
36	1037460100	MK40-50-60-07 PANEL (7012 THICK RAGGED GREY)	2
35	1039220100	AIR DRYER HANDLE	4
34	1038260100	MK50-60-03B PANEL (7012 THICK RAGGED GREY)	1
33	1012807	ME-MKON-0155-180300/0170-Y-BM-PK	1
32	1012808	ME-MKON-0155-180300/0170-X-BM-PK	1
31	1042000100	MK40-50-60-06 PANEL (7012 THICK RAGGED GREY)	1
30	1022290100	MK10-150 COLLECTOR	1
29	1029740100	1/4"-6*8 METAL SWIVELLING ELBOW UNION	1
28	1002090100	1/4" CHECK VALVE	2
27	1062260100	1/4" - Ø6 TRANSITION NIPPLE (NPT)	1
26	1040160100	MK40-50-60-04 PANEL (7012 THICK RAGGED GREY)	1
25	1000670600	MK40-50-60-05A PANEL (GALVANIZED)	1
24	1057740100	DPR0 CONTROLLER 30A 115V	1
23	1057340100	DRYER FRONT PANEL	1
22	1012805	GKON-155-3/4-MY-A1/4-NSG-W-0000	1
21	1012806	GKON-155-3/4-MX-A1/4-NSG-W-0000	1
20	1060570100	MK40-50-60 CONNECTION KIT NPT	2
19	1026770100	25 BAR HIGH PRESSURE SWITCH	1
18	1029510100	3 SIDE SCHRADER, 1 SIDE WELDED T	1
17	1026750100	12-9 BAR-FAN SWITCH	1
16	1026100100	MK10-90 FILTER DRYER	1
15	1025980100	MK10-60 EXPANSION VALVE TYPE-1	1
14	1002060100	1/2" CORNER UNION	1
13	1018430100	1/2"-1/4" FILTERED DRAIN	1
12	1026380100	MK10-80 115V 16Bar SOLENOID VALVE	1
11	1442340100	MK40-60 ISOLATION POLYSTYRENE LOWER	1
10	1045560100	MK40-50-60 HEAT EXCHANGER-MKR	1
9	1026430100	1/4" 6mm STRAIGHT FEMALE FITTINGS	3
8	1612250732	1/4"-4 UNION - ELBOW	1
7	1062890100	MK50 COMPRESSOR 115/1-60 ELECTRIC BOX	1
6	1024470100	MK50 COMPRESSOR 115/1/60	1
5	1025130100	MK50-80 115V UL FAN MOTOR	1
4	1025270100	MK50-70 (Ø275) FAN GRILL	1
3	1025160100	MK50-70 (Ø254) FAN PROPELLER	1
2	1024990100	MK50-60 CONDENSER	1
1	1038050100	MK40-50-60-01 PANEL (7012 THICK RAGGED GREY)	1

PART LIST

24	CONTROLLER	DPR0 CONTROLLER 30A 230V	1057350100
12	SOLENOID VALVE	MK10-130 230V 16BAR SOL. VALVE	1018440100
6	COMPRESSOR	MK50 COMP. 220-230/1/50-60	1024420100
5	FAN MOTOR	MK50-60 230/1/60 UL FAN MOTOR	1025110100

Trouble Shooting Guide

Problem	Possible Cause	Repair	Comments
Dryer is switched on, indicator light is lit but the refrigerant compressor does not turn on.	The connection has inverted phases	Invert two phases	3-phase dryers are equipped with a phase controller to avoid the fans from turning in the opposite direction.
	Refrigeration unit is not functioning	Check refrigeration compressor	Several factors can cause compressor failure. A qualified refrigeration technician needs to check all the electrical and refrigerant circuit and controls.
	The refrigerant high pressure protection has tripped	The refrigerant safety high pressure switch has tripped.	The dryer is protected against excessively high refrigerant pressure. If the condenser efficiency has reduced, the switch will trip. Manually reset the switch.
		In case of water cooled condensers, check the water control valve	
	Excessive ambient temperature	Be sure that dryer is working in temperatures lower than the design conditions. Designed conditions and correction factors are described in this manual.	A high ambient temperature may cause the refrigerant system to operate at higher than normal pressures. Results will be higher than normal evaporator temperature. important: adequate air circulation around the dryer, and proper ventilation in the equipment room should guarantee a low enough ambient temperature.
Dryer is switched on, but the refrigerant compressor does not turn on.	Excessive temperature on crankcase of compressor.	Allow time for the compressor to cool down. Reason may be a possible incorrect adjustment of hot gas bypass valve or shortage of refrigerant	Compressor is protected against overly elevated temperatures of the crankcase by a thermal switch.
	Excessive compressed air inlet temperature.	Be sure that dryer is working in temperatures lower than design conditions.	The dryer is designed for working in calculated conditions (see description in this manual). If conditions are exceeded, the dryer will be overflowed, dew point will go up and protecting devices can switch off.
	Clogged condenser fins or clogged water condenser. Possible high crankcase temperature Possible loss of phase Possible low voltage causing overload trip Possible failed compressor	Clear fins or water condenser of all obstructions.	The clogged fins in the condenser will restrict the air passage and reduce the refrigeration capacity, causing high temperature in the evaporator. Same will occur if water condenser is clogged with mud or dirt. Air condenser and water condenser should be periodically checked and cleaned. Protect water circuit by an adapted filter.
	Too much compressed air flow.	Check actual flow through the dryer.	This dryer is designed for a maximum air flow at design conditions. If too much air is pumped into the dryer, water removal capacity may not be sufficient, resulting in liquid carryover down stream. Check the rated output the air compressor.
	Faulty electrical wiring	Inspect the circuit	The compressor-on light should be wired into the refrigerant compressor circuit. See wiring diagrams in this manual.
	One electrical protection has tripped.	Reset the protection or replace the blown fuse.	The dryer is protected against high amp draw by fuse and/or overload relay that can trip in case of need. Reset or replace fuse once, but do not persist if it trips again, request assistance from a qualified refrigeration contractor.
Dryer is switched on but fan is not running.	Fan has to run if refrigerant high pressure reaches upper set point.	Check that compressed air flows through the dryer. Check that fan blades are free to move. Check the fan pressure switch.	Fan operates automatically to keep refrigerant pressure below the maximum value. The fan can stop if pressure is under the recommended setting.
When compressor starts, it vibrates a lot and makes mechanical noise.	Compressor is slugging liquid refrigerant at start up.	Be sure the pre-heating period of at least 2 hours is respected	Refrigerant may move between receivers when refrigerant compressor is stopped and not heated, especially if stopped for a long time. This migration may cause liquid shock (slugging) in valves specially on large dryers containing more refrigerant

Problem	Possible Cause	Repair	Comments
Water in system	Compressed Air Inlet and outlet connections are reversed.	Check inlet and outlet connections.	This dryer is designed for air flow in one direction only. Inlet and outlet directions are identified on the dryer.
	Drain system is clogged or inoperative.	Restore a free flow of water condensate. Check water evacuation.	Drain system is timed solenoid valve, pneumatically assisted which has to be adjusted in accordance with values listed in this manual. The Solenoid valve includes a strainer that has to be periodically checked and cleaned. Membranes of pneumatically assisted drain have to be checked or replaced every 6 months.
	Bypass system is open	Check the valves	Important: Bypass piping should be installed around the dryer so the dryer can be isolated for service without shutting down the air supply. During dryer operation, valves must be set so all air goes into the system. Check tightness of the bypass system.
	Free moisture remains in pipe lines.	Blow out the system	Before the dryer is first started all free moisture should be blown out of the system.
	Excessive air flow	Check actual flow through the dryer.	This dryer is designed for a maximum air flow. If too much air is pumped into the dryer, water removal capacity may not be sufficient, resulting in liquid carry over downstream. Check the rated flow of the air compressor .
	Excessive free moisture	Check the separator and drain system and compressor after cooler ahead of the dryer.	In some system there may be an accumulation of free moisture in the line ahead of the dryer. If this moisture is pumped into the dryer intermittently, the water removal capacity may not be sufficient. A water separator should be installed in the line before the dryer.
	Excessive compressed air inlet temperature.	Be sure that dryer is wor- king lower than design conditions	The dryer is designed to work for calculated design conditions. Should the conditions be exceeded, the dryer will be overflowed, dew point will go up and protecting devices can switch off.
	Clogged condenser fins	Clear fins of all obstru- ctions	The clogged fins in the condenser will restrict air passage and reduce refrigerant capacity causing water downstream. Fins should be periodically checked and cleaned.
	Shortage of refrigerant	Fix the leak and add a charge of refrigerant.	Loss of refrigerant will cause improper functioning. A qualified, refrigeration specialist should perform the necessary repairs, or factory should be contacted if the unit is in warranty.
	Refrigeration system is not functioning	Check to be certain refrigerant compressor is running	To check if the compressor is running, check compressor-on light. It is possible for the fan to be operating but not the compressor. Compressor not running can be caused by several factors. A qualified refrigeration technician should check all refrigerant and electrical controls
	Excessive pressure dew point	Readjust refrigerant evaporating pressure	The refrigerant pressure adjustment should be done by a qu- alified refrigeration engineer. This is a very sensitive device and incorrect settings may create other failures.

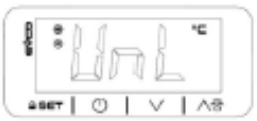
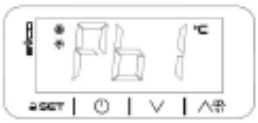
Problem	Possible Cause	Repair	Comments
High pressure drop	Excessive compressed air flow or too law air inlet pressure.	Check actual pressure and flow through the dryer.	This dryer is designed for a maximum air flow. If too much air is pumped into the dryer, water removal capacity may not be sufficient, resulting in liquid carry-over downstream. Check the rated flow of the air compressor.
	Freeze up	Check that compressor room ambient,	Frosting of the lines is an indication that controls are set too low. The following should be done by an experienced refrigeration technician.
		Fan switch could have failed in closed position keeping fan on.	
			Controls may be adjusted in the fields by means of the hot gas bypass valve. This is to be done by a qualified refrigerant tech- nician.
The unit will not run or cycles off and on.	Clogged heat exchanger	Clean heat exchanger with reverse air flow.	Dryer are supposed to be used with compressed air free of any aggressive contaminants. Some contamination may require extra maintenance of the heat exchanger.
	Line disconnect switch is open.	Close the start or disconnect switch.	If the dryer is not operating, check the disconnect switch or circuit breaker to be certain it is on.
	Fuse or breaker is open	Replace fuse or reset breaker.	The fuse to the power line should be checked and replaced if nee- ded. Never replace a burnt fuse with an oversized fuse.
	Faulty refrigerant compressor or controls.	Determine the cause and make correction	Failure of compressor to run may be caused by several factors. A qualified refrigeration specialist should check all electrical and refrigeration controls, or factory should be contacted if unit is in warranty.
	Excessive compressed air inlet temperature.	Design conditions and correction factors are described in this manual. Be sure that dryer is working in ambient temperatures below design conditions.	The dryer is designed for working into calculated design conditions. Should the conditions be exceeded, the dryer will be overflowed, dew point will go up and protecting devices may trip.

Problem	Possible Cause	Repair	Comments
The unit will not run or cycles off and on.	Excessive ambient temperature	Designed conditions and cor-rection factors are described in dryer . Be sure that dryer is working lower than design conditions.	A high ambient temperature may cause the refrigerant system to operate at higher than normal pressures. Results will be a higher than normal evaporator temperature. Important: there should be adequate air circulation around the dryer, and proper ventilation in the equipment room should guarantee a low enough ambient temperature.
	Clogged condenser fins	Clear fins of all obstructions.	The clogged fins in the condenser will restrict the air passage and reduce the refrigeration capacity, causing high temperature in the evaporator. Fins should be periodically checked and cleaned.
	Low refrigerant level	Fix the leak and add a charge of refrigerant.	Loss of refrigerant will cause improper functioning. Dryers are equipped with a temperature switch which maintains the amount of refrigerant to maintain proper cooling of the compressor. A shortage of refrigerant may cause suction line to become very hot, causing the temperature switch to trip. A qualified refrigeration specialist should perform the necessary repairs.
Error sign occurs on digital temperature control device	The dew point is too low or too high	Check refrigerant gas and make sure that the working conditions are within the correct range.	If there is not enough refrigerant gas or if the working temperature and inlet temperatures are very high, the dew point will increase.
Drain Failure	Back pressure or reduction of drain port.	Back First of all replace the drain / drains. Open drain to atmosphere (no back pressure) - if hose / pipe is used to carry the drain somewhere else; keep or enlarge the diameter.	Max drain hose length after the dryer must not exceed 30 feet.
			Max drain hose height from the dryer must not exceed 9 feet.
			The drain port size should not be reduced.
			There should not be any fitting that may cause pressure drop such as valves, elbow, tees, etc. on the drain connection.
			Drain should be at atmospheric pressure at all times. Any back pressure will result in failure and malfunction.

Follow the steps below to reset the filter alarm:

To reset the filter alarm, you need to enter the service domain and then access the "rHF" section. Please follow the steps carefully.

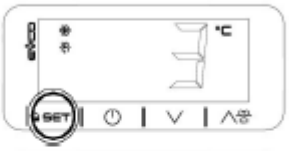
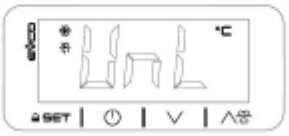
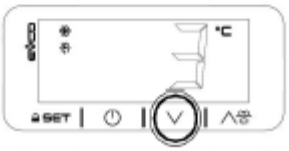
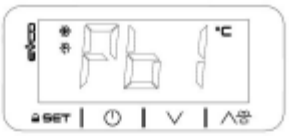
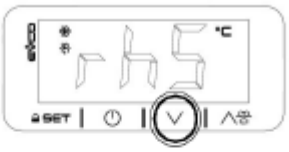
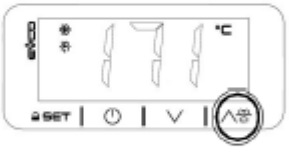
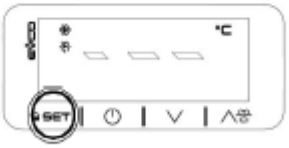
Table 1 Steps to reset the filter alarm

1	**Main page** To disable the Key Lock: Press and hold the SET button for 4 sec	
2	**Key Lock** "Loc" appears while holding the SET button for 4 sec	
3	"UnL" appears when key lock is released	
4	To access service menu (Pb1): Press and hold the menu button for 4 sec.	
5	"Pb1" appears when service menu is opened	
6	To access "rHF", use the menu keys	
7	Press the SET button to password section after access the "rHF" section.	
8	Enter "149" in the password field	
9	The press and release button SET: the display will show "- - -" 4 sec flashing	
10	The main page appears after this operation	

Follow the steps below to reset the service alarm:

To reset the service alarm, you need to enter the service domain and then access the "rHS" section. Please follow the steps carefully.

Table 2 Steps to reset the service alarm

1	**Main page** To disable the Key Lock: Press and hold the SET button for 4 sec	
2	**Key Lock** "Loc" appears while holding the SET button for 4 sec	
3	"UnL" appears when key lock is released	
4	To access service menu (Pb1): Press and hold the menu button for 4 sec.	
5	"Pb1" appears when service menu is opened.	
6	To access "rhS", use the menu keys	
7	Press the SET button to password section after access the "rHF" section.	
8	Enter "171" in the password field	
9	The press and release button SET: the display will show "- - -" 4 sec flashing	
10	The main page appears after this operation