

COMPRESSED AIR DRYERS



INSTRUCTION MANUAL

KRAD M SERIES (KRAD 15M to KRAD 500M)

WARRANTY NOTICE

Failure to follow the instructions and procedures in this manual, or misuse of this equipment, will **void the warranty**



ABN 88 648 683 461



www.activeairspares.com.au

KK-KRAD-15-500 KLT

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1. IMPORTANT SAFETY NOTES



PLEASE READ

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

- A)** Before installation, make sure the dryer and the compressed air system are depressurised and disconnected from the electrical mains supply.
- B)** The user is responsible for maintaining safe operating conditions. Parts and accessories must be replaced if inspection shows that safe operation can no longer be assured.
- C)** Installation, operation, maintenance and repair must only be carried out by authorised, trained and skilled personnel.
- D)** The minimum and maximum values stated for the dryer must be observed, as well as all safety precautions described in this manual.
- E)** If any statement in this manual does not comply with local legislation, the strictest applicable standard must be applied.

1.1 Transportation

- A)** Use care and caution when transporting the dryer. Avoid dropping the unit or subjecting it to any physical impact.
- B)** A forklift may be used to transport the dryer, provided the forks are long enough to support the full width or length of the unit and are used with care throughout the move.

1.2 Positioning

- A)** The dryer must be installed horizontally. A minimum clearance of 50 cm around the dryer is required to allow adequate ventilation and easy access for servicing.
- B)** The ambient temperature in the room should not exceed 45 °C and must not be below 4 °C, taking into account the heat radiated by the dryer.
- C)** (40 watts for each litre/second under ISO 7183-A conditions or 18 watts for each SCFM under ISO 7183-B conditions).
- D)** There must be no chemicals in the surrounding atmosphere that could damage the copper components (for example, ammonia gas).

1.3 Installation

In addition to general mechanical installation practices and local regulations, the following instructions must be emphasised:

- A)** Only authorised, trained and skilled personnel may install the compressed air dryer.
- B)** Safety devices, protective covers and insulation on the dryer must never be removed or modified. Each pressure vessel or accessory installed outside the dryer and operating with air above atmospheric pressure must be fitted with the required pressure-relief safety valves.

1.4. Before Operating

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

- A)** Review all safety precautions.
- B)** The dryer connection piping measurements must be selected correctly. (See Technical specifications)
- C)** The dryer connection piping must be adapted to the operating pressure. (See Technical specifications)
- D)** Never operate the dryer at pressure above the maximum specified on the dryer label (check the technical specs too).
- E)** 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.

1.5 Qualified service personnel

- A) Maintenance and repairs must only be carried out when the air dryer is shut down, depressurised, and the main power switch is turned off.
- B) Use only appropriate tools for maintenance and repair.
- C) Before dismantling any part under pressure, disconnect all pressure sources and depressurise the system.
- D) Proceed carefully during maintenance and repair. Prevent dirt from entering the system by covering parts and openings with a clean cloth, paper or tape. A receiver must never be welded or modified in any way.
- E) Never leave tools, loose parts or cleaning rags in or on the air dryer.
- F) Before returning the dryer to service, check the settings of the control and safety devices, as well as the pressure and temperature of the compressed air circuit.

1.6 Maintenance by the user

- A) Keep the dryer clean.
- B) Regularly check that the condensate drain trap is operating correctly.
- C) Every six months, check and clean the drain strainer by undoing the access screw and rinsing the filter with tap water to remove trapped dirt from inside.
- D) For air-cooled dryers, clean the air condenser whenever it is dirty or clogged.
- E) For optional water-cooled condensers, use only clean water and install a water filter if needed. Use counter-flow water to clean the condenser if required.
- F) Refer to the troubleshooting list in case of operational issues.
- G) After maintenance, check operating pressures, temperatures and time settings. If all operating and safety devices function correctly, the air dryer may be put back into service.

2. INTRODUCTION TO THE DRYER

A) Purpose of this Dryer

- A) This refrigerated compressed air dryer is designed to remove water vapour from industrial compressed air.
- B) The dryer is designed for indoor operation.
- C) The minimum and maximum values stated must be observed, along with all safety precautions described in this manual.

B) Dryer Label

The following label is affixed to the cabinet of the refrigerated compressed air dryer.

REFRIGERANT AIR DRYER	
Model No:	MODEL NO
Serial No:	
Max. Pressure	Refrigerant
Max. Amper	Ref.Quantity
Fuse Amper	Voltage
Power	Element Type
	Address:

Dryer label descriptions:

Model No:	Dryer model number
Serial No:	Dryer serial number
Max Pressure:	Maximum working pressure of the dryer
Max Ampere:	Maximum allowed current
Fuse Amp:	Maximum rating of the protective fuse
Element Type:	Filter element type in the air dryer
Refrigerant:	Type of refrigerant gas used
Refrigerant Quantity:	Amount of refrigerant gas used
Voltage:	Main supply voltage
Power:	Nominal input power under the specified operating conditions for this dryer model

C) Working Details

1) Refrigerant circuit

The refrigerant circuit can be divided into **3** parts:

- A) Low-pressure section with an evaporator (heat exchanger).
- B) High-pressure section including the condenser, liquid receiver (if installed) and filter dryer.
- C) Control circuit including:
 - Compressor
 - Expansion valve
 - Bypass valve (if installed)
 - Fan pressure switch (if installed)

2) For water-cooled dryers

- A) Water valve
- B) Safety high-pressure switch (if installed)

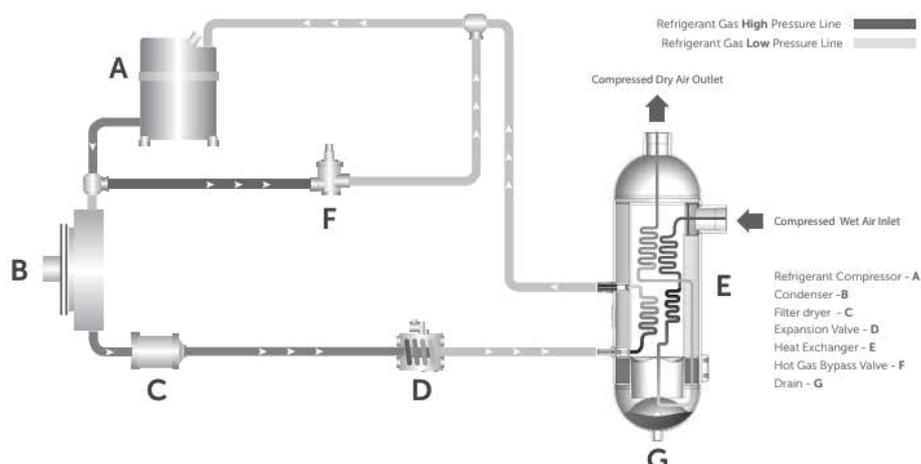
3) Refrigerant circuit operation

- A) The compressor compresses the gaseous refrigerant to a high temperature.
- B) The hot refrigerant condenses in the condenser. Once liquefied, it is stored in the liquid receiver (if installed).
- C) Liquid refrigerant is taken from the receiver and injected into the evaporator (heat exchanger) through an expansion valve. This expansion valve is protected by a filter that removes particles and moisture that may be present in the circuit.
- D) The injected liquid fills the refrigerant section of the air/refrigerant heat exchanger and evaporates by absorbing heat from the compressed air. The gaseous refrigerant is then drawn back into the compressor and the cycle continues.
- E) To keep the evaporation pressure, and therefore the refrigerant temperature in the heat exchanger, constant, a bypass valve injects hot gaseous refrigerant into the circuit. On some dryers, an automatic expansion valve provides this regulation.

4) Compressed air circuit

- A) The saturated hot compressed air flows into the Economiser, where it is pre-cooled by the outgoing dry, chilled air. In the cold zone of the air/refrigerant section, the air is cooled further down to its dew point and then enters the separator, where condensate is collected. The outgoing chilled air is then warmed in the economiser by the incoming hot air.
- B) The condensate is collected after centrifugal separation and discharged through the automatic drain trap.
- C) As long as the compressed air temperature does not fall below the dew point in the downstream pipework, no further condensation will form in the air circuit.

Compressed Air Dryer Working Principle



5) Refrigerant compressor

The refrigerant compressor increases the pressure and temperature of the refrigerant. Two types of compressors are commonly used in this application, depending on refrigerant capacity:

- Piston type
- Scroll type

6) Condenser

The condenser dissipates the heat removed by the evaporator and generated by the compressor. There are two types of condensers used in this application:

1) Air-cooled type (standard)

Designed to dissipate heat to the ambient air.
Fans force air through the fins to improve heat transfer.

2) Water-cooled type (optional)

Designed to dissipate heat to a circulating water flow.
A shell-and-tube heat exchanger is used for this purpose.

2.1 Points regarding the protection of the water-cooled condenser

- The most common problem is clogging. Undesirable or unexpected changes in the amount of incoming water will affect dryer performance.
- Clogging is caused by calcification (scale), solid particles and microorganisms.
- Calcareous deposits in the cooling water should not be removed using a water softener alone.
- Filtration using a semi-permeable membrane can be used to remove lime (scale).
- After analysis of the solid particles, suitable filtration equipment should be used to remove them (for example, a 100 µm strainer filter).
- If corrosive water such as seawater is to be used, the condenser must be manufactured from special, corrosion-resistant materials. If a standard condenser is used with seawater contrary to this information, the dryer will be out of warranty.
- If information about chemicals present in the working environment is not provided to the manufacturer and the unit is operated in a corrosive atmosphere (such as ammonia), the warranty will be void.
- To prevent damage caused by freezing, water containing antifreeze should be used at a concentration suitable for the minimum expected operating temperature (preferably ethylene glycol).
- The water pressure and flow rate must be kept within the limits stated in the technical datasheet (maximum pressure 6 barg).
- Care must be taken not to use materials that may cause galvanic corrosion in the cooling system.
- The manufacturer is not responsible for any malfunctions that may occur due to unsuitable or poor-quality water.

7) Refrigerant circuit protection

A) Klixon: Single-phase compressors are equipped with a Klixon, a temperature-sensitive switch that monitors compressor temperature and possible over-current. In the event of a fault, the Klixon trips and automatically resets once the compressor has cooled.

B) High-pressure safety switch: The refrigerant line is considered a pressure vessel, so it is protected against over-pressure by a manually reset high-pressure switch. It is set to 25 bar for dryers operating with R513a from R134a.

C) Filter dryer: The refrigerant circuit is a closed circuit and complete removal of moisture from the refrigerant is essential for correct operation.

D) To avoid problems, the refrigerant circuit must be evacuated (vacuum-pumped) before charging with refrigerant. The circuit is equipped with a filter dryer, which also traps any solid particles that may have entered during assembly.

E) Water-cooled dryers are equipped with a high-pressure safety switch. In case of cooling water failure, this safety switch stops the dryer. When it has tripped, it must be manually reset before restarting the dryer.

8) Refrigerant circuit controls

A) Liquid refrigerant injection: Liquid refrigerant is injected into the evaporator by a control valve. This valve is thermostatic or pressostatic and maintains a constant level of superheat in the refrigerant within the evaporator(s).

B) Constant evaporating pressure: In dryers equipped with a bypass valve, the evaporating pressure is kept constant by controlled injection of hot gas from the high-pressure side into the low-pressure section of the circuit.

9) Condensate drain – trap assembly

The condensate drain is easy to remove because it can be isolated from the pressurised air circuit using a ball valve. The drain must be depressurised before it is dismantled.

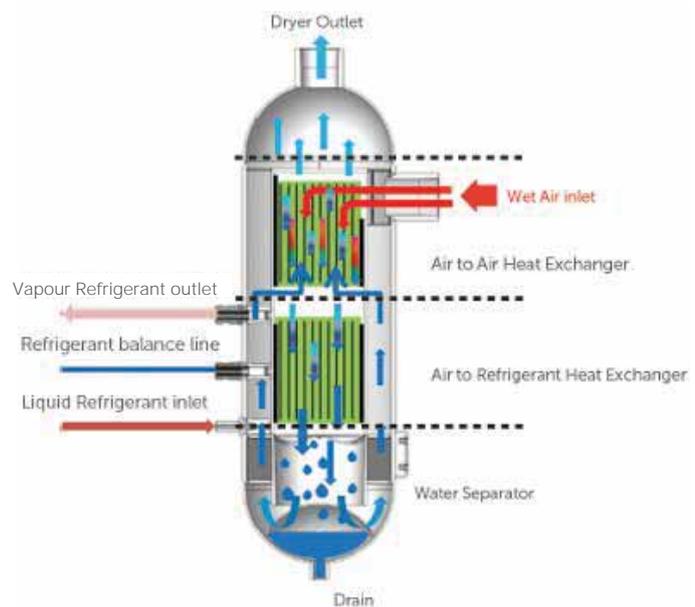
10) Heat exchanger – modular design

A) The dryers are equipped with a compact Mono-Bloc Heat Exchanger module.

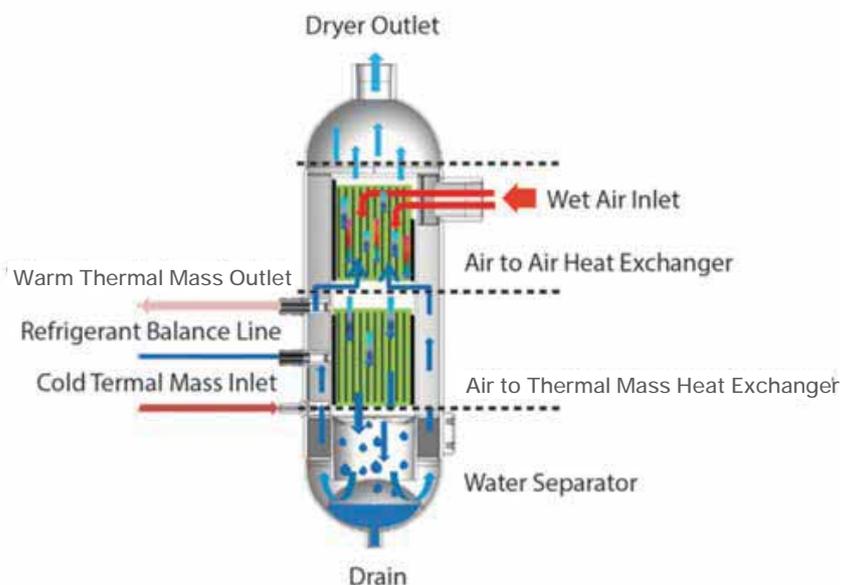
This assembly is specially designed for drying compressed air and consists of:

- 1) Economiser – pre-cools the incoming hot air with the outgoing cold air.
- 2) Air/thermal mass refrigerant exchanger – cools the compressed air down to the required dew point.
- 3) Centrifugal separator – concentrates all condensate and requires no maintenance.

Air Cooled System



Water Cooled System



11) Accessories

Temperature switch: Located inside the dryer, this temperature switch is adjustable from 0° up to 35 °C.

Digital Controller –DigiPro: This device helps dryer save energy when there is not any compressed air flow in the dryer. The information that can be accessed is as follows: Dewpoint value, periodic maintenance interval display, status report, run time meter, temperature unit selection (°F or °C)

Digital Controller – ESD3: Energy Saving Device: (ESD) This device helps dryer save energy when there is not any compressed air flow in the dryer. The information that can be accessed is as follows: Dewpoint value, periodic maintenance interval display, status report, run time meter, temperature unit selection (°F or °C)
(Please see the models have standard and optional in next page)

3. OPERATION

Control panels for KRAD M Series

The Control Panel of the KRAD Dryer includes a Line Filter replacement alarm.



Single Phase	Digital Controller
KRAD 15M - KRAD 500M	Digi-Pro

IMPORTANT NOTE - INTERNAL FILTERS

The Dryer has two Compressed Air Filter inside.

For the best efficiency, replace the Compressed Air Line Filters annually.

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

ATTENTION - PRESSURE DROP

KRAD M range of dryers have a lower pressure drop than their competitors.

Do not use KRAD M range dryers together with other dryers that have a significantly higher pressure drop without first obtaining confirmation from the technical support team.

3.1. During Operation

Regularly check the Digi-Pro digital temperature controller on the dryer to ensure that operating conditions are within the correct range. (KRAD-350 and above only)

3.2. Start-up and shut-down

Warning: Do not leave the dryer switched off while compressed air is still flowing through it.

3.3. Starting for the first time or after a long stop

1) 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 NOTE

2) After a long stop, it is mandatory to allow a minimum preheating period of 4 hours before starting the dryer again.

3) Follow the daily starting and shut down procedure.

3.4 Daily starting and shut-down

Starting the dryer

- Press the ON button to start the dryer.
- The Start indicator or Dryer Active light will show that the dryer is running.

Stopping the dryer

First stop the airflow:

- Either shut down the air compressor, **or**
- Close the dryer inlet/outlet valves, **or**
- Close the bypass valve (if used).
- Once the airflow is stopped, set the rotary switch to "O".
- Set the rotary switch back to "I" to keep the preheating function active.

It is recommended to leave the dryer power on permanently so the crankcase heater runs continuously. (KRAD-350 and above only)

IMPORTANT NOTE

- 4) Avoid leaving the dryer stopped while compressed air is still flowing through it.
- 5) To start an already preheated dryer again, simply press the green Start button.

4. ELECTRICAL CONTROLLER

4.1 Digi-Pro

4.1.1 Description

With the Digi-Pro series controllers, air dryers have outstanding 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;

- Digital dew point monitoring
- Energy-saving mode display
- Periodic maintenance interval display
- Status report
- Run time meter
- Fahrenheit and Centigrade selection
- Dry Contact available for Remote Stop/Start

4.1.2 Operation

Use the Digi-Pro controller as shown in the control panel illustration.



4.1.3 Menu Buttons



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.

4.1.4 Display Buttons



Alarms / warnings are displayed on the digital screen. This means the dryer is not working under normal operating conditions, and are out of range of the safe working values.

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
HP	High Pressure Alarm	Refrigerant high line pressure is higher than specified set values
tSH	High Suction Line Temperature	Refrigerant suction line temperature is higher than specified set values
hSE	Service Time	General service time of the dryer



Please contact the service department when an alarm/warning occurs.

4.1.5 Mode Display



DRYER ACTIVE MODE

This indicates that the dryer is performing correctly in an active state and drying correctly.



AUTOMATIC DRAIN MODE

Illuminates when the drain system is activated.



ENERGY SAVING MODE

Illuminates when the energy saving mode is activated



CELSIUS UNIT MODE

Indicates that Celsius temperature unit is selected.



FAHRENHEIT UNIT MODE

Indicates that Fahrenheit temperature unit is selected.



COMPRESSOR STANDBY MODE

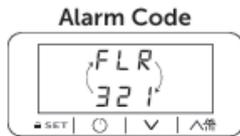
This mode shows that the dryer is ready for drying operation.



SERVICE MODE

This mode shows that the dryer in the service time.

4.1.6 Replacing filter kit with encryption code for Digi-Pro controller



When the filter alarm (FIL) occurs, a numeric warning code is shown on the controller display. Note the warning code displayed on the controller.



Inform the authorised distributor or service provider that a filter alarm has occurred.



Replace the filter kit with an original spare part.



Go to the website indicated below on your phone or computer.

Enter the required information:

Dryer model number

Filter kit serial number

Warning digit code

The website will provide a 3-digit solution code.



On the Digi-Pro controller, enter this solution code via the COD parameter:

Unlock the keypad by pressing SET for 4 seconds.

Use the navigation keys to find the COD parameter.

Press SET to enter the COD menu.

Enter the three-digit solution code using the navigation keys.

Press SET again to confirm



Once the solution code has been correctly entered, the process is now complete and the alarm will be reset.



www.myintegratedfilter.com

5. FILTER ALARM RESET PROCEDURE

Replacement of the filter elements is critical to system performance and ensuring an ISO 8573.1 class 1.4.1 air quality for the customer. This can only be accomplished using Keltec replacement elements. The new reset procedure will require a serial number from a Keltec element kit before it can be reset. The filter alarm will be seen on the screen as in the below figure 1 at the end of the 6000 hours.



FIG.1: Controller screen demonstration of new filter alarm using encrypted code. "Dewpoint" – "Filter Alarm Encryption Code" – "Filter Alarm Warning" is seen respectively when the alarm is given.

5.1 Getting the Passcode

Scan the QR Code or visit: www.myintegratedfilter.com to get the passcode corresponding to the encrypted code.



The following information is needed:

- Serial number of Keltec Dryer
- Originally supplied filter number
- Code displayed on the dryer

After filling in the necessary information, the code will be given by pressing the get your passcode button.

 It is important to save the "passcode" as it can only be used one time for each serial number.

Once the reset code is generated, follow these instructions to reset the alarm for Digi pro controllers

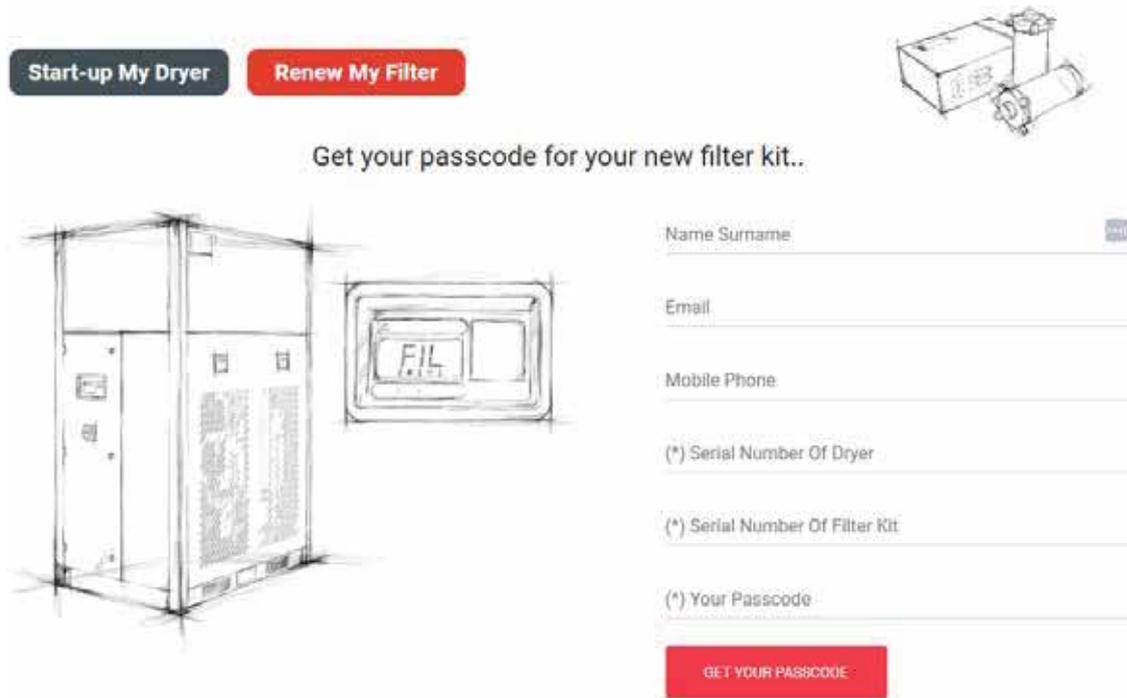
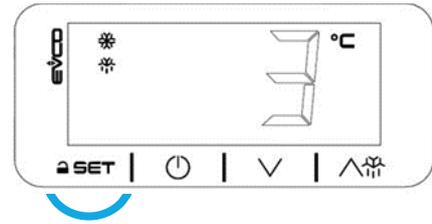


FIG.2: Passcode Screen

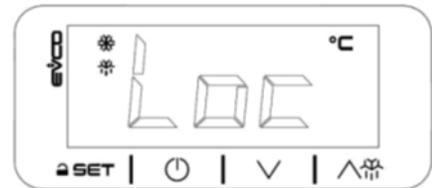
5.2 Reset the alarm for Digi pro controllers

Follow these instructions to reset the alarm for Digi pro controllers

1) Unlock the keylock press SET button for 4 seconds.



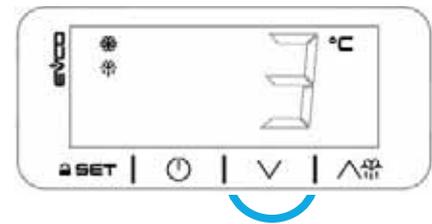
2) While pressing SET button "Loc" appears on the screen.



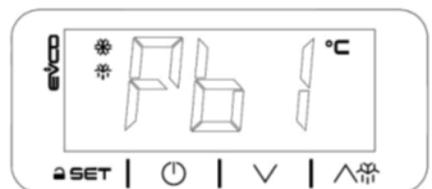
3) "UnL" will appear when the keylock is deactivated.



4) After "UnL" has been seen on screen, Press the down arrow for 4 seconds to reach the service menu "Pb1"



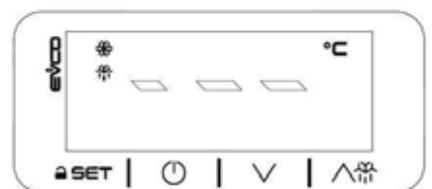
5) "Pb1" is seen when the service menu opens



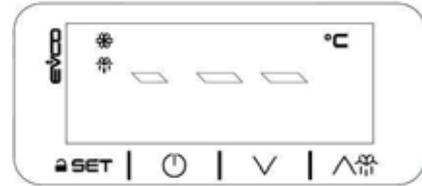
6) Use the direction key to find the "CoD" screen. Press the SET button to enter the code writing screen.



7) Enter the code which is taken from "myintegratedfilter.com" website using the direction keys.



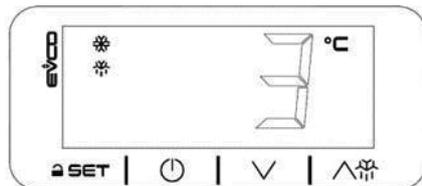
8) Input the code from the right hand side. Use SET button for confirmation.



9) When the passcode is wrong "E01" is seen, and the buzzer raises an alarm.



10) The alarm will disappear when the correct code is entered, and the main screen appears.



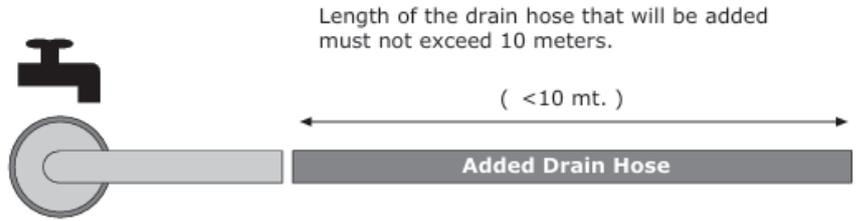
Scan the QR Code to watch filter change instructions on YouTube



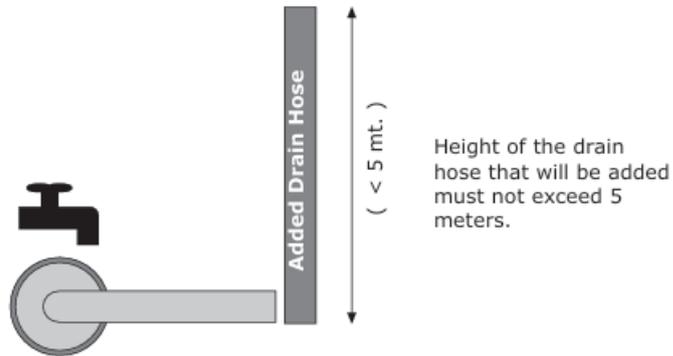
6. CORRECT DRAIN HOSE CONNECTION

Comment	Correct Drain Hose Connection
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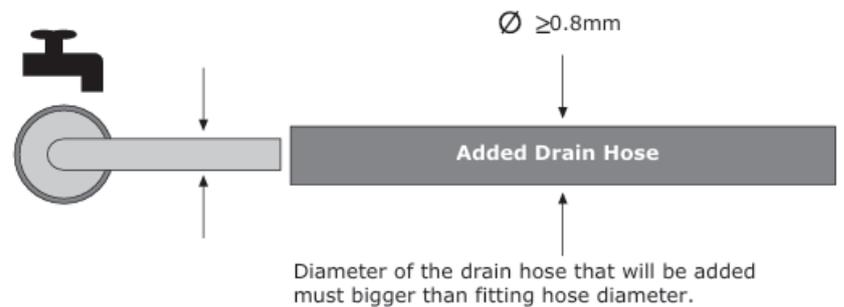
When extending the length of the drain hose, please keep it as short as possible.



Keep the extended drain hose as horizontal as possible. Avoid loops or upward bends that can trap water.



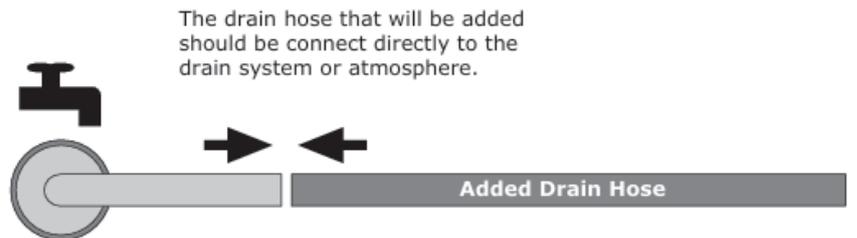
The diameter of the drain hose to be added must be bigger than the diameter of the existing hose fittings.



if

Diameter is Ø6 mm,	Ø ≥ 6 mm
Diameter is Ø8 mm,	Ø ≥ 8 mm
Diameter is G1/2",	Ø ≥ G1/2"
Diameter is G1",	Ø ≥ G1"

The drain hose to be added must be connected to the drain system (or atmosphere) so that it does not create back pressure.



7. TECHNICAL SPECIFICATIONS

Model	Capacity (m ³ /h)	Connection Size	Voltage	Total Installed Power (w)	Nominal Operating Current	MCA (A)	Total LRA (A)	Fuse (Amp) ***	Total Refrigerant (gm)	Refrigerant gas	Pressure drop (mbar)
KRAD-15	15	1/2"	230V / 1ph / 50 Hz	414	1.9	2.33	9.85	4	170	R513a	150
KRAD-25	25	1/2"	230V / 1ph / 50 Hz	460	2.18	2.83	11.45	4	170	R513a	250
KRAD-40	40	3/4"	230V / 1ph / 50 Hz	447	2.18	2.83	12.55	4	225	R513a	90
KRAD-60	60	3/4"	230V / 1ph / 50 Hz	667	3.77	4.8	19.45	6	270	R513a	195
KRAD-80	80	3/4"	230V / 1ph / 50 Hz	823	4.88	6.18	24.25	8	270	R513a	285
KRAD-100	100	1-1/2"	230V / 1ph / 50 Hz	990	5.31	6.93	20.55	8	750	R513a	195
KRAD-125	125	1-1/2"	230V / 1ph / 50 Hz	1254	7.08	9.43	67.05	10	880	R513a	285
KRAD-150	150	1-1/2"	230V / 1ph / 50 Hz	1499	6.93	9.05	33.05	10	880	R513a	175
KRAD-200	200	2"	230V / 1ph / 50 Hz	1777	7.74	9.6	33.6	10	2500	R513a	275
KRAD-250	250	2"	230V / 1ph / 50 Hz	1743	7.89	14.85	51.6	16	2500	R513a	215
KRAD-350	350	2"	230V / 1ph / 50 Hz	1843	8.39	15.35	52.1	16	3960	R513a	135
KRAD-500	500	2"	230V / 1ph / 50 Hz	2358	10.83	18.73	79.1	20	4400	R513a	170

*** Will be provided by the user

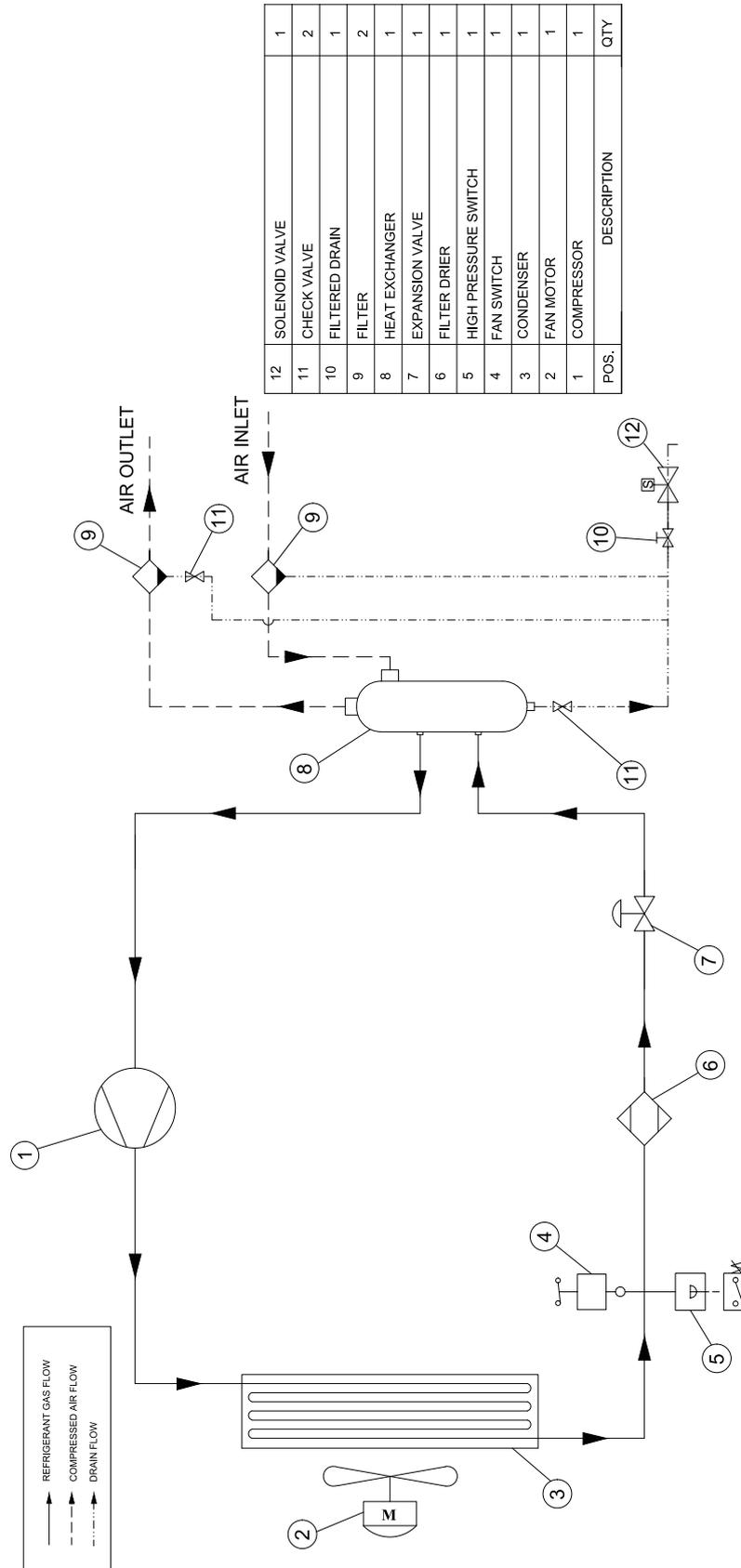
Note: Electrical protection class according to IEC is IP 54

FOR AIR COOLED MODELS	
Nominal Working Pressure	7 barg
Maximum Working Pressure	16 barg
Maximum Ambient Temperature	50°C
Minimum Ambient Temperature	4°C
Maximum Inlet Temperature	60°C

FOR WATER COOLED MODELS	
Maximum Working Pressure	16 barg
Maximum Water Temperature	30°C
Maximum Water Inlet Temperature	60°C
Minimum Water Temperature	5°C
Maximum Water Pressure	6 barg
Minimum Water Pressure	4 barg

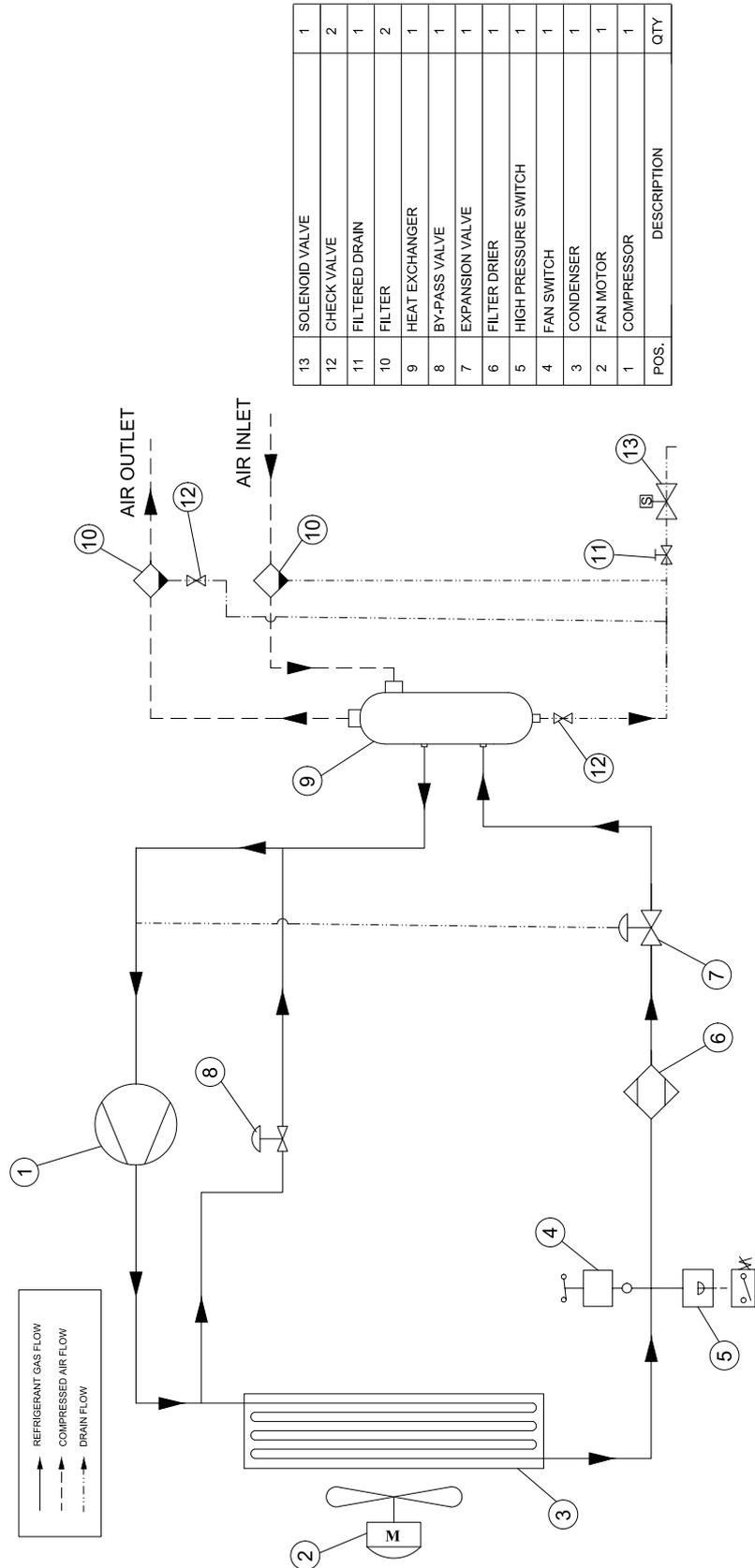
8.1 AIR FLOW DIAGRAMS

KRAD 40M - KRAD 80M



8.1 AIR FLOW DIAGRAMS

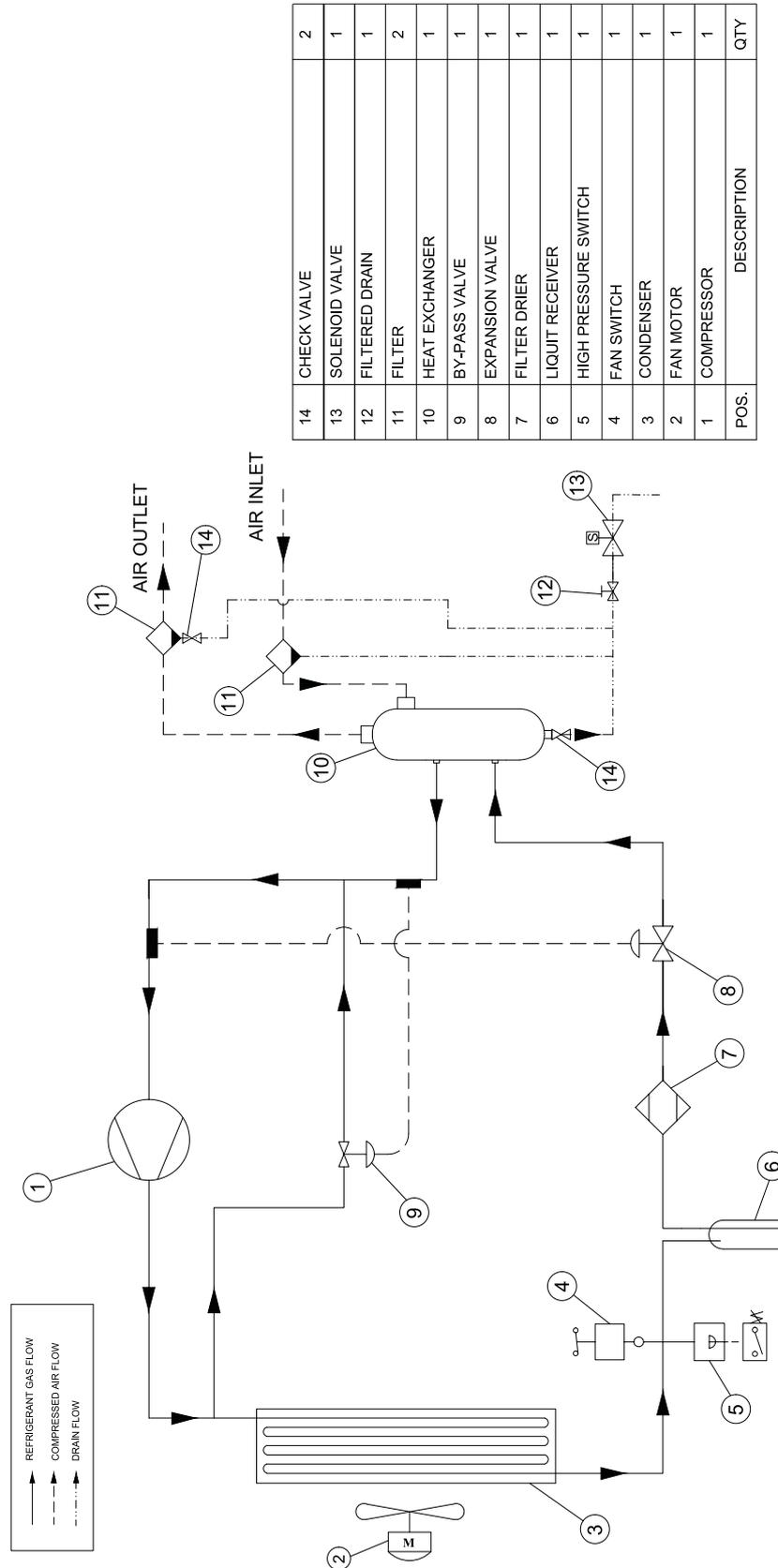
KRAD 100M to KRAD 150M



POS.	DESCRIPTION	QTY
13	SOLENOID VALVE	1
12	CHECK VALVE	2
11	FILTERED DRAIN	1
10	FILTER	2
9	HEAT EXCHANGER	1
8	BY-PASS VALVE	1
7	EXPANSION VALVE	1
6	FILTER DRIER	1
5	HIGH PRESSURE SWITCH	1
4	FAN SWITCH	1
3	CONDENSER	1
2	FAN MOTOR	1
1	COMPRESSOR	1

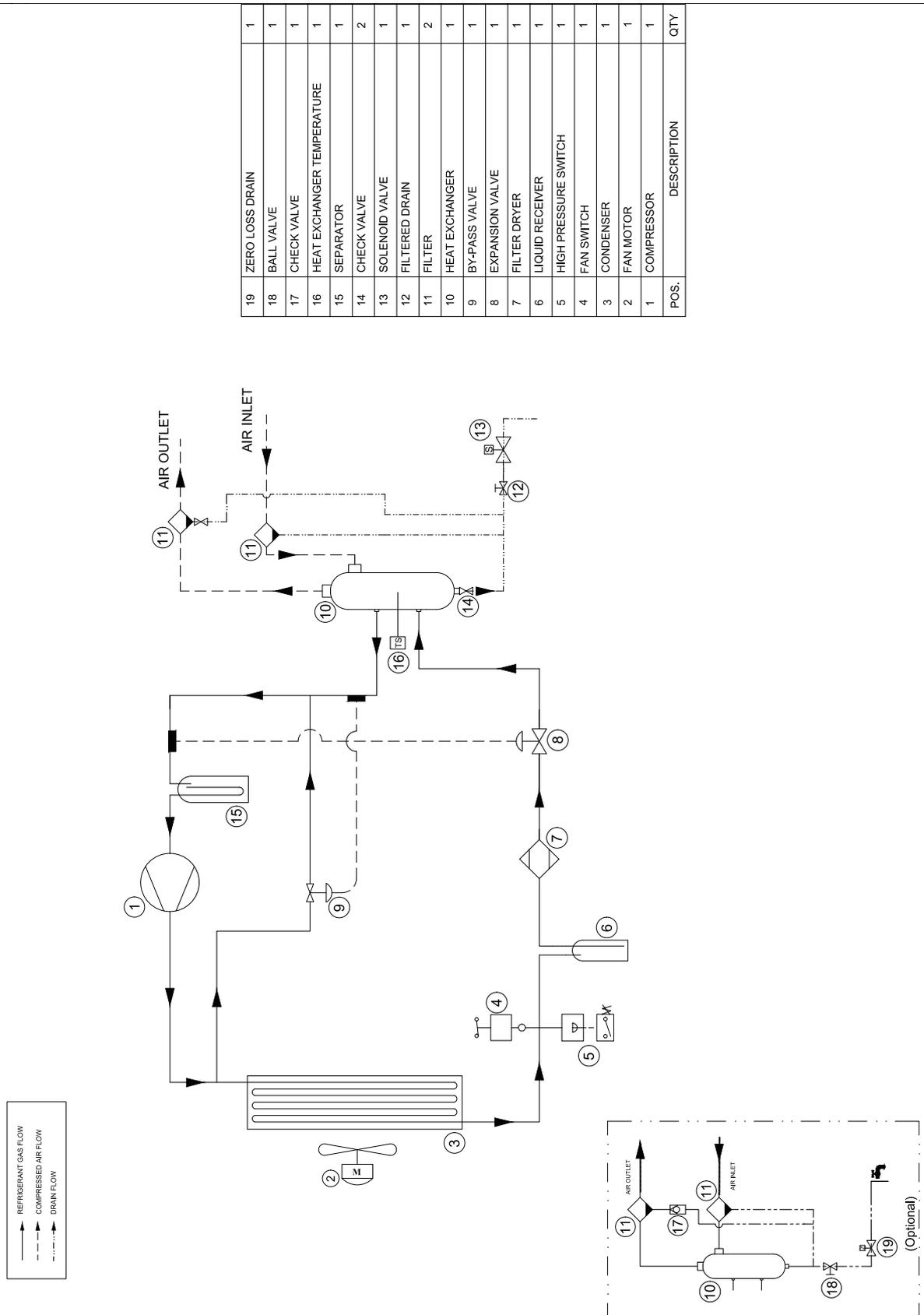
8.1 AIR FLOW DIAGRAMS

KRAD 200M to KRAD 250M



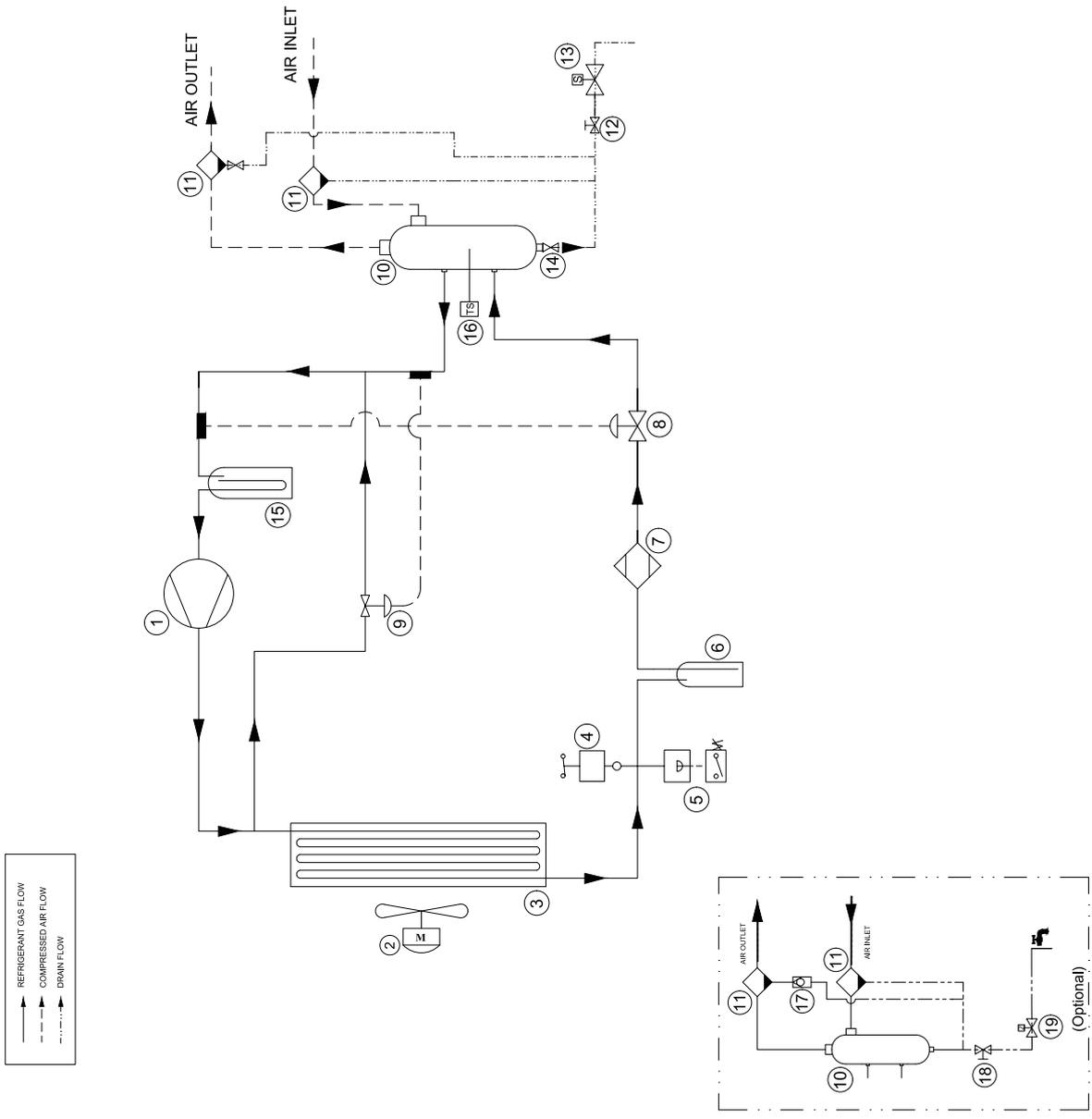
8.1 AIR FLOW DIAGRAMS

KRAD 350M



8.1 AIR FLOW DIAGRAMS

KRAD 500M



POS.	DESCRIPTION	QTY
19	ZERO LOSS DRAIN	1
18	BALL VALVE	1
17	CHECK VALVE	1
16	HEAT EXCHANGER TEMPERATURE	1
15	SEPARATOR	1
14	CHECK VALVE	2
13	SOLENOID VALVE	1
12	FILTERED DRAIN	1
11	FILTER	2
10	HEAT EXCHANGER	1
9	BY-PASS VALVE	1
8	EXPANSION VALVE	1
7	FILTER DRYER	1
6	LIQUID RECEIVER	1
5	HIGH PRESSURE SWITCH	1
4	FAN SWITCH	1
3	CONDENSER	1
2	FAN MOTOR	1
1	COMPRESSOR	1

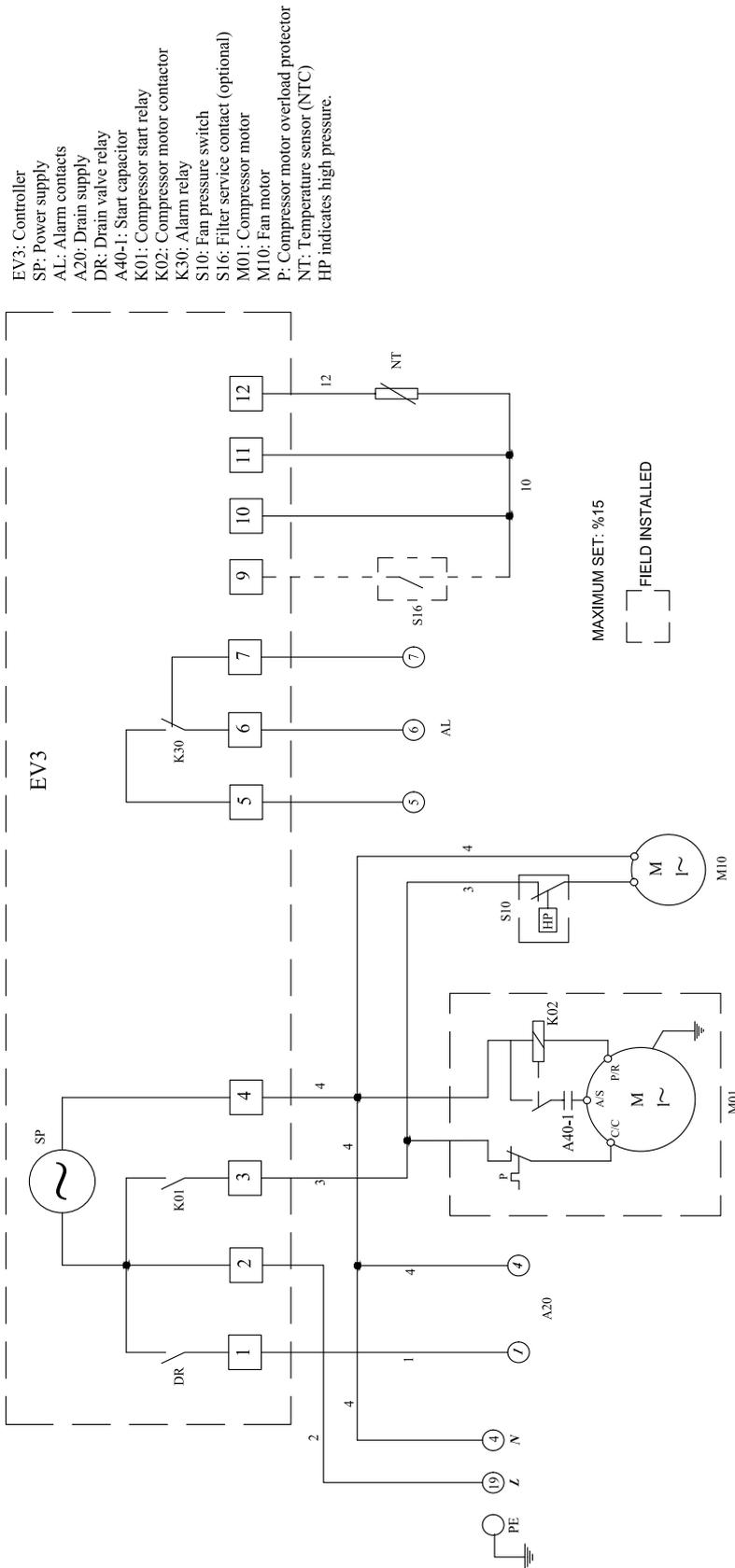
8.2 ELECTRICAL DIAGRAMS

ELECTRICAL DIAGRAMS

With Control & Power

8.2 ELECTRICAL DIAGRAMS

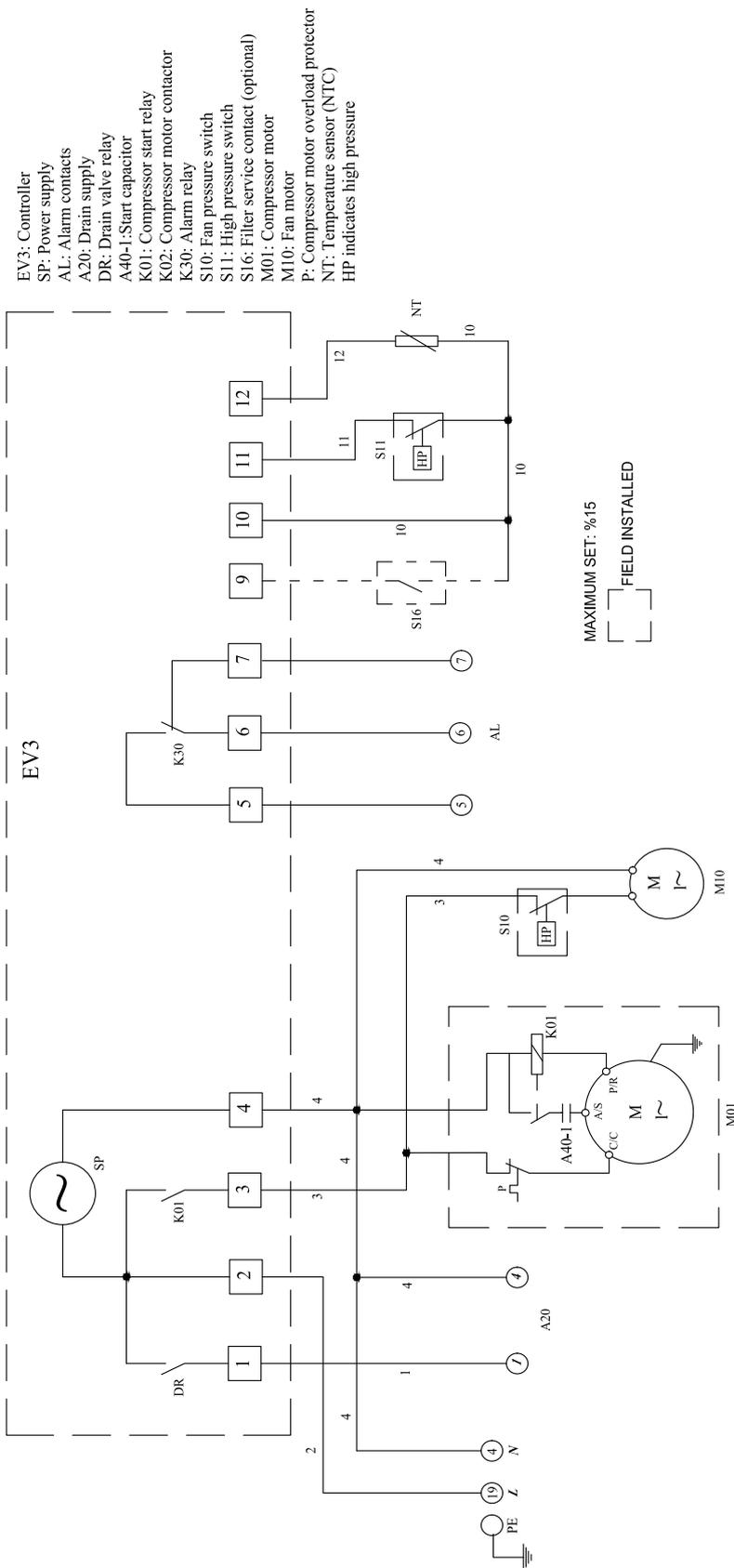
KRAD 15M to KRAD 25M



S01 MAIN PROTECTION AND DISCONNECTING MEANS SHALL BE PROVIDED BY THE INSTALLER OF RESIDUAL CURRENT AUTOMATIC CIRCUIT BREAKER

8.2 ELECTRICAL DIAGRAMS

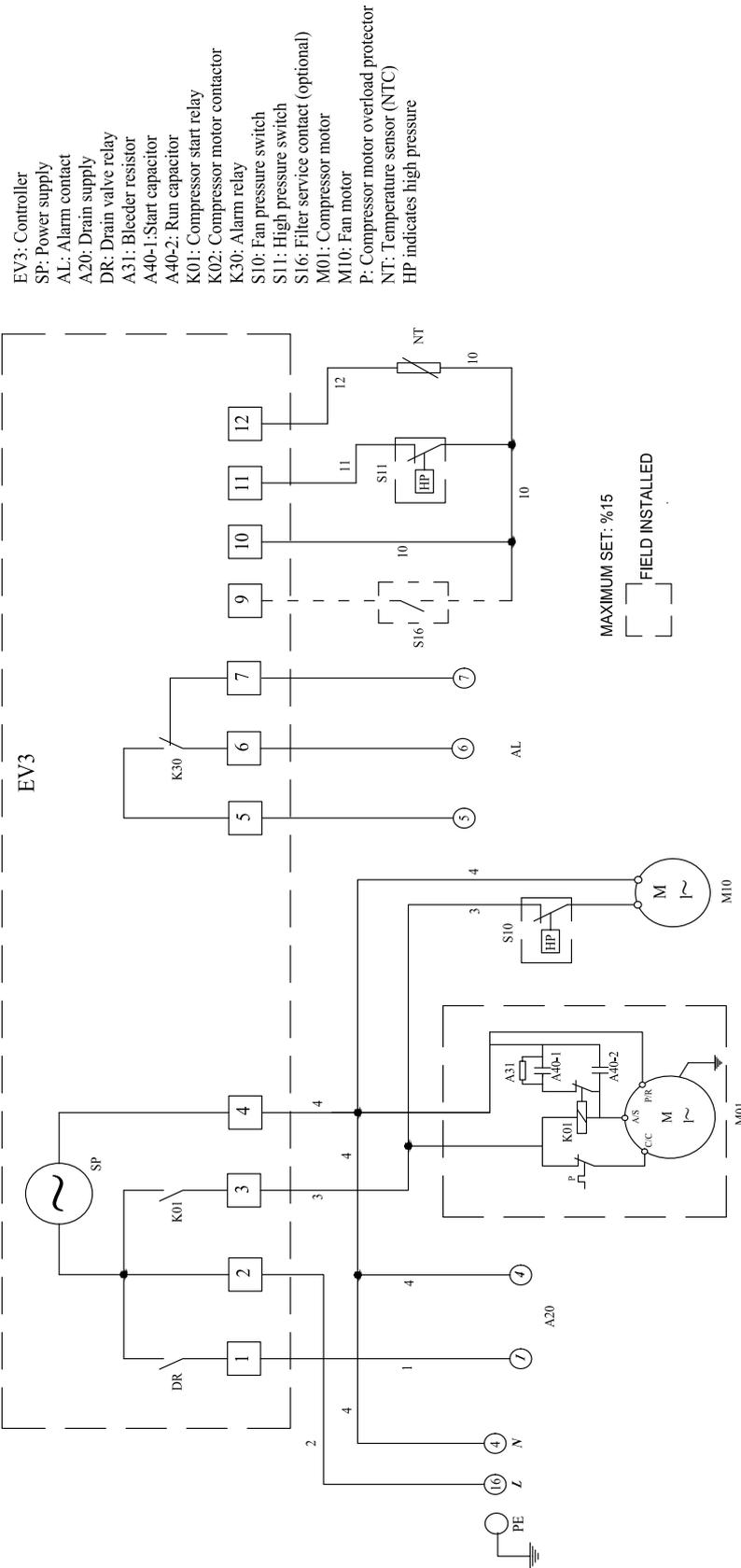
KRAD 40M to KRAD 125M



SOI MAIN PROTECTION AND DISCONNECTING MEANS SHALL BE PROVIDED BY THE INSTALLER OF RESIDUAL CURRENT AUTOMATIC CIRCUIT BREAKER

8.2 ELECTRICAL DIAGRAMS

KRAD 150M to KRAD 250M



S11 MAIN PROTECTION AND DISCONNECTING MEANS SHALL BE PROVIDED BY THE INSTALLER OF RESIDUAL CURRENT AUTOMATIC CIRCUIT BREAKER

8.3 COMPONENTS LOCATION

All main components located into dryer identified with labels as listed here under.

CAUTION: Due to manufacture design, some components out of the list are not installed into the dryer

Electrical components:

Accessories:

- A01: Control circuit transformer
- A02: Power circuit transformer
- A10: ON warning light
- A11: OFF warning light
- A20: Drain solenoid valve
- A30: Crankcase heater
- A31: Electrical resistor
- A40: Electrical capacity
- EV3: Digital Controller (Digi-Pro)
- A50-3: Energy saving device 3 (ESD3)

Accessories:

- K01: Compressor motor relay
- K10: Fan motor relay
- K20: Drain timer or Bekomat (optional)
- K30: Temperature Controller

Switches :

- S01: Main switch
- S02: Start push button
- S03: Stop push button
- S10: Fan pressure control
- S11: High-low pressure security control
- S12: High pressure security control
- S13: Low pressure security control
- S20: Refrigerant temperature control
- S21: Air temperature control

Motors:

- M01: Refrigerant compressor motor
- M10: Fan motor

Thermal protections:

- P01: Refrigerant compressor thermal overload
- P10: Fan motor thermal overload

Fuses protections:

See complete identification into electrical sketch included in dryer

- F--: Transformer protection
- F--: Fan protection
- F--: Compressor relay protection
- F--: Transformer protection
- F--: Drain protection
- F--: Fan relay protection

Refrigerant components:

- G01: Liquid receiver
- G02: Refrigerant drier
- G03: Expansion valve
- G04: Liquid separator
- G05: Hot gas bypass valve
- G06: Refrigerant solenoid valve
- G10: Water cooled condenser
- G11: Water control valve
- G20: Refrigerant evaporating pressure gauge
- G21: Refrigerant evaporating temperature gauge

Compressed air components:

- H01: Air inlet prefilter
- H11: Drain filter
- H12: Pneumatic drain valve

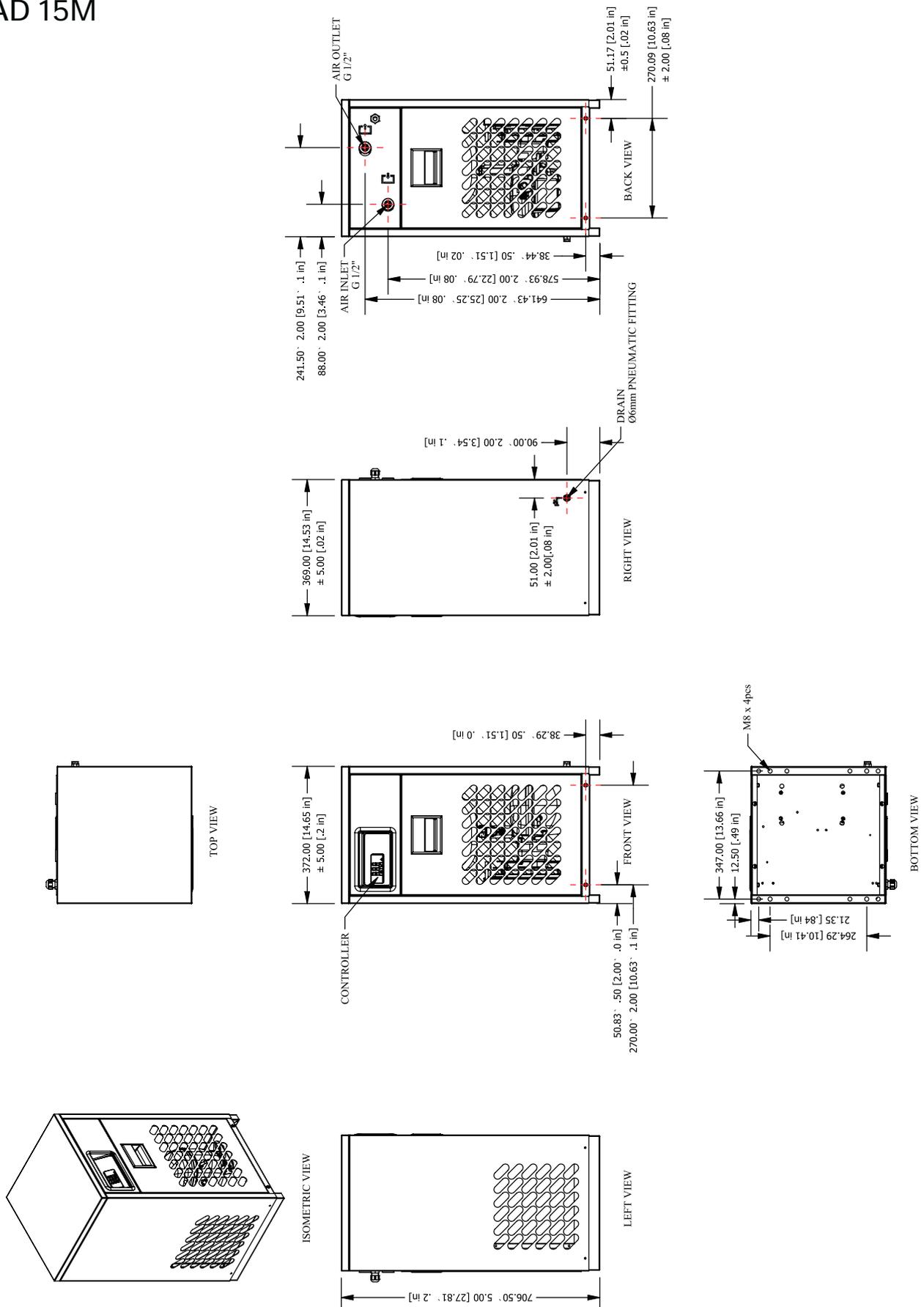
Terminal boxes:

- B01: Main terminal box
- B11: Refrigerant unit thermal box
- B12: Free of potential terminal box

8.4 ID DIAGRAMS

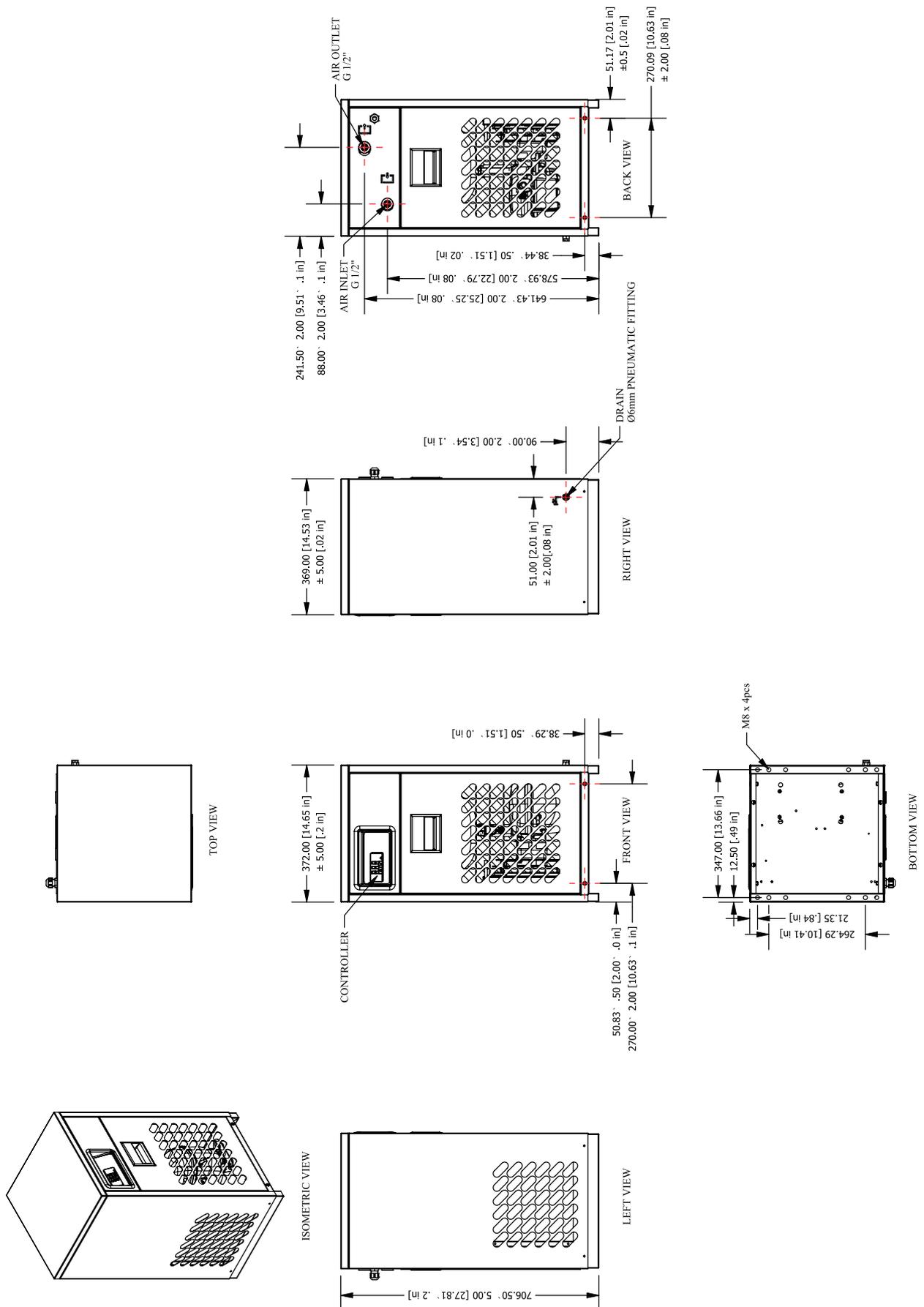
ID DIAGRAM DRAWINGS & General Arrangements

KRAD 15M



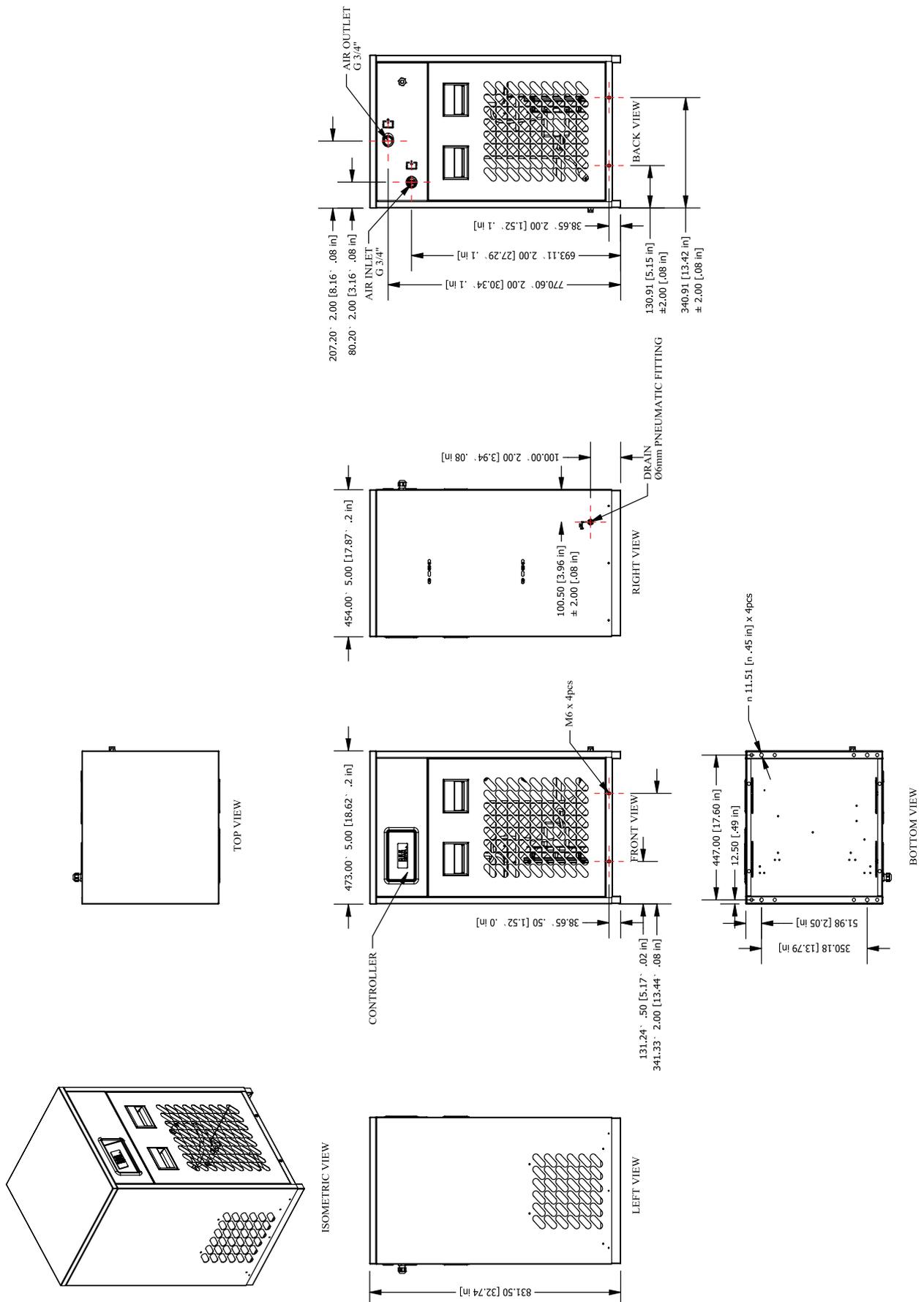
8.4 ID DIAGRAMS

KRAD 25M



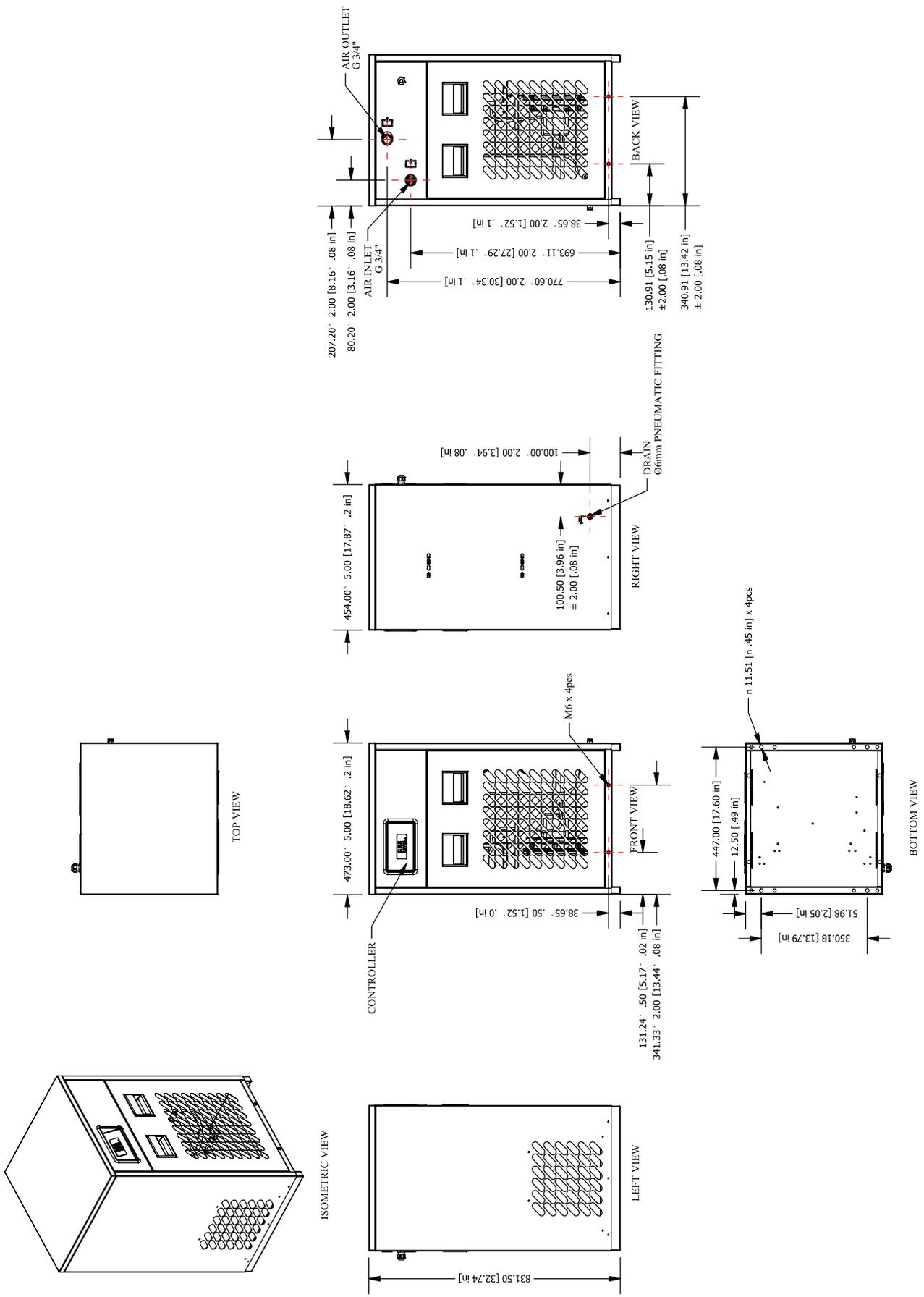
8.4 ID DIAGRAMS

KRAD 40M



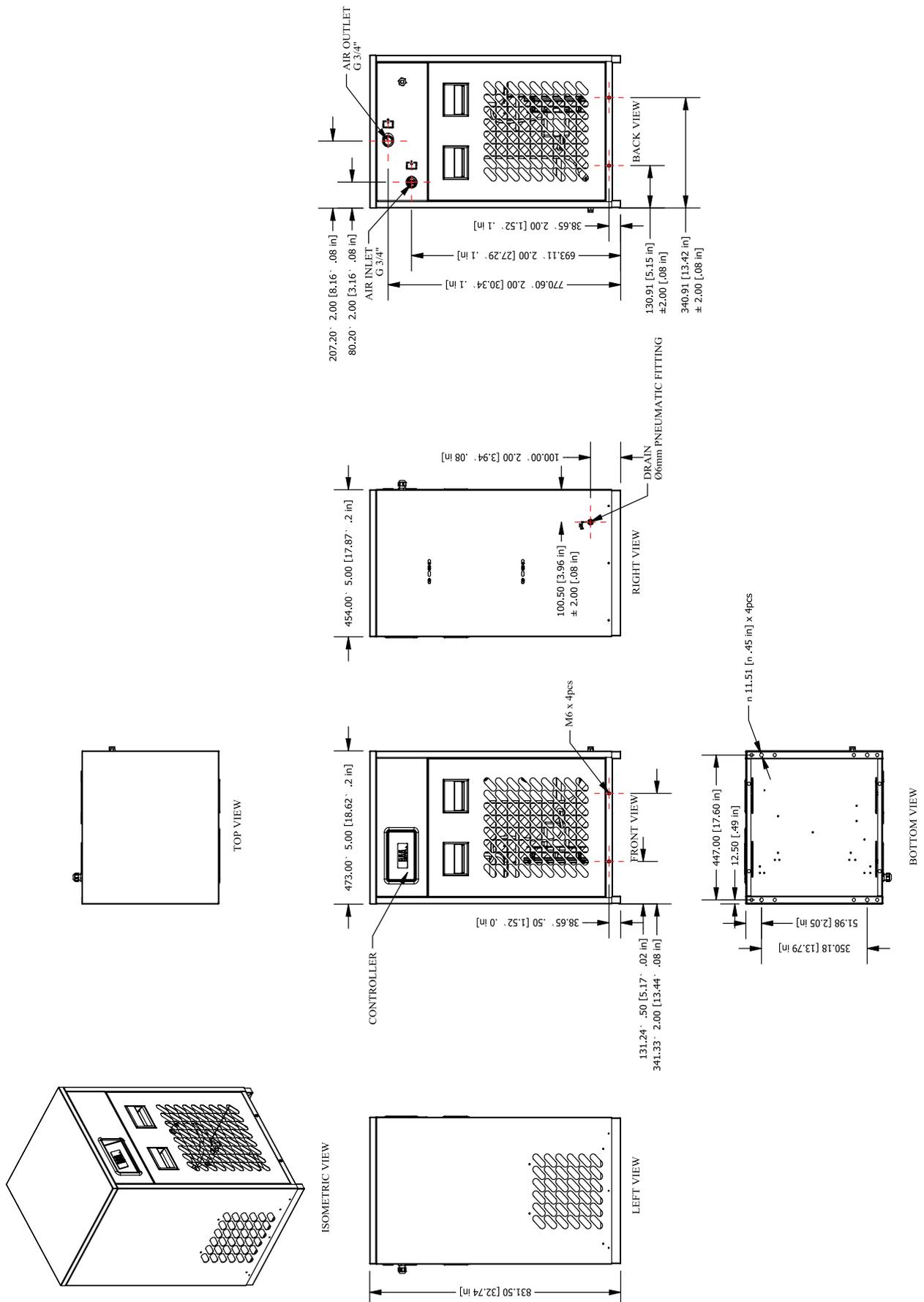
8.4 ID DIAGRAMS

KRAD 60M



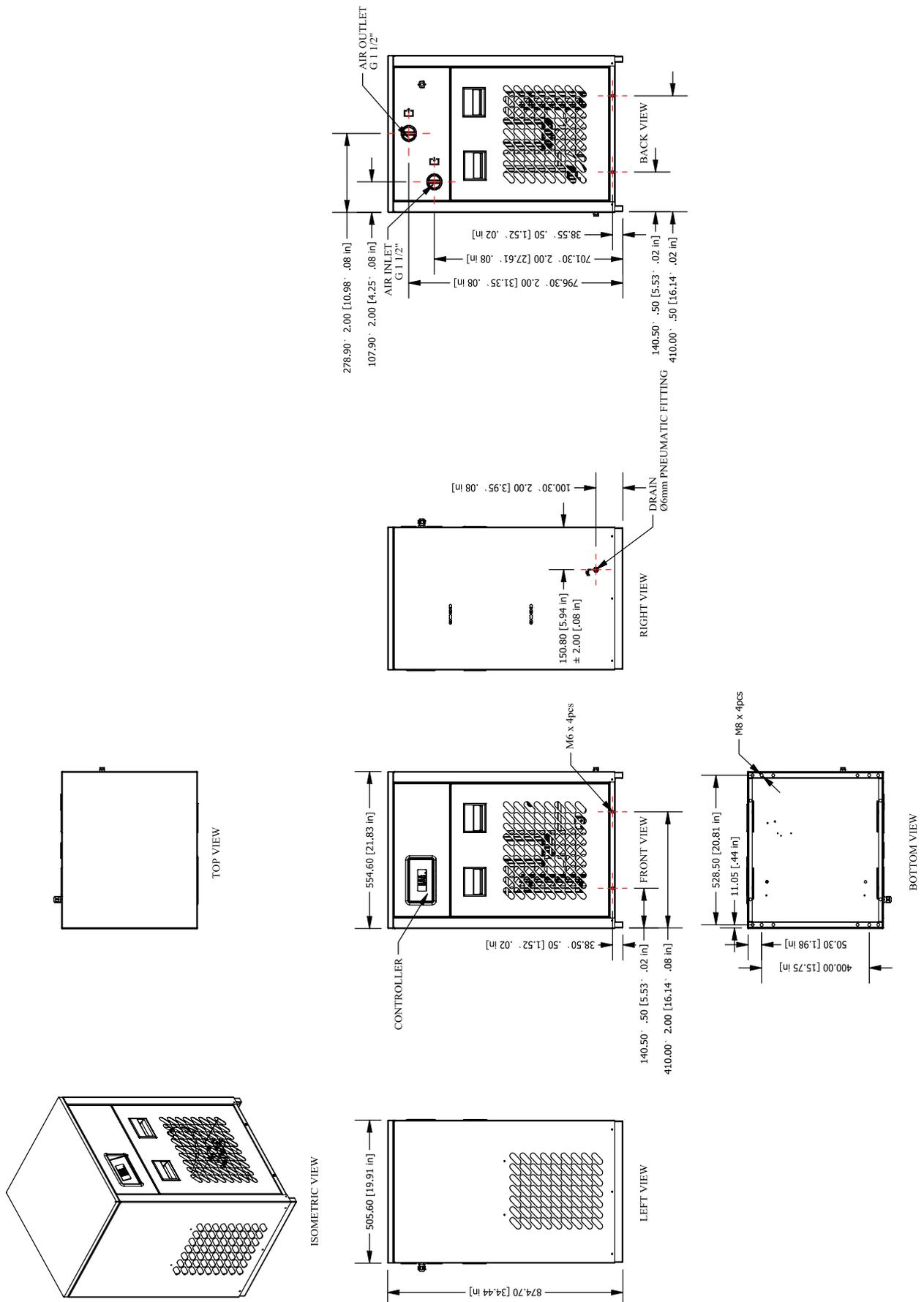
8.4 ID DIAGRAMS

KRAD 80M



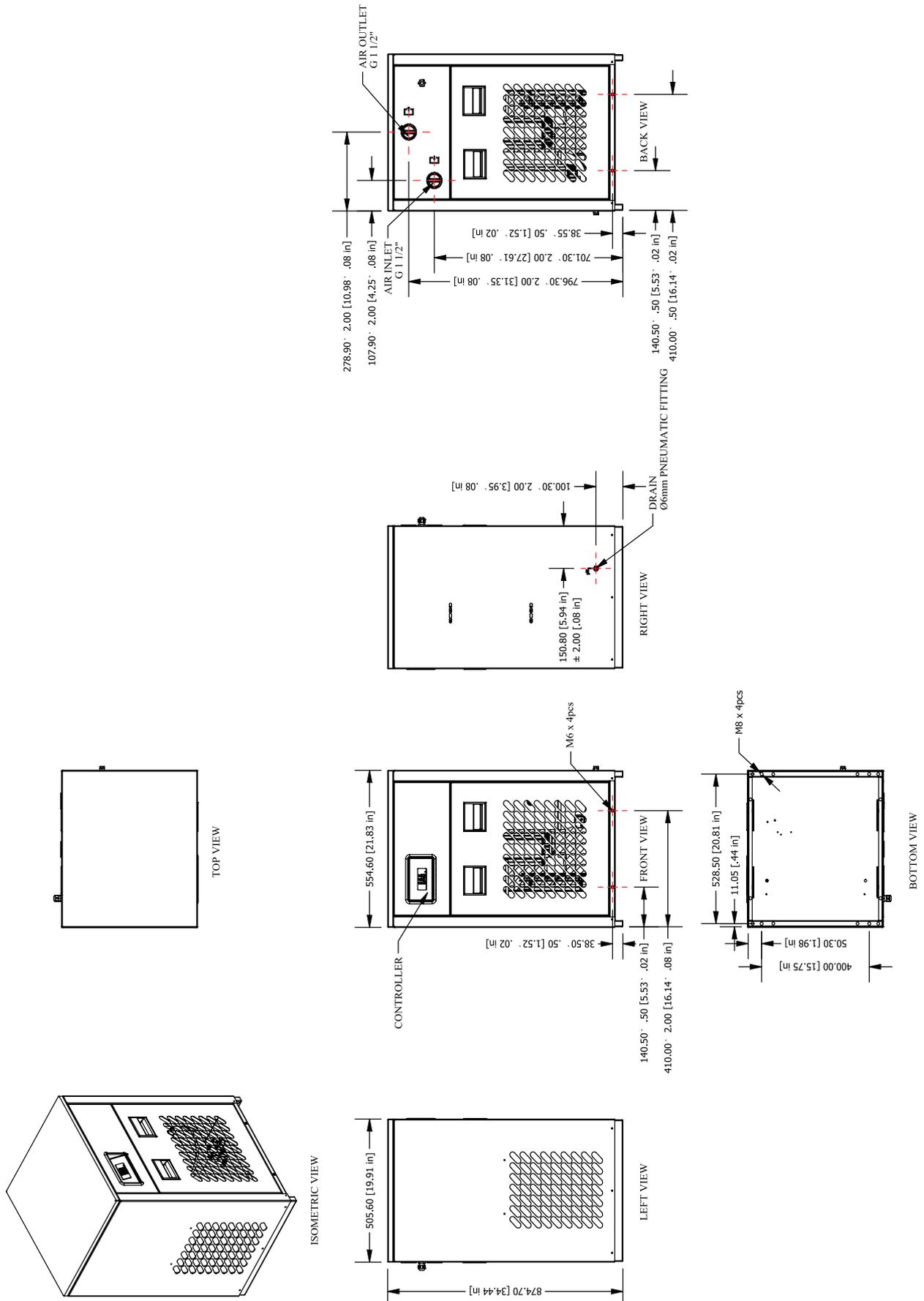
8.4 ID DIAGRAMS

KRAD 100M



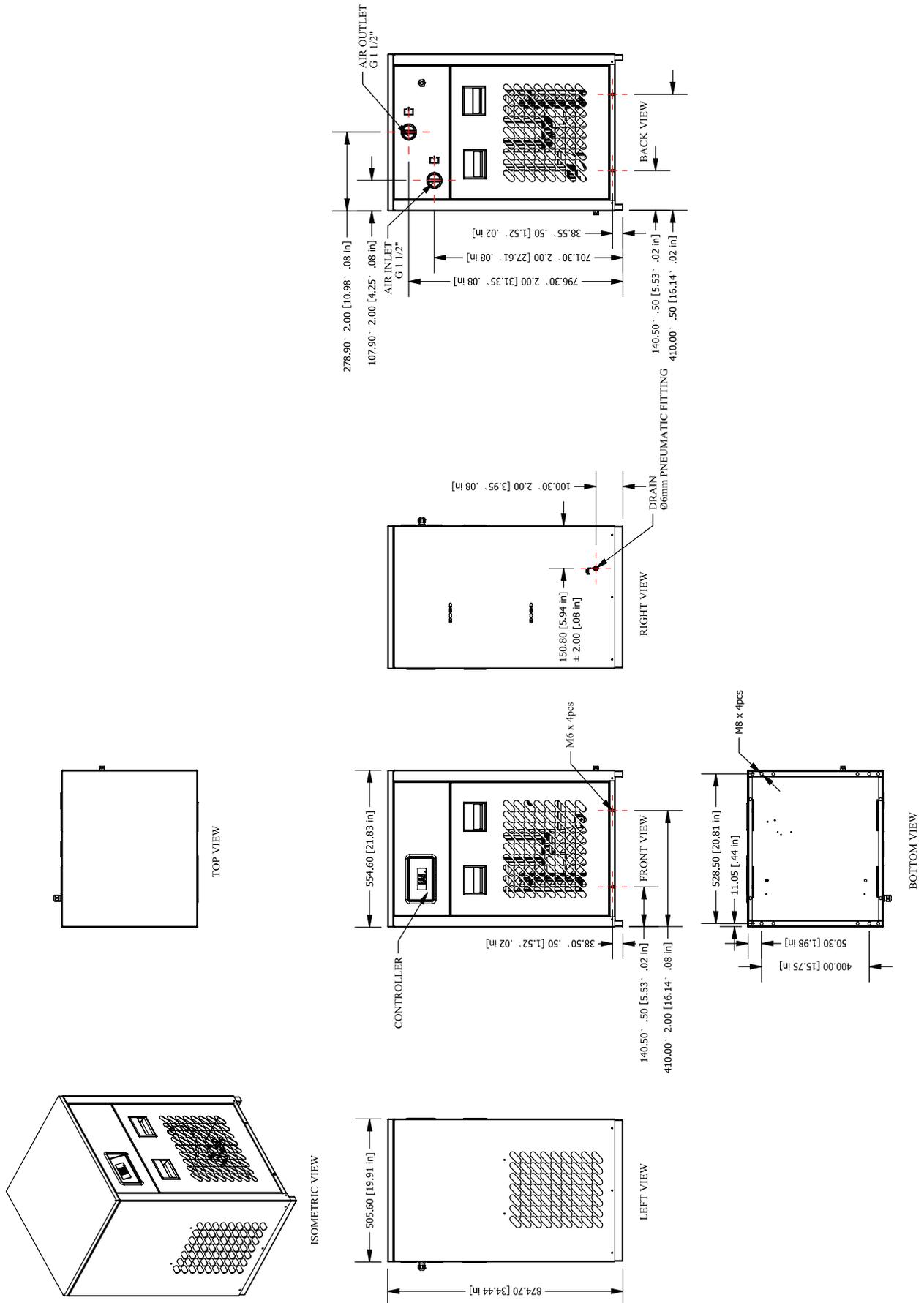
8.4 ID DIAGRAMS

KRAD 125M



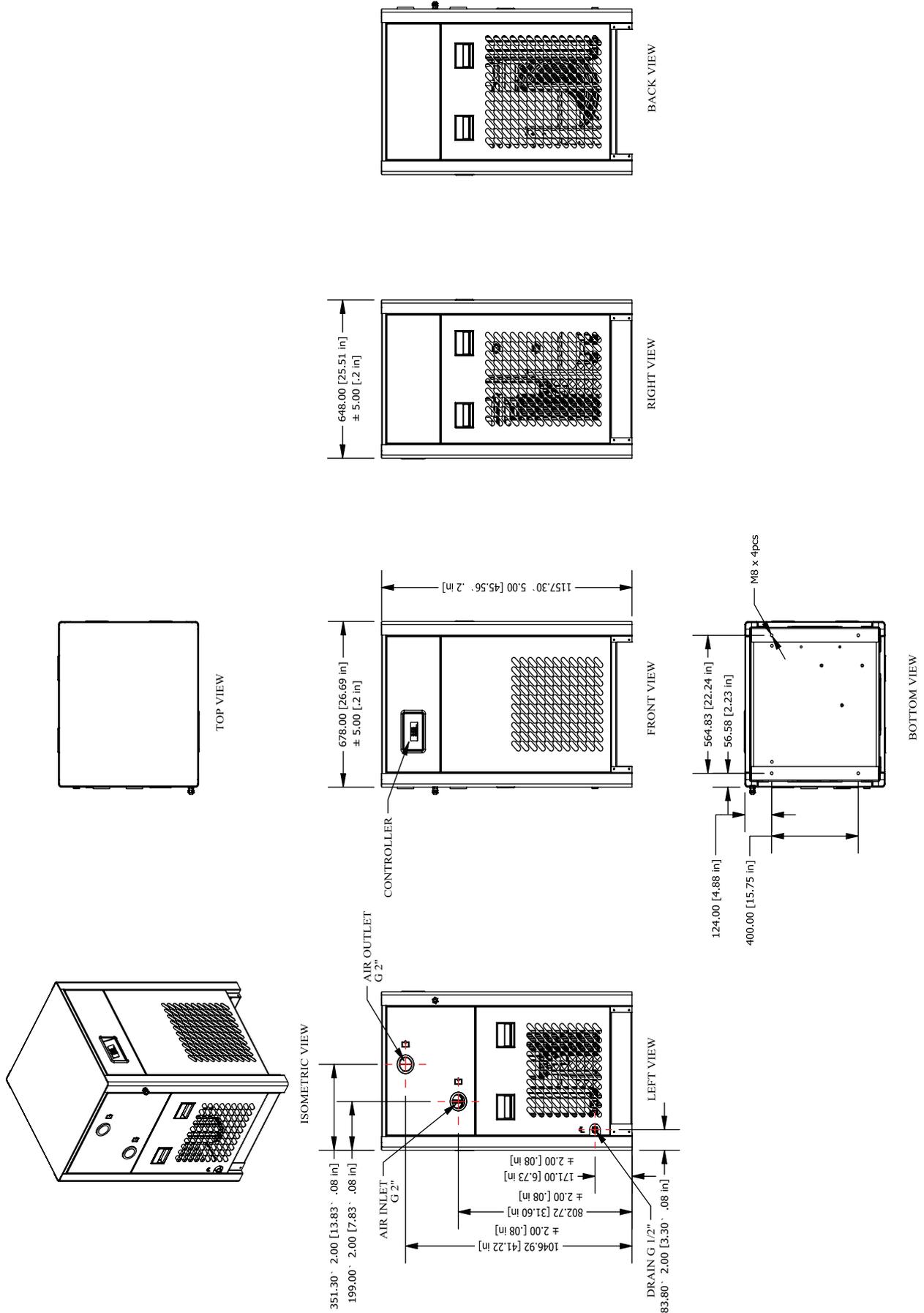
8.4 ID DIAGRAMS

KRAD 150M



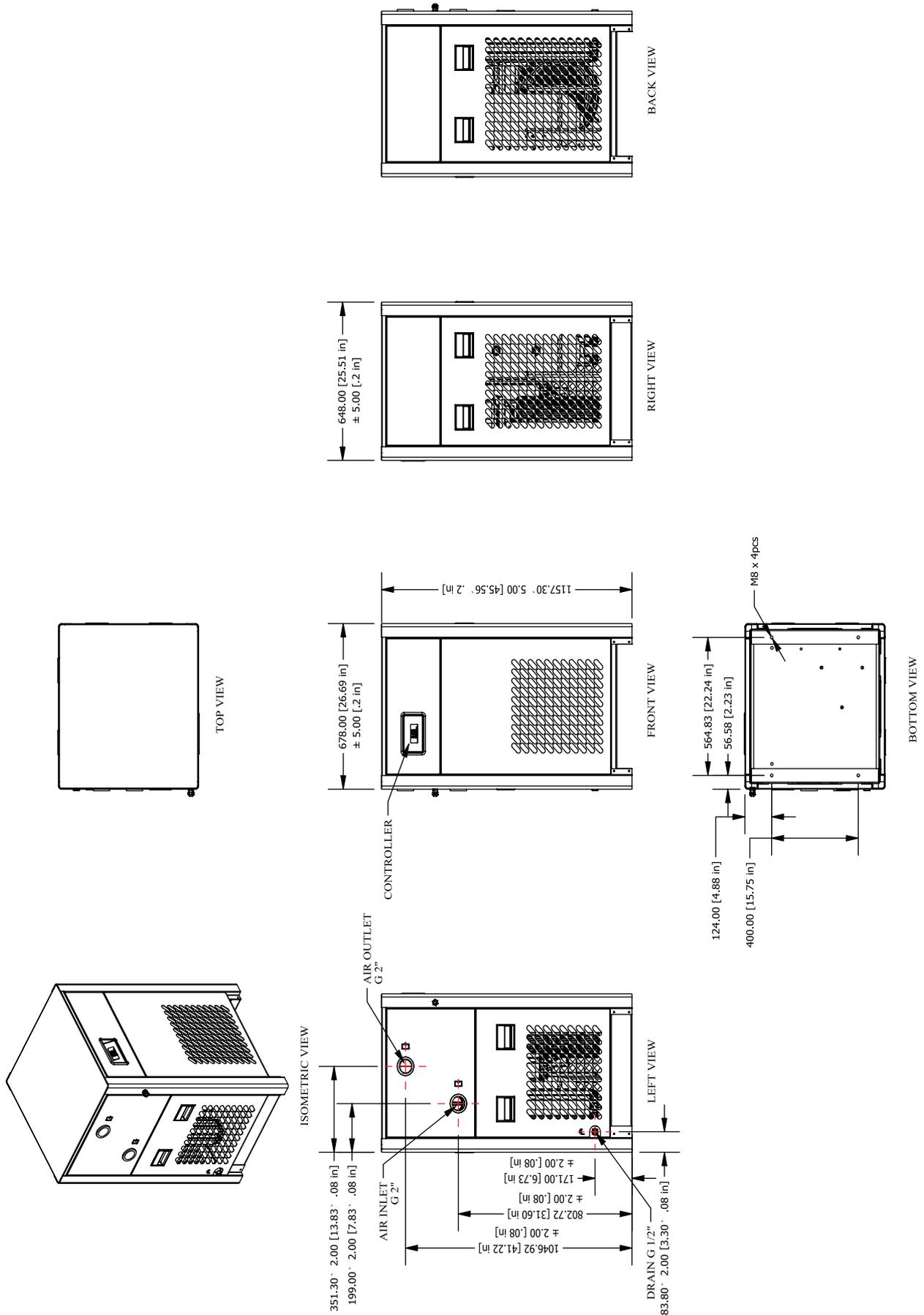
8.4 ID DIAGRAMS

KRAD 200M



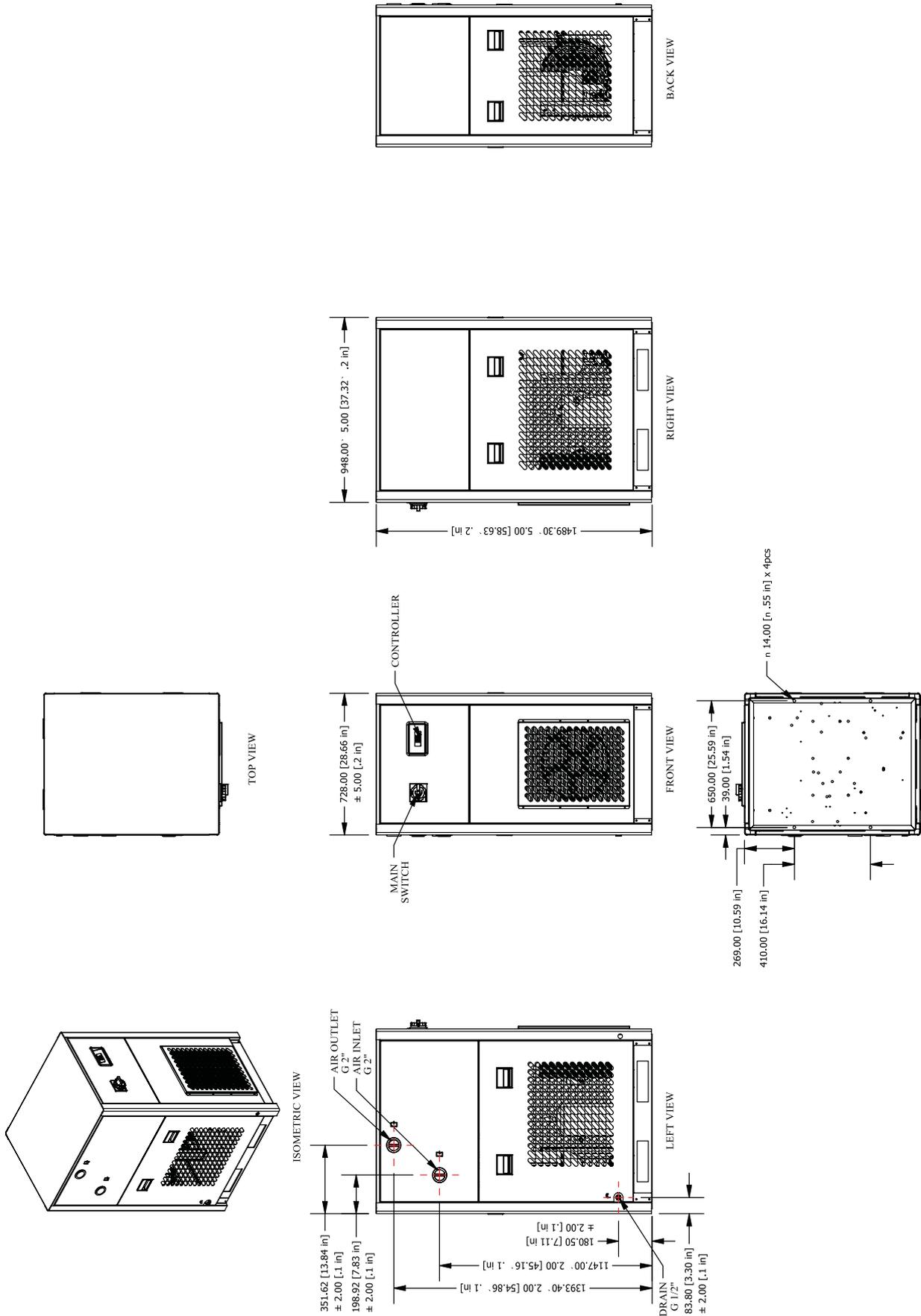
8.4 ID DIAGRAMS

KRAD 250M



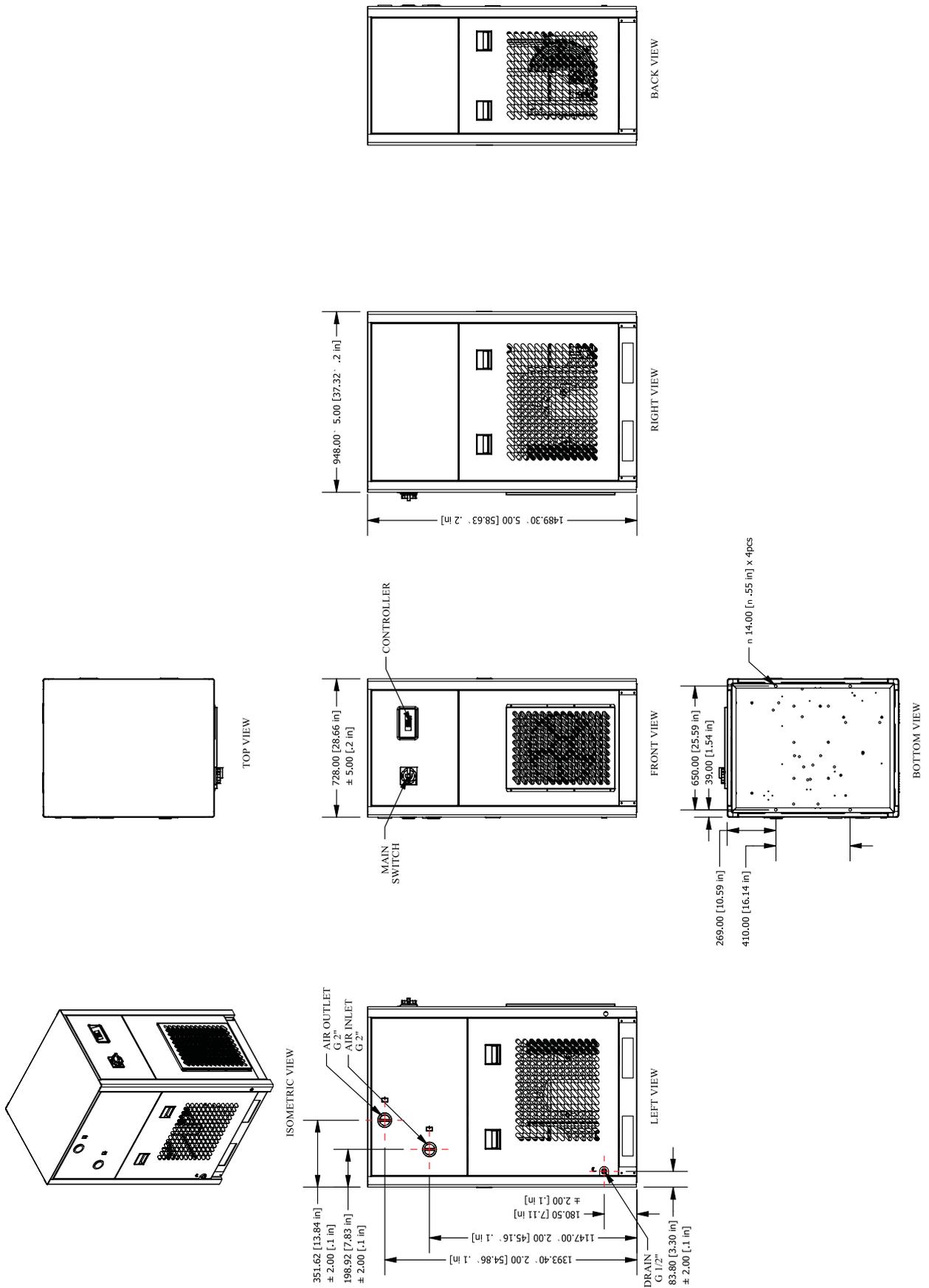
8.4 ID DIAGRAMS

KRAD 350M



8.4 ID DIAGRAMS

KRAD 500M



9. GENERAL ARRANGEMENTS

Model	Element Part Number	Control	Length	Width (mm)	Height (mm)	Weight (kg)
KRAD-15	ADFK1-REV3	DigiPro	413	362	556	32
KRAD-25	ADFK1-REV3	DigiPro	413	362	556	32
KRAD-40	ADFK2-REV1	DigiPro	472	452	831	51
KRAD-60	ADFK2-REV1	DigiPro	472	452	831	51
KRAD-80	ADFK2-REV1	DigiPro	472	452	831	55
KRAD-100	ADFK3-REV1	DigiPro	552	502	873	78
KRAD-125	ADFK3-REV1	DigiPro	552	502	873	96
KRAD-150	ADFK3-REV1	DigiPro	552	502	873	98
KRAD-200	ADFK4-REV1	DigiPro	677	647	1156	145
KRAD-250	ADFK4-REV1	DigiPro	677	647	1156	151
KRAD-350	ADFK5-REV1	DigiPro	947	727	1500	220
KRAD-500	ADFK5-REV1	DigiPro	947	727	1500	235

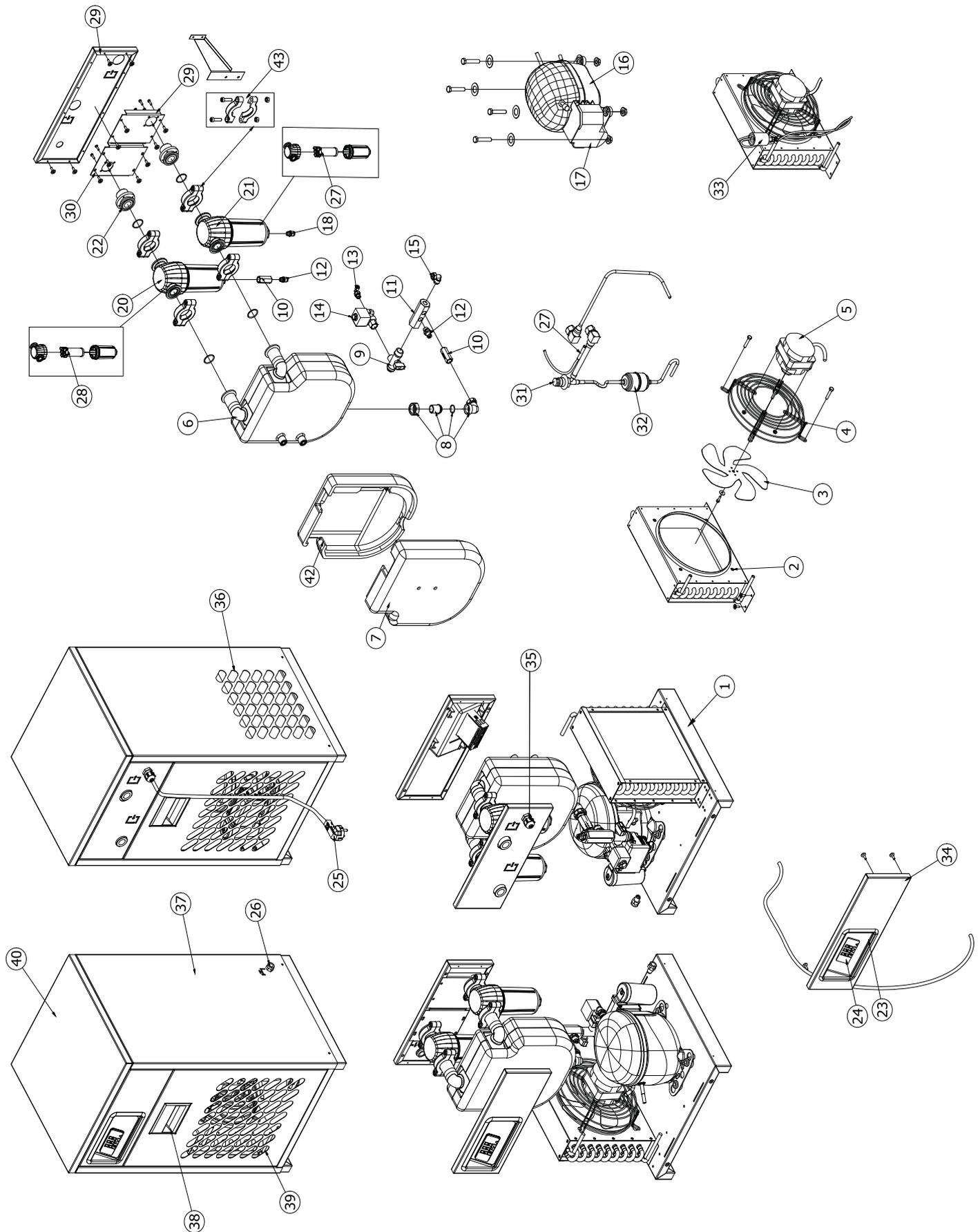
ALL MODELS	Superheat of thermostatic expansion valve	Evaporating pressure	Fan pressure switch	Security high pressure switch	Security low pressure switch	Drain timer	Refrigerant temperature switch	Water flow valve (if water condenser)
	5°C - 10°C	2.05 bar	9 - 12 bar	25 bar	1.6 bar	5 min. - 5sec.	45°C	11 bar

10. KRAD M EXPLODED DIAGRAMS

& Spare Parts List

10.1 EXPLODED DIAGRAMS & Spare Part List

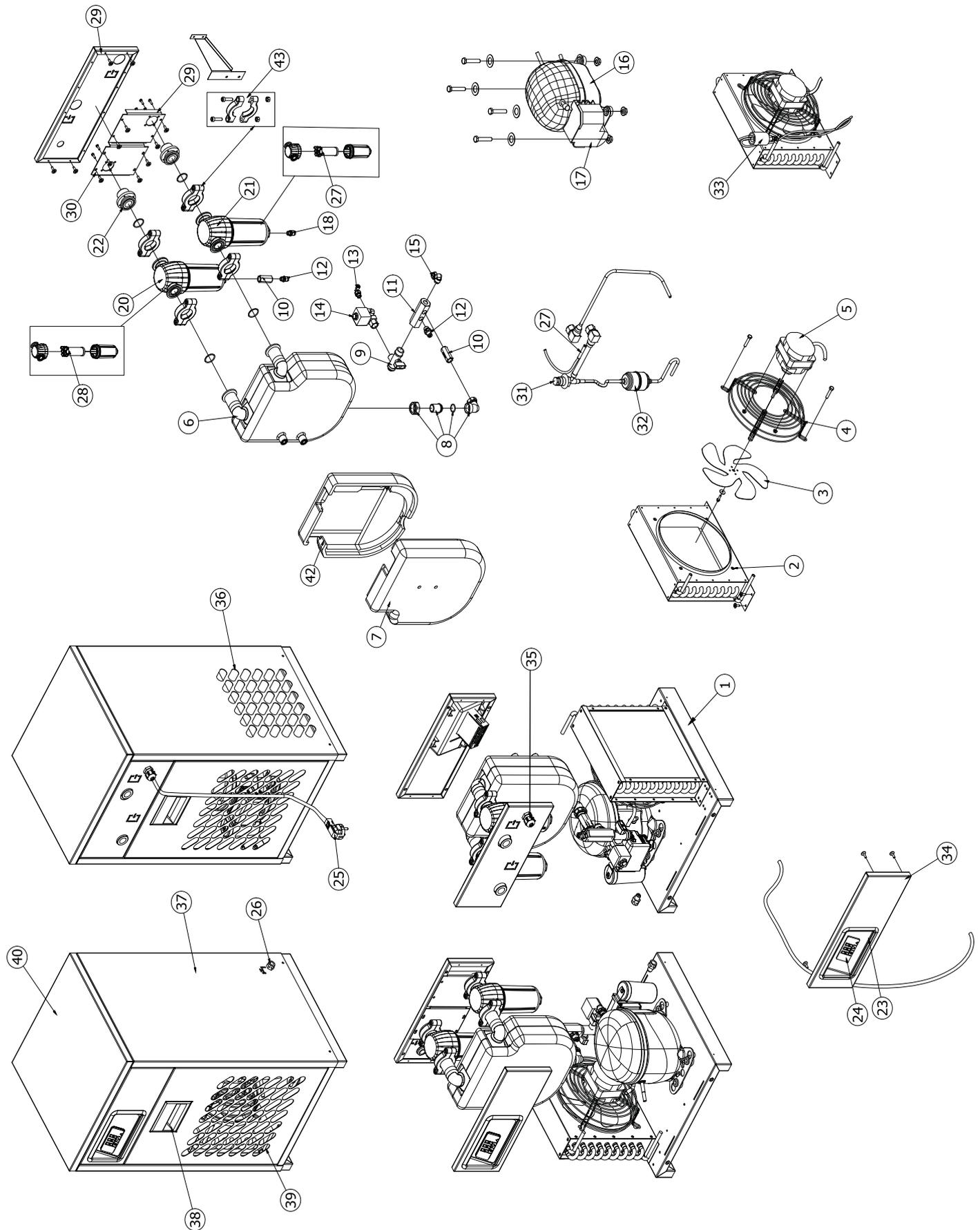
KRAD 15M



KRAD 15M PART LIST			
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	1612264161	MK10-20-30-35-02-GON (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	1612264163	MK10-20-30-35-04-GON (7012 THICK RAGGED GREY)	1
27	1057380100	NTC SENSOR	1
26	1026290100	PASS UNION Ø6mm	1
25	1031920100	3mt CABLE WITH PLUG	1
24	1057350100	DPR0 INDICATOR 30A 230V	1
23	1057340100	DRYER FRONT PANEL SINGLE HOLE	1
22	1037930100	MK10-20-30 CONNECTION KIT- ALD	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	1062760100	MK10-20 COMPRESSOR 220-230/1/50-60 ELECTRIC BOX	1
16	1024550100	MK10-20 COMPRESSOR 220-230/1/50-60	1
15	1612250732	1/4"-4MM UNION - ELBOW	1
14	1026430100	MK10-130 230V 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	1025370100	MK10-40 230/1/50 FAN MOTOR	1
4	1025260100	MK10-40 (Ø220) FAN GRILL	1
3	1025150100	MK10-40 (Ø200) FAN PROPELLER	1
2	1025040100	MK35 CONDENSER	1
1	1612264160	MK10-20-30-35-01-GON (7012 THICK RAGGED GREY)	1

10.1 EXPLODED DIAGRAMS & Spare Part List

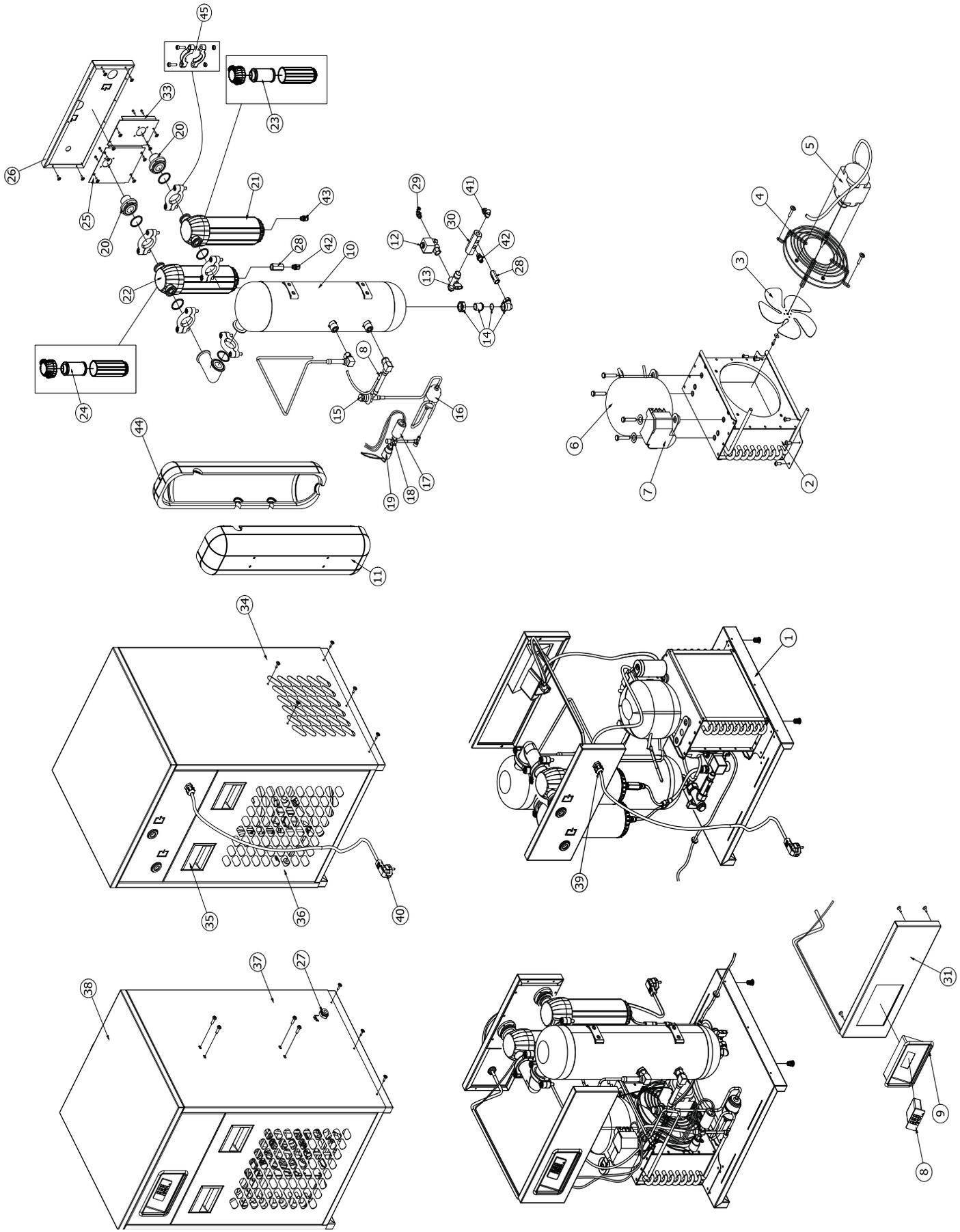
KRAD 25M



KRAD 25M PART LIST			
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	1612264161	MK10-20-30-35-02-GON (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	1612264163	MK10-20-30-35-04-GON (7012 THICK RAGGED GREY)	1
27	1057380100	NTC SENSOR	1
26	1026290100	PASS UNION Ø6mm	1
25	1031920100	3mt CABLE WITH PLUG	1
24	1057350100	DPR0 INDICATOR 30A 230V	1
23	1057340100	DRYER FRONT PANEL	1
22	1037930100	MK10-20-30 INTERMEDIATE COUPLING KIT	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	1062720100	MK30-35-40 COMPRESSOR 220-230/1/50-60 ELECTRIC BOX	1
16	1024410100	MK30-35-40 COMPRESSOR 220-230/1/50-60	1
15	1612250732	1/4"-4MM UNION - ELBOW	1
14	1026430100	MK10-130 230V 16Bar SOLENOID VALVE	1
13	1029740100	1/4"-6*8 METAL SWIVELLING ELBOW UNION	1
12	1034620100	1/4"-Ø6 STRAIGHT FEMALE FITTINGS	2
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	1025290100	MK10-40 230/1/60 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

10.1 EXPLODED DIAGRAMS & Spare Part List

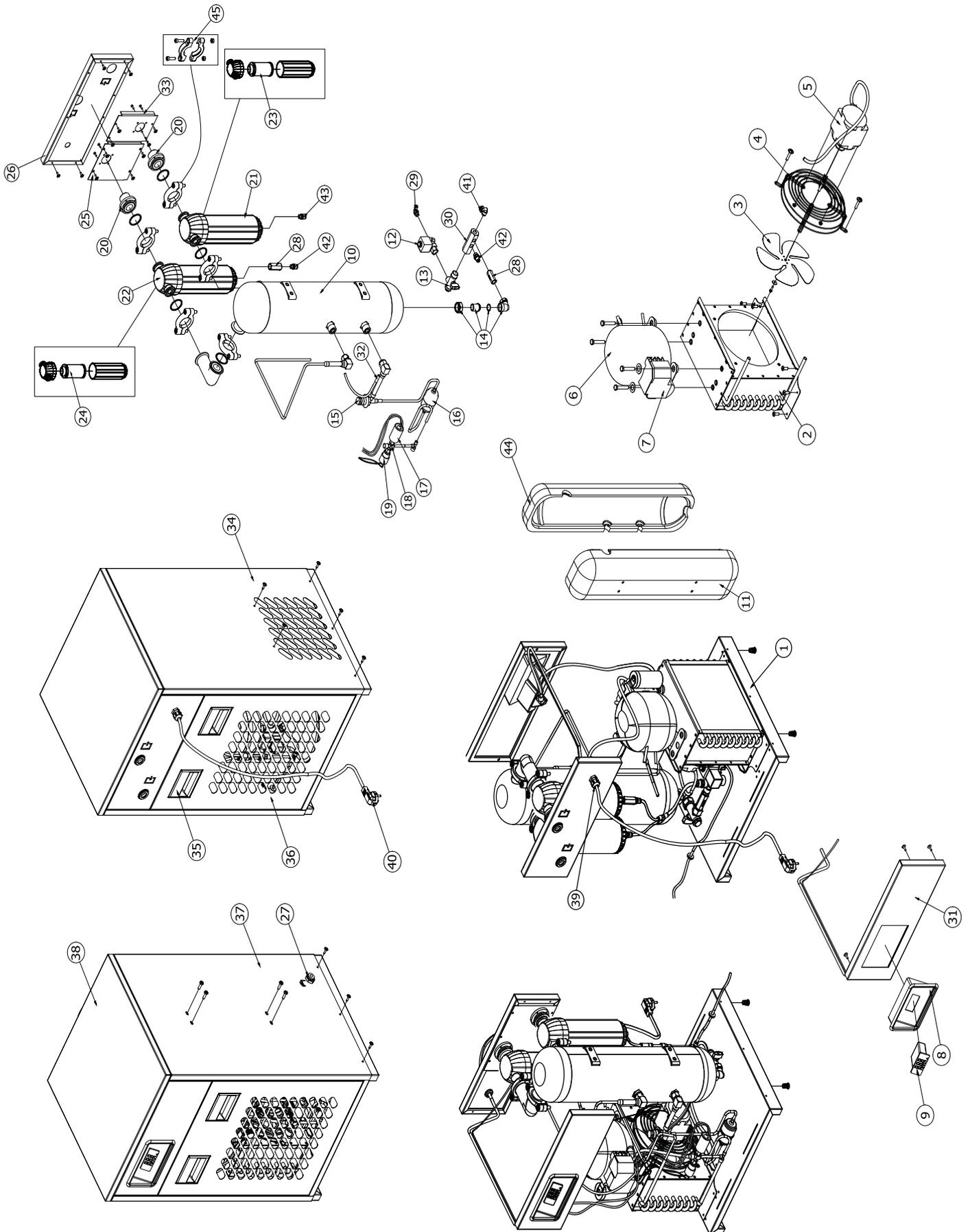
KRAD 40M



KRAD 40M PART LIST			
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	1034620100	1/4" 6mm STRAIGHT FEMALE FITTINGS	2
41	1612250732	1/4"-4mm UNION - ELBOW	1
40	1031920100	3mt CABLE WITH PLUG	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	1047680100	MK40-03A PANEL (7012 THICK RAGGED GREY)	1
33	1000670700	MK40-50-60-05B PANEL (GALVANIZED)	1
32	1057380100	NTC SENSOR	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	1026290100	PASS UNION Ø6mm	1
26	1040160100	MK40-50-60-04 PANEL (7012 THICK RAGGED GREY)	1
25	1000670600	MK40-50-60-05A PANEL (GALVANIZED)	1
24	1012807	ME-MKON-0155-180300/0170-Y-BM-PK	1
23	1012808	ME-MKON-0155-180300/0170-X-BM-PK	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	1040740100	MK40-50-60 CONNECTION KIT ALD	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	1
14	1002060100	1/2" CORNER UNION	1
13	1018430100	1/2"-1/4" FILTERED DRAIN	1
12	1026430100	MK10-130 230V 16Bar SOLENOID VALVE	1
11	1026970100	MK40-60 ISOLATION POLYSTYRENE	1
10	1045560100	MK40-50-60 HEAT EXCHANGER-MKR	1
9	1057350100	DPR0 CONTROLLER 30A 230V	1
8	1057340100	DRYER FRONT PANEL	1
7	1062720100	MK30-35-40 COMPRESSOR 220-230/1/50-60 ELECTRIC BOX	1
6	1024410100	MK30-35-40 COMPRESSOR 220-230/1/50-60	1
5	1025370100	MK10-40 230/1/50 FAN MOTOR	1
4	1025260100	MK10-40 (Ø220) FAN GRILL	1
3	1025150100	MK10-40 (Ø200) FAN PROPELLER	1
2	1024690100	MK40 CONDENSER	1
1	1038050100	MK40-50-60-01 PANEL (7012 THICK RAGGED GREY)	1

10.1 EXPLODED DIAGRAMS & Spare Part List

KRAD 60M

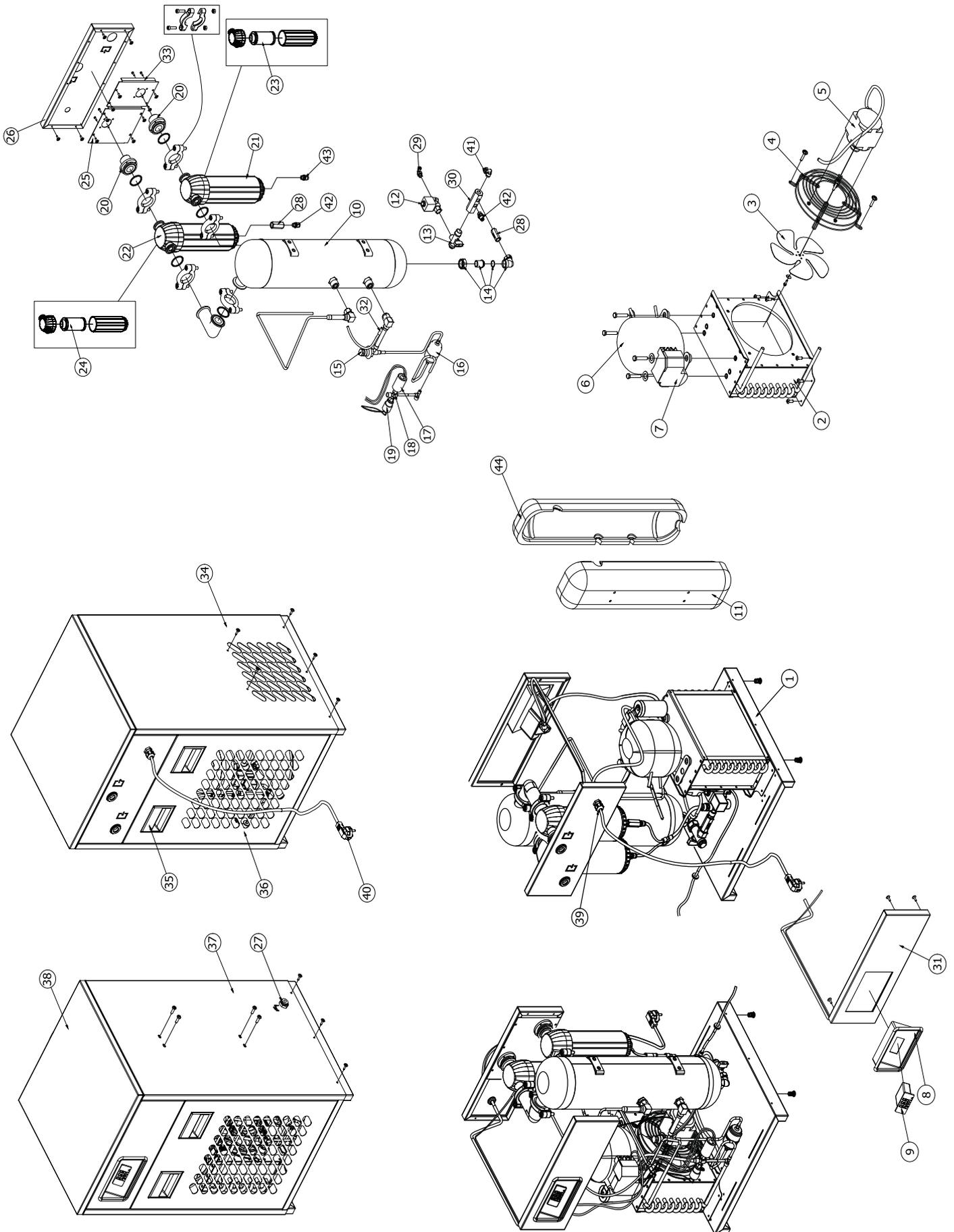


KRAD 60M PART LIST

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	1034620100	1/4" 6mm STRAIGHT FEMALE FITTINGS	2
41	1612250732	1/4"-4mm UNION - ELBOW	1
40	1031920100	3mt CABLE WITH PLUG	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	1000670700	MK40-50-60-05B PANEL (GALVANIZED)	1
32	1057380100	NTC SENSOR	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	1026290100	PASS UNION Ø6mm	1
26	1040160100	MK40-50-60-04 PANEL (7012 THICK RAGGED GREY)	1
25	1000670600	MK40-50-60-05A PANEL (GALVANIZED)	1
24	1012807	ME-MKON-0155-180300/0170-Y-BM-PK	1
23	1012808	ME-MKON-0155-180300/0170-X-BM-PK	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	1040740100	MK40-50-60 CONNECTION KIT ALD	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	1
14	1002060100	1/2" CORNER UNION	1
13	1018430100	1/2"-1/4" FILTERED DRAIN	1
12	1026430100	MK10-130 230V 16Bar SOLENOID VALVE	1
11	1442340100	MK40-60 ISOLATION POLYSTYRENE LOWER	1
10	1045560100	MK40-50-60 HEAT EXCHANGER-MKR	1
9	1057350100	DPR0 CONTROLLER 30A 230V	1
8	1057340100	DRYER FRONT PANEL	1
7	1062710100	MK50 COMPRESSOR 220-230/1/50-60 ELECTRIC BOX	1
6	1024420100	MK50 COMPRESSOR 220-230/1/50-60	1
5	1057820100	MK50-90 230V 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

10.1 EXPLODED DIAGRAMS & Spare Part List

KRAD 80M

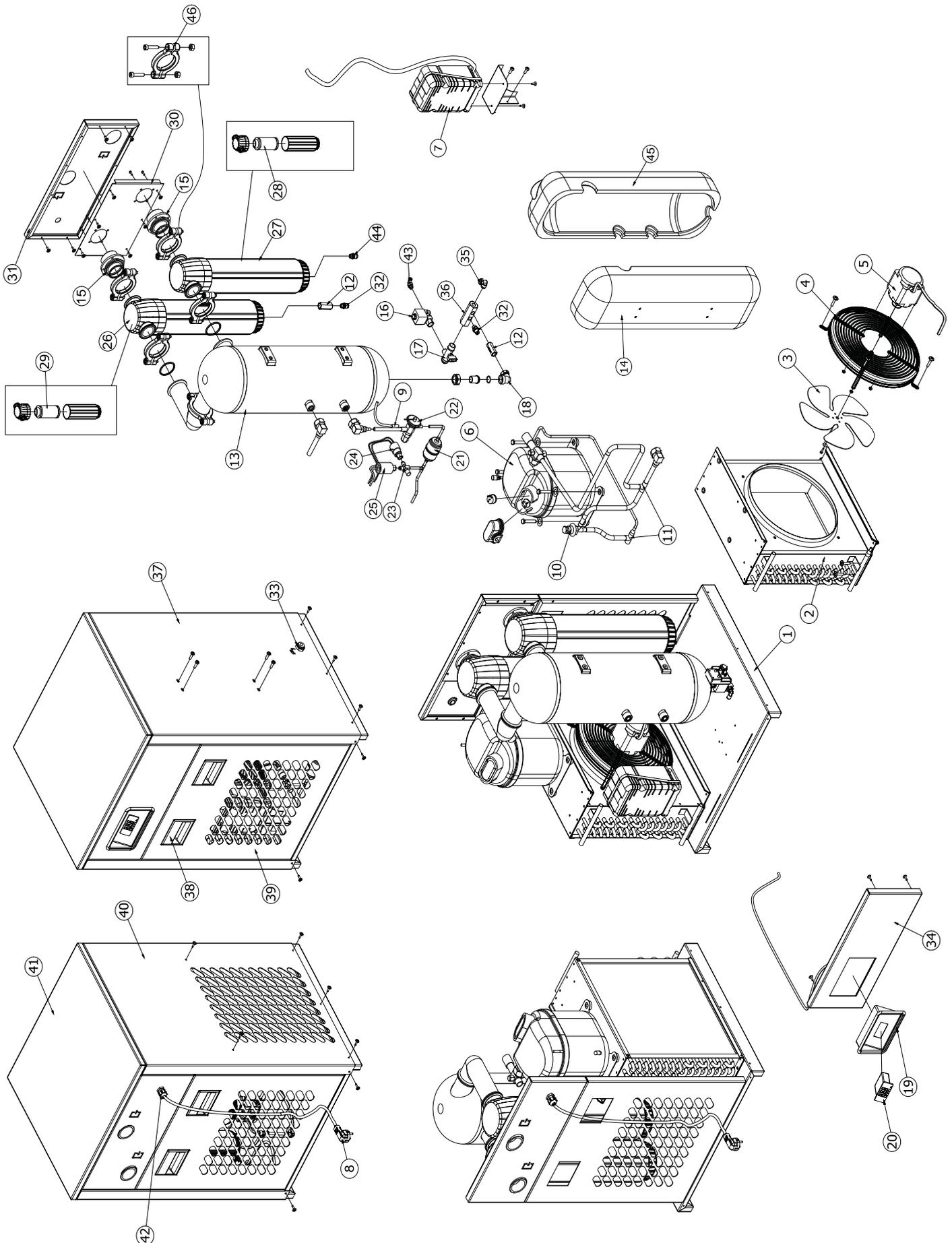


KRAD 80M PART LIST

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	1034620100	1/4" 6mm STRAIGHT FEMALE FITTINGS	2
41	1612250732	1/4"-4mm UNION - ELBOW	1
40	1031920100	3mt CABLE WITH PLUG	1
39	1023220100	POLYAMIDE CABLE UNION PG11	1
38	1047510100	MK40-50-60-08 PANEL (7012 THICK RAGGED GREY)	1
37	1043740100	MK50-60-02 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	1000670700	MK40-50-60-05B PANEL (GALVANIZED)	1
32	1057380100	NTC SENSOR	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	1026290100	PASS UNION Ø6mm	1
26	1040160100	MK40-50-60-04 PANEL (7012 THICK RAGGED GREY)	1
25	1000670600	MK40-50-60-05A PANEL (GALVANIZED)	1
24	1012807	ME-MKON-0155-180300/0170-Y-BM-PK	1
23	1012808	ME-MKON-0155-180300/0170-X-BM-PK	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	1040740100	MK40-50-60 CONNECTION KIT ALD	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	1
14	1002060100	1/2" CORNER UNION	1
13	1018430100	1/2"-1/4" FILTERED DRAIN	1
12	1026430100	MK10-130 230V 16Bar SOLENOID VALVE	1
11	1442340100	MK40-60 ISOLATION POLYSTYRENE LOWER	1
10	1045560100	MK40-50-60 HEAT EXCHANGER-MKR	1
9	1057350100	DPR0 CONTROLLER 30A 230V	1
8	1057340100	DRYER FRONT PANEL	1
7	1062820100	MK60 COMPRESSOR 220-230/1/50-60 ELECTRIC BOX	1
6	1024430100	MK60 COMPRESSOR 220-230/1/50-60	1
5	1057820100	MK50-90 230V 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

10.1 EXPLODED DIAGRAMS & Spare Part List

KRAD 100M

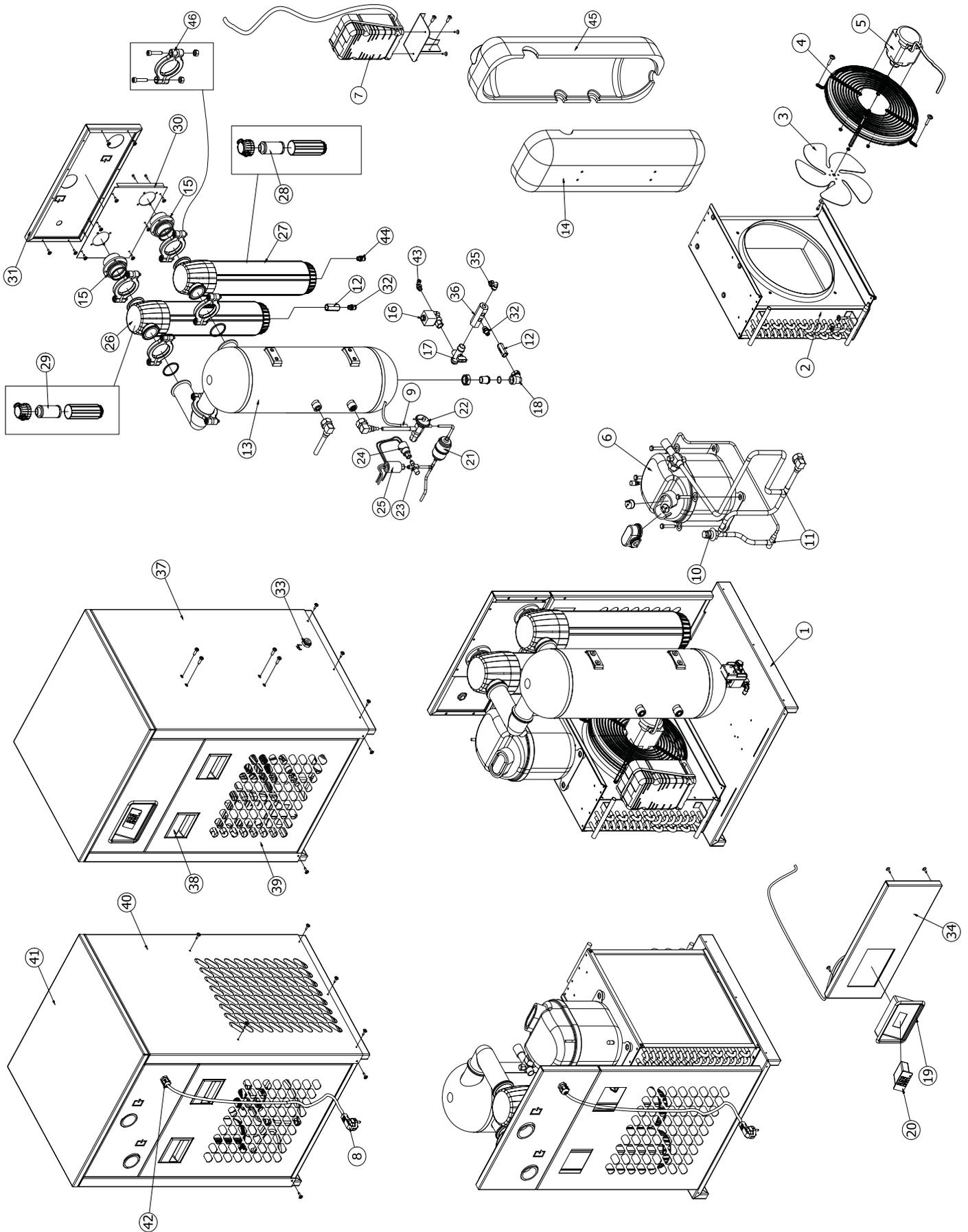


KRAD 100M PART LIST

Item No.	Part No.	Description	QTY
46	1020952	G300-600 CLAMP KIT	5
45	1442370100	MK70-90 ISOLATION POLYSTYRENE TOP	1
44	1612250731	1/4"-4 STRAIGHT FEMALE FITTINGS	1
43	1029740100	1/4"-6*8 METAL SWIVELLING ELBOW UNION	2
42	1023220100	POLYAMIDE CABLE UNION PG11	1
41	1044830100	MK70-80-90-08 PANEL (7012 THICK RAGGED GREY)	1
40	1045190100	MK70-03A PANEL (7012 THICK RAGGED GREY)	1
39	1045220100	MK70-80-90-07 PANEL (7012 THICK RAGGED GREY)	2
38	1039220100	AIR DRYER HANDLE	4
37	1046660100	MK70-80-90-02 PANEL (7012 THICK RAGGED GREY)	1
36	1022290100	MK10-150 COLLECTOR	1
35	1612250732	1/4"-4 UNION - ELBOW	1
34	1044300100	MK70-80-90-06 PANEL (7012 THICK RAGGED GREY)	1
33	1026290100	PASS UNION Ø6mm	1
32	1034620100	1/4" 6mm STRAIGHT FEMALE FITTINGS	2
31	1047010100	MK70-80-90-04A PANEL (7012 THICK RAGGED GREY)	1
30	1001310500	MK70-80-90-05 PANEL (GALVANIZED)	1
29	1013517	ME-MKON-0405-300400/0390-Y-BM-PK	2
28	1013516	ME-MKON-0405-300400/0390-X-BM-PK	1
27	1013513	GKON-405-1 1/2-MX-A1/4-NSG-W-0000	1
26	1013512	GKON-405-1 1/2-MY-A1/4-NSG-W-0000	1
25	1026750100	12-9 BAR-FAN SWITCH	1
24	1026770100	25 BAR HIGH PRESSURE SWITCH	1
23	1029510100	3 SIDE SCHRADER, 1 SIDE WELDED	1
22	1025640100	EXPANSION VALVE TUBE-5	1
21	1026100100	MK10-90 FILTER DRYER	2
20	1057350100	DPRO CONTROLLER 30A 230V	1
19	1057340100	DRYER FRONT PANEL	1
18	1018430100	1/2"-1/4" FILTERED DRAIN	1
17	1002060100	1/2" CORNER UNION	1
16	1026430100	MK10-130 230V 16Bar SOLENOID VALVE	1
15	1041300100	MK70-80-90 CONNECTION KIT ALD	2
14	1441820100	MK70-90 ISOLATION POLYSTYRENE LOWER	1
13	1058200100	MK70-80-90 EXCHANGER	1
12	1002090100	1/4" CHECK VALVE	2
11	1029560100	1/4" COPPER T 6mm	2
10	1025410100	MK10-60 BY-PASS VALVE TYPE -2	1
9	1057380100	NTC SENSOR	1
8	1031920100	3mt CABLE WITH PLUG	1
7	1062730100	MK70 COMPRESSOR 220-230/1/50-60 ELECTRIC BOX	1
6	1024560100	MK70 COMPRESSOR 220-230/1/50-60	1
5	1057820100	MK50-90 230V FAN MOTOR	1
4	1025270100	MK50-70 (Ø275) FAN GRILL	1
3	1025160100	MK50-70 (Ø254) FAN PROPELLER	1
2	1024700100	MK70 CONDENSER	1
1	1047230100	MK70-80-90-01 PANEL (7012 THICK RAGGED GREY)	1

10.1 EXPLODED DIAGRAMS & Spare Part List

KRAD 125M

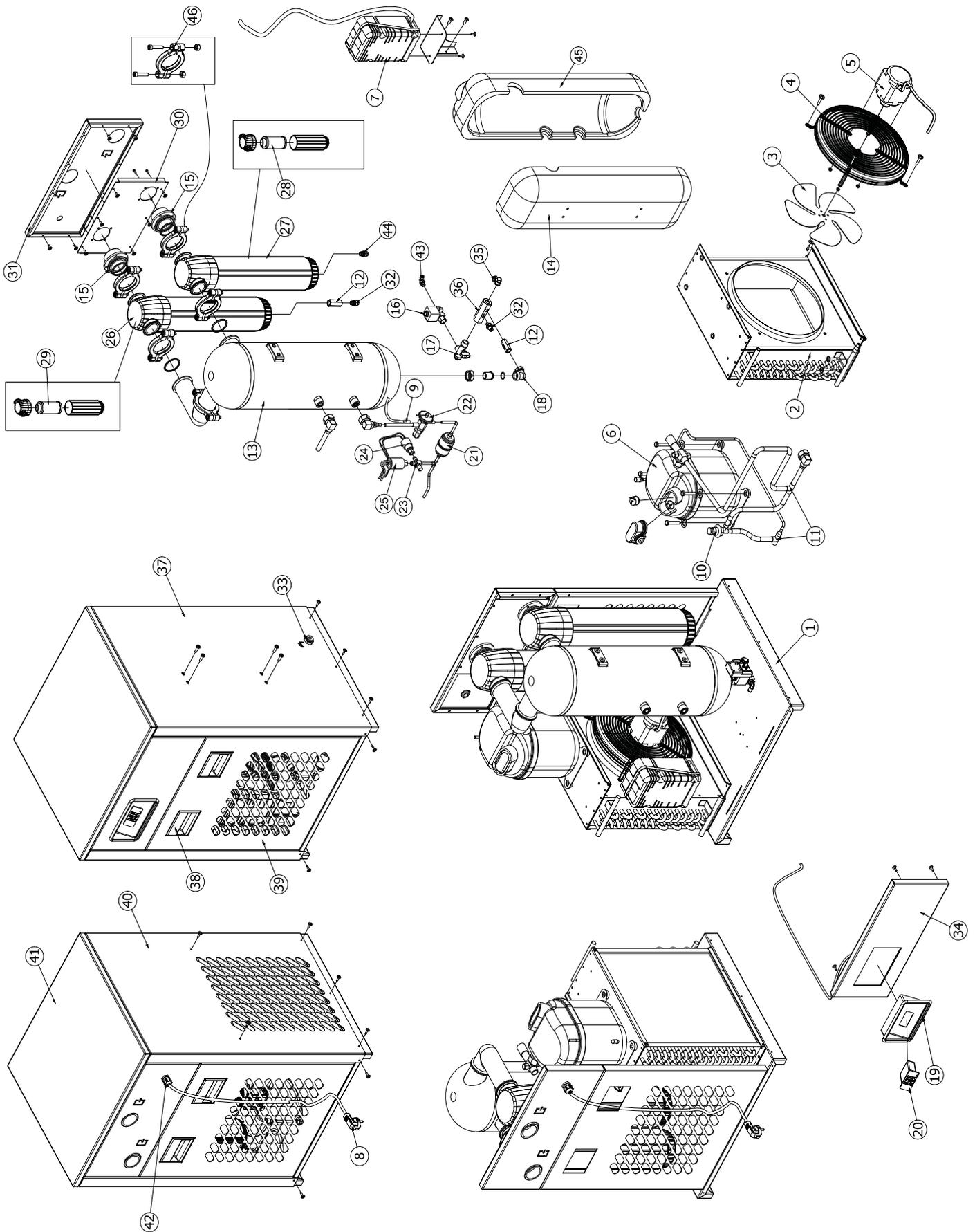


KRAD 125M PART LIST

Item No.	Part No.	Description	QTY
46	1020952	G300-600 CLAMP KIT	5
45	1442370100	MK70-90 ISOLATION POLYSTYRENE TOP	1
44	1612250731	1/4"-4 STRAIGHT FEMALE FITTINGS	1
43	1029740100	1/4"-6*8 METAL SWIVELLING ELBOW UNION	1
42	1023220100	POLYAMIDE CABLE UNION PG11	1
41	1044830100	MK70-80-90-08 PANEL (7012 THICK RAGGED GREY)	1
40	1045420100	MK80-90-03B PANEL (7012 THICK RAGGED GREY)	1
39	1045220100	MK70-80-90-07 PANEL (7012 THICK RAGGED GREY)	2
38	1039220100	AIR DRYER HANDLE	4
37	1046660100	MK70-80-90-02 PANEL (7012 THICK RAGGED GREY)	1
36	1022290100	MK10-150 COLLECTOR	1
35	1612250732	1/4"-4 UNION - ELBOW	1
34	1044300100	MK70-80-90-06 PANEL (7012 THICK RAGGED GREY)	1
33	1026290100	PASS UNION Ø6mm	1
32	1034620100	1/4" 6mm STRAIGHT FEMALE FITTINGS	3
31	1047010100	MK70-80-90-04A PANEL (7012 THICK RAGGED GREY)	1
30	1001310500	MK70-80-90-05 PANEL (GALVANIZED)	1
29	1013517	ME-MKON-0405-300400/0390-Y-BM-PK	1
28	1013516	ME-MKON-0405-300400/0390-X-BM-PK	1
27	1013513	GKON-405-1 1/2-MX-A1/4-NSG-W-0000	1
26	1013512	GKON-405-1 1/2-MY-A1/4-NSG-W-0000	1
25	1026750100	12-9 BAR-FAN SWITCH	1
24	1026770100	25 BAR HIGH PRESSURE SWITCH	1
23	1029510100	3 SIDE SCHRADER, 1 SIDE WELDED	1
22	1025640100	EXPANSION VALVE TUBE-5	1
21	1026100100	MK10-90 FILTER DRYER	1
20	1057350100	DPRO CONTROLLER 30A 230V	1
19	1057340100	DRYER FRONT PANEL	1
18	1018430100	1/2"-1/4" FILTERED DRAIN	1
17	1002060100	1/2" CORNER UNION	1
16	1026430100	MK10-130 230V 16Bar SOLENOID VALVE	1
15	1041300100	MK70-80-90 CONNECTION KIT ALD	2
14	1441820100	MK70-90 ISOLATION POLYSTYRENE LOWER	1
13	1058200100	MK70-80-90 EXCHANGER	1
12	1002090100	1/4" CHECK VALVE	2
11	1029560100	1/4" COPPER T 6mm	2
10	1025610100	MK80-130 BY-PASS VALVE 3/8"x1/2"	1
9	1057380100	NTC SENSOR	1
8	1031920100	3mt CABLE WITH PLUG	1
7	1062740100	MK80 COMPRESSOR 220-230/1/50-60 ELECTRIC BOX	1
6	1024570100	MK80 COMPRESSOR 220-230/1/50-60	1
5	1057820100	MK50-90 230V FAN MOTOR	1
4	1025320100	MK80-90 (Ø340) FAN GRILL	1
3	1025170100	MK80-90 (Ø300) FAN PROPELLER	1
2	1024920100	MK80-90 CONDENSER	1
1	1047230100	MK70-80-90-01 PANEL (7012 THICK RAGGED GREY)	1

10.1 EXPLODED DIAGRAMS & Spare Part List

KRAD 150M

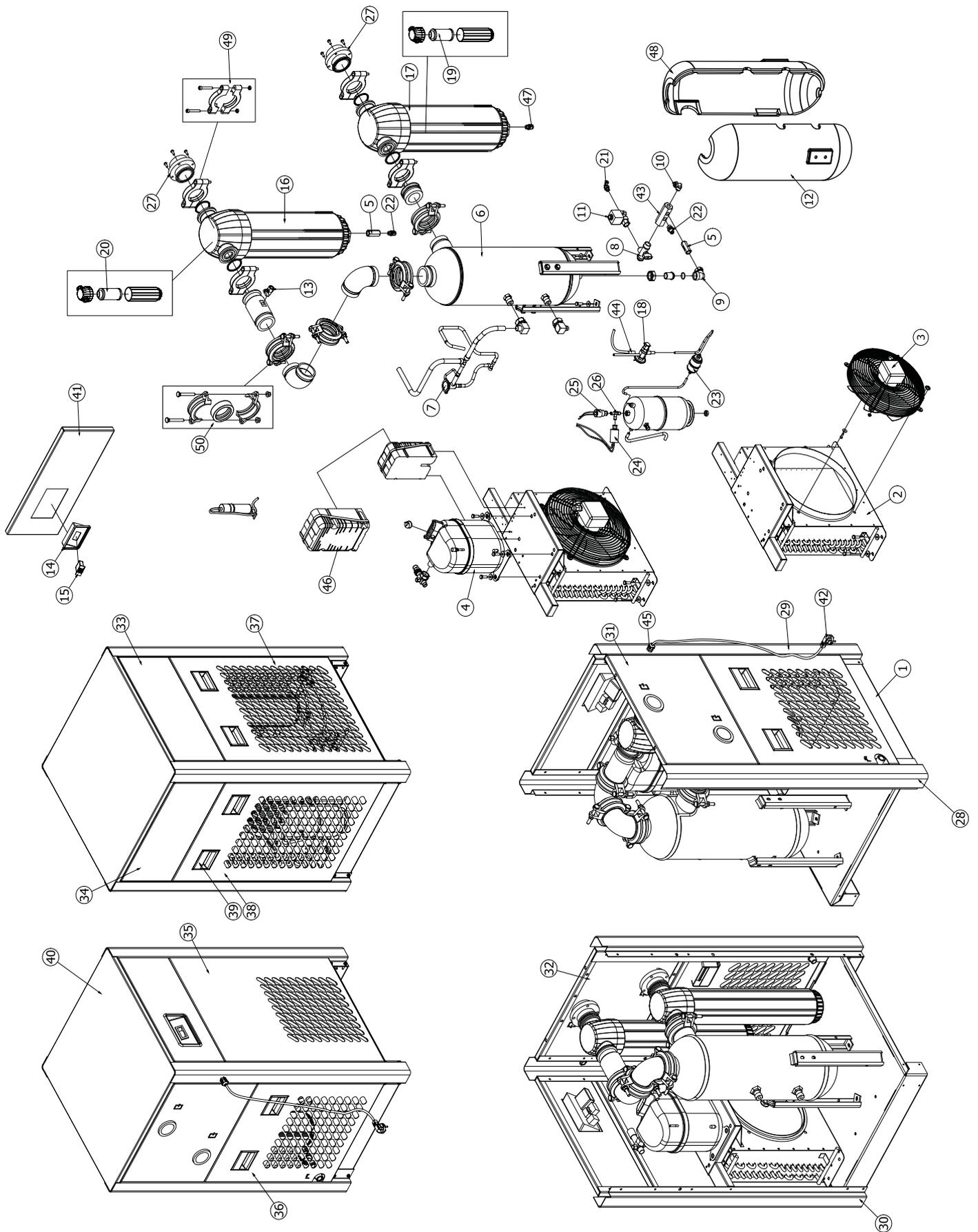


KRAD 150M PART LIST

Item No.	Part No.	Description	QTY
46	1020952	G300-600 CLAMP KIT	5
45	1442370100	MK70-90 ISOLATION POLYSTYRENE TOP	1
44	1612250731	1/4"-4 STRAIGHT FEMALE FITTINGS	1
43	1029740100	1/4"-6*8 METAL SWIVELLING ELBOW UNION	1
42	1023220100	POLYAMIDE CABLE UNION PG11	1
41	1044830100	MK70-80-90-08 PANEL (7012 THICK RAGGED GREY)	1
40	1045420100	MK80-90-03B PANEL (7012 THICK RAGGED GREY)	1
39	1045220100	MK70-80-90-07 PANEL (7012 THICK RAGGED GREY)	2
38	1039220100	AIR DRYER HANDLE	4
37	1046660100	MK70-80-90-02 PANEL (7012 THICK RAGGED GREY)	1
36	1022290100	MK10-150 COLLECTOR	1
35	1612250732	1/4"-4 UNION - ELBOW	1
34	1044300100	MK70-80-90-06 PANEL (7012 THICK RAGGED GREY)	1
33	1026290100	PASS UNION Ø6mm	1
32	1034620100	1/4" 6mm STRAIGHT FEMALE FITTINGS	3
31	1047010100	MK70-80-90-04A PANEL (7012 THICK RAGGED GREY)	1
30	1001310500	MK70-80-90-05 PANEL (GALVANIZED)	1
29	1013517	ME-MKON-0405-300400/0390-Y-BM-PK	1
28	1013516	ME-MKON-0405-300400/0390-X-BM-PK	1
27	1013513	GKON-405-1 1/2-MX-A1/4-NSG-W-0000	1
26	1013512	GKON-405-1 1/2-MY-A1/4-NSG-W-0000	1
25	1026750100	12-9 BAR-FAN SWITCH	1
24	1026770100	25 BAR HIGH PRESSURE SWITCH	1
23	1029510100	3 SIDE SCHRADER, 1 SIDE WELDED	1
22	1025640100	EXPANSION VALVE TUBE-5	1
21	1026100100	MK10-90 FILTER DRYER	1
20	1057350100	DPRO CONTROLLER 30A 230V	1
19	1057340100	DRYER FRONT PANEL	1
18	1018430100	1/2"-1/4" FILTERED DRAIN	1
17	1002060100	1/2" CORNER UNION	1
16	1026430100	MK10-130 230V 16Bar SOLENOID VALVE	1
15	1041300100	MK70-80-90 CONNECTION KIT ALD	2
14	1441820100	MK70-90 ISOLATION POLYSTYRENE LOWER	1
13	1058200100	MK70-80-90 EXCHANGER	1
12	1002090100	1/4" CHECK VALVE	2
11	1029560100	1/4" COPPER T 6mm	2
10	1025610100	MK80-130 BY-PASS VALVE 3/8"x1/2"	1
9	1057380100	NTC SENSOR	1
8	1031920100	3mt CABLE WITH PLUG	1
7	1062740100	MK80 COMPRESSOR 220-230/1/50-60 ELECTRIC BOX	1
6	1024030100	MK90-100 COMPRESSOR 220/1/50	1
5	1057820100	MK50-90 230V FAN MOTOR	1
4	1025320100	MK80-90 (Ø340) FAN GRILL	1
3	1025170100	MK80-90 (Ø300) FAN PROPELLER	1
2	1024920100	MK80-90 CONDENSER	1
1	1047230100	MK70-80-90-01 PANEL (7012 THICK RAGGED GREY)	1

10.1 EXPLODED DIAGRAMS & Spare Part List

KRAD 200M

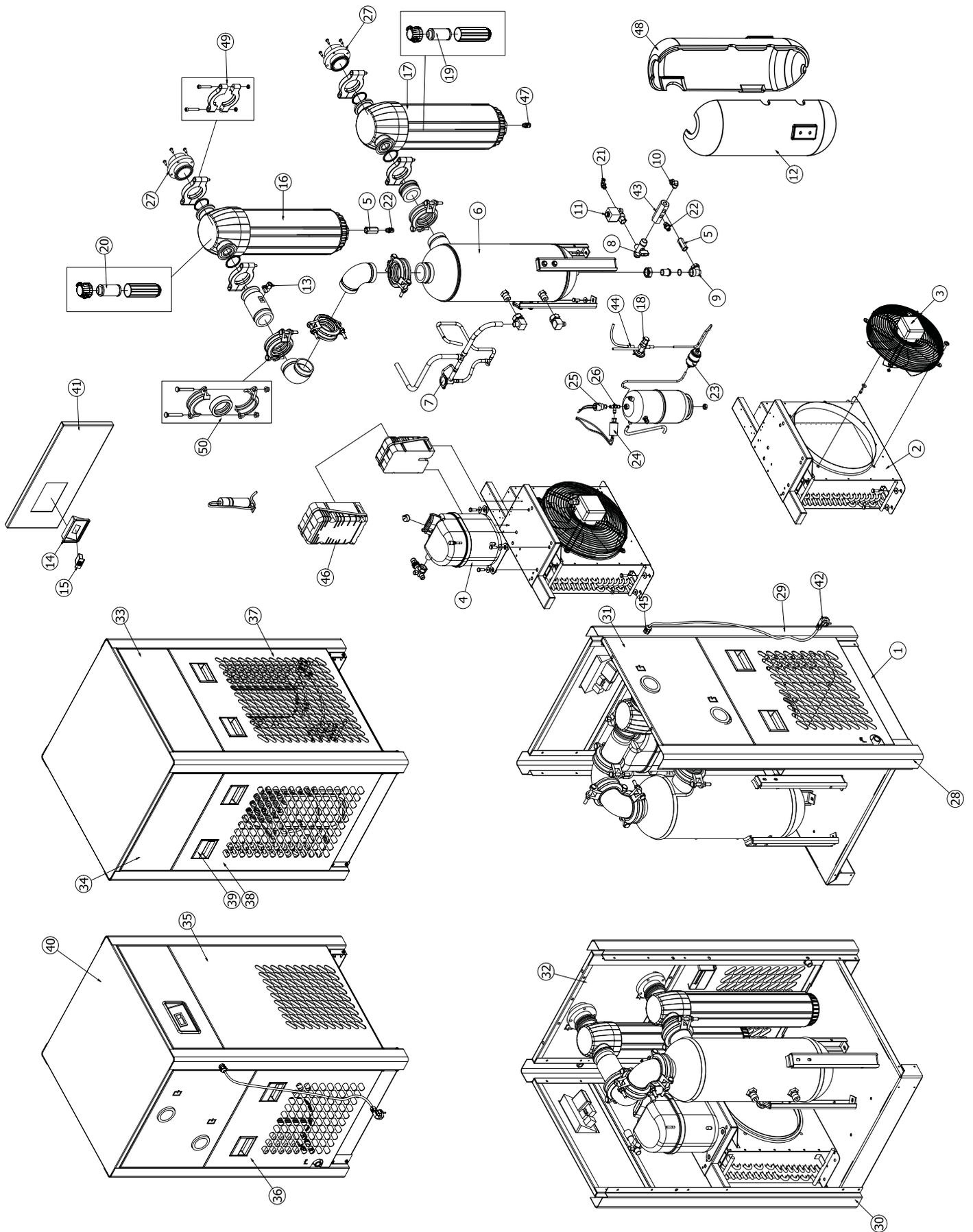


KRAD 200M PART LIST

Item No.	Part No.	Description	QTY
50	1027870100	76,1mm (2 1/2") RIGID COUPLAGE CLAMP	4
49	1020002	G851-1210 CLAMP KIT	4
48	1442300100	MK100-110 ISOLATION POLYSTYRENE LOWER	1
47	1612250731	1/4" -4mm STRAIGHT FEMALE FITTINGS	1
46	1062780100	MK90-100 COMPRESSOR 220/1/50 ELECTRIC BOX	1
45	1023220100	POLYAMIDE CABLE UNION PG11	1
44	1057380100	NTC SENSOR	1
43	1022290100	MK10-150 COLLECTOR	1
42	1031920100	3mt CABLE WITH PLUG	1
41	1041820100	MK100-110-14 PANEL (7012 THICK RAGGED GREY)	1
40	1041760100	MK100-110-13 PANEL (7012 THICK RAGGED GREY)	1
39	1039220100	AIR DRYER HANDLE	6
38	1042480100	MK100-110-10 PANEL (7012 THICK RAGGED GREY)	1
37	1038590100	MK100-110-11 PANEL (7012 THICK RAGGED GREY)	1
36	1041090100	MK100-110-12 PANEL (7012 THICK RAGGED GREY)	1
35	1041470100	MK100-110-09 PANEL (7012 THICK RAGGED GREY)	1
34	1042370100	MK100-110-08 PANEL (7012 THICK RAGGED GREY)	1
33	1038380100	MK100-110-07 PANEL (7012 THICK RAGGED GREY)	1
32	1001740700	MK100-110-06 PANEL (GALVANIZED)	1
31	1044820100	MK100-110-05 PANEL (9005 THIN RAGGED BLACK)	1
30	1049460100	MK100-110-02 PANEL (9005 THIN RAGGED BLACK)	2
29	1044400100	MK100-110-04 PANEL (9005 THIN RAGGED BLACK)	1
28	1044370100	MK100-110-03 PANEL (9005 THIN RAGGED BLACK)	1
27	1000280100	MK100-110-120-130 CONNECTION KIT ALD	2
26	1029510100	3 SIDE SCHRADER, 1 SIDE WELDED	1
25	1026770100	25 BAR HIGH PRESSURE SWITCH	1
24	1026750100	12-9 BAR-FAN SWITCH	1
23	1026110100	MK100-110 FILTER DRYER	1
22	1034620100	1/4" 6mm STRAIGHT FEMALE FITTINGS	1
21	1029740100	1/4"-6*8 METAL SWIVELLING ELBOW UNION	3
20	1013518	ME-MKON-0805-5001200/0400-X-BM-PK	1
19	1013519	ME-MKON-0805-5001200/0400-Y-BM-PK	1
18	1025640100	EXPANSION VALVE TUBE-5	1
17	1013510	GKON-805-2-MX-A1/4-NSG-W-0000	1
16	1013511	GKON-805-2-MY-A1/4-NSG-W-0000	1
15	1057350100	DPRO CONTROLLER 30A 230V	1
14	1057340100	DRYER FRONT PANEL	1
13	1021840100	BALL VALVE 1/4" Mini Metal Handle	1
12	1442310100	MK100-110 ISOLATION POLYSTYRENE TOP	1
11	1026430100	MK10-130 230V 16Bar SOLENOID VALVE	1
10	1612250732	M1/4"-4 UNION - ELBOW	1
9	1002060100	1/2" CORNER UNION	1
8	1018430100	1/2"-1/4" FILTERED DRAIN	1
7	1025610100	MK80-130 BY-PASS VALVE 3/8"x1/2"	1
6	1026550100	MK100-110 EXCHANGER	1
5	1002090100	1/4" CHECK VALVE	2
4	1024030100	MK90-100 COMPRESSOR 230/1/50	1
3	1018100100	MK100-110 230V FAN MOTOR	1
2	1024960100	MK100-110 CONDENSER	1
1	1038290100	MK100-110-01 PANEL (9005 THIN RAGGED BLACK)	1

10.1 EXPLODED DIAGRAMS & Spare Part List

KRAD 250M

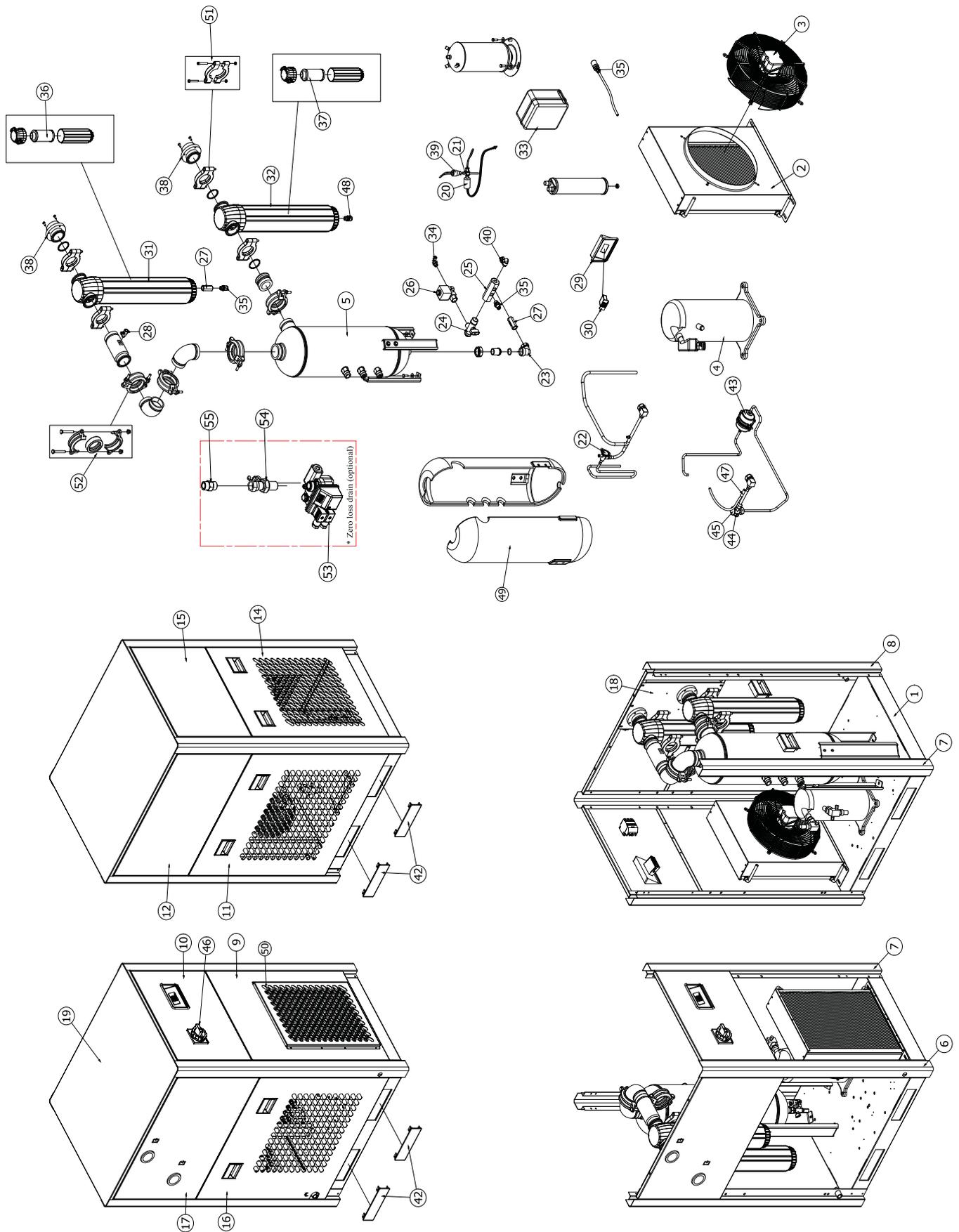


KRAD 250M PART LIST

Item No.	Part No.	Description	QTY
50	1027870100	76,1mm (2 1/2") RIGID COUPLAGE CLAMP	
49	1020002	G851-1210 CLAMP KIT	
48	1442300100	MK100-110 ISOLATION POLYSTYRENE LOWER	
47	1612250731	1/4" -4mm STRAIGHT FEMALE FITTINGS	
46	1062780100	MK90-100 COMPRESSOR 220/1/50 ELECTRIC BOX	
45	1023220100	POLYAMIDE CABLE UNION PG11	
44	1057380100	NTC SENSOR	
43	1022290100	MK10-150 COLLECTOR	
42	1031920100	3mt CABLE WITH PLUG	
41	1041820100	MK100-110-14 PANEL (7012 THICK RAGGED GREY)	
40	1041760100	MK100-110-13 PANEL (7012 THICK RAGGED GREY)	
39	1039220100	AIR DRYER HANDLE	
38	1042480100	MK100-110-10 PANEL (7012 THICK RAGGED GREY)	
37	1038590100	MK100-110-11 PANEL (7012 THICK RAGGED GREY)	
36	1041090100	MK100-110-12 PANEL (7012 THICK RAGGED GREY)	
35	1041470100	MK100-110-09 PANEL (7012 THICK RAGGED GREY)	
34	1042370100	MK100-110-08 PANEL (7012 THICK RAGGED GREY)	
33	1038380100	MK100-110-07 PANEL (7012 THICK RAGGED GREY)	
32	1001740700	MK100-110-06 PANEL (GALVANIZED)	
31	1044820100	MK100-110-05 PANEL (9005 THIN RAGGED BLACK)	
30	1049460100	MK100-110-02 PANEL (9005 THIN RAGGED BLACK)	
29	1044400100	MK100-110-04 PANEL (9005 THIN RAGGED BLACK)	
28	1044370100	MK100-110-03 PANEL (9005 THIN RAGGED BLACK)	
27	1000280100	MK100-110-120-130 CONNECTION KIT ALD	
26	1029510100	3 SIDE SCHRADER, 1 SIDE WELDED	
25	1026770100	25 BAR HIGH PRESSURE SWITCH	
24	1026750100	12-9 BAR-FAN SWITCH	
23	1026110100	MK100-110 FILTER DRYER	
22	1034620100	1/4" 6mm STRAIGHT FEMALE FITTINGS	
21	1029740100	1/4"-6*8 METAL SWIVELLING ELBOW UNION	
20	1013518	ME-MKON-0805-5001200/0400-X-BM-PK	
19	1013519	ME-MKON-0805-5001200/0400-Y-BM-PK	
18	1025640100	EXPANSION VALVE TUBE-5	
17	1013510	GKON-805-2-MX-A1/4-NSG-W-0000	
16	1013511	GKON-805-2-MY-A1/4-NSG-W-0000	
15	1057350100	DPRO CONTROLLER 30A 230V	
14	1057340100	DRYER FRONT PANEL	
13	1021840100	BALL VALVE 1/4" Mini Metal Handle	
12	1442310100	MK100-110 ISOLATION POLYSTYRENE TOP	
11	1026430100	MK10-130 230V 16Bar SOLENOID VALVE	
10	1612250732	M1/4"-4 UNION - ELBOW	
9	1002060100	1/2" CORNER UNION	
8	1018430100	1/2"-1/4" FILTERED DRAIN	
7	1025610100	MK80-130 BY-PASS VALVE 3/8"x1/2"	
6	1026550100	MK100-110 EXCHANGER	
5	1002090100	1/4" CHECK VALVE	
4	1024330100	MK110 COMPRESSOR 230/1/50	
3	1018100100	MK100-110 230V FAN MOTOR	
2	1024960100	MK100-110 CONDENSER	
1	1038290100	MK100-110-01 PANEL (9005 THIN RAGGED BLACK)	

10.1 EXPLODED DIAGRAMS & Spare Part List

KRAD 350M

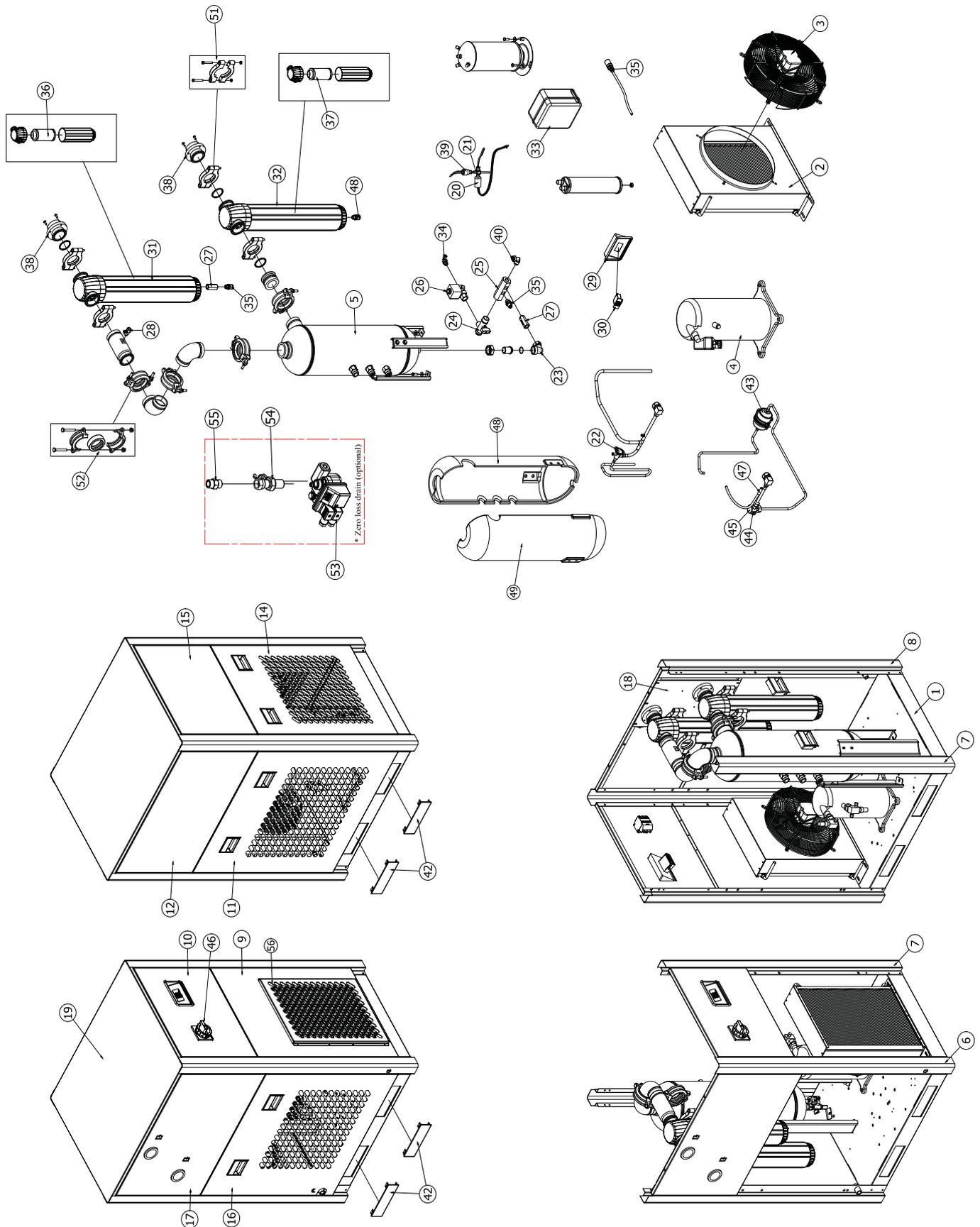


KRAD 350M PART LIST

Item No.	Part No.	Description	QTY
55	1034110100	1/2" NIPPLE (ZL)	1
54	1612277436	1/2" UNION VALVE(ZL)	1
53	1612292109	MZL-600 230VAC 50/60Hz	1
52	1027870100	76,1MM (2 1/2") RIGID COUPLING CLAMP	4
51	1047421	G851-1210/GON500-1200 CLAMP KIT	4
50	1612307176	MK120-130-HR-15 (7035 GLOSSY GREY)	1
49	1612282728	MK120-130/160-170 ISOLATION POLYSTYRENE KIT	1
48	1612250731	1/4" 4mm STRAIGHT FEMALE FITTINGS	1
47	1057380100	NTC SENSOR	1
46	1021760100	MAIN SWITCH	1
45	1025660100	MK130 ORIFICE	1
44	1025650100	MK110(60Hz)-120 EXPANSION VALVE	1
43	1026120100	MK120-150 FILTER DRYER	1
42	1042470100	FORKLIFT GUIDE COVER	4
41	1023220100	POLYAMIDE CABLE UNION PG11	1
40	1612250732	M1/4"-4 UNION - ELBOW	1
39	1026770100	25 BAR HIGH PRESSURE SWITCH	1
38	1000280100	MK100-110-120-130 CONNECTION KIT	2
37	1013521	ME-MKON-1205-5001200/0525-Y-BM-PK	1
36	1013520	ME-MKON-1205-5001200/0525-X-BM-PK	1
35	1034620100	1/4" 6mm STRAIGHT FEMALE FITTINGS	4
34	1029740100	1/4"-6*8 METAL SWIVELLING ELBOW UNION	1
33	1062750100	MK120 COMPRESSOR 230/1/50 ELECTRIC BOX	1
32	1013514	GKON-1205-2-MY-A1-4-NSG-W-0000	1
31	1013515	GKON-1205-2-MX-A1-4-NSG-W-0000	1
30	1057350100	DPR0 CONTROLLER 30A 230V	1
29	1057340100	DRYER FRONT PANEL	1
28	1021840100	BALL VALVE 1/4" Mini Metal Handle	1
27	1002090100	1/4" CHECK VALVE	2
26	1026430100	MK10-130 230V 16Bar SOLENOID VALVE	1
25	1022290100	MK10-150 COLLECTOR	1
24	1018430100	1/2"-1/4" FILTERED DRAIN	1
23	1002060100	1/2" CORNER UNION	1
22	1025610100	MK80-130 BY-PASS VALVE 3/8"x1/2"	1
21	1029510100	3 SIDE SCHRADER, 1 SIDE WELDED	1
20	1026750100	12-9 BAR-FAN SWITCH	1
19	1612307174	MK120-130-HR-13 (7035 GLOSSY GREY)	1
18	1612304817	MK120-130-HR-12 (GALVANIZED)	1
17	1612304832	MK120-130-HR-11 (9005 THIN RAGGED BLACK)	1
16	1612307173	MK120-130-HR-10 (7035 GLOSSY GREY)	1
15	1612307172	MK120-130-HR-09 (7035 GLOSSY GREY)	1
14	1612307171	MK120-130-HR-08 (7035 GLOSSY GREY)	1
13	1039220100	AIR DRYER HANDLE	6
12	1612307170	MK120-130-HR-07 (7035 GLOSSY GREY)	1
11	1612307169	MK120-130-HR-06 (7035 GLOSSY GREY)	1
10	1612308343	MK120-130-HR-05 (3020 GLOSSY RED)	1
9	1612307167	MK120-130-HR-04 (7035 GLOSSY GREY)	1
8	1612304824	MK120-130-HR-03 (9005 THIN RAGGED BLACK)	1
7	1612304823	MK120-130-HR-02 (9005 THIN RAGGED BLACK)	2
6	1612304822	MK120-130-HR-01(9005 THIN RAGGED BLACK)	1
5	1026520100	MK120-130/160-170 EXCHANGER	1
4	1612261540	MK120 COMPRESSOR 230/1/50 TYPE-2	1
3	1025210100	MK120-130 230/1/50 FAN MOTOR	1
2	1612267328	MK130 MICROCHANNEL CONDENSER	1
1	1612304821	MK120-130-HR LOWER TABLE (9005 THIN RAG. BLACK)	1

10.1 EXPLODED DIAGRAMS & Spare Part List

KRAD 500M



KRAD 500M PART LIST			
Item No.	Part No.	Description	QTY
56	1612307176	MK120-130-HR-15 (7035 GLOSSY GREY)	1
55	1059760100	MAIN SWITCH	1
54	1034110100	1/2" NIPPLE (ZL)	1
53	1612277436	1/2" UNION VALVE(ZL)	1
52	1027870100	76,1MM (2 1/2") RIGID COUPLING	4
51	1020002	G851-1210 CLAMP KIT	4
50	1442290100	MK120-130/160-170 ISOLATION POLYSTYRENE TOP	1
49	1442280100	MK120-130/160-170 ISOLATION POLYSTYRENE LOWER	1
48	1612250731	1/4" 4mm STRAIGHT FEMALE FITTINGS	1
47	1057380100	NTC SENSOR	1
46	1021760100	MAIN SWITCH	1
45	1025660100	MK130 ORIFICE	1
44	1025470100	MK110-130 TRF EXPANSION VALVE R134a	1
43	1026120100	MK120-150 FILTER DRYER	1
42	1042470100	FORKLIFT GUIDE COVER	4
41	1023220100	POLYAMIDE CABLE UNION PG11	1
40	1612250732	M1/4"-4 UNION - ELBOW	1
39	1026770100	25 BAR HIGH PRESSURE SWITCH	1
38	1047700100	MK100-110-120-130 CONNECTION KIT	2
37	1013521	ME-MKON-1205-5001200/0785-Y-BM-PK	1
36	1013520	ME-MKON-1205-5001200/0785-X-BM-PK	1
35	1034620100	1/4" 6mm STRAIGHT FEMALE FITTINGS	4
34	1029740100	1/4"-6*8 METAL SWIVELLING ELBOW UNION	1
33	1612252385	MK130 COMPRESSOR 230/1/50 ELECTRIC BOX	1
32	1013514	GKON-1205-2-MY-A1-4-NSG-W-0000	1
31	1013515	GKON-1205-2-MX-A1-4-NSG-W-0000	1
30	1057350100	DPR0 CONTROLLER 30A 230V	1
29	1057340100	DRYER FRONT PANEL	1
28	1021840100	BALL VALVE 1/4" Mini Metal Handle	1
27	1002090100	1/4" CHECK VALVE	2
26	1026430100	MK10-130 230V 16Bar SOLENOID VALVE	1
25	1022290100	MK10-150 COLLECTOR	1
24	1018430100	1/2"-1/4" FILTERED DRAIN	1
23	1002060100	1/2" CORNER UNION	1
22	1025610100	MK80-130 BY-PASS VALVE 3/8"x1/2"	1
21	1029510100	3 SIDE SCHRADER, 1 SIDE WELDED	1
20	1026750100	12-9 BAR-FAN SWITCH	1
19	1612307174	MK120-130-HR-13 (7035 GLOSSY GREY)	1
18	1612304817	MK120-130-HR-12 (GALVANIZED)	1
17	1612304832	MK120-130-HR-11 (9005 THIN RAGGED BLACK)	1
16	1612307173	MK120-130-HR-10 (7035 GLOSSY GREY)	1
15	1612307172	MK120-130-HR-09 (7035 GLOSSY GREY)	1
14	1612307171	MK120-130-HR-08 (7035 GLOSSY GREY)	1
13	1039220100	AIR DRYER HANDLE	6
12	1612307170	MK120-130-HR-07 (7035 GLOSSY GREY)	1
11	1612307169	MK120-130-HR-06 (7035 GLOSSY GREY)	1
10	1612308343	MK120-130-HR-05 (3020 GLOSSY RED)	1
9	1612307167	MK120-130-HR-04 (7035 GLOSSY GREY)	1
8	1612304824	MK120-130-HR-03 (9005 THIN RAGGED BLACK)	1
7	1612304823	MK120-130-HR-02 (9005 THIN RAGGED BLACK)	2
6	1612304822	MK120-130-HR-01(9005 THIN RAGGED BLACK)	1
5	1026520100	MK120-130/160-170 EXCHANGER	1
4	1612261542	MK130 COMPRESSOR 230/1/50 TYPE-2	1
3	1025210100	MK120-130 230/1/50 FAN MOTOR	1
2	1612267328	MK130 MICROCHANNEL CONDENSER	1
1	1612304821	MK120-130-HR LOWER TABLE (9005 THIN RAG. BLACK)	1

11. TROUBLESHOOTING

Problem	Possible Cause	Repair	Comments	
Dryer is switched on, indicator light is lit but the dryer does not start.	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 the 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.	In case of water cooled condensers, check the water control valve	The dryer is protected against excessively high refrigerant pressure. If the condenser efficiency has reduced, the switch will trip. Manually reset the switch.
		Excessive ambient temperature		
Dryer is switched on, but the refrigerant compressor does not turn on.	Excessive temperature on crankcase of compressor.	Allow time for 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 high 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 Three Phase refrigerant 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 compressed air 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 working 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 obstructions	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 reasons. 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 qualified refrigeration engineer. This is a very sensitive device and incorrect settings may create other failures.
High pressure drop	Excessive compressed air flow or too low 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 technician.	
The unit will not run or cycles off and on.	Clogged heat exchanger	Clean heat exchanger with a 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 needed. 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 correction 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.
	Shortage of refrigerant	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.	Check drain solenoid for back pressure caused by blockage in discharge hose, fittings or strainer. Replace drain if required.	Max drain hose length after the dryer must not exceed 10 meters.
			Max drain hose height from the dryer must not exceed 3 meters.
			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.

12. Warranty Statement for Air Dryers

When used under the conditions recommended by the manufacturer, Keltec Air Dryers are warranted to be free from defects in material and workmanship for a period of 24 months from the start-up date, which must not be more than 30 days from the factory ship date, provided that Keltec is supplied with the completed start-up form. The heat exchanger is warranted for 5 years. This warranty is limited to the replacement of the heat exchanger(s), FOB factory, and is subject to the same restrictions outlined below regarding misuse, abuse or accident.

All electrical components such as fan motors, compressors and electronic parts such as timer drains, etc. in the product have a limited warranty of 3 months. Failed electrical and electronic parts may be returned to Keltec for detailed inspection and reporting. If Keltec, or the original equipment manufacturer, determines that the failure is due to a manufacturing defect, the parts will be considered under warranty.

This warranty applies to equipment that is installed, operated and maintained in accordance with the procedures and recommendations outlined in the owner's manual published by Keltec for the duration of this warranty. Keltec reserves the right to request photos of the failed part, or the return of the part itself, to its warehouse. After inspection, if Keltec's warranty department concludes from the photos or the returned part that the defect occurred under normal service and was not due to apparent misuse, abuse or accident, Keltec will, at its sole discretion, repair or replace the defective part free of charge, delivered FOB from its warehouse.

This warranty is not transferable. Any warranty service performed in the field must be authorised by Keltec prior to service. Unauthorised service will void the warranty, and any resulting charges will not be paid by Keltec.

Keltec makes no other warranties or guarantees, express or implied. Keltec assumes no liability for indirect or consequential damages.

CE 2195

2014/68/AB Basıncılı Ekipmanlar Yönetmeliği Ek-IV'e Göre Uygunluk Beyanı
Declaration of Conformity According to 2014/68/EU Pressure Equipment Directive Annex-IV

Üretici / Manufacturer

Adı / Name : Mikropor Makina Sanayi ve Ticaret A.Ş.
Adresi / Address : 1. OSB Oğuz Caddesi No:5, 06935, Sincan - Ankara / Türkiye (Merkez / Head Office)
1. OSB Osmanlı Caddesi No:5, 06935, Sincan - Ankara / Türkiye (Üretim / Production)
1. OSB Büyük Timur Caddesi No:14, 06935, Sincan - Ankara / Türkiye (Üretim / Production)
Telefon / Phone : +90 312 267 07 00
Faks / Fax : +90 312 267 05 52
İnternet Adresi / Web : www.mikropor.com

Uygunluk Değerlendirme Sertifikaları / Conformity Assessment Certificates

Sertifika Numarası / Certificate Number : 2195-PED-2100401
Prosedür (Kategori) / Procedure (Category) : Kategori I to II / Category I to II
Prosedür (Modül) / Procedure (Module) : Modül A2 / Module A2
Onaylanmış Kuruluş / Notified Body : Szutest Uygunluk Değerlendirme A.Ş. (2195)

Ürün Tanımı ve Dizayn Şartları / Product Description and Design Conditions

Ürün Tanımı / Product Description : Soğutmalı Hava Kurutucu / Refrigerated Air Dryer
Ürün Tipi / Product Type : KRAD M Series
Tasarım Standardı / Design Standard : EN 378-2

Seri Numarası / Serial Number

P000000001 to P999999999

Aşağıdaki tasarım koşullarına sahip 2014/68/EU PED Madde 4.2'ye göre bir donanım olarak
As an assembly according to 2014/68/EU PED Article 4.2 with the following design conditions

Maks. Çalışma Basıncı (PS) : 16 Bar
Max. Working Pressure (PS)
Maks. Çalışma Sıcaklığı (Tmax) : 60°C
Max. Working Temp. (Tmax)
Min. Çalışma Sıcaklığı (Tmin) : 5°C
Min. Working Temp. (Tmin)
Akışkan Grubu : 2
Fluid Group

Bileşen Ekipmanlar / Sub-Components	
Basıncılı Ekipman-1 / Pressurized Equipment-1	
Exchanger	"Category SEP" to "Category II Module H1"
Basıncılı Ekipman-2 / Pressurized Equipment-2	
Condenser	"Category I Module A" to "Category II Module A2"
Basıncılı Ekipman-3 / Pressurized Equipment-3	
Compressor	"Category I Module A"
Basıncılı Ekipman-4 / Pressurized Equipment-4	
Liq. Sep	"Category I Module H"

İmza / Signature

Beyan Eden / Declared By : Arda SUCUKA
Ad Soyad / Name Surname : Makine & Kaynak Mühendisi / Mechanical & Welding Engineer
Unvan / Title : 30.06.2025 / Ankara
Tarih - Yer / Date - Place



Not: Ürün üzerinde değişiklik yapmak yasaktır ve uygulamasına göre çalıştırılmalıdır. Aksi halde Mikropor sorumlu olmayacak ve CE işareti geçersiz olacaktır.

Note: Any modifications are forbidden on the equipment and shall be operated according to its application. Otherwise Mikropor will not be responsible and CE marking will be invalid.

FRM.715 - REV1 - 11.1.2023



2006/42/AT - 2014/30/AB - 2014/35/AB Yönetmelikleri'ne Göre Uygunluk Beyanı
Declaration of Conformity According to 2006/42/EC - 2014/30/EU - 2014/35/EU Directives

Üretici / Manufacturer

Adı / Name : Mikropor Makina Sanayi ve Ticaret A.Ş.
Adresi / Address : 1. OSB Oğuz Caddesi No:5, 06935, Sincan - Ankara / Türkiye (Merkez / Head Office)
1. OSB Osmanlı Caddesi No:5, 06935, Sincan - Ankara / Türkiye (Üretim / Production)
1. OSB Büyük Timur Caddesi No:15, 06935, Sincan - Ankara / Türkiye (Üretim / Production)
Telefon / Phone : +90 312 267 07 00
Faks / Fax : +90 312 267 05 52
İnternet Adresi / Web : www.mikropor.com

Uygunluk Değerlendirme Sertifikaları / Conformity Assessment Certificates

Sertifika Numarası / Certificate Number : 23-IS-1104-TAT-25-MD-0032
Onaylayan Kuruluş / Certifying Body : TÜV Austria Türk Belgelendirme Eğitim ve Gözetim Hizmetleri Ltd. Şti.

Ürün Tanımı ve Uygulanabilir Yönetmelik - Direktifler / Product Description and Applicable Directives

Ürün Tanımı / Product Description : Soğutmalı Hava Kurutucu / Refrigerated Air Dryer
Ürün Tipi / Product Type : KRAD M Series

Seri Numarası / Serial Number

P000000001 to P999999999

Yukarıda belirtilen ürün / ürünler, Mikropor tarafından nihai değerlendirme ile iç imalat kontrollerine tabi tutulmuştur.
The above mentioned product(s) has been subjected to internal manufacturing controls with final assessment by Mikropor.

Aşağıda imzası bulunan kişi, ürün tanımında belirtilen ürün / ürünlerin, aşağıda belirtilen yönetmelik ve standartların temel gereksinimlerini karşıladığını beyan eder.

The undersigned declares that the product(s) which specified in the product description meet the essential requirements of the following directives and standards.

Uygulanabilir Yönetmelikler / Applicable Directives;

- * 2006/42/AT Makine Emniyeti Yönetmeliği / 2006/42/EC Machinery Directive
- * 2014/30/AB Elektromanyetik Uyumluluk Yönetmeliği / 2014/30/EU Electromagnetic Compatibility Directive
- * 2014/35/AB Düşük Voltaj Yönetmeliği / 2014/35/EU Low Voltage Directive

Uygulanabilir Standartlar / Applicable Standards;

- * EN ISO 12100:2010
- * EN IEC 61000-6-2:2019
- * EN 60204-1:2018
- * EN IEC 61000-6-4:2019

Beyan Eden / Declared By

Ad Soyad / Name Surname

: Anıl KOÇTÜRK

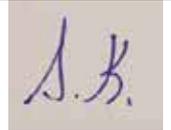
Unvan / Title

: Elektrik Elektronik Mühendisi / Electrical and Electronics Engineer

Tarih - Yer / Date - Place

: 30.06.2025 / Ankara

İmza / Signature



Teknik dosyadan sorumlu kişi - adresi / Name and address of the person to responsible the technical file:
Arda SUCUKA - 1. OSB Büyük Timur Caddesi No:14, 06935, Ankara - Türkiye



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ABN 88 648 683 461



www.activeairspares.com.au