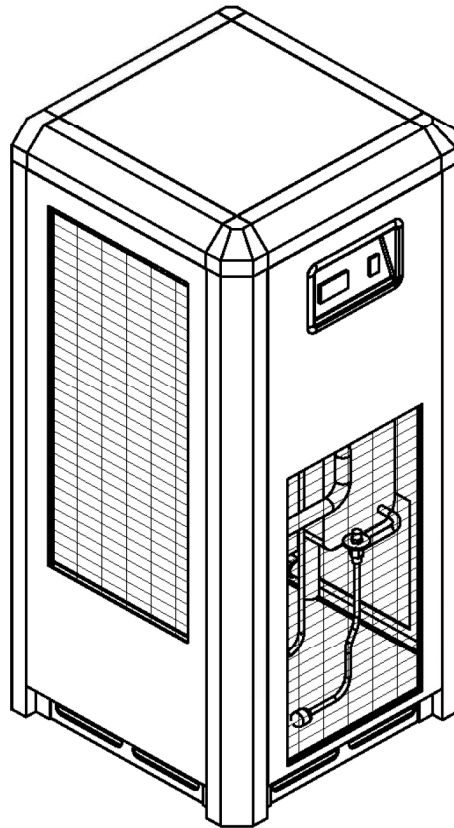




*Always air. Always there.*

# USER/SERVICE MANUAL

## REFRIGERATED DRYERS RH—HIGH TEMPERATURE



PART NUMBER:  
**02250201-299 R01**

**KEEP FOR  
FUTURE  
REFERENCE**

### WARRANTY NOTICE

Failure to follow the instructions  
and procedures in this manual or,  
misuse of this equipment will  
VOID its warranty!

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The information in this manual is current  
as of its publication date, and applies to  
compressor serial number:

**(RH) 0611SA0198**

and all subsequent serial numbers.



## AIR CARE SEMINAR TRAINING

Sullair Air Care Seminars are courses that provide hands-on instruction for the proper operation, maintenance, and servicing of Sullair products. Individual seminars on Stationary compressors and compressor electrical systems are offered at regular intervals throughout the year at Sullair's corporate headquarters training facility located at Michigan City, Indiana.

Instruction includes training on the function and installation of Sullair service parts, troubleshooting common faults and malfunctions, and actual equipment operation. These seminars are recommended for maintenance, contractor maintenance, and service personnel.

For detailed course outlines, schedule, and cost information contact:

### SULLAIR TRAINING DEPARTMENT

1-888-SULLAIR or  
219-879-5451 (ext. 5623)  
[www.sullair.com](http://www.sullair.com)  
[training@sullair.com](mailto:training@sullair.com)

- Or Write -

**Sullair**  
3700 E. Michigan Blvd.  
Michigan City, IN 46360  
Attn: Service Training Department.



*Always air. Always there.*

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## Section 1

# SAFETY

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The dryer has been designed and constructed in accordance with the generally recognized rules pertaining to refrigeration technology as well as industrial safety and accident prevention regulations.

The equipment design, development, production, assembly and customer service fall under the Sullair quality control system.

The dryer is state of the art. There are, however, hazards to the body, equipment and life accompanying this type of product if it is not operated for the purpose which it is intended by trained and specialized personnel.

The equipment supplied is intended exclusively for drying compressed air. Any other use or one exceeding this is considered unauthorized. Sullair cannot be held liable for damages resulting from incorrect or unauthorized use of the equipment. Any such risk is carried solely by the end user.

Authorized use means complete compliance with all of the conditions of operation, servicing and maintenance prescribed by Sullair in this Instruction and Operation Manual.

The dryer is only to be operated, serviced and repaired by trained personnel who are familiar with this type of equipment and understand fully its operation and any potential dangers.

### 1.1 SAFETY INFORMATION

The end user and operator must observe all National, State, and Local industrial and safety regulations dealing with the operation of pressure vessels under compressed air service. Also all “end user” safety rules for the same type of service must be adhered to. The following points list some of the important factors dealing with this type of equipment.

- Never make any constructional changes to the equipment
- Use only original spare parts and accessories
- Never weld on any pressure vessel or modify it in any way
- All maintenance on “pressure parts” must be carried out with the equipment shut-down, depressurized and locked out. Any in plant procedures or work permits regarding pressure vessels are to be adhered to.
- Do not operate the equipment with the control panel door open, the electrical system energized and live parts exposed.
- Disconnect the dryer from the electrical supply when any electrical work is performed. Lock out the safety disconnect and obtain any required work permits.

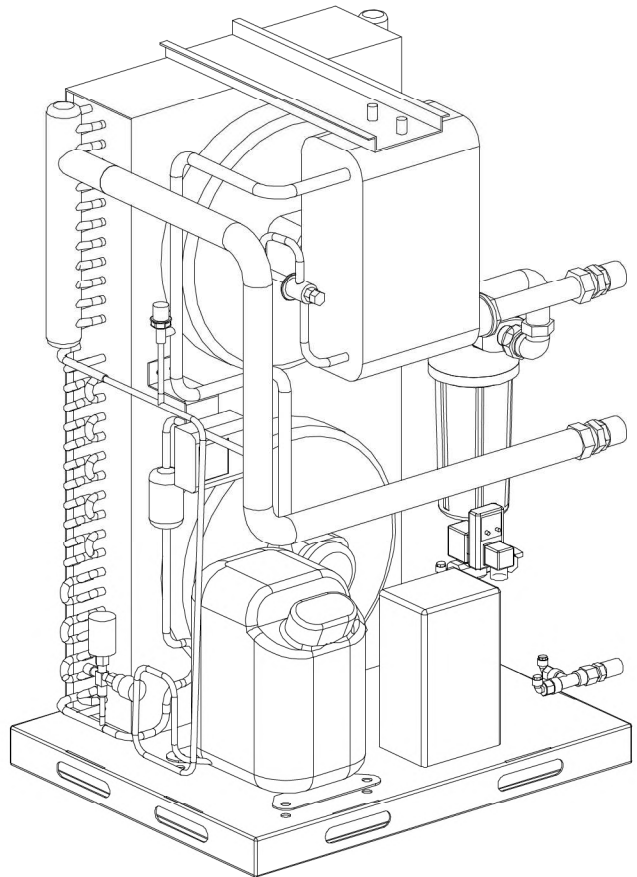
# NOTES

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**Section 2**  
**RH SERIES REFRIGERATED HIGH TEMPERATURE**  
**COMPRESSED AIR DRYER**

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**2.1 SPECIFICATIONS**

Pay attention to the Minimum and Maximum operating conditions before installing and operating the dryer.

<b>Normal Operating Pressure</b>	<b>175 PSIG / 12.07 bar</b>
<b>Normal Operating Temperature</b>	<b>200°F / 93°C</b>
<b>Normal Ambient Temperature</b>	<b>100°F / 38°C</b>
<b>Maximum Operating Pressure</b>	<b>230 PSIG / 15.86 bar</b>
<b>Minimum Operating Pressure</b>	<b>80 PSIG / 5.52 bar</b>
<b>Maximum Ambient Temperature</b>	<b>120°F / 49°C</b>
<b>Minimum Ambient Temperature</b>	<b>40°F / 4°C</b>
<b>Maximum Operating Temperature</b>	<b>240°F / 116°C</b>

If your application does not match the above criteria, contact your Sullair distributor and they will be able to provide the right dryer for your application.

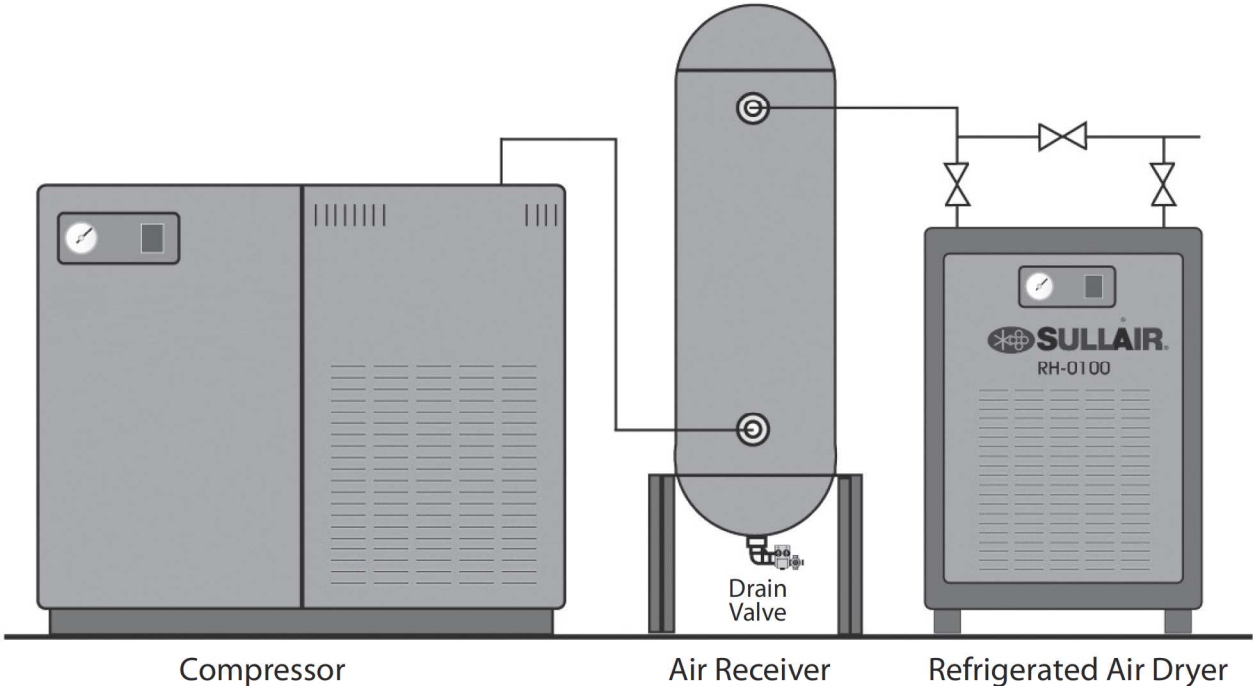
**2.2 INTRODUCTION**

The RH series of Non-cycling Refrigerated Air Dryers are specially designed for compressed air systems that do not use an after cooler. The hot compressed air from the compressor enters the downstream receiver tank where condensed moisture is removed

with an automatic drain. The hot saturated air is then passed directly into the RH series of dryers.

RH series of non-cycling refrigerant compressed air dryers have been designed to remove water vapor from industrial compressed air that is free of reactive contaminants like ammonia, gaseous acid, dust, rust or any other chemical or mineral products capable of reacting or clogging the heat exchanger. The dryers are designed and recommended for indoor applications.

2.3 TYPICAL INSTALLATION



The RH series of Dryers operate without the need for any after-coolers.

## 2.4 SAFETY REGULATIONS

### 2.4.1 IMPORTANT SAFETY NOTES:

1. When operating the air dryer the operator must employ safe working methods and observe all recommended/local safety instructions and applicable regulations.
2. Prior to installation, the dryer and the compressed air system must be depressurized and disconnected from the electrical main supply.
3. The user is responsible for safe operating conditions. Parts and accessories must be replaced if inspection shows that safe operation cannot be assured.
4. Installation, operation, maintenance and repair are to be performed only by authorized, trained and certified technicians.
5. DO NOT exceed the minimum and maximum values of all the parameters mentioned on the Main data label, Electrical data label and accompanying specification sheets if any.
6. All safety precautions mentioned in this manual must be adhered to at all times and by all personnel working on the dryer

### 2.4.2 TRANSPORTATION

1. Use care and caution when transporting the dryer. Avoid sudden jerks, tilting, dropping and other physical abuse.
2. A forklift can be used to transport the dryer provided the forks are long enough to support the full width or length. Caution must be used throughout the move.

### 2.4.3 POSITIONING

1. The dryer must be installed horizontally. A minimum of at least 1.5 feet / 0.5 meters clearance around the dryer is necessary to allow free air circulation and easy access for servicing.
2. The ambient temperature in the room should not exceed 120°F / 49°C and should not be below 40°F / 4°C, taking into account the heat radiated by the dryer. (About 18 watts for each SCFM under ISO 7183-5 condition or 40 watt for each liter/sec under ISO 7183-A condition).

### 2.4.4 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 Technicians should install the compressed air dryer.
2. Safety devices, protecting covers or insulations in the dryer are never to be removed or modified. Each pressure vessel or accessory installed outside the dryer with compressed air (Any pressure above atmospheric pressure) must be fitted with individual pressure relief safety valves.
3. Optional air by-pass valve: Install one (1) air by-pass valve and two (2) switch off valves in the line before the dryer to allow easy maintenance and for possible isolation of the dryer without interrupting the compressed air flow.
4. In Line Filter: install one compressed air filter in line before the dryer to protect it against dirt and possible clogging of heat exchanger. Contact your Sullair representative/dealer for suitable filter.

### 2.4.5 STEPS TO UNDERTAKE BEFORE OPERATING

1. Read this manual completely.
2. Review all safety precautions.
3. Use recommended pipe sizes as per specifications.
4. Never operate the dryer at pressures above the maximum specified on the dryer label (check the technical specifications).

**2.4.6 MAINTENANCE BY AN ENGINEER/  
TECHNICIAN**

1. Maintenance and repairs should only be performed when the air dryer is shut down and depressurized and when the main power switch is turned OFF.
2. Use only the appropriate tools for maintenance and repair.
3. Before dismantling any part that has been pressurized, disconnect the pressure sources and depressurize the system completely. Shut off all valves and isolate the dryer.
4. Proceed carefully during maintenance and repair. Prevent dirt from entering by covering parts and orifices with a clean cloth, paper or tape.
5. Receiver tanks should never be welded or modified in any way.
6. Never leave tools, loose parts or cleaning rags in or on the air dryer.
7. Before connecting the dryer back online, check the setting of the control and safety devices as well as the pressure and the temperature of the compressed air circuit.

**2.4.7 MAINTENANCE BY THE USER**

1. Keep the dryer clean.
2. In case of more than 4 pounds / 1.8 kg of refrigerant, the dryer should be regularly checked to be leak free by qualified refrigerant Technician. Refer to section "Environmental Protection" of this manual.
3. **Every six months**— check the correct operation of the condenser drain trap. Replace timer or solenoid valve in case of clogging or malfunctioning.
4. **Every six months**—check and clean the drain strainer or the electronic sensor by undoing the access screw and rinsing the filter with tap water to remove the trapped dirt from the inside.
5. Clean the air condenser with a soft brush or compressed air as soon as it's dirty or clogged: Take care not to bend the fins of the condenser heat exchanger.
6. Check the troubleshooting list in case of maintenance issues.
7. Check operating pressures, temperatures and time settings after maintenance. If operating and safety devices function properly, the air dryer may be used.

**2.4.8 ENVIRONMENTAL PROTECTION**

1. US/EU laws protect the environment against refrigerant being released into the atmosphere.
2. An annual leak control test at less than 5.0 gr / .01 kg / year should be performed by a qualified engineer if the refrigerant dryer contains more than 4.4 lbs / 2 kg of refrigerant.
3. Prior to dryer disposal, the refrigerant must be properly recovered by a qualified engineer.

**2.4.9 REFRIGERANT CIRCUIT:**

The refrigerant circuit can be divided into 3 parts:

1. Low pressure section with an evaporator (heat exchanger)
2. High pressure section including: Condenser, liquid receiver, (if installed) and the filter dryer.
3. Control circuit including: Compressor, expansion valve, by-pass valve (if installed), fan pressure switch, safety high pressure switch.

**2.4.10 THE REFRIGERANT CIRCUIT OPERATES AS FOLLOWS:**

1. The compressor compresses gaseous refrigerant.
2. The hot refrigerant gas condenses in the condenser. Being liquefied, it is stored in the liquid receiver (if existing).
3. The liquid is taken out of the storage receiver vessel and injected into the evaporator (heat exchanger) by an expansion valve. This expansion valve is protected by a filter dryer, that retains 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 due to the heat from the incoming 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 injects hot gaseous refrigerant into the circuit. On certain dryers, an automatic pressure expansion valve regulates this process.

**2.4.11 COMPRESSED AIR CIRCUIT**

1. The hot, saturated, compressed air from the compressor is forced into the air-cooled after-cooler where it is pre-cooled to approximately ambient temperature.
2. This pre-cooled compressed air enters the high-efficiency moisture separator where condensed moisture is stripped from the air stream and purged out via the electronic timer drain.
3. The air then enters the first stage of the heat exchanger (air to air pre-cooler/re-heater) where the outgoing chilled air cools the incoming hot air. This energy saving heat exchanger provides significant advantages, such as a reduction of the heat load imposed on the refrigerant compressor and condenser, re-heating the outlet air, and preventing condensation of moisture in the plant air distribution lines.
4. From the air-to-air heat exchanger, air enters the air-to-refrigerant heat exchanger where further cooling occurs and the air temperature is reduced to the desired pressure dew point (PDP). As the air is cooled, the moisture condenses into a liquid and is then separated in the integrated high efficiency separator and discharged through the condensate drain.
5. The cooled air then re-enters the air-to-air heat exchanger, in a direction opposite to the flow of the warm, saturated incoming air and pre-cools the hot air. During this process the outgoing air is reheated thereby minimizing the chances of moisture condensation in the compressed air distribution lines.

## 2.5 REFRIGERANT DRYER FEATURES

### 2.5.1 COMPRESSOR TYPE

The High Temperature Inlet Refrigerated compressed air dryers use the sealed Hermetic type of compressors and require no periodic servicing.

### 2.5.2 CONDENSER

The air-cooled condenser is equipped with helicoidally fans controlled by a pressure switch the controls the fan cycling in order to maintain the refrigerant high pressure at the correct level.

Air cooled aftercooler is integrated to the condenser. The fan motor of the air cooled aftercooler is separate and it only starts to function when the inlet air temperature is equal or above 95°F / 35°C. This is controlled by a thermostatic switch.

### 2.5.3 REFRIGERANT CIRCUIT PROTECTION

#### OVERLOAD PROTECTOR:

The single phase compressors are equipped with an overload protector which is a thermal sensitive switch controlling the temperature of the compressor and overheating. In case of malfunction, the protector trips out. However, it switches on again automatically as soon as the compressor has cooled down.

#### HIGH PRESSURE SECURITY SWITCH:

Refrigerant circuits are protected against excessive pressure by a security switch that stops the compressor in case of too high a pressure. In case this safety switch has tripped, it has to be manually reset before switching on the dryer.

### 2.5.4 FILTER DRYER

In order to keep the refrigerant circuit void of all moisture, a filter drier is used in line. This filter also traps any solid particles that may have migrated in the circuit during operation. To avoid problems, the refrigerant circuit must be vacuumed before filling it with the recommended refrigerant.

### 2.5.5 REFRIGERANT CIRCUIT REGULATION

1. 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 through a by-pass valve. This constant pressure corresponds to a stable evaporating temperature adjusted as close to 32°F / 0°C as possible.
2. The liquid refrigerant is injected into the evaporator through a thermostatic expansion valve keeping the superheat of the refrigerant constant at the outlet of the evaporator.
3. The mix of hot gas from by-pass valve and cold gas from evaporator is called superheat.

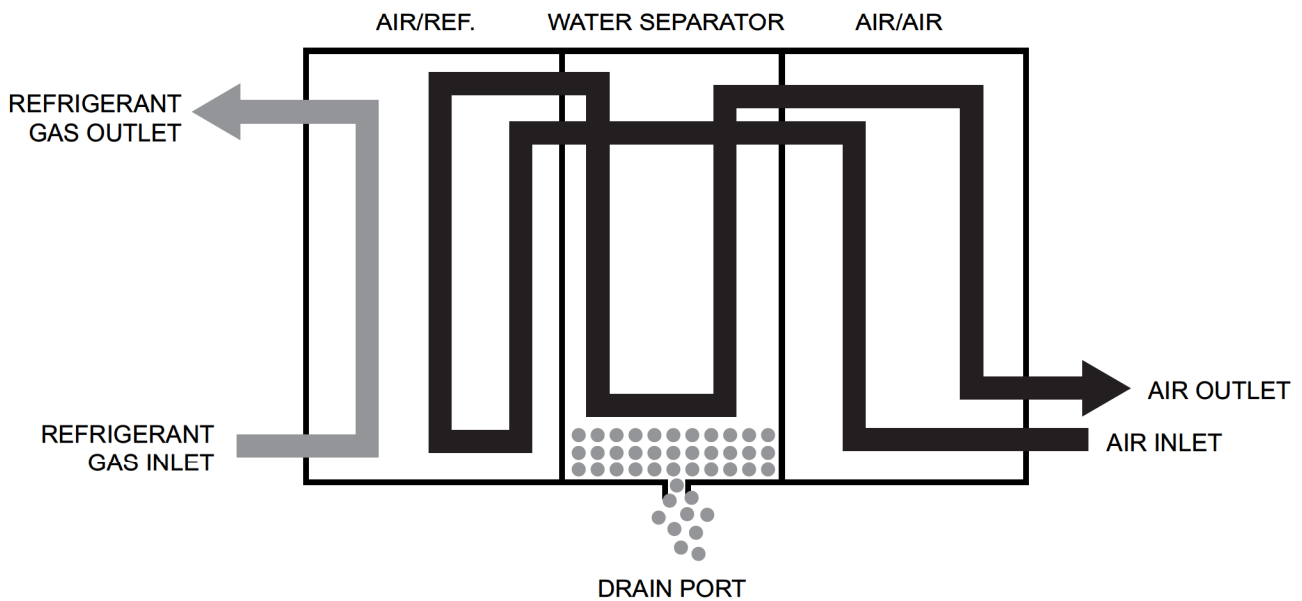
### 2.5.6 CONDENSATE DRAIN—TRAP ASSEMBLY

Disassembling the drain is easy because it can be isolated from the air circuit under pressure with a ball valve. The drain has to be isolated before being dismantled.

**2.5.7 COMPACT 3-IN-1 HEAT EXCHANGER**

The dryers are equipped with compact heat exchangers. This compact 3-in-1 setup has been specially designed to dry compressed air and is made of the following components:

1. An air-to-air heat exchanger which pre-cools the incoming hot air with the outgoing cold air, thereby saving a significant load on the compressor.
2. An Evaporator which is an air-to- refrigerant heat exchanger that cools the pre-cooled compressed air.
3. An integrated separator that removes all condensates and requires no additional maintenance.



## 2.6 DRYER OPERATION PROCEDURE

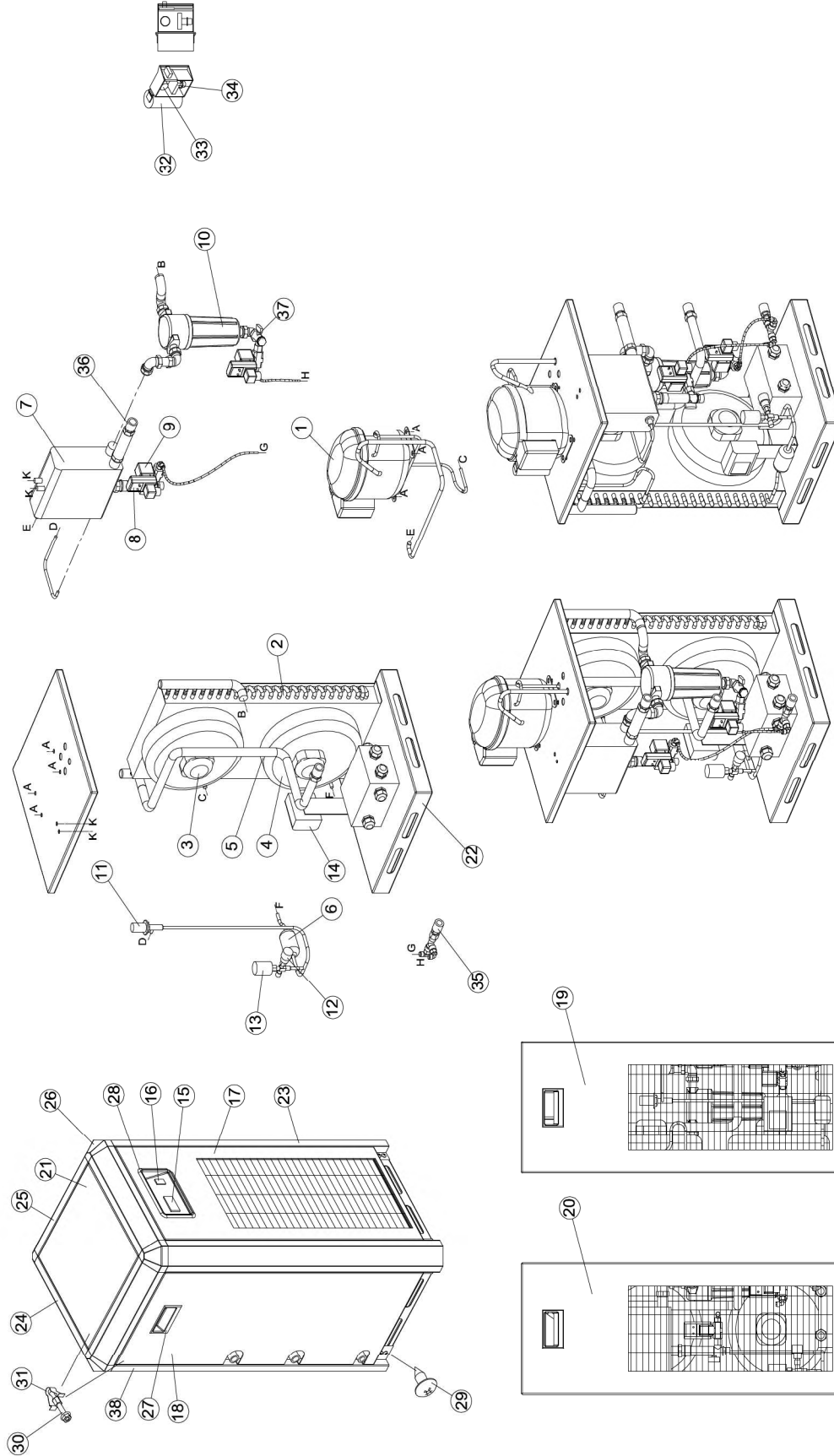
1. Starting of a Single phase dryer for the first time
  - a. Make sure all air connections are intact and have no leaks
  - b. Double check wiring connections
  - c. Set the rocker switch to "I"
2. Daily starting and shut-down
  - a. Push on the green button to start the dryer.
  - b. The start light 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, push the green button to the stop position.



### NOTE

1. Avoid turning OFF the dryer when compressed air is still flowing through it.
2. To switch the already preheated dryer on again, simply set the rocker switch to "I".

2.7 EXPLODED DIAGRAM—RH15-50



02250196-570 R01

2.7 EXPLODED DIAGRAM—RH15-50

KEY	PART NUMBER	DESCRIPTION	QTY
1	SEE REF. TABLE	COMPRESSOR	1
2	M-CON-0050H	CONDENSOR	1
3	M-FMT-0150-115-1-60-A	FAN MOTOR	2
4	M-FAN-0150	FAN BLADE	2
5	M-GRL-0150	FAN GRILL	2
6	M-DRI-0200	DRIER DEHYDRATOR	1
7	SEE REF. TABLE	HEAT EXCHANGER	1
8	TMR-3000	TIMER	2
9	M-SLV-0150-115	SOLENOID VALVE	1
10	M-WSP-0050	WATER SEPARATOR	1
11	M-EXV-0075	EXPANSION VALVE	1
12	M-HPS-0200	HIGH PRESSURE SWITCH	1
13	M-FNS-0200	FAN ON/OFF SWITCH	1
14	M-THS-3000	THERMOSTATIC SWITCH	1
15	M-THG-0325	THERMOSTATIC GAUGE	1
16	M-ONB-0200	ON/OFF BUTTON	1
17	M-CFR-0050-H	CABINET FRONT	1
18	M-CLE-0050-H	CABINET SIDE-LEFT	1
19	M-CRI-0050-H	CABINET SIDE-RIGHT	1

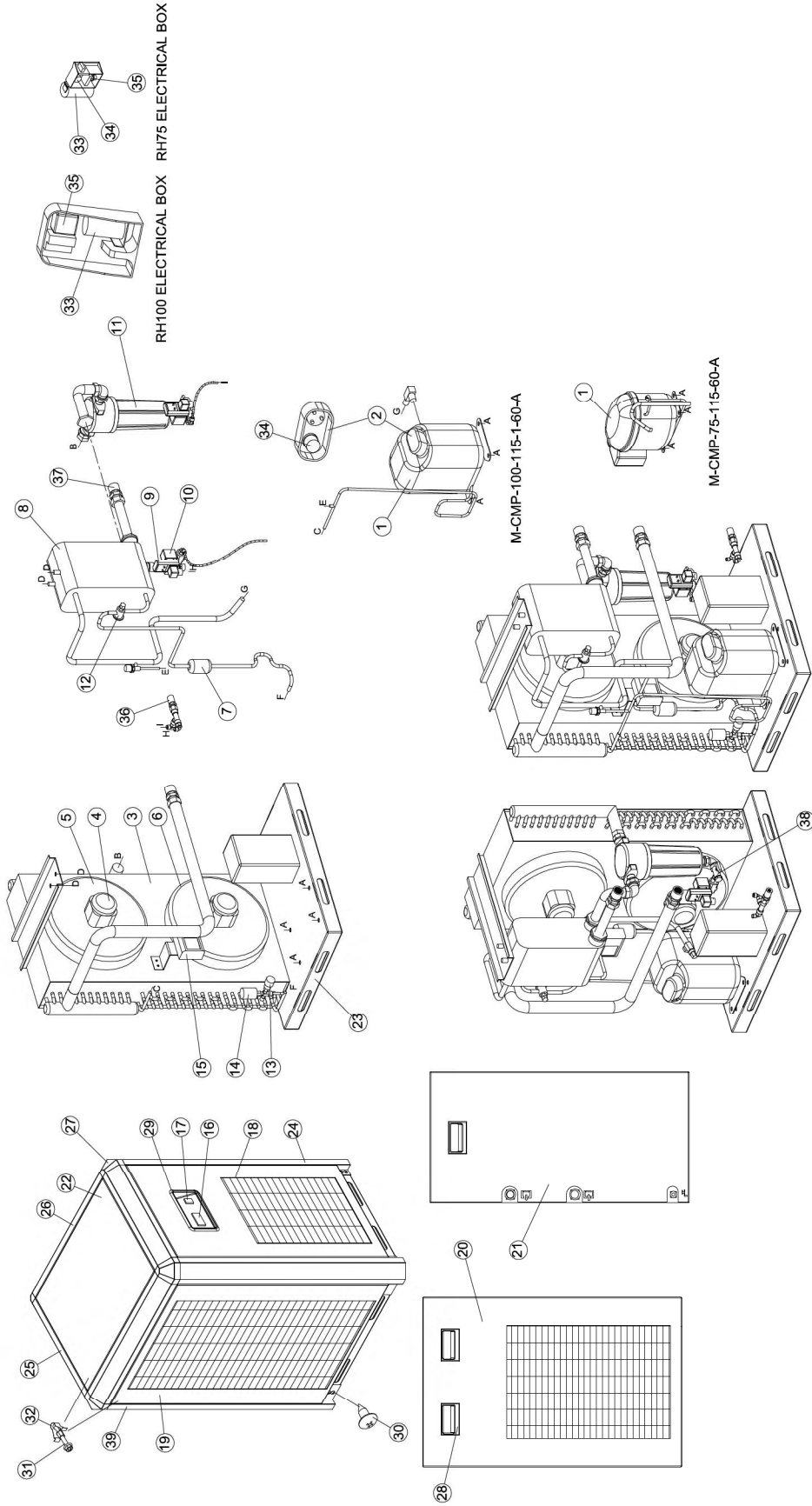
KEY	PART NUMBER	DESCRIPTION	QTY
20	M-CRE-0050-H	CABINET REAR	1
21	M-CTO-0050-H	CABINET TOP	1
22	M-CBA-0050-H	CABINET BASE	1
23	M-CBL-0050-H	CABINET LEG	4
24	M-HP1-0050-H	CABINETHORIZONTAL PROFILE 1	2
25	M-HP2-0050-H	CABINET HORIZONTAL PROFILE 2	2
26	M-CTC-6000	CABINET TOP CORNER	4
27	M-CHN-6000	CABINET HANDLE (NEW)	3
28	M-PDC-0200	PLASTIC DISPLAY COVER	1
29	M-SCR-0200	SCREW TYPE 1	24
30	M-STU-3000	CABINET STUD AND NUT	12
31	M-FAS-6000	CABINET FASTENER	12
32	SEE REF. TABLE	COMPRESSOR START CAPACITOR	1
33	SEE REF. TABLE	COMPRESSOR OVERLOAD PROTECTOR	1
34	SEE REF. TABLE	COMPRESSOR START RELAY	1
35	M-DCF-200	DRAIN CONNECTION FITTING	1
36	M-ACF-0100	AIR CONNECTION FITTING	2
37	M-DBV-0200	DRAIN BALL VALVE	1
38	M-ACL-050-H	AIR CONNECTION LEG	1

DECAL	CAPACITY*	DRYER PART NUMBER	POWER RATINGS	COOLING	COMPRESSOR (1)	COMPRESSOR START CAPACITOR (32)	COMPRESSOR OVERLOAD PROTECTOR (33)	COMPRESSOR START RELAY (34)	HEAT EXCHANGER (7)	AIR CONNECTION FITTING (36)
RH 15	15 CFM	02250193-795	115V/ 1Ph/60Hz	AIR COOLED	M-CMP-0035- 115-1-60	M-CSC-0035- 115-1-60	M-COP-0035-115- 1-60	M-CSR-0035- 115-1-60	M-EXC-0035	M-ACF-0035
RH 25	25 CFM	02250193-796	115V/ 1Ph/60Hz	AIR COOLED	M-CMP-0050- 115-1-60	M-CSC-0050- 115-1-60	M-COP-0050-115- 1-60	M-CSR-0050- 115-1-60	M-EXC-0035	M-ACF-0035
RH 35	35 CFM	02250193-797	115V/ 1Ph/60Hz	AIR COOLED	M-CMP-0035	M-CSC-0050- 115-1-60	M-COP-0050-115- 1-60	M-CSR-0050- 115-1-60	M-EXC-0035	M-ACF-0035
RH 50	50 CFM	02250193-798	115V/ 1Ph/60Hz	AIR COOLED	M-CMP-0075- 115-1-60	M-CSC-0075- 115-1-60	M-COP-0075-115- 1-60	M-CSR-0075- 115-1-60	M-EXC-0050	M-ACF-0050

\* At Normal Operating Conditions



2.8 EXPLODED DIAGRAM—RH75-100



2.8 EXPLODED DIAGRAM—RH75-100

KEY	PART NUMBER	DESCRIPTION	QTY
1	SEE REF. TABLE	COMPRESSOR	1
2	SEE REF. TABLE	COMPRESSOR ELECTRIC BOX	1
3	M-CON-100-H	CONDENSOR	1
4	M-FMT-0150-115-1-60	FAN MOTOR	2
5	M-FAN-0200	FAN BLADE	2
6	M-GRL-0200	FAN GRILL	2
7	M-DRI-0200	DRIER DEHYDRATOR	1
8	SEE REF. TABLE	HEAT EXCHANGER	1
9	TMR-3000	TIMER	2
10	M-SLV-0150-115	SOLENOID VALVE	1
11	M-WSP-100	WATER SEPARATOR	1
12	SEE REF. TABLE	EXPANSION VALVE	1
13	M-HPS-0200	HIGH PRESSURE SWITCH	1
14	M-FNS-0200	FAN ON/OFF SWITCH	1
15	M-THS-3000	THERMOSTATIC SWITCH	1
16	M-THG-0325	THERMOSTATIC GUAGE	1
17	M-ONB-0200	ON/OFF BUTTON	1
18	M-CFR-0100-H	CABINET FRONT	1
19	M-CLE-0100-H	CABINET SIDE-LEFT	1
20	M-CRI-0100-H	CABINET SIDE-RIGHT	1

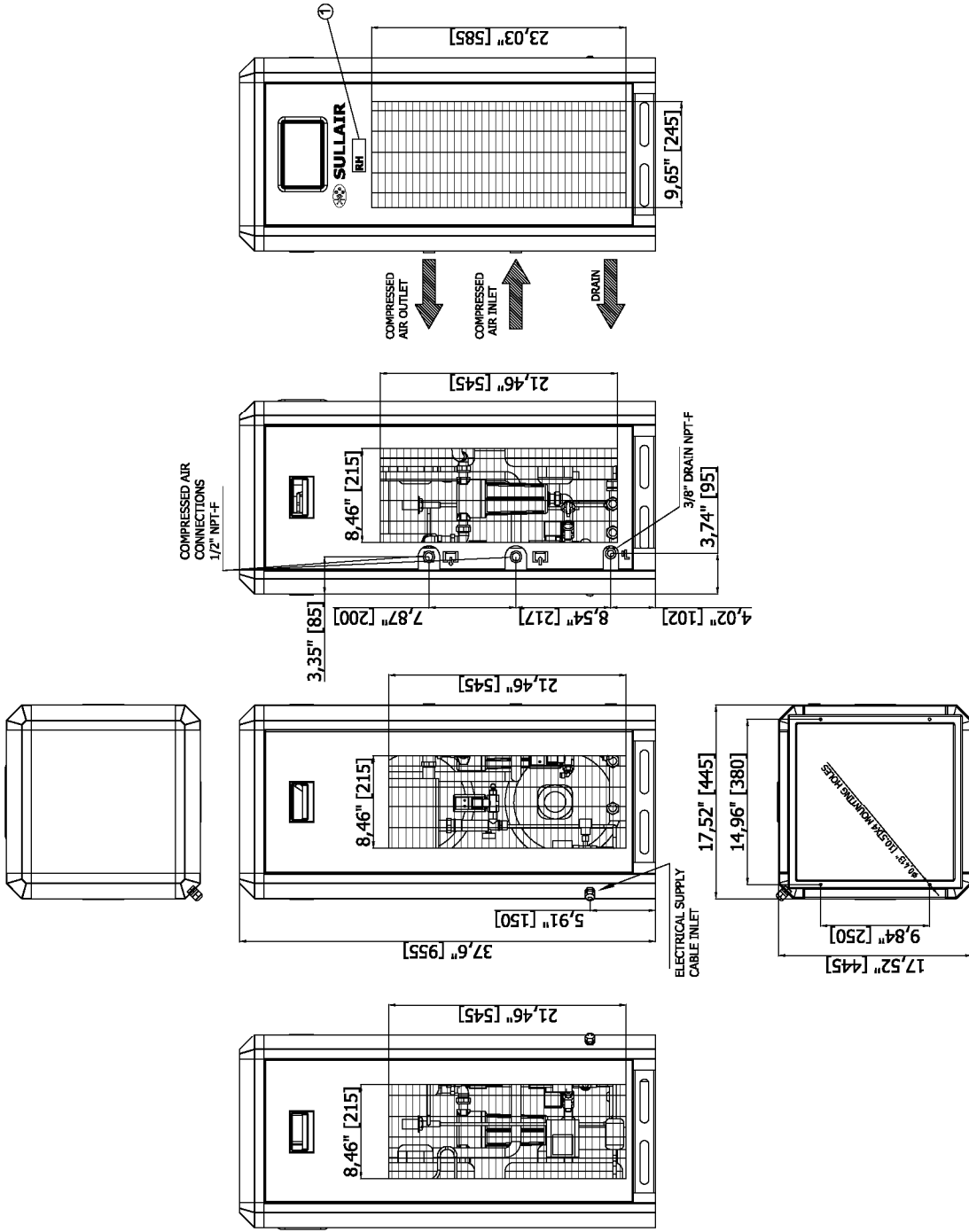
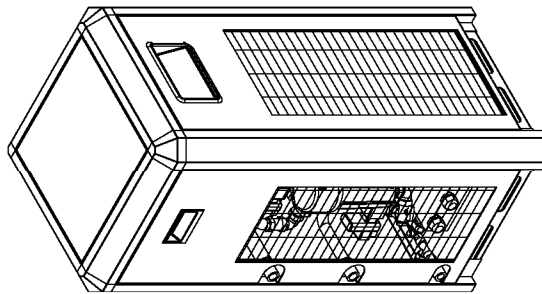
KEY	PART NUMBER	DESCRIPTION	QTY
21	M-CRE-0100-H	CABINET REAR	1
22	M-CTO-0100-H	CABINET TOP	1
23	M-CBA-0100-H	CABINET BASE	1
24	M-CBL-0100-H	CABINET LEG	4
25	M-HP1-0100-H	CABINET HORIZONTAL PROFILE 1	2
26	M-HP2-0100-H	CABINET HORIZONTAL PROFILE 2	2
27	M-CTC-6000	CABINET TOP CORNER	4
28	M-CHN-6000	CABINET HANDLE (NEW)	3
29	M-PDC-0200	PLASTIC DISPLAY COVER	1
30	M-SCR-0200	SCREW TYPE 1	24
31	M-STU-3000	CABINET STUD AND NUT	12
32	M-FAS-6000	CABINET FASTENER	12
33	SEE REF. TABLE	COMPRESSOR START CAPACITOR	1
34	SEE REF. TABLE	COMPRESSOR OVERLOAD PROTECTOR	1
35	SEE REF. TABLE	COMPRESSOR START RELAY	1
36	M-DCF-200	DRAIN CONNECTION FITTING	1
37	M-ACF-0100	AIR CONNECTION FITTING	2
38	M-DBV-0200	DRAIN BALL VALVE	1
39	M-ACL-0100-H	AIR CONNECTION LEG	1

DECAL	CAPACITY *	DRYER PART NUMBER	POWER RATINGS	COOLING	COMPRESSOR (1)	COMPRESSOR ELECTRIC BOX (2)	HEAT EXCHANGER (8)	COMPRESSOR START CAPACITOR (33)	COMPRESSOR OVERLOAD PROTECTOR (34)	COMPRESSOR START RELAY (35)	EXPANSION VALVE (12)
RH 75	75 CFM	02250193-799	115V/ 1Ph/60Hz	AIR COOLED	M-CMP-0075- 115-1-60	N/A	M-EXC-0075	M-CSC-0075- 115-1-60	M-COP-0075-115- 1-60	M-CSR-0075- 115-1-60	M-EXV-0075
RH 100	100 CFM	02250193-800	115V/ 1Ph/60Hz	AIR COOLED	M-CMP-0100- 115-1-60	M-CEB-0100- 115-1-60	M-EXC-0250	M-CSC-0100- 115-1-60	M-COP-0100-115- 1-60	M-CSR-0100- 115-1-60	M-EXV-0200

\* At Normal Operating Conditions



2.9 INSTALLATION DRAWING—RH15-50

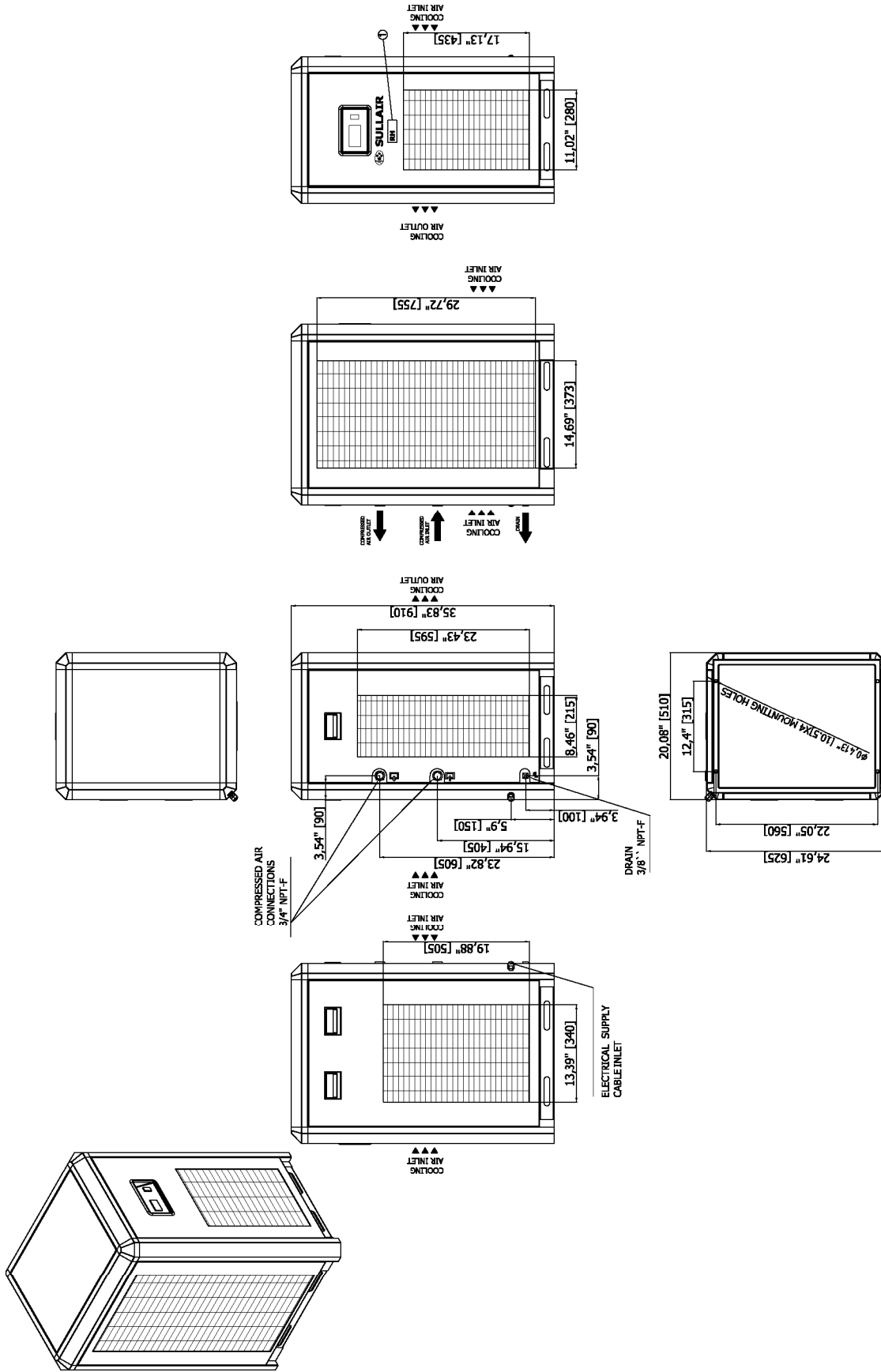


## 2.9 INSTALLATION DRAWING—RH15-50

DECAL (1)	DRYER PART NUMBER	POWER RATINGS	COOLING	A (CONNECTION)
RH50	02250193-795	115V/1Ph/60Hz	AIR COOLED	3/4" NPT-F
RH35	02250193-796	115V/1Ph/60Hz	AIR COOLED	1/2" NPT-F
RH25	02250193-797	115V/1Ph/60Hz	AIR COOLED	
RH15	02250193-798	115V/1Ph/60Hz	AIR COOLED	

DRYER	GROSS WEIGHT	NET WEIGHT	WITHOUT PALLET SIZE	WITH PALLET SIZE
RH50	163 LB/74 kg	141 LB/64 kg	17.52" x 17.52" x 37.6" [445] x [445] x [955]	20.08" x 20.08" x 44.68" [510] x [510] x [1135]
RH35	161 LB/73 kg	139 LB/63 kg		
RH25	159 LB/72 kg	137 LB/62 kg		
RH15	159 LB/72 kg	137 LB/62 kg		

2.10 INSTALLATION DRAWING—RH75-100



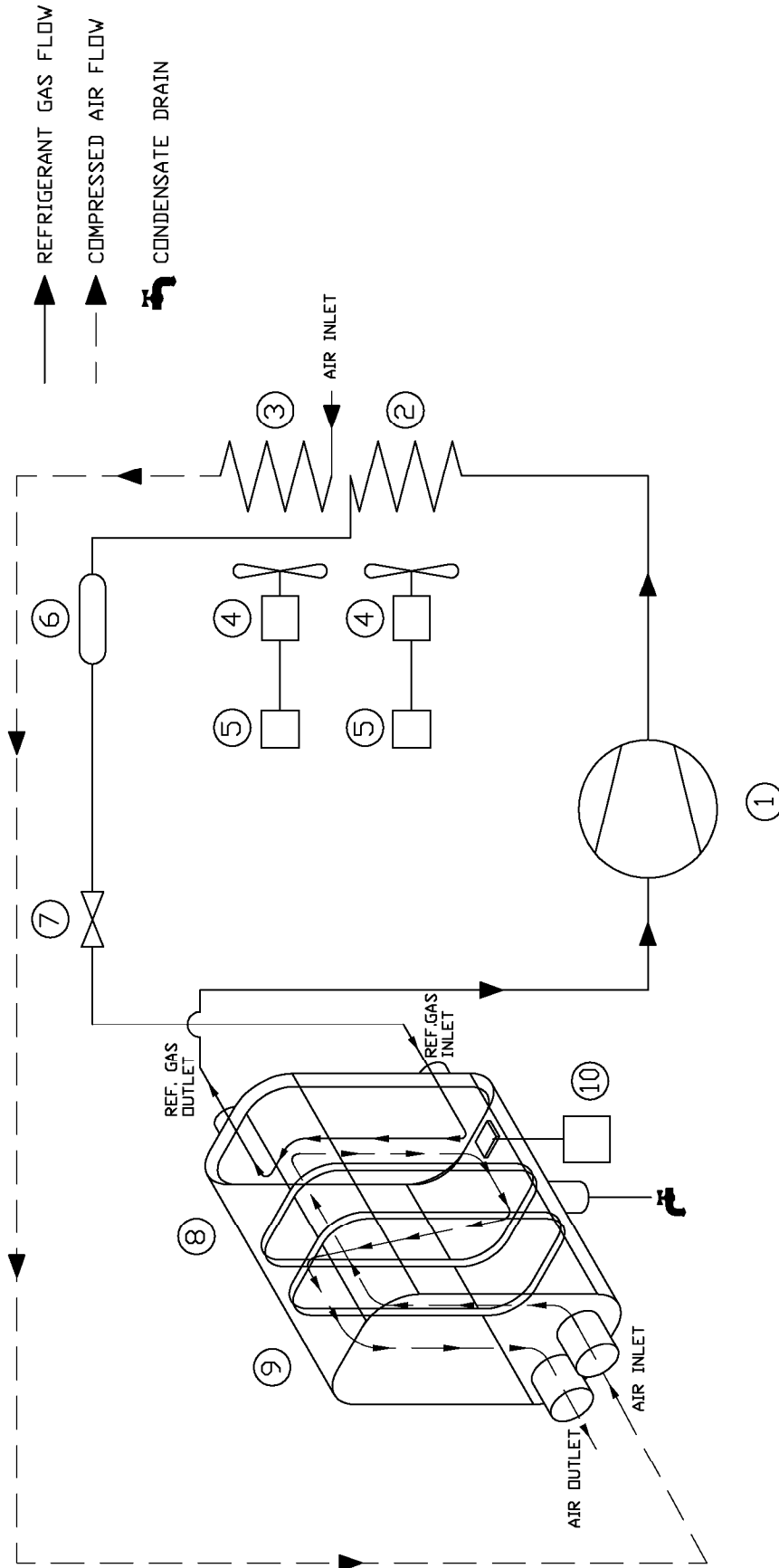
02250195-253 R00

2.10 INSTALLATION DRAWING—RH75-100

DECAL	DRYER PART NUMBER	POWER RATINGS	COOLING
RH75	02250193-799	115V/1Ph/60Hz	AIR COOLED
RH100	02250193-800	115V/1Ph/60Hz	AIR COOLED

DRYER	GROSS WEIGHT	NET WEIGHT	WITHOUT PALLET SIZE	WITH PALLET SIZE
RH100	238 LB/108 kg	213 LB/97 kg	20.08" x 22.05" x 35.83" [510] x [625] x [755]	24.21" x 27.76" x 42.32 [615] x [705] x [1075]
RH75	217 LB/98 kg	193 LB/87.5 kg		

2.11 PIPING & INSTRUMENTATION—RH15-75



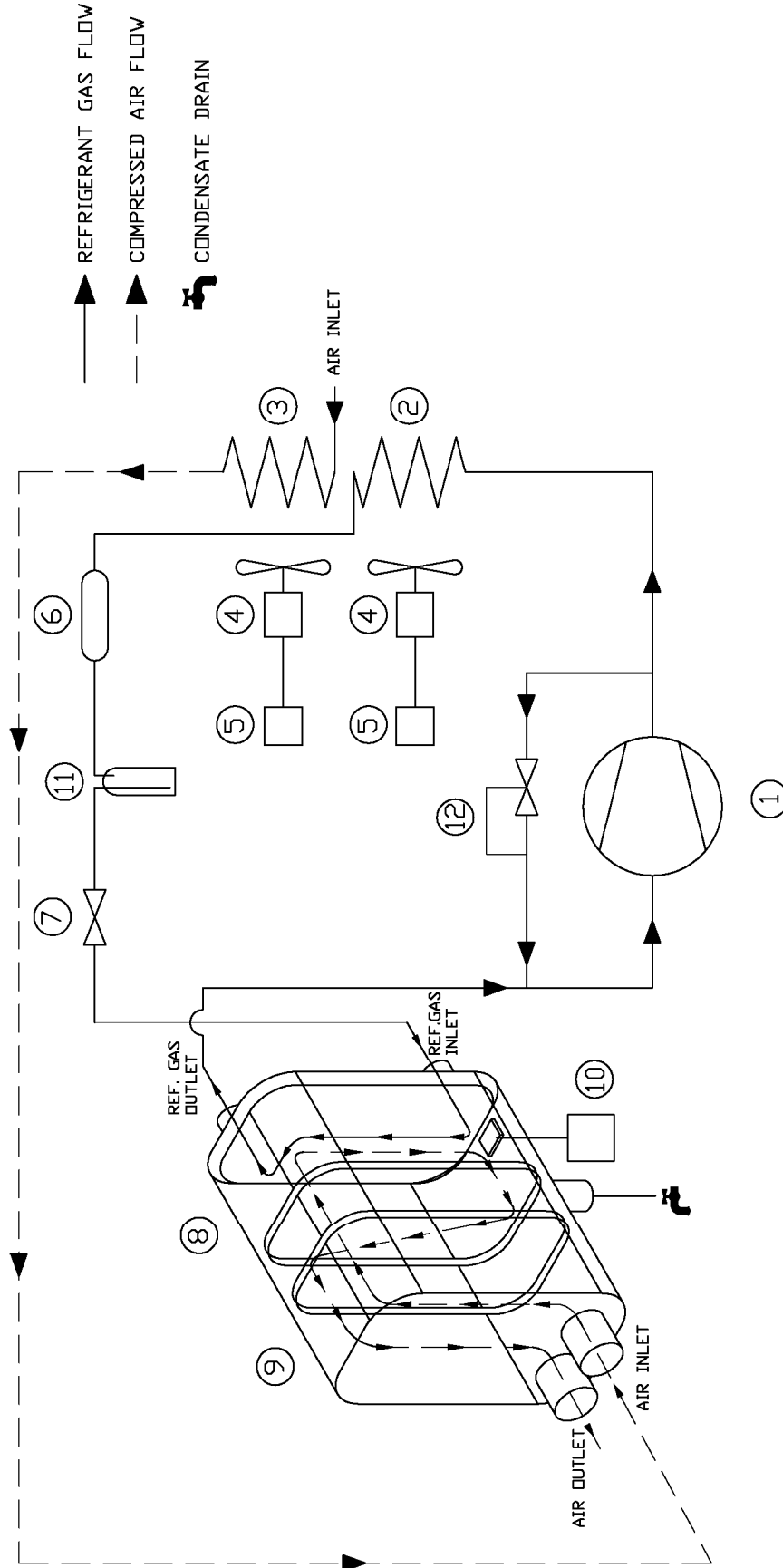
2.11 PIPING & INSTRUMENTATION—RH15-75

1	COMPRESSOR
2	REFRIGERANT CONDENSER
3	AFTERCoolER
4	FAN MOTOR
5	FAN MOTOR SWITCH
6	DEHYDRATOR
7	THERMOSTATIC EXPANSION VALVE
8	EVAPORATOR
9	AIR-AIR EXCHANGER
10	DEW POINT INDICATOR

MODEL	REFRIGERANT TYPE	LB
RH15	R134A	1.102
RH25		1.102
RH35		1.102
RH50		0.992
RH75		1.543



2.12 PIPING & INSTRUMENTATION—RH100



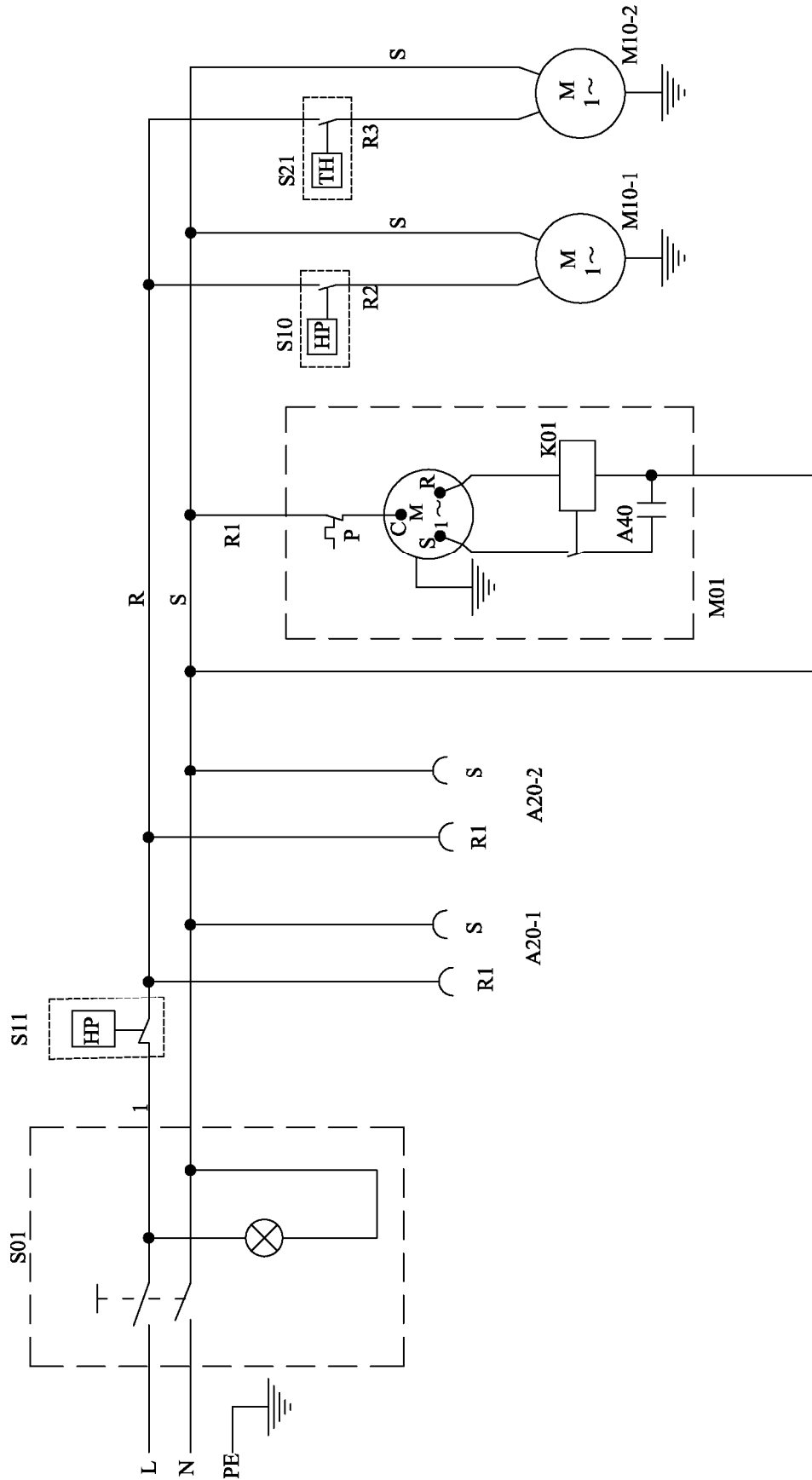
02250195-285 R00

**2.12 PIPING & INSTRUMENTATION—RH100**

1	COMPRESSOR
2	REFRIGERANT CONDENSER
3	AFTERCOOLER
4	FAN MOTOR
5	FAN MOTOR SWITCH
6	DEHYDRATOR
7	THERMOSTATIC EXPANSION VALVE
8	EVAPORATOR
9	AIR-AIR EXCHANGER
10	DEW POINT INDICATOR
11	LIQUID RECEIVER
12	BY-PASS VALVE

REFRIGERANT TYPE: R134A (2.435 lb/1.1 kg)
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2.13 WIRING DIAGRAM



2.13 WIRING DIAGRAM

COMP	DESCRIPTION
A40	Compressor starting capacitor
K01	Compressor motor start relay
A20-1	Electronic drain power supply-1
A20-2	Electronic drain power supply-2
M01	Compressor motor
M10-1	Fan motor 1
M10-2	Fan motor 2
S01	Main switch
S10	Fan pressure switch
S11	High pressure safety switch
S21	High air temperature thermostat
P	Compressor protection
HP	Indicates high pressure
TH	Indicates high temperature in the circuit

Electrical Specifications	
<b>COMPRESSOR UN 115V/1/60</b>	<b>FAN MOTOR UN 115V/1/60</b>
RH 0015 FLA 4.2A 4.2kW	RH 0015 FLA 0.8A 0.1kW
RH 0025 FLA 5.9A 0.194kW	RH 0025 FLA 0.8A 0.1kW
RH 0035 FLA 5.9A 0.194kW	RH 0035 FLA 0.8A 0.1kW
RH 0050 FLA 5A 0.205kW	RH 0050 FLA 0.8A 0.1kW
RH 0075 FLA 9.8A 0.400kW	RH 0075 FLA 3A 0.5kW
RH 0100 FLA 12.9A 0.433kW	RH 0100 FLA 3A 0.5kW

DRYER PART NUMBER	POWER RATINGS	COOLING	DECAL
02250193-795	115V/1PH/60HZ	AIR COOLING	RH 0015
02250193-796	115V/1PH/60HZ	AIR COOLING	RH0025
02250193-797	115V/1PH/60HZ	AIR COOLING	RH 0035
02250193-798	115V/1PH/60HZ	AIR COOLING	RH 0050
02250193-799	115V/1PH/60HZ	AIR COOLING	RH 0075
02250193-800	115V/1PH/60HZ	AIR COOLING	RH 0100


**Use copper conductor only at 167°F/65°C**

**By installer of residual current automatic circuit breaker (4-489 or equivalent fuse)**

Electrical supply line 1 phase + neutral + protection earth

Cable size 3G16AWG

2.14 TROUBLESHOOTING


IMPORTANT

**Before starting maintenance activity or repair on the dryer, the main power switch and ON/OFF switch must be turned OFF (“O”). Also, the compressed air must be vented from the system and the inlet and outlet valves must be closed. The dryer has to be isolated and de-energized completely.**

PROBLEM	POSSIBLE CAUSE	REPAIR	COMMENTS
Dryer-on light is lit but refrigerant compressor is not operating	Refrigeration unit is not operating	Check refrigeration compressor	Several factors may cause compressor failure. A qualified refrigeration contractor should check all electrical and refrigerant control
	The refrigerant high pressure protection has tripped	The refrigerant safety high pressure switch has tripped	The dryer is protected against a very high refrigerant pressure. It will trip in case the condenser efficiency is reduced Manually reset the switch (green button)
	Excessive ambient temperature	Ensure that dryer inlet conditions are within the recommended range. Designed conditions and correction factors are described in product literature.	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 is a must to achieve a low enough ambient temperature
	Excessive temperature on crankcase of compressor	Allow time for the compressor to cool down Reason may be a possible incorrect adjustment or shortage of refrigerant	Compressor is protected against too high a temperature of the crankcase by a thermal switch called “klixon” Klixon can be located internally to refrigerant compressor or under the protective cover on the top of the compressor
	Excessive compressed air inlet temperature	Be sure that dryer inlet conditions are within the specified range.	The dryer is designed for working within calculated maximum conditions. Should these conditions change, the dryer can be overloaded, the dew point will go up and protecting devices can switch off
cont.			

PROBLEM	POSSIBLE CAUSE	REPAIR	COMMENTS
Dryer-on light is lit but refrigerant compressor is not operating	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. Air condensers should be periodically checked and cleaned.
	Too much 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 decreases, resulting in liquid carry-over downstream. Check the rated output of the air compressor and make sure that it matches the dryer capacity.
Dryer-ON light is lit but refrigerant compressor does not run	Faulty electrical wiring	Inspect the circuit	The compressor-on light should be wired into the refrigerant compressor circuit. Refer to the electrical and wiring diagram for proper connections.
	One electrical protection has tripped	Reset the protection or replace the blown fuse	The dryer is protected by a fuse and/or overload relay that can trip. Reset or replace blown fuse once, but do not insist if it trips again. Instead have a qualified refrigerant technician check the complete dryer thoroughly.
Dryer-on light is lit but fan does not come ON	Fan has to run if refrigerant high pressure has reached upper set point	Check the compressed air flows through the dryer. Check to make sure that the fan blades are free to rotate.	Fan is automatically turned ON/OFF in order to keep the refrigerant pressure to a minimum value. The fans might stop if the pressure setting is incorrect
Dryer on light is lit but fan motor of aftercooler does not run	Inlet air temperature may be too low	Increase the inlet air temperature	The fan motor of the aftercooler is designed to run if the inlet air temperature is equal or greater than 95F. In case it is less than that temperature then the fan motor of the aftercooler does not start to run.
When compressor starts, it vibrates a lot and makes mechanical noise	Compressor is sucking liquid refrigerant at start up.	Be sure that pre-heating period of minimum 4 hours has elapsed for dryers equipped with crankcase heater (all models equal to and larger than 250CFM)	Refrigerant may move between the receiver when refrigerant compressor is stopped and not heated, especially if it has been non-operational for a long time This migration may cause liquid shock in valves specially on dryers containing more refrigerant

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>REPAIR</b>	<b>COMMENTS</b>
Water in system	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 and cannot be interchanged.
	Drain system is clogged or inoperative	Restore free flow of water condensate. Check water evacuation points and connections.	The attached drain may be timer and solenoid valve type or pneumatically assisted. Timer has to be adjusted in accordance with values listed in the manual and depending on the amount of moisture in the air stream. Solenoid valves includes a strainer that has to be periodically checked and cleaned. Membranes of pneumatically assisted drains 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 placed inline, blow out all the moisture from the system and from the compressed air piping.
	Excessive free moisture	Check the separator and drain system ahead of the dryer	In some systems 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 has to be installed into the line before the dryer
	Excessive compressed air inlet temperature	Be sure that the dryer is working well within the maximum operating conditions	The dryer is designed for working into calculated maximum conditions. Should the conditions be exceeded, the dryer will be overflowed, dew point will go up and protecting devices can switch off

PROBLEM	POSSIBLE CAUSE	REPAIR	COMMENTS
Water in system	Clogged condenser fins	Clean 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 units is in warranty
	Refrigeration system is not functioning	Double check if the 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 refrigerant technician should check all refrigerant and electrical controls
	Excessive pressure dew point	Readjust refrigerant evaporating pressure	The refrigerant pressure adjustment valve is identified by a label. Turning the adjustment screw counterclockwise will decrease the refrigerant pressure and lower the dew point. Adjust valves in ¼ turn increments to allow 15 minutes for pressure stabilization with full air flowing. Be sure that gauge indicates that pressure stays in green zone
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 carryover downstream. Check the rated output of the air compressor
	Freeze up	Ensure that the operating room temperature is above 41°F/5°C Readjust refrigeration controls	Frosting of the lines is an indication that controls are set too low. Controls may be adjusted in the field by means of the hot gas bypass valve. Turn the screw clockwise to increase refrigerant pressure setting which will increase pressure dew point. Turn screw in ¼ turn increments until frost disappears. Allow 15 minutes for pressure stabilization with air flowing
	Clogged heat exchanger	Clean heat exchanger with a reverse air flow	Dryers are supposed to be used with compressed air free of any aggressive contaminants. Some contaminants and impurities may require a special heat exchanger. Contact your dealer with your application details.

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>REPAIR</b>	<b>COMMENTS</b>
The unit will not run or cycles ON and OFF	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 turned ON.
	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 technician should check all electrical and refrigeration controls, or the factory should be contacted if the unit is under warranty
	Excessive compressed air inlet temperature	Designed conditions and correction factors as described in the product literature must be strictly followed. Ensure that the dryer is working well within the maximum conditions	The dryer is designed for working within the calculated maximum conditions. Should the conditions be exceeded, the dryer will be overflow, dew point will go up and protecting devices can get switched off
	Excessive ambient temperature	Designed conditions and correction factors as described in the product literature must be strictly followed. Ensure that the dryer is working well within the maximum conditions	A high ambient temperature may cause the refrigerant system to operate at higher than normal pressures. Result 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. This 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 the appropriate amount of refrigerant into the system.	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 under warranty

2.15 SETTINGS

MODEL	Return Gas Temperature		Evaporating pressure		Fan pressure switch		Security high pressure switch		Security low pressure switch		Refrigerant temperature switch		Drain timer	Water flow valve (if water condenser)	
	°C	°F	BAR	PSI	BAR	PSI	BAR	PSI	BAR	PSI	°C	°F		Open / Close	BAR
RH-0015	5-10°C	41-50°F	2.05 bar	29.7 psi	9-12 bar	130.5-174 psi	25 bar	363 psi	1.6 bar	23.2 psi	N/A	N/A	4 sec / 5 min	N/A	N/A
RH-0025	5-10°C	41-50°F	2.05 bar	29.7 psi	9-12 bar	130.5-174 psi	25 bar	363 psi	1.6 bar	23.2 psi	N/A	N/A	4 sec / 5 min	N/A	N/A
RH-0035	5-10°C	41-50°F	2.05 bar	29.7 psi	9-12 bar	130.5-174 psi	25 bar	363 psi	1.6 bar	23.2 psi	N/A	N/A	4 sec / 5 min	N/A	N/A
RH-0050	5-10°C	41-50°F	2.05 bar	29.7 psi	9-12 bar	130.5-174 psi	25 bar	363 psi	1.6 bar	23.2 psi	N/A	N/A	4 sec / 5 min	N/A	N/A
RH-0075	5-10°C	41-50°F	2.05 bar	29.7 psi	9-12 bar	130.5-174 psi	25 bar	363 psi	1.6 bar	23.2 psi	N/A	N/A	4 sec / 5 min	N/A	N/A
RH-0100	5-10°C	41-50°F	2.05 bar	29.7 psi	9-12 bar	130.5-174 psi	25 bar	363 psi	1.6 bar	23.2 psi	N/A	N/A	4 sec / 5 min	N/A	N/A

Table 2-1: DP Power 60H

GROUP	STANDARD VOLTAGE	Capacity SCFM @ Rated Conditions	AIR COOLED MODEL REF	SULLAIR PART	WATER COOLED MODEL REF	SULLAIR PART	Rated Flow [1]	Pressure Drop	Absorbed Power	Port Size
High Temp	115/160	15.0	RH-0015-115-60-A	02250193-795	n/a	n/a	scfm	(psid)	(kW)	(in)
High Temp	115/160	25.0	RH-0025-115-60-A	02250193-796	n/a	n/a	15.0	1.1	0.25	1/2"
High Temp	115/160	35.0	RH-0035-115-60-A	02250193-797	n/a	n/a	25.0	2.2	0.29	1/2"
High Temp	115/160	50.0	RH-0050-115-60-A	02250193-798	n/a	n/a	35.0	3.6	0.45	1/2"
High Temp	115/160	75.0	RH-0075-115-60-A	02250193-799	n/a	n/a	50.0	6.0	0.67	1/2"
High Temp	115/160	100.0	RH-0100-115-60-A	02250193-800	n/a	n/a	75.0	2.9	0.85	3/4"
							100.0	5.3	1.11	3/4"

**NOTES**

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