

Compressed Air Treatment Equipment Gas Generator & Gas Purifier

Global Standard Air & Gas

Operation Manual

Refrigerated air dryer



WE ARE PROUD OF LEADING THE INDUSTRIAL STANDARD OF COMPRESSED AIR AND GAS SOLUTIONS SINCE 1993 YEAR !

GSA – Global Standard Air/Gas is development and manufacturing organization producing various compressed air/gas dryers, air/gas chiller, gas generators, gas purifiers, air/gas filters, condensate drains etc.

The company was founded in Korea in 1993 and restarted as GSA in 2003. Over these years, the company has earned a reputation that has a unique combination of quality, value, trust and reliability.

GSA is a very innovative, customer oriented and technology driven company. We always strive to provide world top quality products for compressed air treatment and gas generation supporting you and your business with our solutions.

In this catalogue you will find our total techniques and products of energy saving compressed air and gas solutions to help customers focus on their production at ease.

Chapter 1. Important User Information

Introduction	3
Product Information	3
Disposal	3
Waste Oil	3
Refrigerant	3
General Note	3
First Aid	3
Light	4
General Caution	4
Refrigerant Caution	4
Danger Warning	5

Chapter 2. Installation

Transportation	6
Installation	6
Installation Distance	6
Electrical Connection	7
Piping	7
Condensate Drain	7
Connection to Cooling Water	7

Chapter 3. Technical Description

Classification by Function of Refrigerated Dryer	8
HYD-N(General) Type Overview	9
HYD-EP+(Energy Saving) Type Overview	10
Refrigerant System Parts	11
Control Panel	13
Reverse Phase Check	16
Ref. System Adjustment	17

Chapter 4. Technical Specification

HYD-(W)N Series Specification	18
HYD-HT(W) Series Specification	19
HYD-EP+ Series Specification	20

Chapter 5. Start Up & Shut Down

Preliminary Start Up Check	21
Start Up	21
Shut Down	21

Chapter 6. Maintenance

Maintenance Schedule	22
Check Point	22
Electronic Timer Drain Valve Maintenance	23
Auto Drain Maintenance	24
Built-in Air Filter Maintenance	25
Differential Pressure Check of Air Filter	26
Replacement of Air Filter Element	26
General Check Procedure	27

Chapter 7. Troubleshooting

The air dryer doesn't start	28
The ref. compressor doesn't operate	28
The condenser fan motor doesn't operate	28
High dew point	28
The air dryer doesn't drain the condensate	29
The drain unit doesn't operate	29
Compressed air leaking to the condensate outlet	29
High pressure drop	29
Water within the compressed air line	29
Low dew point	30
Ref. High Pressure Alarm	30
Ref. Low Pressure Alarm	30
Overload relay activation	30

Chapter 8. Appendix

Spare Parts	31
Switch Type(Reference Wiring)	32
General PCB Type(Reference Wiring)	33
Color LCD Type(Reference Wiring)	35
Product introduction material	39

■ Introduction

The usability and the life cycle of the refrigerating compressed air-dryer (referred to below as dryers) as well as the avoidance of premature repairs depends on proper operation, care and competent repair under consideration of these operating instructions.

■ Product Information

Due to our position as suppliers of components we do not always know the final usage and total range of products' applications. We constantly improve our products to the latest state of science and technology and therefore, we assume that our products are free from defects in the sense of product liability. However, it cannot be excluded that during faulty operation in critical areas of application especially at danger to life and limb of persons involved, additionally safety measures may be necessary. Therefore, we request the user of our components units, to ensure in his own interest, to inform us about the application of our products in order to initiate additional safety measures, if necessary.

■ Disposal

When disposing of used devices, pay attention to oil and refrigerant in the hermetical sealed refrigerating circuit of the dryers. Therefore, before dismounting, these components must be disposed by a special company.

The remaining materials are listed on the recycling label inside the dryer. Other materials are named at the recycling label inside the dryer.

■ Waste Oil

The owner of waste oil is responsible for its proper disposal. National environmental protection laws must be met.



Do not dispose waste oil into the environment. Do not mix with household rubbish and do not burn in unauthorized plants.

■ Refrigerant

Prevent the escape of refrigerant into the atmosphere during mounting and maintenance by appropriate measures.

■ General Note

The Company does not accept responsibility if these safety measures are not met during, handling, operation, maintenance and repair, even though this is not strictly stated in these operating instructions. We recommend receipt and notice of these operating instructions verified by the operating personnel in writing (personnel file).

We request strict observation of these notes as otherwise we do not accept any liability in respect of this machine (plant).

■ First aid

- Take victim immediately into the fresh air or into a very well ventilated room.
- Splashes of refrigerant in the eyes must be blown out with the mouth. Then rinse eyes with plenty of water. Do not wipe with cloth!
- If the victim does not breathe, perform a mouth-to-mouth resuscitation or use a respirator until the doctor's arrival.
- Call the doctor and inform him that accident has been caused by refrigerants, for refrigerant type, see identification plate!
- Never leave the victim unattended.

■ Light

Dryer is not provide with a local lighting since it is designed for indoor use only. The sufficient illumination of the working area must be fulfilled by the factory in accordance with the appropriate code of practice and factory regulations.

■ General Caution

- Protective or safety devices must not be removed, modified or readjusted.
- During operation of the Dryer none of the protective of safety devices must be removed, modified or readjusted temporarily or permanently.
- Use proper tools for maintenance and repair work only.
- Use original spare parts only.
- All maintenance works must be performed at stopped machine, disconnected power supply and pulled mains plug only. Ensure that the dryer cannot be switched on by mistake.
- Prior to dismounting a part under pressure disconnect the Dryer from all pressure sources or depressurize the complete system respectively.
- Never weld the pressure vessel or modify it in any way.
- Ensure that no tools, loose parts or similar are left in the system.
- Do not use inflammable solvents for cleaning the parts. Keep the environment absolutely clean during maintenance and repair works. Keep free of dirt by covering the parts and free openings with clean cloth, paper or adhesive tape.



The operator has to observe the national working-, operating- and safety regulations. Also existing internal factory regulations must be met. Maintenance and repair work must only be carried out by specially trained personnel and, if necessary, under supervision of a person qualified for this work.

■ Refrigerant Caution

- Wear eye protection and protective gloves
- Avoid contact of liquid refrigerants with your skin (frostbite, chilblains).
- Do not inhale highly concentrated refrigerant vapors(oxygen displacement).
- To Avoid higher concentrations, all working rooms must be ventilated very well. The opening of windows and doors may not be sufficient, so an exhausting system must be used directly at the supply point or near the floor.
- Do not smoke, because fire might decompose the refrigerant. The resulting substances are toxic and must not be inhaled.
- Do not have refrigerants escaped during filling or repair work. Cover with tape.
- Leave the room immediately and only enter after the room has been sufficiently ventilated when refrigerant concentrations (e.g. pipe line leakages) appear suddenly.
- Execute welding and soldering works on refrigerating systems in well-ventilated rooms only. Refrigerants will be decomposed in flames as well as in electrical arcs. Please, prepare the eye protector and protective gloves at the end-user site. The resulting decomposition products are toxic.
- Before welding and soldering at refrigerating systems, drain refrigerant from the corresponding system component and dispose properly.

■ Danger Warning



Electric Shock

- Control Board
- Power Connection Section



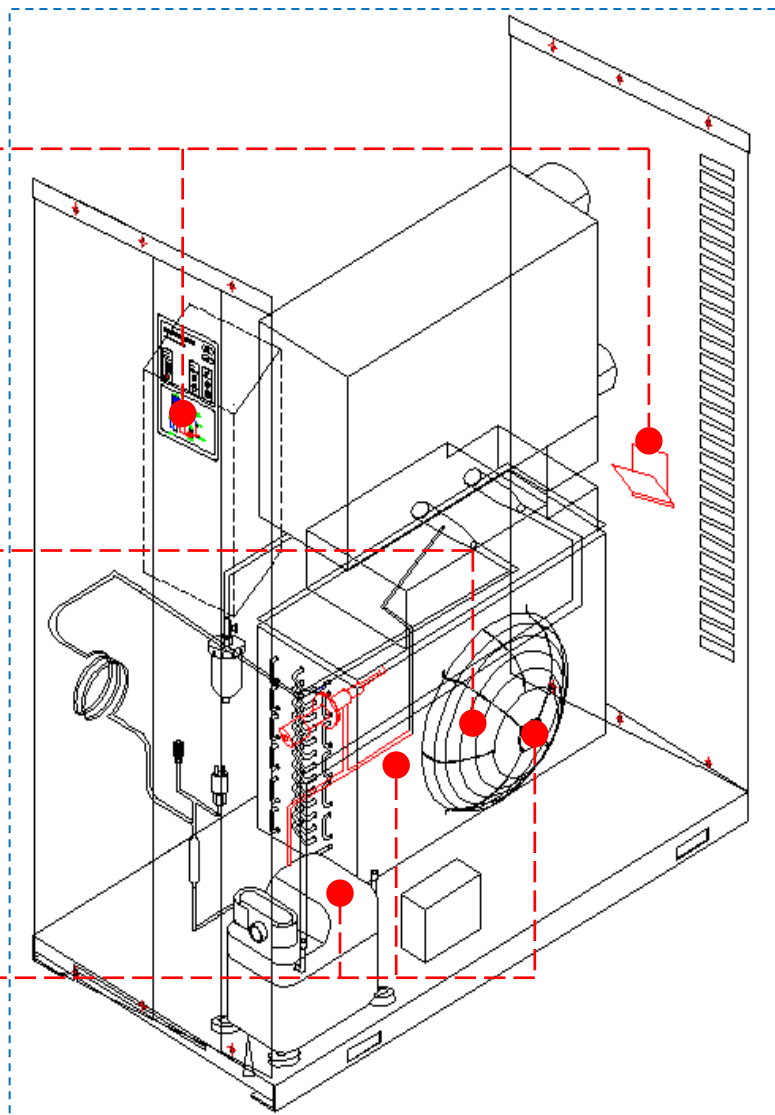
Rotating parts

- Fan Blade

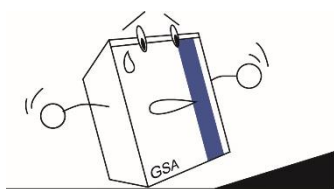


Hot surface

- Copper Tube of Ref. High Pressure Section
- Fan Motor Surface
- Ref. Compressor Surface

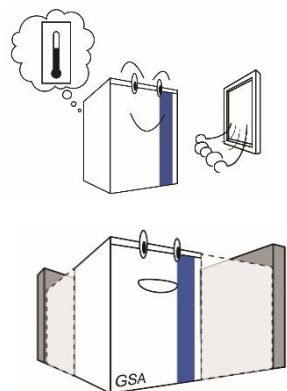


■ Transportation



Transport the air dryer in the upright position only. Air dryers can be transported at a 45° incline position for short distance and time only. In case of greater inclination or horizontal transportation over longer distances, there is the risk that e.g. the refrigerant compressor is damaged in its suspension. The Dryer may be transported by two men or forklift.

■ Installation



- Install the air dryer on secure level surface a convenient, accessible location.
- The air dryer can be installed anchorage or special foundation at the location desired.
- Select a clean, cool & dry area, free from dust, and protected from atmospheric disturbances.
- Maintain ambient temperature of 1°C(34°F) to 35°C(95°F) at installation place.
- Do not obstruct the cooling air inlet or outlet.
- Allow a sufficient clearance on each side of the dryer for proper ventilation and to facilitate maintenance operations.



Failure to install dryer in the proper ambient conditions will affect the dryer's ability to condense refrigerant gas. This can cause higher loads on the ref. compressor, loss of air dryer efficiency and performance, overheated condenser fan motors, electrical component failure and dryer failure due to the following: ref. compressor failure, fan motor failure and electrical component failure. Failures of this type will affect warranty considerations. Do not install dryer in an environment of corrosive chemicals, explosive gasses, poisonous gasses; steam heat, areas of high ambient conditions or extreme dust and dirt.

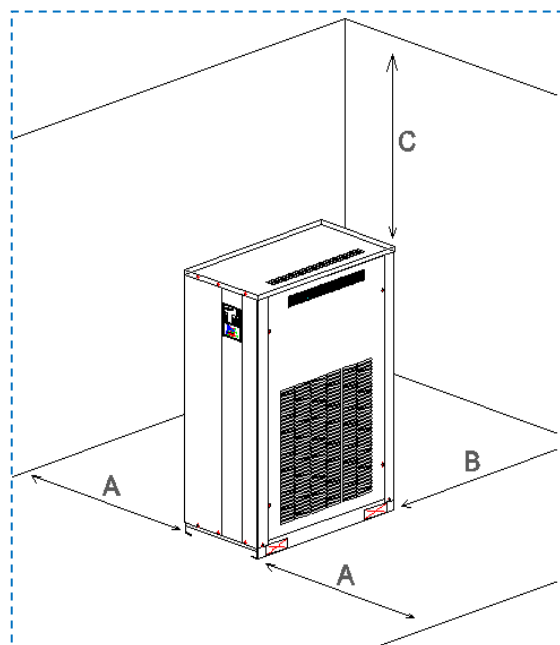
■ Installation Distance

HYD-000	A	B	C
5~20	500	500	500
30~100	1000	1000	1000
150~600	1500	1500	1500
750~1200	2000	2000	2000

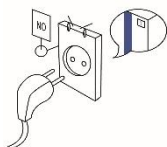


installation space

* Please keep the minimum installation distance for the flow of cooling air for product performance and maintenance of the product.



■ Electrical Connection



- Before connecting the air dryer to the electrical supply, verify the nameplate for the proper electrical information.
- Voltage tolerance is +/- 10%.

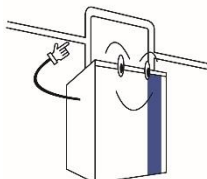


- Must install a suitable earth leakage circuit breaker.



- Qualified personnel should carry out connecting a air dryer to the main power.
- Phase rotation is important if the dryer has a 3 phase ref. compressor & condensing fan motor.
- If the scroll type ref. compressor is installed, press the fan test button and check the rotation direction of the fan motor. In case of reverse phase, change the position of 2 out of 3 power lines.
- Condenser Fan motor must pull air through condenser coil.

■ Piping

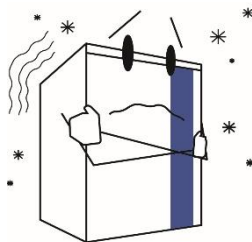


- Connect compressed air lines to the air dryer compressed air inlet and outlet.
- Install an optional bypass line for service purposes.
- If vibration is present, flexible metal hoses must be installed to prevent the vibration.



- Clean the pipelines of welding residual, rust, or other pollutants before attempting to connect to the air dryer.
- Install a suitable compressed air filters.

■ Condensate Drain

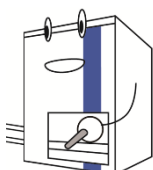


- The air dryer separates a mixture of water and oil from compressed air.
- Water and oil must be separated by suitable separator.
- Condensate drain valve is must opened.
- Prevent condensate drain pipeline from freezing and being bursting in winter.



- Never point the condensate drain line towards anybody.
- The condensate is discharge at the system pressure.
- Drain line should be secured.
- The After-sales service is provided at a cost in case the unit is damaged by debris or freeze or oil

■ Cooling Water Connection(Water Cooled Type)



- Operations to be performed by qualified personnel.
- Cooling water temperature range : 25°C(77°F) ~ 35°C(95°F)
- Cooling water Pressure range : 2barg ~ 3barg

■ Classification by function of refrigerated dryer

	Product Name	Product Classification	Operation Type	Features
Non Cycling Type	HYD-(W)N	General Type - HYD-N : Air –cooled Type - HYD-WN : Water-cooled Type	Always On	- General refrigerant circuit configuration - Where a lot of compressed air is used - Water-cooled Type : Require cooling water
	HYD-HT(W)	High Temp. Type - HYD-HT : Air –cooled Type - HYD-HTW: Water-cooled Type	(* Some small products are cycling type)	for high inlet temperatures - HYD-150HT(W) ~ 1200HT(W)
Cycling Type	HYD-EP+	Energy Saving Type	On / Off Control by Dew Point Temperature	- Energy-saving product with built-in filter - HYD-5EP+ ~ 20EP+ (3 filters) : 5μ / 1ppm / 0.1ppm - HYD-30EP+ ~ 100EP+ (2 filters) : 5μ / 1ppm

■ HYD-N(General) type Overview

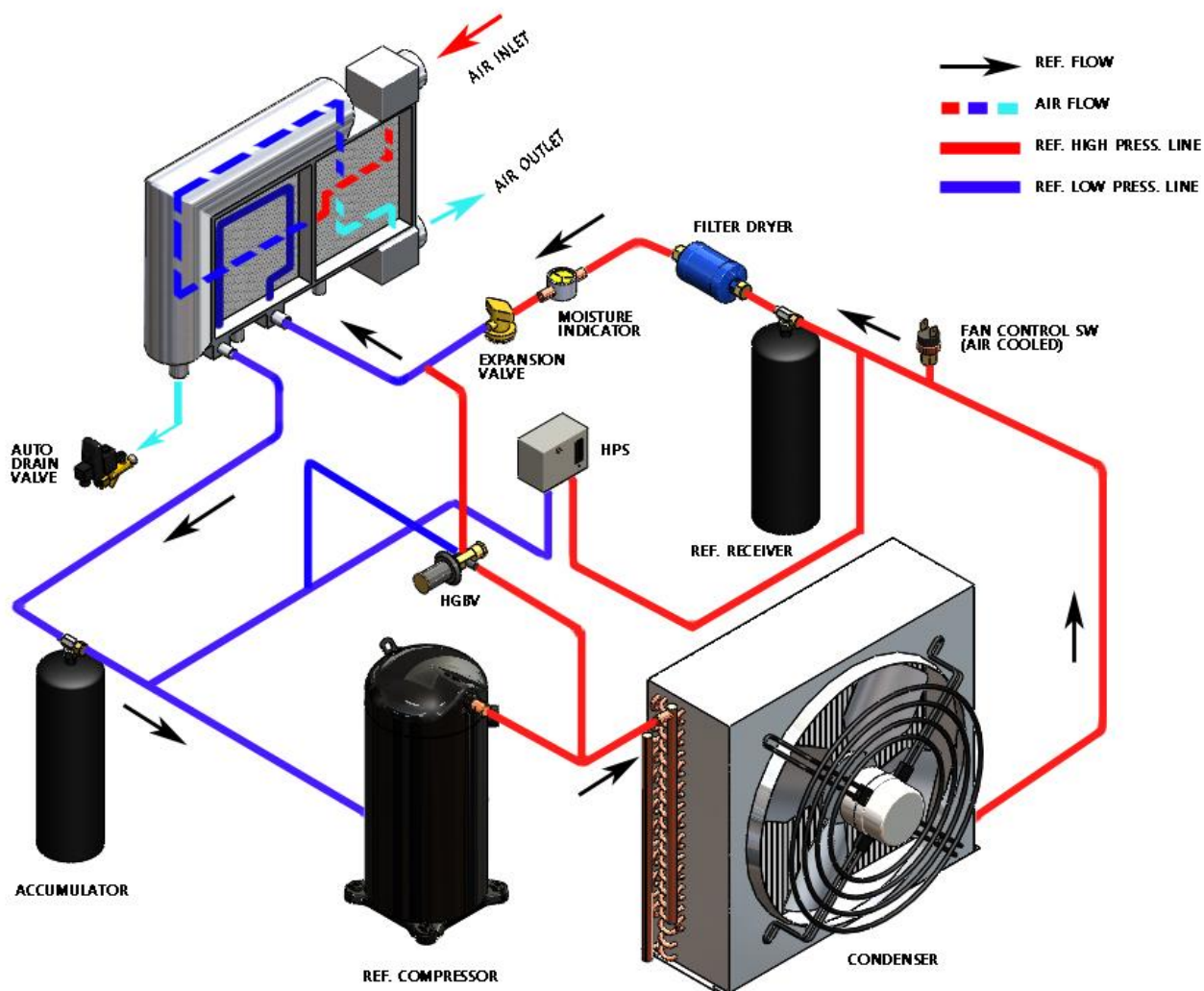
The hot & saturated moisture air enters an air to air heat exchanger. The air then goes through the evaporator, also known as the air to refrigerant heat exchanger. The temperature of the air is reduced to approximately 2°C(36°F), causing water vapor to condense to liquid. The liquid is continuously coalesced and collected in the separator for removal by the condensate drain. The cool air passes back through the air to air heat exchanger to be reheated with incoming air.

* Refrigerant System

Refrigerant gas is cycled through the ref. compressor and exits at high pressure to a condenser where heat is removed causing the refrigerant to condense to a high-pressure liquid state. The liquid is forced through a expansion valve(Capillary tube or TXV) where the resulting pressure drop allows the refrigerant to boil off at a predetermined temperature.

Low-pressure liquid refrigerant enters the heat exchanger where heat from the incoming air is transferred causing the refrigerant to boil; the resulting phase change produces a low pressure, low temperature gas. The low-pressure gas is returned to the ref. compressor, where it is recompressed and begins the cycle again. During those periods when the load is reduced the excess refrigerant is by-passed automatically via the hot gas by-pass valve.

* Flow Diagram



■ HYD-EP+(Energy Saving) Type Overview

HYD-EP+ includes filters. It is an eco-friendly product that reduces unnecessary energy consumption by storing cooling energy during no-load or low-load conditions and stopping the dryer through dew point control. In addition, 2~3 filters are built-in to effectively remove fine particles and oil contained in compressed air, thereby supplying high-quality compressed air.

For general purpose, there is no need to install additional filters. Therefore, it is an economical product that does not require a separate piping work to install the filter and does not require additional space to install the filter.

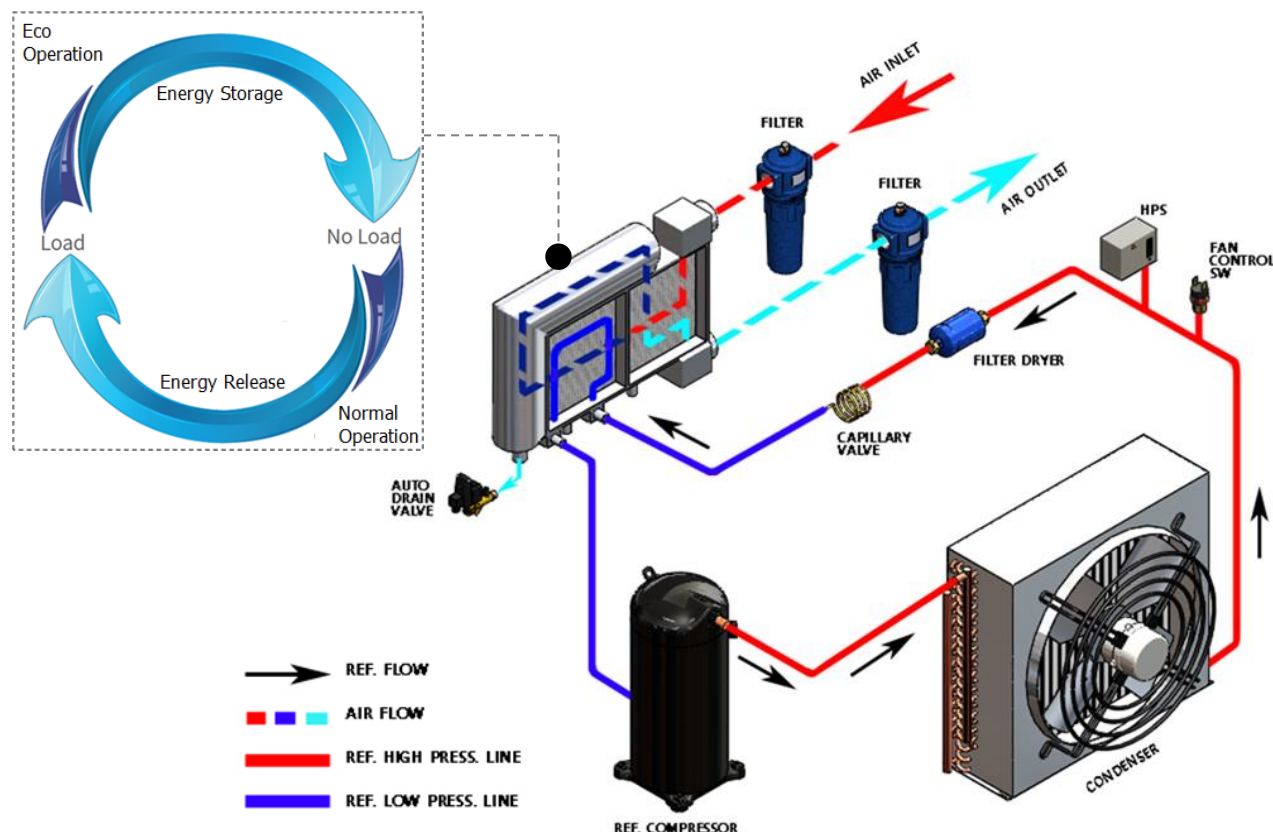
- HYD-5 ~ 20EP+ : 3 filters (40 μ / 1ppm / 0.1ppm)

- HYD-30 ~ 100EP+ : 2 filters (5 μ / 1ppm)

• The operation principle of the HYD-EP+

HYD-EP+ stores cooling energy in the heat exchanger under no-load or low-load conditions. Energy saving is realized by controlling the operation/stop of the freeze dryer according to the dew point temperature using the stored cooling energy.

The heat exchanger of refrigerated air dryer is made entirely of aluminum and there is no thermal resistance between components, so it is possible to store a lot of cooling energy throughout the product. The aluminum heat exchanger has high efficiency and excellent utility of stored cooling energy, so it can increase energy saving efficiency at a low cost. This provides a stable dew point, and the system is simpler than other energy-saving refrigeration dryers for easy maintenance and management.



■ Refrigerant System Parts



- Refrigerant Compressor

It compresses the gasified refrigerant. The cycle of suction and charge of the compressor circulates the refrigerant gas in the system of high pressure and low pressure.



- Oil Separator

Placed on high pressure line of cooling system, it returns the oil mixed with refrigerant to the refrigerant compressor.



- Air Cooled Condenser or Water Cooled Condenser

The condenser is the component in which the gas coming from the compressor is cooled down and condensed becoming a liquid by cooling water(water- cooled) or cooling air.(air-cooled).



- Liquid Refrigerant Receiver

It helps expansion valve work properly by keeping the liquefied refrigerant from the condenser.



- Fan control pressure switch(Air-Cooled Type)

It controls the fan motor that works and helps the refrigerant gas condensing properly by detecting the pressure of high pressure line.



- Cooling Water Regulating Valve(Water-Cooled Type)

It is used to keep the condensing pressure & temperature constant when the water-cooled is being used. Thanks to the capillary tube, the valve detects the pressure in the condenser and consequently adjusts the water flow. When the dryer stops the valve automatically closes the cooling water flow.



- Filter Drier

Humidity and slag can accumulate inside the refrigerant circuit. Long periods of use can also produce sludge. This can limit the lubrication efficiency of the compressor and clog the expansion valve or capillary tube. The function of the filter drier, located before the capillary tubing, is to eliminate any impurities from circulating through the system.



- Sight Glass (Moisture Indicator)

You can check the volume of moisture in the cooling system.



- Expansion Valve(Capillary tube / TXV / EEV)

It changes the hot/high pressure refrigerant into cool/low pressure refrigerant.



- Heat Exchanger

A heat exchanger is a specialized device that assists in the transfer of heat from one fluid to the other. A heat exchanger in air dryer system consist of two parts : air to air heat exchanger & air to refrigerant heat exchanger.



- Hot Gas By-pass Valve(HGBV)

HGBV is designed to control refrigerating system capacity control. HGBV is applicable on any refrigeration system that operates during periods of low load.



- Suction Accumulator

Placed on low pressure line of cooling system, it protects the ref. compressor from being damaged by gasifying the liquefied refrigerant.



- Auto Drain Unit

Drain unit discharges condensate water.



- Refrigerant Pressure Switch(DPS, HPS, LPS)

It protects the unit. The low pressure switch works when the refrigerant leaks while the high pressure switch works when the pressure rises abnormally.

- LPS : Low Pressure Switch
- HPS : High Pressure Switch
- DPS L LPS + HPS



- Refrigerant Pressure Transmitter

A device that controls the operation of the fan motor by sensing the refrigerant condensation pressure.

Refrigerant high-pressure and low-pressure alarm detection caused by abnormalities in the refrigerant system.

■ Control Panel

• HYD - 5~20N

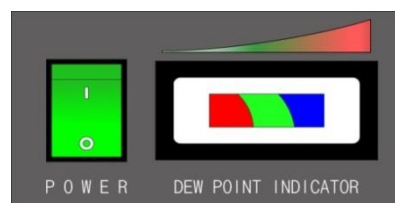


Air Dryer Start / Stop Switch



Dew Point Temp. Display

- Blue: below 5°C
- Green : 5°C ~ 15°C
- Red : above 15°C



• HYD - 30~150N



Air Dryer Start / Stop Switch



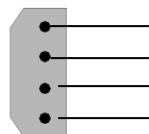
Status Lamp

- RUN : Dryer Operation
- STOP : Dryer Stop
- FAULT : Dryer Fault



Dew Point Temp. Display

- Flickering : below 4°C
- GOOD : 2°C ~ 10°C
- NOMAL : 10°C ~ 20°C
- BAD : above 20°C



START

Remote

(Option)

* Start

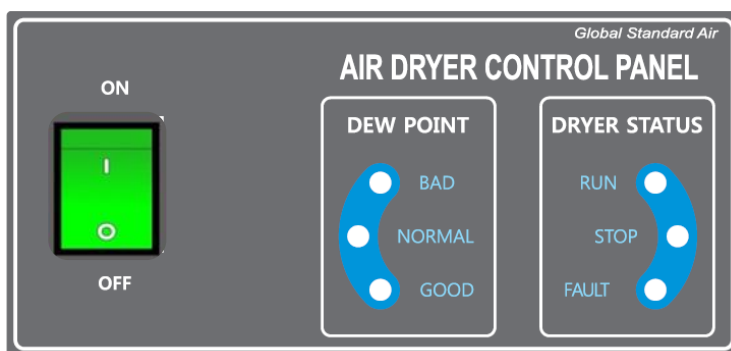
Dryer local start / stop switch

* Remote Start/stop

Remote command must be used by dry contacts

- Remote Start : Continuous Closed

- Remote Stop : Continuous Opened



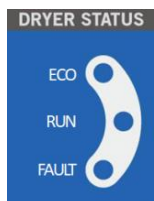
Dew Point Indication

If compressed air is not flowing or flow rate is low, dew point is likely to be inaccurate.

• HYD – 5EP+ ~ 100EP+



Air Dryer
Start / Stop Switch



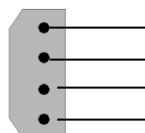
Air Dryer
Status Lamp

- ECO : Energy-saving Mode
- RUN : Air Dryer Run
- FAULT : Abnormal status



Dew Point Lamp

- GOOD : 2 °C ~ 10 °C
- NORMAL : 10 °C ~ 20 °C
- BAD : Over 20 °C



START
Remote
(Option)

- * Start & Remote Operating Contact : Must to use a dry contact
- Remote Start : Close the remote contact
- Remote Stop : Open the remote contact

• Ref. Air Dryer Start & Stop

- Ref. Air Dryer Start : Switch ON of Local Control Panel
- Ref. Air Dryer Stop : Switch OFF of Local Control Panel

• RUN & ECO Status

When the switch on the operation panel is turned on, the RUN lamp of the refrigeration air dryer turns on and the refrigeration air dryer starts. If the heat exchanger has enough cooling energy, the ECO lamp will light instead of the RUN lamp when switched on. When the ECO lamp is on, the refrigerant compressor and fan motor are stopped to save energy.

When cooling energy is consumed due to an increase in load, the dew point temperature rises. When the dew point temperature rises above the set temperature, the ECO lamp turns off and the RUN lamp turns on. When the Run lamp is turned on, the refrigerant compressor and fan motor are restarted. When sufficient cooling energy is secured due to no-load or low-load conditions, the ref. air dryer switches to eco mode again.

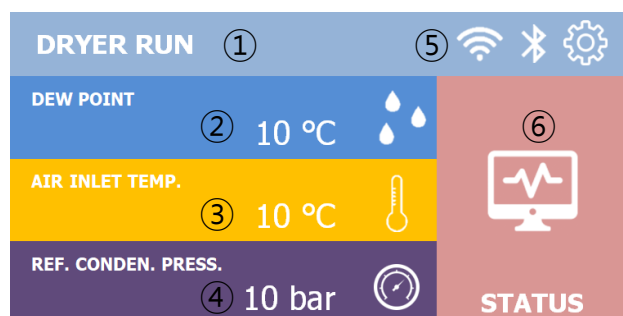
• FAULT Lamp

When the refrigerant high pressure trip or the overload relay of the refrigerant compressor or fan motor operates, the FAULT lamp turns on and the dryer stops. The causes of FAULT vary depending on the product, so please check the specifications and drawings of each product for accurate information.

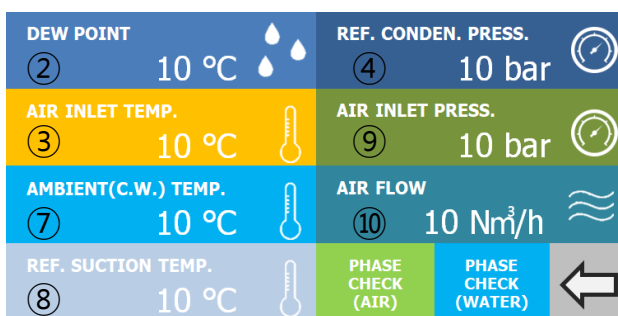
Refer to “Chapter 7 Troubleshooting” for the cause and solution of FAULT caused by refrigerant high pressure trip and overload relay.

- HYD - 200~1200(W)N / 150HT(W) ~ 1200HT(W) (Color LCD Type)

Main Screen



Status Screen



① : Status of Ref. Air Dryer

- You can check the alarm, operation and stop of a ref. air dryer.

② : Dew Point

- You can check the dew point of a ref. air dryer.

③ : Inlet Air Temperature

- You can check the inlet air temperature of a ref. air dryer.

④ : Condensing Pressure of Refrigerant

- You can check the condensing pressure of a ref. air dryer.

⑤ : WIFI/ Bluetooth(Optional)

- Displayed when connected to a mobile phone via Bluetooth or WIFI.

⑥ : STATUS

- If touched, it changes from the main screen to the status screen.

⑦ : Ambient Temperature(Cooling Water Temperature)

- You can check the ambient temperature or cooling water temperature.

⑧ : Refrigerant Suction Temperature

- You can check the refrigerant suction temperature of a ref. air dryer.

⑨ : Inlet Air Pressure(Optional)

- You can check the inlet air pressure of a ref. air dryer.

⑩ : Flow Rate(Optional)

- You can check the flow rate of a ref. air dryer.

⑪ : Phase Check

- AIR(Air cooled type) : Check the rotation direction of the fan motor. If the direction of rotation is opposite, change the position of 2 wires out of 3 power supply wires.

- WATER(Water cooled type) : Check the rotation direction of the ref. compressor. If the direction of rotation is reversed, the refrigerant low pressure will not decrease.

⑫ : Back to main screen

- Return to the main screen.

• Reverse Phase Check



If a 3-phase product is operated in reverse phase, machine failure occurs within a short time.

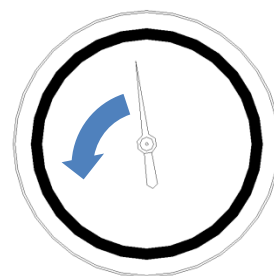
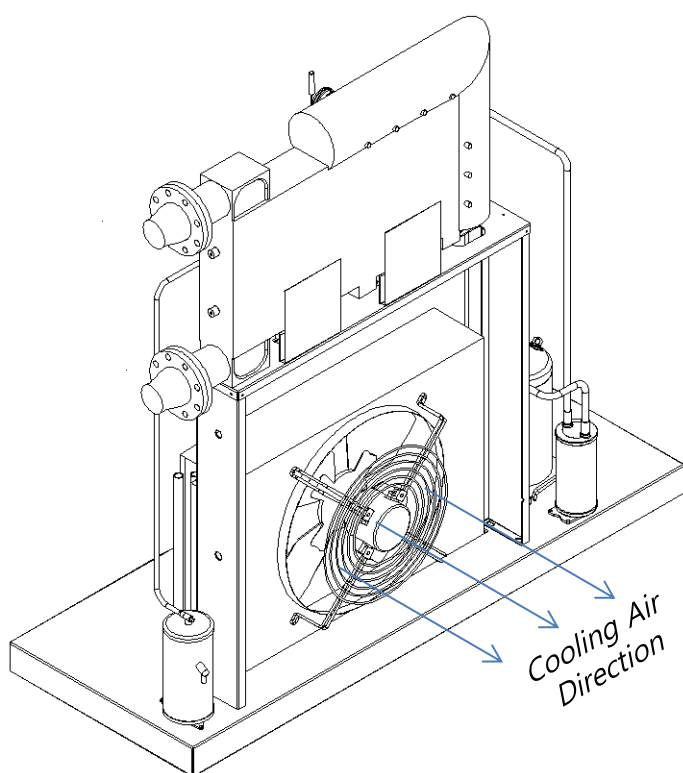
Be sure to check the reverse phase during test operation.

Product defects and malfunctions caused by reverse phase operation are excluded from the free warranty.

① Air-cooled Type

: To check the reverse phase during test operation, check that the cooling air direction of the condenser fan motor matches the figure below.

If the direction of cooling air is opposite, change the position of 2 wires out of 3 power supply wires.



Ref. Suction
Pressure Gauge

② Water Cooled Type

: The refrigerant compressor operates for a short time when checking the reverse phase of water-cooled products.

It is normal if the pressure of the refrigerant suction pressure gauge decreases when the refrigerant compressor is running.

If the refrigerant suction pressure does not decrease, change the position of 2 wires out of 3 power supply wires.

■ Ref. System Adjustment



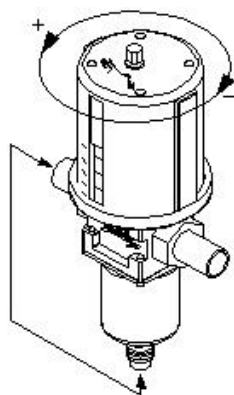
- The hot gas by-pass valve is adjusted during the manufacturing testing phase. As a rule no adjustment is required; anyway if it is necessary the operation must be carried out by an experienced refrigerating engineer.
- During start-up, a qualified technician should check the condensing pressure & temperature and if necessary adjust the valve by using the screws on the valve itself.

■ HGBV(Adjustment for Ref. Suction Pressure)



- Recommended tools
 - HYD-5~100 : A Flat-Head Screwdriver
 - HYD-130~ : 5/16" Hex Wrench Sets
- Adjustment
 - Clockwise : Opening direction
 - Count Clockwise : Closing direction
- Ref. Suction Pressure Range
 - R-134a : 1.8~ 2.5barg
 - R-404A / R-407C etc. : 4.5 ~ 5.5barg

■ Cooling Water Regulating Valve(Adjustment for Ref. Condensing Pressure)



- Only Water cooled Type
- Adjustment
 - Clockwise : Low Pressure Setting (Cooling water increase)
 - Count Clockwise : High Pressure Setting (Cooling water decrease)
- Ref. Condensing Pressure Range
 - R-134a : 9~ 10barg
 - R-404A / R-407C etc. : 15 ~ 16barg

4. Technical Specification

■ HYD-(W)N Series Technical Specification

Product Name		Connection	Air. Comp	Capacity	Power Consump.	Power	Size(mm)			Weight
		A	HP	m³/min	kW	V / Ph / Hz	A	B	C	kg
H Y D	5N	PT 15A	5	0,7	0,3	220 / 1 / 60	355	420	575	30
	7N	PT 15A	7	1.0	0,31		355	420	575	30
	10N	PT 20A	10	1.4	0,32		355	420	575	30
	15N	PT 25A	15	1.9	0,39		427	507	709	45
	20N	PT 25A	20	2.7	0,51		427	507	709	45
	30N	PT 25A	30	3,9	0,9		358	658	864	66
	50N	PT 40A	50	6,7	1,4		408	708	952	89
	75N	PT 50A	75	10,5	2,1		458	798	1045	120
	100N	PT 50A	100	14,2	2,3	380 / 3 / 60 440 / 3 / 60	458	858	1145	126
	150 (W)N	PT 65A	150	21 (22,5)	2,9 (2,5)		565	1005	1330	172 (170)
	200 (W)N	FLG. 80A	200	30 (32,1)	4,18 (3,78)		550	1200	1447	240 (230)
	250 (W)N	FLG. 100A	250	39 (41,7)	4,4 (4)		700	1200	1580	260 (250)
	300 (W)N	FLG. 100A	300	47 (50,3)	4,6 (4,2)		700	1200	1580	270 (260)
	400 (W)N	FLG. 100A	400	56 (59)	9,7 (8,9)		900	1591	1915	600 (500)
	500 (W)N	FLG. 150A	500	66 (70,6)	11,7 (10,9)		1200	1800	1830	940 (780)
	600 (W)N	FLG. 150A	600	85 (91)	12,7 (11,9)		1200	1800	1830	1100 (780)
	800 (W)N	FLG. 200A	800	120	20 (18,5)		1500	1900	2150	1200 (950)
	900 (W)N	FLG. 200A	900	140	25,45 (23,2)		1500	1900	2000	1250 (1,010)
	1200 (W)N	FLG. 200A	1200	180	30,15 (27,9)		2000	1900	2150	1400 (1,300)

* Values in brackets are water-cooled product specifications

Design Conditions	
Inlet Air Pressure : 7 barg	Ambient (Cooling Water) Temp. : 32 °C
Inlet Air Temperature : 38 °C	Design Pressure : 14 barg
Dew Point : 2 ~ 10 °C	Design Temperature : 70 °C



* Correction Factors

Correction factor for inlet air temperature change											
Inlet air temp. (°C)	28	33	38	43	48	53	58	63	68	70	
Correction factor	1,46	1,20	1,00	0,85	0,73	0,63	0,55	0,48	0,42	0,40	
Correction factor for inlet air pressure change											
Inlet air pressure (barg)	4	5	6	7	8	9	10	11	12	13	14
Correction factor	0.84	0.90	0.95	1.0	1.03	1.06	1.09	1.11	1.13	1.15	1.17
Correction factor for ambient temperature change											
Ambient temp. (°C)	27	32	37	40	45	50					
Correction factor	1.05	1.00	0.92	0.82	0.76	0.69					

■ HYD-HT(W) Series Technical Specification

Product Name		Connect.	Air Comp.	Capacity	Power Consump.	Power	Size(mm)			Weight
		A	HP	m³/min	kW	V / Ph / Hz	A	B	C	kg
H Y D	150 HT(W)	PT 65A	150	21	4,18 (3,78)	380 / 3 / 60 440 / 3 / 60	550	1200	1447	220
	200 HT(W)	FLG. 80A	200	30	4,6 (4,2)		700	1200	1580	260
	250 HT(W)	FLG. 100A	250	39	5,5 (5.1)		800	1500	1580	340
	300 HT(W)	FLG. 100A	300	47	5.9 (5.5)		800	1500	1580	360
	400 HT(W)	FLG. 100A	400	56	9,7 (8,9)		1000	1900	2015	680
	500 HT(W)	FLG. 150A	500	66	12,7 (11,9)		1200	2100	1825	980
	600 HT(W)	FLG. 150A	600	85	14.2 (13.4)		1200	2100	1825	1200
	800 HT(W)	FLG. 200A	800	120	25.45 (23.2)		1500	1900	2150	1250
	900 HT(W)	FLG. 200A	900	140	30.15 (27.9)		1500	1900	2150	1320
	1200 HT(W)	FLG. 200A	1200	180	40 (37)		2000	1900	2150	1450

* Values in brackets are water-cooled product specifications

Design Conditions	
Inlet Air Pressure : 7 barg	Ambient (Cooling Water) Temp. : 32 °C
Inlet Air Temperature : 45 °C	Design Pressure : 14 barg
Dew Point : 2 ~ 10 °C	Design Temperature : 70 °C



* Correction Factors

Correction factor for inlet air temperature change												
Inlet air temp. (°C)	40	45	48	52	56	60	65	70				
Correction factor	1.1	1	0.88	0.76	0.65	0.55	0.48	0.41				
Correction factor for inlet air pressure change												
Inlet air pressure (barg)	4	5	6	7	8	9	10	11	12	13	14	
Correction factor	0,84	0,9	0,95	1,0	1,03	1,06	1,09	1,11	1,13	1,15	1,17	
Correction factor for ambient temperature change												
Ambient temp. (°C)	27	32	37	40	45	50						
Correction factor	1,05	1,00	0,92	0,82	0,76	0,69						

■ HYD-EP+ Series Technical Specification

Product Name		Connection	Air. Comp	Capacity	Min. Power Consump.	Built-in Filters		Power	Size(mm)			Weight
		A	HP	m³/min	kW	µm/ppm/ppm	Size	V / Ph / Hz	A	B	C	kg
H Y D	5EP+	PT 15A	5	0,7	0.3	40/1/0,1	15A	220/1/60	420	660	760	41
	7EP+	PT 15A	7	1.0	0.31	40/1/0,1	15A		420	660	760	41
	10EP+	PT 20A	10	1,4	0.32	40/1/0,1	20A		420	660	760	41
	15EP+	PT 25A	15	1,9	0.39	40/1/0,1	25A		425	825	1005	50
	20EP+	PT 25A	20	2,7	0.51	40/1/0,1	25A		425	825	1005	50
	30EP+	PT 25A	30	3,9	0.9	5/1	25A		450	870	1010	76
	50EP+	PT 40A	50	6,7	1.4	5/1	40A		530	1030	1135	99
	75EP+	PT 50A	75	10,5	2.1	5/1	40A		530	1200	1220	135
	100EP+	PT 50A	100	14,2	2.3	5/1	50A	380/3/60	580	1300	1365	141

Design Conditions

Inlet Air Pressure : 7 barg	Ambient Temperature : 32 °C
Inlet Air Temperature : 40 °C	Design Pressure : 10 barg
Dew Point : 2 ~ 10 °C	Design Temperature : 70 °C



* Correction Factors

Correction factor for inlet air temperature change

Inlet air temp. (°C)	38	40	43	48	52	56	60	65	70			
Correction factor	1,10	1,00	0,88	0,76	0,65	0,57	0,51	0,46	0,41			

Correction factor for inlet air pressure change

Inlet air pressure (barg)	4	5	6	7	8	9	10					
Correction factor	0.84	0.89	0.94	1.00	1.04	1.06	1.09					

Correction factor for ambient temperature change

Ambient temp. (°C)	27	32	37	40	45	50						
Correction factor	1.05	1.00	0.92	0.82	0.76	0.69						

■ Preliminary Start Up Check



- Verify that the operating parameters match with the nominal values stated on the data nameplate of the dryer.
(voltage, frequency, air pressure, air temperature, ambient temperature, etc.)
- Qualified personnel must perform the first start-up.

- Check the reverse phase. Refer to the page 20.
- Check that the connection to the compressed air system is correct and that the piping is suitably fixed and supported.
- Check that the condensate drain pipe is properly fastened and connected to a collection system or container.
- Check that the by-pass system (if installed) is closed and the dryer is isolated.
- Check that the manual valve of the condensate drain circuit is open.
- Remove any packaging and other material which could obstruct the area around the dryer.
- Check the cooling water flow and temperature is adequate (Water-Cooled).
- Check the condenser for cleanliness (Air-Cooled).
- Check the piping for air leakage.
- For products with a built-in filter, check that the filter is securely fastened before supplying compressed air.
- Sudden supply of compressed air causes damage and danger to the product. Avoid sudden opening of the shut-off valve.



When transporting or installing products with built-in filters, the filter head and bottom housing locks may come loose. If compressed air is supplied under these conditions, there is a great risk.
Be sure to check the filter.

■ Start Up



- Wait at least 3 hours after transporting or moving the air dryer before starting unit.
- The number of starts must be no more than 10 per hour. Restart after at least 6 minutes after stopping.

- Turn on the operation switch to start the air dryer.
- Check for any abnormal noises during operation.
- After a few minutes, check the dew point temperature through the dew point indicator and dew point lamp.
- Check the current with a multimeter. If the measured current is abnormal, stop the operation and check the air dryer.
- Non Cycling Type air dryer will continue to operate even under no-load conditions. The condenser fan motor repeats operation/stop according to the refrigerant pressure. In summer, the condenser fan motor can continue to run, and in winter the operating cycle can be longer.
- Cycling type air dryer automatically repeats start/stop according to the dew point.
- The built-in aftercooler of the high temperature type air dryer is automatically controlled according to the inlet temperature.

■ Shut Down

- Shut down the air dryer pressing the stop button on control panel.
- Long-term Shut Down : Disconnect power supply.

■ Maintenance Schedule

Check List \ Period	Daily	Weekly	Monthly	Bi-Annually	Annually
Refrigerant Pressure	Check				
Ref. Compressor Operation	Check				
Condenser Fan Motor Operation (Air Cooled)	Check				
Dew Point	Check				
Cooling Water Pressure/temp.	Check				
Condensate Drain units & Strainer	Check	Check Clean			
Ref. Pressure Transmitter or Switch		Check			
Built-in Air Filters			Check	Replace.	
Air Cooled Condenser			Check Clean	Clean	
Water-cooled Condenser				Check	Check Clean
Inside of Unit				Clean	
Refrigerant Circuit – leakage etc.				Check	
Electrical Parts					Check



- Only qualified personnel should perform maintenance operations.
- Perform maintenance work after removing the pressure inside the product.
- When performing maintenance and repair of the air dryer, stop the air dryer and wait at least 10 minutes.

■ Check Point



- Ref. Pressure(Standard)
 - Ref. Suction Pressure (R-134a) : 1.8~2.5barg
 - Ref. Suction Pressure (R-404A, R-407C) : 4.5~5.5barg
 - Ref. Condensing Pressure (R-134) : 7~12barg
 - Ref. Condensing Pressure (R-404A, R-407C) : 13~18barg
- Ref. Compressor Operation (Non Cycling Type)
During the operation, the ref. compressor will run continuously.



- Condenser Fan Motor Operation (Air-cooled Type)
During the operation, the fan motor will repeat on/off.



- Dew Point Indication
 - Analog Type : If the displayed value is in the blue and green range, it is normal. If the red range indicates, check the air dryer.
 - Lamp type: If the blue and green lamps are on, it is normal. If the yellow lamp lights up, check the dryer.



- Water Cooled Condenser(Standard)
- Cooling Water Pressure : 2~3barg
- Cooling Water Temp. : 25~35°C



- Condensate Drain Unit & Strainer

During the operation, condensate water is discharged by drain unit periodically



- Fan Control Switch / Ref. Pressure Transmitter

During the operation, Condenser fan motor is operated by fan control switch or ref. pressure transmitter.

Condenser Fan Motor Operating Range

- R-134a : Cut Out(7barg) / Cut In(12barg)
- R-404A or R-407C : Cut Out(13barg) / Cut In(18barg)



- Air-cooled Condenser

The condenser can be cleaned by using a vacuum or compressed air. Dust and oil stain on the condenser can be the cause of the performance degradation and unit trouble.



- Water-cooled Condenser

The oil stain & other impurities in water cooled condenser can be the cause of the performance degradation and unit trouble.



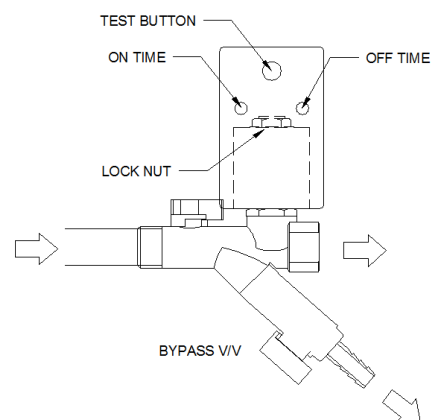
- Ref. Pressure Switch or Transmitter

It is a device that protects the air dryer by detecting the abnormal pressure of the refrigerant.

- Ref. Discharge(Condensing) Pressure (High Pressure Side)
: Dryer Trip : R-134a(15barg) / R-404A or R-407C(25barg)
- Ref. Suction Pressure (Low Pressure Side)
: Dryer Trip : R-134a(1barg) / R-404A or R-407C(2,5barg)

■ Electronic Timer Drain Valve Maintenance

- Push the test button and check how it works, when check air compressor system.
- Please clean the valve core, it valve does not work properly.
- Clean the strainer once every month.
- If the valve is not closed properly although the valve has no problem, we can suspect that some particles get caught between valve core and valve body. You need to clean valve core.



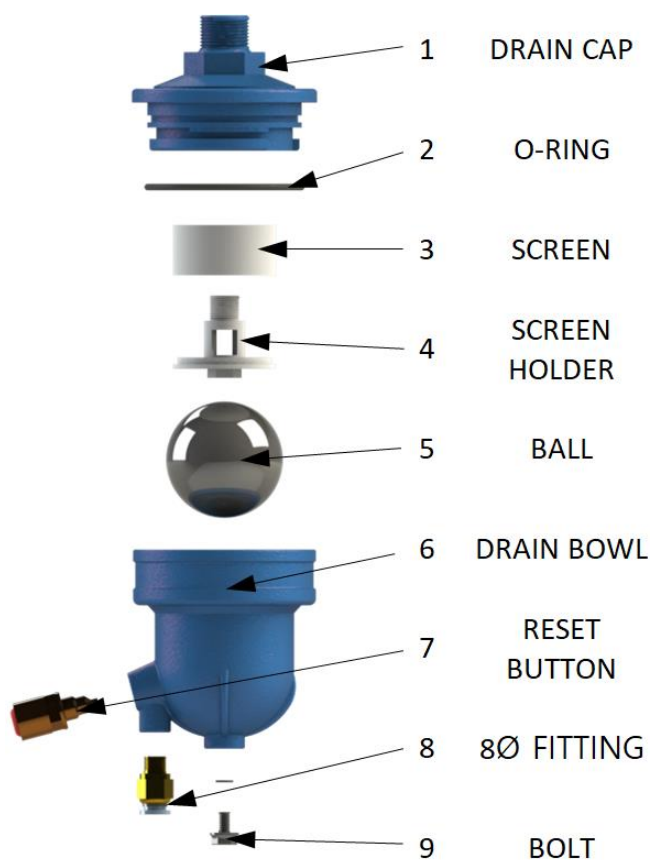
- Condensate drain unit is a consumable item. Therefore, problems caused by incorrect management are excluded from the free service.
- Problems caused by foreign substances, freezing, and oil are excluded from the free service.

■ Auto Drain Maintenance

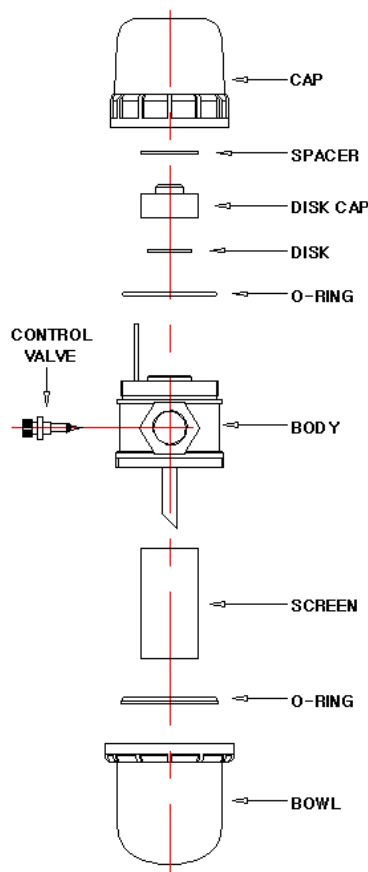
• Product Usage

This is a device that automatically discharges condensed water from the air compressor, receiver tank, aftercooler, and air dryer.

• Assembly of Auto Drain



Auto Drain (HAD-30)



Power Drain (HAD-100)

• Auto Drain Maintenance

- Check for compressed air leakage.
- Periodically clean the screen and bowl of foreign matter.
- Clean oil or foreign matter inside the drain .

• how to clean

1. Disassemble the drain cap and bowl.
2. After disassembling, arrange the auto drain parts in order.
(Refer to the auto drain assembly drawing.)
3. Clean the auto drain part thoroughly.
4. Reassemble the auto drain.
5. Prevent auto drain failure with periodic inspection and cleaning.



In winter, the auto drain may leak or break due to freezing of condensate. When not in use for a long time, remove the condensed water from the inside. Problems caused by foreign substances, freezing, and oil are excluded from the free service.

■ Built-in Air Filter Maintenance

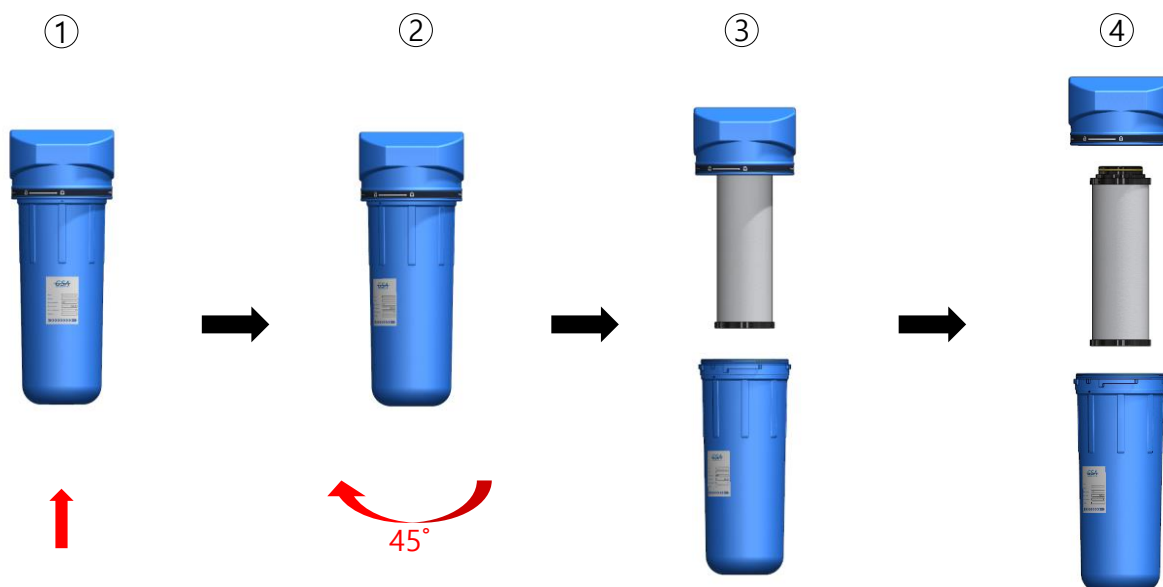
Check the differential pressure by checking the differential pressure indicator installed on the filter or the inlet and outlet pressures of the filter. If the differential pressure is 0.4 bar to 0.7 bar or higher than 0.8 bar, replace the filter element for efficient use of compressed air. It is recommended that the filter element be replaced every 3000 hours or 6 months.

* Filter Element Replacement



- When replacing the filter element, completely remove the pressure inside the filter.
- Do not reuse filter elements past the replacement period.

* HYF-15~50AN



- ① After the pressure is completely relieved, lift the lower housing upwards.
- ② In that state, turn the lower housing counterclockwise
(It does not rotate more than 45 degrees, so do not apply excessive force such as using a tool.)
- ③ Separate the housing from the head.
- ④ Pull the element to remove it and replace it with a new element.
- ⑤ Reassemble the filter head and housing. Turn the housing clockwise and pull it down.
- ⑥ Check that the filter head and bowl are properly locked.



- After replacing the element, check the lock status of the filter head and housing.
- There is a great risk if the filter head and housing are not properly locked.

■ Differential Pressure Check of Air Filter

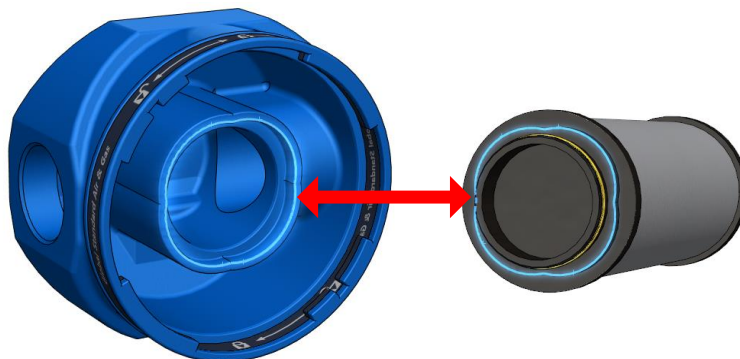
You can know when to replace the element by checking the color of the differential pressure indicator mounted on the filter.



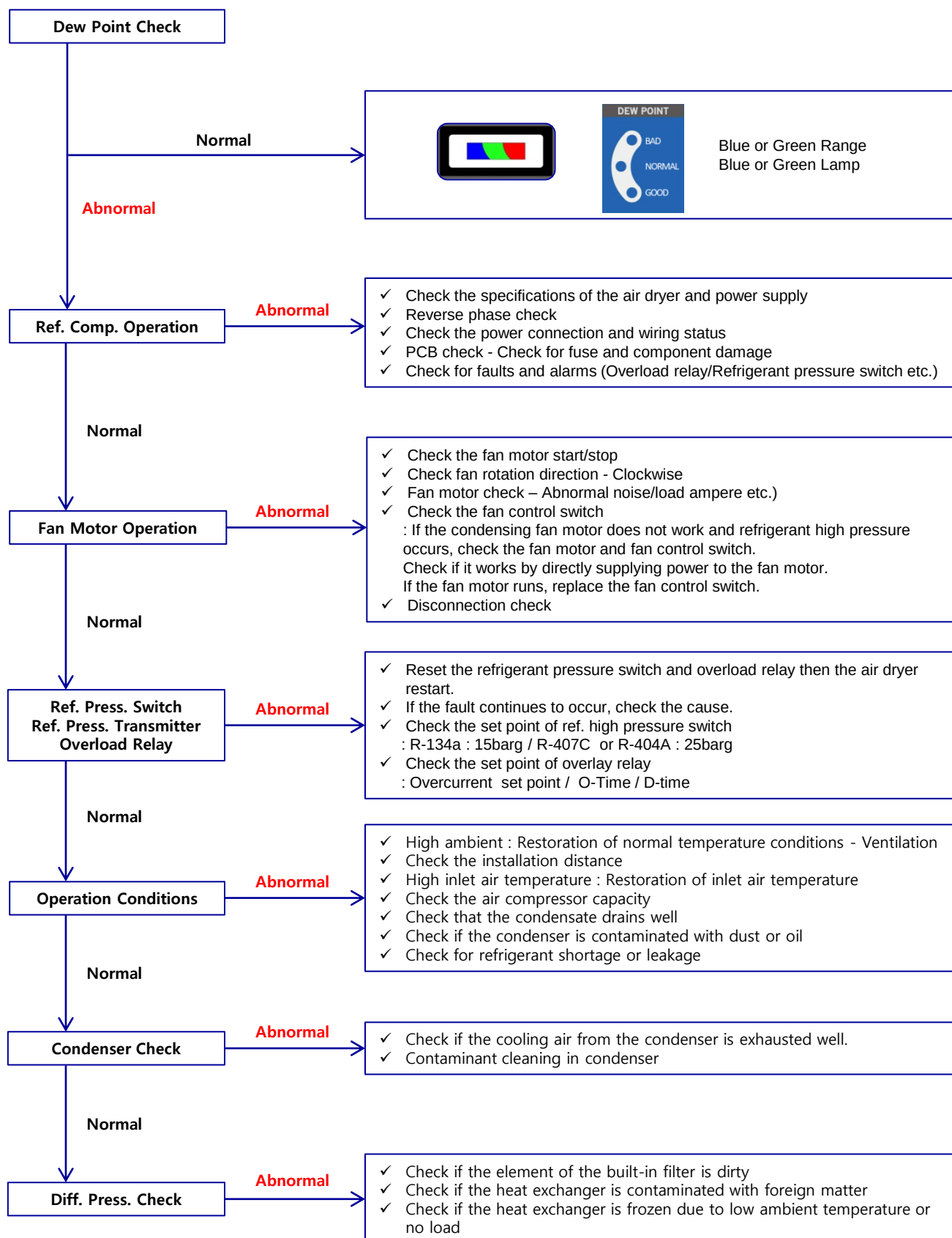
Green Area	0~0.6 bar
Red Area	0.6~0.9 bar

■ Replacement of Air Filter Element

Insert and assemble the element to match the radial structure of the head.



■ General Check Procedure



■ The air dryer doesn't start

Probable Cause	Remedy
System power or electric wiring	Check the system power & electric wiring
Circuit breaker or fuse	Check the main/control circuit breaker or fuse
Alarm status	Check the ref. high press. or overload alarm status

■ The ref. compressor doesn't operate

Probable Cause	Remedy
Trip of the ref. compressor internal thermal protection	Wait for 30 minutes then retry
System power	Check the system power.
The ref. compressor still doesn't operate	Check the ref. compressor Insulation resistance test then replace it

■ The condenser fan motor doesn't operate

Probable Cause	Remedy
System power or electric wiring	Check the system power & electric connection.
Fan control Switch problem	Check the fan control Switch then replace it
Fan motor problem	Check the fan motor then replace it.

■ High dew point

Probable Cause	Remedy
Air dryer stop	Check the air dryer status. Power, alarm etc.
DP temp. sensor problem	Check the dew point temp. sensor
Ref. compressor problem	* See the "The ref. compressor doesn't operate"
High ambient temperature	Proper ventilation or Duct system
High inlet temperature	Restore the nominal conditions
Low inlet pressure	Restore the nominal conditions
Dirty condenser	Clean it
Fan motor problem(air cooled)	* See the "The condenser fan motor doesn't operate"
Hot cooling water(water cooled)	Restore the nominal conditions
Cooling water insufficiency (water cooled)	Restore the nominal conditions
Condensate not drained	* See the "The condenser fan motor doesn't operate"
Refrigerant leakage	Contact a engineer
Hot gas by-pass valve problem	Readjustment by a engineer(more closing)

■ The air dryer doesn't drain the condensate

Probable Cause	Remedy
Drain service valve is closed	Open the valve
Power & coil problem (electrical timer drain valve)	Check the power & coil/core of timer drain valve
Frozen condensate	Dew point is too low (*See specific point)
Drain unit is not operate.	* See the "The drain unit doesn't operate"

■ The drain unit doesn't operate

Probable Cause	Remedy
Power (electrical timer drain valve)	Check the power
Strainer is blocked	Clean it
Sol. coil & valve core	Check the solenoid coil / Clean the valve core
Level Sensor Type Drain	Check the fault alarm and check by referring to the drain manual
Foreign matter inside the drain and filter	After disassembling the filter, clean the flute and inside of the filter. If leaking continues after cleaning, replace the float.

■ Compressed air leaking to the condensate outlet

Probable Cause	Remedy
Foreign matter in drain valve	Clean the drain valve.
Foreign matter in filter	Cleaning after disassembling the filter
Disk abrasion (HAD-100)	Disk replacement inside the power drain

■ High pressure drop

Probable Cause	Remedy
Condensate is not drained	* See the "The drain unit doesn't operate"
Freezing in heat exchanger	* See the "Low Dew Point"
Higher inlet air flow rate	Reduce the flow rate
Contamination of built-in filter	Filter element replacement

■ Water within the compressed air line

Probable Cause	Remedy
By-pass valve open	Close the by-pass valve
High dew point	* See the "High dew point"
Condensate is not drained	* See the "The drain unit doesn't operate"

■ Low dew point

Probable Cause	Remedy
The fan is always on(air cooled)	Check the fan control switch (If ambient temperature is too high, fan motor will run always)
Ambient temperature is too low (air cooled)	Restore de nominal condition
Hot gas by-pass valve problem	Readjustment by a engineer(more opening)
Cooling water temp. is too low (water cooled)	Restore de nominal condition Reduce the cooling water flow rate

■ Ref. High Pressure Alarm

Probable Cause	Remedy
Ambient temp. is too high (air cooled)	Proper ventilation or Duct system
The condenser fan motor doesn't operate(air cooled)	* See the "The condenser fan motor doesn't operate"
The fan control switch doesn't operate(air cooled)	* See the "The fan control switch doesn't operate"
Insufficient cooling water Hot cooling water(water cooled)	Check the cooling water system.
Cooling water regulating valve Problem(water cooled)	Check the Cooling water regulating valve
Dirty condenser	Clean the condenser
High pressure switch or transmitter malfunction	Contact a engineer

■ Ref. Low Pressure Alarm

Probable Cause	Remedy
Refrigerant leakage	Contact a engineer

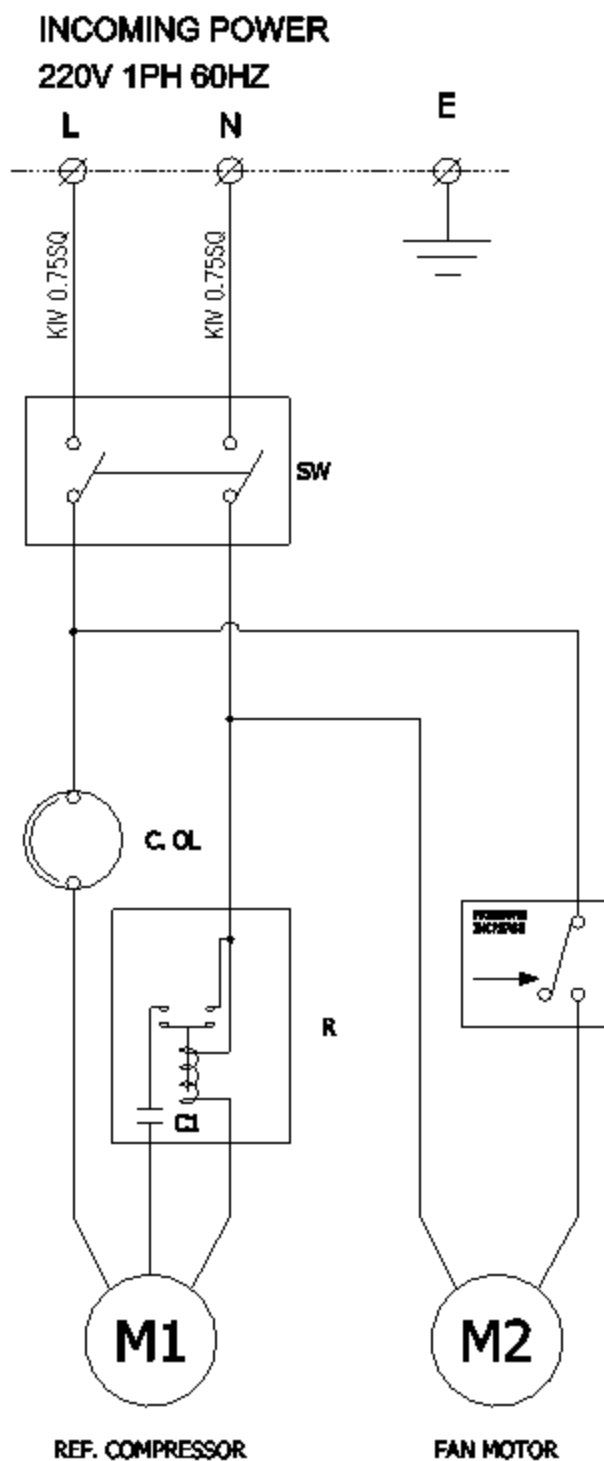
■ Overload relay activation

Probable Cause	Remedy
D-time check(Delay time)	Readjustment delay time : 3~5 sec
O-time check(Over current time)	Readjustment over current time : 3~5 sec
Over current set value	Readjust the over current set value RLA(rated load ampere x 1.2)
Overload relay malfunction	Check the overload relay then replace it

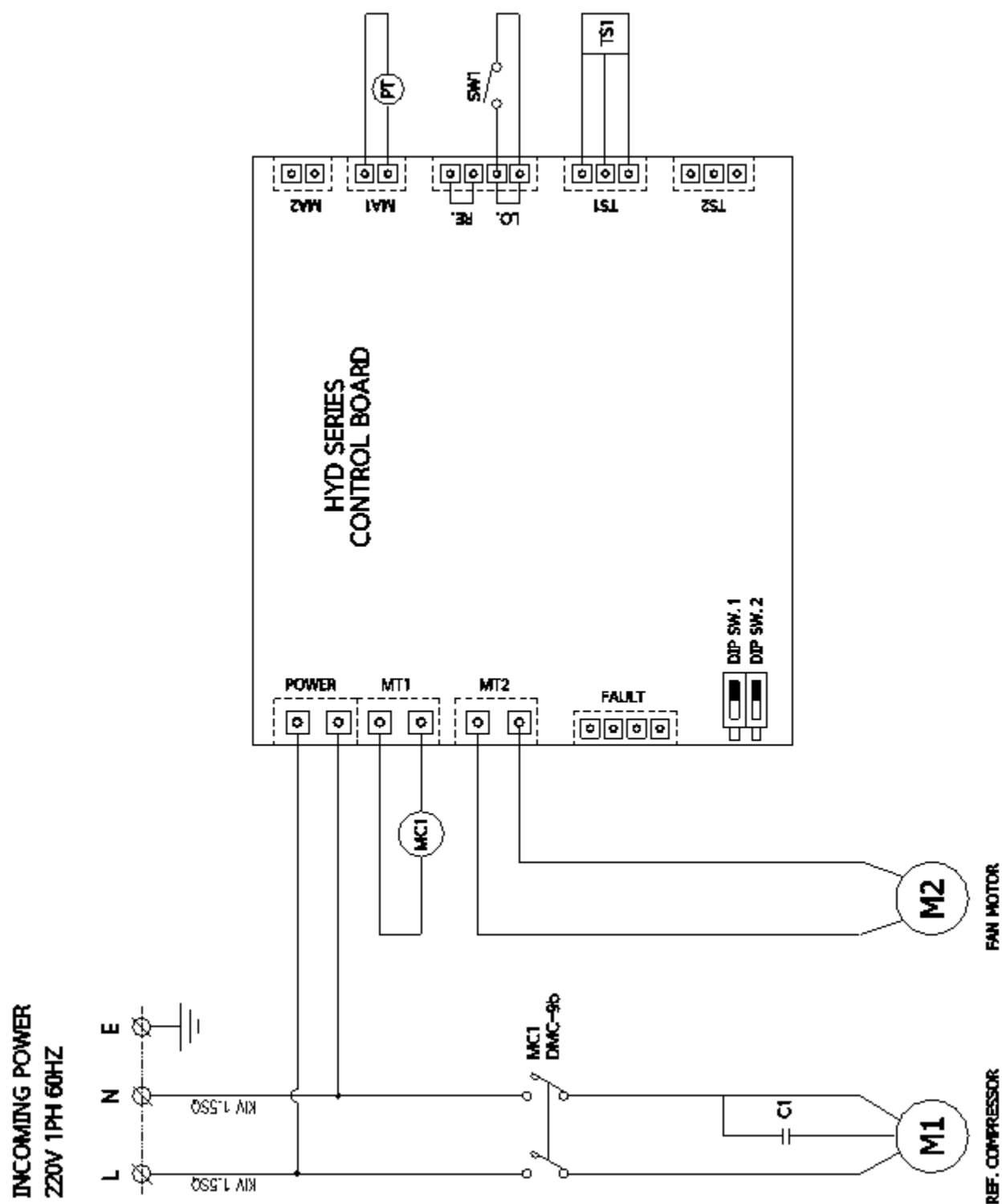
■ Spare Parts

DESCRIPTION	PART NUMBER	HYD – (W)N															
		5	7	10	15	20	30	50	75	100	150	200	250	300	400	500	600
Ref. Comp.	10RC01	1	1														
Ref. Comp.	10RC02			1													
Ref. Comp.	10RC03				1	1											
Ref. Comp.	10RC04						1										
Ref. Comp.	10RC05							1									
Ref. Comp.	10RC06								1								
Ref. Comp.	10RC07									1							
Ref. Comp.	10RC08										1						
Ref. Comp.	10RC09											1					
Ref. Comp.	10RC10												1	1			
Ref. Comp.	10RC11														1		
Ref. Comp.	10RC12															1	1
Fan Motor	10FM01	1	1	1	1	1											
Fan Motor	10FM02						1										
Fan Motor	10FM03							1	1								
Fan Motor	10FM04									1							
Fan Motor	10FM05										1	1	1	1			
Fan Motor	10FM06														1	1	1
Fan Control Sw.	10FC01	1	1	1	1	1											
Fan Control Sw.	10FC02						1	1	1	1	1	1	1	1	1	1	1
Control Board	10CP01						1	1	1	1	1						
Control Board	10CP02											1	1	1	1	1	1
Auto Drain Unit	10AD01	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Water Reg. v/v	10WR01										1	1					
Water Reg. v/v	10WR02												1	1			
Water Reg. v/v	10WR03														1	1	1
Ref. High Press. Sw.	10PS01						1	1	1	1							
Ref. Dual Press. Sw.	10PS02										1	1	1	1	1	1	1
Ref. Pressure Transmitter	10PT01											1	1	1	1	1	1
Filter Drier	10FD01	1	1	1	1	1											
Filter Drier	10FD02						1	1	1	1							
Filter Drier	10FD03										1						
Filter Drier	01FD04											1					
Filter Drier	10FD05												1	1			
Filter Drier	10FD06														1		
Filter Drier	10FD07															1	1
Press. Gauge	10PF01										1	1	1	1	1	1	1
Press. Gauge	10PG02								1	1	1	1	1	1	1	1	1
Press. Gauge	10PG03														1	1	1

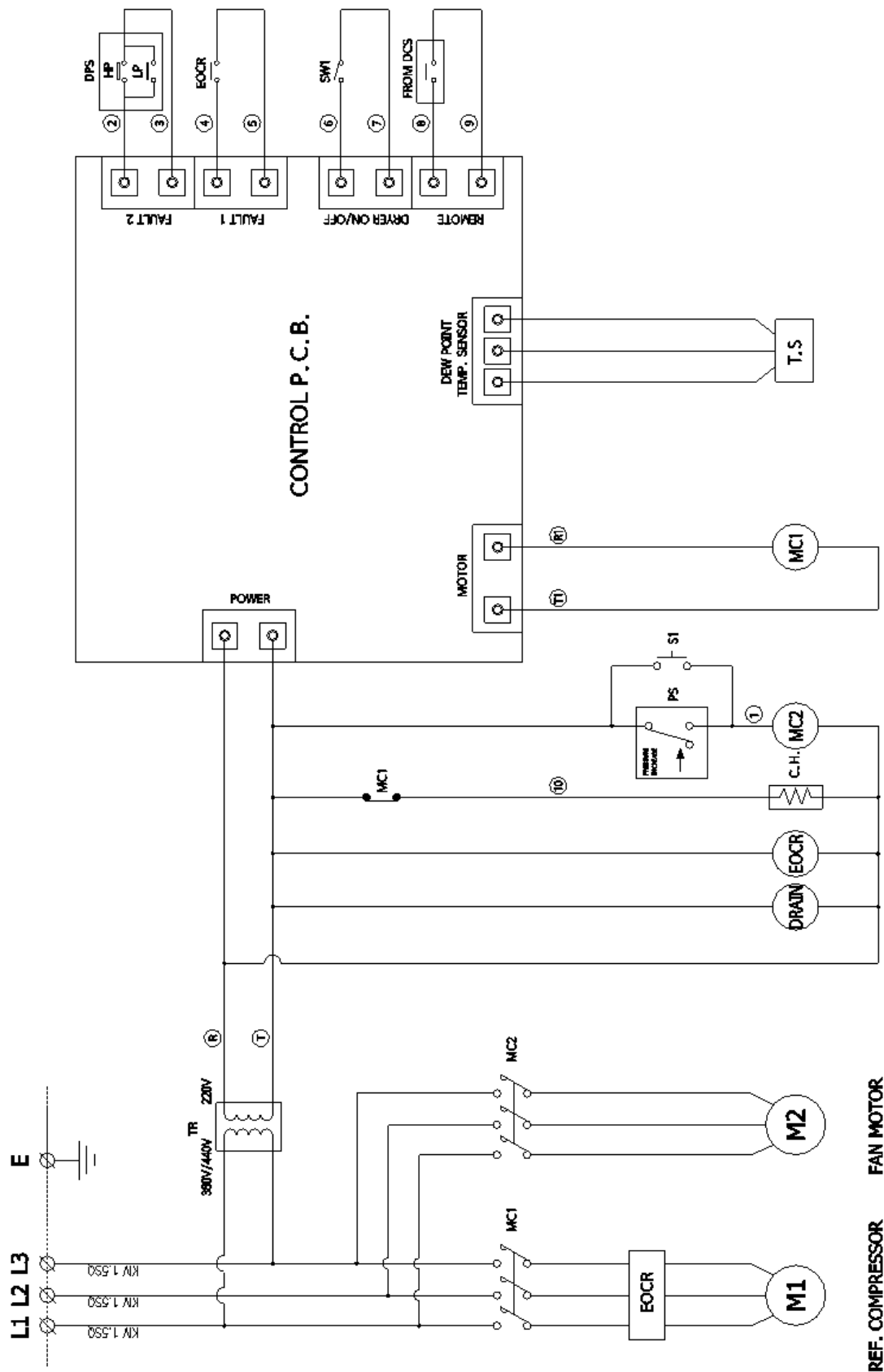
■ Switch Type(Reference Wiring)



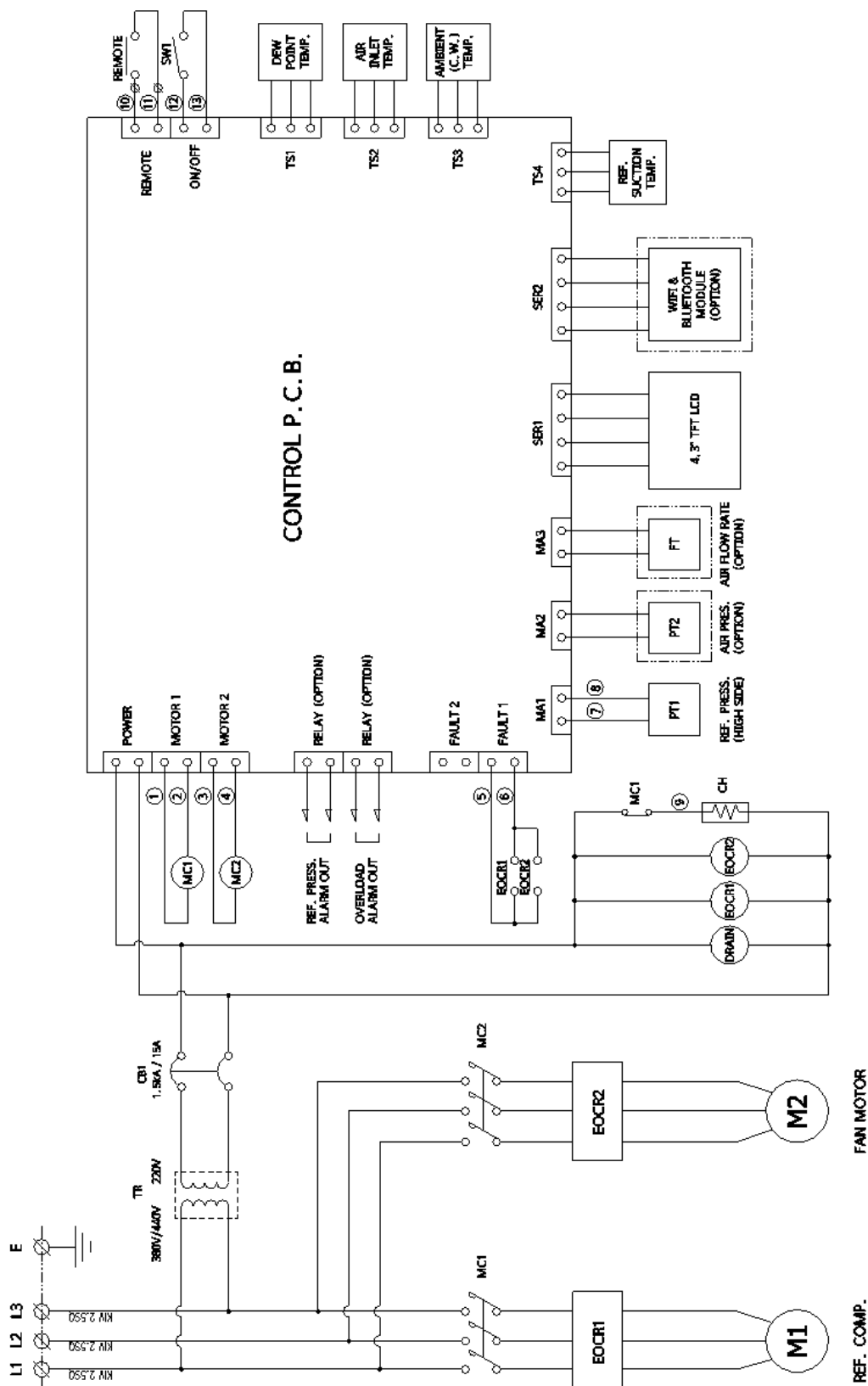
■ General PCB Type(Reference Wiring)



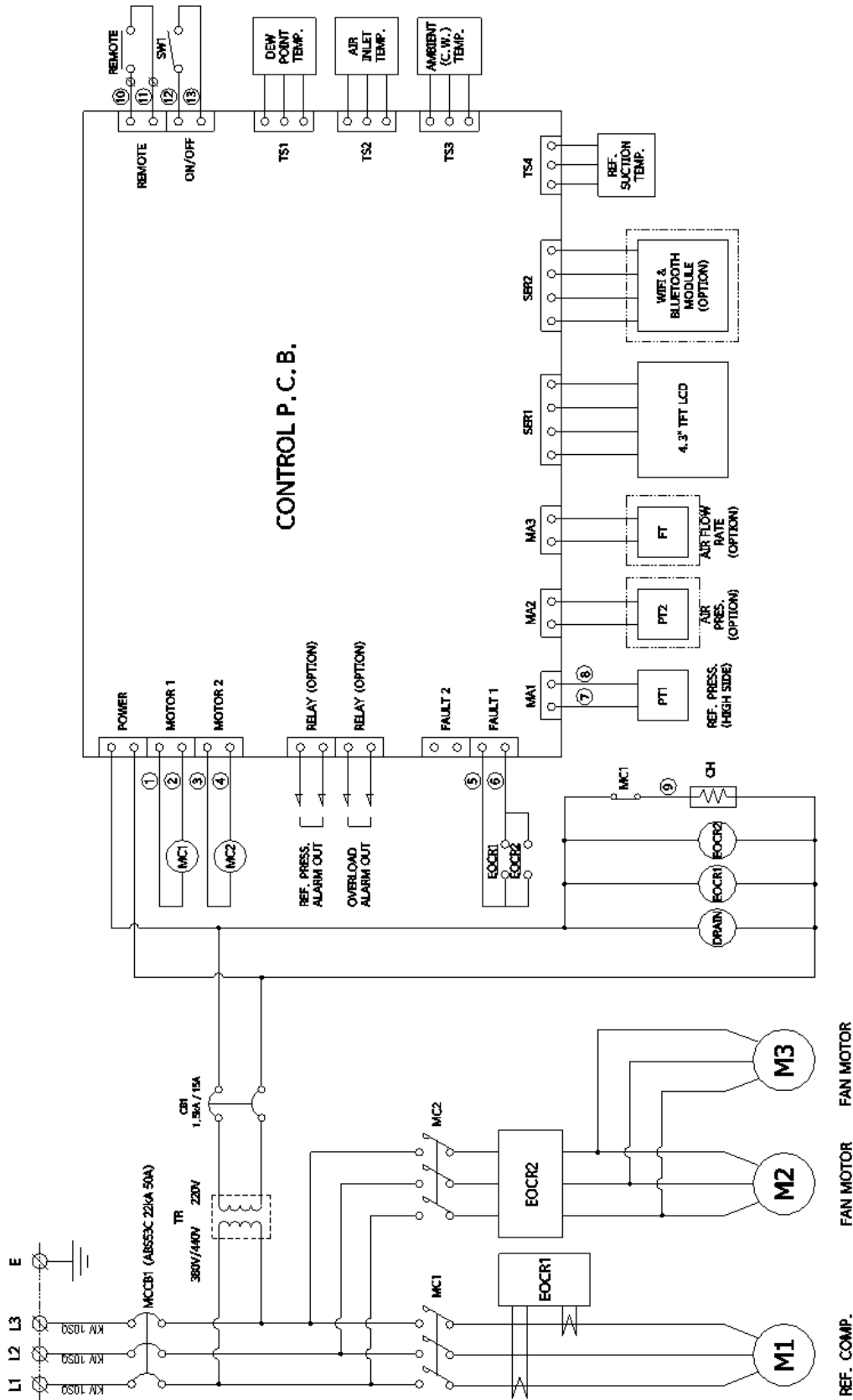
■ General PCB Type(Reference Wiring)



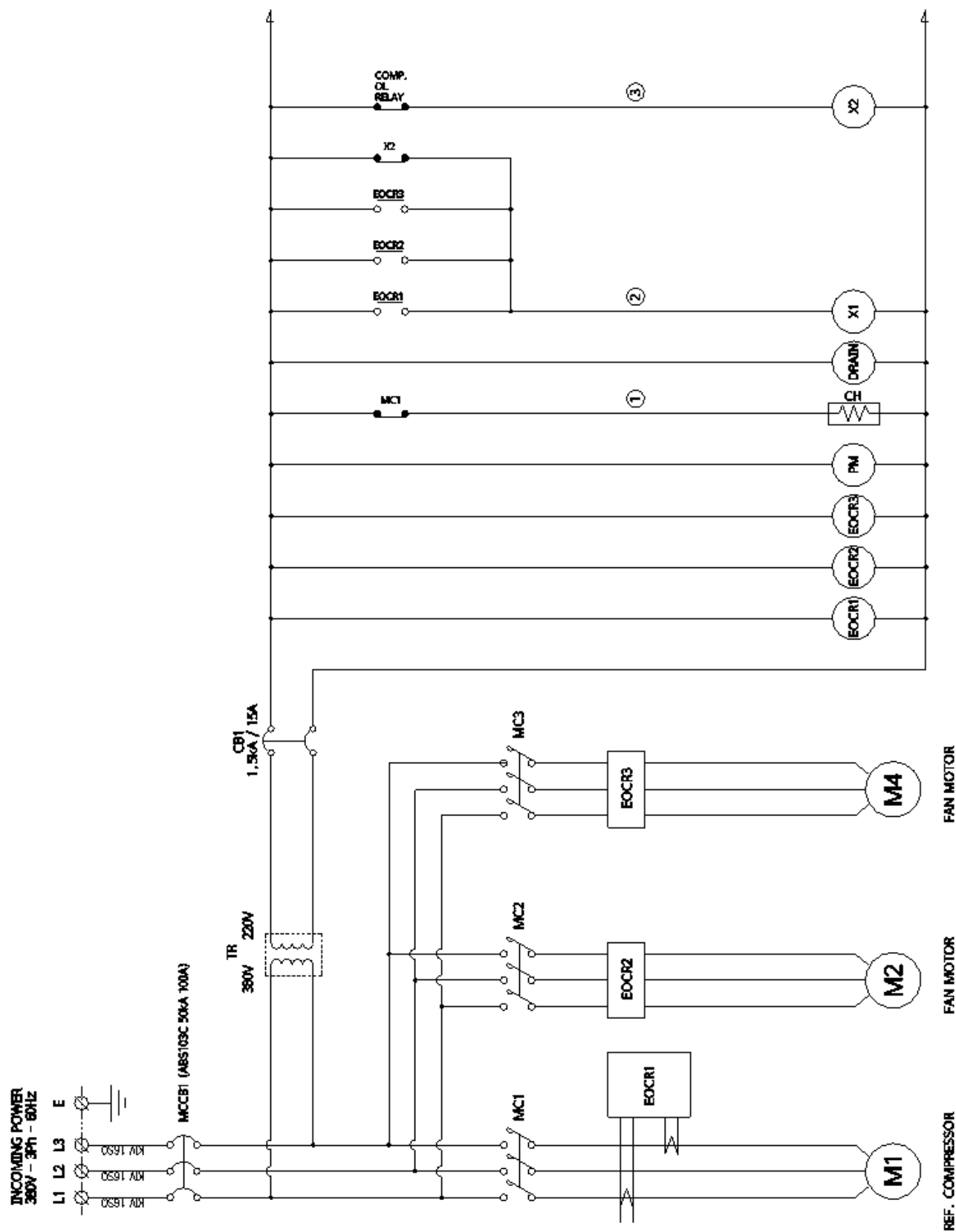
■ Color LCD Type(Reference Wiring)



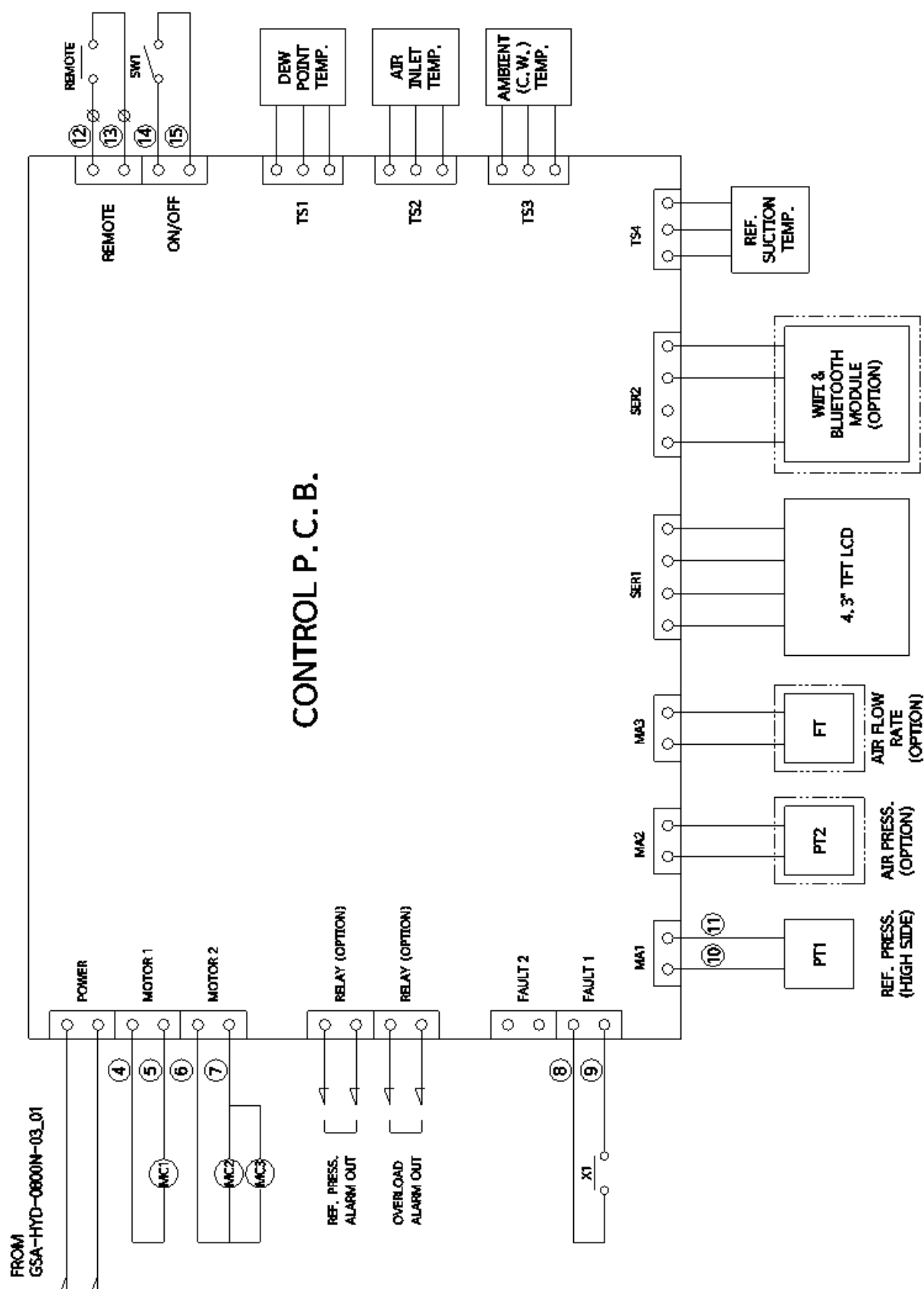
■ Color LCD Type(Reference Wiring)



■ Color LCD Type(Reference Wiring)



■ Color LCD Type(Reference Wiring)



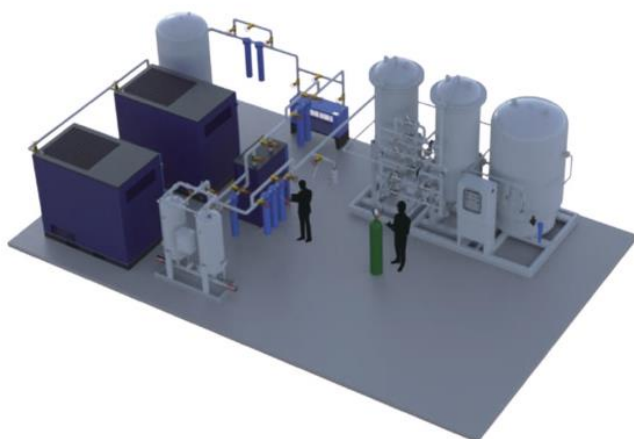
5G. IoT compressed air system



If required, we can also get you monitor remotely your compressed air system centrally via the Internet, 24 hours a day, 365 days a year, allowing you to depend on the productivity and availability of your system at all times.

Optional functions

- Wi-Fi, Bluetooth wireless communication
- Ethernet, RS-485 wire communication
- Monitoring through mobile devices
- User-friendly easy interface
- Easy to check running status through data logging
- Optimal performance with easy and simple setting
- Energy saving with cycling and VSD technique
- Easy maintenance management with testing function
- Intuitive interface



Monitoring unit by mobile phone

Refrigerated Air Dryer



HYD-N3 series

3rd generation cycling type

Flow rate : 0.5~85 Nm³/min

Energy storage heat exchanger

High Purity Alkanes PCM

Max. 90% energy saving

environmentally friendly dryer

Zero air loss magnetic float drain v/v

Wifi/BT Communication

4.3" TFT touch screen / Real Time Monitoring

HYD-20~600N3

(Upon request, customized product)



HYD-N2 series

2nd generation cycling type

Flow rate : 0.5~180 Nm³/min

Energy storage heat exchanger

Energy saving technology

environmentally friendly dryer

ECO mode lamp / Max. 50% energy saving

Zero air loss magnetic float drain v/v

Temp. Controller

HYD-5~1200N2

(Upon request, customized product)



HYD-N series

Non cycling type

Flow rate : 0.5~14.2 Nm³/min

Highly efficient Al. heat exchanger

Dew point indication

Air-cooled type

Zero air loss magnet float drain v/v

High Performance

HYD-5~100N



HYD-N series

Non cycling type

Flow rate : 21~210 Nm³/min

Highly efficient Al. heat exchanger

Dew point indication

Zero air loss level sensor drain v/v

Air-cooled type / 4.3" TFT touch screen

Safety devices / High Performance

HYD-150~1500N

(Upon request, customized product)



HYD-WN series

Non cycling type

Flow rate : 22.5~330 Nm³/min

Highly efficient Al. heat exchanger

Dew point indication

Water-cooled type

Zero air loss level sensor drain v/v

4.3" TFT touch screen

Safety devices / Powerful performance

HYD-150~2500WN



HYD-HTN series

Non cycling type

For High inlet temperature

Flow rate : 0.7~14.2 Nm³/min

Highly efficient Al. heat exchanger

Dew point indication

Zero air loss magnet float drain v/v

Automatic control of after-cooler

Built-in aftercooler & 1~2 air filters

HYD-5~100HTN



HYD-HTNS series

Non cycling type

For High inlet temperature

Flow rate : 0.7~2.7 Nm³/min

Highly efficient Al. heat exchanger

Dew point indication

Zero air loss magnet float drain v/v

Automatic control of after-cooler

Built-in aftercooler & 3 air filters

HYD-5~20HTNS

(Upon request, customized product)



HYD-HT series

Non cycling type

For High inlet temperature

Flow rate : 21~210 Nm³/min

Highly efficient Al. heat exchanger

High Performance

Zero air loss level sensor drain v/v

High inlet & ambient temp.

Large cooling capacity

HYD-5~100HTN

Refrigerated Air Dryer (Customized)



HYD-ID series

Indirect refrigeration system
Cycling type
Flow rate : 21~210 Nm³/min

Highly efficient heat exchanger

Dew point indication
Air/water cooled type
Built-in
Circulation pump & coolant

HYD-150~2500ID



HYD-LP series

Low press. type
Flow rate : 0.5~85Nm³/min

Customized system

Highly efficient heat exchanger
Low differential pressure
Air & gas cooling under 1 barg
Intake air cooling of air comp.

HYD-5~600LP

(Upon request, customized product)



Compressed Air Supply System

All-in-one skid air dryer package
Flow rate : 0.5~85 Nm³/min

Customized system

Basic composition
Ref. air dryer / air filters / bypass piping

Optimized & compact design
Easy installation / Integrated management



Customized Ref. Air Dryer

Outdoor type(IP54)
Stainless steel material type
High pressure type
Marine applications
Special gas type
EPC project

Air & Gas Chiller



HYD-CH Series

1-stage refrigeration system
Above zero point type
Flow rate : 0.5~85 Nm³/min

Outlet temp. control system

Wifi/BT communication
4.3" TFT touch screen
Real time monitoring
Optimized & compact design
Easy installation
(Upon request, customized product)



HYD-CL Series

2-stage refrigeration system
Sub-zero point type

Customized system Max. -70°C outlet temp

RS485 or other communication
TFT touch screen
Real time monitoring
Optimized & compact design

Pre-treatment unit required

After-cooler



HYA Series

Air cooled type
Aluminum fin tube
Flow rate : 1~180 Nm³/min

Eliminating over 80% of the water in compressed air

HYA-20~1200

(Upon request, customized product)



HYA-W Series

Water cooled type
Shell & tube type
Flow rate : 18~180 Nm³/min

Eliminating over 80% of the water in compressed air
Water separator : option.

HYA-100~1200W

(Upon request, customized product)

Desiccant Air Dryer



PHL series

Heatless type
Flow rate : 45~6800 Nm³/hr

Variable cycle control

Solid state controller
Control air filter / Safety valve
Purge pressure indicator
-40°C dew point
Lower dew point : option

PHL-25~4000



POM series

Heatless type with carbon tower
Flow rate : 45~3400 Nm³/hr

Variable cycle control

Solid state controller
Control air filter / Safety valve
Purge pressure indicator
-40°C dew point
Lower dew point : option

POM-25~2000

(Upon request, customized product)



PEH series

Heated purge type
Flow rate : 150~15300 Nm³/hr

Variable cycle control

Solid state controller / PLC
High performance electric heater
Reliable desiccant (AA/MS)
Energy-saving technology
-40°C dew point
(Upon request, customized product)

PEH-100~9000



PEHB series

Heated blower purge type
Flow rate : 255~15300 Nm³/min

Variable cycle control

PLC & touch screen
High performance electric heater
Reliable blower motor / valves
Reliable desiccant (AA/MS)
Energy-saving technology / -40°C dew point
(Lower dew point : option)

PEHB-150~9000



ZEHB/ZEHC series

Zero purge loss type
Ambient air cooling (ZEHB)
Water cooling (ZEHC)
Flow rate : 730~11890 Nm³/hr

PLC & touch screen

High performance electric heater
Reliable blower motor / valves
Reliable desiccant (AA/MS)
Energy-saving technology
(Lower dew point : option)

ZEHB(C)-430~7000



Combination Air Dryer

Desiccant air dryer combined
with a ref. air dryer
Flow rate : 45~3400 Nm³/hr

Extreme performance
Maximum energy efficiency
Low maintenance costs
Optimized & compact design
Easy installation



Compressed Air Supply System

All-in-one skid for air dryer package
Flow rate : 45~3400 Nm³/hr

Customized system

Basic composition
Desiccant air dryer / air filters / bypass piping

Optimized & compact design
Easy installation
Integrated management



Customized Desiccant Air Dryer

Outdoor type (IP54)
Stainless steel material type
High pressure type
Marine applications
Various design code
KS / ASME / DOSH / GOST / JIS

EPC project

Gas Generator / Gas Purifier / Gas Dryer



Nitrogen Generators

PSA type
Low(95%)~high(99.999%) purity
Max. 2000 Nm³/hr

Variable cycle control

Solid state controller / PLC
Reliable valves & CMS
Basic components :
(Nitrogen generators / filters / float flow meter / pressure regulator / receiver tank)



Oxygen Generators

PSA & VSA type
90%~95% purity / Max. 2500 Nm³/hr

Variable cycle control

Solid state controller / PLC
Reliable valves & ZMS
Basic components :
(Oxygen generators / filters / float flow meter / pressure regulator / receiver tank / air blower / vacuum pump)



Gas Purifiers

- H₂ purifier • He purifier
- N₂ purifier • O₂ purifier
- Ar purifier

Impurities gas removal up to
10 ppb from 10 ppm

High reliability and performance
Explosion / weather proof
Various design code
KS / ASME / DOSH / GOST / JIS



Gas Recovery & Purification equipment

- CO recovery & purification
- CO₂ recovery & purification
- CH₄ recovery & purification

environmentally friendly technology

High reliability and performance
Low operating cost
Various design code
KS / ASME / DOSH / GOST / JIS



Gas Dryer

- C₂H₄ gas dryer
- CnH_(2n+2) gas dryer
- CO₂ gas dryer
- Other gas dryer

Customized engineering

High reliability and performance
Low operating cost
Compact & optimized design
Various design code
KS / ASME / DOSH / GOST / JIS



Gas Liquefiers

- CO₂ liquefier
- Other gas liquefiers

Customized system

High reliability and performance
Low operating cost
Optimized design
Various design code
KS / ASME / DOSH / GOST / JIS



Gas Dryer (special)

H₂ deoxidization equipment
Gas dehumidifier

Customized engineering

Explosion / weather proof
High reliability and performance
Low operating cost
Optimized design
Various design code
KS / ASME / DOSH / GOST / JIS



Breathing Air Systems

All-in-one skid package
CO₂ below 1 ppm
CO below 1 ppm

High reliability and performance
Basic components :
(Ref. air dryer / desiccant air dryer / catalyst tower / filters)
Low operating cost
Various design code
KS / ASME / DOSH / GOST / JIS

Membrane Dryer / Other equipment



PMD series

Membrane air dryer
Flow rate : 135~600 LPM

Variable purge volume control environmentally friendly dryer
All Aluminum material
High performance hollow fiber
Easy expansion / Easy maintenance
Long operating life
Small installation space
Easy & short installation time

PMD-135 ~ 600



HYF-AN series

Compressed air filters
Flow rate : 1~14 Nm³/min

Differ. Pressure indicator
All ALDC material
High performance element
Easy maintenance
Long operating life
Compact design / lightweight
Small installation space

HYF-15~50AN



HYF-A series

Compressed air filters
Flow rate : 26~504 Nm³/min

Inlet/outlet Pressure gauge
Stainless or carbon steel
High performance element
Long operating life
Pressure vessel
Various design code
KS / ASME / DOSH / GOST / JIS

HYF-65~300A



HYE-N series

Element cartridge for filter
Particulate / coalescing type

Easy replacement
High quality element
High efficiency multilayers
Long operating life
40/5 μ m particulate element
1/0.0/0.01/0.01F coalescing element

HYE-15~50N



GS series

Air & gas receiver tank
Design pressure : 9.7 barg
Volume : 0.3~20 m³

Pressure gauge
Safety valve
Stainless or carbon steel
Pressure vessel
Various design code
KS / ASME / DOSH / GOST / JIS

GS-003A ~ 20
(Upon request, customized product)



Condensate drain trap

Zero air loss float type
Electronic timer type
Zero air loss level sensor type

- Magnetic float drain
- HAD-10 / 20 auto drain
- HAD-100 power drain
- EDV-15/40T timer drain
- DM series level sensor drain

Easy maintenance
Long operating life
Higher resistance to foreign matter



DPI Series

Differ. pressure indicator
Max. operating press. : 16 barg
Measuring range : 0 ~ 0.9 bar



Differential pressure indicator is designed to indicate pressure drop across the filter element in compressed air system.

HDI 30 / HDI 50



Adsorbent

Activated alumina
Carbon molecular sieve
Zeolite molecular sieve(3A/4A/5A/13X)

Long life
High crush strength
High adsorptive capacity
Low abrasion

Customer Satisfaction

Our Customers are our priority and we provide them with first class products and service in a timely manner and listen to their needs attentively. We achieve our excellence through tireless effort of our staff that we support enthusiastically.

Quality Assurance

GSA provides high-quality products to serve our customers to keep their production optimal at all time and at the lowest operating cost. Standards and policies are used to ensure and maximize the quality of all our products. GSA periodically reviews quality issues and adjusts its programs and processes to ensure continuous quality improvement.

Reliability

Our aim is to achieve ZERO (0) defect for all of our products at all time. Defects are caused because of flaws in the process or work activity. As such, we are doing our best effort to create and design processes to literally eliminate defects. Our Quest for Zero Defects leads reliability for our products from our customers in the market.

Flexibility

We adopt maximum flexibility not only for production but also for design and manufacturing of our products. For example, we are not hesitated to lower the height or width of products to be put into container helping our customers save big charge of transportation or sea freight of the order products.



Timely Delivery

To ensure proper execution of production in the right time and on time delivery/shipment, our production planners distribute line wise production from buyer order list and set production target. At the same time, we exercise the greatest flexibility for meeting urgent special delivery orders.

Reasonable Price

We do all in our power to keep reasonable price of our products by introducing economies in the manufacturing process without lowering standards, and by buying our materials in greater bulk. These economies have enabled us to keep our increase below those of our competitors.



Air/Gas Dryer

GSA leads the compressed air processing equipment industry. The following items are designed and manufactured by us: Refrigerated dryers (cycling, noncycling, high temperature, filter-in), adsorption dryers (non-heating, heating, compression heat, zero purge gas type), membrane dryers, natural gas dryers, and breathing dryers are customized and manufactured according to customers' orders.



Gas Generator/Purifier

GSA leads the gas generators and refineries industry. The following items are designed and manufactured by us: PSA-type nitrogen generators, oxygen generators, hydrogen purifiers, argon/carbon monoxide/carbon/methane recovery purification plants, and other various gas separation and purification plants are custom-made.



Air/Gas chiller

GSA designs and manufactures special purpose air/gas chiller. GSA's air-cooled and water-cooled chiller boasts excellent efficiency and convenient control by employing the latest heat exchanger, solder evaporator, and microchannel type condenser. It's also easy to install, so you can experience significant savings over traditional chiller.

