INSTRUCTION MANUAL

HANGZHOU HANKE PURIFYING EQUIPMENT CO., LTD

HKAD SERIES

REFRIGERATED COMPRESSED AIR DRYER

HKAD28 ~ HKAD247

Thank you for choosing Hanke Compressed Air Dryer. To ensure satisfactory operation and continued good performance of your refrigerated dryer, please read this manual prior to starting this equipment, and keep the manual in good condition for use or in case of failure.

Introduction

Thanks for using Hanke products. Hanke air-cooled refrigerated air dryers deliver stable pressure dew points and effectively remove moisture from compressed air systems. HKAD series refrigerated air dryer is ideal for pressure dew point requirements (35.6～42.8℉) with low overall cost and reliable performance.

This manual contains installation guidance, operation instruction, maintenance as well as brief introduction on selection of dryer capacity and piping installations with diagrams, which provide you a better understanding about compressed air system.

CONTENTS

General Safety Information

1. Pressurized Device. This equipment is a pressure containing device. Do not exceed maximum operating pressure as shown on equipment serial number tag.
2. Electrical
   2.1 This equipment requires electricity to operate.
   2.2 Install equipment in compliance with electrical codes as shown on equipment serial number tag.
   2.3 Equipment supplied as standard is not intended for installation in hazardous environments. Disconnect power supply to equipment when performing any electrical service work.
3. Breathing Air
   Air treated by this equipment may not be suitable for breathing without further purification. Refer to OSHA standard 1910.134 for the requirements for breathing quality air.

Transportation, Moving, Storage and Unpacking

1. Transportation

To protect the precision components of the refrigeration system, piping and electronic component of the control system, please avoid great impact and vibration during long-distance transport. Reduce the speed and keep steady to avoid unnecessary loss.

2. Moving

The dryer frame is designed to be lifted by a fork truck. The dryer may also have lifting lugs for use with an overhead crane. Be sure to attach to all of the lift points and use appropriate spreader bars to prevent damage to the dryer. Never lift the dryer by attaching hooks or slings to the air inlet and outlet connections or piping, or to any part other than the lifting lugs. Severe structural damage could result.

This shipment has been thoroughly checked, packed and inspected before leaving our plant. It was received in good condition by the carrier and was so acknowledged. Upon receipt, check for visible loss or damage. If this shipment shows evidence of loss or damage at time of delivery to you, insist that a notation of this loss or damage be made on the delivery receipt by the carrier's agent

3. Storage

3.1 Dryer should not be stored outside (either packed or unpacked) or exposed to the weather. Damage to electrical and control components may result.

3.2 If unit is shut down below freezing temperatures, the heat exchanger may

freeze and cause permanent damage. Heat exchanger must be drained when the unit is shut down.

3.3 Do not store dryer in temperature above 130°F (54.4°C)

4. **Unpacking**

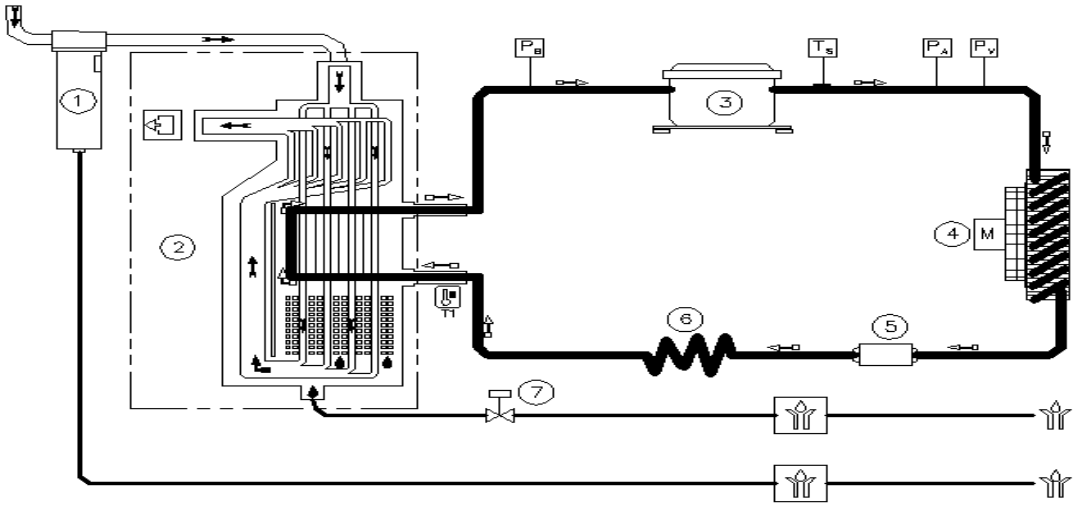
4.1 All packaging material should be left in place until the dryer is in position.

4.2 Do not use sharp tools during unpacking. Caution of refrigerant leakage once refrigeration pipeline and/or condenser damage.

Design Working Conditions

1.	Working Pressure	**87-232 Psi (0.6-1.6 MPa)**
2.	Rated Capacity	**28-247 CFM**
3.	Inlet Temp.	**≤131℉（standard)**
4.	Ambient Temp.	**89.6 ℉**
5.	Max Ambient Temp.	**107.6 ℉**
6.	Pressure Dew Point	**35.6～42.8 ℉**
7.	Power supply	**115V/1P/60HZ**

Process Flow Diagram



Note: 1. Separator; 2. Plate type heat exchanger; 3. Refrigeration compressor;

4. Air Condenser; 5. Refrigerant filter; 6. Throttle valve; 7. Drain

Installation

1. Installation Sites Guide

- Avoid locations in the sun, which may affect heat radiation.
- Locations should be free from rain, piping water, moisture, otherwise electrical short-circuit and rusty shell may be caused.
- Avoid locations where will shock, which may cause instrumentation inaccurate.
- Avoid location acclive and rough, which may easily generate noise and affect operation.
- Avoid locations surrounded by gas or flammable items.

Air-cooled dryers should not locate in--

- Places with lots of oil aerosol, heat, steam (such as places near diesel engines, generators, chimneys, and painting) -- serious pollution may affect the cooling device.
- Places with lots of wood chips, cotton fiber, dust (such as carpentry, cement trough, grinder) --- which block the radiator.
- Places with chemical gases, corrosive gases exist (such as plating tanks, cell, the sulfuric acid tank, toilet) -- may damage the radiator.
- Compressor station without ventilation equipment or other room-- may affect heat dissipation
- Places close to the wall or near large machines, which are not good for heat dissipation and maintenance.

2. Dryers Location Regulations

■ Choose the proper installation site, consider the effects of dryer operation before considering the convenience of piping.

■ Do not let the hot air or other sources of heat released into the dryer.

■ Pay attention to spacing if two or more dryers locate together, prevent the hot gas of one unit from being absorbed by another unit

■ Keep 800mm space around for ventilation and maintenance purposes.

■ If two or more dryers in parallel using, make sure the diameters of pipes, the size of valves are proper so that the loaded capacity remain the same.

■ If the original main pipelines were used, cleaning the oil residue and impurities before using is recommended. Removing filter element (if any) before cleaning to avoid possible damages.

3. Power-supply

■Note the power requirements indicated on nameplate.

- Voltage range tolerance ±5%
- Install voltage regulator if voltage instable.
- Do not share power switch with the air compressor and other electrical equipment.
- For single-phase power supply, please connect to standard wiring (do not use one Live Wire and one Earth wire).
- Earth wire must be grounded.
- *It's dangerous and DO NOT use wiring of hot!*
- Power cord should not be too long, which may cause lower voltage and running failure.
- Power cord must comply with the standards, could not be too small.

4. Piping

■ Bypass piping are needed for easier maintenance.

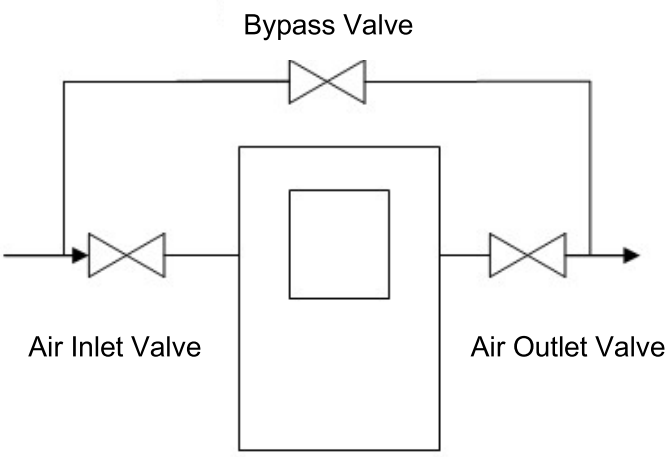


Figure 2: Locations of Bypass Valves

- Use flexible access way in connection of bypass and dryer.
- Piping should not be too heavy. Do not stand on the dryer when piping.
- Use new pipelines, if used pipelines are adopted, please clean them to avoid oil residue and scrap metal rust remain in the system.
- The operation shock of air compressor cannot be transferred to the dryer -- to use high-pressure hose with a shock absorber to connect.
- Install a storage device (air tank) before refrigerated dryer.

- Install fine filters before and after refrigerated dryer to remove oil residue, impurities and rust that generated by compressor or pipelines

5. Drainage

- The pipe connects drains should be fit the connection size and do not bend too much. Keep away from the unit.
- If electrical drains applied, please note the power supply and installation direction.
- If it is float-ball type, please do not make the drain inclined too much, avoid reducing inlet and outlet.
- There are many types of drains. Pay attention to the drain types and pressure range when doing the replacement.
- Drains should be installed lower than the water export end of dryer.

Operation Instruction

1. Start-up

Inspection：

- Make sure the voltage supply is correct
- Check the automatic drain and drainage pipes are installed and work properly. Don’t drain the water into the machine!

Start-up

- Put through the power supply;
- Press the boat-shaped button “I”, the air dryer starts to work.
- After running 3-5 minutes without load, open inlet valve, air dryer starts load operation.
- For new machines, the drain will start to work after running 30 minutes.

Note:

1. Please keep dryers running continuously. Don’t connect with control line of air compressor which may lead to shift from running to stop repeatedly. Don’t start and stop the dryer repeatedly.

2. Fan motor is controlled by the refrigerant pressure. When the refrigerant pressure is higher than the set pressure, the fan starts on. When the single pressure is lower than the value of the equipment, the fan stops.

2. Shut down

1. Stop the air compressor or close inlet valve first normally;
2. Press the boat-shaped button (O), dryer stops;
3. Cutting off power supply of the dryer. Check the power indicator light.

3. Re-start

1 It requires 3-5 minutes interval time between dryers' shut down and re-start, otherwise, a start failure or even compressor damage may occur.

2. Other steps requested in accordance with the operation procedures.

Check and Maintenance

Daily Check

Before Start-up

- Make sure power supply, voltage and grounding etc. are normal.
- Make sure the bypass valves are closed
- Make sure drains work normally, drain valves open
- Check temperature of the compressor station to see whether to start the ventilation fan. (When ambient temp. higher than 107.6℉, start the ventilation fan).

During Operation

- The aluminum fin surface of air-cooled unit's radiator is not blocked, the fan operates normally.

  (Note: Due to different design, some fans will continue to operate, some shift from running to stop repeatedly).
- In the normal operation of the power indicator is in the state of light, if the light off, generally indicating problems with the circuit, the circuit should be checked.
- **Overload status (OVERLOAD may be caused by operations under following situation):**
- High air temperature (above the value indicated on nameplate)
- High air-flow
- High ambient temperature (above 107.6℉)
- Low voltage (standard 115V; tolerance ≤±5%)

- Ventilation blocked by wall or dust

- Check pressure value of air pressure gauge (check air compressor or air tank if there is no pressure gauge installed on dryer), if pressure lower than 21.75PSI (0.15Mpa), float-ball type drains will leak air (not applicable for electrical type).

Weekly Maintenance

- Purge and brush condenser at least once a week, at least 15 minutes every time.
- To use the outlet compressed air by using a hose, blow from upstream to downstream
- To blow the drain from outlet to inside with air gun several times to avoid internal-blocking (not applicable for electrical drains).

Monthly Maintenance

- Wash oil contaminant with brush and soapy water for the surface of Air-cooled radiator, then dried with air gun.
- Check if there is leakage problem of drains (ball-float).
- If drainage failure, the solenoid valve can be manually closed during unit operation. Turn the bottom joint of the drain counter-clockwise to remove and clean the strainer and discharge water manually. Then install the strainer and tighten the joint clockwise. Check whether the solenoid valve coil is functional.

Note: Due to different design or configuration changes, not every dryer of different model type has the component listed above. Please contact us for any uncertainties. Thanks!

Model Selection & Technical Data

1. Model Selection & Technical Data

Model	Nominal capacity	Dimension (inch)			Air inlet/Outlet Conn. Size NPT	Weight	Power
	CFM	L	W	H		LBS	Kw
HKAD28	28	16.5	17.3	20	G3/4	77	0.48
HKAD45	45	19.7	18.9	23.6	G3/4	97	0.50
HKAD60	60	19.7	18.9	23.6	G3/4	102	0.51
HKAD85	85	20.5	21.3	26	G1	118	0.75
HKAD109	109	20.5	21.3	26	G1	125	0.80
HKAD150	150	20.5	21.3	26	G1	126	0.81
HKAD184	184	26	25.2	27	G1	163	1.10
HKAD229	229	31.5	20.5	34.6	G1-1/2	194	1.12
HKAD247	247	31.5	20.5	34.6	G1-1/2	209	1.20

Note：1, Refrigerant R410 or R134a; 2, Air Flow Reference Air compressor performance parameters.

2. Correction Factors

Correction Factors for Different Working Pressure							
Pressure（psi）	43.5	58	72.5	87	101.5	116	130.5
Factor 1	0.73	0.83	0.85	0.93	1.00	1.06	1.11
Pressure（psi）	145	159.5	174	188.5	203	217.5	232
Factor1	1.15	1.18	1.20	1.22	1.24.	1.25	1.26

Correction Factors for Different Ambient Temperature						
Ambt temp.（℉）	68	77	89.6	95	104	113
Factor 2	1.20	1.11	1.00	0.95	0.85	0.66

Correction Factors for Different Inlet Air Temperature								
Inlet temp.（℉）	122	131	140	149	158	167	176	185
Factor 3	1.35	1.30	1.25	1.17	1.12	1.05	1.00	0.90

Correction Factors for Different Dew Point Temp.					
Dew Point（℉）	37.4	41	44.6	48.2	50
Factor 4	0.60	0.70	0.85	0.95	1.00

WARRANTY

Unauthorized service voids the warranty and any resulting charge or subsequent claim will not be paid.

The manufacturer does not warrant any product, part, material, component, or accessory manufactured by others and sold or supplied in connection with the sale of manufacturer's products.

Hangzhou Hanke Purifying Equipment Co., Ltd

Web: www.hangzhouhanke.com

E-mail：hanke@mail.hz.zj.cn