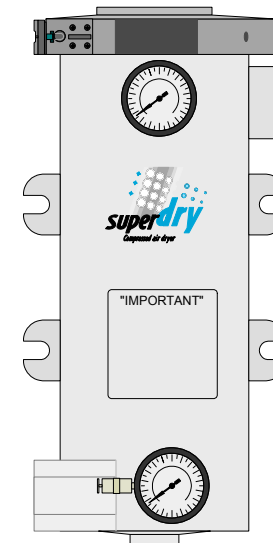


Instruction
Manual
No. 0504-D

Super-Dry D Series



www.super-dry.com



This manual contains important safety information and should be made available to all personnel who operate and/or maintain this product. Carefully read this manual before attempting to operate or perform maintenance on this air dryer.

WARRANTY**What does this warranty cover?**

Universal Compressors Inc (the company), Super-Dry Manufacturer, warrants this unit to be free from defects in materials and workmanship for a period of ten (10) years from date of purchase.

What are the company's obligation under this warranty?

In the event this Super-Dry D Series unit proves to be defective during the warranty period, the Company will, at its sole option, either repair or replace this dryer. Repaired or replacement units shall be warranted hereunder for the remainder or the warranty period applicable to the original unit.

How do you get service?

Contact your local Super-Dry Distributor, or call the Company's Service Department at: 1-888-828-1122 for directions to the nearest Super-Dry distributor. All moving, shipping and insurance charges incurred by you to deliver this Super-Dry D Series dryer to the Company shall be your exclusive responsibility. All risk of loss or damage to your Super-Dry unit in transit shall remain with you until such time as Company or its authorized agents take receipt of your unit.

What does this warranty not cover?

This warranty is contingent upon proper use of the dryer by purchaser and does not cover:

- Abnormal conditions, accidents, neglect, misuse or improper storage of the unit.
- Deviation from operating or maintenance instructions.
- Modifications not authorized by the Company.

What are the limits of Company's Liability?

The warranty given herein, together with any implied warranties covering this Super-Dry D Series dryer, including warranties of merchantability or fitness for a particular purpose are limited in duration to ten (10) years from the date of purchase, and no warranties, whether express or implied will apply after this period. Some states and provinces do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

If this Super-Dry D Series dryer is not in good working order as warranted above, your sole remedy shall be repair or replacement as provided above. In no event will company be liable to you for any damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use or inability to use such air dryer, even if the Company or your place of purchase had been advised of the possibility of such damages.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state or province to province.

Products concerned

The products governed by this politic are the following Super-Dry items: D Series (D-1, D-2, D-3, D-4), FC Series (FC-1/2-P, FC-1 (MB)),FD Series (FD-1/2-P, FD-1 (MB)), ATD Series (ATD-1/4, ATD-1/2), AD Series (AD-1/4-S, AD-1/4 M, AD-1/2), HGT-1/4 and all replacement cartridges.

Return merchandise authorization number (RMA)

To return a product, it is essential to obtain from Pulsar (VMD) a RMA number. A new RMA will be necessary if the merchandise is not returned within 30 days.

Super-Dry policy

The policy of Super-Dry is to return to the customer an equivalent product in replacement of a unit that is defective, under warranty or after an order error.

Credit request

For all credit request, expenses of 15% for remittance in inventory are applicable. These expenses cover the costs of the following procedures :

- Associated costs to the reception of the returned merchandise.
- Hydrostatic test (if necessary) on each products returned.
- Cleaning and painting of returned goods. (if necessary)
- Remittance in physical and computerized inventory.
- Notes in the quality control program.
- Management of the credit to the customer

Before asking a RMA number (IMPORTANT):

If you have a technical problem, please have in hand a detailed description of this problem. It is often possible to resolve the problem over the phone. .

For a product that you believe defective and of which you have obtained a RMA number :

Our engineering department will evaluate the nature of the problem and will do the following :

Will return the dryer to the customer if the dryer works normally.

Will replace and will return the dryer to the petitioner if that unit was found defective and is covered by the warranty.

Freight (In / Out)

The customer assumes in all time the transportation expenses towards Super-Dry repair center. Concerning the transportation expenses of the product of Super-Dry towards the Customer, they will be :

Paid by Super-Dry if the unit had an imperfection covered by the warranty

Paid by the Customer if the problem is not covered by the warranty

- **The desiccant may be contaminated:** The dryer will tolerate amounts of compressor lubricant. If the compressor manufacturer's recommended lubrication rate is exceeded, the desiccant can become contaminated with compressor lubricants. Once a desiccant bead is contaminated by oil or oil mist, it no longer absorbs humidity.

Periodically check the desiccant bag. If the bag is deep yellow or brown, the desiccant may be contaminated.

If the desiccant bag has become contaminated, it can be changed for a brand new Super-Dry replacement kit.

Check the compressor for proper operation. The compressor might be worn or over lubricated. Check the compressor operator's manual and correct.

Check the atmospheric air near the compressor air intake. Heavy concentrations of acid fumes or smoke and dust will cause contamination if they are drawn into the air system. Check or install a filter on the compressor intake.

If it is not possible to reduce the amount of lubricants in the air system, a separator should be installed before the dryer.

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SAFETY

This instruction manual, and any instructions supplied by manufacturers of supporting equipment, should be read and understood prior to use this Super-Dry D Series dryer. If there are any questions, please call your local Super-Dry Distributor.

Safety Precautions

- Relieve the system of all pressure before servicing any part of the unit.
- Do not remove or paint any DANGER!, WARNING!, CAUTION!, or instructional material attached to the air dryer.
- Periodically check all pressure relief valves for proper operation.
- Do not change the pressure setting of the pressure relief valve, restrict the function of the pressure relief valve, or replace the pressure relief valve with a plug.
- Do not make alterations to this Super-Dry D Series dryer.
- Do not operate the dryer in excess of its service rating.
- Prior to use, make a general overall inspection of the unit and correct any unsafe situations.
- If for any reasons any part of the manual becomes illegible or the manual is lost, have it replaced immediately. The instruction manual should be read periodically to refresh one's memory.
- Wear safety glasses during operation, service & maintenance procedures.

The owner, lessor or operator of any dryer unit manufactured by Universal Compressors Inc. is hereby warned that failure to observe the above safety precautions may result in serious injury to personnel and/or damage to property.

Universal Compressors Inc. neither states as fact, nor in any way implies that the above list of safety precautions is an all inclusive list, the observance of which will prevent all damage to property or injury to personnel.

Every effort has been taken to ensure that complete and correct instructions have been included this manual. However, possible product updates and changes may have occurred since this printing. Universal Compressors Inc. reserves the right to change specifications without incurring any obligations for equipment previously or subsequently sold.

TROUBLESHOOTING**Decreased performance**

- **High inlet temperatures:** Check the aftercooler performance. Make sure that the aftercooler was properly sized and installed. Check the aftercooler operation manual for further details.

If an aftercooler was not installed, one may be required.

Check the compressor capacity or air usage vs. the dryer rating.

Was a different compressor installed?

- **High ambient temperature:** Check the location of the dryer for changes in ambient temperatures.

Was the dryer moved to a different location?

Was a piece of equipment or piping installed near the dryer that caused an increase in ambient temperature? Relocate the dryer or equipment if possible. If relocation not possible, correct the ambient temperature.

- **Dryer overloaded:** Check the flow through the dryer. Check the flow at peak usage periods. Have the flow requirements to the system increased?

Was the dryer properly sized for the actual operating conditions? Check the capacity of the dryer for the system conditions. If the system requirements exceed the dryer's capability, a larger dryer must be installed.

Liquid downstream of the dryer.

- **Improper draining:** The dryer may be flooded. The dryer must be drained as often as possible.

Check the drain valve(s) and piping for clogs. Repair or replace faulty valves. If the piping is clogged, it must be cleared.

If the dryer is installed outdoors where ambient temperatures fall below freezing, the drain line and valve(s) may freeze. If ambient temperatures fall below freezing, the drain line can be wrapped with heat tracing and/or insulation to prevent freezing.

If maintaining the required draining schedule is a problem, an automatic solenoid type drain valve should be installed. Never install a float type drain valve on this dryer.

- **Bypass valve open or faulty:** Check the dryer bypass valve. It might be faulty or open allowing untreated air to enter the air system.

DANGER !

Do not remove, repair, or replace any item on the dryer while it is under pressure. Depressurize the dryer completely before starting installation and/or maintenance procedures. Serious personal or death may result if these safety rules are not followed.

Do not remove cover and/or retaining clamp until ALL air pressure is removed.

WARNING !

Do not try to tighten the clamp if you hear or feel a leak. Immediately shut off the air or gas supply to the vessel and reduce the dryer pressure to zero.

Do not use power tools or cheater bars to tighten the nut on the clamp. Too much force can distort the threads. If damaged by over tightening, the cover can blow out and cause serious injury or death.

Always install a new o-ring each time the cover is remove, or at least once a year. Use Super-Dry authorized parts only.

Safety Components

Pressure Relief Valve: pressure relief valves aid in preventing system failures by relieving system pressure when compressed air reaches a predetermined pressure level. This type of valve is preset by the manufacturer and must not be modified in any way.

WARNING !

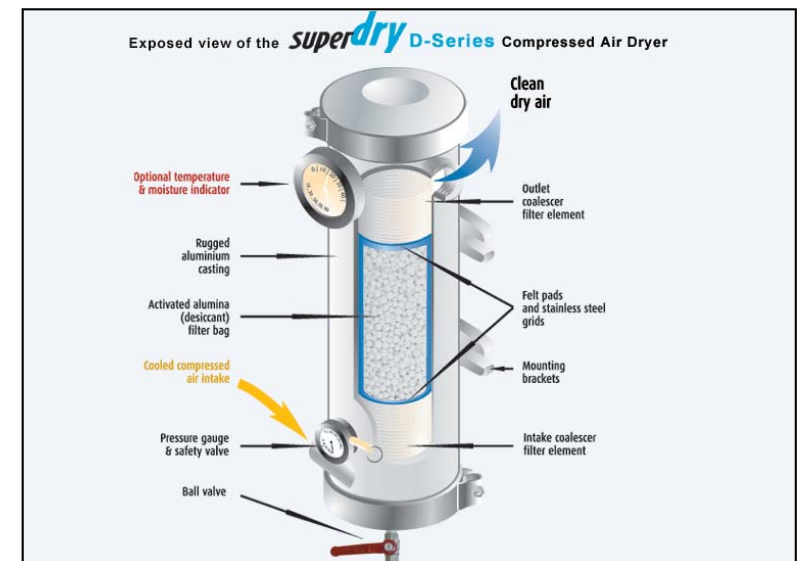
Pressure relief valves must not be modified, welded on, or repaired. Such actions may cause property damage, severe injury, or even death.

INTRODUCTION

The purpose of installing a Super-Dry D Series dryer in a compressed air system is to remove the water vapours (humidity) which has been drawn into the system at the compressor intake. The dryer operates automatically. There is no moving parts and no external source of power is required. If an automatic drain is installed, a power source is required only to operate the valve.

The wet air enters the offset inlet, located at the lower part of the dryer, which makes the air spin in the lower portion of the dryer. Liquid water and solid particles are separated by gravity and centrifugal force and fall to the bottom of the vessel. A coalescer element, located at the bottom of the dryer, filters all oil, rust and others solid particles

The process air moves upward through a felt pad, and after through the desiccant bag which attracts and absorbs the moisture from the air before it flows through another series of felt pad and coalescer element.



INSTALLATION

Location

The ability of a dryer to provide dry compressed air depends on the correct location of the unit. Inlet air temperature and pressure are the keys to selecting the proper location. We recommend to install Super-Dry D Series dryers directly at the point of use.

IMPORTANT !
Always process air through the dryer at the lowest possible temperature and the highest practical pressure.

Air Inlet Temperature

The dew point of the outlet air is directly related to the inlet air temperature and the type of desiccant being used. The lower the inlet temperature, the lower the dew point of the outlet air. Determine the lowest temperature where the compressed air is being used or where the lines are located. Do not exceed 100°F inlet temperature. The ideal inlet air temperature should be 70 °F and below.

Aftercooling

Air discharged by the compressor is extremely hot (from 150 °F to 350 °F). An aftercooler, finned tubing or extended run of piping will usually be necessary to reduce the inlet air temperature to the dryer. A water cooled aftercooler (see fig.1) can be use to reduce the inlet air temperature to the dryer. Ask your Super-Dry authorized distributor for more details and application list.



Fig. 1

Outdoor Air Usage

If some or all of the air supplied by the Super-Dry D Series dryer will be used outdoors, install the dryer outdoors in the coolest possible area. Make sure that the dryer do not freeze when your compressed air system is not working.

Indoor Air Usage

If all of the air from the dryer will be used indoors where temperatures remain within a fixed range, locate the dryer in the coolest indoor area. When air equipment of piping is located in an air conditioned area, install the dryer in the coolest area—usually the air conditioned area.

Air Receiver

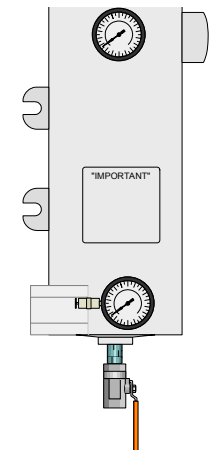
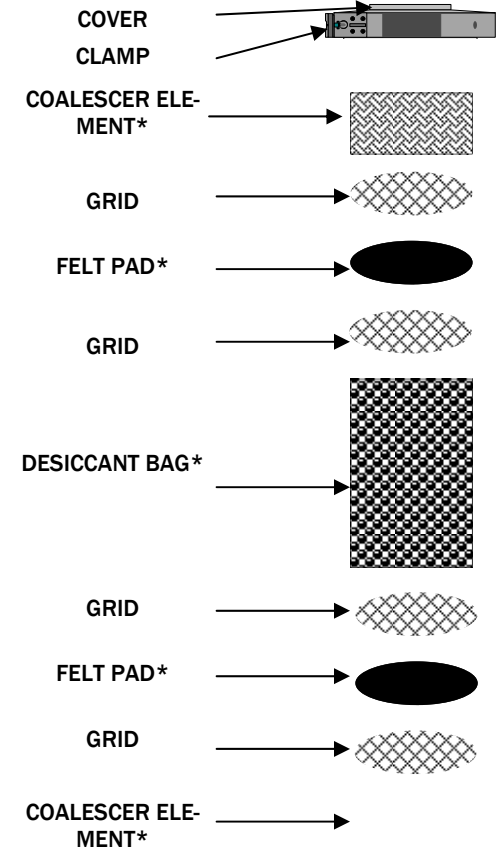
In relation to the air receiver, the Super-Dry D Series dryer should be located where it will be provided with the coolest inlet temperature. If the receiver is located in an area where the ambient temperature is lower than the outlet air from the aftercooler, locate the dryer downstream of the receiver to allow additional cooling of the dryer before it enters the dryer. If the ambient temperature around the receiver is higher than the outlet air temperature from the aftercooler, locate the dryer between the aftercooler and the receiver.

Special Equipment Installation

If the Super-Dry D Series dryer is being installed on a branch line to protect a specific piece of air-operated equipment, locate the dryer on the high pressure side of any pressure regulators.

MAINTENANCE:

- Remove the cover clamp and cover.
- Remove everything inside the dryer but keep the grids.
- Insert parts as shown on the diagram.
- Inspect the o-ring in the cover for damage and replace if necessary.
- Install cover and clamp. Do not tighten the clamp bolt more than 8 Lbs/in²



WARNING !

Do not install the drain line in the direction of people and equipment. When the dryer is drained, the drain solution will be discharged under line pressure. Pointing the drain in the direction of people and equipment may result in injury and damage.

Do not install a float type drain under the dryer. The drain solution will cause this type of drain to fail, thus resulting in flooding the dryer.

OPERATION**Start up procedures**

Close the inlet and outlet isolation valves. Open the bypass valve and manual drain valve.

Open the outlet isolation valve SLOWLY and allow some air to bleed through the manual drain valve; then close the manual drain valve. When the dryer reaches normal operating pressure, SLOWLY turn the inlet valve to full open position; then close the bypass valve.

If the vessel was installed without the bypass or isolation valves, SLOWLY pressurize the air system. Allow some air to bleed through the manual drain valve. Once the vessel starts to pressurize, the manual drain valve can be closed. Close the bypass valve. The dryer is now on stream.

WARNING !

Make sure that the dryer is not subject to sudden flow surges. Always open the valves slowly to permit gradual equalization of pressure between the dryer and the air supply lines.

Operating the dryer

The simple design of the Super-Dry D Series dryer allows for easy operation. The dryer requires two procedures to ensure peak performance.

- **Daily draining:** The accumulated solution in the bottom of the dryer should be drained as often as possible, or at least every 4 to 8 hours of operation. Depending on actual operating conditions, the dryer may require draining on a more frequent basis.
- **Refilling the dryer with desiccant:** During the Super-Dry drying process, the desiccant will slowly become saturated. When your moisture indicator indicates more than 70% relative humidity, or if the humidity condense downstream of the dryer, replace the cartridge. Cartridge replacing instructions are included with the Super-Dry Replacement Cartridges. The desiccant consumption rate is dependent on several factors, such as inlet temperature, flow, pressure and the type of desiccant being used.

Operating Pressure

More air can be processed through the dryer at higher pressures. Locate the dryer at the highest practical pressure, but do not exceed the maximum rated working pressure of the dryer. Super-Dry D Series dryers are rated at 150 PSIG maximum working pressure.

WARNING !

Super-Dry D Series dryers are rated at 150 PSIG maximum working pressure.

Piping and Ancillary Equipment

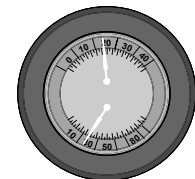
Locate the dryer in the proper location as explained in the previous section. If the dryer is being installed in an existing piping system, make sure that the pipe is free of scale and rust.

Inlet and Bypass Piping

Inlet and outlet isolation valves should be installed on the dryer. These valves will aid in the start up and shutdown of the dryer. A bypass valve and piping should also be installed. This will allow the dryer to be taken off stream without interrupting the air system.

Optional gauge installation

The upper pressure gauge can be replaced with the optional Super-Dry HGT1/4 Temperature & Moisture Indicator. Contact your Super-Dry distributor for more details on this product.



HGT 1/4

Manual Drain Valve

All Super-Dry single tower D series dryer is shipped with a 1/4 NPT ball valve. Install the ball valve at the bottom of the dryer. The drain line of the dryer can be remotely piped. DO NOT connect the drain line to a pressurized line. Make sure that the line is vented to atmospheric pressure. Any remote drain piping should be of the same size and on the same level or lower than the drain valve.

Optional Automatic Timer Drain

The TD1/4 drain valve is recommended to make sure that the Super-Dry D Series dryer is drained on time every time. That option eliminates the risk of the human error.



TD-1/4