

Refrigeration  
Dyer

# Refrigeration Dryer



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## **1.0 EG-Declaration of Conformity (CE-Identification)**

in accordance with the following guidelines

- Machinery 89/392/EWG
- Electrical appliances 73/23/EWG

The following EU standards have been applied as:

- EN 292, (Safety of Machinery and installations)
- EN 387, Refrigeration units and heat exchangers, health 6 safety consideration for the environment from 1996.
- EN 60204.1 (Electrical equipment for industrial installations).

## **2.0 Important Notices**

### **2.1 Safety Notice**

These instructions for use include important notices and instructions for the installation, use and service of the refrigeration dryers considering the safety requirements and guidelines.

### **2.2 Operating Notice**

The refrigeration dryers will operate at a dew point of between +3°C and +7°C dependant upon the flow (m<sup>3</sup>/hour), inlet pressure, inlet temperature and ambient Temperature

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### **2.2.1 Safety Rules**

The refrigeration dryer has been developed and manufactured in accordance with accepted guidelines which include the following regulations:

- Equipment safety regulations from 13. August 1980
- Pressure Vessel regulations from February 1990
- Accident prevention guidelines VBG 20 (refrigeration units) from 1. April 1987
- Electrical appliances and equipment regulations edition 1 January 1993

VDE 0700, Part 24, and. IEC 335-2-24

VDE 0113, Part 1, and. IEC 204-1

During the installation, the local health and safety regulations are to be observed and adhered to. The refrigeration dryer must be installed after the end pressure safety valve. Regulations referring to the handling of FCKW (Data Sheet ZH1/409) including first air procedures, and the guidelines for disposing of condensation waster are to be adhered to.

The manufacture accepts no responsibility or liability if the guidelines and stipulations in these instructions are not adhered to. This applies equally to the use as also to the service and maintenance of the refrigeration dryer even if a specific warning is not listed.

Access to the fuses, contact breaker, safety devices and any access to opening of the cooling pipelines and equipment is strictly forbidden.

During the guarantee period, any work is to be carried out only by authorised personnel (authorised by the manufacturer).

After this period, only qualified personnel according to DIN 8975, part 3, section 11.3. are authorised to carry out any work on the unit.

The refrigeration dryer is exclusively for use with compressed air. Any unauthorised use with other gases voids the guarantee.

The guarantee is subject to the manufacturer's conditions.

### **2.2.2 Safety equipment and devices**

The refrigeration dryer is self-contained according to VBG 20.

The combined thermo and power surge circuit breaker cuts the system off automatically in the event of overload. If a fault occurs, the cause should be identified using the fault diagnosis table, the dryer will run automatically after the fault is rectified.

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### 2.3 Transport and Storage

**WARNING: Refrigeration dryers should only be transported or stored in an upright position. Should the dryers be in a lying position, they should be mounted upright and left for at least 24 hours before use.**

On arrival, the shipment should be checked for integrity and possible damage. Any damage or missing products should be registered to the transport company immediately to make a claim necessary.

The transport and storage ambient temperature must lie between  $-25^{\circ}\text{C}$  and  $+63^{\circ}\text{C}$ . The relative humidity should not exceed 90%.

### 3.0 Mounting and installation

#### 3.1 Mounting Position

The dimensions and weight can be found in the technical specifications table. A suitable mounting position should be chosen with consideration to access for maintenance, cooling air intake and exhaust. The mounting should be protected from the external environment and not below  $+^{\circ}\text{C}$  or exceed  $+50^{\circ}\text{C}$ .

**WARNING: The weight of the connecting pipes should not be supported by the refrigeration dryer.**

A wall clamp for the piping (inlet and outlet) is to be secured as close to the unit as possible.

Attention should be paid to a vibration free connection between the dryer and the piping.

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### 3.2 Installation

#### 3.2.1 Compressed Air Connections

We recommend that the refrigeration dryer is fitted with a by-pass line with valve so that if any maintenance needs to be carried out, this will not interfere with the operation of the installation.

**WARNING: The by-pass must be installed without any tension or vibration present.**

**WARNING: When the connections are made to the inlet and outlet bulkhead fittings, a counter tool must be used to ensure that the bulkhead fittings are not loosened in the unit!**

The refrigeration dryer should be connected to pressure lines which do not exceed the working pressure rating stamped on the plate.

If larger quantities or particles are present, a pre-filter is to be installed.

#### 3.2.2 Electrical Connection

The refrigeration dryer should be connected according to the wiring diagram supplied in these instructions. The cable strength should comply with guidelines for the power rating stamped on the plate.

The power supply cable is with an insulated 3 point CE plug.

The refrigeration dryer should always have its own fused circuit.

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### 4.0 Instructions for use

#### 4.1 Control panel

On/Off Switch, Temperature display.



#### 4.2 Operation

**WARNING: Apply pressure to the refrigeration dryer as slowly as possible.**

**WARNING: The valve operation in the by-pass line should be as slowly and controlled as possible.**

**WARNING: The inlet and outlet valves are closed (if fitted), the by-pass valve is open (if fitted).**

The operating procedure is as follows:

The insulated plug should be plugged in a suitable socket.

Turn the on/off switch (illustration 1 item 1) to the on position, the green lamp (illustration 1 item 1) will illuminate.

The refrigeration dryer is now in operation and the working temperature in the heat exchanger will drop. The temperature display (illustration 1 item 2) will show the temperature of the refrigeration fluid and this should reach +3°C within 10 minutes of switching the unit on without any air flow.

Run the refrigeration dryer for approximately 10 minutes before allowing the compressed air to flow through the dryer.

The dryer will now ready for normal operation.

**Check the entire installation for leaks. When this check is completed, the refrigeration dryer is ready for use.**

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### **4.3 Shutting the refrigeration dyer down.**

**WARNING: The dryer is under pressure.**

Slowly open the by-pass valve (if fitted) and slowly close the inlet and outlet valves (if fitted). Turn off the refrigeration dyer using the on/off switch (illustration 1 item 1) and unplug the power supply cable from the socket.

**WARNING: The dryer is under pressure.**

Purge the refrigeration dyer via the condensation collector so that the oil, water and emulsified contaminants drain off. This is particularly important if the dryer is to be stored for extended periods of time without being operated.

**WARNING: If the condensation collector does not have a drain valve fitted, then another method for purging the system id to be used.**

### **5.0 Maintenance**

Maintenance is necessary on the following components:

- Refrigeration fluid condenser.
- Condensation collector.

#### **5.1 Refrigeration fluid condenser**

**Warning: Before commencing any maintenance work, shut the refrigeration dyer down (see item 4.3)**

The performance of the refrigeration dryer will be influenced by a contaminated condenser heat exchanger.

##### **5.1.1 Air Cooled Condenser (Standard)**

The refrigeration fluid condenser heat exchange plates are to be cleaned in regular intervals, the frequency depends on the contamination and environmental conditions. To clean the exchanger, the dryer must be shut down and the covers then removed. Use a soft brush to clean the heat exchangers.

Illustration No.:2

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### 5.2 Condensation Collector

To ensure the correct function of the condensation collector, the operation should be checked periodically. The effectiveness of the refrigeration dryer is dependant on the operation of the condensation removal.

Illustration 3.:



Illustration No.:3

## 6.0 Control units

### 6.1 Optical control units

#### 6.1.1 General

The optical control unit is the dew point display with non potential fault display.

#### Digital Control Unit

The digital control unit shows the temperature of the cooling fluid which subsequently cools the compressed air.

The operation is normal when the temperature is under 7°C. Temperatures between 7 and 10°C may result in a temporary overload of the refrigeration dryer.

Temperatures above 10°C will indicate a fault in the system.

#### Resistance Free Warning Indicator:

The temperature limit for resistance free operation for the air cooler is 10°C. The maximum power load for this relay should not exceed 250 V, 50 Hz, 40 VA.

The interface for the resistance free relay is via the digital controller N1 on the circuit diagram.

#### Power Supply Control:

To monitor the power supply, there is a green lamp integrated in the on/off switch (illustration1 item 1)

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**6.2 Fault Diagnosis**

**Fault Cause/Remedy**

Green lamp does not illuminate on the on/off switch

**Check Power Supply**

Call service number.

If the temperature display is showing the correct working temperature and the air is being purified, then the lamp is defective and needs replacing.

Temperature display above 10°C

**Refrigeration circuit failure**

Call service number.

**Flow is too large**

Reduce volume of air flow through

Dryer Check unit specifications/capacity.

**Condenser Blocked**

Clean heat exchangers

**Ventilator defective**

Replacement by qualified personnel, call service number.

Too much moisture in the air:

**Refrigeration circuit failure**

Call service number.

**Flow is too large**

Reduce volume of air flow through  
dryer

Check unit

specifications/capacity.

**Condenser Blocked**

Clean heat exchangers

**Ventilator defective**

Replacement by qualified personnel,  
call service number.

**Condensation collector  
defective**

Press test button on relay.

Clean filter element

Call service number.

## Refrigeration Dyer

### **7.0 Conditions of Guarantee**

The basis for the guarantee period is the date of purchase, the identification plate and the original condition of the unit as it was first delivered.

Guarantee period is 6 Months. Damage due to unauthorised work, misuse not adhering to these instructions for use or unauthorised access to the dryer deems the guarantee void.

The following is exempt from the guarantee:

- Wear & Tear parts (seals etc..)
- Damage due to overloading the dryer
- Damage due to a faulty or insufficient power supply
- Damage due to wrong use or application
- Damage due to the lack of necessary maintenance
- Damage resulting from improper installation.
- Damage to insufficient cooling
- Expenses for transport and labour
- 3rd party liability for personal injury or damages that are directly or indirectly caused by improper use or operation of the refrigeration dryer
- Incorrect operation of the condensation collector and drain to due a lack of maintenance and/or cleaning.

### **8.0 Technical Specifications**

See Table in the appendix.

Air Flow according to ISO 1217/DIN 1945 Pt 1, converted to absolute pressure at 1 bar at a temperature of 20°C. The capacity and dew points are listed in accordance with ISO 7183.1 and refer to the working pressure of 300/300 bars, an air inlet temperature of 35°C and an ambient temperature of 25°C.

### **9.0 Spare Parts**

Available from the manufacturer.

### **10.0 Service Telephone**

## Operating and Display Unit L&W Air Cooler +3°C

Illustration: Display Panel



### Secondary Menu Level

#### 1. Entry to the secondary level

To enter the secondary level, press and hold the up and down button simultaneously for 4 seconds. The first parameter will appear in the display.

The menu can be scanned with the up and down buttons.

(Select the parameter P6 )

#### 2. Off-Set Display

To show the value for the parameter, press the set button. (The different parameters are displayed after pressing the up/down buttons).

#### 3. Resetting the Off Set figure

After selecting the correct parameter, the off-set value is changed by holding the set button down and then pressing the up or down buttons until the correct off set value appears.

#### 4. Correction of the temperature display

Switch on the cooler and place the cooler under full load (air flow). The display should read +3°C. If this is not displayed, then a correction is necessary with an off set value.

**Example: Display under full load: +6°C , Off Set: Enter -3 in the off set parameter.**