Operating manual
De-icing unit
DC-DI-16

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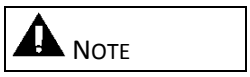
I STRUCTURE OF THE MANUAL / CLARIFICATION

The various aspects of this manual are clearly listed here. Points of attention are marked throughout the entire manual in the following way (the interpretation is also given):

Offers suggestions/advice to the operator in order to perform certain tasks more easily.



Points out possible problems to the operator.

Indicates damage to the system or directly linked equipment when the operator does not carefully adhere to the procedures.

Warns the operator of possible injuries if the procedures are not adhered to properly.

The life of the operator is directly threatened.

Demaco Holland bv considers the operator to be:
the one who operates the machine or equipment supplied by Demaco Holland bv.

The operator is responsible for the safety of any assisting employee. The operator must ensure, before starting the machine or installation, that no dangerous situation can occur for the assisting employee.

II SAFETY AND HEALTH CONCERNS

NOTE

This user manual must be read by the operator as soon as possible in order for him to become familiar with the operation of this equipment.

From the point of view of injuries to the operator, specific attention is given to the dangers that can occur when using liquid nitrogen. On Demaco Holland bv equipment, where the operator may come into contact with liquid nitrogen, you can find the label as shown below. It warns the operator of the presence of coldness and it is indicated that safety glasses and gloves with wrist protection should be worn.

Figure 1; Safety labels on Demaco Holland bv products

This user manual should at least be available for consultation at the head of the department. We recommend that a copy be made of this manual inserted in plastic folders, or bound, and put on view at location with the control cabinet.

We also recommend to carefully read the Demaco safety instruction “Safety guidelines for working with cold media”. Extensive information is provided in this manual about working with cryogenic media. A copy of the “safety instruction” is shipped with this delivery. Should you require more copies of this instruction in order to create a save working environment for your operator(s), additional copies can be requested from Demaco Holland bv. Contact our sales department.

1 INTRODUCTION

The De-icing unit consists of a heating element with junction box, a connecting cable and a control cabinet.

De-icing unit

The De-icing unit is designed to heat up the end of an exhaust line, to prevent ice formation.

Operator working area

For safe operation and use of the De-icing unit the following points must be taken into consideration :

- Adequate space to operate and maintain.
- Adequate illumination level.
- Does not protrude in passages or driveways.
- In case of direct blow-off a safe and ventilated area.

Installation

- The De-icing unit must be attached firmly.
- The De-icing unit is designed for ambient temperatures between 0 °C and 55 °C.
- The De-icing unit must be protected from traffic loads or collisions using proper obstacles such as concrete poles or a steel frame.

2 TECHNICAL DETAILS DE-ICING UNIT

The De-icing unit is equipped with a temperature control, which is positioned inside the control cabinet.

General functionality description

- Digital Thermostat for simple temperature control.
- Limit monitoring.
- Easy to set and operate by means of keys on the front panel.
- 3-digit LC display with temperature in °C.
- Temperature free programmable.
- Switching status of the relay K1 is indicated by a LED.

Measuring input
Pt100
Output
Floating changeover contact 10A 250V
Power supply
Internal: 230VAC 48 - 63Hz
Housing
Polycarbonate, UL 94 V0, IP20
Mounting
DIN rail

3 TEMPERATURE SETTINGS

The JUMO eTRON is operated from the keys on the front panel.

Temperature setting

Press the P button.
Display shows “SP”.
Select the wanted value by pressing the ▲ and ▼ button (factory setting +80°C)
Press the P button to confirm the new setting.
Press the P button again to turn back to the default display.

4 DE-ICING UNIT GENERAL

The heating element is equipped with a temperature sensor. This temperature sensor is connected to the temperature controller in the control cabinet.
Heating of the heating element stops when the set temperature has been reached.
The heating stops when the temperature sensor is malfunctioning.

WARNING

The temperature of the gas blowing out of the exhaust line may be as low as -196°C. The position of the GN_2 outlet and the direction of the gas flow should be chosen in such a way that there is no danger for people or vulnerable equipment.

PERIL OF LIFE

When the outlet of the exhaust line is exhausting in a confined space, danger of suffocation exists. This being because the amount of nitrogen from the exhaust line can displace the air (oxygen) from the space. In this case exhausting the gas to a safe remote atmosphere is necessary.

WARNING

Before operating the De-icing unit the operator must read this manual, and must make himself familiar with the equipment. The operator must be familiar with working with cryogenic liquids. The operator must have read and understood the safety guidelines and operating guidelines of Demaco Holland bv.
Failing to do so may lead to severe injury.

5 TROUBLE SHOOTING

When the De-icing unit is not functioning:

WARNING

Before working on the De-icing unit, make sure no nitrogen or nitrogen pressure is available in the exhaust line!

The De-icing unit consists of a heating element with junction box, a connecting cable and a control cabinet. Trouble shooting is easy and can be performed using commonly available tooling and equipment. Documentation of the controller can be found in the databook and in the control box.

1. Check that power is available.
2. Check all electrical components. A description of the components is available in the Demaco Holland bv databook and control box for reference.
3. Check the temperature sensors (2-wire Pt100). A malfunction of this sensor (broken wire or short circuit) will stop the heating.
4. Replace any malfunctioning component and test.

6 MAINTENANCE

WARNING

During some parts of this maintenance check the De-icing unit must be operational. Therefore all safety requirements noted in this manual must be met.

Fully check the system at least once every six months by operating the equipment and checking the following:

1. Check that the “POWER ON” light is glowing; replace a broken light.
2. Check for proper operation of the De-icing unit. Check that all controls are operational and that the heating element is working properly.
3. Check all electrical connections. Connections that show signs of chafing, bare wires or other signs of wear must be replaced.
4. Report and repair any malfunction.
5. Clean the control boxes periodically using a cloth.
6. Check whether the opening of the exhaust line is free of any obstacles.