

Oil Temperature Control Kit (Water Miser) INSTRUCTION MANUAL

DESCRIPTION	ITEM NUMBER
Oil Temperature Control Kit (Water Miser)	900-412-124

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We accept no liability for loss of profit, loss of market or any other indirect or consequential loss whatsoever.

Product warranty and limit of liability are dealt with in our standard terms and conditions of sale or negotiated contract under which this document is supplied.

You must use this product as described in this manual. Read the manual before you install, operate, or maintain the product.

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1. Safety and compliance

For safe operation from the start, read these instructions carefully before you install or commission the equipment and keep them safe for future use. Read all the safety instructions in this section and the rest of this manual carefully and make sure that you obey these instructions.

The instruction manual is an important safety document that we often deliver digitally. It is your responsibility to keep the instruction manual available and visible while working with the equipment. Please download the digital version of the instruction manual for use on your device or print it if a device will not be available.

1.1 Definition of Warnings and Cautions

Important safety information is highlighted as warning and caution instructions which are defined as follows. Different symbols are used according to the type of hazard.

WARNING:

If you do not obey a warning, there is a risk of injury or death.

CAUTION:

If you do not obey a caution, there is a risk of minor injury, damage to equipment, related equipment or process.

NOTICE:

Information about properties or instructions for an action which, if ignored, will cause damage to the equipment.

We reserve the right to change the design and the stated data. The illustrations are not binding.

1.2 Trained personnel

For the operation of this equipment "trained personnel" are:

- skilled workers with knowledge in the fields of mechanics, electrical engineering, pollution abatement and vacuum technology and
- personnel specially trained for the operation of vacuum pumps

1.3 Safety symbols

The safety symbols on the products show the areas where care and attention is necessary.

The safety symbols that we use on the product or in the product documentation have the following meanings:



Warning/Caution

Risk of injury and/or damage to equipment. An appropriate safety instruction must be followed or a potential hazard exists.



Mandatory action symbol

Failure to comply with this action may result in injury or damage to equipment.

2. Introduction

2.1 Scope and definitions

This manual provides installation, operation and maintenance instructions for the Edwards oil temperature control kit (referenced as water miser throughout the rest of this manual). Please read the manual before attempting to install and operate the unit.

This manual contains essential safety information which supplements the safety features on the water miser. Safety procedures are highlighted as WARNING and CAUTION instructions. These instructions must be followed

The format for units used throughout this manual will conform to the following: imperial (SI).

There are no warning symbols that appear on the kit parts.

2.2 Description

The Model 900-412-124 water miser (refer to *Figure: Oil Temperature Control kit (water miser*) on page 8) has been designed to be used with 149/212/412H and 212/412J Microvac pumps. The water miser provides optimum control of pump temperature resulting in maximum efficiency of gas ballast while minimizing the water cooling supply requirements. The kit contains a temperature actuated water regulating valve, dial temperature gauge, piping, and cable tie-downs.

Figure 1 Oil Temperature Control kit (water miser)



2.2.1 Principle of operation

The water miser monitors the operating temperature of the pump and allows the necessary cooling water to be supplied by means of a control valve. A temperature gauge has been added as a visual aid for adjusting and monitoring the pump temperature.

2.2.2 Temperature actuated water regulating valve

The self-modulating value is temperature actuated, self powered, adjustable, and applicable to cooling by means of water. The value is compact, dependable and made of brass alloy casting. The capillary is armor protected and made from copper. The temperature sensing bulb is made from brass.

2.2.3 Dial temperature gauge

The temperature gauge is a Trend 0 - 250 °F (-20 to +120 °C) dial type indicator.

3. Technical data

3.1 Temperature actuated water regulating valve

Table 1 Temperature actuated water regulating valve

Parameter	Value
Weight	2 lb. (0.9 kg)
Body construction	Brass alloy casting
Temperature bulb construction	Brass
Capillary construction	Armor protected copper
Seat disc construction	Replaceable Buna-N
Operating temperature	140 - 240 °F (60 - 116 °C)
Connection ports	3/ 4 inch NPT
Temperature bulb connection	3/ 4 inch NPT

3.2 Dial temperature gauge

Table 2 Dial temperature gauge

Parameter	Value	
Construction	304 stainless steel, hermetically sealed	
Size	2.0 inch dial	
Range	0 - 250 °F (-20 to +120 °C)	

4. Installation

4.1 Installation safety



WARNING: INSTALLATION SAFETY

Risk of injury or damage to equipment. Obey the safety instructions provided and take note of appropriate precautions. Failure to do so can cause injury to personnel and/or damage to equipment.

- Ensure that the water miser is used in conjunction with the instruction manual supplied with the mechanical pump. The water miser is intended for use with Stokes 149/212/412H and 212/412J Microvac pumps. Contact us before use for recommendations for the particular application.
- Installation should be performed by a competent technician, familiar with local and national safety requirements. Use particular attention regarding products being pumped and wear appropriate personal protective equipment (PPE) to prevent accidental contact with contaminated components or by-products.
- Vent and purge the pump if connecting to an existing system.
- Lockout all components for the mechanical pump to prevent accidental start-up.
- Ensure pump is cool before installation.

4.2 Unpacking and preparation

Remove all packing material and check the water miser. If the water miser is damaged or missing parts (refer to *Figure: Microvac 149 installation* on page 13,*Figure: Microvac 212 installation* on page 14 and *Figure: Microvac 412 Installation* on page 15), notify the supplier and carrier in writing within three days; state the item number of the water miser together with the order number and supplier invoice. Retain all packing materials for inspection. Do not use the water miser if damaged.

If the water miser is not used immediately, store the unit in suitable conditions, as described in *Storage* on page 18 of this manual.

The water miser will require assembly.

4.3 Installation

Install the water miser according to the following instructions (refer to *Figure: Microvac* 149 installation on page 13, *Figure: Microvac 212 installation* on page 14 and *Figure: Microvac 412 Installation* on page 15):

- 1. Drain the Microvac pump according to the instructions provided with the pump.
- 2. Remove the plugs from the ports where the temperature control bulb and dial temperature gauge are to be installed.
- 3. Using a proper pipe sealant, configure and attach the nipples, elbow, union.
- 4. Using a proper pipe sealant, attach the valve portion of the temperature actuated water regulating valve assembly to the piping ensuring the capillary tube is to the top side.

- 5. Using a proper pipe sealant, carefully install the temperature sensing bulb into the proper port on the pump.
- 6. Using a proper pipe sealant, install the dial temperature gauge into the proper port on the pump.
- 7. Clean the areas on the pump housing with alcohol where the capillary tie-down mounts will be attached.
- 8. Attach the capillary to the mounts with the cable tie-downs and trim excess material.
- 9. Connect the customer supply line to the inlet on the valve.
- **10**. Remove the tape from the temperature control valve.
- **11.** Refill the pump with oil according to the instructions provided with the pump.







A. Existing 90° street elbow

B. Temperature control probe

GE/15809/A

C. Capillary tubing

Item	Description	Part number
1	1/2 inch NPT x 7.0 inch long nipple	085-019-507
2	1/2 inch NPT 90° street elbow	026-038-004
3	1/2 inch NPT union	026-029-004
4	1/2 inch NPT x 1-1/8 inch long nipple	026-035-034
5	Temperature control valve	085-031-118
6	Cable tie-down mount	085-033-281
7	Cable tie-down	085-030-000
8	Dial temperature gauge	085034096

Figure 3 Microvac 212 installation



- A. Existing 90° street elbow
- C. Capillary tubing

B. Temperature control probe

Item	Description	Part number
1	1/2 inch NPT x 7.0 inch long nipple	085-019-507
2	1/2 inch NPT union	026-029-004
3	1/2 inch NPT x 1-1/8 inch long nipple	026-035-034
4	1/2 inch NPT 90° street elbow	026-038-004
5	Temperature control valve	085-031-118
6	Cable tie-down mount	085-033-281
7	Cable tie-down	085-030-000
8	Dial temperature gauge	085034096

S41212880_E - Installation





- A. Existing 90° street elbow
- B. Temperature control probe

C. Capillary tubing

Item	Description	Part number
1	1/2 inch NPT x 7.0 inch long nipple	085-019-507
2	1/2 inch NPT 90° street elbow	026-038-004
3	1/2 inch NPT union	026-029-004
4	1/2 inch NPT x 1-1/8 inch long nipple	026-035-034
5	Temperature control valve	085-031-118
6	Cable tie-down mount	085-033-281
7	Cable tie-down	085-030-000
8	Dial temperature gauge	085034096

5. Operation

With the exception of setting the valve to the required temperature, the water miser is self-modulating, self-powered device that requires no operator interface.

5.1 Set-up

The water miser comes factory set for 160 °F (71 °C) operation. If the operating temperature requirement is different than the factory set point, it will be necessary to adjust the valve setting as follows:

- Increase Pump Temperature Turn the valve adjustor, located on the bottom-side of the valve, clockwise (See *Figure: Temperature adjust* on page 16). Monitor the pump with the dial gauge until the proper temperature is reached. Provide sufficient time for the pump to adjust to the new setting.
- Decrease Pump Temperature Turn the valve adjustor, located on the bottom-side of the valve, counter-clockwise (Refer to *Figure: Temperature adjust* on page 16). Monitor the pump with the dial gauge until the proper temperature is reached.Provide sufficient time for the pump to adjust to the new setting.
- **Note:**

Optimum pump operating temperature is 140-160 °F (60-71 °C). This temperature can be increased slightly to remove condensables from the oil. Operation of the gas ballast may increase pump temperature above 160 °F (71 °C). The water miser on hot pumps is set to 200 °F (93 °C). Consult us for applications requiring pump operating temperatures above 160 °F (71 °C).

Figure 5 Temperature adjust



A. Raise pump temperature

B. Lower pump temperature

C. Valve adjuster

6. Maintenance

If the temperature valve requires manual flushing: insert a screwdriver on the top of the push-plate and spring assembly. Compress and release the spring assembly several times with the water supply on.

7. Storage

In order to maintain a satisfactory service life of the unit, perform the following:

- Wipe clean and dry all surfaces, especially where condensation may have formed
- Inspect the unit for leaks and cap all openings
- Store the unit in cool, dry conditions until required for use. When required, prepare and install the unit as described in *Installation* on page 11.

8. Disposal

Dispose of the unit and any components safely and in accordance with all local and national safety and environmental requirements.

9. Spares and accessories

Our products, spares and accessories are available from our companies in Belgium, Brazil, China, France, Germany, Israel, Italy, Japan, Korea, Singapore, United Kingdom, U.S.A and a world-wide network of distributors. The majority of these centres employ Service Engineers who have undergone comprehensive our training courses.

Order spare parts and accessories from our nearest company or distributor. When ordering, state for each part required:

- Model and Item Number of the equipment
- Serial number
- Item number and description of part

9.1 Service

Our products are supported by a world-wide network of Service Centres. Each Service Centre offers a wide range of options including: equipment decontamination; service exchange; repair; rebuild and testing to factory specifications. Equipment which has been serviced, repaired or rebuilt is returned with a full warranty.

Your local Service Centre can also provide engineers to support on-site maintenance, service or repair of your equipment.

For more information about service options, contact your nearest Service Centre or the company.

9.2 Return the equipment or components for service

Before you send your equipment to us for service or for any other reason, you must complete a Declaration of Contamination Form. The form tells us if any substances found in the equipment are hazardous, which is important for the safety of our employees and all other people involved in the service of your equipment. The hazard information also lets us select the correct procedures to service your equipment.

If you are returning equipment note the following:

- If the equipment is configured to suit the application, make a record of the configuration before returning it. All replacement equipment will be supplied with default factory settings.
- Do not return equipment with accessories fitted. Remove all accessories and retain them for future use.
- The instruction in the returns procedure to drain all fluids does not apply to the lubricant in pump oil reservoirs.

Download the latest documents from *edwardsvacuum.com/HSForms/*, follow the procedure in HS1, fill in the electronic HS2 form, print it, sign it, and return the signed copy to us.



NOTICE:

If we do not receive a completed form, your equipment cannot be serviced.

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