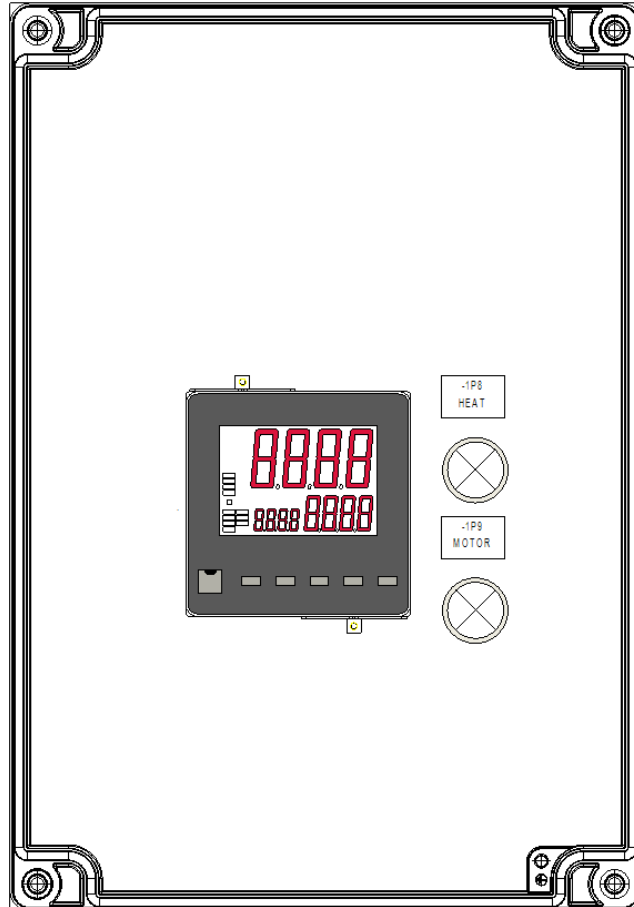


ROTAN TEMPERATURE CONTROLLER 230/400VAC



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Contents

1. FUNCTION OF THE ELECTRIC HEATING CONTROL BOX	- 3 -
1.1 ELECTRIC HEATING CONTROL BOX WITH ONE TEMPERATURE CONTROLLER	- 4 -
2. TECHNICAL SPECIFICATION	- 7 -
3. ELECTRICALLY HEATED ROTAN PUMPS FOR ASPHALT AND BITUMEN	- 7 -
3.1 TEMPERATURE SENSOR	- 7 -
3.2 ELECTRICAL CARTRIDGE HEATERS	- 7 -
3.3 HEATING TIME.....	- 8 -
3.4 STUFFING BOX	- 8 -
3.5 CARTRIDGE LIP SEAL	- 8 -
3.6 MECHANICAL SHAFT SEAL	- 8 -

1. Function of the electric heating control box

The electric heating control box shall secure the motor, which drives the pump, not to start until the temperature inner the pump has reached the adjusted level. This level has to be adjusted to a temperature where the liquid in the pump is liquified enough to be pumped without damaging the pump.

The control box turns on and shuts off the connected cartridge heaters, and sends a start signal to the motor control.

The motor will be released 5 degrees before the adjusted level is attained from the temperature sensor mounted on rear cover (pos.BA) or packing gland (pos.BB). See Fig.1.

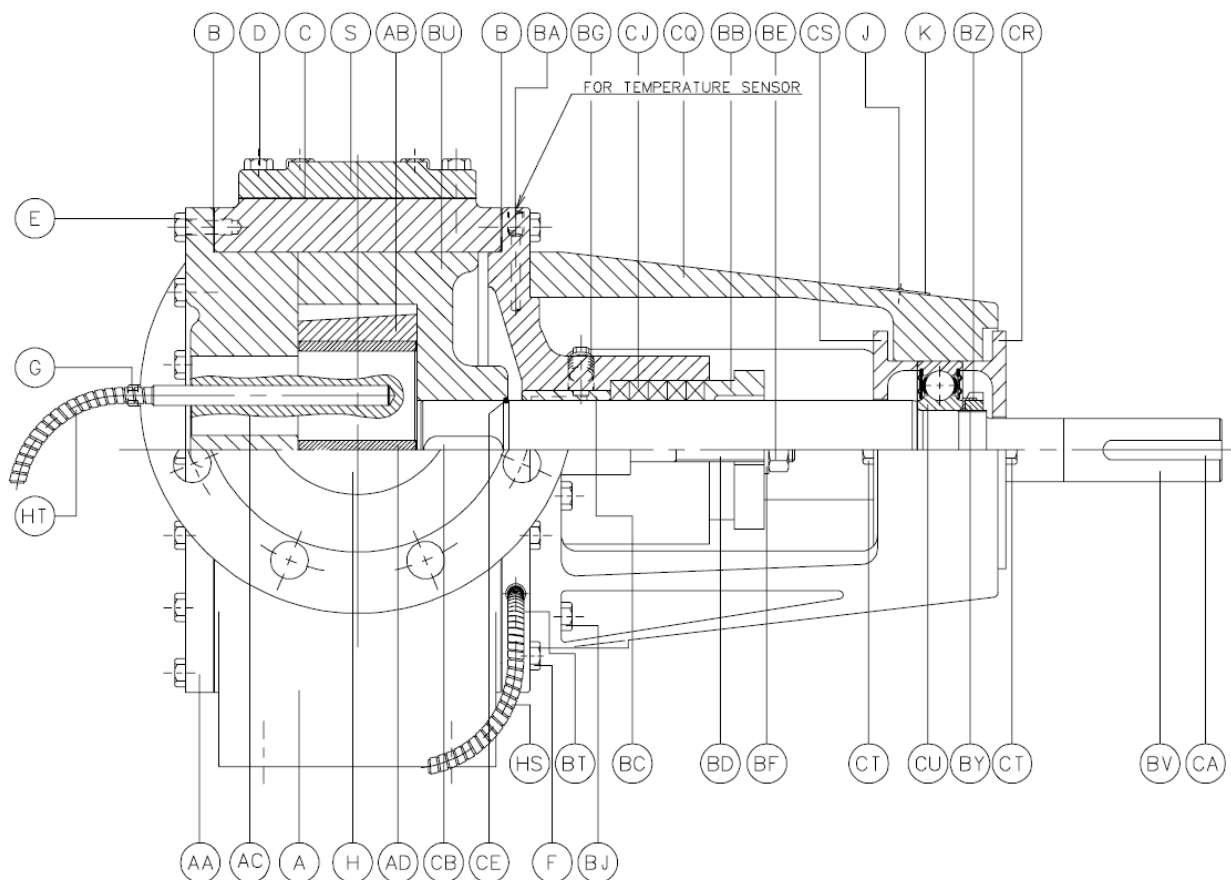


Fig.1 Electric heating bitumen pump

Ex.: If the temperature level on the control box is adjusted to 155°C, a start signal will be sent to the motor control when the temperature level is measured to 150°C.

This signal will maintain until the temperature is too low. When the temperature is at 155°C, the cartridge heaters will be shut off. If the temperature decrease to 4°C lower than the adjusted level, the cartridge heaters automatically will be turned on again.

1.1 Electric heating control box with one temperature controller

When pump is mounted with only one temperature sensor (on rear cover or packing gland, pos.BA or BB in Fig.1), the electric heating control box with one temperature controller below (Fig.2) is applied.

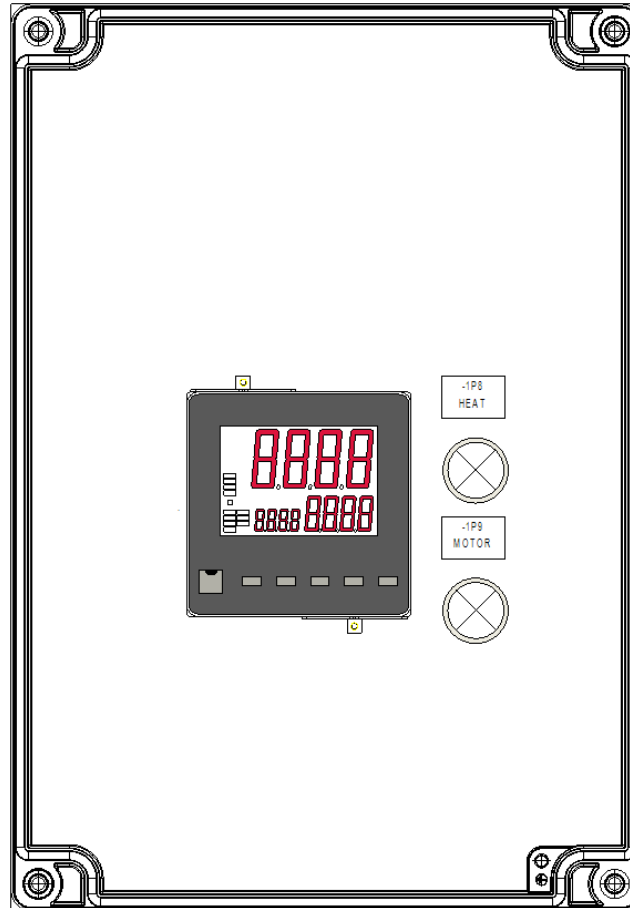


Fig.2 Electric heating control box with one temperature controller

The display, key buttons of temperature controller are shown in Fig.3.

PV is actual temperature value, SV is setting value.

Lamp:

Heat----- Lights up when the cartridge heaters are turned on.

Motor----- Lights up when the motor may start. A start signal is sent to the motor control.

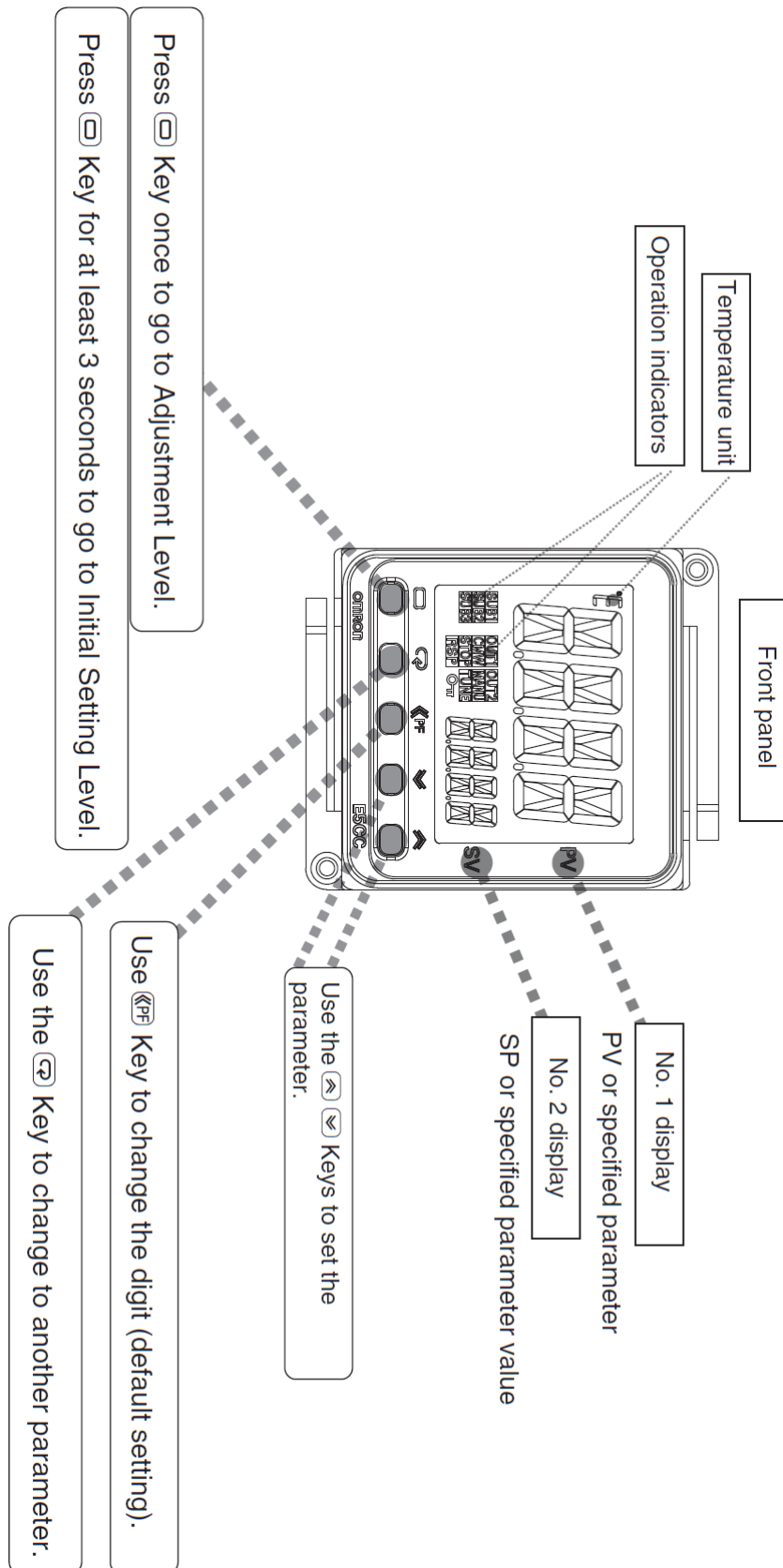










Fig.3 Display and key bottoms of temperature controller

Change temperature unit:

Press  key for 3 seconds to go to initial setting level, and then press  key several times until it shows “d-U”. Press   key to choose temperature unit: C means °C, F means °F. Press  for less than 1 second again to save the setting.

Change setting temperature value:

When temperature controller is in adjustment level, press   key to adjust setting temperature value, press  to change the digits of the value.

The Circuit diagram of electric heating control box with one temperature controller is shown in Fig.4.

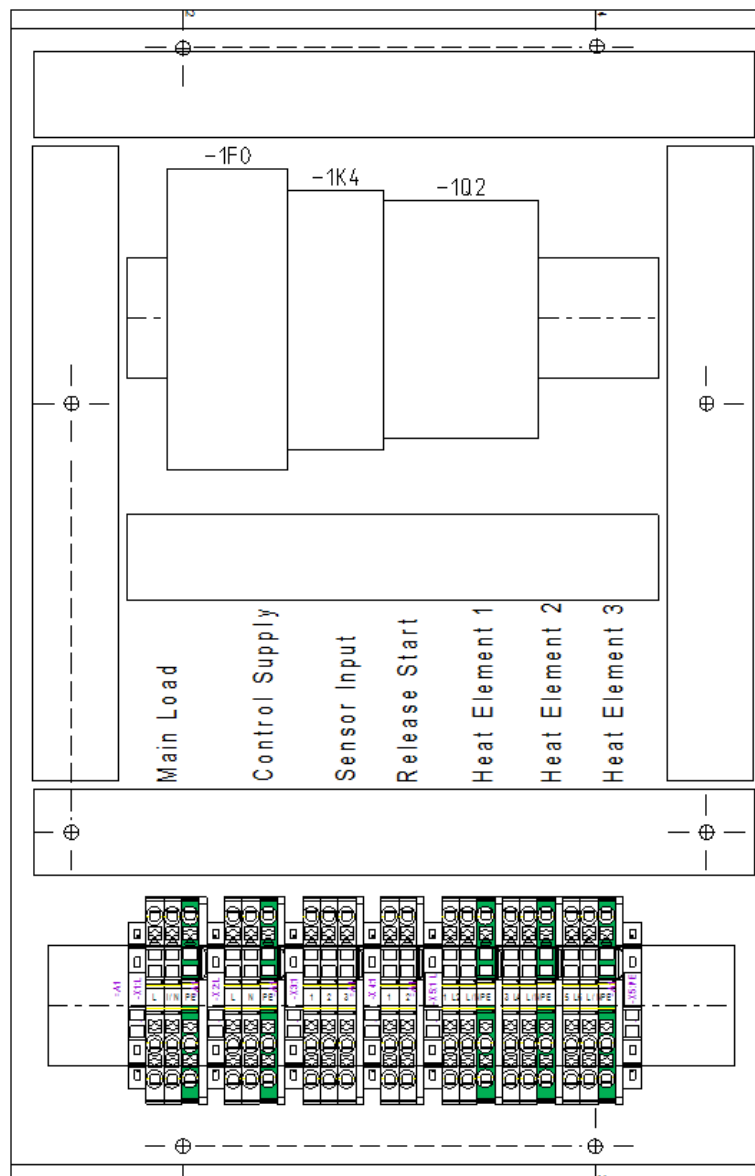


Fig.4 Circuit diagram of electric heating control box with one temperature controller

2. Technical specification

Max. Wattage of total electrical cartridge heaters:

2KW for 230V power input

3.5KW for 400V power input

Applicative pump size:

	Control box with one temperature controller	Control box with two temperature controllers	Note
Applicative pump sizes and voltages	51-151 for 230V	51-151 for 230V	For pump sizes which are not specified, contact DESMI for solution.
	51-152 for 400V	51-152 for 400V	

IP grade:

The IP grade of control box and transformer box are IP 55.

When the control box is used outdoors, a roof should be built to prevent direct sunlight. The ultraviolet ray will speed up aging of plastic parts of temperature controller.



3. Electrically heated ROTAN pumps for Asphalt and Bitumen

3.1 Temperature sensor

The pump can be equipped with temperature sensor Type K DIN EN 60584 Class 2 or PT100 DIN EN 60751 Class B and A, with a 3 m twin core cable. The green core is the positive pole and the white core is the negative pole.

The temperature sensor, which is placed in the rear cover, has to be connected to an operating device which will prevent the motor from starting up until the pump medium is liquefied enough to be pumped.

If the distance to this operating device is more than 3 m, the temperature sensor can be connected to a temperature transmitter or the wire can be elongated with a Type K cable (NiCr-Ni) or PT100 cable.

3.2 Electrical Cartridge heaters

The voltage for the electrical heaters used in electrically heated ROTAN pumps are 230V and 400V.

Wattage: see separate scheme.

If the pump is equipped with more than one cartridge heater, the cables from the cartridge heaters can be joined together in a junction box, and a single cable from there can be connected to the operating device, for instance a temperature control box.

3.3 Heating time

The heating time for HD and GP pumps, equipped with electrical cartridge heaters, from 20°C to 150°C is about four hours. This is when the pump is insulated. When the pump is not insulated, the heating time will extend about 50% or more. The heating time will vary depending on the ambient temperature and air.

It is highly recommended to insulate the front cover, the pump casing and the rear cover against the pump casing with 50 mm wind tight insulation. The bearing bracket (item CQ) **may not** be insulated, because this will cause the ball bearing (item CU) to be too warm.

3.4 Stuffing Box

The stuffing box packings with DESMI/Rotan material code 825, used in ROTAN pumps for Asphalt and Bitumen, is made of discontinuous aramid yarns with a graphite based compound impregnation.

The temperature range is between -100°C to +400°C. For rotating pumps the pressure rating is up to 50 bar and the speed limit is 15 m/s. The chemical resistance is pH 2 - 12.

3.5 Cartridge Lip seal

The DESMI Cartridge Lip seal, used in ROTAN pumps for Asphalt and Bitumen, is made of special fluororubber.

The max. temperature is up to +200°C. For rotating pumps the max. working pressure is 16 bar.

3.6 Mechanical shaft seal

When the pump is equipped with a mechanical shaft seal, the temperature sensor has to be installed near to the shaft seal. This is to prevent the pump from starting up until the pump medium is liquid enough to secure the dynamic parts in the shaft seal to work properly.