



®

Operating & Maintenance Instructions Dry Running Protection Device DRP-001

AD MANUAL NO:

AD-50-001-00



Roto Pumps Ltd.

Roto House, Noida Special Economic Zone

Phase – II, Noida – 201305, Uttar Pradesh (India)

Ph – 0120 3043901 TO 04, Fax – 0120 2562561

Email – contact@rotopumps.com

Website – www.rotopumps.com



DRY RUNNING PROTECTION

DRP

ISSUE NO : DRP 001

CODIFICATION

ISSUE DATE : 24.04.06

DESCRIPTION	01	02	03	04	05	06	07	08	09
DRY RUNNING PROTECTION	D	R	P						
DESIGN									
FIRST DESIGN				0					
VARIANT									
DOMESTIC					0				
UK					1				
AUSTRALIA					2				
USA					3				
TYPE									
COMPLETE SYSTEM						1			
THERMO WELL ASSEMBLY						2			
THERMAL PROBE ASSEMBLY						3			
PUMP SERIES									
INDUSTRIAL D RANGE								D	
INDUSTRIAL M RANGE								M	
INDUSTRIAL L RANGE								L	
INDUSTRIAL N RANGE								N	
SIZE									
43 45 47 49 51 53 55									5 5
50 52 54 56 58 60 62 64 66 68 70 72									
63 67 71									
01 02 03 04 05 06 07 08 09 10									
SAMPLE CODE	D	R	P	0	0	1	D	5	5

NOTE : THE ABOVE SAMPLE CODE REFERS TO DRY RUNNING PROTECTION DEVICE OF FIRST DESIGN FOR DOMESTIC MARKET, COMPLETE SYSTEM CONTAINING THE CONTROLLER AS WELL AS THERMO WELL AND RTD SENSOR. COMPATIBLE FOR RDA55 SIZE PUMP.

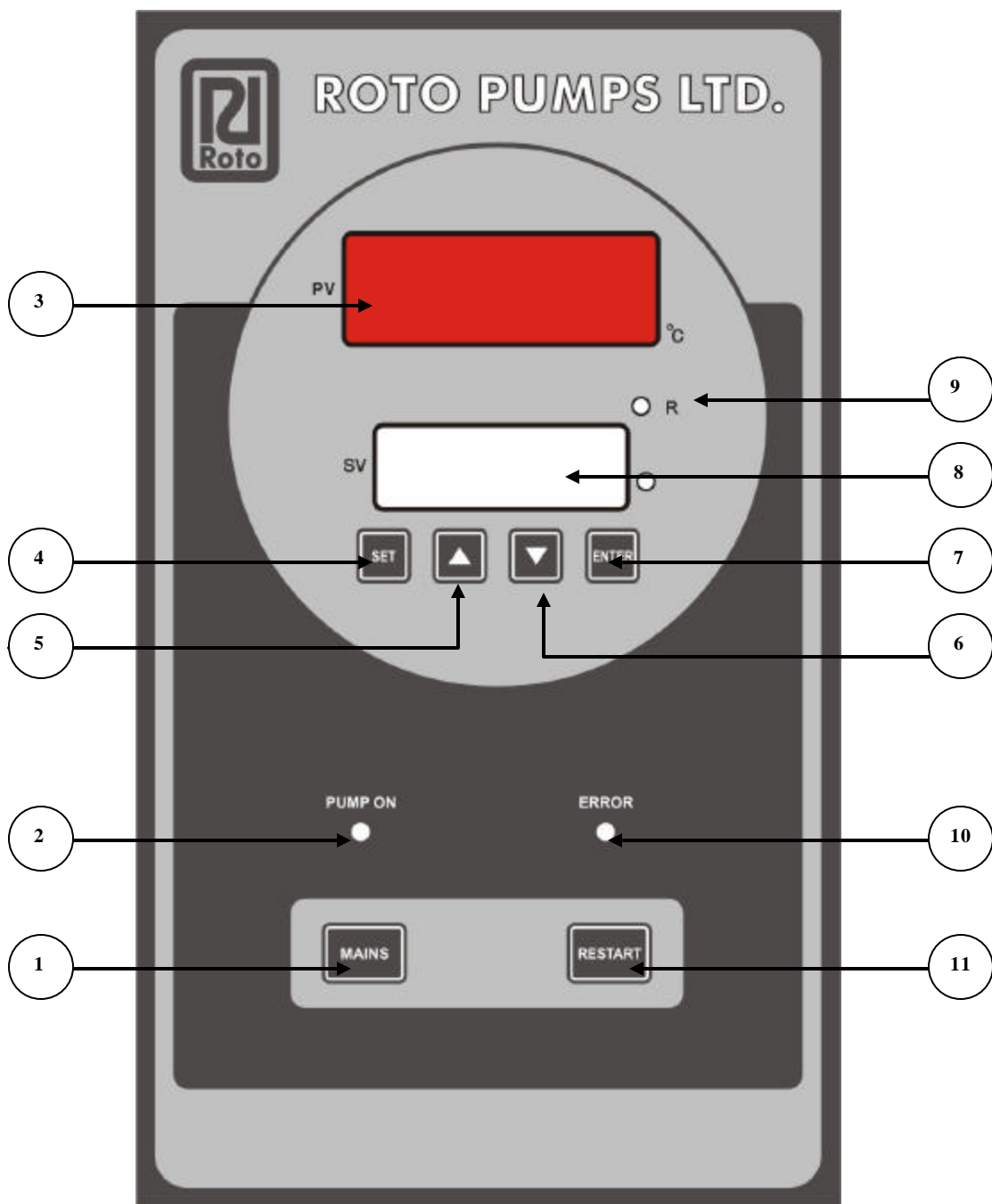


®

Operating & Maintenance Instructions Dry Running Protection Device DRP-001

AD MANUAL NO:

AD-50-001-00





®

Operating & Maintenance Instructions Dry Running Protection Device DRP-001

AD MANUAL NO:

AD-50-001-00

WARNING make sure that the power has been disconnected from the Temperature Controller prior to servicing.

The Dry running protection, which is a device to protect the stator from dry running mainly, consists of three parts; the Temperature Controller (processor) with LED display, the Temperature Sensor (PT-100 RTD), and the Thermo Well.

1. The Device functions as follows

In the stator of the pump there is a Temperature Sensor. This sensor continuously measures the stator temperature which range from 0°C to 200°C. If the stator temperature rises above the programmed or specified cut-off temperature (about normal pumping temperature), which is set on the controller, there will be an optical or acoustic signal indication on the controller and will also switch the pump off immediately.

2. Setting Cut-off the Temperature

The cut off temperature value of the controller in normal conditions is easy to adjust.

- Connect the input, output and RTD wires as per the terminal connections.
- Press the **MAINS** button **(1)**, the **PUMP ON** LED **(2)** would energize with an acoustic beep. When no key is pressed, the display at Process Value **PV (3)** shows the actual stator temperature.
- Press **SET** button **(4)** for 2 seconds SET would be displayed at **PV (3)**. Release the **SET** button **(4)**, you are now in set mode
- By pressing the buttons **(5)** and **(6)** the pump cut off temperature can raised or lowered to the desired settings.
- Press **ENTER** button **(7)** the set value would be stored in the memory and

the LED at **(9)** would illuminate. The Set Value **(SV) (8)** would be retained in the memory even if there is a power failure.

- Press the **RESTART** button **(11)** to start the pump and the acoustic beep would stop.

3. Selecting the Cut-off Temperature

- Adjust the cut-off temperature up to 150°C at the controller.
- Start the pump.
- When steady pumping is being obtained, a read out of the stator temperature will be displayed at **PV (3)** on the controller.
- If this is accurate, taking into consideration the product and ambient temperatures, then the cut-off temperature can be set 5°C higher.

4. Switching Functions

With the temperature sensor connected and the operating voltage applied to the controller, the internal relay is energized.

If the cut-off temperature is being exceeded or a short-circuit is occurring, the internal relay drops out and the pump would stop immediately.

The pump would not start automatically unless the sensor temperature is lower than the set temperature.

To restart the pumps again press the **RESTART** button **(11)**.

5. Safety Precautions

If a temperature sensor is operated within a hazardous area there must be a special enclosure installed between the Temperature Controller and the Temperature Sensor (RTD).



®

Operating & Maintenance Instructions Dry Running Protection Device DRP-001

AD MANUAL NO:

AD-50-001-00

The switching of inductive loads (contacts) may result a false reading from the Controller, or in complete malfunction of the Unit. Here, we recommended the wiring of a Surge Suppressor.

6. Installations of Temperature Sensor and Controller.

The Stator (2224), as displayed in Std. No.RN-10-242-01_sheet 1,2,3,4 and 5 is equipped with a Thermo-well-head (3) and a Temperature Sensor (PT-100RTD), (1).

The stator is delivered with a built-in Thermo Well (2). When installed on a ROTO Pump, this Thermo Well should be mounted on its inlet side.

- Material of Construction: Platinum Upper 4 digit display in red colour indicates current process temperature value.
- Lower 4 digit display in green colour indicates current set value
- Led on the right side glows when the relay is on.
- Range 0-200.0°C.
- Output: 1 relay with 2 C/O, 230 V A.C., 5 Amp. Contact.
- Control action: TP / ON-OFF selectable.

* Controller should not be more than 10 meters from the temperature sensor.

7. Technical Data

- Microcontroller based double display.
- Size: 72 x 72 x 110 mm
- Panel cutout : 68 x 68
- Supply: 110-230 V A.C., 50 Hz. (SMPS)
- Measuring input for PT- 100 RTD/3W (RTD Type) Temperature Sensor.

8. Terminal Box

This illustration shows the electrical outline connection of a DRP-001 Dry Running Protection Device.

Terminal Box Connections

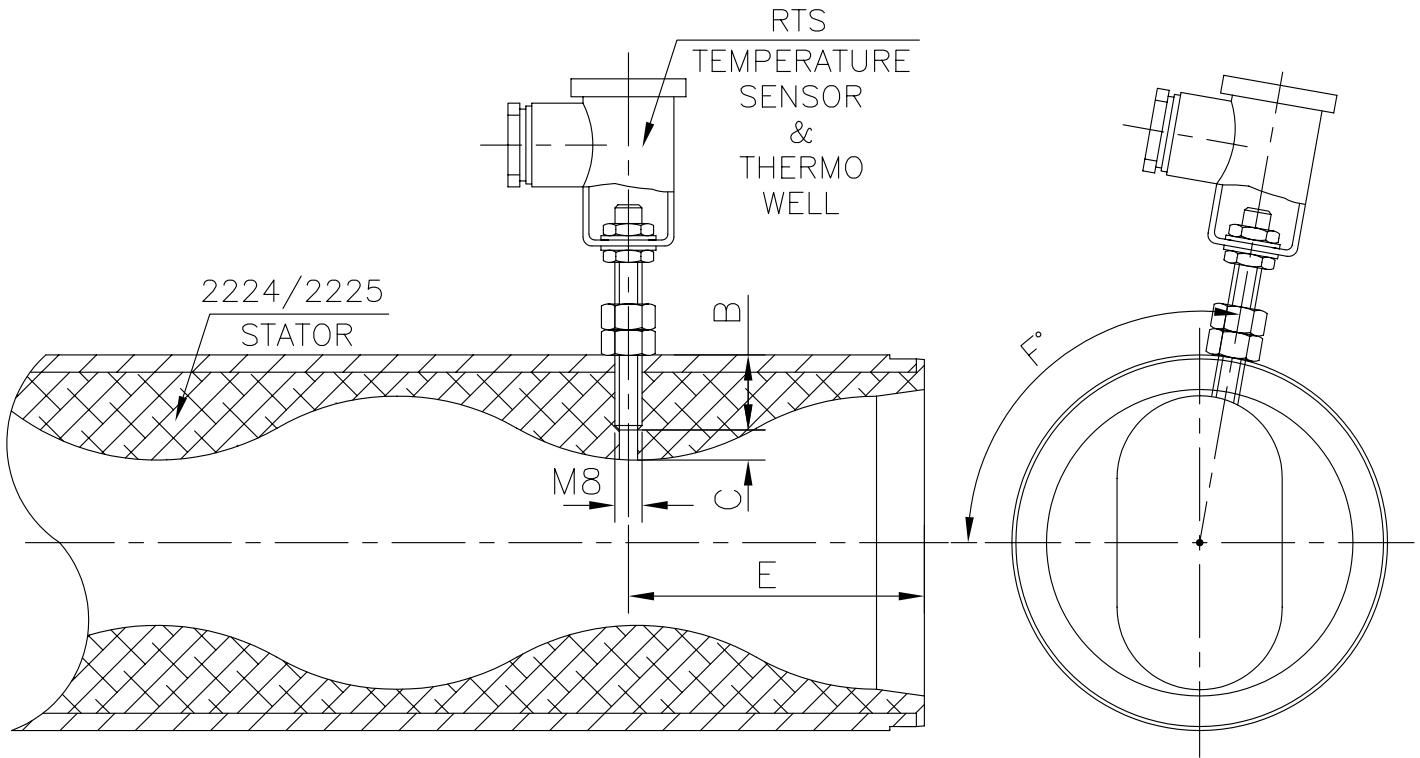
MAINS CONTROL				INPUT		OUTPUT		X	SENSOR		
1	2	3	4	5	6	7	8	9	10	11	12
L	L	N	E	L	N	TO DIRECT ON LINE STARTER					
230 VAC		110 VAC		230 VAC					R	W	W
				L1	L2				SENSOR PT-100(RTD)		
				440 VAC							



ROTO TEMPERATURE SENSOR (RTS) MOUNTING ARRANGEMENT (FOR PCP)

STD. No.
RN-10-242-01

FOR "M" SERIES PUMP



REFER ROTO STANDARD NUMBER RN-10-247 FOR ROTO TEMPERATURE SENSOR DIMENSION.

PUMP MODEL	RTS	B	C	E	F°
M-50	RTS 065	11	7	33	83
M-52	RTS 065	20	7	46	80
M-54	RTS 065	18.5	7	72	100
M-56	RTS 065	21	7	85	100
M-58	RTS 085	30	8	98	100
M-60	RTS 085	31	8	117	99
M-62	RTS 085	37	8	144	100
M-64	RTS 085	46	8	170	100
M-66	RTS 105	54	8	182	99
M-68	RTS 105	57	10	215	99
M-70	RTS 130	67	10	234	99
M-72	RTS 130	80	12	273	99

SCOPE:—THIS STANDARD DEFINES THE DIMENSIONS RELATED TO MOUNTING ARRANGEMENT OF ROTO TEMPERATURE SENSOR AND STATOR.

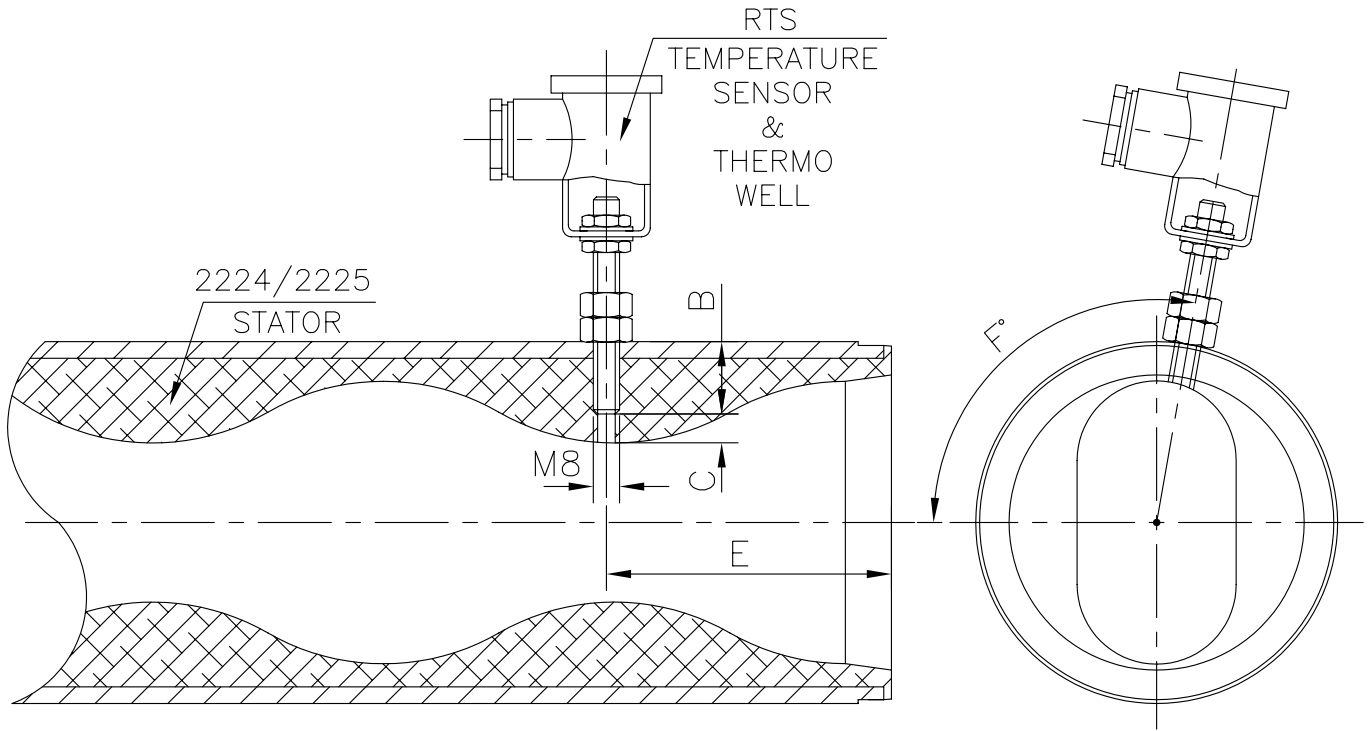
01	D-035-06	REPRESENTATION MODIFIED & DIM F° ADDED.			
00	G-438-05	NEW RELEASE			SKS/18.3.06
ALT NO.	ALT NOTE NO	ALTERATION			SIGN/DATE
DRAWN	CHECKED	APPROVED	SHEET NO.	NO. OF SHEETS	
NEERAJ	SJ	SKS	01	05	



ROTO TEMPERATURE SENSOR (RTS) MOUNTING ARRANGEMENT (FOR PCP)

STD. No.
RN-10-242-01

FOR "N" SERIES PUMP



REFER ROTO STANDARD NUMBER RN-10-247 FOR ROTO TEMPERATURE SENSOR DIMENSION.

PUMP MODEL	RTS	B	C	E	F°
N-01	RTS 045	7	6	25	120
N-02	RTS 045	8.5	7	38	137
N-03	RTS 065	16	7	49	118
N-04	RTS 065	24	7	65	117
N-05	RTS 065	28	8	81	112
N-06	RTS 085	32	8	98	114
N-07	RTS 085	40	8	114	114
N-08	RTS 085	44	8	130	113
N-09	RTS 130	66	10	156	113
N-10	RTS 105	52	8	163	114

SCOPE:—THIS STANDARD DEFINES THE DIMENSIONS RELATED TO MOUNTING ARRANGEMENT OF ROTO TEMPERATURE SENSOR AND STATOR.

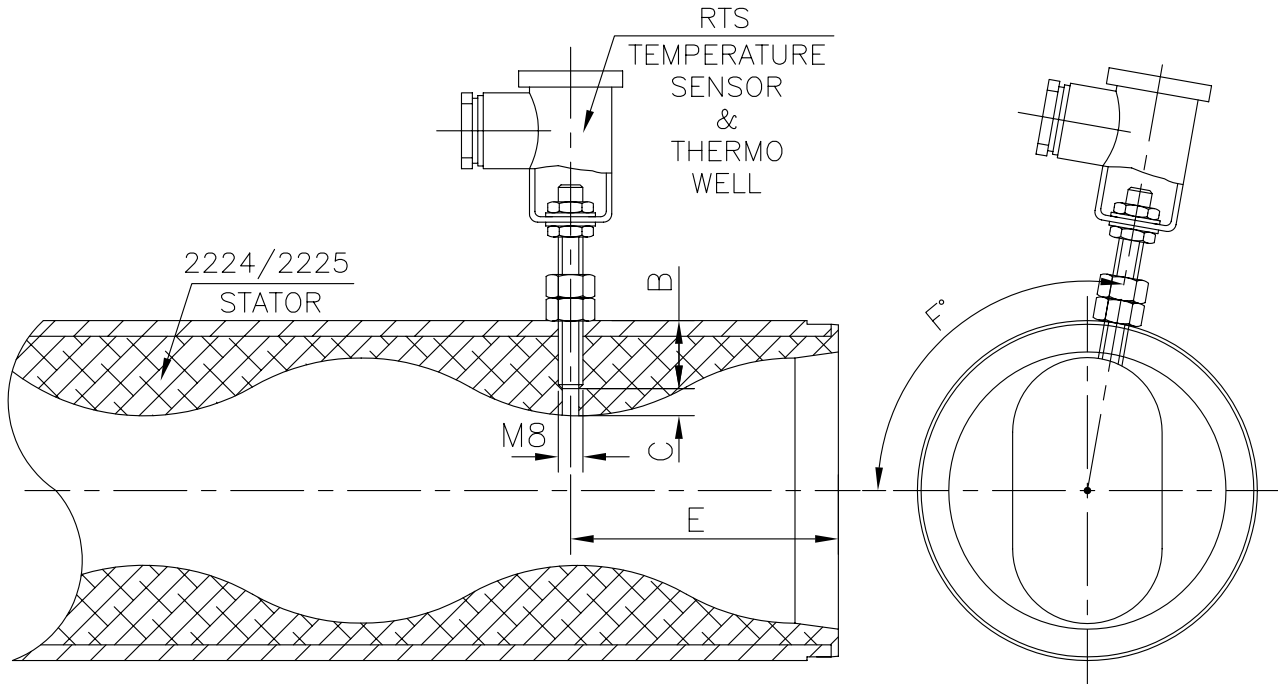
01	D-035-06	REPRESENTATION MODIFIED & DIM F° ADDED.			
00	G-438-05	NEW RELEASE			SKS/18.3.06
ALT NO.	ALT NOTE NO	ALTERATION			SIGN/DATE
DRAWN	CHECKED	APPROVED	SHEET NO.	NO. OF SHEETS	
NEERAJ	SJ	SKS	02	05	



ROTO TEMPERATURE SENSOR (RTS) MOUNTING ARRANGEMENT (FOR PCP)

STD. No.
RN-10-242-01

FOR "D" SERIES PUMP



REFER ROTO STANDARD NUMBER RN-10-247 FOR ROTO TEMPERATURE SENSOR DIMENSION.

PUMP MODEL	RTS	B	C	E	F
D-41	RTS 045	8	6	25	300
D-43	RTS 045	8	6	25	300
D-45	RTS 045	8	6	25	150
D-47	RTS 045	7	6	30	120
D-49	RTS 045	9	7	39	117
D-51	RTS 065	19	7	49	118
D-53	RTS 065	17	7	62	118
D-55	RTS 065	19	7	81	117

SCOPE:—THIS STANDARD DEFINES THE DIMENSIONS RELATED TO MOUNTING ARRANGEMENT OF ROTO TEMPERATURE SENSOR AND STATOR.

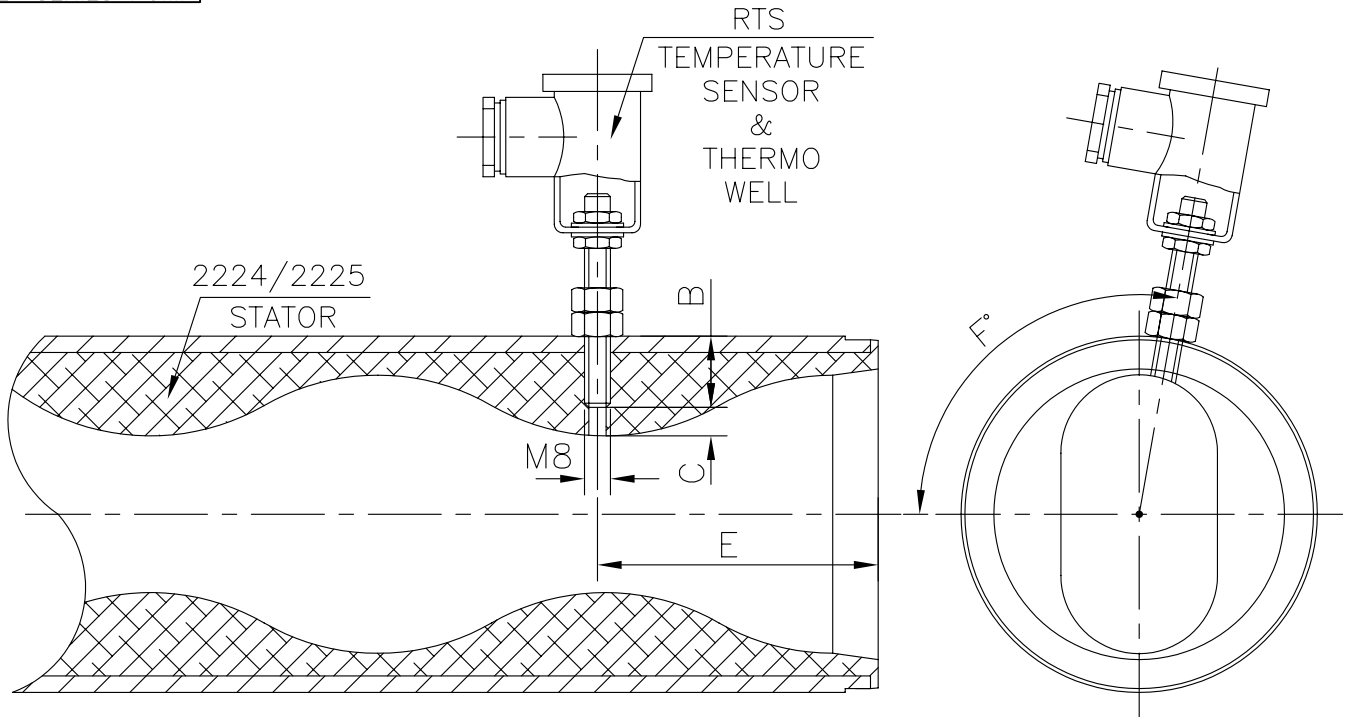
01	D-035-06	REPRESENTATION MODIFIED & DIM F' ADDED.			
00	G-438-05	NEW RELEASE			SKS/18.3.06
ALT NO.	ALT NOTE NO	ALTERATION			SIGN/DATE
DRAWN	CHECKED	APPROVED	SHEET NO.	NO. OF SHEETS	
NEERAJ	SJ	SKS	03	05	



ROTO TEMPERATURE SENSOR (RTS) MOUNTING ARRANGEMENT (FOR PCP)

STD. No.
RN-10-242-01

FOR "L" SERIES PUMP



REFER ROTO STANDARD NUMBER RN-10-247 FOR ROTO TEMPERATURE SENSOR DIMENSION.

PUMP MODEL	RTS	B	C	E	F°
L-54	RTS 065	17	7	214	257
L-57	RTS 065	19	7	286	257
L-61	RTS 085	28	8	474	250
L-63	RTS 085	31	8	234	117
L-67	RTS 085	46	8	273	99
L-71	RTS 105	57	10	357	117
L-75	RTS 130	80	12	455	106

SCOPE:-THIS STANDARD DEFINES THE DIMENSIONS RELATED TO MOUNTING ARRANGEMENT OF ROTO TEMPERATURE SENSOR AND STATOR.

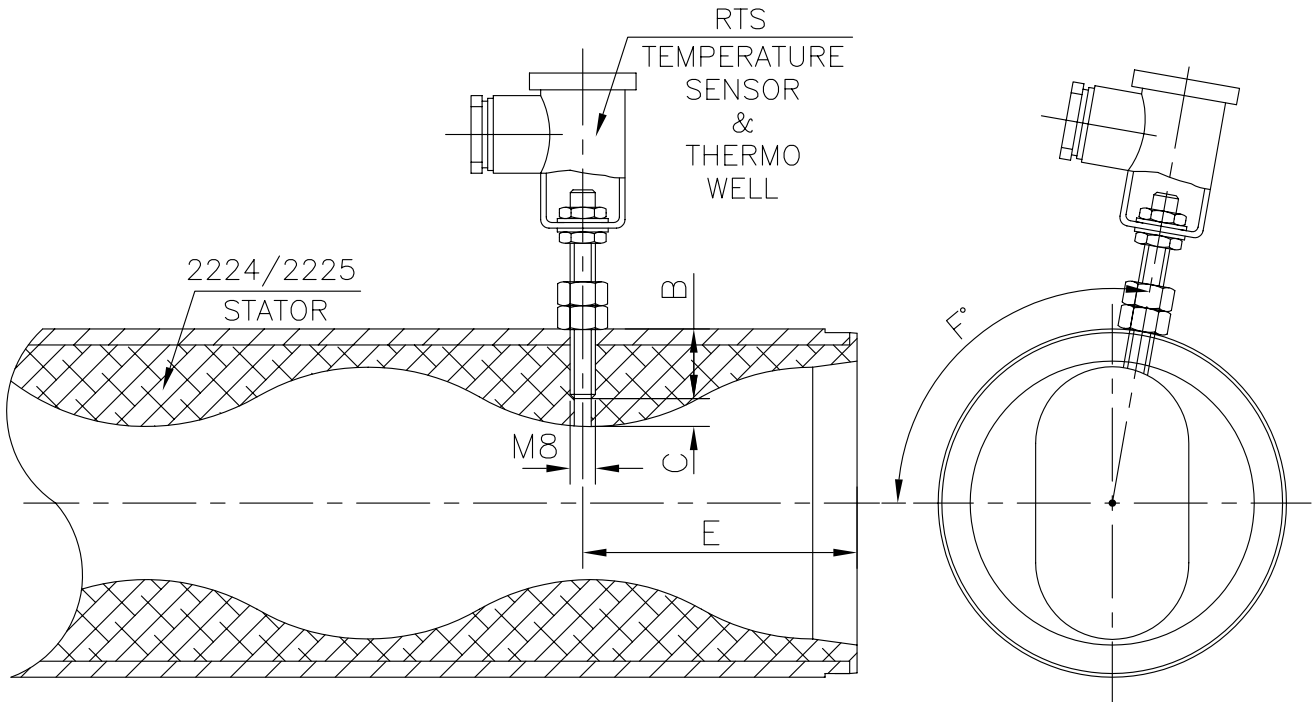
01	D-035-06	REPRESENTATION MODIFIED & DIM F° ADDED.			
00	G-438-05	NEW RELEASE			SKS/18.3.06
ALT NO.	ALT NOTE NO	ALTERATION			SIGN/DATE
DRAWN	CHECKED	APPROVED	SHEET NO.	NO. OF SHEETS	
NEERAJ	SJ	SKS	04	05	



ROTO TEMPERATURE SENSOR (RTS) MOUNTING ARRANGEMENT (FOR PCP)

STD. No.
RN-10-242-01

FOR "G" SERIES PUMP



REFER ROTO STANDARD NUMBER RN-10-247 FOR ROTO TEMPERATURE SENSOR DIMENSION.

PUMP MODEL	RTS	B	C	E	F°
G-58	RTS 085	37	8	60	80

SCOPE:—THIS STANDARD DEFINES THE DIMENSIONS RELATED TO MOUNTING ARRANGEMENT OF ROTO TEMPERATURE SENSOR AND STATOR.

01	D-035-06	REPRESENTATION MODIFIED & DIM F° ADDED.			
00	G-438-05	NEW RELEASE			SKS/18.3.06
ALT NO.	ALT NOTE NO	ALTERATION			SIGN/DATE
DRAWN	CHECKED	APPROVED	SHEET NO.	NO. OF SHEETS	
NEERAJ	SJ	SKS	05	05	