

# Temperature & Pressure Recorders

## Model RPO / RTO

Data sheet : RPO-RTO/2013

- 1, 2 & 3 pen pressure & temperature recording at low cost
- Uses proven and reliable Rotothem pressure & temperature systems
- Simple installation and maintenance requirement
- Fully mechanical versions available
- Electrical, battery or mechanical chart drive options

### Introduction

The RPO and RTO range of pressure circular chart recorders use the well proven and reliable Rotothem pressure and temperature measuring systems.

These reliable and accurate instruments are suitable for most applications where there is a requirement for low cost process recording.

### Pens

Fitted to the pen arms are disposable fibre tipped pens which are readily replaced without mess. The first pen of the two and three pen recorders trace in red ink, the second pen in blue, the third in green.

### Specifications

#### ACCURACY

+/-1% FSD

#### AMBIENT TEMPERATURE

-20°C to +50°C

#### CHART DRIVE

Synchronous electric, battery or mechanical spring wound. 24 hour or 7 day. (other rotations on request)

#### CHARTS

Disc 240mm (9.5 inches) diameter. Standard dividing 40, 50, 60, 70 or 80 linear divisions.

#### INKING SYSTEM

Disposable fibre tipped pens.

2 pen : red & blue    3 pen : red, blue and green

#### CASE

Steel case, black epoxy coated. Protection rated to IP55

#### WINDOW

Acrylic

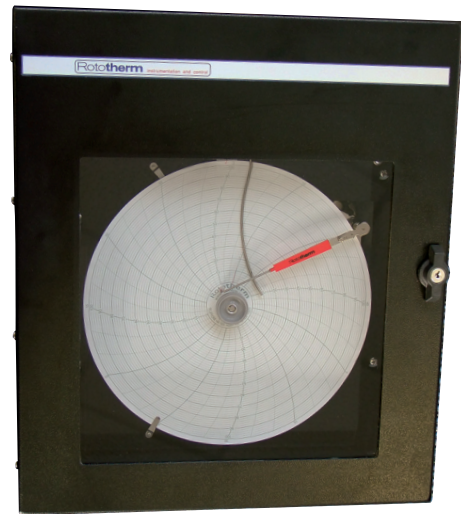
#### POWER SUPPLY

200 to 250 volts, 50Hz (60Hz available); 100 to 110 volts, 50Hz (60Hz available);

Instruments without electrical control require no power supply provided that a clockwork chart drive is fitted. Battery operated chart drives require 1.5 volt type "C" cell.

#### MOUNTING

Suitable for surface or panel mounting. (Pipe mounting and portable options available)



#### WEIGHT

Single pen : 6.5 kg (14.25lb)

Two pen : 7.0 kg (15.5lb)

Three pen : 7.5 kg (16.75lb)

Portable single pen : 8.6 kg (19 lb)

### RPO Pressure Recorders

#### PRESSURE MEASURING ELEMENT

Stainless steel or Non Ferrous Bourdon tube or pressure capsule

#### PRESSURE CONNECTION

Standard 3/8" BSP male, with nut and tail pipe suitable for 6.35mm (1/4") outside diameter tube.

Portable 3/8" BSP male, with nut and tail pipe suitable for 6.35mm (1/4") outside diameter tube or 3/8" inside diameter tube.

Receiver Type 1/4" BSP female (input 3-15 psi 0.2-1 Bar)

### RTO Temperature Recorders

#### MEASURING ELEMENT

Rotothem thermal bourdon tube temperature compensated.

#### CAPILLARY

Microbore stainless steel tube with 3mm diameter stainless steel cover (type C1) as standard. Other capillary types are available.

#### BULB AND STEM

Stainless steel BS970 316. Standard diameter is 12.7mm.

#### FITTINGS

Compression gland (adjustable). Stainless steel BS970 316 (1/2" BSP is standard). Other BSP, NPT and API are available on request. (suitable for pressures up to 3.5 bar)

Suitable for surface or panel mounting. (Pipe mounting and portable options available)

## Standard Pressure Ranges

Pressure Range	Sensing Element	Material
0 to 30" Hg vacuum	Single Capsule	Beryllium Copper
-15 to +15 psi		
0 to 15 psi		
0 to 20 psi		
0 to 25 psi		
0 to 30 psi		
0 to 40 psi		
0 to 60 psi		
0 to 80 psi		
3 to 15 psi		
0 to 6 bar		
0 to 10 bar		
0 to 16 bar		
0 to 25 bar		
0 to 40 bar		
0 to 60 bar		
0 to 100 bar	Bourdon Tube	Stainless Steel
0 to 160		
0 to 250		
0 to 300		
0 to 400		
0 to 600		
0 to 1000		
0 to 1200		
0 to 1600		

Other ranges may be available - please contact Rototherm Sales

## Standard Temperature Ranges

Temperature Ranges	
-40 to +40 Deg C	0 to 120 Deg C
-30 to +30 Deg C	0 to 160 Deg C
-30 to +50 Deg C	0 to 200 Deg C
-25 to +25 Deg C	0 to 300 Deg C
-25 to +30 Deg C	0 to 400 Deg C
0 to 40 Deg C	20 to 120 Deg C
0 to 50 Deg C	50 to 250 Deg C
0 to 60 Deg C	100 to 400 Deg C
0 to 100 Deg C	100 to 500 Deg C

other ranges may be available on request

## RTO Recorder Bulb Types

### Type 301

This bulb type is used when no compression fitting is required. This bulb may be held in place by a bracket or clip (not supplied by Rototherm) or may be inserted directly into the process.

### Type 302

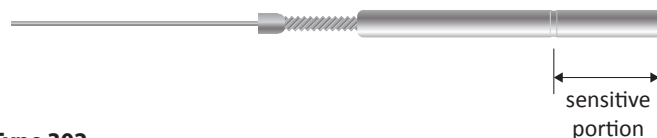
This bulb has a compression gland fitting that slides along the capillary and is tightened into the required position. This bulb type is only available with plain stainless steel capillary (type C1) - armoured capillaries are not available as it is not possible to move the fitting along the armoured capillary. Bulb length cannot be specified.

### Type 303

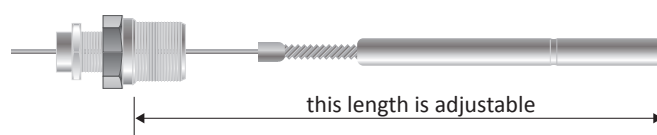
Compression gland fittings tighten on the bulb to provide liquid and gas tight seal. Once fitted the position of the gland fitting can only be altered by cutting off the olive and replacing it with a new one.

If required this bulb type may be specified with a compression gland fitting - in this instance please confirm the required overall length of the bulb.

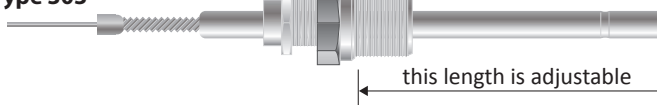
### Type 301



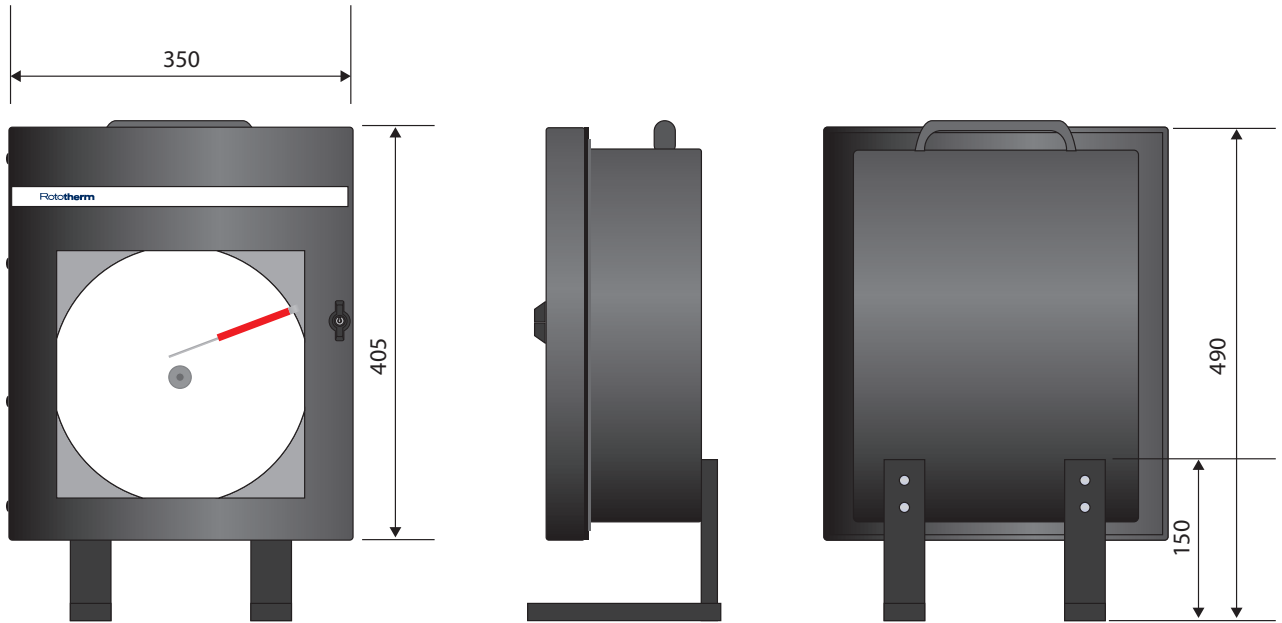
### Type 302



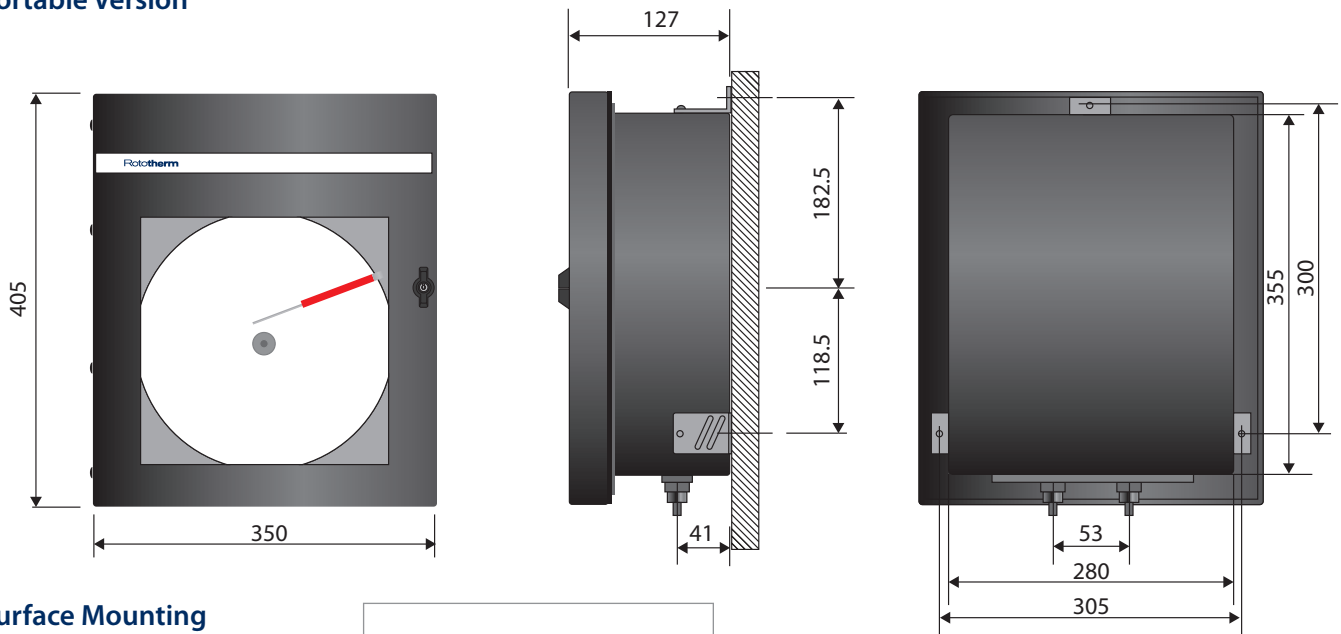
### Type 303



## Dimensions



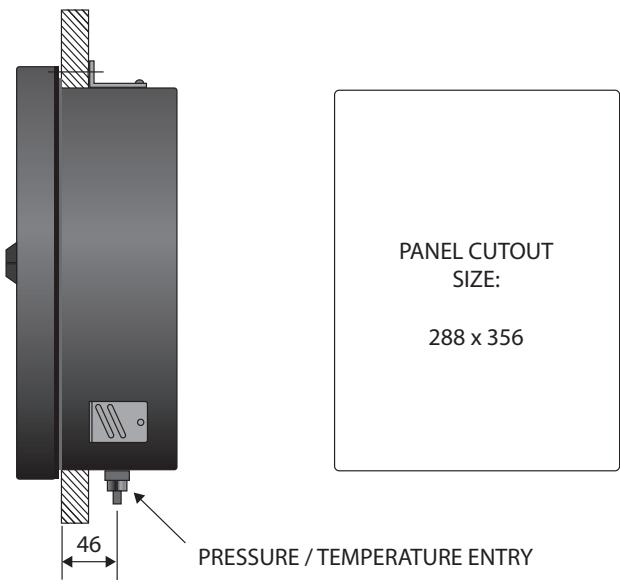
## Portable Version



## Surface Mounting

CASE DOOR OPENS 120° MAX.

## Panel Mounting



## Ordering Codes - RPO Pressure Recorders

RPO Pressure Recorder, Single Pen

RPO Pressure Recorder, Two Pen

RPO Pressure Recorder, Three Pen

Code for 2nd pen (if required)

Code for 3rd pen (if required)

### Mounting

Wall / Panel  
Portable  
2" Pipe/Post

### Chart Drive

Electric 240V 50Hz  
Electric 110V 50Hz  
Mechanical Spring Wound  
Battery Operated  
Other\*

### Chart Rotation

24 hour  
7 day  
Other\*

### Process Connection

Standard (3/8" BSP male)  
1/2" BSP male  
Other

### Element / Connection Material

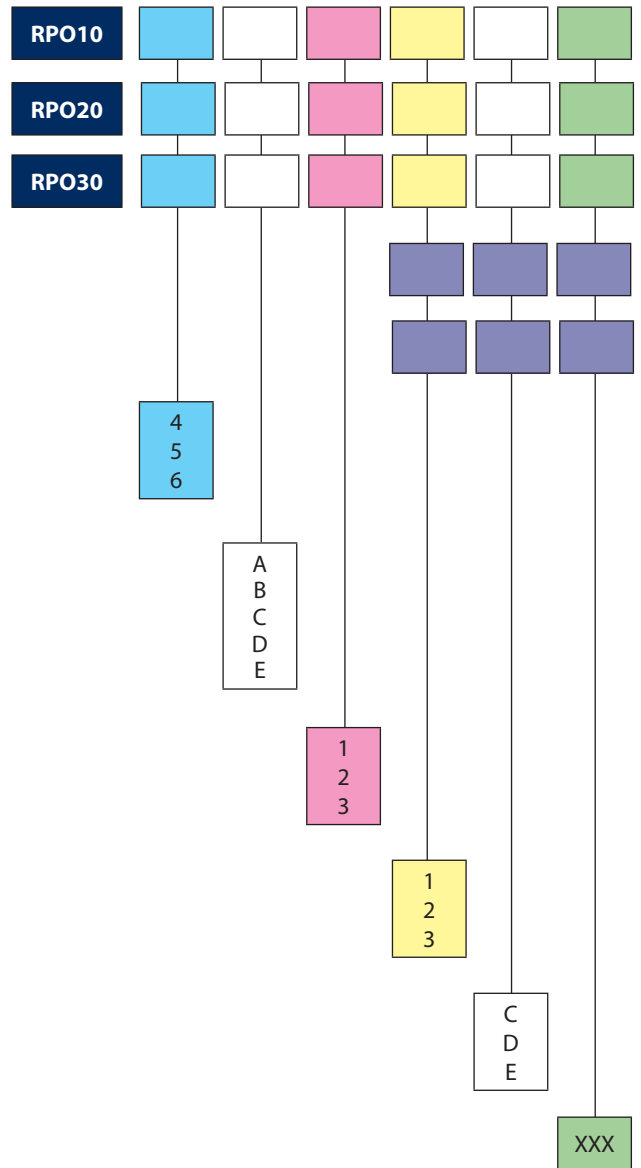
Non ferrous - Beryllium Copper, Phosphor Bronze  
Stainless steel  
Other

### Pressure Range

Enter range and unit of measurement

Notes:

- (a) Where Other\* is specified please add note to order code stating exact requirements
- (b) When specifying different ranges for 2 or 3 pen recorders, care should be taken to use standard/compatible charts ranges.



### Example Order Code

Single pen pressure recorder, wall mounted, electrical 240 volt 50Hz chart drive, 24 hour rotation, standard stainless steel connection, stainless steel element, range 0 to 10 bar.

## Ordering Codes - RTO Temperature Recorders

RTO Temperature Recorder, Single Pen

RTO Temperature Recorder, Two Pen

RTO Temperature Recorder, Three Pen

Code for 2nd pen (if required)

Code for 3rd pen (if required)

### Mounting

Wall / Panel  
Portable  
2" Pipe / Post

### Chart Drive

Electric 240V 50Hz  
Electric 110V 50Hz  
Mechanical Spring Wound  
Battery Operated  
Other\*

### Chart Rotation

24 hour  
7 day  
Other\*

### Bulb Options

Type 301  
Type 302  
Type 303

### Capillary Type

Stainless steel  
Flexible stainless armour  
Flexible stainless armour over stainless

### Capillary Length

3 metres  
Other (enter length in metres)

### Fitting / Gland (type 302 or 303 bulbs only)

No fitting required  
1/2" BSP male  
Other

### Bulb Immersion Length (Type 303 bulbs only)

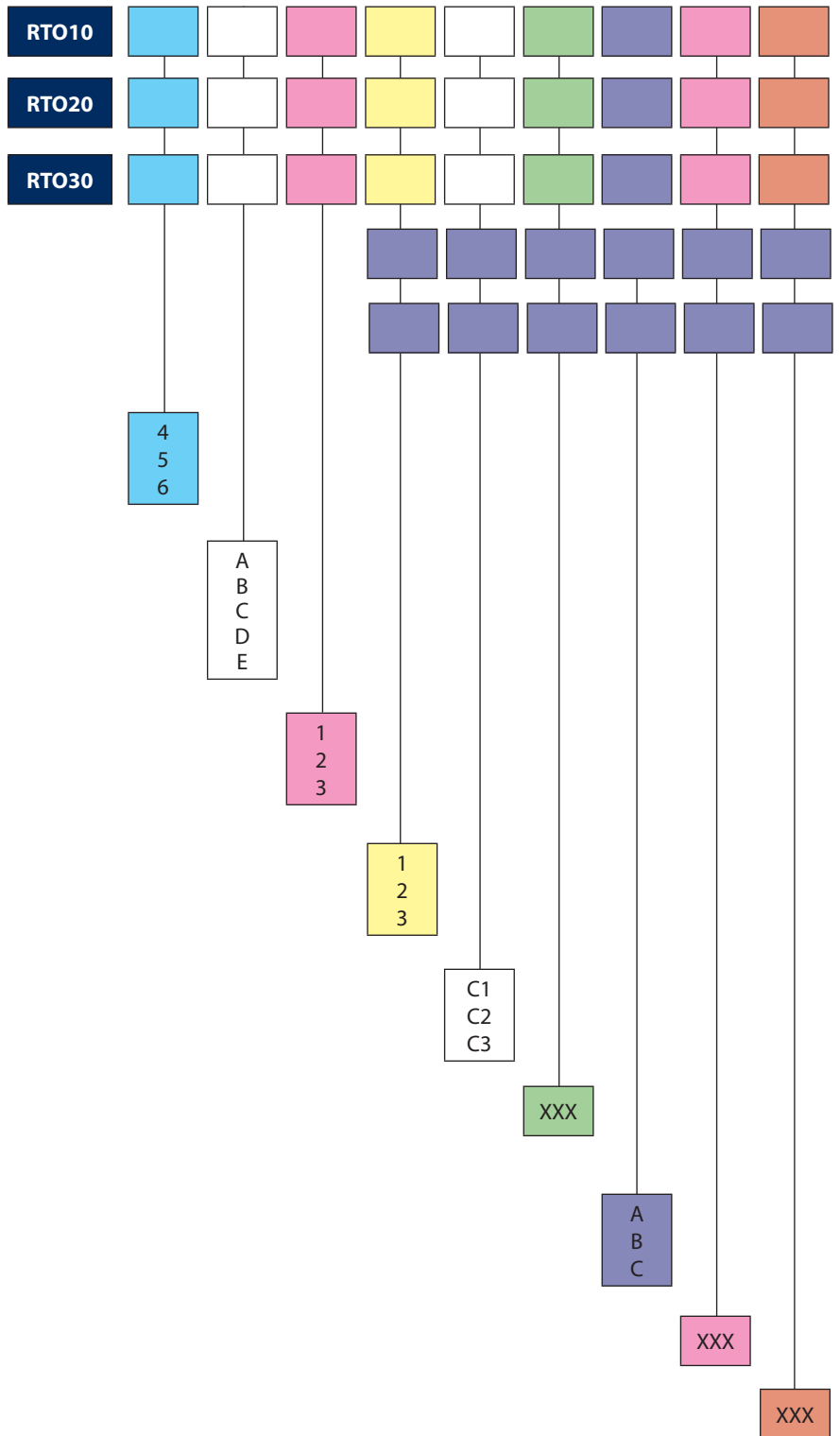
Enter length in mm

### Temperature Range

Enter range in °C or °F

### \*Notes:

- When other is specified please add note to order code stating exact requirement.
- When specifying different ranges for 2 pen recorders, care should be taken to use compatible chart ranges. Details are available on request.

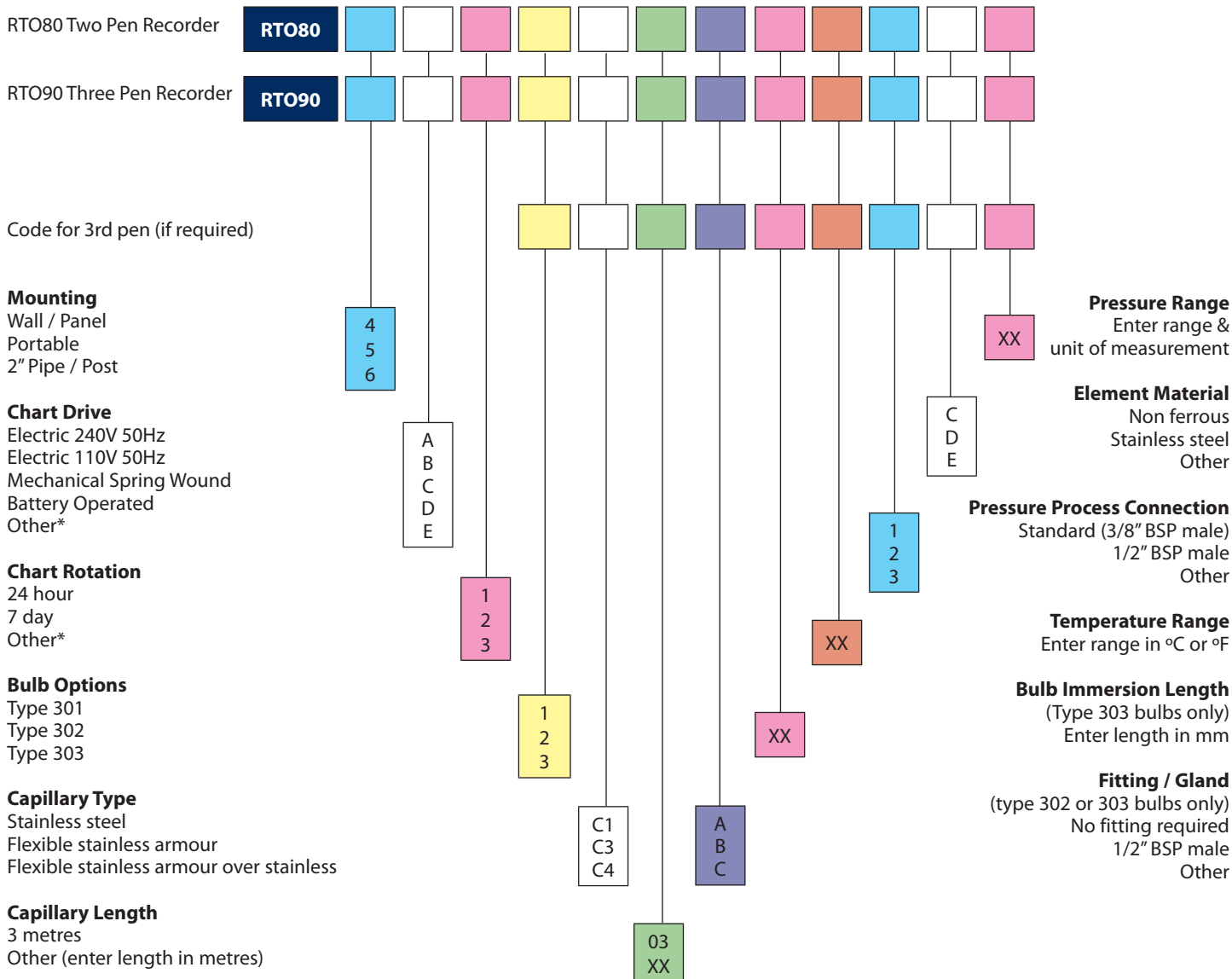


**RTO10** 4 A 1 3 C1 03 B 150 0-200°C

## Example Order Code

Single pen temperature recorder, wall mounted, electrical 240 volt 50hz chart drive, 24 hour rotation, non-toxic Type 303 bulb, 3 metres of stainless steel capillary, immersion length 150 mm, 1/2" BSP male fitting, , range 0 to 200 Deg C.

## Ordering Codes - Combined Temperature & Pressure Recorders



### \*Notes:

- When other is specified please add note to order code stating exact requirement.
- When specifying different ranges for 2 pen recorders, care should be taken to use compatible chart ranges. Details are available on request.

RTO80 4 A 1 3 C1 03 B 150 0-200°C 2 D 0 to 200 BAR

### Example Order Code

Two pen temperature & pressure recorder, wall mounted, electrical 240 volt 50hz chart drive, 24 hour rotation, type 303 bulb, 3 metres of stainless steel capillary, 1/2" BSP fitting, immersion length 150 mm, temperature range 0 to 200 Deg C, pressure range 0 to 200 bar, stainless steel pressure system. 1/2" BSP process connection



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