

# RC1990

## Explosion proof Switch Box

# Instruction

**Manufacturer:** Rotork Sweden AB  
**Directive conformity:** 94/9/EC  
**Standard conformity:** CENELEC EN 50014:1997+A1:1999+A2:1999  
CENELEC EN 50018:2000, EN 50020:2002  
CENELEC EN 50281-1-1:1998

### Certificate

**EC Nemko:** Nemko 03ATEX1435, Nemko 04ATEX1030

**RosTechNadzor:** RTN Explosion Proof

**Centre CTB:** GOST R

**Group and category:** C  0470  II 2 G D EEx d IIC T4, T5, T6  
C  0470  II 2 G D EEx ib IIC T5, T6  
For use in potentially explosive atmospheres.



## Commissioning

Ensure that the switch box correspond to the ordered part specifications. If needed contact the manufacturer Rotork Sweden AB.

The electrical connection between the RC1990 switch box and the control system is to be established according to the standards for installation. The installer must also refer to the label on the switch box and the EC-type examination certificate (available on request) to ensure that the electrical and environmental parameters correspond to the installation requirements.

Fit suitable Explosion-proof cable gland, EEx d approved for EEx d switch box and EEx e approved for EEx i switch box. Extra cable entries with EX glands may be required if solenoid valves are to be connected.

### Note:

Cable entries in Explosion-proof design suitable for the cable type and ambient condition and/or a plug are demanded for approved application.

## Maintenance

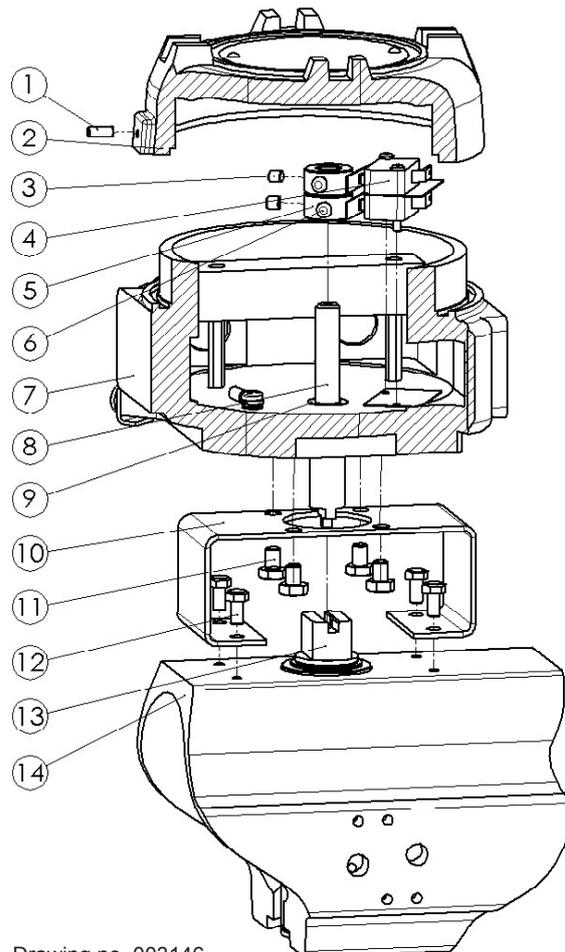
1. Check that the threaded gaps between the cover and the RC1990 housing (7) do not have any damage, due to mechanical or corrosion affection.
2. If needed touch up the painting.
3. Check the condition of the cable glands and that they are correctly mounted.
4. If necessary protect the gaps and threads against corrosion with nonhardening grease. Klüber Isoflex Topas NCA 52 or identical. The gaps and threads must not be painted or treated with silicone oil based grease.
5. Check that O-rings for cover (2) and shaft (8) are intact. Damaged O-rings must be replaced with genuine spare parts only.
6. Check that all screws and the cover are correctly tightened. Secure the cover (2) with the locking screw (1).

## Mounting

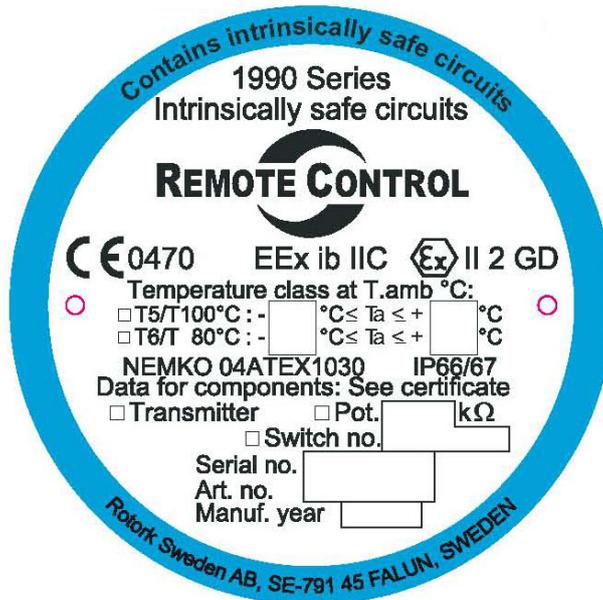
1. Operate the actuator to the "closed valve position".
2. Fasten the Namur console (10) to the RC1990 switch box (7) with 4 pcs M6 screws according to drawing 003146.
3. Dismantle the cover (2) on the switch box. Loosen the locking screw (1), unscrew the cover and lift it straight up.
4. Mount the RC1990 switch box shaft (8) through the hole in the box. The shaft journal must go through the brass bearing bush (9). Turn the RC1990 shaft so that it aligns with the groove in the actuator stem (13).
5. Mount the RC1990 box and console with the shaft in the groove on the top side of the actuator stem (13).
6. Fasten the console with 4 pcs screws (12) to the upper side of the actuator and centre the units with each other before tightening the screws.
7. Slide the two cams (5) over the shaft (8). The cams should be turned according to drawing 003146.
8. *Adjustment of the lower switch for "closed valve position" indication:* Turn the lower cam (5) clockwise until the switch is actuated. When a click is heard (only mechanical switches), the cam must be locked with the grub screw (3).
9. Operate the actuator to the "open valve position".
10. *Adjustment of the upper switch for "open valve position" indication:* The slot in the actuator stem (13) will now align with actuator long side. Turn the upper cam anti-clockwise until the switch is actuated. When a click is heard (only mechanical switches), the cam must be locked with the grub screw (3).
11. Connect according to the wiring diagram attached inside the switch box cover. The power must be switched off.
12. Screw the cover (2) back on the RC1990 switch box and secure the locking screw (1).

## Dismounting

1. Switch off the power to the switch box and vent the actuator.
2. Dismantle the cover (2) on the switch box. Loosen the locking screw (1), unscrew the cover and lift it straight up.
3. Disconnect the wires from the terminal strip and open the cable gland/s. Remove the cables.
4. Loosen the mounting bracket by the screws (12) to the upper side of the actuator. Remove the switch box. Put the cover back on the switch box. Lock with screw (1).



Drawing no. 003146

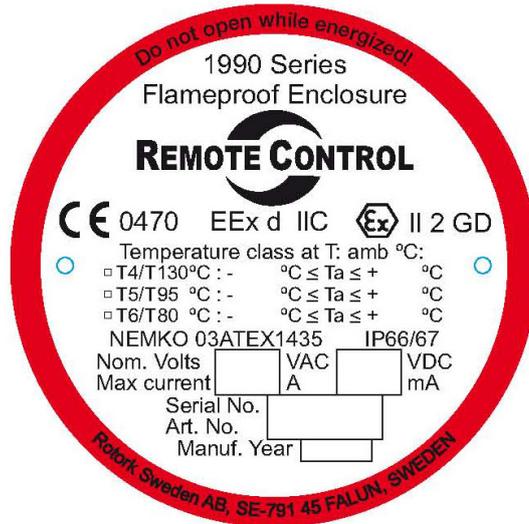


The sign for 1990 in EEx ib-version looks as above. Ambient temperature (T.amb) ranges are filled in according to data of the included components. Min value is taken from the component with the highest min value and MaxT5/T6-values from the component with lowest max-value. Maximum values for Ui, Ii, Pi, Ci and Li are stated for each component in the table. Component values are included in the electric scheme inside the lid.

Table for EEx ib								
Description	Type	Tmin	Max T6/T5 (°C)	Ui (VDC)	Ii (mA)	Pi (mW)	Ci (nF)	Li (µH)
Transmitter 4-20mA	3W2 code:708-xxx	-40°C	T6+60/T5+75	30	160	1000	10	0
Micro switch Gold plated	V5J012BB1xx	-55°C*	T6+65/T5+80	30	100	750	-	-
Inductive sensor	NJ2-V3-N	-25°C	T6+65/T5+80	16	25	64	40	50
Inductive sensor	NS5002	-20°C	T6+70/T5+80	15	50	120	80	110
Inductive sensor	NS5009	-20°C	T6+70/T5+70	15	50	120	80	110
Inductive sensor	NJ5-18GK-SN	-40°C	T6+65/T5+80	16	25	64	120	200
Inductive sensor	NCB2-V3-N0	-25°C	T6+65/T5+80	16	25	64	100	100
Inductive sensor	SJ3,5-SN	-50°C	T6+65/T5+80	16	25	64	30	100
Inductive sensor	NJ2-11-SN-G	-40°C	T6+65/T5+80	16	25	64	50	150
Inhead transmitter	IPAQ-HX	-40°C	T6+50/T5+65	Ui/Uo: 30	Ii 100/ Io 25	Pi 900/ Po 188	Ci 0/ Co 66	Li 0/ Lo 50

\* -55°C only with low temp o-ring for the lid.





The sign for 1990 in EEx d-version looks as above. Ambient temperature (T.amb) ranges are filled in according to data of the included components. Min value is taken from the component with the highest min value and MaxT4/T5/T6-values from the component with lowest max-value. Nom. Volts and Max current are filled in. Component values are included in the electric scheme inside the lid.

**Table for EEx d**

Description	Type	Tmin	Max T6/T5/T4 (°C)	U (VDC)	I (mA)
Transmitter 4-20mA	3W2 code:708-124D1ADH	-40°C	T6+60/T5+70	33	20
Transmitter 4-20mA EEx ia	3W2 code:708-226D1AD	-40°C	T6+60/T5+75	30	20
Potentiometer 1k Ohm	FCP22AC	-50°C	T6+60/T5+75/T4+100	(1k Ohm, 1W)	
Inductive sensor	IS5001	-25°C	T6+60/T5+75	36	200
Inductive sensor	IS5026	-25°C	T6+60/T5+75	36	200
Inductive sensor	NJ2-V3-N	-25°C	T6+60/T5+75	8	
Inductive sensor	NBB2-V3-E2	-25°C	T6+60/T5+75	30	100
Inductive sensor	NBB3-V3-Z4	-25°C	T6+60/T5+75	60	100
Inductive sensor	NJ5-18GK-SN	-40°C	T6+60/T5+75	25	
Inductive sensor	SJ3,5-SN	-40°C	T6+60/T5+75	25	
Micro switch Gold plated	V5J012BB1C	-50°C	T6+60	30	100
Micro switch	V5B210CB1C	-50°C	T6+60/T5+75/T4+110	250VAC	6A
Inhead transmitter	IPAQ-H	-40°C	T6+50/T5+65/T4+85	36	20
Inhead transmitter	IPAQ-HX	-40°C	T6+60/T5+75/T4+85	30	20
Inhead transmitter	MESO-H	-40°C	T6+60/T5+75/T4+85	42	20

Ref No 398A / Art No 980398

We reserve the right to make changes without notice

