

Mechanical Limit Switchbox - Operation



- Switches in Open and Closed Position
- IP65 Protection
- M20 Cable Entry
- Optical Indication
- Various Voltages

Description

A reliable low cost switching option designed for use on manual and pneumatic actuated ball and butterfly valves. The 2 x V3 gold plated SPDT switches are housed in an aluminium powder coated housing and offer repeatable switching, giving open and closed functions. In addition a high visibility optical beacon gives indication of open or closed positions of the valve. Brackets are supplied for both manual and actuated applications.



Description

Type VO210 Limit Switchbox offers outstanding value for money, whilst maintaining both quality and repeatability. This unit offers both optical position indication via a dome top beacon and 2 V3 SPDT switches housed in a IP65 aluminium coated enclosure.



Beschreibung

Die Endschalterbox vom Typ VO210 bietet ein hervorragendes Preis-Leistungs-Verhältnis bei gleichzeitiger Beibehaltung von Qualität und Wiederholbarkeit. Dieses Gerät bietet sowohl eine optische Positionsanzeige über eine Rundumkennleuchte als auch 2 V3-SPDT-Schalter in einem aluminiumbeschichteten IP65-Gehäuse.



Descripción

La caja de interruptores de límite Tipo VO210 ofrece una excelente relación calidad-precio, manteniendo la calidad y la repetibilidad. Esta unidad ofrece indicación de posición óptica a través de una baliza superior de domo y 2 interruptores SPDT V3 alojados en una carcasa con revestimiento de aluminio IP65.



Description

Le Switchbox Limit Type VO210 offre un excellent rapport qualité / prix, tout en conservant à la fois la qualité et la répétabilité. Cette unité offre à la fois une indication de position optique via une balise supérieure en dôme et 2 commutateurs SPDT V3 logés dans un boîtier revêtu d'aluminium IP65.

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1 Purpose

This installation and operating manual explains how to install, operate and maintain Type VO210 limit switch box.

1.1 Safety

Safety notices in his manual offer precautions for the user aimed to reduce the risk of personal injury and damage to equipment. It is recommended that the user read these instructions before installation, operating or before maintenance is carried out.

2. Product identification

The limit switch box has a name plate and is located on the top casing. It includes:

- Type number
- Enclosure Protection
- Rated current
- Certifications

2.1 Inspection

Please make sure that the specifications of the limit switch box (name plate) confirms with the customers specifications.

Check the product for any damage

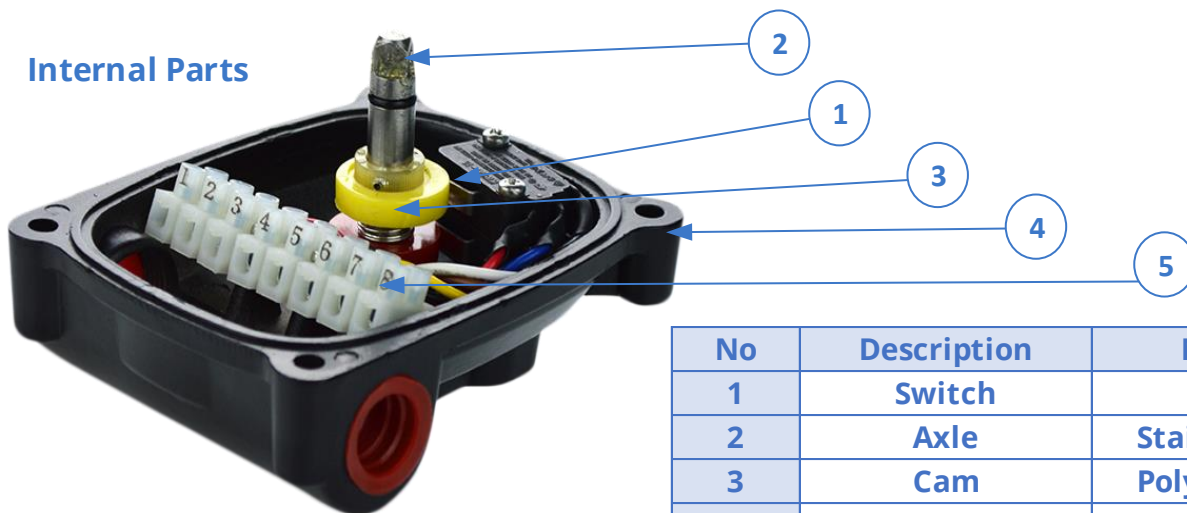
3. General information and features

The QK type 210 limit switches are designed for the used in various types of industries for use with small Ball and butterfly valves giving position indication, signalling / valve and for monitoring purposes.

3.1 Type VO210 standard technical data

- Enclosure Rating Weatherproof IP67
- Enclosure High grade aluminium alloy
- Ambient Temperature -20° C ~ + 80° C
- Conduit Entries 2x M20
- Travel Angle 90 degree +/- 10%
- Position Indicator open: yellow and close: red
- Switch Mechanical 2 x SPDT - Rating: 250VAC/16A, 125VAC/16A, 250VDC/0,3A, 125VDC/0,6A, 30VDC/10A
- Terminal Strip 8 point
- External Coating Chromate polyester powder coating

Internal Parts



No	Description	Material
1	Switch	2-SPDT
2	Axle	Stainless Steel
3	Cam	Polycarbonate
4	Body	Aluminium
5	Terminal Strips	Polycarbonate

4. Installation instructions

Verify that the nameplate of the limit switch box match the specifications needed – correct model number, voltage and enclosure type - before installation and use.

Wiring connections should be in accordance with the diagram attached to the inside of the top casing cover.

The two conduit cable entries shall be sealed in a proper manner until cable works is finalised. Position indicator and switch box covers are sealed by use of O-rings. Please take care of O-ring in order not to cause any damage to the O-rings during disassembly or reassembly.

The position of the limit switches / cams have not been adjusted at the factory. Therefore a final adjustment of those is needed before use.

Do not use in areas where explosion proof equipment is required. These types of limit switches are designed as weatherproof types – not explosion proof types.

4.1 Limit switch box mounting

Note:

Prior to mounting of the limit switch box the item must be checked for any damage.

Damaged parts must be replaced by original spare parts

Mounting is most easily done with the actuator shaft pointing vertically upwards. But mounting is also possible in any other position.

The limit switch box may be mounted in any position.

It is mandatory that the limit switch box is firmly secured to a sturdy mounting bracket. High tensile bolts or studs with spring locking washers must be used.

The limit switch box output shaft must be in line with the actuator shaft to avoid side-loading the shaft. To avoid any backlash no flexibility in the mounting bracket or mounting should be allowed.

Caution: Make sure to cut off the electrical power before working on the limit switch box for assembly, mounting etc.

4.2 Fitting the mounting bracket

Four types of standard mounting brackets are available

NAMUR VDE/VDI 3845 size 30x80 h20

NAMUR VDE/VDI 3845 size 30x80 h30

NAMUR VDE/VDI 3845 size 30x130 h30

NAMUR VDE/VDI 3845 size 30x130 h50

The mounting bracket is fixed onto the top of the actuator by use of correctly sized high tensile bolts and spring washers

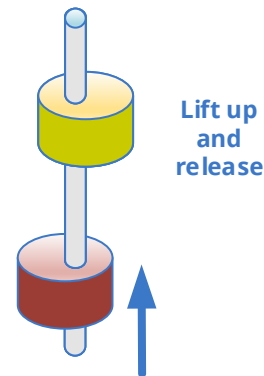
Insert the shaft of the limit switch box correctly into the drive slot on the top of the actuator drive shaft – use correctly sized high tensile bolts and spring washers for fastening the box to the bracket.

4.3 Adjustment of the limit switch box

By use of screw driver loosen the captive bolt on the cover and lift off top cover. Each switch has its own independent cam arrangement. Follow the procedures bellow for adjustment.

4.3.1 Open cam setting

Lift the bottom cam up and turn it until the switch is activated (clicks) – then release the cam. The spring will force the cam back into the splines on the shaft ensuring the correct position of the cam.

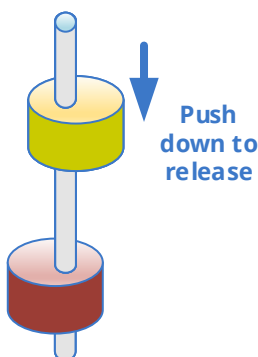


4.3.2 Closed cam setting

Push the top cam down and turn it until the switch is activated (clicks) – the release the cam. The spring will force the cam back into the splines on the shaft ensuring the correct position of the cam.

Push down and release

NOTE: It should be kept in mind that an incorrect setting of the cam position may/will result in incorrect signalling to external control systems.



4.3.3 Checking the switch cam setting

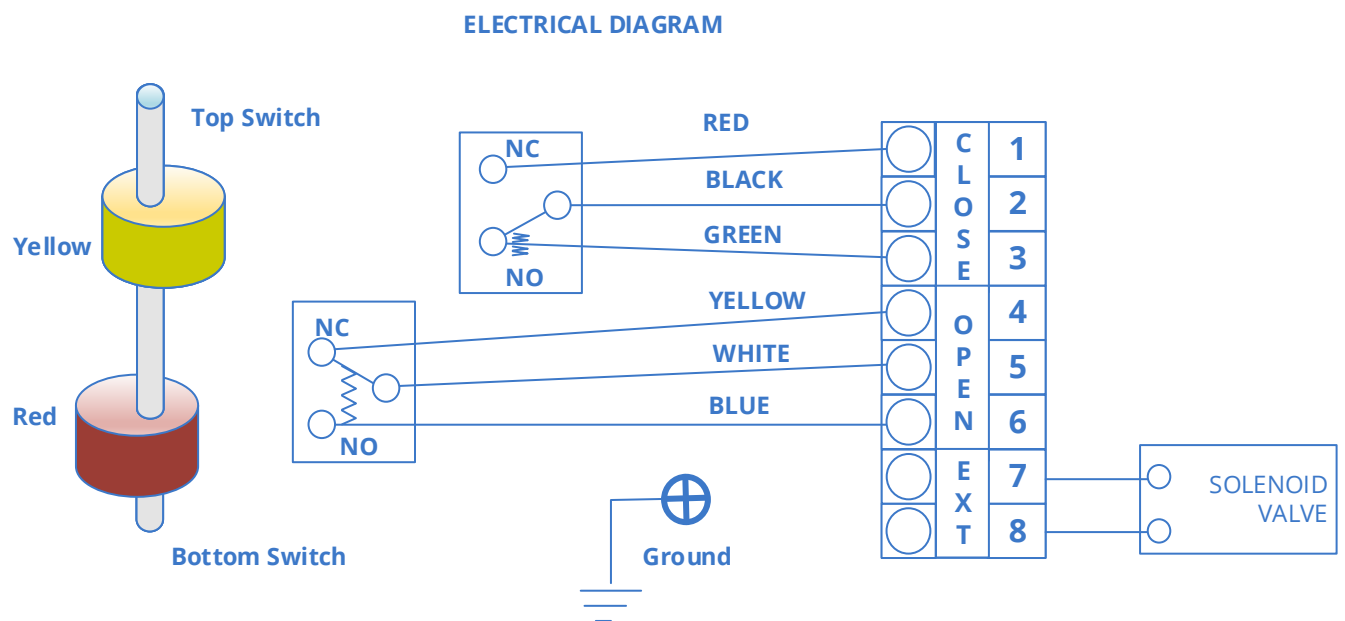
Operate the actuator from full open to full closed in both directions several times to check that the switch cams are operating correctly – preferably with a detection of the output signal from the limit switches (if possible)

4.3.4 Wiring

The correct wiring diagram is attached onto the inside of the top casing cover. Please follow the instructions carefully. If in doubt – please contact VOL.

Operate the actuator from full open to full closed in both directions several times to check that the switch cams are operating correctly – preferably with a detection of the output signal from the limit switches (if possible)

Important: Earth wire cable shall be use in bicolour combination green/yellow



4.3.5 Reassembly of limit switch box

Carefully mount the top cover onto the bottom part of the casing – taking care not to damage the O-ring.

5. Operation instructions

Electrical connections and preliminary test

WARNING:

Work on the electrical system or equipment must only be carried out by a skilled electrician himself or by specially instructed personnel under the control and supervision of such an electrician and in accordance with the applicable electrical engineering rules

Cable gland or conduit entries shall be controlled by qualified engineers to ensure correct protection against water damages etc.

Treat limit switch casing top with care. Gap between limit switch box housing parts may lead to unexpected damages. Do not jam cover during fitting.

5.1 Wiring

Please refer to the enclosed wiring diagram or contact us for further details.

If the enclosed diagram is not followed/neglected – the guarantee will no longer be valid.

5.2 Operation

As to the fact that the limit switch are fully controlled/operated by the actuator shaft no manual operation is necessary.

6. Maintenance

Caution:

Turn off all power services before attempting to perform service on the limit switch box.

Before removing or disassembling the limit switch box ensure that the valve or other actuated device is isolated and not under pressure.

When/if replacing any part use only original DVC spare parts.

All though no real maintenance is necessary on the limit switch box, regular maintenance checks should, under normal conditions, be carried out with intervals of maximum six months. But if service conditions are severe more frequent inspections may be advisable.

Ensure limit switch box / actuator alignment

Ensure wiring insulation is intact, connected and terminated properly

Ensure all screws are present and tight

Ensure cleanliness of internal electrical parts / devices

Ensure conduits connections are installed properly and dry

Check enclosure O-ring seals and verify that the O-ring is not pinched between flange

Visual inspect during open/close cycle

Inspect identification labels for wear and replace if necessary