Installation Instructions

Original Instructions

Allen-Bradley
by ROCKWELL AUTOMATION

Gravity Return Limit Switch with Indicating Light

Bulletin Number 802G

Product Overview

IMPORTANT Save these instructions for future use.

A gravity return limit switch is a device that provides a low operating torque. It is intended to be used in such a way that, once it has been operated, gravity acts on the actuating lever to return the switch to the unopened state. When the lever is rotated in either direction continuously, the device provides 180° of switch-on time and 180° of switch-off time.

The operating head and the switch unit that are used in this style of device are unique and can only be used with one another. Operating heads or switches from other styles of devices cannot be interchanged with these devices.

IMPORTANT This device is a gravity return limit switch, which must be correctly configured to provide proper operation. Once the switch is operated, gravity acts on the lever arm, which supplies the return torque to rotate the operating shaft back to the operating state. There is no internal return mechanism. Carefully adjust the lever arm length and position so that the unit has adequate return force, but be sure that the returning lever arm does not oscillate and operate the switch unintentionally.

If unintentional switch operation creates a hazard, the free-swinging mode of operation of the lever arm must be avoided. You must provide a means to help prevent lever arm oscillation, such as an external stop. Be sure that this stop effectively damps any bounce of the lever arm, which might also cause unintentional switch operation.

Indicating Light

These instructions cover the style of limit switch that contains an indicating light. This light can be wired to provide a visual indication of switch contact action.

The switch is available with either a 120V AC lamp circuit or a 240V AC lamp circuit. The rated voltage for each device is displayed on the switch cover inside the enclosure.

The lamp in this device cannot be replaced separately. If lamp replacement is necessary, a new switch module and lamp assembly must be ordered as a renewal part.

IMPORTANT If used with solid-state or other sensitive devices, leakage current (0.005 A) can cause false operation.

Mounting

Position the conduit that leads into the switch so that any fluid inside the conduit does not drain into the switch enclosure. Apply the sealing compound to conduit threads to help prevent against the entrance of fluids through the threads.

You can mount the base by either of two methods:

1. Two #10...32 tapped holes are provided for rear mounting.

IMPORTANT Be sure the screws that are used for rear mounting are not so long as to interfere with the screws that are used to secure the front to the base.

2. Two clearance holes for #10 screws are provided for front mounting.

Wiring

IMPORTANT The contacts in each switch element must have the same polarity. The circuit diagram is shown on the nameplate.

The pressure type connector terminals in the base accept 4 mm^2 (12 AWG) and smaller solid or stranded wire. For proper tightening, use nothing smaller than 1 mm^2 (18 AWG). Before inserting the wire under the pressure plates, strip the insulation approximately 9.5 mm (0.375 in). Tighten all pressure plate terminal screws, whether used or not, to avoid interference with the screw cover.

A grounding screw is enclosed in the terminal base near the conduit opening. The grounding screw has a self-lifting pressure plate and wire barrier. The proper installation position of the ground wire is between the pressure plate and the wire barrier in a direction parallel to the edge of the casting. Be sure that the ground wire does not interfere with the gasket or the switch portion of the device.

You must wire the indicating light to a power source. You must provide lead wires to connect to terminals 5 and 6 in the terminal block. The other ends of these leads are connected to the points in the circuit that provide the desired indicating function.

If the indicating light is to be connected internally across the limit switch terminals, always connect the indicating lamp lead wires to the same set of terminals used for the load. When connected across the normally open terminals 1 and 2, the light is on when the limit switch is in its unoperated state. When connected across the normally closed terminals 3 and 4, the light is off when the limit switch is in its unoperated state. See Figure 1 on page 3 for typical circuit configurations.

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After completing the wiring, check that all wires are in the wiring cavity of the terminal block so they do not interfere with the switch when it is plugged into the terminal block. Recheck all terminal wiring screws for tightness.

For switched that have been wired at the factory, check the wire color and their position in the terminal block for proper circuit hookup.

When the switch has been plugged into the terminal block, securely tighten the two cover screws to compress the body gasket.

Actuator Head Positioning

As shown in Figure 2 on page 3, you can place the actuator head in any of four positions on the switch body:

1. Loosen the four captive head screws.
2. Place the head in the desired position.
3. Securely retighten the four screws.

Lever Arm Positioning

Screwdriver slots are provided on each end of the operating shaft, which can be used to keep the shaft from rotating while adjusting the position of the lever arm:

1. Loosen the screw that secures the lever arm clamping assembly to the operating shaft.
2. Position the shaft so that in the unoperated state the circuit between terminals 1 and 2 is open and between terminals 3 and 4 is closed.

The switch does not function as a gravity return device if the shaft is positioned with the circuit functions reversed. The circuit functions are reversed if in the unoperated state the circuit between terminals 1 and 2 is closed and between 3 and 4 is open.

Select the switch operating point so that the weight of the lever arm returns the unit to the unoperated state. Be sure that the maximum travel position of the lever is below the level that will cause the lever arm to oscillate in a pendulum manner, operating the switch unintentionally after gravity returns it to its unoperated position. After installing or adjusting the device, always check for this swinging action before energizing the circuit.

See Product Overview on page 1 for restrictions on the free-swinging mode of operation

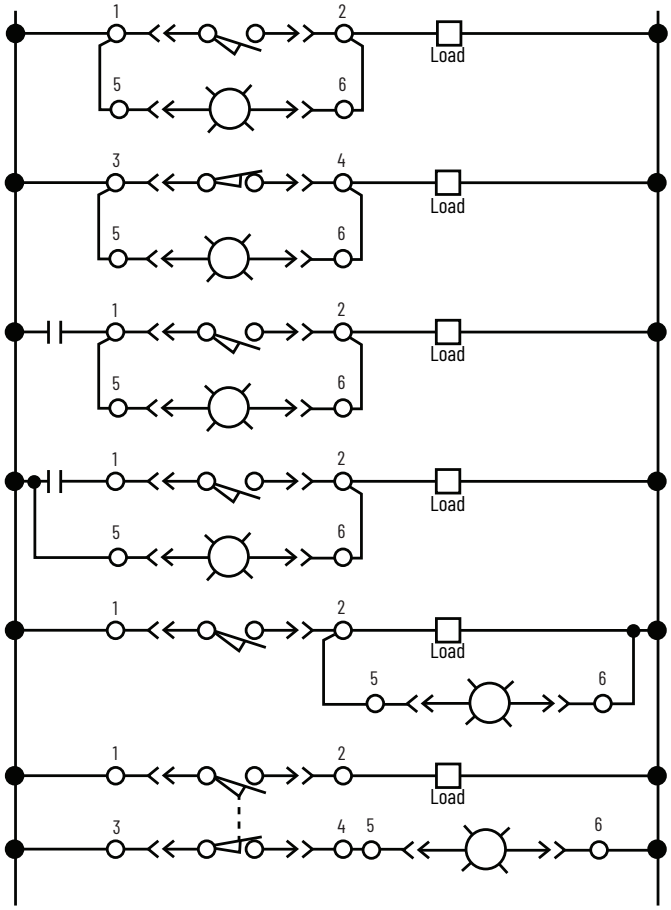
Lever Arm Rod Length Adjustment

The effective lever arm length can be varied by loosening the screw that secures the rod in the clamping block.

As the rod length that extends below the clamp assembly is shortened, the operating torque and return torque decrease, while the allowable angular overtravel increases.

Figure 1 - Typical Indicating Light Circuits

Numbers correspond to terminal block markings.



Internal connection to N.O. contact.
Light on when the switch is unoperated.

Internal connection to N.C. contact.
Light off when the switch is unoperated.

Will not light if an external series contact is open.

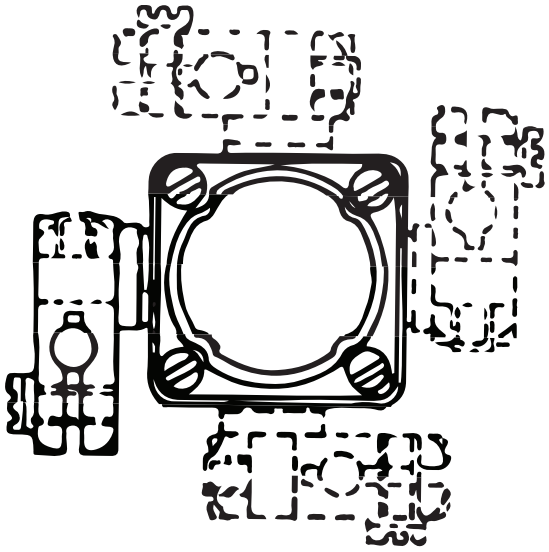
Light on when either contact is open.

Indicate load energized; similar connection can be made with N.C. contact.

Alternate connections to isolate the light from the load circuit if leakage current through the load is undesirable.

Light is on when switch is unoperated. Similar connection can be made with load and light connections reversed.

Figure 2 - Actuator Head Position



Waste Electrical and Electronic Equipment (WEEE)

At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

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Rockwell Otomasyon Ticaret A.Ş. Kar Plaza İş Merkezi E Blok Kat:6 34752, İçerenköy, İstanbul, Tel: +90 (216) 5698400 EEE Yönetmeliğine Uygundur

Connect with us.

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AMERICAS: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
EUROPE/MIDDLE EAST/AFRICA: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
ASIA PACIFIC: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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