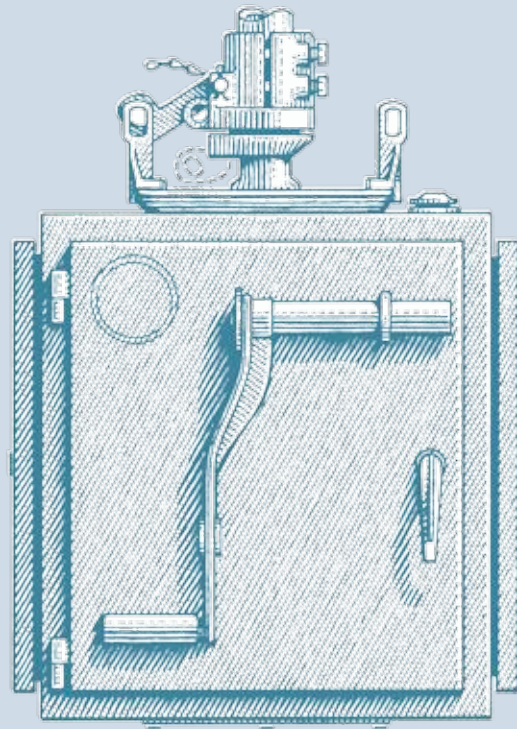


MO10



“Our motor operator designs allow for a wide variety of operating schemes. Each unit is specifically designed to meet or exceed each unique requirement.”

| | | |
|--|---|-------------------------|
| INTRODUCTION & TYPE TEST DATE : 1967 & 1997 | | ANNUAL PRODUCTION : 920 |
| UNITS IN SERVICE : > 31000 | TORQUE (IN-LB) : 8000 22000 30000 34000 | |
| VOLTAGE : 24, 48, 125, 250 VDC; 120, 240 VAC | AC VOLTAGE : 120, 240 | |
| DC VOLTAGE : 24, 48, 125, 250 ----- | | |

| | | |
|--|------------------------------------|--|
| TYPICAL OPTIONS : | | |
| > Internal de-coupler | > Communication packages | > Fuse, circuit breaker or knife switch circuit protection |
| > Self contained batteries and battery charger | > Condition monitoring | > Mechanical or electrical counter |
| > Multi-speed operation | > Open, Close and Stop pushbuttons | |
| | > Local - Remote Selector Switch | |

The MO-10 is a modern and reliable motor operator that can be configured for switch applications from 8.3 kV to 800 kV. Supply voltage to the MO-10 can be DC or single phase AC. A variety of component configurations are available which are tailored to each customer's requirements. A heavy duty split series wound motor and a worm gear arrangement is utilized in the power train to provide ample torque to operate any switch arrangement even under ice load conditions. A manual crank handle is provided for initial switch adjustment and can also be used to operate the switch when power is not available. A safety disconnect

is provided to assure that the MO-10 cannot be operated electrically when the manual handle is in place. A dynamic brake arrangement is used to assure positive and repeatable open and closed operation. Limit switch adjustment provides up to 235 degrees of operator travel. For EHV applications, a multi-revolution power train is employed. Multiple gear reductions in the MO-10 and switch reduce the required operating torque through the drive linkage. Vertical pipe couplings are available for 2", 2.5" and 3" pipe sizes. A locking arrangement is provided to allow for locking the MO-10 in the coupled or uncoupled position.

MO-10 VALUE-ADDED FEATURES

Pascor Atlantic's MO-10 motor operator is the result of 100 years' experience in developing and supplying power equipment to the electric utility industry. Pascor Atlantic has continuously pioneered the research, design, testing and the manufacture of outdoor disconnect switches. We maintain this leadership because of our continued innovative efforts to provide maximum value in acquisition, installation, maintenance and operating reliability.

Procurement:

- Local sales representatives and expertise
- Pre-engineered designs available for quick delivery
- ISO 9002 certified
- ISO 14000 compliant
- On-time shipment

Engineering:

- Standard DIN rail mounted components
- Adaptability to meet special requirements
- Availability of AutoCAD

Installation:

- Three removable doors for easy access
- Individually adjustable auxiliary switch cams
- Removable conduit plate for external conduit access
- Service technicians available for assistance
- On time deliveries

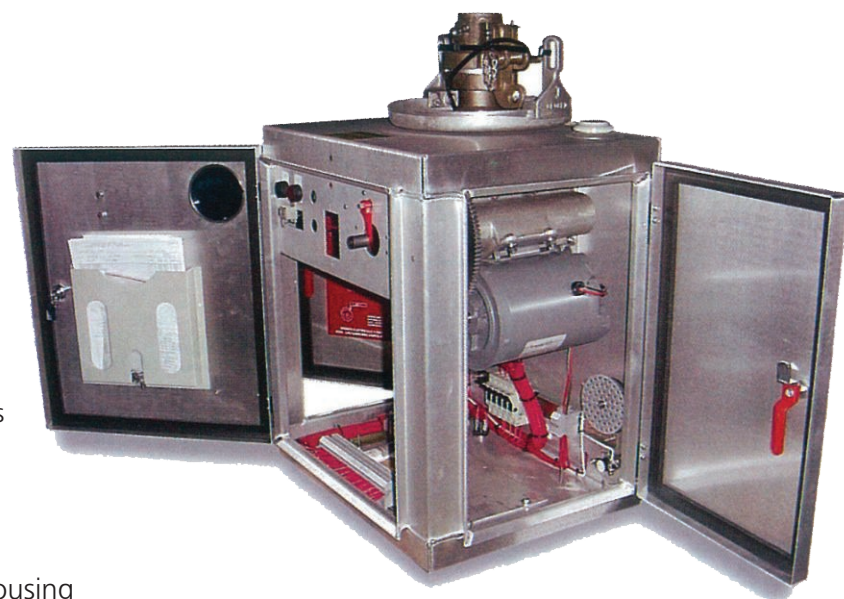
Maintenance:

- Weather-sealed, maintenance free gear train
- Corrosion resistant, weather-tight aluminum housing
- Individual circuits for easy testing and troubleshooting
- Reliable dynamic braking

Accessories:

The following accessories can be provided for the MO-10:

- Battery Back-up
- Heater - 140 Watts
- Push-button control
- Indicating Lights
- GFCI Outlet, light and switch
- 13 & 25 circuit auxiliary switch addition
- Operations counter - electrical or mechanical
- Swing handle coupling
- Circuit breakers
- Local-Remote selector switch
- Internal de-coupler
- Multi-revolution



OPEN VIEW OF MO-10

ORDERING INFORMATION:

The following information is the minimum required when ordering MO-10 motor operators:

- Voltage, BIL rating, continuous current, momentary rating of main or ground switch on which it will be used
- Motor and control voltage
- Heater voltage
- Size of operating pipe
- Direction of rotation of VOP to open switch
- Torque requirement
- Operating time

Type MO-10



7.5 THRU 800 kV



*Motor Operating Mechanism
Outdoor Air Disconnect Switch*

Description

The MO-10 is a modern and reliable motor operator which provides an efficient means of operation for disconnect switches from 7.5 to 800 kV. MO-10 motor operated switches can be operated either remotely from a station control room or directly at the switch location. Direct or alternating voltage sources can be used as means of energy.

Standard electrical and mechanical components have been designed into the MO-10 product line. As a result, parts are easier to stock and are more readily available from the factory.

Pascor Atlantic
Air Switch Division • State Route 42
254 Industry Dr. • Bland, Virginia 24315-9709
Phone: 276-688-3328 • Fax: 276-688-2228 or 2229
www.pascoratlantic.com



This bulletin describes our standard product and does not show variations in design which may be available. If additional details are required, contact your local Pascor Atlantic representative. Pascor Atlantic reserves the right to make changes or improvements to the product shown in this bulletin without notice or obligation.

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MO-10 DESIGN FEATURES AND BENEFITS

The aluminum housing and hinged lift-off doors meet both NEMA 4 and IP54 requirements (gasketed doors and vents). The housing is vented in order to reduce condensation and to ensure a long, corrosion-free life. A removable conduit plate is provided for easy conduit entrance.

GEAR TRAIN

The gear train is designed to transmit up to 34,000 inlbs (heavy duty) during ice or extreme operating conditions without permanent deformation of gears or other components. This gear train is then mated with a coupling that ensures proper uncoupling and recoupling to the vertical operating pipe through a fail safe method. The uncoupled vertical operating pipe can then be padlocked in the open or close position.

CIRCUIT PROTECTION

The control, motor and heater circuits are protected by time delay fuses mounted in a hinged holder for easy disconnect or replacement. This allows for moderate overloads for short periods of time but assures circuit interruption if sustained overloads or fault would occur.

ELECTRICAL

The 3/4 hp motor is adequately sized with the gear train to allow for operation of the air switch under ice conditions and utilizes a dynamic brake for durable operation. The motor and the IEC industrial magnetic contactors are maintenance-free. The motor and contactor are equipped to operate in one of the following specified voltages: 24 vdc, 48 vdc, 125 vdc, 250 vdc, 120 vac, and 240 vac. The contactors are magnetic, requiring low current and are electrically interlocked in order to prevent both from being actuated at the same time.

TERMINAL BLOCKS

Terminal blocks used for the motor mechanism are DIN rail mounted IEC modular type with stripped wire termination. Standard terminal blocks for field control termination accept a #10 ga. wire and a #4 ga. wire for power termination.

WIRING

All motor operators are factory wired with #14 ga. wire. Motor, control, heater and accessory circuits are separated and have individual circuit protection. This allows for isolation of each circuit for testing or troubleshooting circuits.

BRAKING

Dynamic braking is used on both AC and DC motor operators so there is nothing to bind, and no brake linings to wear out. The only adjustment is the initial setting of a single auxiliary switch.

The split series, DC motor is dynamically braked by first removing the source voltage from the motor. The motor winding that would tend to turn the motor in the opposite direction is then energized by connecting that winding across the rotating armature.

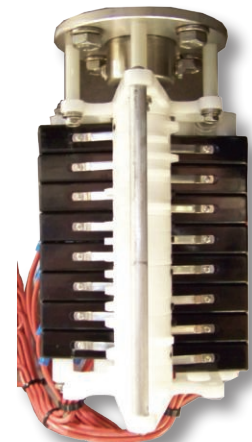
For AC control voltage applications a rectifier is used to convert the control voltage to DC. This allows the highly effective dynamic braking from the DC motor to be used.

AUXILIARY POSITION CONTACTS

The auxiliary switches are a Form "C" micro switch type and are easily field adjustable to "N.O." or "N.C." by means of an infinitely adjustable cam. A set screw in each individual cam for each switch is used to adjust the respective cam. The standard mechanism is equipped with three auxiliary contacts for customer use.



TERMINAL BLOCKS ARE LOCATED IN THE BOTTOM OF THE HOUSING FOR CONVENIENT EXTERNAL WIRE ACCESS.



AUXILIARY SWITCHES WITH INDIVIDUALLY SET CAMS.

MANUAL OPERATION

Manual operation is accomplished by opening the front door and inserting the handle into the access hole in the gear cover panel. Inserting the manual handle actuates a cut-off switch which disconnects the motor electrically. Manual operation turns the same gearing as motor operation, thus the auxiliary switches provide the same indication for both manual and motor operation.

COUPLING

The MO-10 is connected to the switch torsional control through a coupling assembly which consists of a pipe coupling and a fixed coupling driven by the gear mechanism. The two couplings are attached by an uncoupling bar on the pipe coupling. The uncoupling bar is fitted into a notch on the fixed coupling and can be padlocked. It may be disengaged from the fixed coupling to test or operate the MO-10 without disturbing the switch position. Recoupling in the same switch position is assured as the uncoupling bar can not be returned into the notch until the fixed coupling opens. Position indicators are provided to show switch position at ground level.



COUPLING ASSEMBLY

MO-10 SPECIFICATIONS

