

GP 15-09-02	Electric Motor Operators for Valves	July 2001
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Electric Motor Operators for Valves

GP 15-09-02

Scope

[I] This Global Practice (GP) covers the design, construction, performance, operating controls, installation, and testing of electric motor operators for valves.

[I] An asterisk (*) indicates that a decision by the Owner's Engineer or Purchaser is required, or that additional information shall be supplied by the Purchaser.

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GP 15-09-02	Electric Motor Operators for Valves	July 2001
-------------	-------------------------------------	-----------

Table of Contents

1. Required References.....	3
1.1. Global Practices–ExxonMobil Engineering Practices	3
2. Additional Requirements	3
2.1. Global Practices–ExxonMobil Engineering Practices	3
2.2. API–American Petroleum Institute	4
2.3. IEC–International Electrotechnical Commission	4
2.4. CSA–Canadian Standards Association	4
2.5. NEMA–National Electrical Manufacturers Association	4
2.6. NFPA–National Fire Protection Association	4
2.7. UL–Underwriters Laboratories, Inc.	4
3. Definitions	4
4. Operator Design Requirements.....	5
4.1. General	5
4.2. Handwheel and Clutching Mechanism.....	6
4.3. Local Valve Position Indication	6
5. Operator Performance Requirements.....	6
6. Electric Motor Operator Drivers	7
6.1. Electrical and Mechanical Components.....	7
6.2. Electric Motors	7
6.3. Reduction Gears for Operators.....	8
7. Local/Remote Controls	8
8. Additional Requirements for Electric Motor Operated Valves in EBV Service	10
9. Actuator Placement and Valve Orientation	12
10. Documentation, Testing, and Start-Up Kit	12
11. Operator Nameplate Identification	13
Record of Change	14
Attachment: Purpose Codes Definitions	15

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Page 2 of 14	©ExxonMobil Development Company	



Documents

Document Sharing Hub

GP 15-09-02	Electric Motor Operators for Valves	July 2001
-------------	-------------------------------------	-----------

1. Required References

[I] This Section lists Practices and Standards that are generically referenced and assumed to be a part of this document. Unless otherwise specified herein, use the latest edition.

1.1. Global Practices–ExxonMobil Engineering Practices

GP 14-03-01	Fireproofing
GP 15-06-02	Environmental Protection for Instrumentation
GP 15-10-01	Instrument Transmission Systems
GP 16-01-03	Protection of Electrical Equipment in Contaminated Environments
GP 16-02-01	Power System Design
GP 16-03-01	Wiring Methods and Material Selection
GP 16-04-01	Grounding and Overvoltage Protection
GP 16-13-01	Field Installation and Testing of Electrical Equipment
GP 20-01-01	Inspection of Equipment and Materials

2. Additional Requirements

* [I] Vendors shall comply with any local rules or regulations specified by the Owner's Engineer. For other conditions of procurement and implementation, the applicable standards of manufacture and test shall be specified by the Purchaser.

[I] Valve Supplier and/or Operator Vendor shall assume overall engineering responsibility, including but not limited to: sizing the operator components, mounting the operator on the valve, terminating operator side control and power wiring inside the operator enclosure, and stroking the valve to set the limit and torque switches.

* [I] The following Practices and Standards shall be used with this GP as specified by the Owner's Engineer and Purchaser.

2.1. Global Practices–ExxonMobil Engineering Practices

GP 03-12-01	Valve Selection
GP 16-01-01	Area Classification and Related Electrical Design for Flammable Liquids, Gases or Vapors
GP 16-01-02	Area Classification and Related Electrical Design for Combustible Dust

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Documents

Document Sharing Hub

GP 15-09-02	Electric Motor Operators for Valves	July 2001
-------------	-------------------------------------	-----------

2.2. API–American Petroleum Institute

API RP 553	Refinery Control Valves
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2.3. IEC–International Electrotechnical Commission

IEC 60529	Degrees of Protection Provided by Enclosures (IP Code)
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2.4. CSA–Canadian Standards Association

CSA C22.1HB-02	CE Code Handbook - An Explanation of Rules of the Canadian Electrical Code, Part 1
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2.5. NEMA–National Electrical Manufacturers Association

NEMA ICS 6	Industrial Control and Systems Enclosures
NEMA 250	Enclosures for Electrical Equipment (1000 Volts Maximum)

2.6. NFPA–National Fire Protection Association

NFPA 70	National Electrical Code
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2.7. UL–Underwriters Laboratories, Inc.

UL 1709	UL Standard for Safety Rapid Rise Fire Tests of Protection Materials for Structural Steel
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3. Definitions

Term	[I] Description
Electric Motor Operator	A totally enclosed self contained electro-mechanical unit, consisting of an electric motor driver, stem nut reduction gearing, lost motion device, thrust bearings (where applicable), handwheel, and local position indicator. The operator also contains electrical control equipment, including torque and position sensing devices, space heater where needed, and wiring terminals. Operators may also contain control power transformer, integral reversing motor starter with electrical and/or mechanical interlocks, and motor starter controls.

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Page 4 of 14	©ExxonMobil Development Company	



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Term	[I] Description
Emergency Block Valves (EBV Type C or EBV Type D)	Valves for isolating or depressurizing during an emergency. EBVs are installed at strategic locations to isolate/shutdown equipment, or to enable the depressurizing, removal, or displacement of the flammable material inventory of process vessels. Power operated EBVs, typically electric motor or double-acting piston type operators, may be Type C or Type D. EBV Type “C” are typically large line size valves (10 in. or larger) that are installed at least 25 ft (7.5 m) from the equipment to be isolated, and located no higher than 15 ft (4.5 m) abovegrade. The actuating pushbutton(s) and position indicating lights for such a valve are installed locally at the valve actuator. EBV Type “D” valves have actuating pushbutton(s) and position indicating lights located away from the valve at a readily accessible and safe location, at least 40 ft (12 m) horizontally away from the potential leak source and such that it can be operated from grade. Type “D” valves are selected for installations where the valve is not readily accessible in an emergency situation.
Motor Operated Valves (MOV)	Valves with an electric operator that has actuating pushbuttons and position indicating lights installed integral with, or located adjacent to, the operator for use during normal process operations. These valves may also, in some cases, be operated from the control house.
Torque Sensing	An integral operator function used for valve operations. It must be responsive to the mechanical torque developed in driving the valve either open or closed, or by intermediate obstructions met in either direction, or encountered at the end of valve travel.

4. Operator Design Requirements

4.1. General

- 1) * [I] The use of an integral or remote mounted motor starter and control transformer shall be specified by the Owner’s Engineer.
- 2) [R] For rising stem valves, a weatherproof galvanized or painted schedule 40 steel pipe cover shall be provided for the stem extension above the operator. The cover shall be threaded into the operator enclosure to protect the valve stem.
- 3) * [I] Materials of construction shall be manufacturer’s standard for the specified environmental exposure, unless otherwise specified by Owner’s Engineer.
- 4) [I] Fireproofing is required for operators and wiring systems in specified fire hazardous areas, in accordance with [GP 14-03-01](#). The fireproofing materials and methods for the valve operator, and power and control wiring systems, shall be as specified in [GP 14-03-01](#).

