



Electric Motor Actuators

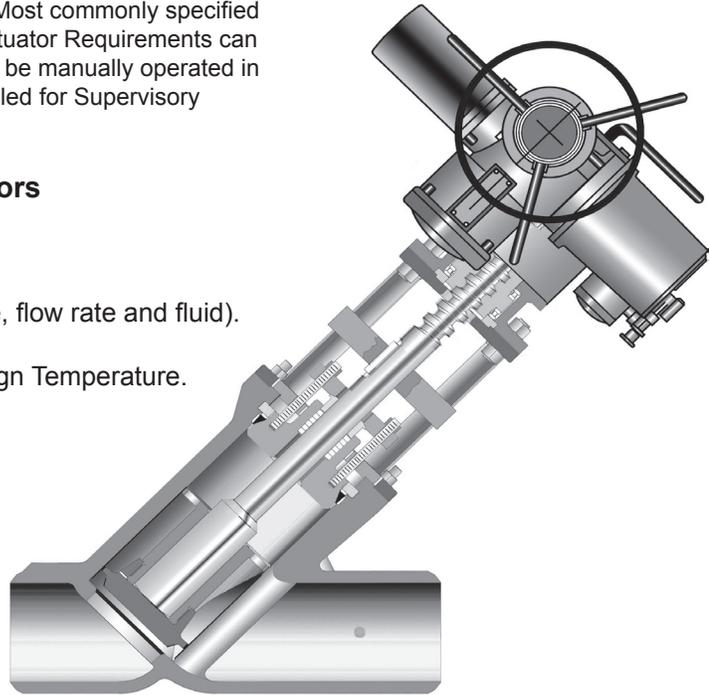
Electric motor actuated valves can be provided to meet the broadest range of requirements including operating cycle time, use of integral or remote controls, starters and indicators, and a wide range of power sources.

The Electric Actuators are available for AC or DC current. Most commonly specified NEMA classifications for Electrical Enclosures on Valve Actuator Requirements can be met, including fire safe & explosion proof. All units can be manually operated in case of power failure. Communication boards can be installed for Supervisory Control.

Information Required to Quote Motor Actuators

1. Valve size, figure number or description.
2. Valve operating conditions (pressure, temperature, flow rate and fluid).
3. Maximum differential (shut-off) pressure and Design Temperature.
4. Primary power supply:
 - a) electric-voltage, phase cycles,
5. Control voltage.
6. Valve stem position.
7. Closing time and frequency. (1)
8. Required construction (NEMA, etc.) or local environment
9. Auxiliary equipment:
 - a) push-button stations,
 - b) reversing controllers,
 - c) position indicators,
 - d) communication boards
 - d) other (i.e., stem covers, etc.)
10. Special requirements (i.e., radiation, seismic, etc.)
11. Preference for specific manufacturer, if any.

(1) Note: Depending on the required time to opening and closing, special construction for the valve can be required. For example, when a very short period of time is required for opening the valve, double or triple lead thread in valve stem is provided. Also modifications on the gate valve body guides are necessary for sliding the wedge in an intermediate position, with full differential pressure.





NEMA Area Classification for Electrical Enclosures

Type 3S—Dust-tight, Raintight and Sleet (Ice) Proof—Outdoor

Type 3S enclosures are intended for use outdoors to protect the enclosed equipment against windblown dust and water and to provide for its operation when the enclosure is covered by external ice or sleet. These enclosures do not protect the enclosed equipment against malfunction resulting from internal icing; where this is a requirement, the apparatus manufacturer should be consulted.

Type 4—Watertight and Dust-Tight—Indoor

Type 4 enclosures are intended for use indoors to protect the enclosed equipment against splashing water, see page of water, falling or hose directed water, and severe external condensation.

Type 6—Submersible, Watertight, Dust-Tight and Sleet (Ice) Resistant Indoor and Outdoor

Type 6 enclosures are intended for use indoors and out-doors where occasional submersion is encountered. They shall protect the enclosed equipment against a static head of water of six (6) feet for thirty (30) minutes, dust, splashing or external condensation of noncorrosive liquids, falling or hose directed water, lint and seep-age. They are not sleet (ice) proof.

Type 7, Class 1, Groups A, B, C, & D Air-Break Equipment—Indoor

Type 7 enclosures are intended for use indoors in the atmospheres and locations defined as Class I and Groups A, B, C, and D in the National Electrical Code. The letters A, B, C, or D which indicate the gas or vapor atmospheres in the hazardous location appear as a suffix to the designation, "Type 7" to give the complete NEMA designation and correspond to Class 1, Group A, B, C, or D, respectively, as defined in the National Electrical Code.

Type 9, Class 11, Groups E, F, & G Air Break Equipment—Indoor

Type 9 enclosures are intended for use indoors in the atmospheres defined as Class 11 and Groups E, F, or G in the National Electrical Code. The letters E, F, or G which indicate the dust atmospheres in the hazardous location appear as a suffix to the designation "Type 9" to give the complete NEMA designation and correspond to Class 11, Group E, F, or G, respectively, as defined in the National Electrical Code. These enclosures prevent the ingress of explosive amounts of hazardous dust.

Summary of Hazardous Atmospheres (Based on national Electrical Code and UL)

As explained in the definitions of the NEMA Types 7 and 9. The groups (indicated by letters), which follow the type class, indicate the gas or vapor atmospheres within the hazardous locations. The following chart is a listing which gives the typical atmospheres covered by these groups. You will note that this list also includes a "Division 1 or 2" in addition to the class. The "Division" simply indicates if the area in question is considered "Normally Hazardous" or "Not Normally Hazardous."

1. A Division 1 area, is or might be hazardous under normal conditions.
2. A Division 2 area, might become hazardous should an unusual condition arise.

CLASS	DIVISION	GROUP	TYPICAL ATMOSPHERES
I Gases Vapours	1 Normally Hazardous	A	Acetylene
		B	Hydrogen: Manufactured Gas and Equivalent
	2 Not Normally Hazardous	C	Ethyl-Ether Vapors; Ethylene; Cyclopropane
		D	Gasoline; Hexane; Naptha; Benzine; Butane; Propane; Alcohol; Acetone Benzol; Lacquer; Solvents; Natural Gas
II Combustible	1 Normally Hazardous	A	Same as Division I
		B	Same as Division I
		C	(Shown above)
	2 Not Normally Hazardous	E	Metal Dust, Including Aluminum, Magnesium, and their Commercial Alloys, and other metals or Similarly Characteristics.
F		Carbon Black, Coal, Coke Dust	
	G	Flour, Starch, Grain, Dusts.	
		G	Same as Division I (Shown above)