

# Trends in Valve Automation

## Part - 2

*By Balachandra MN,  
Vice President – Marketing,  
AUMA India Private Limited*

Electrical actuators generally fall into four duty categories depending on valve. Namely

- Class A (On-off)
- Class B (Inching)
- Class C (Modulating)
- Class D (Continuous Modulating)

European standard EN-15714-2 clearly brings out the distinction between the various duty categories as reproduced

below in Table 1.

It is apparent that with the exception of class A, the distinguishing factor between the various classes is the number of starts.

While many actuator manufacturers are offering Class C for modulating duties, very few are offering Class D services. This is due to the well-known fact that higher number of starts leads to heating

of the motor due to the high inrush starting current. The starting current of an induction motor is around six times the full load current and hence higher number of starts leads to the motor windings getting heated. This characteristic imposes limitations on a standard three phase induction motor used for regulating or modulating services.

Another important requirement of a

Table 1 – Multi-turn actuator duty performances

Rated torque ranges (Nm)	Class A On-Off (running time per hour <sup>a</sup> )	Class B Inching (starts per hour <sup>b</sup> )	Class C Modulating (starts per hour <sup>c</sup> )	Class D Continuous modulating (starts per hour <sup>d</sup> )
Up to 100	15 minutes	30	1,200	3,600
101 – 700	15 minutes	20	600	1,800
701 – 2,500	15 minutes	15	300	600
2,501 – 10,000	15 minutes	10	60	T.B.A <sup>e</sup>
Above 10,000	15 minutes	5	30	T.B.A <sup>e</sup>

a Based on an average load of at least 30% of the rated torque with the ability to transmit 100% of the rated torque for at least 10 % of the time.

b For inching, one start duration is defined by at least one revolution, with an average load of 30% of the rated torque.

c For modulating, one start consists of at least ¼ revolution, with a load of at least 30% of the rated torque. The cyclic duration factor (i.e. the ratio between the running period and total period) shall be not less than 25% (e.g. 1 s running and 3 s resting).

d For continuous modulating, one start consists of at least ¼ revolution, with a load of at least 30% of the rated torque.

e To be agreed between manufacturer / supplier and purchaser.

moderately accurate is the  
positioning accuracy. Modulating  
actuators used in automatic  
close-off systems in process of  
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