

Title: METHOD FOR CALCULATING Cv FOR SOLENOID VALVE GIVEN REQUIREMENT TORQUE & STROKE TIME

ACTUATOR MODEL	Factor for Cv (X)
05	0.07
07	0.18
08	0.24
09	0.38
10	0.60
12	1.23
14	3.1
15	5.2
16	6.7
18	16
20/21	32
30	48
40	68
60	106

NOTES: T = Stroke time secs. for 90° travel (No load condition)
 Cv given in US. Gals/Min/psi
 Supply pressure = 80 psi

METHOD: Given Load torque Nm (L) and operating time required in seconds (t),
 Refer to Kinetrol catalogue for max actuator torque (A).
 Load % max torque = L / A
 Refer to graph on sheet 2 for Actuator operating time factor (F)
 No load time (T) = t / F
 Cv = X / T (X from table above)

EXAMPLES: Torque required is 90 Nm (797 lbf.in), operating time required is 1.8 seconds.
 094-100 actuator used, from catalogue max torque = 199Nm
 Load % max torque = L / A = 90/199 = 45% max torque
 Using graph on sheet 2, load factor is 1.6.
 No load time T = 1.8/1.6 = 1.125 seconds
 Cv = X (09 actuator) / T = 0.38/1.125 = 0.34 US Gals/Min/psi

Torque required is 47 Nm (415 lbf.in), operating time is 3.6 seconds.
 094-120 actuator used, from catalogue max torque = 93.8Nm
 Load % max torque = L / A = 47/93.8 = 50% max torque
 Using graph on sheet 2, load factor is 1.8.
 No load time T = 3.6/1.8 = 2 seconds
 Cv = X (09 actuator) / T = 0.38/2 = 0.19 US Gals/Min/psi

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Actuator Operating Time Factor
Against % Load Max Torque

