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: $T = Stroke time secs. for 90^{\circ} travel (No load condition)$

C_V 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

 $C_V = X (09 \text{ actuator}) / T = 0.38/1.125 = 0.34 \text{ US Gals/Min/psi}$

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

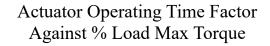
Using graph on sheet 2, load factor is 1.8.

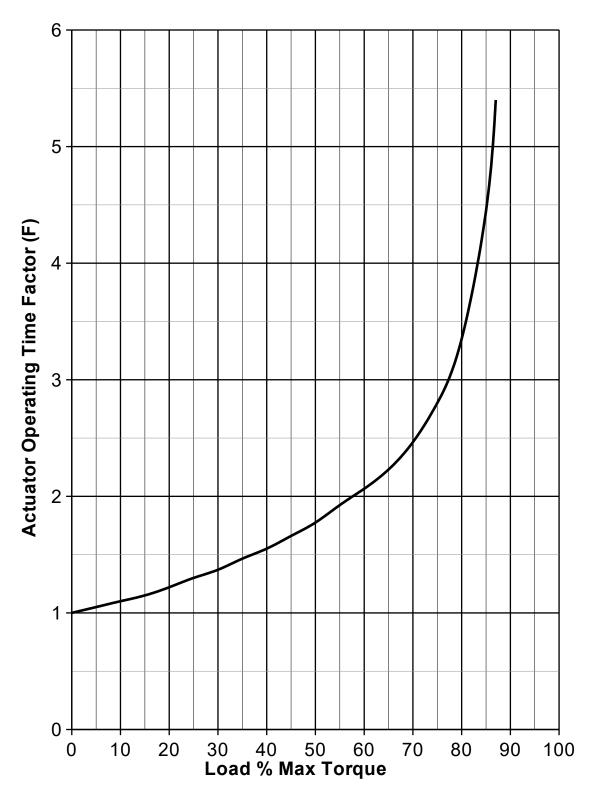
No load time T = 3.6/1.8 = 2 seconds

 $C_V = X (09 \text{ actuator}) / T = 0.38/2 = 0.19 \text{ US Gals/Min/psi}$

ISSUE	J.C.B.	KINETROL	Trading Fotato Fambana Surray England	Doc.No. TD77
J	05-02-25		Trading Estate Farnham Surrey England	Page 1 of 2

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]	ISSUE	J.C.B.	KINETROL		Doc.No. TD77
	J	05-02-25		Trading Estate Farnham Surrey England	Page 2 of 2