

VALVE/ ACTUATOR TORQUE SIZING ANALYSIS CHART FOR TRUNNION BALL VALVES

PISTON STYLE SCOTCH YOKE ACTUATOR SIZING CALCULATIONS SHEET LARGER ACTUATORS 2500NM TO 17000NM SPRING RETURN (SET SPRING TO CLOSE)

Item	Valve Size/Class	Valve BTO (N-m)	Valve RTO (N-m)	Valve ETO (N-m)	Valve BTC (N-m)	Valve RTC (N-m)	Valve ETC (N-m)	MAST (N-m)	Maximum DELTA P
1	100NB 600CL	500	150.00	175	445	150.00	375	2850	9900 KPA
	Actuator Model/Type	Actr BTO (N-m)	Actr RTO (N-m)	Actr ETO (N-m)	Actr BTC (N-m)	Actr RTC (N-m)	Actr ETC (N-m)	Actr BTO (N-m)	Air Supply Pressure
1A	HD722SR80	1346	673.00	807.60	1278.7	673.00	807.60	1346	5.5 BAR
	Safety Factor	169%	349%	361%	187%	349%	115%	-53%	

NOTES

No safety factor has been allowed in any valve or actuator torques shown. All torques are nett.

Above Actuator is Complete with Bracket (ISO Mounting) and high tensile Adaptor

All Torque Values are theoretical, however where required we will torque test prior to despatch.

The real valve torque value can be higher depending upon the following listed factors as these factors can drastically increase (or decrease) the torque.

Please advise if any of the following factors are applicable. Approximate valve torque increases/ decreases (Apply safety factor accordingly) are:-

- 1) Fluid carrying dust, powder, abrasive particles (+50% to 125%). In extreme cases can be higher. i.e. Up to 200%
- 1a) Slurry, pulp, resins, paste (+50%) can be even higher in some cases
- 2) Dry service (Dry Gas) (+25%)
- 3) High or low temperature (consult us)
- 4) Infrequent use (+30-50%) *1 - *2
- 5) If a higher minimum air supply than shown above is available more torque will be produced in the air operation phase.
- 6) Torque is based on a maximum Delta P for class. If your actual working pressure is lower please advise as a smaller actuator may be possible.
- 7) Lubricated service (clean oil or other high lubricity fluid) (+15%)

*1 PTFE/RPTFE can require more torque to unseat after a period of time due to its fluidity & memory. For Devlon/ Nylon Seat the valve torque is higher and PEEK is even higher (of course we have factored into torque of valve where applicable), however as these are harder materials (especially PEEK) infrequent use has a lesser effect on the increase in torque.

*2 Where set fail closed, an additional infrequent use safety factor at least needs to be applied to spring stroke torques (especially the spring BTC if set fail closed or the spring BTO if set fail open). Infrequent use:- Once per month +25%, once every 4 months +30%, once per month, over 4 months +40%

Abbreviations:-

BTO = Break to open (air stroke)

BTC = Break to close (spring stroke)

MAST = Max stem torque

RTO = Running to open (air stroke)

RTC = Running to close (spring stroke)

ETO = End to open (air stroke)

ETC = End to close (spring stroke)