

**INFINITY ACTUATORS DRS SERIES**

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The **3x** Factor

**GVC DRS Series Scotch Yoke Actuators**



INFINITY ACTUATORS

**ATEX**  
**CE**  
**P.E.D.**

## The **3X** Factor - *BEST IN CLASS*

The GVC tradition of excellence continues with the introduction of :  
**GVC DRS Series Scotch Yoke Actuators**

### Three Exclusive Features

#### Modularity

- Three parts – frame, spring, and air cylinder – modifications are simple and quick!
- Welded spring modules, for complete safety
- Springs or cylinders can be removed from frame module without disassembling the frame module.
- Conversion from spring return to double acting is EASY!

#### Versatility

- Optional hydraulic override can be included or added later
- Converting from fail closed to fail open is easily done in the field.
- Extra heavy duty travel adjustment bolts offer +/- 10% adjustment; for high speed impacts, no special end stops required.

#### Reliability

- Guaranteed for 1 million cycles!
- Exclusive X-Seals on pistons and V-Seals on the shafts out perform standard O-rings.
- Yoke is supported by life time lubricated ball bearings.
- Oversized dual tie rods are internal to the cylinder to eliminate corrosion.
- Tie rods pass through the pistons through solid bearings, X-seals not conventional O-rings - better alignment, lower friction, and smoother operation.
- Yoke thrust pin is case hardened for higher output torques.

## Actuator Modules

GVC actuator spring modules and pneumatic modules can be removed, swapped, rebuilt, or reinstalled on the frame module without disassembling the frame module. No need even to remove top cover of frame module, because all bolting for removal of the modules is external.

Actuators can easily be changed in the field from fail close to fail open by just swapping the positions of the spring and pneumatic modules. No need to dismantle the frame cover or cylinder assembly

Actuators can be modified from double acting to spring return easily in the field by adding a spring module.

Springs are lifetime lubricated and epoxy coated.

Springs are pre-compressed inside their welded spring modules for safety and ease of use.

Pneumatic cylinders are lined with hard chrome plating. Smooth to eliminate wear of piston seals, the surface is very hard, for long life.

Inside the pneumatic module, dual oversized tie rods are protected from external corrosion. Where the tie rods pass through the piston head, GVC has improved the design by providing a slide bearing, where most designs don't. This bearing is important to help maintain alignment and assure smooth operation.

## Frame Module

Inside the frame module, the yoke is supported by life time lubricated bearings. Needle roller bearings ensure the most efficient torque transmission.

Extra heavy duty travel adjustment bolts allow for +/- 10% adjustment of the 90 degree stroke. The area of contact is large, to withstand the impact forces.

The yoke thrust pin is made of case hardened steel to resist wear

The piston shaft is supported on each side of the frame module by solid bearings that ensure proper alignment and smooth operation.

## Flexijoint

Each piston shaft of the GVC DRS is equipped with two Flexijoints. These specially designed joints compensate for movement and changes in alignment to reduce internal stresses and increase output torque.

The thrust transmitted through the Flexijoints ensures no side thrust on the cylinder walls and bearings.

## Unique Sealing Features

Piston seal is GVC X design. Flexibility of the sealing material reduces friction, prevents leakage, and extends actuator life. The X shaped seal is wear compensating, and the unique shape of the seal retains the grease for longer periods. The piston is guided by a PTFE thrust bearing, which helps keep the piston centered, and seal wear to a minimum.

The tie rod seal is also of the GVC X design. Old fashioned O-rings are replaced by these flexible, low friction, resilient seals to reduce the failure rate of tie rod seals. Also reduces the wear and tear to the tie rods themselves.

GVC has also replaced the standard O-ring of the shaft seal. In this position, we provide a proven V-seal design. This self-energized, wear compensating seal guarantees low hysteresis and minimum friction. Like the X seal of the piston and tie rod seals, the inherent shape of the V-seal helps keep the grease where it needs to be.

## Optional Hydraulic Override

GVC DRS actuators may be ordered with an optional hydraulic override, or the override may be retrofitted to an existing actuator.

The override is fitted into the spring cartridge, to keep the overall dimensions of the actuator and override to a minimum.

Can withstand up to 2,000 psi hydraulic pressure.

Easy to operate.

Special Z seal ensures zero leakage and extended life.

**Conclusion** : Most actuators are perfectly good. Some are better then others...  
... but the GVC DRS is **Best In Class!**

# Heavy Duty Scotch Yoke Actuators

## FEATURES

- X seals and V seal for low wear and tear, each with grease retaining groove
- Extra heavy duty travel adjustment bolts can withstand high impact and are easy to adjust
- Needle roller bearing provides for the most efficient torque transmission
- The actuator can easily be converted to fail open from fail close, by interchanging the spring and pneumatic modules
- No need to dismantle the frame cover to install/ change spring or air module
- The spring is well caged in the cartridge form
- The pneumatic cylinders are lined with hard chrome plating - smooth to eliminate wear of piston seals for long life



### PISTON SEAL AND GUIDE

- The piston is guided by PTFE thrust bearing, to ensure no metal to metal contact
- The seal is X shape with flexibility, to minimize the friction
- The seal flexibility ensures no leakage and very long life
- Due to inherent shape, it retains the grease for a longer period
- Guaranteed operation of 1 million cycles



### YOKE PIN THRUST BEARING

- The carrier is well guided on the support rod
- Case hardened steel of the yoke thrust pin is strong for consistent transmission of the force
- Grease nipple for lubrication
- Larger intervals between scheduled maintenance



### FLEXI JOINT

- The thrust transmitted through the Flexi joint ensures no side thrust on the cylinder walls and the bearings
- The Flexi joint provides an easy means to assemble/ dismantle the cylinder module to the frame
- In spring return actuators, dual Flexi joints allow the carrier to operate perfectly and smoothly

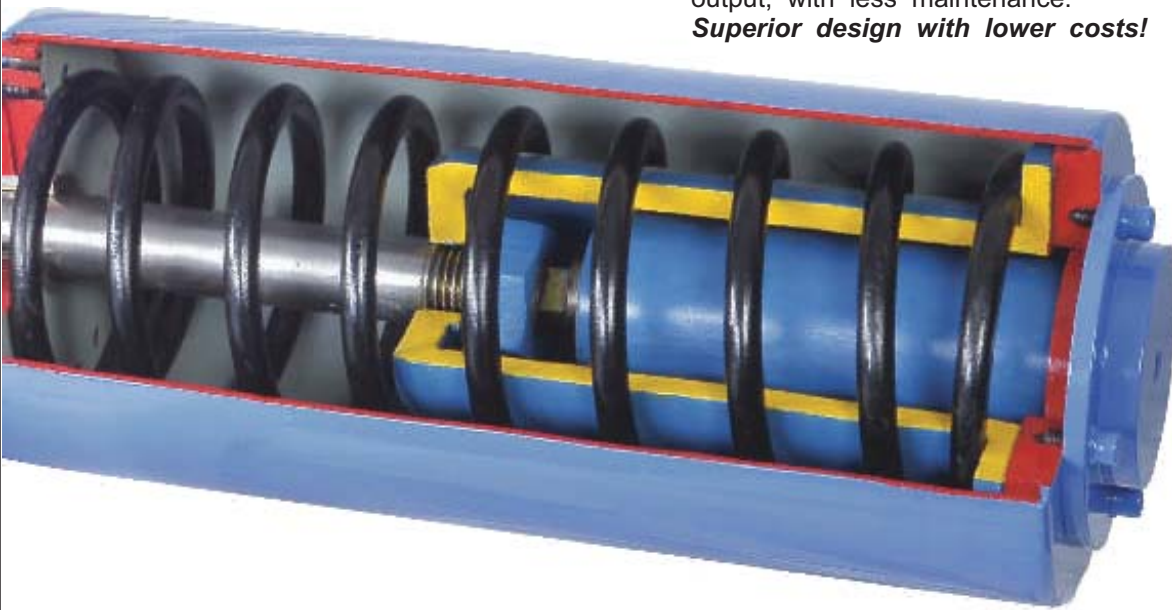
# Heavy Duty Scotch Yoke Actuators

- Solid bearing for piston rod for better alignment and smooth operation
- Internally mounted hydraulic override
- Guided, lifetime lubricated epoxy coated springs
- The tie rods are enclosed in the cylinder for the best performance, for high corrosion protection, and a longer life of the actuator
- The hydraulic override is built into the spring carrier
- Can be installed at a later date
- The vent valve is provided to check the gland leak on the direct mount valves
- The vent valve has built non return function, for IP67
- Secondary vent valve function is to detect leakages in the rod seal area of pneumatic cylinder

## SUPER EFFICIENT!

Needle bearings, Flexi joint, and the hardened yoke thrust pin bearing, are all incorporated into the actuator for longer, smoother operation. The GVC DRS actuator gives you greater efficiency and higher torque output, with less maintenance.

**Superior design with lower costs!**



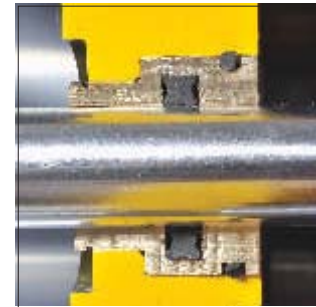
**HEAVY DUTY BEARINGS**

- The piston rod is guided on the heavy duty bearing
- V - Seal at the rod end ensures a very long life
- The bearing is built with a high grade bronze metal
- Low friction for smooth operation



**YOKE BEARING**

- The yoke is supported on life time lubricated ball bearings
- Very low coefficient of friction
- Provides 98% of the torque transmission
- Wear and tear of the yoke is reduced due to the alignment and support provided by the bearings



**X SEAL ON TIE ROD**

- The X seal provides the flexibility in sealing
- Due to additional linear bearings, the tie rod is not under wear and tear
- The X seal provides extremely low friction and a long life

# Heavy Duty Scotch Yoke Actuators

## SCOTCH YOKE

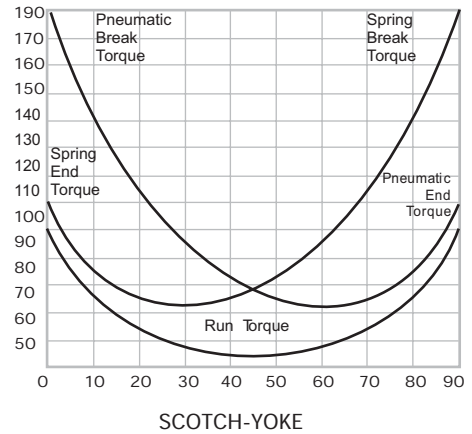
- Conventional system
- Excellent for valves having break torque much higher than run torques
- Comparatively, less cyclic load
- Light weight
- Requires only periodic servicing
- Cost effective

## LOW FRICTION PISTON SEAL

Flexible X style seal seals the piston to the cylinder wall. Hard chrome plated cylinder ensures a smooth surface for the piston seal to glide along. Chrome will resist flaking or peeling, ensuring a long lasting smooth surface

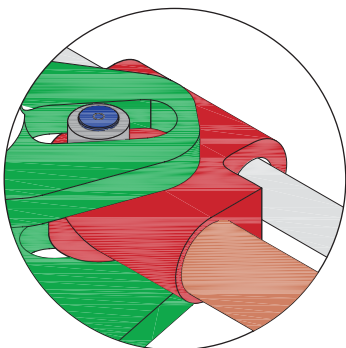
## SPRING INSPECTION

The spring pack can be easily removed from the actuator for the inspection. In most critical shut down applications it is a requirement that springs are periodically checked for cracks, low set and buckling to verify the health of the spring. GVC High Performance Actuator provides this feature to allow our customers to run their plants smoothly.



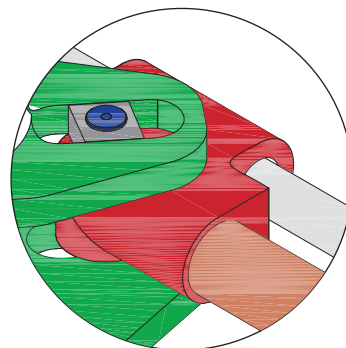
LOW FRICTION LIP SEAL

## PRINCIPLE OF SCOTCH YOKE



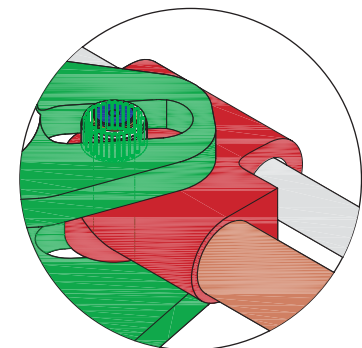
MAKE 'B'

- The roller is directly mounted on pin
- High friction
- Low efficiency of transmission
- Line contact for load transmission



MAKE 'R'

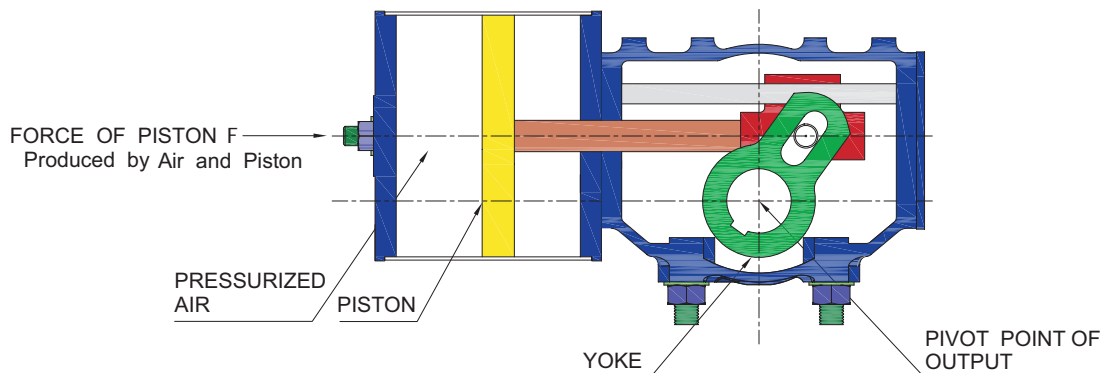
- Square drive is mounted on pin
- Larger friction
- Lower efficiency of transmission
- Larger face contact for load transmission



GVC

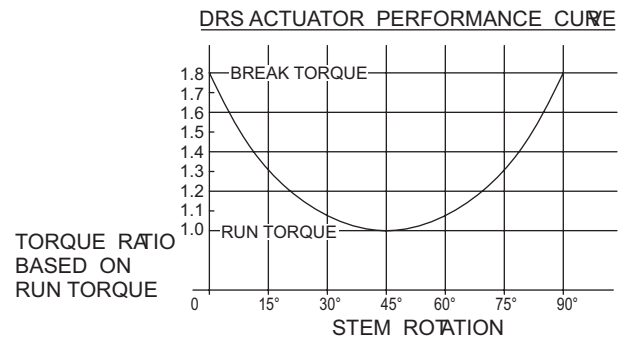
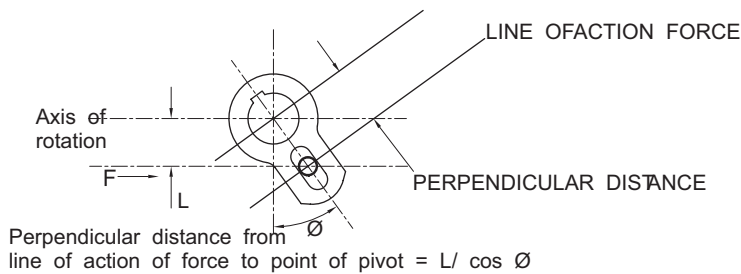
- Roller is mounted on a needle roller bearing
- Very low friction
- Very high efficiency of transmission
- Line contact for the load transmission

## EFFICIENCY OF SCOTCH YOKE ACTUATORS



THE SCOTCH YOKE ACTUATOR IS A LINK MECHANISM ON A SWEEP OF 90°

- (A) Due to the Scotch Yoke construction, the torque across the stroke is not constant.
- (B) Due to the construction at each point of rotation the torque varies, this is due to the fact that at each degree, the perpendicular distance to the force is changing.



Hence force multiplied by perpendicular distance, gives us the torque.  
By neglecting frictional force we get:

$$\text{Torque} = \frac{FC}{\cos^2\theta}$$

This is a frictionless mechanism, but conventionally, a factor for friction must be included in our equation. This friction, varies with the angular position.

## DRS EFFICIENCY

- Due to the needle roller on the load carrying pin
- Due to the ball bearing yoke
- Loss on 90° and 0° is only 2%

Hence 98% of the torque is available for work. Only 2% of the force is lost to friction - this makes GVC actuators much more efficient than those of our competitor

MAKE	% Loss at 0° and 90°
GVC	2%
MAKE B	6%
MAKE R	7%

# Heavy Duty Scotch Yoke Actuators



## DOUBLE ACTING TORQUE

ACTUATOR MODEL	STROKE POSITION	Operating Pressure (psig)						
		40	50	60	70	80	90	100
		Air Torque Output Start/ Min./ End (in-lb)						
DRSB0300	Start/End	25108	31385	37662	43939	50216	56493	-
	Minimum	12942	16178	19413	22649	25884	29120	-
DRSB0350	Start/End	34175	42718	51262	59806	-	-	-
	Minimum	17616	22020	26424	30828	-	-	-
DRSB0400	Start/End	44636	55795	-	-	-	-	-
	Minimum	23008	28760	-	-	-	-	-
DRSC0300	Start/End	30129	37662	45194	52727	60259	67791	75324
	Minimum	15531	19413	23296	27179	31061	34944	38827
DRSC0350	Start/End	41010	51262	61514	71767	82019	92272	102524
	Minimum	21139	26424	31708	36993	42278	47563	52847
DRSC0400	Start/End	53564	66954	80345	93736	107127	-	-
	Minimum	27610	34513	41415	48318	55220	-	-
DRSC0500	Start/End	83693	104616	-	-	-	-	-
	Minimum	43141	53926	-	-	-	-	-
DRSD0300	Start/End	36155	45194	54233	63272	72311	81350	90388
	Minimum	18637	23296	27955	32614	37274	41933	46592
DRSD0350	Start/End	49212	61514	73817	86120	98423	110726	123029
	Minimum	25367	31708	38050	44392	50734	57075	63417
DRSD0400	Start/End	64276	80345	96414	112483	128552	144622	160691
	Minimum	33132	41415	49698	57981	66264	74547	82830
DRSD0500	Start/End	100432	125540	150647	175755	200863	225971	-
	Minimum	51769	64711	77653	90596	103538	116480	-
DRSD0600	Start/End	144622	180777	216932	-	-	-	-
	Minimum	74547	93184	111821	-	-	-	-
DRSD0700	Start/End	196846	-	-	-	-	-	-
	Minimum	101467	-	-	-	-	-	-
DRSE0400	Start/End	77370	96712	116054	135397	154739	174081	193424
	Minimum	39881	49852	59822	69792	79762	89733	99703
DRSE0500	Start/End	120890	151112	181335	211557	241780	272002	302225
	Minimum	62314	77893	93472	109050	124629	140207	155786
DRSE0600	Start/End	174081	217602	261122	304643	348163	391683	435204
	Minimum	89733	112166	134599	157032	179465	201899	224332
DRSE0700	Start/End	236944	296180	355416	414652	473889	-	-
	Minimum	122136	152670	183204	213738	244272	-	-
DRSE0800	Start/End	309478	386848	464217	-	-	-	-
	Minimum	159525	199406	239287	-	-	-	-
DRSE0900	Start/End	391683	-	-	-	-	-	-
	Minimum	201899	-	-	-	-	-	-
DRSG0500	Start/End	148788	185985	223181	260378	297575	334772	371969
	Minimum	76695	95868	115042	134216	153389	172563	191737
DRSG0600	Start/End	214254	267818	321381	374945	428508	482072	535635
	Minimum	110440	138050	165660	193270	220881	248491	276101
DRSG0700	Start/End	291624	364530	437436	510341	583247	656153	729059
	Minimum	150321	187902	225482	263063	300643	338223	375804
DRSG0800	Start/End	380896	476120	571344	666568	761793	857017	-
	Minimum	196338	245423	294507	343592	392677	441761	-
DRSG0900	Start/End	482072	602590	723108	843626	-	-	-
	Minimum	248491	310613	372736	434859	-	-	-



# Heavy Duty Scotch Yoke Actuators



## DOUBLE ACTING TORQUE

ACTUATOR MODEL	STROKE POSITION	Operating Pressure (psig)						
		40	50	60	70	80	90	100
		Air Torque Output Start/ Min./ End (in-lb)						
DRSG0700-2	Start/End	583247	729059	874871	-	-	-	-
	Minimum	300643	375804	450964	-	-	-	-
DRSH0600	Start/End	265140	331424	397709	463994	530279	596564	662849
	Minimum	136670	170837	205005	239172	273340	307507	341675
DRSH0700	Start/End	360884	451105	541327	631548	721769	811990	902211
	Minimum	186023	232529	279034	325540	372046	418551	465057
DRSH0800	Start/End	471359	589199	707039	824878	942718	1060558	1178398
	Minimum	242969	303711	364453	425195	485937	546679	607422
DRSH0900	Start/End	596564	745705	894846	1043987	1193128	1342269	-
	Minimum	307507	384384	461261	538138	615014	691891	-
DRSH1000	Start/End	736499	920623	1104748	1288873	-	-	-
	Minimum	379638	474548	569458	664367	-	-	-
DRSH0800-2	Start/End	942718	1178398	1414077	-	-	-	-
	Minimum	485937	607422	728906	-	-	-	-
DRSH0900-2	Start/End	1193128	-	-	-	-	-	-
	Minimum	615014	-	-	-	-	-	-
DRSJ0700	Start/End	473889	592361	710833	829305	947777	1066249	1184721
	Minimum	244272	305341	366409	427477	488545	549613	610681
DRSJ0800	Start/End	618956	773696	928435	1083174	1237913	1392652	1547391
	Minimum	319050	398812	478575	558337	638099	717862	797624
DRSJ0900	Start/End	783367	979208	1175050	1370892	1566733	1762575	1958417
	Minimum	403797	504747	605696	706645	807595	908544	1009493
DRSJ1000	Start/End	967119	1208899	1450679	1692459	1934239	2176019	2417799
	Minimum	498515	623144	747773	872402	997030	1121659	1246288
DRSJ0800-2	Start/End	1237913	1547391	1856869	2166348	2475826	2785304	-
	Minimum	638099	797624	957149	1116674	1276199	1435724	-
DRSJ0900-2	Start/End	1566733	1958417	2350100	-	-	-	-
	Minimum	807595	1009493	1211392	-	-	-	-
DRSJ1000-2	Start/End	1934239	2417799	2901358	-	-	-	-
	Minimum	997030	1246288	1495546	-	-	-	-
DRSM1000	Start/End	1246096	1557620	1869144	2180668	2492192	2803716	3115240
	Minimum	642318	802897	963476	1124056	1284635	1445215	1605794
DRSM1100	Start/End	1507776	1884720	2261665	2638609	3015553	3392497	3769441
	Minimum	777204	971505	1165806	1360108	1554409	1748710	1943011
DRSM1200	Start/End	1794379	2242973	2691568	3140162	3588757	4037352	4485946
	Minimum	924937	1156172	1387406	1618640	1849875	2081109	2312343
DRSM1300	Start/End	2105903	2632378	3158854	3685329	4211805	4738281	5264756
	Minimum	1085517	1356896	1628275	1899654	2171034	2442413	2713792
DRSM1000-2	Start/End	2492192	3115240	3738289	4361337	4984385	5607433	-
	Minimum	1284635	1605794	1926953	2248112	2569270	2890429	-
DRSM1100-2	Start/End	3015553	3769441	4523329	5277217	-	-	-
	Minimum	1554409	1943011	2331613	2720215	-	-	-
DRSM1200-2	Start/End	3588757	4485946	5383136	-	-	-	-
	Minimum	1849875	2312343	2774812	-	-	-	-
DRSM1300-2	Start/End	4211805	5264756	-	-	-	-	-
	Minimum	2171034	2713792	-	-	-	-	-

# Heavy Duty Scotch Yoke Actuators



## SPRING RETURN TORQUE

ACTUATOR MODEL	SPRING TORQUE Start/ Min./ End (In-lb)		Operating Pressure (psig)						
			40	50	60	70	80	90	100
			Air Torque Output Start/ Min./ End (in-lb)						
DRSB0300-E6	Start	12970	15801	21413	27191	34166	40063	46022	-
	Min.	6070	7362	10199	13135	16789	19797	22842	-
	End	10124	13185	18610	24248	31420	37209	43079	-
DRSB0350-E6	Start	12970	24868	32747	40792	50033	-	-	-
	Min.	6070	12035	16041	20146	24968	-	-	-
	End	10124	22252	29944	37849	47286	-	-	-
DRSB0400-E6	Start	12970	35329	45824	-	-	-	-	-
	Min.	6070	17428	22782	-	-	-	-	-
	End	10124	32713	43021	-	-	-	-	-
DRSB0300-E5	Start	16445	12680	18069	23680	30889	36658	42511	-
	Min.	7896	5684	8401	11247	15027	17966	20954	-
	End	13519	9990	15187	20654	28065	33724	39485	-
DRSB0350-E5	Start	16445	21746	29402	37280	46756	-	-	-
	Min.	7896	10357	14243	18258	23206	-	-	-
	End	13519	19057	26521	34255	43932	-	-	-
DRSB0400-E5	Start	16445	32208	42479	-	-	-	-	-
	Min.	7896	15750	20983	-	-	-	-	-
	End	13519	29519	39598	-	-	-	-	-
DRSB0300-E4	Start	20709	9526	14690	20132	27577	33217	38963	-
	Min.	9916	3826	6411	9158	13077	15940	18865	-
	End	16950	6070	10987	16244	23949	29447	35075	-
DRSB0350-E4	Start	20709	18592	26023	33732	43444	-	-	-
	Min.	9916	8500	12253	16168	21256	-	-	-
	End	16950	15137	22321	29844	39816	-	-	-
DRSB0400-E4	Start	20709	29054	39100	-	-	-	-	-
	Min.	9916	13892	18993	-	-	-	-	-
	End	16950	25599	35398	-	-	-	-	-
DRSB0300-E3	Start	24184	-	12253	17574	25190	30736	36405	-
	Min.	11476	-	4874	7545	11572	14376	17252	-
	End	19424	-	7564	12650	20595	25962	31481	-
DRSB0350-E3	Start	24184	16319	23587	31174	41057	-	-	-
	Min.	11476	7066	10716	14555	19750	-	-	-
	End	19424	11942	18898	26250	36462	-	-	-
DRSB0400-E3	Start	24184	26780	36664	-	-	-	-	-
	Min.	11476	12459	17457	-	-	-	-	-
	End	19424	22404	31975	-	-	-	-	-
DRSB0300-E2	Start	26861	-	-	14796	22597	28043	33627	-
	Min.	12903	-	-	6069	10194	12945	15776	-
	End	22110	-	-	9881	18010	23277	28712	-
DRSB0350-E2	Start	26861	13849	20941	28396	38464	-	-	-
	Min.	12903	5754	9311	13080	18373	-	-	-
	End	22110	9481	16261	23482	33877	-	-	-
DRSB0400-E2	Start	26861	24311	34018	-	-	-	-	-
	Min.	12903	11147	16052	-	-	-	-	-
	End	22110	19943	29338	-	-	-	-	-
DRSB0300-E1	Start	31046	-	-	-	19765	25100	30592	-
	Min.	14764	-	-	-	8398	11079	13851	-
	End	25044	-	-	-	13971	19081	24385	-
DRSB0350-E1	Start	31046	-	18051	25361	35631	-	-	-
	Min.	14764	-	7478	11155	16577	-	-	-
	End	25044	-	12139	19154	29838	-	-	-
DRSB0400-E1	Start	31046	21613	31128	-	-	-	-	-
	Min.	14764	9436	14219	-	-	-	-	-
	End	25044	16096	25216	-	-	-	-	-

# Heavy Duty Scotch Yoke Actuators



## SPRING RETURN TORQUE

ACTUATOR MODEL	SPRING TORQUE Start/ Min./ End (In-lb)		Operating Pressure (psig)						
			40	50	60	70	80	90	100
			Air Torque Output Start/ Min./ End (in-lb)						
DRSC0300-E4	Start	36503	-	-	-	25200	31660	38298	47235
	Min	17099	-	-	-	10673	13913	17260	21984
	End	28517	-	-	-	17491	23651	30039	39369
DRSC0350-E4	Start	36503	-	23174	32021	44240	53420	62779	-
	Min	17099	-	9581	14024	20488	25129	29878	-
	End	28517	-	15307	23762	36531	45411	54519	-
DRSC0400-E4	Start	36503	27348	38866	50852	66209	-	-	-
	Min	17099	11891	17670	23731	31812	-	-	-
	End	28517	20006	31000	42593	58501	-	-	-
DRSC0500-E4	Start	36503	57477	-	-	-	-	-	-
	Min.	17099	27421	-	-	-	-	-	-
	End	28517	50135	-	-	-	-	-	-
DRSC0300-E3	Start	42051	-	-	-	21525	27841	34361	43485
	Min.	19547	-	-	-	8310	11458	14728	19573
	End	32325	-	-	-	12136	18087	24301	33905
DRSC0350-E3	Start	42051	-	-	28084	40565	49601	58841	-
	Min.	19547	-	-	11492	18125	22674	27347	-
	End	32325	-	-	18024	31176	39847	48781	-
DRSC0400-E3	Start	42051	23847	35116	46915	62534	-	-	-
	Min.	19547	9640	15259	21199	29449	-	-	-
	End	32325	14906	25535	36855	53145	-	-	-
DRSC0500-E3	Start	42051	53977	-	-	-	-	-	-
	Min.	19547	25171	-	-	-	-	-	-
	End	32325	45035	-	-	-	-	-	-
DRSC0300-E2	Start	48933	-	-	-	-	-	29619	38969
	Min.	22534	-	-	-	-	-	11639	16631
	End	36910	-	-	-	-	-	17184	27126
DRSC0350-E2	Start	48933	-	-	-	36139	45003	54099	66169
	Min.	22534	-	-	-	15242	19679	24258	30652
	End	36910	-	-	-	24533	32945	41664	54326
DRSC0400-E2	Start	48933	-	30600	42173	58108	-	-	-
	Min.	22534	-	12317	18110	26566	-	-	-
	End	36910	-	18757	29738	46502	-	-	-
DRSC0500-E2	Start	48933	49762	-	-	-	-	-	-
	Min.	22534	22425	-	-	-	-	-	-
	End	36910	38709	-	-	-	-	-	-
DRSC0300-E1	Start	53951	-	-	-	-	-	-	33809
	Min.	25274	-	-	-	-	-	-	13933
	End	42149	-	-	-	-	-	-	22184
DRSC0350-E1	Start	53951	-	-	-	31082	39749	48681	-
	Min.	25274	-	-	-	12597	16932	21424	-
	End	42149	-	-	-	19689	27913	36474	-
DRSC0400-E1	Start	53951	-	25440	36755	-	-	-	-
	Min.	25274	-	9619	15277	-	-	-	-
	End	42149	-	13814	24548	-	-	-	-
DRSC0500-E1	Start	53951	44946	-	-	-	-	-	-
	Min.	25274	19907	-	-	-	-	-	-
	End	42149	34096	-	-	-	-	-	-
DRSD0300-E4	Start	68391	-	-	-	-	-	-	41877
	Min.	30814	-	-	-	-	-	-	16241
	End	49252	-	-	-	-	-	-	23025
DRSD0350-E4	Start	68391	-	-	-	-	49029	59789	74517
	Min.	30814	-	-	-	-	19831	25207	33066
	End	49252	-	-	-	-	29835	39995	55666

# Heavy Duty Scotch Yoke Actuators



## SPRING RETURN TORQUE

ACTUATOR MODEL	SPRING TORQUE Start/ Min./ End (In-lb)		Operating Pressure (psig)						
			40	50	60	70	80	90	100
			Air Torque Output Start/ Min./ End (in-lb)						
DRSD0400-E4	Start	68391	-	-	45477	64942	79159	93684	112179
	Min.	30814	-	-	17830	28237	35362	42679	52480
	End	49252	-	-	25683	46468	59965	73890	93327
DRSD0500-E4	Start	68391	55154	77028	99710	128214	151470	-	-
	Min.	30814	23442	34360	45785	60852	72635	-	-
	End	49252	37559	58176	79916	109739	132275	-	-
DRSD0600-E4	Start	68391	99344	132265	-	-	-	-	-
	Min.	30814	46220	62833	-	-	-	-	-
	End	49252	81749	113414	-	-	-	-	-
DRSD0350-E3	Start	82577	-	-	-	-	-	-	65486
	Min.	36903	-	-	-	-	-	-	27069
	End	58421	-	-	-	-	-	-	41694
DRSD0400-E3	Start	82577	-	-	-	56091	69963	84201	103148
	Min.	36903	-	-	-	22360	29255	36382	46482
	End	58421	-	-	-	32775	45739	59220	79356
DRSD0500-E3	Start	82577	-	67997	90227	119363	142274	-	-
	Min.	36903	-	28363	39488	54975	66529	-	-
	End	58421	-	44204	65246	96047	118049	-	-
DRSD0600-E3	Start	82577	90915	123234	-	-	-	-	-
	Min.	36903	40622	56836	-	-	-	-	-
	End	58421	68709	99442	-	-	-	-	-
DRSD0400-E2	Start	97818	-	-	-	-	-	73235	92703
	Min.	43660	-	-	-	-	-	29393	39826
	End	69025	-	-	-	-	-	43457	64344
DRSD0500-E2	Start	97818	-	-	79261	109128	131640	-	-
	Min.	43660	-	-	32499	48452	59752	-	-
	End	69025	-	-	49483	81335	102764	-	-
DRSD0600-E2	Start	97818	81167	112790	-	-	-	-	-
	Min.	43660	34410	50180	-	-	-	-	-
	End	69025	54698	84430	-	-	-	-	-
DRSD0400-E1	Start	120978	-	-	-	-	-	-	73681
	Min.	54875	-	-	-	-	-	-	28781
	End	88337	-	-	-	-	-	-	41531
DRSD0500-E1	Start	120978	-	-	-	90486	-	-	-
	Min.	54875	-	-	-	37627	-	-	-
	End	88337	-	-	-	58979	-	-	-
DRSD0600-E1	Start	120978	63413	93768	-	-	-	-	-
	Min.	54875	24101	39134	-	-	-	-	-
	End	88337	33406	61618	-	-	-	-	-
DRSE0500-E4	Start	155124	-	-	-	116727	143255	170399	205459
	Min.	66010	-	-	-	45333	58429	71939	90769
	End	98243	-	-	-	61822	86210	111571	149433
DRSE0600-E4	Start	155124	-	120836	159518	209812	249638	290080	338438
	Min.	66010	-	47149	66331	93315	113266	133630	159315
	End	98243	-	64810	100691	154907	192594	231252	282412
DRSE0700-E4	Start	155124	146630	199415	253813	319822	375364	-	-
	Min.	66010	61453	87653	114936	150021	178073	-	-
	End	98243	94339	143389	194985	264917	318319	-	-
DRSE0800-E4	Start	155124	219164	290082	362613	-	-	-	-
	Min.	66010	98842	134389	171019	-	-	-	-
	End	98243	166873	234056	303786	-	-	-	-
DRSE0500-E3	Start	185434	-	-	-	-	-	-	188270
	Min.	78387	-	-	-	-	-	-	78578
	End	115695	-	-	-	-	-	-	119579

# Heavy Duty Scotch Yoke Actuators



## SPRING RETURN TORQUE

ACTUATOR MODEL	SPRING TORQUE Start/ Min./ End (In-lb)		Operating Pressure (psig)						
			40	50	60	70	80	90	100
			Air Torque Output Start/ Min./ End (in-lb)						
DRSE0600-E3	Start	185434	-	-	141469	192967	232136	272030	321249
	Min.	78387	-	-	53531	81368	100854	120830	147124
	End	115695	-	-	69344	125649	162196	199905	252557
DRSE0700-E3	Start	185434	130586	182225	235764	302976	357861	413472	-
	Min.	78387	50075	75462	102136	138074	165661	193738	-
	End	115695	66474	113534	163638	235659	287921	341346	-
DRSE0800-E3	Start	185434	203120	272893	344564	-	-	-	-
	Min.	78387	87464	122198	158219	-	-	-	-
	End	115695	139008	204201	272439	-	-	-	-
DRSE0900-E3	Start	185434	285325	375649	-	-	-	-	-
	Min.	78387	129838	175165	-	-	-	-	-
	End	115695	221214	306958	-	-	-	-	-
DRSE0600-E2	Start	230069	-	-	-	-	210752	249978	300247
	Min.	95168	-	-	-	-	84024	103474	130594
	End	137017	-	-	-	-	117433	153743	208594
DRSE0700-E2	Start	230069	-	161223	213712	282395	336478	-	-
	Min.	95168	-	58933	84780	121876	148830	-	-
	End	137017	-	69571	117476	192575	243159	-	-
DRSE0800-E2	Start	230069	183518	251891	322512	-	-	-	-
	Min.	95168	72036	105668	140863	-	-	-	-
	End	137017	97976	160238	226277	-	-	-	-
DRSE0900-E2	Start	230069	265723	-	-	-	-	-	-
	Min.	95168	114410	-	-	-	-	-	-
	End	137017	180181	-	-	-	-	-	-
DRSE0600-E1	Start	256360	-	-	-	-	185969	224420	275906
	Min.	108899	-	-	-	-	70253	89274	117070
	End	161730	-	-	-	-	91066	126552	182698
DRSE0700-E1	Start	256360	-	-	188153	258540	311694	-	-
	Min.	108899	-	-	70579	108622	135060	-	-
	End	161730	-	-	90285	167196	216791	-	-
DRSE0800-E1	Start	256360	-	227550	296954	-	-	-	-
	Min.	108899	-	92144	126662	-	-	-	-
	End	161730	-	134342	199086	-	-	-	-
DRSE0900-E1	Start	256360	243005	-	-	-	-	-	-
	Min.	108899	101788	-	-	-	-	-	-
	End	161730	156011	-	-	-	-	-	-
DRSG0600-E4	Start	296518	-	-	-	-	236093	283643	346656
	Min.	127355	-	-	-	-	93159	116778	150660
	End	191864	-	-	-	-	131138	175409	243575
DRSG0700-E4	Start	296518	-	175550	239007	325142	390832	457725	540080
	Min.	127355	-	62461	93770	140131	172922	206511	250363
	End	191864	-	72470	130773	224123	285877	349490	436999
DRSG0800-E4	Start	296518	204515	287141	372916	481369	569377	658588	-
	Min.	127355	79261	119982	162795	220660	264955	310049	-
	End	191864	108307	184060	264682	380350	464422	550354	-
DRSG0900-E4	Start	296518	305691	413610	524679	-	-	-	-
	Min.	127355	131413	185173	241024	-	-	-	-
	End	191864	209483	310530	416445	-	-	-	-
DRSG0600-E3	Start	352686	-	-	-	-	-	-	313308
	Min.	150761	-	-	-	-	-	-	127607
	End	225721	-	-	-	-	-	-	188252
DRSG0700-E3	Start	352686	-	-	-	292461	356878	422710	506732
	Min.	150761	-	-	-	117538	149449	182305	227310
	End	225721	-	-	-	169906	229548	291401	381676

# Heavy Duty Scotch Yoke Actuators



## SPRING RETURN TORQUE

ACTUATOR MODEL	SPRING TORQUE Start/ Min./ End (In-lb)		Operating Pressure (psig)						
			40	50	60	70	80	90	100
			Air Torque Output Start/ Min./ End (in-lb)						
DRSG0800-E3	Start	352686	-	253793	337901	448688	535423	623573	-
	Min.	150761	-	96929	138589	198068	241483	285842	-
	End	225721	-	128737	206592	326133	408093	492264	-
DRSG0900-E3	Start	352686	274566	380263	489664	-	-	-	-
	Min.	150761	109896	162119	216817	-	-	-	-
	End	225721	157847	255206	358355	-	-	-	-
DRSG0700-2-E3	Start	352686	375742	506732	641428	-	-	-	-
	Min.	150761	162048	227310	295046	-	-	-	-
	End	225721	259023	381676	510119	-	-	-	-
DRSG0700-E2	Start	448448	-	-	-	-	316829	381409	467398
	Min.	185058	-	-	-	-	115053	146834	193528
	End	265655	-	-	-	-	133511	192363	287354
DRSG0800-E2	Start	448448	-	-	-	410141	495374	582272	-
	Min.	185058	-	-	-	164962	207087	250372	-
	End	265655	-	-	-	233697	312056	393226	-
DRSG0900-E2	Start	448448	-	-	448364	587198	-	-	-
	Min.	185058	-	-	181346	256228	-	-	-
	End	265655	-	-	259317	410754	-	-	-
DRSG0700-2-E2	Start	448448	339030	467398	600127	-	-	-	-
	Min.	185058	130519	193528	259575	-	-	-	-
	End	265655	170989	287354	411080	-	-	-	-
DRSG0700-E1	Start	531230	-	-	-	-	-	-	419871
	Min.	218970	-	-	-	-	-	-	160126
	End	313908	-	-	-	-	-	-	205817
DRSG0800-E1	Start	531230	-	-	-	-	446982	532369	-
	Min.	218970	-	-	-	-	173078	215300	-
	End	313908	-	-	-	-	229036	307612	-
DRSG0900-E1	Start	531230	-	-	-	540621	-	-	-
	Min.	218970	-	-	-	223495	-	-	-
	End	313908	-	-	-	330848	-	-	-
DRSG0700-2-E1	Start	531230	-	419871	550223	-	-	-	-
	Min.	218970	-	160126	224503	-	-	-	-
	End	313908	-	205817	325466	-	-	-	-
DRSH0600-E3	Start	507910	-	-	-	-	-	-	305514
	Min.	228008	-	-	-	-	-	-	117094
	End	362789	-	-	-	-	-	-	162575
DRSH0700-E3	Start	507910	-	-	-	281359	357937	436788	544876
	Min.	228008	-	-	-	105451	143382	182742	240477
	End	362789	-	-	-	141279	212399	286702	401937
DRSH0800-E3	Start	507910	-	-	331837	474690	578886	685356	821063
	Min.	228008	-	-	128644	205107	257274	310870	382841
	End	362789	-	-	181751	334610	433348	535270	678124
DRSH0900-E3	Start	507910	263051	388370	519644	693799	829296	967067	-
	Min.	228008	97899	159804	225452	318049	386351	456082	-
	End	362789	129642	245431	369558	553718	683758	816981	-
DRSH1000-E3	Start	507910	402986	563288	729546	938685	-	-	-
	Min.	228008	170030	249968	333649	444279	-	-	-
	End	362789	269576	420349	579460	798604	-	-	-
DRSH0800-2-E3	Start	507910	609206	821063	1038876	-	-	-	-
	Min.	228008	276329	382841	493097	-	-	-	-
	End	362789	475796	678124	888790	-	-	-	-
DRSH0900-2-E3	Start	507910	859615	-	-	-	-	-	-
	Min.	228008	405406	-	-	-	-	-	-
	End	362789	726205	-	-	-	-	-	-

# Heavy Duty Scotch Yoke Actuators



## SPRING RETURN TORQUE

ACTUATOR MODEL	SPRING TORQUE Start/ Min./ End (In-lb)		Operating Pressure (psig)						
			40	50	60	70	80	90	100
			Air Torque Output Start/ Min./ End (in-lb)						
DRSH0700-E2	Start	598129	-	-	-	-	294087	370943	482166
	Min.	268284	-	-	-	-	102991	141089	200807
	End	426457	-	-	-	-	121921	193397	313075
DRSH0800-E2	Start	598129	-	-	-	413234	515036	619511	758353
	Min.	268284	-	-	-	166230	216883	269217	343172
	End	426457	-	-	-	247525	342871	441965	589262
DRSH0900-E2	Start	598129	-	325660	453799	632343	765446	901222	-
	Min.	268284	-	120134	183798	279173	345960	414429	-
	End	426457	-	156569	276253	466634	593280	723676	-
DRSH1000-E2	Start	598129	344457	500578	663701	877229	-	-	-
	Min.	268284	133005	210298	291995	405402	-	-	-
	End	426457	186639	331487	486155	711519	-	-	-
DRSH0800-2-E2	Start	598129	550676	758353	973030	-	-	-	-
	Min.	268284	239304	343172	451443	-	-	-	-
	End	426457	392858	589262	795485	-	-	-	-
DRSH0900-2-E2	Start	598129	801086	-	-	-	-	-	-
	Min.	268284	368381	-	-	-	-	-	-
	End	426457	643268	-	-	-	-	-	-
DRSH0700-E1	Start	742096	-	-	-	-	-	-	407538
	Min.	325086	-	-	-	-	-	-	144859
	End	502224	-	-	-	-	-	-	171272
DRSH0800-E1	Start	742096	-	-	-	-	-	541151	683725
	Min.	325086	-	-	-	-	-	210471	287223
	End	502224	-	-	-	-	-	293072	447459
DRSH0900-E1	Start	742096	-	-	-	559207	689461	822862	-
	Min.	325086	-	-	-	224343	288994	355683	-
	End	502224	-	-	-	327666	448899	574783	-
DRSH1000-E1	Start	742096	-	-	585341	804093	-	-	-
	Min.	325086	-	-	233249	350573	-	-	-
	End	502224	-	-	337262	572552	-	-	-
DRSH0800-2-E1	Start	742096	481023	683725	894671	-	-	-	-
	Min.	325086	187085	287223	392698	-	-	-	-
	End	502224	260508	447459	646591	-	-	-	-
DRSH0900-2-E1	Start	742096	731433	-	-	-	-	-	-
	Min.	325086	316162	-	-	-	-	-	-
	End	502224	510918	-	-	-	-	-	-
DRSJ0800-E4	Start	1012189	-	-	-	-	-	-	958075
	Min.	417272	-	-	-	-	-	-	386626
	End	598311	-	-	-	-	-	-	550420
DRSJ0900-E4	Start	1012189	-	-	-	793362	966703	1143794	1369101
	Min.	417272	-	-	-	303867	389124	476996	598495
	End	598311	-	-	-	393860	551636	715756	961446
DRSJ1000-E48	Start	1012189	-	-	-	1114930	1334208	1557237	1828483
	Min.	417272	-	-	-	469623	578560	690111	835290
	End	598311	-	-	-	715428	919141	1129199	1420828
DRSJ0800-2-E4	Start	1012189	-	958075	1238088	1588818	1875795	2166522	-
	Min.	417272	-	386626	525601	713896	857728	1004176	-
	End	598311	-	550420	810050	1189316	1460728	1738484	-
DRSJ0900-2-E4	Start	1012189	1016706	1369101	1731319	-	-	-	-
	Min.	417272	423996	598495	779844	-	-	-	-
	End	598311	636227	961446	1303281	-	-	-	-
DRSJ1000-2-E4	Start	1012189	1384211	1828483	-	-	-	-	-
	Min.	417272	613432	835290	-	-	-	-	-
	End	598311	1003733	1420828	-	-	-	-	-

# Heavy Duty Scotch Yoke Actuators



## SPRING RETURN TORQUE

ACTUATOR MODEL	SPRING TORQUE Start/ Min./ End (In-lb)		Operating Pressure (psig)							
			40	50	60	70	80	90	100	
			Air Torque Output Start/ Min./ End (in-lb)							
DRSJ0900-E3	Start	1260638	-	-	-	-	-	-	-	1258607
	Min.	508620	-	-	-	-	-	-	-	508521
	End	710492	-	-	-	-	-	-	-	716732
DRSJ1000-E3	Start	1260638	-	-	-	-	1221705	1441218		1717988
	Min.	508620	-	-	-	-	486949	595638		745315
	End	710492	-	-	-	-	669978	872250		1176114
DRSJ0800-2-E3	Start	1260638	-	-	1122069	1480534	1763292	2050503		-
	Min.	508620	-	-	431128	625721	766118	909702		-
	End	710492	-	-	553100	949496	1211565	1481535		-
DRSJ0900-2-E3	Start	1260638	-	1258607	1615300	-	-	-	-	-
	Min.	508620	-	508521	685371	-	-	-	-	-
	End	710492	-	716732	1046331	-	-	-	-	-
DRSJ1000-2-E3	Start	1260638	1281083	1717988	-	-	-	-	-	-
	Min.	508620	529456	745315	-	-	-	-	-	-
	End	710492	775333	1176114	-	-	-	-	-	-
DRSJ0900-E2	Start	1381500	-	-	-	-	-	-	-	1125446
	Min.	578803	-	-	-	-	-	-	-	439392
	End	845685	-	-	-	-	-	-	-	597687
DRSJ1000-E2	Start	1381500	-	-	-	-	-	1301400		1584828
	Min.	578803	-	-	-	-	-	523053		676187
	End	845685	-	-	-	-	-	747253		1057069
DRSJ0800-2-E2	Start	1381500	-	-	-	1350036	1627710	-	-	-
	Min.	578803	-	-	-	557975	695732	-	-	-
	End	845685	-	-	-	832833	1090356	-	-	-
DRSJ0900-2-E2	Start	1381500	-	1125446	1475481	-	-	-	-	-
	Min.	578803	-	439392	612786	-	-	-	-	-
	End	845685	-	597687	921334	-	-	-	-	-
DRSJ1000-2-E2	Start	1381500	1156800	1584828	-	-	-	-	-	-
	Min.	578803	464936	676187	-	-	-	-	-	-
	End	845685	664225	1057069	-	-	-	-	-	-
DRSJ0800-2-E1	Start	1712206	-	-	-	-	1466983	1744935		-
	Min.	703888	-	-	-	-	570288	707753		-
	End	1005952	-	-	-	-	758700	1014518		-
DRSM1100-E4	Start	2222372	-	-	-	-	-	-	-	2578000
	Min.	882953	-	-	-	-	-	-	-	1073332
	End	1209627	-	-	-	-	-	-	-	1580482
DRSM1200-E4	Start	2222372	-	-	-	-	2375653	2786338		3294505
	Min.	882953	-	-	-	-	964384	1167947		1442665
	End	1209627	-	-	-	-	1359999	1738945		2296987
DRSM1300-E4	Start	2222372	-	-	-	2517717	2998701	3487268		4073315
	Min.	882953	-	-	-	1047369	1285543	1529250		1844113
	End	1209627	-	-	-	1540150	1983047	2439874		3075797
DRSM1000-2-E4	Start	2222372	-	-	2487275	3193724	3771281	-	-	-
	Min.	882953	-	-	1013790	1395827	1683780	-	-	-
	End	1209627	-	-	1439882	2216157	2755626	-	-	-
DRSM1100-2-E4	Start	2222372	-	2578000	3272316	-	-	-	-	-
	Min.	882953	-	1073332	1418451	-	-	-	-	-
	End	1209627	-	1580482	2224922	-	-	-	-	-
DRSM1200-2-E4	Start	2222372	2476745	3294505	4132122	-	-	-	-	-
	Min.	882953	1038175	1442665	1861650	-	-	-	-	-
	End	1209627	1545729	2296987	3084729	-	-	-	-	-
DRSM1300-2-E4	Start	2222372	3099793	4073315	-	-	-	-	-	-
	Min.	882953	1359334	1844113	-	-	-	-	-	-
	End	1209627	2168777	3075797	-	-	-	-	-	-



# Heavy Duty Scotch Yoke Actuators

## SPRING RETURN TORQUE

ACTUATOR MODEL	SPRING TORQUE Start/ Min./ End (In-lb)		Operating Pressure (psig)						
			40	50	60	70	80	90	100
			Air Torque Output Start/ Min./ End (in-lb)						
DRSM1200-E3	Start	2740578	-	-	-	-	-	-	3039302
	Min.	1081513	-	-	-	-	-	-	1247090
	End	1468726	-	-	-	-	-	-	1786572
DRSM1300-E3	Start	2740578	-	-	-	-	2738858	3219304	3818112
	Min.	1081513	-	-	-	-	1086412	1323897	1648539
	End	1468726	-	-	-	-	1463352	1903938	2565382
DRSM1000-2-E3	Start	2740578	-	-	-	2943625	3511438	4088456	-
	Min.	1081513	-	-	-	1204164	1484649	1771913	-
	End	1468726	-	-	-	1715950	2235931	2773090	-
DRSM1100-2-E3	Start	2740578	-	-	3004353	3859506	-	-	-
	Min.	1081513	-	-	1213097	1676267	-	-	-
	End	1468726	-	-	1688987	2631831	-	-	-
DRSM1200-2-E3	Start	2740578	-	3039302	3864159	-	-	-	-
	Min.	1081513	-	1247090	1656296	-	-	-	-
	End	1468726	-	1786572	2548793	-	-	-	-
DRSM1300-2-E3	Start	2740578	2861604	3818112	-	-	-	-	-
	Min.	1081513	1176797	1648539	-	-	-	-	-
	End	1468726	1692389	2565382	-	-	-	-	-
DRSM1300-E2	Start	3284764	-	-	-	-	-	-	3512974
	Min.	1302061	-	-	-	-	-	-	1431307
	End	1778522	-	-	-	-	-	-	2029378
DRSM1200-2-E2	Start	3284764	-	-	3543764	-	-	-	-
	Min.	1302061	-	-	1428203	-	-	-	-
	End	1778522	-	-	1985988	-	-	-	-
DRSM1300-2-E2	Start	3284764	-	3512974	-	-	-	-	-
	Min.	1302061	-	1431307	-	-	-	-	-
	End	1778522	-	2029378	-	-	-	-	-

## TECHNICAL INFORMATION

### WEIGHT

### DOUBLE ACTING

BORE	0300	0350	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300
ACTUATOR	WEIGHT (lb)											
DRSB	198	214	258	-	-	-	-	-	-	-	-	-
DRSC	278	302	324	386	-	-	-	-	-	-	-	-
DRSD	441	452	478	578	699	860	-	-	-	-	-	-
DRSE	-	-	891	904	1014	1173	1567	1839	-	-	-	-
DRSG	-	-	-	1565	1614	1801	2086	2361	-	-	-	-
DRSH	-	-	-	-	2540	2621	2800	3252	-	-	-	-
DRSJ	-	-	-	-	-	3549	3704	4200	4442	-	-	-
DRSM	-	-	-	-	-	-	-	-	-	8179	8578	9930

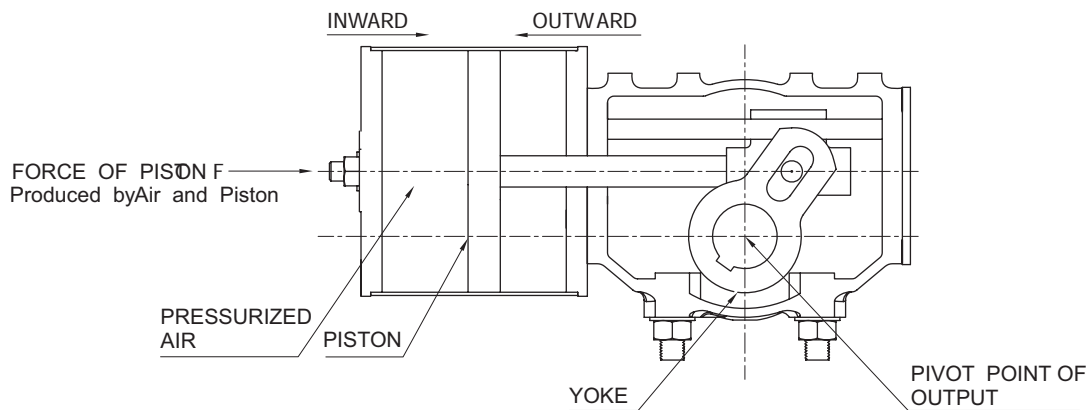
# Heavy Duty Scotch Yoke Actuators

## WEIGHT

## SPRING RETURN

BORE	0300	0350	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300
ACTUATOR	WEIGHT (lb)											
DRSB-E	397	414	437	-	-	-	-	-	-	-	-	-
DRSC-E	578	593	628	694	-	-	-	-	-	-	-	-
DRSD-E	985	1012	1056	1168	1281	1440	-	-	-	-	-	-
DRSE-E	-	-	1777	1806	1918	2077	2253	2659	-	-	-	-
DRSG-E	-	-	-	3737	3818	4023	4266	4641	-	-	-	-
DRSH-E	-	-	-	-	5719	5796	5975	6426	-	-	-	-
DRSJ-E	-	-	-	-	-	8225	8380	8876	9118	-	-	-
DRSM-E	-	-	-	-	-	-	16733	17284	17527	17957	18353	19709

## AIR VOLUME



ACTUATOR	BORE	0300	0350	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300
	TYPE	DISPLACEMENT (cu.in.)											
DRSB	OUTWARD	583	820	1072	-	-	-	-	-	-	-	-	-
	INWARD	638	868	1134	-	-	-	-	-	-	-	-	-
DRSC	OUTWARD	724	985	1286	2009	-	-	-	-	-	-	-	-
	INWARD	766	1042	1361	2126	-	-	-	-	-	-	-	-
DRSD	OUTWARD	839	1182	1543	2412	3648	5426	-	-	-	-	-	-
	INWARD	888	1250	1633	2552	3861	5742	-	-	-	-	-	-
DRSE	OUTWARD	-	-	1858	2903	4392	6532	7921	9935	-	-	-	-
	INWARD	-	-	1966	3072	4647	6912	8382	10513	-	-	-	-
DRSG	OUTWARD	-	-	-	3572	5405	8039	9727	11706	-	-	-	-
	INWARD	-	-	-	3780	5720	8507	10293	12387	-	-	-	-
DRSH	OUTWARD	-	-	-	-	6689	9948	12037	15132	17685	-	-	-
	INWARD	-	-	-	-	7079	10527	12737	16012	18714	-	-	-
DRSJ	OUTWARD	-	-	-	-	-	13063	15806	19870	23223	-	-	-
	INWARD	-	-	-	-	-	13823	16726	21026	24574	-	-	-
DRSM	OUTWARD	-	-	-	-	-	-	-	-	29922	36205	43087	50566
	INWARD	-	-	-	-	-	-	-	-	31663	38312	45595	53509

# Heavy Duty Scotch Yoke Actuators

## MOUNTING DIMENSIONAL DETAILS

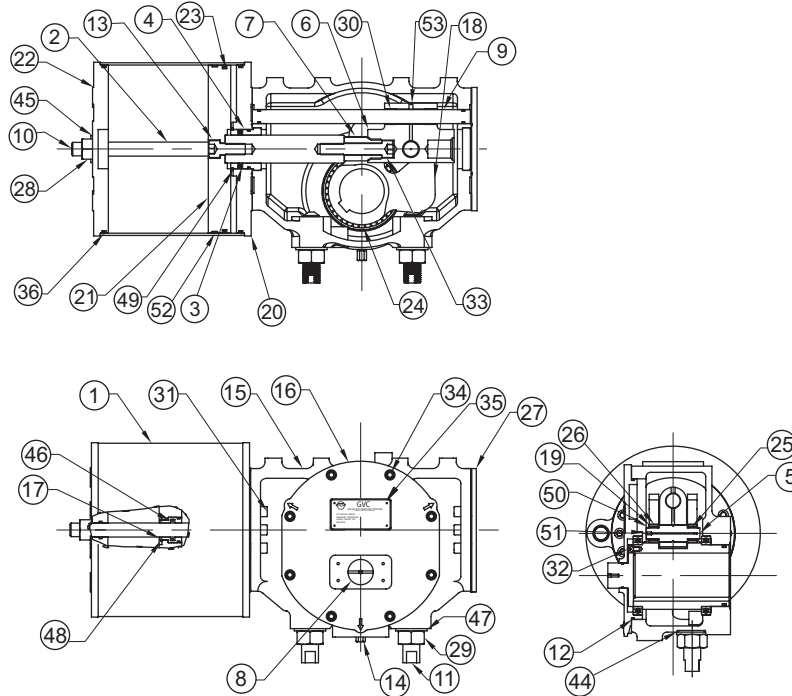
MODEL	d1	KEY	L5	M	N	ØO	FLANGE
DRSB	80	22X14X156	160	M20	22	165	F16
DRSC	100	28X16X183	190	M16	24	254	F25
DRSD	120	32X18X212	220	M20	22	298	F30
DRSE	160	40X22X295	300	M30	32	356	F35
DRSG	178	45X25X366	370	M36	44.5	406	F40
DRSH	220	50X28X389	390	M36	44.5	483	F48
DRSJ	280	63X32X448	450	M36	44.5	603	F60
DRSM	360	90X40X550	560	M50	44.5	800	F60

MODEL	L2	L4	C	D	ØE	CONN.
DRSB0300	1553	728	330	400	45	1/2" NPT
DRSB0350	1560	735	380	425	45	1/2" NPT
DRSB0400	1567	742	430	450	45	3/4" NPT
DRSC0300	1684	821	330	430	45	1/2" NPT
DRSC0350	1691	828	380	455	45	1/2" NPT
DRSC0400	1698	835	430	480	45	3/4" NPT
DRSC0500	1705	842	530	530	45	3/4" NPT
DRSD0300	1956	991	330	466	45	1/2" NPT
DRSD0350	1962	997	380	491	45	1/2" NPT
DRSD0400	1969	1004	430	516	45	3/4" NPT
DRSD0500	1976	1011	530	566	45	3/4" NPT
DRSD0600	1983	1018	640	640	45	3/4" NPT
DRSD0700	1990	1025	780	780	45	1" NPT
DRSE0400	2295	1215	430	560	45	3/4" NPT
DRSE0500	2302	1222	530	610	45	3/4" NPT
DRSE0600	2309	1229	640	665	45	3/4" NPT
DRSE0700	2316	1236	780	780	45	1" NPT
DRSE0800	2323	1243	850	850	45	1" NPT
DRSE0900	2330	1250	950	950	45	1 1/2" NPT
DRSG0500	2963	1516	530	670	55	3/4" NPT
DRSG0600	2970	1523	640	725	55	3/4" NPT
DRSG0700	2977	1530	780	795	55	1" NPT
DRSG0800	2984	1537	850	850	55	1" NPT
DRSG0900	2991	1544	950	950	55	1 1/2" NPT
DRSH0600	3591	1746	640	801	55	3/4" NPT
DRSH0700	3598	1753	780	871	55	1" NPT
DRSH0800	3605	1760	850	906	55	1" NPT
DRSH0900	3612	1767	950	956	55	1 1/2" NPT
DRSH1000	3619	1774	1030	1030	55	1 1/2" NPT
DRSJ0700	4340	2171	780	995	55	1" NPT
DRSJ0800	4347	2177	850	1030	55	1" NPT
DRSJ0900	4354	2184	950	1080	55	1 1/2" NPT
DRSJ1000	4361	2191	1030	1120	55	1 1/2" NPT
DRSM1000	5710	2810	1030	1330	55	1 1/2" NPT
DRSM1100	5805	2830	1130	1430	55	2" NPT
DRSM1200	5915	2850	1230	1530	55	2" NPT

# Heavy Duty Scotch Yoke Actuators

## MATERIAL OF CONSTRUCTION

### DOUBLE ACTING



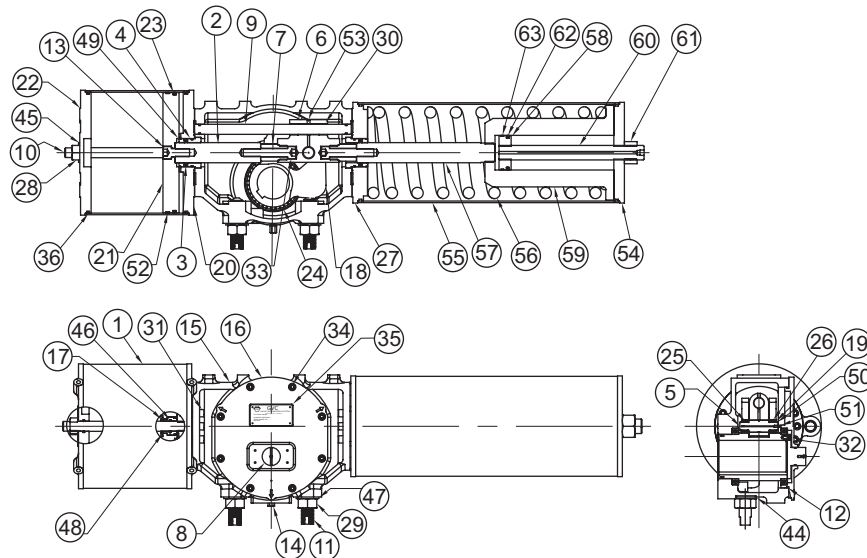
S.NO	DESCRIPTION	QTY	MATERIAL
1	CYLINDER	1	M.S.
2	PISTON ROD	1	EN8
3	LIP SEAL FOR PISTON ROD	1	NBR
4	BEARING BUSHING	1	PHOSPHOR BRONZE
5	YOKE PIN	1	30MnSr5
6	CARRIER	1	DUCTILE IRON
7	CONNECTING NUT	1	EN19
8	YOKE INSERT	1	DUCTILE IRON
9	GUIDE ROD	1	EN8
10	TIE ROD FOR CYLINDER	1	EN8
11	TRAVEL ADJ. BOLT	2	EN8
12	O RING FOR TOP COVER	2	NBR
13	HEX SOCKET HEAD SCREW (H.T)	1	-
14	CHECK VALVE	1	-
15	CENTRAL BLOCK	1	DUCTILE IRON
16	CENTRAL BLOCK COVER	1	DUCTILE IRON
17	GUIDE BUSHING	1	PHOSPHOR BRONZE
18	YOKE	2	DUCTILE IRON
19	WASHER FOR BEARING	1	SS304
20	CYL COVER FRONTEND	2	DUCTILE IRON
21	PISTON	1	DUCTILE IRON
22	CYL COVER REAR END	1	DUCTILE IRON
23	QUAD SEAL FOR PISTON	1	NBR

S.NO	DESCRIPTION	QTY	MATERIAL
24	BALL BEARING	1	-
25	NEEDLE BEARING	2	-
26	CAGE FOR NEEDLE BEARING	2	20MnCr5
27	REAR CAP	2	DUCTILE IRON
28	HEX NUT	1	-
29	HEX NUT	2	-
30	BUSHING	2	PHOSPHOR BRONZE
31	HEX HEAD SCREW (H.T)	2	-
32	HEX SOCKET HEAD SCREW (H.T)	12	-
33	HEX SOCKET HEAD SCREW (H.T)	4	-
34	HEX SOCKET HEAD SCREW (H.T)	1	-
35	NAME PLATE	8	ALUMINUM
36-44	O RING	×	NBR
45	SPRING WASHER	2	-
46	QUAD SEAL FOR GUIDE BUSHING	2	NBR
47	WASHER	2	-
48	EXTERNAL CIRCLIP	2	-
49	EXTERNAL CIRCLIP	2	-
50	EXTERNAL CIRCLIP	1	-
51	LUBRICATION NIPPLE	2	-
52	TEFLON STRIP	1	-
53	GRUB SCREW	1	-

# Heavy Duty Scotch Yoke Actuators

## MATERIAL OF CONSTRUCTION

### SPRING RETURN

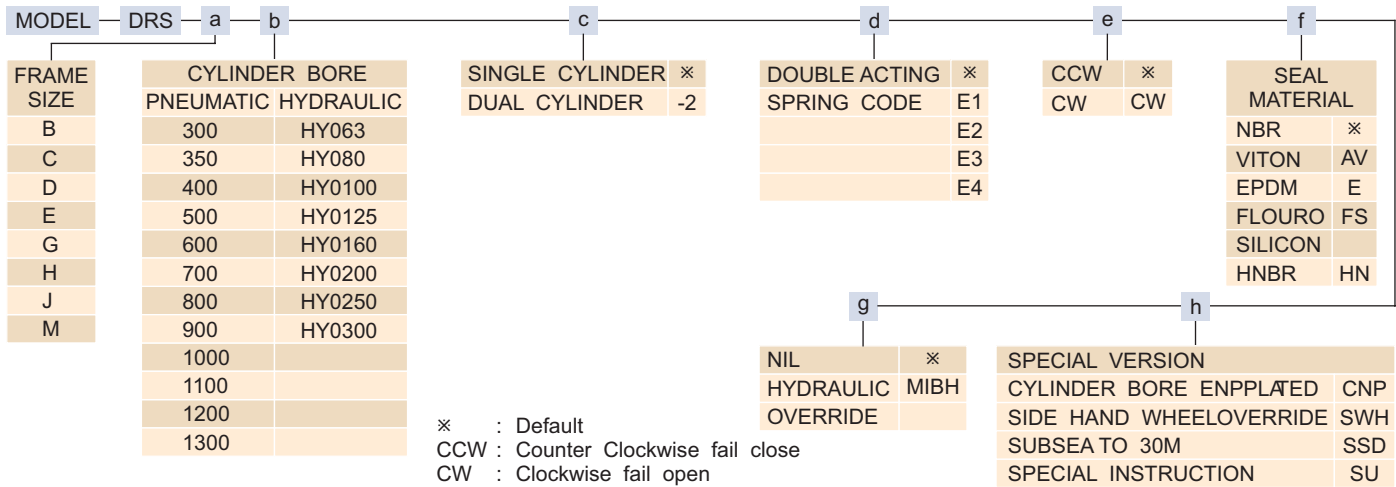


S.NO	DESCRIPTION	QTY	MATERIAL
1	CYLINDER	1	M.S.
2	PISTON ROD	1	EN8
3	LIP SEAL FOR PISTON ROD	2	NBR
4	BEARING BUSHING	2	PHOSPHOR BRONZE
5	YOKE PIN	1	30MnSr5
6	CARRIER	1	DUCTILE IRON
7	CONNECTING NUT	2	EN19
8	YOKE INSERT	1	DUCTILE IRON
9	GUIDE ROD	1	EN8
10	TIE ROD FOR CYLINDER	2	EN8
11	TRAVEL ADJ. BOLT	2	EN8
12	O RING FOR TOP COVER	1	NBR
13	HEX SOCKET HEAD SCREW (H.T)	1	-
14	CHECK VALVE	1	-
15	CENTRAL BLOCK	1	DUCTILE IRON
16	CENTRAL BLOCK COVER	1	DUCTILE IRON
17	GUIDE BUSHING	1	PHOSPHOR BRONZE
18	YOKE	1	DUCTILE IRON
19	WASHER FOR BEARING	2	SS304
20	CYL COVER FRONTEND	1	DUCTILE IRON
21	PISTON	1	DUCTILE IRON
22	CYL COVER REAR END	1	DUCTILE IRON
23	QUAD SEAL FOR PISTON	1	NBR
24	BALL BEARING	2	-
25	NEEDLE BEARING	2	-
26	CAGE FOR NEEDLE BEARING	2	20MnCr5
27	SPRING COVER FRONTEND	1	DUCTILE IRON
28	HEX NUT	2	-

S.NO	DESCRIPTION	QTY	MATERIAL
29	HEX NUT	2	-
30	BUSHING	2	PHOSPHOR BRONZE
31	HEX HEAD SCREW (H.T)	12	-
32	HEX SOCKET HEAD SCREW (H.T)	4	-
33	HEX SOCKET HEAD SCREW (H.T)	2	-
34	HEX SOCKET HEAD SCREW (H.T)	8	-
35	NAME PLATE	1	ALUMINUM
36-44	O RING	×	NBR
45	SPRING WASHER	2	-
46	QUAD SEAL FOR GUIDE BUSHING	2	NBR
47	WASHER	2	-
48	EXTERNAL CIRCLIP	2	-
49	EXTERNAL CIRCLIP	2	-
50	EXTERNAL CIRCLIP	2	-
51	LUBRICATION NIPPLE	1	-
52	TEFLON STRIP	1	-
53	GRUB SCREW	1	-
54	SPRING COVER REAR END	1	DUCTILE IRON
55	SPRING TUBE	1	M.S.
56	SPRING	1	EN 47
57	CONNECTION ROD	1	STAINLESS STEEL
58	PISTON FOR HYDRAULIC M.O.	1	CARBON STEEL
59	SPRING RETAINER	1	CARBON STEEL
60	PISTON ROD FOR HYDRAULIC M.O.	1	CARBON STEEL
61	HEX NUT	1	-
62	LIP SEAL	1	-
63	TEFLON STRIP	1	-

# Heavy Duty Scotch Yoke Actuators

## ORDERING CODE



## ORDERING EXAMPLE

- DRSE0700E4  
Frame size E, Cylinder bore 700 mm Spring Return with Spring set 4, fail close with NBR seals
- DRSC0400-HN  
Frame size C, Cylinder bore 400 mm Double Acting with HNBR seals

## MIBH ORDERING CODE

Ordering code for manual override needs complete DRS code since the manual override can be installed at a later stage, hence MIBH needs to be specific for each model e.g. MIBH for DRS E700E4 would be MIBH-DRSE700E4

## CCW

This is the standard version for fail close, or air to open/ spring to close. Looking from the top of the yoke (i.e. Where limitswitch mounts), the drive will rotate counter clockwise (ccw) when air is applied to the actuator when air is vented, springs will the rotate drive clockwise to close valve

## CW

This is the version for fail open. Looking from the top of the yoke, the drive will rotate clockwise when air is apply to the actuator When the air is vented, springs will rotate the drive counter clockwise to open the valve

## MOPD

The torque chart indicates the MOPD. (Maximum operating pressure differential) It is very critical not to exceed the MOPD

## DUAL CYLINDER OPTION (-2)

This option designates that twin pneumatic cylinders are installed on the frame. For double acting twin cylinder style, one pneumatic cylinder is mounted on each side of frame. For the spring return twin cylinder style, two pneumatic cylinders are mounted in tandem on the pneumatic side of the frame

## SEALS

NBR -4° F to 175° F, Viton -4° F to +250° F, EPDM -25° F to +200° F, Fluoro Silicon -45° F to + 200° F, HNBR -50° F to 170° F

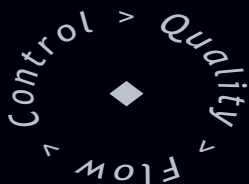
## HYDRAULIC CYLINDER

DRS actuators are also supplied with hydraulic cylinder. The Torque chart for double acting and Single acting is referred same as pneumatic to choose right size of Hydraulic Cylinder

- Choose DRS with pneumatic model with maximum air pressure possible as shown in chart
- Last three digit shows bore of the cylinder in mm.
- Select Hydraulic pressure in bar
- With above data calculate nearest Hydraulic actuator bore

eg. DRSD0600, maximum pressure allowable is 4 bar (No torque details beyond 4 bar is shown) if Hydraulic pressure is 100 bar the calculated Hydraulic bore will be 120 mm choose Hy0125. Selected model will be DRSDHY0125

# 3X Factor



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