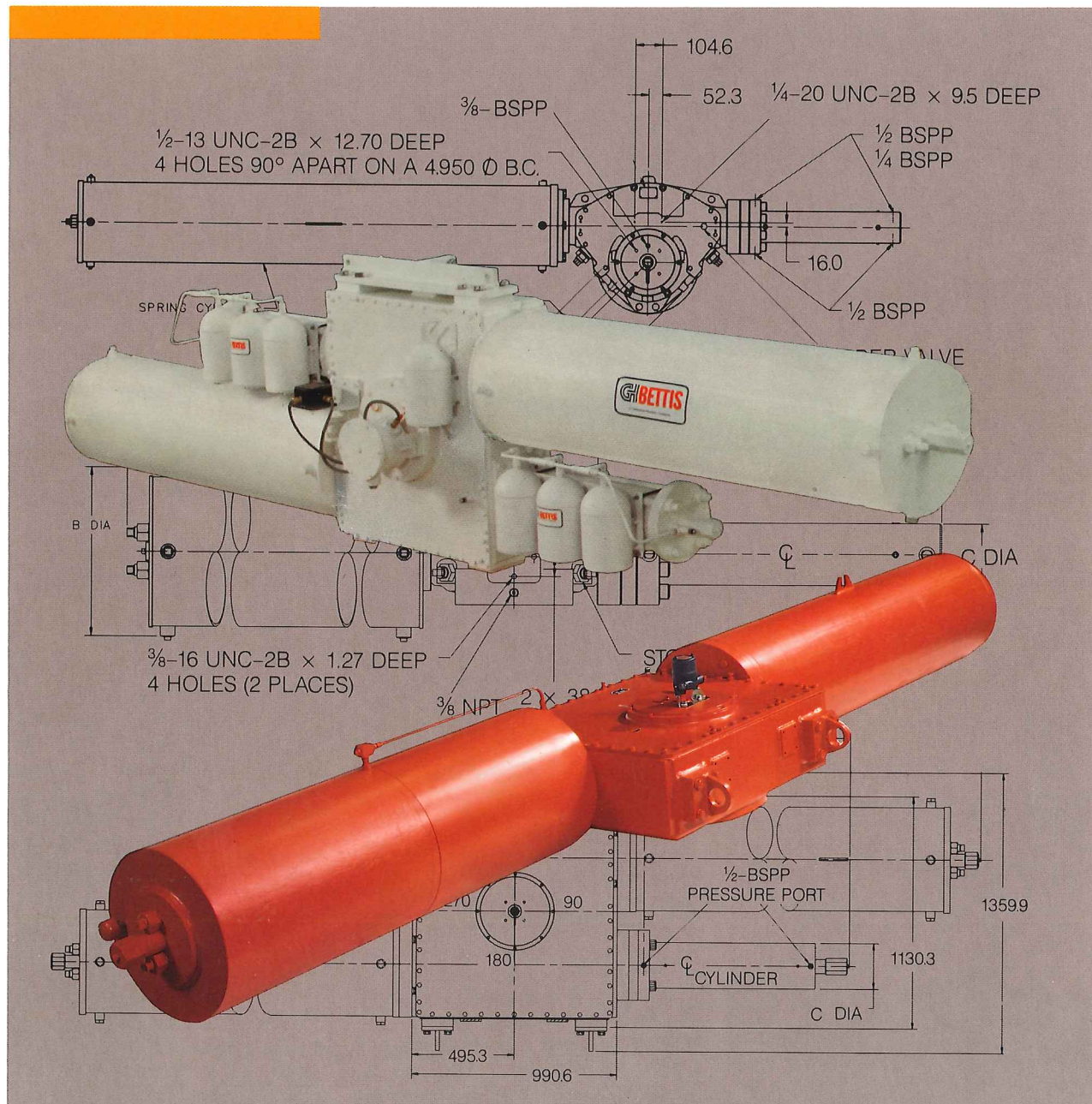
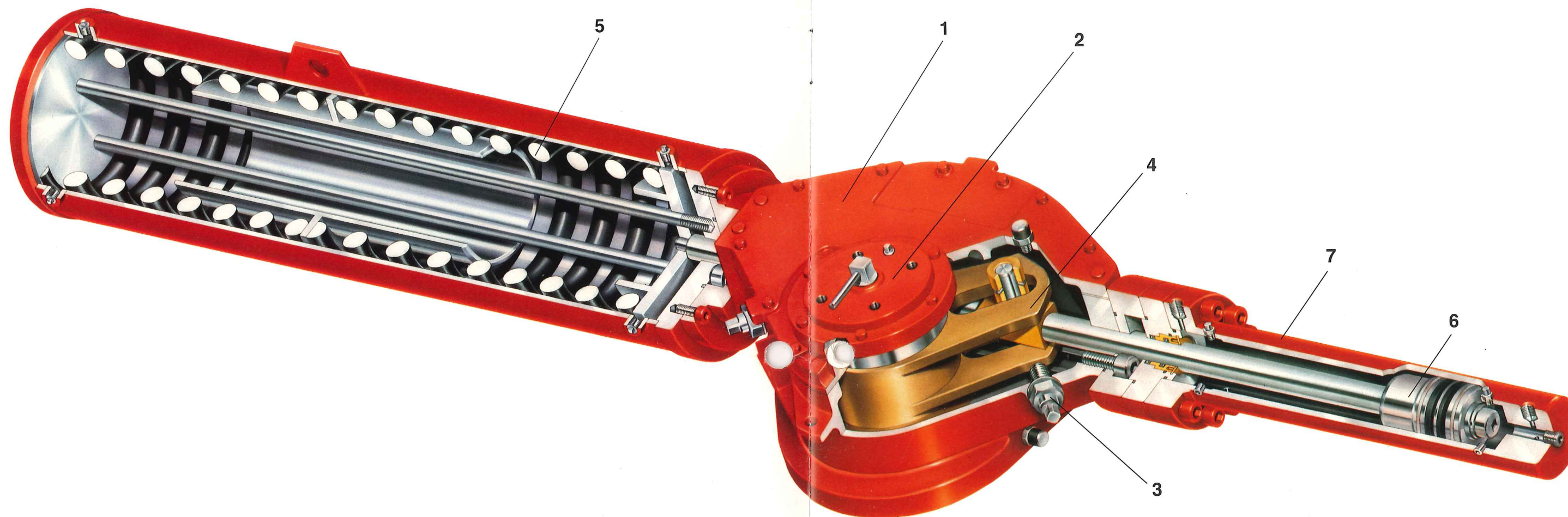




ST/STR/STRQ Series Hydraulic Actuators



Design and Construction



Introduction

The ST, STR and STRQ Series hydraulic valve actuators represent the latest technology from GH-Bettis, the industry pioneer with more than 35 years of field proven performance in valve actuation. These high-performance actuators, designed to operate high pressure ball, butterfly and plug valves, contain the design enhancements necessary to operate in harsh, demanding environments. The actuators, manufactured from the most advanced materials in accordance with demanding quality procedures, are subjected to rigorous performance testing, prior to shipment, to simulate actual operating conditions.

The three series are:
ST Series Available in either double-acting models or spring-return with torque outputs rated 50,800 Nm, and spring ending torques to in excess of 23,000 Nm.

STR Series These double-acting and spring-return models incorporate an internal track-guide rail to counteract side loads developed by the scotch yoke mechanism. Double-acting torque outputs are rated to 113,000 Nm and spring ending torques to 37,500 Nm.

STRQ Series The most powerful performers, these double-acting and spring-return piston-type actuators utilize a balanced force quad-body

construction for operation with a wide range of pressures, temperatures and environments. The STRQ Series double-acting produces torque to 226,000 Nm, spring-ending torques to 75,000 Nm.

Features

The three series are designed for operating temperatures of -30°C to $+90^{\circ}\text{C}$ as standard and can be fitted with optional seals for operation in higher and lower temperatures. The units incorporate positive environmental sealing features, and include a three stage corrosion-resistant coating system, applied to allow operation in adverse conditions of

wind, salt laden air or water, including external pressures of subsea applications. A totally enclosed housing (1) protects all moving parts from ingress of sea water, sand or other corrosive and abrasive elements, while minimizing the possibility of internal misalignment and reducing the chance of injury to personnel. The yoke cover (2) provides a static seal plus a weather-resistant seal protecting the replaceable journal bearings. Thread seals are used on fasteners and the field adjustable stops (3). The stops insure precise valve positioning.

The scotch yoke (4) mechanism transforms linear movement of the

piston into a 90 degree rotating movement to provide maximum break torque and aids in its maintenance simplicity. The ST Series incorporates a rigid spring cartridge (5), eliminating the need for external tie bars or brace rods. Coupled with an O-ring seal between the housing and the spring cartridge, fully machined metal-to-metal seating assures proper alignment of all dynamic components during shipment, installation and operation.

The piston (6) is fitted with PTFE-composite wear rings to minimize seal wear and improve internal guiding. The hydraulic power cylinder (7), a unitized module, allows easy

removal for isolated testing or service. The module consists of components treated with a wear and corrosion-resistant surface conversion process. Optional cylinder ports facilitate mounting in any position while maintaining fluid filling or draining capabilities and proper displacement of air during startup.

All ST, STR and STRQ models can be provided with standard options that include full torque manual overrides, slam retarders, subsea pressure compensation (as shown in cover photo), and integral instrumentation. Also included is a broad array of custom devices.

Typical Specifications

The following information may be used as a guide to compose specifications for ST/STR/STRQ Series hydraulic actuators. GH-Bettis supplies actuators that meet or exceed all the specifications stated below.

1. The actuator shall be effectively sealed to prevent entry of water ingress, atmospheric corrosive gases and airborne abrasive dust. The actuator shall exhibit sealing capabilities meeting requirements of BS 5490: 1977, IP 6X, with vacuum — dust ingress; BS 5490: 1977, IPX6M, functioning — water spray; and applicable 5 BAR water deluge test TP-1192 — 12/13 while operating under load.
2. All external component interfaces must be rigid, metal to metal, with positively retained resilient o-rings and anaerobic sealing compounds.
3. Valve interface shall provide controlled line pressure vent fitting as an integral part of the actuator arranged to prevent entry of the flow media into the actuator as a result of valve stem packing leakage.
4. The actuator shall utilize permanently lubricated, replaceable, high performance yoke trunnion, piston and piston rod bearings.
5. All bearings shall be sized and materials selected to provide maximum service life while performing as sacrificial protectors of critical sealing and structural components.
6. The actuator shall be permanently lubricated, be devoid of lubrication fittings and factory approved for "zero" preventive maintenance practices.
7. The actuator shall be suitable for petroleum, water glycol or phosphate ester base hydraulic fluids per specification.
8. Factory installed control tubing shall be type 316 stainless steel and corrosion resistant steel or stainless steel fittings.
9. Modular power cylinders shall be capable of pressurization, testing, cleaning, as an isolated unit detached from the Scotch-yoke housing.
10. All wetted ferrous cylinder components shall be protected by a corrosion and wear resistant surface conversion process exhibiting properties superior to hard chromeplate.

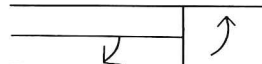
All dynamic surface finishes shall be 16 RMS or better micro finish.
11. Platings which are subject to flaking or which alter dimensions of dynamic components and dry film lubricants shall be strictly prohibited from use in the cylinder.
12. The actuator positioning stops shall provide accurate valve alignment, be friction locked to prevent changes due to vibration and impact loads, and be positively sealed.
13. The positioning stops shall be adjusted to plus or minus (+ or -) 5 degrees beyond the nominal 90 degree rotation, at each end of travel on actuators rated to 50,800 Nm. and 3.5 degrees minimum on actuators rated higher than 50,800 Nm.
14. Actuator torque outputs shall be guaranteed minimum values auditable to type tests of each model. Torque testing and certification in accordance with approved test procedures and Q.A. processes must be available on request.
15. Power cylinders, housings and spring cartridge commissioning and service ports shall be incorporated such that mounting position shall not be restricted.
16. The housing, spring cartridge and non-pressurized cylinder elements shall be pressure protected by a normally closed vent system adaptable to positive pressure purge per ASK 2140.
17. The position indicator shall be highly visible from vertical or horizontal positions and to facilitate custom installations, be indexable by customer to optional valve mounting orientation.
18. Power cylinders shall include provision for concealed, tamperproof slam retarder activated upon loss or damage to external controls, if specified. Line mounted fixed orifices are strictly prohibited in control circuits.
19. All dynamic fluid seal sets shall be bi-directional and bearing guided to minimize seal and component wear.
20. The actuators shall be of a standard design capable of operating in a wide range of applications, including offshore, with the minimum of additional trim equipment.
21. All actuators shall be Lloyd Register of London type approved for use on ESD riser applications to SI 1029.

Torque Ratings All Published Torques are Guaranteed Minimum Values.

Double-Acting Actuators ST-Series

Actuator Model	Position/Direction of Stroke		Operating Pressure (Bar)											
			40	50	60	70	80	90	100	120	140	160	180	200
			Torque Output (Nm)											
ST302.5	Break	↺	1,483	1,854	2,225	2,596	2,967	3,338	3,709	4,450	5,192	5,934	6,676	
	Run	↺	850	1,062	1,275	1,488	1,700	1,913	2,125	2,551	2,976	3,401	3,826	
	Break	↻	1,035	1,293	1,552	1,811	2,070	2,328	2,587	3,105	3,622	4,140	4,657	5,175
	Run	↻	593	741	889	1,038	1,186	1,334	1,483	1,779	2,076	2,372	2,669	2,966
ST303.0	Break	↺	2,136	2,670	3,204	3,738	4,273	4,807	5,341	6,409				
	Run	↺	1,224	1,530	1,836	2,143	2,449	2,755	3,061	3,673				
	Break	↻	1,687	2,109	2,531	2,953	3,375	3,797	4,219	5,062	5,906	6,750		
	Run	↻	967	1,209	1,450	1,692	1,934	2,176	2,418	2,901	3,385	3,869		
ST303.5	Break	↺	2,908	3,635	4,362	5,089	5,816	6,543						
	Run	↺	1,666	2,083	2,500	2,917	3,333	3,750						
	Break	↻	2,459	3,074	3,689	4,303	4,918	5,533	6,148					
	Run	↻	1,409	1,762	2,114	2,466	2,819	3,171	3,524					
ST304.0	Break	↺	3,798	4,748	5,697	6,647								
	Run	↺	2,177	2,721	3,265	3,810								
	Break	↻	3,349	4,187	5,024	5,861	6,699							
	Run	↻	1,919	2,399	2,879	3,359	3,839							
ST403.0	Break	↺	3,039	3,799	4,558	5,318	6,078	6,838	7,598	9,117	10,637	12,156		
	Run	↺	1,741	2,177	2,612	3,048	3,483	3,919	4,354	5,225	6,096	6,967		
	Break	↻	2,400	3,000	3,600	4,201	4,801	5,401	6,001	7,201	8,402	9,602	10,802	12,003
	Run	↻	1,375	1,719	2,063	2,407	2,751	3,095	3,439	4,127	4,815	5,503	6,191	6,879
ST403.5	Break	↺	4,136	5,171	6,205	7,239	8,273	9,308	10,342	12,410				
	Run	↺	2,371	2,963	3,556	4,149	4,742	5,335	5,927	7,113				
	Break	↻	3,498	4,373	5,247	6,122	6,996	7,871	8,746	10,495	12,244			
	Run	↻	2,005	2,506	3,007	3,509	4,010	4,511	5,013	6,015	7,018			
ST404.0	Break	↺	5,403	6,754	8,104	9,455	10,806	12,157						
	Run	↺	3,097	3,871	4,645	5,419	6,194	6,968						
	Break	↻	4,764	5,955	7,147	8,338	9,529	10,720	11,911					
	Run	↻	2,731	3,413	4,096	4,779	5,462	6,144	6,827					
ST405.0	Break	↺	8,442	10,553	12,664									
	Run	↺	4,839	6,049	7,258									
	Break	↻	7,804	9,755	11,706									
	Run	↻	4,473	5,591	6,709									
ST503.5	Break	↺	5,688	7,110	8,532	9,954	11,376	12,798	14,220	17,065	19,909	22,753		
	Run	↺	3,260	4,075	4,890	5,705	6,520	7,335	8,150	9,781	11,411	13,041		
	Break	↻	4,265	5,332	6,398	7,465	8,531	9,598	10,664	12,797	14,930	17,063	19,196	21,329
	Run	↻	2,445	3,056	3,667	4,278	4,890	5,501	6,112	7,335	8,557	9,780	11,002	12,225
ST504.0	Break	↺	7,429	9,286	11,144	13,001	14,859	16,716	18,573	22,288				
	Run	↺	4,258	5,323	6,387	7,452	8,516	9,581	10,646	12,775				
	Break	↻	6,007	7,509	9,011	10,513	12,015	13,517	15,019	18,022	21,026	24,030		
	Run	↻	3,443	4,304	5,165	6,025	6,886	7,747	8,608	10,330	12,051	13,773		
ST505.0	Break	↺	11,609	14,511	17,413	20,315	23,218							
	Run	↺	6,653	8,317	9,980	11,644	13,307							
	Break	↻	10,186	12,733	15,279	17,826	20,373	22,919	25,466					
	Run	↻	5,838	7,298	8,757	10,217	11,677	13,136	14,596					
ST506.0	Break	↺	16,716	20,896	25,075									
	Run	↺	9,581	11,976	14,372									
	Break	↻	15,294	19,118	22,942									
	Run	↻	8,766	10,958	13,149									

Note: ↺ Denotes counterclockwise rotation, full piston area pressured, > torque.
 ↻ Denotes clockwise rotation, reduced piston area due to rod, < torque.



Torque Ratings All Published Torques are Guaranteed Minimum Values.

Double-Acting Actuators ST-Series (cont.)

Actuator Model	Position/Direction of Stroke		Operating Pressure (Bar)											
			40	50	60	70	80	90	100	120	140	160	180	200
			Torque Output (Nm)											
ST804.0	Break	↻	10,806	13,508	16,209	18,911	21,613	24,314	27,016	32,419	37,823	43,226	48,629	
	Run	↻	6,194	7,742	9,291	10,839	12,388	13,936	15,485	18,582	21,679	24,776	27,873	
	Break	↺	8,738	10,922	13,107	15,292	17,476	19,661	21,845	26,215	30,584	34,953	39,322	43,691
	Run	↺	5,008	6,260	7,512	8,764	10,017	11,269	12,521	15,025	17,529	20,034	22,538	25,042
ST805.0	Break	↻	16,885	21,107	25,328	29,550	33,771	37,993	42,214	50,657				
	Run	↻	9,678	12,098	14,517	16,937	19,357	21,776	24,196	29,035				
	Break	↺	14,816	18,520	22,225	25,929	29,633	33,337	37,041	44,450				
	Run	↺	8,492	10,615	12,738	14,861	16,985	19,108	21,231	25,477				
ST806.0	Break	↻	24,315	30,394	36,473	42,551	48,630							
	Run	↻	13,936	17,421	20,905	24,389	27,873							
	Break	↺	22,247	27,808	33,370	38,932	44,494	50,055						
	Run	↺	12,751	15,939	19,127	22,314	25,502	28,690						
ST807.0	Break	↻	33,095	41,369	49,643									
	Run	↻	18,969	23,711	28,454									
	Break	↺	31,026	38,783	46,540									
	Run	↺	17,783	22,229	26,675									

STR-Series

Actuator Model	Position/Direction of Stroke		Operating Pressure (Bar)											
			40	50	60	70	80	90	100	120	140	160	180	200
			Torque Output (Nm)											
STR1005	Break	↻	21,107	26,384	31,661	36,937	42,214	47,491	52,768	63,322	73,875	84,429	94,983	105,536
	Run	↻	11,872	14,840	17,808	20,777	23,745	26,713	29,681	35,617	41,554	47,490	53,426	59,363
	Break	↺	16,832	21,040	25,248	29,456	33,664	37,872	42,080	50,496	58,912	67,328	75,744	84,160
	Run	↺	9,467	11,834	14,201	16,568	18,935	21,302	23,669	28,403	33,137	37,871	42,605	47,339
STR1006	Break	↻	30,394	37,992	45,591	53,189	60,788	68,386	75,985	91,182	106,379			
	Run	↻	17,096	21,370	25,644	29,918	34,192	38,466	42,740	51,289	59,837			
	Break	↺	26,120	32,650	39,180	45,710	52,240	58,770	65,300	78,360	91,420	104,480		
	Run	↺	14,692	18,365	22,038	25,711	29,384	33,057	36,730	44,076	51,422	58,768		
STR1007	Break	↻	41,369	51,712	62,054	72,397	82,739	93,082	103,424					
	Run	↻	23,270	29,087	34,905	40,722	46,540	52,357	58,175					
	Break	↺	37,095	46,369	55,643	64,917	74,191	83,465	92,739	111,286				
	Run	↺	20,865	26,082	31,298	36,515	41,731	46,948	52,164	62,597				
STR1008	Break	↻	54,034	67,542	81,051	94,559	108,068							
	Run	↻	30,393	37,992	45,590	53,188	60,787							
	Break	↺	49,760	62,200	74,640	87,080	99,520	111,960						
	Run	↺	27,989	34,986	41,984	48,981	55,978	62,976						
STR1010	Break	↻	86,901	108,626										
	Run	↻	48,881	61,101										
	Break	↺	82,627	103,283										
	Run	↺	46,477	58,096										
STR10205	Break		37,939	47,424	56,909	66,394	75,879	85,363	94,848					
	Run		21,340	26,675	32,010	37,345	42,681	48,016	53,351					
STR10206	Break		56,514	70,642	84,771	98,899	113,028							
	Run		31,788	39,735	47,682	55,630	63,577							
STR10207	Break		78,465	98,081										
	Run		44,135	55,169										
STR10208	Break		103,794											
	Run		58,383											

Torque Ratings All Published Torques are Guaranteed Minimum Values.

Double-Acting Actuators

STRQ-Series

Actuator Model	Position/ Direction of Stroke	Operating Pressure (Bar)											
		40	50	60	70	80	90	100	120	140	160	180	200
		Torque Output (Nm)											
STRQ10205	Break	37,939	47,424	56,909	66,394	75,879	85,363	94,848	113,818	132,788	151,758	170,727	189,697
	Run	21,340	26,675	32,010	37,345	42,681	48,016	53,351	64,021	74,691	85,362	96,032	106,702
STRQ10206	Break	56,514	70,642	84,771	98,899	113,028	127,157	141,285	169,542	197,799	226,056		
	Run	31,788	39,735	47,682	55,630	63,577	71,524	79,471	95,365	111,260	127,154		
STRQ10207	Break	78,465	98,081	117,698	137,314	156,930	176,547	196,163					
	Run	44,135	55,169	66,203	77,237	88,271	99,305	110,339					
STRQ10208	Break	103,794	129,742	155,691	181,640	207,588							
	Run	58,383	72,978	87,574	102,170	116,766							
STRQ10210	Break	164,584	205,731										
	Run	92,577	115,721										
STRQ10405	Break	75,879	94,848	113,818	132,788	151,758	170,727	189,697					
	Run	42,681	53,351	64,021	74,691	85,362	96,032	106,702					
STRQ10406	Break	113,028	141,285	169,542	197,799	226,056							
	Run	63,577	79,471	95,365	111,260	127,154							
STRQ10407	Break	156,930	196,163										
	Run	88,271	110,339										
STRQ10408	Break	207,588											
	Run	116,766											

Spring-Return Actuators

ST-Series

Actuator Model	Spring Torque End/Min/Break (Nm)	Operating Pressure (Bar)												
		40	50	60	70	80	90	100	120	140	160	180	200	
		Torque Output End/Min/Break (Nm)												
ST302.5-SR5	E	622			258	611	963	1,316	1,669	2,375	3,080	3,786	4,492	5,197
	M	588			257	609	847	1,065	1,279	1,702	2,122	2,541	2,958	3,376
	B	1,520			1,356	1,708	2,061	2,414	2,767	3,472	4,178	4,884	5,589	6,295
ST303.0-SR5	E	622		681	1,189	1,698	2,206	2,714	3,222	4,238	5,254	17,378		
	M	588		665	987	1,296	1,601	1,904	2,206	2,808	3,409	24,385		
	B	1,520		1,779	2,287	2,795	3,303	3,812	4,320	5,336	6,352	24,098		
ST303.5-SR5	E	622	907	1,599	2,291	2,982	3,674	4,365	5,057					
	M	588	812	1,236	1,651	2,063	2,474	2,883	3,292					
	B	1,520	2,005	2,697	3,388	4,080	4,772	5,463	6,155					
ST302.5-SR4	E	1,077					407	760	1,113	1,818	2,524	3,229	3,935	4,641
	M	872					406	717	940	1,369	1,791	2,210	2,629	3,046
	B	1,975					1,505	1,857	2,210	2,916	3,622	4,327	5,033	5,738
ST303.0-SR4	E	1,077			633	1,141	1,649	2,157	2,665	3,681	4,698			
	M	872			631	957	1,267	1,572	1,875	2,478	3,080			
	B	1,975			1,731	2,239	2,747	3,255	3,763	4,779	5,795			
ST303.5-SR4	E	1,077	351	1,042	1,734	2,426	3,117	3,809	4,500					
	M	872	350	896	1,318	1,732	2,143	2,553	2,963					
	B	1,975	1,449	2,140	2,832	3,523	4,215	4,907	5,598					
ST304.0-SR4	E	1,077	1,198	2,101	3,004	3,908	4,811							
	M	872	992	1,538	2,076	2,612	3,147							
	B	1,975	2,295	3,199	4,102	5,005	5,909							
ST302.5-SR3	E	1,519							426	1,132	1,837	2,543	3,249	3,954
	M	1,169							425	985	1,417	1,840	2,261	2,680
	B	2,537							1,671	2,376	3,082	3,787	4,493	5,199

Torque Ratings All Published Torques are Guaranteed Minimum Values.

Spring-Return Actuators (cont.)

ST-Series

Actuator Model	Spring Torque End/Min/Break (Nm)		Operating Pressure (Bar)											
			40	50	60	70	80	90	100	120	140	160	180	200
			Torque Output End/Min/Break (Nm)											
ST303.0-SR3	E	1,519				455	963	1,471	1,979	2,995	4,011	5,027		
	M	1,169				453	878	1,194	1,502	2,110	2,713	3,315		
	B	2,537				1,699	2,207	2,715	3,223	4,239	5,256	6,272		
ST303.5-SR3	E	1,519			1,048	1,739	2,431	3,122	3,814	5,197				
	M	1,169			932	1,357	1,773	2,185	2,596	3,415				
	B	2,537			2,292	2,984	3,675	4,367	5,059	6,442				
ST304.0-SR3	E	1,519	511	1,415	2,318	3,221	4,124	5,028						
	M	1,169	509	1,159	1,705	2,244	2,780	3,315						
	B	2,537	1,756	2,659	3,562	4,466	5,369	6,272						
ST302.5-SR2	E	2,496									1,189	1,894	2,600	3,305
	M	1,722									962	1,387	1,808	2,227
	B	3,393									2,180	2,885	3,591	4,297
ST303.0-SR2	E	2,496						822	1,330	2,346	3,362	4,379	5,395	
	M	1,722						734	1,047	1,657	2,260	2,862	3,462	
	B	3,393						1,813	2,321	3,337	4,354	5,370	6,386	
ST303.5-SR2	E	2,496				1,090	1,782	2,474	3,165	4,549				
	M	1,722				901	1,319	1,732	2,143	2,962				
	B	3,393				2,082	2,773	3,465	4,157	5,540				
ST304.0-SR2	E	2,496		766	1,669	2,572	3,476	4,379	5,282					
	M	1,722		699	1,252	1,791	2,327	2,862	3,396					
	B	3,393		1,757	2,660	3,564	4,467	5,370	6,274					
ST303.0-SR1	E	3,265									1,284	2,300	3,316	4,332
	M	2,339									1,208	1,841	2,454	3,061
	B	4,769									3,122	4,138	5,154	6,171
ST303.5-SR1	E	3,265							1,087	2,470	3,853			
	M	2,339							1,077	1,944	2,775			
	B	4,769							2,925	4,308	5,691			
ST304.0-SR1	E	3,265					1,397	2,300	3,204					
	M	2,339					1,281	1,841	2,387					
	B	4,769					3,235	4,139	5,042					
ST403.0-SR5	E	1,519				683	1,406	2,128	2,851	4,296	5,742	7,187	8,633	10,078
	M	1,408				680	1,403	1,892	2,340	3,216	4,080	4,940	5,798	6,654
	B	3,580				3,201	3,924	4,646	5,369	6,815	8,260	9,706	11,151	12,597
ST403.5-SR5	E	1,519		543	1,526	2,510	3,494	4,478	5,462	7,429	9,397			
	M	1,408		540	1,502	2,130	2,731	3,324	3,913	5,084	6,250			
	B	3,580		3,061	4,045	5,028	6,012	6,996	7,980	9,947	11,915			
ST404.0-SR5	E	1,519	763	2,048	3,333	4,618	5,903	7,188	8,473					
	M	1,408	761	1,842	2,634	3,409	4,176	4,940	5,703					
	B	3,580	3,282	4,567	5,851	7,136	8,421	9,706	10,991					
ST403.0-SR4	E	2,258					502	1,224	1,947	3,393	4,838	6,284	7,729	9,175
	M	1,870					500	1,222	1,778	2,671	3,541	4,403	5,262	6,119
	B	4,320					3,020	3,743	4,465	5,911	7,356	8,802	10,247	11,693
ST403.5-SR4	E	2,258			623	1,606	2,590	3,574	4,558	6,525	8,493			
	M	1,870			620	1,556	2,180	2,780	3,372	4,547	5,715			
	B	4,320			3,141	4,125	5,108	6,092	7,076	9,044	11,011			
ST404.0-SR4	E	2,258		1,145	2,429	3,714	4,999	6,284	7,569	10,139				
	M	1,870		1,142	2,080	2,865	3,637	4,403	5,167	6,690				
	B	4,320		3,663	4,948	6,233	7,518	8,802	10,087	12,657				

Torque Ratings All Published Torques are Guaranteed Minimum Values.

Spring Return Actuators (cont.)

ST-Series

Actuator Model	Spring Torque End/Min/Break (Nm)		Operating Pressure (Bar)														
			40	50	60	70	80	90	100	120	140	160	180	200			
			Torque Output End/Min/Break (Nm)														
ST405.0-SR4	E	2,258	2,751	4,759	6,766	8,774											
	M	1,870	2,279	3,493	4,690	5,881											
	B	4,320	5,269	7,277	9,285	11,292											
ST403.0-SR3	E	3,637								1,199	2,645	4,090	5,536	6,981	8,427		
	M	2,643								1,186	2,092	2,962	3,823	4,681	5,537		
	B	5,453								3,207	4,653	6,098	7,543	8,989	10,434		
ST403.5-SR3	E	3,637					1,842	2,826	3,810	5,777	7,745	9,713					
	M	2,643					1,599	2,202	2,794	3,966	5,133	6,297					
	B	5,453					3,850	4,834	5,818	7,785	9,753	11,720					
ST404.0-SR3	E	3,637			1,681	2,966	4,251	5,536	6,821	9,391							
	M	2,643			1,498	2,287	3,058	3,823	4,585	6,107							
	B	5,453			3,689	4,974	6,259	7,544	8,829	11,399							
ST405.0-SR3	E	3,637	2,003	4,011	6,019	8,026	10,034										
	M	2,643	1,699	2,914	4,109	5,299	6,487										
	B	5,453	4,011	6,019	8,026	10,034	12,042										
ST403.0-SR2	E	4,172										1,296	2,741	4,187	5,632		
	M	3,273										1,291	2,539	3,442	4,320		
	B	7,217										5,018	6,463	7,909	9,354		
ST403.5-SR2	E	4,172								1,015	2,983	4,950	6,918				
	M	3,273								1,010	2,693	3,907	5,093				
	B	7,217								4,738	6,705	8,673	10,640				
ST404.0-SR2	E	4,172					1,457	2,742	4,027	6,597							
	M	3,273					1,452	2,539	3,343	4,900							
	B	7,217					5,179	6,464	7,749	10,319							
ST405.0-SR2	E	4,172		1,216	3,224	5,232	7,239										
	M	3,273		1,211	2,845	4,078	5,285										
	B	7,217		4,938	6,946	8,954	10,962										
ST403.5-SR1	E	5,694									1,122	3,089	5,057	7,024			
	M	4,190									1,117	2,760	3,972	5,156			
	B	8,740									4,844	6,812	8,779	10,747			
ST404.0-SR1	E	5,694						881	2,165	4,735	7,305						
	M	4,190						875	2,157	3,776	5,324						
	B	8,740						4,603	5,888	8,458	11,028						
ST405.0-SR1	E	5,694			1,363	3,371	5,378	7,386									
	M	4,190			1,357	2,936	4,166	5,372									
	B	8,740			5,086	7,093	9,101	11,109									
ST503.5-SR4	E	5,112				1,919	3,272	4,625	5,977	8,683	11,388	14,094	16,799	19,504			
	M	3,494				1,621	2,442	3,250	4,053	5,655	7,252	8,849	10,444	12,040			
	B	6,830				3,817	5,170	6,523	7,875	10,581	13,286	15,992	18,697	21,402			
ST504.0-SR4	E	5,112			3,051	4,818	6,584	8,351	10,118	13,652	17,185	20,719					
	M	3,494			2,309	3,365	4,413	5,459	6,503	8,589	10,672	12,756					
	B	6,830			4,949	6,716	8,482	10,249	12,016	15,550	19,083	22,617					
ST505.0-SR4	E	5,112	3,493	6,254	9,014	11,775	14,536	17,296	20,057								
	M	3,494	2,574	4,217	5,850	7,480	9,109	10,737	12,365								
	B	6,830	5,391	8,152	10,912	13,673	16,434	19,194	21,955								
ST506.0-SR4	E	5,112	8,351	12,327	16,302	20,278											
	M	3,494	5,459	7,806	10,151	12,495											
	B	6,830	10,249	14,225	18,200	22,176											

Torque Ratings All Published Torques are Guaranteed Minimum Values.

Spring-Return Actuators (cont.)

ST-Series

Actuator Model	Spring Torque End/Min/Break (Nm)		Operating Pressure (Bar)											
			40	50	60	70	80	90	100	120	140	160	180	200
			Torque Output End/Min/Break (Nm)											
ST503.5-SR3	E	6,147					2,128	3,481	4,833	7,539	10,244	12,950	15,655	18,361
	M	4,108					1,749	2,567	3,374	4,978	6,577	8,174	9,770	11,365
	B	7,864					4,026	5,379	6,731	9,437	12,142	14,848	17,553	20,259
ST504.0-SR3	E	6,147			1,907	3,674	5,441	7,207	8,974	12,508	16,041	19,575	23,108	
	M	4,108			1,613	2,682	3,735	4,782	5,827	7,913	9,997	12,081	14,165	
	B	7,864			3,805	5,572	7,339	9,105	10,872	14,406	17,939	21,473	25,006	
ST505.0-SR3	E	6,147	2,349	5,110	7,870	10,631	13,392	16,153	18,913					
	M	4,108	1,884	3,538	5,174	6,805	8,435	10,063	11,690					
	B	7,864	4,247	7,008	9,768	12,529	15,290	18,051	20,811					
ST506.0-SR3	E	6,147	7,208	11,183	15,158	19,134	23,109							
	M	4,108	4,782	7,131	9,477	11,821	14,165							
	B	7,864	9,106	13,081	17,056	21,032	25,007							
ST503.5-SR2	E	9,528									3,772	6,477	9,183	11,888
	M	6,426									3,136	4,773	6,387	7,992
	B	12,407									7,290	9,995	12,701	15,406
ST504.0-SR2	E	9,528							2,502	6,035	9,569	13,102	16,636	20,170
	M	6,426							2,339	4,508	6,616	8,712	10,801	12,888
	B	12,407							6,020	9,553	13,087	16,620	20,154	23,687
ST505.0-SR2	E	9,528				4,159	6,919	9,680	12,441	17,962				
	M	6,426				3,373	5,037	6,682	8,319	11,584				
	B	12,407				7,677	10,437	13,198	15,959	21,480				
ST506.0-SR2	E	9,528		4,711	8,686	12,661	16,637	20,612						
	M	6,426		3,709	6,091	8,450	10,801	13,149						
	B	12,407		8,228	12,204	16,179	20,154	24,130						
ST504.0-SR1	E	13,684									3,327	6,861	10,394	13,928
	M	9,145									3,111	5,294	7,412	9,513
	B	17,514									8,008	11,542	15,075	18,609
ST505.0-SR1	E	13,684						3,438	6,199	11,720	17,242			
	M	9,145						3,183	4,893	8,202	11,477			
	B	17,514						8,119	10,880	16,402	21,923			
ST506.0-SR1	E	13,684				6,420	10,395	14,370	18,346					
	M	9,145				5,027	7,412	9,776	12,130					
	B	17,514				11,101	15,076	19,051	23,027					
ST804.0-SR5	E	7,494			3,121	5,691	8,261	10,831	13,400	18,540	23,680	28,820	33,959	39,099
	M	5,416			2,842	4,426	5,969	7,500	9,025	12,068	15,104	18,139	21,171	24,202
	B	11,127			7,135	9,705	12,275	14,845	17,415	22,554	27,694	32,834	37,974	43,113
ST805.0-SR5	E	7,494	3,764	7,779	11,795	15,811	19,826	23,842	27,857	35,888	43,919			
	M	5,416	3,246	5,681	8,073	10,453	12,828	15,199	17,570	22,307	27,044			
	B	11,127	7,778	11,794	15,809	19,825	23,840	27,856	31,871	39,902	47,934			
ST806.0-SR5	E	7,494	10,831	16,613	22,396	28,178	33,960	39,742	45,525					
	M	5,416	7,500	10,928	14,345	17,760	21,171	24,581	27,992					
	B	11,127	14,845	20,627	26,410	32,192	37,974	43,757	49,539					
ST807.0-SR5	E	7,494	19,183	27,053	34,924	42,794								
	M	5,416	12,448	17,096	21,739	26,381								
	B	11,127	23,197	31,068	38,938	46,808								
ST804.0-SR4	E	10,529							5,383	10,523	15,663	20,802	25,942	31,082
	M	7,862							5,012	8,190	11,276	14,336	17,385	20,428
	B	16,620							12,828	17,968	23,107	28,247	33,387	38,527

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Spring Return Actuators (cont.) ST-Series

Actuator Model	Spring Torque End/Min/Break (Nm)		Operating Pressure (Bar)														
			40	50	60	70	80	90	100	120	140	160	180	200			
			Torque Output End/Min/Break (Nm)														
ST805.0-SR4	E	10,529			3,778	7,793	11,809	15,825	19,840	27,871	35,902						
	M	7,862			3,765	6,525	8,965	11,372	13,763	18,527	23,277						
	B	16,620			11,223	15,238	19,254	23,269	27,285	35,316	43,347						
ST806.0-SR4	E	10,529		8,596	14,378	20,161	25,943	31,725	37,508								
	M	7,862		7,018	10,508	13,954	17,385	20,808	24,227								
	B	16,620		16,041	21,823	27,605	33,388	39,170	44,952								
ST807.0-SR4	E	10,529	11,166	19,036	26,907	34,777											
	M	7,862	8,578	13,286	17,956	22,612											
	B	16,620	18,611	26,481	34,351	42,222											
ST804.0-SR3	E	13,955								6,335	11,475	16,615	21,755	26,894			
	M	9,912								5,617	8,764	11,843	14,901	17,948			
	B	20,047								13,780	18,920	24,060	29,199	34,339			
ST805.0-SR3	E	13,955					7,621	11,637	15,652	23,684	31,715	39,746					
	M	9,912					6,418	8,861	11,268	16,045	20,800	25,547					
	B	20,047					15,066	19,082	23,097	31,128	39,159	47,190					
ST806.0-SR3	E	13,955		4,409	10,191	15,973	21,755	27,538	33,320								
	M	9,912		4,366	7,988	11,460	14,901	18,329	21,750								
	B	20,047		11,853	17,635	23,418	29,200	34,982	40,765								
ST807.0-SR3	E	13,955	6,978	14,849	22,719	30,589	38,460										
	M	9,912	6,019	10,788	15,473	20,135	24,789										
	B	20,047	14,423	22,293	30,164	38,034	45,904										
ST804.0-SR2	E	20,031											6,735	11,875	17,015		
	M	14,058											6,388	9,602	12,709		
	B	28,131											16,633	21,773	26,913		
ST805.0-SR2	E	20,031							5,773	13,804	21,835	29,866	37,897				
	M	14,058							5,743	10,773	15,593	20,370	25,129				
	B	28,131							15,671	23,702	31,733	39,764	47,795				
ST806.0-SR2	E	20,031				6,093	11,876	17,658	23,440	35,005							
	M	14,058				5,962	9,602	13,095	16,550	23,416							
	B	28,131				15,991	21,774	27,556	33,338	44,903							
ST807.0-SR2	E	20,031			12,839	20,710	28,580	36,450									
	M	14,058			10,189	14,922	19,606	24,273									
	B	28,131			22,737	30,608	38,478	46,348									
ST805.0-SR1	E	23,158								8,304	15,351	22,398	29,445	36,492			
	M	15,779								7,054	11,327	15,530	19,711	23,882			
	B	30,740								16,683	23,730	30,777	37,824	44,871			
ST806.0-SR1	E	23,158					8,346	13,636	18,927	29,507	40,088						
	M	15,779					7,078	10,297	13,463	19,747	26,008						
	B	30,740					16,725	22,016	27,306	37,887	48,468						
ST807.0-SR1	E	23,158			10,292	17,670	25,048	32,427	39,805								
	M	15,779			8,274	12,714	17,105	21,478	25,842								
	B	30,740			18,671	26,050	33,428	40,806	48,184								

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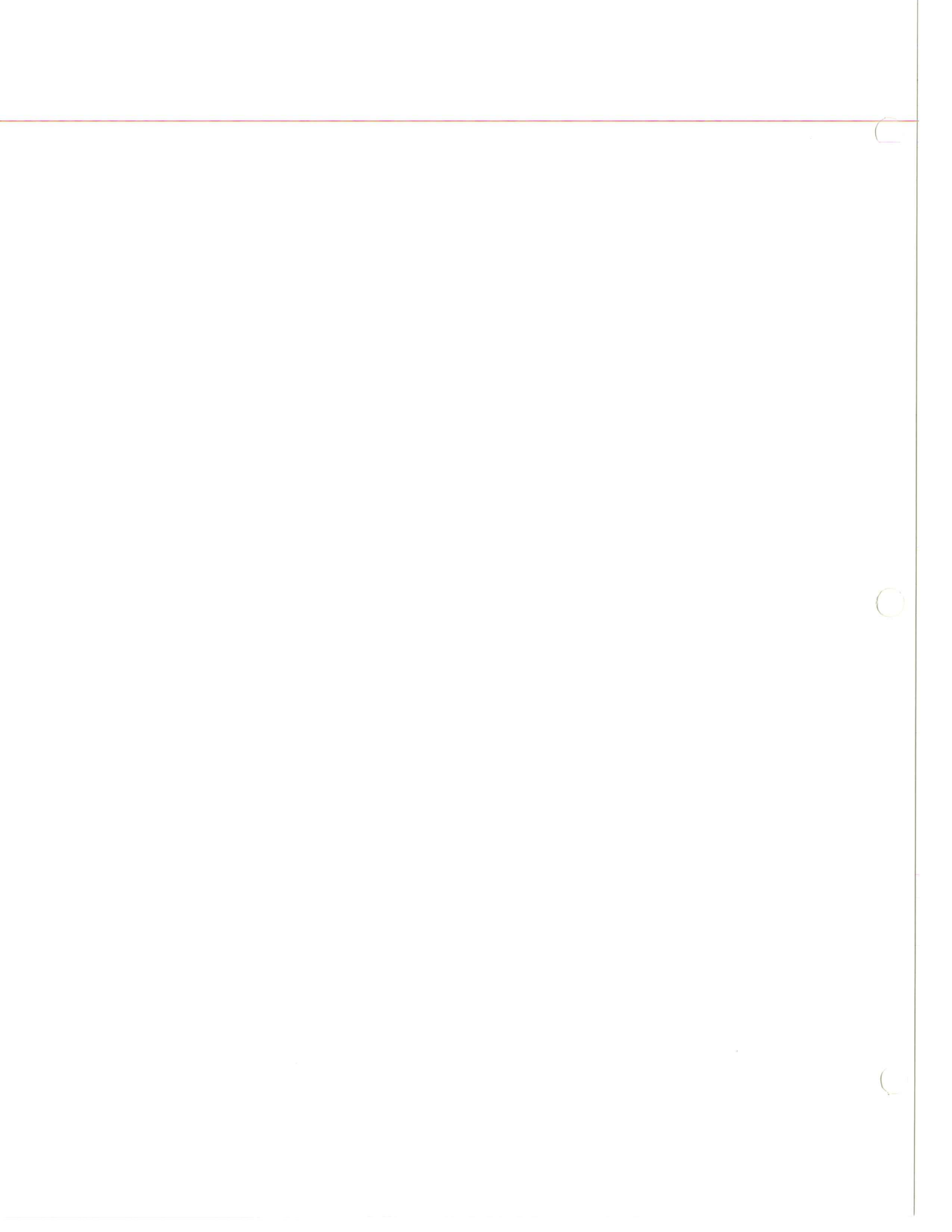
Spring Return Actuators STR-Series

Actuator Model	Spring Torque End/Min/Break (Nm)		Operating Pressure (Bar)												
			40	50	60	70	80	90	100	120	140	160	180	200	
			Torque Output End/Min/Break (Nm)												
STR1005-SR3	E	22,596									13,584	21,789	29,996	38,202	46,408
	M	15,657									10,608	15,436	20,215	24,976	29,726
	B	32,257									24,263	32,470	40,676	48,882	57,088
STR1006-SR3	E	22,596				8,917	15,284	21,651	28,019	40,753	53,488	66,223	78,957	91,692	
	M	15,657				7,796	11,614	15,353	19,063	26,450	33,818	41,175	48,528	55,877	
	B	32,257				19,597	25,964	32,332	38,699	51,434	64,168	76,903	89,638	102,372	
STR1007-SR3	E	22,596		9,559	18,601	27,644	36,687	45,729	54,772	72,857	90,943				
	M	15,657		8,190	13,568	18,846	24,096	29,331	34,561	45,010	55,446				
	B	32,257		20,239	29,282	38,324	47,367	56,410	65,452	83,538	101,623				
STR1008-SR3	E	22,596	12,864	24,992	37,122	49,251	61,380	73,510	85,639						
	M	15,657	10,180	17,304	24,349	31,371	38,381	45,388	52,388						
	B	32,257	23,543	35,673	47,802	59,931	72,061	84,190	96,319						
STR1010-SR3	E	22,596	44,908	65,048											
	M	15,657	28,858	40,500											
	B	32,257	55,588	75,728											
STR1005-SR2	E	30,051											17,217	25,423	
	M	22,906											15,658	20,663	
	B	51,244											40,639	48,845	
STR1006-SR2	E	30,051								19,769	32,503	45,238	57,973	70,707	
	M	22,906								17,234	24,875	32,361	39,790	47,191	
	B	51,244								43,190	55,925	68,660	81,394	94,129	
STR1007-SR2	E	30,051				15,702	24,745	33,787	51,873	69,958					
	M	22,906				14,701	20,253	25,635	36,237	46,758					
	B	51,244				39,124	48,166	57,209	75,294	93,380					
STR1008-SR2	E	30,051		16,137	28,266	40,396	52,525	64,654							
	M	22,906		14,979	22,362	29,528	36,620	43,680							
	B	51,244		39,559	51,688	63,817	75,947	88,076							
STR1010-SR2	E	30,051	23,923	44,063											
	M	22,906	19,761	31,677											
	B	51,244	47,345	67,485											
STR1006-SR1	E	37,509										17,538	30,273	43,008	
	M	31,481										17,472	27,881	35,700	
	B	76,306										60,418	73,153	85,888	
STR1007-SR1	E	37,509								24,173	42,258				
	M	31,481								23,941	35,249				
	B	76,306								67,053	85,138				
STR1008-SR1	E	37,509				12,696	24,825	36,955							
	M	31,481				12,640	24,379	32,027							
	B	76,306				55,576	67,705	79,835							

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Spring Return Actuators STRQ-Series

Actuator Model	Spring Torque End/Min/Break (Nm)		Operating Pressure (Bar)												
			40	50	60	70	80	90	100	120	140	160	180	200	
			Torque Output End/Min/Break (Nm)												
STRQ10205-2SR3	E	45,192									27,167	43,579	59,992	76,404	92,817
	M	31,314									21,216	30,872	40,430	49,952	59,452
	B	64,515									48,527	64,940	81,352	97,765	114,177
STRQ10206-2SR3	E	45,192				17,834	30,569	43,303	56,038	81,507	106,977	132,446	157,915	183,385	
	M	31,314				15,592	23,228	30,706	38,126	52,900	67,636	82,350	97,056	111,754	
	B	64,515				39,195	51,929	64,664	77,399	102,868	128,337	153,807	179,276	204,745	
STRQ10207-2SR3	E	45,192		19,118	37,203	55,289	73,374	91,459	109,545	145,715	181,886				
	M	31,314		16,380	27,136	37,692	48,192	58,662	69,122	90,020	110,892				
	B	64,515		40,479	58,564	76,649	94,735	112,820	130,905	167,076	203,246				
STRQ10208-2SR3	E	45,192	25,727	49,985	74,244	98,503	122,761	147,020	171,279						
	M	31,314	20,360	34,608	48,698	62,742	76,762	90,776	104,776						
	B	64,515	47,087	71,346	95,604	119,863	144,122	168,381	192,639						
STRQ10210-2SR3	E	45,192	89,815	130,096											
	M	31,314	57,716	81,000											
	B	64,515	111,176	151,457											
STRQ10205-2SR2	E	60,103											34,435	50,847	
	M	45,812											31,316	41,326	
	B	102,488											81,278	97,691	
STRQ10206-2SR2	E	60,103								39,538	65,007	90,476	115,946	141,415	
	M	45,812								34,468	49,750	64,722	79,580	94,382	
	B	102,488								86,381	111,851	137,320	162,789	188,259	
STRQ10207-2SR2	E	60,103					31,404	49,490	67,575	103,746	139,916				
	M	45,812					29,402	40,506	51,270	72,474	93,516				
	B	102,488					78,248	96,333	114,419	150,589	186,760				
STRQ10208-2SR2	E	60,103			32,274	56,533	80,792	105,051	129,309						
	M	45,812			29,958	44,724	59,056	73,240	87,360						
	B	102,488			79,118	103,377	127,635	151,894	176,153						
STRQ10210-2SR2	E	60,103	47,846	88,127											
	M	45,812	39,522	63,354											
	B	102,488	94,689	134,970											
STRQ10206-2SR1	E	75,018										35,077	60,546	86,016	
	M	62,962										34,946	55,762	71,400	
	B	152,612										120,837	146,306	171,776	
STRQ10207-2SR1	E	75,018								48,346	84,517				
	M	62,962								47,882	70,498				
	B	152,612								134,106	170,277				
STRQ10208-2SR1	E	75,018					25,392	49,651	73,910						
	M	62,962					25,280	48,758	64,054						
	B	152,612					111,153	135,411	159,670						



Performance Data

Double Acting Actuators ST-Series

Actuator Model	Displacement/Rotation Per Stroke (Litres)		Maximum Operating Pressure (Bar)	Maximum Allowable Working Pressure (Bar)	Approximate Weight (kg.)
	Clockwise	Counterclockwise			
ST302.5	0.32	0.45	183	239	90
ST303.0	0.51	0.65	127	166	92
ST303.5	0.75	0.88	93	122	98
ST304.0	1.02	1.16	71	93	104
ST403.0	0.73	0.93	171	234	113
ST403.5	1.07	1.26	126	172	119
ST404.0	1.45	1.65	96	132	125
ST405.0	2.38	2.57	62	84	152
ST503.5	1.30	1.73	179	229	197
ST504.0	1.83	2.26	137	203	202
ST505.0	3.11	3.54	88	130	225
ST506.0	4.66	5.09	61	90	242
ST804.0	2.66	3.30	188	214	216
ST805.0	4.52	5.15	120	162	230
ST806.0	6.78	7.41	84	112	248
ST807.0	9.46	10.09	61	82	307

Double Acting Actuators STR/STRQ-Series

Actuator Model	Displacement/Rotation Per Stroke (Litres)		Maximum Operating Pressure (Bar)	Maximum Allowable Working Pressure (Bar)	Approximate Weight (kg.)
	Clockwise	Counterclockwise			
STR1005	5.26	6.60	227	227	952
STR1006	8.16	9.50	173	208	958
STR1007	11.59	12.93	122	152	960
STR1008	15.55	16.89	91	119	990
STR1010	26.82	28.16	55	58	1080
STR10205	11.85	11.85	119	227	1059
STR10206	17.66	17.66	80	208	1072
STR10207	24.52	24.52	58	152	1076
STR10208	32.44	32.44	44	119	1134
STRQ10205	11.85	11.85	227	227	1373
STRQ10206	17.66	17.66	160	208	1386
STRQ10207	24.52	24.52	115	152	1389
STRQ10208	32.44	32.44	87	119	1448
STRQ10210	54.98	54.98	53	58	1628
STRQ10405	23.72	23.72	119	227	1588
STRQ10406	35.32	35.32	80	208	1613
STRQ10407	49.04	49.04	58	152	1621
STRQ10408	64.88	64.88	44	119	1738

Performance Data

Spring Return Actuators ST-Series

Actuator Model	Displ. Per Stroke (Litres)	Actuator Spring Size					Maximum Allowable Working Pressure (Bar)	Actuator Spring Size				
		SR5	SR4	SR3	SR2	SR1		SR5	SR4	SR3	SR2	SR1
		Maximum Operating Pressure (Bar)*						Approximate Weight of Actuator (kg.)				
ST302.5-SR	0.45	212	226	240	267		282	160	159	159	198	
ST303.0-SR	0.65	147	157	167	185	205	196	163	162	162	200	247
ST303.5-SR	0.88	108	115	122	136	150	144	169	168	168	206	253
ST304.0-SR	1.16		88	94	104	115	115	175	174	174	221	259
ST403.0-SR	0.93	203	215	233	244		284	184	183	221	268	264
ST403.5-SR	1.26	149	158	171	179	196	208	190	189	227	274	270
ST404.0-SR	1.65	114	121	131	137	150	160	196	195	233	280	276
ST405.0-SR	2.57		77	84	88	96	106	222	221	259	306	302
ST503.5-SR	1.73		228	236	266		278		427	417	508	
ST504.0-SR	2.26		174	181	204	230	242		432	414	513	626
ST505.0-SR	3.54		112	116	130	147	155		455	446	536	649
ST506.0-SR	5.09		77	80	91	102	107		471	462	553	665
ST804.0-SR	3.30	229	243	247	247		247	445	535	527	640	
ST805.0-SR	5.15	146	156	165	182		189	459	549	540	654	
ST806.0-SR	7.41	102	108	115	126		131	478	681	672	786	
ST807.0-SR	10.09	75	79	84	93		97	536	626	617	730	
*ST805.0-SR1	4.52					166	166					969
*ST806.0-SR1	6.78					141	141					987
*ST807.0-SR1	9.46					102	122					1046

*Note: ST8XX-SR1 is a pull spring actuator.

Spring Return Actuators STR/STRQ-Series

Actuator Model	Displ. Per Stroke (Litres)	Actuator Spring Size					Maximum Allowable Working Pressure** (Bar)	Actuator Spring Size				
		SR5	SR4	SR3	SR2	SR1		SR5	SR4	SR3	SR2	SR1
		Maximum Operating Pressure (Bar)*						Approximate Weight of Actuator (kg.)				
STR1005-SR	5.26	N/A		227	227		227†	N/A	1885	1985		
STR1006-SR	8.16	N/A		208	208	208	208	N/A	1891	1991	2036	
STR1007-SR	11.59	N/A		151	152	152	152	N/A	1893	1993	2038	
STR1008-SR	15.55	N/A		113	119	119	119	N/A	1922	2022	2068	
STR1010-SR	26.82	N/A		58	58	58	58	N/A	2012	2112	2158	
STRQ10205-2SR	10.52	N/A		227	227		227	N/A	3239	3438		
STRQ10206-2SR	16.32	N/A		208	208	208	208	N/A	3252	3451	3542	
STRQ10207-2SR	23.20	N/A		151	152	152	152	N/A	3255	3454	3546	
STRQ10208-2SR	31.10	N/A		113	119	119	119	N/A	3314	3513	3604	
STRQ10210-2SR	53.64	N/A		58	58	58	58	N/A	3494	3693	3785	

*Maximum operating pressure is the pressure required to produce the maximum rated torque of the actuator.

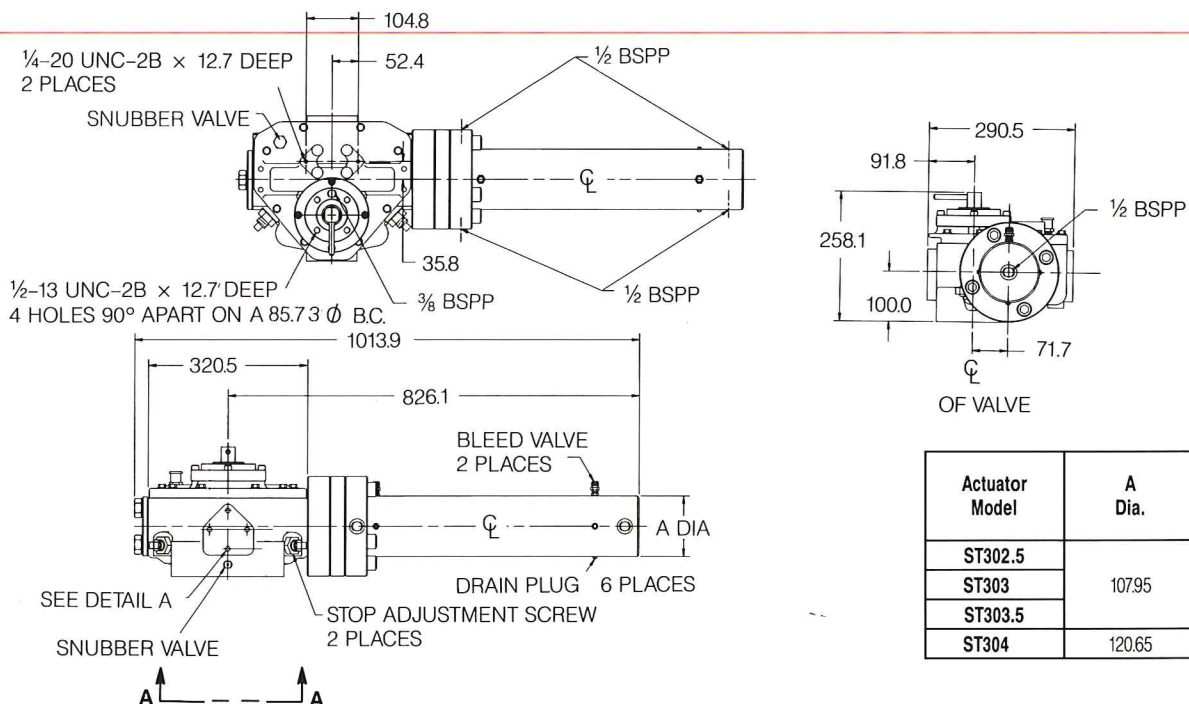
**Maximum allowable working pressure is the maximum static pressure that may be applied to a fully stroked actuator against the travel stops. Pressures applied to only one end of the cylinder in excess of the maximum allowable operating pressure may result in permanent deformation of the torque-producing mechanism of the actuator. Maximum pneumatic test pressure is 1.25 times the maximum allowable working pressure when applied to both sides of the cylinder simultaneously.

†Except when maximum operating pressure is higher.

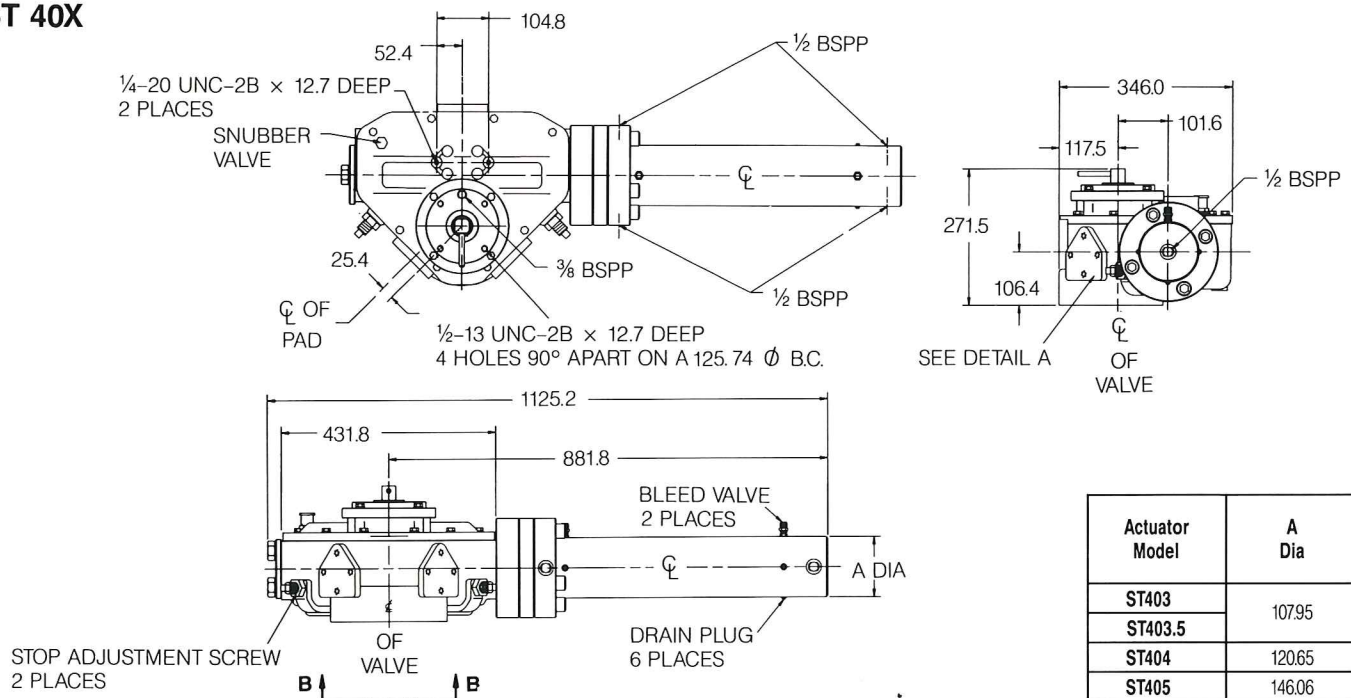
Dimensions (mm) — ST Series

Double Acting Actuators

ST 30X

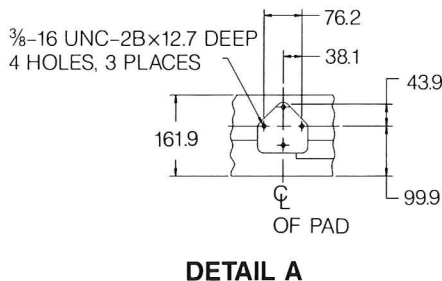
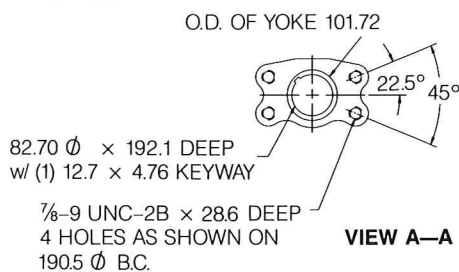


ST 40X



NOTE: ACTUATOR SHOWN ROTATED TO THE FULL CLOCKWISE POSITION, TOP VIEW.

ST 30X



ST 40X

7/8-9 UNC-2B x 28.6 DEEP
6 HOLES ON 190.5 Ø B.C.
LOCATED AS SHOWN

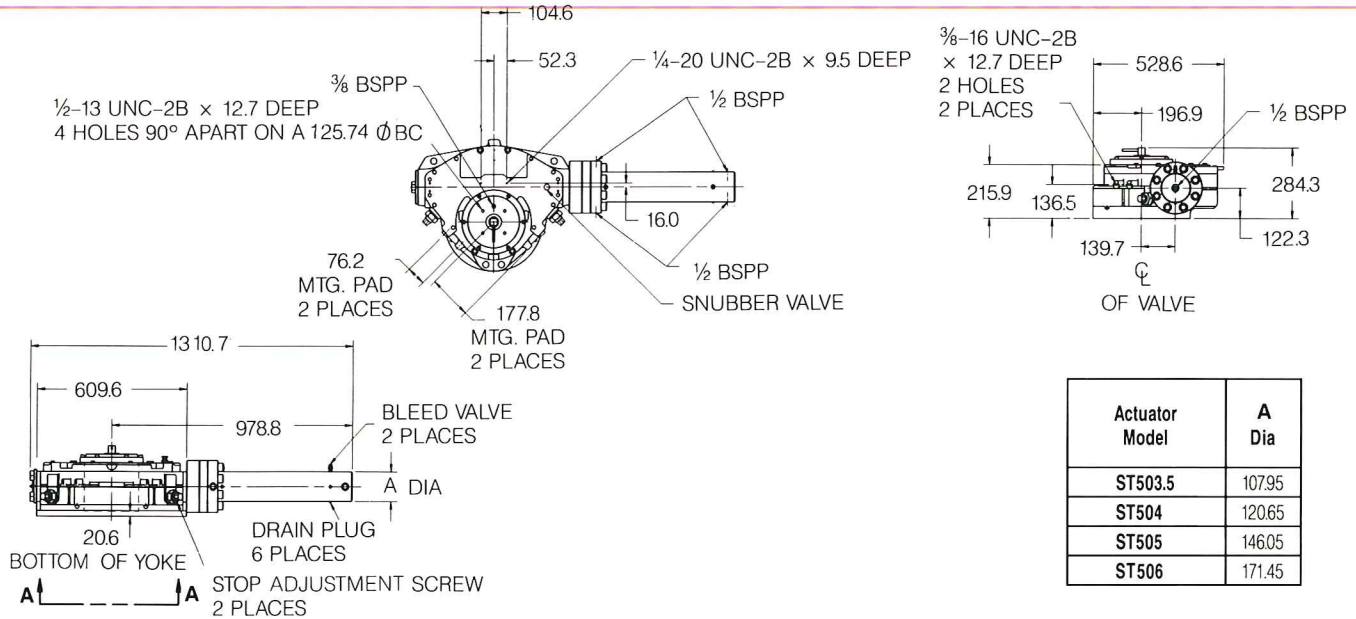
O.D. of YOKE 142.88

VIEW B-B
MOUNTING DIMENSIONS

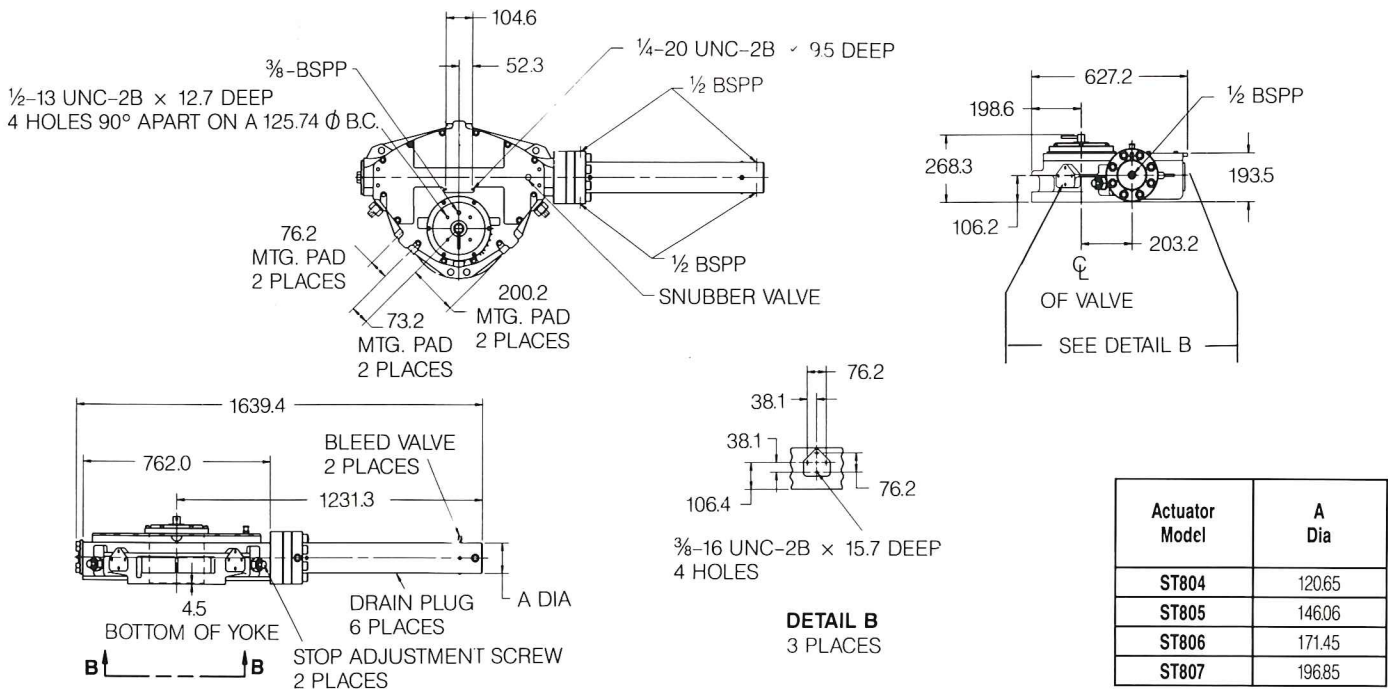
Dimensions (mm) — ST Series

Double Acting Actuators

ST-50X

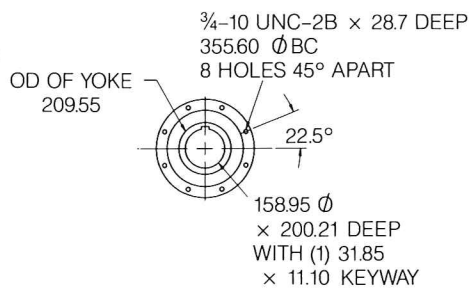


ST 80X

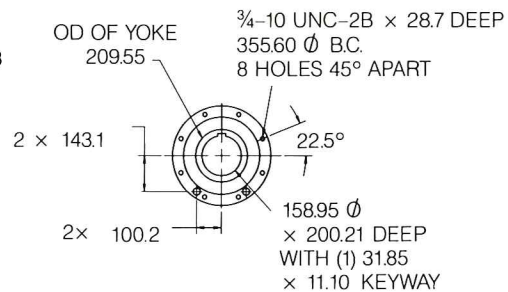


NOTE: ACTUATOR SHOWN ROTATED TO THE FULL CLOCKWISE POSITION, TOP VIEW.

ST-50X VIEW A—A



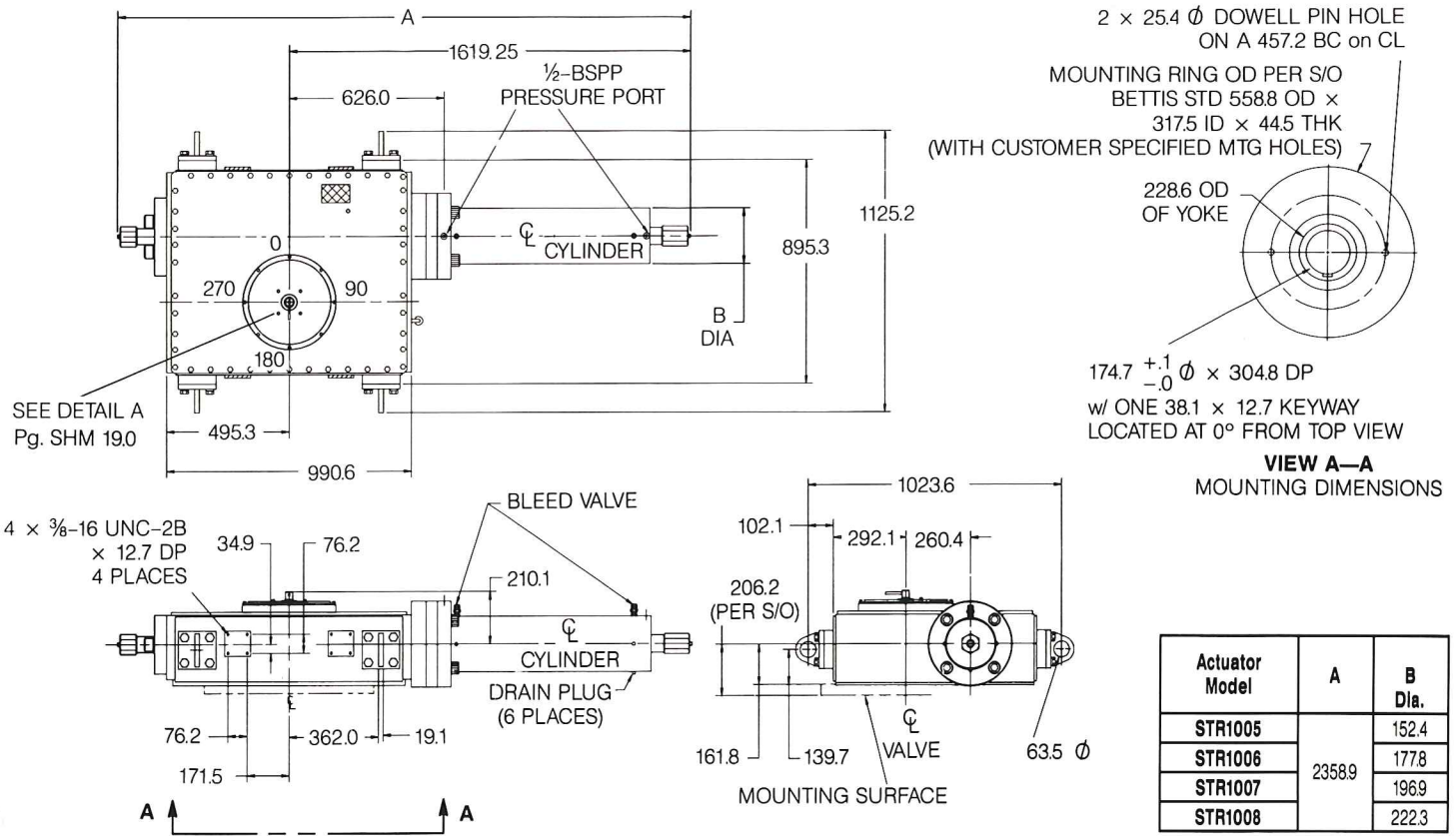
ST-80X VIEW B—B



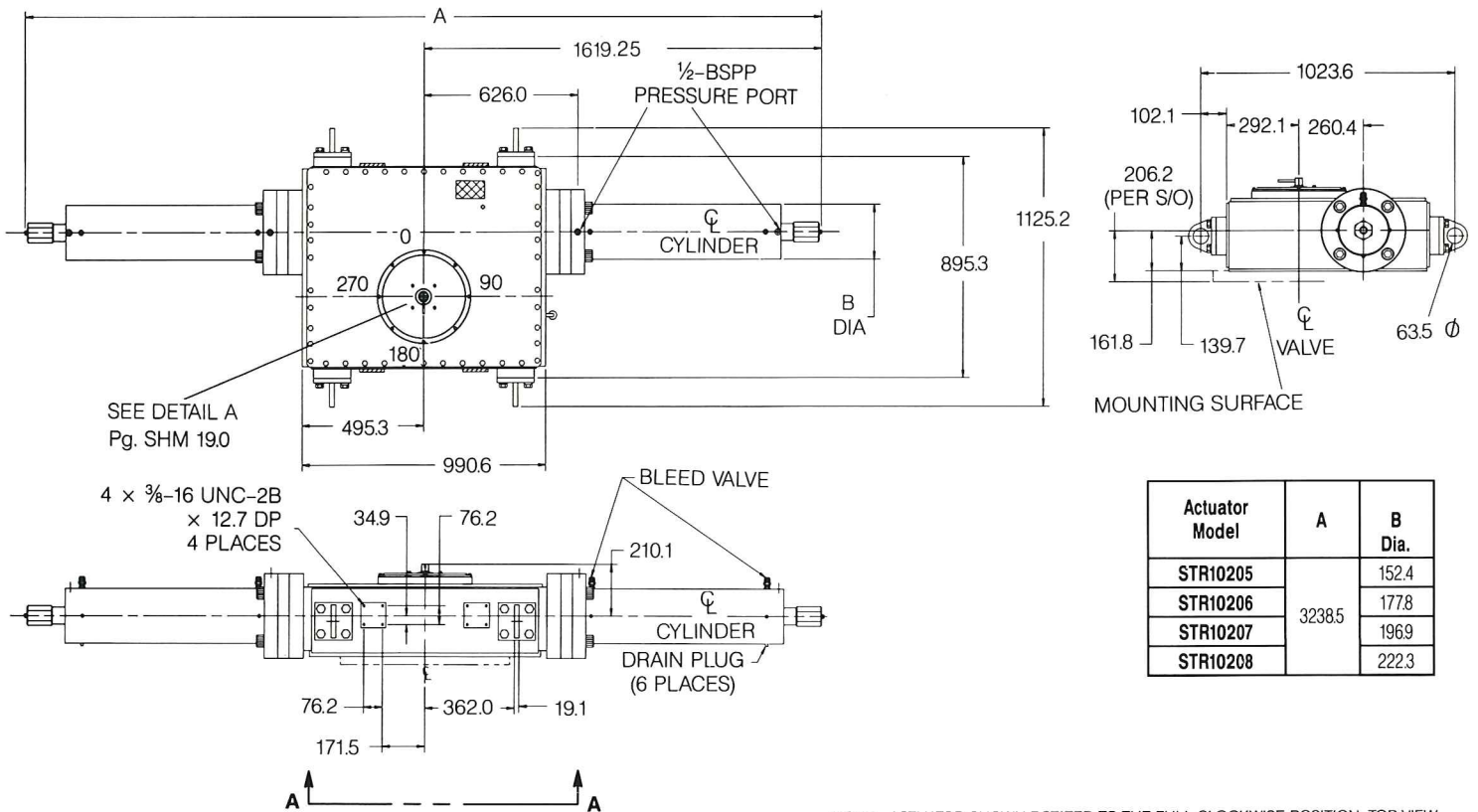
Dimensions (mm) — STR Series

Double Acting Actuators

STR 100X



STR 1020X

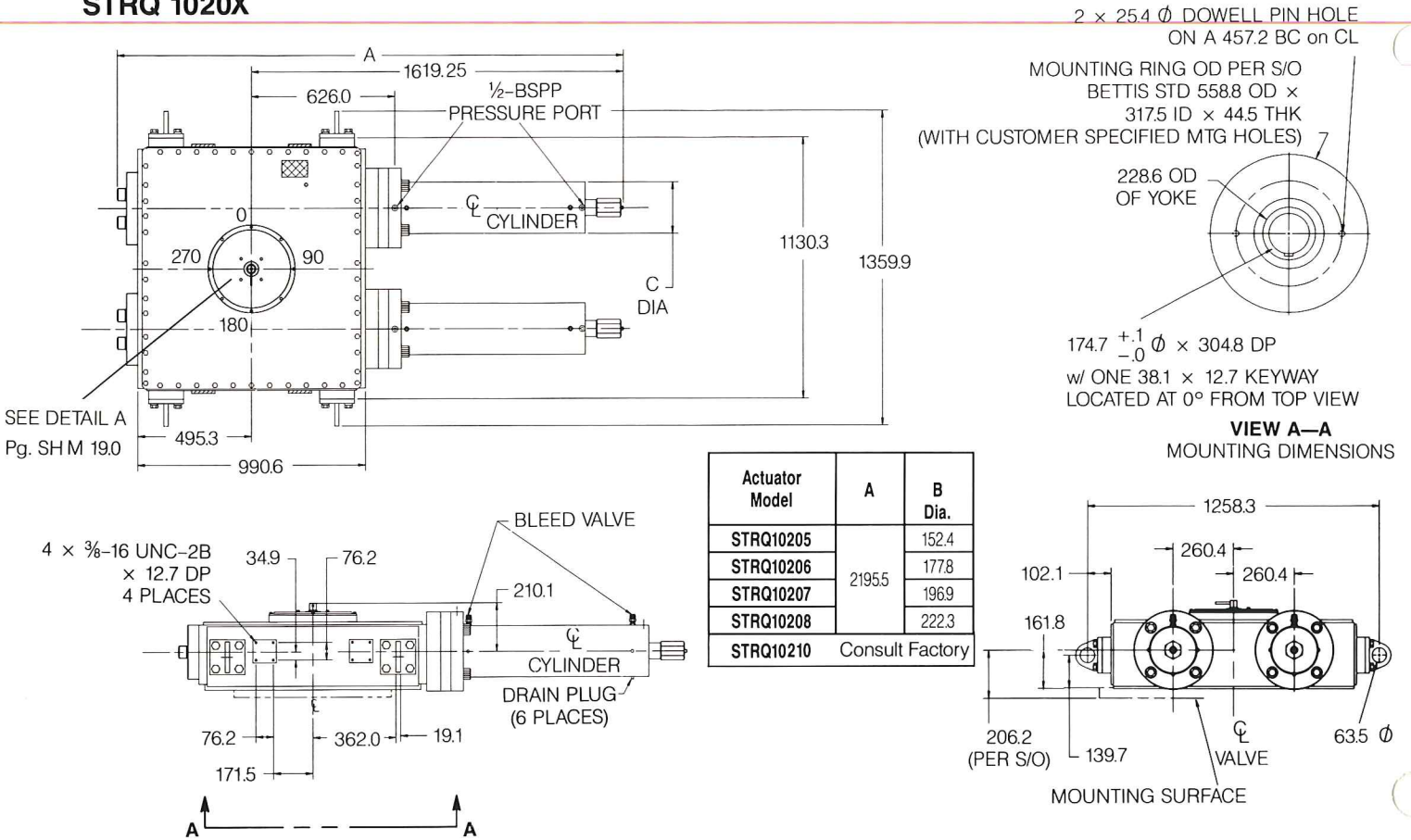


NOTE: ACTUATOR SHOWN ROTATED TO THE FULL CLOCKWISE POSITION, TOP VIEW.

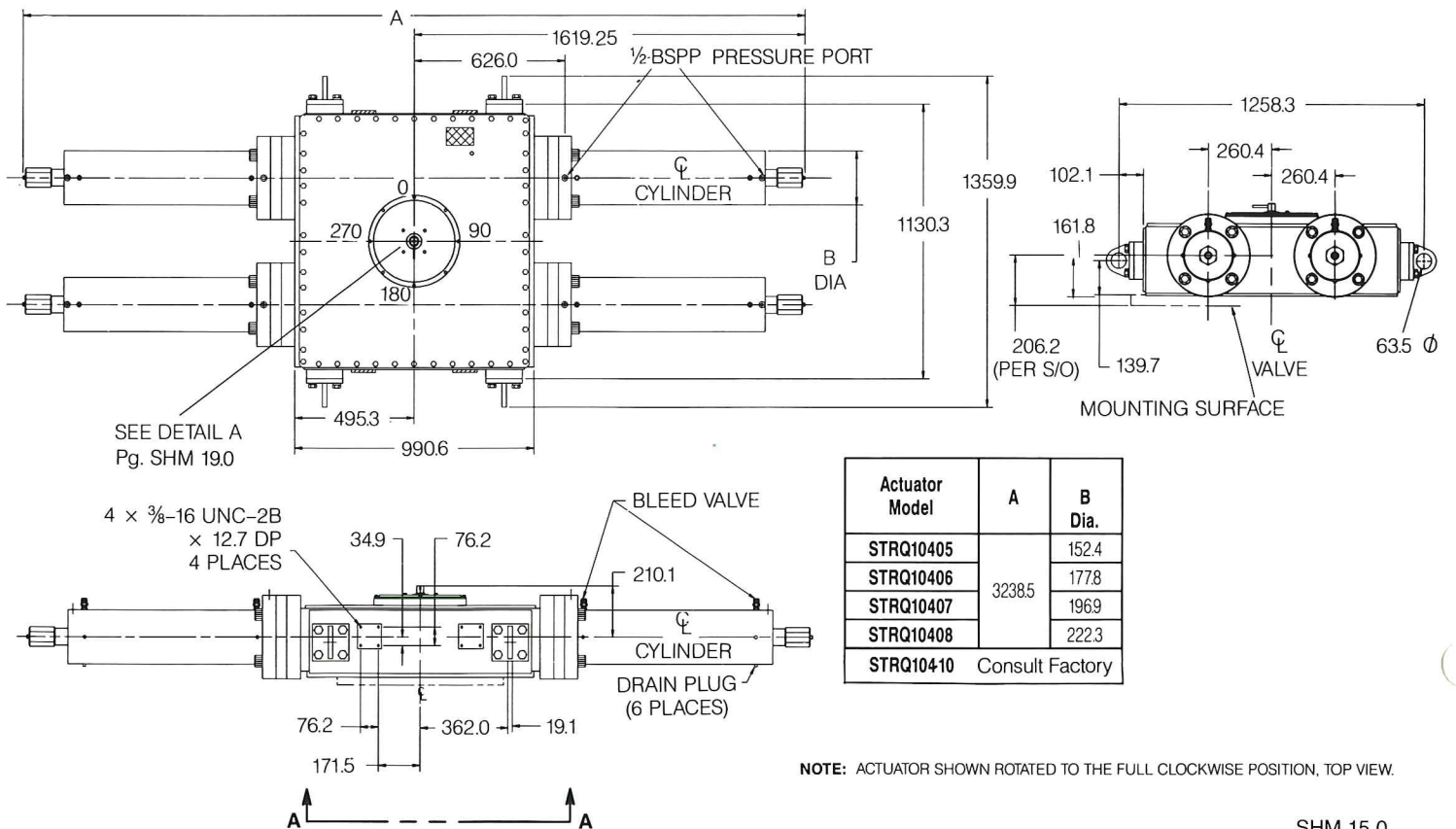
Dimensions (mm) — STRQ Series

Double Acting Actuators

STRQ 1020X



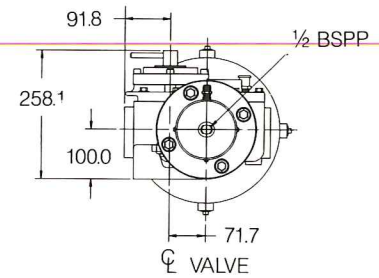
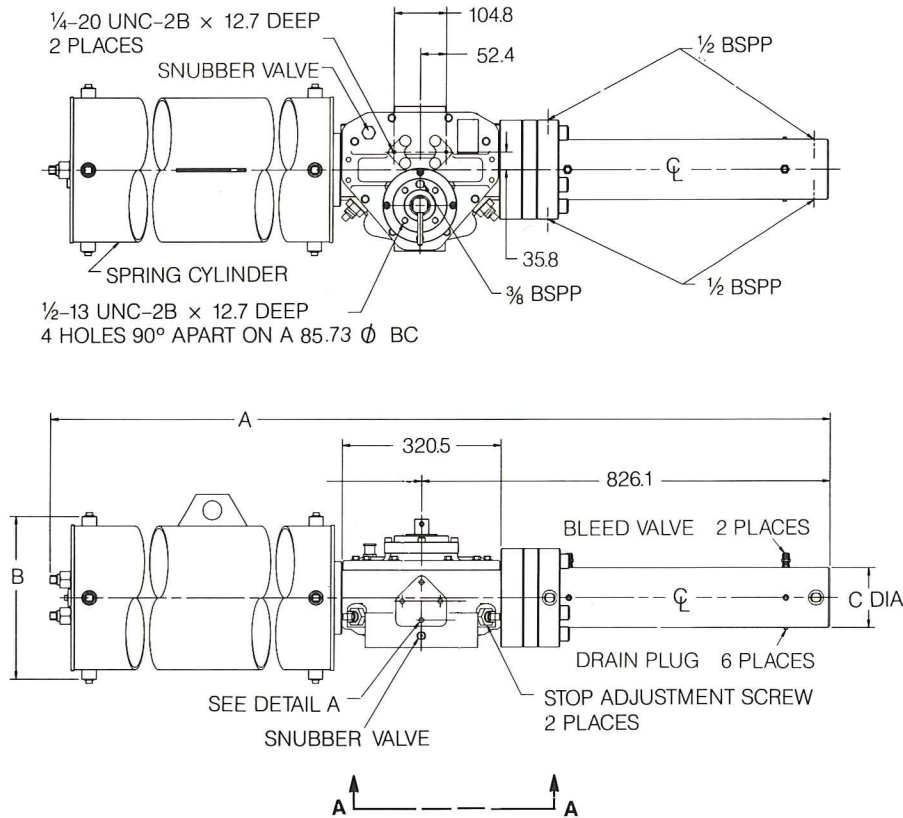
STRQ 1040X



Dimensions (mm) — ST Series

Spring Return Actuators

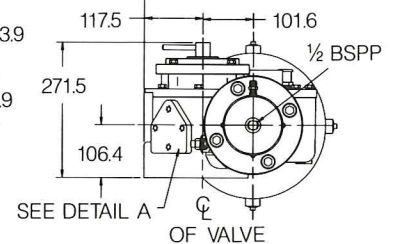
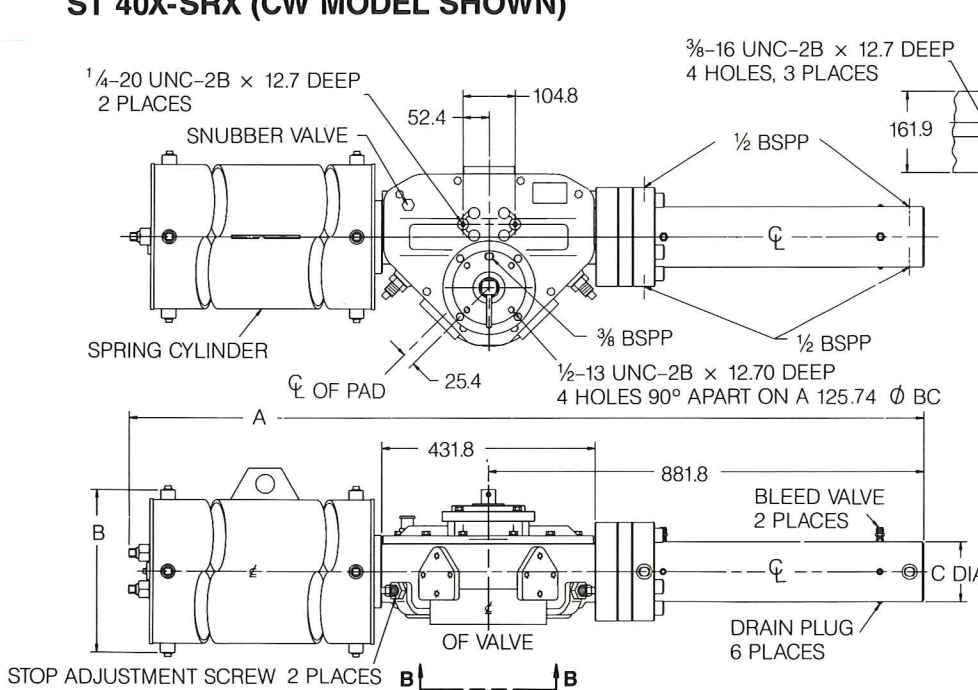
ST 30X-SRX (CW MODEL SHOWN)



Actuator Model	Actuator Dimensions		
	A	B	C Dia.
ST303-SR1	1905.76	327.15	107.95
ST303.5-SR1			120.65
ST304-SR1	1775.46	308.10	107.95
ST302.5-SR2			120.65
ST303-SR2	1832.62	219.20	107.65
ST303.5-SR2			120.65
ST304-SR2	1905.76	308.10	107.65
ST302.5-SR3			120.65
ST303-SR3	1832.62	219.20	107.65
ST303.5-SR3			120.65
ST304-SR3	1905.76	308.10	107.65
ST302.5-SR4			120.65
ST303-SR4	1832.62	219.20	107.65
ST303.5-SR4			120.65
ST304-SR4	1905.76	308.10	107.65
ST302.5-SR5			120.65
ST303-SR5	1832.62	219.20	107.65
ST304-SR5			120.65

DETAIL A

ST 40X-SRX (CW MODEL SHOWN)



Actuator Model	Actuator Dimensions		
	A	B	C Dia.
ST403.5-SR1	2017.01	327.15	107.95
ST404-SR1			120.65
ST405-SR1	2118.61	327.15	146.06
ST403-SR2			107.95
ST403.5-SR2	1886.71	308.10	107.95
ST404-SR2			120.65
ST405-SR2	1943.86	219.20	146.06
ST403-SR3			107.95
ST403.5-SR3	2017.01	327.15	120.65
ST404-SR3			146.06
ST405-SR3	2118.61	327.15	146.06
ST403-SR4			107.95
ST403.5-SR4	1886.71	308.10	107.95
ST404-SR4			120.65
ST405-SR4	1943.86	219.20	146.06
ST403-SR5			107.95
ST404-SR5	2017.01	327.15	120.65
ST405-SR5			146.06

O.D. OF YOKE 101.72

82.70 \varnothing \times 192.1 DEEP
w/ (1) 12.7 \times 4.76 KEYWAY

VIEW A—A

$\frac{7}{8}$ -9 UNC-2B \times 28.6 DEEP
4 HOLES AS SHOWN ON
190.5 \varnothing B.C.

$\frac{7}{8}$ -9 UNC-2B \times 28.6 DEEP
6 HOLES ON 190.5 \varnothing B.C.
LOCATED AS SHOWN

O.D. OF YOKE 142.88

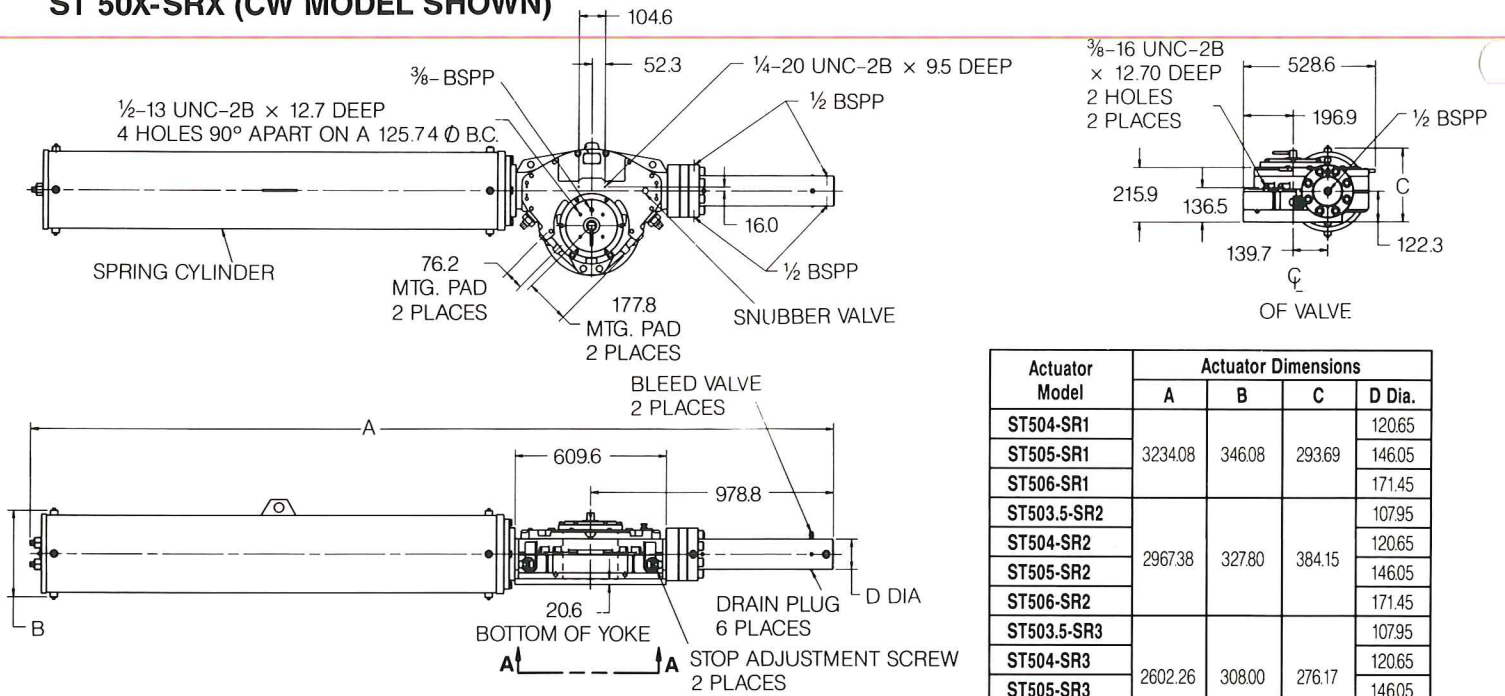
VIEW B—B
MOUNTING DIMENSIONS

NOTE: ACTUATOR SHOWN ROTATED TO THE FULL CLOCKWISE POSITION, TOP VIEW.

Dimensions (mm) — ST Series

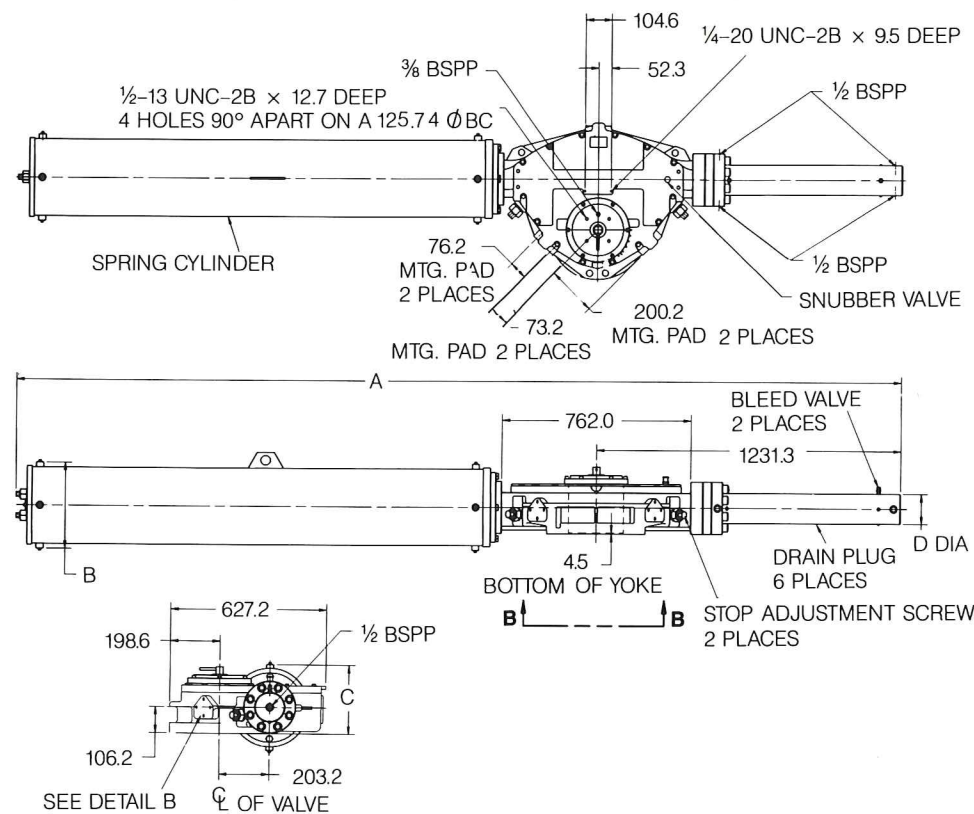
Spring Return Actuators

ST 50X-SRX (CW MODEL SHOWN)



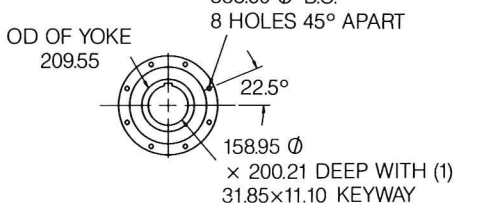
Actuator Model	Actuator Dimensions			
	A	B	C	D Dia.
ST504-SR1				120.65
ST505-SR1	323.408	346.08	293.69	146.05
ST506-SR1				171.45
ST503.5-SR2				107.95
ST504-SR2				120.65
ST505-SR2	296.738	327.80	384.15	146.05
ST506-SR2				171.45
ST503.5-SR3				107.95
ST504-SR3				120.65
ST505-SR3	260.226	308.00	276.17	146.05
ST506-SR3				171.45
ST503.5-SR4				107.95
ST504-SR4				120.65
ST505-SR4	277.063	308.00	276.17	146.05
ST506-SR4				171.45

ST 80X-SRX (CW MODEL SHOWN-EXCEPT SR1)

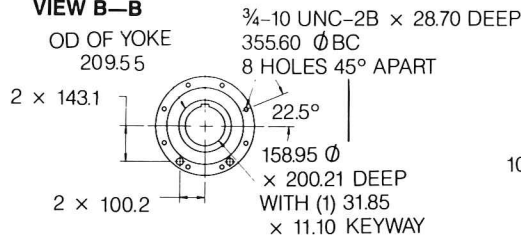


Actuator Model	Actuator Dimensions			
	A	B	C	D Dia.
ST805-SR1				146.05
ST806-SR1	2305.30	498.70	355.55	171.45
ST807-SR1				196.85
ST804-SR2				120.65
ST805-SR2				146.05
ST806-SR2	356.286	346.08	279.40	171.45
ST807-SR2				196.85
ST804-SR3				120.65
ST805-SR3				146.05
ST806-SR3	3295.65	327.80	270.00	171.45
ST807-SR3				196.85
ST804-SR4				120.65
ST805-SR4				146.05
ST806-SR4	352.425	327.80	270.00	171.45
ST807-SR4				196.85
ST804-SR5				120.65
ST805-SR5				146.05
ST806-SR5	3098.80	308.00	260.35	171.45
ST807-SR5				196.85

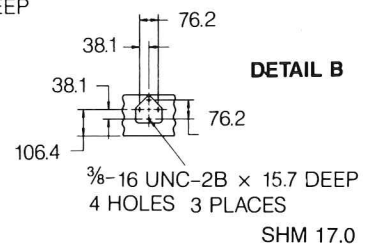
ST 50X-SRX VIEW A-A



ST 80X-SRX VIEW B-B



NOTE: ACTUATOR SHOWN ROTATED TO THE FULL CLOCKWISE POSITION, TOP VIEW.

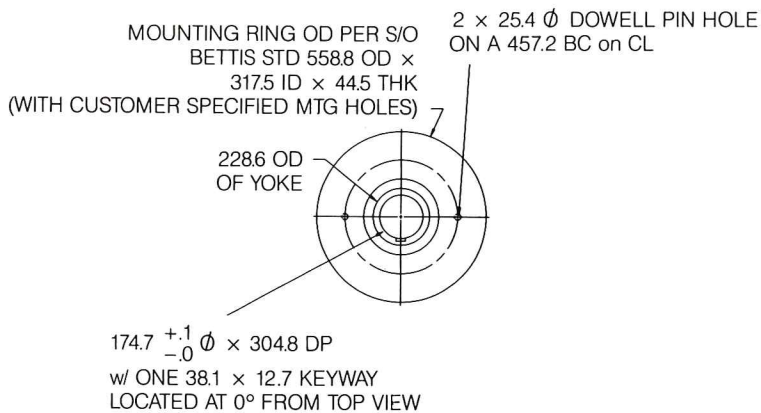
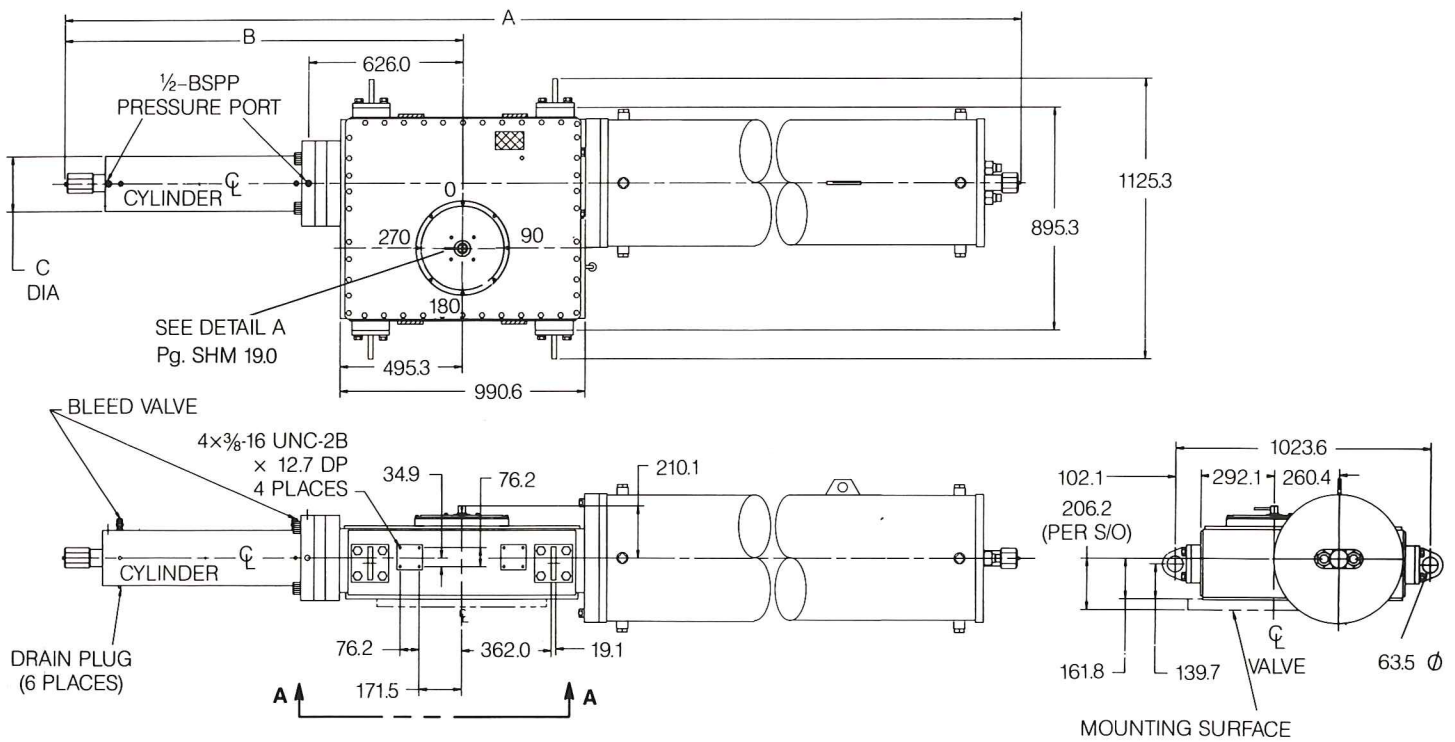


SHM 17.0

Dimensions (mm) — STR Series

Spring Return Actuators

STR 100X-SRX (CW MODEL SHOWN)



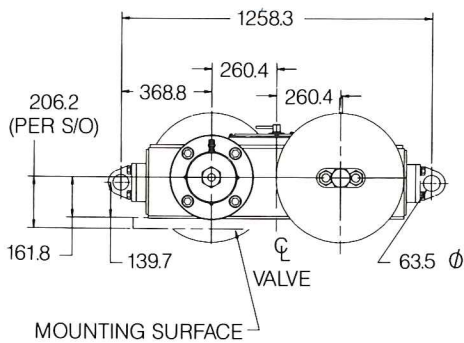
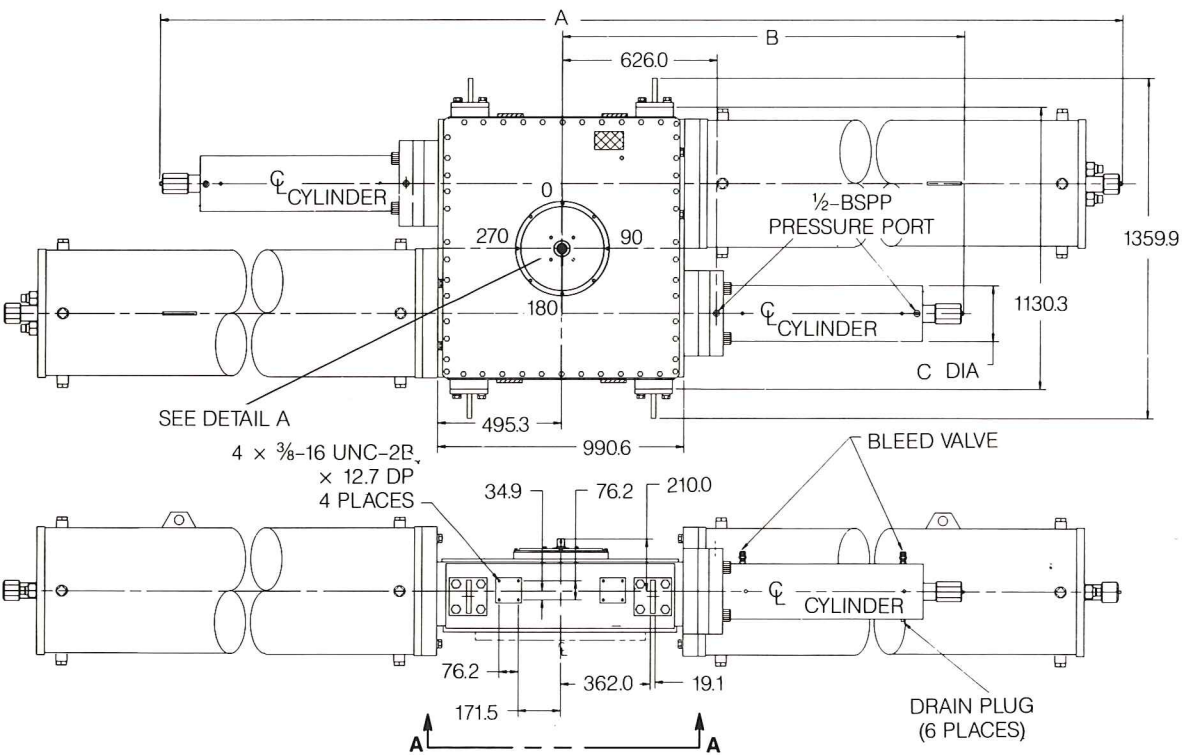
Actuator Model	A	B	C Dia
STR1005-SR3	4230.1	1619.25	152.4
STR1005-SR2			177.8
STR1006-SR3			196.9
STR1006-SR2			222.3
STR1006-SR1			
STR1007-SR3			
STR1007-SR2			
STR1007-SR1			
STR1008-SR3			
STR1008-SR2			
STR1008-SR1			
STR1010-SRX	Consult Factory		

NOTE: ACTUATOR SHOWN ROTATED TO THE FULL CLOCKWISE POSITION, TOP VIEW.

Dimensions (mm) — STRQ Series

Spring Return Actuators

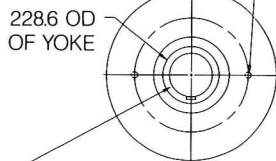
STRQ 1020X-SRX (CW MODEL SHOWN)



Actuator Model	A	B	C Dia
STRQ10205-2SR3	4230.1	1619.25	152.4
STRQ10205-2SR2			177.8
STRQ10206-2SR3			196.9
STRQ10206-2SR2			222.3
STRQ10206-2SR1			
STRQ10207-2SR3			
STRQ10207-2SR2			
STRQ10207-2SR1			
STRQ10208-2SR3			
STRQ10208-2SR2			
STRQ10208-2SR1			
STRQ10210-2SRX	Consult Factory		

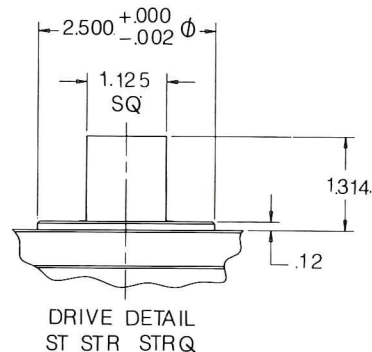
MOUNTING RING OD PER S/O
 BETTIS STD 558.8 OD x
 317.5 ID x 44.5 THK
 (WITH CUSTOMER SPECIFIED MTG HOLES)

2 x 25.4 Ø DOWELL PIN HOLE
 ON A 457.2 BC ON CL



174.7 \pm_{-0}^{+1} Ø x 304.8 DP
 w/ ONE 38.1 x 12.7 KEYWAY
 LOCATED AT 0° FROM TOP VIEW

VIEW A—A
 MOUNTING DIMENSIONS



DETAIL A

NOTE: ACTUATOR SHOWN ROTATED TO THE FULL CLOCKWISE POSITION, TOP VIEW.



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IMPORTANT: Due to GH-Bettis' continuing commitment to engineered product advancement, data presented herein is subject to change.

BULLETIN NO. 95.00