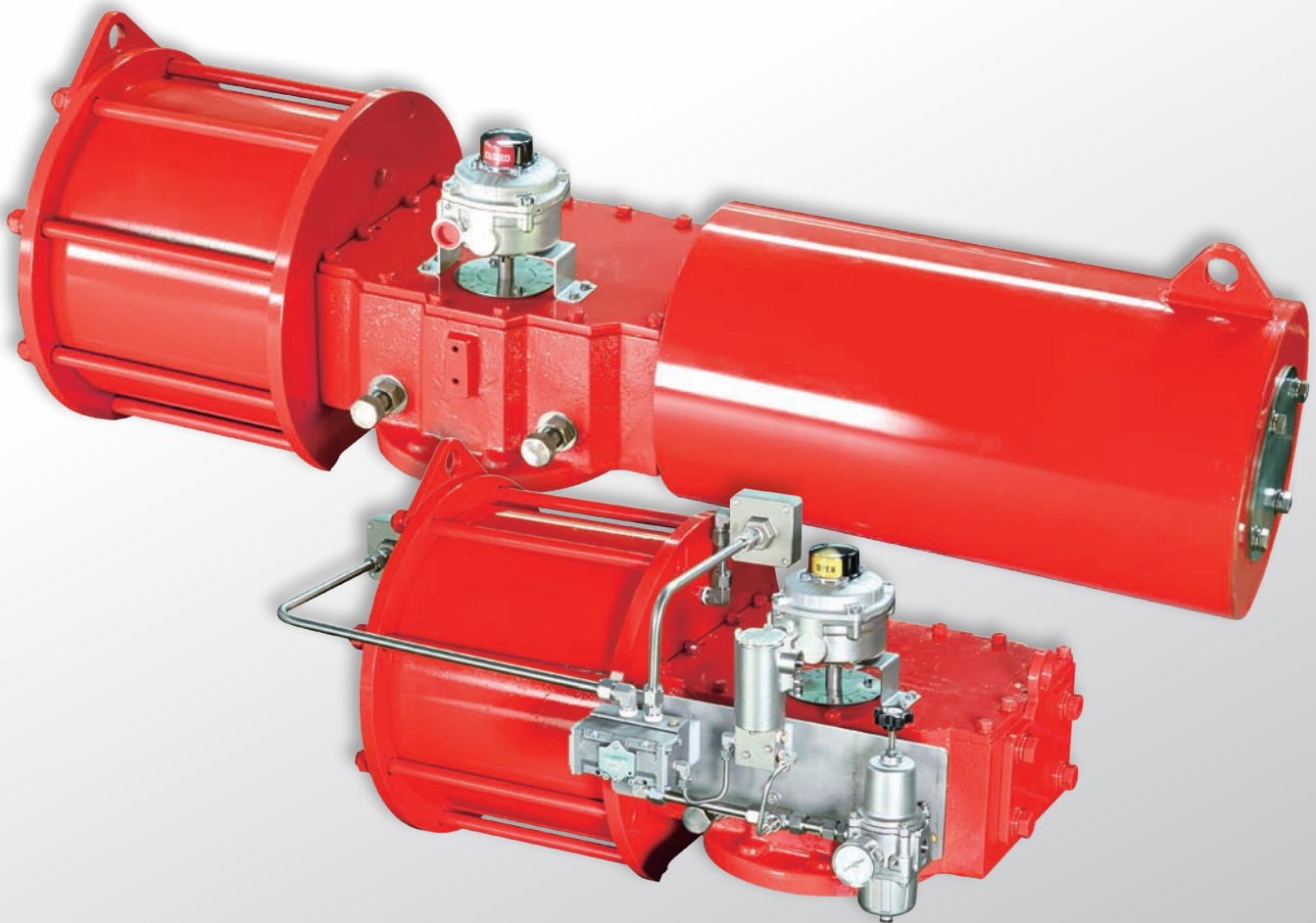


SWR SERIES

PNEUMATIC ACTUATOR

PNEUMATIC DOUBLE ACTING & SPRING RETURN ACTUATOR



S&W

PNEUMATIC ACTUATOR (SWR SERIES)

1 High Efficient Operation

Piston rod is propped by the high strength alloy steel guide rod, which has self-lubricating bearing. This framework guarantees the efficient operation, and the improvement of the energy delivery that goes to the valve stem from the actuator.

2 External Tie Rods

The tie rod outside the cylinder prevents the unexpected damages during the field work, and also provides easy maintenance.

3 Piston Guide Ring

The high quality backup ring is installed to prevent the leaking and guarantee the high performance and longer expected operating life of the product.

4 Cylinder Tube Coating

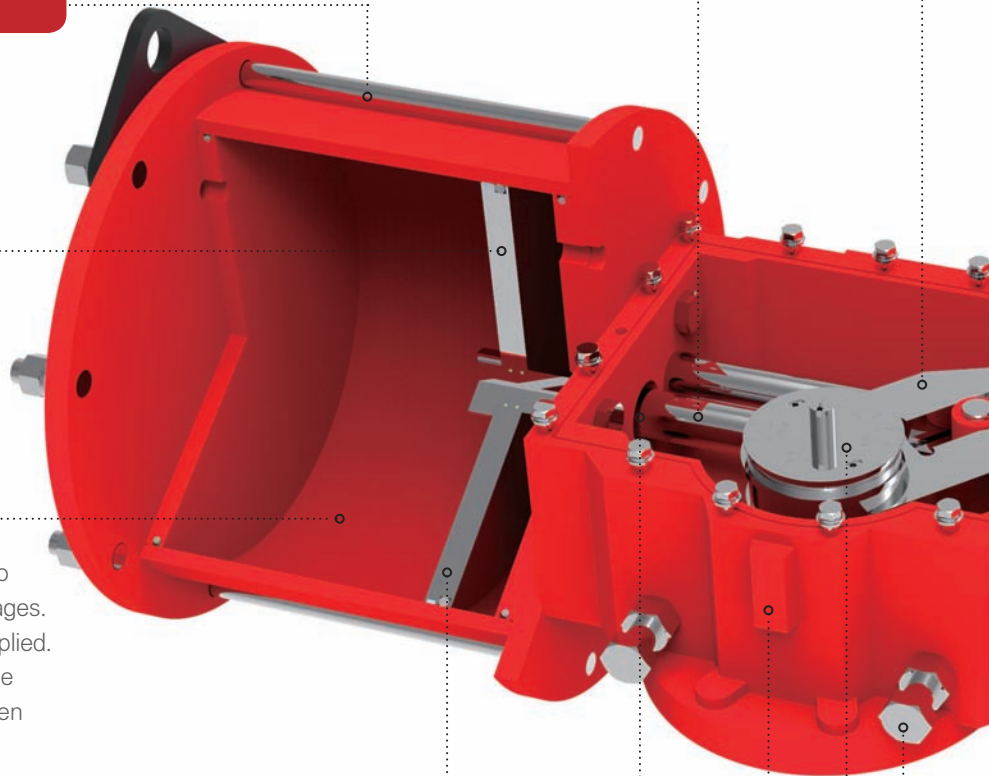
The inside of the cylinder is chrome-plated to prevent the corrosion, abrasion and the damages. In addition, lubricative finishing material is applied. It's design can also prevent the damage to the plating by PTFE + bronze seal (guide seal) even when u-packing get failed.

5 Sealing Compounds

PTFE and rubber seal are applied to the sealing. The first iron rubber u-packing provides high quality sealing and long service life, and the second PTFE + bronze seal guarantees self-lubrication and the smoothness.

6 Alignment of Modules

The center ring makes sure the exact alignment at between the housing and the cylinder case.



ACTUATOR DESIGN

SWR Series actuator's module structure, which makes it easy to change the structure of fail position, enables the user to do simple and accurate arrangement of the module when assembling and maintaining the module.

7 Namur Mounting Standard

SWR Series actuator follows NAMUR mounting standard, thus the installation of the auxiliary equipment through the interface is quick and simple.

8 Replaceable Bearing

Self-lubricating bearing's lifetime lubrication function makes the low friction, thus the whole components can avoid damages and the actuator can have smooth operation and longer operating life. It also enables easier replacement and maintenance work.

9 Spring Rod Guide

When the spring moves, the spring case is maintained safe and sound due to the application of spring rod guide and interior BUSHING.

10 Spring Rod Nut

The spring rod nut is designed to maintain the tension of the spring evenly, and the stability is improved by connecting it with the spring rod that's fixed to the housing. Its double nut prevents loosening and the fluctuation of spring's tension when operated.

11 Travel Stops / Indicator

Open / Close can be set in the permissible range of $\pm 5^\circ$. With its adjustment of moving range of $-5^\circ \sim 95^\circ$, the indicator shows the actuator's current location simple and clear.

12 Ancillary Bracket

The user can operate the actuator with various composition of the optimal installation of multi functional auxiliary brackets where applicable.

Manual Overrides

- Declutch Gearbox
 - Hydro Handpump
- The following option is upon request.



PNEUMATIC DOUBLE ACTING & SPRING RETURN ACTUATOR

SWR Series rotary actuator guarantees optimum performance for all quarter turn valves(butterfly, ball, plug, damper, etc.) in on-off or modulating service. Actuator consists of three main parts: Housing part, cylinder part, and spring part. The yoke of housing converts linear motion into rotational motion, and the rod has a structure that alternately drives and compresses pneumatic cylinders and springs.

MAIN DESIGN FEATURES

SWR Series actuator is designed with modular construction design and is completely sealed to completely protect all operating components. Based on the housing in the center, the cylinder and spring are always assembled on the opposite side, and all parts are designed to ensure long life with minimal friction. The inside of the cylinder is designed to be strong against corrosion with chrome plating, and the spring is completely sealed to prevent separation. In order to operate the spring under the best conditions, the spring operation section is always designed to be the same no matter where it is located. In addition to the o-ring, the piston is equipped with a guide ring to slide with teflon to protect the inner cylinder when the o-ring is damaged, ensuring long life and perfect sealing, and there is an adjustable travel stopper to optimize the required valve stroke. (adjustable ± 5 degrees) Also, a mechanical indicator is installed on the housing to indicate the valve position. Upon customer request, it can be provided for use in special environments with low or high temperatures.

MANUAL OVERRIDE

For emergency use, manual override option can be installed upon customer request.

- Hydraulic hand pump
- Declutchable gearbox

TEST

Actuators that have been manufactured are subject to strict performance testing, and only those actuators that have been verified are delivered to our customers.

TECHNICAL PERFORMANCE

PRESSURE RANGE

- Pressure range : Min 3 Bar.g, Max. 10 Bar.g
- Actuator test pressure : 1.2 times the operating pressure of the actuator

ADJUSTABLE STROKE

- 90 degree standard adjustable - $5^{\circ} \sim +5^{\circ}$ (travel stopper)

TEMPERATURE RANGE

- Standard : $-20^{\circ}\text{C} \sim 80^{\circ}\text{C}$
- Option(on request) : Low : $-40^{\circ}\text{C} \sim 80^{\circ}\text{C}$
High : $-20^{\circ}\text{C} \sim 180^{\circ}\text{C}$

OPERATING MEDIUM

- Dry air or gas

EQUIPMENTS

Below list of accessories may be required for local or remote operation and control :

- Solenoid valve
- Limit switches
- Air set
- Air operated valve
- Quick exhaust valve
- Positioner
- Position transmitter
- Control panel

ACTUATOR SEAL MATERIAL

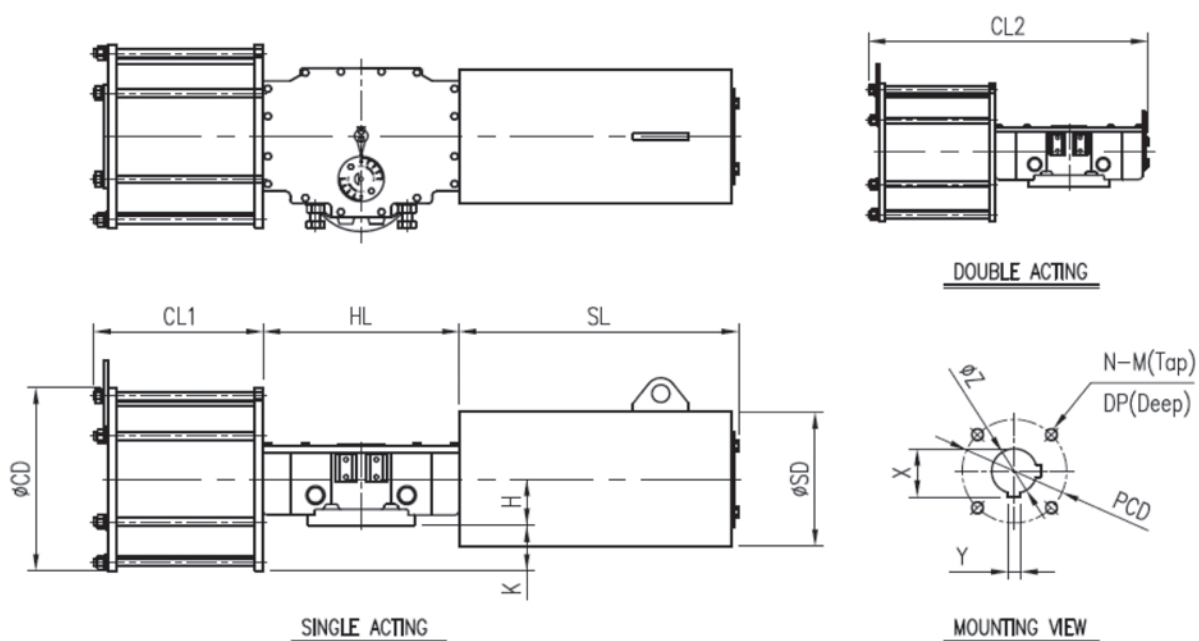
- Standard : N.B.R. ($-20^{\circ}\text{C} \sim +80^{\circ}\text{C}$)
- Low temp. : Fluorosilicone
- High temp. : Viton

PAINTING

- Sandblasting
- 1 Primer layer
- 1 Epoxy finish layer
- On request available other painting

MAINTENANCE

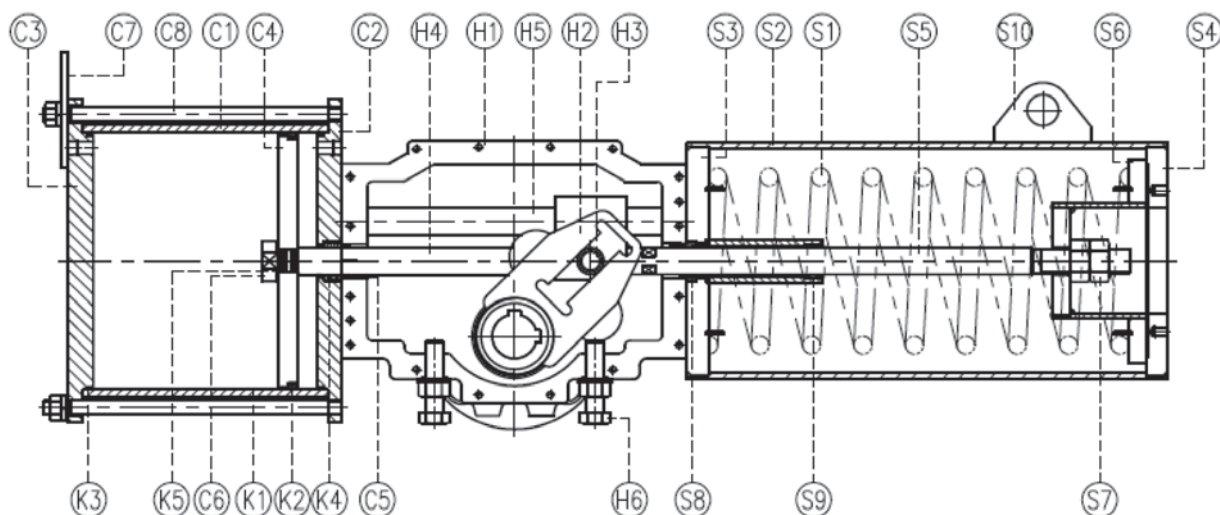
The internal parts of the actuator are designed to last a long life time through low friction structure, but if required, customer can replace internal o-rings for maintenance purpose. Please also refer to the operating & maintenance manual provided at the time of delivery.

ACTUATOR DIMENSION


ACTUATOR MODEL	HL	H	K	CYLINDER			SPRING		MOUNTING						
				CL1	CL2	ØCD	SL	ØSD	PCD	N	M	DP	ØZ	X	Y
SWR08-200	386	92	46	334	738	276	537	270	165	4	M20	30	50	53.8	14
SWR08-250			71	334	738	326	537	280							
SWR08-300			96	334	738	376	537	320							
SWR08-335			115	334	738	414	537	320							
SWR10-335	440	115	92	398	863	414	681	320	254	8	M16	24	75	79.9	20
SWR10-385			125	402	867	480	681	360							
SWR10-435			150	402	867	530	681	360							
SWR13-435	580	126	139	482	1090	530	920	410	298	8	M20	30	90	95.4	22
SWR13-485			164	482	1090	580	920	410							
SWR13-535			189	482	1090	630	920	410							
SWR16-535	700	160	155	566	1297	630	1160	410	356	8	M30	45	110	117.4	32
SWR16-585			185	572	1303	690	1160	410							
SWR16-635			210	572	1303	740	1160	410							
SWR20-635	820	178	192	700	1555	740	1320	510	406	8	M36	54	130	137.4	32
SWR20-685			218	700	1555	792	1320	510							
SWR20-735			243	700	1555	842	1320	560							

PNEUMATIC DOUBLE ACTING & SPRING RETURN ATUATOR

BILL OF MATERIALS



Model	DESCRIPTION	MATERIAL	Model	DESCRIPTION	MATERIAL
H1	HOUSING	FCD40	S2	SPRING CASE	STPG
H2	YOKE	C.S	S3	SPRING FRONT COVER	SS400
H3	BEARING	S45C	S4	SPRING END COVER	SS400
H4	PISTON ROD	S45C+Cr Coat	S5	SPRING ROD	S45C
H5	GUIDE BAR	S45C+Cr Coat	S6	SPRING GUIDE	C.S
H6	STOPPER BOLT	SUS	S7	ROD NUT	C.S
C1	CYLINDER	STPG	S8	CENTER RING	BRASS
C2	FRONT FLANGE	SS400	S9	BEARING	BRASS
C3	END FLANGE	SS400	S10	LIFTING LUG	SS400
C4	PISTON	SS400	K1	BACK UP RING	PTFE
C5	SEAL BUSH	BRASS	K2	PISTON O-RING	NBR
C6	PISTON ROD NUT	S45C	K3	O-RING(FRONT & END)	NBR
C7	LIFTING LUG	SS400	K4	SEAL BUSH O-RING	NBR
C8	TIE ROD	S45C	K5	PISTON ROD O-RING	NBR
S1	SPRING	SUP9			

TORQUE TABLE
DOUBLE ACTING TORQUE TABLE(3.5Bar.g & 6.0Bar.g)
(Nm)

Model	3.5 Bar.g		4.0 Bar.g		4.5 Bar.g		5.0 Bar.g		5.5 Bar.g		6.0 Bar.g	
	BRAKE	END	BRAKE	END	BRAKE	END	BRAKE	END	BRAKE	END	BRAKE	END
SWR 08DA 200	1,344	1,307	1,536	1,494	1,728	1,680	1,920	1,867	2,112	2,054	2,304	2,240
SWR 08DA 250	2,100	2,042	2,400	2,334	2,700	2,625	3,001	2,917	3,301	3,209	3,601	3,501
SWR 08DA 300	3,025	2,941	3,457	3,361	3,889	3,781	4,321	4,201	4,753	4,621	5,185	5,041
SWR 08DA 335	3,771	3,667	4,310	4,190	4,849	4,714	5,388	5,238	5,926	5,762	6,465	6,286
SWR 10DA 335	4,437	4,314	5,071	4,930	5,705	5,546	6,338	6,162	6,972	6,779	7,606	7,395
SWR 10DA 385	5,860	5,697	6,697	6,511	7,535	7,325	8,372	8,139	9,209	8,953	10,046	9,767
SWR 10DA 435	7,481	7,273	8,550	8,312	9,619	9,352	10,687	10,391	11,756	11,430	12,825	12,469
SWR 13DA 435	9,726	9,455	11,115	10,806	12,504	12,157	13,894	13,508	15,283	14,859	16,672	16,209
SWR 13DA 485	12,090	11,754	13,817	13,433	15,544	15,112	17,271	16,791	18,998	18,471	20,725	20,150
SWR 13DA 535	14,711	14,302	16,813	16,346	18,914	18,389	21,016	20,432	23,117	22,475	25,219	24,519
SWR 16DA 535	18,106	17,603	20,693	20,118	23,279	22,632	25,866	25,147	28,452	27,662	31,039	30,177
SWR 16DA 585	21,648	21,047	24,741	24,054	27,834	27,061	30,926	30,067	34,019	33,074	37,112	36,081
SWR 16DA 635	25,507	24,799	29,151	28,341	32,795	31,884	36,439	35,427	40,083	38,969	43,727	42,512
SWR 20DA 635	31,884	30,998	36,439	35,427	40,994	39,855	45,548	44,283	50,103	48,712	54,658	53,140
SWR 20DA 685	37,103	36,072	42,403	41,225	47,703	46,378	53,004	51,532	58,304	56,685	63,605	61,838
SWR 20DA 735	42,717	41,530	48,819	47,463	54,922	53,396	61,024	59,329	67,126	65,262	73,229	71,195
SWR 20DA 800	50,606	49,201	57,836	56,229	65,065	63,258	72,295	70,287	79,524	77,315	86,754	84,344
SWR 20DA 850	57,130	55,543	65,291	63,478	73,453	71,412	81,614	79,347	89,775	87,282	97,937	95,216
SWR 20DA 900	64,049	62,269	73,198	71,165	82,348	80,061	91,498	88,956	100,648	97,852	109,798	106,748
SWR 20DA 1000	79,072	76,876	90,368	87,858	101,664	98,840	112,960	109,823	124,257	120,805	135,553	131,787

SPRING RETURN TORQUE TABLE(3.5Bar.g & 4.5Bar.g)

(Nm)

Model	3.5 Bar.g						4.5 Bar.g					
	SPRING TORQUE(Nm)			AIR TORQUE(Nm)			SPRING TORQUE(Nm)			AIR TORQUE(Nm)		
	BRAKE	RUN	END	BRAKE	RUN	END	BRAKE	RUN	END	BRAKE	RUN	END
SWR 08SR 200	815	395	499	845	399	492	934	452	572	964	454	559
SWR 08SR 250	1,257	612	782	1,319	627	785	1,465	709	897	1,504	708	869
SWR 08SR 300	1,817	885	1,130	1,894	900	1,123	2,091	1,013	1,280	2,177	1,028	1,270
SWR 08SR 335	2,270	1,106	1,412	2,360	1,121	1,397	2,608	1,263	1,597	2,713	1,281	1,582
SWR 10SR 335	2,676	1,300	1,652	2,785	1,319	1,638	3,067	1,490	1,893	3,178	1,504	1,863
SWR 10SR 385	3,611	1,754	2,228	3,632	1,705	2,087	4,035	1,960	2,490	4,207	1,993	2,476
SWR 10SR 435	4,507	2,189	2,782	4,700	2,227	2,766	5,238	2,544	3,233	5,317	2,503	3,074
SWR 13SR 435	6,020	2,863	3,509	6,217	2,878	3,435	6,837	3,251	3,985	7,130	3,310	3,970
SWR 13SR 485	7,427	3,532	4,329	7,761	3,604	4,327	8,511	4,048	4,961	8,856	4,108	4,922
SWR 13SR 535	9,093	4,325	5,300	9,411	4,359	5,210	10,335	4,915	6,024	10,789	5,009	6,011
SWR 16SR 535	11,212	5,295	6,407	11,699	5,393	6,391	12,860	6,073	7,348	13,344	6,142	7,258
SWR 16SR 585	13,435	6,344	7,677	13,971	6,434	7,612	15,374	7,260	8,785	15,956	7,344	8,680
SWR 16SR 635	15,808	7,465	9,033	16,474	7,591	8,991	18,099	8,547	10,342	18,809	8,661	10,243
SWR 20SR 635	20,138	9,384	11,079	20,804	9,437	10,860	22,928	10,683	12,614	23,825	10,826	12,499
SWR 20SR 685	23,288	10,851	12,812	24,291	11,050	12,784	26,765	12,471	14,725	27,678	12,559	14,461
SWR 20SR 735	26,941	12,553	14,822	27,895	12,662	14,589	30,657	14,285	16,866	31,953	14,533	16,806
SWR 20SR 800	31,648	14,746	17,412	33,195	15,126	17,553	36,462	16,989	20,060	37,776	17,150	19,768
SWR 20SR 850	36,007	16,778	19,810	37,320	16,945	19,535	40,995	19,102	22,554	42,737	19,439	22,482
SWR 20SR 900	40,361	18,806	22,205	41,843	19,000	21,908	46,178	21,517	25,406	47,793	21,691	24,987
SWR 20SR 1000	49,834	23,220	27,417	51,656	23,455	27,042	56,955	26,538	31,335	59,034	26,805	30,903

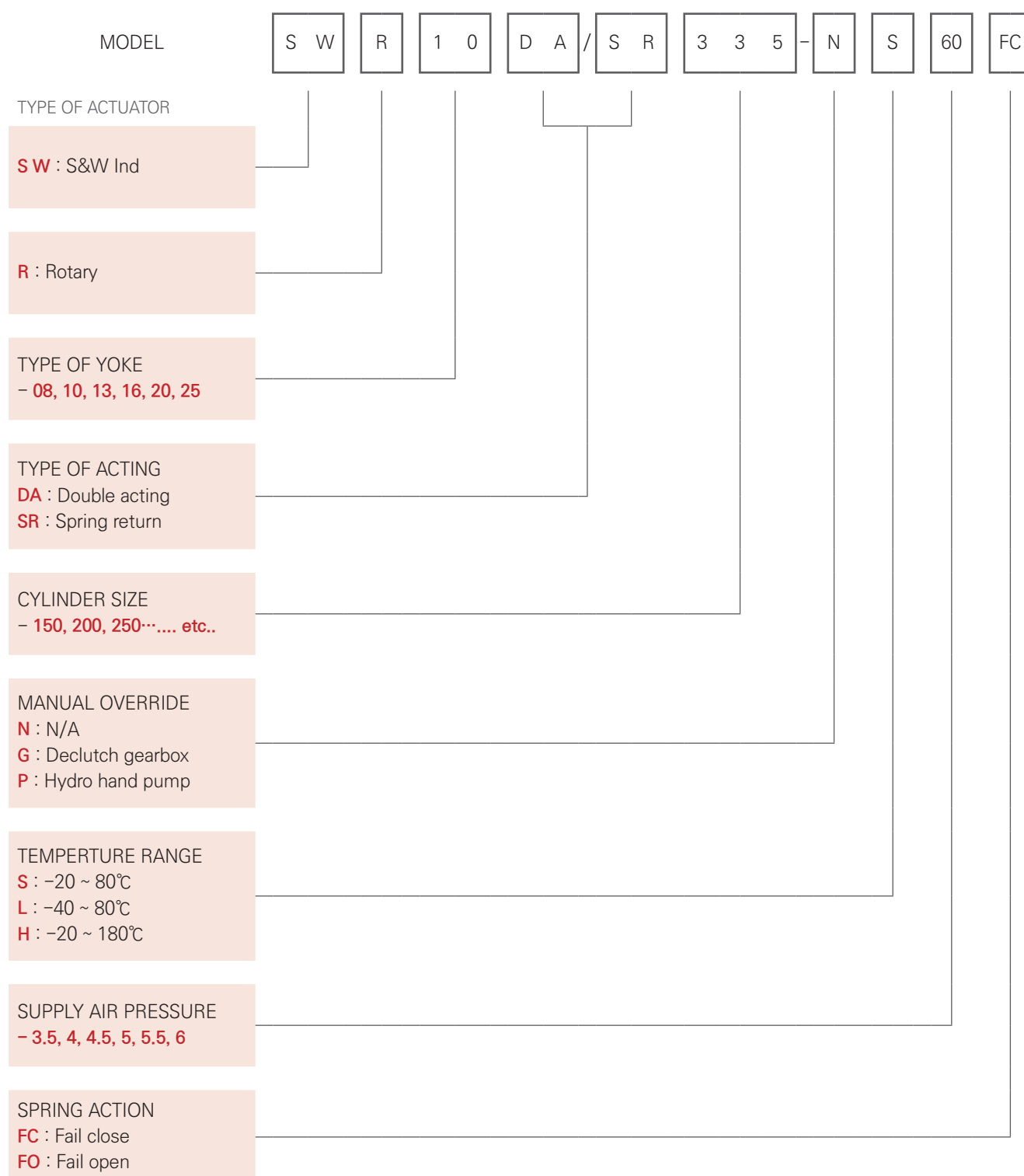
SPRING RETURN TORQUE TABLE(4.5Bar.g & 5Bar.g)
(Nm)

Model	4.5 Bar.g						5 Bar.g					
	SPRING TORQUE(Nm)			AIR TORQUE(Nm)			SPRING TORQUE(Nm)			AIR TORQUE(Nm)		
	BRAKE	RUN	END	BRAKE	RUN	END	BRAKE	RUN	END	BRAKE	RUN	END
SWR 08SR 200	1,050	508	643	1,086	512	631	1,164	564	713	1,207	570	703
SWR 08SR 250	1,629	789	997	1,703	805	996	1,822	882	1,115	1,885	889	1,095
SWR 08SR 300	2,346	1,136	1,436	2,452	1,159	1,434	2,607	1,262	1,596	2,725	1,288	1,594
SWR 08SR 335	2,938	1,424	1,804	3,045	1,438	1,777	3,267	1,582	2,000	3,387	1,598	1,971
SWR 10SR 335	3,432	1,667	2,118	3,587	1,701	2,115	3,821	1,856	2,358	3,981	1,886	2,342
SWR 10SR 385	4,543	2,207	2,804	4,731	2,241	2,783	5,048	2,452	3,116	5,256	2,490	3,091
SWR 10SR 435	5,790	2,812	3,573	6,046	2,866	3,562	6,418	3,117	3,961	6,727	3,192	3,973
SWR 13SR 435	7,697	3,661	4,486	8,018	3,721	4,460	8,523	4,053	4,968	8,926	4,148	4,985
SWR 13SR 485	9,602	4,567	5,597	9,947	4,609	5,510	10,642	5,061	6,203	11,069	5,134	6,150
SWR 13SR 535	11,603	5,528	6,797	12,117	5,637	6,786	12,887	6,140	7,550	13,466	6,265	7,545
SWR 16SR 535	14,389	6,795	8,223	15,057	6,946	8,243	15,959	7,536	9,120	16,746	7,732	9,188
SWR 16SR 585	17,181	8,113	9,818	18,016	8,316	9,880	19,188	9,061	10,965	19,962	9,194	10,879
SWR 16SR 635	19,676	9,291	11,243	21,552	10,067	12,208	22,517	10,650	12,924	23,515	10,859	12,910
SWR 20SR 635	25,736	11,992	14,159	26,835	12,206	14,119	28,508	13,283	15,684	29,864	13,603	15,775
SWR 20SR 685	29,942	13,951	16,473	31,231	14,207	16,437	33,269	15,502	18,303	34,700	15,786	18,263
SWR 20SR 735	34,600	16,122	19,036	35,886	16,298	18,796	38,326	17,895	21,213	39,812	18,126	21,003
SWR 20SR 800	40,818	19,019	22,457	42,609	19,388	22,440	45,472	21,188	25,017	47,278	21,487	24,815
SWR 20SR 850	46,102	21,481	25,364	48,089	21,877	25,311	51,015	23,771	28,067	53,547	24,405	28,332
SWR 20SR 900	51,862	24,165	28,533	53,816	24,444	28,199	57,590	26,834	31,684	59,814	27,176	31,367
SWR 20SR 1000	63,909	29,779	35,161	66,504	30,232	34,931	70,815	32,996	38,960	74,000	33,682	39,007

SPRING RETURN TORQUE TABLE(5.5Bar.g & 6Bar.g)

(Nm)

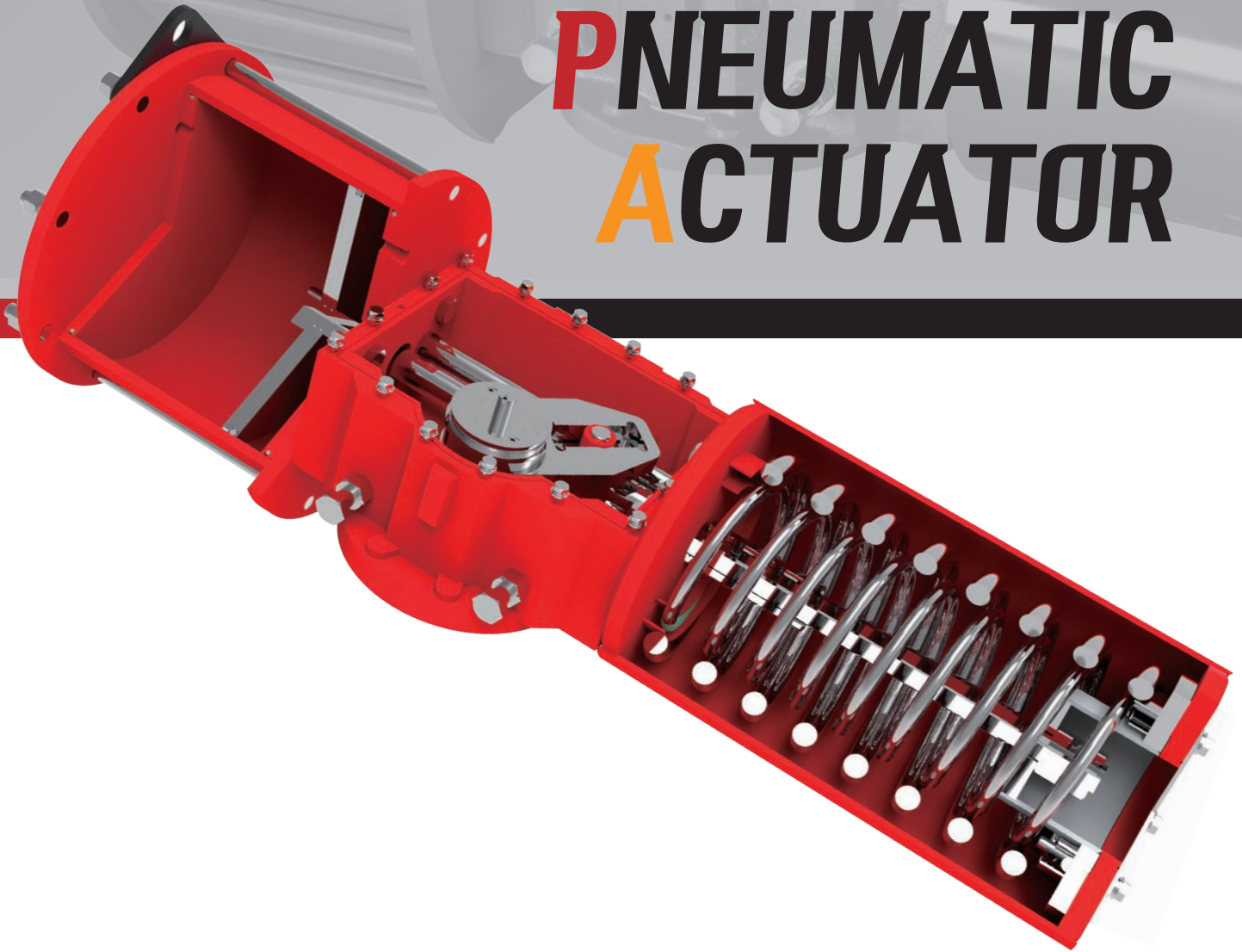
Model	5.5 Bar.g						6 Bar.g					
	SPRING TORQUE(Nm)			AIR TORQUE(Nm)			SPRING TORQUE(Nm)			AIR TORQUE(Nm)		
	BRAKE	RUN	END	BRAKE	RUN	END	BRAKE	RUN	END	BRAKE	RUN	END
SWR 08SR 200	1,281	620	784	1,328	627	773	1,392	674	852	1,452	686	848
SWR 08SR 250	1,991	964	1,219	2,081	984	1,218	2,170	1,051	1,328	2,272	1,075	1,331
SWR 08SR 300	2,866	1,388	1,755	2,998	1,417	1,755	3,123	1,512	1,912	3,273	1,548	1,918
SWR 08SR 335	3,591	1,739	2,198	3,728	1,759	2,171	3,906	1,892	2,392	4,074	1,925	2,379
SWR 10SR 335	4,208	2,044	2,597	4,375	2,072	2,571	4,575	2,222	2,823	4,783	2,268	2,820
SWR 10SR 385	5,541	2,691	3,420	5,789	2,744	3,412	6,047	2,937	3,732	6,314	2,993	3,720
SWR 10SR 435	7,092	3,445	4,377	7,380	3,495	4,338	7,748	3,763	4,781	8,044	3,807	4,721
SWR 13SR 435	9,389	4,466	5,473	9,811	4,556	5,469	10,252	4,876	5,975	10,697	4,966	5,958
SWR 13SR 485	11,700	5,565	6,819	12,179	5,650	6,771	12,752	6,065	7,433	13,293	6,169	7,397
SWR 13SR 535	14,202	6,754	8,278	14,840	6,892	8,274	15,477	7,361	9,021	16,198	7,526	9,042
SWR 16SR 535	19,098	9,019	10,913	17,539	7,776	8,564	19,128	9,033	10,930	20,108	9,289	11,048
SWR 16SR 585	21,000	9,917	12,000	22,019	10,164	12,074	22,923	10,825	13,099	24,013	11,082	13,158
SWR 16SR 635	24,776	11,700	14,158	25,925	11,960	14,193	27,029	12,764	15,445	28,281	13,047	15,483
SWR 20SR 635	31,392	14,627	17,271	32,832	14,948	17,319	34,242	15,955	18,839	35,819	16,309	18,898
SWR 20SR 685	36,419	16,970	20,037	38,268	17,446	20,265	39,885	18,585	21,944	41,661	18,960	21,952
SWR 20SR 735	42,127	19,629	23,177	43,950	19,995	23,135	45,884	21,380	25,244	47,985	21,846	25,311
SWR 20SR 800	49,824	23,216	27,412	52,113	23,726	27,491	54,254	25,280	29,849	56,905	25,930	30,090
SWR 20SR 850	56,192	26,183	30,915	58,860	26,810	31,090	61,562	28,685	33,869	64,067	29,126	33,654
SWR 20SR 900	63,277	29,484	34,813	65,835	29,927	34,575	68,740	32,030	37,819	71,979	32,782	38,007
SWR 20SR 1000	78,096	36,389	42,966	81,290	36,957	42,708	85,220	39,708	46,885	88,667	40,306	46,567

PNEUMATIC ACTUATOR ORDERING GUIDE
SWR SERIES SCOTCH YOKE ACTUATOR CODE MODE


SWR SERIES

Designed by [주]에스앤에스 밸브산업 (주) 02-2264-8355

PNEUMATIC ACTUATOR



S & W

The best of Valves & Actuators

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