

UA-M

Univals double acting and spring return. The M series pneumatic cylinder piston type actuators are designed for use in both modulating control and on-off service. These actuators offer an extremely long cycle life and are well suited to operate almost any type of rotary valve. Double-acted piston actuators combine the benefits of high cycle life, rugged construction, and an extremely compact and symmetrical design with a unique range of features. They are specifically designed for fast efficient operation of ball, butterfly, and other rotary type valves.

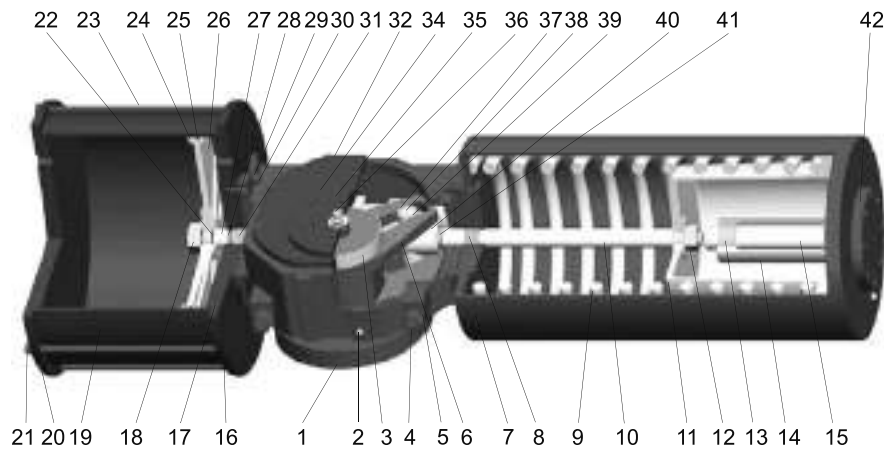
Design Features

- Actuators have available, field serviceable drive, power, spring and override modules.
- The modules are removable, durable and interchangeable for variety combination as per requirements.
- Actuators incorporate over three stages of internal and external coatings to resist severe weather, chemical and corrosion environments. The inner surface of cylinders is coated by PTFE, enhanced corrosion resistant self lubricating.
- The piston rod and guide block connection, superior surface finishes and self-lubricating bearings maximize input energy transfer directly to the valve stem. Efficiency is further enhanced by the tension-loaded spring, minimizing radial loads on the piston rod.
- The guide rod and piston rod have an advanced surface treatment, which combined with self-lubricating bearings, provides superior wear resistance and extends the life of all sliding components.
- O-rings are fitted on bodies, caps and so on. This ensures water ingress protected.
- The shaft driven accessory interface conforms to NUMAR and is identical on all M-series models, allowing standardization of accessory mounting hardware and installation practices.
- The actuators interface is comply with ISO 5211 and meets the dimensional requirements of ISO defined for each torque.
- The override devices include a manual center piece handle, a manual hand-wheel override for high torque applications.
- A variety of accessories are available including positioner and limit switches, position indicators, solenoid valves, boosters and volume tanks etc.

UNIVALS SCOTCH – YORK PNEUMATIC ACTUATOR



Exploded View



Material Parts List

NO	PART NAME	MATERIAL	NO	PART NAME	MATERIAL
1	Body	Ductile Iron	22	O-ring	NBR
2	Vent Valve	Carbon Steel	23	Screw	Alloy Steel
3	Sliding Bearing	TEF Metal + TFE	24	Guide Ring	PTFE
4	Adjust Stud	Alloy Steel	25	O-ring	NBR
5	Nut	2H	26	Piston	Ductile Iron
6	Yoke	Carbon Steel	27	Center Bar	Alloy Steel
7	Spring Case	Carbon Steel	28	O-ring	NBR
8	Sliding Bearing	TEF Metal + TFE	29	Stud	Alloy Steel
9	Spring	Alloy Steel	30	Nut	2H
10	Tension rod	Alloy Steel	31	Sliding Bearing	TEF Metal + TFE
11	Spring Seat	Carbon Steel	32	Bolt	Carbon Steel
12	Nut	2H	33	Body Cap	Ductile Iron
13	Sliding Bearing	TEF Metal + TFE	34	Bolt	Carbon Steel
14	Hydraulic Cylinder	Carbon Steel	35	Cover	Ductile Iron
15	Hydraulic Piston	Carbon Steel	36	Drive Shaft	Alloy Steel
16	Adapter	Ductile Iron	37	Roller	Alloy Steel
17	O-ring	NBR	38	Sliding Bearing	TEF Metal + TFE
18	Nut	2H	39	Pin	Alloy Steel
19	Cylinder	Carbon Steel	40	Guide Block	Ductile Iron
20	End Cap	Ductile Iron	41	Nut	Carbon Steel
21	Nut	2H	42	Cover Plate	Carbon Steel

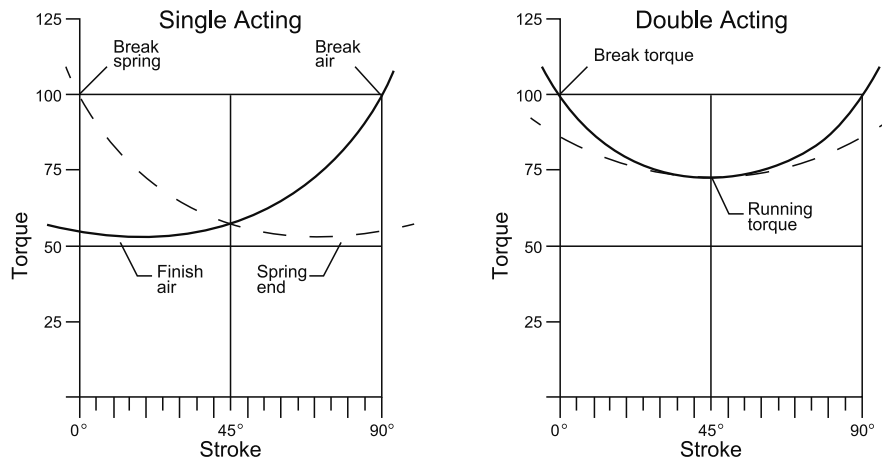
Pneumatic Actuator Technical Data

Specifications

Supply Pressure Range:
 Pneumatic: 3-7 Bar
 Hydraulic: 100 Bar
 Torque Output:
 Double acting: 830 – 250000Nm
 Travel Adjustment: 80° - 90°

Temperature Range:
 Standard: -20°C to +80°C
 Low Temp.: -40°C to +80°C
 High Temp.: -20°C to +120°C
 Spring return end torque: 307 – 71764Nm
 Supply Media: Dry, non-corrosive gas.

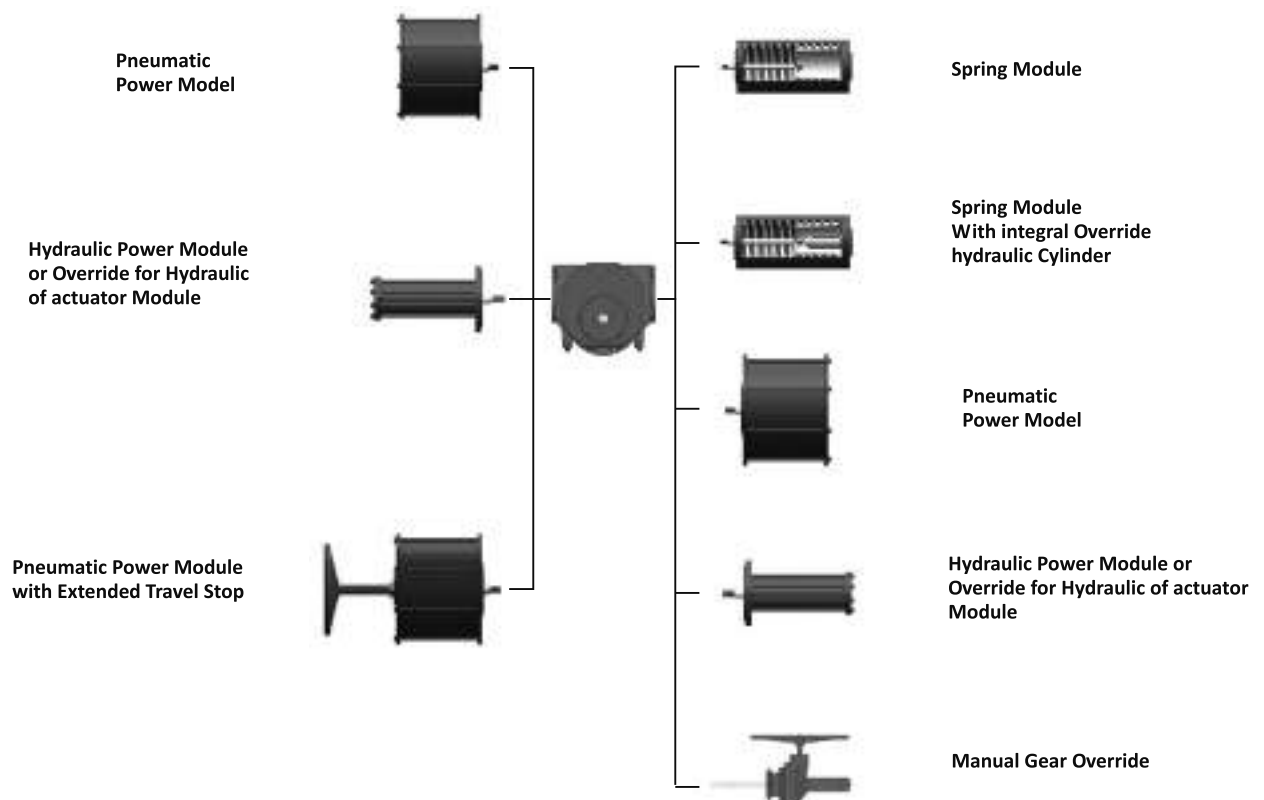
Torque Characteristics



Actuator Selection

To select a proper actuator for a particular valve and service, first determine the maximum operating torque that will be required from applicable valve torque table of valve bulletin. Then refer to the appropriate torque output tables and select an actuator that will, at the available supply pressure, provide a torque output on less than the required operating torque for the valves. For Spring-return units, both the spring torque and the air torque must be sufficient.

Versatility Model Configurations



Torque Table of Double Acting

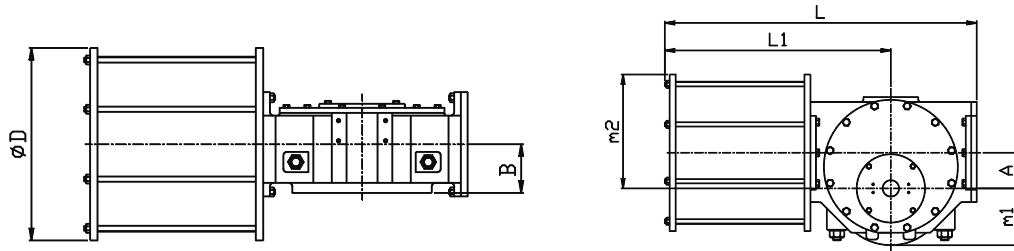
Model	Max Torque	Torque Output Nm at Specified Air Supply Pressure in bar									
		3 Bar		4 Bar		5 Bar		6 Bar		7 Bar	
		Open	End	Open	End	Open	End	Open	End	Open	End
SF14-200	2000Nm	830	504	1107	672	1384	839	1660	1007	1937	1175
SF14-250		1298	787	1730	1049	2163	1312				
SF14-300		1861	1129								
SF16-250	4000Nm	1622	984	2163	1312	2704	1640	3245	1968	3786	2296
SF16-300		2336	1417	3115	1889	3894	2362				
SF16-350		3180	1929	4240	2572						
SF25-350	8000Nm	3926	2381	5235	3175	6543	3969	7852	4763		
SF25-400		4984	3023	6646	4031	8307	5039				
SF25-450		6309	3827	8412	5103						
SF30-450	16000Nm	7710	4677	10280	6236	12580	7631	15420	9354		
SF30-500		9519	5774	12693	7700	15866	9625				
SF30-550		11519	6988	15359	9317						
SF35-550	32000Nm	14660	8893	19547	11858	24433	14822	29320	17787	34207	20752
SF35-600		17447	10584	23263	14112	29078	17640	34894	21169		
SF35-700		23748	14407	31664	19209						
SF40-600	63000Nm					35310	21421	42373	25706	49435	29990
SF40-700				38449	23325	48062	29157	57674	34988	67286	40820
SF40-800		37664	22849	50219	40366	62774	38082				
SF48-800	125000Nm					73852	44803	88623	53764	103393	62725
SF48-900				74775	45363	93468	56703	112162	68044	130856	79385
SF48-1000		69237	42003	92316	56005	115395	70006				
SF60-800	250000Nm							119641	72582	139581	84679
SF60-900				100947	61241	126183	76551	151420	91861	176657	107171
SF60-1000		93469	56704	124626	75606	155782	94507	186939	113409	218095	132310
SF60-1100		113097	68612	150797	91483	188496	114354	226195	137224	263894	160095

Torque Table of Spring Return Acting at Different Air Supply Pressure

Model	Max. Torque	Torque Output Nm at Specified Air Supply Pressure in bar							
		Spring Return Acting		Air Supply 3 Bar		Spring Return Acting		Air Supply 4 Bar	
		Open	Close	Open	Close	Open	Close	Open	Close
SF14-200	2000Nm	511	307	523	318	679	436	671	428
SF14-250		789	506	791	508	1079	674	1056	651
SF14-300		1079	674	1194	790	1477	948	1544	1015
SF16-250	4000Nm	1092	607	1014	529	1281	818	1345	882
SF16-300		1434	892	1444	902	1896	1227	1888	1219
SF16-350		1896	1227	1953	1283	2595	1629	2611	1645
SF25-350	8000Nm	2249	1470	2346	1567	2996	1895	3193	2092
SF25-400		2996	1895	3089	1903	3960	2534	4112	2686
SF25-450		3960	2534	3774	2348	4955	2999	5412	3456
SF30-450	16000Nm	4786	2889	4821	2924	6329	3820	6461	3952
SF30-500		6044	3535	5984	3475	7929	4869	7824	4763
SF30-550		6867	4349	7169	4651	9375	5824	9534	5983
SF35-550	32000Nm	9180	5400	9260	5480	12297	7481	12066	7250
SF35-600		11016	6378	11069	6430	14449	8907	14356	8813
SF35-700		14449	8907	14840	9298	19069	11549	20114	12594
SF40-600	63000Nm	13131	8114	13071	8054	16359	10272	17976	11888
SF40-700		16359	10272	18564	12477	21426	13666	24782	17023
SF40-800		21426	13666	23998	16238	30015	18757	31461	20203
SF48-800	125000Nm	26619	16381	27930	17691	33844	20827	38254	25237
SF48-900		33844	20827	35254	22237	45789	29097	45677	28986
SF48-1000		45789	29097	40140	23447	57348	35200	57115	34968
SF60-800	250000Nm	36800	22805	35799	21805	47118	27842	51918	32642
SF60-900		47118	27842	47867	28592	63398	38261	62685	37548
SF60-1000		63398	38261	55207	30071	78878	49217	75409	45747
SF60-1100		78878	49217	63881	34219	95891	58177	92620	54906

Model	Max. Torque	Torque Output Nm at Specified Air Supply Pressure in bar							
		Spring Return Acting		Air Supply 5 Bar		Spring Return Acting		Air Supply 6 Bar	
		Open	Close	Open	Close	Open	Close	Open	Close
SF14-200	2000Nm	789	506	877	594	1028	623	1037	633
SF14-250		1345	815	1347	818	1477	948	1648	1118
SF14-300		1880	1206	1908	1235	2291	1458	2280	1447
SF16-250	4000Nm	1553	1011	1692	1150	1896	1227	2018	1348
SF16-300		2421	1455	2438	1472	2595	1629	3044	2077
SF16-350		3194	2085	3215	2106	3858	2446	3914	2502
SF25-350	8000Nm	3960	2534	3826	2400	4955	2999	4633	2677
SF25-400		4955	2999	5309	3352	6326	3726	6243	3643
SF25-450		6326	3726	6788	4188	8261	4720	7897	4357
SF30-450	16000Nm	7929	4869	7892	4922	9375	5824	9598	6046
SF30-500		9375	5824	10042	6490	11426	7092	11962	7613
SF30-550		11426	7092	12106	7772	14080	8344	14694	8957
SF35-550	32000Nm	14449	8907	15527	9984	18185	10752	18569	11136
SF35-600		18185	10752	18327	10894	22471	12716	22179	12424
SF35-700		23864	14109	25470	15715	28953	17288	30207	18543
SF40-600	63000Nm	21426	13666	21644	13884	26630	16828	25544	15471
SF40-700		30015	18757	29304	18046	35425	21679	35995	22248
SF40-800		35425	21679	41095	27349	47742	29300	46029	28593
SF48-800	125000Nm	45789	29097	44755	28063	57348	35200	5342	31275
SF48-900		57348	35200	58269	36121	69602	42618	69545	42561
SF48-1000		69602	42618	72776	45792	82680	51976	86497	55793
SF60-800	250000Nm	63398	38261	61439	36302	78878	49217	70724	40762
SF60-900		78878	49217	76967	47305	95891	58177	93243	55529
SF60-1000		95891	58177	97605	59891	112369	71764	115175	74570
SF60-1100		112369	71764	116733	76127				

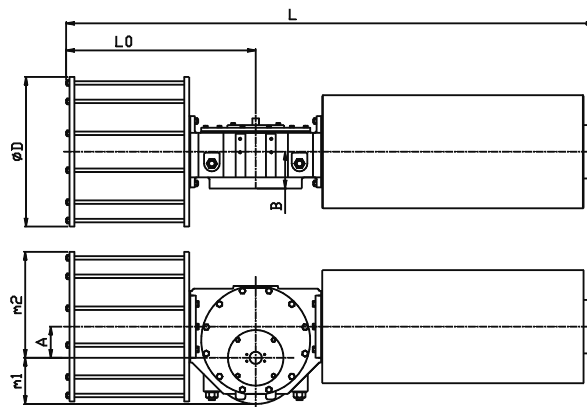
Dimension Drawings



Double Acting Actuators

Model	Dimensions in mm								
	Connect	L	L1	M1	M2	A	B	D	Air Port
SF14-200DA	F14	594	499	87.5	187.5	60	88	255	RC3/8"
SF14-250DA		594	449	87.5	212.5	60	88	305	RC1/2"
SF14-300DA		594	449	87.5	237.5	60	88	360	RC1/2"
SF16-250DA	F16	679	499	105	222.5	70	92	305	RC1/2"
SF16-300DA		679	499	105	247.5	70	92	360	RC1/2"
SF16-350DA		679	499	105	272.5	70	92	415	RC1/2"
SF25-350DA	F25	766	556	150	292.5	90	104	415	RC1/2"
SF25-400DA		766	556	150	317.5	90	104	465	RC3/4"
SF25-450DA		766	556	150	350	90	104	520	RC3/4"
SF30-450DA	F30	922	662	175	370	110	130	520	RC3/4"
SF30-500DA		922	662	175	395	110	130	570	RC3/4"
SF30-550DA		922	662	175	420	110	130	620	RC3/4"
SF35-550DA	F35	1130	817	207.5	450	140	165	620	RC3/4"
SF35-600DA		1130	817	207.5	450	140	165	670	RC1"
SF35-700DA		1130	817	207.5	475	140	165	770	RC1"
SF40-600DA	F40	1320	960	237.5	505	170	200	670	RC1"
SF40-700DA		1320	960	237.5	555	170	200	770	RC1"
SF40-800DA		1320	960	237.5	607.5	170	200	875	RC1-1/2"
SF48-800DA	F48	1580	1130	280	637.5	200	210	875	RC1-1/2"
SF48-900DA		1580	1130	280	687.5	200	210	975	RC2"
SF48-1000DA		1580	1130	280	787.5	200	210	1075	RC2"
SF60-800DA	F60	1960	1380	343	707.5	270	230	875	RC1-1/2"
SF60-900DA		1960	1380	343	757.5	270	230	975	RC2"
SF60-1000DA		1960	1380	343	807.5	270	230	1075	RC2"
SF60-1100DA		1960	1380	343	857.5	270	230	1175	RC2"

Dimension Drawings



Spring Acting Actuators

Model	Dimensions in mm								
	Connect	L	L0	M1	M2	A	B	D	AIR PORT
SF14-200SR4	F14	1105	449	87.5	187.5	60	88	255	RC3/8"
SF14-250SR4		1105	449	87.5	212.5	60	88	305	RC1/2"
SF14-300SR4		1125	449	87.5	237.5	60	88	360	RC1/2"
SF16-250SR4	F16	1289	499	105	222.5	70	92	305	RC1/2"
SF16-300SR4		1289	499	105	247.5	70	92	360	RC1/2"
SF16-350SR4		1318	499	105	272.5	70	92	415	RC1/2"
SF25-350SR4	F25	1576	556	150	292.5	90	104	415	RC1/2"
SF25-400SR4		1576	556	150	317.5	90	104	465	RC3/4"
SF25-450SR4		1674	556	150	350	90	104	520	RC3/4"
SF30-450SR4	F30	1807	662	175	370	110	130	520	RC3/4"
SF30-500SR4		1807	662	175	395	110	130	570	RC3/4"
SF30-550SR4		1807	662	175	420	110	130	620	RC3/4"
SF35-550SR4	F35	2005	817	207.5	450	140	165	620	RC3/4"
SF35-600SR4		2005	817	207.5	450	140	165	670	RC1"
SF35-700SR4		2005	817	207.5	475	140	165	770	RC1"
SF40-600SR4	F40	2695	960	237.5	505	170	200	670	RC1"
SF40-700SR4		2695	960	237.5	555	170	200	770	RC1"
SF40-800SR4		2695	960	237.5	607.5	170	200	875	RC1-1/2"
SF48-800SR4	F48	3395	1130	280	637.5	200	210	875	RC1-1/2"
SF48-900SR4		3395	1130	280	687.5	200	210	975	RC2"
SF48-1000SR4		3585	1130	280	787.5	200	210	1075	RC2"
SF60-800SR4	F60	4185	1380	343	707.5	270	230	875	RC1-1/2"
SF60-900SR4		4185	1380	343	757.5	270	230	975	RC2"
SF60-1000SR4		4750	1380	343	807.5	270	230	1075	RC2"
SF60-1100SR4		4750	1380	343	857.5	270	230	1175	RC2"

Note: Dimensions in this table only for the spring return actuators which spring size is 4 bar.
 Others, spring size please contact with Univals.

How to Order

To specify a complete UM pneumatic cylinder actuator, simply make a selection from the code of each field below:

EXAMPLE: UM-SF14300SR4STC

1.	Univals Pneumatic		
UM-	Standard Body		
2.	Actuator Body Size		
	SF14, SF16, SF25, SF30, SF40, SF48, SF60		
3.	Actuator Size		
	200	500	800
	250	550	850
	300	600	900
	350	650	950
	400	700	1000
	450	750	1100
4.	Acting Type		
DA	Double Acting		
SR	Spring Return		

5.	Spring Size		
3	for 3 bar	5	for 5 bar
4	for 4 bar	6	for 6 bar
6.	Temperature Options		
-	Standard Temperature -20°C ~ +80°C		
LT	Low Temperature -40°C ~ +80°C		
HT	High Temperature -20°C ~ +120°C		
7.	Accessories (Option)		
WH	Jack Screw Manual Override		
EX	Extended Travel Stop		
HY	Hydraulic Override		
8.	Air Failure Position		
STC	Spring to Close		
STO	Spring to Open		

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