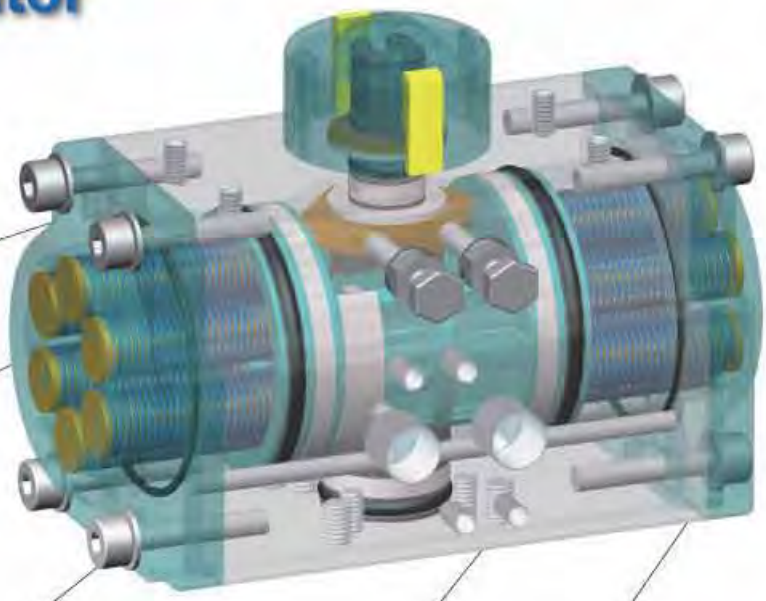
NUTORK®

Actuators & Valves

ISO 9001:2000

NK Series Rack & Pinion Pneumatic Actuator



Hard Anodized

Polyester Coated

Ceramic Coated

Nickel Coated

PTFE Coated

0-180° Actuator

NUTORK CORPORATION

Pneumatic Actuator - Operating Conditions

1. Pressure Ranges

2 bar(29 psig) to 8 bar(116 psig) double acting
3 bar(44 psig) to 8 bar(116 psig) spring return

2. Temperature Ranges

*Std.(NBR O-rings): -20°C(-4°F) to +80°C(+176°F)
*Lower Temp. (HNBR O-rings):-40°C(-40°F) to +80°C(+176°F)
*High Temp. (Viton O-rings): -15°C(+5°F) to +150°C(+300°F)

Note: Special grease is required for low and high temperature service condition.

3. Wide Range Available

The actuator range consists of 14 sizes, with torques from 9Nm(80in.lbs) to 3,920Nm (34,660in.lbs) at 6 bar (87 psig) air supply.

4. Operating Media

Filtered dry or lubricated air for non-corrosive gas, water or light hydraulic oil. The maximum particle size must not exceed 30 microns.

5. Stroke Adjustment

0°and 90° with standard adjustment ± 5°.

6. Lubrication

All moving parts are factory lubricated for entire life cycle of actuator.

7. Construction

Twin piston rack and pinion actuator design, suitable for indoor and outdoor installation.

8. Connections

Bottom drilling complies with ISO 5211/DIN 3337 to match valve. Interface for solenoid valve, shaft top end and top drilling for assembling accessories are in accordance with VDI/VDE-3845, NAMUR standard.

9. Inspection

Every actuator is hydraulically tested, certified and guaranteed for a minimum of 1,000,000 cycles.

Pneumatic Actuator - Features

1. Indicator

A position indicator with Namur mounting is standard on all NUTORK pneumatic actuators for mounting accessories.

2. Pinion

The hardened alloy steel pinion is precision ground and Nickel plated (over 15um) in order to reduce friction, provide maximum wear resistance. Full conformance with the newest standards of ISO5211 & DIN3337. The dimensions can be customized and as options, stainless steel and aluminium alloy are also available.

3. Actuator Body

The aluminum extrusion is hard anodized(over 30um) to protect against wear and corrosion while reducing piston friction to the absolute minimum. Other options such as Nickel, Ceramic, PTFE, Polyester coated are available.

4. End Caps

Epoxy coated(over 80um) die cast aluminum end caps provide maximum resistance against potentially corrosive elements. Other treatments such as Nickel, Ceramic, PTFE,Polyester coated are available.

5. Pistons

The precisely-balanced and hard anodized treatment (over 30um)die cast aluminum pistons are fitted with high quality rings and guides. The twin rack and piston design creates a constant torque output on all actuators.

6. Travel Adjustment

The standard adjustment is ± 5°in both the open and closed positions through easily accessible external adjustment bolts.

7. High Performance Springs

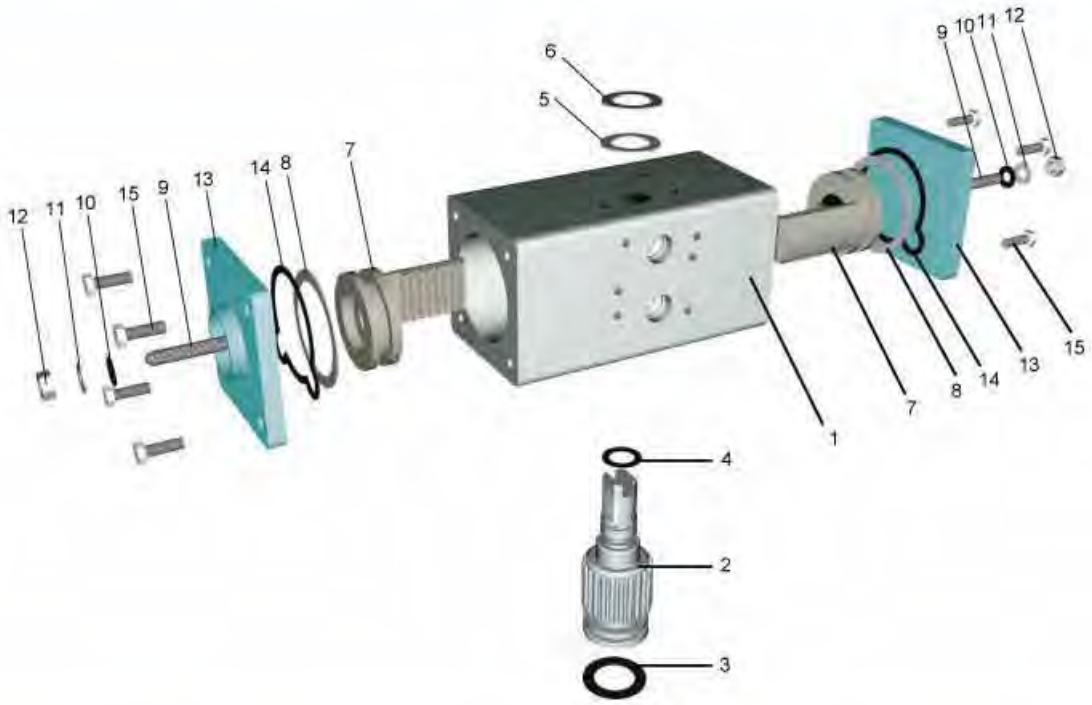
The high tensile steel springs are coated with Epoxy coated for corrosion resistance and longer service. The pre-loaded springs can be safely & rapidly disassembled.

8. Bearings & Guides

The highly durable compound material provides high trust stability with minimum friction and long life.

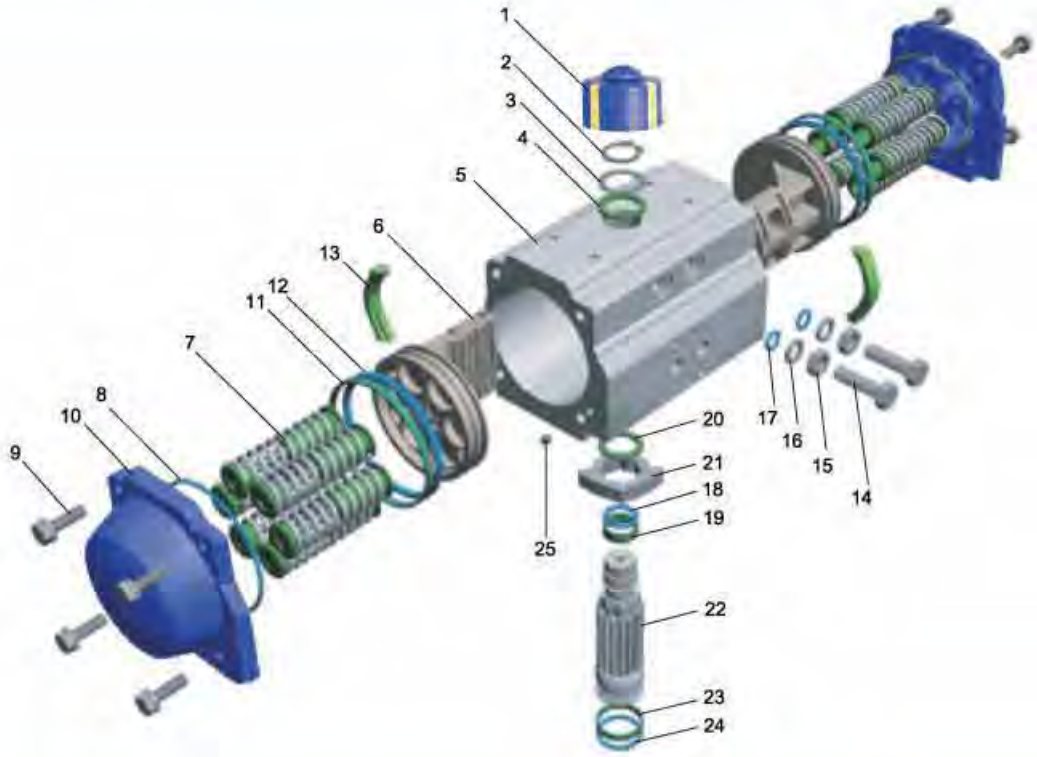
9. O-Rings

NBR O-rings provide trouble-free operation at standard temperature ranges. Viton and HNBR O-rings are available for high or low temperature applications.



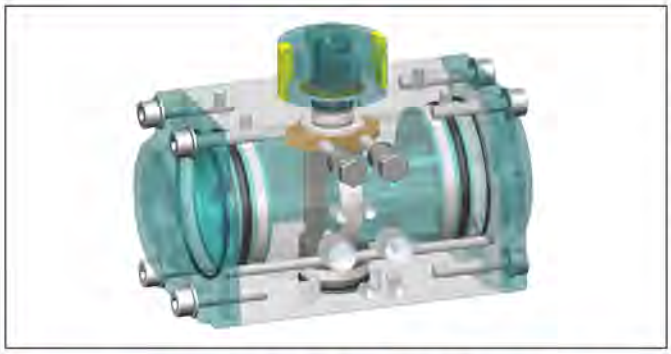
Item	Description	Material	Protection	Q'ty	Optional
1	Actuator Body	Extruded Alluminum Alloy	Hard Anodized (over 30um)	1	Nickel or PTFE coated
2	Pinion	Alloy Steel	Nickel Plated (over 15um)	1	S.S. or Alu.Alloy
3*	O-Ring(Lower Pinion)	NBR		1	Viton / HNBR
4*	O-Ring(Top Pinion)	NBR		1	Viton / HNBR
5	Thrust Bearing(Pinion)	Nylon 66		1	
6	Spring Clip	Stainless Steel		1	
7	Piston	Die Cast Aluminum Alloy	Hard Anodized (over 30um)	2	
8*	Piston Seal	NBR		2	Viton / HNBR
9	Stroke Bolt	Stainless Steel		2	
10*	Stroke Bolt O-Ring	NBR		2	Viton / HNBR
11	Stroke Bolt Washer	Stainless Steel		2	
12	Stroke Bolt Retaining Nut	Stainless Steel		2	
13	End Cap	Die Cast Aluminum	Epoxy Coated (over 80um)	2	Nickel or PTFE coated
14*	End Cap Seals	NBR		2	Viton / HNBR
15	End Cap Bolts	Stainless Steel		8	

*Note: Recommended spare parts for maintenance.



Item	Description	Material	Protection	Q'ty	Optional
1	Indicator	Plastic		1	
2	Spring Clip	Stainless Steel		1	
3	Thrust Washer(Pinion)	Stainless Steel		1	
4	Thrust Bearing(Pinion)	Nylon 66		1	
5	Actuator Body	Extruded Alluminum Alloy	Hard Anodized(over 30um)	1	Nickel or PTFE coated
6	Piston	Die Cast Aluminum Alloy	Hard Anodized(over 30um)	2	
7	Spring(Cartridge)	High Performance Spring Steel	Epoxy Coated	0-12	
8*	End Cap Seals	NBR		2	Viton / HNBR
9	End Cap Bolts	Stainless Steel		8	
10	End Cap	Die Cast Aluminum	Epoxy Coated(over 80um)	2	Nickel or PTFE coated
11*	Piston Bearing	Nylon 66		2	
12*	Piston Seal	NBR		2	Viton / HNBR
13*	Piston Guide	Nylon 66		2	
14	Stroke Bolt	Stainless Steel		2	
15	Stroke Bolt Retaining Nut	Stainless Steel		2	
16	Stroke Bolt Washer	Stainless Steel		2	
17*	Stroke Bolt O-Ring	NBR		2	Viton / HNBR
18*	O-Ring(Top Pinion)	NBR		1	Viton / HNBR
19*	Bearing(Top Pinion)	Nylon 66		1	
20*	Thrust Bearing(Pinion)	Nylon 66		1	
21	Stroke Cam	Stainless Steel		1	
22	Pinion	Alloy Steel	Nickel Plated(over 15um)	1	S.S. or Alu.Alloy
23*	Bearing(Lower Pinion)	Nylon 66		1	
24*	O-Ring(Lower Pinion)	NBR		1	Viton / HNBR
25*	Plug	NBR		2	Viton / HNBR

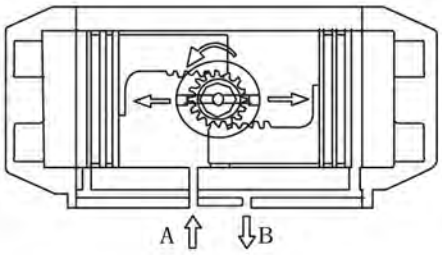
*** Note: Recommended spare parts for maintenance.**



Sizing example of NUTORK double acting actuator:
Valve torque 100Nm plus 20% safety factor= 120Nm. Minimum operating pressure 6bar(87psig). By reading down the 6bar(87 psig) column the figure below 120Nm is 135.0Nm, The model number shown in the left hand column is therefore NKD-092.

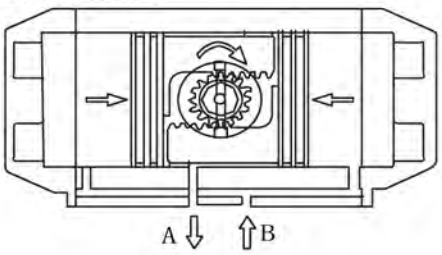
The operating principle of double acting actuator

CCW-counter-clockwise



Air to port A forces the pistons outwards, causing the piston to turn counter-clockwise while air is being exhausted from port B.

CW-clockwise



Air to port B forces the pistons inwards, causing the piston to turn clockwise while air is being exhausted from port A.

Torque Table of Double Acting Actuator

Model	Air Supply Pressure(unit:bar)									
	2.0	2.5	3.0	4.0	4.5	5.0	5.5	6.0	7.0	8.0
	Output Torque(Nm)									
NKD-032	3.1	3.8	4.6	6.1	6.9	7.6	8.4	9.2	10.7	12.2
NKD-052	8.1	10.1	12.1	16.1	18.1	20.2	22.2	24.2	28.2	32.3
NKD-063	14.2	17.8	21.3	28.4	32.0	35.5	39.1	42.6	49.7	56.8
NKD-075	20.1	25.2	30.2	40.3	45.3	50.3	55.4	60.4	70.5	80.5
NKD-083	30.8	38.5	46.2	61.6	69.4	77.1	84.8	92.5	107.9	123.3
NKD-092	45.4	56.8	68.2	90.9	102.3	113.6	125.0	136.3	159.1	181.8
NKD-105	65.8	82.2	98.7	131.6	148.0	164.4	180.9	197.3	230.2	263.1
NKD-125	103.0	128.0	154.0	205.0	231.0	256.0	282.0	308.0	359.0	410.0
NKD-140	175.0	219.0	263.0	351.0	395.0	439.0	482.0	526.0	614.0	702.0
NKD-160	267.0	334.0	401.0	535.0	601.0	668.0	735.0	802.0	935.0	1069.0
NKD-190	431.0	538.0	646.0	861.0	969.0	1077.0	1185.0	1292.0	1508.0	1723.0
NKD-210	526.0	658.0	789.0	1052.0	1184.0	1316.0	1447.0	1579.0	1842.0	2105.0
NKD-240	773.0	966.0	1160.0	1546.0	1740.0	1933.0	2126.0	2320.0	2706.0	3093.0
NKD-270	1174.0	1468.0	1761.0	2349.0	2642.0	2936.0	3229.0	3523.0	4110.0	4697.0
NKD-300	1526.0	1908.0	2289.0	3052.0	3434.0	3815.0	4197.0	4578.0	5341.0	6104.0

Sizing example of NUTORK spring return actuator:

Spring to close when air fails(air to open):

Valve torque 60Nm plus 20% safety factor = 72Nm. Minimum operating pressure: 6bar(87psig). The spring return NUTORK actuator selected is NKS-105-12.The NKS-105-12 has the following output torques:

1.air torque 0°(valve close) = 122.5Nm > 72Nm

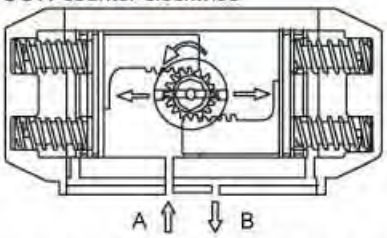
2.air torque 90°(valve open) = 80.6Nm

3.spring torque 90°(valve open) = 118.1Nm

4.spring torque 0°(valve close) = 75.9Nm > 72Nm

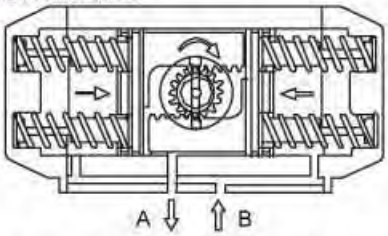
The operating principle of single acting spring return actuator

CCW-counter-clockwise



Air to port A forces the pistons outwards, causing the springs to compress. The pinion turns counter-clockwise while air is being exhausted through port B.

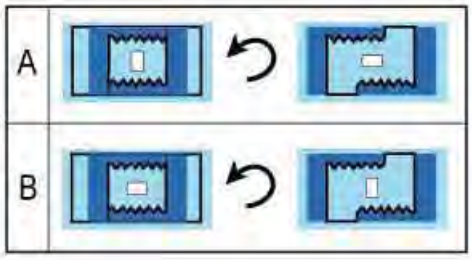
CW-clockwise



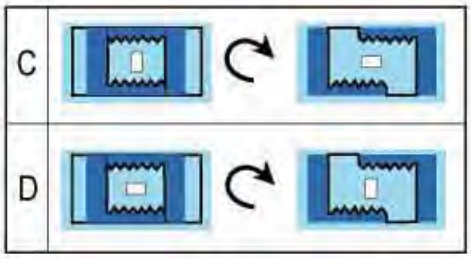
Loss of air pressure through port A allows the stored energy in the springs to force the pistons inwards. The pinion turns clockwise while air is being exhausted through port A.

Mounting Variations

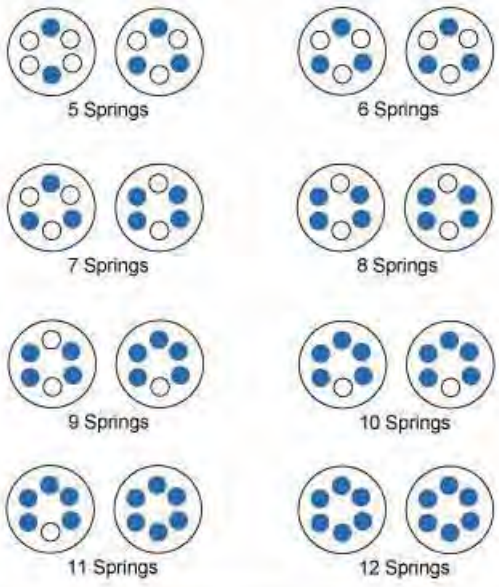
CCW-counter-clockwise



CW-clockwise



Spring Arrangement



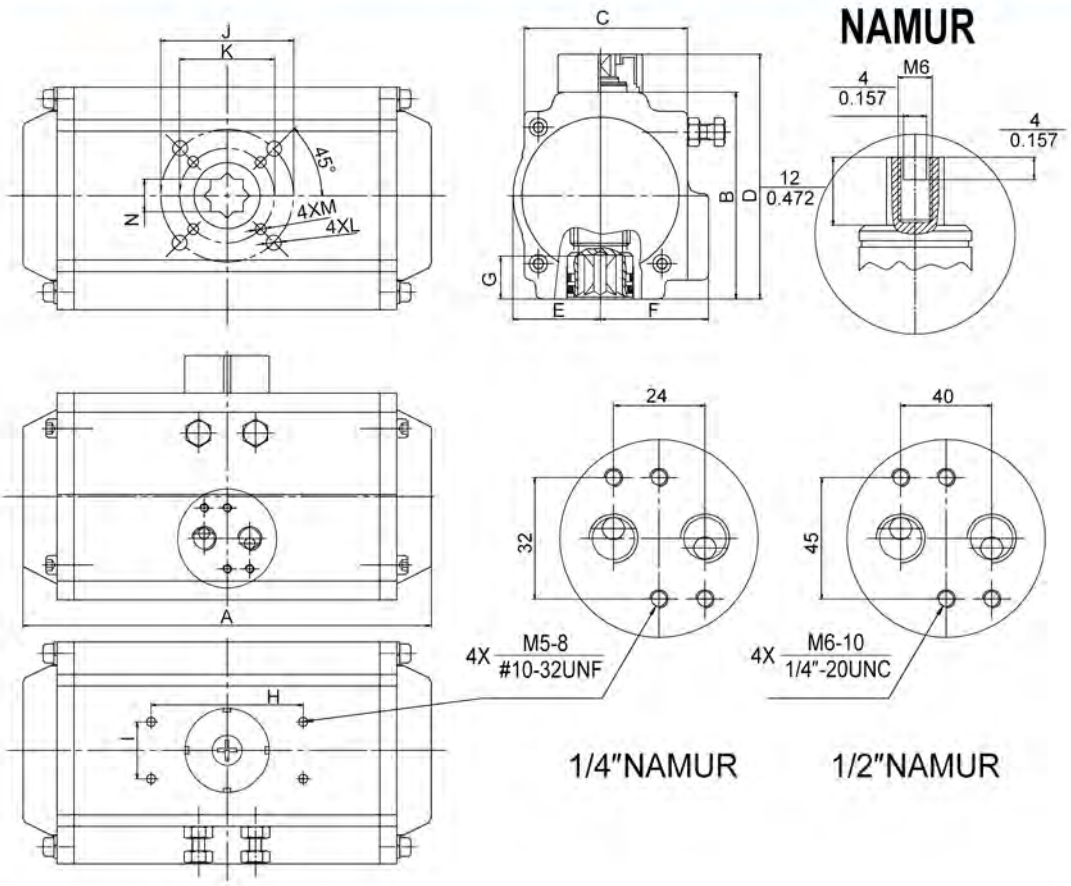
unit:Nm

Model	Spring Set	Spring Torque (Nm)		Air Supply Pressure(Unit:bar)													
				2.5		3.0		4.0		5.0		6.0		7.0		8.0	
				Air Torque Output(Nm)													
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
NKS-052	5	4.3	6.2	5.7	3.8	7.6	5.7	----	----	----	----	----	----	----	----	----	----
	6	5.0	7.4	4.9	2.5	6.9	4.5	10.9	8.5	----	----	----	----	----	----	----	----
	7	5.9	8.6	4	1.3	6	3.3	9.8	7.3	14	10.4	----	----	----	----	----	----
	8	6.7	9.9	----	----	5.2	2.0	9.2	6.0	13.2	9.1	17.2	14.1	----	----	----	----
	9	7.6	11.1	----	----	4.3	0.8	8.3	4.8	12.3	7.9	16.3	12.8	20.3	16.8	----	----
	10	8.5	12.4	----	----	----	----	7.4	3.6	11.5	6.7	15.5	11.6	19.5	15.6	----	----
	11	9.3	13.6	----	----	----	----	6.6	2.3	10.6	5.4	14.6	10.4	18.6	14.3	22.6	18.3
	12	10.2	14.8	----	----	----	----	----	----	9.7	4.2	13.8	9.1	17.8	12.2	22.6	17.1
NKS-063	5	6.8	10.4	11.4	7.7	15.0	11.4	22.3	14.9	----	----	----	----	----	----	----	----
	6	8.2	12.5	10.1	5.7	13.6	9.3	20.9	16.6	28.3	23.9	----	----	----	----	----	----
	7	9.6	14.6	8.6	3.6	12.5	7.2	19.5	14.5	26.8	21.9	----	----	----	----	----	----
	8	10.9	16.7	----	----	10.9	5.1	18.2	12.4	25.5	19.8	32.8	27	40.1	34.3	----	----
	9	12.3	18.9	----	----	----	----	16.8	10.4	24.1	17.7	31.4	24.9	38.7	32.2	----	----
	10	13.7	20.9	----	----	----	----	14.0	8.2	22.8	15.6	30	22.8	37.3	30.1	44.7	37.4
	11	15.0	22.9	----	----	----	----	----	----	21.5	13.5	28.7	20.7	36	28	43.3	35.3
	12	16.4	25.0	----	----	----	----	----	----	20	11.4	27.3	18.6	34.6	25.9	41.9	33.3
NKS-075	5	10.5	14.5	14.5	10.6	19.4	15.5	29.5	25.7	----	----	----	----	----	----	----	----
	6	12.7	17.4	12.4	7.6	17.3	12.6	27.4	22.7	37.5	32.8	----	----	----	----	----	----
	7	14.8	20.3	10.4	4.8	15.2	9.7	25.3	19.9	35.4	29.9	----	----	----	----	----	----
	8	16.9	23.2	----	----	13.1	6.8	23.1	16.9	33.3	27	43.2	37	53.3	47	----	----
	9	19.0	26.1	----	----	----	----	21.0	14.1	31.2	24.1	41.1	34.1	51.2	44.2	----	----
	10	21.1	29.0	----	----	----	----	19.0	11.1	28.8	21.2	39.0	31.2	49.1	41.2	59.1	51.2
	11	23.2	31.9	----	----	----	----	----	----	27	18.3	37	28.3	47	38.4	57	48.4
	12	25.3	34.7	----	----	----	----	----	----	24.9	15.4	34.9	25.4	44.9	35.4	54.9	45.4
NKS-083	5	15.8	23.0	23.3	16.1	31.1	24.0	46.8	39.7	----	----	----	----	----	----	----	----
	6	19.0	27.6	20.1	11.5	28.0	19.3	43.7	35.1	59.4	50.7	----	----	----	----	----	----
	7	22.1	32.2	17.0	6.9	24.8	14.8	40.5	30.5	56.2	46.2	----	----	----	----	----	----
	8	25.3	36.8	----	----	21.7	10.1	37.4	25.8	53.1	41.5	68.8	57.2	84.5	72.9	----	----
	9	28.5	41.4	----	----	----	----	34.2	21.3	49.9	37	65.6	52.6	81.2	68.3	----	----
	10	31.6	46.0	----	----	----	----	31.0	16.6	46.7	32.3	62.4	48.0	78.1	63.7	93.8	79.3
	11	34.8	50.6	----	----	----	----	----	----	43.6	27.7	59.3	43.4	75.0	59.1	90.6	74.8
	12	38.0	55.2	----	----	----	----	----	----	40.4	23.2	56.1	38.9	71.7	54.5	87.4	70.2
NKS-092	5	23.3	34.4	33.1	22.0	44.2	33.2	66.8	55.9	----	----	----	----	----	----	----	----
	6	28.0	41.2	28.4	15.2	39.6	26.4	62.2	49.0	84.8	71.6	----	----	----	----	----	----
	7	32.7	48.1	23.8	8.2	34.9	19.4	57.5	42.1	80.2	64.7	----	----	----	----	----	----
	8	37.3	55.0	----	----	31.3	12.6	52.9	35.2	75.5	57.9	98.1	80.5	120.7	103	----	----
	9	42.0	61.9	----	----	----	----	48.2	28.4	70.9	51.0	93.5	73.6	116	96.1	----	----
	10	46.7	68.7	----	----	----	----	43.6	21.5	66.2	44.1	88.8	66.7	111.3	89.2	134.0	111.8
	11	51.4	75.6	----	----	----	----	----	----	61.5	37.2	84.1	59.9	106.6	82.4	129.2	105
	12	56.0	82.5	----	----	----	----	----	----	56.8	30.4	79.4	53.0	101.9	75.5	124.5	98.1
NKS-105	5	31.6	49.2	51.0	33.4	67.5	49.9	100.6	83.0	----	----	----	----	----	----	----	----
	6	38.0	59.1	44.7	23.5	61.1	40.0	94.2	73.2	127.3	106.2	----	----	----	----	----	----
	7	44.3	68.9	38.4	13.7	54.9	30.3	87.9	63.4	121.0	96.4	----	----	----	----	----	----
	8	50.6	78.7	----	----	48.5	20.4	81.6	53.5	114.7	86.5	147.7	119.6	180.8	152.7	----	----
	9	56.9	88.6	----	----	----	----	75.3	43.7	108.4	76.8	141.5	109.8	174.5	142.9	----	----
	10	63.3	98.4	----	----	----	----	68.9	33.4	102.0	66.5	135.1	99.6	168.2	132.6	201.2	165.7
	11	69.6	108.3	----	----	----	----	----	----	95.7	57.0	128.7	90.1	161.8	123.1	194.8	156.2
	12	75.9	118.1	----	----	----	----	----	----	89.4	47.5	122.5	80.6	155.5	113.6	188.6	146.7
NKS-125	5	52	79	73	47	98	72	148	122	----	----	----	----	----	----	----	----
	6	63	94	63	31	88	56	138	107	188	157	----	----	----	----	----	----
	7	73	110	52	15	77	40	127	90	178	141	----	----	----	----	----	----
	8	84	125	----	----	67	25	117	75	167	125	217	176	268	226	----	----
	9	94	141	----	----	----	----	107	59	157	109	207	159	257	210	----	----
	10	105	157	----	----	----	----	96	44	146	94	196	144	247	194	297	245
	11	115	173	----	----	----	----	----	----	136	78	186	128	236	178	286	228
	12	125	188	----	----	----	----	----	----	125	63	176	113	226	163	276	213

Pneumatic Actuator -Torque Table(Nm)

unit:Nm.

Model	Spring Set	Spring Torque (Nm)		Air Supply Pressure(Unit:bar)													
				2.5		3.0		4.0		5.0		6.0		7.0		8.0	
				Air Torque Output(Nm)													
		0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°	0°	90°
NKS-140	5	86	129	126	85	171	127	256	213	----	----	----	----	----	----	----	----
	6	103	155	111	59	154	102	239	187	325	273	----	----	----	----	----	----
	7	120	181	94	33	137	76	222	162	308	247	----	----	----	----	----	----
	8	137	206	----	----	120	50	205	136	291	221	376	307	462	392	----	----
	9	155	232	----	----	----	----	187	110	273	196	358	281	444	367	----	----
	10	172	258	----	----	----	----	170	84	256	169	341	255	427	340	512	426
	11	189	284	----	----	----	----	----	----	238	143	324	229	409	314	495	400
	12	206	310	----	----	----	----	----	----	221	118	307	203	392	289	478	374
NKS-160	5	140	208	193	124	259	191	392	324	----	----	----	----	----	----	----	----
	6	168	250	165	83	232	149	365	282	498	415	----	----	----	----	----	----
	7	196	292	137	41	203	107	336	240	469	373	----	----	----	----	----	----
	8	223	333	----	----	176	66	309	199	442	237	575	465	708	598	----	----
	9	251	375	----	----	----	----	280	157	413	290	546	423	679	556	----	----
	10	279	417	----	----	----	----	253	115	386	248	519	381	652	514	785	647
	11	307	458	----	----	----	----	----	----	358	207	491	340	624	473	757	606
	12	335	500	----	----	----	----	----	----	330	165	463	298	596	431	729	564
NKS-190	5	200	309	332	222	438	329	651	542	----	----	----	----	----	----	----	----
	6	240	371	292	161	398	267	611	480	824	693	----	----	----	----	----	----
	7	280	433	252	99	358	205	571	418	784	631	----	----	----	----	----	----
	8	320	495	----	----	318	143	531	356	744	569	957	782	1169	995	----	----
	9	360	557	----	----	----	----	491	295	704	507	917	720	1130	933	----	----
	10	400	618	----	----	----	----	451	233	664	446	877	658	1090	871	1302	1084
	11	440	680	----	----	----	----	----	----	624	384	837	597	1050	809	1263	1022
	12	480	742	----	----	----	----	----	----	584	322	797	535	1010	748	1223	960
NKS-210	5	275	380	390	285	523	418	789	684	----	----	----	----	----	----	----	----
	6	330	456	335	209	468	342	734	608	1000	874	----	----	----	----	----	----
	7	385	532	280	133	413	266	679	532	945	798	----	----	----	----	----	----
	8	440	608	----	----	358	190	624	456	890	722	1156	988	1422	1254	----	----
	9	495	684	----	----	----	----	569	380	835	646	1101	912	1367	1178	----	----
	10	550	760	----	----	----	----	514	304	780	570	1046	836	1312	1102	1578	1368
	11	605	836	----	----	----	----	----	----	725	494	991	760	1257	1026	1523	1292
	12	660	912	----	----	----	----	----	----	670	418	936	684	1202	950	1468	1216
NKS-240	5	410	554	552	409	744	600	1129	985	----	----	----	----	----	----	----	----
	6	492	665	470	297	662	489	1047	874	1432	1259	----	----	----	----	----	----
	7	575	775	388	187	580	379	964	764	1349	1149	----	----	----	----	----	----
	8	656	886	----	----	498	268	883	653	1267	1037	1652	1422	2037	1807	----	----
	9	739	998	----	----	----	----	800	542	1185	926	1569	1311	1954	1696	----	----
	10	821	1108	----	----	----	----	718	431	1103	816	1488	1201	1872	1586	2257	1970
	11	903	1219	----	----	----	----	----	----	1021	705	1406	1090	1791	1474	2176	1859
	12	985	1330	----	----	----	----	----	----	939	594	1323	979	1708	1363	2093	1748
NKS-270	5	560	787	903	675	1195	968	1779	1552	----	----	----	----	----	----	----	----
	6	672	943	790	519	1083	811	1667	1396	2252	1981	----	----	----	----	----	----
	7	783	1101	679	361	972	654	1556	1238	2141	1823	----	----	----	----	----	----
	8	895	1258	----	----	860	497	1444	1081	2029	1666	2614	2252	3199	2836	----	----
	9	1007	1416	----	----	----	----	1332	923	1917	1509	2502	2094	3087	2678	----	----
	10	1119	1572	----	----	----	----	1220	767	1805	1352	2390	1937	2974	2521	3560	3107
	11	1231	1730	----	----	----	----	----	----	1693	1194	2278	1779	2862	2364	3448	2949
	12	1342	1887	----	----	----	----	----	----	1582	1037	2167	1623	2751	2207	3336	2792



Dimension Table 尺寸表

Unit: mm / inch

Model	A	B	C	D	E	F	G	H	I	N	J	K	L	M	Air Connection
NK-032	110	45	45	65	22.5	22.5	11	50	25	9	F03	----	M5×7.5		1/8"
	4.33	1.77	1.77	2.56	0.89	0.89	0.89	1.97	0.98	0.35			#10-24UNF		
NK-052	146	72	60	92	26	41.5	14	80	30	11	F05	F03	M6×10	M5×7.5	1/8"or1/4"(std)
	5.74	2.83	2.36	3.62	1.02	16.33	0.55	3.15	1.18	0.43			1/4"-20UNC	#10-24UNF	
NK-063	169	88	69.5	108	33.5	47	17	80	30	14	F07	F05	M8×13	M6×10	1/8"or1/4"(std)
	6.65	3.46	27.36	4.25	1.31	1.85	0.66	3.15	1.18	0.55			5/16"-20UNC	1/4"-20UNC	
NK-075	186	100	78	120	39	53	17	80	30	14	F07	F05	M8×13	M6×10	1/8"or1/4"(std)
	7.32	3.93	3.07	4.72	1.53	2.08	0.66	3.15	1.18	0.55			5/16"-20UNC	1/4"-20UNC	
NK-083	210	109	86	129	40	57	23	80	30	17	F07	F05	M8×13	M6×10	1/8"or1/4"(std)
	8.26	4.29	3.38	5.07	1.57	2.24	0.9	3.15	1.18	0.67			5/16"-20UNC	1/4"-20UNC	
NK-092	264	117	90.5	137	44.5	58.5	23	80	30	17	F07	F05	M8×13	M6×10	1/8"or1/4"(std)
	10.39	4.6	3.56	5.39	1.75	2.3	0.9	3.15	1.18	0.67			5/16"-20UNC	1/4"-20UNC	
NK-105	272	133	104	153	52	64	28	80	30	22	F10	F07	M10×16	M8×13	1/4"
	10.7	5.23	4.09	6.02	2.04	2.51	1.1	3.15	1.18	0.87			3/8"-20UNC	5/16"-20UNC	
NK-125	302	155	120	185	60	74.5	28	130	30	22	F10	F07	M10×16	M8×13	1/4"
	11.88	6.1	4.72	7.28	2.36	2.93	1.1	5.11	1.18	0.87			3/8"-20UNC	5/16"-20UNC	
NK-140	398	172	125	202	65	77	35	130	30	27	F12	F10	M12×20	M10×16	1/4"
	15.66	6.77	4.92	7.95	2.55	3.03	1.37	5.11	1.18	1.06			1/2"-20UNC	3/8"-20UNC	
NK-160	456	197	142	227	74	87	35	130	30	27	F12	F10	M12×20	M10×16	1/4"
	17.95	7.75	5.59	8.93	2.91	3.42	1.37	5.11	1.18	1.06			1/2"-20UNC	3/8"-20UNC	
NK-190	534	230	172	260	86	103	43	130	30	36	F14	----	M16×20		1/4"
	21.02	9.05	6.77	10.23	3.38	4.05	1.69	5.11	1.18	1.42			5/8"-20UNC		
NK-210	536	255	194	285	97	113	43	130	30	36	F14	----	M16×20		1/4"
	21.1	10.03	7.63	1.12	3.81	4.44	1.69	5.11	1.18	1.42			5/8"-20UNC		
NK-240	612	290	230	320	115	130	55	130	30	46	F16	----	M20×25		1/4"or3/8"(std)
	24.09	11.41	9.05	12.59	4.52	5.11	2.16	5.11	1.18	1.81			3/4"-20UNC		
NK-270	718	330	252	360	126	147	55	130	30	46	F16	----	M20×25		1/4"or1/2"(std)
	28.26	12.99	9.92	14.17	4.96	5.78	2.16	5.11	1.18	1.81			3/4"-20UNC		

* Dimensions for reference only, subject to change.

Air Consumption - Air Volume Opening & Closing

Model	Air Volume@opening (Unit:L)	Air Volume@closinging (Unit:L)	Model	Air Volume@opening (Unit:L)	Air Volume@closinging (Unit:L)
NK-032	0.08	0.11	NK-125	1.60	1.40
NK-052	0.12	0.16	NK-140	2.50	2.20
NK-063	0.21	0.23	NK-160	3.70	3.20
NK-075	0.30	0.34	NK-190	5.90	5.40
NK-083	0.43	0.47	NK-210	7.50	7.50
NK-092	0.64	0.73	NK-240	11.00	9.00
NK-105	0.95	0.88	NK-270	17.00	14.00

Air consumption rest with Air supply. Air volume and Action cycle times, expressions
L/Min=Air volume(Air volume Opening+Air Volume Closing)X[(Air Supply(Kpa)+101.3)/101.3]X Action cycle time(/min)

The Table of Actuators Weight & Opening Closing Time

Model	NK-032		NK-052		NK-063		NK-075		NK-083		NK-092		NK-105	
	D	S	D	S	D	S	D	S	D	S	D	S	D	S
Screw stroke adj. for 1° adj. need	-----		1/5 turn		1/5 turn		1/5 turn		1/5 turn		1/4 turn		1/4 turn	
Opening time (Sec.)	0.03	---	0.2	0.25	0.25	0.3	0.3	0.35	0.4	0.5	0.5	0.6	0.7	0.8
Closing time (Sec.)	0.03	---	0.25	0.3	0.3	0.35	0.4	0.5	0.5	0.6	0.7	0.9	0.9	1.1
Approximate weight (Kg/Lbs)	0.5/1.1	---	1.0/2.2	1.0/2.2	1.6/3.5	1.8/4.0	2.6/5.7	3.1/6.8	3.1/6.8	3.6/7.9	4.9/10.8	5.7/12.5	6.5/14.3	7.7/16.9

Model	NK-125		NK-140		NK-160		NK-190		NK-210		NK-240		NK-270	
	D	S	D	S	D	S	D	S	D	S	D	S	D	S
Screw stroke adj. for 1° adj. need	1/4 turn		1/4 turn		1/4 turn		1/3 turn		1/3 turn		1/3 turn		1/3 turn	
Opening time (Sec.)	0.9	1.1	1.3	1.5	1.6	1.8	2.2	2.4	2.9	3.4	3.8	4.3	4.5	5.0
Closing time (Sec.)	1.2	1.4	1.6	1.9	1.9	2.2	2.6	3.0	3.8	4.1	4.4	5.0	5.0	5.5
Approximate weight (Kg/Lbs)	9.9/21.8	11/24.2	13.8/30.4	16.3/35.9	19/41.8	24/52.8	28/61.6	34/74.8	37/81.4	45/99	52/114.4	64/140.8	85/187	104/228.8

Order Information

Type	Model	Spring Set	Seals	Options
NKD	032	**Blank**	**Blank**	**120**
Double Acting Actuator	052	(Double Acting Actuator)	(standard NBR seals)	120°operation
	063	05		**180**
NKS	075	06	**HT= Viton seals**	180°operation
Spring Return Actuator	083	07	(for high temperature)	**SS**
	092	08		Stainless Steel Housing
NKDN	105	09	**LT= Silicone seals**	
Double Acting Actuator	125	10	(for low temperature)	
(Nickel Plated Housing)	140	11		
	160	12		
NKSN	190			
Spring Return Actuator	210			
(Nickel Plated Housing)	240			
	270			

Note: The part numbers are represented as the following: Type-Model-Spring Set-Seals-Options

The V-Solenoid II

Standard Type	ATEX EX Type	Intrinsically Safe Type	Ex-Proof Type

Features

- Multi-million cycle life reliability. The innovative design and all composite construction means the V-Solenoid II is not affected by wear or corrosion
- Set 5/2 or 3/2 function simply by turning the rotary sealing plate 180°, dramatically reducing parts inventory
- High airflow: Cv>1.1 (1100 L/min) (I-Safe Cv=0.8)
- Manual override built in - no extra parts required
- Operating temperature range: -4°F to +140°F (-20°C to +60°C)
- For extreme environmental corrosion protection, all port threaded inserts and armature components can be supplied in stainless steel
- Direct mounting conforms to Namur VDI/VDE 3845 standard
- Exhaust feedback – provides spring chamber with instrument air preventing corrosion
- Very competitively priced with a wide variety of available options

SV300 series

NAMUR SOLENOID VALVE

Specification

Model	SV310-08	SV320-08
Medium	Air	
Operating	Internal Piloted	
Valve Type	5 Port 2 Position	
Orifice Size	35mm^2	
Port Size	Inlet & Exhaust Port:PF1/4"	
Lubrication	Not Required	
Pressure Range	0.15 ~ 0.8 Mpa	
Proof Pressure	12bar	
Temp. Range	-5 ~ 60℃ (23 ~ 140°F)	
Voltage Range	-15% ~ 10%	
Power Consumption	AC=2.0~3.5VA, DC=2.5W	
Insulation Class	Class F	
Protecion	IP65(DIN40050)	
Connector	Socket with Plug	
Max Frequency	5 cycle/second	

Note: Port thread PT and NPT are also available.
Change 5/2 or 3/2 way function simply by turning the rotary O-ring Seal

Specification of Explosion-Proof Type

Protecion	EExmIIT4
Voltage Range	±10%
Power Consumption	AC = 4.4VA, DC = 5W
Insulation Class	Class F

NTS Valve Position Monitor (Limit Switchbox)
NKS-A,C,D,E,F,H Series General Specification

NTS-A Series,Weather-Proof

- Enclosure: Aluminum Die-casting, weather proof - IP67/NEMA 4 &4X
- Bolts on visual position Indicator
- Switches: 2 x SPDT mechanical switch or proximity sensor
- Cable Entry: 2 x 1/2"NPT(std.). Option:M20,PG13.5,PF1/2",PT1/2"
- Terminal Strip: 8 points(0.08 – 2.5mm2)
- Easy mounting, Namur standard, stainless steel bracket & bolts

NTS-C Series,Weather-Proof

- Enclosure: Aluminum Die-casting, weather proof - IP67/NEMA 4 &4X
- Bolts on visual position Indicator
- Switches: 2, 3 or 4 x SPDT mechanical switch or proximity sensor
- Cable Entry: 2 x 1/2"NPT(std.). Option:M20,PG13.5,PF1/2",PT1/2"
- Terminal Strip: 8 points(0.08 – 2.5mm2), Option: 8-16 points
- Easy mounting, Namur standard, stainless steel bracket & bolts

NTS-E Series,Ex-Proof(EExdIIBT6)

- Enclosure: Aluminum Die-casting or 3166SS, weather proof - IP67/NEMA 4 &4X & Explosion proof – EExdIIBT6
- Bolts on visual position Indicator
- Switches: 2, 3 or 4 x SPDT mechanical switch or proximity sensor Option: Potentiometer(0-1,5,10K ohm), Position Transmitter(4-20mADC)
- Cable Entry: 2 x 3/4"NPT(std.). Option:M20,M25,PF3/4",PT3/4"
- Terminal Strip: 8 points(0.08 – 2.5mm2), Option: 8-16 points
- Easy mounting, Namur standard, stainless steel bracket & bolts

NTS-H Series,Ex-Proof(EExdIICT6)

- Enclosure:Aluminum Die-casting, weather-proof, IP67/NEMA 4 &4X & Explosion proof – EExdIICT6
- Bolts on visual position Indicator
- Switches: 2, 3 or 4 x SPDT mechanical switch or proximity sensor Option: Potentiometer(0-1,5,10K ohm), Position Transmitter(4-20mADC)
- Cable Entry: 2 x 3/4"NPT(std.). Option:M20,M25,PF3/4",PT3/4"
- Terminal Strip: 8 points(0.08 – 2.5mm2), Option: 8-16 points
- Easy mounting, Namur Standard, stainless steel bracket & bolts

NTS-D Series,Weather-Proof

- Enclosure: ABS plastic, weather-proof, IP67/NEMA 4 &4X
- Visual position Indicator
- Switches: 2 x SPDT mechanical switch
- Cable Entry: 2 x 1/2"NPT(std.). Option: M20,PG13.5,PF1/2",PT1/2"
- Terminal Strip: 8 points(0.08 – 2.5mm2)
- Easy mounting, Namur Standard, plastic bracket & stainless steel bolts

NTS-F Series,Weather-Proof

- Enclosure: ABS plastic, weather-proof, IP67/NEMA 4 &4X
- Visual position Indicator
- Switches: 2 x SPST magnet reed switch, LED indicator
- 0.7 meter lead wire(std.), option: quick coupler
- Easy mounting, Namur Standard, stainless steel bracket & bolts

Note: A. Standard Specification: 1.Captive cover bolts. 2.Polyester powder coating(black color). 3.Ambient Temp.: -20 ~ +80°C
B. The other paining & colors are available upon request'

■ Manual Override

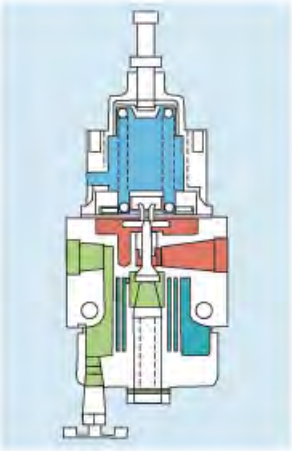
Specification

1.Housing : Cast Iron or Aluminum Alloy
2.Gear Guardant : Ductile Iron
3.Input Shaft : ASTM A29M+Chrome Plated
4.Temperature Range : -20°C to +120°C
(-4°F to +248°F)
5.Stroke Adjustment : ± 5°at each end
6.Movement): 0°~90°
7.Finish Paint :Two Polyurethane Coated
8.Enclosure: Sealed to IP65
9.Torque Range: 300 ~ 70000Nm

Technical Data

Model	Gear Ratio	Input Torque (Nm)	Output Torque (Nm)	Handwheel Dia. (mm)	Weight (Kg/Lbs)
MO30	26:1	46	300	200	6/13.2
MO70	38:1	97	700	300	13.5/29.8
MO120	54:1	123	1200	300	17.5/38.6
MO200	80:1	126	2000	400	22/48.5
MO310	78:1	160	3100	600	34/74.9
MO850	315:1	155	8500	700	108/238.1
MO1200	333:1	240	12000	800	159/350.6
MO1800	490:1	175	18000	750	178/392.5
MO2500	623:1	192	25000	750	210/463.1
MO3200	945:1	170	32000	750	280/617.4
MO7000	1460:1	225	70000	1000	400/882.0

■ AFR50 Air Filter Regulator



Technical Information

Sensitivity:	25.4mm water column
Flow Capacity:	565LPM
Exhaust Capacity(5psi above,20psi set point)	2.8LPM
Effect of Supply Pressure Variation(25psi) On Outlet Pressure:	< 0.2PSI(0.01bar)
Max. Input Pressure:	1700KPa
Output Pressure Range:	0-200KPa; 0-400KPa; 0-800Kpa
Filtration:	5um
Temperature Range:	-18°C to 71°C
Total Air Consumption at Max. Output:	2.8LPM
Port Size:	1/4"NPT
Outline Dimension:	81 x 80 x 184mm
Weight:	0.8 Kg(1.76 Lbs)
Material of Construction:	1.Body:Die-Cast Aluminum with Vinyl Paint 316SS(Option) 2.Diaphragm:Buna-N Elastomer with Polyester Fabric.
Mounting:	Bracket for Pipe and Panel

■ AFR30 Air Filter Regulator

Air Filter Regulator

Model	AFR30-02	AFR30-03	AFR30-04	AFR30-06	AFR30-08
Port Size	1/4"	3/8"	1/2"	3/4"	1"
Fluid	Compressed Air				
Regulator Construction	Piston				
Body Material	Die-Casting Aluminum				
Bowl Material	Die-Casting Aluminum				
Filtration	5um(standard)				
Operating Pressure Range	0.5 ~ 10 kgf/cm²				
Max. Operating Pressure Range	15 kgf/cm²				
Max. Flow Rate, l/min(6kg/cm²)	2080	2100	2600	7940	8200
Ambient Temp.	-10 ~ 60°C				
Standard Drain	Semi-Auto Drain				
Weight(g)	930	930	930	1360	1360
Accessories	Pressure Gauge, Mounting Bracket, Plug, Bolts				

NUTORK®

NUTORK CORP. manufactures a wide range of pneumatic actuators, electric actuators and the accessories of pneumatic actuator (limit switchbox, solenoid valve, manual override ---etc.) for quarter turn valves

Nutork Corp. supply the following product range:

NK series rack & pinion type (CE-ATEX certified and PED compliant)

14 models, the output torque from 9Nm(80in.lbs) to 3,920Nm(34,660in.lbs) at 6 bar air supply. ISO5211/DIN3337 for valve connection, VDI/VDE 3845(Namur) standard connection for solenoid valve and shaft top end(limit switchbox or E/P positioner), +/-5 degree stroke adjustment. 25~30um standard hard anodized treatment on actuator body and over 120um epoxy coated on end caps which meet ASTM B117 qualification(salt spread test over 1,000 hours and no corrosion.

PTFE, Polyester, Nickel, Ceramic and Epoxy coated are available on request.

NSF series scotch yoke type pneumatic and hydraulic actuators (CE-ATEX certified and PED compliant)

The output torque from 978Nm(8,656in.lbs) to 226,200Nm (2,001,870in.lbs) at 6 bar air supply. Anti-corrosion painting on outer body and cylinder as standard. VDI/VDE 3845(Namur) standard connection for shaft top end(limit switchbox or E/P positioner), +/-10 degree stroke adjustment. ISO5211 standard for valve connection. PTFE coated on inner cylinder surface. Hydraulic manual override is available for big size actuator.

NTE series electric actuator, CE approval

13 models and the output torque from 18Nm(159in.lbs) to 6000Nm(53,106in.lbs), compact design, die-casting aluminum alloy housing, alloy steel with heat treatment gear driving unit, integral wormgear & drive shaft, 30% duty rating, detachable crank handle, ISO5211(option), IP67 enclosure.IP68 for option.

NTE-02L Quarter Turn Electric Actuator

Output torque 25Nm(222in.lbs),operation time 10Sec;voltage 24VAC,110VAC & 220VAC for option,ABS housing, 30% duty rating,IP65 enclosure.

NTQ electric actuator, CE approval(IP67 & EExdIIBT4 enclosure)

13 models, the output torque from 100Nm(885in.lbs) to 6,000Nm(53,106in.lbs), de-clutchable manual override, 2xSPDT each for open & close, torque switch: 1xSPDT each for open & close. space heater, self-lock, IP67 & EExdIIBT4 enclosure.

The fully range accessories(Limit Switchbox, Solenoid Valve, Declutchable Manual Override, Air Filter regulator, E/P Positioner ---etc).

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