

NUMATICS®

KG Series

Air Cylinders for Valve Actuation



www.numatics.com


EMERSON
Industrial Automation

BCAE
Automation Solutions

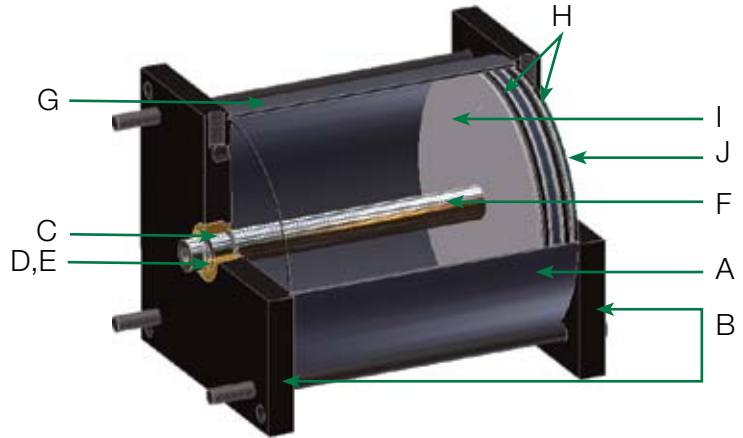
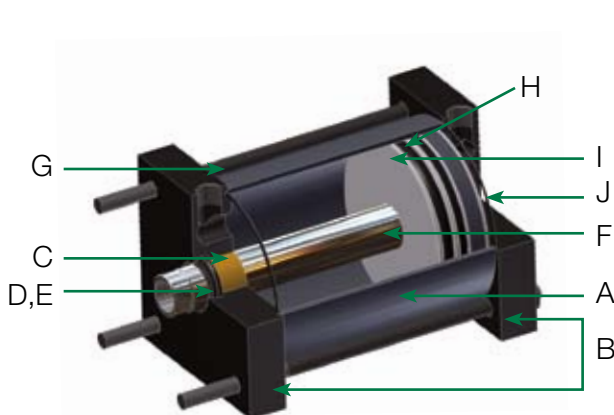
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1-1/2" - 14" Bore

16" - 24" Bore



Features:

The KG Series pneumatic cylinder is specifically designed to automate valve operation. Though this design is widely used throughout the knife gate industry, it can also be utilized in an assortment of applications that require medium duty pneumatic actuation.

A - Tube

Honed and chrome plated (on the I.D.) steel tube is standard on 1-1/2" - 6" and 8" - 14" bore.

Composite tube is standard on 7" and 16" - 24" bore cylinders. Our composite tubing is a robust material that weighs less than traditional metallic materials. Composite and aluminum tubing is also an option on 1-1/2" - 6" and 8" - 14" bore.

B - End Caps

The standard KG Series end caps are accurately machined from precision square steel blocks. The cylinders are painted with black enamel paint. Note that black enamel paint is the standard and the black epoxy paint is an option. A recess on the piston-mating surface (at both ends) enables the air to work on a larger piston area for effortless breakaway (even at both ends).

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C - Rod Bushing

1-1/2" - 14" bore has a sintered bronze bushing.
16" - 24" bore has a removable 660 bronze bushing.

D - Rod Seal

A nitrile rod/wiper is standard on 1-1/2" - 14" bore.
A nitrile rounded lip seal is standard on 16" - 24" bore.

E - Rod Wiper

The standard nitrile rod wiper/rod seal combination is standard on 1-1/2" - 14" bore. A separate urethane rod wiper is standard on 16" - 24" bore.

F - Piston Rod

High strength steel (100,000 psi minimum yield) piston rod has a ground, polished, and chrome plated surface. This surface provides maximum life for both the rod bushing and the seals.

G - Tie Rods

The tie rods are 100,000 psi minimum yield steel for maximum holding power. Most are roll formed for superior strength and engagement.

H - Piston Seal

The piston seal 1-1/2" - 8" bore is a nitrile o-ring seal. Nitrile lip seals are standard offering on 10" - 24" bore.

I - Piston

The solid aluminum alloy piston is strong and durable.
1-1/2" - 14" bore: 6061-T6 aluminum piston.
16" - 24" bore: A36 steel piston.

J - Tube End Seal

The tube end seals are compression type and reusable.

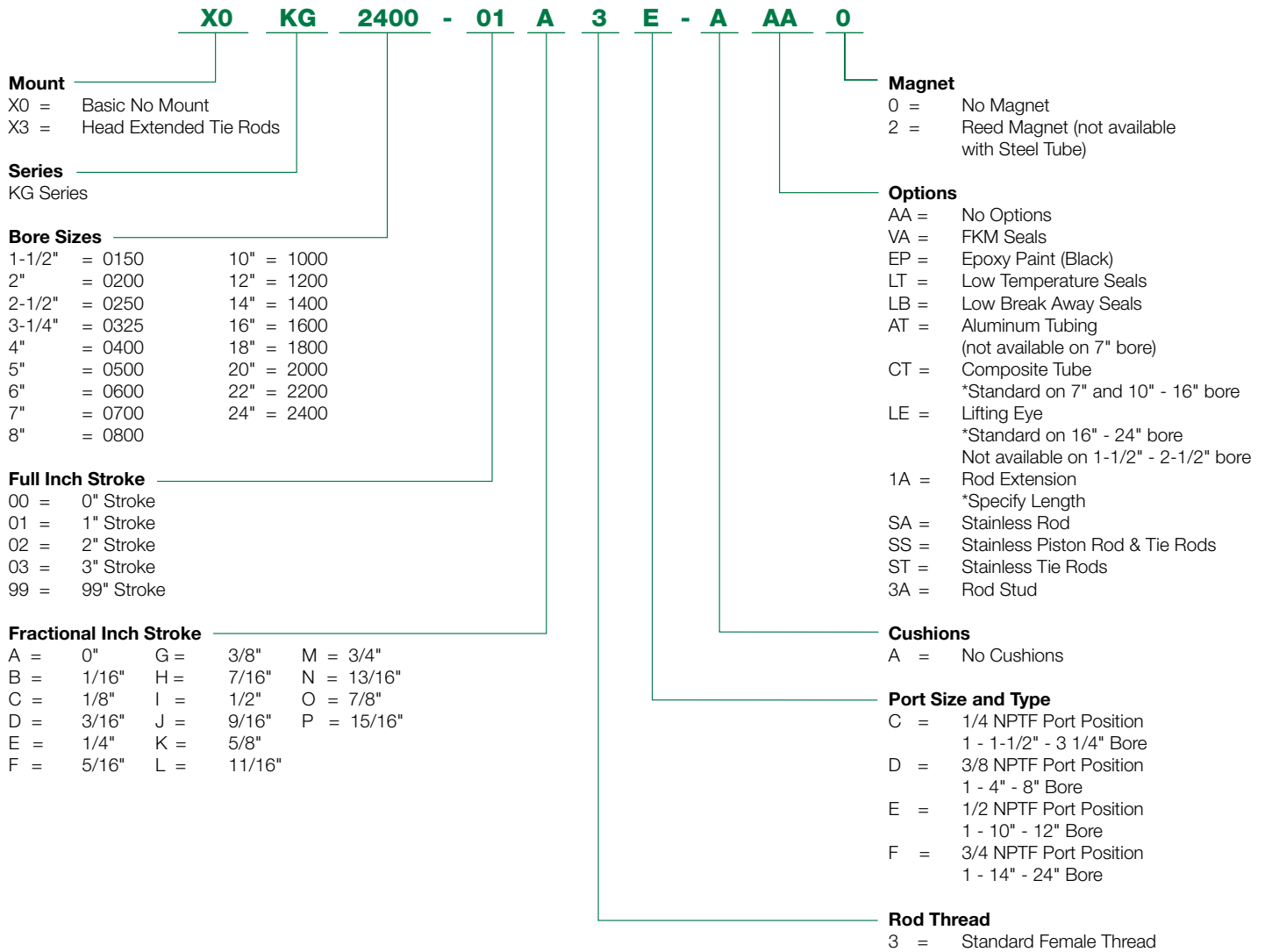
K - Ports

Our enhanced port design enables the cylinder to work more efficiently. Through the use of precise machining depths and tool shape, we are able to smooth the flow path into and out of the cylinder.

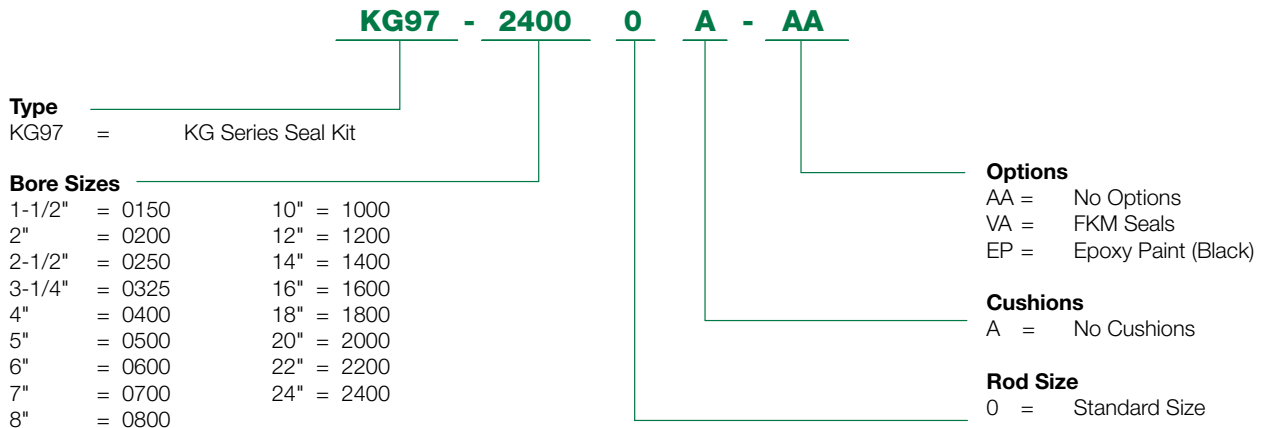
Standard Specifications:

- Bore sizes from 1-1/2" to 24"
- Piston rod diameters from 5/8" to 3-1/2"
- Maximum pressure rating is 150 psi air
- Standard temperature -10°F to 165°F (-23°C to 74°C)
- Optional low temperature seal -40°F to +165°F (-40°C to +74°C)
- Optional FKM Seals 0°F to +400°F (-17°C to +204°C)
- NPTF ports
- Black enamel paint

How to Order

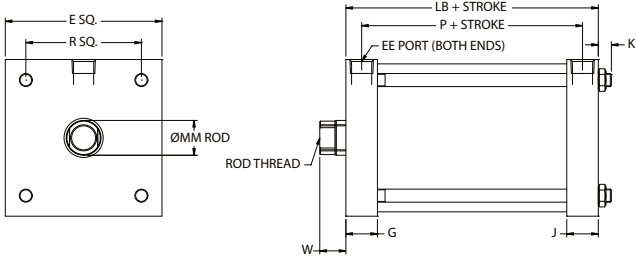


Seal Kit How to Order

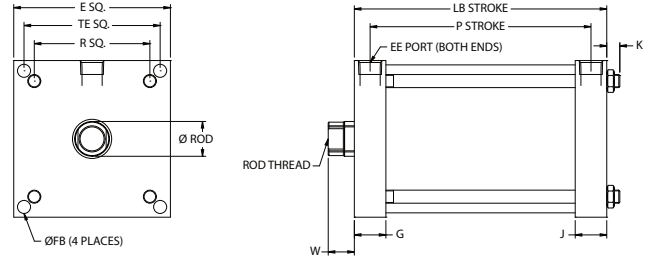


1-1/2" - 14" Bore

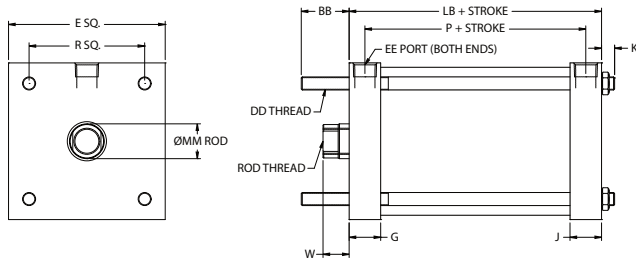
X0 MOUNT (1 1/2" - 6" BORE)



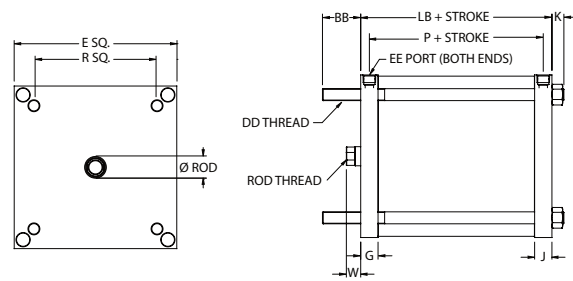
X0 MOUNT (7" - 14" BORE)



X3 MOUNT (1 1/2" - 6" BORE)



X3 MOUNT (7" - 14" BORE)



KG Series Standard Mount - X0 Mount

Bore Size	E	G	J	K	P	R	W	EE	FB	Rod	LB	TE	Rod Thread	Rod Diameter
1-1/2	2.000	1.000	1.000	0.250	2.188	1.430	0.625	1/4	-	5/8	3.125	-	7/16-20	5/8
2	2.500	1.000	1.000	0.313	2.188	1.840	0.625	1/4	-	5/8	3.125	-	7/16-20	5/8
2-1/2	3.000	1.000	1.000	0.313	2.313	2.190	0.625	1/4	-	5/8	3.250	-	7/16-20	5/8
3-1/4	3.750	1.000	1.000	0.375	2.344	2.760	0.750	1/4	-	1	3.250	-	3/4-16	1
4	4.500	1.000	1.000	0.375	2.344	3.320	0.750	3/8	-	1	3.250	-	3/4-16	1
5	5.500	1.000	1.000	0.500	2.594	4.100	0.750	3/8	-	1	3.500	-	3/4-16	1
6	6.500	1.000	1.000	0.500	2.594	4.880	0.750	3/8	-	1	3.500	-	3/4-16	1
7	7.500	1.000	1.000	0.625	2.719	5.730	0.750	3/8	9/16	1	3.625	6.750	3/4-16	1
8	8.500	1.000	1.000	0.625	2.719	6.440	0.750	3/8	11/16	1	3.625	7.570	3/4-16	1
10	10.625	1.250	1.250	0.750	3.469	8.060	1.000	1/2	13/16	1	4.625	9.400	3/4-16	1
12	12.750	1.250	1.250	0.750	3.969	9.410	1.000	1/2	13/16	1 3/8	5.125	11.100	1-14	1 3/8
14	14.750	1.500	1.500	0.875	4.750	10.900	1.000	3/4	15/16	1 3/8	6.125	12.870	1-14	1 3/8

KG Series Head Extended Tie Rod Mount - X3 Mount

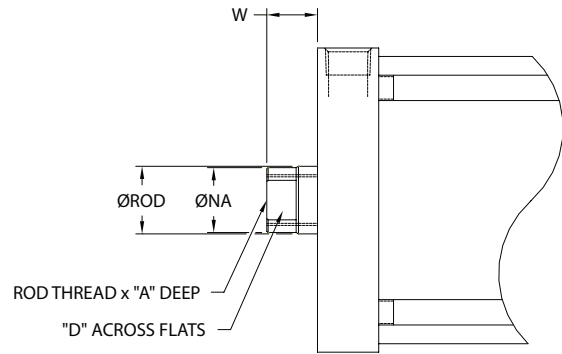
Bore Size	E	G	J	K	P	R	W	BB	DD	EE	Rod	LB	TE	Rod Thread
1-1/2	2.000	1.000	1.000	0.250	2.062	1.430	0.625	1.000	1/4-28	1/4	5/8	3.125	-	7/16-20
2	2.500	1.000	1.000	0.313	2.062	1.840	0.625	1.125	5/16-24	1/4	5/8	3.125	-	7/16-20
2-1/2	3.000	1.000	1.000	0.313	2.187	2.190	0.625	1.125	5/16-24	1/4	5/8	3.250	-	7/16-20
3-1/4	3.750	1.000	1.000	0.375	2.156	2.760	0.750	1.375	3/8-24	1/4	1	3.250	-	3/4-16
4	4.500	1.000	1.000	0.375	2.156	3.320	0.750	1.375	3/8-24	3/8	1	3.250	-	3/4-16
5	5.500	1.000	1.000	0.500	2.406	4.100	0.750	1.750	1/2-20	3/8	1	3.500	-	3/4-16
6	6.500	1.000	1.000	0.500	2.406	4.880	0.750	1.750	1/2-20	3/8	1	3.500	-	3/4-16
7	7.500	1.000	1.000	0.625	2.406	5.730	0.750	2.000	5/8-18	3/8	1	3.625	6.750	3/4-16
8	8.500	1.000	1.000	0.625	2.531	6.440	0.750	2.000	5/8-18	3/8	1	3.625	7.570	3/4-16
10	10.625	1.250	1.250	0.750	3.281	8.060	1.000	2.250	3/4-16	1/2	1	4.625	9.400	3/4-16
12	12.750	1.250	1.250	0.750	3.781	9.410	1.000	2.250	3/4-16	1/2	1 3/8	5.125	11.100	1-14
14	14.750	1.500	1.500	0.875	4.500	10.900	1.000	2.500	7/8-14	3/4	1 3/8	6.125	12.870	1-14

1-1/2" - 14" Rod End

Rod

Bore Size	Rod	A	D	W	NA	Rod Thread
1-1/2	5/8	0.750	0.500	0.625	0.585	7/16-20
2	5/8	0.750	0.500	0.625	0.585	7/16-20
2-1/2	5/8	0.750	0.500	0.625	0.585	7/16-20
3-1/4	1	1.125	0.813	0.750	0.960	3/4-16
4	1	1.125	0.813	0.750	0.960	3/4-16
5	1	1.125	0.813	0.750	0.960	3/4-16
6	1	1.125	0.813	0.750	0.960	3/4-16
7	1	1.125	0.813	0.750	0.960	3/4-16
8	1	1.125	0.813	0.750	0.960	3/4-16
10	1	1.125	0.813	0.750	0.960	3/4-16
12	1 3/8	1.625	1.125	1.000	1.313	1-14
14	1 3/8	1.625	1.125	1.000	1.313	1-14

ROD END (1 - 1/2" - 14" BORE)

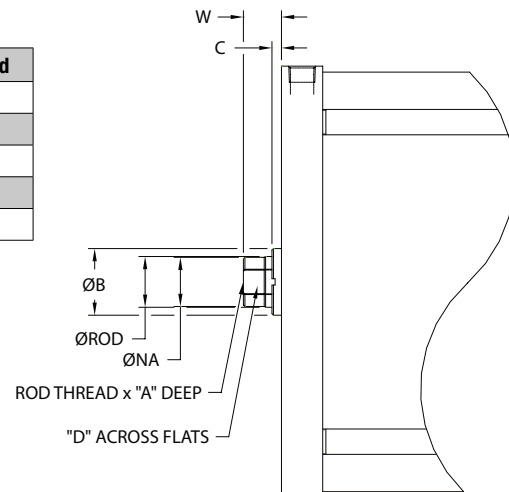


16" - 24" Rod End

Rod

Bore Size	Rod	A	B	C	D	W	NA	Rod Thread
16	2	1.625	2.625	0.375	1.750	1.500	1.940	1-14
18	2	2.000	2.625	0.375	1.750	1.500	1.940	1 1/8-12
20	2	2.000	2.625	0.375	1.750	1.500	1.940	1 1/4-12
22	3	2.000	4.750	0.375	2.625	2.250	2.940	1 1/4-12
24	3 1/2	2.000	4.750	0.375	3.000	2.250	3.440	1 1/4-12

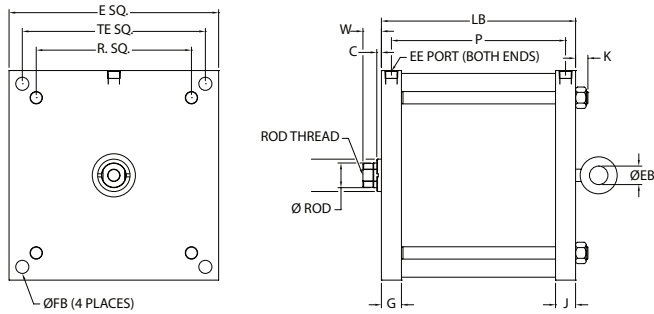
ROD END (16" - 24" BORE)



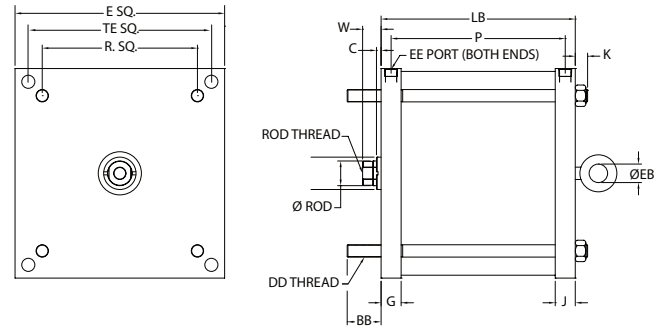
Dimensions: Inches

16" - 24" Bore

XO MOUNT (16" - 24" BORE)



X3 MOUNT (16" - 24" BORE)



Bore Size	C	E	G	J	K	P	R	W	BB	DD	EB	EE	FB	Rod	LB	TE	Rod Thread
16	0.38	17.000	1.750	1.750	1.000	4.125	12.590	1.500	2.750	1-14	1.25	3/4	1	2.000	5.750	14.850	1-14
18	0.38	19.000	1.750	1.750	1.125	4.125	14.140	1.500	3.250	1 1/8-12	1.25	3/4	1 1/16	2.000	5.750	16.690	1 1/8-12
20	0.38	21.000	1.750	1.750	1.250	4.325	15.770	1.500	3.250	1 1/4-12	1.50	3/4	1 1/4	2.000	6.000	18.430	1 1/4-12
22	0.38	23.000	2.000	2.000	1.250	5.688	17.180	2.250	3.500	1 1/4-12	1.50	3/4	1 1/4	3.000	7.500	20.150	1 1/4-12
24	0.38	25.250	2.500	2.500	1.250	6.188	18.740	2.250	3.500	1 1/4-12	1.50	3/4	1 1/4	3.500	8.500	21.745	1 1/4-12

Cylinder Weight Chart

(Steel Tube)

Bore Size	Base Weight (lbs)	Per Inch Stroke (lbs)
1-1/2	3.5	0.3
2	5.5	0.4
2-1/2	7.4	0.5
3-1/4	11.5	0.7
4	15.4	0.8
5	24.4	1.0
6	33.4	1.1
7	45.9	0.9
8	58.4	1.9
10	112.0	2.8
12	162.5	3.4
14	259.7	4.0
16	438.6	2.5
18	556.8	3.0
20	706.3	3.4
22	1027.4	4.7
24	1403.4	5.6

Lifting Eyes

Bore Size	EB Ø	Lifting Eye Capacity (lbs)
3-1/4	1.00	1300
4	1.19	2400
5	1.19	2400
6	1.19	2400
7	1.19	2400
8	1.19	2400
10	1.25	3000
12	1.25	3000
14	1.25	3000
16	1.25	3000
18	1.50	5000
20	1.50	5000
22	1.50	5000
24	1.50	5000

Extend Force Chart (Units = in-lbf)

Bore Size	Pressure (psi)						
	40	50	60	80	90	100	125
1-1/2	71	88	106	142	160	177	221
2	126	157	189	251	283	314	392
2-1/2	196	246	295	393	442	491	614
3-1/4	332	415	498	664	747	830	1037
4	503	629	754	1005	1131	1257	1571
5	785	982	1178	1571	1768	1964	2455
6	1130	1414	1696	2262	2544	2827	3534
7	1539	1924	2309	3079	3464	3848	4811
8	2010	2513	3015	4020	4523	5026	6280
10	3142	3927	4712	6283	7069	7854	9817
12	4524	5655	6786	9048	10179	11310	14137
14	6158	7697	9236	12315	13854	15394	19242
16	8042	10053	12064	16085	18096	20106	25133
18	10179	12723	15268	20358	22902	25447	31809
20	12566	15708	18850	25133	28274	31416	39270
22	15205	19007	22808	30411	34212	38013	47517
24	18096	22619	27143	36191	40715	45239	56549

Retract Force Chart (Units = in-lbf)

Bore Size	Pressure (psi)						
	40	50	60	80	90	100	125
1-1/2	58	73	88	117	131	146	183
2	113	142	170	226	255	283	354
2-1/2	165	206	247	330	371	412	515
3-1/4	300	376	451	601	676	751	939
4	471	589	707	942	1060	1178	1473
5	754	943	1131	1508	1697	1885	2356
6	1100	1375	1649	2199	2474	2749	3436
7	1508	1885	2262	3016	3393	3770	4713
8	1979	2474	2969	3958	4453	4948	6185
10	3110	3888	4665	6220	6998	7775	9719
12	4464	5581	6697	8929	10045	11161	13951
14	6098	7623	9147	12196	13721	15245	19056
16	7917	9896	11875	15834	17813	19792	24740
18	10053	12567	15080	20106	22620	25133	31416
20	12441	15551	18661	24882	27992	31102	38878
22	14922	18653	22384	29845	33575	37306	46633
24	17711	22139	26566	35422	39849	44277	55346

The KG Series is a robust air cylinder line that is designed to perform in the most demanding cylinder applications. One of the most popular applications for the KG Series is to provide a versatile method to automate Knife Gate Valves. The KG Series cylinder is designed to withstand the harshest Knife Gate industries and applications, i.e., water and waste-water treatment plants, power industry, pulp and paper mills, and the mining industry.

As more processes and systems move to automated control and monitoring, the need for actuated Knife Gate and Slide Gate Valves becomes apparent. Actuation provides remote, out-of-sight operation, faster cycling, lower operating costs, better process management and safer operation. The KG Series air actuators from Numatics provide a versatile and cost effective method of automation.

Furthermore, the KG Series cylinder line was designed to perform in general industry Knife Gate applications as well. For example, chemical processing, brewing, cement, tanneries, sugar mills, and chemical plants to name a few.

Valve Accessories, Options, and Mounting Capabilities

In addition to tailoring actuator mounting to specific valve configurations, Numatics also offers a range of directional control valves for valve automation.

Cylinder Options

- FKM High Temperature Seals
- Low Temperature Seals
- Composite and Aluminum Tubing
- Special Exterior Finishing
- Stainless Steel Piston Rod
- Stainless Steel Tie-Rods

Automation Accessories

- Control Valves
 - Manual
 - Solenoid

Various Valve Types

- Knife Gate
- Wedge Gate
- Globe
- Pinch
- Sluice



NUMATICS®

World Class Supplier of Pneumatic Components



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