

K-MAX CONTROL VALVE

The Eccentric Rotary Control Valve has *EVOLVED!*

The **K-MAX** Eccentric Plug Rotary Control Valve was originally introduced to the worldwide valve market by the K&M (Kieley & Mueller) Control Valve Company. The **K-MAX** is a classic case of taking a good idea and making it even better. It's design still incorporates the cam action, low friction plug operation that provides tight shutoff over long service life in a wide variety of flow control applications.

The **K-MAX** Rotary Control Valve has improved on the performance and durability of traditional rotary control valves with the addition of these features:



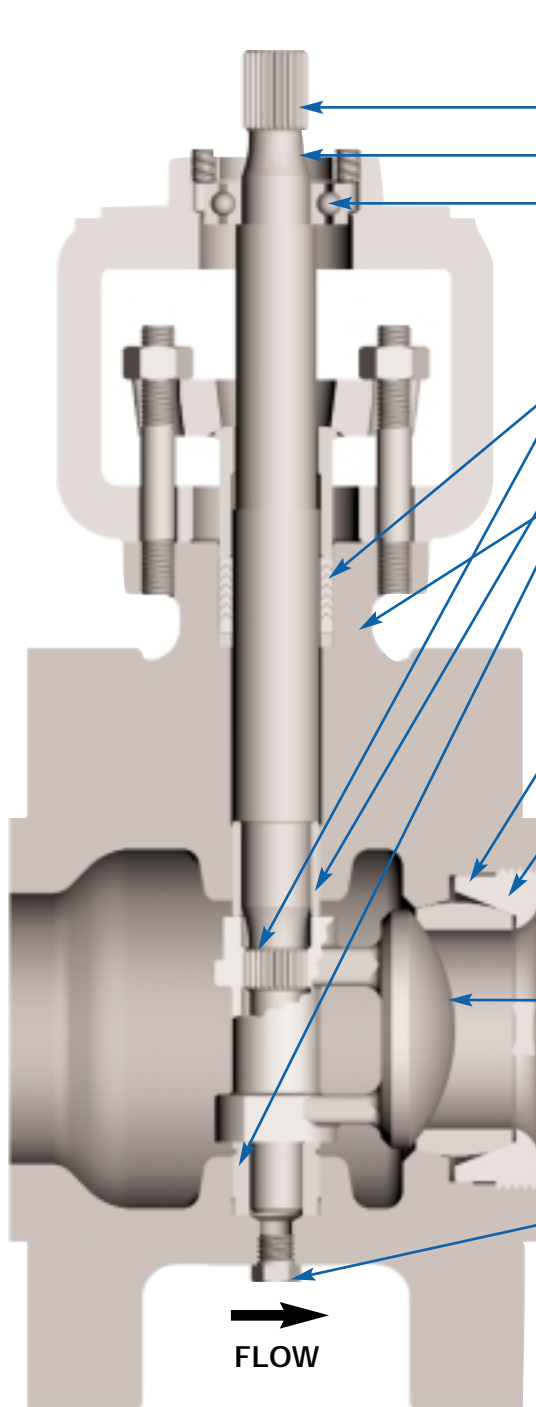
The **K-MAX** Rotary Control Valve is engineered to handle nearly all industrial process control requirements including:

- High & Low Pressure Steam
- Clean, Dirty & Corrosive Liquids
- Clean, Dirty & Corrosive Gas
- Erosive & Abrasive Slurries

- Self-aligning Orbital Seat
- Enlarged Stem Diameter
- Shaft Access Plug
- Greater Trim Size Selection
- Steel Actuator with SS Bolting
- Expanded Material Options

K-MAX CONTROL VALVE

...with a Well-rounded Complement of Features



Maximum Service Life assured by these standard features:

- Dual Spline Driven Shaft
- Large Diameter 17-4PH Stem
- Triple Bearing Shaft Support

Long Packing Life and Minimized Emissions Hazard provided by rotary valve operation.

Fewer Possible Leak Paths due to one piece, integral bonnet design.

Easy Trim Size Changes modify valve C_v by simply replacing seat ring.

Customized Trim Options include SS, Stellite, Hastelloy, Titanium and other alloys for a variety of applications such as:

- Slurry Service
- Corrosive Chemicals
- Erosive Conditions
- Superheated Steam

Tight Shutoff over Extended Service Life provided by low friction, cam action offset plug mated with self-aligning orbital seat.

Easy Maintenance and Clean-out assured by standard shaft access plug.

Variety of End Connections

- Wafer Style
(150, 300, 600 ANSI Class)
- Separable Flanged
(150, 300 ANSI Class)
- Integral Flanged
(150, 300, 600 ANSI Class)

FLOW TO CLOSE

K-MAX TECHNICAL SPECIFICATIONS

Valve Style:

High performance eccentric rotary plug control valve.

Valve Size:

Sizes 1" through 8" (25mm-200mm) with full or reduced port trim.

End Connection:

Flangeless ANSI class 150, 300 or 600, sizes 1" - 8".
 Separable flanged ANSI class 150 or 300, sizes 1" - 6".
 Integral flanged ANSI class 150, 300 or 600, sizes 1" - 8".

Note: Serrated raised face flanges are standard. Smooth raised face flanges, DIN and JIS flanges, available on application.

Body Material:

Carbon steel, ASTM A216 grade WCB
 316 stainless steel, ASTM A351 grade CF8M
 Alloy 20 Cb3, ASTM A351 grade CN7M
 Hastelloy C4C, ASTM A494 grade CW2M*
 Titanium C3, ASTM B367 grade C-3

PRESSURE/TEMPERATURE ANSI RATINGS

Packing:

Packing Type	Temperature Range
PTFE V-Ring	-40°F through +450°F
Laminated Graphite	-300°F through +800°F
PTFE V-Ring with Viton Bearing Seals	-40°F through +450°F

Trim Material:

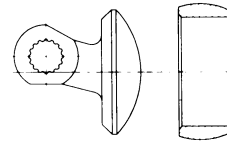
See K-Max valve material specifications.

Note: Other trim combinations available on application.

Alloy 6 Trim Options:

No Alloy 6

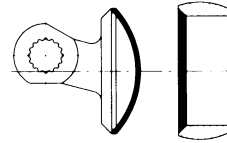
No Alloy 6 on seat ring or plug.



Partial Alloy 6

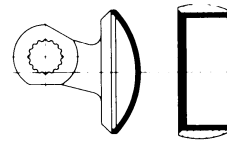
(Reduced Cv's only)

Alloy 6 on seat ring and plug seating surfaces.

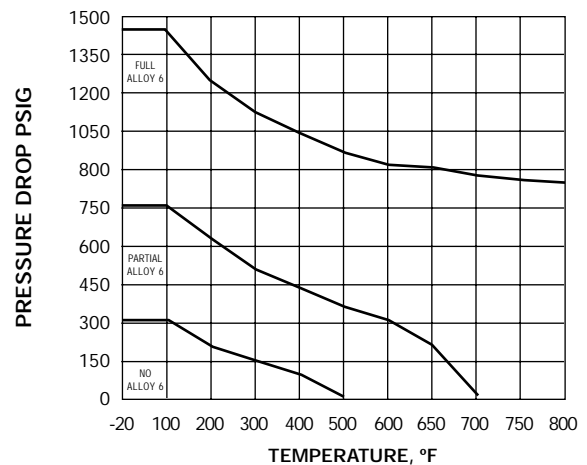


Full Alloy 6

Alloy 6 on seat ring bore in addition to seat ring and plug seating surfaces.



ALLOY 6 RECOMMENDED USAGE
(ANSI CLASS 600 RATING)



K-MAX TECHNICAL SPECIFICATIONS

Seat Seal

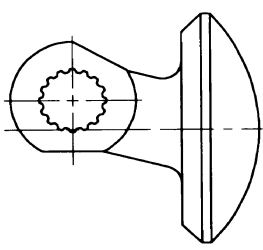
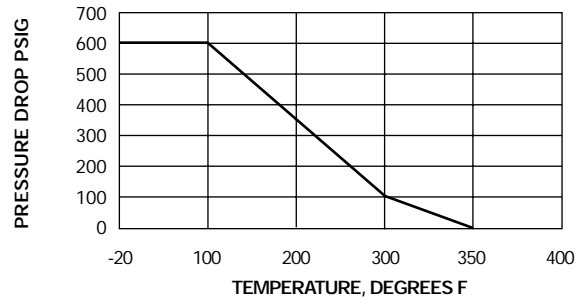
- Metal to metal seat (standard) - ANSI class IV
- Metal to metal seat (optional) - ANSI class V
- PTFE soft seat - ANSI CLASS VI

Trim Size

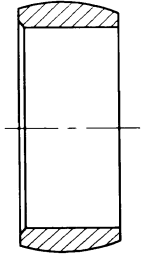
- Full size trim - 100% capacity
- .6 reduced trim - 60% of full capacity
- .4 reduced trim - 40% of full capacity
- .2 reduced trim - 20% of full capacity

Note: Other trim sizes available on application.

PTFE SOFT SEAT



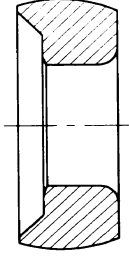
COMMON PLUG FOR ALL TRIM SIZES



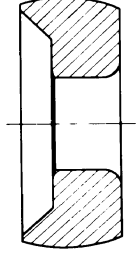
FULL PORT SEAT (100% CAPACITY)



.6 REDUCED PORT SEAT (60% CAPACITY)



.4 REDUCED PORT SEAT (40% CAPACITY)

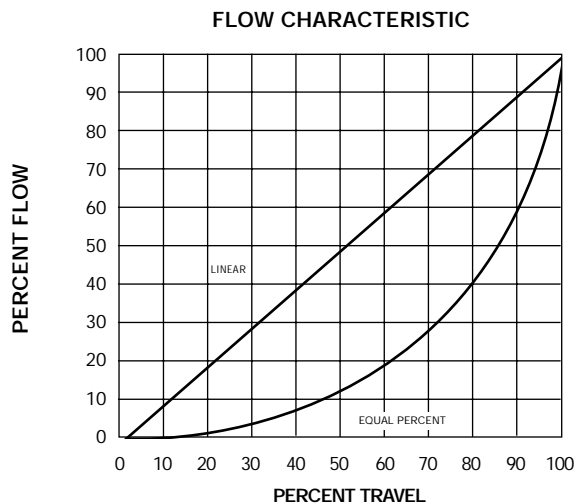


.2 REDUCED PORT SEAT (20% CAPACITY)

Options

- Fluoroelastomer bearing seal for slurry service
- Kalrez bearing seal for slurry service
- 316 stainless steel separable flanges and retaining rings
- 316 stainless steel valve to actuator bolting
- NACE trim - conforms to NACE MR1075

The inherent flow characteristic of the K-Max valve is linear. When required, the valve travel can be modified with a positioner cam adjustment to provide equal percent flow characteristic.



Recovery Coefficients F_L (all fluids) and Cavitation Index K_C (liquids)

Valve Opening %	Flow to open		Flow to close	
	F_L	K_C	F_L	K_C
100	.88	.60	.75	.56
90	.89	.61	.74	.49
80	.89	.62	.73	.49
70	.90	.63	.73	.49
60	.89	.62	.75	.50
50	.89	.61	.78	.51
40	.88	.61	.80	.52
30	.88	.60	.82	.53
20	.87	.59	.84	.55
10	.87	.59	.85	.55

Note: For calculating the pressure drop at which cavitation will begin, ΔP_C multiply K_C by the quantity $P_1 - P_V$, where P_1 = upstream pressure (PSIA), and P_V = vapor pressure (PSIA). $\Delta P_C = K_C (P_1 - P_V)$.

K-MAX SPECIFICATIONS

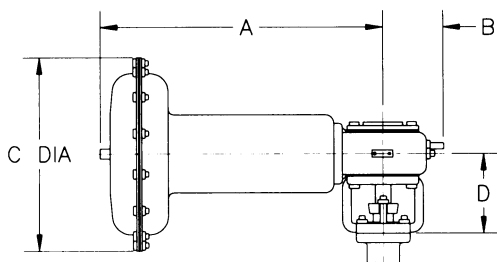
Trim Material Code	Body Material	Plug Material	Seat Ring Material		Shaft Material	Bearing Material
			size 2" - 8" full trim valves	size 1" - 1.5" full trim valves and size 1" - 8" reduced trim valves		
S	Carbon steel ASTM A216 WCB	316 stainless steel ASTM A351 CF8M w/hardened electroless nickel coating	316 stainless steel ASTM A351 CF8M Hardness Brinell 150	316 stainless steel ASTM A479 316 Hardness Brinell 150	17-4 PH stainless steel ASTM A564 S17400 condition H900 Hardness Rockwell C 40	440C stainless steel ASTM A276 S44004 Hardness Rockwell C 58
	316 stainless steel ASTM A351 CF8M	316 stainless steel ASTM A351 CF8M w/hardened electroless nickel coating	316 Stainless Steel ASTM A351 CF8M Hardness Brinell 150	316 stainless steel ASTM A479 316 Hardness Brinell 150	17-4 PH stainless steel ASTM A564 S17400 condition H900 Hardness Rockwell C 40	317 stainless steel ASTM A276 317 w/carbon graphite liner
P or F	Carbon steel ASTM A216 WCB	316 stainless steel ASTM A351 CF8M w/Alloy 6 hard overlay AWS A5.13 RCoCr - A Hardness Rockwell C 38 - 47	Alloy 6	316 stainless steel ASTM A479 316 Alloy 6 Hardness Rockwell C 38 - 47	17-4 PH stainless steel ASTM A564 S17400 condition H900 Hardness Rockwell C 40	440C stainless steel ASTM A276 S44004 Hardness Rockwell C 58
	316 stainless steel ASTM A315 CF8M	316 stainless steel ASTM A351 CF8M w/Alloy 6 hard overlay AWS A5.13 RCoCr - A Hardness Rockwell C 38 - 47	Alloy 6	316 stainless steel ASTM A479 316 with Alloy 6 Hardness Rockwell C 38 - 47	17-4 PH stainless steel ASTM A564 S17400 condition H900 Hardness Rockwell C 40	Alloy 6 AMS 5387B Hardness Rockwell C 37 - 41
A	Alloy 20 ASTM A315 CN7M	Alloy 20 ASTM A351 CN7M Hardness Brinell 130	Alloy 20 ASTM A351 CN7M Hardness Brinell 130	Alloy 20 Cb3 ASTM B473 N08020 Hardness Brinell 183	Titanium 5 ASTM B348 Grade 5 Hardness Rockwell C 36	Hastelloy C ASTM B574 N10276 Hardness Brinell 184
H	Hastelloy C4C ASTM A494 CW2M	Hastelloy C ASTM A494 CW2M Hardness Brinell 200	Hastelloy C ASTM A494 CW2M Hardness Brinell 200	Hastelloy C ASTM B574 N10276 Hardness Brinell 184	Titanium 5 ASTM B348 Grade 5 Hardness Rockwell C 36	Hastelloy C ASTM B574 N10276 Hardness Brinell 184
T	Titanium C3 ASTM B367 C - 3	Titanium C3 ASTM B367 C - 3 Hardness Brinell 235 maximum	Titanium C3 ASTM B367 C - 3 Hardness Brinell 235 maximum	Titanium 5 ASTM B348 Grade 5 Hardness Rockwell C 36	Titanium 5 ASTM B348 Grade 5 Hardness Rockwell C 36	Ceramic Partially stabilized zirconium Grade MS

Note: Seat ring retainer material is the same as the base plug material.

Rotary Valve Specification Form

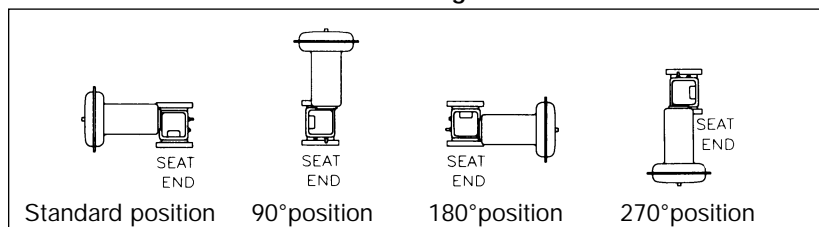
K-MAX ACTUATOR DIMENSIONS

ACTUATOR DIMENSIONS inches (mm)
AND WEIGHTS pounds (kg)

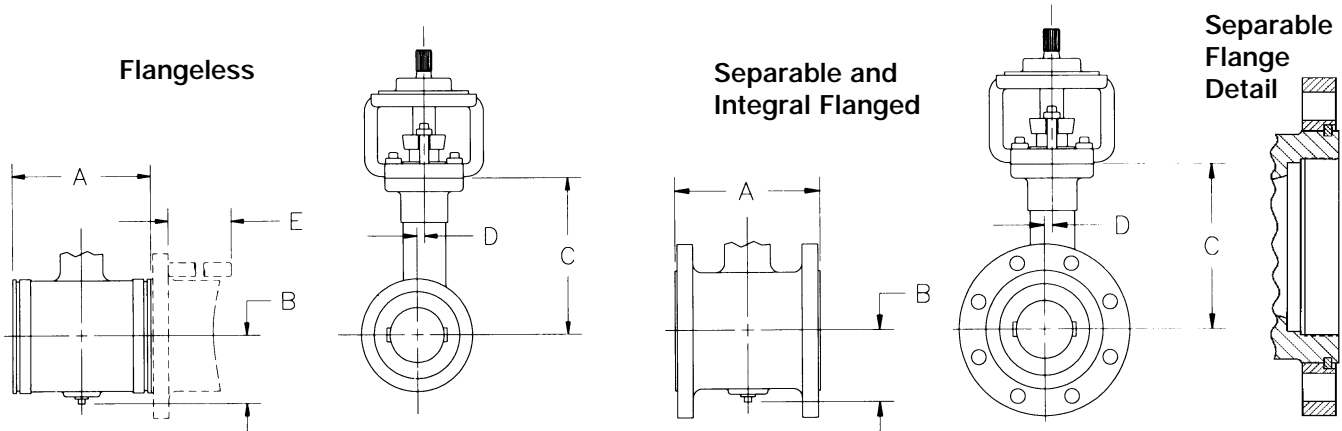


Actuator Size	Dimensions				Weights
	A	B	C	D	
40	11.25 (286)	3.50 (88.9)	10.12 (257)	6.50 (165)	29 (13)
55	18.50 (470)	5.25 (133)	12.00 (305)	6.56 (167)	80 (36)
85	19.88 (505)	5.25 (133)	14.75 (375)	7.44 (189)	110 (50)

Actuator Mounting Positions



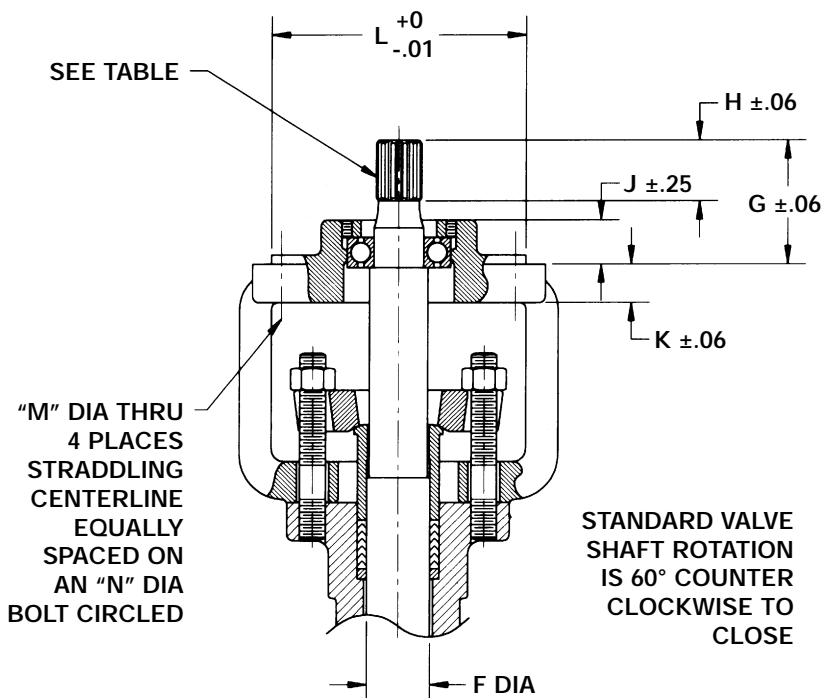
K-MAX Body Dimensions



BODY DIMENSIONS inches (mm) AND WEIGHTS pounds (kg)

Size	DIMENSIONS													WEIGHTS			
	A	B	C	D	E	F	G	H	J	K	L	M	N	Flgless	FL150	FL300	FL600
1 (25)	4 (102)	2 ¹ / ₁₆ (62)	4 ⁷ / ₁₆ (113)	5 ¹ / ₂ (4.06)	7 ⁵ / ₁₆ (194)	1 (25.4)	1 ¹ / ₂ (38.1)	1 ¹ / ₁₆ (26.9)	—	1 ⁵ / ₁₆ (23.9)	—	7 ¹ / ₁₆ (11.2)	3 ³ / ₄ (82.6)	9 (4.1)	12 (5.4)	14 (6.4)	17 (7.7)
1 ¹ / ₂ (40)	4 ¹ / ₂ (114)	2 ³ / ₄ (69.8)	5 ¹ / ₈ (130)	7 ¹ / ₄ (6.35)	8 ³ / ₄ (222)	1 (25.4)	1 ¹ / ₂ (38.1)	1 ¹ / ₁₆ (26.9)	—	1 ⁵ / ₁₆ (23.9)	—	7 ¹ / ₁₆ (11.2)	3 ³ / ₄ (82.6)	13 (5.9)	18 (8.2)	23 (10)	27 (12)
2 (50)	4 ⁷ / ₈ (124)	2 ¹³ / ₁₆ (71.4)	4 ⁷ / ₈ (124)	7 ¹ / ₂ (5.59)	9 ¹ / ₈ (232)	1 (25.4)	1 ¹ / ₂ (38.1)	1 ¹ / ₁₆ (26.9)	—	1 ⁵ / ₁₆ (23.9)	—	7 ¹ / ₁₆ (11.2)	3 ³ / ₄ (82.6)	14 (6.4)	21 (9.5)	25 (11)	30 (14)
3 (80)	6 ¹ / ₂ (165)	3 ³ / ₁₆ (90.4)	5 ³ / ₄ (146)	7 ¹ / ₈ (7.87)	11 ¹ / ₂ (292)	1 ¹ / ₄ (31.8)	2 ¹ / ₁₆ (62)	1 ³ / ₁₆ (30.2)	7 ¹ / ₈ (22.4)	3 ¹ / ₄ (19)	5 (126.9)	7 ¹ / ₁₆ (14.2)	6 ¹ / ₂ (165)	31 (14)	43 (20)	52 (24)	58 (26)
4 (100)	7 ⁵ / ₈ (194)	4 (102)	7 (178)	7 ¹ / ₁₆ (11.2)	13 ³ / ₈ (340)	1 ¹ / ₄ (31.8)	2 ¹ / ₁₆ (62)	1 ³ / ₁₆ (30.2)	7 ¹ / ₈ (22.4)	3 ¹ / ₄ (19)	5 (126.9)	7 ¹ / ₁₆ (14.2)	6 ¹ / ₂ (165)	42 (19)	60 (27)	76 (34)	100 (45)
6 (150)	9 (229)	5 ¹ / ₁₆ (129)	9 ¹ / ₁₆ (244)	1 ¹ / ₁₆ (16.8)	15 ³ / ₄ (400)	1 ¹ / ₄ (44.4)	2 ⁵ / ₁₆ (58.7)	1 ⁵ / ₁₆ (23.9)	1 ¹ / ₂ (11.2)	1 ¹ / ₁₆ (16.8)	5 (126.9)	7 ¹ / ₁₆ (14.2)	6 ¹ / ₂ (165)	97 (44)	119 (54)	152 (69)	207 (94)
8 (200)	9 ⁹ / ₁₆ (243)	6 (152)	11 (279)	7 ¹ / ₈ (22.4)	17 ³ / ₄ (438)	1 ¹ / ₄ (44.4)	2 ⁵ / ₁₆ (58.7)	1 ⁵ / ₁₆ (23.9)	1 ¹ / ₂ (11.2)	1 ¹ / ₁₆ (16.8)	5 (126.9)	7 ¹ / ₁₆ (14.2)	6 ¹ / ₂ (165)	144 (65)	180 (82)	222 (101)	304 (138)

- Note:** 1. All dimensions are subject to change without notice. Request certified drawings for use in preparing piping layouts.
 2. Flange dimensions conform to ANSI B16.5.
 3. Face-to-face dimensions conform to ISA S75.04.
 4. Weights shown do not include crating.



External Involute Spline Data Table (Inches)

Feature	Valve Size		
	1, 1.5, 2	3, 4	6, 8
Fillet Root Side Fit			
Number of teeth	28	28	52
Pitch	40/80	32/64	40/80
Pressure angle	30°	30°	30°
Base diameter	.6062	.7578	1.1258
Pitch diameter	.7	.875	1.3
Major diameter	.725/.722	.906/.903	1.325/1.322
Form diameter	.671	.839	1.271
Minor diameter	.638	.8	1.236
Circular Tooth Thickness			
Max. effective	.0390	.0491	.0393
Min. actual	.0366	.0464	.0361

K-MAX Cv TABLES

Flow coefficients (Cv), Linear Characteristic

Flow to Open		Percent Travel (60°) Rotation									
Valve Size	Trim Size	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1	Full	1.3	2.8	4.2	5.9	7.8	9.1	11	12	13	14
	.6 reduced	.76	1.6	2.5	3.5	4.8	5.5	6.4	7.4	7.9	8.4
	.4 reduced	.50	1.1	1.7	2.4	3.2	3.7	4.3	4.9	5.3	5.6
	.2 reduced	.25	.53	.84	1.2	1.6	1.8	2.1	2.5	2.6	2.8
1.5	Full	2.9	6.1	9.6	13	18	21	24	28	30	32
	.6 reduced	2.7	5.7	9.0	11	12	13	15	17	18	20
	.4 reduced	1.2	2.5	3.9	5.5	7.4	8.6	9.8	11	12	13
	.2 reduced	.59	1.2	2.0	2.8	3.7	4.3	4.9	5.7	6.1	6.5
2	Full	4.6	9.7	15	21	29	34	39	45	48	51
	.6 reduced	2.7	5.7	9.0	13	17	20	23	26	28	30
	.4 reduced	1.8	3.8	6.0	8.4	11	13	15	18	19	20
	.2 reduced	.90	1.9	3.0	4.2	5.7	6.6	7.6	8.8	9.4	10
3	Full	14	29	45	63	86	99	114	132	141	150
	.6 reduced	8.1	17	27	38	51	59	68	79	85	90
	.4 reduced	5.4	11	18	25	34	40	46	53	56	60
	.2 reduced	2.7	5.7	9.0	13	17	20	23	26	28	30
4	Full	22	47	74	104	141	163	187	217	232	247
	.6 reduced	13	28	44	62	84	97	112	129	138	147
	.4 reduced	8.8	19	29	41	56	65	75	86	92	98
	.2 reduced	4.4	9.3	15	21	28	32	37	43	46	49
6	Full	47	99	156	218	296	343	395	458	489	520
	.6 reduced	28	59	89	125	170	206	225	275	294	312
	.4 reduced	19	40	59	83	113	137	150	183	196	208
	.2 reduced	9.4	20	30	42	57	69	75	92	98	104
8	Full	78	165	261	365	496	574	661	766	818	870
	.6 reduced	47	99	156	219	297	345	396	459	491	522
	.4 reduced	31	66	104	146	198	230	264	306	327	348
	.2 reduced	16	33	52	73	99	115	132	153	164	174

Flow to Close		Percent Travel (60°) Rotation									
Valve Size	Trim Size	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1	Full	1.4	2.9	4.5	6.3	8.6	9.9	11	13	14	15
	.6 reduced	.81	1.7	2.7	3.8	5.1	5.9	6.8	7.9	8.5	9.0
	.4 reduced	.54	1.1	1.8	2.5	3.4	4.0	4.6	5.3	5.6	6.0
	.2 reduced	.27	.57	.90	1.3	1.7	2.0	2.3	2.6	2.8	3.0
1.5	Full	3.1	6.5	10	14	19	22	26	30	32	34
	.6 reduced	1.9	4.0	6.3	8.8	12	14	16	19	20	21
	.4 reduced	1.3	2.7	4.2	5.9	8.0	9.2	11	12	13	14
	.2 reduced	.63	1.3	2.1	2.9	4.0	4.6	5.3	6.2	6.6	7.0
2	Full	5.0	11	17	23	31	36	42	48	52	55
	.6 reduced	2.7	5.7	9.0	13	17	20	24	29	30	33
	.4 reduced	1.8	3.8	6.0	8.4	11	13	16	19	20	22
	.2 reduced	.90	1.9	3.0	4.2	5.7	6.5	8.0	9.0	10	11
3	Full	14	30	47	65	88	102	118	136	146	155
	.6 reduced	8.4	18	28	39	53	61	71	81	87	93
	.4 reduced	5.6	12	19	26	35	41	47	54	58	62
	.2 reduced	2.8	5.9	9.3	13	15	21	24	27	29	31
4	Full	24	51	80	112	152	176	202	234	250	266
	.6 reduced	14	30	48	67	90	95	120	140	149	159
	.4 reduced	9.5	20	32	45	60	63	80	93	99	106
	.2 reduced	4.8	10	16	22	30	32	40	47	50	53
6	Full	43	91	144	202	273	316	364	422	451	480
	.6 reduced	26	55	86	120	164	189	219	254	270	288
	.4 reduced	17	37	58	80	109	126	146	169	180	192
	.2 reduced	8.6	18	29	40	55	63	73	85	90	96
8	Full	72	152	240	336	456	528	608	704	752	800
	.6 reduced	43	90	144	201	273	317	365	422	450	480
	.4 reduced	29	60	96	134	182	211	243	281	300	320
	.2 reduced	14	30	48	67	91	106	122	141	150	160



K-MAX ACTUATOR SIZING

Full Port, Air to Open Flow-to-Open & Flow-to-Close

Valve Size (Inches)	Actuator Code	Maximum Shutoff Pressure Differential		
		Air Supply PSIG		
		20	35	60
1	DR-40-R-60	-	-	1440
	DR-40-R-35	-	1440	-
	DR-40-R-20	1440	-	-
1.5	DR-40-R-60	-	-	1440
	DR-40-R-35	-	1440	-
	DR-40-R-20	500	-	-
2	DR-40-R-60	-	-	1440
	DR-40-R-35	-	800	-
	DR-40-R-20	100	-	-
3	DR-55-R-60*	-	-	1440
	DR-55-R-35	-	775	-
	DR-55-R-20	250	-	-
	DR-85-R-35*	-	1440	-
	DR-85-R-20	600	-	-
4	DR-55-R-60*	-	-	540
	DR-55-R-35	-	100	-
	DR-55-R-20	25	-	-
	DR-85-R-35*	-	400	-
	DR-85-R-20	100	-	-
6**	DR-85-R-60	-	-	200
	DR-85-R-35	-	25	-
8**	DR-85-R-60	-	-	25

Full Port, Air to Close Flow-to-Open & Flow-to-Close

Valve Size (Inches)	Actuator Code	Maximum Shutoff Pressure Differential		
		Air Supply PSIG		
		20	35	60
1	DR-40-D-60	-	-	1440
	DR-40-D-35	-	1440	-
	DR-40-D-20	1200	-	-
1.5	DR-40-D-60	-	-	1440
	DR-40-D-35	-	1440	-
	DR-40-D-20	75	-	-
2	DR-40-D-60	-	-	1440
	DR-40-D-35	-	800	-
	DR-40-D-20	20	-	-
3	DR-55-D-60*	-	-	1440
	DR-55-D-35	-	560	-
	DR-55-D-20	150	-	-
	DR-85-D-35*	-	1440	-
	DR-85-D-20	600	-	-
4	DR-55-D-60*	-	-	425
	DR-55-D-35	-	100	-
	DR-55-D-20	20	-	-
	DR-85-D-35*	-	400	-
	DR-85-D-20	100	-	-
6**	DR-85-D-60	-	-	200
	DR-85-D-35	-	25	-
8**	DR-85-D-60	-	-	25

.6, .4 & Reduced Port, Air to Open Flow-to-Open & Flow-to-Close

1 & 1.5	DR-40-R-60	-	-	1440
	DR-40-R-35	-	1440	-
	DR-40-R-20	1440	-	-
2	DR-40-R-60	-	-	1440
	DR-40-R-35	-	1440	-
	DR-40-R-20	860	-	-
3	DR-55-R-60*	-	-	1440
	DR-55-R-35	-	1440	-
	DR-55-R-20	400	-	-
	DR-85-R-20	960	-	-
4	DR-55-R-60*	-	-	1440
	DR-55-R-35	-	200	-
	DR-55-R-20	40	-	-
	DR-85-R-35*	-	640	-
	DR-85-R-20	160	-	-
6**	DR-85-R-60	-	-	690
	DR-85-R-35	-	120	-
8**	DR-85-R-60	-	-	295

.6, .4 & Reduced Port, Air to Close Flow-to-Open & Flow-to-Close

1 & 1.5	DR-40-D-60	-	-	1440
	DR-40-D-35	-	1440	-
	DR-40-D-20	1440	-	-
2	DR-40-D-60	-	-	1440
	DR-40-D-35	-	1440	-
	DR-40-D-20	860	-	-
3	DR-55-D-60*	-	-	1440
	DR-55-D-35	-	1440	-
	DR-55-D-20	240	-	-
	DR-85-D-20	960	-	-
4	DR-55-D-60*	-	-	1440
	DR-55-D-35	-	200	-
	DR-55-D-20	30	-	-
	DR-85-D-35*	-	640	-
	DR-85-R-20	160	-	-
6**	DR-85-D-60	-	-	690
	DR-85-D-35	-	120	-
8**	DR-85-D-60	-	-	295

* Not for use with trim material S3.

** For higher differential pressures, consult factory.



K-MAX TORQUE SPECIFICATIONS

Torque Requirements to achieve ANSI Class IV, V OR VI shut off
(Foot Pounds)

Valve Size	Shut off Pressure Drop (PSIG)													
	30	50	100	200	300	400	500	600	700	800	900	1000	1200	1440
1	10.8	11.0	11.5	12.2	12.9	13.8	14.6	15.4	16.2	16.9	17.8	18.6	20.2	21.8
1.5	19.5	19.9	21.2	23.4	25.8	28.0	30.3	32.7	34.9	37.3	39.6	42.4	46.5	51.1
2	28.7	29.5	31.4	35.3	39.3	43.3	47.3	51.3	55.2	59.2	63.1	67.4	74.9	78.8
3	61.3	63.7	69.7	81.7	93.6	106	117	129	142	153	165	177	193	210
4	110	116	130	160	189	218	248	277	306	336	365	394	-	-
6	229	252	299	393	487	582	676	770	-	-	-	-	-	-
8	397	442	552	773	994	-	-	-	-	-	-	-	-	-

Maximum Allowable Differential Pressure (PSIG)
based on Torsional Shear Strength of Shaft

Valve Size	Shaft Material			
	17-4 SST	Titanium	317 SST	Hastelloy C
1	1440	1440	1440	1440
1.5	1440	1440	1440	1440
2	1440	1440	700	1440
3	1440	1440	350	800
4	1000	1000	30	175
8	1000	1000	200	400
8	550	550	30	100

Note: Hastelloy C shaft material on application

Maximum Allowable Shaft Torques
(Foot Pounds)

Valve Size	Shaft Material			
	17-4 SST	Titanium	317 SST	Hastelloy C
1	210	210	55	80
1.5	210	210	55	80
2	210	210	55	80
3	390	390	100	150
4	390	390	100	150
8	1550	1550	405	550
8	1550	1550	405	550

Note: Hastelloy C shaft material on application

Diaphragm Actuator Output Torques

Actuator Size	Actuator Action	Actuator Spring	Output Torque(Ft-lbs)
40	Air to Open	20 psi	31
	Air to Close	20 psi	19
	Air to Open	35 psi	58
	Air to Close	35 psi	58
	Air to Open	60 psi	95
	Air to Close	60 psi	102
55	Air to Open	20 psi	88
	Air to Close	20 psi	76
	Air to Open	35 psi	152
	Air to Close	35 psi	124
	Air to Open	60 psi	263
	Air to Close	60 psi	224

Actuator Size	Actuator Action	Actuator Spring	Output Torque(Ft-lbs)
85	Air to Open	20 psi	130
	Air to Close	20 psi	130
	Air to Open	35 psi	220
	Air to Close	35 psi	221
	Air to Open	60 psi	389
	Air to Close	60 psi	389



K-MAX ORDERING CODE

Class	Material	Valve Size	End Conn.	Valve Rating	Trim Material	Trim Factor	Shutoff Class	Packing	Flow Direction	Actuator	Spring	H.O.D.	Actuator Orientation	
K	R	C	2	W	1	S	1	4	T	C	B	6	N	2
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Class - Position 1 & 2 KR
Material - Position 3 C = Steel WCB S = 316 SS A = Alloy 20 H = Hast-C* T = Titanium
Valve Size - Position 4 0 = 1" 1 = 1½" 2 = 2" 3 = 3" 4 = 4" 6 = 6" 8 = 8"
End Connection - Position 5 W = Wafer L = CS separable flanges** S = SS separable flange** F = Integral flanges
Valve Rating - Position 6 1 = ANSI 150 2 = ANSI 300 3 = ANSI 600
Trim Material - Position 7 S = Std 316 SS P = Partial Stellite F = Full Stellite A = Alloy 20*** H = Hast C*** T = Titanium R = 316/TFE****

* Consult factory.

** Separable flanges available in 1" - 6", ANSI 150-300 only.

*** Optional in 316 & CS valves.

**** Use code 6 for shutoff classification. TFE seats 1" - 2" Full Cv only.

Trim Factor - Position 8 1 = Full 6 = 0.6 4 = 0.4 2 = 0.2
Shutoff - Position 9 Classification (per FCI 70.2) 4 = Class IV, Standard 5 = Class V, Optional 6 = Class VI, soft seat only
Packing - Position 10 G = Laminated Graphite T = Teflon-Chevron V = Teflon-Chevron*****
Flow Direction - Position 11 O = Flow to Open C = Flow to Close
Actuator - Position 12 A = DR-40-D B = DR-40-R C = DR55-D D = DR-55-R E = DR-85-D F = DR-85-R N = None/bare stem*****
Spring - Position 13 2 = 20 3 = 35 6 = 60 (Standard)
H.O.D. - Position 14 N = No H = Handwheel J = HandJack
Actuator Orientation - Position 15 1 = Standard 2 = 90° 3 = 180° 4 = 270°

*****With Viton O-ring Bearing Seals.

*****Includes Yoke Kit.

Consult Factory for configurations not listed above
Add accessories and other options as separate line items.