

AVCO

Alloy Valves and Control

KNIFEGATE VALVES SERIES 22



Size

2" - 36"

End Connections

150# Lug

Port Types

Standard
V-Port

Body & Trim Materials

304 Stainless Steel
316 Stainless Steel
Cast Iron
Hastelloy C

Seat Materials

NBR
EPDM
FKM-FPM

Service Applications

Chemical
Food & Beverage
Mining
Power Plants
Pulp & Paper
Waste Water

Applicable Standards

MSS-SP-81
TAPPI TIS 405-8
ASME B16.5
ASME B16.47

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Series 22 Features

Body

- Bi-directional design
- One piece integrally cast stainless steel body with reinforced ribs in larger diameters for extra body strength
- Port design according to MSS-SP-81 and Tappi TIS 405-8
- Internal design avoids any build up of solids that could prevent valve from closing

Gate

- Standard AISI 316 or AISI 304 stainless steel gate
- Gates polished and lapped for a greater seal between the gate and both the packing and seat

Seat (resilient)

- Patented. Totally new design. The resilient seat is an elastomer sleeve, available in different materials
- This sleeve which supports, protects and also guides the gate is slotted in the top half to allow gate travel, and guarantees full tightness with low friction
- The sleeve is held by means of two seat rings which support it and also guide the gate

Packing

- Braided PTFE impregnated fibre and EPDM o-ring as standard for improved stem sealing
- Long-life braided packing is available in a wide range of materials

Stem

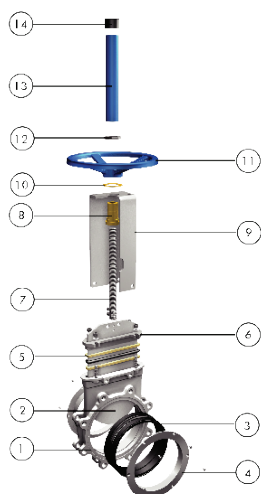
- Long life corrosion resistant stainless steel stem as standard
- Hand wheel assemblies include a protective cover for the stem to prevent against the ingress of dust

Actuators

- AVCO supplies actuators which are interchangeable and have standard mounting kits for easy site installation

Yoke and Support Plates

- Made from epoxy coated carbon steel with stainless steel available upon request
- Compact design makes it extremely robust even in severe conditions



Part	Description
1 Body	CF8M /CF8
2 Gate	AISI 316 / AISI 304
3 Sleeve	EPDM
4 Seat ring	CF8M /CF8
5 Packing	PTFE Impreg. Synth. Fibre + EPDM O-Ring
6 Gland follower	CF8M /CF8
7 Stem	Stainless Steel
8 Stem nut	Brass
9 Yoke	AISI 304 / Epoxy-coated Carbon Steel
10 Thrust washer	Brass
11 Handwheel	Ductile iron
12 Nut	Zinc Plated Carbon Steel
13 Stem protector	Epoxy-coated Carbon Steel
14 Cap	Plastic

Please contact AVCO for all size and material combinations not shown in this literature

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OTHER OPTIONS

Other materials of construction

Ductile iron, carbon steel, special stainless steels (Duplex, ...), special alloys (254SMO, Hastelloys, ...), etc.

Fabricated valves

AVCO designs, produces and delivers special fabricated valves for special process conditions (big sizes and/or high pressures)

Surface treatments

Valve components can be protected or coated for a longer life expectancy, depending on the application of the valves and the valve service conditions. At AVCO we can offer alternative treatments and coatings for the different valve components to improve their properties against abrasion (Stellite, hard-chroming, carbides, ...), against corrosion and against adherence

Bonnet (Fig. 1)

Assures tight sealing to atmosphere. Reduces packing maintenance



Fig.1



Fig.2



Fig.3

V-Port

60 degree and pentagonal port design. Selection depends on the desired fluid control type

Locking device

The valve can be designed with a locking pin system to block the gate in emergency situations or for maintenance operations

Mechanical stops

Mechanical stops can be added to limit stem travel at a certain stroke position

Actuator manual override (Fig. 2)

Pneumatic and electric actuators can be equipped with manual override handwheels to manually operate the actuators in emergency situations or for maintenance operations

Stem extensions and floor stand (Fig. 3)

Extensions for valve operation when valves are installed in positions below operation level are available, including wall brackets and different types of pedestals for actuators

Accessories for pneumatic valve automation

Limit and proximity switches, solenoid valves, positioners, flow regulations, air filter units, silencers, junction boxes

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SEAT/SEAL TYPES

Material	Max.T (°F)	Max.T (°C)	Applications
EPDM (E)	248	120	Acids and non mineral oils
NBR (N)	248	120	Resistance to petroleum products
FKM-FPM (V)	392	200	Chemical service / High temp.

More details and other materials under request. All are reinforced with a metal core

PACKING TYPES

Material	Max.T (°F)	Max.T (°C)	pH
PTFE impregn. synth. fibre (ST)	482	250	2-13

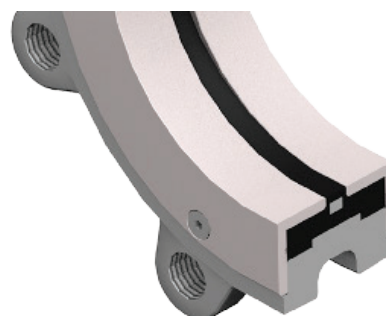
SEAT CONFIGURATIONS/DESIGNS

Type

Features

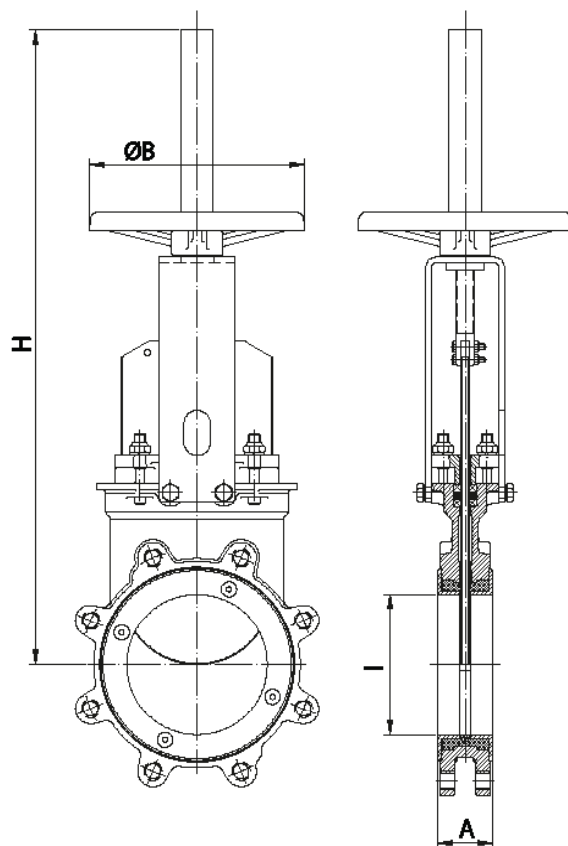
Resilient

The new seat (patented) is a slotted sleeve on its top half and includes a metal core in the bottom half which provides a great resistance to demanding working conditions and pressures. The seat is held by means of two stainless steel rings. This design provides watertightness in both directions while avoiding any buildup of solids that could prevent the valve from closing. The seat can be supplied in different resilient material qualities



MANUALLY OPERATED RISING STEM HANDWHEEL VERSION

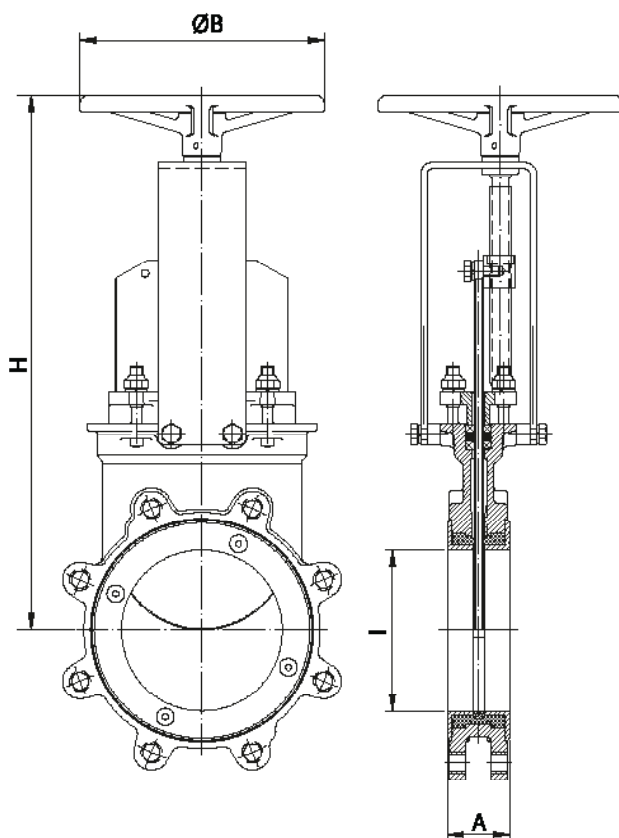
Standard manual actuator available from 2in to 24in and recommended with gearbox from 12in and above



DN (in/mm)	I (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)
2/50	2.00/50	1.88/47,8	8.86/225	16.92/430
3/80	2.90/75	2.00/50,8	8.86/225	18.70/475
4/100	3.80/97	2.00/50,8	8.86/225	20.66/525
5/125	4.76/121	2.25/57,2	8.86/225	24.40/620
6/150	5.78/147	2.25/57,2	8.86/225	26.37/670
8/200	7.63/194	2.74/69,8	12.20/310	40.51/1029
10/250	9.40/239	2.74/69,8	12.20/310	43.81/1113
12/300	11.18/284	3.00/76,2	16.14/410	48.62/1235
14/350	12.67/322	3.00/76,2	16.14/410	50.78/1290
16/400	14.40/366	3.50/89	16.14/410	54.92/1395
18/450	15.74/400	3.50/89	21.65/550	62.20/1580
20/500	18.11/460	4.50/114,2	21.65/550	66.53/1690
24/600	20.86/530	4.50/114,2	21.65/550	75.39/1915

MANUALLY OPERATED NON-RISING STEM HANDWHEEL VERSION

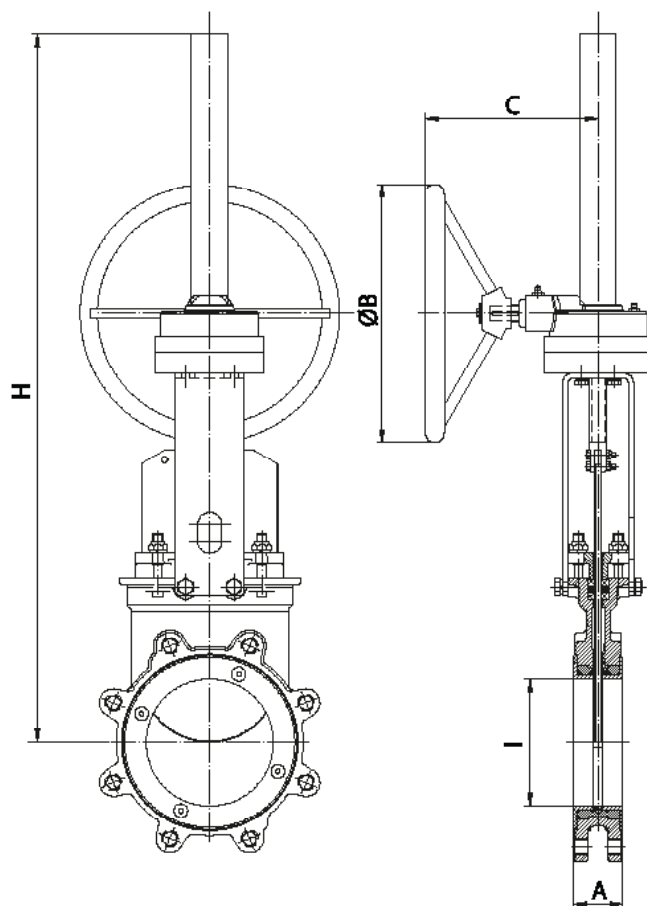
Manual actuator recommended for installation where space is limited, available from 2in to 24in and recommended with gearbox from 12in and above



DN (in/mm)	l (in/mm)	A (in/mm)	ØB (in/mm)	H (in/mm)
2/50	2.00/50	1.88/47,8	8.86/225	11.62/298
3/80	2.90/75	2.00/50,8	8.86/225	13.45/345
4/100	3.80/97	2.00/50,8	8.86/225	15.47/393
5/125	4.76/121	2.25/57,2	8.86/225	17.32/440
6/150	5.78/147	2.25/57,2	8.86/225	19.33/491
8/200	7.63/194	2.74/69,8	12.20/310	24.13/613
10/250	9.40/239	2.74/69,8	12.20/310	27.48/698
12/300	11.18/284	3.00/76,2	16.14/410	32.52/826
14/350	12.67/322	3.00/76,2	16.14/410	35.90/912
16/400	14.40/366	3.50/89	16.14/410	39.56/1005
18/450	15.74/400	3.50/89	21.65/550	42.87/1089
20/500	18.11/460	4.50/114,2	21.65/550	47.87/1216
24/600	20.86/530	4.50/114,2	21.65/550	52.48/1333

MANUALLY OPERATED GEAR RISING STEM VERSION

Manual actuator recommended for valves larger than 12in

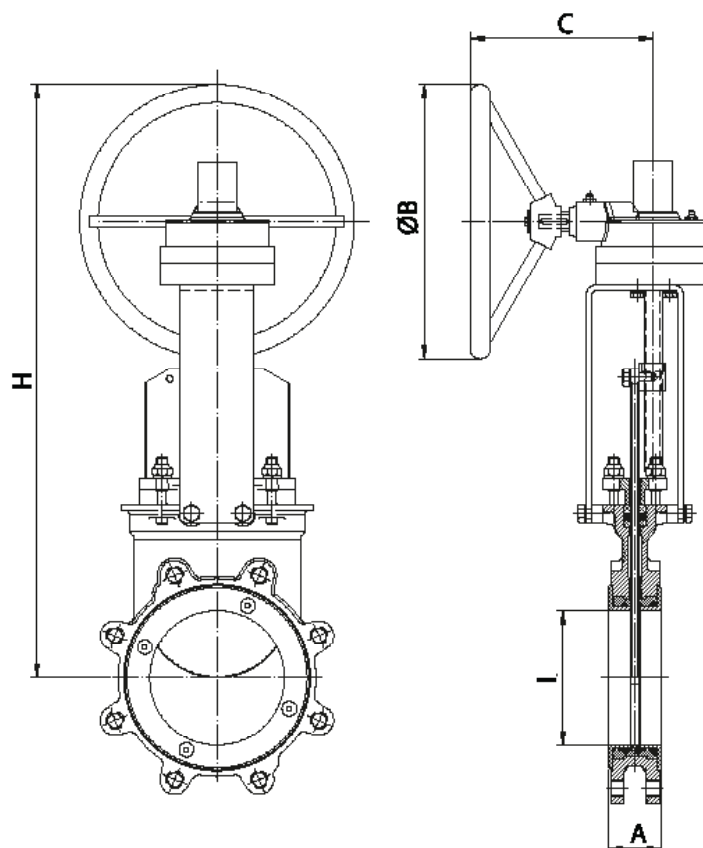


DN (in/mm)	I (in/mm)	A (in/mm)	ØB (in/mm)	C (in/mm)	H (in/mm)
8/200	7.63/194	2.74/69,8	12.00/300	7.87/200	40.51/1029
10/250	9.4/239	2.74/69,8	12.00/300	7.87/200	43.82/1113
12/300	11.18/284	3.00/76,2	12.00/300	7.87/200	48.62/1235
14/350	12.67/322	3.00/76,2	17.72/450	10.62/270	63.38/1610
16/400	14.40/366	3.50/89	17.72/450	10.62/270	67.72/1720
18/450	15.74/400	3.50/89	17.72/450	10.62/270	70.87/1800
20/500	18.11/460	4.50/114,2	17.72/450	10.62/270	74.61/1895
24/600	20.86/530	4.50/114,2	17.72/450	10.62/270	80.31/2040
30/750	26.37/670	4.60/117	17.72/450	12.20/310	105.11/2670
36/900	31.88/810	4.60/117	25.50/650	14.56/370	126.29/3208

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MANUALLY OPERATED GEAR RISING NON-RISING STEM VERSION

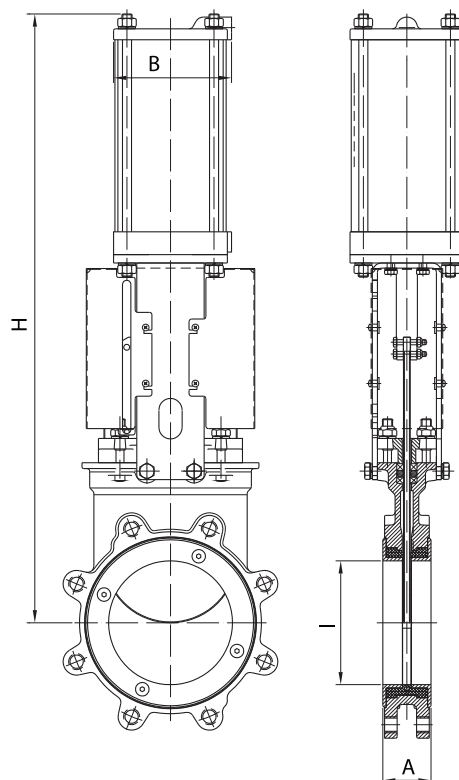
Manual actuator recommended for valves larger than 12in



DN (in/mm)	L (in/mm)	A (in/mm)	ØB (in/mm)	C (in/mm)	H (in/mm)
8/200	7.63/194	2.74/69,8	12.00/300	7.87/200	30.51/775
10/250	9.4/239	2.74/69,8	12.00/300	7.87/200	34.29/871
12/300	11.18/284	3.00/76,2	12.00/300	7.87/200	38.97/990
14/350	12.67/322	3.00/76,2	12.00/300	8.54/217	40.78/1036
16/400	14.40/366	3.50/89	17.72/450	8.54/217	47.36/1203
18/450	15.74/400	3.50/89	17.72/450	8.54/217	50.66/1287
20/500	18.11/460	4.50/114,2	17.72/450	11.33/288	56.37/1432
24/600	20.86/530	4.50/114,2	17.72/450	11.33/288	64.92/1649
30/750	26.37/670	4.60/117	17.72/450	12.20/310	76.06/1932
36/900	31.88/810	4.60/117	25.59/650	14.56/370	88.85/2257

PNEUMATIC CYLINDER VERSION

Double-acting and single-acting pneumatic cylinders available. Available in sizes 2in to 36in. Actuators sized for 85psi air supply. For valves installed in a horizontal position, actuator supports are recommended.

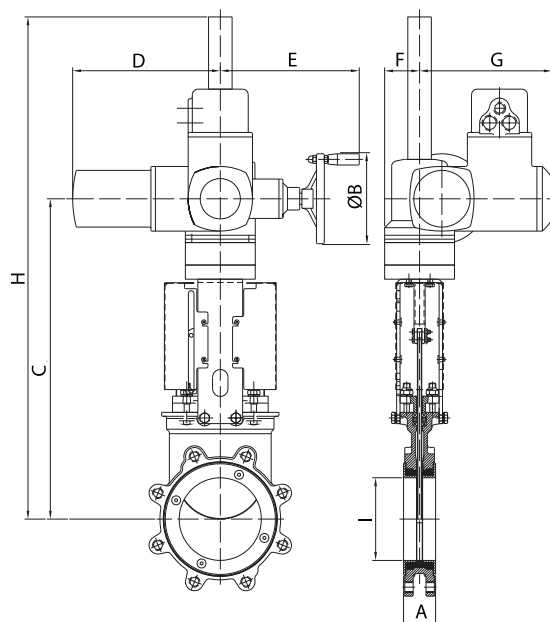


DN (in/mm)	I (in/mm)	A (in/mm)	B (in/mm)	H (in/mm)	Connect.
2/50	2.00/50	1.88/47,8	4.52/115	16.22/412	1/4 "G
3/80	2.90/75	2.00/50,8	4.52/115	19.37/492	1/4 "G
4/100	3.80/97	2.00/50,8	4.52/115	22.04/560	1/4 "G
5/125	4.76/121	2.25/57,2	5.51/140	25.47/647	1/4 "G
6/150	5.78/147	2.25/57,2	5.51/140	28.46/723	1/4 "G
8/200	7.63/194	2.74/69,8	6.88/175	35.70/907	1/4 "G
10/250	9.4/239	2.74/69,8	8.66/220	41.92/1065	3/8" G
12/300	11.18/284	3.00/76,2	8.66/220	48.54/1233	3/8" G
14/350	12.67/322	3.00/76,2	10.90/277	52.28/1328	3/8" G
16/400	14.40/366	3.50/89	10.90/277	56.42/1433	3/8" G
18/450	15.74/400	3.50/89	15.04/382	64.72/1644	1/2" G
20/500	18,11/460	4.50/114,2	15.04/382	69.09/1755	1/2" G
24/600	20.86/530	4.50/114,2	15.04/382	79.84/2028	1/2" G
30/750	26.37/670	4.60/117	17.48/444	102.16/2595	3/4 "G
36/900	31.88/810	4.60/117	20.27/515	122.12/3102	3/4 "G

Note: pneumatic cylinder sizing for sizes DN 12in/300mm and above are based on Series 10 pressure ratings

ELECTRIC ACTUATOR RISING STEM VERSION

Designed with a yoke flange for the actuator according to ISO 5210. Available from 2in to 36in with manual overrides.
For valves installed in a horizontal position, actuator supports are recommended.

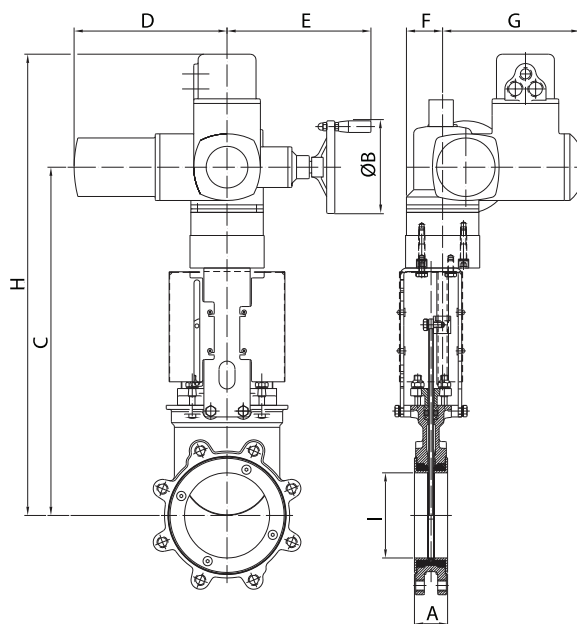


DN (in/mm)	I (in/mm)	A (in/mm)	C (in/mm)	ØB (in/mm)	H (in/mm)	D (in/mm)	E (in/mm)	F (in/mm)	G (in/mm)	Torque (ft.LBS/Nm)
2/50	2.00/50	1.88/47,8	14.84/377	6.30/160	17.87/454	10.43/265	9.80/249	2.44/62	9.33/237	7.4/10
3/80	2.90/75	2.00/50,8	16.70/424	6.30/160	19.72/501	10.43/265	9.80/249	2.44/62	9.33/237	7.4/10
4/100	3.80/97	2.00/50,8	18.58/472	6.30/160	21.61/549	10.43/265	9.80/249	2.44/62	9.33/237	7.4/10
5/125	4.76/121	2.25/57,2	20.43/519	6.30/160	23.46/596	10.43/265	9.80/249	2.44/62	9.33/237	11.1/15
6/150	5.78/147	2.25/57,2	22.44/570	6.30/160	45.15/1147	10.43/265	9.80/249	2.44/62	9.33/237	14.8/20
8/200	7.63/194	2.74/69,8	27.71/704	6.30/160	50.86/1292	10.43/265	9.80/249	2.44/62	9.33/237	22.2/30
10/250	9.40/239	2.74/69,8	31.10/790	6.30/160	54.25/1378	10.43/265	9.80/249	2.44/62	9.33/237	33.3/45
12/300	11.18/284	3.00/76,2	34.76/883	7.87/200	57.91/1471	11.10/282	10.08/256	2.55/65	9.72/247	30/40
14/350	12.67/322	3.00/76,2	35.79/909	7.87/200	58.94/1497	11.14/283	10.00/254	2.55/65	9.76/248	52/70
16/400	14.40/366	3.50/89	42.32/1075	12.40/315	70.98/1803	15.31/389	13.22/336	3.58/91	11.25/286	67/90
18/450	15.74/400	3.50/89	44.84/1139	12.40/315	73.50/1867	15.31/389	13.22/336	3.58/91	11.25/286	82/110
20/500	18.11/460	4.50/114,2	52.00/1321	15.74/400	80.67/2049	15.31/389	13.34/339	3.58/91	11.25/286	70/95
24/600	20.86/530	4.50/114,2	56.85/1444	15.74/400	85.51/2172	15.31/389	13.34/339	3.58/91	11.25/286	104/140
30/750	26.37/670	4.60/117	71.65/1820	19.68/500	115.55/2935	16.92/430	14.37/365	4.60/117	11.92/303	104/140
36/900	31.88/810	4.60/117	74.80/1900	19.68/500	126.96/3225	16.92/430	14.37/365	4.60/117	11.92/303	167/220

Note: torque values for sizes DN 12in/300mm and above are calculated based on Series 10 pressure ratings. For full differential pressure, check with AVCO representative

ELECTRIC ACTUATOR NON-RISING STEM VERSION

Designed with a yoke flange for the actuator according to ISO 5210. Available from 2in to 36in with manual overrides.
For valves installed in a horizontal position, actuator supports are recommended.



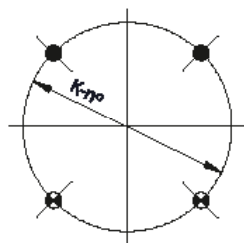
DN (in/mm)	I (in/mm)	A (in/mm)	C (in/mm)	ØB (in/mm)	H (in/mm)	D (in/mm)	E (in/mm)	F (in/mm)	G (in/mm)	Torque (ft.LBS/Nm)
2/50	2.00/50	1.88/47,8	14.84/377	6.30/160	21.33/547	10.43/265	9.80/249	2.44/62	9.33/237	7.4/10
3/80	2.90/75	2.00/50,8	16.70/424	6.30/160	23.17/594	10.43/265	9.80/249	2.44/62	9.33/237	7.4/10
4/100	3.80/97	2.00/50,8	18.58/472	6.30/160	25.27/642	10.43/265	9.80/249	2.44/62	9.33/237	7.4/10
5/125	4.76/121	2.25/57,2	20.43/519	6.30/160	27.16/690	10.43/265	9.80/249	2.44/62	9.33/237	11.1/15
6/150	5.78/147	2.25/57,2	22.44/570	6.30/160	29.13/740	10.43/265	9.80/249	2.44/62	9.33/237	14.8/20
8/200	7.63/194	2.74/69,8	27.71/704	6.30/160	34.44/875	10.43/265	9.80/249	2.44/62	9.33/237	22.2/30
10/250	9.40/239	2.74/69,8	31.10/790	6.30/160	37.79/960	10.43/265	9.80/249	2.44/62	9.33/237	33.3/45
12/300	11.18/284	3.00/76,2	34.76/883	7.87/200	41.45/1053	11.10/282	10.08/256	2.55/65	9.72/247	30/40
14/350	12.67/322	3.00/76,2	35.79/909	7.87/200	42.48/1079	11.14/283	10.00/254	2.55/65	9.76/248	52/70
16/400	14.40/366	3.50/89	42.32/1075	12.40/315	49.01/1245	15.31/389	13.22/336	3.58/91	11.25/286	67/90
18/450	15.74/400	3.50/89	44.84/1139	12.40/315	51.53/1309	15.31/389	13.22/336	3.58/91	11.25/286	82/110
20/500	18.11/460	4.50/114,2	52.00/1321	15.74/400	58.70/1491	15.31/389	13.34/339	3.58/91	11.25/286	70/95
24/600	20.86/530	4.50/114,2	56.85/1444	15.74/400	63.54/1614	15.31/389	13.34/339	3.58/91	11.25/286	104/140
30/750	26.37/670	4.60/117	71.65/1820	19.68/500	78.43/2005	16.92/430	14.37/365	4.60/117	11.92/303	104/140
36/900	31.88/810	4.60/117	74.80/1900	19.68/500	40.35/2295	16.92/430	14.37/365	4.60/117	11.92/303	167/220

Note: torque values for sizes DN 12in/300mm and above are calculated based on Series 10 pressure ratings. For full differential pressure, check with AVCO representative

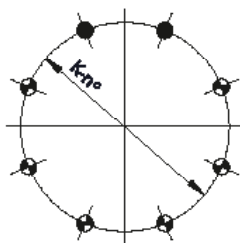
FLANGE AND BOLTING DETAILS ASME B16.5, CLASS 150 *

DN	K	Nº	M	T	 
2"	4 3/4"	4	5/8" - 11 UNC	15/32"	2 - 2
3"	6"	4	5/8" - 11 UNC	25/64"	2 - 2
4"	7 1/2"	8	5/8" - 11 UNC	25/64"	2 - 6
5"	8 1/2"	8	3/4" - 10 UNC	15/32"	2 - 6
6"	9 1/2"	8	3/4" - 10 UNC	15/32"	2 - 6
8"	11 3/4"	8	3/4" - 10 UNC	1/2"	2 - 6
10"	14 1/4"	12	7/8" - 9 UNC	19/32"	4 - 8
12"	17"	12	7/8" - 9 UNC	5/8"	4 - 8
14"	18 3/4"	12	1" - 8 UNC	21/32"	4 - 8
16"	21 1/4"	16	1" - 8 UNC	23/32"	4 - 12
18"	22 3/4"	16	1 1/8" - 7 UNC	25/32"	6 - 10
20"	25"	20	1 1/8" - 7 UNC	1 7/32"	6 - 14
24"	29 1/2"	20	1 1/4" - 7 UNC	1 3/32"	6 - 14
30"	36"	28	1 1/4" - 7 UNC	1 9/64"	10 - 18
36"	42 3/4"	32	1 1/2" - 6 UNC	1 1/4"	10 - 22

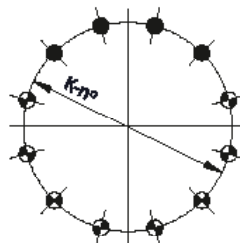
* From NPS 24, acc. to ASME B16.47 Series A (class 150)



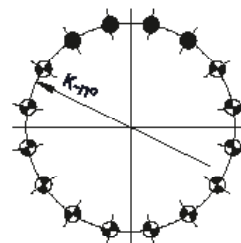
DN 2" - 3"



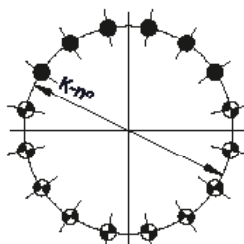
DN 4" - 8"



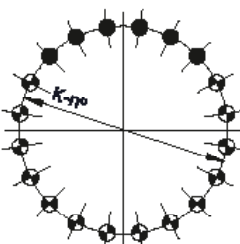
DN 10" - 14"



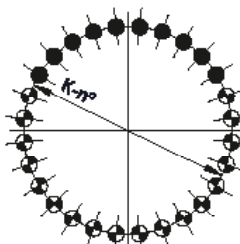
DN 16"



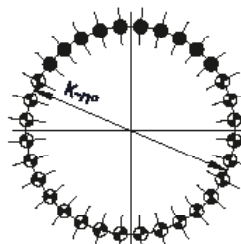
DN 18"



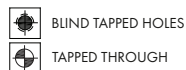
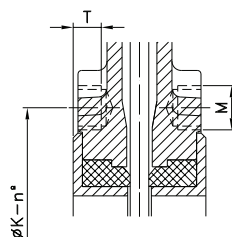
DN 20" - 24"



DN 30"

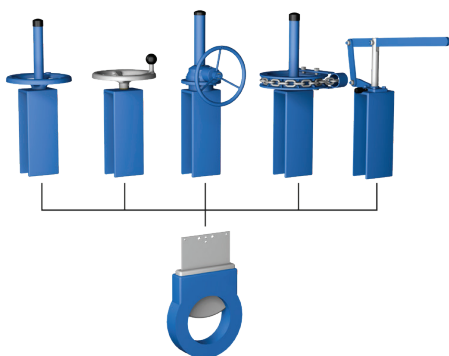


DN 36"



Alloy Valves and Control

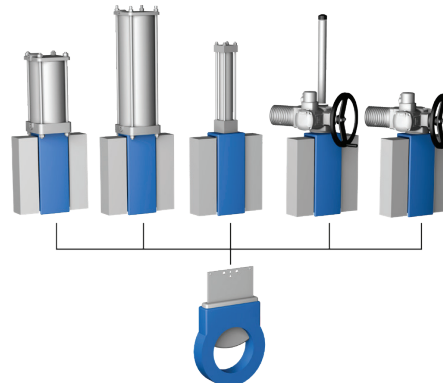
Manual RS Manual NRS Bevel Gear Chainwheel Lever



Manual Valves

Handwheel
Bevel Gear
Lever
Chainwheel
Custom Extensions
Lock Out

Pneumatic Double Acting Pneumatic Single Acting Hydraulic Electric RS Electric NRS



Actuated Valves

Pneumatic
Hydraulic
Double Acting/Spring Return
Solenoid Valves
Limit Switches
Positioners 4-20 mA/3-15 psi
Intelligent Positioner

HOW TO ORDER

AV22	36	36	M	-	2.0
Series	Body	Seat	Seat Material	Options	Size
Series 22 Lug Type Knifegate Valve*	304SS - 34	304SS - 34	M - Metal	SSY - Stainless Steel Yoke	2" - 2.0
	316SS - 36	316SS - 36	RB - Resilient Buna	HT - High Temperature Packing	3" - 3.0
	317SS - 37	317SS - 37	RE - Resilient EPDM	BP - Backing Pins	4" - 4.0
	210 SMO - 25	250 SMO - 25	RN - Resilient Neoprene	BGO - Bevel Gear Operator	5" - 5.0
	Titanium - Ti	Titanium - Ti	RH - Resilient Hypalon	DA - Double Acting Pneumatic Actuator	6" - 6.0
	Hastelloy C276 - HC	Hastelloy C276 - HC	RV - Resilient Viton	SA - Spring Return Pneumatic Actuator	8" - 8.0
	Cast Iron - 21	Carbon Steel - 24		HW - Handwheel	10" - 10.0
	Ductile Iron - 23			BG - Bevel Gear	12" - 12.0
	Carbon Steel - 24			HW/C - Chainwheel on Handwheel	14" - 14.0
				BG/CW - Chainwheel on Gear	16" - 16.0
				EL120 - Electric 120vac	18" - 18.0
				EL460 - Electric 460vac	20" - 20.0
				DAH - Hydraulic Cylinder	24" - 24.0
				LV - Lever Handle	30" - 30.0
				SRFC - Spring fail close	36" - 36.0
				SRFO - Spring fail open	

* Valves by Orbinox

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