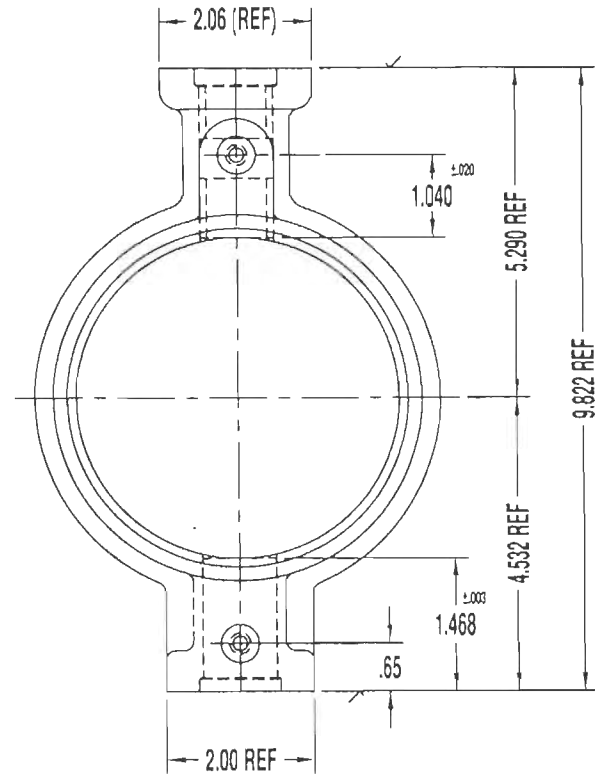
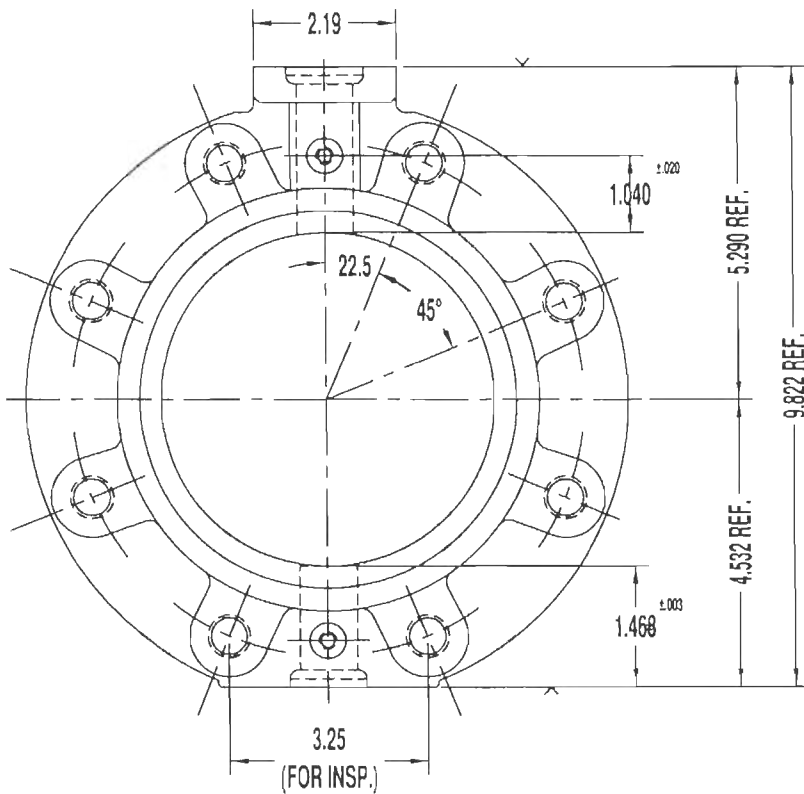


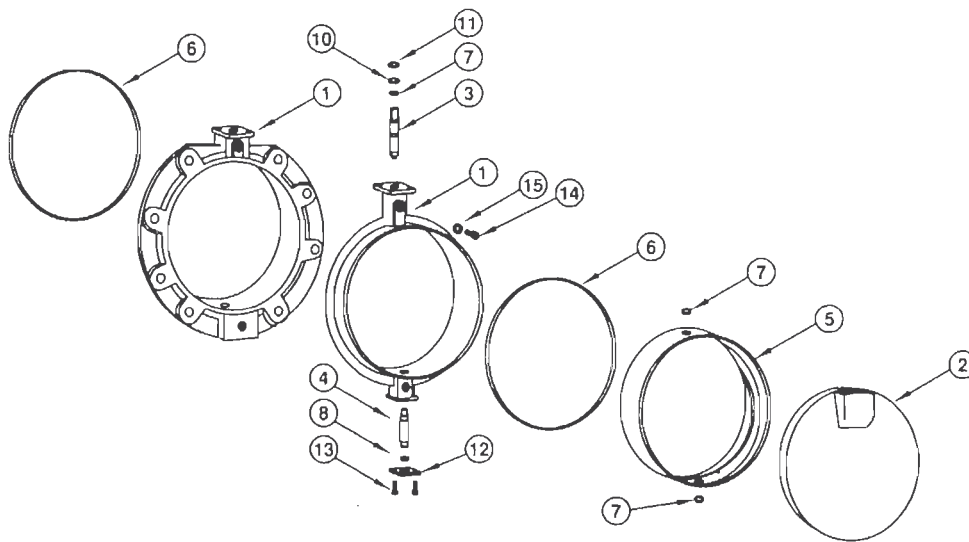
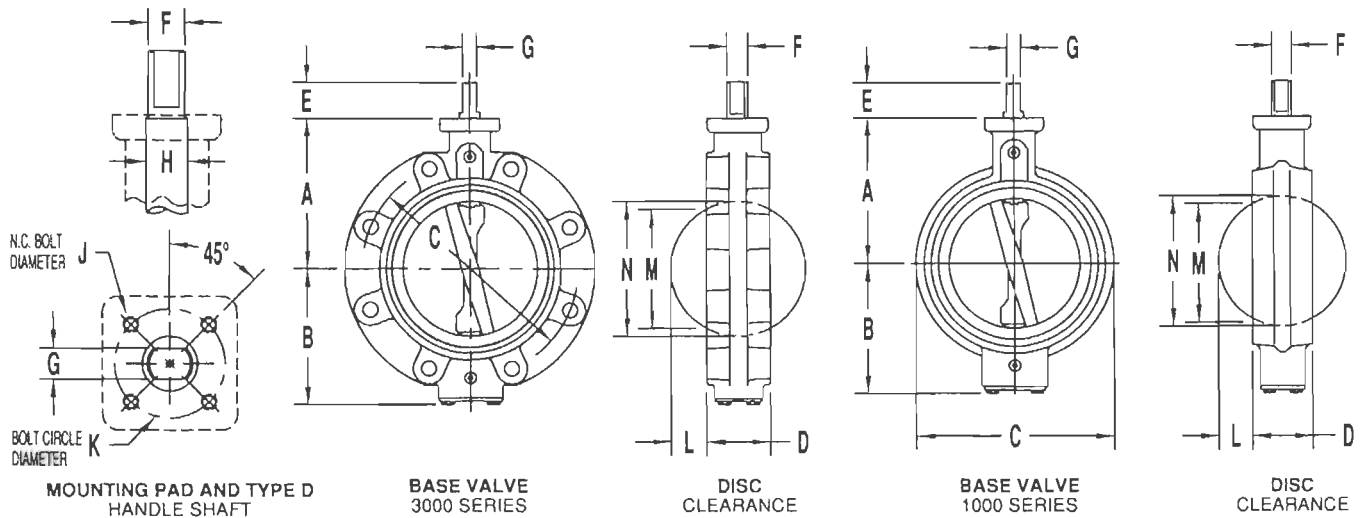
NORRIS

MANUFACTURED IN CANADA
BY ALBERTA OIL TOOL

BUTTERFLY VALVES



Certified Dimensions



PARTS DESCRIPTION: 2" THRU 12" NORRISEAL BUTTERFLY VALVES

- 1) BODY - Valve body is isolated from flow stream by resilient seat and o-ring seals. Steel bodies have Teflon bushings to prevent seizing with stainless steel shafts. Three different models and six materials are available. See exploded assembly.
- 2) DISC - Angle disc construction gives 360° uninterrupted contact of disc with seat. Disc does not seat in shaft holes, assuring bubble-tight shutoff time after time with no scrubbing of the elastomer in the shaft hole areas. Disc drive slot assures positive disc action. Precision fit prevents disc "flutter".
- 3) HANDLE SHAFT - Handle shaft is retained by a sealed retention screw for safety. Shaft is double o-ring sealed to prevent leakage into shaft bearing areas and protect from outside contamination. Milled drive flats are parallel to disc, indicate disc position.
- 4) BOTTOM SHAFT - Stationary bottom shaft is double o-ring sealed to prevent stem leakage. Bottom shaft is retained by a sealed retention screw for safety.
- 5) SEAT - Field replaceable resilient seat is bonded to a rigid backing ring to prevent seat from distorting or collapsing due to high velocity flow or in vacuum service. Rigid backing also prevents seat collapse during installation of valve between flanges.
- 6) BODY O-RINGS - Body o-ring flange seals eliminate need for flange gaskets. Flange seals can be replaced without dismantling the valve and replacing the seat. Many times a damaged o-ring flange seal can be repaired simply by turning it over and returning it to the body face groove.
- 7-8) O-RING SHAFT SEALS - Shaft seals prevent leakage to the atmosphere and permanently lubricated areas; protect from outside contamination.
- 10-11) STEEL & TEFLON THRUST WASHERS - Provide precision fit with topworks. Eliminates "disc flutter".
- 12-13) BOTTOM PLATE & CAPSCREWS - Bottom shaft is retained by a thrust plate.
- 14-15) CAPSCREW & WASHER - Both shafts are retained by sealed retention screws for safety. Cannot be removed when valve is installed between flanges.

Valve Dimensions

1000 SERIES 2" – 12" VALVES

Valve Size – inches/mm

Dimension Reference	2/50	2.5/65	3/75	3.5/90	4/100	5/125	6/150	8/200	10/250	12/300
A	3.70	4.16	4.41	Not Available	4.88	5.28	6.50	7.47	9.38	10.41
B	3.22	3.75	4.05		4.50	4.91	6.00	6.94	8.66	9.69
C	4.13	4.88	5.38		6.88	7.75	8.75	10.88	13.38	16.00
D	1.63	1.75	1.75		2.00	2.13	2.13	2.50	2.50	3.00
E	1.31	1.31	1.31		1.31	1.31	1.69	1.69	2.00	2.00
F	.69	.69	.69		.69	.69	.88	.88	1.06	1.06
G	.50	.50	.50		.50	.50	.63	.63	.75	.75
H	.69	.88	.88		.88	.88	1.06	1.06	1.38	1.38
J	.25	.25	.25		.25	.25	.38	.38	.38	.38
K	1.81	1.81	1.81		1.81	1.81	2.34	2.34	2.63	2.63

Disc Clearance

L	.38	.50	.75	N.A.	1.13	1.56	1.94	2.69	3.75	4.50
M	1.77	2.06	2.69		3.59	4.72	5.55	7.44	9.58	11.52
N	2.41	2.72	3.20		4.19	5.17	5.91	7.81	9.89	11.89

Approx. Wt. Ductile Iron Body	4	6	7	-	11	14	18	30	47	64
-------------------------------	---	---	---	---	----	----	----	----	----	----

FOR USE WITH 150 LB. ANSI WELDNECK FLANGES

For optimum valve performance, it is recommended that butterfly valves be installed between weldneck flanges or flanges with equivalent inside dimensions.

Bolt Data

BOLT SIZE	.63 x 4.00	.63 x 4.50	.63 x 4.50	N.A.	.63 x 4.50	.75 x 5.50	.75 x 5.50	.75 x 6.00	.88 x 6.00	.88 x 7.00
No. Req.	4	4	4	-	8	8	8	8	12	12

Valve Dimensions

3000 SERIES 2" – 12" VALVES

Valve Size – inches/mm

Dimension Reference	2/50	2.5/65	3/75	3.5/90	4/100	5/125	6/150	8/200	10/250	12/300
A	3.70	4.16	4.41	4.63	4.88	5.28	6.50	7.47	9.38	10.41
B	3.22	3.75	4.05	4.25	4.50	4.91	6.00	6.94	8.66	9.69
C	4.75	5.50	6.00	7.00	7.50	8.50	9.50	11.75	14.25	17.00
D	1.63	1.75	1.75	1.94	2.00	2.13	2.13	2.50	2.50	3.00
E	1.31	1.31	1.31	1.31	1.31	1.31	1.69	1.69	2.00	2.00
F	.69	.69	.69	.69	.69	.69	.88	.88	1.06	1.06
G	.50	.50	.50	.50	.50	.50	.63	.63	.75	.75
H	.69	.88	.88	.88	.88	.88	1.06	1.06	1.38	1.38
J	.25	.25	.25	.25	.25	.25	.38	.38	.38	.38
K	1.81	1.81	1.81	1.81	1.81	1.81	2.34	2.34	2.63	2.63

Approx. Wt. Ductile Iron Body	6	8	10	12	16	20	26	40	62	87
-------------------------------	---	---	----	----	----	----	----	----	----	----

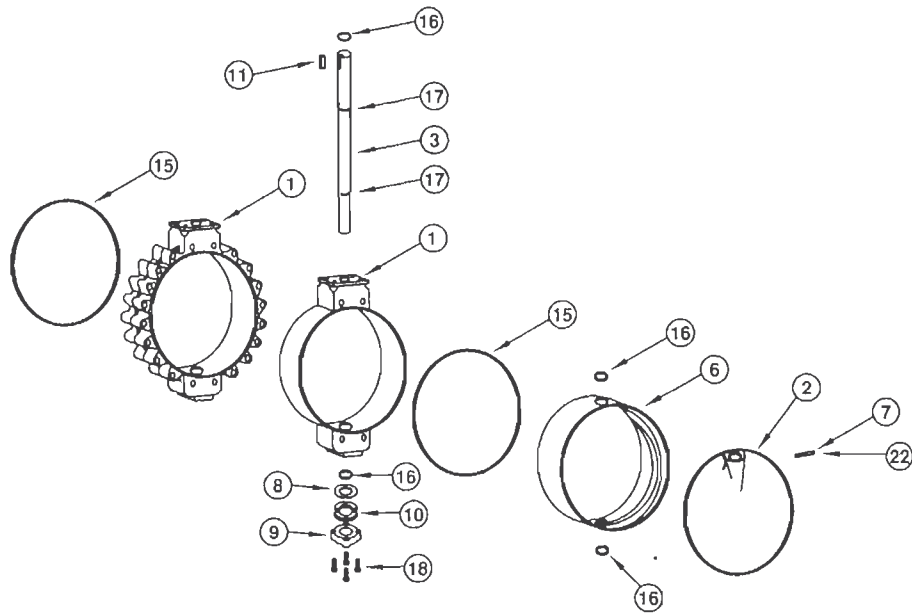
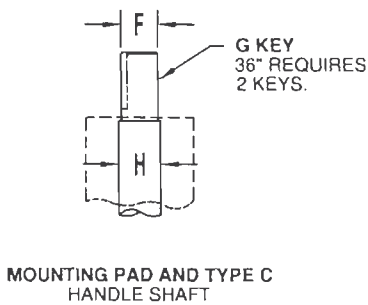
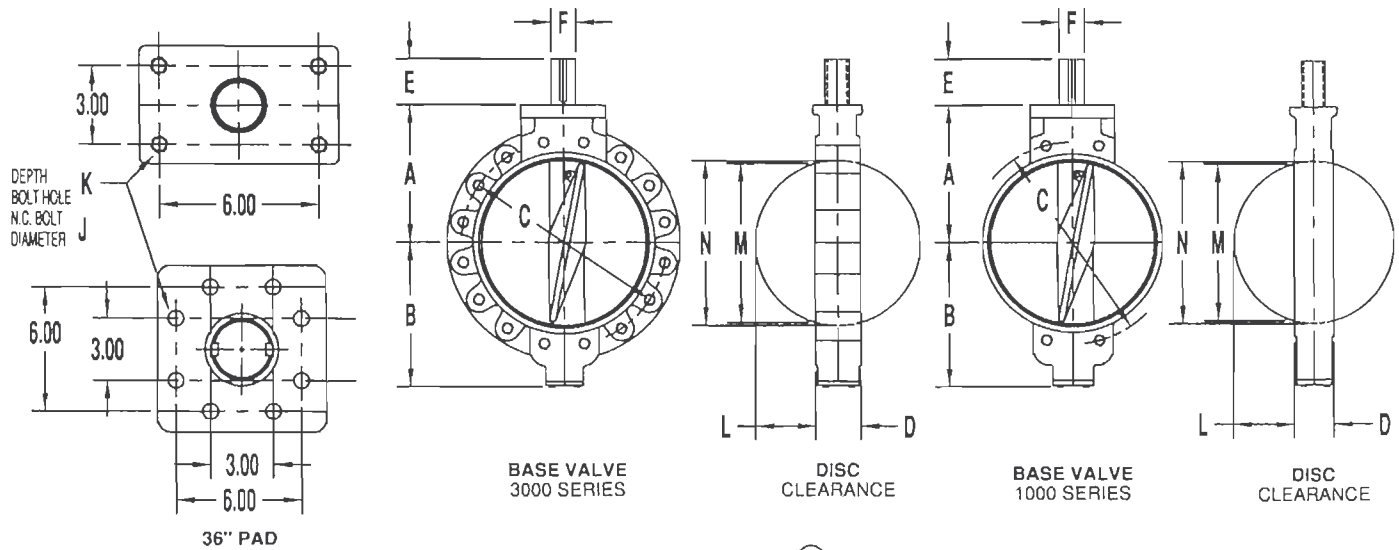
FOR USE WITH 150 LB. ANSI WELDNECK FLANGES

For optimum valve performance, it is recommended that butterfly valves be installed between weldneck flanges or flanges with equivalent inside dimensions.

Bolt Data

CAPSCREW SIZE*	.63 NC x 1.50	.63 NC x 1.50	.63 NC x 1.75	.63 NC x 1.75	.63 NC x 1.75	.75 NC x 1.75	.75 NC x 2.00	.75 NC x 2.25	.88 NC x 2.25	.88 NC x 2.50
No. Req.	8	8	8	16	16	16	16	16	24	24

* Through-tapped from face to face for studs or capscrews unless specified otherwise.



PARTS DESCRIPTION: 14" THRU 36" NORRISEAL BUTTERFLY VALVES

- 1) BODY - Valve body is isolated from flow stream by resilient seat and o-ring seals. All 14" and larger bodies have inboard and outboard shaft bushings for handling shaft loads and to provide minimum operating torque. Two different models and three materials are available.
- 2) DISC - Angle disc construction gives 360° uninterrupted contact of disc with seat. Disc does not seat in shaft holes, assuring bubble-tight shutoff time after time with no scrubbing of the elastomer in the shaft hole areas.
- 3) SHAFT - Through shaft, cross pinned to disc with straight dowel pin, assures maximum drive strength and field repairability.
- 6) SEAT - Field replaceable resilient seat is bonded to a rigid backing ring to prevent seat from distorting or collapsing due to high velocity flow or in vacuum service. Rigid backing also prevents seat collapse during installation of valve between flanges.
- 7) DISC PIN - Disc pin does not penetrate the sealing plane of the disc.
- 8) SHIM SET - Assures proper disc support and centering in seating area.
- 9-10) THRUST PLATE & WASHER - Retains shaft from bottom.
- 11) KEY - Provides precision fit with operator.
- 15) BODY O-RINGS - Body o-ring flange seals eliminate need for flange gaskets. Flange seals can be replaced without dismantling the valve and replacing the seat. Many times a damaged o-ring flange seal can be repaired simply by turning it over and returning it to the body face groove.
- 16) O-RING SEAT & SHAFT SEALS - Seat and shaft seals prevent stem leakage to the atmosphere and permanently lubricated areas; protect from outside contamination.
- 17) O-RING DISC/SHAFT SEALS - Seals prevent leakage across disc plane. Patented Teflon seal available.
- 18) THRUST PLATE CAPSCREWS - To retain bottom thrust plate.
- 22) DISC PIN CAPSCREWS - To retain disc pin.

1000 SERIES 14" – 36" VALVES

Valve Size – Inches/mm

Dimension Reference	14/350	16/400	18/450	20/500	22/550	24/600	26/650	28/700	30/750	32/800	36/900
A	12.63	14.00	14.75	16.00	17.38	17.50	20.13	22.75	23.75	24.50	26.13
B	14.25	15.63	16.63	17.88	18.00	19.00	20.61	21.83	22.70	24.23	29.38
C	18.75	21.25	22.75	25.00	27.25	29.50	31.75	34.00	36.00	38.50	42.75
D	3.75	4.13	4.63	5.13	5.00	5.00	6.00	6.50	7.00	7.00	8.50
E	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	4.75
F	1.75	1.75	1.75	2.50	2.50	2.50	2.50	2.50	2.50	2.50	3.00
G	.38 x 2.5	.38 x 2.5	.38 x 2.5	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.75 x 3.0
H	1.75	2.00	2.25	2.50	2.50	2.50	3.00	3.00	3.00	3.50	3.50
J	.63	.63	.63	.63	.63	.63	.75	.75	.75	.75	.75
K	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

Valve Dimensions

L	4.79	5.61	6.36	7.14	8.19	9.19	9.60	10.36	11.10	11.96	12.88
M	12.80	14.78	16.72	18.72	20.75	22.83	24.50	26.38	28.50	30.13	34.25
N	13.34	15.34	17.34	19.41	21.33	23.38	25.51	27.21	29.21	30.96	35.25

Disc Clearance

Approx. Wt. Ductile Iron Body	160	224	300	370	420	518	640	740	940	990	1485
-------------------------------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------

FOR USE WITH 150 LB. ANSI WELDNECK FLANGES

For optimum valve performance, it is recommended that butterfly valves be installed between weldneck flanges or flanges with equivalent inside dimensions.

Bolt Data

BOLT SIZE	1.00 x 7.75	1.00 x 8.50	1.13 x 9.00	1.13 x 10.00	1.25 x 11.50	1.25 x 11.50	1.25 x 13.00	1.25 x 13.50	1.25 x 14.00	1.50 x 14.00	1.50 x 15.00
No. Req.	8	12	12	16	16	16	20	24	24	24	28

(Both Required)

CAPSCREW SIZE	1.00 x 3.00	1.00 x 3.00	1.13 x 3.00	1.13 x 3.00	1.25 x 3.50	1.25 x 4.00	1.25 x 3.50	1.25 x 3.25	1.25 x 3.50	1.50 x 3.75	1.50 x 3.75
No. Req.	8	8	8	8	8	8	8	8	8	8	8

3000 SERIES 14" – 36" VALVES

Valve Size – Inches/mm

Dimension Reference	14/350	16/400	18/450	20/500	22/550	24/600	26/650	28/700	30/750	32/800	36/900
A	12.63	14.00	14.75	16.00	17.38	17.50	20.13	22.75	23.75	24.50	26.13
B	14.25	15.63	16.63	17.88	18.00	19.00	20.61	21.83	22.70	24.23	29.38
C	18.75	21.25	22.75	25.00	27.25	29.50	31.75	34.00	36.00	38.50	42.75
D	3.75	4.13	4.63	5.13	5.00	5.00	6.00	6.50	7.00	7.00	8.50
E	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	4.75
F	1.75	1.75	1.75	2.50	2.50	2.50	2.50	2.50	2.50	2.50	3.00
G	.38 x 2.5	.38 x 2.5	.38 x 2.5	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.75 x 3.0
H	1.75	2.00	2.25	2.50	2.50	2.50	3.00	3.00	3.00	3.50	3.50
J	.63	.63	.63	.63	.63	.63	.75	.75	.75	.75	.75
K	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

Valve Dimensions

Approx. Wt. Ductile Iron Body	200	290	370	460	485	531	810	980	1080	1130	1795
-------------------------------	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------

FOR USE WITH 150 LB. ANSI WELDNECK FLANGES

For optimum valve performance, it is recommended that butterfly valves be installed between weldneck flanges or flanges with equivalent inside dimensions.

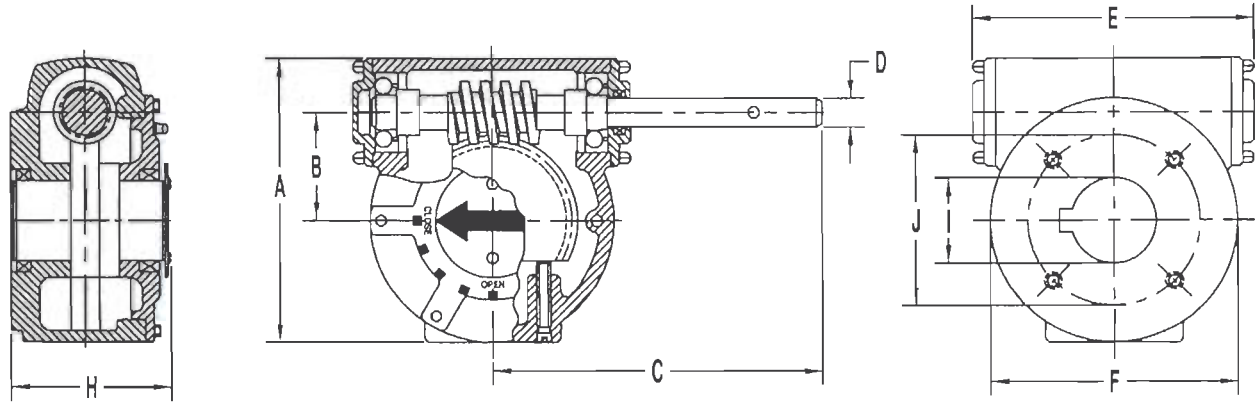
Bolt Data

CAPSCREW SIZE	1.00 NC x 3.00	1.00 NC x 3.00	1.13 NC x 3.50	1.13 NC x 3.50	1.25 NC x 4.00	1.25 NC x 4.00	1.25 NC x 4.00	1.25 NC x 4.00	1.25 NC x 4.00	1.50 NC x 4.50	1.50 NC x 4.50
No. Req.	24	32	32	32	32	40	40	48	48	48	64

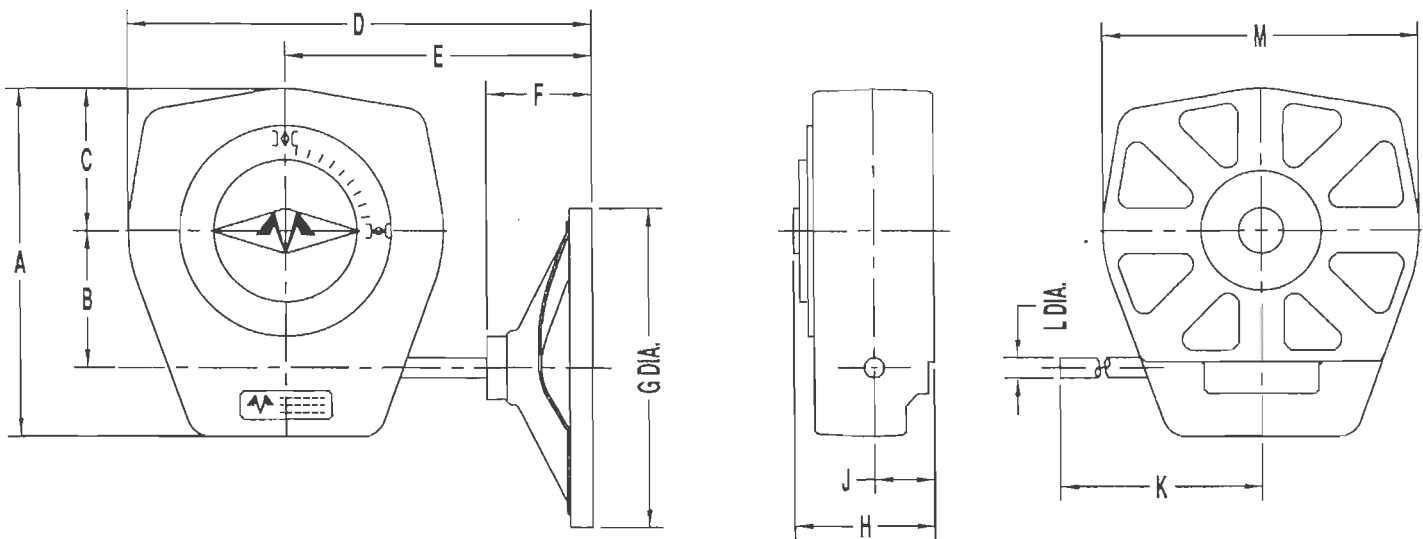
(Both Required)

CAPSCREW SIZE				1.13 NC x 3.00	1.25 NC x 3.50		1.25 NC x 3.50	1.25 NC x 3.25	1.25 NC x 3.50	1.50 NC x 3.75	1.50 NC x 4.00
No. Req.	N.A.	N.A.	N.A.	8	8	N.A.	8	8	8	8	8

Torque Rating and Dimensions

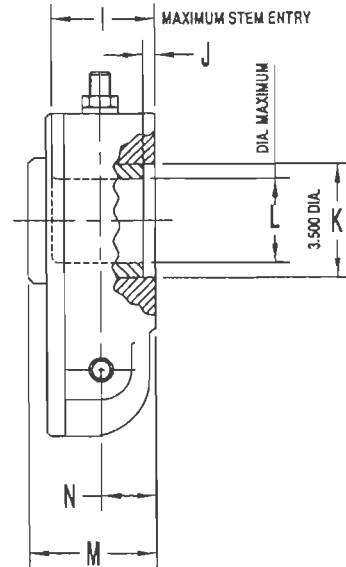
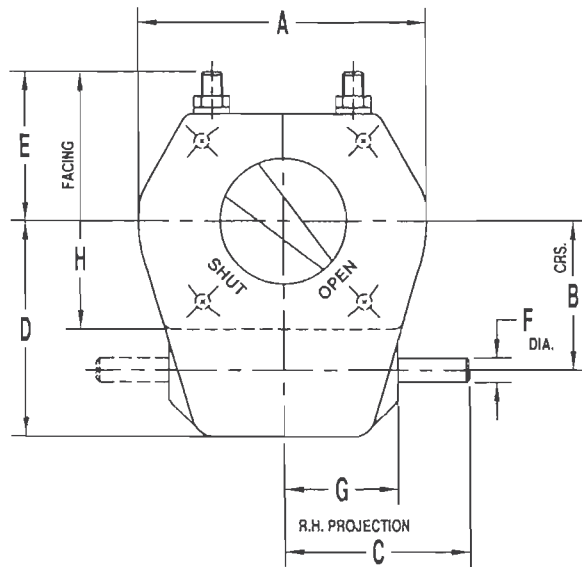


Model Number	Torque Rating Inch Pounds	Ratio	Dimensions in Inches							Bore Size		Mt. Hole Pattern		Weight Pounds
			A	B	C	D	E	F	H	1 MAX MIN	J MAX MIN	Mntg. Hole Thread Size		
2" - 8" 2X	3,500	30:1	5 7/32	2	6 19/32	19/32	4 7/8	4 13/32	2 23/32	1 1/2 1/4	4 1/2 2 13/16	3/8 - 16	10.3	
10" - 12" 2X	8,000	30:1	6 29/32	2 9/16	8	3/4	6 9/16	6 13/32	3 13/32	1 7/16 3/4	4 31/32 3 1/16	3/8 - 16	19.1	



PERFORMANCE						
Unit Ref.	Output Torque (max)	Ratio	Mechanical Advantage	Input Torque (max)	Handwheel Rim Effort (max)	Weight
2" - 8" 2M	3500 in. lbs. 395 Nm	40:1	10.74	326 in. lbs. 36.8 Nm	82 lbs. 365 N	7 lb. 3 Kg.
10" 12" 2M	7000 in. lbs. 790 Nm	40:1	11.49	609 in. lbs. 68.8 Nm	94 lbs. 418 N	13 lb. 6 Kg.

DIMENSIONS												
	A	B	C	D	E	F	G	H	J	K	L	M
in.	5.93	2.358	2.43	10.78	8.09	2.75	8.00	2.38	1.13	6.00	0.625/0.623	5.38
mm	150.6	60.0	61.7	273.8	205.5	69.81	203.2	60.4	28.7	152.4	15.87/15.82	136.6
in.	7.50	3.000	3.12	13.44	10.00	4.25	13.00	2.73	1.31	6.75	0.750/0.748	6.88
mm	190.5	76.2	79.2	341.4	254.0	108.0	330.2	69.3	33.3	171.4	19.05/19.00	175.0

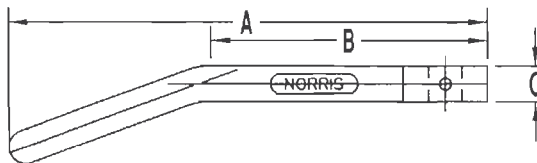
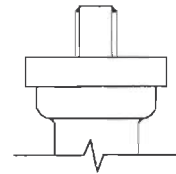


Model Number	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Weight
14" – 18" 2P	9.00	4.375	7.00	6.63	3.50	0.873	3.50	7.50	3.25	0.25	3.50	2.50	4.00	1.87	55 lbs.
20" – 24" 2P	10.82	5.375	7.38	7.62	3.50	0.998	4.00	7.50	3.25	0.37	4.50	3.25	4.14	1.87	68 lbs.

A 1" thick mounting plate is used with all 14" – 24" Norris Butterfly Valves

Manual Handles (Dimensions available upon request)

Size	A	B	C	D
2" – 5"	10"	6"	.750"	1.750"
6" – 8"	14.50"	10.187"	.750"	2.375"
10" – 12"	20.375"	13.375"	1"	2.75"

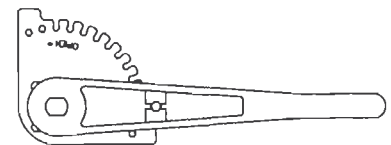


1A – Standard on-off handle with 1J detent topworks.

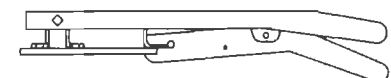
1M – Standard on-off handle with 10° detent topworks. Handle can be removed to prevent accidental operation of valve. A unique design feature of Norris Valves.

1J – Standard on-off unitized detent topworks. Milled shaft flats are parallel to the disc. The flattened portion of the shaft can determine disc position. A wrench may be used to operate the valve.

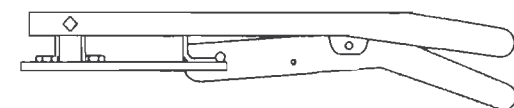
1S – 10° detent topworks. Indicates position of valve every 10 degrees of valve disc rotation.



1F – Cast aluminum squeeze trigger 10 position throttling handle.



1FB – Throttling handle with *balance* return memory stop to limit valve disc opening.



1FL – Throttling handle with toggle lock. (Brass quadrant and stainless steel fasteners). *Padlock not included.*

1FM – *Manne* trim throttling handle. Non-sparking for fuel service. (Brass quadrant and stainless steel fasteners).

Norris Butterfly Valves

Reliable – For more than 30 years, Norris Butterfly Valves have been performing reliably in a wide variety of services. To assure valve integrity, every Norris valve is shell tested to 150% of rated working pressure and differentially tested to 110% of rated working pressure before shipment. (Example: 200 w.p. valves are tested to 220 psi.)

Economical – Each year, more and more Norris Butterfly Valves are providing savings to the industry...in initial costs...in operational costs...and in maintenance costs.

Compact – Norris Butterfly Valves save space and weight...simplify piping design and construction. Compact size and weight make the piping lighter and eliminate the need for extra pipe supports or foundations.

Versatile – Norris Butterfly Valves can be used for on-off service and throttling control. Because of the variety of body styles and trim materials available, there is a Norris Butterfly Valve to fit every application. Proper valve trim selection allows Norris valves to handle any medium that flows through a pipeline.

Available - Norris Butterfly Valves are available through supply stores and manufacturers representatives throughout the country. A Norris expert in your area can provide technical assistance and help solve the toughest valving problems.

FOR FURTHER INFORMATION PLEASE CONTACT:



Edmonton, Alberta
9530 - 60 Avenue
T6E 0C1
(780) 434-8566
Fax (780) 434-4267
www.albertaoiltool.com

Calgary, Alberta
Airways Mall
Suite 205, 2323 - 32 Avenue NE
T2E 6Z3
(403) 291-3900
Fax (403) 291-1302

Issue Date: 9/1/07
Revision: C