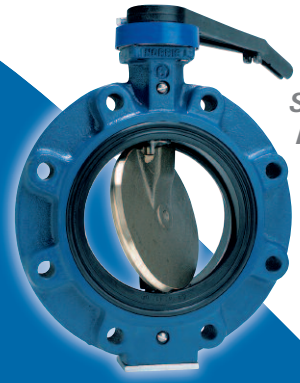
Series 200 Butterfly Valves

Advanced Angle-disc Design:

Provides bi-directional, positive shutoff and long service life



Series R200

Series M200

Norriseal Series 200 butterfly valves *provide bi-directional, positive shutoff to 200 psig working pressure. They are available in both resilient-seated (Series R200) and metal-lined (Series M200) configurations. All Series 200 butterfly valves feature a unique, angle disc that creates a 360° uninterrupted differential sealing surface.*

Series 200 butterfly valves have double-shaft seals and body bushings to assure smooth, low-torque operation. They are available with a full range of pneumatic, electric and hydraulic actuation.

Series 200 butterfly valves have independent flange seals and a non-wetted body that may be specified with either lug or wafer design. All Series 200 butterfly valves are easily repaired in the field.

Features

- Double-shaft seals and body bushings assure smooth, low-torque operation
- Independent flange seals
- Rigid-backed rubber seat easily field-replaced
- Non-wetted body available in lug or wafer designs
- Rigid drive, precision disc-to-shaft connection
- Resilient-seated design (R200) offered in a wide variety of elastomeric seals and metallic materials
- Metal-lined design (M200) provides positive shutoff with minimum sealing material
- Available with a variety of pneumatic, electric and hydraulic actuation

Contents

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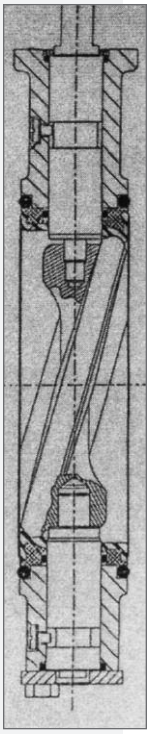
Engineered Performance



When to use Series R-200 Valves

- ***Use R-Series valves for positive shutoff to 200 psi wp.***

  Under certain service conditions, Norriseal valves may be rated up to 250 psi wp. Consult factory for trim recommendations and pricing.

- ***Use R-Series valves for throttling control at flow rates up to 30 fps.***

- ***Use R-Series valves at temperatures from -20° to +250°F.***

  Proper selection of seal elastomers must be made for valve applications at extreme temperatures.

- ***Use R-Series valves for bi-directional flow conditions.***

- ***Use R-Series valves for controlling the flow of liquids, gases and solids, including abrasive and corrosive materials.***

  R-Series valves are not recommended for handling gasoline and other volatile media. Volatile materials or solvents tend to dry out elastomers and make the valves difficult to operate. See M-Series section of catalog for gasoline service. Rubber liner and double O-ring shaft seals prevent line media from contacting body of valve, making use of premium body materials unnecessary. Only the internal wetted parts need to be corrosion resistant to the media.

- ***Use R-Series valves for end-of-line suspension to full rated working pressure by temporarily installing a downstream flange or spool piece.***

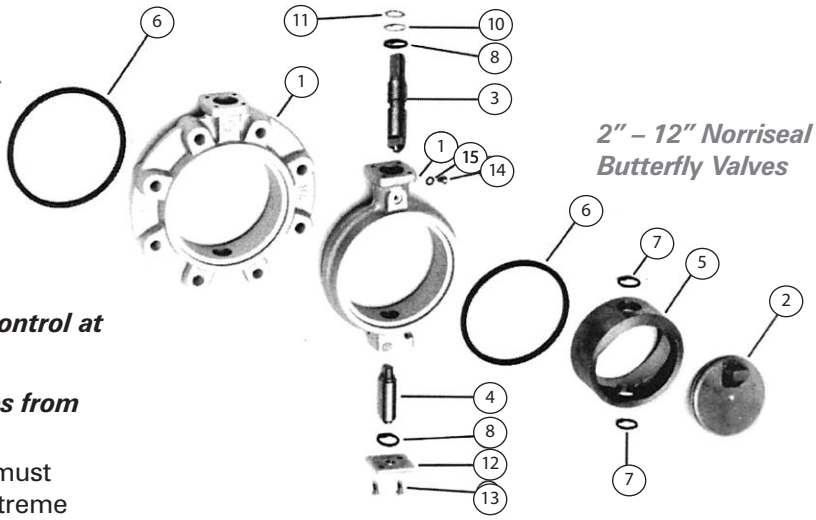
  With the downstream flange removed, R-series valves are derated for safety to 75 psi wp.

- ***Use R-Series valves for insulated lines.***

  14 inch and larger Norriseal valves will accommodate 2 inches of insulation on accompanying pipelines. A neck extender is available for use with 2 thru 12 inch wafer valves when lines are insulated.

- ***Use R-Series valves with ANSI Class 125 cast iron or Class 150 steel flanges.***

  Weldneck or socket weld flanges are recommended for use with R-Series valves to provide support for the seat and to assure optimum performance at the full rated pressure of the valve. R-Series span type valves can be used with ANSI Class 300 flanges; however, some valve sizes may require special bolt drilling or spacers. Lug style bodies for use with ANSI Class 300 flanges are available on special order.



2" – 12" Norriseal Butterfly Valves

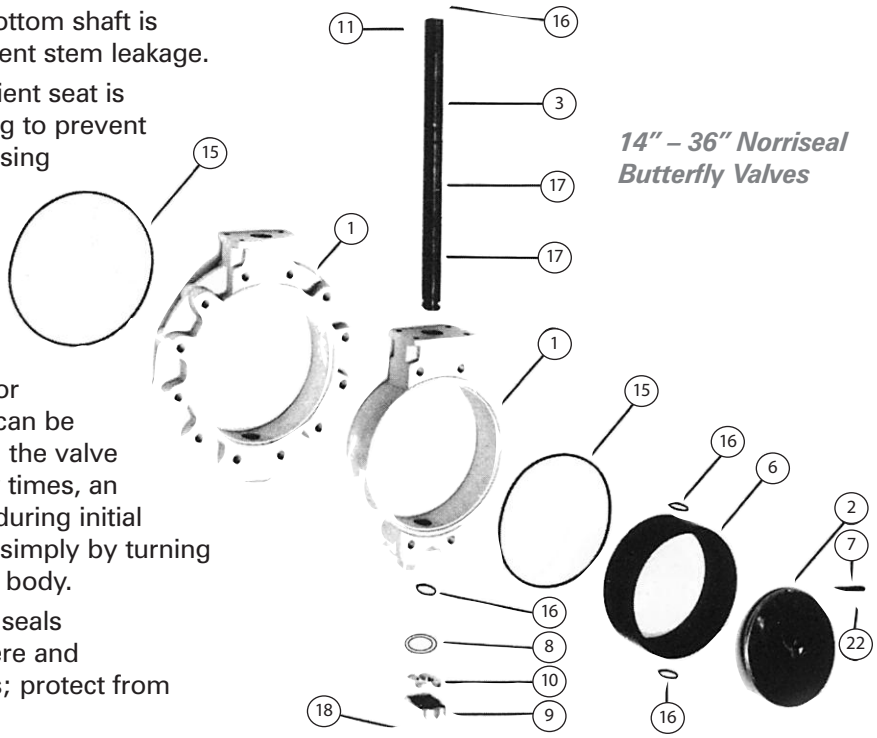
- ***R-Series valves are designed for use with standard weight or schedule 40 pipe inside dimensions. Check data sheets for specific clearance dimensions.***

  If heavy wall, plastic or cement lined pipe is used, back beveling at the flange may be required for disc clearance.

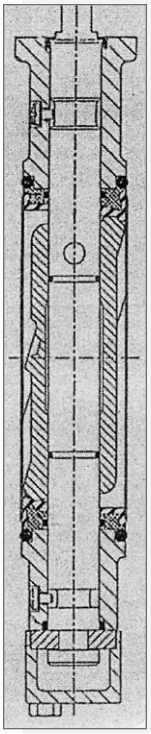
2"–12" Norriseal Butterfly Valves Parts Description

- **1. Body –** Valve body isolated from flow stream by resilient seat and O-ring seals. Steel bodies have Teflon bushings to prevent seizing with stainless steel shafts. Different models and 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. Operator Shaft –** Operator 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.
- **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, an O-ring flange seal damaged during initial installation may still be used simply by turning it over and returning it to the body.
- **7-8. O-ring Shaft Seals –** Shaft seals prevent leakage to 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 and retention screw.
- **14-15. Capscrew & Washer –** Top shaft is retained by sealed retention screw for safety. Cannot be removed when valve is installed between flanges.

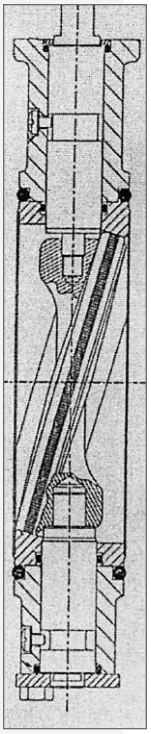


14" – 36" Norriseal Butterfly Valves



14"–36" Norriseal Butterfly Valves Parts Description

- **1. Body –** Valve body 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. Different models and 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. Disc pin does not penetrate the sealing plane of the disc.
- **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, an O-ring flange seal damaged during initial installation may still be used simply by turning it over and returning it to the body.
- **16. O-ring Seat and Shaft Seals –** Seat and shaft seals prevent stem leakage to atmosphere and permanently lubricated areas; protect from outside contamination.
- **17. O-ring Disc/Shaft Seals –** Seals prevent leakage across disc plane.
- **18. Thrust Plate Capscrews –** To retain bottom thrust plate.
- **22. Disc Pin Capscrews –** To retain disc pin.



When to use Series M-200 Valves

- ***Use M-Series valves for positive shutoff to 200 psi wp.***

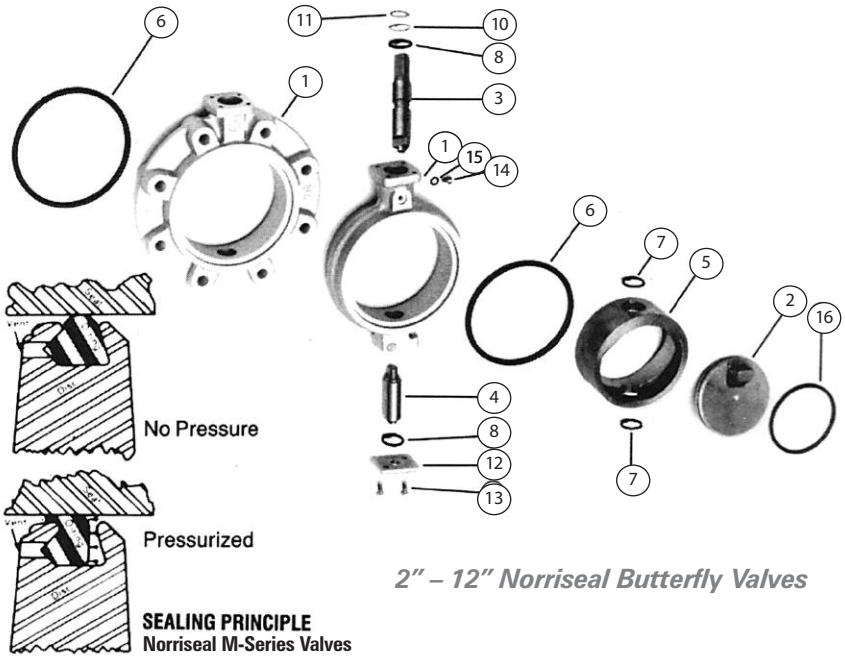
  Under certain service conditions, Norriseal valves may be rated up to 250 psi wp. Consult factory for trim recommendations and pricing.

- ***Use M-Series valves for throttling control when flow rates do not exceed 16 fps.***

- ***Use M-Series valves at temperatures from -40° to +350°F.***

  Proper selection of seal elastomers must be made for valve applications at extreme temperatures.

- ***Use M-Series valves of any size for complete bi-directional, zero bubble positive shutoff. A wide range of elastomer seals is available.***



2" – 12" Norriseal Butterfly Valves

- ***Use M-Series valves for controlling the flow of liquids and gases, including abrasive and corrosive materials.***

  Limited use of elastomers in M-Series valves make them ideal for handling gasolines and other volatile media which tend to dry the elastomer. Field replaceable metal seat is available in a variety of exotic materials to resist corrosion. Metal seat liner and double O-ring shaft seals prevent line media from contacting body of valve, making use of premium body materials unnecessary. Only the internal wetted parts need to be corrosion resistant to the media. M-Series valves are not recommended for use when large abrasive material is present. See R-Series section.

- ***Use M-Series lug-type valves for end-of-line suspension to full rated working pressure without a downstream flange or spool piece.***

- ***Use M-Series valves for insulated lines.***

  14 inch and larger Norriseal valves will accommodate 2 inches of insulation on accompanying pipelines. A neck extender is available for use with 2 thru 12 inch wafer valves when lines are insulated.

- ***Use M-Series valves with ANSI Class 125 cast iron or Class 150 steel flanges. Care should be exercised to assure that valve body is correctly centered when installing M-Series valves between slip-on flanges.***

  M-Series span type valves can be used with ANSI Class 300 flanges, however, some valve sizes may require special bolt drilling or spacers. Lug style bodies for use with ANSI Class 300 flanges are available on special order. (Consult factory).

- ***M-Series valves are designed for use with standard weight or schedule 40 pipe inside dimensions. Check data sheets for specific clearance dimensions.***

  If heavy wall, plastic or cement lined pipe is used, back beveling at the flange may be required for disc clearance.

- ***Norriseal M-Series butterfly valves have been found to offer maximum resistance to damage from fire because of limited use of elastomers in the sealing design. (Request fire test report for specifics).***

2"–12" Norriseal Butterfly Valves Parts Description

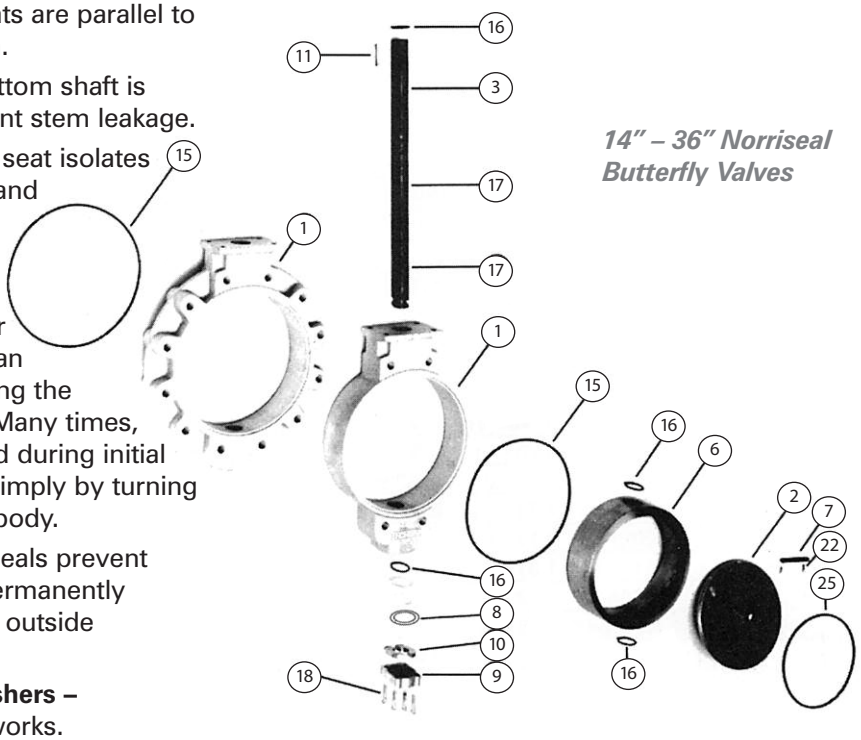
- **1. Body –** Valve body isolated from flow stream by metal seat and O-ring seals. Steel bodies have Teflon bushings to prevent seizing with stainless steel shafts. Different models and materials are available. See exploded assembly.
- **2. Disc –** Angle disc construction gives 360° uninterrupted contact of disc O-ring with seat for dependable bubble-tight shutoff. Drive slot assures positive disc action. Precision fit prevents disc "flutter."
- **3. Operator Shaft –** Operator 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 and indicate disc position.

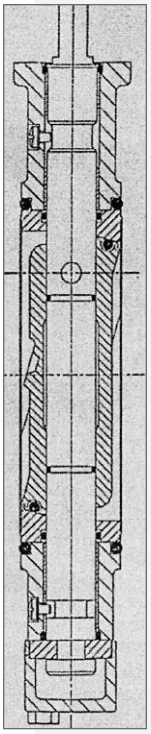
- **4. Bottom Shaft –** Stationary bottom shaft is double O-ring sealed to prevent stem leakage.
- **5. Seat –** Field replaceable metal seat isolates valve body from flow stream and eliminates need for premium body material.
- **6. Body O-rings –** Body O-ring flange seals eliminate need for flange gaskets. Flange seals can be replaced without dismantling the valve and replacing the seat. Many times, an O-ring flange seal damaged during initial installation may still be used simply by turning it over and returning it to the body.
- **7/8. O-ring Shaft Seals –** Shaft seals prevent leakage to 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 –** Top and bottom shafts are retained by sealed retention screws for safety. Cannot be removed when valve is installed between flanges.
- **16. Disc O-ring Seal –** Pressure energized O-ring seal contained in specially designed groove in disc edge assures positive shutoff. The higher the pressure, the tighter the seal.

14"– 36" Norriseal Butterfly Valves Parts Description

- **1. Body –** Valve body isolated from flow stream by metal seat and O-ring seals. All 14" and larger bodies have inboard and outboard bushings for handling shaft loads and to provide minimum torque. Different models and materials are available.
- **2. Disc –** Angle disc construction gives 360° uninterrupted contact of disc O-ring with seat for dependable bubble-tight shutoff.
- **3. Shaft –** Through shaft, cross pinned to disc with straight dowel pin, assures maximum drive strength and field repairability. Disc pin does not penetrate sealing plane of the disc.
- **6. Seat –** Field replaceable metal seat isolates valve body from flow stream; eliminates need for premium body material.

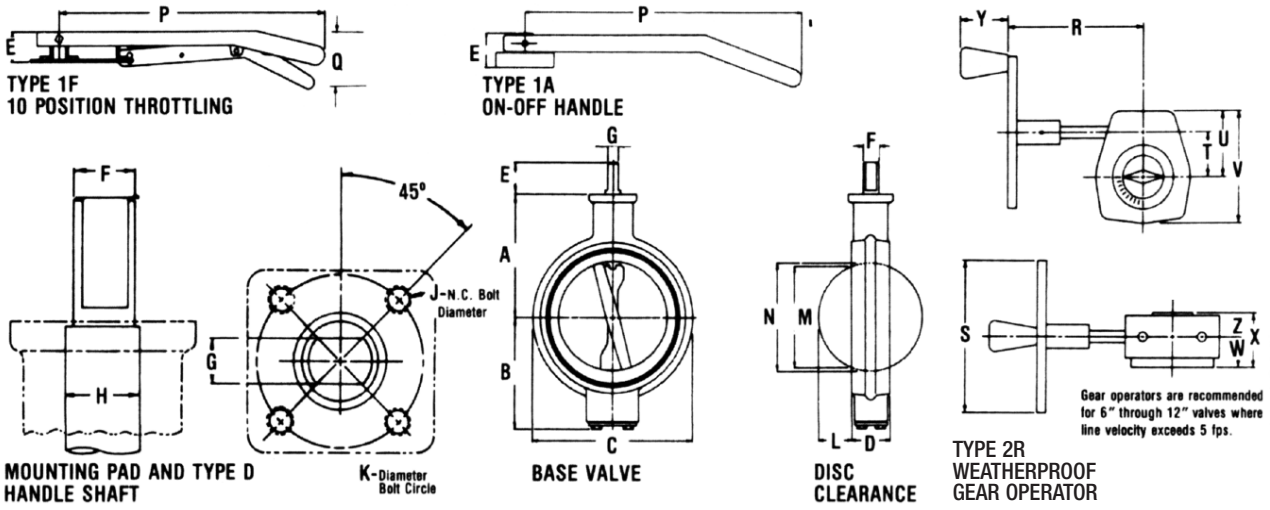


14" – 36" Norriseal Butterfly Valves



- **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, an O-ring flange seal damaged during initial installation may still be used simply by turning it over and returning it to the body.
- **16. O-ring Seat and Shaft Seals –** Seat and shaft seals prevent stem leakage to atmosphere and permanently lubricated areas; protect from outside contamination.
- **17. O-ring Disc/Shaft Seals –** Seals prevent leakage across disc plane.
- **18. Thrust Plate Capscrews –** To retain bottom thrust plate.
- **22. Disc Pin Capscrews –** To retain disc pin.
- **25. Disc O-ring Seal –** Pressure energized O-ring seal contained in a specially designed groove in disc edge assures positive shutoff. The higher the pressure, the tighter the seal.

R&M-1000 2”-12” Valves



VALVE DIMENSIONS

Dimension Reference	Valve Size (Inches/mm)									
	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	N/A	4.88	5.28	6.50	7.47	9.38	10.41
B	3.22	3.75	4.05	N/A	4.50	4.91	6.00	6.94	8.66	9.69
C	4.13	4.88	5.38	N/A	6.88	7.75	8.75	10.88	13.38	16.00
D	1.63	1.75	1.75	N/A	2.00	2.14	2.13	2.50	2.50	3.00
E	1.31	1.31	1.31	N/A	1.31	1.31	1.69	1.69	2.00	2.00
F	.69	.69	.69	N/A	.69	.69	.88	.88	1.06	1.06
G	.50	.50	.50	N/A	.50	.50	.63	.63	.75	.75
H	.69	.88	.88	N/A	.88	.88	1.06	1.06	1.38	1.38
J	.25	.25	.25	N/A	.25	.25	.38	.38	.38	.38
K	1.81	1.81	1.81	N/A	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	N/A	3.59	4.72	5.55	7.44	9.58	11.52
N	2.41	2.72	3.20	N/A	4.19	5.17	5.91	7.81	9.89	11.89
Approx Wt. (lbs) Cast Iron Body	5	7	9	–	14	17	23	37	59	80

BOLT DATA

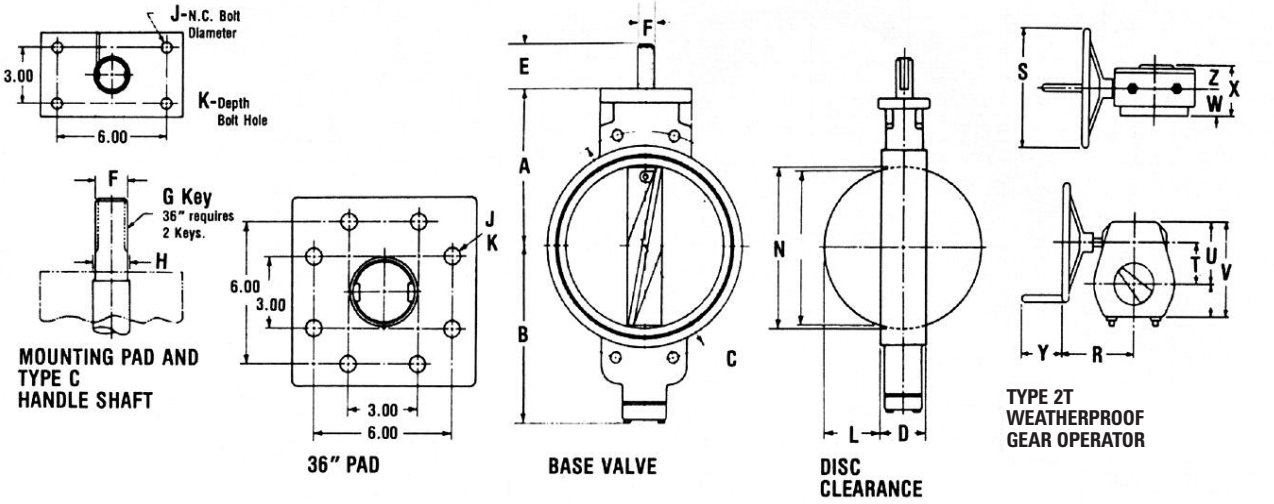
For Use with ANSI Class 150 Weldneck Flanges.
For optimum valve performance, it is recommended that butterfly valves be installed between weldneck flanges or flanges with equivalent inside dimensions.

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. Required	4	4	4	–	8	8	8	8	12	12

OPERATOR DIMENSIONS

P	9.94	9.94	9.94	N/A	9.94	9.94	15.00	15.00	16.00	16.00
Q	3.34	3.34	3.34	N/A	3.34	3.34	3.66	3.66	3.66	3.66
R	6.88	6.88	6.88	N/A	6.88	6.88	7.50	7.50	8.00	8.00
S	6.00	6.00	6.00	N/A	6.00	6.00	8.00	8.00	8.00	8.00
T	2.36	2.36	2.36	N/A	2.36	2.36	2.36	2.36	3.00	3.00
U	3.50	3.50	3.50	N/A	3.50	3.50	3.50	3.50	4.38	4.38
V	5.93	5.93	5.93	N/A	5.93	5.93	5.93	5.93	7.50	7.50
W	5.25	5.25	5.25	N/A	5.25	5.25	5.25	5.25	6.75	6.75
X	2.92	2.92	2.92	N/A	2.92	2.92	2.92	2.92	3.27	3.27
Y	2.63	2.63	2.63	N/A	2.63	2.63	2.63	2.63	2.63	2.63
Z	1.69	1.69	1.69	N/A	1.69	1.69	1.69	1.69	1.88	1.88
Approx Wt. (lbs) 2R & 2RM Operator	7	7	7	N/A	7	7	8	8	13	13

R&M-1000 14"-36" Valves



VALVE DIMENSIONS

Dimension Reference	Valve Size (Inches/mm)										
	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	.38x2.5	.38x2.5	.38x2.5	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.75x3.0
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

DISC CLEARANCE

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
Approx Wt. (lbs) Cast Iron Body	187	262	351	432	550	606	790	910	1160	1220	1840

BOLT DATA

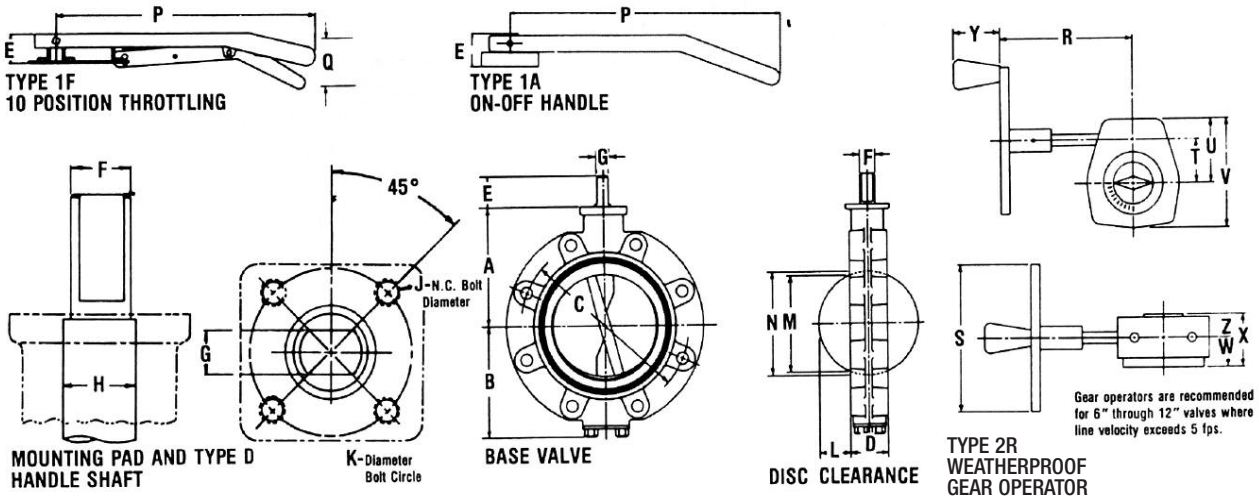
For Use with ANSI Class 150 Weldneck Flanges.
For optimum valve performance, it is recommended that butterfly valves be installed between weldneck flanges or flanges with equivalent inside dimensions.

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. Required (Both Required)	8	12	12	16	16	16	20	24	24	24	28
Capscrew Size	1.00NC x 3.00	1.00NC x 3.00	1.13NC x 3.00	1.13NC x 3.00	1.25NC x 4.00	1.25NC x 4.00	1.25NC x 3.50	1.25NC x 3.25	1.25NC x 3.50	1.50NC x 3.75	1.50NC x 3.75
No. Required	8	8	8	8	8	8	8	8	8	8	8

OPERATOR DIMENSIONS

R	9.75	9.75	9.75	17.25	17.25	17.25	17.84	17.84	17.84	17.84	17.84
S	12.75	12.75	12.75	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
T	4.83	4.83	4.83	5.38	5.38	5.38	2.69	2.69	2.69	2.69	7.13
U	6.63	6.63	6.63	7.63	7.63	7.63	9.44	9.44	9.44	9.44	10.81
V	10.13	10.13	10.13	11.13	11.13	11.13	14.94	14.94	14.94	14.94	16.31
W	9.00	9.00	9.00	10.81	10.81	10.81	12.00	12.00	12.00	12.00	14.00
X	5.00	5.00	5.00	5.14	5.14	5.14	7.38	7.38	7.38	7.38	7.75
Y	4.50	4.50	4.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Z	2.88	2.88	2.88	2.88	2.88	2.88	4.00	4.00	4.00	4.00	4.00
Approx Wt. (lbs) 2R & 2RM Operator	70	70	70	90	90	90	90	210	210	210	260

R&M-3000 2”-12” Valves



VALVE DIMENSIONS

Dimension Reference	Valve Size (Inches/mm)									
	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	N/A	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

DISC CLEARANCE

L	.38	.50	.75	.94	1.13	1.56	1.94	2.69	3.75	4.50
M	1.77	2.06	2.69	3.16	3.59	4.72	5.55	7.44	9.58	11.52
N	2.41	2.72	3.20	3.72	4.19	5.17	5.91	7.81	9.89	11.89
Approx Wt.- Cast Iron Body	7	9	11	14	18	22	30	44	68	108

BOLT DATA

For Use with ANSI Class 150 Weldneck Flanges.
For optimum valve performance, it is recommended that butterfly valves be installed between weldneck flanges or flanges with equivalent inside dimensions.

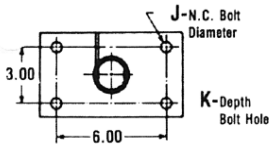
Capscrew Size	.63NC x 1.50	.63NC x 1.50	.63NC x 1.75	.63NC x 1.75	.63NC x 1.75	.75NC x 1.75	.75NC x 2.00	.75NC x 2.25	.88NC x 2.25	.88NC x 2.50
No. Required	8	8	8	16	16	16	16	16	24	24

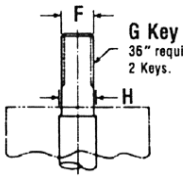
*Through-tapped from face to face for studs or capscrews unless specified otherwise.

OPERATOR DIMENSIONS

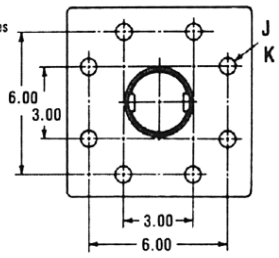
P	9.94	9.94	9.94	N/A	9.94	9.94	15.00	15.00	16.00	16.00
Q	3.34	3.34	3.34	N/A	3.34	3.34	3.66	3.66	3.66	3.66
R	6.88	6.88	6.88	N/A	6.88	6.88	7.50	7.50	8.00	8.00
S	6.00	6.00	6.00	N/A	6.00	6.00	8.00	8.00	8.00	8.00
T	2.36	2.36	2.36	N/A	2.36	2.36	2.36	2.36	3.00	3.00
U	3.50	3.50	3.50	N/A	3.50	3.50	3.50	3.50	4.38	4.38
V	5.93	5.93	5.93	N/A	5.93	5.93	5.93	5.93	7.50	7.50
W	5.25	5.25	5.25	N/A	5.25	5.25	5.25	5.25	6.75	6.75
X	2.92	2.92	2.92	N/A	2.92	2.92	2.92	2.92	3.27	3.27
Y	2.63	2.63	2.63	N/A	2.63	2.63	2.63	2.63	2.63	2.63
Z	1.69	1.69	1.69	N/A	1.69	1.69	1.69	1.69	1.88	1.88
Aprox Wt. 2M & 2RM Operator	7	7	7	N/A	7	7	8	8	13	13

R&M-3000 14"-36" Valves

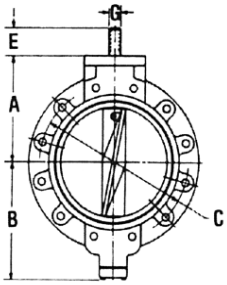




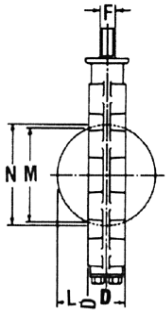
MOUNTING PAD AND TYPE C HANDLE SHAFT



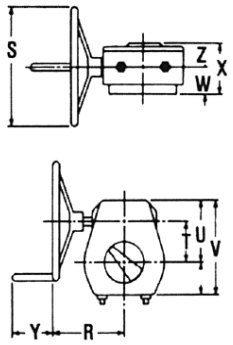
36" PAD



BASE VALVE



DISC CLEARANCE



TYPE 2T WEATHERPROOF GEAR OPERATOR

VALVE DIMENSIONS

Dimension Reference	Valve Size (Inches/mm)										
	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	.38x2.5	.38x2.5	.38x2.5	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.63x2.94	.75x3.0
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

DISC CLEARANCE

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
Approx Wt.- Cast Iron Body	234	339	432	538	590	621	960	1150	1300	1360	2150

BOLT DATA

For Use with ANSI Class 150 Weldneck Flanges.
For optimum valve performance, it is recommended that butterfly valves be installed between weldneck flanges or flanges with equivalent inside dimensions.

Capscrew Size	1.00NC x 3.00	1.00NC x 3.00	1.13NC x 3.50	1.13NC x 3.50	1.25NC x 4.00	1.25NC x 4.00	1.25NC x 4.00	1.25NC x 4.00	1.25NC x 4.00	1.50NC x 4.50	1.50NC x 4.50
No. Required (Both Required)	24	32	32	32	32	40	40	48	48	48	64
Capscrew Size				1.13NC x 3.00	1.25NC x 3.50		1.25NC x 3.50	1.25NC x 3.25	1.25NC x 3.50	1.25NC x 3.75	1.50NC x 4.00
No. Required	N/A	N/A	N/A	8	8	N/A	8	8	8	8	8

OPERATOR DIMENSIONS

R	9.75	9.75	9.75	17.25	17.25	17.25	17.84	17.84	17.84	17.84	17.84
S	12.75	12.75	12.75	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
T	4.83	4.83	4.83	5.38	5.38	5.38	2.69	2.69	2.69	2.69	7.13
U	6.63	6.63	6.63	7.63	7.63	7.63	9.44	9.44	9.44	9.44	10.81
V	10.13	10.13	10.13	11.13	11.13	11.13	14.94	14.94	14.94	14.94	16.31
W	9.00	9.00	9.00	10.81	10.81	10.81	12.00	12.00	12.00	12.00	14.00
X	5.00	5.00	5.00	5.14	5.14	5.14	7.38	7.38	7.38	7.38	7.75
Y	4.50	4.50	4.50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Z	2.88	2.88	2.88	2.88	2.88	2.88	4.00	4.00	4.00	4.00	4.00
Aprox Wt. 2P & 2PM Operator	70	70	70	90	90	90	90	210	210	210	260

Series 200 Model Code

BODY CONFIGURATION

Configuration	Code
Special to be Described	00
Single Rib Wafer Body	10
ISO Wafer Body (DI only)	11
Double Rib Wafer Body	20
Full Lugged Body	30
ISO Lugged Body (DI only)	31

SERIES

Series	Code
Resilient Seat	R
Metal Seat	M
Metal-to-Metal Seat (Damper Style)	D

VALVE SIZE (IN INCHES)

Size	Code
2"– 36"	2...36

BODY MATERIALS

Material Type	Code
Ductile Iron ASTM A395 60-40-18	11
Carbon Steel (WCB) ASTM A216 Gr. WCB	20
316 Stainless Steel ASTM A743 CF8M*	21
Alloy 20 Stainless Steel ASTM A743 CN7M*	22
Valve Bronze ASTM B61	30
Aluminum Bronze (NiAl) ASTM B148 Alloy 95800	31
Aluminum Alloy ASTM B26 Alloy356-T6	40

*Special Order – Consult Factory

SHAFT MATERIAL

Material	Code
Alloy 20 Stainless Steel ASTM B473 N08020	1
316 Stainless Steel ASTM A276 Type 316	2
416 Stainless Steel ASTM A582 Type 416	3
Monel (NiCu Alloy) ASTM B164, Class A	4
Nitronic 50 Stainless Steel"ASTM A276	5
K-Monel (NiCuAl Alloy) Alloy QQ-N-286A*	6
17-4 PH Stainless Steel ASTM A564 Type 630	7
Inconel 600 ASTM B166	8
Titanium ASTM B348 Gr. 4	9
Special to be Described	0
Hastelloy "B" ASTM B335	B
Hastelloy "C" 276 ASTM A574 Alloy N10276	C

*K-Monel std. in 22" & Larger Valves with Monel Shaft

DISC MATERIAL

Code	Materials
1	Ductile Iron ASTM A395 60-40-18
2	316 Stainless Steel ASTM A743 Gr. CF8M
3	Alloy 20 Stainless Steel ASTM A743 Gr. CN7M
4	Aluminum Bronze ASTM B148 Alloy C95400 2" thru 14" B148 Alloy C95500 16" thru 36"
5	Aluminum Alloy ASTM B26 Alloy 356-T6
6	Monel (Ni Cu Alloy) ASTM A494, M30C
9	Titanium ASTM B367 Gr. 8A
0	Special to be described
B	Hastelloy "B" ASTM A494 Gr. N-12MV
C	Hastelloy "C" ASTM A494 CW 12MW
G	Inconel 600 ASTM A494 Alloy CY40
K	Illium PD
P	NiAl Bronze ASTM B148 Alloy C95800

SEAT MATERIAL

Code	Seat R Series
A	Buna N
B	Fluoroelastomer (Viton)
E	Neoprene (Black)
G	Neoprene (White)
J	Nitrile, Abrasive Resistant
S	EPDM, Peroxide Cured
4	HSN, Highly Saturated Nitrile/ Epoxy Backing
5	Natural Red Rubber
8	Peroxide Cured Nitrile

Code	Seat M Series
1	Cast Iron ASTM A126, Class B
2	316 Stainless Steel ASTM A743 Gr. CF8M
3	Aluminum Bronze ASTM B148 Alloy C95300
4	Aluminum Alloy ASTM B26 Alloy 356-T6
5	Monel (Ni Cu Alloy) ASTM A494, M30C
6	Inconel 600 ASTM A494 Alloy CY40
7	Alloy 20 Stainless Steel ASTM A743 Gr. CN7M
9	Titanium ASTM B367 Gr. 8A
0	Special to be described
B	Hastelloy "B" ASTM A494 Gr. N-12MV
C	Hastelloy "C" ASTM A494 CW 12MW
F	Illium PD
G	NiAl Bronze ASTM B148 Alloy C95800

6 M 30 11 - 4 2 3 B - 2R

SEALS

Materials	Code
Buna N	A
Viton	B
Neoprene (Black)	E
Neoprene (White)	G
AFLAS	R
EPDM	S
Low Temp Neoprene	V
Kalrez	Y
Highly Saturated Nitrile (HSN)	4
Peroxide Cured Nitrile	8

NORRISEAL OPERATORS

Code	Manual Operators
1A	(2-12) STD Handle with 1J Topworks
1F	(2-12) Squeeze Trigger 10 Pos
1FM	(2-12) 1F with Marine Trim
1J	(2-12) STD Topworks On-Off
1AM	(2-5) STD Handle with 1S Topworks
1P	(2-8) Locking Topworks
1Q	(2-8) 1P Topworks with STD Handle
1JS	(2-8) STD On-Off Topworks, Stainless Steel

Code	Mechanical Operators
2E	(2-12) Gear - W.P. - Aluminum Bronze Marine Trim
2ES	(2-12) 2E Subm. for Salt Water
2R	(2-12) Gear Operator Aluminum Case
2T	(2-36) Gear Operator Cast Iron Case
2RM	2R with Marine Trim
2TM	2T with Marine Trim

Code	Diaphragm Operators
**	
2G11	(2-4) 35 SR Diaphragm Actuator
2G12	(2-4) 35 PB Diaphragm Actuator
2G13	(2-8) 70 SR Diaphragm Actuator
2G14	(2-8) 70 PB Diaphragm Actuator
2G15	(6-12) 180A SR Diaphragm Actuator
2G16	(6-12) 180 PB Diaphragm Actuator
2G17	(12-20) 180 SR Diaphragm Actuator
2G18	(12-20) 180 PB Diaphragm Actuator

**2G Numbers listed are Basic Numbers Only. Complete Actuator Model Number Must be Used when ordering.

SR-Spring Return. Specify Fail/Open or Fail/Closed.

PB - Pressure Balanced/Double Acting.

Please note: not all available options are shown.

R200 Series Specifications

Typical Specifications, General Purpose Trim

Valves 2" through 36" shall be resilient lined, wafer or lug butterfly type with replaceable body O-ring flange seals. Bodies shall be of high-strength ductile iron with aluminum bronze discs, 416 stainless steel shafts, aluminum bronze seats and Buna N (Hycar®) seats and seals. *For more severe applications, consult trim table for proper body, disc, shaft, seal and O-ring material selection*. Valves through 5" shall have lever handles for on-off service *or other specified operator*. Valves 6" and larger shall be equipped with weatherproof gear operators *or other specified operator*. Valves shall be suitable for installation between ANSI Class 150 weldneck flanges or other specified flanges without special preparation. Butterfly valves shall be Norriseal Angle Disc Model R2011 – 43AA-1A *or other specified model number.*

M200 Series Specifications

Typical Specifications, General Purpose Trim

Valves 2" through 36" shall be metal lined, wafer or lug butterfly type. Bodies shall be of high-strength cast iron with aluminum bronze discs, 416 stainless steel shafts, aluminum bronze seats and Buna N (Hycar®) seats and seals. *For more severe applications, consult trim table for proper body, disc, shaft, seal and O-ring material selection*. Valves through 5" shall have lever handles for on-off service *or other specified operator*. Valves 6" and larger shall be equipped with weatherproof gear operators *or other specified operator*. Valves shall be suitable for installation between ANSI Class 150 weldneck flanges or other specified flanges without special preparation. Butterfly valves shall be Norriseal Angle Disc Model M1011 – 433A *or other specified model number.*

Series R200

Series M200

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- Field support available worldwide

Please contact your Norriseal representative for more details and assistance in specifying the optimal solution for your application.

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