

# 141/143

APOLLO® BUTTERFLY VALVE  
General Purpose/Economy/HVAC  
Wafer / Lug  
2"-24"



*Simplifying the valve buying process*

**APOLLO**  
Butterfly Valves & Controls  
A Division of Conbraco Industries, Inc.

## Apollo® Butterfly Valves That Meet MSS SP-67 And API 609 Standards

Apollo® 141/143 Series butterfly valves offer an economical design that's ideal for use in industrial and HVAC/mechanical applications. Rated at 200 psig (2"-12") and 150 psig (14"-24") bubble-tight shut-off between flanges, these general purpose valves offer reliable performance in all types of water: hot and cold, treated and untreated and for such tasks as ON/OFF and throttling, control isolation, flow balancing and diversion.

141 Model: One-piece wafer-style, sizes 2" to 24"  
143 Model: Companion lug valves, sizes 2" to 24".

Both models come equipped with an extended neck to assure a minimum 2" clearance between the valve top plate and pipe flange.

### (1) Body Design

141 Model: a one-piece wafer design with flange locating holes; 143 Model: valves are full lug with tapped lugs, to ANSI 125/150 drillings. Face-to-face dimensions meet universal interchangeability standards outlined in MSS SP-67 and API 609.

### (2) Phenolic Backed Seat

The valves are equipped with a stretch-resistant, non-collapsible blowout-proof seat.

### (3) Seat Facing

Design of the seat facing eliminates the need to use flange gaskets with the valves.

### (4) Mounting Flange For Actuator

The valves' cast-in top plate is universally designed to ISO 5211 standard dimensions for direct mounting of Apollo® Compactorque™ actuators and manual operators.

### (5) Single-Piece Through Shaft

To assure positive disc positioning and dependable performance, the valves feature a one-piece "Double D" through shaft design.

### (6) Weather Seal

All models are equipped with a shaft weather seal (below bushing on some sizes).

### (7) Smooth Finish Disc Flats

Interfacing with seat flats assures a high efficiency seal and prevents shaft-area leaking.

### (8) Precision Taper Pins

Pins provide a vibration-proof, positive shaft-to-disc connection.

### (9) Three Bushings

Support shaft at three locations to enhance shaft alignment and absorb actuator side thrusts.

### (10) Profiled Disc Design

Precision disc assures bubble-tight shut-off with minimal torque and longer seat life.

### (11) Shaft Seal

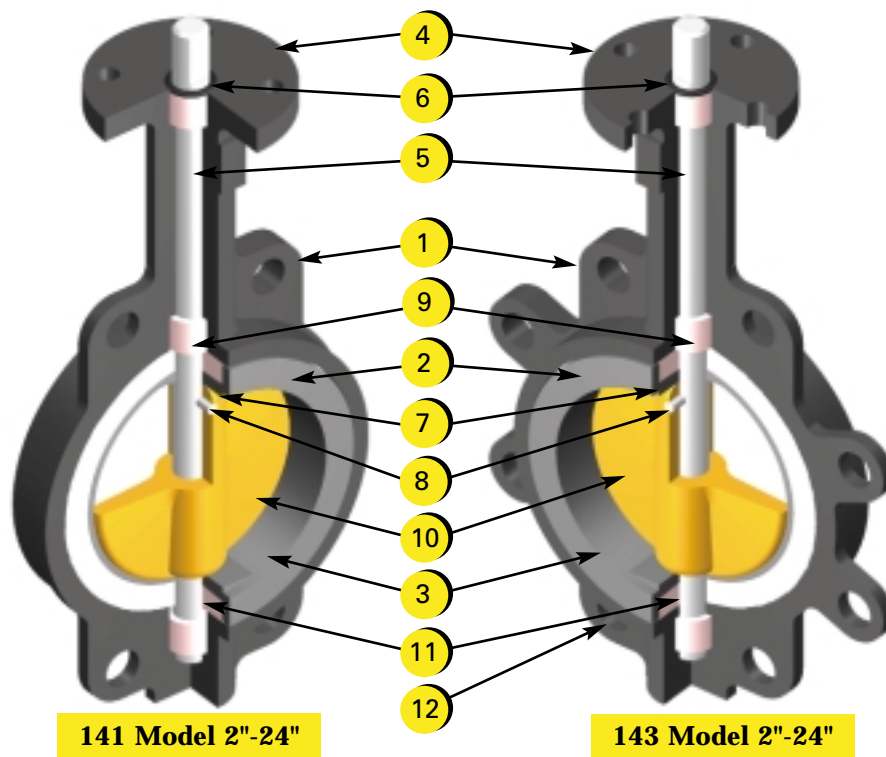
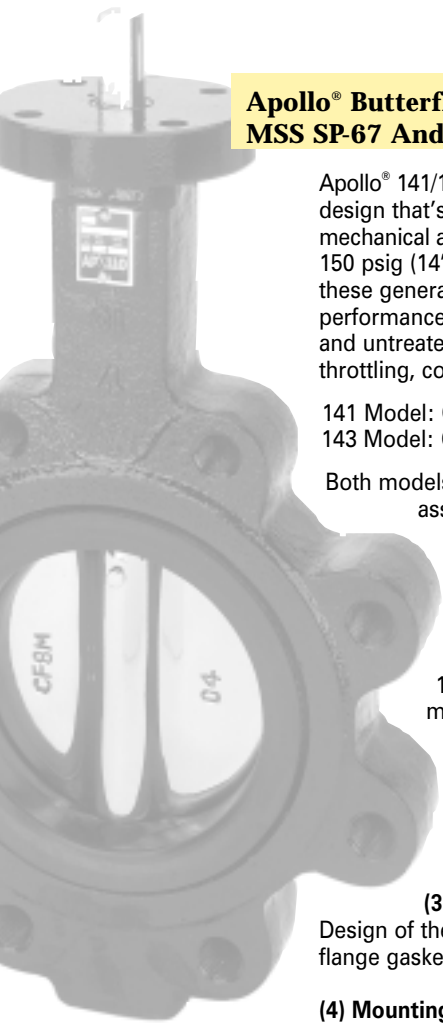
Bonding the elastomer to the phenolic backing ring guards against distortion, a frequent cause of shaft leakage.

### (12) Dead End Service

All 2" to 24" 143 Model valves are equipped with retainer screws for dead end service; 2" through 12" to 200 psig, 14" through 24" to 150 psig.

### Testing

All valves are 110 percent factory tested in both operational directions before shipping.



141 Model 2"-24"

143 Model 2"-24"

# From the Name You Know And Trust

## Direct Actuator Mounting

No brackets, or couplings are needed for mounting. The modular design of these butterfly valves allow direct mounting of all Apollo® manual operators and Apollo® Compactorque™ pneumatic actuators.

## Self Locking Gear Operators

Self locking manual gear operators are available for all Apollo 141/143 Series butterfly valves for heavy duty ON/OFF and throttling service. Gear operators are completely weatherproof and self-lubricating; they're equipped with position indicators and adjustable travel stops. Chainwheel operators are available.

## Handle And Plate Kits



## Manual Overrides

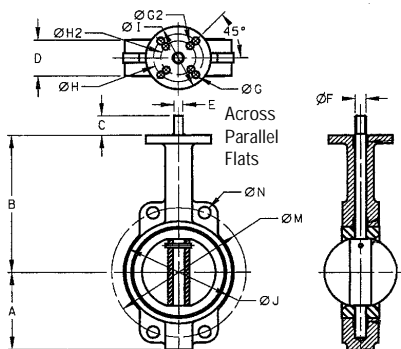
Apollo® manual overrides mount directly between the valve and actuator. Should a power loss require the opening or closing of a valve, a declutchable lever can be manually rotated to provide a camming action and engage the gear segment.

## Apollo® Compactorque™ Actuators

Apollo Compactorque Actuators are the most advanced rack and pinion actuators on the market today. They're available as double acting or as spring return when field-equipped with pre-loaded springs in the standard housing. They're available with a wide variety of corrosion resistant coatings for use in most any application. Compactorque actuators come equipped with our unique Universal Shaft Adapter (USA) which allows direct mounting to our Apollo butterfly valves. Standard features include internal and external travel stop adjustments, internal piston guides, high

temperature, low friction piston bearings and high temperature, low coefficient of friction body bearings that absorb piston side thrusts. All top mounting dimensions and supply ports comply with the latest NAMUR specifications.

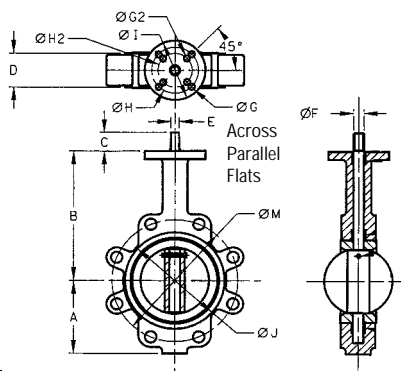
## 141 Model



## 141 and 143 Series Dimensions

Valve Size (in.) (mm)	A	B	C	D	E	F	G	G2	Key
2	50	3.250	6.275	1.250	1.750	.394	.496	.375	--
2.5	65	3.750	6.875	1.250	1.875	.394	.496	.375	--
3	80	4.000	7.125	1.250	1.875	.394	.496	.375	--
4	100	4.875	7.875	1.250	2.125	.472	.621	.375	--
5	125	5.375	8.375	1.250	2.250	.551	.745	.375	--
6	150	5.875	8.875	1.250	2.250	.551	.745	.375	--
8	200	7.125	10.250	1.750	2.500	.669	.870	.563	.438
10	250	8.250	11.500	1.875	2.750	.866	1.120	.563	.438
12	300	9.750	13.250	1.875	3.125	.945	1.244	.563	--
14	350	11.000	14.500	1.875	3.125	.945	1.244	.563	--
16	400	12.000	15.750	2.000	3.500		1.313	.563	--
18	450	14.375	16.625	2.000	4.250		1.500	.813	--
20	500	14.625	18.875	2.500	5.250		1.625	.813	--
24	600	18.000	22.125	2.750	6.125		2.000	.813	--

## 143 Model

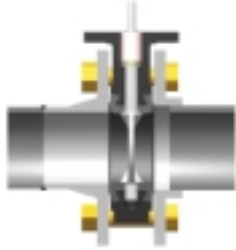


## 141 and 143 Series Dimensions

Valve Size (in.) (mm)	H	H2	I	J	L (141)	Tapped Lug Data (143)	
						K	#Holes Tap UNC.
2	50	2.756	--	3.54	4.000	.6875	4, .625-11
2.5	65	2.756	--	3.54	4.750	.6875	4, .625-11
3	80	2.756	--	3.54	5.125	.6875	4, .625-11
4	100	2.756	--	3.54	6.750	.6875	8, .625-11
5	125	2.756	--	3.54	7.750	.8125	8, .750-10
6	150	2.756	--	3.54	8.625	.8125	8, .750-10
8	200	4.921	4.015	5.91	10.563	.8125	8, .750-10
10	250	4.921	4.015	5.91	13.063	.9375	12, .875-9
12	300	4.921	--	5.91	16.000	.9375	12, .875-9
14	350	4.921	--	5.91	17.125	1.063	12, 1.000-8
16	400	4.921	--	5.91	20.000	1.063	16, 1.000-8
18	450	6.496	--	8.27	21.375	1.250	16, 1.125-7
20	500	6.496	--	8.27	23.313	1.250	20, 1.125-7
24	600	6.496	--	8.27	27.875	1.375	20, 1.250-7

# Apollo® Butterfly Valves Flange Selection

Apollo® butterfly valves are designed for installation between ANSI Class 125/150 lb. weld-neck or slip-on flanges. While we suggest use of weld neck flanges, Apollo models are configured to also accept slip-on flanges that eliminate failures associated with conventional butterfly valves. Be sure to properly align flange and valve when using raised face flanges. Type C stub end flanges are not recommended.



## PRESSURE RATINGS

When the valve is placed between the flanges for bi-directional bubble-tight shut-off, disc in closed position:

### All Disc and Seat Combos

2" - 12" (50mm - 300mm)  
200 psig (14 bar)  
14" - 24" (350mm-600mm)  
150 psig (10 bar)

### Dead-End Service

Without downstream flanges, dead-end pressure rating for valves 2" to 12" is 200 psig (14 bar) and 14" to 24" is 150 psig (10 bar).

## VELOCITY LIMITS

### For ON/OFF Services

Fluids - 30 feet/second (9m/second)  
Gases - 175 feet/second (54m/second)

## 141/143 Series Rated Flow Coefficient (Cv)

Valve Size (in.) (mm)	Angle of Disc Opening (degrees)									
	10°	20°	30°	40°	50°	60°	70°	80°	90°	
2	50	0.06	3	7	15	27	44	70	105	115
2.5	65	0.10	6	12	25	45	75	119	178	196
3	80	0.20	9	18	39	70	116	183	275	302
4	100	0.30	17	36	78	139	230	364	546	600
5	125	0.50	29	61	133	237	392	620	930	1022
6	150	0.80	45	95	205	366	605	958	1437	1579
8	200	2	89	188	408	727	1202	1903	2854	3136
10	250	3	151	320	694	1237	2047	3240	4859	5340
12	300	4	234	495	1072	1911	3162	5005	7507	8250
14	350	6	338	715	1549	2761	4568	7230	10844	11917
16	400	8	464	983	2130	3797	6282	9942	14913	16388
18	450	11	615	1302	2822	5028	8320	13168	19752	21705
20	500	14	791	1674	3628	6465	10698	16931	25396	27908
24	600	22	1222	2587	5605	9989	16528	26157	39236	43116

This chart should be used as a general guide.

For additional Cv information, consult the **Engineering and Application Data Section**.

Cv = the volume of water in U.S. gallons per minute that will pass through a given valve opening with a pressure drop of 1 psig at room temperature.

## Torque Rating (in. lbs.)

Valve Size (in.) (mm)	Full Rated Pressures (psig)				
	ΔP50	ΔP100	ΔP150	ΔP200	
2	50	100	106	111	117
2.5	65	150	163	176	189
3	80	207	220	232	244
4	100	290	323	357	390
5	125	423	481	540	598
6	150	599	691	783	875
8	200	1060	1183	1307	1430
10	250	1671	1872	2074	2275
12	300	2568	2795	3023	3250
14	350	2640	3070	3500	N/A
16	400	4260	4880	5500	N/A
18	450	6287	7243	8200	N/A
20	500	8360	9180	10000	N/A
24	600	15427	16813	18200	N/A

### Special Notations:

All torque values shown on chart are for *wet* (water and other non-lubricating media) on-off service. For *dry* (non-lubricating, dry gas media), multiply values by 1.15. For *lubed* service (clean, nonabrasive lubricating media), multiply values by 0.85.

Under certain conditions, hydrodynamic torque can meet or exceed seating and unseating torques. When designing valve systems, hydrodynamic torque must be considered to help ensure correct selection of actuation.



# Name You Know And Trust

## Apollo 141/143 Series: 2"-24" Materials and Specifications

- ▲ Available in wafer and lug bodies.
- ▲ Compatible with ANSI 125/150 flanges.
- ▲ Wafer body features four alignment holes.
- ▲ Pressure ratings for bubble tight shut-off at temperatures up to maximum limit of the seat material:  
2" to 12" - 200 psig  
14" to 24" - 150 psig
- ▲ Ideal for ON/OFF and throttling service.
- ▲ Through-Stem design with taper pin connecting stem to disc.
- ▲ Encapsulated disc and stem: no exposure of body or stem to line media.
- ▲ Designed to fully comply with MSS SP-67 and API 609.  
(See dimensional table for exact valve measurements.)
- ▲ Valves 2" to 24" meet the intent and have passed AWWA C-504-87 Section 5 proof of design tests.
- ▲ Maintaining optimum performance requires no field adjustment.

### 141/143 Temperature Range of Seats

Type	Max	Min
Buna-N	+180°F (82°C)	+10°F (-12°C)
EPDM	+275°F (135°C)	-30°F (-34°C)

### 141/143 Series

No.	Name	Qty
1	Body	1
2	Seat	1
3	Shaft	1
4	Disc	1
5	Taper Pin	1-2
6	Bushing	3
7	Stem Seal	1

## Valve Construction 2" - 24" (50mm-600mm)

### Body

- Cast Iron  
ASTM A126, Class B

### Seat

- EPDM
- Buna-N

### Bushings

- PTFE

### Stem Seal

- Buna-N

### Disc

- Nickel Plated Ductile Iron  
ASTM A536 (65-45-12)
- Aluminum-Bronze  
ASTM B148, C95400
- 316 Stainless Steel  
ASTM A351, Type CF8M

### Shaft

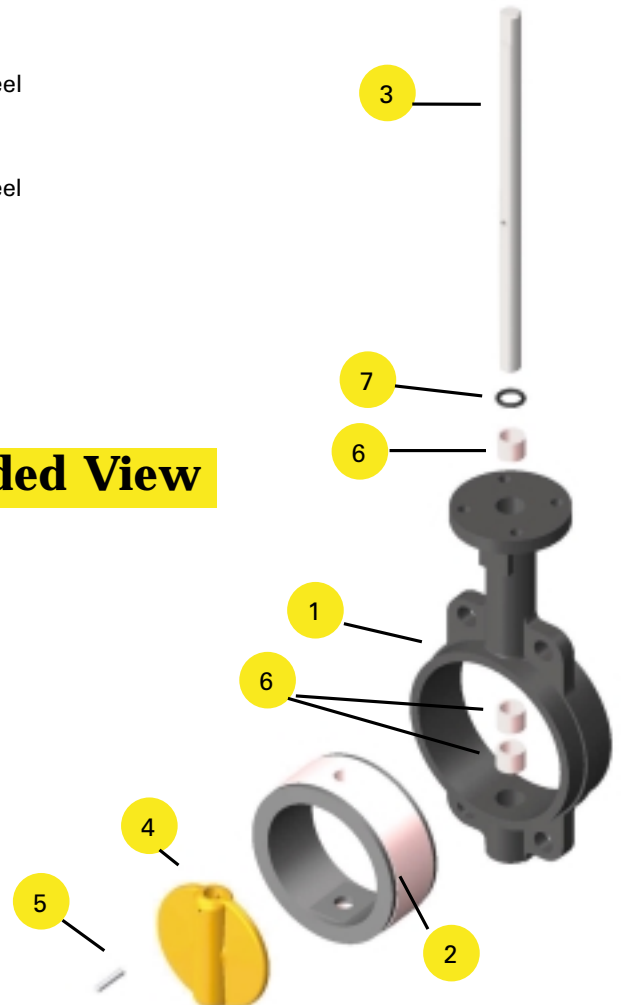
- 416 Stainless Steel

### Taper Pins

- 316 Stainless Steel

Valve Size (in.)	(mm)	Weight(lbs)	
		141 Model	143 Model
2"	50	6	9
2.5"	65	8	10
3"	80	9	11
4"	100	11	18
5"	125	15	22
6"	150	18	26
8"	200	32	43
10"	250	47	66
12"	300	70	102
14"	350	90	148
16"	400	142	206
18"	450	176	277
20"	500	251	410
24"	600	405	592

## Exploded View



trim line only

# Installation

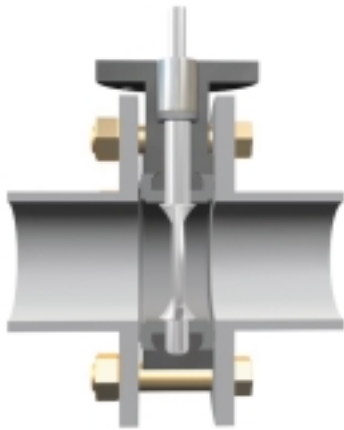
Installing 141/143 Series Valves

Begin by positioning the disc at partially open; maintain the disc within the body face-to-face. After positioning the valve body between flanges, install flange bolts. Don't use flange gaskets. Before tightening flange bolts, adjust disc to the full open position. This helps assure proper alignment and clearance between the outside diameter of the disc and the inside diameter of the pipe. Tighten bolts to spec with disc in full open position. After tightening, rotate disc carefully to closed position to assure proper outside diameter clearance.

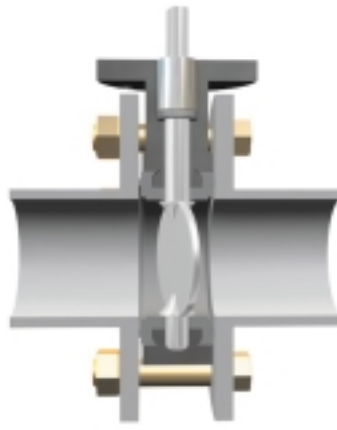
## Maintenance

Apollo® butterfly valves are designed for extended service with minimal wear and servicing. No regular lubrication is needed. In case of replacement, put disc in a near closed position and remove from line, spread flanges and support the valve while removing flange bolts.

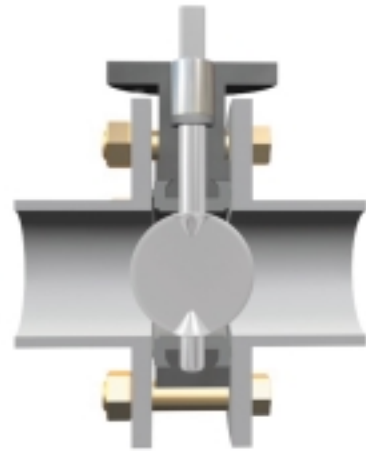
*Note: Always depressurize a piping system when removing a manual or power actuator or performing valve maintenance.*



**Closed**



**Partially open**



**Open**

To learn more about Apollo® Butterfly valves or to place an order, see your local Apollo distributor:



**Conbraco Industries, Inc.**  
P.O. Box 247  
Matthews, NC 28106

**704.841.6000**  
**Fax: 704.841.6020**  
**www.conbraco.com**

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