BALON®

BALON®

Ball Valves - Floating
Series F Gear Operated

Balon includes gear operators as a standard feature in 4" full port and larger ANSI 600 class valves and 6" full port and larger in ANSI 150 and 300 classes. This is the valve to specify when steel valves are required.

Ball Valves - Trunnion
Series T Trunnion Mounted

Balon's new line of trunnion mounted ball valves include numerous patented features and improvements. Now available in 8" full port ANSI 300 and 4", 6" and 8" ANSI 600 in carbon steel standard, carbon steel NACE and stainless steel NACE trim configurations. Additional sizes will be available soon.

Gear Operator

Rugged locking device and ductile iron gearbox are standard. With a stainless steel shaft and directional indicator, this gear operator is suitable for both above ground and buried service.

Ball Valves - Floating
Series US **UTILI SEAL** Ball Valve

Balon's weld x weld and weld x flange are designed for buried service and feature patented heat dissipating fins, heavy duty stops, and rugged forged steel components. It is available in sizes 2" through 6" in ANSI 150 and ANSI 300 classes. Locking devices and 2" square operating nut are standard.

Swing Check Valves
Series C

Perfect for applications where better corrosion resistance is a must. Ease of maintenance with replaceable seat and disc modules. NACE and 316 stainless steel disc are standard. Available in sizes 2" through 3". This valve is available in carbon steel, ductile iron and aluminum bronze.

Swing Check Valves
Series D

This top entry swing check valve is available in ductile iron, carbon steel, and aluminum bronze, in sizes 1" and 2". Stainless steel discs are standard. The Series D is improved by design making bonnet removal simpler. Expect an extended life made possible by this valves patented Hinge-Works feature.

Swing Check Valves
Series C Flanged End

This flanged end carbon steel valve is available in sizes 2" through 6" ANSI Class 150, 300, and 600 with a working pressure of 285, 740, and 1480 respectively. NACE and stainless steel are standard, and the seat and disc module are completely replaceable.

Swing Check Valves
Thin and Long Pattern Wafer

With sizes ranging from 2" through 6", Balon's long and thin pattern wafer check valves are available in "hard to find" larger port sizes. NACE and a replaceable stainless steel disc are standard. Sturdy, rugged forged steel body construction. Also available with stainless steel seats.

Needle Valves
Resilient Seated

This 6,000 PSI needle valve is built with precision metering in mind. It features a bonnet locking shroud and an innovative split seat design with integral lugs to prevent rotation. This valve is available in both carbon steel and stainless steel. 316 stainless steel stems are standard.

Needle Valves
Metal Seated

This 10,000 PSI needle valve uses an indirect globe style flow path to allow for delicate adjustment at high pressures. It features a bonnet locking shroud. This valve is available in both carbon steel and stainless steel. 316 stainless steel stems are standard.

Table of Contents

Ball Valves - Floating Series LS

Available in ¼" through 1", this solid 316 stainless steel ball valve is the solution for corrosive applications. It is widely used in odorant applications. Pressures are up to 3000 PSI. Locking devices are standard on all Series LS.

Ball Valves - Floating Series LM

This carbon steel threaded end valve is available in sizes ¼" through 1". Stainless steel ball and stems are standard. This is a very rugged valve for pressures up to 3000 PSI. As with other Balon valves, the Series LM is totally maintenance free.

Ball Valves - Floating Series F Threaded / Grooved

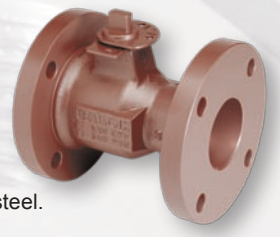
Available in threaded and grooved end sizes from 1" through 4", this valve is available in pressures up to 5000 PSI WP. Firesafe design and built in locking device are standard. Bolted body construction protects against end adapter blowout. This valve is available in carbon steel, aluminum bronze and ductile iron.

Ball Valves - Floating Series S Threaded / Grooved

A threaded / grooved end valve available in pressures up to 3000 PSI WP. This valve is available in carbon steel, ductile iron, aluminum bronze, and stainless steel. It replaces all threaded end plug valves at a competitive cost. Rugged locking device and fire-safe design are standard.

Ball Valves - Floating Series F Flanged End

Available in sizes up to 6" and offered in ANSI 150, 300, 600, 900 and 1500 pressure classes. Because it is totally maintenance free, it eliminates the expense of lubrication and grease contamination in meters and other equipment. This valve is available in ductile iron and carbon steel.



Balon: The Company

Founded in 1965 by Domer Scaramucci, Balon is a family owned company that has expanded in its four decades of operation from an initial 4,000 square foot building to a modern manufacturing facility that encompasses nearly 400,000 square feet today.

Mr. Scaramucci's product designs for the oil and gas industry had long been recognized as inherently superior. It was this experience and success that spurred Mr. Scaramucci to start and structure a valve company that would focus on the integrity of the product as a reflection of the integrity of the Company itself. He envisioned higher quality, safer valves, and valves that would embody the overall Company destiny: to be different by philosophy and better by design.

In the ensuing years, Balon has established a reputation for providing valves that have proven their superior quality and have become the standard by which all others are judged. Our skilled and committed workforce is our most valuable asset and their pride of craftsmanship sets Balon apart from its competition in our pursuit of uncompromised quality and total dedication to customer satisfaction and safety.

Balon is poised for the future as we continue to meet the ever evolving needs of our customers. With twenty-five contiguous acres, Balon will continue its phased expansion that will add an additional 300,000 square feet to its facility.

The Balon Mission

To assure growth for the Company and opportunity for all employees, it shall be our dedicated aim to:

- Produce valves with the safety of those who use them as our uppermost and defining goal.
- Provide our customers with valves that perform as promised, at a price reflective of their true value to the user.
- Meet the needs of our customers by maintaining a worldwide distributor network and a full-time staff of factory trained valve professionals in strategic geographical locations.
- Respond promptly and courteously to all customer and distributor inquiries, questions, and problems.
- Make certain that all Balon employees understand and implement our commitment to customer attention and customer satisfaction.
- Treat our vendors, customers, distributors and employees with equanimity and honesty.

Leading the Pack Through Innovation

By the time Domer Scaramucci founded Balon Corporation in 1965, he had already set the standard for valve technology with his patented valve designs for the oil and gas industry. Driven by a spirit for innovation with an emphasis on safety, he laid the ground work for the company that Balon has become today.

Balon's commitment to deliver the benefits of valve engineering and innovation to our customers is reflected through over two hundred patents that we have been issued throughout the United States and Canada. Our founder's influence on our design engineers continues today as we increase our patent portfolio at an average rate of five patents per year.

Balon has secured a distinguished reputation as an unprecedented innovator of design advances that have become industry standards in ball, check and needle valves. We were first to develop many of the design enhancements that are the features of high quality valves and will continue to **"Lead the Pack"** through innovative design and state of the art manufacturing methods.

Safety is No Accident: We do it by Design

At Balon, safety and quality are uppermost in our minds when we design and build valves. This commitment is reflected in the fact that Balon has produced and sold more than 15 million valves that have been installed and used throughout the world without any reports of bodily injury or property damage attributable to the design or manufacture of a Balon valve.

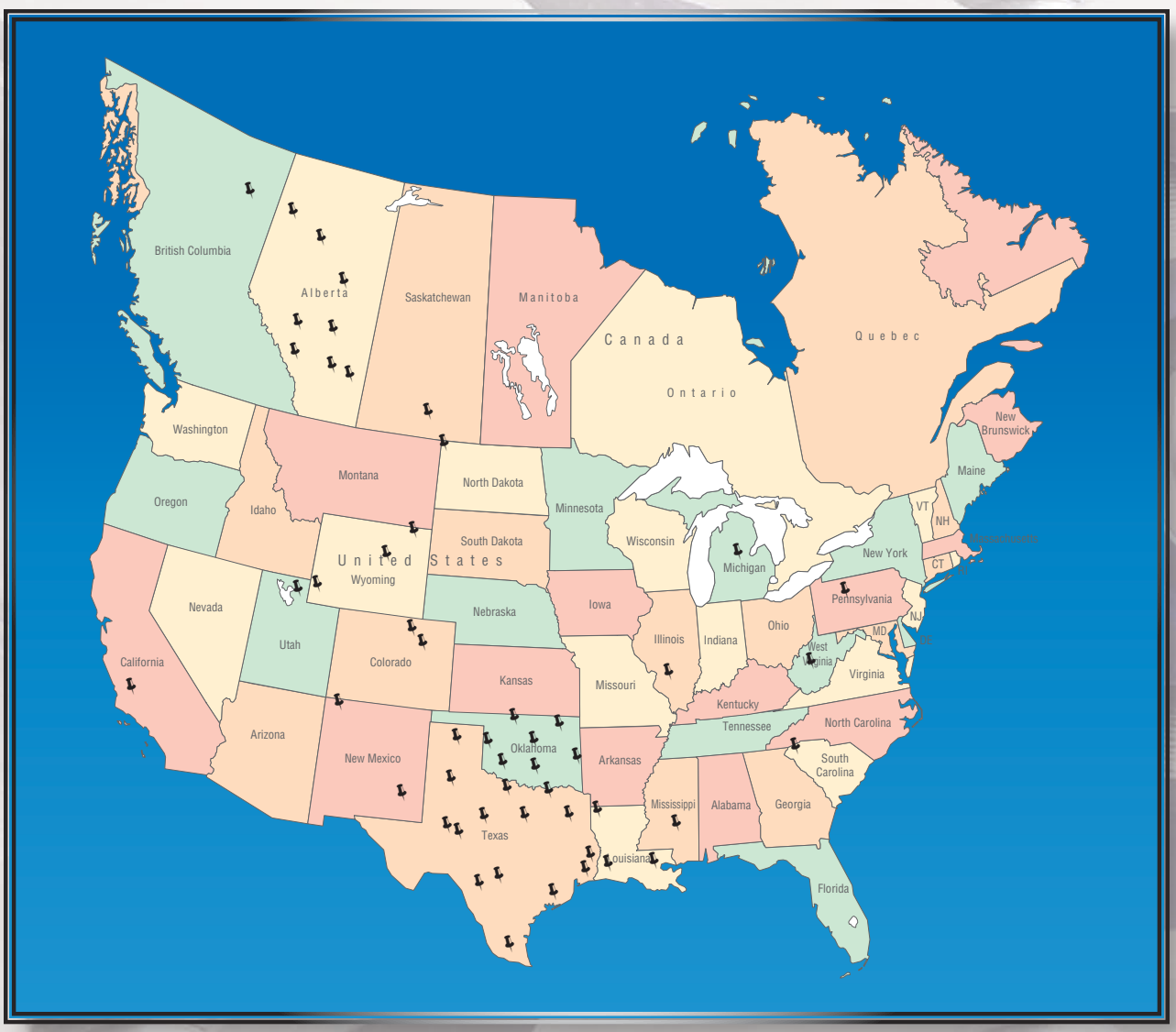
Founder - Domer Scaramucci

We didn't achieve this exceptional safety record by avoiding tough applications. Instead, our safety record is the intentional result of a concerted effort to address possible hazards in the way we design and manufacture valves with an inherent margin of safety that surpasses others on the market.

A Balon valve should never be the cause of any accident. In each design change we pursue, we remain aware that our valves are integral to the safety of an operation, whether that operation is large or small. The fire safe features that are included in every Balon ball valve are a prime example of this philosophy.

In our design and manufacture of valves, we will always remember that our exceptional safety record is the pinnacle of our success.

Customer Support Network



We understand that Balon products are expected to perform at the highest level in terms of safety and operation and to do so in a way that delivers maximum value to the end user. A key ingredient for our customers to achieve the lowest cost of ownership is the ability to communicate directly with factory representatives who are dedicated to complete customer satisfaction.

Balon employs full time, non-commissioned valve specialists throughout North America who concentrate on the development of long term manufacturer–distributor–valve owner relationships.

Our distributors and product owners can rely on prompt, personalized service that Balon has become known for now and in the future. For information regarding the nearest Balon representative, simply contact the factory in Oklahoma City at (405) 677-3321 or by email at balon@balon.com.

Balon Quality
Different by Philosophy
Better by Design

Balon Corporation's 400,000 square feet of modern office and manufacturing capability is shown in this aerial view.

At Balon, our total commitment to excellence means that quality is our top priority. Balon's Quality Plan sets the benchmark for our proactive approach in exceeding standards in the valve industry and our diligent pursuit to identify improvements in design, development, manufacturing and quality control. The result has been that Balon valves have attained a reputation for excellence unequaled by any other valves on the market.

Balon's improved design features, advanced manufacturing methods, and practical common sense engineering have blended with a well-planned marketing program that connects personally with end users and supports distributors vigorously.

Many manufacturers have adopted the philosophy that valves are best made by machines that are incapable of exercising judgment as to the quality of the final product. Balon valves are manufactured by perfection minded craftsmen who employ specialized machines as tools to help them make a better valve. Our entire organization is committed to excellence and each employee takes ownership of the total valve making process.

It is with this philosophy in mind that we will continue to provide a superior valve, an advanced valve. And we will support this product with a concerted program of design, manufacturing, engineering, quality control and marketing. Superior quality, total commitment.

Why Balon is American Made

The Issue is Clear

Companies that buy and resell foreign made valves or incorporate foreign components in their products are sending part of your money overseas and trimming the output of American Industry. American industry provides the foundation and infrastructure necessary to support our national security. Buying foreign materials also cuts U.S. demand for oil and gas because closed factories don't burn fuel.

Balon: American Made

Balon doesn't intend to bite the hand that feeds us. We never have - and we never will. We've always been proud of our American heritage and supporting our home shore vendors has never gone out of style at Balon. Our vendors burn American fuels and provide high quality jobs for American workers who consume the energy you produce.

That's why every Balon valve is manufactured here in America, from components produced by home shore companies. Every casting, ball, nut, and bolt is the product of an American worker, drawing an American salary, consuming American goods, and paying American taxes.

Committed to Our Vendors

Our vendors know that Balon demands and will only accept the highest quality. They also know that Balon is willing to pay a fair price to ensure that level of quality. That's why we deal only with American suppliers who understand Balon's commitment to quality and who realize that our customers won't tolerate anything less.

What about the Competition?

We're not throwing stones. But we do know that a number of competitive firms are either reselling foreign made valves or using foreign components, that's their choice. However, choosing to weaken the American Industrial output will only add to our dependence on others and shift jobs and economic power to those countries that invest in creating manufacturing capacity. Is that the future we want for our children and grandchildren?

Specify Balon

There are many good reasons to specify Balon. One is the quality and safety you have a right to expect.

Another equally important reason gets to the heart of this whole issue… do we help ourselves and our companies by buying American-made products? Or, do we compromise quality and safety and jeopardize the security of our future by moving jobs and industry overseas?

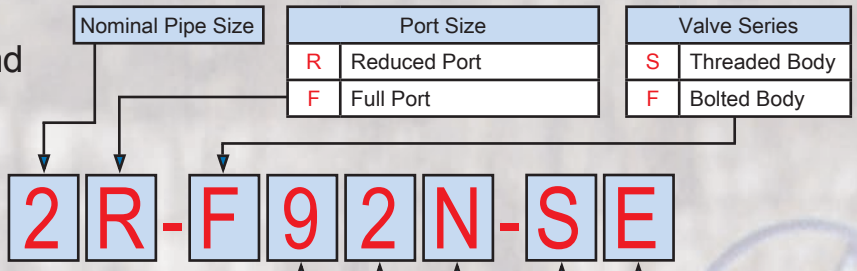
Balon knows that in these times, the choice can be hard. Balon offers the American solution. When you choose Balon, you help to create quality jobs for American workers, support our economy, contribute to our national security and feed the demand for the energy you produce. No other alternative will accomplish these goals. Insist on Balon.

FLOATING BALL VALVES

TOC

Floating Ball Valve Identification Key

Balon Threaded End / Grooved End Series F, S, UNI



Valve Working Pressure	
2	500 PSI WP
3	750 PSI WP
4	1000 PSI WP
6	1500 PSI WP
9	2000 PSI WP or 2500 PSI WP 2″ Reduced Carbon Steel
0	2500 PSI WP or 3000 PSI WP
5M	5000 PSI WP

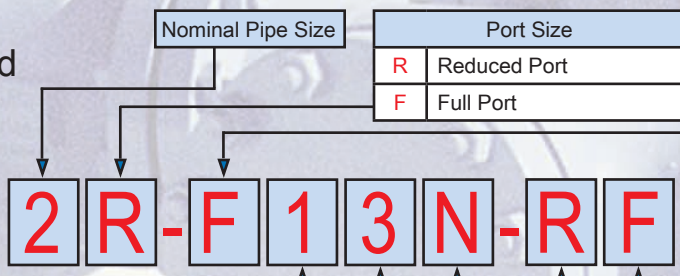
Valve Material	
2	Ductile Iron
3	Carbon Steel
4	Aluminum Bronze
5	Stainless Steel

Trim (Ball & Stem Material)	
	Not Used if Carbon Steel Standard
N	NACE Stainless Steel Ball & Stem

End Connection		
S	E	Threaded End
G	E	Grooved End

Note: For Threaded End Unidirectional valve substitute **UNI** *for* **SE.** *For Grooved End Unidirectional valve specify* **UNI** *after* **GE.**

Balon Flanged End, Weld End Series F, US



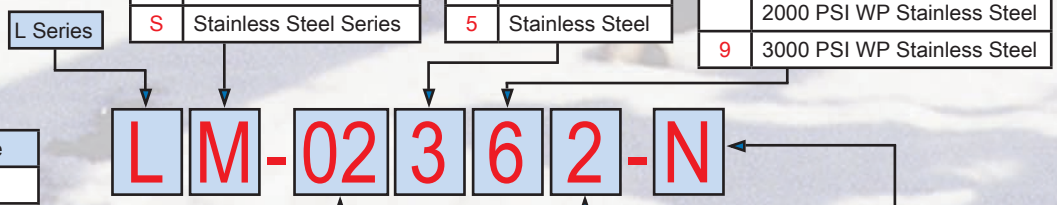
Valve Working Pressure	
1	ANSI 150 285 WP Carbon Steel Ductile Iron RF 250 WP FF 200 WP
3	ANSI 300 740 WP Carbon Steel Ductile Iron RF 640 WP
6	ANSI 600 1480 WP
9	ANSI 900 2220 WP
0	ANSI 1500 3705 WP

Valve Material	
2	Ductile Iron
3	Carbon Steel

Trim (Ball & Stem Material)	
	Not Used if Carbon Steel Standard
N	NACE Stainless Steel Ball & Stem

End Connection		
R	F	Raised Face
R	J	Ring Type Joint
B	W	Butt Weld
W	F	Weld X Flange
F	F	Flat Face (Ductile Only)

Balon Threaded End Series L



Nominal Pipe Size	
02	1/4 NPT
05	1/2 NPT
07	3/4 NPT
10	1 NPT

Port Size	
1	Reduced Port
2	Full Port

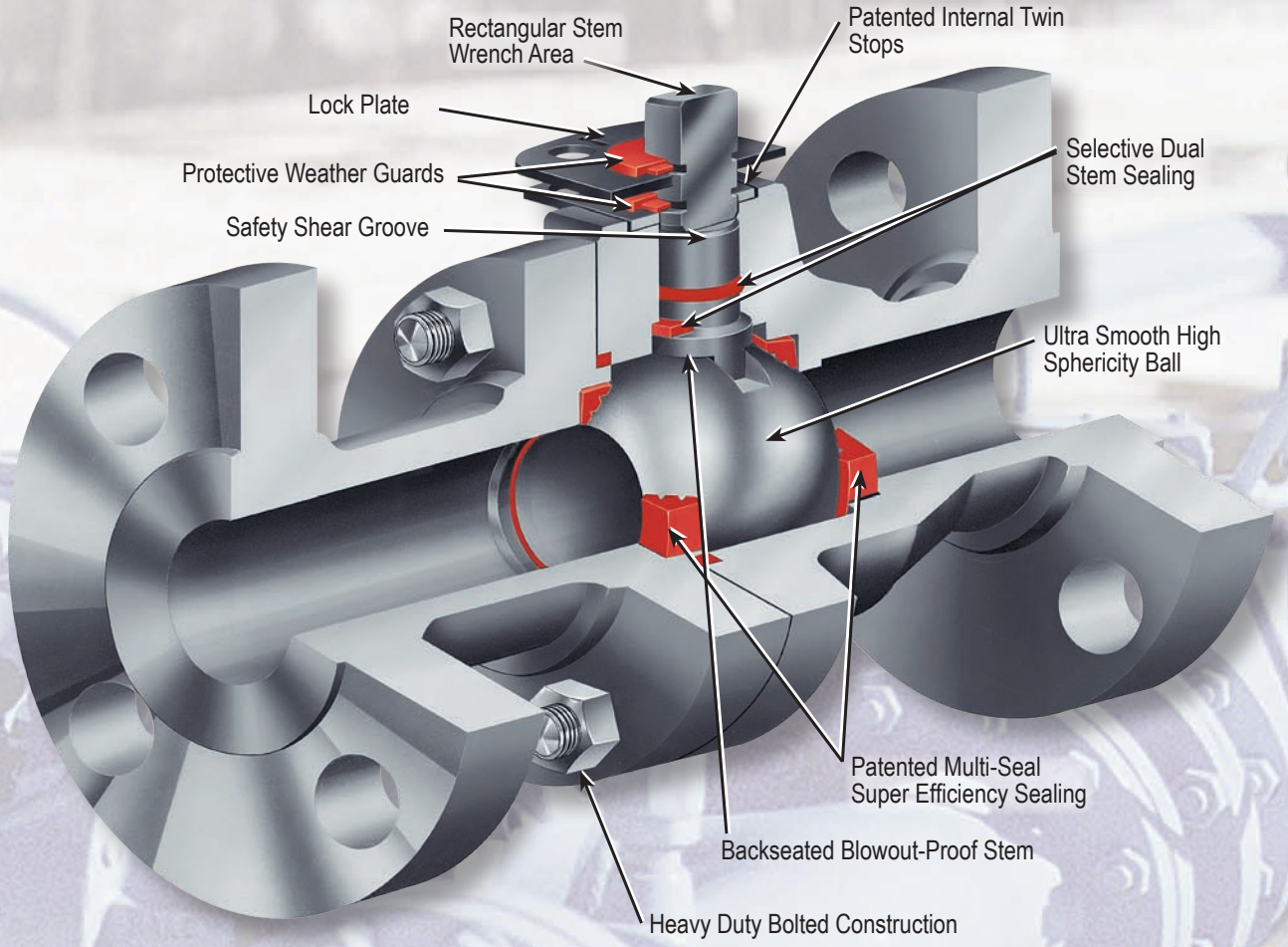
Trim (Ball & Stem Material)	
	Not Used if Carbon Steel
N	Carbon Steel NACE Trim

Note: For any valves not listed please consult factory.

TOC

TOC

The Balon Valve: Totally Advanced



Unique Sealing Approach

The Balon Ball Valve is the culmination of many years of arduous design and development effort which has been focused on providing a better choice in ball valves. It is a refinement of features proven superior during the use of Balon Ball Valves in thousands of installations since 1965.

The multi-seal seat design has given impetus to the development of an overall valve which embodies several design improvements.

Backseated Stem

Stems are backseated and blowout proof. And, they provide metal-to-metal backup sealing in the event of a fire. This secondary metal-to-metal sealing is also provided internally behind the seat area.

Simplified Top Works

Bolts and glands and complicated stem assemblies are totally absent in the Balon valve to assure a simpler, more trouble-free valve. Hazards associated with bolted stem retainer and packing adjustment screws or bolts have been eliminated. Even the stops are internal and give dual precise stopping support during opening and closing. The stem area is grease-packed and protected by dual plastic weather guards to shield this vital area from external elements thereby eliminating the need for maintenance in the field.

Precise Manufacturing Control

Balon uses only the highest quality materials to assure the strength and uniformity necessary for applications where valves are used. To further enhance the overall operational superiority of the valve, all balls are machined in-house by Balon's spherical machining process which assures a consistently accurate spherical contour. They are superbly finished and polished. This high integrity finish, along with multi-seal's advanced sealing capability, provides the highest sealing efficiency and substantially reduced operating torque.

Multi-Seal: The Heart of the Valve

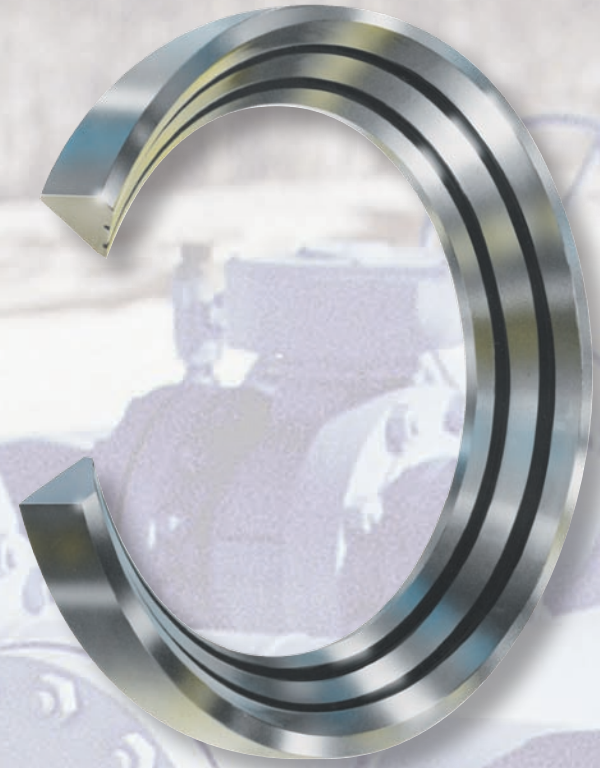
Notice the grooves. These grooves loosely receive any grit that might be present when the valve is closed. When the valve is opened, the foreign matter washes harmlessly away, where an ordinary valve seal could have been scored across its entire surface. Balon's seal is good as new.

Notice the seal rings. Not just one ring...a series. That's where Multi-Seal gets another big sealing edge over plain seals. The rings assure a concentrated seal, providing a bubble tight seal at high and low pressures, the tighter the seal...the better the shut-off.

Notice the tapered outer walls. These tapered walls on the Multi-Seal provide automatic seal-to-ball tensioning and self adjustment to wear. Much longer life and complete trouble-free performance is what you get. That's why you don't need a repair kit.

How long will the Balon Multi-Seal last? Our sales records of replacement seats indicate that most Balon valves sold have provided many years of trouble-free performance.

It has been tested on water pumped at 1,000 psi operating pressure with shock loading on shutoff up to 1,800 psi. After a million shutoffs, it still sealed bubble tight.



Ordinary Seals are damaged during shutoff. As flow is squeezed through fine-line opening, foreign particles are trapped. Complete shutoff grinds them into the seal. Results: premature damage, leakage, valve failure.

Multi-Seal receives particles loosely in grooves, to be washed harmlessly away during next opening. Valve seals bubble tight again, through repeated shutoffs.

Multi-Seal's series groove design features blunt-edge seal members for superior sealing efficiency. And the grooves form super-tight "fluid seal rings." Each seal member, working with the next one, creates exclusive "staged differential pressure sealing," for the tightest shutoff possible at all pressures.

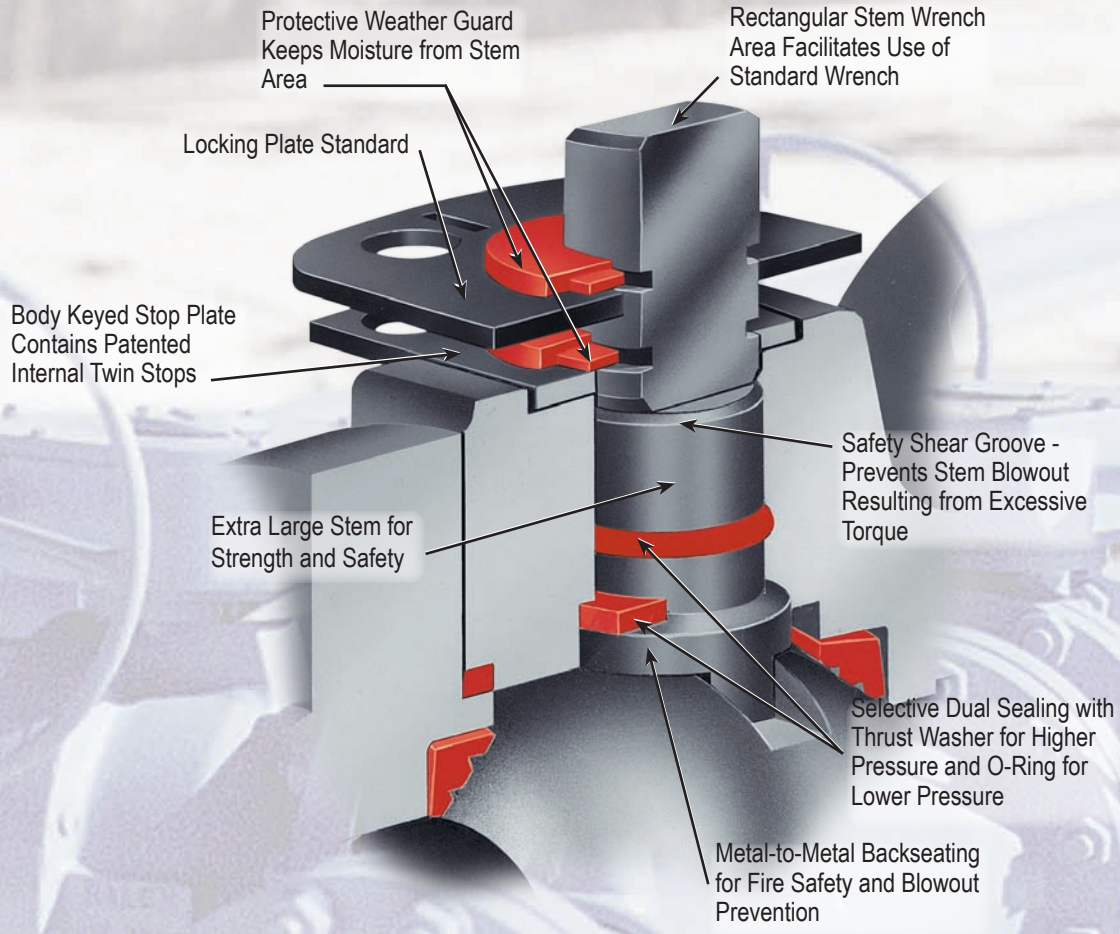
Multi-Seal adjusts itself to wear! Outer walls are tapered to permit self-compensation to valve load and seal engagement demand. The design permits thrust loading to realign seat toward optimum sealing engagement.

The Multi-Seal design permits selection of seal material best suited to abrasive, high and low pressure applications in toughest services. And the relief pockets formed by the tapered walls, with the series grooving, provide self-compensation for swell to permit easy turning, long-life operation. It takes a better seal to make a better valve...and the best ball valve is a Balon.

BALON

An Advanced Concept in Stem Design

Balon has eliminated the need for grease fittings, lube channels, and regular lubrication.



Simple Design

In keeping with Balon's philosophy of design which envisions simplification and improvement instead of improvement by complication, the Balon stem design solves many problems associated with the common stem design. The overall utility of the ball valve is related in no small way to the basic stem design. Certain standard designs originated early and were followed through by ball valve manufacturers in the years following the advent of the ball valve itself during World War II.

The Balon Stem: New Solutions For Old Problems

The Balon design represents the result of a total attack on specific problems associated with the outdated design. In the past, it has been a frequent practice to retain stems by use of external bolts or screws. Often these bolted arrangements also provided stem packing adjustment. The problem of leaking stems was amplified because of the complexity of the assembly itself.

The absence of backseating in early designs opened the way for stem blowout in the event of failure of the retaining assembly or as a result of forcible operation of the valve.

In many former designs, double O-rings were incorporated on the theory that should one O-ring fail to seal, then the second O-ring would perform the sealing job. However, higher pressures trapped between the O-rings often caused high operating torque and other operating problems.

A Combination of Improvements

As shown here, the Balon design is simple, yet solves these problems. The clean, functional design of the stem assembly represents dramatic improvement in many ways over conventional designs. As is true of the overall Balon approach, the Balon stem does not present just one special modification or design innovation. Rather, it represents the bringing together of interrelated improvements, resulting in total improvement and total superiority.

A More Complete Solution to Fire Safety

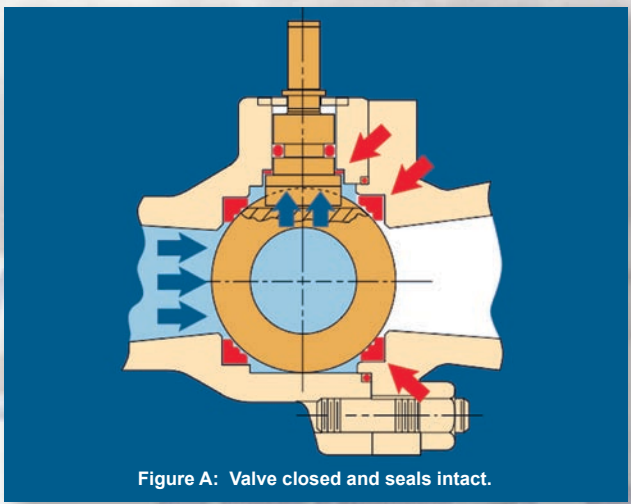


Figure A: Valve closed and seals intact.

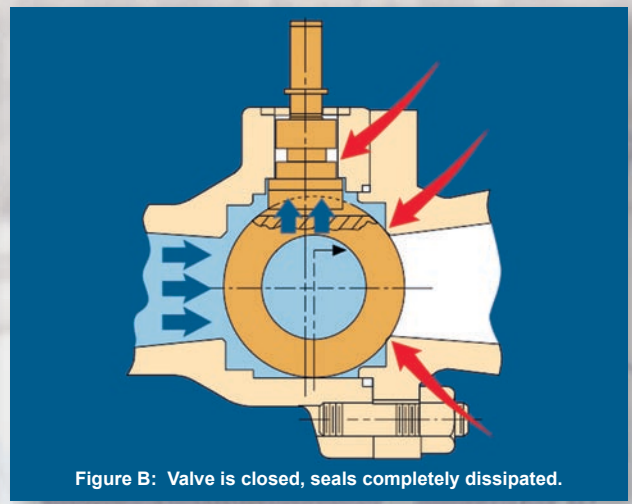


Figure B: Valve is closed, seals completely dissipated.

After many years of development and testing, Balon patented and introduced a ball valve that represented a dramatic turning point in valve safety. It was the first ball valve with the following:

- Backseated stem to prevent stem blowout
- Packless stem gland housing which eliminates stem adjustment mechanisms
- Stem shear groove to assure controlled stem damage above the backseat
- Full Metal spectrum fire safety for metal-to-metal secondary sealing at all potential leak points

Balon then encased these safety improvements in a rugged bolted body assembly capable of withstanding violent thrust loading and line stresses so common in high-pressure line applications.

Fire safety in ball valves has become a major consideration as more and more ball valves have been used in hazardous environments.

The Balon Ball Valve has been designed to provide maximum backup sealing in the event resilient seals are destroyed by heat or fire.

Controlled Spacing

The interior components of the valve, with seals intact, can be seen in Figure “A”. In the closed position the ball is held off of the secondary metal seat position.

The seat and seat pocket are made oversize in radial dimension, allowing close spacing of the ball and metal seat provision. In operation, with prime seals in place, this controlled spacing prevents damage to the surface finish of the ball.

It can also be seen that the stem is backseated, and with seals in place the primary stem seal holds the stem off of the metal shoulder machined in the valve body.

Secondary Stem Seal

In figure “B”, the seals have been fully dissipated, the ball has moved downstream onto the secondary metal seat, and the stem has been checked, metal-to-metal, against the inner shoulder.

As can be seen, the stem is free to move upward when subjected to a slight amount of pressure, onto the machined metal inner shoulder, thus substantially restricting any flow past the stem into the atmosphere.

Straight Ahead Ball Movement

The stem tongue is keyed into a linear milled slot, straight and perpendicular to the bore of the valve. In the closed position, the ball is free to move downstream onto the secondary metal seating, functioning at that moment as a simple ball check valve.

The ball itself is confined in the body with just enough vertical and horizontal clearance to assure free and easy operation. This keeps the ball in uniform alignment so that ball movement onto backseating - should it become necessary - is consistently on a straight course, without deflection up, down or sideways.

The valve may be positioned in either vertical or horizontal installations, and retain its secondary metal-to-metal sealing capability.

These very simple provisions are intended to provide full operational safety in our valves. Every attempt has been made in our design to produce a valve that is safe and affordable.

Balon Ball Valves have been successfully tested by an independent laboratory in accordance with API Standard 6FA “Fire Test for Resilient Seated Ball Valves”. Results of this testing are available on request from Balon’s headquarters.

Series LM Carbon Steel

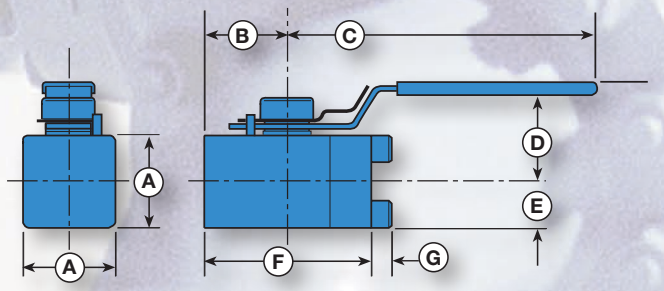
- Lever Operated Ball Valve
- 3000 PSI WP
- ¼" Through 1"
- Bolted Body Construction

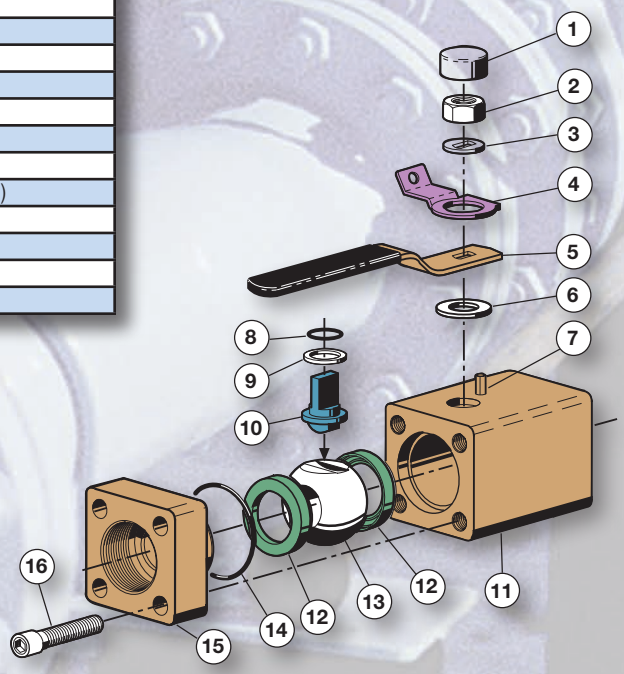
- Multi-Seal Seats
- 316 Stainless Steel Ball and Stem Standard
- Locking Device Standard
- Maintenance Free Sealing

Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Weather Guard	Polyethylene	Polyethylene
2	Stem Nut	Carbon Steel	Carbon Steel
3	Spacer	Carbon Steel	Carbon Steel
4	Lock Plate	Carbon Steel	Carbon Steel
5	Handle*	Carbon Steel	Carbon Steel
6	Stem Washer	Acetal	Acetal
7	Stop Pin	Carbon Steel	Carbon Steel
8	Stem O-Ring	Buna-N	Fluorocarbon
9	Stem Seal	TFE	TFE
10	Stem	316 Stainless Steel	316 Stainless Steel
11	Body	AISI 1215	AISI 1018
12	Ball Seat	Nylon (TFE Optional)	Nylon (TFE Optional)
13	Ball	316 Stainless Steel	316 Stainless Steel
14	Body Seal	Buna-N	Fluorocarbon
15	End Adapter	AISI 1215	AISI 1018
16	Body Bolts	ASTM A193 B7M	ASTM A193 B7M

** Handle and lock device are standard on all Series LM Ball Valves.*





Dimensional Data

SIZE	CATALOG NUMBER		PORT	A	B	C	D	E	F	G	LBS.	Cv
	STANDARD TRIM 316 SS BALL & STEM	NACE TRIM 316 SS BALL & STEM										
.25x.37x.25	LM-02362	LM-02362-N	.37	1.25	1.12	3.5	1.62	.62	2.25	.25	1	-
.50x.37x.50	LM-05361	LM-05361-N	.37	1.25	1.12	3.5	1.62	.62	2.25	.25	1	6
.75x.75x.75	LM-07362	LM-07362-N	.75	2	1.81	4.87	2.25	1	3.62	.37	3.5	-
1x.75x1	LM-10361	LM-10361-N	.75	2	1.81	4.87	2.25	1	3.62	.37	3.5	30

Series S Carbon Steel

- Lever Operated Ball Valve
- To 5000 PSI WP
- 1" Through 2"
- Threaded Body Construction

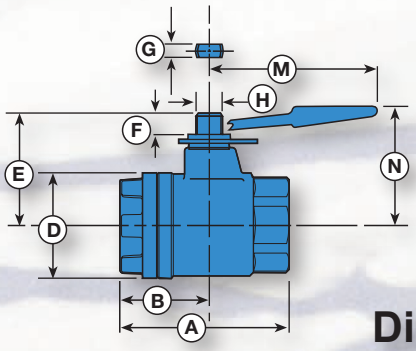
- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing

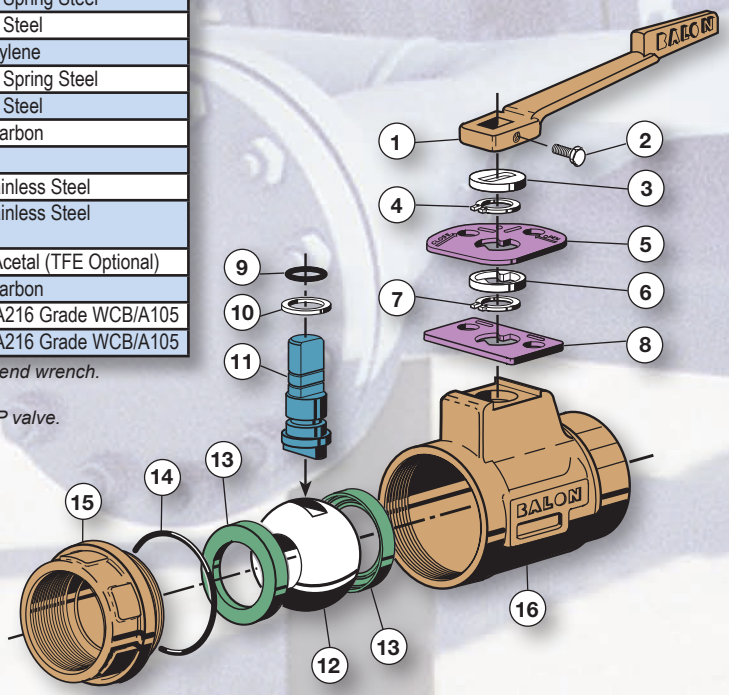
Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon-Acetal (TFE Optional)	Nylon-Acetal (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter**	ASTM A216 Grade WCB/A105	ASTM A216 Grade WCB/A105
16	Body**	ASTM A216 Grade WCB/A105	ASTM A216 Grade WCB/A105

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*

*** Body and end adapter for material is AISI 4140 on 5000 PSI WP valve.*





Dimensional Data

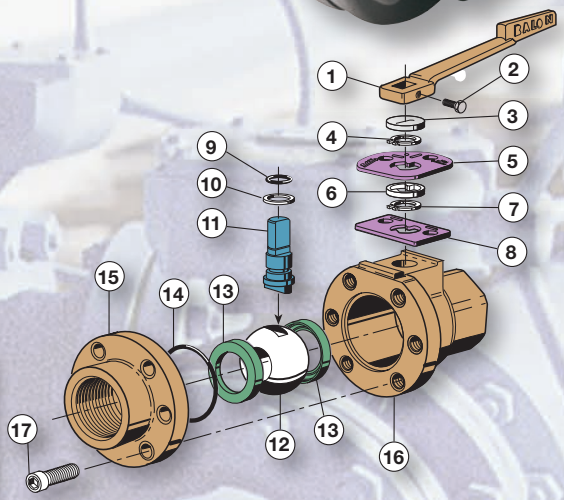
SIZE	CATALOG NUMBER		PORT	WP	A	B	D	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM														
1x1x1	1F-S03-SE	1F-S03N-SE	1	3000	4	2	2.75	2.37	.50	.340	.685	4.37	2	4.5	P-333-CS	-
2x1.5x2	2R-S93-SE	2R-S93N-SE	1.5	2500	5.5	2.75	4.25	3.62	.75	.434	.873	7.25	5	14	P-4128-DI	125
2x1.5x2	2R-S03-SE	2R-S03N-SE	1.5	3000	5.5	2.75	4.25	3.62	.75	.434	.873	7.25	5	14	P-4128-DI	125
2x1.5x2	2R-S5M-SE	2R-S5MN-SE	1.5	5000	5.5	2.75	4.25	3.62	.75	.434	.873	10.25	5.37	14	P-4125-DI	125
2x2x2	2F-S93-SE	2F-S93N-SE	2	2500	6	3.12	4.87	4.37	.75	.497	.998	10.25	5.37	20	P-4129-DI	-
2x2x2	2F-S03-SE	2F-S03N-SE	2	3000	6	3.12	4.87	4.37	.75	.497	.998	10.25	5.37	20	P-4129-DI	-

TOC

Series F Carbon Steel

- Lever Operated Ball Valve
- To 5000 PSI WP
- 1" Through 4"
- Bolted Body Construction

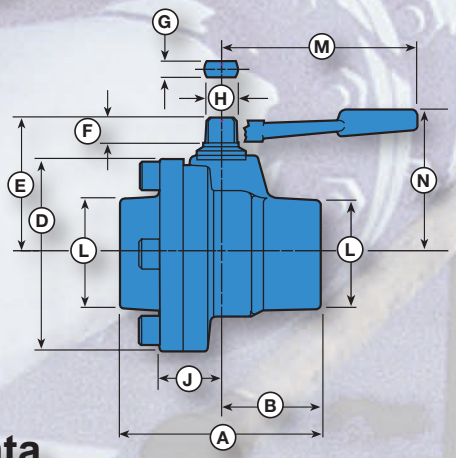
- Multi-Seal Seats
- Bolted Body Protects Against End Adapter Blowout
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing



Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon-Acetal (TFE Optional)	Nylon-Acetal (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A105	ASTM A105
16	Body	ASTM A105	ASTM A105
17	Body Bolts	ASTM A193 B7M	ASTM A193 B7M

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*

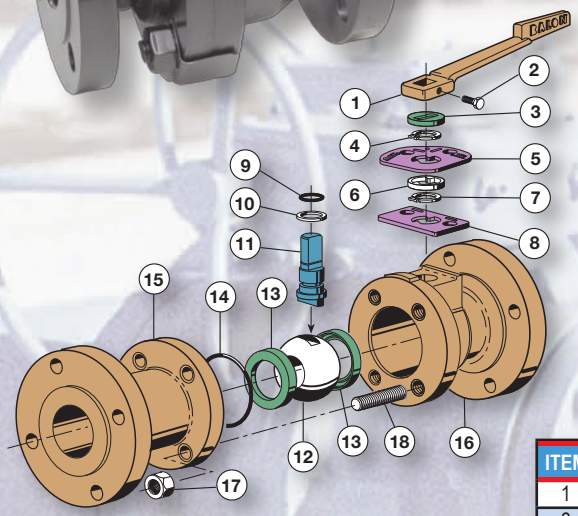


Dimensional Data

SIZE	CATALOG NUMBER		PORT	WP	A	B	D	E	F	G	H	J	L	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM																
1x1x1	1F-F93-SE	1F-F93N-SE	1	2500	3.87	1.93	3.37	2.37	.50	.340	.685	1.12	1.87	4.37	2	4.3	P-333-CS	-
1x1x1	1F-F03-SE	1F-F03N-SE	1	3000	3.87	1.93	3.37	2.37	.50	.340	.685	1.12	1.87	4.37	2	4	P-333-CS	-
1.5x1.5x1.5	1.5F-F93-SE	1.5F-F93N-SE	1.5	2500	5.25	2.62	5.12	3.62	.75	.434	.873	1.62	2.50	7.25	5	12.8	P-4128-DI	-
2x1.5x2	2R-F93-SE	2R-F93N-SE	1.5	2500	5.50	2.75	5.12	3.62	.75	.434	.873	1.62	3	7.25	5	13.5	P-4128-DI	125
2x1.5x2	2R-F03-SE	2R-F03N-SE	1.5	3000	5.50	2.75	5.12	3.62	.75	.434	.873	1.62	3	7.25	5	13	P-4128-DI	125
2x1.5x2	2R-F5M-SE	2R-F5MN-SE	1.5	5000	6	3	6	3.62	.75	.434	.873	1.75	3.25	10.25	5.37	20	P-4125-DI	125
2x2x2	2F-F93-SE	2F-F93N-SE	2	2000	5.75	2.87	6.12	4.37	.87	.497	.998	2	3.12	10.25	5.37	20	P-4129-DI	-
2x2x2	2F-F03-SE	2F-F03N-SE	2	2500	5.75	2.87	6.12	4.37	.87	.497	.998	2	3.12	10.25	5.37	20	P-4129-DI	-
3x2x3	3R-F93-SE	3R-F93N-SE	2	2000	7.62	3.81	6.87	4.37	.87	.497	.998	2.06	4.25	10.25	5.37	32	P-4129-DI	180
3x3x3	3F-F63-SE	3F-F63N-SE	3	1500	8.37	4.18	8	5.75	1.06	.747	1.373	2.50	4.25	20	6.75	46	P-4127-DI	-
4x3x4	4R-F63-SE	4R-F63N-SE	3	1500	8.87	4.43	8	5.75	1.06	.747	1.375	2.43	5.25	20	6.75	47	P-4127-DI	500

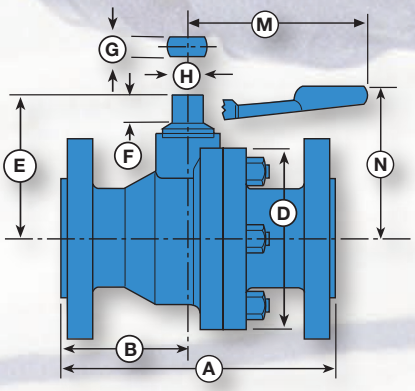
Series F Carbon Steel

- Lever Operated Ball Valve
- ANSI Class 150 (285 PSI WP)
- 2" Through 6"
- Bolted Body Construction



- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing

Note: Most Series F flanged end valves are available for low temperature service. Consult factory for price and availability.



Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)	Nylon (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
16	Body	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
17	Nuts	ASTM A194 2H	ASTM A194 2HM
18	Body Bolts	ASTM A193 B7	ASTM A193 B7M

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*

Dimensional Data

SIZE	CATALOG NUMBER		PORT	A	B	D	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM													
2x1.5x2	2R-F13	2R-F13N	1.5	7	3.25	5	3.62	.75	.434	.873	7.25	5	21.5	P-4128-DI	125
2x2x2	2F-F13	2F-F13N	2	7	2.75	6	4.37	.87	.497	.998	10.25	5.37	28	P-4129-DI	-
3x2x3	3R-F13	3R-F13N	2	8	3	6	4.37	.87	.497	.998	10.25	5.37	40	P-4129-DI	200
3x3x3	3F-F13	3F-F13N	3	8	3.56	7.50	5.75	1.06	.747	1.373	20	6.75	54	P-4127-DI	-
4x3x4	4R-F13	4R-F13N	3	9	4.06	7.87	5.75	1.06	.747	1.373	20	6.75	70	P-4127-DI	525
4x4x4	4F-F13	4F-F13N	4	9	4.06	9	6.37	1.06	.747	1.373	20	7.37	80	P-4127-DI	-
6x4x6	6R-F13	6R-F13N	4	10.5	4.81	9.37	6.37	1.06	.747	1.373	20	7.37	102	P-4127-DI	800

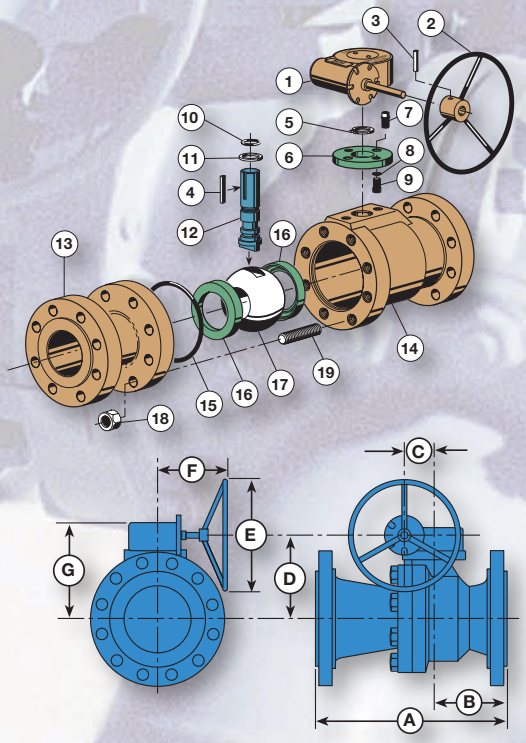
TOC

Series F Carbon Steel

- Gear Operated Ball Valve
- ANSI Class 150 (285 PSI WP)
- 6" Through 10"
- Bolted Body Construction

- Exclusive Balon Gearbox
  - ✔ Ductile Housing for Reduced Risk of Damage
  - ✔ Stainless Steel Input Shaft and Directional Indicator Standard
  - ✔ Integral Locking Device Standard
- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Maintenance Free Sealing

Note: Most Series F flanged end valves are available for low temperature service. Consult factory for price and availability.

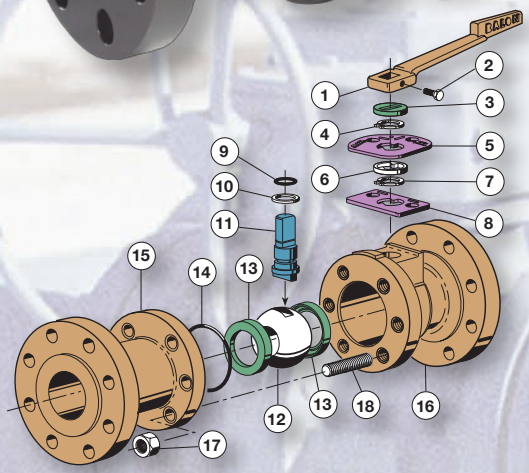


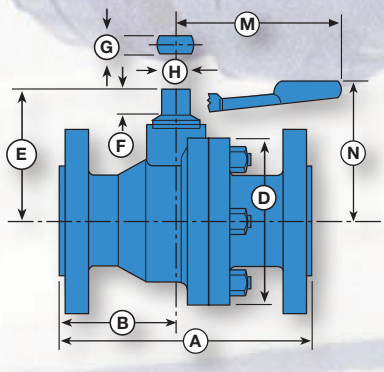
Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Gear Operator	Ductile Iron	Ductile Iron
2	Hand Wheel	Carbon Steel	Carbon Steel
3	Drive Pin	Carbon Spring Steel	Carbon Spring Steel
4	Stem Key	Steel Key Stock	Steel Key Stock
5	Stem Retainer Ring	Carbon Spring Steel	Carbon Spring Steel
6	Mounting Plate	Ductile Iron	Ductile Iron
7	Mounting Plate Screws	Alloy Steel	Alloy Steel
8	Lock Washers	Carbon Steel	Carbon Steel
9	Mounting Screws	Alloy Steel	Alloy Steel
10	Stem O-Ring	Buna-N	Fluorocarbon
11	Stem Seal	TFE	TFE
12	Stem	Carbon Steel	316 Stainless Steel
13	End Adapter	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
14	Body	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
15	Body O-Ring	Buna-N	Fluorocarbon
16	Ball Seats	Nylon (TFE Optional)	Nylon (TFE Optional)
17	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
18	Nuts	ASTM A194 2H	ASTM A194 2HM
19	Body Bolts	ASTM A193 B7	ASTM A193 B7M

Dimensional Data

SIZE	CATALOG NUMBER		PORT	A	B	C	D	E	F	G	LBS.	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM		RF	RF							
6x6x6	6F-F13	6F-F13N	6	10.5	4.50	4	9.75	13	9	11.19	230	-
8x6x8	8R-F13	8R-F13N	6	11.5	5.12	4	9.75	13	9	11.19	285	2200
8x8x8	8F-F13	8F-F13N	8	18	8	5.25	12	20	11.5	13.75	520	-
10x8x10	10R-F13	10R-F13N	8	21	9	5.25	12	20	11.5	13.75	580	4200





Series F Carbon Steel

- Lever Operated Ball Valve
- ANSI Class 300 (740 PSI WP)
- 2" Through 6"
- Bolted Body Construction

- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing

Note: Most Series F flanged end valves are available for low temperature service. Consult factory for price and availability.

Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)	Nylon (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
16	Body	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
17	Nuts	ASTM A194 2H	ASTM A194 2HM
18	Body Bolts	ASTM A193 B7	ASTM A193 B7M

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*

Dimensional Data

SIZE	CATALOG NUMBER		PORT	A	B	D	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM													
2x1.5x2	2R-F33	2R-F33N	1.5	8.50	4	5	3.62	.75	.434	.873	7.25	5	29	P-4128-DI	125
2x2x2	2F-F33	2F-F33N	2	8.50	3.75	6.50	4.37	.87	.497	.998	10.25	5.37	36	P-4129-DI	-
3x2x3	3R-F33	3R-F33N	2	11.12	4.56	6.50	4.37	.87	.497	.998	10.25	5.37	60	P-4129-DI	200
3x3x3	3F-F33	3F-F33N	3	11.12	5.12	8	5.75	1.06	.747	1.373	20	6.75	76	P-4127-DI	-
4x3x4	4R-F33	4R-F33N	3	12	5.56	8	5.75	1.06	.747	1.373	20	6.75	98	P-4127-DI	525
4x4x4	4F-F33	4F-F33N	4	12	5.50	9.37	6.37	1.06	.747	1.373	20	7.37	128	P-4127-DI	-
6x4x6	6R-F33	6R-F33N	4	15.87	7.44	10	6.37	1.06	.747	1.373	20	7.37	196	P-4127-DI	800

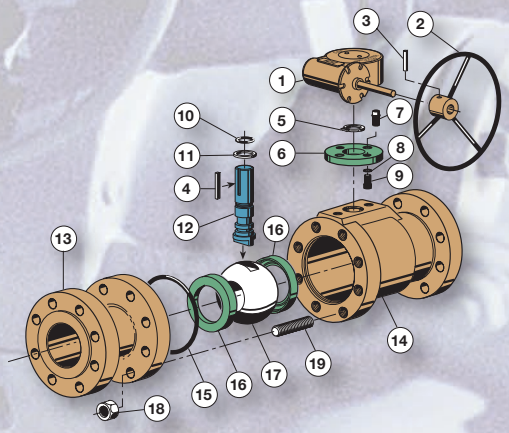
TOC

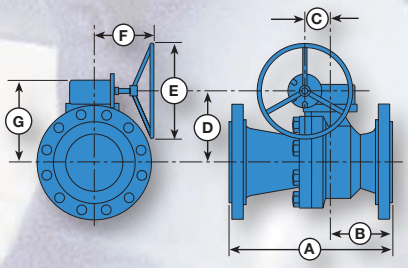
Series F Carbon Steel

- Gear Operated Ball Valve
- ANSI Class 300 (740 PSI WP)
- 6" Through 8"
- Bolted Body Construction

- Exclusive Balon Gearbox
  - ✔ Ductile Housing for Reduced Risk of Damage
  - ✔ Stainless Steel Input Shaft and Directional Indicator Standard
  - ✔ Integral Locking Device Standard
- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Maintenance Free Sealing

Note: Most Series F flanged end valves are available for low temperature service. Consult factory for price and availability.



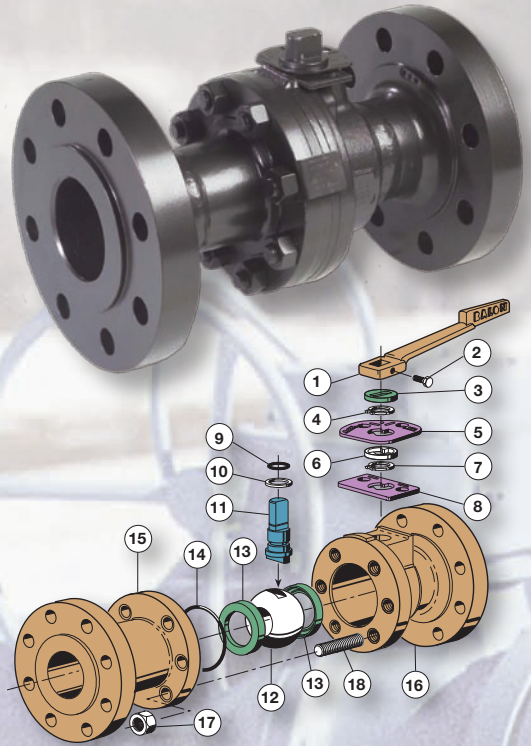


Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Gear Operator	Ductile Iron	Ductile Iron
2	Hand Wheel	Carbon Steel	Carbon Steel
3	Drive Pin	Carbon Spring Steel	Carbon Spring Steel
4	Stem Key	Steel Key Stock	Steel Key Stock
5	Stem Retainer Ring	Carbon Spring Steel	Carbon Spring Steel
6	Mounting Plate	Ductile Iron	Ductile Iron
7	Mounting Plate Screws	Alloy Steel	Alloy Steel
8	Lock Washers	Carbon Steel	Carbon Steel
9	Mounting Screws	Alloy Steel	Alloy Steel
10	Stem O-Ring	Buna-N	Fluorocarbon
11	Stem Seal	TFE	TFE
12	Stem	Carbon Steel	316 Stainless Steel
13	End Adapter	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
14	Body	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
15	Body O-Ring	Buna-N	Fluorocarbon
16	Ball Seats	Nylon (TFE Optional)	Nylon (TFE Optional)
17	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
18	Nuts	ASTM A194 2H	ASTM A194 2HM
19	Body Bolts	ASTM A193 B7	ASTM A193 B7M

Dimensional Data

SIZE	CATALOG NUMBER		PORT	A	B	C	D	E	F	G	LBS.	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM		RF	RF							
6x6x6	6F-F33	6F-F33N	6	15.87	7.38	4	9.75	13	9	11.19	307	-
8x6x8	8R-F33	8R-F33N	6	16.50	7.69	4	9.75	13	9	11.19	409	2200



Series F Carbon Steel

- Lever Operated Ball Valve
- ANSI Class 600 (1480 PSI WP)
- 2" Through 4"
- Bolted Body Construction

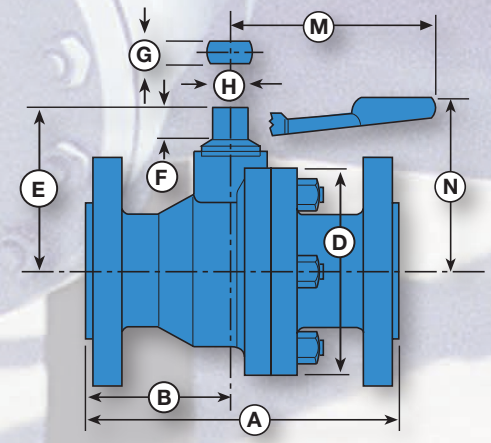
- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing

Note: Most Series F flanged end valves are available for low temperature service. Consult factory for price and availability.

Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)	Nylon (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
16	Body	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
17	Nuts	ASTM A194 2H	ASTM A194 2HM
18	Body Bolts	ASTM A193 B7	ASTM A193 B7M

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*



Dimensional Data

SIZE	CATALOG NUMBER		PORT	A		B		D	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM		RF	RTJ	RF	RTJ										
2x1.5x2	2R-F63	2R-F63N	1.5	11.5	11.62	5.06	5.12	5.37	3.62	.75	.434	.873	7.25	5	37	P-4128-DI	125
2x2x2	2F-F63	2F-F63N	2	11.5	11.62	4.75	4.81	6.50	4.37	.87	.497	.998	10.25	5.37	48	P-4129-DI	-
3x2x3	3R-F63	3R-F63N	2	14	14.12	5.75	5.81	6.62	4.37	.87	.497	.998	10.25	6.75	69	P-4129-DI	200
3x3x3	3F-F63	3F-F63N	3	14	14.12	5.50	5.56	8	5.75	1.06	.747	1.373	20	6.75	90	P-4127-DI	-
4x3x4	4R-F63	4R-F63N	3	17	17.12	6.87	6.93	8.62	5.75	1.06	.747	1.373	20	6.75	154	P-4127-DI	525

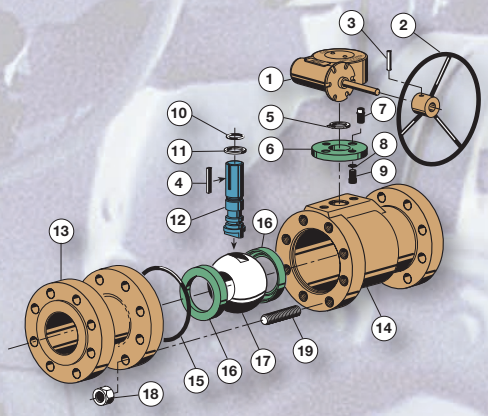
TOC

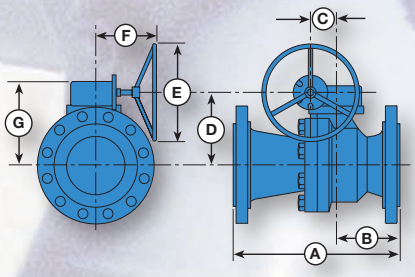
Series F Carbon Steel

- Gear Operated Ball Valve
- ANSI Class 600 (1480 PSI WP)
- 4" Through 8"
- Bolted Body Construction

- Exclusive Balon Gearbox
  - ✔ Ductile Housing for Reduced Risk of Damage
  - ✔ Stainless Steel Input Shaft and Directional Indicator Standard
  - ✔ Integral Locking Device Standard
- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Maintenance Free Sealing

Note: Most Series F flanged end valves are available for low temperature service. Consult factory for price and availability.



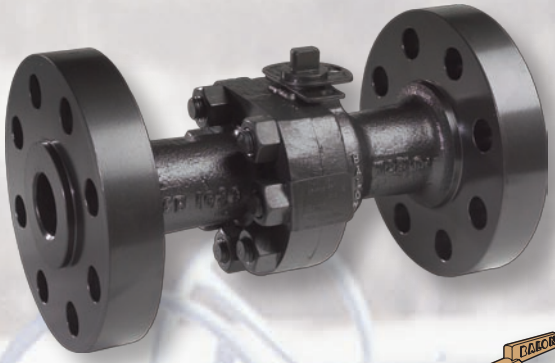


Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Gear Operator	Ductile Iron	Ductile Iron
2	Hand Wheel	Carbon Steel	Carbon Steel
3	Drive Pin	Carbon Spring Steel	Carbon Spring Steel
4	Stem Key	Steel Key Stock	Steel Key Stock
5	Stem Retainer Ring	Carbon Spring Steel	Carbon Spring Steel
6	Mounting Plate	Ductile Iron	Ductile Iron
7	Mounting Plate Screws	Alloy Steel	Alloy Steel
8	Lock Washers	Carbon Steel	Carbon Steel
9	Mounting Screws	Alloy Steel	Alloy Steel
10	Stem O-Ring	Buna-N	Fluorocarbon
11	Stem Seal	TFE	TFE
12	Stem	Carbon Steel	316 Stainless Steel
13	End Adapter	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
14	Body	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
15	Body O-Ring	Buna-N	Fluorocarbon
16	Ball Seats	Nylon (TFE Optional)	Nylon (TFE Optional)
17	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
18	Nuts	ASTM A194 2H	ASTM A194 2HM
19	Body Bolts	ASTM A193 B7	ASTM A193 B7M

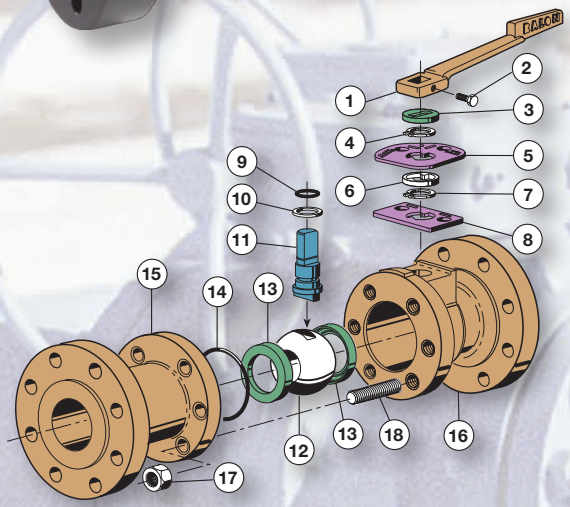
Dimensional Data

SIZE	CATALOG NUMBER		PORT	A		B		C	D	E	F	G	LBS.	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM		RF	RTJ	RF	RTJ							
4x4x4	4F-F63	4F-F63N	4	17	17.12	7.37	7.43	3	8.19	13	9	9.69	238	-
6x4x6	6R-F63	6R-F63N	4	22	22.12	9.88	9.25	3	8.19	13	9	9.69	340	800
6x6x6	6F-F63	6F-F63N	6	22	22.12	8.62	8.68	4	9.75	20	11	11.19	440	-
8x6x8	8R-F63	8R-F63N	6	26	26.12	10.62	10.68	4	9.75	20	11	11.19	570	2200



Series F Carbon Steel

- Lever Operated Ball Valve
- ANSI Class 900 (2220 PSI WP)
- 2"
- Bolted Body Construction



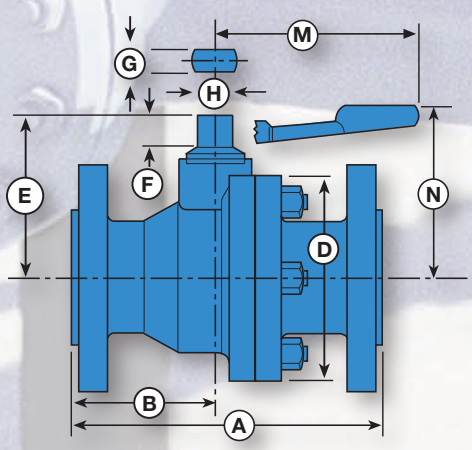
- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing

Note: Most Series F flanged end valves are available for low temperature service. Consult factory for price and availability.

Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)	Nylon (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
16	Body	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
17	Nuts	ASTM A194 2H	ASTM A194 2HM
18	Body Bolts	ASTM A193 B7	ASTM A193 B7M

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*



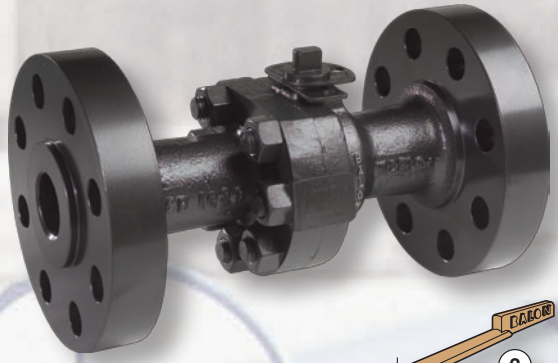
Dimensional Data

SIZE	CATALOG NUMBER		PORT	A		B		D	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM		RF	RTJ	RF	RTJ										
2x1.5x2	2R-F93	2R-F93N	1.5	14.50	14.62	6.31	6.37	6.25	3.62	.75	.434	.873	7.25	5	75	P-1104-DI	125
2x2x2	2F-F93	2F-F93N	2	14.50	14.62	6	6.06	7	4.37	.87	.497	.998	10.25	5.37	81	P-1105-DI	-

TOC

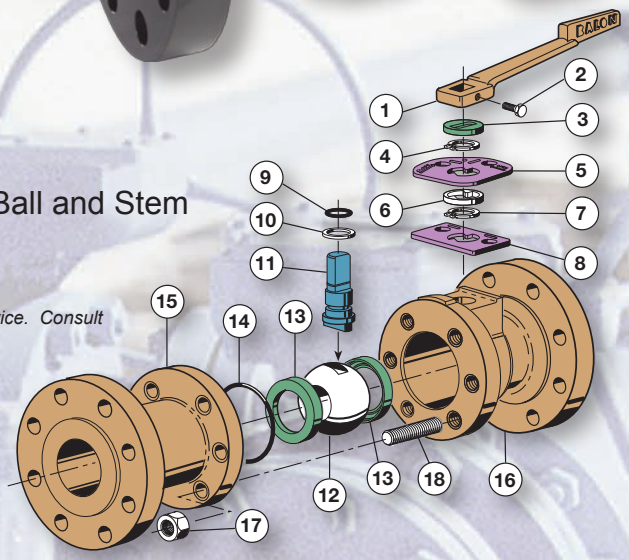
Series F Carbon Steel

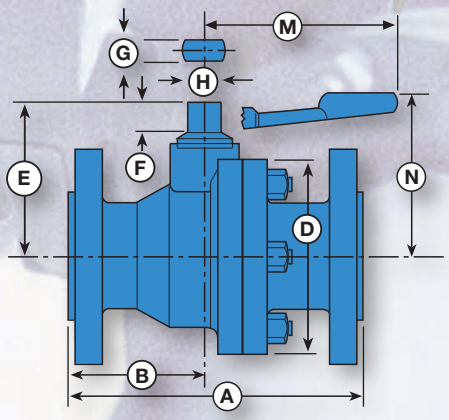
- Lever Operated Ball Valve
- ANSI Class 1500 (3705 PSI WP)
- 2"
- Bolted Body Construction



- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing

Note: Most Series F flanged end valves are available for low temperature service. Consult factory for price and availability.





Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Acetal	Acetal
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
16	Body	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
17	Nuts	ASTM A194 2H	ASTM A194 2HM
18	Body Bolts	ASTM A193 B7	ASTM A193 B7M

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*

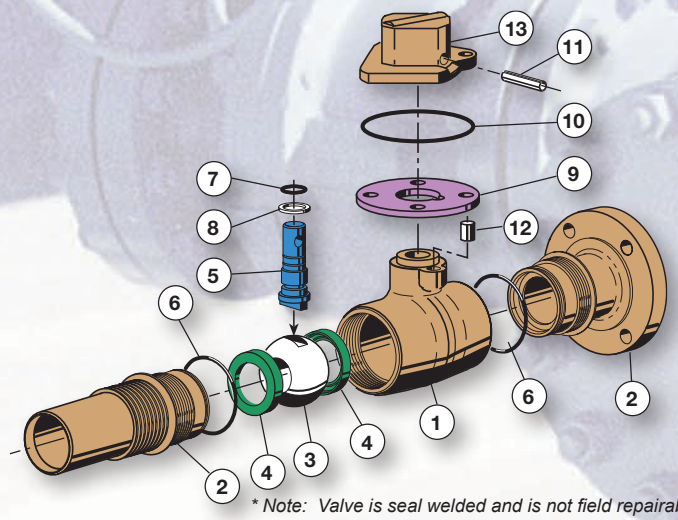
Dimensional Data

SIZE	CATALOG NUMBER		PORT	A		B		D	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM		RF	RTJ	RF	RTJ										
2x1.5x2	2R-F03	2R-F03N	1.5	14.5	14.62	6.31	6.37	6.25	3.62	.75	.434	.873	7.25	5	75	P-1104-DI	125

Series US Weld X Flange Carbon Steel

- Weld X Flange Ball Valve
- ANSI Class 150 (285 PSI WP)
- 2" Through 4"

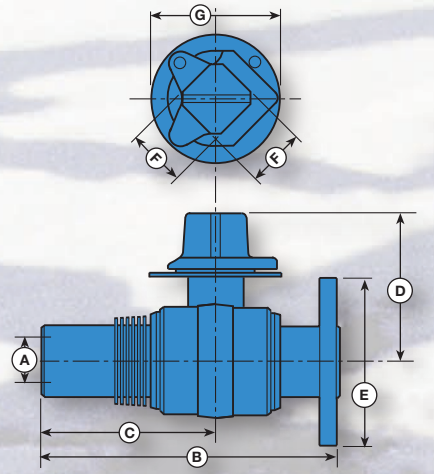
- Multi-Seal Seats
- True Full Port for Hot Tap Service
- Heat Dissipating Fins for Protection of Seats and Seals During Welding
- Rugged Stainless Steel Lock Plate
- Heavy Duty Forged Steel Components
- Solid Balls for Reduction of Turbulence and Pressure Drop
- Stainless Steel Stem Standard



** Note: Valve is seal welded and is not field repairable.*

Material Description

ITEM	PART NAME	MATERIAL (STANDARD)
1	Body	ASTM A105
2	Adapter	ASTM A105
3	Ball	Carbon Steel - Nickel Chrome Plated
4	Seats	Nylon
5	Stem	316 Stainless Steel
6	Body O-Ring	Buna-N
7	Stem O-Ring	Buna-N
8	Stem Seal	TFE
9	Lock Plate	Stainless Steel
10	Weather Seal	Polyethylene
11	Roll Pin	Stainless Steel
12	Stop Pin	Stainless Steel
13	Drive Nut - 2" Square	Ductile Iron



Dimensional Data

SIZE	CATALOG	PORT/A	B	C	D	E	F	G	LBS.	Cv
2x1.5x2	2R-US13-WF	1.5	9.4	5.9	5	6	2	4.5	20	148
2x2x2	2F-US13-WF	2	10	5.9	5.50	6	2	4.5	28	-
3x2.5x3	3R-US13-WF	2.5	9.9	5.9	6.12	7.5	2	4.5	40	550
3x3x3	3F-US13-WF	3	11.3	5.9	6.75	7.5	2	4.5	53	-
4x3x4	4R-US13-WF	3	10.9	6.4	6.75	9	2	4.5	60	662
4x4x4	4F-US13-WF	4	12.1	6.4	7.50	9	2	4.5	81	-

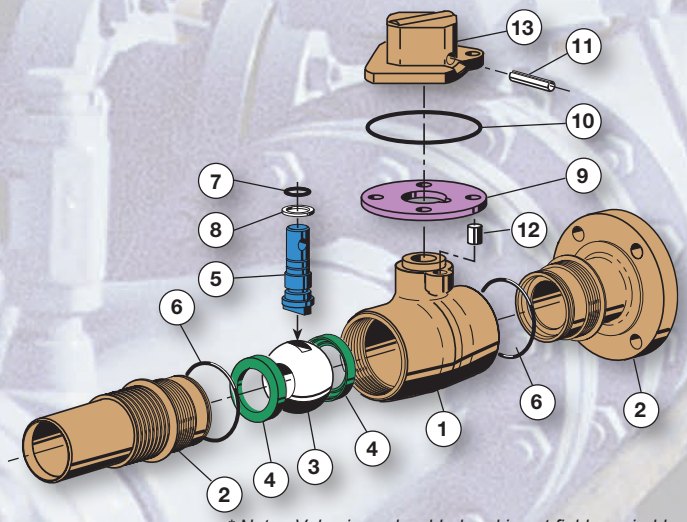
Series US Weld X Flange Carbon Steel

- Weld X Flange Ball Valve
- ANSI Class 300 (740 PSI WP)
- 2" Through 4"

- Multi-Seal Seats
- True Full Port for Hot Tap Service
- Heat Dissipating Fins for Protection of Seats and Seals During Welding
- Rugged Stainless Steel Lock Plate
- Heavy Duty Forged Steel Components
- Solid Balls for Reduction of Turbulence and Pressure Drop
- Stainless Steel Stem Standard

Material Description

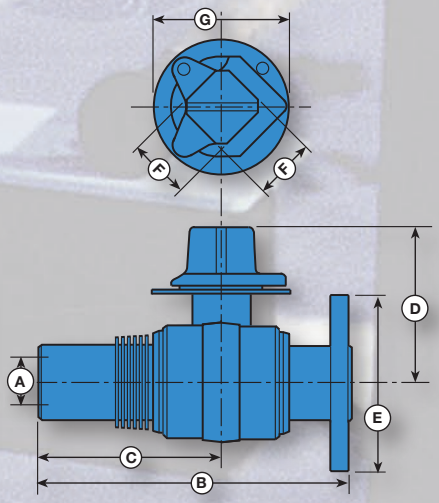
ITEM	PART NAME	MATERIAL (STANDARD)
1	Body	ASTM A105
2	Adapter	ASTM A105
3	Ball	Carbon Steel - Nickel Chrome Plated
4	Seats	Nylon
5	Stem	316 Stainless Steel
6	Body O-Ring	Buna-N
7	Stem O-Ring	Buna-N
8	Stem Seal	TFE
9	Lock Plate	Stainless Steel
10	Weather Seal	Polyethylene
11	Roll Pin	Stainless Steel
12	Stop Pin	Stainless Steel
13	Drive Nut - 2" Square	Ductile Iron



** Note: Valve is seal welded and is not field repairable.*

Dimensional Data

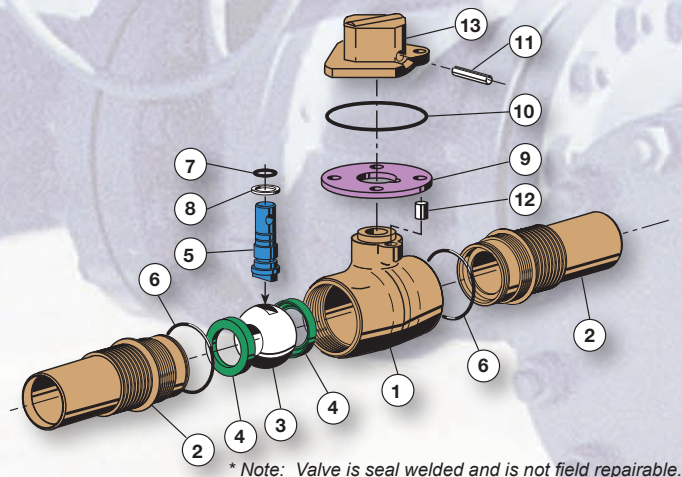
SIZE	CATALOG	PORT/A	B	C	D	E	F	G	LBS.	Cv
2x1.5x2	2R-US33-WF	1.5	10.15	5.9	5	6.50	2	4.5	23	148
2x2x2	2F-US33-WF	2	10.2	5.9	5.50	6.50	2	4.5	28	-
3x2.5x3	3R-US33-WF	2.5	11.46	5.9	6.12	8.25	2	4.5	48	550
3x3x3	3F-US33-WF	3	11.5	5.9	6.75	8.25	2	4.5	56	-
4x3x4	4R-US33-WF	3	12.4	6.4	6.75	10	2	4.5	70	662
4x4x4	4F-US33-WF	4	12.4	6.4	7.50	10	2	4.5	91	-



Series US Weld X Weld Carbon Steel

- Weld End Ball Valve
- ANSI Class 150 (285 PSI WP)
- 2" Through 6"

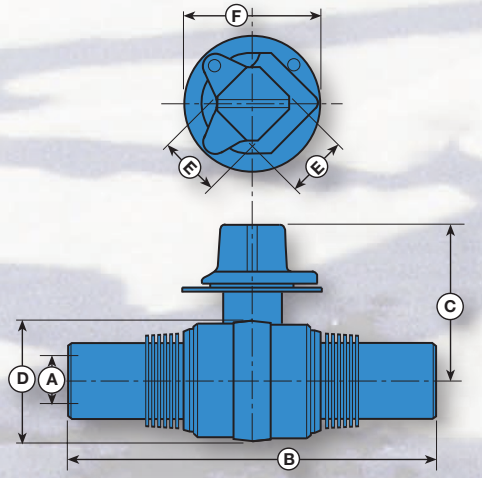
- Multi-Seal Seats
- Heat Dissipating Fins for Protection of Seats and Seals During Welding
- Rugged Stainless Steel Lock Plate
- Heavy Duty Forged Steel Components
- Solid Balls for Reduction of Turbulence and Pressure Drop
- Stainless Steel Stem Standard



** Note: Valve is seal welded and is not field repairable.*

Material Description

ITEM	PART NAME	MATERIAL (STANDARD)
1	Body	ASTM A105
2	Adapter	ASTM A105
3	Ball	Carbon Steel - Nickel Chrome Plated
4	Seats	Nylon
5	Stem	316 Stainless Steel
6	Body O-Ring	Buna-N
7	Stem O-Ring	Buna-N
8	Stem Seal	TFE
9	Lock Plate	Stainless Steel
10	Weather Seal	Polyethylene
11	Roll Pin	Stainless Steel
12	Stop Pin	Stainless Steel
13	Drive Nut - 2" Square	Ductile Iron



Dimensional Data

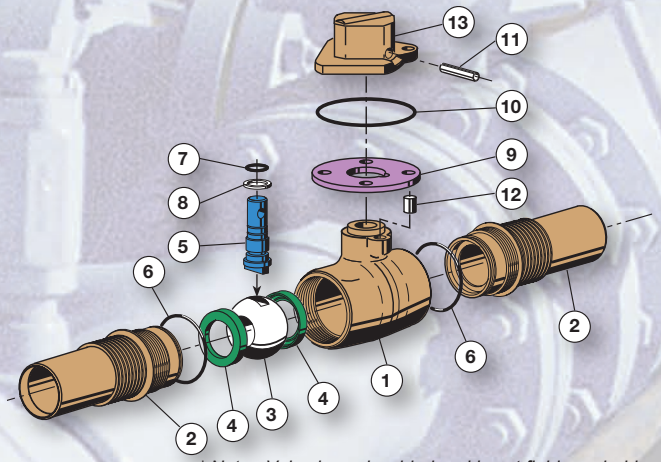
SIZE	CATALOG	PORT/A	B	C	D	E	F	LBS.	Cv
2x1.5x2	2R-US13-BW	1.5	11.8	5	3.62	2	4.5	17	148
2x2x2	2F-US13-BW	2	11.8	5.50	4.50	2	4.5	23	-
3x2.5x3	3R-US13-BW	2.5	11.8	6.12	5.25	2	4.5	31	550
3x3x3	3F-US13-BW	3	11.8	6.75	6.25	2	4.5	44	-
4x3x4	4R-US13-BW	3	12.8	6.75	6.25	2	4.5	45	662
4x4x4	4F-US13-BW	4	12.8	7.50	6.87	2	4.5	69	-
6x4x6	6R-US13-BW	4	13.8	7.50	6.87	2	4.5	71	800

TOC

Series US Weld X Weld Carbon Steel

- Weld End Ball Valve
- ANSI Class 300 (740 PSI WP)
- 2" Through 6"

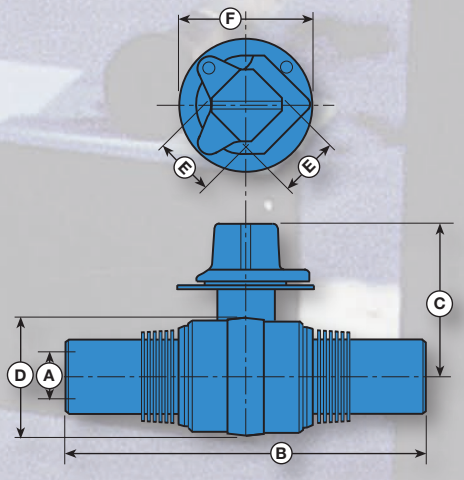
- Multi-Seal Seats
- Heat Dissipating Fins for Protection of Seats and Seals During Welding
- Rugged Stainless Steel Lock Plate
- Heavy Duty Forged Steel Components
- Solid Balls for Reduction of Turbulence and Pressure Drop
- Stainless Steel Stem Standard



** Note: Valve is seal welded and is not field repairable.*

Material Description

ITEM	PART NAME	MATERIAL (STANDARD)
1	Body	ASTM A105
2	Adapter	ASTM A105
3	Ball	Carbon Steel - Nickel Chrome Plated
4	Seats	Nylon
5	Stem	316 Stainless Steel
6	Body O-Ring	Buna-N
7	Stem O-Ring	Buna-N
8	Stem Seal	TFE
9	Lock Plate	Stainless Steel
10	Weather Seal	Polyethylene
11	Roll Pin	Stainless Steel
12	Stop Pin	Stainless Steel
13	Drive Nut - 2" Square	Ductile Iron



Dimensional Data

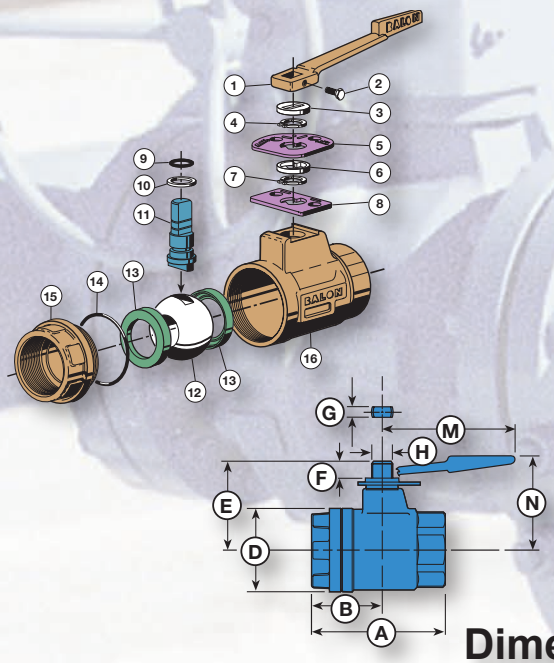
SIZE	CATALOG	PORT/A	B	C	D	E	F	LBS.	Cv
2x1.5x2	2R-US33-BW	1.5	11.8	5	3.62	2	4.5	17	148
2x2x2	2F-US33-BW	2	11.8	5.50	4.50	2	4.5	23	-
3x2.5x3	3R-US33-BW	2.5	11.8	6.12	5.25	2	4.5	31	550
3x3x3	3F-US33-BW	3	11.8	6.75	6.25	2	4.5	44	-
4x3x4	4R-US33-BW	3	12.8	6.75	6.25	2	4.5	45	662
4x4x4	4F-US33-BW	4	12.8	7.50	6.87	2	4.5	69	-
6x4x6	6R-US33-BW	4	13.8	7.50	6.87	2	4.5	71	800

Series S Ductile Iron

- Lever Operated Ball Valve
- To 2000 PSI WP
- 1" Through 4"
- Threaded Body Construction

- High Grade Ductile Iron with Better Corrosion Resistance and Greater Yield Strength
- Multi-Seal Seats
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard

- Fire Safe Design
- Maintenance Free Sealing



Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)	Nylon (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
16	Body	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*

Dimensional Data

SIZE	CATALOG NUMBER		PORT	WP	A	B	D	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM														
1x1x1	1F-S42-SE	1F-S42N-SE	1	1000	3.87	1.93	2.25	2.37	.50	.340	.685	4.37	2	3	P-333-CS	-
1x1x1	1F-S62-SE	1F-S62N-SE	1	1500	3.87	1.93	2.25	2.37	.50	.340	.685	4.37	2	3	P-333-CS	-
1x1x1	1F-S92-SE	1F-S92N-SE	1	2000	4	2	2.50	2.37	.50	.340	.685	4.37	2	4	P-333-CS	-
2x1.5x2	2R-S32-SE	2R-S32N-SE	1.5	750	5.25	2.62	3.37	3.62	.62	.434	.873	7.25	5	8	P-4128-DI	125
2x1.5x2	2R-S42-SE	2R-S42N-SE	1.5	1000	5.25	2.62	3.37	3.62	.75	.434	.873	7.25	5	8	P-4128-DI	125
2x1.5x2	2R-S62-SE	2R-S62N-SE	1.5	1500	5.25	2.62	3.37	3.62	.75	.434	.873	7.25	5	8.5	P-4128-DI	125
2x1.5x2	2R-S92-SE	2R-S92N-SE	1.5	2000	5.50	2.75	3.75	3.62	.75	.434	.873	7.25	5	10	P-4128-DI	125
2x2x2	2F-S32-SE	2F-S32N-SE	2	750	5.75	2.87	4.25	4.37	.75	.497	.998	10.25	5.37	12	P-4129-DI	-
2x2x2	2F-S42-SE	2F-S42N-SE	2	1000	5.75	2.87	4.25	4.37	.75	.497	.998	10.25	5.37	13	P-4129-DI	-
2x2x2	2F-S62-SE	2F-S62N-SE	2	1500	6	3	4.75	4.37	.75	.497	.998	10.25	5.37	15	P-4129-DI	-
2x2x2	2F-S92-SE	2F-S92N-SE	2	2000	6	3	4.75	4.37	.75	.497	.998	10.25	5.37	16	P-4129-DI	-
3x2x3	3R-S32-SE	3R-S32N-SE	2	750	7.25	3.50	4.50	4.37	.75	.497	.998	10.25	5.37	17.8	P-4129-DI	180
3x2x3	3R-S62-SE	3R-S62N-SE	2	1500	7.25	3.62	5	4.37	.75	.497	.998	10.25	5.37	22	P-4129-DI	180
3x2.5x3*	3R-S42-SE	3R-S42N-SE	2.5	1000	7.62	3.93	5.25	5.25	1.06	.622	1.248	16	5.75	24	P-4126-DI	400
3x3x3	3F-S32-SE	3F-S32N-SE	3	750	8	4	6	5.75	.87	.747	1.373	20	6.75	33	P-4127-DI	-
3x3x3	3F-S42-SE	3F-S42N-SE	3	1000	8.75	4.37	6	5.75	.87	.747	1.373	20	6.75	33	P-4127-DI	-
4x3x4	4R-S32-SE	4R-S32N-SE	3	750	8.75	4.37	6	5.75	.87	.747	1.373	20	6.75	36	P-4127-DI	525
4x3x4	4R-S42-SE	4R-S42N-SE	3	1000	8.75	4.37	6	5.75	.87	.747	1.373	20	6.75	35	P-4127-DI	525
4x4x4	4F-S22-SE	4F-S22N-SE	4	500	9.37	4.68	7.50	6.37	1.06	.747	1.373	20	7.37	49	P-4127-DI	-

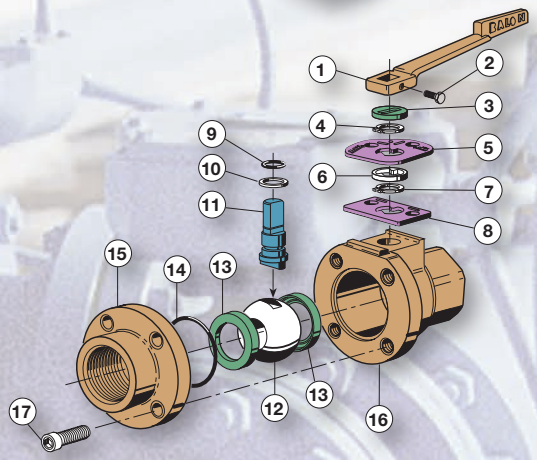
** This reduced port valve has a 2.5" bore for increased flow.*

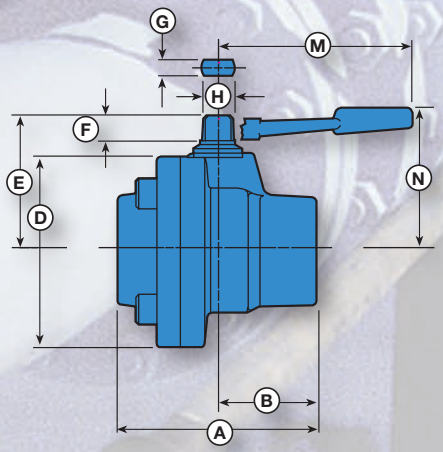
TOC

Series F Ductile Iron

- Lever Operated Ball Valve
- To 2000 PSI WP
- 1" Through 4"
- Bolted Body Construction

- High Grade Ductile Iron with Better Corrosion Resistance and Greater Yield Strength
- Multi-Seal Seats
- Bolted Body Protects Against End Adapter Blowout
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing





Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	AISI 1018 Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)	Nylon (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
16	Body	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
17	Body Bolts	ASTM A-193 B7M	ASTM A193 B7M

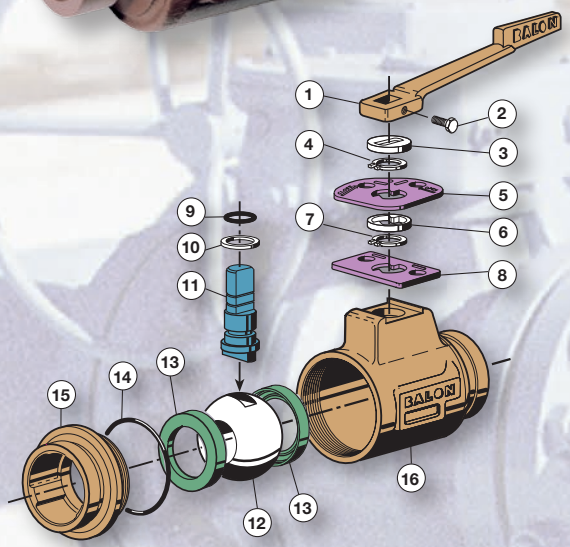
** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*

Dimensional Data

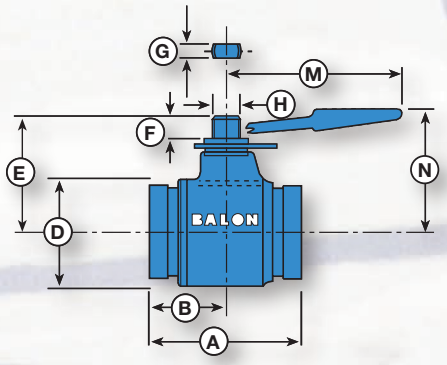
SIZE	CATALOG NUMBER		PORT	WP	A	B	D	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM														
1x1x1	1F-F92-SE	1F-F92N-SE	1	2000	3.87	1.93	3.37	2.37	.50	.340	.685	4.37	2	4	P-333-CS	-
2x1.5x2	2R-F92-SE	2R-F92N-SE	1.5	2000	5.50	2.75	4.87	3.62	.75	.434	.873	7.25	5	12.4	P-4128-DI	125
2x2x2	2F-F62-SE	2F-F62N-SE	2	1500	5.75	2.87	6.12	4.37	.87	.497	.998	10.25	5.37	19	P-4129-DI	-
2x2x2	2F-F92-SE	2F-F92N-SE	2	2000	5.75	2.87	6.12	4.37	.87	.497	.998	10.25	5.37	19	P-4129-DI	-
2.5x2.5x2.5	2.5F-F62-SE	2.5F-F62N-SE	2.5	1500	7	3.50	6.87	5.25	1.06	.622	1.248	16	5.75	27	P-4126-DI	-
3x2x3	3R-F62-SE	3R-F62N-SE	2	1500	7.25	3.62	6.75	4.37	.87	.497	.998	10.25	5.37	26	P-4129-DI	180
3x2x3	3R-F92-SE	3R-F92N-SE	2	2000	7.25	3.62	6.75	4.37	.87	.497	.998	10.25	5.37	26	P-4129-DI	180
3x3x3	3F-F42-SE	3F-F42N-SE	3	1000	8.12	4.06	7.75	5.75	1.06	.747	1.373	20	6.75	40	P-4127-DI	-
4x3x4	4R-F42-SE	4R-F42N-SE	3	1000	8.62	4.31	7.75	5.75	1.06	.747	1.375	20	6.75	42	P-4127-DI	500
4x4x4	4F-F32-SE	4F-F32N-SE	4	750	9.37	4.68	9.25	6.37	1.06	.747	1.375	20	7.37	69	P-4127-DI	-

Series S Ductile Iron

- Lever Operated Ball Valve
- 750 PSI WP
- 2" Through 4"
- Threaded Body Construction



- High Grade Ductile Iron with Better Corrosion Resistance and Greater Yield Strength
- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing



Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)	Nylon (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
16	Body	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*

Dimensional Data

SIZE	CATALOG NUMBER		PORT	A	B	D	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM													
2x1.5x2	2R-S32-GE	2R-S32N-GE	1.5	5.12	2.68	3.37	3.62	.62	.434	.873	7.25	5	7.5	P-4128-DI	140
3x2x3	3R-S32-GE	3R-S32N-GE	2	7.25	3.50	4.50	4.37	.75	.497	.998	10.25	5.37	17	P-4128-DI	200
4x3x4	4R-S32-GE	4R-S32N-GE	3	8.87	4.50	6	5.75	.87	.747	1.373	20	6.75	34	P-4128-DI	550

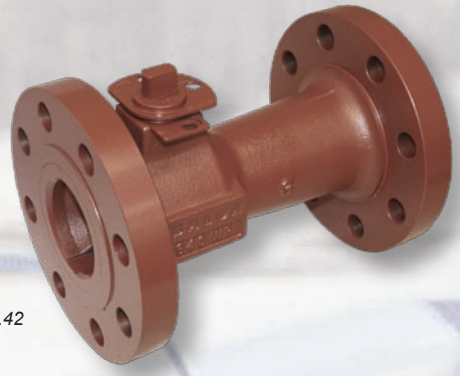
TOC

BALON

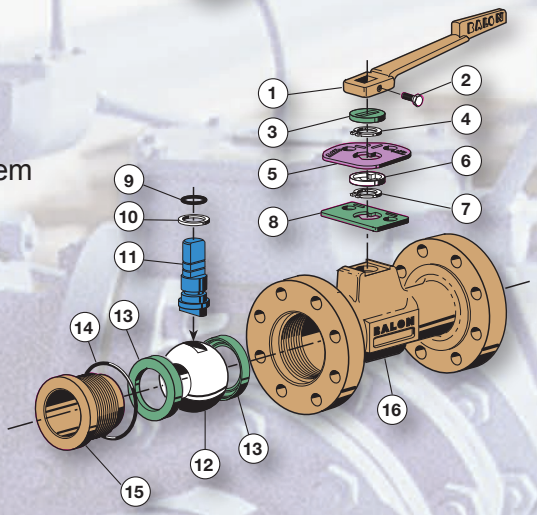
Series F Ductile Iron

- Lever Operated Ball Valve
- ANSI Class 300*
  Raised Face (640 PSI WP)
- 2" Through 4"

** Dimensions meet ANSI standard B16.34; rated working pressure meets ANSI standard B16.42*



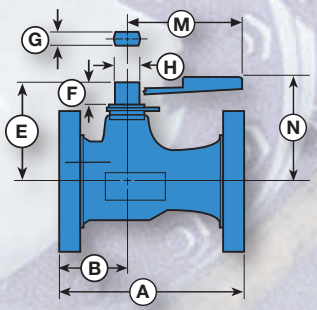
- High Grade Ductile Iron with Better Corrosion Resistance and Greater Yield Strength
- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing Improvement Over Lubricated Ball Valves and Cast Iron Plug Valves
- Eliminates High Maintenance of Lubricated Valves



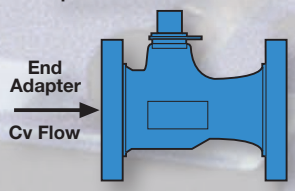
Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)	Nylon (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
16	Body	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*

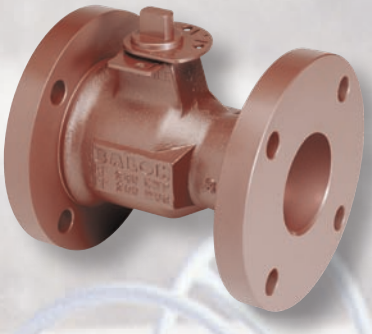


Optimum Flow Direction



Dimensional Data

SIZE	CATALOG NUMBER		PORT	A	B	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM												
2x1.5x2	2R-F32	2R-F32N	1.5	8.5	2.75	3.62	.75	.434	.873	7.25	5	21.6	P-4128-DI	125
3x2x3	3R-F32	3R-F32N	2	11.12	3	4.37	.75	.497	.998	10.25	5.37	40	P-4129-DI	200
4x3x4	4R-F32	4R-F32N	3	12	3.37	5.75	.87	.747	1.373	20	6.75	72	P-4127-DI	525

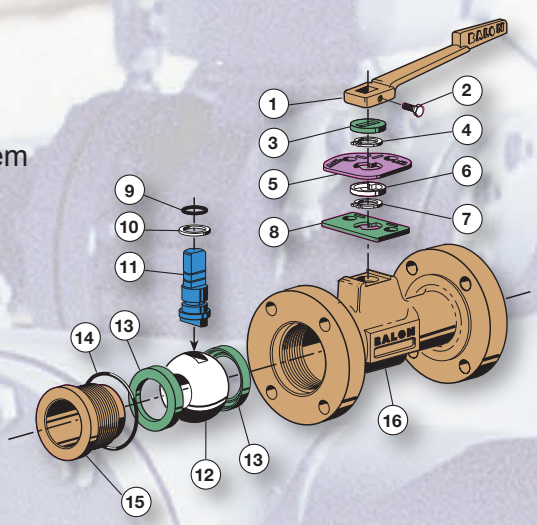


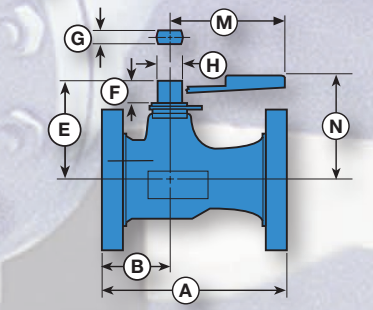
Series F Ductile Iron

- Lever Operated Ball Valve
- ANSI Class 125* • Flat Face (200 PSI WP)
- ANSI Class 150* • Raised Face (250 PSI WP)
- 2" Through 6"

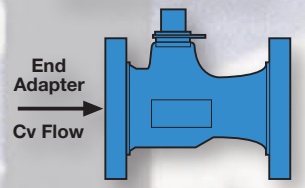
** Dimensions meet ANSI standard B16.34; rated working pressure meets ANSI standard B16.42*

- High Grade Ductile Iron with Better Corrosion Resistance and Greater Yield Strength
- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing Improvement Over Lubricated Ball Valves and Cast Iron Plug Valves
- Eliminates High Maintenance of Lubricated Valves





Optimum Flow Direction



Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)	Nylon (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
16	Body	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*

Dimensional Data

SIZE	CATALOG NUMBER		PORT	WP		A	B	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM		CLASS 125 FLAT FACE	CLASS 150 RAISED FACE											
2x1.5x2	2R-F12	2R-F12N	1.5	FF200	RF250	7	2.75	3.62	.75	.434	.873	7.25	5	18	P-4128-DI	125
3x2x3	3R-F12	3R-F12N	2	FF200	RF250	8	3	4.37	.75	.497	.998	10.25	5.37	30	P-4129-DI	200
4x3x4	4R-F12	4R-F12N	3	FF200	RF250	9	3.37	5.75	.87	.747	1.373	20	6.75	53.5	P-4127-DI	525
6x4x6	6R-F12	6R-F12N	4	FF200	RF250	10.50	3.81	6.37	.87	.747	1.373	20	7.37	75	P-4127-DI	800

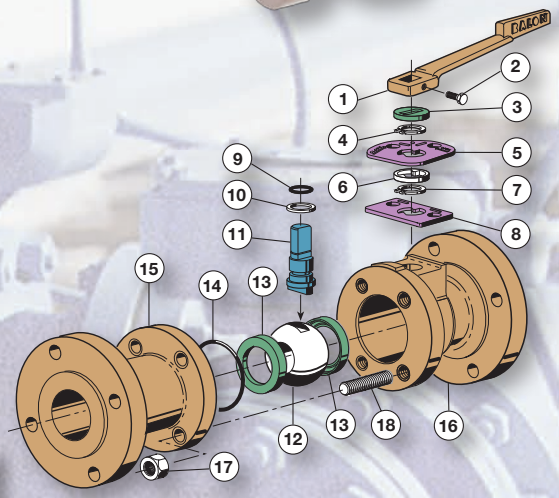
TOC

Series F Ductile Iron

- Lever Operated Ball Valve
- ANSI Class 150* Raised Face (250 PSI WP)
- 2" Through 4"
- Bolted Body Construction

** Dimensions meet ANSI standard B16.34; rated working pressure meets ANSI standard B16.42*

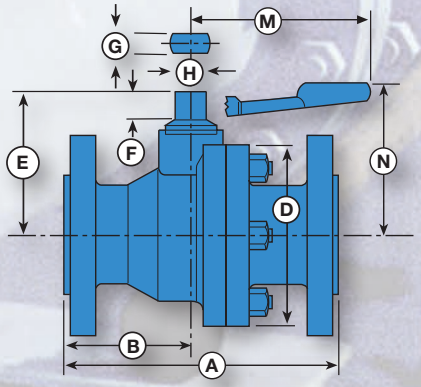
- High Grade Ductile Iron with Better Corrosion Resistance and Greater Yield Strength
- Multi-Seal Seats
- Fire Safe Design
- NACE Valves Include 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing Improvement Over Lubricated Ball Valves and Cast Iron Plug Valves
- Eliminates High Maintenance of Lubricated Valves



Material Description

ITEM	PART NAME	MATERIAL (STANDARD)	MATERIAL (NACE)
1	Handle*	Ductile Iron	Ductile Iron
2	Handle Bolt	Standard Hex Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene	Polyethylene
4	Lock Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
5	Lock Plate	Carbon Steel	Carbon Steel
6	Dust Cover	Polyethylene	Polyethylene
7	Stop Plate Retainer	Carbon Spring Steel	Carbon Spring Steel
8	Stop Plate	Carbon Steel	Carbon Steel
9	Stem O-Ring	Buna-N	Fluorocarbon
10	Stem Seal	TFE	TFE
11	Stem	Carbon Steel	316 Stainless Steel
12	Ball	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)	Nylon (TFE Optional)
14	Body O-Ring	Buna-N	Fluorocarbon
15	End Adapter	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
16	Body	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
17	Nuts	ASTM A194 2H	ASTM A194 2HM
18	Body Bolts	ASTM A193 B7	ASTM A193 B7M

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*



Dimensional Data

SIZE	CATALOG NUMBER		PORT	A	B	D	E	F	G	H	M	N	LBS.	HANDLE	Cv
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM													
2x2x2	2F-F12	2F-F12N	2	7	2.75	6	4.37	.87	.497	.998	10.25	5.37	28	P-4129-DI	-
3x3x3	3F-F12	3F-F12N	3	8	3.56	7.50	5.75	1.06	.747	1.373	20	6.75	54	P-4127-DI	-
4x4x4	4F-F12	4F-F12N	4	9	4.06	9	6.37	1.06	.747	1.373	20	7.37	80	P-4127-DI	-

Series S Aluminum Bronze

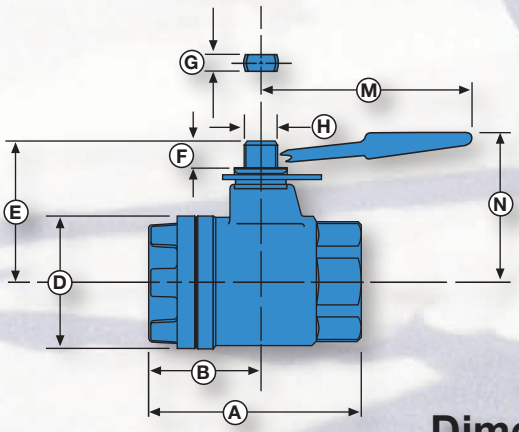
- Lever Operated Ball Valve
- To 1000 PSI WP
- 2" Through 4"
- Threaded Body Construction

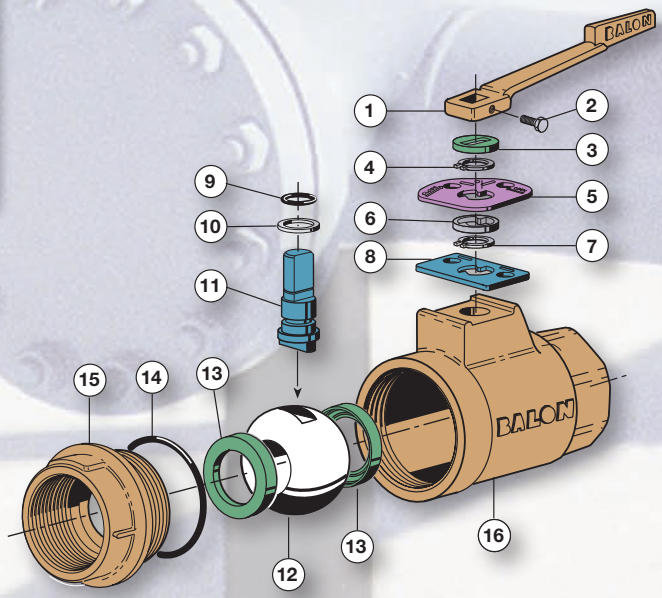
- Enhanced Protection Against CO_2 and Saltwater Corrosion
- NACE Standard
- Multi-Seal Seats
- Fire Safe Design
- Minimizes Risk of Galling Associated with Stainless Steel
- 316 Stainless Steel Ball and Stem
- Rugged Locking Device Standard
- Maintenance Free Sealing

Material Description

ITEM	PART NAME	MATERIAL NACE (STANDARD)
1	Handle*	Ductile Iron
2	Handle Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene
4	Lock Plate Retainer	Stainless Steel
5	Lock Plate	Stainless Steel
6	Dust Cover	Polyethylene
7	Stop Plate Retainer	Stainless Steel
8	Stop Plate	Stainless Steel
9	Stem O-Ring	Fluorocarbon
10	Stem Seal	TFE
11	Stem	316 Stainless Steel
12	Ball	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)
14	Body O-Ring	Fluorocarbon
15	End Adapter	ASTM B148-9D (955)
16	Body	ASTM B148-9D (955)

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*





Dimensional Data

SIZE	CATALOG	PORT	WP	A	B	D	E	F	G	H	M	N	LBS.	HANDLE	Cv
2x1.5x2	2R-S44N-SE	1.5	1000	5.25	2.66	3.38	3.66	.75	.434	.873	7.25	5	7.5	P-4128-DI	125
2x2x2	2F-S44N-SE	2	1000	5.75	2.88	4.25	4.38	.75	.497	.998	10.25	5.38	12	P-4129-DI	-
3x2x3	3R-S44N-SE	2	1000	7.25	3.50	4.50	4.38	.75	.497	.998	10.25	5.38	17	P-4129-DI	180
3x3x3	3F-S44N-SE	3	1000	8.75	4.38	6	5.75	.88	.747	1.373	20	6.75	31	P-4127-DI	-
4x3x4	4R-S44N-SE	3	1000	8.75	4.38	6	5.75	.88	.747	1.373	20	6.75	36	P-4127-DI	525
4x4x4	4F-S34N-SE	4	750	9.38	4.69	7	6.38	1.06	.747	1.373	20	7.38	52	P-4127-DI	-

TOC

Series F Aluminum Bronze

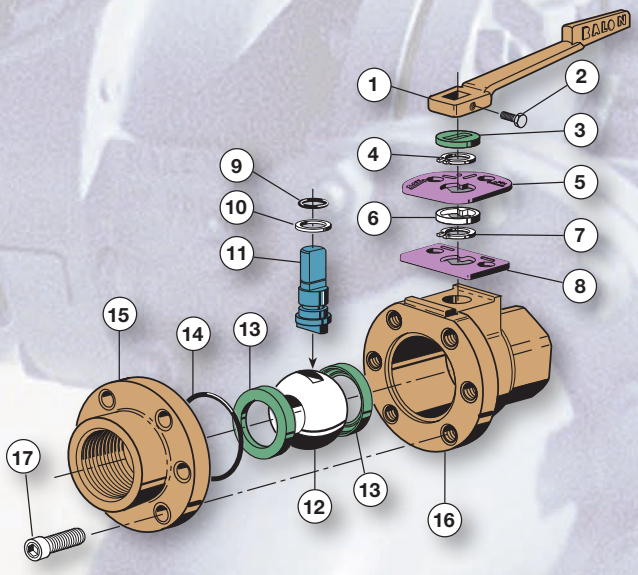
- Lever Operated Ball Valve
- To 3000 PSI WP
- 1" Through 2"
- Bolted Body Construction

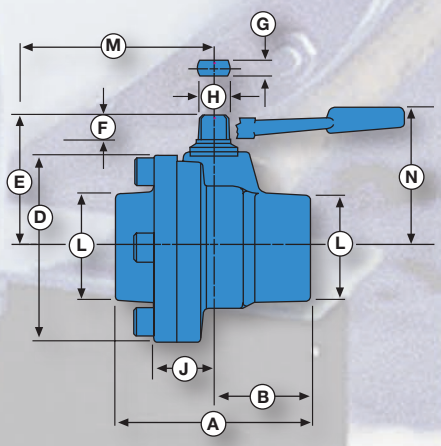
- Enhanced Protection Against CO_2 and Saltwater Corrosion
- NACE Standard
- Minimizes Risk of Galling Associated with Stainless Steel
- Multi-Seal Seats
- Fire Safe Design
- Rugged Locking Device Standard
- Maintenance Free Sealing

Material Description

ITEM	PART NAME	MATERIAL NACE (STANDARD)
1	Handle*	Ductile Iron
2	Handle Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene
4	Lock Plate Retainer	Stainless Steel
5	Lock Plate	Stainless Steel
6	Dust Cover	Polyethylene
7	Stop Plate Retainer	Stainless Steel
8	Stop Plate	Stainless Steel
9	Stem O-Ring	Fluorocarbon
10	Stem Seal	TFE
11	Stem	316 Stainless Steel
12	Ball	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)
14	Body O-Ring	Fluorocarbon
15	End Adapter	ASTM B148-9D (955)
16	Body	ASTM B148-9D (955)
17	Body Stud Bolts	ASTM A193 B7M

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*





Dimensional Data

SIZE	CATALOG	PORT	WP*	A	B	D	E	F	G	H	J	L	M	N	LBS.	HANDLE	Cv
1x1x1	1F-F04N-SE	1	3000	3.87	1.93	3.37	2.37	.50	.340	.685	1.12	1.87	4.37	2	4	P-333-CS	-
2x1.5x2	2R-F04N-SE	1.5	3000	5.50	2.75	4.87	3.62	.75	.434	.873	1.62	3	7.25	5	11.5	P-4128-DI	125
2x2x2	2F-F94N-SE	2	2000	5.75	2.87	6.12	4.37	.87	.497	.998	2	3.12	10.25	5.37	19	P-4129-DI	-

Series S Aluminum Bronze

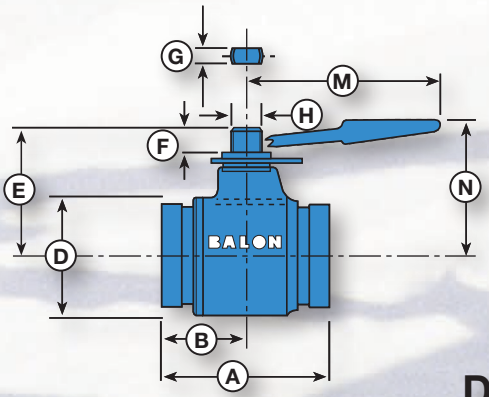
- Lever Operated Ball Valve
- 1000 PSI WP
- 2" Through 4"
- Threaded Body Construction

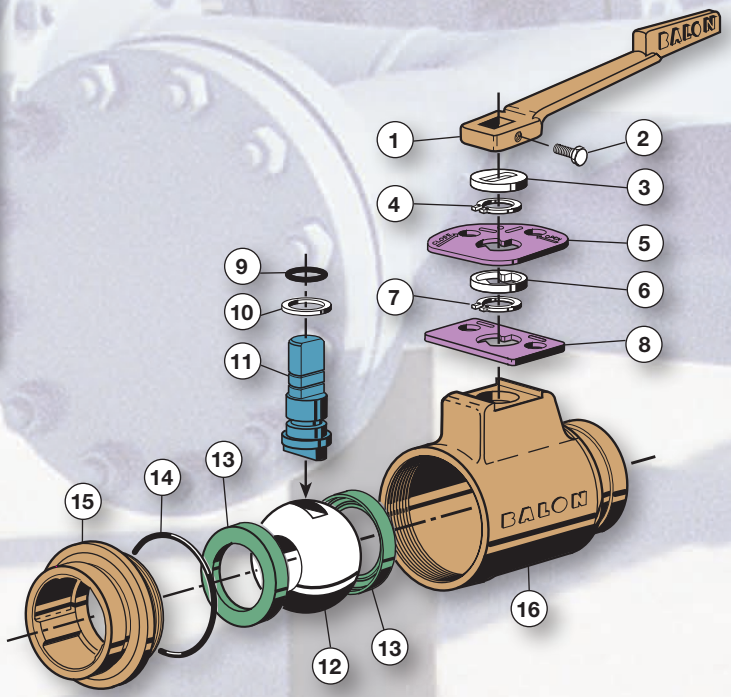
- Enhanced Protection Against CO_2 and Saltwater Corrosion
- Multi-Seal Seats
- Fire Safe Design
- NACE Standard
- Rugged Locking Device Standard
- Maintenance Free Sealing

Material Description

ITEM	PART NAME	MATERIAL NACE (STANDARD)
1	Handle*	Ductile Iron
2	Handle Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene
4	Lock Plate Retainer	Stainless Steel
5	Lock Plate	Stainless Steel
6	Dust Cover	Polyethylene
7	Stop Plate Retainer	Stainless Steel
8	Stop Plate	Stainless Steel
9	Stem O-Ring	Fluorocarbon
10	Stem Seal	TFE
11	Stem	316 Stainless Steel
12	Ball	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)
14	Body O-Ring	Fluorocarbon
15	End Adapter	ASTM B148-9D (955)
16	Body	ASTM B148-9D (955)

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*





Dimensional Data

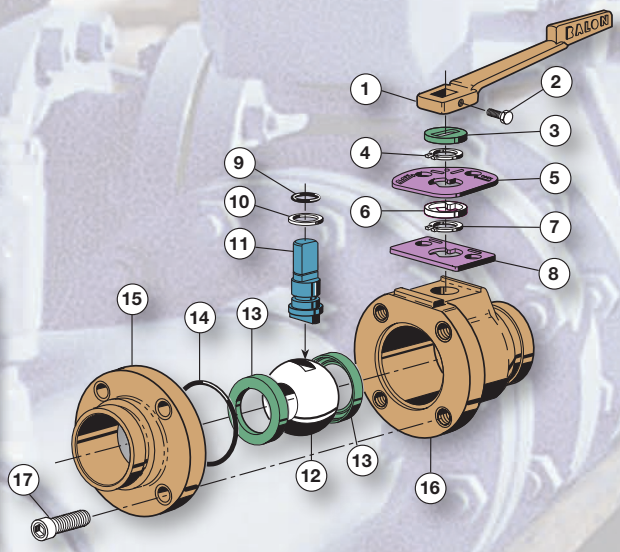
SIZE	CATALOG NUMBER NACE TRIM 316 SS BALL & STEM	PORT	A	B	D	E	F	G	H	M	N	LBS.	HANDLE	Cv
2x1.5x2	2R-S44N-GE	1.5	5.12	2.68	3.37	3.62	.62	.434	.873	7.25	5	7.5	P-4128-DI	140
3x2x3	3R-S44N-GE	2	7.25	3.50	4.50	4.37	.75	.497	.998	10.25	5.37	16	P-4129-DI	200
4x3x4	4R-S44N-GE	3	8.87	4.50	6	5.75	.87	.747	1.373	20	6.75	34	P-4127-DI	550

TOC

Series F Aluminum Bronze

- Lever Operated Ball Valve
- 2000 PSI WP
- 2"
- Bolted Body Construction

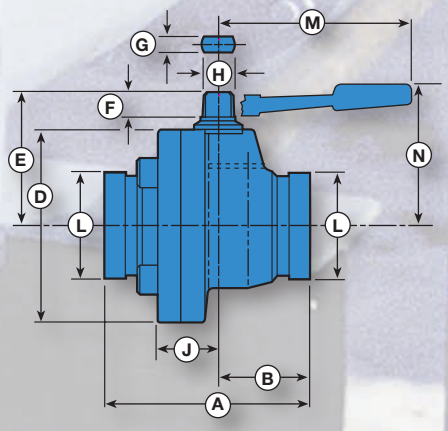
- Enhanced Protection Against CO_2 and Saltwater Corrosion
- Multi-Seal Seats
- Fire Safe Design
- NACE Standard
- Rugged Locking Device Standard
- Maintenance Free Sealing



Material Description

ITEM	PART NAME	MATERIAL NACE (STANDARD)
1	Handle*	Ductile Iron
2	Handle Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene
4	Lock Plate Retainer	Stainless Steel
5	Lock Plate	Stainless Steel
6	Dust Cover	Polyethylene
7	Stop Plate Retainer	Stainless Steel
8	Stop Plate	Stainless Steel
9	Stem O-Ring	Fluorocarbon
10	Stem Seal	TFE
11	Stem	316 Stainless Steel
12	Ball	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)
14	Body O-Ring	Fluorocarbon
15	End Adapter	ASTM B148-9D (955)
16	Body	ASTM B148-9D (955)
17	Body Bolts	ASTM A193 B7M

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*



Dimensional Data

SIZE	CATALOG	PORT	A	B	D	E	F	G	H	J	L	M	N	LBS.	HANDLE	Cv
2x1.5x2	2R-F94N-GE	1.5	5.5	2.75	4.87	3.62	.75	.497	.873	1.62	2.37	7.25	5	11.5	P-4128-DI	140

Series LS Threaded End Stainless Steel

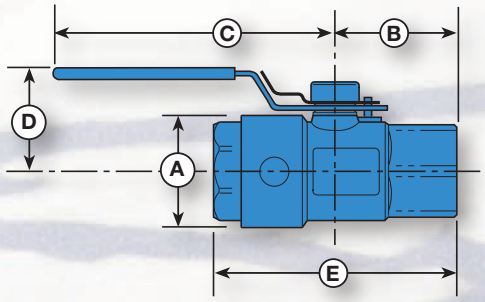
- Lever Operated Ball Valve
- To 3000 PSI WP
- ¼" Through 1"
- Threaded Body Construction

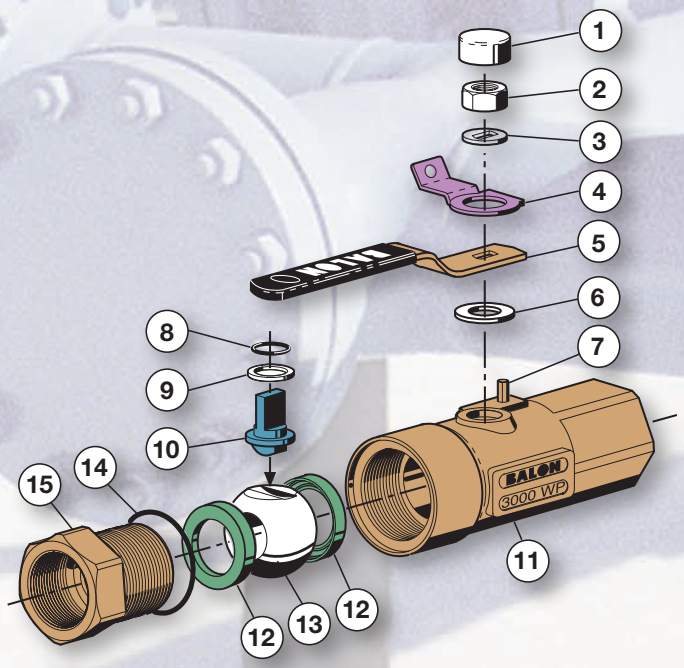
- Multi-Seal Seats
- NACE Standard
- Exclusive Patented Design Inhibits Loosening of End Adapter
- All Metal Components Made of Stainless Steel
- Maintenance Free Sealing

Material Description

ITEM	PART NAME	MATERIAL (STANDARD)
1	Weather Guard	Polyethylene
2	Stem Nut	Stainless Steel
3	Spacer	Stainless Steel
4	Lock Plate	Stainless Steel
5	Handle*	Stainless Steel
6	Stem Washer	Acetal
7	Stop Pin	Stainless Steel
8	Stem O-Ring	Fluorocarbon
9	Stem Seal	TFE
10	Stem	316 Stainless Steel
11	Body	316 Stainless Steel
12	Ball Seat	Nylon (TFE Optional)
13	Ball	316 Stainless Steel
14	Body Seal	Fluorocarbon
15	Adapter	316 Stainless Steel

** Handle and locking device standard on all Series LS Ball Valves.*





Dimensional Data

SIZE	CATALOG	PORT	WP*	A	B	C	D	E	LBS.	Cv
.25x.37x.25	LS-02592	.37	3000	1.37	1.12	3.50	1.62	2.62	.91	-
.50x.37x.50	LS-05561	.37	2000	1.37	1.12	3.50	1.62	2.50	.75	6
.50x.37x.50	LS-05591	.37	3000	1.37	1.43	3.50	1.62	3	1	6
.75x.75x.75	LS-07592	.75	3000	2.12	1.75	4.87	2.25	3.75	2.5	-
1x.75x1	LS-10561	.75	2000	2.12	1.87	4.87	2.25	3.75	2	30
1x.75x1	LS-10591	.75	3000	2.12	2	4.87	2.25	4.12	2.5	30

TOC

Series S Threaded End Stainless Steel

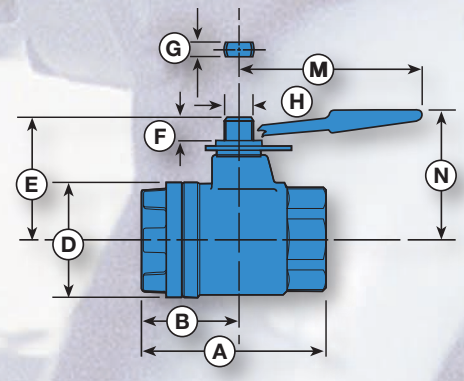
- Lever Operated Ball Valve
- 3000 PSI WP
- 2"
- Threaded Body Construction

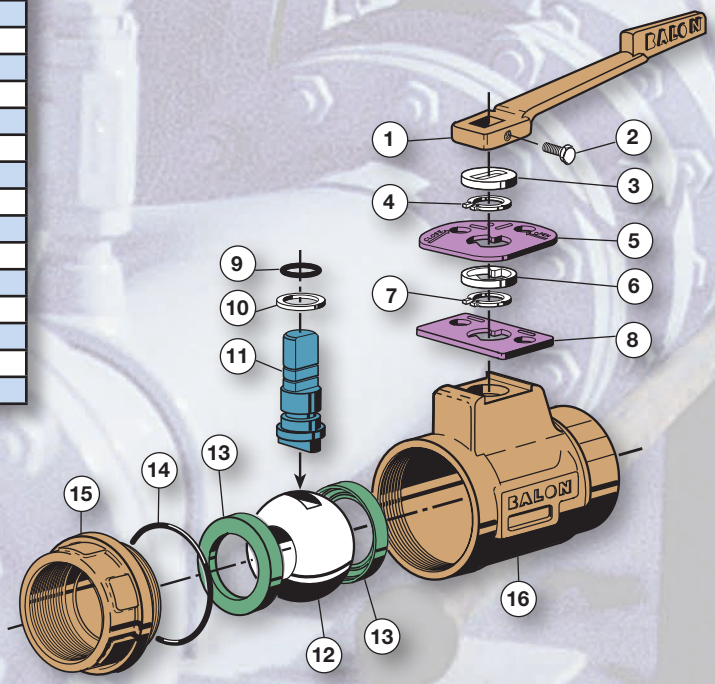
- Multi-Seal Seats
- Fire Safe Design
- 316 Stainless Steel Ball and Stem Standard
- Rugged Locking Device Standard
- Maintenance Free Sealing

Material Description

ITEM	PART NAME	MATERIAL NACE (STANDARD)
1	Handle*	Ductile Iron
2	Handle Bolt	Standard Hex Bolt
3	Weather Guard	Polyethylene
4	Lock Plate Retainer	Stainless Steel
5	Lock Plate	Stainless Steel
6	Dust Cover	Polyethylene
7	Stop Plate Retainer	Stainless Steel
8	Stop Plate	Stainless Steel
9	Stem O-Ring	Fluorocarbon
10	Stem Seal	TFE
11	Stem	316 Stainless Steel
12	Ball	316 Stainless Steel
13	Ball Seat	Nylon (TFE Optional)
14	Body O-Ring	Fluorocarbon
15	End Adapter	316 Stainless Steel
16	Body	316 Stainless Steel

** Balon valves are designed to be operated with a standard open-end wrench. Handle is optional.*





Dimensional Data

SIZE	CATALOG NUMBER NACE TRIM 316 SS BALL & STEM	PORT	A	B	D	E	F	G	H	M	N	LBS.	HANDLE	Cv
2x1.5x2	2R-S05N-SE	1.5	5.5	2.75	4.25	3.62	.75	.434	.873	7.25	5	14	P-4128-DI	125
2x2x2	2F-S05N-SE	2	6	3.12	4.87	4.37	.75	.497	.998	10.25	5.37	20	P-4129-DI	-

Actuator Sizing

Because the actuator sizing is so critical to the proper operation and life of a ball valve, we have chosen not to publish torque values. Misinterpretation of manual torque data can lead to undersizing, while misinterpretation of factored torque values can mislead as to ease of manual operation.

Furthermore, types of service conditions can significantly alter standard torque requirements. Balon valves facilitate ease of use, and we will be glad to provide sizing information upon request through one of our field representatives or from our Oklahoma City headquarters.

Standards and Specifications

Balon utilizes the following standards in the manufacture of ball valves. It should be noted that not all styles, configurations and materials used in Balon valves meet all of these standards in their entirety.

The user therefore, should specify a given standard if there is a need to assure total compliance with a given standard.

API. . . . . (American Petroleum Institute)
API-6FA. . . . . Fire Test For Resilient-Seated Valves
API 5B . . . . . Inspection Of Threads
API-6D. . . . . Pipeline Valves, End Closures, Connectors And Swivels.
API-Q1. . . . . Quality Programs
API-594 . . . . . Wafer Check Valves
ANSI . . . . . (American National Standard Institute)
ANSI-B. . . . . 16.5 - Pipe Flanges And Flanged Fittings
ANSI-B. . . . . 16.10 - Face-To-Face End-To-End Dimensions
ANSI-B. . . . . 16.42 Ductile Iron Pipe Flanges And Flanged Fittings
ANSI-B. . . . . 16.34 - Valves - Flanged End, ... Threaded And Butt Weld
ANSI-B. . . . . (B1.20.1) - Pipe Threads General Purpose (Inch)
MSS. . . . . (Manufacturers Standardization Society)
MSS-SP6. . . . . Standard Finishes For Contact Faces Of Pipe Flanges And Connection End Flanges Of Valves And Fittings
MSS-SP25. . . . . Standard Marking System For Valves, Fittings, Flanges And Fittings
MSS-SP72. . . . . Ball Valves With Flanged Or Butt Welding Ends For General Service
MSS-SP82. . . . . Valve Pressure Test Methods
MSS-SP84. . . . . Steel Valves - Socket Welding And Threaded Ends
NACE MR-01-75. . .Sulfide Stress Cracking, Resistant Metallic Material For Oil Field Equipment (NACE Materials Are Optional And Must Be Specified On Purchase Orders)

BALON®

Application Guide

This Balon "Media and Application Guide" provides assistance to the engineer in selecting the best material for a particular service. The final selection of materials however, requires the judgement of the user because it may be necessary to sacrifice certain physical properties of a material to take better advantage of others.

Information contained in the following chart is believed to be reliable and is intended to be used by trained personnel at their own discretion and risk. Due to many factors which affect the rate of corrosion, we suggest that final acceptability be established by test under actual operating conditions.

Ratings are based on media at ambient temperatures except as noted.

E - Excellent G - Good F - Fair U - Unsatisfactory BLANK - Insufficient Data

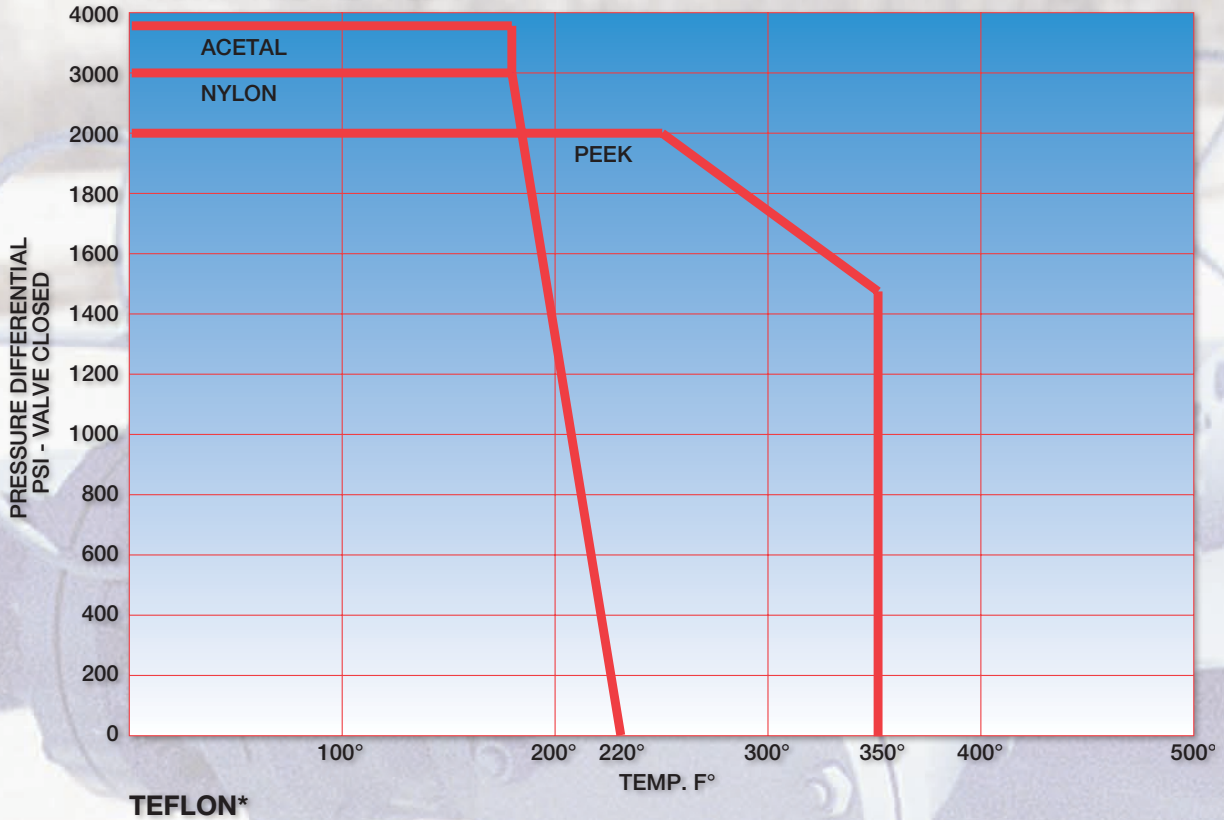
	VALVE MATERIAL			SEAT AND SEAL MATERIAL			
Media *	Carbon Steel	Ductile Iron	316 SS	Buna-N	Viton	Nylon	TFE
Air	E	E	E	E	E	E	E
Alcohols	G	G	E	E	E	F	E
Amines (conc.)	E	E	E	U	U	E	E
Ammonia, Anhydrous	E	G	E	F	U	E	E
- Aqueous	E	E	E	F	U	G	E
- Solutions	G	G	E	F	U	G	E
Benzene or Benzol	G	G	E	U	E	E	E
Brines	F	F	G	E	E	E	E
Bunker Oils (Fuels)	G	G	E	E	E	E	E
Butane	E	E	E	E	E	E	E
Carbolic Acid (Phenol)	U	U	G	U	G	U	E
Carbon Dioxide, Dry	E	F	E	G	G	G	E
Carbonic Acid	U	U	G	G	E	E	E
Carbon Tetrachloride, Dry	F	F	E	U	E	E	E
-Wet	U	U	G	U	E	E	E
Carbonated Water	G	G	E	E	E	G	E
Crude Oil, Sweet	E	E	E	E	E	E	E
- Sour	G	G	E	F	G	G	E
Diethylamine (DEA)	E	E	E	U	U	E	E
Diesel Fuels	E	E	E	E	E	E	E
Dowtherm A and E	G	G	E	U	E	E	E
Drilling Mud	G	G	E	E	E	E	E
Ethane	E	E	E	E	E	E	E
Ethylene	E	E	E	U	E	E	E
Ethylene Glycol	G	G	G	E	E	G	E
Fuel Oil	G	G	E	E	E	E	E
Gas, Manufactured	G	G	G	E	E	E	E
- Natural	G	G	E	E	E	E	E
- Odorizers	G	G	E	U	E	G	E
- Sour	G	G	E	F	E	E	E
Gasoline, Leaded	E	G	E	G	E	E	E
- Unleaded	E	G	E	F	E	E	E
- Aviation	E	G	E	G	E	E	E
- Motor	E	G	E	F	E	E	E
Glycols	G	G	G	E	E	G	E
Heptane	E	E	E	E	E	E	E
Hexane	E	E	E	E	E	E	E
Hydraulic Oil - Petroleum Base	E	E	E	E	E	E	E
- Phosphate Base	E	E	E	U	E	E	E
Hydrocloric Acid -Air Free	U	U	U	F	E	U	E
Hydrofloric Acid	U	U	U	U	U	U	F
Hydrogen Gas	G	G	E	E	E	E	E
Hydrogen Sulfide, Dry(Conc.)	G	G	E	F	F	E	E
Wet(Conc.)	F	U	G	U	F	E	E
Illuminating Gas	E	E	E	E	E		E
Iso-Octane	E	G	E	E	E	E	E

	VALVE MATERIAL			SEAT AND SEAL MATERIAL			
Media *	Carbon Steel	Ductile Iron	316 SS	Buna-N	Viton	Nylon	TFE
Isopropyl Alcohol	G	G	G	G	E	G	E
- Ether	E	G	E	G	U	E	E
JP-4 Fuel	E	E	E	E	E	E	E
JP-5 Fuel	E	E	E	E	E	E	E
JP-6 Fuel	E	E	E	E	E	E	E
Kerosene	G	G	E	E	E	E	E
Liquified Pet. Gas (LPG)	G	G	G	E	E	E	E
Lubricating Oil	E	E	E	E	E	E	E
Mercaptan (Conc.)	G	G	E	F	E	G	E
Methane	E	E	E	E	E	E	E
Muratic Acid	U	U	U	G	E	U	E
Naphtha	G	G	E	G	E	E	E
Naphthalene	E	G	E	U	E	E	E
Natural Gas	E	E	E	E	E	E	E
Nitrogen	E	E	E	E	E	E	E
Oil, Animal	E	E	E	E	E		E
- Cottonseed	F	F	G	E	E	E	E
- Fish	G	G	E	E	E	E	E
- Fuel	G	G	E	E	E	E	E
- Lube	E	E	E	E	E	E	E
- Mineral	G	G	E	E	E	E	E
- Petroleum, Refined	E	G	E	E	E	E	E
Oil-Water Mixtures	E	E	E	E	E	E	E
Parafin	G	G	E	G	E	E	E
Pentane	G	G	E	U	E	E	E
Producer Gas	G	G	G	E	E	E	E
Propane	E	E	E	E	E	E	E
Propyl Alcohol	E	E	E	E	E	E	E
Propylene Glycol	E	E	E	E	E	F	E
Sea Water	U	U	E	E	E	E	E
Sodium Acetate	G	G	G	G	U	G	E
- Hydroxide, Cold, 20%	E	E	E	G	G	E	E
- Hydroxide, Hot, 20%	F	F	G	G	G	G	E
- Hydroxide, Cold, 50%	G	G	G	F	F	F	F
- Hydroxide, Hot, 50%	G	G	G	U	F	U	F
- Hydroxide, Cold, 70%	F	F	G	U	F		F
- Hydroxide, Hot, 70%	G	F	G	U	F		U
Steam (212° F)	E	E	E	U	U	U	E
Stoddard Solvent	G	G	G	E	E	G	E
Sulfur Dioxide (Dry)	G	G	E	U	U	F	E
Sulfuric Acid, 0-7%	F	F	G	F	E	G	E
- 20%	U	U	F	U	E	U	E
- 50%	U	U	U	U	E	U	E
- 100%	U	U	U	U	E	U	E
Toluene or Toluol	E	E	E	U	E	E	E
Water, Distilled, Aerated	U	U	E	E	G	E	E
- Fresh	F	F	E	E	E	E	E
- Sea	U	U	E	E	E	E	E
Wax Emulsions	E	G	E	E	E	E	E
Waxes	E	E	E	E	E	E	E
Xylene, Dry	E	E	E	U	E	E	E

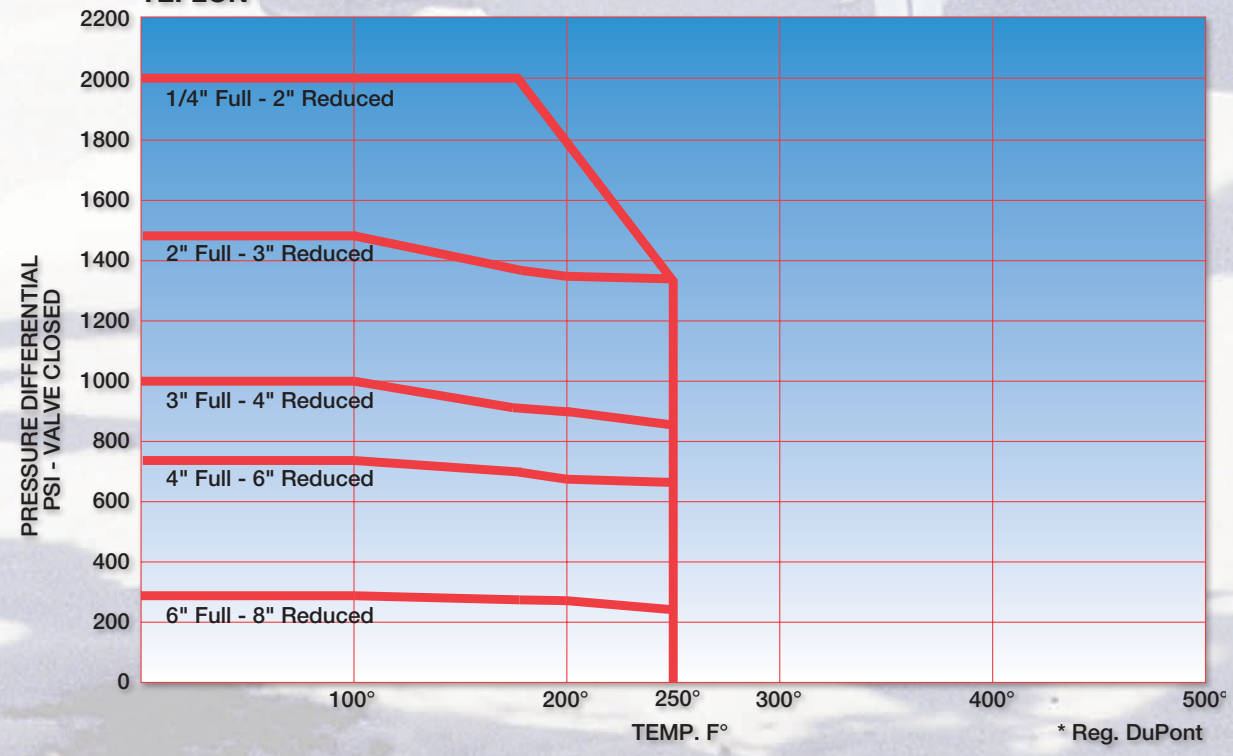
** Consult Oklahoma City office for compatibility of Aluminum Bronze Material*

Seat Pressure & Temperature Ratings

NYLON / ACETAL / PEEK



TEFLON*



* Reg. DuPont

Flow Coefficient Data

Cv Ratings of Full Bore Valve

Depending upon pipe schedule with which they are used, Balon full bore valves have bore sizes exceeding or nearly equaling the pipe inside diameter. The best method of computing system pressure losses is to consider the valve an equivalent length of pipe.

Using the Cv method of rating full bore valves does not provide good accuracy. The reason for this is that Cv tests do not provide valid data until the measured pressure drop equals at least 2 psi. In the relatively short length involved in a valve, extremely high velocities are required to generate that pressure drop.

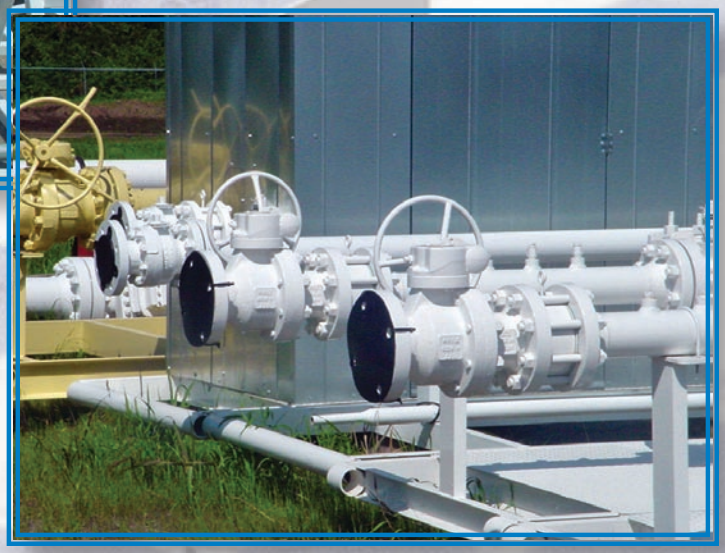
At these high velocities (which are well beyond those used in industry), other effects such as vibration and pulsation are then created by “super turbulent” flow. The net results are Cv ratings which are lower than would be derived if pressure losses could be consistently measured at velocities in the usable range.

Cv data for reduced port valves are listed on the product pages.

BALON®

We Make Them

We Don't Import Valves



TOC

BALON®

FREEZE RESISTANT UNI-DIRECTIONAL OPTION

Flow Indicator for UNI-Directional Valves Only

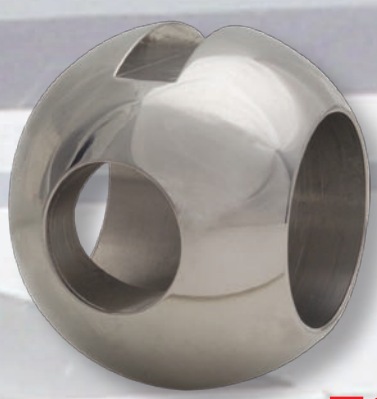
UNI-Directional Valve

UNI-Directional Modification for Freeze Resistance

While no design can prevent a valve from freezing, Balon offers a UNI-Directional option that reduces the likelihood of a temporary freeze resulting in permanent damage to the valve. This design modification incorporates a relief hole in the upstream side of the closed ball. When water trapped inside the ball cavity freezes and expands, the relief hole allows dissipation of the increased internal pressure.

As shown in the photographs, the addition of the relief hole renders the valve uni-directional with the body side of the valve positioned upstream for proper sealing and operation. Balon's freeze-resistant, UNI-Directional option is available on nearly every ball valve Balon offers. Please call the factory for pricing and availability when requesting the freeze resistant, UNI-Directional option.

Relief Hole, Upstream when Valve is Closed



Different By Philosophy

BALON®

GEAR OPERATOR

Why We Make Our Own Gear Operators

We manufacture our own Balon gear operators because our customers expect and deserve gear operators that measure up to the proven safety, sealability, and durability of Balon ball valves.

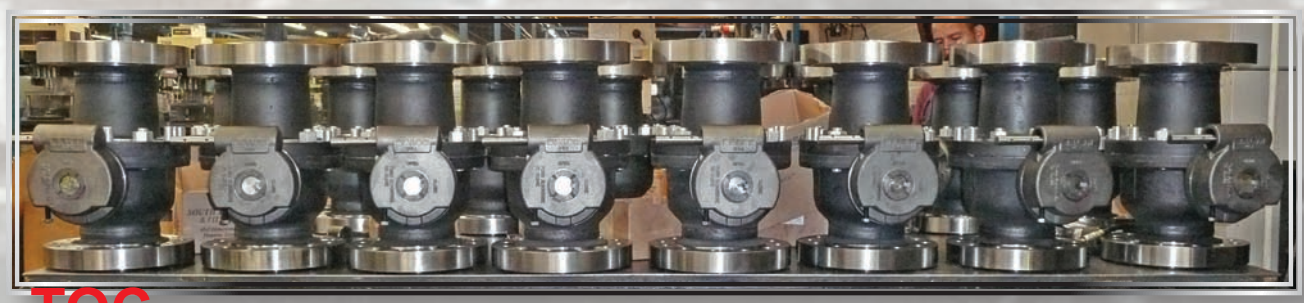
Balon has seized an opportunity to advance gearbox safety and performance where commodity gearbox manufacturers have fallen short. By incorporating rugged features and upgraded materials, the Balon gear operator extends service life and enhances both safety and ease of operation.

And, as with every component of our valves, the Balon gear operator is 100% made in America by Balon Corporation.

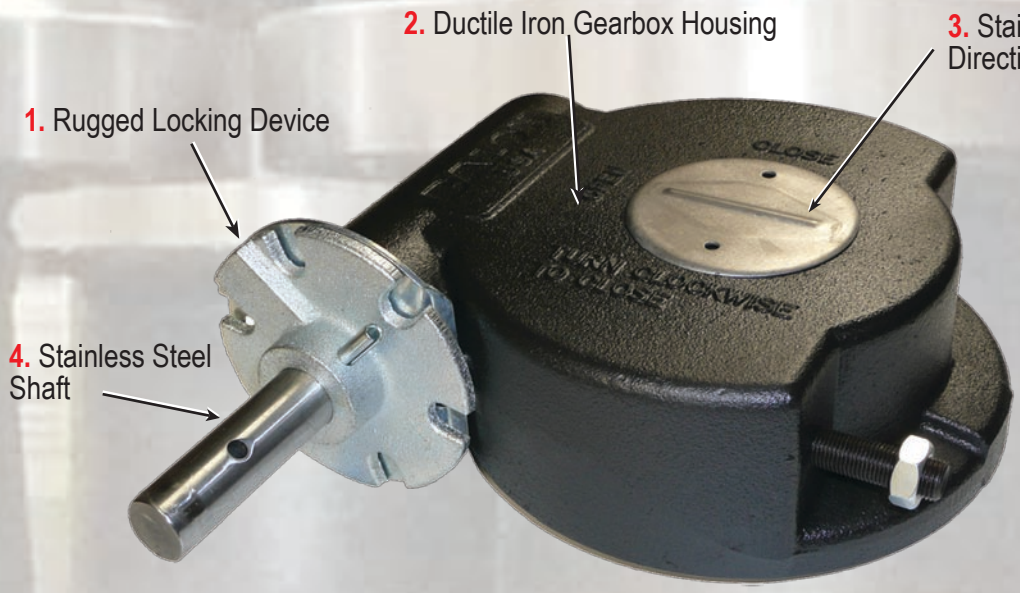
Please consult the chart below for sizes and pressure classes on which Balon gear operators are standard.

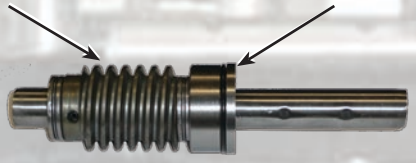
Balon Gear Operator Models and their corresponding Valves *		
B44	**B64**	**B88**
4F-F63-RF(RJ)	6F-F13-RF	8F-F13-RF
4F-F63N-RF(RJ)	6F-F13N-RF	8F-F13N-RF
4F-T63-RF(RJ)	6F-F13-RF15.5	8F-T33-RF
4F-T63CN-RF (RJ)	6F-F13N-RF15.5	8F-T33CN-RF
4F-T63SN-RF (RJ)	6F-F33-RF	8F-T33SN-RF
6R-F63-RF(RJ)	6F-F33N-RF	8F-T63-RF(RJ)
6R-F63N-RF(RJ)	6F-F63-RF(RJ)	8F-T63CN-RF(RJ)
	6F-F63N-RF(RJ)	8F-T63SN-RF(RJ)
	6F-T63-RF(RJ)	10R-F13-RF
	6F-T63CN-RF(RJ)	10R-F13N-RF
	6F-T63SN-RF(RJ)	
	8R-F13-RF	
	8R-F13N-RF	
	8R-F33-RF	
	8R-F33N-RF	
	8R-F63-RF(RJ)	
	8R-F63N-RF(RJ)	

** Gear operator models are also applicable on equivalent low-temp, high-temp, and uni-directional valves.*

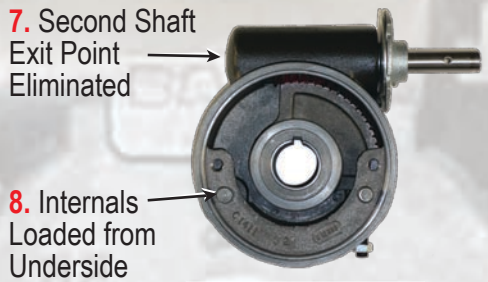


Gear Operator Features





Shaft with Gear Worm and Seals



Gearbox Underside

1. Rugged Locking Device Standard

A rugged locking device is standard with every Balon gearbox.

2. Ductile Iron Gearbox Housing

For all gearbox housings, Balon uses high-strength ductile iron, a more malleable material with a yield strength comparable to carbon steel.

3. Stainless Steel Directional Indicator

The Balon gearbox includes a low-profile stainless steel directional indicator. The indicator seal protects the stem journal from external contaminants.

4. Stainless Steel Shaft

All Balon gear operators are equipped with stainless steel shafts as standard, thus reducing corrosion concerns and assuring smoother gearbox operation.

5. Hardened Steel Gear Worm

Gear worms are often susceptible to galling and wear. Balon takes the additional step of hardening our steel gear worms, making them highly resistant to galling and premature failure.

6-8. Suitable for Above Ground and Buried Service

The Balon gearbox is designed to prevent water and external contaminants from invading the box and causing corrosion and operating problems. **6)** The shaft is completely O-ring sealed. **7)** Balon has eliminated the second shaft exit point, a common *entry* point for external contaminants in more ordinary gearboxes. **8)** The internal components of Balon's gearbox are loaded from the underside, not from the top, and are sealed against the encroachment of external contaminants.

Leading The Pack

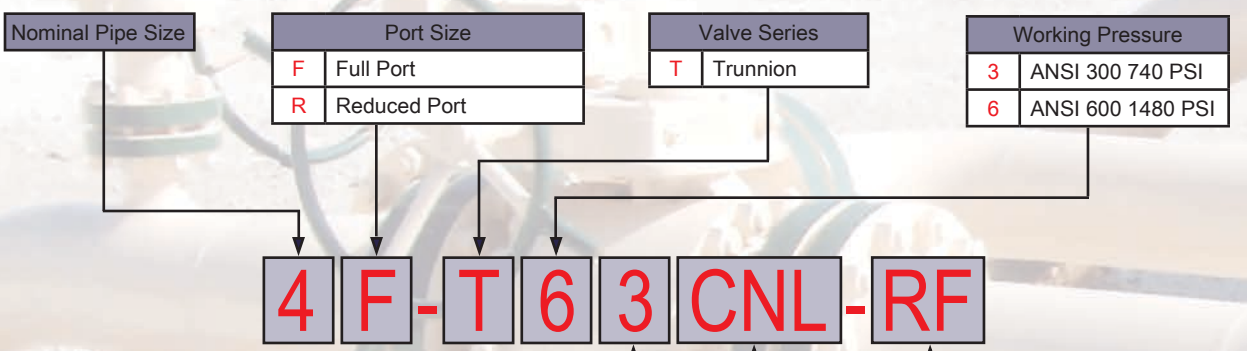
Innovate Rather Than Imitate

BALON®

TRUNNION BALL VALVES

Trunnion Ball Valve Identification Key

Balon
Trunnion Ball Valves



Material	
3	Carbon Steel

Trim (Ball & Stem Material)	
	Not Used if Carbon Steel Standard
CN	NACE (Carbon Steel Ball & Stem)
CNL	Low Temperature NACE (Carbon Steel Ball & Stem)
SN	NACE (Stainless Steel Ball & Stem)
SNL	Low Temperature NACE (Stainless Steel Ball & Stem)

End Connection	
RF	Raised Face
RJ	Ring Type Joint

Note: For any valves not listed please consult factory.

Trunnion Ball Valve Special Features

FULL-RANGE SEALING WITH MULTI-SEAL

Most trunnion-mounted ball valves seal poorly at low pressure. By contrast, Balon's Multi-Seal seats provide multiple sealing surfaces for full-range sealing: Nylon for low-pressure sealing, Acetal for high-pressure sealing. Multi-Seal is standard in every valve.

BLOWOUT-PROOF STEM WITH SAFETY SHEAR GROOVE

To prevent hazardous blowout, the Balon Series T stem is internally loaded and back-seated. And, as an added precaution each stem includes Balon's safety shear groove. If the stem should be inadvertently sheared, breakage occurs at a point located a safe distance from the pressure zone.

LOAD-BEARING BLOCKS

Balon has done away with the externally inserted lower trunnion, a hazardous leak path, a maintenance nuisance, and a blowout point. The Balon Series T incorporates load-bearing blocks. Even at maximum pressure, the blocks bear the load uniformly and reduce lateral stress, keeping the ball centered. Balon has eliminated the premature bearing failure associated with traditional trunnion valve designs.

DOUBLE-BLOCK-AND-BLEED AND SECONDARY SEALING

Every Balon Series T includes a bleed fitting for double-block-and-bleed, and every valve allows grease injection for secondary sealing.

LOCKING DEVICE ON EVERY VALVE

Balon Series T valves, like all Balon gear operated valves, feature standard locking devices in all sizes.

FIRE-TESTED AS STANDARD

With Balon, there is no need to ask for "fire safe." Every Balon Series T ball valve is fire-safe and fire-tested…as standard.

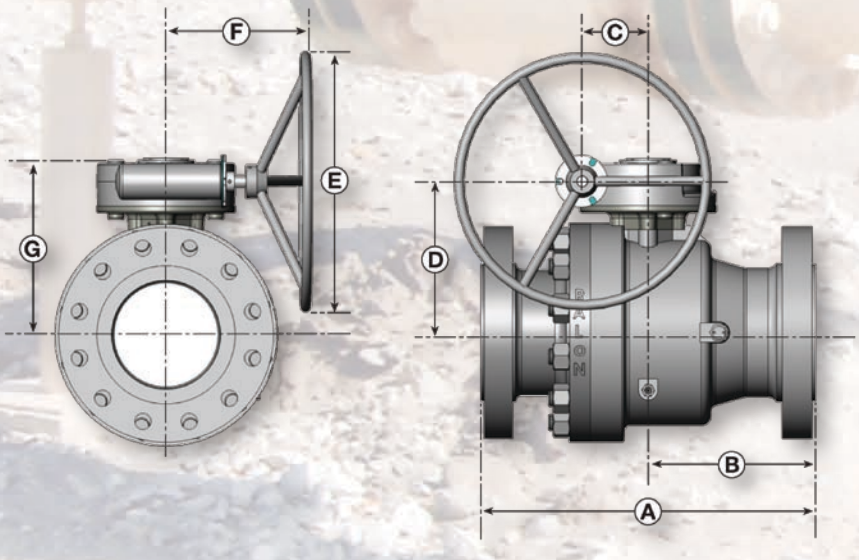
100% AMERICAN-MADE

Like all Balon valves, the Series T comprises 100% domestic raw materials. All machining work is performed in our Oklahoma City plant by Balon employees.

Series T Carbon Steel

- Gear Operated Trunnion Ball Valve
- ANSI Class 300 (740 PSI WP)
- 8"
- Bolted Body Construction

- Exclusive Balon Gearbox
  - ✔ Ductile Housing for Reduced Risk of Damage
  - ✔ Stainless Steel Input Shaft Indicator Standard
  - ✔ Integral Locking Device Standard
- Multi-Seal Seats
- Fire Safe Design

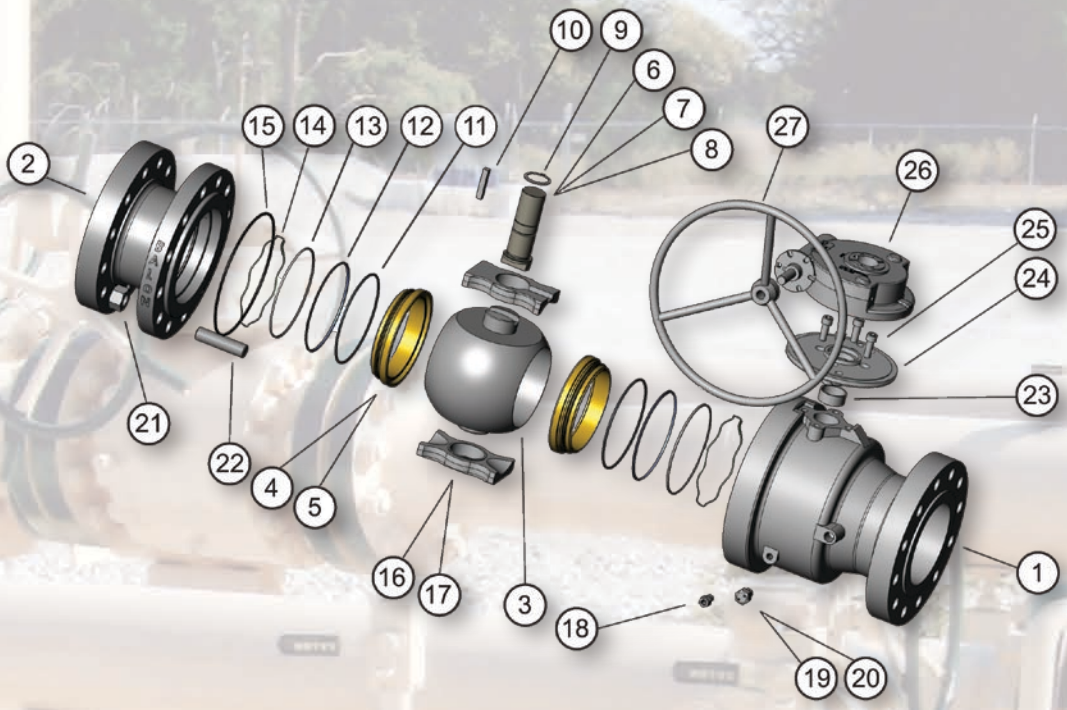


Dimensional Data

SIZE	CATALOG NUMBER				PORT	A	B	C	D	E	F	G	LBS.
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM	LOW-TEMP NACE TRIM 316 SS BALL & STEM									
8x8x8	8F-T33-RF	8F-T33CN-RF	8F-T33SN-RF	8F-T33SNL-RF	8	19.75	9.37	5.25	11.75	20	11.56	13.68	684

TOC

Series T Carbon Steel



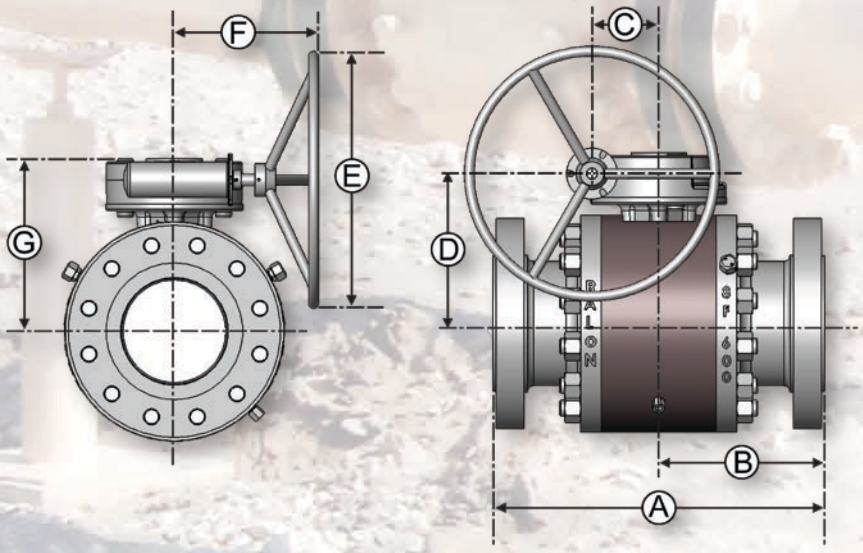
Material Description

ITEM	PART NAME	STANDARD TRIM	CARBON STEEL NACE	STAINLESS STEEL NACE
1	Body	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
2	Adapter	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
3	Ball	Carbon Steel Nickel Chrome Plated	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
4	Seat Carrier	Carbon Steel Nickel Chrome Plated	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
5	Seat Insert	Nylon/Acetal	Nylon/Acetal	Nylon/Acetal
6	Stem	Carbon Steel	Carbon Steel	316 Stainless Steel
7	Stem O-Ring	Buna-N	Fluorocarbon	Fluorocarbon
8	Stem Thrust Washer	TFE	TFE	TFE
9	Snap Ring	Carbon Spring Steel	Carbon Spring Steel	Carbon Spring Steel
10	Stem Key	Steel Key Stock	Steel Key Stock	Steel Key Stock
11	Seat O-Ring	Buna-N	Fluorocarbon	Fluorocarbon
12	Fireseal	Graphite	Graphite	Graphite
13	Fireseal Support Ring	Stainless Steel	Stainless Steel	Stainless Steel
14	Spring	Inconel X-750	Inconel X-750	Inconel X-750
15	Body O-Ring	Buna-N	Fluorocarbon	Fluorocarbon
16	Bearing Block	Carbon Steel	Carbon Steel	Stainless Steel
17	Trunnion Bearing	316 SS/TFE	316 SS/TFE	316 SS/TFE
18	Bleed Fitting	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
19	Grease Fitting	Alloy Steel	Alloy Steel	Alloy Steel
20	Internal Check Fitting	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
21	Nuts	ASTM A194 2H	ASTM A194 2HM	ASTM A194 2HM
22	Studs	ASTM A193 B7	ASTM A193 B7M	ASTM A193 B7M
23	Stem Bearing	Glass/TFE	Glass/TFE	Glass/TFE
24	Adapter Plate	Ductile Iron	Ductile Iron	Ductile Iron
25	Capscrews	Alloy Steel	Alloy Steel	Alloy Steel
26	Gear Operator	Ductile Iron	Ductile Iron	Ductile Iron
27	Handwheel	Carbon Steel	Carbon Steel	Carbon Steel

Series T Carbon Steel

- Gear Operated Trunnion Ball Valve
- ANSI Class 600 (1480 PSI WP)
- 4" Through 8"
- Bolted Body Construction

- Exclusive Balon Gearbox
  - ✔ Ductile Housing for Reduced Risk of Damage
  - ✔ Stainless Steel Input Shaft Indicator Standard
  - ✔ Integral Locking Device Standard
- Multi-Seal Seats
- Fire Safe Design

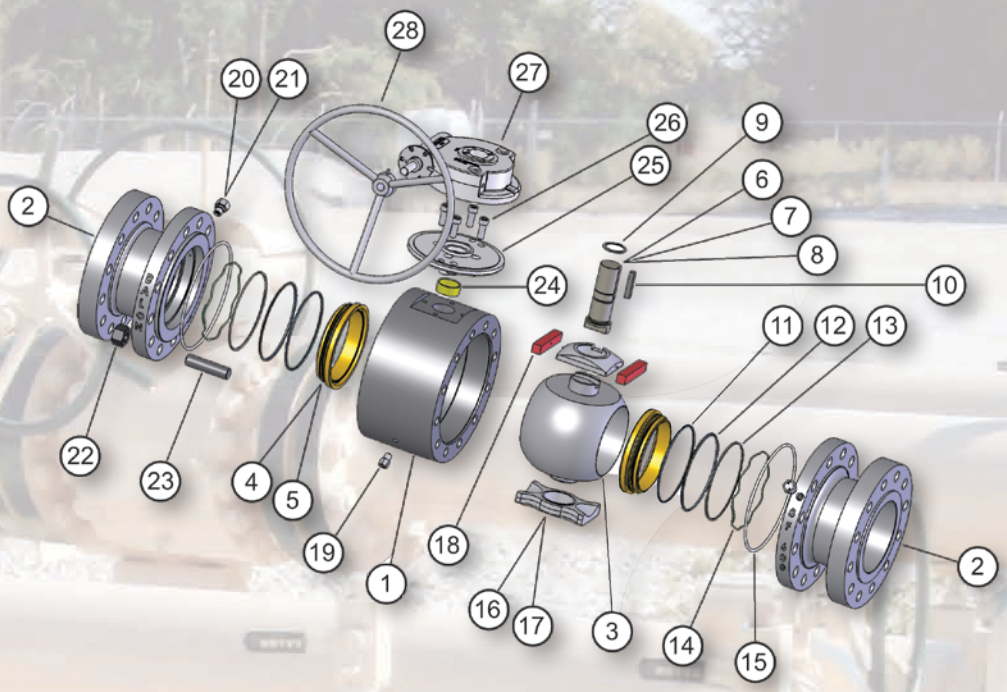


Dimensional Data

SIZE	CATALOG NUMBER				PORT	A	B	C	D	E	F	G	LBS.
	STANDARD TRIM CARBON STEEL BALL & STEM	NACE TRIM CARBON STEEL BALL & STEM	NACE TRIM 316 SS BALL & STEM	LOW-TEMP NACE TRIM 316 SS BALL & STEM									
4x4x4	4F-T63-RF	4F-T63CN-RF	4F-T63SN-RF	4F-T63SNL-RF	4	17	8.5	3.04	8.06	13	8.75	9.68	282
6x6x6	6F-T63-RF	6F-T63CN-RF	6F-T63SN-RF	6F-T63SNL-RF	6	22	11	4.06	9.69	20	11.19	11.31	560
8x8x8	8F-T63-RF	8F-T63CN-RF	8F-T63SN-RF	8F-T63SNL-RF	8	26	13	5.25	11.75	20	11.56	13.68	998

TOC

Series T Carbon Steel



Material Description

ITEM	PART NAME	STANDARD TRIM	CARBON STEEL NACE	STAINLESS STEEL NACE
1	Body	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
2	Adapter	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105	ASTM A216 GR WCB/A105
3	Ball	Carbon Steel Nickel Chrome Plated	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
4	Seat Carrier	Carbon Steel Nickel Chrome Plated	Carbon Steel Nickel Chrome Plated	316 Stainless Steel
5	Seat Insert	Nylon/Acetal	Nylon/Acetal	Nylon/Acetal
6	Stem	Carbon Steel	Carbon Steel	316 Stainless Steel
7	Stem O-Ring	Buna-N	Fluorocarbon	Fluorocarbon
8	Stem Thrust Washer	TFE	TFE	TFE
9	Snap Ring	Carbon Spring Steel	Carbon Spring Steel	Carbon Spring Steel
10	Stem Key	Steel Key Stock	Steel Key Stock	Steel Key Stock
11	Seat O-Ring	Buna-N	Fluorocarbon	Fluorocarbon
12	Fireseal	Graphite	Graphite	Graphite
13	Fireseal Support Ring	Stainless Steel	Stainless Steel	Stainless Steel
14	Spring	Inconel X-750	Inconel X-750	Inconel X-750
15	Body O-Ring	Buna-N	Fluorocarbon	Fluorocarbon
16	Bearing Block	Carbon Steel	Carbon Steel	Stainless Steel
17	Trunnion Bearing	316 SS/TFE	316 SS/TFE	316 SS/TFE
18	Spacer Block	Stainless Steel	Stainless Steel	Stainless Steel
19	Bleed Fitting	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
20	Grease Fitting	Alloy Steel	Alloy Steel	Alloy Steel
21	Internal Check Fitting	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel
22	Nuts	ASTM A194 2H	ASTM A194 2HM	ASTM A194 2HM
23	Studs	ASTM A193 B7	ASTM A193 B7M	ASTM A193 B7M
24	Stem Bearing	Glass/TFE	Glass/TFE	Glass/TFE
25	Adapter Plate	Ductile Iron	Ductile Iron	Ductile Iron
26	Capscrews	Alloy Steel	Alloy Steel	Alloy Steel
27	Gear Operator	Ductile Iron	Ductile Iron	Ductile Iron
28	Handwheel	Carbon Steel	Carbon Steel	Carbon Steel

Actuator Sizing

Because the actuator sizing is so critical to the proper operation and life of a ball valve, we have chosen not to publish torque values. Misinterpretation of manual torque data can lead to undersizing, while misinterpretation of factored torque values can mislead as to ease of manual operation.

Furthermore, types of service conditions can significantly alter standard torque requirements. Balon valves have been recognized for years as a very easy to operate valve. We will be glad to provide sizing information upon request through one of our field representatives or from our Oklahoma City headquarters.

Standards and Specifications

Balon utilizes the following standards in the manufacture of ball valves. It should be noted that not all styles, configurations and materials used in Balon valves meet all of these standards in their entirety.

The user therefore, should specify a given standard if there is a need to assure total compliance with a given standard.

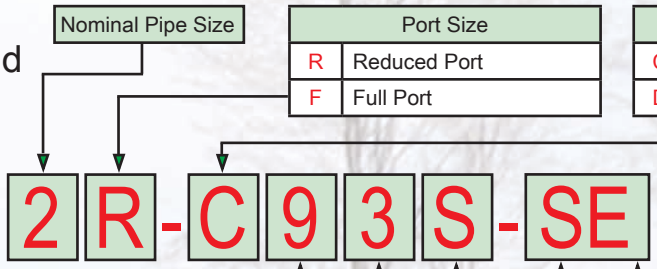
API. . . . . (American Petroleum Institute)
API-6FA. . . . . Fire Test For Resilient-Seated Valves
API 5B . . . . . Inspection Of Threads
API-6D. . . . . Pipeline Valves, End Closures, Connectors And Swivels.
API-Q1. . . . . Quality Programs
API-594 . . . . . Wafer Check Valves
ANSI . . . . . (American National Standard Institute)
ANSI-B. . . . . 16.5 - Pipe Flanges And Flanged Fittings
ANSI-B. . . . . 16.10 - Face-To-Face End-To-End Dimensions
ANSI-B. . . . . 16.42 Ductile Iron Pipe Flanges And Flanged Fittings
ANSI-B. . . . . 16.34 - Valves - Flanged End, ... Threaded And Butt Weld
ANSI-B. . . . . (B1.20.1) - Pipe Threads General Purpose (Inch)
MSS. . . . . (Manufacturers Standardization Society)
MSS-SP6. . . . . Standard Finishes For Contact Faces Of Pipe Flanges And Connection End Flanges Of Valves And Fittings
MSS-SP25. . . . . Standard Marking System For Valves, Fittings, Flanges And Fittings
MSS-SP72. . . . . Ball Valves With Flanged Or Butt Welding Ends For General Service
MSS-SP82. . . . . Valve Pressure Test Methods
MSS-SP84. . . . . Steel Valves - Socket Welding And Threaded Ends
NACE MR-01-75. . .Sulfide Stress Cracking, Resistant Metallic Material For Oil Field Equipment (NACE Materials Are Optional And Must Be Specified On Purchase Orders)

BALON®

SWING CHECK VALVES

Check Valve Identification Key

Balon Threaded End \ Grooved End Check Valves



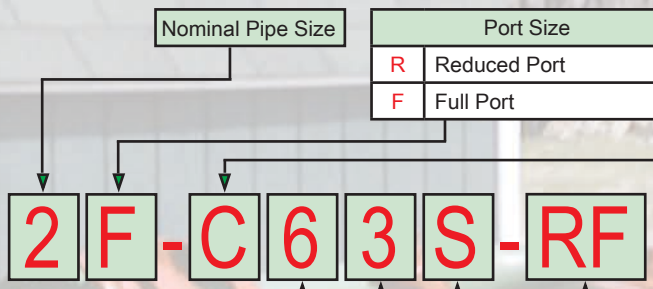
Valve Working Pressure	
2	500 PSI WP
3	750 PSI WP
4	1000 PSI WP
6	1500 PSI WP
9	2000 PSI WP or 2500 PSI WP 2″ Reduced Carbon Steel
0	3000 PSI WP

Valve Material	
2	Ductile Iron
3	Carbon Steel
4	Aluminum Bronze

Trim	
	Not Used in Series D or Series C with Carbon Steel Seat
S	Stainless Steel Replaceable Seat

End Connection	
SE	Threaded End
GE	Grooved End

Balon Flanged End Check Valves



Valve Working Pressure	
1	ANSI 150 - 285 WP
3	ANSI 300 - 740 WP
6	ANSI 600 - 1480 WP

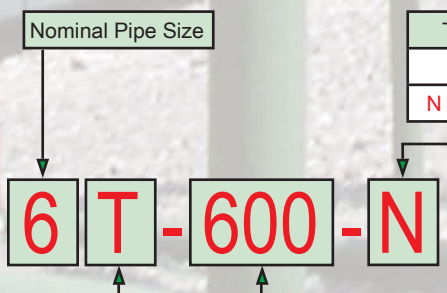
Valve Material	
3	Carbon Steel

Trim	
S	Stainless Steel Replaceable Seat

End Connection	
RF	Raised Face
RJ	Ring Type Joint *

** Ring Joint available only in ANSI 600 class.*

Balon Thin and Long Pattern Wafer Check Valves



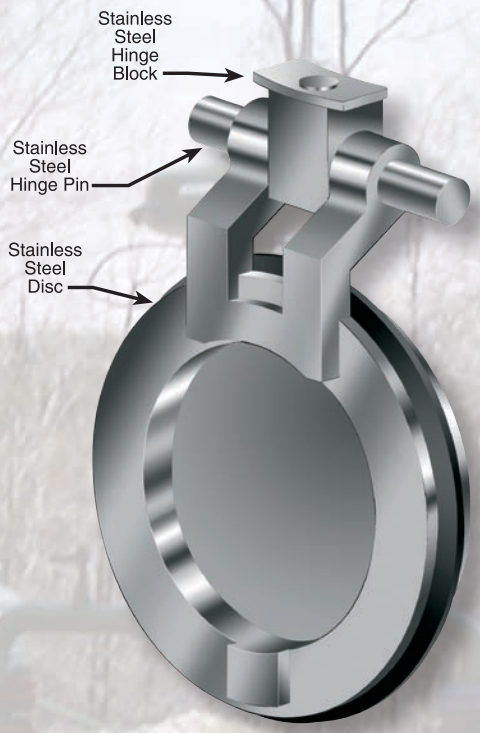
API Pattern Size	
T	API Thin Pattern
L	API Long Pattern

ANSI Class	
150	ANSI 150 - 285 WP
300	ANSI 300 - 740 WP
600	ANSI 600 - 1480 WP

Note: For any valves not listed please consult factory.

BALON®

Series D Check Valves



The Balon Series D is a top-entry check valve which is available in carbon steel, ductile iron and aluminum bronze.

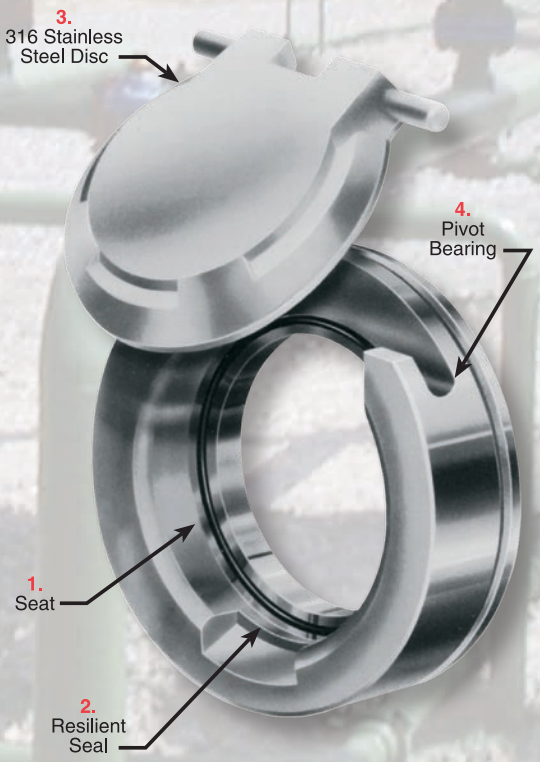
All series D are full port to allow for uninterrupted flow through the valve. As is the case with all of Balon's other check valves, all series D meet NACE and include 316 stainless steel discs as standard components.

All Series D feature a specially designed, patented hinge-works consisting of a hinge pin and bearing block. As with the disc, the hinge and bearing block are also made of stainless steel. This special hinge-works supports the disc and encases the hinge in a stainless steel bearing that is fixed in place to prevent the hinge from rubbing against the dissimilar metal of the valve body.

In competitive check valves, this rubbing of dissimilar metals causes erosion and wear and can greatly shorten the useful life of the valve.

Balon's exclusive, patented hinge-works is yet another example of how Balon solves problems by raising the threshold of quality and lowering the cost of ownership.

Series C Check Valves



Balon has breathed new life into check valve art by providing a fresh approach that conquers common swing check valve problems of the past.

Check valves often are subjected to damaging service requiring periodic replacement of internal components. Yet the design of most check valves prevents replacement of one of the most important components in a check valve; the seat, which can lead to premature valve failure.

Balon's Series C Check Valves solve this problem by using an innovative cartridge assembly that affords the user an economical and easy way to replace the entire checking mechanism (the disc, seal and seat) in the field, thereby extending the life of the valve.

1. Notice the Seat...it is an integral part of the replaceable module and not cast into the body as in other check valves.

2. Notice the Resilient Seal...it is firmly anchored into the seat rather than the disc, protecting it from the destructive abrading and blasting effect of the flow.

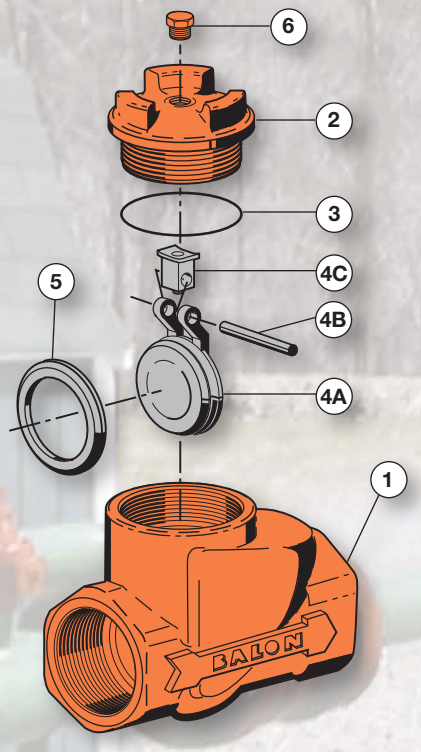
3. Notice the Disc...it has an integral pivot pin. No problem with wear prone pins and bushings. A positive solution to early mechanical failure.

4. Notice the Pivot Bearing...it is part of the seat module and not the valve body. It is a replaceable part, allowing complete valve renewal.

Series D Carbon Steel

- Top Entry Swing Check Valve
- To 2500 PSI WP
- 1" Through 2"
- Threaded Body Construction

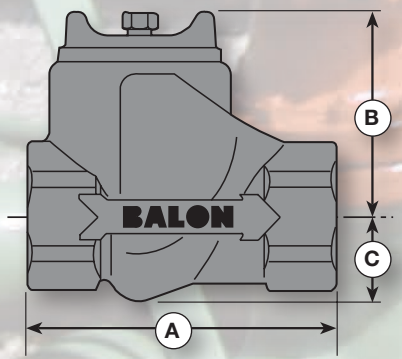
- Patented Hinge-Works for Extended Life
- Stainless Steel Disc Standard
- Improved by Design for Easier Bonnet Removal



Material Description

ITEM	PART NAME	DESCRIPTION
1	Body	ASTM A216 GR WCB/A105
2	Bonnet	ASTM A216 GR WCB/A105
3	Bonnet Seal	Buna-N (Fluorocarbon Optional)
4A	Disc	Replaceable 316 Stainless Steel
4B	Pin	Stainless Steel
4C	Pivot Bearing	Stainless Steel
5	Disc Seal	Buna-N (Fluorocarbon Optional)
6*	Pipe Plug	Carbon Steel

** Not available in 1".*



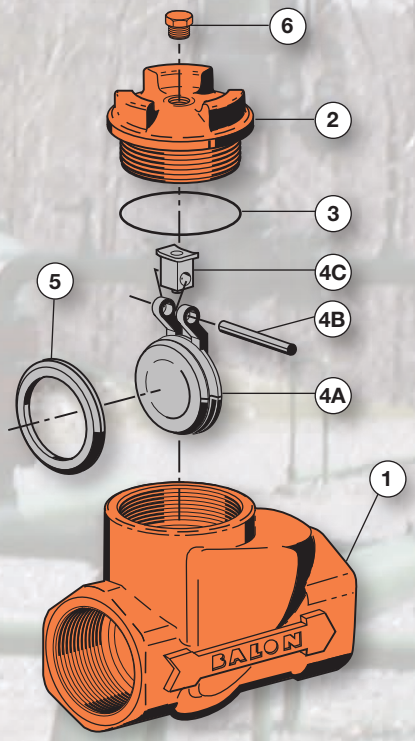
Dimensional Data

SIZE	CATALOG	PORT	WP	A	B	C	LBS.
1	1F-D63-SE	1	1500	2.87	2.87	1.12	4.5
1	1F-D93-SE	1	2500	2.87	2.87	1.12	4.5
2	2F-D63-SE	2	1500	6	3.75	1.81	12
2	2F-D93-SE	2	2500	6	3.75	1.81	12

TOC

Series D Ductile Iron

- Top Entry Swing Check Valve
- To 2000 PSI WP
- 1" Through 2"
- Threaded Body Construction



- High Grade Ductile Iron for Better Corrosion Resistance and Greater Yield Strength
- Patented Hinge-Works for Extended Life
- Stainless Steel Disc Standard
- Improved by Design for Easier Bonnet Removal

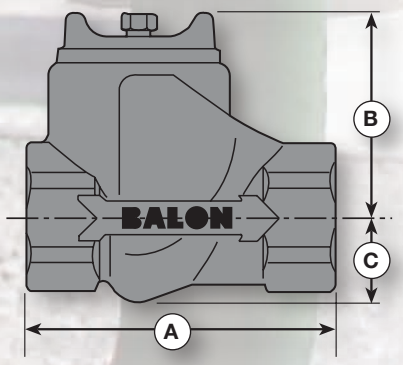
Material Description

ITEM	PART NAME	DESCRIPTION
1	Body	ASTM A395 Class 60-40-18 Fully Annealed
2	Bonnet	ASTM A395 Class 60-40-18 Fully Annealed
3	Bonnet Seal	Buna-N (Fluorocarbon Optional)
4A	Disc	Replaceable 316 Stainless Steel
4B	Pin	Stainless Steel
4C	Pivot Bearing	Stainless Steel
5	Disc Seal	Buna-N (Fluorocarbon Optional)
6*	Pipe Plug	Carbon Steel

** Not available in 1".*

Dimensional Data

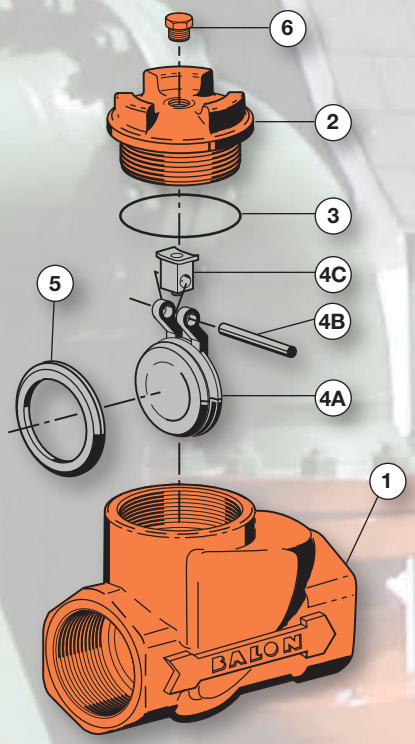
SIZE	CATALOG	PORT	WP	A	B	C	LBS.
1	1F-D42-SE	1	1000	4.25	2.87	1.12	4
1	1F-D92-SE	1	2000	4.25	2.87	1.12	4
2	2F-D12-SE	2	300	6	3.75	1.81	10
2	2F-D32-SE	2	750	6	3.75	1.81	10
2	2F-D42-SE	2	1000	6	3.75	1.81	10
2	2F-D62-SE	2	1500	6	3.75	1.87	11
2	2F-D92-SE	2	2000	6	3.75	1.87	11



Series D Aluminum Bronze

- Top Entry Swing Check Valve
- To 2000 PSI WP
- 1" Through 2"
- Threaded Body Construction

- Enhanced Protection Against CO_2 and Saltwater Corrosion
- Replaceable Disc
- NACE Standard
- 316 Stainless Steel Disc Standard
- Improved by Design for Easier Bonnet Removal
- Minimizes Risk of Galling Associated with Stainless Steel



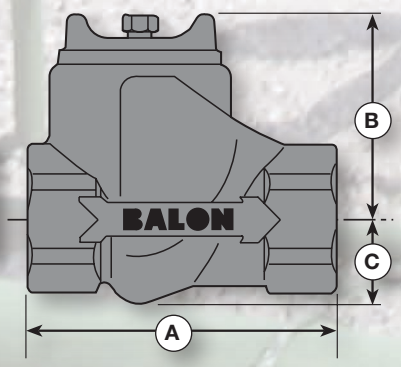
Material Description

ITEM	PART NAME	STAINLESS STEEL SEAT
1	Body	ASTM B148 9D (955)
2	Bonnet	ASTM B148 9D (955)
3	Bonnet Seal	Fluorocarbon
4A	Disc	Replaceable 316 Stainless Steel
4B	Pin	Stainless Steel
4C	Pivot Bearing	Stainless Steel
5	Disc Seal	Fluorocarbon
6*	Pipe Plug	316 Stainless Steel

** Not available in 1".*

Dimensional Data

SIZE	STAINLESS STEEL SEAT	PORT	WP	A	B	C	LBS.
1	1F-D44-SE	1	1000	4.25	2.87	1.12	4
2	2F-D44-SE	2	1000	6	3.75	1.87	9.8
2	2F-D94-SE	2	2000	6	3.75	1.87	11



TOC

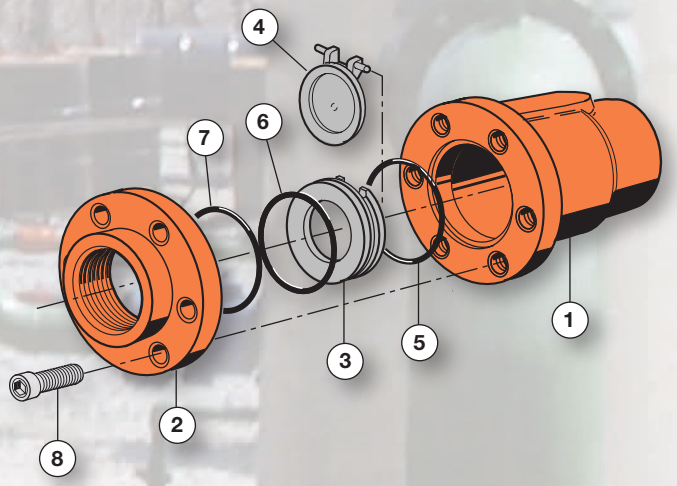
Series C Aluminum Bronze

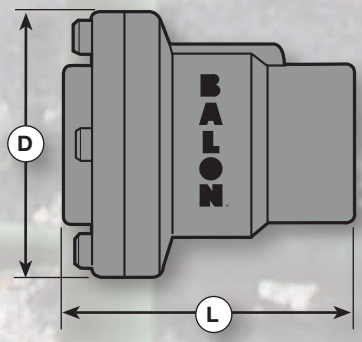
- Swing Check Valve
- 3000 PSI WP
- 2"
- Bolted Body Construction

- Enhanced Protection Against CO_2 and Saltwater Corrosion
- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- 316 Stainless Steel Disc Standard
- Minimizes Risk of Galling Associated with Stainless Steel

Material Description

ITEM	PART NAME	STAINLESS STEEL SEAT
1	Body	ASTM B148 9D (955)
2	Adapter	ASTM B148 9D (955)
3	Seat	Replaceable 316 Stainless Steel
4	Disc	Replaceable 316 Stainless Steel
5	O-Ring	Seat Seal: Fluorocarbon
6	O-Ring	Assembly Seal: Fluorocarbon
7	O-Ring	Body Seal: Fluorocarbon
8	Bolts	ASTM A193 B7M





Dimensional Data

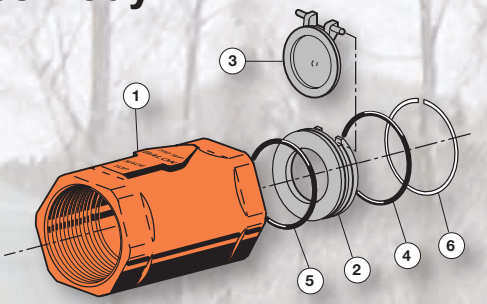
SIZE	STAINLESS STEEL SEAT	PORT	D	L	LBS.
2	2R-C04S-SE	1.5	4.88	5.37	10.9

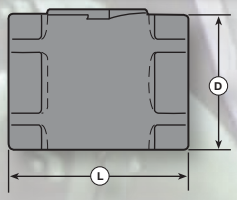
Series C Ductile Iron

- Swing Check Valve
- 750 PSI WP
- 2" Through 3"
- One Piece Body

Material Description

ITEM	PART NAME	DESCRIPTION
1	Body	ASTM A536-A395 Class 60-40-18 Fully Annealed
2	Seat	Replaceable Carbon Steel
3	Disc	Replaceable 316 Stainless Steel
4	O-Ring	Seat Seal: Fluorocarbon
5	O-Ring	Body Seal: Buna-N
6	Retaining Ring	316 Stainless Steel



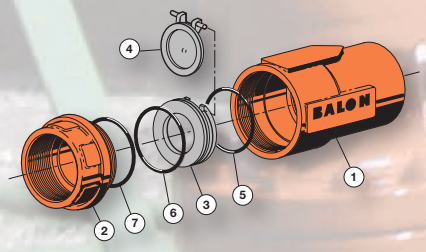


Dimensional Data

SIZE	CATALOG	PORT	D	L	LBS.
2	2R-C32-SE	1.25	3	3.62	3.3
3	3R-C32-SE	2	4.25	4.50	7.3

- High Grade Ductile Iron for Better Corrosion Resistance and Greater Yield Strength
- Replaceable Seat Disc Cartridge
- Stainless Steel Disc Standard
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard

Swing Check Valve
1000 PSI WP
2"
Threaded Body Construction

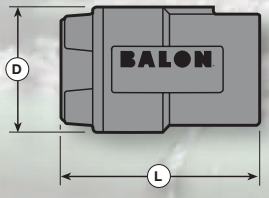


Material Description

ITEM	PART NAME	CARBON STEEL SEAT	STAINLESS STEEL SEAT
1	Body	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
2	Adapter	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
3	Seat	Replaceable Carbon Steel	Replaceable 316 Stainless Steel
4	Disc	Replaceable 316 Stainless Steel	Replaceable 316 Stainless Steel
5	O-Ring	Seat Seal: Fluorocarbon	Seat Seal: Fluorocarbon
6	O-Ring	Assembly Seal: Buna-N	Assembly Seal: Fluorocarbon
7	O-Ring	Body Seal: Buna-N	Body Seal: Fluorocarbon

Dimensional Data

SIZE	CATALOG NUMBER		PORT	D	L	LBS.
	CARBON STEEL SEAT	STAINLESS STEEL SEAT				
2	2R-C42-SE	2R-C42S-SE	1.5	3.37	5.37	6

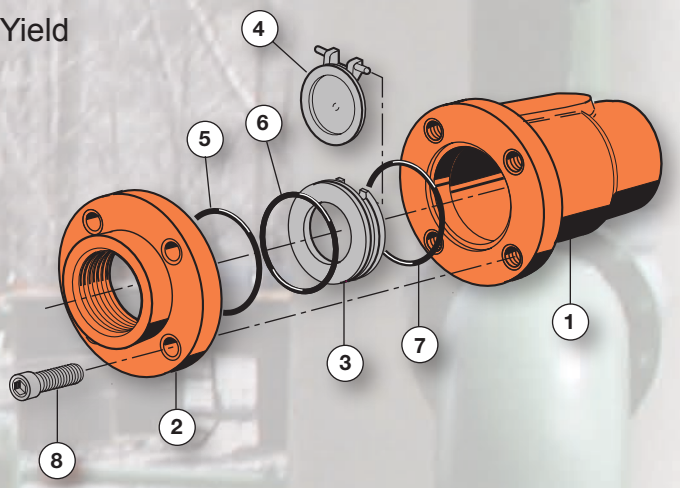


TOC

Series C Ductile Iron

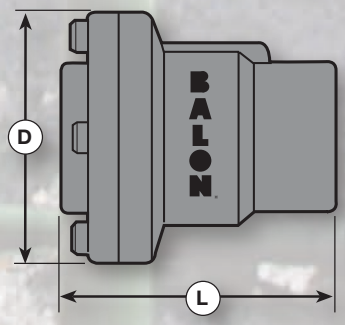
- Swing Check Valve
- 2000 PSI WP
- 2" Through 3"
- Bolted Body Construction

- Bolted Body Protects Against End Adapter Blowout
- High Grade Ductile Iron for Better Corrosion Resistance and Greater Yield Strength
- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- 316 Stainless Steel Disc Standard



Material Description

ITEM	PART NAME	CARBON STEEL SEAT	STAINLESS STEEL SEAT
1	Body	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
2	Adapter	ASTM A395 Class 60-40-18 Fully Annealed	ASTM A395 Class 60-40-18 Fully Annealed
3	Seat	Replaceable AISI 1018 Carbon Steel	Replaceable 316 Stainless Steel
4	Disc	Replaceable 316 Stainless Steel	Replaceable 316 Stainless Steel
5	O-Ring	Body Seal: Buna-N	Body Seal: Fluorocarbon
6	O-Ring	Assembly Seal: Buna-N	Assembly Seal: Fluorocarbon
7	O-Ring	Seat Seal: Fluorocarbon	Seat Seal: Fluorocarbon
8	Bolts	ASTM A193 B7M	ASTM A193 B7M

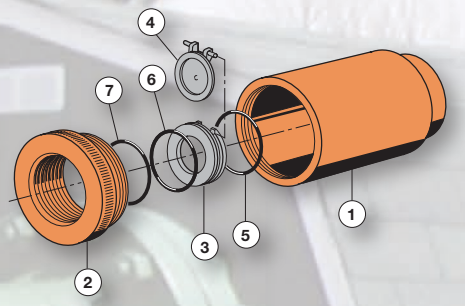


Dimensional Data

SIZE	CATALOG NUMBER		PORT	D	L	LBS.
	CARBON STEEL SEAT	STAINLESS STEEL SEAT				
2	2R-C92-SE	2R-C92S-SE	1.5	4.87	5.50	10
3	3R-C92-SE	3R-C92S-SE	2	6.75	7.25	24.3

Series C Carbon Steel

- Swing Check Valve
- To 3000 PSI WP
- 1" Through 2"
- Threaded Body Construction

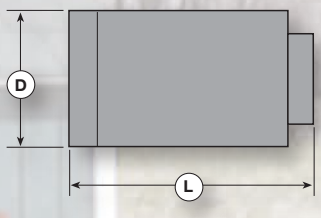


Material Description

ITEM	PART NAME	CARBON STEEL SEAT	STAINLESS STEEL SEAT
1	Body	AISI 1018 Carbon Steel	AISI 1018 Carbon Steel
2	Adapter	AISI 1018 Carbon Steel	AISI 1018 Carbon Steel
3	Seat	Replaceable Carbon Steel	Replaceable 316 Stainless Steel
4	Disc	Replaceable 316 Stainless Steel	Replaceable 316 Stainless Steel
5	O-Ring	Seat Seal: Fluorocarbon	Seat Seal: Fluorocarbon
6	O-Ring	Assembly Seal: Buna-N	Assembly Seal: Fluorocarbon
7	O-Ring	Body Seal: Buna-N	Body Seal: Fluorocarbon

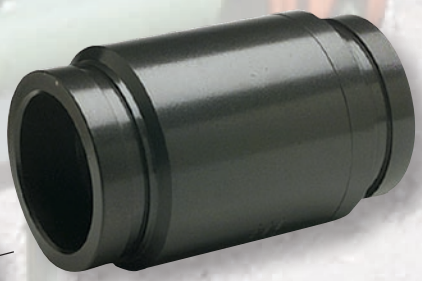
Dimensional Data

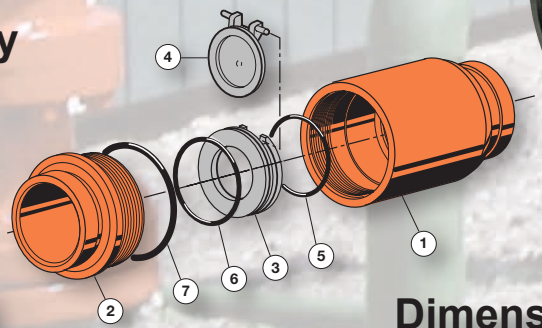
SIZE	CATALOG NUMBER		PORT	WP	D	L	LBS.
	CARBON STEEL SEAT	STAINLESS STEEL SEAT					
1	1F-C63-SE	1F-C63S-SE	1	1500	2.375	3.75	2.5
1	1F-C03-SE	1F-C03S-SE	1	3000	2.500	3.75	3.2
2	2F-C43-SE	2F-C43S-SE	2	1000	4	5.75	10.5

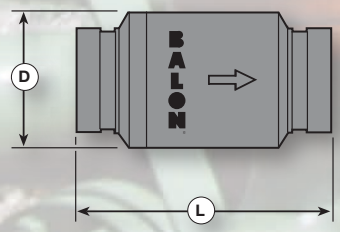


- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- 316 Stainless Steel Disc Standard

- Swing Check Valve
- 1000 PSI WP
- 2" Through 3"
- Threaded Body Construction







Dimensional Data

SIZE	CATALOG NUMBER		PORT	D	L	LBS.
	CARBON STEEL SEAT	STAINLESS STEEL SEAT				
2	2R-C43-GE	2R-C43S-GE	1.5	3.12	5.87	5.3
3	3R-C43-GE	3R-C43S-GE	2	4	6.50	9.8

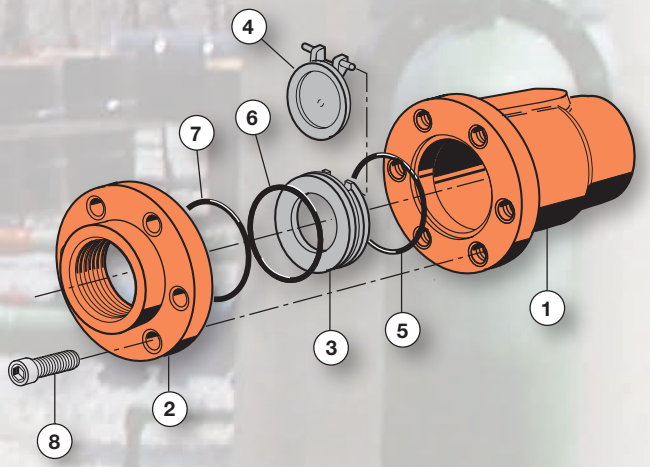
Series C Carbon Steel

- Swing Check Valve
- 3000 PSI WP
- 2"
- Bolted Body Construction

- Bolted Body Protects Against End Adapter Blowout
- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- 316 Stainless Steel Disc Standard

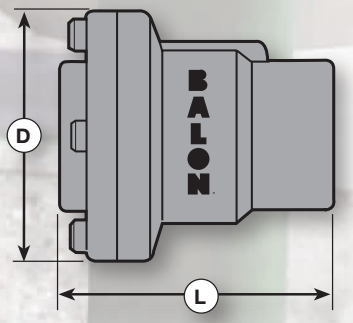
Material Description

ITEM	PART NAME	CARBON STEEL SEAT	STAINLESS STEEL SEAT
1	Body	ASTM A216 Grade WCB/A105	ASTM A216 Grade WCB/A105
2	Adapter	ASTM A216 Grade WCB/A105	ASTM A216 Grade WCB/A105
3	Seat	Replaceable Carbon Steel	Replaceable 316 Stainless Steel
4	Disc	Replaceable 316 Stainless Steel	Replaceable 316 Stainless Steel
5	O-Ring	Seat Seal: Fluorocarbon	Seat Seal: Fluorocarbon
6	O-Ring	Assembly Seal: Buna-N	Assembly Seal: Fluorocarbon
7	O-Ring	Body Seal: Buna-N	Body Seal: Fluorocarbon
8	Bolts	ASTM A193 B7M	ASTM A193 B7M



Dimensional Data

SIZE	CATALOG NUMBER		PORT	D	L	LBS.
	CARBON STEEL SEAT	STAINLESS STEEL SEAT				
2	2R-C03-SE	2R-C03S-SE	1.5	4.87	5.37	10.3



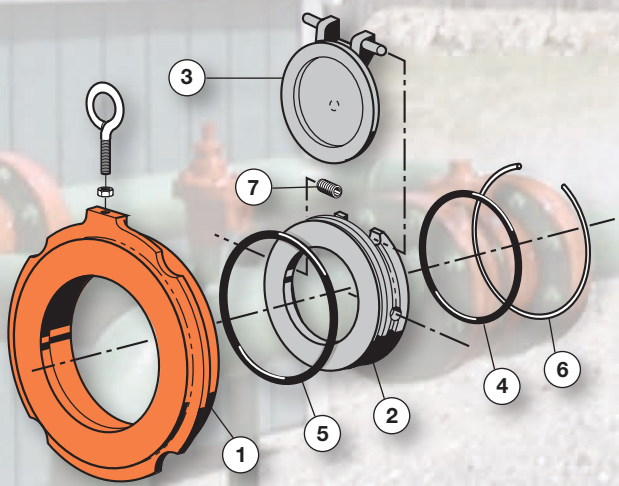
Wafer Check Valves
Carbon Steel

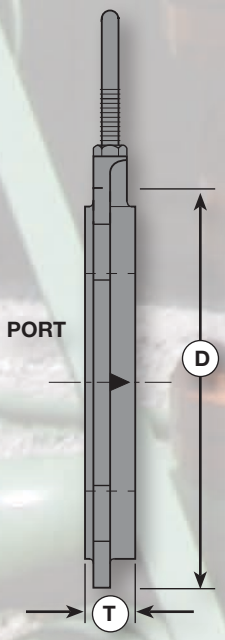
- **Thin Pattern Swing Check Valve**
- **ANSI 150 (285 PSI WP)**
- **2" Through 6"**
- **Forged Steel Body Construction**

- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- 316 Stainless Steel Disc Standard
- Generally Larger Port Sizes Than Other Brands

Material Description

ITEM	PART NAME	CARBON STEEL SEAT	STAINLESS STEEL SEAT
1	Body	ASTM A105	ASTM A105
2	Seat	Replaceable Carbon Steel	Replaceable 316 Or 17-PH Stainless Steel
3	Disc	Replaceable 316 Stainless Steel	Replaceable 316 Stainless Steel
4	O-Ring	Seat Seal: Fluorocarbon	Seat Seal: Fluorocarbon
5	O-Ring	Assembly Seal: Buna-N	Assembly Seal: Fluorocarbon
6	Retainer	Stainless Steel	Stainless Steel
7	Set Screw	Stainless Steel	Stainless Steel





Dimensional Data

SIZE	CATALOG NUMBER		PORT	D	T	STUD LENGTH	LBS.
	CARBON STEEL SEAT	STAINLESS STEEL SEAT					
2	2T-150	2T-150S	1.25	4.12	.75	4.25	2.5
3	3T-150	3T-150S	2	5.37	.75	4.50	4.3
4	4T-150	4T-150S	2.81	6.87	.75	4.50	7.5
6	6T-150	6T-150S	4.50	8.75	.87	5	13

BALON

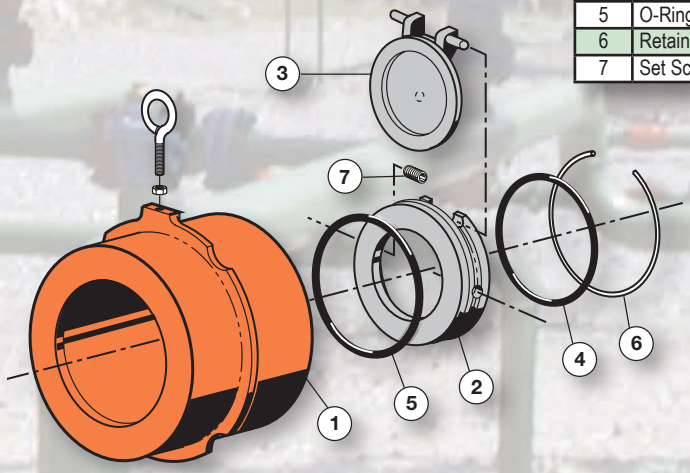
Wafer Check Valves
Carbon Steel

- Long Pattern Swing Check Valve
- ANSI 150 (285 PSI WP)
- 2" Through 6"
- Forged Steel Body Construction

- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- 316 Stainless Steel Disc Standard
- Generally Larger Port Sizes Than Other Brands

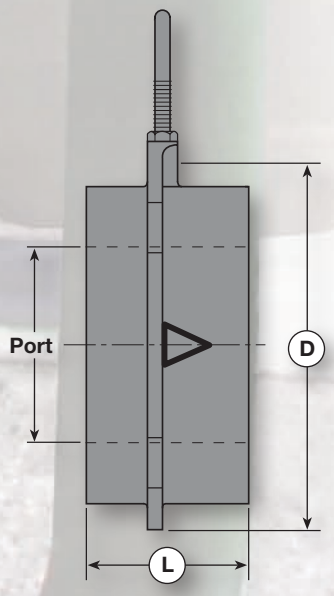
Material Description

ITEM	PART NAME	CARBON STEEL SEAT	STAINLESS STEEL SEAT
1	Body	ASTM A105	ASTM A105
2	Seat	Replaceable Carbon Steel	Replaceable 316 Or 17-PH Stainless Steel
3	Disc	Replaceable 316 Stainless Steel	Replaceable 316 Stainless Steel
4	O-Ring	Seat Seal: Fluorocarbon	Seat Seal: Fluorocarbon
5	O-Ring	Assembly Seal: Buna-N	Assembly Seal: Fluorocarbon
6	Retainer	Stainless Steel	Stainless Steel
7	Set Screw	Stainless Steel	Stainless Steel



Dimensional Data

SIZE	CATALOG NUMBER		PORT	D	L	STUD LENGTH	LBS.
	CARBON STEEL SEAT	STAINLESS STEEL SEAT					
2	2L-150	2L-150S	1.25	4.12	2.37	5.75	4.9
3	3L-150	3L-150S	2	5.37	2.87	6.50	11.8
4	4L-150	4L-150S	3	6.87	2.87	6.50	15
6	6L-150	6L-150S	4.75	8.75	3.87	8	34



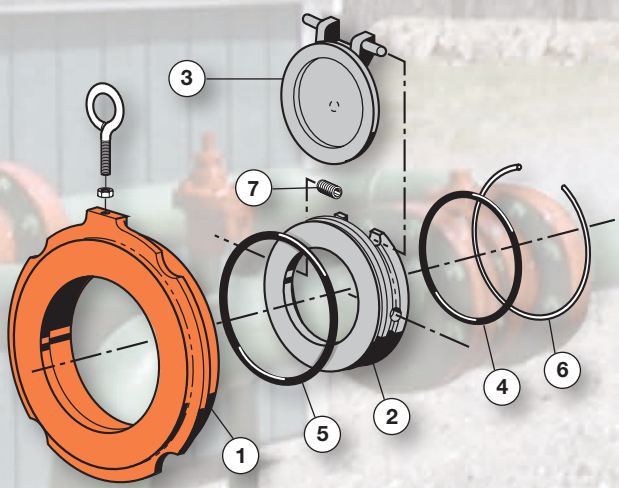
Wafer Check Valves
Carbon Steel

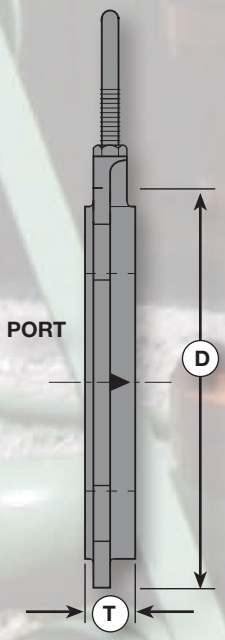
- Thin Pattern Swing Check Valve
- ANSI 300 (740 PSI WP)
- 2" Through 6"
- Forged Steel Body Construction

- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- 316 Stainless Steel Disc Standard
- Generally Larger Port Sizes Than Other Brands

Material Description

ITEM	PART NAME	CARBON STEEL SEAT	STAINLESS STEEL SEAT
1	Body	ASTM 105	ASTM 105
2	Seat	Replaceable Carbon Steel	Replaceable 316 Or 17-4PH Stainless Steel
3	Disc	Replaceable Stainless Steel	Replaceable 316 Stainless Steel
4	O-Ring	Seat Seal: Fluorocarbon	Seat Seal: Fluorocarbon
5	O-Ring	Assembly Seal: Buna-N	Assembly Seal: Fluorocarbon
6	Retainer	Stainless Steel	Stainless Steel
7	Set Screw	Stainless Steel	Stainless Steel





Dimensional Data

SIZE	CATALOG NUMBER		PORT	D	T	STUD LENGTH	LBS.
	CARBON STEEL SEAT	STAINLESS STEEL SEAT					
2	2T-300	2T-300S	1.25	4.37	.75	4.50	2.8
3	3T-300	3T-300S	2	5.87	.75	5.25	5.3
4	4T-300	4T-300S	2.81	7.12	.75	5.50	8
6	6T-300	6T-300S	4.50	9.87	.87	5.75	18

BALON

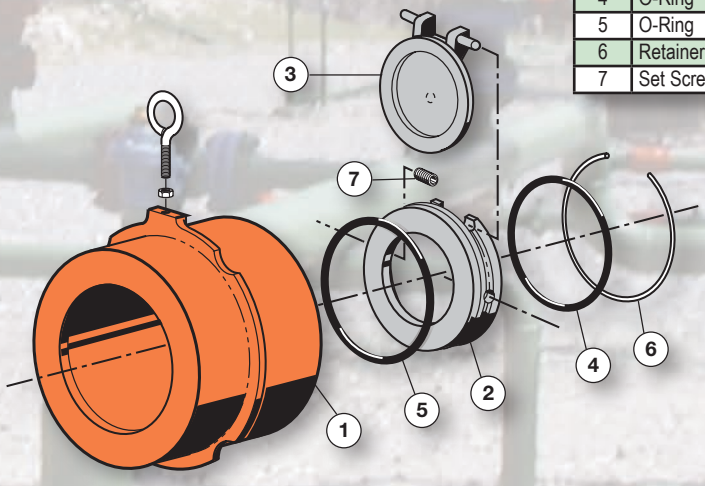
Wafer Check Valves Carbon Steel

- Long Pattern Swing Check Valve
- ANSI 300 (740 PSI WP)
- 2" Through 6"
- Forged Steel Body Construction

- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- 316 Stainless Steel Disc Standard
- Generally Larger Port Sizes Than Other Brands

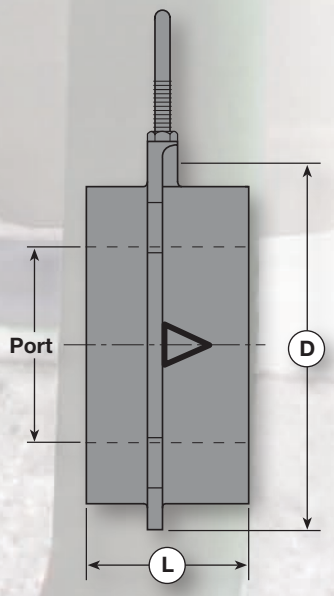
Material Description

ITEM	PART NAME	CARBON STEEL SEAT	STAINLESS STEEL SEAT
1	Body	ASTM A105	ASTM A105
2	Seat	Replaceable Carbon Steel	Replaceable 316 Or 17-4PH Stainless Steel
3	Disc	Replaceable 316 Stainless Steel	Replaceable 316 Stainless Steel
4	O-Ring	Seat Seal: Fluorocarbon	Seat Seal: Fluorocarbon
5	O-Ring	Assembly Seal: Buna-N	Assembly Seal: Fluorocarbon
6	Retainer	Stainless Steel	Stainless Steel
7	Set Screw	Stainless Steel	Stainless Steel



Dimensional Data

SIZE	CATALOG NUMBER		PORT	D	L	STUD LENGTH	LBS.
	CARBON STEEL SEAT	STAINLESS STEEL SEAT					
2	2L-300	2L-300S	1.5	4.37	2.37	6.25	4.9
3	3L-300	3L-300S	2	5.87	2.87	7.25	11.8
4	4L-300	4L-300S	3	7.12	2.87	7.75	15
6	6L-300	6L-300S	4.75	9.87	3.87	9	34.8



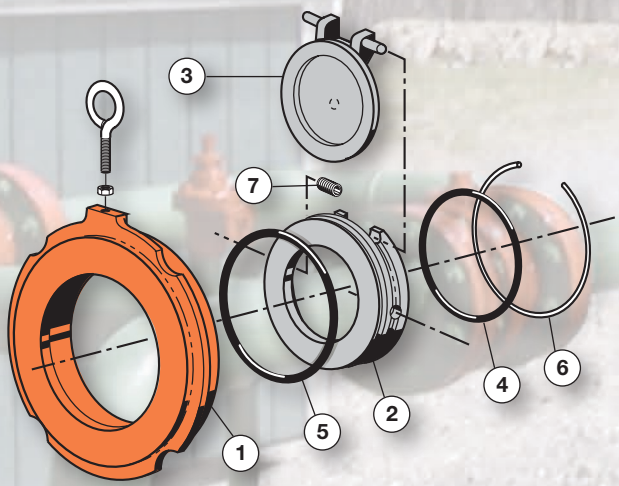
Wafer Check Valves Carbon Steel

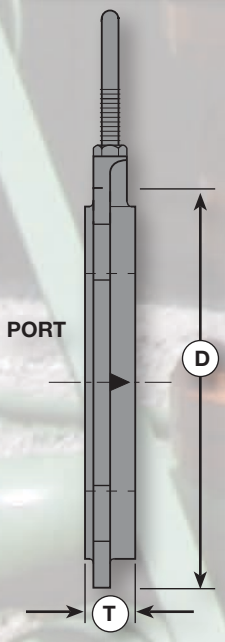
- Thin Pattern Swing Check Valve
- ANSI 600 (1480 PSI WP)
- 2" Through 6"
- Forged Steel Body Construction

- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- 316 Stainless Steel Disc Standard
- Generally Larger Port Sizes Than Other Brands

Material Description

ITEM	PART NAME	CARBON STEEL SEAT	STAINLESS STEEL SEAT
1	Body	ASTM A105	ASTM A105
2	Seat	Replaceable Carbon Steel	Replaceable 316 Or 17-4PH Stainless Steel
3	Disc	Replaceable 316 Stainless Steel	Replaceable 316 Stainless Steel
4	O-Ring	Seat Seal: Fluorocarbon	Seat Seal: Fluorocarbon
5	O-Ring	Assembly Seal: Buna-N	Assembly Seal: Fluorocarbon
6	Retainer	Stainless Steel	Stainless Steel
7	Set Screw	Stainless Steel	Stainless Steel





Dimensional Data

SIZE	CATALOG NUMBER		PORT	D	T	STUD LENGTH	LBS.
	CARBON STEEL SEAT	STAINLESS STEEL SEAT					
2	2T-600	2T-600S	1.25	4.37	.75	5.25	2.5
3	3T-600	3T-600S	2	5.87	.75	6	5.3
4	4T-600	4T-600S	2.62	7.62	.87	7	10.8
6	6T-600	6T-600S	4	10.50	1.12	8	19

BALON

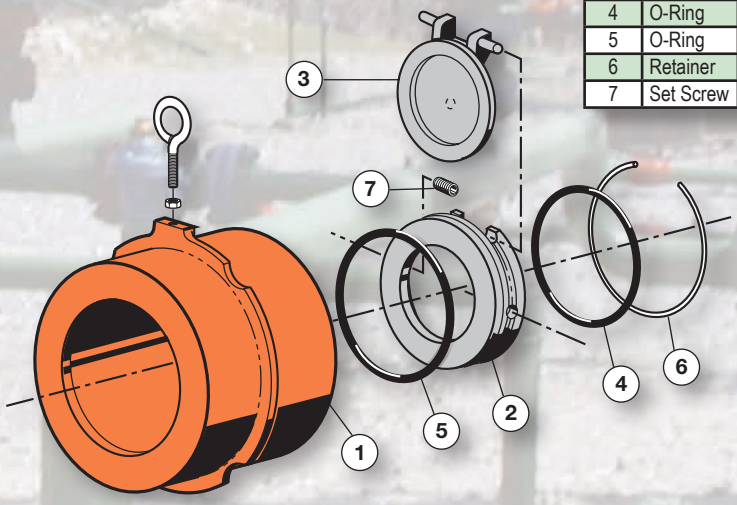
Wafer Check Valves Carbon Steel

- Long Pattern Swing Check Valve
- ANSI 600 (1480 PSI WP)
- 2" Through 6"
- Forged Steel Body Construction

- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- 316 Stainless Steel Disc Standard
- Generally Larger Port Sizes Than Other Brands

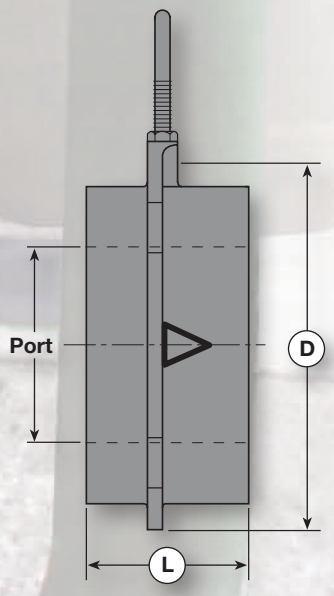
Material Description

ITEM	PART NAME	CARBON STEEL SEAT	STAINLESS STEEL SEAT
1	Body	ASTM A105	ASTM A105
2	Seat	Replaceable Carbon Steel	Replaceable 316 Or 17-4PH Stainless Steel
3	Disc	Replaceable 316 Stainless Steel	Replaceable 316 Stainless Steel
4	O-Ring	Seat Seal: Fluorocarbon	Seat Seal: Fluorocarbon
5	O-Ring	Assembly Seal: Buna-N	Assembly Seal: Fluorocarbon
6	Retainer	Stainless Steel	Stainless Steel
7	Set Screw	Stainless Steel	Stainless Steel



Dimensional Data

SIZE	CATALOG NUMBER		PORT	D	L	STUD LENGTH	LBS.
	CARBON STEEL SEAT	STAINLESS STEEL SEAT					
2	2L-600	2L-600S	1.5	4.37	2.37	6.75	4.9
3	3L-600	3L-600S	2	5.87	2.87	8	11.8
4	4L-600	4L-600S	3	7.87	3.12	9.25	15.9
6	6L-600	6L-600S	4.75	10.50	5.37	12.50	48

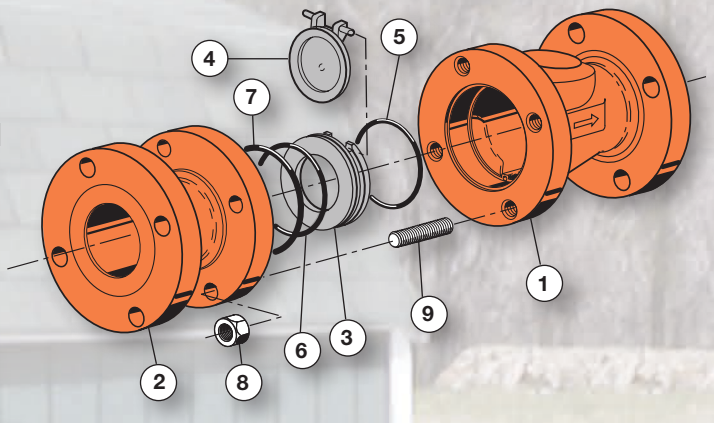


Flanged End Connection

Series C Carbon Steel

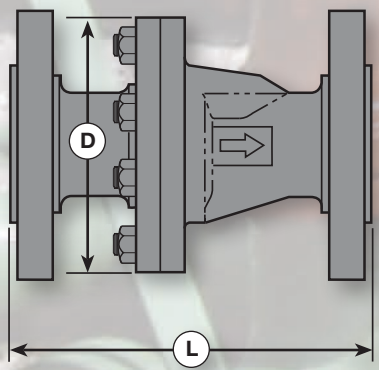
- Swing Check Valve
- ANSI Class 150 (285 PSI WP)
- 2" Through 6"
- Bolted Body Construction

- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- Stainless Steel Disc and Seat Standard



Material Description

ITEM	PART NAME	DESCRIPTION
1	Body	ASTM A216 Grade WCB
2	Adapter	ASTM A216 Grade WCB
3	Seat	Replaceable 316 Stainless Steel
4	Disc	Replaceable 316 Stainless Steel
5	O-Ring	Seat Seal: Fluorocarbon
6	O-Ring	Assembly Seal: Fluorocarbon
7	O-Ring	Body Seal: Fluorocarbon
8	Nuts	ASTM A194 2HM
9	Body Bolts	ASTM A193 B7M

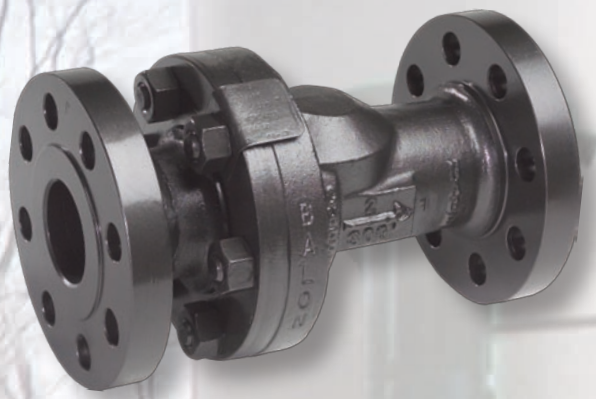


Dimensional Data

SIZE	CATALOG	PORT	D	L	LBS.
2	2F-C13S-RF	2	6	8	27
3	3F-C13S-RF	3	7.50	9.5	48
4	4F-C13S-RF	4	9	11.5	74
6	6F-C13S-RF	6	12.75	14	162

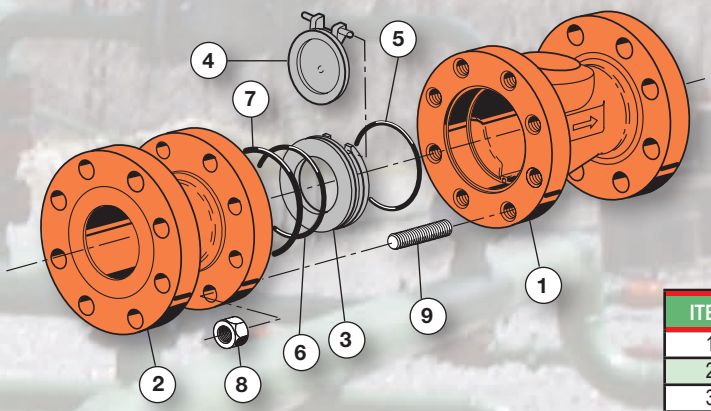
BALON

Series C Carbon Steel



- Swing Check Valve
- ANSI Class 300 (740 PSI WP)
- 2" Through 6"
- Bolted Body Construction

- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- Stainless Steel Disc and Seat Standard

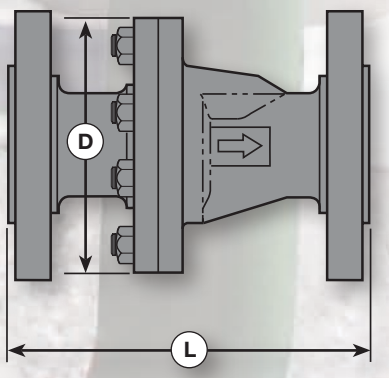


Material Description

ITEM	PART NAME	DESCRIPTION
1	Body	ASTM A216 Grade WCB
2	Adapter	ASTM A216 Grade WCB
3	Seat	Replaceable 316 Stainless Steel
4	Disc	Replaceable 316 Stainless Steel
5	O-Ring	Seat Seal: Fluorocarbon
6	O-Ring	Assembly Seal: Fluorocarbon
7	O-Ring	Body Seal: Fluorocarbon
8	Nuts	ASTM A194 2HM
9	Body Bolts	ASTM A193 B7M

Dimensional Data

SIZE	CATALOG	PORT	D	L	LBS.
2	2F-C33S-RF	2	6.50	10.5	37
3	3F-C33S-RF	3	8	12.5	74
4	4F-C33S-RF	4	9.37	14	111
6	6F-C33S-RF	6	13.25	17.5	268

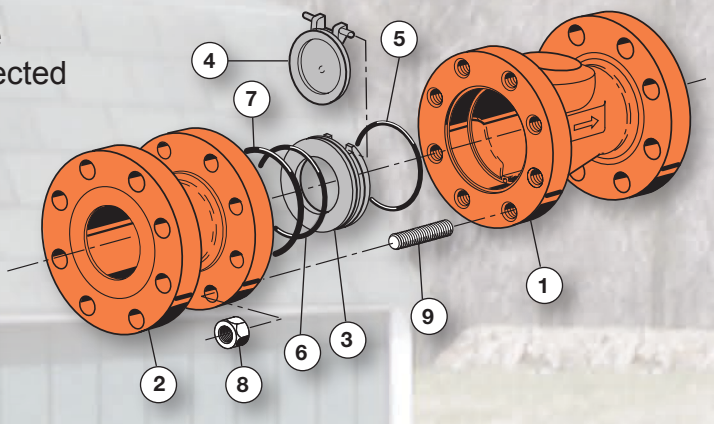


Flanged End Connection

Series C Carbon Steel

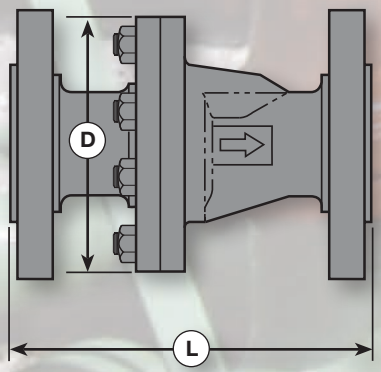
- Swing Check Valve
- ANSI Class 600 (1480 PSI WP)
- 2" Through 6"
- Bolted Body Construction

- Replaceable Seat Disc Cartridge
- Seal Located in Seat, Thus Protected From Flow
- NACE Standard
- Stainless Steel Disc and Seat Standard



Material Description

ITEM	PART NAME	DESCRIPTION
1	Body	ASTM A216 Grade WCB
2	Adapter	ASTM A216 Grade WCB
3	Seat	Replaceable 316 Stainless Steel
4	Disc	Replaceable 316 Stainless Steel
5	O-Ring	Seat Seal: Fluorocarbon
6	O-Ring	Assembly Seal: Fluorocarbon
7	O-Ring	Body Seal: Fluorocarbon
8	Nuts	ASTM A194 2HM
9	Body Bolts	ASTM A193 B7M



Dimensional Data

SIZE	CATALOG		PORT	D	L		LBS.
	RAISED FACE	RING JOINT			RF	RJ	
2	2F-C63S-RF	2F-C63S-RJ	2	6.50	11.5	11.62	42
3	3F-C63S-RF	3F-C63S-RJ	3	8	14	14.12	80
4	4F-C63S-RF	4F-C63S-RJ	4	10.75	17	17.12	188
6	6F-C63S-RF	6F-C63S-RJ	6	13.75	22	22.12	384

People Make Valves

BALON®

Customers Own Valves

Safety is No Accident

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NEEDLE VALVES

TOC

Needle Valve Identification Key

Balon
Carbon Steel \ Stainless Steel
Needle Valves

Valve Series	
N	Needle Valve

Working Pressure	
6	6,000 PSI
0	10,000 PSI

End Connection	
MF	Male x Female
FF	Female x Female
MRF	1/2″ Male x 1/4″ Female
A	Male x Female 90° Angle

N 4 6 3 - MF - N

Nominal Pipe Size	
2	1/4″
4	1/2″

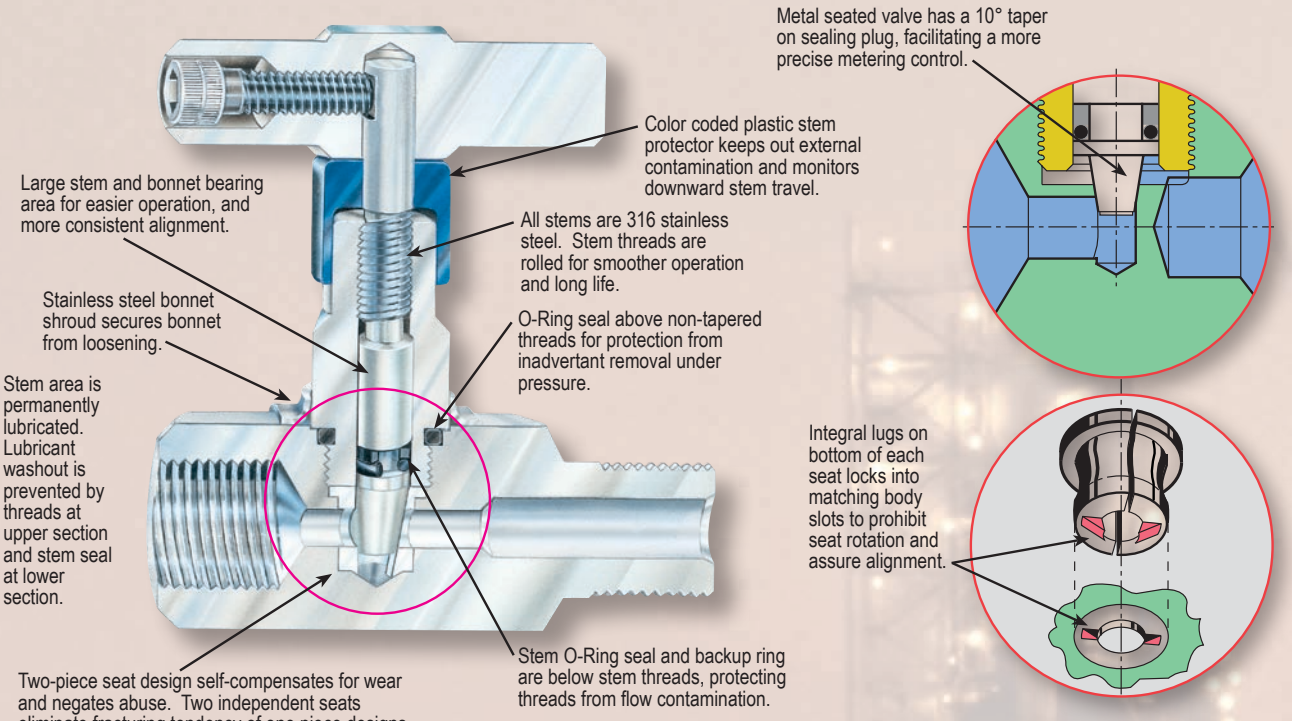
Material	
3	Carbon Steel
5	316 Stainless Steel

NACE Trim	
N	Meets NACE

Note: Available only on 316 Stainless Steel Valves

Note: For any valves not listed please consult factory.

Balon: The Benchmark for Needle Valves



All Balon Needle Valves are made under on or more U.S. & CANADIAN PATENTS: 4,431,021, 4,452,428, 4,607,422, and 4,811,929 Canadian 1987, 1993.

INTEGRATED STEM AND BONNET DESIGN

The stem and bonnet assembly presents a number of balanced features integrated in such a way as to provide a general improvement in stem operation, service life, and overall safety.

All stems are 316 stainless steel for almost universal corrosion resistance and therefore much longer life.

Stem threads are located above the stem sealing area so that they are protected against contamination from the flow, again contributing to smoother operation and longer life. The thread area is lubricated at the factory, and the stem seal prevents washout of the lubricant, making for a permanently lubricated valve.

The stem threads are rolled for smoother operation and longer life. Note also that the stem and bonnet bearing area is larger than normally encountered. This makes for more precise stem alignment and gives a “superb quality feel” of operation, and it enhances overall sealability.

An O-ring provides the primary stem sealing with a back-up ring providing lower friction, longer seal life, and a permanently adjusted stem seal arrangement. The color coded plastic stem protector keeps external contamination out of the thread area.

Thick cross sectional area limits and cushions downward handle movement, thus helping to prevent overtightening of stem.

The stainless steel bonnet shroud fits over the hex wrench flats of the bonnet and secures it into position to impede loosening by vibration or other undetected causes.

The bonnet also contains an O-ring seal above the threads. Because these threads are not tapered, forcible removal of the bonnet would result in early blow-out of the O-ring and immediate leakage, warning against further removal of the bonnet. Conventional designs with tapered threads and no O-ring would not give warning of an impending blowout.

No other needle valve on the market today provides such a complete and rational approach to solving existing operational and safety concerns.

ADVANCE SEALING CONCEPT

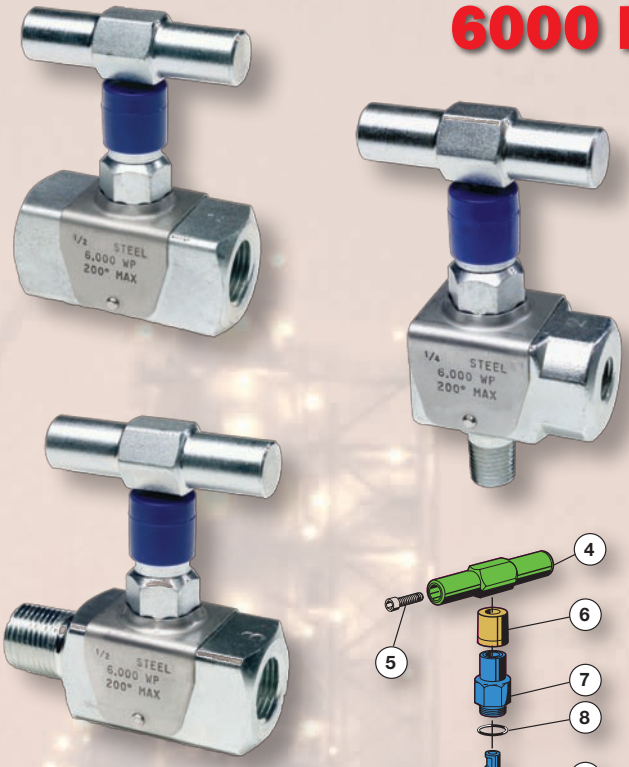
Balon’s exclusive seat design is a split two-piece design consisting of two counterpositioned conical sections. This arrangement provides independent bi-directional sealing. On closing, downward movement of sealing plug transmits force radially. Each seat section “floats” laterally, slightly promoting self-compensation for wear, as well as resistance to distortion, scoring, binding and permanent set, all common maladies of needle valves in general. Since each seat section responds to the cleaving effect of the sealing plug, bubble tight sealing occurs early, with less stem torque required than in other designs.

The split seat configuration preempts seat fracturing, a common cause of valve leakage. Two seats acting separately but also in concert, offer higher integrity sealing and extended service life.

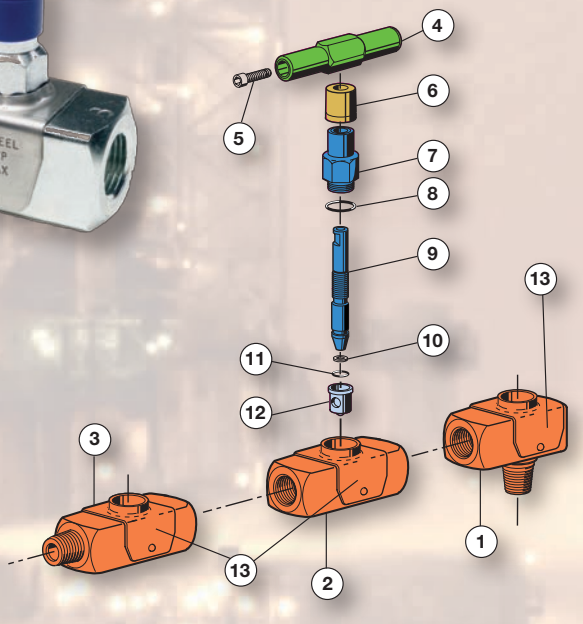
Integral lugs on bottom of each seat section lock into matching recesses in the valve body. Seat rotation is denied. Alignment is assured and consistently maintained.

The Balon concept is not merely an answer to needle valve sealing problems, it constitutes a continued effort to, “raise the threshold of quality and lower the cost of ownership”.

6000 PSI / Resilient Seated



- 316 Stainless Steel Stem Standard
- Non-Rotating Seats
- Bonnet Locking Shroud
- Precise Metering
- Split Seat Design
- Maximum Temp 200°



Material Description

ITEM	PART NAME	CARBON STEEL VALVE
1	Body (MxF) (90 °)	A216 WCB (Investment Casting)
2	Body (FxF)	1215 CRS
3	Body (MxF)	1215 CRS
4	Handle	12L14 CRS
5	Handle Bolt	SHCS Zinc Plated
6	Bonnet Cover	Polyethylene
7	Bonnet	12L14 CRS
8	Bonnet O-Ring	Buna-N
9	Stem	316 Stainless Steel
10	Stem Back-up Ring	Buna-N
11	Stem O-Ring	Buna-N
12	Resilient Seat (2 Piece)	Acetal
13	Bonnet Locking Shroud	304 Stainless Steel

Diagram A (M x F)

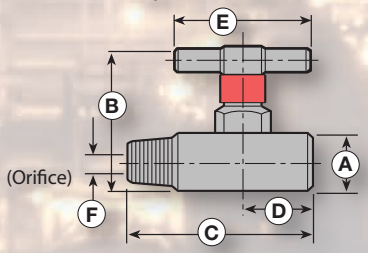


Diagram B (F x F)

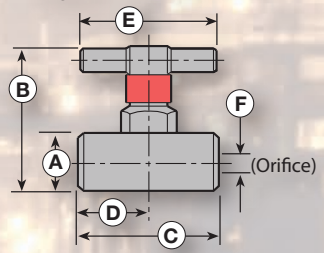
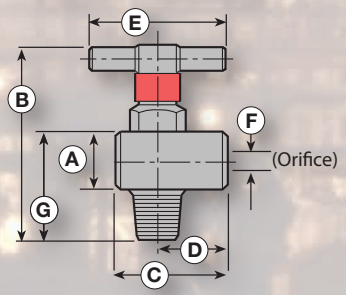


Diagram C (M x F) Angle



Dimensional Data

SIZE	CATALOG NUMBER CARBON STEEL	SEAT	DIAGRAM	A	B	C	D	E	F	G	LBS.
.25	N263-MF	Resilient	A	1.25	3.87	3.25	1.37	2.62	.219	N/A	1.5
.25	N263-FF	Resilient	B	1.25	3.87	2.75	1.37	2.62	.219	N/A	1.5
.50	N463-MF	Resilient	A	1.25	3.87	3.37	1.37	2.62	.219	N/A	1.5
.50x.25	N463-MRF	Resilient	A	1.25	3.87	3.37	1.37	2.62	.219	N/A	1.5
.50	N463-FF	Resilient	B	1.25	3.87	2.75	1.37	2.62	.219	N/A	1.5
.50	N463-A	Resilient	C	1.25	4.87	2.12	1.37	2.62	.219	2.25	1.5

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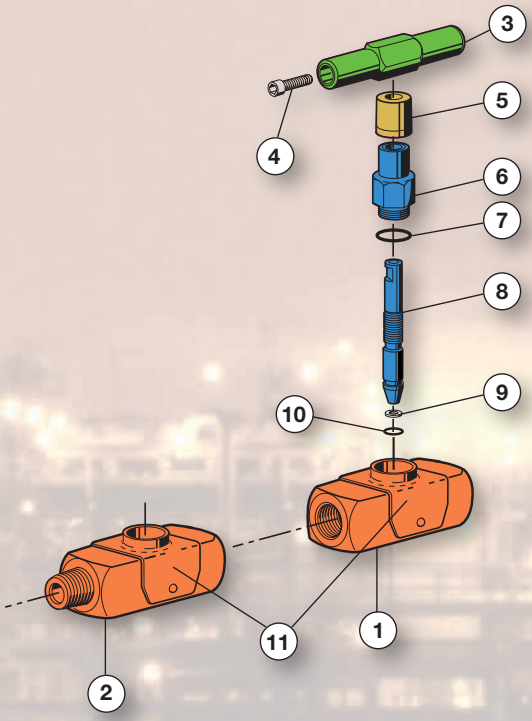
BALON

10000 PSI / Metal Seated

- 316 Stainless Steel Stem Standard
- Bonnet Locking Shroud
- Precise Metering
- Maximum Temp 200°



Material Description

ITEM	PART NAME	CARBON STEEL VALVE
1	Body (FxF)	1215 CRS
2	Body (MxF)	1215 CRS
3	Handle	12L14 CRS
4	Handle Bolt	SHCS Zinc Plated
5	Bonnet Cover	Polyethylene
6	Bonnet	12L14 CRS
7	Bonnet O-Ring	Buna-N
8	Stem	316 Stainless Steel
9	Stem Back-up Ring	Buna-N
10	Stem O-Ring	Buna-N
11	Bonnet Locking Shroud	304 Stainless Steel

Diagram A (M x F)

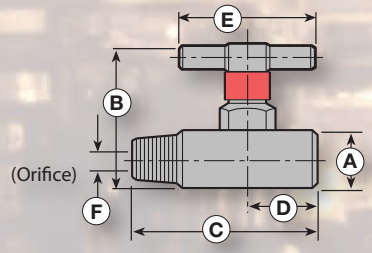
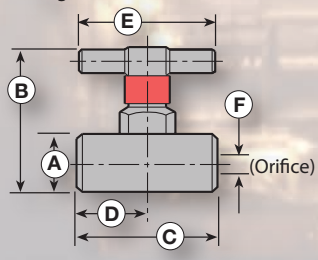


Diagram B (F x F)



Dimensional Data

SIZE	CATALOG NUMBER CARBON STEEL	SEAT	DIAGRAM	A	B	C	D	E	F	G	LBS.
.25	N203-MF	Metal	A	1.25	3.87	3.25	1.37	2.62	.219	N/A	1.5
.50	N403-MF	Metal	A	1.25	3.37	2.75	1.37	2.62	.219	N/A	1.5
.50	N403-FF	Metal	B	1.25	2.75	3.37	1.37	2.62	.219	N/A	1.5

6000 PSI / Resilient Seated

- Non-Rotating Seats
- Bonnet Locking Shroud
- Precise Metering
- Split Seat Design
- Maximum Temp 200°

Material Description

ITEM	PART NAME	STAINLESS STEEL
1	Body (FxF)	316 Stainless Steel
2	Body (MxF)	316 Stainless Steel
3	Handle	303 Stainless Steel
4	Handle Bolt	18-8 Stainless Steel
5	Bonnet Cover	Polyethylene
6	Bonnet	316 Stainless Steel
7	Bonnet O-Ring	Buna-N (NACE Fluorocarbon)
8	Stem	316 Stainless Steel
9	Stem Back-up Ring	Buna-N (NACE Fluorocarbon)
10	Stem O-Ring	Buna-N (NACE Fluorocarbon)
11	Resilient Seat (2 Piece)	Acetal
12	Bonnet Locking Shroud	304 Stainless Steel

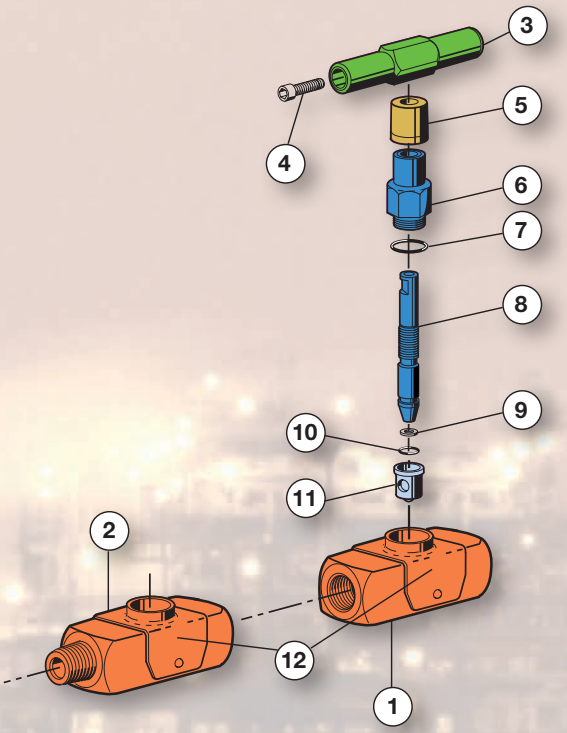


Diagram A (M x F)

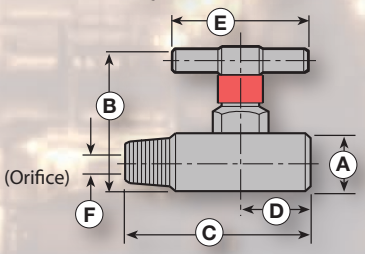
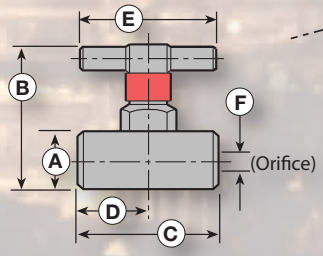


Diagram B (F x F)



Dimensional Data

SIZE	CATALOG NUMBER		SEAT	DIAGRAM	A	B	C	D	E	F	G	LBS.
	STAINLESS STEEL	NACE										
.25	N265-MF	N265-MFN	Resilient	A	1.25	3.87	3.25	1.37	2.62	.219	N/A	1.5
.50	N465-MF	N465-MFN	Resilient	A	1.25	3.87	3.37	1.37	2.62	.219	N/A	1.5
.50	N465-FF	N465-FFN	Resilient	B	1.25	3.87	2.75	1.37	2.62	.219	N/A	1.5

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BALON

10000 PSI / Metal Seated

- Bonnet Locking Shroud
- Precise Metering
- Maximum Temp 200°

Material Description

ITEM	PART NAME	CARBON STEEL VALVE
1	Body (FxF)	316 Stainless Steel
2	Body (MxF)	316 Stainless Steel
3	Handle	303 Stainless Steel
4	Handle Bolt	18-8 Stainless Steel
5	Bonnet Cover	Polyethylene
6	Bonnet	316 Stainless Steel
7	Bonnet O-Ring	Buna-N (NACE Fluorocarbon)
8	Stem	316 Stainless Steel
9	Stem Back-up Ring	Buna-N (NACE Fluorocarbon)
10	Stem O-Ring	Buna-N (NACE Fluorocarbon)
11	Bonnet Locking Shroud	304 Stainless Steel

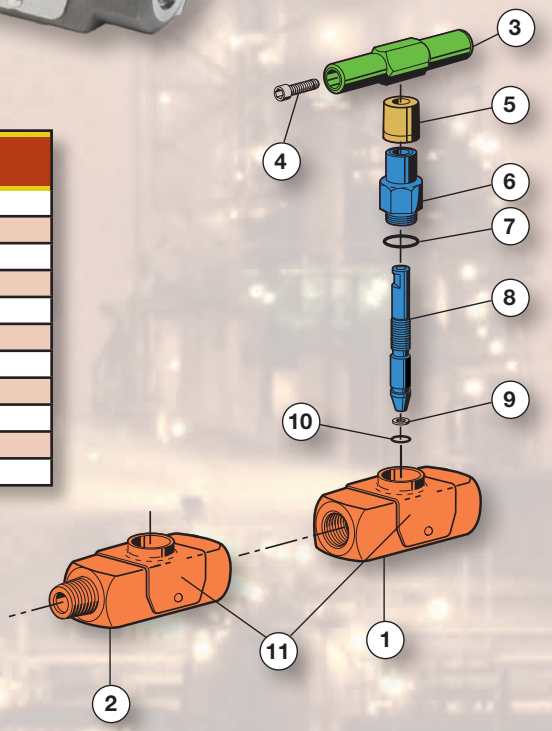


Diagram A (M x F)

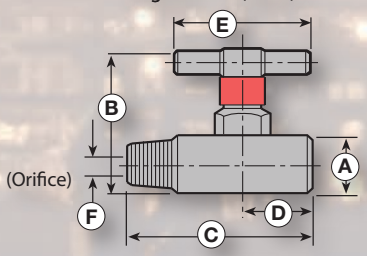
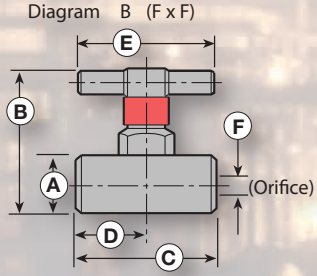


Diagram B (F x F)



Dimensional Data

SIZE	CATALOG NUMBER		SEAT	DIAGRAM	A	B	C	D	E	F	G	LBS.
	STAINLESS STEEL	NACE										
.25	N205-MF	N205-MFN	Metal	A	1.25	3.87	3.25	1.37	2.62	.219	N/A	1.5
.50	N405-MF	N405-MFN	Metal	A	1.25	3.87	3.37	1.37	2.62	.219	N/A	1.5
.50	N405-FF	N405-FFN	Metal	B	1.25	3.87	2.75	1.37	2.62	.219	N/A	1.5

We Create Them

We Don't Export Jobs

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BALON®

TERMS AND CONDITIONS

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Terms and Conditions

Order Acceptance: Any written or oral purchase order received from Buyer by Balon Corporation ("Balon" or "Seller") shall be construed as a written acceptance of Balon's offer to sell and shall be filled in accordance with the terms and conditions of sale set forth herein. Balon's acceptance of Buyer's order is expressly conditioned on buyer's assent to the terms and conditions set forth below. The terms and conditions of Balon's proposal and acknowledgment (if any), including without limitation the terms and conditions set forth below, shall prevail over any conflicting or different terms in Buyer's order. Buyer's terms of purchase will not be considered a counteroffer to Balon's terms and conditions of sale. The failure of Buyer to object to any provision in conflict with Balon's terms and conditions of sale, whether contained in Buyer's purchase order or otherwise, shall not be construed as a waiver of any of the provisions of Balon's terms and conditions of sale nor as an acceptance of any provision of Buyer's terms of purchase.

Quotations, Prices and Discounts: Any product, service capability or manufacturing capability which may be available at the time a quotation is made is subject to prior sale. Prices quoted are valid for thirty (30) days, unless specifically stated otherwise on the quotation, and are subject to change without notice. The price in effect at the time of shipment including any escalation formula will apply, unless a valid quotation or written agreement to the contrary exists between Buyer and Balon. Unless otherwise expressly stated in writing and acknowledged by an authorized officer of Balon Corporation, all prices set forth in any of Balon's correspondence, printed material, quotations, acknowledgments, other documents or verbal communications are in U.S. dollars and reflect F.O.B. Balon's shipping point. Any documentation pertaining to traceability requirements for raw materials or products or documentation required for any routine or special processes must be identified by the Buyer at the time of quotation (if any) or at the time of order placement, whichever is earlier. All published prices and discounts are subject to change without notice. While Balon Corporation strives to provide accurate product and pricing information, pricing or typographical errors may occur. In the event that an item is listed at an incorrect price or with incorrect information due to an error in pricing or product information, Balon Corporation shall have the right, at its sole discretion, to refuse or cancel any orders placed for that item. In the event that an item is mispriced, Balon Corporation may, at its sole discretion, either contact Buyer for instructions or cancel the order and notify Buyer of such cancellation.

Invoice Terms: Payment for all materials, products and services at the full Invoice stated net price must be received in hand, in good funds at Balon Corporation during normal business hours within thirty (30) calendar days from the date of Invoice (the "Due Date"). The amount of each Invoice for which Balon has not received payment in hand, in good funds at Balon Corporation during normal business hours within thirty (30) calendar days from the date of Invoice shall be subject to the maximum legal interest rate per annum, or such lesser rate as Balon may determine in its sole discretion, computed daily commencing on the Due Date and continuing until Balon has received in hand, in good funds all amounts due in connection with such Invoice, including without limitation all interest accrued thereon. Balon reserves the right to impose a minimum billing charge on all sales, change orders or order supplements. Buyer agrees that title and risk of loss shall pass to Buyer on the date of Balon's Invoice.

Taxes, Duties and Exports: Any tax or other charge imposed by law on the sale or production of goods or the performance of services shall be paid by the Buyer, unless the law specifically provides that such payment must be made by Balon, in which case Buyer shall reimburse Balon for such payment as part of the purchase price. Custom duties, consular fees, insurance charges and other comparable charges will be borne solely by Buyer. Consular fees for legalizing invoices, stamping bills of lading, or other documents required by the laws of any country or destination are not included in quotations or selling prices. Balon assumes no responsibility for any fines or other charges imposed due to errors or incorrect declarations.

Literature: Published information such as catalogs, brochures, or other literature is subject to change without notice.

Freight Charges, Allowances and Claims: All shipments are F.O.B. at Balon's plant in Oklahoma City, Oklahoma. Freight charges will be allowed on orders of 1,000 pounds or more for shipment to one (1) destination within the continental United States or Canada (excluding Alaska). Freight allowances are via least expensive way. If Buyer designates a more costly transportation route or carrier, Balon shall have the right to assess a charge upon Buyer for the difference between the cost of Buyer's designated transportation route or carrier and the least expensive transportation method available to Balon. Buyer assumes risk of loss upon delivery to the carrier, regardless of who pays shipping costs. Unless requested in writing by the Buyer, no shipments are insured by Balon against damage or loss in transit. Balon will place insurance as nearly as possible in accordance with Buyer's written instructions but in such case Balon acts only as agent between the insurance company and the Buyer and assumes no liability whatsoever. Any claims for shipping loss, breakage or damage (obvious or concealed) are Buyer's responsibility and should be made to the carrier. All claims regarding shortages must be made to Balon in writing within thirty (30) days from receipt of shipment and must be accompanied by the packing list(s) covering the shipment.

Shipping Schedules: Shipment schedules are given as accurately as conditions permit and effort will be made to make shipments as scheduled. Balon will not be responsible for deviations in meeting shipping schedules nor for any losses or damages (including but not limited to any consequential, exemplary, indirect, incidental, punitive or special damages) incurred or suffered by Buyer or any third party arising out of or in connection with any deviations in the scheduled shipping of Buyer's Order. Balon shall have additional time within which to perform as may be reasonably necessary under the circumstances and shall have the right to apportion its production among its customers in such a manner as Balon deems equitable in its sole discretion.

Cancellation: Firm orders which have been accepted and entered by Balon shall not be subject to cancellation except by permission of and on the terms prescribed by Balon Corporation.
Return Policy: Unused products of current manufacturing design may be returned only upon written consent of Balon's Oklahoma City office. Credit will be issued only on products which are received by Balon within one year after the date of original purchase and returned by prepaid freight at Buyer's expense together with a copy of Balon's Return Authorization Form and documents which verify the original purchase order number and original invoice number. A deduction will be made for any cost incurred by Balon in restoring products to saleable condition. Credit may be used only for the purchase of merchandise and is not subject to cash reimbursement or cash payment.

Limited Warranty: Balon warrants its products against defects in material and workmanship for one (1) year from the original date of shipment. If Balon receives written notice from Buyer of any alleged defect in or nonconformance of any product within one (1) year from the original date of shipment of such product. Then, upon Balon's request, Buyer shall return the product F.O.B. to Balon's designated plant or service location at Buyer's sole cost and expense. Balon shall have no liability for removal or reinstallation of products. If, in Balon's sole judgment, the product does not conform or is found to be defective in material or workmanship, then Balon, at its sole option, shall either repair the product, replace the product or repay to Buyer the full price paid by Buyer for such product, without interest. If any stipulated remedy shall fail in its essential purpose, Balon shall refund the purchase price of such product, without interest, as the sole and exclusive remedy for any and all claims whether in contract, strict liability, tort or otherwise.

THIS LIMITED WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES AND REMEDIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY OR NON-INFRINGEMENT. IN NO EVENT SHALL BALON BE LIABLE FOR ANY DAMAGES OF ANY KIND OR NATURE IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT(S) ALLEGED TO BE DEFECTIVE, INCLUDING BUT NOT LIMITED TO ANY CONSEQUENTIAL, EXEMPLARY, INDIRECT, INCIDENTAL, PUNITIVE OR SPECIAL DAMAGES, LOSS OF ANTICIPATED PROFITS, LOSS OF USE OF EQUIPMENT OR OF ANY INSTALLATION, SYSTEM OR FACILITY INTO OR AT WHICH BALON'S PRODUCT(S) MAY BE USED OR INSTALLED. PROVIDED, HOWEVER, BALON SHALL NOT BE RESPONSIBLE FOR ANY LOSS OR DAMAGE OF ANY KIND OR NATURE INCLUDING BUT NOT LIMITED TO ANY CONSEQUENTIAL, EXEMPLARY, INDIRECT, INCIDENTAL, PUNITIVE OR SPECIAL DAMAGES IF THE PRODUCT IS: USED IN A SERVICE FOR WHICH IT WAS NOT MANUFACTURED; SUBJECTED TO PRESSURE IN EXCESS OF THE MAXIMUM OPERATING PRESSURE FOR SUCH PRODUCT AS DETERMINED BY BALON IN ITS SOLE DISCRETION; TAMPERED WITH OR ALTERED BY ANYONE OTHER THAN AN AUTHORIZED REPRESENTATIVE OF BALON; OR, NOT MAINTAINED IN STRICT ACCORDANCE WITH BALON'S RECOMMENDED MAINTENANCE PROCEDURES.

This Limited Warranty may only be altered, amended, expanded, modified, rescinded or terminated in writing signed by an authorized officer of Balon.

Not Intended for Nuclear Use: The products sold hereunder are not designed or manufactured for use in or with any atomic installation or activity.

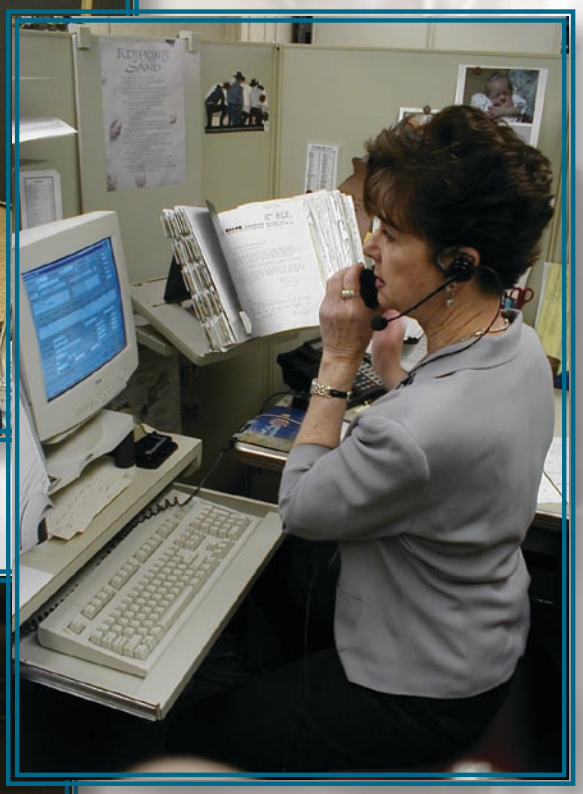
Design Changes: Balon, in its sole discretion, shall have the right to manufacture the products provided hereunder as far in advance of its estimated shipping schedule as it deems appropriate. Balon expressly reserves the right to change or modify the design and construction of any product in the course of its manufacturing process without incurring any obligation or liability to furnish or install such changes, modifications or improvements to products previously or subsequently sold.

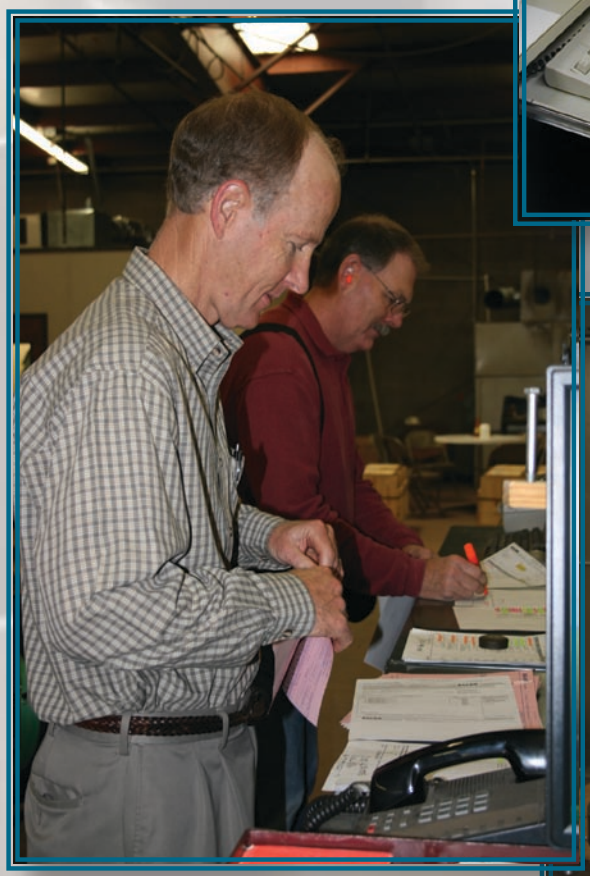
Indemnification: Buyer agrees to hold Balon and its affiliates and their respective agents, directors, employees, officers and shareholders harmless from any and all attorneys' fees, claims, damages, expert witness fees, fines, litigation costs, losses and remediation expenses to real or personal property, arising in whole or in part from the discharge, escape, loss or spill of hydrocarbons, hazardous waste or other pollutants, regardless of whether such discharge, escape, loss or spill either results from or arises out of the negligence or sole negligence of Balon, its affiliates or their respective agents, directors, employees, officers and shareholders or results from or arises out of any defect in the design or manufacture of Balon's products or results from or arises out of a failure by Balon to warn against any foreseeable danger. Buyer acknowledges and agrees that this indemnity shall apply both to property owned or controlled by Buyer and property owned or controlled by any third party.

Modification, Rescission and Waiver: Balon's Terms and Conditions of Sale herein may only be amended, modified or rescinded by a written instrument signed by an authorized officer of Balon at its office in Oklahoma City, Oklahoma that expressly states as its purpose to amend, modify or rescind these Terms and Conditions of Sale in whole or in part. Failure by Balon to insist in any one or more instances upon the performance of any of these Terms and Conditions of Sale or the failure of Balon to exercise any of its rights hereunder shall not be construed as a waiver or relinquishment of any such term, condition, or right hereunder and shall not affect Balon's right to insist upon strict performance and compliance with regard to any unexecuted portions of this contract or future performance of these terms and conditions. In the event an ambiguity or question of intent or interpretation arises, this Agreement shall be construed as if drafted jointly by the Parties and no presumption or burden of proof shall arise favoring or disfavoring any Party by virtue of the authorship of any of the provisions of this Agreement.

Choice of Law, Forum and Venue: These Terms and Conditions of Sales shall for all purposes be governed by and interpreted and enforced in accordance with the laws of the State of Oklahoma, without reference to or application of any conflict of laws provision which would direct the application of the law of any other jurisdiction. Buyer agrees (i) not to file or institute any action, lawsuit or proceeding asserting any claim, defense, offset or right against Balon or any of its affiliates or any of their respective agents, directors, employees, officers or shareholders that relates in any way to any product sold or service supplied by Balon or to these Terms and Conditions of Sale (an "Action") before any court, tribunal forum or venue other than the state or federal district courts located within Oklahoma County, Oklahoma (collectively, the "Oklahoma Courts") and (ii) to submit, without objection, in any Action to the in personal jurisdiction of the Oklahoma Courts.

Commitment to Customer Satisfaction





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