



GENERAL PRODUCTS CATALOG



From product recommendations, regulatory compliance, vessel automation, and ship commissioning, our team offers unique solutions to maritime challenges. The industries we serve operate 24/7, and so does W&O. Around the clock, every day of the year, we provide mission-critical products and services through our many strategically located service centers.

What We Offer

With close to 50 years of experience in the marine market, W&O is the recognized leader in classification-society-approved materials for the maritime industry. We strive to be an integral part of your supply chain while ensuring the highest level of customer service available.

We offer high-value consultancy and project-management services. Through our strategic partnerships with global suppliers to the marine industry, W&O can offer the best in technology and engineering solutions, along with testing and follow-up services to ensure successful installation and ongoing results. Our expertise includes piping, mechanical and automation systems; product recommendations; on-board and shore-side data acquisition and management; energy optimization and vessel-efficiency systems; and regulatory-compliance measures.

Through the continuous training of our people and ongoing enhancements to our facilities and services, we can ensure that your projects will be specified correctly the first time, every time.



Pipe, Valves, Fittings

With over \$50 million dollars of standing inventory, we carry a complete line of products in copper nickel, stainless steel, galvanized steel, and carbon steel material. Our portfolio includes ASME, DIN, JIS and U.S. Mil-Spec products and we also offer valves in virtually every body material, from iron, steel and bronze, to exotic alloys such as chrome moly, hastelloy and titanium. All sizes and types, including metric, are available to ensure that we meet your requirements.

Engineered Solutions

One of the things that truly sets W&O apart is our range of product solutions. We work closely with our customers to solve problems and offer innovative answers to their unique challenges. A few of our distinctive solutions include:

- SeaCor® from Georg Fischer Piping Systems - the first commercially available United States Coast Guard-Approved (USCG) marine thermoplastic piping system in the world.
- No-weld piping systems including NORMACONNECT®, Chibro and Pyplok®, the weld less, thread less way to join pipe/tube.
- Bulkhead Sealing systems for and pipe including RISE for fire resistant sealing and NOFIRNO for the harshest fire ratings as well as gas and water tight systems.
- Hyde Ballast Water Treatment System (BWTS) that filters and disinfects using ultraviolet light.

Actuation

W&O does not only deliver the required valve, we have expertise in actuation for new or existing systems on board. W&O can support you with hydraulic, pneumatic, manual and electric systems. With two automation facilities, W&O provides custom design, manufacturing, assembly and control solutions that meet the most demanding and precise customer specifications.

Quality & Certification

W&O understands the regulatory requirements of class societies and flag states. Our products carry a variety of certifications and registrations to ensure they will meet the exact specifications of the customer and those of the service in which they will be placed.





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Section 1: ASME Valves

Gate Valves
Globe Valves
Angle Valves
Butterfly Valves
Check Valves
Ball Valves
Pressure Relief Valves
Relief Valves
Safety Valves
Temperature Regulators
Pressure Reducers & Regulators
Spectacle Type Line Blind
Deck Drains, Access Boxes & Covers
Inverted Vent Check Valves
Tank Air Escape Valves
Vent Terminals
Strainers
Quick Open Valves
Scupper Valves
Mesurflo®



Bronze Gate Valves 125 lb, Rising or Non-Rising Stem

SIZES: 1/4" to 4"

PRESSURE / TEMPERATURE RATINGS
125 PSI WSP 400°F / 200 PSI WOG 150°F

DESIGN DESCRIPTION

- Threaded Ends standard; Solder Joint Ends available
- Threaded Bonnet
- Rising Stem or Non-Rising Stem (NRS)
- Bronze Body Material, ASTM B62
- Bronze Trim Material



RISING STEM
ITEM ID: 111101



NON-RISING STEM
ITEM ID: 111201

Bronze Gate Valves 150 lb, Rising or Non-Rising Stem

SIZES: 1/4" to 3"

PRESSURE / TEMPERATURE RATINGS
150 PSI WSP 400°F / 300 PSI WOG 150°F

DESIGN DESCRIPTION

- Threaded Ends standard; Solder Joint Ends available
- Threaded Bonnet
- Rising Stem or Non-Rising Stem (NRS)
- Bronze Body Material, ASTM B62
- Bronze Trim Material



RISING STEM
ITEM ID: 112101



NON-RISING STEM
ITEM ID: 112201

Bronze Gate Valves 200 or 300 lb, Rising Stem

SIZES: 1/4" to 3"

PRESSURE / TEMPERATURE RATINGS
200 PSI WSP 550°F / 400 PSI WOG 150°F
300 PSI WSP 550°F / 1000 PSI WOG 150°F

DESIGN DESCRIPTION

- Threaded Ends
- Union Bonnet
- Rising Stem standard; Non-Rising Stem (NRS) available
- Bronze Body Material, ASTM B62
- Bronze Trim Material



200 LB
ITEM ID: 113101



300 LB
ITEM ID: 114101



Bronze Gate Valves 150 lb, Rising or Non-Rising Stem

SIZES: 1/2" to 3"

PRESSURE / TEMPERATURE RATINGS
150 PSI WSP 400°F / 225 PSI WOG 150°F

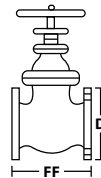
DESIGN DESCRIPTION

- Flanged Ends
- Threaded or Union Bonnet
- Rising Stem or Non-Rising Stem (NRS)
- Bronze Body Material, ASTM B62
- Bronze Trim Material standard; Monel Trim available
- Integral Seats

Face to face conforms to ASME B16.10.

DIMENSIONS (Inches)

SIZE	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
FF	4.25	4.61	5.00	5.51	6.50	7.01	7.48	7.99
D	3.54	3.94	4.33	4.53	4.92	5.91	7.09	7.48
wt	4	4	7	9	11	18	28	44



**THREADED BONNET
RISING STEM
ITEM ID: 052102**



**UNION BONNET
NON-RISING STEM
ITEM ID: 052202**

Bronze Gate Valves 150 lb, Rising or Non-Rising Stem

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS
150 PSI WSP 400°F / 225 PSI WOG 150°F

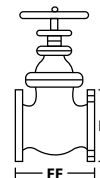
DESIGN DESCRIPTION

- Flanged Ends
- Bolted Bonnet
- OS&Y Rising Stem or Non-Rising Stem (NRS)
- Bronze Body Material, ASTM B62
- Bronze Trim or Monel Trim Material
- Open/Closed indicators available on NRS valves

Face to face conforms to ASME B16.10.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	4	5	6	8	10	12
FF	7.01	7.48	7.99	9.02	10.00	10.51	11.50	12.99	14.02
D	5.91	7.09	7.48	9.06	10.04	11.02	13.58	15.95	19.10
wt	36	50	67	98	131	170	251	387	600



**OS&Y RISING STEM
BRONZE TRIM
ITEM ID: 052103**



**NON-RISING STEM
BRONZE TRIM
ITEM ID: 052203**

**OS&Y RISING STEM
MONEL TRIM
ITEM ID: 052104**

**NON-RISING STEM
MONEL TRIM
ITEM ID: 052204**



Cast Iron Gate Valves 125 lb, Rising or Non-Rising Stem

SIZES: 2" to 24"

PRESSURE / TEMPERATURE RATINGS
125 PSI WSP 450°F / 200 PSI WOG 150°F

DESIGN DESCRIPTION

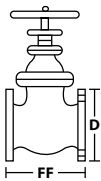
- Flanged Ends
- OS&Y Rising Stem or Non-Rising Stem (NRS)
- Cast Iron Body Material
- Bronze Trim Material

Cast iron (also called grey iron) gate valves are designed to permit repacking under pressure when fully opened. Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.1. Recommended for service on steam and non-shock water, oil or gas. Non-rising stem valves include open/shut indicator.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	4	5	6	8	10	12
FF	7.00	7.50	8.00	9.00	10.00	10.50	11.50	13.00	14.00
D	6.00	7.00	7.50	9.00	10.00	11.00	13.50	16.00	19.00
wt OS&Y	42	55	70	115	160	200	320	520	700
wt NRS	40	50	65	110	145	170	300	480	650

SIZE	14	16	18	20	24
FF	15.00	16.00	17.00	18.00	20.00
D	21.00	23.50	25.00	27.50	32.00
wt OS&Y	970	1300	1650	2200	3300
wt NRS	880	1250	1500	1900	2900



OS&Y RISING STEM
ITEM ID: 021103



NON-RISING STEM
ITEM ID: 021203



Ductile Iron Gate Valves 150 lb, Rising or Non-Rising Stem

SIZES: 2" to 16"

PRESSURE / TEMPERATURE RATINGS
165 PSI WSP 450°F / 275 PSI WOG 100°F

DESIGN DESCRIPTION

- Flanged Ends
- OS&Y Rising Stem or Non-Rising Stem (NRS)
- Ductile Iron Body Material, ASTM A395
- Bronze Trim Material
- Larger sizes available upon request as a special order

Cast ductile iron, also called nodular iron or spheroidal iron, is less brittle than cast grey iron. It has malleability similar to steel and corrosion resistance like that of grey iron. Ductile iron gate valves are designed to permit repacking under pressure when fully opened. Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.



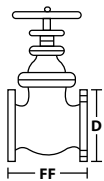
OS&Y RISING STEM
ITEM ID: 032103



NON-RISING STEM
ITEM ID: 032203

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	4	5	6	8	10	12	14	16
FF	7.00	7.50	8.00	9.00	10.00	10.50	11.50	13.00	14.00	15.00	16.00
D	6.00	7.00	7.50	9.00	10.00	11.00	13.50	16.00	19.00	21.00	23.50
wt _{OS&Y}	42	55	70	115	160	200	320	520	700	970	1300
wt _{NRS}	40	50	65	110	145	170	300	480	650	880	1250





Cast Steel Gate Valves 150 lb, Non-Rising Stem

SIZES: 2" to 24"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

DESIGN DESCRIPTION

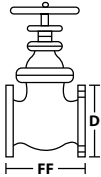
- Flanged Ends
- Bolted Bonnet
- Non-Rising Stem (NRS)
- Cast Steel Body Material
- CR13/HF Trim or Aluminum Bronze Trim Material standard; Monel Trim Material available
- Solid Disc

Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10	12
FF	7.01	7.48	7.99	8.50	9.02	10.00	10.51	11.50	12.99	14.02
D	5.98	7.01	7.48	8.50	9.02	10.00	10.98	13.50	15.98	19.02
wt	38	60	73	91	110	145	189	297	462	682

SIZE	14	16	18	20	24
FF	15.00	15.98	17.01	17.99	20.00
D	20.98	23.50	25.00	27.48	32.01
wt	869	1195	1490	1840	2200



CR13/HF TRIM
ITEM ID: 012201
FIG.: 15021C

ALUM. BRONZE TRIM
ITEM ID: 012202
FIG.: 15021B





Cast Steel Gate Valves 150 lb, Rising Stem

SIZES: 2" to 24"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

DESIGN DESCRIPTION

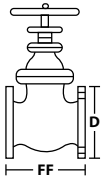
- Flanged Ends
- Bolted Bonnet
- OS&Y Rising Stem
- Cast Steel Body Material
- Aluminum Bronze Trim or CR13/HF Trim Material standard; Monel Trim, 316 Stainless Steel Trim or Full Stellite Trim Material available
- Available in C5 material for high temperature

Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10	12
FF	7.01	7.48	7.99	8.50	9.02	10.00	10.51	11.50	12.99	14.02
D	5.98	7.01	7.48	8.50	9.02	10.00	10.98	13.50	15.98	19.02
wt	52	72	90	115	140	150	240	380	585	770

SIZE	14	16	18	20	24
FF	15.00	15.98	17.01	17.99	20.00
D	20.98	23.50	25.00	27.48	32.01
wt	1085	1380	1810	2200	3315



CR13/HF TRIM
ITEM ID: 012101
FIG.: 15011C

ALUM. BRONZE TRIM
ITEM ID: 012102
FIG.: 15011B





Cast Steel Gate Valves 300 lb, Rising Stem

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

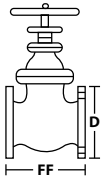
DESIGN DESCRIPTION

- Flanged Ends standard; Buttweld or RTJ Flanged Ends available
- Bolted Bonnet
- OS&Y Rising Stem
- Carbon Steel Body Material
- CR13/HF Trim Material standard; Full Stellite Trim available
- Available in WC6, WC9, C5 material for high temperature
- 600 LB and 900 LB available upon request as a special order

Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	4	5	6	8	10	12
FF	8.50	9.49	11.14	12.01	14.21	15.87	16.50	17.99	19.76
D	6.50	7.48	8.27	10.00	10.98	12.52	15.00	17.48	20.51
wt	66	80	112	171	235	340	540	790	1120



ITEM ID: 014101
FIG.: 30011C





Forged Steel Gate Valves 150, 300, 600, 800, 1500 lb, Rising Stem

SIZES: 1/2" to 2"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

DESIGN DESCRIPTION

- Flanged, Threaded or Socket Weld Ends
- Bolted Bonnet
- OS&Y Rising Stem
- Carbon Steel (A-105) or Chromemoly (F11/F22) Body and Bonnet Material
CR13/HF Trim Material
- 410 Stainless Steel Disc and Stem Material; 316 Stainless Steel or Stellite Disc,
Stem available with HF Integral Seat
- Multi-purpose valve suitable for steam, liquid or gas

Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

150 LB FLANGED

SIZE	1/2	3/4	1	1-1/2	2
FF	4.25	4.61	5.00	6.50	7.01
D	3.50	3.86	4.25	5.00	5.98
wt	7	11	13	22	31

300 LB FLANGED

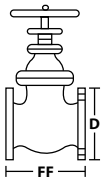
SIZE	1/2	3/4	1	1-1/2	2
FF	5.51	5.98	6.50	7.48	8.50
D	3.74	4.65	4.88	6.14	6.50
wt	9	12	16	30	43

600 LB FLANGED

SIZE	1/2	3/4	1	1-1/2	2
FF	6.50	7.50	8.50	9.50	11.50
D	3.75	4.63	4.88	6.13	6.50
wt	10	12	19	38	51

1500 LB FLANGED

SIZE	1/2	3/4	1	1-1/2	2
FF	8.50	9.00	10.00	12.00	14.50
D	4.75	5.13	5.63	7.00	8.50
wt	22	35	55	77	99



**FLANGED
150 LB
ITEM ID: 211111**

**FLANGED
300 LB
ITEM ID: 212111**

**FLANGED
600 LB
ITEM ID: 213111**

**FLANGED
1500 LB
ITEM ID: 216111**



**THREADED
800 LB
ITEM ID: 214121**

**THREADED
1500 LB
ITEM ID: 216121**

**SOCKET WELD
800 LB
ITEM ID: 214131**

**SOCKET WELD
1500 LB
ITEM ID: 216131**



Stainless Steel Gate Valves 200 lb, Rising Stem

SIZES: 1/4" to 3"

PRESSURE / TEMPERATURE RATINGS
200 PSI WSP

DESIGN DESCRIPTION

- Threaded Ends
- Threaded Bonnet
- OS&Y Rising Stem
- 316 Stainless Steel Body Material, ASTM A351-CF8M, standard; other grades available
- 316 Stainless Steel Trim Material
- Integral Seats



ITEM ID: 173107

Stainless Steel Gate Valves 800 lb, Rising Stem

SIZES: 1/4" to 2"

PRESSURE / TEMPERATURE RATINGS
800 PSI WSP

DESIGN DESCRIPTION

- Threaded or Socket Weld Ends
- Bolted Bonnet
- OS&Y Rising Stem
- 316 Stainless Steel Body Material, ASTM A182-F316L, standard; other grades available
- 316 Stainless Steel Trim Material
- Fully Guided Solid Disc
- Integral Seats



THREADED
ITEM ID: 176107

SOCKET WELD
ITEM ID: 176137



Stainless Steel Gate Valves 150, 300, 600 lb, Rising Stem

SIZES: 1" to 16"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

DESIGN DESCRIPTION

- Flanged Ends standard; Butt-weld Ends available
- Bolted Bonnet
- OS&Y Rising Stem
- 316 Stainless Steel Body Material, ASTM A351-CF8M, standard; other grades available
- 316 Stainless Steel Trim Material
- Fully Guided Disc
- Integral Seats

DIMENSIONS (Inches)

150 LB

SIZE	1	1-1/4	1-1/2	2	2-1/2	3	4	6	8	10	12
FF	5.00	5.50	6.50	7.00	7.50	8.00	9.00	10.50	11.50	13.00	14.00
D	4.25	4.63	5.00	6.00	7.00	7.50	9.00	11.00	13.50	16.00	19.00
wt	12	18	22	30	42	51	88	158	275	455	675

SIZE	14	16
FF	15.00	16.00
D	21.00	23.50
wt	865	1250

300 LB

SIZE	1	1-1/4	1-1/2	2	2-1/2	3	4	6	8	10	12
FF	6.00	7.00	7.50	8.50	9.50	11.13	12.00	15.88	16.50	18.00	19.75
D	4.88	5.25	6.13	6.50	7.50	8.25	10.00	12.50	15.00	17.50	20.50
wt	23	33	40	52	68	102	169	305	500	890	1250

600 LB

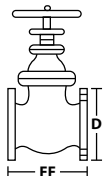
SIZE	1	1-1/4	1-1/2	2	2-1/2	3	4	6	8	10	12
FF	8.50	9.00	9.50	11.50	13.00	14.00	17.00	22.00	26.00	31.00	33.00
D	4.88	5.25	6.13	6.50	7.50	8.25	10.75	14.00	16.50	20.00	22.00
wt	19	31	41	58	132	171	323	600	1190	1830	2400



**150 LB
ITEM ID: 072107**

**300 LB
ITEM ID: 074107**

**600 LB
ITEM ID: 076107**





Stainless Steel Knife Gate Valves 150 lb

SIZES: 2" to 24"

DESIGN DESCRIPTION

- Bonnetless
- OS&Y, Non-Rising Handwheel or Rising Stem
- Standard one piece body cast in corrosion resistant stainless steel
- Also available in ductile iron and cast steel body
- Smooth flow, non-clogging full port design
- Designed to handle dense mixtures of stock and slurries
- Shearing action of knife gate cuts through solids and cleans seats as it closes
- Gate and seat machined and fitted to provide shut off in one direction
- Standard with tapped holes & serrated gasket faces

Flange drilling conforms to ASME B16.5.



LUG
ITEM ID: 072006



WAFER
ITEM ID: 072007



Bronze Globe Valves 125 lb, Rising Stem

SIZES: 1/4" to 3"

PRESSURE / TEMPERATURE RATINGS
125 PSI WSP 400°F / 200 PSI WOG 150°F

DESIGN DESCRIPTION

- Threaded Ends standard; Solder Joint Ends available
- Threaded Bonnet
- Rising Stem
- Bronze Body Material, ASTM B62
- Bronze Trim Material



ITEM ID: 111301

Bronze Globe Valves 150 lb, Rising Stem

SIZES: 1/4" to 3"

PRESSURE / TEMPERATURE RATINGS
150 PSI WSP 400°F / 300 PSI WOG 150°F

DESIGN DESCRIPTION

- Threaded Ends standard; Solder Joint Ends available
- Union Bonnet
- Rising Stem
- Bronze Body Material, ASTM B62
- Bronze Trim Material
- Stop-Check available
- Composition Disc available



ITEM ID: 112301



Bronze Globe Valves 150 lb, Rising Stem

SIZES: 1/2" to 3"

PRESSURE / TEMPERATURE RATINGS
150 PSI WSP 400°F / 300 PSI WOG 150°F

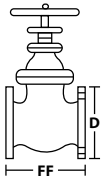
DESIGN DESCRIPTION

- Flanged Ends
- Union Bonnet
- Rising Stem
- Bronze Body Material, ASTM B62
- Aluminum Bronze Trim Material standard; Monel Trim available
- Integral Seats
- Stop-Check available

Face to face conforms to ASME B16.10.

DIMENSIONS (Inches)

SIZE	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
FF	4.25	4.60	5.00	5.51	6.50	7.99	8.50	9.49
D	3.54	3.94	4.33	4.53	4.92	5.91	7.09	7.48
wt	3	5	7	9	12	19	30	40



ITEM ID: 052302

**STOP-CHECK
ITEM ID: 052312**



Bronze Globe Valves 150 lb, Rising Stem

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS
150 PSI WSP 500°F / 225 PSI WOG 150°F

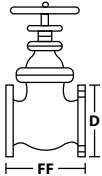
DESIGN DESCRIPTION

- Flanged Ends
- Bolted Bonnet
- Rising Stem
- Bronze Body Material, ASTM B62
- Aluminum Bronze Trim or Monel Trim Material
- Stop-Check available

Face to face conforms to ASME B16.10.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	4	5	6	8	10	12
FF	7.99	8.50	9.49	11.50	14.02	15.98	19.49	24.49	27.48
D	5.91	7.09	7.48	9.06	10.04	11.03	13.58	15.94	19.09
wt	19	29	51	80	125	145	315	580	750



ALUM. BRONZE TRIM
ITEM ID: 052303

MONEL TRIM
ITEM ID: 052304

STOP-CHECK
ALUM. BRONZE TRIM
ITEM ID: 052313

STOP-CHECK
MONEL TRIM
ITEM ID: 052314



Bronze Hose Globe Valves Flanged x Hose Thread

SIZES: 1-1/2" and 2-1/2"

DESIGN DESCRIPTION

- Flanged Ends
- Union Bonnet (1-1/2") or Bolted Bonnet (2-1/2")
- Rising Stem
- Bronze Body Material
- Bronze Trim Material standard; Monel Trim Material available

Flanges conform to ASME B16.24.

When ordering, specify type and number of threads per inch.

DIMENSIONS (Inches)

SIZE	1-1/2	2-1/2
D	5.00	7.00
BC	3.88	5.50
Holes	4	4
wt	15	37

Threads per inch (TPI)

NH	9.00	7.50
NPSH	11.50	9.00



**150 LB NH (NST)
ITEM ID: 055303**

**150 LB NPSH (SIPT)
ITEM ID: 055301**



Cast Iron Globe Valves 125 lb, Rising Stem

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS
125 PSI WSP 450°F / 200 PSI WOG 150°F

DESIGN DESCRIPTION

- Flanged Ends
- Bolted Bonnet
- Rising Stem
- Cast Iron Body Material
- Bronze Trim Material
- Stop-Check available

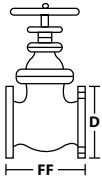
Cast iron globe valves are designed to permit repacking under pressure when fully open. Bronze trim valves are recommended for steam and water service. Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.1.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	4	5	6	8	10	12
FF	8.00	8.50	9.50	11.50	13.00	14.00	19.50	24.50	27.50
D	6.00	7.00	7.50	9.00	10.00	11.00	13.50	16.00	19.00
wt	33	52	65	103	139	187	346	624	870



ITEM ID: 021303





Ductile Iron Globe Valves 150 lb, Rising Stem

SIZES: 2" to 16"

PRESSURE / TEMPERATURE RATINGS
165 PSI WSP 450°F / 275 PSI WOG 150°F

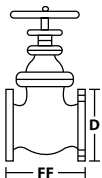
DESIGN DESCRIPTION

- Flanged Ends
- Bolted Bonnet
- OS&Y Rising Stem
- Ductile Iron Body Material, ASME A395
- Bronze Trim Material
- Stop-Check available

Cast ductile iron, also called nodular iron or spheroidal iron, is less brittle than cast grey iron. It has malleability similar to steel and corrosion resistance like that of grey iron. Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5. Recommended for throttling service.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10	12	14	16
FF	8.00	8.50	9.50	10.50	11.50	13.00	14.00	19.50	24.50	27.50	31.00	36.00
D	6.00	7.00	7.50	8.50	9.00	10.00	11.00	13.50	16.00	19.00	21.00	23.50
wt	30	40	53	65	87	119	151	379	624	830	1000	1200



ITEM ID: 032303

**STOP-CHECK
ITEM ID: 032313**



Cast Steel Globe Valves 150 lb, Rising Stem

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

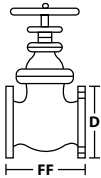
DESIGN DESCRIPTION

- Flanged Ends standard; Butt-weld Ends available
- Bolted Bonnet
- OS&Y Rising Stem
- Cast Steel Body Material
- CR13/HF Trim or Aluminum Bronze Trim Material standard; Monel, 316 Stainless Steel and Full Stellite Trim available
- Stop-Check available
- Available in C5 material for high temperature

Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10	12
FF	8.00	8.50	9.50	10.50	11.50	14.00	16.00	19.50	24.50	27.50
D	6.00	7.00	7.50	8.50	9.00	10.00	11.00	13.50	16.00	19.00
wt	50	60	80	115	135	180	230	420	700	850



**CR13/HF TRIM
ITEM ID: 012301
FIG.: 15031C**

**ALUM. BRONZE TRIM
ITEM ID: 012302
FIG.: 15031B**

SPACE



Cast Steel Globe Valves 300 lb, Rising Stem

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

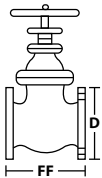
DESIGN DESCRIPTION

- Flanged Ends standard; Buttweld or RTJ Flanged Ends available
- Bolted Bonnet
- OS&Y Rising Stem
- Carbon Steel Body Material
- CR13/HF Trim Material standard; Aluminum Bronze, Monel, 316 Stainless Steel and Full Stellite Trim Material available
- Stop-Check available
- Also available in WC6, WC9, C5 material for high temperature
- 600 LB available upon request as a special order

Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10	12
FF	10.51	11.50	12.52	13.27	14.02	15.75	17.48	22.01	24.49	27.99
D	6.50	7.48	8.27	9.02	10.00	10.98	12.52	15.00	17.50	20.51
wt	83	110	135	180	220	280	390	740	1010	1675



ITEM ID: 014301



Forged Steel Globe Valves 150, 300, 600, 800, 1500 lb, Rising Stem

SIZES: 1/2" to 2"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

DESIGN DESCRIPTION

- Flanged, Threaded or Socket Weld Ends
- Bolted Bonnet
- Rising Stem
- Carbon Steel (A-105) Body Material standard; Chromemoly (F11/F22) Body Material available
- Carbon Steel (A-105) Bonnet Material standard; Chromemoly (F11/F22) Bonnet Material available
- CR13/HF Trim Material standard; Other Trim Materials available
- Multi-purpose valve suitable for steam, liquid or gas

Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

150 LB FLANGED

SIZE	1/2	3/4	1	1-1/4	1-1/2	2
FF	4.25	4.63	5.00	5.50	6.50	8.00
D	3.50	3.88	4.25	4.63	5.00	6.00
wt	7	11	13	17	22	35

300 LB FLANGED

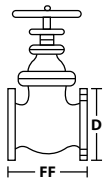
SIZE	1/2	3/4	1	1-1/4	1-1/2	2
FF	6.00	7.00	8.00	8.50	9.00	10.50
D	3.75	4.63	4.88	5.25	6.13	6.50
wt	9	13	18	28	38	50

600 LB FLANGED

SIZE	1/2	3/4	1	1-1/4	1-1/2	2
FF	6.50	7.50	8.50	9.00	9.50	11.50
D	3.75	4.63	4.88	5.25	6.13	6.50
wt	10	14	19	29	38	51

1500 LB FLANGED

SIZE	1/2	3/4	1	1-1/4	1-1/2	2
FF	8.50	9.00	10.00	11.00	12.00	14.50
D	4.75	5.13	5.88	6.25	7.00	8.50
wt	22	35	55	68	77	99



**FLANGED
150 LB
ITEM ID: 211311**

**FLANGED
300 LB
ITEM ID: 212311**

**FLANGED
600 LB
ITEM ID: 213311**

**FLANGED
1500 LB
ITEM ID: 216311**



**THREADED
800 LB
ITEM ID: 214321**

**THREADED
1500 LB
ITEM ID: 216321**

**SOCKET WELD
800 LB
ITEM ID: 214331**

**SOCKET WELD
1500 LB
ITEM ID: 216331**

Stainless Steel Globe Valves 200 lb, Rising Stem

SIZES: 1/4" to 2"

PRESSURE / TEMPERATURE RATINGS
200 PSI WSP

DESIGN DESCRIPTION

- Threaded Ends
- Threaded Bonnet
- Rising Stem
- 316 Stainless Steel Body Material standard; other Stainless Steel Body Material available
- 316 Stainless Steel Trim Material
- Integral Seats



ITEM ID: 173307

Stainless Steel Globe Valves 800 lb, Rising Stem

SIZES: 1/4" to 3"

PRESSURE / TEMPERATURE RATINGS
800 PSI WSP

DESIGN DESCRIPTION

- Threaded or Socket Weld Ends
- Bolted Bonnet
- OS&Y Rising Stem
- 316 Stainless Steel Body Material standard; other Stainless Steel Body Material available
- 316 Stainless Steel Trim Material
- Integral Seats



THREADED
ITEM ID: 176307



SOCKET WELD
ITEM ID: 176337



Stainless Steel Globe Valves 150, 300, 600 lb, Rising Stem

SIZES: 1/2" to 12"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

DESIGN DESCRIPTION

- Flanged Ends
- Bolted Bonnet
- OS&Y Rising Stem
- 316 Stainless Steel Body Material standard; other Stainless Steel Body Material available
- 316 Stainless Steel Trim Material
- Integral Seat

DIMENSIONS (Inches)

150 LB

SIZE	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	6	8
FF	4.25	4.63	5.00	5.50	6.50	8.00	8.50	9.50	11.50	16.00	19.50
D	3.50	3.88	4.25	4.63	5.00	6.00	7.00	7.50	9.00	11.00	13.50
wt	6	7	11	15	20	29	35	55	115	195	340

SIZE	10	12
FF	24.50	27.50
D	16.00	19.00
wt	640	915

300 LB

SIZE	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	6	8	10	12
FF	6.00	7.00	8.00	8.50	9.00	10.50	11.50	12.50	14.00	17.50	22.00	24.50	28.00
D	3.75	4.63	4.88	5.25	6.13	6.50	7.50	8.25	10.00	12.50	15.00	17.50	20.50
wt	7	11	15	17	28	36	55	76					

600 LB

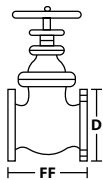
SIZE	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	6
FF	6.50	7.50	8.50	9.00	9.50	11.50	13.00	14.00	17.00	22.00
D	3.75	4.63	4.88	5.25	6.13	6.50	7.50	8.25	10.75	16.50
wt	8	9	11	28	37					



150 LB
ITEM ID: 072307

300 LB
ITEM ID: 074307

600 LB
ITEM ID: 076307





Bronze Angle Valves 125 lb, Rising Stem

SIZES: 1/4" to 3"

PRESSURE / TEMPERATURE RATINGS
125 PSI WSP 400°F / 200 PSI WOG 150°F

DESIGN DESCRIPTION

- Threaded Ends standard; Solder Joint Ends available
- Threaded Bonnet
- Rising Stem
- Bronze Body Material, ASTM B62
- Bronze Trim Material



ITEM ID: 111401

Bronze Angle Valves 150 lb, Rising Stem

SIZES: 1/4" to 3"

PRESSURE / TEMPERATURE RATINGS
150 PSI WSP 400°F / 300 PSI WOG 150°F

DESIGN DESCRIPTION

- Threaded Ends standard; Solder Joint Ends available
- Union Bonnet
- Rising Stem
- Bronze Body Material, ASTM B62
- Bronze Trim Material
- Stop-Check available
- Composition Disc available



ITEM ID: 112401



Bronze, 150 lb Angle Valves Rising Stem

SIZES: 1/2" to 3"

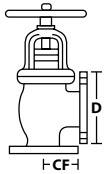
PRESSURE / TEMPERATURE RATINGS
150 PSI WSP 400°F / 300 PSI WOG 150°F

DESIGN DESCRIPTION

- Flanged Ends
- Union Bonnet
- Rising Stem
- Bronze Body Material, ASTM B62
- Aluminum Bronze Trim Material standard; Monel Trim available
- Integral Seats
- Stop-Check available

DIMENSIONS (Inches)

SIZE	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3
CF	2.24	2.52	2.76	2.99	3.27	3.75	4.02	4.25
D	3.54	3.94	4.33	4.53	4.92	4.92	5.91	7.09
wt	3	5	7	9	12	19	30	40



ITEM ID: 052402

STOP-CHECK
ITEM ID: 052412



Bronze Angle Valves 150 lb, Rising Stem

SIZES: 2" to 12"

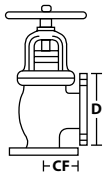
PRESSURE / TEMPERATURE RATINGS
150 PSI WSP 500°F / 225 PSI WOG 150°F

DESIGN DESCRIPTION

- Flanged Ends
- Bolted Bonnet
- Rising Stem
- Bronze Body Material, ASTM B62
- Aluminum Bronze Trim or Monel Trim Material
- Stop-Check available

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	4	5	6	8	10	12
CF	4.02	4.25	4.76	5.75	7.01	7.99	9.76	12.24	13.74
D	5.91	7.09	7.48	9.06	10.04	11.02	13.58	15.95	18.90
wt	19	29	51	80	125	145	315	580	750



ALUM. BRONZE TRIM
ITEM ID: 052403

MONEL TRIM
ITEM ID: 052404

STOP-CHECK
ALUM. BRONZE TRIM
ITEM ID: 052413

STOP-CHECK
MONEL TRIM
ITEM ID: 052414



Bronze Hose Angle Valves Flanged x Hose Thread

SIZES: 1-1/2" and 2-1/2"

DESIGN DESCRIPTION

- Flanged Ends
- Union Bonnet (1-1/2") or Bolted Bonnet (2-1/2")
- Rising Stem
- Bronze Body Material
- Bronze Trim Material standard; Monel Trim Material available

Flanges conform to ASME B16.24.

When ordering, specify type and number of threads per inch.

DIMENSIONS (Inches)

SIZE	1-1/2	2-1/2
D	5.00	7.00
BC	3.88	5.50
Holes	4	4
wt	15	37

Threads per inch (TPI)

NH	9.00	7.50
NPSH	11.50	9.00



**150 LB NH (NST)
ITEM ID: 055403**

**150 LB NPSH (SIPT)
ITEM ID: 055401**



Cast Iron Angle Valves 125 lb, Rising Stem

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS
125 PSI WSP 450°F / 200 PSI WOG 150°F

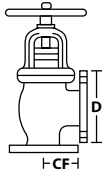
DESIGN DESCRIPTION

- Flanged Ends
- Bolted Bonnet
- Rising Stem
- Cast Iron Body Material
- Bronze Trim Material
- Stop-Check available

Cast iron angle valves are designed to permit repacking under pressure when fully open. Bronze trim valves are recommended for steam and water service. Flange drilling conforms to ASME B16.1.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10	12
CF	4.00	4.25	4.75	5.25	5.75	6.50	7.00	9.75	12.25	13.75
D	6.00	7.00	7.50	8.50	9.00	10.00	11.00	13.50	16.00	19.00
wt	33	52	65	86	103	139	187	346	624	870



ITEM ID: 021403



Ductile Iron Angle Valves 150 lb, Rising Stem

SIZES: 2" to 16"

PRESSURE / TEMPERATURE RATINGS
165 PSI WSP 450°F / 275 PSI WOG 150°F

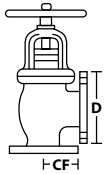
DESIGN DESCRIPTION

- Flanged Ends
- Bolted Bonnet
- OS&Y Rising Stem
- Ductile Iron Body Material, ASTM A395
- Bronze Trim Material
- Stop-Check available

Cast ductile iron, also called nodular iron or spheroidal iron, is less brittle than cast grey iron. It has malleability similar to steel and corrosion resistance like that of grey iron. Flange drilling conforms to ASME B16.5. Recommended for throttling service.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10	12	14	16
CF	4.00	4.25	4.75	5.25	5.75	6.50	7.00	9.75	12.25	13.75	15.50	18.00
D	6.00	7.00	7.50	8.50	9.00	10.00	11.00	13.50	16.00	19.00	21.00	23.50
wt	30	40	53	65	87	119	151	379	624	830	1000	1200



ITEM ID: 032403

**STOP-CHECK
ITEM ID: 032413**



Cast Steel Angle Valves 150 lb, Rising Stem

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

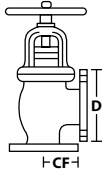
DESIGN DESCRIPTION

- Flanged Ends standard; Butt-weld Ends available
- Bolted Bonnet
- OS&Y Rising Stem
- Cast Steel Body Material, ASTM 216-WCB
- CR13/HF Trim or Aluminum Bronze Trim Material; Monel, 316 Stainless Steel and Full Stellite Trim available
- Stop-Check available
- Available in C5 material for high temperature

Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10	12
CF	4.00	4.25	4.75	5.26	5.74	7.00	8.00	9.75	12.25	13.75
D	5.98	7.01	7.48	8.50	9.02	10.00	10.98	13.50	15.98	19.02
wt	50	60	80	115	135	180	230	420	700	850



**CR13/HF TRIM
ITEM ID: 012401
FIG.: 15041C**

**ALUM. BRONZE TRIM
ITEM ID: 012402
FIG.: 15041B**





Cast Steel Angle Valves 300 lb, Rising Stem

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

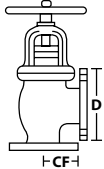
DESIGN DESCRIPTION

- Flanged Ends standard; Butt weld or RTJ Flanged Ends available
- Bolted Bonnet
- OS&Y Rising Stem
- Carbon Steel Body Material, ASTM A216 WCB
- CR13/HF Trim Material standard; Full Stellite Trim Material available
- Stop-Check available
- Also available in WC6, WC9, C5 material for high temperature
- 600 LB also available upon request as a special order

Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10	12
CF	5.25	5.75	6.25	6.63	7.01	7.87	8.74	10.98	12.24	14.00
D	6.50	7.48	8.27	9.02	10.00	10.98	12.52	15.00	17.50	20.51
wt	83	110	135	180	220	280	390	740	1010	1675



ITEM ID: 014401
FIG.: 30041C





Forged Steel Angle Valves 150, 300, 600, 800, 1500 lb, Rising Stem

SIZES: 1/2" to 2"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

DESIGN DESCRIPTION

- Flanged, Threaded or Socket Weld Ends
- Bolted Bonnet
- Forged Carbon Steel (A105) or Chromemoly (F11/F22) Body and Bonnet Material
- CR13/HF Trim Material standard; Other Trim Materials available
- Multi-purpose valve suitable for steam, liquid or gas

Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

150 LB FLANGED

SIZE	1/2	3/4	1	1-1/4	1-1/2	2
CF	2.25	2.50	2.75	3.00	3.25	4.00
D	3.50	3.88	4.25	4.63	5.00	6.00
wt	7	11	13	17	22	35

300 LB FLANGED

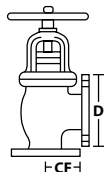
SIZE	1/2	3/4	1	1-1/4	1-1/2	2
CF	3.00	3.50	4.00	4.25	4.50	5.25
D	3.75	4.63	4.88	5.25	6.13	6.50
wt	9	13	18	28	38	50

600 LB FLANGED

SIZE	1/2	3/4	1	1-1/4	1-1/2	2
CF	3.38	3.88	4.38	4.88	4.88	5.88
D	3.75	4.63	4.88	5.25	6.13	6.50
wt	10	14	19	29	38	51

1500 LB FLANGED

SIZE	1/2	3/4	1	1-1/4	1-1/2	2
CF	4.31	4.50	5.00	6.00	6.00	7.31
D	4.75	5.13	5.88	6.25	7.00	8.50
wt	22	35	55	68	77	99



**FLANGED
150 LB
ITEM ID: 211411**

**FLANGED
300 LB
ITEM ID: 212411**

**FLANGED
600 LB
ITEM ID: 213411**

**FLANGED
1500 LB
ITEM ID: 216411**



**THREADED
800 LB
ITEM ID: 214421**

**THREADED
1500 LB
ITEM ID: 216421**

**SOCKET WELD
800 LB
ITEM ID: 214431**

**SOCKET WELD
1500 LB
ITEM ID: 216431**



Ductile Iron Butterfly Valves Resilient Seated

SIZES: 1-1/2" to 54"

There is a wide range of choices for valve type and configurations. Most common is wafer or lug style in ductile iron body with bronze, monel or stainless steel disc and buna or EPDM seat. Bronze, aluminum or steel body material available upon request. Operation is by lever or mechanical gear.

By specifying line medium and service application, recommendations can be made. In the case of mechanical actuation, line pressure should be identified.

Flanges to suit each valve are also stocked.



WAFER

**BRONZE DISC
ITEM ID: 313103**

**STAINLESS DISC
ITEM ID: 313107**

**MONEL DISC
ITEM ID: 313104**

**NL PLATED DISC
ITEM ID: 313101**



LUG

**BRONZE DISC
ITEM ID: 313203**

**STAINLESS DISC
ITEM ID: 313207**

**MONEL DISC
ITEM ID: 313204**

**NL PLATED DISC
ITEM ID: 313201**



Butterfly Valves High Performance

SIZES: 2" to 24"

High performance butterfly valves (also known as double offset butterfly valves) are used in applications where a long life in critical service is needed.

When operating, the offset disc produces a cam-like action, pulling and pushing the disc to and from the seat. This cam-like action reduces seat wear and operating torque and provides bi-directional, zero leakage shut off throughout the full pressure range.

Double offset valves are capable of higher temperatures and pressures than standard resilient seat butterfly valves and are easier to maintain and rebuild.

Designed with a wetted body in contact with the flow medium, a formed primary teflon profile seal and an adjustable packing stem seal, these high-performance butterfly valves offer bubble tight shut off and throttling capabilities. The soft seat in conjunction with a secondary metal seat which is stable at elevated temperatures offers a fire safe rating and complies with 46 CFR 56.20-15(1) requirements for positive shut off valves.

Available in wafer or lug style with bronze, stainless steel or steel body. Discs available in stainless steel, monel and other alloys. These valves are available in ASME Class: 150, 300 & 600 lb.

Operation is quarter turn enabled by lever, gear operator or powered actuation.



WAFER

STEEL

**STAINLESS DISC
ITEM ID: 337507**

STAINLESS STEEL

**STAINLESS DISC
ITEM ID: 331507**



LUG

STEEL

**STAINLESS DISC
ITEM ID: 337607**

STAINLESS STEEL

**STAINLESS DISC
ITEM ID: 331607**

Above valve configurations are typically supplied with teflon primary seal. Metal seated high performance butterfly valves are available upon request.



Bronze Swing Check Valves 125 lb

SIZES: 1/4" to 4"

PRESSURE / TEMPERATURE RATINGS
125 PSI WSP 400°F / 200 PSI WOG 150°F

DESIGN DESCRIPTION

- Threaded Ends standard; Solder Joint Ends available
- Threaded Cap
- Bronze Body Material, ASTM B62
- Bronze Trim Material
- Horizontal or Vertical installation
- Composition Disc available



T-PATTERN or Y-PATTERN
ITEM ID: 111501

Bronze Vertical Lift Check Valves 125 or 150 lb

SIZES: 1/4" to 2"

PRESSURE / TEMPERATURE RATINGS
125 PSI WSP 400°F / 200 PSI WOG 150°F
200 PSI WSP 550°F / 400 PSI WOG 150°F

DESIGN DESCRIPTION

- Threaded Ends
- Cast Bronze Body Material, ASTM B584

Vertical lift check valves are designed for inline vertical installations when swing check is not suitable for service conditions.



125 LB
ITEM ID: 111701



150 LB
ITEM ID: 112701

Bronze Air Compressor Check Valves

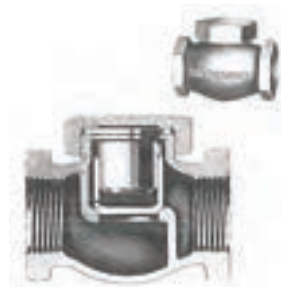
SIZES: 1/4" to 2"

PRESSURE RATINGS
300 LB Air Pressure

DESIGN DESCRIPTION

- Threaded Ends
- Bronze Body Material, ASTM B61
- Stainless Steel Trim Material

Compressor check valves are specially designed for severe operating conditions of air compressor service, but are equally successful in many other air and gas line applications where there is frequent and rapid reversal of flow.



ITEM ID: 114601



Bronze Swing Check Valves 150 lb

SIZES: 1/2" to 12"

PRESSURE / TEMPERATURE RATINGS
150 PSI WSP 550°F / 225 PSI WOG 150°F

DESIGN DESCRIPTION

- Flanged Ends
- Threaded Bonnet (1/2" to 2") or Bolted Bonnet (2-1/2" to 12")
- Bronze Body Material, ASTM B62
- Aluminum Bronze Trim or Monel Trim Material

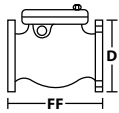
Face to face conforms to ASME B16.10.

DIMENSIONS (Inches): Threaded Bonnet

SIZE	1/2	3/4	1	1-1/4	1-1/2	2
FF	4.25	4.45	5.00	5.51	6.50	7.99
D	3.54	3.94	4.33	4.53	4.92	5.91
wt	3	4	5	7	9	15

DIMENSIONS (Inches): Bolted Bonnet

SIZE	2-1/2	3	4	5	6	8	10	12
FF	8.50	9.49	11.50	12.99	14.02	19.49	24.49	27.48
D	7.09	7.48	9.06	10.04	11.02	13.58	15.95	19.10
wt	31	39	67	102	130	280	400	600



ALUM. BRONZE TRIM
ITEM ID: 052503



MONEL TRIM
ITEM ID: 052504



Cast Iron Swing Check Valves 125 lb

SIZES: 2" to 20"

PRESSURE / TEMPERATURE RATINGS
125 PSI WSP 450°F / 200 PSI WOG 150°F

DESIGN DESCRIPTION

- Flanged Ends
- Bolted Bonnet
- Cast Iron Body Material, ASTM A126
- Bronze Trim Material
- Bolted Cap
- Lever and Weight available

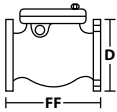
The valve disc is hinged to swing entirely clear of the waterway when fully open and to seat with gravity. Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.1.



ITEM ID: 021503

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10	12	14	16	18	20
FF	8.00	8.50	9.50	10.50	11.50	13.00	14.00	19.50	24.50	27.50	31.00	30.00	33.00	36.00
D	6.00	7.00	7.50	8.50	9.00	10.00	11.00	13.50	16.00	19.00	21.00	23.50	25.00	27.50
wt	22	37	44	57	71	104	139	258	423	649	900	1260	1580	1912





Ductile Iron Swing Check Valves 150 lb

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS
165 PSI WSP 450°F / 275 PSI WOG 150°F

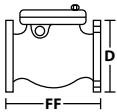
DESIGN DESCRIPTION

- Flanged Ends
- Ductile Iron Body Material, ASTM A395
- Bronze Trim Material
- Bolted Cap

Cast ductile iron, also called nodular iron or spheroidal iron, is less brittle than cast grey iron. It has malleability similar to steel and corrosion resistance like that of grey iron. Ductile iron check valve discs are hinged to swing entirely clear of the waterway when fully open. Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10	12
FF	8.00	8.50	9.50	9.50	11.50	13.00	14.00	19.50	24.50	27.50
D	6.00	7.00	7.50	8.50	9.00	10.00	11.00	13.50	16.00	19.00
wt	25	42	48	65	89	113	146	291	485	649



ITEM ID: 032503



Cast Steel Swing Check Valves 150 lb

SIZES: 2" to 16"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

DESIGN DESCRIPTION

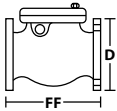
- Flanged Ends standard; Butt-weld Ends available
- Bolted Cap
- Cast Steel Body Material, ASTM A216 WCB
- CR13/HF Trim or Aluminum Bronze Trim standard; Monel or 316 Stainless Steel Trim Material available
- Available in C5 material for high temperature

Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	3-1/2	4	5	6	8	10
FF	8.00	8.50	9.50	9.50	11.50	13.00	14.00	19.50	24.50
D	6.00	7.00	7.50	8.50	9.00	10.00	11.00	13.50	16.00
wt	40	48	59	77	95	132	187	330	480

SIZE	12	14	16
FF	27.50	31.00	36.00
D	19.00	21.00	23.50
wt	690	860	990



CR13/HF TRIM
ITEM ID: 012501
FIG.: 15051C

ALUM. BRONZE TRIM
ITEM ID: 012502
FIG.: 15051B





Cast Steel Swing Check Valves 300 lb

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

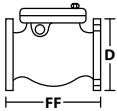
DESIGN DESCRIPTION

- Flanged Ends standard; Butt weld Ends or RTJ Ends available
- Bolted Cap
- Cast Steel Body Material, ASTM A216 WCB
- CR13/HF Trim Material
- Also available in WC6, WC9, C5 material for high temperature
- 600 lb also available upon request as a special order

Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

SIZE	2	2-1/2	3	4	5	6	8	10	12
FF	10.51	11.50	12.52	14.02	15.75	17.48	20.98	24.49	27.99
D	6.50	7.48	8.27	10.00	10.98	12.52	15.00	17.48	20.51
wt	40	48	59	95	140	187	330	480	690



ITEM ID: 014501

FIG.: 30051C

SPACE



Forged Steel Swing, Piston & Ball Check Valves 150, 300, 600, 1500 lb

SIZES: 1/2" to 2"

PRESSURE / TEMPERATURE RATINGS

Conforms to ASME B16.34

DESIGN DESCRIPTION

- Flanged, Threaded or Socket Weld Ends
- Bolted Cap
- Carbon Steel (A-105) or Chromemoly (F11/F22) Body, Bonnet Material
- CR13 Trim Material with HF Integral Seat standard; Other Trim Materials available
- Multi-purpose valve suitable for steam, liquid or gas

Face to face conforms to ASME B16.10. Flange drilling conforms to ASME B16.5.

DIMENSIONS (Inches)

150 LB FLANGED

SIZE	1/2	3/4	1	1-1/4	1-1/2	2
FF	4.25	4.63	5.00	5.50	6.50	8.00
D	3.50	3.88	4.25	4.63	5.00	6.00
wt	6	7	9	14	18	24

300 LB FLANGED

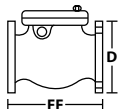
SIZE	1/2	3/4	1	1-1/4	1-1/2	2
FF	6.00	7.00	8.00	8.50	9.00	10.50
D	3.75	4.63	4.88	5.25	6.13	6.50
wt	7	10	15	21	26	40

600 LB FLANGED

SIZE	1/2	3/4	1	1-1/4	1-1/2	2
FF	6.50	7.50	8.50	9.50	9.50	11.50
D	3.75	4.63	4.88	5.25	6.13	6.50
wt	7	11	17	23	29	44

1500 LB FLANGED

SIZE	1/2	3/4	1	1-1/4	1-1/2	2
FF	8.50	9.00	10.00	11.00	12.00	14.50
D	4.75	5.13	5.88	6.25	7.00	8.50
wt	18	22	33	46	57	71



BALL

**THREADED
800 LB
ITEM ID: 214821**

**SOCKET WELD
800 LB
ITEM ID: 214831**

**PISTON
FLANGED
150 LB
ITEM ID: 211611**

**FLANGED
300 LB
ITEM ID: 212611**

**FLANGED
600 LB
ITEM ID: 213611**

**FLANGED
1500 LB
ITEM ID: 216611**

**THREADED
800 LB
ITEM ID: 214621**

**THREADED
1500 LB
ITEM ID: 216621**

**SOCKET WELD
800 LB
ITEM ID: 214631**

**SOCKET WELD
1500 LB
ITEM ID: 216631**



SWING

**FLANGED
150 LB
ITEM ID: 211511**

**FLANGED
300 LB
ITEM ID: 212511**

**FLANGED
600 LB
ITEM ID: 213511**

**SOCKET WELD
800 LB
ITEM ID: 214521**



Stainless Steel Check Valves 200 lb

SIZES: 1/4" to 3"

PRESSURE / TEMPERATURE RATINGS
200 PSI WSP

DESIGN DESCRIPTION

- Threaded Ends
- Stainless Steel Body Material
- Stainless Steel Trim Material
- Integral Seats
- Horizontal or Vertical installation



ITEM ID: 173507

Stainless Steel Check Valves 800 lb

SIZES: 1/4" to 2"

PRESSURE / TEMPERATURE RATINGS
800 PSI WSP

DESIGN DESCRIPTION

- Threaded or Socket Weld Ends
- Stainless Steel Body Material
- Stainless Steel Trim Material
- Bolted or Flanged Cap
- Integral Seats
- Horizontal or Vertical installation



THREADED
ITEM ID: 176507

SOCKET WELD
ITEM ID: 176537



Stainless Steel Swing Check Valves 150, 300, 600 lb

SIZES: 1/2" to 12"

PRESSURE / TEMPERATURE RATINGS
150 PSI WSP 550°F / 400 PSI WOG 150°F

DESIGN DESCRIPTION

- Bolted Cap
- Flanged Ends
- Stainless Steel Body Material

DIMENSIONS (Inches)

150 LB

SIZE	1/2	3/4	1	1-1/2	2	2-1/2	3	4	6	8
FF	4.25	4.63	5.00	6.50	8.00	8.50	9.50	11.50	14.00	19.50
D	3.50	3.88	4.25	4.63	5.00	6.00	7.00	7.50	9.00	11.00
wt	6	7	9	17	28	32	40	65	125	230

SIZE	10	12
FF	24.50	27.50
D	13.50	16.00
wt	460	560

300 LB

SIZE	1/2	3/4	1	1-1/2	2	2-1/2	3	4
FF	6.00	7.00	8.50	9.50	10.50	11.50	12.50	14.00
D	3.75	4.63	4.88	5.25	6.13	6.50	7.50	8.25
wt	7	12	16	28	40	60	68	90

600 LB

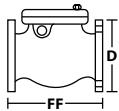
SIZE	1/2	3/4	1	1-1/2	2	2-1/2	3
FF	6.50	7.50	8.50	9.50	11.50	13.00	14.00
D	3.75	4.63	4.88	5.25	6.13	6.50	7.50
wt	11	16	19	40	52	70	83



150 LB
ITEM ID: 072507

300 LB
ITEM ID: 074507

600 LB
ITEM ID: 076507





Wafer Check Valves

SIZES: 2" to 36"

DESIGN DESCRIPTION

Wafer checks are designed to fit within the bolting circle of joining flanges and are rated to match the flange rating: 125/150, 250/300 and 600 lb. Wafer checks are typically of three types: duo-check, swing check and silent check, and have resilient or metal-to-metal seating. Metric sizes available.

Duo-checks are designed with two half circle discs or plates that hinge on a center hinge pin. The spring loaded plates are opened by the flow of the medium and close automatically. Duo-checks are suitable for installation in any horizontal or vertical position.

Wafer swing checks operate similarly to standard swing checks with the single disc hinged at the top closing by gravity. Wafer swing checks can be supplied with internal or external springs or outside lever to facilitate closing.



DUO-CHECK

**IRON
ITEM ID: 302202**

**STEEL
ITEM ID: 302101**

**BRONZE
ITEM ID: 302502**

**STAINLESS
ITEM ID: 302707**



Ball Valves

SIZES: 1/4" to 12"

Ball valves are available in straightway design for quarter-turn on/off applications or multiport for diverter functions. Ball valves can be supplied in a wide variety of materials, style, end connections, and pressures. Standard port (bore) is reduced, full port design is available in most styles. Firesafe ball valves are also available. Typical ball valves are constructed with teflon seats and as such have limited temperature service range. Metal seated ball valves are available for severe or high temperature service. Other end connections are available upon request.

Bronze ball valves are typically rated 400/600 WOG. Steel and stainless are typically 800/2000 WOG. Special high pressure ball valves can be supplied in steel or stainless rated up to 6000 PSI.



FLANGED BALL VALVE

150 LB BRONZE
ITEM ID: 385202

150 LB STEEL
ITEM ID: 386201

300 LB STEEL
ITEM ID: 388201

150 LB STAINLESS
ITEM ID: 387207

300 LB STAINLESS
ITEM ID: 389207



1-PIECE or 2-PIECE ECONOMY STYLE

Threaded or Solder Ends
Not Suitable for Socket Weld or
Silbraz

BRONZE THREADED
ITEM ID: 375202

BRONZE SOLDER
ITEM ID: 374202

STEEL THREADED
ITEM ID: 376201

STAINLESS THREADED
ITEM ID: 377207



3-PIECE THREADED

Socket Weld or Silbraz

BRONZE THREADED
ITEM ID: 375302

BRONZE SILBRAZE
ITEM ID: 375332

STEEL THREADED
ITEM ID: 376301

STEEL SOCKET WELD
ITEM ID: 376331

STAINLESS THREADED
ITEM ID: 377307

STAINLESS SOCKET WELD
ITEM ID: 377337



3-WAY MULTIPORT DIVERTER

BRONZE THREADED
ITEM ID: 375902

STAINLESS THREADED
ITEM ID: 377907

BRONZE FLANGED
ITEM ID: 385303

STEEL FLANGED
ITEM ID: 386301

STAINLESS FLANGED
ITEM ID: 387307

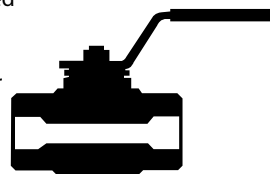
OPTIONS

LEVER OPERATOR OPTIONS:

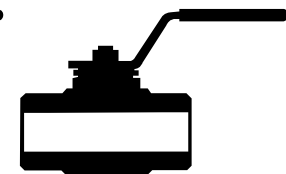
Stainless Lever
Round Handle for space limited
applications
Locking Lever
Deadman Spring Return Lever

GEAR OPERATOR:

Motor Operator - Electric,
Pneumatic, Hydraulic



STANDARD PORT



FULL PORT

Pressure Vacuum Relief Valves from Pres-Vac

Type **HS-ISO** high velocity pressure vacuum relief vent provides active protection from fire and explosions and automatically controls the tank pressure/vacuum during loading, discharge, voyage, and ballasting without any manual operation. It provides safe operation regardless of flow volume and can be used in common and individual systems and in inert gas systems. The valve conforms to requirements for non-hammering and non-oscillation. The type **HS-ISO** is made and tested in accordance with IMO MSC/Circ. 677/Rev. 1; EN 12874; and ISO 15364.

- Flow capacity to 10,000 m³/h (higher rates available)
- Adjustable blow-down value
- Full stroke/self closing check lifts with visual indication
- No external or internal drains, completely self-draining to tank

Type **DA 2264** and **1500-P** are combined pressure/vacuum valves, designed to relieve pressure and vacuum during loading, discharge, voyage and ballasting in venting systems. During voyage, the valves operate automatically and relieve pressure or vacuum caused by thermal variations and sloshing.

- Hand wheel for forced open position of pressure unit
- Simple rigid design and construction
- Easy maintenance

PV-ECO is an all stainless steel assembly designed to perform flawlessly on long vent pipes onboard chemical carriers. It has an integral damper system which reduces tear and wear of the seat and disk significantly.

- Flow capacity range from 650 Nm³/h to 2500Nm³/h
- Settings from 5kpa to 70kpa
- Certified for apparatus group IIB = MESG 0,65mm
- For inland tanker installation PV-ECO is approved for gas group IIB = MESG 0,5mm

PV-VOC is available in carbon steel as standard but can also be made in high grade stainless steel if required. The valve is designed to work flawlessly on oil carriers focusing on saving VOC (Volatile Organic Compound) which is required by IMO/MSC/Circ. 680. It has a dual performance system built in, in shape of a breather system enabling the valve to only open sufficiently to release the VOC and at the same time keep pressure on the cargo avoiding the boil off. The valve has a breathing system in compliance with API2000 requirements. This valve can also be delivered with seat and disk in higher grade stainless steel for long endurance and with resilient seals for near zero leakage and reduced disc/seat wear.

- Flow capacity range from 3200 Nm³/h to 12000Nm³/h
- Settings from 5kpa to 70kpa
- Certified for apparatus group IIB = MESG 0,65mm

Type **DH** is an in-line automatic weightloaded pressure/vacuum valve operating through the vapor header. The valve is available with magnet assisted pressure disc (type DHM) to reduce pressure drop, allowing for smaller size of equipment and vent pipe diameter.

Also Available:

Detonation Arrester: **JS 2370**

Flame Arrester, end-of-line: **EPV**

Vertical Efflux Flame Screen: **VFA 2273-1**

VOCON & MARVOC System



Relief Valves

DESIGN DESCRIPTION

Relief valves are self-contained, spring operated control valves designed to control pressure in a system. Used most often in fluid or compressed air applications, these valves open in proportion to the increase in system pressure. The valve does not open all the way when the system is slightly over pressure. Instead, they open gradually, allowing the system to return to the preset pressure level. When that level is reached, the valve shuts again allowing for normal system operation.

MATERIALS

Bronze
Iron
Cast steel
Stainless steel

ORDERING INFORMATION

Material and size
End connections (inlet and outlet)
Service (liquid, oil, other)
Set pressure (to relieve it)
Capacity at set pressure
With or without lift lever



BRONZE RELIEF VALVES
LIQUID SERVICE

Stainless steel available



CAST STEEL & IRON
RELIEF VALVES
LIQUID SERVICE

Temperature Regulators

Temperature regulators are used to control heating or cooling applications.

Direct acting type are typically used to modulate hot water or steam heating systems. The valve is normally open and closes in response to increase of temperature which is sensed by the bulb.

Reverse acting regulators are used in cooling systems. The valve is normally closed and opens as the temperature sensed by the thermometer bulb increases. The opening valve provides cooling water to the downstream line, tank or heat exchanger.

Temperature regulators are available in two way and three way configurations. Three way are used for mixing or diverting of hot and cold water. End connections are flanged or union type with threaded or silbrazed tailpiece ends.

For ordering, please specify desired temperature range, capillary length, and bulb length.



DIRECT ACTING
or
REVERSE ACTING
Threaded, Union or
Flanged Ends

Pressure Reducers & Regulators

Pressure reducing and regulating valves are available in bronze, iron, steel or stainless for reducing downstream pressure of liquid, air, steam or oil. Specialty items, available upon request.

For ordering, please specify service, inlet pressure and outlet pressure or pressure range, temperature and capacity, if known.



BRONZE REDUCER

Liquid or Air
300 PSI Max. Inlet
150 PSI Max. Outlet
Threaded Ends
Sizes: 1/2" to 2"



BRONZE REDUCER

Liquid with Integral Strainer
300 PSI Max. Inlet
150 PSI Max. Outlet
Threaded Ends
Sizes: 1/2" to 2"



HIGH PERFORMANCE

Air or Steam
Bronze Body, Stainless Trim
Air: 600 PSI Max. Inlet
Air: 565 PSI Max. Outlet
Steam: 300 PSI Max. Inlet
Steam: 275 PSI Max. Outlet
Threaded or Flanged Ends
Sizes: 1/2" to 3"



BRONZE REDUCER

Liquid
300 PSI Max. Inlet
125 PSI Max. Outlet
Union Threaded or Silbrazed Ends
Sizes: 3/4" to 2"



BRONZE REDUCER

Liquid
300 PSI Max. Inlet
125 PSI Max. Outlet
Flanged Ends
Sizes: 1" to 6"



STEEL REDUCER

Steam
Bronze Body, Stainless Trim
1000 PSI Max. Inlet
400 PSI Max. Outlet
Flanged or Threaded Ends
Sizes: 1/2" to 3"

Control Valves

Control valves are used to control steam, water or gas in marine and industrial applications. Available in steel, iron, bronze or stainless with flanged, threaded or welded ends. Control valves are diaphragm operated with air supplied to controlling diaphragm from external source. Standard design is straight globe type with balanced double seat. Also available in angle or 3-way pattern.

Direct acting are normally open, providing constant downstream pressure even during large pressure fluctuations.

Reverse acting are normally closed and open in response to air supply to diaphragm, reducing upstream pressure.





Spectacle Type Line Blind Valves

SIZE: 2" to 24"

DESIGN DESCRIPTION

- Flanged or Butt-weld Ends
- Cast Steel or Stainless Steel Body Material
- Steel or Stainless Steel Trim Material

The spectacle blind provides positive, permanent shutoff. When the blind end of the spectacle plate is clamped in position, media cannot leak to the downstream side. These valves are especially useful in critical separation of incompatible tank cargos.

The uninstalled end of the spectacle plate is visible outside the valve body, providing a positive visual indication of its open/closed condition.

To operate simply spread the line with a bar or pipe (pictured) by working the cam bolts, then rotating the spectacle plate on its pivot and re-tighten. No other tools are required.

Replacement spectacles and spectacle o-ring gaskets available - specify type of rubber or teflon.

Steel valves are supplied standard with steel spectacles though stainless spectacles plates are available on request.



DIMENSIONS (Inches)

SIZE	2	2-1/2	3	4	5	6	8	10	12
FF - RF	7.00	7.50	8.00	9.00	10.00	10.50	11.50	13.00	14.00
FF - BW	5.00	5.50	5.50	6.00	7.00	7.00	8.00	8.00	9.00
wt _{RF}	21	27	30	43	60	75	100	185	240

SIZE	14	16	18	20	24
FF - RF	15.00	16.00	17.00	18.00	20.00
FF - BW	10.00	10.00	17.00	18.00	18.25
wt _{RF}	330	420	820	900	1600



Deck Drains, Access Boxes & Covers

SIZE: 1/2" to 4"

ECONOMY DECK DRAINS

Economy deck drains are standard with steel body for direct welding to steel deck. Strainer plates are furnished in bronze. Buttweld, socket weld, or threaded ends are available. Spare bronze strainer plates are available. Specify diameter.

HEAVY WALL DECK DRAINS

This series of deck drains has a heavy wall for direct welding to steel deck. Bodies are furnished in steel or galvanized with bronze strainer plates. Available with or without trap and baffle in straight or angle configurations.

DECK ACCESS BOXES

For direct welding to steel deck.

522101: Heavy wall stainless body and bronze countersunk plug, available in 1-1/2" or 2" with socket weld or buttweld connections.

522201: Steel body with bronze plug, available in 1-1/2" to 2-1/2" with socket weld or buttweld end connections.

522301: Steel body access box for reach rod operation.

522401: Rapid action deck cover in bronze fits standard 12-1/2" deck opening, deck thickness up to 3". Flat, safe top.



THREADED
ITEM ID: 511201

SOCKET WELD
ITEM ID: 511301

BUTTWELD
ITEM ID: 511401



WITH TRAP & BAFFLE
ITEM ID: 511502



WITH TRAP & BAFFLE
ANGLE TYPE
ITEM ID: 511602



WITHOUT TRAP & BAFFLE
ITEM ID: 511501



WITHOUT TRAP & BAFFLE
ANGLE TYPE
ITEM ID: 511601



STAINLESS BODY, SQUARE
HOLE
BRONZE PLUG DIAM. 2-5/16"
ITEM ID: 526101



STEEL BODY, SLOTTED HOLE
BRONZE PLUG DIAM. 4"
ITEM ID: 526201



DECK PLUG BRONZE
COUNTERSUNK, SQUARE or
SLOTTED
Specify plug and thread diam.



T-WRENCH
STEEL
Specify Square or
Rectangle dimensions

Inverted Vent Check Valves

SIZE: 1" to 12"

DESIGN DESCRIPTION

- Cast Iron, Cast Steel or Bronze Body
- Monel, Stainless Steel or Poly Float Ball
- Threaded, Flanged, Butt-weld or Silbraze Ends

Inverted vent check valves protect tanks and bulkheads from vacuum and pressure build-up during loading and unloading of liquid or dry cargo, and assure maximum efficiency during pumping operations. The ball float prevents contamination of tank cargos by saltwater during heavy seas.

The stainless steel flame screen isolates flammable fluids and dry cargo dust from deck fires. A protective mesh covers this flame screen and protects it from damage.

Replacement balls are available in monel, stainless steel or poly. Specify valve size or ball diameter.



WITHOUT COVER

**THREADED
ITEM ID: 521104**

**SILBRAZE
ITEM ID: 521105**

**FLANGED
ITEM ID: 521106**



WITH COVER

**THREADED
ITEM ID: 521101**

**BUTT WELD
ITEM ID: 521102**

**FLANGED
ITEM ID: 521103**

Tank Air Escape Valves Vent Terminals

SIZES: 1" to 12"

DESIGN DESCRIPTION

- Cast Iron, Cast Steel or Bronze Body
- Threaded, Flanged, Butt-weld or Silbraze Ends

Tank air escape valves permit the free passage of air into tanks, dry cargo holds, or storage spaces, and prevent vacuum or pressure build-up during pumping operations. These valves have no automatic means of closing and should not be used in locations accessible to sea water. The stainless steel flame screen isolates flammable fluids and dry cargo dust from deck fires. It also prevents the entrance of insects into cargo areas. Although similar in design to inverted vent checks, vent terminals are not equipped with a ball float.



WITHOUT COVER

**THREADED
ITEM ID: 521204**

**SILBRAZE
ITEM ID: 521205**

**FLANGED
ITEM ID: 521206**



WITH COVER

**THREADED
ITEM ID: 521201**

**BUTT WELD
ITEM ID: 521202**

**FLANGED
ITEM ID: 521203**

Strainers

SIZES: 1/4" to 24"

DESIGN DESCRIPTION

- Flanged, Threaded or Socket Weld Ends
- Bronze, Steel, Stainless Steel, Iron Body Material standard; Copper Nickel available

For ordering, please specify perforation or mesh size of basket.

Y-Strainers are generally used when the need for cleaning is infrequent. Y-Strainers must be installed with the basket down. The screen or basket is removed from the bottom. Suitable for use in vertical lines.

Basket or simplex strainers are used where frequent cleaning is necessary. A basket strainer is installed upright and the basket is lifted out through the top. The basket has a closed bottom and will trap all material being strained. Available with bolted or yoke type cover, please specify.

Duplex strainers are used where uninterrupted service is necessary and the system cannot be shut down to clean the strainer. This type of strainer can operate continuously and never has to be shut down for cleaning. The strainer has two baskets. The flow passes through one basket while the other basket is closed. When one basket becomes clogged and requires cleaning, the flow is transferred to the other basket by turning a lever or handwheel. During this switching operation, the flow continues at an uninterrupted rate because one side is opening as the other side closes. Available with bolted or yoke type cover, please specify.



FLANGED Y-STRAINER

**150 LB BRONZE
ITEM ID: 690501**

**150 LB STEEL
ITEM ID: 690601**

**125 LB IRON
ITEM ID: 690600**

**300 LB STEEL
ITEM ID: 690603**

**600 LB STEEL
ITEM ID: 690606**

**150 LB STAINLESS STEEL
ITEM ID: 690701**



THREADED Y-STRAINER

**BRONZE SILBRAZE
ITEM ID: 690101**

**BRONZE THREADED
ITEM ID: 690102**

**IRON THREADED
ITEM ID: 690201**

**STEEL THREADED
ITEM ID: 690301**

**600 LB STEEL
SOCKET WELD
ITEM ID: 690302**

**1500 LB STEEL
SOCKET WELD
ITEM ID: 690303**

**2500 LB STEEL
SOCKET WELD
ITEM ID: 690304**

**STAINLESS STEEL
THREADED
ITEM ID: 690307**

**STAINLESS STEEL
SOCKET WELD
ITEM ID: 690337**



**SIMPLEX STRAINER
THREADED**

**150 LB BRONZE
ITEM ID: 691501**

**150 LB STEEL
ITEM ID: 691601**

**125 LB IRON
ITEM ID: 691801**



**DUPLEX STRAINER
FLANGED**

**150 LB BRONZE
ITEM ID: 692501**

**150 LB STEEL
ITEM ID: 692601**

**125 LB IRON
ITEM ID: 692600**

Quick Open Valves



**QUICK OPEN, MANUAL CLOSE
BRONZE THREADED GATE
DRAIN or VENT SERVICE
SIZES: 1/2" to 4"
ITEM ID: 112151**



**QUICK OPEN, SELF CLOSE
BRONZE THREADED GATE
SPRING RETURN LEVER
SIZES: 1/2" to 4"
ITEM ID: 112151M**



**QUICK OPEN, SELF CLOSE
BRONZE THREADED GLOBE
AIR or WHISTLE SERVICE
SIZES: 1/2" to 2"
ITEM ID: 112351**



**QUICK OPEN, SELF CLOSE
BRONZE THREADED SOUNDING COCK
NPT or BSP TANK SERVICE
SIZES: 1-1/2" and 2"
ITEM ID: 990703**

Scupper Valves

SIZES: 2" to 8"

DESIGN DESCRIPTION

Scupper valves, also called discharge check or storm valves, are used on overboard discharge lines. The 150 lb commercial ASME valves with flange drilling are all bronze construction. The valves are available with or without gag control, when ordering please specify. Navy drilled upon request.



180° FLANGED

**WITH CONTROL
ITEM ID: 515071**

**WITHOUT CONTROL
ITEM ID: 515070**



90° FLANGED

**WITH CONTROL
ITEM ID: 515081**

**WITHOUT CONTROL
ITEM ID: 515080**



Bronze Mesurflo® Models 2313-2323-2333

SIZES: 1/2" to 1-1/2"

DESIGN DESCRIPTION

Automatic flow control / balancing valve for a variety of shipboard hydronic cooling systems. Operating range of 2-80psid. Inline valve body including flow limiting internals.

MATERIAL SPECIFICATION

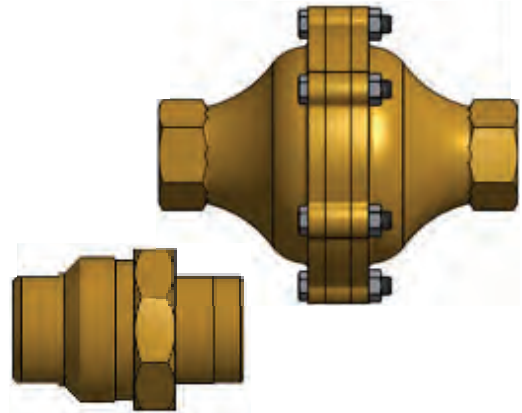
UNS 83600 Bronze, NPT connections only

Model 2313: 1/2" & 3/4" (FNPT by FNPT); .50-9gpm

Model 2323: 3/4" & 1" (FNPT by FNPT) / 1-1/4" & 1-1/2" (FNPT by MNPT); 9-25gpm

Model 2333: 1-1/2" (FNPT by FNPT); 26-50gpm

For ordering, please specify size, connection, and required GPM.



Stainless Steel Mesurflo® Series 2500

SIZES: 1/2" to 18"

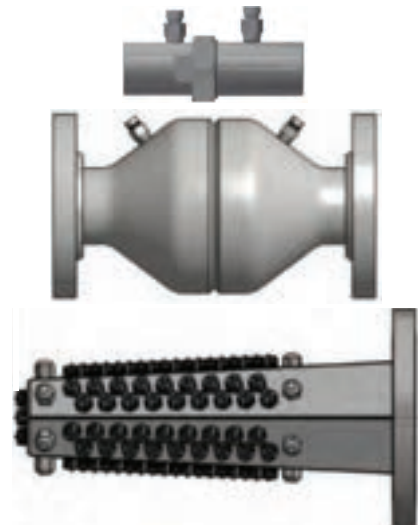
DESIGN DESCRIPTION

Automatic flow control / balancing valve for a variety of shipboard hydronic cooling systems. Operating range of 2-80psid. Inline valve body including flow limiting internals.

MATERIAL SPECIFICATION

316 Stainless Steel, connections types available are NPT (1/2" to 2"), FSWT (1-1/2" & 2"), Flanged (2" to 18")

For ordering, please specify size, connection, and required GPM.





Section 2: Mil-Spec Products

Gate Valves
Globe Valves
Angle Valves
Check Valves
Butterfly Valves
Ball Valves
Pressure Relief Valves
Strainers Premier Union End Y-Type
Simplex & Duplex Strainers
Pressure Reducing Valves
Magazine Sprinkler Valves
Deck Drains
Deck Access Boxes & Sounding Tubes
Thermo Fittings
Mesurflo®
Scupper Valves
Bronze Silbrazed Fittings, Unions & Flanges
High Pressure Bronze Silbrazed Fittings & Unions
Copper Nickel Socket Weld Fittings
Copper Nickel Buttweld Fittings
Bosses & Outlets
Copper Funnels & Bellmouths
Copper Nickel, Bronze, Steel & Alloy Flanges
Steel & Alloy Pipe
Deck Sleeves
Backing Rings
Pipe Hangers & Clamps



Navy Bronze Gate Valves 100 WOG

MIL-V-1189, TYPE I, CLASS 1 (OS&Y)

SIZES: 1" to 12"

PRESSURE / TEMPERATURE RATINGS

100 PSI WOG 425°F

DESIGN DESCRIPTION

- Flanged Ends, MIL-F-20042
- Bolted Bonnet
- Outside Screw & Yoke (OS&Y)
- Bronze Body and Bonnet Material, ASTM B61
- Monel Trim Material



ITEM ID: 411101

Navy Bronze Gate Valves 250 WOG

MIL-V-1189, TYPE I, CLASS 2

DWG 2177917

SIZES: 2-1/2" to 12"

PRESSURE / TEMPERATURE RATINGS

250 PSI WSP 150°F / 150 PSI WOG 425°F

DESIGN DESCRIPTION

- Flanged Ends, MIL-F-20042
- Bolted Bonnet
- Outside Screw & Yoke (OS&Y)
- Bronze Body and Bonnet Material, ASTM B61
- Monel Trim Material



ITEM ID: 412101



Navy Bronze Gate Valves 400 WOG

DWG 803-1385714

SIZE: 1/4" to 2"

PRESSURE / TEMPERATURE RATINGS
200 PSI WSP 425°F / 400 PSI WOG 150°F

DESIGN DESCRIPTION

- Union Ends: 1/2" to 2" size with monel seat rings
- Threaded Bonnet: Silbrazed tailpieces to MIL-F-1183
- Non-Rising Stem: 1/4" and 3/8" sizes with integral bronze seats
- Bronze Body Material, ASTM B61
- Monel Stem & Disc Material
- The "O" Rings (one each at the body, tailpiece joint and retainer rings) can be furnished in the following materials:
 1. BUNA-N - for oil service. Standard.
 2. "EPR" - for water, gas, or steam service. Available upon request.

OPTIONAL FEATURES

These valves are normally furnished with bronze silbrazed tailpieces. Tailpieces can also be furnished with socket weld ends in 90/10 or 70/30 copper nickel, monel, or stainless steel.

Available with lockshield and key; stem position indicator.



ITEM ID: 414101



WITH INDICATOR
ITEM ID: 414161



WITH LOCKSHIELD
ITEM ID: 414171



Navy Bronze Globe Valves 100 WOG

DWG 803-1385541

SIZES: 1/2" to 8"

PRESSURE / TEMPERATURE RATINGS

100 PSI WOG 425°F

DESIGN DESCRIPTION

- Flanged Ends, MIL-F-20042, 150 lb
- Union Bonnet (1/2" to 1-1/2"), Bolted Bonnet (2" and larger)
- Bronze Body and Bonnet Material, ASTM B61
- Monel Trim Material
- Bronze Integral Seat standard
- Monel Seat Rings (4" and larger)
- Stop-Check available



ITEM ID: 411301

STOP-CHECK
ITEM ID: 411311



Navy Bronze Globe Valves Union End

DWG 803-4384536

SIZE: 1/4" to 2"

PRESSURE / TEMPERATURE RATINGS

400 PSI WOG 150°F

DESIGN DESCRIPTION

- Class A: Hard Seat
- Union Ends: Monel Trim
- Union Bonnet: Globe and Stop-Check versions

Bronze body, bonnet and bonnet ring with a monel stem, seat ring and disc. There are "O" rings in the body-to-bonnet joint and the union ends. The standard valve has silbrazed tailpieces to MIL-F-1183. Available in needle globe design.

- Class B: Soft Seat
- Union Ends: Monel Trim
- Union Bonnet: Globe and Stop-Check versions

Bronze body, bonnet and bonnet ring with a monel stem and seat ring and monel disc with Kel F insert. There are "O" rings in the body-to-bonnet joint and the union ends. Standard valve has silbrazed tailpieces to MIL-F-1183.

The "O" Rings (one each at the body, tailpiece joint and retainer rings) can be furnished in the following materials:

1. BUNA-N - for oil service. Standard.
2. "EPR" - for water, gas, or steam service. Available upon request.

OPTIONAL FEATURES

These valves are normally furnished with bronze silbrazed tailpieces. Tailpieces can also be furnished with socket weld ends in 90/10 or 70/30 copper nickel, monel, or stainless steel.

Available with lockshield and key; stem position indicator.

Class A	414301
Class B	414303
Stop-Check Class A	414302
Stop-Check Class B	414304
Needle Class A	414305
Class A w/ Lockshield	414371
Class B w/ Lockshield	414373



CLASS A
ITEM ID: 414301



Navy Forged Alloy Steel Globe Valves 900 lb

DWG 2177525

SIZES: 1/2" to 2"

DESIGN DESCRIPTION

- Socket Weld Ends
- Bolted Bonnet
- Outside Screw & Yoke (OS&Y)
- Forged Steel Body Material
- Stop-Check available



STEEL, A105
ITEM ID: 235331

STAINLESS STEEL
ITEM ID: 235337

STOP-CHECK
STEEL, A105
ITEM ID: 235333

STOP-CHECK
STAINLESS STEEL
ITEM ID: 235338



Navy Bronze Hose Globe Valve 250 WOG

DWG 1385711 UNION BONNET
DWG 1385712 OS&Y

SIZES: 1-1/2", 2-1/2"

PRESSURE / TEMPERATURE RATINGS
250 PSI WOG

DESIGN DESCRIPTION

- Union Bonnet (1-1/2"), Hose Thread NPSH (1 1-1/2")
- Outside Screw & Yoke (OS&Y) (2-1/2"), Hose Thread NH (7-1/2")
- Bronze Body and Bonnet Material
- Monel Trim Material
- EPR Disc Material
- Specialty hose fittings, adapters and flanges available



ITEM ID: 412371



Navy Bronze Y-Globe Valves 250 WOG

DWG 803-1385623

SIZES: 2-1/2" to 8"

PRESSURE / TEMPERATURE RATINGS

250 PSI WSP 160°F

DESIGN DESCRIPTION

- Flanged Ends, MIL-F-20042
- Bolted Bonnet
- Bronze Body and Bonnet Material
- Monel Trim Material with Nylon KEL-F or Monel Disc

TRIM CHOICES

- Type 1: Nylon Disc without Retainer
- Type 2: NI-CU Disc with Throttle Retainer
- Type 3: KEL-F Disc without Retainer
- Type 4: KEL-F Disc with Retainer
- Type 5: KEL-F Disc with Throttle Retainer
- Type 6: NI-CU Disc without Throttle Retainer



TYPE 4
ITEM ID: 412801



Navy Globe, Angle & Stop-Check Valves Union End, 6000 lb

MIL-V-24109

SIZE: 1/8" to 2"

PRESSURE RATING

6000 PSI

DESIGN DESCRIPTION

- For high pressure liquid, air and steam applications
- Shutoff, needle or stop-check hand valve type
- Replaceable seat and cartridge
- O-SEAL™ or Direct Weld/Braze End Connections
- Aluminum Bronze Body and Bonnet Material
- Monel with KEL-F Trim Material
- Specify nut and tail material: bronze, stainless, copper nickel or monel
- Specify tail style: silbraze, socket weld, threaded or buttweld



STRAIGHT GLOBE
ITEM ID: 416301

OFFSET GLOBE
ITEM ID: 416302

ANGLE
ITEM ID: 416401

NEEDLE
ITEM ID: 416304

LIFT CHECK
ITEM ID: 416601



Navy Instrument Valves Union End, 6000 lb

MIL-V-24578C(SH)

PRESSURE RATING

6000 PSI

DESIGN DESCRIPTION

- High pressure instrument valve that allows for in-place calibration and verification without removing
- For water, oil and gas (WOG) applications
- 1/4" flared tube calibration connection
- Standard panel mount with full panel nut engagement
- Stainless Steel or Monel Body Material
- Stainless Steel Bonnet Material



STAINLESS STEEL
ITEM ID: 533101.004.CPV

MONEL
ITEM ID: 533201.004.CPV





Navy Bronze Angle Valves 100 WOG

DWG 803-1385541

SIZES: 1/2" to 8"

PRESSURE / TEMPERATURE RATINGS

100 PSI WOG 425°F

DESIGN DESCRIPTION

- Flanged Ends, MIL-F-20042, 150 LB
- Union Bonnet (1/2" to 1-1/2"), Bolted Bonnet (2" and larger)
- Bronze Body and Bonnet Material
- Monel Trim Material
- Bronze Integral Seat
- Monel Seat Rings (4" and larger)



ITEM ID: 411401

STOP-CHECK
ITEM ID: 411411



Navy Bronze Angle Valves Union End

DWG 803-4384536

SIZE: 1/4" to 2"

PRESSURE / TEMPERATURE RATINGS

400 PSI WOG 150°F

DESIGN DESCRIPTION

- Class A: Hard Seat
- Union Ends: Monel Trim
- Union Bonnet: Globe and Stop-Check versions

Bronze body, bonnet and bonnet ring with a monel stem, seat ring and disc. There are "O" rings in the body-to-bonnet joint and the union ends. The standard valve has silbraze tailpieces to MIL-F-1183. Available in needle globe design.

- Class B: Soft Seat
- Union Ends: Monel Trim
- Union Bonnet: Globe and Stop-Check versions

Bronze body, bonnet and bonnet ring with a monel stem and seat ring and monel disc with Kel F insert. There are "O" rings in the body-to-bonnet joint and the union ends. Standard valve has silbraze tailpieces to MIL-F-1183.

The "O" Rings (one each at the body, tailpiece joint and retainer rings) can be furnished in the following materials:

1. BUNA-N - for oil service. Standard.
2. "EPR" - for water, gas, or steam service. Available upon request.

OPTIONAL FEATURES

These valves are normally furnished with bronze silbraze tailpieces. Tailpieces can also be furnished with socket weld ends in 90/10 or 70/30 copper nickel, monel, or stainless steel.

Available with lockshield and key; stem position indicator.

Class A	414401
Class B	414403
Stop-Check Class A	414402
Stop-Check Class B	414404
Class A w/ Lockshield	414471
Class B w/ Lockshield	414473



CLASS A
ITEM ID: 414401



Navy Bronze Hose Angle Valves 250 WOG

DWG 1385711 UNION BONNET
DWG 1385712 OS&Y

SIZES: 1-1/2", 2-1/2"

PRESSURE / TEMPERATURE RATINGS
250 PSI WOG

DESIGN DESCRIPTION

- Union Bonnet (1-1/2"), Hose Thread NPSH (1 1-1/2")
- Outside Screw & Yoke (OS&Y) (2-1/2"), Hose Thread NH (7-1/2")
- Bronze Body and Bonnet Material
- Monel Trim Material
- EPR Disc Material
- Specialty hose fittings, adapters and flanges available



ITEM ID: 412471



Bray/McCannalok Navy Butterfly Valves

MIL-V-24624

SIZES: 2" to 14"

TEMPERATURE RANGE

-20°F to 500°F

DESIGN DESCRIPTION

The Bray/McCannalok Navy valve is highly versatile and precision engineered to comply with MIL-V-24624. Engineered for bi-directional zero leakage, this high-performance butterfly valve is certified to the highest military standards.

Double offset design produces a cam-like action that reduces seat wear and eliminates seat deformation when the disc is in the open position. The high strength stem utilizes Double "D" or keyed connections to eliminate hysteresis. Integral acutation mounting eliminates the need for additional mounting kits and minimizes the effects of shock and vibration. The seat retainer is totally encapsulated inside the body which eliminates any external leak paths for line media. A machined dimple on the stem easily identifies valve disc position by rotating toward the cast "O" (open) and "C" (closed) letters on the body.

- Available in Wafer (Style A) or Lug (Style B) styles
- Gear Operator is standard
- Aluminum Bronze (Type III) or Stainless Steel (Type I) Body Material
- Teflon Seats with metal backup



**WAFER
BRONZE
ITEM ID: 325504**

**STAINLESS STEEL
ITEM ID: 327507**

**LUG
BRONZE
ITEM ID: 325604**

**STAINLESS STEEL
ITEM ID: 327607**



Navy Butterfly Valves

MIL-V-22133

SIZES: 1-1/2" to 12"

DESIGN DESCRIPTION

- Available in Wafer or Lug styles
- Lever or Gear Operator
- Nickel Aluminum Bronze Body Material
- Monel Disc and Stem Material
- Rubber Seats (Buna-N)



**WAFER
ITEM ID: 325104**



**LUG
ITEM ID: 325204**



Navy Bronze Swing Check Valves 100 WOG

MIL-V-17547 TYPE A CLASS 1

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS
100 PSI WOG

DESIGN DESCRIPTION

- Bolted Bonnet
- Bronze Body Material
- Monel Trim Material



ITEM ID: 411501

Navy Bronze Swing Check Valves 250 WOG

MIL-V-17547 TYPE A CLASS 2
DWG 803-1385637

SIZES: 2" to 12"

PRESSURE / TEMPERATURE RATINGS
250 PSI WOG

DESIGN DESCRIPTION

- Bolted Bonnet
- Bronze Body Material
- Monel Trim Material



ITEM ID: 412501



Navy Bronze Swing Check Valves 400 WOG

DWG 803-1385721

SIZES: 1/4" to 2"

PRESSURE / TEMPERATURE RATINGS
200 PSI WSP 425°F / 400 PSI WOG 150°F

DESIGN DESCRIPTION

- Union Ends
- Monel Disc
- Regrinding Seat

Bronze union end swing check valve has a monel disc, side plugs, hinge pin and disc nut. The standard valve has silbrazed tailpieces grooved for, but furnished without silbrazed rings.

The "O" Rings (one each at the body, tailpiece joint and retainer rings) can be furnished in the following materials:

1. BUNA-N - for oil service. Standard.
2. "EPR" - for water, gas, or steam service. Available upon request.

OPTIONAL FEATURES

These valves are normally furnished with bronze silbrazed tailpieces. Tailpieces can also be furnished with socket weld ends in 90/10 or 70/30 copper nickel, monel, or stainless steel.



ITEM ID: 414501



Navy Bronze Ball Valves 250 lb

MIL-V-24509A

SIZES: 1-1/4" to 6"

DESIGN DESCRIPTION

- Flanged Ends MIL-V-20042
- Available in 2 Way and 3 Way patterns
- Bronze Body and Ball Material
- Monel Stem Material
- Teflon Seat Material



2 WAY, STRAIGHT
ITEM ID: 395202

3 WAY, 2 PORT
ITEM ID: 395302

**3 WAY, 3 PORT
FLOW 5**
ITEM ID: 395353

**3 WAY, 3 PORT
FLOW 7**
ITEM ID: 395373

Navy Bronze Ball Valves 700 lb

DWG 5001003 1/4" to 2-1/2" 700 PSI
DWG 5001004 3" to 6" 700 PSI

SIZES: 1-1/4" to 6"

DESIGN DESCRIPTION

- Silbraze, Socket Weld, Buttweld, Hose or Flanged Ends
- Available in 2 Way and 3 Way patterns
- Bronze, Copper Nickel, Steel or Stainless Steel Body Material
- Titanium or CRES/SS Ball Material
- Teflon Seat Material



**2 WAY
SILBRAZE**
ITEM ID: 393305

**2 WAY
SILBRAZE x HOSE**
ITEM ID: 393355

**3 WAY
SILBRAZE x FLANGED**
ITEM ID: 393905



Navy Pressure Relief Valves Union End Silbraze

MIL-V-22549 AIR OR GAS SERVICE
MIL-V-24332 LIQUID SERVICE

SIZES: 1/4" to 2"

DESIGN DESCRIPTION

- Quick acting, Soft-Seat Design
- Bronze Body Material
- Monel or Stainless Steel Trim Material; Stellite or Hard-faced Trim available
- Plated Steel, Hi-Temp Steel, Phosphor Bronze, Stainless Steel, or Monel Springs available depending on size and pressure

SPECIFY

- Material
- End Connections - Inlet and Outlet
- Spring set pressure to relieve at
- Enclosed or exposed spring
- With or without lift lever
- Service: liquid, air, or steam



Navy Pressure Relief Valves Flanged

MIL-V-22549 AIR OR GAS SERVICE
MIL-V-24332 LIQUID SERVICE

SIZES: 2-1/2" to 8"

DESIGN DESCRIPTION

- Quick acting, Soft-Seat Design
- Bronze or Cast Steel Body Material
- Monel or Stainless Steel Trim Material; Stellite or Hard-faced Trim available
- Plated Steel, Hi-Temp Steel, Phosphor Bronze, Stainless Steel, or Monel Springs available depending on size and pressure

SPECIFY

- Material
- End Connections - Inlet and Outlet
- Spring set pressure to relieve at
- Enclosed or exposed spring
- With or without lift lever
- Service: liquid, air, or steam





Navy Strainers Premier Union End Y-Type

DESIGN DESCRIPTION

- Similar to bronze strainers offered under the Navy drawing 803-841499 (250 PSI at 425° max) but modified to mate with union tail piece assemblies conforming to MIL-F-1183 for sizes 3/8" to 2" NPS and as a modification of MIL-F-1183 for 2-1/2" NPS.
- Tail pieces are offered in Bronze, 90/10 Copper Nickel and 70/30 Copper Nickel.
- Strainer screens are Nickel Copper and available in .062 perf (.093 for 2-1/2") and .020 perf for all sizes.
- All sizes are also available with Blow Down Valves for clean out under pressure.

Please note: 804-8533843 is a proprietary commercial specification and not a U.S. Navy drawing.



Navy Strainers Simplex

MIL-S-16293 FLANGED or THREADED

SIZES: 1/2" to 12"

DESIGN DESCRIPTION

- Bronze, Steel or Stainless Steel Body Material
- Stainless or Monel Perforated Screen Material

FLANGED ENDS

- Fig 691401 (150 Navy Bronze)



Navy Strainers Duplex

MIL-S-17849 BRONZE or STEEL
DWG 5001048 STEEL 600 LB

SIZES: 1" to 8"

DESIGN DESCRIPTION

- Stainless Steel or Monel Perforated Screen Material
- Available with Navy MIL-F-20042

FLANGED ENDS

- Fig 692401 (150 Navy Bronze)
- Fig 692402 (250 Navy Bronze)





Navy Deck Drains

DWG 1385789

SIZES: 1-1/2" to 3"

TYPE A & TYPE D

Wrought copper nickel or cast body, with an optional steel compensation ring for direct welding into steel deck. Furnished with choice of 2", 4", and 6" seal, bell baffle, and Navy standard strainer plate. Type A furnished with manual valve for positive back-flow protection, or outlet sealing. Type D has plain cover with no manual closing valve. Available in 90/10 or 70/30 copper nickel alloy, bronze, or aluminum body.

TYPE B

Wrought copper nickel or cast body, with an optional steel compensation ring for direct welding into steel deck. Furnished with a seal, bell baffle, and Navy standard strainer plate. Furnished with manual valve for positive back-flow protection, or outlet sealing. Available in 90/10 or 70/30 copper nickel alloy, bronze, or aluminum body.

TYPE C

Wrought copper nickel or cast body, with an optional steel compensation ring for direct welding into steel deck. Plain deck or shower drain furnished with Navy standard strainer plate. Available in 90/10 or 70/30 copper nickel alloy, bronze, or aluminum body.

TYPE G & TYPE H

Wrought copper nickel or cast body, with an optional steel compensation ring for direct welding into steel deck. Furnished with choice of 2" & 4" seal, bell baffle, and Navy standard strainer plate. Outlet manufactured with 90° elbow and pipe plug cleanout. Type G furnished with manual valve for positive back-flow protection, or outlet sealing. Type H has plain cover with no manual closing valve. Available in 90/10 or 70/30 copper nickel alloy, bronze, or aluminum body.



TYPE A
90/10
ITEM ID: 510301

70/30
ITEM ID: 510201

BRONZE
ITEM ID: 511101

ALUMINUM
ITEM ID: 510101



TYPE D
90/10
ITEM ID: 510304

70/30
ITEM ID: 510204

BRONZE
ITEM ID: 511104

ALUMINUM
ITEM ID: 510104



TYPE B
90/10
ITEM ID: 510302

70/30
ITEM ID: 510202

BRONZE
ITEM ID: 511102

ALUMINUM
ITEM ID: 510102



TYPE C
90/10
ITEM ID: 510303

70/30
ITEM ID: 510203

BRONZE
ITEM ID: 511103

ALUMINUM
ITEM ID: 510103



TYPE H
90/10
ITEM ID: 510308

70/30
ITEM ID: 510208

BRONZE
ITEM ID: 511108

ALUMINUM
ITEM ID: 510108



TYPE G
90/10
ITEM ID: 510307

70/30
ITEM ID: 510207

BRONZE
ITEM ID: 511107

ALUMINUM
ITEM ID: 510107

Navy Deck Access Boxes & Sounding Tubes

DECK BOX

DWG 1385848

SIZES: 1-1/2", 2", 2-1/2"

DESIGN DESCRIPTION

- Steel Body Material
- Bronze Plug with rectangular countersunk hole
- Slip-On Socket Connection

DECK BOX

SIZES: 1-1/2", 2", 2-1/2"

DESIGN DESCRIPTION

- Stainless Steel Body Material
- Bronze Plug with square hole
- Socket Weld Connection

SOUNDING TUBE

DWG 1385791

DWG 3285831

SIZES: 1-1/2"

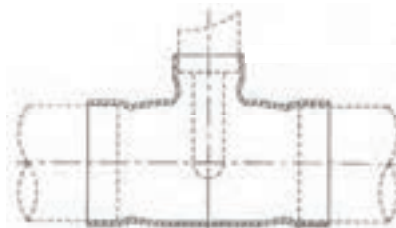
DESIGN DESCRIPTION

- Steel Body Material
- Bronze Cap
- Plain Pipe End Connection

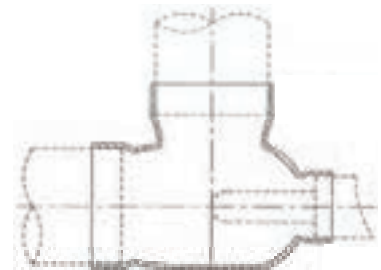


Navy Thermo Fittings

DWG 3285846



**THERMO TEE
GLOBE TYPE A
BRONZE SILBRAZE**



**THERMO TEE
ANGLE TYPE B
BRONZE SILBRAZE**



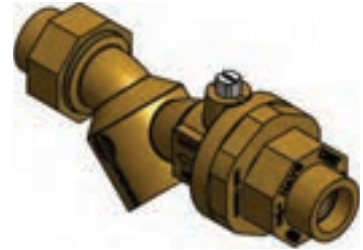
Navy Mesurflo® Series 35X4

SIZES: 1/2" to 2"

DESIGN DESCRIPTION

Automatic flow control / balancing valve for shipboard chilled water and air conditioning systems. Operating range of 2-150 psid. Combination valve body including ball valve, flow limiting internals, and union connection.

- Material specification: UNS 83600 Bronze, ASTM B62
- Union End Silver Braze (C83600 & C90300) or Socket Weld End (C96200, C71500, S30400) or Solder (C36000) Fittings
- Specify size, connection, and required GPM



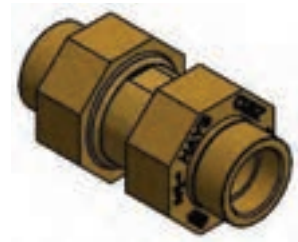
Navy Mesurflo® Series 3600

SIZES: 1/2" to 1"

DESIGN DESCRIPTION

Automatic flow control / balancing valve for shipboard chilled water and air conditioning systems. Serves as a drop-in replacement for the 2300 Series shown below but with a lower operating range of 2-150 psid.

- Material specification: UNS 83600 Bronze, ASTM B62
- Mil-F-1183 Connections Silver-Brazed and Socket Weld Tailpieces in materials (C83600, C96200, C71500, C90300, S30403, S31603)
- Specify size, connection, and required GPM



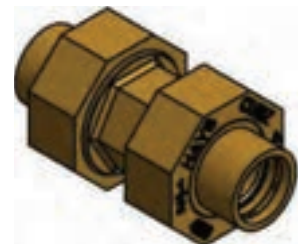
Navy Mesurflo® Series 2300

SIZES: 1/2" to 1-1/2"

DESIGN DESCRIPTION

Automatic flow control / balancing valve for shipboard chilled water and air conditioning systems. Operating range of 15-150 psid.

- Material specification: UNS 83600 Bronze, ASTM B62
- Mil-F-1183 Connections Silver-Brazed and Socket Weld Tailpieces in materials (C83600, C96200, C71500, C90300, S30403, S31603)
- Specify size, connection, and required GPM





Navy Scupper Valves

SIZES: 2" to 8"

DESIGN DESCRIPTION

- Bronze or Steel Construction
- With or Without Gag Control

180° FLANGED COMMERCIAL or NAVY (MIL-F-20042)

- | | With Gag | No Gag |
|----------------------------|-----------------|---------------|
| • Outlet & Inlet same size | 515071 Bronze | 515070 Bronze |

SPECIALTY ITEMS*

- Outlet larger than inlet (comm)
- Outlet special Navy, Inlet Std Navy
- MIL-F-20042; DWG 328582 (2")
- DWG 3285820 (3")
- DWG 3285813 (4")

90° FLANGED COMMERCIAL or NAVY (MIL-F-20042)

- | | With Gag | No Gag |
|----------------------------|-----------------|---------------|
| • Outlet & Inlet same size | 515081 Bronze | 515080 Bronze |

SPECIALTY ITEMS*

- Outlet larger than Inlet (comm)
- Outlet special Navy, Inlet Std Navy
- MIL-F-20042; DWG 328582 (2")
- DWG 3285820 (3")
- DWG 3285813 (4")

* Specialty items available upon request.



**180° ORIENTATION
ITEM ID: 515071**



**90° ORIENTATION
ITEM ID: 515081**



Navy Bronze Silbraze Fittings

SPECIALTY ITEMS. CONTACT SALES FOR ORDERING INFORMATION.

MIL-F-1183
MIL-F-24227 (U.T. TYPE)

DESIGN DESCRIPTION

- Bronze Body Material, B61
- Reducing fittings - add "R" to part number

These fittings are used with IPS sized pipe/tubing. Typically supplied grooved for pre-inserted silver brazing ring. Available without groove (face fed). Specify as such.

These fittings will not fit type K, L, M copper water tube which require solder joint fittings.

800, 1500, 3000 lb available upon request.

FF = Female Braze End, Grooved
FPT = Female Pipe Thread
MF = Male Braze End
MPT = Male Pipe Thread



90° ELBOW
FF x FF 605101
FF x FPT 605102



45° ELBOW
FF x FF 605104
FF x MF 605109



STREET 90° ELBOW
FF x MPT 605107
FF x MF 605108



LONG TURN 90°
FF x FF 605111



TEE
FF x FF x FF 605121
FF x FPT x FF 605122
FF x FF x FPT 605123
FF x FPT x FPT 605124



SINGLE SWEEP TEE
FF x FF 605130
FF x FPT 605131



DOUBLE SWEEP TEE
FF x FF 605133



Y-BRANCH
FF x FF 605140



**180° RETURN BEND
OPEN**
FF x FF 605156



PLUG
MF 605065



CAP
FF 605154



COUPLING
FF x FF 605150
FF x FPT 605151



REDUCER
FF x FF 605150R
FF x FPT 605151R



CROSS
FF x FF 605135



BUSHING
MF x FF 605157



UNION
FF x FF 605301
FF x FPT 605526
FF x MF 605527
FF x MPT 605528



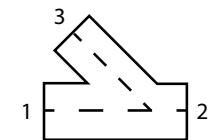
FEMALE ADAPTER
MF x FPT 605063



MALE ADAPTER FF x MPT 605160
NAVY ADAPTER FF x ^{one size larger} MPT 605161
OVERSIZE ADAPTER FF x ^{more than one size larger} MPT 605162



SILVER BRAZING RING
605197 (GR 3)
605193 (BAG 3)
605195 (GR 5)
605196 (BAG 7)



REDUCING FITTINGS
SPECIFY SIZE 1-2-3
ADD "R" TO ITEM ID



Navy Bronze Silbraze Unions & Flanges

MIL-F-1183
MIL-F-20042 FLANGES
DWG 1385892 BUTTERFLY FLANGES

DESIGN DESCRIPTION
B61 Bronze

Tailpieces are also available in 90/10, 70/30, monel and stainless steel.
Also: U.T. end preparation, reducing outlet sizes, hose outlet end.

FF = Female Braze End, Grooved
FPT = Female Pipe Thread
MF = Male Braze End
MPT = Male Pipe Thread



**RETAINER & O-RING
BRONZE RETAINER
WITH BUNA O-RING
605347 KIT
605343 BUNA O-RING
605344 EPR O-RING
605345 VITON O-RING
605346 BRONZE RETAINER**



UNION
FF x FF 605301
FF x FPT 605526
FF x MF 605527
FF x MPT 605528
FF x MPT 605529
one size larger



THREADPIECE
FF 605299



TAILPIECE
FF 605298
FPT 605294
MALE HOSE 605293
MPT 605295
MPT 605296
one size larger
ASSEMBLY 605BXX.XXX



NUT
605297



UNION RUN TEE
FF x FF 605540



UNION OUTLET TEE
FF x FF 605545



SILBRAZE FLANGE
150 NAVY 605175
200 NAVY 605188
250 NAVY 605181
400 NAVY 605178
700 NAVY 605179



MALE SILBRAZE FLANGE
150 NAVY 605075



BLIND FLANGE
150 NAVY 605077
250 NAVY 605081



Navy High Pressure Bronze Silbraz Fittings & Unions

SPECIALTY ITEMS. CONTACT SALES FOR ORDERING INFORMATION.

SIZES: 800 lb 2-1/2" to 12"
1500 lb 1/8" to 2"
3000 lb 1/8" to 2-1/2"

DWG

1385766 800/1500 lb Fittings

1385863 800/1500 lb Bushings

1385859 800/1500 lb Unions

1385942 800/1500 lb Fittings U.T.

1385946 800/1500 lb Unions U.T.

841338 3000 lb Gageline Fittings

841626 3000 lb Gageline Unions

841337 3000 lb Union Steel Nut, rectangular gasket

1385883 3000 lb U.T. O-Ring Gasket

1385886 3000 lb O.D. Fittings

1385941 3000 lb Fittings U.T.

1385944 3000 lb Gageline Fittings U.T.

1385943 3000 lb Unions U.T. Ni-Cu Nut, O-Ring Gasket

2068540 3000 lb Bushings & Reducers



90° ELBOW
800/1500 lb 606101
3000 lb 607101
3000 U.T. 608101



45° ELBOW
800/1500 lb 606104
3000 lb 607104
3000 U.T. 608104



TEE
800/1500 lb 606121
3000 lb 607121
3000 U.T. 608121



COUPLING
800/1500 lb 606150
3000 lb 607150
3000 U.T. 608150



BUSHING
800/1500 lb 606157
3000 lb 607157
3000 U.T. 608157



MALE ADAPTER
800/1500 lb 606160
3000 lb 607160



CAP
800/1500 lb 606154
3000 lb 607154
3000 U.T. 608154



CROSS
800/1500 lb 606135
3000 lb 607135
3000 U.T. 608135



**UNION
O-RING GASKET**
800/1500 LB 606301



**UNION
RECTANGULAR GASKET**
3000 LB 607301



**UNION
O-RING GASKET**
3000 U.T. 608301



Navy Copper Nickel Socket Weld Fittings 400 lb

DWG 6397430

SIZES: 1/4" to 4" (5" and above available upon request)

Approved for use with Class 200 & 700 Copper Nickel tubing in fire hazardous areas and systems.



90° ELBOW
640101
645101

90/10
70/30



45° ELBOW
640104
645104



**LONG TURN 90°
ELBOW**
640111
645111



TEE
640121
645121

90/10
70/30



**SINGLE SWEEP
TEE**
640130
645130



**DOUBLE SWEEP
TEE**
640133
645133



COUPLING
640150
645150

90/10
70/30



BUSHING
640157
645157



CAP
640154
645154



CROSS
640135
645135

90/10
70/30



Y-BRANCH
640140
645140



UNION
640301
645301

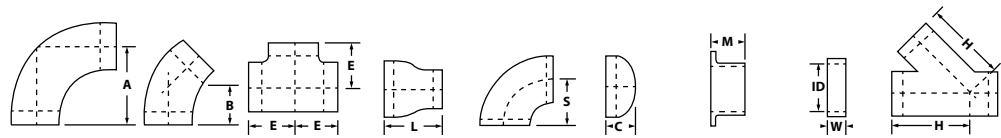


Navy Copper Nickel Butt Weld Fittings 90/10 & 70/30

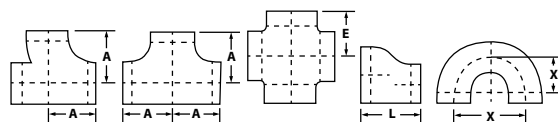
DWG 1385880 90/10 CLASS 200
70/30 CLASS 200
MIL-F-24202 70/30 CLASS 700

DIMENSIONS

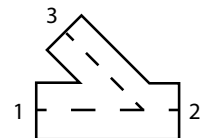
IPS Size	O.D. Max	Wall CL 200	Wall CL 700	A	B	E	L	S	C	M	W	H
				LR 90° Elbow	LR 45° Elbow	Tee or Cross	Reducer Con or Ecc	SR 90° Elbow	Cap End	Stub End	Sleeve ID=IPSOD	45° Y Lateral
1/2	0.84	0.065	0.072	1.94		1.00				2.00	0.75	
3/4	1.05	0.065	0.083	1.59		1.13	1.50			2.00	0.81	
1	1.31	0.065	0.095	2.00	1.13	1.50	2.00	1.50	1.50	2.00	0.88	6.25
1-1/4	1.66	0.072	0.095	2.44	1.34	1.88	2.00	1.81	1.50	2.00	1.00	6.81
1-1/2	1.90	0.072	0.109	2.94	1.63	2.25	2.50	2.19	1.50	2.00	1.25	7.69
2	2.38	0.083	0.120	3.72	1.97	2.50	3.00	2.72	1.50	2.50	1.31	8.72
2-1/2	2.88	0.083	0.134	4.63	2.44	3.00	3.50	3.38	1.50	2.50	1.56	10.38
3	3.50	0.095	0.165	5.41	2.77	3.38	3.50	3.91	2.00	2.50	1.66	10.91
3-1/2	4.00	0.109	0.180	6.25	3.17	3.75	4.00	4.44	2.50	3.00	1.75	12.44
4	4.50	0.109	0.203	6.97	3.45	4.13	4.00	4.97	2.50	3.00	1.81	13.00
5	5.56	0.125	0.220	8.59	4.20	4.88	5.00	6.09	3.00	3.00	2.06	14.59
6	6.63	0.134	0.259	10.17	4.45	5.63	5.50	7.17	3.50	3.50	2.22	15.69
8	8.63	0.148	0.340	13.38	6.34	7.00	6.00	9.38	4.00	4.00	2.63	18.88
10	10.75	0.187	0.380	16.56	7.78	8.50	7.00	11.56	5.00	5.00	3.00	
12	12.75	0.250	0.454	19.69	9.14	10.00	8.00	11.69	6.00	6.00	3.25	
14	14.00			21.50	9.25	11.00	13.00	14.50	6.50	6.00		
16	16.00			24.50	10.50	12.00	14.00	16.50	7.00	6.00		
18	18.00			27.50	11.75	13.50	15.00	18.50		6.00		
20	20.00			30.50	13.00	15.00	20.00	20.50		6.00		
24	24.00			36.50	15.50	17.00	20.00	24.50		6.00		



	LR 90°	LR 45°	Tee	Conc Red	SR 90°	Cap	Stub End	Sleeve	Lateral
90/10 CL 200	601111	601104	601121	601150	601101	601154	601159	601155	601140
70/30 CL 200	602111	602104	602121	602150	602101	602154	602159	602155	602140
70/30 CL 700	6027111	6027104	6027121	6027150	6027101	6027154	6027159	6027155	6027140



	Single Sweep Tee	Double Sweep Tee	Cross	Eccentric Reducer	180° Return
90/10 CL 200	601130	601133	601135	601149	601156
70/30 CL 200	602130	602133	602135	601149	602156



Reducer fittings: LR 90°, Tee, SS Tee, DS Tee, Cross, Y Lateral add "R" Suffix + Specify sizes 1-2-3 as shown at right. Class 700 LR 90° + SR 90° dimensions differ from chart. They are slightly less than the Class 200 dimensions shown.

Navy Bosses & Outlets

Outlet fittings are designed to be welded onto an existing "run" of pipe to provide a branch or "outlet" connection without having to cut run pipe. Outlet connection can be threaded, socket weld, braze or buttweld. Outlet fittings provide 90° or 45° (elbolet) connections. They are typically described by two sizes: "run" by "outlet". For example a 4x2 socket fits on a 4" run of pipe with a 2" socket outlet size.

Other configurations available upon request.



**SOCKET or
BRAZE OUTLET**



**FPT
OUTLET**



**BUTTWELD
OUTLET**



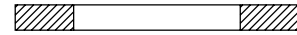
BOSS
DWG 1385912
DWG 1385950

	SOCKET	BRAZE			
BRONZE	-	695108	695101	-	-
90/10	695202	695208	695201	695203	695204
70/30	695302	695308	695301	695303	695304
STEEL	695402	-	695401	695403	-
STAINLESS STEEL	695702	-	695701	695703	-
MONEL	-	-	-	695603	-

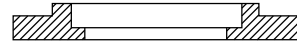


Navy Copper Nickel Flanges 90/10 & 70/30

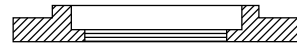
			90/10	70/30
DWG 4715319	1A	150 Navy Slip On	689000	687000
	2A	150 Navy Socket Weld	689040	687040
	2C	200 Navy Butterfly Socket Weld	689188	687188
	2A	250 Navy Slip On	689200	687200
	2A	50 Navy Socket Weld	689040	687040
	2A	150 Navy Socket Weld	689240	687240
DWG 1385992	250 Navy	Weldneck	689260	687260
DWG 1889897	700 Navy	Socket Weld	689740	687740
	700 Navy	Weldneck	689760	687760



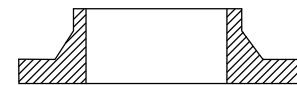
SLIP ON



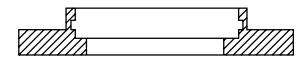
SOCKET WELD



BUTTERFLY SOCKET WELD



WELD NECK



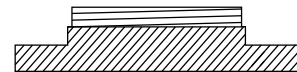
SILBRAZE



BLIND



MALE



MALE HOSE

Navy Bronze Flanges

ASTM B61

			Bronze	
MIL-F-20042	150 Navy	Silbrazed	605175	
		Blind	605077	
		Male	605075	
	250 Navy	Silbrazed	605181	
		Blind	605081	
DWG 1385892	Butterfly 200	Silbrazed	605188	
Hose Flange*	150 Navy	Male Hose		
	250 Navy	Male Hose		

* Specialty item, contact sales for ordering information.



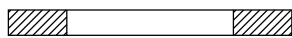
Navy / ASME Steel & Alloy Flanges

Ordering info: by description or codes + size.

ASME flanges have raised face unless orderd "FF" flat face.



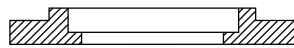
MATERIAL		CODE	
Steel	A105	680 + Pressure/Style Code + Size	
	MIL-F-20670	B-110	678
	MIL-F-17823	300 LB	680
	DWG 64496	600 LB	680
	DWG 1385861	700 LB	680
Chromemoly	F11		681
	F22		682
Monel	NiCu		685
Aluminum	6061		676
	5086		677
Stainless Steel	304/316		670
Titanium			625



SLIP ON

Slip On - Type C		
Navy	150 lb	000
	250 lb	200

Slip On		
ASME	150 lb	100
	300 lb	300
	600 lb	600
	900 lb	800
	1500 lb	900



SOCKET WELD

Socketweld - Type D Mod		
Navy	150 lb	040
	250 lb	240

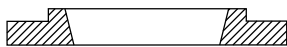
Socket Weld		
ASME	150 lb	140
	300 lb	340
	600 lb	640
	900 lb	840
	1500 lb	940



WELD NECK

Weldneck - Type D		
Navy	150 lb	060
	250 lb	260

Weldneck		
ASME	150 lb	160
	300 lb	360
	600 lb	660
	900 lb	860
	1500 lb	960



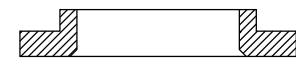
THREADED

ASME	150 lb	120
	300 lb	320
	600 lb	620
	900 lb	820
	1500 lb	920



BLIND

Navy	150 lb	080
	250 lb	280
ASME	150 lb	180
	300 lb	380
	600 lb	680
	900 lb	880
	1500 lb	980



LAP JOINT

ASME	150 lb	190
	300 lb	390
	600 lb	690



Navy Flange Dimensions

100/150 LB MIL-F-20042 Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
1/4	3-1/4	3/8	2-1/8	3	9/16
3/8	3-3/8	3/8	2-1/4	3	9/16
1/2	3-9/16	3/8	2-7/16	3	9/16
3/4	3-13/16	7/16	2-11/16	4	9/16
1	4-1/4	7/16	3-1/8	4	9/16
1-1/4	4-1/2	7/16	3-3/8	4	9/16
1-1/2	5-1/16	7/16	3-15/16	6	9/16
2	5-9/16	7/16	4-7/16	6	9/16
2-1/2	6-1/8	1/2	5	6	9/16
3	6-5/8	1/2	5-1/2	8	9/16
3-1/2	7-3/16	1/2	6-1/16	8	9/16
4	7-11/16	1/2	6-9/16	8	9/16
4-1/2	8-3/16	1/2	7-1/16	10	9/16
5	9-1/16	9/16	7-13/16	10	11/16
6	10-1/8	9/16	8-7/8	12	11/16
7	11-5/16	9/16	10	12	11/16
8	12-3/8	5/8	11-1/16	14	11/16
9	13-15/16	11/16	12-3/8	14	13/16
10	15	11/16	13-7/8	15	13/16
11	16-9/16	11/16	15	16	13/16
12	17-5/8	3/4	16-1/16	18	13/16

250 LB MIL-F-20042 Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
1/4	3-1/4	11/16	2-1/8	3	9/16
3/8	3-3/8	11/16	2-1/4	3	9/16
1/2	3-9/16	11/16	2-7/16	3	9/16
3/4	3-13/16	11/16	2-11/16	4	9/16
1	4-1/4	3/4	3-1/8	4	9/16
1-1/4	4-1/2	13/16	3-3/8	4	9/16
1-1/2	5-1/16	13/16	3-15/16	6	9/16
2	5-9/16	13/16	4-7/16	6	9/16
2-1/2	6-1/8	15/16	5	6	9/16
3	6-5/8	15/16	5-1/2	8	9/16
3-1/2	7-3/16	1	6-1/16	8	9/16
4	7-11/16	1	6-9/16	8	9/16
4-1/2	8-3/16	1	7-1/16	10	9/16
5	9-1/16	1-1/16	7-13/16	10	11/16
6	10-1/8	1-3/16	8-7/8	12	11/16
7	11-5/16	1-1/4	10	12	11/16
8	12-3/8	1-5/16	11-1/16	14	11/16
9	13-15/16	1-3/8	12-3/8	14	13/16
10	15	1-7/16	13-7/8	15	13/16
11	16-9/16	1-1/2	15	16	13/16
12	17-5/8	1-1/2	16-1/16	18	13/16

200 LB DWG 1385892 Butterfly Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
3/8	3-1/2	5/16	2-3/8	4	5/8
1/2	3-1/2	5/16	2-3/8	4	5/8
3/4	3-7/8	11/32	2-3/4	4	5/8
1	4-1/4	3/8	3-1/8	4	5/8
1-1/4	4-5/8	13/32	3-1/2	4	5/8
1-1/2	5	7/16	3-7/8	4	5/8
2	6	1/2	4-3/4	4	3/4
2-1/2	7	9/16	5-1/2	4	3/4
3	7-1/2	5/8	6	4	3/4
3-1/2	8-1/2	11/16	7	8	3/4
4	9	11/16	7-1/2	8	3/4
5	10	3/4	8-1/2	8	7/8
6	11	13/16	9-1/2	8	7/8
8	13-1/2	15/16	11-3/4	8	7/8
10	16	1	14-1/4	12	1
12	19	1-1/16	17	12	1

400 LB MIL-F-20042 Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
1/4	3-3/4	11/16	2-5/8	3	9/16
3/8	3-7/8	11/16	2-3/4	4	9/16
1/2	4	11/16	2-7/8	4	9/16
3/4	4-5/16	11/16	3-3/16	4	9/16
1	5-1/16	3/4	3-3/4	5	11/16
1-1/4	5-3/8	13/16	4-1/16	5	11/16
1-1/2	5-15/16	13/16	4-5/8	6	11/16
2	6-1/2	13/16	5-3/16	7	11/16
2-1/2	7-9/16	15/16	6	8	13/16
3	8-1/8	15/16	6-9/16	8	13/16
3-1/2	8-11/16	1	7-1/8	9	13/16
4	9-1/4	1	7-11/16	9	13/16
5	10-3/8	1-1/16	8-13/16	11	13/16
6	11-15/16	1-3/16	10-3/16	12	15/16
8	14-3/4	1-5/16	12-3/4	13	1-1/16
10	17	1-7/16	15	15	1-1/16

50 LB MIL-F-20042 Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
12	16-9/16	11/16	15	16	13/16
14	19-1/8	3/4	17-3/8	19	15/16
16	21-3/16	3/4	19-7/16	20	15/16
18	23-1/4	7/8	21-1/2	22	15/16
20	25-13/16	7/8	23-13/16	24	1-1/16
22	27-7/8	7/8	25-7/8	26	1-1/16
24	30	1	28	28	1-1/16
26	32-9/16	1	30-5/16	30	1-3/16
28	34-11/16	1	32-7/16	32	1-3/16
30	36-13/16	1-1/8	34-9/16	35	1-3/16
32	39	1-1/8	36-3/4	36	1-3/16
34	41	1-1/8	38-3/4	36	1-3/16
36	43-7/8	1-1/4	41-3/8	36	1-5/16
38	46-1/8	1-1/4	43-5/8	36	1-5/16
40	48-1/8	1-1/4	45-5/8	36	1-5/16

700 LB DWG 1385892 Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
1/4	3-1/4	11/16	2-1/8	3	9/16
3/8	3-3/8	11/16	2-1/4	3	9/16
1/2	3-9/16	11/16	2-7/16	3	9/16
3/4	3-3/4	11/16	2-11/16	4	9/16
1	4-1/4	3/4	3-1/8	4	9/16
1-1/4	4-1/2	13/16	3-3/8	4	9/16
1-1/2	5-1/16	13/16	3-15/16	6	9/16
2	5-9/16	15/16	4-7/16	6	11/16
2-1/2	6-1/8	1-1/16	5	6	11/16
3	7-7/16	1-3/8	5-15/16	8	11/16
3-1/2	8	1-7/16	6-1/2	8	11/16
4	8-11/16	1-7/16	7-3/16	10	11/16
5	9-3/4	1-5/8	8-1/4	12	11/16
6	10-7/8	1-15/16	9-3/8	14	11/16
8	13-1/8	2-1/8	11-5/8	16	11/16



Navy Steel & Alloy Pipe

SIZES: 1/4" to 24"

- Steel - MIL-P-24691/1*
- Chromemoly P11 - MIL-P-24691/2*
- Stainless Steel - MIL-P-24691/3*

* Specialty item, contact sales for ordering information.

IPS SIZE	PIPE SIZE CHART			
	O.D.	STD Wall	XH Wall	Sch 10 Wall
1/4	0.540	0.088	0.119	0.065
3/8	0.675	0.091	0.126	0.065
1/2	0.840	0.109	0.147	0.083
3/4	1.050	0.113	0.154	0.083
1	1.315	0.133	0.179	0.109
1-1/4	1.660	0.140	0.191	0.109
1-1/2	1.900	0.145	0.200	0.109
2	2.375	0.154	0.218	0.109
2-1/2	2.875	0.203	0.276	0.120
3	3.500	0.216	0.300	0.120
3-1/2	4.000	0.226	0.318	0.120
4	4.500	0.237	0.337	0.120
5	5.563	0.258	0.375	0.134
6	6.625	0.280	0.432	0.134
8	8.625	0.322	0.500	0.148
10	10.75	0.365	0.580	0.165
12	12.75	0.375	0.500	0.180
14	14.00	0.375	0.500	0.250
16	16.00	0.375	0.500	0.250
18	18.00	0.375	0.500	0.250
20	20.00	0.375	0.500	0.250
24	24.00	0.375	0.500	0.250



Navy Deck Sleeves

DWG 1385866

SIZES: 1/4" to 12"

Steel deck and bulkhead sleeves are available for steel or copper nickel piping systems. Standard sleeve length is 3-1/4" though longer sleeves are available.

DWG 2424406

SIZES: 1/4" to 8"

Steel deck sleeves straight type.

DWG 2424424

SIZES: 1-1/2" to 10"

Steel insulated type deck sleeves with rubber cap.

ALUMINUM & STEEL "CBC" TYPE STUFFING BOX RUBBER SEAL GASKET

DWG 545-1856518

SIZES: 1/4" to 4"

Single style with nut and gasket one end only or double style with nut and gasket on both ends.



SINGLE

Aluminum

Steel



DOUBLE

Single 549995
Double 549996

Single 549997
Double 549998

Navy Pipe Hangers & Clamps

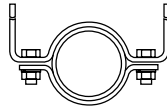
DWG 810-4714432

DESIGN DESCRIPTION

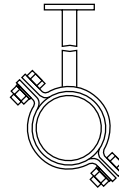
- Pipe hangers conform to the dimensional requirements of DWG 810-4714432 Rev. J
- Neoprene liner iaw ASTM D-2000-75E Shore A 60, 1/4" and 3/8" NPS hangers have 1/8" liners, other sizes have 1/4" liners
- Hangers supplied uncoated unless specified by customer
- A36 Steel Material
- Fasteners to be Grade 2 or Grade 5



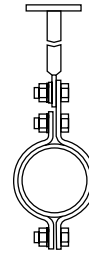
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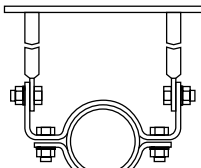
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ITEM ID: 548432



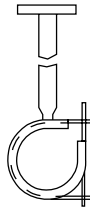
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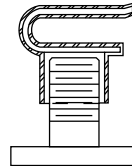
TYPE 5
ITEM ID: 548435



TYPE 7
ITEM ID: 548438



TYPE 38
ITEM ID: 548439



TYPE 35B
ITEM ID: 54835B



Navy Copper Pipe & Tubing

Thin and heavy wall tubing with pipe-size O.D.'s for use with silbraz, butt weld and socket weld fittings. Not for use with solder joint fittings due to different O.D.'s.

90/10 COPPER NICKEL

MIL-T-16420 ALLOY 706 ANNEALED

Class 200	1/8" O.D. to 12"	710200
Class 50	12" to 24"	710050

MIL-T-15005 CONDENSER TUBE

3/8" O.D. to 3/4" O.D.

ASTM B-466

Sch 40	1/4" to 8"	710040
Sch 80	1/4" to 6"	710080

70/30 COPPER NICKEL

MIL-T-16420 ALLOY 706 ANNEALED

Class 200	1/4" O.D. to 24"	720200
Class 700	1/4" to 12"	720700
Class 1650	1/4" to 5"	721650
Class 3300	1/4" O.D. to 3"	723300
Class 6000	1/4" O.D. to 2"	726000

ASTM B-466

Sch 40	1/4" to 8"	720040
Sch 80	1/4" to 6"	720080

DEOX COPPER

MIL-T-24107 ALLOY 122

Standard thin wall	1/4" O.D. to 6"	731000
Heavy wall	1/4" O.D. to 6"	731001

COPPER NICKEL

SIZE	O.D.	COPPER NICKEL					
		90/10 CL 50 Wall	90/10 CL 200 Wall	70/30 CL 700 Wall	70/30 CL 1650 Wall	70/30 CL 3300 Wall	70/30 CL 6000 Wall
1/4 O.D.	0.250		0.035			0.035	0.058
1/4	0.540					0.072	0.120
3/8	0.675		0.065	0.065	0.042	0.095	0.148
1/2	0.840		0.065	0.072	0.049	0.120	0.203
3/4	1.050		0.065	0.072	0.058	0.148	0.238
1	1.315		0.065	0.083	0.083	0.180	0.300
1-1/4	1.660		0.065	0.095	0.095	0.220	0.380
1-1/2	1.900		0.072	0.095	0.120	0.250	0.425
2	2.375		0.072	0.109	0.134	0.340	0.520
2-1/2	2.875		0.083	0.120	0.165	0.380	
3	3.500		0.083	0.134	0.203	0.457	
3-1/2	4.000		0.095	0.165	0.250		
4	4.500		0.095	0.180	0.284		
5	5.563		0.109	0.220			
6	6.625		0.125	0.259	0.425		
8	8.625		0.140	0.340			
10	10.75	0.134	0.187	0.380			
12	12.75	0.156	0.250	0.454			
14	14.00	0.165	0.250				
16	16.00	0.165	0.250				
18	18.00	0.180	0.250				
20	20.00	0.180	0.250				
24	24.00		0.250				

DEOX COPPER

SIZE	O.D.	STD Wall	DEOX COPPER				
			Heavy Walls				
1/4 O.D.	0.250	0.032					
1/4	0.540	0.065	0.072	0.109			
3/8	0.675	0.065	0.095	0.134	0.134		
1/2	0.840	0.065	0.083	0.120	0.165		
3/4	1.050	0.065	0.095	0.148	0.165	0.220	
1	1.315	0.065	0.120	0.180	0.203	0.263	
1-1/4	1.660	0.065	0.072	0.084	0.259	0.340	
1-1/2	1.900	0.065	0.096	0.180	0.148	0.220	0.340
2	2.375	0.065	0.083	0.109	0.259	0.380	
2-1/2	2.875	0.065	0.100	0.130	0.120	0.220	0.340
3	3.500	0.065	0.083	0.122	0.145	0.259	0.380
3-1/2	4.000	0.065	0.095	0.140	0.165	0.177	0.340
4	4.500	0.065	0.107	0.157	0.202		
5	5.563	0.068	0.132	0.194	0.281		
6	6.625	0.081	0.158	0.231	0.335		



Section 3: DIN Valves

Gate Valves
Globe Valves
Angle Valves
Check Valves
Butterfly Valves
Ball Valves
Pressure Relief Valves
Strainers Premier Union End Y-Type
Simplex & Duplex Strainers
Pressure Reducing Valves
Magazine Sprinkler Valves
Deck Drains
Deck Access Boxes & Sounding Tubes
Thermo Fittings
Mesurflo®
Scupper Valves
Bronze Silbrazz Fittings, Unions & Flanges
High Pressure Bronze Silbrazz Fittings & Unions
Copper Nickel Socket Weld Fittings
Copper Nickel Buttweld Fittings
Bosses & Outlets
Copper Funnels & Bellmouths
Copper Nickel, Bronze, Steel & Alloy Flanges
Steel & Alloy Pipe
Deck Sleeves
Backing Rings
Pipe Hangers & Clamps

Cast Iron Gate Valve, Bronze or Stainless Steel Trim Non-Rising Stem, F4 w/ Indicator

SIZES: 200 mm - 700 mm

Gate valves with raised face flanges acc. to DIN PN10, bolted bonnet and adjustable gland and short face to face. Inside screwed stem, non-rising stem and handwheel.

APPLICATION

Cold and hot fresh water, sea water, lubricating oil.

MATERIAL SPECIFICATION: 962203

1	Body	GG25	Cast Iron
2	Seat	RG5	Bronze
3	Stem	RG5	Bronze
4	Gland	GG25	Cast Iron

MATERIAL SPECIFICATION: 962207

1	Body	GG25	Cast Iron
2	Seat	AISI304	Stainless Steel
3	Stem	AISI420	Stainless Steel
4	Gland	GG25	Cast Iron

TECHNICAL FEATURES

Design	DIN EN 1171 (DIN 3352 T2) with indicator
Face to face	EN 558 Series 14 (DIN 3202 F4)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Temperature range	-10°C ~ +120°C
Options	Drain plug, locking device, chain wheel, double threaded stem

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	Weight (kg)
200	PN10	340	230	620	250	90
250	PN10	395	250	730	315	145
300	PN10	445	270	845	315	210
350	PN10	505	290	930	400	260
400	PN10	565	310	1015	400	330
450	PN10	615	330	1125	400	370
500	PN10	670	350	1275	500	520
600	PN10	780	390	1460	500	630
700	PN10	895	430	1650	630	810

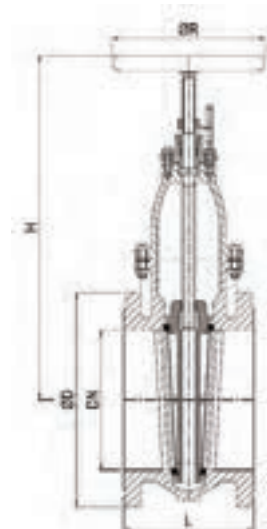


BRONZE TRIM
ITEM ID: 962203

STAINLESS STEEL TRIM
ITEM ID: 962207

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING
DN200~300	PN10
DN350~500	PN6
DN600~700	PN4



Nodular Cast Iron Gate Valve, Bronze or Stainless Steel Trim, Non-Rising Stem, F4 w/ Indicator

SIZES: 200 mm - 700 mm

Gate valves with raised face flanges acc. to DIN PN10, bolted bonnet and adjustable gland and short face to face. Inside screwed stem, non-rising stem and handwheel.

APPLICATION

Cold and hot fresh water, sea water, lubricating oil.

MATERIAL SPECIFICATION: 972203

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	RG5	Bronze
3	Stem	RG5	Bronze
4	Gland	GGG40.3	Nodular Cast Iron

MATERIAL SPECIFICATION: 972207

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	AISI304	Stainless Steel
3	Stem	AISI420	Stainless Steel
4	Gland	GGG40.3	Nodular Cast Iron

TECHNICAL FEATURES

Design	DIN EN 1171 (DIN 3352 T2) with indicator
Face to face	EN 558 Series 14 (DIN 3202 F4)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Temperature range	-10°C ~ +120°C
Options	Drain plug, locking device, chain wheel, double threaded stem

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	Weight (kg)
200	PN10	340	230	620	250	90
250	PN10	395	250	730	315	145
300	PN10	445	270	845	315	210
350	PN10	505	290	930	400	260
400	PN10	565	310	1015	400	330
450	PN10	615	330	1125	400	370
500	PN10	670	350	1275	500	520
600	PN10	780	390	1460	500	630
700	PN10	895	430	1650	630	810

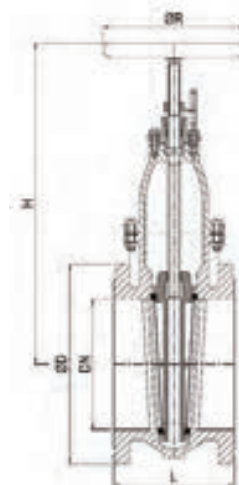


BRONZE TRIM
ITEM ID: 972203

STAINLESS STEEL TRIM
ITEM ID: 972207

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING
DN200~300	PN10
DN350~500	PN6
DN600~700	PN4



Nodular Cast Iron Gate Valve, Stainless Steel Trim Rising Stem

SIZES: 200 mm - 700 mm

APPLICATION

Cold and hot fresh water, lubricating oil.

MATERIAL SPECIFICATION

1	Body	GGG40.3	Nodular Cast Iron
2	Bonnet	GGG40.3	Nodular Cast Iron
3	Wedge	GGG40.3	Nodular Cast Iron
4	Seat	AISI304	Stainless Steel
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Asbestos-free	-
8	Gland packing	PTFE	-
9	Handwheel	GG25	Cast Iron

TECHNICAL FEATURES

Standard	DIN EN 1171 (DIN 3352 T3)
Face to face	EN 558 Series 14 (DIN 3202 F4)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	230	795	360	295	8x22	108
250	PN10	395	250	945	400	350	12x22	155
300	PN10	445	270	1160	500	400	12x22	210
350	PN10	505	290	1305	500	460	16x22	250
400	PN10	565	310	1405	640	515	16x26	340
450	PN10	615	330	1685	640	565	20x26	400
500	PN10	670	350	1785	720	620	20x26	520
600	PN10	780	390	1935	720	725	20x30	630
700	PN10	895	430	2200	800	840	24x30	820

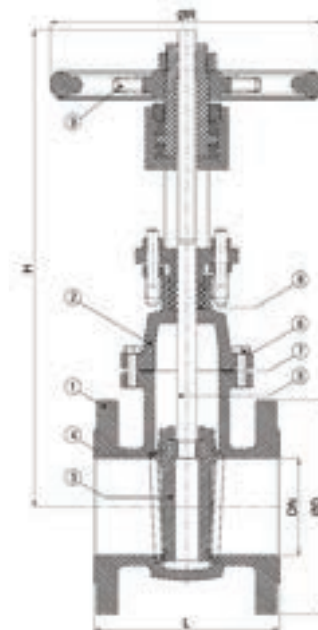


ITEM ID: 972227

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		
		120°C	CASING	CLOSURE
DN200~300	PN10	10	15	11
DN300~350	PN6*	6	9	6.6
DN400~600	PN4*	4	6	4.4

*Flanges drilled according to PN10



Nodular Cast Iron Gate Valve, Bronze or Stainless Steel Trim

SIZES: 40 mm - 200 mm

Gate valves with raised face flanges acc. to DIN PN10, bolted bonnet and adjustable gland and short face to face. Inside screwed stem, non-rising stem and handwheel.

APPLICATION

Cold and hot fresh water, sea water, lubricating oil.

MATERIAL SPECIFICATION: 973203

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	RG5	Bronze
3	Stem	RG5	Bronze
4	Gland	GGG40.3	Nodular Cast Iron

MATERIAL SPECIFICATION: 973207

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	AISI304	Stainless Steel
3	Stem	AISI420	Stainless Steel
4	Gland	GGG40.3	Nodular Cast Iron

TECHNICAL FEATURES

Standard	DIN EN 1171 (DIN 3352 T2) with indicator
Face to face	EN 558 Series 14 (DIN 3202 F4)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Pressure rating	PN16
Temperature range	-10°C ~ +120°C
Options	Drain plug, locking device, chain wheel, double threaded stem

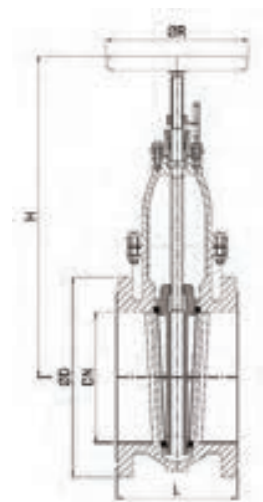
DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	Weight (kg)
40	PN16	150	140	270	140	15
50	PN16	165	150	270	140	17
65	PN16	185	170	295	160	20
80	PN16	200	180	325	160	27
100	PN16	220	190	360	200	34
125	PN16	250	200	450	200	45
150	PN16	285	210	500	200	55
175	PN16	315	220	560	200	70
200	PN16	340	230	620	250	90



BRONZE TRIM
ITEM ID: 973203

STAINLESS STEEL TRIM
ITEM ID: 973207



Cast Steel Gate Valve, Stainless Steel Trim Non-Rising Stem, F4 w/ Indicator

SIZES: 200 mm - 700 mm

Gate valves with raised face flanges acc. to DIN PN10, bolted bonnet and adjustable gland and short face to face. Inside screwed stem, non-rising stem and handwheel.

APPLICATION

Cold and hot fresh water, sea water, lubricating oil.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Seat	AISI304	Stainless Steel
3	Stem	AISI420	Stainless Steel
4	Gland	GSC25	Cast Steel

TECHNICAL FEATURES

Design	DIN EN 1171 (DIN 3352 T2) with indicator
Face to face	EN 558 Series 14 (DIN 3202 F4)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Temperature range	-10°C ~ +120°C
Options	Drain plug, locking device, chain wheel, double threaded stem

DIMENSIONS

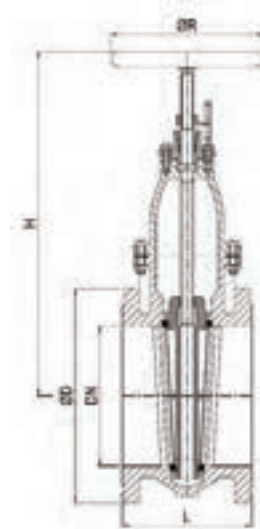
DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	Weight (kg)
200	PN10	340	230	620	250	90
250	PN10	395	250	730	315	145
300	PN10	445	270	845	315	210
350	PN10	505	290	930	400	260
400	PN10	565	310	1015	400	330
450	PN10	615	330	1125	400	370
500	PN10	670	350	1275	500	520
600	PN10	780	390	1460	500	630
700	PN10	895	430	1650	630	810



ITEM ID: 952207

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING
DN200~300	PN10
DN350~500	PN6
DN600~700	PN4



Cast Steel Gate Valve, Stainless Steel Trim Rising Stem

SIZES: 200 mm - 700 mm

APPLICATION

Cold and hot fresh water, sea water, lubricating oil.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Wedge	GSC25	Cast Steel
4	Seat	AISI304	Stainless Steel
5	Stem	AISI420	Stainless Steel
7	Bonnet gasket	Asbestos free	-
8	Gland packing	PTFE	-

TECHNICAL FEATURES

Standard	DIN 3352 T3
Face to face	EN 558 Series 14 (DIN 3202 F4)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (mm)	Weight (kg)
200	PN10	340	230	795	360	295	8x22	115
250	PN10	395	250	945	400	350	12x22	160
300	PN10	445	270	1160	500	400	12x22	215
350	PN10	505	290	1305	500	460	16x22	255
400	PN10	565	310	1405	640	515	16x26	345
450	PN10	615	330	1685	640	565	20x26	405
500	PN10	670	350	1785	720	620	20x26	530
600	PN10	780	390	1935	720	725	20x30	640
700	PN10	895	430	2200	800	840	24x30	830

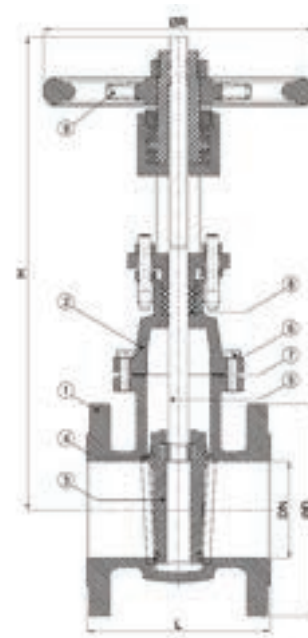


ITEM ID: 952227

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar] Hydro test press. [bar]		
		120°C	CASING	CLOSURE
DN200~300	PN10	10	15	11
DN350~500	PN6*	6	9	6.6
DN600~700	PN4*	4	6	4.4

*Flanges drilled according to PN10



Cast Steel Gate Valve, Bronze Trim Non-Rising Stem, F4 w/ Indicator

SIZES: 40 mm - 200 mm

Gate valves with raised face flanges acc. to DIN PN10, bolted bonnet and adjustable gland and short face to face. Inside screwed stem, non-rising stem and handwheel.

APPLICATION

Cold and hot fresh water, sea water, lubricating oil.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Seat	RG5	Bronze
3	Stem	RG5	Bronze
4	Gland	GSC25	Cast Steel

TECHNICAL FEATURES

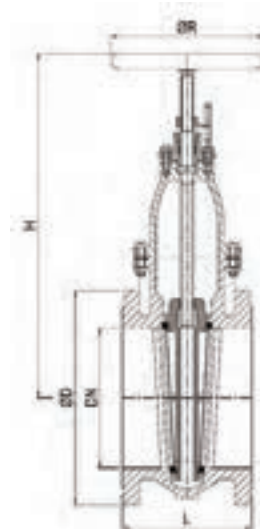
Standard	DIN EN 1171 (DIN 3352 T2) with indicator
Face to face	EN 558 Series 14 (DIN 3202 F4)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Pressure rating	PN16
Temperature range	-10°C ~ +120°C
Options	Drain plug, locking device, chain wheel, double threaded stem

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	Weight (kg)
40	PN16	150	140	270	140	15
50	PN16	165	150	270	140	17
65	PN16	185	170	295	160	20
80	PN16	200	180	325	160	27
100	PN16	220	190	360	200	34
125	PN16	250	200	450	200	45
150	PN16	285	210	500	200	55
175	PN16	315	220	560	200	70
200	PN16	340	230	620	250	90



ITEM ID: 953203



Cast Steel Gate Valve, Stainless Steel Trim Rising Stem

SIZES: 40 mm - 200 mm

APPLICATION

Cold and hot fresh water, lubricating oil.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Wedge	GSC25	Cast Steel
4	Seat	AISI304	Stainless Steel
5	Stem	AISI420	Stainless Steel
7	Bonnet gasket	Asbestos free	-
8	Gland packing	PTFE	-

TECHNICAL FEATURES

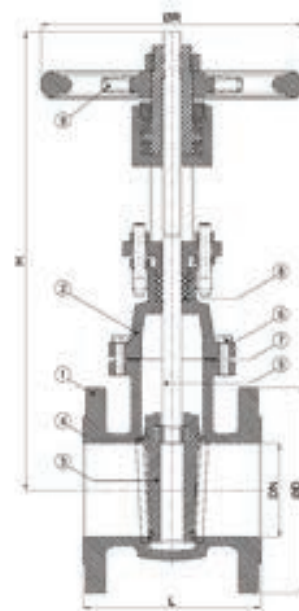
Standard	DIN 3352 T3
Face to face	EN 558 Series 14 (DIN 3202 F4)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (mm)	Weight (kg)
40	PN16	150	140	370	180	110	4x18	18
50	PN16	165	150	370	180	125	4x18	19
65	PN16	185	170	440	225	145	4x18	28
80	PN16	200	180	445	225	160	8x18	32
100	PN16	220	190	490	280	180	8x18	40
125	PN16	250	200	620	320	210	8x18	55
150	PN16	285	210	660	320	240	8x22	68
175	PN16	315	220	700	320	270	8x22	90
200	PN16	340	230	795	360	295	12x22	115



ITEM ID: 953227



Bronze Globe Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 8 mm - 100 mm

APPLICATION

Sea water, water and low pressure steam.

MATERIAL SPECIFICATION

1	Body	RG5	Bronze
2	Seat	RG5	Bronze
3	Disc	RG5	Bronze
4	Stem	Som59	Brass
6	Bonnet gasket	PTFE	-
7	Gland packing	Graphite	-

TECHNICAL FEATURES: 990301

Design	Special design, screwed and secured bonnet, STOP Type
Face to face	Acc. to mentioned dimension table
Threaded ends	BSP-female acc. to DIN EN 10226-1 (DIN 2999)

TECHNICAL FEATURES: 990311

Design	Special design, screwed and secured bonnet, SDNR Type
Face to face	Acc. to mentioned dimension table
Threaded ends	BSP-female acc. to DIN EN 10226-1 (DIN 2999)

DIMENSIONS

DN (mm)	Flange con.	G (inch)	L (mm)	H (mm)	ØR (mm)	Weight (kg)
8	PN16	1/4	60	95	60	0.4
10	PN16	3/8	60	102	63	0.6
15	PN16	1/2	65	102	63	0.6
20	PN16	3/4	75	117	80	1
25	PN16	1	90	124	80	1.4
32	PN16	1-1/4	105	130	90	2
40	PN16	1-1/2	120	147	100	3.1
50	PN16	2	145	172	125	4.4
65	PN16	2-1/2	170	180	160	6
80	PN16	3	200	230	200	8
100	PN16	4	220	250	200	12

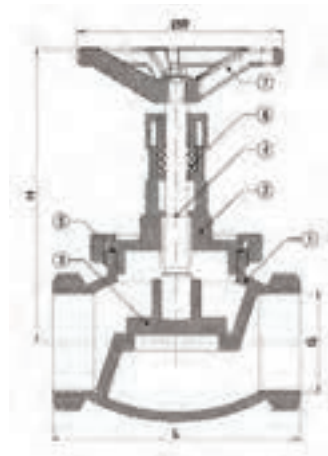


STOP TYPE
ITEM ID: 990301

SDNR TYPE
ITEM ID: 990311

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		CLOSURE
		120°C	CASING	
DN10~100	PN16	16	24	17.6



Bronze Globe Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

The valves offer good resistance to corrosive action of sea water, fresh water and waste water.

MATERIAL SPECIFICATION

1	Body	RG5	Bronze
2	Bonnet	RG5	Bronze
3	Seats	RG5	Bronze
4	Disc	RG5	Bronze
5	Stem	Som59	Brass
6	Bolts, nuts	A2	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 992303

Standard	DIN EN 86260-A STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-3/B (DIN 2501)
Flange connections	PN10

TECHNICAL FEATURES: 992313

Standard	DIN EN 86261-A SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-3/B (DIN 2501)
Flange connections	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	600	510	400	295	8x22	146
250	PN10	395	730	600	520	350	12x22	250
300	PN10	445	850	670	520	400	12x22	350
350	PN10	505	980	755	640	460	16x22	450
400	PN10	565	1100	835	640	515	16x26	625
450	PN10	615	1200	920	640	565	20x26	770
500	PN10	670	1250	970	640	620	20x26	980
600	PN10	780	1450	1200	640	725	20x30	1200



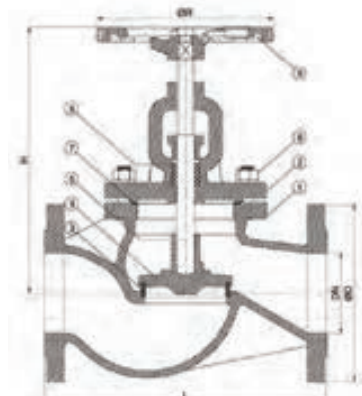
STOP TYPE
ITEM ID: 992303

SDNR TYPE
ITEM ID: 992313

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

* Flanges drilled according to PN10



Bronze Globe Valve, Bronze Trim STOP Type or SDNR Type, Special Length

SIZES: 15 mm - 200 mm

APPLICATION

The valves offer good resistance to corrosive action of sea water, fresh water and waste water.

MATERIAL SPECIFICATION

1	Body	RG5	Bronze
2	Bonnet	RG5	Bronze
3	Disc	RG5	Bronze
4	Stem	Som59	Brass
5	Bolts, nuts	A2	Steel
6	Bonnet gasket	Graphite	-
7	Gland packing	Graphite	-

TECHNICAL FEATURES: 993303SP

Design	Special design, STOP Type
Face to face	Acc. to dimension table
Flange dimensions	DIN Flanges acc. to EN 1092-3/A (DIN 2501)
Flange options	Special flange drilling acc. to ANSI or JIS

TECHNICAL FEATURES: 993313SP

Design	Special design, SDNR Type
Face to face	Acc. to dimension table
Flange dimensions	DIN Flanges acc. to EN 1092-3/A (DIN 2501)
Flange options	Special flange drilling acc. to ANSI to JIS

DIMENSIONS

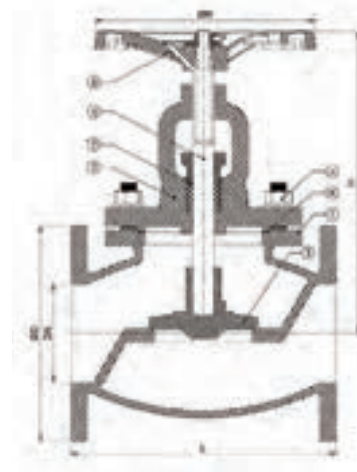
DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (mm)	Weight (kg)
15	PN16	95	120	165	120	65	4x14	3.8
20	PN16	105	120	165	120	75	4x14	4.2
25	PN16	115	140	175	140	85	4x14	5
32	PN16	140	150	180	140	100	4x18	6
40	PN16	150	155	220	160	110	4x18	10
50	PN16	165	180	235	160	125	4x18	12
65	PN16	185	200	240	180	145	4x18	15
80	PN16	200	240	280	200	160	8x18	21
100	PN16	220	270	310	225	180	8x18	34
125	PN16	250	320	350	250	210	8x22	50
150	PN16	285	370	385	300	240	8x22	72
200	PN16	340	500	490	400	295	12x22	122



STOP TYPE **SDNR TYPE**
ITEM ID: 993303SP ITEM ID: 993313SP

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		CLOSURE
		120°C	CASING	
DN15~200	PN16	16	24	17.6



Bronze Globe Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

The valves offer good resistance to corrosive action of sea water, fresh water and waste water.

MATERIAL SPECIFICATION

1	Body	RG5	Bronze
2	Bonnet	RG5	Bronze
3	Seat	RG5	Bronze
4	Disc	RG5	Bronze
5	Stem	Som59	Brass
6	Bolts, nuts	A2	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 993303

Standard	DIN 86260-A, STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-3/B (DIN 2501)
Flange connection	PN16

TECHNICAL FEATURES: 993313

Standard	DIN 86261-A, SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-3/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	130	165	120	65	4x14	3.8
20	PN16	105	150	165	120	75	4x14	4.2
25	PN16	115	160	175	140	85	4x14	5
32	PN16	140	180	180	140	100	4x18	7
40	PN16	150	200	220	160	110	4x18	11
50	PN16	165	230	230	160	125	4x18	13
65	PN16	185	290	245	180	145	4x18	18
80	PN16	200	310	295	200	160	8x18	22
100	PN16	220	350	330	225	180	8x18	34
125	PN16	250	400	365	250	210	8x18	48
150	PN16	285	480	420	300	240	8x22	70
175	PN16	315	550	500	400	270	8x22	122
200	PN16	340	600	510	400	295	12x22	146

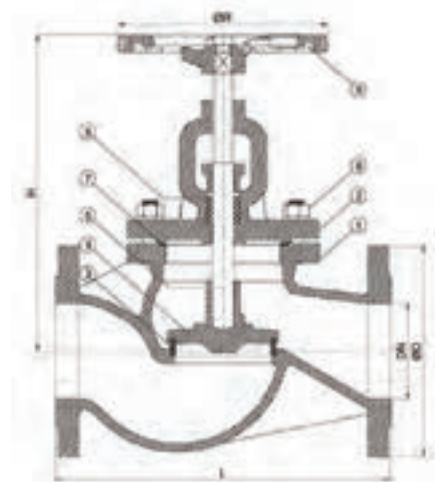


STOP TYPE
ITEM ID: 993303

SDNR TYPE
ITEM ID: 993313

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Cast Iron Globe Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

Steam, hot and cold water, oil and gases.

MATERIAL SPECIFICATION

1	Body	GG25	Cast Iron
2	Bonnet	GG25	Cast Iron
3	Seat	AISI304	Stainless Steel
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 962301

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

TECHNICAL FEATURES: 962317

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	600	510	400	295	8x22	135
250	PN10	395	730	600	520	350	12x22	215
300	PN10	445	850	670	520	400	12x22	305
350	PN10	505	980	755	640	460	16x22	405
400	PN10	565	1100	835	640	515	16x26	550
450	PN10	615	1200	920	640	565	20x26	690
500	PN10	670	1250	970	640	620	20x26	835
600	PN10	780	1450	1200	640	725	20x30	1050



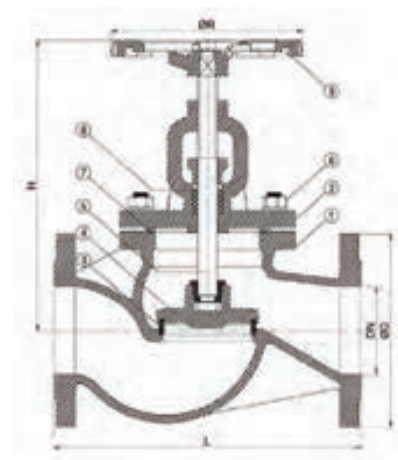
STOP TYPE
ITEM ID: 962301

SDNR TYPE
ITEM ID: 962317

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10



Cast Iron Globe Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GG25	Cast Iron
2	Bonnet	GG25	Cast Iron
3	Seat	AISI304	Bronze
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 962303

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

TECHNICAL FEATURES: 962313

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	600	510	400	295	8x22	135
250	PN10	395	730	600	520	350	12x22	215
300	PN10	445	850	670	520	400	12x22	305
350	PN10	505	980	755	640	460	16x22	405
400	PN10	565	1100	835	640	515	16x26	550
450	PN10	615	1200	920	640	565	20x26	690
500	PN10	670	1250	970	640	620	20x26	835
600	PN10	780	1450	1200	640	725	20x30	1050



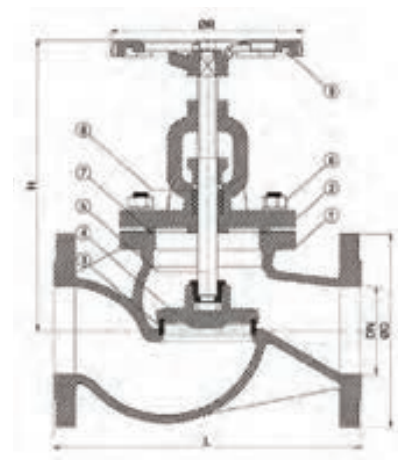
STOP TYPE
ITEM ID: 962303

SDNR TYPE
ITEM ID: 962313

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10



Cast Iron Globe Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Steam, cold and hot water, oil and gases.

MATERIAL SPECIFICATION

1	Body	GG25	Cast Iron
2	Bonnet	GG25	Cast Iron
3	Seat	AISI304	Stainless Steel
4	Disc (≤65)	AISI420	Stainless Steel
4	Disc (≥80)	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 963301

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

TECHNICAL FEATURES: 963311

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	130	165	120	65	4x14	3.8
20	PN16	105	150	165	120	75	4x14	4
25	PN16	115	160	170	140	85	4x14	5
32	PN16	140	180	180	140	100	4x18	7
40	PN16	150	200	220	160	110	4x18	11
50	PN16	165	230	230	160	125	4x18	13
65	PN16	185	290	245	180	145	4x18	18
80	PN16	200	310	295	200	160	8x18	25
100	PN16	220	350	330	225	180	8x18	35
125	PN16	250	400	365	250	210	8x18	55
150	PN16	285	480	420	300	240	8x22	75
175	PN16	315	550	500	400	270	8x22	115
200	PN16	340	600	510	400	295	12x22	135

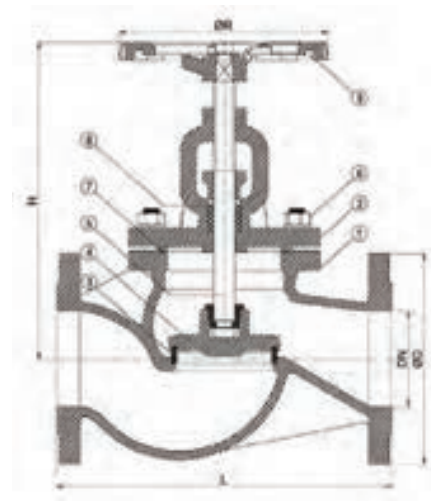


STOP TYPE
ITEM ID: 963301

SDNR TYPE
ITEM ID: 963311

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Cast Iron Globe Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GG25	Cast Iron
2	Bonnet	GG25	Cast Iron
3	Seat	RG5	Bronze
4	Disc (≤65)	RG5	Bronze
4	Disc (≥80)	GGG40.3	Nodular Cast Iron
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 963303

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

TECHNICAL FEATURES: 963313

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	130	165	120	65	4x14	3.8
20	PN16	105	150	165	120	75	4x14	4
25	PN16	115	160	175	140	85	4x14	5
32	PN16	140	180	180	140	100	4x18	7
40	PN16	150	200	220	160	110	4x18	11
50	PN16	165	230	230	160	125	4x18	13
65	PN16	185	290	245	180	145	4x18	18
80	PN16	200	310	295	200	160	8x18	25
100	PN16	220	350	330	225	180	8x18	35
125	PN16	250	400	365	250	210	8x18	55
150	PN16	285	480	420	300	240	8x22	75
175	PN16	315	550	500	400	270	8x22	115
200	PN16	340	600	510	400	295	12x22	135

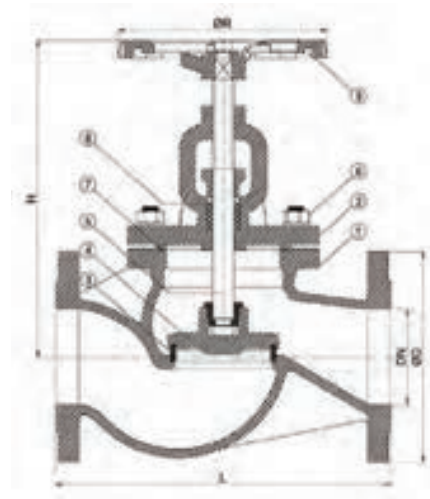


STOP TYPE
ITEM ID: 963303

SDNR TYPE
ITEM ID: 963313

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Nodular Cast Iron Globe Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GGG40.3	Nodular Cast Iron
2	Bonnet	GGG40.3	Nodular Cast Iron
3	Seat	RG5	Bronze
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 972303

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

TECHNICAL FEATURES: 972313

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	600	510	400	295	8x22	135
250	PN10	395	730	600	520	350	12x22	215
300	PN10	445	850	670	520	400	12x22	305
350	PN10	505	980	755	640	460	16x22	405
400	PN10	565	1100	835	640	515	16x26	550
450	PN10	615	1200	920	640	565	20x26	690
500	PN10	670	1250	970	640	620	20x26	835
600	PN10	780	1450	1200	640	725	20x30	1050



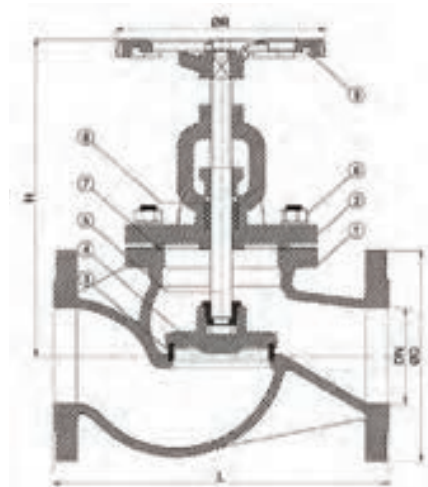
STOP TYPE
ITEM ID: 972303

SDNR TYPE
ITEM ID: 972313

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10



Nodular Cast Iron Globe Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GGG40.3	Nodular Cast Iron
2	Bonnet	GGG40.3	Nodular Cast Iron
3	Seat	AISI304	Stainless Steel
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 972307

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

TECHNICAL FEATURES: 972317

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	600	510	400	295	8x22	135
250	PN10	395	730	600	520	350	12x22	215
300	PN10	445	850	670	520	400	12x22	305
350	PN10	505	980	755	640	460	16x22	405
400	PN10	565	1100	835	640	515	16x26	550
450	PN10	615	1200	920	640	565	20x26	690
500	PN10	670	1250	970	640	620	20x26	835
600	PN10	780	1450	1200	640	725	20x30	1050



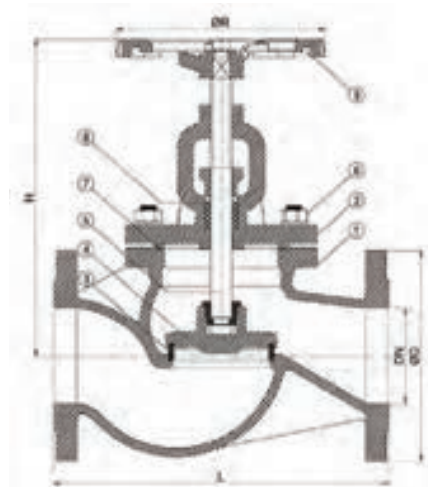
STOP TYPE
ITEM ID: 972307

SDNR TYPE
ITEM ID: 972317

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10



Nodular Cast Iron Globe Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION: 973303

1	Body	GGG40.3	Nodular Cast Iron
2	Bonnet	GGG40.3	Nodular Cast Iron
3	Seats	RG5	Bronze
4	Disc	RG5	Bronze
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

MATERIAL SPECIFICATION: 973313

1	Body	GGG40.3	Nodular Cast Iron
2	Bonnet	GGG40.3	Nodular Cast Iron
3	Seats	RG5	Bronze
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 973303

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connections	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	130	165	120	65	4x14	3.8
20	PN16	105	150	165	120	75	4x14	4
25	PN16	115	160	175	140	85	4x14	5
32	PN16	140	180	180	140	100	4x18	7
40	PN16	150	200	220	160	110	4x18	11
50	PN16	165	230	230	160	125	4x18	13
65	PN16	185	290	245	180	145	4x18	18
80	PN16	200	310	295	200	160	8x18	25
100	PN16	220	350	330	225	180	8x18	35
125	PN16	250	400	365	250	210	8x18	55
150	PN16	285	480	420	300	240	8x22	75
175	PN16	315	550	500	400	270	8x22	115
200	PN16	340	600	510	400	295	12x22	135



STOP TYPE
ITEM ID: 973303

SDNR TYPE
ITEM ID: 973313

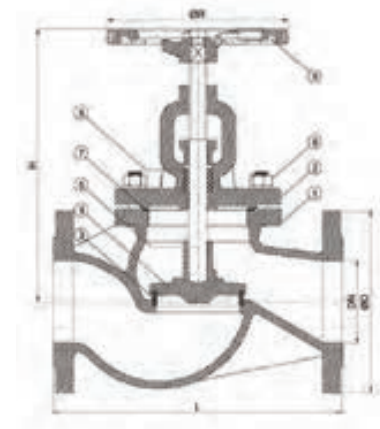
PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10

TECHNICAL FEATURES: 973313

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connections	PN16



Nodular Cast Iron Globe Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.



STOP TYPE
ITEM ID: 973307

SDNR TYPE
ITEM ID: 973317

MATERIAL SPECIFICATION: 973307

1	Body	GGG40.3	Nodular Cast Iron
2	Bonnet	GGG40.3	Nodular Cast Iron
3	Seats	AISI304	Stainless Steel
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

MATERIAL SPECIFICATION: 973317

1	Body	GGG40.3	Nodular Cast Iron
2	Bonnet	GGG40.3	Nodular Cast Iron
3	Seats	AISI304	Stainless Steel
4	Disc (≤65)	AISI420	Stainless Steel
4	Disc (≥80)	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 973307

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connections	PN16

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		CASING	CLOSURE
		120°C	180°C		
DN15~200	PN16	16	10	24	17.6
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

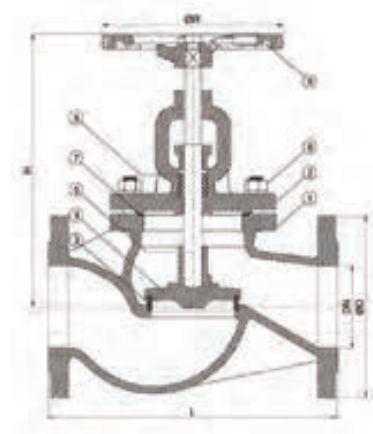
*Flanges drilled according to PN10

TECHNICAL FEATURES: 973317

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connections	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	130	165	120	65	4x14	3.8
20	PN16	105	150	165	120	75	4x14	4
25	PN16	115	160	175	140	85	4x14	5
32	PN16	140	180	180	140	100	4x18	7
40	PN16	150	200	220	160	110	4x18	11
50	PN16	165	230	230	160	125	4x18	13
65	PN16	185	290	245	180	145	4x18	18
80	PN16	200	310	295	200	160	8x18	25
100	PN16	220	350	330	225	180	8x18	35
125	PN16	250	400	365	250	210	8x18	55
150	PN16	285	480	420	300	240	8x22	75
175	PN16	315	550	500	400	270	8x22	115
200	PN16	340	600	510	400	295	12x22	135



Nodular Cast Iron Quick Closing Globe Valve Stainless Steel Trim

SIZES: 15 mm - 200 mm

APPLICATION

On board ships for fuel, oil, etc. Quick closing valves are specifically designed for marine use, providing a quick shut-off in emergency situations from outside the engine room and above the water line. These valves are equipped with a release cylinder for pneumatic, hydraulic, mechanical activation of automatic release in case of fire. TYPE APPROVED.



ITEM ID: 973357D

MATERIAL SPECIFICATION

1, 2	Body, Bonnet	GGG40.3	Nodular Cast Iron
3	Seats	AISI304	Stainless Steel
4	Disc	AISI420	Stainless Steel
5	Stem	AISI420	Stainless Steel
6	Spring	Spring Steel	-
7	Bolts, nuts	Steel	-
8	Bonnet gasket	Graphite	-
9	O-ring	NBR	Nitrile Rubber
10	Handwheel	GG25	Cast Iron
11	Retainer block	Ms58	Messing
12	Cylinder	Ms58	Messing

PRESSURE & TEMPERATURE RANGES

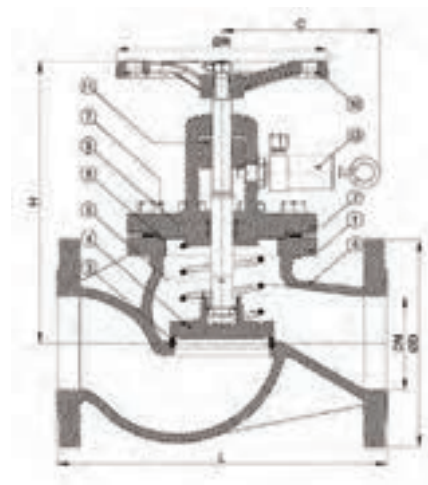
BORE	PRESS. RATING	Working press. [bar]		CLOSURE
		150°C	CASING	
DN15~200	PN16	16	24	17.6

TECHNICAL FEATURES

Design	Bonnet: hydraulic-pneumatic-mechanical operated release cylinder & pull-ring
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Options	Impuls unit for remote control
Flange options	Special flange drilling acc. to ANSI or JIS

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	130	175	120	65	4x14	4
20	PN16	105	150	175	120	75	4x14	4.5
25	PN16	115	160	190	140	85	4x14	5
32	PN16	140	180	190	140	100	4x18	7
40	PN16	150	200	205	160	110	4x18	11
50	PN16	165	230	215	160	125	4x18	13
65	PN16	185	290	245	180	145	4x18	19
80	PN16	200	310	270	200	160	8x18	25
100	PN16	220	350	305	225	180	8x18	35
125	PN16	250	400	330	250	210	8x18	55
150	PN16	285	480	380	300	240	8x22	75
200	PN16	340	600	450	400	295	12x22	135



Cast Steel Globe Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

Steam, cold and hot water, oil and gases.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Seat	AISI304	Stainless Steel
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	A2	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 952301

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

TECHNICAL FEATURES: 952311

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	600	510	400	295	8x22	135
250	PN10	395	730	600	520	350	12x22	215
300	PN10	445	850	670	520	400	12x22	305
350	PN10	505	980	755	640	460	16x22	405
400	PN10	565	1100	835	640	515	16x26	550
450	PN10	615	1200	920	640	565	20x26	690
500	PN10	670	1250	970	640	620	20x26	835
600	PN10	780	1450	1200	640	725	20x30	1050



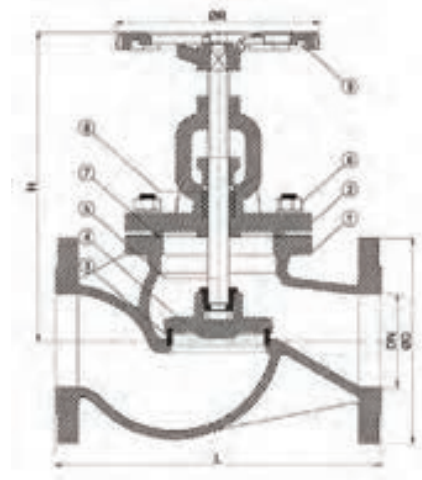
STOP TYPE
ITEM ID: 952301

SDNR TYPE
ITEM ID: 952311

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10



Cast Steel Globe Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Seat	RG5	Bronze
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	Som 59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 952303

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

TECHNICAL FEATURES: 952313

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	600	510	400	295	8x22	135
250	PN10	395	730	600	520	350	12x22	215
300	PN10	445	850	670	520	400	12x22	305
350	PN10	505	980	755	640	460	16x22	405
400	PN10	565	1100	835	640	515	16x26	550
450	PN10	615	1200	920	640	565	20x26	690
500	PN10	670	1250	970	640	620	20x26	835
600	PN10	780	1450	1200	640	725	20x30	1050



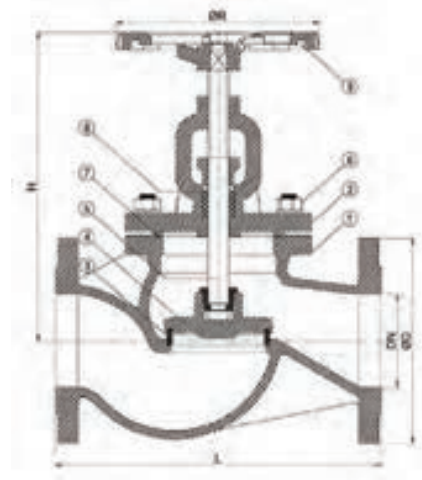
STOP TYPE
ITEM ID: 952303

SDNR TYPE
ITEM ID: 952313

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10



Cast Steel Globe Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Steam, cold and hot water, oil and gases.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Seat	AISI304	Stainless Steel
4	Disc (≤65)	AISI420	Stainless Steel
4	Disc (≥80)	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 953301

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

TECHNICAL FEATURES: 953311

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	130	165	120	65	4x14	3.8
20	PN16	105	150	165	120	75	4x14	4
25	PN16	115	160	175	140	85	4x14	5
32	PN16	140	180	180	140	100	4x18	7
40	PN16	150	200	220	160	110	4x18	11
50	PN16	165	230	230	160	125	4x18	13
65	PN16	185	290	245	180	145	4x18	18
80	PN16	200	310	295	200	160	8x18	25
100	PN16	220	350	330	225	180	8x18	35
125	PN16	250	400	365	250	210	8x18	55
150	PN16	285	480	420	300	240	8x22	75
175	PN16	315	550	500	400	270	8x22	115
200	PN16	340	600	510	400	295	12x22	135

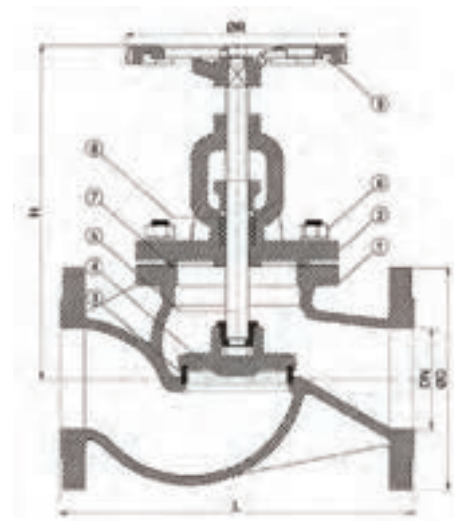


STOP TYPE
ITEM ID: 953301

SDNR TYPE
ITEM ID: 953311

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Cast Steel Globe Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Seat	RG5	Bronze
4	Disc (≤65)	RG5	Bronze
4	Disc (≥80)	GGG40.3	Nodular Cast Iron
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 953303

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

TECHNICAL FEATURES: 953313

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	130	165	120	65	4x14	3.8
20	PN16	105	150	165	120	75	4x14	4
25	PN16	115	160	175	140	85	4x14	5
32	PN16	140	180	180	140	100	4x18	7
40	PN16	150	200	220	160	110	4x18	11
50	PN16	165	230	230	160	125	4x18	13
65	PN16	185	290	245	180	145	4x18	18
80	PN16	200	310	295	200	160	8x18	25
100	PN16	220	350	330	225	180	8x18	35
125	PN16	250	400	365	250	210	8x18	55
150	PN16	285	480	420	300	240	8x22	75
175	PN16	315	550	500	400	270	8x22	115
200	PN16	340	600	510	400	295	12x22	135

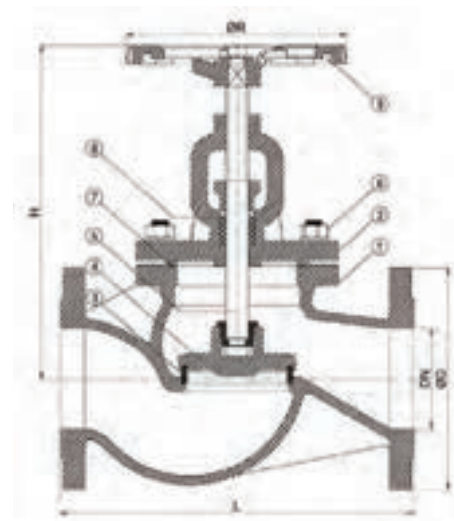


STOP TYPE
ITEM ID: 953303

SDNR TYPE
ITEM ID: 953313

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Cast Steel Globe Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 15 mm - 150 mm

APPLICATION

Steam, cold and hot water, oil and gases.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Seats	AISI304	Stainless Steel
4	Disc (<65)	AISI420	Stainless Steel
4	Disc (>80)	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 956301

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimension	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN40

TECHNICAL FEATURES: 956311

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimension	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN40

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN40	95	130	165	120	65	4x14	3.8
20	PN40	105	150	165	120	75	4x14	4
25	PN40	115	160	175	140	85	4x14	5
32	PN40	140	180	180	140	100	4x18	7
40	PN40	150	200	220	160	110	4x18	11
50	PN40	165	230	230	160	125	4x18	13
65	PN40	185	290	245	180	145	8x18	18
80	PN40	200	310	295	200	160	8x18	25
100	PN40	220	350	330	225	180	8x22	35
125	PN40	250	400	365	250	210	8x26	55
150	PN40	285	480	420	300	240	8x26	75

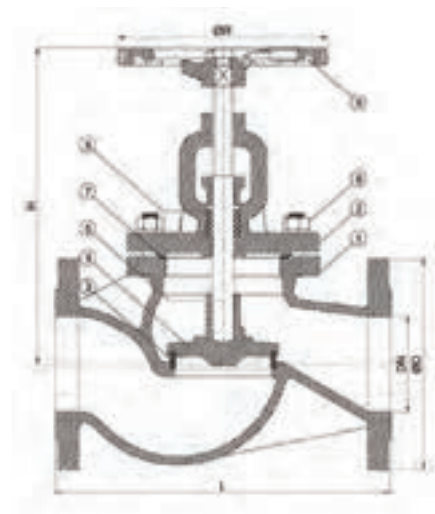


STOP TYPE
ITEM ID: 956301

SDNR TYPE
ITEM ID: 956311

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		CASING	CLOSURE
		120°C	Hydro test press. [bar]		
DN15~150	PN40	40	60	60	44



Cast Steel Globe Valve, Bronze Trim SDNR Type

SIZES: 15 mm - 150 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Seat	RG5	Bronze
4	Disc (≤65)	RG5	Bronze
4	Disc (≥80)	GGG40.3	Nodular Cast Iron
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN40

DIMENSIONS

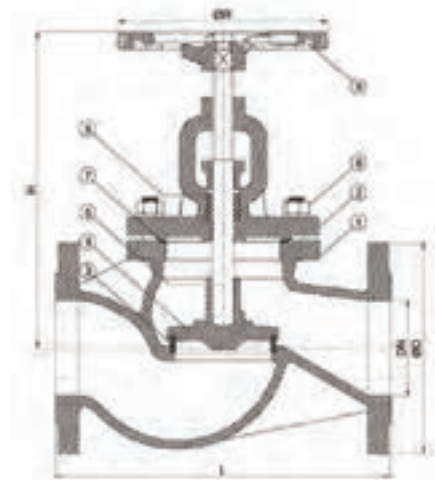
DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN40	95	130	165	120	65	4x14	3.8
20	PN40	105	150	165	120	75	4x14	4
25	PN40	115	160	175	140	85	4x14	5
32	PN40	140	180	180	140	100	4x18	7
40	PN40	150	200	220	160	110	4x18	11
50	PN40	165	230	230	160	125	4x18	13
65	PN40	185	290	245	180	145	8x18	18
80	PN40	200	310	295	200	160	8x18	25
100	PN40	220	350	330	225	180	8x22	35
125	PN40	250	400	365	250	210	8x26	55
150	PN40	285	480	420	300	240	8x26	75



ITEM ID: 956313

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		
		120°C	CASING	CLOSURE
DN15~150	PN40	40	60	44



Bronze Angle Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

The valves offer good resistance to corrosive action of sea water, fresh water and waste water.

MATERIAL SPECIFICATION

1	Body	RG5	Bronze
2	Bonnet	RG5	Bronze
3	Seats	RG5	Bronze
4	Disc	RG5	Bronze
5	Stem	Som59	Brass
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 993403

Standard	DIN EN 86260-A STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-3/B (DIN 2501)
Flange connection	PN16

TECHNICAL FEATURES: 993413

Standard	DIN EN 86261-A SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-3/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	90	160	120	65	4x14	3.8
20	PN16	105	95	155	120	75	4x14	4
25	PN16	115	100	165	140	85	4x14	5
32	PN16	140	105	170	140	100	4x18	7
40	PN16	150	115	210	160	110	4x18	10
50	PN16	165	125	210	160	125	4x18	12
65	PN16	185	145	225	180	145	4x18	17
80	PN16	200	155	260	200	160	8x18	23
100	PN16	220	175	305	225	180	8x18	33
125	PN16	250	200	310	250	210	8x18	50
150	PN16	285	225	350	300	240	8x22	70
175	PN16	315	250	420	400	270	8x22	90
200	PN16	340	275	420	400	295	12x22	110

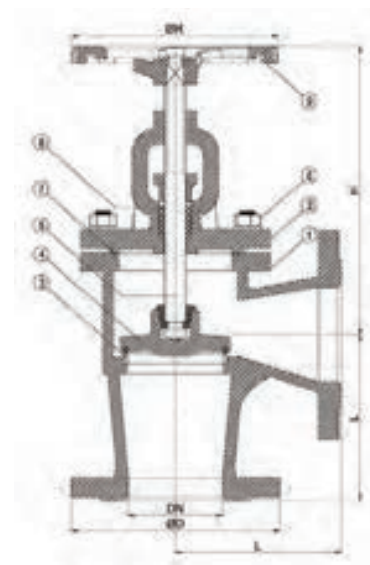


STOP TYPE
ITEM ID: 993403

SDNR TYPE
ITEM ID: 993413

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Bronze Angle Valve, Bronze Trim STOP Type or SDNR Type, Special Length

SIZES: 15 mm - 200 mm

APPLICATION

The valves offer good resistance to corrosive action of sea water, fresh water and waste water.

MATERIAL SPECIFICATION

1	Body	RG5	Bronze
2	Bonnet	RG5	Bronze
3	Disc	RG5	Bronze
4	Stem	Som59	Brass
6	Bonnet gasket	Graphite	-
7	Gland packing	Graphite	-

TECHNICAL FEATURES: 993403SP

Standard	Special design, STOP Type
Face to face	Acc. to mentioned dimension table
Flange dimensions	DIN Flanges acc. to EN 1092-3/A (DIN 2501)
Flange options	Special flange drilling acc. to ANSI or JIS

TECHNICAL FEATURES: 993413SP

Standard	Special design, SDNR Type
Face to face	Acc. to mentioned dimension table
Flange dimensions	DIN Flanges acc. to EN 1092-3/A (DIN 2501)
Flange options	Special flange drilling acc. to ANSI or JIS

DIMENSIONS

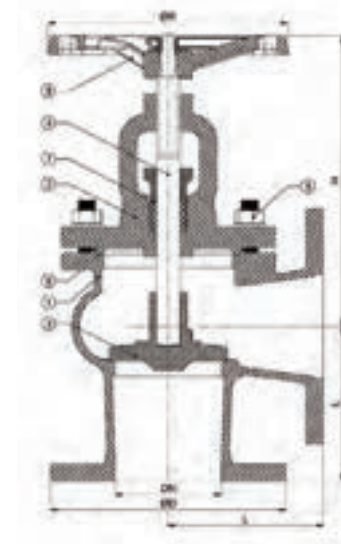
DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	65	155	120	65	4x14	3.6
20	PN16	105	65	155	120	75	4x14	4
25	PN16	115	70	155	140	85	4x14	4.5
32	PN16	140	90	160	140	100	4x18	5.5
40	PN16	150	90	200	160	110	4x18	9
50	PN16	165	105	210	160	125	4x18	11
65	PN16	185	115	210	180	145	4x18	15
80	PN16	200	125	245	200	160	8x18	20
100	PN16	220	145	275	225	180	8x18	28
125	PN16	250	170	305	250	210	8x18	42
150	PN16	285	200	340	300	240	8x22	65
200	PN16	340	250	470	400	295	12x22	90



STOP TYPE **SDNR TYPE**
ITEM ID: 993403SP ITEM ID: 993413SP

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		
		120°C	CASING	CLOSURE
DN15~200	PN16	16	24	17.6



Bronze Angle Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 8 mm - 80 mm

APPLICATION

Sea water, water and low pressure steam.

MATERIAL SPECIFICATION

1	Body	RG5	Bronze
2	Seat	RG5	Bronze
3	Disc	RG5	Bronze
4	Stem	Som59	Brass
6	Bonnet gasket	PTFE	-
7	Gland packing	Graphite	-

TECHNICAL FEATURES: 990401

Design	Special design, screwed and secured bonnet, STOP Type
Face to face	Acc. to mentioned dimension table
Threaded ends	BSP-female acc. to DIN EN 10226-1 (DIN 2999)

TECHNICAL FEATURES: 990411

Design	Special design, screwed and secured bonnet, SDNR Type
Face to face	Acc. to mentioned dimension table
Threaded ends	BSP-female acc. to DIN EN 10226-1 (DIN 2999)

DIMENSIONS

DN (mm)	Flange con.	G (inch)	L1 (mm)	L2 (mm)	H (mm)	ØR (mm)	Weight (kg)
8	PN16	1/4	35	30	86	60	0.4
10	PN16	3/8	35	30	93	63	0.6
15	PN16	1/2	40	35	94	63	0.6
20	PN16	3/4	45	40	106	80	0.9
25	PN16	1	50	45	115	80	1.2
32	PN16	1-1/4	55	50	125	90	1.9
40	PN16	1-1/2	65	55	135	100	2.5
50	PN16	2	75	65	150	125	4
65	PN16	2-1/2	90	75	230	160	5.5
80	PN16	3	110	90	250	200	7.5

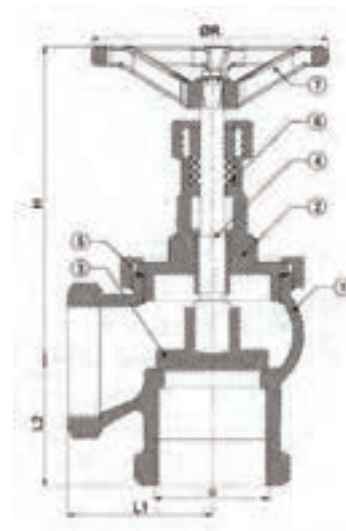


STOP TYPE
ITEM ID: 990401

SDNR TYPE
ITEM ID: 990411

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		CLOSURE
		120°C	Hydro test press. [bar]	
DN10~80	PN16	16	24	17.6



Bronze Angle Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

The valves offer good resistance to corrosive action of sea water, fresh water and waste water.

MATERIAL SPECIFICATION

1	Body	RG5	Bronze
2	Bonnet	RG5	Bronze
3	Seat	RG5	Bronze
4	Disc	RG5	Bronze
5	Stem	Som59	Brass
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 992403

Standard	DIN EN 86260-A STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimension	DIN Flanges acc. to EN 1092-3/B (DIN 2501)
Flange connections	PN10

TECHNICAL FEATURES: 992413

Standard	DIN 86261-A SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimension	DIN Flanges acc. to EN 1092-3/B (DIN 2501)
Flange connections	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	275	420	400	295	8x22	110
250	PN10	395	325	490	520	350	12x22	155
300	PN10	445	375	530	520	400	12x22	215
350	PN10	505	425	610	640	460	16x22	275
400	PN10	565	475	660	640	515	16x26	360
450	PN10	615	500	715	640	565	20x26	395
500	PN10	670	525	765	640	620	20x26	485
600	PN10	780	675	900	640	725	20x30	650



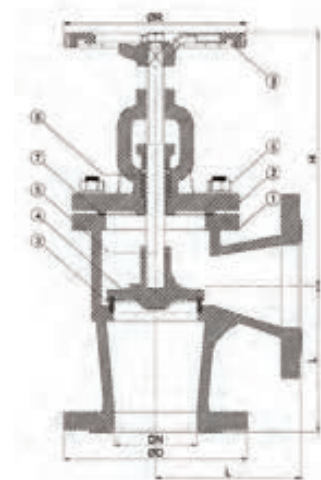
STOP TYPE
ITEM ID: 992403

SDNR TYPE
ITEM ID: 992413

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

* Flanges drilled according to PN10



Cast Iron Angle Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GG25	Cast Iron
2	Bonnet	GG25	Cast Iron
3	Seat	RG5	Bronze
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 962403

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

TECHNICAL FEATURES: 962413

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	275	420	400	295	8x22	110
250	PN10	395	325	490	520	350	12x22	155
300	PN10	445	375	530	520	400	12x22	215
350	PN10	505	425	610	640	460	16x22	275
400	PN10	565	475	660	640	515	16x26	360
450	PN10	615	500	715	640	565	20x26	395
500	PN10	670	525	765	640	620	20x26	485
600	PN10	780	675	900	640	725	20x30	650



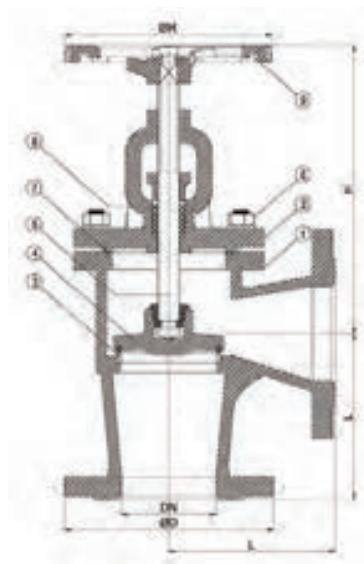
STOP TYPE
ITEM ID: 962403

SDNR TYPE
ITEM ID: 962413

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10



Cast Iron Angle Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

Steam, hot and cold water, oil and gases.

MATERIAL SPECIFICATION

1	Body	GG25	Cast Iron
2	Bonnet	GG25	Cast Iron
3	Seat	AISI304	Stainless Steel
4	Disc	AISI420	Stainless Steel
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	A2	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 962407

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

TECHNICAL FEATURES: 962417

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	275	420	400	295	8x22	110
250	PN10	395	325	490	520	350	12x22	155
300	PN10	445	375	530	520	400	12x22	215
350	PN10	505	425	610	640	460	16x22	275
400	PN10	565	475	660	640	515	16x26	360
450	PN10	615	500	715	640	565	20x26	395
500	PN10	670	525	765	640	620	20x26	485
600	PN10	780	675	900	640	725	20x30	650



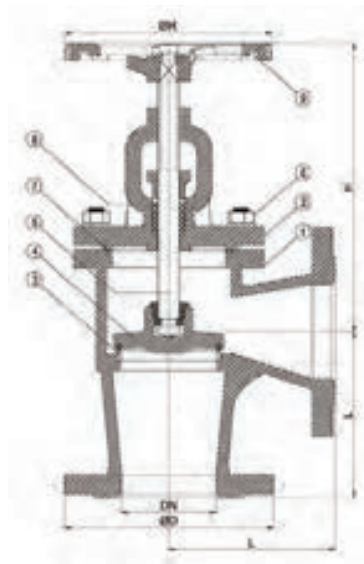
STOP TYPE
ITEM ID: 962407

SDNR TYPE
ITEM ID: 962417

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10



Cast Iron Angle Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Aboard ships for cold and hot water, oil and gases.

MATERIAL SPECIFICATION

1	Body	GG25	Cast Iron
2	Bonnet	GG25	Cast Iron
3	Seat	RG5	Bronze
4	Disc (≤65)	RG5	Bronze
4	Disc (≥80)	RG5	Nodular Cast Iron
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 963403

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

TECHNICAL FEATURES: 963413

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	90	160	120	65	4x14	3.8
20	PN16	105	95	155	120	75	4x14	4
25	PN16	115	100	165	140	85	4x14	5
32	PN16	140	105	170	140	100	4x18	7
40	PN16	150	115	210	160	110	4x18	10
50	PN16	165	125	210	160	125	4x18	12
65	PN16	185	145	225	180	145	4x18	17
80	PN16	200	155	260	200	160	8x18	23
100	PN16	220	175	305	225	180	8x18	33
125	PN16	250	200	310	250	210	8x18	50
150	PN16	285	225	350	300	240	8x22	70
175	PN16	315	250	420	400	270	8x22	90
200	PN16	340	275	420	400	295	12x22	110

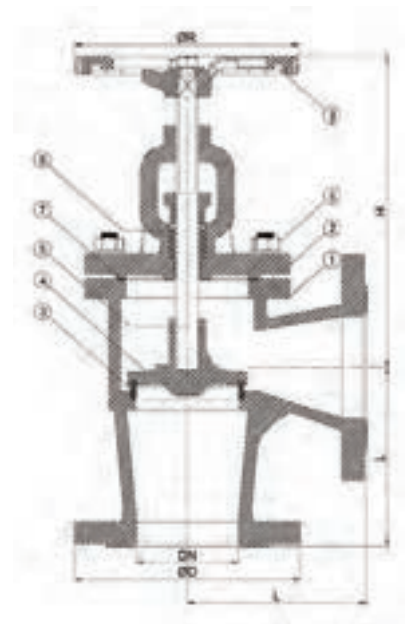


STOP TYPE
ITEM ID: 963403

SDNR TYPE
ITEM ID: 963413

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Cast Iron Angle Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Steam, cold and hot water, oil and gases.

MATERIAL SPECIFICATION

1	Body	GG25	Cast Iron
2	Bonnet	GG25	Cast Iron
3	Seat	AISI304	Stainless Steel
4	Disc (≤65)	AISI420	Stainless Steel
4	Disc (≥80)	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 963407

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

TECHNICAL FEATURES: 963417

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	90	160	120	65	4x14	3.8
20	PN16	105	95	155	120	75	4x14	4
25	PN16	115	100	165	140	85	4x14	5
32	PN16	140	105	170	140	100	4x18	7
40	PN16	150	115	210	160	110	4x18	10
50	PN16	165	125	210	160	125	4x18	12
65	PN16	185	145	225	180	145	4x18	17
80	PN16	200	155	260	200	160	8x18	23
100	PN16	220	175	305	225	180	8x18	33
125	PN16	250	200	310	250	210	8x18	50
150	PN16	285	225	350	300	240	8x22	70
175	PN16	315	250	420	400	270	8x22	90
200	PN16	340	275	420	400	295	12x22	110

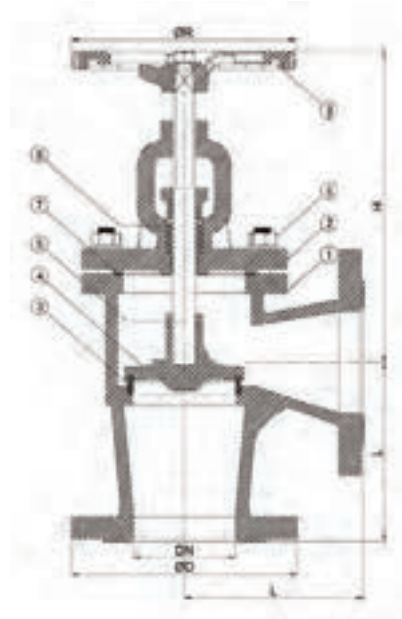


STOP TYPE
ITEM ID: 963407

SDNR TYPE
ITEM ID: 963417

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Nodular Cast Iron Angle Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GGG40.3	Nodular Cast Iron
2	Bonnet	GGG40.3	Nodular Cast Iron
3	Seat	RG5	Bronze
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 972403

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

TECHNICAL FEATURES : 972413

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	275	420	400	295	8x22	110
250	PN10	395	325	490	520	350	12x22	155
300	PN10	445	375	530	520	400	12x22	215
350	PN10	505	425	610	640	460	16x22	275
400	PN10	565	475	660	640	515	16x26	360
450	PN10	615	500	715	640	565	20x26	395
500	PN10	670	525	765	640	620	20x26	485
600	PN10	780	675	900	640	725	20x30	650



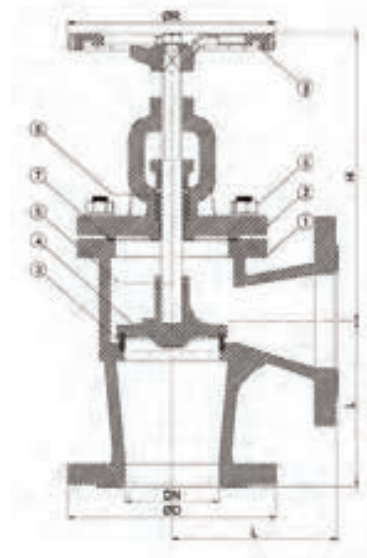
STOP TYPE
ITEM ID: 972403

SDNR TYPE
ITEM ID: 972413

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10



Nodular Cast Iron Angle Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GGG40.3	Nodular Cast Iron
2	Bonnet	GGG40.3	Nodular Cast Iron
3	Seat	AISI304	Stainless Steel
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 972407

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

TECHNICAL FEATURES: 972417

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	275	420	400	295	8x22	110
250	PN10	395	325	490	520	350	12x22	155
300	PN10	445	375	530	520	400	12x22	215
350	PN10	505	425	610	640	460	16x22	275
400	PN10	565	475	660	640	515	16x26	360
450	PN10	615	500	715	640	565	20x26	395
500	PN10	670	525	765	640	620	20x26	485
600	PN10	780	675	900	640	725	20x30	650



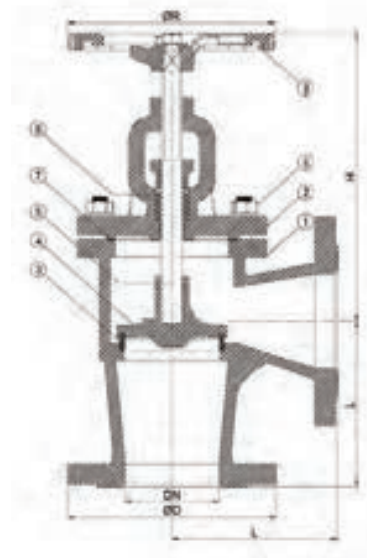
STOP TYPE
ITEM ID: 972407

SDNR TYPE
ITEM ID: 972417

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10



Nodular Cast Iron Angle Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GGG40.3	Nodular Cast Iron
2	Bonnet	GGG40.3	Nodular Cast Iron
3	Seats	RG5	Bronze
4	Disc (≤65)	RG5	Bronze
4	Disc (≥80)	GGG40.3	Nodular Cast Iron
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 973403

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connections	PN16

TECHNICAL FEATURES: 973413

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connections	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	90	160	120	65	4x14	3.8
20	PN16	105	95	155	120	75	4x14	4
25	PN16	115	100	165	140	85	4x14	5
32	PN16	140	105	170	140	100	4x18	7
40	PN16	150	115	210	160	110	4x18	10
50	PN16	165	125	210	160	125	4x18	12
65	PN16	185	145	225	180	145	4x18	17
80	PN16	200	155	260	200	160	8x18	23
100	PN16	220	175	305	225	180	8x18	33
125	PN16	250	200	310	250	210	8x18	50
150	PN16	285	225	350	300	240	8x22	70
175	PN16	315	250	420	400	270	8x22	90
200	PN16	340	275	420	400	295	12x22	110

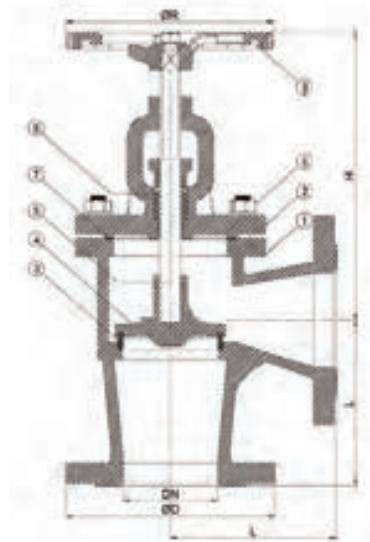


STOP TYPE
ITEM ID: 973403

SDNR TYPE
ITEM ID: 973413

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Nodular Cast Iron Angle Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GGG40.3	Nodular Cast Iron
2	Bonnet	GGG40.3	Nodular Cast Iron
3	Seats	AISI304	Stainless Steel
4	Disc (≤65)	AISI420	Stainless Steel
4	Disc (≥80)	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 973407

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/A (DIN 2501)
Flange connections	PN16

TECHNICAL FEATURES: 973417

Standard	DIN EN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-3/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	90	160	120	65	4x14	3.8
20	PN16	105	95	155	120	75	4x14	4
25	PN16	115	100	165	140	85	4x14	5
32	PN16	140	105	170	140	100	4x18	7
40	PN16	150	115	210	160	110	4x18	10
50	PN16	165	125	210	160	125	4x18	12
65	PN16	185	145	225	180	145	4x18	17
80	PN16	200	155	260	200	160	8x18	23
100	PN16	220	175	305	225	180	8x18	33
125	PN16	250	200	310	250	210	8x18	50
150	PN16	285	225	350	300	240	8x22	70
175	PN16	315	250	420	400	270	8x22	90
200	PN16	340	275	420	400	295	12x22	110

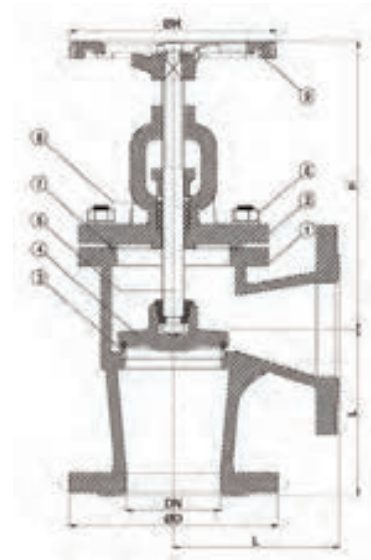


STOP TYPE
ITEM ID: 973407

SDNR TYPE
ITEM ID: 973417

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Nodular Cast Iron Angle Quick Closing Valve Stainless Steel Trim

SIZES: 15 mm - 200 mm

APPLICATION

On board ships for fuel, oil, etc. Quick closing valves are specifically designed for marine use, providing a quick shut-off in emergency situations from outside the engine room and above the water line. These valves are equipped with a release cylinder for pneumatic, hydraulic, mechanical activation of automatic release in case of fire. TYPE APPROVED.



ITEM ID: 973457D

MATERIAL SPECIFICATION

Item No.	Component	Material	Notes
1, 2	Body, Bonnet	GGG40.3	Nodular Cast Iron
3	Seats	AISI304	Stainless Steel
4	Disc	AISI420	Stainless Steel
5	Stem	AISI420	Stainless Steel
6	Spring	Spring Steel	-
7	Bolts, nuts	Steel	-
8	Bonnet gasket	Graphite	-
9	O-ring	NBR	Nitrile Rubber
10	Handwheel	GG25	Cast Iron
11	Retainer block	Ms58	Messing
12	Cylinder	Ms58	Messing

PRESSURE & TEMPERATURE RANGES

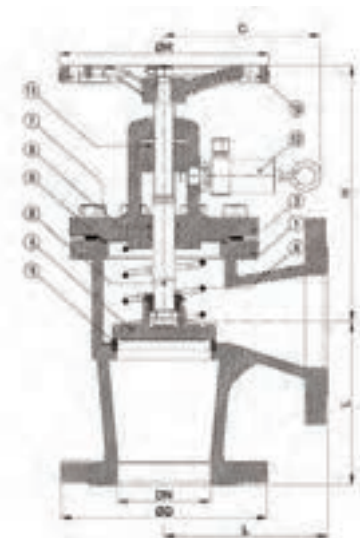
BORE	PRESS. RATING	Hydro test press. [bar]	
		CASING	CLOSURE
DN15~200	PN16	24	17.6

TECHNICAL FEATURES

Design	Bonnet: hydraulic-pneumatic-mechanical operated release cylinder & pull-ring
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Options	Impuls unit for remote control
Flange options	Special flange drilling acc. to ANSI or JIS

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	C (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	90	170	120	165	65	4x14	3.8
20	PN16	105	95	170	120	165	75	4x14	4
25	PN16	115	100	180	140	165	85	4x14	5
32	PN16	140	105	180	140	165	100	4x18	7
40	PN16	150	115	200	160	165	110	4x18	10
50	PN16	165	125	200	160	165	125	4x18	12
65	PN16	185	145	225	180	170	145	4x18	17
80	PN16	200	155	245	200	170	160	8x18	23
100	PN16	220	175	275	225	170	180	8x18	33
125	PN16	250	200	275	250	170	210	8x18	50
150	PN16	285	225	315	300	170	240	8x22	70
200	PN16	340	275	360	400	175	295	12x22	110



Cast Steel Angle Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 15 mm - 150 mm

APPLICATION

Steam, cold and hot water, oil and gases.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Seats	AISI304	Stainless Steel
4	Disc (<65)	AISI420	Stainless Steel
4	Disc (>80)	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 956401

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimension	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN40

TECHNICAL FEATURES: 956411

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimension	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN40

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN40	95	90	160	120	65	4x14	3.8
20	PN40	105	95	155	120	75	4x14	4
25	PN40	115	100	165	140	85	4x14	5
32	PN40	140	105	170	140	100	4x18	7
40	PN40	150	115	210	160	110	4x18	10
50	PN40	165	125	210	160	125	4x18	12
65	PN40	185	145	225	180	145	8x18	17
80	PN40	200	155	260	200	160	8x18	23
100	PN40	220	175	305	225	180	8x22	33
125	PN40	250	200	310	250	210	8x26	50
150	PN40	285	225	350	300	240	8x26	70

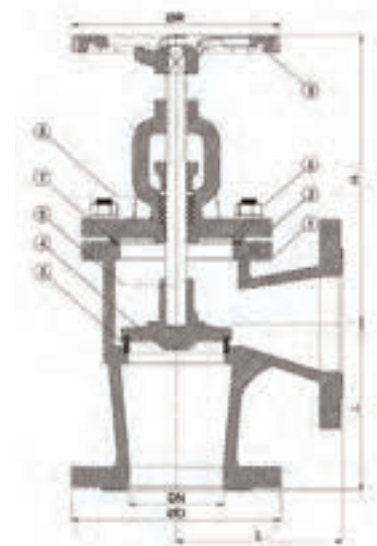


STOP TYPE
ITEM ID: 956401

SDNR TYPE
ITEM ID: 956411

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		CASING	CLOSURE
		120°C	Hydro test press. [bar]		
DN15~150	PN40	40	60	60	44



Cast Steel Angle Valve, Stainless Steel Trim or Bronze Trim, SDNR Type

SIZES: 200 mm - 600 mm

APPLICATION

Steam, cold and hot water, oil and gas.

MATERIAL SPECIFICATION: 952411

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Seat	AISI304	Stainless Steel
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

MATERIAL SPECIFICATION: 952413

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Seat	RG5	Bronze
4	Disc	GGG40.3	Nodular Cast Iron
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN10

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
200	PN10	340	275	420	400	295	8x22	110
250	PN10	395	325	490	520	350	12x22	155
300	PN10	445	375	530	520	400	12x22	215
350	PN10	505	425	610	640	460	16x22	275
400	PN10	565	475	660	640	515	16x26	360
450	PN10	615	500	715	640	565	20x26	395
500	PN10	670	525	765	640	620	20x26	485
600	PN10	780	675	900	640	725	20x30	650



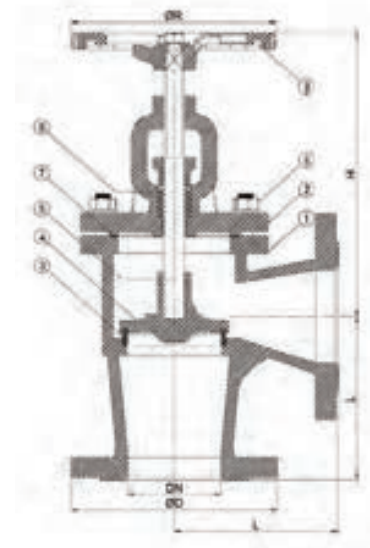
STAINLESS STEEL TRIM
ITEM ID: 952411

BRONZE TRIM
ITEM ID: 952413

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN200~250	PN10	10	6	15	11
DN300~350	PN6*	6	4	9	6.6
DN400~600	PN4*	4	2	6	4.4

*Flanges drilled according to PN10



Cast Steel Angle Valve, Stainless Steel Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Steam, cold and hot water, oil and gases.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Seat	AISI304	Stainless Steel
4	Disc (≤65)	AISI420	Stainless Steel
4	Disc (≥80)	GGG40.3	Nodular Cast Iron
5	Stem	AISI420	Stainless Steel
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 953401

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F2)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

TECHNICAL FEATURES: 953411

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 1 (DIN 3202 F1)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	90	160	120	65	4x14	3.8
20	PN16	105	95	155	120	75	4x14	4
25	PN16	115	100	165	140	85	4x14	5
32	PN16	140	105	170	140	100	4x18	7
40	PN16	150	115	210	160	110	4x18	10
50	PN16	165	125	210	160	125	4x18	12
65	PN16	185	145	225	180	145	4x18	17
80	PN16	200	155	260	200	160	8x18	23
100	PN16	220	175	305	225	180	8x18	33
125	PN16	250	200	310	250	210	8x18	50
150	PN16	285	225	350	300	240	8x22	70
175	PN16	315	250	420	400	270	8x22	90
200	PN16	340	275	420	400	295	12x22	110

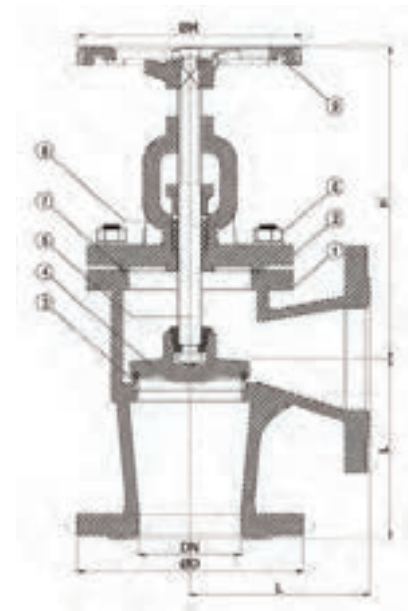


STOP TYPE
ITEM ID: 953401

SDNR TYPE
ITEM ID: 953411

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Cast Steel Angle Valve, Bronze Trim STOP Type or SDNR Type

SIZES: 15 mm - 200 mm

APPLICATION

Aboard ships for hot and cold water, oil and steam.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Bonnet	GSC25	Cast Steel
3	Seat	RG5	Bronze
4	Disc (≤65)	RG5	Bronze
4	Disc (≥80)	GGG40.3	Nodular Cast Iron
5	Stem	Som59	Brass
6	Bolts, nuts	Steel	Steel
7	Bonnet gasket	Graphite	-
8	Gland packing	Graphite	-

TECHNICAL FEATURES: 953403

Standard	DIN 86251 STOP Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

TECHNICAL FEATURES: 953413

Standard	DIN 86252 SDNR Type (DIN 3356)
Face to face	EN 558 Series 8 (DIN 3202 F32)
Flange dimensions	DIN Flanges acc. to EN 1092-2/B (DIN 2501)
Flange connection	PN16

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	H (mm)	ØR (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
15	PN16	95	90	160	120	65	4x14	3.8
20	PN16	105	95	155	120	75	4x14	4
25	PN16	115	100	165	140	85	4x14	5
32	PN16	140	105	170	140	100	4x18	7
40	PN16	150	115	210	160	110	4x18	10
50	PN16	165	125	210	160	125	4x18	12
65	PN16	185	145	225	180	145	4x18	17
80	PN16	200	155	260	200	160	8x18	23
100	PN16	220	175	305	225	180	8x18	33
125	PN16	250	200	310	250	210	8x18	50
150	PN16	285	225	350	300	240	8x22	70
175	PN16	315	250	420	400	270	8x22	90
200	PN16	340	275	420	400	295	12x22	110

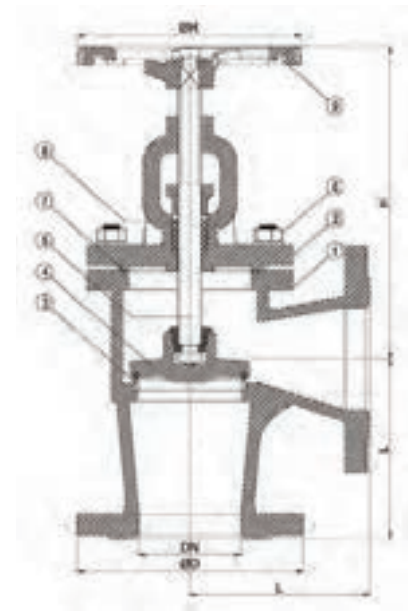


STOP TYPE
ITEM ID: 953403

SDNR TYPE
ITEM ID: 953413

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		Hydro test press. [bar]	
		120°C	180°C	CASING	CLOSURE
DN15~200	PN16	16	10	24	17.6



Nodular Cast Iron Butterfly Valve, Aluminum Bronze Disc, Wafer Type, Lever Operated

SIZES: 40 mm - 300 mm

Butterfly valve with handlever in nodular cast iron, GGG40.3, with stainless steel notch plate and stainless steel fasteners.

MATERIAL SPECIFICATION: 951113

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	NBR	Nitrile Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Shaft	1.4122	Stainless Steel

NITRILE RUBBER SEAT ITEM ID: 951113
EPDM RUBBER SEAT ITEM ID: 951113E



MATERIAL SPECIFICATION: 951113E

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	EPDM	Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Shaft	431	Stainless Steel

PRESSURE & TEMPERATURE RANGES: 951113

Max. working press.	16 Bar DN40 ~ DN150 10 Bar DN200 ~ DN300
Temperature	-15°C ~ +80°C

PRESSURE & TEMPERATURE RANGES: 951113E

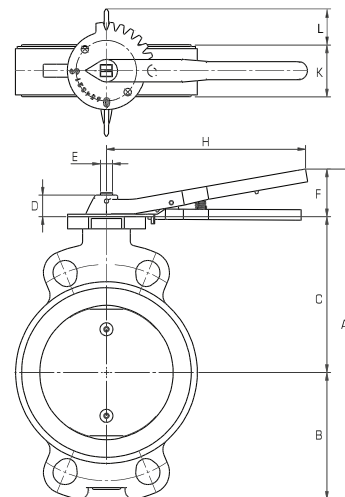
Max. working press.	16 Bar DN40 ~ DN150 10 Bar DN200 ~ DN300
Temperature	-23°C ~ +120°C

TECHNICAL FEATURES

Standard	API 609/EN 593
Face to face	EN 558-1 (ISO 5752)
Flange connection	DIN PN10 DIN PN16 JIS 10K ANSI 150#
Top flange Operation	ISO 5211 Lever

DIMENSIONS

DN (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	H (mm)	K (mm)	L (mm)	Weight (kg)
40	232	61	113	25	11	58	232	33	3.5	2.95
50	243	67	118	25	11	58	232	43	4.7	3.15
65	258	74	126	25	11	58	232	46	11	3.75
80	273	82	133	25	11	58	232	46	18	4.55
100	305	100	147	25	11	58	232	52	26	5.35
125	341	112	160	28	14	69	330	56	35	8.45
150	383	134	180	28	14	69	330	56	47	10.75
200	432	159	204	28	17	69	330	60	70	14.75
250	521	195	245	30	22	81	400	68	91	22.2
300	571	220	270	30	22	81	400	78	113	31.6



Nodular Cast Iron Butterfly Valve, Aluminum Bronze Disc, Wafer Type, Gearbox Operated

SIZES: 40 mm - 1000 mm

MATERIAL SPECIFICATION

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	NBR	Nitrile Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Shaft	1.4122	Stainless Steel

TECHNICAL FEATURES

Standard	API 609/EN 593
Face to face	EN 558-1 (ISO 5752)
Flange connection	DIN PN10 DIN PN16 JIS 10K ANSI 150#
Top flange	ISO 5211
Operation	Gearbox

PRESSURE & TEMPERATURE RANGES

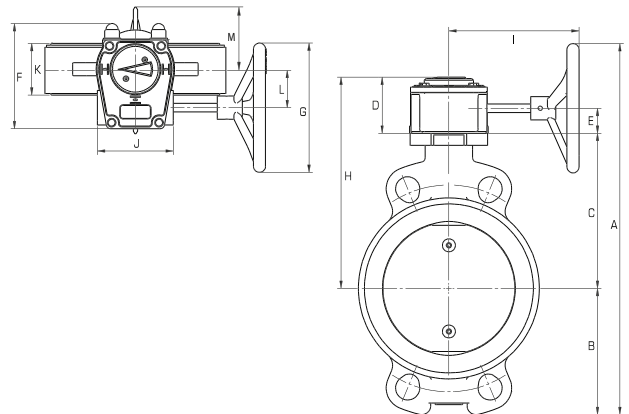
Max. working press.	16 Bar DN40 ~ DN150 10 Bar DN200 ~ DN1000
Temperature	-15°C ~ +80°C

DIMENSIONS

DN (mm)	Gearbox Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	ØG (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)	M (mm)	Weight (kg)
40	AB150N	276	61	113	55	27	124	150	168	155	80	33	43	3.5	4.2
50	AB150N	287	67	118	55	27	124	150	173	155	80	43	43	4.7	4.4
65	AB150N	302	74	126	55	27	124	150	181	155	80	46	43	11	5.0
80	AB150N	317	82	133	55	27	124	150	188	155	80	46	43	18	5.8
100	AB150N	349	100	147	55	27	124	150	202	155	80	52	43	26	6.6
125	AB150N	374	112	160	55	27	124	150	215	155	80	56	43	35	9.2
150	AB150N	416	134	180	55	27	124	150	235	155	80	56	43	47	11.5
200	AB210N	495	159	204	63	32	128	200	267	225	102	60	52	70	17.5
250	AB215N	597	195	245	63	32	128	250	308	225	102	68	52	91	24.2
300	AB215N	647	220	270	63	32	128	250	333	225	102	78	52	113	33.6
350	AB550N	791	282	315	88	44	174	300	403	296	138	78	71	129	48
400	AB550N	851	307	350	88	44	174	300	438	296	138	102	71	147	79
450	AB550N	921	352	375	88	44	174	300	463	296	138	114	71	167	107
500	AB880N	1049	387	415	93	47	226	400	508	289	200	127	86	160	142
600	AB880N	1264	452	565	93	47	226	400	658	289	200	154	86	240	217
700	AB1950N	1370	502	555	126	63	323	500	681	390	285	165	130	262	352
800	AB1950N	1490	557	620	126	63	323	500	746	390	285	190	130	300	382
900	AB3000N PR4	1674	622	675	153	77	337	600	828	449	293	203	140	343	549
1000	AB3000N PR4	1789	672	740	153	77	337	600	893	449	293	216	140	385	799



ITEM ID: 951113 GBR



Nodular Cast Iron Butterfly Valve, Stainless Steel Disc, Wafer Type, Lever Operated

SIZES: 40 mm - 300 mm

Butterfly valve with handlever in nodular cast iron, GGG40.3, with stainless steel notch plate and stainless steel fasteners.

MATERIAL SPECIFICATION: 951117

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	NBR	Nitrile Rubber
3	Disc	1.4408	Stainless Steel
4	Shaft	1.4122	Stainless Steel

MATERIAL SPECIFICATION: 951117E

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	EPDM	Rubber
3	Disc	1.4408	Stainless Steel
4	Shaft	1.4122	Stainless Steel

MATERIAL SPECIFICATION: 951117V

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	FKM	Viton Rubber
3	Disc	1.4408	Stainless Steel
4	Shaft	1.4122	Stainless Steel

TECHNICAL FEATURES

Standard	API 609/EN 593
Face to face	EN 558-1 (ISO 5752)
Flange connection	DIN PN10 DIN PN16 JIS 10K ANSI 150#
Top flange	ISO 5211
Operation	Lever

DIMENSIONS

DN (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	H (mm)	K (mm)	L (mm)	Weight (kg)
40	232	61	113	25	11	58	232	33	3.5	2.95
50	243	67	118	25	11	58	232	43	4.7	3.15
65	258	74	126	25	11	58	232	46	11	3.75
80	273	82	133	25	11	58	232	46	18	4.55
100	305	100	147	25	11	58	232	52	26	5.35
125	341	112	160	28	14	69	330	56	35	8.45
150	383	134	180	28	14	69	330	56	47	10.75
200	432	159	204	28	17	69	330	60	70	14.75
250	521	195	245	30	22	81	400	68	91	22.2
300	571	220	270	30	22	81	400	78	113	31.6



NITRILE RUBBER SEAT ITEM ID: 951117
EPDM RUBBER SEAT ITEM ID: 951117E

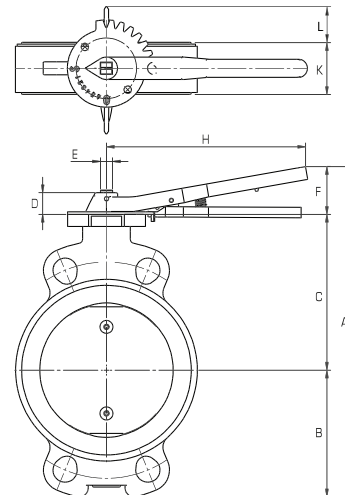
VITON RUBBER SEAT ITEM ID: 951117V

PRESSURE & TEMPERATURE RANGES: 951117, 951117E

Max. working press.	16 Bar DN40 ~ DN150 10 Bar DN200 ~ DN300
Temperature	-23°C ~ +120°C

PRESSURE & TEMPERATURE RANGES: 951117V

Max. working press.	16 Bar DN40 ~ DN150 10 Bar DN200 ~ DN300
Temperature	-15°C ~ +200°C



Nodular Cast Iron Butterfly Valve, Stainless Steel Disc, Wafer Type, Gearbox Operated

SIZES: 40 mm - 1000 mm

MATERIAL SPECIFICATION: 951117E GBR

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	EPDM	EPDM Rubber
3, 4	Disc, Shaft	1.4408, 1.4122	Stainless Steel

MATERIAL SPECIFICATION: 951117V GBR

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	FKM	Viton Rubber
3, 4	Disc, Shaft	1.4408, 1.4122	Stainless Steel

TECHNICAL FEATURES

Standard	API 609/EN 593
Face to face	EN 558-1 (ISO 5752)
Flange connection	DIN PN10, DIN PN16 JIS 10K, ANSI 150
Top flange	ISO 5211
Operation	Gearbox

PRESSURE & TEMPERATURE RANGES

Max. working press.	16 Bar DN40 ~ DN150 10 Bar DN200 ~ DN1000
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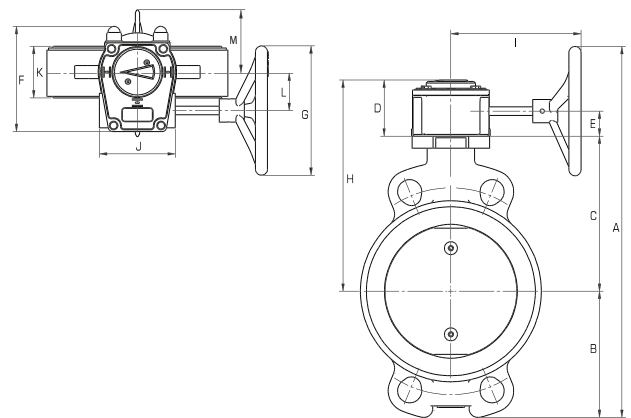
951117E GBR Temp -23°C ~ +120°C

951117V GBR Temp -15°C ~ +200°C



EPDM RUBBER SEAT
ITEM ID: 951117E GBR

VITON RUBBER SEAT
ITEM ID: 951117V GBR



DIMENSIONS

DN (mm)	Gearbox Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	ØG (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)	M (mm)	Weight (kg)
40	AB150N	276	61	113	55	27	124	150	168	155	80	33	43	3.5	4.2
50	AB150N	287	67	118	55	27	124	150	173	155	80	43	43	4.7	4.4
65	AB150N	302	74	126	55	27	124	150	181	155	80	46	43	11	5.0
80	AB150N	317	82	133	55	27	124	150	188	155	80	46	43	18	5.8
100	AB150N	349	100	147	55	27	124	150	202	155	80	52	43	26	6.6
125	AB150N	374	112	160	55	27	124	150	215	155	80	56	43	35	9.2
150	AB150N	416	134	180	55	27	124	150	235	155	80	56	43	47	11.5
200	AB210N	495	159	204	63	32	128	200	267	225	102	60	52	70	17.5
250	AB215N	597	195	245	63	32	128	250	308	225	102	68	52	91	24.2
300	AB215N	647	220	270	63	32	128	250	333	225	102	78	52	113	33.6
350	AB550N	791	282	315	88	44	174	300	403	296	138	78	71	129	48
400	AB550N	851	307	350	88	44	174	300	438	296	138	102	71	147	79
450	AB550N	921	352	375	88	44	174	300	463	296	138	114	71	167	107
500	AB880N	1049	387	415	93	47	226	400	508	289	200	127	86	160	142
600	AB880N	1264	452	565	93	47	226	400	658	289	200	154	86	240	217
700	AB1950N	1370	502	555	126	63	323	500	681	390	285	165	130	262	352
800	AB1950N	1490	557	620	126	63	323	500	746	390	285	190	130	300	382
900	AB3000N PR4	1674	622	675	153	77	337	600	828	449	293	203	140	343	549
1000	AB3000N PR4	1789	672	740	153	77	337	600	893	449	293	216	140	385	799

Nodular Cast Iron Butterfly Valve, Stainless Steel Disc, High Performance, Wafer Type, Gearbox Operated

SIZES: 50 mm - 400 mm

MATERIAL SPECIFICATION

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	PTFE	PolyTetraFluorEthylene
3	Disc	1.4408	Stainless Steel
4	Shaft	1.4418	Stainless Steel

TECHNICAL FEATURES

Standard	API 609/EN 593
Face to face	EN 558-1 (ISO 5752)
Flange connection	DIN PN16 DN50 - DN150 DIN PN10 DN200 - DN400
Top flange Operation	ISO 5211 Gearbox

PRESSURE & TEMPERATURE RANGES

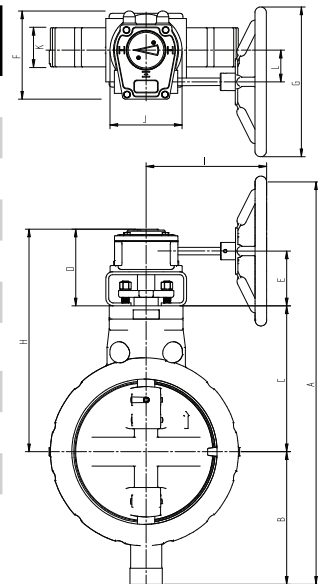
Max. working press.	16 Bar DN50 - DN150 10 Bar DN200 - DN400
Temperature	-50°C ~ +180°C

DIMENSIONS

DN (mm)	Gearbox Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	J (mm)	K (mm)	L (mm)	Weight (kg)
50	AB150W	344	91	108	85	70	124	100	193	80	43	42	6.7
65	AB150W	369	101	123	85	70	124	100	208	80	46	42	7.6
80	AB150W	385	107	133	85	70	124	100	218	80	46	42	8.2
100	AB150W	415	115	155	85	70	124	100	240	80	52	42	9.7
125	AB210W	506	155	173	97	78	128	200	270	102	56	52	16
150	AB210W	525	164	183	97	78	128	200	280	102	56	52	18.5
200	AB215WLB	605	195	218	112	92	155	200	330	150	60	52	29
250	AB215WLB	700	230	253	112	92	155	250	365	150	68	52	40
300	AB550W	792	260	278	131	104	174	300	409	138	78	71	60
350	AB550W	880	308	318	131	104	174	300	449	138	92	71	81
400	AB880W	1035	354	354	166	127	226	400	520	200	102	86	123



ITEM ID: 999927 GBR



Nodular Cast Iron Butterfly Valve, Aluminum Bronze Disc, Lug Type, Lever Operated

SIZES: 40 mm - 300 mm

Butterfly valve with handlever in nodular cast iron GGG40.3 with stainless steel notch plate and stainless steel fasteners.

MATERIAL SPECIFICATION: 999933E

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	EPDM	EPDM Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Shaft	1.4122	Stainless Steel

MATERIAL SPECIFICATION: 999933

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	NBR	Nitrile Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Shaft	1.4122	Stainless Steel

TECHNICAL FEATURES

Standard	API 609/EN 593
Face to face	EN 558-1 (ISO 5752)
Flange connection	DIN PN16 DN50 - DN150 DIN PN10 DN200 - DN300
Top flange	ISO 5211
Operation	Lever

DIMENSIONS

DN (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	H (mm)	K (mm)	L (mm)	Weight (kg)
40	232	61	113	25	11	58	232	33	3.5	4.35
50	243	67	118	25	11	58	232	43	4.7	4.85
65	258	74	126	25	11	58	232	46	11	5.85
80	273	82	133	25	11	58	232	46	18	6.45
100	305	100	147	25	11	58	232	52	26	9.25
125	341	112	160	28	14	69	330	56	35	11.75
150	383	134	180	28	14	69	330	56	47	14.35
200	432	159	204	28	17	69	330	60	70	19.75
250	521	195	245	30	22	81	400	68	91	32.30
300	571	220	270	30	22	81	400	78	113	50



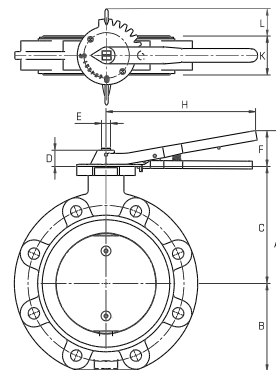
EPDM RUBBER TRIM ITEM ID: 999933E
NITRILE RUBBER TRIM ITEM ID: 999933

PRESSURE & TEMPERATURE RANGES: 999933E

Max. working press.	16 Bar DN40 - DN150 10 Bar DN200 - DN300
Temperature	-23°C ~ +120°C

PRESSURE & TEMPERATURE RANGES: 999933

Max. working press.	16 Bar DN40 - DN150 10 Bar DN200 - DN300
Temperature	-15°C ~ +80°C



Nodular Cast Iron Butterfly Valve, Stainless Steel Disc, Lug Type, Lever Operated

SIZES: 40 mm - 300 mm

Butterfly valve with handlever in nodular cast iron GGG40.3 with stainless steel notch plate and stainless steel fasteners.

MATERIAL SPECIFICATION

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	NBR	Nitrile Rubber
3	Disc	1.4408	Stainless Steel
4	Shaft	1.4122	Stainless Steel

TECHNICAL FEATURES

Standard	API 609/EN 593
Face to Face	EN 558-1 (ISO 5752)
Flange connection	DIN PN16 DN50 - DN150 DIN PN10 DN200 - DN300
Top flange	ISO 5211
Operation	Lever

PRESSURE & TEMPERATURE RANGES

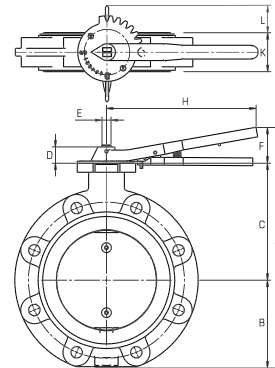
Max. working press.	16 Bar DN40 - DN150 10 Bar DN200 - DN300
Temperature	-15°C ~ +80°C

DIMENSIONS

DN (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	H (mm)	K (mm)	L (mm)	Weight (kg)
40	232	61	113	25	11	58	232	33	3.5	4.35
50	243	67	118	25	11	58	232	43	4.7	4.85
65	258	74	126	25	11	58	232	46	11	5.85
80	273	82	133	25	11	58	232	46	18	6.45
100	305	100	147	25	11	58	232	52	26	9.25
125	341	112	160	28	14	69	330	56	35	11.75
150	383	134	180	28	14	69	330	56	47	14.35
200	432	159	204	28	17	69	330	60	70	19.75
250	521	195	245	30	22	81	400	68	91	32.30
300	571	220	270	30	22	81	400	78	113	50



ITEM ID: 999937



Nodular Cast Iron Butterfly Valve, Aluminum Bronze Disc, Mono Flange, Lever Operated

SIZES: 40 mm - 300 mm

Butterfly valve with handlever in nodular cast iron GGG40.3 with stainless steel notch plate and stainless steel fasteners.

MATERIAL SPECIFICATION

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	NBR	Nitrile Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Shaft	1.1422	Stainless Steel

TECHNICAL FEATURES

Standard	API 609/EN 593
Face to face	EN 558-1 (ISO 5752)
Flange connection	DIN PN6
Top flange	ISO 5211
Operation	Lever

PRESSURE & TEMPERATURE RANGES

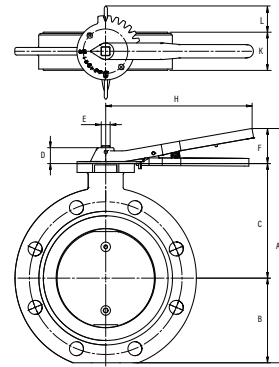
Max. working press.	6 Bar
Temperature	-15°C ~ +80°C

DIMENSIONS

DN (mm)	Flange conn.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	H (mm)	K (mm)	L (mm)	Weight (kg)
40	PN6	232	61	113	25	11	58	232	33	3.5	3.45
50	PN6	243	67	118	25	11	58	232	43	4.7	3.75
65	PN6	258	74	126	25	11	58	232	46	11	4.75
80	PN6	273	82	133	25	11	58	232	46	18	4.95
100	PN6	305	100	147	25	11	58	232	52	26	6.85
125	PN6	341	112	160	28	14	69	330	56	35	9.55
150	PN6	383	134	180	28	14	69	330	56	47	11.55
200	PN6	432	159	204	28	17	69	330	60	70	16.25
250	PN6	521	195	245	30	22	81	400	68	91	28.8
300	PN6	571	220	270	30	22	81	400	78	113	35.6



ITEM ID: 999941



Nodular Cast Iron Butterfly Valve, Aluminum Bronze Disc, Mono Flange, Lever Operated

SIZES: 40 mm - 300 mm

Butterfly valve with handlever in nodular cast iron GGG40.3 with stainless steel notch plate and stainless steel fasteners.



EPDM RUBBER TRIM ITEM ID: 999943E
NITRILE RUBBER TRIM ITEM ID: 999943

MATERIAL SPECIFICATION: 999943E

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	EPDM	EPDM Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Shaft	1.1422	Stainless Steel

MATERIAL SPECIFICATION: 999943

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	NBR	Nitrile Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Shaft	1.1422	Stainless Steel

PRESSURE & TEMPERATURE RANGES: 999943E

Max. working press.	16 Bar DN40 - DN150
	10 Bar DN200 - DN1000
Temperature	-23°C ~ +120°C

PRESSURE & TEMPERATURE RANGES: 999943

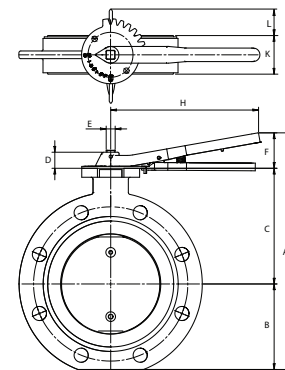
Max. working press.	16 Bar DN40 - DN150
	10 Bar DN200 - DN1000
Temperature	-15°C ~ +80°C

TECHNICAL FEATURES

Standard	API 609/EN 593
Face to face	EN 558-1 (ISO 5752)
Flange connection	DIN PN16 DN40 - DN150 DIN PN10 DN200 - DN1000
Top flange	ISO 5211
Operation	Lever

DIMENSIONS

DN (mm)	Flange conn.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	H (mm)	K (mm)	L (mm)	Weight (kg)
40	PN16	232	61	113	25	11	58	232	33	3.5	3.45
50	PN16	243	67	118	25	11	58	232	43	4.7	3.75
65	PN16	258	74	126	25	11	58	232	46	11	4.75
80	PN16	273	82	133	25	11	58	232	64	18	4.95
100	PN16	305	100	147	25	11	58	232	64	26	6.85
125	PN16	341	112	160	28	14	69	330	70	35	9.55
150	PN16	383	134	180	28	14	69	330	76	47	11.55
200	PN10	432	159	204	28	17	69	330	89	70	16.25
250	PN10	521	195	245	30	22	81	400	114	91	28.8
300	PN10	571	220	270	30	22	81	400	114	113	35.6



Nodular Cast Iron Butterfly Valve, Aluminum Bronze Disc, Mono Flange Long, Lever Operated

SIZES: 40 mm - 300 mm

Butterfly valve with handlever in nodular cast iron GGG.40 with stainless steel notch plate and stainless steel fasteners.



MATERIAL SPECIFICATION: 999944E

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	EPDM	EPDM Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Shaft	1.1422	Stainless Steel

EPDM RUBBER TRIM ITEM ID: 999944E
NITRILE RUBBER TRIM ITEM ID: 999944

MATERIAL SPECIFICATION: 999944

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	NBR	Nitrile Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Shaft	1.1422	Stainless Steel

PRESSURE & TEMPERATURE RANGES: 999944E

Max. working press.	16 Bar DN40 - DN150
	10 Bar DN200 - DN1000
Temperature	-23°C ~ +120°C

PRESSURE & TEMPERATURE RANGES: 999944

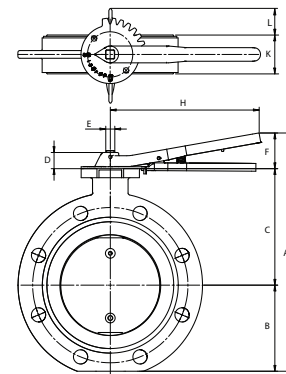
Max. working press.	16 Bar DN40 - DN150
	10 Bar DN200 - DN1000
Temperature	-15°C ~ +80°C

TECHNICAL FEATURES

Standard	EN 593
Face to face	EN 558-1 (ISO 5752)
Flange connection	DIN PN16 DN40 - DN150 DIN PN10 DN200 - DN1000
Top flange	ISO 5211
Operation	Lever

DIMENSIONS

DN (mm)	Flange conn.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	H (mm)	K (mm)	L (mm)	Weight (kg)
40	PN16	232	61	113	25	11	58	232	33	3.5	3.45
50	PN16	243	67	118	25	11	58	232	43	4.7	3.75
65	PN16	258	74	126	25	11	58	232	46	11	4.75
80	PN16	273	82	133	25	11	58	232	64	18	4.95
100	PN16	305	100	147	25	11	58	232	64	26	6.85
125	PN16	341	112	160	28	14	69	330	70	35	9.55
150	PN16	383	134	180	28	14	69	330	76	47	11.55
200	PN10	432	159	204	28	17	69	330	89	70	16.25
250	PN10	521	195	245	30	22	81	400	114	91	28.8
300	PN10	571	220	270	30	22	81	400	114	113	35.6



Nodular Cast Iron Butterfly Valve, Aluminium Bronze Disc, Double Flanged, Gearbox Operated

SIZES: 40 mm - 1000 mm

MATERIAL SPECIFICATION

1	Body	GG40.3	Nodular Cast Iron
2	Seat	EPDM	EPDM Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Shaft	1.4122	Stainless Steel

TECHNICAL FEATURES

Standard	API 609/EN 593
Face to face	EN 558-1 (ISO 5752)
Flange connection	DIN PN16 DN40 - DN150 DIN PN10 DN200 - DN1000
Top flange Operation	ISO 5211 Gearbox

PRESSURE & TEMPERATURE RANGES

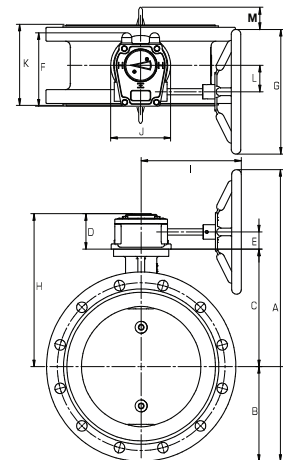
Max. working press.	16 Bar DN40 - DN150 10 Bar DN200 - DN1000
Temperature	-23°C ~ +120°C

DIMENSIONS

DN (mm)	Gearbox Type	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	ØG (mm)	H (mm)	I (mm)	J (mm)	K (mm)	L (mm)	M (mm)	Weight (kg)
40	AB150N	276	61	113	55	27	124	150	168	155	80	106	43	-	10.2
50	AB150N	287	67	118	55	27	124	150	173	155	80	108	43	-	11
65	AB150N	302	74	126	55	27	124	150	181	155	80	112	43	-	11.8
80	AB150N	317	82	133	55	27	124	150	188	155	80	114	43	-	13
100	AB150N	349	100	147	55	27	124	150	202	155	80	127	43	-	16.1
125	AB150N	374	112	160	55	27	124	150	215	155	80	140	43	-	22
150	AB150N	416	134	180	55	27	124	150	235	155	80	140	43	5.4	27.1
200	AB210N	495	159	204	63	32	128	200	267	225	102	152	52	25	47
250	AB215N	597	195	245	63	32	128	250	308	225	102	165	52	43	58
300	AB215N	647	220	270	63	32	128	250	333	225	102	178	52	63	83
350	AB550N	791	282	315	88	44	174	300	403	296	138	190	71	73	107
400	AB550N	851	307	350	88	44	174	300	438	296	138	216	71	90	113
450	AB550N	921	352	375	88	44	174	300	463	296	138	222	71	112	174
500	AB880N	1049	387	415	93	47	226	400	508	289	200	229	86	134	190
600	AB880N	1264	452	465	93	47	226	400	658	289	200	267	86	167	251
700	AB1950N	1370	502	555	126	63	323	500	681	390	285	292	130	198	410
800	AB1950N	1490	557	620	126	63	323	500	746	390	285	318	130	236	485
900	AB3000N PR4	1674	622	675	153	77	337	600	828	449	293	330	140	279	721
1000	AB3000N PR4	1789	672	740	153	77	337	600	893	449	293	410	140	288	1040



ITEM ID: 999955E GBR



Cast Iron Swing Check Valve, Bronze or Stainless Steel Trim

SIZES: 32 mm - 200 mm

Swing check valves, with metal seat or rubber seal, full bore are suitable for horizontal and vertical installation.

APPLICATION

Applicable for cold and hot water, fresh and sea water.

MATERIAL SPECIFICATION: 963503

1	Body	GG25	Cast Iron
2	Seat	RG5	Bronze
3	Stem	RG5	Bronze
4	Gland	GG25	Cast Iron
5	Disc	RG5	Bronze

MATERIAL SPECIFICATION: 963507

1	Body	GG25	Cast Iron
2	Seat	AISI304	Stainless Steel
3	Stem	AISI420	Stainless Steel
4	Gland	GG25	Cast Iron
5	Disc	AISI420	Stainless Steel

TECHNICAL FEATURES

Design	DIN 3232, Rubber sealed
Face to face	EN 558 Series 48 (IN 3202 F6)
Pressure rating	PN16
Temperature range	-10°C ~ +120°C
Flange options	Special flange drilling acc. to ANSI or JIS
Options	Lift limiter, metal seated

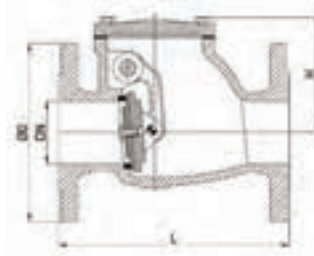
DIMENSIONS

DN (mm)	Flange conn.	ØD (mm)	L (mm)	H (mm)	Weight (kg)
32	PN16	140	180	100	8
40	PN16	150	180	100	8
50	PN16	165	200	105	10
65	PN16	185	240	120	15
80	PN16	200	260	145	21
100	PN16	220	300	152	26
125	PN16	250	350	165	42
150	PN16	285	400	190	55
200	PN16	340	500	290	112



BRONZE TRIM
ITEM ID: 963503

STAINLESS STEEL TRIM
ITEM ID: 963507



Cast Iron Swing Check Valve, Bronze or Stainless Steel Trim, Full Bore, Short Type

SIZES: 15 mm - 200 mm

APPLICATION

Gaseous and liquid media in oil, gas, water systems, chemical industry.

MATERIAL SPECIFICATION: 963503 SB

1	Body	GG25	Cast Iron
2	Disc	-	Bronze
3	Disc seal ring	NBR	-
4	Body seal ring	NBR	-

MATERIAL SPECIFICATION: 963507 SB

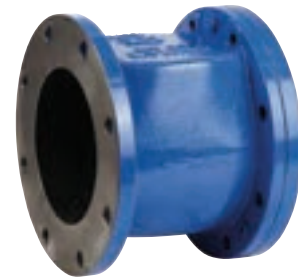
1	Body	GG25	Cast Iron
2	Disc	1.4462	Stainless Steel
3	Disc seal ring	NBR	-
4	Body seal ring	NBR	-

TECHNICAL FEATURES

Design	Special Short Type - Full Bore
Face to face	Acc. to data mentioned in dimension table
Flange dimensions	DIN Flanges acc. to EN 1092-2/A (DIN 2501)
Temperature range	-15°C ~ +80°C

DIMENSIONS

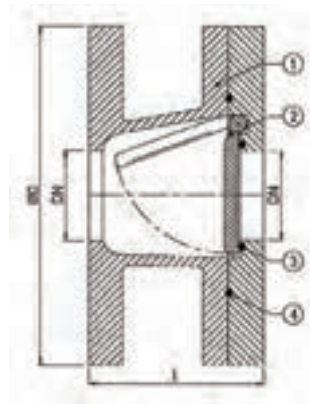
DN (mm)	Flange con.	ØD (mm)	L (mm)	Opening press. horiz.(mmwk)	PCD (mm)	N°holes (mm)	Weight (kg)
15	PN16	95	65	230	65	4x14	2
20	PN16	105	65	233	75	4x14	2
25	PN16	115	70	233	85	4x14	3
32	PN16	140	75	237	100	4x18	4
40	PN16	150	80	243	110	4x18	5
50	PN16	165	85	250	125	4x18	6
65	PN16	185	105	110	145	4x18	8
80	PN16	200	125	126	160	8x18	10
100	PN16	220	145	126	180	8x18	14
125	PN16	250	170	128	210	8x18	20
150	PN16	285	200	158	240	8x22	26
200	PN16	340	255	160	295	12x22	42



BRONZE TRIM **STAINLESS STEEL TRIM**
ITEM ID: 963503 SB **ITEM ID: 963507 SB**

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Hydro test press. [bar]	
		CASING	CLOSURE
DN15~200	PN16	24	17.6



Nodular Cast Iron Swing Check Valve Steel, Bronze or Stainless Steel Disc

SIZES: 15 mm - 200 mm

APPLICATION

Gaseous and liquid media in oil, gas, water systems, chemical industry.

MATERIAL SPECIFICATION: 973501 SB

1	Body	GGG40.3	Nodular Cast Iron
2	Disc		Steel
3	Disc seal ring	NBR	Nitrile Rubber
4	Body seal ring	NBR	Nitrile Rubber

MATERIAL SPECIFICATION: 973503 SB

1	Body	GGG40.3	Nodular Cast Iron
2	Disc		Bronze
3	Disc seal ring	NBR	Nitrile Rubber
4	Body seal ring	NBR	Nitrile Rubber

MATERIAL SPECIFICATION: 973507 SB

1	Body	GGG40.3	Nodular Cast Iron
2	Disc		Stainless Steel
3	Disc seal ring	NBR	Nitrile Rubber
4	Body seal ring	NBR	Nitrile Rubber

TECHNICAL FEATURES

Design	Special Short Type, Full Bore
Face to face	Acc. to data mentioned in dimension table
Flange dimensions	DIN Flanges acc. to EN 1092-2/A (DIN 2501)
Temperature range	-15°C ~ +80°C

DIMENSIONS

DN (mm)	Flange con.	ØD (mm)	L (mm)	Opening press. horiz.(mmwk)	PCD (mm)	N°holes (mm)	Weight (kg)
15	PN16	95	65	230	65	4x14	2
20	PN16	105	65	233	75	4x14	2
25	PN16	115	70	233	85	4x14	3
32	PN16	140	75	237	100	4x18	4
40	PN16	150	80	243	110	4x18	5
50	PN16	165	85	250	125	4x18	6
65	PN16	185	105	110	145	4x18	8
80	PN16	200	125	126	160	8x18	10
100	PN16	220	145	126	180	8x18	14
125	PN16	250	170	128	210	8x18	20
150	PN16	285	200	158	240	8x22	26
200	PN16	340	255	160	295	12x22	42



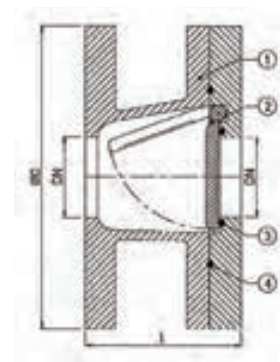
STEEL DISC
ITEM ID: 973501 SB

BRONZE DISC
ITEM ID: 973503 SB

STAINLESS STEEL DISC
ITEM ID: 973507 SB

PRESSURE & TEMPERATURE RANGES

		Hydro test press. [bar]	
BORE	PRESS. RATING	CASING	CLOSURE
DN15~200	PN16	24	17.6



Nodular Cast Iron Swing Check Valve Bronze or Stainless Steel Trim

SIZES: 32 mm - 200 mm

Swing check valves, with metal seat or rubber seal, full bore are suitable for horizontal and vertical installation.

APPLICATION

Applicable for cold and hot water, fresh and sea water.

MATERIAL SPECIFICATION: 973503

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	RG5	Bronze
3	Stem	RG5	Bronze
4	Gland	GGG40.3	Nodular Cast Iron
5	Disc	RG5	Bronze

MATERIAL SPECIFICATION: 973507

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	AISI304	Stainless Steel
3	Stem	AISI420	Stainless Steel
4	Gland	GGG40.3	Nodular Cast Iron
5	Disc	AISI420	Stainless Steel

TECHNICAL FEATURES

Design	DIN 3232, Rubber sealed
Face to face	EN 558 Series 48 (IN 3202 F6)
Pressure rating	PN 16
Temperature range	-10°C ~ +120°C
Flange options	Special flange drilling acc. to ANSI or JIS
Options	Lift limiter, metal seated

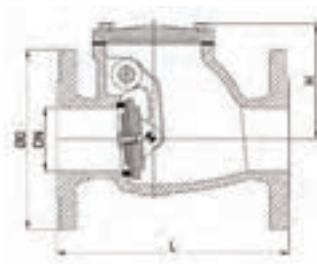
DIMENSIONS

DN (mm)	Flange conn.	ØD (mm)	L (mm)	H (mm)	Weight (kg)
32	PN16	140	180	100	8
40	PN16	150	180	100	8
50	PN16	165	200	105	10
65	PN16	185	240	120	15
80	PN16	200	260	145	21
100	PN16	220	300	152	26
125	PN16	250	350	165	42
150	PN16	285	400	190	55
200	PN16	340	500	290	112



BRONZE TRIM
ITEM ID: 973503

STAINLESS STEEL TRIM
ITEM ID: 973507



Cast Steel Swing Check Valve, Stainless Steel Trim Rubber Seal

SIZES: 32 mm - 200 mm

APPLICATION

Applicable for cold and hot water, fresh and sea water.

MATERIAL SPECIFICATION

1	Body	GSC25	Cast Steel
2	Seat	AISI304	Stainless Steel
3	Stem	AISI420	Stainless Steel
4	Gland	GSC25	Cast Steel
5	Disc	AISI420	Stainless Steel



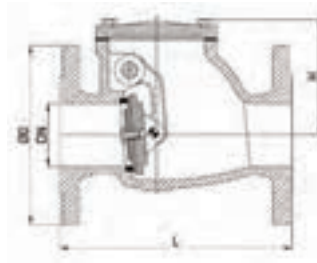
ITEM ID: 953507

TECHNICAL FEATURES

Design	DIN 3232, Rubber sealed
Face to face	EN 558 Series 48 (DIN 3202 F6)
Pressure rating	PN16
Temperature range	-10°C ~ +120°C
Flange options	Special flange drilling acc. to ANSI or JIS
Options	Lift limiter, metal seated

DIMENSIONS

DN (mm)	Flange conn.	ØD (mm)	L (mm)	H (mm)	Weight (kg)
32	PN16	140	180	100	8
40	PN16	150	180	100	8
50	PN16	165	200	105	10
65	PN16	185	240	120	15
80	PN16	200	260	145	21
100	PN16	220	300	152	26
125	PN16	250	350	165	42
150	PN16	285	400	190	55
200	PN16	340	500	290	112



Nodular Cast Iron Duo Check Valve Aluminum Bronze or Stainless Steel Trim, Wafer

SIZES: 50 mm - 600 mm

MATERIAL SPECIFICATION: 970603

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	NBR	Nitrile Rubber
3	Disc	BS1400-AB2	Aluminum Bronze
4	Spring	SS316	Stainless Steel
5	Stem	SS316	Stainless Steel



ALUM. BRONZE TRIM STAINLESS STEEL TRIM
ITEM ID: 970603 ITEM ID: 970607

MATERIAL SPECIFICATION: 970607

1	Body	GGG40.3	Nodular Cast Iron
2	Seat	NBR	Nitrile Rubber
3	Disc	1.4462	Stainless Steel
4	Spring	SS316	Stainless Steel
5	Stem	SS316	Stainless Steel

PRESSURE & TEMPERATURE RANGES

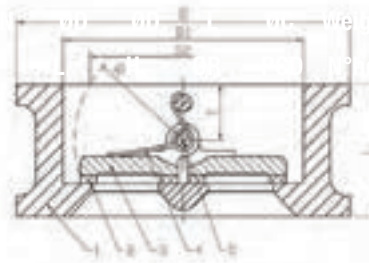
Normal pressure		10 Bar	16 Bar
Test pressure	SEAT	11 Bar	17.6 Bar
	SHELL	15 Bar	24 Bar

TECHNICAL FEATURES

Face to face	ISO 5752
Flange dimensions	BS 4504
Temperature range	-15°C ~ +80°C

DIMENSIONS

DN (mm)	Flange con.	D (mm)	D1 (mm)	D2 (mm)	L (mm)	R (mm)	T (mm)	Weight (kg)
50	PN16	107	65	43.3	43	28.8	19	1.8
65	PN16	127	80	60.2	46	36.1	20	2
80	PN16	142	94	66.4	64	43.4	28	2.5
100	PN16	162	117	90.8	64	52.8	27	4
125	PN16	192	145	116.9	70	65.7	30	6.5
150	PN16	218	170	144.6	76	78.6	31	9
200	PN16	273	224	198.2	89	104.4	33	14
200	PN10	273	224	198.2	89	104.4	33	14
250	PN10	328	265	233.7	114	127.0	50	24.5
300	PN10	378	310	283.9	114	148.3	43	36
350	PN10	438	360	332.9	127	172.4	45	52
400	PN10	489	410	381.0	140	197.4	52	69
450	PN10	539	450	419.9	152	217.8	58	98
500	PN10	594	505	467.8	152	241.0	58	117
600	PN10	700	624	572.6	178	295.4	73	180



Bronze Check Valve, Wafer Type Sandwich Type

SIZES: 40 mm - 600 mm

Wafer type check valves with short face to face length, disc and flange sealing by NBR o-ring, are suitable for fitting between DIN flanges. Suitable for horizontal and vertical (upward flow) installation and have low weight and low pressure loss.

APPLICATION

These bronze wafer type check valves offer excellent resistance to the corrosive action of sea water, fresh water and waste water.

MATERIAL SPECIFICATION

1	Body	Bronze
2	Disc	Bronze

DIMENSIONS

DN (mm)	Pressure rating	ØD PN16 (mm)	L (mm)	ØC (mm)	Weight (kg)
40	PN16	94	16	22	0.8
50	PN16	109	16	30	1.1
65	PN16	129	16	37	1.6
80	PN16	144	16	48	2
100	PN16	164	16	70	2.4
125	PN16	194	18	95	3.3
150	PN16	220	19	121	4.5
200	PN16	275	29	155	10
250	PN10	330	29	196	16
300	PN10	380	38	230	28
350	PN10	440	41	250	35
400	PN10	491	51	303	60
450	PN10	541	51	358	68
500	PN10	596	61	398	80
600	PN10	698	71	480	120



ITEM ID: 993903

TECHNICAL FEATURES

Design

Special sandwich type, for fitting between flanges

Face to face

Acc. to data mentioned in dimension table

Pressure rating

PN10 - PN16

Seat

NBR

Temperature range

-15°C ~ +80°C

Flange options

Available acc. to customers request



Stainless Steel Check Valve Wafer Type

SIZES: 25 mm - 1000 mm

Wafer type check valves with short face to face length, disc and flange sealing by NBR O-ring, are suitable for fitting between DIN flanges. Suitable for horizontal and vertical (upward flow) installation and have low weight and low pressure loss.

APPLICATION

Applicable for fresh water, cold water, waste water.

MATERIAL SPECIFICATION

1	Body	Stainless Steel
2	Disc	Stainless Steel

DIMENSIONS

DN (mm)	ØD PN10	ØD PN16	L (mm)	ØC (mm)	Weight (kg)
25	73	73	14	14	0.6
32	84	84	16	16	0.7
40	94	94	16	22	0.9
50	109	109	16	30	1.2
65	129	129	16	37	1.7
80	144	144	16	48	2.1
100	164	164	16	70	2.8
125	194	194	18	95	3.9
150	220	220	19	121	6
200	275	275	29	155	11
250	330	331	29	196	21
300	380	386	38	230	34
350	440	446	41	250	45
400	491	498	51	303	71
450	541	558	51	358	86
500	596	620	61	398	126
600	698	737	71	480	203
700	813	807	76	580	307
800	920	914	89	621	460
900	1020	1014	95	715	605
1000	1127	1131	118	815	920



ITEM ID: 983901

TECHNICAL FEATURES

Design

Special sandwich type, for fitting between flanges

Face to face

Acc. to data mentioned in dimension table

Pressure rating

PN10 - PN16

Seat

NBR

Temperature range

-15°C ~ +80°C

Flange options

Available acc. to customers request



Bronze Self Closing Drain Valve, Bronze Trim, Flanged w/ Push Button

SIZES: 20 mm, 25 mm

APPLICATION

Oil, lubricant and fuel tanks.

MATERIAL SPECIFICATION

1	Body	RG5	Bronze
2	Stem	Som59	Brass
3	Spring	1.4310	-
4	Locking nut	RG5	Bronze
5	O-ring	NBR	-

TECHNICAL FEATURES

Design	Special design - with spring and push button
Face to face	Acc. to mentioned dimension table
Flange dimensions	DIN Flanges acc. to EN 1092-3/A (DIN 2501)
Options	With drain pipe for downstream
Flange options	Special flange drilling acc. to ANSI or JIS

DIMENSIONS

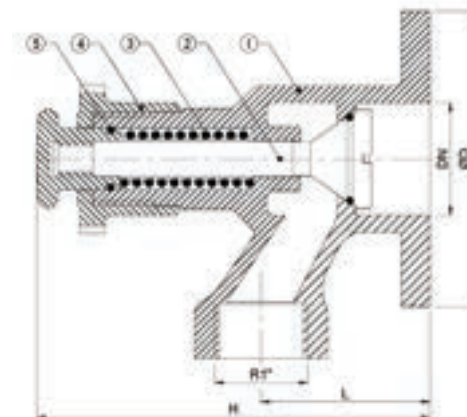
DN (mm)	ØD (mm)	Ød (mm)	L (mm)	H open (mm)	PCD (mm)	N°holes (Ømm)	Weight (kg)
20	105	40	60	140	75	4x14	2.2
25	115	40	60	140	85	4x14	2.4



ITEM ID: 993493DP

PRESSURE & TEMPERATURE RANGES

BORE	PRESS. RATING	Working press. [bar]		
		80°C	CASING	CLOSURE
DN20~25	PN10	10	15	11



Cast Iron Mudbox, Basket Strainer Straight Type, DIN / PN10

SIZES: 25 mm - 700 mm

The standard perforation of the basket is 5 mm square for DN25 to DN 65 and 8 mm square for DN80 to DN700.

APPLICATION

Especially for suction and discharge lines for sea water cooling and bilge systems.

MATERIAL SPECIFICATION

1 Body	GG25	Cast Iron
2 Cover	GG25	Cast Iron
3 Basket	AISI316	Stainless Steel
4 Cover sealing	NBR	-
5 Stud bolts, nuts	-	Galvanized Steel
6 Drain, vent plug	Ms58	Brass

TECHNICAL FEATURES

Design	DIN 87151 D - With fixed studs and nuts
Face to face	DIN 87151 - Straight Type
Flange dimension	DIN Flanges acc. to EN 1092-2/B (DIN 2501)



ITEM ID: 763303

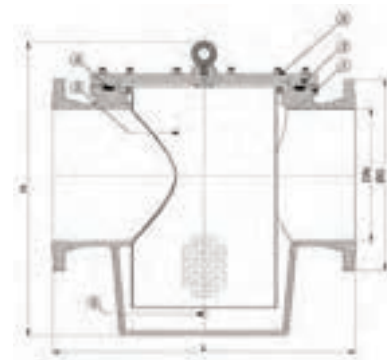
PRESSURE RANGES

BORE	PRESS. RATING	Hydro test press. [bar]
		CASING
DN25~300*	PN4	6
DN350~450*	PN4	6
DN500~700*	PN2.5	3.8

* Flanges drilled according to PN10

DIMENSIONS

DN (mm)	Flange Conn.	ØD (mm)	L (mm)	H (mm)	Screen (mm)	Drain Plug	Vent Plug	PCD (mm)	N°holes (Ømm)	Weight (kg)
25	PN10	115	160	180	5 x 5	R3/8"	-	85	4x14	5
32	PN10	140	200	210	5 x 5	R3/8"	-	100	4x18	8
40	PN10	150	200	192	5 x 5	R1/2"	-	110	4x18	8.5
50	PN10	165	230	209	5 x 5	R1/2"	-	125	4x18	12
65	PN10	185	290	250	5 x 5	R1/2"	-	145	4x18	16
80	PN10	200	310	275	8 x 8	R1/2"	-	160	8x18	20
100	PN10	220	350	331	8 x 8	R1/2"	-	180	8x18	28
125	PN10	250	400	392	8 x 8	R1/2"	-	210	8x18	39
150	PN10	285	480	446	8 x 8	R1/2"	-	240	8x22	62
200	PN10	340	600	549	8 x 8	R3/4"	R1/2"	295	8x22	103
250	PN10	395	600	587	8 x 8	R1"	R1/2"	350	12x22	141
300	PN10	445	700	660	8 x 8	R1"	R1/2"	400	12x22	189
350	PN10	505	800	750	8 x 8	R1"	R1/2"	460	16x22	230
400	PN10	565	740	900	8 x 8	R1"	R1/2"	515	16x26	305
450	PN10	615	1000	1000	8 x 8	R1"	R1/2"	565	20x26	500
500	PN10	670	1100	1210	8 x 8	R1"	R1/2"	620	20x26	765
600	PN10	780	1100	1100	8 x 8	R1 1/2"	R1/2"	725	20x30	830
700	PN10	895	1250	1150	8 x 8	R1 1/2"	R1/2"	840	24x30	900



Cast Iron Mudbox, Basket Strainer Angle Type, DIN / PN10

SIZES: 25 mm - 300 mm

The standard perforation of the basket is 5 mm square for DN25 to DN65 and 8 mm square for DN80 to DN700.

APPLICATION

Especially for suction and discharge lines for seawater cooling and bilge systems.

MATERIAL SPECIFICATION

1	Body	GG25	Cast Iron
2	Cover	GG25	Cast Iron
3	Basket	AISI316	Stainless Steel
4	Cover sealing	NBR	-
5	Stud bolts, nuts	-	Galvanized Steel
6	Drain, vent plug	Ms58	Brass

TECHNICAL FEATURES

Design	DIN 87151 D - With fixed studs and nuts
Face to face	DIN 87151 - Angle Type
Flange dimension	DIN Flanges acc. to EN 1092-2/B (DIN 2501)

DIMENSIONS

DN (mm)	Flange Conn.	ØD (mm)	L (mm)	H (mm)	Screen (mm)	Drain Plug	Vent Plug	PCD (mm)	N°holes (Ømm)	Weight (kg)
25	PN10	115	100	195	5 x 5	R3/8"	-	85	4x14	5
32	PN10	140	105	235	5 x 5	R3/8"	-	100	4x18	7
40	PN10	150	125	222	5 x 5	R1/2"	-	110	4x18	9
50	PN10	165	135	241	5 x 5	R1/2"	-	125	4x18	13
65	PN10	185	150	264	5 x 5	R1/2"	-	145	4x18	16
80	PN10	200	175	310	8 x 8	R1/2"	-	160	8x18	22
100	PN10	220	195	343	8 x 8	R1/2"	-	180	8x18	30
125	PN10	250	220	383	8 x 8	R3/4"	-	210	8x18	44
150	PN10	285	270	456	8 x 8	R3/4"	R1/2"	240	8x22	70
200	PN10	340	300	514	8 x 8	R3/4"	R1/2"	295	8x22	101
250	PN10	395	390	636	8 x 8	R1"	R1/2"	350	12x22	157
300	PN10	445	445	739	8 x 8	R1"	R1/2"	400	12x22	207

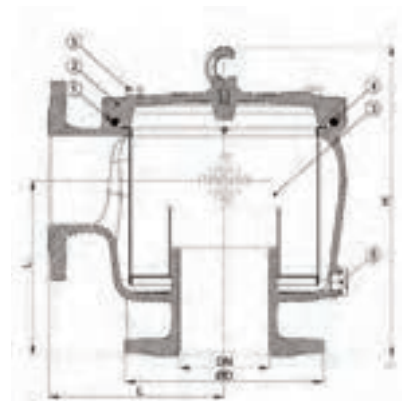


ITEM ID: 763403

PRESSURE RANGES

BORE	PRESS. RATING	Hydro test press. [bar]
		CASING
DN25~300*	PN4	6

* Flanges drilled according to PN10





Section 4: Fittings

- Pipe Fittings
- Threaded Fittings
- Socket Fittings
- Steel & Alloy Forged Fittings
- Buttweld Fittings
- Welding Fittings
- Pipe Nipples
- Outlet Fittings
- Flanges
- Pipe Couplings Dresser/Diacoup
- NORMACONNECT® FGR Pipe Couplings
- Deck/Bulkhead Coupling

Pipe Fittings

Fittings shown are available in a variety of materials Figure numbers apply to fitting type.



PLUG
065



COUNTERSUNK PLUG
066



90° ELBOW
101



45° ELBOW
104



90° STREET
107



45° STREET
109



TEE
121



CROSS
135



Y-BRANCH LATERAL
140



HALF COUPLING
149



COUPLING
150



REDUCER COUPLING
150R



CAP
154



180° RETURN BEND
156



BUSHING INSERT
157



UNION
301



COMBINATION NIPPLE
700



HEX NIPPLE
800



NIPPLE, THREADED
9xx



NIPPLE T.O.E.
9xx-TOE



Threaded Fittings

SIZES: 1/8" to 6"

High pressure and low pressure fittings in a full range of materials.



Item id example:

621G065.200 EX: 621G065.200 = 3000 lb Forged Steel Galvanized Threaded Plug, 1"



MATERIAL / PRESSURE		1	CODE	FITTING TYPE		2	CODE	SIZE	3	CODE
Bronze Cast, B62/B61	125 lb		603		Plug		065	1/8		.020
	250 lb		604		Countersunk Plug		066	1/4		.040
Malleable Iron, Galvanized	150 lb		610		Roundhead Plug		067	3/8		.060
	300 lb		612		90° Elbow		101	1/2		.100
				Reducing 90° Elbow		101R	3/4		.150	
Malleable Iron, Black	150 lb		611		45° Elbow		104	1		.200
	300 lb		613		Street 90° Elbow		107	1-1/4		.250
	150 lb		611		Street 45° Elbow		109	1-1/2		.300
	300 lb		613		Tee		121	2		.400
Forged Steel, A105	3000 lb		621		Reducing Tee		121R	2-1/2		.450
	6000 lb		623		Cross		135	3		.500
Forged Steel, Galvanized	3000 lb	621G			Y-Lateral		140	3-1/2		.550
					Half Coupling		149	4		.600
					Coupling		150	5		.650
Copper Nickel, 90/10	3000 lb	641			Reducing Coupling		150R	6		.700
					Cap		154			
Copper Nickel, 70/30	3000 lb	646			Return Bend		156			
					Bushing		157			
Stainless Steel, A182 (304 or 316)	150 lb		650		Commercial Flange		170			
	3000 lb		651		Blind Flange		172			
Aluminum	150 lb	660			Union		301			
					Combination Nipple		700			
					Hex Nipple		800			
					Welded Nipple		9xx*			
	3000 lb	661		Seamless Nipple		9xx-SMLS				

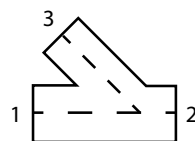
*xx indicates length. See Pipe Nipple page for format and complete listing of nipples.

Thread-by-socket adapter fittings: specify

Metric threads add suffix:

- BSPT - Tapered British standard thread (JIS B0203, ISO R7, PT)
- BSPP - Straight or parallel, British standard thread (JIS B0202, ISO R228, PF)

Order reducing tees in 1-2-3 size sequence.





Socket Fittings

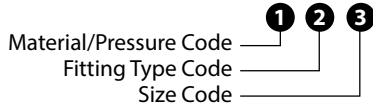
SIZES: 1/8" to 6"

High pressure and low pressure fittings in a full range of materials.



Item id example:

605101,020 EX: 605101.020 = 200 LB Bronze Cast Socket 90° Elbow, 1/8"



MATERIAL / PRESSURE		1	CODE	FITTING TYPE	2	CODE	SIZE	3	CODE
Bronze Cast, B62/B61	200 lb	605		90° Elbow	101		1/8	.020	
	Sil-Braze	1500 lb	606	45° Elbow	104		1/4	.040	
	3000 lb	607		Tee	121		3/8	.060	
Forged Steel, A105	3000 lb	622		Cross	135		1/2	.100	
				Y-Lateral	140		3/4	.150	
	6000 lb	624		Half Coupling	149		1	.200	
				Coupling	150		1-1/4	.250	
Chromemoly Steel, F11	3000 lb	626		Reducer Coupling	150R		1-1/2	.300	
				Cap	154		2	.400	
Monel	3000 lb	635		Bushing	157		2-1/2	.450	
				Union	301		3	.500	
				Union Male x Female	528		3-1/2	.550	
Copper Nickel, 90/10	400 lb	640		Union Elbow	530		4	.600	
	3000 lb	642		Union Run Tee	540		5	.650	
Copper Nickel, 90/10	400 lb	645		Union Outlet Tee	545		6	.700	
	3000 lb	647							
Stainless Steel, A182 (304/L or 316/L)	3000 lb	652							
Aluminum, 6061	3000 lb	662							
Aluminum, 5086	3000 lb	663							

Reducing fittings: 90°, tee, lateral

Socket x thread adapter fittings: specify.



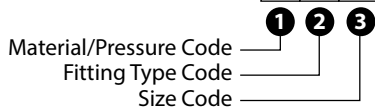
Steel & Alloy Forged Fittings

SIZES: 1/8" to 4"



Item id example:

621065.020 EX: 621065.020 = 3000 lb Steel Threaded Plug, 1/8"



MATERIAL / PRESSURE / END CONNECTION			1	CODE	FITTING TYPE	2	CODE	SIZE	3	CODE
Steel, A105	3000 lb	Threaded	621		Plug	065		1/8	.020	
	3000 lb	Socket Weld	622		Countersunk Plug	066		1/4	.040	
	6000 lb	Socket Weld	624		90° Elbow	101		3/8	.060	
Chromemoly, F11	3000 lb	Socket Weld	626		45° Elbow	104		1/2	.100	
					90° Street	107		3/4	.150	
Chromemoly, F22	3000 lb	Socket Weld	628		Tee	121		1	.200	
					Cross	135		1-1/4	.250	
Monel Nickel Copper QQ-N-288	3000 lb	Threaded	634		Lateral	140		1-1/2	.300	
	3000 lb	Socket Weld	635		Half Coupling	149		2	.400	
Copper Nickel, 90/10 MIL-C-15726	200/400 lb	*Socket Weld	640		Coupling	150		2-1/2	.450	
					Reducer Coupling	150R		3	.500	
					Cap	154		3-1/2	.550	
Copper Nickel, 70/30 MIL-C-15726	200/400 lb	*Socket Weld	642		Bushing Insert	157		4	.600	
					Union	301				
					3000 lb	Threaded	646			
Stainless, 304/316	3000 lb	Threaded	645							
	3000 lb	Socket Weld	647							
Aluminum, 6061	3000 lb	Threaded	651							
	3000 lb	Socket Weld	652							
Aluminum, 5086	3000 lb	Threaded	661							
	3000 lb	Socket Weld	662							
Aluminum, 5086	3000 lb	Socket Weld	663							

Also available: 6000 & 9000 LB rated fittings.

Inconel, 321, 347, A20 and other alloys.

*This is a cast fitting, not forged.



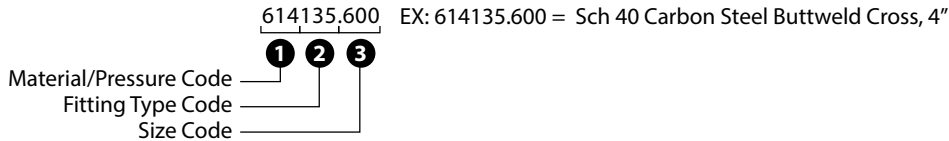
Buttweld Fittings

SIZES: 1/2" to 24"

Buttweld fittings (except copper nickel class 200/700) conform to ASME B16.9 dimensions. For copper nickel 90/10 and 70/30 buttweld fittings that conform to DWG 1385880 dimensions, see Navy section.



Item id example:



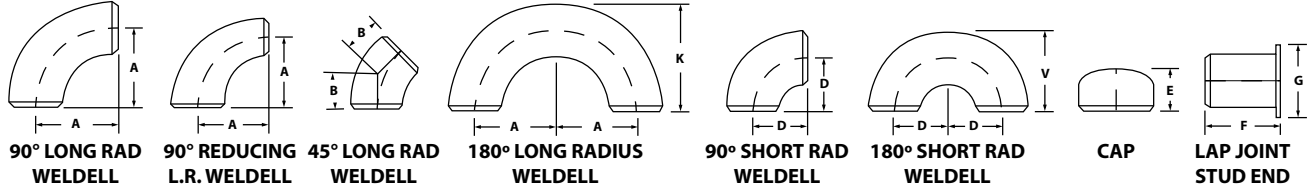
MATERIAL / SCHEDULE		① CODE	FITTING TYPE	② CODE	SIZE	③ CODE
Copper Nickel, 90/10	Sch 40	600	90° Elbow	101	1/2	.100
			Reducing 90° Elbow	101R	3/4	.150
Carbon Steel, A234 WPB	Sch 40	614	45° Elbow	104	1	.200
			Long Radius 90° Elbow	111	1-1/4	.250
	Sch 80	615	Tee	121	1-1/2	.300
	Sch 120	616	Reducing Tee	121R	2	.400
	Sch 160	617	Cross	135	2-1/2	.450
	XXH	618	Lateral	140	3	.500
Stainless, 304/304L/316/316L	Sch 10	653	Eccentric Reducer	149	3-1/2	.550
			Concentric Reducer	150	4	.600
	Sch 40	654	Cap	154	5	.650
	Sch 80	655	180° Return Bend, Close/Short	155	6	.700
	Sch 160	656	180° Return Bend, Open/Long	156	7	.707
	XXH	657	Stub End	159	8	.750
Aluminum, 6061	Sch 40	664	Stub End	159	10	.800
			Stub End	159	12	.820
Aluminum, 5086	Sch 40	666	Stub End	159	14	.880
			Stub End	159	16	.890
	Sch 80	667	Stub End	159	18	.900
	Sch 80	667	Stub End	159	20	.920
	Sch 80	667	Stub End	159	24	.924
	Sch 80	667	Stub End	159	24	.924

Also available:
 Alloy 20
 321, 347 Stainless
 Monel
 F11, F22 Chromemoly
 Low Temperature A333



Welding Fittings

Dimensions shown per ASME B16.9 cover materials available. Steel, stainless steel, aluminum, copper nickel and other alloys available upon request.



Nom. Pipe Size	Pipe O.D.	Wall Thickness																	A	B	K	D	V	E	F		G	Nom. Pipe Size
		Light Wall	Sch 20	Sch 30	Std	Sch 40	Sch 60	X-Stg	Sch 80	Sch 100	Sch 120	Sch 140	Sch 160	XX-Stg	ASA	MSS												
		1/2	0.840	0.083	-	-	0.109	0.109	-	0.147	0.147	-	-	-	0.188	0.294	1-1/2	5/8							1-7/8	-		
3/4	1.050	0.083	-	-	0.113	0.113	-	0.154	0.154	-	-	-	0.219	0.308	1-1/8	7/16	1-11/16	-	-	1	3	2	1-11/16	3/4				
1	1.315	0.109	-	-	0.133	0.133	-	0.179	0.179	-	-	-	0.250	0.358	1-1/2	7/8	2-3/16	1	-	1-5/8	1-1/2	4	2	2	1			
1-1/4	1.660	0.109	-	-	0.140	0.140	-	0.191	0.191	-	-	-	0.250	0.382	1-7/8	1	2-3/4	1-1/4	-	2-1/16	1-1/2	4	2	2	1-1/4			
1-1/2	1.900	0.109	-	-	0.145	0.145	-	0.200	0.200	-	-	-	0.281	0.400	2-1/4	1-1/8	3-1/4	1-1/2	-	2-7/16	1-1/2	4	2	2	1-1/2			
2	2.375	0.109	-	-	0.154	0.154	-	0.218	0.218	-	-	-	0.344	0.436	3	1-3/8	4-3/16	2	-	3-3/16	1-1/2	6	2	2	2			
2-1/2	2.875	0.120	-	-	0.203	0.203	-	0.276	0.276	-	-	-	0.375	0.552	3-3/4	1-3/4	5-3/16	2-1/2	-	3-15/16	1-1/2	6	2	2	2			
3	3.500	0.120	-	-	0.216	0.216	-	0.300	0.300	-	-	-	0.438	0.600	4-1/2	2	6-1/4	3	-	4-3/4	2	6	2	2	2			
3-1/2	4.000	0.120	-	-	0.226	0.226	-	0.318	0.318	-	-	-	0.636	0.864	5-1/4	2-1/4	7-1/4	3-1/2	-	5-1/2	2-1/2	6	3	2	2			
4	4.500	0.120	-	-	0.237	0.237	-	0.337	0.337	-	-	-	0.531	0.674	6	2-1/2	8-1/4	4	-	6-1/4	2-1/2	6	3	2	2			
5	5.563	0.134	-	-	0.258	0.258	-	0.375	0.375	-	-	-	0.500	0.625	7-1/2	3-1/8	10-5/16	5	-	7-3/4	3	8	3	2	2			
6	6.625	0.134	-	-	0.280	0.280	-	0.432	0.432	-	-	-	0.719	0.864	9	3-3/4	12-5/16	6	-	9-5/16	3-1/2	8	3	2	2			
8	8.625	0.148	0.250	0.277	0.322	0.322	0.406	0.500	0.500	0.594	0.719	0.844	1.000	1.125	1.000	15	6-1/4	20-3/8	10	-	15-3/8	5	10	5	2			
10	10.750	0.165	0.250	0.307	0.365	0.365	0.500	0.500	0.594	0.719	0.844	1.000	1.125	1.000	15	6-1/4	20-3/8	10	-	15-3/8	5	10	5	2				
12	12.750	0.180	0.250	0.330	0.375	0.406	0.562	0.500	0.688	0.844	1.000	1.125	1.312	1.000	18	7-1/2	24-3/8	12	-	18-3/8	6	10	6	2				
14	14.000	0.250	0.312	0.375	0.375	0.438	0.594	0.500	0.750	0.938	1.094	1.250	1.406	-	21	8-3/4	28	14	-	21	6-1/2	12	-	2				
16	16.000	0.250	0.312	0.375	0.375	0.500	0.656	0.500	0.844	1.031	1.219	1.438	1.594	-	24	10	32	16	24	-	7	12	-	2				
18	18.000	0.250	0.312	0.438	0.375	0.562	0.750	0.500	0.938	1.156	1.375	1.562	1.781	-	27	11-1/4	36	18	27	-	8	12	-	2				
20	20.000	0.250	0.375	0.500	0.375	0.594	0.812	0.500	1.031	1.281	1.500	1.750	1.969	-	30	12-1/2	40	20	30	-	9	12	-	2				
24	24.000	0.250	0.375	0.562	0.375	0.688	0.969	0.500	1.219	1.531	1.812	2.062	2.344	-	36	15	48	24	36	-	10-1/2	12	-	2				
30	30.000	0.312	0.500	0.625	0.375	-	-	0.500	-	-	-	-	-	-	45	18-1/2	60	30	45	-	10-1/2	-	-	-	2			
36	36.000	0.312	0.500	0.625	0.375	0.750	-	0.500	-	-	-	-	-	-	54	22-1/4	-	36	54	-	10-1/2	-	-	-	2			
42	42.000	-	-	-	0.375	-	-	0.500	-	-	-	-	-	-	63	26	-	42	-	42	-	12	-	-	-	2		
48	48.000	-	-	-	0.375	-	-	0.500	-	-	-	-	-	-	72	29-3/4	-	48	-	48	-	13-1/2	-	-	-	2		

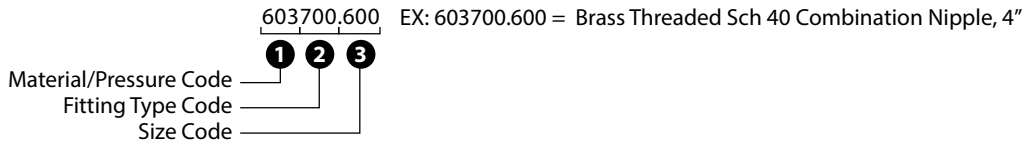
Type	Nom. Pipe Size	Outlet	Nom. Pipe Size				Nom. Pipe Size	Outlet	Nom. Pipe Size				Nom. Pipe Size	Outlet	Nom. Pipe Size					
			C	M	H	C			M	H	C	M			H	C	M	H		
STRAIGHT TEE	3/4	3/4	1-1/8	-	-	3-1/2	3-1/2	3-3/4	-	-	10	10	8-1/2	-	-	20	20	15	-	-
		1/2	1-1/8	1-1/8	1-1/2	2	3	3-3/4	3-5/8	4	8	8	8-1/2	8	7	18	15	14	1/2	20
REDUCING TEE	1	1	1-1/2	-	-	2	2	3-3/4	3-1/2	4	6	8-1/2	7-5/8	7	16	15	14	1/2	20	
		3/4	1-1/2	1-1/2	2	2	3-3/4	3-1/4	4	5	8-1/2	7-1/2	7	14	15	14	20			
CONCENTRIC REDUCER	1-1/4	1-1/4	1-7/8	-	-	4	4	4-1/8	-	-	12	12	10	-	-	10	15	13-1/8	20	
		1	1-7/8	1-7/8	2	4	3-1/2	4-1/8	4	4	10	10	9-1/2	8	8	15	12-3/4	20		
ECCENTRIC REDUCER	1-1/2	1-1/2	1-7/8	1-7/8	2	2	3	4-1/8	3-7/8	4	8	10	9	8	24	24	17	-	-	
		3/4	1-7/8	1-7/8	2	2	3	4-1/8	3-3/4	4	6	10	8-5/8	8	20	17	17	20		
CONCENTRIC REDUCER	2	2	2-1/4	-	-	5	5	4-7/8	-	-	14	14	11	-	-	16	17	16	20	
		1-1/4	2-1/4	2-1/4	2-1/2	5	5	4-7/8	4-5/8	5	10	11	10-1/8	13	12	17	15-5/8	20		
ECCENTRIC REDUCER	2-1/2	2-1/2	2-1/4	-	-	6	6	5-5/8	-	-	16	16	12	-	-	30	30	27	-	
		1	2-1/2	2-1/2	3	3	4-7/8	4-3/8	5	8	11	9-3/4	13	10	17	15-1/8	20			
CONCENTRIC REDUCER	3	3	3-3/8	-	-	8	8	7	-	-	18	18	13-1/2	-	-	30	30	26	24	
		2-1/2	3-3/8	3-1/4	3-1/2	5	5	7	6-5/8	6	12	13-1/2	12-5/8	15	18	26-1/2	22-1/2	24		
ECCENTRIC REDUCER	3	3	3-3/8	-	-	8	8	7	-	-	14	14	13-1/2	13	15	20	26-1/2	23	24	
		2-1/2	3-3/8	2-7/8	3-1/2	4	4	7	6-1/8	6	10	13-1/2	12-1/8	15	16	26-1/2	22	24		



Pipe Nipples

SIZES: 1/8" to 6"

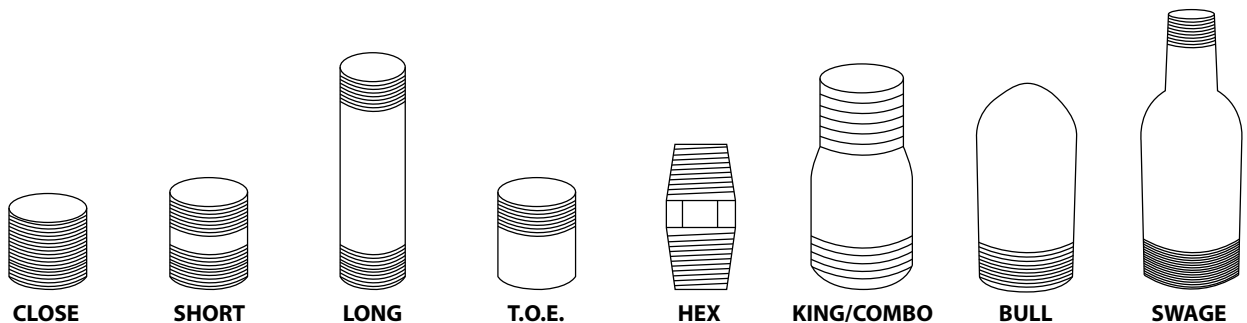
Item id example:



MATERIAL / SCHEDULE		1	CODE	FITTING TYPE	2	CODE	SIZE	3	CODE
Copper Nickel, 90/10			601	King Combo Nipple		700	1/8		.020
				Hex Nipple		800	1/4		.040
Copper Nickel, 70/30			602	"Close" Length		900	3/8		.060
				"Short" Length x 1-1/2		915	1/2		.100
Brass	Sch 40		603	"Short" Length x 2		920	3/4		.150
	Sch 80		604	"Short" Length x 2-1/2		925	1		.200
				"Short" Length x 3		930	1-1/4		.250
*Galvanized	Sch 40		610	"Short" Length x 3-1/2		935	1-1/2		.300
	Sch 80		612	"Short" Length x 4		940	2		.400
				"Short" Length x 4-1/2		945	2-1/2		.450
Black Welded	Sch 40		611	"Short" Length x 5		950	3		.500
	Sch 80		613	"Short" Length x 5-1/2		955	3-1/2		.550
				"Short" Length x 6		960	4		.600
Monel	Sch 40		636	"Short" Length x 8		980	5		.650
	Sch 80		637	"Short" Length x 10		990	6		.700
				"Short" Length x 12		992			
Stainless Steel	Sch 40		650						
	Sch 80		651						
Aluminum	Sch 40		660						
	Sch 80		661						

Other lengths available
 Thread One End (T.O.E.) available
 Swage and Hex Nipples are a standard length
 * Available welded or seamless

Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
"Close" Length	3/4	7/8	1	1-1/8	1-3/8	1-1/2	1-5/8	1-3/4	2	2-1/2	2-5/8	2-7/8
"Short" Length	1-1/2	1-1/2	1-1/2	1-1/2	1-1/2	2	2	2	2-1/2	3	3	4



Outlet Fittings

Outlet fittings are designed to be welded onto an existing “run” of pipe to provide a branch or “outlet” connection without having to cut run pipe. Outlet connection can be threaded, socketweld, braze, or buttweld. Outlet fittings provide 90° or 45° connections. They are typically described by two sizes: “run” by “outlet”. For example, a 4 x 2 sockolet fits on a 4” run of pipe with a 2” socket outlet size. Outlet fittings available in other materials upon request.



**SOCKET or
BRAZE OUTLET**



**FPT
OUTLET**



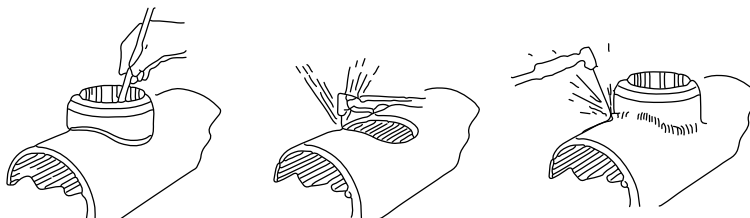
**BUTTWELD
OUTLET**

BRONZE	695108	695101	-
90/10	695202	695201	695203
70/30	695302	695301	695303
STEEL	695402	695401	695403
STAINLESS STEEL	695702	695701	695703



**ELBOW FPT
OUTLET**

STEEL 697401





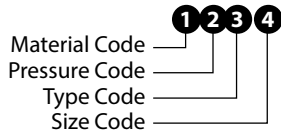
Flanges

SIZES: 1/2" to 12"

Flanges to ASME B16.5 standards are available in all materials and pressure classes.

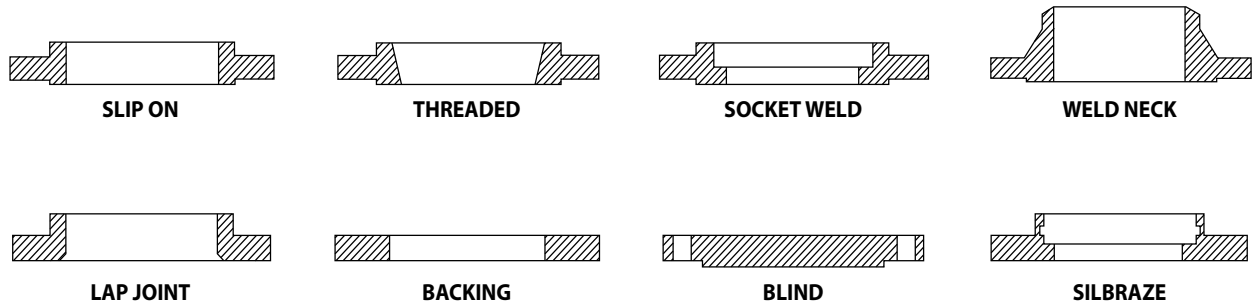
Item id example:

605170.040 EX: 605170.040 = 150 lb Bronze Silbraze Flange, 1/4"



MATERIAL	1 CODE	PRESSURE	2 CODE	TYPE	3 CODE	SIZE	4 CODE	FACING	BORE	
Bronze, Threaded	603	150	1	Slip On	00	1/2	.100	RF	Raised Face	STD/Sch 40
Bronze, Silbraze	605	300	3	Threaded	20	3/4	.150	FF	Flat Face	XH/Sch 80
Stainless Steel, 304/304L	670	600	6	Socket Weld	40	1	.200	RTJ	Ring Type Joint	XXH/Sch 160
Stainless Steel, 316/316L	670	800	8	Weldneck	60	1-1/4	.250			
Aluminum, 6061	676	1500	9	Silbraze	70	1-1/2	.300			
Aluminum, 5086	677			Blind	80	2	.400			
Carbon Steel, A105	680			Lap Joint	90	2-1/2	.450			
Chromemoly, F11	681			Backing	95	3	.500			
Monel, 400	685					3-1/2	.550			
Copper Nickel, 70/30	687					4	.600			
Copper Nickel, 90/10	689					5	.650			
						6	.700			
						8	.750			
						10	.800			
						12	.820			

also available:
A20 and other Stainless Alloys
A350 low temperature
Titanium





Pipe Couplings Dresser/Diacoup

SIZES: 1/2" to 36" IPS

Style 38 (Standard Length) and 40 (Long) couplings are available for all sizes of IPS sized pipe. Constructed of steel mid-ring and followers with resilient gaskets and steel tightening bolts. Also available in all stainless construction or galvanized steel, given lead time. Dresser type couplings can also be supplied for imperial and metric piping standards and OD pipe or tubing.

Gaskets are offered in a variety of resilient materials:

Grade 27 - Buna-S rubber for water service, max. temp. 212°F

Grade 42 - Buna-N rubber for oil and gas, max. temp. 150°F

Grade 27 armored - similar to plain Grade 27 gasket, but with brass helical coil embedded in tip of gasket to provide durable seal for critical service applications

Grade 42 armored - similar to plain Grade 42 gasket, but with Brass helical coil embedded in tip of gasket to provide durable seal for critical service applications

Viton - for aromatic (e.g. gasoline) service and/or high temp. 300°F



STYLE 38
ITEM ID: 541038

STYLE 40
ITEM ID: 541040

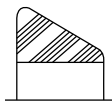
SIZE IPS	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	5	6	8	10	12	14	16	18	20	22	24	30	36
PIPE OD	1.31	1.66	1.90	2.38	2.88	3.50	4.00	4.50	5.56	6.63	8.63	10.75	12.75	14	16	18	20	22	24	30	36

MID RING LENGTH: STYLE 38/541038

INCHES	5	5	5	4/5/7	5	4/5/7	4/5	4/5/7	4/5/7	4/5/7	4/5/7	5/7	5/7	7	7	7	7	7	7	7/10	7/10
WEIGHT	4	4	5	7	19	14	18	17	24	26	32	49	56	60	70	75	83	95	105	120	223

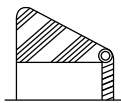
MID RING LENGTH: STYLE 40/541040

INCHES	12	12	12	12	12	12	12	12	16	16	16	16	16	16	16	24	16	16/24	-	-	
WEIGHT	6	9	10	15	20	23	25	28	41	51	63	78	93	133	173	176	192	224	240	-	-

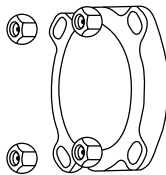


PLAIN REPLACEMENT GASKETS

GR 27 - PLAIN
GR 42 - PLAIN
GR 27 - ARMORED
GR 42 - ARMORED

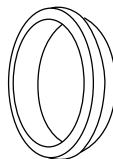


ARMORED REPLACEMENT GASKETS

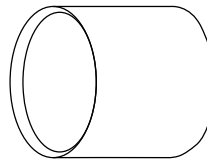


FOLLOWER RING

SPECIFY PIPE SIZE

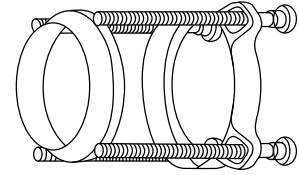


GASKET



MID RING

SPECIFY PIPE SIZE AND RING LENGTH



TRACKHEAD BOLT

STEEL
STAINLESS STEEL
SPECIFY BOLT LENGTH OR COUPLING SIZE

Repair Clamps

SIZE: 1/2" to 24" REPAIR
2" to 14" FULL ENCIRCLEMENT

Repair clamps are used to repair holes or leaks in pipe. Typical economical style is stainless steel band type with rubber sleeve. Sizes refer to IPS size of pipe to be repaired. Lengths are standard 3" to 6", though longer lengths 9" and 12" are available.

Encirclement type will hold 360° repair and is a more costly unit. Width typically 8", 10". Wider to 16" available.



REPAIR
3" WIDTH 541103
6" WIDTH 541106



ENCIRCLEMENT
8" WIDTH 541118
10" WIDTH 541119

NORMACONNECT® FGR Pipe Couplings

An economical alternative permanent pipe joining coupling for both metal and plastic pipe and tubing. The ready-to-fit stainless steel coupling is pushed over plain end pipe ends, aligned to any fitting position, then the bolts are simply tightened with a torque wrench. The grip type couplings have a metal bite anchoring ring providing industry leading axial restraint. The patented double lip sealing system provides maximum seal ability at both low and high pressures (up to 232 psi). The seals are available in EPDM for water service (-22° to 212°F) or Buna-N (NBR) for petroleum services (-10° to 180°F). Norma emergency repair clamps are also available for temporary repairs to damaged pipes.

APPLICATIONS

- Gas
- Liquids
- Metal to metal
- Plastic to metal
- Plastic to plastic

MATERIALS

- Stainless Steel 316
- Stainless Steel 316L
- Stainless Steel 316TI
- Stainless Steel 304

SIZE RANGE

- 26.4 mm (3/4" nps) - 715 mm (28" nps)

TEMPERATURE RANGE

- EPDM: -22° to 212°F
- NBR: -10° to 180°F

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- DNV-GL
- Lloyd's Register



GRIP TYPE
ITEM ID: 540102



PLAST GRIP
ITEM ID: 540107



REPAIR CLAMP
ITEM ID: 540104



COMBI GRIP
ITEM ID: 540109





Deck/Bulkhead Coupling

SIZE: 1/4" to 4"

Weldable deck/bulkhead penetration couplings with compression nut and rubber washer on one end provide seal around penetrating pipe. Double nut design joins pipe from each side of the deck/bulkhead. Available in steel or aluminum.



ALUMINUM	SINGLE NUT	549995
	DOUBLE NUT	549996
STEEL	SINGLE NUT	549997
	DOUBLE NUT	549998



Section 5: Pipe

Seamless & Welded Pipe
IPS Pipe Dimensions & Weights
Copper Tube
Expansion Joints
Pipe Hangers & Clamps
Pipe Weld Backing Rings



Pipe

Pipe in North America was first made from elm and hemlock trees by manually boring 5 or 10 foot logs with augers. Another method is logs were split, hollowed and staved together. Limb joints were used as natural points to “branch” the pipe to a joining or outlet. In mid-17th century Boston concerted use of wooden pipeline began. For fires the line was bored into at point of need and later plugged. Cast iron pipes came into being and Philadelphia was first to replace its wooden pipes with this. The used wooden pipes were sold to the city of Burlington, New Jersey for reuse. By the 1890’s, wood was not up to handling the steam machinery of the times.

A later wrought iron process from England was further improved upon in 1832 with an iron butt welding technique similar to CW at Pascal Iron Works, Philadelphia. In 1862, Robert Briggs, superintendent at Pascal, developed what came to be known as “Briggs Standard” sizing for pipe and threads 1/8” to 10”. This exists to this day as Sch 40 pipe and thread patterning.

The industry advanced in 1884 with use of Bessemer steel-less costly and superior to iron at Riverside Iron Works, Wheeling, West Virginia 1890 saw the seamless process perfected. John Moon, in 1911, understood how pipe could be made continuously and in 1922 production started at the (Sam) Fretz-Moon Tube Company. By 1930 ERW came into being.

MODERN MANUFACTURING METHODS

Continuous Weld (CW) Pipe begins as a coiled strip in the required width and thickness for the size and schedule to be made. Strip is leveled and welded end to end to make an “endless” ribbon loop of steel. Then a furnace flame heats to 2450°F, edges to 2600°F. Hot formed into an oval. Edges are pressed together by welding rolls making a forged weld. No metal is added in this operation. Final rolls form measurements to finished dimensions. Saw cut, descaled, inspected, tested, ends prepared.

SIZES: to 4” IPS

SPECIFICATIONS: A-120, A-53, API 5L

Electro-Resistance Weld (ERW) pipe is produced from flat sheet metals. ERW pipe is first cold formed into a cylindrical shape and then welded longitudinally. Both continuous welded and electric resistance welded pipe are made by shaping rolls of coiled steel into cylindrical forms and welding along the longitudinal seams. There are many ways for the electric current to be used for welding the rolled strip. The welding process includes a revolving copper disc, fixed alloy Cu contacts and induction coils. These methods raise the temperature of the steel edge to 2600°F for effective welding. The rolling process exerts so much pressure that it creates a metal welded seam on the outside and inside. These weld seams are then removed during the finishing process. The welded pipe is heat treated, inspected and hydro tested.

SIZES: 1/8” to 24” IPS

SPECIFICATIONS: A-120, A-53, API 5L

Seamless Pipe is most commonly produced using the hot rotary piercing method. In this process, hot billets are forced through rotating heavy rollers over a mandrel or piercing plug. The piercing plug creates the hole through the seamless cylindrical billets. Seamless pipe goes through various finishing operations such as straightening, inspection, hydro testing and imaging. Seamless pipe is widely used in pressure piping, construction, petrochemical and oil refineries.

SIZES: 1/8” to 36”

SPECIFICATIONS: ASTM A53, A106, API 5LX grades 42-65



Pipe

IPS - IRON PIPE SIZE STANDARD

SIZES: 1/8" to 36"

IPS pipe is available in all common materials. All IPS pipe has the same outside diameter regardless of material, schedule or class.

Lengths are standard 21' for welded steel pipe. Seamless steel pipe is manufactured in 17' to 24' random lengths. Stainless, aluminum, monel, copper, and copper nickel are in 20' lengths. Brass pipe is standard 12' (6' length if chrome plated). 20' brass lengths are also available.

Pipes can be cut to specified length or bent to specification.

MATERIAL		WELDED	SEAMLESS
Steel Black	STD/40	770040	771040
	XH/80	770080	771080
	SCH 160	770160	771160
	XXH	770088	771088
Galvanized	STD/40	772040	773040
	XH/80	772080	773080
Stainless Steel 304	SCH 10	767010	767110
	STD/40	767040	767140
	XH/80	767080	767180
Stainless Steel 316	SCH 10	768010	768110
	STD/40	768040	768140
	XH/80	768080	768180
SEAMLESS			
Brass B-43	STD/40	741040	
	XH/80	741080	
Copper B-42	STD/40	751040	
	XH/80	751080	
Copper Nickel 90/10 B466	CL 200	710200	
	STD/40	710040	
Copper Nickel 70/30 B466	XH/80	710080	
	CL 200	720200	
Copper Deox	CL 700	720700	
	-	731000	
Aluminum 6061	STD/40	762040	
	XH/80	762080	
Aluminum 5086	STD/40	764040	
	XH/80	764080	
Monel (NiCu)	SCH 10	769010	
	STD/40	769040	
Chromemoly P11 Steel	XH/80	769080	
	STD/40	791040	
Chromemoly P22 Steel	XH/80	791080	
	STD/40	792040	
	XH/80	792080	

NOTE: Thin wall Sch 5 or 10 IPS and CI 200 or 700 pipe is not suitable for use with threaded fittings.

COPPER NICKEL AND COPPER IPS DIAMETERS WITH THIN WALL

IPS SIZE	O.D.	COPPER NICKEL		DEOX
		CLASS 200	CLASS 700	COPPER
		90/10 70/30 WALL	70/30 WALL	HARD DRAWN WALL
1/8	0.405	0.065	-	0.065
1/4	0.540	0.065	0.065	0.065
3/8	0.675	0.065	0.072	0.065
1/2	0.840	0.065	0.072	0.065
3/4	1.050	0.065	0.083	0.065
1	1.315	0.065	0.095	0.065
1-1/4	1.660	0.072	0.095	0.065
1-1/2	1.900	0.072	0.109	0.065
2	2.375	0.083	0.120	0.065
2-1/2	2.875	0.083	0.134	0.065
3	3.500	0.095	0.165	0.065
3-1/2	4.000	0.095	0.180	0.065
4	4.500	0.109	0.203	0.065
5	5.563	0.125	0.220	0.095
6	6.625	0.134	0.259	0.095
8	8.625	0.148	0.340	0.105
10	10.75	0.187	0.380	0.131
12	12.75	0.250	0.454	-

RED BRASS B-43, COPPER B-42, COPPER NICKEL B-466 IPS DIAMETER WITH STD AND XH WALL

IPS SIZE	O.D.	STD	XH
		SCH 40 WALL	SCH 80 WALL
1/8	0.405	0.062	0.100
1/4	0.540	0.082	0.123
3/8	0.675	0.090	0.127
1/2	0.840	0.107	0.149
3/4	1.050	0.114	0.157
1	1.315	0.126	0.182
1-1/4	1.660	0.146	0.194
1-1/2	1.900	0.150	0.203
2	2.375	0.156	0.221
2-1/2	2.875	0.187	0.280
3	3.500	0.219	0.304
3-1/2	4.000	0.250	0.321
4	4.500	0.250	0.341
5	5.563	0.250	0.375
6	6.625	0.250	0.437

STAINLESS STEEL 304, 316

IPS SIZE	O.D.	SCH 5	SCH 10	STD	XH
		WALL	WALL	SCH 40 WALL	SCH 80 WALL
1/8	0.405	0.035	0.049	0.068	0.095
1/4	0.540	0.049	0.065	0.088	0.119
3/8	0.675	0.049	0.065	0.091	0.126
1/2	0.840	0.065	0.083	0.109	0.147
3/4	1.050	0.065	0.083	0.113	0.154
1	1.315	0.065	0.109	0.133	0.179
1-1/4	1.660	0.065	0.109	0.140	0.191
1-1/2	1.900	0.065	0.109	0.145	0.200
2	2.375	0.065	0.109	0.154	0.218
2-1/2	2.875	0.083	0.120	0.203	0.276
3	3.500	0.083	0.120	0.216	0.300
3-1/2	4.000	0.083	0.120	0.226	0.318
4	4.500	0.083	0.120	0.237	0.337
5	5.563	0.109	0.134	0.258	0.375
6	6.625	0.109	0.134	0.280	0.432
8	8.625	0.109	0.148	0.322	0.500
10	10.75	0.134	0.165	0.365	0.500
12	12.75	0.165	0.180	0.406	0.500



IPS Pipe Dimensions & Weights

Dimensions cover black, galvanized, chromemoly, stainless steel, aluminum and are very close to brass, copper, copper nickel.
Ordering info: nominal size and Class or Schedule.

Nominal Size		Outside Diameter		Wall Thickness		Designations		Inside Diameter		Weight
Inches	mm	Inches	mm	Inches	mm	Wt. Class	Schedule	Inches	mm	Lbs/ft
1/8	6	0.405	10.3	0.068	1.73	STD	40	0.269	6.8	0.24
				0.095	2.41	XH	80	0.215	5.5	0.31
1/4	8	0.540	13.7	0.088	2.24	STD	40	0.364	9.2	0.42
				0.119	3.02	XH	80	0.302	7.7	0.54
3/8	10	0.375	17.1	0.091	2.31	STD	40	0.493	12.5	0.57
				0.126	3.20	XH	80	0.423	10.7	0.74
1/2	15	0.840	21.3	0.109	2.77	STD	40	0.622	15.8	0.85
				0.147	3.73	XH	80	0.546	13.8	1.09
3/4	20	1.050	26.7	0.113	2.87	STD	40	0.824	21.0	1.13
				0.154	3.91	XH	80	0.742	18.9	1.47
1	25	1.315	33.4	0.133	3.38	STD	40	1.049	26.6	1.68
				0.179	4.55	XH	80	0.957	24.3	2.17
1-1/4	32	1.660	42.2	0.140	3.56	STD	40	1.380	35.1	2.27
				0.191	4.85	XH	80	1.278	32.5	3.00
1-1/2	40	1.900	48.3	0.145	3.68	STD	40	1.610	40.9	2.72
				0.200	5.08	XH	80	1.500	38.1	3.63
2	50	2.375	60.3	0.154	3.91	STD	40	2.067	52.5	3.65
				0.218	5.54	XH	80	1.939	49.2	5.02
2-1/2	65	2.875	73.0	0.203	5.16	STD	40	2.469	62.7	5.79
				0.276	7.01	XH	80	2.323	59.0	7.66
3	80	3.500	88.9	0.216	5.49	STD	40	3.068	77.9	7.58
				0.300	7.62	XH	80	2.900	73.7	10.25
3-1/2	90	4.000	101.6	0.226	5.74	STD	40	3.548	90.1	9.11
				0.318	8.08	XH	80	3.364	85.4	12.51
4	100	4.500	114.3	0.237	6.02	STD	40	4.026	102.3	10.79
				0.337	8.56	XH	80	3.826	97.2	14.98
5	125	5.563	141.3	0.258	6.55	STD	40	5.047	128.2	14.62
				0.375	9.53	XH	80	4.813	122.3	20.78
6	150	6.625	168.3	0.280	7.09	STD	40	6.065	154.1	18.78
				0.432	10.97	XH	80	5.761	146.3	28.57
7*	175	7.625	193.7	0.310	7.87	STD	40	7.020	178.3	23.60
				0.500	12.70	XH	80	6.630	168.3	38.10
8	200	8.625	219.1	0.322	8.18	STD	40	7.980	202.7	28.55
				0.500	12.70	XH	80S	7.625	193.7	43.39
9*	225	9.625	244.5	0.342	8.69	STD	40	8.940	227.1	33.90
				0.500	12.70	XH	80	8.630	219.2	48.70
10	250	10.750	273.0	0.365	9.27	STD	40	10.020	254.5	40.48
				0.500	12.70	XH	80S	9.750	247.6	54.74
11*	275	11.750	298.5	0.375	9.53	STD	40	11.000	279.4	45.60
				0.500	12.70	XH	80	10.750	273.1	60.10
12	300	12.750	323.8	0.375	9.53	STD	40	12.000	304.8	49.56
				0.500	12.70	XH	80S	11.750	298.5	65.42
14	350	14.000	355.6	0.375	9.53	STD	30	13.250	336.5	54.57
				0.500	12.70	XH	-	13.000	330.2	72.09
16	400	16.000	406.4	0.375	9.53	STD	30	15.250	387.4	62.58
				0.500	12.70	XH	40	15.000	391.0	82.77
18	450	18.000	457.2	0.375	9.53	STD	-	17.250	438.2	70.60
				0.500	12.70	XH	-	17.000	431.8	93.50
20	500	20.000	508.0	0.375	9.53	STD	20	19.250	488.9	78.60
				0.500	12.70	XH	30	19.000	482.6	104.10
22	550	22.000	558.8	0.375	9.53	STD	20	21.250	539.8	86.60
				0.500	12.70	XH	30	21.000	533.4	114.80
24	600	24.000	609.6	0.375	9.53	STD	20	23.250	590.6	94.60
				0.500	12.70	XH	-	23.000	584.2	125.50

*fittings no longer made for these sizes except some copper nickel.



Copper Tube

SIZES: 1/4" to 6"

Copper tube is made either hard or soft. Inch standard is designated type K, L, M, ACR, refrigeration, or heavy, depending on wall thickness and execution. With K, L, M tubing actual outside diameter is larger than nominal or "name" size.

Type K - supplied hard 20' lengths or soft 60' coils. Recommended for general plumbing and is also suitable for gas, oil and low pressure steam.

Type L - supplied hard 20' lengths or soft 60' coils. Recommended for interior applications in plumbing and heating.

Type M - supplied hard 20' lengths. Recommended for non-pressurized uses with solder fittings only.

ACR Grade - supplied hard 20' lengths. Has I.D. cleaned and ends capped for air conditioning and refrigeration use.

Refrigeration Coil - soft 50' coils - also I.D. cleaned and ends capped.

Heavy Copper Coil - soft 50' coils. General purpose extra heavy wall tube. Ends are open.

Metric Copper Tube - hard 5 meter lengths, soft 10 meter coils. Specified by O.D. and wall thickness.

Bronze Solder Joint (SJ) - valves and wrought copper SJ fittings are designed for soldering onto copper tubes. (Bite type flareless compression and flare end fittings are also sized for these tubes).

Bronze Silbraz (SB) - valves and fittings are designed for brazing to copper, red brass or copper nickel pipe and have ends sized to accommodate pipe outside diameters (also called IPS sized).

IMPORTANT NOTE: The term "sweat" is used to describe the joining technique for both solder joint (tube size) materials and silbraz (IPS pipe size) materials. Actual O.D. of tube or I.D. of valves or fittings will establish which type is referred to when "sweat" connection is indicated.

All available chrome plated. Order with CP after Item Id.

COPPER WATER TUBING ASTM B88

NOM SIZE	ACTUAL O.D.	TYPE K 752000 WALL	TYPE L 753000 WALL	TYPE M 754000 WALL	ACR 755000 WALL
1/4	3/8	0.035	0.030	0.025	0.030
3/8	1/2	0.049	0.035	0.025	0.035
5/8	3/4	0.049	0.040	0.028	0.040
3/4	7/8	0.065	0.045	0.030	0.042
1	1-1/8	0.065	0.050	0.035	0.050
1-1/4	1-3/8	0.065	0.055	0.042	0.055
1-1/2	1-5/8	0.072	0.060	0.049	0.060
2	2-1/8	0.083	0.070	0.058	0.070
2-1/2	2-5/8	0.095	0.080	0.065	0.080
3	3-1/8	0.109	0.090	0.072	0.090
3-1/2	3-5/8	0.120	0.100	0.083	0.100
4	4-1/8	0.134	0.110	0.095	0.110
5	5-1/8	0.160	0.125	0.109	0.125
6	6-1/8	0.192	0.140	0.122	0.140

METRIC COPPER TUBING DIN 1786

NOM SIZE	ACTUAL O.D.	5 METER PLAIN FINISH 873000 WALL	2 METER CHROME PLATE 874000 WALL	10M SOFT COIL PLAIN CHROME 900000 900000.C WALL
4	4	0.8		0.8
6	6	0.8	1.0	0.8
8	8	0.8	1.0	0.8
10	10	0.8	1.0	1.0
12	12	1.0	1.0	1.0
14	14	1.0		1.0
15	15	1.0	1.0	1.0
16	16	2.0		1.0
18	18	1.0		1.0
20	20	2.0		
22	22	1.0		1.0
25	25	1.0		
28	28	1.2		
35	35	1.5		
42	42	1.5		

COPPER REFRIGERATION COILS

NOM SIZE	ACTUAL O.D.	STANDARD 761000 WALL	HEAVY 761001 WALL
1/8	1/8	0.030	0.065
3/16	3/16	0.030	0.065
1/4	1/4	0.030	0.065
5/16	5/16	0.032	0.065
3/8	3/8	0.032	0.065
1/2	1/2	0.032	0.065
5/8	5/8	0.035	0.065
3/4	3/4	0.035	0.065
7/8	7/8	0.045	
1-1/8	1-1/8	0.050	
1-3/8	1-3/8	0.055	
1-5/8	1-5/8	0.060	

Pressure Tubing

MATERIAL

Carbon Steel, Stainless Steel 304 or 316 - Welded or Seamless

Ordering info: Material + O.D. + Wall Thickness + Welded or Seamless

SIZE (O.D.)	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1-1/8	1-1/4	1-1/2	2
COMMON WALLS	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.049	0.035	0.065	0.065	0.065
	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.065	0.065	0.095	0.095	0.095
STD LENGTH 20'	0.065	0.065	0.065	0.065	0.065	0.065	0.065	0.083	0.095	0.120	0.120	0.188

Expansion Joints

Joints are available in a variety of styles for different service application requirements. Types are identified and described below. Flange drilling to ANSI and metric - please indicate drilling pattern dimensions. Movement patterns are shown below and measure and degree of these actions as well as temperature must be considered for suitable choice of joint construction.

RUBBER BELLOWS or SPOOL PIECE TYPE

Function well to prevent line stress or accommodate misalignment. Also for noise and vibration dampening. For general economy service, to 240°F and 225 PSI: construction of molded neoprene and nylon with floating solid plate steel flanges, 6" overall length. Tapped bolt holes.

For more specialized applications, please specify medium conveyed in line so that proper casing materials can be determined. Also movement dynamics, pressure or vacuum and temperature ranges. This type, known as spool piece type, has integral elastomer flanges and split steel retaining rings. Generally 6" to 8" length with single arch or 10" to 12" with double arch. Control rod option for excessive elongation situations.

U-TYPE TUBULAR RUBBER ABSORBER

Non-arched rubber vibration and sound absorber good also for some lateral movement with molded rubber flanged ends or crimp-on nipple ends. Comes standard lengths 12" to 36".

METAL BELLOWS TYPE

Bellows material is stainless steel. Can be supplied sleeve-lined for temperature/pressure applications or for flow considerations. Weld stub end or flange is typically carbon steel. End to end dimension to your specification. Please indicate description of movement dynamics, pressure/temperature ranges and medium conveyed in the line. Supplied with control rods as needed.

BRAIDED PUMP CONNECTION TYPE

Construction from flexible annular corrugated hose of stainless or tin-bronze tubing with cover mesh for strength. Flanged, weld stub or threaded ends.

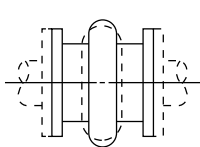
TEFLON BELLOWS

Teflon construction for wide application in chemical process. Short overall length: 2" to 3". Ductile iron flanges with tapped bolt holes.

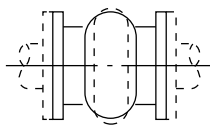
SLIP TUBE TYPE

Precision machined and lubricated slip joint bolts rigid into pipeline. Designed to accommodate extreme traverse (on-line movement). Supplied with or without base. Traverse 4" or 8" maximum, single or double joint.

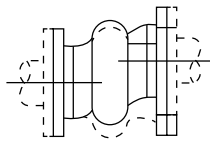
MOVEMENT PATTERN PROFILES



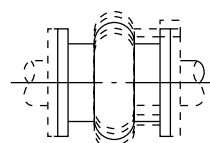
AXIAL COMPRESSION



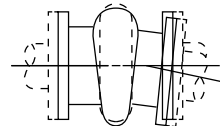
AXIAL ELONGATION



LATERAL MOVEMENT



VIBRATION



ANGULAR

Pipe Hangers & Clamps

SIZE: 1/4" to 24"

DESIGN DESCRIPTION

Common Materials:

- Steel - item numbers below
- Galvanized Steel - add "G"
- Stainless Steel - add "SS"



CHAIR CLAMP 100
ITEM ID: 548100



CLEVIS HANGER 260
ITEM ID: 548260



PIPE CLAMP 212
ITEM ID: 548212



U-BOLT
ITEM ID: 548137



RISER CLAMP
ITEM ID: 548261



STAUFF® TUBE
SINGLE ITEM ID: 548801



DOUBLE ITEM ID: 548802



STRAP CLAMP
ITEM ID: 548262

Pipe Weld Backing Rings

SIZE: 1/4" to 12"

These rings maintain gap between weld joints in pipe and fittings. They are also called consumable rings as they become part of the weld and add reinforcement to inside seam. Tips are knocked off after welding. As these fit inside pipe joint, specify pipe size & schedule or I.D.



STAINLESS STEEL
SCH 10
ITEM ID: 549971

STANDARD STEEL
ITEM ID: 549980

STAINLESS STEEL
SCH 40
ITEM ID: 549974

XH STEEL
ITEM ID: 549981

STAINLESS STEEL
SCH 80
ITEM ID: 549975

90/10
COPPER NICKEL
ITEM ID: 549990



Section 6: Engineered Products

Chibro: Pressfitting®, Steckdrain®, Cunipress®

Victaulic

Pyelok®

Viega

Instaflex

iFit

SeaDrain® White

PE-100

SeaCor®

CSD: NOFIRNO®, RISE®, SLIPSIL®

SprayStop

Lid-Lock Hatch Gasket

SternSeal

Valve Cartridge Live Loading

Garlock Rubber Expansion Joints

Ballast Water Treatment System

Bestobell Cryogenic Globe Valves

Perma-Pipe® Fuel Gard

Control Valves

Regulator Valves

Leser Safety Relief Valves

Backflow Preventers

ASCO Solenoid Valves

Actuation: Electric, Hydraulic, Manual, Pneumatic

Actuation Accessories

Quick Closing Valves

Chibro Pressfitting®

The remarkable Chibro Pressfitting® system is a metric press-fit system using 316 stainless steel. At each end, fittings have a toroidal groove with an o-ring seal that is compressed by a portable hydraulic tool, forming a permanent leak-free seal. A complete array of fittings and piping components as well as tooling are readily available.

APPLICATIONS

- Compressed air systems
- Fresh, sanitary, drinking water (hot and cold)
- Hot and chilled water for air conditioning systems
- Machinery fresh water cooling systems
- Sprinkler systems (dry and wet)

AVAILABLE SIZES

- DN12
- DN15
- DN20
- DN25
- DN32
- DN40
- DN50
- DN65
- DN80
- DN100

MATERIALS

- Stainless Steel - AISI 316L

TEMPERATURE RANGE

- -20°C to 120°C

DESIGN PRESSURE

- 16 Bar

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- DNV-GL
- Lloyd's Register
- Russian Maritime Register of Shipping



Chibro Steckdrain®

Steckdrain® is a comprehensive push-fit stainless-steel sanitary metric pipe-work system. When internal pressure increases, the pressure of the sealing ring against the interior pipe walls increases, ensuring joint tightness. The push-fit joint is completely interchangeable between either gravity or vacuum systems. Steckdrain offers a complete array of deck drains with or without traps designed to suit virtually any installation combinations throughout the vessel.

AVAILABLE SIZES

- DN40
- DN50
- DN65
- DN80
- DN100
- DN125
- DN150
- DN200

MATERIALS

- Stainless Steel - AISI 316L

TEMPERATURE RANGE

- EPDM: -35°C - 100°C (standard)
- FPM: -25°C - 200°C
- NBR: -30°C - 80°C
- SI: -50°C - 230°C

DESIGN PRESSURE

- 10 Bar: DN40 to DN125
- 5 Bar: DN150 to DN200

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- DNV-GL
- Lloyd's Register
- Russian Maritime Register of Shipping



Chibro Cunipress®

The Chibro Cunipress® system is a metric press-fit system specifically developed for seawater and other aggressive media applications. At each end, fittings have a toroidal groove with an o-ring seal that is compressed by a portable hydraulic tool, forming a permanent leak-free seal.

APPLICATIONS

- Ballast systems
- Bilge systems
- Brine systems
- Compressed air systems
- Deck washing systems
- Fire systems
- Machinery fresh and sea water cooling systems
- Sanitary fresh and sea water systems
- Sprinkler systems

AVAILABLE SIZES

- 15 mm
- 18 mm
- 22 mm
- 28 mm
- 35 mm
- 42 mm
- 54 mm
- 76.1 mm
- 88.9 mm
- 108 mm

MATERIALS

- CuNi 90/10

TEMPERATURE RANGE

- -20°C to 110°C

DESIGN PRESSURE

- 13 Bar

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- DNV-GL
- Lloyd's Register



Victaulic

The Victaulic grooved-end piping system is the most versatile, economical and reliable piping system available. It is faster to install than welded systems, while providing unique design versatility. There are a variety of coupling sizes and styles for almost any piping application. Their couplings provide designers with versatility not found with other pipe-joining methods and can be combined to allow for thermal growth within the system. Additionally, the use of three consecutive flexible couplings reduces noise and vibration while eliminating costly specialty noise dampeners. The system is designed for roll-grooved or cut-grooved standard pipe or roll-grooved light wall pipe. A complete line of grooving tools are available to quickly and efficiently groove pipe in the shop or at the job site.



APPLICATIONS

- Black water
- Chilled water
- Condensate water
- Fire sprinkler systems (wet and dry)
- Fresh water
- Grey water
- LP air
- Sea water
- Vacuum systems
- Waste water

SIZE RANGE

- 3/4" - 24"

TEMPERATURE RANGE

- -40°F - 300°F

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- DNV-GL
- Lloyd's Register
- NAVFAC

Pyelok

Pyelok fittings from W&O are non-welded permanent connection fittings that are radially swaged onto pipe/tubing using a compression tool. This process forms a 360° radial compression around the pipe, forming a leak-free seal. All of the Pyelok fittings are made from bar-stock single forging (solid "no-weld" construction). The advantage of Pyelok's unique non-metallic o-ring sealing characteristics makes it ideal for gaseous as well as fluid systems. Pyelok fittings have all of the benefits of a welded joint, without the hazards associated with hot work.



APPLICATIONS

- Oil Hydraulic Systems
- Air, Nitrogen, Oxygen
- High pressure fire systems

APPROVALS/CERTIFICATIONS

- ABS
- Canadian Coast Guard
- DNV-GL
- USCG

MATERIALS

- Carbon Steel - ASTM-A106/A333/A105/A350
- CuNi 70/30 - ASTM B466/Mil-T-16420
- Duplex - ASTM-A789/A790/A276
- Stainless Steel 316 - ASTM-A276/A479/A312/A403
- Super Duplex - ASTM-A789/A790/A276

SIZE RANGE

- Metric Tube 0.8 mm Wall - 8 mm Wall; 6 mm - 66 mm
- OD Tube 0.03" Wall - 0.22" Wall; 1/4" - 2"
- NPS Pipe Sch 10 - Sch 160: 1/4" NPS - 3" NPS



Viega MegaPress FKM

MegaPress FKM is a carbon steel, cold press system designed for use in class III piping systems. MegaPress FKM fittings in sizes from 1/2" IPS to 4" IPS are offered in more than 180 fitting configurations, designed for use in piping systems utilizing ASTM A53, A106 grade A or B, A135, and A795 Schedule 5 to Schedule 80 pipe. MegaPress FKM fittings are manufactured with Viega's unique Smart Connect® Technology allowing identification of an unpressed fitting during pressure testing.



TEMPERATURE RANGE

- 23°F to 284°F (-5°C - 140°C)

OPERATING PRESSURE

- 232 psi max

VACUUM LINES

- 170 mbar absolute (-12.04 psi/-24.5 in Hg/-0.083 MPa)

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- DNV-GL
- Lloyd's Register
- RINA
- USCG 2019-3650



Viega MegaPress 316

MegaPress 316 is a Stainless Steel Cold Press compression System designed for use in Class III piping systems. The fittings are designed to be used with standard IPS ASTM A312 stainless steel pipe and are available in a vast array of assorted configurations. MegaPress 316 size range is 1/2" IPS to 4" IPS and can be used with Schedule 10 to Schedule 40 stainless steel pipe as well as schedule 80 (subject to max pressure rating as listed below).



OPERATING PRESSURE

- 1/2" – 2-1/2": 232 psi
- 3": 181 psi
- 4": 145 psi

VACUUM LINES

- 170 mbar absolute (-12.04 psi/-24.5 in Hg/-0.083 MPa)

APPROVALS/CERTIFICATIONS

- ABS
- DNV-GL
- Lloyd's Register
- USCG 2019-3650



Viega MegaPress CuNi

Viega MegaPress CuNi is a high quality cold-press, mechanical pressfit system designed for the marine industry. Available in sizes 1/2" IPS through 4" IPS it will work with off the shelf copper nickel piping from class 200 through schedule 40. The only copper nickel press fitting system with NAVSEA approval (1/2" - 2"). Presses in seconds reducing installation time by up to 90% compared to welding. Viega's Smart Connect® technology helps ensure consistent connections with the added security of no re-work.



FEATURES

- Make secure press connections in seven seconds
- One sealing element for all applications
- Complies with DIN 86019, UNS C70600 compositionally and ASTM B466 and Mil-T-16420K dimensionally
- Compatible with existing MegaPress jaws and rings
- Stocked and available in North America

MATERIALS

- Sealing Element: FKM
- Alloy: 90/10 Copper-Nickel C70600

TEMPERATURE RANGE

- 14°F to 284°F (-10°C - 140°C)
- Can handle temperature spikes up to 356°F (180°C).

OPERATING PRESSURE

- 232 psi max, tested to 600 psi

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- DNV-GL
- Lloyd's Register
- NAVSEA
- RINA
- USCG 2019-3650



INSTAFLEX

INSTAFLEX is a modern, all-plastic pipeline system made of polybutylene (PB) for shipboard applications. PB has a high chemical resistance and outstanding resistance to hot water. This pipeline system also has outstanding flexibility in installation and operation. To allow fast and reliable installation, INSTAFLEX consists of a broad range of fittings and PB pipes. The INSTAFLEX system has been designed to meet the highest demands in a variety of different applications. The fittings and pipes are odorless and tasteless making them ideal for use in drinking-water installations.

APPLICATIONS

- Chilled water
- Compressed air
- Hot and cold water
- Potable water

AVAILABLE SIZES

- 16 mm
- 20 mm
- 25 mm
- 32 mm
- 40 mm
- 50 mm
- 63 mm
- 75 mm
- 90 mm
- 110 mm

TEMPERATURE RANGE

- 0°C to 95°C

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- DNV-GL
- Lloyd's Register



iFit

Georg Fischer iFit from W&O is an innovative plastic pipeline system for shipboard installations. The joining technology and modular system make iFit fast, simple and cost-effective. With 50% fewer parts in the range, the modular system is more versatile than conventional installation systems which allows low inventories with maximum flexibility.

FEATURES

- Reliable processing, thanks to view windows and click joints
- 100% inspection of all adapters to assure system reliability
- Fast mounting
- Low investments
- Detachable joints for simple replacement within a constrained space
- Short insertion depths, so that constrained spaces present no problems
- Same tool and fittings for multilayer-composite and polybutene pipes

APPLICATIONS

- Drinking water
- Hot and cold water

AVAILABLE SIZES

- d16
- d20
- d25
- d32

APPROVALS/CERTIFICATIONS

- Bureau Veritas
- DNV-GL
- Lloyd's Register





SeaDrain® White

The SeaDrain® White marine piping system is the first thermoplastic black and grey water drainage system to offer both welded and mechanical jointing capabilities. The system introduces the industry's first non-corroding thermoplastic deck drain, as well as the Fast-Lock® mechanical jointing method. Completely independent of support brackets, the system is capable of long-term burst pressure of 36 psi (2.5 bar) and -14.5 psi (-1.0 bar) full vacuum black water service, thus revolutionizing marine drainage systems. Long-term system sustainability and passenger safety were critical considerations in the system design. The complete system ranges in size from 1-1/2" to 6" (DN40 - DN150), and includes all the components required to complete any installation.

SeaDrain® White is suitable for cruise ships, passenger ferries, and luxury yacht installations, in both new build and retrofit construction. As a plastic piping system, SeaDrain® White offers numerous advantages over traditional metal systems and will provide a long, maintenance-free life. Installation of the system is eased by the lightweight components, the reduced need for pipe hangers, and the option of two simple jointing methods. There's no need to paint after installation as SeaDrain® White is manufactured from a UV protected white polypropylene material.

The SeaDrain® White piping system is produced in the United States and approved for use by ABS, DNV-GL, Lloyd's Register, and RINA. It is also NSF certified and ASTM D635-18 (HB) compliant. A solution with all properties desirable for marine environments.



APPLICATIONS

- Black and grey water sanitary drains
- Cabins, galleys and laundries
- Deck and balcony drains
- Customer facing areas

APPROVALS/CERTIFICATIONS

- ABS
- DNV-GL
- Lloyd's Register
- RINA

AVAILABLE SIZES

- 1-1/2" to 6" (DN40 - DN150)

PE-100

Due to its robust mechanical strength, high impact resistance (including very low temperatures) and excellent chemical resistance, GF PE-100 Industrial Polyethylene from W&O is an ideal all-around product for your chill-water, seawater/freshwater transfer systems. The dynamic combination of specifiable pipe, fittings, valves, and cutting-edge fusion technologies integrates well into the marine process industry.

APPLICATIONS

- Cold water
- Air conditioning
- Sea and fresh water cooling
- Grey and black water
- Fresh water bunkering
- Ballast system

TEMPERATURE RANGE

- -40°C to +40°C

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- CCS
- DNV-GL
- Lloyd's Register
- RMRS
- RINA





SeaCor® Marine Piping

SeaCor® is a specially formulated plastic compound piping system, and is the first commercially available complete thermoplastic system that meets the IMO requirements for flame spread, low smoke and toxicity.

SeaCor® can be used in “Non-Essential” Shipboard Systems including:

- Potable hot & cold water supply and water generation
- Sanitary Systems Grey & Black, including vacuum toilet systems
- Sewage Treatment & Transfer
- Chemical Injection & Brine systems
- Sounding pipes in water & dry tanks
- Deck drains
- Chilled water & condensate returns
- Fresh & salt water washdown
- Others as permitted by ABS SVR 4-6-3 Table 1 Fire Endurance Matrix

SIZES: 1/2” to 12” schedule 80 nominal pipe size

DESIGN DESCRIPTION

- Proprietary High Performance CPVC Based Thermoplastic Compound Resin material
- Operating Temperature: 32°F (0°C) to 210°F (99°C)
- Working Pressure: 279 PSI (19Bar) @ 73°F
- Connections: Solvent Weld Socket Type, Flanges to ANSI, DIN, JIS and NPT Threaded Adaptors
- SeaCor is manufactured by Georg Fischer in Little Rock Arkansas, is Buy America Act compliant and available only from W&O

APPROVALS

- American Bureau of Shipping: 21-2079720-PDA
- Lloyd’s Register: 16/60010
- Det Norske Veritas: TAK000007J
- EU MRA: 08HS242939-EUMR
- USCG: 164.141/36/0
- Transport Canada
- NSF/ANSI/CA 61





CSD NOFIRNO®

W&O proudly offers the NOFIRNO® penetration system, a sealant-based alternative for casting compounds and block systems used in fire-rated bulkheads. Developed specifically for the marine and offshore industry, these systems are very easy to install, with a minimum number of different parts. Based on revolutionary new NOFIRNO® technology, NOFIRNO® offers ultimate flexibility for sealing any combination of metallic or plastic pipe penetrations. The system comprises just three components and installation is simple.

NOFIRNO® is to duct any combination of cable, metallic or plastic pipes through the same penetration.

FEATURES

- Approved for metallic or plastic, single or multi-pipe penetrations
- Labor savings; installs in a fraction of the time compared to competitive systems
- Allows pipes of dissimilar metals (and/or plastic) to pass through the same penetration
- No special transit frames required
- Pipes can be ducted off center
- Easy re-entry for future pipe changes; no need to replace material
- No metal parts, no corrosion
- No mineral wool in the system; protects against internal transit corrosion
- Provides vibration absorption and sound dampening
- Prevents condensation on service pipes
- Allows longitudinal and radial movement of pipes
- Fire rated A-0 up to A-60, H-0 up to H-120, Jet Fire
- Watertight up to 4 bar

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- DNV-GL
- Transport Canada
- USCG
- US Navy



CSD RISE®

RISE® single and multi-pipe penetrations have been the penetration sealing product of choice for shipyards around the world for more than 25 years. The system comprises of just two simple components—FRR/LEHF rubber for insert sleeves, filler sleeves and wrap and FIWA® Sealant—which provides fire, water and gas protection. Benefits include quick and easy installation, vibration absorption and sound dampening, corrosion free and an aged tested service life of up to 50 years.

FEATURES

- Approved for metallic or plastic, single or multi-pipe penetrations
- Labor savings; installs in a fraction of the time compared to competitive systems
- No special transit frames required
- Easy re-entry for future pipe changes; no need to replace material
- No metal parts, no corrosion
- Provides vibration absorption and sound dampening
- Fire rated A-0 up to A-60, H-0 up to H-120, Jet Fire
- Watertight up to 2.5 bar
- Age tested to 50-year service life
- NAVSEA approved for surface combatants

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- DNV-GL
- Transport Canada
- USCG
- US Navy



SLIPSIL®

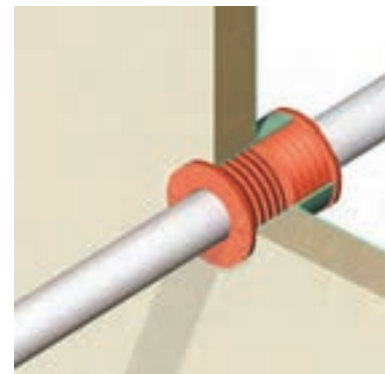
SLIPSIL® sealing plugs are used for the gas, water tight and fire safe sealing of pipe and cable penetrations. The plugs can be used for steel, stainless steel, copper, GRP and plastic pipes and are approved for steel and aluminum partitions in marine and offshore applications. They are made from high quality NOFIRNO® Rubber. Features of SLIPSIL® include quick and easy installation, corrosion-free, a wide temperature range and an aged tested service life of 20 years.

FEATURES

- Approved for metallic or plastic, single or multi-tube penetrations
- Labor savings - installs in just a couple of minutes / no tools required
- No special transit frames required
- No metal parts, no bolts, no corrosion
- No mineral wool in the system - protects against internal transit corrosion
- Provides vibration absorption and sound dampening
- Wide temperature range - seals both Freon lines and steam lines
- Fire rated A-0 up to A-60, H-0 up to H-120
- Watertight up to 2.5 bar (36.25 psi)
- Shock and vibration tested
- Age tested to 20 year service life
- Sizes to seal pipes from 5 mm to 168 mm

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- DNV-GL
- Transport Canada
- USCG
- US Navy



SprayStop

SprayStop is a superb anti-splash and -spray tape for a wide range of applications. Designed by experienced safety specialists, this high-tech laminated, multi-layer aluminum tape prevents spray-outs of hot or hazardous liquids from piping systems. SprayStop can help prevent fires, explosions or other potentially catastrophic mishaps. According to the SOLAS amendment chapter 2-2 regulation, ships are required to apply proper protection systems to prevent leakage and splashing of flammable oils from FO, LO and other piping. SprayStop is an excellent choice for this and complies with IMO A653 (6) regulations.



FEATURES

- Fuel oil injection pipes, service pipes, valve cooling pipes attached to diesel engines
- Lube oil service pipes and hydraulic oil pipes attached to diesel engines
- Flammable oil pipes, pumps, and strainers
- Fuel oil heater
- Lube oil heater and cooler
- Fuel oil purifier
- Lube oil purifier
- Fuel oil burning unit for boiler, thermal oil heater, inert gas generator and incinerator
- Level gauge, fittings and oil tray of flammable oil tanks
- Sounding pipe head of double bottom fuel oil tank
- Special pipe joint (threaded pipe joint, compression fitting joint, etc.) and expansion joint in the oil piping

MATERIALS

- Multilayer Aluminum/Glasscloth/PET Liner with special adhesive

SIZE RANGE

- 35 mm - 1,000 mm

TEMPERATURE RANGE

- -70°C - 200°C

APPROVALS/CERTIFICATIONS

- ABS
- Bureau Veritas
- CCS
- DNV-GL
- Lloyd's Register
- RINA



W&O SternSeal

W&O SternSeal Marine Shaft Packing is square-plait-braided to provide an unusually flexible, formable packing. The base fiber is a long-fibered, roved flax of the highest quality. W&O SternSeal is graphite-free to avoid galvanic corrosion on shafts.

APPLICATIONS

- Stern tubes
- Rudder posts
- Shaft bulkhead
- Glands
- Cold water

TEMPERATURE LIMIT

- 135°C (275°F)

PRESSURE LIMIT

- 20 bar g (300 psi)

SHAFT SPEED

- 5 m/s (1,000 fpm)

CHEMICAL RESISTANCE

- pH 6 to 8



Valve Cartridge Live Loading

The Valve Cartridge Live Loading technology compensates for a variety of system conditions and optimizes reliable valve sealing by maintaining a consistent load on the packing gland. This helps to minimize valve induced process fluctuations and reduce associated leakage due to system disturbances, improving equipment uptime.

FEATURES

- No torque wrench required for installation or retorques
- Reduces need for retorques
- Absorbs vibrational shock
- Compensates for thermal expansion/contraction
- No nut friction due to temperature, time, thread damage, corrosion, or burrs
- Maintains packing gland load for improved reliability



Lid-Lock Hatch Gasket

Lid-Lock packing is designed specifically to handle the unique sealing requirements and harsh environments of tank covers, hatches and lids found on marine transport equipment.

Lid-Lock has an EPDM rubber core overwrapped with a high quality PTFE film. The combination of the two gives this packing its excellent compressibility and elasticity.

Lid-Lock can be supplied in bulk lengths for use as needed, or the product can be preformed into an endless ring custom made to each tank lid application.





Garlock Rubber Expansion Joints Style 206 EZ-FLO®

The EZ-FLO® expansion joints from Garlock contain a single wide flowing arch, eliminating the need for filled arches on slurry services. The self-flushing design removes media build-up and reduces fluid turbulence. High pressure and vacuum-resistance ensures longer life and reduces inventory requirements. The lightweight design installs easily.

FEATURES

- Self-flushing design eliminates media buildup and reduces fluid turbulence
- High pressure and vacuum resistance ensures longer life and reduces inventory requirements
- Lightweight design installs easily

APPROVALS/CERTIFICATIONS

- ABS
- ISO 15540 Fire Safe (Requires use of fire safe cover)



Garlock Narrow Arch Expansion Joint Style 204

The Style 204 family of spool-type expansion joints are manufactured with the industry standard narrow arch design. This style is intended to be used in dynamic conditions where both pressure and vacuum concerns are present.

Also available for high-pressure applications, Style 204 MAX has the highest pressure rating available in the industry today.

FEATURES

- Fully laboratory and field tested for long life and exceptional reliability
- High pressure and vacuum resistance offer increased safety and ensure suitability for a wide range of applications
- Single and multi-arch designs are available for a range of movement capabilities
- Concentric and eccentric reducing configurations can be provided to join piping of unequal diameters
- Available in a variety of elastomers and fabric combinations to meet the varied demands of temperature, pressure, and media

APPROVALS/CERTIFICATIONS

- ABS



Ballast Water Treatment System

The Hyde GUARDIAN Gold™ Ballast Water Treatment System (BWTS) is the new effective and dependable solution that utilizes filtration and Ultraviolet (UV) disinfection. With its simple design, the BWTS is easy to use with automatic operation and requires minimal shipboard maintenance. The system is compact and can be easily installed while in service with no downtime or dry docking. The filter system improves ballast times and increases flow to tanks while providing a 30% reduction in peak power consumption in power wash to conserve power/energy requirements. Made with corrosion-free materials, the filter screen requires very low maintenance. The BWTS utilizes high intensity ultraviolet treatment for disinfection and is not affected by water salinity, temperature, or hold time in the ballast tank.

- Compact – Smallest footprint on the market
- Economic – low installation, operating and consumable costs
- Easy to install – requires no downtime or dry docking and is supplied as a skid-mounted or modular system
- Easy to use – simple, automatic and requires minimal shipboard maintenance
- Safe – low risk for safety of crew and vessel
- Compatible – integrates seamlessly with existing ballast system, installed pumps and shipboard power system

APPROVALS/CERTIFICATIONS

- ABS
- DNV-GL
- IMO
- Lloyd's Register
- RMRS
- USCG



Bestobell Cryogenic Hydraulically Actuated Globe Valve

The Bestobell Cryogenic Hydraulically Actuated Globe Valve is designed to eliminate leakages, maximize lifetime operation and reduce maintenance and spares costs for ship operators. Constructed with a stainless steel design, the valve can withstand a temperature range of -196 C to +80 C. All Cryogenic Globe Valves use a bonnet and flange design and are available in a butt weld or flanged option. The valves can be operated by either a linear or multi-turn hydraulic actuator, and both types are used for throttling and on/off applications.

- Fire Safe
- Leak free to atmosphere
- Independent bonnet and flange design
- Available in butt weld or flanged design
- Laser etched nameplates

APPROVALS/CERTIFICATIONS

- Full 3.2 Certification to meet Class requirements
-



Bestobell Cryogenic Pneumatically Actuated Globe Valve

The Bestobell Cryogenic Actuated Globe Valve is designed to eliminate leakages, maximize lifetime operation and reduce maintenance and spares costs for ship operators. Constructed with a stainless steel design, the valve can withstand a temperature range of -196 C to +80 C. All Cryogenic Globe Valves use a bonnet and flange design and are available in a butt weld or flanged option. The valves can be operated for throttling and on/off applications.

- Fire safe
- Leak free to atmosphere
- Marine paint option for on deck valves
- Laser etched nameplates
- Independent bonnet and flange design
- Available in butt weld or flanged design
- INDUSTRIES: Industrial Gas, LNG Marine, LNG Land Based

APPROVALS/CERTIFICATIONS

- Full 3.2 Certification to meet Class requirements



Perma-Pipe® Fuel Gard

W&O is Perma-Pipes's exclusive North American distributor to the maritime industry. Perma-Pipe manufactures and sells pre-insulated and secondary containment piping systems for LNG and other fuel systems and components.

- Pre-engineered and pre-fabricated in PERMA-PIPE's ISO 9000 approved factory
- Stainless-in-stainless (double wall) construction
- Complete testing and traceability on all materials
- Insulation is Cryogel® made from Aspen Aerogels to make the system more compact and provides cost savings to end users
- INDUSTRIES: Maritime LNG, Bunker Fuel & Gas Piping

APPROVALS/CERTIFICATIONS

- ABS
- IMO
- USCG



Control Valves

Control valves are used to control steam, water or gas in marine and industrial applications. Available in steel, iron, bronze or stainless with flanged, threaded or weld ends. Control valves are diaphragm operated with air supplied to controlling diaphragm from external source.

The standard design is straight globe type with balanced double seat. Control valves are also available in angle or 3-way pattern. Direct acting are normally open, providing constant downstream pressure even during large pressure fluctuations. Reverse acting are normally closed and open in response to air supply to diaphragm, reducing upstream pressure.

MATERIALS

- Bronze
- Iron
- Stainless Steel
- Steel

END CONNECTION

- Flanged
- Threaded
- Welded



Regulator Valves

W&O offers a complete line of industrial and commercial flow regulator valves to suit a wide variety of applications: air, water, hydraulic, steam, or gas. Regulator valves include: flow control, pressure regulating, pressure reducing, temperature control, back pressure valves.

Regulator valves are sized by capacity and not to line size. The following things must be taken into consideration when ordering a valve: capacity (usually in gallons per minute, pounds per hour, or standard cubic feet per minute), valve size, connection, the media (fluid), maximum operating pressure (inlet), temperature, and discharge (outlet) pressure.



Leser Safety Relief Valves

Relief valves are used to control or limit building pressure in a vessel to avoid system malfunction. Relief valves start operation at a set pressure determined by the system requirements, once the system reaches approximately 90% of set pressure the valve begins to lift and will go into full lift at 10% overpressure. As the pressure in the system drops, the valve starts to close and will fully close once the excess overpressure is relieved and the system drops back down to the operating pressure. Our relief valves are sized and set to provide overpressure protection and required capacity for the system that they are installed on. If you require certification, testing and repairs of your relief valves, you can count on W&O to be your full-service provider.

AVAILABLE PRODUCTS

- Leser API Flanged Safety Relief Valves; Series 526
- Leser Compact Performance Safety Relief Valves; Series 437, 459
- Leser High Performance Flanged Safety Relief Valves; Series 441, 441 Full Nozzel, XXL, 444, 458

SPECIFICATION TYPE

- ASME
- DIN
- JIS

APPROVALS/CERTIFICATIONS

- Bureau Veritas
- DNV
- Lloyd's Register
- USCG
- ClassNK NIPPON Kaiji Kyokai



Backflow Preventers, Public Health Valves

Public health valves, also known as backflow preventers, are installed in potable water systems to protect the water from potential hazards. Backflow devices are required by law and must be installed in accordance with public-health codes.

- There are many different types of backflow preventers used in various applications
- The Double Check Valve Assembly (DCVA) is essentially two single check valves assembled within one body and furnished with four test cocks and two shut-off valves.
- A DCVA is commonly used to protect against low to medium hazard installations such as food processing equipment or sprinkler systems.
- A Reduced Pressure Zone Assembly (RPZ) contains two independently acting spring loaded check valves separated by a spring loaded differential pressure relief valve, two shutoff valves, and four test cocks.
- A vacuum breaker is an accessory placed on a faucet valve, toilet, or flush valve that prevents the reverse flow of polluted water from entering into the potable water supply due to back-siphonage.





ASCO Solenoid Valves

Solenoid valves generally service air, inert gas, water and light oil (up to 300 SSU) at moderate temperatures. The solenoid is an electromagnetic part of a valve comprised of a coil, core tube, core and enclosure. W&O offers our customers the outstanding ASCO RedHat brand, with the world's largest selection of two-, three- and four-way solenoid valves, designed to handle the most demanding fluid-control applications. If the system requires a valve for extremely high temperatures of hot water and steam or extremely cold temperatures for cryogenic systems to -320°F (-196°C) or liquid CO₂ systems to -75°F (-59°C) the ASCO 2-way valve can handle these extremes. Two- and three-way valves can also be used in potable water and food service applications.

Series 8210 2-Way Air/Inert Gas, Water, Lt. Oil – 3/8" – 2 1/2"

Solenoid pilot operated valves available in normally closed and normally open constructions. Available either AC or DC operated with Brass or Stainless Steel bodies for a wide variety of applications. Diaphragm constructions from 3/8" – 1 1/2", piston constructions from 3/8" – 2 1/2". Our most economical, high flow valve available.

Series 8320 3-Way Pilot Operated Diaphragm Valves – 3/8" – 1"

Solenoid pilot operated diaphragm valves available in normally closed and normally open constructions. Available either AC or DC operated with Brass or Stainless Steel bodies for a wide variety of high flow applications. Available with external for zero minimum pressure requirements.

Series 8551 3-Way & 4-way NAMUR Mount Solenoids

The 8551 series are pilot operated high flow valves available in anodized aluminum bodies 1/4" NPT. They are compact spool valves with threaded port connections, with all exhaust ports pipable, providing better protection against harsh environments.





Electric Actuation

W&O keeps an extensive inventory of a complete line of quarter-turn and multi-turn electric actuators.

FEATURES

- Weatherproof, explosion-proof, IP68 enclosures
- On/off, modulating, fail safe and battery back up based on design application
- All electric actuators come fully equipped with manual override capabilities
- Network communications: Modbus, Profibus and ASI protocols

VOLTAGE

- 12vDC
- 24vDC
- 24vAC
- 110/220vAC-1Ph
- 220/380/440/460/480
- 3Ph
- 50/60Hz

MATERIALS

- Carbon Steel
- Cast Iron
- Die Cast Aluminum

TORQUE

- 350 in-lbs - 840,000 in-lbs

TRUST RANGE

- 10,000 lbs - 350,000 lbs



Hydraulic Actuation

Hydraulic actuation is used in higher-torque, quarter-turn, multi-turn and linear applications. Hydraulic actuators are smaller in size than electric and pneumatic actuators, making them ideal for use in small, confined spaces. They are available in single-acting (spring-return) and double-acting (fail-in-place) versions and with manual hand pump for emergency or local operation.

- Scotch yoke design, piston type
- Local visual position indicator
- Manual operation via stationary or portable hand pump
- TORQUE RANGE 50 to 47,500 ft/lbs
- Solenoid valve control circuit cabinets
- Hydraulic power units
- PLC or MIMIC PANEL CONTROL



Manual Actuation

There are three different types of manual actuation:

- Gear Operation – used on larger valves that have a higher torque output
- Lever Operation – used on smaller valves that do not require excessive torque
- Remote Mechanical Valve Operator / Reach Rod – custom made to suit any length or complexity requirements. Typically used in locations that are physically difficult to access valve position or in a hazardous/restricted environment. Continuous submerged service available.

MATERIALS

- Aluminum
- Carbon Steel
- Cast Iron
- Stainless Steel

TORQUE

- Gear operated – up to 620,000 in-lbs
- Lever operated – low torque quarter turn applications
- Reach Rod – up to 250 ft-lbs





Pneumatic Actuation

W&O provides pneumatic actuation that has a high cycle life with many actuation accessories available for use within the pneumatic system. To meet our customers' needs, we offer pneumatic actuation that is inexpensive, easily maintained and readily available.

FEATURES

- Rotary application: rack-and-pinion, scotch-yoke and canted-yoke type
- Linear application: piston type
- Double acting (fail in-place) and spring return (fail safe)
- Shorter lead time for pneumatic actuators

SUPPLY PRESSURE RANGE

- 40 psi - 150 psi

MATERIALS

- Ductile Iron
- Hard Anodized Aluminum
- Stainless Steel

TORQUE

- 30 in-lbs - 1,600,000 in-lbs

TRUST RANGE

- 478 lbs - 216,676 lbs

CONTROLS

- Airset / Filter Regulator
- Limit Switches
- Line or Namur Mount Solenoids
- Lock up Valves
- Mechanical Overrides with Block and Bleed Valves
- Pneumatic, Electro-Pneumatic and Digital Positioners
- Speed / Flow Controls



Limit Switches

Limit switches provide confirmation for the valve position, indicating whether the valve is open or closed. Limit switches come as mechanical, proximity or "prox switch" and inductive to provide precise valve position.

FEATURES

- Gives position feedback from an actuator locally and remotely
- Gives operator a clear indication on valve position
- Enclosures offered in multiple area classifications, including explosion-proof, intrinsically safe, weatherproof types
- Wide variety of mechanical, proximity and inductive switch options provide the most effective and economical choice for each specific application
- AS-i digital communication interface card, 3-position dribble control, 4-20mA feedback transmitter, special terminal strips, NAMUR mounting brackets
- Explosion-proof ratings UL and cULus listed NEMA 4, 4X, 7 and 9, international explosion-proof rating E Ex d IIB T6 and ATEX certified
- Weatherproof type ratings (NEMA 4, 4X)



Manual Overrides

Manual Gear Overrides mount integrally with actuator and valve. This rugged device allows for manual operation during installation and system testing or in the event of an air, electric or hydraulic supply failure.



Positioners

Positioners are advanced control devices used to control valve actuators and come as pneumatic, electro/pneumatic and digital-valve varieties. Our positioners are highly dependable for consistent, reliable control even in difficult environments. W&O's highly trained actuation team can help you engineer a solution no matter how complex the system might be.

FEATURES

- Used in rotary and linear applications
- Positioners are used when proportional control is required
- Offered in multiple enclosures for specific area classifications (weatherproof and explosion-proof), FM/SCA Class1, Div1, Groups C&D, Stainless Steel available
- Available with a wide range of feedback options
- Communication protocols: Profibus, ASi, HART, Fieldbus



Quick Closing Valve, Straight Type

Quick closing valves are most often used in fuel related systems where there is a need to shut off the flow instantly. Universal release cylinder for mechanical, hydraulic or pneumatic closing. Integrated fire release safety.

SIZES: 1/2" to 6"

SPECIFICATIONS

- Flange standard: ISO 7005-2 / ANSI drilled
- Face to face standard: EN 558, series 1
- Bonnet connection: Bolted
- Execution: Straight
- Connection type: Flanged
- Operation: Handwheel, Hydraulic, Pneumatic
- Actuation: Multiturn

APPLICATION

Meets SOLAS, USCG Subchapter M (46 CFR) and all regulatory requirements installed on tanks containing flammable & inflammable liquids to instantly shut off all flow in the event of a fire. Fuel oil, lubricating oil, flammable hydraulic oil, Cargo oil and Non-flammable hydraulic fluid.



ITEM ID: 973357

Hydraulic Control Station

For quick closing valves.

OPTIONS

- Fittings for stainless steel tube
- Spare parts kits available



ITEM ID: 973307QC

Hydraulic Control Station Cabinet

Cabinet for hydraulic control of quick closing valves. Standard painting of cabinet RAL 7035.

OPTIONS

- Cabinet: stainless steel 1.4301 (AISI 304) or 1.4404 (AISI 316)
- Fittings for stainless steel tube



ITEM ID: 973307CAB



Section 7: Data

Properties of Welded & Seamless Pipe

Bronze Flange Dimensions

Cast Iron Flange Dimensions

Steel Flange Dimensions

Metric Flange Dimensions

Navy Flange Dimensions

Working Pressures: Valves

Working Pressures: Pipe & Tube

Conversion Charts



PROPERTIES OF WELDED & SEAMLESS PIPE

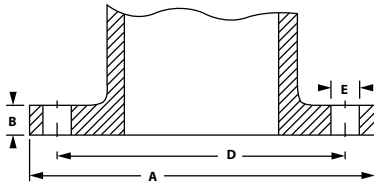
Nominal Pipe Size Inches	Outside Diameter Inches	Wall Thickness Inches	Identification		Weight of Pipe Lb./Ft	Inside Diameter Inches	Area of Metal Sq. In.	Internal Cross-Sectional Area	
			Schedule Number	Designation				Sq. In.	Sq. Ft.*
1/8	0.405	0.049	10S		0.19	0.307	0.055	0.0739	0.0005
		0.068	40, 40S	STD	0.24	0.269	0.072	0.0567	0.0003
		0.095	80, 80S	XS	0.31	0.215	0.092	0.0362	0.0002
1/4	0.540	0.065	10S		0.33	0.410	0.097	0.1320	0.0009
		0.088	40, 40S	STD	0.42	0.364	0.125	0.1039	0.0007
		0.119	80, 80S	XS	0.54	0.302	0.157	0.0716	0.0004
3/8	0.675	0.065	10S		0.42	0.545	0.124	0.2332	0.0016
		0.091	40, 40S	STD	0.57	0.493	0.167	0.1908	0.0013
		0.126	80, 80S	XS	0.74	0.423	0.217	0.1405	0.0009
1/2	0.840	0.065	5S		0.54	0.710	0.158	0.3959	0.0027
		0.093	10S		0.67	0.674	0.197	0.3567	0.0024
		0.109	40, 40S	STD	0.89	0.622	0.260	0.3037	0.0021
3/4	1.050	0.147	80, 80S	XS	1.09	0.546	0.320	0.2341	0.0016
		0.188	160		1.31	0.464	0.385	0.1690	0.0011
		0.294		XSS	1.71	0.252	0.504	0.0498	0.0003
1	1.315	0.065	5S		0.89	0.920	0.201	0.6647	0.0046
		0.083	10S		0.86	0.884	0.252	0.6137	0.0042
		0.113	40, 40S	STD	1.13	0.824	0.332	0.5332	0.0037
1-1/4	1.660	0.154	80, 80S	XS	1.47	0.742	0.433	0.4323	0.0030
		0.219	160		1.94	0.612	0.571	0.2941	0.0020
		0.308		XXS	2.44	0.434	0.718	0.1478	0.0010
1-1/2	1.900	0.065	5S		0.87	1.185	0.255	1.1028	0.0076
		0.109	10S		1.40	1.097	0.413	0.9451	0.0065
		0.133	40, 40S	STD	1.68	1.049	0.494	0.8642	0.0060
2	2.375	0.179	80, 80S	XS	2.17	0.957	0.638	0.7192	0.0049
		0.250	160		2.84	0.815	0.836	0.5216	0.0036
		0.358		XXS	3.66	0.599	1.076	0.2818	0.0019
2-1/2	2.875	0.065	5S		1.11	1.530	0.326	1.8385	0.0127
		0.109	10S		1.81	1.442	0.531	1.6330	0.0113
		0.140	40, 40S	STD	2.27	1.380	0.668	1.4957	0.0103
3	3.500	0.191	80, 80S	XS	3.00	1.278	0.881	1.2827	0.0089
		0.250	160		3.76	1.160	1.107	1.0568	0.0073
		0.382		XSS	5.21	0.896	1.533	0.6305	0.0043
3-1/2	4.000	0.065	5S		1.28	1.770	0.374	2.4605	0.0170
		0.109	10S		2.09	1.682	0.613	2.2219	0.0154
		0.145	40, 40S	STD	2.72	1.610	0.799	2.0358	0.0141
4	4.500	0.200	80, 80S	XS	3.63	1.500	1.068	1.7671	0.0122
		0.281	160		4.86	1.338	1.438	1.4060	0.0097
		0.400		XXS	6.41	1.100	1.884	0.9503	0.0065
5	5.563	0.065	5S		1.61	2.245	0.471	3.9584	0.0274
		0.109	10S		2.64	2.157	0.776	3.6541	0.0253
		0.154	40, 40S	STD	3.65	2.067	1.074	3.3555	0.0233
6	6.625	0.219	80, 80S	XS	5.02	1.939	1.476	2.9528	0.0205
		0.344	160		7.46	1.687	2.194	2.2351	0.0155
		0.436		XXS	9.03	1.503	2.655	1.7742	0.0123
7	7.875	0.083	5S		2.48	2.709	0.728	5.7637	0.0400
		0.120	10S		3.53	2.635	1.038	5.4531	0.0378
		0.203	40, 40S	STD	5.79	2.469	1.703	4.7877	0.0332
8	8.625	0.276	80, 80S	XS	7.66	2.323	2.252	4.2382	0.0294
		0.375	160		10.01	2.125	2.944	3.5465	0.0246
		0.552		XXS	13.69	1.771	4.026	2.4633	0.0171
9	9.500	0.083	5S		3.03	3.334	0.890	8.7301	0.0606
		0.120	10S		4.33	3.260	1.274	8.3469	0.0579
		0.216	40, 40S	STD	7.58	3.068	2.227	7.3926	0.0513
10	10.500	0.300	80, 80S	XS	10.25	2.900	3.014	6.6052	0.0458
		0.438	160		14.32	2.624	4.211	5.4077	0.0375
		0.600		XXS	18.58	2.300	5.464	4.1547	0.0288
11	11.500	0.083	5S		3.92	4.334	1.151	14.7525	0.1024
		0.120	10S		5.61	4.260	1.650	14.2531	0.0989
		0.237	40, 40S	STD	10.79	4.026	3.172	12.7302	0.0884
12	12.750	0.337	80, 80S	XS	14.98	3.826	4.405	11.4968	0.0796
		0.438	120		19.00	3.624	5.587	10.3148	0.0716
		0.531	160		22.51	3.438	6.618	9.2832	0.0644
14	14.500	0.674		XXS	27.54	3.152	8.097	7.8030	0.0541
		0.109	5S		6.36	5.345	1.868	22.438	0.1558
		0.134	10S		7.77	5.295	2.285	22.020	0.1529
16	16.500	0.258	40, 40S	STD	14.62	5.047	4.300	22.006	0.1389
		0.375	80, 80S	XS	20.78	4.813	6.112	18.194	0.1263
		0.500	120		27.04	4.563	7.953	16.353	0.1135
18	18.750	0.625	160		32.96	4.313	9.696	14.610	0.1014
		0.750		XXS	38.55	4.063	11.340	12.965	0.0900
		0.109	5S		7.59	6.407	2.231	32.240	0.2238
20	20.750	0.134	10S		9.29	6.357	2.732	31.739	0.2204
		0.280	40, 40S	STD	18.97	6.065	5.581	28.890	0.2006
		0.432	80, 80S	XS	28.57	5.761	8.405	26.067	0.1810
24	24.000	0.562	120		36.39	5.501	10.705	23.767	0.1650
		0.719	160		45.35	5.187	13.340	21.131	0.1467
		0.864		XXS	53.16	4.897	15.637	18.834	0.1307
30	30.000	0.109	5S		9.93	8.407	2.916	55.510	0.3854
		0.148	10S		13.40	8.329	3.941	54.485	0.3783
		0.250	20		22.36	8.125	6.578	51.849	0.3600
36	36.000	0.277	30		24.70	8.071	7.265	51.162	0.3552
		0.322	40, 40S	STD	28.55	7.981	8.399	50.027	0.3474
		0.406	60		35.64	7.813	10.483	47.943	0.3329
42	42.000	0.500	80, 80S	XS	43.39	7.625	12.763	45.664	0.3171
		0.594	100		50.95	7.437	14.987	43.440	0.3016
		0.719	120		60.71	7.187	17.858	40.568	0.2817
48	48.000	0.812	140		67.76	7.001	19.931	38.496	0.2673
		0.875		XXS	72.42	6.875	21.304	37.122	0.2577
		0.906	160		74.69	6.813	21.970	36.456	0.2531



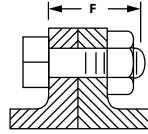
PROPERTIES OF WELDED & SEAMLESS PIPE

Nominal Pipe Size Inches	Outside Diameter Inches	Wall Thickness Inches	Identification		Weight of Pipe Lb/Ft	Inside Diameter Inches	Area of Metal Sq. In.	Internal Cross-Sectional Area	
			Schedule Number	Designation				Sq. In.	Sq. Ft.*
10	10.750	0.134	5S		15.19	10.482	4.469	86.294	0.5992
		0.165	10S		18.65	10.420	5.487	85.276	0.5921
		0.250	20		28.04	10.250	8.247	82.516	0.5730
		0.307	30		34.24	10.136	10.072	80.691	0.5603
		0.365	40, 40S	STD	40.48	10.020	11.908	78.854	0.5476
		0.500	60, 80S	XS	54.74	9.750	16.101	74.662	0.5184
		0.594	80		64.43	9.562	18.952	71.811	0.4986
		0.719	100		77.03	9.312	22.658	68.105	0.4729
		0.844	120		89.29	9.062	26.266	64.497	0.4478
		1.000	140	XXS	104.13	8.750	30.631	60.132	0.4175
		1.125	160		115.64	8.500	34.018	56.745	0.3940
		0.156	5S		20.98	12.438	6.172	121.504	0.8437
		0.180	10S		24.17	12.390	7.108	120.568	0.8372
		0.250	20		33.38	12.250	9.818	117.859	0.8184
0.330	30		43.77	12.090	12.876	114.800	0.7972		
12	12.750	0.375	40S	STD	49.56	12.000	14.579	113.098	0.7854
		0.406	40		53.52	11.938	15.745	111.932	0.7773
		0.500	80S	XS	65.42	11.750	19.242	108.434	0.7530
		0.562	60		73.15	11.625	21.519	106.158	0.7372
		0.688	80		88.63	11.375	26.071	101.605	0.7055
		0.844	100		107.32	11.062	31.569	96.107	0.6674
		1.000	120	XXS	125.49	10.750	36.914	90.763	0.6302
		1.125	140		139.67	10.500	41.086	86.590	0.6013
		1.312	160		160.27	10.126	47.145	80.532	0.5592
		0.156	5S		23.07	13.688	6.785	147.154	1.0218
		0.188	10S		27.73	13.624	8.158	145.781	1.0123
		0.250	10		36.71	13.500	10.799	143.140	0.9940
		0.312	20		45.61	13.375	13.417	140.522	0.9758
		0.375	30	STD	54.57	13.250	16.052	137.887	0.9575
0.438	40		63.44	13.125	18.662	135.297	0.9394		
0.500		XS	72.09	13.000	21.206	132.733	0.9217		
0.594	60		85.05	12.812	25.017	128.921	0.8952		
14	14.000	0.750	80		106.13	12.500	31.220	122.719	0.8522
		0.938	100		130.85	12.124	38.491	115.447	0.8017
		1.094	120		150.79	11.812	44.357	109.581	0.7609
		1.250	140		170.21	11.500	50.069	103.869	0.7213
		1.406	160		189.11	11.188	55.629	98.309	0.6827
		0.165	5S		27.90	15.670	8.208	192.854	1.339
		0.188	10S		31.75	15.624	9.338	191.723	1.331
		0.250	10		42.05	15.500	12.370	188.692	1.310
		0.312	20		52.27	15.376	15.377	185.685	1.289
		0.375	30	STD	62.58	15.250	18.407	182.654	1.268
		0.500	40	XS	82.77	15.000	24.347	176.715	1.227
		0.656	60		107.50	14.688	31.622	169.440	1.176
		0.844	80		136.61	14.312	40.186	160.876	1.117
		1.031	100		164.82	13.938	48.484	152.577	1.059
1.219	120		192.43	13.562	56.605	144.456	1.003		
1.438	140		223.64	13.124	65.785	135.276	0.939		
1.594	160		245.25	12.812	72.141	128.921	0.895		
16	16.000	0.165	5S		31.43	17.670	9.245	245.224	1.702
		0.188	10S		35.76	17.624	10.520	243.949	1.694
		0.250	10		47.39	17.500	13.940	240.528	1.670
		0.312	20		58.94	17.376	17.337	237.132	1.646
		0.375	30	STD	70.59	17.250	20.764	233.705	1.622
		0.438	40		82.15	17.124	24.165	230.303	1.599
		0.500		XS	93.45	17.000	27.489	226.980	1.576
		0.562	60		104.67	16.876	30.788	223.681	1.553
		0.750	80		138.17	16.500	40.644	213.825	1.484
		0.938	100		170.92	16.124	50.278	204.190	1.417
		1.156	120		207.96	15.688	61.172	193.297	1.342
		1.375	140		244.14	15.250	71.815	182.654	1.268
		1.562	160		274.22	14.876	80.664	173.805	1.206
		1.781	180		308.50	14.438	90.748	163.721	1.136
18	18.000	0.188	5S		39.78	19.624	11.701	302.458	2.100
		0.218	10S		46.06	19.564	13.548	300.611	2.087
		0.250	10		52.73	19.500	15.511	298.648	2.073
		0.375	20	STD	78.60	19.250	23.120	291.039	2.021
		0.500	30	XS	104.13	19.000	30.630	283.529	1.968
		0.594	40		123.11	18.812	36.213	277.946	1.930
		0.812	60		166.40	18.376	48.948	265.211	1.841
		1.031	80		208.87	17.938	61.440	252.719	1.754
		1.281	100		256.10	17.438	75.332	238.827	1.658
		1.500	120		296.37	17.000	87.179	226.980	1.576
		1.750	140		341.09	16.500	100.334	213.825	1.484
		1.969	160		379.14	16.062	111.536	202.623	1.407
		0.218	5S		55.37	23.564	16.287	436.102	3.028
		0.250	10, 10S		63.41	23.500	18.653	433.737	3.012
0.375	20	STD	94.62	23.250	27.832	424.557	2.948		
0.500		XS	125.49	23.000	36.913	415.476	2.885		
0.562	30		140.68	22.876	41.381	411.008	2.854		
0.688	40		171.29	22.624	50.387	402.003	2.791		
0.969	60		238.35	22.062	70.111	382.279	2.654		
1.219	80		296.58	21.562	87.242	365.148	2.535		
20	20.000	1.531	100		367.39	20.938	108.071	344.319	2.391
		1.812	120		429.39	20.376	126.307	326.083	2.264
		2.062	140		483.12	19.876	142.113	310.276	2.154
		2.344	160		542.13	19.312	159.472	292.917	2.034
		0.250	5S		79.43	29.500	23.365	683.494	4.746
		0.312	10, 10S		98.93	29.376	29.099	677.760	4.706
		0.375		STD	118.65	29.250	34.901	671.958	4.666
		0.500	20	XS	157.53	29.000	46.338	660.521	4.586
		0.625	30		196.08	28.750	57.677	649.182	4.508
		0.312	10		118.92	35.376	34.980	982.897	6.825
		0.375		STD	142.68	35.250	41.969	975.908	6.777
		0.500	20	XS	189.57	35.000	55.763	962.115	6.681
		0.625	30		236.13	34.750	69.458	948.419	6.586
		0.750	40		282.35	34.500	83.056	934.822	6.491

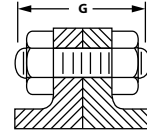
BRONZE FLANGE DIMENSIONS



Class 150 & Class 300 Bronze



Length of Machine Bolt



Length of Stud Bolt

CLASS 150 BRONZE FLANGES

Dimensions in inches

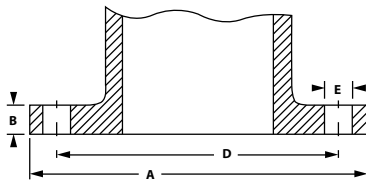
Nominal Pipe Size	Flanges		Drilling		Bolting		Length of Machine Bolts	Length of Stud Bolts with 2 Nuts
	Flange Diameter A	Flange Thickness B	Diameter of Bolt Circle D	Diameter of Bolt Holes E	Number of Bolts	Diameter of Bolts		
1/2	3-1/2	5/16	2-3/8	5/8	4	1/2	1-1/4	1-7/8
3/4	3-7/8	11/32	2-3/4	5/8	4	1/2	1-1/2	1-7/8
1	4-1/4	3/8	3-1/8	5/8	4	1/2	1-1/2	2
1-1/4	4-5/8	13/32	3-1/2	5/8	4	1/2	1-1/2	2
1-1/2	5	7/16	3-7/8	5/8	4	1/2	1-1/2	2-1/8
2	6	1/2	4-3/4	3/4	4	5/8	1-3/4	2-1/2
2-1/2	7	9/16	5-1/2	3/4	4	5/8	2	2-5/8
3	7-1/2	5/8	6	3/4	4	5/8	2	2-3/4
3-1/2	8-1/2	11/16	7	3/4	8	5/8	2-1/4	2-7/8
4	9	11/16	7-1/2	3/4	8	5/8	2-1/4	2-7/8
5	10	3/4	8-1/2	7/8	8	3/4	2-1/2	3-1/4
6	11	13/16	9-1/2	7/8	8	3/4	2-1/2	3-3/8
8	13-1/2	15/16	11-3/4	7/8	8	3/4	2-3/4	3-5/8
10	16	1	14-1/4	1	12	7/8	3-1/4	4-1/8
12	19	1-1/16	17	1	12	7/8	3-1/4	4-1/4

CLASS 300 BRONZE FLANGES

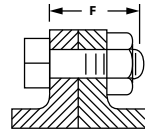
Nominal Pipe Size	Flanges		Drilling		Bolting		Length of Machine Bolts	Length of Stud Bolts with 2 Nuts
	Flange Diameter A	Flange Thickness B	Diameter of Bolt Circle D	Diameter of Bolt Holes E	Number of Bolts	Diameter of Bolts		
1/2	3-3/4	1/2	2-5/8	5/8	4	1/2	1-3/4	2-1/4
3/4	4-5/8	17/32	3-1/4	3/4	4	5/8	2	2-1/2
1	4-7/8	19/32	3-1/2	3/4	4	5/8	2	2-5/8
1-1/4	5-1/4	5/8	3-7/8	3/4	4	5/8	2	2-3/4
1-1/2	6-1/8	11/16	4-1/2	7/8	4	3/4	2-1/4	3-1/8
2	6-1/2	3/4	5	3/4	8	5/8	2-1/4	3
2-1/2	7-1/2	13/16	5-7/8	7/8	8	3/4	2-1/2	3-3/8
3	8-1/4	29/32	6-5/8	7/8	8	3/4	2-3/4	3-1/2
3-1/2	9	31/32	7-1/4	7/8	8	3/4	3	3-5/8
4	10	1-1/16	7-7/8	7/8	8	3/4	3	3-7/8
5	11	1-1/8	9-1/4	7/8	8	3/4	3-1/4	4
6	12-1/2	1-3/16	10-5/8	7/8	12	3/4	3-1/4	4-1/8
8	15	1-3/8	13	1	12	7/8	3-3/4	4-3/4
10	17-1/2	1-7/16	15-1/4	1-1/8	16	1	4-1/4	5-1/4
12	20-1/2	1-17/32	17-3/4	1-1/4	16	1-1/8	4-1/2	5-3/4

When flanges are integral with valves or fittings, the bolt holes, which are in multiples of four, are drilled to straddle the center lines unless otherwise ordered. Full face gaskets extending to the flange edge as given in ANSI Standard Nonmetallic Gaskets to Pipe Flanges (ANSI B16.21) are required. Metallic gaskets should not be used. Flanges are smooth finished over the entire face and are provided with two concentric gasket retaining grooves inside the bolt holes. When bronze flanges are bolted to cast iron or steel flanges which normally have a raised face, the raised face should be removed. Flange diameters and drilling templates of 150 lb bronze flanges are the same as corresponding sizes of the ANSI 125 lb Cast Iron Flange Standard, ANSI B16.1 and the ANSI Class 150 Steel Flange Standard, ANSI B16.5. The Class 300 bronze flange diameters and drilling templates are the same as corresponding sizes of the ANSI Class 250 Cast Iron Flange Standard, ANSI B16.1 and the ANSI Class 300 Steel Flange Standard, ANSI B16.5.

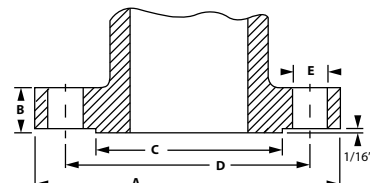
CAST IRON FLANGE DIMENSIONS



Class 125 Cast Iron



Length of Machine Bolt



Class 250 Cast Iron

CLASS 125 CAST IRON FLANGES

Dimensions in Inches

Nominal Pipe Size	Flanges		Drilling		Bolting		Length of Machine Bolts
	Flange Diameter	Flange Thickness	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	
	A	B	D	E			F
1	4-1/4	7/16	3-1/8	5/8	4	1/2	1-3/4
1-1/4	4-5/8	1/2	3-1/2	5/8	4	1/2	2
1-1/2	5	9/16	3-7/8	5/8	4	1/2	2
2	6	5/8	4-3/4	3/4	4	5/8	2-1/4
2-1/2	7	11/16	5-1/2	3/4	4	5/8	2-1/2
3	7-1/2	3/4	6	3/4	4	5/8	2-1/2
3-1/2	8-1/2	13/16	7	3/4	8	5/8	3
4	9	15/16	7-1/2	3/4	8	5/8	3
5	10	15/16	8-1/2	7/8	8	3/4	3
6	11	1	9-1/2	7/8	8	3/4	3-1/4
8	13-1/2	1-1/8	11-3/4	7/8	8	3/4	3-1/2
10	16	1-3/16	14-1/4	1	12	7/8	3-3/4
12	19	1-1/4	17	1	12	7/8	3-3/4
14	21	1-3/8	18-3/4	1-1/8	12	1	4-1/4
16	23-1/2	1-7/16	21-1/4	1-1/8	16	1	4-1/2
18	25	1-9/16	22-3/4	1-1/4	16	1-1/8	4-3/4
20	27-1/2	1-11/16	25	1-1/4	20	1-1/8	5
24	32	1-7/8	29-1/2	1-3/8	20	1-1/4	5-1/2
30	38-3/4	2-1/8	36	1-3/8	28	1-1/4	6-1/4
36	46	2-3/8	42-3/4	1-3/8	32	1-1/2	7

Bolt lengths are for flanges of thickness shown herein. Bolt lengths should be checked for the thicker flanges shown in some individual valve description pages. When flanges are integral with valves or fittings, the bolt holes, which are in multiples of four, are drilled to straddle the center lines unless otherwise ordered. Class 125 cast iron flanges have plain faces.

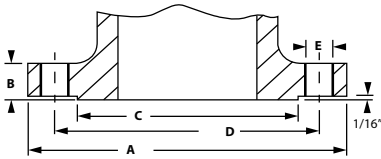
CLASS 250 CAST IRON FLANGES

Nominal Pipe Size	Flanges		Drilling		Bolting		Length of Machine Bolts	
	Flange Diameter	Flange Thickness	Diameter of Raised Face	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts		Diameter of Bolts
	A	B	C	D	E		F	
1	4-7/8	11/16	2-11/16	3-1/2	3/4	4	5/8	2-1/2
1-1/4	5-1/4	3/4	3-1/16	3-7/8	3/4	4	5/8	2-1/2
1-1/2	6-1/8	13/16	3-9/16	4-1/2	7/8	4	3/4	2-3/4
2	6-1/2	7/8	4-3/16	5	3/4	8	5/8	2-3/4
2-1/2	7-1/2	1	4-15/16	5-7/8	7/8	8	3/4	3-1/4
3	8-1/4	1-1/8	5-11/16	6-5/8	7/8	8	3/4	3-1/2
4	10	1-1/4	6-15/16	7-7/8	7/8	8	3/4	3-3/4
5	11	1-3/8	8-5/16	9-1/4	7/8	8	3/4	4
6	12-1/2	1-7/16	9-11/16	10-5/8	7/8	12	3/4	4
8	15	1-5/8	11-15/16	13	1	12	7/8	4-1/2
10	17-1/2	1-7/8	14-1/16	15-1/4	1-1/8	16	1	5-1/4
12	20-1/2	2	16-7/16	17-3/4	1-1/4	16	1-1/8	5-1/2
14	23	2-1/8	18-15/16	20-1/4	1-1/4	20	1-1/8	6
16	25-1/2	2-1/4	21-1/16	22-1/2	1-3/8	20	1-1/4	6-1/4
18	28	2-3/8	23-5/16	24-3/4	1-3/8	24	1-1/4	6-1/2
20	30-1/2	2-1/2	25-9/16	27	1-3/8	24	1-1/4	6-3/4
24	36	2-3/4	30-5/16	32	1-5/8	24	1-1/2	7-1/2

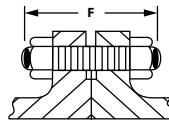
When Class 250 cast iron flanges are bolted to bronze flanges, the 1/16-inch raised face should be removed and a full-face gasket used. The 118-inch raised face on the Class 250 cast iron flanges is included in the dimension B for thickness of flange. Bolt lengths are for flanges of thickness shown herein. Bolt lengths should be checked for the thicker flanges shown in some individual valve description pages.



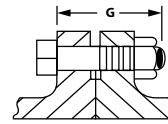
STEEL FLANGE DIMENSIONS



Class 150 & Class 300 Steel



Length of Stud Bolt



Length of Machine Bolt

CLASS 150 STEEL FLANGES

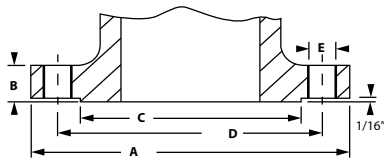
Nominal Pipe Size	Flange Diameter A	Companion Flange B	Flange Thickness				Diameter of Bolt Holes Bolts	Length of Stud Bolts with 2 Nuts F	Length of Machine Bolts G
			Valve Flange B	Raised Face C	Diameter of Bolt Circle D	Diameter of Bolt Holes E			
1/2	3-1/2	7/16		1-3/8	2-3/8	5/8	4	1/2	1-3/4
3/4	3-7/8	1/2		1-11/16	2-3/4	5/8	4	1/2	2
1	4-1/4	9/16	7/16	2	3-1/8	5/8	4	1/2	2
1-1/4	4-5/8	5/8	1/2	2-1/2	3-1/2	5/8	4	1/2	2-1/4
1-1/2	5	11/16	9/16	2-7/8	3-7/8	5/8	4	1/2	2-1/4
2	6	3/4	5/8	3-5/8	4-3/4	3/4	4	5/8	2-3/4
2-1/2	7	7/8	11/16	4-1/8	5-1/2	3/4	4	5/8	3
3	7-1/2	15/16	3/4	5	6	3/4	4	5/8	3
3-1/2	8-1/2	15/16	13/16	5-1/2	7	3/4	8	5/8	3
4	9		15/16	6-3/16	7-1/2	3/4	8	5/8	3
5	10		15/16	7-5/16	8-1/2	7/8	8	3/4	3-1/4
6	11		1	8-1/2	9-1/2	7/8	8	3/4	3-1/4
8	13-1/2		1-1/8	10-5/8	11-3/4	7/8	8	3/4	3-1/2
10	16		1-3/16	12-3/4	14-1/4	1	12	7/8	3-3/4
12	19		1-1/4	15	17	1	12	7/8	4
14	21		1-3/8	16-1/4	18-3/4	1-1/8	12	1	4-1/4
16	23-1/2		1-7/16	18-1/2	21-1/4	1-1/8	16	1	4-1/2
18	25		1-9/16	21	22-3/4	1-1/4	16	1-1/8	4-3/4
20	27-1/2		1-11/16	23	25	1-1/4	20	1-1/8	5-1/4
24	32		1-7/8	27-1/4	29-1/2	1-3/8	20	1-1/2	5-3/4

CLASS 300 STEEL FLANGES

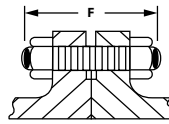
Nominal Pipe Size	Flange Diameter A	Flange Thickness B	Diameter of Rised Face C	Diameter of Bolt Circle D	Diameter of Bolt Holes E	Number of Bolts	Diameter of Bolts	Length of Stud Bolts with 2 Nuts F	Length of Machine Bolts G
3/4	4-5/8	5/8	1-11/16	3-1/4	3/4	4	5/8	2-3/4	2-1/2
1	4-7/8	11/16	2	3-1/2	3/4	4	5/8	3	2-1/2
1-1/4	5-1/4	3/4	2-1/2	3-7/8	3/4	4	5/8	3	2-3/4
1-1/2	6-1/8	13/16	2-7/8	4-1/2	7/8	4	3/4	3-1/2	3
2	6-1/2	7/8	3-5/8	5	3/4	8	5/8	3-1/4	3
2-1/2	7-1/2	1	4-1/8	5-7/8	7/8	8	3/4	3-3/4	3-1/4
3	8-1/4	1-1/8	5	6-5/8	7/8	8	3/4	4	3-1/2
3-1/2	9	1-3/16	5-1/2	7-1/4	7/8	8	3/4	4-1/4	3-3/4
4	10	1-1/4	6-3/16	7-7/8	7/8	8	3/4	4-1/4	3-3/4
5	11	1-3/8	7-5/16	9-1/4	7/8	8	3/4	4-1/2	4
6	12-1/2	1-7/16	8-1/2	10-5/8	7/8	12	3/4	4-3/4	4-1/4
8	15	1-5/8	10-5/8	13	1	12	7/8	5-1/4	4-3/4
10	17-1/2	1-7/8	12-3/4	15-1/4	1-1/8	16	1	6	5-1/4
12	20-1/2	2	15	17-3/4	1-1/4	16	1-1/8	6-1/2	5-3/4
14	23	2-1/8	16-1/4	20-1/4	1-1/4	20	1-1/8	6-3/4	6
16	25-1/2	2-1/4	18-1/2	22-1/2	1-3/8	20	1-1/4	7-1/4	6-1/2
18	28	2-3/8	21	24-3/4	1-3/8	24	1-1/4	7-1/2	6-3/4
20	30-1/2	2-1/2	23	27	1-3/8	24	1-1/4	8	7
24	36	2-3/4	27-1/4	32	1-5/8	24	1-1/2	9	7-3/4

The regular 1/16" raised face of Class 150 and 300 flanges is included in the minimum flange thickness given above, but other raised faces must be added thereto. Class 150 loose flanges are thicker than integral flanges for sizes 3 1/2-inch and smaller. Note column B. Lengths of alloy steel stud bolts do not include the height of the points. Bolt lengths not shown in the tables can be determined by reference to Appendix F of ANSI B16.5.

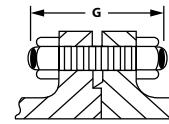
STEEL FLANGE DIMENSIONS



Class 400 & Class 600 Steel



**Male to Male
Flanged Joint**



**Male to Female
Flanged Joint**

CLASS 400 STEEL FLANGES

Nominal Pipe Size	Flange Diameter A	Flange Thickness B	Diameter of Rised Face C	Diameter of Bolt Circle D	Diameter of Bolt Holes E	Number of Stud Bolts	Diameter of Stud Bolts	Length of Stud Bolts with 2 Nuts	
								F	G
4*	10	1-3/8	6-3/16	7-7/8	1	8	7/8	5-1/4	5
5	11	1-1/2	7-5/16	9-1/4	1	8	7/8	5-1/2	5-1/4
6	12-1/2	1-5/8	8-1/2	10-5/8	1	12	7/8	5-3/4	5-1/2
8	15	1-7/8	10-5/8	13	1-3/8	12	1	6-1/2	6-1/4
10	17-1/2	2-1/8	12-3/4	15-1/4	1-1/4	16	1-1/8	7-1/4	7
12	20-1/2	2-1/4	15	17-3/4	1-3/8	16	1-1/4	7-3/4	7-1/2
14	23	2-3/8	16-1/4	20-1/4	1-3/8	20	1-1/4	8	7-3/4
16	25-1/2	2-1/2	18-1/2	22-1/2	1-1/2	20	1-3/8	8-1/2	8-1/4
18	28	2-5/8	21	24-3/4	1-1/2	24	1-3/8	8-3/4	8-1/2
20	30-1/2	2-3/4	23	27	1-5/8	24	1-1/2	9-1/2	9-1/4
24	36	3	27-1/4	32	1-7/8	24	1-3/4	10-1/2	10-1/4

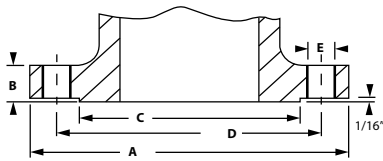
*Use Class 600 dimensions in sizes smaller than 4-inch.

CLASS 600 STEEL FLANGES

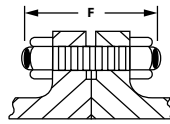
Nominal Pipe Size	Flange Diameter A	Flange Thickness B	Diameter of Rised Face C	Diameter of Bolt Circle D	Diameter of Bolt Holes E	Number of Stud Bolts	Diameter of Stud Bolts	Length of Stud Bolts with 2 Nuts	
								F	G
1/2	3-3/4	9/16	1-3/8	2-5/8	5/8	4	1/2	3	2-3/4
3/4	4-5/8	5/8	1-1/16	3-1/4	3/4	4	5/8	3-1/4	3
1	4-7/8	11/16	2	3-1/2	3/4	4	5/8	3-1/2	3-1/4
1-1/4	5-1/4	13/16	2-1/2	3-7/8	3/4	4	5/8	3-3/4	3-1/2
1-1/2	6-1/8	7/8	2-7/8	4-1/2	7/8	4	3/4	4	3-3/4
2	6-1/2	1	3-5/8	5	3/4	8	5/8	4	3-3/4
2-1/2	7-1/2	1-1/8	4-1/8	5-7/8	7/8	8	3/4	4-1/2	4-1/4
3	8-1/4	1-1/4	5	6-5/8	7/8	8	3/4	4-3/4	4-1/2
3-1/2	9	1-3/8	5-1/2	7-1/4	1	8	7/8	5	5
4	10-3/4	1-1/2	6-3/16	8-1/2	1	8	7/8	5-1/2	5-1/4
5	13	1-3/4	7-5/16	10-1/2	1-1/8	8	1	6-1/4	6
6	14	1-7/8	8-1/2	11-1/2	1-1/8	12	1	6-1/2	6-1/4
8	16-1/2	2-3/16	10-5/8	13-3/4	1-1/4	12	1-1/8	7-1/2	7-1/4
10	20	2-1/2	12-3/4	17	1-3/8	16	1-1/4	8-1/4	8
12	22	2-5/8	15	19-1/4	1-3/8	20	1-1/4	8-1/2	8-1/4
14	23-3/4	2-3/4	16-1/4	20-3/4	1-1/2	20	1-3/8	9	8-3/4
16	27	3	18-1/2	23-3/4	1-5/8	20	1-1/2	9-3/4	9-1/2
18	29-1/4	3-1/4	21	25-3/4	1-3/4	20	1-5/8	10-1/2	10-1/4
20	32	3-1/2	23	28-1/2	1-3/4	24	1-5/8	11-1/4	11
24	37	4	27-1/4	33	2	24	1-7/8	12-3/4	12-1/2

The regular 1/4-inch raised face of Class 400 and 600 flanges is not included in the minimum flange thickness given above. The addition of any facing is beyond the outside edge of the flange. Lengths of alloy steel stud bolts do not include the height of the points. Bolt lengths not shown in the tables can be determined by reference to Appendix F of ANSI B16.5. When flanges are integral with valves, the bolt holes, which are in multiples of four, are drilled to straddle the centerline unless otherwise ordered.

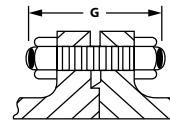
STEEL FLANGE DIMENSIONS



Class 900 & Class 1500 Steel



**Male to Male
Flanged Joint**



**Male to Female
Flanged Joint**

CLASS 900 STEEL FLANGES

	Flange Diameter	Flange Thickness	Diameter of Raised Face	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Stud Bolts	Diameter of Stud Bolts	Length of Stud Bolts with 2 Nuts	
	A	B	C	D	E		F	G	
3*	9-1/2	1-1/2	5	7-1/2	1	8	7/8	5-1/2	5-1/4
4	11-1/2	1-3/4	6-3/16	9-1/4	1-1/4	8	1-1/8	6-1/2	6-1/4
5	13-3/4	2	7-5/16	11	1-3/8	8	1-1/4	7-1/4	7
6	15	2-3/16	8-1/2	12-1/2	1-1/4	12	1-1/8	7-1/2	7-1/4
8	18-1/2	2-1/2	10-5/8	15-1/2	1-1/2	12	1-3/8	8-1/2	8-1/4
10	21-1/2	2-3/4	12-3/4	18-1/2	1-1/2	16	1-3/8	9	8-3/4
12	24	3-1/8	15	21	1-1/2	20	1-3/8	9-3/4	9-1/2
14	25-1/4	3-3/8	16-1/4	22	1-5/8	20	1-1/2	10-1/2	10-1/4
16	27-3/4	3-1/2	18-1/2	24-1/4	1-3/4	20	1-5/8	11	10-3/4
18	31	4	21	27	2	20	1-7/8	12-3/4	12-1/2
20	33-3/4	4-1/4	23	29-1/2	2-1/8	20	2	13-1/2	13-1/4
24	41	5-1/2	27-1/4	35-1/2	2-5/8	20	2-1/2	17	16-3/4

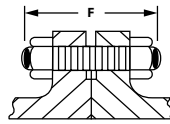
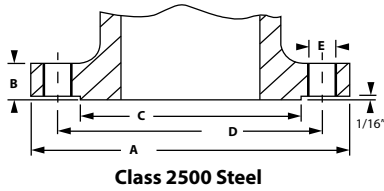
*Use Class 1500 dimensions in sizes smaller than 4-inch.

CLASS 1500 STEEL FLANGES

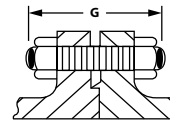
	Flange Diameter	Flange Thickness	Diameter of Raised Face	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Stud Bolts	Diameter of Stud Bolts	Length of Stud Bolts with 2 Nuts	
	A	B	C	D	E		F	G	
1/2	4-3/4	7/8	1-3/8	3-1/4	7/8	4	3/4	4	3-3/4
3/4	5-1/8	1	1-11/16	3-1/2	7/8	4	3/4	4-1/4	4
1	5-7/8	1-1/8	2	4	1	4	7/8	4-3/4	4-1/2
1-1/4	6-1/4	1-1/8	2-1/2	4-3/8	1	4	7/8	4-3/4	4-1/2
1-1/2	7	1-1/4	2-7/8	4-7/8	1-1/8	4	1	5-1/4	5
2	8-1/2	1-1/2	3-5/8	6-1/2	1	8	7/8	5-1/2	5-1/4
2-1/2	9-5/8	1-5/8	4-1/8	7-1/2	1-1/8	8	1	6	5-3/4
3	10-1/2	1-7/8	5	8	1-1/4	8	1-1/8	6-3/4	6-1/2
4	12-1/4	2-1/8	6-3/16	9-1/2	1-3/8	8	1-1/4	7-1/2	7-1/4
5	14-3/4	2-7/8	7-5/16	11-1/2	1-5/8	8	1-1/2	9-1/2	9-1/4
6	15-1/2	3-1/4	8-1/2	12-1/2	1-1/2	12	1-3/8	10	9-3/4
8	19	3-5/8	10-5/8	15-1/2	1-3/4	12	1-5/8	11-1/4	11
10	23	4-1/4	12-3/4	19	2	12	1-7/8	13-1/4	13
12	26-1/2	4-7/8	15	22-1/2	2-1/8	16	2	14-3/4	14-1/2
14	29-1/2	5-1/4	16-1/4	25	2-3/8	16	2-1/4	16	15-3/4
16	32-1/2	5-3/4	18-1/2	27-3/4	2-5/8	16	2-1/2	17-1/2	17-1/4
18	36	6-3/8	21	30-1/2	2-7/8	16	2-3/4	19-1/4	19
20	38-3/4	7	23	32-3/4	3-1/8	16	3	21	20-3/4
24	46	8	27-1/4	39	3-5/8	16	3-1/2	24	23-3/4

The regular 1/4" raised face of Class 900 & 1500 flanges is not included in the minimum flange thickness given above.

STEEL FLANGE DIMENSIONS



**Male to Male
Flanged Joint**



**Male to Female
Flanged Joint**

CLASS 2500 STEEL FLANGES

	Flange Diameter	Flange Thickness	Diameter of Raised Face	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Stud Bolts	Diameter of Stud Bolts	Length of Stud Bolts with 2 Nuts	
	A	B	C	D	E			F	G
1/2	5-1/4	1-3/16	1-3/8	3-1/2	7/8	4	3/4	4-3/4	4-1/2
3/4	5-1/2	1-1/4	1-11/16	3-3/4	7/8	4	3/4	4-3/4	4-1/2
1	6-1/4	1-3/8	2	4-1/4	1	4	7/8	5-1/4	5
1-1/4	7-1/4	1-1/2	2-1/2	5-1/8	1-1/8	4	1	5-3/4	5-1/2
1-1/2	8	1-3/4	2-7/8	5-3/4	1-1/4	4	1-1/8	6-1/2	6-1/4
2	9-1/4	2	3-5/8	6-3/4	1-1/8	8	1	6-3/4	6-1/2
2-1/2	10-1/2	2-1/4	4-1/8	7-3/4	1-1/4	8	1-1/2008	7-1/2	7-1/4
3	12	2-5/8	5	9	1-3/8	8	1-1/4	8-1/2	8-1/4
4	14	3	6-3/16	10-3/4	1-5/8	8	1-1/2	9-3/4	9-1/2
5	16-1/2	3-5/8	7-5/16	12-3/4	1-7/8	8	1-3/4	11-1/2	11-1/4
6	19	4-1/4	8-1/2	14-1/2	2-1/8	8	2	13-1/2	13-1/4
8	21-3/4	5	10-5/8	17-1/4	2-1/8	12	2	15	14-3/4
10	26-1/2	6-1/2	12-3/4	21-1/4	2-5/8	12	2-1/2	19	18-3/4
12	30	7-1/4	15	24-3/8	2-7/8	12	2-3/4	21	20-3/4

The regular 1/4" raised face of Class 2500 flanges is not included in the minimum flange thickness given above. The addition of any facing is beyond the outside edge of the flange.



METRIC FLANGE DIMENSIONS

NOM DIA (mm)	DIN PN6 900106	DIN PN10 900110	DIN PN16 900116	DIN PN25 900125	DIN PN40 900140	JIS 5K 900005	JIS 10K 900010	JIS 16K 900016	JIS 20K 900020	JIS 40K 900040
15	80	95	95	95	95	80	95	95	95	115
	55	65	65	65	65	60	70	70	70	80
	4 x 11	4 x 14	4 x 14	4 x 14	4 x 14	4 x 12	4 x 15	4 x 15	4 x 15	4 x 19
20	90	105	105	105	105	85	100	100	100	120
	65	75	75	75	75	65	75	75	75	85
	4 x 11	4 x 14	4 x 14	4 x 14	4 x 14	4 x 12	4 x 15	4 x 15	4 x 15	4 x 19
25	100	115	115	115	115	95	125	125	125	130
	75	85	85	85	85	75	90	90	90	95
	4 x 11	4 x 14	4 x 14	4 x 14	4 x 14	4 x 12	4 x 19	4 x 19	4 x 19	4 x 19
32	120	140	140	140	140	115	135	135	135	140
	90	100	100	100	100	90	100	100	100	105
	4 x 14	4 x 18	4 x 18	4 x 18	4 x 18	4 x 15	4 x 19	4 x 19	4 x 19	4 x 19
40	130	150	150	150	150	120	140	140	140	160
	100	110	110	110	110	95	105	105	105	120
	4 x 14	4 x 18	4 x 18	4 x 18	4 x 18	4 x 15	4 x 19	4 x 19	4 x 19	4 x 23
50	140	165	165	165	165	130	155	155	155	165
	110	125	125	125	125	105	120	120	120	130
	4 x 14	4 x 18	4 x 18	4 x 18	4 x 18	4 x 15	4 x 19	4 x 19	4 x 19	8 x 19
65	160	185	185	185	185	155	175	175	175	200
	130	145	145	145	145	130	140	140	140	160
	4 x 14	4 x 18	4 x 18	4 x 18	4 x 18	4 x 15	4 x 19	4 x 19	4 x 19	8 x 23
80	190	200	200	200	200	180	185	200	200	210
	150	160	160	160	160	145	150	160	160	170
	4 x 18	8 x 18	8 x 18	8 x 18	8 x 18	4 x 19	8 x 19	8 x 23	8 x 23	8 x 23
100	210	220	220	235	235	200	210	225	225	250
	170	180	180	190	190	165	175	185	185	205
	4 x 18	8 x 18	8 x 18	8 x 22	8 x 22	8 x 19	8 x 19	8 x 23	8 x 23	8 x 25
125	240	250	250	270	270	235	250	270	270	300
	200	210	210	220	220	200	210	225	225	250
	8 x 18	8 x 18	8 x 18	8 x 26	8 x 26	8 x 19	8 x 23	8 x 25	8 x 25	8 x 27
150	265	285	285	300	300	265	280	305	305	355
	225	240	240	250	250	230	240	260	260	295
	8 x 18	8 x 22	8 x 22	8 x 26	8 x 26	8 x 19	8 x 23	12 x 25	12 x 25	12 x 33
175	295	315	315	330	330	300	305			
	255	270	270	280	280	260	265			
	8 x 18	8 x 22	8 x 22	12 x 26	12 x 26	8 x 23	12 x 23			
200	320	340	340	360	375	320	330	350	350	405
	280	295	295	310	320	280	290	305	305	345
	8 x 18	8 x 22	8 x 22	12 x 26	12 x 30	8 x 23	12 x 23	12 x 25	12 x 25	12 x 33
250	375	395	405	425	450	385	400	430	430	475
	335	350	355	370	385	345	355	380	380	410
	12 x 18	12 x 22	12 x 26	12 x 30	12 x 33	12 x 23	12 x 25	12 x 27	12 x 27	12 x 33
300	440	445	460	485	515	430	445	480	480	540
	395	400	410	430	450	390	400	430	430	470
	12 x 22	12 x 22	12 x 26	16 x 30	16 x 33	12 x 23	16 x 25	16 x 27	16 x 27	16 x 39
350	490	505	520	555	580	480	490	540	540	585
	445	460	470	490	510	435	445	480	480	515
	12 x 22	16 x 22	16 x 26	16 x 33	16 x 36	12 x 25	16 x 25	16 x 33	16 x 33	16 x 39
400	540	565	580	620	660	540	560	605	605	645
	495	515	525	550	585	495	510	540	540	570
	16 x 22	16 x 26	16 x 30	16 x 36	16 x 39	16 x 25	16 x 27	16 x 33	16 x 33	16 x 39
450	595	615	640	670	755	605	620	675		
	550	565	585	600	670	555	565	605		
	16 x 22	20 x 26	20 x 33	20 x 36	20 x 36	16 x 25	20 x 27	20 x 33		
500	645	670	715	730	795	655	675	730		
	600	620	650	660	670	605	620	660		
	20 x 22	20 x 26	20 x 33	20 x 36	20 x 42	20 x 25	20 x 27	20 x 33		

D: Flange Diameter
 BC: Bolt Circle Diameter
 H: Bolt Holes x Hole Diameter

1 inch = 25.4 mm



NAVY FLANGE DIMENSIONS

100/150 LB MIL-F-20042 Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
1/4	3-1/4	3/8	2-1/8	3	9/16
3/8	3-3/8	3/8	2-1/4	3	9/16
1/2	3-9/16	3/8	2-7/16	3	9/16
3/4	3-13/16	7/16	2-11/16	4	9/16
1	4-1/4	7/16	3-1/8	4	9/16
1-1/4	4-1/2	7/16	3-3/8	4	9/16
1-1/2	5-1/16	7/16	3-15/16	6	9/16
2	5-9/16	7/16	4-7/16	6	9/16
2-1/2	6-1/8	1/2	5	6	9/16
3	6-5/8	1/2	5-1/2	8	9/16
3-1/2	7-3/16	1/2	6-1/16	8	9/16
4	7-11/16	1/2	6-9/16	8	9/16
4-1/2	8-3/16	1/2	7-1/16	10	9/16
5	9-1/16	9/16	7-13/16	10	11/16
6	10-1/8	9/16	8-7/8	12	11/16
7	11-5/16	9/16	10	12	11/16
8	12-3/8	5/8	11-1/16	14	11/16
9	13-15/16	11/16	12-3/8	14	13/16
10	15	11/16	13-7/8	15	13/16
11	16-9/16	11/16	15	16	13/16
12	17-5/8	3/4	16-1/16	18	13/16

250 LB MIL-F-20042 Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
1/4	3-1/4	11/16	2-1/8	3	9/16
3/8	3-3/8	11/16	2-1/4	3	9/16
1/2	3-9/16	11/16	2-7/16	3	9/16
3/4	3-13/16	11/16	2-11/16	4	9/16
1	4-1/4	3/4	3-1/8	4	9/16
1-1/4	4-1/2	13/16	3-3/8	4	9/16
1-1/2	5-1/16	13/16	3-15/16	6	9/16
2	5-9/16	13/16	4-7/16	6	9/16
2-1/2	6-1/8	15/16	5	6	9/16
3	6-5/8	15/16	5-1/2	8	9/16
3-1/2	7-3/16	1	6-1/16	8	9/16
4	7-11/16	1	6-9/16	8	9/16
4-1/2	8-3/16	1	7-1/16	10	9/16
5	9-1/16	1-1/16	7-13/16	10	11/16
6	10-1/8	1-3/16	8-7/8	12	11/16
7	11-5/16	1-1/4	10	12	11/16
8	12-3/8	1-5/16	11-1/16	14	11/16
9	13-15/16	1-3/8	12-3/8	14	13/16
10	15	1-7/16	13-7/8	15	13/16
11	16-9/16	1-1/2	15	16	13/16
12	17-5/8	1-1/2	16-1/16	18	13/16

200 LB DWG 1385892 Butterfly Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
3/8	3-1/2	5/16	2-3/8	4	5/8
1/2	3-1/2	5/16	2-3/8	4	5/8
3/4	3-7/8	11/32	2-3/4	4	5/8
1	4-1/4	3/8	3-1/8	4	5/8
1-1/4	4-5/8	13/32	3-1/2	4	5/8
1-1/2	5	7/16	3-7/8	4	5/8
2	6	1/2	4-3/4	4	3/4
2-1/2	7	9/16	5-1/2	4	3/4
3	7-1/2	5/8	6	4	3/4
3-1/2	8-1/2	11/16	7	8	3/4
4	9	11/16	7-1/2	8	3/4
5	10	3/4	8-1/2	8	7/8
6	11	13/16	9-1/2	8	7/8
8	13-1/2	15/16	11-3/4	8	7/8
10	16	1	14-1/4	12	1
12	19	1-1/16	17	12	1

400 LB MIL-F-20042 Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
1/4	3-3/4	11/16	2-5/8	3	9/16
3/8	3-7/8	11/16	2-3/4	4	9/16
1/2	4	11/16	2-7/8	4	9/16
3/4	4-5/16	11/16	3-3/16	4	9/16
1	5-1/16	3/4	3-3/4	5	11/16
1-1/4	5-3/8	13/16	4-1/16	5	11/16
1-1/2	5-15/16	13/16	4-5/8	6	11/16
2	6-1/2	13/16	5-3/16	7	11/16
2-1/2	7-9/16	15/16	6	8	13/16
3	8-1/8	15/16	6-9/16	8	13/16
3-1/2	8-11/16	1	7-1/8	9	13/16
4	9-1/4	1	7-11/16	9	13/16
5	10-3/8	1-1/16	8-13/16	11	13/16
6	11-15/16	1-3/16	10-3/16	12	15/16
8	14-3/4	1-5/16	12-3/4	13	1-1/16
10	17	1-7/16	15	15	1-1/16

50 LB MIL-F-20042 Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
12	16-9/16	11/16	15	16	13/16
14	19-1/8	3/4	17-3/8	19	15/16
16	21-3/16	3/4	19-7/16	20	15/16
18	23-1/4	7/8	21-1/2	22	15/16
20	25-13/16	7/8	23-13/16	24	1-1/16
22	27-7/8	7/8	25-7/8	26	1-1/16
24	30	1	28	28	1-1/16
26	32-9/16	1	30-5/16	30	1-3/16
28	34-11/16	1	32-7/16	32	1-3/16
30	36-13/16	1-1/8	34-9/16	35	1-3/16
32	39	1-1/8	36-3/4	36	1-3/16
34	41	1-1/8	38-3/4	36	1-3/16
36	43-7/8	1-1/4	41-3/8	36	1-5/16
38	46-1/8	1-1/4	43-5/8	36	1-5/16
40	48-1/8	1-1/4	45-5/8	36	1-5/16

700 LB DWG 1385892 Flanges

SIZE	Diameter	Thickness	Bolt Circle	No. of Holes	Hole Size
1/4	3-1/4	11/16	2-1/8	3	9/16
3/8	3-3/8	11/16	2-1/4	3	9/16
1/2	3-9/16	11/16	2-7/16	3	9/16
3/4	3-3/4	11/16	2-11/16	4	9/16
1	4-1/4	3/4	3-1/8	4	9/16
1-1/4	4-1/2	13/16	3-3/8	4	9/16
1-1/2	5-1/16	13/16	3-15/16	6	9/16
2	5-9/16	15/16	4-7/16	6	11/16
2-1/2	6-1/8	1-1/16	5	6	11/16
3	7-7/16	1-3/8	5-15/16	8	11/16
3-1/2	8	1-7/16	6-1/2	8	11/16
4	8-11/16	1-7/16	7-3/16	10	11/16
5	9-3/4	1-5/8	8-1/4	12	11/16
6	10-7/8	1-15/16	9-3/8	14	11/16
8	13-1/8	2-1/8	11-5/8	16	11/16



WORKING PRESSURES: VALVES ASME B16.34-1977 MAXIMUMS

All pressures are in pounds per square inch (Gauge).
Temperatures and pressures listed are maximum internal fluid temperatures and pressures.

Pressure Class Rating	150	300	600	900	1500	2500	4500	Pressure Class Rating	150	300	600	900	1500	2500	4500	
Hydrostatic								Hydrostatic								
Shell Test Pressure (PSIG)	450	1125	2250	3375	5625	9375	16875	Shell Test Pressure (PSIG)	450	1125	2250	3375	5625	9375	16875	
Working Temp. (Deg. F.)	Material ASTM							Working Temp. (Deg. F.)	Material ASTM							
	Specification	Alloy	Maximum Non-Shock Working					Specification	Alloy	Maximum Non-Shock Working						
	Grade Designation		Pressure (PSIG)	Standard Class Values				Grade Designation		Pressure (PSIG)	Standard Class Values					
-20	WCB	285	740	1480	2220	3705	6170	11110	WCB	110	535	1065	1600	2665	4440	7990
to	WC6	290	750	1500	2250	3750	6250	11250	WC6	110	570	1135	1705	2840	4730	8515
100	EC9	290	750	1500	2250	3750	6250	11250	WC9	110	570	1135	1705	2840	4730	8515
	C5	290	750	1500	2250	3750	6250	11250	C5	110	570	1135	1705	2840	4730	8515
	LCB	265	695	1390	2085	3470	5785	10415	CF8M	110	430	865	1295	2160	3600	6480
	CF8M	275	720	1440	2160	3600	6000	10800								
	WCB	26	665	1350	2025	3375	5625	10120	WCB	95	505	1010	1510	2520	4200	7560
	WC6	26	710	1425	2135	3560	5930	10675	WC6	95	530	1065	1595	2660	4430	7970
200	WC9	260	715	1430	2150	3580	5965	10740	WC9	95	530	1065	1595	2660	4430	7970
	C5	260	750	1500	2250	3750	6250	11250	C5	95	530	1065	1595	2660	4430	7970
	LCB	250	655	1315	1970	3280	5470	9845	CF8M	95	425	845	1270	2110	3520	6335
	CF8M	240	620	1240	1860	2795	4660	8390								
	WCB	230	655	1315	1970	3280	5470	9845	WCB	80	410	825	1235	2060	3430	6170
	WC6	230	675	1345	2020	3365	5605	10090	WC6	80	510	1015	1525	2540	3230	7610
300	WC9	230	675	1355	2030	3385	5640	10150	WC9	80	510	1015	1525	2540	3230	7610
	C5	230	730	1455	2185	3640	6070	10925	C5	80	500	995	1490	2485	4145	7460
	LCB	230	640	1275	1915	3190	5315	9565	CF8M	80	415	830	1245	2075	3460	6230
	CF8M	215	560	1120	1680	2795	4660	8390								
	WCB	200	635	1270	1900	3170	5280	9505	WCB'	65	270	535	805	1340	2230	4010
	WC6	200	660	1315	1975	3290	5485	9875	WC6	65	485	975	1460	2435	4060	7305
400	WC9	200	650	1295	1945	3240	5400	9720	WC9	65	480	975	1460	2435	4060	7305
	C5	200	705	1410	2115	3530	5880	10585	C5	65	440	880	1315	2195	3660	6585
	LCB	200	620	1235	1850	3085	5145	9260	WCB'	50	170	345	515	860	1430	2570
	CF8M	195	515	1030	1540	2570	4280	7705	WC6	50	450	900	1350	2245	3745	6740
	WCB	170	600	1200	1795	2995	4990	8980	WC9	50	450	900	1350	2245	3745	6740
	WC6	170	640	1285	1925	3210	5350	9630	C5	50	355	705	1060	1765	2945	5300
500	WC9	170	640	1280	1920	3200	5330	9595	WCB'	35	105	205	310	515	860	1545
	C5	170	665	1330	1995	3325	5540	9965	WC6	35	380	755	1130	1885	3145	5660
	LCB	170	585	1165	1745	2910	4850	8735	WC9	35	380	755	1130	1885	3145	5660
	CF8M	170	480	955	1435	2390	3980	7165	C5	35	260	520	780	1305	2170	3910
	WCB	140	550	1095	1640	2735	4560	8210	WCB'	20	50	105	155	260	430	770
	WC6	140	605	1210	1815	3025	5040	9070	WC6	20	225	445	670	1115	1860	3345
600	WC9	140	605	1210	1815	3025	5040	9070	WC9	20	270	535	805	1340	2230	4010
	C5	140	605	1210	1815	3025	5040	9070	C5	20	190	385	575	960	1600	2880
	LCB	140	535	1065	1600	2666	4440	7990	WCB'	20 ²	140	275	410	685	1145	2060
	CF8M	140	450	905	1355	2255	3760	6770	WC9	20 ²	200	400	595	995	1660	2985
	WCB	125	535	1075	1610	2685	4475	8055	C5	20 ²	140	280	420	705	1170	2110
	WC6	125	590	1175	1765	2940	4905	8825	WCB'	20 ²	95	190	290	480	800	1440
650	WC9	125	590	1175	1765	2940	4905	8825	WC9	20 ²	115	225	340	565	945	1700
	C5	125	590	1175	1765	2940	4905	8825	C5	20 ²	105	205	310	515	860	1545
	LCB	125	525	1045	1570	2615	4355	7840	WCB'	20 ²	70	140	205	345	570	1030
	CF8M	125	445	890	1330	2220	3700	6660	C5	20 ²	45	90	135	225	370	670

1) Permissible but not recommended by ASME B16.34 for prolonged use above ±800°F

2) For welded end valve only.

ASME B16.34 flanged end rating terminal at 1000°F.



WORKING PRESSURES: PIPE & TUBE

SEAMLESS CARBON STEEL PIPE

NOMINAL PIPE SIZE	MAXIMUM ALLOWABLE WORKING PRESSURE AT -20F TO 650F												
	SCHED 10	SCHED 20	SCHED 30	STD WALL	SCHED 40	SCHED 60	EXTRA STRONG	SCHED 80	SCHED 100	SCHED 120	SCHED 140	SCHED 160	XX STRONG
1/2	-	-	-	1694	1694	-	3036	3036	-	-	-	4551	9223
3/4	659	-	-	1450	1450	-	2589	2589	-	-	-	4505	7531
1	065	-	-	1578	1578	-	2601	2601	-	-	-	4290	7150
1-1/4	556	-	-	1069	1069	-	1941	1941	-	-	-	3001	5593
1-1/2	486	-	-	1004	1004	-	1821	1821	-	-	-	3091	5114
2	388	-	-	903	903	-	1659	1659	-	-	-	3225	4475
2-1/2	431	-	-	1214	1214	-	1936	1936	-	-	-	2963	4936
3	346	-	-	1094	1094	-	1773	1773	-	-	-	2933	4405
3-1/2	303	-	-	1023	1023	-	1671	1671	-	-	-	-	-
4	269	-	-	974	974	-	1598	1598	-	2243	-	2868	3858
5	284	-	-	888	888	-	1475	1475	-	2123	-	2791	3485
6	239	-	-	833	833	-	1473	1473	-	2038	-	2738	3414
8	225	543	628	770	770	1343	1343	1649	2068	2388	2715	2605	-
10	224	434	578	723	723	1070	1070	1311	1641	1975	2406	2754	-
12	219	366	534	630	696	1033	898	1305	1653	2009	2295	2735	-
14	333	451	573	573	693	999	816	1311	1690	2013	2341	2675	-
16	391	395	500	500	711	980	711	1305	1638	1975	2378	2669	-
18	258	350	538	444	725	1013	631	1303	1648	1998	2303	2665	-
20	233	399	568	399	693	995	568	1299	1653	1970	2338	2663	-
22	211	-	-	363	-	-	515	-	-	-	-	-	-
24	194	331	541	331	683	1004	471	1295	1664	2003	2309	2656	-
26	-	-	-	306	-	-	435	-	-	-	-	-	-
30	209	376	489	265	-	-	376	-	-	-	-	-	-
36	-	-	-	220	-	-	314	-	-	-	-	-	-
42	-	-	-	189	-	-	269	-	-	-	-	-	-

For allowable working pressures at higher temperatures, multiply listed values by the following factors:

GRADE A						GRADE B					
Temperature	700°F	750°F	800°F	850°F	900°F	Temperature	700°F	750°F	800°F	850°F	900°F
Multiplying Factor	0.974	0.892	0.75	0.708	0.417	Multiplying Factor	0.956	0.863	0.72	0.52	0.333

VARIOUS TUBE

Information on this page is provided only as theoretical data and is not to be understood as a recommendation or specific guideline for application.

Calculating theoretical allowable working pressures of tubing equals multiplier below x "s" value from chart. This is for ambient temperature applications. See below for temperature factors (multipliers) above 200°F.

TUBE O.D. (IN.)	TUBE WALL THICKNESS (INCHES)											
	0.028	0.035	0.049	0.065	0.083	0.095	0.109	0.120	0.134	0.148	0.156	
1/8"	0.533*	0.676*	*LAME'S FORMULA									
3/16"	0.339	0.436*	0.628*									
1/4"	0.244	0.315	0.460*	0.625*								
6/16"		0.245	0.358	0.492*								
3/8"		0.201	0.291	0.402*								
1/2"		0.148	0.212	0.290	0.382							
5/8"		0.117	0.167	0.226	0.296	0.346						
3/8"			0.137	0.186	0.242	0.281	0.328					
7/8"			0.117	0.157	0.205	0.237	0.276					
1"			0.101	0.137	0.177	0.205	0.238	0.265				
1-1/4"				0.1085	0.1402	0.1618	0.1874	0.2079	0.2345	0.2615	0.2773	
1-1/2"					0.1158	0.1334	0.1543	0.1709	0.1924	0.2142	0.2268	
2"						0.0987	0.1139	0.1260	0.1416	0.1573	0.1604	

°F	FACTORS					
	ALUMINUM	COPPER	STEEL	304SS	316SS	MONEL
200	1	0.8	0.95	1	1	0.88
400	0.4	0.5	0.86	0.93	0.96	0.79
600	-	-	0.77	0.82	0.85	0.79
800	-	-	0.58	0.76	0.79	0.76
1000	-	-	-	0.69	0.76	-
1200	-	-	-	0.3	0.37	-

Material	"S" Value	Specification	Tensile
Carbon Steel	15700	Hydraulic A-179	47000
Stainless	200000	Annealed A-269, A-213	75000
Monel	18700	Smls 400 B-165	70000
Copper	6000	Types L, K C-88, B-75	30000
Aluminum	14000	SMLS 6061T6 B-218	42000



CONVERSIONS

Use the table by starting in the FC column and then reading to the left or right for Celsius or Fahrenheit.

C=	FC	=F	C=	FC	=F	C=	FC	=F	C=	FC	=F	C=	FC	=F	C=	FC	=F
-273.0	-459.4		-17.2	1	33.8				32.8	91	195.8	260	500	932	538	100	1832
-268.0	-450.0		-16.7	2	35.6				33.3	92	197.6	266	510	950	549	1020	1868
-262.0	-440.0		-16.1	3	37.4				33.9	93	199.4	271	520	968	560	1040	1904
-257.0	-430.0		-15.6	4	39.2	9.4	49	120.0	34.3	94	201.2	277	530	986	571	1060	1940
-251.0	-420.0		-15.0	5	41.0	10.0	50	122.0	35.0	95	203.0	282	540	1004	582	1080	1976
-246.0	-410.0		-14.4	6	42.8	10.6	51	123.8	35.6	96	204.8	288	550	1022	593	1100	2012
-240.0	-400.0		-13.9	7	44.6	11.1	52	125.6	36.1	97	206.6	293	560	1040	604	1120	2048
-234.0	-390.0		-13.3	8	46.4	11.7	53	127.4	36.7	98	208.4	299	570	1058	616	1140	2084
-229.0	-380.0		-12.8	9	48.2	12.2	54	129.2	37.2	99	210.2	304	580	1076	627	1160	2120
-223.0	-370.0		-12.2	10	50.0	12.8	55	131.0	37.8	100	212.0	310	590	1094	638	1180	2156
-218.0	-360.0		-11.7	11	51.8	13.3	56	132.8	43.0	110	230.0	316	600	1112	649	1200	2192
-212.0	-350.0		-11.1	12	53.6	13.9	57	134.6	49.0	120	248.0	321	610	1130	660	1220	2228
-207.0	-340.0		-10.6	13	55.4	14.4	58	136.4	54.0	130	266.0	327	620	1148	671	1240	2264
201.0	-330.0		-10.0	14	57.2	15.0	59	138.2	60.0	140	284.0	332	630	1166	682	1460	2300
196.0	-320.0		-9.4	15	59.0	15.6	60	140.0	66.0	150	302.0	338	640	1184	693	1380	2336
-190.0	-310.0		-8.9	16	60.8	16.1	61	141.8	71.0	160	320.0	343	650	1202	704	1300	2372
-184.0	-300.0		-8.3	17	62.6	16.7	62	143.6	77.0	170	338.0	349	660	1220	732	1350	2462
-179.0	-290.0		-7.8	18	64.4	17.2	63	145.4	82.0	180	356.0	354	670	1238	760	1400	2552
-173.0	-280.0		-7.2	19	66.2	17.8	64	147.2	88.0	190	374.0	360	680	1256	788	1450	2642
-169.0	-273.0	-459.4	-6.7	20	68.0	18.3	65	149.0	93.0	200	392.0	366	690	1274	816	1500	2732
-168.0	-270.0	-454.0	-6.1	21	69.8	18.9	66	150.8	99.0	210	410.0	371	700	1292	843	1550	2822
-162.0	-260.0	-436.0	-5.6	22	71.6	19.4	67	152.6	100.0	212	413.6	377	710	1310	871	1600	2912
-157.0	-250.0	-418.0	-5.0	23	73.4	20.0	68	154.4	104.0	220	428.0	382	720	1328	899	1650	3002
-151.0	-240.0	-400.0	-4.4	24	75.2	20.6	69	156.2	110.0	230	446.0	388	730	1346	927	1700	3092
-146.0	-230.0	-382.0	-3.9	25	77.0	21.1	70	158.0	116.0	240	464.0	393	740	1364	954	1750	3182
-140.0	-220.0	-364.0	-3.3	26	78.8	21.7	71	159.8	121.0	250	482.0	399	750	1382	982	1800	3272
-134.0	-210.0	-346.0	-2.8	27	80.6	22.2	72	161.6	127.0	260	500.0	404	760	1400	1010	1850	3362
-129.0	-200.0	-328.0	-2.2	28	82.4	22.8	73	163.4	132.0	270	518.0	410	770	1418	1038	1900	3452
-123.0	-190.0	-310.0	-1.7	29	84.2	23.3	74	165.2	138.0	280	536.0	416	780	1436	1066	1950	3542
-118.0	-180.0	-292.0	-1.1	30	86.0	23.9	75	167.0	143.0	290	554.0	421	790	1454	1093	2000	3632
-112.0	-170.0	-274.0	-0.6	31	87.8	24.4	76	168.8	149.0	300	572.0	427	800	1472	1121	2050	3722
-107.0	-160.0	-256.0	0.0	32	89.6	25.0	77	170.6	154.0	310	590.0	442	810	1490	1149	2100	3812
-101.0	-150.0	-238.0	0.6	33	91.4	25.6	78	172.4	160.0	320	608.0	438	820	1508	1177	2150	3902
-96.0	-140.0	-220.0	1.1	34	93.2	26.1	79	174.2	166.0	330	626.0	443	830	1526	1204	2200	3992
-90.0	-130.0	-202.0	1.7	35	95.0	26.7	80	176.0	171.0	340	644.0	449	840	1544	1232	2250	4082
-84.0	-120.0	-184.0	2.2	36	96.8	27.2	81	177.8	177.0	350	662.0	454	850	1562	1260	2300	4162
-79.0	-110.0	-166.0	2.8	37	98.6	27.8	82	179.6	182.0	360	680.0	460	860	1580	1288	2350	4262
-73.0	-100.0	-148.0	3.3	38	100.4	28.3	83	181.4	188.0	370	698.0	466	870	1598	1316	2400	4352
-68.0	-90.0	-130.0	3.9	39	102.2	28.9	84	183.1	193.0	380	716.0	471	880	1616	1343	2450	4442
-62.0	-80.0	-112.0	4.4	40	104.0	29.4	85	185.0	199.0	390	734.0	477	890	1634	1371	2500	4532
-57.0	-70.0	-94.0	5.0	41	105.8	30.0	86	186.8	204.0	400	752.0	482	900	1652	1399	2550	4622
-51.0	-60.0	-76.0	5.6	42	107.6	30.6	87	188.6	210.0	410	770.0	488	910	1670	1427	2600	4712
-46.0	-50.0	-58.0	6.1	43	109.4	31.1	88	190.4	216.0	420	788.0	492	920	1688	1454	2650	4802
-40.0	-40.0	-40.0	6.7	44	111.2	31.7	89	192.2	221.0	430	806.0	499	930	1706	1482	2700	4892
-34.0	-30.0	-22.0	7.2	45	113.0	32.2	90	194.0	227.0	440	824.0	504	940	1724	1510	2750	4982
-29.0	-20.0	-4.0	7.8	46	114.8				232.0	450	842.0	510	950	1742	1538	2800	5072
-23.0	-10.0	14.0	8.3	47	116.6				238.0	460	860.0	516	960	1760	1566	2850	5162
-7.8	0.0	32.0	8.9	48	118.4				243.0	470	878.0	521	970	1778	1593	2900	5252
									249.0	480	896.0	527	980	1796	1621	2950	5342
									254.0	490	914.0	532	990	1814	1649	3000	5432



CONVERSIONS

inch	0	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16
0	0.0	1.6	3.2	4.8	6.4	7.9	9.5	11.1	12.7	14.3	15.9	17.5	19.1	20.6	22.2	23.8
1	25.4	27.0	28.6	30.2	31.8	33.3	34.9	36.5	38.1	39.7	41.3	42.9	44.5	46.0	47.6	49.2
2	50.8	52.4	54.0	55.6	57.2	58.7	60.3	61.9	63.5	65.0	66.7	68.3	69.9	71.4	73.0	74.6
3	76.2	77.8	79.4	81.0	82.6	84.1	85.7	87.3	88.9	90.5	92.1	93.7	95.3	96.8	98.4	100.0
4	101.6	103.2	104.8	106.4	108.0	109.5	111.1	112.7	114.3	115.9	117.5	119.1	120.7	122.2	123.8	125.4
5	127.0	128.6	130.2	131.8	133.4	134.9	136.5	138.1	139.7	141.3	142.9	144.5	146.1	147.6	149.2	150.8
6	152.4	154.0	155.6	157.2	158.8	160.3	161.9	163.5	165.1	166.7	168.3	169.9	171.5	173.0	174.6	176.2
7	177.8	179.4	181.0	182.6	184.2	185.7	187.3	188.9	190.5	192.1	193.7	195.3	196.9	198.4	200.0	201.6
8	203.2	204.8	206.4	208.0	209.6	211.1	212.7	214.3	215.9	217.5	219.1	220.7	222.3	223.8	225.4	227.0
9	228.6	230.2	231.8	233.4	235.0	236.5	238.1	239.7	241.3	242.9	244.5	246.1	247.7	249.2	250.8	252.4
10	254.0	255.6	257.2	258.8	260.4	261.9	263.5	265.1	266.7	268.3	269.9	271.5	273.1	274.6	276.2	277.8
11	279.4	281.0	282.6	284.2	285.9	287.3	288.9	289.5	292.1	293.7	295.3	296.9	298.5	300.0	301.6	303.2
12	304.8	306.4	308.0	309.6	311.2	312.7	314.3	315.9	317.5	319.1	320.7	322.3	323.9	325.4	327.0	328.6
13	330.2	331.8	333.4	335.0	336.6	338.1	339.7	341.3	342.9	344.5	346.1	347.7	349.3	350.8	352.4	354.0
14	355.6	357.2	358.8	360.4	362.0	363.5	365.1	366.7	368.3	369.9	371.5	373.1	374.7	376.2	377.8	379.4
15	381.0	382.6	384.2	385.8	387.4	388.9	390.5	392.1	393.7	395.3	396.9	398.5	400.1	401.6	403.2	404.8
16	406.4	408.0	409.6	411.2	412.8	414.3	415.9	417.5	419.1	420.7	422.3	423.9	425.5	427.0	428.6	430.2
17	431.8	433.4	435.0	436.6	438.2	439.7	441.3	442.9	444.5	446.1	447.7	449.3	450.9	452.4	454.0	455.6
18	457.2	458.8	460.4	462.0	463.6	465.1	466.7	468.3	469.9	471.5	473.1	474.7	476.3	477.8	479.4	481.0
19	482.6	484.2	485.8	487.4	489.0	490.5	492.1	493.7	495.3	496.9	498.5	500.1	501.7	503.2	504.8	506.4
20	508.0	509.6	511.2	512.8	514.4	515.9	517.5	519.1	520.7	522.3	523.9	525.5	527.1	528.6	530.2	531.8
21	533.4	535.0	536.6	538.2	539.8	541.3	542.9	544.5	546.1	547.7	549.3	550.9	552.5	554.0	555.6	557.2
22	558.8	560.4	562.0	563.6	565.2	566.7	568.3	569.9	571.5	573.1	574.7	576.3	577.9	579.4	581.0	582.6
23	584.2	585.8	587.4	589.0	590.6	592.1	593.7	595.3	596.9	598.5	600.1	601.7	603.3	604.8	606.4	608.0
24	609.6	611.2	612.8	614.4	616.0	617.5	619.1	620.7	622.3	623.9	625.5	627.1	628.7	630.2	631.8	633.4
25	635.0	636.6	638.2	639.8	641.4	642.9	644.5	646.1	647.7	649.3	650.9	652.5	654.1	655.6	657.2	658.8
26	660.4	662.0	663.6	665.2	666.8	668.3	669.9	671.5	673.1	674.7	676.3	677.9	679.5	681.0	682.6	684.2
27	685.8	687.4	689.0	690.6	692.2	693.7	695.3	696.9	698.5	700.1	701.7	703.3	704.9	706.4	708.0	709.6
28	711.2	712.8	714.4	716.0	717.6	719.1	720.7	722.3	723.9	725.5	727.1	728.7	730.3	731.8	733.4	735.0
29	736.3	738.2	739.8	741.4	743.0	744.5	746.1	747.7	749.3	750.9	752.5	754.1	755.7	757.2	758.8	760.4
30	762.0	763.6	765.2	766.8	768.4	769.9	771.5	773.1	774.7	776.3	777.9	779.5	781.1	782.6	784.2	785.8
31	787.4	789.0	790.6	792.2	793.8	795.3	796.9	798.5	800.1	801.7	803.3	804.9	806.5	808.0	809.6	811.2
32	812.8	814.4	816.0	817.6	819.2	820.7	822.3	823.9	825.5	827.1	828.7	830.3	831.9	833.4	835.0	836.6
33	838.2	839.8	840.4	843.0	844.6	846.1	847.7	849.3	850.9	852.5	854.1	855.7	857.3	858.8	860.4	862.0
34	863.6	865.2	866.8	868.4	870.0	871.5	873.1	874.7	876.3	877.9	879.5	881.1	882.7	884.2	885.8	887.4
35	889.0	890.6	892.2	893.8	895.4	896.9	898.5	900.1	901.7	903.3	904.9	906.5	908.1	909.6	911.2	912.8
36	914.4	916.0	917.6	919.2	920.8	922.3	923.9	925.5	927.1	928.7	930.3	931.9	933.5	935.0	936.6	938.2
37	939.8	941.4	943.0	944.6	946.2	947.7	949.3	950.9	952.5	954.1	955.7	957.3	958.9	960.4	962.0	963.6
38	965.2	966.8	968.4	970.0	971.6	973.1	974.7	976.3	977.9	979.5	981.1	982.2	984.3	985.8	987.4	989.0
39	990.6	992.2	993.8	995.4	997.0	998.5	1000.1									

Multiply By	To Convert	To	Multiply By	To Convert	To	Multiply By	To Convert	To			
2.54	Inches	Centimeters	0.3937	0.065	Grains	Grammes	15.38	0.1	Lb. per sq. in.	H'd of water (M.)	1.4285
30.48	Feet	Centimeters	0.03228	30.6	Cwt	Kilogrammes	0.01968	0.068	Lb. per sq. in.	Atmospheres	14.7
0.914	Yards	Metres	1.094	1016	Tons	Kilogrammes	0.000984	1.575	Tons per sq. in.	Kgm. Sq. mm.	0.635
1809.3	Miles	Metres	0.000621	4.546	Gallons	Litres	0.22	4.883	Lb. per sq. ft.	Kgm.sq. metre	0.205
1833.27	Nautical Miles	Metres	0.000539	10	Gallons of Water	Pounds	0.1	0.593	Lb. per cub. yd.	Kgm. Cub. metre	1.685
6.45	Sauqre Inches	Sq. Cms.	0.155	0.454	Pounds of Water	Litres	2.202	15.02	Lb. per cub. Ft.	Kgm. Cub. metre	0.0624
0.093	Square Feet	Sq. Metres	10.764	70.3	Lb. per sq. in	Gm. Sq. cm.	0.0142	0.0996	Lb. per gallon	Kgm. Litre	10.02
0.836	Square Yards	Sq. Metres	1.196	2.3	Lb. per sq. in	H'd of water (ft.)	0.434	0.1833	Foot-lb.	K'grammetres	7.23
16.39	Cubic Inches	Cu. Cms.	0.061	14.7	Atmospheres	Lb. sq. inch	0.066	0.33	Foot-tons	Tonne-metres	3
28.3	Cubic Feet	Litres	0.0353	0.90	German candies	English candies	1.1111	1.014	Horse-Power	Forces de chaval	0.0951
6.24	Cubic Feet	Gallons	0.1502	9.55	Carrels	Candies	0.1047	745	Horse-Power	Watts	0.00134
0.765	Cubic Yards	Cub. Metres	1.308	0.737	Joules	Ft. lb	1.357	33000	Horse-Power	Ft.-lb. min.	-
0.3732	Pounds (Troy)	Kilogrammes	2.68	88	Miles Hour	Ft. min.	0.01134	75	Horse-Power	Kg.,m. sec.	0.01316
31.10	Ounces (Troy)	Grammes	0.03218	197	Metres sec.	Ft. min.	0.00508	44	Watts	Ft.-lb. min	0.0227
0.4536	Pounds (Avoir)	Kilogrammes	2.2045	1.8	C.H.U.	B. Th. U.	0.5555	0.1	Watts	Kg.,m. sec.	10
7000	Pounds (Avoir)	Grains (Troy)	0.000143	0.208	Centipoise	Lb. Force		0.252	Heat Units	Calories	3.97
28.35	Ounces (Avoir)	Grammes	0.0353			sec. sq. ft.	4.8		To Obtain	From	Multiply By
	To Obtain	From	Multiply By		To Obtain	From	Multiply By				



FRACTIONS, DECIMALS & MILLIMETERS

Inches			Inches			Inches			Inches		
fractions	decimals	mm	fractions	decimals	mm	fractions	decimals	mm	fractions	decimals	mm
-	0.0004	0.01	25/32	0.781	19.884	-	2.165	55	3-11/16	3.6875	93.863
-	0.004	0.10	-	0.7874	20	2-3/16	2.1875	55.563	-	3.7008	94.000
-	0.01	0.25	5/164	0.797	20.241	-	2.2047	56	3-23/32	3.719	94.456
1/64	0.0156	0.397	13/16	0.8125	20.638	2-7/32	2.219	56.358	-	3.7401	95.000
-	0.0197	0.50	-	0.8268	21	-	2.244	57	3-3/4	3.75	95.250
-	0.0295	0.75	53/64	0.828	21.034	2-1/4	2.25	57.150	-	3.7795	96.000
1/32	0.03125	0.794	27/32	0.844	21.431	2-9/32	2.281	57.944	3-25/32	3.781	96.044
-	0.0394	1	55/64	0.859	22.828	-	2.2835	58	3-13/16	3.8125	96.838
3/64	0.0469	1.191	-	8661	22	2-5/16	2.312	58.738	-	3.8189	97.000
-	0.059	1.50	7/8	0.875	22.225	-	2.3228	59	3-27/32	3.844	97.631
1/16	0.62	1.586	57/64	0.8906	22.622	2-11/32	2.44	59.531	-	3.8583	98.000
5/64	0.0781	1.984	-	0.9055	23	-	2.3672	60	3-7/8	3.875	98.425
-	0.0787	2	29/32	0.9062	23.019	2-3/8	2.375	60.325	-	3.8976	99.000
3/32	0.094	2.381	59/64	0.922	23.416	-	2.4016	61	3-29/32	3.9062	99.219
-	0.0964	2.50	15/16	0.9375	23.813	2-13/32	2.406	61.119	-	3.937	100.000
7/64	0.109	2.778	-	0.9449	24	2-7/16	2.438	61.913	3-15/16	3.9375	100.013
-	0.1811	3	61/64	0.953	24.209	-	2.4409	62	3-31/32	3.969	100.806
1/8	0.125	3.175	31/32	0.969	24.606	2-15/32	2.469	62.706	-	3.9764	101.000
-	0.1378	3.50	-	0.9843	25	-	4.4803	63	4	4.000	101.600
9/64	0.141	3.572	63/64	0.9844	25.003	2-1/2	2.500	63.500	4-1/16	4.062	103.188
5/32	0.156	3.969	1	1.000	25.400	-	2.5197	64	4-1/8	4.125	104.775
-	0.1575	4	-	1.0236	26	2-17/32	2.531	64.294	-	4.1338	106.000
11/64	0.172	4.366	1-1/32	1.0312	26.194	-	2.559	65	4-3/16	4.1875	106.363
-	0.177	4.50	1-1/16	1.062	26.968	2-9/16	2.562	65.068	4-1/4	4.250	107.950
3/16	0.1875	4.763	-	1.063	27	2-19/32	2.594	65.881	4-5/16	4.312	109.538
-	0.1969	5	1-3/32	1.094	27.781	-	2.5964	66	-	4.3307	110.000
13/64	0.203	5.159	-	1.1024	28	2-5/8	2.625	66.675	4-3/8	4.375	111.125
-	0.2163	5.50	1-1/8	1.125	28.575	-	2.638	67	4-7/16	4.438	112.713
7/32	0.219	5.566	-	1.1417	29	2-21/32	2.656	67.469	4-1/2	4.500	114.300
15/64	0.234	5.953	1-5/32	1.156	29.369	-	2.6772	68	-	4.5275	115.000
-	0.2362	6	-	1.1811	30	2-11/16	2.6875	68.263	4-9/16	4.562	115.888
1/4	0.25	6.35	1-3/16	1.1875	30.163	-	2.7165	69	4-5/8	4.625	117.475
-	0.2559	6.50	1-7/32	1.219	30.956	2-23/32	2.719	69.056	4-11/16	4.6875	119.063
17/64	0.2636	6.747	-	1.2205	31	2-3/4	2.750	69.850	-	4.7244	120.000
-	0.2756	7	1-1/4	1.25	31.750	-	2.7559	70	4-3/4	4.75	120.650
9/32	0.281	7.144	-	1.2598	32	2-25/32	2.781	70.6439	4-13/16	4.8125	122.238
-	0.2953	7.50	1-9/32	1.281	32.544	-	2.7953	71	4-7/8	4.875	123.825
19/64	0.297	7.541	-	1.2992	33	2-13/16	2.8125	71.4376	-	4.9212	125.000
5/16	0.312	7.938	1-5/16	1.312	33.338	-	2.8346	72	4-15/16	4.9375	125.413
-	0.315	8	-	1.3386	34	2-27/32	2.844	72.214	5	5.000	127.000
21/64	0.328	8.334	1-11/32	1.344	34.131	-	2.874	73	-	5.1181	130.000
-	0.335	8.50	1-3/8	1.375	34.925	2-7/8	2.875	73.025	5-1/4	5.250	133.350
11/32	0.344	8.731	-	1.3779	35	2-29/32	2.9062	73.819	5-1/2	5.500	139.700
-	0.3543	9	1-13/32	1.406	35.719	-	2.9134	74	-	5.5118	140.000
23/64	0.359	9.128	-	1.4173	36	2-15/16	2.9375	74.613	5-3/4	5.750	146.050
-	0.374	9.50	1-7/16	1.438	36.513	-	2.9527	75	-	5.9055	150.000
3/8	0.375	9.525	-	1.4567	37	2-31/32	2.969	75.406	6	6.000	152.400
25/64	0.391	9.922	1-15/32	1.469	37.306	-	2.9921	76	6-1/4	6.250	158.750
-	0.3937	10	-	1.4691	38	3	3.000	76.200	-	6.2992	160.000
13/32	0.406	10.319	1-1/2	1.500	38.100	3-1/32	3.0312	76.994	6-1/2	6.500	165.100
-	0.413	10.50	1-17/32	1.531	38.894	-	3.0315	77	-	6.6929	170.000
27/64	0.422	10.716	-	1.5354	39	3-1/16	3.062	77.788	6-3/4	6.750	171.450
-	0.4331	11	1-9/16	1.562	39.688	-	3.0709	78	7	7.000	177.800
7/16	0.438	11.113	-	1.5748	40	3-3/32	3.094	78.581	-	7.0666	180.000
29/64	0.453	11.509	1-19/32	1.594	40.481	-	3.1102	79	-	7.4803	190.000
15/32	0.469	11.906	-	1.6142	41	3-1/8	3.125	79.375	7-1/2	7.500	190.500
-	0.4724	12	1-5/8	1.625	41.275	-	3.1496	80	-	7.874	200.000
31/64	0.484	12.303	-	1.6535	42	3-5/32	3.156	80.169	8	8.000	203.200
1/2	0.492	12.50	1-21/32	1.6562	42.069	3-3/16	3.1875	80.963	-	8.2677	210.000
-	0.500	12.70	1-11/16	1.6875	42.863	-	3.1890	81	8-1/2	8.500	215.900
-	0.5118	13	-	1.6929	43	3-7/32	3.219	81.756	-	8.6614	220.000
33/64	0.5166	13.097	1-23/32	1.719	43.656	-	3.2283	82	9	9.000	228.600
17/32	0.531	13.494	-	1.7323	44	3-1/4	3.25	82.550	-	9.0551	230.000
35/64	0.547	13.891	1-3/4	1.75	44.45	-	3.2677	83	-	9.4488	240.000
-	0.5512	14	-	1.7717	45	3-9/32	3.281	83.344	9-1/2	9.500	241.300
9/16	0.563	14.288	1-25/32	1.781	45.244	-	3.3071	84	-	9.8425	250.000
-	0.571	14.50	-	1.811	46	3-5/16	3.312	84.1377	10	10.000	254.000
37/64	0.578	14.684	1-13/16	1.8125	46.38	3-11/32	3.344	84.9314	-	10.2362	260.000
-	0.5906	15	1-27/32	1.844	46.831	-	3.3464	85	-	10.6299	270.000
19/32	0.594	15.061	-	1.8504	47	3-3/8	3.375	85.725	11	11.000	279.401
39/64	0.609	15.478	1-7/8	1.875	47.0625	-	3.3858	86	-	11.0236	280.000
5/8	0.625	15.875	-	1.8896	48	3-13/32	3.406	86.519	-	11.4173	290.000
-	0.6299	16	1-29/32	1.9062	48.419	-	3.4252	87	-	11.81	300.000
41/64	0.6406	16.272	-	1.9291	49	3-7/16	3.438	87.313	12	12.000	304.801
-	0.6496	16.50	1-15/16	1.9375	49.213	-	3.4646	88	13	13.000	330.201
21/32	0.656	16.669	-	1.9685	50	3-15/32	3.469	88.106	-	13.7795	350.000
-	0.6693	17	1-31/32	1.969	50.006	3-1/2	3.500	88.900	14	14.000	355.601
43/64	0.672	17.066	2	2.000	50.8	-	3.5039	89	15	15.000	381.001
11/16	0.6875	17.463	-	2.0079	51.000	3-17/32	3.531	89.694	-	15.748	400.000
45/64	0.703	17.859	2-1/32	2.03125	51.594	-	3.5433	90	16	16.000	406.401
-	0.7067	18	-	2.0472	52	3-9/16	3.562	90.4877	17	17.000	431.801
23/32	0.719	18.256	2-1/16	2.062	52.388	-	3.5827	91	-	17.7165	450.000
-	0.7283	18.50	-	2.0866	53	3-19/32	3.594	91.281	18	18.000	457.201
47/64	0.734	18.653	2-3/32	2.094	53.181	-	3.622	92	19	19.000	482.801
-	0.748	19	2-1/8	2.125	53.975	3-5/8	3.6225	92.075	-	19.685	500.000
3/4	0.750	19.05	-	2.126	54	3-21/32	3.656	92.869	20	20.000	508.001
49/64	0.7656	19.447	2-5/32	2.156	54.768	-	3.6614	93	-		



MATERIALS

Kind of Material	International ISO		Germany		DIN 17007		USA		ASTM		USSR GOST		Great Britain BS		Japan JIS		France AFNOR		Sweden MNC		Remarks		
	Material Standard	Designation	Material Standard	Designation	Material Standard	Designation	Material Standard	Designation	Material Standard	Designation	Material Standard	Designation	Material Standard	Designation	Material Standard	Designation	Material Standard	Designation	Material Standard	Designation			
Cast Iron	R 985	GG-25	891	A13	40D	112	SC276-18	165	Gr 17	FC25	FC25	NFA32-11	FC25	NFA32-11	MNC-70SE	MNC-70SE	0175-00						
	R1083	GG-40	863	A58	60-40-B	7283	VC13-2	2783	Gr 420/12	FC502	FC502	NFA32-201	FC502	NFA32-201	MNC-70B	MNC-70B	0177-02						
	E1083	GG-60	863	A58	60-55-06	7283	VC10-2	2783	Gr 600/3	G552	G552	NFA32-201	G552	NFA32-201	MNC-70B	MNC-70B	0177-02						
	E627	GG-100-3	862	A139	D-28																		
	E627	GG-100-3	862	A139	D-28																		
Cast Steel	2882	SNCR203	891	A128	CL8																		
			891	A128	CL8																		
			891	A128	CL8																		
			891	A128	CL8																		
			891	A128	CL8																		
Alloy Steel	D4991	C23-45BL	1745	A19	Gr. WCB-A																		
			1745	A19	Gr. WCB-A																		
			1745	A19	Gr. WCB-A																		
			1745	A19	Gr. WCB-A																		
			1745	A19	Gr. WCB-A																		
			1745	A19	Gr. WCB-A																		
			1745	A19	Gr. WCB-A																		
			1745	A19	Gr. WCB-A																		
			1745	A19	Gr. WCB-A																		
			1745	A19	Gr. WCB-A																		
Bronze Casting	338	Cu-Pb-Sn-Zn-Pb	705	B62	C-835-00																		
	338	Cu-Sn-Pb-Zn	705	B62	C-835-00																		
	338	Cu-Sn-Pb-Zn	705	B62	C-835-00																		
			705	B62	C-835-00																		
			705	B62	C-835-00																		
Alum Bronze Casting	338	G-CuAl10FeNi5	774	B148	C-955-00																		
			774	B148	C-955-00																		
Alum Bronze	428	CuAl10FeNi5	1765/1767	B171	628.000																		
	428	CuAl10FeNi5	1765/1767	B171	628.000																		
Condenser Tube			10316	A79	Gr A/C																		
			10309/05	A79	Gr A/C																		
Cu-Ni-Alloy Steel	429		1743	B62	C-835-00																		
	429		1743	B62	C-835-00																		
Boil/Nuts			17225	A 193	Gr B7																		
			1181	A 194	Gr2H																		
Carbon Steel	630	F68606	1740	A283	GID																		
	1052	F6860-2	1740	A283	GID																		
Rubber	R1629	FRM	3760	D41B-72B	FRM																		
	R1629	NBR	3760	D41B-72B	NBR																		
	R1629	EPDM	3760	D41B-72B	EPDM																		



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