PLUG VALVES

arflu
INDUSTRIAL VALVES

arflu
INDUSTRIAL VALVES

INDUSTRIAL VALVES FOR THE

PETROCHEMICAL, ENERGY & GAS DIVISIONS

PEG

INDEX

ARFLU 4

PLUG VALVES 6

TECHNICAL DATAS 18

DIMENSIONS
- FLANGES
- BUTT WELDING

TECHNICAL HELP
- FORGED STEEL STANDARDS COMPARISON
- CAST IRON
- FERRITIC STEELS
- COPPER ALLOYS
- NICKEL ALLOYS
- AUSTENITIC STEELS
- NICKEL-COPPER ALLOYS
- PRESSURE - TEMPERATURE RATINGS

P W G E M

PETROCHEMICAL DIVISION
WATER DIVISION
GAS DIVISION
ENERGY DIVISION
MARINE DIVISION

We are pleased to present you our company which, since its foundation more than 25 years ago, is dedicated to the production of high quality valves. Since 1988 we have been manufacturing all kind of valves mainly for petrochemical, energy, gas, marine services and water and we are proud to manufacture our valves under our brand ARFLU.

ARFLU 's quality guarantee system as well as all its processes and procedures, both technical ones regarding products and in the organization of the company are certified according to the UNE-EN ISO 9001 standard. In addition ARFLU is certified according to H module of 97/23/CE of the EU. Though this certification is extremely important for our company, it must be said that the best certification and guaranty we can offer is the fact that our customers are placing their confidence in ARFLU products day by day. Living in a world of technology and communications as it is today, in ARFLU we try to keep at the forefront of industry. ARFLU owns the latest and most powerful informatic technology systems in order to have our whole organization perfectly communicated and to be in constant contact with customers worldwide. ARFLU is one of the most qualified companies in its field. We develop tailor made solutions as well as we provide customized advice and training for our clients.

arflu

INNOVATION, QUALITY, DESIGN

PLUG VALVES

Plug valves
A cone is the closing element of plug valves. Like ball valves, they are quarter turn valves. They are valves of simple configuration, consequently, they have a low cost of maintenance.

MANUFACTURING AND DESIGN
STANDARDS

Plug valves are designed and manufactured according to the following international codes and standards:

DESIGN AND MANUFACTURING:
- API 599 Metal Plug Valves - Flanged, Threaded and Welding Ends
- API-6D Specification for pipeline and piping valves
- ISO 14313 Petroleum and natural gas industries, pipeline transportation systems, pipeline valves

INSPECTION AND TEST:
- API 598 valve inspection and testing
- API-6D Specification for pipeline and piping valves
- ISO 14313 Petroleum and natural gas industries, pipeline transportation systems, pipeline valves

FLANGE DIMENSION:
- ASME B16.5 pipe flanges and flanged fittings

WELDED END:
- ASME B16.25 buttwelding ends

FACE TO FACE AND END TO END
- ASME B16.10 face to face and end-to-end dimensions of valves
- API-6D Specification for pipeline and piping valves
- ISO 14313 Petroleum and natural gas industries, pipeline transportation systems, pipeline valves
- API-599 Metal Plug Valves – Flanged, Threaded and Welding Ends

DESIGN FEATURES

PLUG VALVES

Plug valves are a quarter turn valves similar to ball valves. The valve closure system consists of a conical plug, which seats against a soft material sleeve, or against the body of the valve.

Plug valves are used as ON-OFF valves. Fully opened valves have a low pressure loss value. Comparing with ball valves, plug valves have the following advantages:

- Less valve weight, specially important for big sizes.
- Bigger seating surface than a same size ball valve.
- Much more uniform velocity of the fluid while closing. Wire drawing is avoided.

Plug valves may be lubricated or non lubricated design.

NON LUBRICATED SEALING VALVES

In this design, the sealing is made by a PTFE sleeve and the surface of the plug. The PTFE sleeve is locked into the body by means of grooves and metal lips. In case of small leakage, the plug may be regulated and pushed down on the sleeve tightening the valve.

LUBRICATED SEALING VALVES

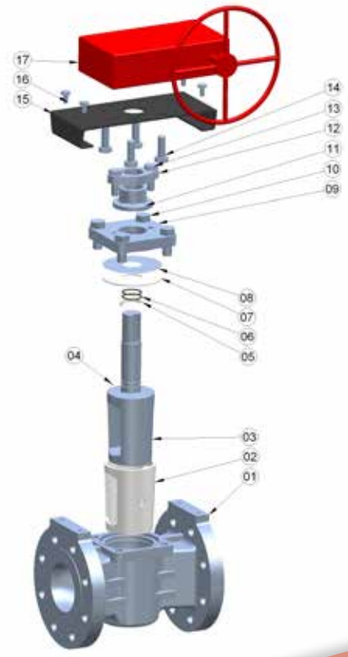
In this design the sealing is metal to metal, so greasing on the sealing surface is necessary to reduce valve operating torque. As the valve is being operated, a thin film of grease retained on the body will be applied on the sealing surface.

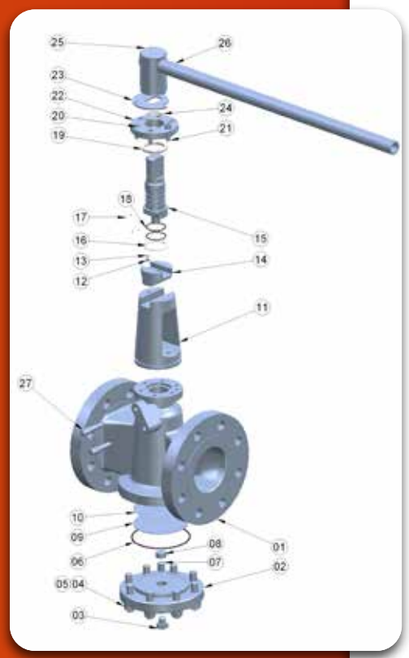
In case of small leakage, the plug may be regulated and pushed against the body to make the valve tight. In this case the valve operating torque will quickly be increased. Injecting grease on the valve will make the valve easy operating.

Grease is usually injected through the stem and conducted on the sealing surface across the ducts and grooves specially designed.

SLEEVE TYPE SOFT SEALING PLUG VALVES

		WCB / F6 / PTFE		CF8 / 304 / PTFE	CF8M / 316 / PTFE
1	BODY	ASTM A216 WCB		ASTM A351 CF8	ASTM A351 CF8M
2	SLEEVE	PTFE		PTFE	PTFE
3	PLUG	ASTM A182 F6	ASTM A351 CF8	ASTM A351 CF8	ASTM A351 CF8M
4	ANTISTATIC DEVICE	SS304	SS304	SS304	SS316
5	GASKET	PTFE		PTFE	PTFE
6	O-RING	VITON	VITON	VITON	VITON
7	GASKET	PTFE		PTFE	PTFE
8	PLATE	ASTM A216 WCB		ASTM A351 CF8	ASTM A351 CF8M
9	BONNET	ASTM A216 WCB		ASTM A351 CF8	ASTM A351 CF8M
10	BOLT	ASTM A193 B7		ASTM A193 B8	ASTM A193 B8M
11	GLAND RING	ASTM A105		ASTM A182 F304	ASTM A182 F316
12	GLAND FLANGE	ASTM A216 WCB		ASTM A351 CF8	ASTM A351 CF8M
13	BOLT	ASTM A193 B7		ASTM A193 B8	ASTM A193 B8M
14	BOLT	ASTM A193 B7		ASTM A193 B8	ASTM A193 B8M
15	BRACKET	CARBON STEEL		CARBON STEEL	CARBON STEEL
16	BOLT	ASTM A193 B7		ASTM A193 B8	ASTM A193 B8M
17	GEAR	CARBON STEEL		CARBON STEEL	CARBON STEEL





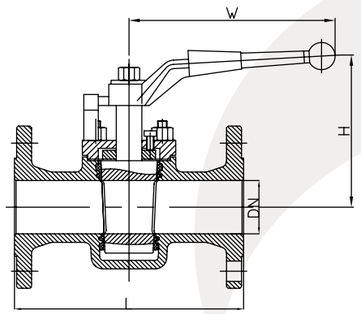
INVERTED PRESSURE BALANCE LUBRICATED PLUG VALVES

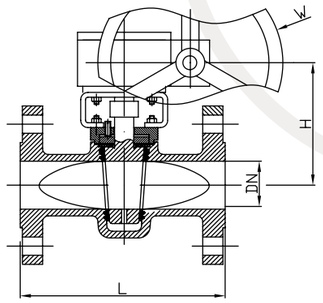
		WCB / F6 / MM	WCB / CF8 / MM	CF8 / 304 / MM	CF8M / 316 / MM
1	BODY	ASTM A216 WCB		ASTM A351 CF8	ASTM A351 CF8M
2	COVER	ASTM A216 WCB		ASTM A351 CF8	ASTM A351 CF8M
3	BLOCK	CARBON STEEL		SS304	SS316
4	NUT	A194 2H		ASTM A194 8	ASTM A194 8M
5	EYEBOLT	ASTM A193 B7		ASTM A193 B8	ASTM A193 B8M
6	O-RING	VITON		VITON	VITON
7	SET STUD	CARBON STEEL		SS304	SS316
8	DISC	CARBON STEEL		SS304	SS316
9	DISC	CARBON STEEL		SS304	SS316
10	DISC	CARBON STEEL		SS304	SS316
11	PLUG	ASTM A217 CA15	ASTM A351 CF8	ASTM A351 CF8	ASTM A351 CF8M
12	SMALL BALL	SS304		SS304	SS316
13	SMALL SPRING	SS304		SS304	SS316
14	COUPLING	SS304		SS304	SS316
15	STEM	ASTM A182 F6	ASTM A182 F304	ASTM A182 F304	ASTM A182 F316
16	GASKET	PTFE		PTFE	PTFE
17	ANTISTATIC DEVICE	S304	SS304	SS304	SS316
18	O-RING	VITON		VITON	VITON
19	GASKET	PTFE		PTFE	PTFE
20	GLAND FLANGE	ASTM A105		ASTM A351 CF8	ASTM A351 CF8M
21	BOLT	ASTM A193 B7		ASTM A193 B8	ASTM A193 B8M
22	PIN	CARBON STEEL		SS304	SS316
23	STOP PLATE	CARBON STEEL		CARBON STEEL	CARBON STEEL
24	O-RING	VITON		VITON	VITON
25	LEVER COVER	CARBON STEEL		CARBON STEEL	CARBON STEEL
26	LEVER	CARBON STEEL		CARBON STEEL	CARBON STEEL

Plug valve API 6D - API 599

COD. AP-1000

NON LUBRICATED PLUG VALVES CLASS **150** 1/2" TO 14"





DESIGN	ASME B16.34 & API-6D & API-599
FACE TO FACE	ASME B16.10 & API6D
FLANGED ENDS	ASME B16.5
BUTT WELD ENDS	ASME B16.25
BY-PASS & DRAIN	MSS SP-45
TEST	API-598, API 6D & ISO 15848
CONSTRUCTION	• Top entry type • Bolted Bonnet • Soft seated closure • 360 ° Metal edge in the closure protecting the sleeve • Metal edge with auto-cleaning function • Bidirectional • Manual and actuator operated (gearbox, electric, pneumatic, hydraulic,...)
MATERIALS	WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8M, CF3, CF3M, CF8C, Bronze, 4A, 6A, AISI-904L, CK3MCUN, Duplex, Superduplex, exotic materials
PLUG	CA15, CF8, CF8M, CF3M, bronce, monel, 4A, 6A, CK3MCUN, duplex, superdupplex, exotic materials, ...
SLEEVE	PTFE or others.
OTHERS	Jacketed, cryogenic services, H.F. services, All kind of actuators, all type of painting and coating.

*** other requirements upon request.**

CLASS 150 DIMENSIONS IN MILIMETERS

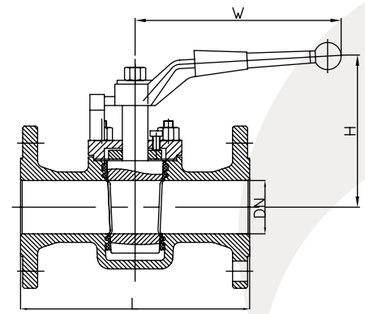
ND.	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"
L (BW)	140	149	172		241	267	305	330	356		457	521	559	635	686
L (RF)	108	117	127	140	165	178	191	203	229	254	267	292	330	356	686
L (RTJ)	108	117	140	153	178	191	204	216	242	267	280	305	343	369	699
DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350
H (OPEN)	180	180	185	200	210	215	250	270	300	340	365	400	450	510	590
W	400	400	500	500	600	600	820	820	300	300	320	320	350	380	380
WEIGHT (KG.) (RF)	10	12	14	17	19	21	29	33	48	75	98	125	171	230	370

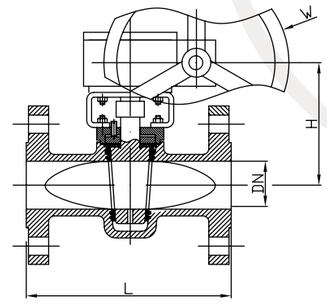
*** Other measures upon request.**

Plug valve API 6D - API 599

COD. AP-3000

NON LUBRICATERD PLUG VALVES CLASS **300** LBS 1/2" TO 14"





DESIGN	ASME B16.34 & API-6D & API-599
FACE TO FACE	ASME B16.10 & API6D
FLANGED ENDS	ASME B16.5
BUTT WELD ENDS	ASME B16.25
BY-PASS & DRAIN	MSS SP-45
TEST	API-598, API 6D & ISO 15848
CONSTRUCTION	• Top entry type • Bolted Bonnet • Soft seated closure • 360 ° Metal edge in the closure protecting the sleeve • Metal edge with auto-cleaning function • Bidirectional • Manual and actuator operated (gearbox, electric, pneumatic, hydraulic,...)
MATERIALS	WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8M, CF3, CF3M, CF8C, Bronze, 4A, 6A, AISI-904L, CK3MCUN, Duplex, Superduplex, exotic materials
PLUG	CA15, CF8, CF8M, CF3M, bronce, monel, 4A, 6A, CK3MCUN, duplex, superdupplex, exotic materials, ...
SLEEVE	PTFE or others.
OTHERS	Jacketed, cryogenic services, H.F. services, All kind of actuators, all type of painting and coating.

*** other requirements upon request.**

CLASS 300 DIMENSIONS IN MILIMETERS

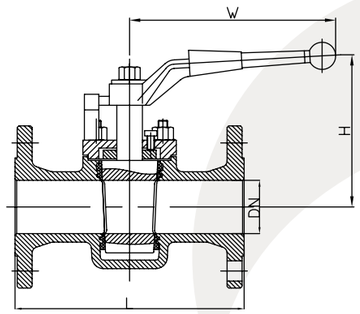
ND.	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"
L (BW)	140	149	172		241	267	305	330	356		457	521	559	635	762
L (RF)	140	152	165	178	191	216	241	283	305	381	403	419	457	502	762
L (RTJ)	151	165	178	191	204	232	257	299	321	397	419	435	473	518	778
DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350
H (OPEN)	180	180	185	200	210	215	250	270	300	340	365	400	450	510	590
W	400	400	500	600	600	820	1000	1000	300	300	320	320	350	380	380
WEIGHT (KG.) (RF)	12	14	16	19	21	24	31	36	61	86	130	190	255	380	560

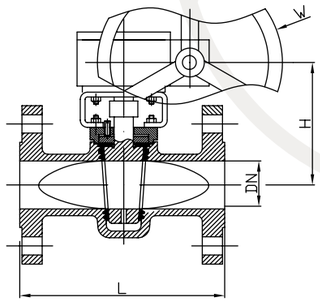
*** Other measures upon request.**

Plug valve API 6D - API 599

COD. AP-6000

NON NLUBRICATED PLUG VALVES CLASS **600** 1/2" TO 14"





DESIGN	ASME B16.34 & API-6D & API-599
FACE TO FACE	ASME B16.10 & API6D
FLANGED ENDS	ASME B16.5
BUTT WELD ENDS	ASME B16.25
BY-PASS & DRAIN	MSS SP-45
TEST	API-598, API 6D & ISO 15848
CONSTRUCTION	• Top entry type • Bolted Bonnet • Soft seated closure • 360 ° Metal edge in the closure protecting the sleeve • Metal edge with auto-cleaning function • Bidirectional • Manual and actuator operated (gearbox, electric, pneumatic, hydraulic,...)
MATERIALS	WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8M, CF3, CF3M, CF8C, Bronze, 4A, 6A, AISI-904L, CK3MCUN, Duplex, Superduplex, exotic materials
PLUG	CA15, CF8, CF8M, CF3M, bronce, monel, 4A, 6A, CK3MCUN, duplex, superdupplex, exotic materials, ...
SLEEVE	PTFE or others.
OTHERS	Jacketed, cryogenic services All kind of actuators, all type of painting and coating.

*** other requirements upon request.**

CLASS 600 DIMENSIONS IN MILIMETERS

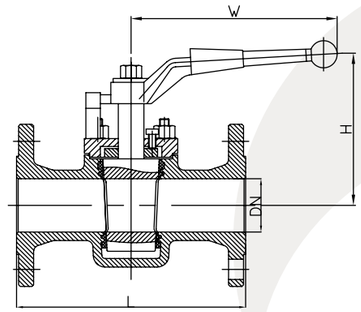
ND.	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"
L (BW)	165	190	216	229	241	292	330	356	432	508	559	660	787	838	889
L (RF)	165	190	216	229	241	292	330	356	432	508	559	660	787	838	889
L (RTJ)	165	190	216	229	241	295	333	359	435	511	562	663	790	841	892
DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350
H (OPEN)	180	180	185	200	210	215	250	270	300	340	365	400	450	510	590
W	400	400	500	600	600	820	1000	1000	300	300	320	320	350	380	380
WEIGHT (KG.) (RF)	14	16	18	20	24	29	35	47	91	129	210	320	660	920	1250

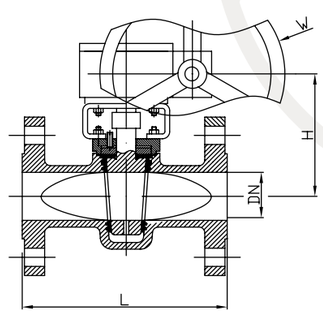
*** Other measures upon request.**

Plug valve API 6D - API 599

COD. AP-9000

NON NLUBRICATED PLUG VALVES CLASS **900** 1/2" TO 14"





DESIGN	ASME B16.34 & API-6D & API-599
FACE TO FACE	ASME B16.10 & API6D
FLANGED ENDS	ASME B16.5
BUTT WELD ENDS	ASME B16.25
BY-PASS & DRAIN	MSS SP-45
TEST	API-598, API 6D & ISO 15848
CONSTRUCTION	• Top entry type • Bolted Bonnet • Soft seated closure • 360 ° Metal edge in the closure protecting the sleeve • Metal edge with auto-cleaning function • Bidirectional • Manual and actuator operated (gearbox, electric, pneumatic, hydraulic,...)
MATERIALS	WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8M, CF3, CF3M, CF8C, Bronze, 4A, 6A, AISI-904L, CK3MCUN, Duplex, Superduplex, exotic materials
PLUG	CA15, CF8, CF8M, CF3M, bronce, monel, 4A, 6A, CK3MCUN, duplex, superdupplex, exotic materials, ...
SLEEVE	PTFE or others.
OTHERS	Jacketed, cryogenic services All kind of actuators, all type of painting and coating.

*** other requirements upon request.**

CLASS 900 DIMENSIONS IN MILIMETERS

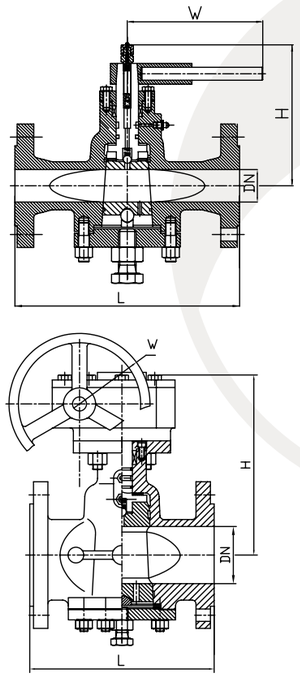
ND.	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"
L (BW)	229	229	254	279	305	368	419	381	457	559	610	737	838	965	1029
L (RF)	229	229	254	279	305	368	419	381	457	559	610	737	838	965	1029
L (RTJ)	229	229	254	279	305	371	422	384	460	562	613	740	841	968	1038
DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350
H (OPEN)	180	180	185	200	210	215	250	270	300	340	365	400	450	510	590
W	400	400	500	600	600	820	1000	1000	300	300	320	320	350	380	380
WEIGHT (KG.) (RF)	17	29	21	24	30	37	44	65	110	160	255	380	810	1050	1460

*** Other measures upon request.**

Plug valve API 6D - API 599

COD. AP 1000

LUBRICATED PLUG CLASS **150** 1/2" TO 14"



DESIGN ASME B16.34 & API-6D & API-599

FACE TO FACE ASME B16.10 & API6D

FLANGED ENDS ASME B16.5

BUTT WELD ENDS ASME B16.25

BY-PASS & DRAIN MSS SP-45

TEST API-598, API 6D & ISO 15848

CONSTRUCTION
- Inverted Top entry Type
- Inverted Bolted Bonnet
- Grease seated closure, balanced pressure
- Grease groove between body and closure to increase sealing capacity
- Bidirectional
- Manual and actuator operated (gearbox, electric, pneumatic, hydraulic,...)

MATERIALS WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8M, CF_3, CF_3M, CF8C, Bronze, 4A, 6A, AISI-904L, CK_3MCUN, Duplex, Superduplex, exotic materials

PLUG CA15, CF8, CF8M, CF_3M, bronce, monel, 4A, 6A, CK_3MCUN, duplex, superdupplex, exotic materials, ...

OTHERS Jacketed, cryogenic services, H.F. services,
All kind of actuators, all type of painting and coating.

*** other requirements upon request.**

CLASS 150 DIMENSIONS IN MILIMETERS

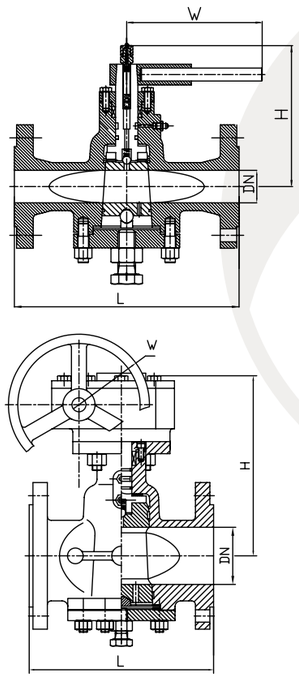
ND.	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"
L (BW)	140	149	172		241	267	305	330	356		457	521	559	635	686
L (RF)	108	117	127	140	165	178	191	203	229	254	267	292	330	356	686
L (RTJ)	108	117	140	153	178	191	204	216	242	267	280	305	343	369	699
DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350
H (OPEN)	110	115	115	135	140	150	165	180	380	460	520	580	620	680	760
W	175	175	175	220	280	305	35	405	300	300	320	320	350	380	450
WEIGHT (KG.) (RF)	8,8	9,5	10,5	12	14	18	22	26	40	60	70	130	219	381	570

*** Other measures upon request.**

Plug valve API 6D - API 599

COD. AP 3000

LUBRICATED PLUG CLASS **300** 1/2" TO 14"



DESIGN ASME B16.34 & API-6D & API-599

FACE TO FACE ASME B16.10 & API6D

FLANGED ENDS ASME B16.5

BUTT WELD ENDS ASME B16.25

BY-PASS & DRAIN MSS SP-45

TEST API-598, API 6D & ISO 15848

CONSTRUCTION
- Inverted Top entry Type
- Inverted Bolted Bonnet
- Grease seated closure, balanced pressure
- Grease groove between body and closure to increase sealing capacity
- Bidirectional
- Manual and actuator operated (gearbox, electric, pneumatic, hydraulic,...)

MATERIALS WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8M, CF_3, CF_3M, CF8C, Bronze, 4A, 6A, AISI-904L, CK_3MCUN, Duplex, Superduplex, exotic materials

PLUG CA15, CF8, CF8M, CF_3M, bronce, monel, 4A, 6A, CK_3MCUN, duplex, superdupplex, exotic materials, ...

OTHERS Jacketed, cryogenic services, H.F. services,
All kind of actuators, all type of painting and coating.

*** other requirements upon request.**

CLASS 300 DIMENSIONS IN MILIMETERS

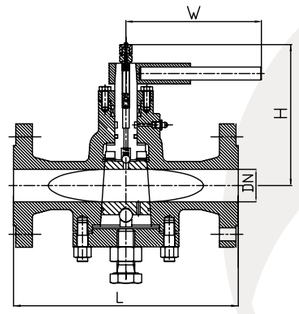
ND.	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"
L (BW)	140	149	172		241	267	305	330	356		457	521	559	635	762
L (RF)	140	152	165	178	191	216	241	283	305	381	403	419	457	502	762
L (RTJ)	151	165	178	191	204	232	257	299	321	397	419	435	473	518	778
DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350
H (OPEN)	110	115	115	135	140	150	165	180	380	460	520	580	620	680	760
W	175	175	175	220	280	305	350	405	300	300	320	320	350	380	450
WEIGHT (KG.) (RF)	9,5	10,5	12	14	16	20	24	29	53	75	85	185	230	390	550

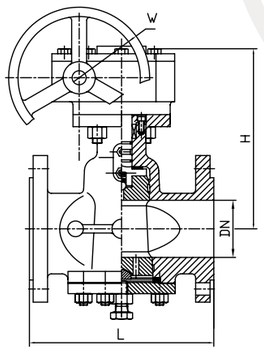
*** Other measures upon request.**

Plug valve API 6D - API 599

COD. AP 6000

LUBRICATED PLUG CLASS **600** 1/2" TO 14"





DESIGN	ASME B16.34 & API-6D & API-599
FACE TO FACE	ASME B16.10 & API6D
FLANGED ENDS	ASME B16.5
BUTT WELD ENDS	ASME B16.25
BY-PASS & DRAIN	MSS SP-45
TEST	API-598, API 6D & ISO 15848
CONSTRUCTION	• Inverted Top entry Type • Inverted Bolted Bonnet • Grease seated closure, balanced pressure • Grease groove between body and closure to increase sealing capacity • Bidirectional • Manual and actuator operated (gearbox, electric, pneumatic, hydraulic,...)
MATERIALS	WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8M, CF3, CF3M, CF8C, Bronze, 4A, 6A, AISI-904L, CK3MCUN, Duplex, Superduplex, exotic materials
PLUG	CA15, CF8, CF8M, CF3M, bronce, monel, 4A, 6A, CK3MCUN, duplex, superdupplex, exotic materials, ...
OTHERS	Jacketed, cryogenic services All kind of actuators, all type of painting and coating.

*** other requirements upon request.**

CLASS 600 DIMENSIONS IN MILIMETERS

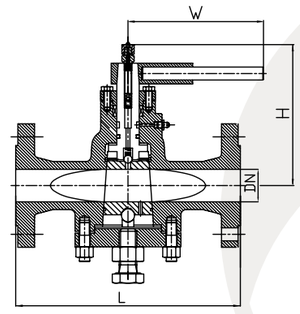
ND.	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"
L (BW)	165	190	216	229	241	292	330	356	432	508	559	660	787	838	889
L (RF)	165	190	216	229	241	292	330	356	432	508	559	660	787	838	889
L (RTJ)	165	190	216	229	241	295	333	359	435	511	562	663	790	841	892
DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350
H (OPEN)	110	115	115	135	140	150	165	180	380	460	520	580	620	680	760
W	175	175	175	220	280	305	350	405	300	300	320	320	350	380	450
WEIGHT (KG.) (RF)	11	13	17	20	23	27	31	36	72	98	141	245	330	515	710

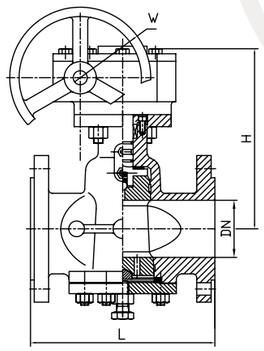
*** Other measures upon request.**

Plug valve API 6D - API 599

COD. AP 9000

LUBRICATED PLUG CLASS **900** 1/2" TO 14"





DESIGN	ASME B16.34 & API-6D & API-599
FACE TO FACE	ASME B16.10 & API6D
FLANGED ENDS	ASME B16.5
BUTT WELD ENDS	ASME B16.25
BY-PASS & DRAIN	MSS SP-45
TEST	API-598, API 6D & ISO 15848
CONSTRUCTION	• Inverted Top entry Type • Inverted Bolted Bonnet • Grease seated closure, balanced pressure • Grease groove between body and closure to increase sealing capacity • Bidirectional • Manual and actuator operated (gearbox, electric, pneumatic, hydraulic,...)
MATERIALS	WCB, WCC, WC1, WC6, WC9, C5, C12, LCB, LCC, CF8, CF8M, CF3, CF3M, CF8C, Bronze, 4A, 6A, AISI-904L, CK3MCUN, Duplex, Superduplex, exotic materials
PLUG	CA15, CF8, CF8M, CF3M, bronce, monel, 4A, 6A, CK3MCUN, duplex, superdupplex, exotic materials, ...
OTHERS	Jacketed, cryogenic services All kind of actuators, all type of painting and coating.

*** other requirements upon request.**

CLASS 900 DIMENSIONS IN MILIMETERS

ND.	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"
L (BW)	229	229	254	279	305	368	419	381	457	559	610	737	838	965	1029
L (RF)	229	229	254	279	305	368	419	381	457	559	610	737	838	965	1029
L (RTJ)	229	229	254	279	305	371	422	384	460	562	613	740	841	968	1038
DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350
H (OPEN)	110	115	115	135	140	150	165	180	380	460	520	580	620	680	760
W	175	175	175	220	280	305	350	405	300	300	320	320	350	380	450
WEIGHT (KG.) (RF)	13	16	21	24	28	32	40	47	91	117	165	285	420	610	860

*** Other measures upon request.**

Technical datas

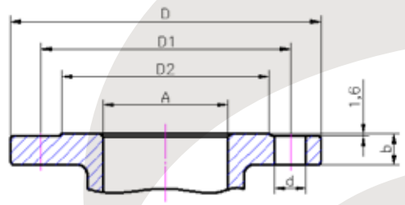
dimensions
- FLANGES
- BUTT WELDING

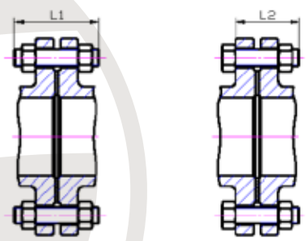
Technical help
materials
- FORGED STEEL STANDARDS COMPARISON
- CAST IRON
- FERRITIC STEELS
- COPPER ALLOYS
- NICKEL ALLOYS
- AUSTENITIC STEELS
- NICKEL-COPPER ALLOYS
- PRESSURE - TEMPERATURE RATINGS

DIMENSIONS

Flanges ASME B 16.5 RF

Class 150 lbs | Class 300 lbs





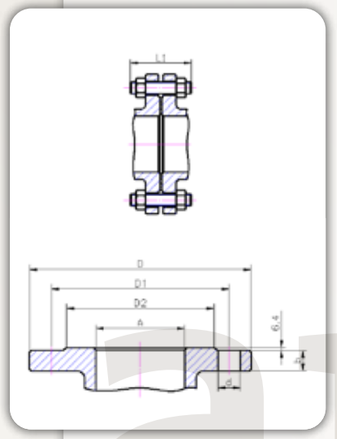
Class 300 lbs

Nominal size			A	D	D1	D2	b	d	Bolt		L1	L2
			Size of port valve	Flanges diameter	Holes circle diameter	Raised diameter	Flange thickness	Diameter of holes	Number of holes	Diameter of bolts	Length stud bolts	Length machine bolts
NPS	DN											
1/2"	15	inch.	1/2	3,75	2,62	1,38	0,56	0,62	4	1/2"	2,75	2,25
		mm.	13	95,25	66,55	35,05	14,22	15,75			69,85	57,15
3/4"	20	inch.	3/4	4,62	3,25	1,69	0,62	0,75	4	5/8"	3,00	2,50
		mm.	20	117,35	82,55	42,93	15,75	19,05			76,20	63,50
1"	25	inch.	1	4,88	3,50	2,00	0,69	0,75	4	5/8"	3,25	2,50
		mm.	25	123,95	88,90	50,80	17,53	19,05			82,55	63,50
1 1/4"	32	inch.	1 1/4	5,25	3,88	2,50	0,75	0,75	4	5/8"	3,25	2,75
		mm.	32	133,35	98,55	63,50	19,05	19,05			82,55	69,85
1 1/2"	40	inch.	1 1/2	6,12	4,50	2,88	0,81	0,88	4	3/4"	3,75	3,00
		mm.	38	155,45	114,30	73,15	20,57	22,35			95,25	76,20
2"	50	inch.	2	6,50	5,00	3,62	0,88	0,75	8	5/8"	3,50	3,00
		mm.	50	165,10	127,00	91,95	22,35	19,05			88,90	76,20
2 1/2"	65	inch.	2 1/2	7,50	5,88	4,12	1,00	0,88	8	3/4"	4,00	3,50
		mm.	65	190,50	149,35	104,65	25,40	22,35			101,60	88,90
3"	80	inch.	3	8,25	6,62	5,00	1,12	0,88	8	3/4"	4,25	3,75
		mm.	77	209,55	168,15	127,00	28,45	22,35			107,95	95,25
3 1/2"	90	inch.	3 1/2	9,00	7,25	5,50	1,19	0,88	8	3/4"	4,50	3,75
		mm.	90	228,60	184,15	139,70	30,23	22,35			114,30	95,25
4"	100	inch.	4	10,00	7,88	6,19	1,25	0,88	8	3/4"	4,50	4,00
		mm.	102	254,00	200,15	157,23	31,75	22,35			114,30	101,60
5"	125	inch.	5	11,00	9,25	7,31	1,38	0,88	8	3/4"	4,75	4,25
		mm.	127	279,40	234,95	185,67	35,05	22,35			120,65	107,95
6"	150	inch.	6	12,50	10,62	8,50	1,44	0,88	12	3/4"	5,00	4,25
		mm.	152	317,50	269,75	215,90	36,58	22,35			127,00	107,95
8"	200	inch.	8	15,00	13,00	10,62	1,62	1,00	12	7/8"	5,50	4,75
		mm.	203	381,00	330,20	269,75	41,15	25,40			139,70	120,65
10"	250	inch.	10	17,50	15,25	12,75	1,88	1,12	16	1"	6,25	5,50
		mm.	254	444,50	387,35	323,85	47,75	28,45			158,75	139,70
12"	300	inch.	12	20,50	17,75	15,00	2,00	1,25	16	1 1/8"	6,75	6,00
		mm.	305	520,70	450,85	381,00	50,80	31,75			171,45	152,40
14"	350	inch.	13 1/4	23,00	20,25	16,25	2,12	1,25	20	1 1/8"	7,00	6,25
		mm.	337	584,20	514,35	412,75	53,85	31,75			177,80	158,75
16"	400	inch.	15 1/4	25,50	22,50	18,50	2,25	1,38	20	1 1/4"	7,50	6,50
		mm.	387	647,70	571,50	469,90	57,15	35,05			190,50	165,10
18"	450	inch.	17	28,00	24,75	21,00	2,38	1,38	24	1 1/4"	7,75	6,75
		mm.	432	711,20	628,65	533,40	60,45	35,05			196,85	171,45
20"	500	inch.	19	30,50	27,00	23,00	2,50	1,38	24	1 1/4"	8,25	7,25
		mm.	483	774,70	685,80	584,20	63,50	35,05			209,55	184,15
24"	600	inch.	23	36,00	32,00	27,25	2,75	1,62	24	1 1/2"	9,25	8,00
		mm.	584	914,40	812,80	692,15	69,85	41,15			234,95	203,20

Class 150 lbs

Nominal size			A	D	D1	D2	b	d	Bolt		L1
			Size of port valve	Flanges diameter	Holes circle diameter	Raised diameter	Flange thickness	Diameter of holes	Number of holes	Diameter of bolts	Length stud bolts
NPS	DN										
1/2"	15	inch.	1/2	3,50	2,38	1,38	0,38	0,62	4	1/2"	2,50
		mm.	13	88,90	60,45	35,05	9,65	15,75			63,50
3/4"	20	inch.	3/4	3,88	2,75	1,69	0,41	0,62	4	1/2"	2,50
		mm.	20	98,55	69,85	42,93	10,41	15,75			63,50
1"	25	inch.	1	4,25	3,12	2,00	0,44	0,62	4	1/2"	2,75
		mm.	25	107,95	79,25	50,80	11,18	15,75			69,85
1 1/4"	32	inch.	1 1/4	4,62	3,50	2,50	0,50	0,62	4	1/2"	2,75
		mm.	32	117,35	88,90	63,50	12,70	15,75			69,85
1 1/2"	40	inch.	1 1/2	5,00	3,88	2,88	0,56	0,62	4	1/2"	3,00
		mm.	38	127,00	98,55	73,15	14,22	15,75			76,20
2"	50	inch.	2	6,00	4,75	3,62	0,62	0,75	4	5/8"	3,25
		mm.	50	152,40	120,65	91,95	15,75	19,05			82,55
2 1/2"	65	inch.	2 1/2	7,00	5,50	4,12	0,69	0,75	4	5/8"	3,50
		mm.	65	177,80	139,70	104,65	17,53	19,05			88,90
3"	80	inch.	3	7,50	6,00	5,00	0,75	0,75	4	5/8"	3,50
		mm.	77	190,50	152,40	127,00	19,05	19,05			88,90
3 1/2"	90	inch.	3 1/2	8,50	7,00	5,50	0,81	0,75	8	5/8"	3,50
		mm.	90	215,90	177,80	139,70	20,57	19,05			88,90
4"	100	inch.	4	9,00	7,50	6,19	0,94	0,75	8	5/8"	3,50
		mm.	102	228,60	190,50	157,23	23,88	19,05			88,90
5"	125	inch.	5	10,00	8,50	7,31	0,94	0,88	8	3/4"	3,75
		mm.	127	254,00	215,90	185,67	23,88	22,35			95,25
6"	150	inch.	6	11,00	9,50	8,50	1,00	0,88	8	3/4"	4,00
		mm.	152	279,40	241,30	215,90	25,40	22,35			101,60
8"	200	inch.	8	13,50	11,75	10,62	1,12	0,88	8	3/4"	4,25
		mm.	203	342,90	298,45	269,75	28,45	22,35			107,95
10"	250	inch.	10	16,00	14,25	12,75	1,19	1,00	12	7/8"	4,50
		mm.	254	406,40	361,95	323,85	30,23	25,40			114,30
12"	300	inch.	12	19,00	17,00	15,00	1,25	1,00	12	7/8"	4,75
		mm.	305	482,60	431,80	381,00	31,75	25,40			120,65
14"	350	inch.	13 1/4	21,00	18,75	16,25	1,38	1,12	12	1"	5,25
		mm.	337	533,40	476,25	412,75	35,05	28,45			133,35
16"	400	inch.	15 1/4	23,50	21,25	18,50	1,44	1,12	16	1"	5,25
		mm.	387	596,90	539,75	469,90	36,58	28,45			133,35
18"	450	inch.	17 1/4	25,00	22,75	21,00	1,56	1,25	16	1 1/8"	5,75
		mm.	438	635,00	577,85	533,40	39,62	31,75			146,05
20"	500	inch.	19 1/4	27,50	25,00	23,00	1,69	1,25	20	1 1/8"	6,25
		mm.	489	698,50	635,00	584,20	42,93	31,75			158,75
24"	600	inch.	23 1/4	32,00	29,50	27,25	1,88	1,38	20	1 1/4"	6,75
		mm.	591	812,80	749,30	692,15	47,75	35,05			171,45

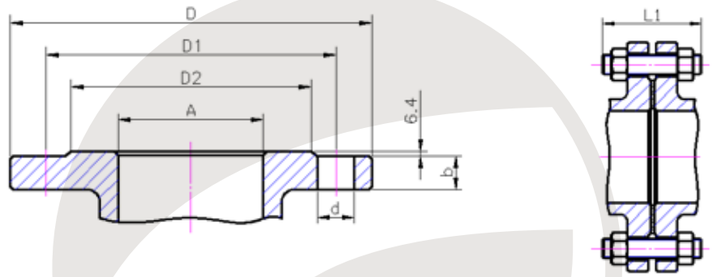
Class 600 lbs



Nominal size			A	D	D1	D2	b	d	Bolt		L1
			Size of port valve	Flanges diameter	Holes circle diameter	Raised diameter	Flange thickness	Diameter of holes	Number of holes	Diameter of bolts	Length stud bolts
NPS	DN										
1/2"	15	inch.	1/2	3,75	2,62	1,38	0,56	0,62	4	1/2"	3,25
		mm.	13	95,25	66,55	35,05	14,22	15,75			82,55
3/4"	20	inch.	3/4	4,62	3,25	1,69	0,62	0,75	4	5/8"	3,50
		mm.	20	117,35	82,55	42,93	15,75	19,05			88,90
1"	25	inch.	1	4,88	3,50	2,00	0,69	0,75	4	5/8"	3,75
		mm.	25	123,95	88,90	50,80	17,53	19,05			95,25
1 1/4"	32	inch.	1 1/4	5,25	3,88	2,50	0,81	0,75	4	5/8"	4,00
		mm.	32	133,35	98,55	63,50	20,57	19,05			101,60
1 1/2"	40	inch.	1 1/2	6,12	4,50	2,88	0,88	0,88	4	3/4"	4,25
		mm.	38	155,45	114,30	73,15	22,35	22,35			107,95
2"	50	inch.	2	6,50	5,00	3,62	1,00	0,75	8	5/8"	4,25
		mm.	50	165,10	127,00	91,95	25,40	19,05			107,95
2 1/2"	65	inch.	2 1/2	7,50	5,88	4,12	1,12	0,88	8	3/4"	4,75
		mm.	65	190,50	149,35	104,65	28,45	22,35			120,65
3"	80	inch.	3	8,25	6,62	5,00	1,25	0,88	8	3/4"	5,00
		mm.	77	209,55	168,15	127,00	31,75	22,35			127,00
3 1/2"	90	inch.	3 1/2	9,00	7,25	5,50	1,38	1,00	8	7/8"	5,50
		mm.	90	228,60	184,15	139,70	35,05	25,40			139,70
4"	100	inch.	4	10,75	8,50	6,19	1,50	1,00	8	7/8"	5,75
		mm.	102	273,05	215,90	157,23	38,10	25,40			146,05
5"	125	inch.	5	13,00	10,50	7,31	1,75	1,12	8	1"	6,50
		mm.	127	330,20	266,70	185,67	44,45	28,45			165,10
6"	150	inch.	6	14,00	11,50	8,50	1,88	1,12	12	1"	6,75
		mm.	152	355,60	292,10	215,90	47,75	28,45			171,45
8"	200	inch.	7 7/8	16,50	13,75	10,62	2,19	1,25	12	1 1/8"	7,75
		mm.	200	419,10	349,25	269,75	55,63	31,75			196,85
10"	250	inch.	9 3/4	20,00	17,00	12,75	2,50	1,38	16	1 1/4"	8,50
		mm.	248	508,00	431,80	323,85	63,50	35,05			215,90
12"	300	inch.	11 3/4	22,00	19,25	15,00	2,62	1,38	20	1 1/4"	8,75
		mm.	299	558,80	488,95	381,00	66,55	35,05			222,25
14"	350	inch.	12 7/8	23,75	20,75	16,25	2,75	1,50	20	1 3/8"	9,25
		mm.	327	603,25	527,05	412,75	69,85	38,10			234,95
16"	400	inch.	14 3/4	27,00	23,75	18,50	3,00	1,62	20	1 1/2"	10,00
		mm.	375	685,80	603,25	469,90	76,20	41,15			254,00
18"	450	inch.	16 1/2	29,25	25,75	21,00	3,25	1,75	20	1 5/8"	10,75
		mm.	419	742,95	654,05	533,40	82,55	44,45			273,05
20"	500	inch.	18 1/4	32,00	28,50	23,00	3,50	1,75	24	1 5/8"	11,50
		mm.	464	812,80	723,90	584,20	88,90	44,45			292,10
24"	600	inch.	22	37,00	33,00	27,25	4,00	2,00	24	1 7/8"	13,00
		mm.	559	939,80	838,20	692,15	101,60	50,80			330,20

Flanges ASME B 16.5 RF

Class 600 lbs | Class 900 lbs | Class 1500 lbs | Class 2500 lbs



Class 900 lbs

Nominal size			A	D	D1	D2	b	d	Bolt		L1
			Size of port valve	Flanges diameter	Holes circle diameter	Raised diameter	Flange thickness	Diameter of holes	Number of holes	Diameter of bolts	Length stud bolts
NPS	DN										
1/2"	15	inch.	1/2	4,75	3,25	1,38	0,88	0,88	4	3/4"	4,25
		mm.	13	120,65	82,55	35,05	22,35	22,35			107,95
3/4"	20	inch.	11/16	5,12	3,50	1,69	1,00	0,88	4	3/4"	4,50
		mm.	17,5	130,05	88,90	42,93	25,40	22,35			114,30
1"	25	inch.	7/8	5,88	4,00	2,00	1,12	1,00	4	7/8"	5,00
		mm.	22	149,35	101,60	50,80	28,45	25,40			127,00
1 1/4"	32	inch.	1 1/8	6,25	4,38	2,50	1,12	1,00	4	7/8"	5,00
		mm.	28,5	158,75	111,25	63,50	28,45	25,40			127,00
1 1/2"	40	inch.	1 3/8	7,00	4,88	2,88	1,25	1,12	4	1"	5,50
		mm.	35	177,80	123,95	73,15	31,75	28,45			139,70
2"	50	inch.	1 7/8	8,50	6,50	3,62	1,50	1,00	8	7/8"	5,75
		mm.	47,5	215,90	165,10	91,95	38,10	25,40			146,05
2 1/2"	65	inch.	2 1/4	9,62	7,50	4,12	1,62	1,12	8	1"	6,25
		mm.	57	244,35	190,50	104,65	41,15	28,45			158,75
3"	80	inch.	2 7/8	9,50	7,50	5,00	1,50	1,00	8	7/8"	5,75
		mm.	73	241,30	190,50	127,00	38,10	25,40			146,13
4"	100	inch.	3 7/8	11,50	9,25	6,19	1,75	1,25	8	1 1/8"	6,75
		mm.	99	292,10	234,95	157,23	44,45	31,75			171,45
5"	125	inch.	4 3/4	13,75	11,00	7,31	2,00	1,38	8	1 1/4"	7,50
		mm.	121	349,25	279,40	185,67	50,80	35,05			190,50
6"	150	inch.	5 3/4	15,00	12,50	8,50	2,19	1,25	12	1 1/8"	7,50
		mm.	146	381,00	317,50	215,90	55,63	31,75			190,50
8"	200	inch.	7 1/2	18,50	15,50	10,62	2,50	1,50	12	1 3/8"	8,75
		mm.	191	469,90	393,70	269,75	63,50	38,10			222,25
10"	250	inch.	9 3/8	21,50	18,50	12,75	2,75	1,50	16	1 3/8"	9,25
		mm.	238	546,10	469,90	323,85	69,85	38,10			234,95
12"	300	inch.	11 1/8	24,00	21,00	15,00	3,12	1,50	20	1 3/8"	10,00
		mm.	283	609,60	533,40	381,00	79,25	38,10			254,00
14"	350	inch.	12 1/4	25,25	22,00	16,25	3,38	1,62	20	1 1/2"	10,75
		mm.	311	641,35	558,80	412,75	85,85	41,15			273,05
16"	400	inch.	14	27,75	24,25	18,50	3,50	1,75	20	1 5/8"	11,25
		mm.	356	704,85	615,95	469,90	88,90	44,45			285,75
18"	450	inch.	15 3/4	31,00	27,00	21,00	4,00	2,00	20	1 7/8"	12,75
		mm.	400	787,40	685,80	533,40	101,60	50,80			323,85
20"	500	inch.	17 1/2	33,75	29,50	23,00	4,25	2,12	20	2"	13,75
		mm.	445	857,25	749,30	584,20	107,95	53,85			349,25
24"	600	inch.	21	41,00	35,50	27,25	5,50	2,62	20	2 1/2"	17,25
		mm.	534	1.041,40	901,70	692,15	139,70	66,55			438,15

Class 1500 lbs

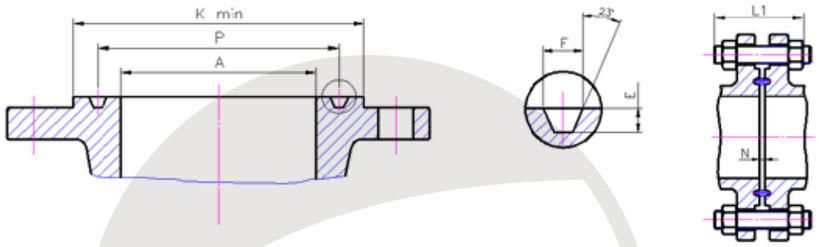
Nominal size			A	D	D1	D2	b	d	Bolt		L1
			Size of port valve	Flanges diameter	Holes circle diameter	Raised diameter	Flange thickness	Diameter of holes	Number of holes	Diameter of bolts	Length stud bolts
NPS	DN										
1/2"	15	inch.	1/2	4,75	3,25	1,38	0,88	0,88	4	3/4"	4,25
		mm.	13	120,65	82,55	35,05	22,35	22,35			107,95
3/4"	20	inch.	11/16	5,12	3,50	1,69	1,00	0,88	4	3/4"	4,50
		mm.	17,5	130,05	88,90	42,93	25,40	22,35			114,30
1"	25	inch.	7/8	5,88	4,00	2,00	1,12	1,00	4	7/8"	5,00
		mm.	22	149,35	101,60	50,80	28,45	25,40			127,00
1 1/4"	32	inch.	1 1/8	6,25	4,38	2,50	1,12	1,00	4	7/8"	5,00
		mm.	28,5	158,75	111,25	63,50	28,45	25,40			127,00
1 1/2"	40	inch.	1 3/8	7,00	4,88	2,88	1,25	1,12	4	1"	5,50
		mm.	35	177,80	123,95	73,15	31,75	28,45			139,70
2"	50	inch.	1 7/8	8,50	6,50	3,62	1,50	1,00	8	7/8"	5,75
		mm.	47,5	215,90	165,10	91,95	38,10	25,40			146,05
2 1/2"	65	inch.	2 1/4	9,62	7,50	4,12	1,62	1,12	8	1"	6,25
		mm.	57	244,35	190,50	104,65	41,15	28,45			158,75
3"	80	inch.	2 3/4	10,50	8,00	5,00	1,88	1,25	8	1 1/8"	7,00
		mm.	70	266,70	203,20	127,00	47,75	31,75			177,80
4"	100	inch.	3 5/8	12,25	9,50	6,19	2,12	1,38	8	1 1/4"	7,75
		mm.	92	311,15	241,30	157,23	53,85	35,05			196,85
5"	125	inch.	4 3/8	14,75	11,50	7,31	2,88	1,62	8	1 1/2"	9,75
		mm.	111	374,65	292,10	185,67	73,15	41,15			247,65
6"	150	inch.	5 3/8	15,50	12,50	8,50	3,25	1,50	12	1 3/8"	10,25
		mm.	137	397,70	317,50	215,90	82,55	38,10			260,35
8"	200	inch.	7	19,00	15,50	10,62	3,62	1,75	12	1 5/8"	11,50
		mm.	178	482,60	393,70	269,75	91,95	44,45			292,10
10"	250	inch.	8 3/4	23,00	19,00	12,75	4,25	2,00	12	1 7/8"	13,25
		mm.	222	584,20	482,60	323,85	107,95	50,80			336,55
12"	300	inch.	10 3/8	26,50	22,50	15,00	4,88	2,12	16	2"	14,75
		mm.	263	673,10	571,50	381,00	123,95	53,85			374,65
14"	350	inch.	11 3/8	29,50	25,00	16,25	5,25	2,38	16	2 1/4"	16,00
		mm.	289	749,30	635,00	412,75	133,35	60,45			406,40
16"	400	inch.	13	32,50	27,75	18,50	5,75	2,62	16	2 1/2"	17,50
		mm.	330	825,50	704,85	469,90	146,05	66,55			444,50
18"	450	inch.	14 5/8	36,00	30,50	21,00	6,38	2,88	16	2 3/4"	19,50
		mm.	371	914,40	774,70	533,40	162,05	73,15			495,30
20"	500	inch.	16 3/8	38,75	32,75	23,00	7,00	3,12	16	3"	21,50
		mm.	416	984,25	831,85	584,20	177,80	79,25			546,10
24"	600	inch.	19 5/8	46,00	39,00	27,25	8,00	3,62	16	3 1/2"	24,50
		mm.	499	1.168,40	990,60	692,15	203,20	91,95			622,30

Class 2500 lbs

Nominal size			A	D	D1	D2	b	d	Bolt		L1
			Size of port valve	Flanges diameter	Holes circle diameter	Raised diameter	Flange thickness	Diameter of holes	Number of holes	Diameter of bolts	Length stud bolts
NPS	DN										
1/2"	15	inch.	7/16	5,25	3,50	1,38	1,19	0,88	4	3/4"	5,25
		mm.	11	133,35	88,90	35,05	30,23	22,35			133,35
3/4"	20	inch.	9/16	5,50	3,75	1,69	1,25	0,88	4	3/4"	5,25
		mm.	14,5	139,70	95,25	42,93	31,75	22,35			133,35
1"	25	inch.	3/4	6,25	4,25	2,00	1,38	1,00	4	7/8"	5,75
		mm.	20	158,75	107,95	50,80	35,05	25,40			146,05
1 1/4"	32	inch.	1	7,25	5,12	2,50	1,50	1,12	4	1"	6,25
		mm.	25,5	184,15	130,05	63,50	38,10	28,45			158,75
1 1/2"	40	inch.	1 1/8	8,00	5,75	2,88	1,75	1,25	4	1 1/8"	7,00
		mm.	28,5	203,20	146,05	73,15	44,45	31,75			177,80
2"	50	inch.	1 1/2	9,25	6,75	3,62	2,00	1,12	8	1"	7,25
		mm.	38	234,95	171,45	91,95	50,80	28,45			184,15
2 1/2"	65	inch.	1 7/8	10,50	7,75	4,12	2,25	1,25	8	1 1/8"	8,00
		mm.	47,5	266,70	196,85	104,65	57,15	31,75			203,20
3"	80	inch.	2 1/4	12,00	9,00	5,00	2,62	1,38	8	1 1/4"	9,00
		mm.	57	304,80	228,60	127,00	66,55	35,05			228,60
4"	100	inch.	2 7/8	14,00	10,75	6,19	3,00	1,62	8	1 1/2"	10,25
		mm.	73	355,60	273,05	157,23	76,20	41,15			260,35
5"	125	inch.	3 5/8	16,50	12,75	7,31	3,62	1,88	8	1 3/4"	12,00
		mm.	92	419,10	323,85	185,67	91,95	47,75			304,80
6"	150	inch.	4 3/8	19,00	14,50	8,50	4,25	2,12	8	2"	13,75
		mm.	111	15,00	368,30	215,90	107,95	53,85			349,25
8"	200	inch.	5 3/4	21,75	17,25	10,62	5,00	2,12	12	2"	15,25
		mm.	146	552,45	438,15	269,75	127,00	53,85			387,35
10"	250	inch.	7 1/4	26,50	21,25	12,75	6,50	2,62	12	2 1/2"	19,50
		mm.	184	673,10	539,75	323,85	165,10	66,55			495,30
12"	300	inch.	8 5/8	30,00	24,38	15,00	7,25	2,88	12	2 3/4"	21,50
		mm.	219	762,00	619,25	381,00	184,15	73,15			546,10

Flanges ASME B 16.5 RTJ

Class 150 lbs | Class 300 lbs | Class 600 lbs
Class 900 lbs | Class 1500 lbs | Class 2500 lbs



Class 150 lbs

Nominal size			Ring number	A Size of port valve	K Raised diameter	P Pitch diameter	E Depth	F Width	R Radius at bottom	N Distance between flanges	L1 Length stud bolts
NPS	DN										
1"	25	inch.	R-15	1	2,50	1,88	0,25	0,34	0,03	0,16	3,00
		mm.		25	63,50	47,63	6,35	8,74	0,76	4,06	76,20
1 1/4"	32	inch.	R-17	1 1/4	2,88	2,25	0,25	0,34	0,03	0,16	3,25
		mm.		32	73,15	57,15	6,35	8,64	0,76	4,06	82,55
1 1/2"	40	inch.	R-19	1 1/2	3,25	2,56	0,25	0,34	0,03	0,16	3,25
		mm.		38	82,55	65,07	6,35	8,64	0,76	4,06	82,55
2"	50	inch.	R-22	2	4,00	3,25	0,25	0,34	0,03	0,16	3,75
		mm.		50	101,60	82,55	6,35	8,64	0,76	4,06	95,25
2 1/2"	65	inch.	R-25	2 1/2	4,75	4,00	0,25	0,34	0,03	0,16	4,00
		mm.		65	120,65	101,60	6,35	8,64	0,76	4,06	101,60
3"	80	inch.	R-29	3	5,25	4,50	0,25	0,34	0,03	0,16	4,00
		mm.		77	133,35	114,30	6,35	8,64	0,76	4,06	101,60
3 1/2"	90	inch.	R-33	3 1/2	6,06	5,19	0,25	0,34	0,03	0,16	4,00
		mm.		90	153,92	131,78	6,35	8,64	0,76	4,06	101,60
4"	100	inch.	R-36	4	6,75	5,88	0,25	0,34	0,03	0,16	4,00
		mm.		102	171,45	149,23	6,35	8,64	0,76	4,06	101,60
5"	125	inch.	R-40	5	7,62	6,75	0,25	0,34	0,03	0,16	4,25
		mm.		127	193,55	171,45	6,35	8,64	0,76	4,06	107,95
6"	150	inch.	R-43	6	8,62	7,63	0,25	0,34	0,03	0,16	4,50
		mm.		152	218,95	193,68	6,35	8,64	0,76	4,06	114,30
8"	200	inch.	R-48	8	10,75	9,75	0,25	0,34	0,03	0,16	4,75
		mm.		203	273,05	247,65	6,35	8,64	0,76	4,06	120,65
10"	250	inch.	R-52	10	13,00	12,00	0,25	0,34	0,03	0,16	5,00
		mm.		254	330,20	304,80	6,35	8,64	0,76	4,06	127,00
12"	300	inch.	R-56	12	16,00	15,00	0,25	0,34	0,03	0,16	5,25
		mm.		305	406,40	381,00	6,35	8,64	0,76	4,06	133,35
14"	350	inch.	R-59	13 1/4	16,75	15,63	0,25	0,34	0,03	0,12	5,75
		mm.		337	425,45	396,88	6,35	8,64	0,76	3,05	146,05
16"	400	inch.	R-64	15 1/4	19,00	17,88	0,25	0,34	0,03	0,12	5,75
		mm.		387	482,60	454,03	6,35	8,64	0,76	3,05	146,05
18"	450	inch.	R-68	17 1/4	21,50	20,38	0,25	0,34	0,03	0,12	6,25
		mm.		438	546,10	517,53	6,35	8,64	0,76	3,05	158,75
20"	500	inch.	R-72	19 1/4	23,50	22,00	0,25	0,34	0,03	0,12	6,75
		mm.		489	596,90	558,80	6,35	8,64	0,76	3,05	171,45
24"	600	inch.	R-76	23 1/4	28,00	26,50	0,25	0,34	0,03	0,12	7,25
		mm.		591	711,20	673,10	6,35	8,64	0,76	3,05	184,15

Class 300 lbs

Nominal size			Ring number	A Size of port valve	K Raised diameter	P Pitch diameter	E Depth	F Width	R Radius at bottom	N Distance between flanges	L1 Length stud bolts
NPS	DN										
1/2"	15	inch.	R-11	1/2	2,00	1,34	0,22	0,28	0,03	0,12	3,00
		mm.		13	50,80	34,14	5,56	7,14	0,76	3,05	76,20
3/4"	20	inch.	R-13	3/4	2,50	1,69	0,25	0,34	0,03	0,16	3,50
		mm.		20	63,50	42,88	6,35	8,74	0,76	4,06	88,90
1"	25	inch.	R-16	1	2,75	2,00	0,25	0,34	0,03	0,16	3,50
		mm.		25	69,85	50,80	6,35	8,74	0,76	4,06	88,90
1 1/4"	32	inch.	R-18	1 1/4	3,12	2,38	0,25	0,34	0,03	0,16	3,75
		mm.		32	79,25	60,33	6,35	8,64	0,76	4,06	95,25
1 1/2"	40	inch.	R-20	1 1/2	3,56	2,69	0,25	0,34	0,03	0,16	4,00
		mm.		38	90,42	68,28	6,35	8,64	0,76	4,06	101,60
2"	50	inch.	R-23	2	4,25	3,25	0,31	0,47	0,03	0,22	4,00
		mm.		50	107,95	82,55	7,92	11,91	0,76	5,59	101,60
2 1/2"	65	inch.	R-26	2 1/2	5,00	4,00	0,31	0,47	0,03	0,22	4,50
		mm.		65	127,00	101,60	7,92	11,94	0,76	5,59	114,30
3"	80	inch.	R-31	3	5,75	4,88	0,31	0,47	0,03	0,22	4,75
		mm.		77	146,05	123,83	7,87	11,94	0,76	5,59	120,65
3 1/2"	90	inch.	R-34	3 1/2	6,25	5,19	0,31	0,47	0,03	0,22	5,00
		mm.		90	158,75	131,78	7,87	11,94	0,76	5,59	127,00
4"	100	inch.	R-37	4	6,88	5,88	0,31	0,47	0,03	0,22	5,00
		mm.		102	174,75	149,23	7,87	11,94	0,76	5,59	127,00
5"	125	inch.	R-41	5	8,25	7,13	0,31	0,47	0,03	0,22	5,25
		mm.		127	209,55	180,98	7,87	11,94	0,76	5,59	133,35
6"	150	inch.	R-45	6	9,50	8,31	0,31	0,47	0,03	0,22	5,50
		mm.		152	241,30	211,12	7,87	11,94	0,76	5,59	139,70
8"	200	inch.	R-49	8	11,88	10,63	0,31	0,47	0,03	0,22	6,00
		mm.		203	301,75	269,88	7,87	11,94	0,76	5,59	152,40
10"	250	inch.	R-53	10	14,00	12,75	0,31	0,47	0,03	0,22	6,75
		mm.		254	355,60	323,85	7,87	11,94	0,76	5,59	171,45
12"	300	inch.	R-57	12	16,25	15,00	0,31	0,47	0,03	0,22	7,25
		mm.		305	412,75	381,00	7,87	11,94	0,76	5,59	184,15
14"	350	inch.	R-61	13 1/4	18,00	16,50	0,31	0,47	0,03	0,22	7,50
		mm.		387	457,20	419,10	7,87	11,94	0,76	5,59	190,50
16"	400	inch.	R-65	15 1/4	20,00	18,50	0,31	0,47	0,03	0,22	8,00
		mm.		432	508,00	469,90	7,87	11,94	0,76	5,59	203,20
18"	450	inch.	R-69	17	22,62	21,00	0,31	0,47	0,03	0,22	8,25
		mm.		432	574,55	533,40	7,87	11,94	0,76	5,59	209,55
20"	500	inch.	R-73	19	25,00	23,00	0,38	0,53	0,06	0,22	8,75
		mm.		483	635,00	584,20	9,53	13,49	1,52	5,59	222,25
24"	600	inch.	R-77	23	29,50	27,75	0,44	0,66	0,06	0,25	10,00
		mm.		584	749,30	704,85	11,13	16,66	1,52	6,35	254,00

Class 600 lbs

Nominal size			Ring number	A Size of port valve	K Raised diameter	P Pitch diameter	E Depth	F Width	R Radius at bottom	N Distance between flanges	L1 Length stud bolts
NPS	DN										
1/2"	15	inch.	R-11	1/2	2,00	1,34	0,22	0,28	0,03	0,12	3,00
		mm.		13	50,80	34,14	5,56	7,14	0,76	3,05	76,20
3/4"	20	inch.	R-13	3/4	2,50	1,69	0,25	0,34	0,03	0,16	3,50
		mm.		20	63,50	42,88	6,35	8,74	0,76	4,06	88,90
1"	25	inch.	R-16	1	2,75	2,00	0,25	0,34	0,03	0,16	3,50
		mm.		25	69,85	50,80	6,35	8,74	0,76	4,06	88,90
1 1/4"	32	inch.	R-18	1 1/4	3,12	2,38	0,25	0,34	0,03	0,16	3,75
		mm.		32	79,25	60,33	6,35	8,64	0,76	4,06	95,25
1 1/2"	40	inch.	R-20	1 1/2	3,56	2,69	0,25	0,34	0,03	0,16	4,25
		mm.		38	90,42	68,28	6,35	8,64	0,76	4,06	107,95
2"	50	inch.	R-23	2	4,25	3,25	0,31	0,47	0,03	0,19	4,25
		mm.		50	107,95	82,55	7,92	11,91	0,76	4,83	107,95
2 1/2"	65	inch.	R-26	2 1/2	5,00	4,00	0,31	0,47	0,03	0,19	4,75
		mm.		65	127,00	101,60	7,92	11,94	0,76	4,83	120,65
3"	80	inch.	R-31	3	5,75	4,88	0,31	0,47	0,03	0,19	5,00
		mm.		77	146,05	123,83	7,87	11,94	0,76	4,83	127,00
3 1/2"	90	inch.	R-34	3 1/2	6,25	5,19	0,31	0,47	0,03	0,19	5,75
		mm.		90	158,75	131,78	7,87	11,94	0,76	4,83	146,05
4"	100	inch.	R-37	4	6,88	5,88	0,31	0,47	0,03	0,19	5,75
		mm.		102	174,75	149,23	7,87	11,94	0,76	4,83	146,05
5"	125	inch.	R-41	5	8,25	7,13	0,31	0,47	0,03	0,19	6,50
		mm.		127	209,55	180,98	7,87	11,94	0,76	4,83	165,10
6"	150	inch.	R-45	6	9,50	8,31	0,31	0,47	0,03	0,19	6,75
		mm.		152	241,30	211,12	7,87	11,94	0,76	4,83	171,45
8"	200	inch.	R-49	7 7/8	11,88	10,63	0,31	0,47	0,03	0,19	7,75
		mm.		200	301,75	269,88	7,87	11,94	0,76	4,83	196,85
10"	250	inch.	R-53	9 3/4	14,00	12,75	0,31	0,47	0,03	0,19	8,50
		mm.		248	355,60	323,85	7,87	11,94	0,76	4,83	215,90
12"	300	inch.	R-57	11 3/4	16,25	15,00	0,31	0,47	0,03	0,19	8,75
		mm.		299	412,75	381,00	7,87	11,94	0,76	4,83	222,25
14"	350	inch.	R-61	12 7/8	18,00	16,50	0,31	0,47	0,03	0,19	9,25
		mm.		327	457,20	419,10	7,87	11,94	0,76	4,83	234,95
16"	400	inch.	R-65	14 3/4	20,00	18,50	0,31	0,47	0,03	0,19	10,00
		mm.		375	508,00	469,90	7,87	11,94	0,76	4,83	254,00
18"	450	inch.	R-69	16 1/2	22,62	21,00	0,31	0,47	0,03	0,19	10,75
		mm.		419	574,55	533,40	7,87	11,94	0,76	4,83	273,05
20"	500	inch.	R-73	18 1/4	25,00	23,00	0,38	0,53	0,06	0,19	11,50
		mm.		464	635,00	584,20	9,53	13,49	1,52	4,83	292,10
24"	600	inch.	R-77	22	29,50	27,75	0,44	0,66	0,06	0,22	13,25
		mm.		559	749,30	704,85	11,13	16,66	1,52	5,59	336,55

Technical datas

Class 900 lbs

Nominal size			Ring number	A	K	P	E	F	R	N	L1
NPS	DN			Size of port valve	Raised diameter	Pitch diameter	Depth	Width	Radius at bottom	Distance between flanges	Length stud bolts
3"	80	inch.	R-31	2 7/8	6,12	4,88	0,31	0,47	0,03	0,16	5,75
		mm.		73	155,45	123,83	7,87	11,91	0,76	4,06	146,05
4"	100	inch.	R-37	3 7/8	7,12	5,88	0,31	0,47	0,03	0,16	6,75
		mm.		99	180,85	149,23	7,87	11,94	0,76	4,06	171,45
5"	125	inch.	R-41	4 3/4	8,50	7,13	0,31	0,47	0,03	0,16	7,50
		mm.		121	215,90	180,98	7,87	11,94	0,76	4,06	190,50
6"	150	inch.	R-45	5 3/4	9,50	8,31	0,31	0,47	0,03	0,16	7,75
		mm.		146	241,30	211,12	7,87	11,94	0,76	4,06	196,85
8"	200	inch.	R-49	7 1/2	12,11	10,63	0,31	0,47	0,03	0,16	8,75
		mm.		191	307,64	269,88	7,87	11,94	0,76	4,06	222,25
10"	250	inch.	R-53	9 3/8	14,25	12,75	0,31	0,47	0,03	0,16	9,25
		mm.		238	361,95	323,85	7,87	11,94	0,76	4,06	234,95
12"	300	inch.	R-57	11 1/8	16,50	15,00	0,31	0,47	0,03	0,16	10,00
		mm.		283	419,10	381,00	7,87	11,94	0,76	4,06	254,00
14"	350	inch.	R-62	12 1/4	18,38	16,50	0,44	0,66	0,06	0,16	11,00
		mm.		311	466,85	419,10	11,13	16,66	1,52	4,06	279,40
16"	400	inch.	R-66	14	20,62	18,50	0,44	0,66	0,06	0,16	11,50
		mm.		356	523,75	469,90	11,18	16,66	1,52	4,06	292,10
18"	450	inch.	R-70	15 3/4	23,38	21,00	0,50	0,78	0,06	0,19	13,25
		mm.		400	593,85	533,40	12,70	19,84	1,52	4,83	336,55
20"	500	inch.	R-74	17 1/2	25,50	23,00	0,50	0,78	0,06	0,19	14,25
		mm.		445	647,70	584,20	12,70	19,84	1,52	4,83	361,95
24"	600	inch.	R-78	21	30,38	27,25	0,63	1,06	0,09	0,22	18,00
		mm.		534	771,65	692,15	15,88	26,97	2,29	5,59	457,20

Class 2500 lbs

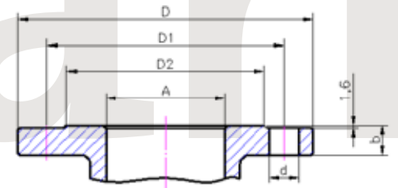
Nominal size			Ring number	A	K	P	E	F	R	N	L1
NPS	DN			Size of port valve	Raised diameter	Pitch diameter	Depth	Width	Radius at bottom	Distance between flanges	Length stud bolts
1/2"	15	inch.	R-11	7/16	2,56	1,69	0,25	0,34	0,03	0,16	5,25
		mm.		11	65,02	42,88	6,35	8,74	0,76	4,06	133,35
3/4"	20	inch.	R-13	9/16	2,88	2,00	0,25	0,34	0,03	0,16	5,25
		mm.		14,5	73,15	50,80	6,35	8,74	0,76	4,06	133,35
1"	25	inch.	R-16	3/4	3,25	2,38	0,25	0,34	0,03	0,16	5,50
		mm.		20	82,55	60,33	6,35	8,74	0,76	4,06	139,70
1 1/4"	32	inch.	R-18	1	4,00	2,84	0,31	0,47	0,03	0,12	6,00
		mm.		25,5	101,60	72,24	7,92	11,91	0,76	3,05	152,40
1 1/2"	40	inch.	R-20	1 1/8	4,50	3,25	0,31	0,47	0,03	0,12	6,75
		mm.		28,5	114,30	82,55	7,92	11,91	0,76	3,05	171,45
2"	50	inch.	R-23	1 1/2	5,25	4,00	0,31	0,47	0,03	0,12	7,00
		mm.		38	133,35	101,60	7,92	11,91	0,76	3,05	177,80
2 1/2"	65	inch.	R-26	1 7/8	5,88	4,38	0,38	0,53	0,06	0,12	8,00
		mm.		47,5	149,35	111,13	9,53	13,49	1,52	3,05	203,20
3"	80	inch.	R-31	2 1/4	6,62	5,00	0,38	0,53	0,06	0,12	9,00
		mm.		57	168,15	127,00	9,53	13,49	1,52	3,05	228,60
4"	100	inch.	R-37	2 7/8	8,00	6,19	0,44	0,66	0,06	0,16	10,25
		mm.		73	203,20	157,18	11,13	16,66	1,52	4,06	260,35
5"	125	inch.	R-41	3 5/8	9,50	7,50	0,50	0,78	0,06	0,16	12,25
		mm.		92	241,30	190,50	12,70	19,84	1,52	4,06	311,15
6"	150	inch.	R-45	4 3/8	11,00	9,00	0,50	0,78	0,06	0,16	14,00
		mm.		111	279,40	228,60	12,70	19,84	1,52	4,06	355,60
8"	200	inch.	R-49	5 3/4	13,38	11,00	0,56	0,91	0,06	0,19	15,50
		mm.		146	339,85	279,40	14,27	23,01	1,52	4,83	393,70
10"	250	inch.	R-53	7 1/4	16,75	13,50	0,69	1,19	0,09	0,25	20,00
		mm.		184	425,45	342,90	17,48	30,18	2,29	6,35	508,00
12"	300	inch.	R-57	8 5/8	19,50	16,00	0,69	1,31	0,09	0,31	22,00
		mm.		219	495,30	406,40	17,48	33,32	2,29	7,87	558,80

Class 1500 lbs

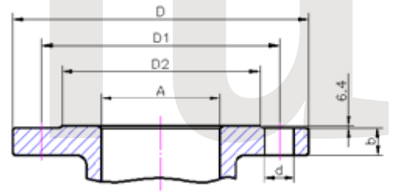
Nominal size			Ring number	A	K	P	E	F	R	N	L1
NPS	DN			Size of port valve	Raised diameter	Pitch diameter	Depth	Width	Radius at bottom	Distance between flanges	Length stud bolts
1/2"	15	inch.	R-11	1/2	2,38	1,56	0,25	0,34	0,03	0,16	4,25
		mm.		13	60,45	39,67	6,35	8,74	0,76	4,06	107,95
3/4"	20	inch.	R-13	11/16	2,62	1,75	0,25	0,34	0,03	0,16	4,50
		mm.		17,5	66,55	44,45	6,35	8,74	0,76	4,06	114,30
1"	25	inch.	R-16	7/8	2,81	2,00	0,25	0,34	0,03	0,16	5,00
		mm.		22	71,37	50,80	6,35	8,74	0,76	4,06	127,00
1 1/4"	32	inch.	R-18	1 1/8	3,19	2,38	0,25	0,34	0,03	0,16	5,00
		mm.		28,5	81,03	60,33	6,35	8,64	0,76	4,06	127,00
1 1/2"	40	inch.	R-20	1 3/8	3,62	2,69	0,25	0,34	0,03	0,16	5,50
		mm.		35	91,95	68,28	6,35	8,64	0,76	4,06	139,70
2"	50	inch.	R-23	1 7/8	4,88	3,75	0,31	0,47	0,03	0,12	5,75
		mm.		47,5	123,95	95,25	7,92	11,91	0,76	3,05	146,05
2 1/2"	65	inch.	R-26	2 1/4	5,38	4,25	0,31	0,47	0,03	0,12	6,25
		mm.		57	136,65	107,95	7,92	11,94	0,76	3,05	158,75
3"	80	inch.	R-31	2 3/4	6,62	5,38	0,31	0,47	0,03	0,12	7,00
		mm.		70	168,15	136,53	7,87	11,94	0,76	3,05	177,80
4"	100	inch.	R-37	3 5/8	7,62	6,38	0,31	0,47	0,03	0,12	7,75
		mm.		92	193,55	161,93	7,87	11,94	0,76	3,05	196,85
5"	125	inch.	R-41	4 3/8	9,00	7,63	0,31	0,47	0,03	0,12	9,75
		mm.		111	228,60	193,68	7,87	11,94	0,76	3,05	247,65
6"	150	inch.	R-45	5 3/8	9,75	8,31	0,38	0,53	0,06	0,12	10,50
		mm.		137	247,65	211,12	9,53	13,49	1,52	3,05	266,70
8"	200	inch.	R-49	7	12,50	10,63	0,44	0,66	0,06	0,16	12,75
		mm.		178	317,50	269,88	11,13	16,66	1,52	4,06	323,85
10"	250	inch.	R-53	8 3/4	14,62	12,75	0,44	0,66	0,06	0,16	13,50
		mm.		222	371,35	323,85	11,13	16,66	1,52	4,06	342,90
12"	300	inch.	R-57	10 3/8	17,25	15,00	0,56	0,91	0,06	0,19	15,25
		mm.		263	438,15	381,00	14,27	23,01	1,52	4,83	387,35
14"	350	inch.	R-61	11 3/8	19,25	16,50	0,63	1,06	0,09	0,22	16,75
		mm.		289	488,95	419,10	15,88	26,97	2,29	5,59	425,45
16"	400	inch.	R-65	13	21,50	18,50	0,69	1,19	0,09	0,31	18,50
		mm.		330	546,10	469,90	17,48	30,18	2,29	7,87	469,90
18"	450	inch.	R-69	14 5/8	24,12	21,00	0,69	1,19	0,09	0,31	20,75
		mm.		371	612,65	533,40	17,48	30,18	2,29	7,87	527,05
20"	500	inch.	R-73	16 3/8	26,50	23,00	0,69	1,31	0,09	0,38	22,25
		mm.		416	673,10	584,20	17,48	33,32	2,29	9,65	565,15
24"	600	inch.	R-77	19 5/8	31,25	27,25	0,81	1,44	0,09	0,44	25,50
		mm.		499	793,75	692,15	20,62	36,53	2,29	11,18	647,70

Flanges ASME B 16.47 Serie A

Class 150 lbs | Class 300 lbs | Class 600 lbs | Class 900 lbs



Class 150 & Class 300 RF Flanges



Class 600 & Class 900 RF Flanges

Class 150 lbs

Class	Nominal size			D	D1	D2	b	d	Bolt	
				Flanges diameter	Holes circle diameter	Raised diameter	Flange thickness	Diameter of holes	Number of holes	Diameter of bolts
	NPS	DN								
150	26"	650	inch.	34,25	31,75	29,50	2,69	1,38	24	1 1/4"
			mm.	869,95	806,5	749,30	68,33	35		
	28"	700	inch.	36,50	34,00	31,50	2,81	1,38	28	1 1/4"
			mm.	927,10	863,6	800,10	71,37	35		
	30"	750	inch.	38,75	36,00	33,75	2,94	1,38	28	1 1/4"
			mm.	984,25	914,4	857,25	74,68	35		
	32"	800	inch.	41,75	35,50	36,00	3,19	1,62	28	1 1/2"
			mm.	1.060,45	901,7	914,40	81,03	41		
	34"	850	inch.	43,75	40,50	38,00	3,25	1,62	32	1 1/2"
			mm.	1.111,25	1028,7	965,20	82,55	41		
	36"	900	inch.	46,00	42,75	40,25	3,56	1,62	32	1 1/2"
			mm.	1.168,40	1085,9	1.022,35	90,42	41		
	38"	950	inch.	48,75	45,25	42,25	3,44	1,62	32	1 1/2"
			mm.	1.238,25	1149,4	1.073,15	87,38	41		
	40"	1000	inch.	50,75	47,25	44,25	3,56	1,62	36	1 1/2"
			mm.	1.289,05	1200,2	1.123,95	90,42	41		
	42"	1050	inch.	53,00	49,50	47,00	3,81	1,62	36	1 1/2"
			mm.	1.346,20	1257,3	1.193,80	96,77	41		
	44"	1100	inch.	55,25	51,75	49,00	4,00	1,62	40	1 1/2"
			mm.	1.403,35	1314,5	1.244,60	101,60	41		
	46"	1150	inch.	57,25	53,75	51,00	4,06	1,62	40	1 1/2"
			mm.	1.454,15	1365,3	1.295,40	103,12	41		
	48"	1200	inch.	59,50	56,00	53,50	4,25	1,62	44	1 1/2"
			mm.	1.511,30	1422,4	1.358,90	107,95	41		
	50"	1250	inch.	61,75	58,25	55,50	4,38	1,88	44	1 3/4"
			mm.	1.568,45	1479,6	1.409,70	111,25	48		
	52"	1300	inch.	64,00	60,50	57,50	4,56	1,88	44	1 3/4"
			mm.	1.625,60	1536,7	1.460,50	115,82	48		
	54"	1350	inch.	66,25	62,75	59,50	4,75	1,88	44	1 3/4"
			mm.	1.682,75	1593,9	1.511,30	120,65	48		
	56"	1400	inch.	68,75	65,00	62,00	4,88	1,88	48	1 3/4"
			mm.	1.746,25	1651,0	1.574,80	123,95	48		
	58"	1450	inch.	71,00	67,25	64,00	5,06	1,88	48	1 3/4"
			mm.	1.803,40	1708,2	1.625,60	128,52	48		
	60"	1500	inch.	73,00	69,25	66,00	5,19	1,88	52	1 3/4"
			mm.	1.854,20	1759,0	1.676,40	131,83	48		

Class 300 lbs

Class	Nominal size			D	D1	D2	b	d	Bolt	
				Flanges diameter	Holes circle diameter	Raised diameter	Flange thickness	Diameter of holes	Number of holes	Diameter of bolts
	NPS	DN								
300	26"	650	inch.	38,25	34,50	29,50	3,12	1,75	28	1 5/8"
			mm.	971,55	876,3	749,30	79,25	44		
	28"	700	inch.	40,75	37,00	31,50	3,38	1,75	28	1 5/8"
			mm.	1.035,05	939,8	800,10	85,85	44		
	30"	750	inch.	43,00	39,25	33,75	3,62	1,88	28	1 3/4"
			mm.	1.092,20	997,0	857,25	91,95	48		
	32"	800	inch.	45,25	41,50	36,00	3,88	2,00	28	1 7/8"
			mm.	1.149,35	1.054,1	914,40	98,55	51		
	34"	850	inch.	47,50	43,50	38,00	4,00	2,00	28	1 7/8"
			mm.	1.206,50	1.104,9	965,20	101,60	51		
	36"	900	inch.	50,00	46,00	40,25	4,12	2,12	32	2"
			mm.	1.270,00	1.168,4	1.022,35	104,65	54		
	38"	950	inch.	46,00	43,00	40,50	4,25	1,62	32	1 1/2"
			mm.	1.168,40	1.092,2	1.028,70	107,95	41		
	40"	1000	inch.	48,75	45,50	42,75	4,50	1,75	32	1 5/8"
			mm.	1.238,25	1.155,7	1.085,85	114,30	44		
	42"	1050	inch.	50,75	47,50	44,75	4,69	1,75	32	1 5/8"
			mm.	1.289,05	1.206,5	1.136,65	119,13	44		
	44"	1100	inch.	53,25	49,75	47,00	4,88	1,88	32	1 3/4"
			mm.	1.352,55	1.263,7	1.193,80	123,95	48		
	46"	1150	inch.	55,75	52,00	49,00	5,06	2,00	28	1 7/8"
			mm.	1.416,05	1.320,8	1.244,60	128,52	51		
	48"	1200	inch.	57,75	54,00	51,25	5,25	2,00	32	1 7/8"
			mm.	1.466,85	1.371,6	1.301,75	133,35	51		
	50"	1250	inch.	60,25	56,25	53,50	5,50	2,12	32	2"
			mm.	1.530,35	1.428,8	1.358,90	139,70	54		
	52"	1300	inch.	62,25	58,25	55,50	5,69	2,12	32	2"
			mm.	1.581,15	1.479,6	1.409,70	144,53	54		
	54"	1350	inch.	62,25	61,00	57,75	6,00	2,38	28	2 1/4"
			mm.	1.581,15	1.549,4	1.466,85	152,40	60		
	56"	1400	inch.	67,25	63,00	59,75	6,06	2,38	28	2 1/4"
			mm.	1.708,15	1.600,2	1.517,65	153,92	60		
	58"	1450	inch.	69,25	65,00	62,00	6,25	2,38	32	2 1/4"
			mm.	1.758,95	1.651,0	1.574,80	158,75	60		
	60"	1500	inch.	71,25	67,00	64,00	6,44	2,38	32	2 1/4"
			mm.	1.809,75	1.701,8	1.625,60	163,58	60		

Class 600 lbs

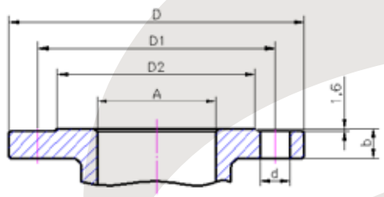
Class	Nominal size			D	D1	D2	b	d	Bolt	
				Flanges diameter	Holes circle diameter	Raised diameter	Flange thickness	Diameter of holes	Number of holes	Diameter of bolts
	NPS	DN								
600	26"	650	inch.	40,00	36,00	29,50	4,25	2,00	28	1 7/8"
			mm.	1.016,00	914,4	749,30	107,95	51		
	28"	700	inch.	42,25	38,00	31,50	4,38	2,12	28	2"
			mm.	1.073,15	965,2	800,10	111,25	54		
	30"	750	inch.	44,50	40,25	33,75	4,50	2,12	28	2"
			mm.	1.130,30	1.022,4	857,25	114,30	54		
	32"	800	inch.	47,00	42,50	36,00	4,62	2,12	28	2"
			mm.	1.193,80	1.079,5	914,40	117,35	54		
	34"	850	inch.	49,00	44,50	38,00	4,75	2,38	28	2 1/4"
			mm.	1.244,60	1.130,3	965,20	120,65	60		
	36"	900	inch.	51,75	47,00	40,25	4,88	2,62	28	2 1/2"
			mm.	1.314,45	1.193,8	1.022,35	123,95	67		
	38"	950	inch.	50,00	45,75	41,50	6,00	2,38	28	2 1/4"
			mm.	1.270,00	1.162,1	1.054,10	152,40	60		
	40"	1000	inch.	52,00	47,75	43,75	6,25	2,38	32	2 1/4"
			mm.	1.320,80	1.212,9	1.111,25	158,75	60		
	42"	1050	inch.	55,25	50,50	46,00	6,62	2,62	28	2 1/2"
			mm.	1.403,35	1.282,7	1.168,40	168,15	67		
	44"	1100	inch.	57,25	52,50	48,25	6,81	2,62	32	2 1/2"
			mm.	1.454,15	1.333,5	1.225,55	172,97	67		
	46"	1150	inch.	59,50	54,75	50,25	7,06	2,62	32	2 1/2"
			mm.	1.511,30	1.390,7	1.276,35	179,32	67		
	48"	1200	inch.	62,75	57,50	52,50	7,44	2,88	32	2 3/4"
			mm.	1.593,85	1.460,5	1.333,50	188,98	73		
	50"	1250	inch.	65,75	60,00	54,50	7,75	3,12	28	3"
			mm.	1.670,05	1.524,0	1.384,30	196,85	79		
	52"	1300	inch.	67,75	62,00	56,50	8,00	3,12	32	3"
			mm.	1.720,85	1.574,8	1.435,10	203,20	79		
	54"	1350	inch.	70,00	64,25	58,75	8,25	3,12	32	3"
			mm.	1.778,00	1.632,0	1.492,25	209,55	79		
	56"	1400	inch.	73,00	66,75	60,75	8,56	3,38	32	3 3/8"
			mm.	1.854,20	1.695,5	1.543,05	217,42	86		
	58"	1450	inch.	75,00	68,76	63,00	8,75	3,38	32	3 3/8"
			mm.	1.905,00	1.746,5	1.600,20	222,25	86		
	60"	1500	inch.	78,50	71,75	65,25	9,19	3,62	28	3 5/8"
			mm.	1.993,90	1.822,5	1.657,35	233,43	92		

Class 900 lbs

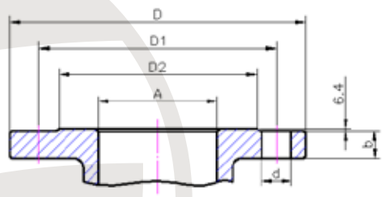
Class	Nominal size			D	D1	D2	b	d	Bolt	
				Flanges diameter	Holes circle diameter	Raised diameter	Flange thickness	Diameter of holes	Number of holes	Diameter of bolts
	NPS	DN								
900	26"	650	inch.	42,75	37,50	29,50	5,50	2,88	20	2 3/4"
			mm.	1.085,85	952,5	749,30	139,70	73		
	28"	700	inch.	46,00	40,25	31,50	5,62	3,12	20	3"
			mm.	1.168,40	1.022,4	800,10	142,75	79		
	30"	750	inch.	48,50	42,75	33,75	5,88	3,12	20	3"
			mm.	1.231,90	1.085,9	857,25	149,35	79		
	32"	800	inch.	51,75	45,50	36,00	6,25	3,38	20	3 3/8"
			mm.	1.314,45	1.155,7	914,40	158,75	86		
	34"	850	inch.	55,00	48,25	38,00	6,50	3,62	20	3 5/8"
			mm.	1.397,00	1.225,6	965,20	165,10	92		
	36"	900	inch.	57,50	50,75	40,25	6,75	3,62	20	3 5/8"
			mm.	1.460,50	1.289,1	1.022,35	171,45	92		

Flanges ASME B 16.47 Serie B

Class 150 lbs | Class 300 lbs | Class 600 lbs | Class 900 lbs



Class 150 & Class 300 RF Flanges



Class 600 & Class 900 RF Flanges

Class 150 lbs

Class	Nominal size NPS	Nominal size DN		D Flanges diameter	D1 Holes circle diameter	D2 Raised diameter	b Flange thickness	d Diameter of holes	Bolt Number of holes	Bolt Diameter of bolts
150	26"	650	inch.	30,94	29,31	28,00	1,62	0,88	36	3/4"
			mm.	785,88	744,5	711,20	41,15	22		
	28"	700	inch.	32,94	31,31	30,00	1,75	0,88	40	3/4"
			mm.	836,68	795,3	762,00	44,45	22		
	30"	750	inch.	34,94	33,31	32,00	1,75	0,88	44	3/4"
			mm.	887,48	846,1	812,80	44,45	22		
	32"	800	inch.	37,06	35,44	34,00	1,81	0,88	48	3/4"
			mm.	941,32	900,2	863,60	45,97	22		
	34"	850	inch.	39,56	37,69	36,25	1,94	1,00	40	7/8"
			mm.	1.004,82	957,3	920,75	49,28	25		
	36"	900	inch.	41,62	39,75	38,25	2,06	1,00	44	7/8"
			mm.	1.057,15	1.009,7	971,55	52,32	25		
	38"	950	inch.	44,25	42,12	40,25	2,12	1,12	40	1"
			mm.	1.123,95	1.069,8	1.022,35	53,85	28		
	40"	1000	inch.	46,25	44,12	42,25	2,19	1,12	44	1"
			mm.	1.174,75	1.120,6	1.073,15	55,63	28		
	42"	1050	inch.	48,25	46,12	44,50	2,31	1,12	48	1"
			mm.	1.225,55	1.171,4	1.130,30	58,67	28		
	44"	1100	inch.	50,25	48,12	46,50	2,38	1,12	52	1"
			mm.	1.276,35	1.222,2	1.181,10	60,45	28		
	46"	1150	inch.	52,81	50,56	48,62	2,44	1,25	40	1 1/8"
			mm.	1.341,37	1.284,2	1.234,95	61,98	32		
	48"	1200	inch.	54,81	52,56	50,75	2,56	1,25	44	1 1/8"
			mm.	1.392,17	1.335,0	1.289,05	65,02	32		
	50"	1250	inch.	56,81	54,56	52,75	2,69	1,25	48	1 1/8"
			mm.	1.442,97	1.385,8	1.339,85	68,33	32		
	52"	1300	inch.	58,81	56,56	54,75	2,75	1,25	52	1 1/8"
			mm.	1.493,77	1.436,6	1.390,65	69,85	32		
	54"	1350	inch.	61,00	58,75	56,75	2,81	1,25	56	1 1/8"
			mm.	1.549,40	1.492,3	1.441,45	71,37	32		
	56"	1400	inch.	63,00	60,75	58,75	2,88	1,25	60	1 1/8"
			mm.	1.600,20	1.543,1	1.492,25	73,15	32		
	58"	1450	inch.	65,94	63,44	60,75	2,94	1,38	48	1 1/4"
			mm.	1.674,88	1.611,4	1.543,05	74,68	35		
	60"	1500	inch.	67,94	65,44	63,00	3,00	1,38	52	1 1/4"
			mm.	1.725,68	1.662,2	1.600,20	76,20	35		

Class 300 lbs

Class	Nominal size NPS	Nominal size DN		D Flanges diameter	D1 Holes circle diameter	D2 Raised diameter	b Flange thickness	d Diameter of holes	Bolt Number of holes	Bolt Diameter of bolts
300	26"	650	inch.	34,12	31,62	29,00	3,50	1,38	32	1 1/4"
			mm.	866,65	803,1	736,60	88,90	35		
	28"	700	inch.	36,25	33,75	31,00	3,50	1,38	36	1 1/4"
			mm.	920,75	857,3	787,40	88,90	35		
	30"	750	inch.	39,00	36,25	33,25	3,69	1,50	36	1 3/8"
			mm.	990,60	920,8	844,55	93,73	38		
	32"	800	inch.	41,50	38,50	35,50	4,06	1,62	32	1 1/2"
			mm.	1.054,10	977,9	901,70	103,12	41		
	34"	850	inch.	43,62	40,62	37,50	4,06	1,62	36	1 1/2"
			mm.	1.107,95	1.031,7	952,50	103,12	41		
	36"	900	inch.	46,12	42,88	39,75	4,06	1,75	32	1 5/8"
			mm.	1.171,45	1.089,2	1.009,65	103,12	44		
	38"	950	inch.	48,12	44,88	41,75	4,38	1,75	36	1 5/8"
			mm.	1.222,25	1.140,0	1.060,45	111,25	44		
	40"	1000	inch.	50,12	46,88	43,88	4,56	1,75	40	1 5/8"
			mm.	1.273,05	1.190,8	1.114,55	115,82	44		
	42"	1050	inch.	52,50	49,00	46,00	4,69	1,88	36	1 3/4"
			mm.	1.333,50	1.244,6	1.168,40	119,13	48		
	44"	1100	inch.	54,50	51,00	48,00	5,00	1,88	40	1 3/4"
			mm.	1.384,30	1.295,4	1.219,20	127,00	48		
	46"	1150	inch.	57,50	53,75	50,00	5,06	2,00	36	1 7/8"
			mm.	1.460,50	1.365,3	1.270,00	128,52	51		
	48"	1200	inch.	59,50	55,75	52,25	5,06	2,00	40	1 7/8"
			mm.	1.511,30	1.416,1	1.327,15	128,52	51		
	50"	1250	inch.	61,50	57,75	54,25	5,44	2,00	44	1 7/8"
			mm.	1.562,10	1.466,9	1.377,95	138,18	51		
	52"	1300	inch.	63,50	59,75	56,25	5,62	2,00	48	1 7/8"
			mm.	1.612,90	1.517,7	1.428,75	142,75	51		
	54"	1350	inch.	65,88	62,12	58,25	5,38	2,00	48	1 7/8"
			mm.	1.673,35	1.577,8	1.479,55	136,65	51		
	56"	1400	inch.	69,50	65,00	60,50	6,06	2,38	36	2 1/4"
			mm.	1.765,30	1.651,0	1.536,70	153,92	60		
	58"	1450	inch.	71,94	67,44	62,75	6,06	2,38	40	2 1/4"
			mm.	1.827,28	1.713,0	1.593,85	153,92	60		
	60"	1500	inch.	73,94	69,44	65,00	5,94	2,38	40	2 1/4"
			mm.	1.878,08	1.763,8	1.651,00	150,88	60		

Class 600 lbs

Class	Nominal size NPS	Nominal size DN		D Flanges diameter	D1 Holes circle diameter	D2 Raised diameter	b Flange thickness	d Diameter of holes	Bolt Number of holes	Bolt Diameter of bolts
600	26"	650	inch.	35,00	31,75	28,62	4,38	1,75	28	1 5/8"
			mm.	889,00	806,5	726,95	111,25	44		
	28"	700	inch.	37,50	34,00	30,88	4,56	1,88	28	1 3/4"
			mm.	952,50	863,6	784,35	115,82	48		
	30"	750	inch.	40,25	36,50	33,12	4,94	2,00	28	1 7/8"
			mm.	1.022,35	927,1	841,25	125,48	51		
	32"	800	inch.	42,75	38,75	35,25	5,12	2,12	28	2"
			mm.	1.085,85	984,3	895,35	130,05	54		
	34"	850	inch.	45,75	41,50	37,50	5,56	2,38	24	2 1/4"
			mm.	1.162,05	1054,1	952,50	141,22	60		
	36"	900	inch.	47,75	43,50	39,75	5,75	2,38	28	2 1/4"
			mm.	1.212,85	1104,9	1.009,65	146,05	60		
	38"	950	inch.	50,00	45,75	41,50	6,00	2,38	28	2 1/4"
			mm.	1.270,00	1.162,1	1.054,10	152,40	60		
	40"	1000	inch.	52,00	47,75	43,75	6,25	2,38	32	2 1/4"
			mm.	1.320,80	1.212,9	1.111,25	158,75	60		
	42"	1050	inch.	55,25	50,50	46,00	6,62	2,62	28	2 1/2"
			mm.	1.403,35	1.282,7	1.168,40	168,15	67		
	44"	1100	inch.	57,25	52,50	48,25	6,81	2,62	32	2 1/2"
			mm.	1.454,15	1.333,5	1.225,55	172,97	67		
	46"	1150	inch.	59,50	54,75	50,25	7,06	2,62	32	2 1/2"
			mm.	1.511,30	1.390,7	1.276,35	179,32	67		
	48"	1200	inch.	62,75	57,50	52,50	7,44	2,88	32	2 3/4"
			mm.	1.593,85	1.460,5	1.333,50	188,98	73		
	50"	1250	inch.	65,75	60,00	54,50	7,75	3,12	28	3"
			mm.	1.670,05	1.524,0	1.384,30	196,85	79		
	52"	1300	inch.	67,75	62,00	56,50	8,00	3,12	32	3"
			mm.	1.720,85	1.574,8	1.435,10	203,20	79		
	54"	1350	inch.	70,00	64,25	58,75	8,25	3,12	32	3"
			mm.	1.778,00	1.632,0	1.492,25	209,55	79		
	56"	1400	inch.	73,00	66,75	60,75	8,56	3,38	32	3 3/8"
			mm.	1.854,20	1.695,5	1.543,05	217,42	86		
	58"	1450	inch.	75,00	68,76	63,00	8,75	3,38	32	3 3/8"
			mm.	1.905,00	1.746,5	1.600,20	222,25	86		
	60"	1500	inch.	78,50	71,75	65,25	9,19	3,62	28	3 5/8"
			mm.	1.993,90	1.822,5	1.657,35	233,43	92		

Class 900 lbs

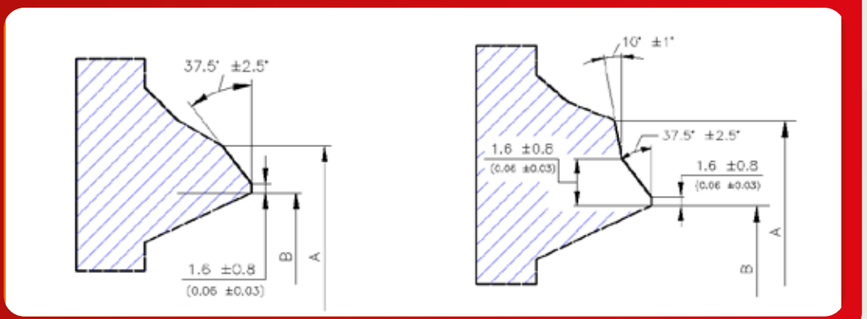
Class	Nominal size NPS	Nominal size DN		D Flanges diameter	D1 Holes circle diameter	D2 Raised diameter	b Flange thickness	d Diameter of holes	Bolt Number of holes	Bolt Diameter of bolts
900	26"	650	inch.	40,25	35,50	30,00	5,31	2,62	20	2 1/2"
			mm.	1.022,35	901,7	762,00	134,87	67		
	28"	700	inch.	43,50	38,25	32,25	5,81	2,88	20	2 3/4"
			mm.	1.104,90	971,6	819,15	147,57	73		
	30"	750	inch.	46,50	40,75	34,50	6,12	3,12	20	3"
			mm.	1.181,10	1035,1	876,30	155,45	79		
	32"	800	inch.	48,75	43,00	36,50	6,31	3,12	20	3"
			mm.	1.238,25	1092,2	927,10	160,27	79		
	34"	850	inch.	51,75	45,50	39,00	6,75	3,38	20	3 3/8"
			mm.	1.314,45	1155,7	990,60	171,45	85		
	36"	900	inch.	53,00	47,25	40,50	6,81	3,12	24	3"
			mm.	1.346,20	1200,2	1.028,70	172,97	79		

BUTT-WELDING ENDS ACC/ASME B16.25

Nominal size		Schedule number	Outside Diameter				Nominal inside diameter		Machined inside diameter		Nominal wall thickness	
			A Wrought or fabricated components		A Cast steel valves		B		C		T	
NPS	DN		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
2 1/2	65	40	2,88	73	2,96	75	2,469	62,5	2,479	62,93	0,203	5,16
		80					2,323	59	2,351	59,69	0,276	7,01
		160					2,125	54	2,178	55,28	0,375	9,53
		XXS					1,771	45	1,868	47,43	0,552	14,02
3	80	40	3,50	88	3,59	91	3,068	78	3,081	78,25	0,216	5,49
		80					2,900	73,5	2,934	74,53	0,300	7,62
		160					2,624	66,5	2,692	68,38	0,438	11,13
		XXS					2,300	58,5	2,409	61,19	0,600	15,24
4	100	40	4,50	114,3	4,62	117	4,026	102	4,044	102,73	0,237	6,02
		80					3,826	97	3,869	98,28	0,337	8,56
		120					3,624	92	3,692	93,78	0,438	11,13
		160					3,438	87,5	3,530	89,65	0,531	13,49
		XXS					3,152	80	3,279	83,3	0,674	17,12
5	125	40	5,56	141,3	5,69	144	5,047	128	5,070	128,8	0,258	6,55
		80					4,813	122	4,866	123,58	0,375	9,53
		120					4,563	116	4,647	118,04	0,500	12,7
		160					4,313	109,5	4,428	112,47	0,625	15,88
		XXS					4,063	103	4,209	106,92	0,750	19,05
6	150	40	6,62	168,3	6,78	172	6,065	154	6,094	154,82	0,280	7,11
		80					5,761	146,5	5,828	148,06	0,432	10,97
		120					5,501	140	5,600	142,29	0,562	14,27
		160					5,187	132	5,326	135,31	0,719	18,26
		XXS					4,897	124,5	5,072	128,85	0,864	21,95
8	200	40	8,62	219,1	8,78	223	7,981	203	8,020	203,75	0,322	8,18
		60					7,813	198,5	7,873	200,02	0,406	10,31
		80					7,625	193,5	7,709	195,84	0,500	12,7
		100					7,437	189	7,544	191,65	0,594	15,09
		120					7,187	182,5	7,326	186,11	0,719	18,26
		140					7,001	178	7,163	181,98	0,812	20,62
		XXS					6,875	174,5	7,053	179,16	0,875	22,23
		160					6,813	173	6,998	177,79	0,906	23,01
10	250	40	10,75	273	10,94	278	10,020	254,5	10,070	255,74	0,365	9,27
		60					9,750	247,5	9,834	249,74	0,500	12,7
		80					9,562	243	9,670	245,55	0,594	15,09
		100					9,312	236,5	9,451	240,01	0,719	18,26
		120					9,062	230	9,232	234,44	0,844	21,44
		140					8,750	222	8,959	227,51	1,000	25,4
		160					8,500	216	8,740	221,95	1,125	28,58
12	300	STD	12,75	323,8	12,97	329	12,000	305	12,053	306,08	0,375	9,53
		40					11,938	303	11,999	304,72	0,406	10,31
		XS					11,750	298,5	11,834	300,54	0,500	12,7
		60					11,626	295	11,725	297,79	0,562	14,27
		80					11,374	289	11,505	292,17	0,688	17,48
		100					11,062	281	11,232	285,24	0,844	21,44
		120					10,750	273	10,959	278,31	1,000	25,4
		140					10,500	266,5	10,740	272,75	1,125	28,58
		160					10,126	257	10,413	264,45	1,312	33,32
14	350	STD	14,00	355,6	14,25	362	13,250	336,5	13,303	337,88	0,375	9,53
		40					13,124	333,5	13,192	335,08	0,438	11,13
		XS					13,000	330	13,084	332,34	0,500	12,7
		60					12,812	325,5	12,920	328,15	0,594	15,09
		80					12,500	317,5	12,646	321,22	0,750	19,05
		100					12,124	308	12,318	312,86	0,938	23,83
		120					11,812	300	12,044	305,93	1,094	27,79
		140					11,500	292	11,771	299	1,250	31,75
		160					11,188	284	11,498	292,07	1,406	35,71
16	400	STD	16,00	406,4	16,25	413	15,250	387,5	15,303	388,68	0,375	9,53
		40					15,000	381	15,084	383,14	0,500	12,7
		60					14,688	373	14,811	376,21	0,656	16,66
		80					14,312	363,5	14,482	367,84	0,844	21,44
		100					13,938	354	14,155	359,53	1,031	26,19
		120					13,562	344,5	13,826	351,18	1,219	30,96
		140					13,124	333,5	13,442	341,43	1,438	36,53
		160					12,812	325,5	13,170	334,5	1,594	40,49
18	450	STD	18,00	457,2	18,28	464	17,250	438	17,303	439,48	0,375	9,53
		XS					17,000	432	17,084	433,94	0,500	12,7
		40					16,876	428,5	16,975	431,19	0,562	14,27
		60					16,500	419	16,646	422,82	0,750	19,05
		80					16,124	409,5	16,318	414,46	0,938	23,83
		100					15,688	398,5	15,936	404,78	1,156	29,36
		120					15,250	387,5	16,553	395,03	1,375	34,93
		140					14,876	378	15,225	386,77	1,562	39,67
		160					14,438	366,5	14,842	376,99	1,781	45,24
20	500	STD	20,00	508	20,31	516	19,250	489	19,303	490,28	0,375	9,53
		XS					19,000	482,5	19,084	484,74	0,500	12,7
		40					18,812	478	18,920	480,55	0,594	15,09
		60					18,376	467	18,538	470,88	0,812	20,62
		80					17,938	455,5	18,155	461,13	1,031	26,19
		100					17,438	443	17,717	450,02	1,281	32,54
		120					17,000	432	17,334	440,29	1,500	38,1
		140					16,500	419	16,896	429,17	1,750	44,45
		160					16,062	408	16,513	419,44	1,969	50,01
22	550	STD	22,00	558,8	22,34	567	21,250	539	21,303	541,08	0,375	9,53
		XS					21,000	533	21,084	535,54	0,500	12,7
		60					20,250	514	20,428	518,86	0,875	22,23
		80					19,750	501	19,990	507,75	1,125	28,58
		100					19,250	488,5	19,553	496,63	1,375	34,93
		120					18,750	476	19,115	485,52	1,625	41,28
		140					18,250	463	18,678	474,41	1,875	47,63
		160					17,750	450,5	18,240	463,3	2,125	53,98
24	600	STD	24,00	609,6	24,38	619	23,250	590,5	23,303	591,88	0,375	9,53
		XS					23,000	584	23,084	586,34	0,500	12,7
		30					22,876	581	22,975	583,59	0,562	14,27
		40					22,624	574,5	22,755	577,97	0,688	17,48
		60					22,062	560,5	22,263	565,49	0,969	24,61
		80					21,562	547,5	21,826	554,38	1,219	30,96
		100					20,938	532	21,280	540,49	1,531	38,89
		120					20,376	517,5	20,788	528,03	1,812	46,02
		140					19,876	505	20,350	516,91	2,062	52,37
		160					19,312	490,5	19,857	504,37	2,344	59,54

BUTT-WELDING ENDS ACC/ASME B16.25

BUTT-WELDING ENDS ACC/ASME B16.25



TECHNICAL HELP

FORGED STEEL STANDARDS COMPARISON

ASTM	UNS/AISI	DIN	AFNOR	BS	JIS
A105	AISI 1020	C22 1.0402	A48 – XC18S	1503-221-490 (En 3A)	SF50 (SC30)-(S28C)
A182-F1	K12822	15 Mo 3 1.5415	–	1503-240-420	SFHV 12 B – G 3213
A182-F5	K41545	12 CrMo 19.5 1.7733	Z 12 CD.5	1503-625-520	SFHV 25 -G 3213
A182-F11	K11572	24 CrMoV-55 1.7733	15 CD 5.05	1506-661-440	SFHV 23 B -G 3213
A182-F22	K21590	10 CrMo9.10 1.7380	12 CD 9.10	1503-622-490	SFHV 24 B -G3213
A182-F304	S30400	X5 CrNi 18.9 1.4301	Z6 CN 18.09	1503-304-S15	SUS 304 -G 4303
A182-F304H	S30409	X5 CrNi 18.9 1.4301	Z6 CN 18.09	1503-304-S49	SUS 304H -G 4303
A182-F304L	S30403	X2 CrNi 18.9 1.4306	Z2 CN 18.10	1503-304-S12	SUS 304L – G 4303
A182-F316	S31600	X5 CrNiMo 18.9 1.4401	Z6 CND 17.11	1503-316-S16	SUS 316 -G 4303
A182-F316H	S31609	X5 CrNiMo 18.12	–	1503-316-S49	SUS 316H -G 4303
A182-F316L	S31603	X2 CrNiMo 18.10 1.4404	Z2 CND 17.12	1503-316-S12	SUS 316L -G 4303
A182-F321	S32100	X10 CrNiTi 18.9 1.4541	Z6 CNT 18.10	1503-321-S31	SUS 321
A182-F347	S34700	X10 CrNiNb 18.9 1.4550	Z6 CN Nb 18.10	1503-347-S17	SUS 347
A193-B6 (A276 – Type 410)	AISI 410 S41000	X10 Cr 13 1.4006	Z10 C 13	410-S21	SUS 410 -G 4303
A193-B7	AISI 4140	42 CrMo 4 1.7225	42 CD 4	1506-621-A	SNB 7 – G 4107 (SMC 4)
A193-B8	AISI 304	X5 CrNi 18.9 1.4301	Z6 CN 18.09	1506-801-B	SUS 304 -G 4303
A193-B8M	AISI 316	X5 CrNiMo 18.10 1.4401	Z6 CND 17.11	1506-845	SUS 316 -G 4303
A193-B16	–	24 CrMoV55 1.7733	38 CDV 4.05	1506-661	SNB 16 G4107
A194-2H	–	C45 1.0503	A60/CC45	1506-162	S45C – G4051
A194-Gr. 4	–	24 CrMo 5 1.7258	40 D2	1506-240	–
A194-Gr. 8	AISI 304	X5 CrNi 18.9 1.4301	Z6 CN 18.09	1506-801-B	SUS 304 – G 4303
A194-Gr. 8M	AISI 316	X5 CrNiMo 18.10 1.4401	Z6 CND 17.11	1506-845	SUS 316 – G 4303
A276-Type 420	AISI 420 S42000	X30 Cr 13 1.4028	Z30 C13	420-S45	SUS 420 J2
A320-L7	AISI 4140	42 CrMo 4 1.7225	42 CD 4	1506-621-A	SCM3 – G4105
A350-LF2	–	TT St E 36 1.0508	A48 FP1 (A 36-208)	1503-223-410 (32A LT50)	–
A276-Type 420	AISI 303 S30300	X10 CrNiS 18.9 1.4305	Z10 CNF 18.09	303-S21	SUS 303
Type 416	AISI 416 S41600	X12 CrS 13 1.4005	Z12 CF13	416-S21	SUS 416

CAST IRON

CHEMICAL REQUIREMTS (%)

	Carbon	Manga-nese	Phos-phorus	Sulfur	Silicon	Nickel	Chro-mium	Copper	Alloying Ele-ments
HI-STRENGTH CAST IRON									
Min.	....	....	....	....	....	....	....	....	....
Max	....	....	0.75	0.15	....	....	....	....	....
3% NICKEL IRON									
Min.	....	....	....	....	....	2.75	....	....	....
Max	....	....	0.40	0.12	....	3.25	....	....	....
AUSTENITIC GRAY IRON. (Ni-Resist)									
Min.	....	0.50	....	....	1.00	18.0	1.5	....	ASTM
Max	3.0	1.50	....	0.12	2.80	22.0	2.5	0.50	A126, Clase B

MECHANICAL PROPERTIES

Tensile Strength		Transverse Test Load		Transverse Test Deflection at Center	
Ksi	Mpa	lbs	kN	in	mm.
UNS F12102			ASTM A126, Clase B		
31	214	3300	14.65	0.12	3.0
....	....	....	....	....	....
31	214	3300	14.65	0.12	3.0
....	....	....	....	....	....
25	172	....	....	....	....
....	....	....	....	....	....

CAST DUCTILE IRONS AND MALLEABLE IRONS

CHEMICAL REQUIREMTS (%)

	Carbon	Manga-nese	Phos-phorus	Silicon	Nickel	Chro-mium
FERRITIC DUCTILE IRON						
Min.	3.0	....	....	....	....	....
Max	....	....	0.08	2.50	....	....
DUCTILE IRON *						
Min.	....	....	....	....	....	....
Max	....	....	....	....	....	....
AUSTENITIC NODULAR IRON *						
Min.	....	0.70	....	1.5	18.0	1.75
Max	3.0	1.25	0.8	3.0	22.0	2.75
FERRITIC MALLEABLE IRON *						
Min.	....	....	....	....	....	....
Max	....	....	....	....	....	....
MALLEABLE IRON *						
Min.	....	....	....	....	....	....
Max	....	....	....	....	....	....

MECHANICAL PROPERTIES

Tensile Strength		Yield Strenght		Elongation in 2" (50 mm)
Ksi	Mpa	Ksi	Mpa	
UNS F32800				ASTM A395
60	414	40	276	18%
....	....	....	....	....
UNS F33100				ASTM A536, Grade 65-45-12
65	448	45	310	12%
....	....	....	....	....
UNS F43000				ASTM A439, Type D-2
58	400	30	207	8%
....	....	....	....	....
UNS F22200				(ASTM A47, Grade 32510
50	345	32.5	224	10%
....	....	....	....	....
				ASTM A197
40	276	30	207	5%
....	....	....	....	....

* Chemical requirements are subordinate to the mechanical properties.

FERRITIC STEELS

CHEMICAL REQUIREMTS (%)

	Carbon	Manga-nese	Phos-phorus	Sulfur	Silicon	Nickel	Chro-mium	Molyb-denum
CAST CARBON STEEL								
Min.	....	....	....	....	....	....	....	....
Max	0.30	1.00	0.040	0.045	0.60	0.50	0.50	0.20
FORGED CARBON STEEL								
Min.	....	0.60	....	....	....	....	....	....
Max	0.35	1.05	0.040	0.05	0.35	0.40	0.30	0.12
CAST CARBON STEEL FOR LOW TEMPERATURES								
Min.	....	....	....	....	....	....	....	....
Max	0.30	1.00	0.040	0.045	0.60	0.50	0.50	0.20
CAST 2 1/2% NICKEL STEEL FOR LOW TEMPERATURES								
Min.	....	0.50	....	....	....	2.0	....	....
Max	0.25	0.80	0.040	0.045	0.60	3.0	....	....
CAST 3 1/2% NICKEL STEEL FOR LOW TEMPERATURES								
Min.	....	0.50	....	....	....	3.0	....	....
Max	0.15	0.80	0.040	0.045	0.60	4.0	....	....
CAST 1 1/4% CR-1/2% MO ALLOY STEEL								
Min.	0.05	0.50	....	....	....	....	1.00	0.45
Max	0.20	0.80	0.040	0.045	0.60	0.60	1.50	0.65
FORGED/ROLLED 1 1/4% CR-1/2% MO ALLOY STEEL								
Min.	0.10	0.30	....	....	0.50	....	1.00	0.44
Max	0.20	0.80	0.040	0.040	1.00	....	1.50	0.65
CAST 2 1/4% CR-1% MO ALLOY STEEL								
Min.	....	0.40	....	....	....	....	2.00	0.90
Max	0.18	0.70	0.040	0.045	0.60	0.50	2.75	1.20
FORGED /ROLLED 2 1/4% CR-1% MO ALLOY STEEL								
Min.	....	0.30	....	....	....	....	2.00	0.87
Max	0.15	0.60	0.040	0.040	0.50	....	2.50	1.13
CAST 4-6% CR ALLOY STEEL								
Min.	....	0.40	....	....	....	....	4.00	0.45
Max	0.20	0.70	0.040	0.045	0.75	0.50	6.50	0.65
FORGED /ROLLED 4-6% CR ALLOY STEEL								
Min.	....	....	....	....	....	....	4.00	0.44
Max	0.25	0.60	0.040	0.030	0.50	0.50	6.00	0.65
CAST 12-14% CR STAINLESS STEEL								
Min.	....	....	....	....	....	....	11.5	....
Max	0.15	1.00	0.040	0.040	1.50	1.00	14.0	0.50
FORGE/ROLLED 12-14% CR STAINLESS STEEL								
Min.	....	....	....	....	....	....	11.5	....
Max	0.12	1.00	0.040	0.030	1.00	0.50	14.0	....
FEE-MACHINING 12-14% STAINLESS STEEEL BARS								
Min.	....	....	....	0.15	....	....	12.0	....
Max	0.15	1.25	0.06	....	1.00	....	14.0	
RESULFURIZED STEEL BARS								
Min.	0.14	1.00	....	0.08	....	....	....	....
Max	0.20	3.00	0.04	0.13	....	....	....	....

MECHANICAL PROPERTIES

Tensile Strength		Yield Strenght		Elongation in 2" (50 mm)
Ksi	Mpa	lbs	kN	
UNS J03002			ASTM A216, Grade WCB	
70	485	36	250	22%
95	655	....	....	....
UNS K03504			ASTM A105	
70	485	36	250	22%
....	....	....	....	....
UNS J03003			ASTM A352, Grade LCB*	
65	450	35	240	24%
90	620	....	....	....
UNS J22500			ASTM A352, Grade LC2*	
70	485	40	275	24%
95	655	....	....	....
UNS J31550			ASTM A352, Grade LC3*	
70	485	40	275	24%
95	655	....	....	....
UNS J12072			ASTM A217, Grade WC6	
70	485	40	275	20%
....	....	....	....	....
UNS K11572			ASTM A182, Grade F11	
70	485	40	275	20%
....	....	....	....	....
UNS K21890			ASTM A217, Grade WC9	
70	485	40	276	20%
95	655	....	....	....
UNS K21590			ASTM A182, Grade F22	
75	515	45	310	20%
....	....	....	....	....
UNS J42045			ASTM A217, Grade C5	
90	620	60	415	18%
115	795	....	....	....
UNS K42544			ASTM A182, Grade F5a	
90	620	65	450	22%
....	....	....	....	....
UNS J91150			ASTM A217, Grade CA15	
90	620	65	450	18%
115	795	....	....	....
			ASTM A182, Grade F6a, Class 3	
110	760	85	585	15%
....	....	....	....	....
UNS S41600			ASTM A582, Type 416	
75†	515†	40†	275†	30% †
110‡	760‡	85‡	585‡	18 % ‡
UNS G11170			AISI Type C1117	
....	....	(121 BHN)	....	23%
....	....	....	....	....

* Usual minimum service temperatura:LCB at -50F (-45,6C). LC2 at -100 f (-73.3 C). LC3 at -150 F (-101.1C)
† Annealed representive mechancal properties.
‡ Temperaed representive mechanical properties.

COPPER ALLOYS

	Cooper	Tin	Lead	Iron	Nickel	Manga-nese	Alum-inum	Zinc	Silicon	Other	Tensile Strength Ksi	Tensile Strength Mpa	Yield Strenght Ksi	Yield Strenght Mpa	Elongation in 2" (50 mm)
STEM OR VALVE BRONZE CASTINGS								**UNS C92200**					**ASTM B61, Alloy 922**		
Min.	86.0	5.5	1.0	,,,,	,,,,	,,,,	,,,,	3.0	,,,,	,,,,	34	235	16	110	24%
Max	90.0	6.5	2.0	0.25	1.0	,,,,	0.005	5.0	0.005	0.05*	,,,,	,,,	,,,,	,,,,	,,,,
COMPSOTION BRONZE CASTINGS								**UNS C83600**					**ASTM B62, Alloy 836**		
Min.	84.0	4.0	4.0	,,,,	,,,,	,,,,	,,,,	4.0	,,,,	,,,,	30	205	14	95	20%
Max	86.0	6.0	6.0	0.30	1.0	,,,,	0.005	6.0	0.005	0.05*	,,,,	,,,	,,,,	,,,,	,,,,
COMPOSTION CAST BRONZE ROD													**ASTM B62, MODIFIED**		
Min.	82.20	4.0	4.0	,,,,	,,,,	,,,,	,,,,	4.0	,,,,	,,,,	50	,,,,	25	,,,,	14%
Max	83.50	6.0	6.0	0.30	1.0	,,,,	,,,,	6.0	,,,,	1.5		,,,,		,,,,	
SEMI-RED BRASS CASTINGS								**UNS C84800**					**ASTM B584, Alloy 848**		
Min.	75.0	2.0	5.5	,,,,	,,,,	,,,,	,,,,	13.0	,,,,	,,,,	28	193	12	83	16%
Max	77.0	3.0	7.0	0.40	1.0	,,,,	0.005	17.0	0.005	0.80**	,,,,	,,,,	,,,,	,,,,	,,,,
SILICON BRONZE CASTINGS								**UNS C87600**					**ASTM B584, Alloy 876**		
Min.	88.0	,,,,	,,,,	,,,,	,,,,	,,,,	,,,,	4.0	3.5	,,,,	60	414	30	207	16%
Max	....	,,,,	0.50	,,,,	,,,,	,,,,	,,,,	7.0	5.5	0.50**	,,,,	,,,,	,,,,	,,,,	,,,,
LEADED MANGANESES BRONZE CATINGS								**UNS C86400**					**ASTM B584, Alloy 864**		
Min.	56.0	0.5	0.5	0.4	,,,,	0.1	0.5	32.0	,,,,	,,,,	60	414	20	138	15%
Max	62.0	1.5	1.5	2.0	1.0	1.0	1.5	427.0	,,,,	1.0**	,,,,	,,,,	,,,,	,,,,	,,,,
ALUMINUM BRONZE CASTINGS								**UNS C95400**					**ASTM B148, Alloy 954**		
Min.	Balance	,,,,	,,,,	3.0	,,,,	,,,,	10.0	,,,,	,,,,	,,,,	75	515	30	205	12%
Max		,,,,	,,,,	5.0	1.5	0.5	11.5	,,,,	,,,,	,,,,	,,,,	,,,,	,,,,	,,,,	,,,,
NAVAL BRASS ROD/BAR								**UNS C48200**					**ASTM B21, Alloy 482, Hard Temper**		
Min.	59.0	0.5	0.4	,,,,	,,,,	,,,,	,,,,	Balance	,,,,	,,,,	‡	‡	‡	‡	‡
Max	62.0	1.0	1.0	0.15	,,,,	,,,,	,,,,		,,,,	1.0**	.....	.....	.....	.....	.....
NAVAL BRASS ROD/BAR								**UNS C46400**					**ASTM B21, Alloy 464**		
Min.	59.0	0.5	....	,,,,	,,,,	,,,,	,,,,	Balance	,,,,	,,,,	‡	‡	‡	‡	‡
Max	62.0	1.0	0.20	0.15	,,,,	,,,,	,,,,		,,,,	1.0**	.....	.....	.....	.....	.....
FREE CUTTING BRASS ROD/BAR								**UNS C36000**					**ASTM B16, Alloy 360**		
Min.	60.0	,,,,	2.5	,,,,	,,,,	,,,,	,,,,	Balance	,,,,	,,,,	‡	‡	‡	‡	‡
Max	63.0	,,,,	3.7	0.35	,,,,	,,,,	,,,,		,,,,	0.50**	.....	.....	.....	.....	.....
FORGING BRASS								**UNS C37700**					**ASTM B.124, Alloy 377**		
Min.	58.0	,,,,	1.5	,,,,	,,,,	,,,,	,,,,	Balance	,,,,	,,,,	,,,,	,,,,	,,,,	,,,,	,,,,
Max	61.0	,,,,	2.5	0.30	,,,,	,,,,	,,,,		,,,,	0.50**	,,,,	,,,,	,,,,	,,,,	,,,,
MANGANESE BRONZE ROD/BAR								**UNS C67500**					**ASTM B124, ALLOY 675**		
Min.	57.0	0.5	....	0.8	,,,,	0.05	....	Balance	,,,,	,,,,	,,,,	,,,,	,,,,	,,,,	,,,,
Max	60.0	1.0	0.20	2.0	,,,,	0.5	0.25		,,,,	0.50**	,,,,	,,,,	,,,,	,,,,	,,,,
LEADED RED BRASS ROD/BAR								**UNS C32000**					**ASTM B140, Alloy 320**		
Min.	83.5	,,,,	1.5	,,,,	....	,,,,	,,,,	Balance	,,,,	,,,,	‡	‡	‡	‡	‡
Max	86.5	,,,,	2.2	0.10	0.25	,,,,	,,,,		,,,,		.....	.....	.....	.....	.....
COPPER SILICON ALLOY WIRE								**UNS C65100**					**ASTM B99, Alloy 651, eighth-Hard**		
Min.	Balance	,,,,	....	,,,,	,,,,	,,,,	,,,,	,,,,	0.8	,,,,	50	.344	,,,,	,,,,	20%
Max		,,,,	0.05	0.8	,,,,	0.7	,,,,	1.5	2.0 †	0.50**	65	448	,,,,	,,,,	
COPPER-ZIN SILICON ALLY ROD								**UNSC69400**					**ASTM B371, Alloy 694**		
Min.	80.0		....	,,,,	,,,,	,,,,	,,,,	Balance	3.5	,,,,	75	515	35	240	15%
Max	83.0		0.30	0.20	,,,,	,,,,	,,,,		4.5	,,,,	....	...	,,,,	.....	
LEADED SEMI-RED BRASS								**UNS C84400**					**ASTM B584, Alloy 844**		
Min.	78.0	2.3	6.0	,,,,	,,,,	,,,,	,,,,	7.0	,,,,	,,,,	29	200	13	90	18%
Max	82.0	3.5	8.0	0.40	1.0,	,,,,	0.005	10.0	,,,,	0.80**	....	...	,,,,	.....	

* Also may include maximum of 0.05/phosphrus.
Also may include maximum of 0.25, antimony, 0.08% sulfur, and 0.02% phosphorous.
** Maximun percent of elements permissible other than those indicated.
† Maximum of 2.6% silicon permissible provinding sum of all elements other than copper, iron , and silicon does not exceed 0.3%.
‡ Deppends on diameter of thickness (surface to surface) of material; data on request.

AUSTENITIC STEELS

	Carbon	Manga-nese	Phos-phorus	Sulfur	Silicon	Nickel	Chro-mium	Molyb-denum	Copper and Colum-bium	Tensile Strength Ksi	Tensile Strength Mpa	Yield Strenght lbs	Yield Strenght kN	Elongation in 2" (5 0 mm)		Reduction of Area
STAINLESS STEEEL WITH MOLYBDENUM BAR										**UNS S31600**				**ASTM A216, Type 316**		
Min.	,,,,	,,,,	....	,,,,	,,,,	10.0	16.0	2.0	....	*	*	*	*	*	*	*
Max	0.08	2.00	0.045	0.030	1.00	14.0	18.0	3.0	....	....	....	....	....	....	....	....
STAINLESS STEEEL WITH MOLYBDENUM BAR										**UNS S31600**				**ASTM A479, Type 316**		
Min.	,,,,	,,,,	....	,,,,	,,,,	10.0	16.0	2.0	....	75	515	30	205	30%		40%
Max	0.08	2.00	0.045	0.030	1.00	14.0	18.0	3.0	....	....	....	,,,,	,,,,	....		....
CAST STAINLESS STEEL										**UNS J92600**				**ASTM A351, Grade CF8***		
Min.	,,,,	,,,,	....	,,,,	,,,,	8.0	18.0	....	....	70	485	30	205	35%		....
Max	0.08	1.50	0.040	0.040	2.00	11.0	21.0	0.50	....	....	....	,,,,	,,,,	....		....
CAST STAINLESS STEEL										**UNS J92710**				**ASTM A351, Grade CF8C**		
Min.	,,,,	,,,,	....	,,,,	,,,,	9.0	18.0	....	**	70	485	30	205	30%		....
Max	0.08	1.50	0.040	0.040	2.00	12.0	21.0	0.50		....	....	,,,,	,,,,	....		....
CAST STAINLESS STEEL WITH MOLYBDENUM										**UNS J92900**				**ASTM A351, Grade CF8M**		
Min.	,,,,	,,,,	....	,,,,	,,,,	9.0	18.0	2.0	....	70	485	30	205	30%		....
Max	0.08	1.50	0.040	0.040	1.50	12.0	21.0	3.0	....	....	....	,,,,	,,,,	....		....
CAST LOW CARBON STAINLESS STEEL										**UNS J92500**				**ASTM A351, Grade CF3**		
Min.	,,,,	,,,,	....	,,,,	,,,,	8.0	17.0	....	....	70	485	30	205	35%		....
Max	0.03	1.50	0.040	0.040	2.00	12.0	21.0	0.50	....	....	....	,,,,	,,,,	....		....
CAST LOW CARBON STAINLESS STEEL WITH MOLYBDENUM										**UNS J92800**				**ASTM A351, Grade CF3M**		
Min.	....	....	....	....	....	9.0	17.0	2.0	....	70	485	30	205	30%		....
Max	0.03	1.50	0.040	0.040	1.50	12.0	21.0	3.0	....	....	....	,,,,	,,,,	....		....
CAST ALLOY 20 STAINLESS STEEL										**UNS J95150**				**ASTM A351, Grade CN7M**		
Min.	,,,,	,,,,	....	,,,,	,,,,	27.5	19.0	2.0	3.0	62	425	25	170	35%		....
Max	0.07	1.50	0.040	0.040	1.50	30.5	22.0	3.0	4.0	....	....	,,,,	,,,,	....		....
ALLOY 20 STAINLESS STEEL BAR										**UNS N08020**				**ASTM B473**		
Min.	,,,,	,,,,	....	,,,,	,,,,	32.0	19.0	2.0	3.0***	80	550	35	240	30%		50%
Max	0.07	2.00	0.045	0.035	1.00	38.0	21.0	3.0	4.0	....	....	,,,,	,,,,	....		....
CAST STAINLESS STEEL WITH MOLYBDENUM AND COPPER										**UNS J93370**				**ASTM A351, Grade CD-4MCU**		
Min.	,,,,	,,,,	....	,,,,	,,,,	4.75	24.5	1.75	2.75	100	690	70	485	16%		....
Max	0.04	1.00	0.04	0.04	1.00	6.00	26.5	2.25	3.25	....	....	,,,,	...	....		....
STAINLESSS STEEEL WITH FREE MACHININIG BAR										**UNS S30300**				**ASTM A582, Type 303**		
	....	...	....	0.15	,,,,	8.00	17.00	....	....	....	....	....	....	....	....	....
	0.15	2.00	0.20	....	1.00	10.00	19.00	....	....	....	....	....	....	....	....	....
CAST STAINLESS STEEL FREE MACHINING										**UNS J92701**				**ASTM A743, Grade CF16F**		
	....	....	....	,,,,	,,,,	9.00	18.00	....	....	70	485	30	205	25		....
	0.16	1.50	0.04	0.040	2.00	12.00	21.00	....	....	....	....	,,,,	,,,,	....		....

NICKEL ALLOYS

	Carbon	Manga-nese	Phos-phorus	Sulfur	Silicon	Nickel	Chro-mium	Molyb-denum	Iron	Tensile Strength Ksi	Tensile Strength Mpa	Yield Strenght lbs	Yield Strenght kN	Elongation in 2" (5 0 mm)		Reduction of Area
CAST NICKEL-MOLYBDENUM ALLOY (HASTELLOY B*)										**UNS N10001**				**ASTM A494, Grade N-12MV**		
Min.	,,,,	,,,,	....	,,,,	,,,,	Balance	....	26.0	4,00	76	525	40	275	6%	*	....
Max	0.12	1.00	0.04	0.03	1.00		1.00	30.0	6,00	...	....	....	....	....	....	....
CAST NICKEL-MOLYBDENUM-CHROMIUM ALLOY (HASTELLOY C*)														**ASTM A494, Grade CW-12MW**		
Min.	,,,,	,,,,	....	,,,,	,,,,	Balance	15.5	16.0	4.50	72	495	40	275	4%	*	....
Max	0.12	1.00	0.04	0.03	1.00		17.5	18.0	7.50	...	....	....	....	....	....	....
CAST NICKEL										**UNS N02100**				**ASTM A494, Grade CZ-100**		
Min.	,,,,	,,,,	....	,,,,	,,,,	95.0	....	....	....	50	345	18	125	10%		....
Max	1.00	1.50	0.03	0.03	2.00	....	....	....	3.00	....	....	,,,,	,,,,	....		....
CAST NICKEL-CHROMIUM-IRON ALLY (Inconel)**										**UNS N06040**				**ASTM A494, Grade CY-40**		
Min.	,,,,	,,,,	....	,,,,	,,,,	Balance	14.0	....	....	70	485	28	195	30%		....
Max	0.40	1.50	0.03	0.03	0.03		17.0	....	11.00	....	....	,,,,	,,,,	....		....

* Hasteeloy is a trademark of Cabot Corporation.
** Incotel is a trademark of International Nickel Company.

NICKEL-COPPER ALLOYS

	Copper	Tin	Iron	Nickel	Manga-nese	Phos-phorus	Silicon	Sulfur	Carbon	Tensile Strength Ksi	Tensile Strength Mpa	Yield Strenght Ksi	Yield Strenght Mpa	Elongation in 2" 0 mm)	
CAST MONEL *												**ASTM A494, Grade M-35-1**			
Min.	26.0,	....	....	remainder	,,,,	....	....	....	....	65	450	25	170	25%	*
Max	33.0	....	3.5		1.5	0.03	1.25	0.03	0.35	...	....	....	....	....	....
NICKEL COPPER ALLOY ROD												**ASTM A494, Grade M-35-1**			
Min.	28.0,	....	....	63.0	....	....	....	0.025	....	85	585	50	345	15%	*
Max	34.0	....	2.5	....	2.0	....	0.50	0.060	0.030	...	....	....	....	....	....

* Monel is a resitered trade mark of the International Nickel Company, Inc.

technical datas

PRESSURE - TEMPERATURE RATINGS

CLASS 150 -300- 600

Pressure - Temperature Ratings
(comply with ASME B16,34-1981- Standard Class)
STEEL, NICKEL ALLOY and OTHER SPECIAL ALLOYS

WORKING PRESSURE, PSIG

CLASS	TEMP °F	A216 WCB A105	A217 C5	A217 WC6 A182 F11	A217 WC9 A182 F22	A352 LCB	A352 LC3 A350 LF3	A351 CF8M A182 F316	A351 CF3M	A351 CF8 A182 F304	A351 CF3	A351 CF8C	A351 CN7M
CLASS 150	-20 to 100 °	285	290	290	290	265	290	275	275	275	275	275	230
	200	260	260	260	260	250	260	240	245	235	235	245	215
	300	230	230	230	230	230	230	215	215	205	205	225	200
	400	200	200	200	200	200	200	195	195	180	180	200	-
	500	170	170	170	170	170	170	170	170	170	170	170	-
	600	140	140	140	140	140	140	140	140	140	140	140	-
	650	125	125	125	125	125	125	125	125	125	125	125	-
	700	110	110	110	110	-	-	110	110	110	110	110	-
	750	95	95	95	95	-	-	95	95	95	95	95	-
	800	80	80	80	80	-	-	80	80	80	80	80	-
	850	65[1]	65	65	65	-	-	65	65	65	-	65	-
	900	50[1]	50	50	50	-	-	50	-	50	-	50	-
	950	35[1]	35	35	35	-	-	35	-	35	-	35	-
	1000	20[1]	20	20	20	-	-	20	-	20	-	20	-
	1050	-	20[2]	20[2]	20[2]	-	-	20[2]	-	20[2]	-	20[2]	-
	1100	-	20[2]	20[2]	20[2]	-	-	20[2]	-	20[2]	-	20[2]	-
	1150	-	20[2]	-	-	-	-	20[2]	-	20[2]	-	20[2]	-
	1200	-	20[2]	-	-	-	-	20[2]	-	20[2]	-	20[2]	-
	1250	-	-	-	-	-	-	20[2]	-	20[2]	-	20[2]	-
	1300	-	-	-	-	-	-	20[2]	-	20[2]	-	20[2]	-
	1350	-	-	-	-	-	-	20[2]	-	20[2]	-	20[2]	-
	1400	-	-	-	-	-	-	20[2]	-	20[2]	-	20[2]	-
	1450	-	-	-	-	-	-	20[2]	-	15[2]	-	20[2]	-
	1500	-	-	-	-	-	-	15[2]	-	10[2]	-	15[2]	-
CLASS 300	-20 to 100 °	740	750	750	750	695	750	720	720	720	720	720	600
	200	675	750	710	715	655	750	620	620	600	600	635	555
	300	655	730	675	675	640	730	560	560	530	530	590	525
	400	635	705	660	650	620	705	515	515	470	470	555	-
	500	600	665	640	640	585	665	480	480	435	435	520	-
	600	550	605	605	605	535	605	450	450	415	415	490	-
	650	535	590	590	590	525	590	445	445	410	410	480	-
	700	53	570	570	570	-	-	430	430	405	405	470	-
	750	505	530	530	530	-	-	425	425	400	400	460	-
	800	410	500	510	510	-	-	415	415	395	395	455	-
	850	270[1]	440	485	485	-	-	405	405	390	-	445	-
	900	170[1]	355	450	450	-	-	395	-	385	-	430	-
	950	105[1]	260	380	380	-	-	385	-	375	-	385	-
	1000	50[1]	190	225	270	-	-	365	-	325	-	365	-
	1050	-	140	140	200	-	-	360	-	310	-	360	-
	1100	-	105	95	115	-	-	325	-	260	-	325	-
	1150	-	70	-	-	-	-	275	-	195	-	275	-
	1200	-	45	-	-	-	-	205	-	155	-	170	-
	1250	-	-	-	-	-	-	180	-	110	-	125	-
	1300	-	-	-	-	-	-	140	-	85	-	95	-
	1350	-	-	-	-	-	-	105	-	60	-	70	-
	1400	-	-	-	-	-	-	75	-	50	-	50	-
	1450	-	-	-	-	-	-	60	-	35	-	40	-
	1500	-	-	-	-	-	-	40	-	25	-	35	-
CLASS 600	-20 to 100 °	1480	1500	1500	1500	1390	1500	1440	1440	1440	1440	1440	1200
	200	1350	1500	1425	1430	1315	1500	1240	1240	1200	1200	1270	1115
	300	1315	1455	1345	1355	1275	1455	1120	1120	1055	1055	1175	1045
	400	1270	1410	1315	1295	1235	1410	1030	1030	940	940	1110	-
	500	1200	1330	1285	1280	1165	1330	955	955	875	875	1035	-
	600	1095	1210	1210	1210	1065	1210	905	905	830	830	985	-
	650	1075	1175	1175	1175	1045	1175	890	890	815	815	960	-
	700	1065	1135	1135	1135	-	-	865	865	805	805	935	-
	750	1010	1065	1065	1065	-	-	845	845	795	795	920	-
	800	825	995	1015	1015	-	-	830	830	790	790	910	-
	850	535[1]	880	975	975	-	-	810	810	780	-	890	-
	900	345[1]	705	900	900	-	-	790	-	770	-	865	-
	950	205[1]	520	755	755	-	-	775	-	750	-	775	-
	1000	105[1]	385	445	535	-	-	725	-	645	-	725	-
	1050	-	280	275	400	-	-	720	-	620	-	720	-
	1100	-	205	190	225	-	-	645	-	515	-	645	-
	1150	-	140	-	-	-	-	550	-	390	-	550	-
	1200	-	90	-	-	-	-	410[3]	-	310[3]	-	345	-
	1250	-	-	-	-	-	-	365	-	220	-	245	-
	1300	-	-	-	-	-	-	275	-	165	-	185	-
	1350	-	-	-	-	-	-	205	-	125	-	135	-
	1400	-	-	-	-	-	-	150	-	95	-	105	-
	1450	-	-	-	-	-	-	112	-	70	-	80	-
	1500	-	-	-	-	-	-	85	-	50	-	70	-

1 Permissible, but not recommeded for prolonged usage above about 800a C
2 For Welding End Valves only, flanged and ratings terminate al 1000 o C

PRESSURE - TEMPERATURE RATINGS

CLASS 900 - 1500 - 2500

Pressure - Temperature Ratings
(comply with ASME B16,34-1981- Standard Class)
STEEL, NICKEL ALLOY and OTHER SPECIAL ALLOYS

WORKING PRESSURE, PSIG

CLASS	TEMP °F	A216 WCB A105	A217 C5	A217 WC6 A182 F11	A217 WC9 A182 F22	A352 LCB	A352 LC3 A350 LF3	A351 CF8M A182 F316	A351 CF3M	A351 CF8 A182 F304	A351 CF3	A351 CF8C	A351 CN7M
CLASS 900	-20 to 100 °	2220	2250	2250	2250	2085	2250	2160	2160	2160	2160	2160	1800
	200	2025	2250	2135	2150	1970	2250	1860	1860	1800	1800	1910	1670
	300	1970	2185	2020	2030	1915	2185	1540	1540	1410	1410	1765	1570
	400	1900	2115	1975	1945	1850	2115	1540	1540	1410	1410	1665	-
	500	1795	1995	1925	1920	1745	1995	1435	1435	1310	1310	1555	-
	600	1640	1815	1815	1815	1600	1815	1355	1355	1245	1245	1475	-
	650	1610	1765	1765	1765	1570	1765	1330	1330	1225	1225	1440	-
	700	1600	1705	1705	1705	-	-	1295	1295	1210	1210	1405	-
	750	1510	1595	1595	1595	-	-	1270	1270	1195	1195	1385	-
	800	1235	1490	1525	1525	-	-	1245	1245	1180	1180	1370	-
	850	805[1]	1315	1460	1460	-	-	1215	1215	1165	-	1330	-
	900	515[1]	1060	1350	1350	-	-	1180	-	1150	-	1295	-
	950	310[1]	780	1130	1130	-	-	1160	-	1125	-	1160	-
	1000	155[1]	575	670	805	-	-	1090	-	965	-	1090	-
	1050	-	420	410	595	-	-	1080	-	925	-	1080	-
	1100	-	310	290	340	-	-	965	-	770	-	965	-
	1150	-	205	-	-	-	-	825	-	585	-	825	-
	1200	-	135	-	-	-	-	620[3]	-	465	-	515	-
	1250	-	-	-	-	-	-	545	-	330	-	370	-
	1300	-	-	-	-	-	-	410	-	245	-	280	-
	1350	-	-	-	-	-	-	310	-	185	-	205	-
	1400	-	-	-	-	-	-	225	-	145	-	155	-
	1450	-	-	-	-	-	-	175	-	105	-	125	-
	1500	-	-	-	-	-	-	125	-	70	-	105	-
CLASS 1500	-20 to 100 °	3705	3750	3750	3750	3470	3750	3600	3600	3600	3600	3600	3000
	200	3375	3750	3560	3580	3280	3750	3095	3095	3000	3000	3180	2785
	300	3280	3640	3365	3385	3190	3640	2795	2795	2640	2640	2940	2615
	400	3170	3530	3290	3240	3085	3530	2570	2570	2350	2350	2770	-
	500	2995	3325	3210	3200	2910	3325	2390	2390	2185	2185	2590	-
	600	2735	3025	3025	3025	2665	3025	2255	2255	2075	2075	2460	-
	650	2685	2940	2940	2940	2615	2940	2220	2220	2040	2040	2400	-
	700	2665	2840	2840	2840	-	-	2160	2160	2015	2015	2340	-
	750	2520	2660	2660	2660	-	-	2110	2110	1990	1990	2305	-
	800	2060	2485	2540	2540	-	-	2075	2075	1970	1970	2280	-
	850	1340[1]	2195	2435	2435	-	-	2030	2030	1945	-	2220	-
	900	860[1]	1765	2245	2245	-	-	1970	-	1920	-	2160	-
	950	515[1]	1305	1885	1885	-	-	1930	-	1870	-	1930	-
	1000	260[1]	960	1115	1340	-	-	1820	-	1610	-	1820	-
	1050	-	705	685	995	-	-	1800	-	1545	-	1800	-
	1100	-	515	480	565	-	-	1610	-	1285	-	1610	-
	1150	-	345	-	-	-	-	1370	-	980	-	1370	-
	1200	-	225	-	-	-	-	1030[3]	-	770	-	855	-
	1250	-	-	-	-	-	-	910	-	550	-	615	-
	1300	-	-	-	-	-	-	685	-	410	-	465	-
	1350	-	-	-	-	-	-	515	-	310	-	345	-
	1400	-	-	-	-	-	-	380	-	240	-	255	-
	1450	-	-	-	-	-	-	290	-	170	-	205	-
	1500	-	-	-	-	-	-	205	-	120	-	170	-
CLASS 2500	-20 to 100 °	6170	6250	6250	6250	5785	6250	6000	6000	6000	6000	6000	5000
	200	5625	6250	5930	5965	5470	6250	5160	5160	5000	5000	5300	4640
	300	5470	6070	5605	5640	5315	6070	4660	4660	4400	4400	4900	4360
	400	5280	5880	5485	5400	5145	5880	4280	4280	3920	3920	4620	-
	500	4990	5540	5350	5330	4850	5540	3980	3980	3640	3640	4320	-
	600	4560	5040	5040	5040	4440	5040	3760	3760	3460	3460	4100	-
	650	4475	4905	4905	4905	4355	4905	3700	3700	3400	3400	4000	-
	700	4440	4730	4730	4730	-	-	3600	3600	3360	3360	3900	-
	750	4200	4430	4430	4430	-	-	3520	3520	3320	3320	3840	-
	800	3430	4145	4230	4320	-	-	3460	3460	3280	3280	3800	-
	850	2230[1]	3660	4060	4060	-	-	3320	3320	3240	-	3700	-
	900	1430[1]	2945	3745	3745	-	-	3280	-	3200	-	3600	-
	950	860[1]	2170	3145	3145	-	-	3220	-	3120	-	3220	-
	1000	430[1]	1600	1860	2230	-	-	3330	-	2685	-	3330	-
	1050	-	1170	1145	1660	-	-	3000	-	2570	-	3000	-
	1100	-	860	800	945	-	-	2685	-	2145	-	2685	-
	1150	-	570	-	-	-	-	2285	-	1630	-	2285	-
	1200	-	370	-	-	-	-	1715	-	1285	-	1430	-
	1250	-	-	-	-	-	-	1515	-	915	-	1030	-
	1300	-	-	-	-	-	-	1145	-	685	-	770	-
	1350	-	-	-	-	-	-	860	-	515	-	570	-
	1400	-	-	-	-	-	-	630	-	400	-	430	-
	1450	-	-	-	-	-	-	485	-	285	-	345	-
	1500	-	-	-	-	-	-	345	-	200	-	285	-

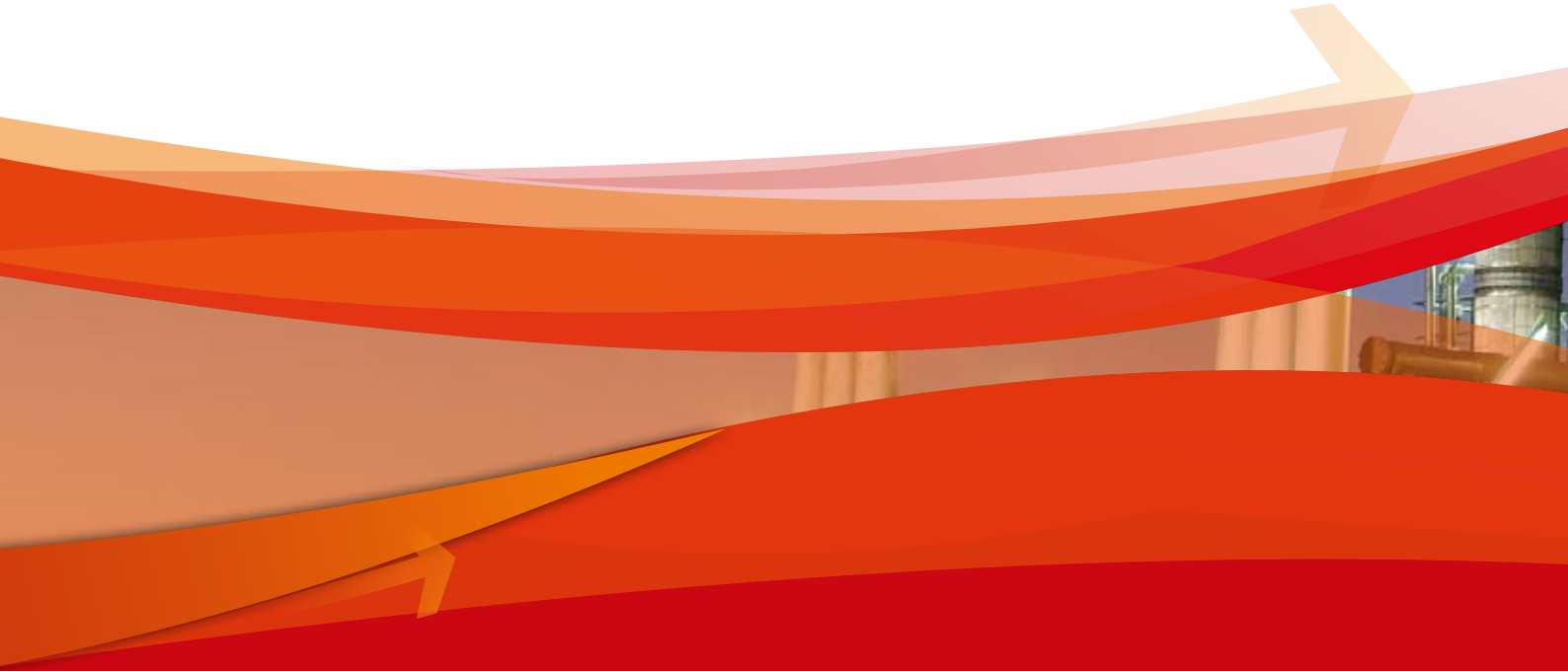
1 Permissible, but not recommeded for prolonged usage above about 800a C

arflu INDUSTRIAL VALVES

arflu

INDUSTRIAL VALVES

Global Thinking



P PETROCHEMICAL DIVISION

W WATER DIVISION

G GAS DIVISION

E ENERGY DIVISION

M MARINE DIVISION

www.arflu.com