

NORFLO AS

Your partner in valves & controls

NORFLO VALVE SELECTION GUIDE



Process Valve Specialists

for the Offshore, Marine and Industrial sectors



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CHECK VALVE

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CHECK VALVE

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BUTTERFLY VALVE

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BUTTERFLY VALVE

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Welcome to

the Norflo

Valve Selection Guide

ABOUT NORFLO

Norflo is a leading supplier of process valve solutions for the Norwegian and international markets. Since the company was founded in 2003, our team of experts has gained a wealth of knowledge and experience in developing solutions for the offshore oil industry, as well as the marine and industrial sectors.

ABOUT THIS GUIDE

The extensive range of available valves and solutions can make the valve selection process daunting and time consuming. At Norflo, we pride ourselves on helping our customers to select the correct valve to meet their process requirements. We have therefore compiled this selection guide to give our customers an accessible overview of our products and solutions. We hope that this will not only provide procurement personnel with an easy to use source of essential information, but that the technical data contained within these pages will also make this guide a valuable reference for technical staff.

YOUR PARTNER IN VALVES AND CONTROLS

We are passionate about delivering top quality valves and valve accessories along with excellent customer service at all stages of the sales process. Identification of any potential issues, fast delivery of documentation and ensuring your products are delivered on time are all part of our personal, flexible service.

Our process valve specialists are always available to answer your questions or to provide a competitive free quotation for your next project, so please don't hesitate to get in touch by telephone at +47 51 60 56 30, or e-mail at post@norflo.no. You can also find more information on our website, www.norflo.no. Thank you for your interest in Norflo – we hope you will find this guide useful, and look forward to hearing from you!

Best wishes,

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To help you through the valve selection process, we have developed a

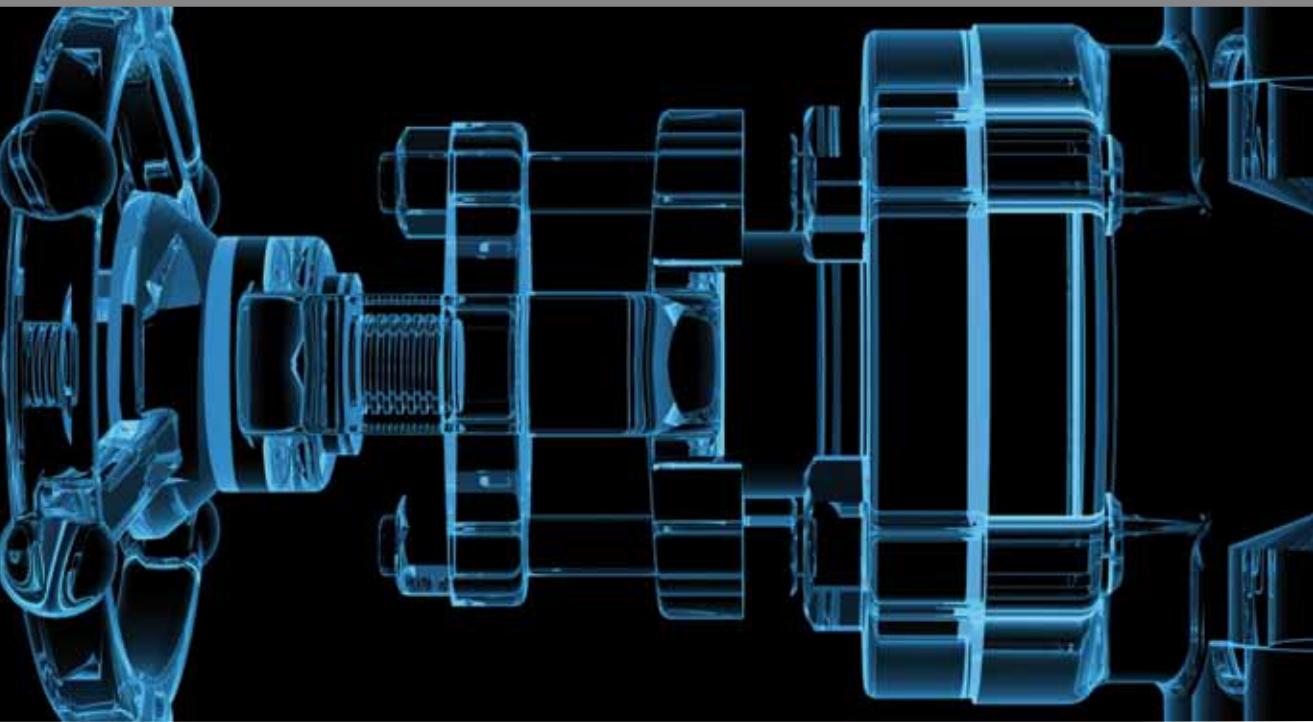
VALVE CHECK LIST

to ensure you have considered all relevant factors

Careful planning and attention to detail are key when selecting valves for both critical and non-critical applications.

While valves serve the purpose of controlling fluids/gases, there are also many other factors that need to be considered during the selection process. Valves are produced in numerous design types, materials and configurations. Selecting the correct valves is important to ensure the most efficient, cost-effective and long-lasting solutions.

The following checklist is the result of our many years of valve selection experience and extensive professional knowledge. We recommend that you use the checklist below when selecting valves for your projects to make sure you receive the correct products on time.



FUNCTION

WHAT IS THE PURPOSE OF THE VALVE?

WHAT FUNCTION IS REQUIRED?

- Starting and stopping the flow
- Regulating (throttling) the flow
- Preventing reversal of the flow
- Regulating or relieving the pressure of the flow

WHAT TYPE OF VALVE IS NEEDED TO MEET THE FLOW REQUIREMENT?

- Ball valve
- Butterfly valve
- Combination valve
- Check valve
- Globe valve
- Gate valve
- Needle valve
- Plug valve
- Control valve
- Other valve types

SERVICE CONSIDERATIONS

WHAT PHYSICAL CONDITIONS WILL THE VALVE HAVE TO ENDURE?

1. PRESSURE

HOW DEMANDING ARE THE PRESSURE CONDITIONS?

WHAT PRESSURE RATING IS NEEDED FOR THE VALVE?

- ANSI Class 150# - 4500#
- API Class 2000 PSI - 15000 PSI
- DIN Class PN6 - PN414
- JIS Class 5K - 40K

2. TEMPERATURE/TYPE OF SERVICE

WHAT ARE THE SERVICE CONDITIONS?

- Liquid/gas/dirty or abrasive (erosive) or corrosive fluid
- What is the design/service temperature?
- Other

WHAT MATERIAL SHOULD BE USED FOR THE SERVICE?

- Ductile iron
- Nodular cast iron
- Carbon steel
- Stainless steel
- Duplex/S duplex
- 6 mo
- Titanium
- Other

3. FLOW CONTROL

HOW DO YOUR FLUIDS/GASES NEED TO BE CONTROLLED?

- On-off throttling
- Need to prevent flow reversal
- Concern for pressure drop
- Velocity

4. OPERATION CONDITIONS

IN WHICH TYPE OF ENVIRONMENT WILL THE VALVE(S) OPERATE?

- Condensation
- Frequency of operation
- Accessibility
- Overall size/space available
- Manual or automated control
- Need for bubble-tight shut-off

PLANNING & DELIVERY

TO MAKE SURE THE VALVES WILL BE DELIVERED ON TIME

- What are the delivery requirements?
- When do the valves need to be delivered by?
- Which supplier(s) can meet the delivery requirements?

DOCUMENTATION

DOCUMENTATION IS CRITICAL IN MEETING REGULATIONS AND ACHIEVING CERTIFICATION

- What documentation is required to meet regulations?
- When do you require the documentation?
- Can the supplier provide correct documentation?

BUDGET

PRICE AND QUALITY ARE CLOSELY LINKED

- What is your budget for valves?
- Is there any area that you can compromise on?
- Are you willing to accept a lower cost now for higher costs in the future?

CHECK THAT THE SUPPLIER HAS THE REQUIRED QUALIFICATIONS TO MEET YOUR SUPPLY CHAIN REQUIREMENTS

- Make sure that the supplier has all the required certificates
- ISO 9002 / Norsok M650 / ATEX / PED etc.

With Norflo helping you through the valve selection process, you can be sure that you will obtain the correct valves for your applications at a competitive price.

Contact Norflo today.

TEL: +47 5160 5630. EMAIL: post@norflo.no



VALVE PRODUCTS

Ball valves

Gate valves

Globe valves

Check valves

Double block & bleed valves

Butterfly valves

Actuators

Accessories

BALL VALVES



Design	B16.34, API 6D, API 6A
Size	1/4" to 36"
Pressure rating range	ANSI Class 150 to Class 2500
End connections	Flanges, socket welding, hub ends, etc...

- Floating ball valve
- Trunnion mounted ball valve
- Top entry
- Non contact ball valve
- Multi way ball valve
- Cryogenic ball valve
- Double block and bleed
- Full and reduced port
- One, two and three piece designs
- Soft and metal seated for cryogenic and high temperature applications
- End or top entry
- Manually operated
- Pneumatic, hydraulic or electric operated
- Fire safe

GATE VALVES



Design	DIN, JIS, API 600, BS 5352, API 6D, API 6A
Size	1/4" to 42"
Pressure rating range	ANSI 150 - 4500 lbs, API 3000 - 20,000, PN6 - PN64, JIS 5K - 40K
End connections	Flanges, socket welding, hub ends, etc...

- API gate valve
- Pressure seal gate valve
- Bellows seal gate valve
- Jacketed gate valve
- Through conduit gate valve
- Parallel slide gate valve
- Cryogenic gate valve
- Other types and sizes on request
- Bolted bonnet, welded bonnet, pressure seal bonnet, bonnetless
- Extended bonnet for cryogenic and high temperature service
- Solid wedge, flexible wedge, slab gate, double expanding
- Graphite stem seal, life loaded, bellows sealed
- Manually operated
- Pneumatic, hydraulic or electric operated
- Fire safe

GLOBE VALVES



Design	BS 1873, ANSI B16.34
Size	1/2" to 24"
Pressure rating range	ANSI 150 - 2500 lbs
End connections	Flanges, socket welding, hub ends, etc...

- Pressure seal globe valve
- Bellows seal globe valve
- Jacketed globe valve
- Cryogenic globe valve
- Other types and sizes on request
- Bolted bonnet, welded bonnet, pressure seal bonnet, bonnetless
- Outside screw and yoke (OS&Y), straight type, Y-type
- Ball type disc, plug type disc, parabolic disc, needle type disc, stop check disc
- Metal seated, soft insert seated
- Graphite stem seal, life loaded, bellows sealed
- Manually operated
- Pneumatic, hydraulic or electric operated
- Fire safe

CHECK VALVES

Design	BS 1868, API 594, API 600, ASME B16.34
Size	1/2" to 48"
Pressure rating range	ANSI 150 - 2500 lbs
End connections	Flanges, socket welding, hub ends, etc...

- Swing check valve
- Lift check valve
- Pressure seal swing check valve
- Pressure seal lift check valve
- Jacketed swing check valve
- Dual plate check valve
- Single plate check valve
- Other types on request
- Bolted bonnet, welded bonnet, pressure seal bonnet
- Flanged ends, wafer and lug type, screwed ends, welded ends, hub ends
- Pneumatic, hydraulic or electric operated
- Fire safe

DOUBLE BLOCK & BLEED

Design	API 6D, API 6A, ASME B16-34
Size	1/4" to 24"
Pressure rating range	ANSI 150 - 4500 lbs, API 3000 PSI to 20,000 PSI
End connections	Flanges, socket welding, hub ends, etc...

- Flanged DB&B
- Modular flanged
- DB&B with chemical injection
- Wafer style
- Monoflanged DB&B
- One, two and three piece designs
- Soft and metal seated
- Top sealing bonnet style
- Non-rotating tip
- Trunnion or floating ball
- Fire safe

BUTTERFLY VALVES

Size	2" to 80"
Rating	PN6 - PN16, JIS 5K - JIS 16K, ANSI 150

Size	2" to 80"
Rating	ANSI 150 - ANSI 600 lbs, equivalent to DIN

Size	3" to 48"
Rating	ANSI 150# To ANSI 600#

RESILIENT SEATED BUTTERFLY VALVE

Resilient seated butterfly valves are very reliable for tight shut off applications. Used in many applications such as water, air, mud, gas, oil etc.

DOUBLE OFFSET BUTTERFLY VALVE

High performance double offset butterfly valves are available in most type of end connections as wafer, lugged, flanges, butt weld ends etc. These valves are type approved by DNV as per API 607, as double offset providing excellent controllability, bubble tight shut off, greater seat life and standard smooth operation.

TRIPLE OFFSET BUTTERFLY VALVE

Triple offset metal seated butterfly valves with unique seat geometry disc shaft engagement provide high cycle life under extreme temperature conditions with metal to metal tight shut off characteristics. Eliminate problems such as wear, seat deformation, abrasion, flow and seat leakage.

ACTUATORS**ACTUATORS**

We supply a wide range of quarter turn and linear pneumatic, hydraulic and electric actuators from all major brands. Available in single or double acting execution. Electric actuators can be either quarter turn or multi turn.

ACCESSORIES

Norflo provides high quality valves, valve automation packages and control systems tailor made to suit your needs.

OTHER PRODUCTS AND SOLUTIONS WE OFFER:

Choke & kill, mud and cement manifolds, stop valves, diaphragm valves, storm flap valves, knife gate valves, firehose valves, mud boxes, strainers, gland cocks, PSV, control valves, quick and self closing valves, steam traps, JIS valves, couplings, fittings, spare parts, repair, expediting.

Industri, Rigg og Marine

Valves for industry and the offshore and marine sectors



SETE VENTIL GLOBE VALVE



DIMENSJONER / DIMENSIONS: DN8 - DN 350
TRYKKLASSE / PRESSURE RATING: PN 4, PN 40, PN63, JIS 5K, 10K, 16K, ANSI 150 lbs, ANSI 300 lbs. **ANSLUTNING VALG / SOCKET:** Flens (flange), gjenger (treads), BW, SW
FUNKSJON OG KONSTRUKSJONER: Rett løp eller vinkel seteventil, parabolsk kjegle, myk tettende sete i skråstilling, metalltettende sete, gjengen overdel med låsemutter, ettertrekking av pakkboks, boltet overdel. **FEATURES:** Straight or angle pattern, parabolic disc, soft seat, metal seat, threaded secured bonnet, adjustable gland packing, bolted bonnet.
ANVENDELSESOMRÅDER: Luft, olje, damp, sjøvann, ferskvann. **APPLICATIONS:** Air, oil, steam, seawater, freshwater. **MATERIALVALG:** Bronse, messing, støpejern, seigjern, støpestål, rustfritt
MATERIALS: Gunmetal, brass, cast iron, ductile iron, stainless steel.

Dimensjoner	DN8 - DN 350
Trykklasser	PN 4, PN 40, PN63, JIS 5K, 10K, 16K, ANSI 150 lbs, ANSI 300 lbs
Anslutnings valg	Flens, gjenger, BW, SW

KULEVENTIL BALL VALVE



DIMENSJONER / DIMENSIONS: DN 8 - DN 500. **TRYKKLASSE / PRESSURE RATING:** 2 - 40 bar, PN 4 - PN 170. **ANSLUTNING VALG / SOCKET:** BSP, NPT, BW. **Flens (flange):** ANSI, DIN, JIS. **FUNKSJON OG KONSTRUKSJONSMULIGHETER:** Helsveist, to eller tredelt kuleventil, dreneringsplugg, utblåsingssikker spindel, fullt eller redusert gjennomløp, flyende eller opplagret kule, ISO 5211 toppflens for aktuator montasje. Kan fås med høy spindelhals for isolering. **FEATURES:** Fully welded, two or three piece ball valve, bleeder plug, anti blow-out proof stem, full or reduced bore, floating or trunnion mounted ball, ISO 5211 top flange for actuator. Stem extension for isolation. **ANVENDELSESOMRÅDER:** Drikkevann, sjøvann, damp, luft, gasser, petroleumsprodukter. **APPLICATIONS:** Drinking water, seawater, steam, air, gas, petrochemicals. **MATERIALVALG:** Messing, rustfritt, støpejern, seigjern, rødmetall, WCB, stål. **MATERIALS:** Brass, stainless steel, cast iron, ductile iron, gunmetal, carbon steel, steel.

Dimensjoner	DN 8 - DN 500
Trykklasser	2 - 40 bar, PN 4 - PN 170
Anslutnings valg	BSP, NPT, BW. Flens (flange): ANSI, DIN, JIS

NÅLEVENTILER NEEDLE VALVE



DIMENSJONER / DIMENSIONS: DN 8 - DN 15
TRYKKLASSE / PRESSURE RATING: PN 100 - PN 400
ANSLUTNING VALG / SOCKET: BSP, NPT
FUNKSJON OG KONSTRUKSJONER: For høyt trykk og for regulering.
FEATURES: For high pressure and manual control.
ANVENDELSESOMRÅDER: Luft, sjøvann, ferskvann, olje
APPLICATIONS: Air, seawater, freshwater, oil
MATERIALVALG: Messing, rustfritt
MATERIALS: Brass, stainless steel

Dimensjoner	DN 8 - DN 15
Trykklasser	PN 100 - PN 400
Anslutnings valg	BSP eller NPT

TILBAKESLAGSVENTILER CHECK VALVE



DIMENSJONER / DIMENSIONS: DN 8 - DN 350
TRYKKLASSE / PRESSURE RATING: PN 6 - PN 40
ANSLUTNING VALG / SOCKET: Monteres mellom flenser (mount between flanges): ANSI, DIN, JIS
FUNKSJON OG KONSTRUKSJONSMULIGHETER: Konstruert for å forhindre tilbakestrøming av mediet. Kan fås som enkel eller dobbel klaff, myk eller metalltettende sete. Kan utstyres med fjær for hindring av "klapping". **FEATURES:** Constructed to prevent back flow. Can be delivered as single or double disc, soft or metal seat. Can also be equipped with spring to prevent "chatter" in the pipe.
ANVENDELSESOMRÅDER: Luft, sjøvann, ferskvann, kjemikalier, gass, damp, oljer.
APPLICATIONS: Air, seawater, freshwater, oil, gas, petrochemicals, steam.
MATERIALVALG: Galv. stål, støpejern, seigjern, aluminium bronse, bronze, rustfritt,
MATERIALS: Steel, cast iron, ductile iron, alum. bronze, bronze, stainless steel.

Dimensjoner	DN 8 - DN 350
Trykklasser	PN 6 - PN 40
Anslutnings valg	Monteres mellom flenser; ANSI, DIN, JIS

STORMKLAFF VENTIL STORM FLAP VALVE



DIMENSJONER / DIMENSIONS: DN15 - DN 150
TRYKKLASSE/ PRESSURE RATING: PN 4, boret flens til (drilled to) PN 10
ANSLUTNING VALG / SOCKET: Flens (flange): DIN, JIS, ANSI
FUNKSJON OG KONSTRUKSJONSMULIGHETER: Konstruert for å hinde sjøvann slår tilbake inn i rørsystemer. Kan fås med manuel overstyring for hurtig stengning. **FEATURES:** Designed to prevent "back flow" and avoid sea water coming back into pipe system. Can be delivered with manual override for fast shutdown. **ANVENDELSESOMRÅDER / APPLICATION:** Sjøvann (Seawater)
MATERIALVALG / MATERIALS: Seigjern, støpejern, bronse (Ductile iron, cast iron, bronze)

Dimensjoner	DN15 - DN 150
Trykklasser	PN 4, boret flens til (drilled to) PN 10
Anslutnings valg	Flens; DIN, JIS, ANSI

SLUSEVENTIL GATE VALVE



DIMENSJONER / DIMENSIONS: DN 40 - DN 600
TRYKKLASSE / PRESSURE RATING: PN 4 - PN 100
ANSLUTNING VALG / SOCKET: SW, BW. Flens (flange): DIN, JIS, ANSI.
FUNKSJON OG KONSTRUKSJONSMULIGHETER: Innvendig gjengen spindel med mulighet for ettertrekking av pakkboks. Kan fås med "ikke stigende spindel" men som OS&Y (outside screw & yoke) som er beregnet for åpning og stengning av flytende medium.
FEATURES: Internally threaded stem, with option to adjust gland packing. Can be delivered with "non-rising" stem, as OS&Y. **ANVENDELSESOMRÅDER:** Vann, damp, luft, olje, gass, petrolearmsprodukter. **APPLICATIONS:** Water, steam, air, oil, gas, petrochemicals.
MATERIALVALG: Seigjern, støpejern, WCB, rustfritt. **MATERIALS:** Ductile iron, cast iron, carbon steel, stainless steel.

Dimensjoner	DN 40 - DN 600
Trykklasser	PN 4 - PN 100
Anslutnings valg	Flens; DIN, JIS, ANSI, SW, BW.

SKYVESPJELDVENTIL KNIFE GATE VALVE



DIMENSJONER / DIMENSIONS: DN 50 - DN 500
TRYKKLASSE / PRESSURE RATING: PN 4 - PN 16 **ANSLUTNING VALG / SOCKET:** For innspenning mellom flens (mount between flanges); PN 10, ANSI 150, ANSI 300
FUNKSJON OG KONSTRUKSJONSMULIGHETER: En eller todelt hus, wafer, lug, gjennomgående spjeld, dobbeltsettende. Spjeld kan fås i eksotisk materialer som rustfritt, alu.bronse, duplex og titan. **FEATURES:** One or two piece body, wafer, lug, through-going gate for secure shut-off. Gate can be delivered in exotic materials such as stainless steel, alum. bronze, duplex and titanium.
ANVENDELSESOMRÅDER: Ferskvann, sjøvann, kjemikalier, kloakk, tykkflytende medier.
APPLICATIONS: Fresh water, seawater, chemicals, sewage, heavy fluids. **MATERIALVALG:** Støpejern, seigjern, rustfritt. **MATERIALS:** Cast iron, ductile iron, stainless steel.

Dimensjoner	DN 50 - DN 500
Trykklasser	PN 4 - PN 16
Anslutnings valg	For innspenning mellom flens PN 10, ANSI 150, ANSI 300

SPJELDVENTIL BUTTERFLY VALVE



DIMENSJONER / DIMENSIONS: DN 50 - DN 800
TRYKKLASSE / PRESSURE RATING: PN 10 - PN 25 **ANSLUTNING VALG / SOCKET:** For innspenning mellom flens (mount between flanges); DIN, JIS, ANSI. **FUNKSJON OG KONSTRUKSJONSMULIGHETER:** Lug. Wafer eller dobbelflenset type, høy hals for isolering, vulkanisert eller utsiktbare seter, myk eller metall tettende sete, dobbell eller tripleksentrisk spjeld for minimal slitasje på sete under åpning/stengning. **FEATURES:** Lug, wafer type or double flanged type, long neck for isolation, vulcanized or replaceable seat, soft or metal seat, double or triple eccentric disc for minimal wear on seat during opening/closing. **ANVENDELSESOMRÅDER:** Ferskvann, sjøvann, luft, petrolearmsprodukter. **APPLICATIONS:** Freshwater, seawater, air, petrochemicals. **MATERIALVALG:** Seigjern, støpejern, karbon stål, rustfritt. **MATERIALS:** Ductile iron, cast iron, carbon steel, stainless steel.

Dimensjoner	DN 50 - DN 600
Trykklasser	PN 10 - PN 25
Anslutnings valg	For innspenning mellom flens (mount between flanges): PN 10, ANSI 150, ANSI 300

TRYKKREDUKSJONSVENTIL PRESSURE REDUCING VALVE



Dimensjoner	DN 8 - DN 80
Trykklasse	PN16 - PN 50
Anslutnings valg	Flens; DIN, JIS, ANSI. Kan også fås med BSP gjenger.

DIMENSJONER / DIMENSIONS: DN 8 - DN 80

TRYKKLASSE / PRESSURE RATING: PN16 - PN 50

ANSLUTNING VALG / SOCKET: BSP, Flens (flange): DIN, JIS, ANSI.

FUNKSJON OG KONSTRUKSJONSMULIGHETER: Konstruert for å redusere utløpstrykk. Utløpstrykk: 1 - 10 bar. Innløpstrykk: max 50 bar. FEATURES: The valve's purpose is to reduce the pressure downstream. Downstream pressure can be set between 1-10 bar. Max inlet pressure: 50 bar. ANVENDELSESMÅRÅDER: Vann, luft. APPLICATIONS: Water, air.

MATERIALVALG: Messing. MATERIALS: Brass.

STENGBAR TILBAKESLAGSVENTIL SCREW DOWN NON-RETURN/SDNR



Dimensjoner	DN8 - DN 300
Trykklasse	PN 4 - PN 40
Anslutnings valg	Flens

DIMENSJONER / DIMENSIONS: DN8 - DN 300

TRYKKLASSE / PRESSURE RATING: PN 4 - PN 40

ANSLUTNING VALG / SOCKET: Flens (Flange): DIN, ANSI, JIS. FUNKSJON OG

KONSTRUKSJONSMULIGHETER: Rettløps eller vinkel. Mulighet for ettertrekking av pakkboks. Myk eller metalltettende sete. Boltet overdel. FEATURES: Straight or angle pattern, adjustable gland packing, soft or metal seat, bolted bonnet. ANVENDELSESMÅRÅDER: Luft, olje, damp, sjøvann, ferskvann, gass, syre. APPLICATIONS: Air, oil, steam, seawater, fresh water, gas, acid. MATERIALVALG: Bronse, messing, støpejern, seigjern, støpestål, rustfritt. MATERIALS: Bronze, brass, cast iron, ductile iron, cast steel, stainless steel.

Y-FILTER Y-STRAINER



Dimensjoner	DN25 - DN300
Trykklasse	PN 4 - PN 40
Anslutnings valg	BSP, Flens; ANSI, DIN, JIS.

DIMENSJONER / DIMENSIONS: DN25 - DN300

TRYKKLASSE / PRESSURE RATING: PN 4 - PN 40

ANSLUTNING VALG / SOCKET: BSP, Flens (flange): ANSI, DIN, JIS.

FUNKSJON OG KONSTRUKSJONS MULIGHETER: Avtakbar filterinnsats av rustfritt stål. FEATURES: Y-strainer with filter strainer in stainless steel.

ANVENDELSESMÅRÅDER: i rørsystemer for å hindre urent media i å skade ventiler etc.

APPLICATIONS: Installed in pipe system to prevent dirty media damage to valves.

MATERIALVALG: Bronse, rustfritt stål, støpejern. MATERIALS: Bronze, stainless steel, cast steel.

GROVFILTER MUDBOX



Dimensjoner	DN40-DN450
Trykklasse	PN 4
Anslutnings valg	Flens; DIN, ANSI, JIS

DIMENSJONER / DIMENSIONS: DN40-DN450

TRYKKLASSE / PRESSURE RATING: PN 4. ANSLUTNING VALG / SOCKET: Flens (flange): DIN, ANSI, JIS. FUNKSJON OG KONSTRUKSJONS-

MULIGHETER: Rettløp- eller vinkel grovfilter med avtakbart lokk for rengjøring.

FEATURES: Straight or angle pattern mud box with removable top for cleaning of strainer.

ANVENDELSESMÅRÅDER: Hvor behov for grovfiltrering.

APPLICATIONS: Where needed for filtration of fluids. MATERIALVALG: Støpejern.

MATERIALS: Cast iron.

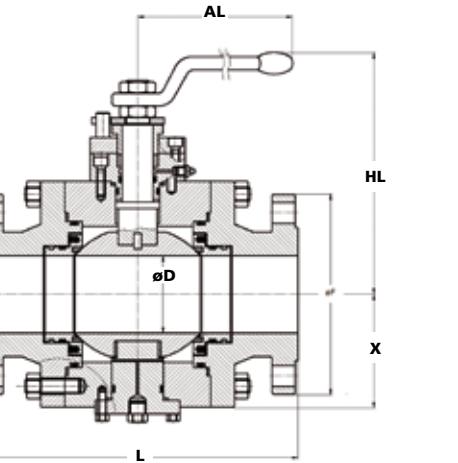
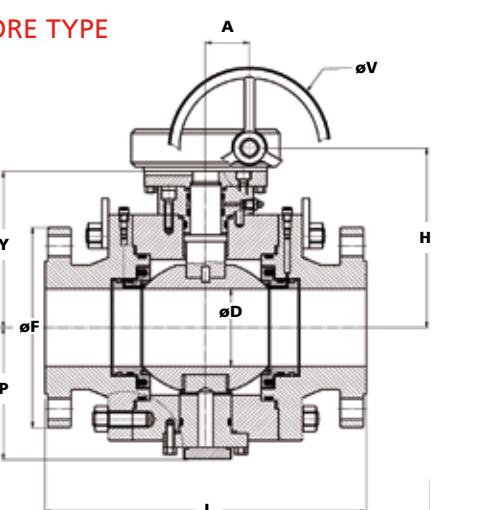
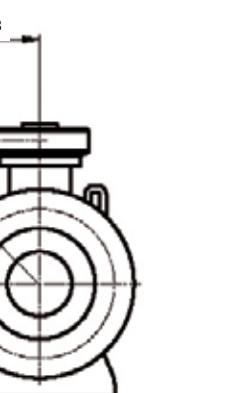
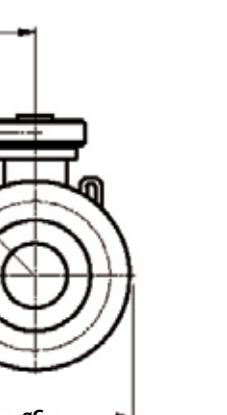
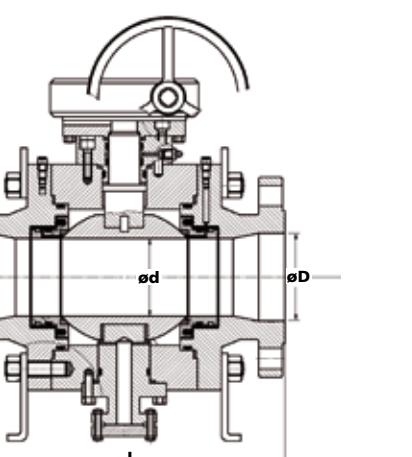
DIVERSE VENTILER OG UTSTYR OTHER VALVES AND ACCESSORIES

- Lufterørsventil (Tank vent check valve)
- Sikkerhetsventil (Safety valve)
- Membranventiler (Diaphragm valve)
- Peilerørskraner (Sounding cock)
- Selvstengende ventiler (Self closing valve)
- Hurtigstengeventil (Quick closing valve)
- Brannventil (Fire valve)
- Løs flens (Loose flange)

- Blindflens (Blind flange)
- Sveiseflens (Welding flange)
- Nivå måling (Level gauge)
- Hydraulisk, Elektrisk og Pneumatiske Aktuatorer (Hydraulic, electric and pneumatic actuators)
- Lokalt Kontroll Panel (LCP)

VALVE DATA AND MEASUREMENTS



BALL VALVES – TRUNNION MOUNTED, END ENTRY – SPLIT BODY DESIGN**FULL BORE TYPE****FULL BORE TYPE****REDUCED BORE TYPE**

All dimensions are in mm, weights are in kg

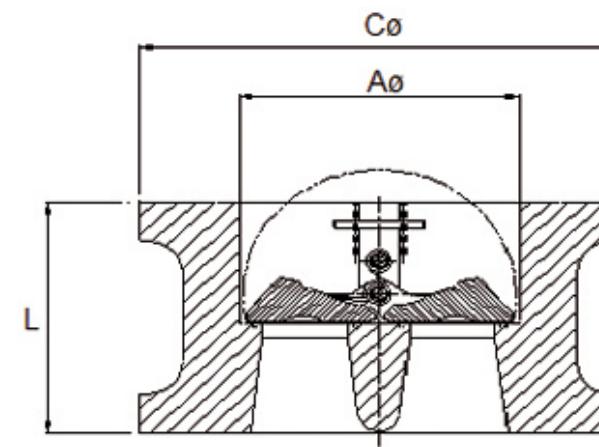
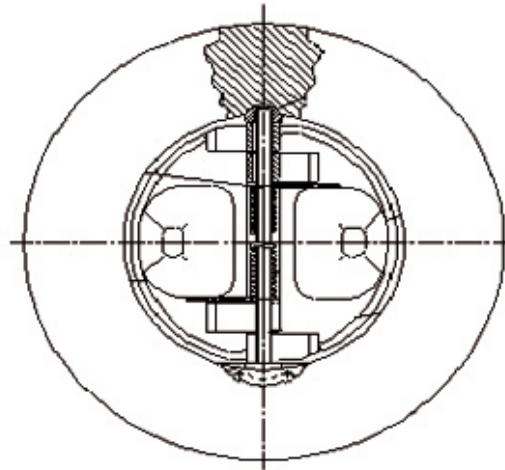
ANSI 150**ANSI 300****ANSI 600****ANSI 900**

SIZE - Bore	L				ød	øD	øF	OC	P	Y	X	A	B	H	øV	AL	HL-	WEIGHT	
	Full	Reduced	RF	RJ														Valve	Valve + Gear
1/2"					14	89													
3/4"					14	98													
1"					19	108													
1 1/2"					25	127													
2"					38	127	150	108	90	70	250	148	400	274	190	16	28		
3"					49	152	150	108	90	70	250	148	400	274	190	19	31		
4"					75	191	164	115	95	70	250	155	400	274	200	21	33		
6"					101	229	229	151	135	70	250	191	400	335	250	40	52		
8"					101	229	267	172	155	70	250	212	400	335	300	54	66		
10"					150	279	348	220	195	70	250	260	400	—	—	155	167		
12"					201	343	348	220	195	70	250	260	400	—	—	189	201		
14"					201	343	406	250	220	70	250	260	400	—	—	270	288		
16"					201	343	458	269	289	92	305	343	500	—	—	370	388		
18"					201	343	505	312	331	101	360	396	600	—	—	510	537		
20"					201	343	552	343	362	125	420	440	700	—	—	663	708		
22"					201	343	599	380	522	164	600	607	700	—	—	730	775		
24"					201	343	646	406	458	220	195	70	250	260	400	—	—	891	
26"					201	343	693	458	500	92	305	343	500	—	—	905	961		
28"					201	343	740	505	552	137	555	523	700	—	—	1124	1180		
30"					201	343	787	552	584	404	414	137	555	561	700	—	—	1231	
32"					201	343	834	605	658	137	555	605	700	—	—	1485	1541		
36"					201	343	881	655	700	137	555	605	700	—	—	1565	1621		
22"					201	343	927	699	890	530	522	164	600	607	700	—	—	2065	
24"					201	343	974	742	874	201	343	974	742	—	—	2170			
26"					201	343	1021	789	921	201	343	1021	789	—	—	2315	2420		
28"					201	343	1067	830	971	201	343	1067	830	—	—	2950	3065		
30"					201	343	1114	877	1015	201	343	1114	877	—	—				
32"					201	343	1161	923	1061	201	343	1161	923	—	—				
36"					201	343	1208	968	1108	201	343	1208	968	—	—				

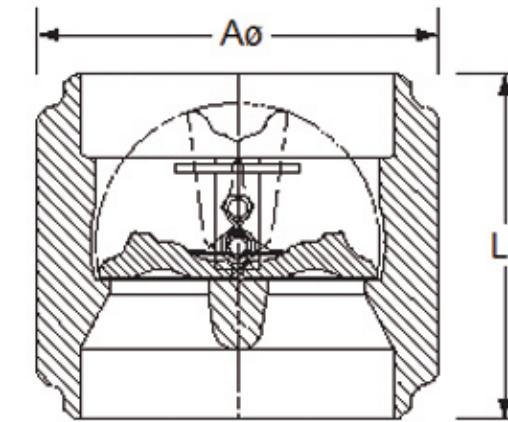
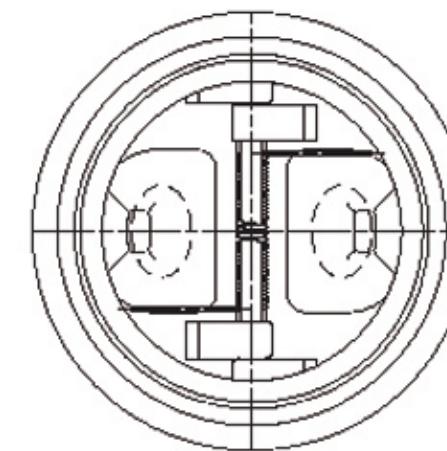
SIZE - Bore	L				ød	øD	øF	OC	P	Y	X	A	B	H	øV	AL	HL-	WEIGHT	
	Full	Reduced	RF	RJ														Valve	Valve + Gear
1/2"					14	95													
3/4"					14	118													
1"					19	124													
1 1/2"					25	124													
2"					38	156	150	108	90	70	250	148	400	274	190	21	33		
3"					49	165	150	108	90	70	250	148	400	274	190	21	33		
4"					75	210	164	115	95	70	250	155	400	274	200	24	36		
6"					101	229	229	151	135	70	250	191	400	335	250	54	66		
8"					101	229	276	172	155	70	250	212	400	335	300	55	67		
10"					101	229	321	201	188	70	250	260	400	335	250	55	67		
12"					101	229	368	172	155	70	250	212	400	335	300	152	164		
14"					101	229	416	201	188	70	250	260	400	335	300	152	164		
16"					101	229	464	201	188	70	250	260	400	335	300	152	164		

CHECK VALVES**API 6A WAFER CHECK VALVE, FLANGED ENDS**

Design	API 594
Size	1-1/2" - 40"
Structure type	ASME B16.25
Ends	Flanged ends

**DUAL PLATE WAFER CHECK VALVE, BUTT WELD ENDS**

Design	API 594
Size	4" - 24"
Structure type	ASME B16.25
Ends	Butt weld end type



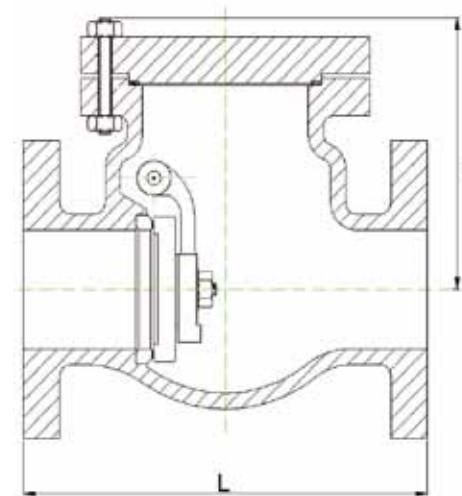
	Size	2-1/16"	3-1/8"	4-1/16"	7-1/16"	9"	11"	13-5/8"
API 2000	End facing	RJ-23	RJ-31	RJ-37	RJ-45	RJ-49	RJ-53	RJ-57
	Aø	57	87	113	166	207	260	300
	cØ	111	149	193,5	267	320,5	400	457
	L	70	82,5	101,5	159	206	241	292
	Weight	3	7	8,5	32	65	113	140
API 3000	End facing	RJ-24	RJ-31	RJ-37	RJ-45	RJ-49	RJ-53	RJ-57
	Aø	57	87	113	166	207	260	300
	cØ	143	168	206	289	359	435	499
	L	70	82,5	101,5	159	206	247,5	305
	Weight	8	13	20,5	54	123	197	327
API 5000	End facing	RJ-24	RJ-35	RJ-39	RJ-46	RJ-50	RJ-54	
	Aø	57	87	113	166	207	260	
	cØ	143	174,5	209,5	282,5	352,5	435	
	L	70	85,7	105	159	206	254	
	Weight	8	13,5	27,5	54,5	117	204	

	Size	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
ANSI 150	End facing	BW									
	Aø	129	168	226	271	329	380	425	475	526	609
	L	121	137	152	187	216	260	305	330	400	343
	Weight	7	13	22	43	63	101	146	189	273	361
ANSI 300	End facing	BW									
	Aø	129	168	226	271	329	380	425	475	526	609
	L	121	137	152	187	216	260	305	330	400	419
	Weight	7	13	25	43	69	112	164	215	312	457
ANSI 600	End facing	BW									
	Aø	136	172	239	289	352	382	441	487	540	635
	L	121	137	216	262	292	355	400	409	495	546
	Weight	9	15	43	77	116	199	263	306	460	721
ANSI 900	End facing	BW									
	Aø	147	229	252	306	373	382	469	519	578	680
	L	165	206	292	262	317	355	400	447	546	603
	Weight	14	28	68	90	159	231	314	423	637	1020
ANSI 1500	End facing	BW									
	Aø	155	229	284	346	419	429	494	555	622	738
	L	165	206	292	346	349	355	438	457	546	660
	Weight	16	37	92	159	234	263	434	567	855	1400
ANSI 2500	End facing	BW	BW	BW	BW						
	Aø	170	229	312	367						
	L	165	206	292	346						
	Weight	19	44	113	179						

Customer must state pipe schedule at time of enquiry. Nominal bore of the valve will be determined by the pipe schedule selected by the customer and be in accordance with ASME/ANSI B16.25.

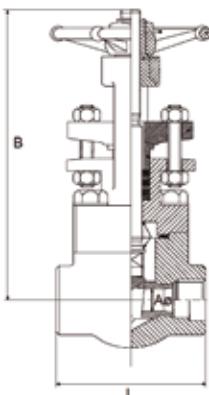
CHECK VALVES**SWING CHECK VALVE**

Design	BS 1868, API 6D, ANSI B16.34
Size	2" - 36"
Ends	Flanges to ASME B16.5 from 2" - 24", flanges to ASME B16.47 from 26", butt weld ends to ANSI B.16.25
Face to face	ASME B16.10 / API 6D
Structure type	Bolted cover, swing type disc



	Size	2"	2-1/2"	3"	4"	6"	8"	10"	12"	
ANSI 150	B	132	173	208	254	308	330	362	362	
	L/RFBW	203	241	292	356	495	622	698	698	
	L/RTJ	216	254	305	369	508	635	711	711	
	Weight (approx.)	16	27	45	73	132	238	295	295	
ANSI 300	B	152	200	238	287	352	398	450	450	
	L/RFBW	267	318	356	444	533	622	711	711	
	L/RTJ	283	334	372	460	549	638	727	727	
	Weight (approx.)	18	48	67	128	240	335	549	549	
ANSI 600	B	197	225	262	335	440	472	482	482	
	L/RFBW	292	356	432	559	600	787	838	838	
	L/RTJ	295	359	435	562	663	790	840	840	
	Weight (approx.)	33	65	112	220	385	465	730	730	
ANSI 900	B	240	255	300	370	450	515	630	630	
	L/RFBW	368	381	457	610	737	838	965	965	
	L/RTJ	371	384	460	613	740	841	968	968	
	Weight (approx.)	69	78	120	265	385	600	860		
ANSI 1500	B	240	300	340	475	525	640	760	760	
	L/RFBW	368	470	543	705	832	991	1130	1130	
	L/RTJ	371	473	549	711	842	1000	1146	1146	
	Weight (approx.)	75	120	235	540	945	1275	1870		
ANSI 2500	B	280	360	420	560	700	810	920	920	
	L/RFBW	451	578	673	914	1022	1270	1422	1422	
	L/RTJ	454	584	683	927	1038	1293	1444	1444	
	Weight (approx.)	90	155	275	735	1210	1450	2200		

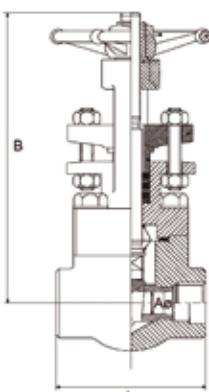
B= Center to top L= End to end

GATE VALVES**GATE VALVE, BOLTED BONNET - STANDARD BORE, OUTSIDE SCREW & YOKE**

Design	API 602, BS 5352
Size	1/4" - 2"
Ends	Socket weld ends to ANSI B.16.11, screwed ends (NPT) to ANSI B1.20.1, butt weld ends to ANSI B.16.25
Face to face	ANSI B16.34
Structure type	Bolted bonnet, standard bore, outside screw & yoke

Norflo/Manufacturer standard

Aø= Diameter of port B= Center to top L= End to end

BOLTED BONNET - REDUCED BORE, OUTSIDE SCREW & YOKE

Design	API 602, BS 5352
Size	1/4" - 2"
Ends	Socket weld ends to ANSI B.16.11, screwed ends (NPT) to ANSI B1.20.1, butt weld ends to ANSI B.16.25
Face to face	Screwed ends (NPT) to ANSI B1.20.1
Structure type	Bolted Bonnet, reduced bore, outside screw & yoke

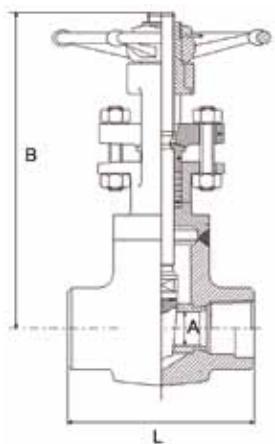
Norflo/Manufacturer standard

Aø= Diameter of port B= Center to top L= End to end

	Size, inches	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	
ANSI 800	End facing	SW/BW	SW/BW	SW/BW	SW/BW	SW/BW	SW/BW	
	Aø	10	14	18	24	30	37	
	B	148	163	178	210	243	262	
	L	90	110	127	127	127	210	
ANSI 1500	End facing	SW/BW	SW/BW	SW/BW	SW/BW	SW/BW	SW/BW	
	Aø	9,6	14	18	24	30	37	
	B	160	175	210	240	260	355	
	L	90	110	127	127	127	210	
	Weight	2.2	3.8	5.5	6.8	9.5	22.5	

GATE VALVES

GATE VALVE, WELDED BONNET – STANDARD BORE, OUTSIDE SCREW & YOKE

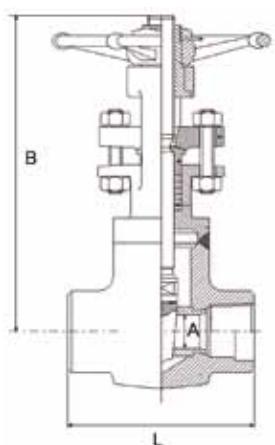


Design	API 602, BS 5352
Size	1/4" - 2"
Ends	Socket weld ends to ANSI B.16.11, screwed ends (NPT) to ANSI B1.20.1, butt weld ends to ANSI B.16.25
Face to face	ANSI B16.34
Structure type	Welded bonnet, standard bore, outside screw & yoke

	Size, inches	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
ANSI 800	End facing	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW
	Aø	8	9,6	14	18	24	30	37	48
	B	148	148	163	178	210	243	262	365
	L	80	80	90	110	127	127	127	210
	Weight	1,6	1,6	2	3,3	4,9	6,5	8,5	17
ANSI 1500	End facing	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW
	Aø	8	9,6	14	18	24	30	37	40
	B	145	160	175	210	240	260	355	360
	L	90	90	110	127	127	127	210	210
	Weight	2,2	2,2	3,6	5,5	6,8	9	18	17,5

Aø= Diameter of port B= Center to top L= End to end

GATE VALVE, WELDED BONNET – REDUCED BORE, OUTSIDE SCREW & YOKE

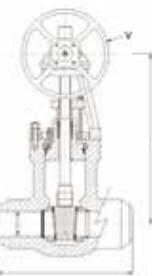


Design	API 602, BS 5352
Size	1/4" - 2"
Ends	Socket weld ends to ANSI B.16.11, screwed ends (NPT) to ANSI B1.20.1, butt weld ends to ANSI B.16.25
Face to face	ANSI B16.34
Structure type	Welded bonnet, reduced bore, outside screw & yoke

	Size, inches	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"		
ANSI 800	End facing	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW		
	Aø	9,6	14	18	24	30	37		
	B	148	163	178	210	243	262		
	L	80	90	110	127	127	127		
	Weight	1.6	2.2	3.5	5	7	9		
ANSI 1500	End facing	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW	SC/SW		
	Aø	9,6	14	18	24	30	37		
	B	160	175	210	240	260	355		
	L	90	110	127	127	127	210		
	Weight	2.2	3.8	5.5	6.8	9.5	22.5		

Aø= Diameter of port B= Center to top L= End to end

GATE VALVE, PRESSURE SEAL - OUTSIDE SCREW & YOKE

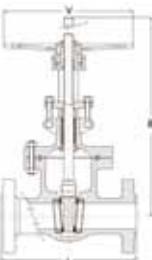


Design	API 600, BS EN ISO 10434, ANSI B16.34
Size	1" - 36"
Ends	Butt weld ends to ANSI B16.25
Face to face	ANSI B16.10
Structure type	Pressure seal, outside screw & yoke

	Size, inches	2"	3"	4"	6"	8"	10"	12"
ANSI 900	End facing	BW	BW	BW	BW	BW	BW	BW
	B	670	791	1068	1380	1560	1800	1900
	L	305	356	508	660	787	914	991
	V	500	500	600	600	G.O	G.O	G.O
ANSI 1500	End facing	BW	BW	BW	BW	BW	BW	BW
	B	590	680	795	1175	1394	1580	1780
	L	216	305	406	559	711	864	991
	V	500	500	600	600	G.O	G.O	G.O
ANSI 2500	End facing	BW	BW	BW	BW	BW	BW	BW
	B	680	735	885	1152	1302	1576	1665
	L	279	368	457	610	762	914	1041
	V	500	500	600	600	G.O	G.O	G.O

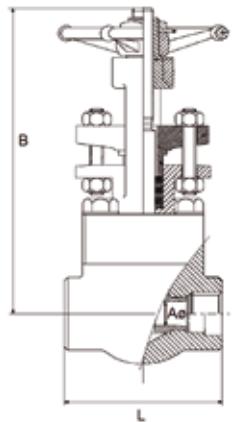
Aø= Diameter of port B= Center to top L= End to end G.O= Gear operated

GATE VALVE, BOLTED BONNET, OS&Y, SOLID OR FLEXIBLE WEDGE

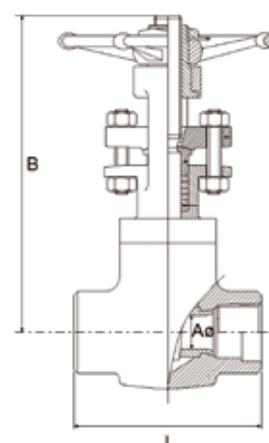


Design	API 600, BS EN ISO 10434, ANSI B16.34
Size	2" - 48"
Ends	Flanges to ASME B16.5 from 2" - 24", flanges to ASME B16.47 from 26", butt weld ends to ANSI B.16.25
Face to face	ASME B16.10
Structure type	Bolted bonnet, OS&Y, solid or flexible wedge

	Size	2"	3"	4"	6"	8"	10"	12"
ANSI 150	B	375	472	577	806	979	1178	1416
	L - RF	178	203	229	267	292	330	356
	L - RTJ	191	216	242	280	305	343	369
	L/BW	216	282	305	403	419	457	502
	V	200	225	250	300	350	400	450
ANSI 300	Weight (approx.)	18	31	51	84	132	205	290
	B	409	506	605	842	1030	1295	1472
	L - RF/BW	216	282	305	403	419	457	502
	L - RTJ	232	298	321	419	435	473	518
ANSI 600	V	200	225	250	350	400	450	500
	Weight (approx.)	27	44	70	132	208	375	445
	B	418	538	644	905	1332	1410	1740
	L - RF/BW	292	356	432	559	660	787	838
ANSI 900	L - RTJ	295	359	435	562	663	790	840
	V	200	250	300	450	500	600	720
	Weight (approx.)	37	61	112	215	365	682	975
	B	438	590	685	930	1140	1340	1750
ANSI 1500	L - RF/BW	368	381	457	610	737	838	965

GLOBE VALVES**GLOBE VALVE, BOLTED BONNET - FULL BORE, OUTSIDE SCREW & YOKE**

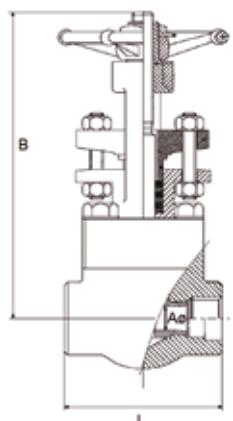
Design	BS 5352, ASME B16.34
Size	1/4" - 2"
Ends	Socket weld ends to ANSI B16.11, screwed ends (NPT) to ANSI B1.20.1, butt weld ends to ANSI B16.25
Face to face	ANSI B16.34
Structure type	Bolted bonnet, standard bore, outside screw & yoke

GLOBE VALVE, WELDED BONNET - FULL BORE, OUTSIDE SCREW & YOKE

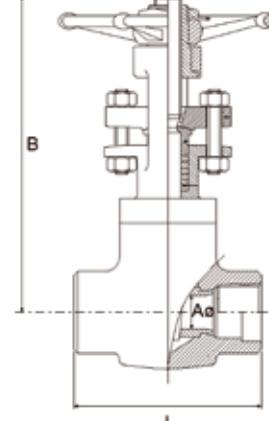
Design	BS 5352, ASME B16.34,
Size	1/4" - 2"
Ends	Socket weld ends to ANSI B16.11, screwed ends (NPT) to ANSI B1.20.1, butt weld ends to ANSI B16.25
Face to Face	ANSI B16.34
Structure type	Welded bonnet, full bore, outside screw & yoke

	Size	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
ANSI 800	End facing	SC/SW/BW							
	Aø	7	9	13	17.5	22.5	29.5	35	46
	L	80	80	90	110	127	155	170	210
	Weight	1.7	1.7	2.3	3.6	5.5	7.5	11.6	22
ANSI 1500	End facing	SC/SW/BW							
	Aø	7	9	13	17	21	28	33	37,5
	L	90	90	110	127	155	170	210	210
	Weight	2.2	2.2	3.9	6	8	12	23,5	23
ANSI 2500	End facing			SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW
	Aø			13	17	21		33	35
	L			150	150	210		235	235
	Weight			11	11.3	22.4		38	38

	Size	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
ANSI 800	End facing	SC/SW/BW							
	Aø	7	9	13	17.5	22.5	29.5	35	45.5
	L	80	80	90	110	127	155	170	210
	Weight	1.7	1.7	2.3	3.6	5.5	7.5	10.5	17.5
ANSI 1500	End facing	SC/SW/BW							
	Aø	7	9	13	17	21	28	33	37.5
	L	90	90	110	127	155	170	210	210
	Weight	2.2	2.2	3.9	6	8	12	19	18.5
ANSI 2500	End facing			SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW
	Aø			13	17	21		33	35
	L			127	155	170		235	235
	Weight			6.5	8.5	12.5		26	25.5
ANSI 4500	End facing			SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW
	Aø			11	11	14		28	
	L			155	170	210		235	
	Weight			9	13	24.5		28	

GLOBE VALVE, BOLTED BONNET - REDUCED BORE, OUTSIDE SCREW & YOKE

Design	BS 5352, ASME B16.34
Size	1/4" - 2"
Ends	Socket weld ends to ANSI B16.11, screwed ends (NPT) to ANSI B1.20.1, butt weld ends to ANSI B16.25
Face to face	ANSI B16.34
Structure type	Bolted bonnet, reduced bore, outside screw & yoke

GLOBE VALVE, WELDED BONNET - REDUCED BORE, OUTSIDE SCREW & YOKE

Design	BS 5352, ASME B16.34,
Size	1/4" - 2"
Ends	Socket weld ends to ANSI B16.11, screwed ends (NPT) to ANSI B1.20.1, butt weld ends to ANSI B16.25
Face to Face	ANSI B16.34
Structure type	Welded bonnet, reduced bore, outside screw & yoke

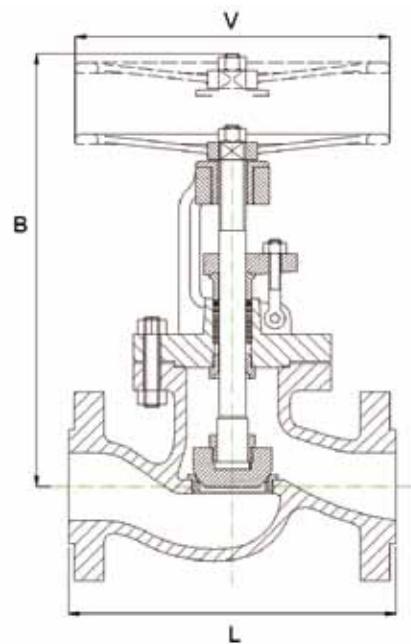
	Size	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"		
ANSI 800	End facing	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW		
	Aø	9.6	14	18	24	30	37		
	L	80	90	110	127	127	127.0		
	Weight	1.6	2.2	3.5	5	6.3	8		
ANSI 1500	End facing	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW		
	Aø	9	13	17	21	28	33		
	L	90	110	127	155	170	210		
	Weight	2.2	3.9	6	8	12	23		

	Size	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"		
ANSI 800	End facing	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW		
	Aø	9	13	17.5	22.5	29.5	35		
	L	80	90	110	127	155	170		
	Weight	1.6	2.2	3.5	5	7.3	10		
ANSI 1500	End facing	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW	SC/SW/BW		
	Aø	9	13	17	21	28	33		
	L	90	110	127	155	170	210		
	Weight	2.2	3.9	6	8	12	19		

GLOBE VALVES

GLOBE VALVE, BOLTED BONNET, OS&Y, SWIVEL DISC

Design	BS 1873, ANSI B16.34
Size	2" - 36"
Ends	Flanges to ASME B16.5 from 2" - 24", Flanges to ASME B16.47 from 26", Butt weld ends to ANSI B16.25
Face to face	ASME B16.10
Structure type	Bolted bonnet, OS&Y, swivel disc

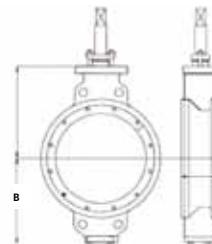


	Size	ANSI 150						
		2"	3"	4"	6"	8"	10"	12"
	B	325	410	465	575	655	740	840
	L - RF/BW	203	241	295	406	495	622	698
	L - RTJ	216	254	305	419	508	635	711
	V	200	225	250	300	400	450	500
	B	395	470	550	655	755	900	980
	L - RF/BW	268	318	356	444	559	622	711
	L - RTJ	283	334	372	460	575	638	727
	V	225	300	400	500	600	720	800
	B	415	550	615	755	880	1050	450
	L - RF/BW	292	356	432	559	660	787	838
	L - RTJ	295	359	435	562	663	790	841
	V	200	225	250	300	350	400	450
	B	525	570	655	980	1200	1620	1740
	L - RF/BW	368	381	457	610	737	838	965
	L - RTJ	371	384	460	613	740	841	968
	V	400	500	600	720	800	1000	G.O
	B	525	630	710	1280	1455	1650	1900
	L - RF/BW	368	470	546	705	832	991	1130
	L - RTJ	371	473	549	711	842	1001	1146
	V	400	500	600	G.O	G.O	G.O	G.O
	B	730	865	950	1510	1690	2075	2420
	L - RF/BW	451	578	673	914	1022	1270	1422
	L - RTJ	454	584	683	927	1038	1293	1444
	V	500	650	750	1000	G.O	G.O	G.O

A= Diameter of port B= Center to top L= End to end V= Diameter of handwheel G.O= Gear operated

BUTTERFLY VALVES

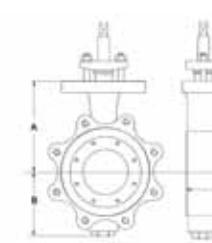
SOFT SEAT WAFER BUTTERFLY VALVE



WAFER - ANSI 150#

Design	API 609 / EN 593								
Size	1-1/2" - 48"								
Body type	Wafer short type with through holes								
Flange alignment	ANSI B16.5 Class 150lbs								
Structure type	Centric disc butterfly valve with rubber lined body, wafer & lug								
Size	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"
A	110	120	125	135	155	155	175	215	230
B	59	64	71	94	103	117	137	168	203
N	4	4	4	4	4	4	4	4	4
L	40	43	46	46	52	56	56	60	68
Weight	2.7	2.9	4.1	4.4	5.6	7.1	8.4	20	29

SOFT SEAT LUG BUTTERFLY VALVE

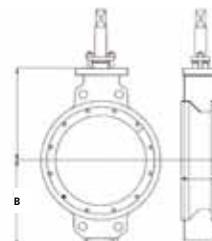


LUG - ANSI 150#

Design	API 609 / EN 593								
Size	1-1/2" - 48"								
Body type	Wafer short type with through holes								
Flange alignment	ANSI B16.5 Class 150lbs								
Structure type	Centric disc butterfly valve with rubber lined body, wafer & lug								
Size	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"
A	110	120	125	135	155	155	175	215	230
B	59	64	71	94	103	117	137	168	203
N	4	4	4	8	8	8	8	8	12
L	40	43	46	46	52	56	56	60	68
Weight	3.7	4.2	5.7	8.7	9.2	12.7	13.7	22.2	32.7

HIGH PERFORMANCE DOUBLE OFFSET BUTTERFLY VALVE

Design	API 609 / EN 593				Face to face	API 609 / BS 5155 / EN 558-1			
Size	2"- 80"				Structure type	Double eccentric, wafer & lug (single flange)			
Body flange	ANSI B16.5 (2"- 24"), ANSI B16.47 (26" - 60")								



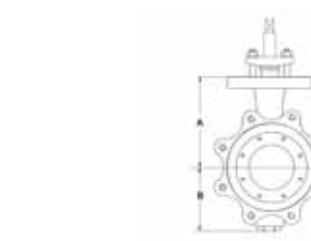
WAFER - ANSI 150#

Size	3"	4"	6"	8"	10"	12"	14"	16"
A	131	153	187	217	250	310	320	340
B	97	122	155	210	240	285	300	350
N	4	4	4	4	4	4	4	4
L	48	54	57	64	71	81	92	102

WAFER - ANSI 300#

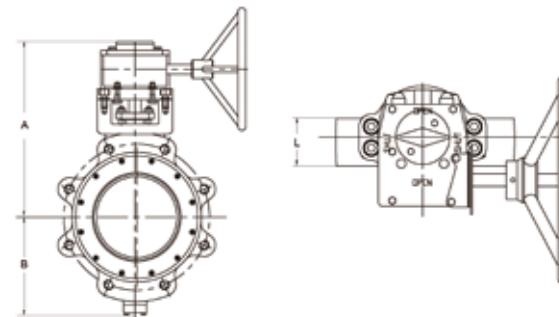
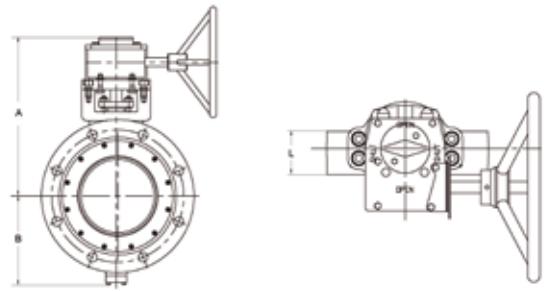
Size	3"	4"	6"	8"	10"	12"	14"	16"
A	131	160	187	217	270	310	335	400
B	97	142	167	225	250	300	335	402
N	4	4	4	4	4	4	4	4
L	48	54	57	73	83	92	117	133

N= Number of bolt *All dimensions in millimeters



BUTTERFLY VALVES**HIGH PERFORMANCE TRIPLE OFFSET BUTTERFLY VALVES**

Design standard	API 609 / BS 5155 / EN 593	Body flange	ANSI B16.5
Size	3" - 48"	Structure type	Triple eccentric, metal seated, flanged & lug
Face to face	API 609 / EN 558-1		

**FLANGED - ANSI 150#**

Size	A	B	n	L
3"	266	97	4	114
4"	319	117	8	127
6"	317	147	8	140
8"	389	225	8	152
10"	426	245	12	165
12"	498	285	12	178
14"	5475	305	12	190
16"	583	345	16	216

FLANGED - ANSI 300#

Size	A	B	n	L
3"	250	92	8	180
4"	300	148	8	190
6"	367	190	12	210
8"	416	220	12	230
10"	458	250	16	250
12"	515	290	16	270
14"	550	320	20	290
16"	620	402	20	310

n = Number of bolt * All dimensions in millimeters

**LUG - ANSI 150#**

Size	A	B	n	L
3"	265	97	4	46
4"	278	122	8	54
6"	340	155	8	57
8"	385	210	8	64
10"	456	240	12	71
12"	516	285	12	81
14"	545	300	12	92
16"	583	350	16	102

LUG - ANSI 300#

Size	A	B	n	L
3"	260	92	8	48
4"	285	150	8	54
6"	352	174	12	59
8"	394	239	12	73
10"	451	278	16	83
12"	496	330	16	92
14"	530	320	20	117
16"	637	408	20	133

**MATERIAL SPECIFICATIONS**

	ASTM GRADE	MATERIAL DESCRIPTION	UNS DESIGNATION	MIN UTS		MIN YIELD		NOMINAL COMPOSITION								
				(Nmm2)	(ksi)	(Nmm2)	(ksi)	C	Cr	Ni	Mo	Cu	N	V	W	Nb
GENERAL PURPOSE	A126 CI B	Cast Iron	F12102	214	71	-	-	-	-	-	-	-	-	-	-	-
	A216 WCB	Carbon Steel	J03002	485	70	250	36	0.23	-	-	-	-	-	-	-	-
	A105	Forges Carbon Steel	K03504	485	70	250	36	0.23	-	-	-	-	-	-	-	-
	B 148 C95800	Aluminium Bronze	C95800	640	93	250	36	-	-	4.50	-	79min	-	-	-	-
	A487 4N/4C	Low Alloy Steel	J13047	620	90	415	60	0.20	0.50	0.50	0.25	-	-	-	-	-
LOW TEMP	A352 LCB	Low Temp Carbon Steel	J03003	450	65	450	35	0.23	-	-	-	-	-	-	-	-
	A352 LCC	Low Temp Carbon Steel	J02505	485	70	275	40	0.23	-	-	-	-	-	-	-	-
	A350 LF2	Low Temp Carbon Steel	K03011	485	70	250	36	0.23	-	-	-	-	-	-	-	-
	A352 LC3	Low Temp Alloy Steel	J31550	485	70	275	40	0.10	-	3.50	-	-	-	-	-	-
	A351 CF8M	Cryogenic Stainless Steel	J92900	485	70	205	30	0.08	19.00	10.00	2.50	-	-	-	-	-
	A351 CF3M	Cryogenic Stainless Steel	J92800	485	70	205	30	0.03	19.00	10.00	2.50	-	-	-	-	-
HIGH TEMP	A217 WC6	Chrome Moly Steel	J12072	485	70	275	40	0.10	1.25	-	0.50	-	-	-	-	-
	A217 C5	Chrome Moly Steel	J42045	620	90	415	60	0.10	5.00	-	0.50	-	-	-	-	-
	A217 C12	Chrome Moly Steel	J82090	620	90	415	60	0.10	9.00	-	1.00	-	-	-	-	-
	A351 CF8M	Stainless Steel	J92900	485	70	205	30	0.08	19.00	10.00	2.50	-	-	-	-	-
	A351 CF8C	Stainless Steel	J92710	485	70	205	30	0.08	19.00	10.00	0.50	-	-	-	-	8xC
HARD WEARING	A217 CA15	Chrome Stainless Steel	J91150	620	90	450	65	0.10	13.00	-	-	-	-	-	-	-
	A487 CA6NM	Low Temp Chrome	J91540	760	110	515	80	0.03	13.00	4.50	0.75	-	-	-	-	-
		Stainless Steel														
		Stellite® 6 (plates only)	W73006	0	70	-	-	1.20	28.00	-	-	-	-	-	-	5.00 Cobalt
	A351 CF8M	Stainless Steel	J92900 S31600	495	70	205	30	0.08	19.00	10.00	2.50	-	-	-	-	-
CORROSION RESISTANT MATERIAL	A890 4A	22% Chrome Duplex	S31803 J92205	620	90	415	60	0.03	22.00	5.50	3.00	-	0.15	-	-	-
	-	Ferralium® 255-3SC	S32550	720	105	450	65	0.08	25.00	6.00	3.50	2.00	0.20	-	-	-
	-	Super Duplex	S32760 J93380	725	105	450	65	0.03	25.00	7.50	3.50	0.75	0.25	-	0.75	-
	A351:CK3MCuN	Super Austenitic	S31254	550	80	260	38	0.03	20.00	18.00	6.50	0.75	0.20	-	-	-
	-	High Nickel 825	N08825	425	62	170	25	0.03	21.00	41.00	3.00	2.00	-	-	-	0.90
	A494:CW-6MC	High Nickel 625	N06625	485	70	275	40	0.03	21.00	62.00	9.00	-	-	-	-	3.50
	A494:CW-12MW	Hastelloy® C276	N10276	495	72	275	40	0.03	16.00	57.00	17.00	-	-	0.35	4.00	

VALVE BOLTINGS**STUDS**

Bolt grade Inches	Alloy type	Typical duty	Min. temp. °C	Max. temp °C	Tensile Strength T/inch ²	Yield strength 0.2% proof stress min. (tensile strength T/inch ²)	% Elongation	Hardness HB	Limiting ruling section (Inch)	Nut grades inch series	Condition and heat treatment
-	-	General purpose	-20	300	26	-	-	-	-	Carbon Steel	-
BL L7	1% Chromium molybdenum steel	General purpose	-100	400	56	47	14	248/335	2,5	2H 4.7 or 8	Hardened and tempered Harden 850°C to 880°C Temper 200°C min. (L4, 7 or 8 with L7 bolts)
					51	43	14	223/310	4		
B7A	1% Chromium molybdenum steel (higher mo)	General purpose	0	450	56	47	13	248/335	4	2H 4.7 or 8	Hardened and tempered Harden 850°C to 880°C Temper 200°C min.
B6	12% Chromium steel	Hard wearing General purpose	0	500	50	38	15	185/272	1,5	6 or 8	Hardened and tempered Harden 950°C to 1020°C or AC. Temper 600°C min.
					42	32		233/310	4	6F of 8F	
B16	1% Chromium molybdenum vanadium steel	General purpose Mid. temp	0	520	56	47	13	24/335	4	4, 7 or 8	Hardened and tempered Harden 930°C to 970°C Temper 600°C min.
B16A	1% Chromium molybdenum vanadium boron steel	General Purpose Mid.temp	0	565	55	43	13	248/335	4	7 or 8	Hardened and tempered Harden 930°C to 120°C QQ or WQ. Temper 650°C min.
B8 L8 B8X L8X	Austenitic chromium-nickel 18/8 type steel	Cryogenic High temp	-250	570	35	13,5	35	183 max.	-	8,8F	Solution treated 750°C to 1100°C WQ Cold worked after treatment
					56	45	12	350 max.	0,75	8X, 8FX	
B8T L8T B8C L8C B8TX L8TX B8CX L8CX	Stabilized austenitic austenitic chromium-nickel 18/8 type steel	High temp	-250	570	35	13,5	35	183 max.	-	8T	Solution treated 1000°C to 1100°C WQ Cold worked after solution treatment
					56	12	12	350 max.	0,75	8C	
B8M L8M B8MX L8MX	Austenitic chromium-nickel molybdenum steel	Cryo/High	-250	600	35	13,5	35	183 max.	-	8M	Solution treated 1000°C to 1100°C WQ Cold worked after treatment
					56	45	12	350 max.	0,75		
B17B L17B	Precipitation hardening austenitic nickel-chromium steel	Cryogenic	-250	650	58	38	15	248/341	-	17B	Solution treated and aged 1h at 970°C to 990°C QQ or WQ reheat 720°C for 16h
B80A L80A	Precipitation hardening nickel-chromium-titanium-aluminium alloy	High temp	-250	750	65	40	15	285/360	-	80A	Solution treated and aged 8h at 1047°C AC 16h at 700°C AC

NUTS

Bolt grade identification symbol	Alloy type	Typical min temp C°	Typical max temp C°	Hardness HB
2H	Carbon steel	0	450	248/352
4,14	Carbon-molybdenum	-100	520	248/352
7	1% Chromium-molybdenum steel	0	575	248/352
6, 6F	12% Chromium steel Molybdenum steel	0	575	223/310
8, 8F 8.8FX	Austenitic chromium steel 18/8 type steel	-250	575	183 max 350 max
8T 8C 8TX, 8CX	Stabilized austenitic chromium-nickel 18/8 type steel	-250	575	183 max 350 max
8M 8MX	Austenitic chromium-nickel molybdenum steel	-250	600	183 max 350 max
17B	Precipitation hardening austenitic nickel-chromium steel	-250	600	248/341
80A	Precipitation hardening nickel-chromium aluminium alloy	-250	750	285/360

END INFO

SHAPE	TYPE	DESCRIPTION	APPLICATION
FLANGED	RF	Raised Face Sealing on RF flanges is by flat non-metallic gaskets fitted within the bolts of the flanges. Surface finish is controlled depending on the type of gaskets being used.	Typically used for low pressure (class 150-300-600)
	RJ	Ring Joint Ring type metal gaskets must be used on this type of flange facing.	Typically used for high pressure (class 900-1500-2500-API 6A)
	HUB	This coupling requires bolting, clamps and a seal ring. As different designs are produced by different manufacturers, we always ask the customer to supply the HUB machining drawing.	Typically used for high pressure (class 900-1500-2500-API 6A)
CLAMP	BW	Butt Welding This construction offers the highest verifiable integrity of welding as BW connections are easy to radiograph. Different schedules can be supplied.	BW ends are generally used when the possibility of fluid leakage must be eliminated.
	PE	Plain Ends This kind of welding end matches the SW end.	
	SW	Socket Welding This kind of welding end matches the PE end.	Typically used for applications where no extremely hazardous fluids neither fluids with tendency for crevice corrosion are present.
WELDED (WE)	NPT (M)	Threaded joints as per American National Taper Pipe Thread.	
	NPT (F)		Typically used on commodity valves.
THREADED			

Others available: BSP (ISO 228/1 e ISO 7/1), FLAT FACE, LARGE FEMALE, LARGE GROOVE, COMPACT FLANGE, SAE.

GASKET SELECTION

PRESSURE	FLAT	SPIRAL WOUND	RTJ
ANSI 150	✓	✓●	-
ANSI 300	✓	✓●	-
ANSI 600	-	✓●	✓
ANSI 900	-	✓○	✓
ANSI 1500	-	✓○	✓
ANSI 2500	-	✓○	✓
API 3000	-	-	✓
API 5000	-	-	✓
API 10,000	-	-	✓

✓ SUITABLE

● INNER RING RECOMMENDED

○ INNER RING OPTIONAL

- NOT APPLICABLE

TYPICAL STANDARDS		
FLAT GASKET	SPIRAL WOUND	RING TYPE JOINT
ASME B16.21	API 601 / BS3381	ANSI B.20 / API 6A

FLANGE DIMENSIONS

ANSI

ANSI CLASS 150	Size	D	Hcd	d	Bolt size	n
	1 "	108	80	16	1/2"	4
	1-1/4 "	118	89	16	1/2"	4
	1-1/2 "	127	98	16	1/2"	4
	2 "	152	121	20	5/8"	4
	1-1/2 "	178	140	20	5/8"	4
	3 "	190	152	20	5/8"	4
	4 "	229	190	20	5/8"	8
	5 "	254	216	23	3/4"	8
	6 "	279	241	23	3/4"	8
	8 "	343	298	23	3/4"	8
	10 "	406	362	26	7/8"	12
	12 "	483	431	26	7/8"	12
	14 "	533	476	28	1"	12
	16 "	597	540	29	1"	16
	18 "	635	578	32	1-1/8"	16
	20 "	698	635	32	1-1/8"	20
	24 "	813	749	35	1-1/4"	20
	28 "	927	864	35	1-1/4"	28
	30 "	984	914	35	1-1/4"	28
	32 "	1060	978	41	1-1/2"	28

ANSI CLASS 300	Size	D	Hcd	d	Bolt size	n
	1 "	124	89	20	5/8"	4
	1-1/4 "	133	98	20	5/8"	4
	1-1/2 "	156	114	23	3/4"	4
	2 "	165	127	20	5/8"	8
	1-1/2 "	190	149	23	3/4"	8
	3 "	210	168	23	3/4"	8
	4 "	254	200	23	3/4"	8
	5 "	279	235	23	3/4"	8
	6 "	318	270	23	3/4"	12
	8 "	381	330	23	7/8"	12
	10 "	445	387	32	1"	16
	12 "	520	450	35	1-1/8"	16
	14 "	584	541	35	1-1/8"	20
	16 "	648	571	38	1-1/4"	20
	18 "	710	629	35	1-1/4"	24
	20 "	775	685	38	1-1/4"	24
	24 "	915	813	42	1-1/2"	24
	28 "	1035	940	45	1-1/2"	28
	30 "	1098	997	48	1-1/4"	28
	32 "	1149	1054	51	1-1/4"	28

FLANGE DIMENSIONS

DIN

PN 6	DN	D	n	Hcd	d
	10	75	4	50	11
	15	80	4	55	11
	20	90	4	65	11
	25	100	4	75	11
	32	120	4	90	14
	40	130	4	100	14
	50	140	4	110	14
	65	160	4	130	14
	80	190	4	150	18
	100	210	4	170	18
	125	240	8	200	18
	150	265	8	225	18
	200	320	8	280	18
	250	375	12	335	18
	300	440	12	395	22
	350	490	12	445	22
	400	540	16	495	22
	450	595	16	550	22
	500	645	20	600	22
	600	755	20	705	26

PN 10	DN	D	n	Hcd	d
	10	90	4	60	14
	15	95	4	65	14
	20	105	4	75	14
	25	115	4	85	14
	32	140	4	100	18
	40	150	4	110	18
	50	165	4	125	18
	65	185	4	145	18
	80	200	8	160	18
	100	220	8	180	18
	125	250	8	210	18
	150	285	8	240	22
	200	340	8	295	22
	250	395	12	350	22
	300	445	12	400	22
	350	505	16	460	22
	400	565	16	515	26
	450	615	20	565	26
	500	670	20	620	26
	600	780	20	725	30

PN 16	DN	D	n	Hcd	d
	10	90	4	60	14
	15	95	4	65	14
	20	105	4	75	14
	25	115	4	85	14
	32	140	4	100	18
	40	150	4	110	18
	50	165	4	125	18
	65	185	8	145	18
	80	200	8	160	18
	100	235	8	190	22
	125	270	8	220	26
	150	300	8	250	26
	200	360	12	310	26
	250	425	12	370	30
	300	485	16	430	30
	350	555	16	490	33
	400	620	16	550	36
	450	670	20	600	36
	500	730	20	660	36
	600	845	20	770	39

PN 40	DN	D	n	Hcd	d

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FLANGE DIMENSIONS

JIS

JIS 5K

DN	D	Hcd	d	Bolt, mm	n
15	80	60	12	M10	4
20	85	65	12	M10	4
25	95	75	12	M10	4
32	115	90	15	M12	4
40	120	95	15	M12	4
50	130	105	15	M12	4
65	155	130	15	M12	4
80	180	145	19	M16	4
100	200	165	19	M16	8
125	235	200	19	M16	8
150	265	230	19	M16	8
200	320	280	23	M20	8
250	385	345	23	M20	12
300	430	390	23	M20	12
350	480	435	25	M22	12
400	540	495	25	M22	16
450	605	555	25	M22	16
500	655	605	25	M22	20
550	720	665	27	M24	20
600	770	715	27	M24	20

JIS 10K

DN	D	Hcd	d	Bolt, mm	n
15	90	70	15	M12	4
20	100	75	15	M12	4
25	125	90	19	M12	4
32	135	100	19	M16	4
40	140	105	19	M16	4
50	155	120	19	M16	4
65	175	140	19	M16	4
80	185	150	19	M20	8
100	210	175	19	M20	8
125	250	210	23	M20	8
150	280	240	23	M20	8
200	330	290	23	M22	12
250	400	355	25	M22	12
300	445	400	25	M22	16
350	490	445	25	M24	16
400	560	510	27	M24	16
450	620	565	27	M24	20
500	675	620	27	M24	20
550	745	680	33	M30	20
600	795	730	33	M30	24

JIS 16K

DN	D	Hcd	d	Bolt, mm	n
15	90	70	15	M12	4
20	100	75	15	M12	4
25	125	90	19	M16	4
32	135	100	19	M16	4
40	140	105	19	M16	4
50	155	120	19	M16	8
65	175	140	19	M16	8
80	200	160	23	M20	8
100	225	185	23	M20	8
125	270	225	25	M22	8
150	305	260	25	M22	12
200	350	305	25	M22	12
250	430	380	27	M24	12
300	480	430	27	M24	16
350	540	480	33	M30x3	16
400	605	540	33	M30x3	16
450	675	605	33	M30x3	20
500	730	660	33	M30x3	20
550	795	720	39	M36x3	20
600	845	770	39	M36x3	24

JIS 20K

DN	D	Hcd	d	Bolt, mm	n
15	90	70	15	M12	4
20	100	75	15	M12	4
25	125	90	19	M16	4
32	135	100	19	M16	4
40	140	105	19	M16	4
50	155	120	19	M16	8
65	175	140	19	M16	8
80	200	160	23	M20	8
100	225	185	23	M20	8
125	270	225	25	M22	8
150	305	260	25	M22	12
200	350	305	25	M22	12
250	430	380	27	M24	12
300	480	430	27	M24	16
350	540	480	33	M30x3	16
400	605	540	33	M30x3	16
450	675	605	33	M30x3	20
500	730	660	33	M30x3	20
550	795	720	39	M36x3	20
600	845	770	39	M36x3	24

APPLICABLE STANDARDS

Norflo delivers valves that are in accordance with API, ANSI, ASME, DIN and BS requirements.

The following list contains the most important applicable valve standards. Norflo is also able to design, manufacture and test valves in accordance with other international standards on request.

API	American Petroleum Institute
Spec. 6A	Specification for wellhead and christmas tree equipment
Spec. 6A	Specification for pipeline valves
Spec. RP6F	Recommended practice for fire testing of valves
Spec. 6FA	Specification for fire testing of valves
Std. 598	Valve inspection and test
Std. 605	Large diameter carbon steel flanges
Std. 607	Fire test for soft seated quarter turn valves
ANSI	American National Standard Institute
ASME	American Society of Mechanical Engineers
B16.11	Forged steel fitting, socket welding and threaded
B16.5	Steel pipe flanges and flanged fittings
B16.10	Face-to-face and end-to-end dimensions of ferrous valves
B16.25	Butt welding ends
B16.34	Steel valves - flanged and butt welding ends
B31.3	Chemical plant and petroleum refinery piping systems
B31.8	Gas transmission and distribution piping systems
ASTM	American Society for Testing Materials
01.01.	Steel piping, tubing and fittings
01.02.	Ferrous casting, ferro alloys
02.01.	Copper and copper alloys
02.04.	Nickel and nickel alloys

03.01.	Metals - mechanical test. Elevated and low temperature test. Metallography
03.03.	Non destructive testing
ISO	International Organization for Standardization
ISO 9001	Quality system - Model for quality assurance in design/development, production, installation and servicing

BRITISH STANDARDS

BS 1560	Steel pipe flanges and flanged fittings
BS 2080	Face-to-face, centre-to-face, end-to-end and centre-to-end dimensions of flanged and butt welding end steel valves for petrochemical and allied industries
BS 4504	Flanges and bolting for pipes, valves and fittings
BS 5146	Inspection and testing of steel valves for the petroleum, petrochemical and allied industries
BS 5351	Steel ball valves for the petroleum, petrochemical and allied industries
BS 6755	Testing of valves
MSS	Manufacturers Standardization Society
SP 6	Standard finishes for contact faces of pipe flanges of valves and fittings
SP 25	Standard marking system for valve fittings, flanges and unions
SP 44	Steel pipeline flanges
SP 45	Bypass and drain connection standard
SP 55	Quality standard for steel castings, visual method
SP 61	Hydrostatic testing of steel valves
SP72	Ball valves with flanged or butt welding ends for general service
NACE	National Association of Corrosion Engineers
MR-01-75	Sulfide stress cracking resistant metallic materials for oil field equipment



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