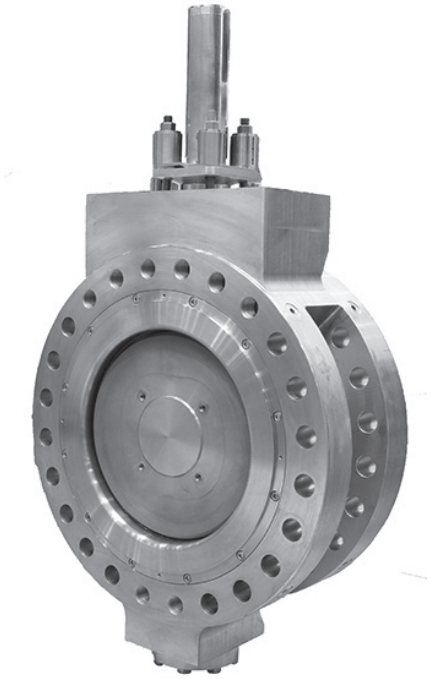
Neles™ Neldisc™ high performance butterfly valves

Series L6, Model D, ASME 600

Neles Neldisc is a metal seated triple eccentric high performance butterfly valve that provides long lasting tight shut-off with excellent flow characteristics and high capacity. The L-Series are widely used in chemical, petrochemical and refining industries.

With nearly equal percentage characteristics and superior tightness, Neldisc triple eccentric butterfly valves operate both in control and tight shutoff applications. As a result of the unique triple offset geometry of Neldisc, the contact between disc and seat is mechanically induced and does not rely on assistance from differential pressure. This design also provides extended operational life in control, high cycle, high temperature and abrasive applications.

The Neldisc high-performance Series L6, Model D, ASME 600 butterfly valve is available in double flange body type suitable for service in a wide variety of applications.



Offering

The following designs are available in sizes 6”–24” (DN 150–600):

	L6
Body type	Double flanged
Design	API 609 ASME B16.34 EN 593
Pressure class	ASME Class 600
Face to face	API 609 Cat B Short Pattern EN 558 Part 1, Table 8 Basic Series 14
Flange connection/ Drilling	ASME B16.5 EN 1092-1

Features

Performance

- High-performance live-loaded packing as standard to minimize the product loss and emission
- Contact between disc and seat is mechanically induced and does not rely on assistance from differential pressure
- Heavy-duty stem and bearings arrangement extend service life and are insensitive to thermal cycles and impurities
- Easier to withstand process fluctuations and harsh conditions for example flow vibration and temperature/ pressure changes
- Easy seat maintenance: Interchangeable seat can be replaced without disassembling the disc and shaft
- Seat replacement does not require any adjustment or special tools
- High performance live loaded graphite packing for a wide range of applications

Field-proven single-piece flexible seat design

- Unique all-metal seat design assures superior tightness in difficult applications over long time periods
- Bi-directional long last tightness is maintained even in high cycle rate services
- Low friction and excellent wear resistance
- Longer service life with less maintenance
- Sealing element protected in the seat pocket for lowest wear & tear
- No secondary components required to maintain tightness
- No resilient parts exposed to the medium

Offset shaft and eccentric disc

- No seat/disc contact in the open or intermediate position
- Eliminates wear points at top and bottom of seats for high cycle life

Safety

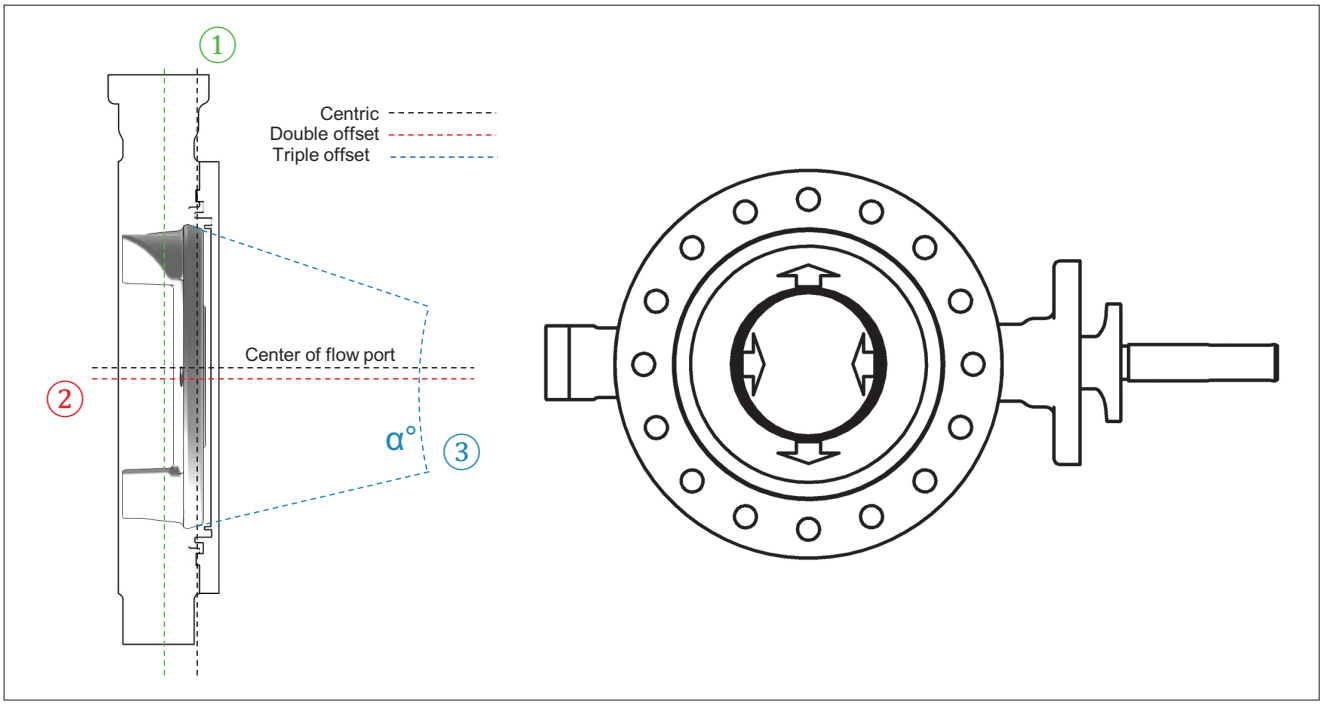
- Anti-blow out design (Positive Shaft Retention):
  Valves are equipped with retainer plates on top of the gland to prevent movement of the top portion of the shaft past the gland if for any reason the shaft should break within the valve
- Lifting holes to ensure safe assembly and maintenance

Excellent for both on-off and control applications

- Inherent flow characteristic is modified equal percentage
- Wide rangeability
- Tight shut-off even in control applications
- Smoothly rising installed characteristic ensures precise control at both low and high valve openings
- Good dynamic stability in both flow directions

Neldisc triple eccentric sealing design

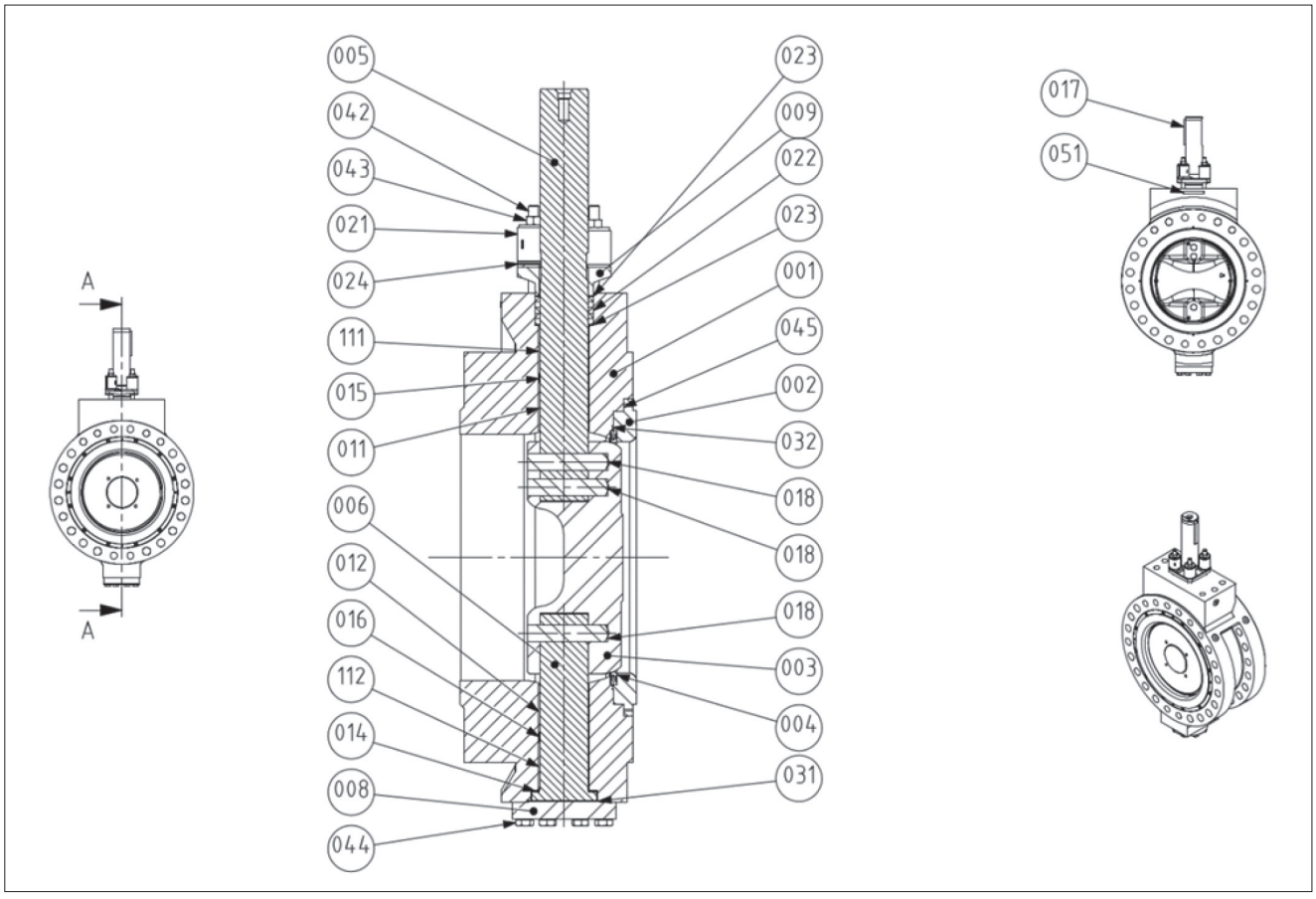
Neldisc high performance butterfly valves rely on triple eccentric sealing design. This unique design enables utilization of performance features from both positions seated and torque seated sealing principles resulting in high tightness level together with low wear. The disc of the valve is machined to close tolerances, to create an elliptical shape, similar to an oblique slice taken from a solid metal cone. When the valve is closed, the elliptical disc at the major axis displaces the seat ring outward, causing the seat ring to contact the disc at the minor axis. The seat ring is able to move freely in a plane in its recess, to accommodate the disc in an optimal manner. When the valve is opened, the contact is released, and the seat ring returns to its original circular shape. With slight changes to the machining of the disc the field proven Neldisc sealing principle is now optimized to reach even the toughest tightness standards.



Triple eccentric sealing design. 1) First eccentricity, 2) Double offset, and 3) Triple offset

Valve construction

Assembly drawing, series L6, Mod D, ASME 600



Parts list, series L6, Mod D, ASME 600 (example)

Item	Qty (example)	Description	Material (example)	Spare part category
1	1	BODY	ASTM A351 gr. CF8M	
2	1	CLAMP RING	ASTM A351 gr. CF8M + ALLOY 6	
3	1	DISC	ASTM A351 gr. CF8M + ALLOY 6	3
4	1	SEAT	UNS N08825 + HCr	2
5	1	DRIVE SHAFT	A564 gr. 630 H1150D NITR	3
6	1	TRUNNION	A564 gr. 630 H1150D NITR	3
8	1	BLIND FLANGE	ASTM A351 gr. CF8M	
9	1	GLAND	ASTM A351 gr. CF8M	
11	1	BEARING	625 + PVDC	3
12	1	BEARING	625 + PVDC	3
14	2	THRUST BEARING	STELL 6B	3
15	1	BEARING SPACER	AISI 316	
16	1	BEARING SPACER	AISI 316	
17	1	KEY	EN 10088-1.4460	3
18	3	PIN	A564 gr. 630 H1150D	3
21	4	DISC SPRING SET	AISI 303 / 50CrV4 + ENP	
22	1	PACKING RING SET	GRAPHITE	1
23	2	ANTI EXTRUSION RING	AISI 316	
24	2	RETAINER	AISI 316	
31	1	GASKET	GRAPHITE	1
32	1	BODY GASKET	GRAPHITE	1
42	4	STUD	ASTM A193 gr. B8M cl. 2	
43	4	HEXAGON NUT	ASTM A194 gr. 8M	
44	8	HEXAGON SCREW	ASTM A193 gr. B8M cl. 2	
45	12	SOCKET HEAD SCREW	ASTM A193 gr. B8M cl. 2	
51	1	IDENTIFICATION PLATE	AISI 316	
55	1	ANTI-STATIC SPRING	UNS N08825	
111	1	BEARING	625 + PVDC	3
112	1	BEARING	625 + PVDC	3

Spare part set category 1: Recommended soft parts, always needed for the repair. Delivered as a set.

Technical specifications

Product type

- L6: Double flange body design

Size range

- NPS 6–24

Pressure classes

- ASME 600

Temperature range

- -50 °C ... +600 °C (-58 °F ... +1112 °F)

Design standard

In accordance with ASME B16.34, API 609 cat B, EN 593

Standard materials

Body:	EN 10213-1.4408 / ASTM A 351 gr. CF8M EN 10213-1.0619 / ASTM A 216 gr. WCB
Disc:	EN 10213-1.4408 / ASTM A 351 gr. CF8M + cobalt based alloy on disc edge
Clamp ring:	EN 10213-1.4408 / ASTM A 351 gr. CF8M
Shafts and pins:	ASTM A 546 gr. 630 (17-4PH H1150D) + cobalt based alloy coating on shaft bearing surfaces
Seat ring, code B:	W. No. 1.4418, hard chrome plated
Bearings:	Inconel 625 + PVDC coating

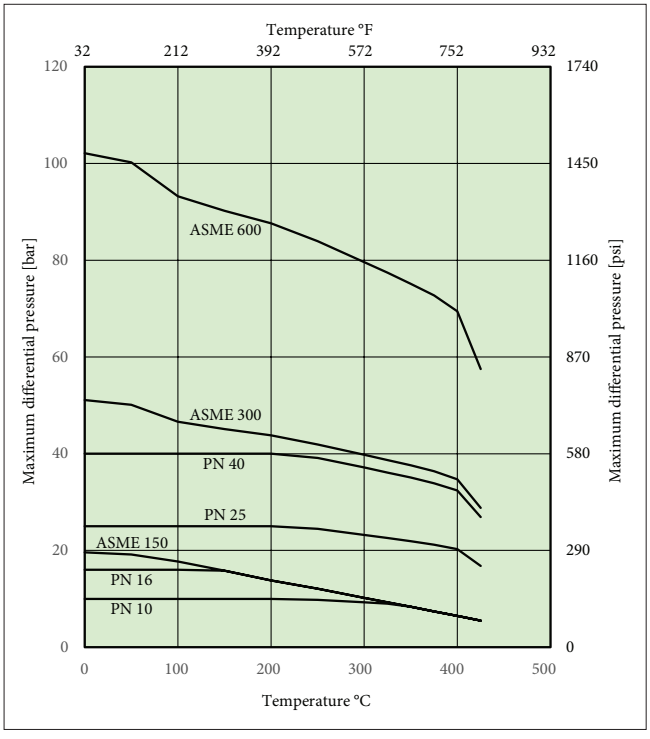
Material and test certifications

EN 10204-3.1B material certificates for body, clamp ring, gland and blind flange. Disc and shaft certification on request. Tightness test certificate.

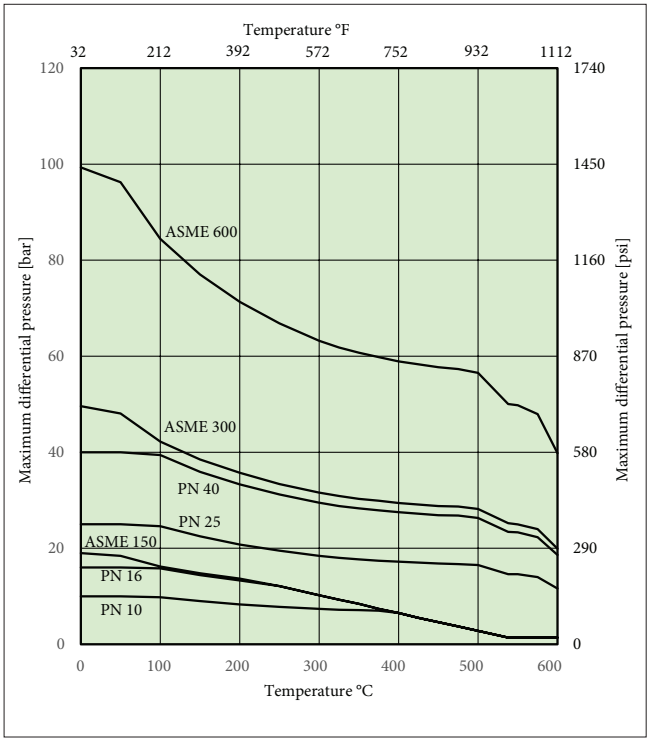
Tightness (Bi-directional)

- Standard tightness: ISO 5208, rate D, air
- Optional tightness: up to ISO 5208, Rate B, or API 598

Pressure/temperature ratings for valve body, WCB



Pressure/temperature ratings for valve body, CF8M



Flow data

The tables below provide flow coefficients for L-Series butterfly valves covered in this bulletin. The Cv values represent the number of gallons per minute of +60 °F water that flows through a fully open valve at a pressure drop of 1 psi.
The metric equivalent Kv is the flow of water at +16 °C through the valve in cubic meters per hour at a pressure drop of 1 kg/cm^2. To convert Cv to Kv multiply by 0.8569.

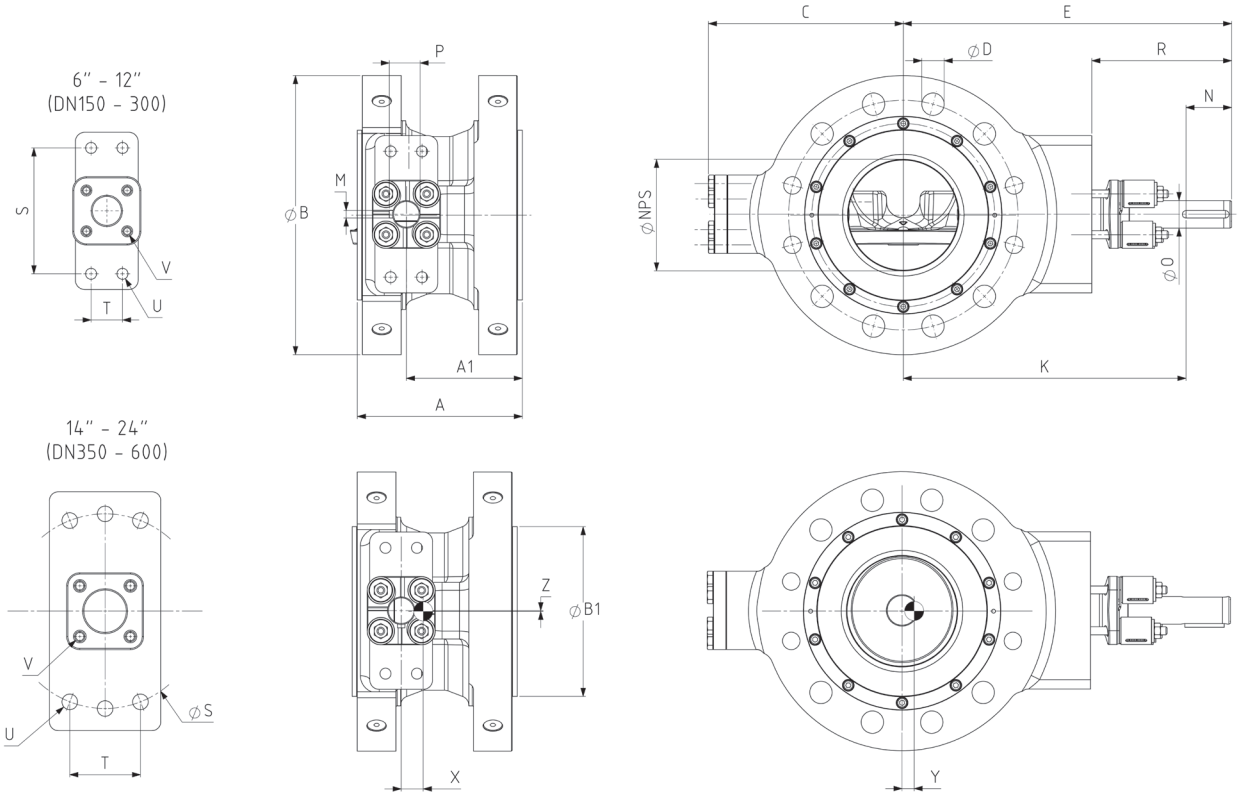
NPS	DN	Design style	ASME 600
6	150	Drive shaft + trunnion	815
8	200	Drive shaft + trunnion	1360
10	250	Drive shaft + trunnion	2590
12	300	Drive shaft + trunnion	3370
14	350	Drive shaft + trunnion	4630
16	400	Drive shaft + trunnion	6340
18	450	Drive shaft + trunnion	8520
20	500	Drive shaft + trunnion	10600
24	600	Drive shaft + trunnion	14700

Torque data

NPS	DN	Pressure class	Closing torque (Nm)	Closing torque (lbs·ft)
6	150	ASME 600	400	295
8	200	ASME 600	800	590
10	250	ASME 600	1500	1106
12	300	ASME 600	2500	1844
14	350	ASME 600	3300	2434
16	400	ASME 600	5500	4057
18	450	ASME 600	7400	5458
20	500	ASME 600	9300	6859
24	600	ASME 600	15100	11137

Dimensions

Series L6, Mod D, ASME 600, Double flanged design



NOTE:
Weight and center of mass dimensions X, Y & Z are given for bareshaft valve without bracket, valve in closed position.
Values are approximate based on 3D-models. Please be aware the actual values may vary due to manufacturing tolerances.

DN	NPS	Dimensions (mm)																	Center of gravity (mm)			Weight (kg)
		A (API/ Series 14)	A1	ØB	ØB1	C	ØD	E	K	M	N	O	P	R	S	T	U	V	X	Y	Z	
150	6	210	148	355	216	255	29	418	360	9.5	58	35	39.1	178	160	40	M16	M10	28	15	0	108
200	8	230	160	420	270	285	32	490	410	12.7	80	45	50.4	220	160	55	M20	M12	30	16	0	163
250	10	250	161	510	324	340	35	590	500	12.7	90	50	55.5	270	230	90	M24	M16	19	30	0	272
300	12	270	175	560	381	375	35	642	530	15.9	112	65	71.9	292	230	90	M24	M16	20	30	0	347
350	14	290	179	605	413	415	38	724	605	19.1	119	70	78.2	339	330	120	M30	M16	12	43	1	440
400	16	310	194	685	470	465	41	784	650	19.1	134	75	83.2	354	330	120	M30	M16	16	39	1	583
450	18	330	205	745	533	495	44	831	685	22.2	146	85	94.6	366	330	120	M30	M16	15	39	1	725
500	20	350	204	815	584	545	44	931	775	22.2	156	95	104.8	406	400	160	M36	M20	2	57	1	973
600	24	390	234	940	692	665	51	1165	960	31.8	205	120	133.8	535	460	180	M36	M20	5	71	1	1470

Type code

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13		14.
-	L6	4	F	B	N	20	A	B	C	B	G1	D	/	-

1. sign	FLOW BALANCING CONSTRUCTION
-	Standard construction

2. sign	PRODUCT SERIES / DESIGN
L6	Double flange type, metal seated triple eccentric butterfly valve

3. sign	FACE TO FACE
4	API 609 Cat B Short Pattern EN 558 Part 1, Table 8 Basic Series 14

4. sign	PRESSURE RATING & DRILLING
F	ASME 600

5. sign	VALVE-ACTUATOR CONNECTION AND SHAFT CONSTRUCTION
B	Drive shaft + trunnion with two keyways / bracket according to manufacturer standard (keyways' orientation according to ISO 5211)

6. sign	CONSTRUCTION
N/1N	**EXTENDED SERVICE (max +425 °C)** • Bearings Inconel 625 + PVDC coating • Body and blind flange gaskets graphite • Anti-static device, ATEX II 2 G c • NACE: o 1N construction fulfills NACE MR0103 with "K" seat o N construction does not fulfill NACE o NACE MR0175 not available
H/1H	**HIGH TEMPERATURE SERVICE (max +600 °C)** • Cobalt based alloy bearings • Body and blind flange gaskets graphite • Anti-static device: ATEX II 2 G c • NACE: o 1H construction fulfills NACE MR0103 with "K" seat o H construction does not fulfill NACE o NACE MR0175 not available

7. sign	SIZE (inches / mm)
ASME	06, 08, 10, 12, 14, 16, 18, 20, 24

8. sign	BODY	9. sign	DISC	10. sign	SHAFT & PINS
Note: Material coding specifies only the type of material not grade (cast, wrought, bar, forged...) which can change based on size or type. Below material combinations are not fixed by each row.					
A	ASTM A351 gr. CF8M	B	ASTM A351 gr. CF8M + cobalt based alloy on disc edge	C	Gr. 630 (17-4PH H1150D) + cobalt based alloy coating on shaft bearing surfaces
P	ASTM A216 gr. WCB			N	XM-19 (Nitronic 50) + cobalt based alloy coating on shaft bearing surfaces
F	ASTM A352 gr. LCC			H	Nimonic 80A + cobalt based alloy coating on shaft bearing surfaces
F1	ASTM A352 gr. LCB				
N	ASTM A217 gr. WC6				

11. sign	STANDARD SEAT
B	W. No. 1.4418, hard chrome plated T = -200 °C ... +400 °C (-328 °F ... +752 °F)
H	Nimonic 80A (UNS N07080), hard chrome plated T = -200 °C ... +650 °C (-328 °F ... +1202 °F)
K	W. No. 2.4681, UNS R31233 (ULTIMET) T = -200 °C ... +600 °C (-328 °F ... +1112 °F)

12. sign	SHAFT SEAL OPTIONS
G1	High performance live loaded graphite packing

13. sign	
D	Model D

14. sign	STANDARD FLANGE FINISHING Special flange finish shall always be marked in type code.
-	Ra 3.2–6.3, standard, without sign cover: EN 1092-1 Type B1 (Ra 3.2–12.5) ASME B16.5, Ra 3.2–6.3 (125–250 µin) DIN 2526 Form E (Ra 4)

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