

ISORIA 16

**Centered disc butterfly valves
with special AMRING[®]
elastomer liner**



**240psig Rated (16 Bar)
1 ½ to 40 inch
(40 to 1000 mm)**

The ISORIA 16 series, developed by AMRI-KSB, is the answer to many block and control applications that may be encountered in all sectors of industry.

Designed for an allowable pressure of 16 bar (240 psig), the ISORIA 16 valves range in size from 1 ½ to 40 inch.

This technical leaflet supplies technical information concerning these valves.

AMRI is ISO 9001 approved



Contents

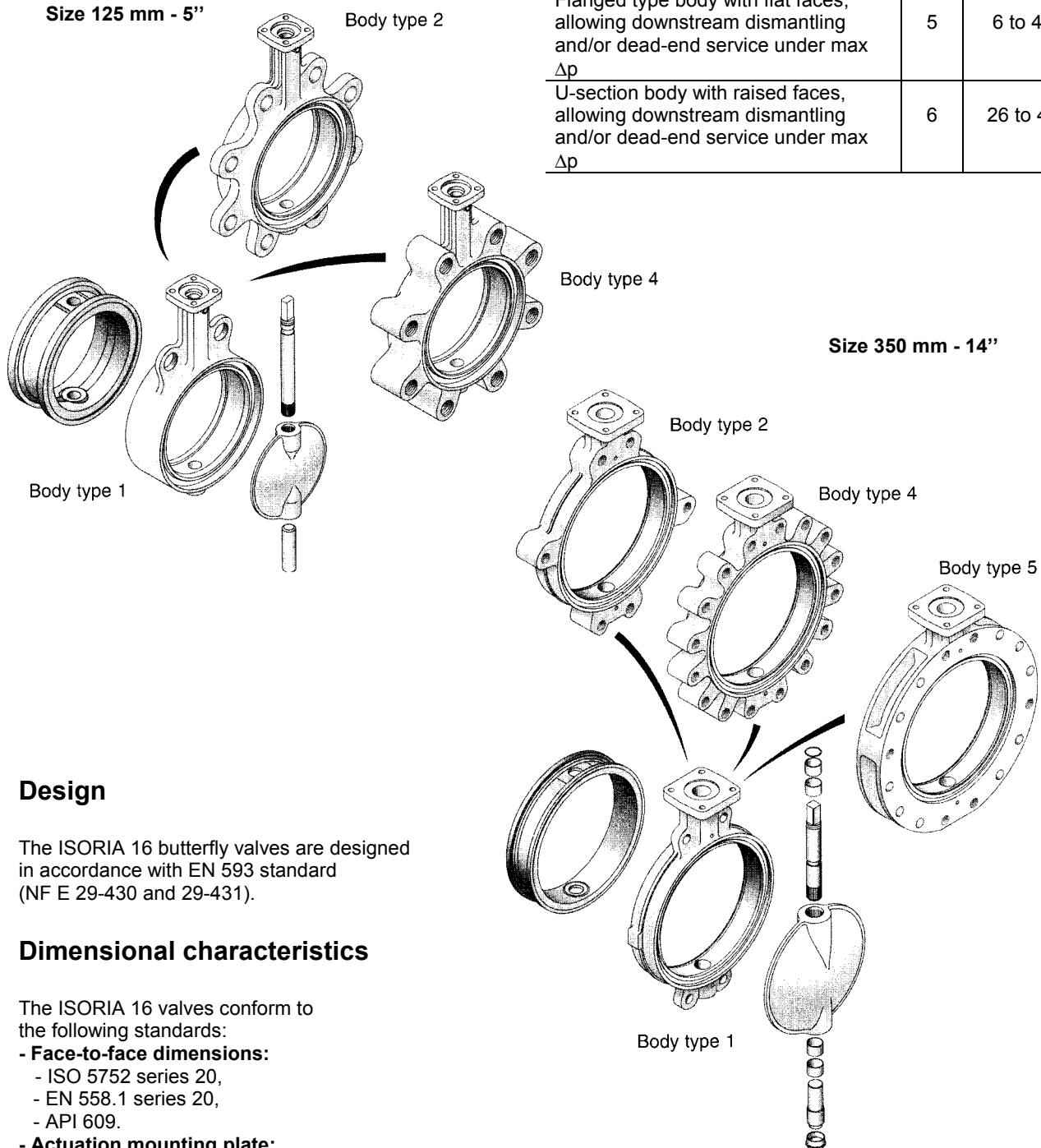
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Manufacturing range

Designed for an allowable pressure of 16 bar (240 psig), the ISORIA 16 valves are available in five body types:

- wafer type,
- semi-lug type,
- full lug type with raised faces,
- flanged type body with flat faces,
- U-section body with raised faces.

Body shape	Type	Size (inch)
Wafer type body with flat faces allowing dead-end service under max Δp	1	1 ½ to 24
Semi-lug type body with flat faces, allowing downstream dismantling and/or dead-end service under max Δp	2	1 ½ to 24
Full-lug type body with raised faces, allowing downstream dismantling and/or dead-end service under max Δp	4	1 ½ to 24
Flanged type body with flat faces, allowing downstream dismantling and/or dead-end service under max Δp	5	6 to 40
U-section body with raised faces, allowing downstream dismantling and/or dead-end service under max Δp	6	26 to 40



Design

The ISORIA 16 butterfly valves are designed in accordance with EN 593 standard (NF E 29-430 and 29-431).

Dimensional characteristics

The ISORIA 16 valves conform to the following standards:

- **Face-to-face dimensions:**
 - ISO 5752 series 20,
 - EN 558.1 series 20,
 - API 609.
- **Actuation mounting plate:**
 - ISO 5211.

Hydraulic characteristics

Flow coefficients

The following table gives the flow coefficients relating to the opening angle of the disc.

The flow coefficient Cv is the flow in US gallons per minute passing through a valve with a resulting pressure drop of 1 psig.

Flow coefficients Cv in gallon US/mn/psi^{1/2}

Size		Flow coefficient Cv relating to the opening angle of the disc								
mm	inch	10°	20°	30°	40°	50°	60°	70°	80°	90°
40	1 ½	0	1	3	6	11	18	31	55	61,5
50	2	0	2	7	15	28	46	77	139	154
65	2 ½	0	4	13	28	50	84	140	252	280
80	3	0	7	21	48	86	143	238	428	475
100	4	1	11	34	76	137	228	380	684	760
125	5	1	16	47	104	188	313	522	940	1044
150	6	2	31	94	209	376	627	1045	1881	2090
200	8	4	62	185	412	742	1236	2060	3708	4120
250	10	8	127	380	845	1521	2536	4226	7607	8453
300	12	10	157	471	1047	1884	3140	5233	9419	10465
350	14	9	139	417	927	1668	2781	4635	8342	9269
400	16	12	181	543	1208	2174	3623	6038	10868	12075
450	18	15	229	688	1530	2753	4589	7648	13766	15295
500	20	20	300	900	2001	3602	6003	10005	18009	20010
550	22	24	362	1087	2415	4347	7245	12075	21735	24150
600	24	29	431	1294	2875	5175	8625	14375	25875	28750
650	26	36	542	1625	3610	6498	10830	18050	32490	36100
700	28	40	594	1782	3960	7128	11880	19800	35640	39600
750	30	48	720	2160	4800	8640	14400	24000	43200	48000
800	32	55	819	2457	5460	9828	16380	27300	49140	54600
900	36	69	1037	3110	6910	12438	20730	34550	62190	69100
1000	40	96	1437	4311	9580	17244	28740	47900	86220	95800

Operating torques for liquid applications

The operating torques (in. lbs.) stated in the tables below are the maximum torques encountered near the closed position when the disc edge compresses the liner.

These torques include:

- the manufacturing tolerances,
- the different natures of elastomers,
- the variations of the elastomer characteristics due to the temperature.

No additional safety factors are necessary. In the intermediate position and up to the fully open position, the running torque is approximately 1/10 of the maximum values.

Note: an increase of the running torque in the intermediate position can be generated by liquid flow hydrodynamics when the flow velocity exceeds 10 ft/sec.

Size		Torque
mm	inch	in. lbs.
40	1 ½	89
50	2	177
65	2 ½	265
80	3	354
100	4	531
125	5	708
150	6	1150
200	8	1504
250	10	2921
300	12	4602
350	14	6372
400	16	8673

Size		Torque
mm	inch	in. lbs.
450	18	10620
500	20	13275
550	22	15930
600	24	18585
650	26	30090
700	28	33630
750	30	38055
800	32	39825
900	36	46905
1000	40	55755

Please consult AMRI for Gas (non-lubricated) applications

Materials

The materials used for the construction of ISORIA 16 valves and their mechanical characteristics are listed in the following tables. They conform to the standards in grey blocks, and are equivalent to the standards in the white blocks. On request, certificates of material conformity can be supplied.

Body: one piece cast with an extended neck for pipe insulation.

AMRI KSB code	Material Type	Designation in accordance with standards			Mechanical characteristics		
		EN	ASTM	JIS	Uts ksi	Yp ksi	% El.
1	Carbon steel	GP240GH (1)	A 216 gr. WCC	JIS G5101 SC 49	≥ 70	≥ 39	≥ 22
3g	Ductile iron	JS 1030 (2)	A 536 gr.60-40-18	JIS G5502 FCD 40	≥ 58	≥ 36	≥ 15
3t	Cast iron	JL 1040 (3)	A 48 cl.35	JIS G5501 FC 25	≥ 36	----	----

Uts: Ultimate tensile strength - Yp: Yield point - El: Elongation

(1) Previous standards: DIN 17245 GSC-25

(2) Previous standards: DIN GGG 40 / NF FGS 400-15

(3) Previous standards: DIN GG 25 / NF FGL 250

The table below defines the body material relating to its shape.

Model	Type	Material	Size (inch)
Wafer type	1	Cast iron - code 3t	1 ½ to 24
Semi-lug type	2	Ductile iron - code 3g	1 ½ to 24
Full-lug type with raised faces	4	Cast iron - code 3t	1 ½ to 24
Flanged type body with flat faces	5	Ductile iron - code 3g	6 to 40
U-section body with raised faces	6	Ductile iron - code 3g	26 to 40
		Carbon steel - code 1	26 to 40

Shafts: in two parts, with anti blow-out device. Flat shaft end for sizes 40 to 300 mm and square shaft end for sizes 350 to 1000 mm. The shaft/disc connection is achieved by splines for sizes up to 600 mm and by keys for larger sizes.

AMRI-KSB code	Material type	Designation in accordance with standards			Mechanical characteristics		
		EN	ASTM	JIS	Uts ksi	Yp ksi	% El.
6k	13% Cr. stainless steel	EN 10088-3 A 35-574	X29 CrS13	-----	123 to 145	≥ 94	≥ 9
6e	17-4 stainless steel		X5CrNiCuNb16-4 N° 1.4542 or X4CrNiMo16-5-1 N° 1.4418	A 564 gr. 630			
8	nickel alloy MONEL K500 aged		-----		≥ 132	≥ 93	≥ 15

Uts: Ultimate tensile strength - Yp: Yield point - El: Elongation

Standard and optional shaft materials are defined in the table to the right.

Size		Materials
mm	inch	
40 to 600	1 ½ to 24	6k* - 6e - 8
650 to 1000	26 to 40	6e* - 8

* standard version

Disc: spherically machined, cast or forged depending on the size and the materials.

AMRI KSB Code	Material Type	Designation in accordance with standards						Mechanical Characteristics			Size (inch)
		EN	ASTM	BS	DIN	UNI	JIS	Uts ksi	Yp ksi	% El.	
3g	Ductile iron	JS 1030 (1)	A 536 gr.60-40-18	-----	-----	-----	JIS G5502 FCD 40	≥ 58	≥ 36	≥ 15	1 ½ to 40
6	18-12 type stainless steel	NF A 32-060 Z6CND18-12M	A 351 gr. CF8M	BS 1504 316C16	DIN 17245 GX6CrNi Mo 18-10 N° 1.4408	UNI 6901 X5CrNiMo 17-12	JIS G5121 SCS 14	≥ 76	≥ 34	≥ 35	10 to 40
	18-12 type stainless steel	EN 10088-3 A35-574 X2CrNiMo17-12-2 N° 1.4404	A 182 gr.F316	-----				≥ 69	≥ 170	≥ 24	1 ½ to 8
6i	18-12 type stainless steel mirror polished	Same grades and characteristics as stainless steel, type 18-12 - code 6									1 ½ to 40
2*	Aluminium bronze	NFA 53-709 CuAl10Fe5Ni5	B148-955	BS 1400 A B2	DIN 1714 GCuAl10Ni	UNI 5275 CuAl11Fe4 Ni4	JIS 5114 AIBC3	≥ 91	≥ 36	≥ 12	1 ½ to 40
3b*	Ductile iron titanium carbide coated	Same grades and characteristics as ductile iron - code 3g									1 ½ to 40

Uts: Ultimate tensile strength - Yp: Yield point - El: Elongation

(1) Previous standards: DIN GGG40 / NF FGS 400-15

* For the availability of these materials, please consult us.

AMRING® liner: in-house designed, formulated and manufactured, it ensures perfect leak-tightness at the shaft passages, the flanges and upstream/downstream. The disc and liner are the only parts in contact with the fluid.

Standard liners

AMRING Code	Elastomer Group	Main properties	Some examples of applications
XA	E.P.D.M.	Good mechanical characteristics. Exceptional resistance to oxidation, ketones, alcohols, mineral and organic acids, acids, neutral or alkaline salts, esters, vegetable or animal oils.	Sea water, sewage,.... Ventilation circuits, ozone and ozone derivatives. Weak acids circuits, aldehydes, amines, ketones, esters Food industry: water, wine, beer, milk, alcohols, fruit juice,.... Approved for foodstuff (I.A.N.E.S.C.O.) and in conformity with F.D.A. regulations.
XV	Heat E.P.D.M.	Special formulation for high temperature	Industrial higher temperature processes. Sugar industry (massecuite and juice). Chemical industry. Evaporators.
K	High content nitrile	Good mechanical characteristics. Good resistance to hydrocarbons.	Hydrocarbons and oils with low aromatic content. General services: compressed air, water, fuel.

Liners on request

Y	HYPALON® chlorosulphonated polyethylene	Good mechanical characteristics. Good resistance to mineral acids, bases, alcohols, animal and vegetable oils. Resistance to ozone.	Soda, potash, phosphoric and superphosphoric acids. Manufacture and treatment of brine in chlorine production. Treatment of steel plates and other steel products.
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For other formulations, please consult us.

Working pressure limits and diameter for the AMRING® liners on ISORIA 16 valve

The opposite table defines the working limits for the liners depending on the elastomer nature and the diameter.

Size		Maximum working pressure (psig)			
		Liner			On request
mm	inch	XA	Standard XV	K	Y
40 to 600	1 ½ to 24	240	240	240	240
650 to 1000	26 to 40	240	240	240	

Vacuum limits

For valves used under extreme conditions of vacuum and temperature, depending on the size of valve and the AMRING® liner material, it may be necessary to bond the liner to the body by vulcanization.

It is impossible to remove the liner after vulcanization, and if the replacement of the liner is required, a body / liner set is proposed.

The table below defines vacuum limits and technical conditions.

Size		Pressure		T max (°F)	Special Construction Requirements
mm	inch	min. (psia)	max. (psig)		
40 to 150	1 ½ to 6	0.0002 (10 ⁻² torr)	240	T max of XA and XV liners T 176 °F for others liners	None
200 to 1000	8 to 40	4.35	240	T max of XA and XV liners T 176 °F for others liners	None
		0.0002 (10 ⁻² torr)	240 for XA and XV liners 150 for other liners	176 °F	Bonded Liner

Connections

The shape of the body has been designed to allow installation into many currently used flange connection standards, mainly:

- PN 10, 16, and 20,
- ANSI B16-1 class 125 and B 16-5 class 150,
- MSS SP 44 class 150,
- AWWA C 207 class B, D and E,
- AS 2129 tables D and E,
- BS 10 tables D and E,
- JIS B 2210 - 5K, 10K, 16K and 20K.

Tests - Inspection

Guaranteed performances

Isolating tight shut-off

The ISORIA 16 valves provide perfectly tight shut-off (no visible leakage to the naked eye) in either flow direction, in accordance with the following standards:

- ISO 5208 category A,
- NF E 29-311 rate 3,
- DIN 3230 part 3 rate 1,
- API 598,

and all other standards which allow a leakage rate (ANSI/FCI 70-2 class 6 for instance).

Atmospheric tight shut-off

In accordance with the above-mentioned standards, the ISORIA 16 valves are guaranteed 100% leak-tight to atmosphere.

Endurance tests

The endurance of ISORIA 16 valves conforms to EN 593 (March 1998) standard.

Standard tests

Body strength test

1.5 times the allowable pressure with water. This test is performed after valve assembly and with the disc in the half open position

Upstream/downstream and shaft tight shut-off test

1.1 times the allowable pressure with water.

Operating test

During final inspection, each valve and its actuator, undergoes a complete operating test (open/close).

This test is carried out without pressure and at ambient temperature. It ensures the correct operation of the valve/actuator assembly, including the accessories.

Optional tests

On request, any other test can be carried out according to special instructions.

Marking

ISORIA 16 valves marking is in accordance with EN 19 standard.

Marking on cast body

- Name of manufacturer: AMRI
- Nominal size: ND (millimeters)
- Grade of body material: standardized designation
- Reference number of casting pattern

Marking on the identification plate attached to the body

In addition to the valve name, the identification plate attached to the body includes the month and the year of manufacturing, the material code, body type, allowable pressure in bar, drilling pattern (if necessary with the thread pitch) and the reference of particular construction (construction S, R 107,).

Coating

The bodies of ISORIA 16 valves are coated with polyurethane paint, thickness 3 mils, color blue ref. RAL 5002.

The discs made of ductile iron (AMRI code 3g) are coated with epoxy powder paint, thickness 2.7 mils, color grey white ref. RAL 7035.

On request, a special food coating can be carried out on the disc. Please, consult us.

Construction - Sizes 40 to 600 mm (1 1/2 to 24")

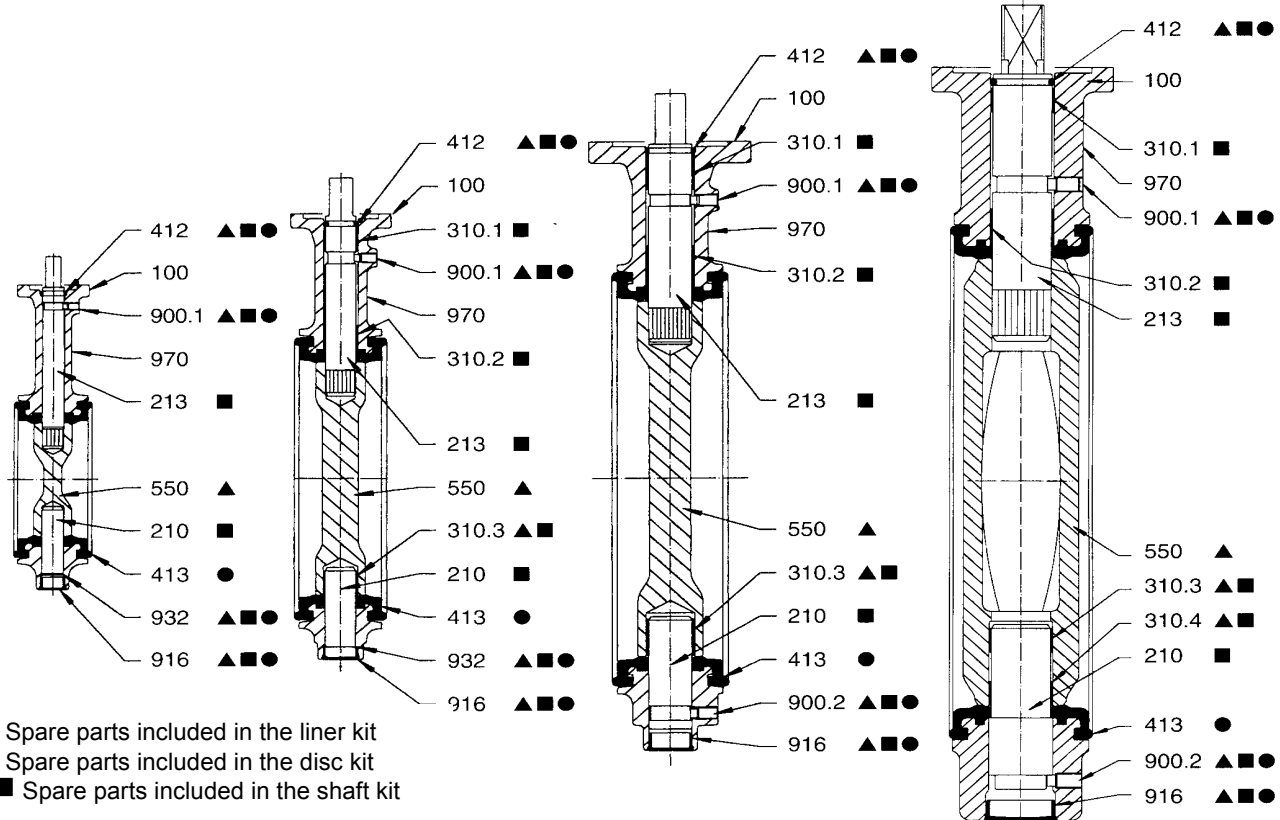
The drawings below show cross sectional drawings of ISORIA 16 valve type 1. Except for the external shape of the body, the construction is the same for all body types.

Sizes 40 to 150 mm
1 1/2 to 6"

Size 200 mm
8"

Sizes 250 and 300 mm
10 and 12"

Sizes 350 to 600 mm
14 to 24"



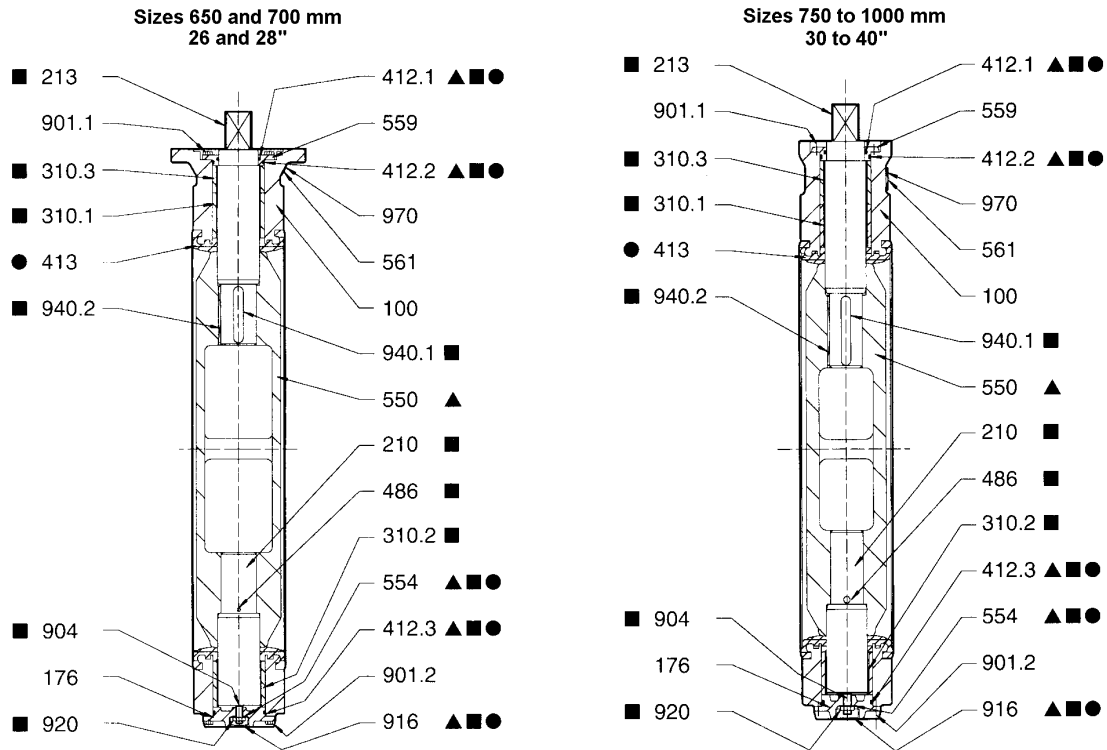
Item	Designation	Size (mm)	Materials
100	Body	40 to 600	Types 1 and 4: JL 1040* cast iron (code 3t) Types 2 and 5: JS 1030** ductile iron (code 3g)
210	Shaft	40 to 600	13% chromium stainless steel (code 6k)
213	Operating shaft	40 to 600	13% chromium stainless steel (code 6k)
310.1	Plain bearing	200 to 600	PTFE filled on steel casing
310.2	Plain bearing	200 to 600	PTFE filled on steel casing
310.3	Plain bearing	200 to 600	PTFE filled on steel casing
310.4	Plain bearing	350 to 600	PTFE filled on steel casing
412	O-Ring	40 to 600	Nitrile
413	Liner	40 to 600	In accordance with fluid
550	Disc	40 to 600	In accordance with fluid
900.1	Anti blow-out screw	40 to 600	Stainless steel
900.2	Anti blow-out screw	250 to 600	Stainless steel
916	Plug	40 to 600	Polyamide
932	Spring retaining ring	40 to 200	Steel
970	Identity plate	40 to 600	Polyester + adhesive

* Previous standards: DIN GG 25 / NF FGL 250

** Previous standards: DIN GGG 40 / NF FGS 400-15

Construction - Sizes 650 to 1000 mm (26 to 40")

The drawings below show the cross sectional drawings of ISORIA 16 valve type 5. Except for the external shape of the body (flat or raised faces), the construction is the same for the body types, 5 and 6.



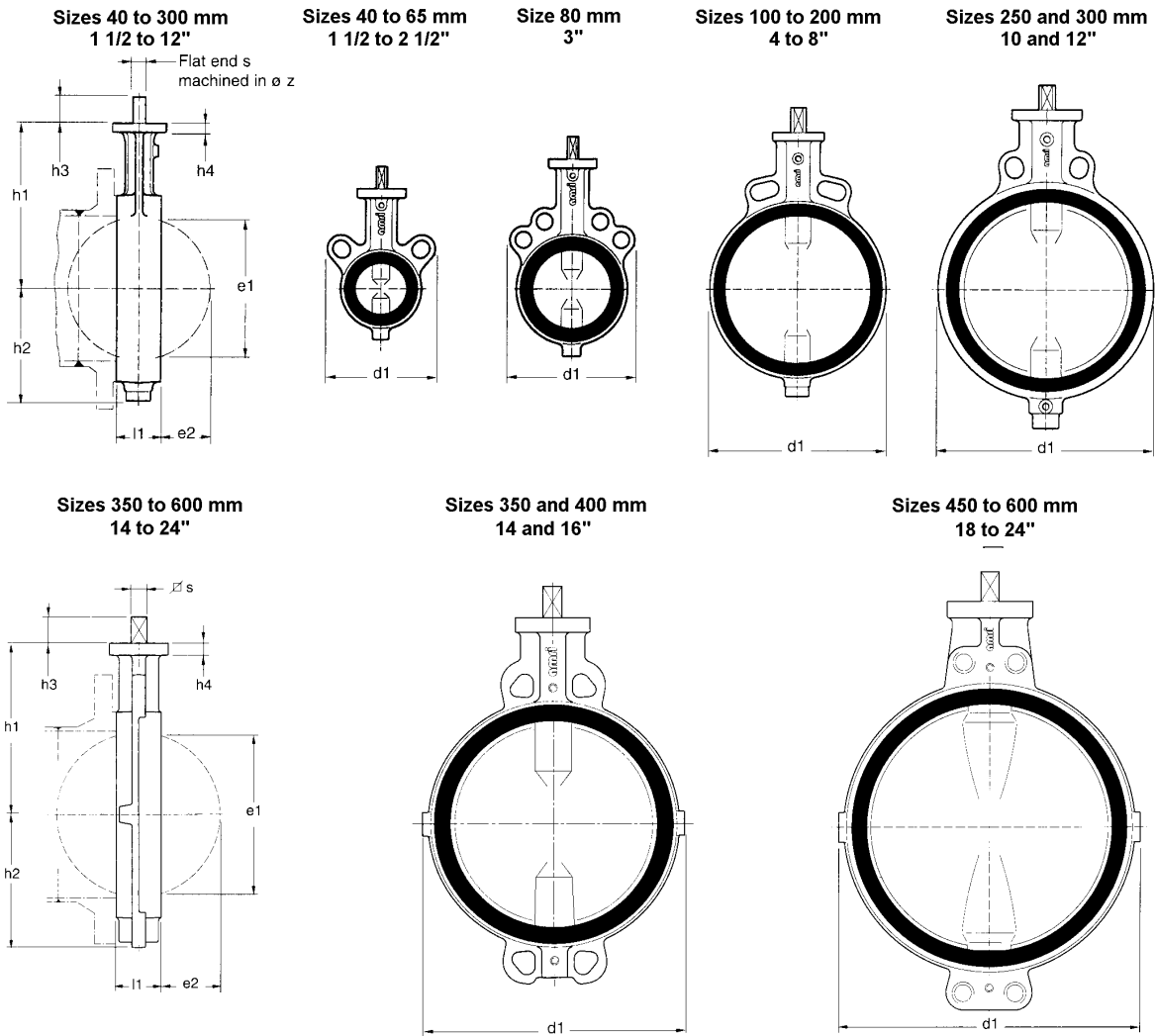
- Spare parts included in the liner kit
- ▲ Spare parts included in the disc kit
- Spare parts included in the shaft kit

Item	Designation	Size (mm)	Materials
100	Body	650 to 1000	Type 5 JS 1030 * ductile iron (code 3g)
			Type 6 JS 1030 * ductile iron (code 3g) ASTM A216 gr. WCC carbon steel (code 1)
176	Bottom	650 to 1000	JS 1030* ductile iron
210	Shaft	650 to 1000	17-4 stainless steel (code 6e)
213	Operating shaft	650 to 1000	17-4 stainless steel (code 6e)
310.1	Plain bearing	650 to 1000	PTFE filled on steel casing
310.2	Plain bearing	650 to 1000	PTFE filled on steel casing
310.3	Plain bearing	650 to 1000	PTFE filled on steel casing
412.1	O-Ring	650 to 1000	Nitrile
412.2	O-Ring	650 to 1000	Nitrile
412.3	O-Ring	650 to 1000	Nitrile
413	Liner	650 to 1000	In accordance with fluid
486	Ball	650 to 1000	Stainless steel
550	Disc	650 to 1000	In accordance with fluid
554	Washer	650 to 1000	Nylon
559	Gasket holder	650 to 1000	JS 1030* ductile iron (code 3g)
561	Grooved nail	650 to 1000	Stainless steel
900.1	Hexagonal screw	650 to 1000	Steel
900.2	Hexagonal screw	650 to 1000	Steel
904	Adjusting screw	650 to 1000	Steel
916	Plug	650 to 1000	Polyethylene
920	Nut	650 to 1000	Steel
940.1	Key	650 to 1000	Steel
940.2	Key	650 to 1000	Steel
970	Identity plate	650 to 1000	Stainless steel

* Previous standards: DIN GGG 40 / NF FGS 400-15

Wafer type body - Type 1- Sizes 40 to 600 mm (1 ½ to 24")

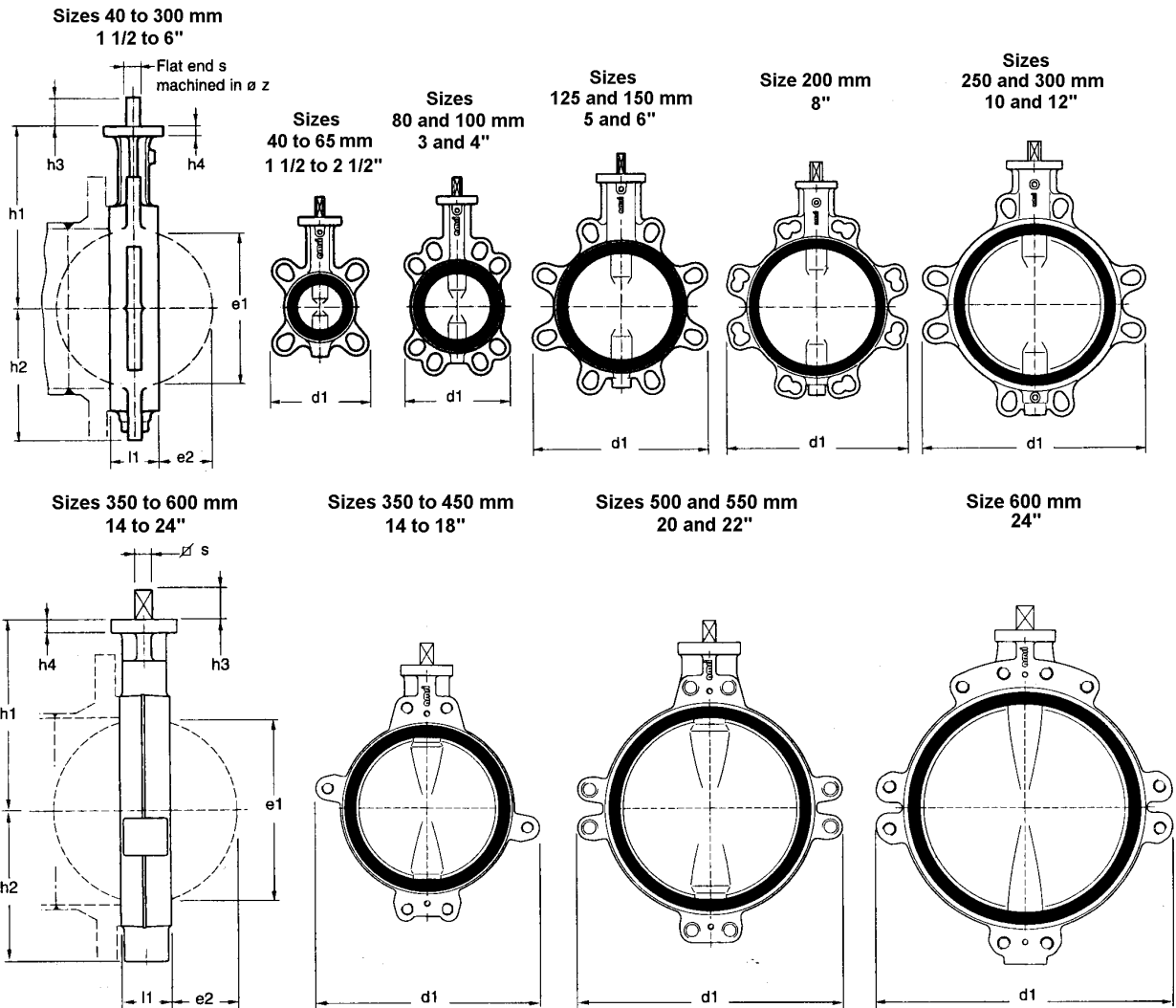
Dimensions (mm) and weight (lbs)



Size		Face to face l1			Mounting plate ISO 5211		Flat shaft end			Square shaft end		Disc clearance		Weight lbs	
mm	inch		d1	h1	h2	n°	h4	s	øz	h3	s	h3	e1		e2
40	1 ½	33	108	105	51	F05	10	11	14	24			32	4	2.4
50	2	43	118	109,5	55,5	F05	10	11	14	24			33	4	2.8
65	2 ½	46	133	136	67,5	F05	10	11	14	24			55	11	4.1
80	3	46	138	142	73,5	F05	10	11	14	24			71	17	5.5
100	4	52	144	163	92	F05	10	14	18	30			90	23	8.5
125	5	56	174	176,5	105,5	F05	10	14	18	30			119	35	10.3
150	6	56	198	194	120	F07	12	14	18	30			144	46	15.2
200	8	60	252	222	150,5	F07	12	19	25	35			196	69	23
250	10	68	310	255	194,5	F10	15	19	25	35			249	92	36
300	12	78	362	282	226	F12	18	22	28	40			297	111	66
350	14	78	433	335	269	F12	23				25	45	326	127	110
400	16	102	490	380	298	F14	23				36	55	370	140	158
450	18	114	546	410	329	F14	23				36	55	422	160	211
500	20	127	600	440	359	F14	27				36	55	470	178	286
550	22	154	645	475	406	F16	27				50	65	522	195	352
600	24	154	714	495	439	F16	27				50	65	566	215	418

Semi-lug type body - Type 2 – Sizes 40 to 600 mm (1 ½ to 24")

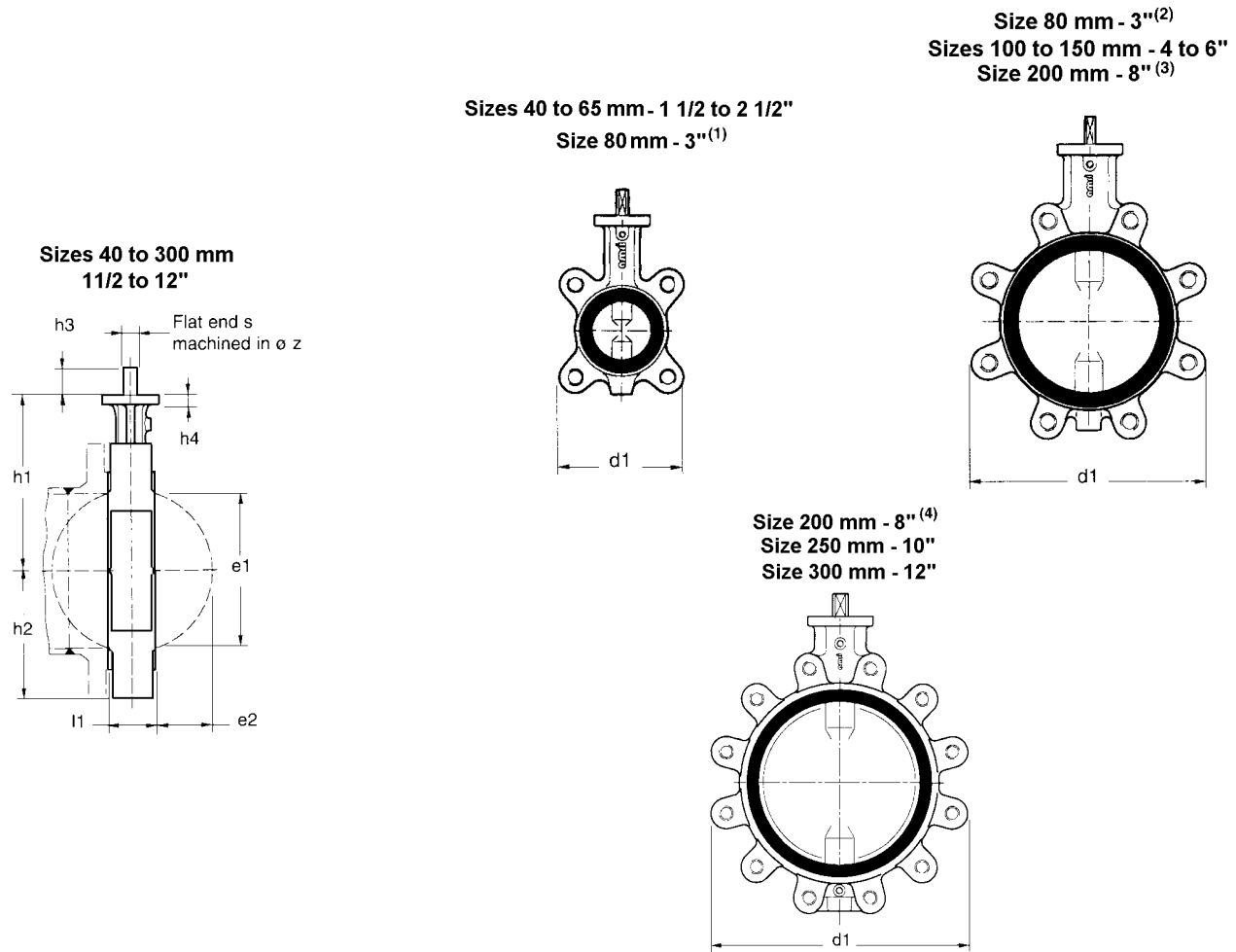
Dimensions (mm) and weight (lbs)



Size		Face to face l1	d1	h1	h2	Mounting plate ISO 5211		Flat shaft end			Square shaft end		Disc clearance		Weight lbs
Mm	inch					n°	h4	s	øz	h3	s	h3	e1	e2	
40	1 ½	33	108	105	54	F05	10	11	14	24			32	4	2.6
50	2	43	118	109.5	59	F05	10	11	14	24			33	4	3.3
65	2 ½	46	132	136	66	F05	10	11	14	24			55	11	4.8
80	3	46	138	142	89	F05	10	11	14	24			71	17	6.1
100	4	52	150	163	103	F05	10	14	18	30			90	23	9.6
125	5	56	234	176.5	117	F05	10	14	18	30			119	35	12.3
150	6	56	260	194	130	F07	12	14	18	30			144	46	17
200	8	60	322	222	161	F07	12	19	25	35			196	69	26
250	10	68	394	255	197	F10	15	19	25	35			249	92	39
300	12	78	462	282	231	F12	18	22	28	40			297	111	70
350	14	78	538	335	269	F12	23				25	45	326	127	132
400	16	102	604	380	302	F14	23				36	55	370	140	176
450	18	114	656	410	328	F14	23				36	55	422	160	242
500	20	127	716	440	358	F14	27				36	55	470	178	319
550	22	154	804	475	406	F16	27				50	65	522	195	396
600	24	154	836	495	439	F16	27				50	65	566	215	484

Full-lug type body with raised faces - Type 4 - Sizes 40 to 300 mm (1 ½ to 12")

Dimensions (mm) and weight (lbs)



Size		Face to face l1	Mounting plate ISO 5211				Flat shaft end			Disc clearance		Weight lbs	
mm	inch		d1	h1	h2	n°	h4	s	øz	h3	e1		e2
40	1 ½	33	108	105	54	F05	10	11	14	24	32	4	4.4
50	2	43	120	109,5	60	F05	10	11	14	24	33	4	5.5
65	2 ½	46	134	136	67	F05	10	11	14	24	55	11	6.6
80(1)	3	46	140	142	70	F05	10	11	14	24	71	17	8.8
80(2)	3	46	178	142	89	F05	10	11	14	24	71	17	9.9
100	4	52	210	163	105	F05	10	14	18	30	90	23	12
125	5	56	236	176.5	118	F05	10	14	18	30	119	35	19
150	6	56	260	194	130	F07	12	14	18	30	144	46	24
200(3)	8	60	312	222	156	F07	12	19	25	35	196	69	52
200(4)	8	60	322	222	161	F07	12	19	25	35	196	69	55
250	10	68	396	255	198	F10	15	19	25	35	249	92	85
300	12	78	466	282	233	F12	18	22	28	40	297	111	101

(1) Connection between flanges PN 20, ANSI B16-5 cl. 150 and JIS B 2210-5K

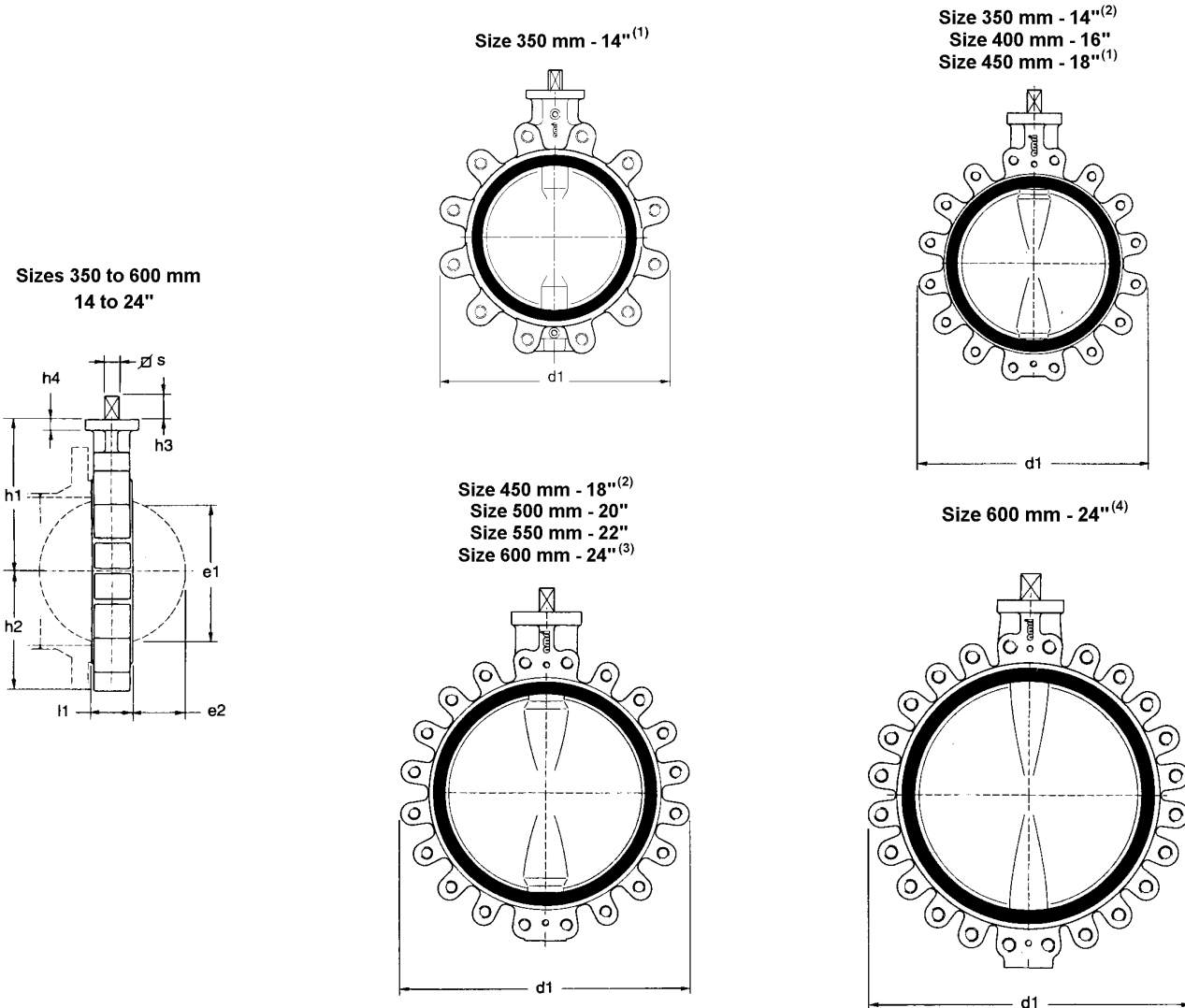
(2) Connection between flanges PN 10, PN 16 and JIS B 2210-10K

(3) Connection between flanges PN 10, PN 20, ANSI B16-5 cl. 150 and JIS B 2210-5K

(4) Connection between flanges PN 16 and JIS B 2210-10K

Full-lug type body with raised faces - Type 4 - Sizes 350 to 600 mm (14 to 24")

Dimensions (mm) and weight (lbs)

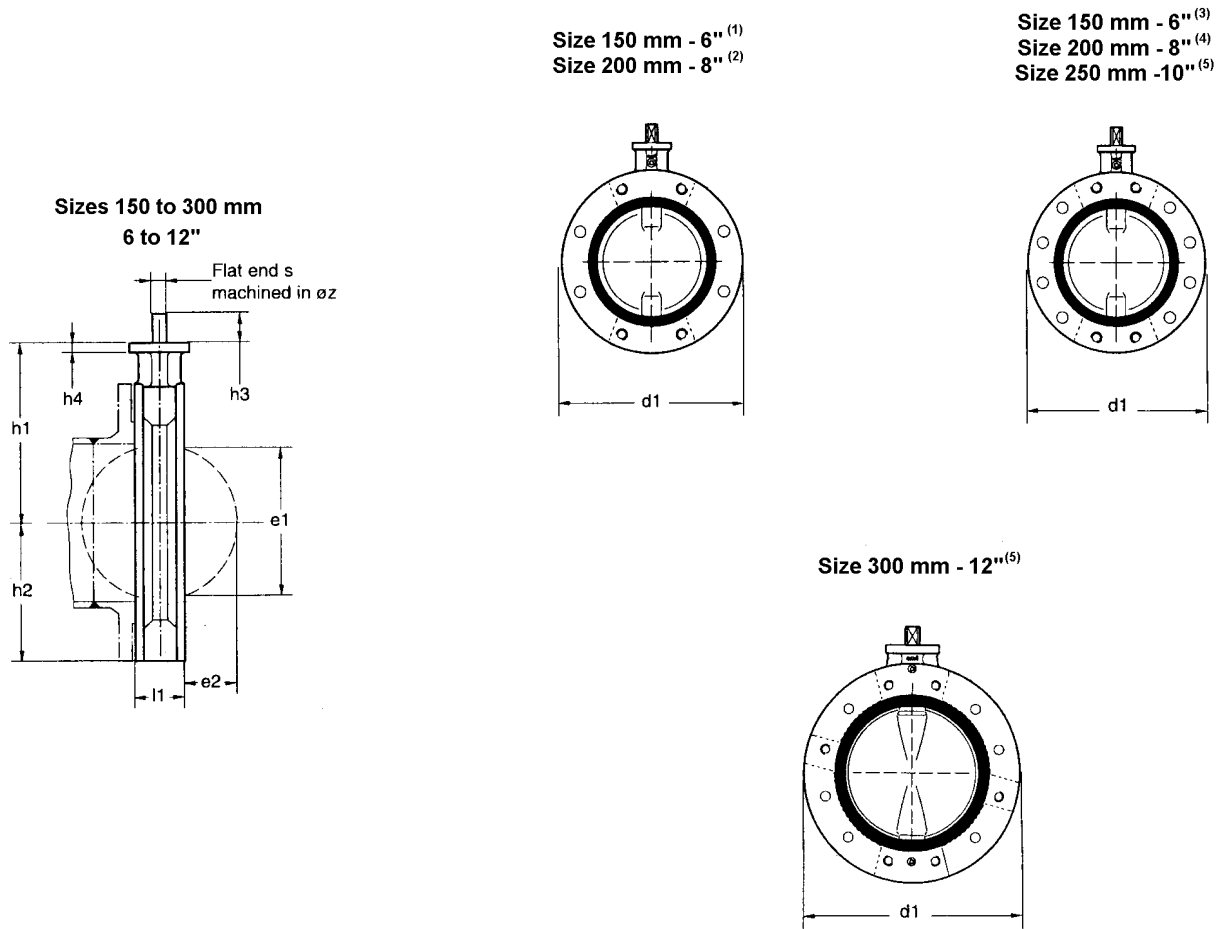


Size		Face to face l1	Mounting plate ISO 5211				Square shaft end		Disc clearance		Weight lbs	
mm	inch		d1	h1	h2	n°	h4	s	h3	e1		e2
350(1)	14	78	510	335	255	F12	23	25	45	326	127	136
350(2)	14	78	530	335	265	F12	23	25	45	326	127	154
400	16	102	598	380	296	F14	23	36	55	370	140	222
450(1)	18	114	622	410	329	F14	23	36	55	422	160	268
450(2)	18	114	654	410	329	F14	23	36	55	422	160	306
500	20	127	708	440	359	F14	27	36	55	470	178	394
550	22	154	774	475	406	F16	27	50	65	522	195	513
600(3)	24	154	822	495	439	F16	27	50	65	566	215	564
600(4)	24	154	830	495	439	F16	27	50	65	566	215	623

(1) Connection between flanges PN 20, ANSI B16-5 cl. 150 and JIS B 2210-5K
 (2) Connection between flanges PN 10, PN 16 and JIS B 2210-10K
 (3) Connection between flanges PN 10, PN 16, PN 20, ANSI B16-5 cl. 150 and JIS B 2210-5K
 (4) Connection between flanges JIS B 2210-10K and 16K

Flanged body with flat faces - Type 5 - Sizes 150 to 300 mm (6 to 12")

Dimensions (mm) and weight (lbs)



Size		Face to face				Mounting plate ISO 5211		Flat shaft end			Disc clearance		Weight
mm	inch	l1	ød1	h1	h2	n°	h4	s	øz	h3	e1	e2	lbs
150	6	56	298	194	149	F07	12	14	18	30	144	46	24
200	8	60	343	222	172	F07	12	19	25	35	196	69	50
250	10	68	406	255	203	F10	15	19	25	35	249	92	88
300	12	78	483	282	242	F12	18	22	28	40	297	111	132

(1) All connections except JIS B 2210-16K

(2) Connections PN 10, PN 20, ANSI B 16-1 cl 125 and B 16-5 cl 150, AWWA C207 B, D and E, BS 10 tables D and E, AS 2129 tables D and E

(3) Connection JIS B 2210-16 K AND 20K

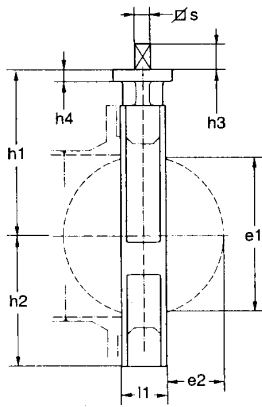
(4) Connections PN 16, JIS B 2210-5K, 10K, 16K and 20K

(5) All connections except JIS B 2210-10K, 16K and 20K

Flanged body with flat faces - Type 5 - Sizes 350 to 1000 mm (14 to 40")

Dimensions (mm) and weight (lbs)

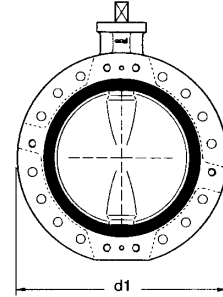
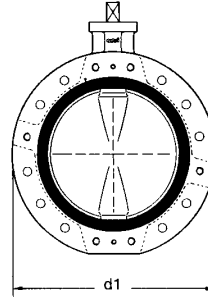
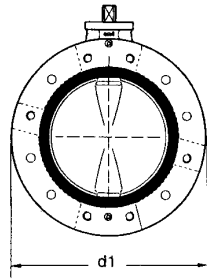
Sizes 350 to 1000 mm
14 to 40"



Size 350 mm - 14"⁽¹⁾
Size 400 mm - 16"⁽²⁾
Size 450 mm - 18"⁽³⁾

Size 350 mm - 14"⁽⁴⁾
Size 400 mm - 16"⁽⁵⁾
Size 450 mm - 18"⁽⁶⁾

Size 450 mm - 18"⁽⁴⁾



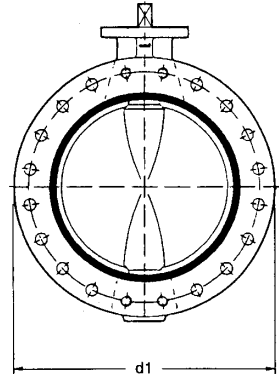
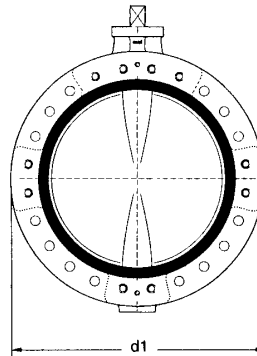
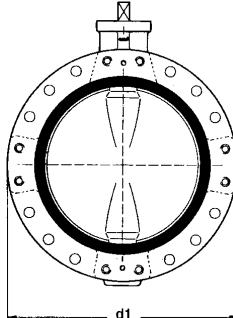
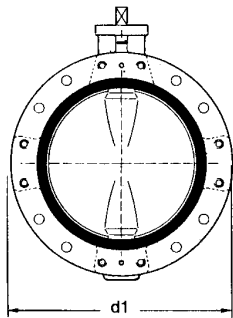
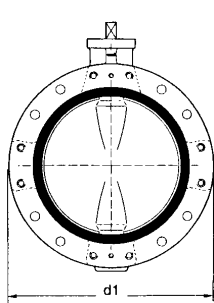
Size 500 mm - 20"⁽⁷⁾
Size 550 mm - 22"⁽⁷⁾
Size 600 mm - 24"⁽⁷⁾

Size 500 mm - 20"⁽⁵⁾
Size 550 mm - 22"⁽⁵⁾

Size 600 mm - 24"⁽⁸⁾

Size 600 mm - 24"⁽⁹⁾

Sizes 650 to 1000 mm
26 to 40"



Size		Face to face l1	Mounting plate ISO 5211			Square shaft end		Disc clearance		Weight lbs		
mm	inch		∅d1	h1	h2	n°	h4	s	h3		e1	e2
350	14	78	533	335	266	F12	23	25	45	326	127	176
400	16	102	597	380	299	F14	23	36	55	370	140	231
450	18	114	640	410	332	F14	23	36	55	422	160	286
500	20	127	715	440	370	F14	27	36	55	470	178	396
550	22	154	749	475	406	F16	27	50	65	522	195	506
600	24	154	840	495	439	F16	27	50	65	566	215	573
650	26	165	870	535	465	F16	26	50	65	615	235	749
700	28	165	925	560	490	F16	26	50	65	666	260	859
750	30	190	985	590	540	F25	30	60	80	712	272	1046
800	32	190	1055	615	565	F25	30	60	80	763	297	1289
900	36	203	1165	665	615	F25	30	60	80	863	341	1520
1000	40	216	1280	735	680	F25	30	60	90	963	385	1906

(1) Connections PN 20, ANSI B16-1 cl 125 and B 16-5 cl 150, MSS SP 44 cl 150, JIS B 2210-5K, AWWA C 207 B,D and E, BS 10 tables D and E, AS 2129 tables D and E

(2) Connections BS 10 tables D and E, AS 2129 tables D and E

(3) Connections BS 10 table D and AS 2129 table D

(4) Connections PN 10, PN 16, JIS B 2210-10K, 16K and 20K

(5) All connections except BS 10 tables D and E, AS 2129 tables D and E

(6) Connections PN 20, ANSI B 16-1 cl 125 and B 16-5 cl 150, AWWA C207 B, D and E, MSS SP 44 cl 150, JIS B 2210-5K, BS 10 table E, AS 2129 table E

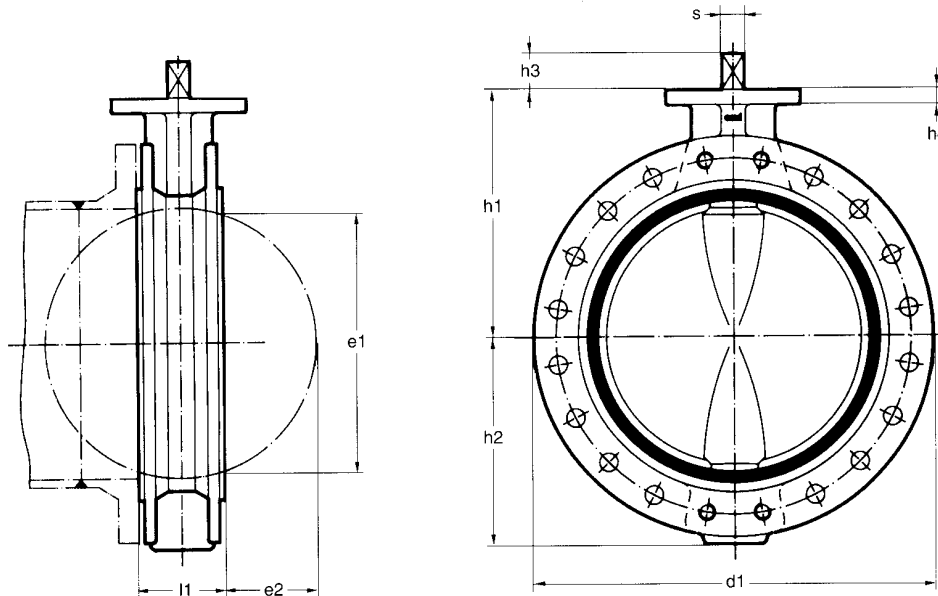
(7) Connections BS 10 tables D and E and AS 2129 tables D and E

(8) All connections except JIS B 2210-5K, 10K, 16K, and 20K, BS 10 tables D and E, AS 2129 tables D and E

(9) Connections JIS B 2210-5K, 10K and 16K

U-section body with raised faces - Type 6 - Sizes 650 to 1000 mm (26 to 40'')

Dimensions (mm) and weight (lbs)



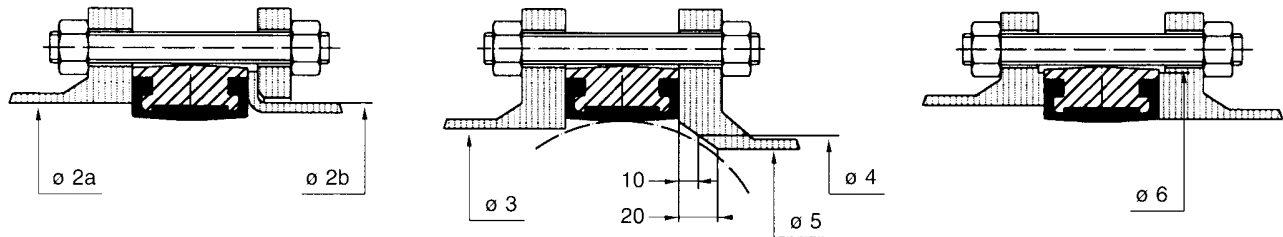
Size		Face to face l1	Mounting plate ISO 5211			Square shaft end		Disc clearance		Weight lbs		
mm	inch		d1	h1	h2	n°	h4	□s	h3		e1	e2
650 (1)	26	165	870	535	465	F16	26	50	65	615	235	639
650 (2)	26	165	895	535	465	F16	26	50	65	615	235	661
700 (3)	28	165	910	560	490	F16	26	50	65	666	260	749
700 (4)	28	165	925	560	490	F16	26	50	65	666	260	749
700 (5)	28	165	960	560	490	F16	26	50	65	666	260	793
750 (6)	30	190	985	590	540	F25	30	60	80	712	272	925
750 (7)	30	190	1020	590	540	F25	30	60	80	712	272	969
800 (8)	32	190	1025	615	565	F25	30	60	80	763	297	1068
800 (9)	32	190	1055	615	565	F25	30	60	80	763	297	1068
900 (10)	36	203	1125	665	615	F25	30	60	80	863	341	1322
900 (11)	36	203	1165	665	615	F25	30	60	80	863	341	1322
1000 (10)	40	216	1255	735	680	F25	30	60	90	963	385	1708
1000 (12)	40	216	1280	735	680	F25	30	60	90	963	385	1708
1000 (7)	40	216	1320	735	680	F25	30	60	90	963	385	1785

- (1) Dimensions and weight of valves with cast iron body except connection between JIS B2210-16K flanges
- (2) Dimensions and weight of valves with ductile iron body and steel body for all connections
- (3) Dimensions and weight of valves with cast iron body, ductile iron body and steel body, connection between PN 10 and 16, JIS B2210-5K and 10 K
- (4) Dimensions and weight of valves with cast iron body, ductile iron body and steel body, connection between PN 20, AWWA C207 cl B, D and E, BS 10 tables D and E, AS 2129 tables D and E, MSS SP 44 cl 150
- (5) Dimensions and weight of valves with ductile iron body and steel body, connection between JIS B2210-16K
- (6) Dimensions and weight of valves with cast iron body, ductile iron body and steel body, except connection between JIS B2210-16K
- (7) Dimensions and weight of valves with ductile iron body and steel body, connection between JIS B2210-16K
- (8) Dimensions and weight of valves with cast iron body, ductile iron body and steel body, connection between PN 10 and 16, JIS B2210-5K
- (9) Dimensions and weight of valves with cast iron body, ductile iron body and steel body, connection between PN 20, JIS B2210-10K, AWWA C207 cl B, D and E, AS 2129 tables D and E, MSS SP 44 cl 150
- (10) Dimensions and weight of valves with cast iron body, ductile iron body and steel body, connection between PN 10 and 16, JIS B2210-10 K
- (11) Dimensions and weight of valves with cast iron body, ductile iron body and steel body, connection between PN 20, JIS B2210-5K, AWWA C207 cl B, D and E, BS 10 tables D and E, AS 2129 tables D and E, MSS SP 44 cl 150
- (12) Dimensions and weight of valves with ductile iron body and steel body, connection between PN 20 and MSS SP 44 cl 150
Dimensions and weight of valves with cast iron body, connection between PN 20, MSS SP 44 cl 150, AWWA C207 cl B, D and E, BS 10, tables D and E, AS 2129 tables D and E.

Flanging dimensions

ISORIA 16 valves are designed for assembly between any type of flange and connection standard currently used. For optional type flanges (for example: slip-on, lap joint ...) and raised face flanges, it is necessary to verify the general compatibility of the connection by checking the dimensions shown in the table below.

The following drawings show valve type 1 mounted between flanges. The flanging dimensions mentioned in this table are the same for all body types.



- Fitting between flat flanges: $\varnothing 2a$ internal max. tolerated dia. on the supporting area of the flange face.
- Fitting between lap joint flange: $\varnothing 2b$ external dia. of the pipe.

Size		Max. dia. tolerated		Min. dia. tolerated on face of flange	Min. dia. 10 mm from face of flange	Min. dia. 20 mm from face of flange	Min. dia. tolerated of shoulder of raised face flange
mm	inch	$\varnothing 2a$	$\varnothing 2b$	$\varnothing 3$	$\varnothing 4$	$\varnothing 5$	$\varnothing 6$
40	1 ½	54	49	32	---	---	77
50	2	63	61	33	---	---	86
65	2 ½	80	77	55	13	---	107
80	3	93	89	71	50	---	121
100	4	116	115	90	74	40	141
125	5	141,5	140	119	107	87	171
150	6	170,5*	169	144	134	120	196
200	8	222*	220	196	189	178	250
250	10	276,5*	273	249	243	234	306
300	12	327,5*	324	297	291	283	358
350	14	361	356	326	321	314	399
400	16	412	407	370	366	358	452
450	18	463	457	422	416	409	505
500	20	515	508	470	464	457	558
550	22	568	561	522	516	509	625
600	24	617	610	566	560	554	664
650	26	667		615	609	602	723
700	28	718		666	661	655	773
750	30	768		712	706	700	830
800	32	819		763	758	752	880
900	36	922		863	858	853	986
1000	40	1027		963	958	953	1093

* Please check that the body is properly centered between the tie-rods.

Installation

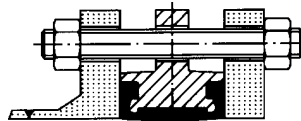
ISORIA 16 valves are bi-directional and can be used for on/off or throttling applications. They can be installed in any position, however, for sizes 650 to 1000mm, (26 to 40 inch); the valve must not be installed upside-down.

Dead-end service

The design of the body of ISORIA 16 valves allows for dead-end service under maximum allowable pressure.

This mounting requires the use of a counter-flange fitted on the downstream side of the valve. Upstream/downstream leak-tightness is maintained and the valve can be cycled.

Shown types 1 and 2



Particular case of type 4

Maximum tightening torque to be applied on the connection bolting:

Size (inch)	Torque (in. lbs.)
1 ½ to 5	443
6 to 14	885
16 to 20	1416
22 and 24	2213

Downstream pipe dismantling

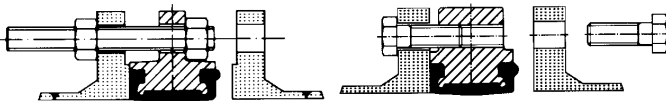
Downstream pipe dismantling under maximum allowable pressure is allowed for ISORIA 16 valves types 2, 4 and 5; and valve type 6 with ductile iron body.

This type of mounting allows repair and maintenance on downstream pipe or equipment. During this time, the valve must not be operated.

Type 2

Sizes 40 to 300 mm
1 ½ to 12 "

Sizes 350 to 600 mm
14 to 24 "

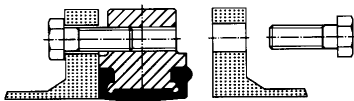


Maximum tightening torque to be applied on the bolting for downstream dismantling, sizes 40 to 300 mm (1 ½ to 12 "):

Size (inch)	Torque (in. lbs.)	Size (inch)	Torque (in. lbs.)
1 ½	88	5	283
2	115	6	416
2 ½	142	8	531
3	239	10	717
4	266	12	1186

No maximum torque valves for larger sizes

Type 4



Maximum tightening torque to be applied on the connection bolting:

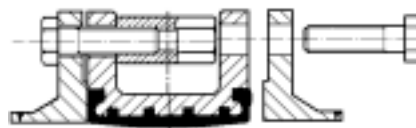
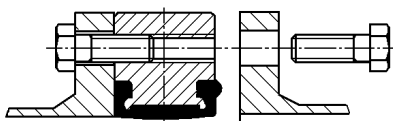
Size (inch)	Torque (in. lbs.)
1 ½ to 5	443
6 to 14	885
16 to 20	1416
22 and 24	2213

Type 5

Sizes 150 to 600
6 to 24"

Sizes 650 to 1000
26 to 40"

Mounting by screws
and special "HS" nuts



Type 6

Mounting by screws
and special "HS" nuts



Data to be supplied upon request or when ordering

Media: chemical composition, concentration, % of solids (if any)

Working conditions: pressure, temperature (min., max.), flow rate

Valve sizes and flange standard

Body, disc and liner materials (if known)

Type of actuator (manual, double acting pneumatic, spring return pneumatic, electric)

On/off or throttling service

Additional accessories required

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