

The ISORIA 10 series, developed by AMRI-KSB, is the answer to many flow shut-off or regulation problems encountered in all sectors of industry.

Designed for an allowable pressure p_s of 10 bar, the ISORIA 10 valves include ranging in sizes from 40 to 1500 mm.

This technical leaflet supplies technical informations concerning these valves.

AMRI is ISO 9001 appro-

Contents

	Page
Manufacturing programme - Design - Dimensional characteristics.....	3
Hydraulic characteristics.....	4
Operating torques.....	5
Materials.....	5, 6, 7 & 8
Vacuum limits.....	8
Flange connection.....	8, 9 & 10
Tests - Inspection.....	11
Marking - Coating.....	11
Construction - Parts list.....	12 & 13
Dimensions and weight - Type 1.....	14
Dimensions and weight - Type 2.....	15
Dimensions and weight - Type 4.....	16 & 17
Dimensions and weight - Type 5	18 & 19
Dimensions and weight - Type 6.....	20
Flanging dimensions.....	21
Installation.....	22
Manual control - ¼ turn handles, MA and MR gear reducers.....	23
Electric control - ACTELEC ¼ turn and multi-turn actuators.....	24
Pneumatic control - ACTAIR double acting actuators.....	25
Pneumatic control - DYNACTAIR spring return actuators.....	26
Hydraulic control - ACTO double acting actuators and DYNACTO spring return actuators.....	27
Data to be supplied upon request or when ordering	28

Manufacturing range

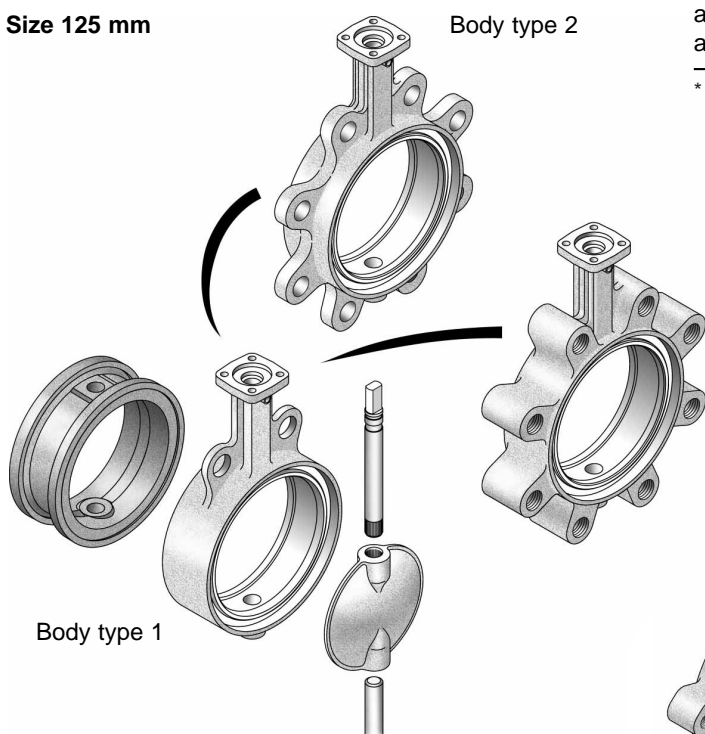
Designed for an allowable pressure p_s of 10 bar, the ISORIA 10 valves are available in five shapes of body :

- 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 (mm)
Wafer type body with flat faces allowing dead-end service under p_s	1	40 to 600
Semi-lug type body with flat faces, allowing downstream dismantling and/or dead-end service under p_s	2	40 to 600
Full-lug type body with raised faces, allowing downstream dismantling and/or dead-end service under p_s	4	40 to 600
Flanged type body with flat faces, allowing downstream dismantling and/or dead-end service under p_s	5	150 to 1500*
U-section body with raised faces, allowing downstream dismantling and/or dead-end service under p_s	6	650 to 1500*

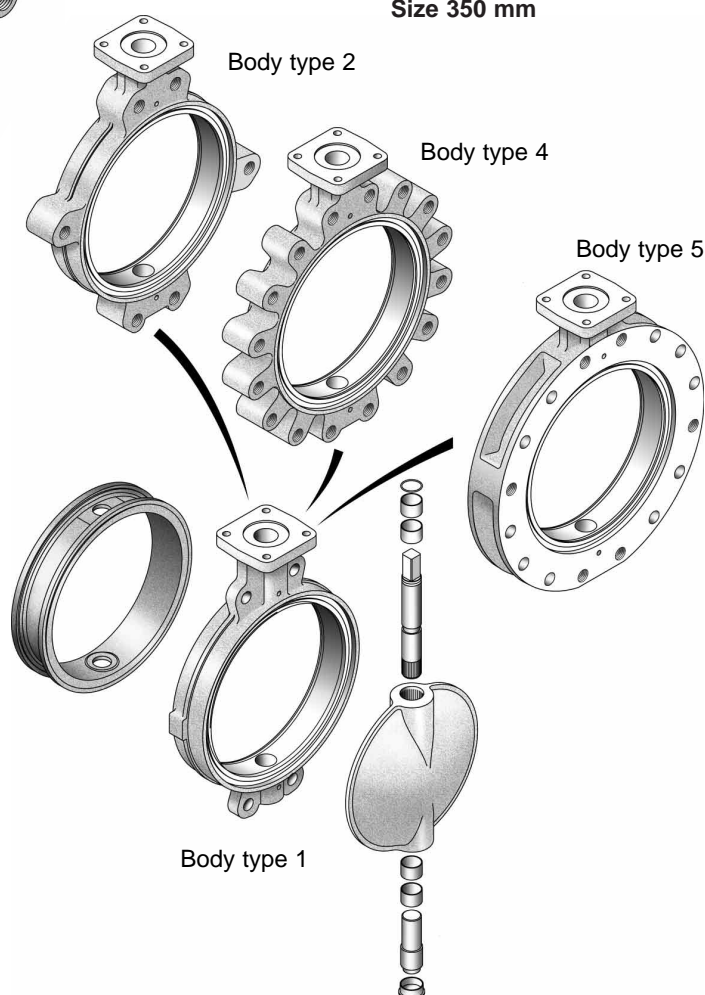
* Size 1500 mm : p_s 6 bar

Size 125 mm



Body type 4

Size 350 mm



Design

The ISORIA 10 butterfly valves are designed in accordance with EN 593 standard (NF E 29-430 and 29-431).

Dimensional characteristics

The ISORIA 10 valves conform to the following standards :

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

Hydraulic characteristics

Flow coefficients

The following tables give the flow coefficients relating to the opening angle of the disc and the zeta coefficient.

The flow coefficient Kv (or Cv) is the flow in m³/h (or US gallon/mn) passing through a valve with a resulting pressure drop of 1 bar (or 1 psi). The relationship between Cv and Kv is : Cv = 1.16 Kv

Zeta is the factor which proportionally links the pressure drop in the valve to the kinetic energy of the fluid in the upstream side of the valve.

Flow coefficients Kv in metric units (m³/h/bar^{1/2})

Size		Flow coefficient Kv relating to the opening angle of the disc									Zeta
mm	inch	10°	20°	30°	40°	50°	60°	70°	80°	90°	
40	1 ½	0	1	2	5	10	16	27	48	53	1,46
50	2	0	2	6	13	24	40	67	120	133	0,56
65	2 ½	0	4	11	24	43	72	120	216	240	0,49
80	3	0	6	18	41	74	123	205	369	410	0,39
100	4	1	10	29	66	118	197	328	590	655	0,37
125	5	1	14	41	90	162	270	450	810	900	0,48
150	6	2	27	81	180	324	540	900	1620	1800	0,25
200	8	4	53	160	355	639	1065	1775	3195	3550	0,20
250	10	7	110	331	735	1323	2205	3675	6615	7350	0,12
300	12	9	137	410	910	1638	2730	4550	8190	9100	0,16
350	14	11	168	504	1120	2016	3360	5600	10080	11200	0,19
400	16	15	222	666	1480	2664	4440	7400	13320	14800	0,19
450	18	20	296	887	1970	3546	5910	9850	17730	19700	0,17
500	20	25	375	1125	2500	4500	7500	12500	22500	25000	0,16
550	22	32	476	1427	3170	5706	9510	15850	28530	31700	0,15
600	24	36	546	1638	3640	6552	10920	18200	32760	36400	0,16
650	26	31	467	1400	3110	5598	9330	15550	27990	31100	0,30
700	28	34	512	1535	3410	6138	10230	17050	30690	34100	0,33
750	30	41	621	1863	4140	7452	12420	20700	37260	41400	0,30
800	32	47	707	2120	4710	8478	14130	23550	42390	47100	0,30
900	36	60	894	2682	5960	10728	17880	29800	53640	59600	0,30
1000	40	83	1239	3717	8260	14868	24780	41300	74340	82600	0,23
1050	42	102	1530	4590	10200	18360	30600	51000	91800	102000	0,19
1100	44	112	1680	5040	11200	20160	33600	56000	100800	112000	0,19
1200	48	112	1680	5040	11200	20160	33600	56000	100800	112000	0,26
1350	54	180	2700	8100	18000	32400	54000	90000	162000	180000	0,16
1400	56	193	2895	8685	19300	34740	57900	96500	173700	193000	0,17
1500	60	233	3495	10485	23300	41940	69900	116500	209700	233000	0,15

Flow coefficients Cv in american units (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	13	193	580	1288	2318	3864	6440	11592	12880
400	16	17	255	766	1702	3064	5106	8510	15318	17020
450	18	23	340	1019	2266	4078	6797	11328	20390	22655
500	20	29	431	1294	2875	5175	8625	14375	25875	28750
550	22	36	547	1640	3646	6562	10937	18228	32810	36455
600	24	42	628	1884	4186	7535	12558	20930	37674	41860
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
1050	42	118	1775	5324	11830	21924	35490	59150	106470	118300
1100	44	130	1950	5850	13000	23400	39000	65000	117000	130000
1200	48	130	1950	5850	13000	23400	39000	65000	117000	130000
1350	54	209	3132	9396	20880	37584	62640	104400	187920	208800
1400	56	224	3357	10071	22380	40284	67140	111900	201420	223800
1500	60	270	4055	12164	27030	48654	81090	135190	243270	270300

Operating torques

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

These torques integrate :

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

No safety coefficient must be applied in the selection definition as per pages 23 to 27.

In intermediate position and up to the fully open position, the friction torque is about 1/10 of the maximum values.

Note : an important increase of the torque in intermediate position can be generated by the hydrodynamic torque in case of flow velocity increasing.

Size		Maximum torque in Nm	
mm	inch	XA, XV, K and GM liners on lubricated medium	XA, XV, K and GM liners on non lubricated medium Other liners (1)
40	1 ½	10	20
50	2	20	30
65	2 ½	30	40
80	3	40	50
100	4	60	70
125	5	80	100
150	6	130	140
200	8	170	210
250	10	220	330
300	12	380	520
350	14	500	720
400	16	650	980
450	18	800	1200
500	20	1000	1500
550	22	1200	1800
600	24	1400	2100

Size		Maximum torque in Nm	
mm	inch	XA, XV, K and GM liners on lubricated medium	XA, XV, K and GM liners on non lubricated medium Other liners (1)
650	26	1800	2700
700	28	2100	3200
750	30	2400	3600
800	32	2800	4100
900	36	3600	5200
1000	40	4400	6400
1050	42	5000	7500
1100	44	5000	7500
1200	48	6500	9500
1350	54	11000	16000
1400	56	11000	16000
1500	60	8100 (2)	12500 (2)

(1) on lubricated or not lubricated medium

(2) allowable pressure $p \leq 6$ bar

Materials

The materials used for the construction of ISORIA 10 valves and their mechanical characteristics are listed in the following tables. They conform to the standards in grey divisions. On request, certificates of material conformity can be supplied.

Body : in one piece, achieved by casting.

AMRI KSB code	Material type	Designation in accordance with standards			Mechanical characteristics		
		EN	ASTM	JIS	Uts MPa	Yp MPa	El. A %
1	Carbon steel	EN 10213-2 GP240GH (1)	A 216 gr. WCC	JIS G5101 SC 49	≥ 485	≥ 275	≥ 22
3g	Ductile iron	JS 1030 (2)	A 536 gr.60-40-18	JIS G5502 FCD 40	≥ 400	≥ 250	≥ 15
3t	Cast iron	JL 1040 (3)	A 48 cl.35	JIS G5501 FC 25	≥ 250	----	----

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 (mm)
Wafer type	1	Cast iron - code 3t	40 to 600
Semi-lug type	2	Ductile iron - code 3g	40 to 600
Full-lug type with raised faces	4	Cast iron - code 3t	40 to 600
Flanged type body with flat faces	5	Ductile iron - code 3g	150 to 1500
U-section body With raised faces	6	Cast iron - code 3t	650 to 1000
		Ductile iron - code 3g	650 to 1500
		Carbon steel - code 1	650 to 1500

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

AMRI-KSB code	Material type	Designation in accordance with standards				Mechanical characteristics		
		EN	ASTM	JIS		Uts MPa	Yp MPa	El.A %
6k *	13% Cr stainless steel	EN 10088-3 A 35-574	X29 CrS13	-----		850 to 1000	≥ 650	≥ 9
6e *	17-4 type stainless steel		X5CrNiCuNb16-4 N° 1.4542 or X4CrNiMo16-5-1 N° 1.4418	A 564 gr. 630	JIS G4303 SUS 630	≥ 900	≥ 700	≥ 9
8	Nickel alloy MONEL K500 aged		-----			≥ 912	≥ 647	≥ 15

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

* 6k : standard version shafts for all sizes, except sizes 1200 to 1400 shafts 6e.

The opposite table defines the various shaft materials relating to the valve size.

Size		Material
mm	inch	
40 to 600	1 ½ to 24	6k * - 6e - 8
650 to 1100	26 to 44	6k * - 6e - 8
1200 to 1400	48 to 56	6e * - 8
1500	60	6k * - 6e - 8

* Standard material

Disc : spherically machined, casted or punched relating to the size.

AMRI KSB code	Material type	Designation in accordance with standards						Mechanical characteristics			Size
		EN	ASTM	BS	DIN	UNI	JIS	Uts MPa	Yp MPa	El. A %	
3g	Ductile iron	JS 1030 (1)	A 536 gr.60-40-18	-----	-----	-----	JIS G5502 FCD 40	≥ 400	≥ 250	≥ 15	40 to 1500
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	≥ 530	≥ 240	≥ 35	250 to 1500
		NF EN 10088-3 A35-574 X5CrNiMo17-12-2 1.4401	A 182 gr. F316	-----				≥ 515	≥ 205	≥ 30	40 to 200
2	Aluminium-bronze	NF A 53-709 CuAl10Fe5Ni5	B148-955	BS 1400 A B2	DIN 1714 GCuAl10Ni	UNI 5275 CuAl11Fe4 Ni4	JIS 5114 AIBC3	≥ 630	≥ 250	≥ 12	40 to 1500
6i	18-12 type stainless steel polished	Same grade and characteristics as 18-12 type stainless steel (code 6)									40 to 1000
3a (2)	HALAR® coated ductile iron	Same grade and characteristics as ductile iron (code 3g)									40 to 1500
3b (2)	Titanium carbide coated ductile iron	Same grade and characteristics as ductile iron (code 3g)									40 to 1500
3p (2)	Ebonite coated ductile iron	Same grade and characteristics as ductile iron (code 3g)									100 to 1500
5c (2)	NORICLOR®	-----			GX3CrNiMo CuN 24-6-5	-----		≥ 700	≥ 450	≥ 25	40 to 1500
5d (2)	NORIDUR®	-----						≥ 700	≥ 450	≥ 25	40 to 1500
6u (2)	Austenitic stainless steel type URANUS B6	EN 10 088 X1NiCrMoCu25-20-5 Z2NCUDU25-20	A351 CN-7M	BS 1504 332 C11	SEW 410 GX7NiCrMo CuNb25-20	-----		≥ 450	≥ 170	≥ 30	40 to 1500

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

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

(2) For the availability of these materials, please consult us.

NORICLOR® and NORIHARD® are KSB registered trade marks.

AMRING® liner : in-house designed, formulated and manufactured, it ensures the leak-tightness at the shaft passages, at the flanges and upstream/downstream : it is the only part with the disc in contact with the fluid. Flexible and interchangeable, its replacement is easy.

AMRING code	Elastomer group	Main properties	Some examples of applications
-------------	-----------------	-----------------	-------------------------------

Standard liners

XA	E.P.D.M.	Good mechanical characteristics. Exceptional resistance to oxydations, ketones, alcohols, mineral and organic acids, acid, neutral or alcaline 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 foodstuffs (I.A.N.E.S.C.O.) and 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

XW	E.P.D.M.	Special formulation for German market	Conform with German regulations KTV
XC	E.P.D.M.	Elastomer specially formulated for drinking water	Conforming with the french by-law regulations and approved by Ville de Paris Laboratory. WRC approved in accordance with BS 6920 standard. Conforming with FDA-Water american by-law regulations
CB	Carboxylated nitrile	Very good mechanical characteristics. Exceptional resistance to tearing, essential for abrasive services. Good resistance to oils.	Abrasive circuits. High speed pneumatic transport of pulverized solids.
CC	White carboxylated nitrile		Pneumatic transport of granules.
GM	Very high content nitrile	Exceptional resistance to all known types of crude oil	Marine / Off-shore : - ballast system, - crude oil transport
Y	HYPALON® chlorosulphonate d 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.
VA	Fluorinated elastomer VITON® acid	Higher resistance to chemical products (and at higher temperature) than the other elastomers except to ketones, esters and certain alcohols. Special formulation for resistance to aqueous medium.	Hot or concentrated mineral acids : chlorhydric and sulfuric acids, acid treatment of ores.
VC	Fluorinated elastomer VITON® heat	Good resistance to hot gas and solvents (not aqueous medium).	Solvents. Oxygen, hot and corrosive gases. Hydrocarbons and refined products ("white products").
EG	Epichlorhydrine	Epichlorhydrine rubber manufactured to conform with the French and German rules for use on natural gas distribution systems. Good resistance to the oil. Possible use on low temperature.	Hydrocarbons. Fuel and oil at low temperature. GDF and DVGW approved.
SK	High temperature silicone	Average mechanical characteristics. Large temperature range.	Air or neutral gas, dry and hot up to 300°C. Photographic emulsions.
NB	Natural rubber Polybutadiene	Very good mechanical characteristics. Very good resistance to dry abrasion at ambient temperature Very good resistance to cold	Low speed transport of pulverized solids. Freeze-drying circuits.

Please consult the table next page for the working pressure limits.

Working pressure limits of AMRING® liners

The table below defines the working pressure limits of the liners relating to the elastomer nature and the size.

Size		Standard liners XA XV K	Allowable pressure p _s in bar									
mm	inch		Liners on request									
			GM	Y	VA VC	CB	CC	SK	XW	XC	EG	NB
40 to 150	1 ½ to 6	10	10	10	10	10	6	6	10	10	10	6
200 to 300	8 to 12											
350 to 500	14 to 20											
550	22											
600	24	10	10	10	10	10	6	6	10	10	10	6
650 to 1000	26 to 40											
1050 to 1200	42 to 48											
1300 to 1400	52 to 56											
1500	60	6	6									

Vacuum limits

For vacuum applications and according to the level of vacuum, the size of the valve, the nature of elastomer and the working temperature, the liner must be integral with the body. The operation consists in vulcanizing the liner on the body.

In this case, this very tricky operation is carried out under high temperature, using a complex process and must be done imperatively in our factory.

After vulcanization, it is impossible to remove the liner. If the replacement of the liner is necessary, a body with a vulcanized liner is supplied.

The table below gives the vacuum limits and the technical conditions.

Size		Pressure		Maximum temperature	Construction with or without sticking
mm	inch	minimum (in absolute bar)	maximum (in relative bar)		
40 to 150	1 ½ to 6	$1,33 \cdot 10^{-5}$ (10^{-2} torr)	10 bar	XA and XV liner : Maximum allowable temperature ----- Other liners: 80 °C	Without sticking
200 to 1500	8 to 60	0,3 bar	10 bar (Size 1500 : 6 bar)	XA and XV liner : Maximum allowable temperature ----- Other liners: 80 °C	Without sticking
		$1,33 \cdot 10^{-5}$ (10^{-2} torr)	10 bar (Size 1500 : 6 bar)	80 °C	With sticking

Connections

The natural connection for an ISORIA 10 valve is the one corresponding to its p_s, but the valve can be fitted onto various other flange connection standards.

The shape of the body has been so designed as to allow fitting between currently used flange connection standards, mainly :

- PN 6, 10 and 16,
- 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 and 16K.

Wafer type body - Type 1

The wafer type ISORIA 10 valves can be fitted between all the previously listed flange connection standards. Its fitting on the pipe is achieved by means of tie-rods, without pipe line gasket.

The design of the body allows dead-end service.

For sizes 350 to 600 mm, if the body has threaded holes at the shaft passages, the threads are in accordance with the connection standard (ISO, UNC or UN).

Semi-lug type body - Type 2

The semi-lug type ISORIA 10 valves can be fitted between all the previously listed flange connection standards. Its fitting on the pipe is achieved by means of tie-rods (sizes 40 to 300 mm) and by screws and tie-rods (sizes 350 to 600 mm). For sizes 350 to 600 mm, the holes of the lugs are threaded in accordance with the connection standard (ISO, UNC or UN).

The design of the body allows the downstream pipe dismantling and the dead-end service under p_s .

The table below shows for sizes 40 to 300 mm the various possibilities of downstream pipe dismantling relating to the connection standards. For sizes 350 to 600 mm, the downstream dismantling is allowed in any case.

Size		Connection in accordance with standards													
		PN			ANSI		MSS SP 44	JIS B 2210			AWWA C207	BS 10		AS 2129	
mm	inch	6	10	16	B16-1 cl.125	B16-5 cl.150	cl.150	5K	10K	16K	B, D & E	table D	table E	table D	table E
40	1 ½	✓ ■	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
50	2	✓	✓	✓	✓	✓		✓	✓	—		✓	✓	✓	✓
65	2 ½	✓	✓	✓	✓	✓		✓	✓	—		✓	✓	✓	✓
80	3	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
100	4	✓	✓	✓	✓	✓		✓	✓	✓	✓	—	✓	—	✓
125	5	✓	✓	✓	✓	✓		✓	✓	—	✓	✓	✓	✓	✓
150	6	✓	✓	✓	✓	✓		✓	✓	—	✓	✓ ■	✓	✓ ■	✓
200	8	✓	✓ ■	✓	✓ ■	✓ ■		✓	✓ ■	—	✓ ■	✓ ■	✓ ■	✓ ■	✓ ■
250	10	✓	✓ ■	✓	✓	✓		✓	✓	—	✓	—	✓ ■	—	✓ ■
300	12	✓	✓	✓	✓	✓	✓	✓	—	—	✓	✓ ■	✓	✓ ■	✓

Key



Downstream dismantling allowed



Connection not defined by this standard



Downstream dismantling not allowed



Insert a washer between the nut and the rib of the valve

Full-lug type body with raised faces - Type 4

The full-lug type ISORIA 10 valves can be fitted between all the previously listed flange connection standards. Its fitting on the pipe is achieved by means of screws.

The holes of the lugs are threaded in accordance with the connection standard (ISO, UNC or UN).

The design of the body allows the downstream pipe dismantling and the dead-end service under p_s .

Size		Connection in accordance with standards													
		PN			ANSI		MSS SP 44	JIS B 2210			AWWA C207	BS 10		AS 2129	
mm	inch	6	10	16	B16-1 cl.125	B16-5 cl.150	cl.150	5K	10K	16K	B, D & E	table D	table E	table D	table E
40	1 ½	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
50	2	✓	✓	✓	✓	✓		✓	✓	●		✓	✓	✓	✓
65	2 ½	✓	✓	✓	✓	✓		✓	✓	●		✓	✓	✓	✓
80	3	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓
100	4	●	✓	✓	✓	✓		✓	✓	✓	✓	●	✓	●	✓
125	5	✓	✓	✓	✓	✓		✓	✓	●	✓	✓	✓	✓	✓
150	6	✓	✓	✓	✓	✓		✓	✓	●	✓	✓	✓	✓	✓
200	8	✓	✓	✓	✓	✓		✓	✓	●	✓	✓	✓	✓	✓
250	10	✓	✓	✓	✓	✓		✓	✓	●	✓	●	✓	●	✓
300	12	✓	✓	✓	✓	✓	✓	✓	●	●	✓	✓	✓	✓	✓
350	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
400	16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	●	●	●	●
450	18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	●	●	●	●
500	20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	●	●	●	●
550	22	✓	✓	✓			✓	✓	✓	✓	✓	●	●	●	●
600	24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	●	●	●	●

Key



Downstream dismantling allowed



Connection not defined by this standard



Fitting not allowed

Flanged body with flat faces - Type 5

The ISORIA 10 valves with flanged body with flat faces type 5 can be fitted between all the previously listed flange connection standards. Its fitting on the pipe is achieved by means of tie-rods and screws, without pipe line gasket.

The holes provided for screws are threaded in accordance with the connection standard (ISO, UNC or UN).

The design of the body allows the downstream pipe dismantling and the dead-end service under p_s .

For sizes 650 to 1500 mm, the flange fitting is allowed in some cases.

Size		Connection in accordance with standards													
		PN			ANSI		MSS SP 44	JIS B 2210			AWWA C207	BS 10		AS 2129	
mm	inch	6	10	16	B16-1 cl.125	B16-5 cl.150	cl.150	5K	10K	16K	B, D & E	table D	table E	table D	table E
150	6	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
200	8	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
250	10	✓	✓	✓	✓	✓		✓	✓	—	✓	●	✓	●	✓
300	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
350	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
400	16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
450	18	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓
500	20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
550	22	✓	✓	—			✓	✓	✓	—	✓	✓	✓	✓	✓
600	24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
650	26	✓▲	✓▲	✓▲			✓▲	✓▲	✓▲	✓▲	✓▲				
700	28	✓▲	✓▲	✓▲			✓▲	✓▲	✓▲	✓▲	✓▲	✓▲	✓▲	✓▲	✓▲
750	30	✓▲	✓▲	✓▲	✓▲		✓▲	✓▲	✓▲	✓▲	✓▲	✓▲	✓▲	✓▲	✓▲
800	32	✓▲	✓▲	✓▲			✓▲	✓▲	✓▲	①	✓▲			✓▲	✓▲
900	36	—	✓▲	✓▲	✓▲		✓▲	●	✓▲	①	✓▲	✓▲	✓▲	✓▲	✓▲
1000	40	—	✓▲	✓▲			✓▲	—	✓▲	✓▲	✓▲	✓▲	✓▲	✓▲	✓▲
1050	42				✓▲		✓▲				✓▲	✓▲	✓▲		
1100	44	✓▲	✓▲	✓▲			✓▲	✓▲	✓▲	①	✓▲				
1200	48	—	✓▲	✓▲	✓▲		✓▲	—	✓▲	①	✓▲	✓▲	✓▲	✓▲	✓▲
1350	54				✓▲		✓▲	●	—	①	✓▲	—			
1400	56	✓▲	✓▲	✓▲			●			①				✓▲	
1500	60	✓▲	✓▲	—	✓▲		✓▲	✓▲	✓▲	①	✓▲	✓▲			

Key	✓	Downstream dismantling allowed	●	Fitting not allowed
	—	Downstream dismantling not allowed		Connection not defined by this standard
	▲	Flange fitting allowed	①	Please consult us

U-section body with raised faces - Type 6

The ISORIA 10 valves with U-section body with raised faces can be fitted between all the previously listed flange connection standards. Its fitting on the pipe is achieved by means of tie-rods and screws, without pipe line gasket.

The holes provided for screws are threaded in accordance with the connection standard (ISO, UNC or UN).

The design of the body allows the downstream pipe dismantling and the dead-end service under p_s .

Size		Connection in accordance with standards													
		PN			ANSI		MSS SP 44	JIS B 2210			AWWA C207	BS 10		AS 2129	
mm	inch	6	10	16	B16-1 cl.125	B16-5 cl.150	cl.150	5K	10K	16K	B, D & E	table D	table E	table D	table E
650	26	✓	✓	✓			✓	✓	✓	✓	✓				
700	28	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
750	30	✓	✓	✓	✓		✓	✓	✓	✓○	✓	✓	✓	✓	✓
800	32	✓	✓	✓			✓	✓	✓	①	✓			✓	✓
900	36	—	✓	✓	✓		✓	—	✓	①	✓	✓	✓	✓	✓
1000	40	—	✓	✓			✓	—	✓	✓○	✓	✓	✓	✓	✓
1050	42				✓		✓				✓	✓	✓		
1100	44	✓	✓	✓			✓	✓	✓	①	✓				
1200	48	—	✓	✓	✓		✓	—	✓	①	✓	✓	✓	✓	✓
1350	54				✓		✓	●	—	①	✓	—			
1400	56	✓	✓	✓			●			①				✓	
1500	60	✓	✓	—	✓		✓	✓	✓	①	✓	✓			

Key	✓	Downstream dismantling allowed in case of ductile iron (3g) or steel (1) body	●	Fitting not allowed
	○	Downstream dismantling allowed in case of ductile iron body		Connection not defined by this standard
	—	Downstream dismantling not allowed	①	Please consult us

Tests - Inspection

Guaranteed performances

Isolating tight shut-off

The ISORIA 10 valves are perfectly tight shut-off (no visible leakage at 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,
- 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 10 valves are guaranteed 100% leak-tight to atmosphere.

Endurance tests

The endurance of ISORIA 10 valves conforms to EN 593 (march 1998) standard.

Standard tests

Body strength test

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

Upstream/downstream and shaft tight shut-off test

1.1 times the allowable pressure (p_s) with water.

Operating test

During the final inspection, each valve, fitted with 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 10 valves marking is in accordance with EN 19 standard.

Marking on cast body

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

Marking on the identity plate fastened on the body

In addition to the valve name, the identity plate fastened on the body mainly includes the month and the year of manufacturing, the materials code (type), the allowable pressure (p_s) in bar, the drilling pattern (if necessary with the tapping standard) and the reference of particular construction (construction S, R 107,,).

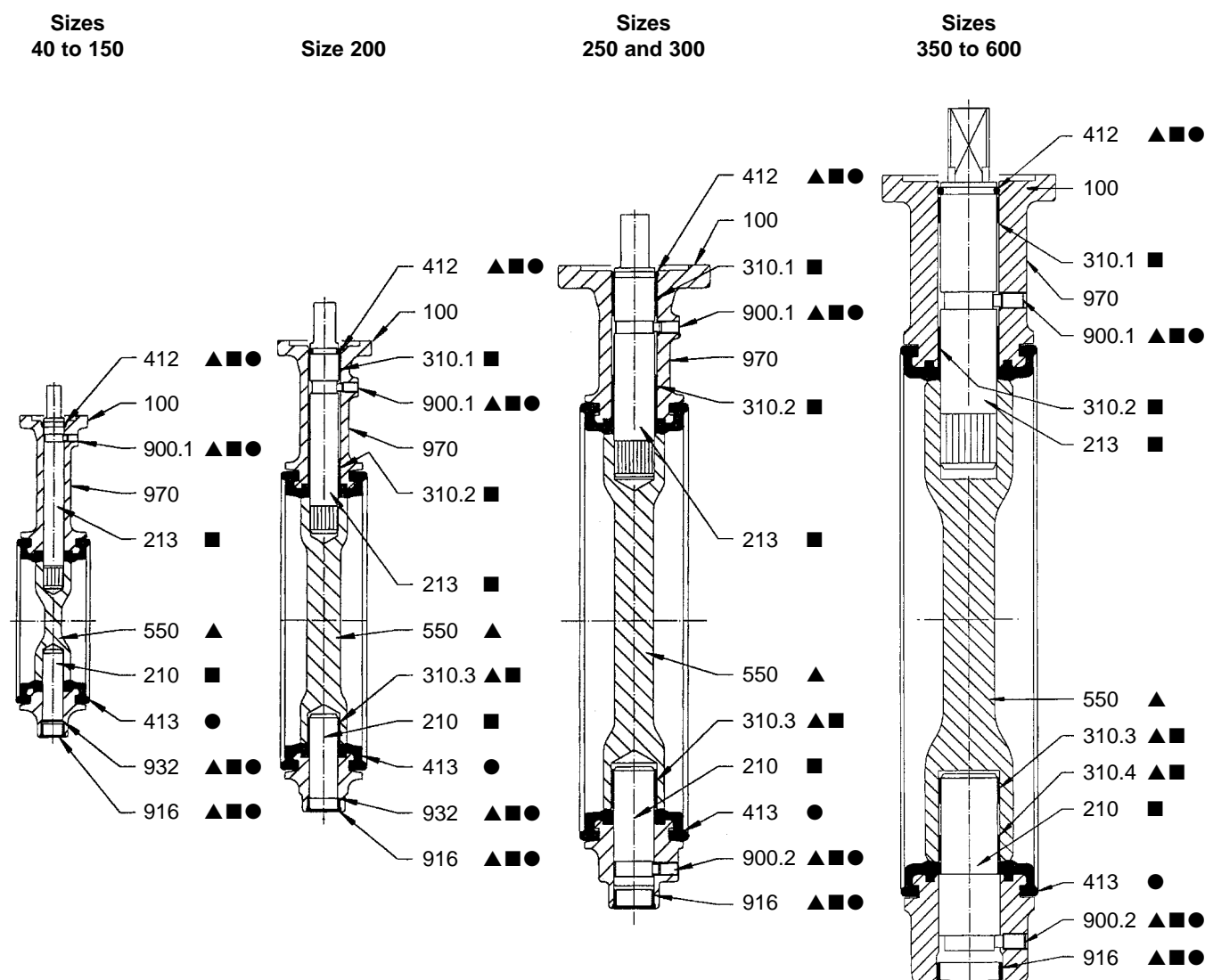
Coating

The body of ISORIA 10 valves are coated with polyurethane paint, thickness 80 μ , colour blue ref. RAL 5002.

The discs made of ductile iron (AMRI code 3g) are coated with epoxy powder paint, thickness 70 μ , colour grey white ref. RAL 7035. The discs made of other materials have not particular coating.

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

The drawings below show the sections of ISORIA 10 valve type 1. Except the external shape of the body, the construction is the same for all types.



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

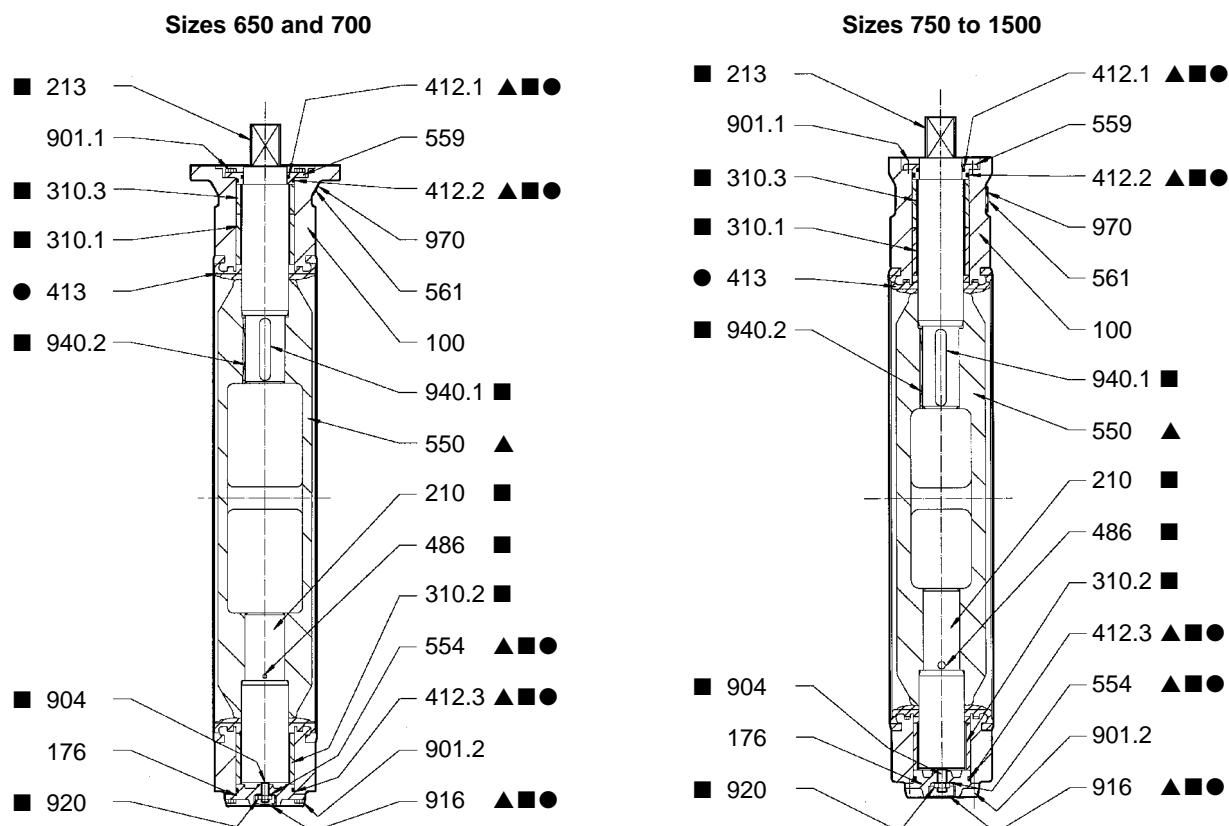
Item	Designation	Size (mm)	Materials
100	Body	40 to 600	Types 1 and 4: JL 1040* cast iron (code 3t) Types 2 and 5: JS 1030** ductile iron (code 3g)
210	Shaft	40 to 600	13% chromium stainless steel (code 6k) in standard version
213	Operating shaft	40 to 600	13% chromium stainless steel (code 6k) in standard version
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 1500 mm (26 to 60")

The drawings below show the sections of ISORIA 10 valve type 5. Except the external shape of the body (flat or raised faces), the construction is the same for the two types.



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

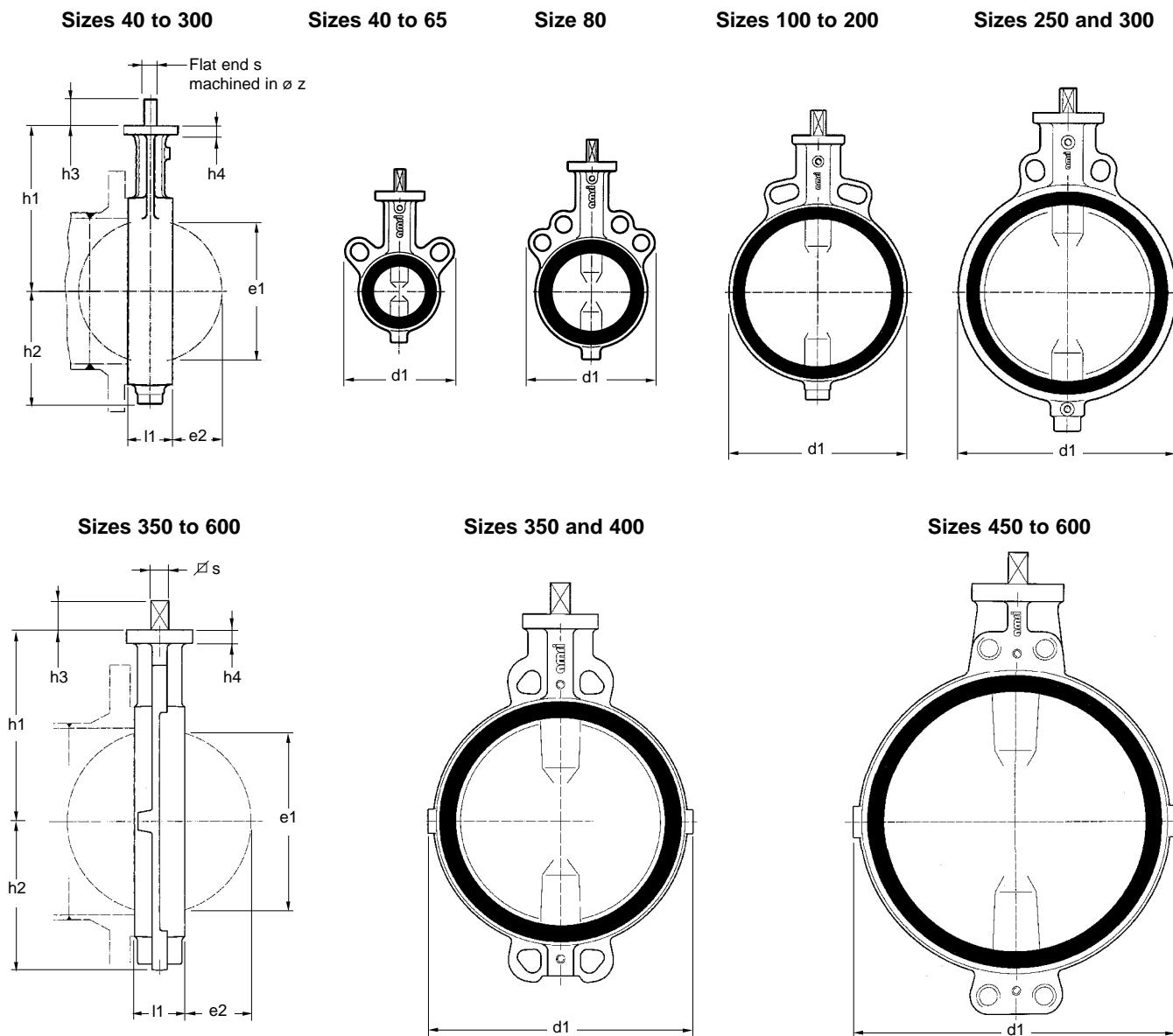
Item	Designation	Size (mm)	Materials
100	Body	650 to 1500	Type 5 JS 1030** ductile iron (code 3g)
		650 to 1500	Type 5 JS 1030** ductile iron (code 3g)
		650 to 1000	Type 6 JL 1040 * cast iron (code 3t)
		650 to 1500	Type 6 ASTM A 216 gr.WCC carbon steel (code 1)
176	Bottom	650 to 1500	JS 1030** ductile iron
210	Shaft	650 to 1500	13% Cr stainless steel (code 6k) or 17-4 stainless steel (code 6e)***
213	Operating shaft	650 to 1500	13% Cr stainless steel (code 6k) or 17-4 stainless steel (code 6e)***
310.1	Plain bearing	650 to 1500	PTFE filled on steel casing
310.2	Plain bearing	650 to 1500	PTFE filled on steel casing
310.3	Plain bearing	650 to 1500	PTFE filled on steel casing
412.1	O-Ring	650 to 1500	Nitrile
412.2	O-Ring	650 to 1500	Nitrile
412.3	O-Ring	650 to 1500	Nitrile
413	Liner	650 to 1500	In accordance with fluid
486	Ball	650 to 1500	Stainless steel
550	Disc	650 to 1500	In accordance with fluid
554	Washer	650 to 1500	Nylon
559	Gasket holder	650 to 1500	JS 1030** ductile iron (code 3g)
561	Grooved nail	650 to 1500	Stainless steel
900.1	Hexagonal screw	650 to 1500	Steel
900.2	Hexagonal screw	650 to 1500	Steel
904	Adjusting screw	650 to 1500	Steel
916	Plug	650 to 1500	Polyethylene
920	Nut	650 to 1500	Steel
940.1	Key	650 to 1500	Steel
940.2	Key	650 to 1500	Steel
970	Identity plate	650 to 1500	Stainless steel

* Previous standards : DIN GG 25 / NF FGL 250 - ** Previous standards : DIN GGG 40 / NF FGS 400-15

*** Shafts 6k in standard version for all sizes, except sizes 1200 to 1400 shafts 6e

Wafer type body - Type 1

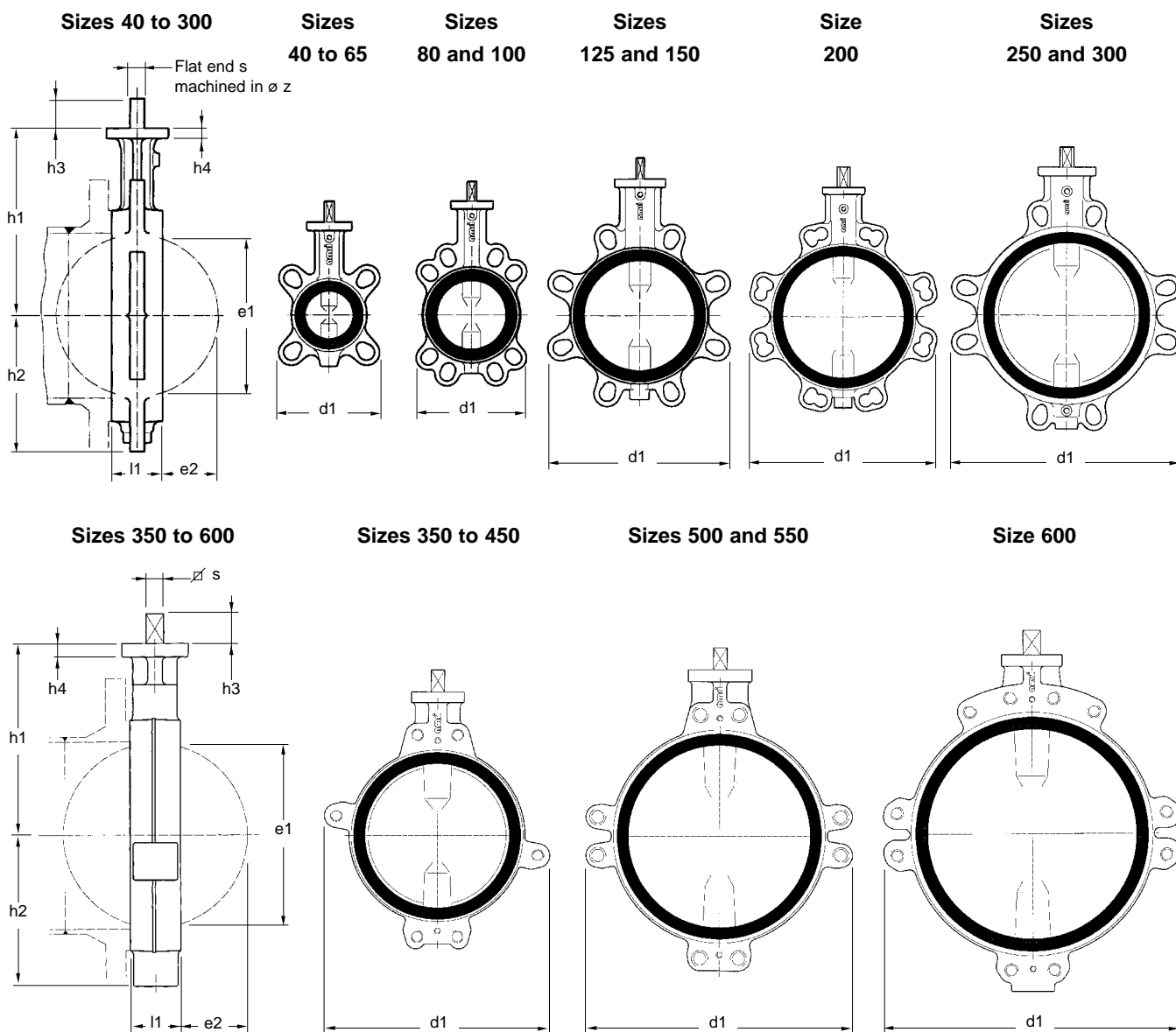
Dimensions (mm) and weight (kg)



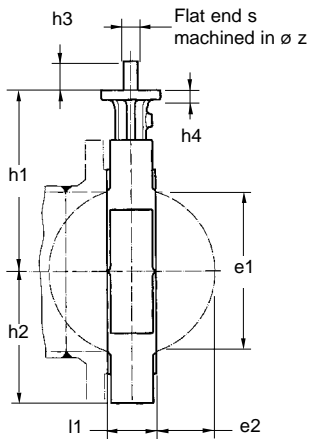
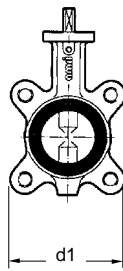
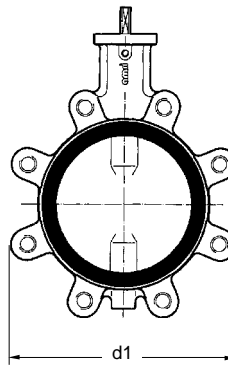
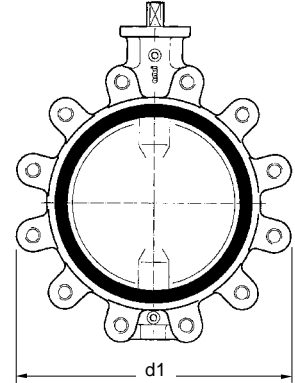
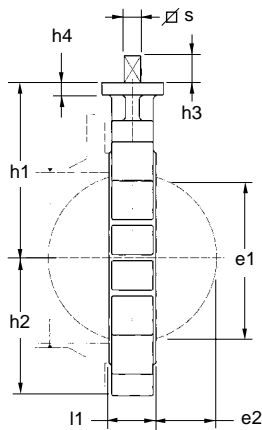
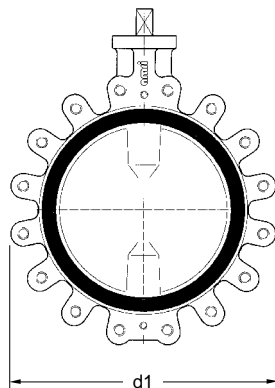
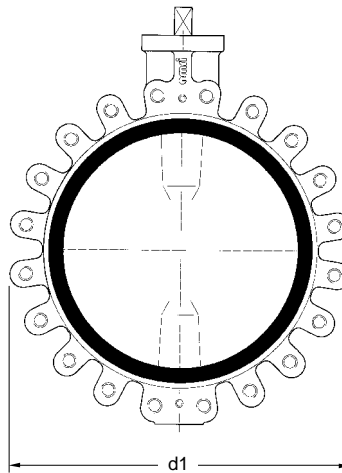
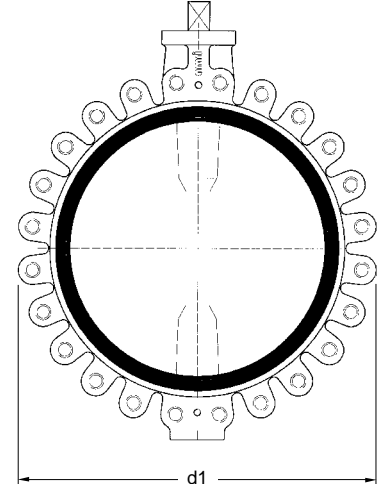
Size		Face to face l1				Mounting plate ISO 5211		Flat shaft end			Square shaft end		Disc clearance		Weight kg
mm	inch		d1	h1	h2	n°	h4	s	øz	h3	□ s	h3	e1	e2	
40	1 ½	33	108	105	51	F05	10	11	14	24			32	4	1,1
50	2	43	118	109,5	55,5	F05	10	11	14	24			33	4	1,3
65	2 ½	46	133	136	67,5	F05	10	11	14	24			55	11	1,9
80	3	46	138	142	73,5	F05	10	11	14	24			71	17	2,5
100	4	52	144	163	92	F05	10	14	18	24			90	23	3,9
125	5	56	174	176,5	105,5	F05	10	14	18	30			119	35	4,7
150	6	56	198	194	120	F07	12	14	18	30			144	46	6,9
200	8	60	252	222	150,5	F07	12	19	25	35			196	69	10,5
250	10	68	310	255	194,5	F10	15	19	25	35			249	92	16,4
300	12	78	362	282	226	F12	18	22	28	40			297	111	30
350	14	78	433	335	269	F12	23				25	45	326	127	50
400	16	102	490	380	298	F14	23				36	55	370	140	72
450	18	114	546	410	329	F14	23				36	55	422	160	96
500	20	127	600	440	359	F14	27				36	55	470	178	130
550	22	154	645	475	406	F16	27				50	65	522	195	160
600	24	154	714	495	439	F16	27				50	65	566	215	190

Semi-lug type body - Type 2

Dimensions (mm) and weight (kg)



Size		Face to face l1				Mounting plate ISO 5211		Flat shaft end			Square shaft end		Disc clearance		Weight kg
mm	inch		d1	h1	h2	n°	h4	s	øz	h3	□ s	h3	e1	e2	
40	1 1/2	33	108	105	54	F05	10	11	14	24			32	4	1,2
50	2	43	118	109,5	59	F05	10	11	14	24			33	4	1,5
65	2 1/2	46	132	136	66	F05	10	11	14	24			55	11	2,2
80	3	46	138	142	89	F05	10	11	14	24			71	17	2,8
100	4	52	150	163	103	F05	10	14	18	24			90	23	4,4
125	5	56	234	176,5	117	F05	10	14	18	30			119	35	5,6
150	6	56	260	194	130	F07	12	14	18	30			144	46	7,8
200	8	60	322	222	161	F07	12	19	25	35			196	69	11,9
250	10	68	394	255	197	F10	15	19	25	35			249	92	17,8
300	12	78	462	282	231	F12	18	22	28	40			297	111	32
350	14	78	538	335	269	F12	23				25	45	326	127	60
400	16	102	604	380	302	F14	23				36	55	370	140	80
450	18	114	656	410	328	F14	23				36	55	422	160	110
500	20	127	716	440	358	F14	27				36	55	470	178	145
550	22	154	804	475	406	F16	27				50	65	522	195	180
600	24	154	836	495	439	F16	27				50	65	566	215	220

Full-lug type body with raised faces - Type 4**Dimensions (mm) and weight (kg)****Sizes 40 to 300****Sizes 40 to 65
Size 80⁽¹⁾****Size 80⁽²⁾
Sizes 100 to 150
Size 200⁽³⁾****Size 200⁽⁴⁾ - Size 250
Size 300 - Size 350⁽¹⁾****Sizes 350 to 600****Size 350⁽²⁾
Size 400 - Size 450⁽¹⁾****Size 450⁽²⁾
Size 500 - Size 550
Size 600⁽⁵⁾****Size 600⁽⁶⁾**

Full-lug type body with raised faces - Type 4 **Dimensions (mm) and weight (kg)**

Size		Face to face l1				Mounting plate ISO 5211		Flat shaft end			Square shaft end		Disc clearance		Weight kg
mm	inch		d1	h1	h2	n°	h4	s	øz	h3	□s	h3	e1	e2	
40	1 ½	33	108	105	54	F05	10	11	14	24			32	4	2
50	2	43	120	109,5	60	F05	10	11	14	24			33	4	2,5
65	2 ½	46	134	136	67	F05	10	11	14	24			55	11	3
80(1)	3	46	140	142	70	F05	10	11	14	24			71	17	4
80(2)	3	46	178	142	89	F05	10	11	14	24			71	17	4,5
100	4	52	210	163	105	F05	10	14	18	24			90	23	5,5
125	5	56	236	176,5	118	F05	10	14	18	30			119	35	9
150	6	56	260	194	130	F07	12	14	18	30			144	46	11
200(3)	8	60	312	222	156	F07	12	19	25	35			196	69	24
200(4)	8	60	322	222	161	F07	12	19	25	35			196	69	25
250	10	68	396	255	198	F10	15	19	25	35			249	92	39
300	12	78	466	282	233	F12	18	22	28	40			297	111	46
350(1)	14	78	510	335	255	F12	23				25	45	326	127	62
350(2)	14	78	530	335	265	F12	23				25	45	326	127	70
400	16	102	598	380	296	F14	23				36	55	370	140	101
450(1)	18	114	622	410	329	F14	23				36	55	422	160	122
450(2)	18	114	654	410	329	F14	23				36	55	422	160	139
500	20	127	708	440	359	F14	27				36	55	470	178	179
550	22	154	774	475	406	F16	27				50	65	522	195	233
600(5)	24	154	822	495	439	F16	27				50	65	566	215	256
600(6)	24	154	830	495	439	F16	27				50	65	566	215	283

(1) Connection between flanges PN 6, ANSI B16-5 cl. 150, JIS B 2210-5K, BS 10 tables D & E, AS 2129 tables D & E.

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

(3) Connection between flanges PN 6 & 10, ANSI B16-5 cl. 150, AWWA C 207 B, D & E, BS10 tables D & E, AS 2129 tables D & E and JIS B 2210-5K

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

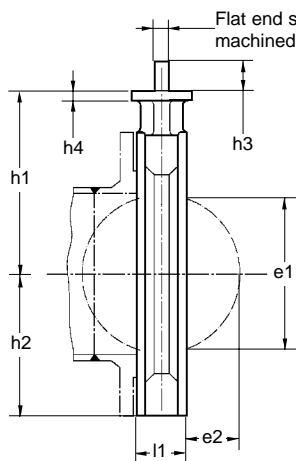
(5) Connection between flanges PN 10 & 16, ANSI B16-5 cl. 150 and JIS B 2210-5K

(6) Connection between flanges JIS B 2210-10K

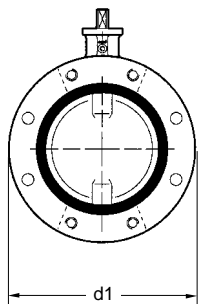
Flanged body with flat faces - Type 5

Dimensions (mm) and weight (kg)

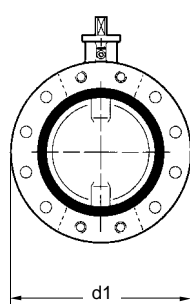
Sizes 150 to 300



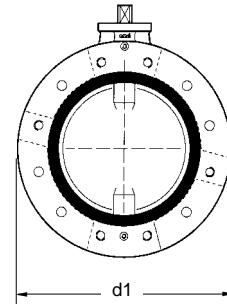
Size 150⁽¹⁾
Size 200⁽²⁾



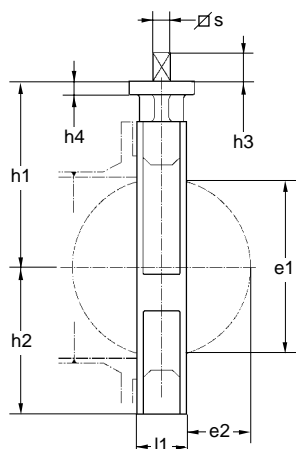
Sizes 150⁽³⁾ and 200⁽⁴⁾
Size 250⁽⁵⁾



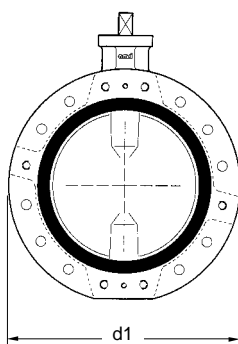
Sizes 300⁽⁵⁾ and 350⁽⁶⁾
Sizes 400⁽⁷⁾ and 450⁽⁸⁾



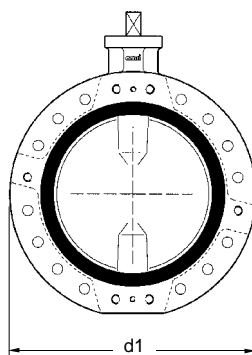
Sizes 350 to 1500



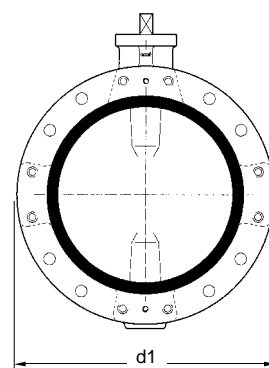
Sizes 300⁽⁹⁾ and 350⁽¹⁰⁾
Sizes 400⁽¹¹⁾ and 450⁽¹²⁾



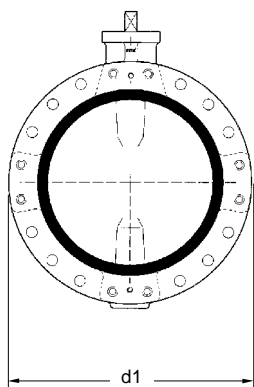
Size 450⁽¹⁰⁾



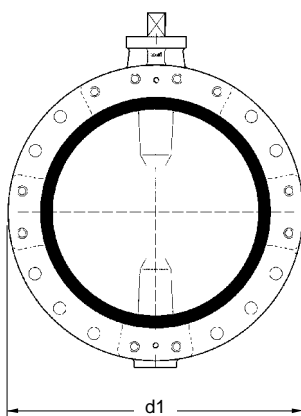
Sizes 500⁽¹³⁾ and 550⁽¹³⁾
Size 600⁽¹³⁾



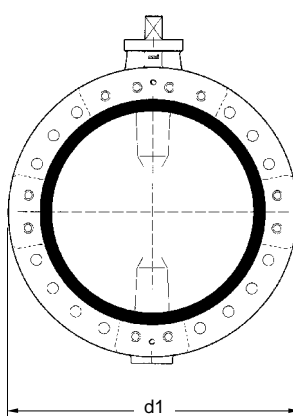
Sizes 500⁽¹¹⁾ and 550⁽¹¹⁾



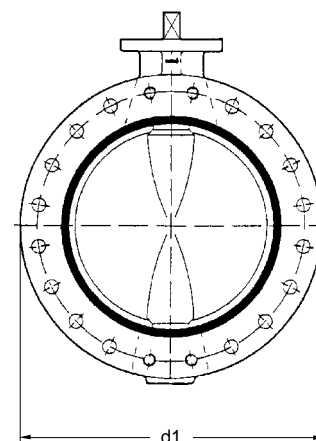
Size 600⁽¹⁴⁾



Size 600⁽¹⁵⁾



Sizes 650 to 1500



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

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

(3) Connection JIS B 2210-16 K

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

(5) All connections except JIS B 2210-10K & 16K

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

(7) Connections BS 10 tables D & E, AS 2129 tables D & E

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

(9) Connections JIS B 2210-10K & 16K

(10) Connections PN 10 & 16, JIS B 2210-10K & 16K

(11) All connections except BS 10 tables D & E, AS 2129 tables D & E

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

(13) Connections BS 10 tables D & E and AS 2129 tables D & E

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

(15) Connections JIS B 2210-5K, 10K & 16K

Flanged body with flat faces - Type 5

Dimensions (mm) and weight (kg)

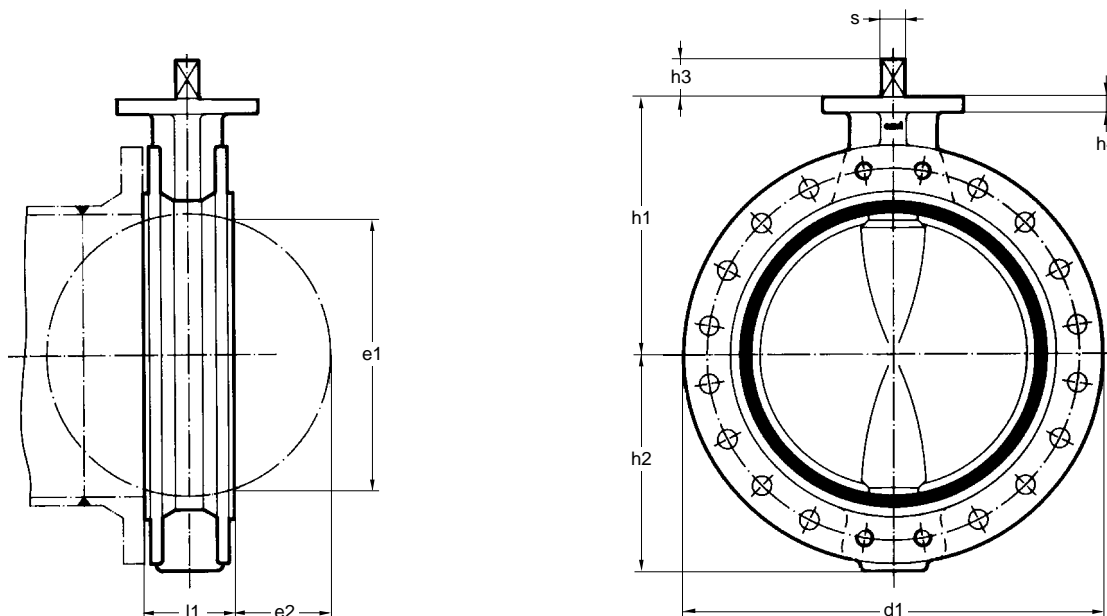
Size		Face to face				Mounting plate		Flat shaft end			Square shaft end		Disc clearance		Weight
mm	inch	l1	d1	h1	h2	n°	h4	s	øz	h3	□ s	h3	e1	e2	kg
150	6	56	298	194	149	F07	12	14	18	30			144	46	11
200	8	60	343	222	172	F07	12	19	25	35			196	69	23
250	10	68	406	255	203	F10	15	19	25	35			249	92	40
300	12	78	483	282	242	F12	18	22	28	40			297	111	60
350	14	78	533	335	266	F12	23				25	45	326	127	80
400	16	102	597	380	299	F14	23				36	55	370	140	105
450	18	114	640	410	332	F14	23				36	55	422	160	130
500	20	127	715	440	370	F14	27				36	55	470	178	180
550	22	154	749	475	406	F16	27				50	65	522	195	230
600	24	154	840	495	439	F16	27				50	65	566	215	260
650	26	165	870	535	465	F16	26				50	65	615	235	340
700	28	165	925	560	490	F16	26				50	65	666	260	390
750	30	190	985	590	540	F25	30				60	80	712	272	475
800	32	190	1055	615	565	F25	30				60	80	763	297	585
900	36	203	1165	665	615	F25	30				60	80	863	341	690
1000	40	216	1280	735	680	F25	30				60	90	963	385	865
1050	42	216	1345	773	717	F25	30				60	90	1045	422	960
1100	44	216	1345	773	717	F25	30				60	90	1045	422	960
1200	48	254	1498	840	784	F25	30				60	90	1170	468	1270
1350	54	280	1683	950	890	F30	35				70	110	1353	548	1815
1400	56	280	1683	950	890	F30	35				70	110	1353	548	1815
1500 (1)	60	280	1780	1000	940	F30	35				70	110	1455	597	2020
1500 (2)	60	280	1850	1030	970	F30	35				70	110	1515	627	2125

(1) Connection between flanges PN 6,10 & 16, JIS B2210-5K & 10K, BS 10 table D.

(2) Connection between flanges MSS SP 44 cl. 150, ANSI B 16-1 cl. 125 and AWWA C 207 cl. B, D & E.

U-section body with raised faces - Type 6

Dimensions (mm) and weight (kg)



Size		Face to face				Mounting plate ISO 5211		Square shaft end		Disc clearance		Weight
mm	inch	l1	d1	h1	h2	n°	h4	□s	h3	e1	e2	kg
650 (1)	26	165	870	535	465	F16	26	50	65	615	235	290
650 (2)	26	165	895	535	465	F16	26	50	65	615	235	300
700 (3)	28	165	910	560	490	F16	26	50	65	666	260	340
700 (4)	28	165	925	560	490	F16	26	50	65	666	260	340
700 (5)	28	165	960	560	490	F16	26	50	65	666	260	360
750 (6)	30	190	985	590	540	F25	30	60	80	712	272	420
750 (7)	30	190	1020	590	540	F25	30	60	80	712	272	440
800 (8)	32	190	1025	615	565	F25	30	60	80	763	297	485
800 (9)	32	190	1055	615	565	F25	30	60	80	763	297	485
900 (10)	36	203	1125	665	615	F25	30	60	80	863	341	600
900 (11)	36	203	1165	665	615	F25	30	60	80	863	341	600
1000 (10)	40	216	1255	735	680	F25	30	60	90	963	385	775
1000 (12)	40	216	1280	735	680	F25	30	60	90	963	385	775
1000 (7)	40	216	1320	735	680	F25	30	60	90	963	385	810
1050	42	216	1345	773	717	F25	30	60	90	1045	422	850
1100 (13)	44	216	1345	773	717	F25	30	60	90	1045	422	850
1100 (14)	44	216	1405	790	733	F25	30	60	90	1069	438	975
1200	48	254	1498	840	784	F25	30	60	90	1170	468	1100
1350	54	280	1683	950	890	F30	35	70	110	1353	548	1600
1400	56	280	1683	950	896	F30	35	70	110	1353	548	1600
1500 (15)	60	280	1780	1000	946	F30	35	70	110	1455	597	1815
1500 (16)	60	280	1850	1030	976	F30	35	70	110	1515	627	1880

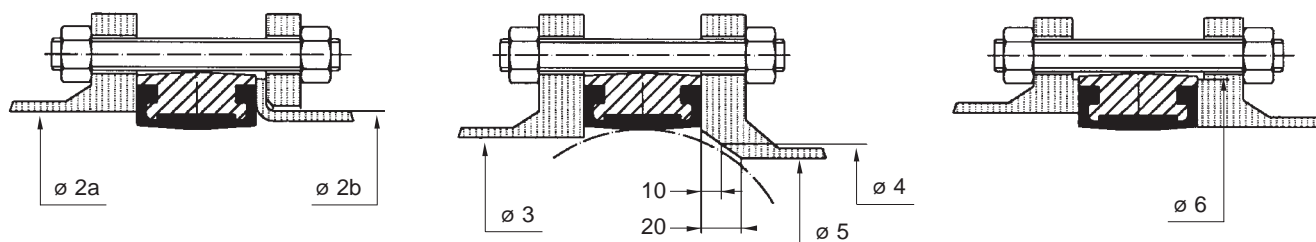
Dimensions and weight of valves with :

- (1) cast iron body, except connection between JIS B2210-16K flanges
- (2) ductile iron body and steel body, all connections
- (3) ductile iron body, cast iron body and steel body, connection between PN 6, 10 and 16, JIS B2210-5K and 10K flanges
- (4) ductile iron body, cast iron body and steel body, connection between 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) ductile iron body and steel body, connection between JIS B2210-16K flanges
- (6) ductile iron body, cast iron body and steel body, except connection between JIS B2210-16K flanges
- (7) ductile iron body and steel body, connection between JIS B2210-16K flanges
- (8) ductile iron body, cast iron body and steel body, connection between PN 6, 10 and 16, JIS B2210-5K flanges
- (9) ductile iron body, cast iron body and steel body, connection between JIS B2210-10K, AWWA C207 cl. B, D and E, AS 2129 tables D and E, MSS SP 44 cl. 150 flanges
- (10) ductile iron body, cast iron body and steel body, connection between PN 10 and 16, JIS B2210-10K flanges
- (11) ductile iron body, cast iron body and steel body, connection between PN 6, AWWA C207 cl. B, D and E, ANSI B16-1 cl.125, BS 10 tables D and E, AS 2129 tables D and E, MSS SP 44 cl. 150
- (12) - ductile iron body and steel body, connection between PN 6 and MSS SP 44 cl. 150 flanges
- cast iron body, connection between PN 6, MSS SP 44 cl. 150, AWWA C207 cl. B, D and E, BS 10 tables D and E, AS 2129 tables D and E flanges
- (13) ductile iron body and steel body, except connection between MSS SP 44 cl. 150 and AWWA C207 cl. B, D and E flanges
- (14) ductile iron body and steel body, connection between MSS SP 44 cl. 150 and AWWA C207 cl. B, D and E flanges
- (15) ductile iron body and steel body, connection between PN 6, 10 and 16, JIS B2210-5K and 10K, BS 10 table D flanges
- (16) ductile iron body and steel body, connection between MSS SP 44 cl. 150, ANSI B 16-1 cl.125 and AWWA C207 cl. B, D and E flanges

Flanging dimensions

ISORIA 10 valves are designed for assembly between any type of flanges and connection standards currently used. For non-standard flanges (for example : slip-on, lap joint...) and raised face flanges, it is necessary to verify the general compatibility of the connection by checking against the dimensions shown in the table below.

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



- Fitting between flat flanges : $\varnothing 2a$ internal max. tolerated dia. on the supporting area of the flange face.
- Fitting between loose plate flange with lapped pipe end : $\varnothing 2b$ 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
1050	42	1100		1045	1040	1035	1171
1100(1)	44	1100		1045	1040	1035	1171
1100(2)	44	1134		1080	1075	1070	1205
1200	48	1236		1170	1165	1160	1309
1350	54	1424		1353	1347	1343	1500
1400	56	1424		1353	1347	1343	1500
1500(3)	60	1524		1455	1450	1445	1602
1500(4)	60	1584		1515	1511	1507	1663

* Please check the body is well centred between the tie-rods.

(1) Valves fitted between PN 6, 10 and 16, JIS B2210-5K and 10K flanges.

(2) Valves fitted between MSS SP 44 cl. 150 and AWWA C207 cl. B, D and E flanges.

(3) Valves fitted between PN 6, 10 and 16, JIS B2210-5K and 10K, BS 10 table D flanges.

(4) Valves fitted between MSS SP 44 cl. 150, ANSI B 16-1 cl. 125 and AWWA C207 cl. B, D and E flanges.

Installation

ISORIA 10 valves are bi-directional valves, used for on/off or throttling applications. They can be installed in any position. For sizes 650 to 1500 mm, the "downwards face actuator" is not allowed.

Dead-end service

The design of the body of ISORIA 10 valves allows the dead-end service under the allowable pressure p_s .

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

Shown type 1 or 2



Particular case of type 4

Maximum tightening torque to be applied on the connection bolting :

Size	Torque
40 to 125 mm	50 Nm
150 to 350 mm	100 Nm
400 to 500 mm	160 Nm
550 and 600 mm	250 Nm

Downstream pipe dismantling

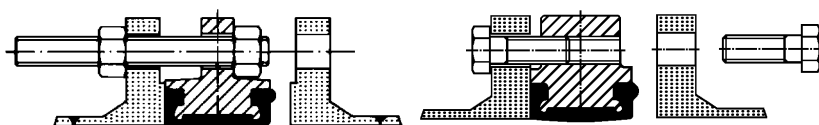
The downstream pipe dismantling under the allowable pressure p_s is allowed for ISORIA 10 valves types 2, 4 and 5 and valves type 6 with ductile iron or steel body.

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

Type 2

Sizes 40 to 300

Sizes 350 to 600

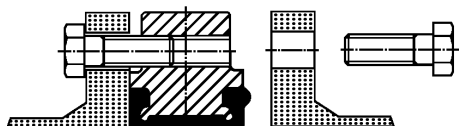


Maximum tightening torque to be applied on the bolting for downstream dismantling, sizes 40 to 300 mm :

Size	Torque	Size	Torque
40	10 Nm	125	32 Nm
50	13 Nm	150	47 Nm
65	16 Nm	200	60 Nm
80	27 Nm	250	81 Nm
100	30 Nm	300	134 Nm

No particular advice for upper sizes

Type 4



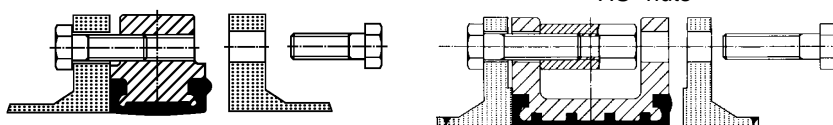
Maximum tightening torque to be applied on the connection bolting :

Size	Torque
40 to 125 mm	50 Nm
150 to 350 mm	100 Nm
400 to 500 mm	160 Nm
550 and 600 mm	250 Nm

Type 5

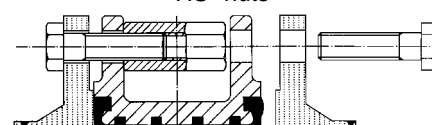
Sizes 150 to 600

Sizes 650 to 1500
Mounting with special
"HS" nuts



Type 6

Sizes 650 to 1500
Mounting with special
"HS" nuts



Manual control

The applicabilities for lubricated medium proposed in the table below are defined for the maximum fluid velocity mentioned. According to the working conditions and the hydraulic characteristics, upper fluid velocities can be admitted, therefore other applicabilities can be proposed : please, consult us.

In case of non lubricated medium, the maximum fluid velocity is 50 m/s.

NR, NP and SM ¼ turn handles

Valve Size	Maximum fluid velocity	Valve on lubricated medium XA - XV - K - GM liners	Other liners	Valve on non lubricated medium All liners
40 to 80	3 m/s	NR/165, NP/165 or SM/260	NR/165, NP/165 or SM/260	NR/165, NP/165 or SM/260
100	3 m/s	NR/300, NP/300 or SM/330	NR/300, NP/300 or SM/330	NR/300, NP/300 or SM/330
125	3 m/s			
150	3 m/s			
200	3 m/s	SM/530	SM/530	SM/530
250	3 m/s		SM/530*	SM/530*
300	3 m/s	SM/530*		

* Important effort to be exerted.

MA 12 and 25 and MR 25 to 1600 reducers

Valve Size	Maximum fluid velocity	Valve on lubricated medium XA - XV - K - GM liners		Other liners		Valve on non lubricated medium All liners	
40 to 100	3 m/s	MA 12	MR 25	MA 12	MR 25	MA 12	MR 25
125	3 m/s	MA 25		MA 25		MA 25	
150	3 m/s						
200	3 m/s						
250	3 m/s						
300	3 m/s	MR 50		MR 50		MR 50	
350	3 m/s			MR 100		MR 100	
400	3 m/s	MR 100					
450	2,5 m/s						
500	2,5 m/s						
550	2 m/s						
600	2,5 m/s	MR 200					
650	2 m/s						
700	2 m/s						
750	2 m/s						
800	2 m/s	MR 400					
900	1,5 m/s						
1000	1,5 m/s						
1050	1,5 m/s						
1100	1,5 m/s	MR 600					
1200	1,5 m/s	MR 800		MR 1200		MR 1200	
1350	1,5 m/s	MR 1200					
1400	1,5 m/s						
1500	1 m/s						

Electric control

The applicabilities for lubricated medium proposed in the table below are defined for the maximum fluid velocity mentioned. According to the working conditions and the hydraulic characteristics, upper fluid velocities can be admitted, therefore other applicabilities can be proposed : please, consult us.

In case of non lubricated medium, the maximum fluid velocity is 50 m/s.

ACTELEC 3 to 150 ¼ turn actuators

Valve Size	Maximum fluid velocity	Valve on lubricated medium				Valve on non lubricated medium		
		XA - XV - K - GM liners On-off function	Throttling duties	Other liners On-off function	Throttling duties	All liners On-off function Throttling duties		
40	3 m/s	3 or 6	8 P	3 or 6	8 P	3 or 6	8 P	
50	3 m/s							
65	3 m/s			6	8 P	6	8 P	
80	3 m/s							
100	3 m/s	6	25 P	6	8 P	6	8 P	
125	3 m/s	8						
150	3 m/s	15		15	15	15	15	15
200	3 m/s	18		25	25	25	25	25
250	3 m/s	25						
300	3 m/s	50	50	50	50	50	50	
350	3 m/s			100	100	80	100	80
400	3 m/s	150	150			100	100	100
450	2,5 m/s			150		150		150
500	2,5 m/s							
550	2 m/s							
600	2.5 m/s							

ACTELEC SG 05 to 12 ¼ turn actuators

Valve Size	Maximum fluid velocity	Valve on lubricated medium	Valve on non lubricated medium
		XA - XV - K - GM liners	All liners
40 to 125	3 m/s	SG 05	SG 05
150	3 m/s	SG 07	SG 07
200	3 m/s		SG 07
250	3 m/s	SG 10	SG 10
300	3 m/s		SG 10
350	3 m/s	SG 12	SG 12
400	3 m/s		SG 12
450	2,5 m/s		SG 12
500	2,5 m/s		

ACTELEC 31 and ACTELEC 200 to 1600 multi-turn actuators (AMRI reducer with multi-turn electric actuator)

Valve	Valve on lubricated medium			Valve on non lubricated medium
	Maximum fluid velocity	XA - XV K - GM liners	Other liners	
40 to 125	3 m/s	31/SA07.5	31/SA07.5	31/SA07.5
150	3 m/s			
200	3 m/s			
250	3 m/s			
300	3 m/s			
350	3 m/s			
400	3 m/s			
450	2,5 m/s			
500	2,5 m/s	200/SA07.5 or 200/SRA6	200/SA07.5 or 200/SRA6	200/SA07.5 or 200/SRA6
550	2 m/s			
600	2,5 m/s			

	Valve on lubricated medium			Valve on non lubricated medium
	Maximum fluid velocity	XA - XV K - GM liners	Other liners	
650	2 m/s	200/SA07.5 or 200/SRA6	400/SA10.1 or 400/SRC	400/SA10.1 or 400/SRC
700	2 m/s			
750	2 m/s			
800	2 m/s			
900	1,5 m/s	400/SRC	800/SA10.1 or 800/SRC	800/SA10.1 or 800/SRC
1000	1,5 m/s			
1050	1,5 m/s	800/SA10.1 or 800/SRC	(2)	(2)
1100	1,5 m/s			
1200	1,5 m/s	1600/SA10.1 or 1600/SRC	1600/SA10.1 or 1600/SRC	1600/SA10.1 or 1600/SRC
1350	1,5 m/s			
1400	1,5 m/s			
1500	1 m/s	(2)	(2)	(2)

Key : ACTELEC type / Motor reduction gear type (SA = Auma, SR = Bernard)

(1) 500/SA07.5 or 500/SRA6 (2) 950/SA07.5 or 950 SRA6

Pneumatic control – ACTAIR double acting actuators

The applicabilities for lubricated medium proposed in the table below are defined for the maximum fluid velocity mentioned. They are defined in function of the control air pressure for on-off and throttling duties.

According to the working conditions and the hydraulic characteristics, upper fluid velocities can be admitted, therefore other applicabilities can be proposed : please, consult us.

In case of non lubricated medium, the maximum fluid velocity is 50 m/s.

Valves on lubricated medium with XA, XV, K or GM liners

Valve Size	Maximum fluid velocity	On-off function				Throttling duties		
		Control air pressure				Control air pressure		
		3,5 bar	4 bar	5 bar	6 bar	4 bar	5 bar	6 bar
40	3 m/s	ACTAIR 3				ACTAIR 3		
50		ACTAIR 3				ACTAIR 3		
65		ACTAIR 6				ACTAIR 6		
80		ACTAIR 6				ACTAIR 6		
100		ACTAIR 12				ACTAIR 12		
125		ACTAIR 12				ACTAIR 12		
150		ACTAIR 25				ACTAIR 25		
200		ACTAIR 25				ACTAIR 25		
250		ACTAIR 50				ACTAIR 50		
300		ACTAIR 50				ACTAIR 50		
350		ACTAIR 100				ACTAIR 100		
400		ACTAIR 100				ACTAIR 100		
450		ACTAIR 200				ACTAIR 200		
500		ACTAIR 200				ACTAIR 200		
550	2 m/s	ACTAIR 400				ACTAIR 400		
600	2,5 m/s	ACTAIR 400				ACTAIR 400		
650	2 m/s	ACTAIR 400				ACTAIR 400		
700	2 m/s	ACTAIR 400				ACTAIR 400		
750	2 m/s	ACTAIR 400				ACTAIR 400		
800	2 m/s	ACTAIR 800				ACTAIR 800		
900	1,5 m/s	ACTAIR 800				ACTAIR 800		
1000	1,5 m/s	ACTAIR 800				ACTAIR 800		
1050	1,5 m/s	ACTAIR 800				ACTAIR 800		
1100	1,5 m/s	ACTAIR 800				ACTAIR 800		
1200	1,5 m/s	Please consult us				Please consult us		
1350	1,5 m/s	Please consult us				Please consult us		
1400	1,5 m/s	Please consult us				Please consult us		
1500	1 m/s	ACTAIR 800				ACTAIR 800		

Valves on lubricated medium with other liners and valves on non lubricated medium with all liners

Valve Size	Maximum fluid velocity (1)	On-off function				Throttling duties		
		Control air pressure				Control air pressure		
		3,5 bar	4 bar	5 bar	6 bar	4 bar	5 bar	6 bar
40	3 m/s	ACTAIR 3				ACTAIR 3		
50		ACTAIR 3				ACTAIR 3		
65		ACTAIR 6				ACTAIR 6		
80		ACTAIR 6				ACTAIR 6		
100		ACTAIR 12				ACTAIR 12		
125		ACTAIR 12				ACTAIR 12		
150		ACTAIR 25				ACTAIR 25		
200		ACTAIR 25				ACTAIR 25		
250		ACTAIR 50				ACTAIR 50		
300		ACTAIR 50				ACTAIR 50		
350		ACTAIR 100				ACTAIR 100		
400		ACTAIR 100				ACTAIR 100		
450		ACTAIR 200				ACTAIR 200		
500		ACTAIR 200				ACTAIR 200		
550	2 m/s	ACTAIR 400				ACTAIR 400		
600	2,5 m/s	ACTAIR 400				ACTAIR 400		
650	2 m/s	ACTAIR 400				ACTAIR 400		
700	2 m/s	ACTAIR 400				ACTAIR 400		
750	2 m/s	ACTAIR 800				ACTAIR 800		
800	2 m/s	ACTAIR 800				ACTAIR 800		
900	1,5 m/s	ACTAIR 800				ACTAIR 800		
1000	1,5 m/s	ACTAIR 800				ACTAIR 800		
1050	1,5 m/s	ACTAIR 800				ACTAIR 800		
1100	1,5 m/s	ACTAIR 800				ACTAIR 800		
1200 to 1500	1,5 m/s	Please consult us				Please consult us		

(1) Fluid velocity to be respected in case of valves on lubricated medium

Pneumatic control - DYNACTAIR spring return actuators

The applicabilities for lubricated medium proposed in the table below are defined for the maximum fluid velocity mentioned. They are defined in function of the control air pressure for on-off and throttling duties.

According to the working conditions and the hydraulic characteristics, upper fluid velocities can be admitted, therefore other applicabilities can be proposed : please, consult us.

In case of non lubricated medium, the maximum fluid velocity is 50 m/s.

Valves on lubricated medium with XA, XV, K or GM liners

Valve Size	Maximum fluid velocity	On-off function			Throttling duties	
		Control air pressure 3,5 bar	Control air pressure 4 bar	Control air pressure 5 bar	Control air pressure 4 bar	Control air pressure 5 bar
40	3 m/s		DYNACTAIR 3		DYNACTAIR 3	
50						
65			DYNACTAIR 6		DYNACTAIR 6	
80						
100			DYNACTAIR 12		DYNACTAIR 12	
125						
150			DYNACTAIR 25		DYNACTAIR 25	
200						
250			DYNACTAIR 50		DYNACTAIR 50	
300						
350	2,5 m/s		DYNACTAIR 100		DYNACTAIR 100	
400			DYNACTAIR 100			
450	2 m/s					
500					DYNACTAIR 200	
550	2 m/s		DYNACTAIR 200			
600	2,5 m/s					
650	2 m/s					
700	2 m/s		DYNACTAIR 400		DYNACTAIR 400	
750	2 m/s					
800	2 m/s		DYNACTAIR 400			
900	1,5 m/s					
1000	1,5 m/s		DYNACTAIR 800		DYNACTAIR 800	
1050	1,5 m/s		DYNACTAIR 800			
1100	1,5 m/s					
1200	1,5 m/s					
1350	1,5 m/s	Please consult us			Please consult us	
1400	1,5 m/s					
1500	1 m/s			DYNACTAIR 800		

Valves on lubricated medium with other liners and valves on non lubricated medium with all liners

Valve Size	Maximum fluid velocity (1)	On-off function			Throttling duties	
		Control air pressure 3,5 bar	Control air pressure 4 bar	Control air pressure 5 bar	Control air pressure 4 bar	Control air pressure 5 bar
40	3 m/s		DYNACTAIR 3		DYNACTAIR 3	
50						
65			DYNACTAIR 6		DYNACTAIR 6	
80						
100			DYNACTAIR 12		DYNACTAIR 12	
125						
150			DYNACTAIR 25		DYNACTAIR 25	
200						
250			DYNACTAIR 50		DYNACTAIR 50	
300			DYNACTAIR 100		DYNACTAIR 100	
350	2,5 m/s		DYNACTAIR 100			
400					DYNACTAIR 200	
450	2 m/s		DYNACTAIR 200			
500	2,5 m/s					
550	2 m/s					
600	2,5 m/s		DYNACTAIR 400		DYNACTAIR 400	
650	2 m/s					
700	2 m/s		DYNACTAIR 400			
750	2 m/s					
800	2 m/s		DYNACTAIR 800		DYNACTAIR 800	
900	1,5 m/s					
1000	1,5 m/s					
1050	1,5 m/s					
1100	1,5 m/s					
1200 to 1500	1,5 m/s	Please consult us			Please consult us	

(1) Fluid velocity to be respected in case of valves on lubricated medium

Hydraulic control

ACTO 25 to 1600 double acting actuators

The applicabilities for lubricated medium proposed in the table below are defined for the maximum fluid velocity mentioned. They are defined in function of the control oil pressure.

According to the working conditions and the hydraulic characteristics, upper fluid velocities can be admitted, therefore other applicabilities can be proposed : please, consult us.

In case of non lubricated medium, the maximum fluid velocity is 50 m/s.

Valve Size	Maximum fluid velocity	Valve on lubricated medium						Valve on non lubricated medium		
		XA - XV - K - GM liners Control oil pressure			Other liners Control oil pressure			All liners Control oil pressure		
		60 bar	90 bar	120 bar	60 bar	90 bar	120 bar	60 bar	90 bar	120 bar
40 to 125	3 m/s	ACTO 25			ACTO 25			ACTO 25		
150										
200										
250						ACTO 50			ACTO 50	
300			ACTO 50			ACTO 100			ACTO 100	
350			ACTO 100							
400	2,5 m/s					ACTO 200			ACTO 200	
450			ACTO 200							
500	2 m/s									
550	2,5 m/s									
600	2 m/s									
650	2 m/s					ACTO 400			ACTO 400	
700	2 m/s									
750	2 m/s		ACTO 400							
800	2 m/s									
900	1,5 m/s									
1000	1,5 m/s									
1050	1,5 m/s		ACTO 800		ACTO 1600	ACTO 800		ACTO 1600	ACTO 800	
1100	1,5 m/s									
1200	1,5 m/s	ACTO 1600								
1350	1,5 m/s	Please consult us	ACTO 1600		Please consult us		ACTO 1600	Please consult us		ACTO 1600
1400	1,5 m/s									
1500	1 m/s	ACTO 1600	ACTO 800							

DYNACTO 12 to 100 spring return actuators

The applicabilities for lubricated medium proposed in the table below are defined for the maximum fluid velocity mentioned. They are defined in function of the control oil pressure.

According to the working conditions and the hydraulic characteristics, upper fluid velocities can be admitted, therefore other applicabilities can be proposed : please, consult us.

In case of non lubricated medium, the maximum fluid velocity is 50 m/s.

Valve Size	Maximum fluid velocity	Valve on lubricated medium						Valve on non lubricated medium		
		XA - XV - K - GM liners Control oil pressure			Other liners Control oil pressure			All liners Control oil pressure		
		60 bar	90 bar	120 bar	60 bar	90 bar	120 bar	60 bar	90 bar	120 bar
40 to 80	3 m/s	DYNACTO 12			DYNACTO 12			DYNACTO 12		
100										
125										
150			DYNACTO 25			DYNACTO 25			DYNACTO 25	
200						DYNACTO 50			DYNACTO 50	
250			DYNACTO 50			DYNACTO 100			DYNACTO 100	
300	2,5 m/s									
350										
400	2 m/s									
450	2,5 m/s									
500										
550	2 m/s	Please consult us			Please consult us			Please consult us		
600	2,5 m/s									

Data to be supplied upon request or when ordering

Nature of media : exact chemical composition (nature, concentration,...)

Working conditions : pressure, fluid velocity, temperature (min., max.), external environment, if possible complete hydraulic diagram

Valves sizes and connection patterns

Body, disc and liner materials

Quality level required - Special tests with standards of reference

Actuation