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Дисковые затворы KSB. Техническое описание

ISORIA 10

Centred disc butterfly valves with AMRING® elastomer liner

Robinet à papillon centré à étanchéité élastomère AMRING®

Wartungsfreie weichdichtende zentrische Absperrklappe AMRING®

DN 40 - 1000

Allowable pressure
Pression admissible
Zulässiger Betriebsdruck
PN 10 bar

The actuator selection for lubricated medium proposed is defined for the maximum fluid velocity.
According to the working conditions and the hydraulic characteristics, upper fluid velocities can be admitted, therefore other actuator selection can be proposed: please, consult us.
In case of non lubricated medium, the maximum fluid velocity is 50 m/s.

Le choix de l'actionneur en milieu lubrifié proposé ci-après est donné à titre d'exemple pour les vitesses maximales de référence indiquées du fluide véhiculé dans le robinet.
En fonction des conditions de service et des caractéristiques hydrauliques du circuit, des vitesses supérieures peuvent être admises et donc un autre choix de l'actionneur peut être proposé : nous consulter.
Pour les robinets en milieu non lubrifié, la vitesse maximale de référence est 50 m/s.

Die folgende Antriebsauswahl gilt beispielhaft für Absperrklappen in flüssigen Medien für die angegebenen maximalen Strömungsgeschwindigkeiten.
Abhängig von den Betriebsbedingungen und den hydraulischen Kenndaten sind höhere Strömungsgeschwindigkeiten und weitere Antriebszuordnungen möglich. Bitte Rücksprache halten.
Für Absperrklappen in nicht flüssigen Medien beträgt die maximale Strömungsgeschwindigkeit 50 m/s.

CE

Manual control - Handles
Commande manuelle - Poignées
Manuelle Antriebe - Handhebel

DN	NPS	(1) m/s	Mounting plate *Embase* Kopfflansch nach ISO 5211	Lubricated medium *Milieu lubrifié* Flüssige Medien: Liners *Manchettes* Ringbälge XA, XC, XV & K	Lubricated medium: Other liners *Autres manchettes* Andere Ringbälge	Non lubricated medium *Milieu non lubrifié* Nicht flüssige Medien: All liners *Toutes manchettes* Alle Ringbälge
40	1 ½	3,0	F05	S/SR(180) S/SR/SM/SP/SF/SFR(260)	S/SR(180) S/SR/SM/SP/SF/SFR(260)	S/SR(180) S/SR/SM/SP/SF/SFR(260)
50	2	3,0				
65	2 ½	3,0				
80	3	3,0				
100	4	3,0	F05	S/SR(330) SM/SP/SF/SFR(330)	S/SR(330) SM/SP/SF/SFR(330)	S/SR(330) SM/SP/SF/SFR(330)
125	5	3,0	F05			
150	6	3,0	F07			
200	8	3,0	F07	SM(530)	SM(530)	SM(530)
250	10	3,0	F10		SM(530*)	SM(530*)
300	12	3,0	F12			

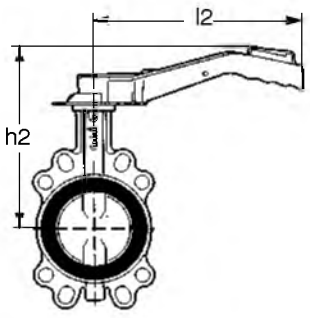
(1) Maximum fluid velocity • *Vitesse maximale de référence* • Strömungsgeschwindigkeit

* Important effort to be exerted
* *Effort de manœuvre important, démultiplicateur manuel recommandé*
* Hohes Betätigungsmoment, Handgetriebe empfohlen

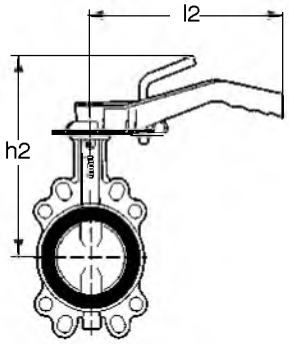
Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

Handles • *Poignées* • Handhebel

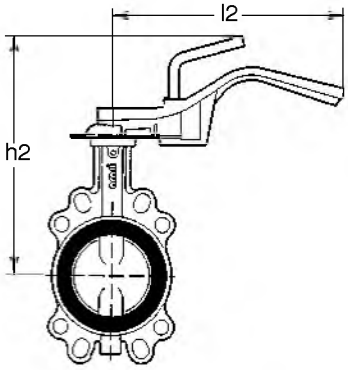
S/SR & SF/SFR



SP



SM



DN	NPS	S/SR Lubricated medium *Milieu lubrifié* Flüssige Medien: l2	h2	Weight* *Poids** Gewicht*	S/SR Non lubricated medium *Milieu non lubrifié* Nicht flüssige Medien: l2	h2	Weight* Poids* Gewicht*	SF/SFR Lubricated medium and non lubricated medium *Milieu lubrifié et non lubrifié* Flüssige und nicht flüssige Medien: l2	h2	Weight* *Poids** Gewicht*
40	1 ½	180	160	0,5	180	160	0,5			
50	2		165			165				
65	2 ½		191			191				
80	3		197			197				
40	1 ½	260	180	0,6	260	180	0,6	260	180	1,4
50	2		185			185			185	
65	2 ½		211			211			211	
80	3		217			217			217	
100	4	330	248	0,7	330	248	0,7	330	248	1,8
125	5		262			262			262	
150	6		279			279			279	

Manual control - Handles
Commande manuelle - Poignées
Manuelle Antriebe - Handhebel

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DN	NPS	SP: Lubricated medium and on non lubricated medium / *Milieu lubrifié et non lubrifié* / Flüssige und nicht flüssige Medien			SM: Lubricated medium with XA, XC, XV and K liners / *Millieu lubrifié avec manchettes XA, XC, XV et K* / Flüssige Medien mit Ringbälgen XA, XC, XV und K			SM: Lubricated medium except liners / *Milieu lubrifié sauf manchettes* / Flüssige Medien außer Ringbälge XA, XC, XV, K ------ Non lubricated medium for all liners / *Milieu non lubrifié toutes manchettes* / Nicht flüssige Medien für alle Ringbälge		
		l2	h2	Weight* *Poids** Gewicht*	l2	h2	Weight* *Poids** Gewicht*	l2	h2	Weight* *Poids** Gewicht*
40	1 ½	260	205	0,7	260	215	1,3	260	215	1,3
50	2		210			220			220	
65	2 ½		236			246			246	
80	3		242			252			252	
100	4	330	263	0,8	330	273	1,6	330	273	1,6
125	5		277			287			287	
150	6		294			304			304	
200	8				530	322	3,3	530	322	3,3
250	10					355			355	
300	12					388				

* The indicated weights are those of the handle • *Les poids indiqués sont ceux de la poignée* • Gewichte gelten nur für Handhebel

Manual control - MN and MR reducers
Commande manuelle - Démultiplicateurs MN et MR
Manuelle Antriebe - Getriebe MN und MR

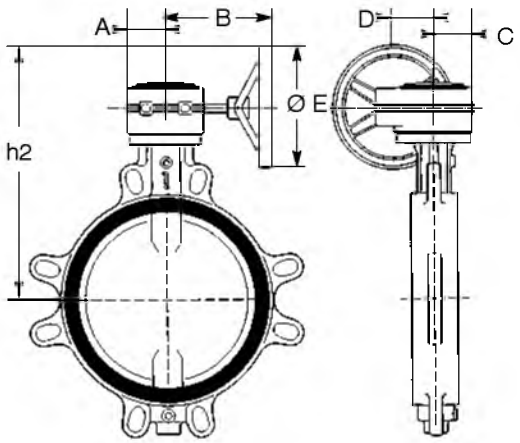
DN	NPS	(1) m/s	Lubricated medium / *Milieu lubrifié* / Flüssige Medien ----- LinersXA, XC, XV & K / *Manchettes* XA, XC, XV & K / RingbälgeXA, XC, XV & K		Lubricated medium ----- Other liners / *Autres manchettes* / Andere Ringbälge		Non lubricated medium / *Milieu non lubrifié* / Nicht flüssige Medien ----- All liners / *Toutes manchettes* / Alle Ringbälge	
40	1 ½	3,0	MN 12	MR 25	MN 12	MR 25	MN 12	MR 25
50	2	3,0						
65	2 ½	3,0						
80	3	3,0						
100	4	3,0						
125	5	3,0						
150	6	3,0	MN 25		MN 25		MN 25	
200	8	3,0						
250	10	3,0			MN 40	MR 50	MN 40	MR 50
300	12	3,0	MN 40	MR 50	MN 80		MN 80	
350	14	3,0	MN 80			MR 100		MR 100
400	16	3,0	MR 100					
450	18	2,5			MR 200		MR 200	
500	20	2,5						
550	22	2,0	MR 200					
600	24	2,5						
650	26	2,0			MR 400		MR 400	
700	28	2,0						
750	30	2,0	MR 400					
800	32	2,0						
900	36	1,5			MR 600		MR 600	
1000	40	1,5						

(1) Maximum fluid velocity • *Vitesse maximale de référence* • Strömungsgeschwindigkeit

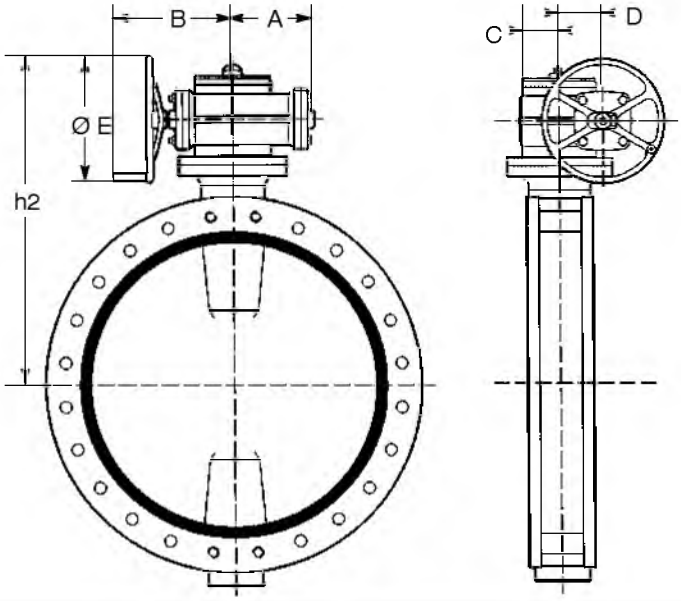
Manual control - MN and MR reducers
Commande manuelle - Démultiplicateurs MN et MR
Manuelle Antriebe - Getriebe MN und MR

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

MN 12 - 80
MR 25 - 200



MR 400 - 1600



DN	NPS	MN															
		Lubricated medium with XA, XC, XV and K liners *Milieu lubrifié avec manchettes XA, XC, XV et K* Flüssige Medien mit Ringbälgen XA, XC, XV und K								Lubricated medium except liners *Milieu lubrifié sauf manchettes* Flüssige Medien außer Ringbälge XA, XC, XV, K --- Non lubricated medium all liners *Milieu non lubrifié toutes manchettes* Nicht flüssige Medien für alle Ringbälge							
		Type Type Typ	A	B	C	D	∅E	h2	Weight* *Poids** Gewicht*	Type Type Typ	A	B	C	D	∅E	h2	Weight* *Poids** Gewicht*
40	1 ½	12	49	135	42	40	160	193	1,6	12	49	135	42	40	160	193	1,6
50	2							198								198	
65	2 ½							224								224	
80	3							230								230	
100	4							251								251	
125	5							265								265	
150	6	25	64	202	60	50	200	300	2,3	25	64	202	60	50	200	300	2,3
200	8							328								328	
250	10							361		40	70	225	60	60	200	393	3,4
300	12	40	70	225	60	60	200	422	3,4	80	90	245	70	75	250	429	5,0
350	14	80	90	245	70	75	250	483	5,0							483	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux du démultiplicateur* • Gewichte gelten nur für das Getriebe

Manual control - MN and MR reducers
Commande manuelle - Démultiplicateurs MN et MR
Manuelle Antriebe - Getriebe MN und MR

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

		MR															
		Lubricated medium with XA, XC, XV and K liners *Milieu lubrifié avec manchettes XA, XC, XV et K* Flüssige Medien mit Ringbälgen XA, XC, XV und K								Lubricated medium except liners *Milieu lubrifié sauf manchettes* Flüssige Medien außer Ringbälge XA, XC, XV, K ----- Non lubricated medium all liners *Milieu non lubrifié toutes manchettes* Nicht flüssige Medien für alle Ringbälge							
DN	NPS	Type *Type* Typ	A	B	C	D	Ø E	h2	Weight* *Poids** Gewicht*	Type *Type* Typ	A	B	C	D	Ø E	h2	Weight* *Poids** Gewicht*
40	1 ½	MR 25	62	184	66	64	225	256	7,0	MR25	62	184	66	64	225	256	7,0
50	2							261								261	
65	2 ½							287								287	
80	3							293								293	
100	4							314								314	
125	5							328								328	
150	6							345								345	
200	8							373								373	
250	10							406		MR50	74	184	77	76	225	418	10,0
300	12	MR 50	74	184	77	76	225	445	10,0							445	
350	14							498		MR100	86	233	88	88	350	572	15,0
400	16	MR 100	86	233	88	88	350	617	15,0							617	
450	18							647		MR200	120	270	108	117	350	658	24,0
500	20							677								688	
550	22	MR 200	120	270	108	117	350	723	24,0							723	
600	24							743								743	
650	26							783		MR 400	229	332	115	125	350	805	58,0
700	28							808								830	
750	30	MR400	229	332	115	125	350	860	58,0							860	
800	32							885								885	
900	36							898		MR 600	271	511	155	140	600	1074	105,0
1000	40							1005								1144	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux du démultiplicateur* • Gewichte gelten nur für das Getriebe

ACTELEC electric actuators (AMRI reducer with multi-turn electric actuator)
Actionneurs électriques ACTELEC (démultiplicateur AMRI avec servomoteur électrique multi-tours)
Elektrische Antriebe ACTELEC (AMRI Getriebe mit elektrischem Drehantrieb für Armaturen)

		Lubricated medium *Milieu lubrifié* Flüssige Medien		Non lubricated medium *Milieu non lubrifié* Nicht flüssige Medien
		Liners / *Manchettes* Ringbälge	Other liners /*Autres manchettes* Andere Ringbälge	All liners / *Toutes manchettes* Alle Ringbälge
DN	NPS	XA, XC, XV & K		
40 - 350	1½ – 14	M31	M31	M31
400 - 800	16 - 32	MR 400	MR 400	MR 400
900	36		MR 800	MR800
1000	40	MR800		

ACTELEC ¼ turn electric actuators Bernard (Deufra)
Actionneurs électriques ¼ tour ACTELEC Bernard (Deufra)
Elektrische Antriebe ACTELEC Bernard (Deufra)

DN	NPS	(1) m/s	Lubricated medium *Milieu lubrifié* Flüssige Medien — XA, XC, XV and K liners *Manchettes XA, XC, XV et K* Ringbälge XA, XC, XV und K: On-off function *Fonction tout ou rien* Absperrfunktion	Lubricated medium — XA, XC, XV and K liners: Throttling duty *Fonction régulation* Regelfunktion	Lubricated medium — Other liners *Autres manchettes* Andere Ringbälge: On-off function *Fonction tout ou rien* Absperrfunktion	Lubricated medium — Other liners: Throttling duty *Fonction régulation* Regelfunktion	Non lubricated medium *Milieu non lubrifié* Nicht flüssige Medien — All liners *Toutes manchettes* Alle Ringbälge: On-off function *Fonction tout ou rien* Absperrfunktion	Non lubricated medium — All liners: Throttling duty *Fonction régulation* Regelfunktion
40	1 ½	3,0	OA3 / OA6	OAP	OA3 / OA6	OAP	OA3 / OA6	OAP
50	2	3,0						
65	2 ½	3,0						
80	3	3,0			OA6		OA6	
100	4	3,0	OA6					
125	5	3,0	OA8		OA8		OA8	
150	6	3,0	OA15	OA15	OA15	OA15	OA15	OA15
200	8	3,0	ASP	ASP	ASP	ASP	ASP	ASP
250	10	3,0			AS50	AS50	AS50	AS50
300	12	3,0	AS50	AS50				
350	14	3,0			AS80	BS100	AS80	BS100
400	16	3,0	BS100	BS100	BS100		BS100	
450	18	2,5						
500	20	2,5						

(1) Maximum fluid velocity • *Vitesse maximale de référence* • Strömungsgeschwindigkeit

Main electric equipments - On-off function
Principaux équipements électriques - Fonction tout ou rien
Standardausführung - Absperrfunktion

Type • *Type* • Typ		OA3	OA6	OA8	OA15	ASP	AS50	AS 80	BS100
Operating time in seconds *Temps de manœuvre en secondes* Stellzeiten in Sekunden	Standard	11	6	6	15	30	30	30	60
	Option			60	25	50	60		
Opening and closing limit switches *Contacts fin de course sur ouverture et fermeture* Endlagenschalter Auf / Zu		Standard							
Mechanical adjustable travel stops *Butées mécaniques de fin de course réglables* Verstellbare Endanschläge		Standard							
Opening and closing torque switches *Limiteurs de couple sur ouverture et fermeture* Drehmomentschaltung für beide Laufrichtungen						Standard			
Heating resistance 6W *Résistance chauffante 6W* Heizwiderstand 6W		Standard							

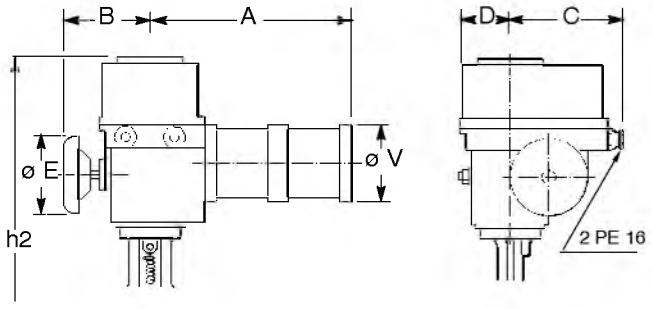
ACTELEC ¼ turn electric actuators Bernard (Deufra)
Actionneurs électriques ¼ tour ACTELEC Bernard (Deufra)
Elektrische Antriebe ACTELEC Bernard (Deufra)

Main electric equipments - Throttling duties
Principaux équipements électriques - Fonction régulation
Standardausführung - Regelfunktion

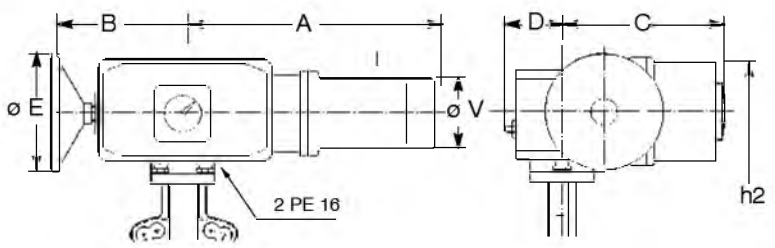
Type • *Type* • Typ	OAP	OA15	ASP	AS50	BS100
Operating time in seconds *Temps de manœuvre en secondes* Stellzeiten in Sekunden	60	25	60	60	60
Opening and closing limit switches *Contacts fin de course sur ouverture et fermeture* Endlagenschalter Auf / Zu	Standard				
Mechanical adjustable travel stops *Butées mécaniques de fin de course réglables* Verstellbare Endanschläge	Standard				
Opening and closing torque switches *Limiteurs de couple sur ouverture et fermeture* Drehmomentschaltung für beide Laufrichtungen			Standard		
Heating resistance 6W *Résistance chauffante 6W* Heizwiderstand 6W	Standard				

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

OA3, OA6, OA8, OAP & OA15



ASP, AS50, AS80 & BS100



ACTELEC ¼ turn electric actuators Bernard (Deufra)
Actionneurs électriques ¼ tour ACTELEC Bernard (Deufra)
Elektrische Antriebe ACTELEC Bernard (Deufra)

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DN	NPS	Lubricated medium with XA, XC, XV and K liners *Milieu lubrifié avec manchettes XA, XC, XV et K* Flüssige Medien mit Ringbälgen XA, XC, XV und K									Lubricated medium except liners *Milieu lubrifié sauf manchettes* Flüssige Medien außer Ringbälge XA, XC, XV, K --- Non lubricated medium all liners *Milieu non lubrifié toutes manchettes* Nicht flüssige Medien für alle Ringbälge								
		Type *Type* Typ	A	B	C	D	Ø E	Ø V	h2	Weight* *Poids** Gewicht*	Type *Type* Typ	A	B	C	D	Ø E	Ø V	h2	Weight* *Poids** Gewicht*
On-off function • *Fonction tout ou rien* • Absperrfunktion																			
40	1 ½	OA3	148	116	145	73	90	100	339	6,0	OA3	148	116	145	73	90	100	321	6,0
50	2								344									322	
65	2 ½								370									352	
80	3								376										
40	1 ½	OA6	200	116	145	65	90	102	329	7,0	OA6	200	116	145	65	90	102	329	7,0
50	2								334									334	
65	2 ½								360									360	
80	3								366									366	
100	4								387									387	
125	5	OA8	200	116	145	65	90	102	401	7,0	OA8	200	116	145	65	90	102	401	7,0
150	6	OA15	260	116	145	65	90	102	418	7,5	OA15	260	116	145	65	90	102	418	7,5
200	8	ASP	312	187	226	89	160	102	399	18,0	ASP	312	187	226	89	160	102	399	18,0
250	10								432		AS50	340	187	226	89	250	139	432	18,0
300	12	AS50	340	187	226	89	250	139	459	18,0								459	
350	14								512		AS80	340	187	226	89	250	139	543	20,0
400	16	BS100	392	187	284	134	250	139	547	26,0	BS100	392	187	284	134	250	139	547	26,0
450	18								577										
500	20								607										
Throttling function • *Fonction régulation* • Regelfunktion																			
40	1 ½	OAP	200	116	145	65	90	102	329	7,2	OAP	200	116	145	65	90	102	329	7,2
50	2								334									334	
65	2 ½								360									360	
80	3								366									366	
100	4								387									387	
125	5								401									401	
150	6	OA15	260	116	145	65	90	102	418	7,5	OA15	260	116	145	65	100	102	418	7,5
200	8	ASP	312	187	226	89	160	102	399	18,0	ASP	312	187	226	89	160	102	399	18,0
250	10								432		AS50	340	187	226	89	250	139	432	21,0
300	12	AS50	340	187	226	89	250	139	459	21,0								459	
350	14								512		BS100	392	187	284	134	250	139	502	29,0
400	16	BS100	392	187	284	134	250	139	547	29,0								547	
450	18								577										
500	20								607										

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux de l'actionneur* • Gewichte gelten nur für den Antrieb

ACTELEC ¼ turn electric actuators Auma
Actionneurs électriques ¼ tour ACTELEC Auma
Elektrische Antriebe ACTELEC Auma

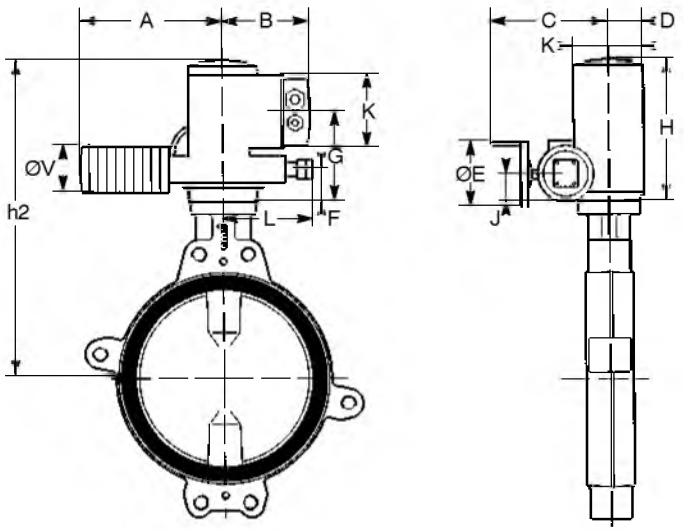
DN	NPS	(1) m/s	Lubricated medium *Milieu lubrifié* Flüssige Medien ----- Liners *Manchettes* Ringbälge XA, XC, XV & K	Lubricated medium ----- Other liners *Autres manchettes* Andere Ringbälge	Non lubricated medium *Milieu non lubrifié* Nicht flüssige Medien ----- All liners *Toutes manchettes* Alle Ringbälge
40	1 ½	3,0	SG 05.1	SG 05.1	SG 05.1
50	2	3,0			
65	2 ½	3,0			
80	3	3,0			
100	4	3,0			
125	5	3,0			
150	6	3,0			
200	8	3,0	SG 07.1	SG 07.1	SG 07.1
250	10	3,0		SG 10.1	SG 10.1
300	12	3,0	SG 10.1		
350	14	3,0		SG 12.1	SG 12.1
400	16	3,0	SG 12.1		
450	18	2,5			
500	20	2,5			
550	22	2,0			
600	24	2,5			

(1) Maximum fluid velocity• *Vitesse maximale de référence* • Strömungsgeschwindigkeit

Operating times · *Temps de manœuvre* · Stellzeiten

Type • *Type* • Typ		SG 05.1	SG 07.1	SG 10.1	SG 12.1
Operating times *Temps de manœuvre* Stellzeiten in Sekunden	Standard	22 s	22 s	32 s	63 s
	Option	8/11/16 s	8/11/16/32 s	16/22/45/63 s	22/32/45 s

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)



ACTELEC ¼ turn electric actuators Auma
Actionneurs électriques ¼ tour ACTELEC Auma
Elektrische Antriebe ACTELEC Auma

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DN	NPS	Type *Type* Typ	A	B	C	D	Ø E	F	G	H	J	K	L	Ø V	h2	Weight* *Poids** Gewicht*
Lubricated medium on XA, XC, XV and K liners ***Milieu lubrifié avec manchettes XA, XC, XV et K*** **Flüssige Medien mit Ringbälgen XA, XC, XV und K**																
40	1 ½	SG 05.1	291	195	191	58	160	50	170	275	82	115	137	105	380	19,0
50	2														385	
65	2 ½														411	
80	3														417	
100	4														438	
125	5														452	
150	6														469	
200	8	SG 07.1	291	195	191	58	160	50	170	275	82	115	137	105	497	19,0
250	10														530	
300	12	SG 10.1	301	205	216	75	160	56	170	291	88	115	172	105	573	25,0
350	14														626	
400	16	SG 12.1	301	205	233	75	160	70	192	313	102	115	172	105	693	29,0
450	18														723	
500	20														753	
Lubricated medium except XA, XC, XV and K liners and non lubricated medium all liners ***Milieu lubrifié sauf manchettes XA, XC, XV et K et milieu non lubrifié toutes manchettes*** **Flüssige Medien außer Ringbälge XA, XC, XV und K und nicht flüssige Medien für alle Ringbälge**																
40	1 ½	SG 05.1	291	195	191	58	160	50	170	275	82	115	137	105	380	19,0
50	2														385	
65	2 ½														411	
80	3														417	
100	4														438	
125	5														452	
150	6														469	
200	8	SG 07.1	291	195	191	58	160	50	170	275	82	115	137	105	497	19,0
250	10	SG 10.1	301	205	216	75	160	56	170	291	88	115	172	105	546	25,0
300	12														573	
350	14	SG 12.1	301	205	233	75	160	70	192	313	102	115	172	105	648	29,0
400	16														693	
450	18														723	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux de l'appareil* • Gewichte gelten nur für den Antriebe

ACTELEC electric actuators (AMRI reducer with multi-turn electric actuator)
Actionneurs électriques ACTELEC (démultiplicateur AMRI avec servomoteur électrique multi-tours)
Elektrische Antriebe ACTELEC (AMRI Getriebe mit elektrischem Drehantrieb für Armaturen)

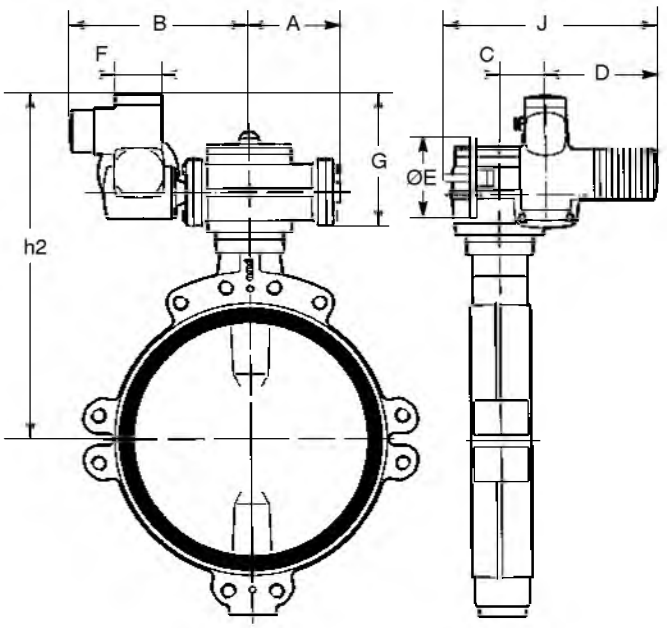
DN	NPS	(1) m/s	Lubricated medium *Milieu lubrifié* Flüssige Medien – Liners *Manchettes* Ringbälge XA, XC, XV & K	Lubricated medium – Other liners *Autres manchettes* Andere Ringbälge	Non lubricated medium *Milieu non lubrifié* Nicht flüssige Medien – All liners *Toutes manchettes* Alle Ringbälge
40	1 ½	3,0	31+SA 07.5 / 31+ASM0	31+SA 07.5 / 31+ASM0	31+SA 07.5 / 31+ASM0
50	2	3,0			
65	2 ½	3,0			
80	3	3,0			
100	4	3,0			
125	5	3,0			
150	6	3,0			
200	8	3,0			
250	10	3,0			
300	12	3,0			
350	14	3,0			
400	16	3,0	200+SA 07.5 / 200+ASM0	200+SA 07.5 / 200+ASM0	200+SA 07.5 / 200+ASM0
450	18	2,5			
500	20	2,5			
550	22	2,5			
600	24	2,5		400+SA 10.1 / 400+ASM1	400+SA 10.1 / 400+ASM1
650	26	2,0			
700	28	2,0			
750	30	2,0	400+SA 10.1 / 400+ASM1		
800	32	2,0			
900	36	1,5		800+SA 10.1 / 800+ASM1	800+SA 10.1 / 800+ASM1
1000	40	1,5	500+SA 07.5 / 500+ASM0		

Key: ACTELEC type + motor reduction: SA = Auma, ASM = Bernard (Deufra)
Légende : Série ACTELEC + type du motoréducteur : SA = Auma, ASM = Bernard (Deufra)
Erklärung: Baureihe ACTELEC + Typ des Untersetzungsgetriebes: SA = Auma, ASM = Bernard (Deufra)
(1) Maximum fluid velocity • *Vitesse maximale de référence* • Strömungsgeschwindigkeit

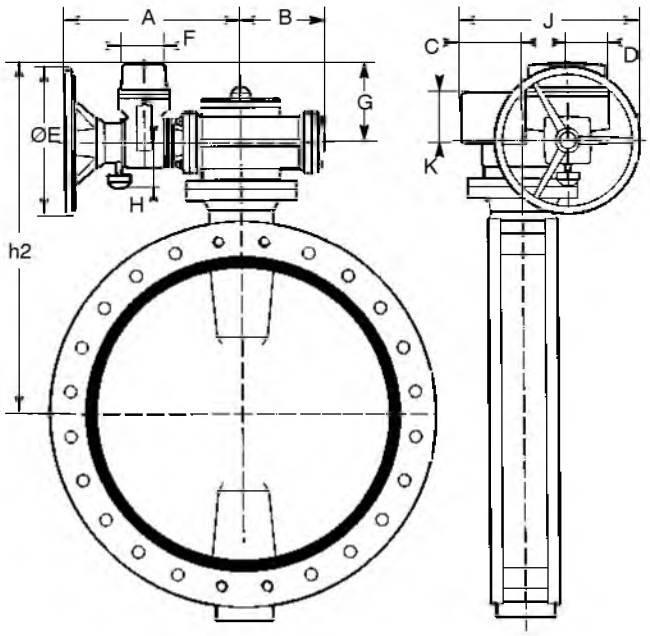
ACTELEC electric actuators (AMRI reducer with multi-turn electric actuator)
Actionneurs électriques ACTELEC (démultiplicateur AMRI avec servomoteur électrique multi-tours)
Elektrische Antriebe ACTELEC (AMRI Getriebe mit elektrischem Drehantrieb für Armaturen)

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

AUMA SA 07.5 & SA 10.1



BERNARD (Deufra) ASM0 & ASM1



ACTELEC electric actuators (AMRI reducer with multi-turn electric actuator)
Actionneurs électriques ACTELEC (démultiplicateur AMRI avec servomoteur électrique multi-tours)
Elektrische Antriebe ACTELEC (AMRI Getriebe mit elektrischem Drehantrieb für Armaturen)

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DN	NPS	Lubricated medium XA, XC, XV and K liners *Milieu lubrifié avec manchettes XA, XC, XV et K* Flüssige Medien mit Ringbälgen XA, XC, XV und K												
		Type *Type* Typ	A	B	C	D	Ø E	F	G	H	J	K	h2	Weight* *Poids** Gewicht*
40	1 ½	31 + SA 07.5	125	398	40	265	160	115	237	101	514	-	411	46,0
50	2												416	
65	2 ½												442	
80	3												448	
100	4												469	
125	5												483	
150	6												500	
200	8												528	
250	10												568	
300	12												594	
350	14												647	
40	1 ½	31 + ASM0	125	250	292	115	300	144	211	122	442	139	385	42,0
50	2												390	
65	2 ½												416	
80	3												422	
100	4												443	
125	5												457	
150	6												474	
200	8												502	
250	10												548	
300	12												568	
350	14												621	
400	16	200 + SA 07.5	229	469	40	265	160	115	237	101	514	-	712	98,0
450	18												742	
500	20												772	
550	22												807	
600	24												827	
650	26												867	
700	28												892	
400	16	200 + ASM0	229	477	292	115	300	144	211	122	442	139	686	94,0
450	18												716	
500	20												746	
550	22												781	
600	24												801	
650	26												841	
700	28												866	
750	30	400 + SA 10.1	229	471	50	282	200	115	247	121	536	-	932	116,0
800	32												957	
900	36												1007	
750	30	400 + ASM1	229	477	292	115	400	144	211	122	492	139	846	111,0
800	32												871	
900	36												921	
1000	40	500 + SA 07.5	271	523	40	265	160	115	237	101	514	-	1081	150,0
1000	40	500 + ASM0	271	531	292	115	300	144	211	122	442	139	1055	146,0

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux de l'actionneur seul* • Gewichte gelten nur für den Antrieb

ACTELEC electric actuators (AMRI reducer with multi-turn electric actuator)
Actionneurs électriques ACTELEC (démultiplicateur AMRI avec servomoteur électrique multi-tours)
Elektrische Antriebe ACTELEC (AMRI Getriebe mit elektrischem Drehantrieb für Armaturen)

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DN	NPS	Lubricated medium except XA, XC, XV and K and non lubricated medium all liners *Milieu lubrifié avec manchettes autres que XA, XC, XV et K et milieu non lubrifié toutes manchettes* Flüssige Medien außer Ringbälge XA, XC, XV, K und nicht flüssige Medien für alle Ringbälge												
		Type *Type* Typ	A	B	C	D	Ø E	F	G	H	J	K	h2	Weight* *Poids** Gewicht*
40	1 ½	31 + SA 07.5	125	398	40	265	160	115	237	101	514	-	411	46,0
50	2												416	
65	2 ½												442	
80	3												448	
100	4												469	
125	5												483	
150	6												500	
200	8												528	
250	10												568	
300	12												594	
350	14												647	
40	1 ½	31 + ASM0	125	250	292	115	300	144	211	122	442	139	385	42,0
50	2												390	
65	2 ½												416	
80	3												422	
100	4												443	
125	5												457	
150	6												474	
200	8												502	
250	10												548	
300	12												568	
350	14												621	
400	16	200 + SA 07.5	229	469	40	265	160	115	237	101	514	-	712	98,0
450	18												742	
500	20												772	
550	22												807	
400	16	200 + ASM0	229	477	292	115	300	144	211	122	442	139	686	94,0
450	18												716	
500	20												746	
550	22												781	
600	24	400 + SA 10.1	229	471	50	282	200	115	247	121	536	-	837	118,0
650	26												877	
700	28												902	
750	30												932	
800	32													
600	24	400 + ASM1	229	477	292	115	400	144	211	122	492	139	751	111,0
650	26												791	
700	28												816	
750	30												846	
800	32													
900	36	800 + SA 10.1	271	525	50	282	200	115	247	121	536	-	1021	168,0
1000	40												1091	
900	36	800 + ASM1	271	531	292	115	400	144	211	122	492	139	935	163,0
1000	40												1005	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux de l'actionneur seul* • Gewichte gelten nur für den Antrieb

ACTAIR double acting pneumatic actuators
Actionneurs pneumatiques double effet ACTAIR
Pneumatische Antriebe doppeltwirkend ACTAIR

DN	NPS	(1) (2) m/s	On-off function *Fonction tout ou rien* Absperrfunktion — Control air pressure *Pression d'air moteur* Steuerdruck: 3,5 bar	4 bar	5 bar	6 bar	Throttling duty *Fonction régulation* Regelfunktion: 4 bar	5 bar	6 bar
Lubricated medium with XA, XC, XV and K liners									
Milieu lubrifié avec manchettes XA, XC, XV et K									
Flüssige Medien mit Ringbälgen XA, XC, XV und K									
40	1 ½	3,0	ACTAIR 3				ACTAIR 3		
50	2	3,0							
65	2 ½	3,0						ACTAIR 6	
80	3	3,0							
100	4	3,0			ACTAIR 6				
125	5	3,0	ACTAIR 12				ACTAIR 12		
150	6	3,0			ACTAIR 12				ACTAIR 12
200	8	3,0		ACTAIR 25				ACTAIR 25	
250	10	3,0	ACTAIR 50				ACTAIR 50		
300	12	3,0			ACTAIR 50			ACTAIR 50	
350	14	3,0							
400	16	3,0						ACTAIR 100	
450	18	2,5			ACTAIR 100				
500	20	2,5							
550	22	2,0						ACTAIR 200	
600	24	2,5			ACTAIR 200				
650	26	2,0							
700	28	2,0							
750	30	2,0		ACTAIR 400				ACTAIR 400	
800	32	2,0							
900	36	1,5		ACTAIR 800				ACTAIR 800	
1000	40	1,5							
Lubricated medium except XA, XC, XV and K liners and non lubricated medium all liners									
Milieu lubrifié avec manchettes autres que XA, XC, XV et K et milieu non lubrifié toutes manchettes									
Flüssige Medien außer Ringbälgen XA, XC, XV und K und nicht flüssige Medien für alle Ringbälge									
40	1 ½	3,0							
50	2	3,0			ACTAIR 3			ACTAIR 3	
65	2 ½	3,0							
80	3	3,0						ACTAIR 6	
100	4	3,0			ACTAIR 6				
125	5	3,0						ACTAIR 12	
150	6	3,0			ACTAIR 12				
200	8	3,0			ACTAIR 25			ACTAIR 25	
250	10	3,0						ACTAIR 50	
300	12	3,0			ACTAIR 50				
350	14	3,0						ACTAIR 100	
400	16	3,0			ACTAIR 100				
450	18	2,5						ACTAIR 200	
500	20	2,5			ACTAIR 200				
550	22	2,0							
600	24	2,5						ACTAIR 400	
650	26	2,0			ACTAIR 400				
700	28	2,0							
750	30	2,0							
800	32	2,0		ACTAIR 800				ACTAIR 800	
900	36	1,5							
1000	40	1,5	ACTAIR 1600				ACTAIR 1600		

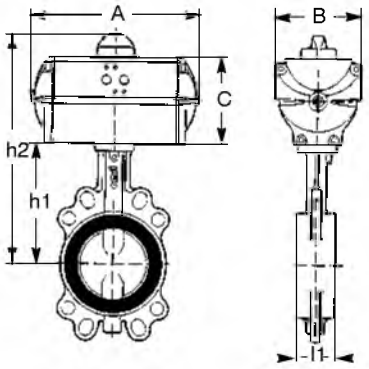
(1) Maximum fluid velocity • *Vitesse maximale de référence* • Strömungsgeschwindigkeit
(2) To respect for valve on lubricated medium • *A respecter pour robinet en milieu lubrifié* • Zu beachten bei Absperrklappen in flüssigen Medien

ACTAIR double acting pneumatic actuators
Actionneurs pneumatiques double effet ACTAIR
Pneumatische Antriebe doppeltwirkend ACTAIR

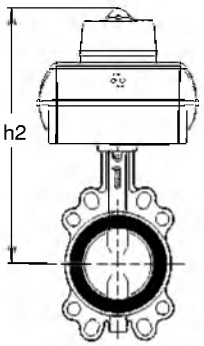
Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

ACTAIR 3 - 200

without • *sans* • ohne AMTRONIC

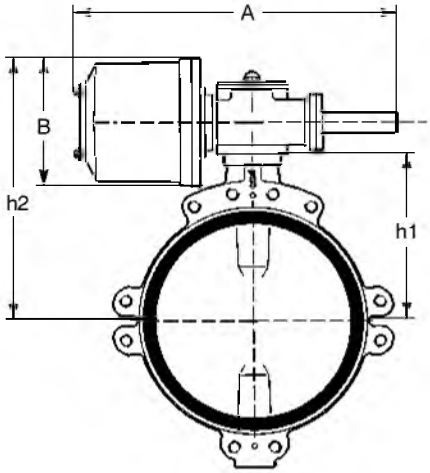


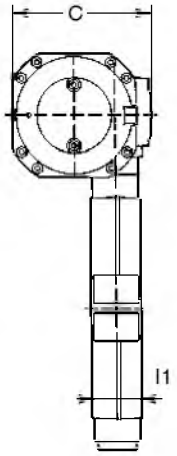
with • *avec* • mit AMTRONIC



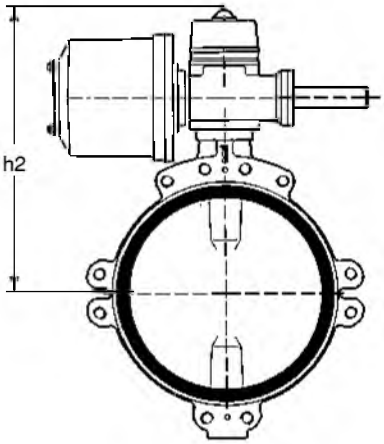
ACTAIR 400

without • *sans* • ohne AMTRONIC



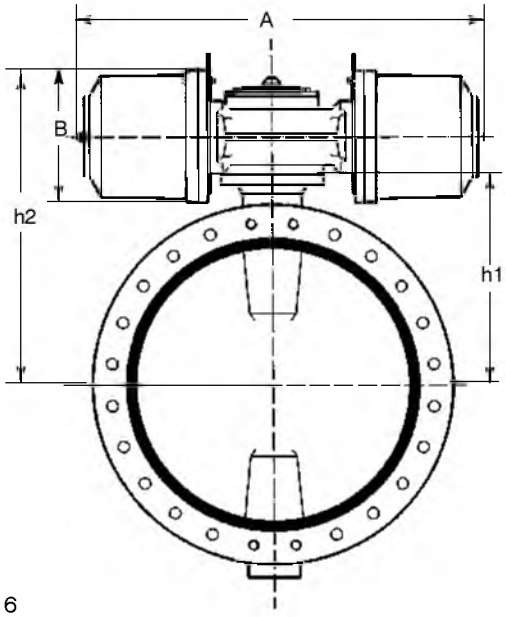


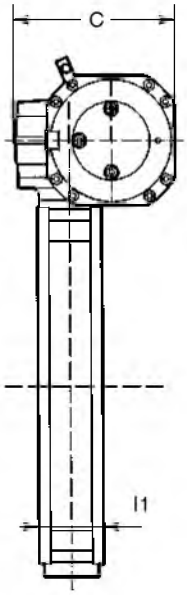
with • *avec* • mit AMTRONIC



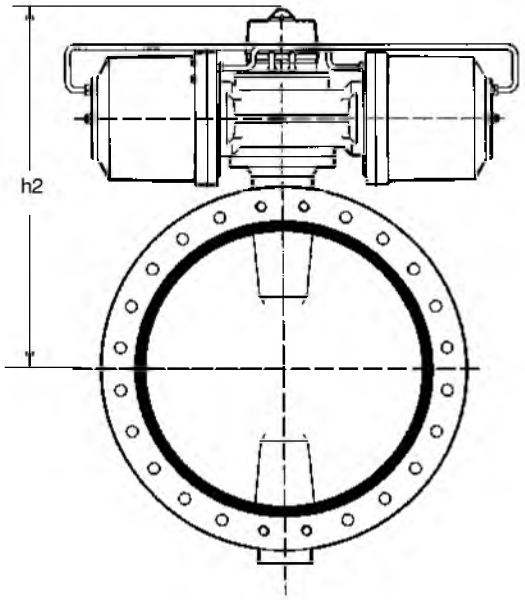
ACTAIR 800 & 1600

without • *sans* • ohne AMTRONIC





with • *avec* • mit AMTRONIC



ACTAIR double acting pneumatic actuators
Actionneurs pneumatiques double effet ACTAIR
Pneumatische Antriebe doppeltwirkend ACTAIR

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

For a control pressure: 5 bar • *Pour une pression moteur : 5 bar* • Für Steuerdruck: 5 bar

DN	NPS	l1	h1	On-off function without box *Fonction tout ou rien sans boîtier* Absperrfunktion ohne Gehäuse						Throttling duty with box *Fonction régulation avec boîtier* Regelfunktion mit Gehäuse					
				Type *Type* Typ	A	B	C	h2	Weight* *Poids** Gewicht*	Type *Type* Typ	A	B	C	h2	Weight* *Poids** Gewicht*
Lubricated medium with XA, XC, XV and K liners *Milieu lubrifié avec manchettes XA, XC, XV et K* **Flüssige Medien mit Ringbälgen XA, XC, XV und K**															
40	1 ½	33	105	3	194	100	98	224	2,8	3	194	100	98	340	4,5
50	2	43	109,5					229						345	
65	2 ½	46	136					255						371	
80	3	46	142					261		6	218	114	116	394	5,5
100	4	52	163	6	218	114	116	300	3,9					415	
125	5	56	176,5					314		12	272	132	142	455	8,0
150	6	56	194	12	272	132	142	357	6,0	25	344	156	176	506	13,0
200	8	60	222	25	344	156	176	419	11,0					534	
250	10	68	255					452						567	
300	12	78	282	50	424	174	217	520	18,3	50	424	174	217	635	20,0
350	14	78	335					573		100	505	157	195	666	32,0
400	16	102	380	100	505	157	195	596	30,0					711	
450	18	114	410					626						763	
500	20	127	440					656		200	592	174	217	793	50,0
550	22	154	475	200	592	174	217	713	48,0					828	
600	24	154	495					733						848	
650	26	165	535					773		400	964	380	430	895	170,0
700	28	165	560					798						920	
750	30	190	590	400	964	380	430	875	160,0					950	
800	32	190	615					900						975	
900	36	203	665					950		800	1490	380	549	1 060	300,0
1000	40	216	735	800	1490	380	549	1 034	290,0					1 130	
Lubricated medium except XA, XC, XV and K liners and non lubricated medium all liners *Milieu lubrifié avec manchettes autres que XA, XC, XV et K et milieu non lubrifié toutes manchettes* **Flüssige Medien außer Ringbälgen XA, XC, XV und K und nicht flüssige Medien für alle Ringbälge**															
40	1 ½	33	105	3	194	100	98	224	2,8	3	194	100	98	340	4,5
50	2	43	109,5					229						345	
65	2 ½	46	136					255		6	218	114	116	388	5,5
80	3	46	142	6	218	114	116	279	3,9					394	
100	4	52	163					300		12	272	132	142	441	8,0
125	5	56	176,5	12	272	132	142	340	6,0					455	
150	6	56	194					357		25	344	156	176	506	13,0
200	8	60	222	25	344	156	176	419	11,0					534	
250	10	68	255	50	424	174	217	493	18,3	50	424	174	217	608	20,0
300	12	78	282					520		100	505	157	195	613	32,0
350	14	78	335	100	505	157	195	551	30,0					666	
400	16	102	380					596		200	592	174	217	733	50,0
450	18	114	410	200	592	174	217	648	48,0					763	
500	20	127	440					678						793	
550	22	154	475					713		400	964	380	430	835	170,0
600	24	154	495	400	964	380	430	780	160,0					855	
650	26	165	535					820						895	
700	28	165	560					845						920	
750	30	190	590					875		800	1490	380	549	985	300,0
800	32	190	615					900						1 010	
900	36	203	665	800	1490	380	549	964	290,0					1 060	
1000	40	216	735					1 034						1 130	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux de l'actionneur seul* • Gewichte gelten nur für den Antrieb

DYNACTAIR spring return pneumatic actuators
Actionneurs pneumatiques simple effet DYNACTAIR
Pneumatische Antriebe einfachwirkend DYNACTAIR

DN	NPS	(1) (2) (m/s)	On-off function *Fonction tout ou rien* Absperrfunktion — Control air pressure *Pression d'air moteur* Steuerdruck 3,5 bar	4 bar	5 bar	6 bar	Throttling duty *Fonction régulation* Regelfunktion — Control air pressure 4 bar	5 bar	6 bar
Lubricated medium with XA, XC, XV and K liners *Milieu lubrifié avec manchettes XA, XC, XV et K* **Flüssige Medien mit Ringbälgen XA, XC, XV und K**									
40	1 ½	3,0		DYN 3				DYN 3	
50	2	3,0							
65	2 ½	3,0		DYN 6				DYN 6	
80	3	3,0							
100	4	3,0		DYN 12				DYN 12	
125	5	3,0							
150	6	3,0		DYN 25				DYN 25	
200	8	3,0							
250	10	3,0		DYN 50				DYN 50	
300	12	3,0							
350	14	3,0		DYN 100				DYN 100	
400	16	3,0							
450	18	2,5							
500	20	2,5		DYN 200				DYN 200	
550	22	2,0							
600	24	2,5							
650	26	2,0							
700	28	2,0		DYN 400				DYN 400	
750	30	2,0	DYN 800				DYN 800		
800	32	2,0							
900	36	1,5							
1000	40	1,5		DYN 800				DYN 800	
Lubricated medium except XA, XC, XV and K liners and non lubricated medium all liners *Milieu lubrifié avec manchettes autres que XA, XC, XV et K et milieu non lubrifié toutes manchettes* **Flüssige Medien außer Ringbälgen XA, XC, XV und K und nicht flüssige Medien für alle Ringbälge**									
40	1 ½	3,0		DYN 3				DYN 3	
50	2	3,0							
65	2 ½	3,0		DYN 6				DYN 6	
80	3	3,0							
100	4	3,0		DYN 12				DYN 12	
125	5	3,0							
150	6	3,0		DYN 25				DYN 25	
200	8	3,0							
250	10	3,0		DYN 50				DYN 50	
300	12	3,0							
350	14	3,0		DYN 100				DYN 100	
400	16	3,0							
450	18	2,5							
500	20	2,5		DYN 200				DYN 200	
550	22	2,0							
600	24	2,5							
650	26	2,0		DYN 400				DYN 400	
700	28	2,0	DYN 800				DYN 800		
750	30	2,0							
800	32	2,0		DYN 800				DYN 800	
900	36	1,5							
1000	40	1,5							

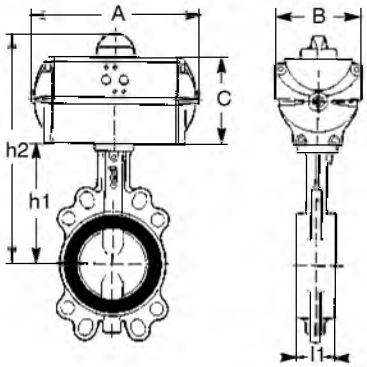
(1) Maximum fluid velocity • *Vitesse maximale de référence* • Strömungsgeschwindigkeit
(2) To respect for valve on lubricated medium • *A respecter pour robinet en milieu lubrifié* • Zu beachten bei Absperrklappen in flüssigen Medien.

DYNACTAIR spring return pneumatic actuators
Actionneurs pneumatiques simple effet DYNACTAIR
Pneumatische Antriebe einfachwirkend DYNACTAIR

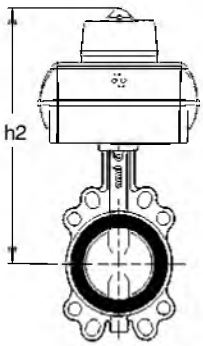
Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DYNACTAIR 3 -100

without • *sans* • ohne AMTRONIC

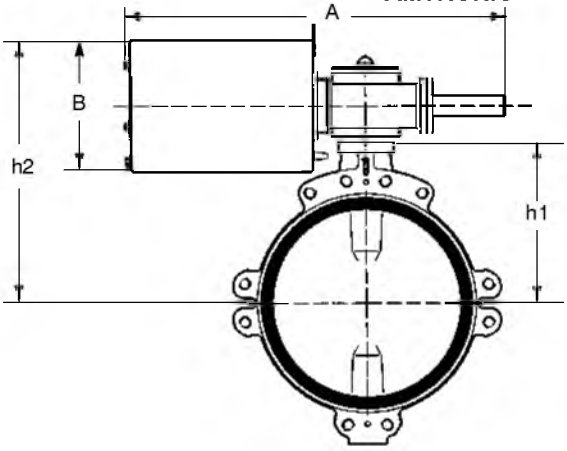


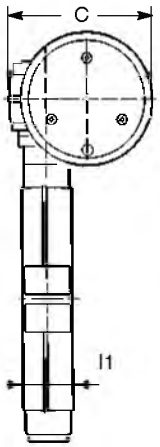
with • *avec* • mit AMTRONIC



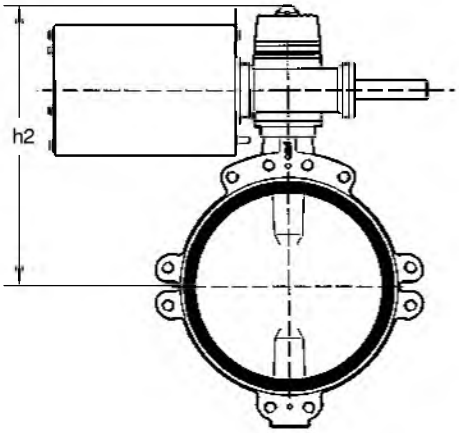
DYNACTAIR 200

without • *sans* • ohne AMTRONIC



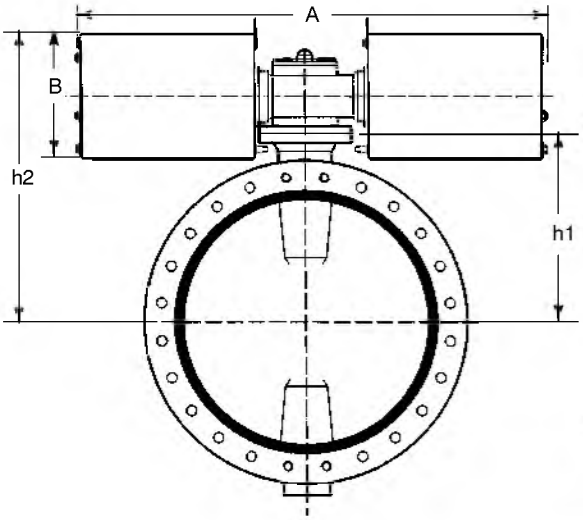


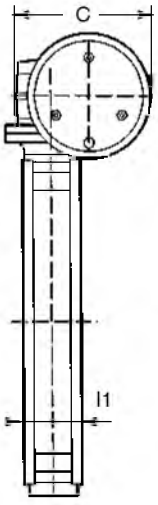
with • *avec* • mit AMTRONIC



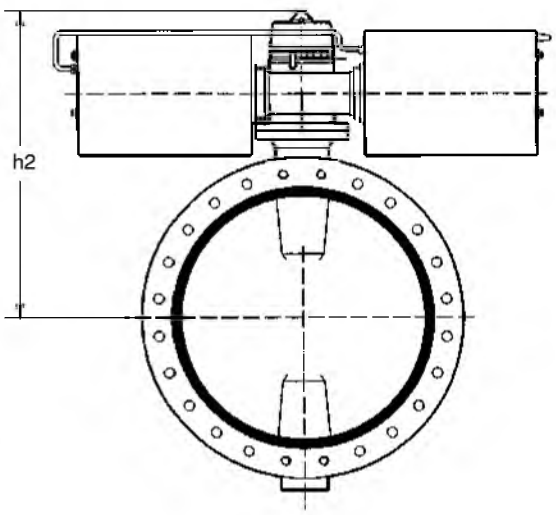
DYNACTAIR 400 & 800

without • *sans* • ohne AMTRONIC





with • *avec* • mit AMTRONIC



DYNACTAIR spring return pneumatic actuators
Actionneurs pneumatiques simple effet DYNACTAIR
Pneumatische Antriebe einfachwirkend DYNACTAIR

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

For a control pressure: 5 bar • *Pour une pression moteur : 5 bar* • Für Steuerdruck: 5 bar

DN	NPS	l1	h1	On-off function without box • *Fonction tout ou rien sans boîtier* Absperrfunktion ohne Gehäuse						Throttling duty with box • *Fonction régulation avec boîtier* Regelfunktion mit Gehäuse					
				Type *Type* Typ	A	B	C	h2	Weight* *Poids** Gewicht*	Type *Type* Typ	A	B	C	h2	Weight* *Poids** Gewicht*
Lubricated medium with XA, XC, XV and K liners															
Milieu lubrifié avec manchettes XA, XC, XV et K															
Flüssige Medien mit Ringbälgen XA, XC, XV und K															
40	1 ½	33	105	3	218	114	116	242	4,5	3	218	114	116	357	5,5
50	2	43	109,5					247						362	
65	2 ½	46	136					273		6	272	132	142	414	8,0
80	3	46	142	6	272	132	142	305	7,3					420	
100	4	52	163					326		12	344	156	176	475	13,0
125	5	56	176,5	12	344	156	176	374	13,6					489	
150	6	56	194	25	424	174	217	432	24,0	25	424	174	217	547	20,0
200	8	60	222					460						575	
250	10	68	255					493		50	705	157	195	586	32,0
300	12	78	282	50	705	157	195	498	46,0					613	
350	14	78	335					551		100	812	174	217	688	50,0
400	16	102	380	100	812	174	217	618	75,0					733	
450	18	114	410					648						763	
500	20	127	440					678		200	1214	406	443	800	280,0
550	22	154	475	200	1214	406	443	721	270,0					835	
600	24	154	495					741						855	
650	26	165	535					781						895	
700	28	165	560					806		400	1530	406	443	920	425,0
750	30	190	590	400	1530	406	443	836	410,0					950	
800	32	190	615					861						975	
900	36	203	665					911						1 025	
1000	40	216	735					981		800	1855	508	549	1 130	900,0
Lubricated medium except XA, XC, XV and K liners and non lubricated medium all liners															
Milieu lubrifié avec manchettes autres que XA, XC, XV et K et milieu non lubrifié toutes manchettes															
Flüssige Medien außer Ringbälgen XA, XC, XV und K und nicht flüssige Medien für alle Ringbälge															
40	1 ½	33	105	3	218	114	116	242	4,5	3	218	114	116	357	5,5
50	2	43	109,5					247						388	
65	2 ½	46	136	6	272	132	142	299	7,3	6	272	132	142	414	8,0
80	3	46	142					305						454	
100	4	52	163	12	344	156	176	360	13,6	12	344	156	176	475	13,0
125	5	56	176,5					374						530	
150	6	56	194	25	424	174	217	432	24,0	25	424	174	217	547	20,0
200	8	60	222					460						553	
250	10	68	255	50	705	157	195	471	46,0	50	705	157	195	586	32,0
300	12	78	282					498						635	
350	14	78	335	100	812	174	217	573	75,0	100	812	174	217	688	50,0
400	16	102	380					618						740	
450	18	114	410	200	1214	406	443	656	270,0	200	1214	406	443	770	280,0
500	20	127	440					686						800	
550	22	154	475					721						835	
600	24	154	495					741		400	1530	406	443	855	425,0
650	26	165	535	400	1530	406	443	781	410,0					895	
700	28	165	560					806						920	
750	30	190	590					836						985	
800	32	190	615					861		800	1855	508	549	1 010	900,0
900	36	203	665	800	1855	508	549	945	880,0					1 060	
1000	40	216	735					1 015							

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux de l'actionneur seul* • Gewichte gelten nur für den Antrieb

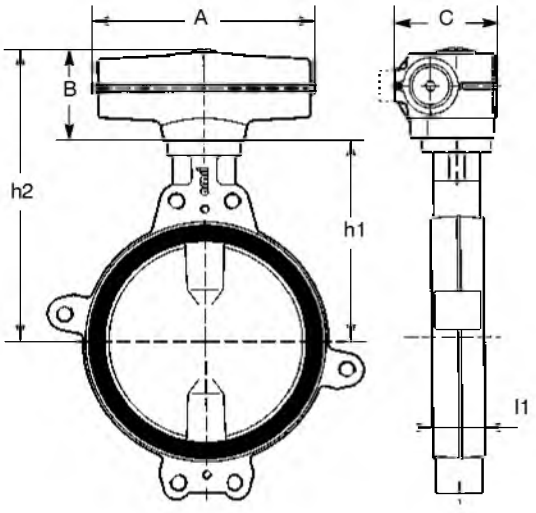
ACTO double acting hydraulic actuators
Actionneurs hydrauliques double effet ACTO
Hydraulische Antriebe doppeltwirkend ACTO

DN	NPS	(1) (m/s)	Lubricated medium *Milieu lubrifié* Flüssige Medien — XA, XC, XV and K liners *Manchettes XA, XC, XV et K* Ringbälge XA, XC, XV und K — Control oil pressure *Pression d'huile moteur* Steueröldruck: 60 bar	90 bar	120 bar	Lubricated medium — Other liners *Autres manchettes* Andere Ringbälge — Control oil pressure: 60 bar	90 bar	120 bar	Non lubricated medium *Milieu non lubrifié* Nicht flüssige Medien — All liners *Toutes manchettes* alle Ringbälge: 60 bar	90 bar	120 bar
40 - 125	1½ - 5	3,0	ACTO 25			ACTO 25			ACTO 25		
150	6	3,0					ACTO 50			ACTO 50	
200	8	3,0									
250	10	3,0		ACTO 50			ACTO 100			ACTO 100	
300	12	3,0									
350	14	3,0		ACTO 100			ACTO 200			ACTO 200	
400	16	3,0									
450	18	2,5									
500	20	2,5		ACTO 200			ACTO 400			ACTO 400	
550	22	2,0									
600	24	2,5									
650	26	2,0									
700	28	2,0									
750	30	2,0		ACTO 400							
800	32	2,0									
900	36	1,5	ACTO 800			ACTO 1600		ACTO 800	ACTO 1600		ACTO 800
1000	40	1,5									

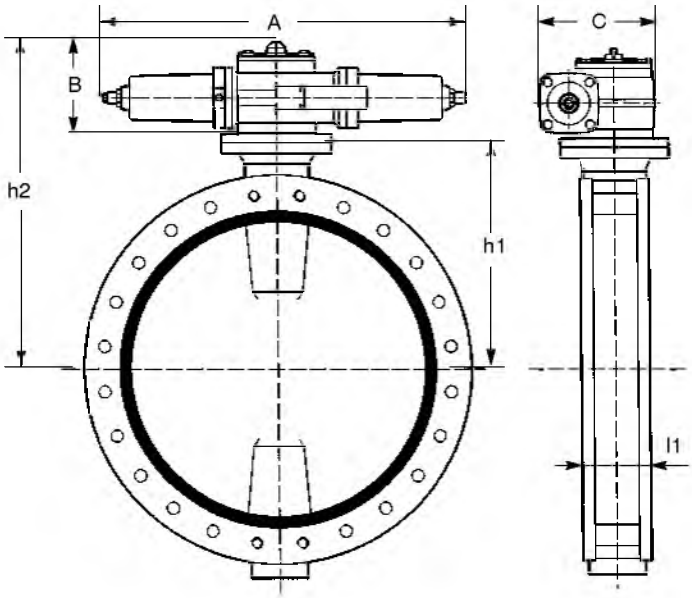
(1) To respect for valve on lubricated medium • *A respecter pour robinet en milieu lubrifié* • Zu beachten bei Absperrklappen in flüssigen Medien.

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

ACTO 25 - 200



ACTO 400 - 1600



ACTO double acting hydraulic actuators
Actionneurs hydrauliques double effet ACTO
Hydraulische Antriebe doppeltwirkend ACTO

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

Control oil pressure: 90 bar • *Pression d'huile moteur : 90 bar* • Steueröldruck: 90 bar

DN	NPS	l1	h1	Type *Type* Typ	A	B	C	h2	Weight* *Poids** Gewicht*
Lubricated medium with XA, XC, XV and K liners ***Milieu lubrifié avec manchettes XA, XC, XV et K*** **Flüssige Medien mit Ringbälgen XA, XC, XV und K**									
40	1 ½	33	105	25	288	104	144	209	13,0
50	2	43	109,5					214	
65	2 ½	46	136					240	
80	3	46	142					246	
100	4	52	163					267	
125	5	56	176,5					281	
150	6	56	194					298	
200	8	60	222					326	
250	10	68	255	50	344	131	168	386	19,5
300	12	78	282					413	
350	14	78	335	100	406	174	202	509	33,5
400	16	102	380					554	
450	18	114	410	200	515	200	253	610	63,0
500	20	127	440					640	
550	22	154	475					675	
600	24	154	495					695	
650	26	165	535	400	994	246	325	781	95,0
700	28	165	560					806	
750	30	190	590					836	
800	32	190	615					861	
900	36	203	665					911	
1000	40	216	735					981	
Lubricated medium except XA, XC, XV and K liners and non lubricated medium ***Milieu lubrifié sauf manchettes XA, XC, XV et K et milieu non lubrifié*** **Flüssige Medien außer Ringbälge XA, XV, K und XC und nicht flüssige Medien**									
40	1 ½	33	105	25	288	104	144	209	13,0
50	2	43	109,5					214	
65	2 ½	46	136					240	
80	3	46	142					246	
100	4	52	163					267	
125	5	56	176,5					281	
150	6	56	194					298	
200	8	60	222	50	344	131	168	353	19,5
250	10	68	255					386	
300	12	78	282	100	406	174	202	456	33,5
350	14	78	335					509	
400	16	102	380	200	515	200	253	580	63,0
450	18	114	410					610	
500	20	127	440					640	
550	22	154	475	400	994	246	325	721	95,0
600	24	154	495					741	
650	26	165	535					781	
700	28	165	560					806	
750	30	190	590					836	
800	32	190	615					861	
900	36	203	665	800	1110	280	403	945	160,0
1000	40	216	735					1015	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux de l'actionneur* • Gewichte gelten nur für den Antrieb

DYNACTO spring return hydraulic actuators
Actionneurs hydrauliques simple effet DYNACTO
Hydraulische Antriebe einfachwirkend DYNACTO

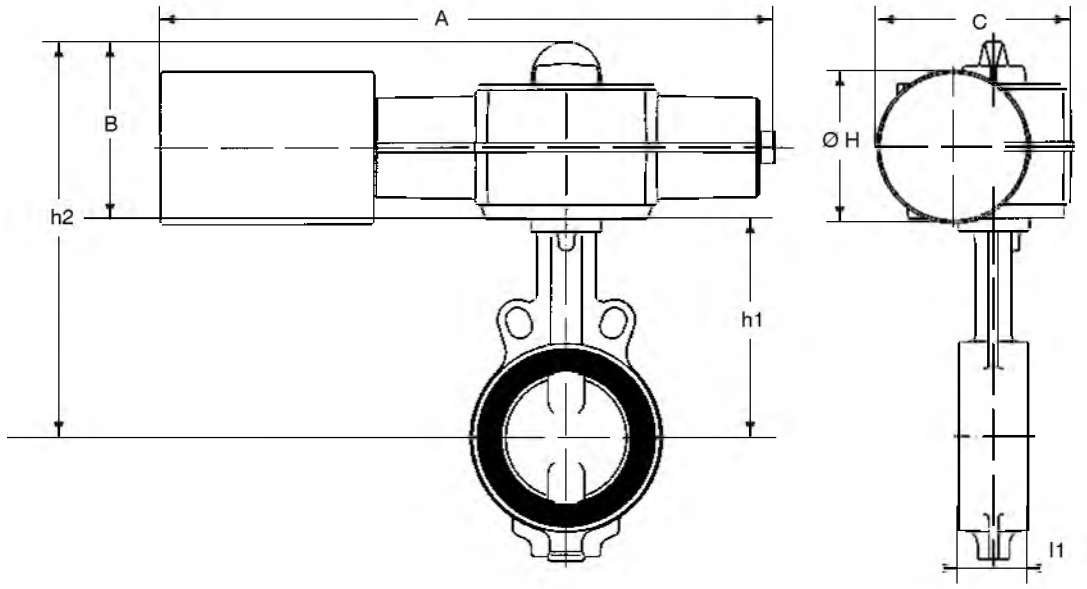
DN	NPS	(1) (m/s)	Lubricated medium *Milieu lubrifié* Flüssige Medien — Liners *Manchettes* Ringbälge XA, XC, XV & K — Control oil pressure *Pression d'huile moteur* Steueröldruck 60 bar	90 bar	120 bar	Lubricated medium — Other liners *Autres manchettes* Andere Ringbälge — 60 bar	90 bar	120 bar	Non lubricated medium *Milieu non lubrifié* Nicht flüssige Medien — All liners *Toutes manchettes* alle Ringbälge — 60 bar	90 bar	120 bar
40 - 80	1½ - 3	3,0	DYN 12			DYN 12			DYN 12		
100	4	3,0	DYN 25							DYN 25	
125	5	3,0					DYN 25				
150	6	3,0	DYN 50	DYN 25						DYN 50	
200	8	3,0					DYN 50				
250	10	3,0				DYN 100			DYN 100		
300	12	3,0			DYN 50	DYN 200			DYN 200		
350	14	3,0		DYN 100				DYN 100			DYN 100
400	16	3,0				DYN 400			DYN 400		
450	18	2,5						DYN 200			DYN 200
500	20	2,5	DYN 400	DYN 200							
550	22	2,0						DYN 400			DYN 400
600	24	2,5									
650	26	2,0		DYN 400							
700	28	2,0									
750	30	2,0									
800	32	2,0									
900	36	1,5									
1000	40	1,5									

(1) To respect for valve on lubricated medium • *A respecter pour robinet en milieu lubrifié* • Zu beachten bei Absperrklappen in flüssigen Medien.

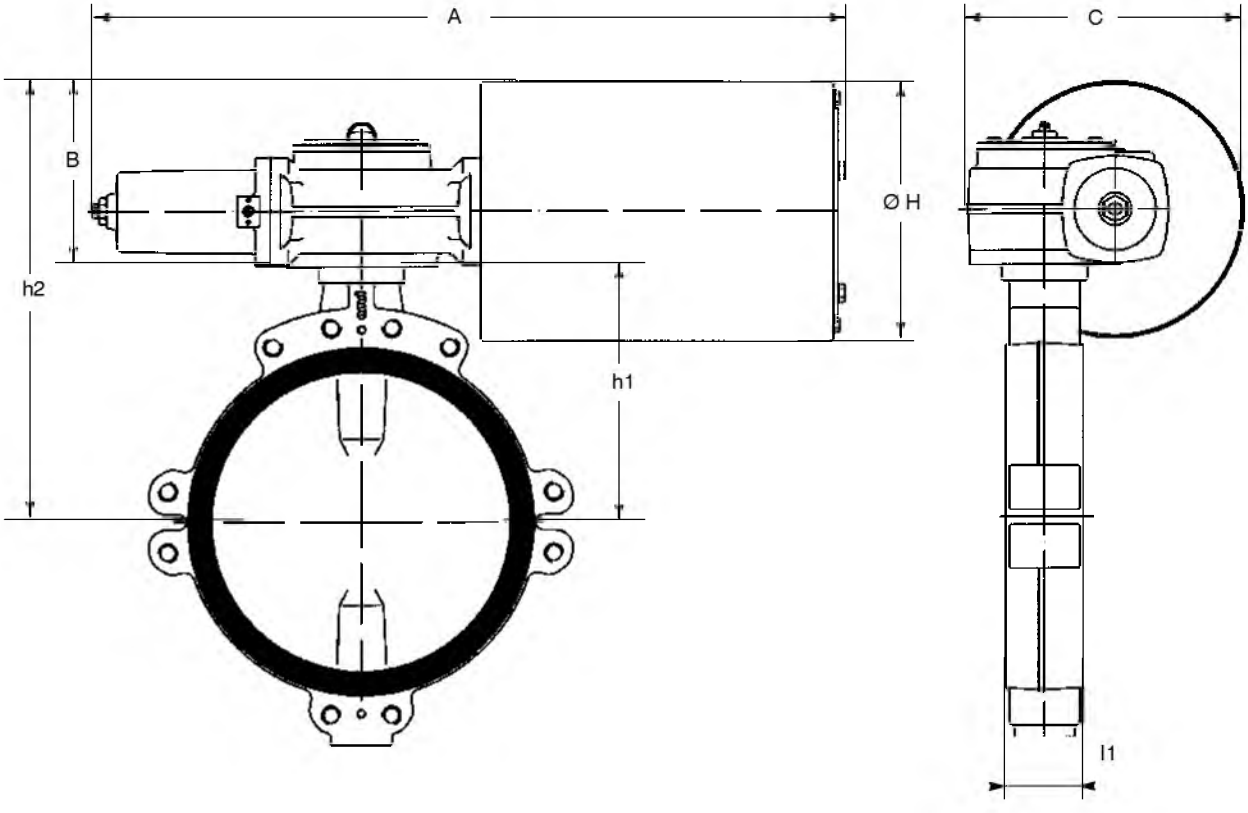
DYNACTO spring return hydraulic actuators
Actionneurs hydrauliques simple effet DYNACTO
Hydraulische Antriebe einfachwirkend DYNACTO

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DYNACTO 12 - 100



DYNACTO 200 & 400



DYNACTO spring return hydraulic actuators
Actionneurs hydrauliques simple effet DYNACTO
Hydraulische Antriebe einfachwirkend DYNACTO

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

Control oil pressure: 90 bar • *Pression d'huile moteur : 90 bar* • Steueröldruck: 90 bar

DN	NPS	l1	h1	Type *Type* Typ	A	B	C	Ø H	h2	Weight* *Poids** Gewicht*
Lubricated medium with XA, XC, XV and K liners *Milieu lubrifié avec manchettes XA, XC, XV et K* Flüssige Medien mit Ringbälgen XA, XC, XV und K										
40	1 ½	33	105	12	585	121	138	95	226	19,0
50	2	43	109						230	
65	2 ½	46	136						257	
80	3	46	142						263	
100	4	52	163						284	
125	5	56	177						298	
150	6	56	194	25	655	151	171	127	345	29,0
200	8	60	222						373	
250	10	68	255	50	726	187	217	169	442	55,0
300	12	78	282	100	932	220	275	219	502	103,0
350	14	78	335						555	
400	16	102	380						600	
450	18	114	410	200	1 247	298	443	406	708	240,0
500	20	127	440						738	
550	22	154	475						773	
600	24	154	495						793	
650	26	165	535	400	1 452	363	549	508	898	515,0
700	28	165	560						923	
750	30	190	590						953	
800	32	190	615						978	
Lubricated medium except XA, XC, XV and K liners and non lubricated medium *Milieu lubrifié sauf manchettes XA, XC, XV et K et milieu non lubrifié* Flüssige Medien außer Ringbälge XA, XV, K und XC und nicht flüssige Medien										
40	1 ½	33	105	12	585	121	138	95	226	19,0
50	2	43	109						230	
65	2 ½	46	136						257	
80	3	46	142						263	
100	4	52	163						284	
125	5	56	177	25	655	151	171	127	328	29,0
150	6	56	194						345	
200	8	60	222	50	726	187	217	169	409	55,0
250	10	68	255						442	
300	12	78	282	100	932	220	275	219	502	103,0
350	14	78	335						555	
400	16	102	380	200	1 247	298	443	406	678	240,0
450	18	114	410						708	
500	20	127	440						738	
550	22	154	475	400	1 452	363	549	508	838	515,0
600	24	154	495						858	
650	26	165	535						898	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux de l'actionneur* • Gewichte gelten nur für den Antrieb

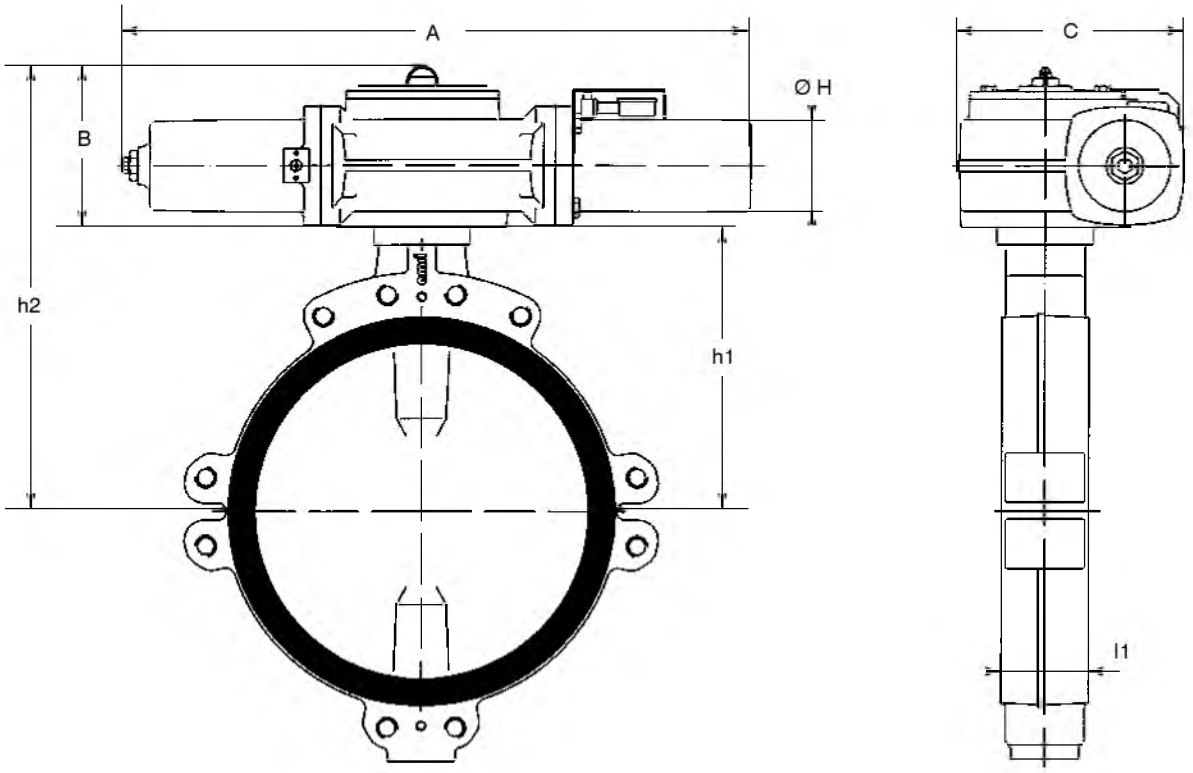
ENNACTO single acting hydraulic actuators
Actionneurs hydrauliques simple effet ENNACTO
Hydraulische Antriebe einfachwirkend ENNACTO

DN	NPS	(1) (m/s)	Lubricated medium *Milieu lubrifié* Flüssige Medien — Liners *Manchettes* Ringbälge XA, XC, XV & K — Control oil pressure *Pression d'huile moteur* Steueröldruck: 60 bar	90 bar	120 bar	Lubricated medium — Other liners *Autres manchettes* Andere Ringbälge: 60 bar	90 bar	120 bar	Non lubricated medium *Milieu non lubrifié* Nicht flüssige Medien — All liners *Toutes manchettes* alle Ringbälge: 60 bar	90 bar	120 bar
300	12	3,0									
350	14	3,0									
400	16	3,0									
450	18	2,5					ENNACTO 200			ENNACTO 200	
500	20	2,5	ENNACTO 200								
550	22	2,0									
600	24	2,5									
650	26	2,0					ENNACTO 400			ENNACTO 400	
700	28	2,0				ENNACTO 800			ENNACTO 800		
750	30	2,0	ENNACTO 400								
800	32	2,0									
900	36	1,5	ENNACTO 800			(2)			(2)		
1000	40	1,5									

(1) To respect for valve on lubricated medium • *A respecter pour robinet en milieu lubrifié* • Zu beachten bei Absperrklappen in flüssigen Medien.
(2) ENNACTO 1600

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

ENNACTO 200 - 1600



ENNACTO single acting hydraulic actuators
Actionneurs hydrauliques simple effet ENNACTO
Hydraulische Antriebe einfachwirkend ENNACTO

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

Control oil pressure: 90 bar • *Pression d'huile moteur : 90 bar* • Steueröldruck: 90 bar

DN	NPS	l1	h1	Type *Type* Typ	A	B	C	Ø H	h2	Weight* *Poids** Gewicht*
Lubricated medium with XA, XC, XV and K liners *Milieu lubrifié avec manchettes XA, XC, XV et K* Flüssige Medien mit Ringbälgen XA, XC, XV und K										
450	18	114	410	200	970	246	325	125	656	105,0
500	20	127	440						686	
550	22	154	475						721	
600	24	154	495						741	
650	26	165	535						781	
700	28	165	560	400	1 106	280	403	162	840	170,0
750	30	190	590						870	
800	32	190	615						895	
900	36	203	665						945	
1000	40	216	735	800	1 123	330	500	162	1 065	340,0
Lubricated medium except XA, XC, XV and K liners and non lubricated medium *Milieu lubrifié sauf manchettes XA, XC, XV et K et milieu non lubrifié* Flüssige Medien außer Ringbälge XA, XV, K und XC und nicht flüssige Medien										
400	16	102	380	200	970	246	325	125	626	105,0
450	18	114	410						656	
500	20	127	440						686	
550	22	154	475						721	
600	24	154	495	400	1 106	280	403	162	775	170,0
650	26	165	535						815	
700	28	165	560						840	
750	30	190	590						870	
800	32	190	615						895	
900	36	203	665	800	1 123	330	500	162	995	340,0
1000	40	216	735						1 065	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux de l'actionneur* • Gewichte gelten nur für den Antrieb

TRIODIS 300

Triple offset valve with metallic seat for High performance

Class 300:
6" to 36" (DN 150 to 900)

Design in accordance with EN 12516 and ASME B16-34

Applications

- LNG process / All liquefied gases.
- Oil and gas, chemicals, petrochemicals, nuclear industry.
- Compressed gas, Hydrocarbon.

Working conditions

- Temperature :
  MT versions: from -46 °C min. up to +260 °C max.
  TBT versions: from -196 °C min. up to +200 °C max.
- Allowable pressure (PS): depends on the body material and the working temperature, see page 2.
- Operating under ΔP = PS
- Vacuum service down to 0 absolute bar.
- Maximum fluid velocity under allowable pressure:
  4 m/s for liquids and 50 m/s for clean gases.
- Lower neck extension seal for valve positionned at an angle +/- 20 °C for vertical position.

Materials

See page 2.

Design

- Full-lug type body with raised faces (Type 4): DN 6" to 24"
- Flanged type body (Type 7): 6" to 36"
- Face-to-face according to:
  Cl. 300 Type 4 -> API 609-B(A) cl. 300,
  Cl. 300 Type 7 -> ISO 5752 serie 13, EN 558.1 serie 13.
- Marking in accordance with EN 19 standard.
- Steel body: paint grey colour, internal thickness 30 µm,
  Stainless steel body: pickling and passivation.

CE

- The valves meet the safety requirements of the Pressure Equipments Directive 97/23/EC (PED) Appendix I for fluids of the groups 1 and 2.
- Fire-safe in accordance with ISO 10497.
- Zero leakage, bi-directionnal.
- The valves meet the requirements of EN ISO15848-1 rate B CO3 and are in accordance with TA-Luft (VDI Guideline 2440).
- The valves are SIL 3 capable in accordance with IEC 61508.

Connections

- PN 40 according to EN 1092-1 (DN 6" to 24"),
- ASME B16-5 cl. 300 UN/UNC (DN 6" to 24"),
- ASME B16-47 serie A class 300 (DN 28" to 36"),
- ASME B16-47 serie B class 300 (DN 28" to 36").

Standard variants

- Pneumatic actuator ACTAIR / DYNACTAIR
- Manual actuator MR
- Hydraulic actuator ACTO / DYNACTO
- Multi turn electric actuator ACTELEC

Options

- Bottom with purge plug
- ATEX version in accordance with 94/9/EC directive
- NACE in accordance with MR0175 / ISO15156

Data to be supplied when ordering

- TRIODIS valve in accordance with type series booklet 8613.1783-EN.
- Size + Type.
- Materials (body, disc, seat).
- Working conditions: nature of fluid, pressure, flow, temperature.
- Connection.
- Flange facing finish and type of contact faces.
- Actuation.

Materials

MT Version

Body	KSB code
Steel ASTM A 216 gr. WCC and EN 10213 1.0619 + stellite	1
Steel ASTM A 216 gr. WCB + stellite	1p
Steel ASTM A 352 gr. LCB + stellite	1n
Steel ASTM A 352 gr. LCC and EN 10213 1.6220 + stellite	1m
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408 + stellite	6
Extension	**KSB code**
Steel ASTM A 216 gr. WCC and EN 10213 1.0619	1
Steel ASTM A 216 gr. WCB	1p
Steel ASTM A 352 gr. LCB	1n
Steel ASTM A 352 gr. LCC and EN 10213 1.6220	1m
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408	6
Shaft	**KSB code**
Stainless steel AISI 431 and EN 10272 1.4057 (from 0 °C min. up to +260 °C)	6h
Stainless steel ASTM A 564 gr. 630 and EN 10088-3 1.4542 (from -50 °C min. up to + 260 °C)	6e
Disc	**KSB code**
Steel ASTM A 216 gr. WCC and EN 10213 1.0619	1
Steel ASTM A 216 gr. WCB	1p
Steel ASTM A 352 gr. LCB	1n
Steel ASTM A 352 gr. LCC and EN 10213 1.6220	1m
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408	6
Seat	**KSB code**
Stainless steel Duplex	7e
Stainless steel Duplex + graphite	7f

Other materials, consult us.

TBT Version

Body	KSB code
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408 + stellite	6
Extension	**KSB code**
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408	6
Shaft	**KSB code**
Stainless steel ASTM A 479 gr. XM19	6r
Stainless steel ASTM A 479gr. 316L EN 10213 1.4404 (for reduced working pressure)	6
Stainless steel ASTM A 638 gr. 660 (for exceptional working conditions)	6f
Disc	**KSB code**
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408	6
Seat	**KSB code**
Stainless steel Duplex	7e
Austenitic Stainless steel XM19	6r
Nickel Alloy UNS N06625	8j

Other materials, consult us.

Pressure / Temperature

In pressure class 300 (european materials), TRIODIS 300 valves are in accordance with EN 12516-1 standard and ASME B 16-34.
The values in the table below must be used for valves which have to comply with PED 97/23/CE:

Material	Working pressure in bar at temperature °C									
Body + extension	-196	-46	-29	-10	50	100	150	200	250	260
ASTM A 216 gr. WCC / EN10213 1.0619	Forbidden	Forbidden	51,7*	51,7	51,7	51,5	50,2	48,6	46,3	45,6
ASTM A 216 gr. WCB	Forbidden	Forbidden	51,1*	51,1	50,1	46,4	45,1	43,8	41,7	41,1
ASTM A 352 gr. LCB	Forbidden	47,9*	47,9*	47,9	47,3	45,1	43,9	42,5	40,6	40
ASTM A 352 gr. LCC / EN10213 1.6220	Forbidden	51,7*	51,7*	51,7	51,7	51,5	50,2	48,6	46,3	45,6
ASTM A 351 gr. CF8M / EN10213 1.4408	49,6	49,6	49,6	49,6	48,1	42,2	38,5	35,7	33,4	33

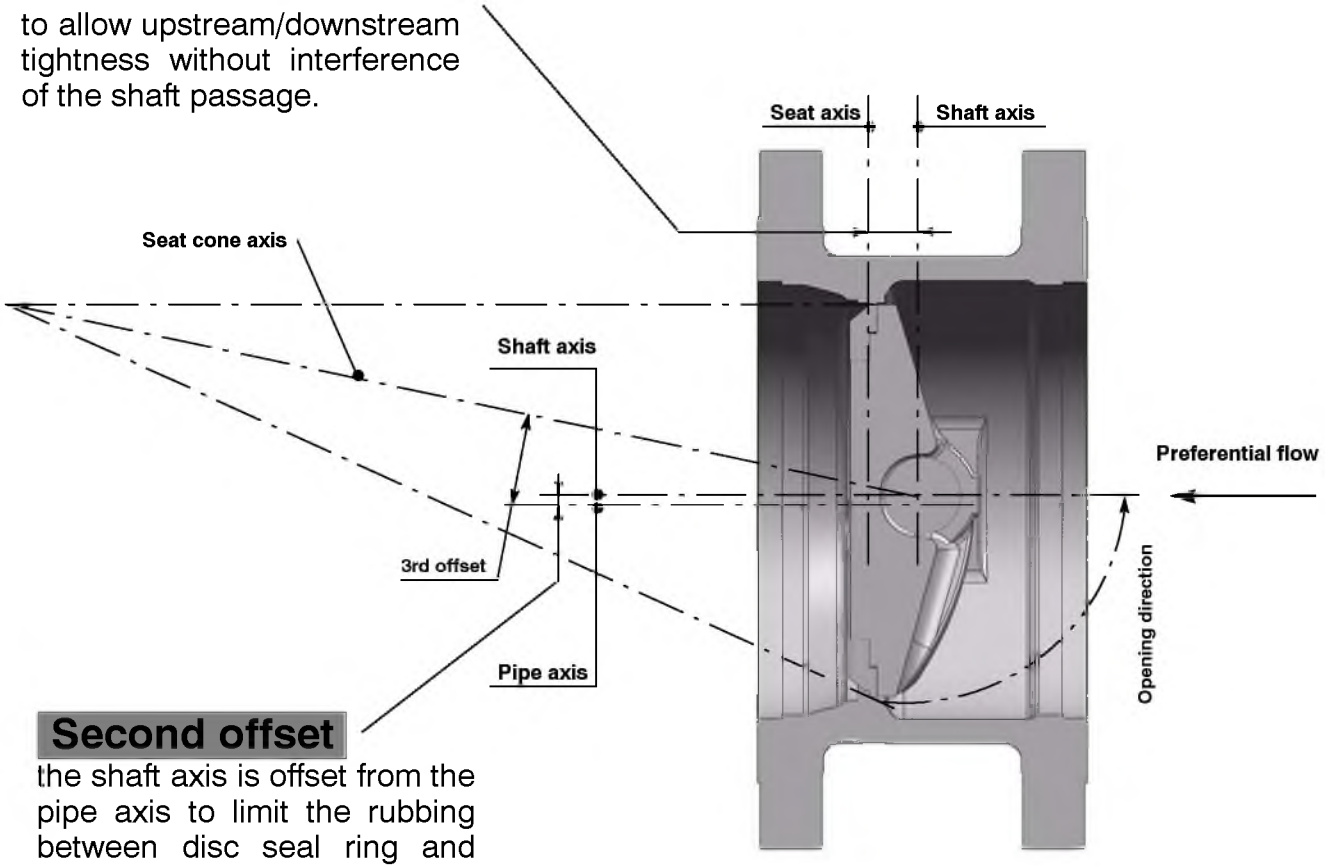
* Only according to ASME B16-34

Hydraulic characteristics

DN	NPS	Flow coefficient in full open position		Zeta
		Kv_0	Cv_0	
150	6	601	697	2,24
200	8	1131	1312	2,00
250	10	1948	2260	1,64
300	12	2778	3222	1,68
350	14	4130	4791	1,40
400	16	5192	6023	1,52
450	18	7745	8984	1,09
500	20	10410	12076	0,92
600	24	16138	18720	0,79
700	28	18489	21448	1,12
750	30	22370	25950	1,01
800	32	25432	29501	1,01
900	36	31555	36603	1,05

First offset

the seal is offset from shaft axis to allow upstream/downstream tightness without interference of the shaft passage.

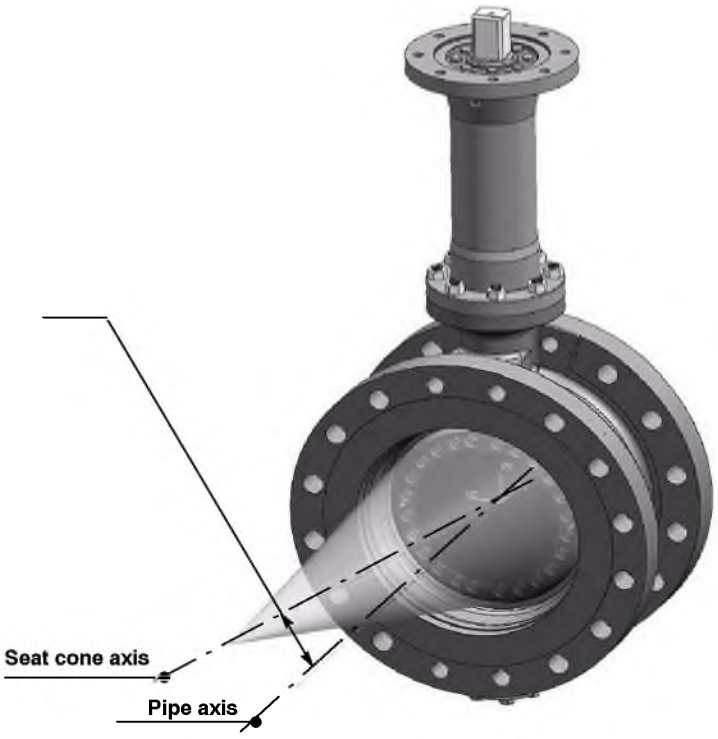


Second offset

the shaft axis is offset from the pipe axis to limit the rubbing between disc seal ring and body seat

Third offset

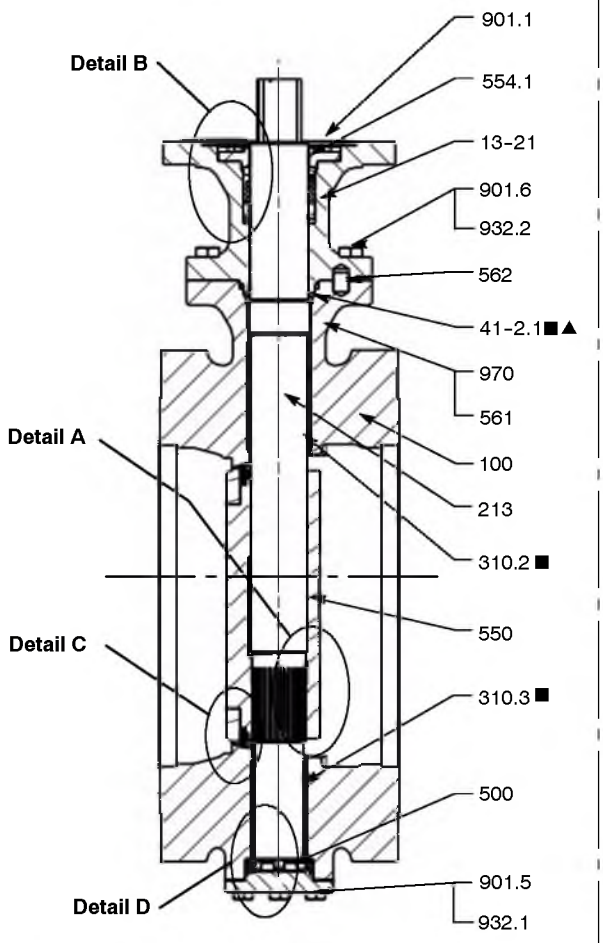
the seat cone axis is inclined of a specific angle from pipe axis:
- to provide the perfect matching of the sealing conical surfaces so that the valve is bubble tighten at high pressure levels,
- to eliminate rubbing during the operating of the valve in order to guarantee a long service life.



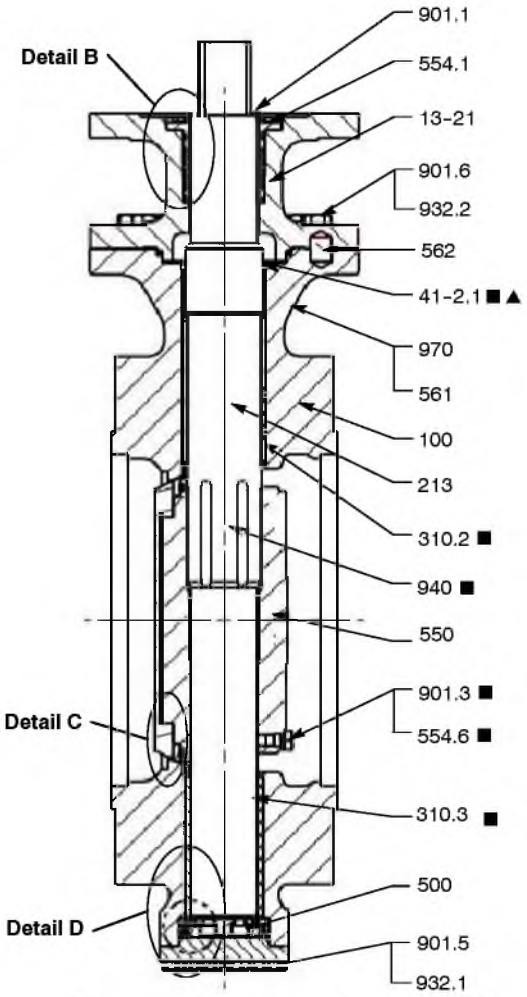
Construction

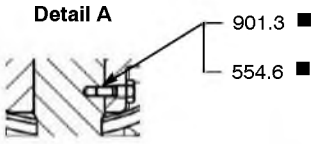
MT version (Type 7 represented)

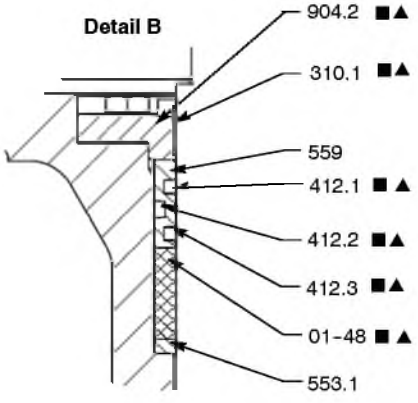
Disc drive with splines
DN ≤ 16”

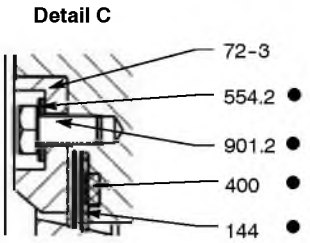


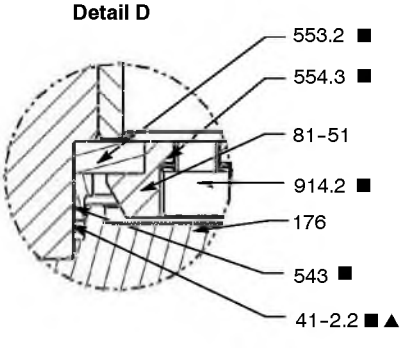
Disc drive with cylindrical keys
DN 18” to DN 36”











● Spare parts kit for seat
■ Spare parts kit for bearing
▲ Spare parts kit for shaft sealing

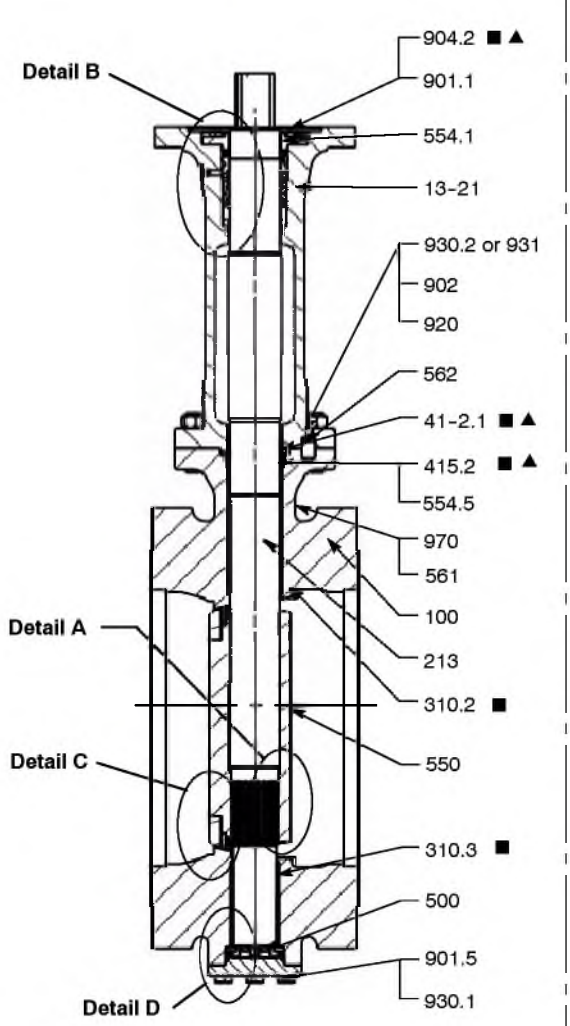
Parts list for MT version

Item	Designation	Materials
01-48	Sealing packing	Expanded graphite
100	Body	See page 2
13-21	Extension	See page 2
144	Seat	See page 2
176	Bottom	A516 gr 70 or Stainless Steel 316L
213	Shaft	See page 2
310.1	Self lubricatting strip	Stainless steel + PTFE
310.2	Upper bearing	Stainless steel 316L hard faced or Stainless steel + PTFE
310.3	Lower bearing	Stainless steel 316L hard faced or Stainless steel + PTFE
400	Static gasket	Stainless steel 316L + graphite or expanded graphite
41-2.1	Extension static joint	Expanded graphite
41-2.2	Bottom static joint	Expanded graphite
412.1	O-Ring	VITON ®
412.2	O-Ring	VITON ®
412.3	O-Ring	VITON ®
500	Anti static device	EN 10213 1.4310
543	Spacer bush	Stainless steel 316L
550	Disc	See page 2
553.1	Upper thrust insert	Stainless steel 316L
553.2	Thrust insert	Stainless steel 316L hard faced
554.1	Upper washer	Stainless steel 316L or EN 10025 S235
554.2	Nord Lock® washer	Stainless steel 316
554.3	Nord Lock® washer	Stainless steel 316
554.6	Nord Lock® washer	Stainless steel 316L
559	Gasket holder	Stainless steel 316L or EN 10025 S235
561	Grooved nail	EN 10213 1.4303
562	Pin	A638 gr. 660
72-3	Tightening flange	EN 10025 S355 or EN 10088-2 1.4462
81-51	Tightening part	Stainless steel 316L
901.1	Hexagon screw	Steel Cl. 8-8 or Stainless steel A4-70
901.2	Hexagon screw	Steel Cl. 8-8 or Stainless steel A4-80
901.3	Liaison screw	Stainless steel A4-70
901.5	Hexagon screw	Stainless steel A4-70
901.6	Hexagon screw	Stainless steel A4-70
904.2	Socket screw	Stainless steel A4-70
914.2	Hexagon socket head cap screw	Stainless steel A4-70
932.1	Lock washer	Stainless steel 316L
932.2	Lock washer	Stainless steel 316L
940	Cylindrical key	A638 GR 660 (for DN > 12")
970	Identity plate	Stainless steel 316 or equivalent

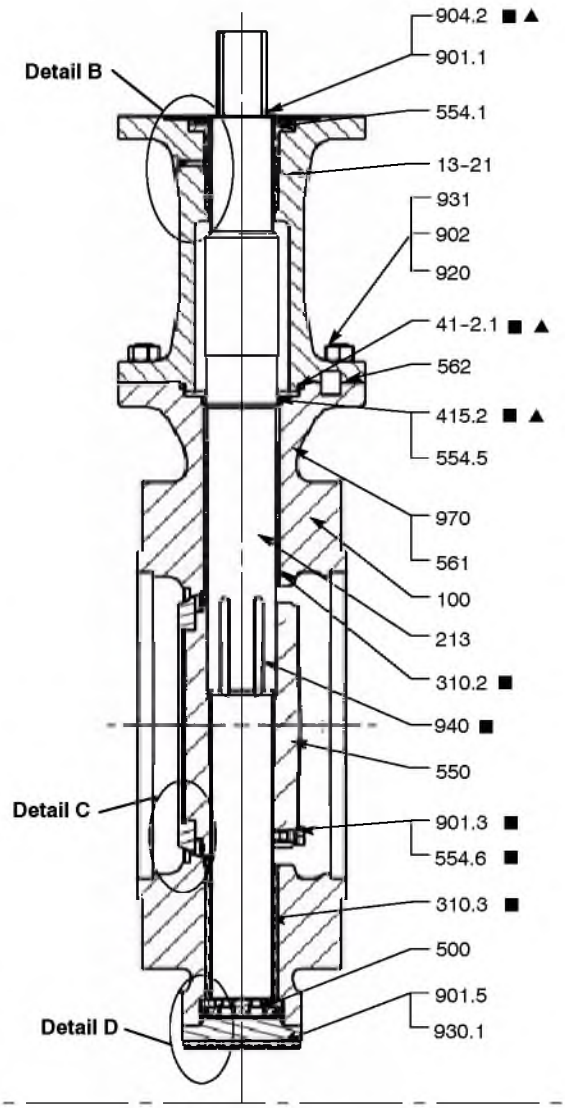
Construction

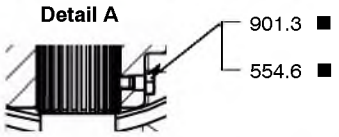
TBT version (Type 7 represented)

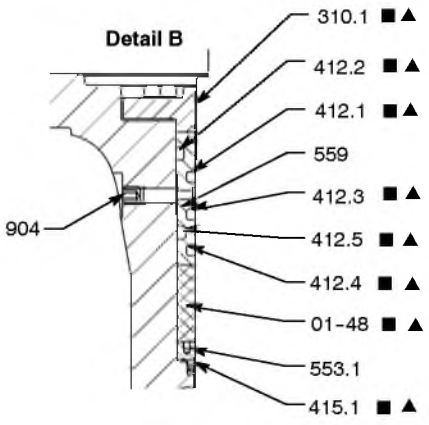
Disc drive with splines
DN ≤ 16”

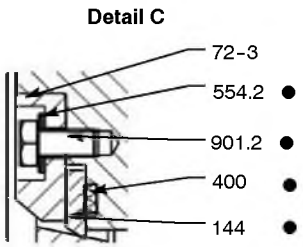


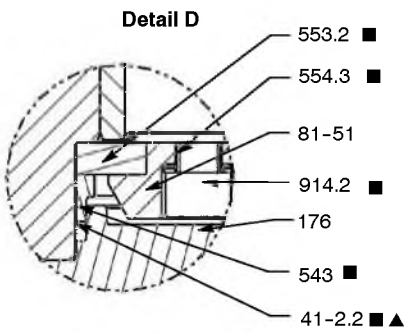
Disc drive with cylindrical keys
DN 18” to DN 36”











● Spare parts kit for seat
■ Spare parts kit for bearing
▲ Spare parts kit for shaft sealing

Parts list for TBT version

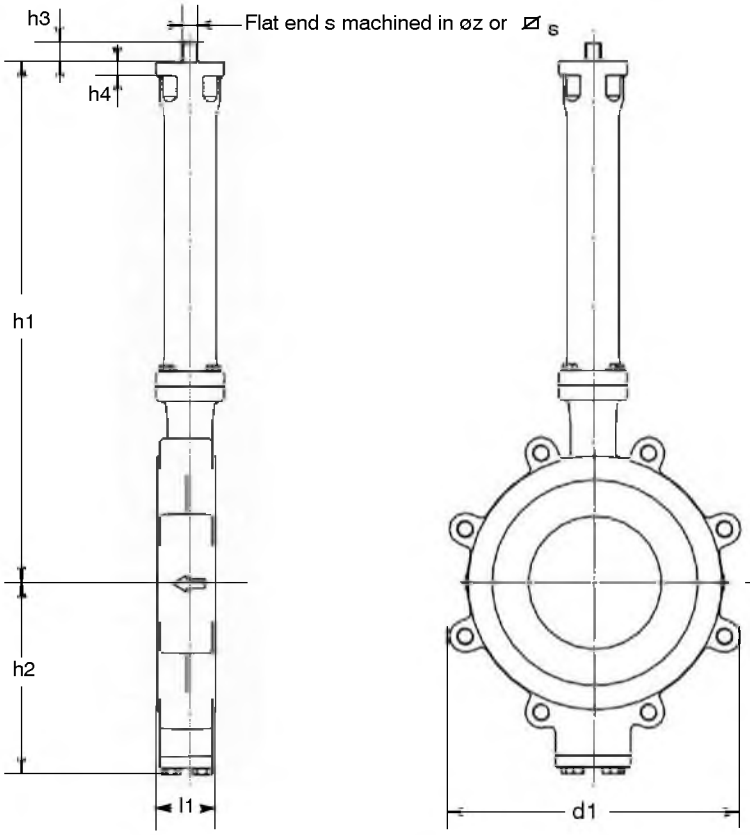
Item	Designation	Materials
01-48	Sealing packing	Expanded graphite
100	Body	See page 2
13-21	Extension	See page 2
144	Seat	See page 2
176	Bottom	Stainless steel 316L
213	Shaft	See page 2
310.1	Self lubricatting strip	Stainless steel + PTFE
310.2	Upper bearing	Stainless steel 316L hard faced or Stainless steel + PTFE
310.3	Lower bearing	Stainless steel 316L hard faced or Stainless steel + PTFE
400	Static gasket	Stainless steel 316L+ graphite or expanded graphite
41-2.1	Extension static joint	Expanded graphite
41-2.2	Bottom static joint	Expanded graphite
412.1	O-Ring	HC Nitrile(*)
412.2	O-Ring	HC Nitrile(*)
412.3	O-Ring	HC Nitrile(*)
412.4	O-Ring	HC Nitrile(*)
412.5	O-Ring	HC Nitrile(*)
415.1	Lip Seal Ring	PTFE + ELGILOY
415.2	Lip Seal Ring	PTFE + ELGILOY (Option)
500	Anti static device	EN 10213 1.4310
543	Spacer bush	Stainless steel 316L
550	Disc	See page 2
553.1	Upper thrust insert	Stainless steel 316L
553.2	Thrust insert	Stainless steel 316L hard faced
554.1	Upper washer	Stainless steel 316L
554.2	Nord Lock® washer	Stainless steel 316
554.3	Nord Lock® washer	Stainless steel 316
554.5	Spacer	Stainless steel 316L (Option)
554.6	Nord Lock® washer	Stainless steel 316L
559	Gasket holder	Stainless steel 316L
561	Grooved nail	EN 10213 1.4303
562	Pin	A638 gr. 660
72-3	Tightening flange	EN 10088-2 1.4462 or Stainless steel 316L or A479 XM19
81-51	Tightening part	Stainless steel 316L
901.1	Hexagon screw	Stainless steel A4-70
901.2	Hexagon screw	Stainless steel A4-70
901.3	Liaison screw	Stainless steel A4-70
901.5	Hexagon screw	A320 GR. B8M cl.2
902	Stud bolt	A320 GR. B8M cl.2
904	Socket screw	Stainless steel A4-70
904.2	Socket screw	Stainless steel A4-70
914.2	Hexagon socket head cap screw	Stainless steel A4-70
920	Hexagon nut	A 194 GR. 8M
930.1	Lock retainer	Stainless steel 316L
930.2	Nut lock	Stainless steel 316L
931	Lock washer	Stainless steel 316L
940	Cylindrical key	A638 gr 660 (DN > 12")
970	Identity plate	Stainless steel 316 or equivalent

-HC Nitrile: Epichlorohydrin for ambient temperature below minus 25 ° C.

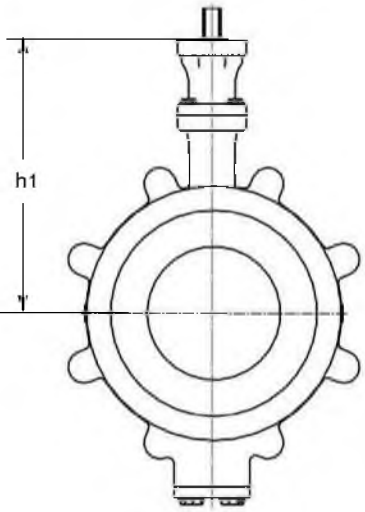
Dimensions

Full-lug type body - Type 4 Class 300

TBT version



MT version



mm

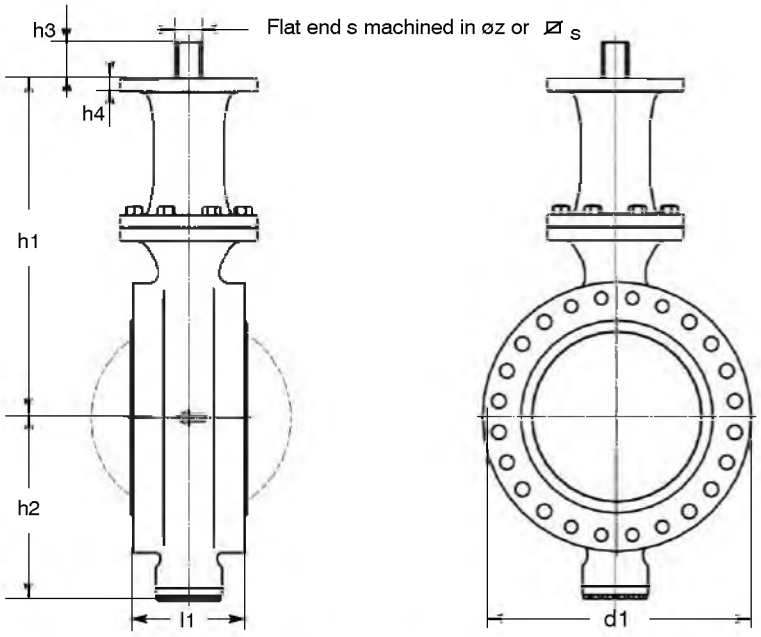
DN*	NPS	d1	l1	MT h1	TBT h1	h2	Mounting plate ISO 5211 n°	Mounting plate ISO 5211 h4	Flat shaft end s	Flat shaft end øz	Flat shaft end h3	Square shaft end ⌑ s	Square shaft end h3	Weight Kg MT	Weight Kg TBT
150	6	300	61	300	565	185	F10	15	22	28	40			21	40
200	8	365	75	345	635	210	F12	18				27	45	54	59
250	10	440	86	410	710	260	F14	23				36	55	75	95
300	12	505	95	480	785	290	F16	27				50	65	120	140
350	14	570	120	520	825	350		27						175	195
400	16	650	135	600	900	385	F25	30				60	80	270	300
450	18	690	152	660	960	430		30						315	350
500	20	745	162	725	1010	465	F30	34				70	105	439	493
600	24	885	184	810	1085	565		34						673	750

* For other diameters, please, consult us.

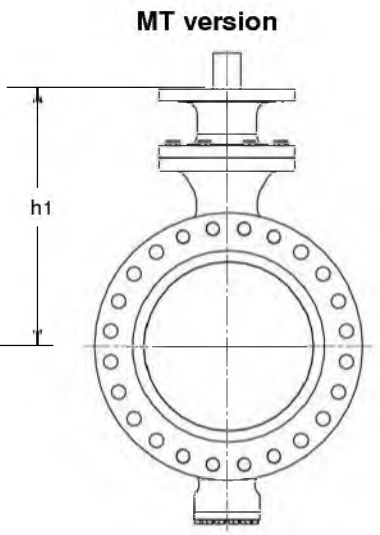
Dimensions

Flanged type body - Type 7 Class 300

TBT version



MT version



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DN*	NPS	d1	l1	h1 MT	h1 TBT	h2	Mounting plate n°	Mounting plate h4	Flat shaft end end s	Flat shaft end end øz	Flat shaft end end h3	Square shaft end ⌀ s	Square shaft end h3	Weight Kg MT	Weight Kg TBT
150	6	320	140	300	565	185	F10	15	22	28	40			50	56
200	8	380	152	345	635	210	F12	18				27	45	92	102
250	10	450	165	410	710	260	F14	23				36	55	120	140
300	12	520	178	480	785	290	F16	27				50	65	180	205
350	14	585	190	520	825	350		27						250	270
400	16	660	216	600	900	385	F25	30				60	80	360	395
450	18	710	222	660	960	430		30						420	455
500	20	775	229	725	1000	465	F30	34				70	105	560	600
600	24	915	267	810	1085	565		34						840	920
ASME B16-47-A															
700	28	1035	292	910	1150	650	F35	38				80	110	1250	1350
750	30	1090	318	970	1210	680								1435	1520
800	32	1150	318	1010	1250	735						90		1650	1800
900	36	1270	330	1130	1380	750	F40	45				110	130	2000	2200
ASME B16-47-B															
700	28	920	292	910	1150	650	F35	38				80	110	1000	1100
750	30	990	318	970	1210	680								1200	1285
800	32	1055	318	1010	1250	735						90		1400	1500
900	36	1170	330	1130	1380	750	F40	45				110	130	1800	1900

* For other diameters, please, consult us.

Connections

The valves can be fitted between flanges according to EN 1092-1 PN 40, ASME B16.5 Cl. 300, ASME B16-47-A and ASME B16-47-B standards (other connections on request).

Full-lug type body - Type 4 - Class 300

DN	NPS	EN 1092-1 PN 40	ASME B16.5 Cl. 300
150	6	✓	✓
200	8	✓	✓
250	10	✓	✓
300	12	✓	✓
350	14	✓	✓
400	16	✓	✓
450	18	✓	✓
500	20	✓	✓
600	24	✓	✓

Flanged type body - Type 7 - Class 300

DN	NPS	EN 1092-1 PN 40	ASME B16.5 Cl. 300	ASME B16-47-A	ASME B16-47-B
150	6	✓	✓		
200	8	✓	✓		
250	10	✓	✓		
300	12	✓	✓		
350	14	✓	✓		
400	16	✓	✓		
450	18	✓	✓		
500	20	✓	✓		
600	24	✓	✓		
700	28			✓	✓
750	30			✓	✓
800	32			✓	✓
900	36			✓	✓

✓ Fitting allowed

Flange facing

	Raised face RF	Flat face FF
Smooth finish	Standard	On request
Stock finish	On request	On request

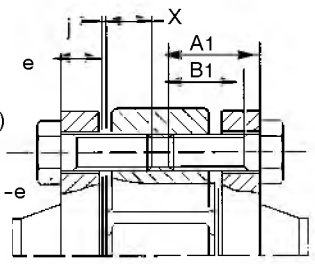
End of line and downstream dismantling

Possible, on request.

Bolting for full-lug type body - Type 4

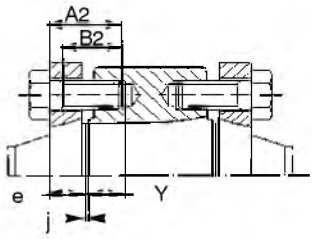
Screw length of the lugs
A1 maxi = e + X + j

e : Flange thickness (customer specification)
X : Max. implantation of the screw
j : Thickness of the flange gasket
B1 : Min. threaded length of the screw B1 > A1-e



Screw length at shaft passages
A2 max. = e + Y + j

e : Flange thickness (customer specification)
Y : Optimal implantation of the screw
j : Thickness of the flange gasket
B2 : Min. threaded length of the screw B2 > A2-e



NB: We do not supply the bolting and flange gasket.

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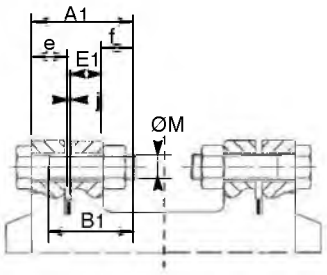
DN	NPS	EN 1092-1 PN 40					ASME B16-5 class 300				
			Screw A1		Screw A2			Screw A1		Screw A2	
		ØM	X	Qty*	Y	Qty*	UN or UNC	X	Qty*	Y	Qty*
150	6	M24	29	8			3/4"	29	12		
200	8	M27	35	12			7/8"	35	12		
250	10	M30	41	12			1"	40	12	20,5	4
300	12	M30	45	12	23	4	1"1/8	45	12	23	4
350	14	M33	53	12	26,5	4	1"1/8	50	16	20	4
400	16	M36	58	12	38,5	4	1"1/4	52	16	29	4
450	18	M36	58	16	32	4	1"1/4	54	20	27,5	4
500	20	M39	64	16	28,5	4	1"1/4	58	20	26	4
600	24	M45	75	16	33,5	4	1"1/2	65	20	30	4

* Quantity of screws by face

Bolting for flanged type body - Type 7

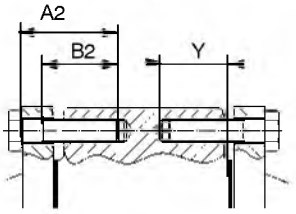
Screw length on flanges
A1 max. = e + j + E1 max. + f

E1 : Thickness of valve flange
e : Flange thickness (customer specification)
f : Overlength of the screw
j : Thickness of flange gasket
B1 : Min. threaded length of the screw B1 > A1 - e



Screw length at shaft passages
A2 max. = e + j + Y

e : Flange thickness (customer specification)
Y : Max. implantation of the screw
j : Thickness of flange gasket
B2 : Min. threaded length of the screw B2 > A2 - e



NB: We do not supply the bolting and flange gasket.

mm

DN	NPS	E1	EN 1092-1 PN 40					ASME B16-5 class 300					ASME B16-47-A					ASME B16-47-B				
				Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2	
			ØM	f	Qty*	Y	Qty*	UN or UNC	f	Qty*	Y	Qty*	UN or UNC	f	Qty*	Y	Qty*	UN or UNC	f	Qty*	Y	Qty*
150	6	36	M24	26	4	30	4	3/4"(1)	22	8	30	4										
200	8	45,5	M27	28	8	35	4	7/8"(1)	25	8	35	4										
250	10	49	M30	31	8	40	4	1"(1)	28	12	40	4										
300	12	54,5	M30	31	12	45	4	1"1/8	32	12	45	4										
350	14	58,5	M33	34	12	45	4	1"1/8	32	16	45	4										
400	16	60,5	M36	39	12	50	4	1"1/4	34	16	50	4										
450	18	67	M36	39	16	52	4	1"1/4	34	20	52	4										
500	20	69	M39	41	16	55	4	1"1/4	34	20	52	4										
600	24	74	M45	45	16	65	4	1"1/2	41	20	65	4										
700	28	84,5											1"5/8	48	20	56	8					
700	28	90																1"1/4	34	28	56	8
750	30	100											1"3/4	54	20	62	8	1"3/8	38	28	62	8
800	32	97											1"7/8	55	20	60	8					
800	32	103																1"1/2	41	24	60	8
900	36	103,5											2"	55	24	48,5	8	1"5/8	48	24	48,5	8

* Quantity of screws by face

(1) Only UNC.

Standard variants

Pneumatic actuator ACTAIR / DYNACTAIR

Manual actuator MR

Hydraulic actuator ACTO / DYNACTO

Notes

TRIODIS 600

Triple offset valve with metallic seat for High performance

Class 600:
8" to 24" (DN 200 to 600)

Design in accordance with EN 12516 and ASME B16-34

Applications

- LNG process / All liquefied gases.
- Oil and gas, chemicals, petrochemicals, nuclear industry.
- Compressed gas, Hydrocarbon.

Working conditions

- Temperature :
  MT versions: from -46 °C min. up to +260 °C max.
  TBT versions: from -196 °C min. up to +200 °C max.
- Allowable pressure (PS): depends on the body material and the working temperature, see page 2.
- Operating under ΔP = PS
- Vacuum service down to 0 absolute bar.
- Maximum fluid velocity under allowable pressure:
  4 m/s for liquids and 50 m/s for clean gases.
- Lower neck extension seal for valve positionned at an angle +/- 20 ° from vertical position.

Materials

See page 2.

Design

- Full-lug type body with raised faces (Type 4): DN 8" to 24"
- Flanged type body (Type 7): 8" to 24"
- Face-to-face according to:
  Cl. 600 Type 4 -> API 609-B (A) cl. 600,
  Cl. 600 Type 7 -> ISO 5752 serie 14, EN 558.1 serie 14, API 609-B (C) cl. 600.
- Marking in accordance with EN 19 standard.
- Steel body: paint grey colour, internal thickness 35 µm,
  Stainless steel body: pickling and passivation.
- The valves meet the safety requirements of the Pressure Equipments Directive 97/23/EC (PED) Appendix I for fluids of the groups 1 and 2.
- Fire-safe in accordance with ISO 10497.
- Zero leakage, bi-directionnal.
- The valves meet the requirements of EN ISO15848-1 rate B CO3 and are in accordance with TA-Luft (VDI Guideline 2440).
- The valves are SIL 3 capable in accordance with IEC 61508.

Connections

- ASME B16-5 cl. 600 UN/UNC,

Standard variants

- Pneumatic actuator ACTAIR / DYNACTAIR
- Manual actuator MR
- Hydraulic actuator ACTO / DYNACTO
- Multi turn electric actuator ACTELEC

Options

- Bottom with purge plug
- ATEX version in accordance with 94/9/EC directive
- NACE in accordance with MR0175 / ISO15156

Data to be supplied when ordering

- TRIODIS valve in accordance with type series booklet 8613.1786-EN.
- Size + Type.
- Materials (body, disc, seat).
- Working conditions: nature of fluid, pressure, flow, temperature.
- Connection.
- Flange facing finish and type of contact faces.
- Actuation.

CE

ami

KSB

Materials

MT Version

Body	KSB code
Steel ASTM A 216 gr. WCC and EN 10213 1.0619 + stellite	1
Steel ASTM A 216 gr. WCB + stellite	1p
Steel ASTM A 352 gr. LCB + stellite	1n
Steel ASTM A 352 gr. LCC and EN 10213 1.6220 + stellite	1m
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408 + stellite	6
Extension	**KSB code**
Steel ASTM A 216 gr. WCC and EN 10213 1.0619	1
Steel ASTM A 216 gr. WCB	1p
Steel ASTM A 352 gr. LCB	1n
Steel ASTM A 352 gr. LCC and EN 10213 1.6220	1m
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408	6
Shaft	**KSB code**
Stainless steel AISI 431 and EN 10272 1.4057 (from 0 °C min. up to +260 °C)	6h
Stainless steel ASTM A 564 gr. 630 and EN 10088-3 1.4542 (from -50 °C min. up to + 260 °C)	6e
Disc	**KSB code**
Steel ASTM A 216 gr. WCC and EN 10213 1.0619	1
Steel ASTM A 216 gr. WCB	1p
Steel ASTM A 352 gr. LCB	1n
Steel ASTM A 352 gr. LCC and EN 10213 1.6220	1m
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408	6
Seat	**KSB code**
Stainless steel Duplex	7e
Stainless steel Duplex + graphite	7f

Other materials, consult us.

TBT Version

Body	KSB code
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408 + stellite	6
Extension	**KSB code**
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408	6
Shaft	**KSB code**
Stainless steel ASTM A 479 gr. XM19	6r
Stainless steel ASTM A 479 gr. 316L or equivalent (for reduced working pressure)	6
Stainless steel ASTM A 638 gr. 660 (for exceptional working conditions)	6f
Disc	**KSB code**
Stainless steel ASTM A 351 gr. CF8M and EN 10213 1.4408	6
Seat	**KSB code**
Stainless steel Duplex	7e
Austenitic Stainless steel XM19	6r
Nickel Alloy UNS N06625	8j

Other materials, consult us.

Pressure / temperature

In pressure class 600 (european materials), TRIODIS 600 valves are in accordance with EN 12516-1 standard and ASME B 16-34.
The values in the table below must be used for valves which have to comply with PED 97/23/CE:

Material	Working pressure in bar at temperature ° C									
Body + extension	-196	-46	-29	-10	50	100	150	200	250	260
ASTM A 216 gr. WCC / EN10213 1.0619	Forbidden	Forbidden	103,4*	103,4	103,4	103	100,3	97,2	92,6	91,2
ASTM A 216 gr. WCB	Forbidden	Forbidden	102,1*	102,1	100,1	92,7	90,2	87,6	83,4	82,2
ASTM A 352 gr. LCB	Forbidden	95,7*	95,7*	95,7	94,6	90,2	87,9	85,1	81,1	79,9
ASTM A 352 gr. LCC / EN10213 1.6220	Forbidden	103,4*	103,4*	103,4	103,4	103	100,3	97,2	92,6	91,2
ASTM A 351 gr. CF8M / EN10213 1.4408	99,3	99,3	99,3	99,3	96,2	84,4	77	71,3	66,8	66

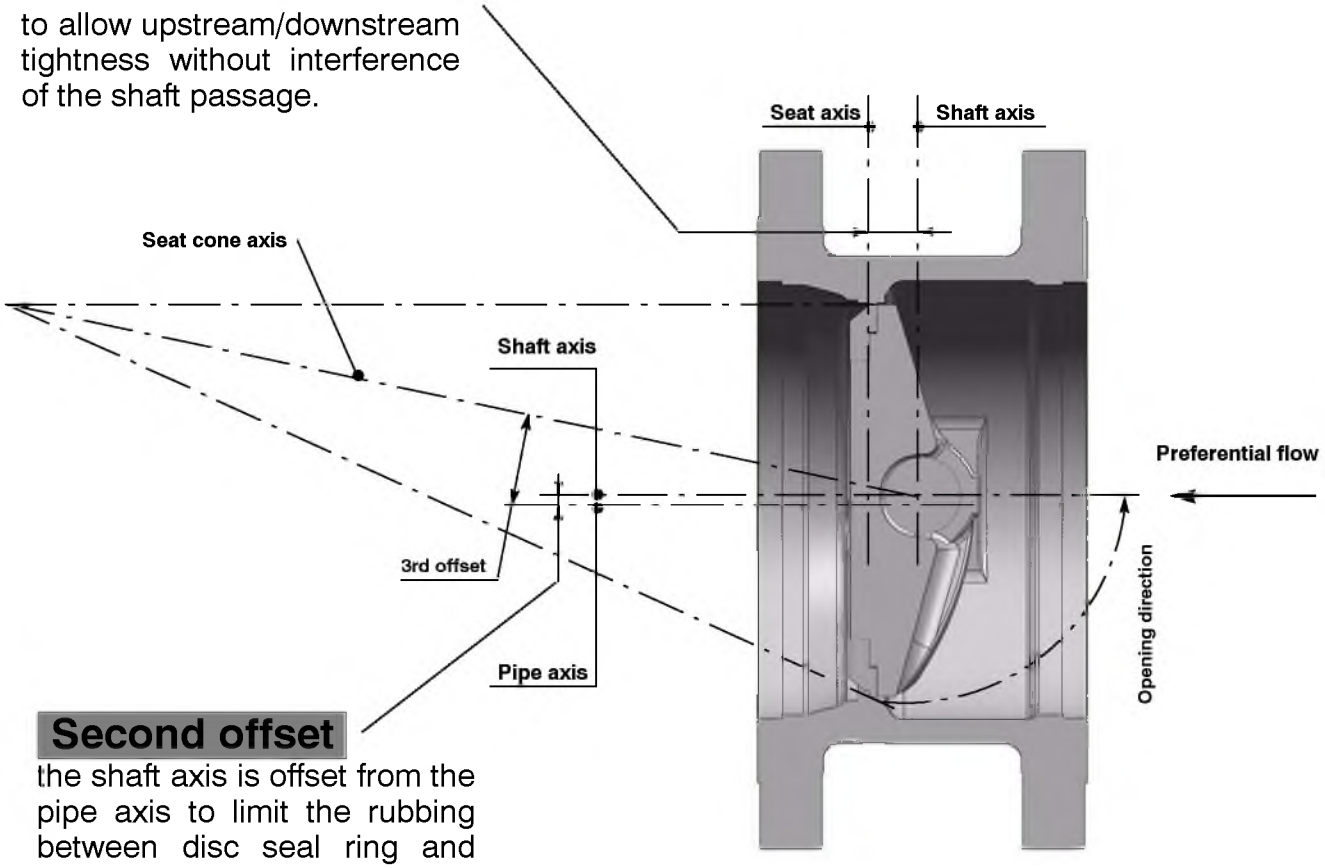
* Only according to ASME B16-34

Hydraulic characteristics

DN	NPS	Flow coefficient in full open position		Zeta
		Kv_0	Cv_0	
200	8	703	815	5,17
250	10	1318	1528	3,59
300	12	2076	2408	3,00
350	14	2719	3154	3,24
400	16	4159	4824	2,36
450	18	5139	5962	2,48
500	20	6765	7848	2,18
600	24	10073	11685	2,04

First offset

the seal is offset from shaft axis to allow upstream/downstream tightness without interference of the shaft passage.

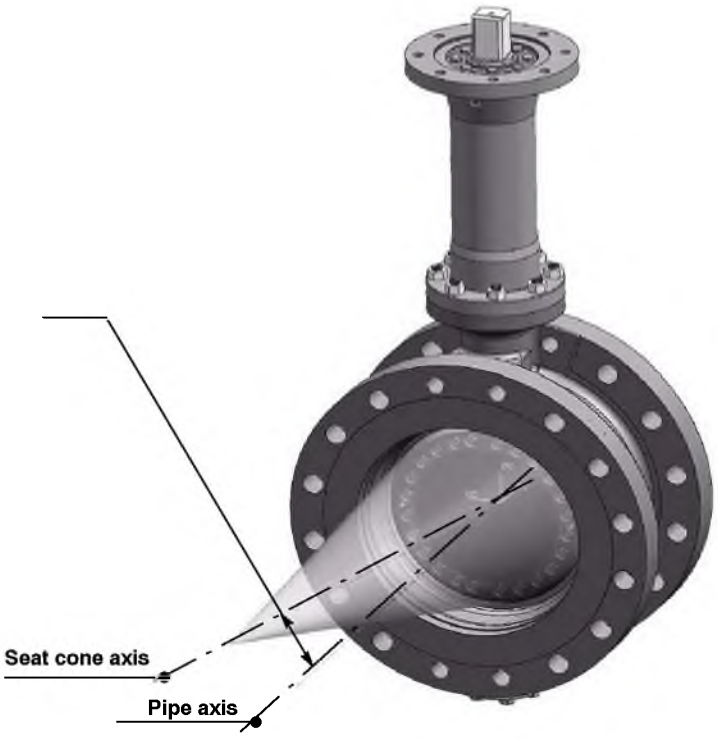


Second offset

the shaft axis is offset from the pipe axis to limit the rubbing between disc seal ring and body seat

Third offset

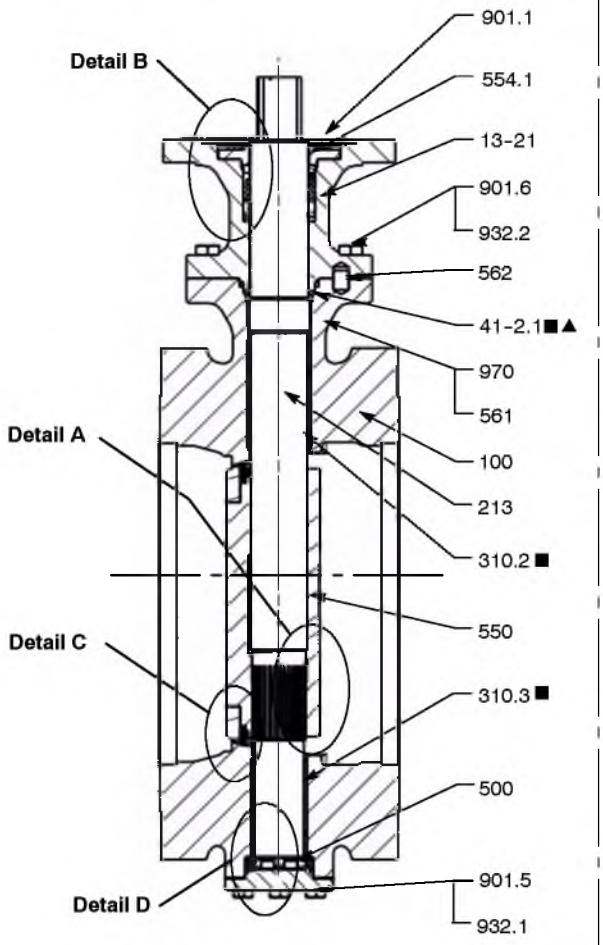
the seat cone axis is inclined of a specific angle from pipe axis:
- to provide the perfect matching of the sealing conical surfaces so that the valve is bubble tighten at high pressure levels,
- to eliminate rubbing during the operating of the valve in order to guarantee a long service life.



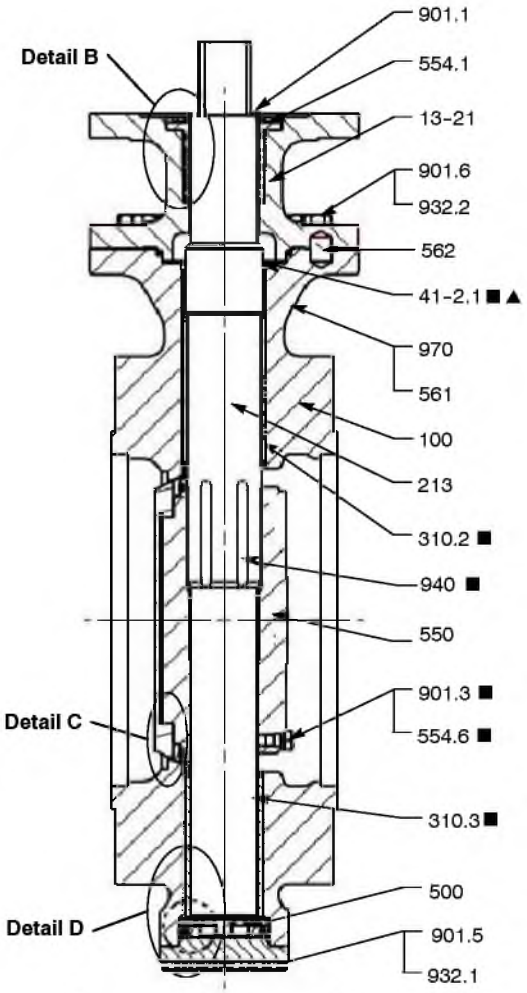
Construction

MT version (Type 7 represented)

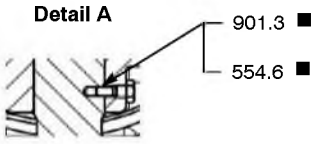
Disc drive with splines
DN 8" and DN 10"



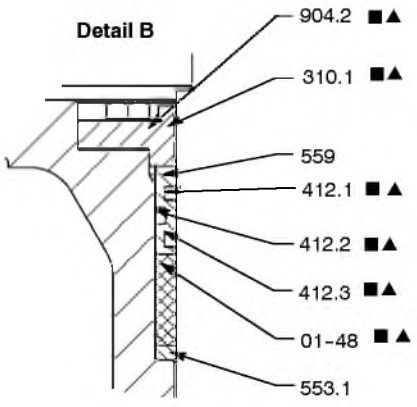
Disc drive with cylindrical keys
DN 12" to DN 24"



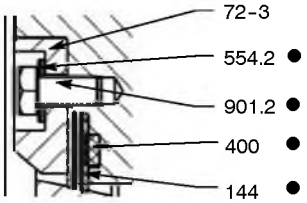
Detail A



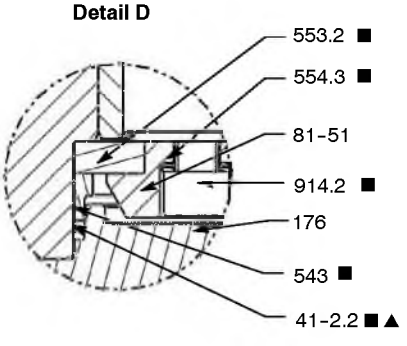
Detail B



Detail C



Detail D



● Spare parts kit for seat
■ Spare parts kit for bearing
▲ Spare parts kit for shaft sealing

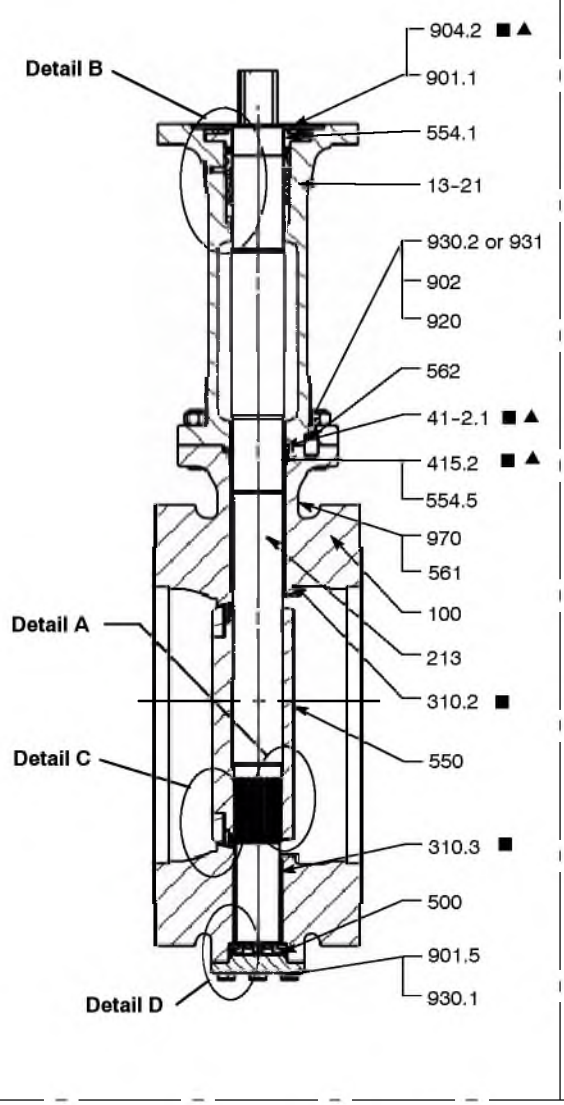
Parts list for MT version

Item	Designation	Materials
01-48	Sealing packing	Expanded graphite
100	Body	See page 2
13-21	Extension	See page 2
144	Seat	See page 2
176	Bottom	Stainless steel 316L or A516 gr 70
213	Shaft	See page 2
310.1	Self lubricatting strip	Stainless steel + PTFE
310.2	Upper bearing	Stainless steel 316L or Stainless steel + PTFE
310.3	Lower bearing	Stainless steel 316L or Stainless steel + PTFE
400	Static gasket	Stainless steel 316L + graphite or expanded graphite
41-2.1	Extension static joint	Expanded graphite
41-2.2	Bottom static joint	Expanded graphite
412.1	O-Ring	VITON ®
412.2	O-Ring	VITON ®
412.3	O-Ring	VITON ®
500	Anti static device	EN 10213 1.4310
543	Spacer bush	Stainless steel 316L
550	Disc	See page 2
553.1	Upper thrust insert	Stainless steel 316L
553.2	Thrust insert	Stainless steel 316L hard faced
554.1	Upper washer	Stainless steel 316L or EN 10025 S235
554.2	Nord Lock® washer	Stainless steel 316
554.3	Nord Lock® washer	Stainless steel 316
554.6	Nord Lock® washer	Stainless steel 316L
559	Gasket holder	Stainless steel 316L or EN 10025 S235
561	Grooved nail	EN 10213 1.4303
562	Pin	A638 gr. 660
72-3	Tightening flange	EN 10025 S235 or EN 10088-2 1.4462
81-51	Tightening part	Stainless steel 316L
901.1	Hexagon screw	Steel Cl. 8-8 or Stainless steel A4-70
901.2	Hexagon screw	Steel Cl. 8-8 or Stainless steel A4-80
901.3	Liaison screw	Stainless steel A4-70
901.5	Hexagon screw	Stainless steel A4-70
901.6	Hexagon screw	Stainless steel A4-70
904	Socket screw	Stainless steel A4-70
904.2	Socket screw	Stainless steel A4-70
914.2	Hexagon socket head cap screw	Stainless steel A4-70
932.1	Lock washer	Stainless steel 316L
932.2	Lock washer	Stainless steel 316L
940	Cylindrical key	A638 GR 660 (for DN > 10")
970	Identity plate	Stainless steel 316 or equivalent

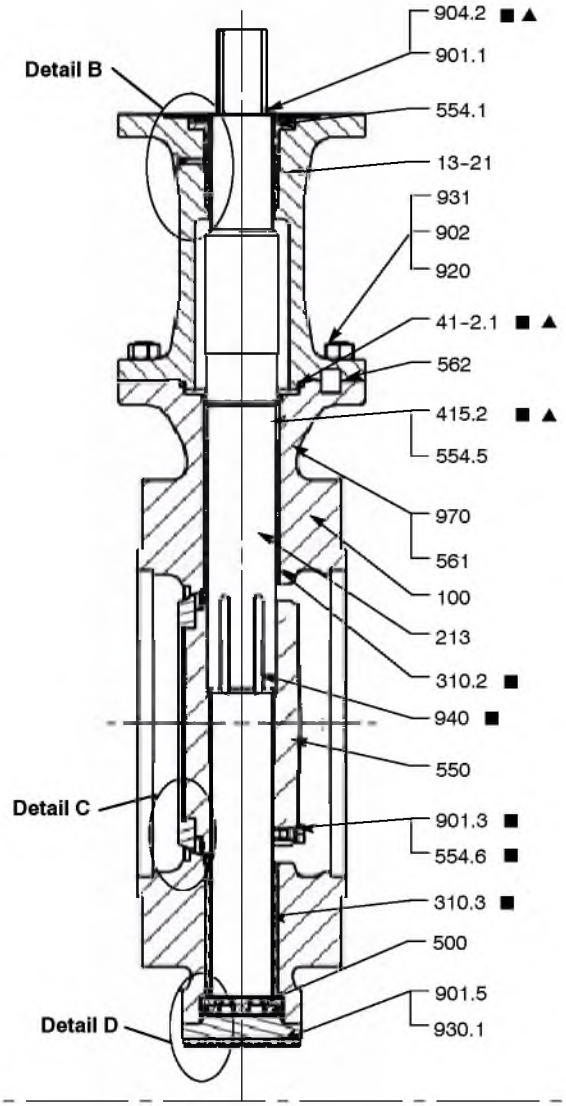
Construction

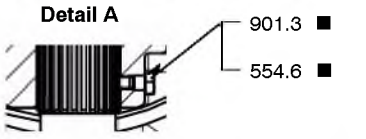
TBT version (Type 7 represented)

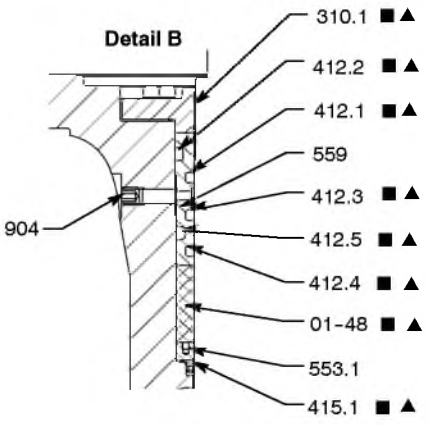
Disc drive with splines
DN 8" and DN 10"

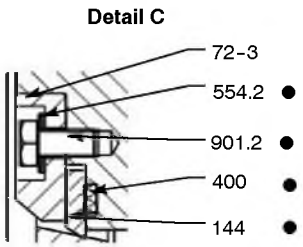


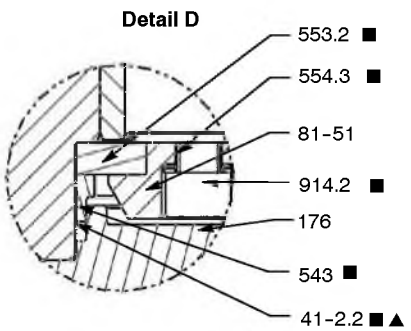
Disc drive with cylindrical keys
DN 12" to DN 24"











● Spare parts kit for seat
■ Spare parts kit for bearing
▲ Spare parts kit for shaft sealing

Parts list for TBT version

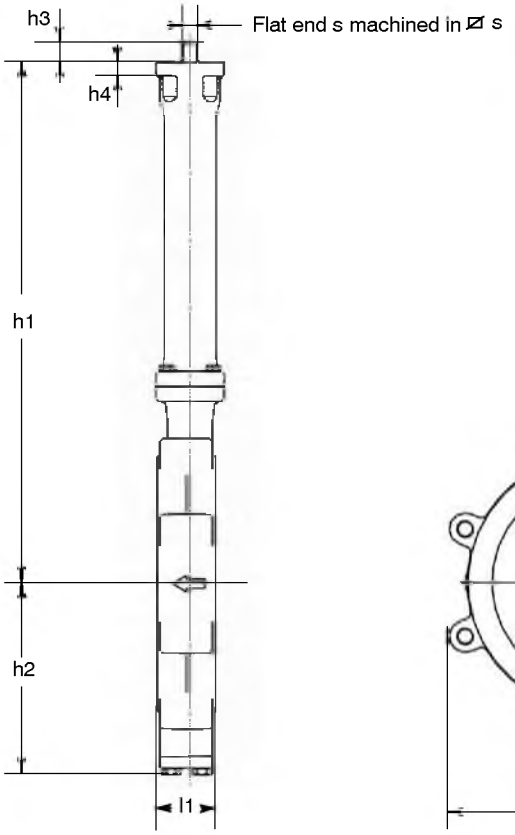
Item	Designation	Materials
01-48	Sealing packing	Expanded graphite
100	Body	See page 2
13-21	Extension	See page 2
144	Seat	See page 2
176	Bottom	Stainless steel 316L
213	Shaft	See page 2
310.1	Self lubricatting strip	Stainless steel + PTFE
310.2	Upper bearing	Stainless steel 316L hard faced or Stainless steel + PTFE
310.3	Lower bearing	Stainless steel 316L hard faced or Stainless steel + PTFE
400	Static gasket	Stainless steel 316L + graphite or expanded graphite
41-2.1	Extension static joint	Expanded graphite
41-2.2	Bottom static joint	Expanded graphite
412.1	O-Ring	HC Nitrile(*)
412.2	O-Ring	HC Nitrile(*)
412.3	O-Ring	HC Nitrile(*)
412.4	O-Ring	HC Nitrile(*)
412.5	O-Ring	HC Nitrile(*)
415.1	Lip Seal Ring	PTFE + ELGILOY
415.2	Lip Seal Ring	PTFE + ELGILOY (Option)
500	Anti static device	EN 10213 1.4310
543	Spacer bush	Stainless steel 316L
550	Disc	See page 2
553.1	Upper thrust insert	Stainless steel 316L
553.2	Thrust insert	Stainless steel 316L hard faced
554.1	Upper washer	Stainless steel 316L
554.2	Nord Lock® washer	Stainless steel 316
554.3	Nord Lock® washer	Stainless steel 316
554.5	Spacer	Stainless steel 316L (Option)
554.6	Nord Lock® washer	Stainless steel 316L
559	Gasket holder	Stainless steel 316L
561	Grooved nail	EN 10213 1.4303
562	Pin	A638 gr. 660
72-3	Tightening flange	Stainless steel 316L or EN 10088-2 1.4462 or A479 gr XM19
81-51	Tightening part	Stainless steel 316L
901.1	Hexagon screw	Stainless steel A4-70
901.2	Hexagon screw	Stainless steel A4-70
901.3	Liaison screw	Stainless steel A4-70
901.5	Hexagon screw	A320 GR. B8M cl.2
902	Stud bolt	A320 GR. B8M cl.2
904	Socket screw	Stainless steel A4-70
904.2	Socket screw	Stainless steel A4-70
914.2	Hexagon socket head cap screw	Stainless steel A4-70
920	Hexagon nut	A 194 GR. 8M
930.1	Lock retainer	Stainless steel 316L
930.2	Nut lock	Stainless steel 316L
931	Lock washer	Stainless steel 316L
940	Cylindrical key	A638 gr 660 (DN > 10")
970	Identity plate	Stainless steel 316 or equivalent

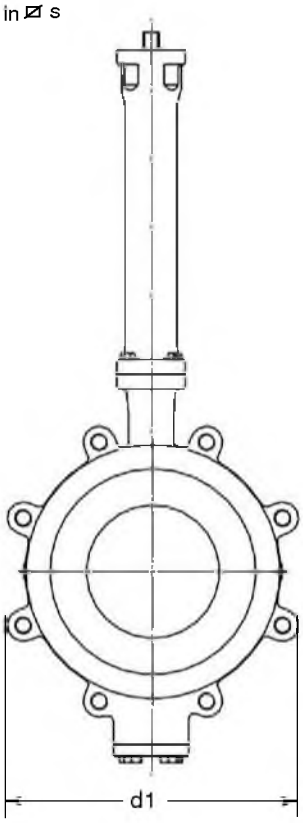
-HC Nitrile: Epichlorohydrin for ambient temperature below minus 25 ° C.

Dimensions

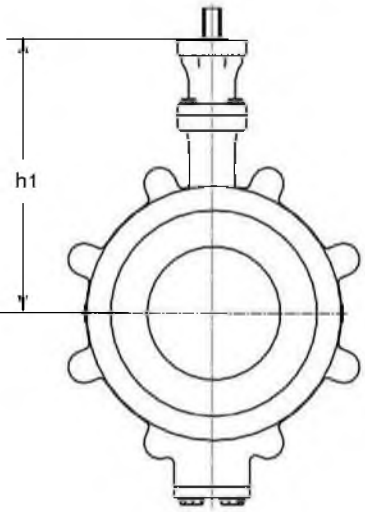
Full-lug type body - Type 4 Class 600

TBT version





MT version



mm

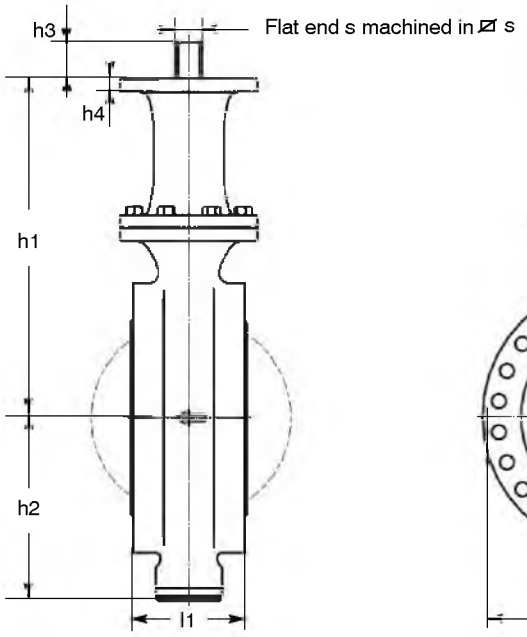
DN*	NPS	d1	l1	h1 MT	h1 TBT	h2	Mounting plate ISO 5211 n°	Mounting plate ISO 5211 h4	Square shaft end ⌀ s	Square shaft end h3	Weight Kg MT	Weight Kg TBT
200	8	390	102	390	690	245	F14	23	36	55	75	95
250	10	490	120	455	760	290	F16	27	50	65	135	155
300	12	540	140	550	770	320	F25	30	60	80	235	260
350	14	580	157	595	895	385	F25	30	60	80	295	325
400	16	665	178	650	925	420	F30	34	70	90	420	470
450	18	720	200	720	995	495	F30	34	70	100	545	585
500	20	790	218	785	1025	540	F35	38	80	110	715	785
600	24	940	235	915	1165	600	F40	45	110	130	1110	1210

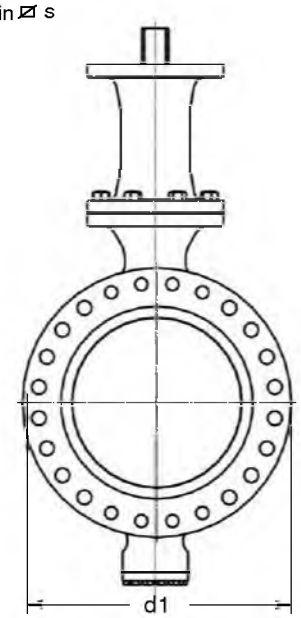
For other diameters, please, consult us.

Dimensions

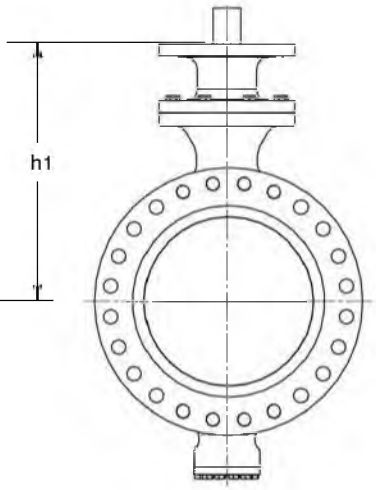
Flanged type body - Type 7 Class 600

TBT version





MT version



mm

DN*	NPS	d1	l1	h1 MT	h1 TBT	h2	Mounting plate ISO 5211 n°	Mounting plate ISO 5211 h4	Square shaft end ⌑ s	Square shaft end h3	Weight kg MT	Weight kg TBT
200	8	420	230	390	690	245	F14	23	36	55	145	165
250	10	510	250	455	760	290	F16	27	50	65	240	260
300	12	560	270	550	770	320	F25	30	60	80	325	350
350	14	605	290	595	895	385	F25	30	60	80	410	440
400	16	685	310	650	925	420	F30	34	70	90	565	615
450	18	745	330	720	995	495	F30	34	70	100	715	755
500	20	815	350	785	1025	540	F35	38	80	110	935	1005
600	24	940	390	915	1165	600	F40	45	110	130	1330	1430

For other diameters, please, consult us.

Connections

The valves can be fitted between flanges according to ASME B16.5 Cl. 600 standards (other connections on request).

Full-Lug and Flanged type body - Type 4 / Type 7 - Class 600

DN	NPS	ASME B16.5 Cl. 600
200	8	✓
250	10	✓
300	12	✓
350	14	✓
400	16	✓
450	18	✓
500	20	✓
600	24	✓

✓ Fitting allowed

Flange facing

	Raised face RF	Flat face FF
Smooth finish	Standard	On request
Stock finish	On request	On request
RTJ (Type 7 only)	On request	On request

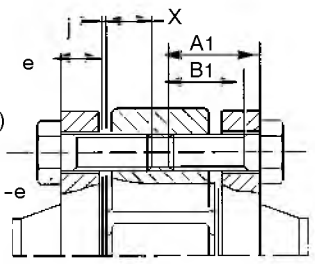
End of line and downstream dismantling

Possible, on request.

Bolting for full-lug type body - Type 4

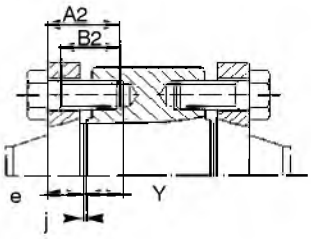
Screw length of the lugs
A1 maxi = e + X + j

e : Flange thickness (customer specification)
X : Max. implantation of the screw
j : Thickness of the flange gasket
B1 : Min. threaded length of the screw B1 > A1-e



Screw length at shaft passages
A2 max. = e + Y + j

e : Flange thickness (customer specification)
Y : Optimal implantation of the screw
j : Thickness of the flange gasket
B2 : Min. threaded length of the screw B2 > A2-e



NB: We do not supply the bolting and flange gasket.

mm

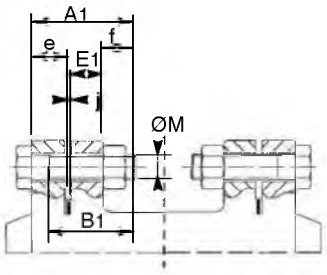
DN	NPS	ASME B16-5 class 600				
			Screw A1		Screw A2	
		UN or UNC	X	Qty*	Y	Qty*
200	8	1"1/8	47	8	37	4
250	10	1"1/4	56	12	28,5	4
300	12	1"1/4	56	16	32	4
350	14	1"3/8	62	16	32	4
400	16	1"1/2	65	16	40	4
450	18	1"5/8	70	16	41	4
500	20	1"5/8	70	20	42	4
600	24	1"7/8	80	20	40,5	4

* Quantity of screws by face

Bolting for flanged type body - Type 7

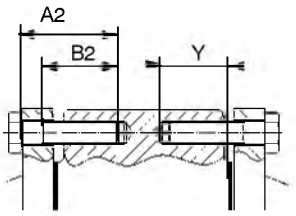
Screw length on flanges
A1 max. = e + j + E1 max. + f

E1 : Thickness of valve flange
e : Flange thickness (customer specification)
f : Overlength of the screw
j : Thickness of flange gasket
B1 : Min. threaded length of the screw B1 > A1 - e



Screw length at shaft passages
A2 max. = e + j + Y

e : Flange thickness (customer specification)
Y : Max. implantation of the screw
j : Thickness of flange gasket
B2 : Min. threaded length of the screw B2 > A2 - e



NB: We do not supply the bolting and flange gasket.

mm

DN	NPS	E1 max.	ASME B16-5 class 600				
			Screw A1			Screw A2	
			UN or UNC	f	Qty*	Y	Qty*
200	8	66,5	1"1/8	32	8	46	4
250	10	77,5	1"1/4	34	12	51	4
300	12	80	1"1/4	34	16	55	4
350	14	84	1"3/8	38	16	57	4
400	16	90	1"1/2	41	16	57	4
450	18	97,5	1"5/8	48	16	63	4
500	20	102	1"5/8	48	16	69	8
600	24	114	1"7/8	58	16	72	8

* Quantity of screws by face

Standard variants

Pneumatic actuator ACTAIR / DYNACTAIR

Manual actuator MR

Hydraulic actuator ACTO / DYNACTO

Notes

Butterfly Valve

APORIS 16

DN 300 - 2000
PS 16 bar

Type Series Booklet

Butterfly Valves

Double-offset Butterfly Valves

APORIS 16

Main applications

- Water supply systems
- Water transport
- Cooling circuits
- General irrigation systems
- Pipelines and tank farms
- Water treatment

Fluids handled

- Hot water
- High-temperature hot water
- Cooling water
- Drinking water
- River water, lake water and groundwater

Operating data

Operating properties

Ambient characteristics	Value
Nominal pressure	16
Nominal size	DN 300 - 2000 Other nominal sizes on request.
Max. permissible pressure [bar]	16
Min. permissible temperature [°C]	0
Max. permissible temperature [°C]	+85
Max. permissible flow velocity at operating pressure	4 m/s. Higher velocities on request.

Design details

Design

- Flanged body with raised faces - T7: DN 300 - 2000
- Face-to-face length to ISO 5752 / EN 558 Series 14
- Downstream dismantling possible
- Dead-end service with counter flange possible
- Design to EN 593 and ISO 10631
- Top flange to ISO 5211
- Marked in accordance with EN 19
- Absolutely tight shut-off (no leakage visible to the naked eye) in either direction of flow in accordance with EN 12266-1, leakage rate A, and ISO 5208, category A.
- Corrosion-protected by epoxy coating, 250/300 µm

Variants

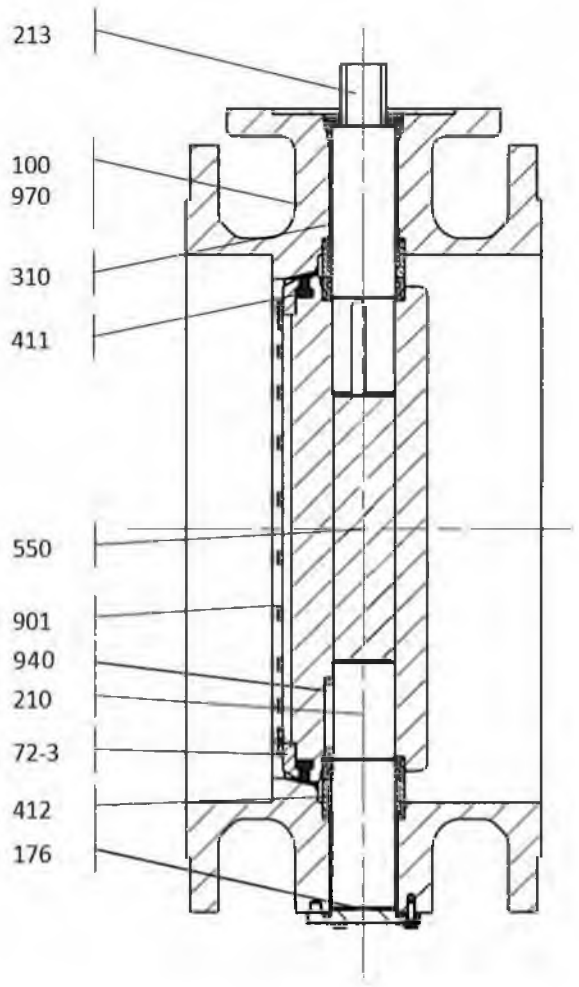
- Device for locking valve disc in open or closed position
- ACTAIR / DYNACTAIR pneumatic actuators
- ACTAIR NG / DYNACTAIR NG pneumatic actuators
- ACTELEC electric actuators
- HQ hydraulic actuators
- AMTROBOX limit switch box
- AMTRONIC valve controller with compressed air supply via directional control valve
- SMARTRONIC positioner and process controller

Product benefits

- Dry stem: The stem is not in contact with the fluid handled.
- Torque transmission by key
- Sealing to atmosphere is ensured.
- Integrally cast support feet for handling and storage
- Valve equipped with stainless steel bearing bushes with reinforced PTFE coating
- Valve approved for drinking water applications (EPDM joint ring and coating certified to WRAS and ACS)
- Valve actuation options:
  - Manual
  - Electric
  - Pneumatic
  - Hydraulic
- Variants on request
  - DN 100 to DN 250

Materials

Sectional drawing



List of components

Part No.	Description	DN	Materials	KSB code
100	Body	300 - 2000	Nodular cast iron EN-GJS-400-15	3g
176	Bottom	300 - 2000	Stainless steel	
210	Stem	300 - 2000	Duplex stainless steel 1.4462	7e
210	Stem	300 - 2000	Stainless steel 1.4542	6e
210	Stem	300 - 2000	Stainless steel 1.4028	6k
213	Actuating stem	300 - 2000	Duplex stainless steel 1.4462	7e
213	Actuating stem	300 - 2000	Stainless steel 1.4542	6e
213	Actuating stem	300 - 2000	Stainless steel 1.4028	6k
310	Bearing	300 - 2000	Steel with reinforced PTFE coating	
411	Seat	300 - 2000	EPDM, approved for drinking water applications to WRAS/ACS	
411*	Seat	300 - 2000	NBR	
412	O-ring	300 - 2000	EPDM, approved for drinking water applications to WRAS/ACS	
550	Valve disc	300 - 2000	Nodular cast iron EN-GJS-400-15	3g
72-3	Retaining flange	300 - 2000	Stainless steel 316L	
901	Bolts	300 - 2000	Stainless steel A4	
940	Key	300 - 2000	Stainless steel 1.4028	
970	Name plate	300 - 2000	Stainless steel	

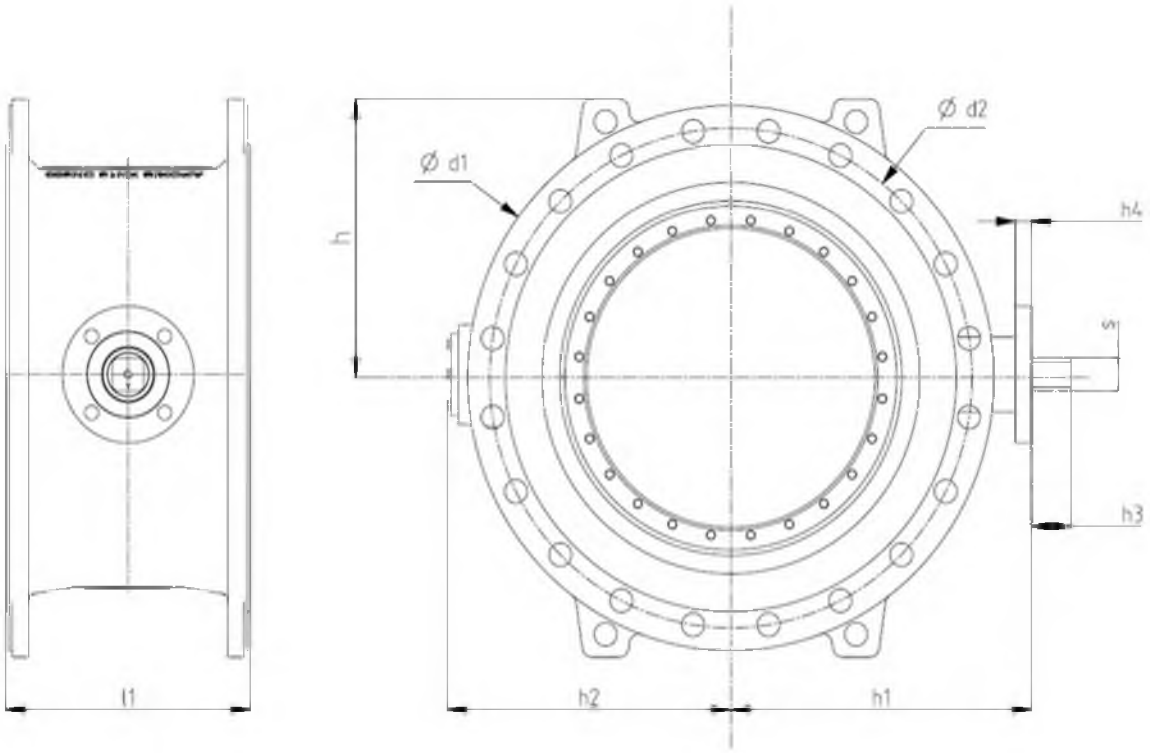
* Optional

Other materials on request

A stainless steel seat can be optionally added.

Dimensions

Drawings



Dimensions

PN 16

mm

DN	Connections	ød1	Face-to-face length l1	h	h1	h2	Top flange to ISO 5211		Square stem end	
							No.	h4	Ø s	h3
300	EN 1092 PN 16	460	270	245	255	212	F10	15	27	45
400	EN 1092 PN 16	580	310	315	320	278	F12	18	36	55
500	EN 1092 PN 16	715	350	368	430	402	F16	26	50	65
600	EN 1092 PN 16	840	390	430	480	452	F16	26	50	65
700	EN 1092 PN 16	910	430	465	525	528	F25	30	70	90
800	EN 1092 PN 16	1025	470	518	580	582	F25	30	70	90
900	EN 1092 PN 16	1125	510	568	643	618	F30	40	70	90
1000	EN 1092 PN 16	1255	550	642	693	668	F30	40	70	90
1200	EN 1092 PN 16	1485	630	758	870	885	F35	40	90	90
1400	EN 1092 PN 16	1685	710	858	990	1008	F40	45	110	110
1600	EN 1092 PN 16	1930	790	980	1114	1130	F48	45	110	110
1800	EN 1092 PN 16	2130	870	1080	1280	1272	F48	50	140	140
2000	EN 1092 PN 16	2345	950	1188	1440	1448	F48	50	140	140

d2 to EN 1092-2

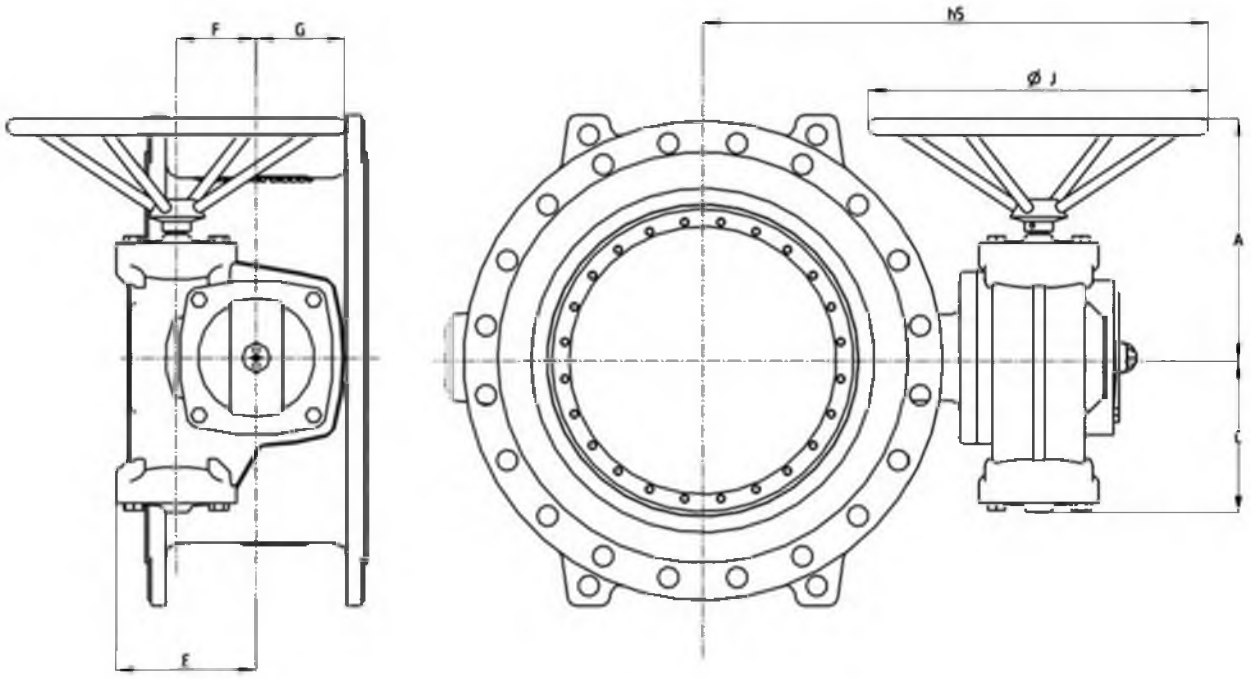
Actuator mounting

The torque for large-diameter valves depends on the hydraulic characteristics of the system.

The selection of actuators given below for lubricating fluids typically applies to maximum flow velocities of 2 m/s.

Higher flow velocities and further actuator/valve combinations are possible, depending on the operating conditions and hydraulic characteristics of the system: request particulars.

Manual actuation: manual gearboxes



PN 16

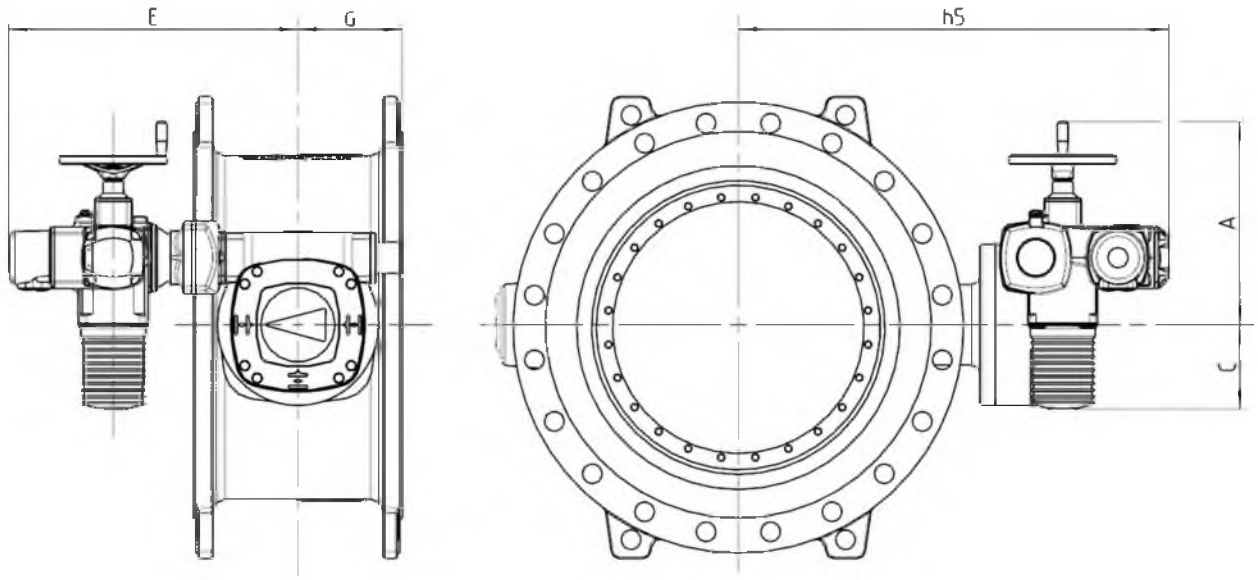
mm

DN	Actuators	A	C	E	F	G	øJ	h5	Weight kg
300	MR50	189	67	98	66	63	225	367	90
400	MR100	243	83	116	78	79	350	495	157
500	MR400	332	279	208	125	115	350	680	328
600	MR400	332	279	208	125	115	350	698	438
700	MR600	511	271	245	140	155	600	934	625
800	MR800	394	405	245	140	155	350	914	790
900	MR1200	661	555	318	180	180	350	1230	1160
1000	MR1600	447	348	318	180	180	800	971	1463
1200	AUMA GS200 + GZ16	600	400	315	200	215	800 max.	1410	2200
1400	AUMA GS200 + GZ25	700	490	365	250	268	800 max.	1496	3180
1600	AUMA GS200 + GZ30	780	550	555	315	340	800 max.	1659	4685
1800	AUMA GS400 + GZ35.1	On request							
2000	AUMA GS400 + GZ35.1	On request							

Other actuators on request

Optional: A 360-degree manual actuator can be selected.

Electric actuation



PN 16

mm

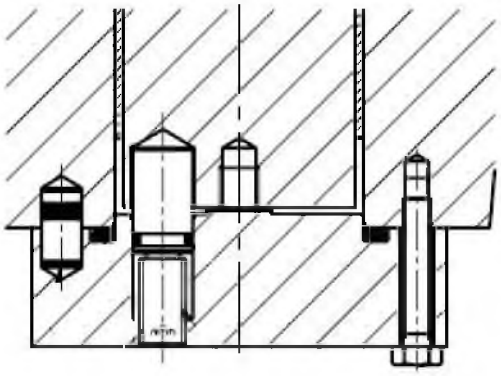
DN	Actuators	A	C	E	G	h5	Weight kg
300	AUMA SQ10.2	265	254	248	65	616	108
400	AUMA SQ12.2	265	254	248	65	745	178
500	AUMA SQ14.2	265	254	248	65	880	311
600	AUMA GS100.3 + VZ4.3 + SA07.6	547	189	365	150	843	439
700	AUMA GS125.3 + VZ4.3 + SA10.2	552	194	390	125	890	591
800	AUMA GS125.3 + VZ4.3 + SA07.6	552	194	390	125	945	751
900	AUMA GS160.3 + VZ4.3 + SA07.6	552	194	390	125	1120	1147
1000	AUMA GS160.3 + VZ4.3 + SA07.2	813	455	390	125	1198	1470
1200	AUMA GZ200.3 + SA07.2	813	455	390	125	1343	2220
1400	AUMA GZ250.3 + SA10.2	815	455	407	129	1254	3188
1600	AUMA GZ315 + SA10.2	670	552	407	129	1506	4739
1800	On request						
2000	On request						

Other actuators on request

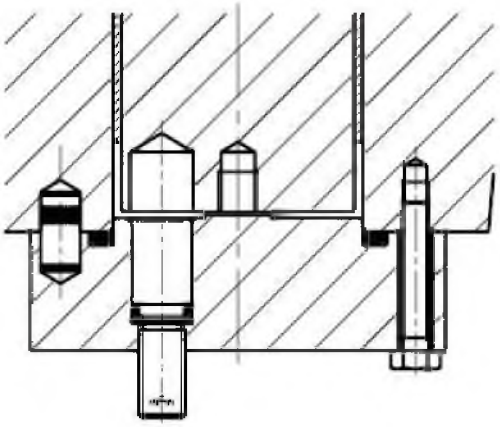
Variants

Locking device

Valve, locked



Valve, unlocked



The locking device allows the valve disc to be locked in open and closed position.

TRIODIS 150 MT

Triple offset disc butterfly valve with metallic seat

DN 50 to 600 (2 to 24")
Pressure class: Class 150 and B 25
Design in accordance with EN 12516 and ASME B16-34

Applications

- Oil and gas, chemicals, petrochemicals.

Working conditions

- Temperature:
  from -50 ° C min. up to +260 ° C max. for stainless steel body,
  from -29 ° C min. up to +260 ° C max. for carbon steel body,
  +380 ° C in HT version.
  The working temperature depends on the media and on the material of the seat.
- Allowable pressure (PS): depends on the body material and the working temperature, see page 2.
- Operating under ΔP = PS (except PN 25: ΔP limited to 20 bar).
- Vacuum service down to 0 absolute bar.
- Maximum fluid velocity under allowable pressure:
  4 m/s for liquids and 50 m/s for clean gases.

Materials

See page 2.

Design

- Wafer type body (Type 1): DN 50 to 600
- Full-lug type body with raised faces (Type 4): DN 50 to 600
- Flanged type body (Type 7): DN 50 to 600 with Raised face or Flat face.
- Possible downstream dismantling and end of line for bodies types 4 and 7.
- Fire safe safety in accordance with BS 6755 Part 2 standard.
- TA-Luft in accordance with VDI 2440.
- Face-to-face in accordance with standards defined pages 8, 9 and 10.
- Possible mounting between flanges according to EN 1092-1, ASME and JIS B2220. See page 14.
- Actuation mounting plate in accordance with ISO 5211 and NF E 29-402 standard.
- Marking in accordance with EN 19 standard.
- Perfectly tight shut-off valves (zero leakage visible to the naked eye) in the two flow directions.
- Steel body: anticorrosion surface treatment, thickness 35 µm, in option = painting 2 or 3 layers.
  Stainless steel body: pickling and passivation.
- The valves meet the safety requirements of the Pressure Equipments Directive 97/23/EC (PED) Appendix I for fluids of the groups 1 and 2.
- A remote valve can be considered as a partly completed machine in compliance with the requirements of the machinery directive 2006/42/EC.
- The valves comply with the requirements of the REACH regulation . See page 12.

Standard variants

- Pneumatic actuator ACTAIR / DYNACTAIR
- Electric actuator ACTELEC
- Hydraulic actuator ACTO
- Position detection AMTROBOX
- Pneumatic distribution for On-Off function AMTRONIC
- Positioner and control unit SMARTRONIC
- ATEX version in accordance with 94/9/EC directive

Remarks

- Operating instructions 8450.810/.-10

Data to be supplied when ordering

- TRIODIS 150 MT valve in accordance with type series booklet 8465.52/2-EN.
- Size.
- Materials (body, disc, seat).
- Working conditions: nature of fluid, pressure, flow, etc.
- Connection, flange facing finish and type of contact faces.
- Actuation.

CE

ami

KSB

Materials

Body	Temperature see § Pression / temperature below	KSB code
Steel ASTM A 216 gr. WCC / 1.0619 Stainless steel ASTM A 351 gr. CF 8M / 1.4408	-29 °C to +260 °C -50 °C to +260 °C	1 6
Shaft		KSB code
Stainless steel ASTM A 564 gr. 630 / 1.4542	-29 °C to +260 °C	6e
Disc		KSB code
Stainless steel ASTM A 351 gr. CF 8M / 1.4408 with hard chromium overlay on edge	-50 °C to +260 °C	6
AMRING® seat		KSB code
Copper Nickel	-50 °C to +150 °C -50 °C to +260 °C	CU NI

The materials selection depends on the nature of the fluid and its temperature.

- Corrosive fluids:
  - Body and disc: stainless steel (code 6),
  - Seat: according to the fluid (agressiveness degree, working temperature). Please refer to the above table.
- Non-corrosive fluids
  - Body: steel (code1) or stainless steel (code 6)
  - Disc: stainless steel (code 6)
  - Seat: according to the working temperature. Please refer to the above table.

Pressure / temperature

In pressure class B 25 (european materials), TRIODIS 150 MT valves are in accordance with EN 12516-1 standard.
The values in the table below must be used for valves which have to comply with PED 97/23/CE:

Pressure class	Material		Working pressure in bar at temperature °C									
	Body	Seat	-50	-10	20	100	135	150	180	200	220	260
B 25	1.0619	Metallic	forbidden	24.4	24.4	21.3	20.3	19.8	18.6	17.8	17.2	15.9
	1.4408	Metallic	24.3	24.3	24.3	20.7	19.3	18.7	17.8	17.2	16.7	15.8

* for temperature < -29° C and pressure > 8bar, please consult us.

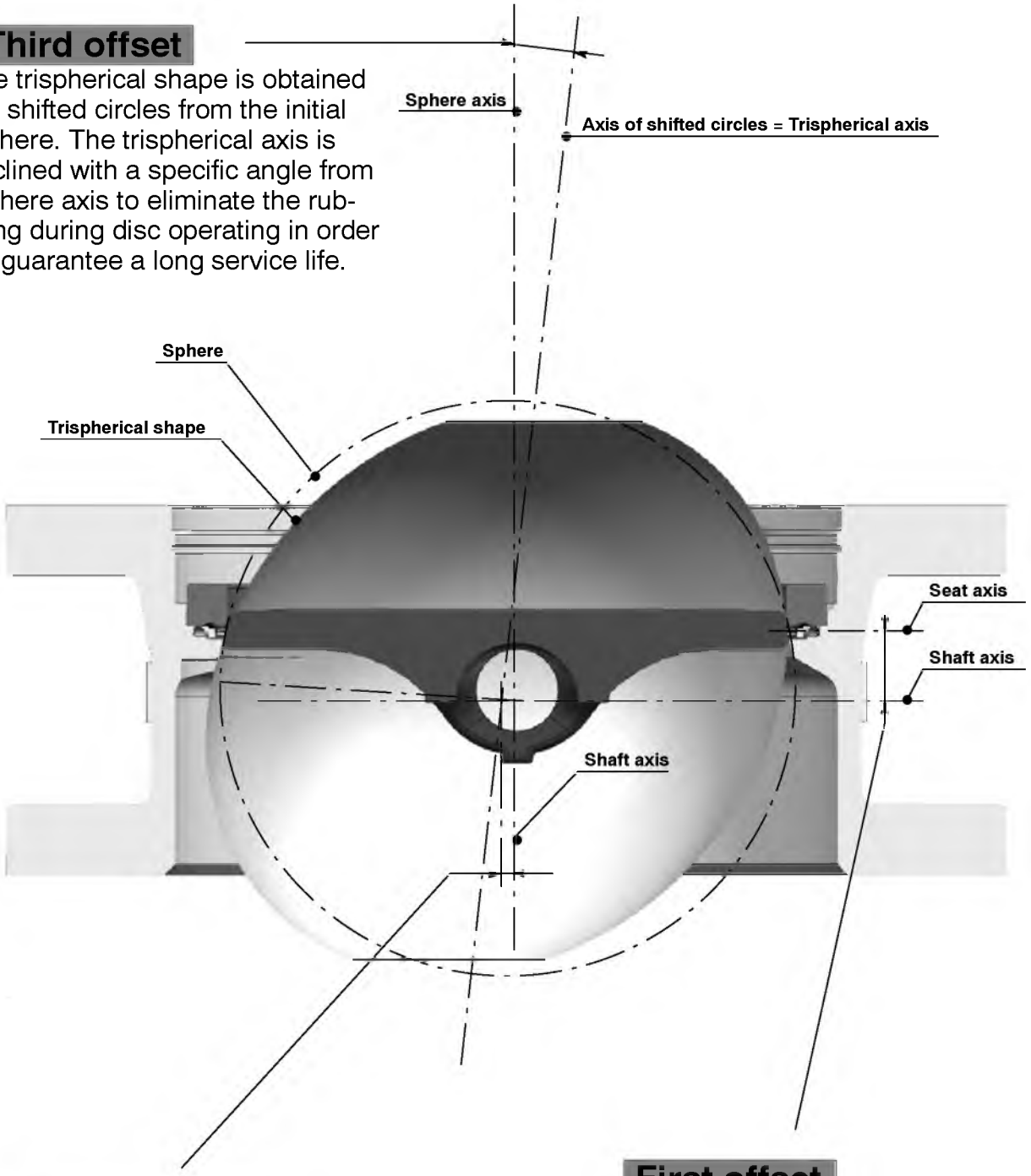
In pressure class 150 (ASTM materials), TRIODIS 150 MT valves meet ASME B 16-34 cl.150 “Standard class” requirements, according to the following table:

Pressure class	Material		Working pressure in bar at temperature °C									
	Body	Seat	-50	-29	38	100	135	150	180	200	220	260
Class 150	A 216 gr. WCC	Metallic	forbidden	20.0	20.0	17.7	16.4	15.8	14.7	14.0	13.2	11.7
	A 351 gr. CF8M	Metallic	19.0	19.0	19.0	16.0	15.2	14.8	15,6	13.5	13.0	11.7

Sealing System Design TRIODIS 150

Third offset

the trispherical shape is obtained by shifted circles from the initial sphere. The trispherical axis is inclined with a specific angle from sphere axis to eliminate the rubbing during disc operating in order to guarantee a long service life.



Second offset

the shaft axis is offset from the sphere axis to limit the rubbing between disc seat and body seal ring.

First offset

The seal is offset from the shaft axis to allow upstream/downstream tightness without interference with the shaft passage.

Upstream / downstream sealing

The TRIODIS 150 MT valve conforms to the following sealing standards.

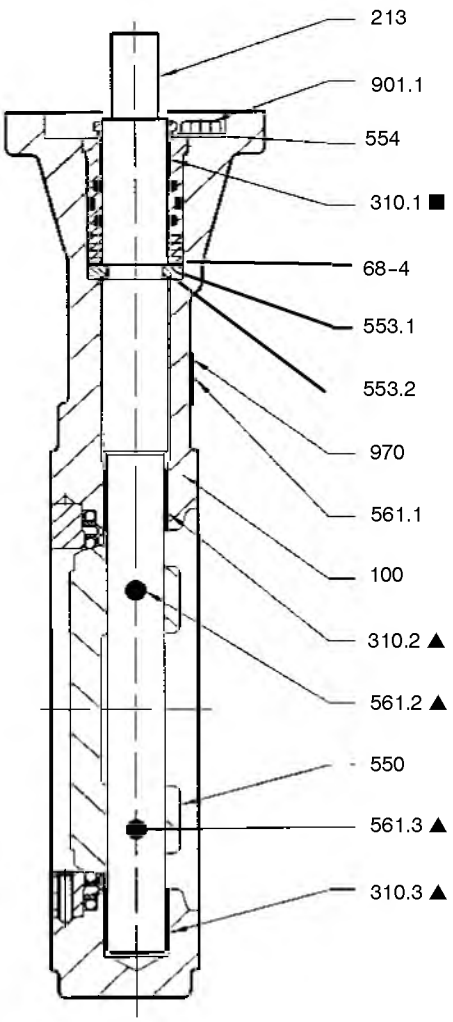
The TRIODIS 150 MT valve is a bi-directional valve with a preferential flow direction shown by an arrow on the body.

Valve	With metallic seat Standard version
On liquids	EN 12266-1 rate < D ISO 5208, category C API 598 MSS SP 61
On gas	EN 12266-1 rate < D ISO 5208 leakage < cat. D MSS SP 61

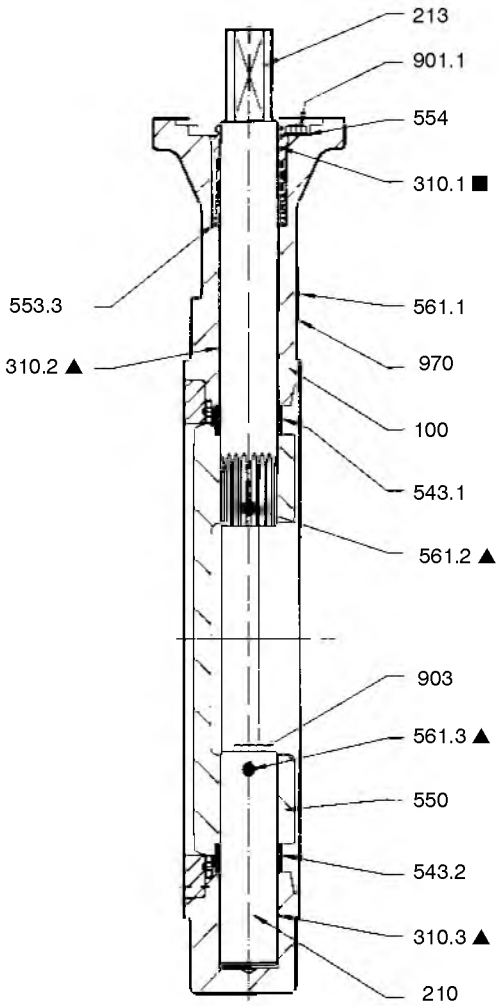
Construction

WAFER TYPE BODY AND FULL-LUG TYPE BODY

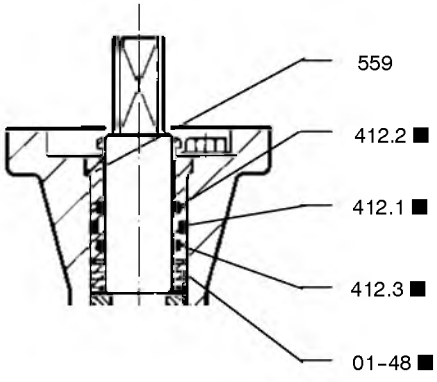
DN 50 to 250 (2" to 10")



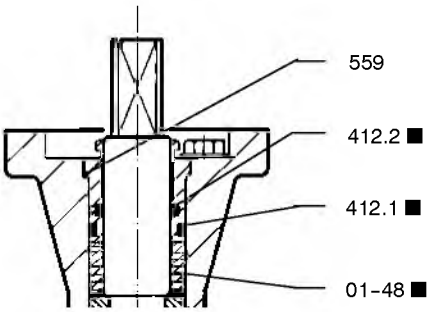
DN 300 to 600 (12" to 24")



Fire-safe packing gland version



TA-Luft packing gland version

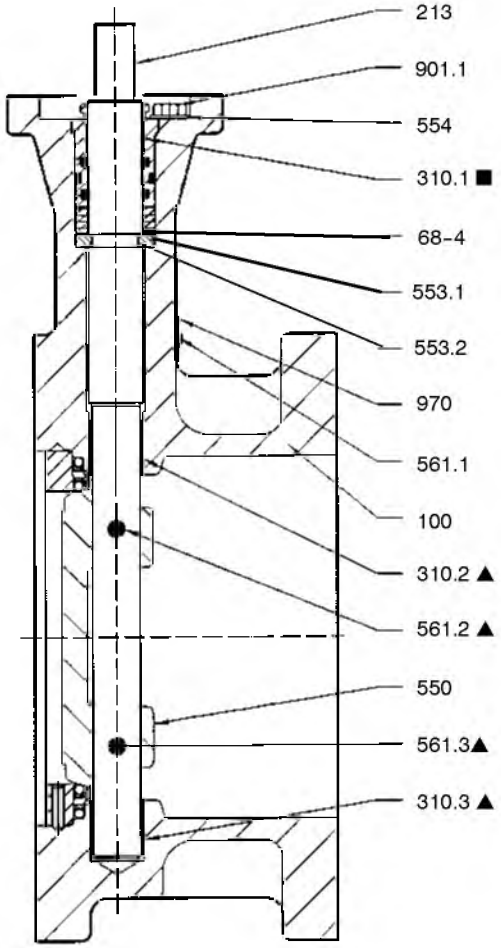


■ Spare parts kit for shaft sealing
▲ Bearing kit

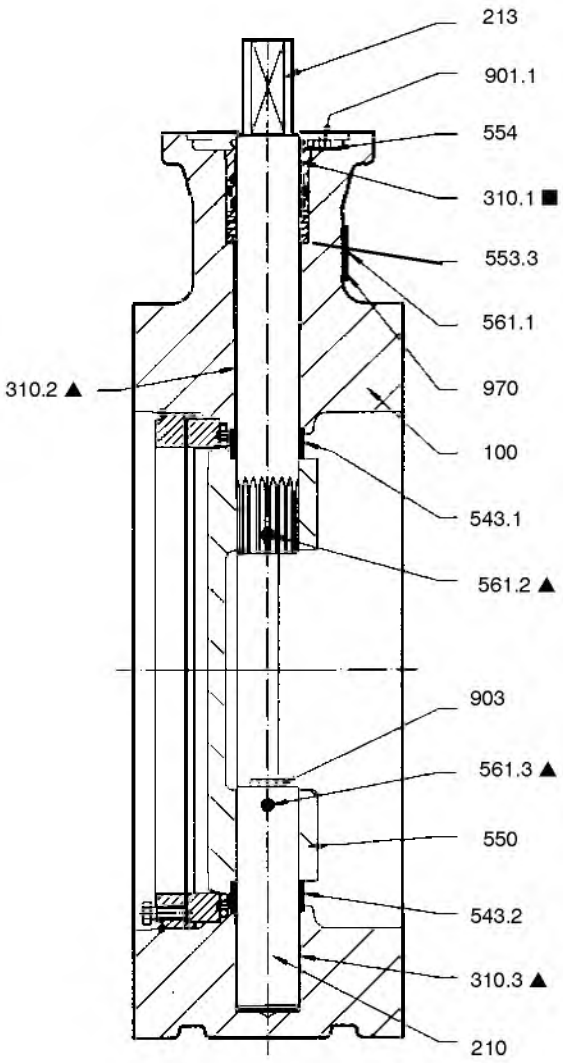
Construction

FLANGED TYPE BODY

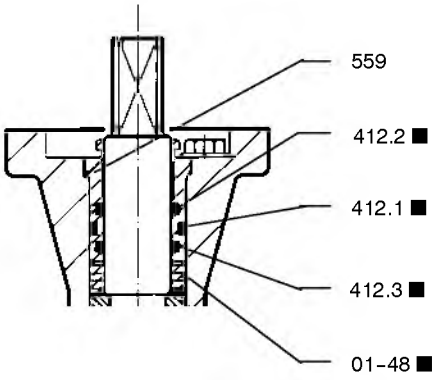
DN 50 to 250 (2" to 10")



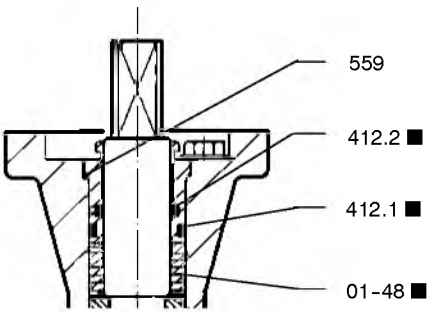
DN 300 to 600 (12" to 24")



Fire-safe packing gland version



TA-Luft packing gland version



■ Spare parts kit for shaft sealing
▲ Bearing kit

Parts list

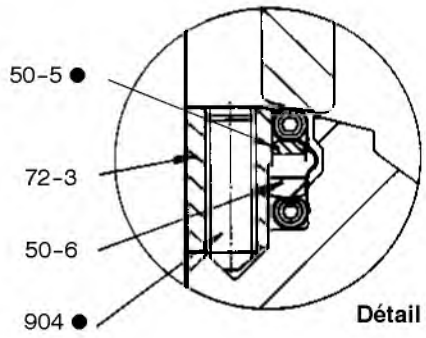
Item	Designation	DN	Materials
68-4	Foil	50 to 250	Stainless steel
100	Body	50 to 600	Carbon steel Stainless steel
210	Shaft	300 to 600	Stainless steel
213	Operating shaft	50 to 600	Stainless steel
310.1	Plain bearing	50 to 600	Stainless steel + PTFE
310.2	Plain bearing	50 to 600	Stainless steel + PTFE
310.3	Plain bearing	50 to 600	Stainless steel + PTFE
543.1	Spacer bush	300 to 600	Stainless steel
543.2	Spacer bush	300 to 600	Stainless steel
550	Disc	50 to 600	Stainless steel
553.1	Thrust	50 to 250	Stainless steel
553.2	Thrust	50 to 250	Stainless steel + PTFE
553.3	Thrust	300 to 600	Stainless steel
554	Washer	50 to 600	Stainless steel
561.1	Grooved nail	50 to 600	Stainless steel
561.2	Grooved pin	50 to 600	Stainless steel
561.3	Grooved pin	50 to 600	Stainless steel
901.1	Hexagon-head screw	50 to 600	Stainless steel cl. A4.70
903	Threaded plug	50 to 600	Stainless steel cl. A4.70
970	Identity plate	50 to 600	Stainless steel
Fire-safe packing (see page 12)			
01-48	Fire-safe packing	50 to 600	Expanded graphite
412.1	O-Ring	50 to 600	VITON ®
412.2	O-Ring	50 to 600	VITON ®
412.3	O-Ring	50 to 600	VITON ®
559	Gasket holder	50 to 600	Stainless steel
TA-Luft packing (see page 12)			
01-48	TA-Luft packing	50 to 600	Expanded graphite SUPAGRAF CONTROL ®
412.1	O-Ring	50 to 600	VITON ®
412.2	O-Ring	50 to 600	VITON ®
559	Gasket holder	50 to 600	Stainless steel

When ordering a spare parts kit, please give the valve commerciel codification marked on the identity plate.

Flexible metallic seat

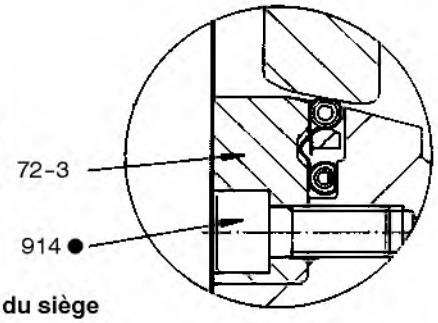
DN 50 to 250 (2" to 10")

All types of body

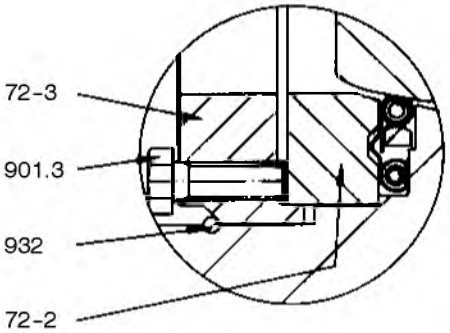


DN 300 to 600 (12" to 24")

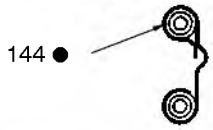
Wafer type body
Full-lug type body



Flanged type body



Détail du siège

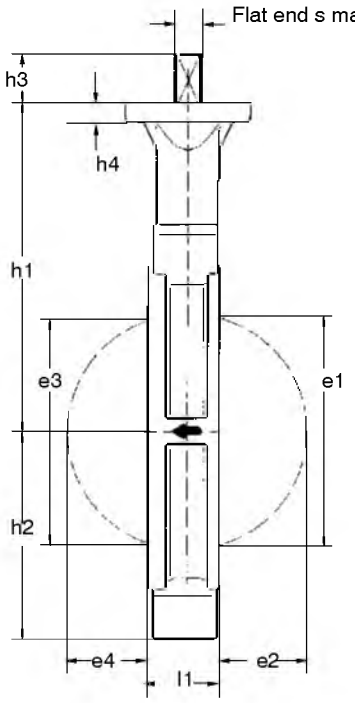


● Kit seat

Item	Designation	DN	Materials
50-5	Reaction ring	50 to 600	Stainless steel
50-6	Tightening ring	50 to 250	Stainless steel
72-2	Centring flange	300 to 600	Stainless steel
72-3	Tightening flange	50 to 600	Stainless steel
144	Metallic seat	50 to 600	In accordance whith fluid (nickel in standard)
901	Hexagon-head screw	300 to 600	Stainless steel cl. A4.70
904	Grub screw	50 to 250	Stainless steel cl. A4.70
914	Cheese-head screw	300 to 600	Stainless steel cl. A4.70
932	Retaining ring	300 to 600	Stainless steel cl. A4.70

Dimensions

Wafer type body - Type 1



mm

DN	NPS	Face to face l1	h1	h2	Mounting plate ISO 5211 no.	Mounting plate ISO 5211 h4	Square shat end ⊠ s	Square shat end h3	Flat shaft end s	Flat shaft end Ø Z	Flat shaft end h3	Disc clearance e1	Disc clearance e2	Disc clearance e3	Disc clearance e4
50	2	43	175	54	F07	16	-	-	14	18	30	36	9	-	-
65	2 ½	46	190	67	F07	16	-	-	14	18	30	49	13	13	1
80	3	50	205	74	F07	16	-	-	14	18	30	62	18	38	6
100	4	52	225	90	F07	16	-	-	14	18	30	81	24	67	17
125	5	56	240	102	F07	16	-	-	14	18	30	103	33	91	23
150	6	56	250	120	F10	18	-	-	19	25	35	131	48	117	33
200	8	60	290	151	F10	18	-	-	22	28	40	177	70	163	51
250	10	68	325	182	F12	20	25	40	-	-	-	226	91	212	70
300	12	78	375	237	F14	22	30	55	-	-	-	266	106	254	87
350	14	92	405	274	F14	22	36	60	-	-	-	309	123	297	103
400	16	102	440	300	F16	26	40	75	-	-	-	360	145	346	121
450	18	114	475	329	F16	26	40	75	-	-	-	420	169	408	147
500	20	127	510	355	F25	30	50	85	-	-	-	456	182	444	160
600	24	154	585	449	F25	30	50	85	-	-	-	546	213	537	197

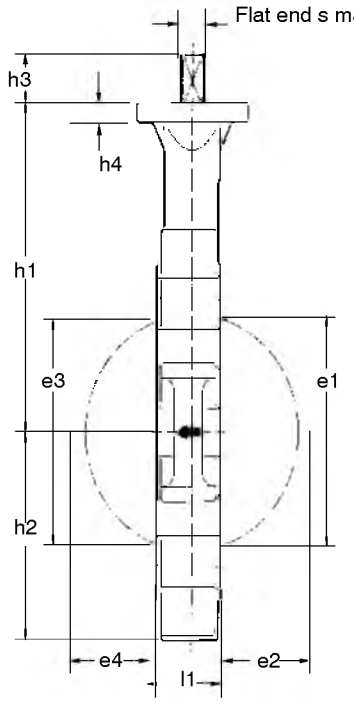
Face to face

DN	NPS	Wafer type
50 to 300 (1)	2" to 12" (1)	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 20
350	14"	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 25
400 to 600	16" to 24"	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 20

(1) DN 80- 3" : only in accordance with API 609 table 2 class 150 standard.

Dimensions

Full-lug type body - Type 4



mm

DN	NPS	Face to face l1	h1	h2	Mounting plate ISO 5211 n°	Mounting plate ISO 5211 h4	Square shaft end ⊠ s	Square shaft end h3	Flat shaft end s	Flat shaft end Ø Z	Flat shaft end h3	Disc clearance e1	Disc clearance e2	Disc clearance e3	Disc clearance e4
50	2	43	175	60	F07	16	-	-	14	18	30	36	9	-	-
65 [1]	2 ½	46	190	67	F07	16	-	-	14	18	30	49	13	13	1
65 [2]	2 ½	46	190	85	F07	16	-	-	14	18	30	49	13	13	1
80 [3]	3	50	205	74	F07	16	-	-	14	18	30	62	18	38	6
80 [4]	3	50	205	94	F07	16	-	-	14	18	30	62	18	38	6
100	4	52	225	105	F07	16	-	-	14	18	30	81	24	67	17
125	5	56	240	123	F07	16	-	-	14	18	30	103	33	91	23
150	6	56	250	135	F10	18	-	-	19	25	35	131	48	117	33
200	8	60	290	155	F10	18	-	-	22	28	40	177	70	163	51
250	10	68	325	202	F12	20	25	40	-	-	-	226	91	212	70
300	12	78	375	237	F14	22	30	55	-	-	-	266	106	254	87
350	14	92	405	274	F14	22	36	60	-	-	-	309	123	297	103
400	16	102	440	300	F16	26	40	75	-	-	-	360	145	346	121
450	18	114	475	329	F16	26	40	75	-	-	-	420	169	408	147
500	20	127	510	356	F25	30	50	85	-	-	-	456	182	444	160
600	24	154	585	449	F25	30	50	85	-	-	-	546	213	537	197

1) Mounting between flanges EN 1092-1 PN 10 and 16 - 4 holes, ASME B16-5 cl.150 and JIS B222010K.
2) Mounting between flanges EN 1092-1 PN 10 and 16 - 8 holes, PN 25 and JIS B2220 16K and 20K.
3) Mounting between flanges ASME B16-5 cl. 150.
4) Mounting between flanges EN 1092-1 PN 10, 16, 25 and JIS B2220 10K, 16K and 20K.

Face to face

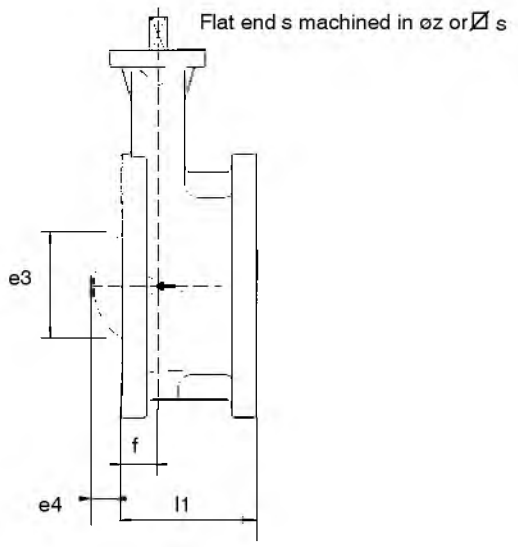
DN	NPS	Full-lug type
50 to 300 (1)	2" to 12" (1)	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 20
350	14"	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 25
400 to 600	16" to 24"	EN 558-1 series 20 ; API 609 table 2 class 150 and ISO 5752 series 20

(1) DN 80- 3" : only in accordance with API 609 table 2 class 150 standard.

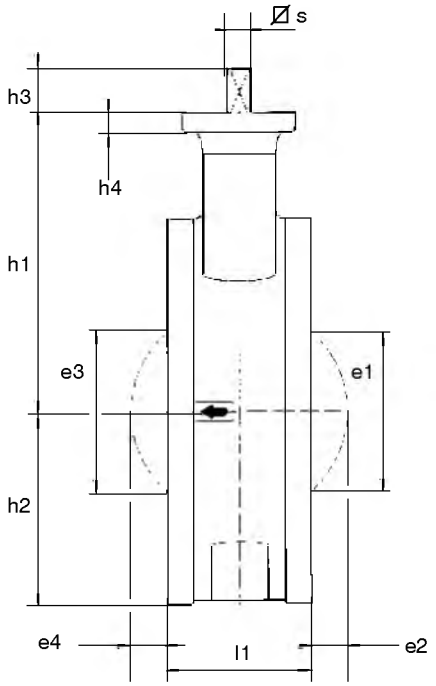
Dimensions

Flanged type body - Type 7

DN 50 to 250 - 2" to 10"



DN 300 to 600 - 12" to 24"



		Face to face				Mounting plate ISO 5211		Square shaft end		Flat shaft end			Disc clearance			
DN	NPS	l1	f	h1	h2	n°	h4	Ø s	h3	s	Ø Z	h3	e1	e2	e3	e4
50	2	108	28,5	175	76	F07	16	-	-	14	18	30	-	-	-	-
65	2 ½	112	33,5	190	89	F07	16	-	-	14	18	30	-	-	-	-
80	3	114	33,5	205	95	F07	16	-	-	14	18	30	-	-	18	2
100	4	127	36,0	225	115	F07	16	-	-	14	18	30	-	-	52	8
125	5	140	38,0	240	127	F07	16	-	-	14	18	30	-	-	81	17
150	6	140	38,0	250	140	F10	18	-	-	19	25	35	-	-	112	29
200	8	152	42,5	290	172	F10	18	-	-	22	28	40	-	-	158	46
250	10	165	46,5	325	203	F12	20	25	40	-	-	-	27	1	208	65
300	12	178	-	375	242	F14	22	30	55	-	-	-	214	52	197	42
350	14	190	-	405	274	F14	22	36	60	-	-	-	263	70	245	58
400	16	216	-	440	300	F16	26	40	75	-	-	-	306	82	289	70
450	18	222	-	475	329	F16	26	40	75	-	-	-	376	111	359	97
500	20	229	-	510	356	F25	30	50	85	-	-	-	417	128	399	112
600	24	267	-	585	449	F25	30	50	85	-	-	-	505	157	487	141

Face to face

The face to face dimensions of TRIODIS 150 MT valves with flanged type body are in accordance with ISO 5752 series 13, EN 558-1 series 13 standards.

Operating torque

DN	NPS	Operating torque * for applications on lubricated medium (in Nm) - Flexible metallic seat										
		0	2	4	6	8	10	12	14	16	18	20
50	2	40	40	40	40	40	40	40	50	50	50	50
65	2 ½	40	40	40	40	40	40	40	50	50	50	50
80	3	40	40	40	40	40	40	40	50	50	50	50
100	4	70	70	70	70	70	70	70	70	90	90	90
125	5	100	100	100	100	100	100	110	120	130	130	150
150	6	160	160	160	160	160	160	180	190	210	220	240
200	8	280	280	280	280	280	280	310	340	370	400	420
250	10	500	500	500	500	500	500	560	610	670	720	780
300	12	770	770	770	770	770	770	850	950	1 040	1 130	1 220
350	14	1 160	1 160	1 160	1 160	1 160	1 160	1 300	1 450	1 590	1 740	1 880
400	16	1 640	1 640	1 640	1 640	1 640	1 640	1 840	2 040	2 240	2 440	2 640
450	18	2 140	2 140	2 140	2 140	2 140	2 450	2 770	3 080	3 400	3 710	4 030
500	20	2 300	2 300	2 300	2 300	2 720	3 140	3 550	3 970	4 390	4 810	5 220
600	24	2 820	2 820	2 820	3 450	4 080	4 710	5 340	5 970	6 600	7 230	7 860

DN	NPS	Operating torque * for applications on non lubricated medium (in Nm) - Flexible metallic seat										
		0	2	4	6	8	10	12	14	16	18	20
50	2	80	80	80	80	80	80	90	100	100	100	100
65	2 ½	90	90	90	90	90	90	90	100	100	100	100
80	3	100	100	100	100	100	100	100	100	100	100	100
100	4	120	120	120	120	120	120	120	130	140	150	160
125	5	190	190	190	190	190	190	200	220	230	240	250
150	6	300	300	300	300	300	300	320	340	360	380	400
200	8	500	500	500	500	500	500	550	590	630	660	700
250	10	860	860	860	860	860	860	930	1 000	1 070	1 140	1 200
300	12	1 260	1 260	1 260	1 260	1 260	1 260	1 370	1 480	1 590	1 700	1 800
350	14	1 860	1 860	1 860	1 860	1 860	1 860	2 030	2 200	2 370	2 530	2 700
400	16	2 680	2 680	2 680	2 680	2 680	2 680	2 920	3 150	3 390	3 620	3 850
450	18	3 550	3 550	3 550	3 550	3 550	3 900	4 260	4 620	4 980	5 340	5 700
500	20	3 900	3 900	3 900	3 900	4 370	4 840	5 310	5 790	6 260	6 730	7 200
600	24	5 150	5 150	5 150	5 840	6 550	7 260	7 970	8 680	9 390	10 100	10 800

* The safety coefficient to define the adaptated actuator is included in the torque value.

Hydraulic characteristics

DN	NPS	Flow coefficient in full open position		Zeta
		Kv_0	Cv_0	
50	2	70	80	2,04
65	2 ½	110	145	2,35
80	3	190	220	1,81
100	4	340	400	1,38
125	5	600	700	1,08
150	6	980	1 140	0,84
200	8	1 850	2 150	0.75
250	10	3 350	3 880	0.56
300	12	4 870	5 650	0.55
350	14	7 070	8 200	0.48
400	16	10 350	12 000	0.38
450	18	12 500	14 500	0.42
500	20	15 090	17 500	0.44
600	24	22 410	26 000	0.41

Fire-Safe version

Metallic seated valves are Fire-Safe approved in accordance with BS 6755 Part 2 standard.
This certification covers the upstream/downstream tightness (metallic seat) and the shaft sealing system (Fire-Safe graphite packing).
Fire-Safe version is advised for the full lug type bodies T4 or flanged type bodies T7.

REACH regulation

The valves comply with the requirements of the REACH regulation. None of substances included in the candidate list and in Annex XIV of this regulation are present in our valves above a concentration of 0.1% weight by weight (article 33/REACH).

ATEX Option

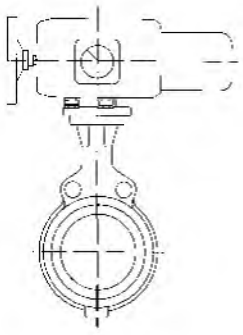
Adapted construction (option) for ATEX Group II - Category 2 - Zones 1+21 in accordance with 94/9/CE Directive .

Definition of possible configurations

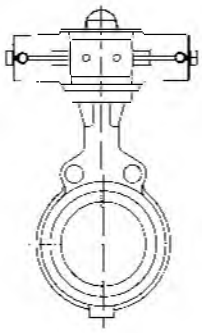
Seat type	Graphite packing	Certification		Option
		Fire-Safe	**TA-Luft**	**ATEX**
Plastomer	TA-Luft SUPAGRAPH CONTROL ®	NO	**YES**	YES
Metallic	Fire-Safe	**YES**	NO	YES
	TA-Luft SUPAGRAPH CONTROL ®	NO	**YES**	YES

Standard variants

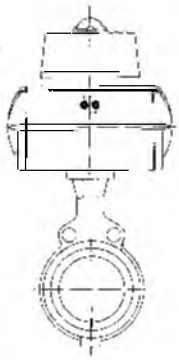
ACTELEC electric actuator



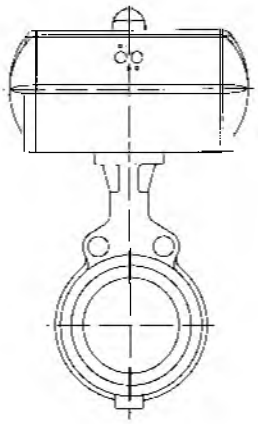
ACTO hydraulic actuator



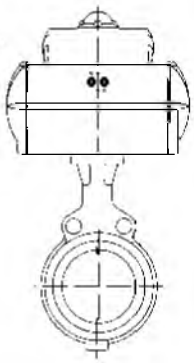
Pneumatic distribution for On-Off function AMTRONIC
Positioner and control unit SMARTRONIC



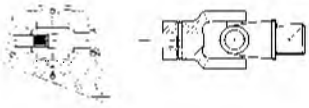
Pneumatic actuators ACTAIR / DYNACTAIR



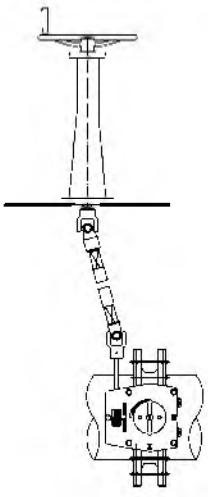
Position detection AMTROBOX, AMTROBOX S, AMTROBOX R, AMTROBOX EEx-ed, AMTROBOX EEx-ia



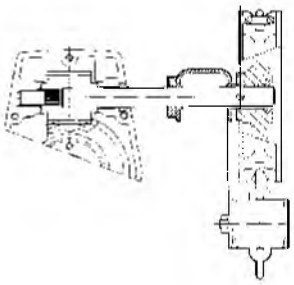
Cardan joint



Deck stand



Chain wheel



Connections

The valves can be fitted between flanges according to EN 1092-1 PN 10, PN 16 and PN 25 ; ASME B16.5 class 150 ; JIS B2220 10K , 16K and 20K standards. Other connections on request.
CAUTION : The ISO 7005 PN 20 connection is in process of disappearence, use preferably ASME B16-5 class 150 standard.

Wafer type body - Type 1 -

DN	NPS	EN 1092-1			ASME	ISO 7005	JIS B2220		
		PN 10	PN 16	PN 25	B16.5 cl. 150	PN 20	10K	16K	20K
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	✓	✓	✓	✓	✓	✓	✓	✓
600	24	✓	✓	✓	✓	✓	✓	✓	✓

Full-lug type body - Type 4 -

DN	NPS	EN 1092-1			ASME B16.5	ISO 7005	JIS B2220		
		PN 10	PN 16	PN 25	cl. 150	PN 20	10K	16K	20K
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	✓	✓	✓	✓	✓	✓	✓	✓
600	24	✓	✓	✓	✓	✓			

Flanged type body - Type 7

DN	NPS	EN 1092-1			ASME	ISO 7005	JIS B2220		
		PN 10	PN 16	PN 25	B16.5 cl150	PN 20	10K	16K	20K
50	2	✓	✓	✓	✓	✓	✓	✓	✓
65	2 ½	✓	✓	✓	✓	✓	✓	✓	✓
80	3	✓	✓	✓	✓	✓	✓	✓	✓
100	4	✓	✓	✓	✓	✓	✓	✓	✓
125	5	✓	✓		✓	✓	✓		
150	5	✓	✓		✓	✓	✓		
200	8	✓	✓		✓	✓	✓	✓	✓
250	10	✓	✓		✓	✓	✓		
300	12	✓	✓	✓	✓	✓	✓	✓	✓
350	14	✓	✓		✓	✓	✓	✓	✓
400	16	✓	✓	✓	✓	✓	✓	✓	✓
450	18	✓	✓	✓	✓	✓	✓		
500	20	✓	✓		✓	✓	✓		
600	24	✓	✓	✓	✓	✓	✓	✓	✓

✓ Fitting allowed

Please consult us

End of line and downstream dismantling

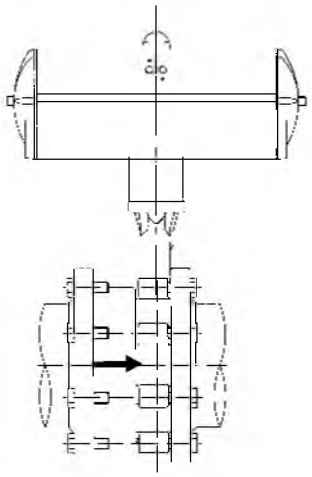
Use as end of line and downstream dismantling of the standard valves Type 4 and Type 7 at room temperature for DN and the differential pressure (ΔPS) are defined hereafter.
End of line and downstream dismantling are not allowed for valves Type 1 (wafer body).

TRIODIS 150 MT	Gases or liquids		Liquids*	
	hazardous **	non hazardous **	hazardous **	non hazardous **
class 150	All DN: on request	All DN: ΔPS = 15 bar max.	All DN: ΔPS = 15 bar max.	All DN: ΔPS = 15 bar max.
B 25	All DN: on request	All DN: ΔPS = 19 bar max.	All DN: ΔPS = 19 bar max.	All DN: ΔPS = 19 bar max.

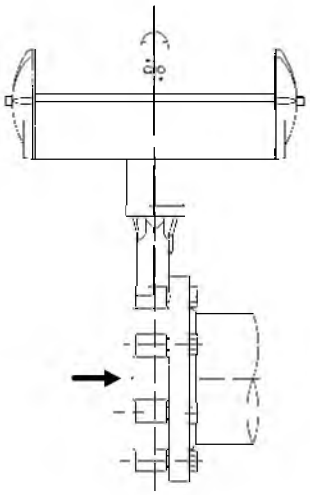
* Liquids having a vapour pressure at the maximum allowable temperature of not more than 0,5 bar above atmospheric pressure (1013 mbar).
** Fluids hazardous and not hazardous according to PED.

NB: A valve fitted at the end of a pipe with a blind flange downstream is not to be considered as an end of pipe service.

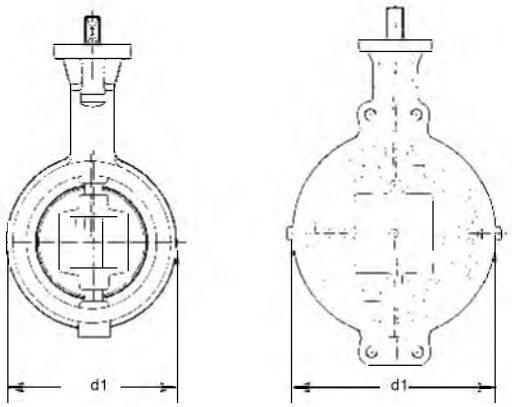
Downstream dismantling



End of line mounting

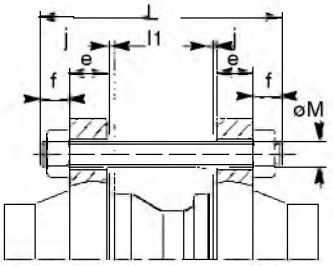


Bolting and weight for wafer type body - Type 1



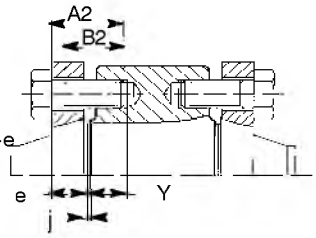
Tie-rod length
L = l1 + 2e + 2f + 2j

l1 : Valve face to face
e : Flange thickness (customer specification)
f : Overlength of the tie-rod
j : Thickness of the flange gasket



Screw length at shaft passages
A2 max. = e + Y + j

e : Flange thickness (customer specification)
Y : Max. implantation of the screw
j : Thickness of the flange gasket
B2 : Min. threaded length of the screw B2 > A2-e



The drawings are not the correct representation of our manufacture (quantity for threaded and plain holes).

NB: We do not supply the bolting

DN	NPS	d1	l1	EN 1092-1 PN 10 (1)					EN 1092-1 PN 16 (1)					EN 1092-1 PN 25					ISO 7005 PN 20					Weight kg
					Tie-rod **		Screw A2			Tie-rod **		Screw A2			Tie-rod **		Screw A2			Tie-rod **		Screw A2		
				ØM	f	Qty	Y	Qty*	ØM	f	Qty	Y	Qty*	Ø M	f	Nb	Y	Qty*	Ø M	f	Qty	Y	Qty*	
50	2	105	43	M16	20	4			M16	20	4			M16	20	4			M16	20	4			5.0
65	2 ½	124	46	M16	20	4/8			M16	20	4/8			M16	20	8			M16	20	4			6.0
80	3	144	50	M16	20	8			M16	20	8			M16	20	8			M16	20	4			7.0
100	4	164	52	M16	20	8			M16	20	8			M20	24	8			M16	20	8			9.5
125	5	194	56	M16	20	8			M16	20	8			M24	29	8			M20	24	8			12.0
150	6	219	56	M20	24	8			M20	24	8			M24	29	8			M20	24	8			17.0
200	8	275	60	M20	24	8			M20	24	12			M24	29	12			M20	24	8			24.0
250	10	330	68	M20	24	12			M24	29	12			M27	32	12			M24	29	12			36.0
300	12	376	78	M20	24	12			M24	29	12			M27	32	12	26	4	M24	29	12			58.0
350	14	413	92	M20	24	12	33	4	M24	29	12	33	4	M30	35	12	27	4	M27	27	12			79.0
400	16	470	102	M24	29	12	44	4	M27	32	12	44	4	M33	38	12	44	4	M27	27	12	44	4	110.0
450	18	530	114	M24	29	16	24	4	M27	32	16	24	4	M33	39	16	22	4	M30	31	12	40	4	146.0
500	20	572	127	M24	29	16	32	4	M30	35	16	31	4	M33	38	16	31	4	M30	31	16	31	4	188.0
600	24	680	154	M27	32	16	43	4	M33	38	16	48	4	M36	42	16	47	4	M33	34	16	47	4	293.0

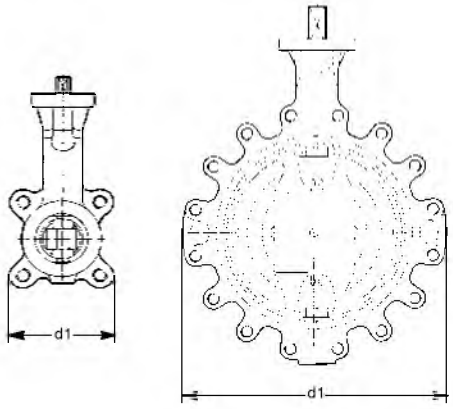
DN	NPS	d1	l1	ASME B16-5 cl.150					JIS B2220 10K					JIS B2220 16K and 20K					Weight kg
					Tie-rod **		Screw A2			Tie-rod **		Screw A2			Tie-rod **		Screw A2		
				UNC	f	Qty	Y	Qty*	ØM	f	Qty	Y	Qty*	ØM	f	Qty	Y	Qty*	
50	2	105	43	5/8"	20	4			M16	20	4								5.0
65	2 ½	124	46	5/8"	20	4			M16	20	4			M16	20	8			6.0
80	3	144	50	5/8"	20	4			M16	20	8			M20	24	8			7.0
100	4	164	52	5/8"	20	8			M16	20	8			M20	24	8			9.5
125	5	194	56	3/4"	24	8			M20	24	8			M22	26	8			12.0
150	6	219	56	3/4"	24	8			M20	24	8			M22	26	12			17.0
200	8	275	60	3/4"	24	8			M20	24	12			M22	26	12			24.0
250	10	330	68	7/8"	29	12			M22	26	12			M24	29	12			36.0
300	12	376	78	7/8"	29	12			M22	26	12	24	4	M24	29	12	26	4	58.0
350	14	413	92	1"	32	12			M22	26	12	39	4	M30x3	35	12	41	4	79.0
400	16	470	102	1"	32	12	44	4	M24	29	12	42	4	M30x3	35	12	44	4	110.0
450	18	530	114	1"1/8	35	12	40	4	M24	29	16	24	4	M30x3	35	16	24	4	146.0
500	20	572	127	1"1/8	35	16	31	4	M24	29	16	32	4	M30x3	35	16	32	4	188.0
600	24	680	154	1"1/4	38	16	47	4	M30	35	20	37	4	M36x3	42	20	36	4	293.0

* Quantity of screws at shaft passages by face

** Quantity of nuts = quantity of tie-rods x 2

(1) Variant 4 tie-rods possible for DN 65

Bolting and weight for full-lug type body - Type 4

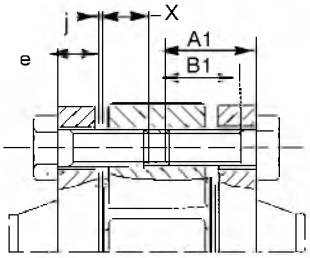


The drawings are not the correct representation of our manufacture (quantity for full-lug holes).

NB: We do not supply the bolting

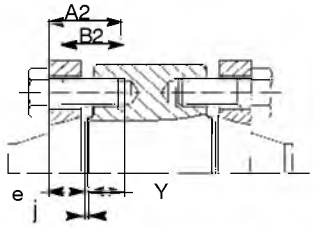
Screw length
A1 max. = e + X + j

e : Flange thickness (customer specification)
X : Max. implantation of the screw
j : Thickness of the flange gasket
B1 : Min. threaded length of the screw B1 > A1-e



Screw length at shaft passages
A2 max. = e + Y + j

e : Flange thickness (customer specification)
Y : Max. implantation of the screw
j : Thickness of the flange gasket
B2 : Min. threaded length of the screw B2 > A2-e



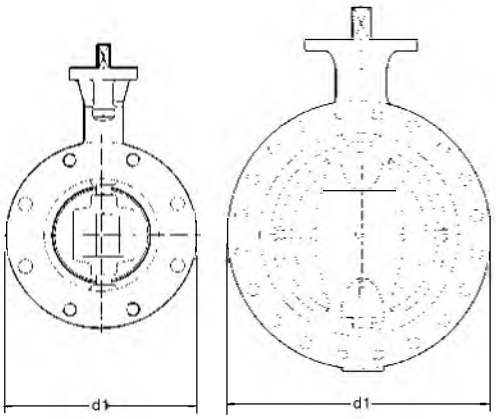
DN	NPS	d1	EN 1092-1 PN 10 (1)					EN 1092-1 PN 16 (2)					EN 1092-1 PN 25					ISO 7005 PN 20					Weight kg
				Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2		
			ØM	X	Qty*	Y	Qty*	ØM	X	Qty*	Y	Qty*	Ø M	X	Qty*	Y	Qty*	Ø M	X	Qty*	Y	Qty*	
50	2	120	M16	20	4			M16	20	4			M16	20	4			M16	20	4			6.5
65	2 ½	130	M16	20	4			M16	20	4								M16	20	4			7.5
65	2 ½	174	M16	20	4			M16	20	8			M16	20	8								8.8
80	3	188	M16	21	8			M16	21	8			M16	21	8			M16	21	4			9.0
100	4	210	M16	21	8			M16	21	8			M20	26	8			M16	21	8			11.2
125	5	246	M16	20	8			M16	20	8			M24	27	8			M20	25	8			15.4
150	6	270	M20	24	8			M20	24	8			M24	27	8			M20	24	8			18.5
200	8	310	M20	26	8													M20	26	8			30.0
200	8	340						M20	26	12			M24	29	12								31.0
250	10	417	M20	26	12			M24	30	12			M27	33	12			M24	30	12			48.0
300	12	478	M20	26	12			M24	30	8	35	4						M24	26	12			70.0
300	12	476											M27	33	12	26	4						72.5
350	14	523																M27	39	12			99.0
350	14	542	M20	37	16			M24	37	16			M30	42	16								108.0
400	16	606	M24	42	16			M27	44	16			M33	44	16			M27	44	16			130.0
450	18	630																M30	51	12	40	4	167.0
450	18	657	M24	40	16	24	4	M27	44	16	24	4	M33	39	16	22	4						207.0
500	20	716	M24	42	16	32	4	M30	51	16	31	4	M33	55	16	31	4	M30	51	16	31	4	237.0
600	24	834	M27	43	20			M33	52	16	48	4	M36	57	16	47	4	M33	52	16	47	4	363.0

DN	NPS	d1	ASME B16-5 class 150					JIS B2220 10K					JIS B2220 16K and 20K					Weight kg
				ScrewA1		ScrewA2			ScrewA1		ScrewA2			ScrewA1		ScrewA2		
			UNC	X	Qty*	Y	Qty*	ØM	X	Qty*	Y	Qty*	ØM	X	Qty*	Y	Qty*	
50	2	120	5/8"	20	4			M16	20	4								6.5
65	2 ½	130	5/8"	20	4			M16	20	4								7.5
65	2 ½	174											M16	20	8			8.8
80	3	188	5/8"	21	4			M16	21	8			M20	24	8			9.0
100	4	210	5/8"	21	8			M16	21	8			M20	26	8			11.2
125	5	246	3/4"	25	8			M20	25	8			M22	27	8			15.4
150	6	270	3/4"	24	8			M20	24	8								18.5
200	8	310	3/4"	26	8													30.0
200	8	340						M20	29	12			M22	29	12			31.0
250	10	417	7/8"	30	12			M22	32	12			M24	31	12			48.0
300	12	478	7/8"	26	12													70.0
300	12	476						M22	24	16			M24	30	16			72.5
350	14	523	1"	39	12													99.0
350	14	542						M22	36	16			M30x3	34	16			108.0
400	16	606	1"	44	16			M24	42	16			M30x3	44	16			130.0
450	18	630	1"1/8	51	12	40	4											167.0
450	18	657						M24	40	16	24	4	M30x3	49	16	26	4	207.0
500	20	716	1"1/8	51	16	31	4	M24	42	16	32	4	M30x3	51	16	32	4	237.0
600	24	834	1"1/4	52	16	47	4											363.0

* Quantity of screws by face

(1) Variant 4 screws by face possible for DN 65

Bolting and weight for flanged type body - Type 7

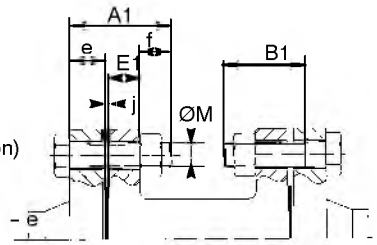


The drawings are not the correct representation of our manufacture (quantity for threaded and plain holes).

Screw length on flanges

A1 max. = e + j + E1 maxi + f

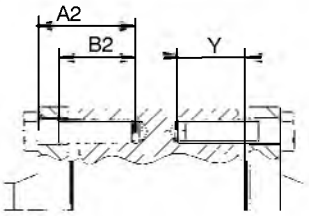
E1 : Thickness of valve flange
e : Thickness of flange (customer specification)
f : Overlength of the screw
j : Thickness of flange gasket
B1 : Min. threaded length of the screw B1 > A1 - e



Screw length at shaft passages

A2 max. = e + j + Y

e : Thickness of flange (customer specification)
Y : Max. implantation of the screw at shaft passages
j : Thickness of the flange gasket
B2 : Min. threaded length of the screw B 2> A2 - e



NB: We do not supply the bolting

DN	NPS	d1	E1	EN 1092-1 PN 10 (1)					EN 1092-1 PN 16 (1)					EN 1092-1 PN 25					ISO 7005 PN 20					weight kg
					Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2		
				ØM	f	Qty*	Y	Qty*	ØM	f	Qty*	Y	Qty*	Ø M	f	Qty*	Y	Qty*	ØM	f	Qty*	Y	Qty*	
50	2	152	22	M16	20	4			M16	20	4			M16	20	4			M16	20	4			10.0
65	2 ½	178	22,5	M16	20	4			M16	20	4								M16	20	4			13.0
65	2 ½	178	22,5	M16	20	4	24	4	M16	20	4	24	4	M16	20	4	24	4						13.0
80	3	190	27	M16	20	4	24	4	M16	20	4	24	4	M16	20	4	24	4	M16	20	4			16.0
100	4	229	27	M16	20	4	24	4	M16	20	4	24	4	M20	24	4	24	4	M16	20	4	24	4	23.5
125	5	254	27	M16	20	4	24	4	M16	20	4	24	4						M20	24	4	24	4	27.5
150	6	279	28,5	M20	24	4	25	4	M20	24	4	25	4						M20	24	4	25	4	32.0
200	8	343	31,5	M20	24	4	28	4	M20	24	8	28	4						M20	24	4	28	4	52.0
250	10	406	33,5	M20	24	8	30	4	M24	29	8	30	4						M24	29	8	30	4	73.0
300	12	483	35,0	M20	24	8	32	4	M24	29	8	32	4	M27	32	12	32	4	M24	29	8	32	4	115.0
350	14	535	38,0	M20	24	12	35	4	M24	29	12	35	4						M27	32	8	35	4	147.0
400	16	600	40,0	M24	29	12	37	4	M27	32	12	37	4	M33	38	12	37	4	M27	32	12	37	4	207.0
450	18	635	42,5	M24	29	16	39	4	M27	32	16	39	4	M33	38	16	39	4	M30	35	12	39	4	243.0
500	20	700	46,0	M24	29	16	42	4	M30	35	16	42	4						M30	35	16	42	4	335.0
600	24	826	52,0	M27	32	16	48	4	M33	38	16	48	4	M36	42	16	48	4	M33	38	16	48	4	463.0

DN	NPS	d1	E1	ASME B16-5 cl 150					JIS B2220 10K					JIS B2220 16K and 20K					weight kg
					Screw A1		Screw A2			Screw A1		Screw A2			Screw A1		Screw A2		
				UNC	f	Qty*	Y	Qty*	ØM	f	Qty*	Y	Qty*	ØM	f	Qty*	Y	Qty*	
50	2	152	22,0	5/8"	20	4			M16	20	4			M16	20	4	19	4	10.0
65	2 ½	178	22,5	5/8"	20	4			M16	20	4			M16	20	4	22	4	13.0
80	3	190	27,0	5/8"	20	4			M16	20	8			M20	24	4	24	4	16.0
100	4	229	27,0	5/8"	20	4	24	4	M16	20	4	4	24	M20	24	4	24	4	23.5
125	5	254	27,0	3/4"	24	4	24	4	M20	24	4	4	24						27.5
150	6	279	28,5	3/4"	24	4	25	4	M20	24	4	4	25						32.0
200	8	343	31,5	3/4"	24	4	28	4	M20	24	8	4	28	M22	27	8	28	4	52.0
250	10	406	33,5	7/8"	29	8	30	4	M22	27	8	4	30						73.0
300	12	483	35,0	7/8"	29	8	32	4	M22	27	12	4	32	M24	29	12	32	4	115.0
350	14	535	38,0	1"	32	8	35	4	M22	27	12	4	35	M30X3	35	12	35	4	147.0
400	16	600	40,0	1"	32	12	37	4	M24	29	12	4	37	M30X3	35	12	37	4	207.0
450	18	635	42,5	1"1/8	35	12	39	4	M24	29	16	4	39						243.0
500	20	700	46,0	1"1/8	35	16	42	4	M24	29	16	4	42						335.0
600	24	826	52,0	1"1/4	38	16	48	4	M30	35	20	4	48	M36X3	42	20	48	4	463.0

* Quantity of screws by face

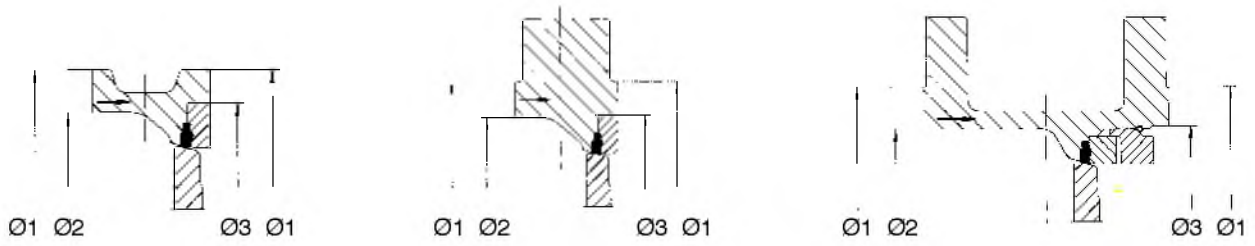
(1) Variant 4 screws by face possible for DN 65

Flanging dimensions

TRIODIS 150 MT valves are designed to be fitted with flat gaskets or spiral-wound gaskets between any type of flanges and connection standards currently used.

SEALING AREA ON FLANGE FACES

In order to ensure a correct connection, the dimensions of flange gaskets must be compatible with the dimensions mentionned in the table below.



DN	NPS	Wafer type body			Full-lug type body			Flanged type body		
		Ø1	Ø2	Ø3	Ø1	Ø2	Ø3	Ø1	Ø2	Ø3
50	2	93	62	73	91.9	62	73	91.9	61	73
65	2	111	74	91	104.6	74	91	104.6	73	91
80	3	127	91	106	127.0	90	106	127.0	98	106
100	4	158	121	128	157.2	117	128	157.2	124	128
125	5	180	142	148	185.7	142	148	185.7	148	148
150	6	201	169	173	215.9	168	173	215.9	173	173
200	8	260	219	226	269.7	219	226	269.7	226	226
250	10	315	273	274	323.9	273	274	323.9	277	274
300	12	364*	320	331	381.0	327	331	381.0	326	324
350	14	413	355	386	412.8**	363	386	412.8	375	372
400	16	470	408	438	469.9	414	438	469.9	430	425
450	18	530	464	498	533.4	468	498	533.4	468	489
500	20	572	510	538	584.2	518	538	584.2	526	529
600	24	680	610	644	692.2	623	644	692.2	630	625

* Ø1: 375 for EN 1092-1 PN 25 and JIS B2220 10K, 16K, 20K

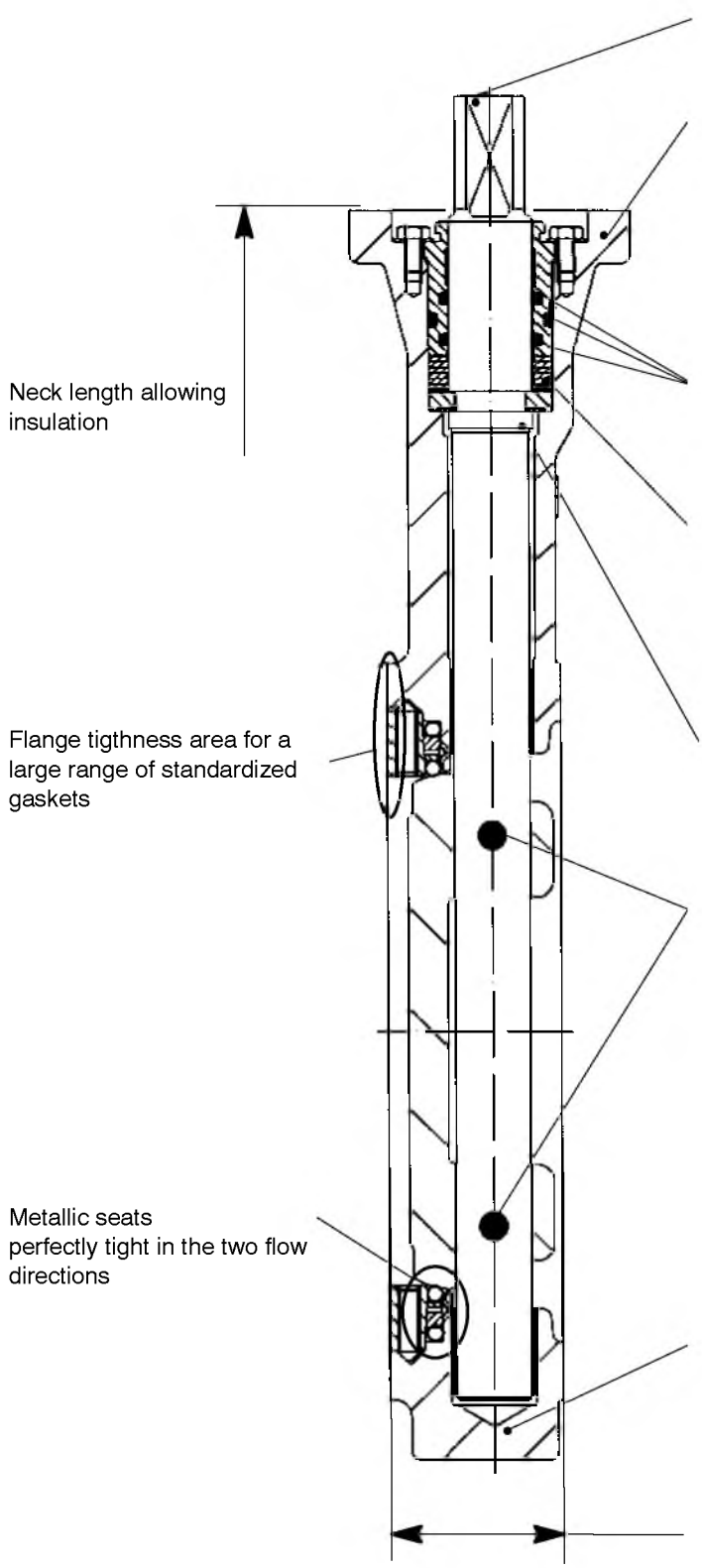
** Ø1: 438 for EN 1092-1 PN 10, 16, 25 and JIS B2220 10K, 16K, 20K

Notes

Notes

Notes

Product features - to our customer's benefit



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KSB S.A.S
4, allée des Barbanniers • 92635 Gennevilliers Cedex (France)
Tel. : +33 1 41 47 75 00 • Fax : +33 1 41 47 75 10 • www.ksb.com

DANAIS TBT II Flanged

Cryogenic OFFSET disc butterfly valves

DN 50 to DN 1200 (2″ to 48″)

Applications

- LNG process / All liquefied gases.

Working conditions

- Temperature: from -250 °C to +200 °C.
- Maximum working pressure: 20 bar.
- Rating: ASME B16.34 Class 150.

Materials

See page 2.

Design

- Flanged body with raised faces (Type 6): DN 50 (2″) to DN 1200 (48″).
- Fire-safe agreement according to BS 6755 part 2 and API 6FA.
- The valves meet the safety requirements of the pressure Equipments Directive 97/23EC (PED) Appendix I for fluids of the groups 1 and 2.
- Face to face according to ISO 5752 series 13 and EN 558.1 series 13 Standards.
- PN10 / PN 16 / PN 20 in accordance with ISO 7005,
- ASME B 16.5 Class 150,
- ASME B16.47 Class 150 series A and B,
- MSS SP 44 Class 150,
- API 605,
- Other drilling patterns on request.

Standard option

- Lip Seal Ring for installation in any position (> 75 ° from vertical positions) (standard for marine applications).
- Drip plate for insulation.
- Electrical continuity.

Standard variants

- Manual actuator MR
- Pneumatic actuator ACTAIR / DYNACTAIR
- Electric actuator ACTELEC
- Hydraulic actuator ACTO / DYNACTO / ENNACTO
- Limit switches box AMTROBOX R

Connections

Materials

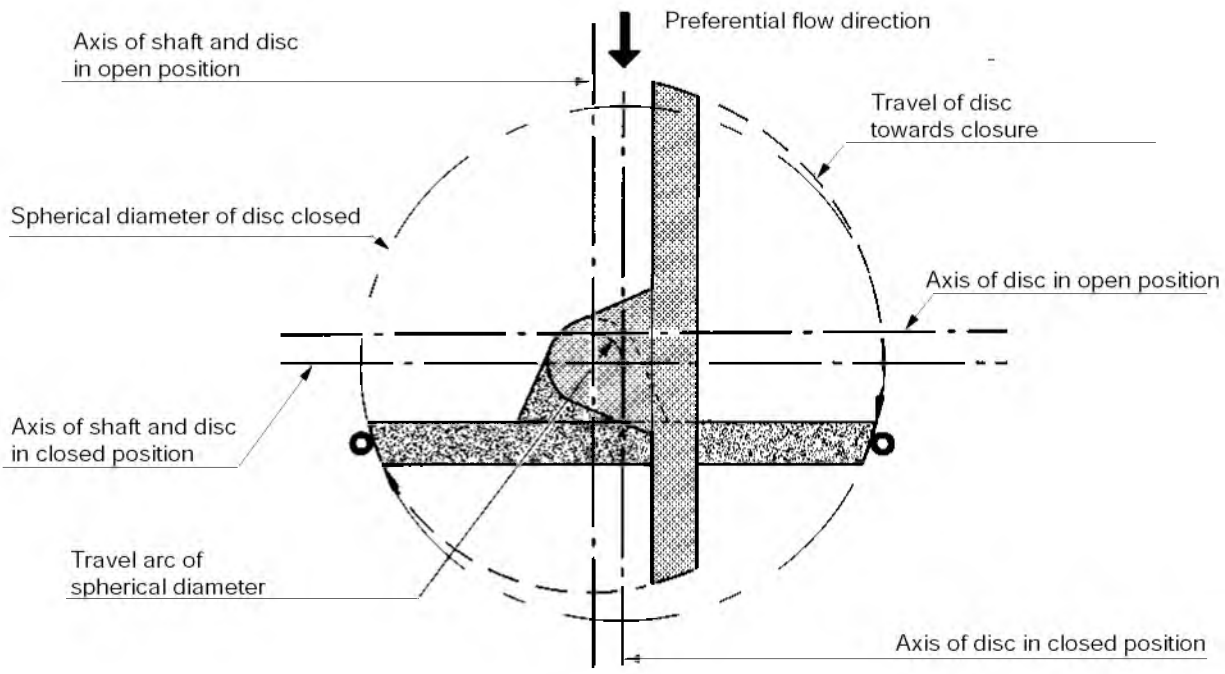
Body	KSB code
Stainless steel ASTM A 351 gr. CF 8M / 1.4408	6
Disc	**KSB code**
Stainless steel ASTM A 351 gr. CF 8M / 1.4408 with hard chromium overlay on edge Stainless steel ASTM A 351 gr. CF 8M / 1.4408 with stellite overlay on edge	6 6s
Operating shaft	**KSB code**
Stainless steel A479 gr. 316L * Stainless steel A638 gr. 660 Stainless steel A479 gr. XM19	6 * 6f 6r
Bonnet	**KSB code**
Stainless steel ASTM A 351 gr. CF 8M / 1.4408	6
Seat	**KSB code**
Copper	CU

* Caution: The working pressure is limited. Please consult us.

Kinematics

The compression of the seating disc edge onto the seat is achieved by double-eccentric kinematics.
The axis of the shafts is off-set to valve axis and eccentric to pipe axis.

This design eliminates the possibility of friction during operation and, as a result ensures long life service while maintaining tight shut-off characteristics.
These tight shut-off characteristics comply with to the most severe requirements and Standards.

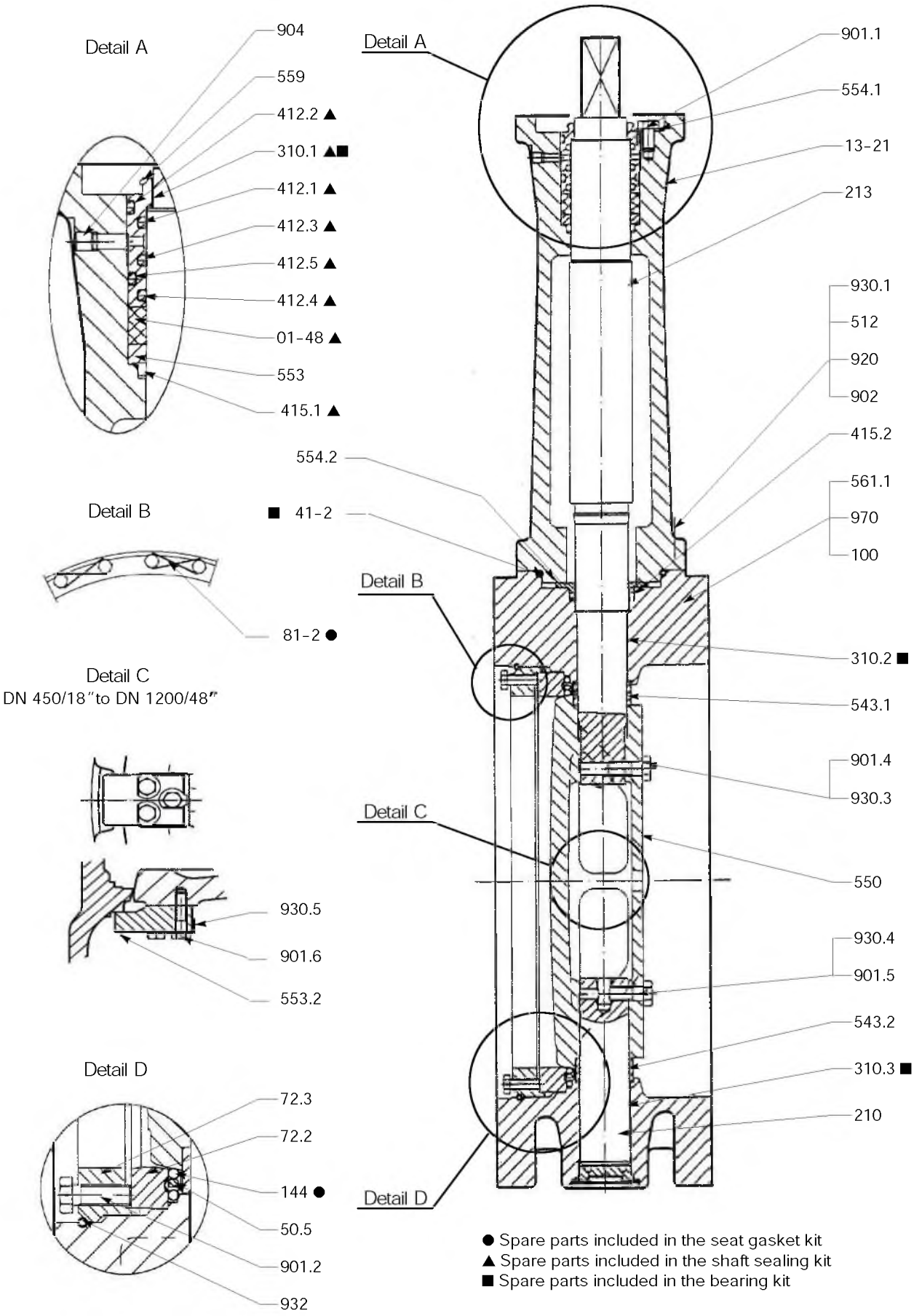


The DANAÏS TBT II Flanged is a bi-directional valve with a preferential flow direction shown by an arrow on the body.

Hydraulic characteristics

DN	NPS	Flow coefficient in full open position		Zeta
		Kv_0	Cv_0	
50	2	70	80	2.04
65	2 ½	110	145	2.35
80	3	190	220	1.81
100	4	340	400	1.38
125	5	600	700	1.08
150	6	980	1 140	0.84
200	8	1 850	2 150	0.75
250	10	3 350	3 880	0.56
300	12	4 870	5 650	0.55
350	14	7 070	8 200	0.48
400	16	10 350	12 000	0.38
450	18	12 500	14 500	0.42
500	20	15 090	17 500	0.44
550	22	18 280	21 200	0.44
600	24	22 410	26 000	0.41
650	26	26 300	30 500	0.41
700	28	29 650	34 400	0.44
750	30	32 820	38 070	0.47
800	32	37 330	43 300	0.47
850	34	42 790	49 600	0.46
900	36	53 840	62 450	0.36
1000	40	58 290	67 600	0.47
1050	42	67 390	78 170	0.43
1200	48	80 000	92 800	0.52

Construction



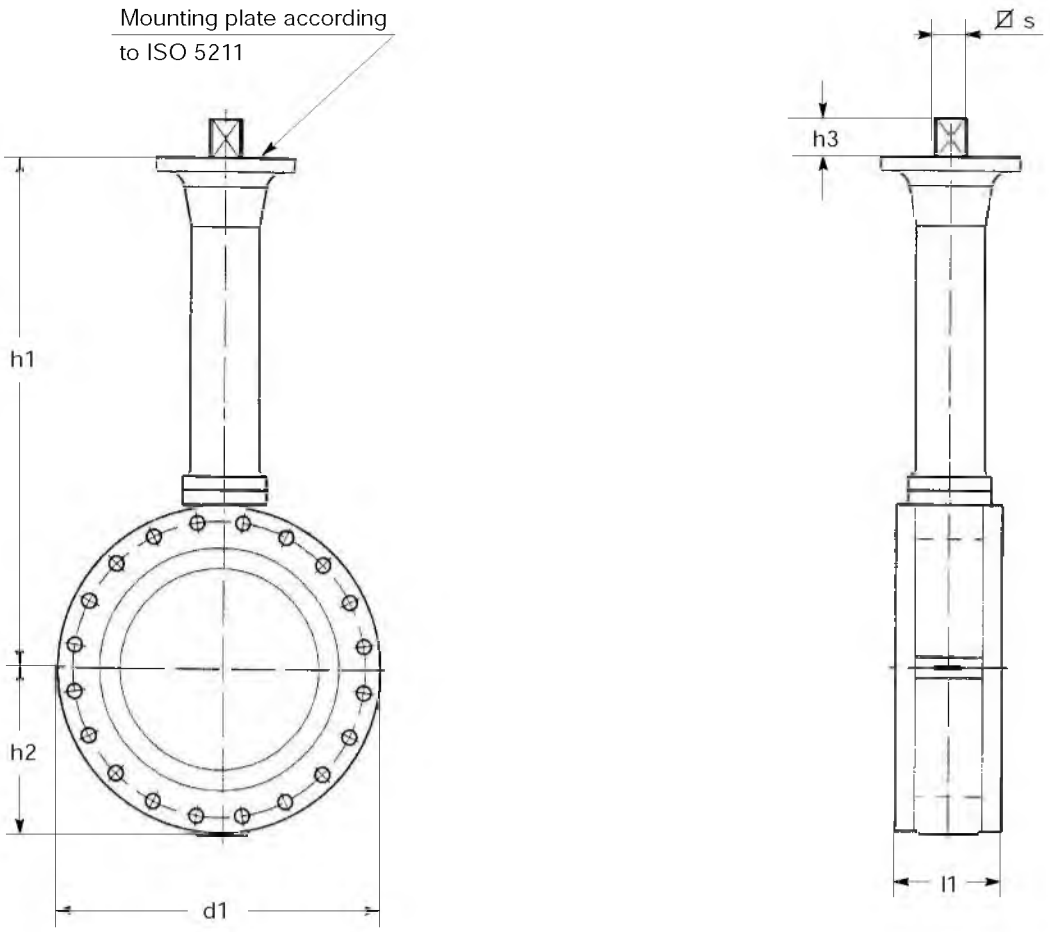
● Spare parts included in the seat gasket kit
▲ Spare parts included in the shaft sealing kit
■ Spare parts included in the bearing kit

Parts list

Item	Designation	Materials
01-48	Sealing packing	Expanded graphite
100	Body	Stainless steel A351 gr CF8M (1.4408)
13-21	Extension	Stainless steel A351 gr CF8M (1.4408)
144	Seat	Copper
210	Shaft	Stainless steel A479 gr. 316L
213	Operating shaft	Stainless steel A479 gr. 316L or A638 gr. 660 (*) or A479 gr. XM19
310.1	Self lubricating strip	Stainless steel + PTFE
310.2	Self lubricating strip	Stainless steel + PTFE
310.3	Self lubricating strip	Stainless steel + PTFE
41-2	Static joint	Nickel
412.1	O-ring	HC Nitrile(**)
412.2	O-ring	HC Nitrile(**)
412.3	O-ring	HC Nitrile(**)
412.4	O-ring	HC Nitrile(**)
412.5	O-ring	HC Nitrile(**)
415.1	Lip seal ring	PTFE + Elgiloy
415.2	Lip seal ring (Standard for marine applications) (Optional for others applications)	PTFE + Elgiloy
50-5	Reaction ring	A638 gr. 660
512	Adjusting ring	Z 3 CND 17-11-02 / 316L
543.1	Spacer bush	Z 3 CND 17-11-02 / 316L
543.2	Spacer bush	Z 3 CND 17-11-02 / 316L
550	Disc	Stainless steel A351 gr CF8M (1.4408) with hard chromium or stellite overlay on edge
553	Thrust insert	Z3 CND 17-11-02 / 316L
553.2	Thrust	Stainless steel 316L
554.1	Washer	Stainless steel
554.2	Plain washer	Stainless steel
559	Gasket holder	Z3 CND 17-11-02 / 316L
561.1	Grooved pin	Z3 CND 17-12-02 / 316L
72-2	Centering flange	Z3 CND 17-11-01 / 316L
72-3	Tightening flange	Z3 CND 17-11-01 / 316L
81-2	Wire	Z3 CN 18-09
901.1	Hexagon head screw	A4-80 Stainless steel
901.2	Hexagon head screw	A4-80 Stainless steel
901.4	Hexagon head screw	A4-80 Stainless steel
901.5	Hexagon head screw	A4-80 Stainless steel
901.6	Hexagon head screw	A4-70 Stainless steel
902	Stud	A320 gr. B8 M cl. 2
904	Socket screw	A4-70 Stainless steel
920	Hexagon nut	A 194 gr. 8 M
930.1	Retainer	Stainless steel 316 or equivalent
930.3	Retainer	Stainless steel 316 or equivalent
930.3	Nut lock	Stainless steel 316
930.4	Nut lock	Stainless steel 316 or equivalent
930.5	Retainer (DN ≥ 700) or wire (DN 450 to 650)	Stainless steel 316 or equivalent
932	Inner ring	Stainless steel 316 or equivalent
970	Identity plate	Stainless steel 316 or equivalent

(*) For DN550, only A638 gr. 660 or A479 gr. XM19 available
(**) HC Nitrile: Epichlorohydrin for ambient temperature below minus 25 °C.

Dimensions - DN 50 to 600

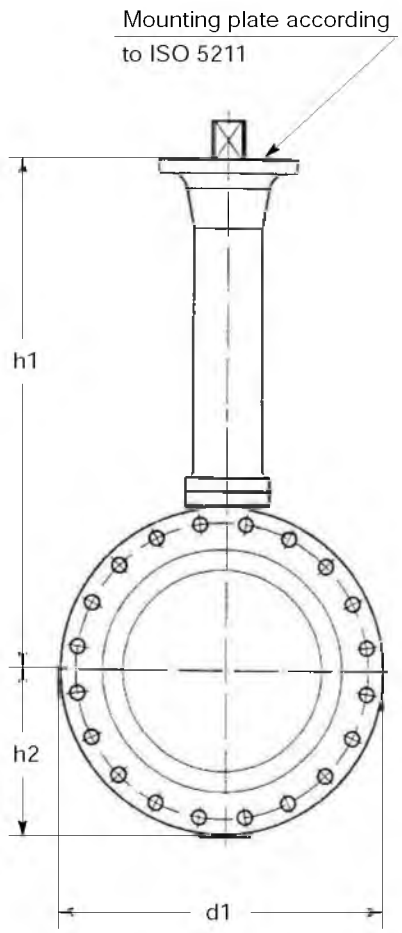


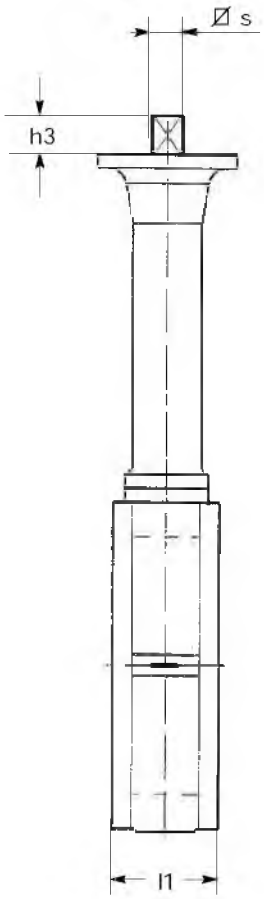
mm

DN	NPS	h1	h2	d1	l1	z	ISO plate	Ø s 6*	Ø s 6f / 6r	h3	Weight Kg
50	2	480	76	152	108	445	F10	19	19	35	12
65	2½	495	89	178	112	452	F10	19	19	35	15
80	3	510	95	190	114	459	F10	19	19	35	20
100	4	530	115	229	127	467	F10	19	19	35	30
125	5	545	127	254	140	478	F10	19	19	35	35
150	6	580	140	279	140	490	F12	25	25	45	41
200	8	610	172	343	152	525	F12	30	30	55	51
250	10	640	203	406	165	500	F12	30	30	55	95
300	12	665	242	483	178	495	F14	36	36	60	133
350	14	700	274	535	190	520	F14	36	36	60	147
400	16	750	300	600	216	515	F16	40	40	76	218
450	18	800	329	635	222	532	F16	46	46	76	242
500	20	850	356	700	229	558	F25	50	50	85	457
550	22	885	382	756	267	585	F25		50	85	472
600	24	975	449	826	267	630	F25	55	50	85	520

* The working pressure is limited. Please consult us.

Dimensions - DN 650 to 1200





mm

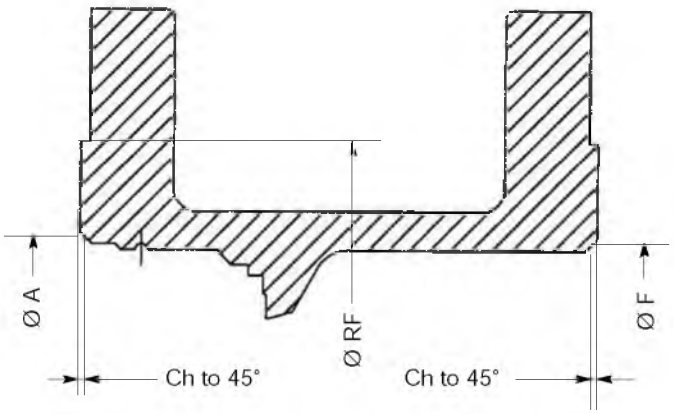
DN	NPS	h1	h2	API (1) d1	MSS (2) d1	l1	ISO plate	Ø s 6*	Ø s 6f / 6r	h3	Weight kg
650	26	1020	446	786	870	292	F30	70	70	104	774
700	28	1050	472	837	927	292	F30	70	70	104	1032
750	30	1100	532	887	985	292	F30	70	70	104	1153
800	32	1135	547	941	1061	318	F30	70	70	104	1274
850	34	1200	565	1005	1112	318	F35	80	80	**	1520
900	36	1175	591	1057	1169	330	F35	80	80	109	1736
1000	40	1280	698	1175	1289	410	F40		90	**	2287
1050	42	1440	705	1226	1346	410	F40		90	112	2621
1200	48	1490	810	1392	1512	470	F40		110	132	3840

(1) API 605 class 150 or ASME B16.47 series B class 150
(2) MSS SP44 class 150 or ASME B16.47 series A class 150

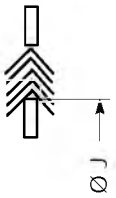
* The working pressure is limited. Please, consult us.
** According to actuator.

Dimensions for flange gasket definition

In order to ensure a correct connection, the dimensions of flange gaskets must be compatible with the dimensions mentionned in the table below.
Connection according to ASME B16.5 class 150 and ASME B16.47 class 150 série A.



NB: We do not supply the gasket



DN	NPS	Ø $A^{\pm 0,5}$	Ø F^{0}_{-10}	Ø J
80	3	94 ,5	90 ,5	104 ,5
100	4	128 ,5	127	138 ,5
150	6	177	176	187
200	8	230	228	240
250	10	278	279	286
300	12	326	330	337
350	14	376 ,5	377	387
400	16	426 ,5	432	439
450	18	490 ,5	477	499
500	20	530 ,5	528	541
550	22	581	587	594
600	24	627	638	647
650	26	673	679	690
700	28	707	713	725
750	30	760 ,5	760	773
800	32	813	816 ,5	828 ,5
850	34			
900	36	918	924	936
1000	40			
1050	42	1066	1054	1078
1200	48	1184	1176	1196

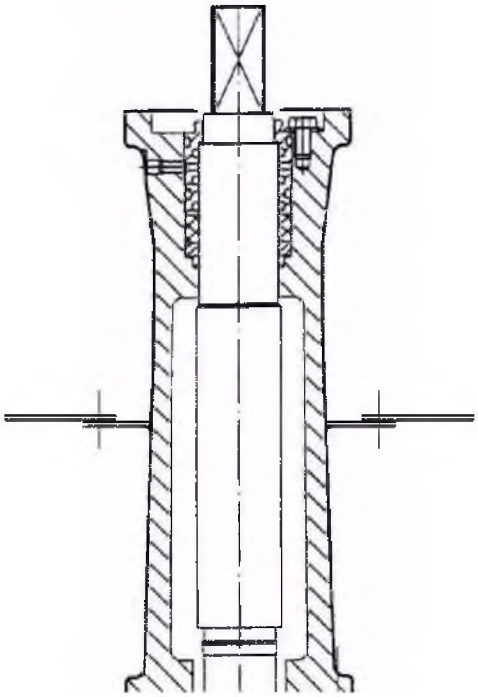
Please consult us

Flange facing finish

Serrated spiral finish according to ASME B16.5 class 150 or ASME B16.47 class 150 série A.
Standard: Stock finish (Ra 6,3 to Ra 12,5)
Optional: Smooth finish (Ra 3,2 and Ra 6,3)

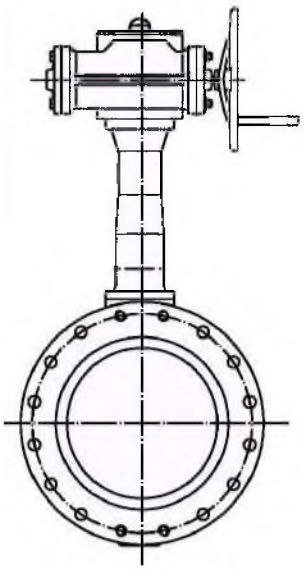
Option

Drip Plate for insulation

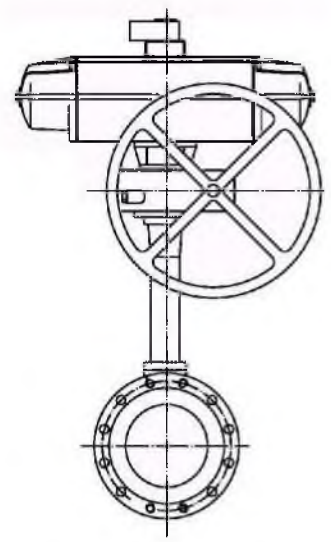


Standard variants

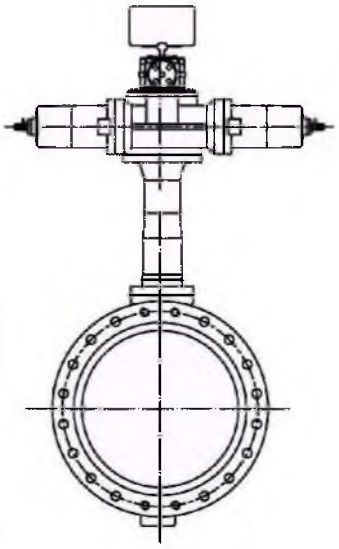
MR manual reducer



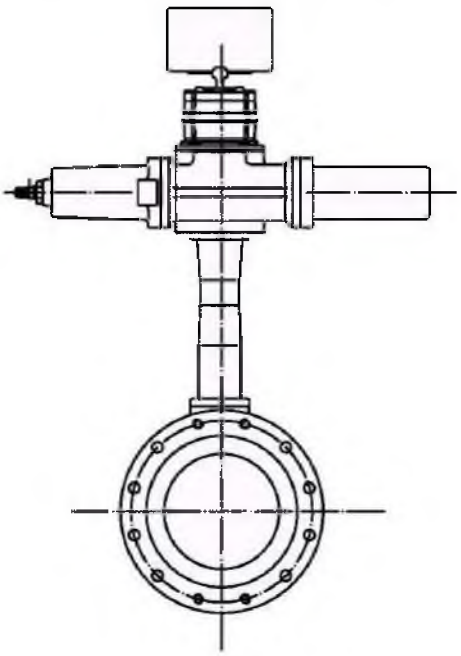
ACTAIR / DYNACTAIR pneumatic actuator with manual override



ACTO hydraulic actuator



ENNACTO hydraulic actuator



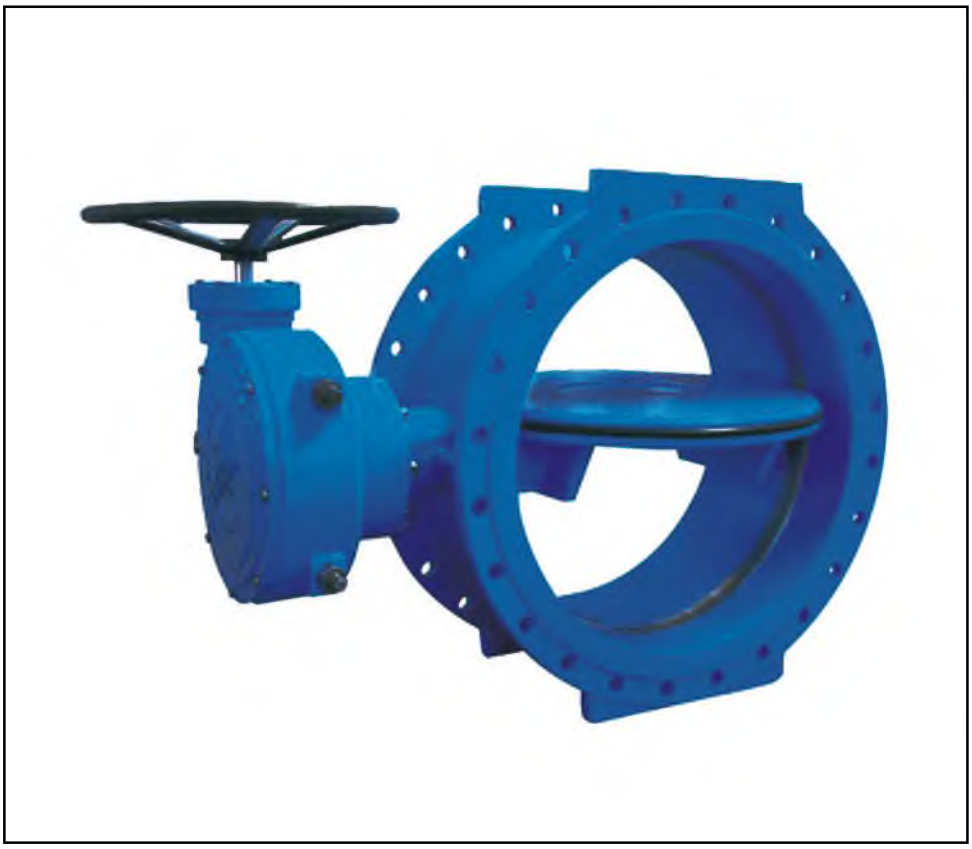
Notes

Butterfly Valve

APORIS-DEB02

PN 10/16/25
DN 150-2200
Epoxy-coated
Flanged Ends

Type Series Booklet



Butterfly Valves

Double-offset Butterfly Valves

APORIS-DEB02

Main applications

- Irrigation systems
- Cooling circuits
- Seawater desalination / reverse osmosis
- Shipbuilding
- Water treatment
- Water supply systems

Fluids handled

- Service water
- River, lake and groundwater
- Cooling water
- Seawater
- Drinking water

Operating data

Operating properties

Characteristic	Value
Nominal pressure	PN 10/16/25
Nominal size	DN 150-2200
Max. permissible pressure	25 bar
Max. permissible temperature	80 °C

Selection as per pressure/temperature ratings (⇨ Page 4)

Body materials

Overview of available materials

Material	Material number	Temperature limit
EN-GJS-400-15	JS1030	Up to 80 °C

Design details

Design

- Double-flanged body with short face-to-face length to EN 558/14
- UNI flanges PN 10, PN 16, PN 25
- Design to BS 5155
- In compliance with API 598
- Marked in accordance with EN 19
- Perfectly tight shut-off in either direction of flow (no leakage visible to the naked eye)
- Mechanical stop on the valve
- Locking device
- Valve certified for drinking water applications to WRAS (elastomer and coating)
- Manual actuator (gearbox)

Variants

- Limit switches
- PN 40 pressure class and flanges
- Design to AWWA C504
- Pneumatic actuators
- Electric actuators

Product benefits

- Body with flanged ends, suitable for downstream dismantling and dead-end service
- Long-term, reliable shut-off and sealing to atmosphere

Related documents

- Operating manual V999011/1.10

On all enquiries / orders please specify

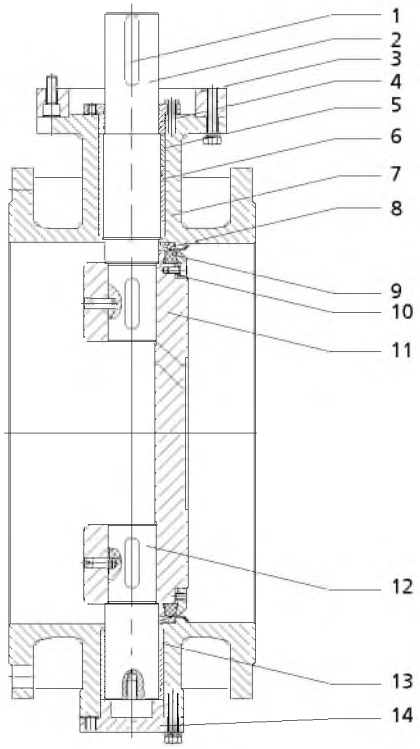
1. Type
2. Nominal pressure
3. Nominal size
4. Operating pressure
5. Differential pressure
6. Operating temperature
7. Fluid handled
8. Pipe connection
9. Variants
10. Number of type series booklet

Pressure/temperature ratings

Permissible operating pressures in bar at temperatures in °C

Nominal pressure	Nominal size	Permissible operating pressures[1)]
PN	DN	Up to +80°C
10	150-2200	10,0
16	150-2200	16,0
25	150-1400	25,0

Materials

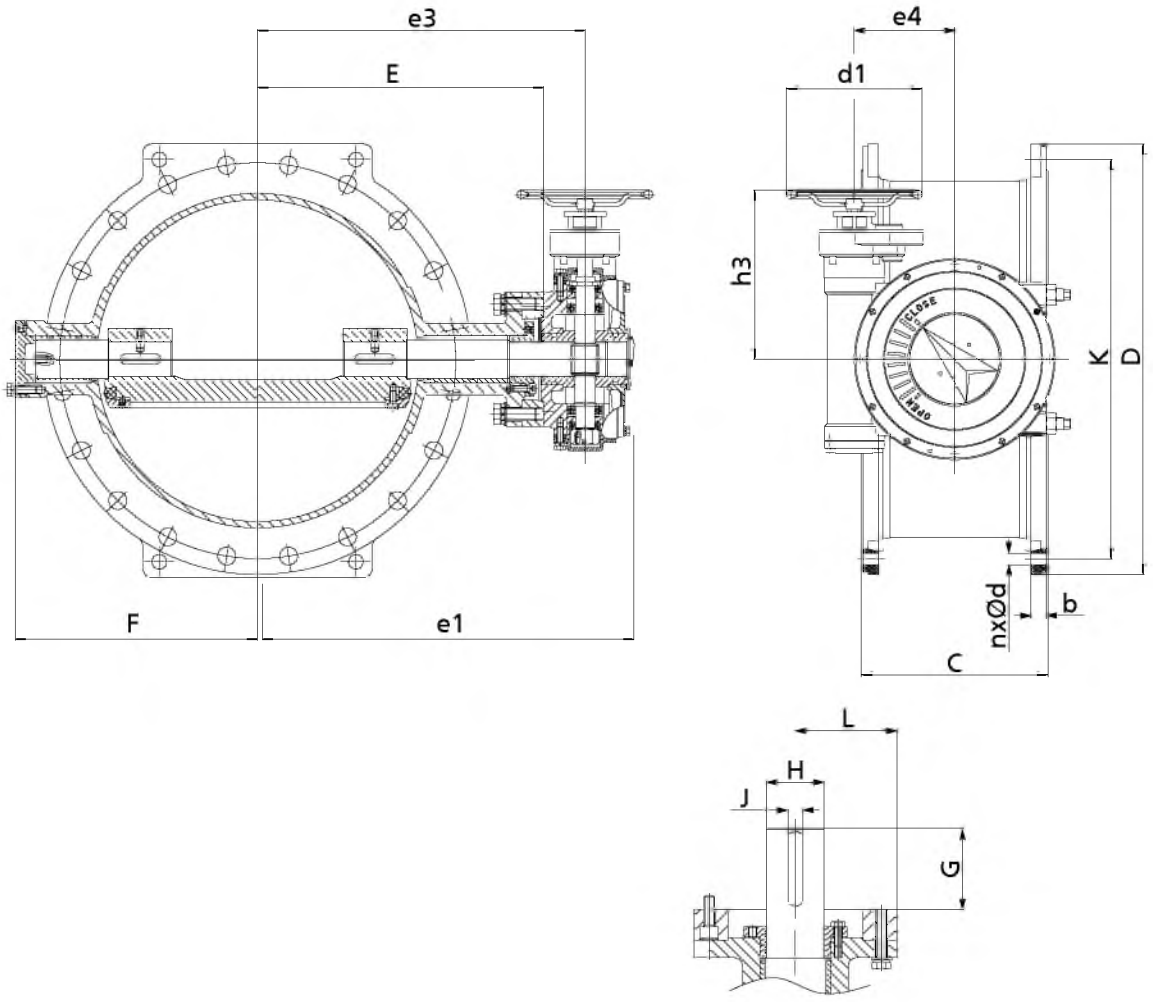


Overview of available materials

Part No.	Description	Material	Material number	Note
1	Key	X20Cr13	1.4021	
2	Upper stem	X17CrNi16-2	1.4057	
3	Flanges	EN-GJS-400-15	EN-JS1030	
4	Stem nut	Carbon steel		
5	Adjusting ring	Aluminium bronze		
6	Upper stem bush	QAL9-2		
7	Body	EN-GJS-400-15	EN-JS1030	Epoxy-coated
8	Body gasket	X2CrNiMo17-12-2	1.4404	
9	Disc seal	EPDM		
10	Circlip	X6CrNiMoTi17-12-2	1.4571	
11	Disc	EN-GJS-400-15	EN-JS1030	Epoxy-coated
12	Lower stem	X17CrNi16-2	1.4057	
13	Lower stem bush	Aluminium bronze		
14	Bottom cover	EN-GJS-400-15	EN-JS1030	Epoxy-coated

1) Static load

Dimensions



Dimensions in mm

PN	DN	C	F	E	G	H	J	K	L	b	h3	e1	e3	e4	d1	n-Ød	D	Top flange[2)]	[kg]
10	150	210	170	200	40	22	6	240	90	19,0	155	284	235	43,2	180	8-23	285	F07	30
	200	230	197	233	45	30	8	195	125	20,0	200	337	278	64,0	250	8-23	340	F10	41
	250	250	223	261	60	30	8	350	125	22,0	200	367	308	64,0	250	12-23	395	F10	56
	300	270	251	295	70	40	12	400	15	24,5	238	418	350	64,0	250	12-23	445	F12	80
	350	290	294	330	80	40	12	160	150	24,5	238	453	385	94,0	250	16-23	505	F12	106
	400	310	329	386	90	50	14	515	175	24,5	275	546	456	132,0	400	16-28	565	F14	139
	450	330	365	411	100	50	14	165	175	25,5	275	571	481	132,0	400	20-28	615	F14	170
	500	350	394	445	90	65	18	620	210	26,5	391	605	515	185,0	400	20-28	670	F16	222
	600	390	454	519	120	65	18	725	210	30,0	391	715	605	185,0	400	20-31	780	F16	308
	700	430	537	585	100	85	22	840	300	32,5	391	785	670	185,0	400	24-31	895	F25	470
	800	470	593	641	120	85	22	950	300	35,0	441	871	741	233,0	400	24-34	1015	F25	622
	900	510	657	706	125	90	25	1050	300	37,5	441	936	806	233,0	400	28-34	1115	F25	870
	1000	550	722	771	125	100	28	1160	300	40,0	491	1059	896	296,0	400	28-37	1230	F25	1087
	1200	630	845	893	155	120	32	1380	350	45,0	512	1181	1018	296,0	400	32-41	1455	F30	1424
	1400	710	967	1019	155	120	32	1590	415	46,0	602	1405	1194	410,0	400	36-44	1675	F35	2494
	1600	790	1113	1111	198	150	36	1820	475	49,0	602	1497	1286	410,0	400	40-50	1915	F40	3221
	1800	870	1251	1244	333	128	32	2020	475	52,0	739	1702	1464	512,5	400	44-50	2115	F48	4356
	2000	950	1370	1330	400	170	40	2230	560	55,0	739	1920	1660	512,5	400	48-50	2325	F48	6382
	2200	1000	1420	1450	400	200	40	2440	560	60,0	-	-	-	-	-	52-55	2550	F48	8510

2) ISO 5211

PN	DN	C	F	E	G	H	J	K	L	b	h3	e1	e3	e4	d1	n-Ød	D	Top flange[2)]	[kg]
16	150	210	167	200	40	22	6	240	90	19,0	155	284	235	43,2	180	8-23	285	F07	30
	200	230	197	233	55	30	8	295	125	20,0	200	337	278	64,0	250	12-23	340	F10	44
	250	250	224	282	60	40	12	355	150	22,0	238	367	308	94,0	250	12-28	405	F12	66
	300	270	267	313	80	40	12	410	150	24,5	238	418	350	94,0	250	12-28	460	F12	90
	350	290	303	357	90	50	14	470	175	26,5	275	453	385	132,0	250	16-28	520	F14	123
	400	310	339	396	110	50	14	525	175	28,0	275	546	456	132,0	250	16-31	580	F14	163
	450	330	379	443	100	65	18	585	210	30,0	391	571	481	185,0	400	20-31	640	F16	211
	500	350	404	469	120	65	18	650	210	31,5	391	605	515	185,0	400	20-34	715	F16	275
	600	390	486	545	120	85	22	725	300	36,0	391	715	605	185,0	400	20-37	840	F25	438
	700	430	537	590	120	85	22	840	300	39,5	441	785	670	233,0	400	24-37	910	F25	600
	800	470	606	655	140	90	25	950	300	43,0	441	871	741	233,0	400	24-47	1025	F25	785
	900	510	699	711	150	100	28	1050	350	46,5	491	936	806	296,0	400	28-41	1125	F30	984
	1000	550	776	791	170	110	28	1160	350	50,0	491	1059	896	296,0	400	28-44	1255	F30	1400
	1200	630	874	921	240	128	32	1380	415	57,0	602	1181	1018	410,0	400	32-50	1485	F35	2240
	1400	710	1034	1038	190	170	40	1590	475	60,0	739	1405	1194	512,5	400	36-50	1685	F40	3100
	1600	790	1175	1188	400	170	40	1820	560	65,0	739	1497	1286	512,5	400	40-57	1930	F48	4237
	1800	870	1320	1335	400	170	40	2020	560	70,0	-	-	-	-	-	44-57	2130	F48	6200
	2000	950	1460	1475	400	200	45	2230	560	75,0	-	-	-	-	-	48-62	2345	F48	8200
	2200	1000	1650	1665	400	200	45	2440	560	90,0	-	-	-	-	-	52-62	2555	F48	14000
25	150	210	188	219	50	30	8	250	125	20,0	200	284	235	64,0	250	8-28	300	F10	43
	200	230	221	245	80	40	12	310	175	22,0	238	337	278	94,0	250	12-28	360	F14	61
	250	250	265	280	80	40	12	370	175	24,5	238	367	308	94,0	250	12-31	425	F14	92
	300	270	298	312	110	50	14	430	210	27,5	275	418	350	132,0	250	16-31	485	F16	137
	350	290	318	365	120	55	16	490	210	30,0	275	453	385	132,0	250	16-34	555	F16	155
	400	310	369	416	120	65	18	550	210	32,0	391	546	456	185,0	400	16-37	620	F16	240
	450	330	375	458	120	65	18	600	210	34,5	391	571	481	185,0	400	20-37	670	F16	308
	500	350	420	484	150	85	22	660	300	36,5	441	605	515	233,0	400	20-37	730	F25	376
	600	390	499	555	170	85	22	770	300	42,0	441	715	605	233,0	400	20-41	845	F25	525
	700	430	601	615	230	100	28	875	350	46,5	491	785	670	296,0	400	24-44	960	F30	775
	800	470	668	697	230	100	28	990	415	51,0	491	871	741	296,0	400	24-50	1085	F35	1025
	900	510	730	750	200	125	32	1090	415	55,5	602	936	806	410,0	400	28-50	1185	F35	1455
	1000	550	819	828	321	140	36	1210	475	60,0	602	1059	896	410,0	400	28-57	1320	F40	1910
	1200	630	995	1004	260	170	40	1310	560	64,5	739	1181	1018	512,5	400	32-57	1530	F48	2822
	1400	710	1150	1124	279	170	40	1640	560	74,0	739	1405	1194	512,5	400	36-62	1755	F48	4250

Mating dimensions - Standards

Face-to-face lengths: EN 558/14
Flanges: DIN EN 1092

2) ISO 5211

BOAX-CBV type CBV13

Centered disc Butterfly valve

PN 10 / 16
DN 50 - 1200

Benefits at a glance

- Flanged type body T7: suitable for downstream dismantling and dead-end service
- Permanent and reliable shut-off and sealing to atmosphere
- Contains no asbestos, CFC, PCB or substances impairing paint adhesion
- Approved for drinking water applications (rubber and painting WRAS certified)
- Manual gearbox operated

Applications

- Flow shut-off or regulation
- For water supply, treatment, distribution, sewage, irrigation, potable water, high pure water, sea water, air, gas, oil

Operating data

- Maximum permissible pressure: 16 bar
- Maximum permissible temperature: 115 °C

Materials

- Body: ductile iron
- Disc: stainless steel
- Shaft: stainless steel 316
- Liner: EPDM: from -10 °C to +115 °C
  NBR: from -10 °C to +80 °C

Design

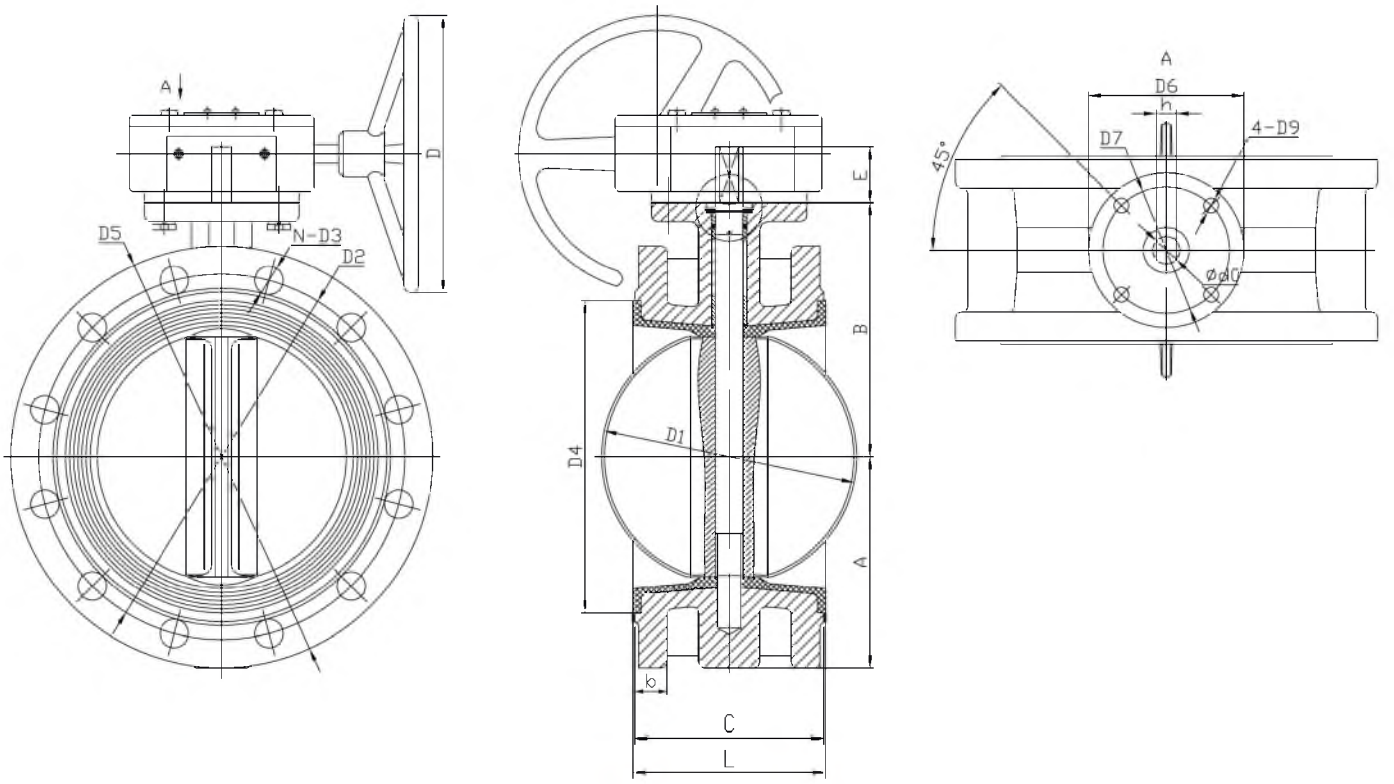
- Valve perfectly tight shut-off (no visible leakage at the naked eye) in either flow direction
- In accordance with API 598 – AWWA C504
- Flanged type body with raised faces (T7)
- Top flange to ISO 5210
- Face-to-face length to ISO 5752 EN 558 series 13 (Double flanged short) / BS 5155
- Design to BS5155 – AWWA C504
- Pressure rating PN 10/16 bar
- Line connection to EN 1092 PN 10/16
- Marking to EN 19

Standard variants

- Pneumatic actuators
- Electric actuators
- Limit switches

Other DNs, materials, variants, ...? Please contact us for your personal quotation

Overall dimensions



Standard Model

		Dimensions (mm)																N	Weight (kg)
DN	PN	D1	D2	D3	D4	D5	D6	D7	D9	d0	h	A	B	C	E	L	b		
50	10/16	52.9	125	19	95	165	90	70	10	12.6	9	83	120	108	32	111	19.0	4	12.9
65		64.5	145		114	185						93	130	112		115			14.9
80		78.8	160		128	200						100	145	114		117		8	16.6
100		104	180		150	220				15.8	11	114	155	127		130			19.3
125		123.3	210		180	250				18.9	14	125	170	140		143			24.8
150		155.6	240	23	200	285						143	190						28.2
200		202.5	295		262	340	125	102	12	22.1	17	170	205	152	40	155	20.0		44.8
250		250.5	350		310	395				28.5	22	198	235	165		168	22.0	12	64.0
300		301.6	400		364	445				31.6		223	280	176		182	24.5		73.7
350		333.4	460		415	505	150	125	14		-	279	310	190	45	194		16	105.0
400		389.7	515	28	460	565	175	140	18	38	-	300	340	216	52/72	221			137.0
450		440.7	565		510	615				42.9	-	345	375	222		227	25.5	20	190.4
500		491.6	620		560	670	210	165	22	41.1	-	355	430	229	64/82	234	26.5		240.2
600		592.5	725	31	660	780				50.6	-	410	500	267	70/82	272	30.0		327.7
700	10	695.0	840	34	770	895	300	254	18	63.4	-	478	560	292	66/82	299	32.5	24	417.6
800		794.7	950		871	1015					-	560	640	318		325	35.0		580.0
900		864.7	1050		972	1115				75	-	584	665	330	118	338	37.5	28	763.0
1000		965.0	1160	37	1080	1230				85	-	657	735	410	142	418	40.0		950.0
1200		1160.6	1380	41	1270	1455	350	298	22	105	-	799	917	470	150	478	45.0	32	1560.0

Hydraulic characteristics

DN	NPS	Flow coefficient valve in fully open position Kvo	Cvo	Zeta
50	2	116.4	135	0.74
65	2 ½	189.7	220	0.79
80	3	260.3	302	0.97
100	4	517.2	600	0.60
125	5	881.0	1022	0.50
150	6	1361.2	1579	0.44
200	8	2703.4	3136	0.35
250	10	4603.4	5340	0.29
300	12	7112.1	8250	0.26
350	14	10273.3	11917	0.23
400	16	14127.6	16388	0.20
450	18	18711.2	21705	0.19
500	20	21058.6	27908	0.23
600	24	37169.0	43116	0.15
700	28	42672.4	49500	0.21
800	32	58836.2	68250	0.19
900	36	74461.2	86375	0.19
1000	40	103232.8	119750	0.15
1200	48	147623.3	171243	0.15

Operating torques *)

DN	NPS	Operating torques *) (in Nm) 10 bar (lubricated)	16 bar (lubricated)
50	2	17.5	17.5
65	2 ½	25.0	25.0
80	3	33.8	33.8
100	4	62.5	62.5
125	5	106.3	106.3
150	6	156.3	156.3
200	8	297.5	297.5
250	10	525.0	525.0
300	12	837.5	837.5
350	14	1217.5	1217.5
400	16	1641.3	1641.3
450	18	2243.8	2243.8
500	20	2897.5	2897.5
600	24	4658.8	4658.8
700	28	6162.5	
800	32	8113.8	
900	36	9901.3	
1000	40	16811.3	
1200	48	23646.3	

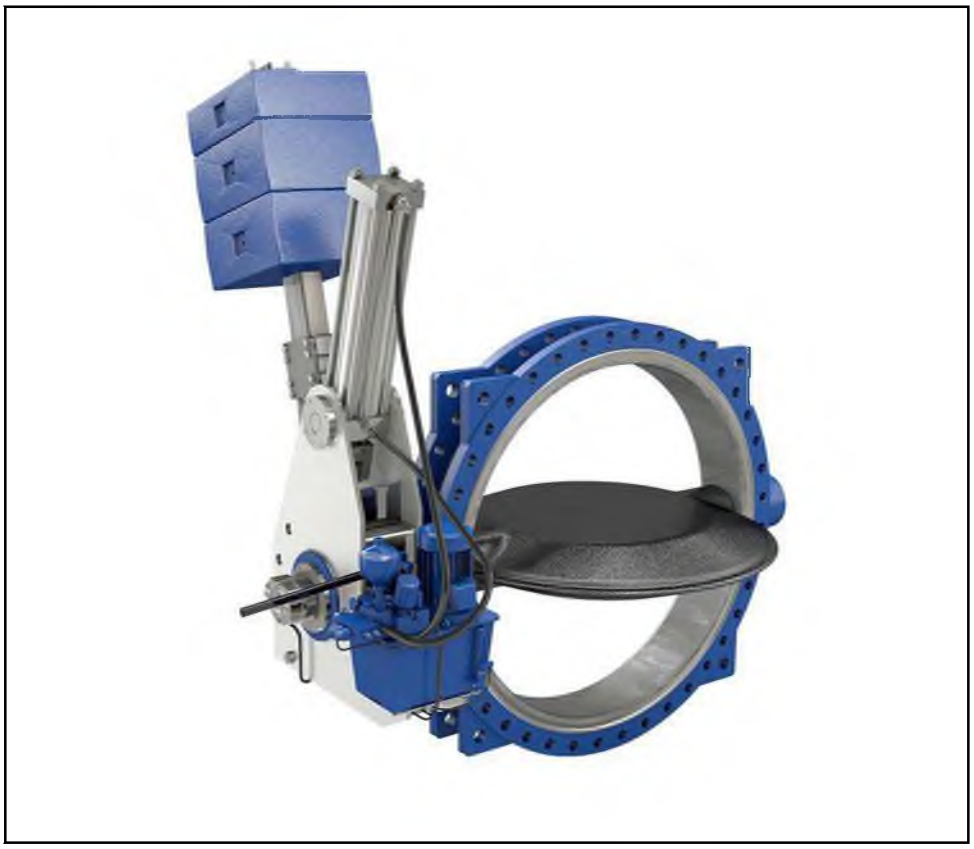
*) The safety coefficient to define the adapted actuator is included in the torque value.

Combined Butterfly/Check Valve

DUALIS

DN 500 to 1400
PN 6 up to 40 bar

Type Series Booklet



Butterfly Valves

Combined Butterfly/Check Valve

DUALIS

Main applications

- Water
- Energy
- Industry

Fluids handled

- Seawater
- Drinking water
- Brackish water
- Grey water
- Solids-laden fluids
- Corrosive fluids
- Gas

Operating data

Operating properties

Characteristic	Value
Max. permissible pressure	40 bar (depending on valve design)
Max. permissible temperature	-10 °C to +65 °C
Enclosure	IP 65 Motor: IP 55

Design details

Design

- DUALIS consists of a (centred-disc or offset-disc) butterfly valve and a (single-acting) counterweight actuator closing the valve by force of gravity.
- The counterweight actuator is mounted on the valve's top flange and directly connected to the actuating stem. It consists of the following components:
  - Mechanical section: bracket, lever arm, hydraulic cylinder, counterweights
  - Hydraulic power pack
  - Limit switch box
  - Terminal box for site connection by customer
- DUALIS combines two functions:
  - the on/off butterfly valve function required of
    a pump discharge valve in pumping stations
  - the check valve function required for:
    absolutely tight shut-off of sections of piping,
    piping protection by means of flow velocity monitoring system,
    protection of turbines in barrages/dams.
- Please request particulars for installation in regions with seismic hazards. Other solutions may be provided.

Product benefits

- Absolutely reliable, gravity-powered closing system
- Two-speed closing action prevents surge pressures.
- Modular design
- The valve can be opened using an emergency hand pump.
- Safety locking option by manually locking the counterweight actuator
  - in open position
  - in closed position

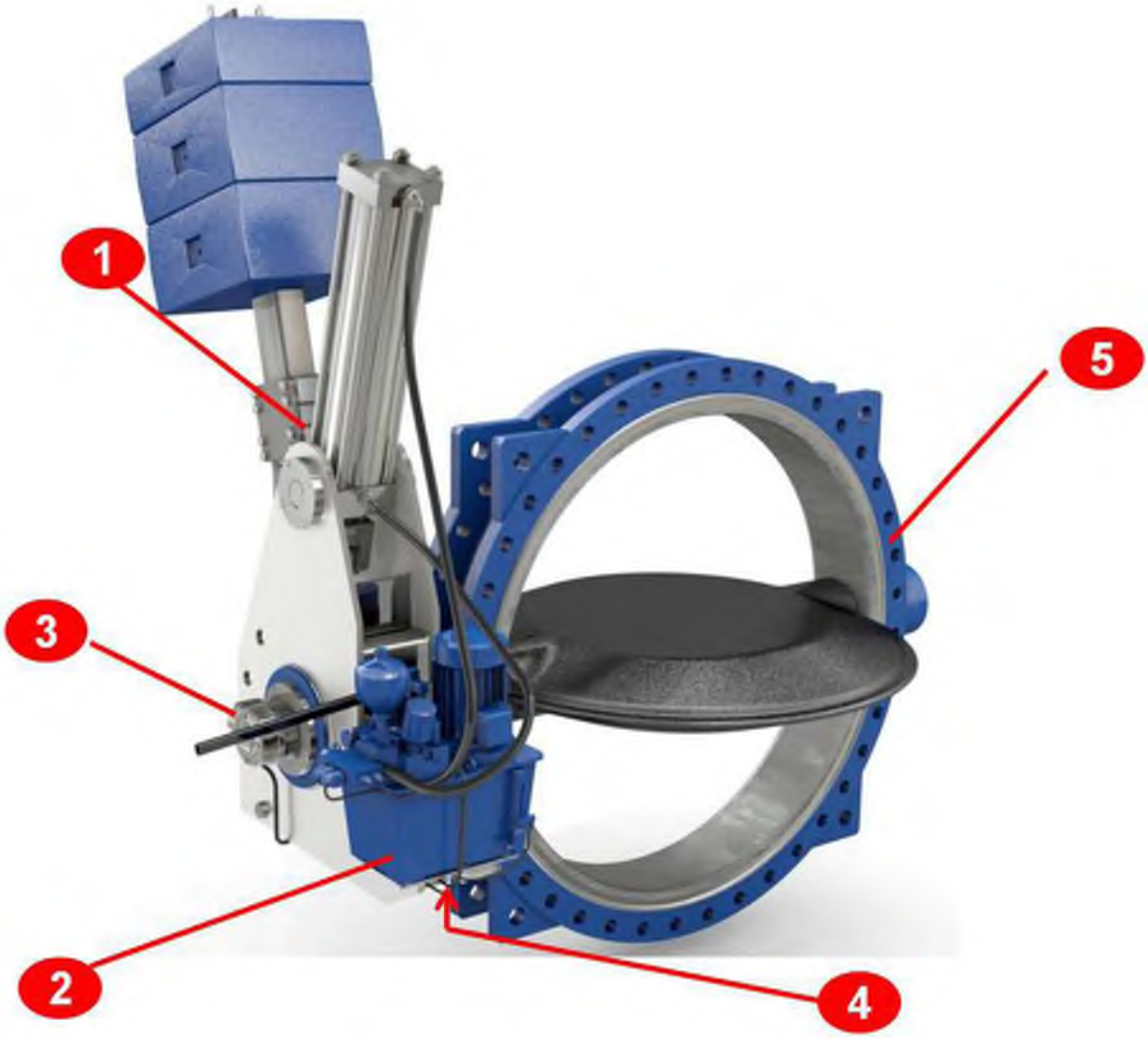
Related documents

Document	Reference No.
ISORIA 10 type series booklet	8444.1
ISORIA 16 type series booklet	8445.1
ISORIA 20 type series booklet	8446.1
ISORIA 25 type series booklet	8447.1
MAMMOUTH type series booklet	8612.12

Document	Reference No.
DANAIS type series booklet	8460.11

Also available for other KSB valves or commercial quarter-turn valves on request.

Configuration



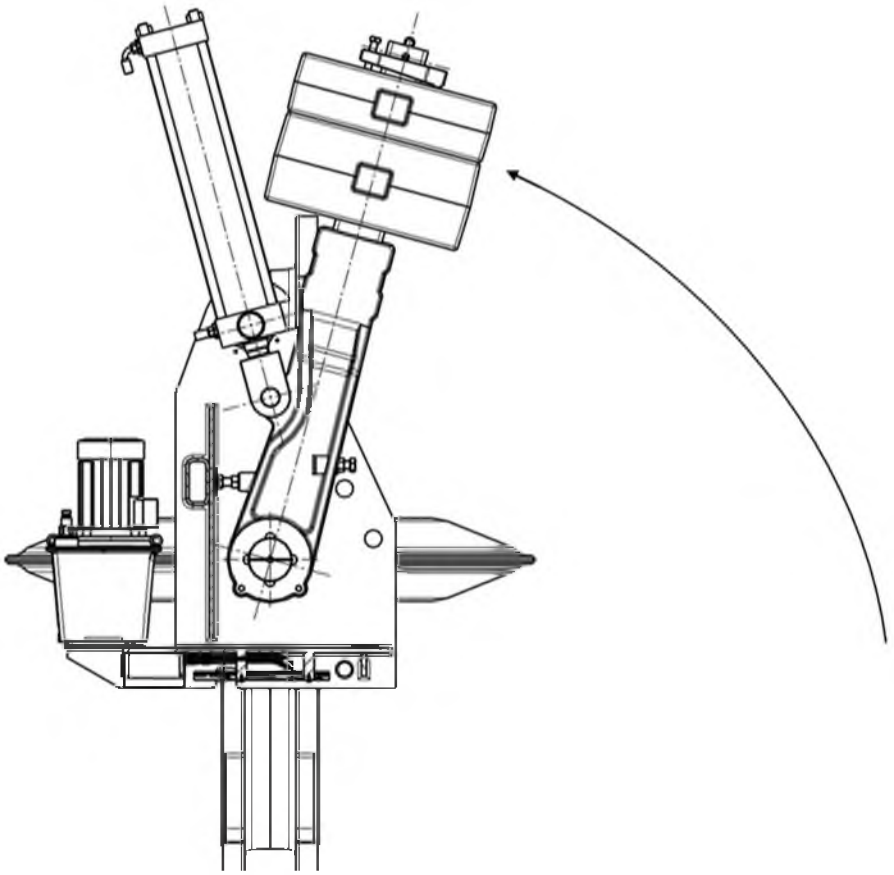
1 : Counterweight
2 : Integrated hydraulic power pack
3 : Limit switch box
4 : Terminal box
5 : Butterfly valve

Illustration
Illustration shows standard centred-disc design.
The counterweight actuator can also be mounted on offset-disc butterfly valves.

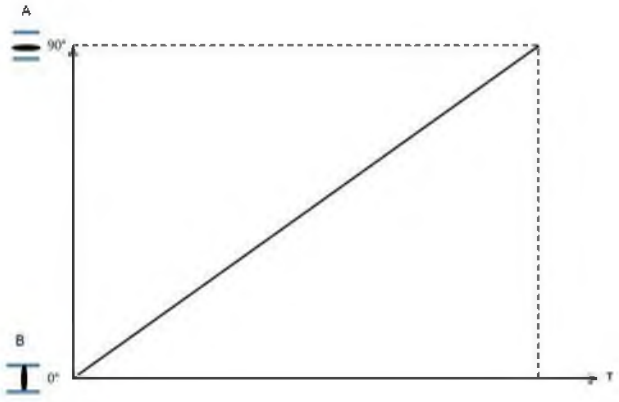
Function

Opening the valve

The valve is opened by means of a cylinder driven by the hydraulic power pack. During the opening process, the hydraulic cylinder moves the lever arm to the raised ("armed") position. When the valve is open, the cylinder rod is retracted.



The opening speed is constant as standard. It can be set by KSB or by the operator.

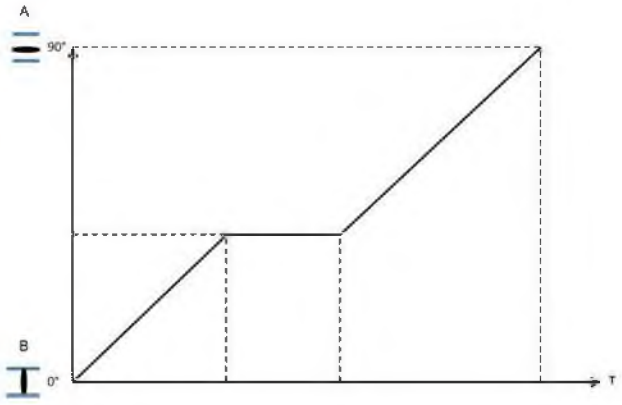


A: Open
B: Closed
T: Time

Opening options

The opening action can be interrupted and resumed by the operator.

- The speed can be set by KSB or by the operator.
- Several stop-and-go cycles are possible during a single actuation.



A: Open
B: Closed
T: Time

Stop-and-go cycles are linked to the start commands for the pump in the system.

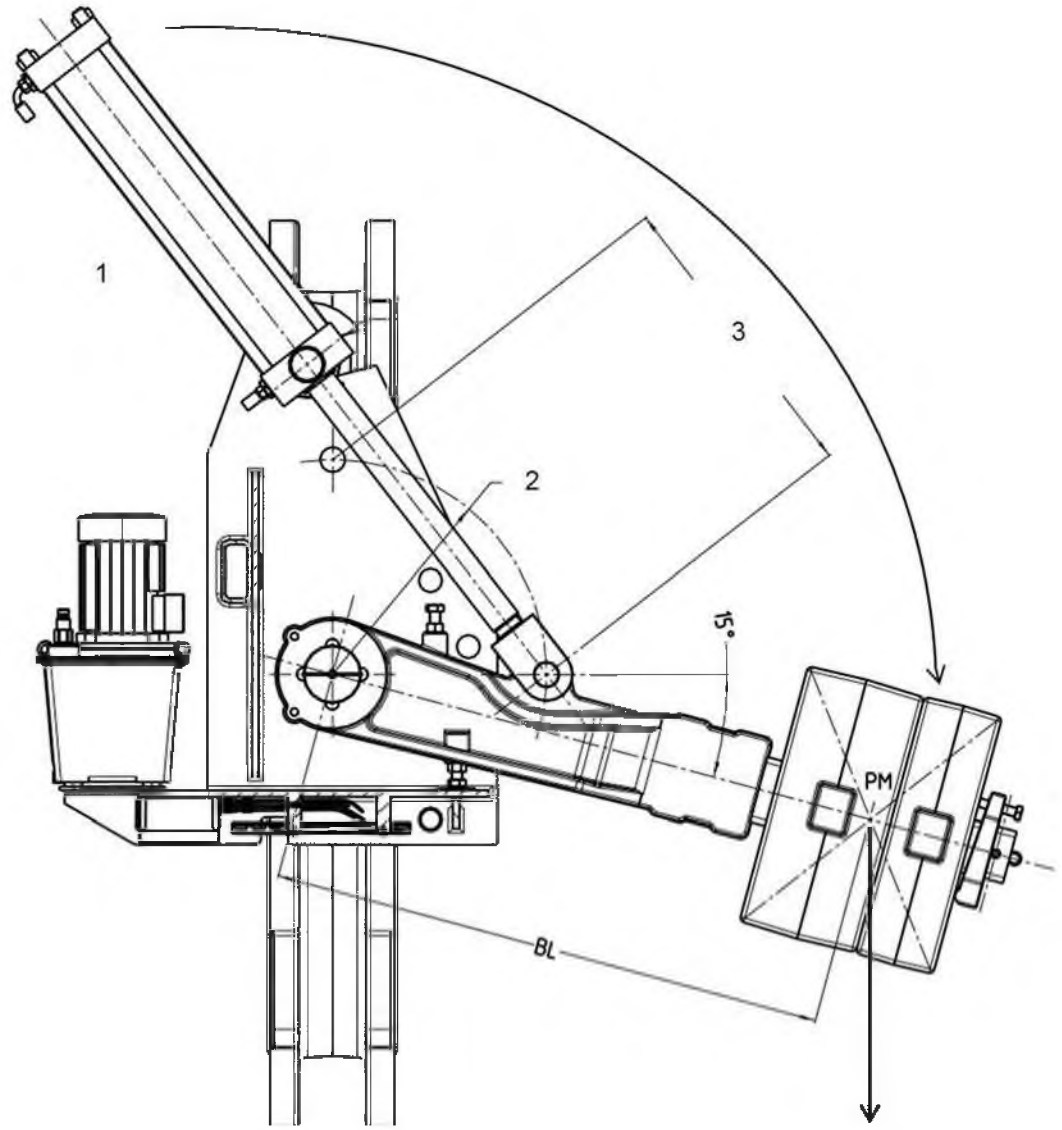
Holding in open position

To hold the valve open, the pressure inside the hydraulic cylinder needs to be monitored.
The pressure is continuously measured by a pressure sensor connected to the operator's monitoring system.
An accumulator compensates for pressure fluctuations in the system and maintains a defined minimum pressure. If the pressure drops below this limit, the hydraulic pump will re-charge the accumulator. Any pressure drop below this limit is detected by the sensor and signalled to the operator for the pump set of the hydraulic power pack to be started. The pump supplies hydraulic oil to the cylinder until the pressure required for the counterweight to be held in the raised ("armed") position has been restored.

Valve closure

The valve is closed by the counterweight being lowered either as a result of a site-supplied, process-related signal or, optionally, following a signal triggered by a power failure.

The lowering process of the counterweight is controlled until the valve is fully closed. Two-speed closing can be provided if required by the customer's process (slowing down before the valve is fully closed). When the valve is closed, the cylinder rod is in extended position.

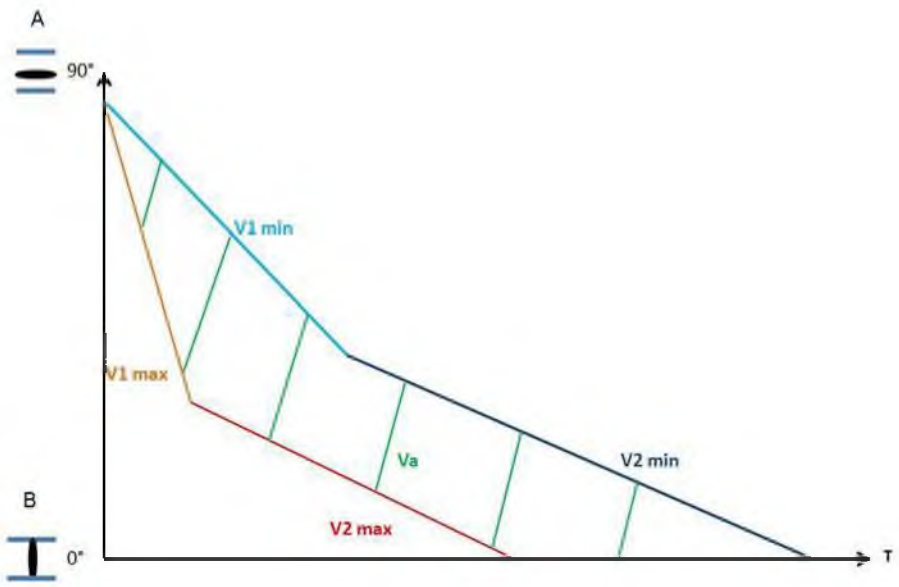


The valve is closed by the lowering of the counterweight.

1: Extended cylinder
2: Angle traversed between open and closed positions
3: Cylinder stroke

Closing options

Valve closure can be effected at two different speeds as required by the operator.



Angle of 30° (example)

A:	Open	V1 min:	Minimum speed 1
B:	Closed	V2 min:	Minimum speed 2
T:	Time	V1 max:	Maximum speed 1
Va:	Adjustable speed	V2 max:	Maximum speed 2

General data of DUALIS

- Designed for a service life of 20 years
- Sound level: less than 75 dB A at a distance of 1 metre
- Cylinder to ISO 6020/2 type MT1
- Designed and manufactured in accordance with ISO 9001
- Machinery Directive 2006/42/EC (EN ISO 12100)

The complete unit meets the requirements of the applicable European directives. The electrical systems and components which meet the relevant European directives (EMC Directive, Low-voltage Directive) are CE-marked.

As a component, the valve with the complete counterweight assembly is not regarded as "completed machinery" capable of functioning autonomously in accordance with Machinery Directive EN 292-2. This directive stipulates that the CE symbol must not be used in this case, and no EC Declaration of Conformity may be issued. However, a Declaration of Incorporation will be issued for actuated valves intended for installation in other machinery.

Coating

The coating provides corrosion protection.

Scope

The following components are coated:

- The mechanical section of the counterweight assembly (bracket, lever arm, cylinder, counterweights)
- The hydraulic power pack

The entire counterweight assembly (mechanical section and hydraulic power pack) is coated in the same colour.

Coating systems

Standard industrial environment: standard two-layer system	
P30	AMERCOAT 124 zinc epoxy - 50 µm + CELLUTOP T polyurethane, grey RAL 7016 - 80 µm
EN ISO 12944 Class C3 - optional	
P61	AMERCOAT 124 zinc epoxy - 50 µm + AMERCOAT 71 TC epoxy - 50 µm + CELLUTOP T polyurethane, grey RAL 7016 - 80 µm
EN ISO 12944 Class C4 (high) - optional	
P71	AMERCOAT 124 zinc epoxy - 50 µm + AMERCOAT 400 MIO epoxy - 125 µm + CELLUTOP T polyurethane, grey RAL 7016 - 80 µm
EN ISO 12944 Class C5 (very high) - optional	
P81	AMERCOAT 124 zinc epoxy - 50 µm + AMERCOAT 71 TC .. epoxy - 50 µm + AMERLOCK 400 MIO epoxy - 125 µm CELLUTOP T polyurethane, grey RAL 7016 - 80 µm

Other coatings on request

Warranty

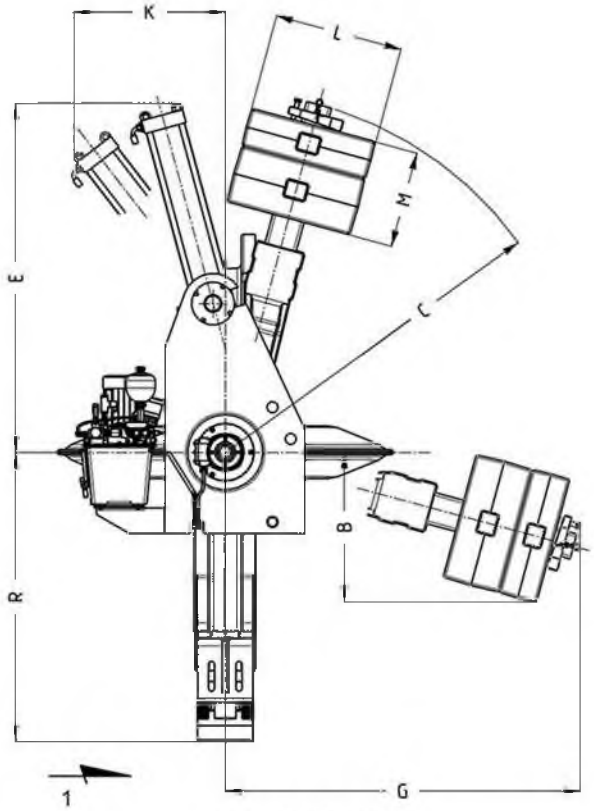
The warranty period for components with a standard coating is one year from delivery.
For a longer warranty period, multi-layer coatings are required.

EN - ISO 12944 - Part 2 Classification of environments		
Corrosivity category of environment	**Examples of typical environments in a temperate climate (informative only)**	
	Exterior	**Interior**
C3	Urban and industrial atmospheres, moderate sulphur dioxide pollution. Coastal areas with low salinity.	Production rooms with high humidity and some air pollution, e.g. food-processing plants, laundries, breweries, dairies.
C4 (high)	Industrial areas and coastal areas with moderate salinity.	Chemical plants, swimming pools, coastal ship- and boatyards.
C5-I (very high / industrial)	Industrial areas with high humidity and aggressive atmosphere.	Buildings or areas with permanent condensation and with high pollution.
C5-M (very high / marine)	Coastal and offshore areas with high salinity.	Buildings or areas with permanent condensation and with high pollution.

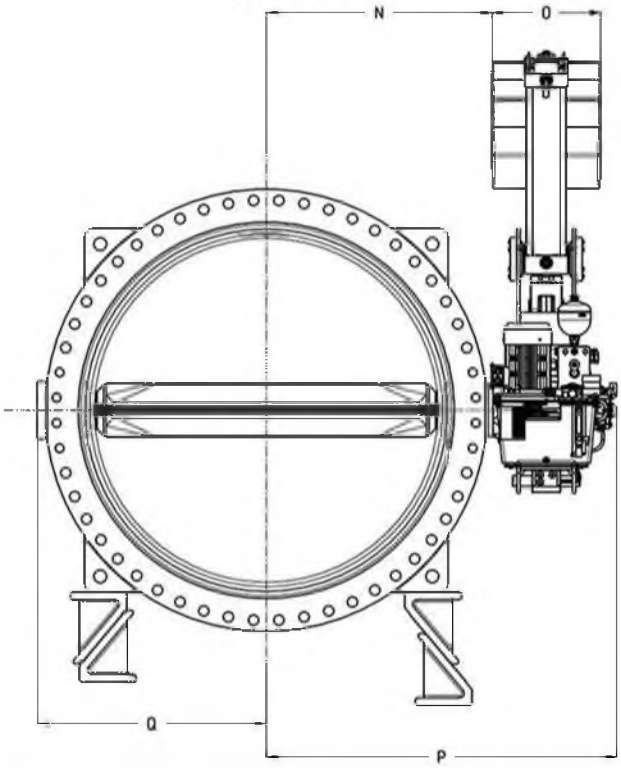
Dimensions

Drawing

Side view (counterweight)



View on pipe axis



Dimensions

DN	NPS	1)	2)	3)	B	Radius C	E	G	K	L	M	N	O	P	Q	R
ISORIA 10 / MAMMOUTH 10																
500	20	R380	2200	40	518	1186	1270	1175	560	500	180	342	400	1012	358	/
600	24	R380	2200	45	518	1186	1270	1175	560	500	180	397	400	1067	439	/
	26	R380	2200	45	518	1186	1270	1175	560	500	180	437	400	1107	451	/
700	28	R380	2200	50	518	1186	1270	1175	560	500	180	462	400	1132	482	/
	30	R380	3150	65	518	1186	1270	1175	560	500	270	492	400	1162	513	/
800	32	R380	3150	65	518	1186	1270	1175	560	500	270	517	400	1187	546	/
900	36	R380	4000	85	518	1186	1270	1175	560	500	360	567	400	1237	588	/
1000	40	R380	5300	70	592	1472	1260	1450	565	500	360	637	400	1307	646	/
	42	R380	5300	75	592	1472	1260	1450	565	500	360	655	400	1325	674	1055
1100	44	R380	5300	75	592	1472	1260	1450	565	500	360	680	400	1350	703	1076
1200	48	R380	8500	90	592	1472	1260	1450	565	500	450	730	400	1400	756	1112
	54	R480	8500	60	664	1543	1615	1520	680	600	360	877	500	1557	968	1210
1400	56	R480	8500	60	664	1543	1615	1520	680	600	360	902	500	1582	993	1235
ISORIA 16 / MAMMOUTH 16																
500	20	R380	2200	40	518	1186	1270	1175	560	500	180	342	400	1012	358	/
600	24	R380	2200	45	518	1186	1270	1175	560	500	180	397	400	1067	439	/
	26	R380	4000	65	518	1186	1270	1175	560	500	360	437	400	1107	451	/
700	28	R380	4000	70	518	1186	1270	1175	560	500	360	462	400	1132	482	/
	30	R380	4000	70	518	1186	1270	1175	560	500	360	492	400	1162	513	/
800	32	R380	4000	75	518	1186	1270	1175	560	500	360	517	400	1187	546	/
900	36	R380	5300	65	592	1472	1260	1450	565	500	360	567	400	1237	588	/
1000	40	R380	6500	75	592	1472	1260	1450	565	500	360	637	400	1307	646	/
1100	44	R480	8500	60	664	1543	1615	1520	680	600	360	752	500	1432	843	1100
ISORIA 20 / MAMMOUTH 20																
500	20	R380	2200	40	518	1186	1270	1175	560	500	180	342	400	1012	358	/
600	24	R380	3150	55	518	1186	1270	1175	560	500	270	397	400	1047	438	/
ISORIA 25 / MAMMOUTH 25																
500	20	R380	3150	50	518	1186	1270	1175	560	500	270	342	400	1012	358	/
600	24	R380	4000	65	518	1186	1270	1175	560	500	360	397	400	1047	438	/

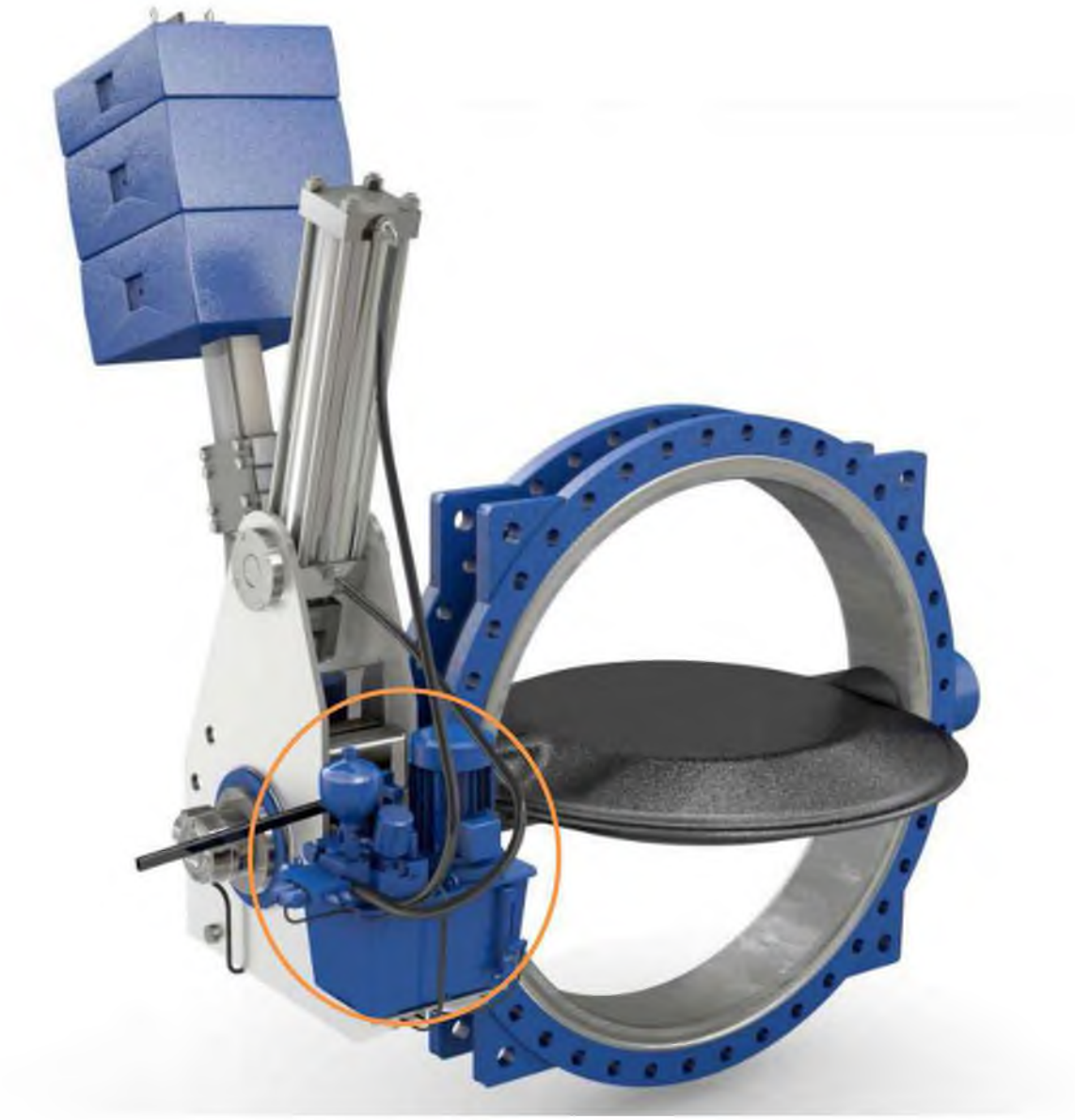
The counterweight actuator can be adapted to any type of centred-disc or offset-disc butterfly valve made by KSB or other manufacturers.
Request particulars.

1) Type of counterweight
2) Torque [Nm]
3) Minimum hydraulic pressure for raising the counterweight [bar]

Other components

Hydraulic power pack

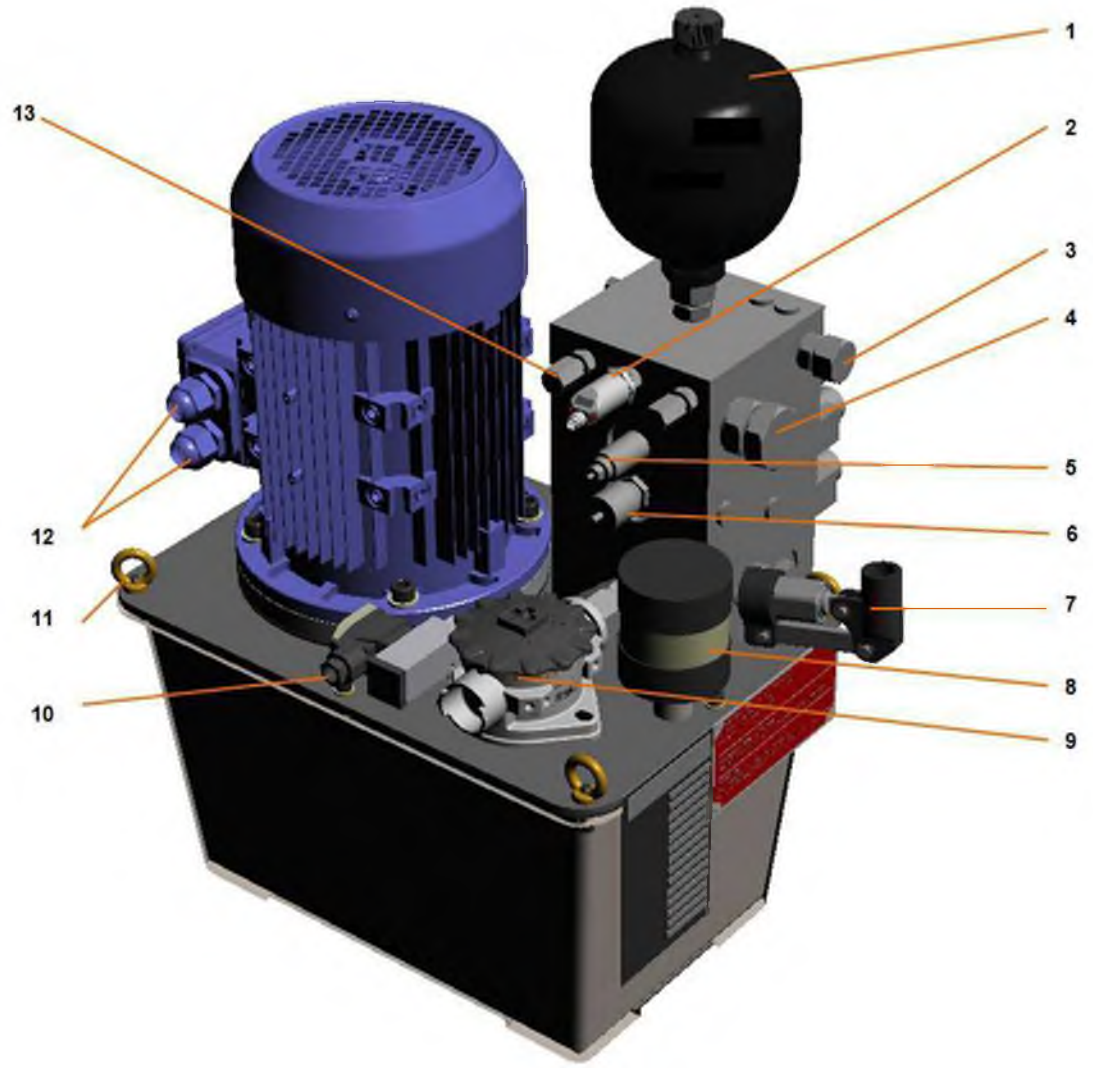
Position



Technical data of the hydraulic power pack

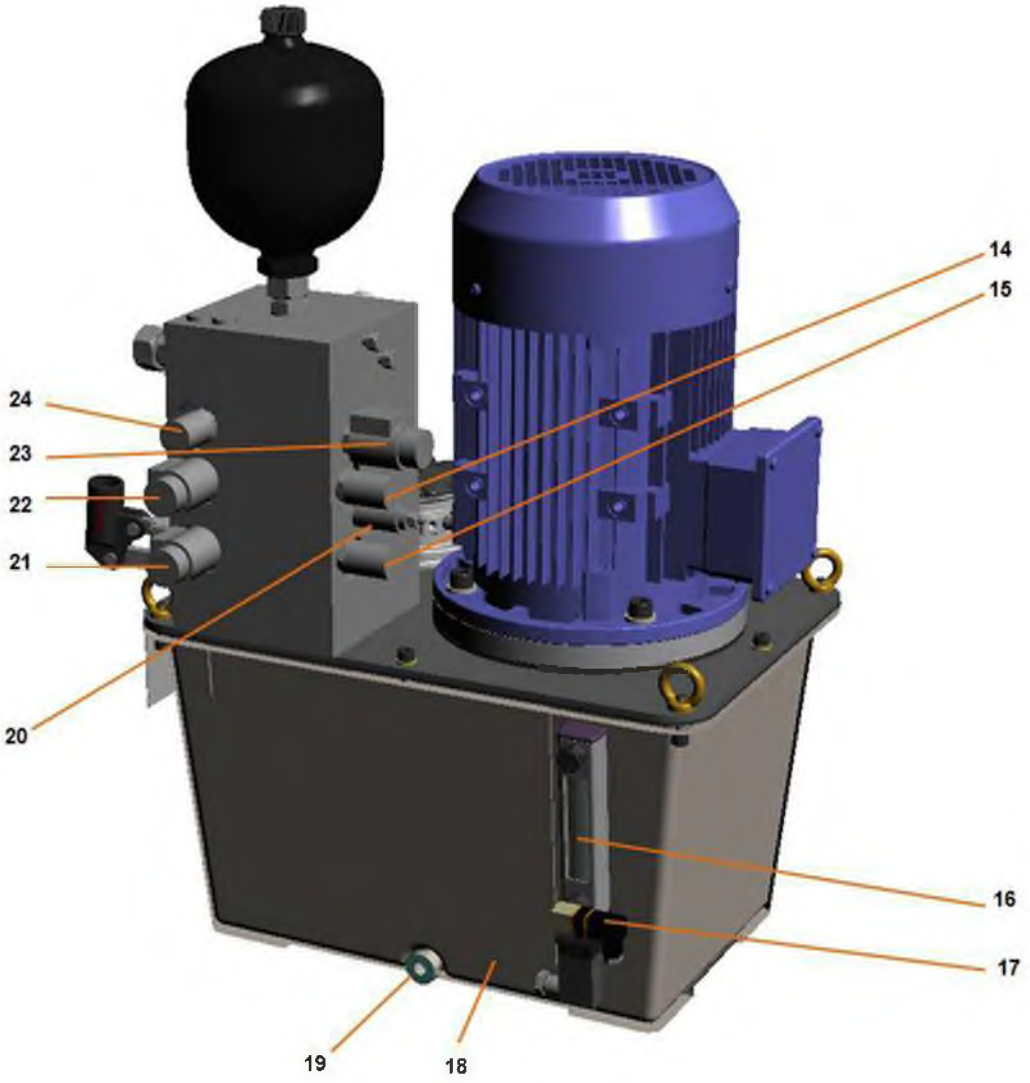
The hydraulic power pack is supplied and fitted by KSB.

3D front view with list of components



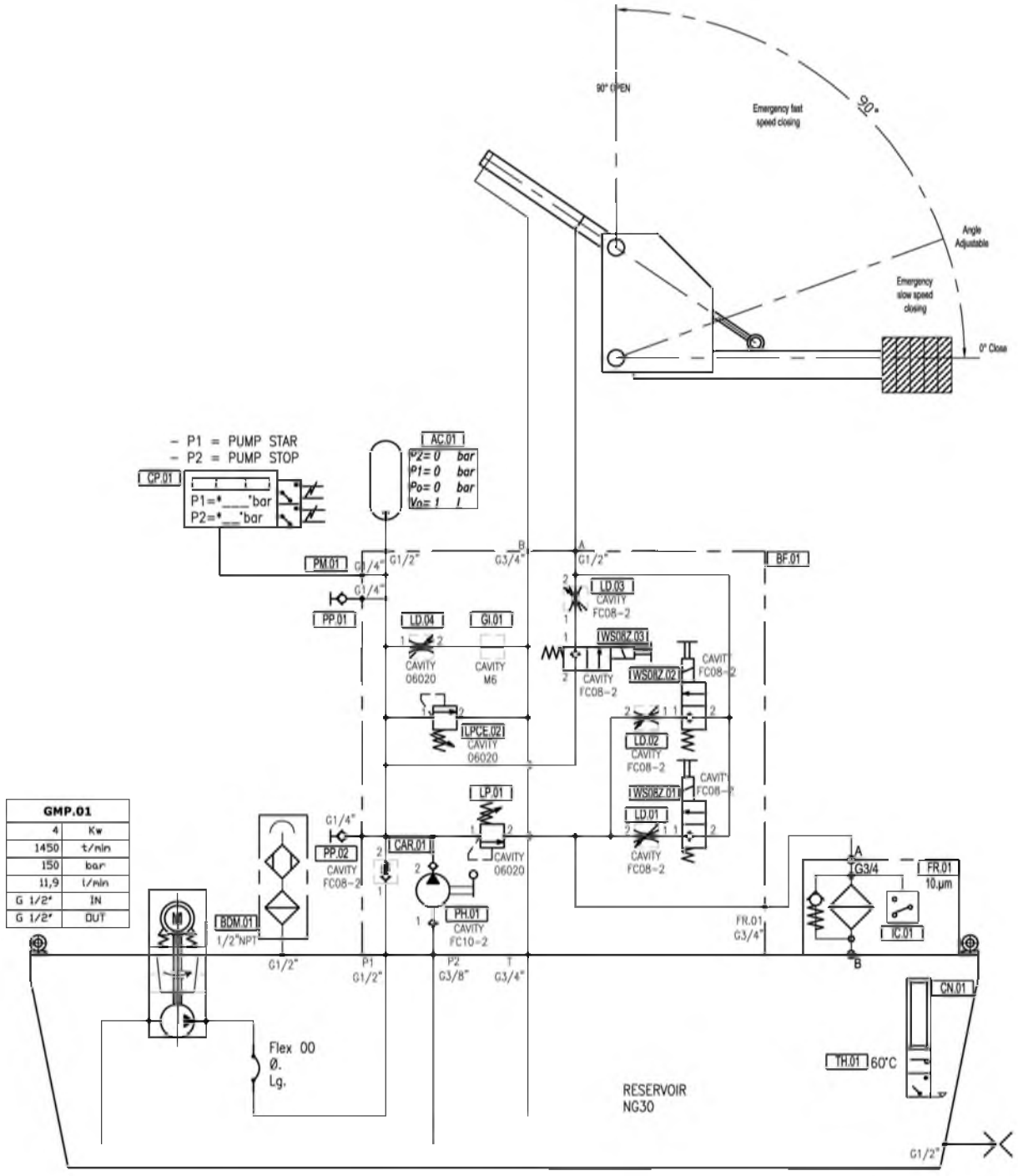
1: Accumulator - AC.01
2: Pressure sensor - CP.01
3: Cylinder supply port
4: Cylinder return port
5: Lead-sealed pressure limiter - LPCE.02 (accumulator protection)
6: Flow limiter - LD.04 for draining the accumulator
7: Hand pump
8: Air filter - BDM.01
9: Oil filter - FR.01
10: Clogging sensor - IC.01
11: Suspension lug
12: Motor terminal strip
13: Connection - PP.01

3D rear view with list of components



14: Flow limiter - LD.01 (closing speed)
15: Flow limiter - LD.02 (closing speed)
16: Oil level - CN.01 (contact)
17: Temperature sensor - TH.01
18: Oil reservoir
19: Drain plug
20: Pressure limiter - LP.01
21: Solenoid valve closure - WS08.Z02
22: Solenoid valve closure - WS08.Z01
23: Solenoid valve closure - WS08.Z03
24: Flow limiter - LD.03 (opening speed)

Hydraulic schematic

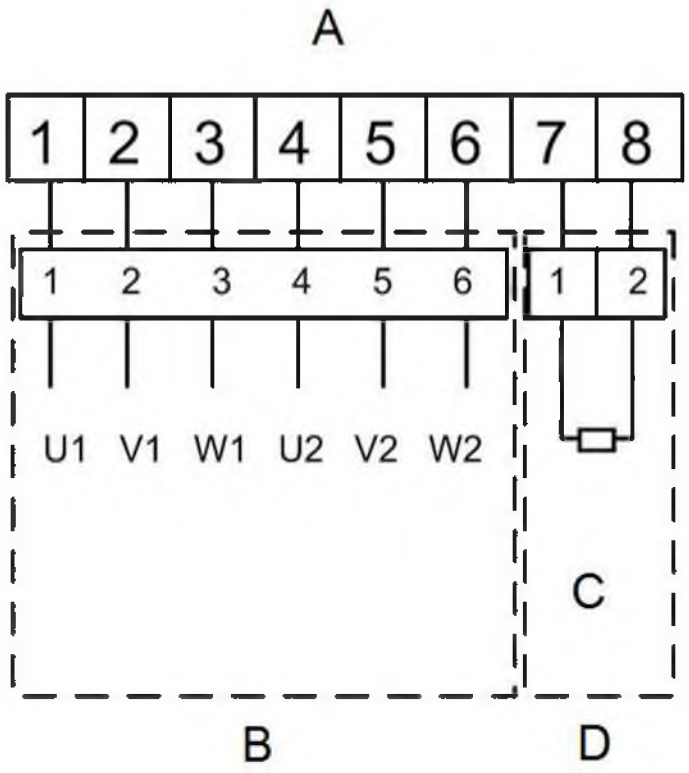


Technical data

Description	Data
Effective volume	30 litres
Reservoir material	Aluminium as standard (optional: steel)
Lid material:	Coated steel (thickness as per specification)
Maximum pressure	160 bar
Oil used	ISO VG 46
Ambient temperature range	-20 to +55 °C
Oil temperature range	+10 to +50 °C
Fluid level sensor	FSK127
Air filter mesh width	2 µm
Return filter mesh width	10 µm

Motor type	Weight	Dimensions (L x W x H)	Pump flow rate required
	[kg]	[mm]	[l/min]
0,75 kW	46,5	490 x 340 x 560	2,32
1,1 kW	49,5	490 x 340 x 580	3,6
1,5 kW	51,5	490 x 340 x 600	4,6
2,2 kW	56,5	490 x 340 x 629	6,1
3 kW	59,5	490 x 340 x 629	9,1
4 kW	64,5	490 x 340 x 647	11,9

Wiring diagram



A: Motor unit
B: 6-pole motor
C: Heating
D: Optional

Hydraulic power pack control

Electrical or mechanical control	WS08Z.03	WS08Z.02	WS08Z.01
Opening	ON	OFF	OFF
Stop-and-go mode	OFF	OFF	OFF
Normal closing, high speed	OFF	OFF	ON
Normal closing, low speed	OFF	ON	OFF

Setting the speed		Component	Clockwise	Anti-clockwise
Setting of low speed, normal closing	SD08-01 C-N-V	LD.02	-	+
Setting of high speed, normal closing	SD08-01 C-N-V	LD.01	-	+
Setting of opening speed	SD08-01 C-N-V	LD.03	-	+

AMTROBOX limit switch box

Position

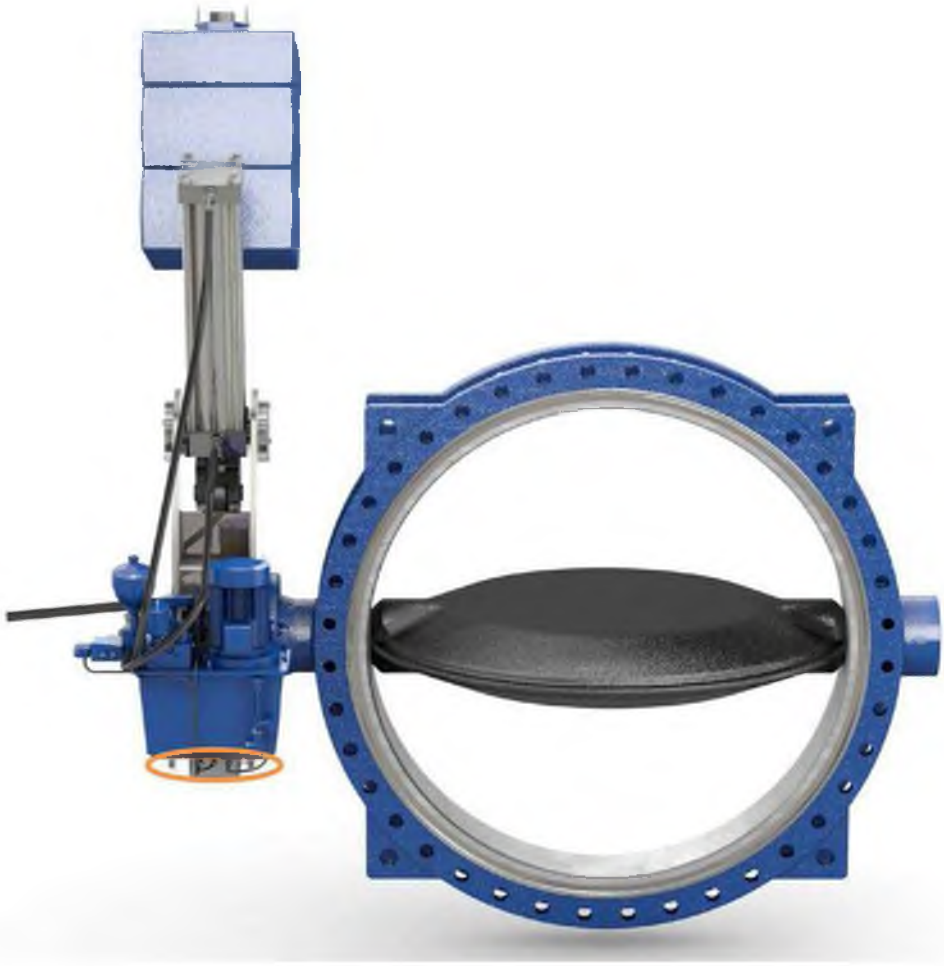
Technical data

- Housing made of cast iron with anti-corrosive coating
- Position indicator function:
  - Open or closed positions indicated by means of electric limit switches or proximity sensors
  - Inductive proximity sensors (1/Open and 1/Closed, one intermediate position possible on request)
  - Actual-position feedback, 4-20 mA, passive - 2-wire system (optional)
- Housing enclosure: IP 68

For more information refer to KSB type series booklet, reference No. 8524.11.

Terminal box

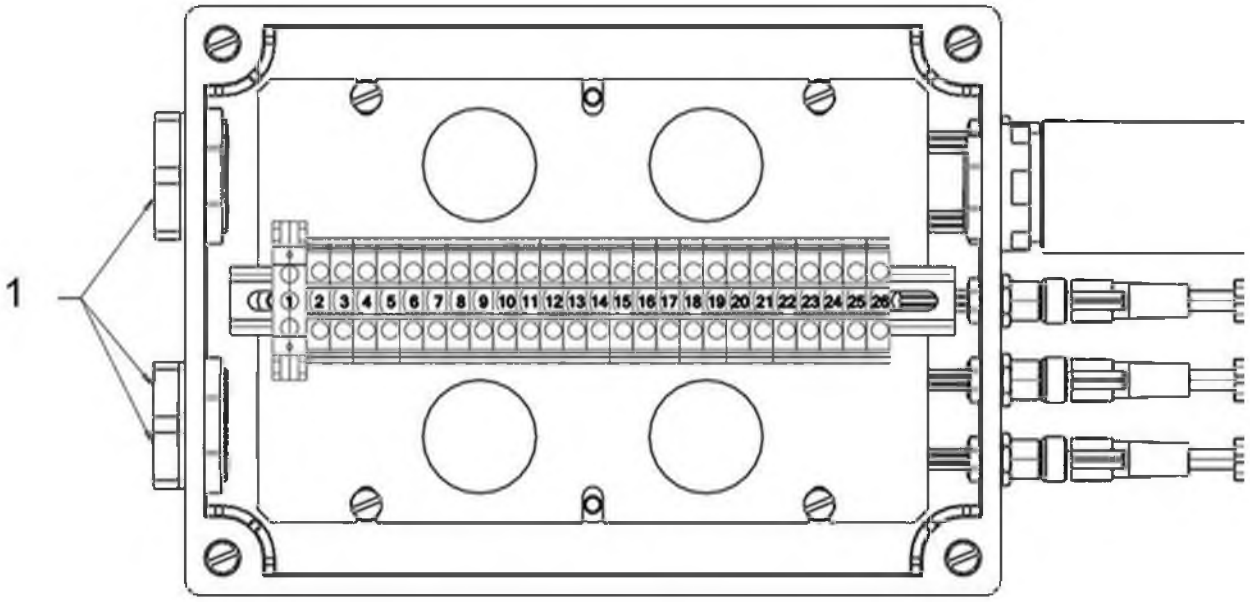
Position



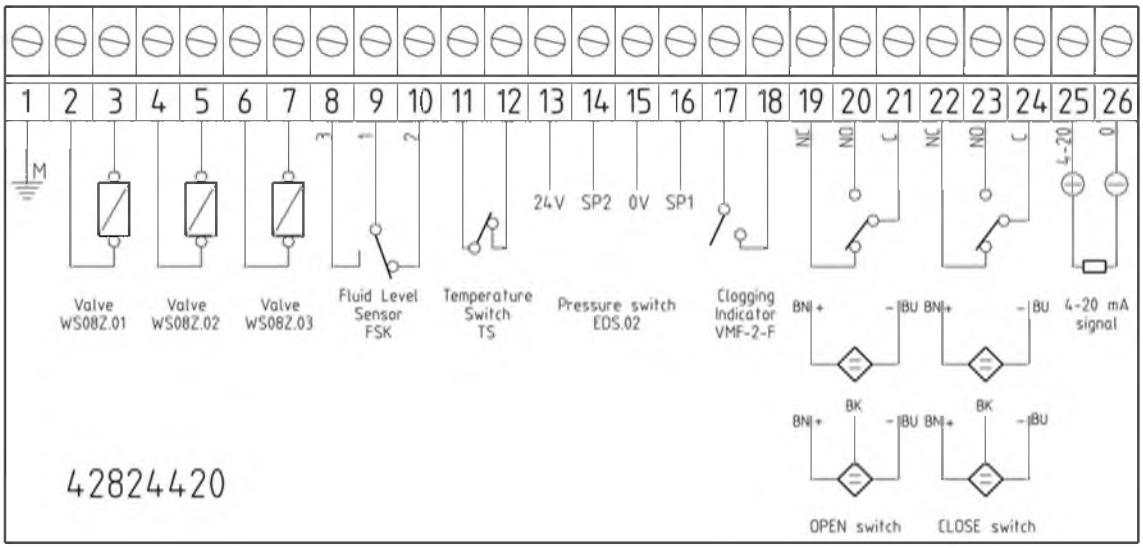
Technical data

- Plastic housing: IP 67 to EN 60529
- Customer-supplied connection: 3 x ISO M25, thread pitch 1.5
- Supplied with 3 plugs (IP 67) as standard
- Connection of centralised instrumentation as shown in schematic below
- Cable diameter for connection to terminal strip: 0.2 to 4 mm²

Connection to terminal strip



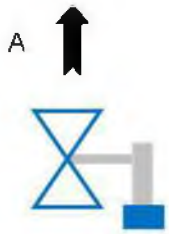
1 Customer-supplied connection: 3 x ISO M25, thread pitch 1.5



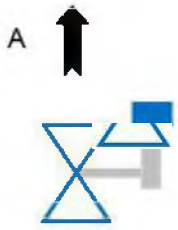
Variants

Options

- Centralised monitoring and programming via PLC
- Version with tropicalised motor for humid environments
- Application-specific coating
- KSB also supplies an electrical control cabinet tailored to the customer's requirements (on request).
- DUALIS can be installed in the piping in four installation positions:

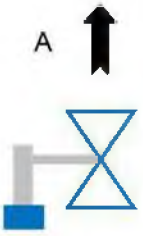


Counterweight mounted on the right (when looking in the flow direction) and dropping in anti-clockwise direction



Counterweight mounted on the right (when looking in the flow direction) and dropping in clockwise direction

Counterweight mounted on the left (when looking in the flow direction) and dropping in anti-clockwise direction



Counterweight mounted on the left (when looking in the flow direction) and dropping in clockwise direction

A: Flow direction

Specifications required for enquiries/orders

Recommendations

- DUALIS is designed for fail-closed operation as standard, but it can also be used in fail-open mode if required for safety reasons (on request).
- The valve must always be installed with the stem in the hoizontal position to ensure the perfect function of the unit.
- Observe all installation instructions supplied.
- After installation in the piping has been completed, a protective cage must be fitted around the counterweight assembly in order to protect the operators and users.

This guard is not included in KSB's standard scope of supply.

Torque / top flange / stem depending on DN and PN

ISORIA

DN	NPS	Pressure				
		6 bar	10 bar	16 bar	20 bar	25 bar
500	20	**V hyd < 5.1 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 60 mm	**V hyd < 5.1 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 60 mm	**V hyd < 5.1 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 60 mm	**V hyd < 5.1 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 60 mm	**V hyd < 5.6 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 60 mm
600	24	**V hyd < 3.85 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 65 mm	**V hyd < 3.85 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 65 mm	**V hyd < 3.1 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 65 mm	**V hyd < 3.9 m/s** Torque: 3150 mdaN Flange: F16 Stem Ø: 75 mm	**V hyd < 4.2 m/s** Torque: 4000 mdaN Flange: F16 Stem Ø: 75 mm
650	26	**V hyd < 3.2 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 70 mm	**V hyd < 3.2 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 70 mm	**V hyd < 5.0 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 70 mm	/	/
700	28	**V hyd < 3.25 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 70 mm	**V hyd < 3.25 m/s** Torque: 2200 mdaN Flange: F16 Stem Ø: 70 mm	**V hyd < 4.7 m/s** Torque: 4000 mdaN Flange: F16 Stem Ø: 70 mm	/	/
750	30	**V hyd < 2.8 m/s** Torque: 3150 mdaN Flange: F16 Stem Ø: 80 mm	**V hyd < 2.8 m/s** Torque: 3150 mdaN Flange: F16 Stem Ø: 80 mm	**V hyd < 3.8 m/s** Torque: 4000 mdaN Flange: F16 Stem Ø: 80 mm	/	/
800	32	**V hyd < 2.8 m/s** Torque: 3150 mdaN Flange: F16 Stem Ø: 80 mm	**V hyd < 2.8 m/s** Torque: 3150 mdaN Flange: F16 Stem Ø: 80 mm	**V hyd < 3.35 m/s** Torque: 4000 mdaN Flange: F16 Stem Ø: 80 mm	/	/
900	36	**V hyd < 2.6 m/s** Torque: 4000 mdaN Flange: F25 Stem Ø: 90 mm	**V hyd < 2.6 m/s** Torque: 4000 mdaN Flange: F25 Stem Ø: 90 mm	**V hyd < 2.95 m/s** Torque: 5300 mdaN Flange: F25 Stem Ø: 90 mm	/	/
1000	40	**V hyd < 2.25 m/s** Torque: 5300 mdaN Flange: F25 Stem Ø: 100 mm	**V hyd < 2.25 m/s** Torque: 5300 mdaN Flange: F25 Stem Ø: 100 mm	**V hyd < 2.5 m/s** Torque: 6500 mdaN Flange: F25 Stem Ø: 100 mm	/	/

V hyd = max. fluid velocity in m/s
Please contact us for higher flow velocities.
Please contact us for higher pressures (up to 40 bar).

MAMMOUTH

DN	NPS	Pressure				
		6 bar	10 bar	16 bar	20 bar	25 bar
1050	42	**V hyd < 2.3 m/s** Torque: 5300 mdaN Flange: F25 Stem Ø: 100 mm	**V hyd < 2.3 m/s** Torque: 5300 mdaN Flange: F25 Stem Ø: 100 mm	/	/	/
1100	44	**V hyd < 2.1 m/s** Torque: 5300 mdaN Flange: F25 Stem Ø: 100 mm	**V hyd < 2.1 m/s** Torque: 5300 mdaN Flange: F25 Stem Ø: 100 mm	**V hyd < 1.75 m/s** Torque: 9600 mdaN Flange: F30 Stem Ø: 140 mm	/	/
1200	48	**V hyd < 2.0 m/s** Torque: 6500 mdaN Flange: F25 Stem Ø: 100 mm	**V hyd < 2.0 m/s** Torque: 6500 mdaN Flange: F25 Stem Ø: 100 mm	/	/	/
1300	52	/	/	/	/	/
1350	54	**V hyd < 1.35 m/s** Torque: 8500 mdaN Flange: F30 Stem Ø: 140 mm	**V hyd < 1.35 m/s** Torque: 8500 mdaN Flange: F30 Stem Ø: 140 mm	/	/	/
1400	56	**V hyd < 1.2 m/s** Torque: 8500 mdaN Flange: F30 Stem Ø: 140 mm	**V hyd < 1.2 m/s** Torque: 8500 mdaN Flange: F30 Stem Ø: 140 mm	/	/	/

V hyd = max. fluid velocity in m/s
Please contact us for higher flow velocities.
Please contact us for higher pressures (up to 40 bar).

KE PLASTOMER

Centred disc butterfly valve with PFA liner

Robinet à papillon centré à étanchéité TEFLON ®

Zentrische Absperrklappe mit PFA-Ringbalg

DN 40 - 600

Allowable pressure
Pression admissible
Zulässiger Betriebsdruck
PS 10 bar

The actuator selection for lubricated medium proposed is defined for the maximum fluid velocity.
According to the working conditions and the hydraulic characteristics, upper fluid velocities can be admitted, therefore other actuator selection can be proposed: please consult us.

Le choix de l'actionneur en milieu lubrifié est donné à titre d'exemple pour les vitesses maximales de référence indiquées du fluide véhiculé dans le robinet.
En fonction des conditions de service et des caractéristiques hydrauliques du circuit, des vitesses supérieures peuvent être admises et donc un autre choix de l'actionneur peut être proposé : nous consulter.

Die folgende Antriebsauswahl gilt beispielhaft für Absperrklappen in flüssigen Medien für die angegebenen maximalen Strömungsgeschwindigkeiten.
Abhängig von den Betriebsbedingungen und den hydraulischen Kenndaten sind höhere Strömungsgeschwindigkeiten und weitere Antriebszuordnungen möglich. Bitte Rücksprache halten.

CE

amri

KSB

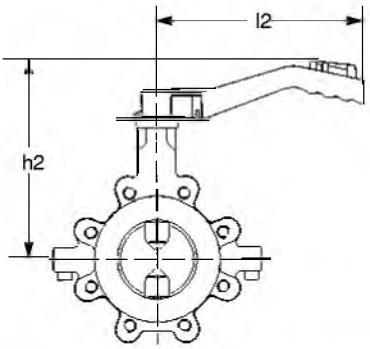
Manual control - Handles
Commande manuelle - Poignées
Manuelle Antriebe - Handhebel

DN	NPS	Maximum fluid velocity *Vitesse maximale de référence* Strömungsgeschwindigkeit (m/s)	Mounting plate *Embase* Kopfflansch nach ISO 5211	Handles *Poignées* Handhebel
40	1 ½	5,0	F05	S/SR (180) S/SR/SM/SP/SF/SFR (260)
50	2	5,0	F05	
65	2 ½	5,0	F05	
80	3	5,0	F05	S/SR/SM/SP/SF/SFR (260)
100	4	5,0	F05	
125	5	5,0	F05	S/SR/SM/SP/SF/SFR (330)
150	6	5,0	F07	
200	8	5,0	F07	SM (530)

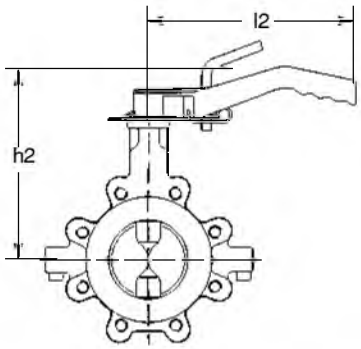
Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

Handles • *Poignées* • Handhebel

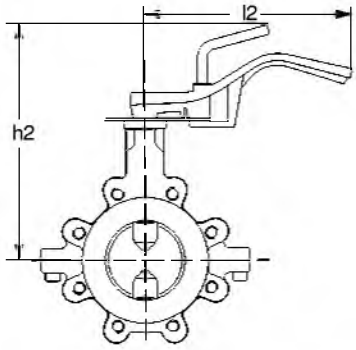
S/SR & SF/SFR



SP



SM



DN	NPS	l2	h2	Weight* *Poids** Gewicht*	l2	h2	Weight* *Poids** Gewicht*
		S/SR			**SF/SFR**		
40	1 ½	180	180	0,5	260	200	1,4
50	2		190			210	
65	2 ½		200			220	
80	3	260	235	0,6		235	
100	4		250			250	
125	5	330	280	0,7	330	280	1,8
150	6		295			325	
		SP			**SM**		
40	1 ½	260	193	0,7	260	207	1,3
50	2		203			217	
65	2 ½		213			227	
80	3		228			242	
100	4	330	243	0,8	330	257	1,6
125	5		277			288	
150	6		292			292	
200	8				530	340	3,3

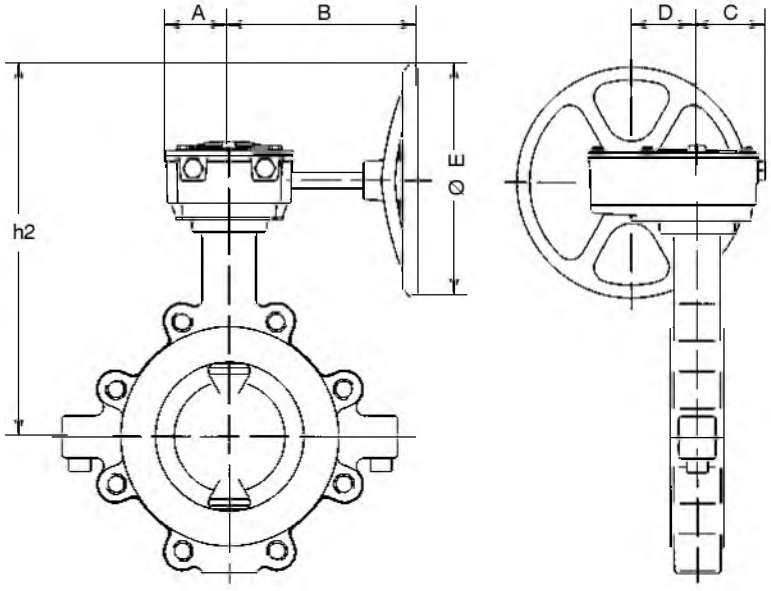
* The indicated weights are those of the handle • *Les poids indiqués sont ceux de la poignée seule* • Gewichte gelten nur für Handhebel.

Manual control - MN and MR reducers
Commande manuelle - Démultiplicateurs MN et MR
Manuelle Antriebe - Getriebe MN und MR

DN	NPS	Maximum fluid velocity *Vitesse maximale de référence* Strömungsgeschwindigkeit (m/s)	Reducers *Actionneurs* Getriebe	
40	1 ½	5,0	MN 12	MR 25
50	2	5,0		
65	2 ½	5,0		
80	3	5,0		
100	4	5,0		
125	5	5,0	MN 25	
150	6	5,0		
200	8	5,0		
250	10	5,0	MN 40	MR 50
300	12	5,0		
350	14	5,0	MR 100	
400	16	5,0		
450	18	5,0		
500	20	5,0	MR 200	
600	24	5,0		

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

MN 12 - 80
MR 25 - 200



Manual control - MN and MR reducers
Commande manuelle - Démultiplicateurs MN et MR
Manuelle Antriebe - Getriebe MN und MR

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DN	NPS	MN Type *Type* Typ	A	B	C	D	∅E	h2	Weight* *Poids** Gewicht*
40	1 ½	MN 12	49	135	42	40	140	223	1,6
50	2							233	
65	2 ½							243	
80	3							258	
100	4							273	
125	5	MN 25	64	202	60	50	225	339	2,3
150	6							354	
200	8							384	
250	10	MN 40	70	225	60	60	225	418	3,4
300	12							453	

DN	NPS	MR Type *Type* Typ	A	B	C	D	Ø E	h2	Weight* *Poids** Gewicht*
40	1 ½	MR25	62	184	66	64	225	276	7,0
50	2							286	
65	2 ½							296	
80	3							311	
100	4							326	
125	5							346	
150	6							361	
200	8							391	
250	10	MR50	74	184	77	76	225	438	10,0
300	12							473	
350	14	MR100	86	233	88	88	350	586	15,0
400	16							611	
450	18							661	
500	20	MR200	120	270	108	117	350	698	24,0
600	24							753	

* The indicated weights are those of the reducer • *Les poids indiqués sont ceux du démultiplicateur seul* • Gewichte gelten nur für das Getriebe.

ACTELEC ¼ turn electric actuators Bernard (Deufra)
Actionneurs électriques ¼ tour ACTELEC Bernard (Deufra)
Elektrische Antriebe ACTELEC Bernard (Deufra)

DN	NPS	Maximum fluid velocity *Vitesse maximale de référence* Strömungsgeschwindigkeit (m/s)	On/off function *Fonction tout ou rien* Absperrfunktion	Throttling duties *Fonction régulation* Regelfunktion
40	1 ½	5,0	OA3 / OA6	OAP
50	2	5,0		
65	2 ½	5,0		
80	3	5,0		
100	4	5,0	OA6	
125	5	5,0		
150	6	5,0	OA15	OA15
200	8	5,0	AS25	ASP
250	10	5,0	AS50	AS50
300	12	5,0		
350	14	5,0	AS80	BS100
400	16	5,0	BS100	
450	18	5,0		

Main electric equipments - On-off function
Principaux équipements électriques - Fonction tout ou rien
Standardausführung - Absperrfunktion

Type • *Type* • Typ		OA3	OA6	OA15	AS18	AS25	AS50	AS80	BS100
Operating times in seconds *Temps de manœuvre en secondes* Stellzeiten in Sekunden	Standard	6	6	15	5	10	30	30	60
	Option			25		60	60		
Opening and closing limit switches *Contacts fin de course sur ouverture et fermeture* Endlagenschalter Auf / Zu		Standard							
Mechanical adjustable travel stops *Butées mécaniquesde fin de course réglables* Verstellbare Endanschläge		Standard							
Opening and closing torque switches *Limiteurs de couple sur ouverture et fermeture* Drehmomentschaltung für beide Laufrichtungen					Standard				
Heating resistance 6W *Résistance chauffante 6W* Heizwiderstand 6W		Standard							

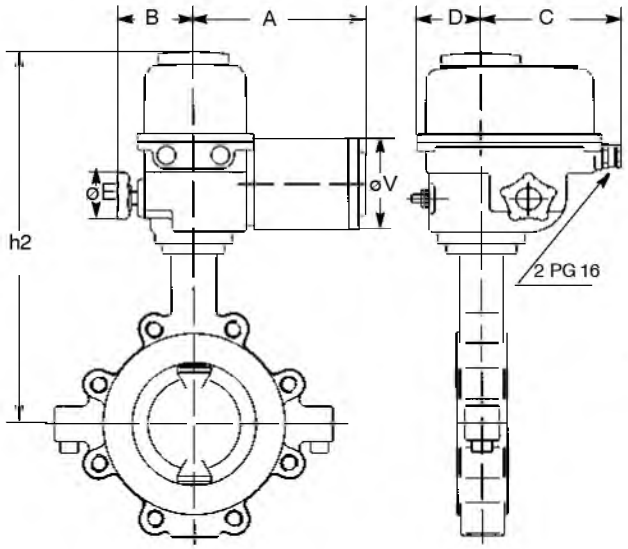
Main electric equipments - Throttling duties
Principaux équipements électriques - Fonction régulation
Standardausführung - Regelfunktion

Type • *Type* • Typ	OAP	OA15	ASP	AS50	BS100
Operating time in seconds *Temps de manœuvre en secondes* Stellzeiten in Sekunden	60	25	60	60	60
Opening and closing limit switches *Contacts fin de course sur ouverture et fermeture* Endlagenschalter Auf / Zu	Standard				
Mechanical adjustable travel stops *Butées mécaniquesde fin de course réglables* Verstellbare Endanschläge	Standard				
Opening and closing torque switches *Limiteurs de couple sur ouverture et fermeture* Drehmomentschaltung für beide Laufrichtungen			Standard		
Heating resistance 6W *Résistance chauffante 6W* Heizwiderstand 6W	Standard				

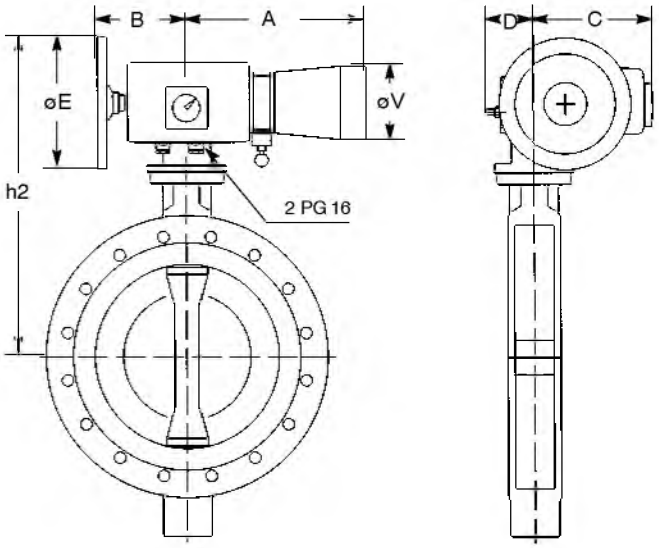
ACTELEC ¼ turn electric actuators Bernard (Deufra)
Actionneurs électriques ¼ tour ACTELEC Bernard (Deufra)
Elektrische Antriebe ACTELEC Bernard (Deufra)

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

OA3, OA6, OAP & OA15



AS18, AS25, ASP, AS50, AS80 & BS100



DN	NPS	On/off function *Fonction tout ou rien* Absperrfunktion								
		Type *Type* Typ	A	B	C	D	E	V	h2	Weight* *Poids** Gewicht*
40	1 ½	OA3	148	90	145	65	60	100	341	5,0
50	2								351	
65	2 ½								361	
80	3								376	
40	1 ½	OA6	200	90	145	65	60	106	349	5,7
50	2								359	
65	2 ½								364	
80	3								384	
100	4								399	
125	5								419	
150	6	OA15	260	112	145	65	100	106	434	7,5
200	8	AS25	312	187	226	89	165	139	417	18,0
250	10	AS50	340	187	226	89	250	139	452	18,0
300	12								487	
350	14	AS80	340	187	226	89	250	139	557	20,0
400	16	BS100	392	187	284	134	250	139	541	26,0
450	18								591	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux du démultiplicateur seul* • Gewichte gelten nur für das Getriebe

ACTELEC ¼ turn electric actuators Bernard (Deufra)
Actionneurs électriques ¼ tour ACTELEC Bernard (Deufra)
Elektrische Antriebe ACTELEC Bernard (Deufra)

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DN	NPS	Throttling duty *Fonction régulation* Regelfunktion								
		Type *Type* Typ	A	B	C	D	E	V	h2	Weight* *Poids** Gewicht*
40	1 ½	OAP	200	90	145	65	60	106	349	7,2
50	2								359	
65	2 ½								369	
80	3								384	
100	4								399	
125	5								419	
150	6	OA15	260	112	145	65	100	106	434	7,5
200	8	ASP	312	187	226	89	165	139	417	16,0
250	10	AS50	340	187	226	89	250	139	452	18,0
300	12								487	
350	14	BS100	392	187	284	134	250	139	516	26,0
400	16								541	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux du démultiplicateur seul* • Gewichte gelten nur für das Getriebe

ACTELEC ¼ turn electric actuators Auma
Actionneurs électriques ¼ tour ACTELEC Auma
Elektrische Antriebe ACTELEC Auma

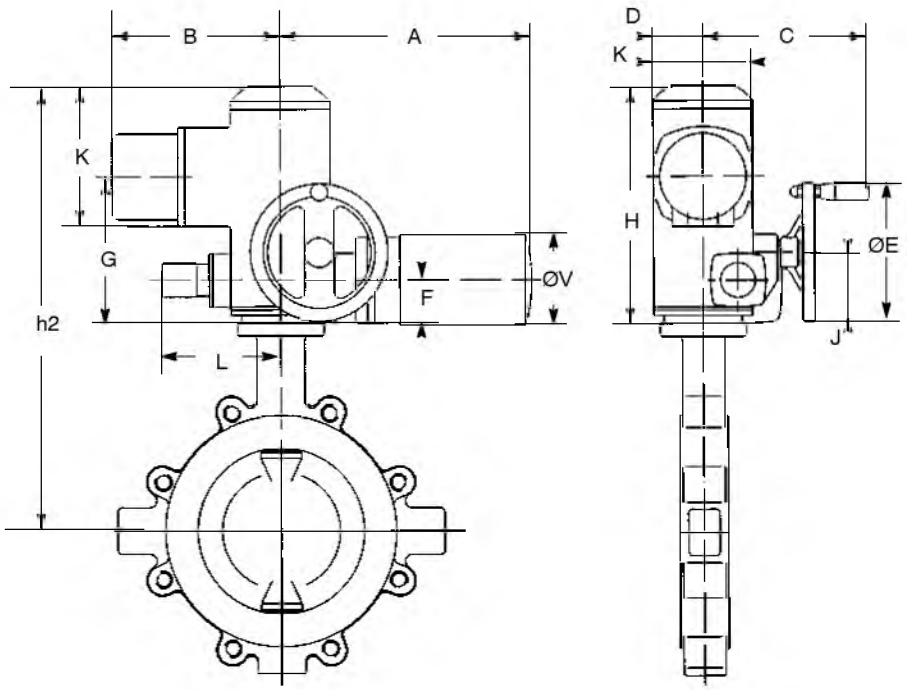
DN	NPS	Maximum fluid velocity *Vitesse maximale de référence* Strömungsgeschwindigkeit (m/s)	Actuators *Actionneurs* Antrieb
40	1 ½	5,0	SG 05.1
50	2	5,0	
65	2 ½	5,0	
80	3	5,0	
100	4	5,0	
125	5	5,0	
150	6	5,0	
200	8	5,0	SG 07.1
250	10	5,0	
300	12	5,0	SG 10.1
350	14	5,0	SG 12.1
400	16	5,0	
450	18	5,0	

Operating times
Temps de manœuvre
Stellzeiten

Type • *Type* • Typ		SG 05.1	SG 07.1	SG 10.1	SG 12.1
Operating times *Temps de manœuvre* Stellzeiten in Sekunden	Standard	22 s	22 s	32 s	63 s
	Option	8/11/16 s	8/11/16/32 s	16/22/45/63 s	22/32/45 s

ACTELEC ¼ turn electric actuators Auma
Actionneurs électriques ¼ tour ACTELEC Auma
Elektrische Antriebe ACTELEC Auma

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)



DN	NPS	Type *Type* Typ	A	B	C	D	E	F	G	H	J	K	L	V	h2	Weight* *Poids** Gewicht*
40	1 ½	SG 05.1	291	195	191	58	160	50	170	275	82	115	137	105	400	19,0
50	2														410	
65	2 ½														420	
80	3														435	
100	4														450	
125	5														470	
150	6														485	
200	8	SG 07.1	291	195	191	58	160	50	170	275	82	115	137	105	515	19,0
250	10														550	
300	12	SG 10.1	301	205	216	75	160	56	170	291	88	115	172	105	601	25,0
350	14	SG 12.1	301	205	233	75	160	70	192	313	102	115	172	105	662	29,0
400	16														687	
450	18														737	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux du démultiplicateur seul* • Gewichte gelten nur für das Getriebe

ACTELEC electric actuators (AMRI reducer with multi-turn electric actuator)
Actionneurs électriques ACTELEC (démultiplicateur AMRI avec servomoteur électrique multi-tours)
Elektrische Antriebe ACTELEC (AMRI Getriebe mit elektrischen Drehantrieben für Armaturen)

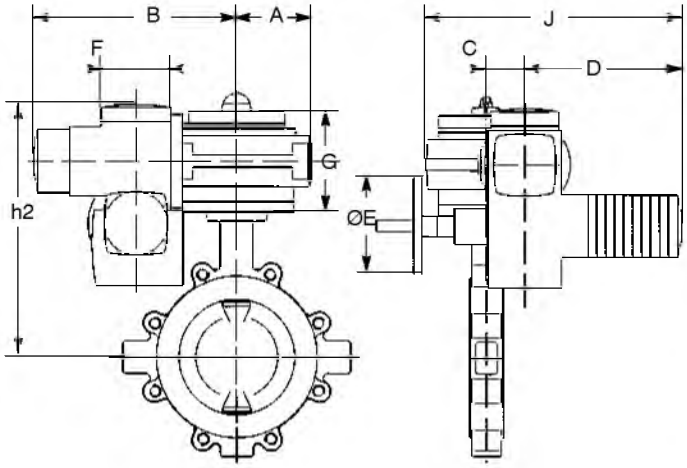
DN	NPS	Maximum fluid velocity *Vitesse maximale de référence* Strömungs-geschwindigkeit (m/s)	Actuators *Actionneurs* Antrieb
40	1 ½	5,0	ACTELEC 31 + SA 07.5 / ACTELEC 31 + ASM0
50	2	5,0	
65	2 ½	5,0	
80	3	5,0	
100	4	5,0	
125	5	5,0	
150	6	5,0	
200	8	5,0	
250	10	5,0	
300	12	5,0	
350	14	5,0	
400	16	5,0	
450	18	5,0	ACTELEC 200 + SA 07.5 / ACTELEC 200 + ASM0
500	20	5,0	
600	24	5,0	

Key: ACTELEC type + Motor reduction gear type: SA = Auma, ASM = Bernard (Deufra)
Légende : série ACTELEC + type du motoréducteur : SA = Auma, ASM = Bernard (Deufra)
Erklärung: Baureihe ACTELEC + Typ des Untersetzungsgetriebe: SA = Auma, ASM = Bernard (Deufra)

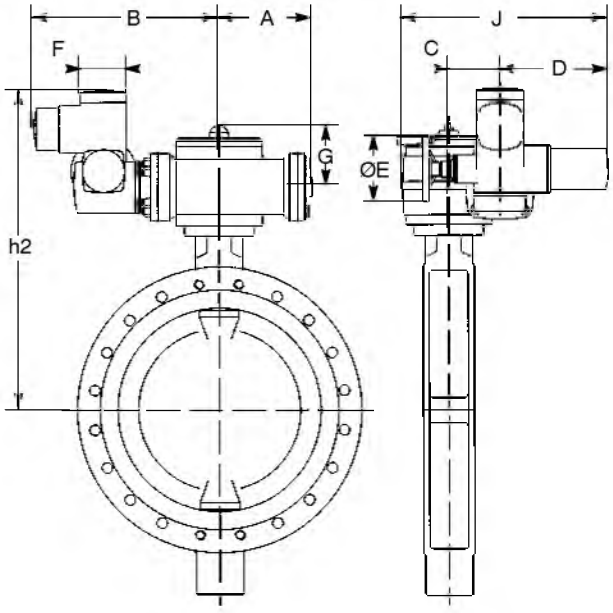
Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

AUMA SA 07.5

DN 40 - 400



DN 450 - 600

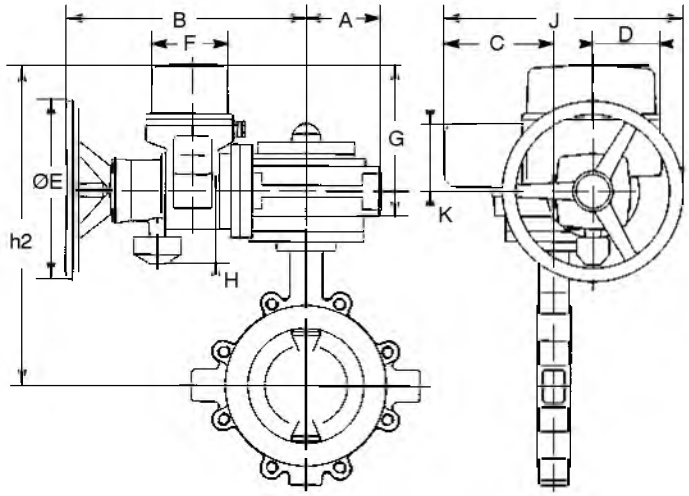


ACTELEC electric actuators (AMRI reducer with multi-turn electric actuator)
Actionneurs électriques ACTELEC (démultiplicateur AMRI avec servomoteur électrique multi-tours)
Elektrische Antriebe ACTELEC (AMRI Getriebe mit elektrischen Drehantrieben für Armaturen)

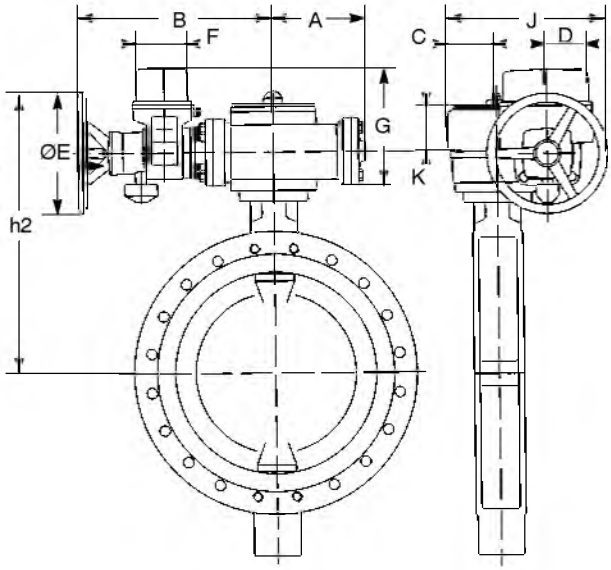
Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

BERNARD (Deufra) ASM0

DN 40 - 400



DN 450 - 600



DN	NPS	Type *Type* Typ	A	B	C	D	E	F	G	H	J	K	h2	Weight* *Poids** Gewicht*
40	1 ½	31 + SA 07.5	125	398	40	265	160	115	237	101	514	-	431	46,5
50	2												441	
65	2 ½												451	
80	3												466	
100	4												481	
125	5												501	
150	6												516	
200	8												546	
250	10												581	
300	12												616	
350	14												655	
400	16												680	
40	1 ½	31 + ASM0	125	250	292	115	300	144	211	122	442	139	405	42,5
50	2												415	
65	2 ½												425	
80	3												440	
100	4												455	
125	5												475	
150	6												490	
200	8												520	
250	10												555	
300	12												590	
350	14												629	
400	16												654	
450	18	200 + SA 07.5	229	469	40	265	160	115	237	101	514	-	756	78,0
500	20												782	
600	24												837	
450	18	200 + ASM0	229	477	292	115	300	144	211	122	442	139	730	74,0
500	20												756	
600	24												811	

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux du démultiplicateur seul* • Gewichte gelten nur für das Getriebe

ACTAIR double acting pneumatic actuators
Actionneurs pneumatiques double effet ACTAIR
Pneumatische Antriebe doppeltwirkend ACTAIR

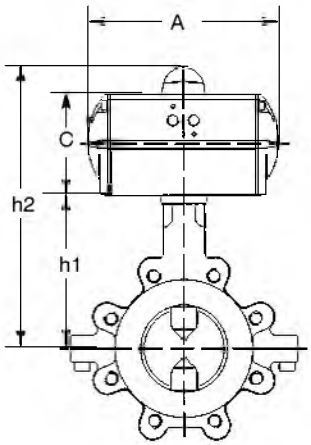
DN	NPS	Maximum fluid velocity *Vitesse maximale de référence* Strömungs-geschwin-digkeit (m/s)	On-off function *Fonction tout ou rien* Absperrfunktion				Throttling duty *Fonction régulation* Regelfunktion		
			Control air pressure *Pression d'air moteur* Steuerdruck						
			3.5 bar	4 bar	5 bar	6 bar	4 bar	5 bar	6 bar
40	1 ½	5,0	ACTAIR 3				ACTAIR 3		
50	2	5,0							
65	2 ½	5,0	ACTAIR 6				ACTAIR 6		
80	3	5,0							
100	4	5,0	ACTAIR 12				ACTAIR 12		
125	5	5,0							
150	6	5,0	ACTAIR 25		ACTAIR 12		ACTAIR 25		
200	8	5,0	ACTAIR 25				ACTAIR 25		
250	10	5,0					ACTAIR 50		
300	12	5,0	ACTAIR 50						
350	14	5,0					ACTAIR 100		
400	16	5,0	ACTAIR 100						
450	18	5,0					ACTAIR 200		
500	20	5,0	ACTAIR 200						
600	24	5,0	ACTAIR 400				ACTAIR 400		

ACTAIR double acting pneumatic actuators
Actionneurs pneumatiques double effet ACTAIR
Pneumatische Antriebe doppeltwirkend ACTAIR

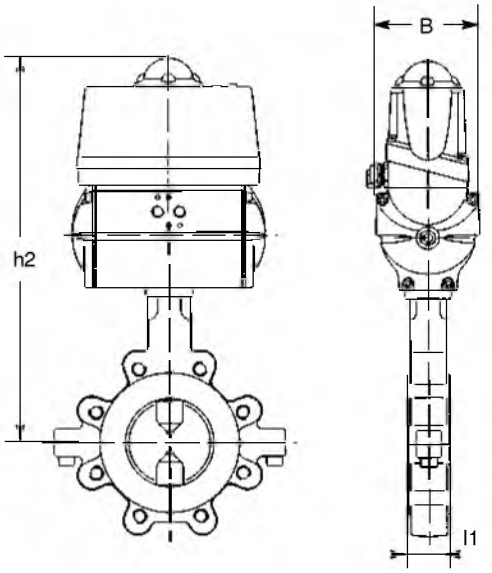
Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

ACTAIR 3 - 50

without • *sans* • ohne AMTRONIC

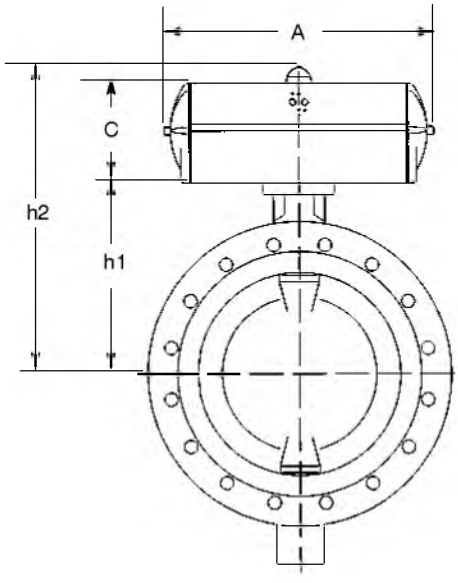


with • *avec* • mit AMTRONIC

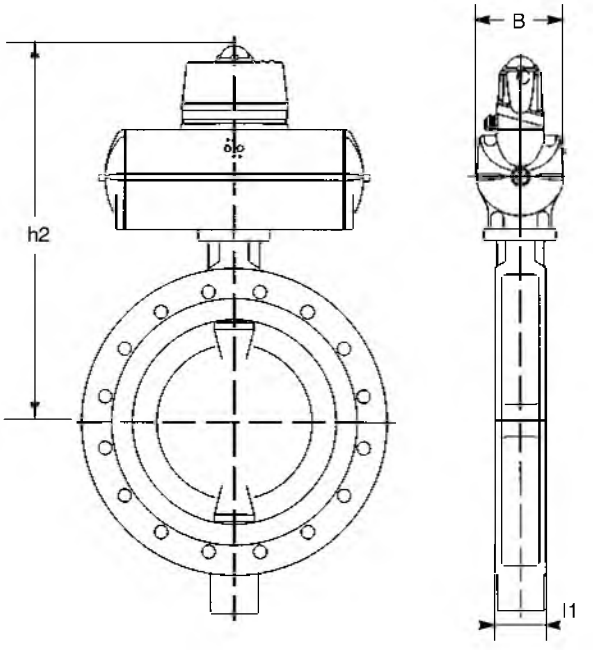


ACTAIR 100 & 200

without • *sans* • ohne AMTRONIC



with • *avec* • mit AMTRONIC

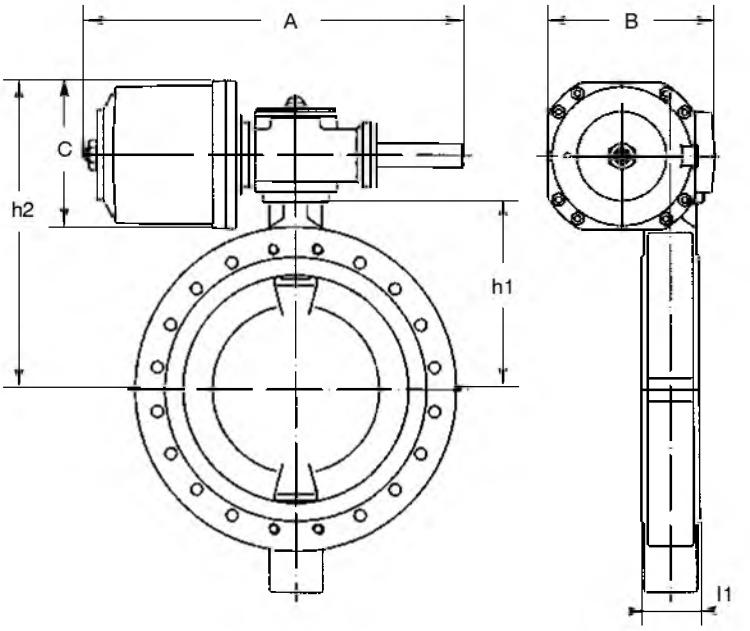


ACTAIR double acting pneumatic actuators
Actionneurs pneumatiques double effet ACTAIR
Pneumatische Antriebe doppeltwirkend ACTAIR

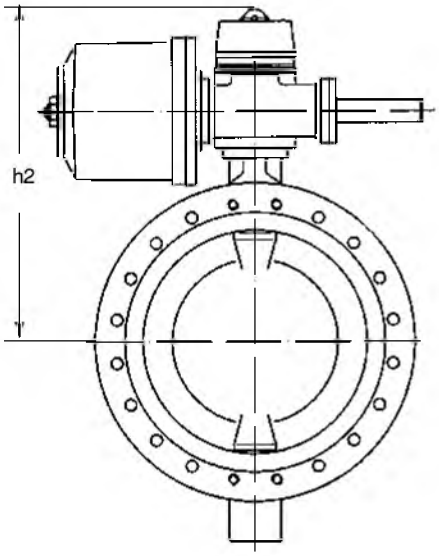
Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

ACTAIR 400

without • *sans* • ohne AMTRONIC



with • *avec* • mit AMTRONIC



For a control pressure: 5 bar • *Pour une pression moteur : 5 bar* • Für Steuerdruck: 5 bar

DN	NPS	l1	h1	On-off function without box *Fonction tout ou rien sans boîtier* Absperrfunktion ohne Gehäuse						Throttling duty with box *Fonction régulation avec boîtier* Regelfunktion mit Gehäuse					
				Type *Type* Typ	A	B	C	h2	Weight* *Poids** Gewicht*	Type *Type* Typ	A	B	C	h2	Weight* *Poids** Gewicht*
40	1 ½	33	105	3	194	100	98	244	2,8	3	194	100	98	360	4,3
50	2	43	109					254						370	
65	2 ½	46	136					264						380	
80	3	46	142					279		6	218	114	116	412	5,4
100	4	52	163	6	218	114	116	312	3,9					427	
125	5	56	176					332		12	272	132	142	473	7,5
150	6	56	194	12	272	132	142	374	6,0					428	
200	8	60	222	25	344	156	176	437	11,0	25	344	156	176	552	12,5
250	10	68	255					472		50	424	174	217	628	20,0
300	12	78	282	50	424	174	217	548	18,3					663	
350	14	78	335	100	505	157	195	565	30,0	100	505	157	195	680	31,5
400	16	102	380					590						705	
450	18	114	410					640		200	592	174	217	777	49,5
500	20	127	440	200	592	174	217	688	48,0					803	
600	24	154	495					743		400	964	380	430	913	170,0

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux du démultiplicateur seul* • Gewichte gelten nur für das Getriebe

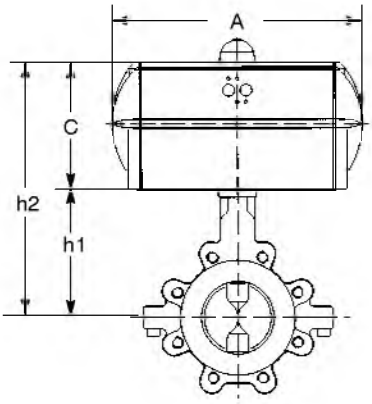
DYNACTAIR spring return pneumatic actuators
Actionneurs pneumatiques simple effet DYNACTAIR
Pneumatische Antriebe einfachwirkend DYNACTAIR

DN	NPS	Maximum fluid velocity *Vitesse maximale de référence* Strömungs-geschwindigkeit (m/s)	On-off function *Fonction tout ou rien* Absperrfunktion				Throttling duty *Fonction régulation* Regelfunktion		
			Control air pressure *Pression d'air moteur* Steuerdruck						
			3.5 bar	4 bar	5 bar	6 bar	4 bar	5 bar	6 bar
40	1 ½	5,0	DYN 3		DYN 1,5		DYN 3		DYN 1,5
50	2	5,0							
65	2 ½	5,0	DYN 6				DYN 6		
80	3	5,0							
100	4	5,0	DYN 12				DYN 12		
125	5	5,0		DYN 25				DYN 25	
150	6	5,0							
200	8	5,0	DYN 50		DYN 25		DYN 50		DYN 25
250	10	5,0							
300	12	5,0		DYN 100				DYN 100	
350	14	5,0							
400	16	5,0	DYN 200				DYN 200		
450	18	5,0							
500	20	5,0							
600	24	5,0	DYN 400				DYN 400		

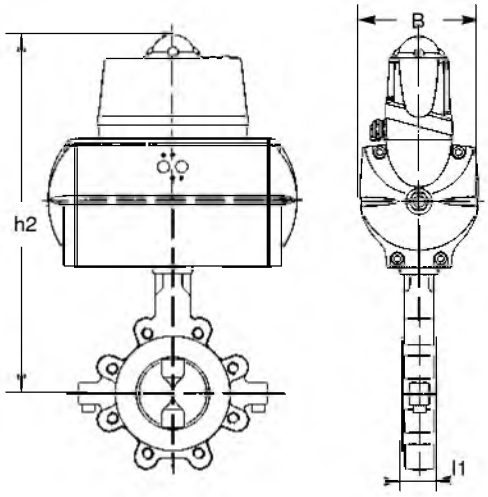
Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DYNACTAIR 1,5 - 25

without • *sans* • ohne AMTRONIC



with • *avec* • mit AMTRONIC

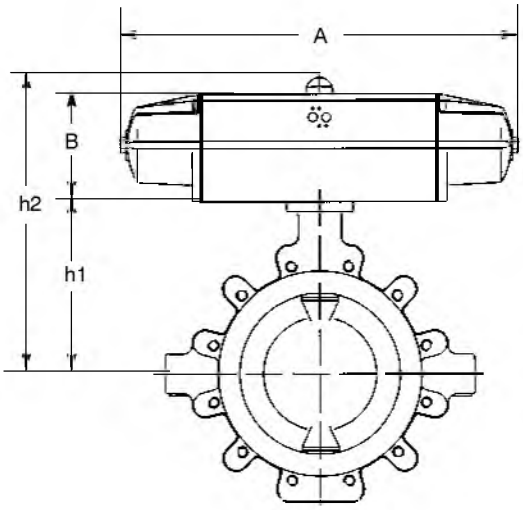


DYNACTAIR spring return pneumatic actuators
Actionneurs pneumatiques simple effet DYNACTAIR
Pneumatische Antriebe einfachwirkend DYNACTAIR

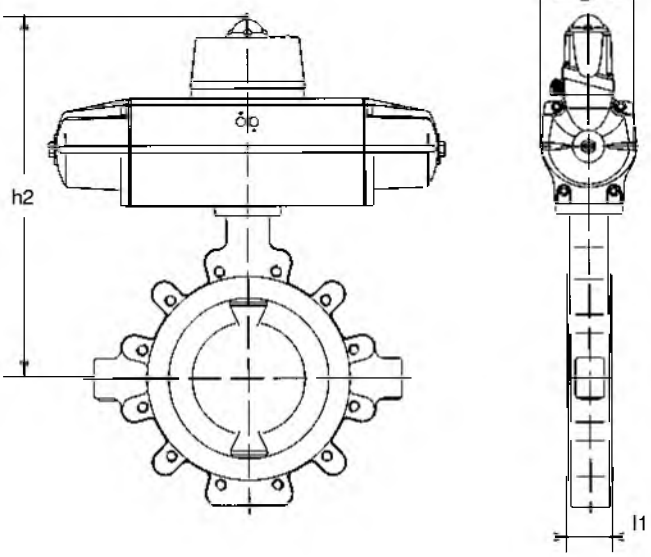
Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DYNACTAIR 50 & 100

without • *sans* • ohne AMTRONIC

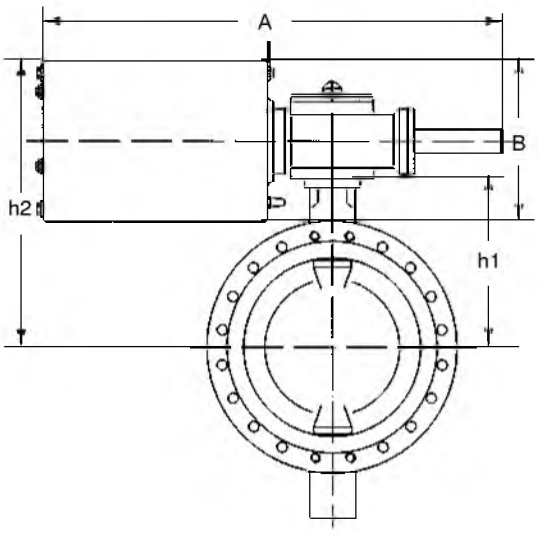


with • *avec* • mit AMTRONIC

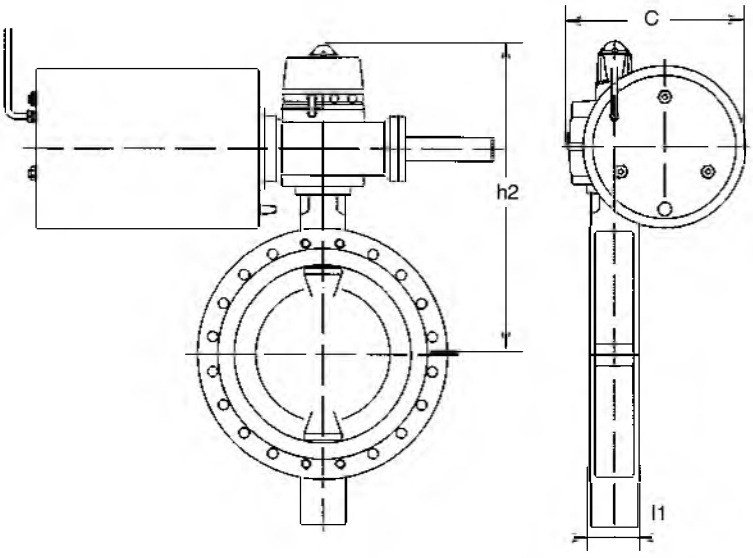


DYNACTAIR 200

without • *sans* • ohne AMTRONIC



with • *avec* • mit AMTRONIC

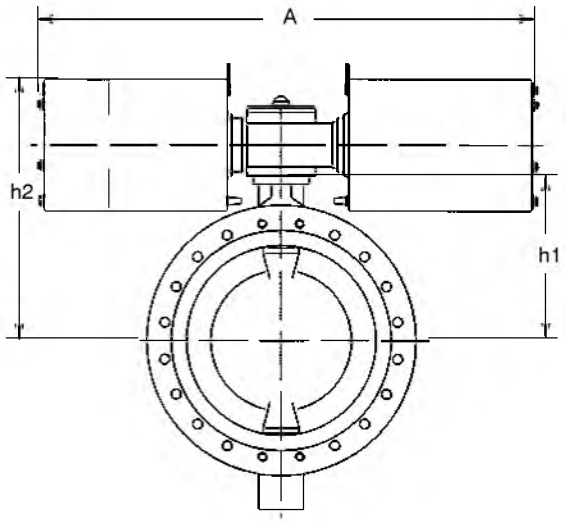


DYNACTAIR spring return pneumatic actuators
Actionneurs pneumatiques simple effet DYNACTAIR
Pneumatische Antriebe einfachwirkend DYNACTAIR

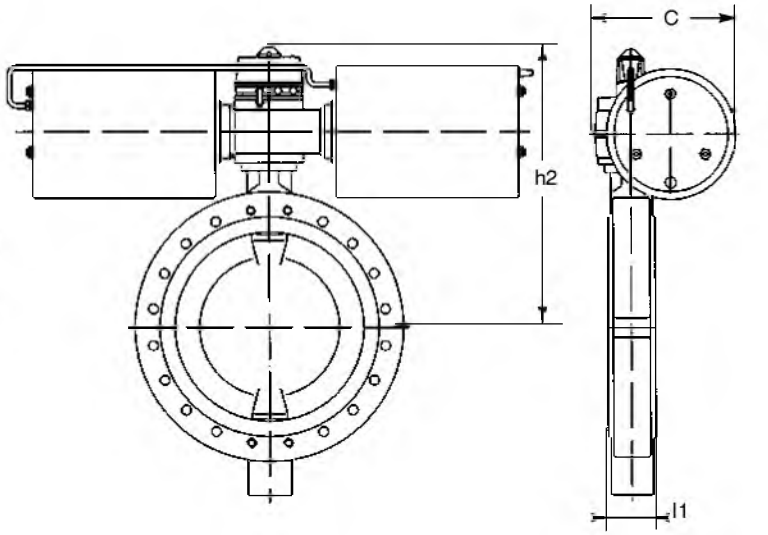
Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DYNACTAIR 400

without • *sans* • ohne AMTRONIC



with • *avec* • mit AMTRONIC



For a control pressure: 5 bar • *Pour une pression moteur : 5 bar* • Für Steuerdruck: 5 bar

DN	NPS	l1	h1	On-off function without box *Fonction tout ou rien sans boîtier* Absperrfunktion ohne Gehäuse						Throttling duty with box *Fonction régulation avec boîtier* Regelfunktion mit Gehäuse					
				Type *Type* Typ	A	B	C	h2	Weight* *Poids** Gewicht*	Type *Type* Typ	A	B	C	h2	Weight* *Poids** Gewicht*
40	1 ½	33	105	1,5	194	100	98	244	3,2	3	218	114	116	377	6,0
50	2	43	109	3	218	114	116	272	4,5					387	
65	2 ½	46	136					282		6	272	132	142	423	8,8
80	3	46	142	6	272	132	142	323	7,3					438	
100	4	52	163					338		12	344	156	176	487	15,1
125	5	56	176	12	344	156	176	392	13,6					507	
150	6	56	194					407		25	424	174	217	563	25,5
200	8	60	222	25	424	174	217	478	24,0	50	705	157	195	571	47,5
250	10	68	255	50	705	157	195	491	46,0					606	
300	12	78	282					526						641	
350	14	78	335	100	812	174	217	587	75,0	100	812	174	217	702	76,5
400	16	102	380					612						727	
450	18	114	410					662		200	1 214	406	443	784	280,0
500	20	127	440	200	1 214	406	443	696	270,0					810	
600	24	154	495					751		400	1 530	406	443	865	425,0

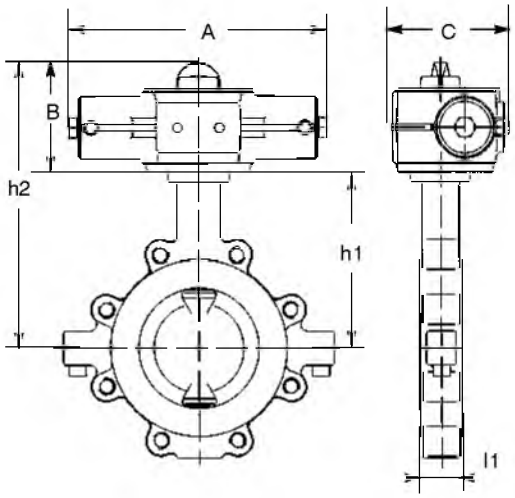
* The indicated weights are those of the actuator • *Les poids indiqués sont ceux du démultiplicateur seul* • Gewichte gelten nur für das Getriebe

ACTO double acting hydraulic actuators
Actionneurs hydrauliques double effet ACTO
Hydraulische Antriebe doppeltwirkend ACTO

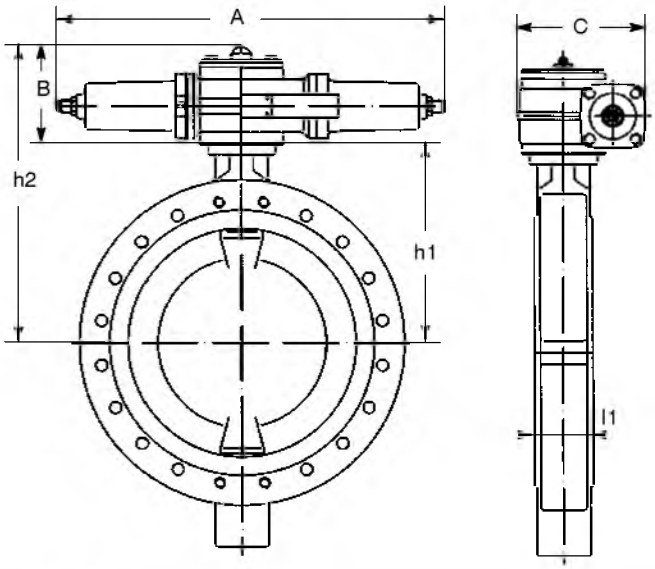
DN	NPS	Maximum fluid velocity *Vitesse maximale de référence* Strömungsgeschwindigkeit (m/s)	Control oil pressure *Pression d'huile moteur* Steueröldruck 60 bar	90 bar	120 bar
40 - 150	1½ - 6	5,0	ACTO 25		
200	8	5,0	ACTO 50		
250	10	5,0			
300	12	5,0			
350	14	5,0	ACTO 100		
400	16	5,0			
450	18	5,0	ACTO 200		
500	20	5,0			
600	24	5,0	ACTO 400		

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

ACTO 25 - 100



ACTO 200



Control oil pressure: 90 bar • *Pression d'huile moteur : 90 bar* • Steueröldruck: 90 bar

DN	NPS	l1	h1	Type *Type* Typ	A	B	C	h2	Weight* *Poids** Gewicht*
40	1 ½	33	105	25	288	104	144	229	13,0
50	2	43	109					239	
65	2 ½	46	136					249	
80	3	46	142					264	
100	4	52	163					279	
125	5	56	176					299	
150	6	56	194					314	
200	8	60	222	50	344	131	168	371	19,5
250	10	68	255					406	
300	12	78	282					441	
350	14	78	335	100	406	174	202	523	33,5
400	16	102	380					548	
450	18	114	410	200	515	200	253	624	63,0
500	20	127	440					650	
600	24	154	495	400	994	246	325	751	95,0

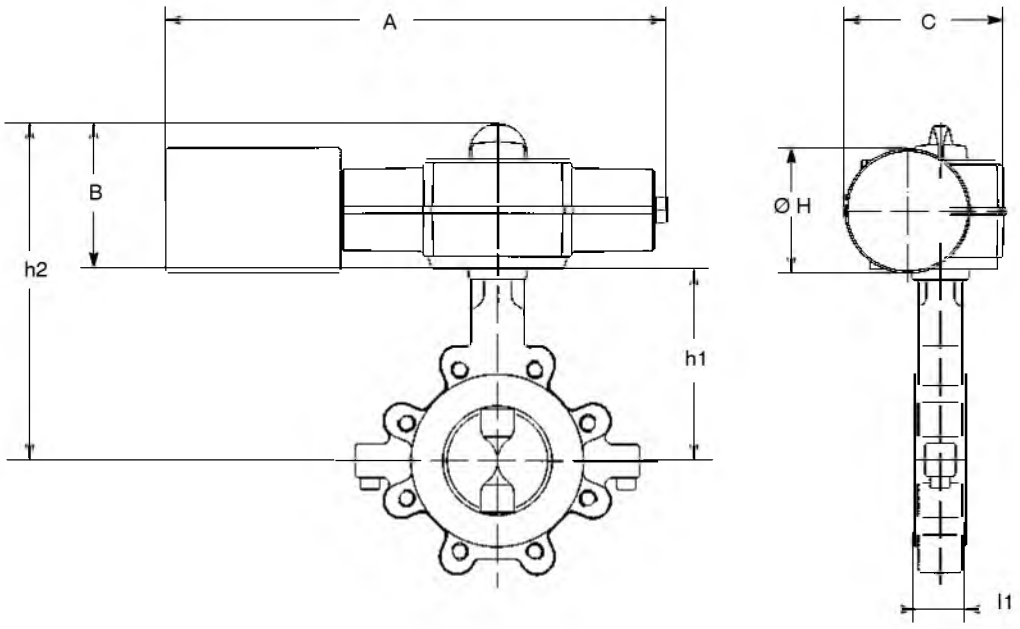
* The indicated weights are those of the actuator • *Les poids indiqués sont ceux du démultiplicateur seul* • Gewichte gelten nur für das Getriebe

DYNACTO spring return hydraulic actuators
Actionneurs hydrauliques simple effet DYNACTO
Hydraulische Antriebe einfachwirkend DYNACTO

DN	NPS	Maximum fluid velocity *Vitesse maximale de référence* Strömungsgeschwindigkeit (m/s)	Control oil pressure *Pression d'huile moteur* Steueröldruck		
			60 bar	90 bar	120 bar
40	1 ½	5,0	DYNACTO 12		
50	2	5,0			
65	2 ½	5,0			
80	3	5,0			
100	4	5,0			
125	5	5.0	DYNACTO 25		
150	6	5,0			
200	8	5,0		DYNACTO 50	DYNACTO 25
250	10	5,0	DYNACTO 100		
300	12	5,0			
350	14	5,0			
400	16	5,0		DYNACTO 200	
450	18	5,0			
500	20	5,0		DYNACTO 400	
600	24	5,0			

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

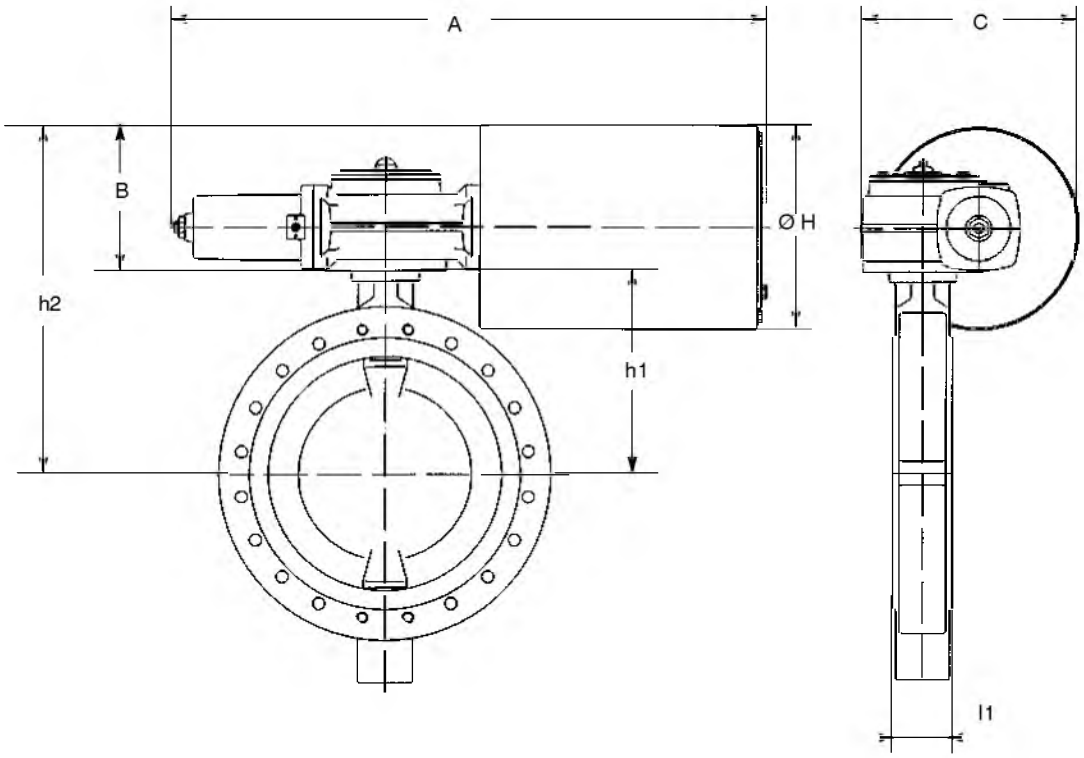
DYNACTO 12 - 100



DYNACTO spring return hydraulic actuators
Actionneurs hydrauliques simple effet DYNACTO
Hydraulische Antriebe einfachwirkend DYNACTO

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

DYNACTO 200 & 400



Control oil pressure: 90 bar • *Pression d'huile moteur : 90 bar* • Steueröldruck: 90 bar

DN	NPS	l1	h1	Type *Type* Typ	A	B	C	Ø H	h2	Weight* *Poids** Gewicht*
40	1 ½	33	105	12	585	121	138	95	226	19,0
50	2	43	109						230	
65	2 ½	46	136						257	
80	3	46	142						263	
100	4	52	163						284	
125	5	56	176						297	
150	6	56	194	25	655	151	171	127	345	29,0
200	8	60	222	50	726	187	217	169	409	55,0
250	10	68	255						475	
300	12	78	282	100	932	220	275	219	502	103,0
350	14	78	335						555	
400	16	102	380						678	
450	18	114	410	200	1 247	298	443	406	708	240,0
500	20	127	440						738	
600	24	154	495	400	1 452	363	549	505	858	515,0

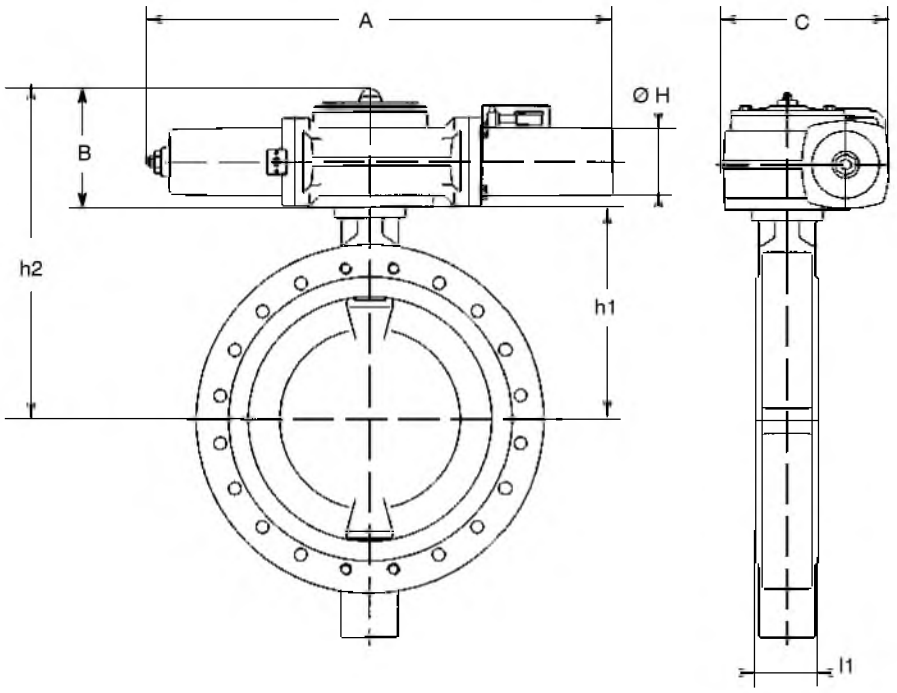
* The indicated weights are those of the actuator • *Les poids indiqués sont ceux du démultiplicateur seul* • Gewichte gelten nur für das Getriebe

ENNACTO single acting hydraulic actuators
Actionneurs hydrauliques simple effet ENNACTO
Hydraulische Antriebe einfachwirkend ENNACTO

DN	NPS	Maximum fluid velocity *Vitesse maximale de référence* Strömungsgeschwindigkeit (m/s)	Control oil pressure *Pression d'huile moteur* Steueröldruck		
			60 bar	90 bar	120 bar
400	16	5,0	ENNACTO 200		
450	18	5,0			
500	20	5,0			
600	24	5,0	ENNACTO 400		

Dimensions (mm) and weights (kg)
Encombrements (mm) et poids (kg)
Abmessungen (mm) und Gewichte (kg)

ENNACTO 200 & 400



Control oil pressure: 90 bar • *Pression d'huile moteur : 90 bar* • Steueröldruck: 90 bar

DN	NPS	l1	h1	Type *Type* Typ	A	B	C	Ø H	h2	Weight* *Poids** Gewicht*
450	18	114	410	200	970	246	325	325	656	105,0
500	20	127	440						686	
600	24	154	495	400	1 106	280	403	403	775	170,0

* The indicated weights are those of the actuator • *Les poids indiqués sont ceux du démultiplicateur seul* • Gewichte gelten nur für das Getriebe

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