

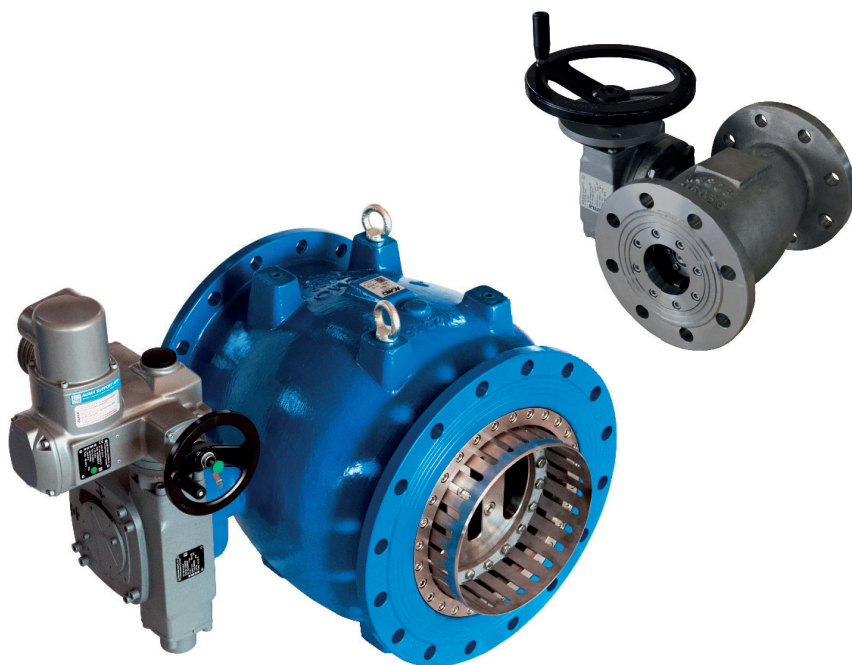


INSTALLATION, OPERATION & MAINTENANCE MANUAL



ACMO-AVK NEEDLE VALVE SERIES 872

Rev. 02 - 20201204



ACMO

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Expect... **AVK**

ACMO-AVK_IOM_872_2020-EN

ACMO-AVK NEEDLE VALVE SERIES 872

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Thank you for purchasing our product. We kindly invite you to read carefully the operating instructions and safety rules in this manual, which is part of the product.

1. Manufacturer identification

AC.MO S.r.l.

Headquarters Street: Via Tommaso da Modena, 28 Z.I. - 31056 RONCADE (TV) ITALY

Tel: +390422840220 r.a. Fax: +390422840923 e-mail: info@acmospa.com

www.acmosrl.com

2. General health and safety measures

- Read the IOM manual before using the valve. Comply with the manual at all times.
- The IOM manual must be available in the workplace.
- Non-compliance with the general safety measures can seriously damage human health and valve functioning. AC.MO S.r.l. will not assume any responsibility or liability for consequential damage due to the non-compliance with these instructions.
- The valve can be used for drinking water and clean service water. Other uses are prohibited because they can alter the valve safety.
- Never use the valve in plants where the pressure is higher than the one indicated.
- Only qualified staff can install the valve. Unqualified or underage staff cannot perform the installation. Always use protective equipment such as safety boots, safety helmets, goggles, protective gloves, etc... Personnel involved in the installation or maintenance of valves should be constantly alert to possible damages caused by an improper handling of the valve.
- Before performing any work on the valve, depressurize the pipeline section and ensure it is free of hazards.
- Unauthorized, unintentional and unexpected actuation, as well as any hazardous movement caused by stored energy (pressurized air, water under pressure) must be prevented.
- When a valve needs to be dismantled from a pipeline, water may emerge from the pipeline or the valve. The pipeline must be emptied completely before the valve is dismantled. It is strictly prohibited to disinstall any component when the system is under pressure (working) or when there is any fluid inside.
- Statutory and local provisions as well as the safety and accident prevention regulations must be observed and complied with at all times.
- For equipment that must be monitored, the relevant laws and regulations such as the Industrial Code, Accident Prevention Regulations, etc. must be complied with. In addition to this, local accident prevention regulations apply.

PLEASE NOTE: That if the valve closes too rapidly it can generate a water hammer in the pipes.

For product improvement purposes, AC.MO S.r.l. reserves the right to change the data in this manual at any time and without notice. Unauthorized use of data is forbidden.

Please contact us for up-to-date information.

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3. Receiving and storage

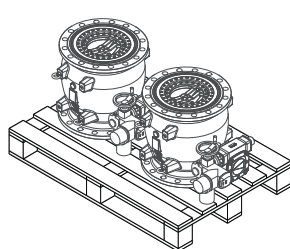
3.1 Product identification

The valve is labeled on the body with ACMO/AVK logo and model identification number of the valve.

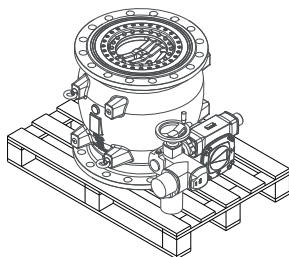
3.2 Packing

The valves are generally delivered in europallets, alternatively, in dedicated high thickness paper boxes. In both cases, they are fastened to the pallet using bolts and covered with a polyethylene heat-shrinking film. The package depends on the valve dimensions and on the actuator and/or hydraulic circuit that may be installed on the valve.

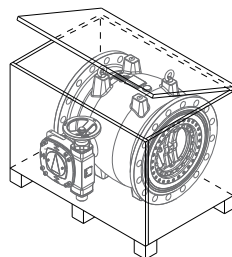
Packing examples:



DN80....300



DN400....700



DN800....1600

3.3 Transport and storing

WARNING: Please carefully inspect the unit for damages or discrepancies with the order upon arrival and report a claim immediately before unloading the goods.

WARNING: During the unpacking, removal and installation of the valve, use the lifting eyebolts on the valves (compliant with UNI ISO 3266 if the valve is provided with holes). Don't lift up the valves using the position indicator or the accessories and pipes installed on the valve.

WARNING: Flat washers has to be installed under the nuts when installing the valve to the pipeline flanges, to prevent the paint from cracking or chipping.

Lifting the valve improperly may damage it. Lift the valves using slings (ISO 4878), otherwise, if present on one valve, using the specific eyebolts.

Make sure the slings do not interfere with electric components levers, counterweights and oil-dynamic components, in order to avoid damaging the system. Don't lift up the valves using the position indicator or the accessories and pipes installed on the valve.

Please make sure the lifting tools (lift truck, slings, cranes, hooks, etc.) are adequate for the weight. Before you move the valve it is necessary to consult the weight table. Make sure their coefficient of safety is equal or higher than the coefficient allowed by law.

If the valve is stored for a middle or long term, it is necessary to:

- Lay the valve in a horizontal and firm position, in order to avoid capsizings which could damage things or people.
- Store the valves in an area protected from weather conditions especially from sunlight, which could damage the coats and the gaskets.

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4. Testing valves

All valves AC.MO S.r.l. designs are tested and controlled before leaving our premises. The test (inspection certificate) is available on request.

5. Warranty

AC.MO S.r.l. guarantees its products for the supplier or the client for a 12 month consecutive period since the delivery date to the final client. The warranty coverage period will correspond to the date on the final client's delivery note. Product faults and damages must be pointed out within 8 days since their identification.

The warranty covers all the parts manufactured/provided by AC.MO S.r.l..

Warranty does not cover normal wear damages.

The warranty does not apply to:

- Valves equipped with tools and accessories, unauthorized by AC.MO S.r.l..
- Valves damaged by misuse, accidents or other chances, negligence, excess load etc..
- Valves damaged by lack of maintenance.
- Valves equipped with non-original spare parts.
- Valves modified without authorisation.

6. Disposal and recycling

Even though AC.MO S.r.l. valves are designed and built to be extremely long lasting, at the end of their life cycle they must be removed and replaced.

Dismantle the valve, separate its components to dispose them of and recycle them (e.g., metal parts must be separated from plastic parts etc.).

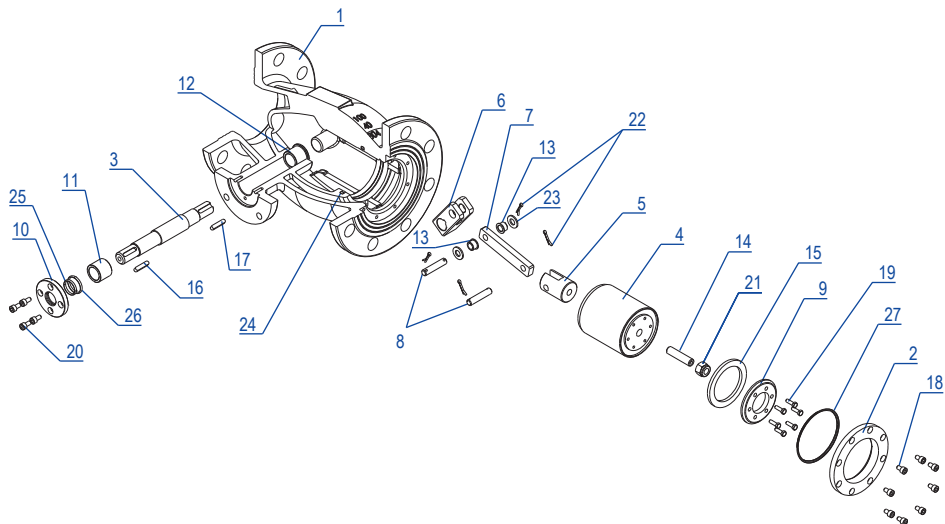
WARNING: Always respect the directives on waste collection, disposal and recycling.

Carefully observe all steps listed in National Laws on waste disposal and recycling.

ACMO-AVK NEEDLE VALVE SERIES 872

7. Series 872 overview

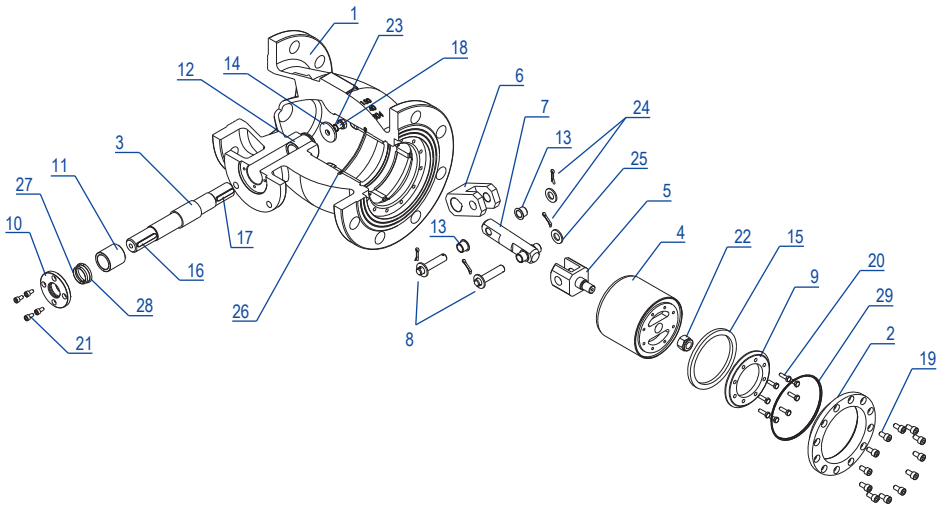
7.1 Valve components description DN80-100



ITEM	DESCRIPTION	MATERIALS	STANDARDS	ITEM	DESCRIPTION	MATERIALS	STANDARDS
1	BODY	AISI 304 1.4308	EN 10213	14	THREADED ROD	AISI 420B	EN 10088-3
2	SEALING RING	AISI 304	EN 10088-3	15	MAIN GASKET SEAL	TECHNOPOLYMER	-
3	SHAFT	AISI 420B	EN 10088-3	16	SHAFT KEY	STAINLESS STEEL	-
4	OBTURATOR (CYLINDER)	AISI 304	EN 10088-3	17	SHAFT KEY	STAINLESS STEEL	-
5	FORK	AISI 420B	EN 10088-3	18	SCREW HTEI	A2-70	EN ISO 3506-1
6	CRANK	AISI 420B	EN 10088-3	19	SCREW TCEI	A2-70	EN ISO 3506-1
7	PISTON ROD	AISI 304	EN 10088-3	20	SCREW HTEI	A2-70	EN ISO 3506-1
8	LINCHPIN	AISI 420B	EN 10088-3	21	SELF-LOCKING NUT	A2-70	EN ISO 3506-1
9	FIXING GASKET RING	AISI 304	EN 10088-3	22	COTTER PIN	AISI 304	EN 10088-3
10	RING NUT FOR SHAFT BONNET	CuAl10Fe5Ni5-C (CC333G)	EN 1982	23	WASHERS	A2-70	EN ISO 3506-1
11	OUTER BEARING	CuAl10Fe5Ni5-C (CC333G)	EN 1982	24	SEAL CYLINDER GASKET	TECHNOPOLYMER	-
12	INTERNAL BEARING	CuAl10Fe5Ni5-C (CC333G)	EN 1982	25	O-RING	NBR	EN 681-1
13	BUSH BEARING	CuAl10Fe5Ni5-C (CC333G)	EN 1982	26	O-RING	NBR	EN 681-1
				27	O-RING	NBR	EN 681-1

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7.2 Valve components description DN150



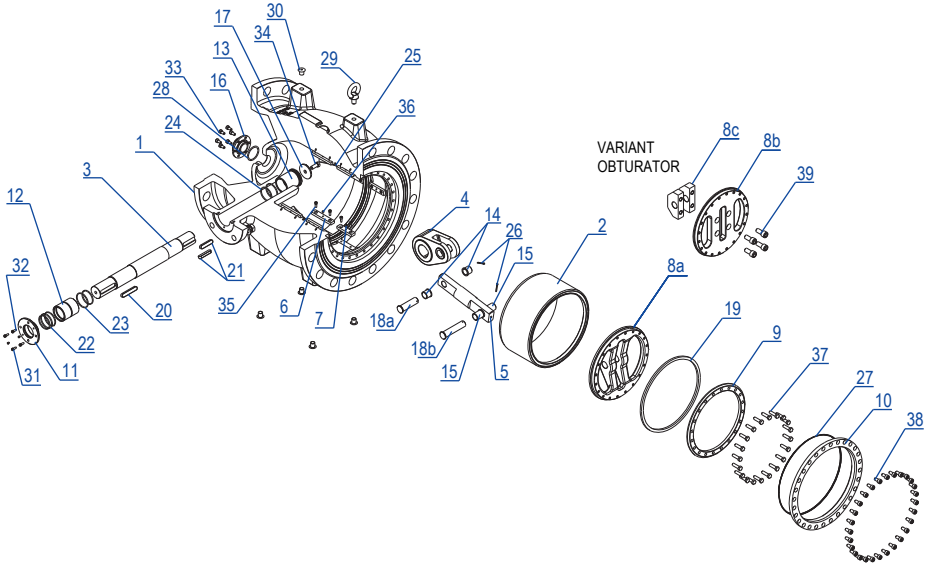
ITEM	DESCRIPTION	MATERIALS	STANDARDS
1	BODY	AISI 304 1.4308	EN 10213
2	SEALING RING	AISI 304	EN 10088-3
3	SHAFT	AISI 420B	EN 10088-3
4	OBTURATOR (CYLINDER)	AISI 304	EN 10088-3
5	FORK	AISI420B	EN 10088-3
6	CRANK	AISI 420B	EN 10088-3
7	PISTON ROD	AISI 420B	EN 10088-3
8	LINCHPIN	AISI 420B	EN 10088-3
9	FIXING GASKET RING	AISI 304	EN 10088-3
10	RING NUT FOR SHAFT BONNET	CuAl10Fe5Ni5-C (CC333G)	EN 1982
11	OUTER BEARING	CuAl10Fe5Ni5-C (CC333G)	EN 1982
12	INTERNAL BEARING	CuAl10Fe5Ni5-C (CC333G)	EN 1982
13	BUSH BEARING	CuAl10Fe5Ni5-C (CC333G)	EN 1982
14	WASHER	AISI 420B	EN 10088-3

ITEM	DESCRIPTION	MATERIALS	STANDARDS
15	MAIN GASKET SEAL	TECHNOPOLYMER	-
16	SHAFT KEY	STAINLESS STEEL	-
17	SHAFT KEY	STAINLESS STEEL	-
18	SCREW HTEI	A2-70	EN ISO 3506-1
19	SCREW TCEI	A2-70	EN ISO 3506-1
20	SCREW HTEI	A2-70	EN ISO 3506-1
21	SCREW TCEI	A2-70	EN ISO 3506-1
22	SELF-LOCKING NUT	A2-70	EN ISO 3506-1
23	WASHER	A2-70	EN ISO 3506-1
24	COTTER PIN	AISI 304	EN 10088-3
25	WASHER	A2-70	EN ISO 3506-1
26	SEAL CYLINDER GASKET	TECHNOPOLYMER	-
27	O-RING	NBR	EN 681-1
28	O-RING	NBR	EN 681-1
29	O-RING	NBR	EN 681-1

The designs, materials and specifications shown are subject to change without notice. This is due to the continuous development of our product programme. Unauthorized use is forbidden.

ACMO-AVK NEEDLE VALVE SERIES 872

7.3 Valve components description DN200-500



ITEM	DESCRIPTION	MATERIALS	STANDARDS
1	BODY	EN GJS-500-7	EN 1563
2	OBTURATOR (CYLINDER)	AISI 304	EN 10088-3
3	SHAFT	AISI 420B	EN 10088-3
4	CRANK	EN GJS-500-7 AISI 420 (DN200)	EN 1563 EN 10088-3
5	PISTON ROD	AISI 420B	EN 10088-3
6	INTERNAL GUIDE	CuZn40Pb2 CW617N	EN 12165
7	EXTERNAL GUIDE	CuZn40Pb2 CW617N	EN 12165
8a	FORK	AISI 304 1.4308	EN 10213
8b	OBTURATOR FLANGE	AISI 304	EN 10088-3
8c	FIXING PLATE ROD	AISI 304	EN 10088-3
9	FIXING GASKET RING	AISI 304	EN 10088-3
10	BODY SEAL RING	AISI 304	EN 10088-3
11	RING CAP SHAFT	CuAl10Fe5Ni5-C	EN 1982
12	OUTER BEARING	CuAl10Fe5Ni5-C	EN 1982
13	INTERNAL BEARING	CuAl10Fe5Ni5-C	EN 1982
14	BUSH BEARING	CuAl10Fe5Ni5-C	EN 1982
15	BUSH BEARING	CuAl10Fe5Ni5-C	EN 1982
16	OGIVE	AISI 420B	EN 10088-3
17	WASHER CRANCK	AISI 420B	EN 10088-3
18a	CRANCK PIN	AISI 420B	EN 10088-3
18b	FORK PIN	AISI 420B	EN 10088-3

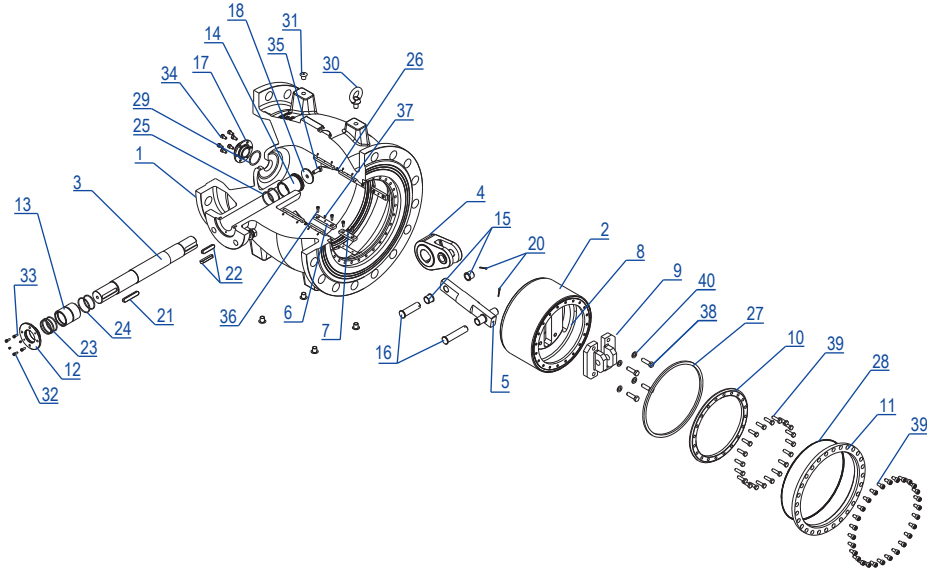
ITEM	DESCRIPTION	MATERIALS	STANDARDS
19	OBTURATOR GASKET	TECHNOPOLYMER	-
20	SHAFT KEY	STAINLESS STEEL	-
21	CRANCK KEY	STAINLESS STEEL	-
22	O-RING	NBR	EN 681-1
23	O-RING	NBR	EN 681-1
24	O-RING	NBR	EN 681-1
25	BODY GASKET	TECHNOPOLYMER	-
26	PIN	AISI 304	EN 10088-3
27	O-RING	NBR	EN 681-1
28	O-RING	NBR	EN 681-1
29	EYE BOLT	GALVANIZED STEEL	UNI ISO 3266
30	PLASTIC CAP	PLASTIC	-
31	SCREW HTEI	A2-70	EN ISO 3506-1
32	HEADLESS SCREW	A2-70	EN ISO 3506-1
33	SCREW TCEI	A2-70	EN ISO 3506-1
34	SCREW HTEI	A2-70	EN ISO 3506-1
35	SCREW TCEI	A2-70	EN ISO 3506-1
36	HEADLESS SCREW	A2-70	EN ISO 3506-1
37	SCREW TCEI	A2-70	EN ISO 3506-1
38	SCREW TCEI	A2-70	EN ISO 3506-1
39	SCREW TCEI	A2-70	EN ISO 3506-1

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Expect ... **AVR**

ACMO-AVK NEEDLE VALVE SERIES 872

7.4 Valve components description DN600-1600



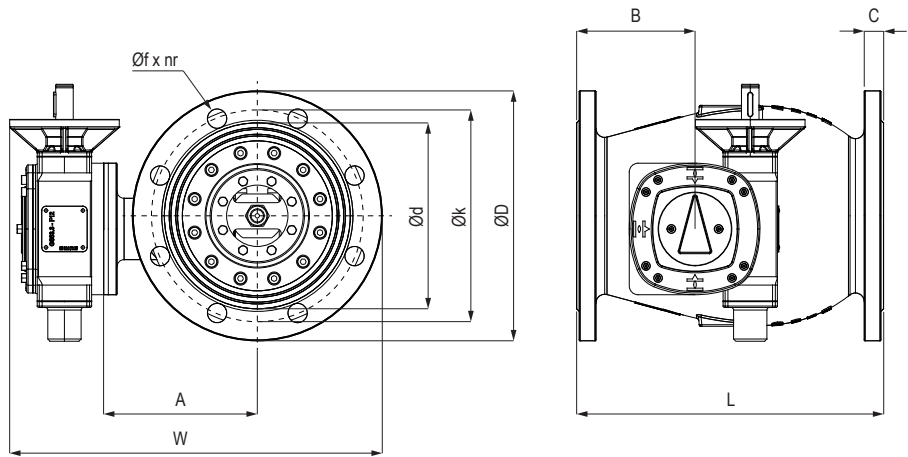
ITEM	DESCRIPTION	MATERIALS	STANDARDS
1	BODY	EN GJS-500-7	EN 1563
2	OBTURATOR (CYLINDRE)	AISI 304	EN 10088-3
3	SHAFT	AISI 420B	EN 10088-3
4	CRANK	EN GJS-500-7	EN 1563
5	PISTON ROD	AISI 420B	EN 10088-3
6	INTERNAL GUIDE	CuZn40Pb2 CW617N	EN 12165
7	EXTERNAL GUIDE	CuZn40Pb2 CW617N	EN 12165
8	OBTURATOR FLANGE	AISI 304	EN 10088-3
9	FIXING PLATE ROD	AISI 304	EN 10088-3
10	FIXING GASKET RING	AISI 304	EN 10088-3
11	BODY SEAL RING	AISI 304	EN 10088-3
12	RING CAP SHAFT	CuAl10Fe5Ni5-C	EN 1982
13	OUTER BEARING	CuAl10Fe5Ni5-C	EN 1982
14	INTERNAL BEARING	CuAl10Fe5Ni5-C	EN 1982
15	BUSH BEARING	CuAl10Fe5Ni5-C	EN 1982
16	BUSH BEARING	CuAl10Fe5Ni5-C	EN 1982
17	OGIVE	AISI 420B	EN 10088-3
18	WASHER CRANCK	AISI 420B	EN 10088-3
19a	CRANCK PIN	AISI 420B	EN 10088-3
19b	FORK PIN	AISI 420B	EN 10088-3
20	PIN	AISI 304	EN 10088-3

ITEM	DESCRIPTION	MATERIALS	STANDARDS
21	SHAFT KEY	STAINLESS STEEL	-
22	SHAFT CRANCK	STAINLESS STEEL	-
23	O-RING	NBR	EN 681-1
24	O-RING	NBR	EN 681-1
25	O-RING	NBR	EN 681-1
26	BODY GASKET	TECHNOPOLYMER	-
27	OBTURATOR GASKET	TECHNOPOLYMER	-
28	O-RING	NBR	EN 681-1
29	O-RING	NBR	EN 681-1
30	EYE BOLT	GALVANIZED STEEL	UNI ISO 3266
31	PLASTIC CAP	PLASTIC	-
32	SCREW HTEI	A2-70	EN ISO 3506-1
33	HEADLESS SCREW	A2-70	EN ISO 3506-1
34	SCREW TCEI	A2-70	EN ISO 3506-1
35	SCREW HTEI	A2-70	EN ISO 3506-1
36	SCREW TCEI	A2-70	EN ISO 3506-1
37	HEADLESS SCREW	A2-70	EN ISO 3506-1
38	SCREW HTEI	A2-70	EN ISO 3506-1
39	SCREW TCEI	A2-70	EN ISO 3506-1
40	WASHER	A2-70	EN ISO 3506-1

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ACMO-AVK NEEDLE VALVE SERIES 872

7.5 Valve dimensions DN80-100-150



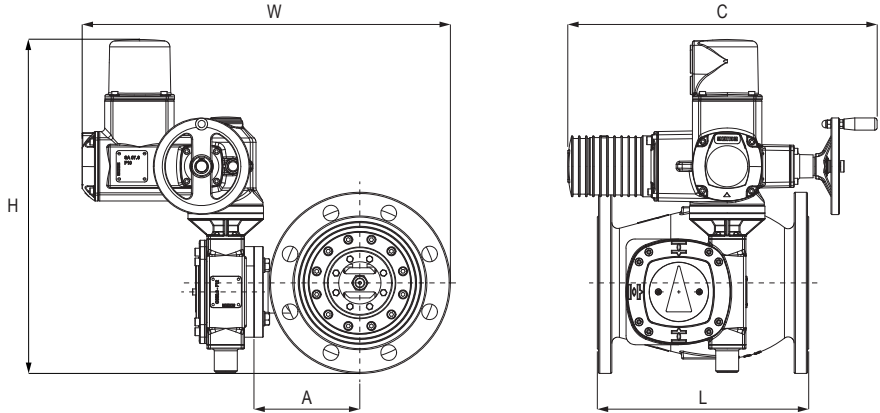
EN558 S15					EN1092-1								WEIGHT	ISO***	
DN	L	A*	B*	W*	øD	øK	øf	nr	C	M	ød	Kg*	GEARBOX	5210	
PN10-16															
80	260**	125	100	328	200	160	18	8	20	M16	138	27	GS50.3	F10	
100	300	145	120	358	220	180	18	8	20	M16	158	37	GS50.3	F10	
150	350	175	135	425	285	240	22	8	22	M20	212	69	GS50.3	F10	
PN25-40															
80	260**	125	100	328	200	160	18	8	24	M16	138	27	GS50.3	F10	
100	300	145	120	365	235	190	22	8	24	M20	162	37	GS50.3	F10	
150	350	175	135	433	300	250	26	8	28	M24	218	75	GS50.3	F10	

* INDICATIVE DIMENSIONS

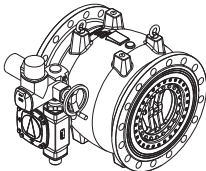
** NOT IN COMPLIANCE WITH STANDARD EN 558 S15

*** GEARBOX FLANGE

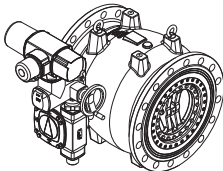
ACMO-AVK NEEDLE VALVE SERIES 872



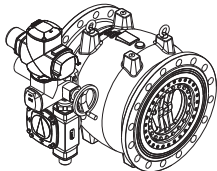
TYPE N



TYPE AC



TYPE AM



EN558				ACTUATOR ***								
S15				TYPE N			TYPE AC			TYPE AM		
DN	L	A*	C*	H*	W*	WEIGHT Kg*	H*	W*	WEIGHT Kg*	H*	W*	WEIGHT Kg*
PN10 - PN16												
80	260**	125	513	491	503	39	581	628	46	591	503	46
100	300	145	513	496	540	57	586	666	64	596	540	64
150	350	175	513	556	608	89	646	733	96	656	608	96
PN25 - PN40												
80	260**	125	513	491	503	39	581	628	46	591	503	46
100	300	145	513	496	540	57	586	666	64	596	540	64
150	350	175	513	556	608	95	646	733	102	656	608	102

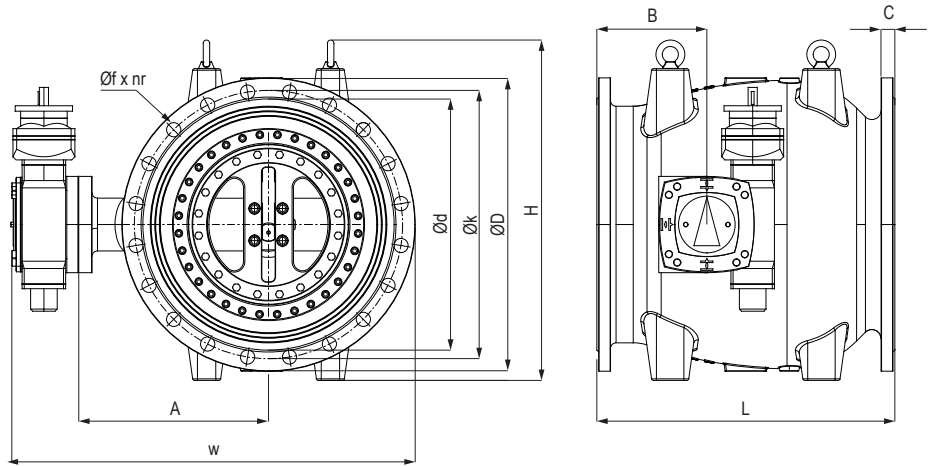
* INDICATIVE DIMENSIONS

** NOT IN COMPLIANCE WITH STANDARD EN 558 S15

*** WITH STANDARD GEARBOX

ACMO-AVK NEEDLE VALVE SERIES 872

7.6 Valve dimensions DN200-1600



EN558 S15						EN1092-2						WEIGHT		ISO**	
DN	L	A*	B*	W*	H*	øD	øK	øf	nr	C	M	ød	Kg*	GEARBOX	5210
PN10															
200	400	220	150	500	425	340	295	23	8	20	M20	266	105	GS63.3	F10
250	450	260	165	570	475	395	350	23	12	22	M20	319	145	GS63.3	F10
300	500	305	185	655	535	445	400	23	12	24.5	M20	370	220	GS80.3	F10
350	550	345	205	725	595	505	460	23	16	24.5	M20	429	295	GS80.3	F10
400	600	385	235	820	660	565	515	28	16	24.5	M24	480	405	GS100.3	F10
450	650	415	240	870	745	615	565	28	20	25.5	M24	530	450	GS100.3	F10
500	700	445	245	945	785	670	620	28	20	26.5	M27	582	515	GS100.3+VZ4.3	F10
600	800	505	280	1070	925	780	725	31	20	30	M27	682	820	GS100.3+VZ4.3	F10
700	900	565	315	1185	1045	895	840	31	24	32.5	M27	794	1100	GS125.3+VZ4.3	F10
800	1000	650	350	1330	1180	1015	950	34	24	35	M30	901	1580	GS125.3+VZ4.3	F10
900	1100	715	385	1440	1315	1115	1050	34	28	37.5	M30	1001	1780	GS125	F10
1000	1200	760	400	1590	1495	1230	1160	37	28	40	M33	1112	2500	GS160.3+GZ160.3	F10
1200	1400	870	415	1810	1725	1455	1380	41	32	45	M36	1328	3530	GS160.3	F10
1400	1600	1000	480	2100	1965	1675	1590	44	36	46	M39	1530	5050	GS200.3+GZ200.3	F10
1600	1800	1150	625	2440	2225	1915	1820	50	40	49	M45	1750	8500	GS250.3+GZ250.3	F10

* INDICATIVE DIMENSIONS

** GEARBOX FLANGE

ACMO-AVK NEEDLE VALVE SERIES 872

EN558 S15						EN1092-2							WEIGHT	ISO**	
DN	L	A*	B*	W*	H*	øD	øK	øf	nr	C	M	ød	Kg*	GEARBOX	5210
PN16															
200	400	220	150	500	425	340	295	23	12	20	M20	266	105	GS63.3	F10
250	450	260	165	570	475	405	355	28	12	22	M24	319	156	GS63.3	F10
300	500	305	185	655	535	460	410	28	12	24.5	M24	370	225	GS80.3	F10
350	550	345	205	725	595	520	470	28	16	26.5	M24	429	295	GS80.3	F10
400	600	385	235	820	660	580	525	31	16	28	M27	480	405	GS100.3+VZ4.3	F10
450	650	415	240	870	745	640	585	31	20	30	M27	548	455	GS100.3+VZ4.3	F10
500	700	445	245	945	785	715	650	34	20	31.5	M30	609	515	GS100.3+VZ4.3	F10
600	800	505	280	1070	925	840	770	37	20	36	M33	720	820	GS100.3+VZ4.3	F10
700	900	565	315	1185	1045	910	840	37	24	39.5	M33	794	1100	GS125.3+VZ4.3	F10
800	1000	650	350	1330	1180	1025	950	41	24	43	M36	901	1600	GS125.3+VZ4.3	F10
900	1100	715	385	1440	1315	1125	1050	41	28	46.5	M36	1001	1800	GS125 208:1	F10
1000	1200	760	400	1590	1495	1255	1170	44	28	50	M39	-	2500	GS160.3+GZ160.3	F10
1200	1400	870	415	1810	1725	1485	1390	50	32	57	M45	1328	3575	GS160.3 442:1	F10
1400	1600	1015	480	2100	1965	1685	1590	50	36	60	M45	1530	5100	GS200.3+GZ200.3	F10
1600	1800	1153	625	2440	2225	1930	1820	57	40	65	M52	1750	8500	GS250.3+GZ250.3	F14
PN25															
200	400	220	150	500	425	360	310	28	12	22	M24	274	110	GS63.3	F10
250	450	260	165	570	475	425	370	31	12	24.5	M27	330	156	GS63.3	F10
300	500	305	185	655	535	485	430	31	16	27.5	M27	389	235	GS100.3+VZ4.3	F10
350	550	350	205	725	595	555	490	34	16	30	M30	448	325	GS100.3+VZ4.3	F10
400	600	385	235	820	665	620	550	37	16	32	M33	503	410	GS100.3+VZ4.3	F10
450	650	420	240	870	745	670	600	37	20	34.5	M33	548	485	GS100.3+VZ4.3	F10
500	700	445	245	945	785	730	660	37	20	36.5	M33	609	530	GS125.3+VZ4.3	F10
600	800	505	285	1070	925	845	770	41	20	42	M36	720	880	GS125.3+VZ4.3	-
PN40															
200	400	220	150	500	425	375	320	31	12	30	M27	284	122	GS80.3	F10
250	450	260	165	570	475	450	385	34	12	34.5	M30	345	165	GS100.3	F10
300	500	305	185	655	535	515	450	34	16	39.5	M30	409	265	GS100.3+VZ4.3	F10
350	550	350	205	725	595	580	510	37	16	44	M33	465	350	-	-
400	600	385	235	820	665	660	585	41	16	48	M36	535	435	GS100.3+VZ4.3	F10
450	650	420	240	870	745	685	610	41	20	49	M36	560	550	-	-
500	700	445	245	945	785	755	670	44	20	52	M39	615	700	-	-
600	800	505	285	1070	925	890	795	50	20	58	M45	735	950	-	-

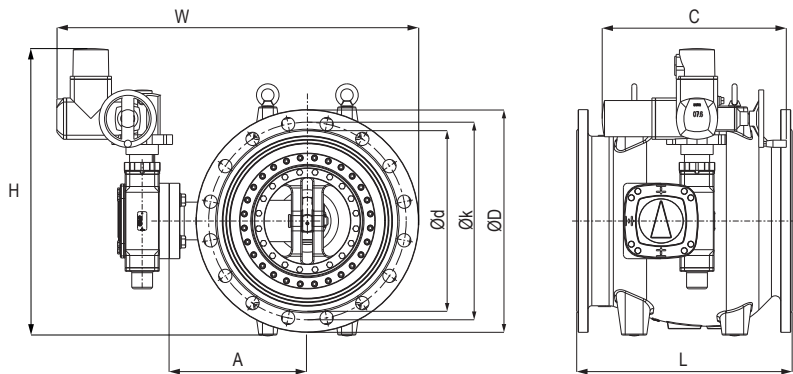
* INDICATIVE DIMENSIONS

** GEARBOX FLANGE

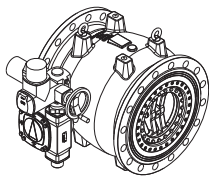
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Expect ... 

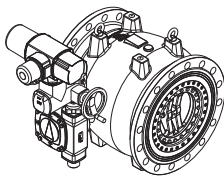
ACMO-AVK NEEDLE VALVE SERIES 872



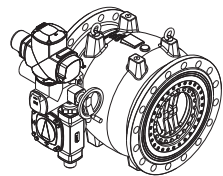
TYPE N



TYPE AC



TYPE AM



EN558 S15				ACTUATOR **								
DN	L	A*	C*	TYPE N			TYPE AC			TYPE AM		
				H*	W*	WEIGHT Kg*	H*	W*	WEIGHT Kg*	H*	W*	WEIGHT Kg*
PN10												
200	400	220	513	613	673	125	676	825	132	713	673	132
250	450	260	513	613	740	165	703	866	172	713	740	172
300	500	305	513	648	828	240	738	953	247	748	828	247
350	550	345	536	695	902	315	785	1032	322	795	902	322
400	600	385	513	860	981	425	923	1133	432	960	981	432
450	650	415	513	887	1042	475	977	1167	482	987	1042	482
500	700	445	513	907	1098	534	997	1223	541	1007	1098	541
600	800	505	513	972	1228	840	1062	1353	847	1072	1228	847
700	900	565	536	1026	1355	1120	1116	1480	1127	1126	1355	1127
800	1000	650	536	1098	1508	1600	1188	1633	1607	1198	1508	1607
900	1100	715	536	1155	1596	1805	1218	1748	1812	1255	1596	1812
1000	1200	760	536	1493	1749	2520	1524	1875	2527	1593	1749	2527
1200	1400	870	536	1390	1966	3550	1453	2118	3557	1490	1966	3557
1400	1600	1000	536	1500	2191	5070	1563	2343	5077	1600	2191	5077
1600	1800	1150	536	1680	2486	8525	1743	2638	8532	1780	2486	8532

* INDICATIVE DIMENSIONS

** WITH STANDARD GEARBOX

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EN558 S15				TYPE N			ACTUATOR **			TYPE AM		
DN	L	A*	C*	H*	W*	WEIGHT Kg*	H*	W*	WEIGHT Kg*	H*	W*	WEIGHT Kg*
PN16												
200	400	220	513	613	673	125	676	825	132	713	673	132
250	450	260	513	608	745	176	703	871	183	708	745	183
300	500	305	536	650	839	245	740	965	252	750	839	252
350	550	345	536	695	910	320	785	1035	327	795	910	327
400	600	385	513	845	988	425	935	1113	432	945	988	432
450	650	415	513	889	1073	475	979	1198	482	989	1073	482
500	700	445	536	909	1125	535	999	1251	542	1009	1125	542
600	800	505	536	979	1248	840	1069	1373	847	1079	1248	847
700	900	565	536	1026	1355	1125	1116	1480	1132	1126	1355	1132
800	1000	650	536	1188	1633	1625	1267	1634	1632	1288	1633	1632
900	1100	715	536	1158	1601	1825	1221	1753	1832	1258	1601	1832
1000	1200	760	536	1434	1749	2520	1524	1875	2527	1534	1749	2527
1200	1400	870	536	1538	1968	3600	1628	2093	3607	1638	1968	3607
1400	1600	1000	536	1753	2253	5125	1843	2378	5132	1853	2253	5132
1600	1800	1150	536	1878	2538	8548	1968	2663	8555	1978	2538	8555
PN25												
200	400	220	513	586	683	130	676	808	137	686	683	137
250	450	260	513	621	756	176	708	881	183	721	756	183
300	500	305	513	790	859	255	880	986	262	890	859	262
350	550	345	513	823	935	345	913	1061	352	923	935	352
400	600	385	513	865	1008	430	955	1133	437	965	1008	437
450	650	415	536	889	1073	505	979	1198	512	989	1073	512
500	700	445	536	914	1132	550	1011	1258	557	1014	1132	557
600	800	505	536	1009	1251	905	1072	1403	912	1109	1251	912
PN40												
200	400	220	536	586	683	122	676	808	149	686	683	149
250	450	260	513	621	756	165	708	881	192	721	756	192
300	500	305	513	790	859	265	880	986	292	890	859	292
350	550	350	513	823	935	350	913	1061	357	923	935	357
400	600	385	536	865	1008	435	955	1133	462	965	1008	462
450	650	420	536	889	1073	550	979	1198	557	989	1073	557
500	700	445	536	914	1132	700	1011	1258	707	1014	1132	707
600	800	505	536	1009	1251	950	1072	1403	957	1109	1251	957

* INDICATIVE DIMENSIONS

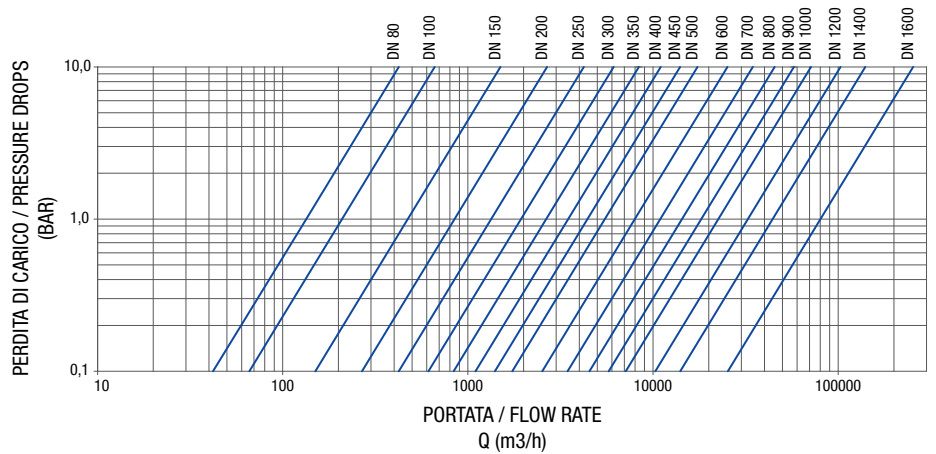
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8. Diagrams

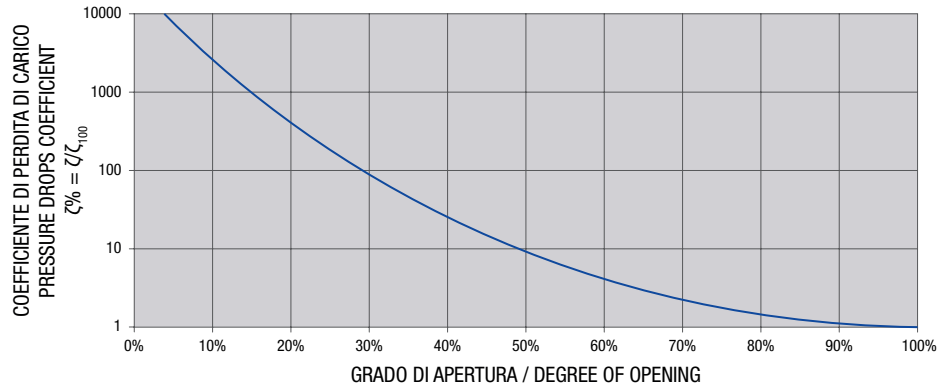
8.1 Head loss diagram with open valve 100%



8.2 Kv values

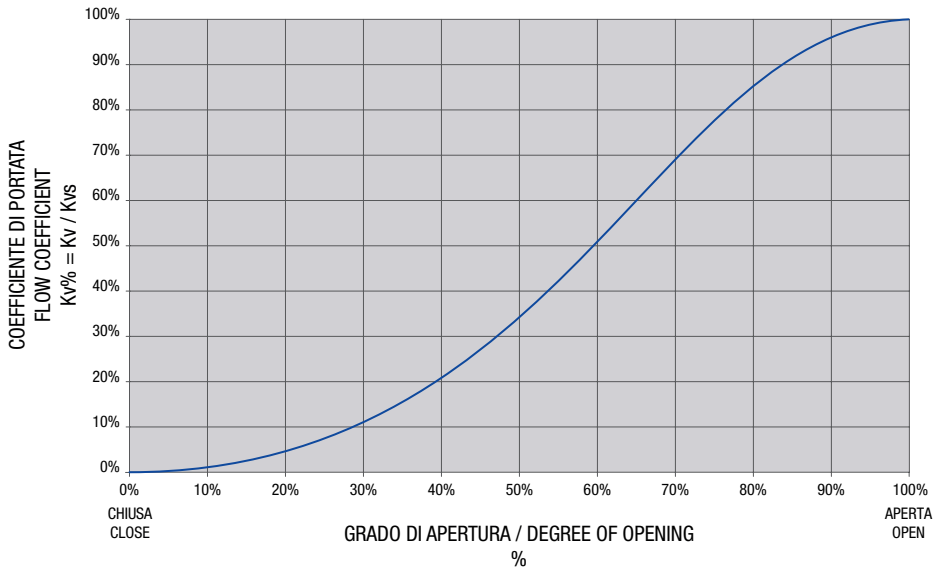
HYDRAULIC SPECIFICATIONS																		
DN	80	100	150	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1400	1600
Kvs [m3/h]	134	209	474	847	1337	1937	2650	3481	4425	5494	7975	10937	14350	18225	22512	32525	44287	80125
ζ _{r100}	3.58	3.58	3.54	3.50	3.43	3.39	3.35	3.32	3.29	3.25	3.20	3.15	3.12	3.10	3.09	3.07	3.07	1.60

8.3 Pressure drop coefficient



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8.4 Diagram of flow coefficient Kv



Pressure drops in needle valves can be evaluated by using equation:

$$\Delta P = \frac{v^2}{2g} \zeta$$

Pressure drops ΔP [mhw]

Pressure drops coefficient ζ

Fluid velocity v [m/s] referred to valve DN $g = 9.81 \text{ m/s}^2$

The pressure drops coefficient ζ can be calculated as (2):

$$\zeta = \zeta \% \times \zeta 100$$

ζ % is given by diagram 1

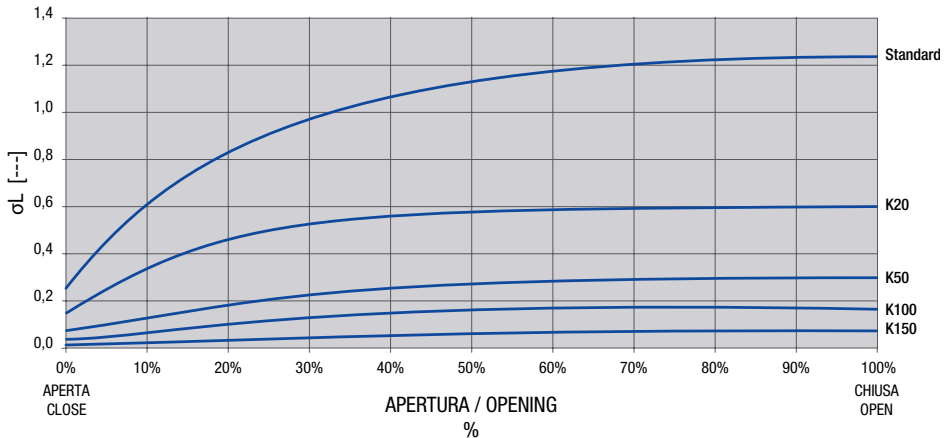
$\zeta 100$ is the pressure drops coefficient of the fully open valve open 100%.

It is given in the table 1 for standard valves (no dissipating cylinder).

$\zeta 100$ for valves equipped with dissipating cylinder, it is the distinctive values of the cylinder (e.g.: for a valve equipped with a dissipating cylinder K20, it will be $100 = 20$).

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8.5 Cavitation diagram 'sigma'



The cavitation risk in needle valves can be evaluated using the following equation: $\sigma > \sigma_L$

The valve won't operate under cavitation until $\sigma > \sigma_L$.

Where is it:

- Cavitation value $\sigma = P_{out} / (\Delta P + v^2/2g)$
- Cavitation limit σ_L see diagram
- ΔP = head loss [mhw]
- P_{out} = valve outlet pressure
- v = fluid velocity referred to DN [m/s]
- $g = 9.81 \text{ m/s}^2$

THE VALVE SHALL NOT CONTINUOUSLY OPERATE UNDER CAVITATION RISK CONDITIONS.
IT CAN BE ACCEPTED THAT THE VALVE OPERATES UNDER SLIGHT CAVITATION CONDITIONS
FOR SHORT PERIODS.

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9. Valve installation

WARNING: The regulations described refer to the installation and use of the valve, and must be strictly observed for the functioning and safety of the system.

1. Prior to installation, verify the valve matches the conformity criteria in the technical description of the model (diameter, pressure, temperature and material).
2. Clean the sealing flanges, the pipeline, the valve, the sealing surface and the work surface area. Use running water or compressed air.
3. During the installation, verify the alignment of the pipelines, the flanges parallelism, the distance between them and the flange drilling dimensions. Note that the cast iron valves do not take over the misalignments. Valves installed in misaligned networks may determine deformations, which could affect the sealing and generate body cracks damaging the valve. For this reasons pipes without supports shall be temporally supported by interim horizontal supports.
4. Fasten the bolts on the flanges using a tightening torque. Especially for metal flanges, make sure the fixed bolt do not exceed the necessary tension. For this reason, it is highly recommended to use the torque wrench and to oil the bolts with a suitable lubricant. During installation, please follow the installation scheme.
5. Install the valve so that the arrow on the body corresponds to the flow direction.
6. Before installing the valve, verify the pipes are clean and free of any residues.
7. The valve needs extraordinary maintenance; therefore, position it in an isolated part of the system.
8. In case of liquids containing foreign bodies (sand, stones etc.) install a suitable filter upstream.
9. During the installation, consider the necessary space to facilitate assembly, disassembly and maintenance operations. It is highly recommended to install a dismantling joint in order to facilitate assembling/ disassembly operations.
10. In the case the valve is installed in a manhole, install an adequate draining system.
11. Frozen water in the valve causes irreparable damage. Avoid such a situation with adequate insulation or drainage valve.
12. It is recommended to install a pressure gauge, upstream and downstream the valve to verify the pressure is adequate for the characteristics of the valve.

OPERATING TEMPERATURE

-10°C a +80°C (the presence of ice doesn't guarantee proper functioning)

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10. Maintenance

Thanks to its design, the needle valve is free from programmed maintenance interventions. Also the gearbox/electric actuator do not need lubrication or other interventions.

WARNING: In case of malfunction, wear, and intervention, disassemble the valve from the pipeline.

11. Dismantling

The needle valve is an extremely reliable product. However, in case of malfunctioning, please contact AC.MO S.r.l. Technical Dept. to plan interventions.

12. Troubleshooting

NOTE. In case of intervention on the valve, comply with the safety rules all the times (page 03) contact AC.MO S.r.l. Technical Dept. before operating on the valve.

PROBLEM	CAUSE	SOLUTION
THE VALVE IS STUCK	There may be foreign bodies on the seat.	Wash the valve. If the problem persists, dismantle the valve and remove manually the foreign bodies.
	The gearbox is stuck.	Release the gearbox.
	The electric actuator is not connected to the power supply.	Connect the power supply to the actuator.
WATER LEAKAGE FROM THE SEAT	The valve is not completely closed.	Close the valve completely.
	Damaged seal gasket.	Replace the gasket.
	Damaged obturator gasket.	Replace the gasket.

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13. Spare parts

DN 80-100			
ITEM	QTY	DESCRIPTION	MATERIALS
page 8 ITEM 9	1	FIXING GASKET RING IN STAINLESS STEEL	AISI304
page 8 ITEM 15	1	MAIN GASKET SEAL	TECHNOPOLYMER
page 8 ITEM 24	1	SEAL CYLINDER GASKET	TECHNOPOLYMER
page 8 ITEM 25-26	1	KIT O-RINGS	NBR

DN 150			
ITEM	QTY	DESCRIPTION	MATERIALS
page 9 ITEM 9	1	FIXING GASKET RING IN STAINLESS STEEL	AISI304
page 9 ITEM 15	1	MAIN GASKET SEAL	TECHNOPOLYMER
page 9 ITEM 26	1	SEAL CYLINDER GASKET	TECHNOPOLYMER
page 9 ITEM 27-28	1	KIT O-RINGS	NBR

DN 200÷500			
ITEM	QTY	DESCRIPTION	MATERIALS
page 10 ITEM 9	1	FIXING GASKET RING IN STAINLESS STEEL	AISI304
page 10 ITEM 19	1	OBTUBATOR GASKET	TECHNOPOLYMER
page 10 ITEM 23-24	1	KIT O-RINGS	NBR
page 10 ITEM 25	1	BODY GASKET	TECHNOPOLYMER

DN 600÷1600			
ITEM	QTY	DESCRIPTION	MATERIALS
page 11 ITEM 10	1	FIXING GASKET RING IN STAINLESS STEEL	AISI304
page 11 ITEM 24-25	1	KIT O-RINGS	NBR
page 11 ITEM 26	1	BODY GASKET	TECHNOPOLYMER
page 11 ITEM 27	1	OBTUBATOR GASKET	TECHNOPOLYMER



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