Globe Valve

BOA-H

PN 16/25
DN 15-350
Bellows
Flanged

Type Series Booklet

Legal information/Copyright

Type Series Booklet BOA-H

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Globe Valves

Bellows-type Globe Valves

BOA-H

Main applications

- Hot-water heating systems
- Air-conditioning systems
- Boiler feed applications
- Boiler recirculation
- Chemical industry
- Process engineering
- Heat recovery systems
- Sugar industry

Fluids handled

- High-temperature hot water
- Saturated steam
- Thermal oil
- Liquids and gases not chemically or mechanically aggressive to the valve materials.
- Other fluids on request.

Operating data

Operating properties

Characteristic	Value	
	JL 1040	JS 1025
Nominal pressure	PN 16	PN 16/25
Nominal size	DN 15-300	DN 15-350[1)]
Max. permissible pressure	16 bar	25 bar
Max. permissible temperature	300 °C	350 °C

1) PN 25: DN 15-150

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

Design details

Design

- Straight-way or angle pattern with horizontal seat
- Throttling plug up to DN 100
- On/off disc for DN 125 and above
- All nominal sizes with position indicator, locking device and travel stop
- Compact bonnet
- Maintenance-free bellows-type stem seal with back-up gland packing
- Non-rising handwheel
- Flanges to DIN EN 1092-2 Type 21
- Exterior coating: blue RAL 5002
- The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.
- The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zones 2+22) to ATEX 94/9/EC.
- Type-tested to the specifications of Germanischer Lloyd

Variants

- V-port plug (seat-guided throttling plug for maximum requirements) for DN 15-300
- Valve disc with PTFE ring (max. 200 °C, throttling plug for DN 15-100, on/off disc for DN 125-200)
- Lead-sealable cap (prevents unauthorised actuation) as assembly set
- Balanced plug design from DN 200
- High-temperature resistant paint (grey aluminium)
- Either one or two limit switch(es) as assembly kit for globe valves of DN 15-150 made of JS1025
- Oil and grease-free: lubricated exclusively by mineral oil free lubricants approved by the German Federal Office for Materials Testing (Bundesanstalt für Materialforschung und -prüfung, BAM)
- Other flange designs
- Low-temperature steel bolts for temperatures down to -30 °C (JS 1025 only) up to 0.75 x PN (max.)
- Certification to customer specification
- Globe valve version with gland packing and electric actuator see BOA-H Mat E.

Body materials

Overview of materials available for straight-way valve

Material	Material number	Temperature limit
EN-GJL-250	JL 1040	Up to 300 °C
EN-GJS-400-18-LT	JS 1025	Up to 350 °C

Overview of materials available for angle valve

Material	Material number	Temperature limit
EN-GJL-250	JL 1040	Up to 300 °C

Product benefits

- High operating comfort at no extra charge due to position indicator with travel stop and locking device outside the insulation. Valve disc position can be checked at any time.
- Optimum start-up and throttling due to standard throttling plug up to DN 100 (seat-guided V-port plug optionally available for all valve sizes to meet maximum throttling requirements).
- When the valve is fully open, the bellows is confined within the valve body, protected from pressure surges.
- Little heat loss during operation due to short and smooth bonnet suitable for easy and cheap insulation.
- Added protection against fatigue fracture: The bellows is welded to the stem, so no vibrations are transmitted from the valve disc to the bellows.
- Back-up gland packing provides additional safety in case of defective bellows.
- Position indicator with colour coding system for identification of valve design during replacement work. The disc type and seat/disc interface material can be verified without removing the insulation.
- Space-saving non-rising handwheel.
- Reduced maintenance costs due to replaceable valve disc. Instead of replacing the complete upper section, only the valve disc is replaced, if necessary.

Related documents

Other applicable documentation

Document	Reference No.
Valve characteristics	7150.4
Operating manual	0570.8
Installation instructions "Accessories set for capped valves"	0570.811
Installation instructions "Limit switch set"	0570.812
BOA-H Mat E type series booklet	7135.1

On all enquiries/orders please specify

1. Type
2. Nominal pressure
3. Nominal size
4. Material
5. Variants
6. Number of type series booklet

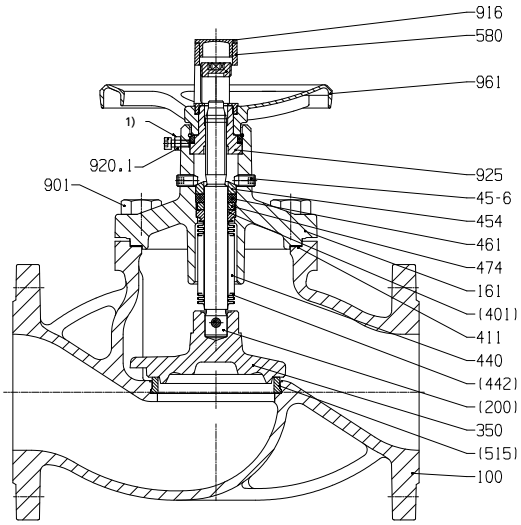
Pressure/temperature ratings

Test and operating pressures

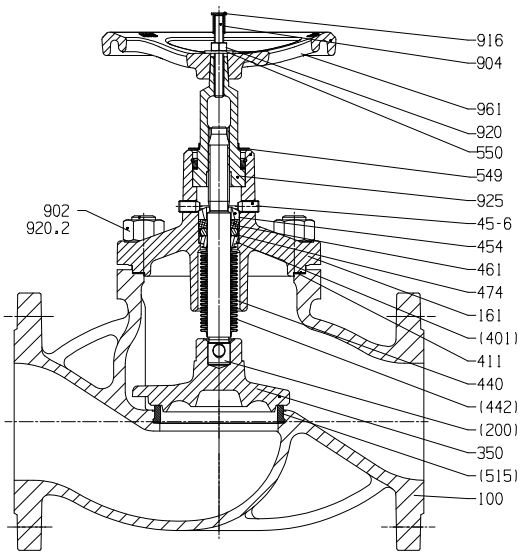
Nominal pressure	Material	Body pressure test	Seat tightness test	Permissible operating pressures in bar at temperatures in °C[2)3)]							
		with water									
		P10, P11[4)]	P12[5)]								
PN		[bar]	[bar]	-10 to +120	150	180	200	230	250	300	350
16	EN-GJL-250	24	17.6	16	14.4	13.4	12.8	11.8	11.2	9.6	-
	EN-GJS-400-18-LT	24	17.6	16	15.5		14.7		13.9	12.8	11.2
25	EN-GJS-400-18-LT	37.5	27.5	25	24.3		23		21.8	20	17.5

2) Intermediate temperatures can be derived by linear interpolation.
3) Static load
4) DIN EN 12266-1 (P10, P11)
5) DIN EN 12266-1 (P12, leakage rate A)

Materials



EN-GJL-250 (JL 1040)

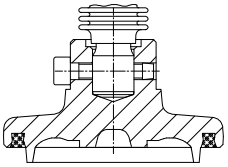


EN-GJS-400-18-LT (JS 1025)

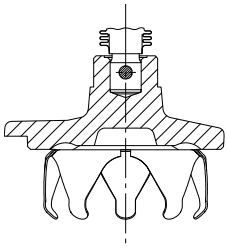
Overview of available materials

Part No.		Description	DN	Material	Material number
100		Body	15-300	EN-GJL-250	JL1040
			15-350	EN-GJS-400-18-LT	JS1025
161		Bonnet	15-300	EN-GJL-250	JL1040
			15-350	EN-GJS-400-18-LT	JS1025
350		Valve disc	15-150	X 20 Cr 13	1.4021+QT (1.4021)
			200-350	C 22/X 15 CrNi 18 8	1.0402/1.4370
411		Joint ring		CrNiSt/graphite	
440		Bellows set consisting of:			
	200	Stem		Stainless steel (min. 13 % Cr)	
	401	Weld ring		Stainless steel (min. 13 % Cr)	
	442	Bellows		X 6 CrNiTi 18 10	1.4541
454		Stuffing box ring		Steel	
45-6		Stuffing box screw		Steel	
461		Gland packing		Pure graphite	
474		Thrust ring		Stainless steel	
515		Seat ring		Stainless steel	
543		Spacer bush	15-65	Plastic, glass-fibre reinforced	
549		Collar bush		Stainless steel	
550		Disc		Steel	
580		Cap	15-150	Plastic, glass-fibre reinforced, impact-resistant	
			200-350	Steel	
901		Hexagon head bolt		8.8 on EN-GJL-250 variant	
902		Stud		C 35 E on EN-GJS-400-18-LT variant	
904		Grub screw		Steel	
916		Plug		Plastic	
920		Hexagon nut		C 35 on EN-GJS-400-18-LT variant	
925		Stem nut		Coated steel	
961		Handwheel	15-150	Die-cast aluminium on EN-GJL-250 variant	
			200-300	EN-GJL-200 on EN-GJL-250 variant	JL1030
			15-350	EN-GJL-200 on EN-GJL-400-18-LT variant	JL1030

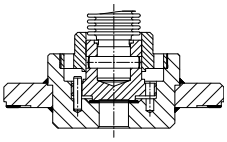
Variants



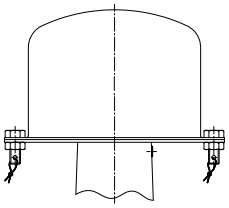
Throttling plug with PTFE ring, DN 15-100



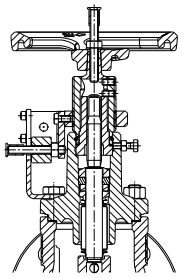
V-port plug



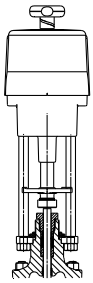
Balanced plug from DN 200



Lead-sealable cap (prevents unauthorised actuation) as assembly set

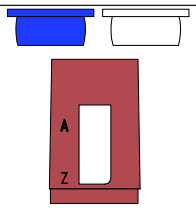
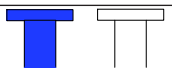
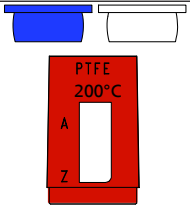


Limit switch(es)



BOA-H Mat E

Colour coding system

<table>
<tr><th colspan="3">Body made of EN-GJL-250 (JL 1040)</th><th colspan="3">Body made of EN-GJS-400-18-LT (JS1025)</th></tr>
<tr><td colspan="3">Metal-seated valve disc</td><td colspan="3">Metal-seated valve disc</td></tr>
<tr><td>Blue plug
Design:
on/off disc</td><td> 
</td><td>White plug
Design:
throttling plug</td><td>Blue plug
Design:
on/off disc</td><td>  </td><td>White plug
Design:
throttling plug</td></tr>
<tr><td></td><td>Crimson cap</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="3">Valve disc with PTFE ring</td><td colspan="3">Valve disc with PTFE ring</td></tr>
<tr><td>Blue plug
Design:
on/off disc</td><td> 
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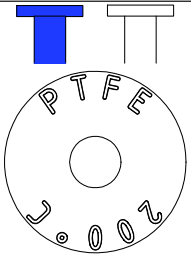
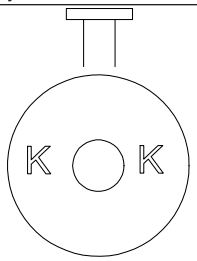
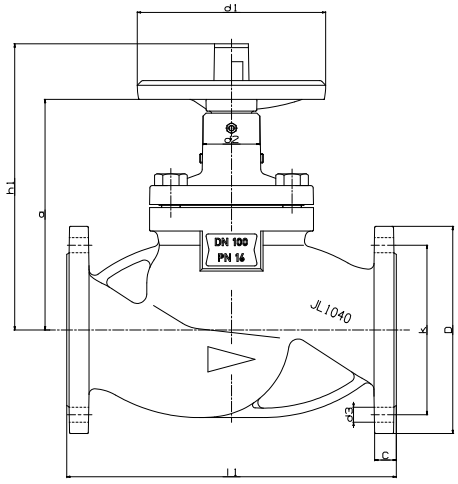
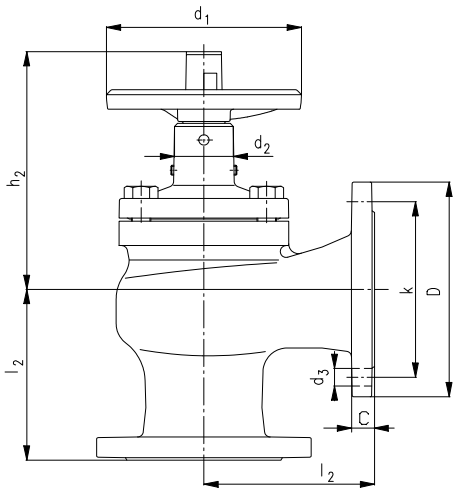
Design:
throttling plug</td><td>Blue plug
Design:
on/off disc</td><td> 
</td><td>White plug
Design:
throttling plug</td></tr>
<tr><td></td><td>Red orange cap</td><td></td><td></td><td>Sheet metal disc</td><td></td></tr>
<tr><td colspan="3">V-port plug (DN 15-300)</td><td colspan="3">V-port plug (DN 15-150)</td></tr>
<tr><td>Tag on handwheel</td><td>
</td><td></td><td></td><td> 
</td><td>White plug</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Sheet metal disc</td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="3">V-port plug (DN 200-350)</td></tr>
<tr><td></td><td></td><td></td><td>Tag on handwheel</td><td>
</td><td></td></tr>
</table>

Dimensions

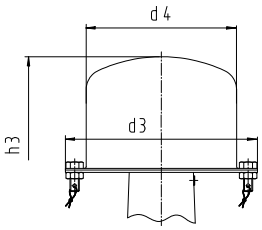
Dimensions PN 16, JL 1040



Straight-way valve



Angle valve



Lead-sealable cap (prevents unauthorised actuation) as assembly set

Dimensions in mm

									Flange						Capped valve			
PN	DN	l_1	l_2	h_1	h_2	d_1	d_2	a	D	k	n x d_3	C	[kg]		d_3	d_4	h_3	
													DF[6]	EF[7]			DF[6]	EF[7]
16	15	130	90	175	150	125	47	137	95	65	4 x 14	14	3.1	3.2	166	130	204	179
	20	150	95	178	153	125	47	140	105	75	4 x 14	16	4	4	166	130	207	182
	25	160	100	184	151	125	47	146	115	85	4 x 14	16	4.7	4.8	166	130	213	180
	32	180	105	205	170	125	47	161	140	100	4 x 19	18	7.3	7.5	166	130	228	193
	40	200	115	210	172	125	47	166	150	110	4 x 19	18	7.7	7.7	166	130	233	208
	50	230	125	235	198	160	51	190	165	125	4 x 19	20	10.2	9.6	210	170	298	260
	65	290	145	246	198	160	51	201	185	145	4 x 19	20	17	16.3	210	170	309	272
	80	310	155	282	226	200	60	223	200	160	8 x 19	22	22	21.8	270	220	390	342
	100	350	175	304	244	200	60	245	220	180	8 x 19	24	32	30.8	270	220	412	356
	125	400	200	390	316	250	86	310	250	210	8 x 19	26	54	48.3	390	340	479	405
	150	480	225	408	320	250	86	328	285	240	8 x 23	26	70.5	65.7	390	340	497	409
	200	600	275	570	468	400	100	440	340	295	12 x 23	30	130	114.2	-	-	-	-
	250	730	325	606	480	400	100	476	405	355	12 x 28	32	230	180.5	-	-	-	-
	300	850	375	660	510	400	93	530	460	410	12 x 28	32	328	267.5	-	-	-	-

Mating dimensions - Standards

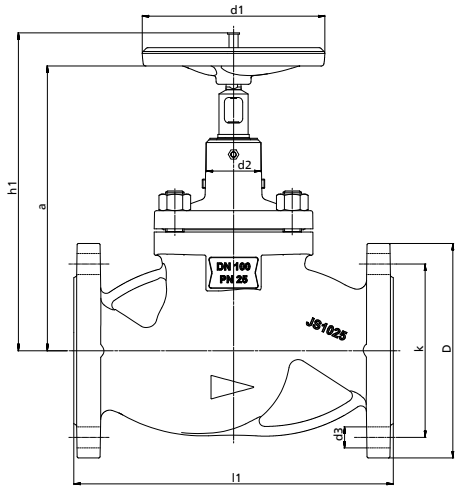
Face-to-face lengths:	Straight-way valve: DIN EN 558 FTF-1, ISO 5752 Angle valve: DIN EN 558 CTF-8, ISO 5752
Flanges:	DIN EN 1092-2, flange type 21 for JL1040 DIN EN 1092-2, flange type 21-2 for JS1025
Flange facing:	DIN EN 1092-2, type B

Other flange designs

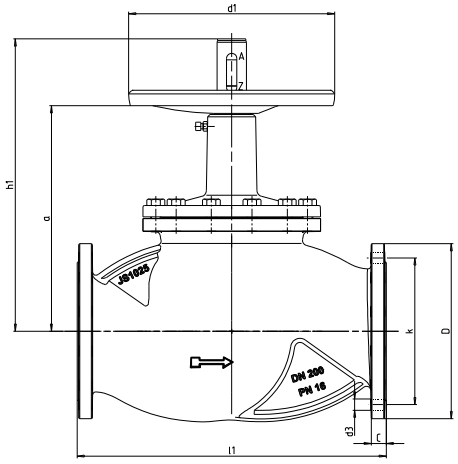
- Undrilled, DN 200-300 drilled to PN 10, drilled to PN 6 (DIN EN 1092-2), drilled to ANSI Class 150, tongue (type C), groove (type D), spigot (type E), recess (type F) at both ends (to DIN EN 1092-1)
- Other flange designs on request

6) Straight-way valve
7) Angle valve

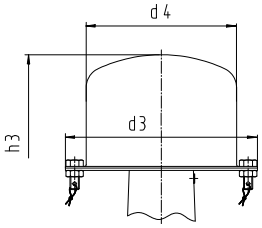
Dimensions PN 16 and PN 25, JS 1025



PN 16/25 up to DN 150



PN 16 DN 200-350



Lead-sealable cap (prevents unauthorised actuation) as assembly set

Dimensions in mm

							Flange					Capped valve		
PN	DN	l_1	h_1	d_1	d_2	a	D	k	n x d_3	C	[kg]	d_3	d_4	h_3
16	15	130	211	125	47	179	95	65	4 x 14	14	3.1	166	130	222
	20	150	214	125	47	182	105	75	4 x 14	16	4.1	166	130	225
	25	160	220	125	47	188	115	85	4 x 14	16	4.6	166	130	231
	32	180	238	125	47	203	140	100	4 x 19	18	8.1	166	130	246
	40	200	243	125	47	208	150	110	4 x 19	18	8.5	166	130	251
	50	230	266	160	51	240	165	125	4 x 19	20	11	210	170	298
	65	290	290	160	51	250	185	145	4 x 19	20	17	210	170	308
	80	310	324	200	60	290	200	160	8 x 19	22	21	270	220	391
	100	350	348	200	60	312	220	180	8 x 19	24	31	270	220	415
	125	400	460	250	80	400	250	210	8 x 19	26	51	390	340	480
	150	480	479	250	80	418	285	240	8 x 23	26	68.5	390	340	499
	200	600	570	400	93	440	340	295	12 x 23	30	139	-	-	-
	250	730	606	400	93	476	405	355	12 x 28	32	239	-	-	-
	300	850	660	400	93	530	460	410	12 x 28	32	343	-	-	-
	350	980	660	400	93	530	520	470	16 x 28	36	390	-	-	-
25	15	130	211	125	47	179	95	65	4 x 14	14	3.1	166	130	222
	20	150	214	125	47	182	105	75	4 x 14	16	4.1	166	130	225
	25	160	220	125	47	188	115	85	4 x 14	16	4.6	166	130	231
	32	180	238	125	47	203	140	100	4 x 19	18	8.2	166	130	246
	40	200	243	125	47	208	150	110	4 x 19	18	8.5	166	130	251
	50	230	266	160	51	240	165	125	4 x 19	20	11	210	170	298
	65	290	290	160	51	250	185	145	8 x 19	20	17	210	170	308
	80	310	324	200	60	290	200	160	8 x 19	22	28.9	270	220	391
	100	350	348	200	60	312	235	190	8 x 23	24	40	270	220	415
	125	400	460	250	80	400	270	220	8 x 28	26	65	390	340	480
	150	480	479	250	80	418	300	250	8 x 28	26	89	390	340	499

Mating dimensions - Standards

Face-to-face lengths:	Straight-way valve: DIN EN 558 FTF-1, ISO 5752 Angle valve: DIN EN 558 CTF-8, ISO 5752
Flanges:	DIN EN 1092-2, flange type 21 for JL1040 DIN EN 1092-2, flange type 21-2 for JS1025
Flange facing:	DIN EN 1092-2, type B

Other flange designs

- PN 16:
  undrilled, DN 200-300 drilled to PN 10, drilled to PN 6 (DIN EN 1092-2), drilled to ANSI Class 150, tongue (type C), groove (type D), spigot (type E), recess (type F) at both ends (to DIN EN 1092-1)
- PN 25:
  undrilled (DIN EN 1092-2), drilled to ANSI Class 150, tongue (type C), groove (type D), spigot (type E), recess (type F) at both ends (to DIN EN 1092-1)

- Other flange designs on request

Installation instructions

Flow through BOA-H globe valves should be in the direction of the embossed arrow on the valve body. An alternating direction of flow is permissible for valves with standard valve disc, but not for valves fitted with a pilot plug.

If the following differential pressures are exceeded on BOA-H globe valves from DN 200 upwards, a pilot plug design is required.

Differential pressures in bar

	DN	150	200	250	300/350
PN 16	Δp bar	-	12	9	6
PN 25		21[8)]			

The pilot plug only takes effect if the pressure to be sealed lies above the valve disc. Therefore, flow through valves with pilot plug must be reversed (embossed flow direction arrow is reversed).

In steam pipelines the valve must not be installed with the stem pointing downwards (risk of steam hammer).

EN 1515-4 "Selection of bolting for equipment subject to the Pressure Equipment Directive 97/23/EC" and any plant regulations governing the application in question must be observed when selecting connecting elements between the valve flange and the pipe flange.

8) No pilot plug available.

Chemical resistance chart

The information provided in this chemical resistance chart is based on experience, the Dechema lists as well as manufacturer information. Corrosion resistance is largely dependent on the operating conditions, temperatures and concentrations. Hydroabrasive wear in fluids containing solids is not covered in this list. All information provided herein, therefore, only serves as an orientation. Warranty claims may not be asserted on the basis of this list!

Chemical resistance chart for water

Fluid handled	Max. content	Max. temp.	A[9)]	B[10)]
Brackish water[11)12)]			✖	✖
Service water[11)12)]			✓	✓
Fire-fighting water[11)]			✓	✓
Chlorinated water[11)]	0.6 mg/kg		✓	✓
Deionised water (demineralised water)			✖	✖
Distilled water			✖	✖
Boiler feed water[13)]			✓	✓
Hot water[11)]			✓	✓
High-temperature hot water[13)]		T = f (p)	✓	✓
Condensate[13)]			✓	✓
Oil-free cooling water[11)]			✓	✓
Oil-containing cooling water[11)]			✓	✓
Ozonised water[11)]	0.5 mg/kg		✓	✓
Pure water[11)]			✓	✓
Seawater			✖	✖
Scale-forming water[11)12)]			○	○
Raw water[11)12)]			✓	✓
Partly desalinated water			✖	✖
Fully desalinated water			✖	✖
Municipal waste water[12)14)]			✓	✓
Industrial waste water[12)15)]			✓	✓

Chemical resistance chart for oils (aromatic content 5 mg/kg)

Fluid handled	Max. content	Max. temp.	A[9)]	B[10)]
Vegetable oils			✓	✓
Mineral oils			✓	✓
Synthetic oils			✓	✓
Crude oil			✓	✓
Petroleum			✓	✓
Light fuel oil			✓	✓
Heavy fuel oil			✓	✓
Linseed oil			✓	✓
Oil-water emulsion[12)]			✓	✓
Jet fuel			○[16)]	✓
Petrol			○[16)]	✓
Kerosene			○[16)]	✓

Chemical resistance chart for refrigerants

Fluid handled	Max. content	Max. temp.	A[9)]	B[10)]
Ammonium hydroxide	30 %	25 °C	✓	✓
Glycol (ethylene glycol)			✓	✓
Propylene glycol			✓	✓
Water-glycol mixture	50 %	40 °C	✓	✓
Inorganic cooling brine, ph 7.5 inhibited			✓	✓

Chemical resistance chart for thermal oils

Fluid handled	Max. content	Max. temp.	A[9)]	B[10)]
Synthetic thermal oils			✓	✓
Mineral-based thermal oils			✓	✓

Chemical resistance chart for acids

Fluid handled	Max. content	Max. temp.	A[9)]	B[10)]
Hydrochloric acid			✖	✖
Sulphuric acid (pure, techn., concentr.)			✖	✖
Sulphurous acid			✖	✖
Fatty acid			✖	✖
Nitric acid			✖	✖

Chemical resistance chart for cleaning agents

Fluid handled	Max. content	Max. temp.	A[9)]	B[10)]
Lye for bottle rinsers (e.g. P3)[12)]		≤ 80 °C	○	○
Lye for metal cleaning[12)]		≤ 80 °C	○	○

Chemical resistance chart for steam

Fluid handled	Max. content	Max. temp.	A[9)]	B[10)]
Saturated steam			○[16)]	✓

Chemical resistance chart for other fluids

Fluid handled	Max. content	Max. temp.	A[9)]	B[10)]
Sodium hydroxide	< 50 %	≤ 50 °C	○	○
Natural gas			✓	✓
Oil-containing compressed air			✓	✓
Dry chlorine		≤ 30 °C	○	✓

9) EN-GJL-250 (JL 1040), Tmax. +300 °C
10) EN-GJS-400-18-LT (JS 1025), Tmax. +350 °C
11) General limits for water to be handled by valves made of non-alloyed materials: pH value 6.5 - 12; chloride ions (Cl) < 150 mg/kg; chlorine (Cl_2) < 0.6 mg/kg.
12) Without solids
13) Water treatment must be in compliance with the guidelines for feed water (e.g. VdTÜV 1466, TRD 611, etc.): pH value ≥ 9.0; O_2 content ≤ 0.02 mg/l
14) Biologically treated
15) Non-corrosive, non-abrasive
16) For safety reasons (ductility) we recommend to use EN-GJS-400-18-LT.

Fluid handled	Max. content	Max. temp.	A[9]	B[10]
Ammonia			✓	✓
Butane (liquefied gas)			✓	✓
Aqueous glycerine			✓	✓
Carbon dioxide (gas)			✓	✓
Carbon dioxide (aqueous solution)			✖	✖

Key to the symbols

Symbol	Description
✓	The fluid handled is not normally aggressive toward the materials.
✖	The fluid handled is aggressive toward the materials. Valve cannot be used.
○	The material or valve can only be used under certain operating conditions. Please enquire accordingly stating the operating conditions such as concentration, temperature, pH value and composition of the fluid handled.

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