

HAFNER Pneumatika Kft.

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The HAFNER logo consists of a dark blue square with the word "HAFNER" in white, uppercase, sans-serif font.

Warranty terms of the products of HAFNER Pneumatika Kft.

For warranty information on the products of HAFNER Pneumatika Kft., see our General Terms and Conditions:

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The warranty does not apply for products broken up or opened by the user.

The warranty does not either apply for those valves of HAFNER Pneumatika Kft., in case of which the operational conditions are not in compliance with the required operational conditions detailed below. HAFNER Pneumatika Kft. reserves the right to charge an investigation fee in case of a complaint not reasonable enough.

Required operational conditions for the valves produced by HAFNER Pneumatika Kft.

Pressure range: it can change according to types. See data in the catalogue.

Medium: correctly prepared compressed air, or neutral gases.

Clearness classification of compressed air: in case of standard pneumatic applications the use of compressed air of at least ISO 8573-1:2010 [7:4:4] clearness class is necessary. In case of special applications, it might be necessary to use compressed air of stricter ISO class than that.

Labelling according to standards: ISO 8573-1:2010 [A:B:C:], where "A" is: clearness class according to particles, "B" is: clearness class according to content of moisture and water (in liquid condition) "C" is: clearness class according to oil content (see the detailed summary table on page 3).

The lifetime of valves can be significantly increased by oil mist lubrication, but this kind of lubrication is in case of TT (cold-resistant design) not allowed, because the generally used pneumatic oil does not perform its task properly under -25°C.

During assembling we use a special kind of grease, that, based on its properties and the way of its application, meets the requirements.

IMPORTANT: The air clearness classes given in ISO 8573:2010 standards were established to give a guideline for air clearness expected in the whole compressed air system, not for the air clearness after installing a single subassembly to prepare the compressed air. It has to be recognized that a given air clearness standard requirement cannot be fulfilled by only using a given equipment combination. The regulation of appropriate lubricants/coolants and physical parameters (for example temperature) has also to be defined. The appropriate regulation of parameters, like temperature have an effect on the physical condition of fluids (which can turn into aerosol or stem). In case of a given compressed air system, in order to keep the clearness level of air, it is important to comply with the suggestions of the supplier regarding maintenance frequency.

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Solenoid valves	
Standard AC series	-10°C - +50°C
Standard DC series	-10°C - +60°C
NT	-20°C - +50°C
HT	-10°C - +80°C
TT, TT AIR	-50°C - +50°C
NTB	-25°C - +70°C
HNT	-20°C - +80°C
BV, BR, BL, BA	
Standard series (201 / 301)	-20°C - +50°C
Standard series (501 / 701)	-10°C - +80°C
NT (501 / 701)	-20°C - +80°C
TT (501 / 701)	-50°C - +50°C
TT (201 / 301)	-50°C - +80°C
TT AIR (501 / 701)	-50°C - +80°C
NTB	-25°C - +80°C
BG, BH, HV, HVR, P	
Standard	-10°C - +80°C
NT	-20°C - +80°C
VIT	-10°C - +120°C
TT (501 / 701)	-50°C - +50°C
TT (121)	-50°C - +80°C
TT AIR (501 / 701 / 121)	-50°C - +80°C
NTB	-25°C - +80°C
DRN, DR, D, ES/VA	
Standard	-10°C - +50°C
TT	-50°C - +50°C
VIT	-10°C - +120°C
UB, SENR	
Standard	-10°C - +50°C
TT	-40°C - +50°C

In case the valve is operated in a temperature under 4°C, it has to be ensured that the dew point of the controlled agent is 15°C lower than the one of the environmental agents, this way ensuring that no condensate precipitates secede from the controlled agent. Air has to be dried appropriately!

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Operating environmental: normal operating environment, atmosphere that only neutral gases (e.g. air) contains.

Operation voltage: the rated voltage of the magnet is $\pm 10\%$, in the operated state of the magnet.

The length of the necessary control signal (defined by ISO 12238:2001 standard): in case of pressure of 6,3 bar at +20°C: 50 ms.

See definitions in: ISO 12238:2001 – Pneumatic Fluid Power – Directional control valves – Measurement of shifting time

The necessary length of control signal: „the time that is needed for moving the shifting part of the valve as much as an output signal is generated”.

Shifting time: „time lapse measured from a change in the control signal (electronic or pneumatic) until the time at which the pressure in the associated outlet port changes by 10% between specified pressure levels, with only a pressure transducer connected to the outlet”.

Overlapping: the HAFNER valves have generally an overlapping-free function. In case of overlapping functionality, it is shown on the datasheet, resp. on the offer drawing.

Noise level: the noise level of the AC solenoids can reach 45dB.

Lifespan: the allowed leakage rate is guaranteed with the manufacturing greasing up to 5 million switching cycles. The lifespan of the valve can be significantly expanded by using oil mist greasing.

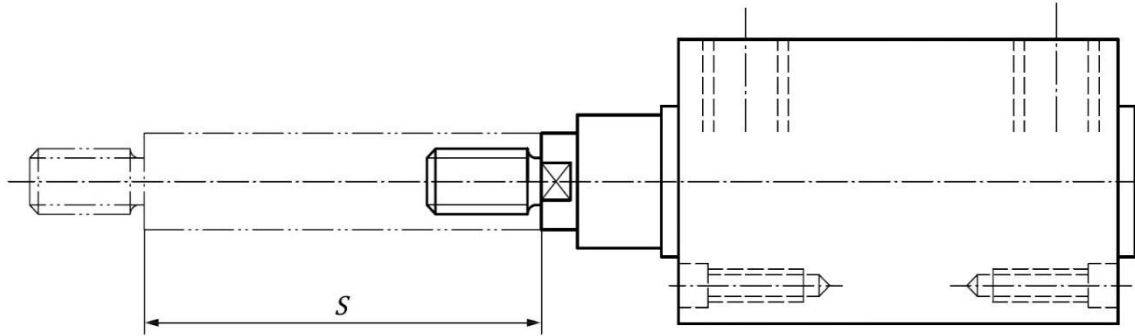
Periodic maintenance: check regularly if the valve operates perfectly, by switching the valve at least once in a month, and ensure the appropriate air clearness level. In case of inappropriate operation, please contact HAFNER Pneumatika Kft.

IMPORTANT: if the supply- or operating pressure is undersized compared to the flow rate of the valve, or if this pressure builds up very slowly, the valve may malfunction. If such possibility occurs, please consult our experts!

Marking and packaging of valves: Unless otherwise agreed in writing, the marking of HAFNER valves includes the valve type number, pneumatic switching symbol (see ISO 1219-1) and the HAFNER logo. Unless otherwise agreed in writing, the method of marking and packaging of HAFNER valves will be decided by HAFNER Pneumatika.

Nominal stroke length tolerances of cylinders manufactured by HAFNER Pneumatika Kft.

In case of ISO 15552 cylinders:



Dimensions in mm!

Bore AL	Nominal stroke S	Nominal stroke tolerance *
32 40 50	$S \leq 500$	+2 0
	$500 < S \leq 1250$	+3,2 0
63 80 100	$S \leq 500$	+2,5 0
	$500 < S \leq 1250$	+4 0
125 160 200 250 320	$S \leq 500$	+4 0
	$500 < S \leq 1250$	+5 0

* The tolerances of dimensions dependent on stroke included in the tables apply for strokes up to and including 1250 mm. If strokes are longer than 1250 mm, tolerances should be selected from national standards or by agreement between the manufacturer and user.

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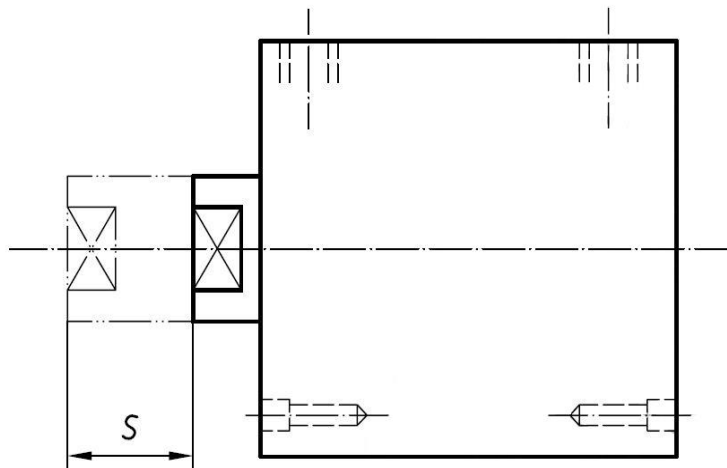
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In case of ISO 21287 cylinders:



Dimensions in mm!

Bore AL	Nominal stroke tolerance
20 25	+1,5 0
32 40 50	+2 0
63 80 100	+2,5 0

Summary table of ISO 8573-1:2010

Class		Particles			Humidity and liquid water		Total oil ^[10]	
		0,1.. – 0,5 µm [1,6,9]	0,5.. – 1 µm [1,6,9]	1.. – 5 µm [1,6,9]				
0	↔	As specified and more stringent than class 1			As specified and more stringent than class 1		As specified and more stringent than class 1	
1	↔	≤ 20.000	≤ 400	≤ 10	≤ -70°C	[2,5]	≤ 0,01 mg/m³	[1,3]
2	↔	≤ 400.000	≤ 6.000	≤ 100	≤ -40°C		≤ 0,1 mg/m³	
3	↔	---	≤ 90.000	≤ 1.000	≤ -20°C		≤ 1 mg/m³	[1,4]
4	↔	---	---	≤ 10.000	≤ +3°C		≤ 5 mg/m³	
5	↔	---	---	≤ 100.000	≤ +7°C			
6	↔	≤ 5 mg/m³			[1,7]	≤ +10°C		
7	↔	5.. – 10 mg/m³				≤ 0,5 g/m³		
8	↔				[1,8]	0,5.. – 5 g/m³		
9	↔					5.. – 10 g/m³		
X	↔	> 10 mg/m³			[1,7]	> 10 g/m³	> 5 mg/m³	[1,4]

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E-mail: ertekesites@hafner-pneumatika.comWeb: www.hafner-pneumatika.com**HAFNER****The allowed leakage rates at 6 bar pressure of the valves produced by HAFNER Pneumatika Kft.**

Valve series	Valve size	Air flow (NI/min)	Allowed leakage			
			Internal		External	
			% of the air flow	cm ³ /min	% of the air flow	cm ³ /min
M5-, 1/8"-, directly actuated-, directly actuated with banjo screw-, MMD-, MA16- and MA30-valves	201	125	-	4	-	2
	301	230	-	4	-	2
	301	280	-	4	-	2
	401	450	-	4	-	2
	501	650	-	4	-	2
1/4"	701	1250	0,0005	6	0,00025	3
1/4"	801	1450	0,0005	7	0,00025	3,5
3/8"	101	2250	0,0005	11	0,00025	5,5
1/2"	121	3000	0,0005	15	0,00025	7,5
3/4"	181	6000	0,0005	30	0,00025	15
In case of low temperature (TT) valves under -40°C, the allowed leakage rate changes as follows:						
1/8"	501	650	-	10	-	5
1/4"	701	1250	-	15	-	5
1/2"	121	3000	-	25	-	5

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The end testing of the pneumatic cylinders produced by HAFNER Pneumatika Kft. is performed according to the ISO 10099:2001 standard, that means that during the testing of the pneumatic cylinders at 1,5 bar and 6,3 bar pressure, the total (internal + external) leakage of the cylinders does not exceed the limit values given in the following table:

Cylinder diameter (mm)	8, 10, 12	16, 20, 25	32, 40, 50	63, 80, 100	125, 160, 200	250, 320
Leakage rate (cm ³ /min ANR) *	10	13,33	20	33,33	50	83,33
* ANR: see ISO 8778:2003 – Standard Reference Atmosphere: 100 kPa (1 bar) pressure, 20 °C temperature, 65% relative humidity						