

## Temperature range:

Type-number	Temperature range
BV, BR, BL, BA	-20°C to +50°C
BG, BH	-10°C to +60°C
HV, HVR, P	-10°C to +60°C
MH, MNH DC-version	-10°C to +60°C
MH, MNH AC-version	-10°C to +50°C
MD, MK	-10°C to +50°C
TT series 500/700	-50°C to +50°C
TT series 121	-40°C to +50°C

Several customer-specific items have been catered for an enlarged temperature range.

## Leakage rate at 6 bar pressure:

All (100 % of) the Hafner-valves leaving the factory are individually tested on function and leakage.

The following leakage rate is allowed and a valve is still rated as good with the following:

Valve size	Valve size	Allowed leaked rate in cm <sup>3</sup> /min	
		Internal	External
M5 - G 1/4"	Direct acting	4	2
M5	201	4	2
M5	301	4	2
G 1/8"	401	4	2
G 1/8"	501	4	2
G 1/4"	701	6	3
G 1/4"	801	7	3,5
G 3/8"	101	11	5,5
G 1/2"	121	15	7,5
G 3/4"	181	30	15

Low temperature valves of the "TT-series" below -40°C			
G 1/8"	501 TT	10	5
G 1/4"	701 TT	10	5

## Standard materials used for Hafner-valves:

Bodies	standard VES / KES chapter 12.	anodised aluminum 1.4404
Spool		stainless steel 1.4104, operator tube 1.4305
Sealing-system	standard low temperature chapter 11. 1/4" VES / KES chapter 12. 1/2" VES chapter 12.	brass & NBR brass & PUR stainless steel, operator tube 1.4305 & PUR stainless steel, operator tube 1.4305 & FKM
Other inner parts	standard low temperature chapter 11. VES / KES chapter 12.	brass, POM, NBR brass, POM, NBR stainless steel, operator tube 1.4305 POM, FKM
Actuation elements	BA-valves HV BH BHP	PA 6.6 30 % glass filled Duroplast PF31 P/PA Duroplast PF31 P/PA ABS-plastic
Upper part solenoids	series 500 and 700 other series VES KES	PA 6.6 30 % glass filled, brass anodised aluminum, brass 1.4404 PA 6.6 30 % glass filled, stainless steel, operator tube 1.4305
PA	Polyamide	
1.4404	high graded stainless steel	
POM	Polyoxymethylene	
FKM	Fluoroelastomer	

In accordance to CETOP position paper „PP07 Machine Directive 2006/42/EC“: Single valves placed on the market are not ... within the meaning of Annex V, point 4 of Machine Directive 2006/42/EC.

## General Warranty:

The general warranty is 12 month from delivery. Warranty expires when valves have been opened.

## Recommended signal length:

The recommended signal length to reach full flow is 50 msec.

## Operation and required air-quality:

The valves are designed for being used with cleaned and lubricated or cleaned and unlubricated compressed air.

Required Air-quality-level in accordance to ISO 8573-1:2010: 7 – 4 – 4 for particles – water – oil

## Lubrication:

Valves do not require any lubrication but lubrication in general increases the life-time of the products. Please avoid to lubricate the valves during a certain period of time and let them run dry later. For low-temperature-items: Do not lubricate as most kinds of oil and grease do not properly operate below - 25°C.

## Voltage tolerance:

The general voltage tolerance of all solenoid systems is +/- 10%.

The Hafner company policy is one of a continuous improvement process. We therefore reserve the right to amend, enhance and change specifications of the products presented in this document without notice.