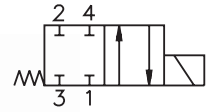


- 4/2 way cartridge valves solenoid operated with spool direction
- Manual override
- No spool sticking by too high tightening torque
- High transmitted power



## Functional Description

The directly operated 4/2 way solenoid actuated spool valve controls in the first line the start and stop function of the oil flow. The valve consists of the valve body (1), control spool (2), return spring (3), cartridge with actuating system (4) and of the solenoid coil (7) that is mounted on the actuating system. The valve bushing is screwed into the cartridge part.

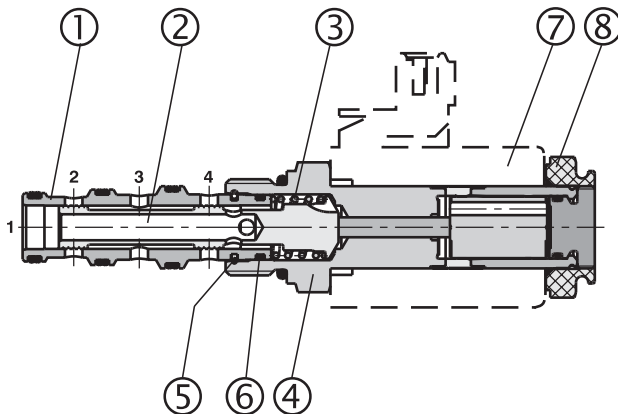
The valve bushing is fixed in the cartridge by a wire ring (5) and sealed with the seal ring (6). Separation of the valve bushing and the cartridge prevent transmitting the stresses, which could be caused by too high tightening torques. The DC solenoid coils can be delivered for 12 V and 24 V supply voltages.

For the alternating current supply, either of 120V/60Hz or 230V/50Hz voltage, the relevant rectifiers for the C19 coil types are available in the auxiliary connector. For the C22 coil types and AC voltage design, the rectifiers are integrated directly into the connector base. By loosening the fixing nut (8), the solenoid coil can be replaced or turned in the range of 180°. The valve body is zinc coated.

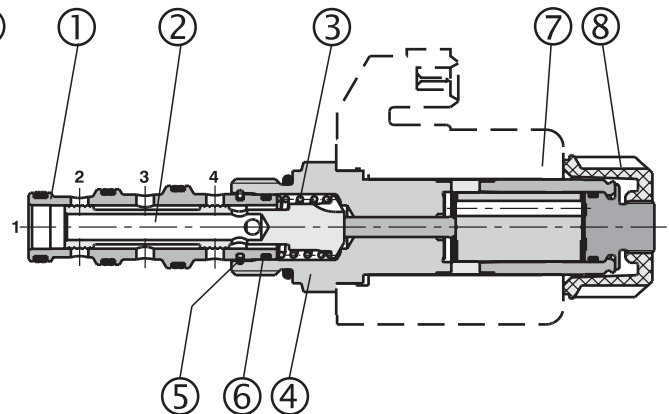
### Note:

The valves are supplied without solenoids coils. The solenoid coil, the terminal box and the housing body for line mounting have to be ordered separately.

### Standard performance



### High performance



# Ordering Code

**SD2E-B4** /

**4/2 Way Solenoid Operated Directional Control Valve**

Standard  
High Performance

**Description**

Refer to the table with functional symbols

**S**  
**H**

No designation  
**V**

**Seals**  
NBR  
FPM (Viton)

No designation  
**M2**  
**M5**  
**M9**

**Manual override**  
standard  
covered with rubber boot  
socket head screw  
without manual override

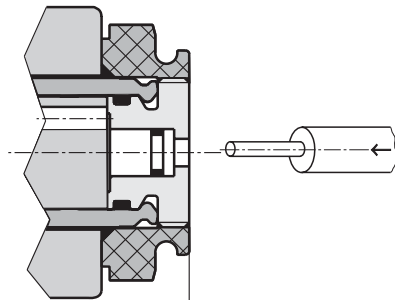
Solenoid coil, terminal box and body for line mounting have to be ordered separately. For selection of solenoid coil and terminal box type use catalogue HA 8007. For selection of valve body for in-line mounting use catalogue HA0018.

# Functional Symbols

Designation	Symbol	Interposition	Designation	Symbol	Interposition
2Z11			2X21		
2Z51					

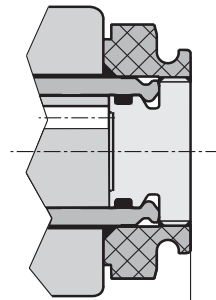
# Manual Override

No designation - standard



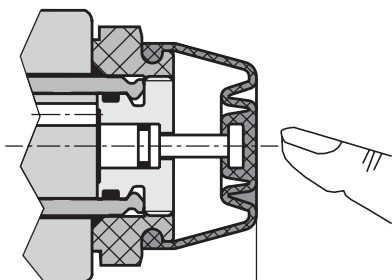
Standard valve ~70,5 (2.776)  
High performance valve ~83,0 (3.268)

Designation **M9** - without manual override



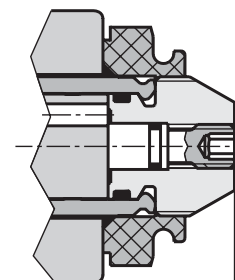
Standard valve ~70,5 (2.776)  
High performance valve ~83,0 (3.268)

Designation **M2** - covered with rubber boot



Standard valve ~82,0(3.228)  
High performance valve ~100,0(3.937)

Designation **M5** - with socket head screw 2.5 (0.098)



Standard valve ~78,0(3.071)  
High performance valve ~84,8(3.339)

# Technical Data

		Standard	High performance
Cartridge thread		7/8-14 UNF- 2B	
Maximum flow	L/min (GPM)	50 (13.21)	60 (15.85)
Max. operating pressure	bar (PSI)	250 (3625)	350 (5076)
Pressure drop	bar (PSI)	see $\Delta p$ -Q characteristics	
Hydraulic fluid		Hydraulic oils of power classes (HL, HLP) to DIN 51524	
Coil groups <sup>1)</sup>		C19B	C22B
Fluid temperature range	°C (°F)	-20 ... +80 (-4... +176)	-20 ... +80 (-4 ... +176)
Ambient temperature, max.	°C (°F)	-20 ... +50 (-4 ...+122)	-20 ... +80 (-4 ... +176)
Viscosity range	mm <sup>2</sup> /s (SUS)	10 ... 500 (49 ... 2450)	
Maximum degree of fluid contamination		Class 21/18/15 according to ISO 4406 (2006).	
Permissible rated voltage variation	%	AC,DC ±10	AC,DC ±15
Max. switching frequency	1/h	15 000	
Duty cycle	%	100	
Enclosure type to EN 60529 <sup>1)</sup>		IP 65	
Service life	cycles	10 <sup>7</sup>	
Valve tightening torque	Nm ( lbf.ft)	35+5 (25.81+3.68)	
Plastic nut tightening torque	Nm ( lbf.ft)	3+1 (2.213+0.738)	3+1 (2.21+0.738)
Weight	kg (lbs)	0,25 (0.55)	0,32 (0.71)
Mounting position		optional	

<sup>1)</sup> see data sheet coils HA 8007

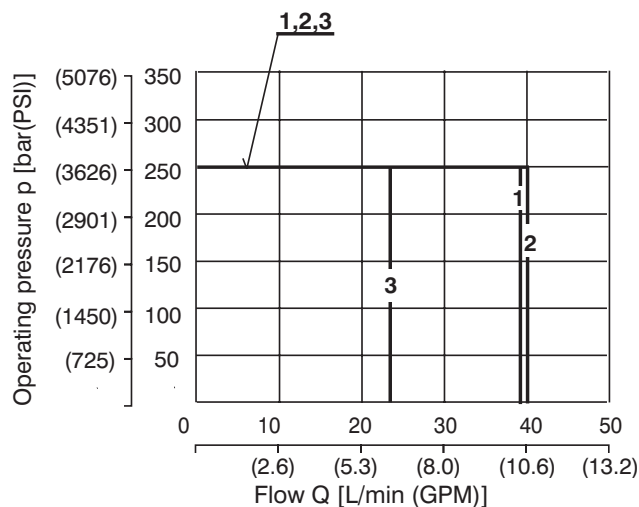
## p-Q Characteristics

Measured at  $v = 32 \text{ mm}^2/\text{s}$  (156 SUS)

Operating limits for maximum hydraulic power transferred by the directional valve. For respective spool type - see functional symbols.

### Standard valve

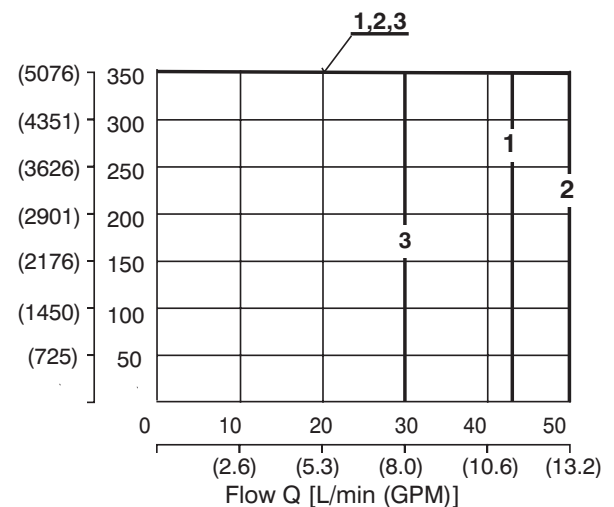
Oil 80 °C (176 °F) / Ambient temperature 50 °C (122 °F)  
Voltage Un -10% [V], 24V



	Connection	Direction
1	2Z11	3-2 → 4-1
2	2Z51	3-4 → 2-1
2	2X21	3-4 → 2-1
3	2X21	3-2 → 4-1

### High performance valve

Oil 80 °C (176 °F) / Ambient temperature 50 °C (122 °F)  
Voltage Un -10% [V], 24V



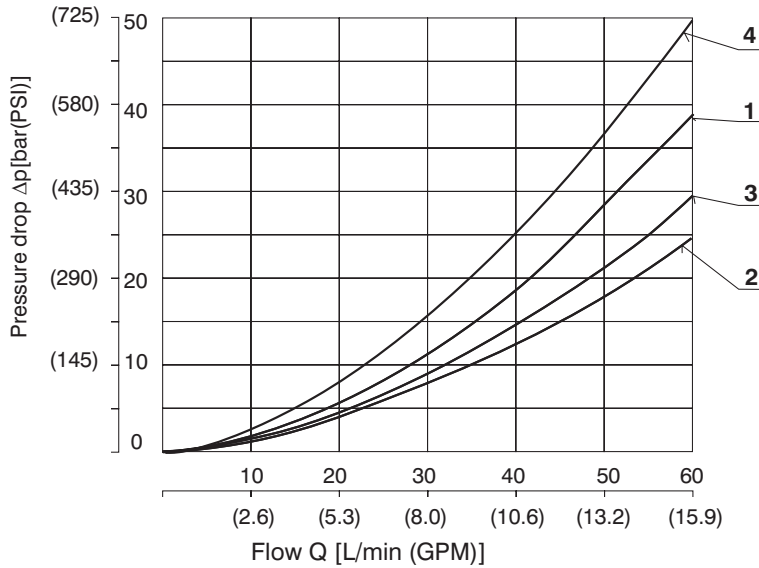
	Connection	Direction
1	2Z11	3-2 → 4-1
2	2Z51	3-4 → 2-1
3	2X21	3-2 → 4-1
2	2X21	3-4 → 2-1

# Δp-Q Characteristics

Measured at  $v = 32 \text{ mm}^2/\text{s}$  (156 SUS)

Pressure drops  $\Delta p$  related to flow rate.

## Standard valve + High performance valve

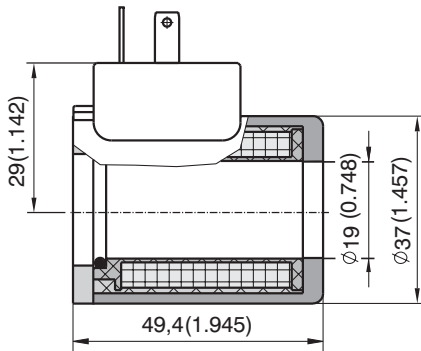


	Connection	Direction
1	2Z11	3→2
1	2Z11	4→1
3	S2Z51	3→4
3	S2Z51	2→1
2	H2Z51	3→4
3	H2Z51	2→1
3	2X21	3→2
4	2X21	4→1
3	2X21 Qmax 50 l/min	3→4
2	2X21 Qmax 40 l/min	2→1

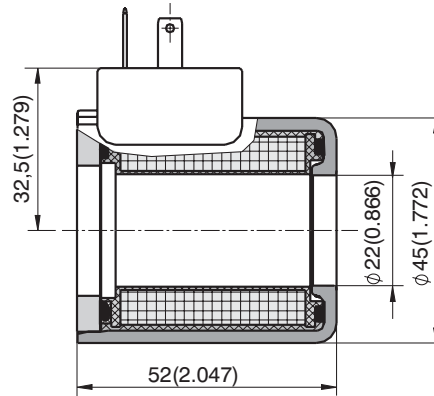
## Type of the Solenoid Coils

Dimensions in millimeters (inches)

Coil for Standard valve  
C19B



Coil for High performance valve  
C22B



**Note:**

Example of most frequent coil types.

For complete range of SD2E-B4 valve coils with technical informatik about voltage, enclosure type, terminal box please refer to coil data sheet HA 8007.

Voltage	Connector	Standard	High performance
		SD2E-B4 / S...	SD2E-B4 / H...
		Type code	Type code
12 VDC	EN 175301-803-A	C19B-01200E1-6NA	C22B-01200E1-6,55NA
24 VDC	EN 175301-803-A	C19B-02400E1-25,75NA	C22B-02400E1-25,3NA
12 VDC	AMP-Junior-Timer	C19B-01200E3-6NA	C22B-01200E3A-6,55NA
24 VDC	AMP-Junior-Timer	C19B-02400E3-25,75NA	C22B-02400E3A-25,3NA
12 VDC	free cables**	C19B-01200E8N300-6NA	C22B-01200E8N300-6,55NA
24 VDC	free cables**	C19B-02400E8N300-25,75NA	C22B-02400E8N300-25,3NA
12 VDC	Deutsch DT04-2P	---	C22B-01200E12-6,55NA
24 VDC	Deutsch DT04-2P	---	C22B-02400E12-25,3NA
120 VAC	EN 175301-803-A	C19B-10600E1-494NA*	C22B-10600E1-545NA*
230 VAC	EN 175301-803-A	C19B-20500E1-1653NA*	C22B-20500E1-2353NA*
120 VAC	EN 175301-803-A (with rectifier)	C19B-12060E5-494NA	C22B-12060E5-545NA
230 VAC	EN 175301-803-A (with rectifier)	C19B-23050E5-1653NA	C22B-23050E5-2353NA

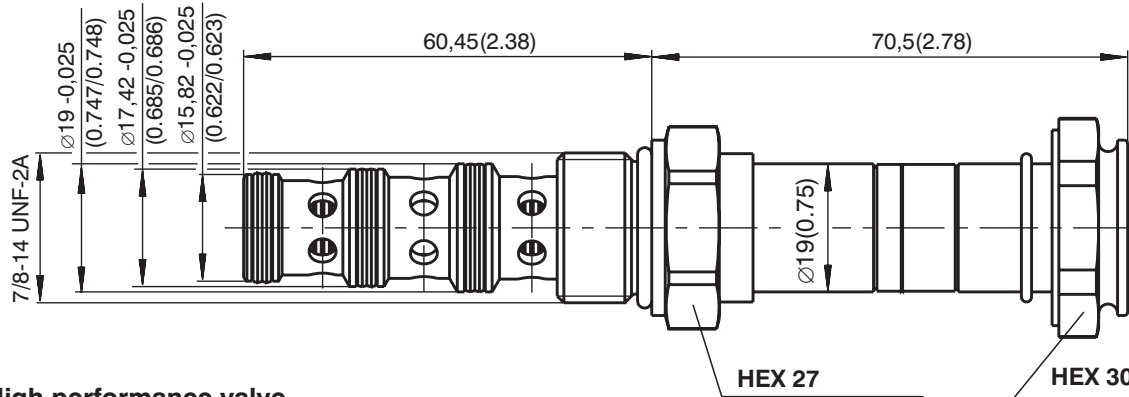
\*Use the terminal box with rectifier!

\*\*Standard length of connecting wire is 300 mm, other lengths on request.

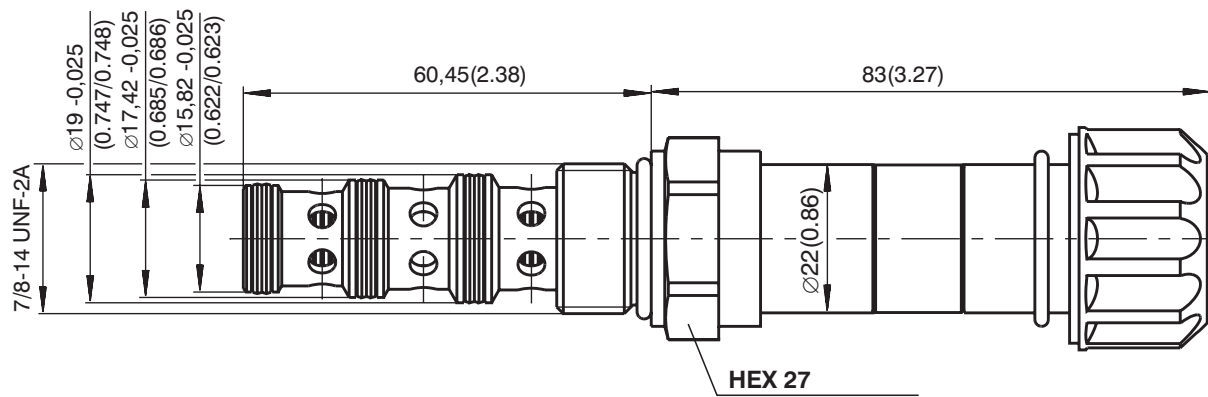
# Valve Dimensions

Dimensions in millimeters (inches)

## Standard valve

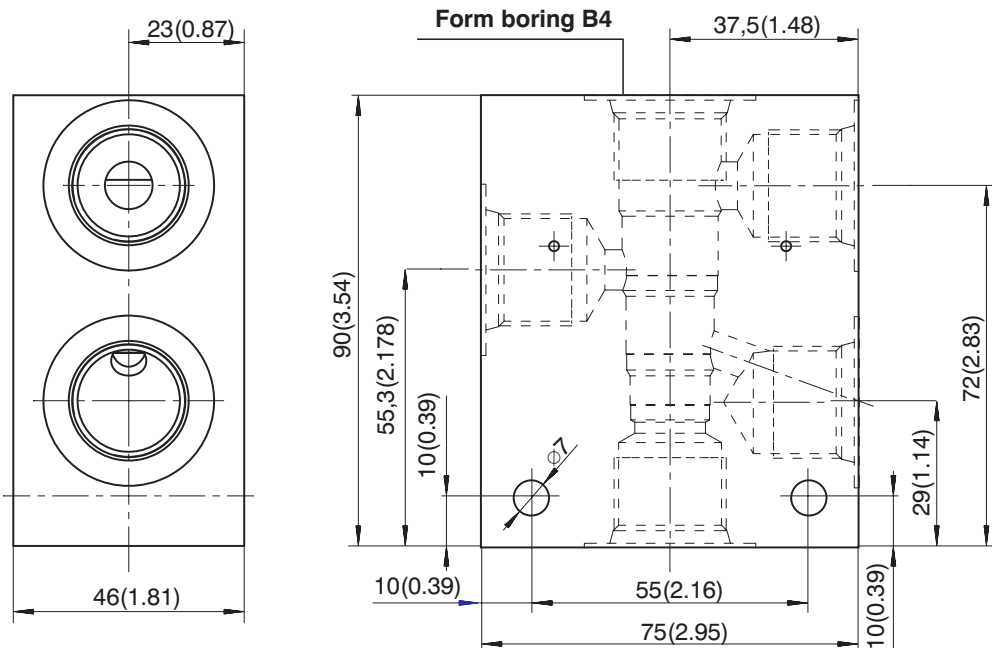


## High performance valve



# Valve Body

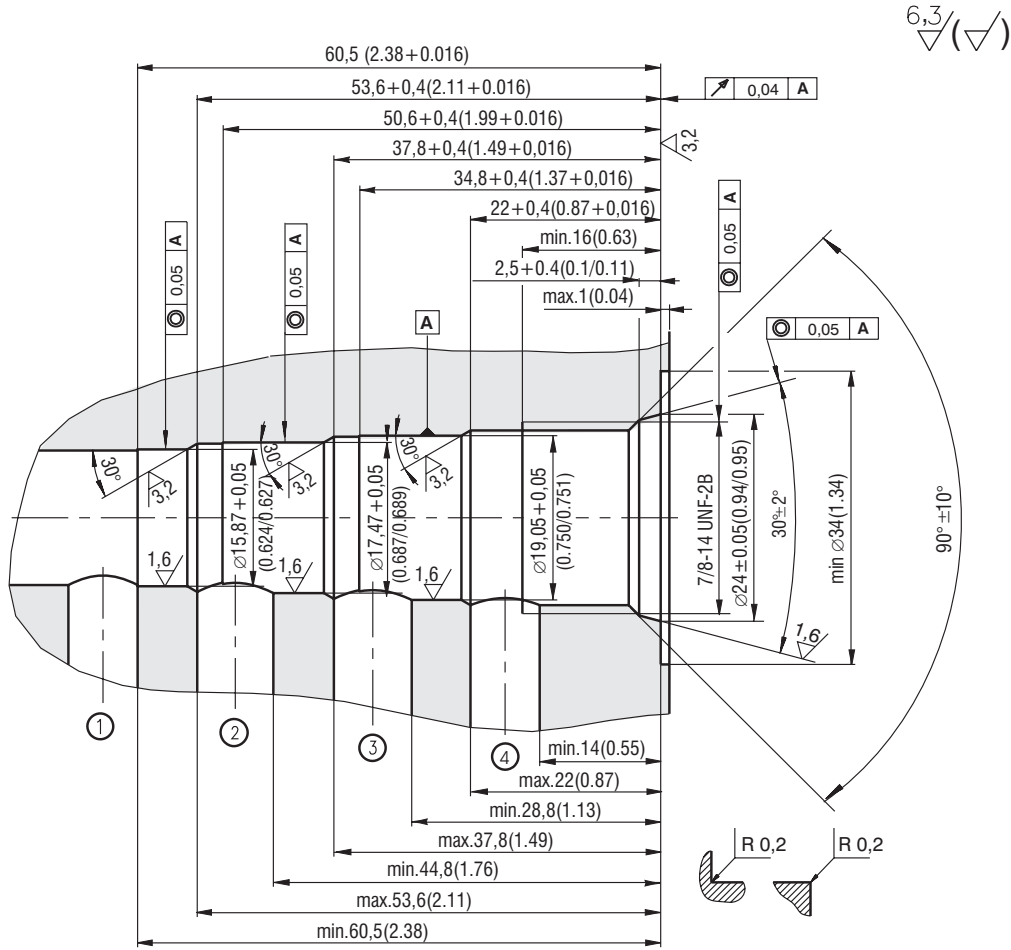
Dimensions in millimeters (inches)



Body material	Connecting size	Type code	Operating pressures
Steel	G 3/8	SB-B4-0103ST	420 bar (6091 PSI)
Steel	SAE 8	SB-B4-0104ST	420 bar (6091 PSI)
Aluminium	G 3/8	SB-B4-0103AL	250 bar (3626 PSI)
Aluminium	SAE 8	SB-B4-0104AL	250 bar (3626 PSI)

# Cavity

Dimensions in millimeters (inches)



# Spare Parts

Dimensions in millimeters

## Standard and high performance valve

Dualseal - PU	O-ring - NBR	O-ring - Viton	Order number
13,47 x 15,87 x 3,1 (1pc.)	19,4 x 2,1 (1pc.)	-	18960800
17,47 x 15,07 x 3,1 (1pc.)			
19,05 x 16,65 x 3,1 (1pc.)			
13,47 x 15,87 x 3,1 (1pc.)	-	19,4 x 2,1 (1pc.)	18960900
17,47 x 15,07 x 3,1 (1pc.)			
19,05 x 16,65 x 3,1 (1pc.)			

## Solenoid retaining nut with seal for standard valve

Type of nut	O-ring - Viton	Order number
Standard nut	18 x 1,5 (1pc.)	20777000
Nut M2	18 x 1,5 (1pc.)	20777600

## Solenoid retaining nut with seal for high performance valve

Type of nut	O-ring - Viton	Order number
Standard nut	22 x 2 (1pc.)	15844600
Nut M2	22 x 2 (1pc.)	18961700

# Caution!

- The packing foil is recyclable.
- The technical information regarding the product presented in this catalogue is for descriptive purposes only. It should not be construed in any case as a guaranteed representation of the product properties in the sense of the law.

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