

# Hydro Bush

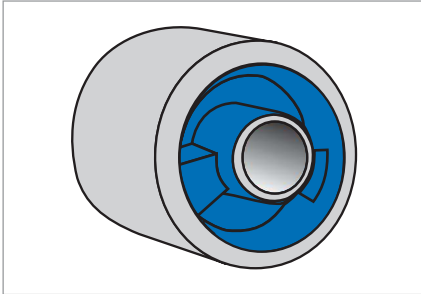


Fig. 1 Hydro Bush

## Material

Standard material	Hardness
Natural rubber NR 11	35, 45, 55, 62, 68 Shore A

## Operating conditions

Compressive forces in Z direction	1100 N ... 4200 N	Maximum permissible force
Max. temperature	+60 °C, transient +80 °C	
Min. temperature	-45 °C	

## Product description

Hydro bushes are elastomer springs with integrated hydraulic damping.

## Product advantages

- Frequency & amplitude selective damping
- Integrated limitation of the spring displacement
- Allowing twist in all directions
- Easily installed
- RoHS-compliant.

## Application

Suitable for mountings of combustion engines, cabs, pumps and compressors, mainly in agricultural machines and construction machinery.

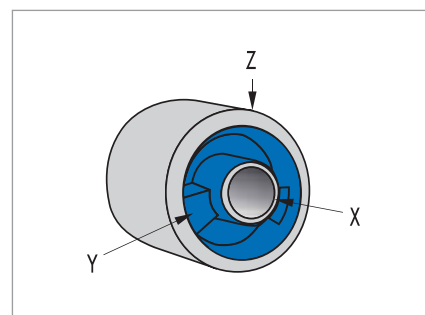


Fig. 2 Primary load directions

They are specifically suited when low frequencies occur as excitation frequency in the mount system. They achieve a high damping in the natural frequency range of the system as well as gut isolation properties above this range. Vibrations in the mount system which have a sound-conducting or radiating characteristic, generated primarily through excitation amplitudes or dynamic forces in the audible frequency range

are significantly reduced. The integrated hydraulic mechanism in the bush with the frequency and amplitude dependent damping is designed for effect in the Z direction. By matching the damping maximum of the hydro bush to the critical frequency (resonance frequency) of the spring-supported mass, the resonance magnification can be noticeably reduced. For higher frequencies, the insulating capability of elastomer bond components can be utilised. The hydro bushes are designed so that the translatory stiffness increase in the order X,Z,Y. The bushes are designed for the primary load in the radial (Z direction) as well as the axial direction (X direction) but can also absorb slight cardanic and torsional deformations. Depending on the design, limiters for deflection (labelled as HD) with or without reinforcement can be integrated in the Z direction.

## Design notes

The mount configuration comprises an elastomer-metal composite with load-bearing element in Vee-shape, stops, fluid chambers and overflow ducts. The composite is mounted in an outer sleeve and fluid-filled.

## Fitting & installation

- Hydro bushes have an outside fit and accommodate a threaded fastener on the inside for installation
- Hydro bushes can be secured with Loctite or other, similar adhesive if a press fit is not desired
- Individual components permit slight adjustment to allow for in-situ offset
- Always install hydro bushes centred and at right angles to the axis of primary radial load and if possible, utilise the entire cylindrical surface area of the outer sleeve as the bearing surface
- If possible, utilise the entire cylindrical length of the inner sleeve bore as the bearing surface
- Position the bush relative to the weight load in such a way as to reduce the largest distance between the axis of the inner sleeve to the axis of the outer sleeve in the place through both axes.

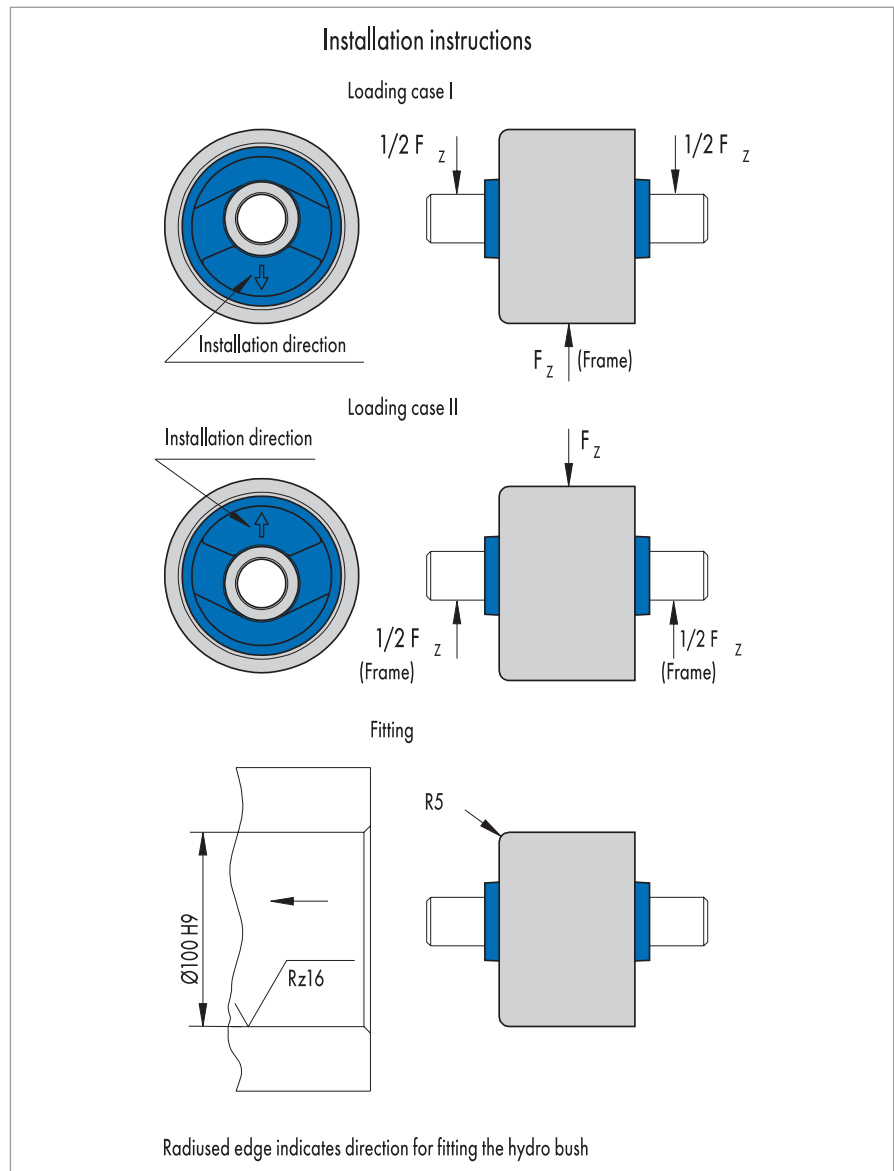


Fig. 3 Fitting & installation instructions: Hydro Bushes

Article list

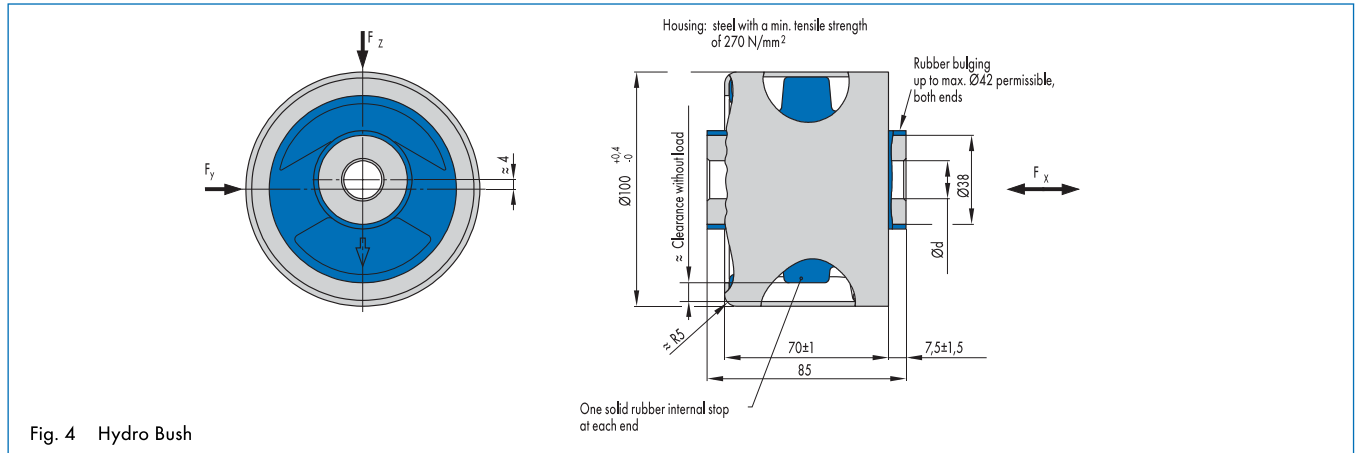


Fig. 4 Hydro Bush

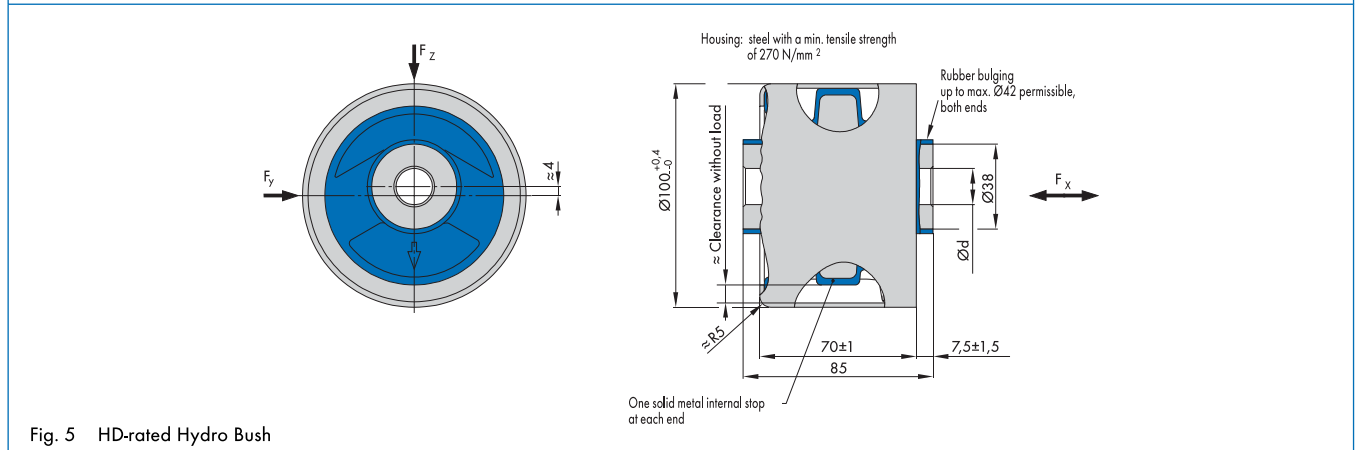


Fig. 5 HD-rated Hydro Bush

Nominal values of the maximum amounts		Stiffness					Inside Ø.		Product No.	Material	Type	Article No.	
		Radial		Axial		Radial		Radial					
		F <sub>Z</sub> max	s <sub>Z</sub> max	c <sub>x</sub>		c <sub>y</sub>							
[N]	[mm]	s <sub>Z</sub> =0mm	s <sub>Z</sub> =5mm	s <sub>Z</sub> =0mm	s <sub>Z</sub> =5mm	[N/mm]	[mm]						
1100	5	95	110	255	300	220	25	H9	046 18 013	35 NR 11	-	95573	●
1100	5	95	110	255	300	220	32	H9	046 18 711	35 NR 11	-	49022801	○
1100	5	95	110	255	300	220	32	H9	046 18 712	35 NR 11	HD	49022862	○
1600	5	190	220	500	600	320	25	H9	046 18 014	45 NR 11	-	595574	●
1600	5	190	220	500	600	320	32	H9	046 18 708	45 NR 11	-	507315	●
1600	5	190	220	500	600	320	32	H9	046 18 713	45 NR 11	HD	49022863	○
2500	5	280	330	750	830	500	25	H9	046 18 015	55 NR 11	-	595575	●
2500	5	280	330	750	830	500	32	H9	046 18 714	55 NR 11	-	49022864	○
2500	5	280	330	750	830	500	32	H9	046 18 705	55 NR 11	HD	477895	●
3450	5	360	425	960	1070	685	32	H9	046 18 016	62 NR 11	-	595576	●
3450	5	360	425	960	1070	685	32	H9	046 18 715	62 NR 11	HD	49022865	○
4200	5	440	520	1170	1300	840	32	H9	046 18 017	68 NR 11	-	95676	●
4200	5	440	520	1170	1300	840	32	H9	046 18 702	68 NR 11	HD	600984	●

● Available from stock    ○ On request: Tool is available, delivery at short notice

Static and dynamic characteristics

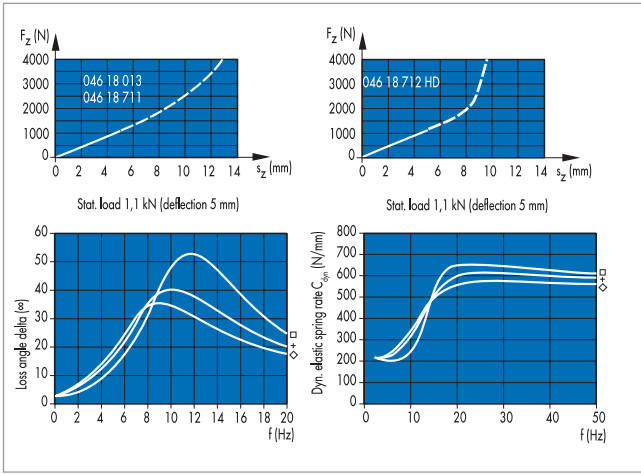


Fig. 6 Hydro Bushes 046 18 013, 046 18 711 and 046 18 712 HD

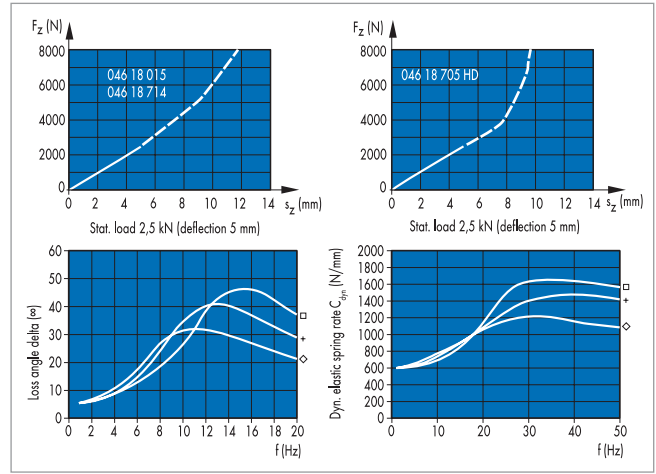


Fig. 7 Hydro Bushes 046 18 014, 046 18 708 and 046 18 713 HD

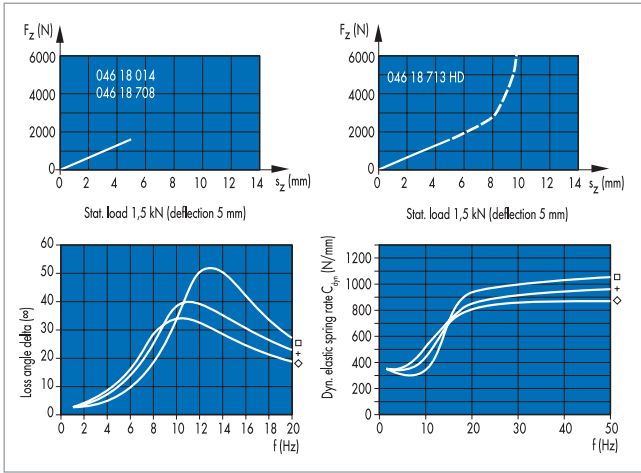


Fig. 8 Hydro Bushes 046 18 015, 046 18 714 and 046 18 705 HD

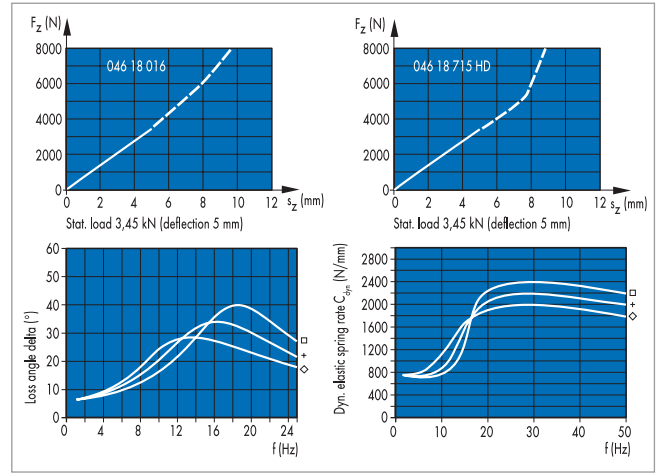


Fig. 9 Hydro Bushes 046 18 016 and 046 18 715 HD

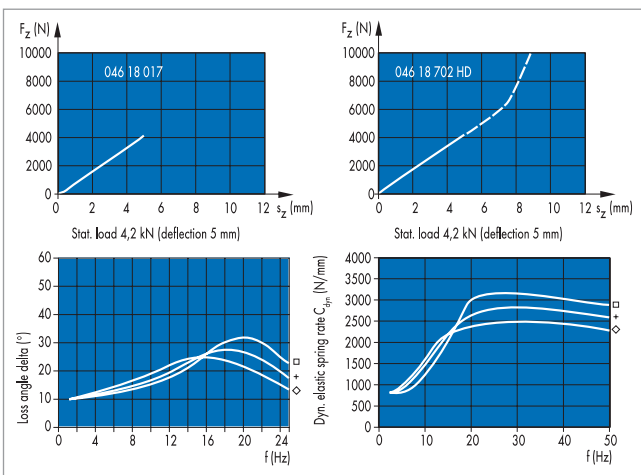


Fig. 10 Hydro Bushes 046 18 017 and 046 18 702 HD

Frequency  $f$  (Hz)      □ Amplitude  $\pm 1$  mm  
 + Amplitude  $\pm 2$  mm  
 ◇ Amplitude  $\pm 3$  mm