

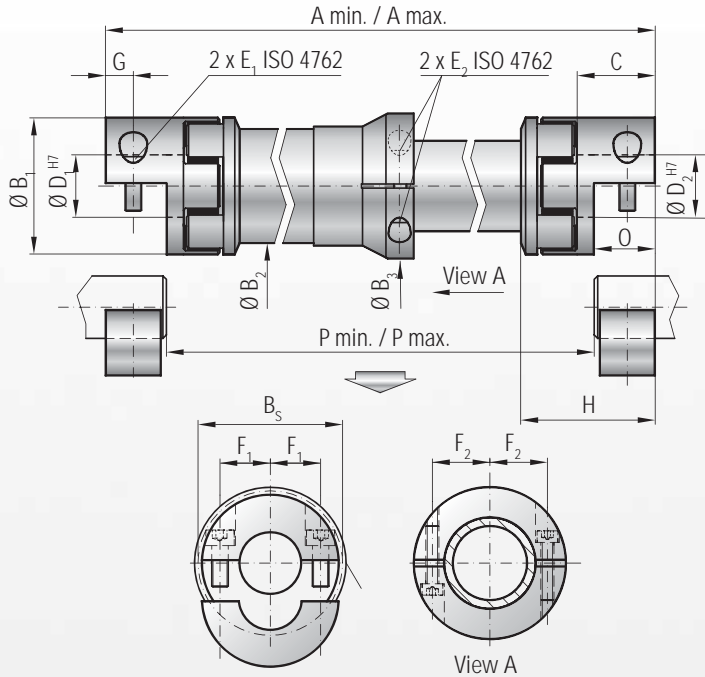


MODEL EZV

BACKLASH FREE LINE SHAFTS



variable length



Ordering example

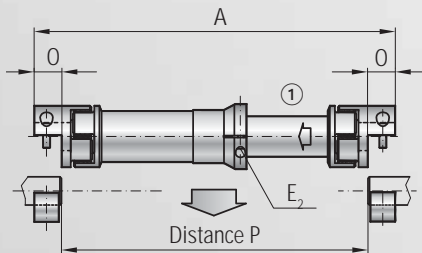
EZV / 20 / 1200 / A / 24 / 19 / XX

Model
Series
Minimum length of selected range
Type Elastomer insert
Bore $\emptyset D1$ H7
Bore $\emptyset D2$ H7
Non standard e.g. finely balanced

All data is subject to change without notice.

Assembly instructions

After loosening the clamping screws E_2 , slide and / or rotate the tube sections to the desired positions. Once positioned, tighten the screws to the appropriate tightening torque, whereby guaranteeing a high level of concentricity for the line shaft assembly.



Properties:

- lateral mounting with split clamping hubs
- lengths up to 4 meters
- adjustable in length
- low moment of inertia
- vibration damping
- press fit designs
- backlash free

Material:

Clamping hub: high strength aluminum.
Elastomer insert: precision molded wear resistant, and thermally stable polymer.
Intermediate tubes: precision machined aluminum tube, steel or composite tube are upon request available.

Design:

Two split clamping hubs on each end are concentrically machined with curved jaws. Both coupling bodies are solidly joined to the tubes with a high level of concentricity. Loosening the intermediate clamp allows for a variation of length and rotational orientation. Elastomer inserts are available in type A or B.

Speed:

To control the critical resonant speed please advise the application speed when ordering or inquiring about EZ Line Shafts.

Tolerance:

Overall clearance between shaft and hub 0.01 to 0.05 mm

R+W calculation program

With specially developed software R+W can calculate the critical resonant speeds for each application.

Results of a calculation are shown below.

The critical speed can be altered by changing the tube material and/or other parameters.

Critical resonant speed	n_{kb}	=	rpm
Maximum speed	n_B	=	rpm
Torsional deflection	φ	=	Degree-Min-Sec
Total stiffness EZ 2	C_{Tdyn}^{EZ}	=	Nm/rad
Permissible lateral misalignment	ΔKr	=	mm
Weight of total axis	m	=	kg
Mass moment of inertia	J	=	kgm ²



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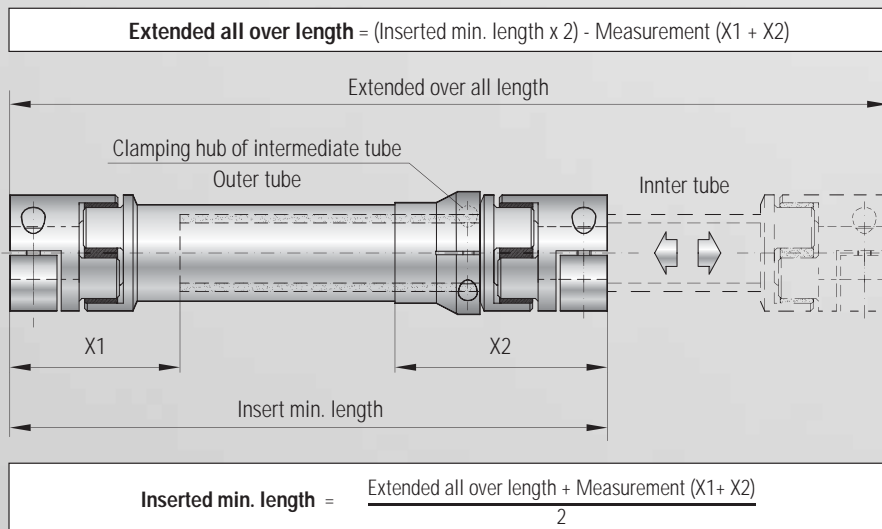
BACKLASH FREE LINE SHAFTS

Model EZV		Series											
		10		20		60		150		300		450	
Type (Elastomer insert)		A	B	A	B	A	B	A	B	A	B	A	B
Rated torque (Nm)	T_{KW}	12.5	16	17	21	60	75	160	200	325	405	530	660
Max. torque* (Nm)	T_{Kmax}	25	32	34	42	120	150	320	400	650	810	1060	1200
Range of possible minimum lengths (collapsed) (mm)	A_{min}	150 to 2055		200 to 2075		250 to 2095		300 to 2115		350 to 2130		400 to 2150	
Range of possible maximum lengths (extended) (mm)	A_{max}	190 to 4000		250 to 4000		310 to 4000		370 to 4000		440 to 4000		500 to 4000	
Measurement (mm)	$X1+X2$	115		156		197		240		280		312	
Outside diameter of clamping hub (mm)	B_1	32		42		56		66,5		82		102	
Outside diameter of tube (mm)	B_2	28		35		50		60		80		90	
Outside diameter of center hub (mm)	B_3	41,5		47		67		77		102		115	
Outside diameter with screw head (mm)	B_5	32		44,5		57		68		85		105	
Fit length (mm)	C	20		25		40		47		55		65	
Inside diameter range H7 (mm)	$D_{1/2}$	5 to 16		8 to 25		14 to 32		19 to 35		19 to 45		24 to 60	
Clamping screw (ISO 4762)		M4		M5		M6		M8		M10		M12	
Tightening torque of the clamping screw (Nm)	E_1	4		8		15		35		70		120	
Clamping screw (ISO 4762)		M4		M4		M5		M6		M8		M10	
Tightening torque of the clamping screw (Nm)	E_2	4		4,5		8		18		35		70	
Distance between centers (mm)	F_1	10,5		15,5		21		24		29		38	
Distance between centers (mm)	F_2	15		18		26		31		41		45	
Distance (mm)	G	7,5		8,5		15		17,5		20		25	
Mounting length (mm)	O	16,6		18,6		32		37		42		52	
Moment of inertia coupling half (10^{-3} kgm ²)	J_1/J_2	0,01		0,02		0,15		0,21		1,02		2,3	
Inertia of tube per meter (10^{-3} kgm ²)	J_3	0,075		0,183		0,66		1,18		2,48		10,6	
Combined dynamic torsional stiffness of the inserts (Nm/rad)	C_{Tdyn}^E	270	825	1,270	2,220	3,970	5,950	6,700	14,650	11,850	20,200	27,700	40,600
Torsional stiffness of tube per meter (Nm/rad)	$C_{T,ZWR}$	321		1,530		6,632		11,810		20,230		65,340	
Distance between centers (mm)	N	26		33		49		57		67		78	
Length of the couplings (mm)	H	34		46		63		73		86		99	

Max. transmittable torque of the clamping hub depends on the bore diameter; see EKH (page 8)

1 Nm = 8.85 in lbs

Function



The collapsed and extended over-all length values are related, becoming increasingly flexible with greater length. Length ranges can be calculated using the two formulas shown at left. For information regarding selection according to axial, angular and lateral misalignment, as well as torsional stiffness of the EZV, refer to page 15.