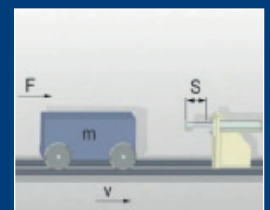


Elasto-Fluid Springs

WES-F



ONLINE
Calculation and
2D / 3D CAD Download



Benefits

Compact construction

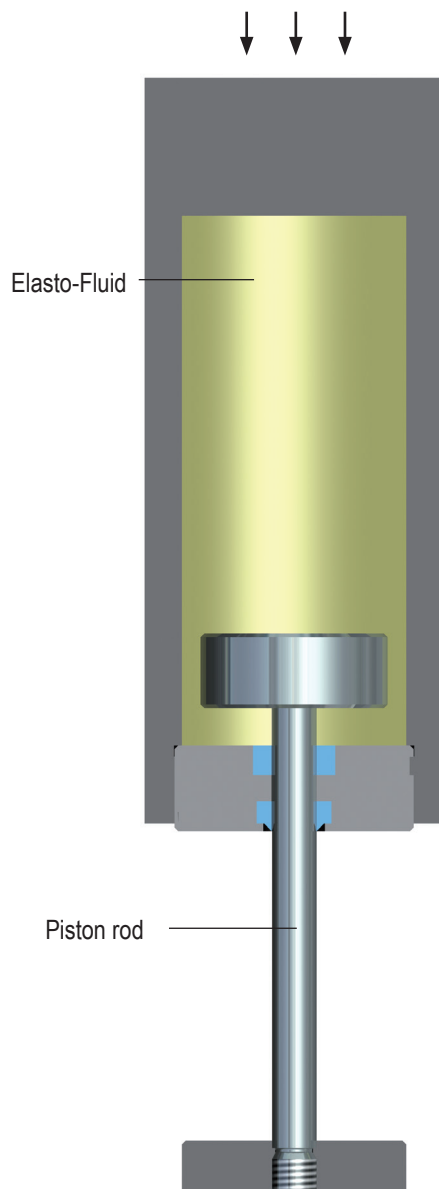
Good reproducibility of deceleration characteristics

Simple assembly

No adjustment necessary

Applications: Rolling mills

Operating Principle



Elasto-Fluid springs of production series WES-F take advantage of the compressibility of the pre-stressed Elasto-Fluid.

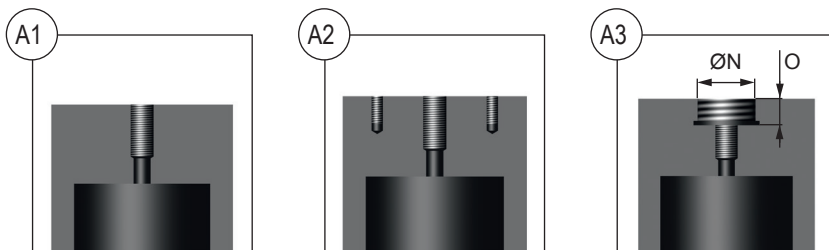
If an Elasto-Fluid spring is loaded with an axial force F , the piston rod and/or the piston penetrates into the pre-stressed Elasto-Fluid. This further increases the pressure. If force F is reduced, the Elasto-Fluid relaxes and returns the piston / piston rod to the starting position.

This technique is used among other things in the rolling mills of cold and hot steel mills. The upper roller inc. attachments is borne by 2 and/or 4 Elasto-Fluid springs of production series WES-F. With the help of hydraulics, the upper roller can be lowered to the desired roll gap. The Elasto-Fluid springs retract accordingly and hold the upper roller in position. If the upper roller is unburdened, the Elasto-Fluid relaxes and returns the roller to the starting position.

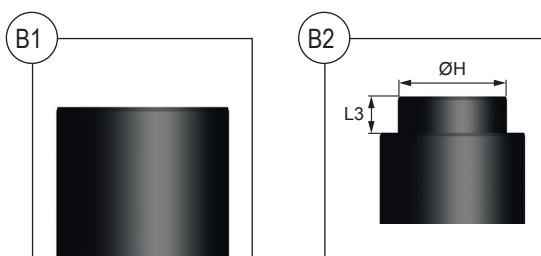
As an additional function, the Elasto-Fluid springs can serve as pistons and be used for roller bending. Elasto-Fluid springs of production series WES-F are based on standard designs, modified and adapted to meet customer requirements.

Information required from the customer

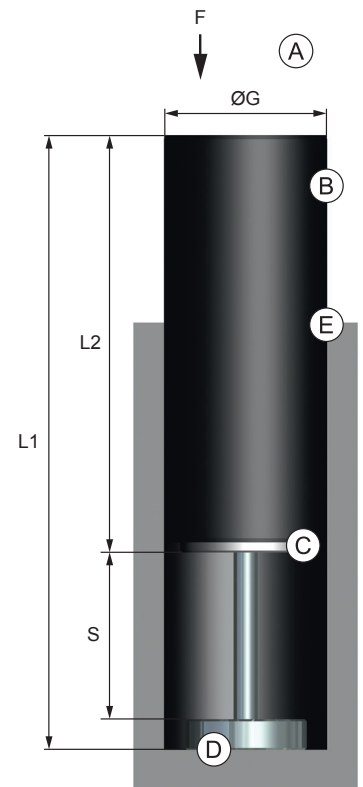
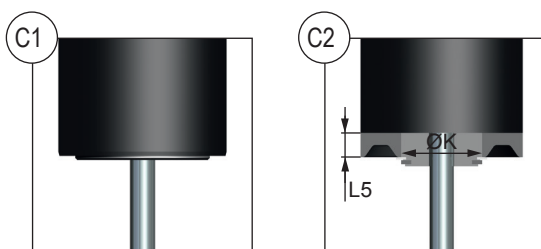
A	Housing bottom		Example
A1	Standard filling port		A1
	Connection thread	N	
	Depth	O	
A2	Filling port + Tapped bores		
A3	Filling port + Tapping		
E3	Hard chrome plated		



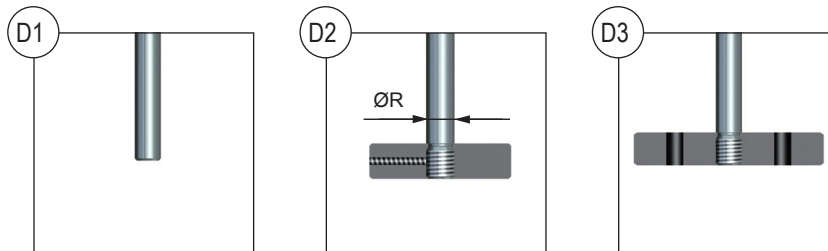
B	Housing design		Example
B1	Housing (standard)		
B2	Housing with connection		B2
	Connection height	L3	210
	Connection diameter	ØH	62



C	Housing front design		Example
C1	Standard		C1
C2	Seals for hydraulic connection		
	Connectin heigh	L5	
	Connection diameter	ØK	



D	Piston rod design		Example
D1	Standard		D1
D2	Additional use as hydraulic cylinder	ØR	
D3	Additional use as hydraulic cylinder		

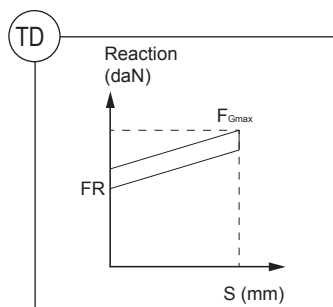


E	Surface protection for the housing		Example
E1	No protection (standard)		E1
E2	Zinc plated		
E3	Hard chrome plated		

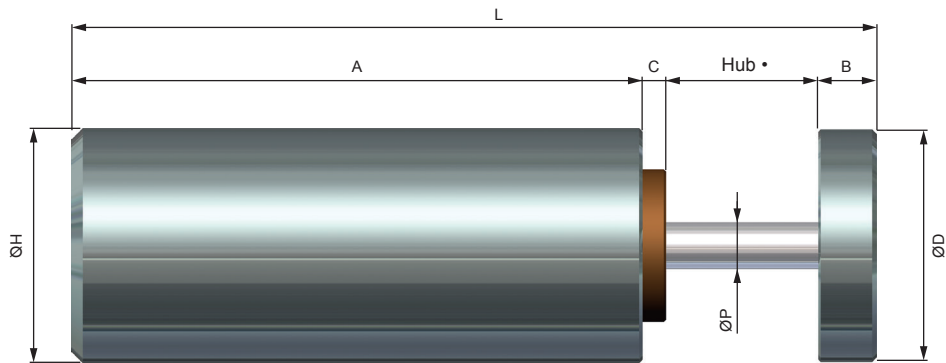
Final Design Data - for confirmation by Weforma

	Dimensions		Example
	Total length(mm)	L1	350
	Housing length (mm)	L2	320
	Housing diameter (mm)	ØG	70

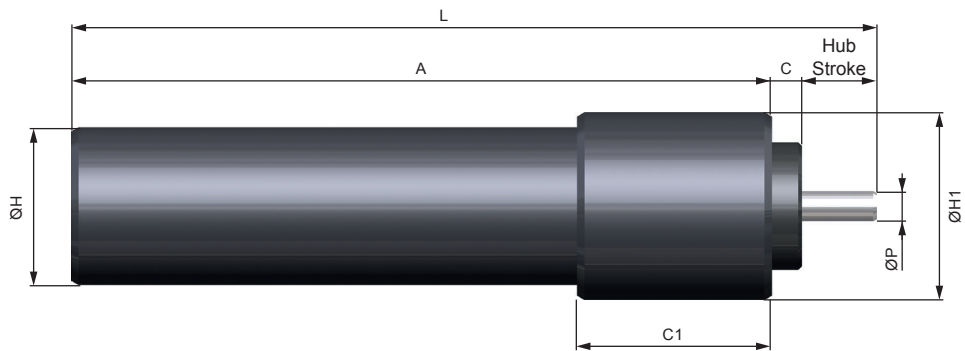
TD	Technical data		
	Return force(kN)	FR	15
	Max. Counterforce(FG kN)	FG	23
	Stroke (mm)	S	30



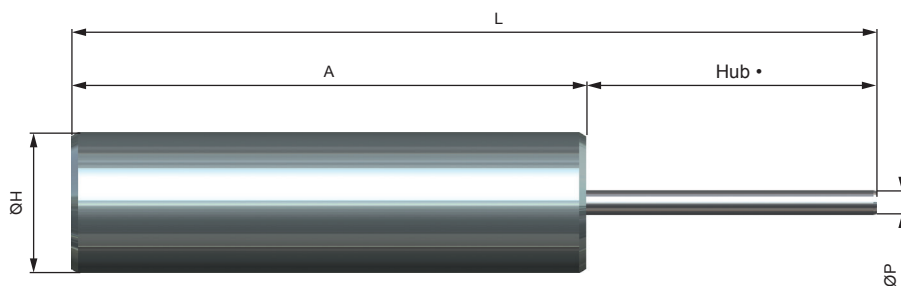
TYP 1



TYP 2



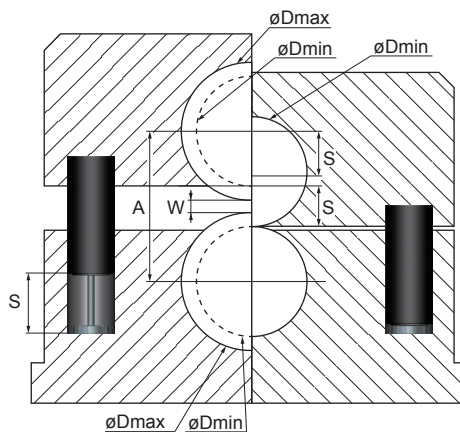
TYP 3



DIMENSIONS

	Type	Force			Stroke mm	A mm	B mm	C mm	C1 mm	D mm	H mm	H1 mm	L mm	P mm
		Fr (kN)	Fv (kN)	Fm (kN)										
WES-F30-1-9,31	3	2,7	2,9	8	55	112,5	-	-	-	-	30f7	-	167,5	5,5g6
WES-F40-1-17,13	3	4,9	5,4	12,9	83	147	-	-	-	-	40f7	-	230	7g6
WES-F45-1-11,5-108	1	3,3	4	7	28	106	10	8	-	33	44,9	-	152	8
WES-F45-1-17,5-102	1	5	5,7	7,6	39	110	10	8	-	33	44,9	-	167	8
WES-F45-1-22,4	3	6,4	7,1	16,9	97,5	167,5	-	-	-	-	45f7	-	265	8g6
WES-F50-2-15,4	2	4,4	5	6,1	20	187	-	8	52	-	42d10	50d10	215	8
WES-F55-2-20,6	2	5,9	6,5	8,5	25	192	-	10	60	-	47d10	55d10	225	8,5
WES-F60-2-30,4	2	8,7	9,5	11,5	35	280	-	10	90	-	50d10	60d10	325	9
WES-F65-2-35	2	10	15	17	25	273	-	7	88	-	57e9	65e9	305	10
WES-F70-1	2	-	-	-	63,5	227	-	-	-	-	70f7	-	311	12g6
WES-F70-2-52,5	2	15	16,5	23	30	316	-	4	106	-	62e9	70e9	350	10
WES-F70-2-70	2	20	23	32	40	385	-	10	135	-	62e9	70e9	435	12
WES-F75-1-11,2	1	32,5	36,5	74	88	335	21	11	-	50	75	-	455	17
WES-F75-1-57,5	1	16,5	18,2	40	125	240	25	10	-	44	75	-	400	12,5
WES-F108-1-9,3	1	26,5	28,5	48	80	380	15	-	-	25	107,95	-	475	15
WES-F114-1-68,5	1	19,6	21,6	40	60,3	326,5	12,7	-	-	111	114,25	-	399,5	18
WES-F127-1-98	3	28	31	62	79	386	25	7	-	65	127e8	-	497	18

CALCULATION



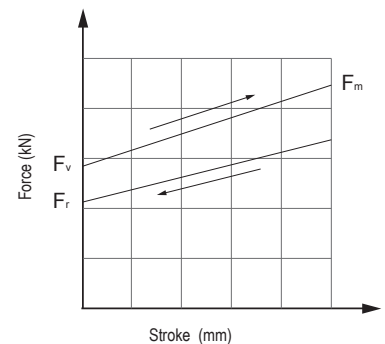
STROKE CALCULATION

$$S = A - D_{min} + \text{reserve}$$

$$S = D_{max} - D_{min} + W + \text{reserve}$$

RETURN FORCE CALCULATION

$$F_R = F/n \times 1,1$$



		D
S	(mm)	Stroke
A	(mm)	Axis center distance
F	(kN)	Weight of the total upper roll construction
W	(mm)	Roll gap
n		Numbers of springs per roll stand
F_R	(kN)	Return force per spring
D_{max}	(mm)	Roll fully extended
D_{min}	(mm)	Roll total compressed

Important information

Attention!

Before Installation, commissioning, servicing and repair the date sheet is to be noticed. Realisation of the works only by trained, introduced specialist staff.

Electric connections according to the suitable national regulation.
for Germany: VDE regulation VD E0100

Before all repair, and servicing works the energy supplies (main switch, etc.) are to be switched off! More over, measures are necessary, around unintentional Reconnect to prevent, e.g., in the main switch a suitable warning „servicing works“, „repair works“ etc. attach.

Designated use

Check before installation and use whether the type name on the damper or on the packaging with the suitable name on the delivery note agrees

Industrial shock absorbers are maintenance-free and ready with installation

- Moved masses can start with the installation of the shock absorbers by unintentional for injuries and body damages lead. Moved masses gainst unintentional procedure protect.
- The dampers can be inexpedient for the application and show no sufficient damping effect. Before the installation check the suitable suitability of the shock absorbers
- At the company beyond the allowed temperature area the damper can lose his function. To temperature area absolutely keep. Shock absorbers because of the warm radiotherapy do not varnish
- Fluide, gases and dirty particle in the surroundings can attack the poetry system of the shock absorber or destroy and lead to the functional financial loss of the shock absorber. Piston rod and poetry system against outside funds in the surroundings protect or isolate.
- Damages of the piston rod surface can destroy the poetry system. Piston rod are not greasy, oil etc. and before dirty particles protect.
- The piston rod can be torn out from the damper. The piston rod do not load on train tension
- Shock absorber can break off in demand. The connection construction always lay out in such a way that the at most appearing forces with sufficient security can be recorded. The maximum supporting forces performed in the calculation programme can deviate from the later really appearing supporting forces, because these are based on theoretical values.
- A setting of the shock absorbers to the respective application is necessary compelling. A wrong setting of the damping leads to a raised machine charge and to an untimely financial loss of the shock absorber

Liability

Due to the number of possible uses of our products and the conditions of use that lie outside of our scope of influence, we accept no liability as to whether the purchase object is suitable for the Client's intended purpose. The verification to this effect, in particular the verification as to whether the purchase object is suitable for the planned use, is the responsibility of the Client alone, unless expressly agreed otherwise in writing.

For the reasons we accept no liability for the suitability of the purchase object for the purpose intended by the Client, except in cases of intent or gross negligence.

With damages, the not designated use and from high-handed, in these instructions do not originate to intended interventions, any guarantee and liability claim goes out towards the manufacturer.

Guarantee

By non-use of the original spare parts the guarantee claim goes out.

Environment protection

By the exchange from damaged parts is to be respected to a proper disposal.