

Sizing
Force and torque

∅	Centre distance Y	Actual force F at 6 bar [N]	Cushioning stroke [mm]	Max. load L [N]	Ma max. [Nm]	Mr max. [Nm]	Mv max. [Nm]
16	9	110	15	120	4	0.3	0.5
25	14	250	21	300	15	1	3
32	18	420	26	450	30	2	4
40	22	640	32	750	60	4	8
63	44	1550	40	1650	200	8	24

Simultaneous loading with force and torque

Equations

$$Ma = F \times ha$$

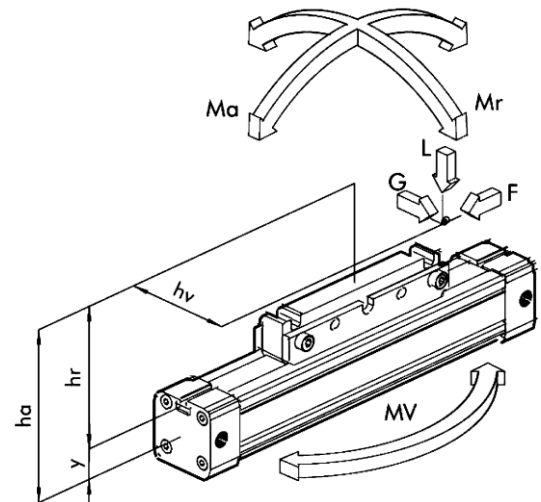
$$Mr = L \times hv + G \times hr$$

$$Mv = F \times hv$$

$$\frac{Mv}{Mv_{max}} \leq 1$$

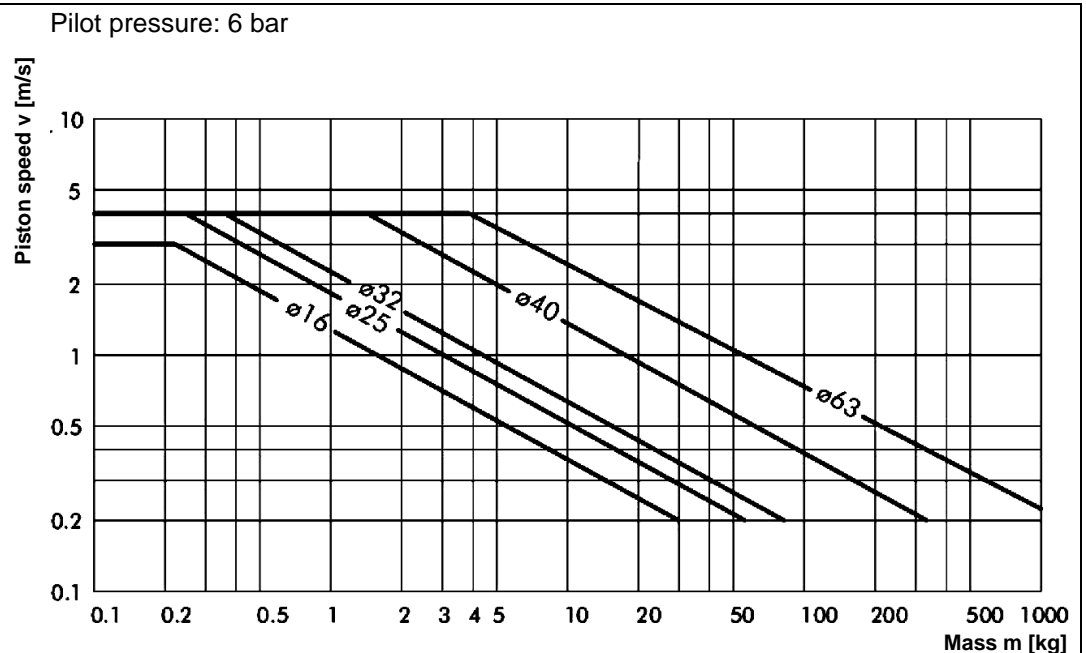
$$\frac{L}{L_{max}} \leq 1$$

$$\frac{Ma}{Ma_{max}} + \frac{Mr}{Mr_{max}} + 0.22 \times \frac{Mv}{Mv_{max}} + 0.4 \times \frac{L}{L_{max}} \leq 1$$


Max. piston speed as a function of the moving mass

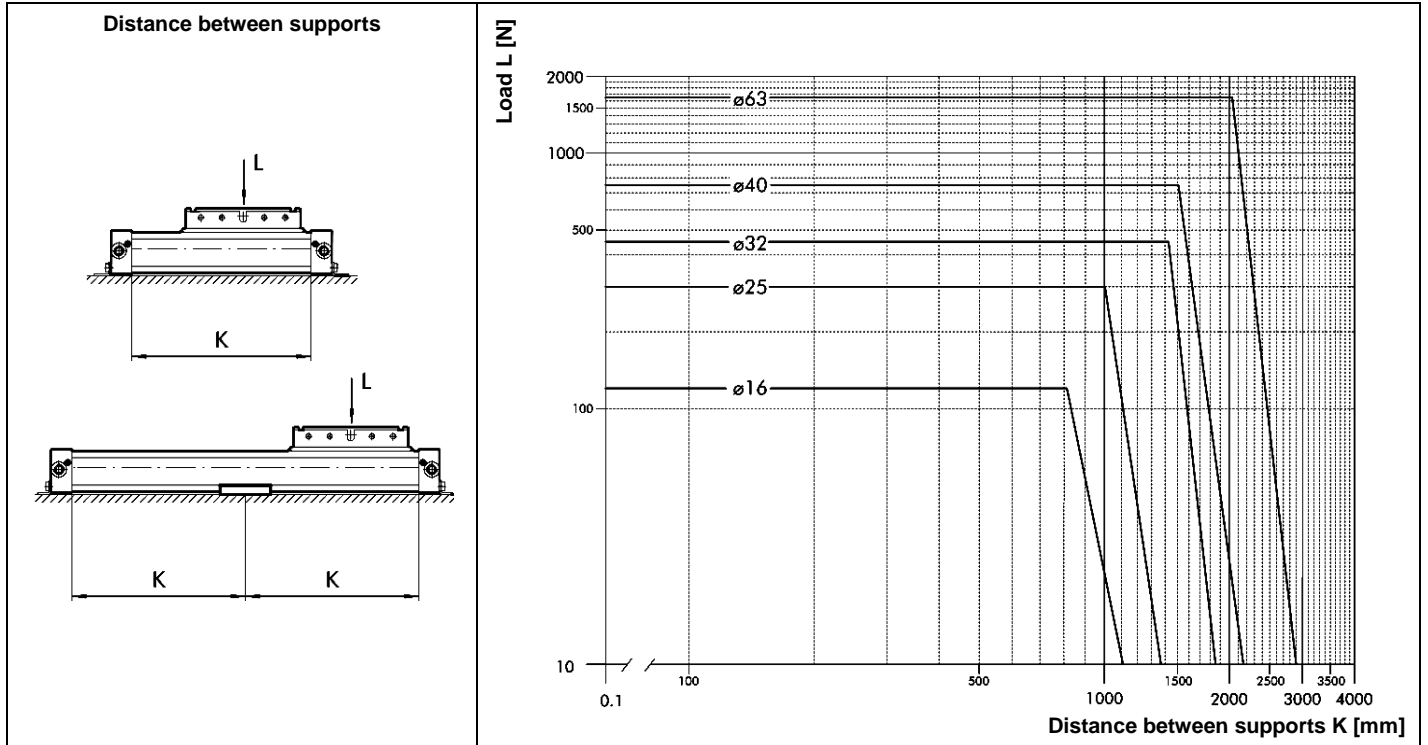
Maximum permissible speed >v< as a function of the moving mass

The end position cushioning must be adjusted to prevent impact in the end-of-stroke position. If the moving masses exceed the permissible values, they should be cushioned as close as possible to the mass centre of gravity by means of suitable external devices (shock absorbers, limit switches, etc.).



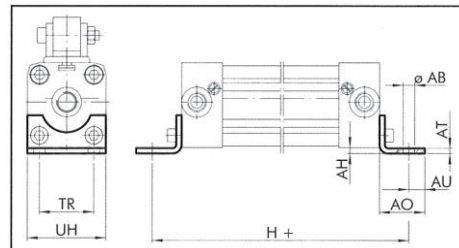
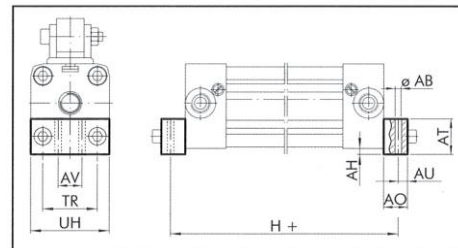
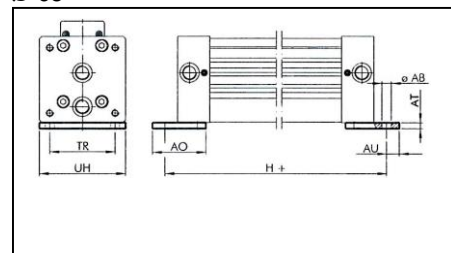
Maximum distance between supports >K< as a function of the load >L<

In order to limit torsion in conjunction with large strokes, the shaft may have to be stabilised with intermediate feet. The graphs below can be used to determine the maximum permissible distance between supports >K< as a function of the load >L<.



Fixing parts and accessories
Foot
Dimensions [mm]

Type No.	Piston Ø	ØAB	AH	AO	AT	AU	AV	TR	UH	H	Material	Weight [g]
455.11-M	16	3.6	1.5	14	1.6	4.0	-	18	26	150	steel	10
455.12-M	25	5.5	2.0	22	2.5	6.0	-	27	40	232	steel	32
455.13-M	32	6.6	4.0	25	20.0	8.0	20	36	51	284	aluminium	88
455.14-M	40	9.0	2.0	25	20.0	11.5	30	54	71	327	aluminium	112
455.15-M	63	11.0	-	64	7.0	15.0	-	78	103	460	aluminium	360

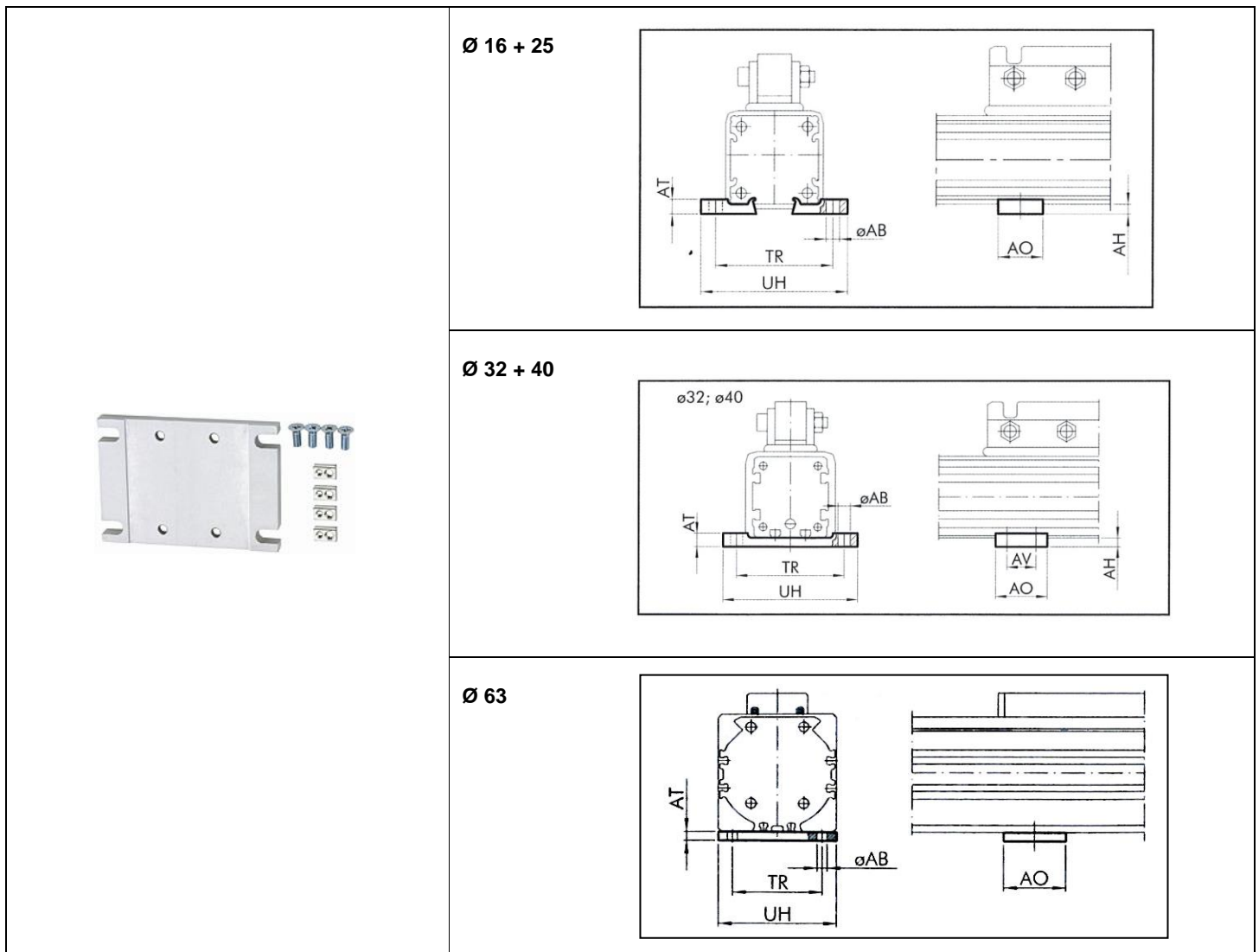
Ø 16 + 25

Ø 32 + 40

Ø 63


Fixing parts and accessories

Intermediate foot

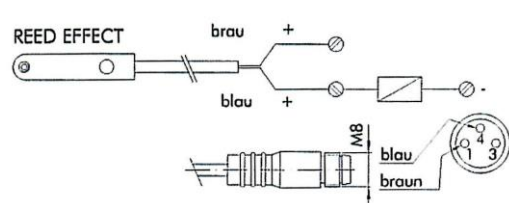
Dimensions [mm]


Type No.	Piston Ø	ØAB	AH	AO	AT	AV	TR	UH	Material	Weight [g]
455.51-M	16	5.5	3	20	5	-	41.0	53	aluminium	4
455.52-M	25	5.5	4	20	6	-	48.0	60	aluminium	6
455.53-M	32	6.5	5	55	8	40	61.5	73	aluminium	72
455.54-M	40	6.5	7	60	8	45	70.0-75.0	85	aluminium	104
455.55-M	63	8,5	7,5	55	7,5	-	78	103	aluminium	330




Fixing parts and accessories
Rodless cylinders
Sensors
Dimensions [mm]

Type No.	Piston Ø	Designation
235.03-M	16-63	DSL reed sensor, 2-wire, NO, 2.5 m
235.04-M	16-63	DSL reed sensor, 2-wire, NO, 300 mm, M8 plug





235.03-M



235.04-M

Sensor support
Dimensions [mm]

Type No.	Piston Ø	Designation	Material
455.05-M	16-25	Long version for mounting opposite the piston guide	aluminium



455.05-M

Plastic strip (500 mm)
Dimensions [mm]

Type No.	Piston Ø	Material
455.06-M	16-63	PVC



455.06-M

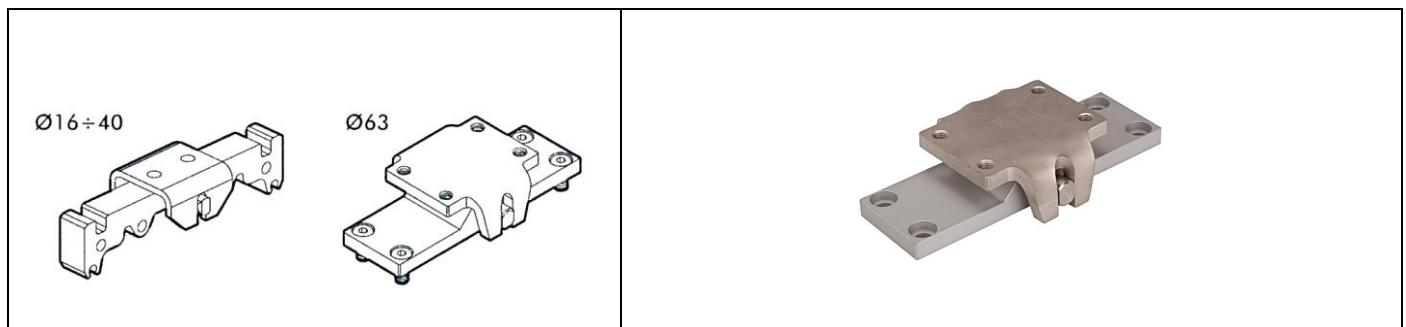
Fixing parts and accessories

Rodless cylinders

Swing support

Dimensions [mm]

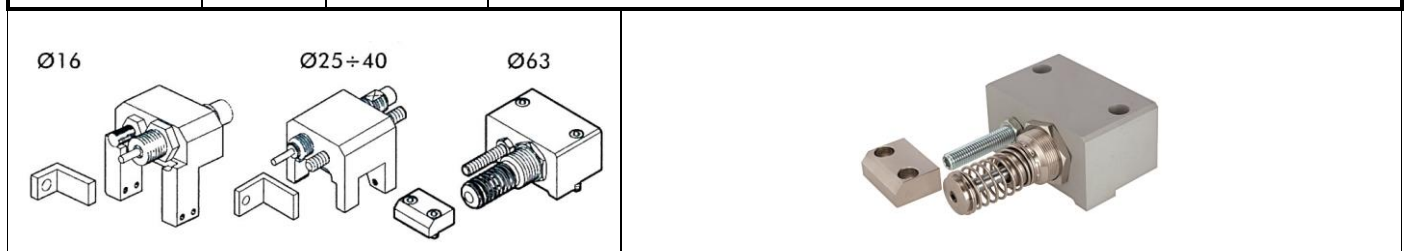
Type No.	Piston Ø	Weight [g]	Material
455.21-M	16	34	aluminium + steel
455.22-M	25	118	aluminium + steel
455.23-M	32	450	aluminium + steel
455.23-M	40	450	aluminium + steel
455.25-M	63	810	aluminium + steel



Adjustable limit switch and shock absorber

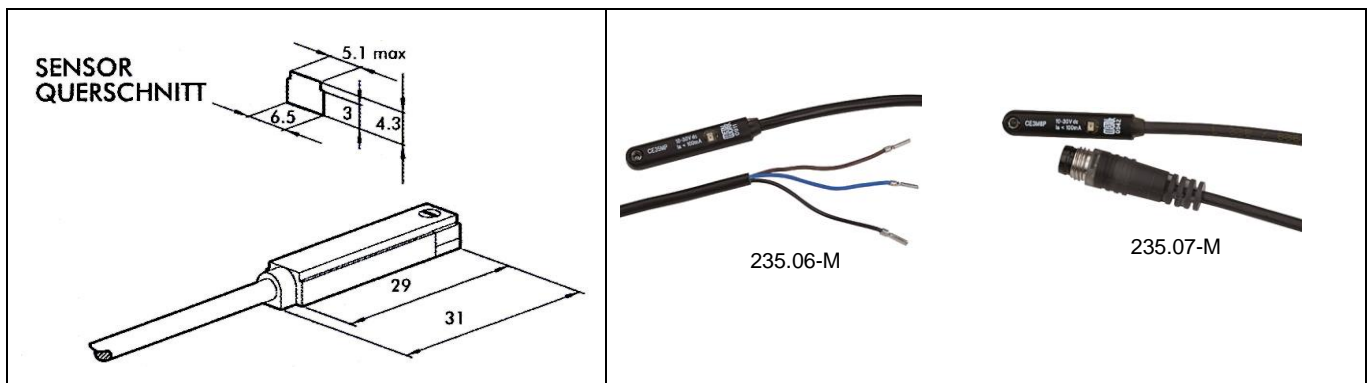
Dimensions [mm]

Type No.	Piston Ø	Weight [g]	
455.31-M	16	125	
455.32-M	25	260	
455.33-M	32	460	
455.34-M	40	730	
455.35-M	63	1620	



Fixing parts and accessories
Rodless cylinders
DSL reed sensor
Dimensions [mm]

Type No.	Piston Ø	Designation
235.06-M	16 - 63	Hall sensor, 3-wire, with 2.5 m cable length
235.07-M	16 - 63	Hall sensor, 3-wire, with M8 plug (3-pin)



Ordering information

Type No.	Art. No.
455.11-M	106364
455.12-M	106365
455.13-M	106366
455.14-M	106367
455.15-M	106368
455.51-M	106369
455.52-M	106370
455.53-M	106371
455.54-M	106372
455.55-M	106373
455.21-M	106374
455.22-M	106375
455.23-M	106376
455.25-M	106377
455.31-M	106378
455.32-M	106379
455.33-M	106380
455.34-M	106381
455.35-M	106382
235.03-M	105748
235.04-M	105749
235.06-M	105750
235.07-M	105751
455.05-M	106383
455.06-M	106384