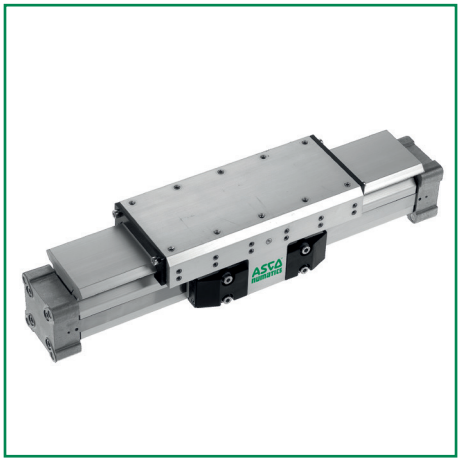
RODLESS BAND CYLINDERS

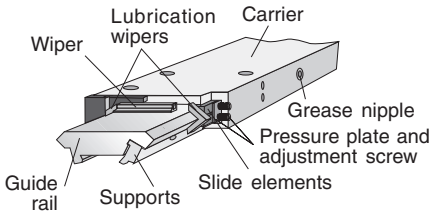
Ø 16 - 80 mm - double acting
with carrier and plain bearing guide
equipped for magnetic detectors

Series **448**
Type STB

SPECIFICATIONS

FLUID	: air or neutral gas, filtered, unlubricated
PRESSURE	: 8 bar max.
TEMPERATURE	: - 10°C, + 80°C
STROKE min.	: 5 mm (without detectors)
	: 100 mm (with detectors)
max. standard	: see below (contact us for longer strokes)
MAXIMUM VELOCITY	: 0,2 to 4 m/sec





CONSTRUCTION

Tube	: Anodised aluminium
Ends	: Anodised aluminium
Carrier (piston)	: Anodised aluminium
Piston seals	: Nitrile (NBR)
Piston brackets	: High resistance stamped steel
Bands	: Stainless steel
Magnet	: Placed inside the piston
Covers, wipers	: Plastic
Screws	: Galvanised steel
Cushioning	: with air, adjustable
Slide elements	: adjustable, sintered material
Guide rail	: Anodised aluminium, prism shaped

CHOICE OF EQUIPMENT

Ø Cylinder (mm)	CYLINDER EQUIPPED FOR DETECTOR CODE(2)	REFERENCE	Max. allowable stroke (mm)	Pipe size	Cushioning length (mm)
16	**44850008** (1)	STB 16 A - 0(3) -_(1)_ - DM	5500	M5	11
25	**44850009** (1)	STB 25 A - 0(3) -_(1)_ - DM	5500	G 1/8	17
32	**44850010** (1)	STB 32 A - 0(3) -_(1)_ - DM	5500	G 1/4	20
40	**44850011** (1)	STB 40 A - 0(3) -_(1)_ - DM	5500	G 1/4	27
50	**44850012** (1)	STB 50 A - 0(3) -_(1)_ - DM	5500	G 1/4	30
63	**44850013** (1)	STB 63 A - 0(3) -_(1)_ - DM	5500	G 3/8	32
80	**44850014** (1)	STB 80 A - 0(3) -_(1)_ - DM	5500	G 1/2	39

For other strokes, consult us.
(1) Specify stroke (in mm)
(2) Position detectors are to be ordered separately
(3) 1 for slow speed option

MOUNTINGS

Ø Cylinder (mm)	CODE  Low foot brackets (4)
16	**43400493**
25	**43400494**
32	**43400495**

Ø Cylinder (mm)	CODE  Flanges
40	**43400496**
50	**43400497**
63	**43400498**
80	**43400499**

Delivered with 2 foot brackets or 2 flanges plus cylinder mounting screws.
The mountings are delivered non assembled.
(4) Foot brackets for cylinders Ø 25 and 32 allow height adjustment.

ACCESSORIES

- **Tube support** (recommended to avoid buckling, depending on the stroke and load)
- Shock absorbers
- Magnetic detectors: Reed switch or magneto-inductive type

OPTIONS

- Slow speeds from 5 mm/s to 0,2 m/s - code: Ø 16 : **995082** Ø 25 : **995083** Ø 32 : **995084** Ø 40 : **995085** Ø 50 : **995086** Ø 63 : **995087** Ø 80 : **995088**

(When selecting this option, you will have to change the cylinder reference to: STB .. A **1** ... DM)

- Pressure supply ports on same side as guide rail (contact us)

Selecting the appropriate band cylinder is simple. The information you need includes:
- the stroke,
- the force required for moving the load,
- the weight of the load,
- the position of the load (centered on the carrier or elsewhere),
- the final or average velocity.

How to select

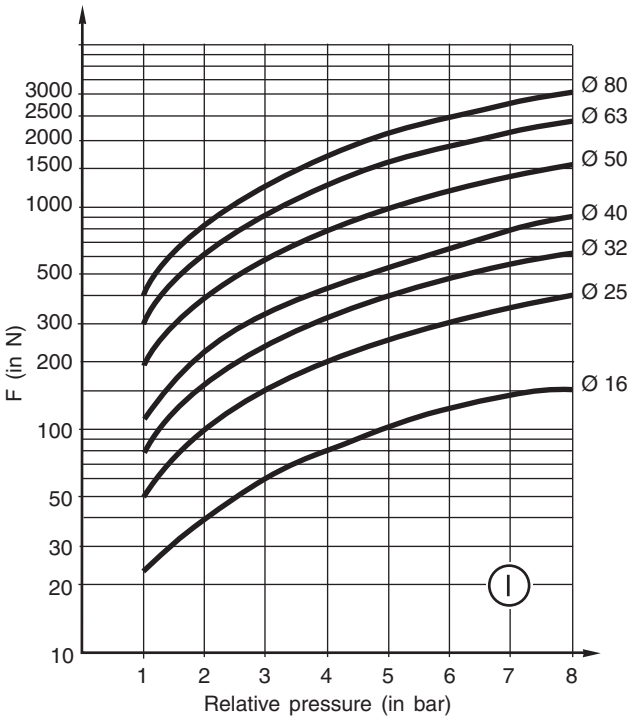
Graph (I) represents the theoretical force at various pressures. For the most efficient use of a cylinder, it is recommended to use a load rate of 70 %: the force needed to move the load therefore corresponds to 70% of the theoretical force.

After defining the cylinder diameter, you must determine if the cylinder's internal cushions may be used.

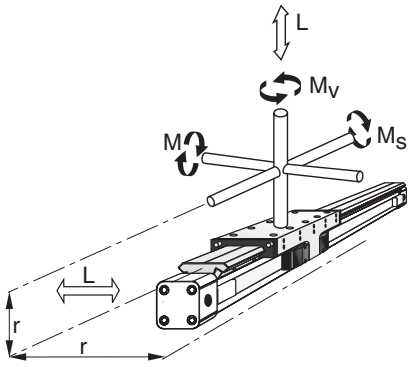
Allowable bending moments

A bending moment will occur if the load is not centered on the carrier (see bending moment data below).

THEORETICAL FORCE AT VARIOUS PRESSURES



ALLOWABLE BENDING/TWISTING MOMENTS



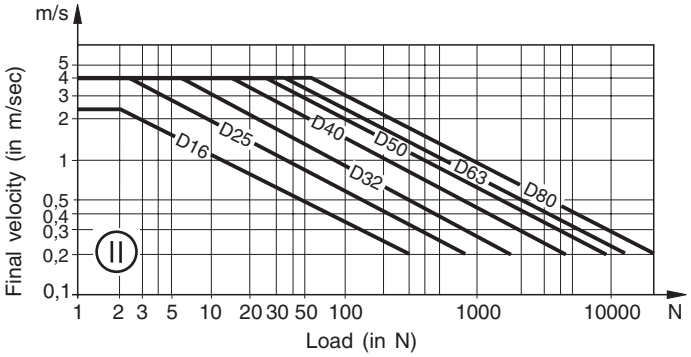
Cushioning capacity

Graph (II) is used to determine the type of cushioning needed. If the intersection point of the final velocity and the load falls below the curves, the internal cushions are adequate. If this is not the case, you must either choose a larger cylinder with greater cushion capacity, or use the shock absorbers which are available as an accessory. If you have determined that the internal cushions would be used near their maximum capacity **and** there is highly intense movement, it would be wise to use the optional shock absorbers.

OTHER ACCESSORIES:

- Tube support brackets: **You must determine if intermediate tube support brackets are required**, depending on the weight of the charge and the stroke. (see chart on tube support sheet).
- Reed switch or magneto-inductive detectors for position control.

CUSHION DATA



The velocities indicated in graph (II) represent **final velocities**.

To properly determine the inertial forces for cushioning, it is important to know the **final velocity**.

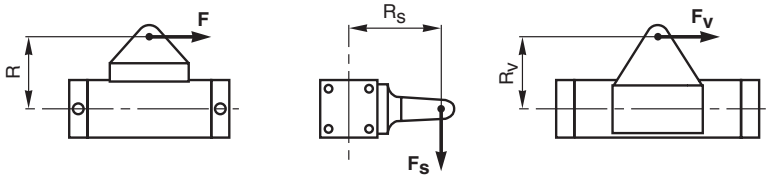
If final (or impact) velocity cannot be calculated directly, a reasonable guideline is:

Final V = 1,5 x average velocity

Ø Cylinder (mm)	Bending moments (in N.m)			Load (in N)
	M	**M_S**	**M_V**	**L**
16	11	6	11	325
25	34	14	34	675
32	60	29	60	925
40	110	50	110	1500
50	180	77	180	2000
63	260	120	260	2500
80	260	120	260	2500

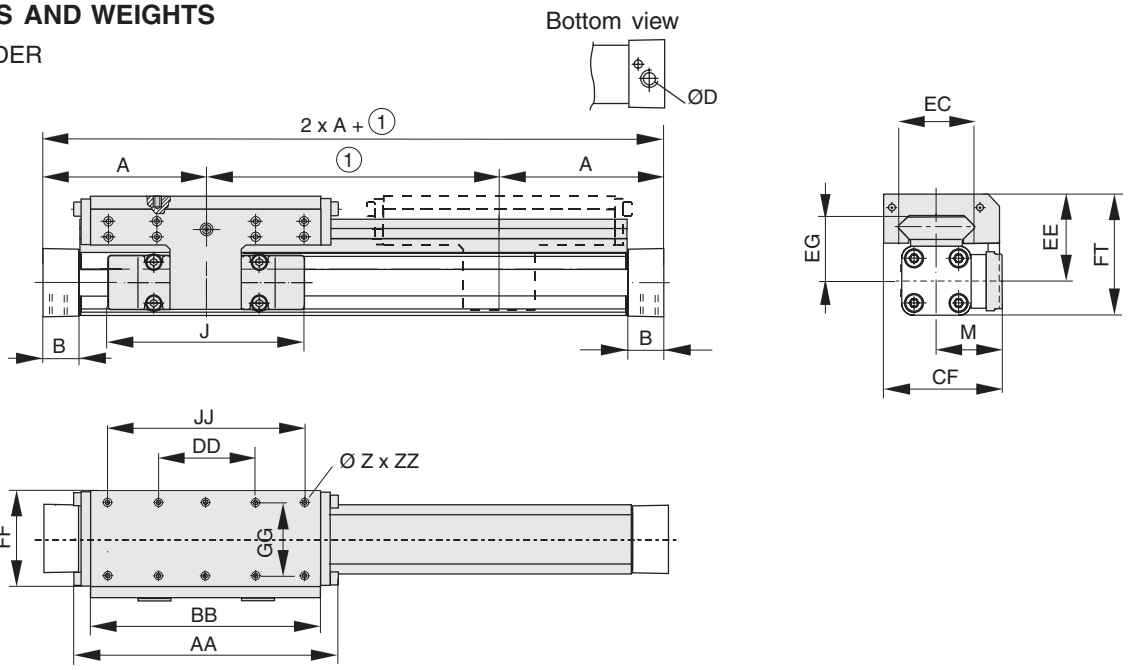
Note: When using the cushioning diagram, be sure to add the weight of the carrier (and that of the brake) to the weight of the load to be moved.

The maximum allowable values for loads, forces and moments are shown in the adjacent table. No dynamic calculation is needed for speeds up to 0,2 m/s.



DIMENSIONS AND WEIGHTS

BARE CYLINDER



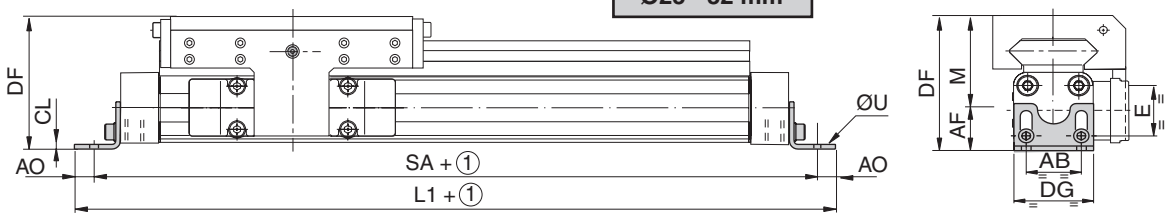
① : stroke

Bore (mm)	DIMENSIONS (mm)																		Weights (kg)		
	A	B	D	J	M	Z	AA	BB	DD	CF	EC	EE	EG	FF	FT	GG	JJ	ZZ	(1)	(2)	carrier
16	65,2	14	M5	69	31	M4	106	88	30	55	36	40	30	48	55	36	70	8	0,57	0,22	0,23
25	100,4	22	G1/8	117	40,5	M6	162	142	60	72,5	47	53	39	64	73,5	50	120	12	1,55	0,39	0,61
32	125,2	25,5	G1/4	152	49	M6	205	185	80	91	67	62	48	84	88	64	160	12	2,98	0,65	0,95
40	150	28	G1/4	152	55	M6	240	220	100	102	77	64,3	50	94	98,8	78	200	12	4,05	0,78	1,22
50	175	33	G1/4	200	62	M6	284	264	120	117	94	75	56	110	118,5	90	240	16	6,72	0,97	2,06
63	215	38	G3/8	256	79	M8	312	292	130	152	116	86	66	152	139	120	260	14	11,66	1,47	3,32
80	260	47	G1/2	348	96	M8	312	292	130	168	116	99	79	152	165	120	260	13	15,71	1,81	3,32

(1) Weight with 0 mm stroke
(2) Weight to be added per additional 100 mm length

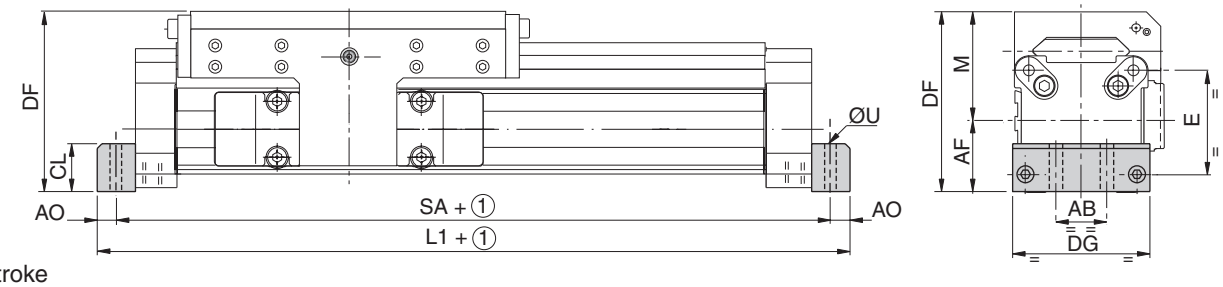
CYLINDER WITH MOUNTING **BRACKETS**

Ø25 - 32 mm



CYLINDER WITH MOUNTING **FLANGES**

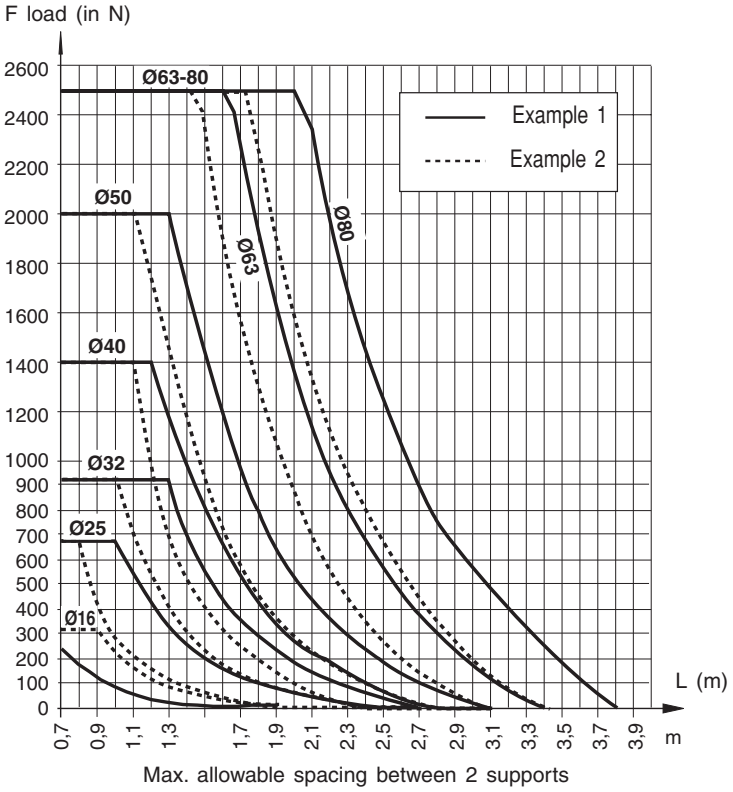
Ø40 - 50 mm



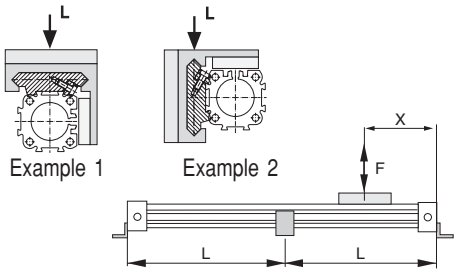
① : stroke

Bore (mm)	DIMENSIONS (mm)										Weights (kg)	
	AB	AF min	AF max	A0	CL	DF min	DF max	DG	E	L1	M	SA	U	Brackets	Flanges
16	18	15		4	1,6	55		26	18	158,4	40	150,4	3,6	0,017	-
25	27	22,7	32,3	9,5	2,5	75,7	85,3	39	27	250,8	53	231,8	6,6	0,072	-
32	36	32,5	45,2	9,3	3	94,5	107,2	50	36	292,4	62	273,8	7	0,117	-
40	30	35,2		11,3	24	99,9		68	54	348	64,3	325,4	9	-	0,210
50	31,8	46		16,2	30	121		86	70	398	75	365,6	10	-	0,308
63	48	60,7		15	40	146,7		104	78	490	86	460	11	-	0,674
80	60	72		17,5	50	171		130	96	590	99	555	14	-	1,218

For certain strokes and loads, it is necessary to use tube support brackets for intermediate support. The graph below is used to determine the maximum allowable support spacings depending on the load and the number of supports required.
These supports are made of treated light alloy and are designed to fit into the dovetail grooves which run the length of the cylinder tube.



Max. allowable spacing between 2 supports



Number of supports needed (n) given that the cylinder is fixed on the ends.

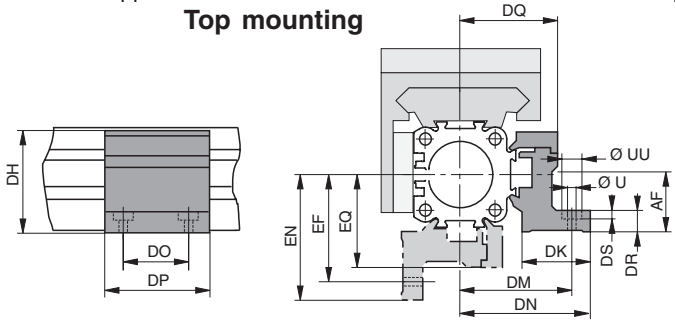
$$n = \left(\frac{\text{Stroke} + 2\ X}{L}\right) - 1$$

n = whole number, rounded up.
X = value in mm, mentioned with general cylinder dimensions
L = max. distance defined in the adjacent graph.

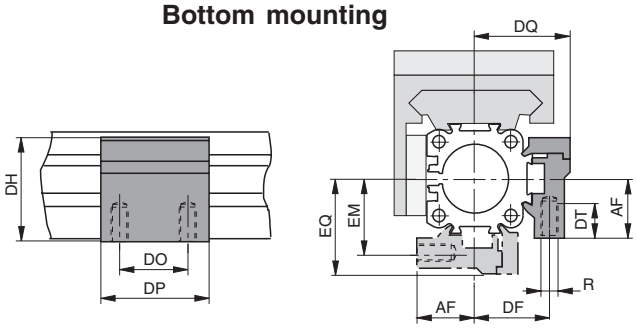
CHOICE OF EQUIPMENT

The tube supports must be mounted into the dovetail rails on the cylinder as shown below.

Top mounting



Bottom mounting



Bore (mm)	CODE	Weights (kg)
16	**43400500**	0,029
25	**43400501**	0,130
32	**43400502**	0,160
40	**43400503**	0,161
50	**43400504**	0,189
63	**43400505**	0,300
80	**43400506**	0,650

Bore (mm)	CODE	Weights (kg)
16	**43400507**	0,026
25	**43400508**	0,061
32	**43400509**	0,073
40	**43400510**	0,140
50	**43400511**	0,169
63	**43400512**	0,236
80	**43400513**	0,552

DIMENSIONS

Bore (mm)	DIMENSIONS (mm)																			
	R	**U**	**UU**	**AF**	**DF**	**DH**	**DK**	**DM**	**DN**	**DO**	**DP**	**DQ**	**DR**	**DS**	**DT**	**EF**	**EM**	**EN**	**EQ**
16	M3	3,4	6	15	20	29,2	24	32	36,4	18	30	27	6	3,4	6,5	32	20	36,4	**27**
25	M5	5,5	10	25	27	41	26	40	47,5	36	50	34,5	11	5,7	10	41,5	28,5	49	36
32	M5	5,5	10	33	33	49	27	46	54,5	36	50	40,5	13	5,7	10	48,5	35,5	57	43
40	M6	7	-	35,2	35	58,2	34	53	60	45	60	45	7,2	-	11	56	38	63	48
50	M6	7	-	46	40	69	34	59	67	45	60	52	8	-	11	64	45	72	57
63	M8	9	-	60,7	47,5	94,7	44	73	83	45	65	63	15,7	-	16	79	53,5	89	69
80	M10	11	-	72	60	111,5	63	97	112	55	80	81	15	-	25	103	66	118	87