



Industrie-shock absorbers

hydraulic

SOMMER
automatic

Shock absorbers

PowerStop

Order no.:	Stroke [mm]	Energy absorption/ Stroke [Nm]	Impact speed min./max. [m/s]	effectiv mass max./min. [kg]	Page
M6x0.5S	4	1	2,0/3,0	0,5/0,2	8
M6x0.5M	4	1	1,2/2,5	1,4/0,3	8

PowerStop

Order no.:	Stroke [mm]	Energy absorption/ Stroke [Nm]	Impact speed min./max. [m/s]	effective mass max./min. [kg]	Page
M8x0.75S	5	3,5	2,0/3,5	1,7/0,6	10
M8x0.75M	5	3,5	1,2/2,5	4,8/1,1	10
M8x1S	5	3,5	2,0/3,5	1,7/0,6	10
M8x1M	5	3,5	1,2/2,5	4,8/1,1	10

PowerStop

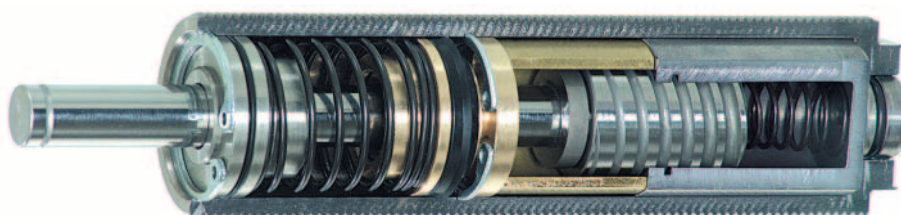
Order no.:	Stroke [mm]	Energy absorption/ Stroke [Nm]	Impact speed min./max. [m/s]	effective mass max./min. [kg]	Page
M10x1S	8	10	2,0/4,0	5/1	12
M10x1M	8	10	1,2/2,2	14/4	12
M10x1H	8	10	0,2/1,4	500/10	12

PowerStop

Order no.:	Stroke [mm]	Energy absorption/ Stroke [Nm]	Impact speed min./max. [m/s]	effectiv mass max./min. [kg]	Page
M12x1S	10	16	2,0/5,0	85/1	14
M12x1M	10	16	1,2/2,2	22/7	14
M12x1H	10	16	0,2/1,4	800/16	14

PowerStop

Order no.:	Stroke [mm]	Energy absorption/ Stroke [Nm]	Impact speed min./max. [m/s]	effectiv mass max./min. [kg]	Page
M14x1S	12	31	2,0/5,0	16/2	16
M14x1M	12	31	1,2/2,2	43/13	16
M14x1H	12	31	0,2/1,4	1550/32	16
M14x1.5S	12	31	2,0/5,0	16/2	16
M14x1.5M	12	31	1,2/2,2	43/13	16
M14x1.5H	12	31	0,2/1,4	1550/32	16



NotStop PowerStop

Order no.:	Stroke [mm]	Energy absorption/ Stroke [Nm]	Impact speed min./max. [m/s]	effectiv mass max./min. [kg]	Page
M20x1.5S	15	70	1,8/4,5	43/7	18
M20x1.5M	15	70	1,0/2,0	140/35	18
M20x1.5H	15	70	0,2/1,2	3500/97	18
M20x1.5SN	15	150	1,8/4,5	93/15	18
M20x1.5MN	15	150	1,0/2,0	300/75	18
M20x1.5HN	15	150	0,2/1,2	7500/208	18

NotStop PowerStop

Order no.:	Stroke [mm]	Energy absorption/ Stroke [Nm]	Impact speed min./max. [m/s]	effectiv mass max./min. [kg]	Page
M25x1.5S	25	210	1,4/4,0	214/26	20
M25x1.5M	25	210	0,6/1,8	1167/130	20
M25x1.5H	25	210	0,2/0,8	10500/656	20
M25x1.5SN	25	550	1,4/4,0	561/69	20
M25x1.5MN	25	550	0,6/1,8	3056/340	20
M25x1.5HN	25	550	0,2/0,8	27500/1719	20

NotStop PowerStop

Order no.:	Stroke [mm]	Energy absorption/ Stroke [Nm]	Impact speed min./max. [m/s]	effectiv mass max./min. [kg]	Page
M33x1.5S	30	320	1,4/3,5	327/52	22
M33x1.5M	30	320	0,6/2,0	1778/160	22
M33x1.5H	30	320	0,2/0,8	16000/1000	22
M33x1.5SN	30	900	1,4/3,5	918/147	22
M33x1.5MN	30	900	0,6/2,0	5000/450	22
M33x1.5HN	30	900	0,2/0,8	45000/2813	22

NotStop PowerStop

Order no.:	Stroke [mm]	Energy absorption/ Stroke [Nm]	Impact speed min./max. [m/s]	effectiv mass max./min. [kg]	Page
M45x1.5S	25	650	1,4/3,5	663/106	24
M45x1.5M	25	650	0,6/1,6	3611/508	24
M45x1.5H	25	650	0,2/0,7	32500/2653	24
M45x1.5SN	25	1500	1,4/3,5	1531/245	24
M45x1.5MN	25	1500	0,6/1,6	8333/1172	24
M45x1.5HN	25	1500	0,2/0,7	75000/6122	24

NotStop PowerStop

Order no.:	Stroke [mm]	Energy absorption/ Stroke [Nm]	Impact speed min./max. [m/s]	effectiv mass max./min. [kg]	Page
M45x1.5LS	50	1.300	1,4/3,5	1327/212	26
M45x1.5LM	50	1.300	0,6/1,6	7222/1016	26
M45x1.5LH	50	1.300	0,2/0,7	65000/5306	26
M45x1.5LSN	50	3.000	1,4/3,5	3061/490	26
M45x1.5LMN	50	3.000	0,6/1,6	16667/2344	26
M45x1.5LHN	50	3.000	0,2/0,7	150000/12245	26

Shock absorbers

➤ Features

- smooth braking (without sudden cross section constrictions)
- higher power absorption by max. capacity use in each piston position
- individual manual adjustment for each matter of application
- small construction space by substancial higher energy absorption
- minimum consumption rates by optimal bearing
- insertion in pneumatic pressure chamber possible (PowerStop)
- higher operation safety and longer life by oil reserve (PowerStop)

The care of the PowerStop: the spiral groove as the absorbency principle...

In contrast to the customary industrial impact damper the exhausting channel(throttle) at our Power Stop is directly incorporated in the piston. By its continious conicity (spiral groove) there is a dynamic force over the total stroke and a maximum energy absorption at minimum power. By the spiral groove a lubricating film in form of a classical hydrostatic slide bearing is built up between the piston and high-pressure tube. The technogical improvement is evident.

Series

PowerStop[®]

Industrial damper execution for the employment under constant load. High energy absorption, small construction form, durability and the possibility of insertion in pneumatic pressure chamber distinguish the PowerStop.

NotStop[®]

Miniature industrial shock absorbers. Highest efficiency on smallest space guaran-teeed by the spiral groove technology.

Model

The wide spectrum - low speeds at big masses upto quick speeds at small masses - at same energy absorption per stroke will be subdivided into three groups.

Typ S (SOFT)

Execution for high impact speed. Preferably at free falling masses.

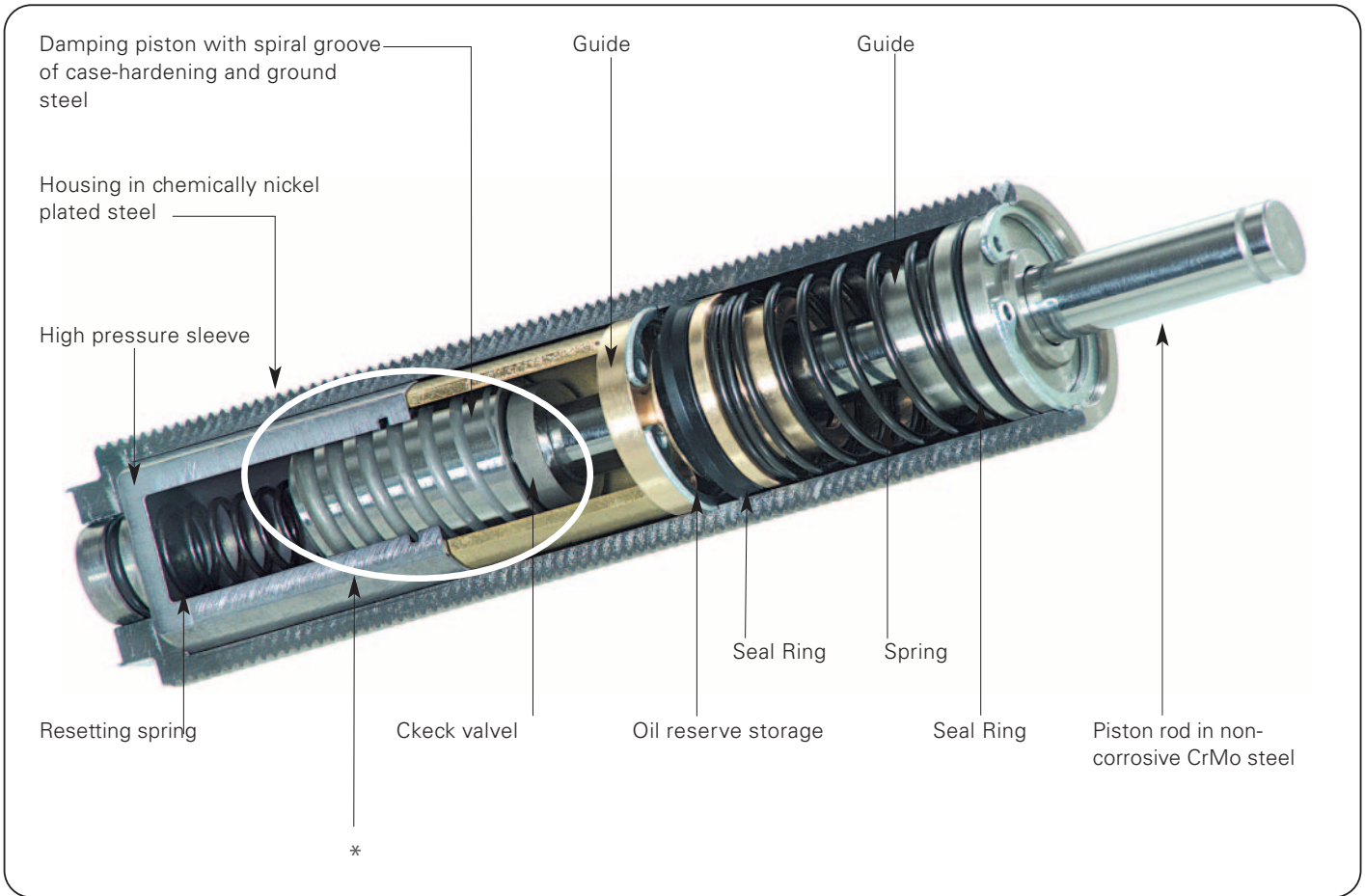
Typ M (MEDIUM)

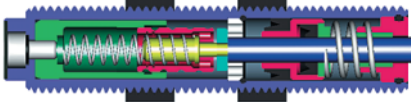
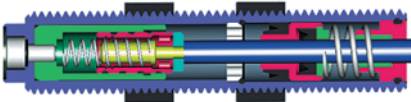

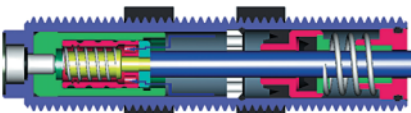
Execution for medium impact speed. Employment, e.g. at quick pneumatic driven masses.

Typ H (HART)

Execution for slow impact speed. Employment at slow (reduced) PowerStop and EmergencyStop only movements.

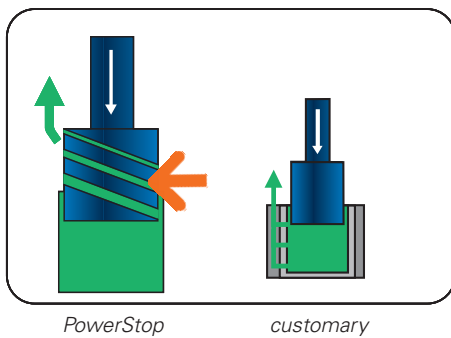
Functional diagram



* Operational Sequence of Spiral Groove Technology	The safety concept
 <p>Basic position: In this position the retaining valve is opened</p>	<p>Our impact dampers are constantly examined by quality tests close to reality.</p>
 <p>Moving-in position: The retaining valve closes, the oil is flowing over the spiral groove into the reservoir store</p>	<p>The piston rod of stainless steel with best surface guarantees a minimum of wear out at a maximum life. Smallest unavoidable losses of oil will be compensated by an integrated oil reservoir!</p>
 <p>Final position</p>	<p>Tube and piston of high-tensile case hardened! For extreme charges upto 1000 bar.</p>
 <p>Resetting: The retaining valve opens and provides the quick return flow of oil (blue arrows)</p>	<p>Tube and Casing separately! By separation of the tube from the casing we also guarantee at the maximum tightening moment of the counter nut the perfect operation of the impact damper.</p>

Shock absorbers

Damping with Spiral Groove Technology



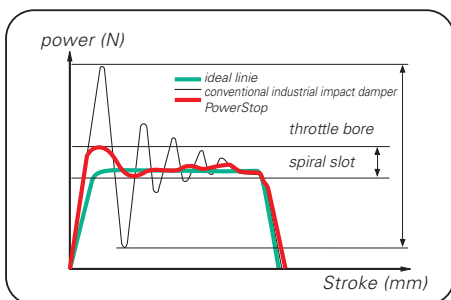
An industrial impact damper of conventional design squeezes the oil out by the throttle bores which are inserted on one side of a tube. The oil will be forced-diverted and enormously strained by the high impact speed.

Top compressions are producing vibration and are reducing the life of elements involved at the damping process. The damping behaviour will be destined by the number of throttle bores, the energy absorption is restricted.

The exhausting channel of the PowerStop is directly inserted in the piston as spiral groove. During damping the piston dives into the oil bath and picks up over the exhausting channel the oil to be squeezed. The mechanical strain of the oil remains low because of the rotary rising spiral groove. The section form allows a continuous throttle activity and guarantees a smooth damping.

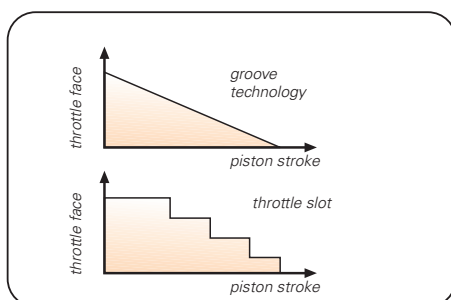
The result is a maximum energy absorption across the entire damping stroke!

Ideal Damping Characteristic



The new Damping curve

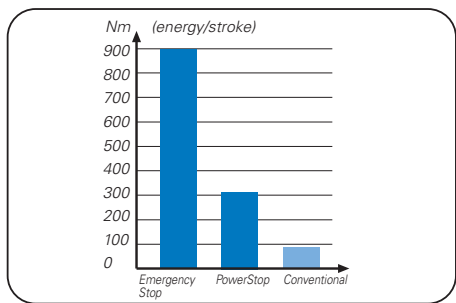
The PowerStop approaches with its damping course to the ideal line of an industrial impact damper. By the special sectioned groove a smooth energy absorption will be started, the variation of the braking power is low. So, an exact positioning will be ensured also with extreme quick damping cycles with a short stroke.



The characteristic curve of the spiral groove shows a continuous course of the throttle cross-section over the entire piston stroke. By this, in each piston position an ideal chocking is realized and the energy absorption optimized. The masses to be moved can be smoothly and safely positioned, also with slow speeds. A further important advantage results by the STROKE-COURSE-ADJUSTMENT. In case the screw-in depth will be modified, the damping characteristic can be adapted individually to matter of application.

Throttle bores, however, are producing a graduated characteristic curve with strong variations in the energy absorption!

Triple Energy Absorption



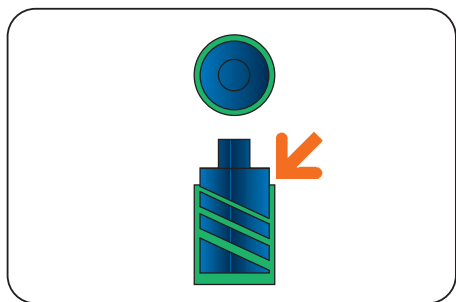
By the spiral groove technology the energy absorption will be tripled in comparison to the conventional type with throttle bores (under comparable test conditions).

The diagram shows the energy absorption at the example of construction series: M33 x 1.5, stroke 30 mm!

result:

- higher energy absorption
- smaller construction series

Hydrostatic Piston Guidance by Spiral Groove Technology



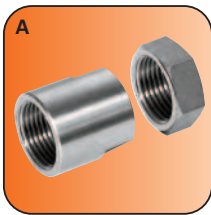
The piston of the PowerStop diving in the oil bath produces during damping process a hydrostatic slide bearing between piston and tube by the symmetric axis of the integrated spiral groove. The sliding film separates the movable elements during damping process. High life expectancy, maintenance-free and reliability guarantee a high production safety.

Shock absorbers

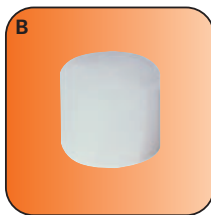


PowerStop

Accessory list



Stop sleeve VA-steel
Order no. MAH6x0.50

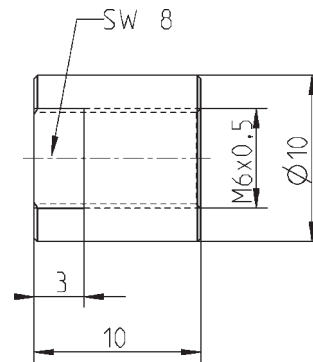


Plastic head
Order no. MKK6

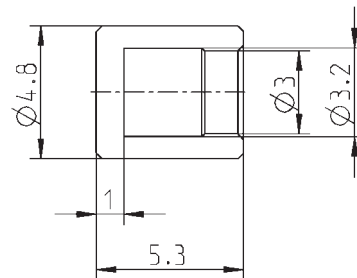


Cooling nut aluminium
on request

Stop sleeve



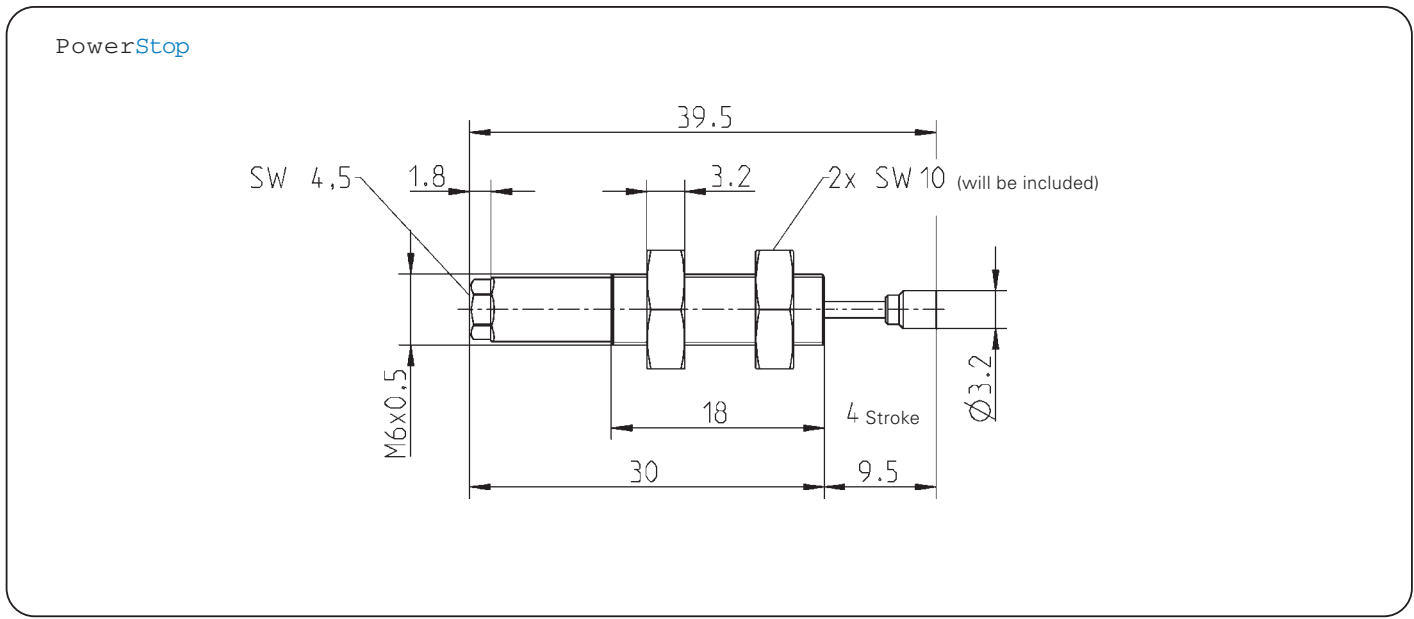
Head



Subject to change without prior notice

PowerStop Order no.:	M6x0.5S	M6x0.5M
Energy absorption per stroke [Nm]:	1,0	1,0
Energy absorption per hour [Nm/h]:	2.400	2.400
Stroke [mm]:	4	4
Min./max. Impact speed [m/s]:	2,0/3,0	1,2/2,5
Piston reset time [s]:	0,2	0,2
Min./max. resetting force [N]:	1/3	1/3
Max./min. effective mass* max./min. [kg]:	0,5/0,2	1,4/0,3
Weight [g]:	10	10

* Actual mass as comparative value to customary industrial impact damper.



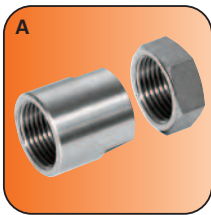
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Shock absorbers

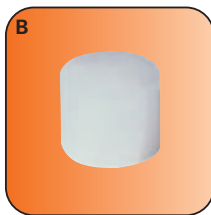


PowerStop

Accessory list



A
Stop sleeve VA-steel
Order no. MAH8x0.75
Order no. MAH8x1

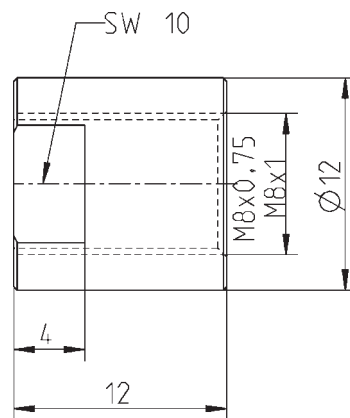


B
Plastic head
Order no. MKK8

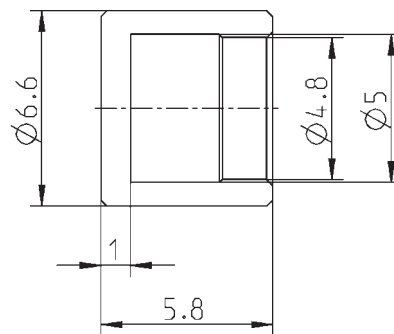


Cooling nut aluminium
on request

Stop sleeve



Head

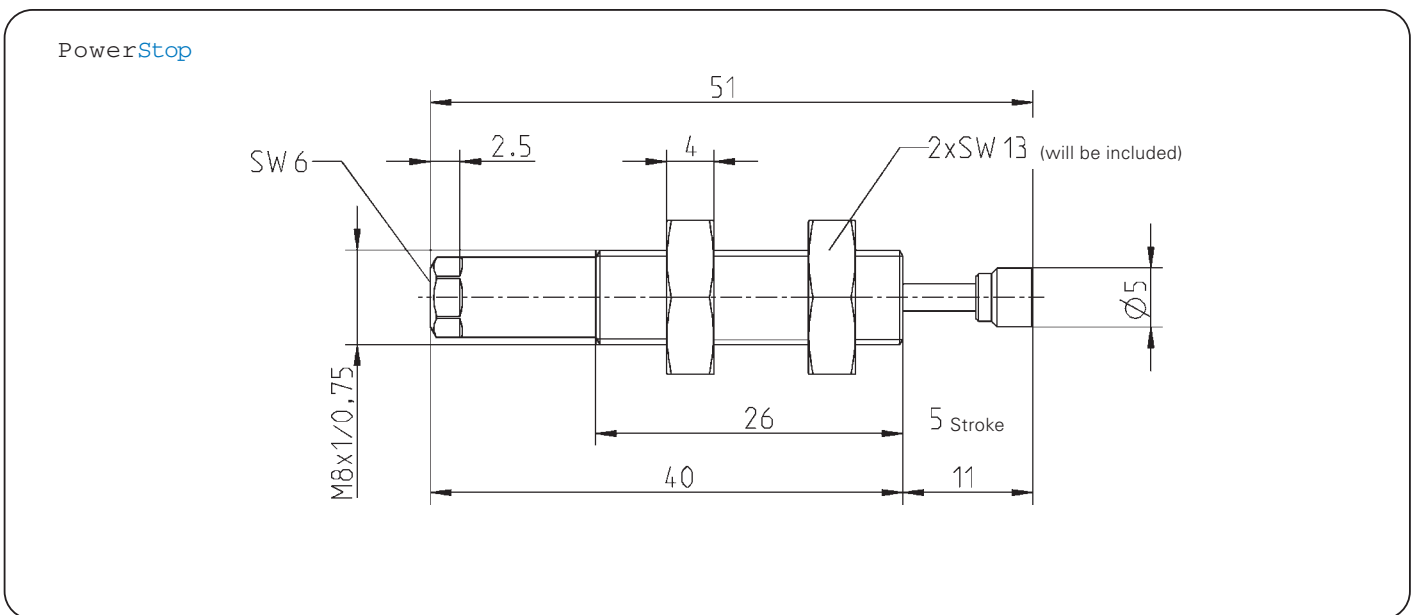


Subject to change without prior notice



Order no.:	M8x0.75S	M8x0.75M	M8x1S	M8x1M
Energy absorption per stroke [Nm]:	3,5	3,5	3,5	3,5
Energy absorption per hour [Nm/h]:	12.600	12.600	12.600	12.600
Stroke [mm]:	5	5	5	5
Min./max. Impact speed [m/s]:	2,0/3,5	1,2/2,5	2,0/3,5	1,2/2,5
Piston reset time [s]:	0,2	0,2	0,2	0,2
Min./max. resetting force [N]:	1/3	1/3	1/3	1/3
Max./min. effective mass* [kg]:	1,7/0,6	4,8/1,1	1,7/0,6	4,8/1,1
Weight [g]:	10	10	10	10

* Actual mass as comparative value to customary industrial impact damper.



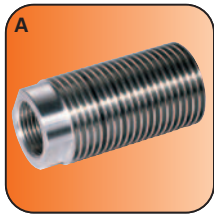
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Shock absorbers

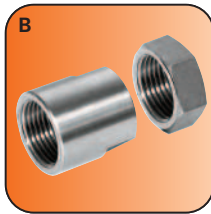


PowerStop

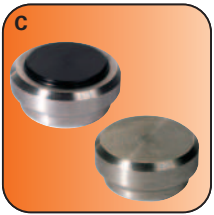
Accessory list



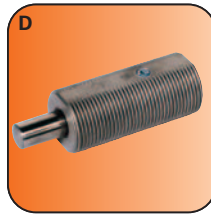
Cooling nut aluminium
Order no. MKM10x1



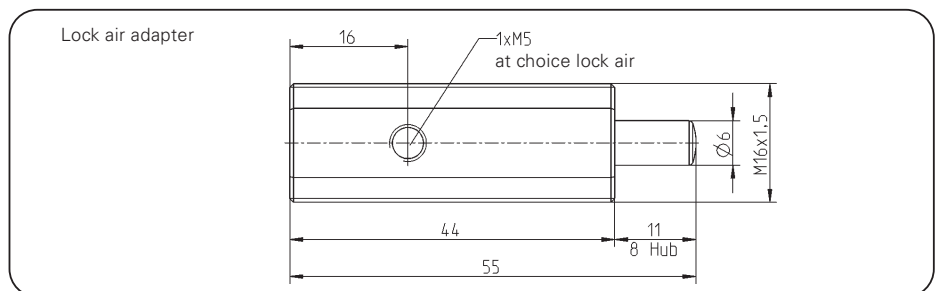
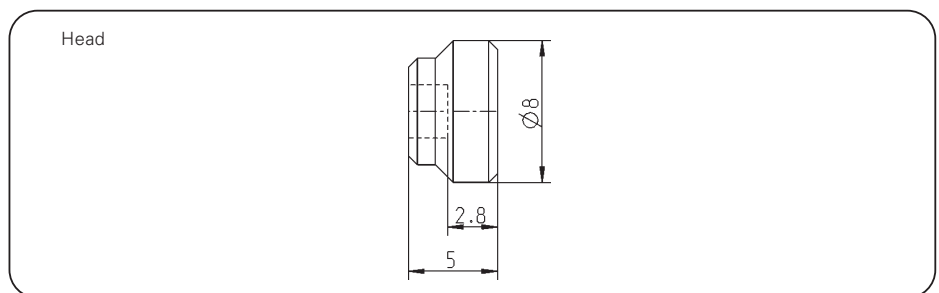
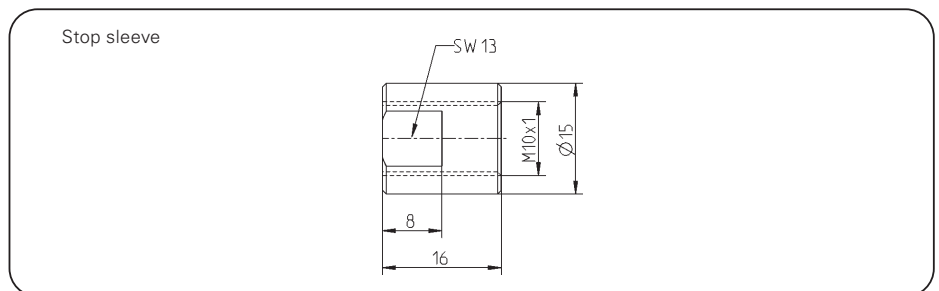
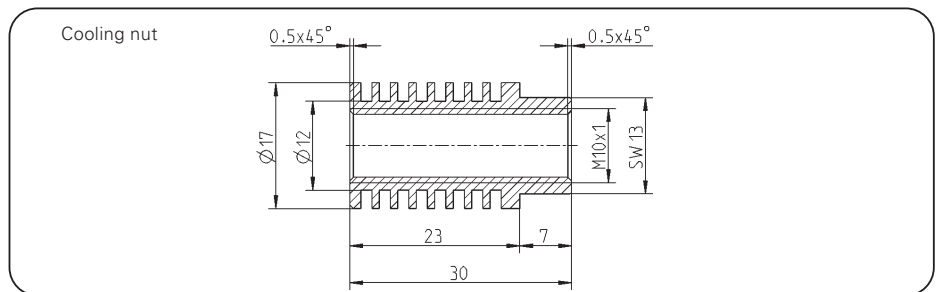
Stop sleeve VA-steel
Order no. MAH10x1



Head plastic /steel
Order no. MKK10
Order no. MKS10



Lock air adapter
bolt pre-supporting
Order no. MRA10x1

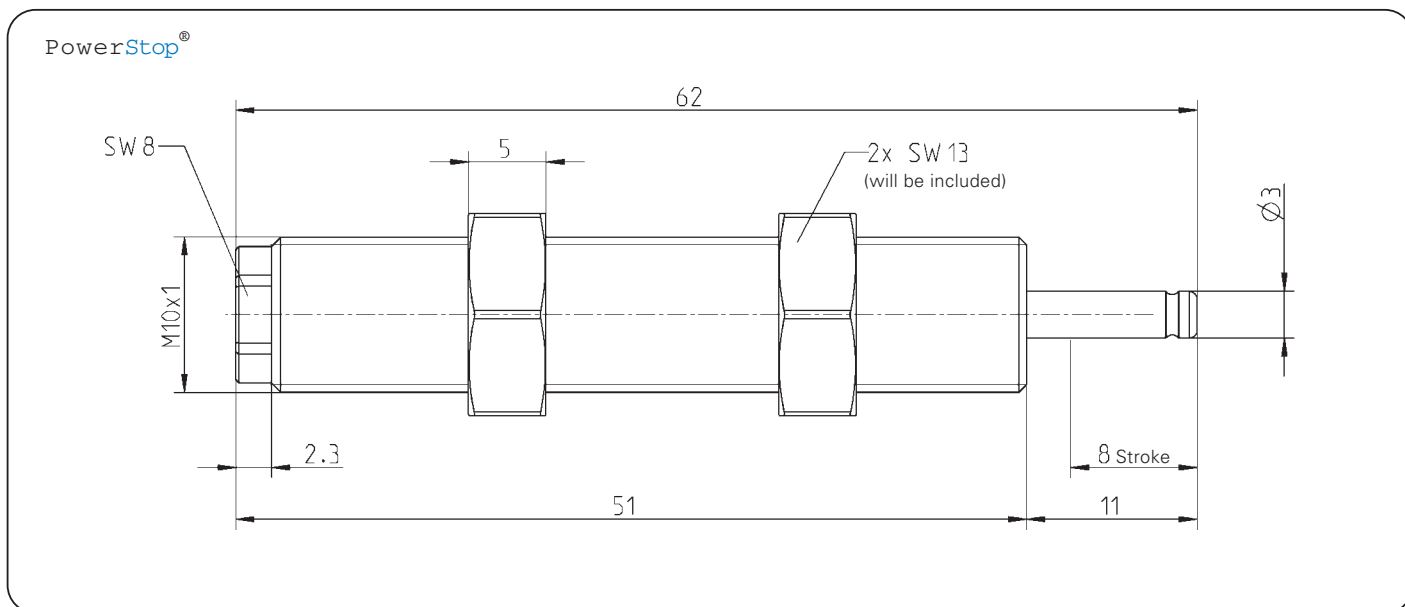


Subject to change without prior notice



PowerStop® Order no.:	M10x1S	M10x1M	M10x1H
Energy absorption per stroke [Nm]:	10	10	10
Energy absorption per hour [Nm/h]:	16.000	16.000	16.000
Stroke [mm]:	8	8	8
Min./max. Impact speed [m/s]:	2,0/4,0	1,2/2,2	0,2/1,4
Piston reset time [s]:	0,2	0,2	0,2
Min./max. resetting force [N]:	6/12	6/12	6/12
Max./min. effective mass* [kg]:	5/1	14/4	500/10
Weight [g]:	20	20	20

* Actual mass as comparative value to customary industrial impact damper.



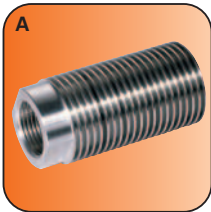
Subject to change without prior notice

Shock absorbers

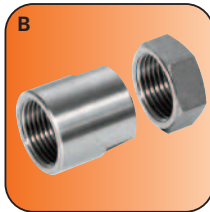


PowerStop

Accessory list



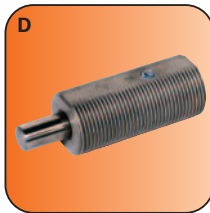
Cooling nut aluminium
Order no. MKM12x1



Stop sleeve VA-steel
Order no. MAH12x1

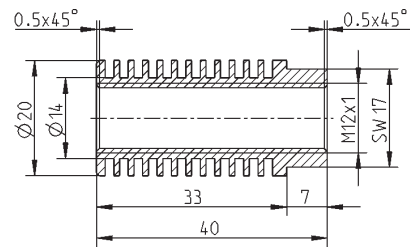


Head plastic/steel
Order no. MKK12
Order no. MKS12

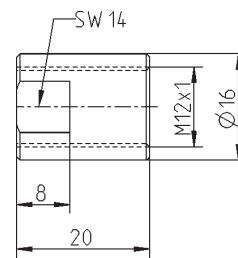


Lock air adapter
bolt pre-supporting
Order no. MRA12x1

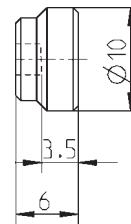
Cooling nut



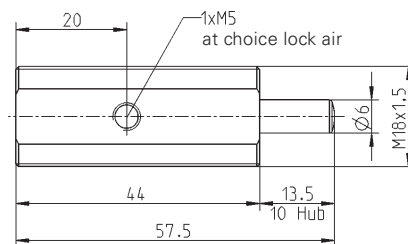
Stop sleeve



Head



Lock air adapter

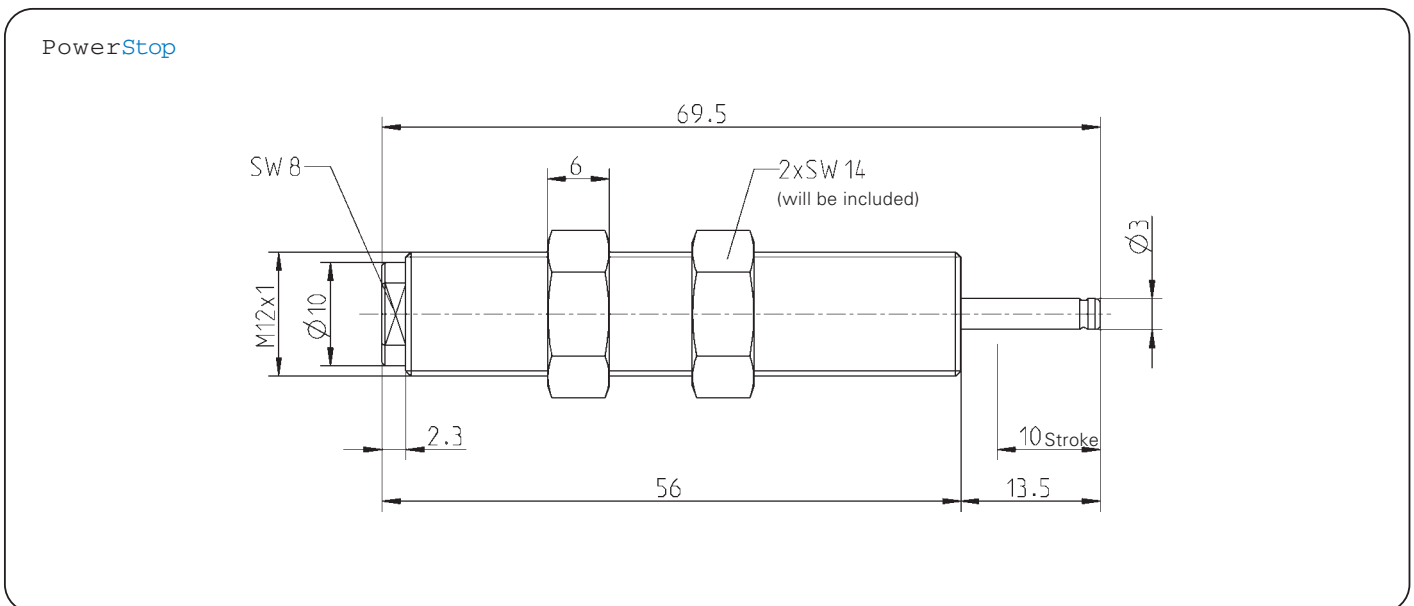


Subject to change without prior notice



PowerStop Order no.:	M12x1S	M12x1M	M12x1H
Energy absorption per stroke [Nm]:	16	16	16
Energy absorption per hour [Nm/h]:	30.000	30.000	30.000
Stroke [mm]:	10	10	10
Min./max. Impact speed [m/s]:	2,0/5,0	1,2/2,2	0,2/1,4
Piston reset time [s]:	0,3	0,3	0,3
Min./max. resetting force [N]:	8/15	8/15	8/15
Max./min. effective mass* [kg]:	8/1	22/7	800/16
Weight [g]:	40	40	40

* Actual mass as comparative value to customary industrial impact damper.



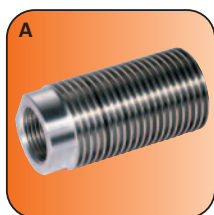
Subject to change without prior notice

Shock absorbers

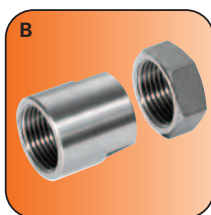


PowerStop

Accessory list



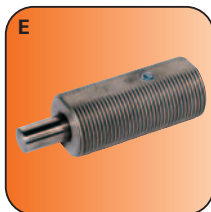
Cooling nut aluminium
Order no. MKM14x1
Order no. MKM14x1.5



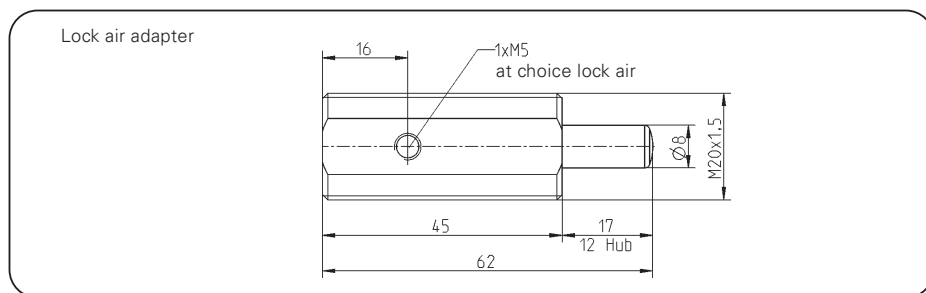
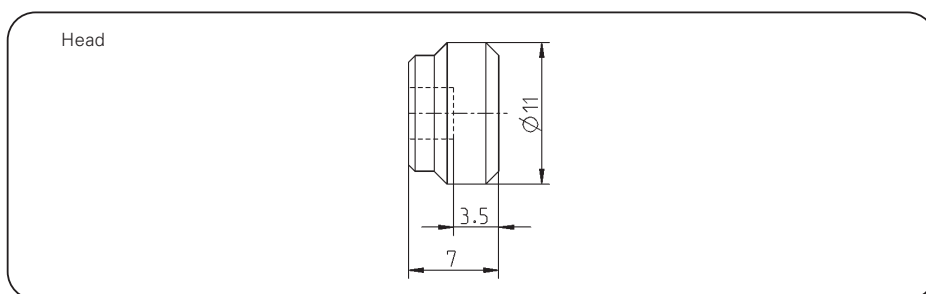
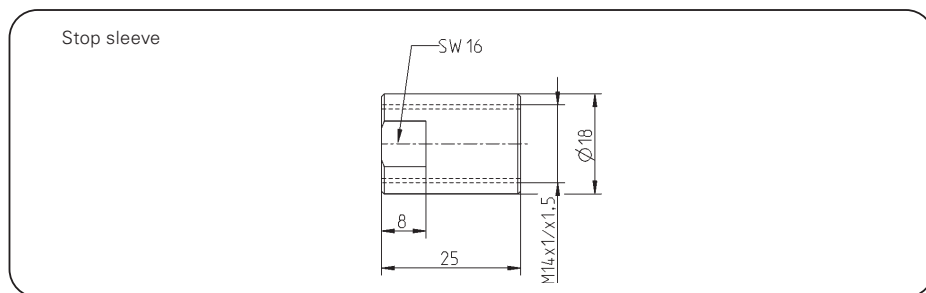
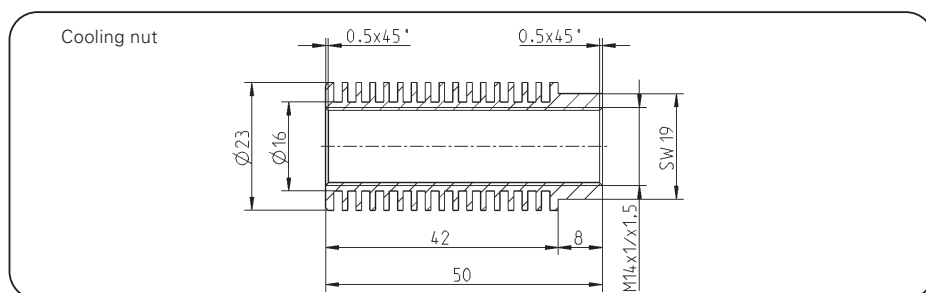
Stop sleeve VA-steel
Order no. MAH14x1
Order no. MAH14x1.5



Head plastic/steel
Order no. MKK14
Order no. MKS14



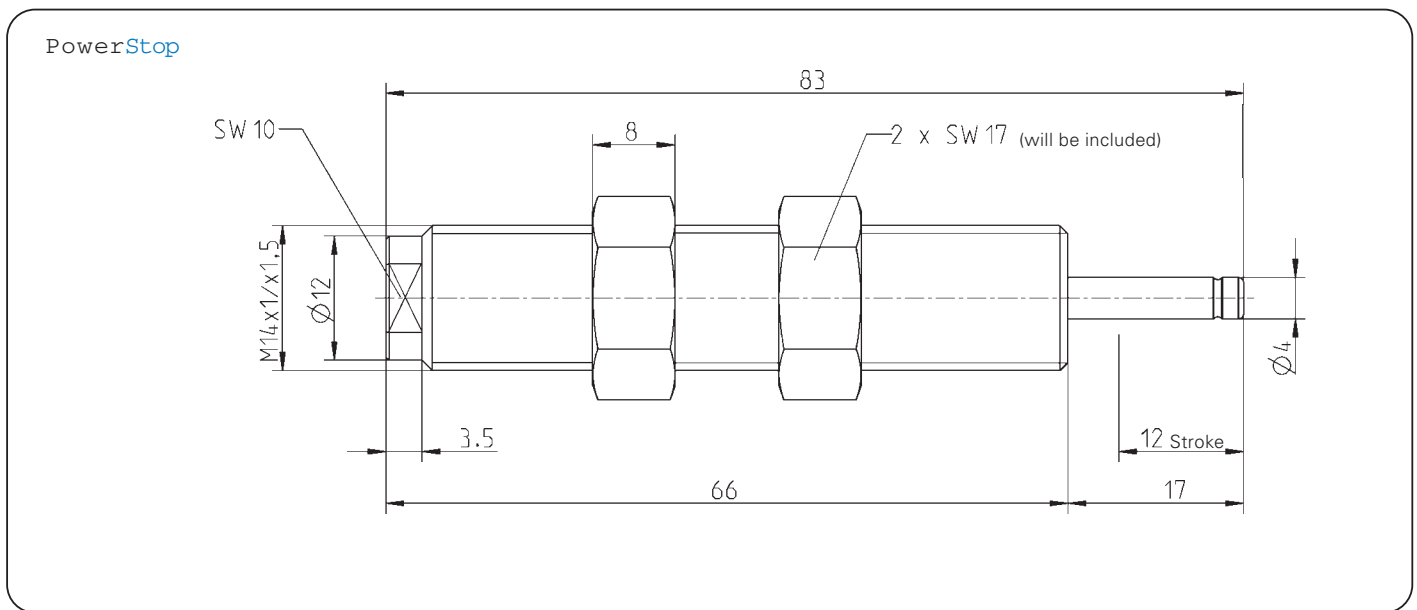
Lock air adapter
bolt pre-supporting
Order no. MRA14x1
Order no. MRA14x1.5



Subject to change without prior notice

Order no.:	M14x1S	M14x1M	M14x1H	M14x1.5S	M14x1.5M	M14x1.5H
Energy absorption per stroke [Nm]:	31	31	31	31	31	31
Energy absorption per hour [Nm/h]:	50.000	50.000	50.000	50.000	50.000	50.000
Stroke [mm]:	12	12	12	12	12	12
Min./max. Impact speed [m/s]:	2,0/5,0	1,2/2,2	0,2/1,4	2,0/5,0	1,2/2,2	0,2/1,4
Piston reset time [s]:	0,3	0,3	0,3	0,3	0,3	0,3
Min./max. resetting force [N]:	10/20	10/20	10/20	10/20	10/20	10/20
Max./min. effective mass* [kg]:	16/2	43/13	1550/32	16/2	43/13	1550/32
Weight [g]:	60	60	60	60	60	60

* Actual mass as comparative value to customary industrial impact damper.



Subject to change without prior notice

Shock absorbers



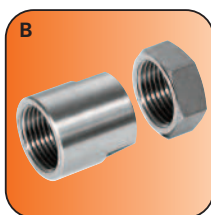
PowerStop

NotStop

Accessory list



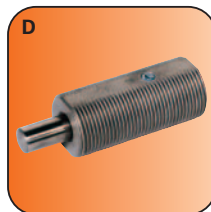
Cooling nut aluminium
Order no. MKM20x1.5



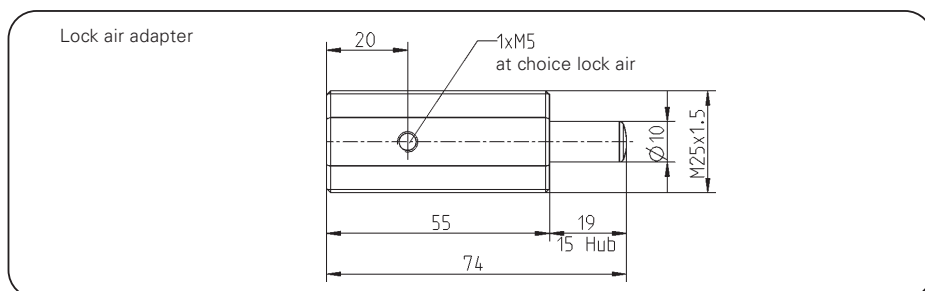
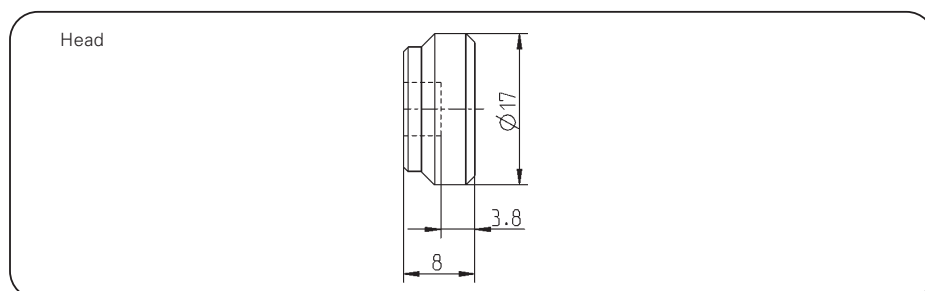
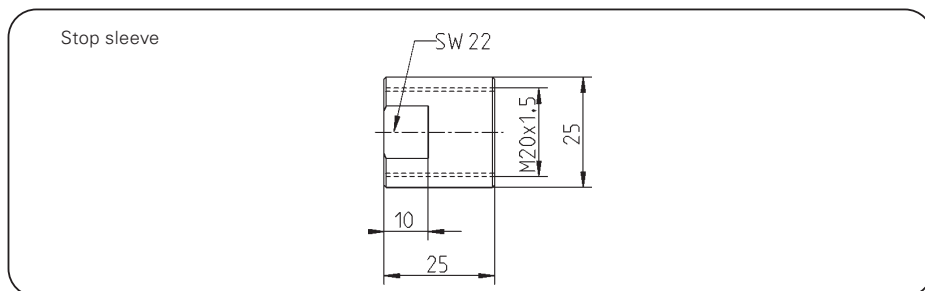
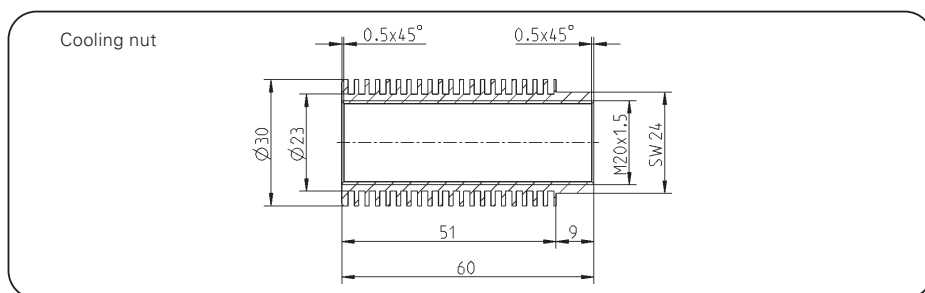
Stop sleeve VA-steel
Order no. MAH20x1.5



Head plastic/steel
Order no. MKK20
Order no. MKS20



Lock air adapter
bolt pre-supporting
Order no. MRA20x1.5



Subject to change without prior notice

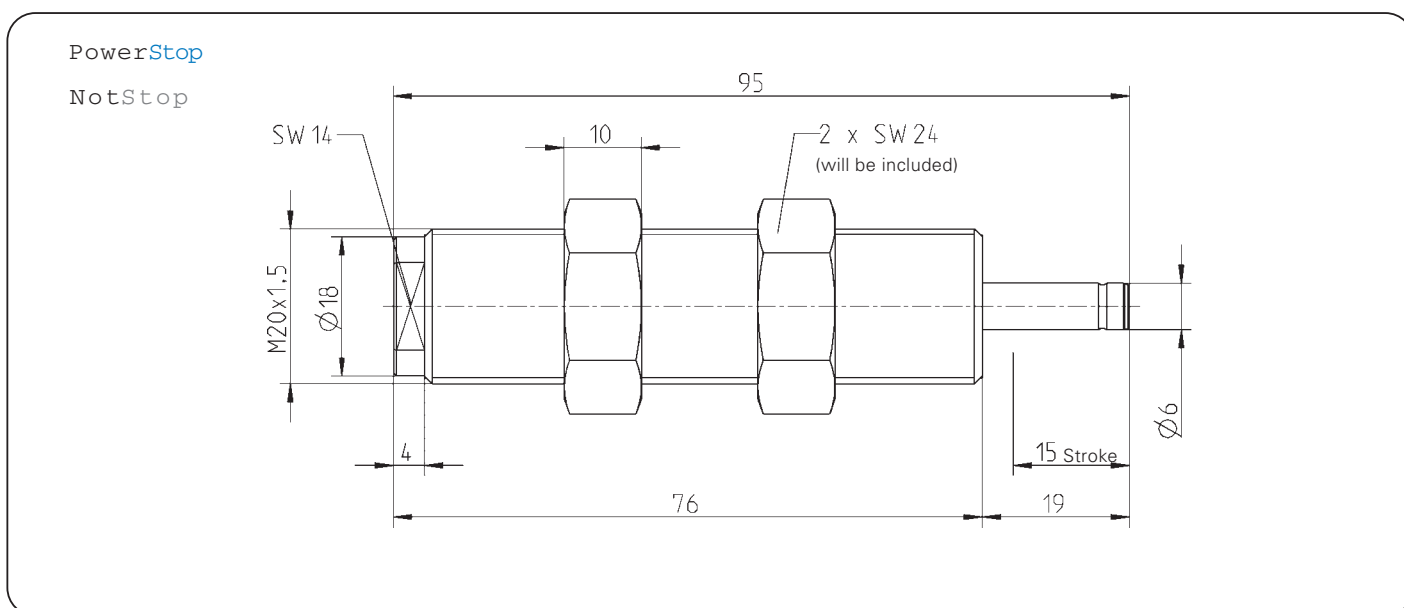


PowerStop	Order no.:	M20x1.5S	M20x1.5M	M20x1.5H
	Energy absorption per stroke [Nm]:	70	70	70
	Energy absorption per hour [Nm/h]:	63.000	63.000	63.000
	Stroke [mm]:	15	15	15
	Min./max. Impact speed [m/s]:	1,8/4,5	1,0/2,0	0,2/1,2
	Piston reset time [s]:	0,5	0,5	0,5
	Min./max. resetting force [N]:	15/25	15/25	15/25
	Max./min. effective mass* [kg]:	43/7	140/35	3500/97
	Weight [g]:	130	130	130

Notice: also available with stroke 30 mm!

NotStop	Order no.:	M20x1.5SN	M20x1.5MN	M20x1.5HN
	Energy absorption per stroke [Nm]:	150	150	150
	Energy absorption per hour [Nm/h]:	-	-	-
	Stroke [mm]:	15	15	15
	Min./max. Impact speed [m/s]:	1,8/4,5	1,0/2,0	0,2/1,2
	Piston reset time [s]:	0,5	0,5	0,5
	Min./max. resetting force [N]:	15/25	15/25	15/25
	Max./min. effective mass* [kg]:	93/15	300/75	7500/208
	Weight [g]:	130	130	130

* Actual mass as comparative value to customary industrial impact damper.



Subject to change without prior notice

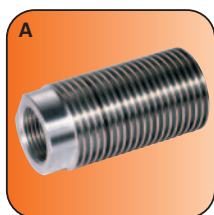
Shock absorbers



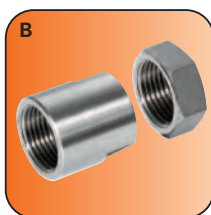
PowerStop

NotStop

Accessory list



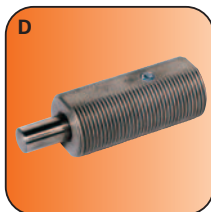
A
Cooling nut aluminium
Order no. MKM25x1.5



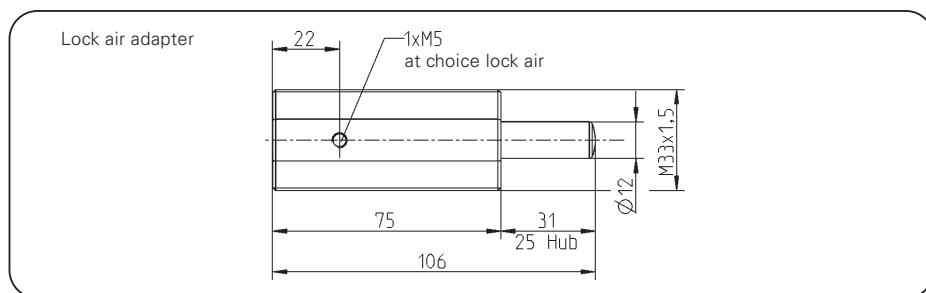
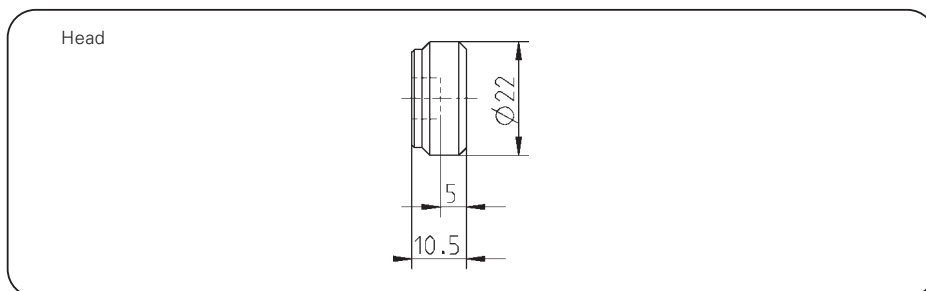
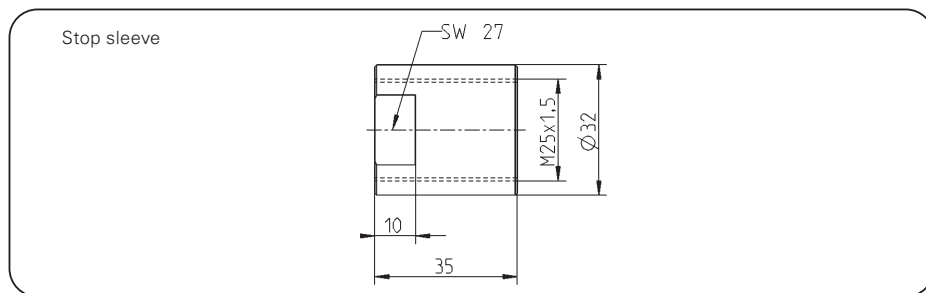
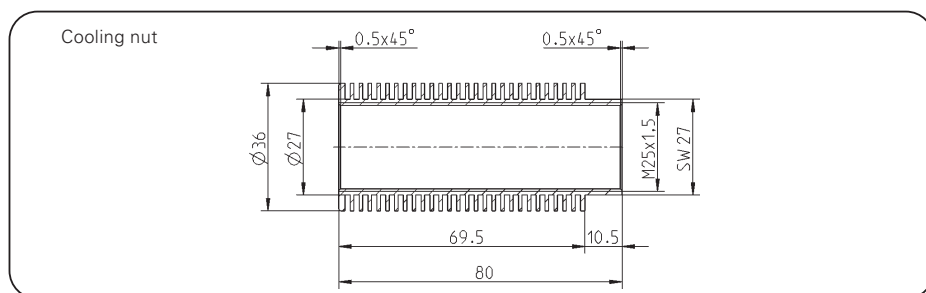
B
Stop sleeve VA-steel
Order no. MAH25x1.5



C
Head plastic/steel
Order no. MKK25
Order no. MKS25



D
Lock air adapter
bolt pre-supporting
Order no. MRA25x1.5



Subject to change without prior notice

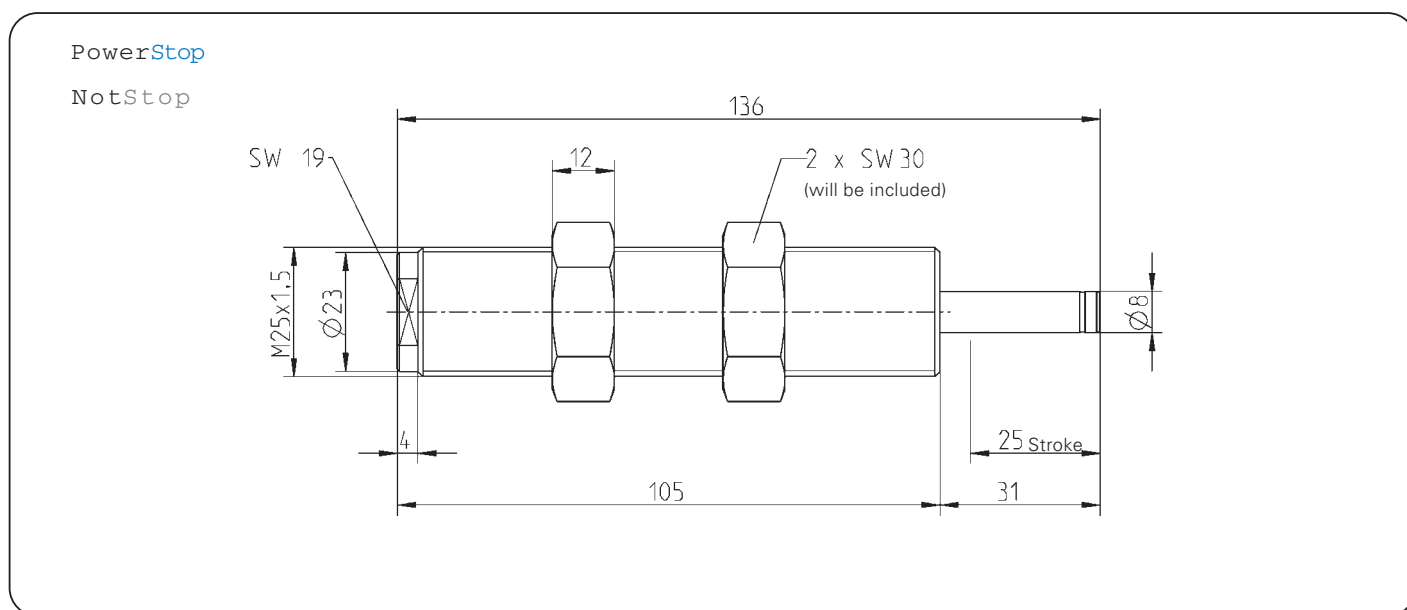


PowerStop	Order no.:	M25x1.5S	M25x1.5M	M25x1.5H
	Energy absorption per stroke [Nm]:	210	210	210
	Energy absorption per hour [Nm/h]:	95.000	95.000	95.000
	Stroke [mm]:	25	25	25
	Min./max. Impact speed [m/s]:	1,4/4,0	0,6/1,8	0,2/0,8
	Piston reset time [s]:	0,6	0,6	0,6
	Min./max. resetting force [N]:	20/40	20/40	20/40
	Max./min. effective mass* [kg]:	214/26	1167/130	10500/656
	Weight [g]:	270	270	270

Notice: also available with stroke 40 mm!

NotStop	Order no.:	M25x1.5SN	M25x1.5MN	M25x1.5HN
	Energy absorption per stroke [Nm]:	550	550	550
	Energy absorption per hour [Nm/h]:	-	-	-
	Stroke [mm]:	25	25	25
	Min./max. Impact speed [m/s]:	1,4/4,0	0,6/1,8	0,2/0,8
	Piston reset time [s]:	0,6	0,6	0,6
	Min./max. resetting force [N]:	20/40	20/40	20/40
	Max./min. effective mass* [kg]:	561/69	3056/340	27500/1719
	Weight [g]:	270	270	270

* Actual mass as comparative value to customary industrial impact damper.



Subject to change without prior notice

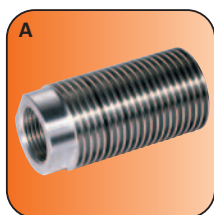
Shock absorbers



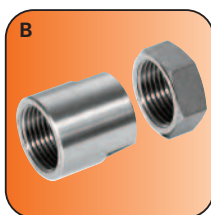
PowerStop

NotStop

Accessory list



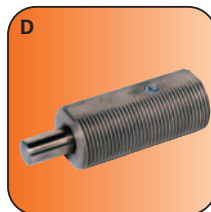
Cooling nut aluminium
Order no. MKM33x1.5



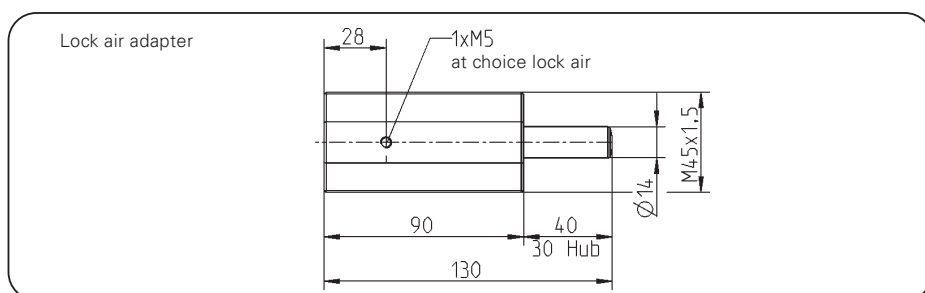
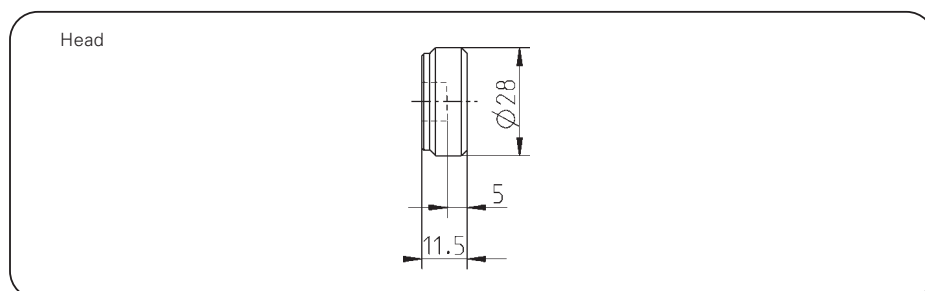
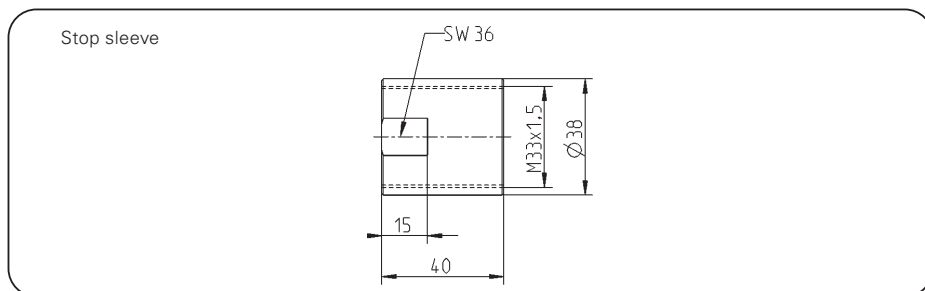
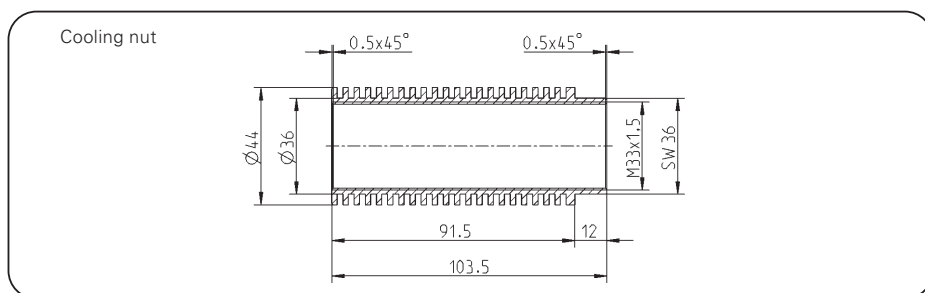
Stop sleeve VA-steel
Order no. MAH33x1.5



Head plastic/steel
Order no. MKK33
Order no. MKS33



Lock air adapter
bolt pre-supporting
Order no. MRA33x1.5



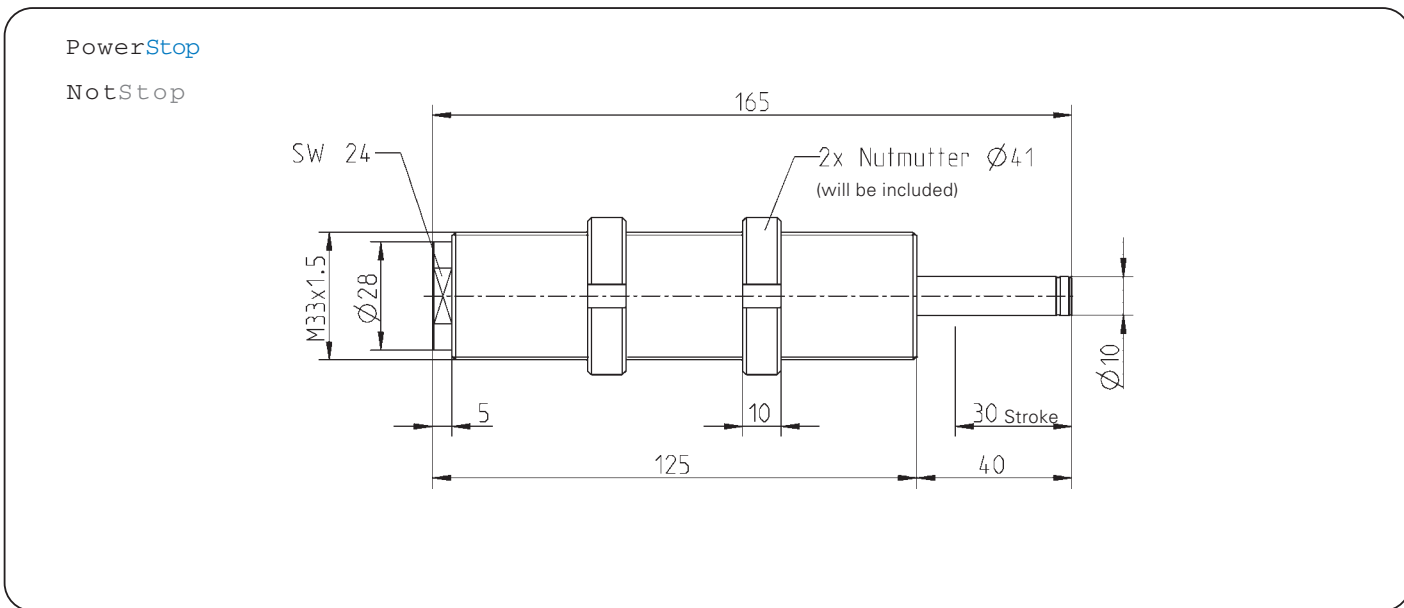
Subject to change without prior notice



PowerStop Order no.:	M33x1.5S	M33x1.5M	M33x1.5H
Energy absorption per stroke [Nm]:	320	320	320
Energy absorption per hour [Nm/h]:	120.000	120.000	120.000
Stroke [mm]:	30	30	30
Min./max. Impact speed [m/s]:	1,4/3,5	0,6/2,0	0,2/0,8
Piston reset time [s]:	0,6	0,6	0,6
Min./max. resetting force [N]:	35/75	35/75	35/75
Max./min. effective mass* [kg]:	327/52	1.778/160	16.000/1.000
Weight [g]:	480	480	480

NotStop Order no.:	M33x1.5SN	M33x1.5MN	M33x1.5HN
Energy absorption per stroke [Nm]:	900	900	900
Energy absorption per hour [Nm/h]:	-	-	-
Stroke [mm]:	30	30	30
Min./max. Impact speed [m/s]:	1,4/3,5	0,6/2,0	0,2/0,8
Piston reset time [s]:	0,6	0,6	0,6
Min./max. resetting force [N]:	35/75	35/75	35/75
Max./min. effective mass* [kg]:	918/147	5000/450	45000/2813
Weight [g]:	480	480	480

* Actual mass as comparative value to customary industrial impact damper.



Subject to change without prior notice

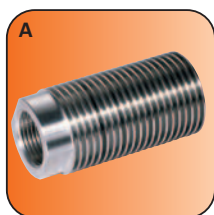
Shock absorbers



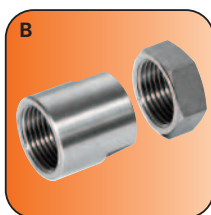
PowerStop

NotStop

Accessory list



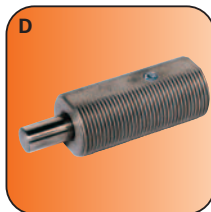
A
Cooling nut aluminium
Order no. MKM45x1.5



B
Stop sleeve VA-steel
Order no. MAH45x1.5

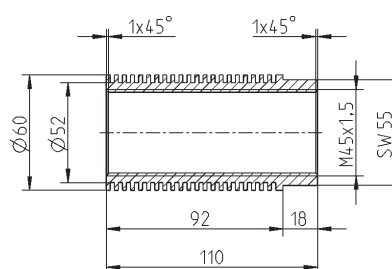


C
Head plastic/steel
Order no. MKK45
Order no. MKS45

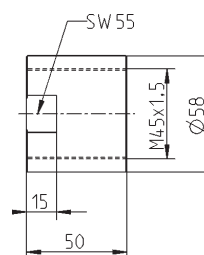


D
Lock air adapter
bolt pre-supporting
Order no. MRA45x1.5

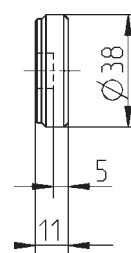
Cooling nut



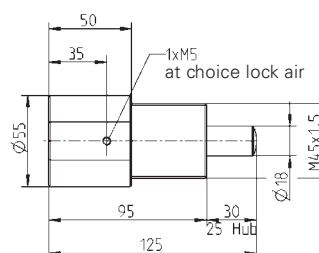
Stop sleeve



Head



Lock air adapter



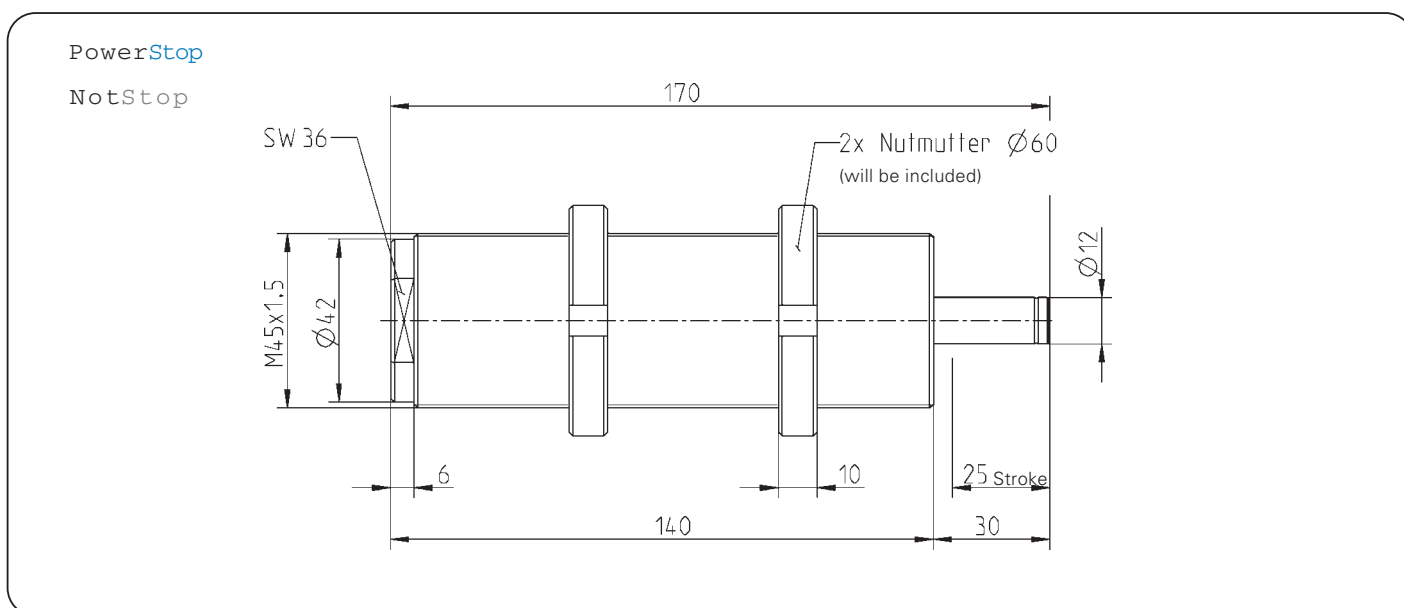
Subject to change without prior notice



PowerStop	Order no.:	M45x1.5S	M45x1.5M	M45x1.5H
	Energy absorption per stroke [Nm]:	650	650	650
	Energy absorption per hour [Nm/h]:	150.000	150.000	150.000
	Stroke [mm]:	25	25	25
	Min./max. Impact speed [m/s]:	1,4/3,5	0,6/1,6	0,2/0,7
	Piston reset time [s]:	0,6	0,6	0,6
	Min./max. resetting force [N]:	40/80	40/80	40/80
	Max./min. effective mass* [kg]:	663/106	3.611/508	32.500/2.653
	Weight [kg]:	1,25	1,25	1,25

NotStop	Order no.:	M45x1.5SN	M45x1.5MN	M45x1.5HN
	Energy absorption per stroke [Nm]:	1.500	1.500	1.500
	Energy absorption per hour [Nm/h]:	-	-	-
	Stroke [mm]:	25	25	25
	Min./max. Impact speed [m/s]:	1,4/3,5	0,6/1,6	0,2/0,7
	Piston reset time [s]:	0,6	0,6	0,6
	Min./max. resetting force [N]:	40/80	40/80	40/80
	Max./min. effective mass* [kg]:	1.531/245	8.333/1.172	75.000/6.122
	Weight [kg]:	1,25	1,25	1,25

* Actual mass as comparative value to customary industrial impact damper.



Subject to change without prior notice

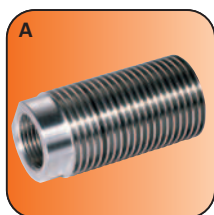
Shock absorbers



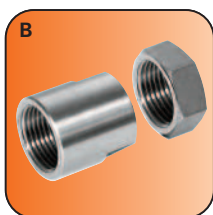
PowerStop

NotStop

Accessory list



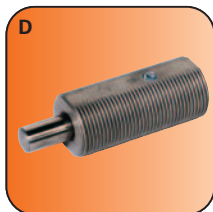
Cooling nut aluminium
Order no. MKM45x1.5L



Stop sleeve VA-steel
Order no. MAH45x1.5

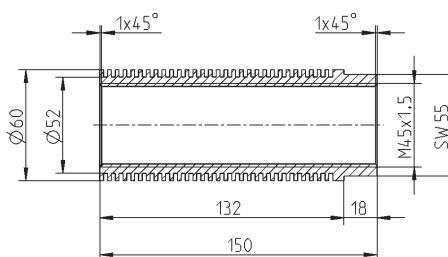


Head plastic/steel
Order no. MKK45
Order no. MKS45

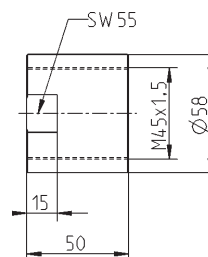


Lock air adapter
bolt pre-supporting
Order no. MRA45x1.5

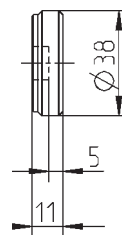
Cooling nut



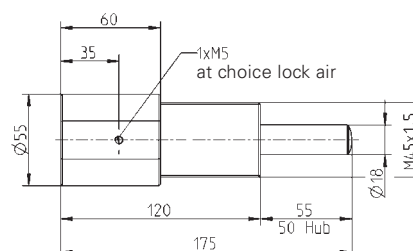
Stop sleeve



Head



Lock air adapter



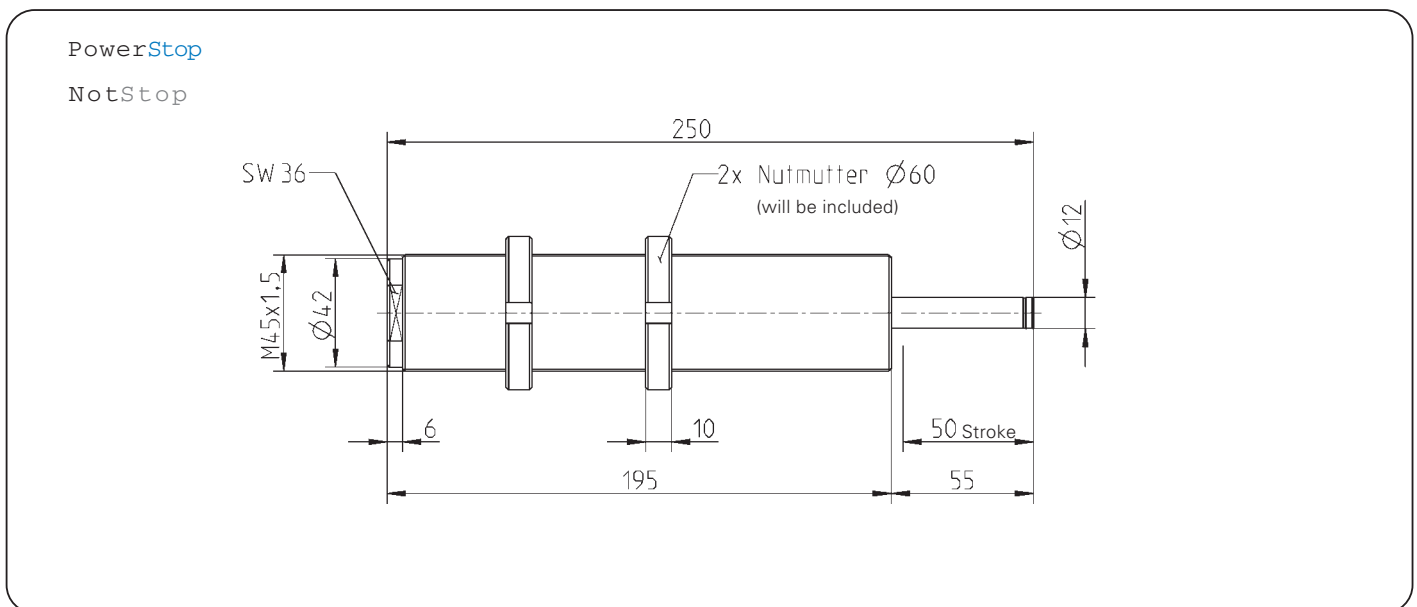
Subject to change without prior notice



PowerStop Order no.:	M45x1.5LS	M45x1.5LM	M45x1.5LH
Energy absorption per stroke [Nm]:	1300	1300	1300
Energy absorption per hour [Nm/h]:	190.000	190.000	190.000
Stroke [mm]:	50	50	50
Min./max. Impact speed [m/s]:	1,4/3,5	0,6/1,6	0,2/0,7
Piston reset time [s]:	1,0	1,0	1,0
Min./max. resetting force [N]:	60/90	60/90	60/90
Min./max. effective mass* [kg]:	212/1.327	1.016/7.222	5.306/65.000
Weight [kg]:	2,0	2,0	2,0

NotStop Order no.:	M45x1.5LSN	M45x1.5LMN	M45x1.5LHN
Energy absorption per stroke [Nm]:	3000	3000	3000
Energy absorption per hour [Nm/h]:	-	-	-
Stroke [mm]:	50	50	50
Min./max. Impact speed [m/s]:	1,4/3,5	0,6/1,6	0,2/0,7
Piston reset time [s]:	1,0	1,0	1,0
Min./max. resetting force [N]:	60/90	60/90	60/90
Min./max. effective mass* [kg]:	490/3.061	2.344/16.667	12.245/150.000
Weight [kg]:	2,0	2,0	2,0

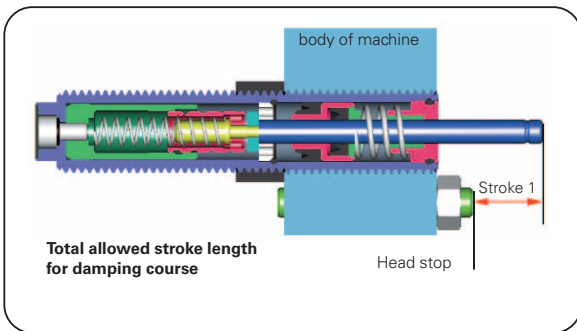
* Actual mass as comparative value to customary industrial impact damper.



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Shock absorbers

Fine adjustment/Energy absorption/Assembly instructions

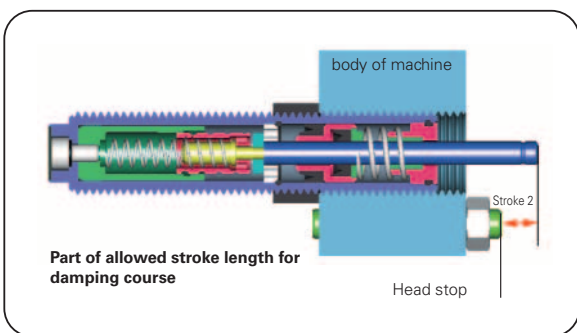


Shock absorber with 98% capacity (max. stroke = max. Energy absorption)

Example: Mass without drive force

$W1 = 0,5 \times m \times v^2$	$W1 = 0,5 \times 85 \times 2,22$	205,7Nm
$(m = 85\text{kg}, v = 2,2\text{m/s}, n = 1001/\text{h})$		
$W2 = 0$	$W2 = 0$	0,0Nm
$W3 = W1 + W2$	$W3 = 205,7 + 0$	205,7Nm
$W4 = W3 \times n$	$W4 = 205,7 \times 100$	20.570Nm
$vD = v$	$vD = 2,2\text{m/s}$	
$m_e = m$		85,0kg

Selection with $W3, W4$ and vD M25 x 1.5 S ($W3=210\text{Nm}$, $W4=95.000\text{Nm/h}$, $v=1,4-4,0\text{m/s}$)



Shock absorber with 47% capacity

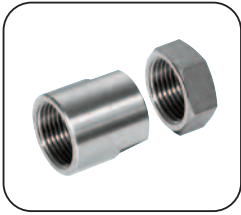
Example: Mass without drive force

$W1 = 0,5 \times m \times v^2$	$W1 = 0,5 \times 16 \times 3,52$	98,0Nm
$(m = 16\text{kg}, v = 3,5\text{m/s}, n = 1001/\text{h})$		
$W2 = 0$	$W2 = 0$	0,0Nm
$W3 = W1 + W2$	$W3 = 98,0 + 0$	98,0Nm
$W4 = W3 \times n$	$W4 = 98,0 \times 100$	9.800Nm
$vD = v$	$vD = 3,5\text{m/s}$	
$m_e = m$		16,0kg

Selection with $W3, W4$ and vD M25 x 1.5 S ($W3=210\text{Nm}$, $W4=95.000\text{Nm/h}$, $v=1,4-4,0\text{m/s}$)

The PowerStop is screwed into the construction. The maximum stroke is 0,5 - 1 mm before final stop of the piston, e.g. M25 x 1,5 S max. stroke = 24 - 24,5 mm. The fine adjustment is done on each application. The PowerStop will be screwed out slowly until an optimal damping is given. This is obtained when the damping speed reduces linearly and its minimum is reached short before meeting at the mechanical final stop.

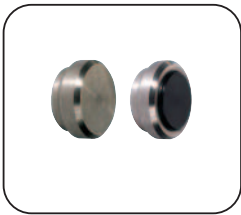
Accessories



Stop sleeve

The PowerStop may not be used as arresting stop. This must be integrated into the construction or it must be used a stop sleeve (accessory).

Through the stop sleeve the final stop can be adjusted individually for each matter of application. By this, the impact damper will be fix screwed into the connecting construction. The adjusting follows by the arresting sleeve and the counter nut.



Head plastic/steel head

By insertion of the steel head the surface hit with load will be enlarged, that means: Minimization of surface load.

This accessory mainly is applied for soft counter material (aluminium) of the movable carriage. On applications for which the noise processing have to be reduced, we recommend the insertion of a plastic head.



Cooling nut

The operation temperature may not exceed 70°C. The here stated values (energy absorption/h) are relating to a vicinity temperature of 20°C. If a shorter cycle time is requested, we recommend the application of a cooler nut (accessory). By the assembly of the cooler nut the PowerStop Damper can be used with a shorter cycle time.

The energy absorption per hour of the impact damper can be increased to the double. The maximum allowed energy absorption per stroke may not be exceeded.



Lock air adapter/
bolt pre-supporting

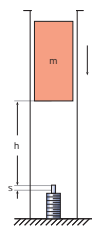
Two requirements solved by one component.

- If the impact angle is larger than 2°, a bolt pre-supporting must be adapted. By this, the allowed impact angle is increased up to 30°. We recommend the use of the bolt pre-supporting for swivelling moments with relative small swivelling radius.
- On applications with increased dirt volume the use of a lock air adapter is to recommend. The lock adapter distinguishes by the low consumption of air. The penetration of dirt particles will avoided and guarantees, therefore, a high life.

Shock absorbers

Formulas/Calculation examples	W1 kinetic energy per stroke; only mass load [Nm]	W2 energy/working of driving power per stroke [Nm]	W3 total energy per stroke (W1+W2) [Nm]	W4 total-Energy per hour (W3xn) [Nm/h]	me effective mass [kg]	m braking mass to be decelerated [kg]	v velocity of impact mass [m/s]	vD impact velocity at shock absorber [m/s]	w angle of incline [1/s]	F additional driving power [N]	n number of strokes per hour [1/h]	P motor capacity [kW]	HM arresting torque factor (normal 2,5) 1 bis	M 2,5	J torque [Nm]	g mass moment of inertia [kgm ²]	h earth acceleration = 9,81 [m/s ²]	s height of drop with impact damper stroke [m]	L/R/r shock absorbers stroke [m]	Q radius [m]	u reacting force/supporting force [N]	t coefficient of friction	β deceleration time angle [°]
For all samples valid:												Reacting max. shock force Q (N)		Q = 1,2 x W3 : s		Attention!		For individual matter in case of damp environment we beg to contact our technical department					
												braking deceleration time (s)		t = 2,6 x s : v _D									
												retarding (m/s)		a = 0,6 x v _D ² : s									

1. Free falling Mass

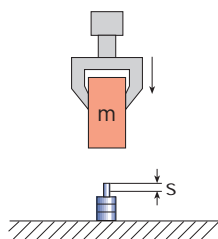


Example:
m=8kg
h=0,3m
n=120 1/h
s=0,02m

$W1 = m \times g \times h$	$W1 = 8 \times 9,81 \times 0,3$	23,5Nm
$W2 = m \times g \times s$	$W2 = 8 \times 9,81 \times 0,02$	1,6Nm
$W3 = W1 + W2$	$W3 = 23,544 + 1,5696$	25,1Nm
$W4 = W3 \times n$	$W4 = 25,1136 \times 120$	3014Nm
$vD = \sqrt{2 \times g \times h}$	$vD = \sqrt{2 \times 9,81 \times 0,3}$	2,4m/s
$me = 2 \times W3 : vD^2$	$me = 2 \times 25,1136 : 2,43^2$	8,5kg

Selection with W3, W4 und v_D
(W3 = 31Nm, W4 = 50 000Nm/h, v_{max} = 2,0 - 5,0m/s) M14 x 1.5S

2. Lowered mass without driving power

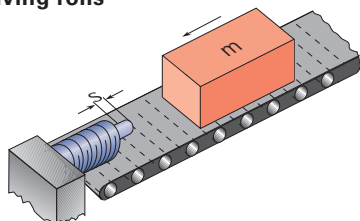


Example:
m=400kg
v=1m/s
n=30 1/h
s=0,02m

$W1 = 0,5 \times m \times v^2$	$W1 = 0,5 \times 400 \times 1^2$	200,0Nm
$W2 = m \times g \times s$	$W2 = 400 \times 9,81 \times 0,02$	78,5Nm
$W3 = W1 + W2$	$W3 = 200 + 78,48$	278,5Nm
$W4 = W3 \times n$	$W4 = 278,48 \times 30$	8354Nm
$vD = v$		1,0m/s
$me = 2 \times W3 : vD^2$	$me = 2 \times 278,48 : 1^2$	557,0kg

Selection with W3, W4 und v_D
(W3 = 320Nm, W4 = 120 000Nm/h, v_{max} = 0,6 - 2,0m/s) M33 x 1.5M

3. Mass on driving rolls

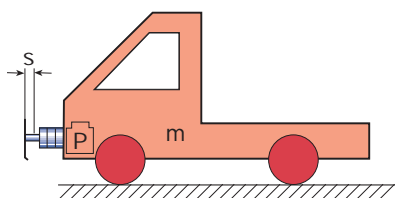


Example:
m=190kg
v=1,8m/s
n=170 1/h
s=0,025m
μ=0,2

$W1 = 0,5 \times m \times v^2$	$W1 = 0,5 \times 190 \times 1,8^2$	307,8Nm
$W2 = m \times \mu \times g \times s$	$W2 = 190 \times 0,2 \times 9,81 \times 0,025$	9,3Nm
$W3 = W1 + W2$	$W3 = 307,8 + 9,3195$	317,1Nm
$W4 = W3 \times n$	$W4 = 317,1195 \times 170$	53.910Nm
$vD = v$		1,8m/s
$me = 2 \times W3 : vD^2$	$me = 2 \times 317,1195 : 1,8^2$	195,8kg

Selection with W3, W4 und v_D
(W3 = 320Nm, W4 = 120 000Nm/h, v_{max} = 0,6 - 2,0m/s) M33 x 1.5M

4. Mass with motor driving

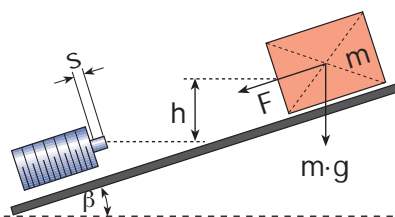


Example:
m=320kg
v=1,3m/s
n=80 1/h
s=0,025m
P=4 kW
HM=2,5

$W1 = 0,5 \times m \times v^2$	$W1 = 0,5 \times 320 \times 1,3^2$	270,4Nm
$W2 = 1000 \times P \times HM \times s : v$	$W2 = 1000 \times 4 \times 2,5 \times 0,025 : 1,3$	192,3Nm
$W3 = W1 + W2$	$W3 = 270,4 + 192,31$	462,7Nm
$W4 = W3 \times n$	$W4 = 462,71 \times 80$	37.017Nm
$vD = v$		1,3m/s
$me = 2 \times W3 : vD^2$	$me = 2 \times 462,71 : 1,3^2$	547,6kg

Selection with W3, W4 und v_D
(W3 = 650Nm, W4 = 150 000Nm/h, v_{max} = 0,6 - 1,6m/s) M45 x 1.5M

5. Mass on inclined plane

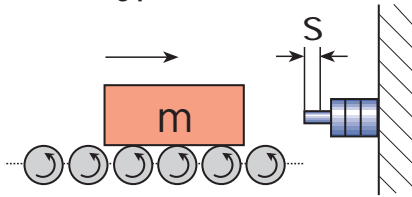


Example:
m=2 kg
h=0,3 m
n=120 1/h
s=0,08m
β=20°

$W1 = m \times g \times h$	$W1 = 2 \times 9,81 \times 0,3$	5,9Nm
$W2 = m \times g \times s \times \sin \beta$	$W2 = 2 \times 9,81 \times 0,08 \times \sin 20$	0,5Nm
$W3 = W1 + W2$	$W3 = 5,89 + 0,54$	6,4Nm
$W4 = W3 \times n$	$W4 = 6,42 \times 120$	771Nm
$vD = \sqrt{2 \times g \times h}$	$vD = \sqrt{2 \times 9,81 \times 0,3}$	2,4m/s
$me = 2 \times W3 : vD^2$	$me = 2 \times 6,42 : 2,43^2$	2,2kg

Selection with W3, W4 und v_D
(W3 = 10Nm, W4 = 8 000Nm/h, v = 2,0 - 5,0m/s) M10 x 1S

6. Mass without driving power



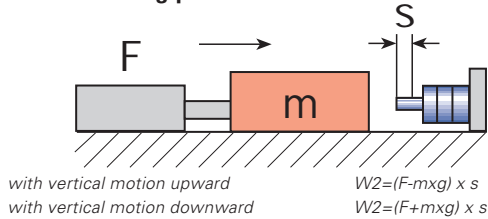
Example:
 $m=200\text{kg}$
 $v=2,5\text{m/s}$
 $n=120\text{ 1/h}$
 $s=0,025\text{m}$

$W1 = 0,5 \times m \times v^2$	$W1 = 0,5 \times 200 \times 2,5^2$	625,0Nm
$W2 = 0$	$W2 = 0$	0,0Nm
$W3 = W1 + W2$	$W3 = 625 + 0$	625,0Nm
$W4 = W3 \times n$	$W4 = 625 \times 120$	75.000Nm
$v_D = v$		2,5m/s
$m_e = m$		200,0kg

Selection with $W3, W4$ und v_D
 ($W3 = 650\text{Nm}$, $W4 = 150\,000\text{Nm/h}$, $v = 1,4 - 3,5\text{m/s}$)

M45 x 1.5S

7. Mass with driving power



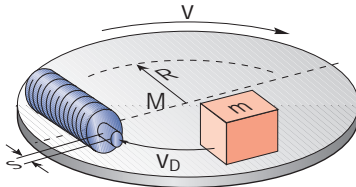
Example:
 $m=30\text{kg}$
 $v=1,9\text{m/s}$
 $n=800\text{ 1/h}$
 $s=0,025\text{m}$
 $F=300\text{N}$

$W1 = 0,5 \times m \times v^2$	$W1 = 0,5 \times 30 \times 1,9^2$	54,2Nm
$W2 = F \times s$	$W2 = 300 \times 0,025$	7,5Nm
$W3 = W1 + W2$	$W3 = 54,15 + 7,5$	61,7Nm
$W4 = W3 \times n$	$W4 = 61,65 \times 800$	49.320Nm
$v_D = v$		1,9m/s
$m_e = 2 \times W3 : v_D^2$	$m_e = 2 \times 61,65 : 1,9^2$	34,2kg

Selection with $W3, W4$ und v_D
 ($W3 = 70\text{Nm}$, $W4 = 63\,000\text{Nm/h}$, $v = 1,8 - 4,5\text{m/s}$)

M20 x 1.5S

8. Rotating table with driving moment horizontal and vertical



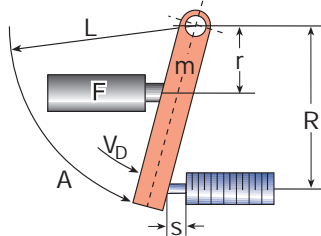
Example:
 $m=650\text{kg}$
 $v=1,2\text{m/s}$
 $n=90\text{ 1/h}$
 $s=0,02\text{m}$
 $R=0,9\text{m}$
 $M=1200\text{Nm}$
 $L=1,35\text{m}$

$W1 = 0,25 \times m \times v^2$	$W1 = 0,25 \times 650 \times 0,8^2$	234,0Nm
$= 0,5 \times J \times \omega^2$		
$W2 = M \times s : R$	$W2 = 650 \times 0,02 : 0,9$	14,4Nm
$W3 = W1 + W2$	$W3 = 234 + 14,44$	248,4Nm
$W4 = W3 \times n$	$W4 = 248,44 \times 90$	22.360Nm
$v_D = v \times R : L$	$v_D = 1,2 \times 0,9 : 1,35$	0,8m/s
$= w \times R$		
$m_e = 2 \times W3 : v_D^2$	$m_e = 2 \times 248,44 : 0,8^2$	776,4kg

Selection with $W3, W4$ und v_D
 ($W3 = 320\text{Nm}$, $W4 = 120\,000\text{Nm/h}$, $v = 0,2 - 0,8\text{m/s}$)

M33 x 1.5H

9. Swivelling mass with driving power



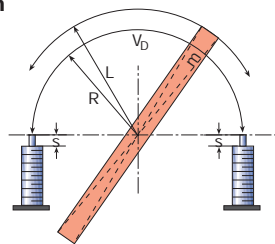
Example:
 $m=320\text{kg}$
 $v=3\text{m/s}$
 $n=220\text{ 1/h}$
 $s=0,025\text{m}$
 $R=0,9\text{m}$
 $M=3200\text{Nm}$
 $L=1,5\text{m}$
 $F=6000\text{N}$
 $r=0,7\text{m}$

$W1 = m \times v^2 \times 0,17$	$W1 = 320 \times 1,8^2 \times 0,17$	489,6Nm
$= 0,5 \times J \times \omega^2$		
$W2 = F \times r \times s : R$	$W2 = 6000 \times 0,7 \times 0,025 : 0,9$	116,7Nm
$= M \times s : R$		
$W3 = W1 + W2$	$W3 = 489,6 + 116,67$	606,3Nm
$W4 = W3 \times n$	$W4 = 606,27 \times 220$	133.379Nm
$v_D = v \times R : L$	$v_D = 3 \times 0,9 : 1,5$	1,8m/s
$= w \times R$		
$m_e = 2 \times W3 : v_D^2$	$m_e = 2 \times 606,27 : 1,8^2$	374,2kg

Selection with $W3, W4$ und v_D
 ($W3 = 650\text{Nm}$, $W4 = 150\,000\text{Nm/h}$, $v = 1,4 - 3,5\text{m/s}$)

M45 x 1.5S

10. Swivelling mass with driving power



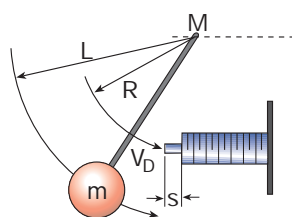
Example:
 $J=41\text{kgm}^2$
 $w=2\text{ 1/s}$
 $n=900\text{ 1/h}$
 $s=0,025\text{m}$
 $R=0,9\text{m}$
 $M=400\text{Nm}$
 $L=1,8\text{m}$

$W1 = m \times v^2 \times 0,17$	$W1 = 0,5 \times 41 \times 2^2$	82,0Nm
$= 0,5 \times J \times \omega^2$		
$W2 = F \times r \times s : R$	$W2 = 400 \times 0,025 : 0,9$	11,1Nm
$= M \times s : R$		
$W3 = W1 + W2$	$W3 = 82 + 11,11$	93,1Nm
$W4 = W3 \times n$	$W4 = 93,11 \times 900$	83.800Nm
$v_D = v \times R : L$	$v_D = 2 \times 0,9$	1,8m/s
$= w \times R$		
$m_e = 2 \times W3 : v_D^2$	$m_e = 2 \times 93,11 : 1,8^2$	57,5kg

Selection with $W3, W4$ und v_D
 ($W3 = 210\text{Nm}$, $W4 = 95\,000\text{Nm/h}$, $v = 1,4 - 4,0\text{m/s}$)

M25 x 1.5S

11. Swivelling mass with driving moment



Example:
 $m=12\text{kg}$
 $v=1,5\text{m/s}$
 $n=1600\text{ 1/h}$
 $s=0,02\text{m}$
 $R=0,6\text{m}$
 $M=60\text{Nm}$
 $L=0,9\text{m}$

$W1 = m \times v^2 \times 0,5$	$W1 = 0,5 \times 12 \times 1,5^2$	13,5Nm
$= 0,5 \times J \times \omega^2$		
$W2 = M \times s : R$	$W2 = 60 \times 0,02 : 0,6$	2,0Nm
$W3 = W1 + W2$	$W3 = 13,5 + 2$	15,5Nm
$W4 = W3 \times n$	$W4 = 15,5 \times 1600$	24.800Nm
$v_D = v \times R : L$	$v_D = 1,5 \times 0,6 : 0,9$	1,0m/s
$= w \times R$		
$m_e = 2 \times W3 : v_D^2$	$m_e = 2 \times 15,5 : 1^2$	31,0kg

Selection with $W3, W4$ und v_D
 ($W3 = 16\text{Nm}$, $W4 = 30\,000\text{Nm/h}$, $v = 0,2 - 1,4\text{m/s}$)

M12 x 1H



➤ Grippers <i>pneumatic</i>	01
➤ Grippers <i>electrical</i>	02
➤ Grippers <i>hydraulic</i>	03
➤ Grippers <i>Special</i>	04
➤ Grip & Rotate Modules <i>pneumatic</i>	05
➤ Separators	06
➤ Swivel Units <i>pneumatic</i>	07
➤ Swivel Units <i>electrical</i>	08
➤ Swivel Units <i>hydraulic</i>	09
➤ Rotation Jaws <i>pneumatic</i>	10
➤ Axial Compensation Modules	11
➤ Tool Changers	12
➤ Robotics Accessories	13
➤ Linear Cylinders	14
➤ Shock Absorber	15
➤ Air Vane Motors	16
➤ Rotary Cylinders	17
➤ Vacuum Components	18