

HYDRAULIC SHOCK ABSORBERS



Highly automated machines with the shortest possible cycle times require a highly sophisticated deceleration technique.

Uncontrolled energy can damage machines and leads to production stop and expensive repairs.

The use of springs, rubber or air buffers is of *no* benefit because they simply store the energy and do *not* permit any form of controlled deceleration.

The best result is achieved when the energy is linearly or progressively reduced over a given distance. It means the shortest possible stopping time and simultaneously the smallest possible reaction force.

These requirements are fulfilled by our shock absorbers.

ADVANTAGES

- 1 higher productivity of the production machines through increased operating speeds
- 2 easier design of the equipment
- 3 improved product quality
- 4 longer maintenance intervals for production equipment by reducing shock loads
- 5 reduced plant noise and improved operator productivity



Mega-Line with Helix-Principle [PATENTED SYSTEM]

By virtue of a helix inside (starting from size 1.25), the throttle orifices of the hardened pressure tube can be opened or closed by turning.

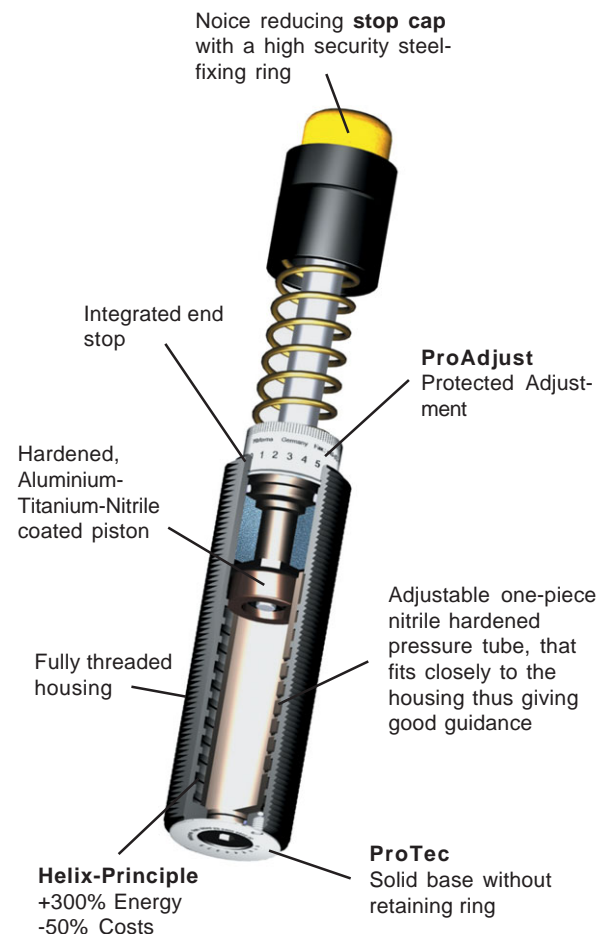
Based on this construction principle the adjustment-tube is no longer necessary. The new available space is now used by a very much large diameter piston thus dramatically increasing the energy capacity of the shock absorber. Depending on the model up to 400% more energy absorption can be achieved (**Helix-Principle**).

The deceleration characteristic of the shock absorber is determined by different sizes of the throttle orifices. The external dimensions remain identical. Adjustable and self-compensating shock absorbers can be delivered with linear or progressive deceleration characteristics. Based on this construction principle the pressure tube is positioned close to the housing thus giving all models a long guidance system, which inter offers the greatest protection against side-forces.

Adjustable models of the M-range are supplied with front and rear adjustment.

Shock absorbers within the Mega-Line are provided with an integrated end stop. The adjustment collar is protected under the stop cap so no damaging load can impact on the collar, all load is absorbed by the integrated end stop on the housing (**ProAdjust**).

All Mega-line shock absorbers are supplied with a solid body and a closed base without retaining ring (**ProTec**).



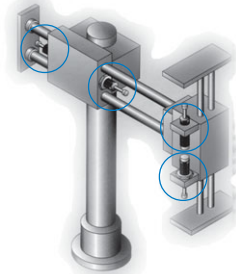
Mega-Line Miniatur



Enlarged Piston.....High energy absorption
 Extended Life Time.....Nitrated Guidance System
 Piston rod: hardened stainless steel
 Special seals + oils
 Temperature.....-20°C - +80°C
 Integrated End Stop.....Max. security

Availability.....Series **WSM** linear self-compensating
 Special editions.....in stainless steel, for pressure chambers up to 7 bar, for clean room, for food industry USDA-H1-compliant

Connection
 M4x0.35 to M12x1
Stroke
 4 to 10 mm
Absorption
 0.4 to 12 Nm



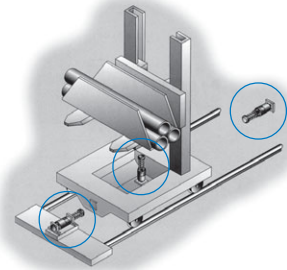
Mega-Line 0,1-0,2



Enlarged Piston.....max. +400% Energy
 max. - 50% Costs / Nm
 Extended Life Time.....Nitrated Guidance System
 Piston: Hardened, Aluminium-Titanium-Nitride coated
 Special Seals + Oils
 Integrated End Stop.....Max. security

Availability.....Series **WSM** linear self-compensating
 Series **WPM** progressiv self-compensating
 Series **WEM** linear adjustable
 Special editions.....in stainless steel, for pressure chambers up to 7 bar, for clean room, for food industry USDA-H1-compliant

Connection
 M8x1 to M12x1
Stroke
 7 to 12 mm
Absorption
 4 to 22 Nm



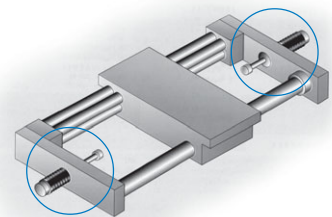
Mega-Line 0,25-1,0



Enlarged Piston.....max. +400% Energy
 max. - 50% Costs / Nm
 Extended Life Time.....Nitrated Guidance System
 Piston: Hardened, Aluminium-Titanium-Nitride coated
 Special Seals + Oils
 Integrated End Stop.....Max. security

Availability.....Series **WSM** linear self-compensating
 Series **WPM** progressiv self-compensating
 Series **WEM** linear adjustable
 Special editions.....in stainless steel, for pressure chambers up to 7 bar, for clean room, for food industry USDA-H1-compliant

Connection
 M14x1 to M24x1,5
Stroke
 14 to 40 mm
Absorption
 30 to 390 Nm



Mega-Line 1,25-1,5



Enlarged Piston.....max. +300% Energy
 max. - 50% Costs / Nm
ProAdjust.....Protected Adjustment
ProTec.....Solid body without retaining ring
 Extended Life Time.....Nitrated Guidance System
 Piston: Hardened, Aluminium-Titanium-Nitride coated
 Special Seals + Oils
 Integrated End Stop.....Max. security

Availability.....Series **WSM** linear self-compensating
 Series **WPM** progressiv self-compensating
 Series **WEM** linear adjustable
 Special editions.....in stainless steel, for pressure chambers up to 7 bar, for food industry USDA-H1-compliant

1,25
Connection
 M32x1.5
Stroke
 25 to 50 mm
Absorption
 300 to 750 Nm

1,5
Connection
 M45x2
Stroke
 25 to 75 mm
Absorption
 870 to 2100 Nm

Technical modifications keep in reserve !

(2012/01)

Emergency Stop WNM



Very high energy absorption

Individual adapted deceleration characteristic
For the first order technical information for the application is required

Temperature.....-20° - +80°

Special editions.....in stainless steel,
for pressure chambers up to 7 bar,
for food industry USDA-H1-compliant

Connection

M8x1.0 to M62x2

Stroke

7 to 250 mm

Absorption

6 to 31200 Nm

Compact WMSK



Deceleration characteristics.....self-compensating, linear

Compact construction.....for restricted space

High energy absorption.....max. 135.000 Nm/h

Extended Life Time.....Special Seals + Oils

Material.....Housing: black finish

Piston rod: hardened stainless steel

Integrated End Stop.....Max. security

Availability.....Series **WMSK** linear self-compensating

Connection

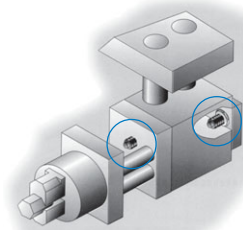
M20x1.5 to M32x1.5

Stroke

7 to 12 mm

Absorption

25 to 90 Nm



Side Forces WBM



Designed for side forces up to 15° without additional mounting parts

Material.....housing: black finish

Extended Life Time.....Special Seals + Oils

Piston rod: hardened, stainless steel

Temperature.....-20° - +80°

Integrated End Stop.....Full Stroke Operation

Availability.....Series **WSBM** linear self-compensating

Series **WPBM** progressiv self-compensating

Series **WEBM** linear adjustable

Connection

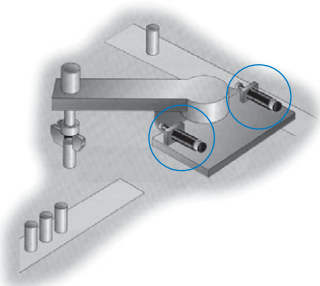
M10x1.0 to M24x1.5

Stroke

8 to 25 mm

Absorption

12 to 180 Nm



PlasticWKL



Cost-effective hydraulic shock absorber

Housing.....Special plastic

Piston rod.....Stainless steel

Temperature.....-5° - +50°

Special edition.....For high temperatures

Stroke

10-20 mm

Absorption

2-7 Nm

Air-Cushioned WAS



Range of application.....Furniture industry

Model WAS 1015.....**self-extending**
air cushioned, sound-absorbing
for 10 mm drill hole

Model WAS-Z 0950.....**without own reset**
air cushioned

Material.....Plastic

Stroke
15-53 mm
Effective mass
20-40 kg

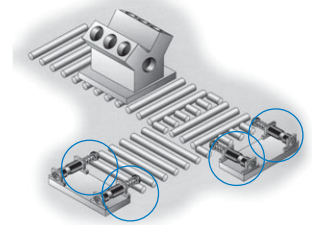
Mega-Line PA



In **pallet systems** shock absorbers are used to stop the pallets in the end position. The end position is detected by a proximity switch. However, **pallets with lower weights are decelerated but don't reach the end position**. As a result the proximity switch detects a fault and the system is stopped.

Based on the Mega-Line we have developed a self-compensating shock absorber with an **innovative valve construction**. In the starting position the valve is open for lower masses. If the weight increases the valve closes, securing the optimum deceleration. After the pallet has been decelerated, the valve opens and the pallet moves in the end position.

Connection
M20x1 to M27x3
Stroke
19 to 25 mm
Impact speed
0,15 to 0,4 m/s
Mass
10 to 1400 kg



Deceleration cylinders WMZ



Flexibility relating to Stroke & Deceleration Characts

Coating.....Housing zinc plated

Temperature.....-30° - +80°

Mounting.....**WMZ**: vertical +/- 30°

WMZG: any position

Recommandation: vertical with the piston rod down

Extended Life Time.....Piston Rod: hard chrome-plated

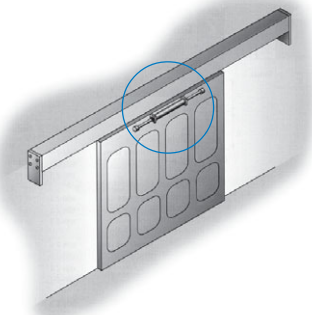
Special Seals + Oils

Special editions.....Series **WMZL** without free travel

Series **WMZD** double acting doorstopper

Series **WMZE** single acting doorstopper

Stroke
10 to 800 mm
Max. compression force
25 to 10.000 N



Speed controls WMV-WVM



Speed rates.....0,015 - 40 m/min

Adjustment.....variable

Extended Life Time.....Special Seals + Oils

Piston rod: hardened stainless steel

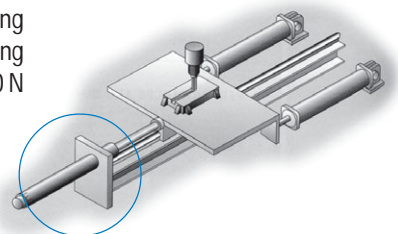
Non standard threads.....M24x1,5 lenght 40 mm

Availability.....Series **WMV** single acting

Series **WMVD** double acting

Series **WVM** for higher speed forces until 10.000 N

Stroke
WMV: 13 to 150 mm
WMVD: 50 to 250 mm
Speed force
25 to 4000 N



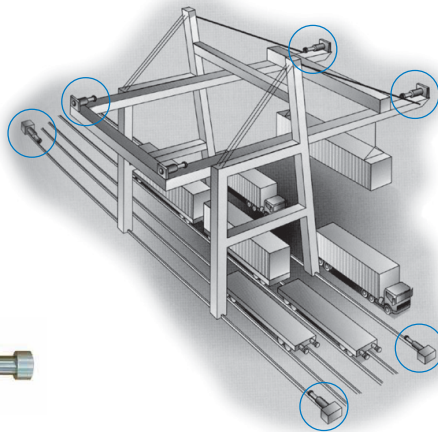
Heavy-Duty LDS-HLS

During the recent years production cranes and automated warehousing systems have increased in size and speed. The hydraulic heavy-duty shock absorber was developed to transform the impact into heat and to slow down the system in a controlled manner by minimizing the end forces.

A large range of more than 100 standard heavy-duty absorbers with different capacities and stroke lengths has been developed to meet the increasing demands of our customers.



Also available
Series **LDS-DW** double acting version



LDS

Stroke

50 to 1200 mm

Energy/Stroke

2.000 to 800.000 Nm

Max. Counterforce

45.000 to 900.000 N

HLS

Stroke

50 to 1200 mm

Energy/Stroke

7.500 to 335.000 Nm

Max. Counterforce

180.000 to 900.000 N

Rotary WRD

Weforma rotation dampers are used for controlling rotary motion. Typical application include copy machine lids, printers, tape decks and CD players. The deceleration characteristic can be clockwise, anti-clockwise or both ways. The size is depending on the torque calculation.



Torque

0.15 to 700 Nm

Opening Angle

110 to 180°



Technical modifications keep in reserve !

(2012/01)

Pallet stoppers WP



Precise deceleration and singulation of pallets
 Single acting via return spring or double acting via
 pneumatic return

Masses
 up to 1200 kg
Speeds
 up to 40 m/min

Material.....Housing: aluminium, black anodized
 Stop: hardened
 Sensor for end position.....optional

Special version.....Pallet stopper
 for clean room

Gas springs WMG



Mounting.....Recommendation: piston rod downwards
 Temperature.....-20°C – +80°C
 Optional -45°C - +200°C

Diameters
 8 to 70 mm
Stroke
 20 to 800 mm
Force
 10 to 13000 N

Minimal friction coefficient to achieve the lowest extension forces
 Integrated grease chamber and sliding bearing
 Lower breakaway force
 Maintenance-free and ready for installation

Special editions.....
Series **WMGVA** in stainless steel
 stroke 20-700 mm, force 40-1200 N
Series **WMGB** freely lockable
 over the complete stroke
 stroke 50-700 mm, force 40-2600 N
Series **WMGZ** traction version
 stroke 30-650 mm, force 30-1200 N

Technical modifications keep in reserve !

(2012/01)