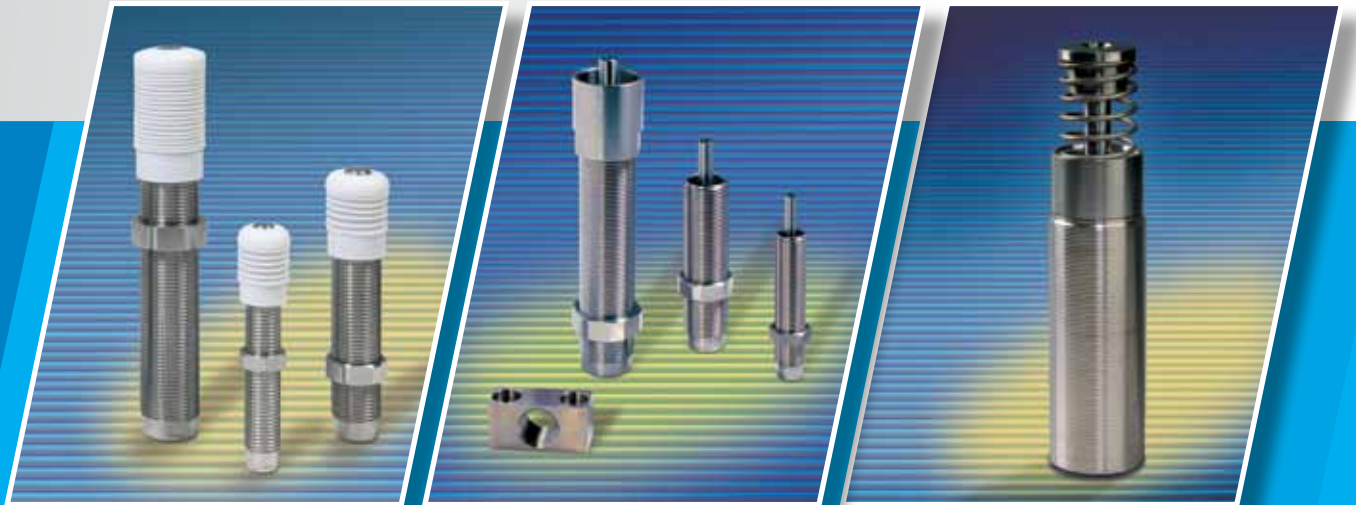




STAINLESS STEEL

INDUSTRIAL SHOCK ABSORBERS



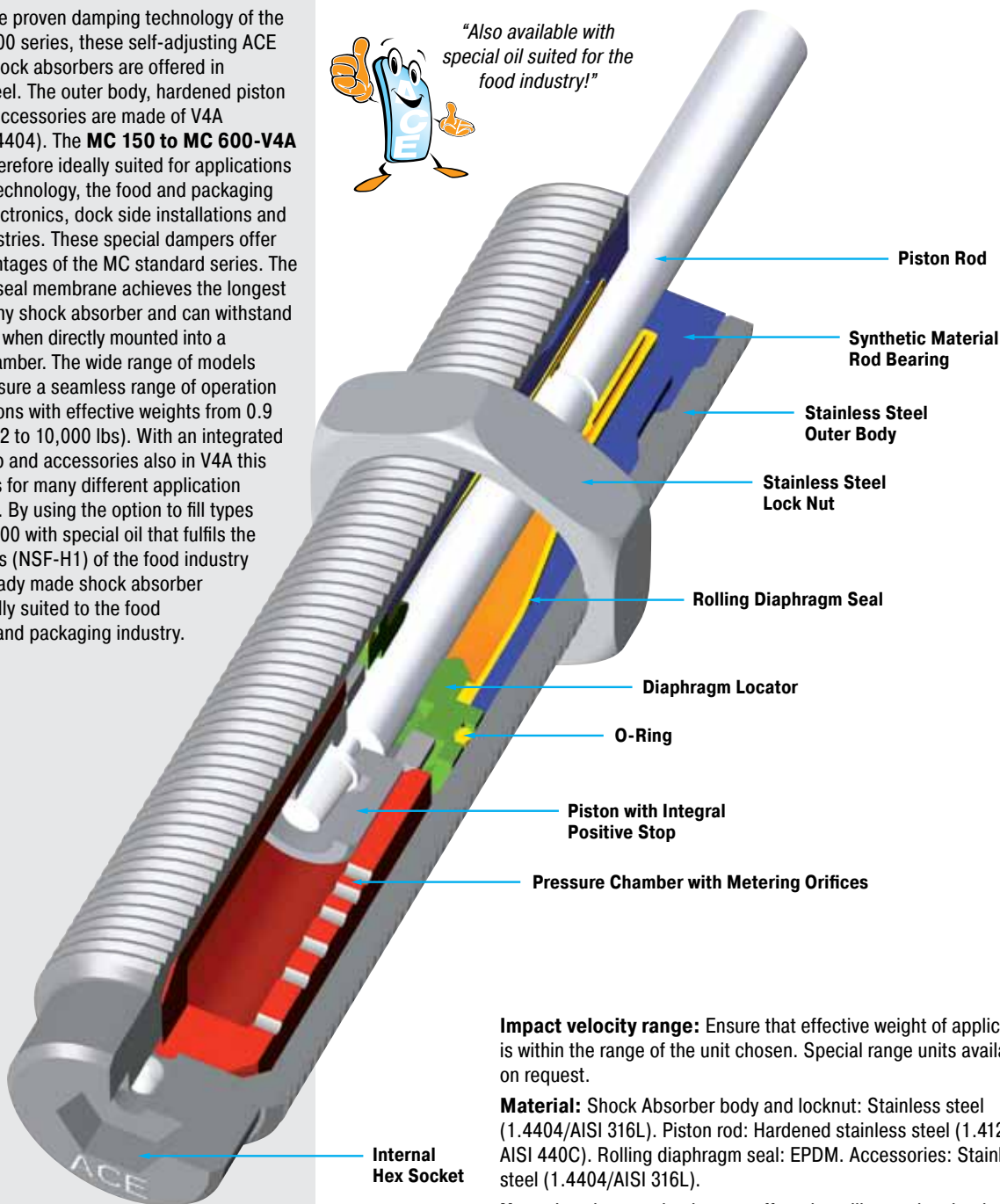
*V4A HIGH QUALITY STAINLESS STEEL
FOR LONG LIFE APPLICATIONS*

PACKAGING / FOOD PROCESSING / MEDICAL / ELECTRONICS / CHEMICAL / MARINE / EXTREME ENVIRONMENTS

Based on the proven damping technology of the MC150 to 600 series, these self-adjusting ACE miniature shock absorbers are offered in stainless steel. The outer body, hardened piston rod and all accessories are made of V4A (material 1.4404). The **MC 150 to MC 600-V4A series** is therefore ideally suited for applications in medical technology, the food and packaging industry, electronics, dock side installations and marine industries. These special dampers offer all the advantages of the MC standard series. The ACE rolling seal membrane achieves the longest lifetime of any shock absorber and can withstand up to 7 bars when directly mounted into a pressure chamber. The wide range of models available ensure a seamless range of operation on applications with effective weights from 0.9 to 4536 kg (2 to 10,000 lbs). With an integrated positive stop and accessories also in V4A this range allows for many different application possibilities. By using the option to fill types MC 150 to 600 with special oil that fulfils the requirements (NSF-H1) of the food industry there is a ready made shock absorber system ideally suited to the food processing and packaging industry.



"Also available with special oil suited for the food industry!"



Impact velocity range: Ensure that effective weight of application is within the range of the unit chosen. Special range units available on request.

Material: Shock Absorber body and locknut: Stainless steel (1.4404/AISI 316L). Piston rod: Hardened stainless steel (1.4125/AISI 440C). Rolling diaphragm seal: EPDM. Accessories: Stainless steel (1.4404/AISI 316L).

Note: Local contamination can affect the rolling seal and reduce the lifetime. Please contact ACE for a suitable solution.

W₄ capacity rating: (max. energy per hour Nm/hr) If your application exceeds the tabulated W₄ figures consider additional cooling i.e. cylinder exhaust air etc. Ask ACE for further details.

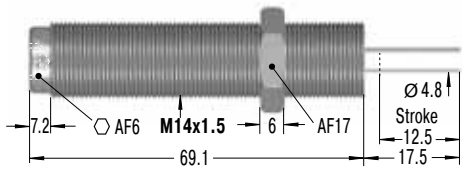
Mounting: In any position. If precise end position datum is required consider use of the optional stop collar type AH.

Operating temperature range: 0°C to 66°C (32°F to 150°F)

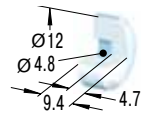
On request: Special oils, seals and special accessories.



MC 150M-V4A

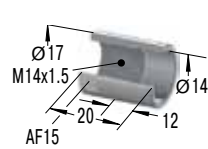


PP150



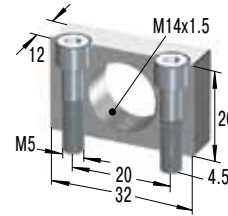
Nylon Button
W₃ max = 14 Nm

AH14-V4A



Stop Collar

MB14SC2-V4A



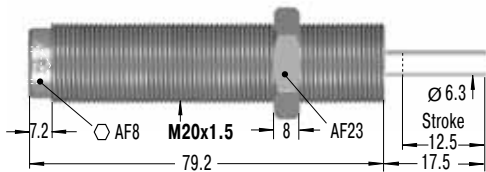
Mounting Block

KM14-V4A

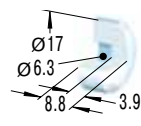


Locknut

MC 225M-V4A

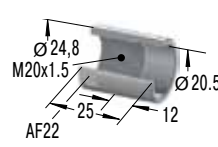


PP225



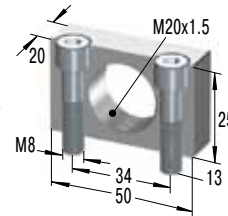
Nylon Button
W₃ max = 33 Nm

AH20-V4A



Stop Collar

MB20SC2-V4A



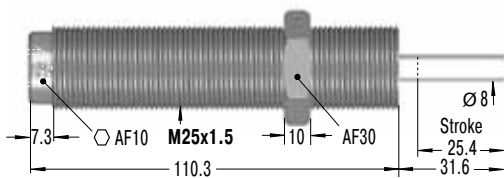
Mounting Block

KM20-V4A

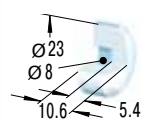


Locknut

MC 600M-V4A

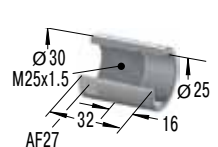


PP600



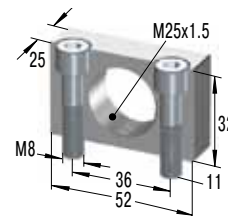
Nylon Button
W₃ max = 68 Nm

AH25-V4A



Stop Collar

MB25SC2-V4A



Mounting Block

KM25-V4A



Locknut

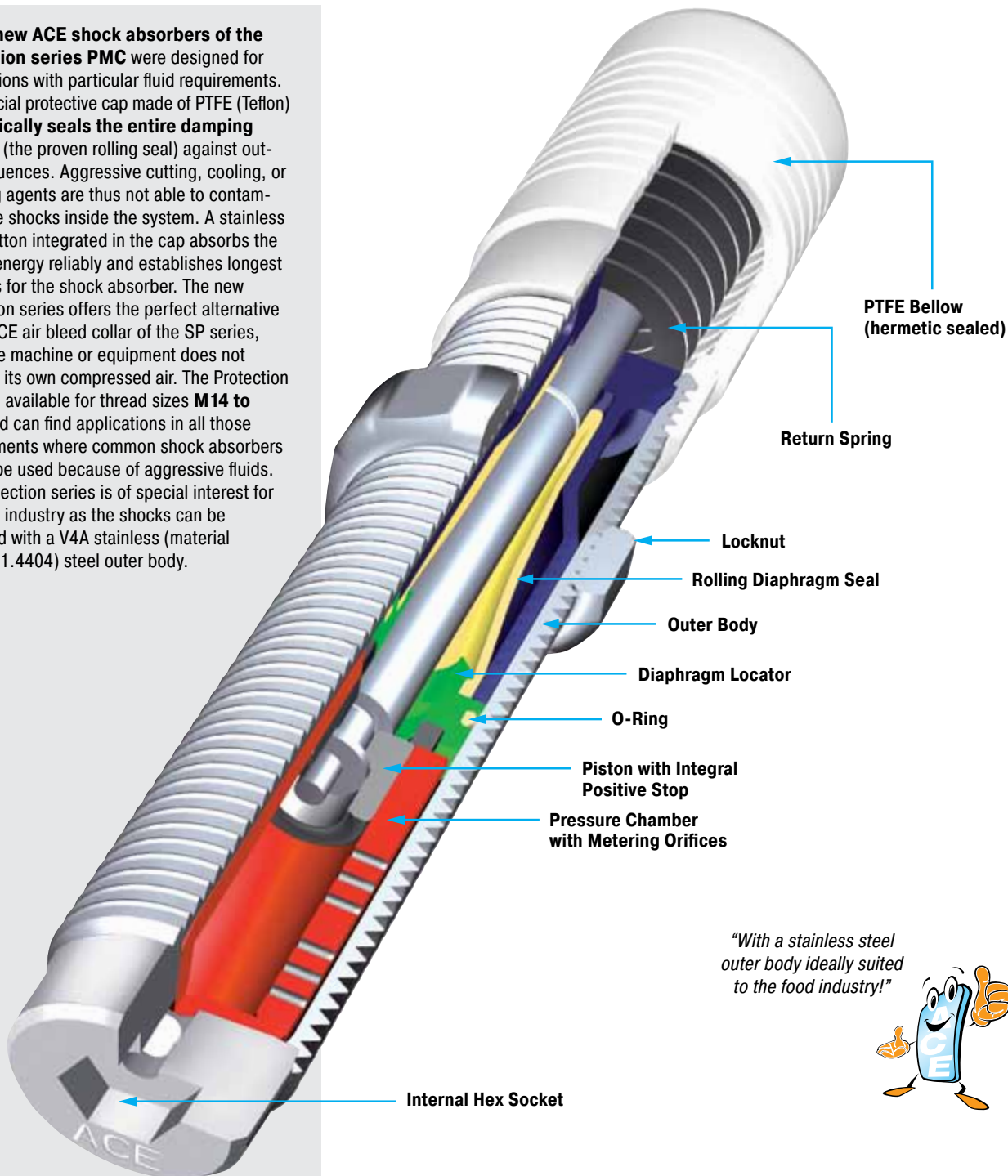
Capacity Chart

¹ For applications with higher side load angles please contact ACE.

| Metric | Max. Energy Capacity | | Effective Weight me | | Min. Return Force | Max. Return Force | Rod Reset Time | ¹ Max. Side Load Angle | Weight |
|---------------|----------------------|----------------|---------------------|---------|-------------------|-------------------|----------------|-----------------------------------|--------|
| | W ₃ | W ₄ | me min. | me max. | | | | | |
| Type | Nm/Cycle | Nm/h | kg | kg | N | N | s | ° | kg |
| MC 150M-V4A | 20 | 34 000 | 0.9 | 10 | 3 | 5 | 0.4 | 4 | 0.06 |
| MC 150MH-V4A | 20 | 34 000 | 8.6 | 86 | 3 | 5 | 0.4 | 4 | 0.06 |
| MC 150MH2-V4A | 20 | 34 000 | 70 | 200 | 3 | 5 | 0.4 | 4 | 0.06 |
| MC 150MH3-V4A | 20 | 34 000 | 181 | 408 | 3 | 5 | 1 | 4 | 0.06 |
| MC 225M-V4A | 41 | 45 000 | 2.3 | 25 | 4 | 6 | 0.3 | 4 | 0.14 |
| MC 225MH-V4A | 41 | 45 000 | 23 | 230 | 4 | 6 | 0.3 | 4 | 0.15 |
| MC 225MH2-V4A | 41 | 45 000 | 180 | 910 | 4 | 6 | 0.3 | 4 | 0.14 |
| MC 225MH3-V4A | 41 | 45 000 | 816 | 1 814 | 4 | 6 | 0.3 | 4 | 0.05 |
| MC 600M-V4A | 136 | 68 000 | 9 | 136 | 5 | 9 | 0.6 | 2 | 0.27 |
| MC 600MH-V4A | 136 | 68 000 | 113 | 1 130 | 5 | 9 | 0.6 | 2 | 0.27 |
| MC 600MH2-V4A | 136 | 68 000 | 400 | 2 300 | 5 | 9 | 0.6 | 2 | 0.29 |
| MC 600MH3-V4A | 136 | 68 000 | 2 177 | 4 536 | 5 | 9 | 0.6 | 2 | 0.26 |

| Imperial | Max. Energy Capacity | | Effective Weight me | | Min. Return Force | Max. Return Force | Rod Reset Time | ¹ Max. Side Load Angle | Weight |
|---------------|----------------------|----------------|---------------------|---------|-------------------|-------------------|----------------|-----------------------------------|--------|
| | E ₃ | E ₄ | We min. | We max. | | | | | |
| Type | In. lbs/Cycle | In. lbs/h | lbs | lbs | lbs | lbs | s | ° | lbs |
| MC 150M-V4A | 175 | 300 000 | 2 | 22 | 0.7 | 1.2 | 0.4 | 4 | 0.12 |
| MC 150MH-V4A | 175 | 300 000 | 20 | 200 | 0.7 | 1.2 | 0.4 | 4 | 0.12 |
| MC 150MH2-V4A | 175 | 300 000 | 150 | 450 | 0.7 | 1.2 | 0.4 | 4 | 0.12 |
| MC 150MH3-V4A | 175 | 300 000 | 400 | 900 | 0.7 | 1.2 | 1 | 4 | 0.12 |
| MC 225M-V4A | 360 | 400 000 | 5 | 55 | 1 | 1.5 | 0.3 | 4 | 0.34 |
| MC 225MH-V4A | 360 | 400 000 | 50 | 500 | 1 | 1.5 | 0.3 | 4 | 0.34 |
| MC 225MH2-V4A | 360 | 400 000 | 400 | 2 000 | 1 | 1.5 | 0.3 | 4 | 0.34 |
| MC 225MH3-V4A | 360 | 400 000 | 1 800 | 4 000 | 1 | 1.5 | 0.3 | 4 | 0.34 |
| MC 600M-V4A | 1 200 | 600 000 | 20 | 300 | 1 | 2 | 0.6 | 2 | 0.57 |
| MC 600MH-V4A | 1 200 | 600 000 | 250 | 2 500 | 1 | 2 | 0.6 | 2 | 0.57 |
| MC 600MH2-V4A | 1 200 | 600 000 | 880 | 5 000 | 1 | 2 | 0.6 | 2 | 0.57 |
| MC 600MH3-V4A | 1 200 | 600 000 | 4 800 | 10 000 | 1 | 2 | 0.6 | 2 | 0.57 |

These new ACE shock absorbers of the Protection series PMC were designed for applications with particular fluid requirements. The special protective cap made of PTFE (Teflon) hermetically seals the entire damping system (the proven rolling seal) against outside influences. Aggressive cutting, cooling, or cleaning agents are thus not able to contaminate the shocks inside the system. A stainless steel button integrated in the cap absorbs the impact energy reliably and establishes longest lifetimes for the shock absorber. The new Protection series offers the perfect alternative to the ACE air bleed collar of the SP series, when the machine or equipment does not possess its own compressed air. The Protection series is available for thread sizes **M14 to M25** and can find applications in all those environments where common shock absorbers cannot be used because of aggressive fluids. The Protection series is of special interest for the food industry as the shocks can be delivered with a V4A stainless (material number 1.4404) steel outer body.



"With a stainless steel outer body ideally suited to the food industry!"



Impact velocity range: Ensure that effective weight of application is within the range of the unit chosen. Special range units available on request.

Material: Bellow: PTFE. Steel insert: Stainless Steel 1.4404/AISI 316L. Shock absorber body: stainless steel 1.4404/AISI 316L.

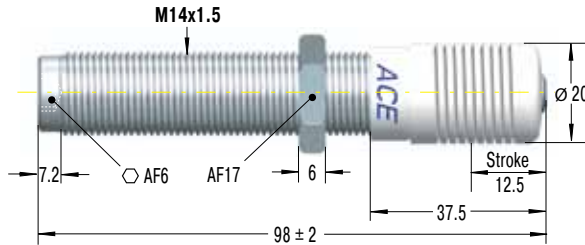
Note: Final preliminary test must be done on the application.

Mounting: In any position

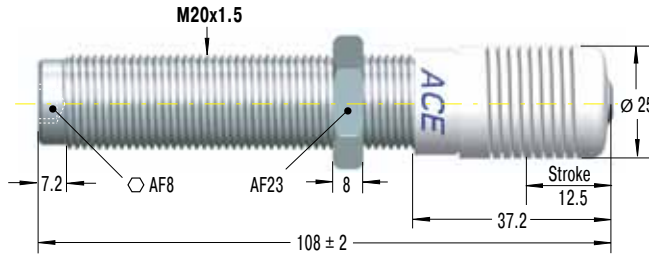
Operating temperature range: 0°C to 66°C (32°F to 150°F)



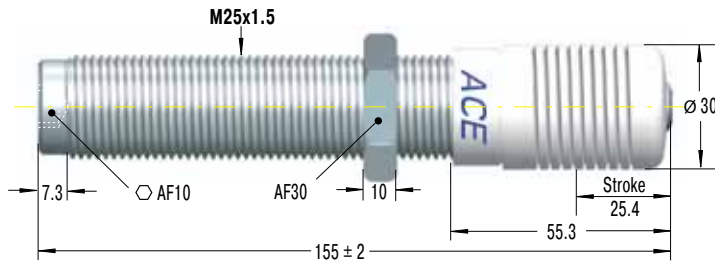
PMC 150M-V4A



PMC 225M-V4A



PMC 600M-V4A



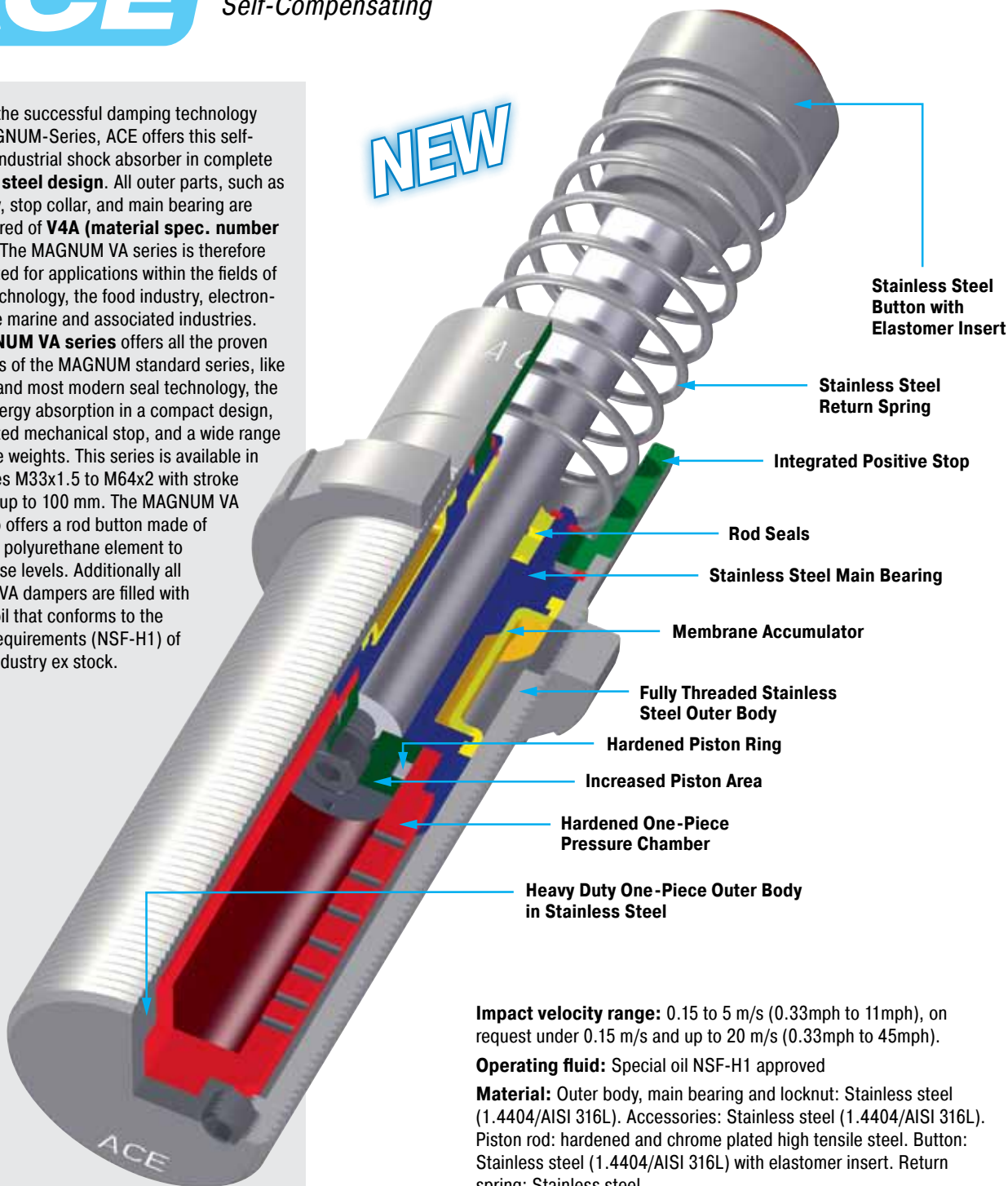
Capacity Chart

| Metric | Max. Energy Capacity | | Effective Weight me | | Min. Return Force | Max. Return Force | Rod Reset Time | Max. Side Load Angle | Weight |
|----------------|----------------------|----------------|---------------------|---------|-------------------|-------------------|----------------|----------------------|--------|
| | W ₃ | W ₄ | me min. | me max. | | | | | |
| Type | Nm/Cycle | Nm/h | kg | kg | N | N | s | ° | kg |
| PMC 150M-V4A | 20 | 34 000 | 0.9 | 10 | 5 | 60 | 0.4 | 4 | 0.06 |
| PMC 150MH-V4A | 20 | 34 000 | 8.6 | 86 | 5 | 60 | 0.4 | 4 | 0.06 |
| PMC 150MH2-V4A | 20 | 34 000 | 70 | 200 | 5 | 60 | 0.4 | 4 | 0.06 |
| PMC 150MH3-V4A | 20 | 34 000 | 181 | 408 | 5 | 60 | 1 | 4 | 0.06 |
| PMC 225M-V4A | 41 | 45 000 | 2.3 | 25 | 5 | 65 | 0.3 | 4 | 0.15 |
| PMC 225MH-V4A | 41 | 45 000 | 23 | 230 | 5 | 65 | 0.3 | 4 | 0.15 |
| PMC 225MH2-V4A | 41 | 45 000 | 180 | 910 | 5 | 65 | 0.3 | 4 | 0.15 |
| PMC 225MH3-V4A | 41 | 45 000 | 816 | 1 814 | 5 | 65 | 0.3 | 4 | 0.15 |
| PMC 600M-V4A | 136 | 68 000 | 9 | 136 | 5 | 85 | 0.6 | 2 | 0.30 |
| PMC 600MH-V4A | 136 | 68 000 | 113 | 1 130 | 5 | 85 | 0.6 | 2 | 0.30 |
| PMC 600MH2-V4A | 136 | 68 000 | 400 | 2 300 | 5 | 85 | 0.6 | 2 | 0.30 |
| PMC 600MH3-V4A | 136 | 68 000 | 2 177 | 4 536 | 5 | 85 | 0.6 | 2 | 0.30 |

Imperial

| Type | E ₃ | E ₄ | We min. | We max. | Min. Return Force | Max. Return Force | Rod Reset Time | Max. Side Load Angle | Weight |
|----------------|----------------|----------------|---------|---------|-------------------|-------------------|----------------|----------------------|--------|
| | In. lbs/Cycle | In. lbs/h | lbs | lbs | lbs | lbs | s | ° | lbs |
| PMC 150M-V4A | 175 | 300 000 | 2 | 22 | 1 | 13 | 0.4 | 4 | 0.13 |
| PMC 150MH-V4A | 175 | 300 000 | 20 | 200 | 1 | 13 | 0.4 | 4 | 0.13 |
| PMC 150MH2-V4A | 175 | 300 000 | 150 | 450 | 1 | 13 | 0.4 | 4 | 0.13 |
| PMC 150MH3-V4A | 175 | 300 000 | 400 | 900 | 1 | 13 | 1 | 4 | 0.13 |
| PMC 225M-V4A | 360 | 400 000 | 5 | 55 | 1 | 14 | 0.3 | 4 | 0.33 |
| PMC 225MH-V4A | 360 | 400 000 | 50 | 500 | 1 | 14 | 0.3 | 4 | 0.33 |
| PMC 225MH2-V4A | 360 | 400 000 | 400 | 2 000 | 1 | 14 | 0.3 | 4 | 0.33 |
| PMC 225MH3-V4A | 360 | 400 000 | 1 800 | 4 000 | 1 | 14 | 0.3 | 4 | 0.33 |
| PMC 600M-V4A | 1 200 | 600 000 | 20 | 300 | 1 | 19 | 0.6 | 2 | 0.66 |
| PMC 600MH-V4A | 1 200 | 600 000 | 250 | 2 500 | 1 | 19 | 0.6 | 2 | 0.66 |
| PMC 600MH2-V4A | 1 200 | 600 000 | 880 | 5 000 | 1 | 19 | 0.6 | 2 | 0.66 |
| PMC 600MH3-V4A | 1 200 | 600 000 | 4 800 | 10 000 | 1 | 19 | 0.6 | 2 | 0.66 |

Based on the successful damping technology of our MAGNUM-Series, ACE offers this self-adjusting industrial shock absorber in complete **stainless steel design**. All outer parts, such as outer body, stop collar, and main bearing are manufactured of **V4A (material spec. number 1.4404)**. The MAGNUM VA series is therefore ideally suited for applications within the fields of medical technology, the food industry, electronics and the marine and associated industries. The **MAGNUM VA series** offers all the proven advantages of the MAGNUM standard series, like its robust and most modern seal technology, the highest energy absorption in a compact design, an integrated mechanical stop, and a wide range of effective weights. This series is available in thread sizes M33x1.5 to M64x2 with stroke lengths of up to 100 mm. The MAGNUM VA series also offers a rod button made of V4A with a polyurethane element to reduce noise levels. Additionally all MAGNUM VA dampers are filled with a special oil that conforms to the approval requirements (NSF-H1) of the food industry ex stock.



Impact velocity range: 0.15 to 5 m/s (0.33mph to 11mph), on request under 0.15 m/s and up to 20 m/s (0.33mph to 45mph).

Operating fluid: Special oil NSF-H1 approved

Material: Outer body, main bearing and locknut: Stainless steel (1.4404/AISI 316L). Accessories: Stainless steel (1.4404/AISI 316L). Piston rod: hardened and chrome plated high tensile steel. Button: Stainless steel (1.4404/AISI 316L) with elastomer insert. Return spring: Stainless steel.

Capacity rating: For emergency only applications it is sometimes possible to exceed the published max. capacity ratings. Please consult ACE for further details. If your application exceeds the tabulated W_4 figures (max. energy per hour Nm/hr) consider additional cooling. Ask ACE for further details.

Mounting: In any position

Operating temperature range: -12°C to 70°C (10°F to 158°F). For higher temperatures consult ACE.

On request: special oils, viton seals and special accessories

Noise reduction: 3 to 7 dB when using the impact buttons with urethane insert.

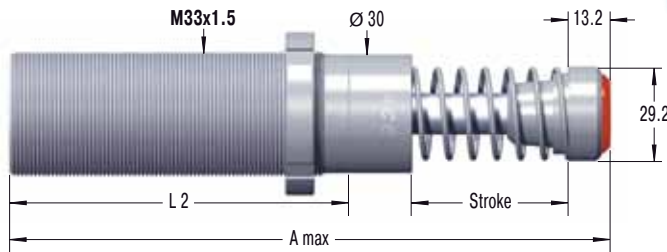


"Standard type with special oil NSF-H1 approved – suited for the food industry!"

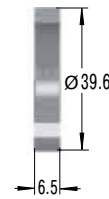
NEW

Dimensions in mm

MC 33xxM-V4A

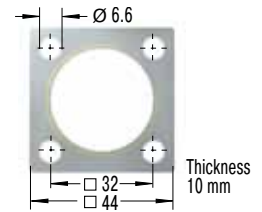


NM33-V4A



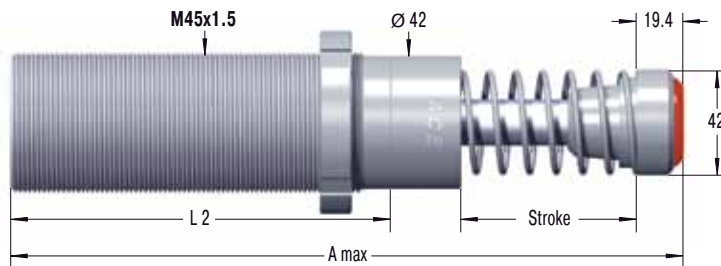
Locking Ring

QF33-V4A

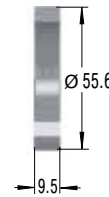


Square Flange

MC 45xxM-V4A

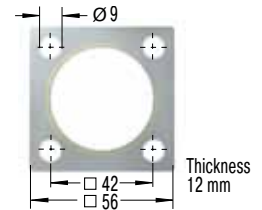


NM45-V4A



Locking Ring

QF45-V4A



Square Flange

MC 64xxM-V4A

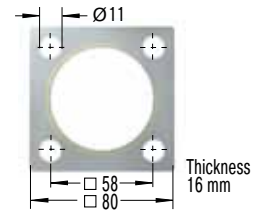


NM64-V4A



Locking Ring

QF64-V4A



Square Flange

See back cover for additional dimensions

Capacity Chart MC 33/MC 45/MC 64

| Type Self-Compensating | Max. Energy Capacity | | 1 Effective Weight me | | | | | Min. Return Force N | Max. Return Force N | Rod Reset Time s | Max. Side Load Angle ° | Weight kg |
|---------------------------|------------------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------|---------------------|------------------|------------------------|-----------|
| | 2 W ₃ Nm/Cycle | W ₄ Nm/h | Soft | | Hard | | | | | | | |
| | | | -0 min. max. kg | -1 min. max. kg | -2 min. max. kg | -3 min. max. kg | -4 min. max. kg | | | | | |
| MC 3325M-V4A | 155 | 75 000 | 3 - 11 | 9 - 40 | 30 - 120 | 100 - 420 | 350 - 1 420 | 45 | 90 | 0.03 | 4 | 0.45 |
| MC 3350M-V4A | 310 | 85 000 | 5 - 22 | 18 - 70 | 60 - 250 | 240 - 840 | 710 - 2 830 | 45 | 135 | 0.06 | 3 | 0.54 |
| MC 4525M-V4A | 340 | 107 000 | 7 - 27 | 20 - 90 | 80 - 310 | 260 - 1 050 | 890 - 3 540 | 70 | 100 | 0.03 | 4 | 1.13 |
| MC 4550M-V4A | 680 | 112 000 | 13 - 54 | 45 - 180 | 150 - 620 | 520 - 2 090 | 1 800 - 7 100 | 70 | 145 | 0.08 | 3 | 1.36 |
| MC 4575M-V4A | 1 020 | 146 000 | 20 - 80 | 70 - 270 | 230 - 930 | 790 - 3 140 | 2 650 - 10 600 | 50 | 180 | 0.11 | 2 | 1.59 |
| MC 6450M-V4A | 1 700 | 146 000 | 35 - 140 | 140 - 540 | 460 - 1 850 | 1 600 - 6 300 | 5 300 - 21 200 | 90 | 155 | 0.12 | 4 | 2.9 |
| MC 64100M-V4A | 3 400 | 192 000 | 70 - 280 | 270 - 1 100 | 930 - 3 700 | 3 150 - 12 600 | 10 600 - 42 500 | 105 | 270 | 0.34 | 3 | 3.7 |

Imperial

| Type Self-Compensating | 2 E ₃ In. lbs/Cycle | | E ₄ In. lbs/h | | 1 Effective Weight We | | | | | Min. Return Force lbs | Max. Return Force lbs | Rod Reset Time s | Max. Side Load Angle ° | Weight lbs |
|---------------------------|-----------------------------------|------------------------|-----------------------------|------------------------|------------------------|----------------|-----------------|----|----|-----------------------|-----------------------|------------------|------------------------|------------|
| | | | | | Soft | | Hard | | | | | | | |
| | -0 min. max. lbs | -1 min. max. lbs | -2 min. max. lbs | -3 min. max. lbs | -4 min. max. lbs | | | | | | | | | |
| MC 3325M-V4A | 1 350 | 670 000 | 7 - 24 | 20 - 80 | 68 - 272 | 230 - 920 | 780 - 3 120 | 10 | 20 | 0.03 | 4 | 1 | | |
| MC 3350M-V4A | 2 700 | 760 000 | 11 - 49 | 40 - 160 | 136 - 544 | 460 - 1 840 | 1 560 - 6 240 | 10 | 30 | 0.06 | 3 | 1 | | |
| MC 4525M-V4A | 3 000 | 950 000 | 15 - 60 | 50 - 200 | 170 - 680 | 575 - 2 300 | 1 950 - 7 800 | 16 | 22 | 0.03 | 4 | 2 | | |
| MC 4550M-V4A | 6 000 | 1 000 000 | 29 - 119 | 100 - 400 | 340 - 1 360 | 1 150 - 4 600 | 3 900 - 15 600 | 16 | 33 | 0.08 | 3 | 3 | | |
| MC 4575M-V4A | 9 000 | 1 300 000 | 44 - 76 | 150 - 600 | 510 - 2 040 | 1 730 - 6 920 | 5 850 - 23 400 | 11 | 40 | 0.11 | 2 | 4 | | |
| MC 6450M-V4A | 15 000 | 1 300 000 | 77 - 309 | 300 - 1 200 | 1 020 - 4 080 | 3 460 - 13 840 | 11 700 - 46 800 | 20 | 35 | 0.12 | 4 | 6 | | |
| MC 64100M-V4A | 30 000 | 1 700 000 | 154 - 617 | 600 - 2 400 | 2 040 - 8 160 | 6 920 - 27 680 | 23 400 - 93 600 | 24 | 61 | 0.34 | 3 | 8 | | |

¹ The effective weight range limits can be raised or lowered to special order.

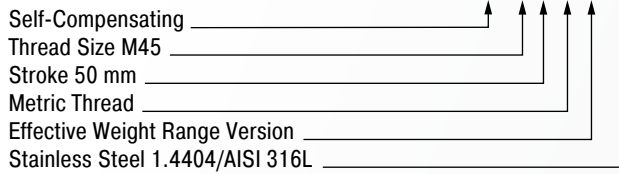
² For emergency only applications it is sometimes possible to exceed the above ratings. Please consult ACE for further details.

| Dimensions (mm) | | | |
|-----------------|-----------|-------|-----|
| Type | Stroke mm | A max | L2 |
| MC 3325M-V4A | 23 | 151.2 | 83 |
| MC 3350M-V4A | 48.5 | 202.2 | 108 |
| MC 4525M-V4A | 23 | 164.5 | 95 |
| MC 4550M-V4A | 48.5 | 214.4 | 120 |
| MC 4575M-V4A | 74 | 265.4 | 145 |
| MC 6450M-V4A | 48.5 | 244.1 | 140 |
| MC 64100M-V4A | 99.5 | 345.1 | 191 |

| Dimensions (inches) | | | |
|---------------------|---------------|-------|----|
| Type | Stroke inches | A max | L2 |
| MC 3325M-V4A | 1 | 6 | 3 |
| MC 3350M-V4A | 2 | 8 | 4 |
| MC 4525M-V4A | 1 | 7 | 4 |
| MC 4550M-V4A | 2 | 8 | 5 |
| MC 4575M-V4A | 3 | 10 | 6 |
| MC 6450M-V4A | 2 | 10 | 6 |
| MC 64100M-V4A | 4 | 14 | 8 |

Ordering Example

MC 4550M-1-V4A



Other Deceleration and Motion Control Products



Safety Shock Absorbers



Velocity and Feed Controllers



PET and GLASS Shock Absorbers



TUBUS Bumpers



Gas Springs



Rotary Dampers



Hydraulic Dampers