**Miniature Shock Absorbers**
**Self-Adjusting**
**Cushioned Mass**
**0,9 to 16 kg**

- **Small, highly efficient units ideal for a wide variety of applications**
- **Reduce installation vibration**
- **Enable high cycling rates to be used**

## Technical Data

Operation:
Self-adjusting hydraulic units

Operating Temperature:
+80˚C max.

Impact Velocity:
0,15 m/s minimum
4,3 m/s maximum

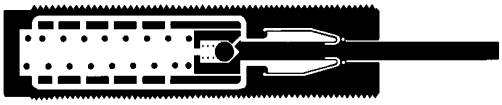
Formulae and Calculations:
See page N 1.11.003.01

Materials:
Burnished steel body, hardened stainless steel (Martensitic) piston rod, synthetic rubber seal.
Note: For optimum heat dissipation do not paint or spray shock absorber

## Ordering Information

To order a shock absorber capable of damping a mass of up to 16 kg at up to 28200 Nm/h quote: M/59612/AZ

To order mountings and accessories refer to appropriate tables.



## Capacity Chart ● Weights of shock absorbers

| Model | Cushioned mass (kg) **me** min. max. | Maximum energy input ** **W3** per stroke (Nm) | **W4** per hour (Nm/h) | Resetting force min. (N) max. | Resetting time (s) | Maximum angle of deflection | Weight (kg) |
|---|---|---|---|---|---|---|---|
| M/59610/AZ | 0,9 to 6,8 | 2,8 | 22600 | 3,6 to 7,6 | 0,2 | 3° | 0,03 |
| M/59610/BZ | 3,6 to 13,6 | 2,8 | 22600 | 3,6 to 7,6 | 0,2 | 3° | 0,03 |
| M/59612/AZ | 0,9 to 16 | 8,5 | 28200 | 4,5 to 11 | 0,3 | 3° | 0,04 |

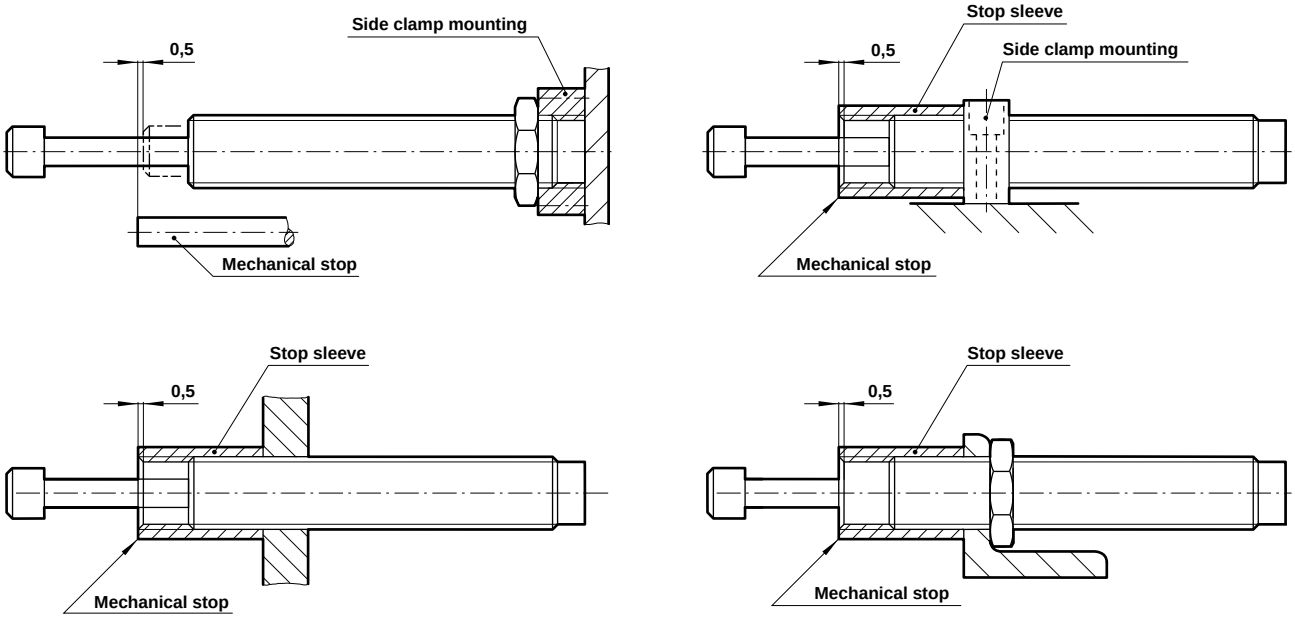
** The ratings per hour of these units may be exceeded if they are switched off periodically or cooled by exhaust air (up to +80°C)

Formulae and Calculations: See page N 1.11.003.01

## Weight of Accessories and Mountings (kg)

| Model | Style 'N' | Stop Sleeve | Style 'T' |
|---|---|---|---|
| M/59610/AZ, ../BZ | 0,001 | 0,008 | 0,026 |
| M/59612/AZ | 0,002 | 0,010 | 0,026 |

## Mounting Examples




### Warning

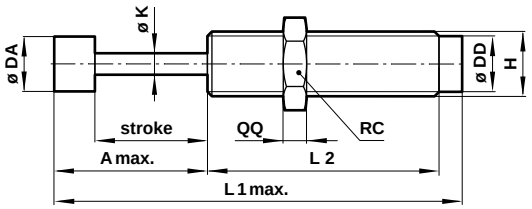
These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under **'Technical Data'**.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult NORGREN.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.
**System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**
System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.

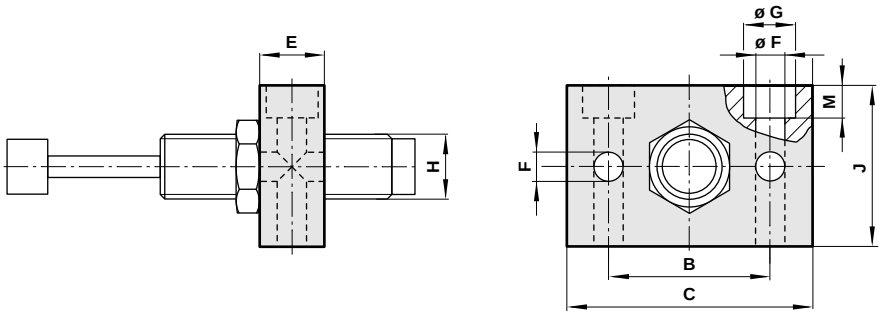
## Basic Dimensions




| Model | Stroke | A | ∅ DA | ∅ DD | H | ∅ K | L 1 | L2 | QQ | RC |
|---|---|---|---|---|---|---|---|---|---|---|
| M/59610/AZ | 6,4 | 14,5 | 7,5 | 8,5 | M 10 x 1 | 3,3 | 57,5 | 37,5 | 3 | 13 |
| M/59610/BZ | 6,4 | 14,5 | 7,5 | 8,5 | M 10 x 1 | 3,3 | 57,5 | 37,5 | 3 | 13 |
| M/59612/AZ | 10 | 18 | 7,5 | 10 | M 12 x 1 | 3,3 | 69,5 | 46 | 4 | 14 |

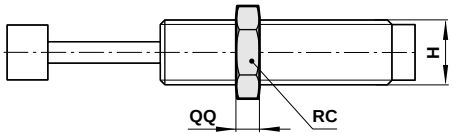
Shock absorbers are supplied with one locknut as standard.

## Side Clamp Mounting Style 'T'



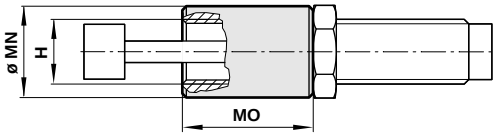

| Model | Shock absorber | B | C | E | ∅ F | ∅ G | H | J | M | |
|---|---|---|---|---|---|---|---|---|---|---|
| M/P34718 | 59610 | 25,5 | 38 | 12 | 4,5 | 8 | M 10 x 1 | 25,5 | 5 | |
| M/P34719 | 59612 | 25,5 | 38 | 12 | 4,5 | 8 | M 12 x 1 | 25,5 | 5 | |

## Locknut Style 'N'




| Model | Shock absorber | H | QQ | RC (A/F) |
|---|---|---|---|---|
| M/P1501/111 | 59610 | M 10 x 1 | 3 | 13 |
| M/P1501/112 | 59612 | M 12 x 1 | 4 | 14 |

## Stop Sleeve




| Model | Shock absorber | H | ∅ MN | MO |
|---|---|---|---|---|
| M/P34721 | 59610 | M 10 x 1 | 14,5 | 20 |
| M/P34722 | 59612 | M 12 x 1 | 16 | 20 |

**Miniature Shock Absorbers**
**Self-Adjusting, Adjustable**
**Cushioned Mass**
**0,9 to 2300 kg**

- **Small, highly efficient units ideal for a wide variety of applications**
- **Reduce installation vibration**
- **Shock absorber (M/59600/AX, .../BX, .../CX) ideal for direct mounting into pneumatic cylinders**
- **Can be used to boost the cushioning capacity of existing actuators**
- **Enable high cycling rates to be used**

## Technical Data

Operation:
Self-adjusting hydraulic units
Adjustable hydraulic units (M/59600/Z and .../MZ)

Operating Temperature:
+90˚C max.
+65°C max. (M/59600/AX, .../BX and .../CX)

Impact Velocity:
0,3 m/s minimum
3,6 m/s maximum
0,8 m/s minimum (M/59600/AX, .../BX and .../CX)
6 m/s maximum (M/59600/AX, .../BX and .../CX)

Formulae and Calculations:
See page N 1.11.003.01

Other Features:
Install mechanical stop 0,5 to 1 mm before each end of stroke. Shock absorbers (M/59600/AX, .../BX and .../CX) direct mounting into pneumatic cylinder end covers for precision cushioning. Cylinder air pressure 7 bar maximum. Do not rotate piston rod or nylon button as this may cause damage to rolling seal.

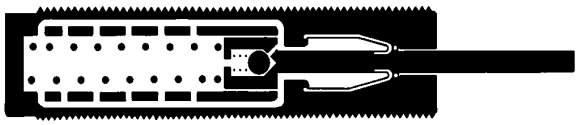
Materials:
Burnished steel body, hardened stainless steel (Martensitic) piston rod, synthetic rubber seals EPDM rolling seal for M/59600/AX, .../BX and .../CX (this material is not compatible with petroleum base fluids).
Note: For optimum heat dissipation do not paint or spray shock absorber.

## Ordering Information

To order a shock absorber capable of damping a mass of up to 910 kg at up to 45000 Nm/h quote: M/59620/CX

To order a shock absorber for direct mounting into pneumatic cylinder capable of damping a mass of up to 2040 kg at up to 90000 Nm/h quote: M/59625/MZ

To order mountings and accessories refer to appropriate tables.






For your local Norgren Technical Sales Centre phone 0345 662266. For your local Norgren Distributor phone 0345 227777.
IMI Norgren Limited, PO Box 22, Eastern Avenue, Lichfield, Staffordshire WS13 6SB

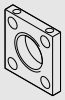
## Capacity Chart ● Weights

| Model | Cushioned mass (kg) **me** min. max. | Maximum energy input ** **W3** per stroke (Nm) | **W4** per hour (Nm/h) | Resetting force min. (N) max. | Resetting time (s) | Maximum angle of deflection | Weight (kg) |
|---|---|---|---|---|---|---|---|
| M/59614/AX | 0,9 to 10 | 17 | 34000 | 3 to 5 | 0,4 | 4° | 0,06 |
| M/59614/BX | 8,6 to 86 | | | | | | |
| M/59614/CX | 70 to 200 | | | | | | |
| M/59620/AX | 2,3 to 25 | 25 | 45000 | 4 to 6 | 0,3 | 4° | 0,15 |
| M/59620/BX | 23 to 230 | | | | | | |
| M/59620/CX | 180 to 910 | | | | | | |
| M/59625/AX | 9 to 136 | 68 | 68000 | 5 to 9 | 0,6 | 2° | 0,26 |
| M/59625/BX | 113 to 1130 | | | | | | |
| M/59625/CX | 400 to 2300 | | | | | | |
| M/59620/BS | 2,3 to 14 | 23 | 45000 | 4 to 9 | 0,1 | 2° | 0,13 |
| M/59620/CS | 9 to 55 | | | | | | |
| M/59620/DS | 36 to 180 | | | | | | |
| M/59625/BS | 9 to 55 | 57 | 68000 | 10 to 30 | 0,2 | 2° | 0,31 |
| M/59625/ES | 36 to 227 | | | | | | |
| M/59625/GS | 181 to 1088 | | | | | | |
| M/59625/DS | 14 to 90 | 90 | 90000 | 10 to 35 | 0,4 | 2° | 0,40 |
| M/59625/FS | 68 to 408 | | | | | | |
| M/59625/HS | 217 to 1906 | | | | | | |
| M/59620/Z | 2,3 to 226 | 25 | 45000 | 5 to 10 | 0,1 | 2° | 0,13 |
| M/59625/Z | 9 to 1360 | 68 | 68000 | 10 to 30 | 0,2 | 2° | 0,31 |
| M/59625/MZ | 14 to 2040 | 100 | 90000 | 10 to 35 | 0,4 | 1° | 0,40 |

**The ratings per hour of these units may be exceeded if they are switched off periodically or cooled by exhaust air (up to +80°C)

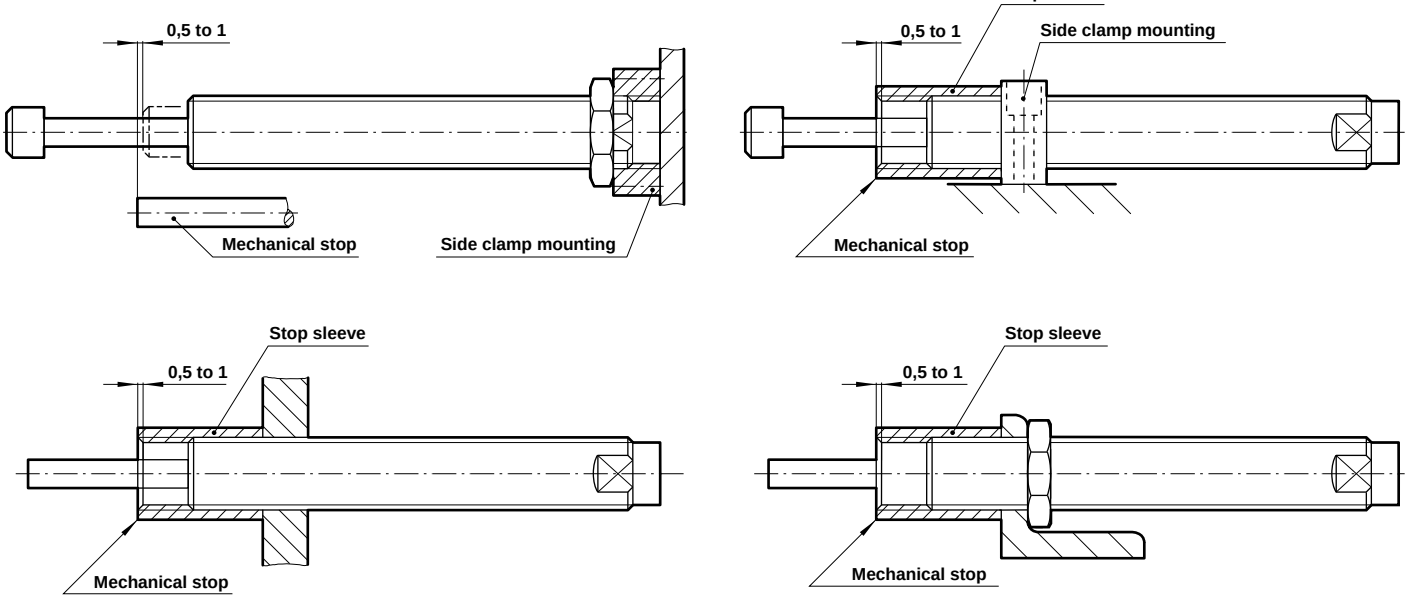
**Formulae and Calculations: See page N 1.11.003.01**

## Weights of Mountings (kg)

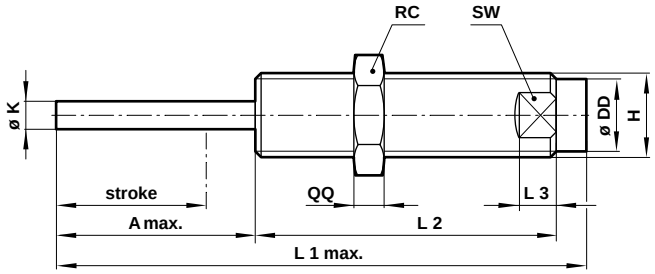
| Model |  Nylon Cap |  Style 'N' |  Stop Sleeve |  Style 'T' |  Style 'F' |  Style 'R' |
|---|---|---|---|---|---|---|
| 59614 | 0,002 | 0,005 | 0,015 | 0,048 | - | - |
| 59620 | 0,003 | 0,010 | 0,032 | 0,043 | - | - |
| 59625 | 0,007 | 0,020 | 0,120 | 0,043 | 0,014 | 0,044 (0,049) * |

* Versions Z, MZ, S

## Mounting Example



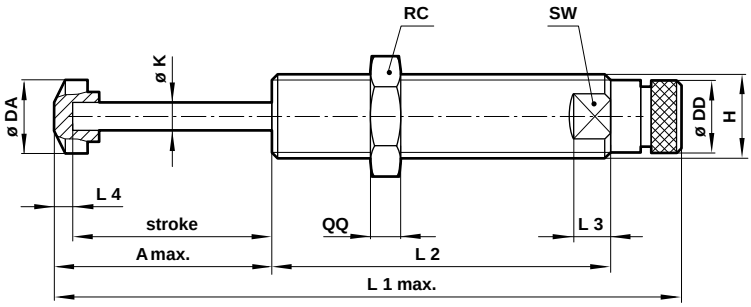
## Basic Dimensions




| Model | Stroke | A | ∅ DD | H | ∅ K | L1 | L2 | L3 | QQ | RC | SW (A/F) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M/59614/AX, ..BX, .../CX | 12,5 | 17,5 | 12 | M 14 x 1,5 | 4,8 | 87 | 61 | 12 | 5 | 17 | 12 |
| M/59620/AX, ..BX, .../CX | 12,5 | 17,5 | 17 | M 20 x 1,5 | 6,3 | 97 | 71 | 12 | 6 | 24 | 18 |
| M/59625/AX, ..BX, .../CX | 25,4 | 32 | 23 | M 25 x 1,5 | 8 | 142,5 | 102 | 12 | 8 | 30 | 23 |

Shock absorbers are supplied with one locknut as standard.

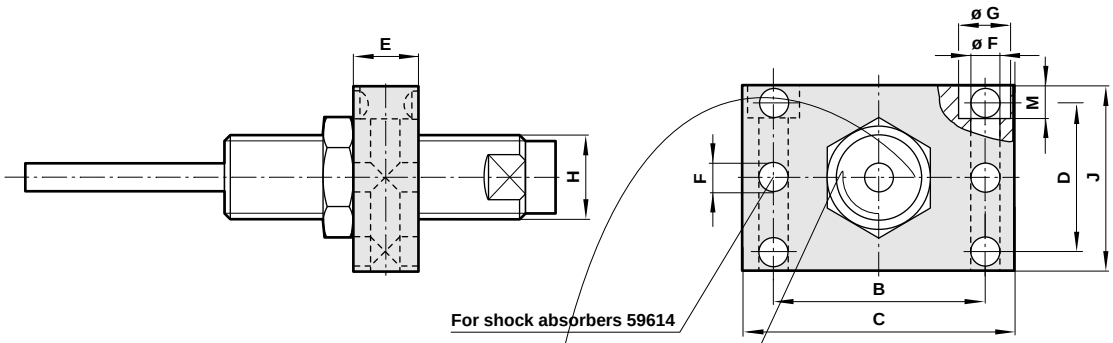
## Basic Dimensions




| Model | Stroke | A | ∅ DA | ∅ DD | H | ∅ K | L1 | L2 | L3 | L4 | QQ | RC | SW (A/F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M/59620/BS, .../CS, .../DS | 19 | 30 | 17 | 17 | M 20 x 1,5 | 4,8 | 118 | 75 | 12 | 4,5 | 6 | 24 | 18 |
| M/59625/BS, .../ES, .../GS | 25,4 | 36,5 | 23 | 22,5 | M 25 x 1,5 | 6,3 | 143 | 78 | 12 | 4,5 | 8 | 30 | 23 |
| M/59625/DS, .../FS, .../HS | 40 | 51 | 23 | 22,5 | M 25 x 1,5 | 6,3 | 189 | 109,5 | 12 | 4,5 | 8 | 30 | 23 |
| M/59620/Z | 19 | 30 | 17 | 17 | M 20 x 1,5 | 4,8 | 118 | 75 | 12 | 4,5 | 6 | 24 | 18 |
| M/59625/Z | 25,4 | 36,5 | 23 | 22,5 | M 25 x 1,5 | 6,3 | 143 | 90 | 12 | 4,5 | 8 | 30 | 23 |
| M/59625/MZ | 40 | 51 | 23 | 22,5 | M 25 x 1,5 | 6,3 | 189 | 121,5 | 12 | 4,5 | 8 | 30 | 23 |

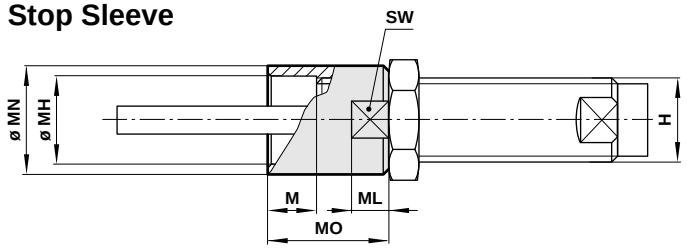
Shock absorbers are supplied with one locknut as standard.

## Side Clamp Mounting Style 'T'



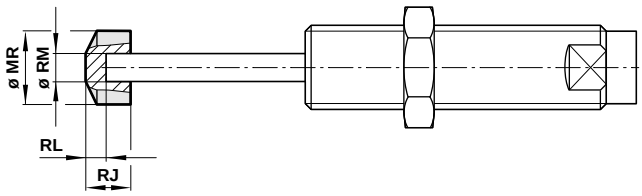

| Model | Shock absorber | B | C | D | E | ∅ F | ∅ G | H | J | M |
|---|---|---|---|---|---|---|---|---|---|---|
| M/P34720 | 59614 | 35 | 45 | - | 16 | 4,5 | 8 | M14 x 1,5 | 29 | 5 |
| M/P70063 | 59620 | 35 | 47 | 25,5 | 16 | 5,5 | 10 | M20 x 1,5 | 35 | 10 |
| M/P29882 | 59625 | 35 | 47 | 25,5 | 16 | 5,5 | 10 | M25 x 1,5 | 35 | 10 |

## Stop Sleeve




| Model | Shock absorber | H | M | ∅ MH | ML | ∅ MN | MO | SW |
|---|---|---|---|---|---|---|---|---|
| M/P29876 | 59614 | M 14 x 1,5 | 12 | 14,5 | 6 | 18 | 19 | 15 |
| M/P29876 | 59620 | M 20 x 1,5 | 12 | 20,5 | 8 | 25 | 25 | 22 |
| M/P29878 | 59625 | M 25 x 1,5 | 16 | 25,5 | 10 | 32 | 45 | 27 |

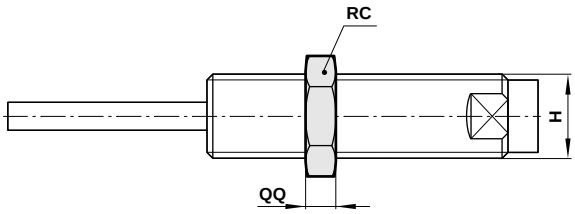
## Polypad




| Model | Shock absorber | ∅ MR | RL | ∅ RM | RJ |
|---|---|---|---|---|---|
| M/P29873 | M/59614/*X | 12 | 11 | 4,5 | 4,8 |
| M/P29874 | M/59620/*X | 17 | 11 | 5 | 6,3 |
| M/P29875 | M/59625/*X | 23 | 13,5 | 6,5 | 8 |

* Versions A, B or C

## Locknut Style 'N'



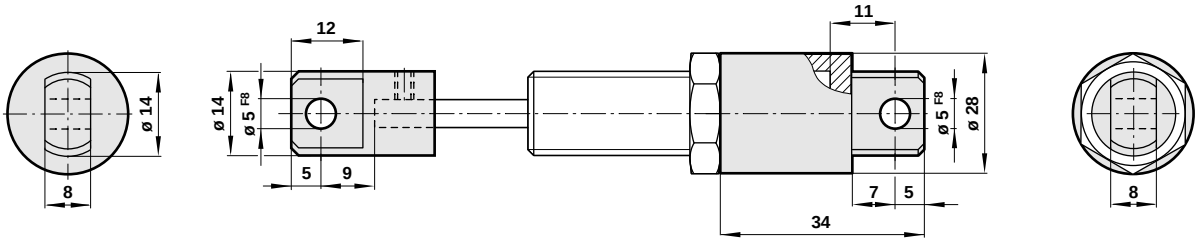

| Model | Shock absorber | H | QQ | RC (A/F) |
|---|---|---|---|---|
| M/P1501/106 | 59614 | M 14 x 1,5 | 5 | 17 |
| M/P1501/107 | 59620 | M 20 x 1,5 | 6 | 24 |
| M/P1501/108 | 59625 | M 25 x 1,5 | 8 | 30 |

## Piston Rod Clevis Mounting Style 'F'

Model: M/P 70065 for shock absorbers M/59625/AX, .../BX and .../CX

## Rear Eye Mounting Style 'R'

Model: M/P 70064 for shock absorbers M/59625/AX, .../BX and .../CX

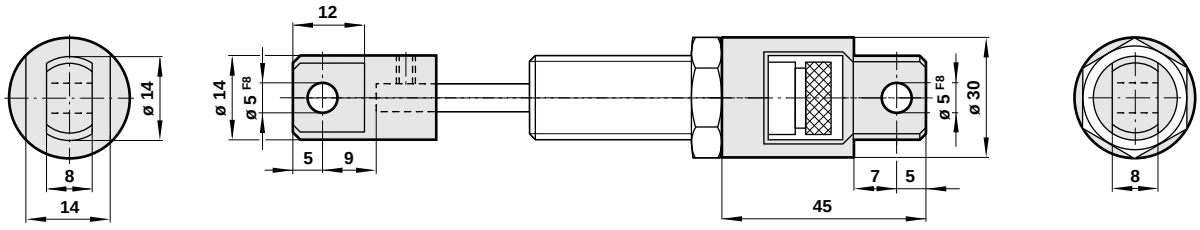



## Piston Rod Clevis Mounting Style 'F'

Model: M/P 70069 for shock absorbers M/59625/Z, .../MZ and .../.S

## Rear Eye Mounting Style 'R'

Model: M/P 70068 for shock absorbers M/59625/Z, .../MZ and .../.S




## Warning

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Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult NORGREN.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.
**System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**
System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.







For your local Norgren Technical Sales Centre phone 0345 662266. For your local Norgren Distributor phone 0345 227777.
IMI Norgren Limited, PO Box 22, Eastern Avenue, Lichfield, Staffordshire WS13 6SB

**Industrial Shock Absorbers**
**Adjustable**
**Cushioned Mass**
**5 to 180 000 kg**

- **Highly efficient user adjustable units ideal for a wide variety of applications**
- **Reduced installation vibration gives increased reliability and reduced maintenance**
- **Enable high cycling rates to be used**
- **Minimal service requirements**

## Technical Data

Operation:
User adjustable hydraulic units

Operating Temperature:
+90˚C max.

Impact Velocity:
0,015 m/s minimum (C/59000/M/1 and .../M/2)
0,61 m/s maximum (C/59000/M/1 and .../M/2)
0,15 m/s minimum (C/59000/1, .../2 and .../3)
4,5 m/s maximum (C/59000/1, .../2 and .../3)

Oil Filling:
Standard hydraulic oil with viscosity 46 cst at 40°C (C/59000/1, .../2 and .../3)
Automatic transmissions fluid (ATF) 42 cst at 40°C (C/59000/M/1 and .../M/2)

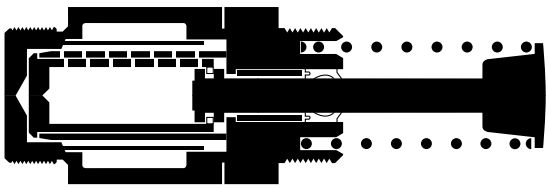
Formulae and Calculation:
See page N 1.11.003.01

Materials:
Burnished steel body, hardened steel (Martensitic) piston rod, synthetic rubber seals
Note: For optimum heat dissipation do not paint or spray shock absorber.

## Ordering Information

To order a shock absorber capable of damping a mass of up to 810 kg at up to 100 000 Nm/h quote: C/59838/2

To order mountings and accessories refer to appropriate tables.



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IMI Norgren Limited, PO Box 22, Eastern Avenue, Lichfield, Staffordshire WS13 6SB

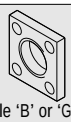
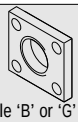
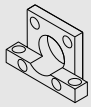
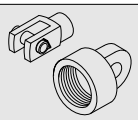
## Capacity Chart • Weights for Shock Absorber

| Model | Cushioned mass (kg) **me** min. max. | Maximum energy input ** **W3** per stroke (Nm) | **W4** per hour (Nm/h) | Resetting force min. (N) max. | Resetting time (s) | Maximum angle of deflection | Weight (kg) |
|---|---|---|---|---|---|---|---|
| C/59838/1 | 5 to 450 | 115 | 85000 | 37 to 70 | 0,03 | 4° | 0,63 |
| C/59838/M/1 | 300 to 50000 | 115 | 85000 | 37 to 70 | 0,03 | 4° | 0,63 |
| C/59838/2 | 10 to 810 | 230 | 100000 | 37 to 106 | 0,06 | 3° | 0,76 |
| C/59838/M/2 | 500 to 80000 | 230 | 100000 | 37 to 106 | 0,06 | 3° | 0,76 |
| C/59857/1 | 27 to 3600 | 260 | 125000 | 60 to 85 | 0,04 | 5° | 1,50 |
| C/59857/M/1 | 3000 to 110000 | 260 | 125000 | 60 to 85 | 0,04 | 5° | 1,50 |
| C/59857/2 | 45 to 6300 | 520 | 150000 | 60 to 120 | 0,09 | 4° | 1,80 |
| C/59857/M/2 | 5000 to 180000 | 520 | 180000 | 60 to 120 | 0,09 | 4° | 1,80 |
| C/59857/3 | 54 to 9500 | 780 | 180000 | 50 to 140 | 0,12 | 3° | 2,10 |

** For stop operation, the rating per stroke may be exceeded up to a maximum of 50%.
The ratings per hour may be exceeded by up to a maximum of 40% if the units are switched off periodically or are cooled by exhaust air.

**Formulae and Calculations: See page N 1.11.003.01**

## Weights of Mountings and Accessories (kg)

| Model |  Polypad |  Style 'N' |  Stop Sleeve |  Stop Sleeve for Polypad |  Style 'B' or 'G' (Square) |  Style 'B' or 'G' (Rectangular) |  Style 'C' |  Style 'F' and 'R' |
|---|---|---|---|---|---|---|---|---|
| C/59838 | 0,009 | 0,017 | 0,121 | 0,114 | - | 0,099 | 0,380 | 0,150 |
| C/59857 | 0,023 | 0,071 | 0,324 | 0,325 | 0,130 | 0,261 | 0,590 | 0,150 |

### Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under **'Technical Data'**.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult NORGREN.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

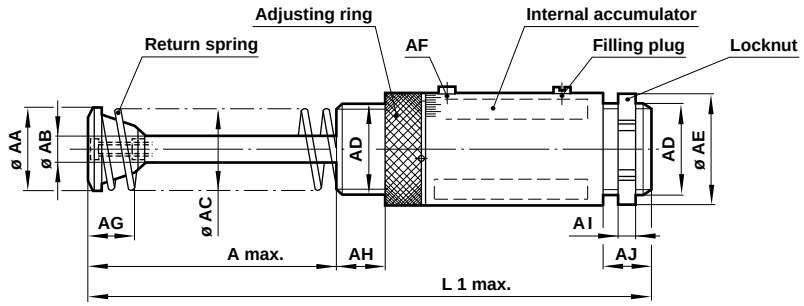
The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.
**System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.**
System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.





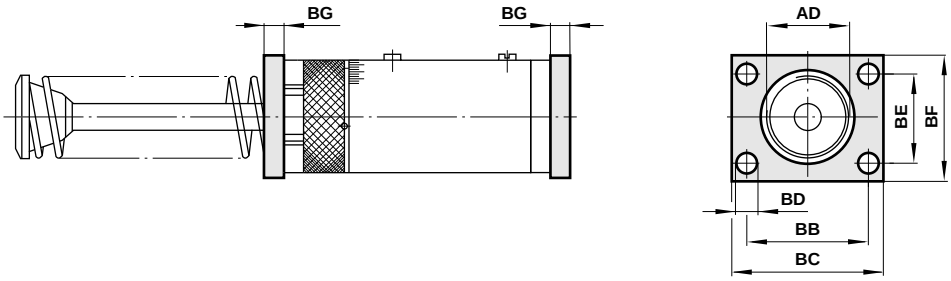


For your local Norgren Technical Sales Centre phone 0345 662266. For your local Norgren Distributor phone 0345 227777.
IMI Norgren Limited, PO Box 22, Eastern Avenue, Lichfield, Staffordshire WS13 6SB

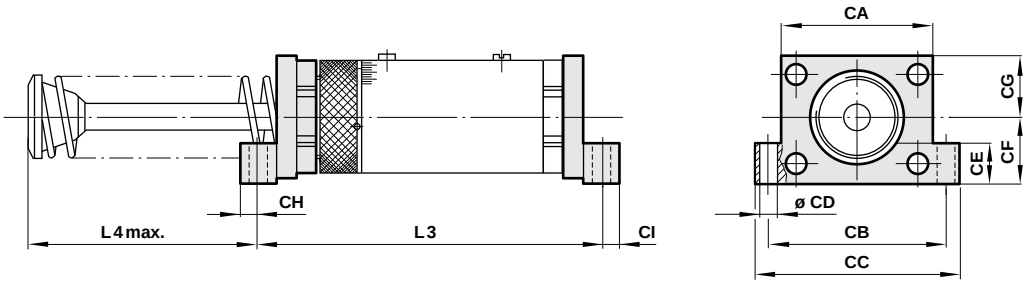



| Model | Stroke | A | | | AC | AD | AE | AF | AG | AH | AI | AJ | L1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C/59838/1 ../M/1 | 25,4 | 55,5 | 25,5 | 9,5 | 28 | UNF 1 1/4 x 12 | 38 | R 1/8 | 12 | 16 | 6,5 | 17 | 138 |
| C/59838/2, ../M/2 | 50,8 | 81 | 25,5 | 9,5 | 28 | UNF 1 1/4 x 12 | 38 | R 1/8 | 12 | 16 | 6,5 | 17 | 189 |
| C/59857/1 ../M/1 | 25,4 | 50 | 38 | 12,7 | 38 | UNF 1 3/4 x 12 | 57 | R 1/8 | 17 | 21 | 9,5 | 23 | 145 |
| C/59857/2, ../M/2 | 50,8 | 75,5 | 38 | 12,7 | 38 | UNF 1 3/4 x 12 | 57 | R 1/8 | 17 | 21 | 9,5 | 23 | 195 |
| C/59857/3 | 76 | 101 | 38 | 12,7 | 38 | UNF 1 3/4 x 12 | 57 | R 1/8 | 17 | 21 | 9,5 | 23 | 246 |

Note: Install mechanical stop 1 to 1,5 mm before end of stroke.
Shock absorbers are supplied with one locknut as standard.



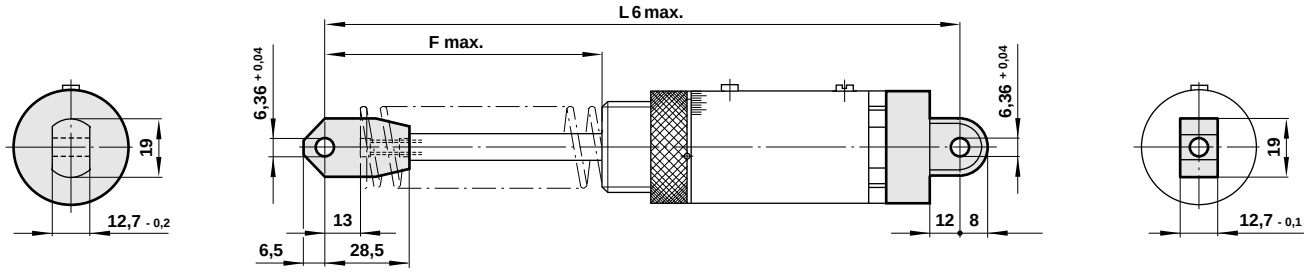

| Model | Shock absorber | AD | BB | BC | BD | BE | BF | BG |
|---|---|---|---|---|---|---|---|---|
| C/P29881 | 59838 | UNF 1 1/4-12 | 42 | 54 | 7 | 28 | 41 | 9,5 |
| C/P32368 | 59857 | UNF 1 3/4-12 | 60 | 76 | 9 | 41,5 | 57 | 12,5 |
| C/P70087 | 59857 | UNF 1 3/4-12 | 41,5 | 57 | 9 | 41,5 | 57 | 12,5 |



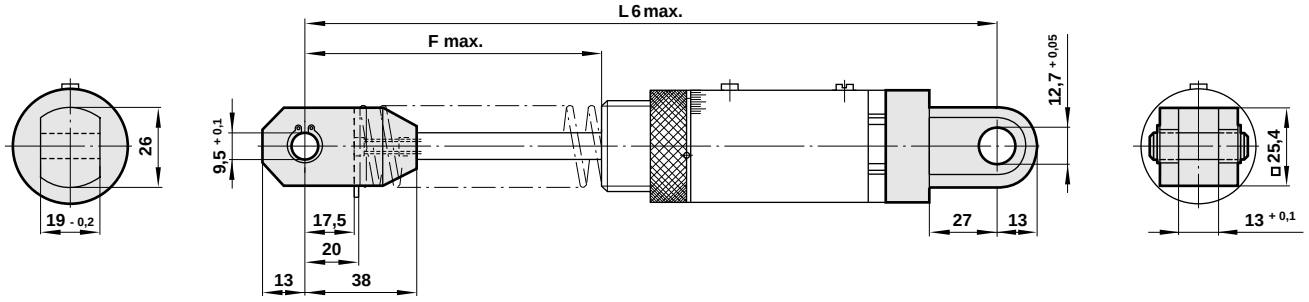

| Model | Shock absorber | L3 | L4 | CA | CB | CC | CD | CE | CF | CG | CH | CI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QC/59838/21 | C/59838/1, ../M/1 | 97 | 49 | 41 | 60 | 70 | 7 | 13 | 22 | 20,5 | 6,5 | 6,5 |
| | C/59838/2, ../M/2 | 122 | 74,5 | | | | | | | | | |
| QC/59857/21 | C/59857/1, ../M/1 | 89 | 49 | 57 | 76 | 95 | 9 | 14 | 29,5 | 28,5 | 10 | 13 |
| | C/59857/2, ../M/2 | 111 | 78,5 | | | | | | | | | |
| | C/59857/3 | 136 | 104 | | | | | | | | | |

## Piston Rod Clevis Mounting Style ‘F’ and Rear Eye Mounting Style ‘R’

Shock absorber 59838



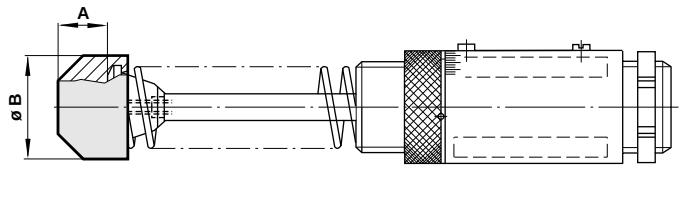

Shock absorber 59857




| Model | Shock absorber | F | L6 |
|---|---|---|---|
| QC/59838/22 | C/59838/1, .../M/1 | 67 | 167 |
| | C/59838/2, .../M/2 | 92 | 218 |

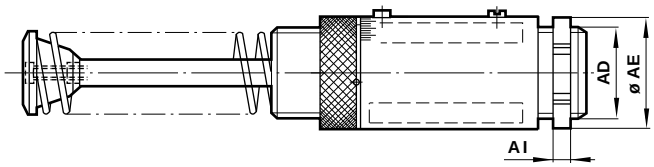
| Model | Shock absorber | F | L6 |
|---|---|---|---|
| QC/59857/22 | C/59857/1, .../M/1 | 65 | 200 |
| | C/59857/2, .../M/2 | 91 | 250 |
| | C/59857/3 | 116 | 301 |

## Polypad



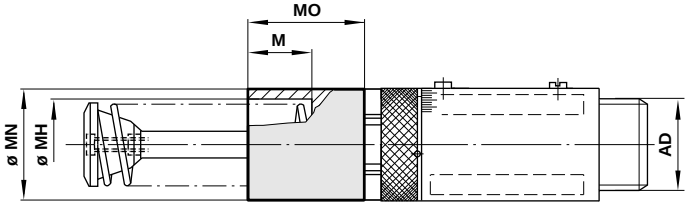

| Model | Shock absorber | A | ∅ B |
|---|---|---|---|
| M/P29879 | 59838 | 12 | 31 |
| C/P32369 | 59857 | 17,5 | 45 |

## Locknut Style ‘N’




| Model | Shock absorber | AD | AE | ∅ AI |
|---|---|---|---|---|
| C/P2035/4 | 59838 | UNF 1 1/4 x 12 | 6,5 | 38 |
| C/P2035/5 | 59857 | UNF 1 3/4 x 12 | 9,5 | 57 |

## Stop Sleeve




| Stop sleeve | | | | | | |
|---|---|---|---|---|---|---|
| Model | Shock absorber | AD | M | ∅ MH | ∅ MN | MO |
| M/P70083 | 59838 | UNF 1 1/4 x 12 | 21 | 29,5 | 38 | 37 |
| M/P70084 | 59857 | UNF 1 3/4 x 12 | 19 | 43 | 57 | 38 |
| Stop sleeve for shock absorber with polypad | | | | | | |
| Model | Shock absorber | AD | M | ∅ MH | ∅ MN | MO |
| M/P70085 | 59838 | UNF 1 1/4 x 12 | 33 | 33 | 38 | 49 |
| M/P70086 | 59857 | UNF 1 3/4 x 12 | 36,5 | 50 | 57 | 55,5 |

**Industrial Shock Absorbers**
**Self Adjustable**
**Cushioned Mass**
**2,5 to 27200 kg**

- **Reduced installation vibration gives increased reliability and reduced maintenance**
- **Enable high cycling rates to be used**
- **Can be used to boost the cushioning capacity of existing actuators**

## Technical Data

Operation:
Self adjustable hydraulic units

Operating Temperature:
+65˚C max.

Duty Class:
Version A = very soft
Version B = soft
Version C = medium
Version D = hard

Impact Velocity:
0,15 m/s minimum
4,5 m/s maximum

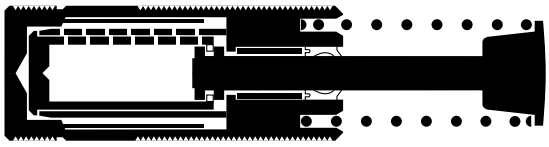
Formulae and Calculation:
See page N 1.11.003.01

Materials:
Burnished steel body, chrome plated steel (Martensitic) piston rod , synthetic rubber seals
Note: For optimum heat dissipation do not paint or spray shock absorber.

## Ordering Information

To order a shock absorber capable of damping a mass of up to 300 kg at up to 85900 Nm/h quote: M/59833/D/2

To order mountings and accessories refer to appropriate tables.



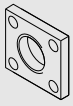
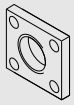
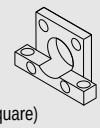
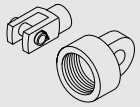
## Alternative Shock Absorber ● Capacity Chart ● Weights

| Model | Cushioned mass (kg) **me** min. max. | Maximum energy input ** **W1/W3** per stroke (Nm) | **W4** per hour (Nm/h) | Resetting force min. (N) max. | Resetting time (s) | Maximum angle of deflection | Weight (kg) |
|---|---|---|---|---|---|---|---|
| M/59833/A/1 | 2,5 to 11 | 102 | 75700 | 37-71 | 0,03 | 5° | 0,5 |
| M/59833/B/1 | 7 to 34 | | | | | | |
| M/59833/C/1 | 23 to 113 | | | | | | |
| M/59833/D/1 | 91 to 450 | | | | | | |
| M/59833/A/2 | 5 to 22 | 204 | 85900 | 37 to 106 | 0,06 | 4° | 0,6 |
| M/59833/B/2 | 13 to 68 | | | | | | |
| M/59833/C/2 | 45 to 230 | | | | | | |
| M/59833/D/2 | 180 to 900 | | | | | | |
| M/59845/A/1 | 11 to 56 | 226 | 107000 | 62 to 89 | 0,03 | 5° | 1,1 |
| M/59845/B/1 | 45 to 230 | | | | | | |
| M/59845/C/1 | 160 to 770 | | | | | | |
| M/59845/D/1 | 545 to 2720 | | | | | | |
| M/59845/A/2 | 23 to 113 | 452 | 124000 | 62 to 122 | 0,08 | 4° | 1,2 |
| M/59845/B/2 | 90 to 450 | | | | | | |
| M/59845/C/2 | 320 to 1550 | | | | | | |
| M/59845/D/2 | 1090 to 5450 | | | | | | |
| M/59845/A/3 | 34 to 170 | 678 | 147000 | 50 to 148 | 0,11 | 3° | 1,5 |
| M/59845/B/3 | 136 to 680 | | | | | | |
| M/59845/C/3 | 450 to 2260 | | | | | | |
| M/59845/D/3 | 1630 to 8160 | | | | | | |
| M/59864/A/2 | 35 to 170 | 1130 | 147000 | 67 to 125 | 0,12 | 5° | 2,8 |
| M/59864/B/2 | 136 to 680 | | | | | | |
| M/59864/C/2 | 450 to 2270 | | | | | | |
| M/59864/D/2 | 1800 to 9070 | | | | | | |
| M/59864/A/4 | 68 to 340 | 2260 | 192000 | 73 to 178 | 0,34 | 4° | 3,5 |
| M/59864/B/4 | 270 to 1360 | | | | | | |
| M/59864/C/4 | 900 to 4540 | | | | | | |
| M/59864/D/4 | 3630 to 18100 | | | | | | |
| M/59864/A/6 | 102 to 510 | 3390 | 249000 | 73 to 301 | 0,48 | 3° | 4,7 |
| M/59864/B/6 | 410 to 2840 | | | | | | |
| M/59864/C/6 | 1360 to 6800 | | | | | | |
| M/59864/D/6 | 5450 to 27200 | | | | | | |

** For emergency stop operation, the rating per stroke may be exceeded up to a maximum of 50%.
The ratings per hour may be exceeded by up to a maximum of 40% if the units are switched off periodically or are cooled by exhaust air.

**Formulae and Calculations: See page N 1.11.003.01**

## Weights of Accessories and Mountings (kg)

| Model |  Polypad |  Style 'N' |  Stop Sleeve |  Stop Sleeve (Polypad) |  Square Style 'B'+'G' |  Rectangular Style 'B'+'G' |  (Square) Style 'C' |  Style 'F'+'R' |
|---|---|---|---|---|---|---|---|---|
| 59833 | 0,009 | 0,019 | 0,099 | 0,110 | - | 0,093 | 0,364 | 0,158 |
| 59845 | 0,002 | 0,065 | 0,314 | 0,326 | 0,124 | 0,251 | 0,576 | 0,578 |
| 59864 | 0,004 | 0,095 | 0,534 | 0,751 | 0,548 | - | 1,835 | 1,542 |

### Warning

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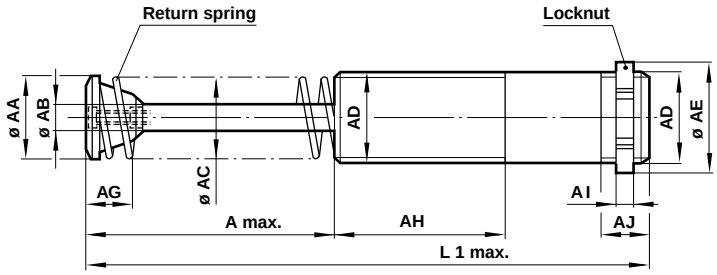
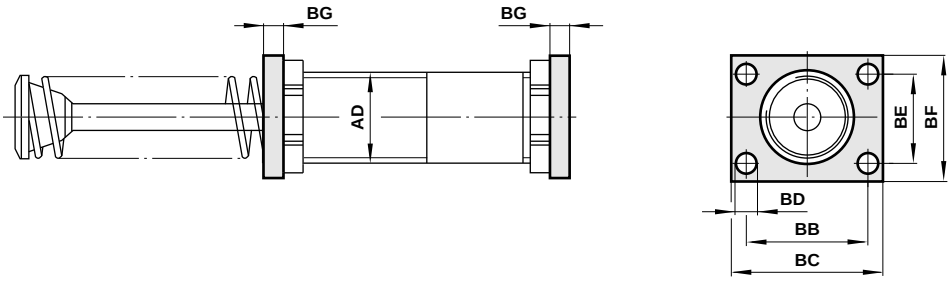
## Basic Dimensions




| Model | Stroke | A | ∅ AA | ∅ AB | ∅ AC | AD | ∅ AE | AG | AH | Al | AJ | L1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M/59833/*/1 | 25,4 | 55,5 | 25,5 | 7 | 25,5 | M 33 x 1,5 | 40 | 12 | 38 | 6,5 | 25 | 138 |
| M/59833/*/2 | 50,8 | 81 | 25,5 | 7 | 25,5 | M 33 x 1,5 | 40 | 12 | 54 | 6,5 | 25 | 189 |
| M/59845/*/1 | 25,4 | 50 | 38 | 9 | 35 | M 45 x 1,5 | 57 | 15 | 40 | 9,5 | 35 | 145 |
| M/59845/*/2 | 50,8 | 75,5 | 38 | 9 | 35 | M 45 x 1,5 | 57 | 15 | 60 | 9,5 | 35 | 195 |
| M/59845/*/3 | 76 | 101 | 38 | 9 | 35 | M 45 x 1,5 | 57 | 15 | 73 | 9,5 | 35 | 246 |
| M/59864/*/2 | 50,8 | 84 | 51 | 10,7 | 48 | M 64 x 2 | 76 | 17,5 | 70 | 9,5 | 38 | 224 |
| M/59864/*/4 | 102 | 135 | 51 | 10,7 | 48 | M 64 x 2 | 76 | 17,5 | 95 | 9,5 | 38 | 326 |
| M/59864/*/6 | 152 | 208 | 60 | 10,7 | 59,5 | M 64 x 2 | 76 | 20,5 | 121 | 9,5 | 38 | 450 |

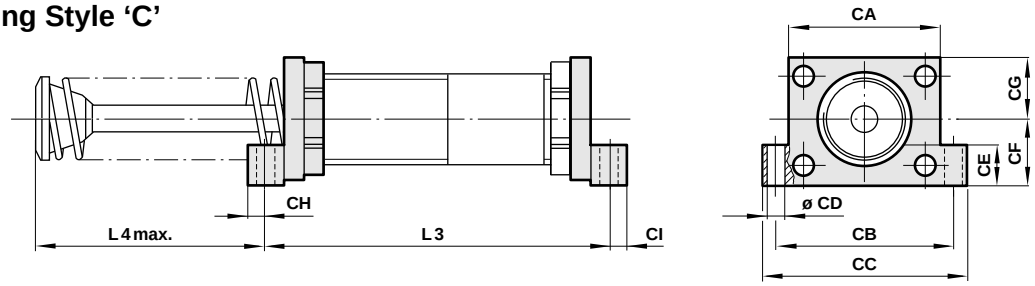
* Version A, B. C or D; Shock absorbers are supplied with one locknut are standard.
Note: Install mechanical stop 1 to 1,5 mm before end stroke.

## Rear Flange Mounting Style ‘B’
## Front Flange Mounting Style ‘G’




| Model | Shock absorber | AD | BB | BC | ∅ BD | BE | BF | BG |
|---|---|---|---|---|---|---|---|---|
| M/P70079 | 59833 | M 33 x 1,5 | 42 | 54 | 7 | 28 | 41 | 9,5 |
| M/P70080 | 59845 | M 45 x 1,5 | 60 | 76 | 9 | 41,5 | 57 | 12,5 |
| M/P70081 | 59845 | M 45 x 1,5 | 41,5 | 57 | 9 | 41,5 | 57 | 12,5 |
| M/P70082 | 59864 | M 64 x 2 | 70 | 89 | 10,5 | 70 | 89 | 16 |

## Foot Mounting Style ‘C’

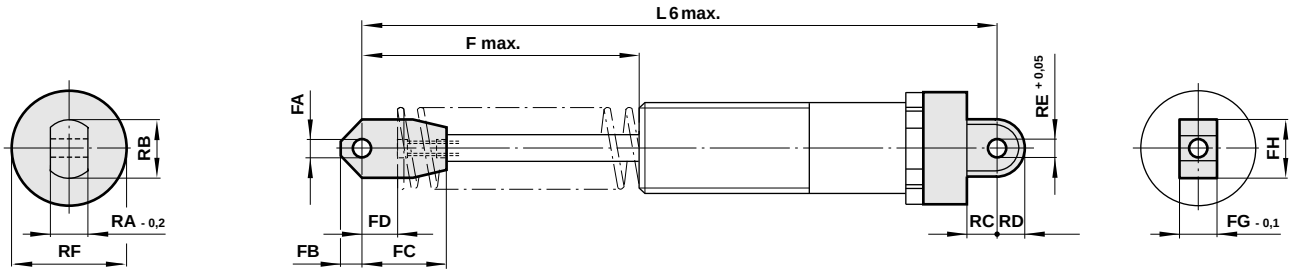



| Model | Shock absorber | L3 | L4 | CA | CB | CC | ∅ CD | CE | CF | CG | CH | Cl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QM/59833/21 | M/59833/*/1 | 97 | 49 | 54 | 60 | 70 | 7 | 13 | 22 | 20,5 | 6,5 | 6,5 |
| | M/59833/*/2 | 122 | 74,5 | | | | | | | | | |
| QM/59845/21 | M/59845/*/1 | 89 | 49 | 57 | 76 | 95 | 9 | 14 | 29,5 | 28,5 | 10 | 13 |
| | M/59845/*/2 | 111 | 78,5 | | | | | | | | | |
| | M/59845/*/3 | 136 | 104 | | | | | | | | | |
| QM/59864/21 | M/59864/*/2 | 127 | 90 | 89 | 124 | 143 | 10,7 | 19 | 45 | 44,5 | 17,5 | 17,5 |
| | M/59864/*/4 | 178 | 141 | | | | | | | | | |
| | M/59864/*/6 | 229 | 214 | | | | | | | | | |

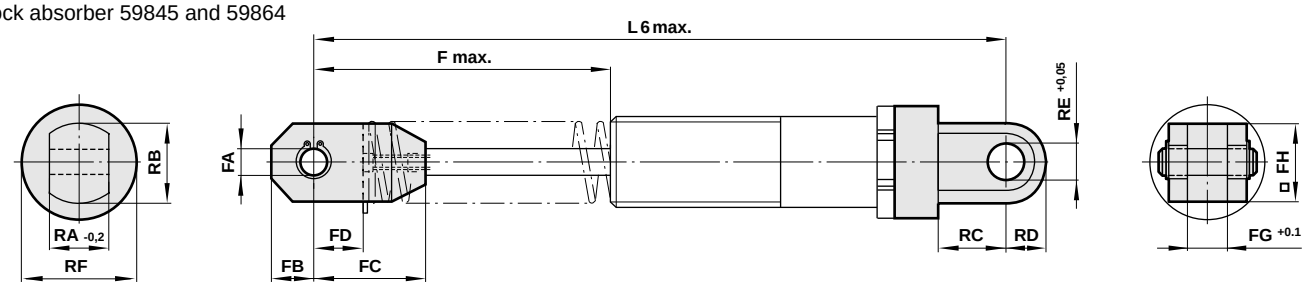
* Version A, B, C or D

## Piston Rod Clevis Mounting Style ‘F’ and Rear Eye Mounting Style ‘R’

Shock absorber 59833



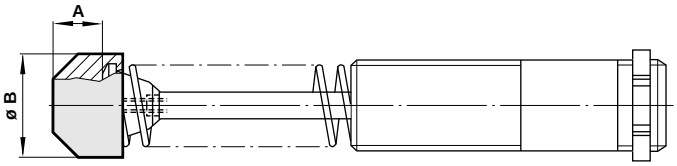

Shock absorber 59845 and 59864




| Model | Shock absorber | F | ∅ FA | FB | FC | FD | FG -0,1 | FH | L6 | RA -0,2 | RB | RC | RD | ∅ RE +0,05 | ∅ RF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| QM/59833/22 | M/59833/*/1 | 67 | 6,36 | 6,5 | 28,5 | 13 | 12,7 -0,1 | 19 | 167 | 12,7 | 19 | 12 | 8 | 6,36 | 40 |
| | M/59833/*/2 | 92 | | | | | | | 218 | | | | | | |
| QM/59845/22 | M/59845/*/1 | 65 | 9,5 | 13 | 30 | 17,5 | 13 +0,1 | 25,5 | 200 | 19 | 26 | 27 | 13 | 12,7 | 57 |
| | M/59845/*/2 | 91 | | | | | | | 250 | | | | | | |
| | M/59845/*/3 | 116 | | | | | | | 301 | | | | | | |
| QM/59864/22 | M/59864/*/2 | 120 | 19,04 | 16 | 53 | 35 | 16 | 32 | 304 | 32 | 38 | 33 | 19 | 19,1 | 76 |
| | M/59864/*/4 | 171 | | | | | | | 410 | | | | | | |
| | M/59864/*/6 | 241 | | | | | | | 530 | | | | | | |

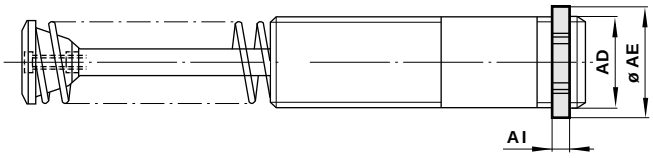
* Version A, B, C or D

## Polypad



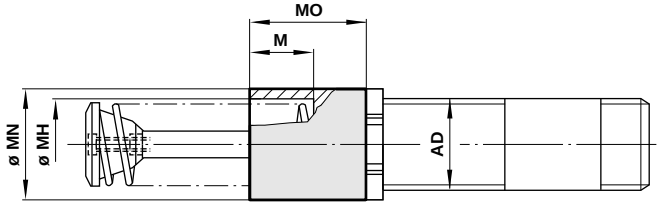

| Model | Shock absorber | A | ∅ B |
|---|---|---|---|
| M/P70076 | 59833 | 12 | 31 |
| M/P70077 | 59845 | 17,5 | 45 |
| M/P70078 | 59864 | 17,5 | 57 |

## Locknut Style ‘N’




| Model | Shock absorber | AD | AI | ∅ AE |
|---|---|---|---|---|
| M/P2035/1 | 59833 | M 33 x 1,5 | 6,5 | 40 |
| M/P2035/2 | 59845 | M 45 x 1,5 | 9,5 | 57 |
| M/P2035/3 | 59864 | M 64 x 2 | 9,5 | 76 |

## Stop Sleeve




| Shock sleeve | | | | | | |
|---|---|---|---|---|---|---|
| Model | Shock absorber | AD | M | ∅ MH | ∅ MN | MO |
| M/P70070 | 59833 | M 33 x 1,5 | 21 | 31 | 38 | 37 |
| M/P70071 | 59845 | M 45 x 1,5 | 19 | 43 | 57 | 38 |
| M/P70072 | 59864 | M 64 x 2 | 22 | 62 | 76 | 47 |
| Stop sleeve for shock absorber with polypad | | | | | | |
| Model | Shock absorber | AD | M | ∅ MH | ∅ MN | MO |
| M/P70073 | 59833 | M 33 x 1,5 | 33 | 33 | 38 | 49 |
| M/P70074 | 59845 | M 45 x 1,5 | 36,5 | 50 | 57 | 55,5 |
| M/P70075 | 59864 | M 64 x 2 | 40 | 62 | 76 | 65 |