OBSOLETE DOCUMENT Technical Reference Only

- **Vibration resistant, dustproof and splashproof**
- **Can operate in any mounting attitude**
- **Direct acting or reverse acting**

# Servo Cylinders Double Acting ∅63 - 100 mm bore

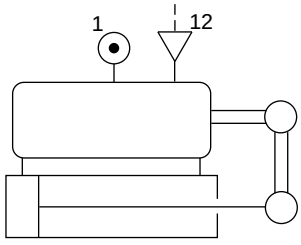
## Technical Data

Medium:
Compressed air
Installation:
Air supply must incorporate a pre-filter and a high efficiency (5μm) filter. Lubrication not required as cylinders are pre-greased
Operation:
Double acting servo cylinders
Operating Pressure:
2 - 10 bar
Control Pressure:
0,2 - 1,0 bar M/3***1, M/3***2 models
0,2 - 2,0 bar M/3***3, M/3***4 models
Control Action:
Direct M/3***1, M/3***3 models
Indirect M/3***2, M/3***4 models
Operating Temperature:
+5°C* to +80°C
*100% dry air
Non-stock Strokes:
50 - 1000 mm
Sensitiveness:
Within 0,007 bar
Linearity:
Within 0,8% stroke M/3***1, M/3***2 models
Within 1,5% stroke M/3***3, M/3***4 models
Repeatability:
Within 0,4% stroke
Hysteresis:
Within 0,8% stroke
Dynamic Response:
Non-oscillatory
Steady state Air Consumption:
Less than 0,5 $dm^3/s$ at 6 bar supply
Zero screw adjustment:
±50% full stroke
Proportional Band:
$\frac{\text{Signal}}{\text{Stroke}}$ Ratio 25 - 150%

**Cylinder Diameters**
63, 80, 100 mm

## Materials - Cylinder

Stainless steel (Martensitic) piston rod, honed and chromium plated steel barrel, steel tie rods, aluminium alloy square outer sleeve, pressure diecast zinc alloy to BS 1004 (1972) Alloy 'A' end covers up to 50 mm bore, pressure diecast aluminium alloy on 63 to 100 mm bore, molybdenum disulphide and 30% glass filled thermoplastic polyamide piston rod bearing and wear ring, aluminium alloy feedback cam, nitrile rubber seals.
For materials of M/1841 and M/1842 Positioner Controller Units, see page **1.9.**011.01.




## *Ordering Information*

*See table overleaf for details of control action.*
*To order an 80 mm bore, 315 mm stroke servo cylinder with a direct acting positioner for a control signal of 0,2 - 1,0 bar, quote: M/30801/315.*
*To order a cylinder complete with mounting brackets refer to the appropriate mounting table.*

## Useful Forces

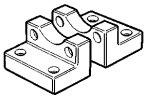
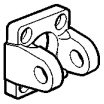
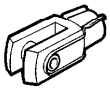
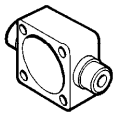
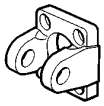
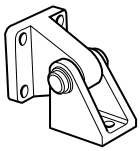
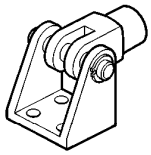
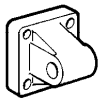
| Bar | | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| **M/30631** | F1 | 347 | 521 | 694 | 868 | 1041 | 1215 | 1388 | 1562 | 1736 |
| ∅63 | F2 | 347 | 521 | 694 | 868 | 1041 | 1215 | 1388 | 1562 | 1736 |
| **M/30801** | F1 | 560 | 840 | 1120 | 1400 | 1680 | 1960 | 2240 | 2520 | 2800 |
| ∅80 | F2 | 560 | 840 | 1120 | 1400 | 1680 | 1960 | 2240 | 2520 | 2800 |
| **M/31001** | F1 | 874 | 1311 | 1749 | 2186 | 2623 | 3060 | 3497 | 3934 | 4371 |
| ∅100 | F2 | 874 | 1311 | 1749 | 2186 | 2623 | 3060 | 3497 | 3934 | 4371 |

F1 - Force (N) outstroke
F2 - Force (N) instroke

## Control Action and Pressure Range

M/3***1 Direct acting, 0,2 - 1,0 bar control pressure
M/3***2 Reverse acting, 0,2 - 1,0 bar control pressure
M/3***3 Direct acting, 0,2 - 2,0 bar control pressure
M/3***4 Reverse acting, 0,2 - 2,0 bar control pressure

## Mountings

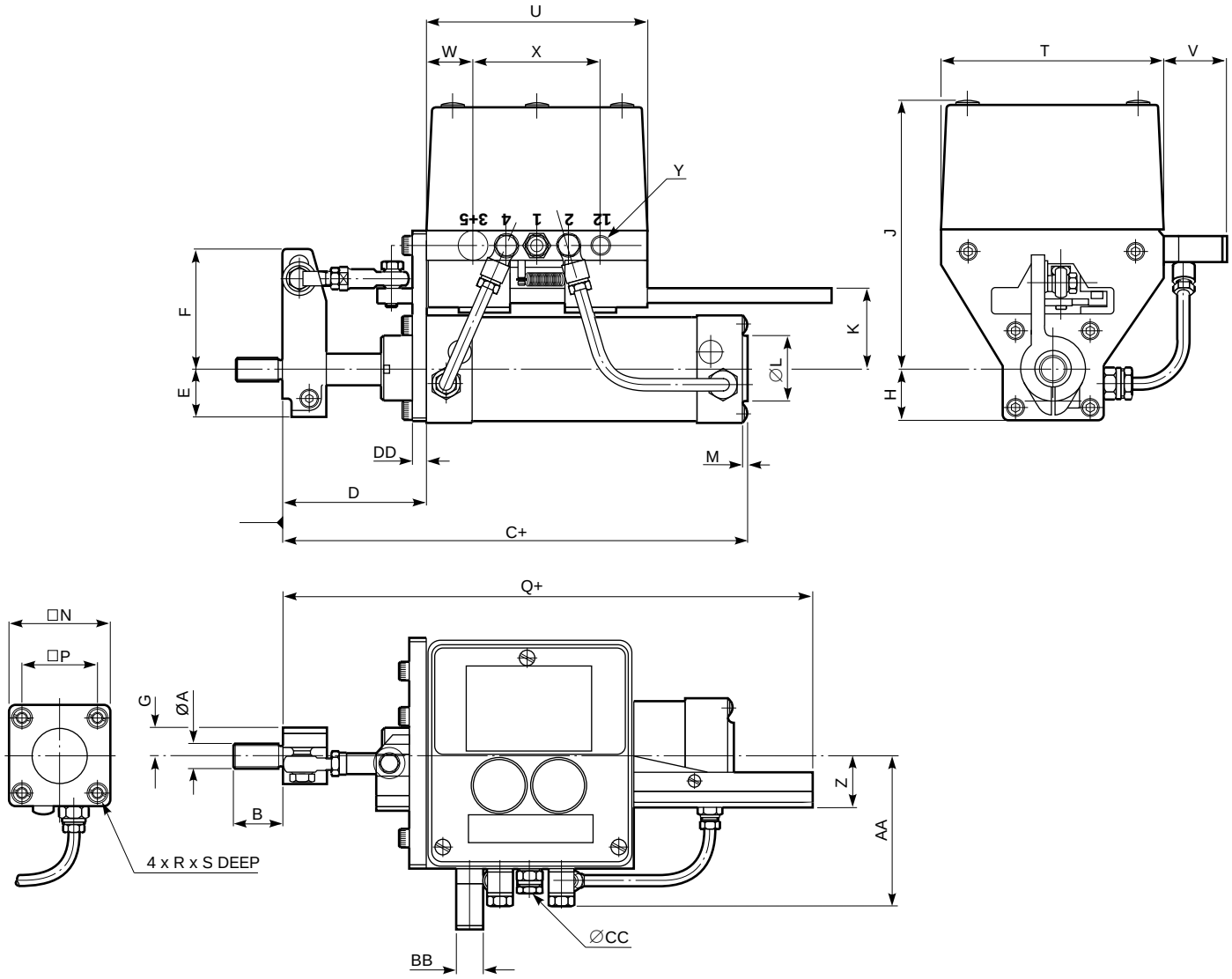
|  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| **C** | **D** | **F** | **H** | **K** | **L** | **M** | **R** |

## Basic Servo Cylinder Dimensions

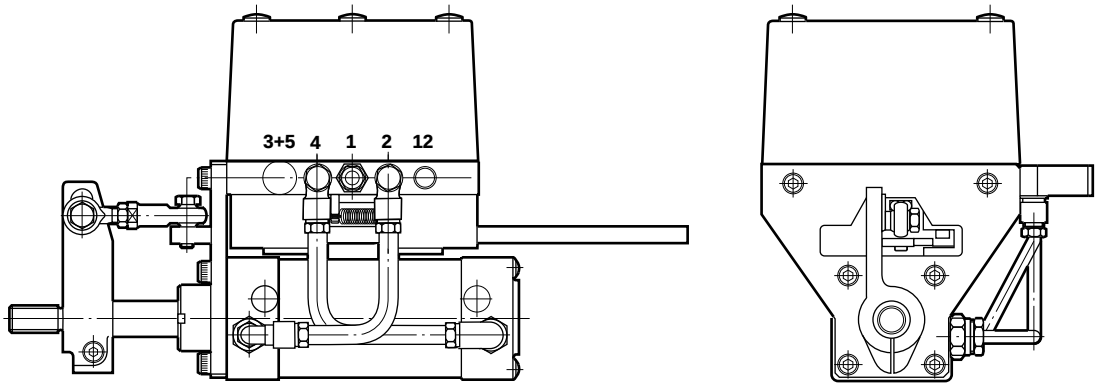
| Model | M/30631 | M/30801 | M/31001 |
|---|---|---|---|
| | M/30632 | M/30802 | M/31002 |
| | M/30633 | M/30803 | M/31003 |
| | M/30634 | M/30804 | M/31004 |
| ∅ | 63 | 80 | 100 |
| **A** | M16x1,5 | M20x1,5 | M20x1,5 |
| **B** | 32 | 40 | 40 |
| **C+** | 220 | 234 | 245 |
| **D** | 99 | 101 | 101 |
| **E** | 32,5 | 32,5 | 40 |
| **F** | 83 | 83 | 95 |
| **G** | 20 | 20 | 23,5 |
| **H** | 36,5 | 46,5 | 56,5 |
| **J** | 185,5 | 195,5 | 206 |
| **K** | 56,5 | 66 | 76,5 |
| **L** $^{\pm 0,05}$ | 40 | 45 | 56 |
| **M** | 4 | 5 | 6 |
| **N** | 73 | 93 | 113 |
| **P** | 54,5 | 69 | 86 |
| **Q+** | 298 | 300 | 300 |
| **R** | M8x1,25 | M10x1,5 | M10x1,5 |
| **S** | 10 | 12 | 12 |
| **T** | 162 | 162 | 162 |
| **U** | 152 | 152 | 152 |
| **V** | 44,5 | 44,5 | 44,5 |
| **W** | 32 | 32 | 32 |
| **X** 4 Equal pitches | 88 | 88 | 88 |
| **Y** | G¼ | G¼ | G¼ |
| **Z** | 41 | 41 | 41 |
| **AA** | 105 | 105 | 105 |
| **BB** | 19 | 19 | 19 |
| **CC** O/D tube | 8 | 8 | 8 |
| **DD** | 10 | 10 | 10 |

## Basic Servo Cylinder Dimensions

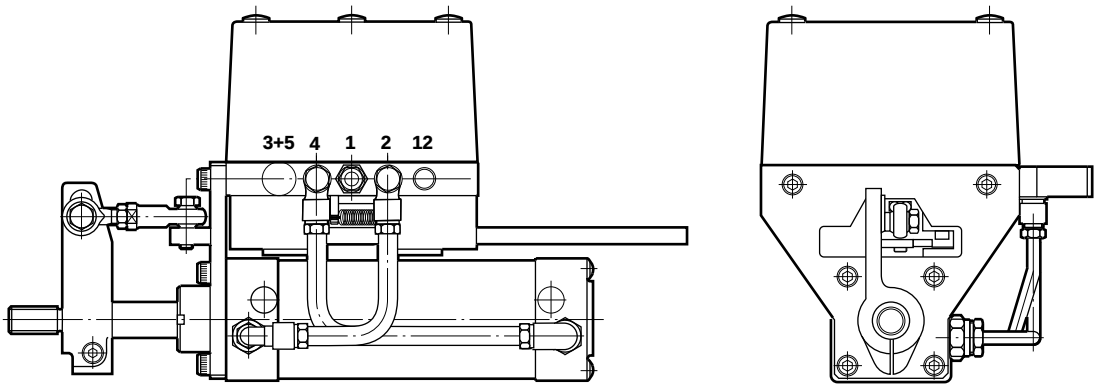
Direct action



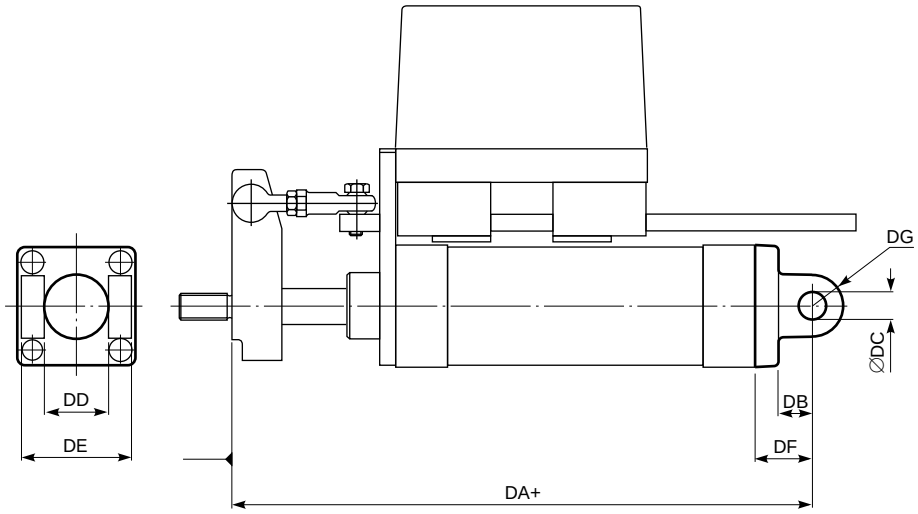
**Basic Cylinder**
Reverse action with strokes less than 100 mm




**Basic Cylinder**
Reverse action with strokes 100 mm or greater



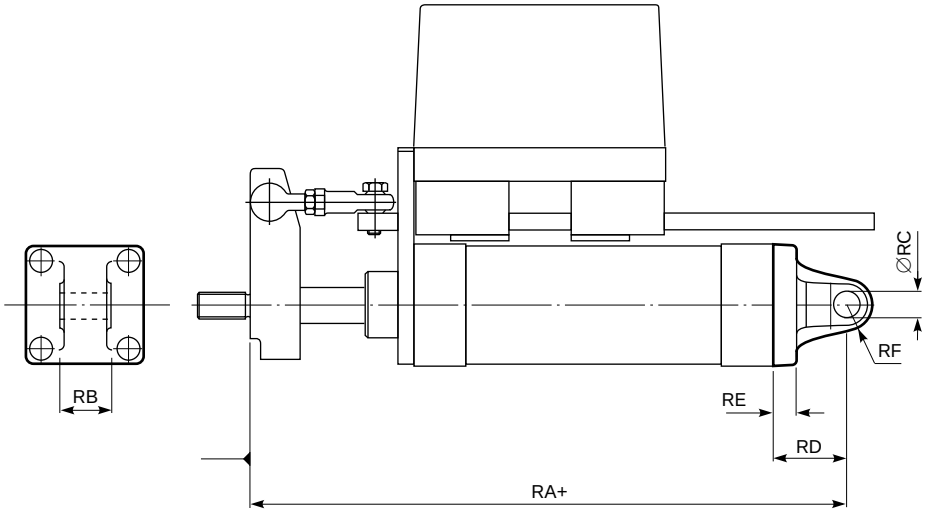
## Rear Clevis Mounting Style ‘D’




| Model | M/30631 | M/30801 | M/31001 |
|---|---|---|---|
| | M/30632 | M/30802 | M/31002 |
| | M/30633 | M/30803 | M/31003 |
| | M/30634 | M/30804 | M/31004 |
| **Reference** | QM/13063/23 | QM/13080/23 | QM/13100/23 |
| **DA+** | 250 | 265 | 280 |
| **DB** | 20 | 20 | 25 |
| **DC**H9 | 16 | 16 | 20 |
| **DD** | 40 | 50 | 60 |
| **DE** | 70 | 90 | 110 |
| **DF** | 34 | 36 | 41 |
| **DG** | 18 | 21 | 27 |

To order a Rear Clevis Mounting Style ‘D’, quote Reference, e.g. QM/13080/23 for M/30801, M/30802, M/30803 or M/30804.

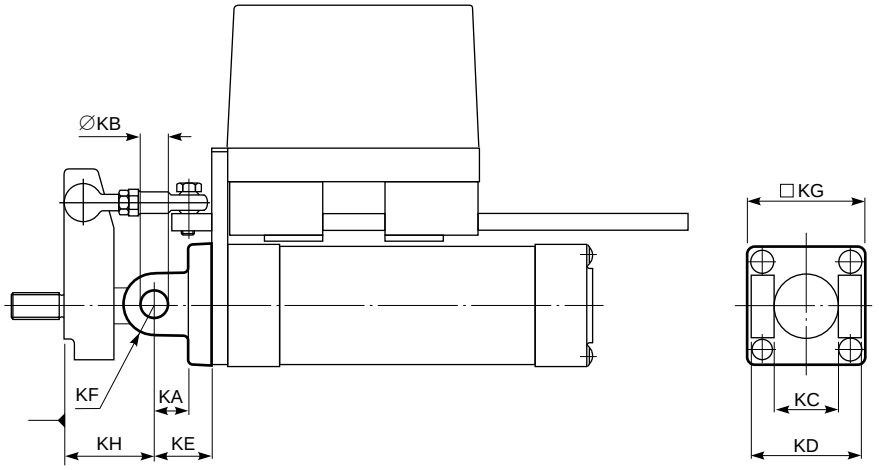
## Rear Eye Mounting Style ‘R’




| Model | M/30631 | M/30801 | M/31001 |
|---|---|---|---|
| | M/30632 | M/30802 | M/31002 |
| | M/30633 | M/30803 | M/31003 |
| | M/30634 | M/30804 | M/31004 |
| **Reference** | QM/13063/32 | QM/13080/32 | QM/13100/32 |
| **RA+** | 261 | 279 | 294 |
| **RB** | 32 | 35 | 40 |
| **RC**G7 | 16 | 16 | 20 |
| **RD** | 45 | 50 | 55 |
| **RE** | 14 | 14 | 16 |
| **RF** | 16 | 16 | 20 |

To order a Rear Eye Mounting Style ‘R’, quote Reference, e.g. QM/13080/32 for M/30801, M/30802, M/30803 or M/30804

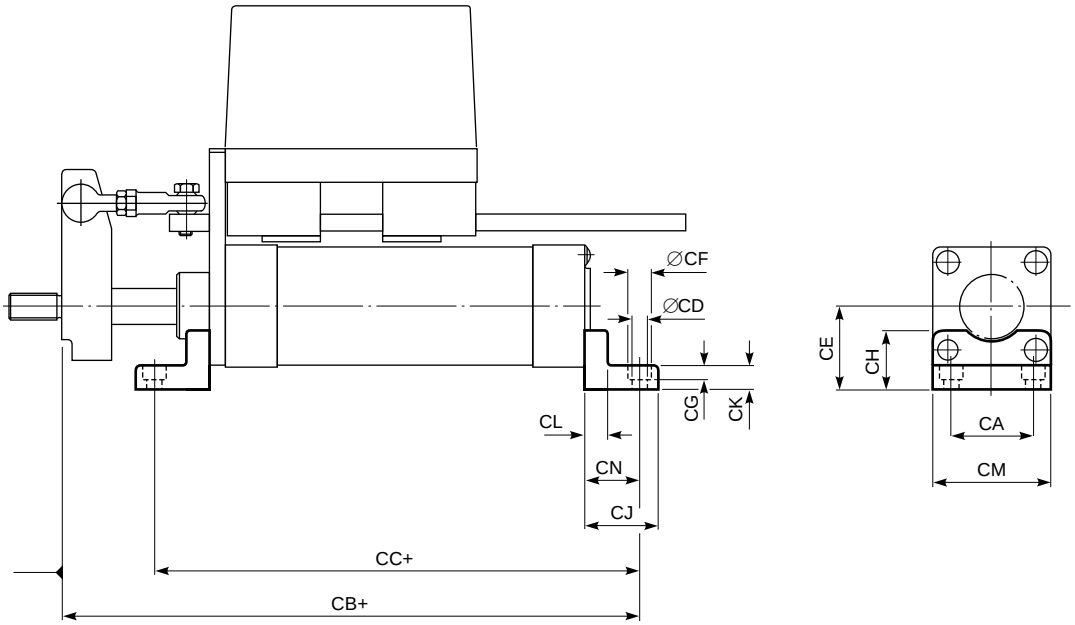
## Front Clevis Mounting Style ‘K’




| Model | M/30631 | M/30801 | M/31001 |
|---|---|---|---|
| | M/30632 | M/30802 | M/31002 |
| | M/30633 | M/30803 | M/31003 |
| | M/30634 | M/30804 | M/31004 |
| **Reference** | QM/30631/29 | QM/30801/29 | QM/31001/29 |
| **KA** | 20 | 20 | 25 |
| **KB**H9 | 16 | 16 | 20 |
| **KB** | 40 | 50 | 60 |
| **KD** | 70 | 90 | 110 |
| **KF** | 18 | 21 | 27 |
| **KG** | 75 | 96 | 116 |
| **KH** | 55 | 55 | 50 |

To order a Front Clevis Mounting Style ‘K’, quote Reference, e.g. QM/31001/29 for M/31001, M/31002, M/31003 or M/31004.

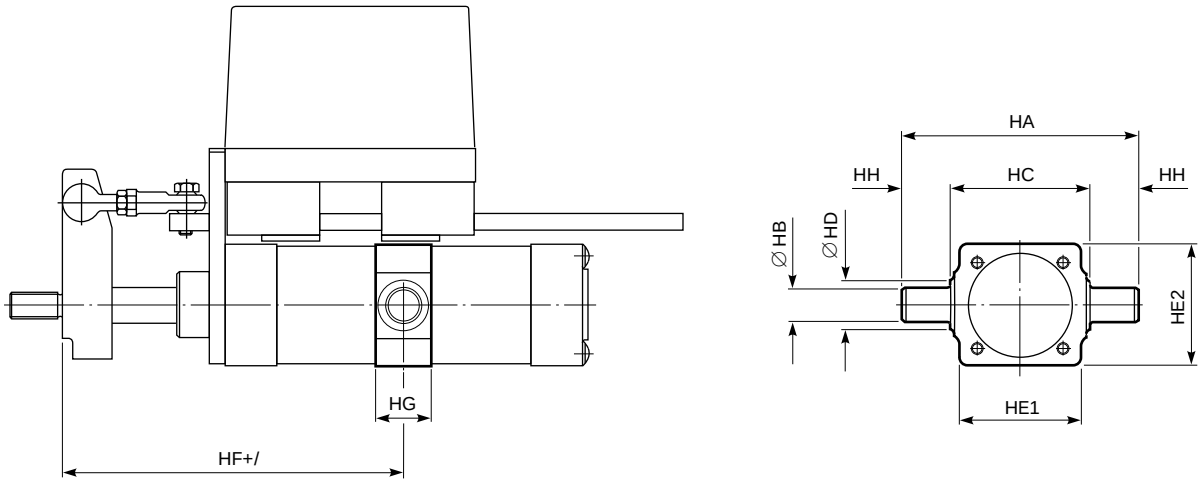
## Foot Mounting Style ‘C’




| Model | M/30631 | M/30801 | M/31001 |
|---|---|---|---|
| | M/30632 | M/30802 | M/31002 |
| | M/30633 | M/30803 | M/31003 |
| | M/30634 | M/30804 | M/31004 |
| **Reference** | QM/30631/21 | QM/30801/21 | QM/31001/21 |
| **CA** | 50 | 63 | 75 |
| **CB+** | 250 | 270 | 280 |
| **CC+** | 195 | 220 | 230 |
| **CD** | 9 | 12 | 14 |
| **CE** | 50 | 63 | 71 |
| **CF** | 14 | 18 | 20 |
| **CG** | 8,5 | 10,5 | 12,5 |
| **CH** | 36 | 50 | 55 |
| **CJ** | 45 | 56 | 60 |
| **CK** | 14 | 16 | 16 |
| **CL** | 14 | 16 | 16 |
| **CM** | 73 | 93 | 113 |
| **CN** | 34 | 41 | 41 |

To order a Foot Mounting Style ‘C’, quote Reference, e.g. QM/30631/21 for M/30631, M/30632, M/30633 or M/30634.

## Central Trunnion Mounting Style ‘H’

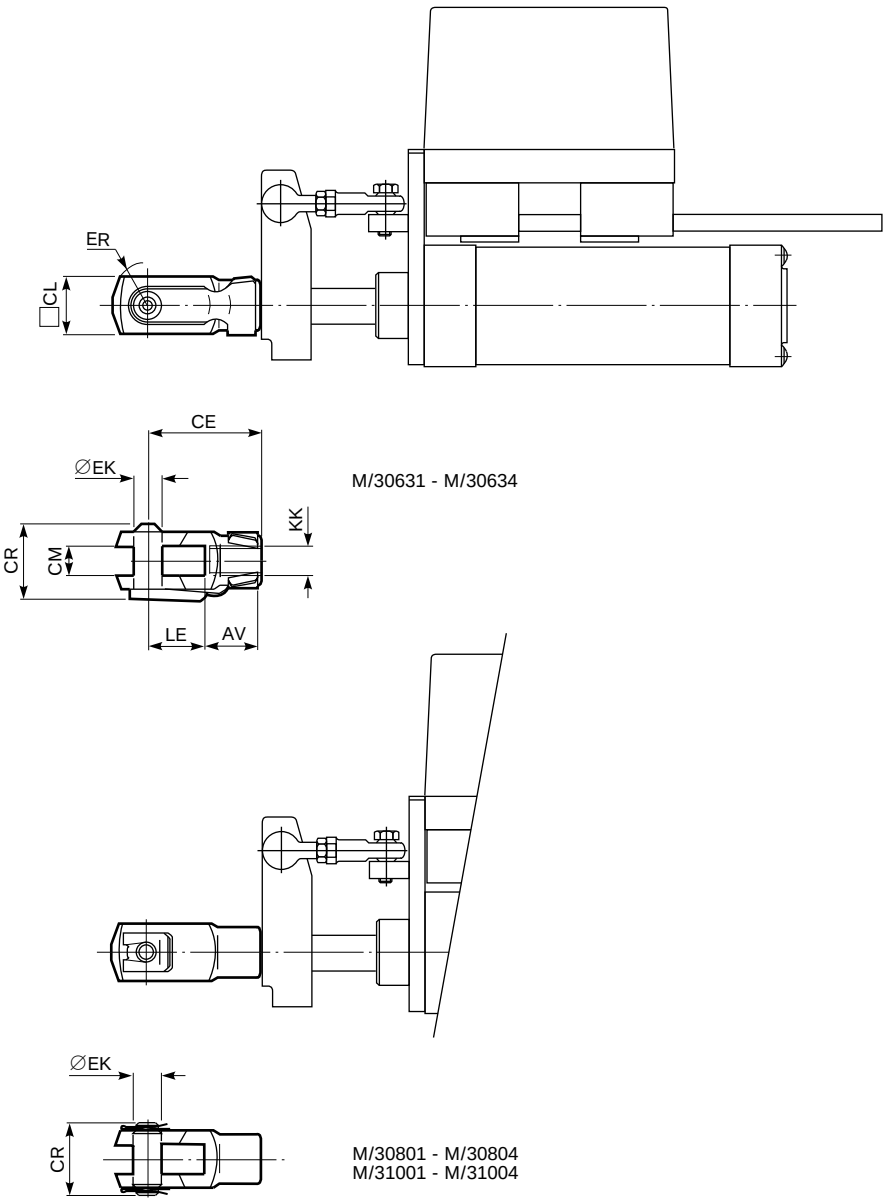



| Model | M/30631 | M/30801 | M/31001 |
|---|---|---|---|
| | M/30632 | M/30802 | M/31002 |
| | M/30633 | M/30803 | M/31003 |
| | M/30634 | M/30804 | M/31004 |
| **Reference** | QM/13063/28 | QM/13080/28 | QM/13100/28 |
| **HA** | 130 | 150 | 182 |
| **HB**e9 | 20 | 20 | 25 |
| **HC**h14 | 90 | 110 | 132 |
| **HE**1 | 81 | 95 | 127 |
| **HE**2 | 81 | 97 | 127 |
| **HF+/** | 157,5 | 165 | 170 |
| **HG** | 37 | 37 | 42 |
| **HH**h14 | 20 | 20 | 25 |

**Note:** These mountings are only supplied assembled complete with the cylinder.

To order a cylinder complete with Central Trunnion Mounting Style ‘H’, quote cylinder model number with mounting Reference, e.g. M/30631/300 complete with QM/13063/28. The minimum stroke length when fitted with this mounting is 250 mm. Unless otherwise specified, units will be supplied with dimension ‘XV’ plus half stroke length.

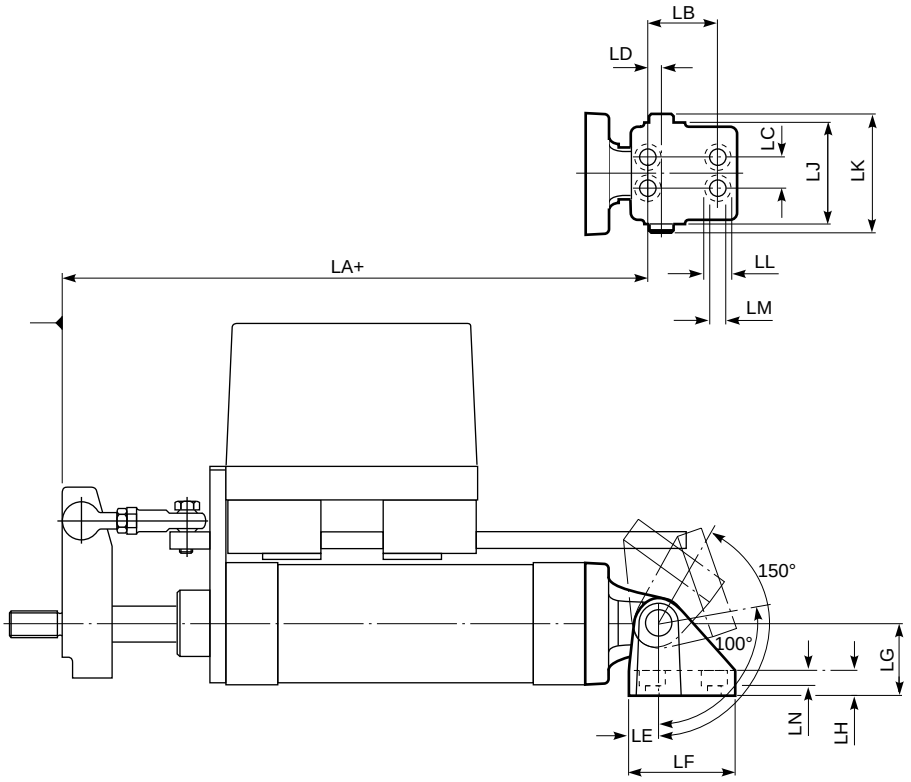
## Piston Rod Clevis Mounting Style ‘F’




| **Model** | **M/30631** | **M/30801** | **M/31001** |
|---|---|---|---|
| | **M/30632** | **M/30802** | **M/31002** |
| | **M/30633** | **M/30803** | **M/31003** |
| | **M/30634** | **M/30804** | **M/31004** |
| **Reference** | QM/13063/25 | QM/13100/25 | QM/13100/25 |
| **AV** | 32 | 40 | 40 |
| **CE** | 64 | 80 | 80 |
| **CL** | 32 | 40 | 40 |
| **CM**B12 | 16,33<br>16,15 | 20,37<br>20,16 | 20,37<br>20,16 |
| **CR** | 39 | 52,5 | 52,5 |
| **ER** | 21,5 | 28 | 28 |
| **EK**h11 | 16 | 20 | 20 |
| **KK** | M16x1,5-6H | M20x1,5-6H | M20x1,5-6H |
| **LE** | 32 | 40 | 40 |

To order a Piston Rod Clevis Mounting Style ‘F’, quote Reference, e.g. QM/13100/25 for M/30801, M/30802, M/30803, M/30804, M/31001, M/31002, M/31003 or M/31004

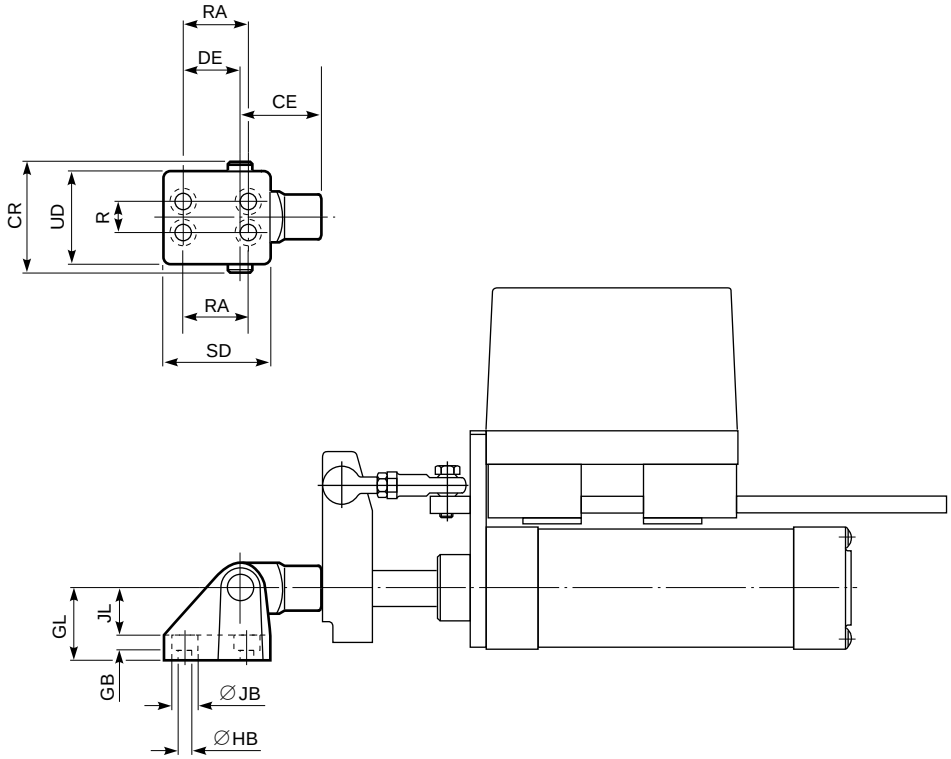
## Rear Hinge Mounting Style ‘L’




| Model | M/30631 | M/30801 | M/31001 |
|---|---|---|---|
| | M/30632 | M/30802 | M/31002 |
| | M/30633 | M/30803 | M/31003 |
| | M/30634 | M/30804 | M/31004 |
| **Reference** | QM/13063/24 | QM/13080/24 | QM/13100/24 |
| **LA+** | 252 | 270 | 284 |
| **LB** | 50 | 50 | 75 |
| **LC** | 20 | 20 | 20 |
| **LD** | 9 | 9 | 10 |
| **LE** | 20 | 20 | 24 |
| **LF** | 72 | 72 | 103 |
| **LG** | 60 | 60 | 80 |
| **LH** | 14 | 14 | 16 |
| **LJ** | 70 | 70 | 82 |
| **LK** | 76 | 76 | 87 |
| **LL** | 14 | 14 | 18 |
| **LM** | 9 | 9 | 12 |
| **LN** | 8 | 8 | 10 |

**Note:** The maximum angle of pivot of 150˚ is obtainable only when the cylinder has outstroked.
To order a Rear Hinge Mounting Style ‘L’, quote Reference, e.g. QM/13080/24 for M/30801, M/30802, M/30803 or M/30804.

## Front Hinge Mounting Style ‘M’




| Model | M/30631 | M/30801 | M/31001 |
|---|---|---|---|
| | M/30632 | M/30802 | M/31002 |
| | M/30633 | M/30803 | M/31003 |
| | M/30634 | M/30804 | M/31004 |
| **Reference** | QM/13063/26 | QM/13080/26 | QM/13100/26 |
| **R** | 20 | 20 | 20 |
| **CE** | 64 | 80 | 80 |
| **CR** | 76 | 87 | 87 |
| **DE** | 41 | 65 | 65 |
| **GB** | 8 | 10 | 10 |
| **GL** | 60 | 80 | 80 |
| **HB** | 9 | 12 | 12 |
| **JB** | 14 | 18 | 18 |
| **JL** | 46 | 64 | 64 |
| **RA** | 50 | 75 | 75 |
| **SD** | 72 | 103 | 103 |
| **UD** | 70 | 82 | 82 |

To order a Front Hinge Mounting Style ‘M’, quote Reference, e.g. QM/13080/26 for M/30801, M/30802, M/30803 or M/30804.

## Spares

| Model | Barrel | Piston & Piston rod Assembly | Spares kit - Cylinders | Spares kit - Positioners |
|---|---|---|---|---|
| **M/30631, M/30632** | M/P23633/* | QM/30631/*/05 | QM/13063/00 | QM/1842/00 |
| **M/30633, M/30634** | M/P23633/* | QM/30631/*/05 | QM/13063/00 | QM/1841/00 |
| **M/30801, M/30802** | M/P23634/* | QM/30801/*/05 | QM/13080/00 | QM/1842/00 |
| **M/30803, M/30804** | M/P23634/* | QM/30801/*/05 | QM/13080/00 | QM/1841/00 |
| **M/31001, M/31002** | M/P23635/* | QM/31001/*/05 | QM/13100/00 | QM/1842/00 |
| **M/31003, M/31004** | M/P23635/* | QM/31001/*/05 | QM/13100/00 | QM/1841/00 |

*Insert stroke length

## 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 MARTONAIR.
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.