

# HYDRAULIC CYLINDERS AND PUMPS VIBRATION DAMPERS FOR BRIDGES

INNOVATION. **FEEL GOOD** VIBES FROM CZECH REPUBLIC.



# KGF hydraulika

## HIGH-PERFORMANCE HYDRAULIC EQUIPMENT FROM THE CZECH REPUBLIC

Established in 1992, our company specialises in the development, manufacture and sale of **700 bar high-pressure hydraulics for industrial applications**. The KGF hydraulics range includes **hydraulic cylinders, pumps, accessories, lifting kits and vibration dampers for footbridges** and bridges. Our customers have been returning to us for over 30 years, which is testament to the top-class quality of KGF products, and proof that we are rightly ranked amongst the global market leaders. We are so confident in our products that we offer an extended 3-year warranty.

### RELIABILITY. 3-YEAR WARRANTY ON KGF HYDRAULIC CYLINDERS.

KGF hydraulic tools are characterised by their high performance, reliability and durability. We have achieved this **top-class quality through a combination of design and technological innovations**, as well as the selection of high-quality materials and their **specialised, precise treatment** — for example, surface hardening. We utilise computer modelling and stress simulation methods when developing hydraulic solutions, enabling us to reduce the height and weight of cylinders and pumps.

### INNOVATION. FEEL GOOD VIBES OF KGF TMDs.

We were the first to develop lightweight yet strong and durable aluminium reservoir pumps (PD series). Our latest innovations include **remote-controlled electric hydraulic pumps (PE series)**, which are lighter and more portable than those offered by other suppliers. **Our ultra-low-profile cylinders (NM series, 'pancake')** reliably withstand lateral loads without seizing. We are the only manufacturer of vibration dampers for footbridges, bridges, and high-rise structures in the Czech Republic, and the **market leader in the TMD segment across Central Europe**. We also provide **expert technical consultancy** and synchronised lifting of very heavy loads with electronic measurement, primarily used in the construction or lifting of bridges.

KGF's hydraulic tools and systems are used in many industrial sectors, including mechanical engineering, construction, transport, energy and mining, as well as in the construction of bridges, railways, ships and wind farms. They are used for lifting and moving loads, spreading, straightening and measuring forces, as well as for use in pressing equipment. KGF tools enable you to **work quickly, easily and safely**, even in confined spaces. Thanks to the **efficiency and user-friendliness** of our tools, you can increase your productivity and save time and money. With several decades of experience, we can tackle complex industrial challenges and find optimal, **tailor-made solutions** for you.

**Tuned mass dampers (TMDs, vibration absorbers) on the Stvanice footbridge in Prague, Czech Rep. (8/2023)**



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**Supporting the load-bearing structure of the bridge over the River Blsanka, Kryry, Czech Republic**



# P SERIES

## FLAT HYDRAULIC CYLINDERS 5 TO 140 TONS, SINGLE-ACTING



Capacity **5–140 tons**

Stroke **6–50 mm**

**P series**

700 bar

Thanks to their compact, flat design, the **P-series single-acting flat hydraulic cylinders** can be used in areas where **clearance space is very restricted, such as narrow gaps and slots.**

They are ideal for handling heavy loads, for example when **positioning machinery on foundations**, during **maintenance** and assembly work, or as initial cylinders prior to the deployment of cylinders with a longer stroke.

### 3-YEAR WARRANTY THANKS TO PROVEN QUALITY

- **Minimum height and weight** of the cylinders.
- **The unique design** of the guide surfaces withstands lateral loads **without seizing**. When lateral forces increase, the cylinder shifts or tilts to ensure that the guide and sealing surfaces cannot be damaged. This is one of the reasons why **KGF rollers do not seize**.
- **Standard H** – the hardened inner surface of the cylinder provides **enhanced corrosion protection and resistance to moisture and scratches** inside the cylinder. **Nitrocarburization as standard in all KGF cylinders.**
- **Standard S** – high **resistance to contaminants in the oil** thanks to a wiper ring (from model P10 upwards).
- **Flexibility**
  - Threaded holes in the cylinder base allow the cylinder to be attached to various pieces of equipment.
  - For **easy handling**, models P90 – P140 are fitted with a **handle**.
- **Automatic piston return thanks to powerful return spring is standard** on KGF cylinders – **no more manual effort to return the piston.**

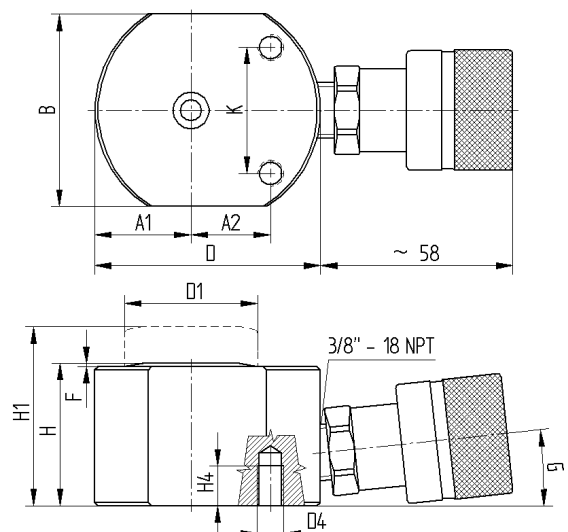
### SCOPE OF DELIVERY

- Hydraulic cylinder
- Hydraulic speed coupler for connecting with high-pressure hydraulic hose

### ACCESSORIES

- **Hydraulic pump** – e.g. PJ-500, see page 34 for more details
- **Pressure gauge** – e.g. 63 mm diameter, see page 36
- **High-pressure hose** – length as required, see page 36
- **Hydraulic manifold**, see page 37

### P10 CYLINDERS (10 TONS)



**P series**

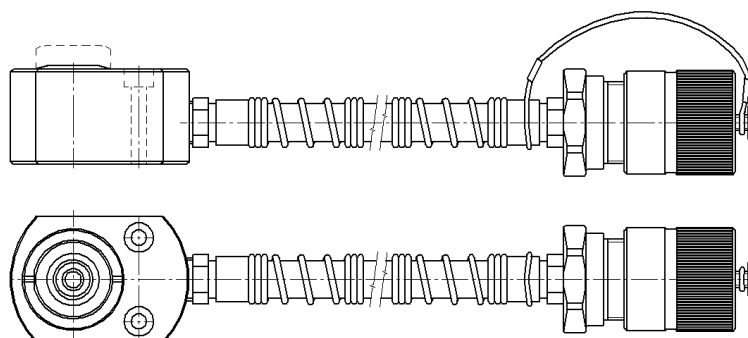
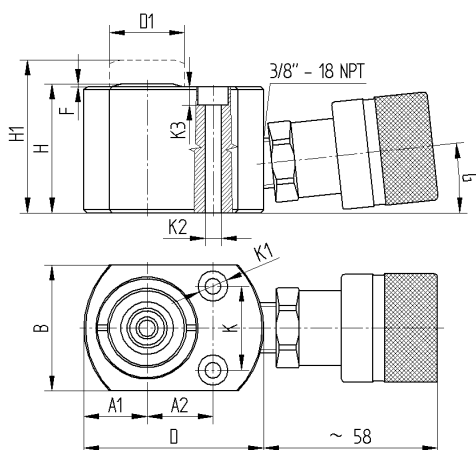
700 bar

Capacity **5–140 tons**Stroke **6–50 mm****Technical specifications**

| Cylinder / Load Capacity* | Stroke | Model Number | Cylinder Effective Area | Oil Capacity    | Diameter D | Height H | Weight ** |
|---------------------------|--------|--------------|-------------------------|-----------------|------------|----------|-----------|
| t (kN)                    | mm     |              | cm <sup>2</sup>         | cm <sup>3</sup> | mm         | mm       | kg        |
| <b>5</b><br>(50)          | 5      | P5-5H        | 7.1                     | 2.9             | 60         | 29       | 0.9       |
|                           | 8      | P5-8H        | 7.1                     | 5.7             | 60         | 33       | 1.0       |
|                           | 16     | P5-16H       | 7.1                     | 7.8             | 60         | 41       | 1.3       |
| <b>10</b><br>(111)        | 9      | P10-9H       | 15.9                    | 11.3            | 68         | 39       | 1.2       |
|                           | 11     | P10-11HS     | 15.9                    | 13.8            | 68         | 43       | 1.3       |
|                           | 21     | P10-21HS     | 15.9                    | 26.4            | 68         | 53       | 1.5       |
| <b>25</b><br>(269)        | 12     | P25-12HS     | 38.5                    | 46.2            | 95         | 58       | 3.2       |
|                           | 22     | P25-22HS     | 38.5                    | 84.7            | 95         | 68       | 3.6       |
|                           | 40     | P25-40HS     | 38.5                    | 153.9           | 95         | 86       | 4.4       |
| <b>50</b><br>(496)        | 16     | P50-16HS     | 70.9                    | 113.4           | 122        | 70       | 5.9       |
|                           | 25     | P50-25HS     | 70.9                    | 177.2           | 122        | 79       | 6.5       |
|                           | 40     | P50-40HS     | 70.9                    | 283.2           | 122        | 94       | 7.5       |
| <b>90</b><br>(929)        | 16     | P90-16HS     | 132.7                   | 212             | 164        | 86       | 13.1      |
|                           | 25     | P90-25HS     | 132.7                   | 332             | 164        | 95       | 13.6      |
|                           | 40     | P90-40HS     | 132.7                   | 531             | 164        | 110      | 15.6      |
| <b>140</b><br>(1,407)     | 16     | P140-16HS    | 201.1                   | 322             | 192        | 100      | 21.8      |
|                           | 30     | P140-30HS    | 201.1                   | 603             | 192        | 114      | 23.8      |
|                           | 50     | P140-50HS    | 201.1                   | 1,006           | 192        | 134      | 26.0      |

\* Maximum load at a cylinder pressure of 70 MPa

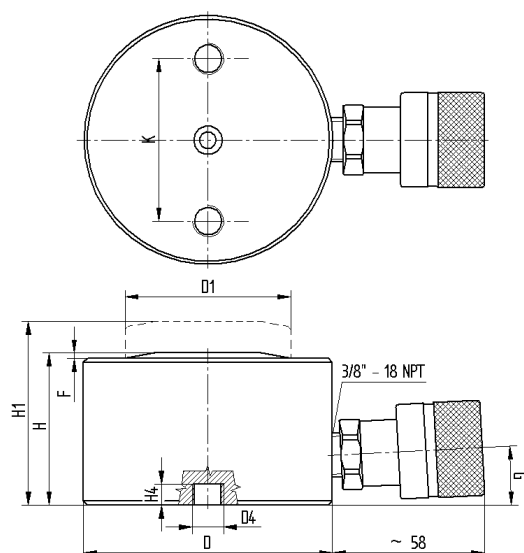
\*\* Weight including speed coupler and oil fill

**P5 CYLINDERS (5 TONS)**

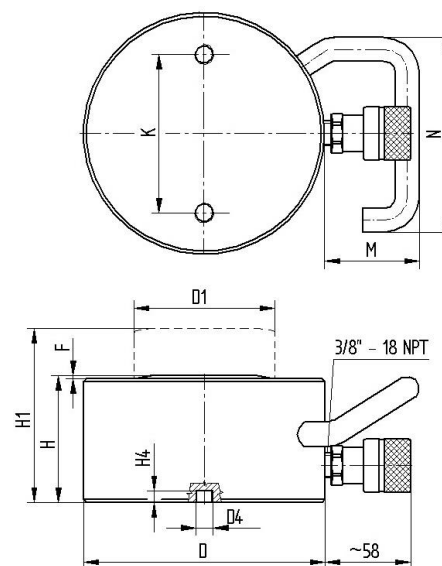
## Cylinder dimensions

| Cylinder /<br>load<br>capacity<br><br>t (kN) | Stroke<br><br>mm | Model     | B<br><br>mm | D<br><br>mm | D1<br><br>mm | H<br><br>mm | H1<br><br>mm | F<br><br>mm | A1<br><br>mm | A2<br><br>mm | K<br><br>mm | K1<br><br>mm | K2<br><br>mm | G<br><br>° | D4<br><br>mm | H4<br><br>mm |
|----------------------------------------------|------------------|-----------|-------------|-------------|--------------|-------------|--------------|-------------|--------------|--------------|-------------|--------------|--------------|------------|--------------|--------------|
| <b>5</b><br>(50)                             | 5                | P5-5H     | 42          | 56          | 25           | 29          | 34           | 1           | 21           | 22           | 28          | 10           | 5.3          | 0          |              |              |
|                                              | 8                | P5-8H     | 42          | 56          | 25           | 33          | 41           | 1           | 21           | 22           | 28          | 10           | 5.3          | 0          |              |              |
|                                              | 16               | P5-16H    | 42          | 56          | 25           | 41          | 57           | 1           | 21           | 22           | 28          | 10           | 5.3          | 6          |              |              |
| <b>10</b><br>(111)                           | 9                | P10-9H    | 58          | 68          | 40           | 39          | 48           | 1           | 29           | 24           | 38          |              |              | 6          | M8           | 12           |
|                                              | 11               | P10-11HS  | 58          | 68          | 40           | 43          | 54           | 1           | 29           | 24           | 38          |              |              | 6          | M8           | 12           |
|                                              | 21               | P10-21HS  | 58          | 68          | 40           | 53          | 74           | 1           | 29           | 24           | 38          |              |              | 6          | M8           | 12           |
| <b>25</b><br>(269)                           | 12               | P25-12HS  |             | 95          | 63           | 58          | 70           | 2           |              |              | 62          |              |              | 3          | M12          | 8            |
|                                              | 22               | P25-22HS  |             | 95          | 63           | 68          | 89           | 2           |              |              | 62          |              |              | 3          | M12          | 8            |
|                                              | 40               | P25-40HS  |             | 95          | 63           | 86          | 122          | 2           |              |              | 62          |              |              | 3          | M12          | 8            |
| <b>50</b><br>(496)                           | 16               | P50-16HS  |             | 122         | 80           | 70          | 86           | 2           |              |              | 95          |              |              | 3          | M12          | 8            |
|                                              | 25               | P50-25HS  |             | 122         | 80           | 79          | 104          | 2           |              |              | 95          |              |              | 3          | M12          | 8            |
|                                              | 40               | P50-40HS  |             | 122         | 80           | 94          | 134          | 2           |              |              | 95          |              |              | 3          | M12          | 8            |
| <b>90</b><br>(929)                           | 16               | P90-16HS  |             | 164         | 95           | 86          | 102          | 2           |              |              | 76          |              |              |            | M12          | 9            |
|                                              | 25               | P90-25HS  |             | 164         | 95           | 95          | 120          | 2           |              |              | 76          |              |              |            | M12          | 9            |
|                                              | 40               | P90-40HS  |             | 164         | 95           | 110         | 150          | 2           |              |              | 76          |              |              |            | M12          | 9            |
| <b>140</b><br>(1,407)                        | 16               | P140-16HS |             | 192         | 115          | 100         | 116          | 2           |              |              | 140         |              |              |            | M12          | 9            |
|                                              | 30               | P140-30HS |             | 192         | 115          | 114         | 144          | 2           |              |              | 140         |              |              |            | M12          | 9            |
|                                              | 50               | P140-50HS |             | 192         | 115          | 134         | 184          | 2           |              |              | 140         |              |              |            | M12          | 9            |

### CYLINDERS P25 – P50 (25–50 tons)



### CYLINDERS P90 – P140 (90–140 tons)



# K SERIES

## SHORT HYDRAULIC CYLINDERS 10 TO 140 TONS, SINGLE-ACTING

Capacity **10–140 tons**Stroke **40–150 mm**

### K series

700 bar

Thanks to their **compact design**, the **short and lightweight K Series hydraulic cylinders** are suitable for use in confined spaces. They are also ideal for applications requiring a **maximum stroke with a low overall height**. They are primarily used in the construction and heavy industries, as well as for all maintenance and assembly work.

### 3-YEAR WARRANTY THANKS TO PROVEN QUALITY

- **Low weight and height** relative to high performance and stroke
- **Automatic piston return thanks to a powerful return spring** on all **KGF** cylinders as **standard** - **no more manual effort to return the piston**.
- **Flexibility**
  - Threaded holes in the cylinder base allow for easy mounting on various equipment
  - For **improved handling**, the K50-100HS models and above (all K90 and K140 models) are **fitted with a handle**
- **Standard H** – the hardened inner surface of the cylinder, with **enhanced corrosion protection**, ensures resistance to moisture and scratches inside the cylinder. **Nitrocarburization as standard in all KGF cylinders**.
- **Standard S** – high **resistance to contaminants in the oil** thanks to a wiper ring and a **dust plug**
- **Long service life** due to the design and materials used, such as high-strength alloy steel and high-quality sealing elements

## Technical specifications

| Cylinder /<br>load capacity* | Stroke | Model             | Cylinder<br>Effective Area | Oil<br>Capacity | Diameter<br>D | Height<br>H | Weight<br>** |
|------------------------------|--------|-------------------|----------------------------|-----------------|---------------|-------------|--------------|
| t (kN)                       | mm     |                   | cm <sup>2</sup>            | cm <sup>3</sup> | mm            | mm          | kg           |
| <b>10</b> (111)              | 40     | <b>K10-40HS</b>   | 15.9                       | 64              | 70            | 85          | 2.6          |
| <b>15</b> (166)              | 45     | <b>K15-45HS</b>   | 23.8                       | 107             | 80            | 95          | 3.5          |
| <b>25</b> (269)              | 60     | <b>K25-60HS</b>   | 38.5                       | 231             | 95            | 116         | 5.7          |
| <b>50</b> (496)              | 60     | <b>K50-60HS</b>   | 70.9                       | 425             | 125           | 126         | 10.3         |
|                              | 100    | <b>K50-100HS</b>  | 70.9                       | 709             | 125           | 170         | 13.7         |
|                              | 150    | <b>K50-150HS</b>  | 70.9                       | 1064            | 125           | 220         | 17.1         |
| <b>90</b> (929)              | 60     | <b>K90-60HS</b>   | 132.7                      | 796             | 170           | 146         | 23.5         |
|                              | 100    | <b>K90-100HS</b>  | 132.7                      | 1,327           | 170           | 198         | 30.0         |
|                              | 150    | <b>K90-150HS</b>  | 132.7                      | 1,991           | 170           | 248         | 36.0         |
| <b>140</b> (1,407)           | 80     | <b>K140-80HS</b>  | 201.0                      | 2,010           | 205           | 185         | 40.0         |
| <b>200</b> (1,985)           | 150    | <b>K200-150HS</b> | 283.5                      | 4,253           | 245           | 277         | 80.5         |

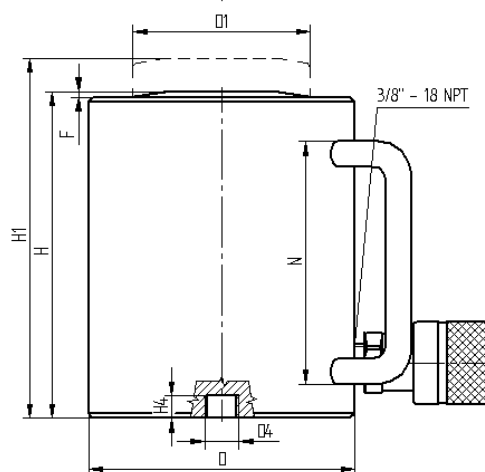
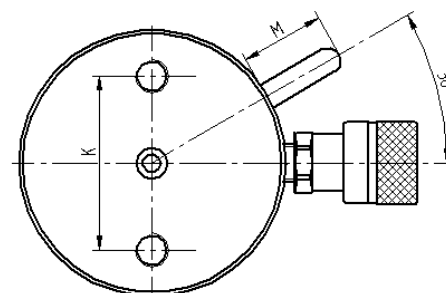
\* Maximum power at a cylinder pressure of 70 MPa

\*\* Weight including speed coupler and oil fill

## SCOPE OF DELIVERY

- Cylinder
- Speed coupler for connecting with hydraulic hose

## K90 – K140 CYLINDERS (90–140 TUN)



## Cylinder dimensions

| Cylinder /<br>load capacity<br>t (kN) | Stroke<br>mm | Model      | D<br>mm | D1<br>mm | H<br>mm | H1<br>mm | F<br>mm | K<br>mm | D4<br>mm | H4<br>mm | G<br>° | M<br>mm | N<br>mm |
|---------------------------------------|--------------|------------|---------|----------|---------|----------|---------|---------|----------|----------|--------|---------|---------|
| 10 (111)                              | 40           | K10-40HS   | 70      | 40       | 85      | 125      | 1       | 38      | M8       | 8        | 3      |         |         |
| 15 (166)                              | 45           | K15-45HS   | 80      | 50       | 95      | 140      | 1       | 50      | M10      | 9        | 3      |         |         |
| 25 (269)                              | 60           | K25-60HS   | 95      | 63       | 116     | 176      | 2       | 62      | M12      | 8        | 3      |         |         |
| 50 (496)                              | 60           | K50-60HS   | 125     | 80       | 126     | 186      | 2       | 95      | M12      | 8        | 3      |         |         |
|                                       | 100          | K50-100HS  | 125     | 80       | 170     | 275      | 2       | 95      | M12      | 8        | 3      |         |         |
|                                       | 150          | K50-150HS  | 125     | 80       | 220     | 370      | 2       | 95      | M12      | 8        | 3      |         |         |
| 90 (929)                              | 60           | K90-60HS   | 170     | 95       | 146     | 206      | 2       | 140     | M12      | 11       |        | 50      | 126     |
|                                       | 100          | K90-100HS  | 170     | 95       | 198     | 298      | 2       | 140     | M12      | 11       |        | 50      | 126     |
|                                       | 150          | K90-150HS  | 170     | 95       | 248     | 398      | 2       | 140     | M12      | 11       |        | 50      | 126     |
| 140 (1,407)                           | 80           | K140-80HS  | 205     | 125      | 185     | 265      | 2       | 140     | M12      | 14       |        | 50      | 126     |
| 200 (1,985)                           | 150          | K200-150HS | 245     | 150      | 277     | 427      | 2       | 140     | M12      | 14       |        |         |         |

Lifting the Čekanice Bridge using a synchronous lifting system with digital stroke measurement and wireless transmission to a PC.



# U SERIES

## MULTI-PURPOSE HYDRAULIC CYLINDERS 5 TO 90 TONS, SINGLE-ACTING



Capacity **5–90 tons**

Stroke **25–300 mm**

**U series**

700 bar

These **single-acting, universal hydraulic cylinders of the U series** are suitable for lifting and lowering operations as well as for use as a **power element in various pieces of equipment** (presses, clamping and expanding devices, etc.). They are primarily used **in engineering, heavy industry** and in all maintenance and assembly work.

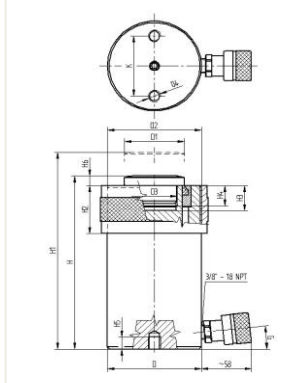
### 3-YEAR WARRANTY THANKS TO PROVEN QUALITY

- **Automatic piston return** thanks to a powerful return spring on all KGF cylinders as standard - **no more manual effort to return the piston.**
- **Standard H** – a hardened inner cylinder surface with **enhanced corrosion protection** ensures resistance to moisture and against scratches inside the cylinder. **Nitrocarburization as standard in all KGF cylinders.**
- **Standard S** – high **resistance to contaminants in the oil** thanks to a wiper ring, suitable for use even **in adverse conditions.**
- **A unique design for the sliding guide surfaces withstands lateral loads without seizing.** If lateral force increases, the cylinder will shift or tilt. The guide and sealing surfaces are thus not damaged and the roller will not seize up.
- **Flexibility**
  - Facultative further load caps (tilt and flat saddles) on the piston face to adapt to the type of load.
  - Threaded holes in the cylinder base allow for attachment to various pieces of equipment.
  - Models U50–U90 are **fitted with a handle for easy handling.**
- **Long service life** thanks to the design and materials used, such as high-strength alloy steel and high-quality sealing elements.

### SCOPE OF DELIVERY

- Hydraulic cylinder with a basic removable load cap (standard piston grooved saddle)
- Cover sleeve for external thread
- Speed coupler for connecting with high-pressure hydraulic hoses

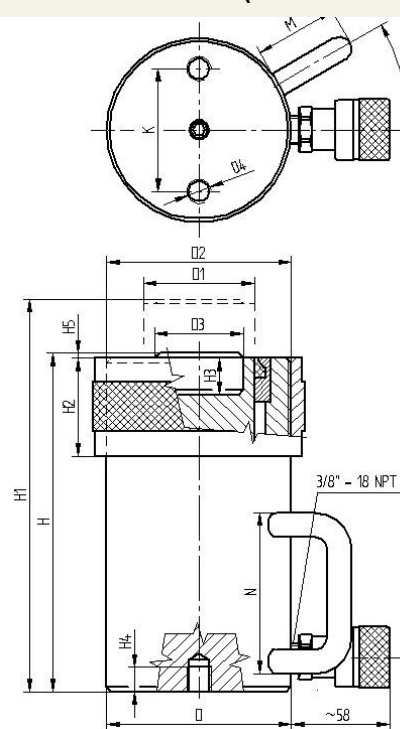
### CYLINDERS U5 – U25



### ACCESSORIES

- **Hydraulic pump** – e.g. PJ-500, see page 34 for more details
- **Pressure gauge** – e.g. diameter 63 mm, see on page 36
- **High-pressure hose** – length as required, p. 36
- **Hydraulic manifold**, see p. 37

### CYLINDERS U50 – U90 (50–90 TONS)



## Technical specifications

### 5–25 tons

#### U series

700 bar

Capacity **5–90 tons**Stroke **25–300 mm**

| Cylinder /<br>load capacity* | Stroke | Model     | Cylinder<br>Effective Area | Oil<br>Capacity | Diameter<br>D | Height<br>H | Weight<br>** |
|------------------------------|--------|-----------|----------------------------|-----------------|---------------|-------------|--------------|
| t (kN)                       | mm     |           | cm <sup>2</sup>            | cm <sup>3</sup> | mm            | mm          | kg           |
| 5 (50)                       | 45     | U5-45HS   | 7.1                        | 32              | 45            | 107         | 1.5          |
| 10<br>(111)                  | 25     | U10-25HS  | 15.9                       | 40              | 62            | 93          | 2.0          |
|                              | 45     | U10-45HS  | 15.9                       | 72              | 62            | 113         | 2.7          |
|                              | 90     | U10-90HS  | 15.9                       | 143             | 62            | 168         | 3.7          |
|                              | 150    | U10-150HS | 15.9                       | 239             | 62            | 233         | 5.0          |
| 15<br>(166)                  | 25     | U15-25HS  | 23.8                       | 59              | 75            | 103         | 3.6          |
|                              | 50     | U15-50HS  | 23.8                       | 119             | 75            | 128         | 4.1          |
|                              | 100    | U15-100HS | 23.8                       | 238             | 75            | 185         | 5.7          |
|                              | 150    | U15-150HS | 23.8                       | 356             | 75            | 235         | 7.0          |
|                              | 200    | U15-200HS | 23.8                       | 475             | 75            | 285         | 8.3          |
| 25<br>(269)                  | 25     | U25-25HS  | 38.5                       | 96              | 95            | 113         | 6.2          |
|                              | 50     | U25-50HS  | 38.5                       | 192             | 95            | 138         | 7.0          |
|                              | 100    | U25-100HS | 38.5                       | 385             | 95            | 190         | 9.6          |
|                              | 150    | U25-150HS | 38.5                       | 577             | 95            | 240         | 11.7         |
|                              | 200    | U25-200HS | 38.5                       | 770             | 95            | 290         | 13.8         |
|                              | 250    | U25-250HS | 38.5                       | 962             | 95            | 340         | 16.0         |

### 50–90 tons

| Cylinder /<br>load capacity* | Stroke | Model     | Cylinder<br>Effective Area | Oil<br>Capacity | Diameter<br>D | Height<br>H | Weight<br>** |
|------------------------------|--------|-----------|----------------------------|-----------------|---------------|-------------|--------------|
| t (kN)                       | mm     |           | cm <sup>2</sup>            | cm <sup>3</sup> | mm            | mm          | kg           |
| 50<br>(496)                  | 50     | U50-50HS  | 70.9                       | 354             | 130           | 162         | 19           |
|                              | 100    | U50-100HS | 70.9                       | 709             | 130           | 212         | 22           |
|                              | 150    | U50-150HS | 70.9                       | 1,063           | 130           | 262         | 25           |
|                              | 200    | U50-200HS | 70.9                       | 1,418           | 130           | 312         | 28           |
|                              | 250    | U50-250HS | 70.9                       | 1,772           | 130           | 362         | 31           |
|                              | 300    | U50-300HS | 70.9                       | 2,126           | 130           | 412         | 34           |
| 90<br>(929)                  | 50     | U90-50HS  | 132.7                      | 664             | 170           | 202         | 30           |
|                              | 100    | U90-100HS | 132.7                      | 1,327           | 170           | 252         | 36           |
|                              | 150    | U90-150HS | 132.7                      | 1,991           | 170           | 302         | 42           |
|                              | 200    | U90-200HS | 132.7                      | 2,655           | 170           | 352         | 48           |
|                              | 250    | U90-250HS | 132.7                      | 3,318           | 170           | 402         | 53           |
|                              | 300    | U90-300HS | 132.7                      | 3,982           | 170           | 452         | 59           |

\* Maximum power at a cylinder pressure of 70 MPa

\*\* Weight including speed coupler, cover nut, thrust plate and oil fill

## Cylinder dimensions 5–25 tons

| Cylinder /<br>load<br>capacity<br><br>t (kN) | Stroke<br><br>mm | Model     | D<br><br>mm | D1<br><br>mm | D2      | D3      | D4  | H<br><br>mm | H1<br><br>mm | H2<br><br>mm | H3<br><br>mm | H4<br><br>mm | H5<br><br>mm | H6<br><br>mm | K<br><br>mm | G<br><br>° |
|----------------------------------------------|------------------|-----------|-------------|--------------|---------|---------|-----|-------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|------------|
| 5 (50)                                       | 45               | U5-45HS   | 45          | 25           | M45x1.5 | M18x1.5 | M6  | 107         | 152          | 25           | 16           | 14           | 12           | 5            | 30          | 6          |
| 10<br>(111)                                  | 25               | U10-25HS  | 62          | 40           | M62x2   | M30x1.5 | M8  | 93          | 118          | 30           | 21           | 16           | 16           | 6            | 38          | 6          |
|                                              | 45               | U10-45HS  | 62          | 40           | M62x2   | M30x1.5 | M8  | 113         | 158          | 30           | 21           | 16           | 16           | 6            | 38          | 6          |
|                                              | 90               | U10-90HS  | 62          | 40           | M62x2   | M30x1.5 | M8  | 168         | 258          | 30           | 21           | 16           | 16           | 6            | 38          | 6          |
|                                              | 150              | U10-150HS | 62          | 40           | M62x2   | M30x1.5 | M8  | 233         | 383          | 30           | 21           | 16           | 16           | 6            | 38          | 6          |
| 15<br>(166)                                  | 25               | U15-25HS  | 75          | 50           | M75x2   | M36x1.5 | M10 | 103         | 128          | 40           | 21           | 18           | 18           | 8            | 50          | 6          |
|                                              | 50               | U15-50HS  | 75          | 50           | M75x2   | M36x1.5 | M10 | 128         | 178          | 40           | 21           | 18           | 18           | 8            | 50          | 6          |
|                                              | 100              | U15-100HS | 75          | 50           | M75x2   | M36x1.5 | M10 | 185         | 285          | 40           | 21           | 18           | 18           | 8            | 50          | 6          |
|                                              | 150              | U15-150HS | 75          | 50           | M75x2   | M36x1.5 | M10 | 235         | 385          | 40           | 21           | 18           | 18           | 8            | 50          | 6          |
|                                              | 200              | U15-200HS | 75          | 50           | M75x2   | M36x1.5 | M10 | 285         | 485          | 40           | 21           | 18           | 18           | 8            | 50          | 6          |
| 25<br>(269)                                  | 25               | U25-25HS  | 95          | 63           | M95x2   | M48x2   | M12 | 113         | 138          | 50           | 24           | 20           | 14           | 10           | 62          | 0          |
|                                              | 50               | U25-50HS  | 95          | 63           | M95x2   | M48x2   | M12 | 138         | 188          | 50           | 24           | 20           | 14           | 10           | 62          | 0          |
|                                              | 100              | U25-100HS | 95          | 63           | M95x2   | M48x2   | M12 | 190         | 298          | 50           | 24           | 20           | 14           | 10           | 62          | 0          |
|                                              | 150              | U25-150HS | 95          | 63           | M95x2   | M48x2   | M12 | 240         | 398          | 50           | 24           | 20           | 14           | 10           | 62          | 0          |
|                                              | 200              | U25-200HS | 95          | 63           | M95x2   | M48x2   | M12 | 290         | 498          | 50           | 24           | 20           | 14           | 10           | 62          | 0          |
|                                              | 250              | U25-250HS | 95          | 63           | M95x2   | M48x2   | M12 | 340         | 598          | 50           | 24           | 20           | 14           | 10           | 62          | 0          |

## 50–90 tons

| Cylinder /<br>load ca-<br>pacity<br><br>t (kN) | Stroke<br><br>mm | Model     | D<br><br>mm | D1<br><br>mm | D2     | D3 | D4  | H<br><br>mm | H1<br><br>mm | H2<br><br>mm | H3<br><br>mm | H4<br><br>mm | H5<br><br>mm | K<br><br>mm | M<br><br>mm | N<br><br>mm |
|------------------------------------------------|------------------|-----------|-------------|--------------|--------|----|-----|-------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|
| 50<br>(496)                                    | 50               | U50-50HS  | 130         | 80           | M130x2 | 71 | M12 | 162         | 212          | 55           | 13           | 20           | 3            | 95          | 50          | 126         |
|                                                | 100              | U50-100HS | 130         | 80           | M130x2 | 71 | M12 | 212         | 312          | 55           | 13           | 20           | 3            | 95          | 50          | 126         |
|                                                | 150              | U50-150HS | 130         | 80           | M130x2 | 71 | M12 | 262         | 412          | 55           | 13           | 20           | 3            | 95          | 50          | 126         |
|                                                | 200              | U50-200HS | 130         | 80           | M130x2 | 71 | M12 | 312         | 512          | 55           | 13           | 20           | 3            | 95          | 50          | 126         |
|                                                | 250              | U50-250HS | 130         | 80           | M130x2 | 71 | M12 | 362         | 612          | 55           | 13           | 20           | 3            | 95          | 50          | 126         |
|                                                | 300              | U50-300HS | 130         | 80           | M130x2 | 71 | M12 | 412         | 712          | 55           | 13           | 20           | 3            | 95          | 50          | 126         |
| 90<br>(929)                                    | 50               | U90-50HS  | 170         | 95           | M170x3 | 90 | M12 | 202         | 252          | 65           | 16           | 20           | 5            | 140         | 50          | 126         |
|                                                | 100              | U90-100HS | 170         | 95           | M170x3 | 90 | M12 | 252         | 352          | 65           | 16           | 20           | 5            | 140         | 50          | 126         |
|                                                | 150              | U90-150HS | 170         | 95           | M170x3 | 90 | M12 | 302         | 452          | 65           | 16           | 20           | 5            | 140         | 50          | 126         |
|                                                | 200              | U90-200HS | 170         | 95           | M170x3 | 90 | M12 | 352         | 552          | 65           | 16           | 20           | 5            | 140         | 50          | 126         |
|                                                | 250              | U90-250HS | 170         | 95           | M170x3 | 90 | M12 | 402         | 652          | 65           | 16           | 20           | 5            | 140         | 50          | 126         |
|                                                | 300              | U90-300HS | 170         | 95           | M170x3 | 90 | M12 | 452         | 752          | 65           | 16           | 20           | 5            | 140         | 50          | 126         |

# NM SERIES

LOW HEIGHT, LOCK NUT HYDRAULIC CYLINDERS, 90 TO 200 TONS



**INNOVATION.** Thanks to the **tilt concave saddle** and **sliding pads**, these cylinders are fully resistant to lateral loads without seizing, whilst maintaining a minimal installation height.

Capacity **90–200 tons**

Stroke **50–100 mm**

**NM series**

700 bar

These exceptionally low height and light weight KGF NM series hydraulic cylinders are designed for lifting and securing heavy-duty application where clearing space is restricted. Thanks to their low-profile design, these cylinders have a minimal installation height and yet are fully resistant to lateral loads without seizing.

The lock nut provides the reassurance of mechanical load holding for extended periods. They are ideal for lifting bridges and steel structures, building renovations, mining and industrial maintenance.

## 3-YEAR WARRANTY THANKS TO PROVEN QUALITY

- **The lowest-profile high-performance jack** delivers very high force in a compact lightweight design.
- **The lock nut provides safe mechanical load holding over an extended period and helps ensure safety on the site.**
- **HS standard** – all cylinder bodies and nuts feature special protection against corrosion, friction and seizing (**nitrocarburisation and a wiper ring are standard features of all KGF cylinders**).
- **The unique design of the guide surfaces and tilt saddles withstands lateral loads of up to 30% without seizing.** If the lateral forces increase, the cylinder will shift or tilt. This prevents damage to the guide and sealing surfaces as well as jack seizing.
- **Flexibility**
  - Threaded holes in the base of the cylinder allow it to be mounted on various equipment.
  - For **easy handling**, this series comes with a handle as standard.
- **Automatic piston return thanks to a powerful return spring** is standard on all KGF cylinders, which significantly speeds up work during multiple operations. **No more manual effort to return the piston.**
- **Accessories: Sliding pads** made of hardened material are particularly suitable for use of lifted load with a rough surface. They eliminate lateral forces, ensuring that the cylinder is not damaged by lateral loads or seized under adverse conditions. **You should put the sliding pads between the piston and the lifted load.**

## SCOPE OF DELIVERY

- Lock nut cylinder
- Speed coupler for connecting with a high pressure hydraulic hose

## ACCESSORIES

- **Sliding pads**
- **Hydraulic electric pumps** – e.g. **PE-5000-330**, see page 32 for more details
- **Pressure gauges** – e.g. 63 mm diameter, see page 36
- **Hydraulic hoses** – p. 36
- **Fitting manifolds** – p. 37

| Sliding pad | Model       | Diameter mm | Thickness mm |
|-------------|-------------|-------------|--------------|
| PNM90       | NM90-50HS   | 155         | 15           |
| PNM140      | NM140-50HS  | 170         | 20           |
| PNM200      | NM200-100HS | 210         | 20           |

# Technical specifications

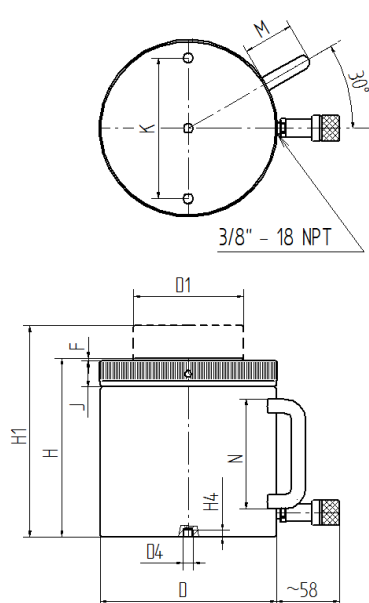
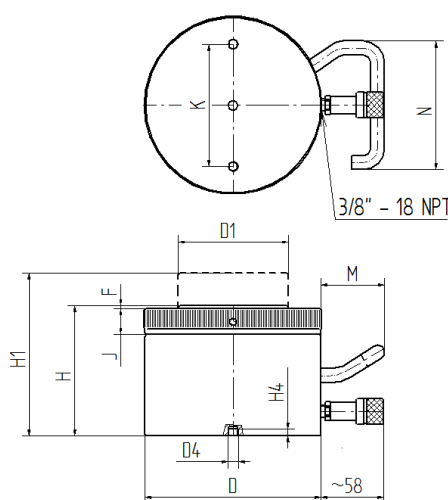
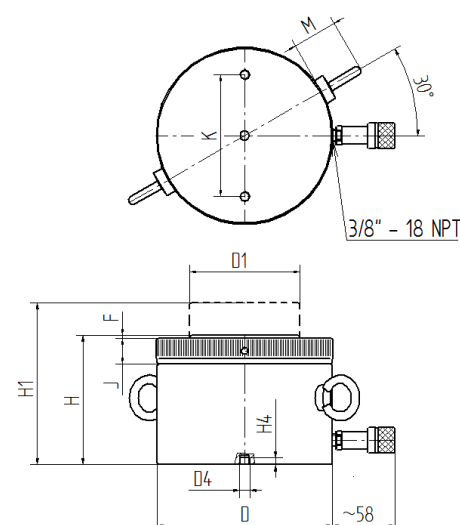
| Cylinder /<br>load capacity* | Stroke | Model       | Cylinder<br>Effective Area | Oil<br>Capacity | Diameter<br>D | Height<br>H | Weight<br>** |
|------------------------------|--------|-------------|----------------------------|-----------------|---------------|-------------|--------------|
| t (kN)                       | mm     |             | cm <sup>2</sup>            | cm <sup>3</sup> | mm            | mm          | kg           |
| 90, (929)                    | 50     | NM90-50HS   | 132.7                      | 663.4           | 165           | 137         | 20.4         |
|                              | 80     | NM90-80HS   | 132.7                      | 1,061.4         | 165           | 174         | 25           |
|                              | 100    | NM90-100HS  | 132.7                      | 1327            | 165           | 200         | 28.5         |
| 140 (1,407)                  | 50     | NM140-50HS  | 201.1                      | 1,005.3         | 202           | 149         | 31.9         |
|                              | 80     | NM140-80HS  | 201.1                      | 1,608.8         | 202           | 189         | 40           |
| 200 (1,985)                  | 100    | NM200-100HS | 283.4                      | 2,834           | 245           | 235         | 75           |

\* Maximum capacity at a cylinder pressure of 70 MPa

\*\* Weight including speed coupler and oil fill

# Cylinder dimensions

| Cylinder /<br>load capacity | Stroke | Model       | D   | D1  | H   | H1  | F   | J    | K   | D4  | H4 | M  | N   |
|-----------------------------|--------|-------------|-----|-----|-----|-----|-----|------|-----|-----|----|----|-----|
| t (kN)                      | mm     |             | mm  | mm  | mm  | mm  | mm  | mm   | mm  |     | mm | mm | mm  |
| 90 (929)                    | 50     | NM90-50HS   | 165 | 70  | 137 | 188 | 2.5 | 24.5 | 140 | M12 | 8  | 72 | 147 |
|                             | 80     | NM90-80HS   | 165 | 70  | 174 | 254 | 3   | 24.5 | 140 | M12 | 8  | 56 | 126 |
|                             | 100    | NM90-100HS  | 165 | 70  | 200 | 300 | 3   | 24.5 | 140 | M12 | 8  | 56 | 126 |
| 140 (1,407)                 | 50     | NM140-50HS  | 202 | 95  | 149 | 199 | 3   | 30   | 140 | M12 | 8  | 72 | 147 |
|                             | 80     | NM140-80HS  | 202 | 95  | 189 | 269 | 3   | 30   | 140 | M12 | 8  | 56 | 126 |
| 200 (1,985)                 | 100    | NM200-100HS | 245 | 130 | 235 | 335 | 4   | 36   | 140 | M12 | 9  | 53 |     |


 Models NM90-80, NM90-100  
and NM140-80

 Models NM90-50,  
NM140-50


Model NM200-100



## KM SERIES

### SHORT LOCK NUT HYDRAULIC CYLINDERS 25 TO 400 TONS, SINGLE-ACTING

|                             |          |                    |
|-----------------------------|----------|--------------------|
| <b>KM series</b><br>700 bar | Capacity | <b>25–400 tons</b> |
|                             | Stroke   | <b>60–150 mm</b>   |

**Lightweight, short lock nut hydraulic cylinders** from the **KM series** are suitable for use in narrow spaces thanks to their compact design. The lock nut secures **the load in the required position and holds it there for an extended period**. They are primarily used in the construction and heavy industries as well as for all maintenance and assembly work.



### 3-YEAR WARRANTY THANKS TO PROVEN QUALITY

- A lock nut for **the secure mechanical retention of the load for an extended period**.
- **Low weight and height** relative to high performance and lifting capacity.
- **Standard H** – the hardened inner surface of the cylinder, **with enhanced corrosion protection (Nitrocarburization)**, ensures resistance to moisture and damage to the cylinder's interior caused by contaminants. This minimises the risk of seizing.
- **Standard S** – high **resistance to contaminants in the oil** thanks to a **wiper ring**.
- **Thanks to the unique design of the guide surfaces, the jack withstands lateral loads without seizing**. If the lateral force increases, the roller will shift or tilt. This prevents damage to the guide and sealing surfaces, and the cylinder will not seize.
- **Flexibility**
  - Threaded holes in the base of the roller allow it to be attached to various pieces of equipment.
  - For **easy handling**, models with a load capacity of 90 tons or more are fitted with a handle or lifting eyes.
- **Automatic piston return thanks to a powerful return spring** is standard on all KGF cylinders, which significantly speeds up work during multiple operations. **No more manual effort to return the piston**.
- A safety relief port protects the cylinder against the piston exceeding its permitted stroke.

## Technical specifications

|          |             |                             |
|----------|-------------|-----------------------------|
| Capacity | 25–400 tons | <b>KM series</b><br>700 bar |
| Stroke   | 60–150 mm   |                             |

| Cylinder /<br>load capacity*<br><br>t (kN) | Stroke<br><br>mm | Model       | Cylinder<br>Effective Area<br><br>cm <sup>2</sup> | Oil<br>Capacity<br><br>cm <sup>3</sup> | Diameter<br>D<br><br>mm | Height<br>H<br><br>mm | Weight<br>**<br><br>kg |
|--------------------------------------------|------------------|-------------|---------------------------------------------------|----------------------------------------|-------------------------|-----------------------|------------------------|
| <b>25</b><br>(269)                         | 60               | KM25-60HS   | 38.47                                             | 230.8                                  | 95                      | 133                   | 7.0                    |
|                                            | 100              | KM25-100HS  | 38.47                                             | 384.4                                  | 95                      | 180                   | 9.6                    |
|                                            | 150              | KM25-150HS  | 38.47                                             | 577.1                                  | 95                      | 230                   | 11.3                   |
| <b>50</b><br>(496)                         | 60               | KM50-60HS   | 70.85                                             | 425.1                                  | 125                     | 153                   | 13.4                   |
|                                            | 100              | KM50-100HS  | 70.85                                             | 708.5                                  | 125                     | 193                   | 16.9                   |
|                                            | 150              | KM50-150HS  | 70.85                                             | 1,062.8                                | 125                     | 243                   | 21.3                   |
| <b>90</b><br>(929)                         | 80               | KM90-80HS   | 132.67                                            | 1,061.4                                | 165                     | 198                   | 29.0                   |
|                                            | 150              | KM90-150HS  | 132.67                                            | 1,990.1                                | 165                     | 268                   | 39.3                   |
| <b>140</b><br>(1,407)                      | 80               | KM140-80HS  | 201.06                                            | 1,608.5                                | 205                     | 220                   | 54.0                   |
|                                            | 150              | KM140-150HS | 201.06                                            | 3,015.9                                | 205                     | 290                   | 67.0                   |
| <b>200</b><br>(1,985)                      | 100              | KM200-100HS | 283.39                                            | 2,833.9                                | 245                     | 275                   | 89.2                   |
|                                            | 150              | KM200-150HS | 283.39                                            | 4,250.9                                | 245                     | 325                   | 105.4                  |
| <b>300</b><br>(2,908)                      | 100              | KM300-100HS | 415.47                                            | 4,154.7                                | 290                     | 330                   | 141.0                  |
|                                            | 150              | KM300-150HS | 415.47                                            | 6,232.1                                | 290                     | 380                   | 162.0                  |
| <b>400</b><br>(4,070)                      | 100              | KM400-100HS | 572.27                                            | 5,722.7                                | 340                     | 370                   | 263.0                  |
|                                            | 150              | KM400-150HS | 572.27                                            | 8,583.9                                | 340                     | 420                   | 298.5                  |

\* Maximum power at a cylinder pressure of 70 MPa

\*\* Weight including speed coupler, lock nut, saddle and oil fill

## Securing a damaged bridge bearing whilst lifting the bridge deck of the highway to Brno.



## Cylinder dimensions

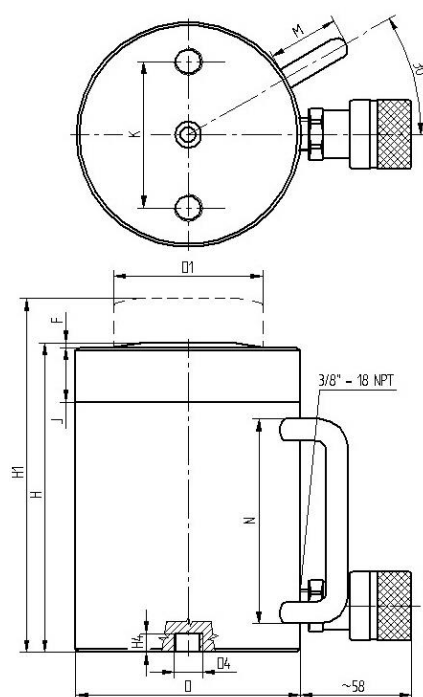
| Cylinder /<br>load capacity<br><br>t (kN) | Stroke<br><br>mm | Model       | D<br><br>mm | D1<br><br>mm | H<br><br>mm | H1<br><br>mm | F<br><br>mm | J<br><br>mm | K<br><br>mm | D4<br><br>mm | H4<br><br>mm | M<br><br>mm | N<br><br>mm |
|-------------------------------------------|------------------|-------------|-------------|--------------|-------------|--------------|-------------|-------------|-------------|--------------|--------------|-------------|-------------|
| <b>25</b><br>(269)                        | 60               | KM25-60HS   | 95          | 70           | 140         | 200          | 2           | 15          | 62          | M12          | 11           |             |             |
|                                           | 100              | KM25-100HS  | 95          | 70           | 180         | 280          | 2           | 15          | 62          | M12          | 11           |             |             |
|                                           | 150              | KM25-150HS  | 95          | 70           | 230         | 380          | 2           | 15          | 62          | M12          | 11           |             |             |
| <b>50</b><br>(496)                        | 60               | KM50-60HS   | 125         | 95           | 154         | 214          | 3           | 20          | 95          | M12          | 9            |             |             |
|                                           | 100              | KM50-100HS  | 125         | 95           | 194         | 294          | 3           | 20          | 95          | M12          | 9            |             |             |
|                                           | 150              | KM50-150HS  | 125         | 95           | 244         | 394          | 3           | 20          | 95          | M12          | 9            |             |             |
| <b>90</b><br>(929)                        | 80               | KM90-80HS   | 165         | 130          | 198         | 278          | 4           | 27          | 140         | M12          | 14           | 50          | 126         |
|                                           | 150              | KM90-150HS  | 165         | 130          | 268         | 418          | 4           | 27          | 140         | M12          | 14           | 50          | 126         |
| <b>140</b><br>(1,407)                     | 80               | KM140-80HS  | 205         | 160          | 220         | 300          | 4           | 35          | 140         | M12          | 14           | 50          | 126         |
|                                           | 150              | KM140-150HS | 205         | 160          | 290         | 440          | 4           | 35          | 140         | M12          | 14           | 50          | 126         |
| <b>200</b><br>(1,985)                     | 100              | KM200-100HS | 245         | 190          | 275         | 375          | 5           | 42          | 140         | M12          | 14           |             |             |
|                                           | 150              | KM200-150HS | 245         | 190          | 325         | 525          | 5           | 42          | 140         | M12          | 14           |             |             |
| <b>300</b><br>(2,908)                     | 100              | KM300-100HS | 290         | 230          | 330         | 430          | 5           | 50          | 140         | M12          | 14           |             |             |
|                                           | 150              | KM300-150HS | 290         | 230          | 380         | 530          | 5           | 50          | 140         | M12          | 14           |             |             |
| <b>400</b><br>(4,070)                     | 100              | KM400-100HS | 340         | 270          | 370         | 470          | 5           | 55          | 140         | M12          | 14           |             |             |
|                                           | 150              | KM400-150HS | 340         | 270          | 420         | 570          | 5           | 55          | 140         | M12          | 14           |             |             |

### SCOPE OF DELIVERY

- Hydraulic cylinder with lock nut
- Speed coupler for connecting the hydraulic hose

### ACCESSORIES

- Hydraulic pump** – e.g. PJ-500, see p. 34
- Pressure gauge** – e.g. 63 mm diameter, see p. 36
- High-pressure hose** – length as required, p. 36
- Fitting manifold**, p. 37



# H SERIES

## 25 TONS HOLLOW PLUNGER HYDRAULIC CYLINDERS, SINGLE-ACTING

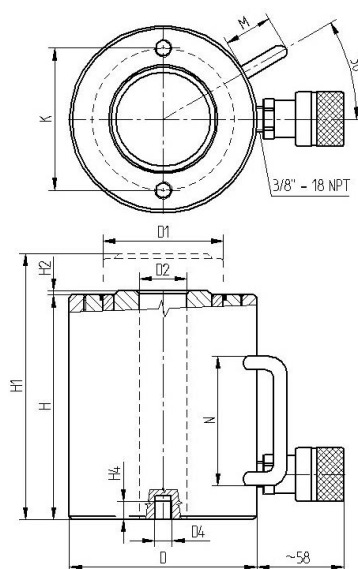
Capacity **25 tons**Stroke **75–150 mm****H series****700 bar**

The H-series single-acting hollow plunger hydraulic cylinders are versatile and can be used for testing, maintenance, pulling and tensioning. The through-hole in the cylinder allows, for example, the tensioning of cables and rods, the lifting of suspended loads, and the removal of pressed-in or seized machine parts such as pins, bushings, shafts,

sleeves, etc.

### 3-YEAR WARRANTY THANKS TO PROVEN QUALITY

- For use even in **adverse conditions, such as damp environments**, the surface of the piston rod is made of hard chrome and protected by a wiper ring.
- Standard H** – hardened inner surface of the cylinder with **enhanced protection against corrosion (Nitrocarburization)**, resulting in resistance to moisture and damage to the cylinder's interior caused by contaminants. This is a key factor in why **KGF cylinders do not seize up**.
- Standard S** – high **resistance to contaminants in the oil** thanks to the wiper ring.
- Flexibility**
  - Threaded holes in the cylinder base allow it to be mounted on various pieces of equipment.
  - For **easy handling**, the H series is fitted with a handle as standard.
- Automatic piston return** thanks to a powerful return spring is standard on all KGF cylinders, which significantly speeds up work during multiple operations. **No more manual effort to return the piston.**



## Technical specifications

| Cylinder / load capacity* | Stroke | Model            | Cylinder Effective Area | Stroke Displacement | Diameter D | Height H | Weight** |
|---------------------------|--------|------------------|-------------------------|---------------------|------------|----------|----------|
| t (kN)                    | mm     |                  | cm <sup>2</sup>         | cm <sup>3</sup>     | mm         | mm       | kg       |
| <b>25</b><br>(278)        | 75     | <b>H25-75HS</b>  | 39.71                   | 297.8               | 125        | 153      | 14.4     |
|                           | 150    | <b>H25-150HS</b> | 39.71                   | 595.7               | 125        | 228      | 16.7     |

\* Maximum capacity at a cylinder pressure of 70 MPa

\*\* Weight including speed coupler and oil fill

## Cylinder dimensions

| Cylinder / load capacity | Stroke | Model            | D   | D1 | D2 | H   | H1  | H2 | K  | D4  | H4 | M  | N   |
|--------------------------|--------|------------------|-----|----|----|-----|-----|----|----|-----|----|----|-----|
| t (kN)                   | mm     |                  | mm  | mm | mm | mm  | mm  | mm | mm |     | mm | mm | mm  |
| <b>25</b><br>(278)       | 75     | <b>H25-75HS</b>  | 125 | 80 | 31 | 153 | 228 | 3  | 95 | M12 | 12 | -  | -   |
|                          | 150    | <b>H25-150HS</b> | 125 | 80 | 31 | 228 | 378 | 3  | 95 | M12 | 12 | 50 | 126 |

**Installation of Tuned Mass Dampers (TMD) on the Štvanice Footbridge in Prague, August 2023**



## HV SERIES

HOLLOW PLUNGER HYDRAULIC CYLINDERS 60 TO 90 TONS, SINGLE-ACTING / DOUBLE-ACTING

|                             |          |                   |
|-----------------------------|----------|-------------------|
| <b>HV series</b><br>700 bar | Capacity | <b>60–90 tons</b> |
|                             | Stroke   | <b>75–150 mm</b>  |

Single-acting / double-acting hollow cylinders of the HV series are used in the maintenance of machinery (excavators) and bridges, as well as for testing, pulling and tensioning. The through-hole in the cylinder allows for **the tensioning of ropes and rods, the lifting of suspended loads, and the removal of pressed-in or seized machine parts** such as pins, bushings, shafts, sleeves, etc. **The return stroke** is achieved either **by compressed air** (operating as a **single-acting** cylinder) or as a **hydraulic return stroke** (function: **double-acting** cylinder).



### 3-YEAR WARRANTY THANKS TO PROVEN QUALITY

- **The lightest and lowest-profile cylinders** in their performance category.
- **Versatile and universal application** – either as a **single-acting cylinder** (air-powered return stroke) or as **double-acting cylinder** (hydraulic return stroke via a second hose)
- **Advantages of the unique piston return stroke** (using compressed air in the space above the piston):
  - Easy to inflate with air to 3 to 10 bar – just like a tyre
  - Large diameter through-hole
  - High return stroke speed
  - Easy conversion to a double-acting cylinder
- **Flexibility and ease of handling**
  - Threaded holes in the cylinder base allow attachment to various devices
  - For easy handling, the HV60 size is fitted with a handle as standard and the HV90 size with a handle as well as lifting eyes
- For use even **in adverse conditions**, the piston rod surface is hardened with an anti-corrosion coating and protected by a wiper ring.
- **HS Standard** – all cylinder bodies feature special protection against corrosion, friction and seizing, **nitrocarburisation and a wiper ring are standard features of all KGF cylinders.**

### Technical specifications

| Cylinder /<br>load capacity* | Stroke | Model             | Cylinder<br>Effective Area | Oil<br>Capacity | Diameter<br>D | Height<br>H | Weight** |
|------------------------------|--------|-------------------|----------------------------|-----------------|---------------|-------------|----------|
| t (kN)                       | mm     |                   | cm <sup>2</sup>            | cm <sup>3</sup> | mm            | mm          | kg       |
| <b>60</b><br>(619)           | 75     | <b>HV60-75HS</b>  | 88.55                      | 664.2           | 165           | 173         | 20.8     |
|                              | 150    | <b>HV60-150HS</b> | 88.55                      | 1,328.3         | 165           | 248         | 28.3     |
| <b>90</b><br>(911)           | 75     | <b>HV90-75HS</b>  | 130.18                     | 976.4           | 205           | 205         | 38.4     |
|                              | 150    | <b>HV90-150HS</b> | 130.18                     | 1952.7          | 205           | 280         | 51       |

\* Maximum power at a cylinder pressure of 70 MPa

\*\* Weight including speed coupler and oil fill

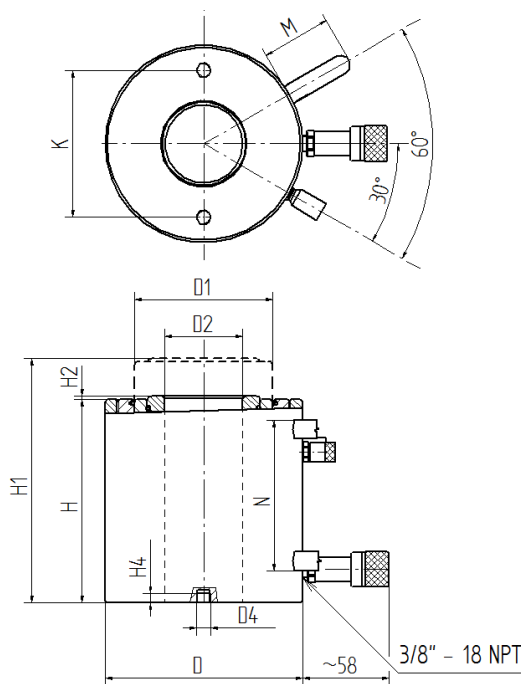
## INNOVATION

Thanks to the **compressed-air-assisted return stroke**, these cylinders combine the advantages of single-acting and double-acting cylinders. Only one hose with a simpler pump (for single-acting cylinders) is required, whilst the cylinder also features a **very fast return stroke** even when using a longer hose.

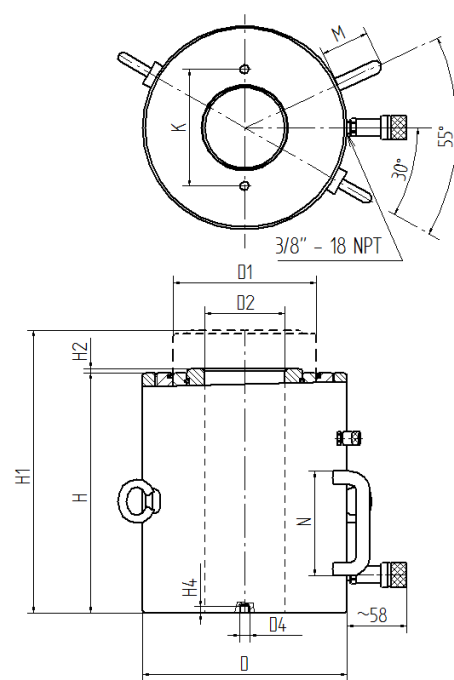


## SCOPE OF DELIVERY

- Hydraulic cylinder
- Speed coupler for hydraulic hose
- Air filling valve



Models HV60-75HS and HV60-150HS



Models HV90-75 and HV90-150HS

## Cylinder dimensions

| Cylinder /<br>Load capacity<br>t (kN) | Stroke<br>mm | Model      | D<br>mm | D1<br>mm | D2<br>mm | H<br>mm | H1<br>mm | H2<br>mm | K<br>mm | D4<br>mm | H4<br>mm | M<br>mm | N<br>mm |
|---------------------------------------|--------------|------------|---------|----------|----------|---------|----------|----------|---------|----------|----------|---------|---------|
| 60<br>(619)                           | 75           | HV60-75HS  | 165     | 105      | 61       | 170     | 248      | 3        | 140     | M12      | 8        | 56      | 126     |
|                                       | 150          | HV60-150HS | 165     | 105      | 61       | 245     | 398      | 3        | 140     | M12      | 8        | 56      | 126     |
| 90<br>(911)                           | 75           | HV90-75HS  | 205     | 130      | 80       | 200     | 280      | 5        | 140     | M12      | 12       | 56      | 126     |
|                                       | 150          | HV90-150HS | 205     | 130      | 80       | 275     | 430      | 5        | 140     | M12      | 12       | 56      | 126     |

# T SERIES

## 5 TO 10 TONNE HYDRAULIC PULL CYLINDERS, SINGLE-ACTING

|                            |          |                  |
|----------------------------|----------|------------------|
| <b>T Series</b><br>700 bar | Capacity | <b>5–10 tons</b> |
|                            | Stroke   | <b>150 mm</b>    |

**T-series hydraulic pull cylinders** are designed for applications requiring tensile forces, such as **pulling together assemblies and modules**.

For easy mounting on various equipment, the cylinder is fitted with three different thread types.

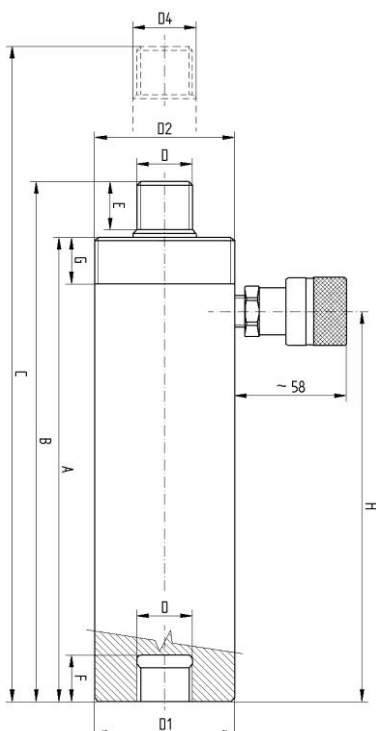


### 3-YEAR WARRANTY THANKS TO PROVEN QUALITY

- For use even in **adverse conditions**, the piston rod surface is made of hard chrome and protected by a ring.
- The internal thread at the base and the external thread on the piston rod allow for the fitting of end fittings, whilst the external thread on the head facilitates attachment to various equipment.
- **Automatic piston return** thanks to a powerful return spring is standard on all KGF cylinders, which significantly speeds up work during multiple operations. **No more manual effort to return the piston.**
- **Long service life** is ensured by the design and the materials used, such as high-strength alloy steel and high-quality sealing elements.

## Technical specifications

| Cylinder / capacity | Stroke | Model            | Oil capacity    | A   | B   | C   | E  | F  | G  | H   | D     | D1 | D2    | D4 | Weight |
|---------------------|--------|------------------|-----------------|-----|-----|-----|----|----|----|-----|-------|----|-------|----|--------|
| t (kN)              | mm     |                  | cm <sup>3</sup> | mm  | mm  | mm  | mm | mm | mm | mm  |       | mm |       | mm | kg     |
| 5 (55)              | 150    | <b>T5-150HS</b>  | 118             | 250 | 285 | 435 | 25 | 25 | 25 | 210 | M30x2 | 62 | M62x2 | 32 | 4.5    |
| 10 (99)             | 150    | <b>T10-150HS</b> | 212             | 250 | 285 | 435 | 25 | 25 | 25 | 210 | M30x2 | 75 | M75x2 | 35 | 7.5    |

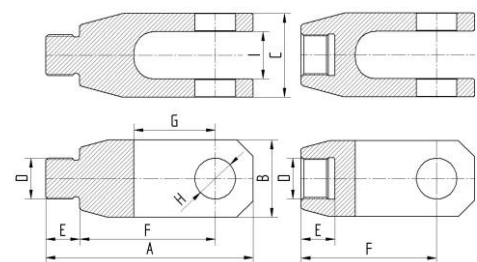


### ACCESSORIES

- **Forks, see below**
- **Pump** – e.g. PJ-500, see page 34
- **Pressure gauge** – e.g. 63 mm diameter, see page 36
- **Hose** – length according to requirements, p. 36
- **Hydraul. manifold**, p. 37

### SCOPE OF DELIVERY

- Hydraulic cylinder
- Speed coupler for connecting with high-pressure hoses



| Forks | A   | B  | C  | D     | E  | F   | G  | H  | I  |
|-------|-----|----|----|-------|----|-----|----|----|----|
| Outer | 153 | 56 | 62 | M30x2 | 25 | 100 | 60 | 30 | 35 |
| Inner | 128 | 56 | 62 | M30x2 | 25 | 100 | 60 | 30 | 35 |

### FORKS



Load test on the footbridge over the River Bečva near Hranice na Moravě, vibration damping by KGF hydraulika (Tuned Mass Dampers – TMDs, vibration absorbers).

## D SERIES

### DOUBLE-ACTING HYDRAULIC CYLINDERS 50 AND 90 TONS



Capacity **50–90 tons**

Stroke **150–300 mm**

#### D Series

700 bar

**Double-acting hydraulic cylinders of type D** are suitable for situations requiring the application of force in two different directions. They are also suitable in cases where both controlled lifting and controlled lowering of a load. They are also ideal where it is necessary to reliably achieve a very rapid return stroke when using long hoses.

Suitable for use in adverse conditions such as damp or heavily contaminated working environments. They are primarily used in heavy industry, construction and all types of maintenance and assembly work.

### 3-YEAR WARRANTY THANKS TO PROVEN QUALITY

- The unique design of the guide surfaces withstands lateral loads without seizing.
- **Standard H** – the hardened inner surface of the cylinder, **with enhanced corrosion protection**, ensures resistance to moisture and damage to the cylinder's interior caused by contaminants. This is a key factor in why **KGF cylinders do not seize up**.
- **Standard S** – the piston scraper ring prevents oil contamination and extends service life.
- The safety valve protects against damage in the event of accidental overpressure.
- When combined with a suitable two-stage pump, very **high performance** can be achieved.

## Technical specifications

| Cylinder /<br>load capacity* | Stroke<br>mm | Model      | Max. force<br>(kN) |      | Cylinder<br>Effective Area<br>(cm <sup>2</sup> ) |      | Oil<br>Capacity<br>(cm <sup>3</sup> ) |       | Diameter<br>D<br>mm | Height<br>H<br>mm | Weight<br>**<br>kg |
|------------------------------|--------------|------------|--------------------|------|--------------------------------------------------|------|---------------------------------------|-------|---------------------|-------------------|--------------------|
|                              |              |            | Press              | Pull | Press                                            | Pull | Press                                 | Pull  |                     |                   |                    |
| <b>50</b><br>(496)           | 150          | DU50-150HS | 496                | 144  | 70.9                                             | 20.6 | 1,063                                 | 310   | 130                 | 295               | 25                 |
|                              | 150          | DS50-150HS | 496                | 144  | 70.9                                             | 20.6 | 1,063                                 | 310   | 125                 | 263               | 20                 |
|                              | 250          | DS50-250HS | 496                | 144  | 70.9                                             | 20.6 | 2,126                                 | 619   | 125                 | 363               | 27                 |
| <b>90</b><br>(929)           | 150          | DU90-150HS | 929                | 323  | 133                                              | 46.1 | 1,991                                 | 692   | 170                 | 332               | 49                 |
|                              | 150          | DS90-150HS | 929                | 323  | 133                                              | 46.1 | 1,991                                 | 692   | 170                 | 290               | 42                 |
|                              | 200          | DS90-200HS | 929                | 323  | 133                                              | 46.1 | 3,982                                 | 1,384 | 170                 | 340               | 48                 |

\* Maximum capacity at a cylinder pressure of 70 MPa

\*\* Weight including speed coupler and oil fill

**DS**  
 Standard version

- Suitable for lifting and lowering operations.
- **Threaded holes in the cylinder base** facilitate mounting on various pieces of equipment.
- These cylinders cannot be used to generate a tensile force.

**SCOPE OF DELIVERY**

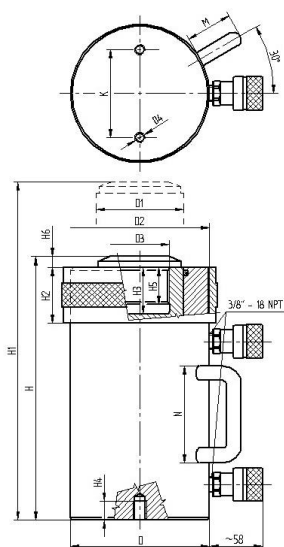
- Hydraulic cylinder with a fixed thrust plate on the front face of the piston.
- 2 standard quick-connect couplings for connecting high-pressure hoses.
- A safety valve on the cylinder to protect the working area.

**DU**  
 Multi-purpose version

- A multi-purpose double-acting cylinder can **operate both compressive and tensile forces**.
- Thread on the front of the piston rod for transmitting tensile force
- **External thread with a cap** on the cylinder circumference **for mounting on various equipment**.
- Threaded holes in the cylinder base (as in the DS version)
- For lifting and lowering operations or as a power component of various devices.

**SCOPE OF DELIVERY**

- Hydraulic cylinder with a fixed thrust plate on the front face of the piston.
- 2 standard quick-connect couplings for connecting high-pressure hoses.
- Safety valve on the cylinder to protect the working area.
- A solid steel cap protecting the external thread.


**OPTIONAL EQUIPMENT**

- Joint tilt saddle
- Safety valve

**ACCESSORIES**

- **Hydraulic pump** for double-acting cylinders
- **Pressure gauge** – e.g. 63 mm diameter, see page 36 for more details
- **Hoses** – length as required, p. 36
- **Hydraulic manifolds**, p. 37

**Cylinder dimensions**

| Cylinder / load capacity<br>t (kN) | Stroke<br>mm | Model      | D<br>mm | D1<br>mm | D2     | D3    | D4  | H<br>mm | H1<br>mm | H2<br>mm | H3<br>mm | H4<br>mm | H5<br>mm | H6<br>mm | K<br>mm | M<br>mm | N<br>mm |
|------------------------------------|--------------|------------|---------|----------|--------|-------|-----|---------|----------|----------|----------|----------|----------|----------|---------|---------|---------|
| 50<br>(496)                        | 150          | DU50-150HS | 130     | 80       | M130x2 | M56x3 | M12 | 295     | 445      | 55       | 60       | 15       | 40       | 15       | 95      | 50      | 126     |
|                                    | 150          | DS50-150HS | 125     | 80       | -      | -     | M12 | 263     | 413      | -        | -        | 15       | -        | 3        | 95      | 50      | 126     |
|                                    | 250          | DS50-250HS | 125     | 80       | -      | -     | M12 | 363     | 613      | -        | -        | 15       | -        | 3        | 95      | 50      | 126     |
| 90<br>(929)                        | 150          | DU90-150HS | 170     | 105      | M170x3 | M72x4 | M12 | 332     | 482      | 65       | 70       | 20       | 45       | 15       | 95      | 50      | 176     |
|                                    | 150          | DS90-150HS | 170     | 105      | -      | -     | M12 | 290     | 440      | -        | -        | 20       | -        | 5        | 95      | 50      | 176     |
|                                    | 200          | DS90-200HS | 170     | 105      | -      | -     | M12 | 340     | 540      | -        | -        | 20       | -        | 5        | 95      | 50      | 176     |

Also other custom-made solutions available.

## RP SERIES

### HYDRAULIC BOLTING FLANGE SPREADERS, 5 TO 10 TONS



Spreading force **5–10 tons**

Flange thickness range **30–380 mm**

**RP series**

700 bar

These very **lightweight and ergonomic RP hydraulic flange spreaders** enable the quick and safe separation of flanges during maintenance and repairs of pipework fittings, such as when replacing gaskets. In addition to their primary use in pipework applications, they can also be used for dismantling machinery with flanged casing connections.

### 2-YEAR WARRANTY THANKS TO PROVEN QUALITY

- Thanks to **its** lightweight construction, **it is easy and quick to handle**
- Versatility**
  - Adjustable spreader width up to 380 mm for **a wide range of applications**; KGF hydraulic spreaders cover all sizes of standardised pipe flanges.
  - Once the head and wedge have been removed, the cylinder can be fitted with **a saddle** and a thread cover and **used for other purposes**.
- Included is **a multi-purpose U-series cylinder with a return spring**.

| Wedge     | Model           | B<br>mm | B1<br>mm |
|-----------|-----------------|---------|----------|
| KRP5 - 1  | RP 5            | 1.5     | 40       |
| KRP5 - 2  | RP 5            | 12      | 50       |
| KRP10 - 1 | RP 10<br>RP 10L | 1.5     | 40       |
| KRP10 - 2 | RP 10<br>RP 10L | 22      | 60       |

### Technical specifications

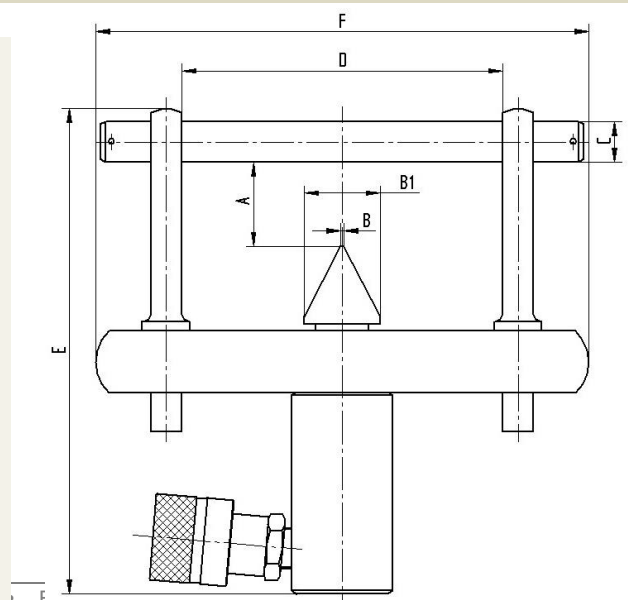
| Spreading force<br>t (kN) | Stroke<br>mm | Model  | Hydraulic cylinder | Cylinder Effective Area<br>cm <sup>2</sup> | Oil Capacity<br>cm <sup>3</sup> | A<br>mm | B<br>mm | B1<br>mm | C<br>mm | D<br>mm | E<br>mm | F<br>mm | Max. Thickness Flange<br>mm | Screw of Bolt Flange<br>mm | Weight<br>kg |
|---------------------------|--------------|--------|--------------------|--------------------------------------------|---------------------------------|---------|---------|----------|---------|---------|---------|---------|-----------------------------|----------------------------|--------------|
| 5 (50)                    | 45           | RP 5   | U5-45HS            | 7.1                                        | 31.8                            | 21      | 1.5     | 40       | 17      | 154     | 200     | 205     | 2 x 67                      | 16–30                      | 3.5          |
| 10 (111)                  | 45           | RP 10  | U10-45HS           | 15.9                                       | 79.5                            | 25      | 1.5     | 40       | 28      | 230     | 250     | 295     | 2 x 100                     | 30–48                      | 9.0          |
|                           | 45           | RP 10L | U10-45HS           | 15.9                                       | 79.5                            | 25      | 1.5     | 40       | 28      | 380     | 250     | 445     | 2 x 175                     | 30–48                      | 15.0         |

#### SET FOR SPREADING WORK

- RP hydraulic spreader** including wedges
- PJ-500 hydraulic pump**, see page 34 for more details
- Pressure gauge** – e.g. 63 mm diameter, see page 36 for more details
- High-pressure hose** – length as required, p. 36
- Hydraulic manifold**, p. 37

#### SCOPE OF DELIVERY

- Spacer head**
- U-series hydraulic cylinder**
- Two optional KRP wedges** for greater flange separation
- Speed coupler for connection with a hydraulic hose
- Standard saddle for multi-purpose cylinder
- Threaded cap nut for using the cylinder for other purposes





# ST SERIES

## 16-TONNE HYDRAULIC LOCK-GRIP PULLER



Pulling force **16 tons**

Stroke **150 mm**

### ST series

700 bar

The KGF hydraulic lock-grip puller enables quick and **safe removal of press-fitted components** such as bearings, gear wheels, pulleys, etc. The lock-on jaws provide a secure grip to prevent slipping along the component being removed. The design allows two or three pulling jaws to be used according to the situation, this changeover is quick and easy.

## 2-YEAR WARRANTY THANKS TO PROVEN QUALITY

### • Efficiency

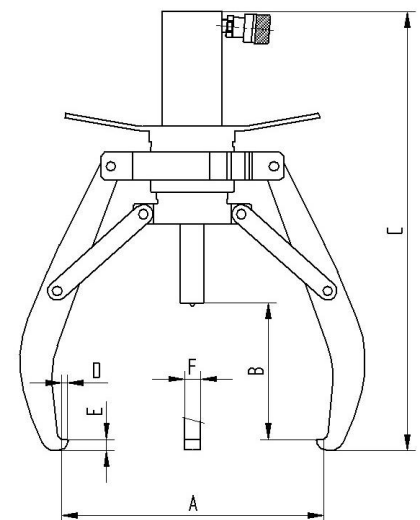
- The special KGF design allows for **the use of two or three pulling jaws depending on immediate requirements**; changing them is very quick and easy.
- Powerful pulling even for large components.
- Thanks to the jaw locking mechanism, only one man is required.
- The puller's mechanism holds the pulling arms **securely and reliably in any working position** and prevents them from slipping on the component being pulled.
- The slimmed-down jaws make it easier to grip components **even in confined spaces**.

### • Versatility

- Optional pullerheads **for different component sizes**.
- Once the jaw and head have been removed, the cylinder can be fitted with **a saddle** and thread cover and **used for other purposes**.
- Included is **a multi-purpose U-series cylinder U15-150HS** with a return spring.

## SCOPE OF DELIVERY

- **Hydraulic lock-grip puller with three arms**
- **Optional accessories:** adapter, extension, pullerhead 1 and 2
- **U-series hydraulic cylinder U15-150HS**
- Standard saddle for the U-series multi-purpose cylinder
- Threaded cap nuts for using the cylinder for other purposes
- **Speed coupler** for connecting with a high-pressure hose



## Technical specifications

| Pulling capacity<br>t (kN) | Stroke<br>mm | Model       | Hydraulic cylinder | Cylinder Effective Area<br>cm <sup>2</sup> | Oil Capacity<br>cm <sup>3</sup> | A<br>mm | B max.<br>mm | C<br>mm | D<br>mm | E<br>mm | F<br>mm | Weight<br>kg |
|----------------------------|--------------|-------------|--------------------|--------------------------------------------|---------------------------------|---------|--------------|---------|---------|---------|---------|--------------|
| 16 (166)                   | 150          | ST15 – 2/3  | U15-150            | 23.76                                      | 365                             | 30–390  | 260          | 580     | 13.8    | 9.5     | 20      | 23.0         |
| 16 (166)                   | 150          | ST15 – 2/3L | U15-150            | 23.76                                      | 365                             | 30–510  | 390          | 710     | 13.8    | 9.5     | 20      | 26.0         |

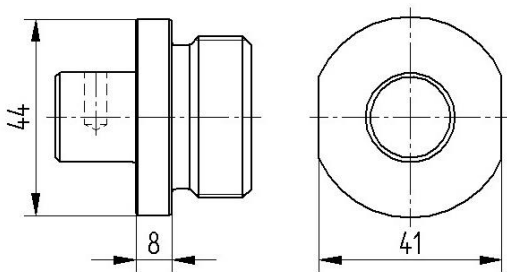
### OPTIONAL ACCESSORIES

- Adapter
- Extension
- Pullerhead 1 and 2

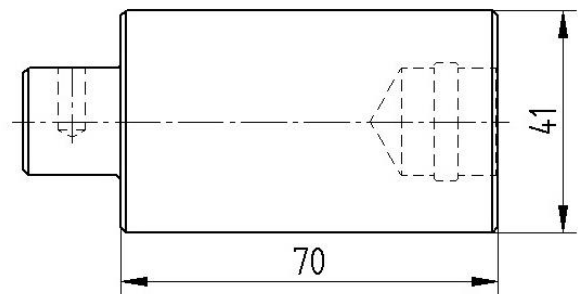
### HYDRAULIC PULLER SET

- **ST15 lock-grip puller with accessories** (adapter, extension, tip 1, tip 2)
- **PJ-500 pump**, see page 34 for more details
- **Pressure gauge** – e.g. 63 mm diameter, see page 36
- **High-pressure hose** – length as required, p. 36
- Speed coupler

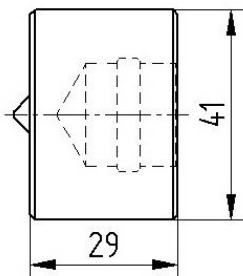
#### Adapter



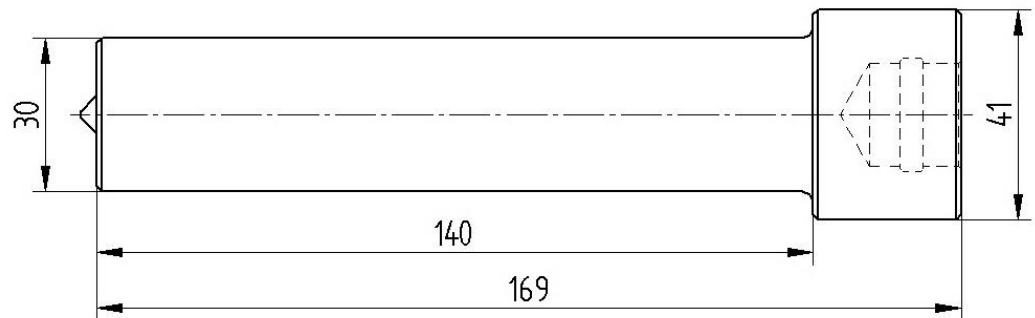
#### Extension



#### Pullerhead 1



#### Pullerhead 2



# PE SERIES

ELECTRIC PUMPS (HYDRAULIC UNITS WITH ELECTRIC MOTORS) for single acting cylinders



Tank capacity **5 – 10 l**

Flow rate **2.3 – 4.6 l/min**

**PE series**  
700 bar

Powerful, two-stage, easily portable **electric PE series electric pumps**, featuring convenient wireless control and an oil level indicator on the tank, are suitable for all **single-acting cylinders**. To ensure **the reliability of your system**, choose KGF hydraulic pumps from the same manufacturer to go with your KGF hydraulic cylinders.

**2-YEAR WARRANTY THANKS TO PROVEN QUALITY**

## • Efficiency

- **Convenient, fast lifting and effortless operation** thanks to the electric drive.
- **Control of the electric motor** directly on the pump and also via a **wireless remote control**.
- **The two-stage design speeds up work** thanks to high speed at low loads.
- **Electric motor** with a power output of **0.55–1.1 kW, 230 VAC, starts under full load**.

## • Safety

- The drain valve ensures **sensitive load release** with smooth regulation.
- The sealed tank with safety valves **prevents oil leaks** even if the unit is overturned; it is protected against overpressure and vacuum, and allows the tank to be filled almost to the brim – **maximising the use of internal volume**.
- An easy-to-read **oil level gauge** running the full height of the tank allows for **easy checking of the oil level**.
- A **pressure gauge** for monitoring the pressure level **is included**.
- High **stability** against tipping over.

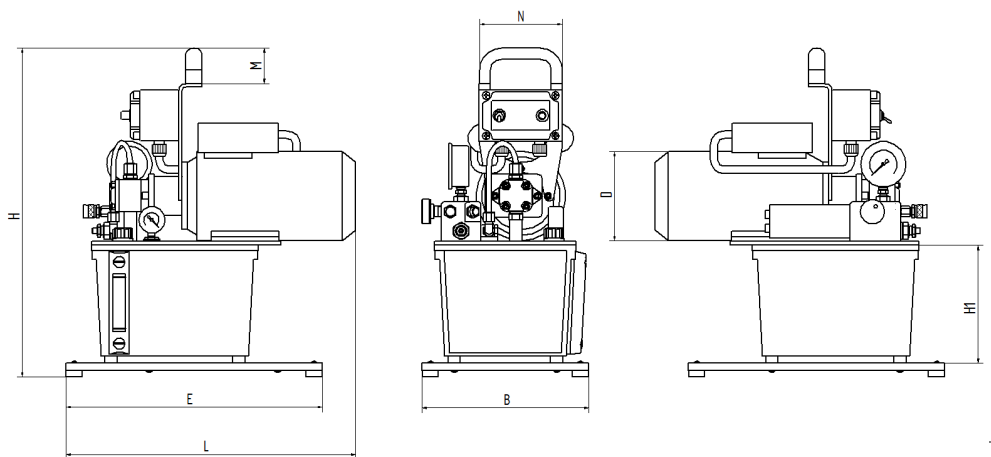
## • Long service life

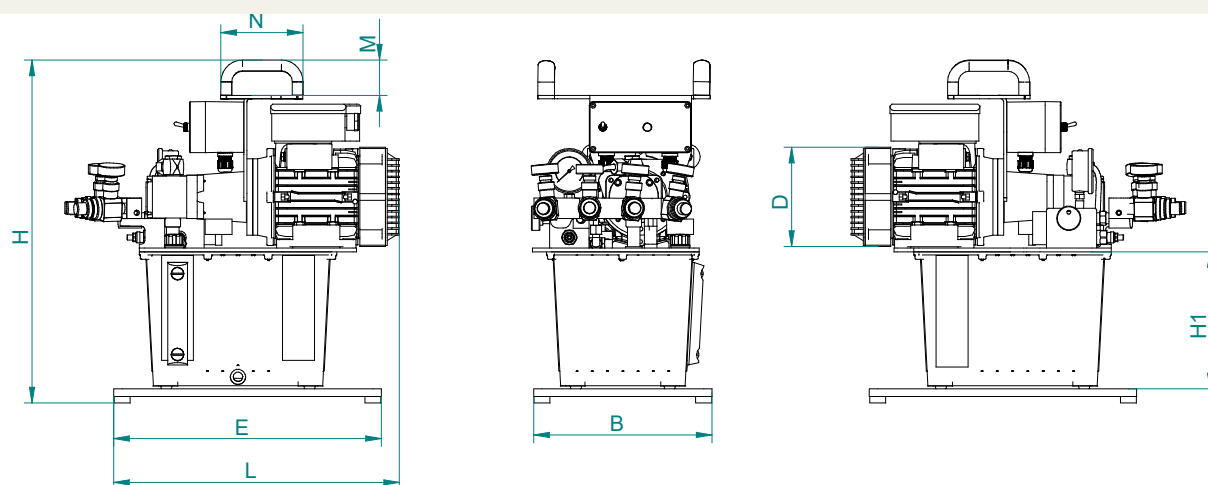
- A **robust fine filter** (10 µm) in the suction line **prevents contaminants** from entering the hydraulic circuit, thereby significantly **extending service life**. Filter clogging **can be monitored** using a vacuum gauge.

### PE5000-330 PUMP (5 l TANK)

#### CYLINDER AND PUMP SET

- **Hydraulic cylinder**, e.g. K50-150HS, more at [www.kgf.cz](http://www.kgf.cz)
- **High-pressure hose**, length as required
- Speed coupler
- Hydraulic manifold



**PE10L-660 PUMP (10 l TANK)**

**Technical specifications**

| Type of pump | Useful capacity of oil tank (litres) | Model      | Maximum pressure (bar) |              | Flow rate (l/min) |              | Connection thread | Electric motor                           | Weight (kg) |          |
|--------------|--------------------------------------|------------|------------------------|--------------|-------------------|--------------|-------------------|------------------------------------------|-------------|----------|
|              |                                      |            | First stage            | Second stage | First stage       | Second stage |                   |                                          | without oil | with oil |
| Two-stage    | 5                                    | PE5000-330 | 22                     | 700          | 2.3               | 0.33         | 2 x 3/8"-18 NPT   | Single-phase<br>0.55 kW / 230 V<br>3.7 A | 19          | 24       |
|              | 10                                   | PE10L-660  | 22                     | 700          | 4.6               | 0.66         | 2 x 3/8"-18 NPT   | Single-phase<br>1.1 kW / 230 V<br>6.6 A  | 25          | 35       |

**Pump dimensions**

| Type of pump | Useful capacity of the oil tank (litres) | Model      | H<br>mm | L<br>mm | B<br>mm | E<br>mm | H1<br>mm | D<br>mm | M<br>mm | N<br>mm |
|--------------|------------------------------------------|------------|---------|---------|---------|---------|----------|---------|---------|---------|
| Two-stage    | 5                                        | PE5000-330 | 512     | 452     | 260     | 400     | 183      | 139     | 55      | 129     |
|              | 10                                       | PE10L-660  | 538     | 449     | 280     | 420     | 215      | 139     | 55      | 129     |

# PJ, PD SERIES

## HYDRAULIC HIGH-PRESSURE HAND PUMPS



Tank capacity **500 – 4 500 cm<sup>3</sup>**

Flow rate **2 cm<sup>3</sup> /stroke**

**PJ, PD series**

**700 bar**

The lightweight yet robust PJ and PD series hydraulic hand pumps are not only easily portable thanks to their aluminium tank, but are also characterised by very high efficiency and ease of use.

These hydraulic pumps are suitable for all KGF single-acting cylinders. To ensure **the reliability of your system**, choose KGF single-stage or two-stage hydraulic pumps.

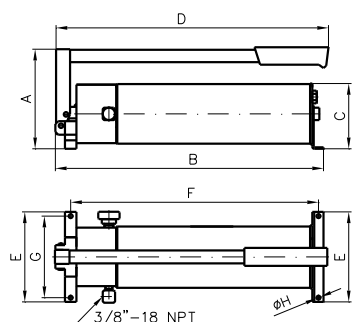
### 2-YEAR WARRANTY THANKS TO PROVEN QUALITY

- The high efficiency of KGF hydraulic pumps, thanks to the automatic relief valve and smooth operation, significantly **reduces operator fatigue**.
- The two-stage design allows for **quick and easy operation**.
- **Safety**
  - The relief valve ensures **sensitive load control** with smooth regulation.
  - The sealed reservoir with a safety valve **eliminates oil loss** and is protected against overpressure.
  - The safe lever lock allows for **easy carrying and prevents the risk of hand injury** whilst working.
  - Two safety valves protect the hydraulic system against overload from both the pump and the cylinder.
- **Long service life**
  - Hardened valve seats and hardened, corrosion-resistant piston sealing surfaces reduce wear.
  - A fine suction filter prevents the ingress of contaminants, thereby significantly extending service life.

### Technical specifications

| Type of pump | Useful tank capacity cm <sup>3</sup> | Model   | Maximum pressure (bar) |              | Oil displacement per piston stroke (cm <sup>3</sup> ) |              | Force on the lever (kg) | Connection thread | Weight (kg) |          |
|--------------|--------------------------------------|---------|------------------------|--------------|-------------------------------------------------------|--------------|-------------------------|-------------------|-------------|----------|
|              |                                      |         | First stage            | Second stage | First stage                                           | Second stage |                         |                   | without oil | with oil |
| Unit         | 500                                  | PJ-500  | -                      | 700          | -                                                     | 2            | 40                      | 3/8"-18 NPT       | 3.3         | 3.8      |
| Two-stage    | 1,300                                | PD-1300 | 30                     | 700          | 18                                                    | 2            | 40                      | 3/8"-18 NPT       | 4.9         | 6.3      |
|              | 1,600                                | PD-1600 | 30                     | 700          | 18                                                    | 2            | 36                      | 3/8"-18 NPT       | 5.1         | 6.8      |
|              | 2,000                                | PD-2000 | 30                     | 700          | 18                                                    | 2            | 31                      | 3/8"-18 NPT       | 5.3         | 7.4      |
|              | 3,000                                | PD-3000 | 30                     | 700          | 18                                                    | 2            | 40                      | 3/8"-18 NPT       | 6.8         | 9.8      |
|              | 3,600                                | PD-3600 | 30                     | 700          | 18                                                    | 2            | 36                      | 3/8"-18 NPT       | 7.2         | 10.8     |
|              | 4,500                                | PD-4500 | 30                     | 700          | 18                                                    | 2            | 31                      | 3/8"-18 NPT       | 7.8         | 12.2     |

| Type of pump | Tank capacity | Model   | A   | B     | C   | D   | E   | F   | G   | H |
|--------------|---------------|---------|-----|-------|-----|-----|-----|-----|-----|---|
| Unit         | 500           | PJ-500  | 130 | 453.0 | 74  | 470 | 110 | 417 | 95  | 7 |
| Two-stage    | 1,300         | PD-1300 | 170 | 482.5 | 114 | 495 | 160 | 445 | 145 | 7 |
|              | 1,600         | PD-1600 | 170 | 542.5 | 114 | 555 | 160 | 505 | 145 | 7 |
|              | 2,000         | PD-2000 | 170 | 629.5 | 114 | 640 | 160 | 592 | 145 | 7 |
|              | 3,000         | PD-3000 | 207 | 479.5 | 150 | 495 | 160 | 442 | 145 | 7 |
|              | 3,600         | PD-3600 | 207 | 540.5 | 150 | 555 | 160 | 503 | 145 | 7 |
|              | 4,500         | PD-4500 | 207 | 626.5 | 150 | 640 | 160 | 589 | 145 | 7 |



# PDN SERIES

## FOOT-OPERATED HIGH-PRESSURE PUMPS

### PDN series

700 bar

 Tank capacity **600 – 1 400 cm<sup>3</sup>**

 Flow rate **1.5 – 2 cm<sup>3</sup>/ stroke**

The PDN series of two-stage foot-operated pumps are not only robust, but also easy to carry thanks to their lightweight construction and aluminium tank. They are conveniently foot-operated, making work with these pumps pleasant and efficient.

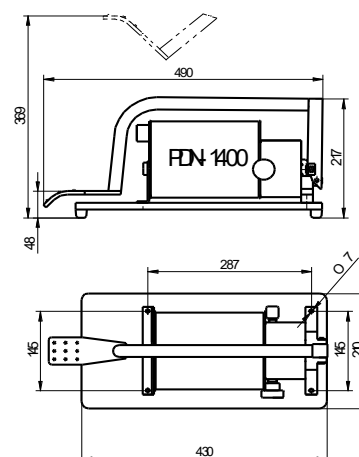
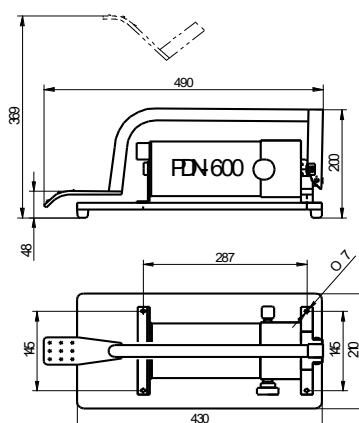


### 2-YEAR WARRANTY THANKS TO PROVEN QUALITY

- The pump's high efficiency, thanks to the automatic relief valve and smooth operation, significantly **reduces operator fatigue**
- Efficiency**
  - Thanks to **the convenient foot control, your hands are free** whilst working, so you can **use them for other tasks**.
  - The two-stage design speeds up the work** thanks to high speed at low loads.
- Safety**
  - The relief valve ensures **sensitive load control** with smooth regulation.
  - The sealed reservoir with a safety valve **eliminates oil loss** and is protected against overpressure.
  - Two safety valves protect the hydraulic system from overload on both the pump and cylinder sides.
- Long service life**
  - Hardened seats on all valves and hardened, corrosion-resistant sealing surfaces on the pistons reduce wear.
  - A fine suction filter prevents the ingress of contaminants, thereby significantly extending service life.

### CYLINDER AND PUMP SET

- Hydraulic cylinder**, e.g. K25-60HS, more at [www.kgf.cz](http://www.kgf.cz)
- Pressure gauge** – e.g. 63 mm diameter
- High-pressure hose**, length as required
- Speed coupler plug
- Fitting manifold



### Technical specifications

| Type of pump | Useful tank capacity cm <sup>3</sup> | Model    | Maximum pressure (bar) |              | Oil displacement per piston stroke (cm <sup>3</sup> ) |              | Force on the lever (kg) | Connection thread | Weight (kg) |          |
|--------------|--------------------------------------|----------|------------------------|--------------|-------------------------------------------------------|--------------|-------------------------|-------------------|-------------|----------|
|              |                                      |          | First stage            | Second stage | First stage                                           | Second stage |                         |                   | without oil | with oil |
| Two-stage    | 600                                  | PDN-600  | 30                     | 700          | 18                                                    | 2            | 44                      | 3/8"–18 NPT       | 6.3         | 7.0      |
|              | 1,400                                | PDN-1400 | 30                     | 700          | 18                                                    | 2            | 44                      | 3/8"–18 NPT       | 7.0         | 8.4      |

## ACCESSORIES

### HIGH-PRESSURE HYDRAULIC HOSES 800 BAR



These **reliable and durable DN6/PN800 plastic hoses** are designed for connecting hydraulic cylinders and pumps.

- Hose lengths: 1.8 m, 3 m, 5 m. Lengths can be customised to your requirements.
- Fittings with 3/8" - 18NPT external thread. Other and special fittings are available on request.
- Nominal diameter DN 6, burst resistance class 4.
- Operating pressure 800 bar.
- Fitted with protective sleeves at both ends to reduce bending stress on the hose at the joint.

### QUICK-CONNECTORS – FEMALE AND MALE



**Quick-connect couplings** are designed for the **easy connection** of components in a high-pressure hydraulic system, e.g. a hydraulic cylinder and a pump.

- **The socket** with a 3/8"-18NPT external thread is **included the DELIVERY of KGF hydraulic cylinders**.
- **The plug** with a 3/8"-18NPT internal thread **on the hose** is used to connect the hydraulic hose to the hydraulic cylinder or another hydraulic component.
- Fitted with a valve which, when the quick-release coupling is disconnected, seals the hydraulic circuit and **prevents oil leakage**.

- **KGF's tried-and-tested, durable caps** provide reliable protection against dust during transport and storage.

3/8"-18NPT plug

Socket 3/8"-18NPT

### PRESSURE GAUGES



A pressure gauge is used to measure pressure and thus to monitor the force exerted by a hydraulic cylinder.

**KGF pressure gauges** are suitable for pressures up to 1,000 bar and contain a glycerine filling, which dampens both pressure and mechanical shocks and **extends** the gauge's **service life**.

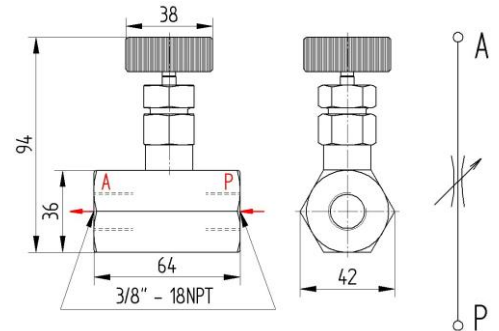
| Pressure gauge | Connection |  | Range         |
|----------------|------------|--|---------------|
| Ø 100          | G 1/2"     |  | 0 – 1,000 bar |
| Ø 63           | G 1/4"     |  | 0 – 1,000 bar |

## VALVES



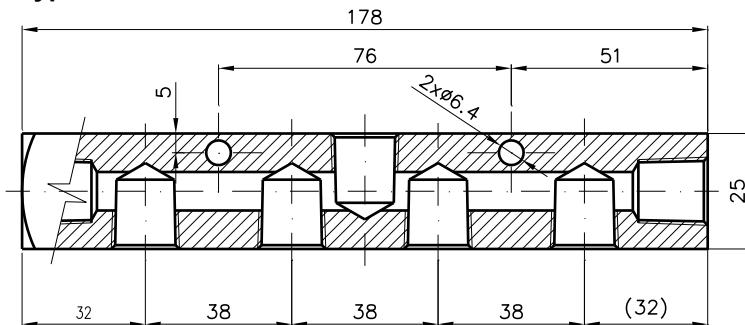
### SV 3/8" throttle valve

Used to regulate the stroke of **multiple cylinders** connected **to a single pump**. It is integrated into the hydraulic circuit via 3/8" - 18NPT internal threads. It is fitted into each branch that terminates in a cylinder.



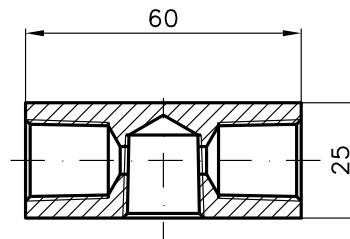
## SCREW-TYPE MANIFOLDS

### Type R7



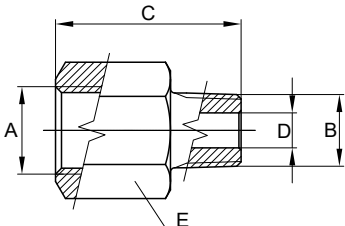
The R7 manifold has seven 3/8"-18NPT connection points. Unused connection points can be sealed with Z3/8 plugs.

### Type R3, R5

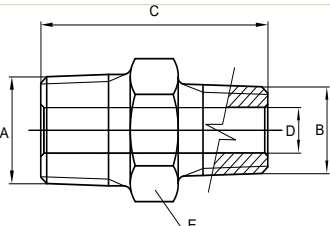


The R3 manifold has three 3/8"-18NPT connection points, whilst the R5 manifold has five

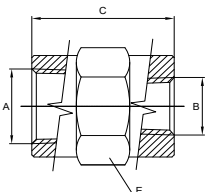
## REDUCERS

|  | Model | A          | B          | C  | D   | E  | For the pressure gauge |
|-----------------------------------------------------------------------------------|-------|------------|------------|----|-----|----|------------------------|
|                                                                                   | V301  | 1/4"-18NPT | 3/8"-18NPT | 23 | 11  | 19 | -                      |
|                                                                                   | V302  | 3/8"-18NPT | 1/4"-18NPT | 38 | 7   | 24 | -                      |
|                                                                                   | RG1/2 | G1/2"      | 3/8"-18NPT | 42 | 7   | 27 | Ø100 G1/2"             |
|                                                                                   | RG1/4 | G1/4"      | 3/8"-18NPT | 19 | 4.5 | 24 | Ø63 G1/4"              |
|  |       |            |            |    |     |    |                        |

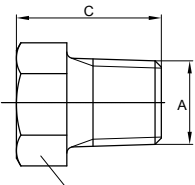
## COUPLING

|  | Model | A           | B           | C  | D | E  |  |
|-------------------------------------------------------------------------------------|-------|-------------|-------------|----|---|----|---------------------------------------------------------------------------------------|
|                                                                                     | V102  | 1/4"-18 NPT | 1/4"-18 NPT | 38 | 7 | 17 |                                                                                       |
|                                                                                     | V103  | 3/8"-18 NPT | 3/8"-18 NPT | 38 | 8 | 19 |                                                                                       |
|                                                                                     | V104  | 3/8"-18 NPT | 1/4"-18 NPT | 38 | 7 | 19 |                                                                                       |

## COUPLING

|  | Model | A           | B           | C  | D | E  |  |
|-------------------------------------------------------------------------------------|-------|-------------|-------------|----|---|----|---------------------------------------------------------------------------------------|
|                                                                                     | V201  | 1/4"-18 NPT | 1/4"-18 NPT | 29 | - | 19 |                                                                                       |
|                                                                                     | V202  | 3/8"-18 NPT | 3/8"-18 NPT | 29 | - | 24 |                                                                                       |
|                                                                                     | V203  | 3/8"-18 NPT | 1/4"-18 NPT | 32 | - | 24 |                                                                                       |

## PLUG

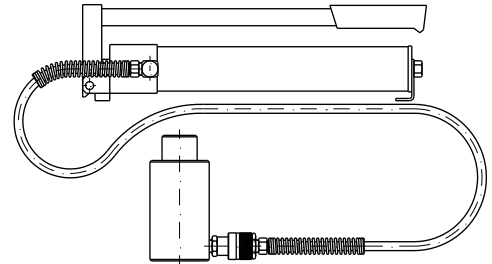
|  | Model | A           | B | C  | D | E  |  |
|-------------------------------------------------------------------------------------|-------|-------------|---|----|---|----|---------------------------------------------------------------------------------------|
|                                                                                     | Z1/4  | 1/4"-18 NPT | - | 23 | - | 17 |                                                                                       |
|                                                                                     | Z3/8  | 3/8"-18 NPT | - | 26 | - | 19 |                                                                                       |

# EXAMPLES OF LIFTING KIT CONNECTIONS

## SIMPLE CONNECTION

A simple connection between the cylinder and the pump using a hose with a quick-connect coupling. Used for most simple applications.

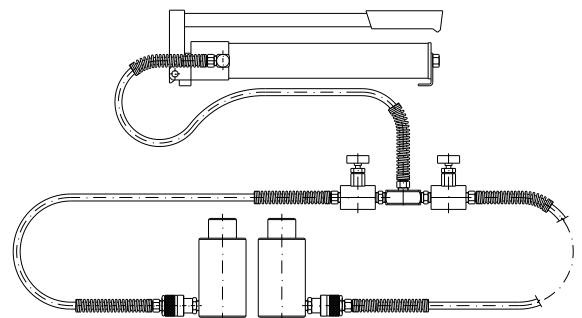
One end of the hose is securely connected to the pump via a 3/8"-18NPT thread, whilst the other end has a quick-connect plug. The cylinder has a quick-connect socket.



## CONNECTING TWO OR MORE CYLINDERS TO A SINGLE PUMP

Throttle valves are fitted in the circuit to **regulate the stroke of the cylinders in the individual branches.**

At one end, the hose is securely connected to the pump via a 3/8"-18NPT thread; at the other end, it is connected to the R3 manifold via the same thread. SV3/8 throttle valves are fitted in the branches leading to the individual cylinders. The ends of the hoses are fitted with quick-connect plugs, whilst the cylinders are fitted with quick-connect sockets.



The connection examples given are by no means exhaustive. In addition to increasing the number of consumers, quick-connect couplings can also be fitted at points other than those specified within the hydraulic circuit. To DELIVER several consumers, a multi-flow electric pump can be used.

## Viscous vibration dampers (stoppers) on the cycle footbridge over the River Elbe in Čelákovice



# DAMPERS FOR FOOTBRIDGES / BRIDGES

## TUNED MASS DAMPERS, VISCOUS DAMPERS

KGF hydraulika develops, manufactures and installs vibration dampers for footbridges and bridges. According to technical parameters of a particular project (footbridge, bridge or construction), we choose an appropriate solution from two different types of dampers:

- **Tuned Mass Dampers – TMD, Harmonic Absorber**
- **Viscous Dampers – FVD (Fluid Viscous Damper), bridge LUD (Lock-Up Device), STU (Shock Transmission Unit)**

KGF hydraulika also provides technical consulting on damping technologies absorbing undesirable pedestrian- or wind-induced structural vibrations as well as specific adaptation of the dampers to the structural characteristics and requirements of the specific project. On-site installation of damping components is an integral part of each project.

**KGF Tuned Mass Dampers (TMD)** are installed on several sites in the Czech Republic and Slovakia, they are used e.g. on the footbridge over the Jizera River in Mlada Boleslav or in Prague on the Troja footbridge and since 2023 also on the Štvanice footbridge. **KGF Fluid Viscous Dampers** are installed e.g. on the footbridge to Strakonice Castle (type TK10-150) or damping the bicycle bridge over the Elbe River in Celakovice (type TK10-250). Further references are listed on page 4.

### Fluid Viscous Dampers on the Footbridge to Strakonice Castle, Czech Republic.



# BEST PRACTICE: STVANICE FOOTBRIDGE / PRAGUE

## TUNED MASS DAMPERS ON THE STVANICE FOOTBRIDGE OVER THE VLTAVA RIVER IN PRAGUE

In 2023 in Prague, the white Stvanice footbridge was accomplished crossing the Vltava River and connecting two Prague districts Holesovice and Karlín. KGF hydraulika designed, manufactured and in cooperation with the main supplier of this pedestrian bridge, Skanska, installed **two Tuned Mass Dampers (TMD)**. These vibration absorbers significantly reduce structural vibrations of the footbridge (**bridge is made of UHPC concrete**) and increase comfort of pedestrians and cyclists.

### Technical parameters

| Modell No.      | Oscillating mass<br>kg | Total weight<br>kg | Natural frequency<br>Hz |
|-----------------|------------------------|--------------------|-------------------------|
| TMDV-1500-1,800 | 1.500                  | 1.730              | 1,180                   |
| TMDV-1500-2,067 | 1.500                  | 1.730              | 2,067                   |

Tuned Mass Dampers on the Stvanice Footbridge over the Vltava River in Prague.



# KGF BEST PRACTICE: STEEL FOOTBRIDGE

## TUNED MASS DAMPERS ON THE FOOTBRIDGE OVER THE JIZERA RIVER IN MLADA BOLESLAV

In Mlada Boleslav, there is a new footbridge over the Jizera River since 2023, connecting the R&D Centre of Skoda Auto with the area of the „Beautiful meadow“. For this bridge we designed, produced and in cooperation with main supplier, Chládek a Tintěra Litoměřice, installed 8 Tuned Mass Dampers (TMD) with following parameters:

### Technical parameters

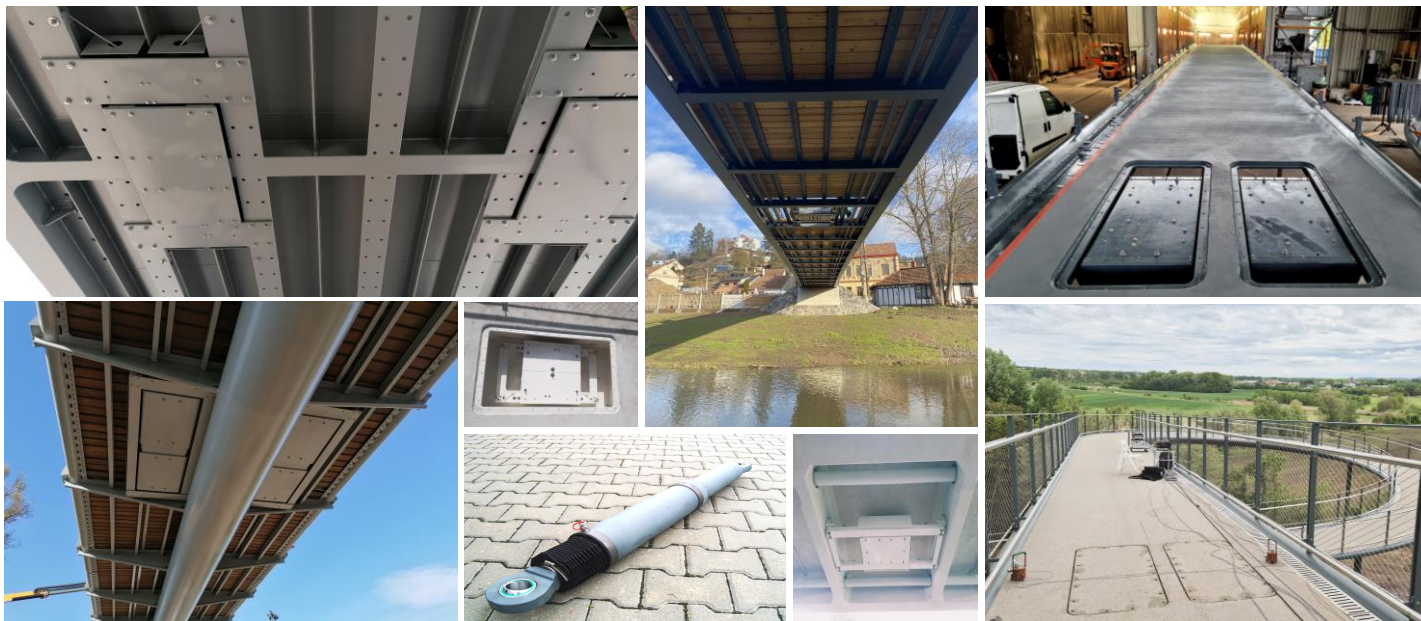
| Modell No.      | # of pcs | Oscillating mass<br>kg | Total weight<br>kg | Natural frequency<br>Hz |
|-----------------|----------|------------------------|--------------------|-------------------------|
| TMDV-1000-2,015 | 2        | 1.000                  | 1.100              | 2,015                   |
| TMDV-450-3,81   | 4        | 450                    | 530                | 3,810                   |
| TMDV-400-4,63   | 2        | 400                    | 480                | 4,630                   |

Tuned Mass Dampers on the footbridge over the Jizera river in Mlada Boleslav, Czech Republic.



# PROJECT REFERENCES

## VIBRATION DAMPERS (TMD, VISCOUS DAMPERS) FOR FOOTBRIDGES



KGF hydraulika has been involved in vibration damping of footbridges and bridges since its foundation. Here, we present a **selection of projects from recent years**. Further project references on TMD (tuned mass damper) and other vibration dampers are **available upon request**.

| Project                                               | Oscillating Mass (kg) / Damping Force (kN)             | Frequency (Hz)           | Damper Type                                     | Year |
|-------------------------------------------------------|--------------------------------------------------------|--------------------------|-------------------------------------------------|------|
| Footbridge over the Uhlava River, Trestice            | 1 x 750                                                | 2,85                     | TMD                                             | 2026 |
| Footbridge over the Sazava River, Samopse             | 1 x 750 kg                                             | 1,9                      | TMD                                             | 2026 |
| Footbridge over the Elbe River, Decin (Podmokly)      | 1 x 1.500 kg (H)<br>1 x 1.500 kg (V)<br>3 x 500 kg (V) | 1,5<br>1,8<br>1,45 – 2,4 | TMD-H (horizontal)<br>TMD-V (vertical)<br>TMD-V | 2026 |
| Footbridge over the Sazava River, Zdar n.S.           | 2 x 500 kg                                             | 2,93                     | TMD                                             | 2026 |
| Footbridge in Sanov, Rail station                     | 4 x 500 kg                                             | 1,6 – 3                  | TMD                                             | 2025 |
| Footbridge over the Olse River, Karvina               | 1 x 500 kg                                             | 1,5                      | TMD                                             | 2025 |
| Footbridge over the Litava River, Blucina             | 1 x 750 kg                                             | 2,23                     | TMD                                             | 2024 |
| Stvanice Footbridge, Vltava River, Prague             | 2 x 1.500 kg                                           | 1,8 – 2,07               | TMD                                             | 2023 |
| Bicycle Bridge, Banska Bystrica (SK)                  | 2 x 1.000 kg                                           | 1,706                    | TMD                                             | 2023 |
| Footbridge, Jizera River, Mlada Boleslav (Škoda Auto) | 2 x 1.000 kg<br>4 x 450<br>2 x 400                     | 2,02<br>3,81<br>4,63     | TMD                                             | 2023 |
| Footbridge in Bilovice nad Svitavou                   | 1 x 350 kg                                             | 2,93                     | TMD                                             | 2023 |
| Troja Footbridge, Vltava River, Prague                | 4 x 1.250 kg                                           | 1,62 – 1,85              | TMD                                             | 2020 |
| Footbridge in Hyskov u Berouna                        | 1 x 1.500 kg                                           | 1,73                     | TMD                                             | 2014 |
| Footbridge over the Bečva River in Usti               | 4 x 500 kN                                             |                          | Viscous Damper                                  | 2023 |
| Bicycle Bridge, Elbe River, Celakovice                | 2 x 100 kN                                             |                          | Viscous Damper                                  | 2021 |
| Footbridge in Vestec, Vltava River, Prague            | 2 x 100 kN                                             |                          | Viscous Damper                                  | 2021 |
| Footbridge Stitary over the Swiss Bay at Vranov Dam   | 4 x 100 kN                                             |                          | Viscous Damper                                  | 2019 |
| Footbridge over the Otava River at                    | 4 x 100 kN                                             |                          | Viscous Damper                                  | 2008 |



**Fluid Viscous Dampers on the Bicycle Bridge over the Elbe River in Celakovice, Czech Republic.**

**TMD in a chamber on the Bicycle Bridge over the Highway in Banska Bystrica, Slovakia.**

# REFERENCES: LIFTING BRIDGES AND STRUCTURES

PERIOD 2019 – 2023



KGF hydraulika has over 30 years' experience in lifting bridges and other structures. Here we present just a few selected references from the last five years, and we will be happy to provide further references upon request.

| Project                                                     | What                    | Why                | Contractor                  | Year      |
|-------------------------------------------------------------|-------------------------|--------------------|-----------------------------|-----------|
| <b>Railway bridge Opatovec u Svitav</b>                     | Bridge lifting          | Bridge bearings    | MaGe Construction           | 2023      |
| <b>Bridge Dolní Benešov</b>                                 | Bridge lifting          | Bridge bearings    | Strabag                     | 2023      |
| <b>Bridge Třanovice-Nebory</b>                              | Bridge lifting          | Bridge bearings    | Strabag                     | 2023      |
| <b>Highway bridge at Lovosicw Nova Ves</b>                  | Bridge lifting          | Bridge bearings    | MaGe Construction           | 2023      |
| <b>4 Railway bridges in Brandys – Usti nad Orlici</b>       | Repeated Bridge lifting | Bridge bearings    | Chládek a Tintěra Pardubice | 2022      |
| <b>5 Bridges near Frydek-Mistek</b>                         | Repeated Bridge lifting | Bridge bearings    | PORR                        | 2021      |
| <b>Railway bridge Dolni Bousov – Libun</b>                  | Repeated Bridge lifting | Bridge repair      | Chládek a Tintěra Pardubice | 2021      |
| <b>Bridge Bystrovany</b>                                    | Bridge lifting          | Bridge bearings    | Ponvia Construct            | 2021      |
| <b>Highway bridge Sviadnova, road III/4848</b>              | Bridge lifting          | Bridge bearings    | PORR                        | 2021      |
| <b>Poweplant Chvaletice</b>                                 | Foundation lifting      | Isolation exchange | PEEM                        | 2020      |
| <b>Highway bridge D55 Otrokovice</b>                        | Bridge lifting          | Bridge bearings    | Eurovia                     | 2020      |
| <b>Highway bridge D1, km 62, 7 MÚK Soutice-Loket-Švihov</b> | Bridge lifting          | Bridge bearings    | Metrostav                   | 2019/2020 |
| <b>Bridge Ostrava Bazaly with 40 fields</b>                 | Repeated Bridge lifting | Bridge bearings    | Strabag                     | 2019      |



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