

KRACHT



## **Directional Valve Size 10 WL 4.10**

Installation dimensions ISO 4401/DIN 24340 A10

## Functional Description

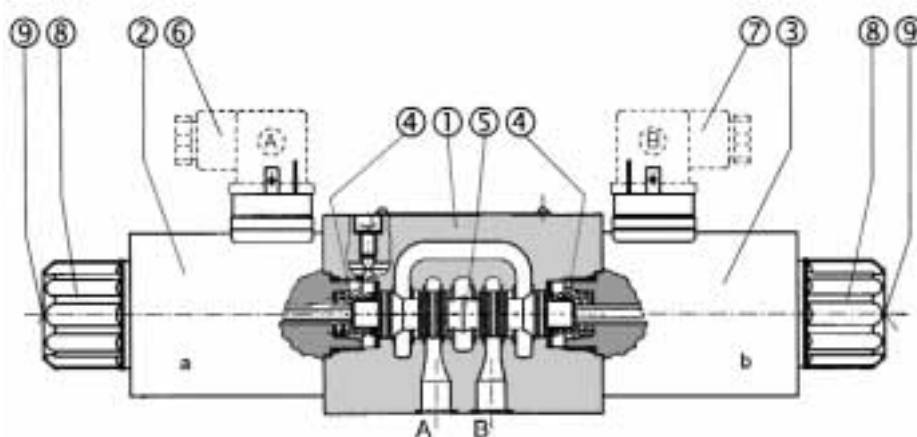
The directional control valves WL 4/10 consist of housing (1), control spool (5), centering springs (4) and operating solenoids (2, 3).

The three-position directional valves are fitted with two solenoids and two springs. The two-position directional valves have one solenoid and one return spring.

The operating solenoids are DC solenoids and are supplied through connectors A, B (6, 7) without rectifiers. For AC supply the solenoids are provided with rectifiers, which are integrated directly into the connectors A, B (6, 7). The connectors do not belong to delivery and must be ordered

separately. By loosening the fixing nut (8), the solenoid can be turned on its axis and fixed in three positions 90° apart. Provided that the pressure in T-port does not exceed 363 psi (25 bar), the spool of the valve can be repositioned by manual override (9).

The basic surface treatment of the valve housing (1) is phosphate coated, whereas the operating solenoids (2, 3) are zinc coated.

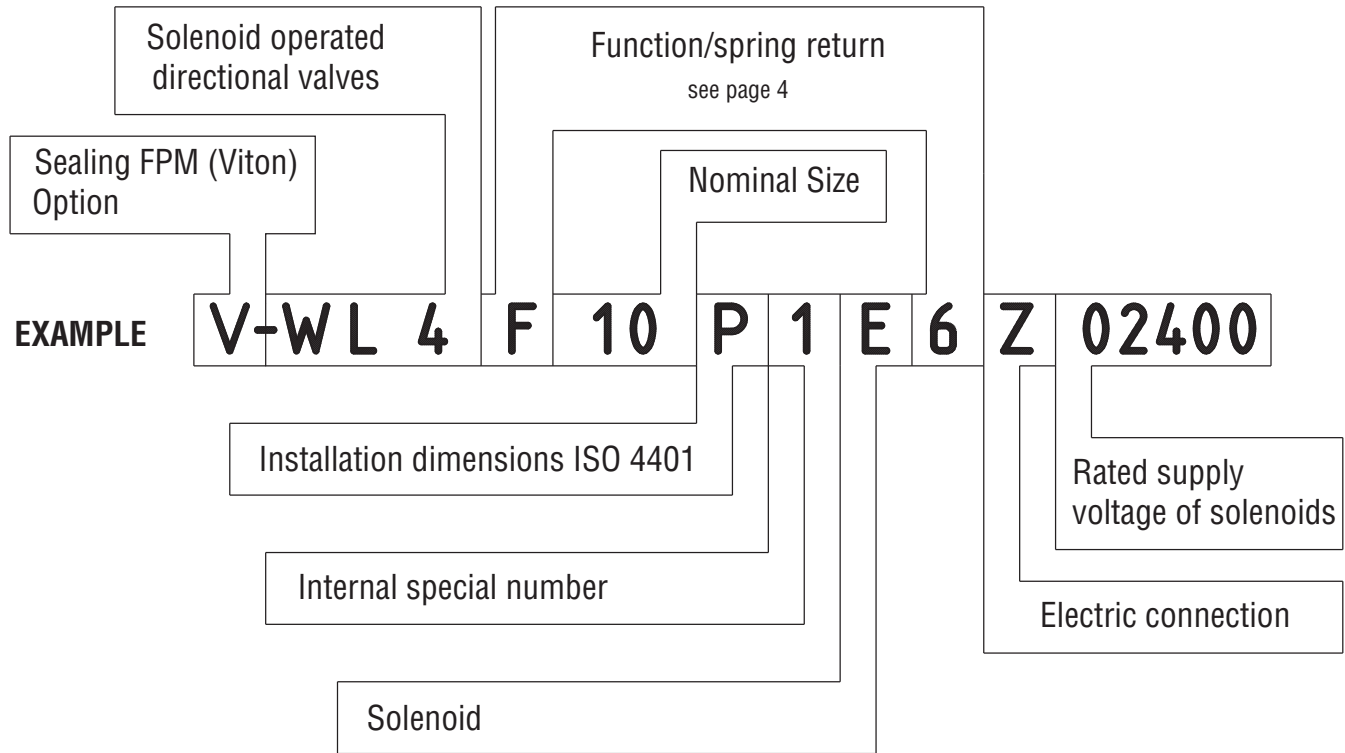


## Technical Data

|  |   |  |  |
|--|---|--|--|
| Nominal size                             | 10  | Permissible rated voltage variation                            | AC: -15 ... +5%<br>DC: -10 ... +6%     |
| Maximum flow                             | see p-Q characteristics   | Max. switching frequency                                       | 15000 1/h                              |
| Max. operating pressure at ports P, A, B | 4641 psi (320 bar)  | Switching time, on;<br>at v = 166 SUS (35 mm <sup>2</sup> /s)  | 90 ... 160 ms                          |
| Max. operating pressure at port T        | 3045 psi (210 bar)  | Switching time, off;<br>at v = 166 SUS (35 mm <sup>2</sup> /s) | 70 ... 100 ms                          |
| Pressure losses                          | see Δp-Q characteristics  | Duty cycle   | 100 %                                  |
| Hydraulic fluid                          | Hydraulic oils of DIN 51254/25<br>other Hydraulic fluids on request                                     | Service life   | 10 <sup>7</sup> cycles                 |
| Fluid temperature range (NBR)            | -22 ... +176 °F (-30 ... +80 °C)  | Enclosure type to DIN 40 050                                   | IP 65                                  |
| Ambient temperature max.                 | ... +122 °F (... +50 °C)  | Weight-valve with 1 Solenoid<br>valve with 2 Solenoids         | 11.25 lb (5.1 kg)<br>14.55 lb (6.6 kg) |
| Viscosity range                          | 98 ... 1840 SUS (20 ... 400 mm <sup>2</sup> /s)   | Mounting position  | optional                               |
| Maximum degree of fluid contamination    | Class 18/15 to ISO 4406.<br>Therefore we recommend a filter with a retention rate β <sub>10</sub> ≥ 75. |  |  |

**Directional valve size 10** installation dimensions ISO 4401 / DIN 24340 A10

**Ordering code**



| Solenoid  |   |
|-----------|---|
| <b>E</b>  | Coil of solenoid equipped with standard plug-in electrical connector DIN 43 650                           |
| <b>EG</b> | Coil of solenoid with integrated rectifier equipped with standard plug-in electrical connector DIN 43 650 |

| Rated supply voltage of solenoids |                              |
|-----------------------------------|------------------------------|
| 01200                             | 12V DC / 3,17 A              |
| 02400                             | 24V DC / 1,73 A              |
| 11550                             | 115V AC / 0,41 A / 50(60) Hz |
| 23050                             | 230V AC / 0,20 A / 50(60) Hz |
| other voltages on request         |                              |

| Electric connection |   | DIN 43 650,<br>Protection IP 65, (DIN 40 050) |
|---------------------|---|---|
| <b>Y</b>            | without electrical plug   |   |
| <b>Z</b>            | with electrical plug (Pg 11)                                      |   |
| <b>L</b>            | with electrical plug and signal lights in conduit adapter (Pg 11) |   |

Directional valves with damping on request: T2 = nozzle Ø 0,6  
T3 = throttle screw

Directional valves with manual override on request: N2 = covered with rubber protective.

Symbols

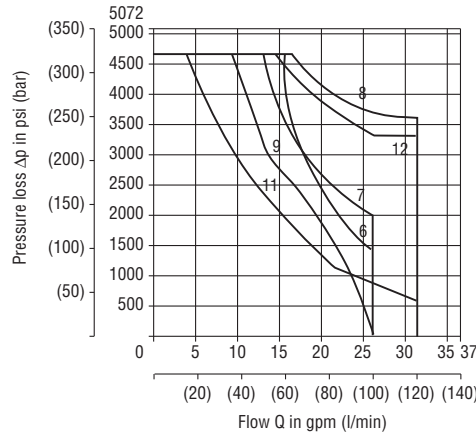
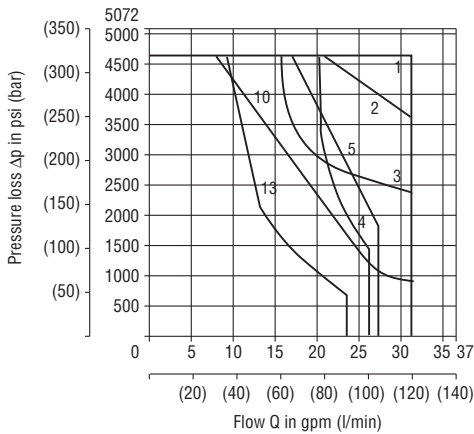
| Function  | Spring return | Symbol | Function | Spring return | Symbol | Function  | Spring return | Symbol |
|-----------|---------------|--------|----------|---------------|--------|-----------|---------------|--------|
| F ...6    |               |        | AP...0*  |               |        | F ...1    |               |        |
| EN...6 ** |               |        | AN...0** |               |        | BP...1 *  |               |        |
| SE...6    |               |        | U ...0   |               |        | BN...1 ** |               |        |
| KF...6    |               |        | KF...0   |               |        | EN...1 ** |               |        |
| SF...6    |               |        | SF...0   |               |        | SE...1    |               |        |
| AE...6    |               |        | EN...0** |               |        | F ...4    |               |        |
| HF...6    |               |        | F ...0   |               |        | AF...1    |               |        |
| FV...6    |               |        | F ...8   |               |        | HE...1    |               |        |
| HE...6    |               |        | SE...0   |               |        | F ...31   |               |        |
| AF...6    |               |        | AF...0   |               |        | AE...1    |               |        |
|           |               |        | AE...0   |               |        | HF...1    |               |        |
|           |               |        | HF...0   |               |        | SF...1    |               |        |

\* P ≙ Overlap (positive)  
 \*\* N ≙ Overlap (negative)

# Directional valve size 10 installation dimensions ISO 4401 / DIN 24340 A10

## p-Q Characteristics Measured at $v = 166 \text{ SUS } (35 \text{ mm}^2/\text{s})$ und $t = 104 \text{ °F } (40 \text{ °C})$

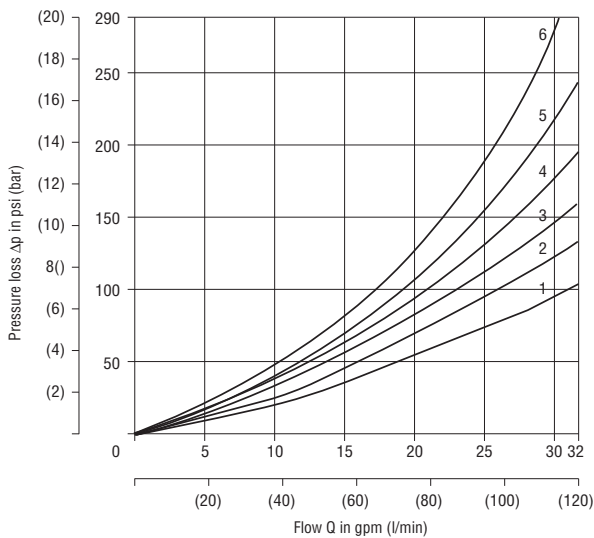
Operating limits for maximum hydraulic power transferred by the directional valve. For respective spool type – see Functional Symbols



|         |    |         |   |
|---------|----|---------|---|
| F ...6  | 3  | F ...8  | 1 |
| EN ...6 | 4  | SE ...0 | 2 |
| SE ...6 | 2  | AF ...0 | 5 |
| KF ...6 | 1  | AE ...0 | 9 |
| SF ...6 | 7  | HF ...0 | 5 |
| AE ...6 | 9  | F ...1  | 3 |
| HF ...6 | 5  | BP ...1 | 6 |
| FV ...6 | 7  | BN ...1 | 8 |
| HE ...6 | 9  | EN ...1 | 4 |
| AF ...6 | 5  | SE ...1 | 2 |
| AP ...0 | 6  | F ...4  | 1 |
| AN ...0 | 8  | AF ...1 | 5 |
| U ...0  | 11 | HE ...1 | 9 |
| KF ...0 | 1  | F ...31 | 1 |
| SF ...0 | 7  | AE ...1 | 9 |
| EN ...0 | 4  | HF ...1 | 5 |
| F ...0  | 3  | SF ...1 | 7 |

## Δp-Q Characteristics Measured at $v = 166 \text{ SUS } (35 \text{ mm}^2/\text{s})$ und $t = 104 \text{ °F } (40 \text{ °C})$

Pressure loss  $\Delta p$  related to flow rate.

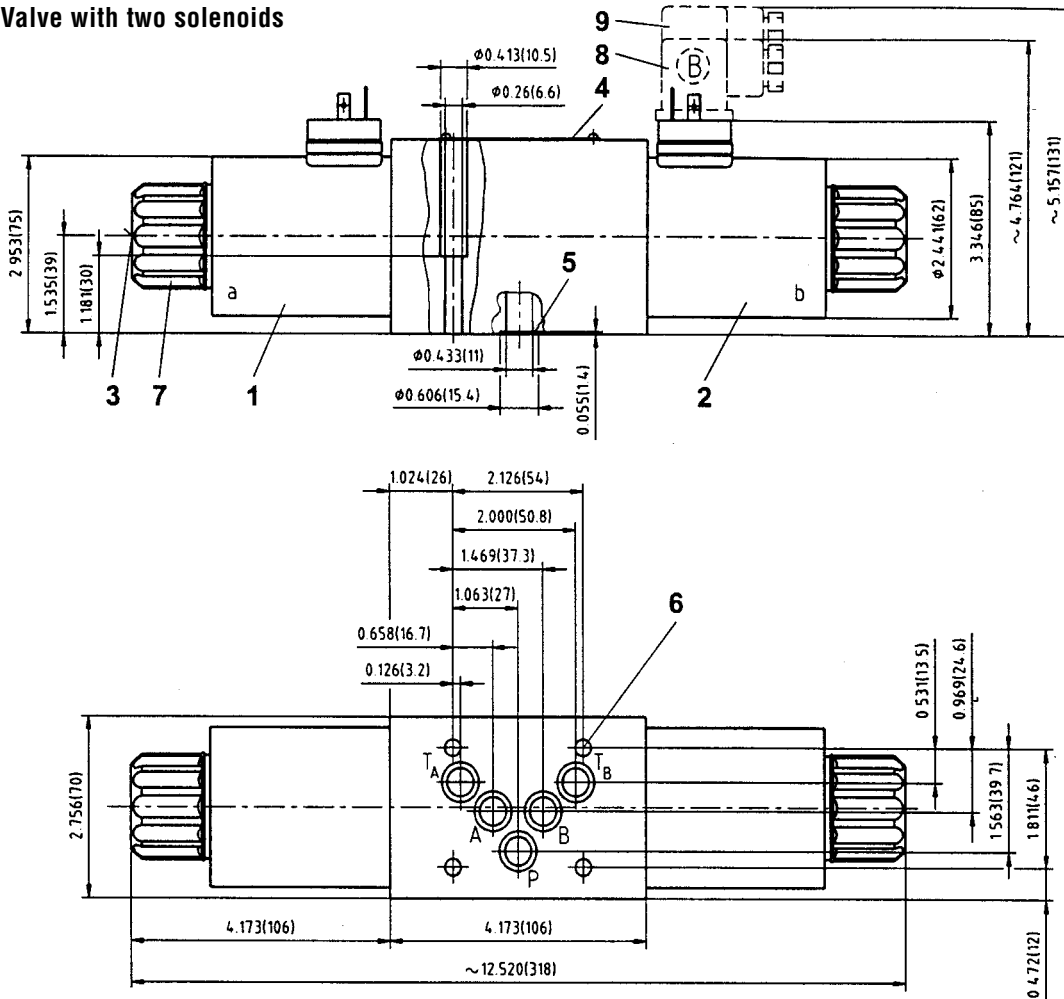


|         | P-A | P-B | A-T | B-T | P-T |
|---------|-----|-----|-----|-----|-----|
| F ...6  | 1   | 1   | 2   | 2   | -   |
| EN ...6 | 4   | 3   | 4   | 5   | 3   |
| SE ...6 | 1   | 1   | 2   | 2   | 1   |
| KF ...6 | 1   | 1   | 2   | 2   | -   |
| SF ...6 | 1   | 1   | 1   | 1   | -   |
| AE ...6 | 1   | 1   | 1   | 2   | 2   |
| HF ...6 | 1   | 1   | 2   | 2   | -   |
| FV ...6 | 1   | 6   | 2   | -   | -   |
| HE ...6 | 1   | 1   | 1   | 2   | 2   |
| AF ...6 | 1   | 1   | 2   | 2   | -   |
| AP ...0 | 2   | 1   | 2   | 3   | -   |
| AN ...0 | 1   | 1   | 2   | 3   | -   |
| U ...0  | 1   | 1   | -   | -   | -   |
| KF ...0 | -   | 1   | 2   | -   | -   |
| SF ...0 | -   | 1   | 1   | -   | -   |
| EN ...0 | 4   | -   | -   | 5   | 1   |
| F ...0  | -   | 1   | 2   | -   | -   |
| F ...8  | 1   | -   | -   | 2   | -   |
| SE ...0 | -   | 1   | 2   | -   | 1   |
| AF ...0 | -   | 1   | 2   | -   | -   |
| AE ...0 | 1   | 1   | 1   | -   | 2   |
| HF ...0 | -   | 1   | 2   | 2   | -   |
| F ...1  | 1   | -   | -   | 2   | -   |
| BP ...1 | 2   | 1   | 2   | 3   | -   |
| BN ...1 | 1   | 1   | 2   | 3   | -   |
| EN ...1 | -   | 4   | 5   | -   | 1   |
| SE ...1 | 1   | -   | -   | 2   | 1   |
| F ...4  | -   | 1   | 2   | -   | -   |
| AF ...1 | 1   | -   | 2   | 2   | -   |
| HE ...1 | 1   | -   | -   | 2   | 2   |
| F ...31 | 1   | 4   | 2   | 3   | -   |
| AE ...1 | 1   | -   | -   | 2   | 2   |
| HF ...1 | 1   | -   | -   | 2   | -   |
| SF ...1 | 1   | -   | 1   | 1   | -   |

**Directional valve size 10** installation dimensions ISO 4401 / DIN 24340 A10

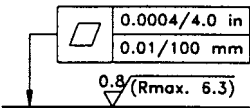
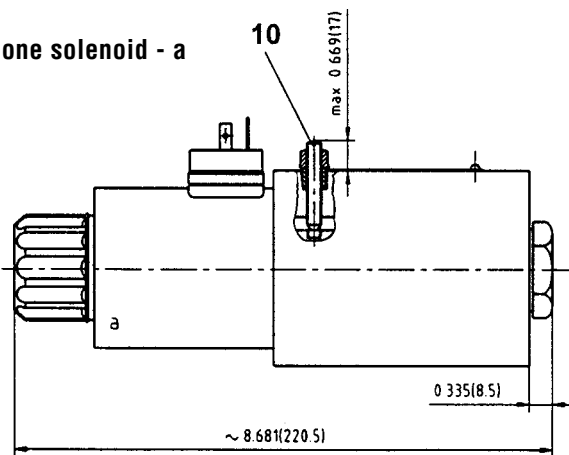
**Valve dimensions** Dimensions in inches and milimetres (in brackets)

**Valve with two solenoids**



- 1 Solenoid a
- 2 Solenoid b
- 3 Manual override
- 4 Name plate
- 5 Square Ring 12,42 x 1,68 mm (5 pcs) supplied in delivery packet
- 6 4 mounting holes
- 7 Fixing nut of the solenoid
- 8 Connector plug to DIN 43 650
- 9 Distance required to remove plug
- 10 Throttle screw

**Valve with one solenoid - a**

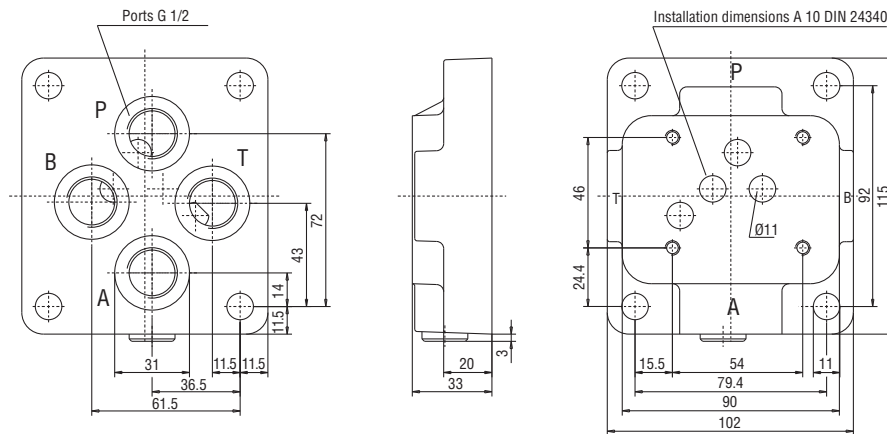


Required surface finish to interface.

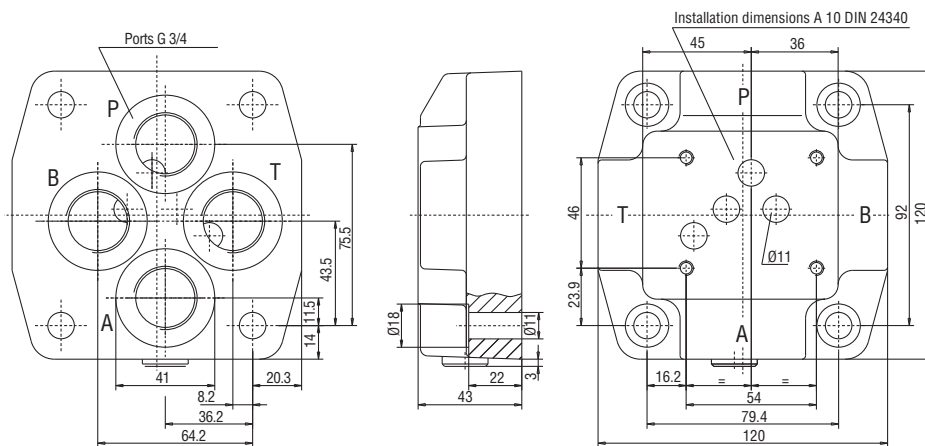
**Single-subplates for WL 4/10** installation dimensions DIN 24340 A10

**Ordering code**

|              |           |                         |                           |
|--------------|-----------|-------------------------|---------------------------|
| Size         |           | internal special number |                           |
| <b>MWL 4</b> | .         | <b>R</b>                | .                         |
| <b>10</b>    | .         | <b>3</b>                | .                         |
| Ports G 1/2  | <b>10</b> | <b>3</b>                | Code no.                  |
| Ports G 3/4  | <b>12</b> | <b>4</b>                | <b>0</b> All 4 ports open |
|              |           |                         | <b>1</b> Port A closed    |
|              |           |                         | <b>2</b> Port B closed    |
|              |           |                         | <b>3</b> Port P closed    |
|              |           |                         | <b>4</b> Ports A+B closed |
|              |           |                         | <b>5</b> Ports B+P closed |
|              |           |                         | <b>6</b> Ports A+P closed |
|              |           |                         | <b>7</b> Ports A+T closed |
|              |           |                         | <b>8</b> Ports B+T closed |
|              |           |                         | <b>9</b> Port T closed    |



Ordering code: **MWL 4 10 R3A .**



Ordering code: **MWL 4 12 R4A .**

## Overview of our complete program

### Transfer pumps

Transfer pumps for lubricating oil supply equipment, low pressure filling and feed systems, dosing and mixing systems.

### Volutronic®

Gear flow meters and electronics for volume and flow metering technology in hydraulics, processing and laquering technology.

### Mobile hydraulics

Single and multistage high pressure gear pumps, hydraulic motors and valves for construction machinery, vehicle-mounted machines.

### Industrial hydraulics

Cetop directional control and proportional valves, hydraulic cylinders, pressure, quantity and stop valves for pipe and slab construction, hydraulic accessories for industrial hydraulics (mobile and stationary use).

With our decades of experience, we are at your side, world-wide, for the professional mastery of specific applications and complete solutions in hydraulics and process technology.



WL4.10.e.05.2000