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## 1 Product Description

### 1.1 Application

WESSEL lowering brake check valves secure the booms against unintentional extending and retracting of your cylinder during hose or pipe breaks. WESSEL lowering brake check valves are design free of oil leakage and thereby hold the cylinder in a defi-ned position.

Lowering brake check valves for vibration sensitive cylinder applications with flow rates up to 60 l/min and maximum pressures up to 450 bar.

Multi-unit poles/booms, which are moved by cylinder, often tend to oscillate. Application examples are concrete placing booms or aerial work platforms. In case of insufficient damping, this can also be caused by the control of a cylinder. Due to the excellent damping characteristics of these valves, vibration can be avoided.

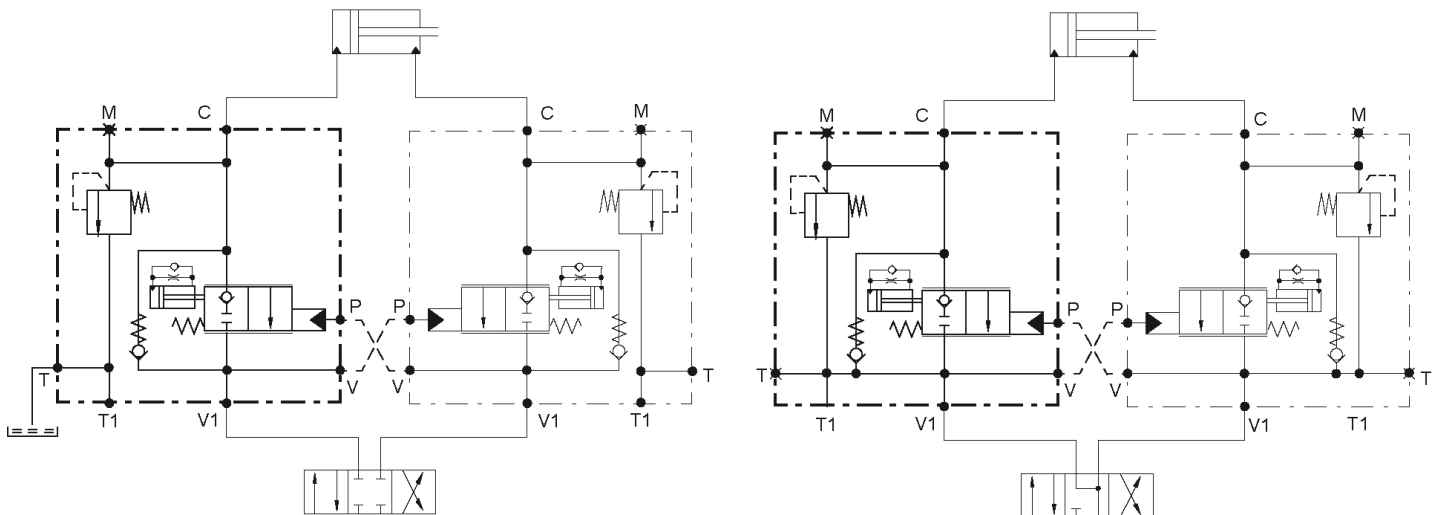
### 1.2 Mounting location

The valve is installed onto the two cylinder connection of the boom that requires securing.

## 2 Function

In general, both cylinder connections are secured with a lowering brake valve type LHC. The hydraulic oil from the control valve flows via the check valve to the cylinder connection. The pressure rises since the opposite side is still closed off. As soon as the opening pressure for the lowering brake valve slide reaches the opposite side, it is opened and the oil can flow from the second cylinder chamber via the control valve to the tank. A path-dependent and direction-dependent dampening causes a vibration-free movement of the actuated cylinder.

The pressure limiting valve is arranged parallel to the lowering brake valve slide. This can relieve in one embodiment to a separate tank connection, or in another embodiment to the control line.



### 2.1 Characteristics

- Leakage free seat in hardened steel housing
- Load pressure independent opening of the control valve
- Cylinder tailored throttle cross sections of the control valve
- High damping characteristics
- Separate pressure limiting valve: Opening point is selectable independent of the DBV setting.
- Directly flanged to the cylinder

## 3 Technical Data

| Criterion                                | Units | Value   |
|--|-------|---|
| Cylinder connection C                    |       | M22x1.5 – pmax < 450bar   |
| Max. operating pressure                  | bar   | 450   |
| Max. volume flow                         | l/min | 60  |
| Weight                                   | kg    | 2.7   |
| Opening pressure of lowering brake valve | bar   | 32 bar  |
| Connection                               |       |   |
| T,V                                      |       | see type code   |
| T1,V1                                    |       | G 3/8, ISO 1179-1, T1 pmax < 10bar, V1 pmax < 350bar  |
| P  |       | G 1/4, ISO 1179-1, pmax < 350bar  |
| M  |       | G 1/4, ISO 1179-1, pmax < 450bar  |
| Hydraulic fluid                          |       | Mineral oil (HL, HLP) conforming with DIN 51524, other fluids upon request                    |
| Pressure fluid temperature range         | °C    | -20 – +80   |
| Ambient temperature:                     | °C    | -30 – +50   |
| Viscosity range                          | mm2/s | 2.8 – 500   |
| Contamination grade                      |       | Filtering conforming with NAS 1638, class 9, with minimum retention rate $\beta_{10} \geq 75$ |

## 4 Ordering Information

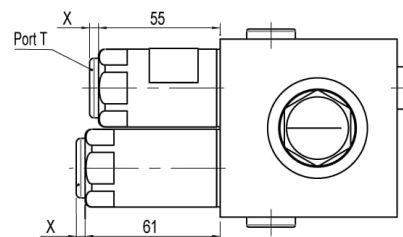
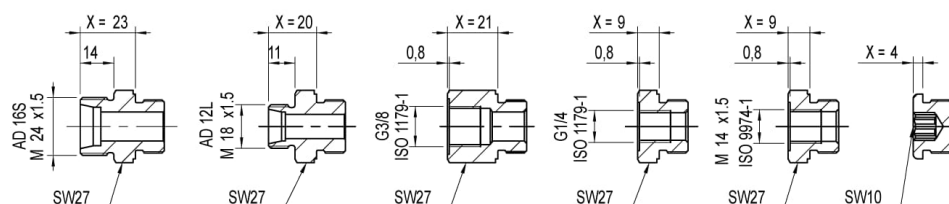
| LHC   | 3H                                 |   |                          |    |    |     |    |     |
|-------|------------------------------------|---|--------------------------|----|----|-----|----|-----|
| 00    | 01                                 | 02  | 03                       | 04 | 05 | 06  | 07 | 08  |
| 00    | Product group                      | Load Control Valve Cylinder   |                          |    |    |     |    | LHC |
| 01    | Variant                            | Attachment with a hollow bolt on the cylinder connection            |                          |    |    |     |    | 3H  |
| 02    | Connection T torque control spring | verschlossen  |                          |    |    |     |    | 000 |
|       |                                    | AD16S   |                          |    |    |     |    | 10R |
|       |                                    | AD12L   |                          |    |    |     |    | 10F |
|       |                                    | M14x1,5   |                          |    |    |     |    | 01D |
|       |                                    | G 3/8   |                          |    |    |     |    | 03C |
|       |                                    | G 1/4   |                          |    |    |     |    | 03B |
| 03    | Connection V torque control spring | verschlossen  |                          |    |    |     |    | 000 |
|       |                                    | AD12S   |                          |    |    |     |    | 10P |
|       |                                    | AD6S  |                          |    |    |     |    | 10M |
|       |                                    | AD12L   |                          |    |    |     |    | 10F |
|       |                                    | M14x1,5   |                          |    |    |     |    | 01D |
|       |                                    | G 3/8   |                          |    |    |     |    | 03C |
| G 1/4 |                                    |   |                          |    |    | 03B |    |     |
| 04    | Nominal volume flow                | Layout of the control valve optimized for the indicated volume flow | 10 l/min                 |    |    |     |    | 10  |
|       |                                    |   | 20 l/min                 |    |    |     |    | 20  |
|       |                                    |   | 40 l/min                 |    |    |     |    | 40  |
|       |                                    |   | 60 l/min                 |    |    |     |    | 60  |
| 05    | Pressure setting                   | Opening/trigger point of the pressure limiting valve                | >200 ≤450                |    |    |     |    | XXX |
| 06    | Damping                            | Standard damping  |                          |    |    |     |    | 01  |
|       |                                    | High damping  |                          |    |    |     |    | 02  |
| 07    | Pressure valve outlet to ...       | Tank  | T1, V1 closed, V, T open |    |    |     |    | T0  |
|       |                                    |   | T1 closed, V, V1, T open |    |    |     |    | T1  |
|       |                                    | Return line   | T, T1, V1 closed, V open |    |    |     |    | V0  |
|       |                                    |   | T, T1 closed, V, V1 open |    |    |     |    | V1  |

Unfortunately, various configurations cannot be implemented for technical reasons. If you have any questions, please contact us for advice.

## 5 Description of Characteristics in Accordance with Type Code

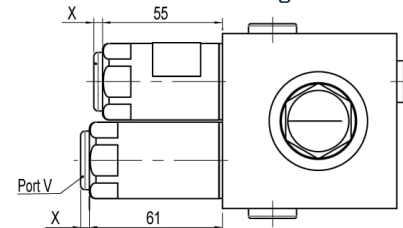
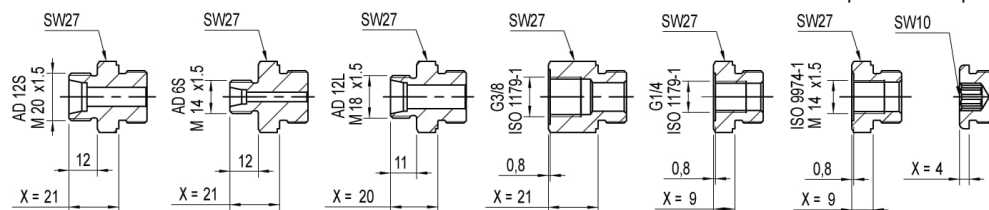
## 5.1 Variant

Attachment with a hollow bolt on the cylinder connection, thread M22x1.5



## 5.2 Connection T torque control spring

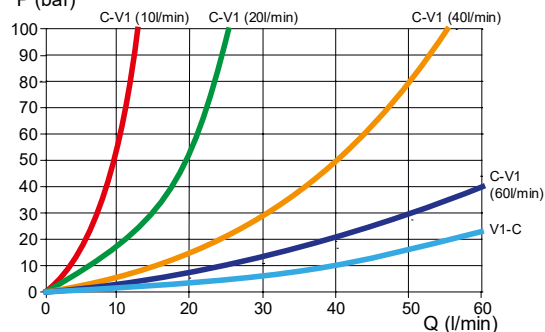
The connection to the torque control spring can be selected in the following dimensions:



### 5.3 Nominal volume flow

Indicates the recommended maximum volume flow from connection C (cylinder) to connection V or V1.

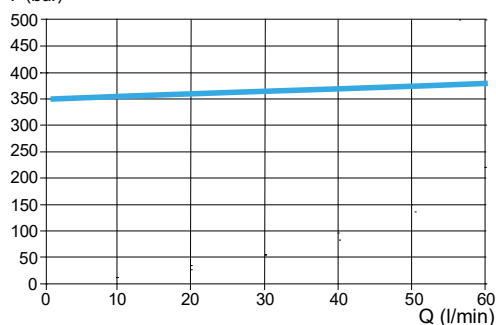
P (bar)



#### 5.4 Pressure setting

Indicates the set opening start of the pressure limiting valve  $\pm 5$  bar. The value is permanently set and can not be changed.

P (bar)



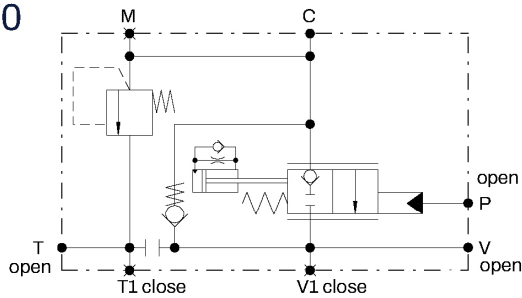
## 5.5 Damping

Using Code 01, the valve opens with the common nozzle damping.

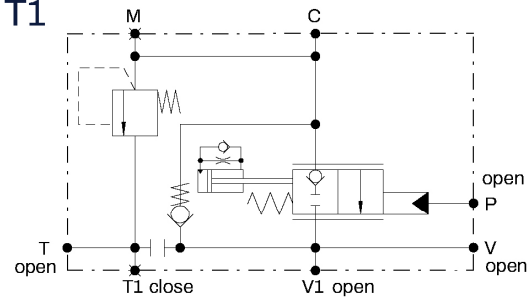
With Code 02 a damping cartridge is installed that first shows a open lift area via a nozzle and thereafter a strong progressive damping. Closing the valve by removing the inlet pressure is always fast.

## 5.6 Setting Pressure valve output

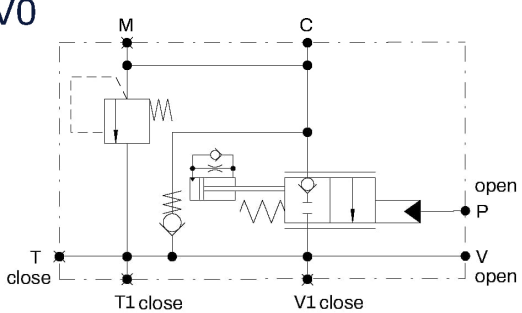
T0



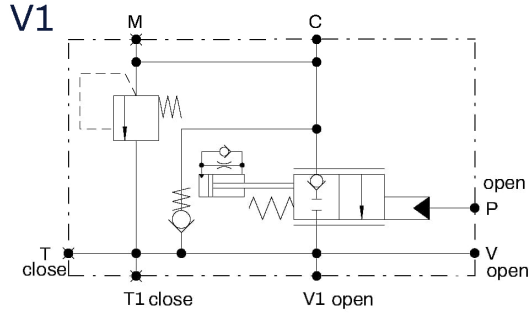
T1



V0



V1



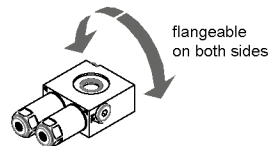
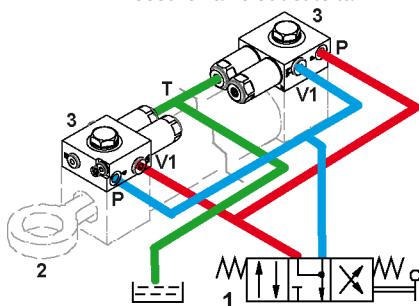
## 6 Installation

### 6.1 General remarks

- Observe all installation and safety information of the construction machine manufacturer.
- Only technically permitted changes are to be made on the construction machine.
- The user has to ensure that the device is suitable for the respective application.
- Application exclusively for the range of application specified by the manufacturer.
- Before installation or dismantling, the hydraulic system is to be depressurized.
- Settings are to be made by qualified personnel only.
- May only be opened with the approval of the manufacturer, otherwise the warranty is invalidated.
- The included connection recommendations are not guaranteed. The functionality and the technical specifications of the construction machine must be checked.

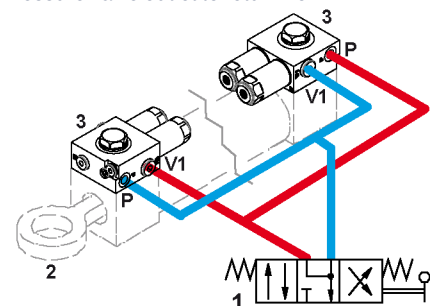
### 6.2 Connection recommendations

Pressure valve outlet to tank



G1/4 - 55Nm  
G3/8 - 80Nm  
M14x1,5 - 55Nm  
M18x1,5 - 90Nm  
M22x1,5 - 225Nm

Pressure valve outlet to return flow



### 6.3 Installation – space

Attachment with a hollow bolt on the cylinder connection

