- **Port size: Subplate mounting or threaded G1/2**
- **Switch proves absolutely reliable, even at extreme oil temperatures**
- **Pilot-controlled pressure valve, negligible pressure peaks**
- **Soft-switching, low noise level**
- **Resistant to contamination**
- **Oil leakage connection not required**
- **Complies with the relevant safety regulations**
- **International approvals**

## Technical features

**Design:**
This hydraulic valve system is for the continuous switching of a cylinder from »in stroke« to »out stroke«. The switching element is a hardened steel piston which moves in a solid cast iron body. For this reason the valves are suitable for the most rugged and demanding operating conditions.

The system relief valve and all other functions necessary to complete the hydraulic circuit are integrated in the single valve body

**Operation:**
The operation is effected without solenoids, and therefore without electrical function. No external signal, no external logic is required. The patented flow and pressure principle guarantees that the switching positions are precisely reached.

**Mounting:**
- Subplate mounted with o-ring seals
- Directly ported G1/2 into valve body

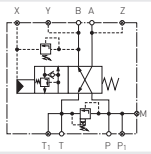
## Certificate Nr. V 487.01/15

**Codes and standards:**
EN ISO 13849-1:2008 + AC:2009
IEC 61508 Parts 1-2 and 4-7:2010

**Intended application:**
Safety function:
Move into basic position at every taking back of supply pressure. The valves fulfill the requierments of the applied standards and can be used in apllications up to PL d acc. EN ISO 13849-1.

**Specific requirements:**
The instructions of the associated Installation and Operating Manual shall be considered.

## Technical data - Regenerative version

| Symbol | $Q_{Pump}$ | $Q_{max.}$ backflow from A>T | set by factory pressures | possible pressure settings $p_1$ / $p_2$ / $p_{Diff}$ [bar] | | pressure switch setting [bar] | | Model |
|---|---|---|---|---|---|---|---|---|
| | (l/min.) | (mm) | $p_1/p_2/p_{Diff}$ [bar] | max. limit | min. limit | for X | for Y | |
|  | 10 ... 70 | 140 | 220/150/100 | 315/240 | 135/100 | 25 | 20 | 8318500.0000.00000 |

## Option selector

83★★★★★.0000.★★★★★

| Pressure relief valve | Substitute |
|---|---|
| Pilot operated | **1** |
| Pilot operated with solenoid operation | **2** |
| **Additional function** | **Substitute** |
| Regenerative version | **8** |
| **Pressure setting** | **Substitute** |
| Pressure = 220 bar<br>Changeover pressure = 150 bar<br>Differential pressure = 100 bar | **500** |
| Pressure = 200 bar<br>Changeover pressure = 150 bar<br>Differential pressure = 100 bar | **555** |
| Pressure = 180 bar<br>Changeover pressure = 150 bar<br>Differential pressure = 100 bar | **558** |
| Pressure = 200 bar<br>Changeover pressure = 150 bar<br>Differential pressure = 100 bar | **559** |
| Pressure = 220 bar<br>Changeover pressure = 150 bar<br>Differential pressure = 100 bar | **562** |
| Pressure = 245 bar<br>Changeover pressure = 150 bar<br>Differential pressure = 100 bar | **565** |
| Pressure = 220 bar<br>Changeover pressure = 150 bar<br>Differential pressure = 100 bar | **566** |

| Frequency / Voltage | Substitute |
|---|---|
| 24 V DC<br>only for electrical vent | **02400** |

## General

| | |
|---|---|
| Type of unit | Directional Control Valve,<br>Self Switching |
| Design | Sliding spool valve |
| Type of mounting | Panel mounting<br>resp. G1/2 cable connection |
| Weight (kg) | Typ 83185 = 7,8 |
| Mounting position | Optional |
| Direction of flow | Refer to Symbols |
| Ambient temperature $\vartheta$ [°C] | –20 ... +50°C |
| Size | NG 16 |
| Dimension of unit | Refer to page 4 |

## Hydraulic Characteristics

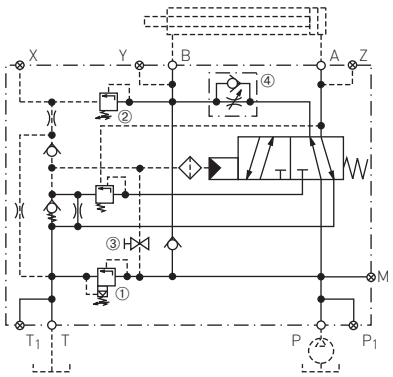
| | | |
|---|---|---|
| max. Operating pressure<br>Connection A, B, P<br>Connection T | <br>p [bar]<br>p [bar] | <br>315<br>120 |
| Pressure *1),<br>factory set | $p_1$ [bar] | 220 |
| Changeover pressure *2),<br>factory set | $p_2$ [bar] | 150,<br>max. 240 permitted |
| Differentialabschaltung | $p_{Diff}$ [bar] | 100 |
| Fluid | | Mineral oil DIN 51524 / 51525<br>(other on request)<br>HL /HLP biological HEES |
| Fluid temperature | $\vartheta$ max. | +80 °C |
| Viscosity | $\vartheta$ [$m^2/s$] | 10 ... 500 |
| Flow $Q_{max}$, A → T<br>$Q_{Pumpe\ max.}$ | [l/min]<br>[l/min] | 140<br>10 - 70 |
| Filtration | [µm] | 25 abs. |
| Contamination level | | ISO 4406 Kla. 20/18/15 |

## Electrical Characteristics

| | | |
|---|---|---|
| Voltage | | see catalog number code |
| Power consumption | P20 [W] ⎓ | 27 |
| Duty cycle | $ED_{rel}$ [%] | 100 |
| Protection class | [EN 60529] | IP65 |
| Voltage tolerance | [%] | ±10 |

*1) Pressure at which the directional valve block switches from the cylinder return stroke to retract stroke.
*2) Pressure at which the directional valve block switches from retract stroke return stroke to the cylinder.

## Circuit diagrams and connections
## Valve block, regenerative system



| Position ports | Characteristics | Remarks |
|---|---|---|
| 1 | System relief valve | |
| 2 | Pressure valve, changeover pressure | Setting at least 35 bar lower than pos.1, max. 240 bar |
| 3 | Shut-off valve | If opened, cylinder stops in fully retracted position |
| P, G1/2 | Pump port | |
| T, G1/2 | Tank port | |
| A, G1/2 | Cylinder port | At cylinder head end |
| B, G1/2 | Cylinder port | At cylinder rod end |
| P1, G1/2 | Alternative pump port | Or gauge port, plugged |
| T1, G1/2 | Alternative pump port | |
| M, G1/4 | Measurement connection | Gauge port, plugged |
| X, G1/4 | Pressure switch port (inapplicable if valve is basic version block with throttle check) | Pressure switch, e.g. with break contact. Opens the electrical link when valve switches over from backward stroke to forward stroke |
| Y, G1/4 | Pressure switch port-B | Pressure switch, e.g. with make contact. Opens the electrical link when valve switches over from forward stroke to backward stroke |
| Z, G1/4 | Pressure switch port-B | For example, in the case of waste presses, for the „safety switch“ 3) or for the 3/4- or full- signal as required |

**Functional Description Regenerative version**
In this version of the valve, when the cylinder piston is extending, the oil dispelled on the rod-side is not, as in the basic version, discharged preloaded to the tank via connection B. But rather it flows through a check valve integrated into the valve block to connection P and as such with the pump output flow to the cylinder piston area. This means that there is a significant increase in the feed rate speed of the cylinder piston. This „rapid feed switch“ can be overridden with an increase in pressure of 100 bar (set by the manufacturer) caused by external resistance. Then, the pressing operation takes place at a reduced speed and, as in the basic version, the return stroke follows.

**Note:**
Piston Area: Rod Area must be ≤ m 2:1 (e.g. Ø 63/45, Ø 70/50, Ø 80/55, Ø 90/65; Ø 100/70; Ø 110/80; Ø 120/85).

**Advantages of regenerative circuit:**
- Reduction in cycle time by approx. 33%
- More cost-effective than dual-pump mode
- Reduction of pump and filter sizes, of the electric motor capacity and the cable cross sections
- same cylinder piston speeds whether retracting or rapidly extending
- in additional dual-pump mode (switching in specific baseplate) there are extremely short cycle times (3 Feed rate speeds)

**Applications:**
This self switching 4/2-way valve block is particularly suitable for driving e.g.
- Waste presses
- Baling presses
- Briquette presses
- Barrel and can presses
- Conveying systems
- Compactor trucks with interchangeable containers

**Note:**
In waste compactors which are driven by the self switching 4/2-way valve, the end positions of the cylinders can be checked without „expensive“ and sensitive limit switches. All that is needed are simple pressure switches, connected to ports X or Y.

The cylinder end positions can be used for various different purposes in the control system
- Compactor will remain OPEN at the end of the cycle time
- Compactor will remain CLOSED at the end of the cycle time

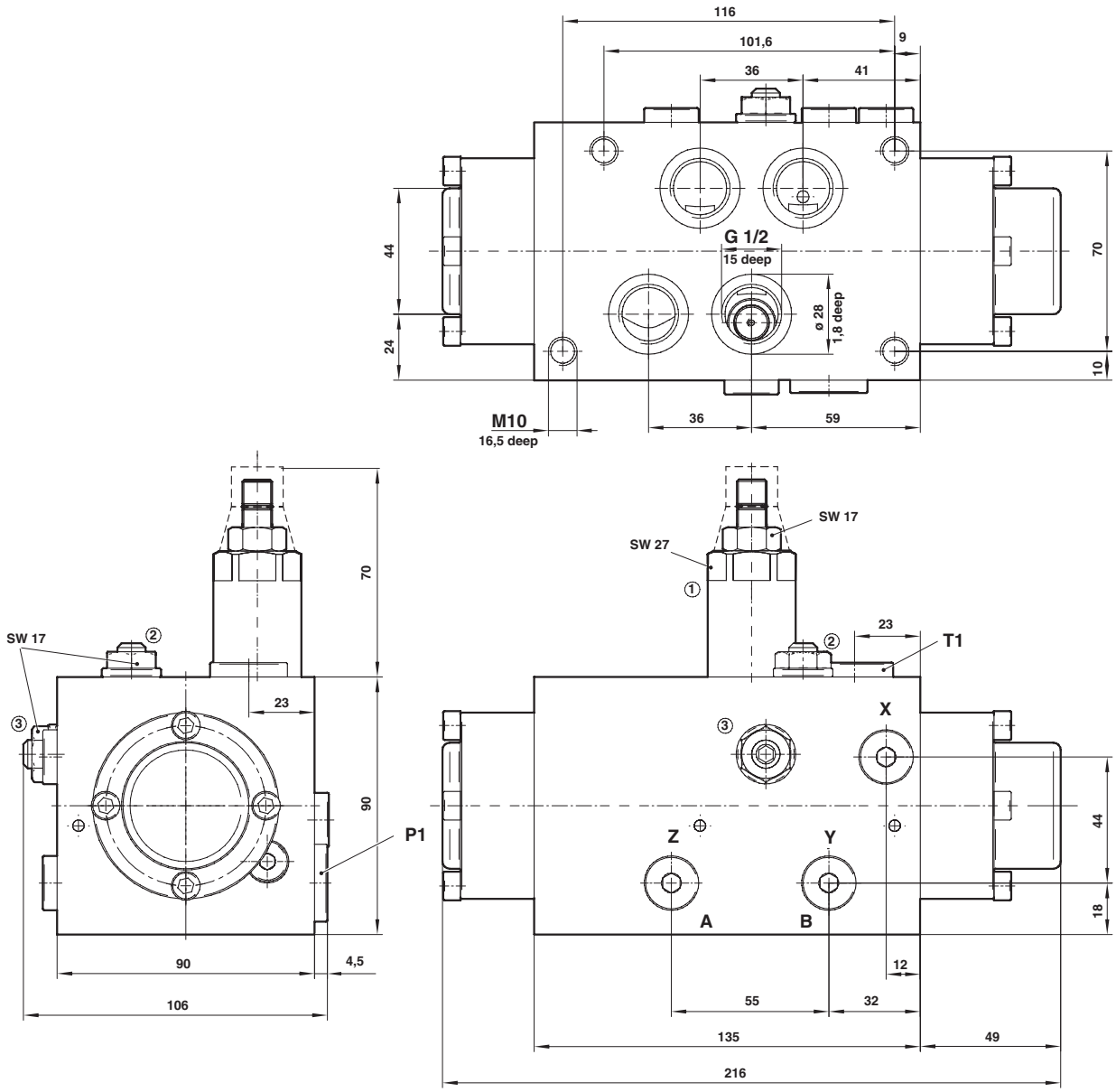
Please ask for documents if required.

## Dimensions

Dimensions in mm
Projection/First angle

### Model

**83185 00...**




For subplate mounting 4 O-Rings 23.47 x 2.62 (PRP-No. 119) are necessary.
They are not included with valves without subplates (Part-No. 12 425 56).

**Conformity:**

The hydraulical 4/2-way valve block is an equipment part without drive system. Thus the hydraulical 4/2-way valve block is excluded from the scope of the Machinery Directive 2006/42/EC.

This indication was reached in accordance with §35 (last paragraph) of “Guideline of the application of the Machinery Directive 2006/42/EC”.

According to this indication a declaration of conformity and incorporation as well as CE marking are not required.