



# **DENISON HYDRAULICS**

## **Stack Valves**

**Cetop 03**



Publ. 8-EN 5650-D, replaces 8-EN 5650-C

**DENISON** Hydraulics

## DESCRIPTION, CIRCUIT

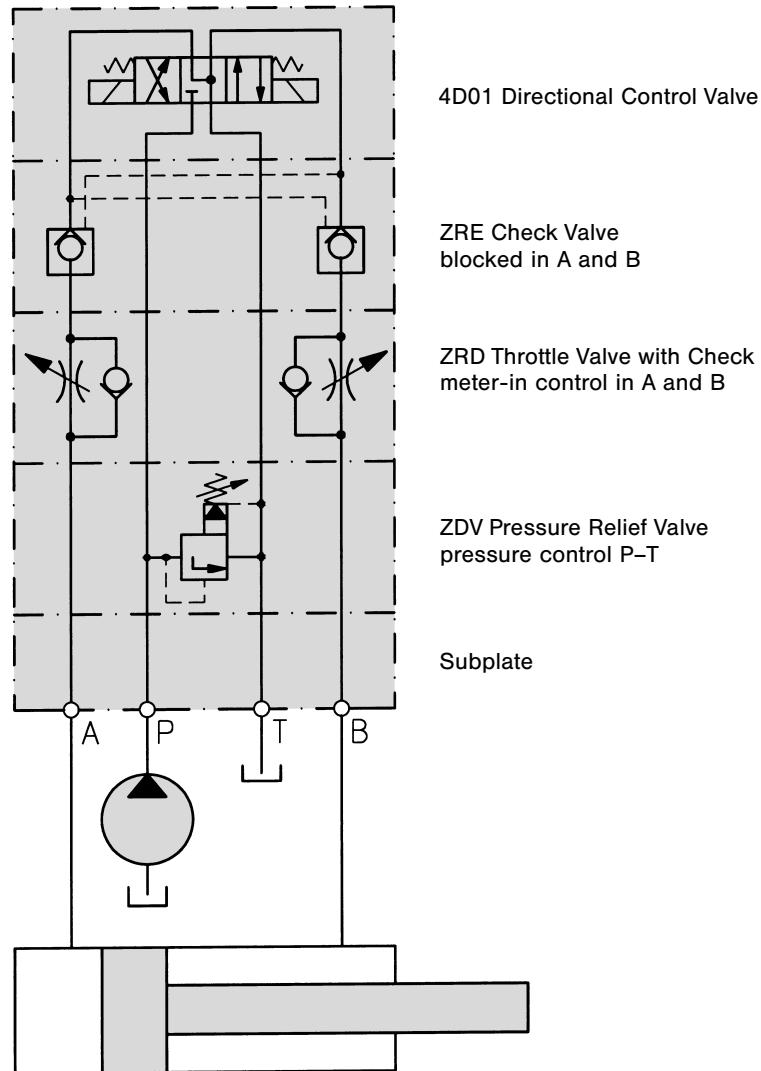
### DESCRIPTION

The Stack Valves described in this bulletin can be used as vertical and horizontal stack systems.

As pressure relief, pressure reducing valves, throttle valves with check, as check and counterbalance valves they are standardized according to CETOP, ISO and DIN in mounting configuration and meet industrial requirements for compact control systems.

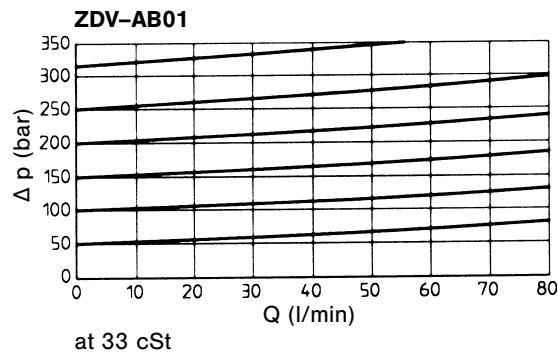
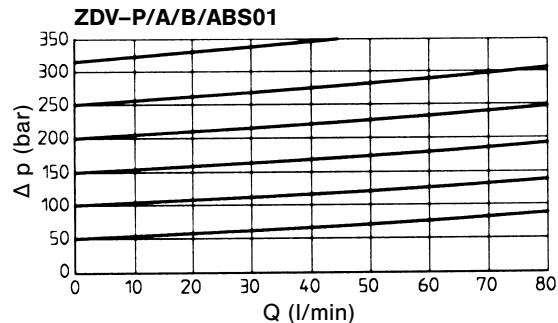
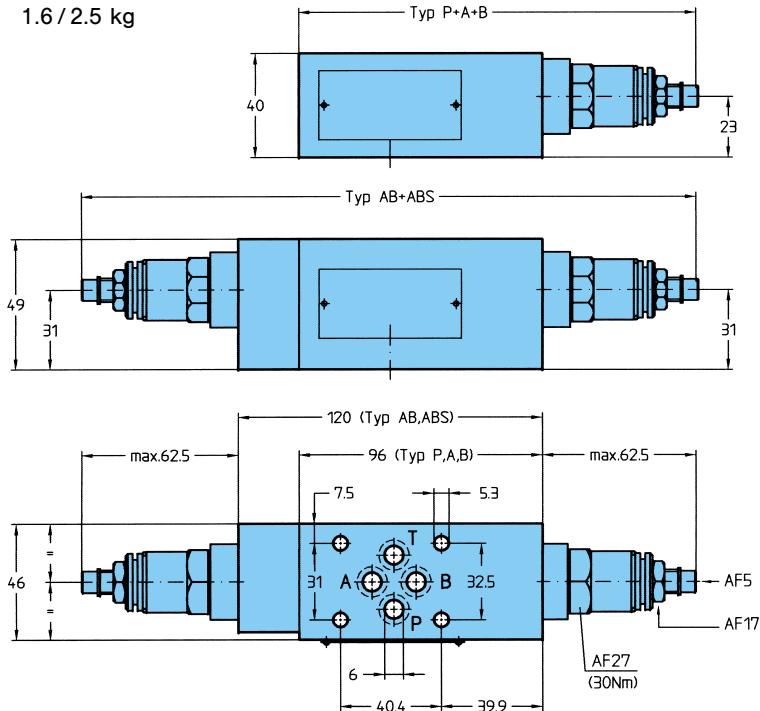
Stack valves size 03 have the same mounting configuration as the directional control valve 4D01 and can be arranged as shown on the following pages.

### CIRCUIT EXAMPLE



## PRESSURE RELIEF VALVE – SERIES ZDV

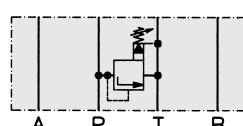
1.6 / 2.5 kg



- Operating pressure range

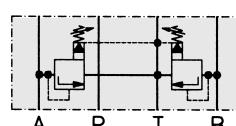
- ZDV-P/A/B/AB 7...70/350 bar
- ZDV-ABS 7...70/315 bar
- Max. flow 80 l/min
- Viscosity range 10...500 cSt
- Fluid temperature range -18...+60 °C

### Pressure control P-T



| Series          | Order No.   |
|-----------------|-------------|
| ZDV-P01-1-S0-D1 | 098-91201-0 |
| ZDV-P01-5-S0-D1 | 098-91202-0 |

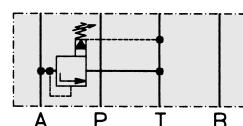
### Pressure control A-T & B-T



| Series           | Order No.   |
|------------------|-------------|
| ZDV-AB01-1-S0-D1 | 098-91207-0 |
| ZDV-AB01-5-S0-D1 | 098-91208-0 |

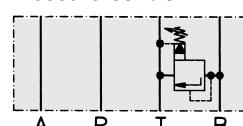
1 = 7...70 bar  
5 = 7...350 bar

### Pressure control A-T



| Series          | Order No.   |
|-----------------|-------------|
| ZDV-A01-1-S0-D1 | 098-91203-0 |
| ZDV-A01-5-S0-D1 | 098-91204-0 |

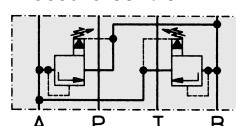
### Pressure control B-T



| Series          | Order No.   |
|-----------------|-------------|
| ZDV-B01-1-S0-D1 | 098-91205-0 |
| ZDV-B01-5-S0-D1 | 098-91206-0 |

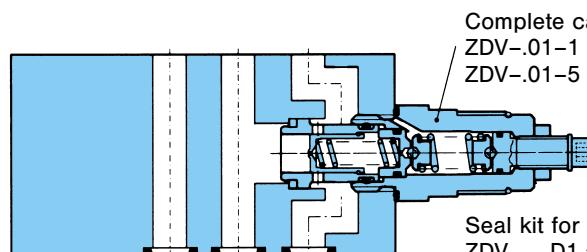
1 = 7...70 bar  
5 = 7...350 bar

### Pressure control A-B & B-A



| Series            | Order No.   |
|-------------------|-------------|
| ZDV-ABS01-1-S0-D1 | 098-91209-0 |
| ZDV-ABS01-5-S0-D1 | 098-91210-0 |

1 = 7...70 bar  
5 = 7...315 bar

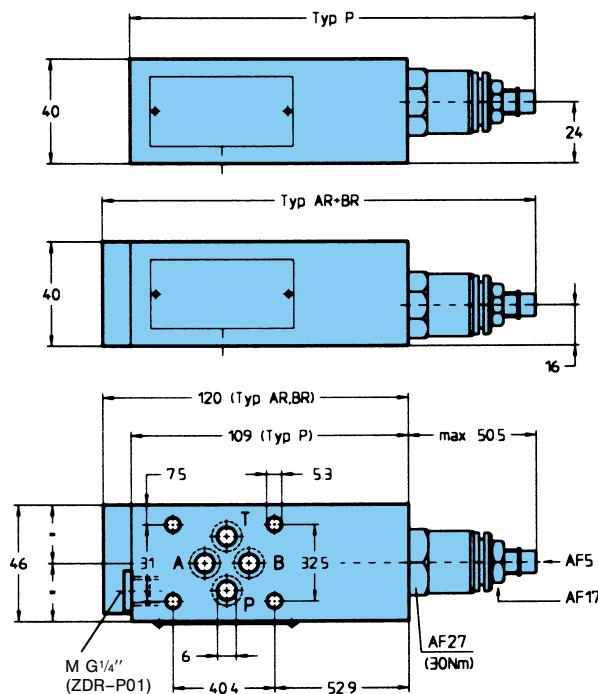


Complete cartridge for  
ZDV-.01-1 = 098-91116-0  
ZDV-.01-5 = 098-91117-0

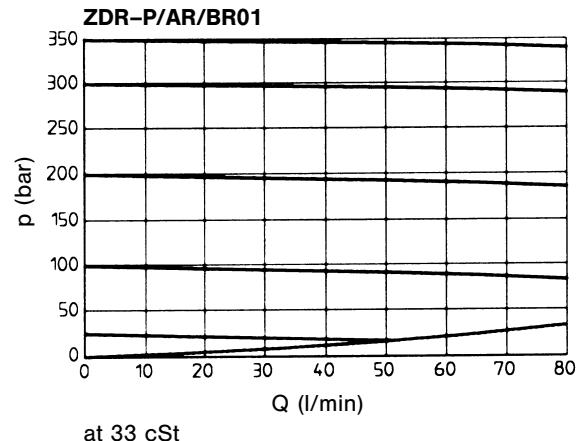
Seal kit for  
ZDV....D1 = 098-91182-0  
ZDV....D5 = 098-91183-0

## PRESSURE REDUCING VALVE – SERIES ZDR

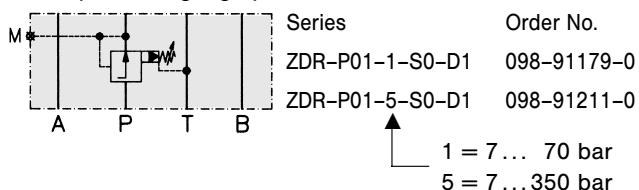
1.6 / 1.8 kg



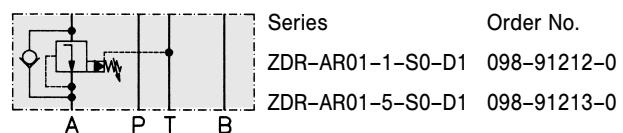
- Operating pressure range
  - ZDR-P 7 ... 70/350 bar
  - ZDR-AR / BR 7 ... 70/315 bar
- Max. flow 80 l/min
- Viscosity range 10 ... 500 cSt
- Fluid temperature range –18 ... +60 °C
- Pilot oil (P, A, B – T) max. 0.3 l/min



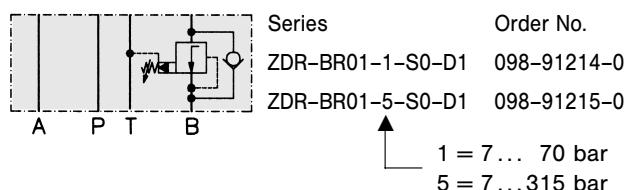
Pressure reducing in P  
with pressure gauge port M



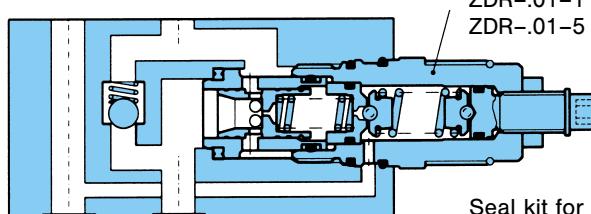
Pressure reducing in A  
with check valve



Pressure reducing in B  
with check valve



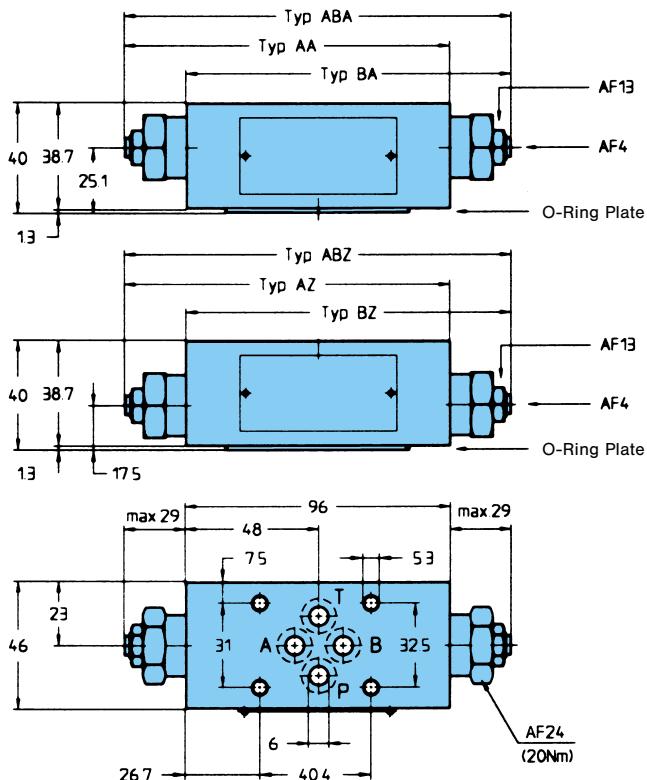
Complete cartridge for  
ZDR-.01-1 = 098-91102-0  
ZDR-.01-5 = 098-91103-0



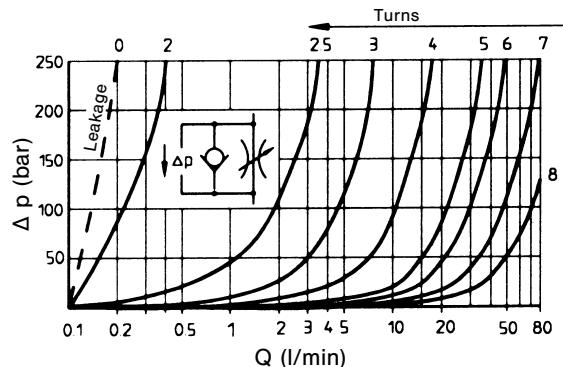
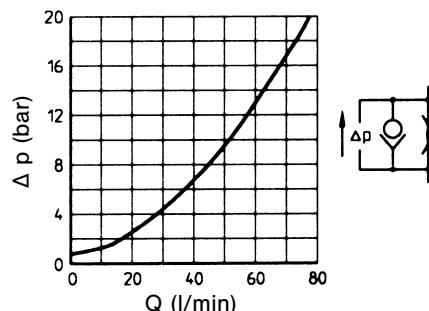
Seal kit for  
ZDR....D1 = 098-91184-0  
ZDR....D5 = 098-91185-0

## THROTTLE VALVE WITH CHECK – SERIES ZRD

1.2 / 1.3 kg



- Max. operating pressure 350 bar
- Max. flow 80 l/min
- Viscosity range 10...500 cSt
- Fluid temperature range -18...+60 °C



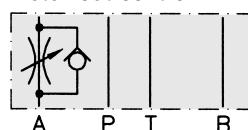
at 33 cSt

Meter-in control in A



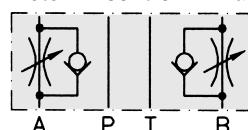
Series ZRD-AZ01-S0-D1  
Order No. 098-91056-0

Meter-out control in A



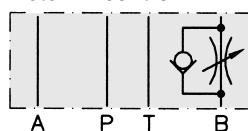
Series ZRD-AA01-S0-D1  
Order No. 098-91012-0

Meter-in control in A and B



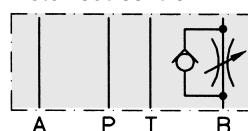
Series ZRD-ABZ01-S0-D1  
Order No. 098-91058-0

Meter-in control in B



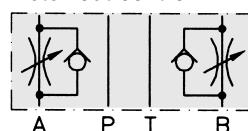
Series ZRD-BZ01-S0-D1  
Order No. 098-91057-0

Meter-out control in B

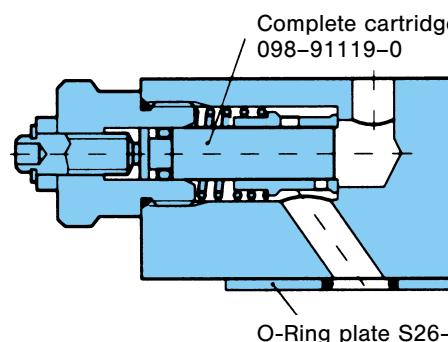


Series ZRD-BA01-S0-D1  
Order No. 098-91013-0

Meter-out control in A and B



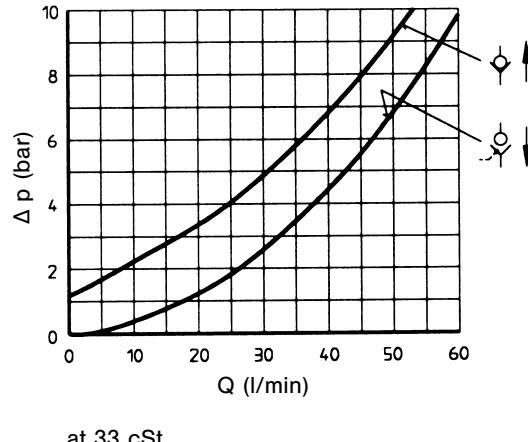
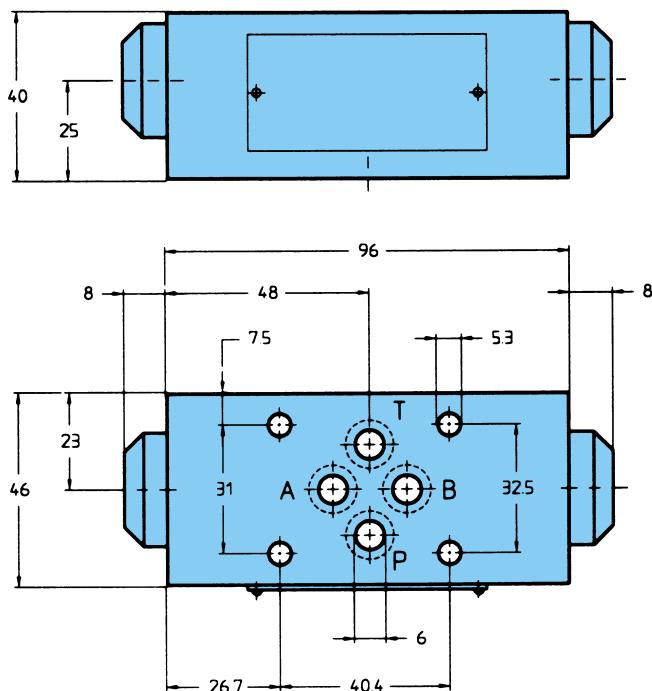
Series ZRD-ABA01-S0-D1  
Order No. 098-91014-0



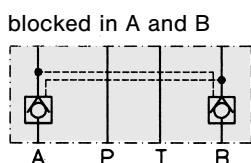
Complete cartridge  
098-91119-0  
Seal kit for:  
ZRD01...D1 = 098-91096-0  
ZRD01...D5 = 098-91097-0

## CHECK VALVE PILOT OPERATED – SERIES ZRE

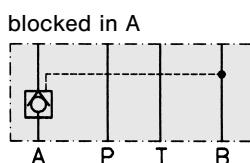
1.2 kg



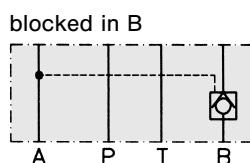
- Max. operating pressure 350 bar
- Max. flow 60 l/min
- Opening ratio 1 : 6 (pilot cone / main cone)
- Cracking pressure 1.2 bar (check valve)
- Viscosity range 10...500 cSt
- Fluid temperature range -18...+60 °C



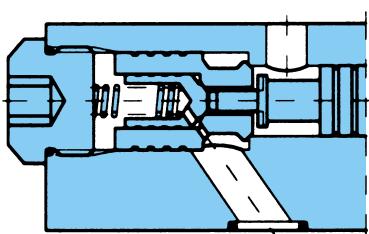
Series ZRE-AB01-D1  
Order No. 098-91020-0



Series ZRE-A01-D1  
Order No. 098-91018-0



Series ZRE-B01-D1  
Order No. 098-91019-0



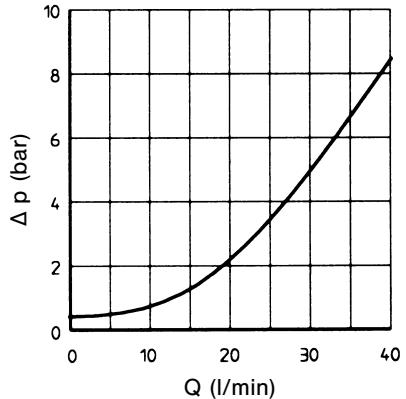
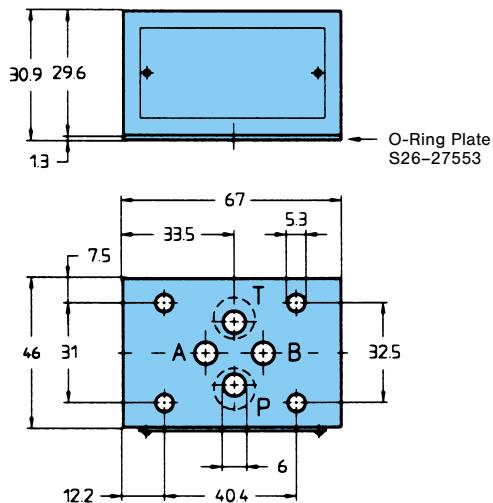
Seal kit for:  
ZRE...D1 = 098-91088-0  
ZRE...D5 = 098-91089-0

**Note:** When service of this valve is necessary, it should be replaced as a complete unit, as the internal components form a matching set (not applicable to seal kit).

## CHECK VALVE DIRECT OPERATED – SERIES ZRV, ERV

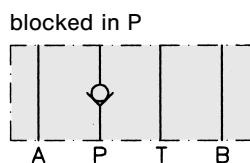
### SERIES ZRV

0.7 kg

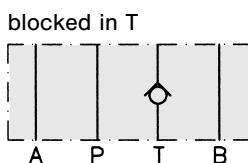


at 33 cSt

- Max. operating pressure 350 bar
- Max. flow 40 l/min
- Cracking pressure 0.5 bar
- Viscosity range 10...500 cSt
- Fluid temperature range -18...+60 °C

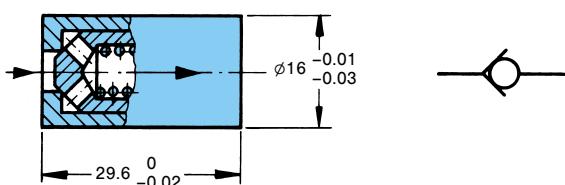


Series ZRV-P01  
Order No. 098-90025-0



Series ZRV-T01  
Order No. 098-90026-0

### SERIES ERV (CARTRIDGE)

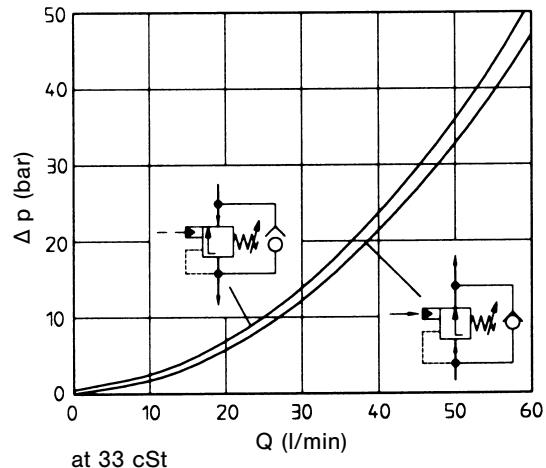
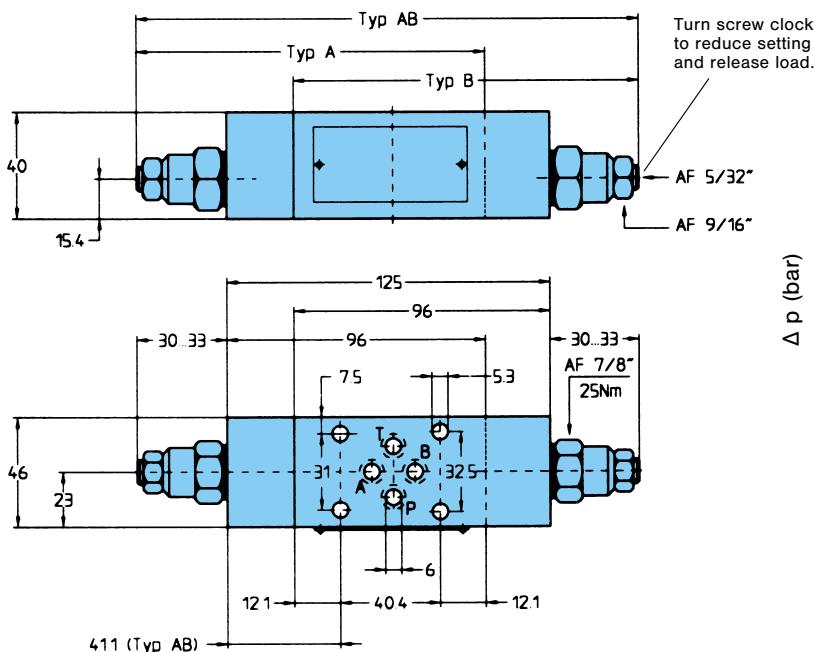


- Cracking pressure = 0.5 bar

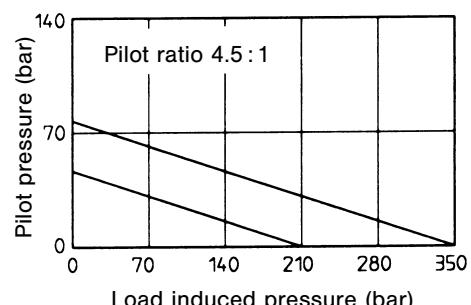
Series ERV 01  
Order No. 098-90910-0

## COUNTERBALANCE VALVE – SERIES ZNS

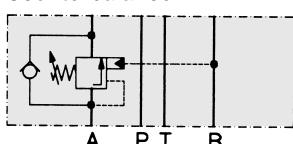
1.3 / 1.6 kg



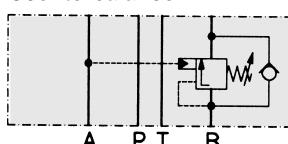
- Min. operating pressure 70/140 bar
- Max. operating pressure 175/350 bar
- Max. flow 60 l/min
- Cracking pressure 0.3 bar
- Viscosity range 10...500 cSt
- Fluid temperature range -18...+60°C



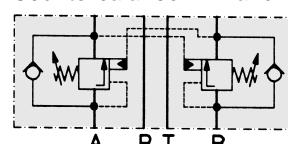
Counterbalance in A



Counterbalance in B



Counterbalance in A and B

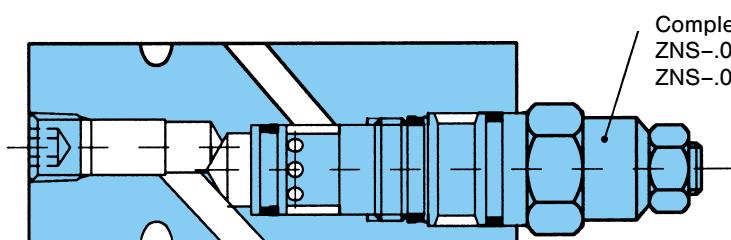


Series/Order No. ZNS-A01-2-S0-D1/098-91126-0  
ZNS-A01-5-S0-D1/098-91127-0

ZNS-B01-2-S0-D1/098-91128-0  
ZNS-B01-5-S0-D1/098-91129-0

ZNS-AB01-2-S0-D1/098-91130-0  
ZNS-AB01-5-S0-D1/098-91131-0

2 = 70...175 bar  
5 = 140...350 bar



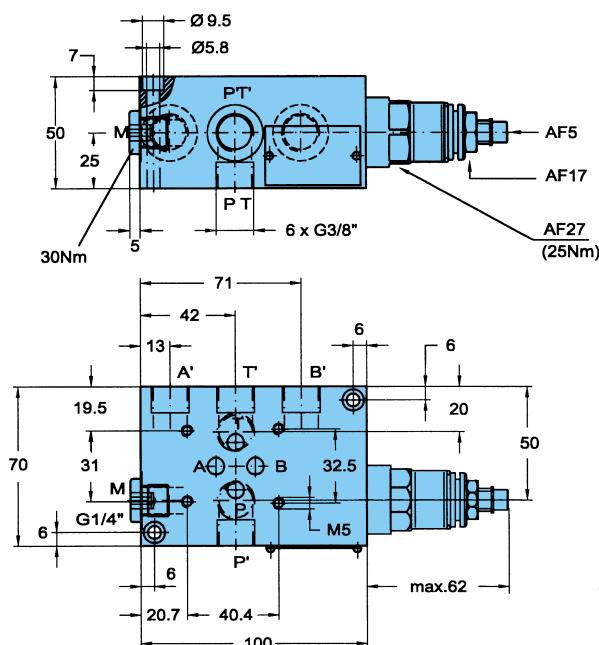
Complete cartridge for:  
ZNS-.01-2 = 517-01017-2  
ZNS-.01-5 = 517-00448-8

Seal kit for:  
ZNS...D1 = 098-91153-0  
ZNS...D5 = 098-91154-0

## SUBPLATE WITH PRESSURE RELIEF VALVE – SERIES GPDV

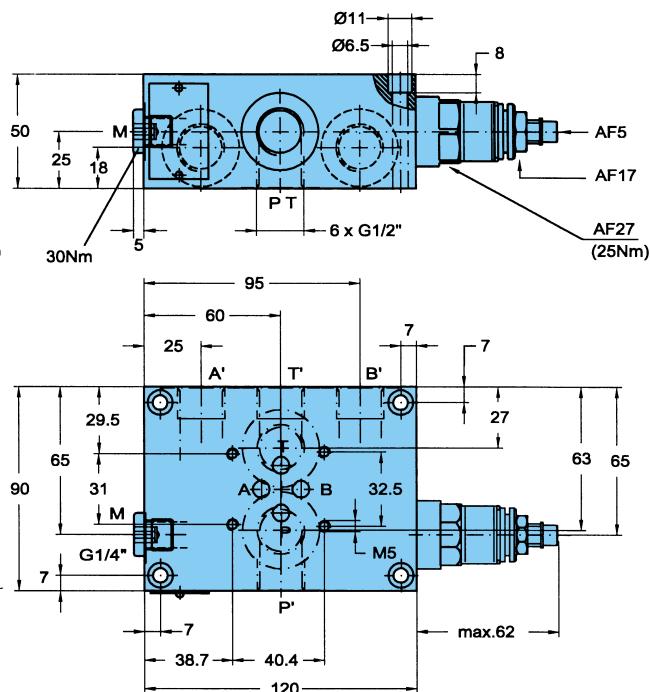
### Ports G 3/8"

2.4 kg

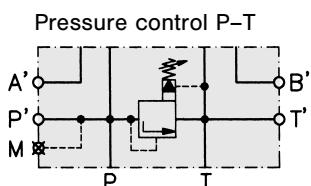
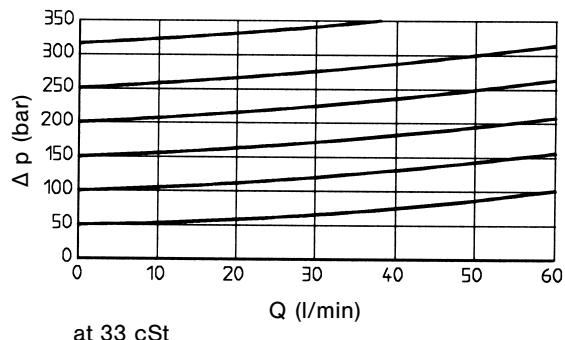


### Ports G 1/2"

3.5 kg



- Operating pressure range 7 ... 70/315 bar
- Max. flow 80 l/min
- Viscosity range 10 ... 500 cSt
- Fluid temperature range -18 ... +60 °C



### Series

- GPDV01-11-S0-D1
- GPDV01-15-S0-D1
- GPDV01-21-S0-C1
- GPDV01-25-S0-C1

### Order No.

- 098-91355-0
- 098-91356-0
- 098-91110-0
- 098-91111-0

### Cartridges

- 098-91116-0
- 098-91117-0
- 098-91116-0
- 098-91117-0

### Seal kits

- 098-91151-0

1 = G 3/8"      1 = 7 ... 70 bar  
 2 = G 1/2"      5 = 7 ... 350 bar

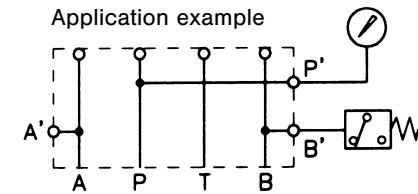
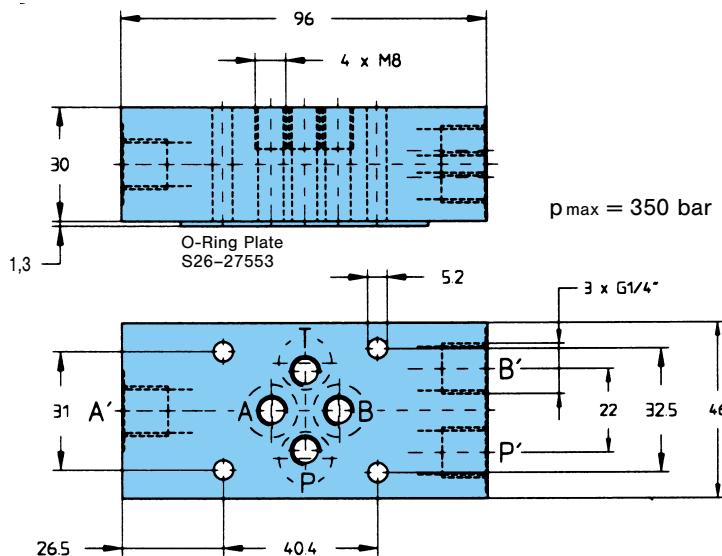
Plugs for closing the ports have to be ordered separately.

| Size   | Order No.   |
|--------|-------------|
| G 3/8" | 700-70341-8 |
| G 1/2" | 700-70283-8 |

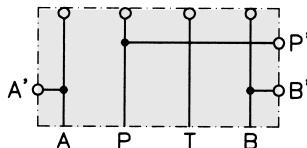
## DISTRIBUTOR PLATE & COVER PLATE

### DISTRIBUTOR PLATE – SERIES ZAP

0.9 kg



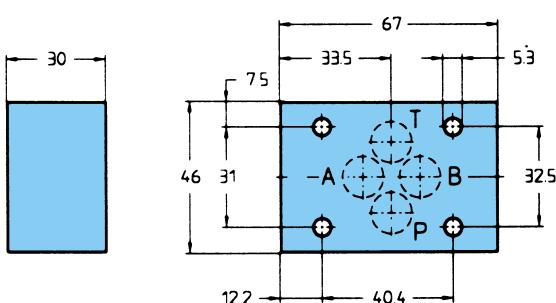
Plug for P', A', B'      Order No.  
M8 x 8      700-71870-8  
G1/4"      S26-52300-0



Series      ZAP-PAB-01  
Order No.      098-90873-0

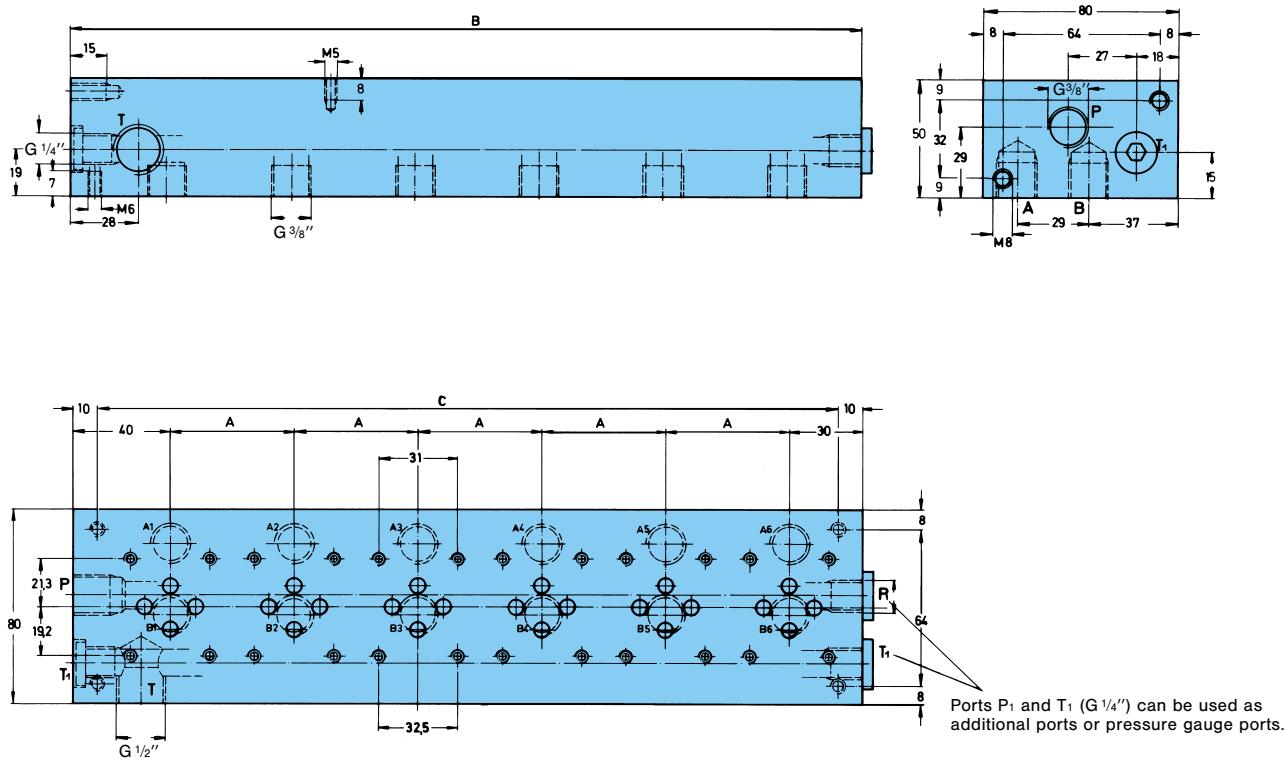
### COVER PLATE – SERIES BA

0.7 kg



Series      BA-01  
Order No.      098-90950-0

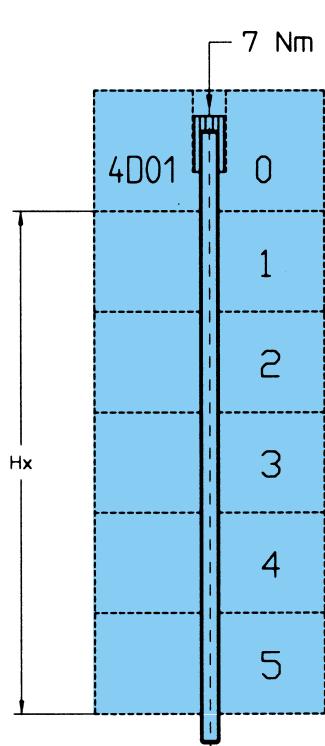
## MULTIPLE SUBPLATE – SERIES GPU



| Qty. of Valves | Series                 | Order No.   | Dimensions |     |     | Weight<br>(kg) |
|----------------|------------------------|-------------|------------|-----|-----|----------------|
|                |                        |             | A          | B   | C   |                |
| 2              | GPU 01-2               | 099-90874-0 | 51         | 121 | 101 | 2.8            |
| 3              | GPU 01-3               | 099-90875-0 | 51         | 172 | 152 | 4.0            |
| 4              | GPU 01-4 <sup>1)</sup> | 099-90876-0 | 51         | 223 | 203 | 5.2            |
| 5              | GPU 01-5 <sup>1)</sup> | 099-90867-0 | 51         | 274 | 254 | 6.4            |
| 6              | GPU 01-6 <sup>1)</sup> | 099-90866-0 | 51         | 325 | 305 | 7.6            |

<sup>1)</sup> no standard, only on request

## MOUNTING KITS



|  | Combinations                | Hx  | Order No.                    |
|--|-----------------------------|-----|------------------------------|
|  | 1 x A                       | 31  | 4 x 361-07283-8 <sup>1</sup> |
|  | 1 x B                       | 40  | 4 x 361-07303-8 <sup>1</sup> |
|  | 1 x C                       | 49  | 4 x 361-07323-8 <sup>1</sup> |
|  | 2 x A                       | 62  | 4 x 361-07343-8 <sup>1</sup> |
|  | (1 x A) + (1 x B)           | 71  | 4 x 036-84970-0 <sup>2</sup> |
|  | (1 x A) + (1 x C)           | 80  | 4 x 033-63694-0 <sup>2</sup> |
|  | 2 x B                       | 80  | 4 x 033-63694-0 <sup>2</sup> |
|  | (1 x B) + (1 x C)           | 89  | 4 x 033-82372-0 <sup>2</sup> |
|  | (2 x A) + (1 x B)           | 102 | 4 x 036-84971-0 <sup>2</sup> |
|  | (2 x A) + (1 x C)           | 111 | 4 x 033-63695-0 <sup>2</sup> |
|  | (1 x A) + (2 x B)           | 111 | 4 x 033-63695-0 <sup>2</sup> |
|  | (1 x A) + (1 x B) + (1 x C) | 120 | 4 x 033-82374-0 <sup>2</sup> |
|  | 3 x B                       | 120 | 4 x 033-82374-0 <sup>2</sup> |
|  | (2 x B) + (1 x C)           | 129 | 4 x 033-82375-0 <sup>2</sup> |
|  | (2 x A) + (2 x B)           | 142 | 4 x 033-63696-0 <sup>2</sup> |
|  | (2 x A) + (1 x B) + (1 x C) | 151 | 4 x 033-82376-0 <sup>2</sup> |
|  | (1 x A) + (3 x B)           | 151 | 4 x 033-82376-0 <sup>2</sup> |
|  | (1 x A) + (2 x B) + (1 x C) | 160 | 4 x 036-84276-0 <sup>2</sup> |
|  | 4 x B                       | 160 | 4 x 036-84276-0 <sup>2</sup> |
|  | (3 x B) + (1 x C)           | 169 | 4 x 033-63697-0 <sup>2</sup> |
|  | (2 x A) + (3 x B)           | 182 | 4 x 036-84972-0 <sup>2</sup> |
|  | (1 x A) + (4 x B)           | 191 | 4 x 036-36952-0 <sup>2</sup> |
|  | (2 x A) + (2 x B) + (1 x C) | 191 | 4 x 036-36952-0 <sup>2</sup> |
|  | (1 x A) + (3 x B) + (1 x C) | 199 | 4 x 036-84277-0 <sup>2</sup> |
|  | 5 x B                       | 200 | 4 x 036-84277-0 <sup>2</sup> |

<sup>1</sup> Screws

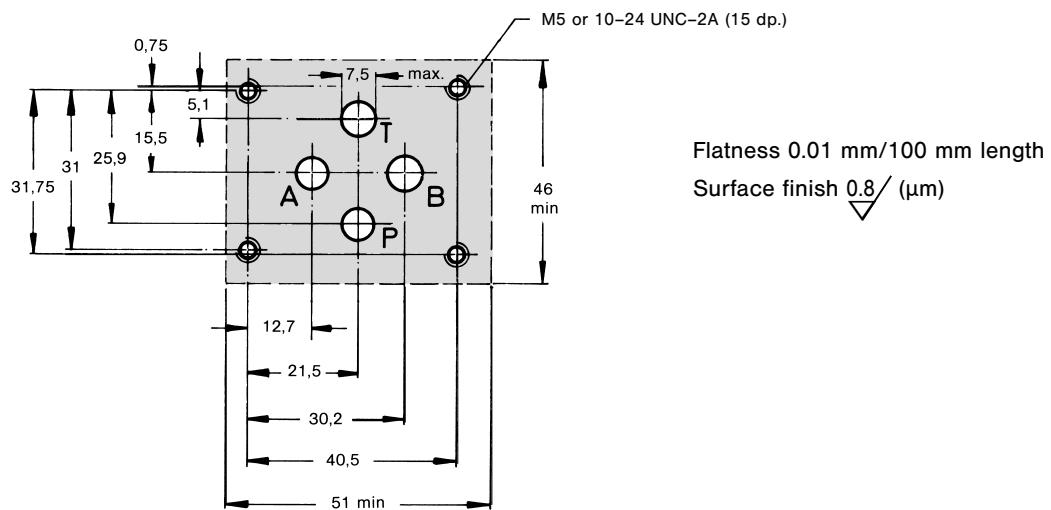
<sup>2</sup> Tie rods

Strength class 10.9 (DIN)

(please order 4 nuts 036-84483-0 additionally)

## BLOCK MOUNTING CONFIGURATION

Mounting configuration according to CETOP, ISO and DIN



**Note:**

Information for directional control valves 4D01 (CETOP 03) and single subplates see publication 4-EN 3060.

The product described is subject to continual development and the manufacturer reserves the right to change the specifications without notice.