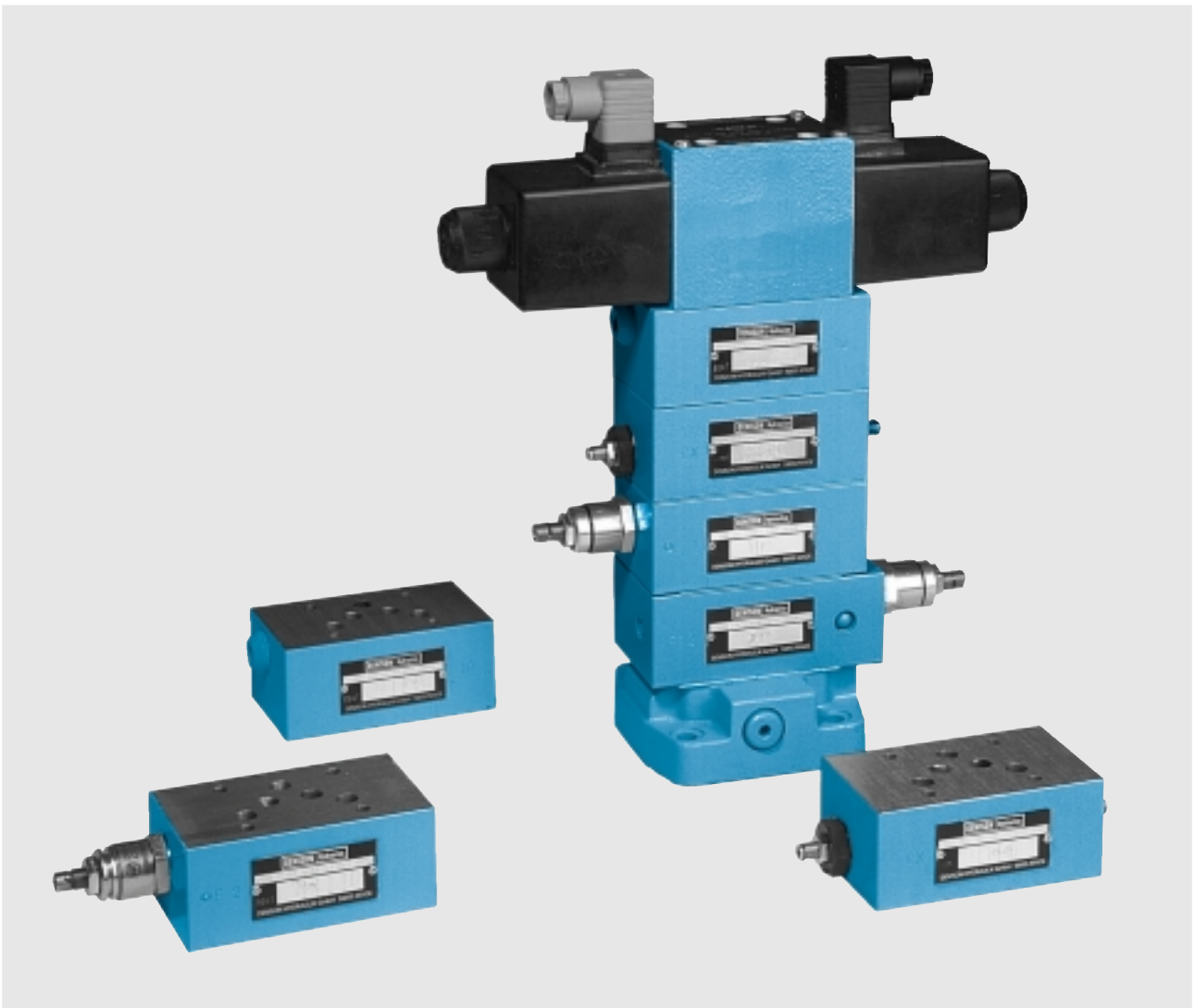


# DENISON HYDRAULICS

## Stack Valves

Cetop 05



Publ. 8-EN 5750-C (dig.)

**DENISON** Hydraulics

## DESCRIPTION, CIRCUIT

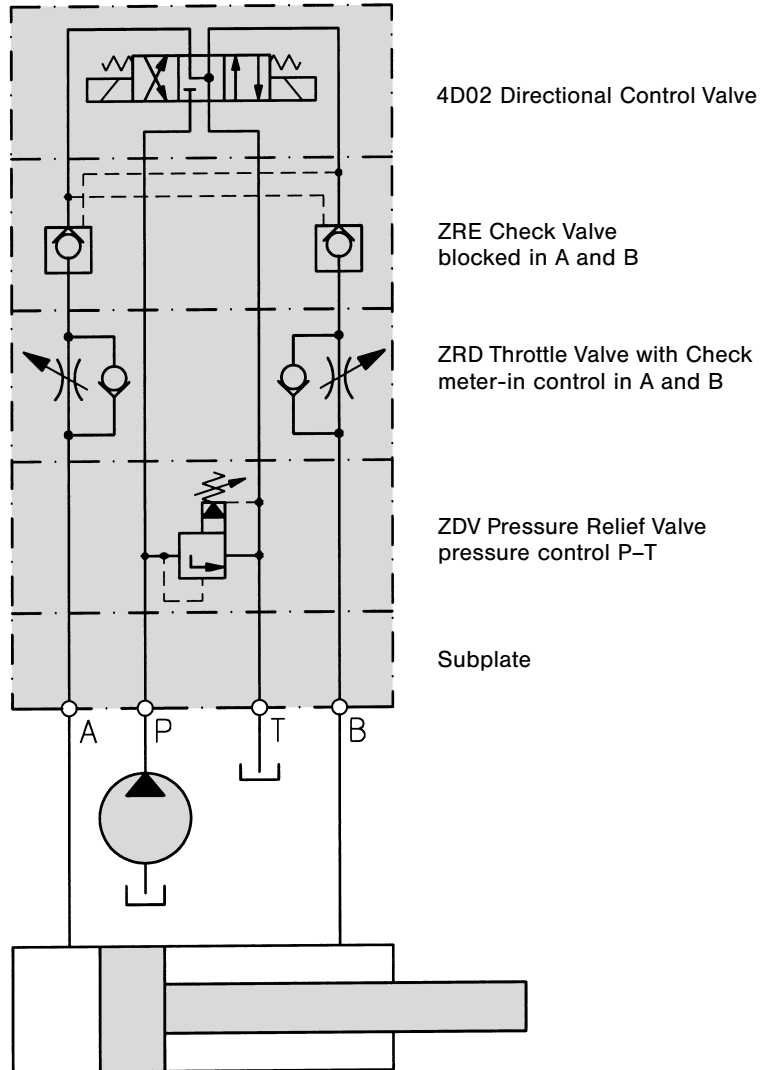
### DESCRIPTION

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.

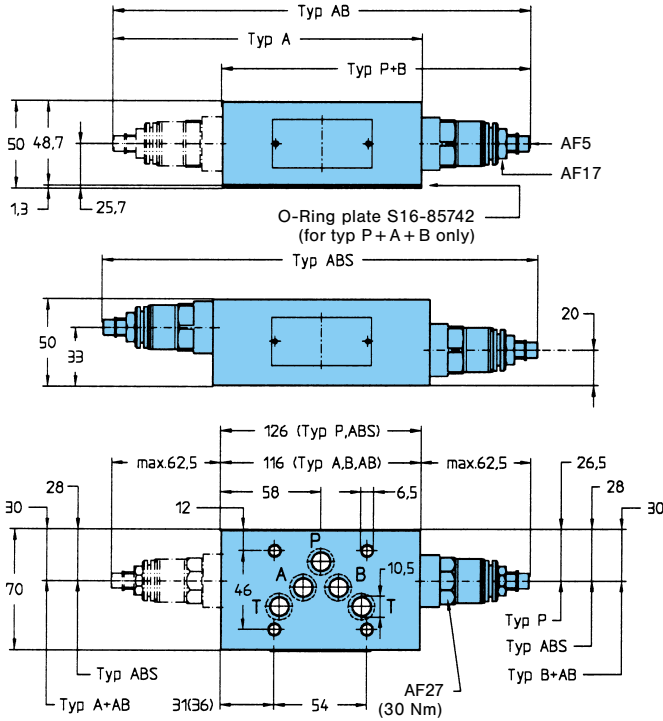
Stack valves size 05 have the same mounting configuration as the directional control valve 4D02 and can be arranged as shown on the following pages.

### CIRCUIT EXAMPLE



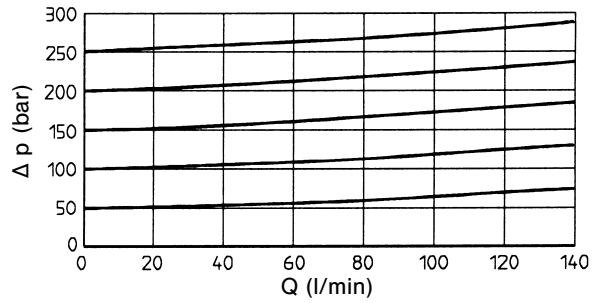
# PRESSURE RELIEF VALVE – SERIES ZDV

3.0 / 3.7 kg

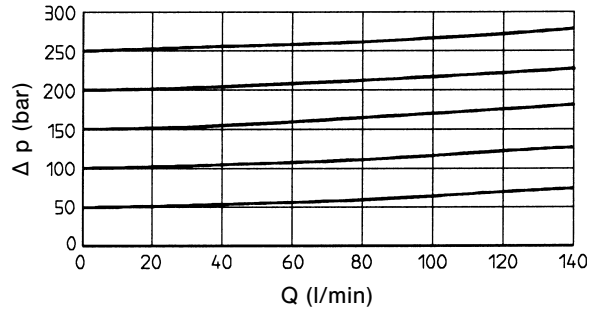


- Operating pressure range
  - ZDV-P / A / B / AB      7... 70/350 bar
  - ZDV – ABS                7... 70/315 bar
- Max. flow                    140 l/min
- Viscosity range            10... 500 cSt
- Fluid temperature range   –18... +60 °C

**ZDV-P/A/B/AB02**



**ZDV-ABS02**



at 33 cSt

**Pressure control P-T**

Series	Order No.
ZDV-P02-1-S0-D1	098-91034-0
ZDV-P02-5-S0-D1	098-91035-0

**Pressure control A-T & B-T**

Series	Order No.
ZDV-AB02-1-S0-D1	098-91040-0
ZDV-AB02-5-S0-D1	098-91041-0

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

**Pressure control A-T**

Series	Order No.
ZDV-A02-1-S0-D1	098-91036-0
ZDV-A02-5-S0-D1	098-91037-0

**Pressure control B-T**

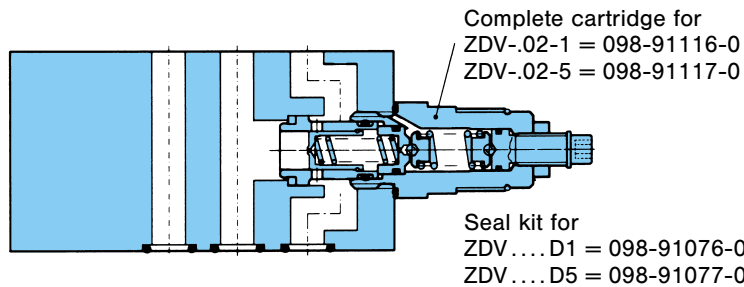
Series	Order No.
ZDV-B02-1-S0-D1	098-91038-0
ZDV-B02-5-S0-D1	098-91039-0

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

**Pressure control A-B & B-A**

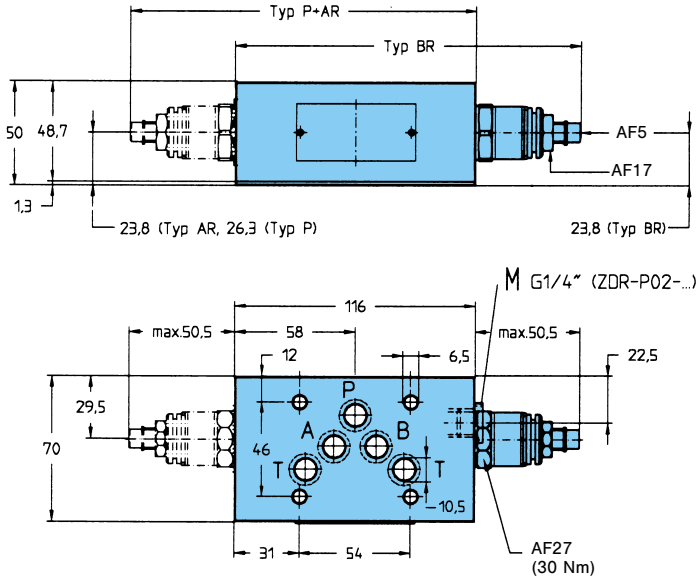
Series	Order No.
ZDV-ABS02-1-S0-D1	098-91042-0
ZDV-ABS02-5-S0-D1	098-91043-0

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

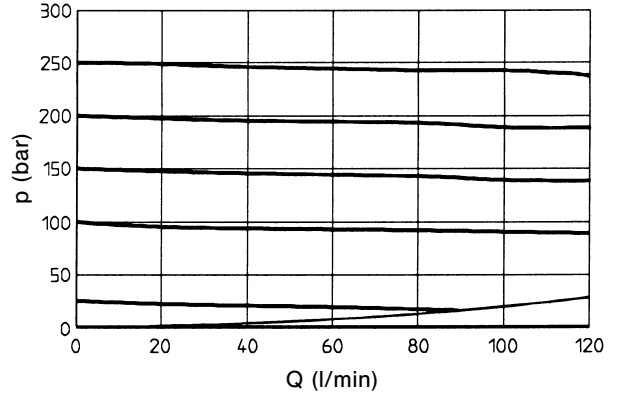


# PRESSURE REDUCING VALVE – SERIES ZDR

2.9/3.0 kg



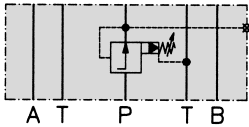
**ZDR-P/AR/BR02**



at 33 cSt

- Operating pressure range
  - ZDR – P                                7 ... 70/350 bar
  - ZDR – AR/BR                        7 ... 70/315 bar
- Max. flow                                120 l/min
- Viscosity range                        10 ... 500 cSt
- Fluid temperature range            – 18 ... + 60 °C
- Pilot oil (P, A, B – T)                max. 0.3 l/min

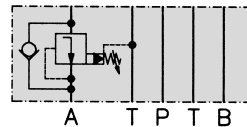
Pressure reducing in P  
with pressure gauge port M



Series	Order No.
ZDR-P02-1-S0-D1	098-91050-0
ZDR-P02-5-S0-D1	098-91051-0

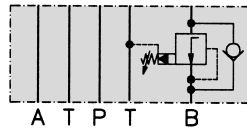
1 = 7 ... 70 bar  
 5 = 7 ... 350 bar

Pressure reducing in A  
with check valve



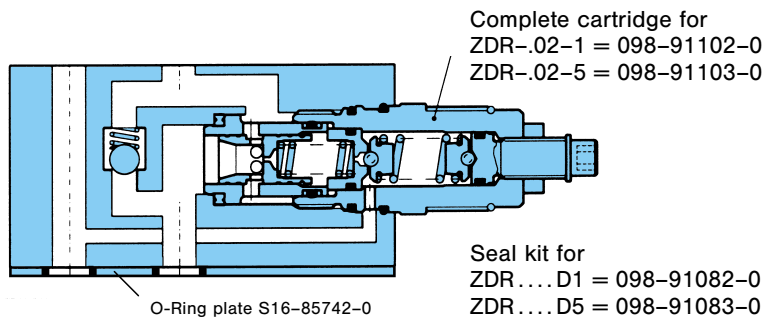
Series	Order No.
ZDR-AR02-1-S0-D1	098-91052-0
ZDR-AR02-5-S0-D1	098-91053-0

Pressure reducing in B  
with check valve



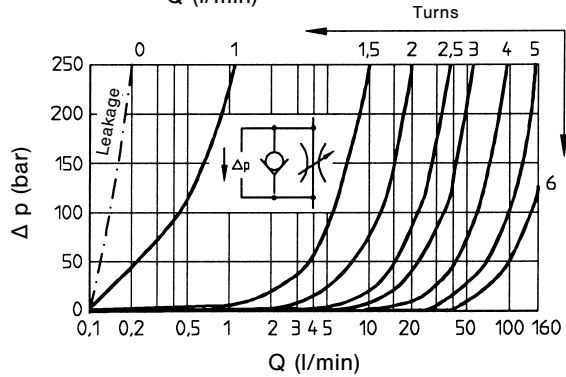
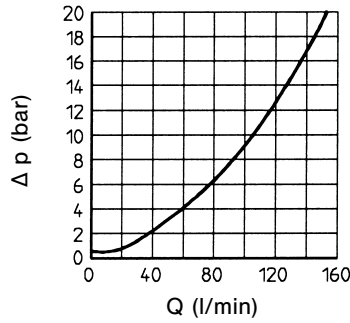
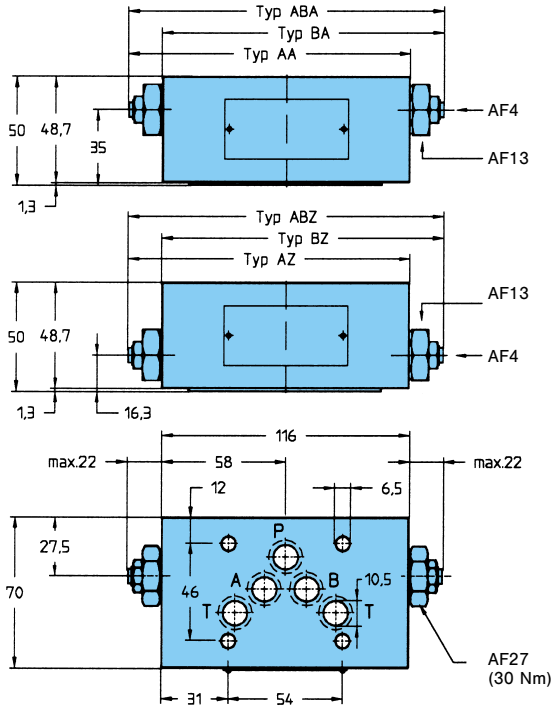
Series	Order No.
ZDR-BR02-1-S0-D1	098-91054-0
ZDR-BR02-5-S0-D1	098-91055-0

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



# THROTTLE VALVE WITH CHECK – SERIES ZRD

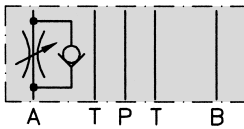
2.8 / 2.9 kg



at 33 cSt

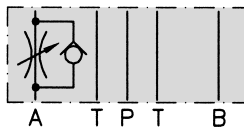
- Max. operating pressure 350 bar
- Max. flow 160 l/min
- Viscosity range 10...500 cSt
- Fluid temperature range -18...+60 °C

Meter-in control in A



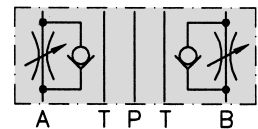
Series ZRD-AZ02-S0-D1  
Order No. 098-91059-0

Meter-out control in A



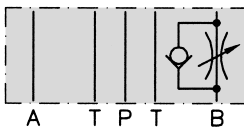
Series ZRD-AA02-S0-D1  
Order No. 098-91015-0

Meter-in control in A and B



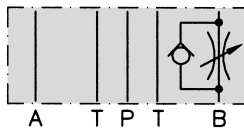
Series ZRD-ABZ02-S0-D1  
Order No. 098-91061-0

Meter-in control in B



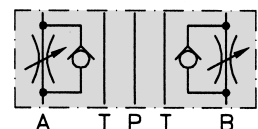
Series ZRD-BZ02-S0-D1  
Order No. 098-91060-0

Meter-out control in B

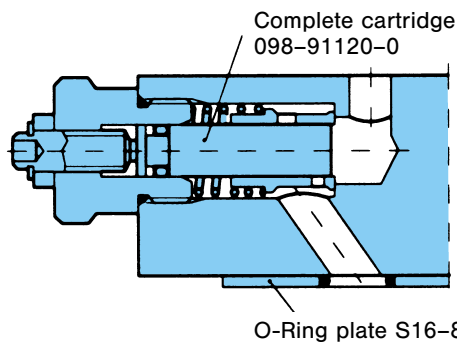


Series ZRD-BA02-S0-D1  
Order No. 098-91016-0

Meter-out control in A and B



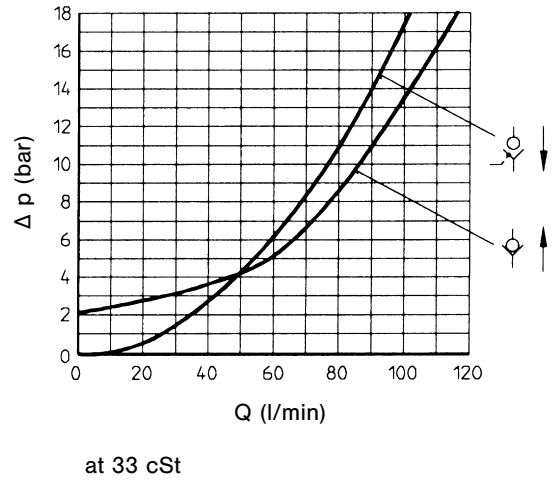
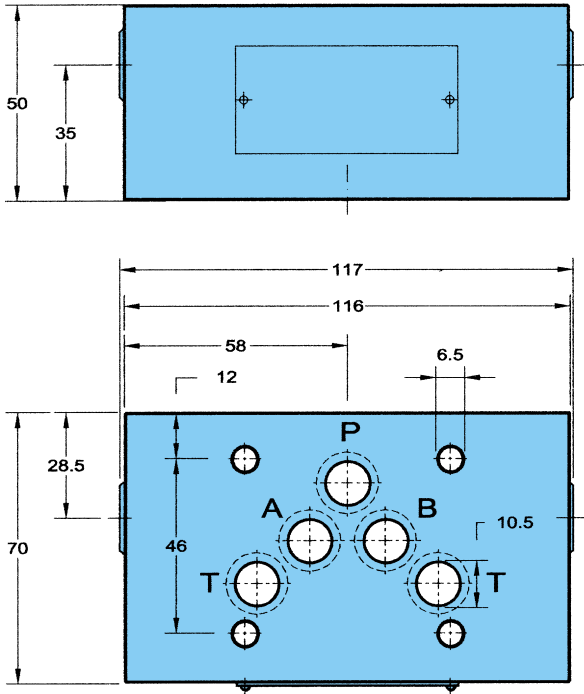
Series ZRD-ABA02-S0-D1  
Order No. 098-91017-0



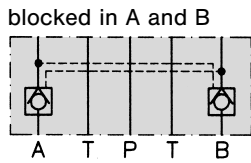
Seal kit for:  
ZRD02...D1 = 098-91098-0  
ZRD02...D5 = 098-91099-0

## CHECK VALVE PILOT OPERATED – SERIES ZRE

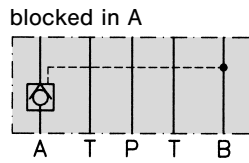
3.1 kg



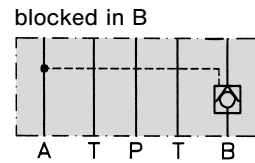
- Max. operating pressure     350 bar
- Max. flow                      120 l/min
- Opening ratio                 1 : 6 (pilot cone / main cone)
- Cracking pressure            2 bar (check valve)
- Viscosity range               10...500 cSt
- Fluid temperature range    -18...+60 °C



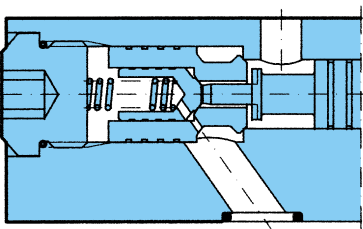
Series     ZRE-AB02-E1  
Order No. 098-91300-0



Series     ZRE-A02-E1  
Order No. 098-91298-0



Series     ZRE-B02-E1  
Order No. 098-91304-0



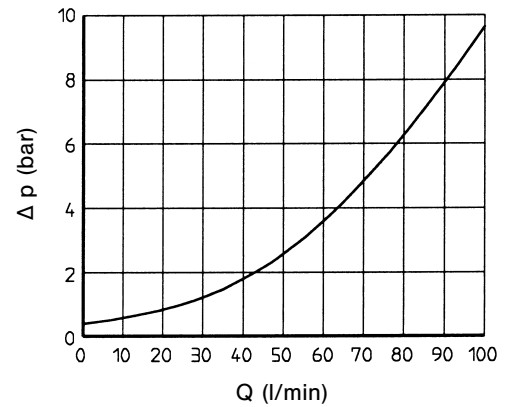
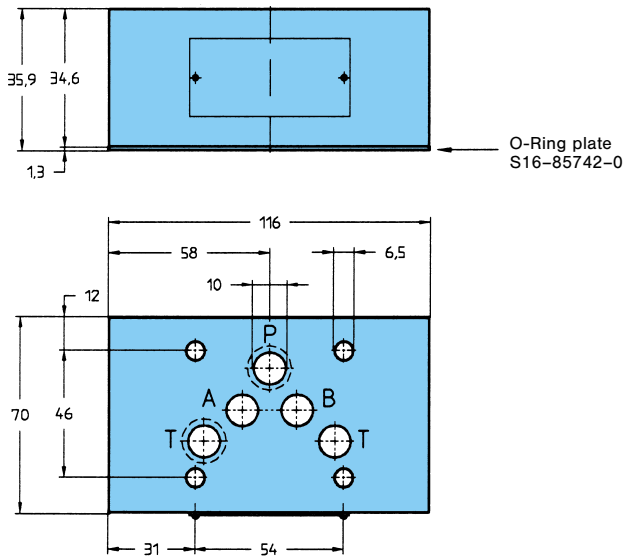
Seal kit for:  
ZRE...D1 = 098-91090-0  
ZRE...D5 = 098-91091-0

**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

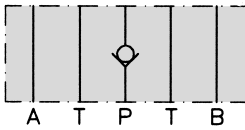
2.0 kg



at 33 cSt

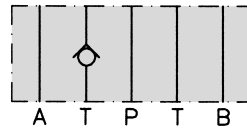
- Max. operating pressure 350 bar
- Max. flow 100 l/min
- Cracking pressure 0.5 bar
- Viscosity range 10...500 cSt
- Fluid temperature range -18...+60 °C

blocked in P



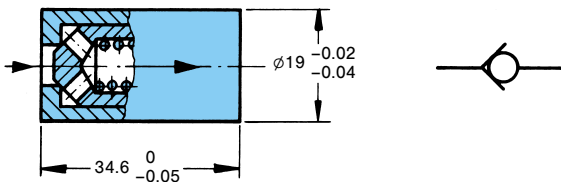
Series ZRV-P02  
Order No. 098-90043-0

blocked in T



Series ZRV-T02  
Order No. 098-90044-0

### SERIES ERV (CARTRIDGE)

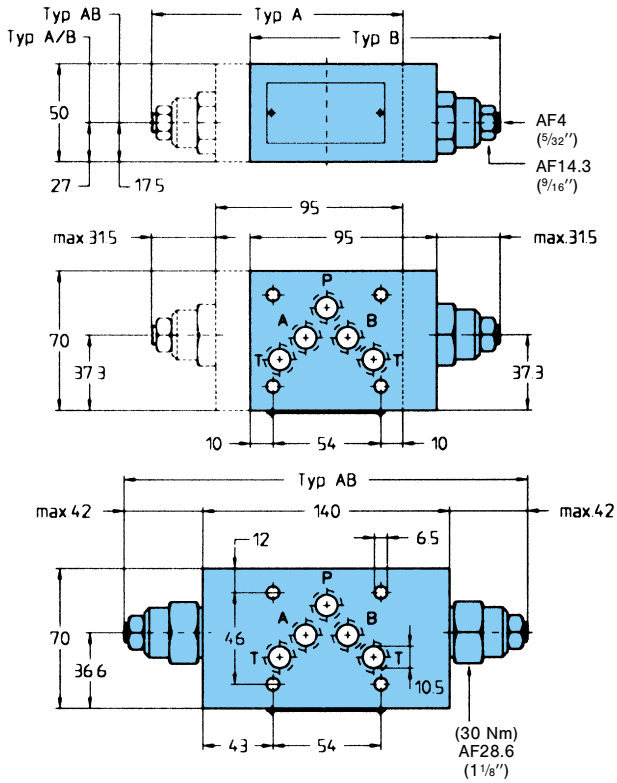


- Cracking pressure = 0.5 bar

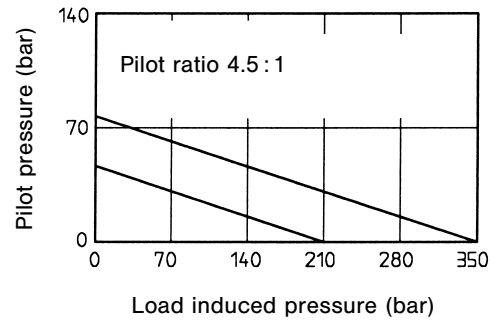
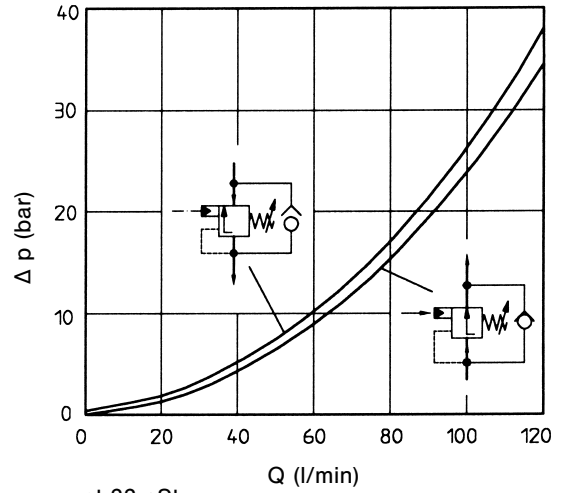
Series ERV02  
Order No. 098-90045-0

# COUNTERBALANCE VALVE – SERIES ZNS

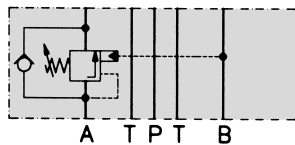
3.0/3.9 kg



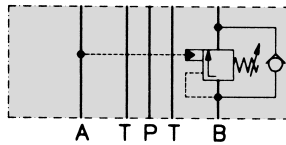
- Min. operating pressure 70/140 bar
- Max. operating pressure 175/315 bar
- Max. flow 120 l/min
- Cracking pressure 0.3 bar
- Viscosity range 10 ... 500 cSt
- Fluid temperature range -18 ... +60 °C



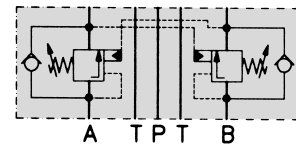
Counterbalance in A



Counterbalance in B



Counterbalance in A and B

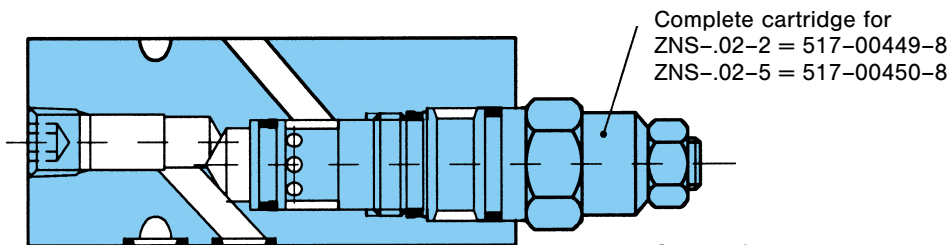


Series/Order No. ZNS-A02-2-S0-D1/098-91132-0  
ZNS-A02-5-S0-D1/098-91133-0

ZNS-B02-2-S0-D1/098-91134-0  
ZNS-B02-5-S0-D1/098-91135-0

ZNS-AB02-2-S0-D1/098-91136-0  
ZNS-AB02-5-S0-D1/098-91137-0

2 = 70 ... 175 bar  
5 = 140 ... 315 bar



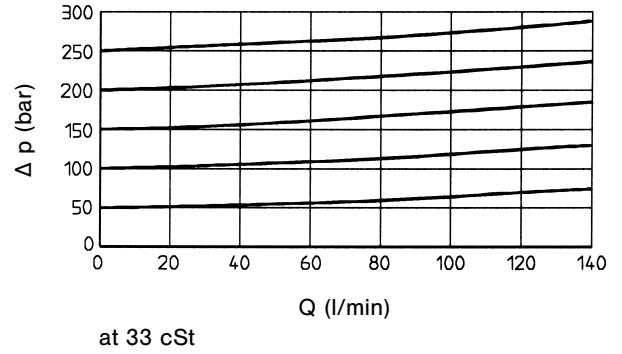
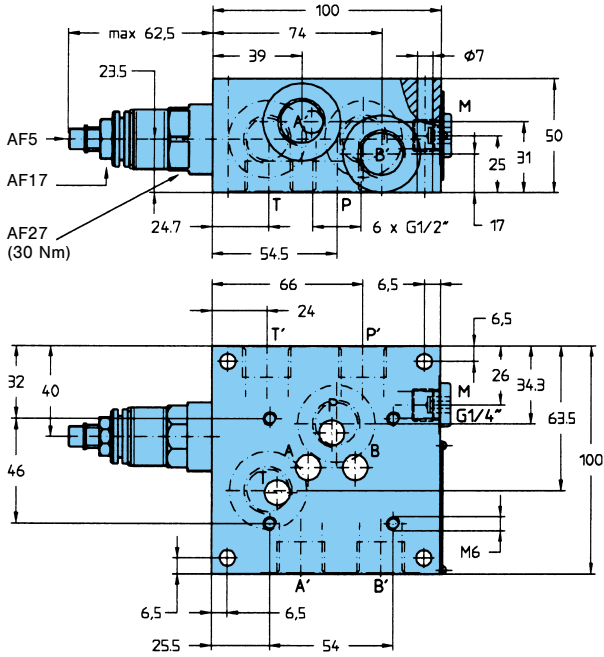
Seal kit for:  
ZNS...D1 = 098-91155-0  
ZNS...D5 = 098-91156-0



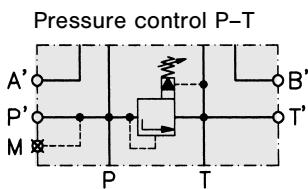
## SUBPLATE WITH PRESSURE RELIEF VALVE – SERIES GPDV

Ports G 1/2"

3.5 kg



- Operating pressure range 7...70/315 bar
- Max. flow 140 l/min
- Viscosity range 10...500 cSt
- Fluid temperature range -18...+60 °C



Series

GPDV02-21-S0-C1

Order No.

098-91112-0

Cartridges

098-91116-0

Seal kits

098-91151-0

GPDV02-25-S0-C1

098-91113-0

098-91117-0

098-91151-0

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

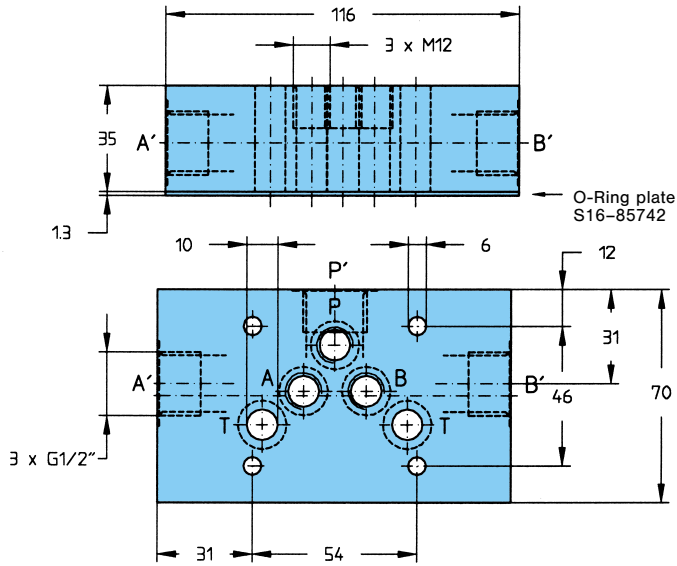
Plugs for closing the ports have to be ordered separately.

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

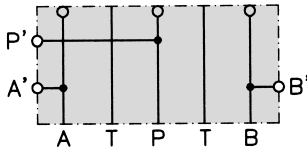
# DISTRIBUTOR PLATE & COVER PLATE

## DISTRIBUTOR PLATE – SERIES ZAP

1.7 kg

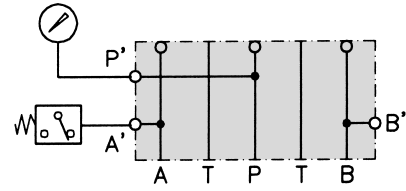


$p_{max} = 315 \text{ bar}$



Series ZAP-PAB-02  
Order No. 098-90825-0

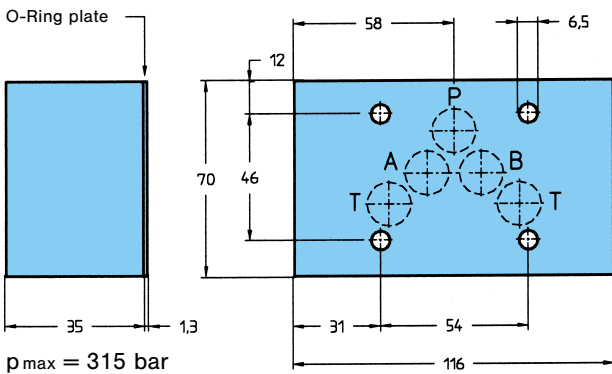
### Application example



Plug for P', A', B'	Order No.
M12 x 10	311-60032-8
G1/2"	700-70283-8

## COVER PLATE – SERIES BA

2.9 kg

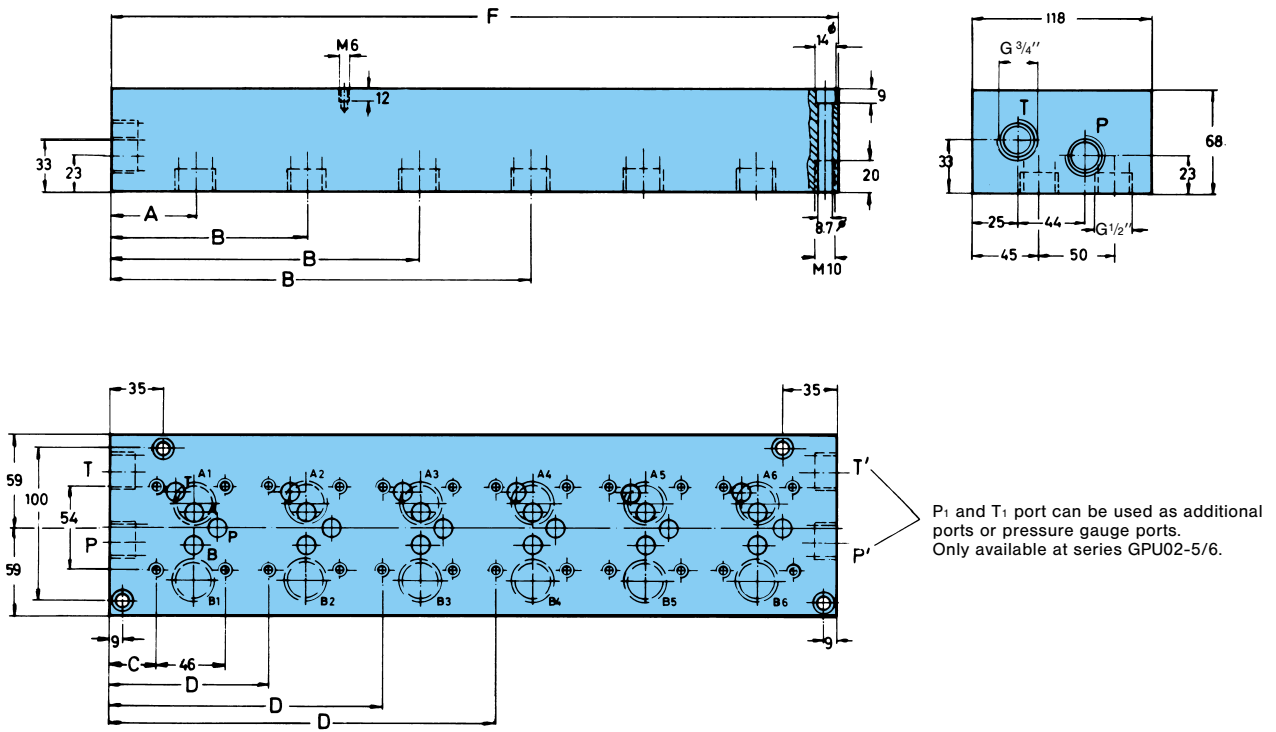


$p_{max} = 315 \text{ bar}$



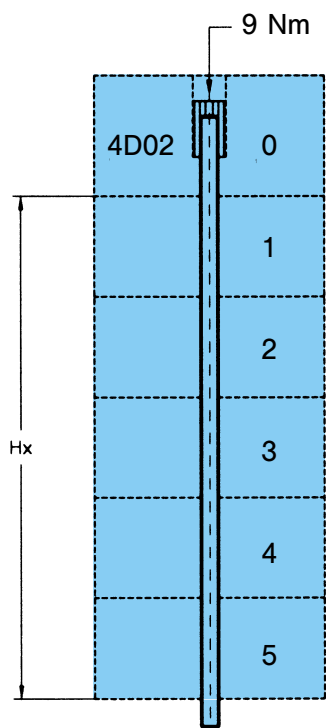
Series BA-02  
Order No. 098-90947-0

## MULTIPLE SUBPLATE – SERIES GPU



Qty. of Valves	Series	Order No.	Dimensions					Weight (kg)
			A	B	C	D	F	
2	GPU 02-2	099-90827-0	54.5	128.5	30	104	180	8.9
3	GPU 02-3	099-90812-0	54.5	202.5	30	178	254	12.5
4	GPU 02-4	099-90813-0	54.5	276.5	30	252	328	16.1
5	GPU 02-5	099-90831-0	54.5	350.5	30	326	402	19.7
6	GPU 02-6	099-90833-0	54.5	424.5	30	400	476	23.3

## MOUNTING KITS



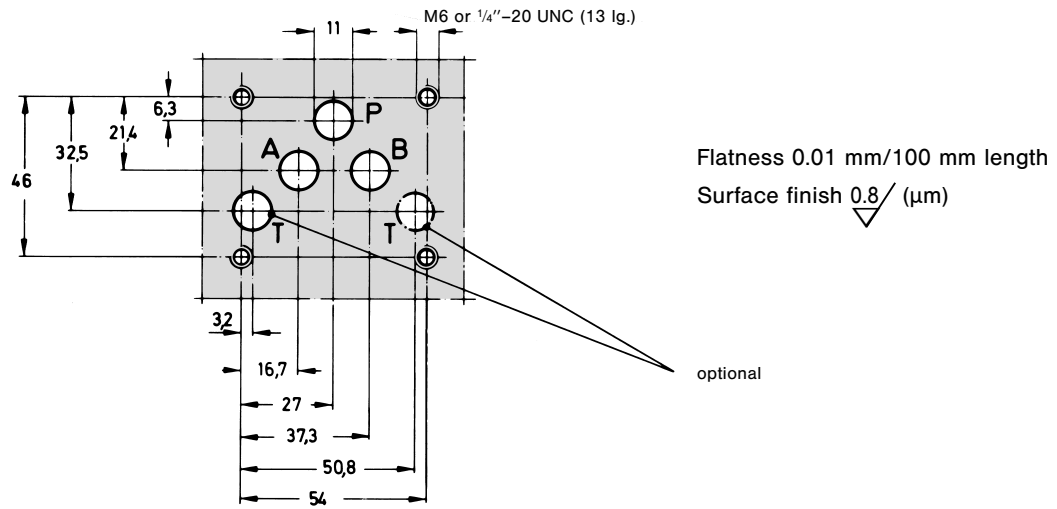
	Combinations	Hx	Order No.
H = 36 mm ZRV/ZAP	1 x A	36	4 x 700-71419-8 <sup>1</sup>
	1 x B	50	4 x 700-70844-8 <sup>1</sup>
	2 x A	72	4 x 700-70825-8 <sup>1</sup>
	(1 x A) + (1 x B)	86	4 x 700-70845-8 <sup>1</sup>
	2 x B	100	4 x 361-08424-8 <sup>1</sup>
	(2 x A) + (1 x B)	122	4 x 033-63039-0 <sup>2</sup>
H = 50 mm ZDV/ZDR/ZRE/ ZRD/ZNS	(1 x A) + (2 x B)	136	4 x 033-38834-0 <sup>2</sup>
	3 x B	150	4 x 036-84270-0 <sup>2</sup>
	(2 x A) + (2 x B)	172	4 x 033-63151-0 <sup>2</sup>
	(1 x A) + (3 x B)	186	4 x 033-63202-0 <sup>2</sup>
	4 x B	200	4 x 036-84271-0 <sup>2</sup>
	(2 x A) + (3 x B)	222	4 x 033-63203-0 <sup>2</sup>
	(1 x A) + (4 x B)	236	4 x 036-84973-0 <sup>2</sup>
	5 x B	250	4 x 036-84272-0 <sup>2</sup>

<sup>1</sup> Screws

<sup>2</sup> Tie rods Strength class 10.9 (DIN)  
(please order 4 nuts 033-38832-0 additionally)

## BLOCK MOUNTING CONFIGURATION

Mounting configuration according to CETOP, ISO and DIN



**Note:**

Information for directional control valves 4D02 (CETOP 05) and single subplates see publication 4-EN 3300 .