

## D - 38

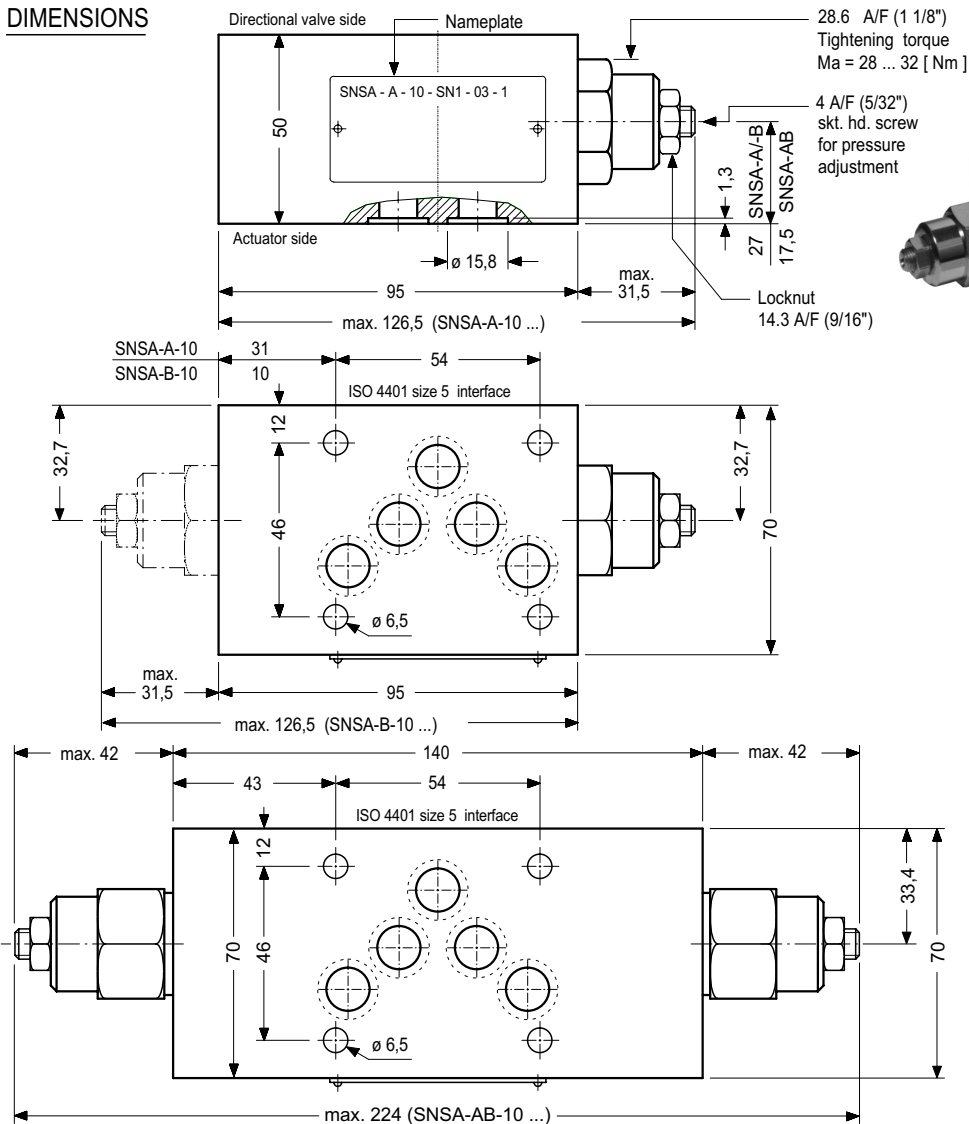
### Stack-mounting Counterbalance Valve Pilot Assisted, Poppet Design

Series SNSA ...

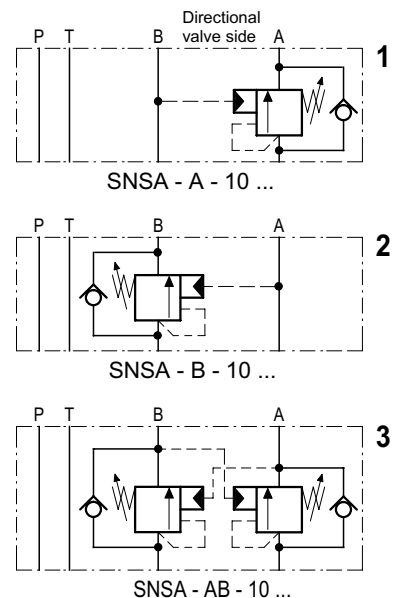
120 l/min, 350 bar

- Controlled movement of negative loads
- Controls the oil leaving the actuator (counterbalance function)
- Load holding via leak-free poppet valve
- Secondary relief protection for the actuator
- Interface to ISO 4401 / CETOP R35H, size 5 / NFPA D05 / DIN 24 340 A10

#### DIMENSIONS



#### SYMBOLS



#### DESCRIPTION

Counterbalance valves prevent actuator "runaway" in the event of negative loads.

The flow leaving the actuator (the A line in the example) is piloted and controlled by the flow entering the actuator (the B line), ensuring a cavitation-free lowering of the load, as long as the valve pressure setting is not exceeded (see application example, page 2).

A counterbalance valve must be capable of holding the load without leakage. The design of this valve is based on a pilot assisted pressure relief valve:

See PRESSURE SETTINGS, page 2

The pressure in the actuator inlet line causes the relief valve in the actuator outlet line to open. The level of pilot pressure which is required is determined by the valve's pilot area ratio and by the pressure generated by the load itself:

See PRESSURE SETTINGS, page 2

To ensure a reliable secondary relief function (e.g. for thermal expansion) the related directional valve must have a centre condition in which ports A and B are connected to Tank (e.g. HTF spool type G).

## PRESSURE SETTINGS

**LOAD PRESSURE:** to hold the maximum load without leakage, we recommend that the SNSA...-10 is set as follows:

$$p_E = p_L \cdot 1.3$$

$p_E$  = valve pressure setting  
 $p_L$  = maximum load-induced pressure

Example: Load pressure  $p_L$  = max. 200 [ bar ]  
 pressure setting  $p_E$  = 200 [ bar ] · 1,3 = **260 [ bar ]**

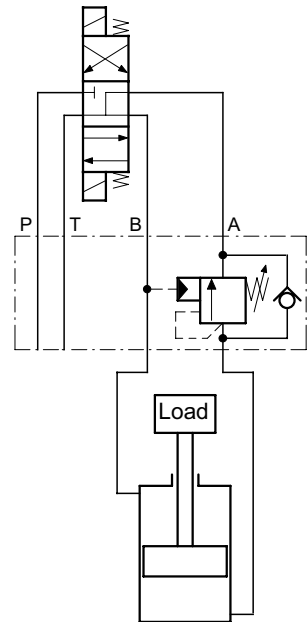
**PILOT PRESSURE:** the required pilot pressure is calculated as follows:

$$p_x = \frac{p_E - p_L}{i}$$

$p_x$  = pilot pressure  
 $p_E$  = valve pressure setting  
 $p_L$  = effective load-induced pressure  
 $i$  = pilot ratio (see PRINCIPAL CHARACTERISTICS)

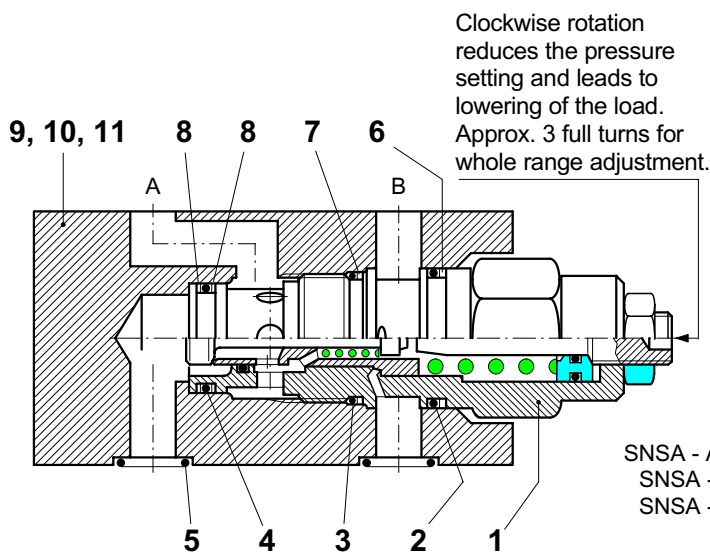
Example: Pressure setting  $p_E$  = 260 [ bar ]  
 Load pressure  $p_L$  = eff. 180 [ bar ]  
 Pilot ratio  $i$  = 4.5  
 $p_x = \frac{260 [ \text{bar} ] - 180 [ \text{bar} ]}{4,5} = \text{approx. } 18 [ \text{bar} ]$

Application example



## SCHEMATIC SECTION

showing the relevant parts



## COMPONENTS AND SERVICE PARTS

It.	Qty.	Description		
1	2	1	1	Cartridge 350 bar type CBEG LCN
				Cartridge 175 bar type CBEG LDN
	1	1	1	Seal Kit No. DS-240, comprising *):
2	2*)		1	O-Ring No. 021 $\varnothing$ 23,52 x 1,78 N90
3	2*)	1	1	O-Ring No. 020 $\varnothing$ 21,95 x 1,78 N90
4	2*)	1	1	O-Ring No. 018 $\varnothing$ 18,77 x 1,78 N90
5	5*)	5	5	O-Ring No. 014 $\varnothing$ 12,42 x 1,78 N90
6	2*)	1	1	Backup ring 021
7	2*)	1	1	Backup ring 020
8	4*)	2	2	Backup ring 018
9	-	-	1	Stacking body 50 x 70 x 95 Typ KA-10
10	-	1	-	Stacking body 50 x 70 x 95 Typ KB-10
11	1	-	-	Stacking body 50 x 70 x 140 Typ KC-10

SNSA - AB - 10  
 SNSA - B - 10  
 SNSA - A - 10

TO ORDER SERVICE PARTS, STATE:

- complete unit model code from the nameplate, including Design Number.
- spare part description per above list.
- spare part item number per above list.
- data sheet number, including issue date
- quantity required

## INSTALLATION AND SEVICING

ALL INSTALLATION AND SERVICING MUST BE CARRIED OUT WITH CARE, AND BY QUALIFIED PERSONNEL ONLY

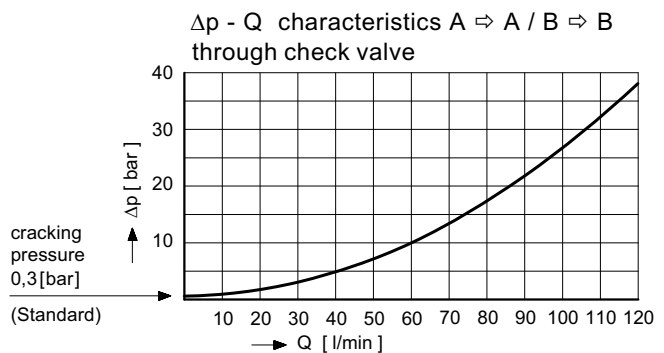
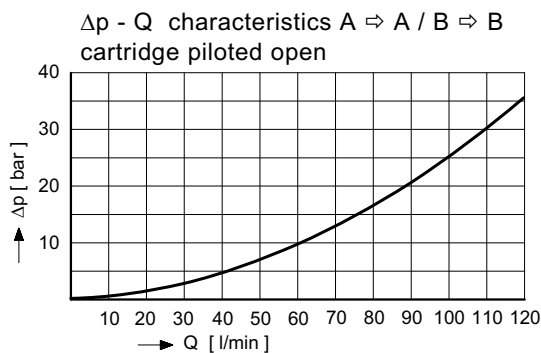
At installation, be sure to mount the valve the correct way up. Do not confuse the flat surface (directional valve side)

and the surface with O-ring counterbores (the actuator side). When renewing seals, the new seals should be thoroughly oiled or greased before fitting them to the valve. Observe the correct tightening torque when installing the cartridge.

## PRINCIPAL CHARACTERISTICS

Type	'sandwich' counterbalance valve	Adjustment range	pressure range <b>M1</b> = 70 ... 175 [bar] (pilot ratio 4,5 : 1)
Design	pilot assisted, poppet type		pressure range <b>M2</b> = 30 ... 105 [bar] (pilot ratio 3 : 1)
Mounting method	stack mounting	C.V. cracking pressure	approx. 0,3 [bar] ( <b>Standard</b> ) approx. 1,8 [bar] (contact HTF)
Size	ISO 4401 size 5 interface	Fluids	Hydraulic oils HL and HLP to DIN 51 524 other fluids - contact HTF
Mass	SNSA - A../B.. - 10... = 2,30 [ kg ] SNSA - AB.. - 10... = 3,50 [ kg ]	Minimum fluid cleanliness	18/14 to ISO 4406 / Cetop RP70H 8 ... 9 to NAS 1638
Mounting attitude	unrestricted	Fluid temp. range	- 20° ... +60° [C]
Flow direction	see symbols	Viscosity range	10 ... 300 [cSt]
Operating pressure	max. 350 [ bar ]	Flow rate, Q max.	120 [ l/min ] see perform. curves
Adjustment range	pressure range <b>N1</b> = 140 ... 350 [bar] (pilot ratio 4.5 : 1) pressure range <b>N2</b> = 70 ... 280 [bar] (pilot ratio 3 : 1)		

## PERFORMANCE CHARACTERISTICS (Oil viscosity 33cSt)



## MODEL CODE KEY

- S = stack mounting
- N = counterbalance valve
- S = poppet type
- A ... Q = **Standard** model per current data sheet
- Z ... R = special features by arrangement (contact HTF)
- A = function in A
- B = function in B
- AB = function in A und B
- 10 = ISO 4401 size 5 interface
- S = screw adjustment
- N1 = pressure range 140 ... 350 bar (Normal, **standard** design)  
pilot ratio 4,5 : 1
- N2 = pressure range 70 ... 280 bar (contact HTF)  
pilot ratio 3 : 1
- M1 = pressure range 70 ... 175 bar (Medium, **standard** design)  
pilot ratio 4,5 : 1
- M2 = pressure range 30 ... 105 bar (contact HTF)  
pilot ratio 3 : 1

Valves are shipped with pressure set at the maximum for the specified pressure range e.g. if N1, then 350 bar.

- 03 = check valve cracking pressure 0,3 bar (**standard**)
- 18 = check valve cracking pressure 1,8 bar (contact HTF)
- (Blank) = Nitrile seals (**standard**)
- V = Viton seals
- special seals by arrangement (contact HTF)

Ex. SNSA - AB - 10 - S N1 - 03 -

D-38

SUBJECT TO CHANGE WITHOUT NOTICE

## RELATED DATA SHEETS

i - 41 DIN 24340 size A10 interface

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