

Stack-Mounting Counterbalance Valve, NG 6

$Q_{max} = 80 \text{ l/min}$, $p_{max} = 350 \text{ bar}$
pilot operated, poppet type
Series SNSA...



- 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
- For plate mounting valve, Interface NG 6 to ISO 4401-03-02

1 Description

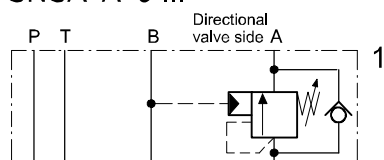
Counterbalance valves prevent actuator “runaway” in the event of negative loads. The flow leaving the actuator (the A line in the example) is piloted and controlled by the flow entering the actuator (the B line), ensuring a cavitation-free lowering of the load, as long as the valve pressure setting is not exceeded (see application example). 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). 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).

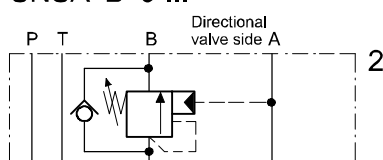
To ensure a reliable secondary relief function (e.g. for thermal expansion) the related directional valve must have a centre condition in which ports A and B are connected to Tank T (spool type function G).

2 Symbol

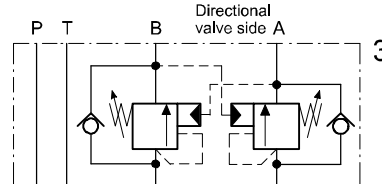
SNSA-A-6 ...



SNSA-B-6 ...



SNSA-AB-6 ...

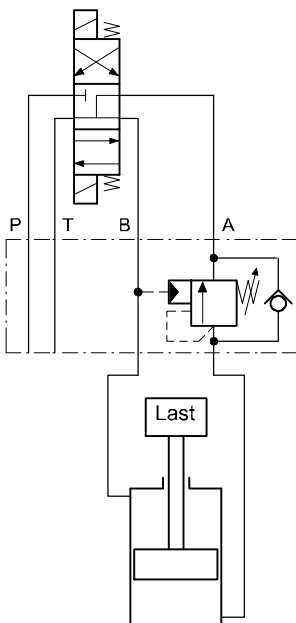


3 Technical data

| General characteristics | Description, value, unit |
|----------------------------|--|
| Designation | stack-mounting counterbalance valve |
| Design | pilot operated, poppet type |
| Mounting method | stack-mounting |
| Size | NG 6, interface ISO 4401-03-02 |
| Weight | SNSA-A ... / -B ...-6 = 1.25 kg SNSA-AB ...-6 = 1.50 kg |
| Mounting attitude | unrestricted |
| Flow direction | see symbols |
| Maximum operating pressure | 350 bar |

| General characteristics | | Description, value, unit |
|---|--|---|
| Adjustment change | pressure range N1 pressure range N2 pressure range M1 pressure range M2 | 140...350 bar (pilot ratio 4.5:1) 70...280 bar (pilot ratio 3:1) 70...175 bar (pilot ratio 4.5:1) 30...105 bar (pilot ratio 3:1) |
| Opening pressure via check valve | standard on request | ca. 1.7 bar ca. 0.3 bar |
| Hydraulic fluid | | HL and HLP mineral oil to DIN 51 524; for other fluids, please contact BUCHER |
| Hydraulic fluid temperature range | | -25 °C ... +80 °C |
| Viscosity range | | 10 ... 300 mm ² /s (cSt) |
| Maximum flow rate | | 80 l/min |
| Surface corrosion protection | | all exposed parts with zinc-nickel plating |
| Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999 | | class 20/18/15 |

4 Application example and pressure settings



LOAD PRESSURE:

to hold the maximum load without leakage, we recommend that the SNSA ...-6 is set as follows:

$$p_E = p_L \times 1.3$$

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] \times 1.3 = **260 [bar]**

PILOT PRESSURE:

the required pilot pressure is calculated as follows:

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

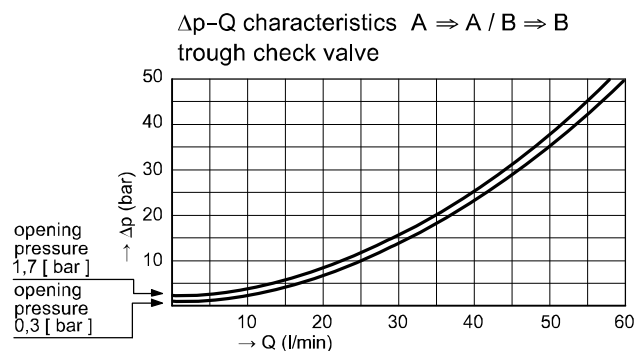
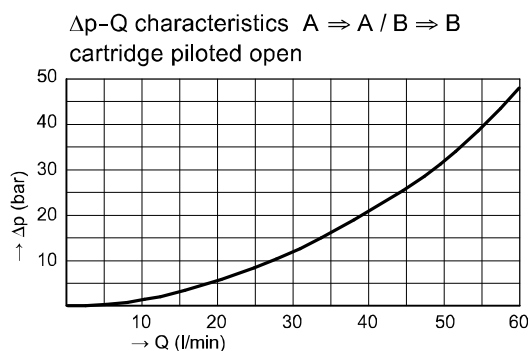
p_X = pilot pressure
 p_E = valve pressure setting
 p_L = effective load-induced pressure
 i = pilot ratio (see principal characteristics)

Example:

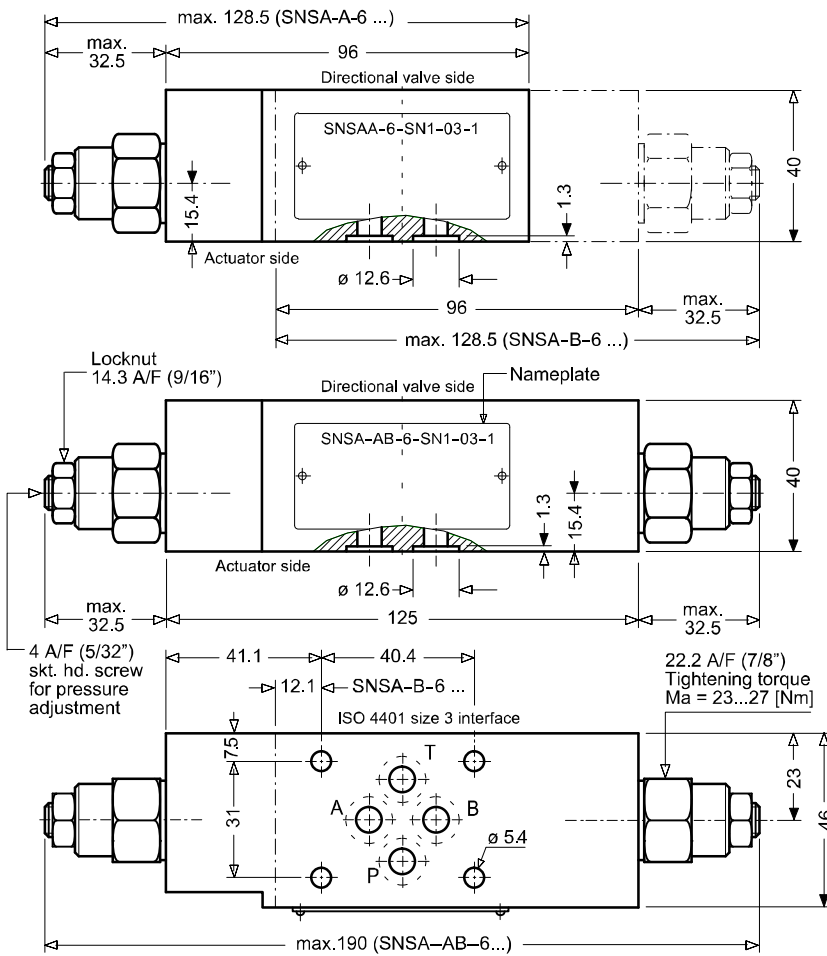
Load pressure p_L = eff. 180 [bar]
pressure setting p_E = 260 [bar]
pilot ratio i = 4.5

$$p_X = \frac{260 \text{ [bar]} - 180 \text{ [bar]}}{4.5} = \text{approx. } \mathbf{18 \text{ [bar]}}$$

5 Performance graphs

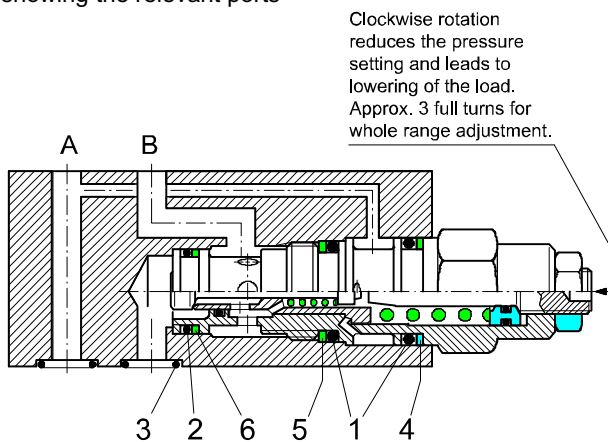


6 Dimensions & sectional view



7 Schematic section

showing the relevant ports



Seal kit Nr. DS-241

| It. | Qty. | Qty. | Qty. | Description | Size |
|-----|------|------|------|-----------------|--------------------|
| 1 | 4 | 2 | 2 | O-ring Nr. 017 | Ø 17.17 x 1.78 N90 |
| 2 | 2 | 1 | 1 | O-ring Nr. 015 | Ø 14.00 x 1.78 N90 |
| 3 | 4 | 4 | 4 | O-ring Nr. 012 | Ø 9.25 x 1.78 N90 |
| 4 | 2 | 1 | 1 | Backup ring 017 | |
| 5 | 2 | 1 | 1 | Backup ring 016 | |
| 6 | 2 | 1 | 1 | Backup ring 015 | |

SNSA-A-6
SNSA-B-6
SNSA-AB-6...

8 Installation information



ATTENTION!

Maintenance work may only be carried out carefully by qualified personnel. When mounting the valve, make sure that the connection hole pattern matches that of the mating surface. (Do not mix up the connection side and the valve side). When replacing seals, make sure that the seals are well oiled or greased. The function cartridge must be mounted with the specified tightening torque.

9 Ordering code

Ex.

| | | | | | | | | | |
|---|---|---|---|----|---|---|----|----|--|
| S | N | S | A | AB | 6 | S | N1 | 18 | |
|---|---|---|---|----|---|---|----|----|--|

- S = stack valve
- N = counterbalance valve
- S = poppet type
- A ... Q = standard model per current data sheet
- Z ... R = special features by arrangement on request
- A = function A
- B = function B
- AB = function in A and B
- 6 = Nominal size 6
- S = screw adjustment
- N1 = pressure range 140 ... 350 bar (normal version, **standard design**)
pilot ratio 4.5:1
- N2 = pressure range 70 ... 280 bar (on request)
pilot ratio 3:1
- M1 = pressure range 70 ... 175 bar (medium version, **standard design**)
pilot ratio 4.5:1
- M2 = pressure range 30 ... 105 bar (on request)
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
- 18 = check valve opening pressure 1.7 bar (**standard**)
- 03 = check valve opening pressure 0.3 bar (on request)
- (blank) = NBR (nitril-butadien-rubber / BUNA) seals (**standard**)
- V = FKM (fluorocarbon rubber / VITON) seals
(special seals - please consult BUCHER)



IMPORTANT!

Two check valve cracking pressures are available. Use the 25 psi (1.7 bar) check unless actuator cavitation is a concern.

10 Related data sheets

| Reference | Description |
|--------------|----------------------------------|
| 400-P-030101 | Interface NG 6 to ISO 4401-03-02 |

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