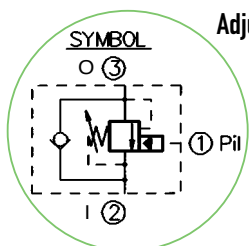


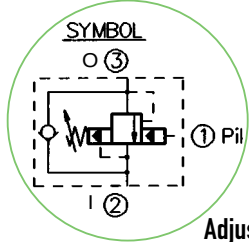
## COUNTERBALANCE VALVES WITH FREE REVERSE FLOW CHECK



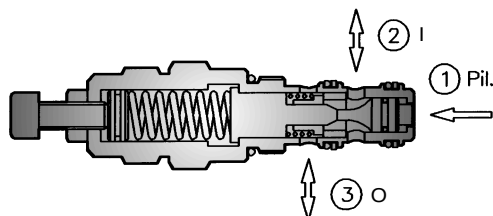
Adjustment EN

NCS

Types VCB 06 - 12



Adjustment CN



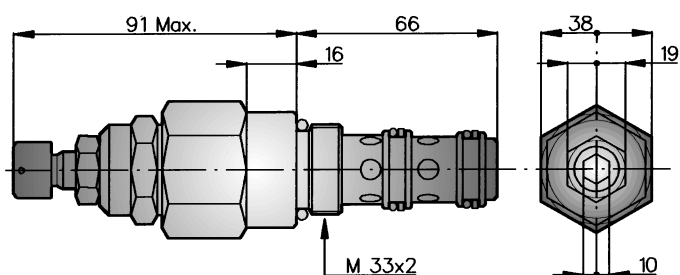
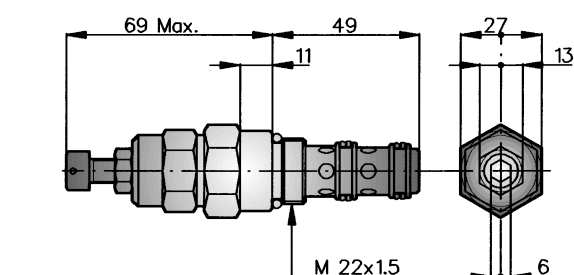
| SIZE                  |            |        | 06    | 12     |      |
|-----------------------|------------|--------|-------|--------|------|
| NOMINAL PORT SIZE     |            |        | DN    | 8      | 12   |
| MAX FLOW RATE         |            | l/min  | 60    | 140    |      |
|                       |            | US gpm | 16    | 37     |      |
| MAX PRESSURE          |            | bar    | 350   | 350    |      |
|                       |            | psi    | 5000  | 5000   |      |
| PILOT RATIO           |            | A      | 7.1:1 | 6.9:1  |      |
|                       |            | B      | 4.1:1 | 4.7:1  |      |
| CAVITY NUMBER         |            |        | 00.95 | 056    | 070  |
| NORMALIZED CAVITY     |            |        | NCS   | 06/3   | 12/3 |
| MAX TIGHTENING TORQUE |            |        | Nm    | 50     | 70   |
| WEIGHT kg             | ADJUSTMENT | EN     | 0.210 | 0.700  |      |
|                       | ADJUSTMENT | CN     | 0.290 | 0.930  |      |
| REF                   |            |        |       |        |      |
| CAVITY DIMENSIONS     |            |        |       | 11.450 |      |

## DIMENSIONS (mm)

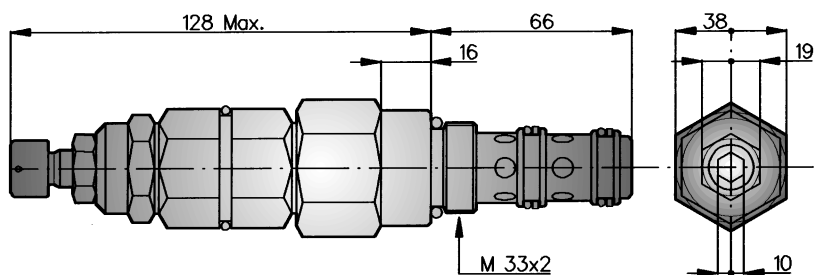
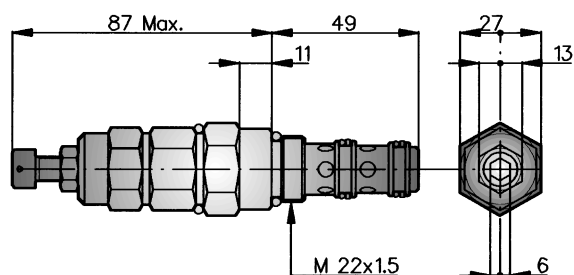
VCB 06

Adjustment EN

VCB 12



Adjustment CN



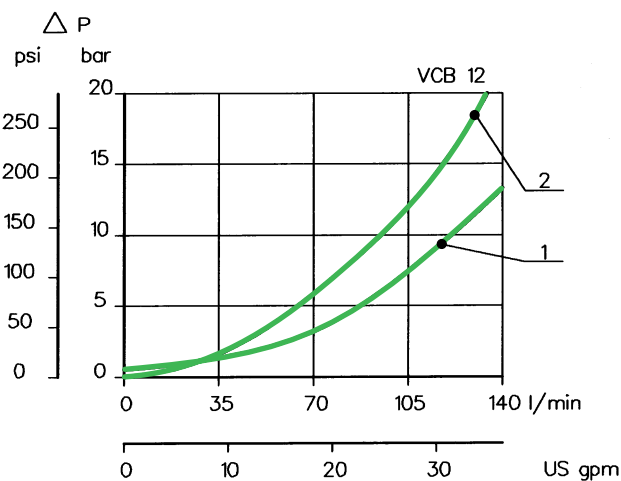
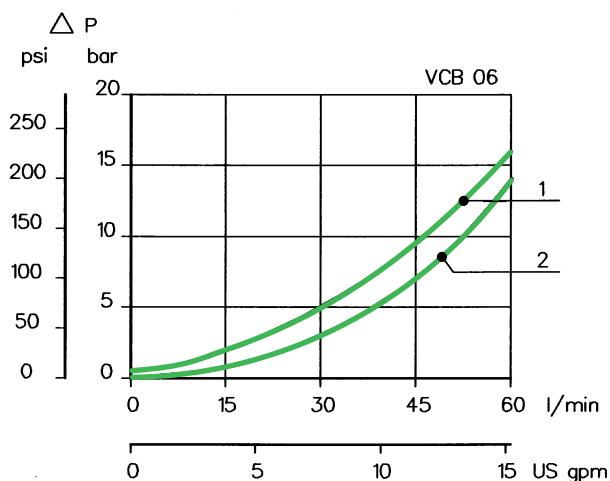
## CHARACTERISTIC OPERATING CURVES

Measurements effected at 20°C ambient temperature with mineral oil having viscosity of 26 cSt at 50°C.

Cartridge only.

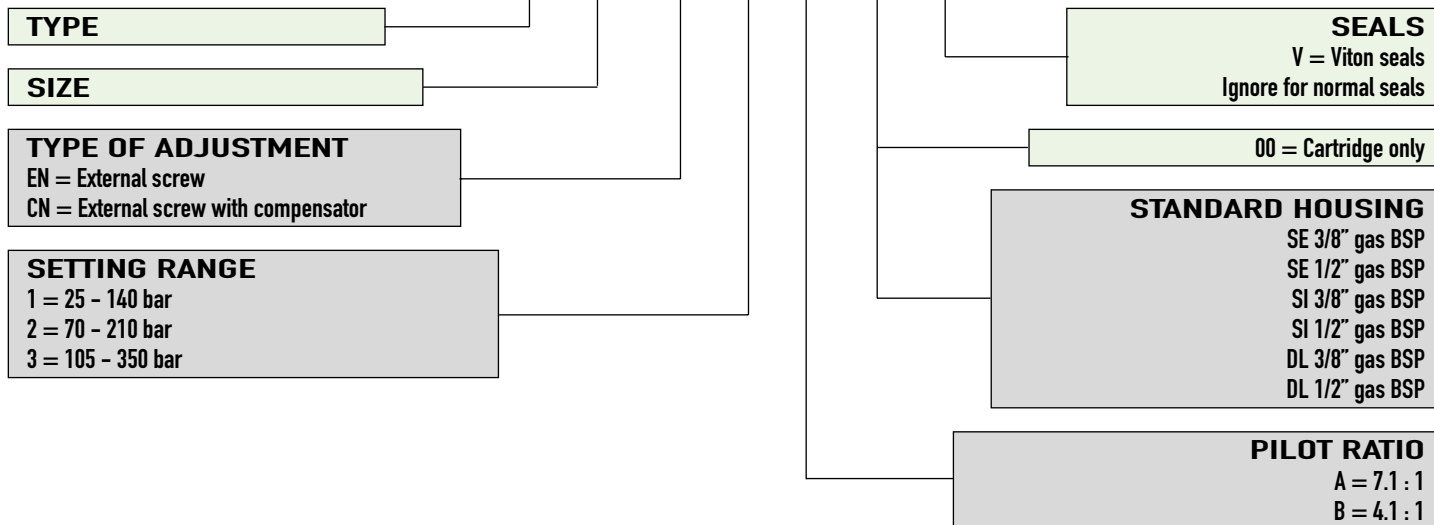
1: Free flow from ② → ③

2: Piloted fully open, flow from ③ → ②



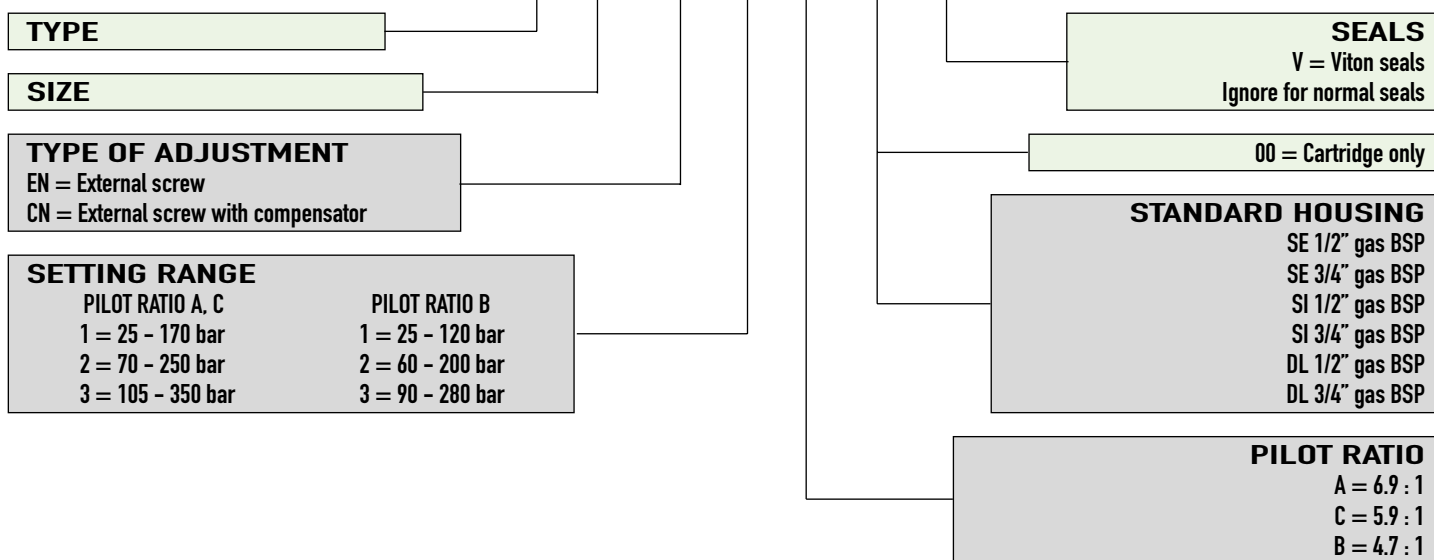
## EXAMPLE OF ORDER DESIGNATION VCB 06

**VCB 06 / EN - 2 - A - 00 - V**



## EXAMPLE OF ORDER DESIGNATION VCB 12

**VCB 12 / EN - 2 - A - 00 - V**



## SPARE PARTS

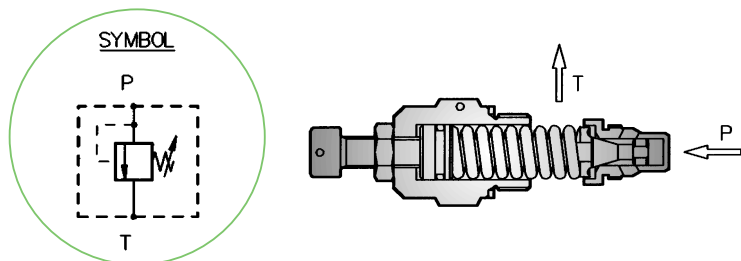
Set of external seals and back-up washers  
(Packs of minimum 10 sets)  
VCB 06 = 230.00.007.0  
VCB 12 = 230.00.013.0

**SPRING ORDER NUMBERS**

| VCB 06 SPRINGS         | VCB 12 SPRINGS         |
|------------------------|------------------------|
| Type 1 = 81.62.012.1.9 | Type 1 = 81.62.024.1.9 |
| Type 2 = 81.62.013.1.9 | Type 2 = 81.62.018.1.9 |
| Type 3 = 81.62.034.1.9 | Type 3 = 81.62.019.1.9 |

## DIRECTLY OPERATED PRESSURE RELIEF VALVE

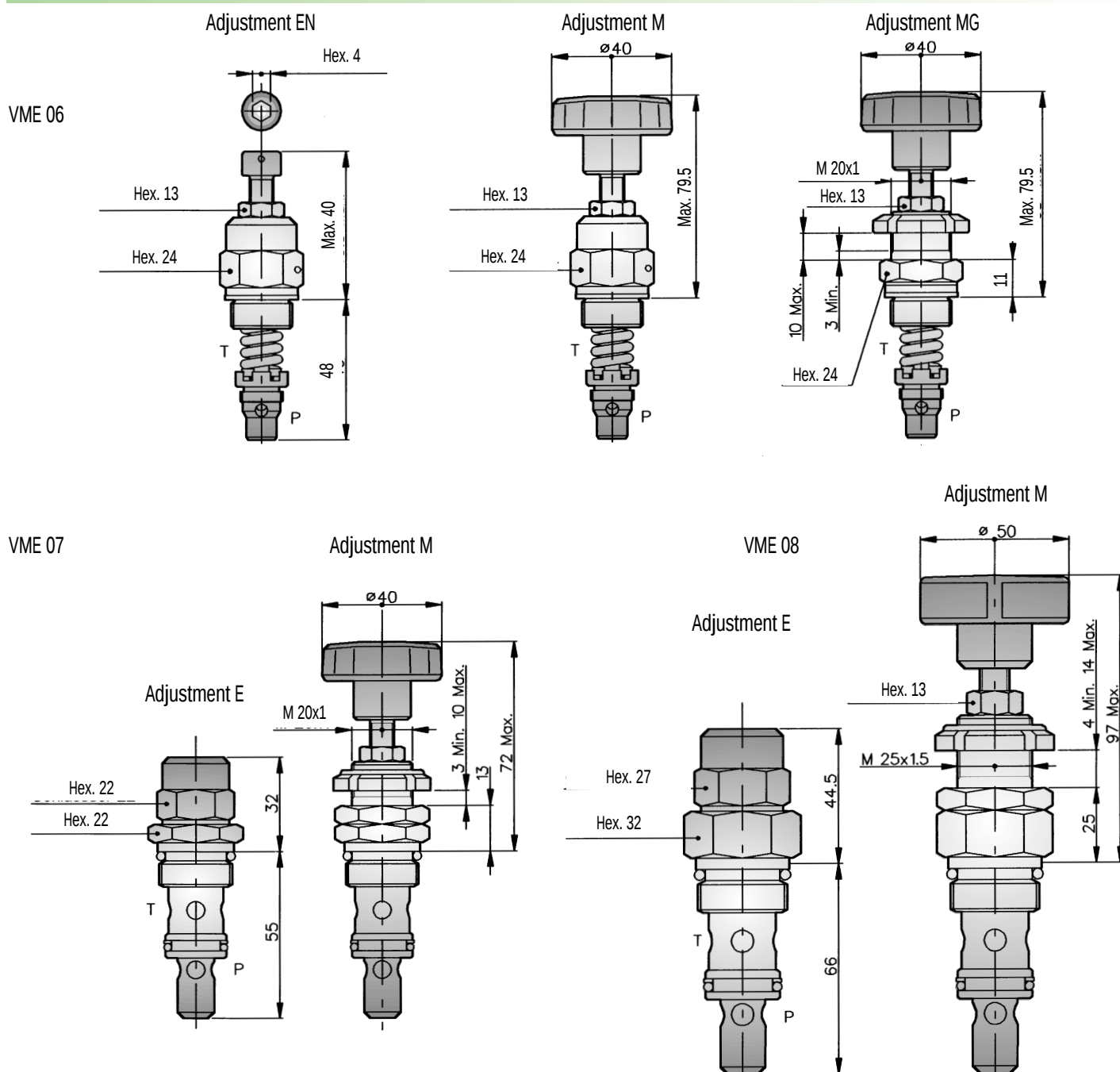
### Types VME 06-07-08



| SIZE                  |                | 06    | 07   | 08   |
|-----------------------|----------------|-------|------|------|
| NOMINAL PORT SIZE     |                | 7     | 7    | 8    |
| MAX FLOW RATE         | l/min          | 40    | 50   | 80   |
|                       | US gpm         | 10.5  | 13   | 21   |
| MAX PRESSURE          | bar            | 315   | 315  | 315  |
|                       | psi            | 4500  | 4500 | 4500 |
| MAX TIGHTENING TORQUE | Nm             | 30    | 60   | 60   |
| WEIGHT<br>Kg          | CARTRIDGE ONLY |       | 0.13 | 0.20 |
|                       | WITH HOUSING   | DG    | 0.33 | 0.47 |
|                       |                | LG    | 0.36 | 0.54 |
| CAVITY NUMBER         |                | .0095 | 030  | 010  |

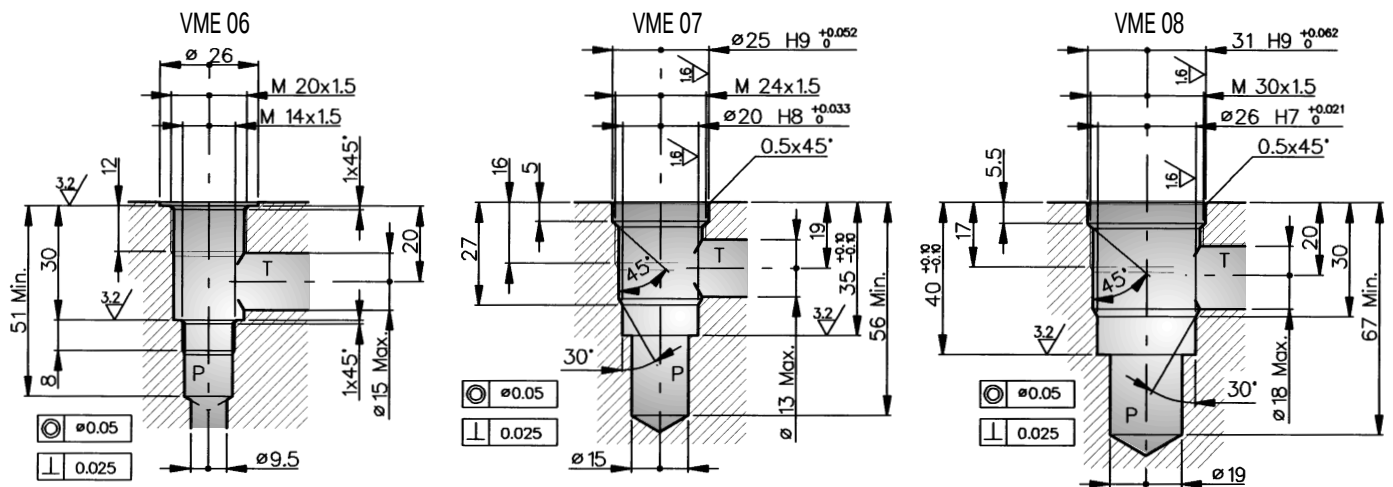
NOTE: Presetting these valves is allowed only when supplied assembled along with their housing.

## DIMENSIONS (mm)



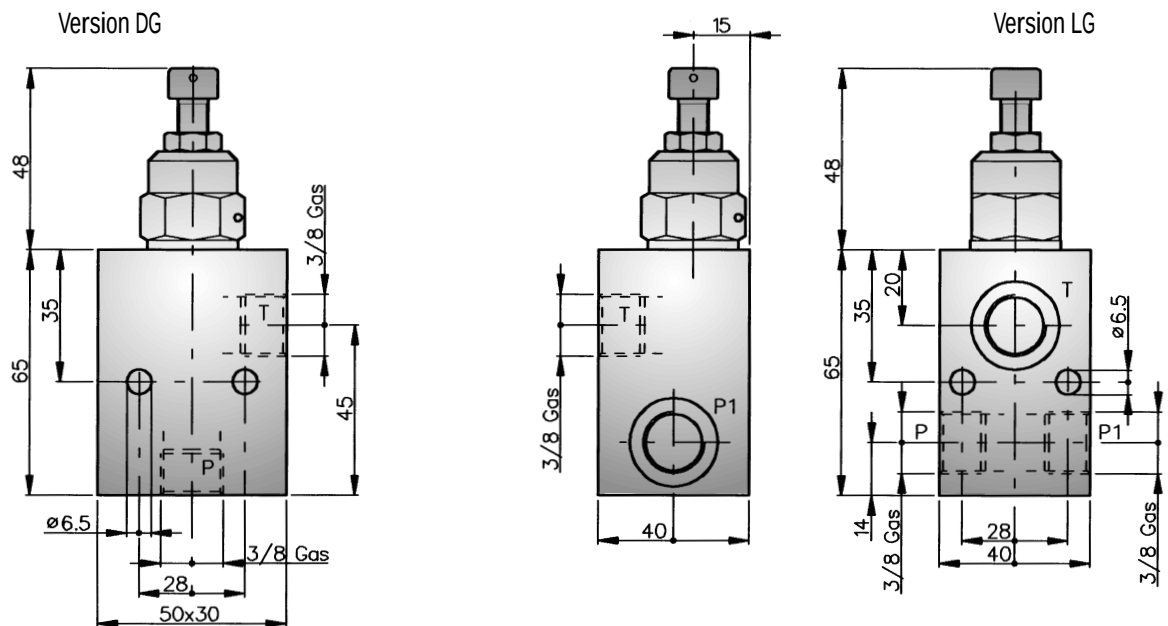
## DIMENSIONS (mm)

### NORMALIZED CAVITIES



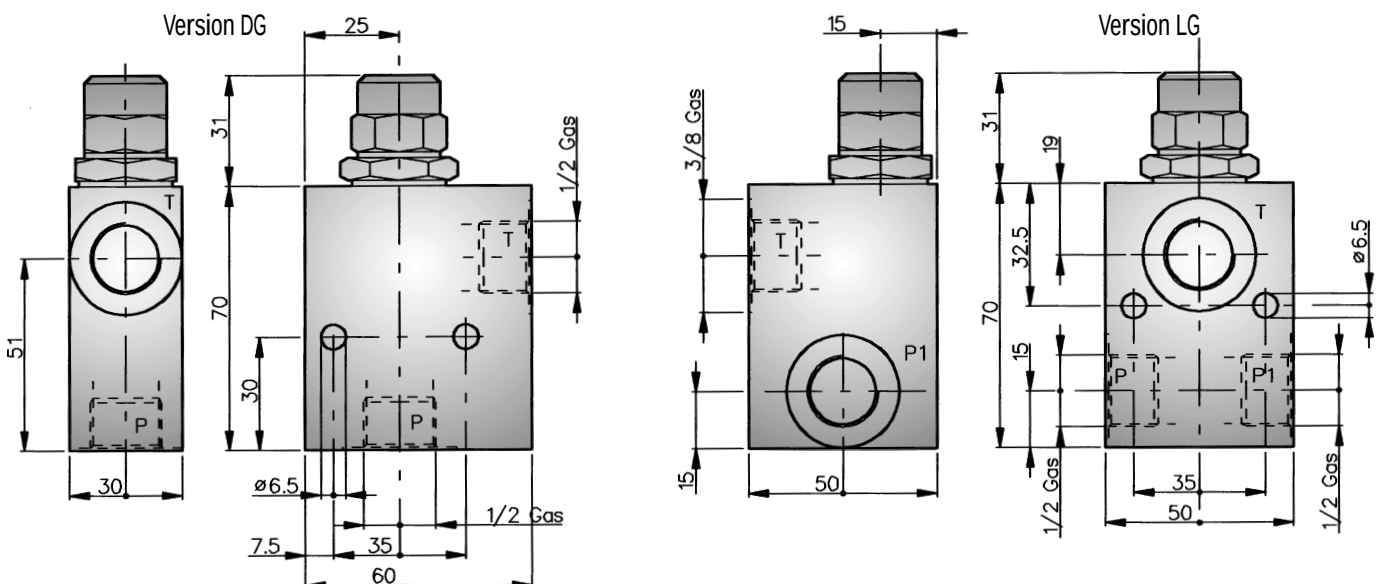
## DIMENSIONS (mm)

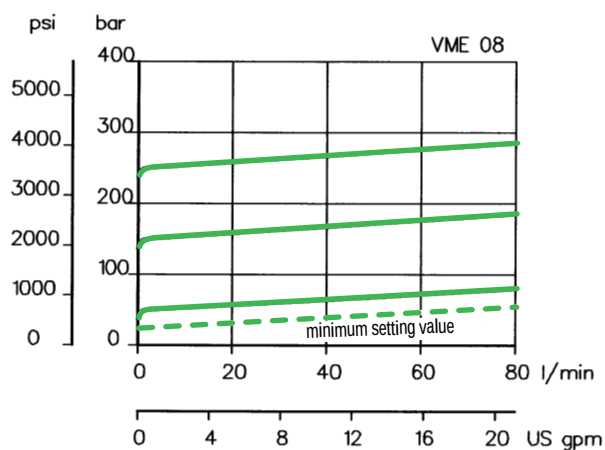
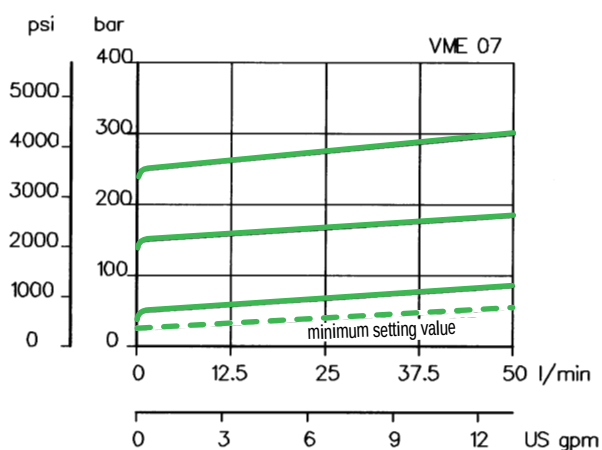
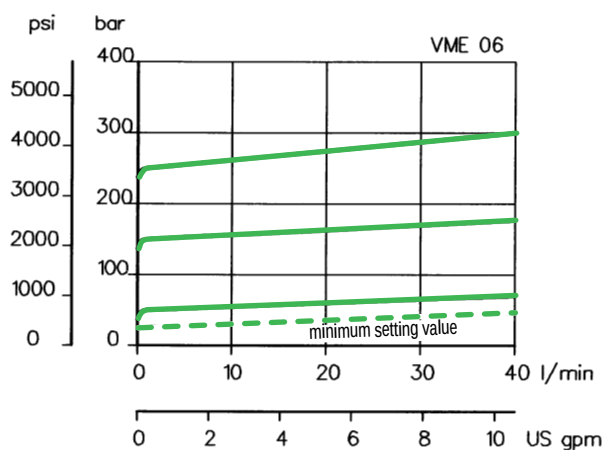
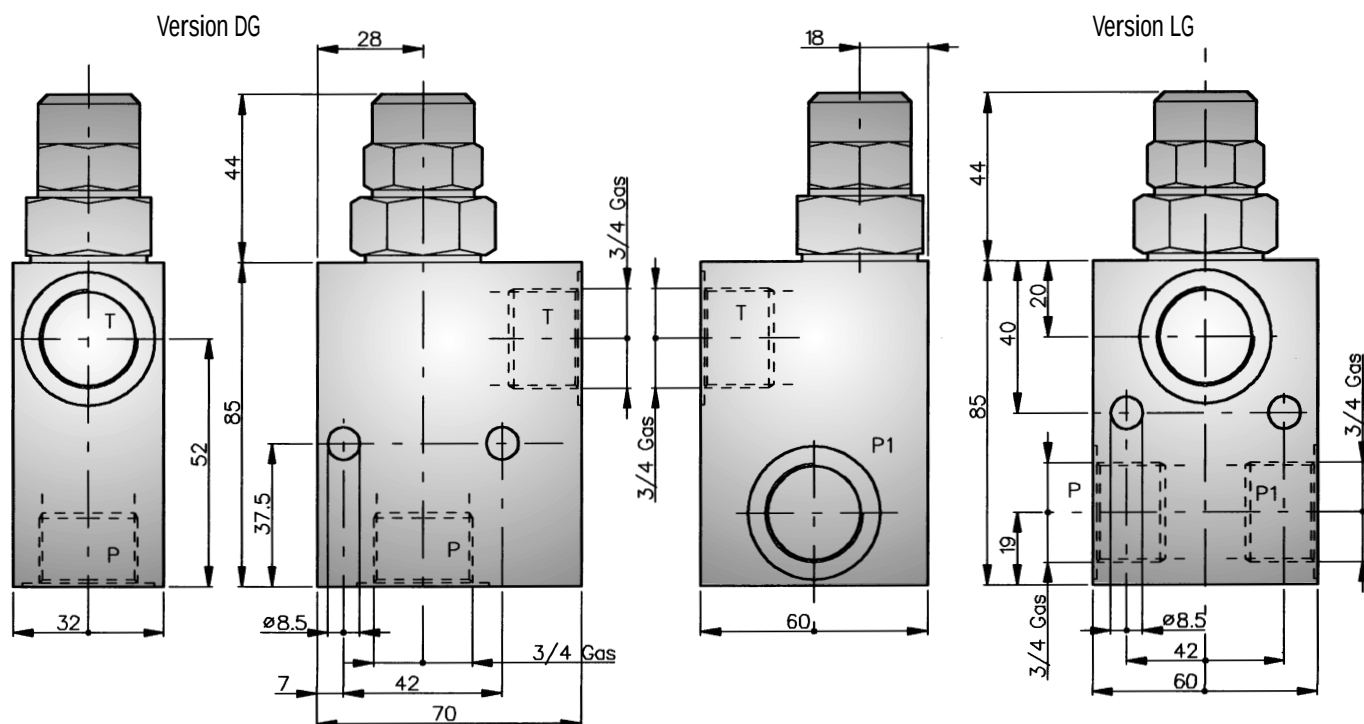
### HOUSING FOR VME 06



## DIMENSIONS (mm)

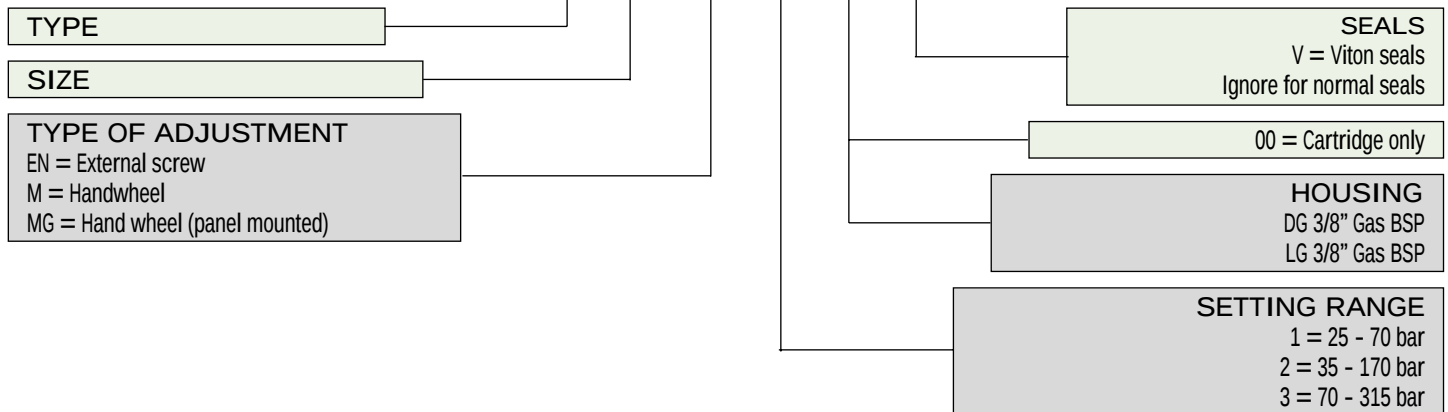
### HOUSING FOR VME 07





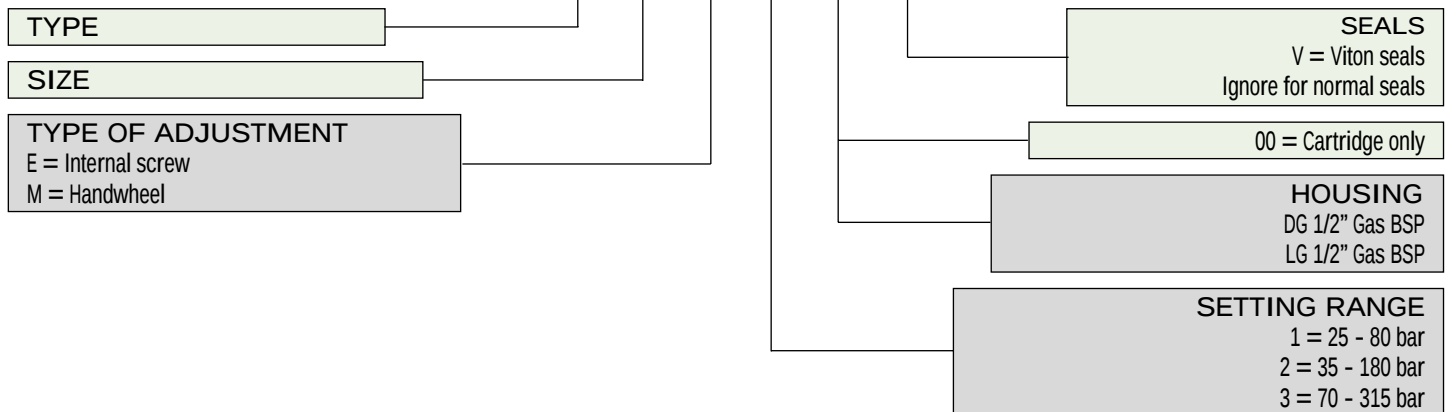
## EXAMPLE OF DESIGNATION VME 06

**VME 06 / EN - 2 - 00 - V**



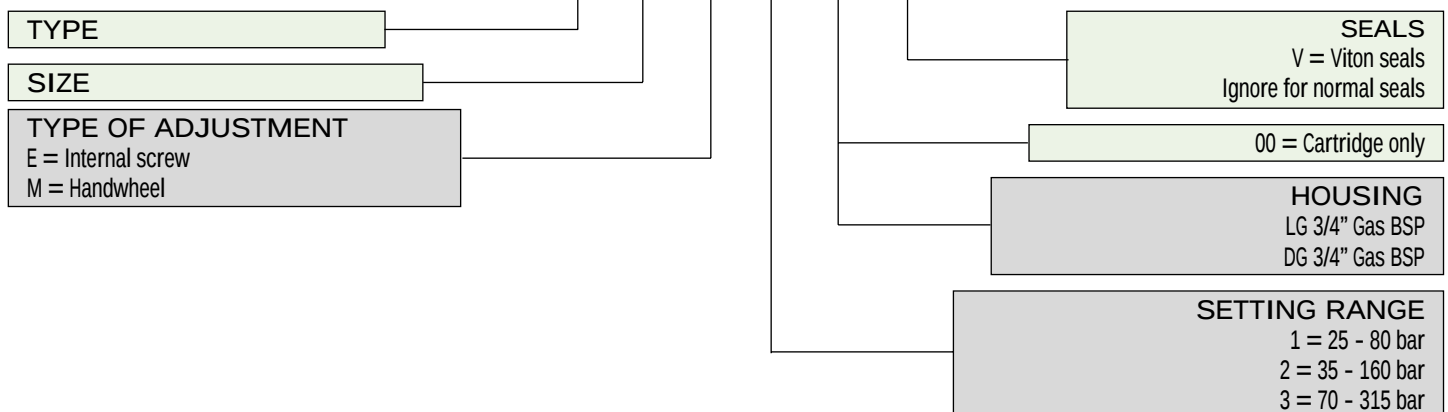
## EXAMPLE OF DESIGNATION VME 07

**VME 07 / E - 2 - 00 - V**



## EXAMPLE OF DESIGNATION VME 08

**VME 08 / E - 2 - 00 - V**



## SPARE PARTS

### SPRING ORDER NUMBERS VME 06

Type 1 = 81.62.003.1.4  
Type 2 = 81.62.004.1.4  
Type 3 = 81.62.045.1.3

### SPRING ORDER NUMBERS VME 07

Type 1 = 81.62.003.1.4  
Type 2 = 81.62.004.1.4  
Type 3 = 81.62.045.1.3

### SPRING ORDER NUMBERS VME 08

Type 1 = 81.62.008.1.9  
Type 2 = 81.62.009.1.9  
Type 3 = 81.62.010.1.9

# Relief Valves

## VEN 06

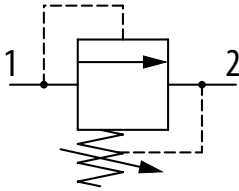
Relief Valve, Direct Acting, Poppet Type with Dampening

315 bar [4600 psi] • 40 l/min [11 US gpm]

### DESCRIPTION AND OPERATION

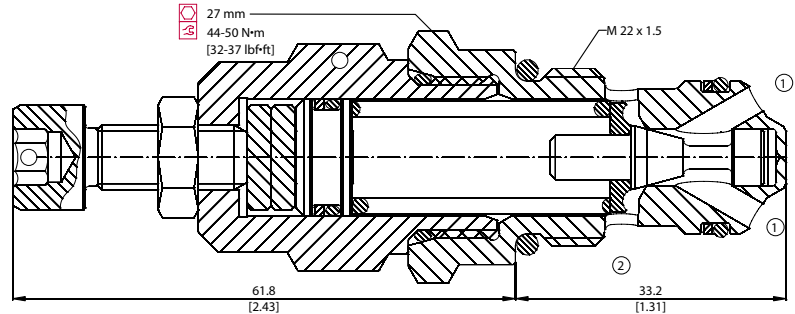
This is a direct acting, poppet type relief valve that relieves from port 1 to 2. It features a highly damped poppet for smooth and stable response. It can be used as a cost-effective main relief or to protect an actuator from over-pressurization.

### SCHEMATIC



### DIMENSIONS

mm [in]

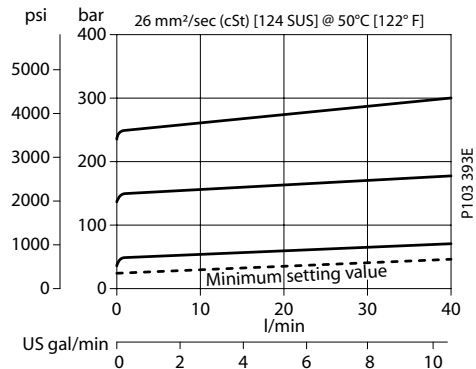


### PERFORMANCE DATA

|                |                      |
|----------------|----------------------|
| Rated pressure | 315 bar [4600 psi]   |
| Rated flow     | 40 l/min [11 US gpm] |
| Weight         | 0.20 kg [0.44 lb]    |
| Cavity         | NCS06/2              |

### PERFORMANCE CURVES

#### Pressure Override



### MODEL CODE

VEN 06 - M - 1 - DG3/8 - V - 60

#### Adjustment Option

EN- External  
M- Calibrated Knob

#### Pressure Range

| Code             | Bar    | Psi         |
|------------------|--------|-------------|
| 1                | 20-80  | [290-1150]  |
| Standard Setting |        | Not set     |
| 2                | 35-160 | [510-2300]  |
| Standard Setting |        | Not set     |
| 3                | 70-315 | [1015-4600] |
| Standard Setting |        | Not set     |

#### Pressure Setting

Code- Pressure setting in bar (5 bar increments within specified Pressure Range)

XXX- Standard setting (see Pressure Range for value)  
Example:

| Code | Bar | Psi   |
|------|-----|-------|
| 60   | 60  | [870] |

#### Seal Option

| Code        | Seal kit  |
|-------------|-----------|
| Omit-Buna-N | 230000060 |
| V-Viton     | 230000380 |

#### Housing

| Code  | Ports & Material | Housing Model Code |
|-------|------------------|--------------------|
| 00    | No Housing       | No Housing         |
| DG3/8 | AL, 3/8 BSP      | NCS06/2-DG-3/8     |
| DG1/2 | AL, 1/2 BSP      | NCS06/2-DG-1/2     |
| DG65  | AL, #6 SAE       | NCS06/2-DG-65      |
| DG85  | AL, #8 SAE       | NCS06/2-DG-85      |

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\*Additional housings available

## Relief Valves Catalog

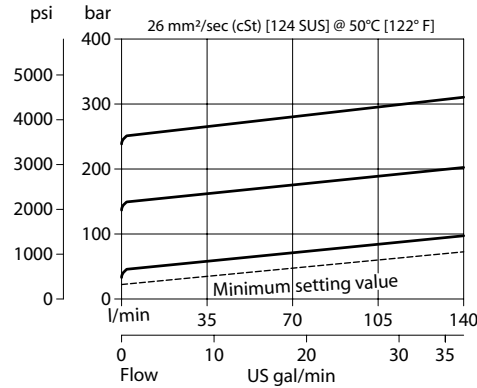
### Differential Area VSB 12-EN

#### OPERATION

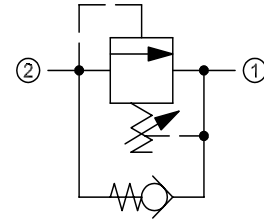
This is a direct-acting, differential area, poppet-type relief valve that relieves from 2 to 1 with an integral free-flow check from 1 to 2.

#### SPECIFICATIONS

##### Theoretical performance



##### Schematic

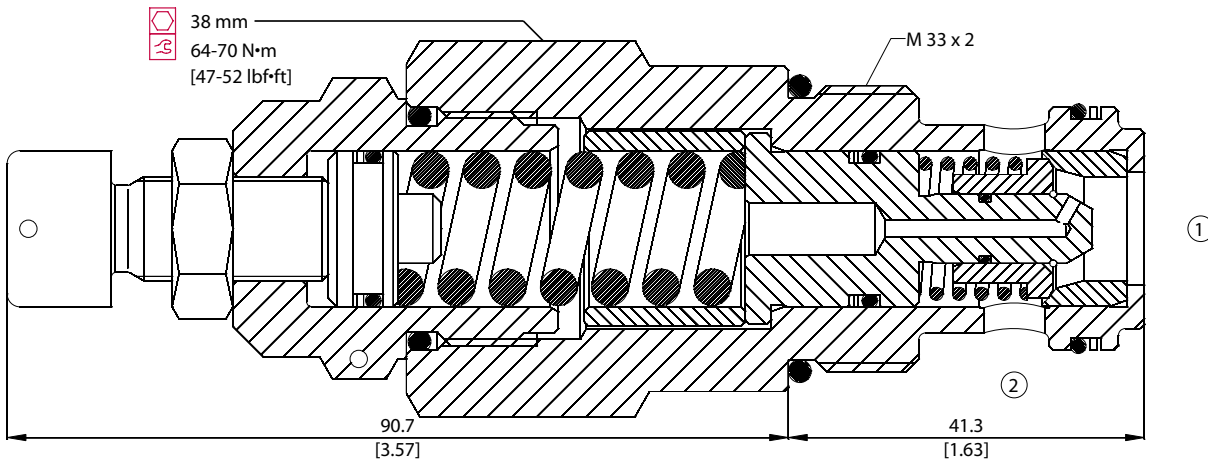


##### Specifications

|                       |                           |
|-----------------------|---------------------------|
| <b>Rated pressure</b> | 350 bar [5075 psi]        |
| <b>Rated flow</b>     | 140 l/min [37 US gal/min] |
| <b>Weight</b>         | 0.60 kg [1.32 lb]         |
| <b>Cavity</b>         | NCS12/2                   |

#### DIMENSIONS

##### Cross-sectional view



#### ORDERING INFORMATION

##### VSB 12-EN - 1 - 00 - V - XXX

##### Setting range

- 1 = 25 - 170 bar [363 - 2466 psi]
- 2 = 70 - 270 bar [1015 - 3916 psi]
- 3 = 105 - 350 bar [1523 - 5076 psi]

##### Seals

- V = Viton
- Omit = Buna-N

##### Seal Kit

- 230000470
- 230000120

##### Housing and ports

- 00 = No Housing
- DG1/2 = AL, 1/2 BSP
- DG3/4 = AL, 3/4 BSP
- DG8S = AL, #8 SAE
- DG12S = AL, #12 SAE
- Other housings available

##### Housing P/N

- No Housing
- NCS12/2-DG-1/2
- NCS12/2-DG-3/4
- NCS12/2-DG-8S
- NCS12/2-DG-12S

# Sequence and Unloading Valves

## AUV 06

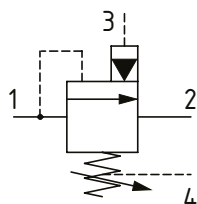
Unloading Valve, Pilot Operated, Spool Type, Hydraulic Pilot, External Drain

250 bar [3600 psi] • 50 l/min [13 US gpm]

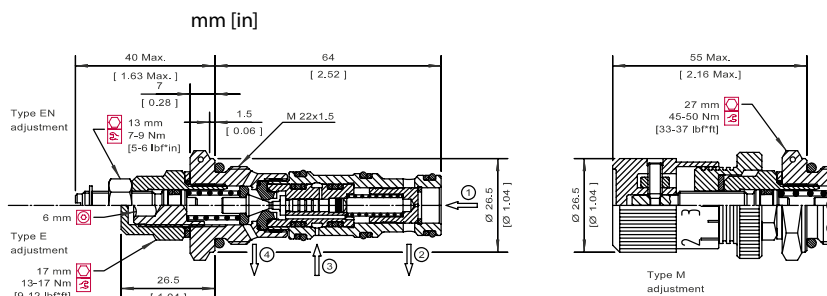
### DESCRIPTION AND OPERATION

This is a pilot operated, spool type unloading valve. Normally used in conjunction with a check valve, the valve remains closed from port 1 to 2 until the set pressure is reached. Pressure sensed downstream of the check valve at port 3 will pilot the valve open, allowing the pressure at port 1 unload to tank (port 2) at minimum pressure. When the pressure in port 3 falls to 85% of the setting, the valve will close and the pressure in port 1 will rise. This valve can be used to dump the pump flow at minimum pressure in an accumulator system or in a two-pump unloading circuit.

### SCHEMATIC



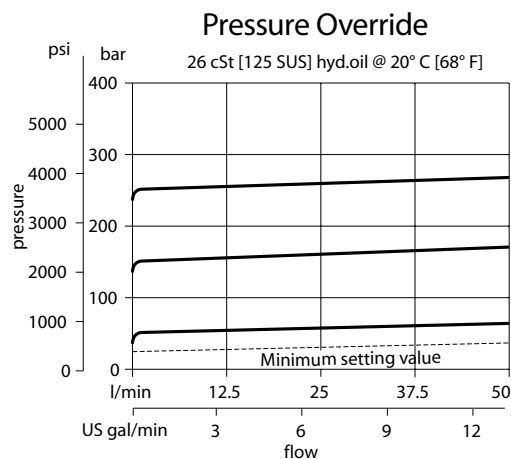
### DIMENSIONS



### PERFORMANCE DATA

|                              |                      |
|------------------------------|----------------------|
| Rated pressure               | 250 bar [3600 psi]   |
| Rated flow @ 7 bar [100 psi] | 50 l/min [13 US gpm] |
| Weight                       | 0.22 kg [0.49 lb]    |
| Cavity                       | NCS06/4              |

### PERFORMANCE CURVES



### MODEL CODE

**AUV 06 - EN - 1 - A - L3/8 - V - 60**

#### Adjustment Option

E - Internal  
EN - External  
M - Calibrated Knob

#### Pressure Range

| Code             | Bar     | Psi         |
|------------------|---------|-------------|
| 1                | 10-70   | [145-1015]  |
| Standard Setting | Not set |             |
| 2                | 30-140  | [435-2030]  |
| Standard Setting | Not set |             |
| 3                | 70-210  | [1015-3000] |
| Standard Setting | Not set |             |

#### Pressure Ratio

A - 85%

#### Pressure Setting

Code-Pressure setting in bar (5 bar increments within specified Pressure Range)  
XXX-Standard setting (see Pressure Range for value)  
Example:

| Code | Bar | Psi   |
|------|-----|-------|
| 60   | 60  | [870] |

#### Seal Option

| Code        | Seal kit  |
|-------------|-----------|
| Omit-Buna-N | 230000080 |
| V-Viton     | 230000350 |

#### Housing

| Code | Ports & Material | Housing Model Code |
|------|------------------|--------------------|
| 00   | No Housing       | No Housing         |
| L3/8 | AL, 3/8 BSP      | NCS06/4-L-3/8      |
| L1/2 | AL, 1/2 BSP      | NCS06/4-L-1/2      |
| L6S  | AL, #6 SAE       | NCS06/4-L-6S       |
| L8S  | AL, #8 SAE       | NCS06/4-L-8S       |

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

# Check Valves

## RPC 06

Pilot Operated Check Valve, Port 1 Pilot to Open

350 bar [5000 psi] • 35 l/min [9 US gpm]

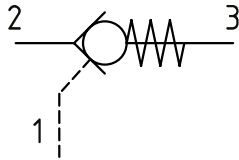


### DESCRIPTION AND OPERATION

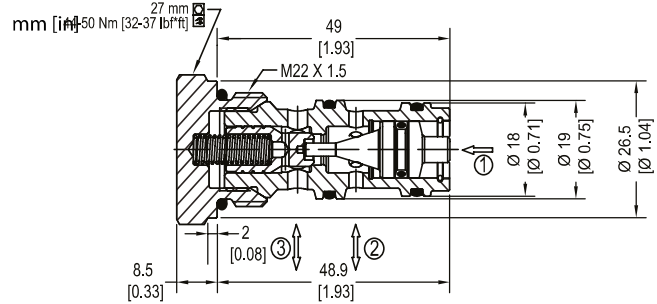
This is a pilot operated check valve where free flow takes place from port 2 to 3 and is blocked from port 3 to 2 until pilot pressure is applied to port 1.

Note: The RPC 06 is intended primarily for use in MVB10 modular valve assemblies. For other applications, consider valves with equivalent function, such as the 4CK30 or SPC2-10.

### SCHEMATIC



### DIMENSIONS



### PERFORMANCE DATA

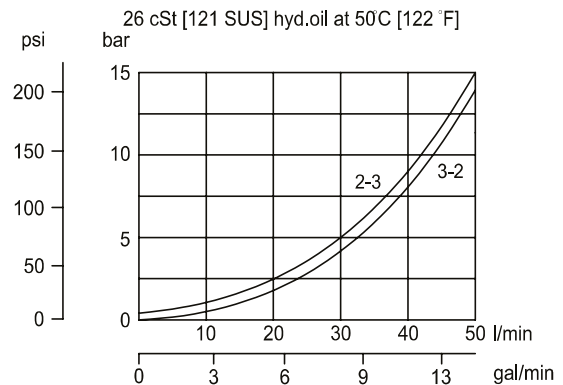
|                               |                     |
|-------------------------------|---------------------|
| Rated pressure*               | 350 bar [5000 psi]  |
| Rated flow at 7 bar [100 psi] | 35 l/min [9 US gpm] |
| Weight                        | 0.10 kg [0.22 lb]   |
| Pilot Ratio                   | 3.4:1               |
| Cavity                        | NCS06/3             |

\*Rated pressure based on NFPA fatigue test standard [at 1 million cycles]

Note: A piston seal requires a 5 bar [72.5 psi] or greater return spring.

### PERFORMANCE CURVES

#### Pressure drop



### MODEL CODE

RPC06 - 5 - OR - 00 - V

#### Crack Pressure

| Code | Bar | Psi   |
|------|-----|-------|
| 0.5  | 0.5 | [7]   |
| 2    | 2   | [30]  |
| 5    | 5   | [73]  |
| 10   | 10  | [145] |

#### Pilot Seal Option

Omit - No seals  
OR - Seals

#### Seal Option

| Code        | Seal kit  |
|-------------|-----------|
| Omit-Buna-N | 230000070 |
| V-Viton     | 230000110 |

#### Housing

| Code  | Ports & Material | Housing Model Code |
|-------|------------------|--------------------|
| 00    | No Housing       |                    |
| SE3/8 | AL, 3/8 BSP      | NCS06/3-SE-3/8     |
| SE1/2 | AL, 1/2 BSP      | NCS06/3-SE-1/2     |
| SE6S  | AL, #6 SAE       | NCS06/3-SE-6S      |
| SE8S  | AL, #8 SAE       | NCS04/3-SE-8S      |

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available

# Pressure Reducing Valves

## PRC 06

Pressure Reducing Valve, Non-Relieving, Direct Acting

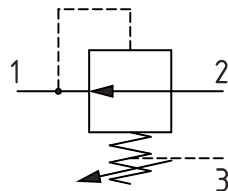
315 bar [4600 psi] • 40 l/min [11 US gpm]



### DESCRIPTION AND OPERATION

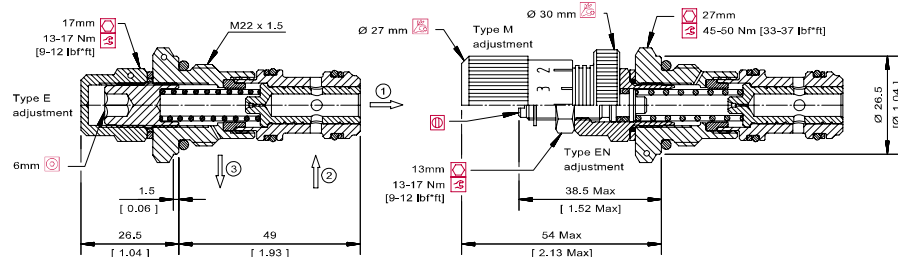
This is a normally open, direct acting pressure reducing valve. Port 2 is open to port 1 until the setting is reached at which time the valve throttles the outlet flow limiting the pressure. Port 3 is a drain port only, as the valve does not contain a relief function. This valve, is ideal for stable and precise control of a secondary pressure within a circuit.

### SCHEMATIC



### DIMENSIONS

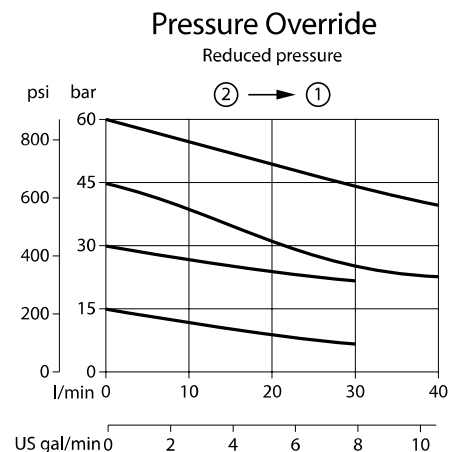
mm [in]



### PERFORMANCE DATA

|                              |                      |
|------------------------------|----------------------|
| Rated pressure               | 315 bar [4600 psi]   |
| Rated flow @ 7 bar [100 psi] | 40 l/min [11 US gpm] |
| Weight                       | 0.14 kg [0.31 lb]    |
| Cavity                       | NCS 06/3             |

### PERFORMANCE CURVES



### MODEL CODE

PRC 06 - EN - 2 - 00 - V - 60

#### Adjustment Option

E - Internal  
EN - External  
M - Calibrated Knob

#### Pressure Range

| Code             | Bar     | Psi        |
|------------------|---------|------------|
| 0.5              | 1-10    | [14.5-145] |
| Standard Setting | Not set |            |
| 1                | 10 - 25 | [145-360]  |
| Standard Setting | Not set |            |
| 1.5              | 10 - 40 | [145-580]  |
| Standard Setting | Not set |            |
| 2                | 25-80   | [360-1150] |
| Standard Setting | Not set |            |

#### Pressure Setting

Code-Pressure setting in bar (5 bar increments within specified Pressure Range)  
XXX-Standard setting (see Pressure Range for value)  
Example:

| Code | Bar | Psi   |
|------|-----|-------|
| 60   | 60  | [870] |

#### Seal Option

| Code          | Seal Kit  |
|---------------|-----------|
| Omit - Buna-N | 230000070 |
| V-Viton       | 230000110 |

#### Housing

| Code  | Ports & Material | Housing Model Code |
|-------|------------------|--------------------|
| 00    | No Housing       |                    |
| SE3/8 | AI, 3/8 BSP      | NCS06/3-SE-3/8     |
| SE1/2 | AI, 1/2 BSP      | NCS06/3-SE-1/2     |
| SE6S  | AI, #6 SAE       | NCS06/3-SE-6S      |
| SE8S  | AI, #8 SAE       | NCS06/3-SE-8S      |

\* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

\* Additional housings available



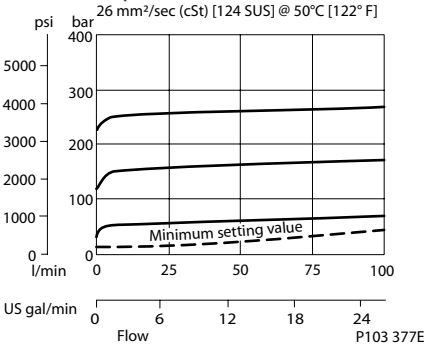
Cartridge Valves Technical Information  
Relief valves  
RPP 06

OPERATION

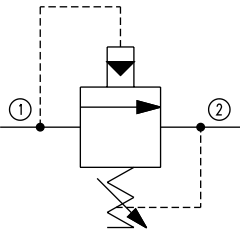
This is a pilot-operated, spool-type relief valve that relieves from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



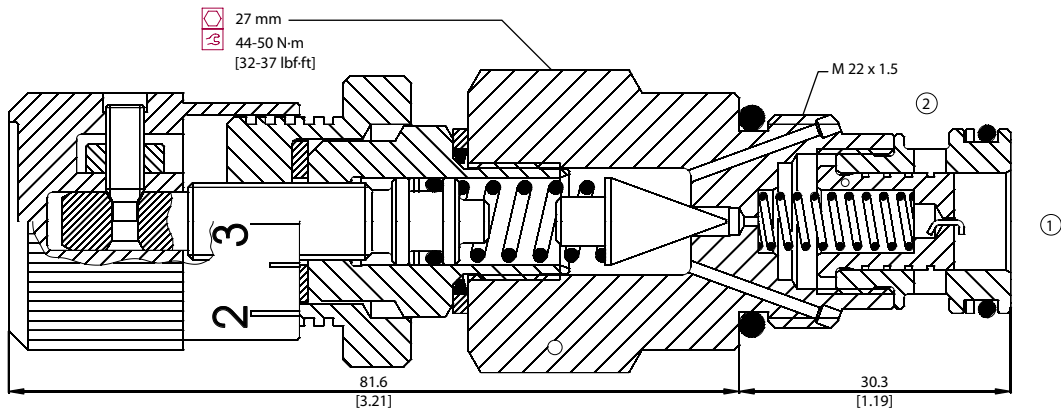
Specifications

|                               |                           |
|-------------------------------|---------------------------|
| Rated pressure                | 315 bar [4500 psi]        |
| Rated flow at 7 bar [100 psi] | 100 l/min [26 US gal/min] |
| Weight                        | 0.27 kg [0.60 lb]         |
| Cavity                        | NCS06/2                   |

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

**RPP 06 - EN - 1 - 00 - V - XXX**

**Type of adjustment**  
E = Internal screw  
EN = External screw  
M = Handwheel

**Setting range**  
1 = 10 - 70 bar [145 - 1015 psi]  
2 = 30 - 170 bar [435 - 2466 psi]  
3 = 70 - 315 bar [1015 - 4569 psi]  
To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

**Seals**  
V = Viton  
Omit = Buna-N

**Seal Kit**  
Consult factory  
230000060

**Housing and ports**  
00 = No Housing  
DG3/8 = AL, 3/8 BSP  
DG1/2 = AL, 1/2 BSP  
DG6S = AL, #6 SAE  
DG8S = AL, #8 SAE  
Other housings available

**Housing P/N**  
No Housing  
NCS06/2-DG-3/8  
NCS06/2-DG-1/2  
NCS06/2-DG-6S  
NCS06/2-DG-8S

P103 378E