

## Vickers By Danfoss

### Flow Control Valves - Pressure Compensated Technical Information



ENGINEERING  
TOMORROW



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# General Description

## Features:

- Porting pattern to DIN 24 340, form G, ISO 6263, CETOP-RP 121H and NFPA 3.5.1 MR1
- Pressure compensator stroke limiter, optional
- Mechanical operation
- Start-up jump reduction
- Flow control in both directions using a rectifier sandwich plate

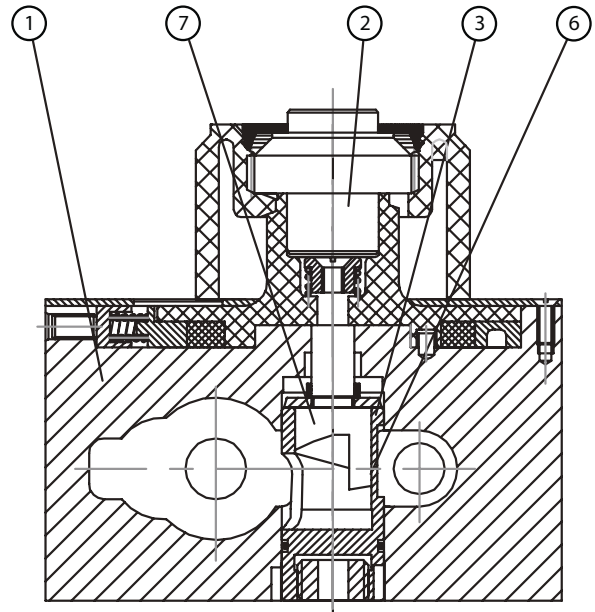
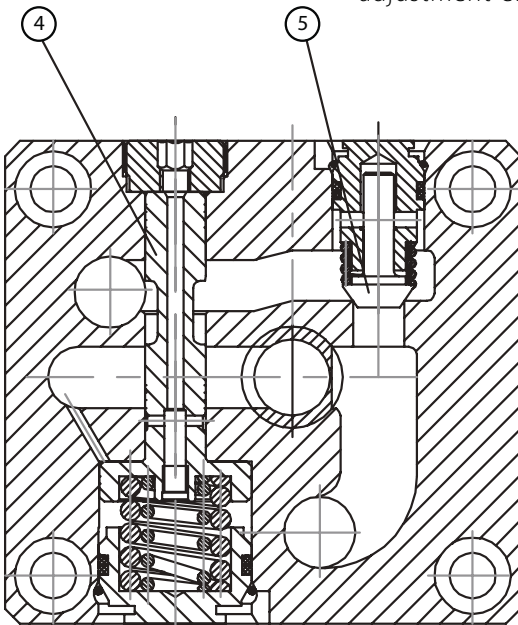
## General

Vickers by Danfoss FCG flow control valves are used to maintain a flow constant largely independent of pressure and temperature.

The valves basically consist of the housing (1), orifice bushing (3), pressure compensator (4) with optional stroke limiter, check valve (5), adjustment element (2).

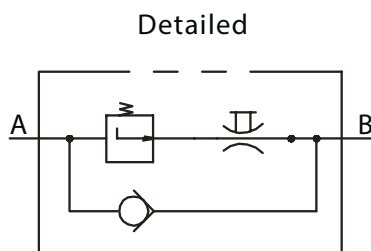
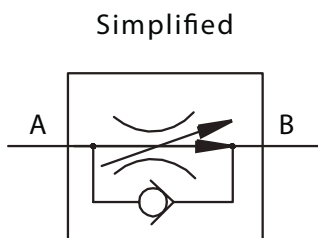
The flow from channel A to channel B is throttle at the orifice (6). In order to maintain the flow across the orifice constant, a pressure compensator is connected upstream of the orifice (6). The flow is maintained largely independent of temperature due to the orifice design. Free return flow from channel B to channel A is directed via

the check valve (5). The flow is only controlled from A to B. In order to control the flows in both directions a rectifier sandwich plate type DGMB can be installed below the flow control valve.

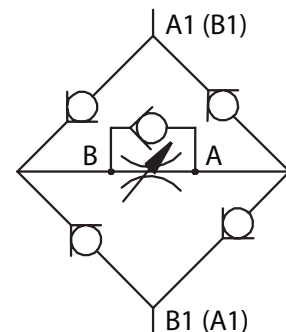


## Functional Symbols

Flow Control Valve

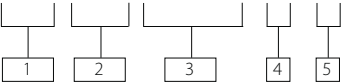


Rectifier sandwich plate



Series FCG-H02-H03  
Model Code

(F3)-FCG-H02-50-(B)-10



1 Seal Options

**F3** – Fluorocarbon seals, for Phosphate Ester (class L\_HFD)  
**Blank** – Nitrile, for Mineral oil Anti-wear hydraulic oil (class L-HFB), Water glycol (class L-HFC)

2 Flow Control Valve

3 Flow Range (A to B)

**Size H02**  
**50** - 50 litres/min  
**35** - 35 litres/min  
**25** - 25 litres/min  
**16** - 16 litres/min  
**10** - 12 litres/min  
**05** - 05 litres/min  
**02** - 02 litres/min

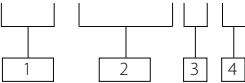
4 Pressure Compensator Stroke Limiter

**Omit** – without  
**B** – with

5 Design Number

**10**

(F3) DGMB-3-10



1 Seal Options

**F3** – Fluorocarbon seals, for Phosphate Ester (class L\_HFD)  
**Blank** – Nitrile, for Mineral oil Anti-wear hydraulic oil (class L-HFB), Water glycol (class L-HFC)

2 Rectifier Sandwich Plate

3 Size

**3** - Size 6 (NG6)  
(Used with F(C)G-3 valve)  
**02** - Size 10  
**03** - Size 16

4 Design Number

**10**

## Hydraulic Technical Data

|                                                  |                                                              |                                  |
|--------------------------------------------------|--------------------------------------------------------------|----------------------------------|
| <b>Flow (L/min)</b>                              | Size 02<br>10      16      25      50                        | Size 03<br>60      100      160  |
| <b>△p with free return flow B→A (Bar)</b>        | Size 02<br>2      2.5      3.5      6                        | Size 03<br>2.8      4.3      7.3 |
| <b>Flow control</b>                              |                                                              |                                  |
| Temperature compensation -20 to +80              | ± 2% at max flow                                             |                                  |
| Pressure-compensation (up to △p = 315 Bar)       | Size 02<br>± 2% max                                          | Size 03<br>± 5% max              |
| <b>Operating pressure, max. - port A (Bar)</b>   | up to 315                                                    |                                  |
| <b>Minimum pressure differential range (Bar)</b> | Size 02<br>3-7                                               | Size 03<br>5-12                  |
| <b>Weight (Kg)</b>                               | Size 02<br>5.6                                               | Size 03<br>11.3                  |
| <b>Hydraulic fluid</b>                           | Mineral oil (for NBR seal) or Phosphate ester (for FPM seal) |                                  |
| <b>Fluid temperature range (°C)</b>              | -30 up to + 80                                               |                                  |
| <b>Fluid viscosity range (mm²/s)</b>             | 10 to 800                                                    |                                  |
| <b>Fluid cleanliness</b>                         | ISO 19/17/14                                                 |                                  |

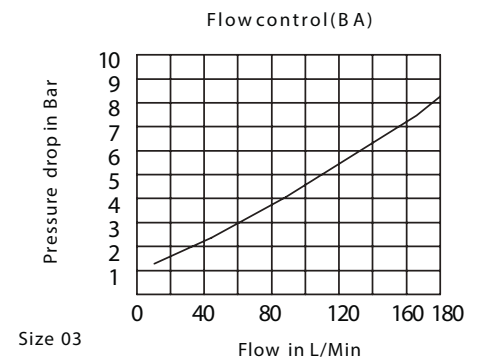
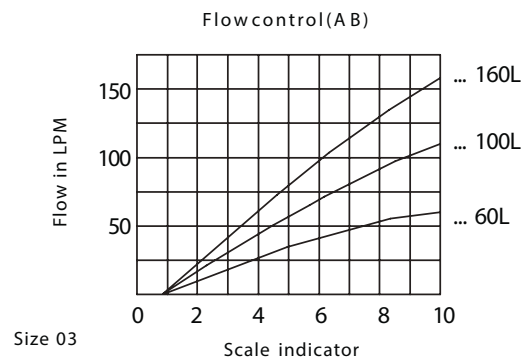
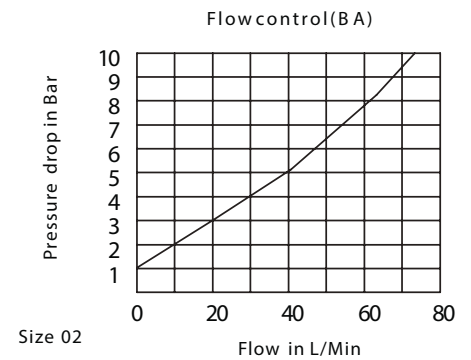
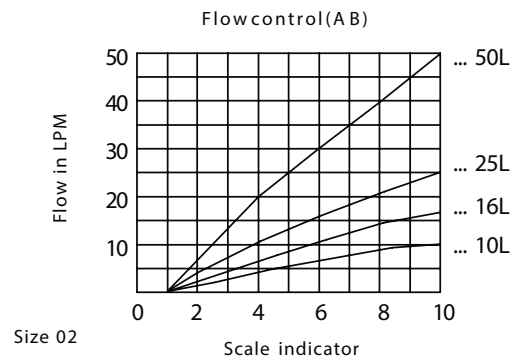
## Rectifier Sandwich Plate

|                                 |                    |                     |                      |
|---------------------------------|--------------------|---------------------|----------------------|
| <b>Flow, maximum (L/min)</b>    | Size 3<br>up to 25 | Size 02<br>up to 50 | Size 03<br>up to 160 |
| <b>Operating pressure (Bar)</b> | up to 315          |                     |                      |
| <b>Cracking pressure (Bar)</b>  | 15                 |                     |                      |
| <b>Weight (Kg)</b>              | Size 3<br>1        | Size 02<br>3.2      | Size 03<br>9.3       |

## FCG-H02-H03

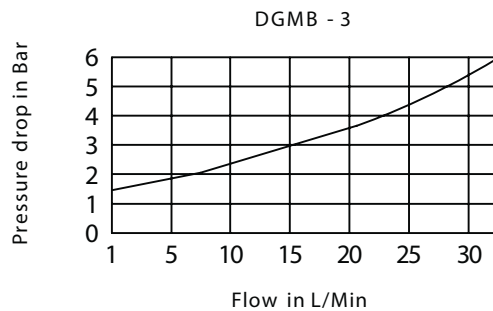
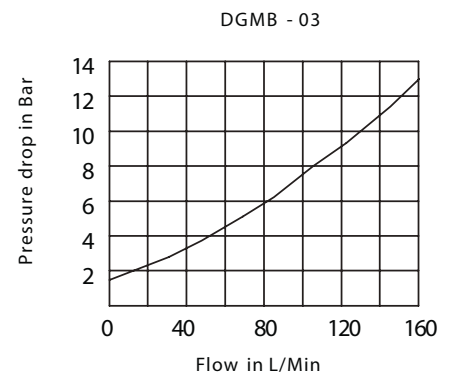
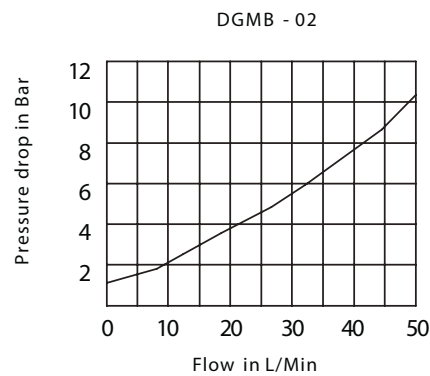
### Flow Curves:

(measured at  $v = 41$   
 $\text{mm}^2/\text{s}$  and  $t = 50^\circ\text{C}$ )



### Flow Curves: Rectifier Sandwich Plate

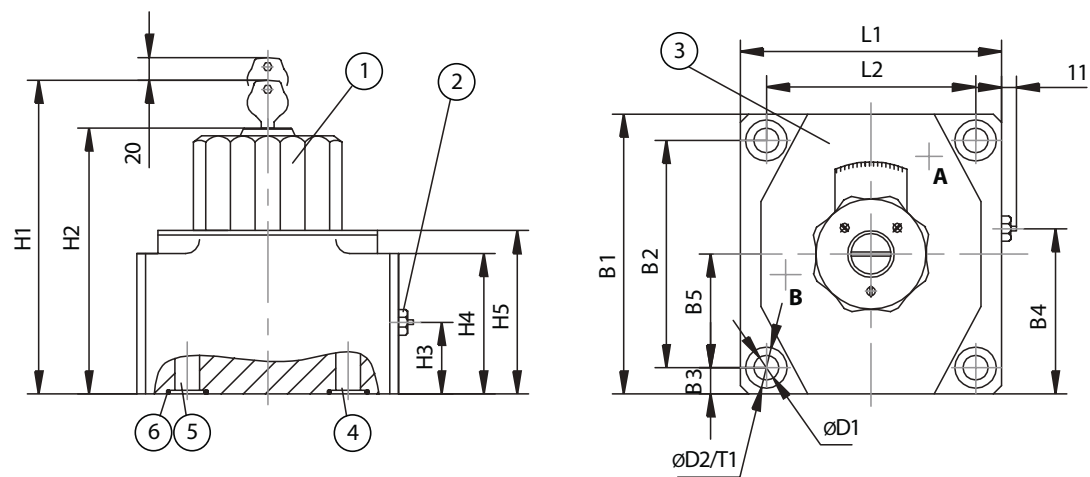
(measured at  $v = 41$   
 $\text{mm}^2/\text{s}$  and  $t = 50^\circ\text{C}$ )



Pressure drop is the same for both directions of flow from A to B or B to A through rectifier sandwich plate.

# FCG-H02-H03 Unit

Dimensions mm



- 1 Lockable rotary knob(may be locked in any position)

2. Pressure compensator stroke limiter, optional

3 Nameplate

4 Port "A"

5 Port "B"
- 6 O-ring 18.66 x 3.53 (size 02)  
O-ring 26 x 3 (size 03)

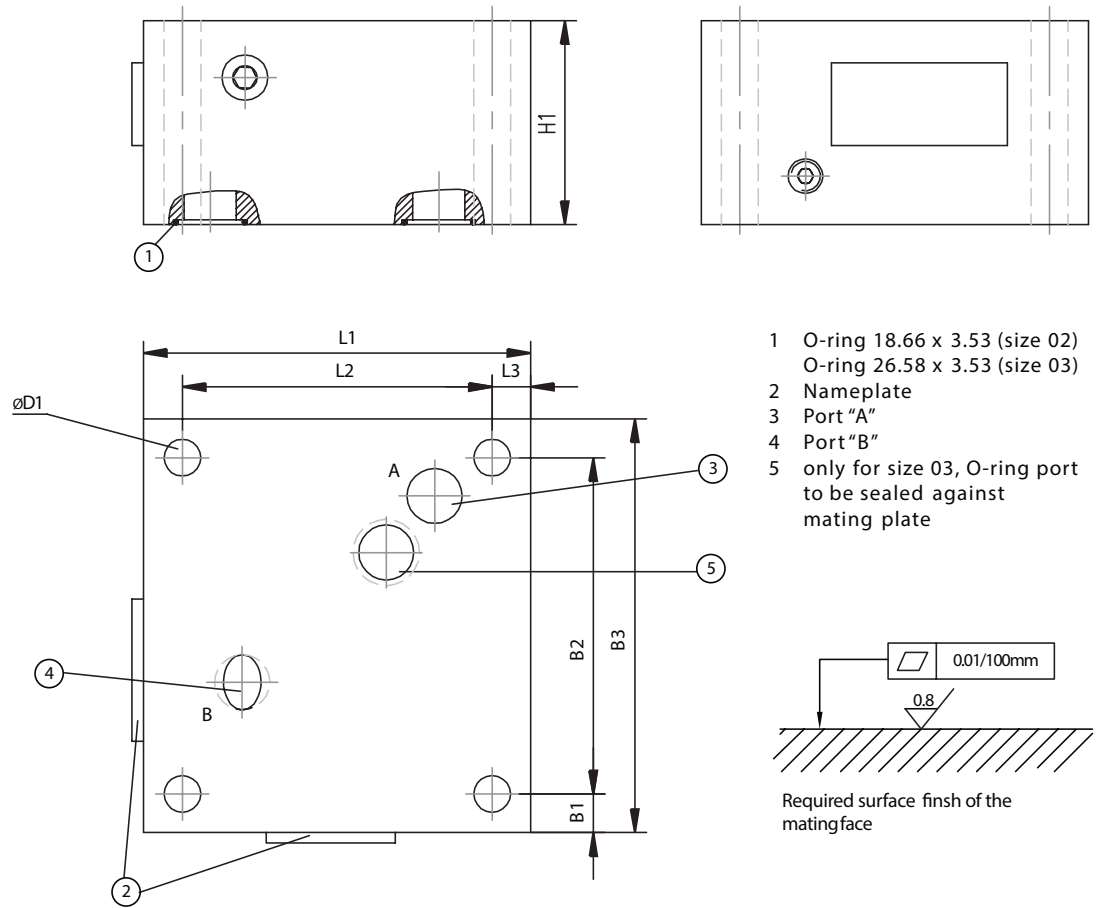
Mounting bolts:  
Size 02  
(4)M8 x 50mm or 5/16"-18UNC x 2"  
Size 03  
(4)M10 x 80mm or 3/8"-16 UNC x 3"

| Size | B1    | B2    | B3   | B4   | B5   | D1 | D2 | H1  | H2  | H3 | H4 | H5 | L1    | L2    | T1 |
|------|-------|-------|------|------|------|----|----|-----|-----|----|----|----|-------|-------|----|
| 02   | 101.5 | 82.5  | 9.5  | 68   | 35.5 | 9  | 15 | 125 | 95  | 26 | 51 | 60 | 95.0  | 76.0  | 13 |
| 03   | 123.5 | 101.5 | 11.0 | 81.5 | 41.5 | 11 | 18 | 147 | 117 | 34 | 72 | 82 | 123.5 | 101.5 | 12 |

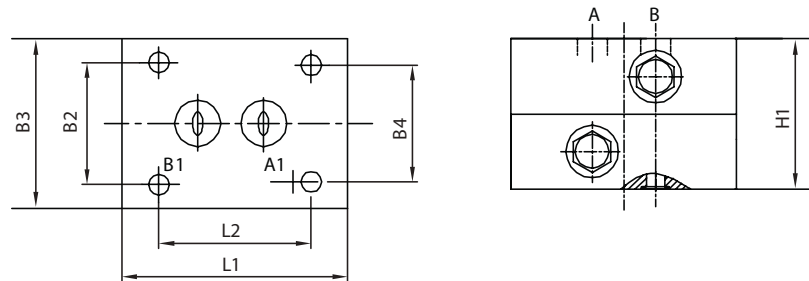
# Rectifier sandwich plate

Dimensions mm

## DGMB - 02 & 03



## DGMB - 3



| Size | B1    | B2     | B3     | B4    | D1 | H1 | L1     | L2     | L3    |
|------|-------|--------|--------|-------|----|----|--------|--------|-------|
| 02   | 9.50  | 82.50  | 101.50 |       | 9  | 50 | 95.00  | 76.00  | 9.50  |
| 03   | 11.00 | 101.50 | 123.50 |       | 11 | 85 | 123.50 | 101.50 | 11.00 |
| 3    |       | 31.00  | 45.00  | 32.50 |    | 40 | 60.00  | 45.00  | N/A   |

| Mounting Bolts                          | Size 3                        | Size 02                                   | Size 03                                   |
|-----------------------------------------|-------------------------------|-------------------------------------------|-------------------------------------------|
| FCG Valve only                          | M5x60mm (2)<br>#10-24x2" (2)  | M8x50mm (4)<br>5/16"-18 UNC x 2" (4)      | M10x80mm (4)<br>3/8"-16 UNC x 3" (4)      |
| FCG Valve with rectifier sandwich plate | M5x100mm (2)<br>#10-24x4" (2) | M8x100mm (4)<br>5/16"-18 UNC x 4-1/4" (4) | M10x160mm (4)<br>3/8"-16 UNC x 6-1/4" (4) |
| Bolt torque value                       | 9 Nm                          | 37 Nm                                     | 75 Nm                                     |

## Released Part Numbers

| <b><i>Model Code</i></b> | <b><i>Assembly Number</i></b> |
|--------------------------|-------------------------------|
| F3-FCG-H02-2-B-10        | 02-413776                     |
| F3-FCG-H02-5-B-10        | 02-413777                     |
| F3-FCG-H02-10-B-10       | 02-413778                     |
| F3-FCG-H02-16-B-10       | 02-413779                     |
| F3-FCG-H02-25-B-10       | 02-413780                     |
| F3-FCG-H02-35-B-10       | 02-413781                     |
| F3-FCG-H02-50-B-10       | 02-413782                     |
| F3-FCG-H02-16-B-10       | 02-413815                     |
| F3-FCG-H02-50-B-10       | 02-413817                     |
| F3-FCG-H03-40-B-10       | 02-413783                     |
| F3-FCG-H03-60-B-10       | 02-413784                     |
| F3-FCG-H03-80-B-10       | 02-413785                     |
| F3-FCG-H03-100-B-10      | 02-413786                     |
| F3-FCG-H03-125-B-10      | 02-413787                     |
| F3-FCG-H03-160-B-10      | 02-413788                     |
| F3-DGMB-3-10             | 02-413796                     |
| F3-DGMB-02-10            | 02-413797                     |
| F3-DGMB-03-10            | 02-413798                     |
| DGMB-3-10                | 02-413799                     |
| DGMB-02-10               | 02-413800                     |
| DGMB-03-10               | 02-413801                     |
| F3-FCG-H03-100-B-10      | 02-413819                     |
| F3-FCG-H03-160-B-10      | 02-413789                     |

## Seal Kit Part Numbers

| <b><i>Model Code</i></b> | <b><i>Assembly Number</i></b> |
|--------------------------|-------------------------------|
| FCG-H02 Seal Kit         | 02-413809                     |
| FCG-H03 Seal Kit         | 02-413810                     |
| DGMB-3 Seal Kit          | 02-413811                     |
| DGMB-02 Seal Kit         | 02-413812                     |
| DGMB-03 Seal Kit         | 02-413813                     |
| F3-FCG-H02 Seal Kit      | 02-413821                     |
| F3-FCG-H03 Seal Kit      | 02-413822                     |
| F3-DGMB-3 Seal Kit       | 02-413820                     |
| F3-DGMB-02 Seal Kit      | 02-413823                     |
| F3-DGMB-03 Seal Kit      | 02-413824                     |

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