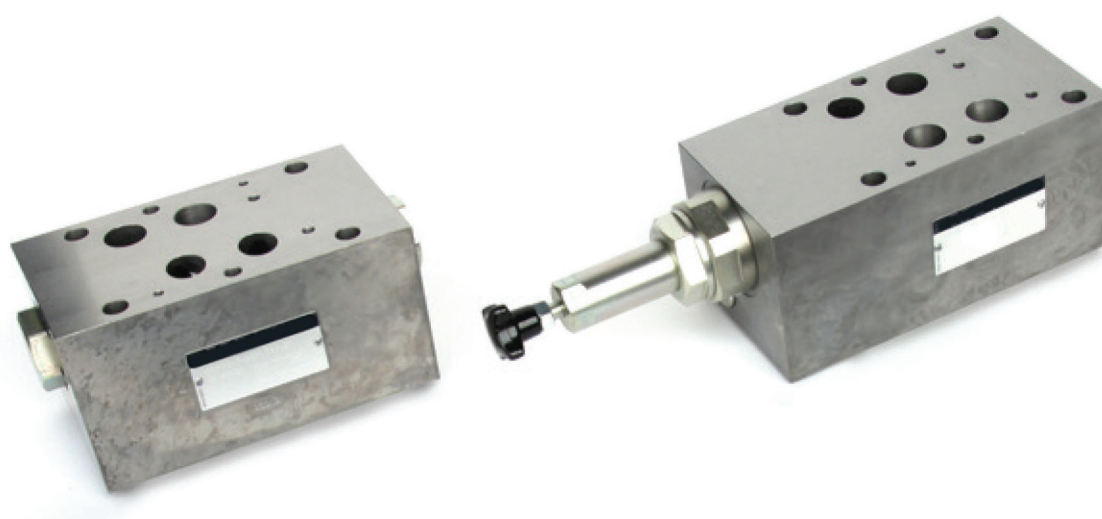


ENGINEERING
TOMORROW



Technical Information
SystemStak™ Valves
DGMxx-7 20/30 Design





General Description

This range of stackable hydraulic controls are designed to be mounted under a size 7 directional valve such as Danfoss DG*V-7, solenoid controlled and pilot operated. With their cartridge design they will provide a compact hydraulic circuit at reduced cost with the elimination of interconnecting piping. Servicing is simplified with access to working parts achieved without removing valves from an assembled stack.

The units are performance rated up to: 200 L/min (53 USgpm)
315/350 bar (4500/5000 psi)

The range comprises:

- DGMX-7 Pressure reducing module
- DGMC-7 Pressure relief module
- DGMFN-7 Flow restrictor module
- DGMPC-7 Pilot operated check module

Table of Contents

Function	Basic symbol	Basic model	Features	Page
Reducing		DGMX	Piloted from (and reduced pressure in) port P, A or B	3
Relief		DGMC	Single, dual and crossport models	5
Pilot operated check		DGMPC	Single in port A or B; dual in ports A and B	7
Flow restrictor		DGMFN	Single or dual port, meter-in or meter-out	10

SystemStak™ Pressure Reducing Valve Modules

DGMX-7



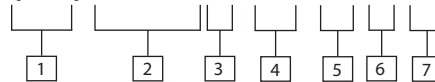
General Description

These two-stage adjustable pressure reducing modules are used to regulate the downstream pressure in the line in which the integral reducing valve is installed, whilst the upstream pressure fluctuates above the reduced pressure.

The valve elements are formed as cartridges for ease of construction and servicing.

Model Code

(F3-) DGMX-7 - P * - * - * -20



1 Special seals for phosphate ester fluids

Omit for standard seals; see "Hydraulic fluids" in "Further Information" section.

2 Stak Module Reducer

3 Size

ISO 4401-7

4 Function Ports

PP – pressure reducing function in the P line, piloted from P

PA – pressure reducing function in the P line, piloted from A

PB – pressure reducing function in the P line, piloted from B

5 Pressure adjustment range

B – 10 to 100 bar (145 to 1454 psi)

C – 10 to 160 bar (145 to 2326 psi)

F – 10 to 250 bar (145 to 3635 psi)

G – 350 bar (5000 psi)

6 Adjustment method

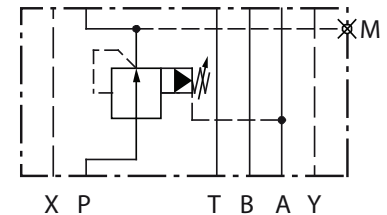
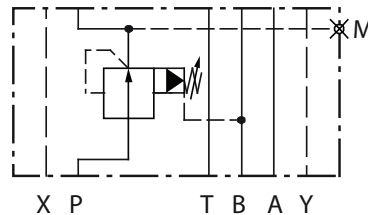
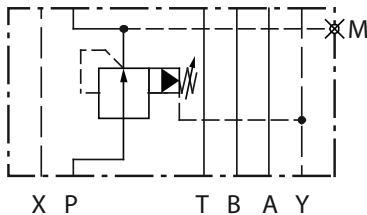
W – screw and lock nut

H – hand wheel with locknut

7 Design number,

Subject to change. Installation dimensions unchanged for numbers 20-29 inclusive.

Functional Symbol



Operating Data

Basic Characteristics

Maximum flow	250 l/min (66 USgpm)
Maximum operating pressure	350 bar (5076 psi)
Operating temperature	-25 to +80°C (-13 to +176°F)
Pilot drain flow	0,5 L/min (0.13 USgpm)
Weights	8,65 kg (19.06 lb)

Performance Data

Performance Characteristics

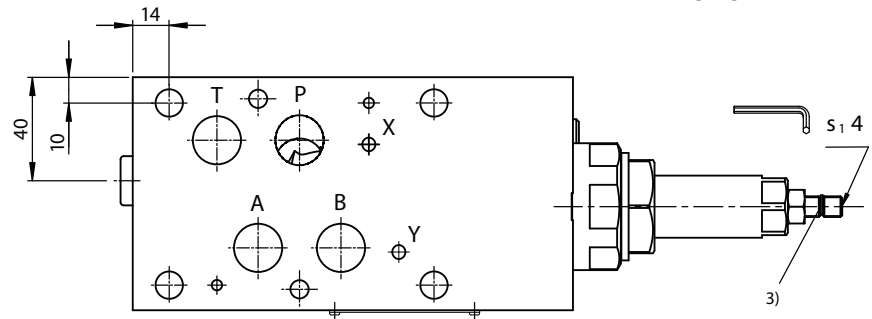
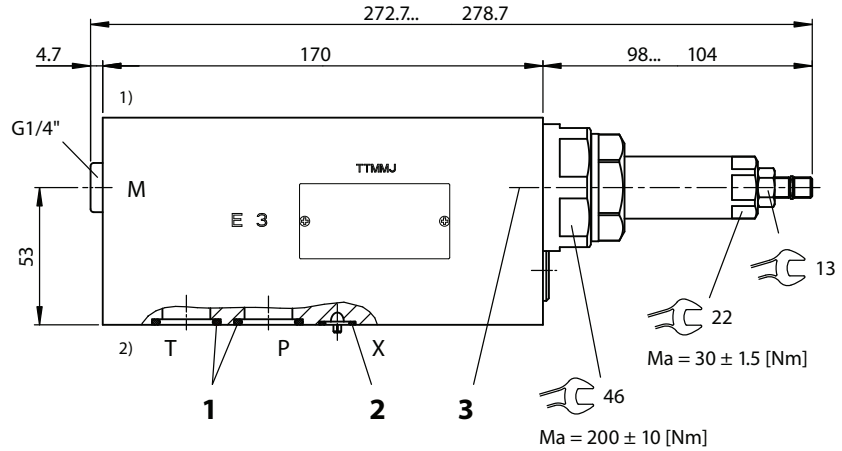
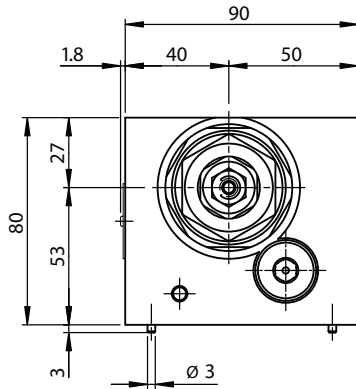
Typical performance with petroleum oil at 36 cSt (169 SUS) and 50°C (122°F).

Reduced Pressure Underride

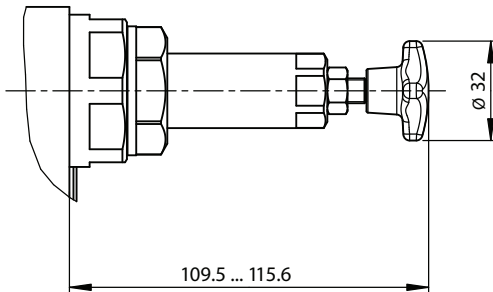
At cartridge outlet for various pressure settings.

Installation Dimensions in mm (inches)

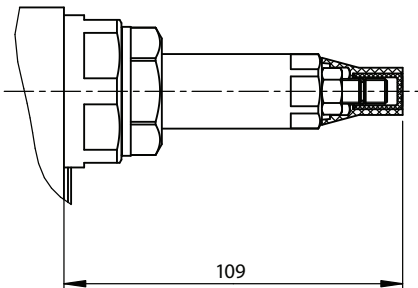
DGMX-7



H Option- Hand Wheel



W Option- Screw and Locknut



For all models, to increase pressure setting, unlock and turn the adjuster clockwise, viewed at the adjuster end. Turn counter-clockwise to decrease pressure setting.

Type H adjustment settings can be secured by tightening the lock screw in the end of the thimble.

For additional dimensions, contact your Danfoss representative.

Pressure Relief Valve Modules

DGMC(2)-7

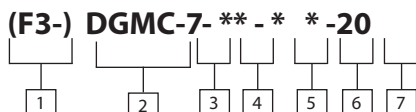


General Description

These two-stage adjustable pressure relief modules are used to limit the maximum pressure in the lines from which the integral relief elements are fed.

The relief elements are formed as cartridges for ease of construction and servicing.

Model Code



1 Special seals for phosphate ester fluids

Omit for standard seals; see "Hydraulic fluids" in "Further Information" section of catalog.

2 Stak Module Relief

3 Size

ISO 4401-07

4 Function

AT – Limits pressure in A, discharges to T

BT – Limits pressure in B, discharges to T

PT – Limits pressure in P, discharges to T

5 Pressure adjustment range

B – 10 to 100 bar (145 to 1454 psi)

C – 10 to 160 bar (145 to 2326 psi)

F – 10 to 250 bar (145 to 3635 psi)

G – 350 bar (5000 psi)

6 Adjustment method

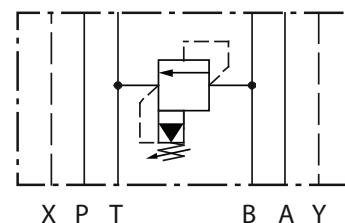
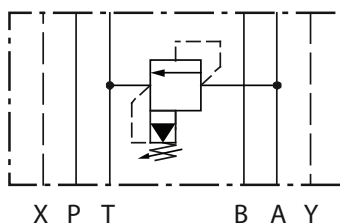
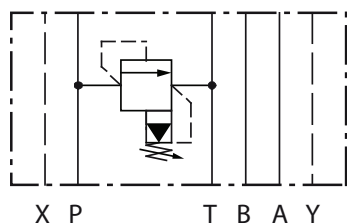
W – screw and lock nut

H – hand wheel with lock nut

7 Design number, 20 series

Subject to change. Installation dimensions unchanged for design numbers 20-29 inclusive.

Functional Symbol



Operating Data

Basic Characteristics

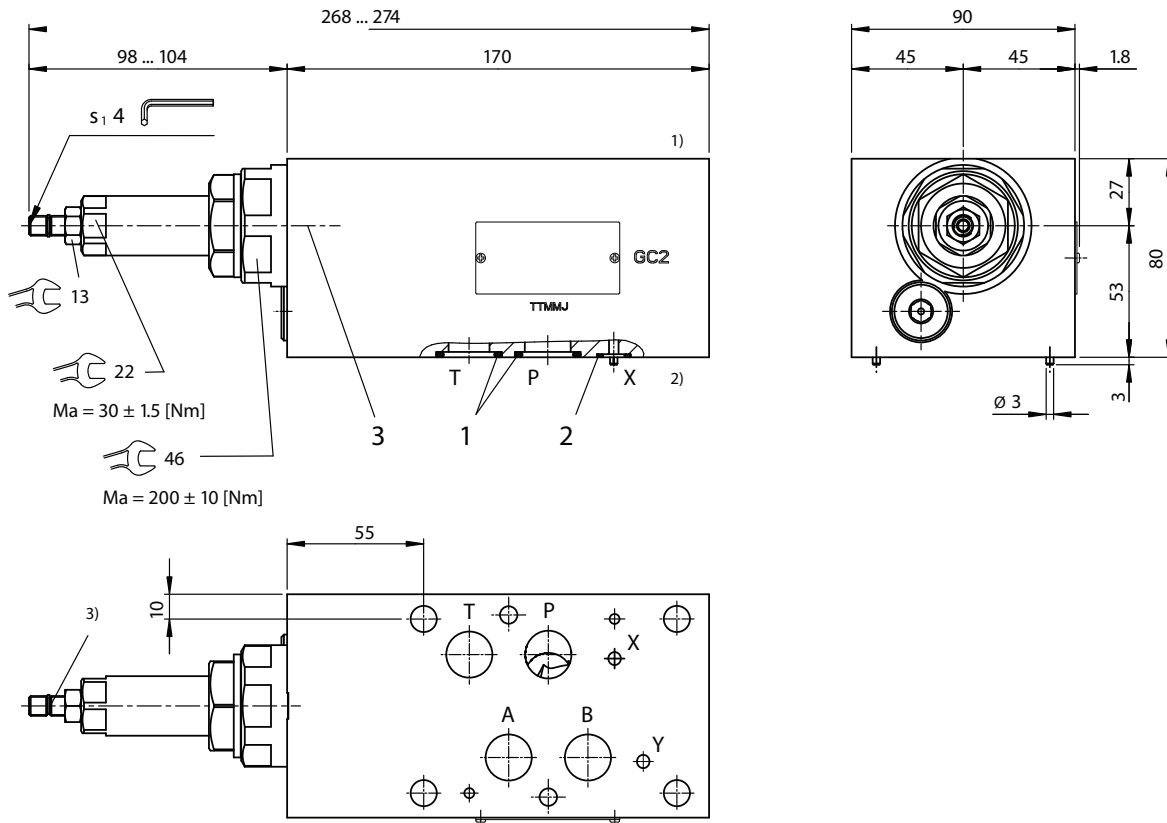
Maximum flow	300 l/min (80 USgpm)
Maximum operating pressure	350 bar (5076 psi)
Note that back pressure in line T, into which the valve's pilot drain is internally connected, increases the effective pressure. For pressure adjustment ranges see "Model Code".	
Operating temperature	-25 to +80°C (-13 to +176°F)
Pilot drain flow	0,5 L/min (0.13 USgpm)
Weights	8,55 kg (18.84 lb)

Performance Characteristics

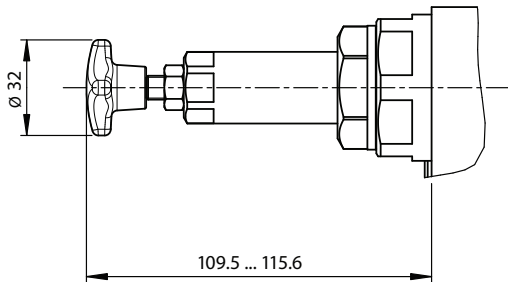
Typical performance with petroleum oil at 36 cSt (169 SUS) and 50°C (122°F).

Pressure Override at Cartridge Inlet

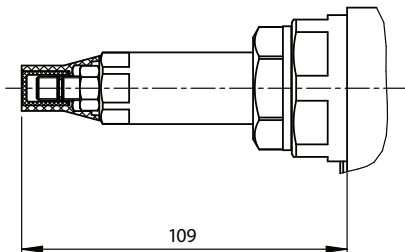
At various pressure settings and cartridge outlet at 0 bar/psi.



H Option - Hand Wheel



W Option - Screw and Locknut



For all models, to increase pressure setting, unlock and turn the adjuster clockwise, viewed at the adjuster end. Turn counter-clockwise to decrease pressure setting.

Type H adjustment settings can be secured by tightening the lock screw in the end of the thimble.

For additional dimensions, contact your Danfoss representative.

SystemStak™ Pilot Operated Check Valve

DGMPC-7

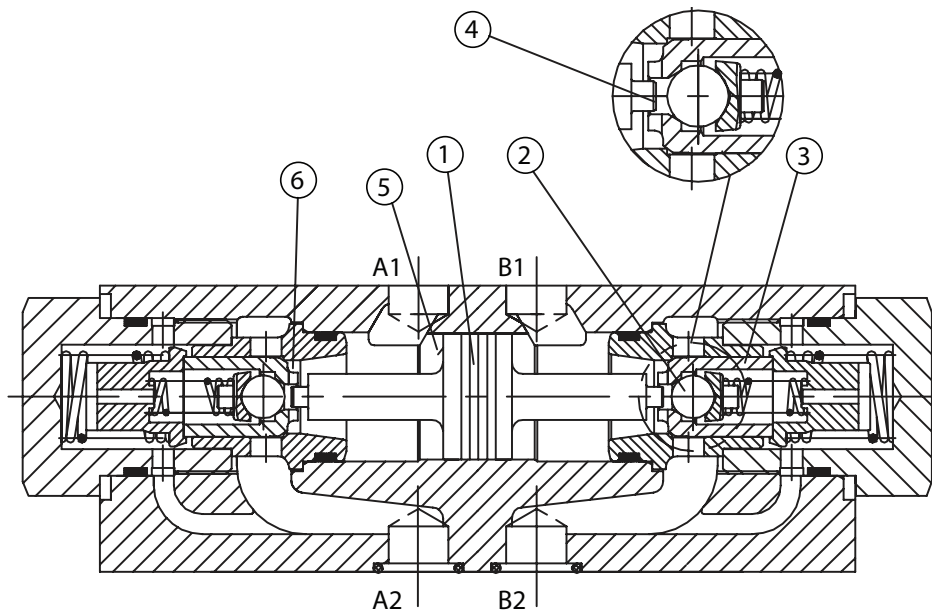
General Description

Features:

- Industry Standard Mounting, ISO 4001-7, NFPA T 3.51 M R1 and ANSI B 93.7 D07
- For use in vertical stacking assemblies
- For the leak free closure of one or both service ports

General

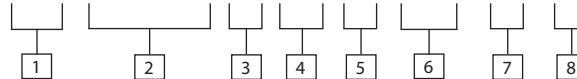
The DGMPC hydraulic operated check valve is of a sandwich plate design. They are used for leak-free closure of one or both service ports, even for long periods of time. Free flow occurs from A1 to A2 or B1 to B2. Flow in the opposite direction is blocked. The fluid flows from A1 to A2, the piston (1) is pressurised and is pushed to the right, thereby opening the ball poppet (2) which then opens the main poppet (3). In order to ensure correct closing of the valve, the service ports of the directional valve must be connected to tank in the neutral position (see typical circuit).



- 1 Piston
- 2 Ball Poppet
- 3 Main Poppet
- 4 Area A1
- 5 Area A2
- 6 Area A3

Model Code

(F3) - DGMPC - 7 - AB - *- (BA) - (*) - 30



1 Seal Options

F3 – Fluorocarbon seals, for Phosphate Ester (class L-HFD)

Blank – Nitrile, for Mineral oil Anti-wear hydraulic oil (class L-HM), Invert emulsion (class L-HFB) Water glycol (class L-HFC)

2 Stack module, piloted operated check valve

3 Size

ISO 4401-07

4 Check Valve Line

AB – A piloted from B
BA – B piloted from A (Single line only)

5 Cracking Pressure

K – 3 Bar

L – 5 Bar

M – 7.5 Bar

N – 10 Bar

6 Check Valve Line

BA – B piloted from A (Dual line only)

7 Cracking Pressure (Dual line only)

K – 3 Bar

B – 5 Bar

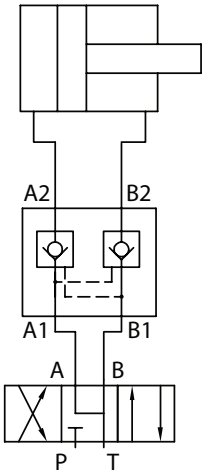
M – 7.5 Bar

N – 10 Bar

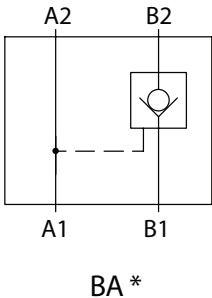
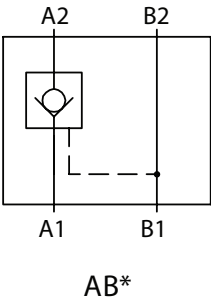
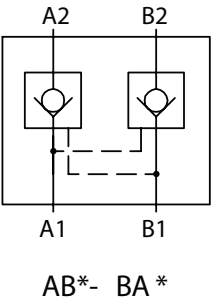
8 Design Number

30

Typical Cir cuit



Symbols



Operating Data

Technical Data	
Maximum Flow (L/min)	300
Maximum Operating Pressure (bar)	315
Cracking Pressure	See "Characteristic Curves" graph
Area Ratio	A1/A2 = 1/11.8; A3/A2 = 1/2.8
Fluid	Mineral oils or phosphate ester
Fluid Temperature Range (0C)	-20 to 80
Fluid Viscosity Range (mm2/S)	2.8 to 500
Fluid Cleanliness Level (ISO)	19/17/14
Weight (Kg)	6.5

Performance Data

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

Solid Line

A1 - A2; B1 - B2

Dotted Line

A2 - A1; B2 - B1

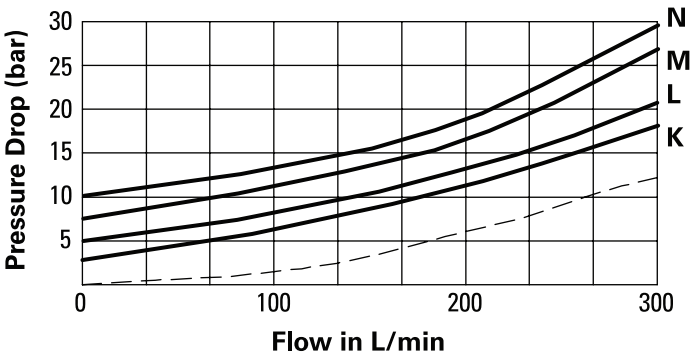
Cracking Pressure:

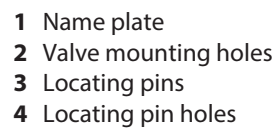
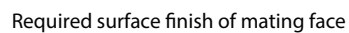
K = 3 bar

L = 5 bar

M = 7.5 bar

N = 10 bar





9

SystemStak™ Throttle Valve with Check

DGMFN-7



General Description

Features:

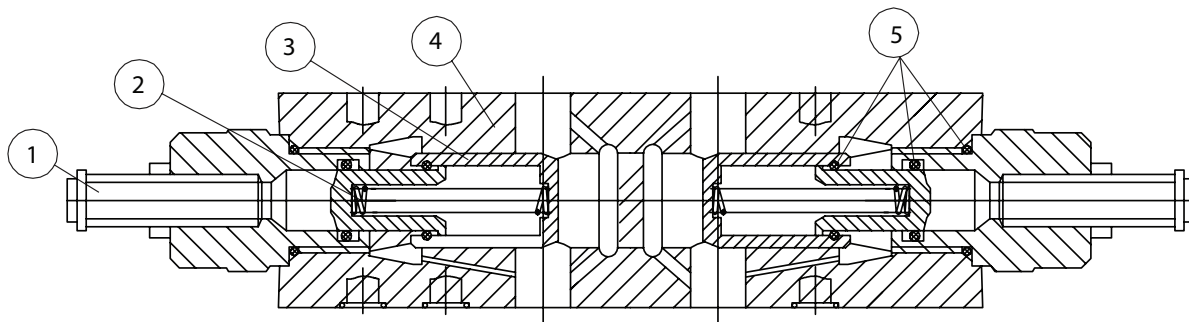
- Industry standard mounting, ISO 4401-7, NFPNA-T-3 .5.1-M-R-I, ANSI B 93.7 D07
- Sandwich plate design
- Limiting of main flow of two actuator ports
- Meter-in or meter-out control

General

DGMFN valves have double throttle/check valves in a sandwich plate design. They are used to limit main flow at one or two actuator ports. Two symmetrically arranged throttle/check valves limit flow (by means of adjustable throttle spools) in one direction and permit free return flow in the other direction.

Main flow limiting

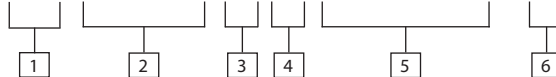
The double throttle/check valve is fitted between the directional valve and the subplate to change the speed of an actuator (main flow limiting)



- 1 Throttle Adjustment Screw
- 2 Spring
- 3 Spool
- 4 Valve Body
- 5 O-Ring

Model Code

F3 - DGMFN - 7 - * - A2W - B2W - 30



1 Seal Options

F3 – Fluorocarbon seals, for Phosphate Ester (class L-HFD)

Blank – Nitrile, for Mineral oil Anti-wear hydraulic oil (class L-HM), Invert emulsion (class L-HFB) Water glycol (class L-HFC)

2 Stack module, throttle valve with check

3 Size

ISO 4401-07

4 Direction of flow control

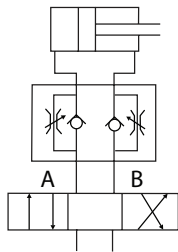
Y – Meter out
X – Meter in
YX – Meter out A, meter in B
XY – Meter in A, meter out B

5 Control line (Wrench adjustment)

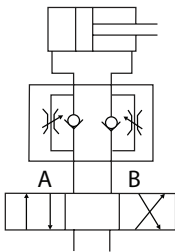
Both port A and B

6 Design Number

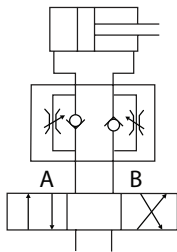
30



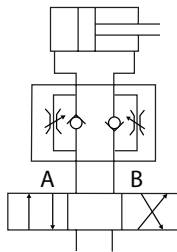
Meter-in control...X



Meter-out control...Y



A Meter -out control
B Meter -in control: YX



A Meter -in control
B Meter -out control: XY

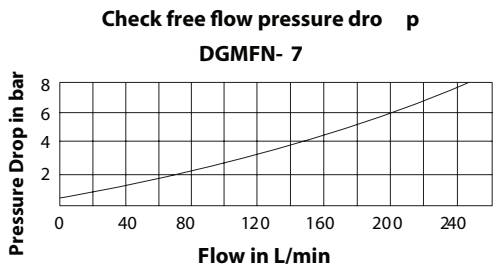
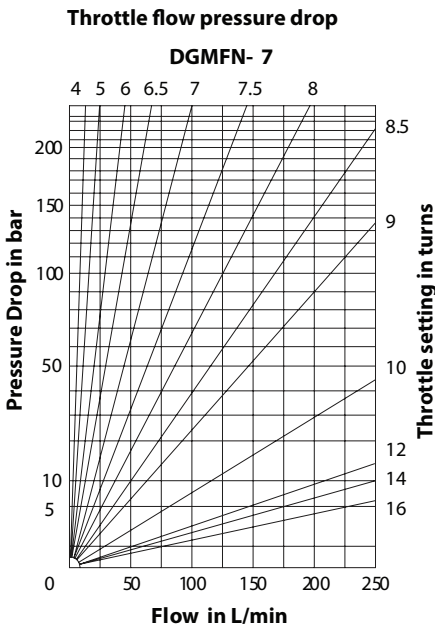
Operating Data

Technical Data

Maximum Flow (L/min)	250
Maximum Working Pressure (bar)	315
Fluid	Mineral oils or phosphate ester
Fluid Temperature Range (0 C)	-20 to + 80
Fluid Viscosity Range (mm2/S)	2.8 to 500
Fluid Cleanliness Level (ISO)	19/17/14
Weight (Kg)	4.7

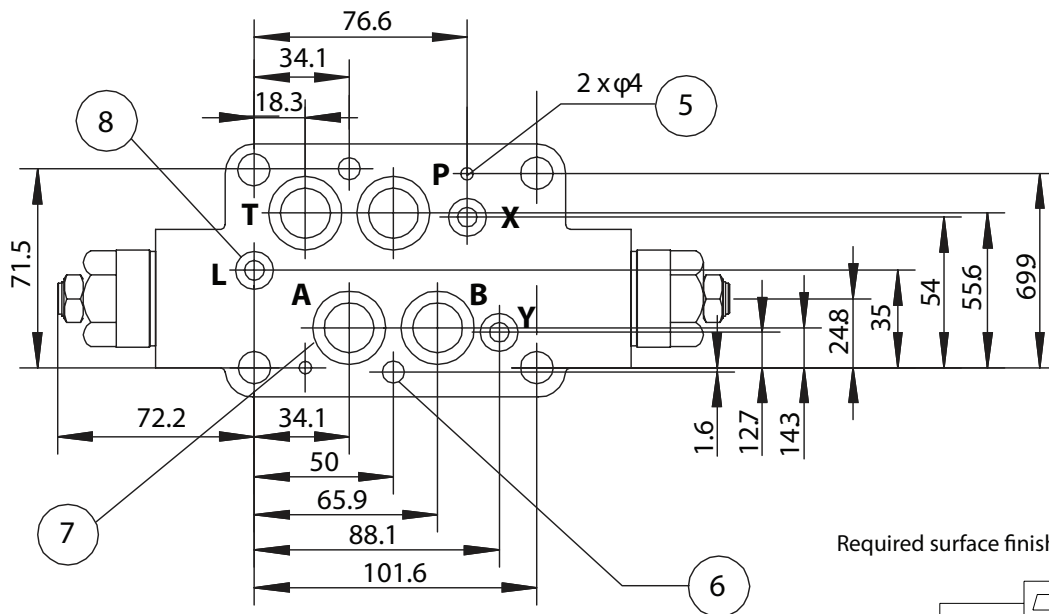
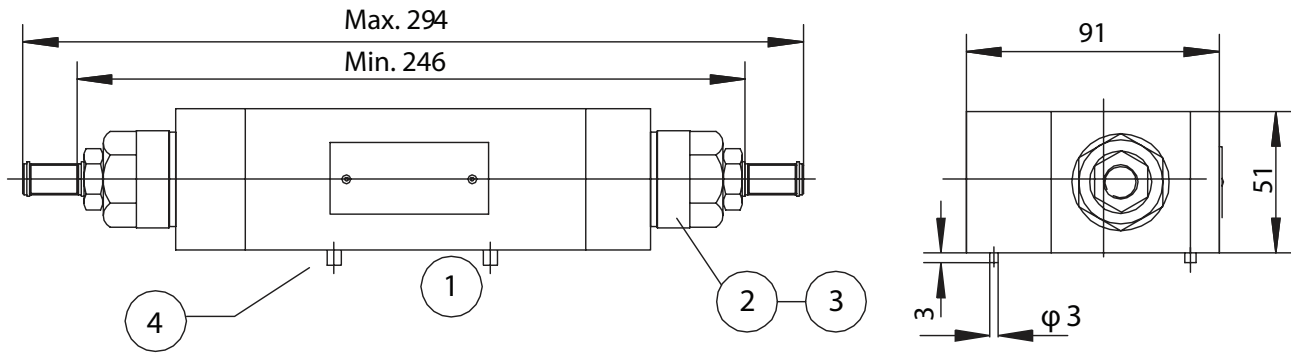
Performance Data

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

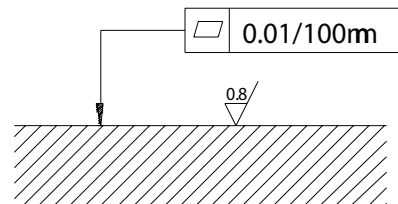


Installation Dimensions

(Dimensions in mm)



Required surface finish of mating face



- 1 Name plate
- 2 Screw for flow adjustment
- 3 Turn anti-clockwise = increases flow, turn clockwise = decreases flow
- 4 Two locating pins
- 5 Two locating pin holes
- 6 Valve mounting holes
- 7 O-ring ports A,B,P,T
- 8 O-ring ports X,Y,L

Mounting bolts: ½-UNC, SAE, Grade 8; M10 (4) & M 6 (2) , DIN912-10.9; ISO 898, Class 12.9

O-Ring: size 22mm x 2.5mm for port A,B,P and T

O-Ring: size 10mm x 2mm for port X,Y, and L

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- DCV directional control valves
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