DGM**-3 40/41 Design

ISO4401 Size 03;
ANSI/B93.7M-D03

Powering Business Worldwide

Build a Compact, Cost-Effective, Reliable Hydraulic System with Eaton SystemStak™ Valves

Reduces System Space Requirements

SystemStak valves make compact hydraulic systems in which specific function valves are "sandwich' mounted between a directional valve and a standard mounting surface.

Reduce Cost

SystemStak valves eliminate intervalve piping and leak-prone tube and pipe connections. Installed cost is less than when using conventional valves.

Versatile and Easy to Install

SystemStak valves have all the internal passages necessary to serve the directional valve topping them. Mounting surfaces and port patterns are to international standards: any valve conforming to ISO 4401 size 03; ANSI/B93.7M size D03; NFPA-D03; CETOP 3; and DIN 24340, NG6 mounting interface can be used with these SystemStak valves.

Rugged and Reliable

Internal working parts are produced from hardened steel and mounted in ductile (spheroidal graphite) iron bodies. Excellent reliability is ensured. Working parts are accessible without removing valves from an assembled stack.

SystemStak Systems... Easy to Understand, Easy to Design

SystemStak circuitry is best shown using slightly different symbols than those for traditional valve configurations. Each SystemStak symbol has the same basic form and size as shown in fig. 1.

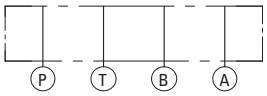

Figure 1

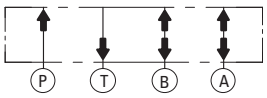

Figure 2

For ease of understanding, remember the directions of flow for each line, and that all four flow paths pass through each valve (see fig. 2). For clarity, directional valves are drawn vertically in SystemStak circuit diagrams (see fig. 3).

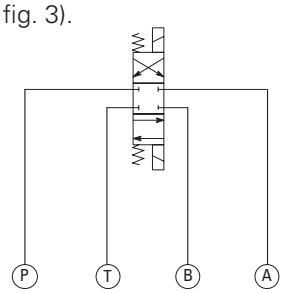

Figure 3

Each station (valve stack) is a combination of functions. When designing and assembling SystemStak valves, care must be taken to ensure that they interact as required by stacking the functions in the correct sequence (fig. 4 is an example).

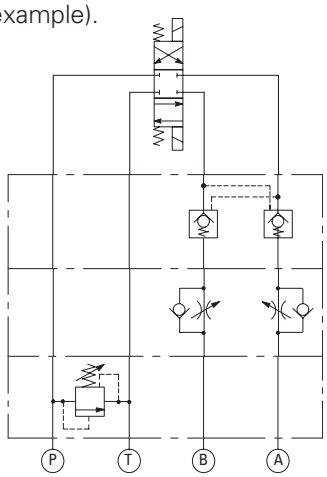

Figure 4

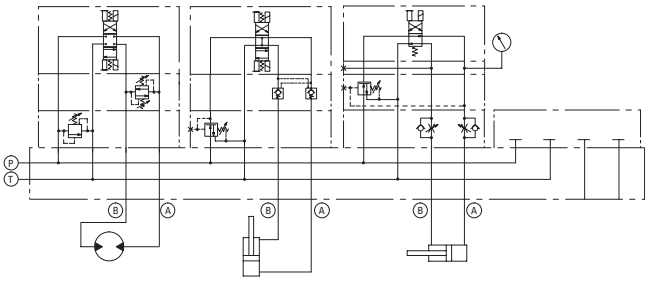

Figure 7

Fig. 7 represents a complete SystemStak system, showing typical use of functions available from this range. The circuit diagram also shows the use of a tapping plate for accessing line pressure readings, and a blanking plate to close off an unused station of a multi-station manifold.

Relief valves should normally be positioned next to the mounting surface (i.e. at the bottom of the stack). When both a flow control and a pilot operated check valve are required, it is recommended that the flow control valve be between the check valve and the actuator to prevent check valve chatter.

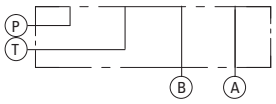

Figure 5

A combination of directional valve, SystemStak valve(s) and subplate/manifold block (fig. 5: single station subplate and fig. 6: multi-station manifold) completes the assembly.

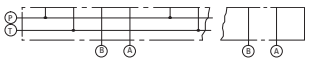

Figure 6

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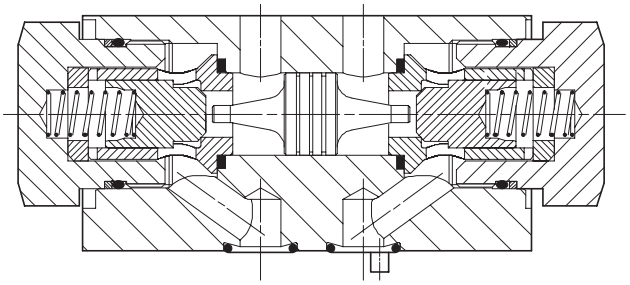
DGMPC-3-41

General Description

These valves provide pilot operated check functions in one or both service lines (A or B), the operating pilot supply coming from the opposite service line. Thus with pressure in one service line the check valve in the other service line will be open (subject to system/actuator pressures being correct for the valve area ratios).

A 3:1 area ratio of pilot piston to check valve seat is supplemented by an optional 10:1 decompression feature.

Typical Section



Model Code

DGMPC -3- (D) * [-(D)** *] - 41**

1 2 3 4 5 6 7

1 Decompression feature
D – 10:1 decompression ratio
Omit if not required

2 Function
AB – Check in line A, pilot operated from line B
D – Check in line B, pilotoperated from line A (single check model only)

3 Check valve opening/cracking pressure
K – 1 bar (14.5 psi)
M – 2,5 bar (36 psi)
N – 5 bar (72 psi)

4 Decompression feature (second function of dual models)
As in 1
Omit for single line models,and if not required for dual models

Note: "D" must be specified here, for dual models, if called for in 1

5 Second function of dual models
BA – Check in line B, pilot operated from line A
Omit for single line models

6 Check valve opening/cracking pressure (second function of dual models)
Options as in 3
Omit for single line models

7 Design number, 41 series
Subject to change. Installation dimensions unchanged for design numbers 40 to 49 inclusive.

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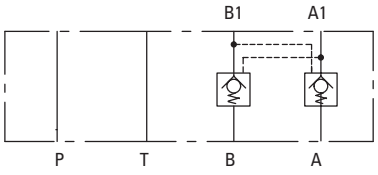
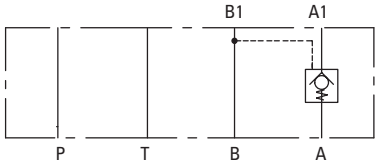
Functional Symbols

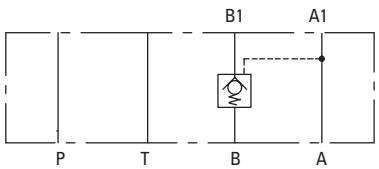
DGMPC-3-(D)AB*-(D)BA*



DGMPC-3-(D)AB*



DGMPC-3-(D)BA*



Operating Data

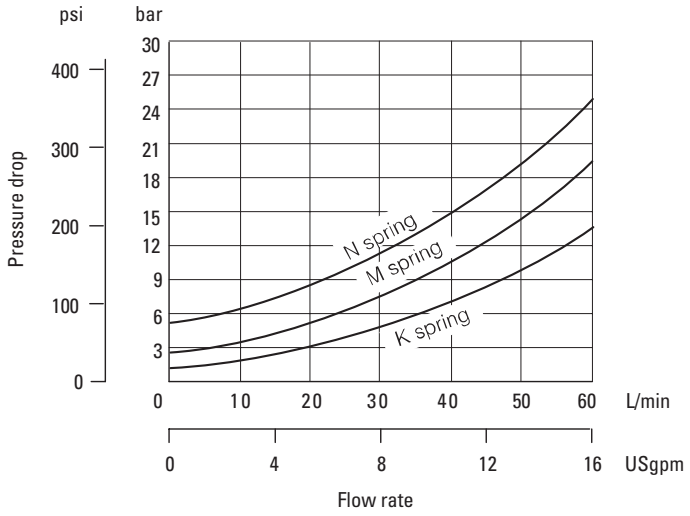
Maximum flow rate	60 L/min (16 USgpm)
Maximum operating pressure	315 bar (4500 psi)
Pressure drops	See graphs
Mounting position	Optional
Mass approximate	0.8 kg (1.81 lb)

Performance Data

Pressure Drop Data

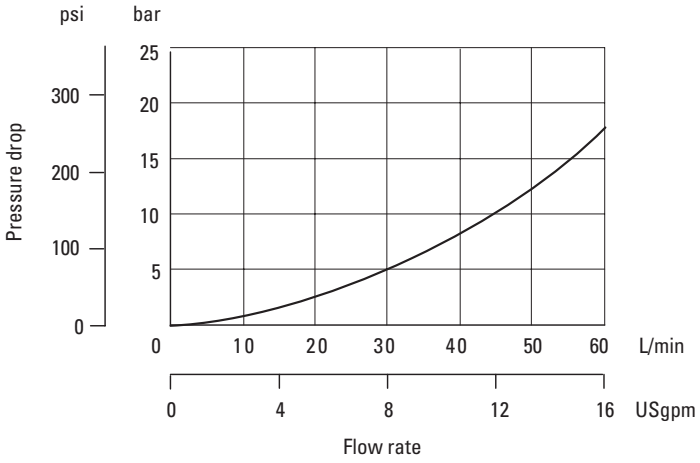
Typical performance with mineral oil at 21 cSt (102 SUS) and at 50°C(122°F)

Pressure drop: flow path A1 to A or B1 to B (no pilot-pressure operation)



u For other viscosities, see "Further Information".

Pressure drop: flow path A to A1, or B to B1 with check valve pilot-operated fully open



Pilot Pressures

Pilot area ratios:

Main check valve 3:1

Decompression poppet 10:1

Use applicable ratio and opening/ cracking pressure to calculate pilot pressure to open valve element, applied to the following formulae:

To open valve or decompression poppet in line A:

$$\text{Pressure at B1} = \frac{p_A + p_C - p_{A1}}{\text{Area ratio factor}} + p_{A1}$$

To open valve or decompression poppet in line B:

$$\text{Pressure at A1} = \frac{p_B + p_C - p_{B1}}{\text{Area ratio factor}} + p_{B1}$$

Where:

p_A = Pressure at A

p_C = Cracking/opening pressure

p_{A1} = Pressure at A1

p_B = Pressure at B

p_{B1} = Pressure at B1

A =
B =
A1 =
B1 = } Service line location; see functional symbols

Leakage

Less than 0,25 ml/min (0.015 in3/min) at 250 bar (3625 psi).

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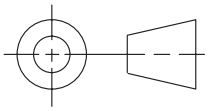
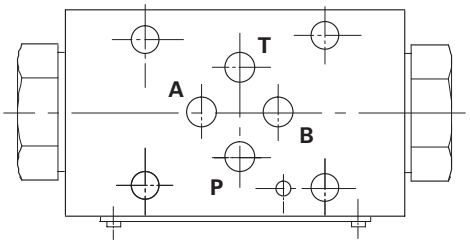
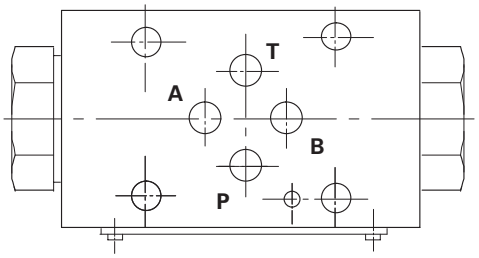
Installation Dimensions in mm (inches)

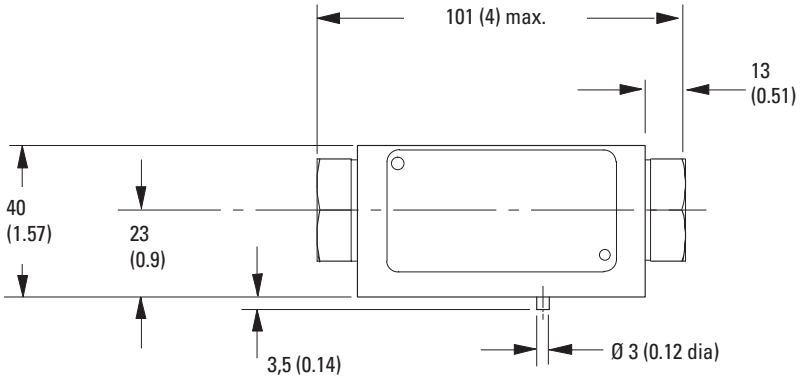


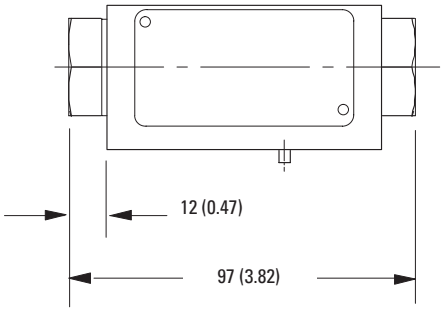
DGMPC-3-(D)AB*-(D)BA*-41

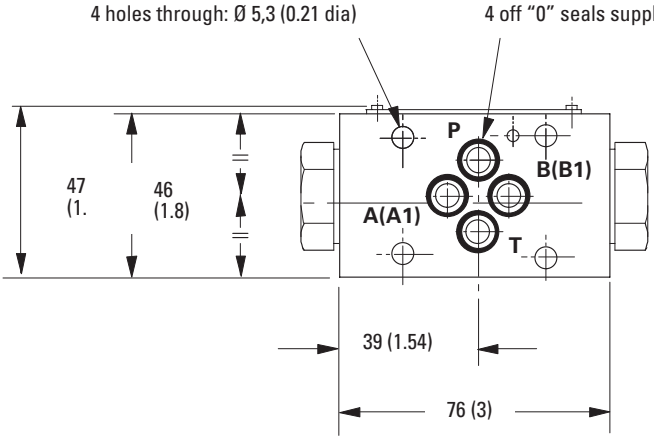


DGMPC-3-(D)AB*-41

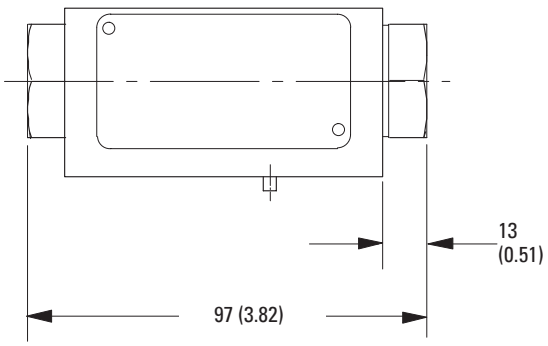








DGMPC-3-(D)BA*-41



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