

ENGINEERING
TOMORROW

Danfoss

Technical Information

SystemStak™ Valves

DGMx-x8 10 Design



SystemStak™ Pilot Operated Check Valve

Series DGMPC-H8



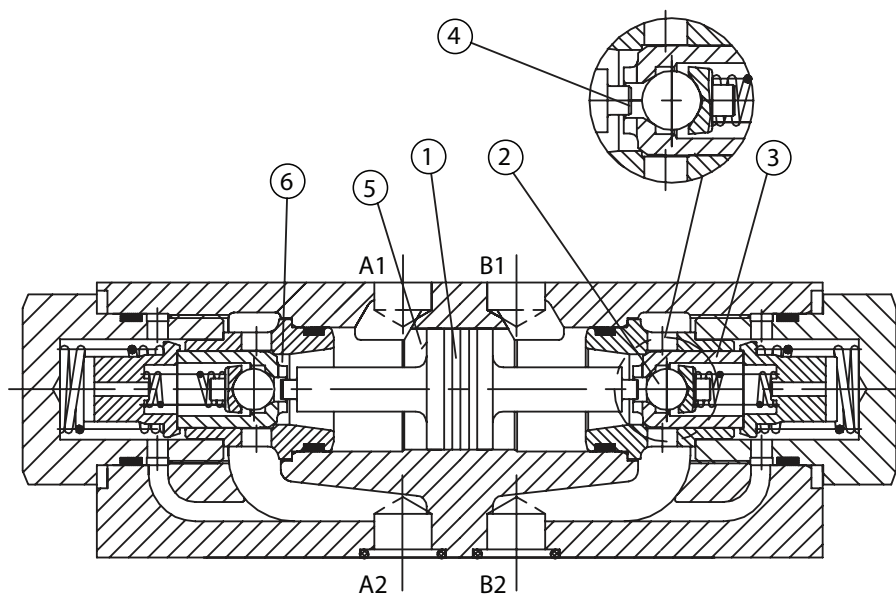
General Description

Features:

- Industry Standard Mounting, ISO 4001-8, NFPA T 3.51 M R1 and ANSI B 93.7 D08
- For use in vertical stacking assemblies
- For the leak free closure of one or both service ports

General

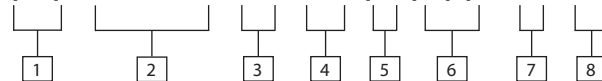
The DGMPC hydraulic operated check valve is of a sandwich plate design. They are used for leak-free closure of one or both service ports, even for long periods of time. Free flow occurs from A1 to A2 or B1 to B2. Flow in the opposite direction is blocked. The fluid flows from A1 to A2, the piston (1) is pressurized 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 H8 AB * (BA) (*) 10



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

H8- ISO 4001-8

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)

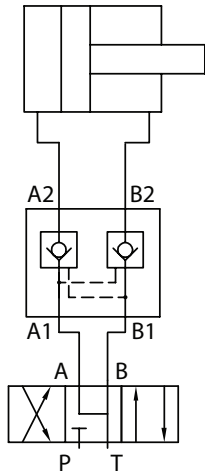
7 Cracking Pressure (Dual line only)

K – 3 Bar
L – 5 Bar
M – 7.5 Bar
N – 10 Bar

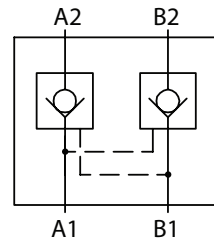
8 Design Number

10

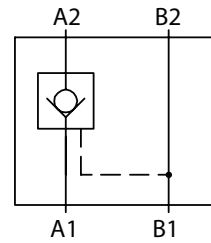
Typical Circuit



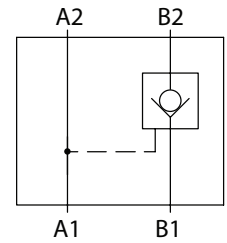
Symbols



AB*- BA *



AB*



BA *

Operating Data

Technical Data

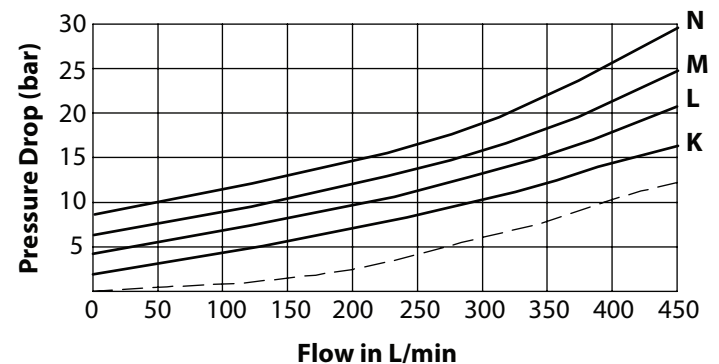
Maximum Flow (L/min)	450
Maximum Operating Pressure (bar)	315
Cracking Pressure	See "Characteristic Curves" graph page 3
Area Ratio	A1/A2 = 1/13.6; A3/A2 = 1/2.8
Fluid	Mineral oils or phosphate ester
Fluid Temperature Range (°C)	-20 to 80
Fluid Viscosity Range (mm ² /S)	2.8 to 500
Fluid Cleanliness Level (ISO)	19/17/14
Weight (Kg)	12

Performance Data

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

Solid Line
A1 - A2; B1 - B2

Dotted Line
A2 - A1; B2 - B1

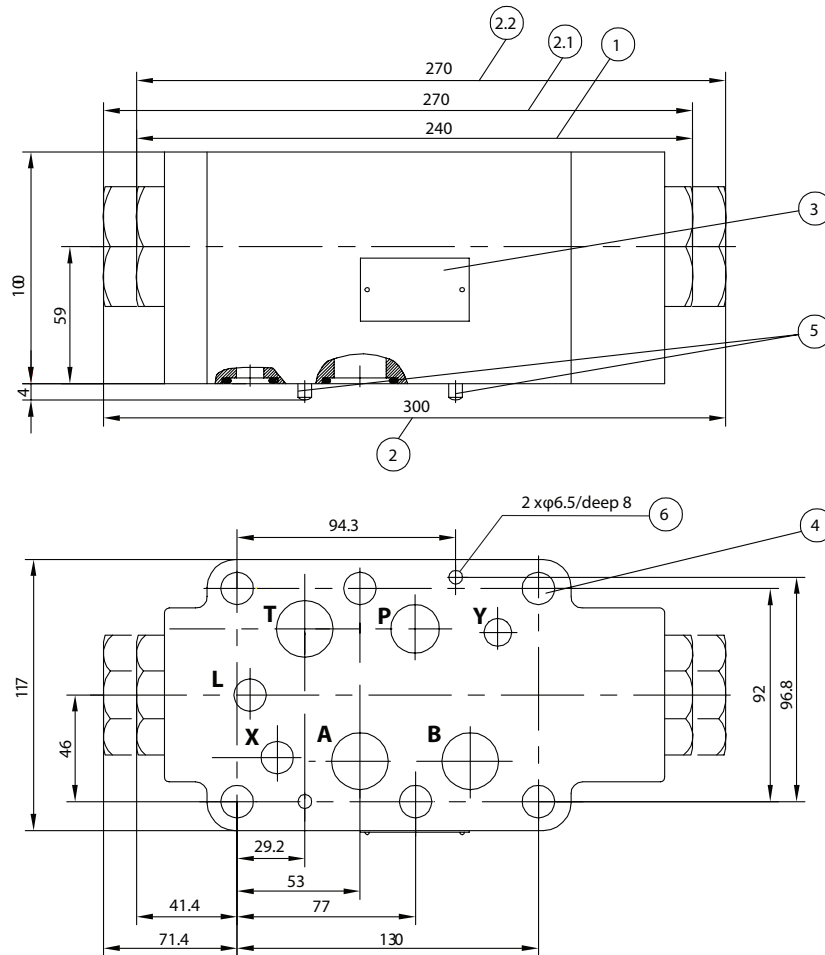


Cracking Pressure:

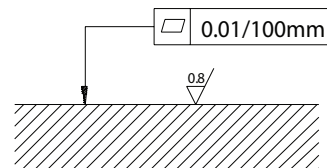
K – 3 bar
L – 5 bar
M – 7.5 bar
N – 10 bar

Installation Dimensions

(Dimensions in mm)



Required surface finish of mating face



- 1 Cracking pressure 3 bar or 5 bar, check valve on both ports A and B
- 2 Cracking pressure 7.5 bar or 10 bar, check valve on both ports A and B
- 2.1 Cracking pressure 7.5 bar or 10 bar, check valve on port A
- 2.2 Cracking pressure 7.5 bar or 10 bar, check valve on port B
- 3 Name plate
- 4 Valve mounting holes, 6 x 15mm
- 5 Locating pins
- 6 Locating pin hole

Mounting bolts: 1/2"-UNC, SAE, Grade 8; M14, DIN912-10.9; ISO 898, Class 12.9

Torque 150 lb-ft (250 Nm)

O-rings: 27mm x 3mm for ports A,B,P and T.

O-rings: 19mm x 3mm for ports X,Y, and L.

SystemStak™ Throttle Valve with Check

Series DGMFN-H8



General Description

Features:

- Industry standard mounting, ISO 4401-8, NFPNA-T-3 .5.1-M-R-I, ANSI B 93.7 D08
- Sandwich plate design
- Limiting of main flow of two actuator ports
- Meter-in or meter-out control

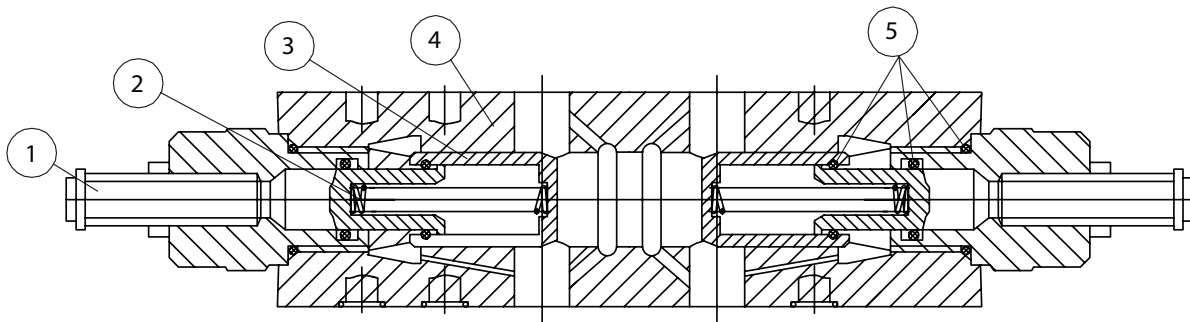
General

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 H8 * A2W-B2W 10

1 2 3 4 5 6

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

H8 – ISO 4001-8

4 Direction of flow control

Y – Meter out

X – Meter in

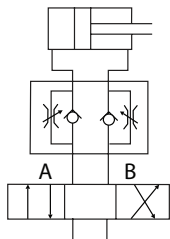
YX – Meter out A, meter in B

XY – Meter in A, meter out B

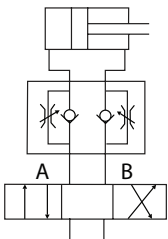
5 Control line (Wrench adjustment)

Both port A and B.

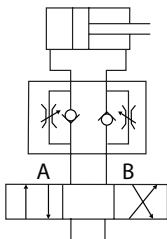
6 Design number



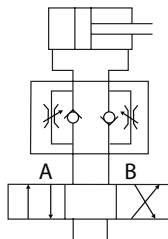
Meter-in control...X



Meter-out control...Y



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



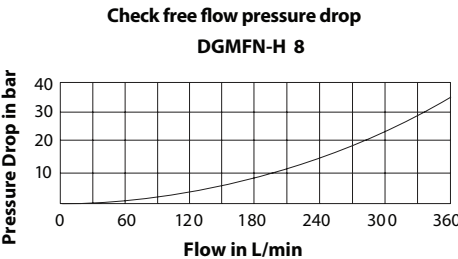
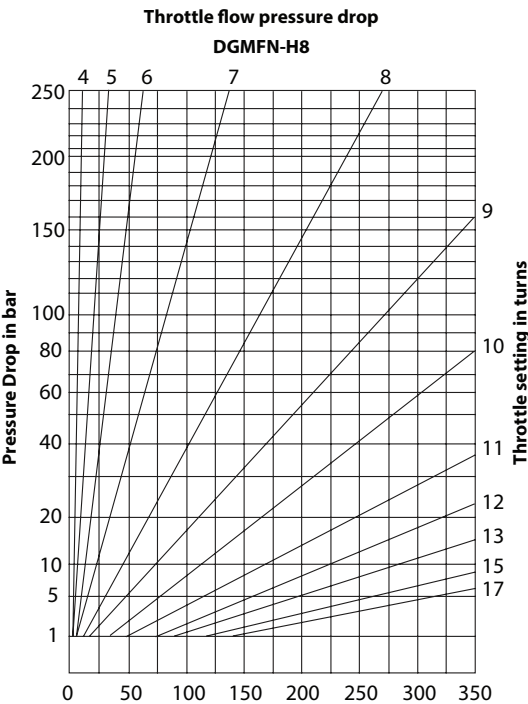
A Meter-in control
B Meter-out control: XY

Operating Data

Technical Data	
Maximum Flow (L/min)	350
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)	8

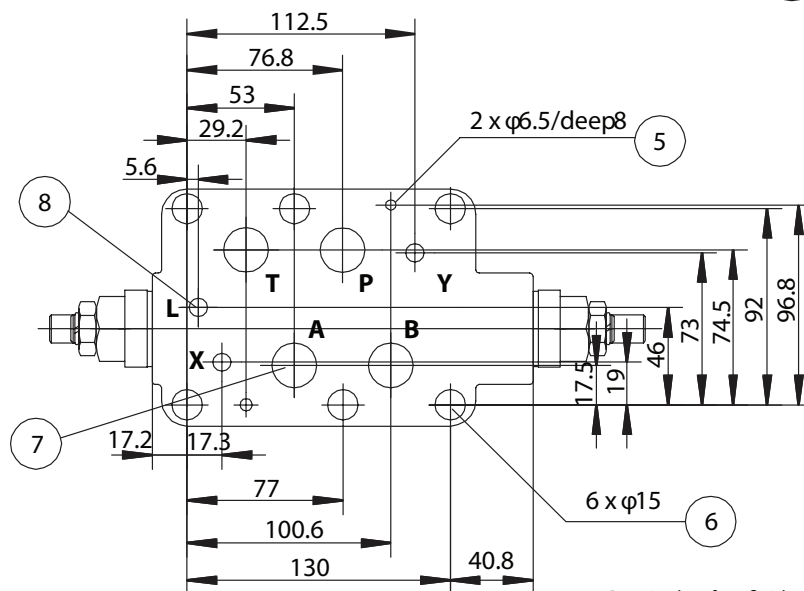
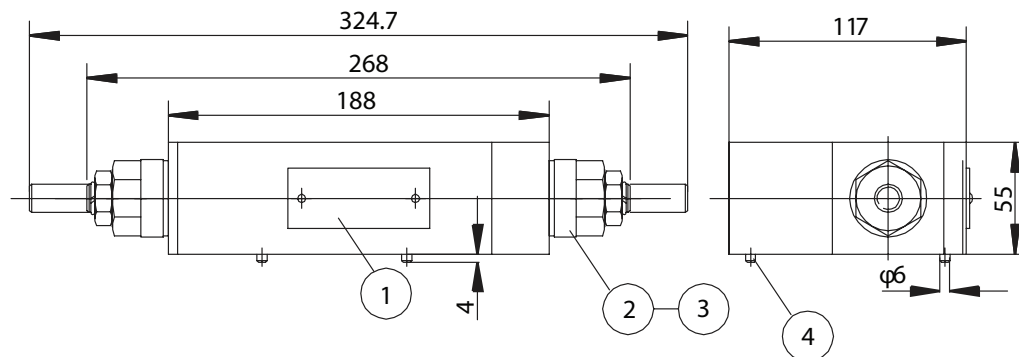
Performance Data

Characteristic Curves
(measured at
 $v = 41 \text{ mm } \frac{3}{8}$ and
 $t = 50^{\circ}\text{C}$)

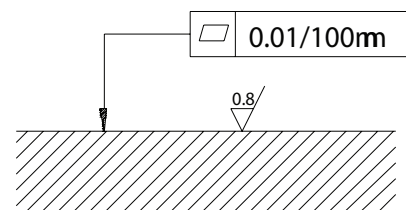


Installation Dimensions

(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; M14, DIN912-10.9; ISO 898, Class 12.9

Torque 150 lb-ft (250 Nm)

O-Ring: 27mm x 3mm for port A,B,P and T

O-Ring: 19mm x 3mm for port X,Y, and L

Single Station Subplates & Mountings

DGSM-8



General Data

Before beginning to assemble individual modular valves, mating surfaces must be undamaged and completely clean in order to ensure a perfect seal.

Single Station Subplates

DGSM single station subplates are designed for individual mounting of one modular valve system.

Mounting Pad

When a subplate is not used, a machined pad (as indicated by subplate shaded area) must be provided for mounting. Pad must be flat within 0,013 mm (.0005 inch) and smooth within 1,6 µm (63 microinch).

Bolt Length Selection Chart - Bolt Kits for Modular Valves

Note: This table serves as a guide in selecting the proper mounting bolt length for various combinations of modules. After the circuit is developed and the components to be stacked are predetermined, add the required lengths plus a 20,6 mm (.81 inch) thread engagement for the subplate or manifold. Select the proper inch thread bolt and order by the bolt kit number. All bolt kits include six (6) socket head screws and six (6) lockwashers 4,4 mm (.17 inch) thick.

Mounting Bolts for Modular Valves

Mounting the various combinations of modular valves in vertical assemblies will require bolt kits of different lengths. These lengths can be determined from the Bolt Length/Kits Selection Chart (below) which indicates the height of the various modules. Mounting bolts provided by the customer should be SAE grade 7 or better.

Bolt Kits for Modular Mounting

A range of bolt kits is available for mounting the various modules, normally topped with a DG5S-8, DG3S-8 or DG17S-8 directional control valve. As the modules are of varying height, it is necessary to calculate the height of the stack and then add 20,66mm (.81 in.) for thread engagement. The Bolt Length/Kits Selection Chart (below) contains a list of all possible bolt lengths for the modular system to NFPA-D08 (ISO-4401-08) interface.

Using two (2) center bolts is optional. All six (6) bolts are recommended for pressure ranges of 140 bar (2000 psi) to 210 bar (3000 psi) for maximum seal life.

DG5S-8	FN, R, X	C	PC	Subplate	Bolt Length	Kit Model No.
Length Required (inch)*						
1.86*	3.5	2.75	4.0	0.64*	½ - 13 UNC thd.	
1	–	1	–	1	5-¼	BK255693
1	1	–	–	1	6	BK255691
1	–	–	1	1	6-½	BK255692
1	1	1	–	1	8-¾	BK255668
1	–	1	1	1	9-¼	BK255671
1	2	–	–	1	9-½	BK255670
1	1	–	1	1	10	BK255669
1	2	1	–	1	12-¼	BK255676
1	1	1	1	1	12-¾	BK255677
1	3	–	–	1	13	BK255678
1	2	–	1	1	13-½	BK255679

Recommended bolt torque 79 Nm (700 lb. in.).

* Assumes use of 4,4 mm (.17 inch) thick lockwasher.

Ordering Procedure

Valves, subplates and mounting bolts must be ordered separately.

Example:

One (1) DG5S-8-0C-M-W-B-2* Valve
 One (1) DGX-H06-2-60 Reducing module
 One (1) DGSM-8-10-T12 Subplate
 One (1) BK255691 Inch bolt kit

Example for ordering:

(1) DG5S-8 Valve 42,9 mm (1.69 in.)
 (1) DGFN-06 Module 88,9 mm (3.50 in.)
 (1) DGPC-06 Module 101,6 mm (4.00 in.)
 + Manifold thread engagement 20,6 mm (.81 in.)

Total bolt length 254,0 mm (10.00 in.)

Order bolt kit number BK225669.

Mounting Subplates

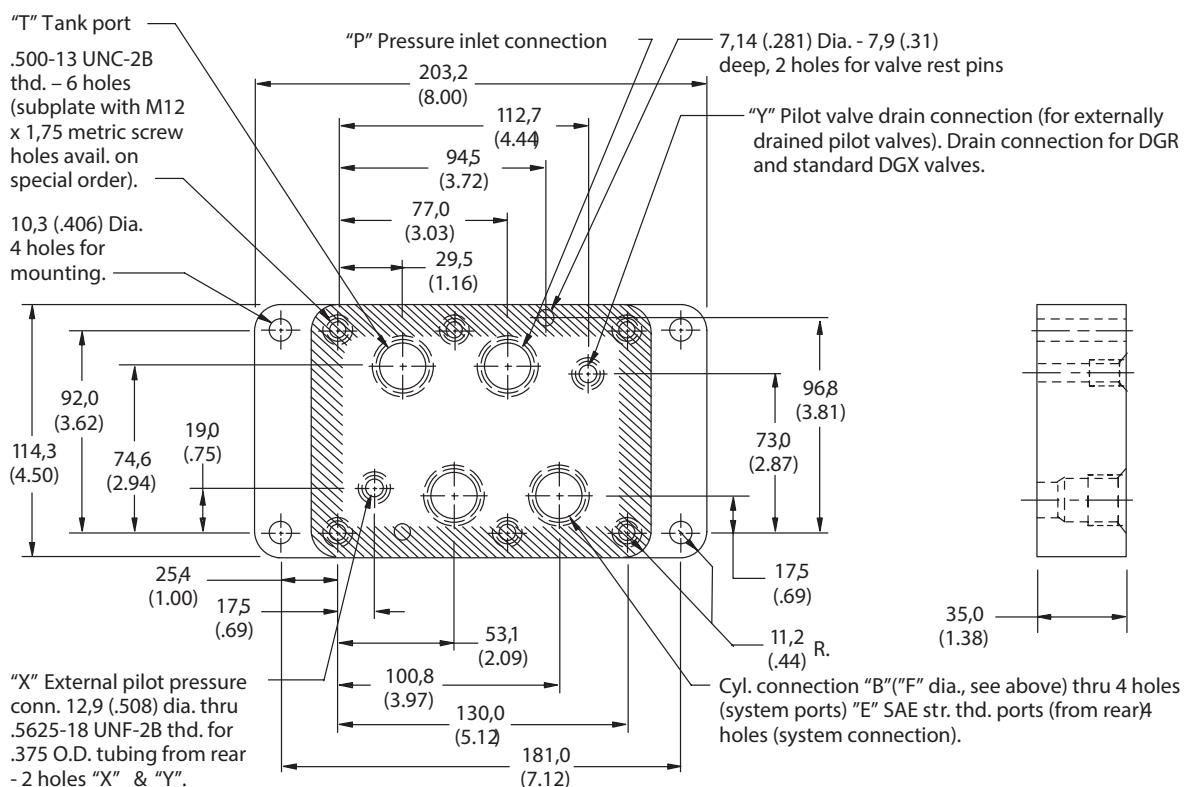
Model No.	"E" Thd.	Tubing O.D.	"F" Dia.	Weight (approx.)
DGSM-8-10-T12	1.0625-12 UN	.750	23,8 (.937)	5.0 kg (11 lbs)
DGSM-8-10-T16	1.3125-12 UN	1.000	24,6 (.969)	5.0 kg (11 lbs)

Additional Subplates

Model No.	Tubing O.D. (thd. size)	System Connections
DGSME-8-10-T12	.750 O.D. (1.0625-12 UN thd.)	Side
DGSME-8-10-T16	1.000 O.D. (1.3125-12 UN thd.)	Side
DGSM-8-10-T20	1.250 O.D. (1.6250-12 UN thd.)	Rear

Mounting Subplate DGSM-8-10-T12/16

Dimensions in millimeters (inch)



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