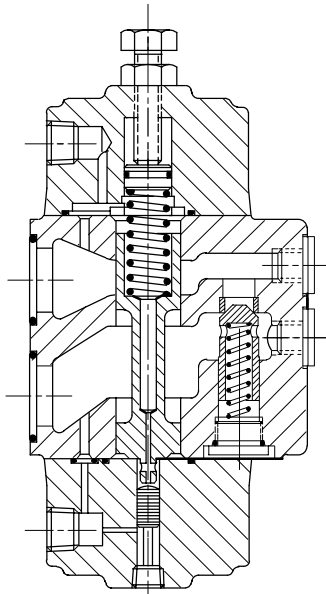


# Pressure Control Valve

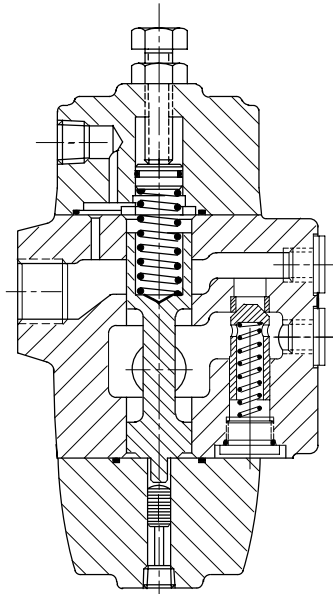
R(C)G(O)-03, 06 and 10; R(C)T(O)-03, 06 and 10

## Sectional Illustrations

RCG-\*\* Model Shown



RCT-\*\* Model Shown



## Basic Characteristics

Type . . . . . Sliding spool  
 Mounting . . . . . Subplate or manifold  
 Pipe mounted  
 Operating pressure . . . . . 210 bar (3000 psi) max.  
 Nominal flow . . . . . Up to 284 L/min (75 USgpm)

## General Description

The R and RC series valves are of the pressure actuated sliding spool type which can be adapted to perform various circuit functions. These functions, depending on assembly build, include relief valve, sequence valve and counterbalance valve.

### Normally Closed Models, R(C)\* Series

#### Back Pressure Valve – Type 1

Internal drain, directly operated. Used for creating back pressure or for overload protection in low pressure circuits up to 35 bar when the secondary port is connected directly to tank.

When provided with an integral check it can be used as a counterbalance or brake valve.

#### Sequence Valve – Type 2

External drain, directly operated. Used to maintain a minimum pressure at the primary port for a holding operation while permitting pressure build-up downstream of the secondary port outlet.

#### Sequence Valve – Type 3

External drain, remotely operated. Operation is the same as Type 2 except that it is remotely operated. The valve can be used to sequence independently of the primary pressure.

#### Unloading Valve – Type 4

Internal drain, remotely operated. Here the secondary port must be connected directly to tank; application of external pressure opens the valve fully, independent of the primary pressure.

When provided with an integral check it can be used as a remotely operated counterbalance or brake valve.

#### Integral Check – Type RC

Allows free reverse flow.

#### Auxiliary Remote Control – P feature

Available only on certain R(C)G and R(C)T models with pressure ranges A, B, D and F. Here low pressure remote control is achieved via the auxiliary port.

#### Normally Open – Type R(C)\*O

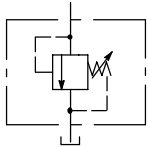
Here the operation is such that pilot pressure closes the valve. It is used in special counterbalance or decompression circuits.

# Functional Symbols and Basic Models

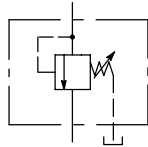
## a) Functional Symbols for “Normally Closed” Valves

### Surface (Gasket) Mounting RG

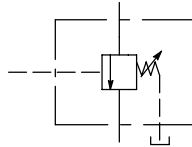
Back pressure valve,  
directly operated, internal  
drain, type 1



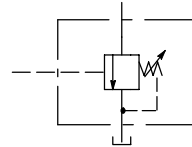
Sequence valve, directly  
operated, external drain,  
type 2



Sequence valve, remotely  
controlled, external drain,  
type 3

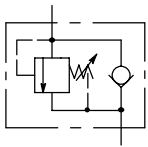


Unloading valve, remotely  
controlled, internal drain,  
type 4

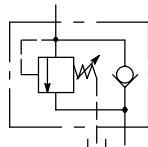


### Surface (Gasket) Mounting RCG

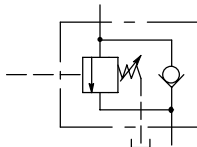
Back pressure valve,  
directly operated, internal  
drain, type 1



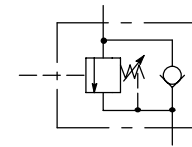
Sequence valve, directly  
operated, external drain,  
type 2



Sequence valve, remotely  
controlled, external drain,  
type 3

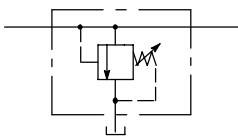


Counterbalance valve,  
remotely controlled,  
internal drain, type 4

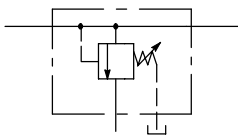


### Threaded Port RT

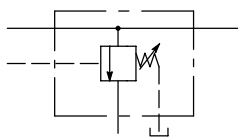
Back pressure valve,  
directly operated, internal  
drain, type 1



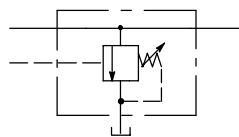
Sequence valve, directly  
operated, external drain,  
type 2



Sequence valve, remotely  
controlled, external drain,  
type 3

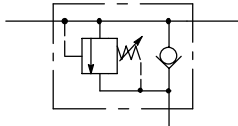


Unloading valve, remotely  
controlled, internal drain,  
type 4

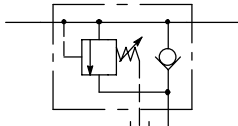


### Threaded Port RCT

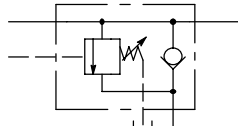
Counterbalance valve,  
directly operated, internal  
drain, type 1



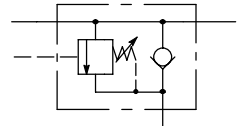
Sequence valve, directly  
operated, external drain,  
type 2



Sequence valve, remotely  
controlled, external drain,  
type 3



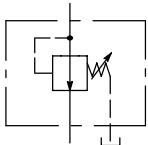
Counterbalance valve,  
remotely controlled,  
internal drain, type 4



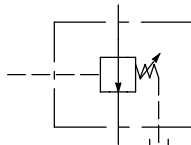
**b) Functional Symbols for “Normally Open” Valves**

**Surface (Gasket) Mounting RGO**

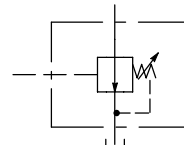
Normally open sequence valve, directly operated, external drain, type 2



Normally open sequence valve, remotely controlled, external drain, type 3

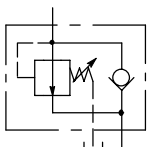


Normally open loading valve, remotely controlled, internal drain, type 4

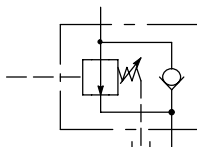


**Surface (Gasket) Mounting RCGO**

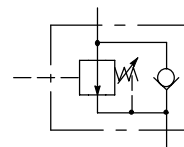
Normally open sequence valve, directly operated, external drain, type 2



Normally open sequence valve, remotely controlled, external drain, type 3

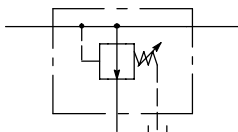


Normally open counterbalance valve, remotely controlled, internal drain, type 4

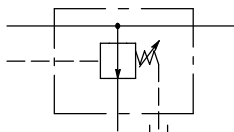


**Threaded Port RTO**

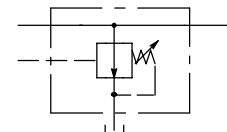
Normally open sequence valve, directly operated, external drain, type 2



Normally open sequence valve, remotely controlled, external drain, type 3

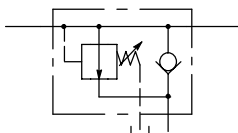


Normally open loading valve, remotely controlled, internal drain, type 4

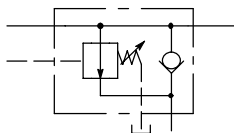


**Threaded Port RCTO**

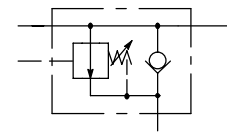
Normally open sequence valve, directly operated, external drain, type 2



Normally open sequence valve, remotely controlled, external drain, type 3

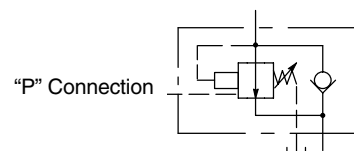
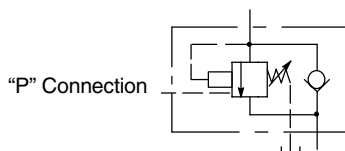


Normally open counterbalance valve, remotely controlled, internal drain, type 4



**Functional Symbols for Auxiliary Remote Control Connection (“P” Feature)**

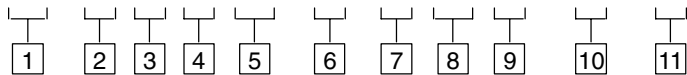
This option provides a control pressure range of nominally 12.5% of the normally required control pressure range for the A, B and D pressure ranges and at 6.25% for the F pressure range. This feature is only available for certain valves with pressure ranges of A, B, C and F. It is not available for R(C)G(O)-03 models.



# Model Code

Features in brackets ( ) may be omitted. All other features must be specified.

**F3 - R C \* (O) - \*\* - \* (P) \* - \*\* - \*\***



**1 Special seals**

See "Hydraulic Fluids" section

**2 Pressure control valve**

**3 Integral check valve**

Omit if not required

**4 Type of mounting**

G = Gasket for subplate or manifold  
T = Pipe mounted

**5 Normally open valve**

Omit if not required  
Not available for type 1 valves

**6 Nominal valve size**

03 = 3/8" nominal bore pipe size  
06 = 3/4" nominal bore pipe size  
10 = 1 1/4" nominal bore pipe size

**7 Pressure range**

(For availability see table below)  
X = 0,7 - 2,1 bar (10 - 30 psi)  
Y = 1,4 - 4,1 bar (20 - 60 psi)  
Z = 2,4 - 8,6 bar (35 - 125 psi)  
A = 5,2 - 17,2 bar (75 - 250 psi)  
B = 8,6 - 34,5 bar (125 - 500 psi)  
D = 17,3 - 69,0 bar (250 - 1000 psi)  
F = 34,5 - 138,0 bar (500 - 2000 psi)

**8 Auxiliary low pressure remote control connection**

Only available for pressure ranges A, B, D and F.  
Not available for R(C)G(O)-03 models.  
Omit if not required.

**9 Valve type**

- 1 = Internally piloted, internally drained
- 2 = Internally piloted, externally drained
- 3 = Externally piloted, externally drained
- 4 = Externally piloted, internally drained

**10 Design number**

Currently  
22, for R(C)\*(O)-10  
23, for RT(O)-03, R(C)G(O)-03/06 and R(C)T(O)-06  
30, for RCT-03  
Subject to change. Installation dimensions remain as shown for design numbers \*0 to \*9 inclusive.

**11 Main port tapings/fixing bolts**

UA = NPT pipe threads▲  
UB = G pipe threads (BSPF, ISO, 228)  
UG = Dual metric/inch fixing bolt facility, R(C)G(O) models only  
Omit for RCT-03 (NPT main ports)  
▲ Check with your Vickers representative for availability.

## Performance Data

**Maximum Pressures**

Main ports▲ . . . . . 210 bar (3000 psi)  
Remote pressure control ports . . . . . As above, for main ports  
Auxiliary remote pressure control port "P" feature . . . . . 140 bar (2000 psi)  
Drain port▲ (all models) . . . . . 140 bar (2000 psi)

▲ The normal outlet of valve types 1 and 4 must be piped to reservoir at atmospheric pressure. The drain port on types 2 and 3 should similarly be piped directly to reservoir at atmospheric pressure. Any pressure at the drain port is additive to the pressure setting of the valve.

Basic model designation	"P" feature ■	Principal adjustable pressure range (bar) and model code reference letter							
		X	Y	Z	Z	A	B	D	F
R(C)G or R(C)T	Without feature	●	●		●	●	●	●	●
	With feature					●	●	●	●

■ Adjustable pressure range at "P" feature port is nominally 12.5% of the A, B and D ranges and 6.25% of F range.

---

### Maximum Recommended Flow Rate

Valve model code	Flow rate L/min (USgpm)
R**-03	45 (12)
R**-06	113 (30)
R**-10	284 (75)

### Hydraulic Fluids

Materials and seals used in these valves are compatible with:

Anti-wear petroleum oils . . . . . L-HM

Non-alkyl based

phosphate esters . . . . . L-HFD

The extreme operating range is 13 to 500 cSt (70 to 2300 SUS) but the recommended running range is 13 to 54 cSt (70 to 250 SUS). For further technical information about fluids see Technical Information leaflet B-920 or I-286-S.

### Contamination Control Requirements

Recommendations on contamination control methods and the selection of products to control fluid condition are included in Vickers publication 9132 or 561, "Vickers Guide to Systemic Contamination Control". The book also includes information on the Vickers concept of "ProActive Maintenance". The following recommendations are based on ISO cleanliness levels at 2 µm, 5 µm and 15 µm. For products in this catalog the recommended levels are:

0 to 210 bar (3000 psi) . . . . . 18/16/13

### Temperatures

For petroleum oil:

Min. . . . . -20°C (-4°F)

Max.\* . . . . . +70°C (158°F)

\* *To obtain optimum service life from both fluid and hydraulic system, 65°C (150°F) normally is the maximum temperature.*

For other fluids where limits are outside those of petroleum oil, consult fluid manufacturer or Vickers representative. Whatever the actual temperature range, ensure that viscosities stay within those specified under "Hydraulic Fluids".

Ambient for:

All valves at full performance specification: 0 to +70°C (32 to +158°F).

Storage:

-25 to +85°C (-13 to +185°F)

## Pressure Adjustment

Adjust pressure by loosening locknut and turning adjusting screw in appropriate direction, clockwise to increase pressure counter-clockwise to decrease pressure.

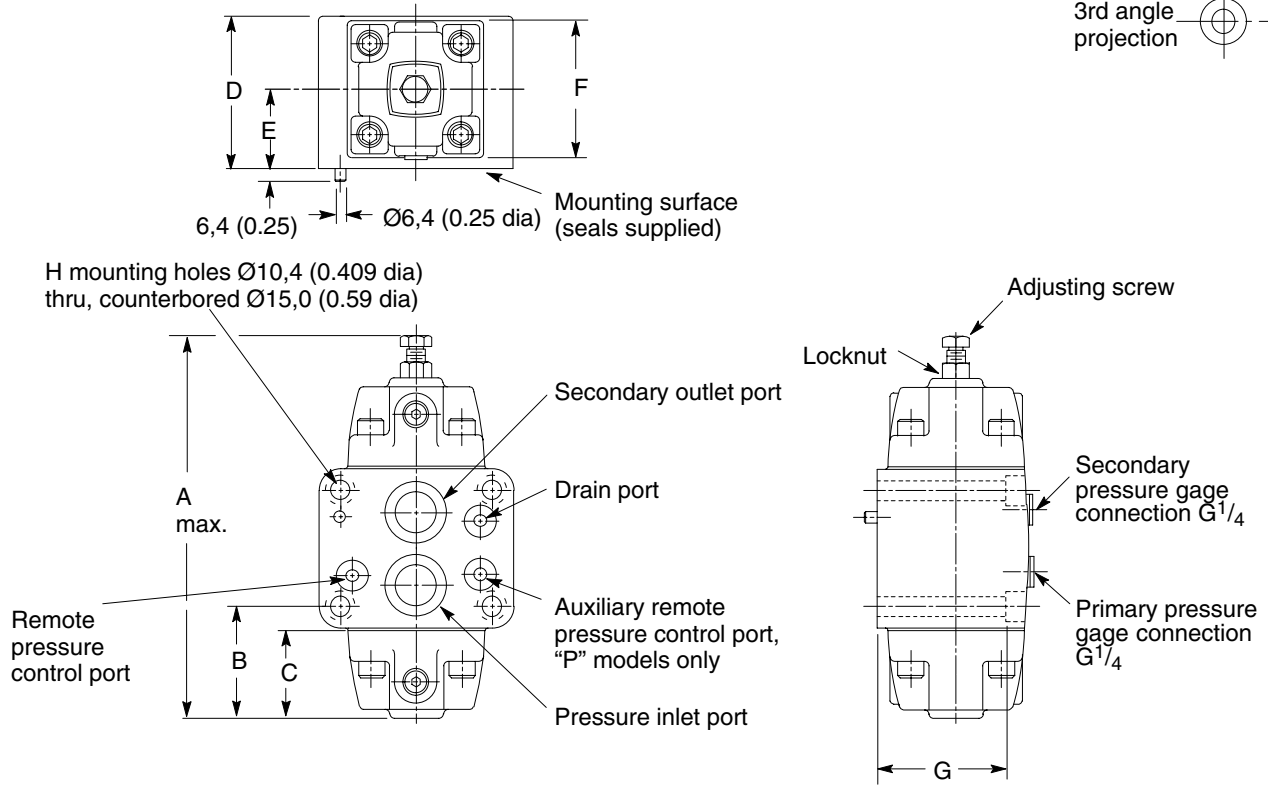
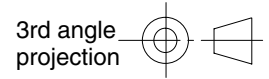
Pressure settings must be at least 17 bar (250 psi) lower than the system relief setting.

The remote pressure control connection on valve types 3 and 4 must be connected to an external pilot pressure source sufficient to operate the valve at the desired pressure and flow conditions.

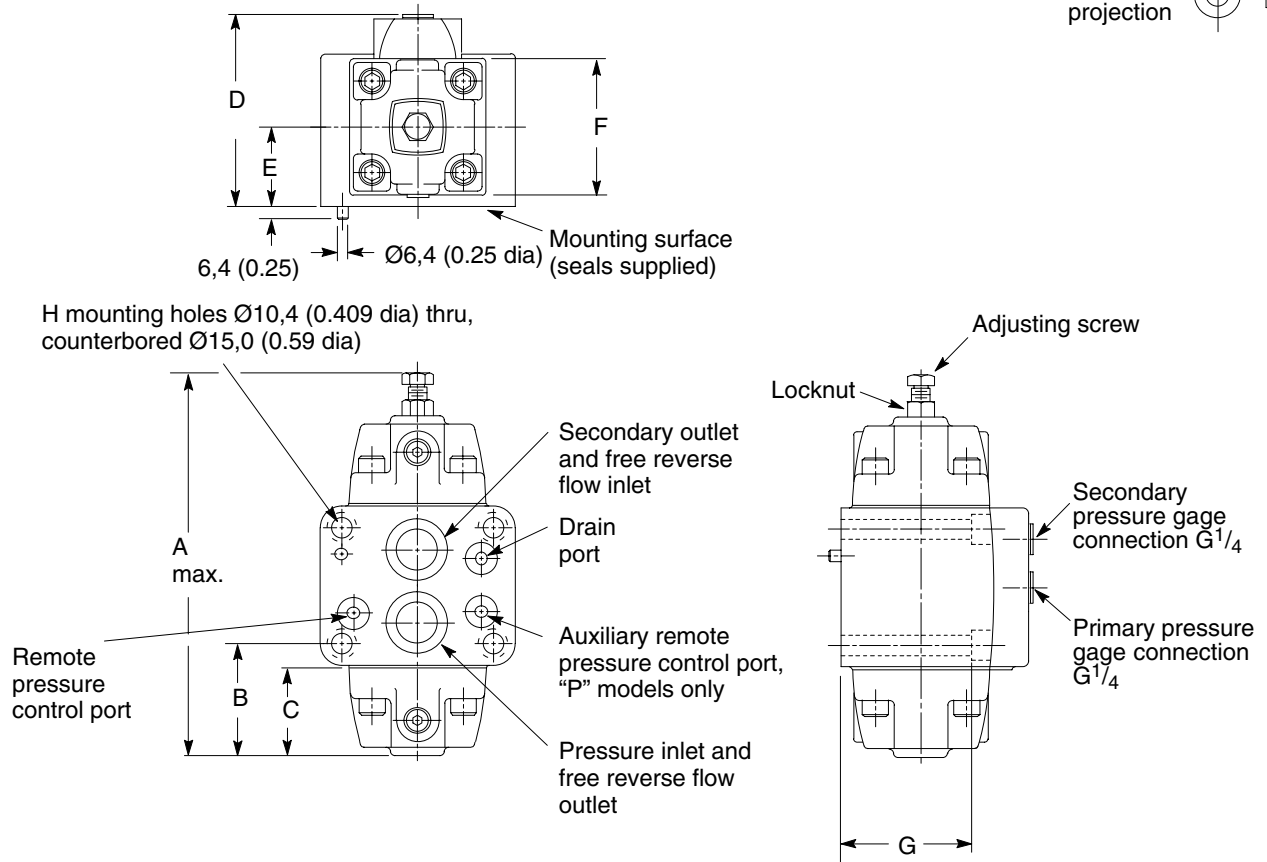
All models, except those with X, Y or Z pressure range and all R(C)G(O)-03, are available with an auxiliary remote control connection. Required pressure at the auxiliary connection is 6.25% of the normally required control pressure for the F pressure range and 12.5% of the normally required control for the A, B and D pressure range.

# Installation Dimensions in mm (inches)

RG(O)-03/06/10

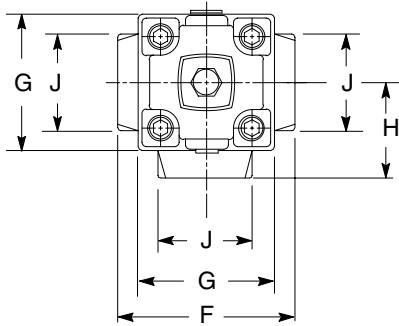


Model	A	B	C	D	E	F	G	H
RG-03	177,8 (7.0)	39,9 (1.57)	29,7 (1.17)	66,5 (2.62)	36,6 (1.44)	57,1 (2.25)	57,0 (2.24)	4
RG-06	200,2 (7.88)	55,7 (2.19)	44,7 (1.76)	79,2 (3.12)	41,1 (1.62)	71,4 (2.81)	69,6 (2.74)	4
RG-10	277,9 (10.94)	54,7 (2.15)	44,7 (1.76)	100,0 (3.94)	50,8 (2.0)	95,3 (3.75)	90,4 (3.56)	6

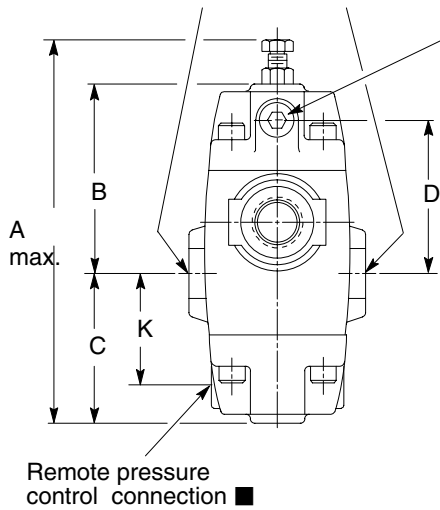


Model	A	B	C	D	E	F	G	H
RCG-03	177,8 (7.0)	39,9 (1.57)	29,7 (1.17)	90,4 (3.56)	36,6 (1.44)	57,1 (2.25)	57,0 (2.24)	4
RCG-06	200,2 (7.88)	55,7 (2.19)	44,7 (1.76)	98,6 (3.88)	41,1 (1.62)	71,4 (2.81)	69,6 (2.74)	4
RCG-10	277,9 (10.94)	54,7 (2.15)	44,7 (1.76)	130,8 (5.15)	50,8 (2.0)	95,3 (3.75)	90,4 (3.56)	6

RT(O)-03/06/10

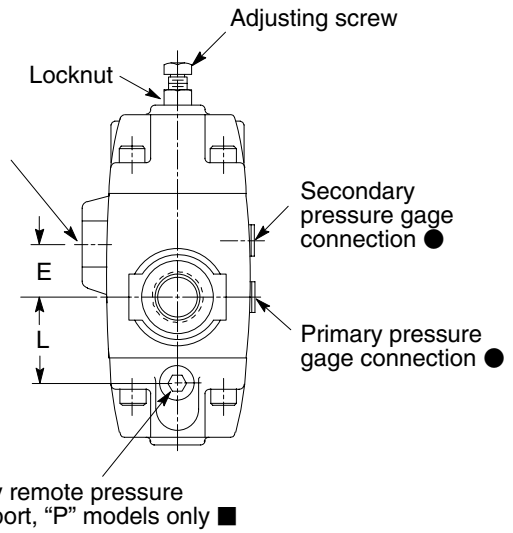


Pressure inlet/outlet ports, see Model Code for tapping options



Drain connection  
1/4" NPT

Secondary outlet port, see Model Code for tapping options

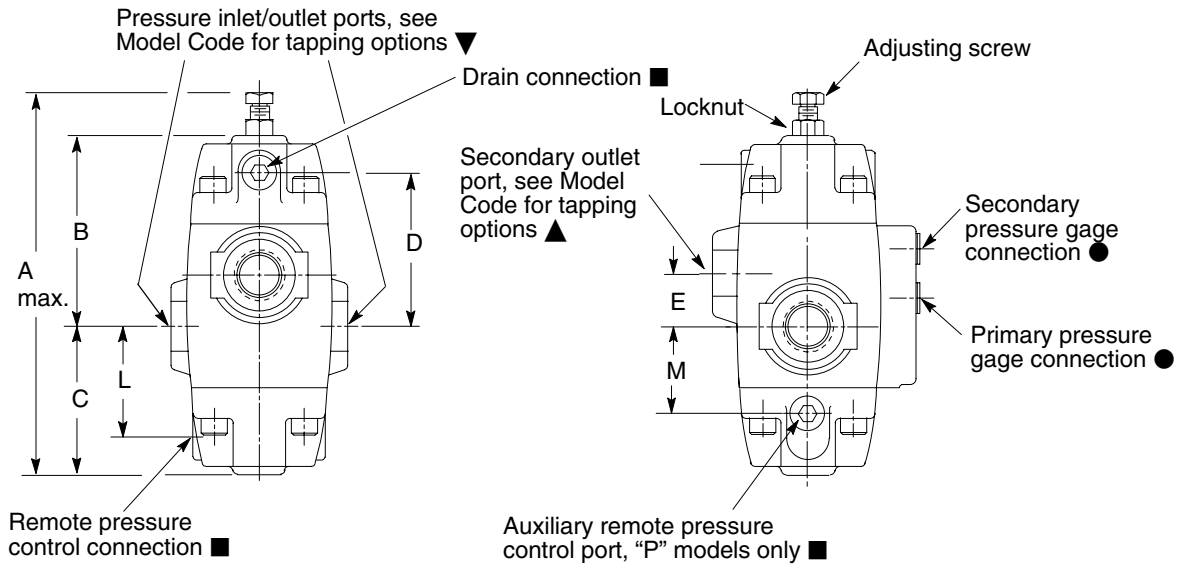
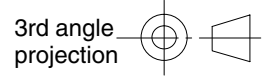
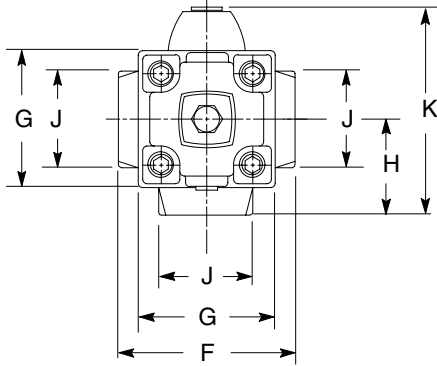


- RT-03 ..... 9/16" -18 UNF-2B SAE O-ring port
- All others ..... 1/4" NPT
- RT-03 ..... 7/16" -20 UNF-2B SAE O-ring port
- UA- suffix models ..... 1/4" NPT
- UB- suffix models ..... G1/4

Model	A	B	C	D	E	F	G	H	J	K	L
RT-03	177,8 (7.0)	97,0 (3.82)	54,0 (2.13)	58,7 (2.31)	23,1 (0.91)	70,0 (2.76)	59,4 (2.34)	39,6 (1.56)	35,1 (1.38)	42,9 (1.69)	37,3 (1.47)
RT-06	200,2 (7.88)	97,0 (3.82)	74,9 (2.95)	79,5 (3.13)	26,9 (1.06)	93,0 (3.66)	76,0 (2.99)	49,3 (1.94)	50,8 (2.0)	57,2 (2.25)	45,2 (1.78)
RT-10	277,9 (10.94)	154,2 (6.07)	84,3 (3.32)	80,5 (3.17)	28,7 (1.13)	118,0 (4.65)	98,6 (3.88)	68,3 (2.69)	86,4 (3.40)	70,9 (2.79)	57,2 (2.25)



RCT(O)-03/06/10



- RCT-03 .....  $\frac{9}{16}$ " -18 UNF-2B SAE O-ring port  
All others .....  $\frac{1}{4}$ " NPT
- RCT-03 .....  $\frac{7}{16}$ " -20 UNF-2B SAE O-ring port  
UA- suffix models .....  $\frac{1}{4}$ " NPT  
UB- suffix models .....  $G\frac{1}{4}$
- ▲ Also free reverse flow inlet.
- ▼ Also free reverse flow outlets.

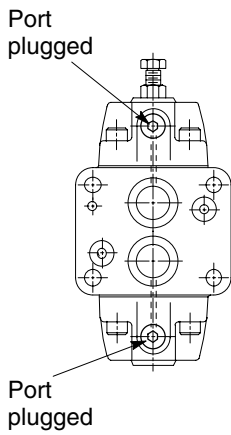
Model	A	B	C	D	E	F	G	H	J	K	L	M
RCT-03	177,8 (7.0)	97,0 (3.82)	54,0 (2.13)	58,7 (2.31)	23,1 (0.91)	70 (2.76)	59,4 (2.34)	39,6 (1.56)	35,1 (1.38)	93,7 (3.69)	42,9 (1.69)	37,3 (1.47)
RCT-06	200,2 (7.88)	97,0 (3.82)	74,9 (2.95)	79,5 (3.13)	26,9 (1.06)	93 (3.66)	76,0 (2.99)	49,3 (1.94)	50,8 (2.0)	107,0 (4.21)	57,2 (2.25)	45,2 (1.78)
RCT-10	277,9 (10.94)	154,2 (6.07)	84,3 (3.32)	80,5 (3.17)	28,7 (1.13)	118 (4.65)	98,6 (3.88)	68,3 (2.69)	86,4 (3.40)	147,6 (5.81)	70,9 (2.79)	57,2 (2.25)

**Basic Models**

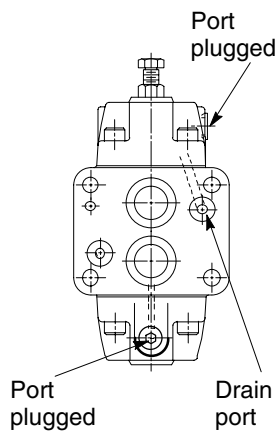
Basic models are distinguished by the relative orientation of top and bottom caps and by the presence or absence of port plugs in the caps.

**R(C)G Models**

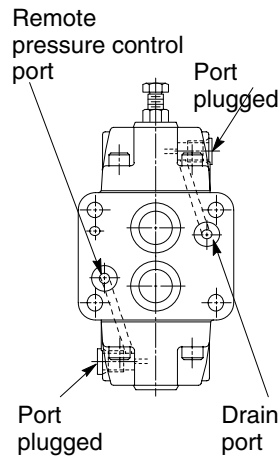
Directly operated, internal drain, type 1



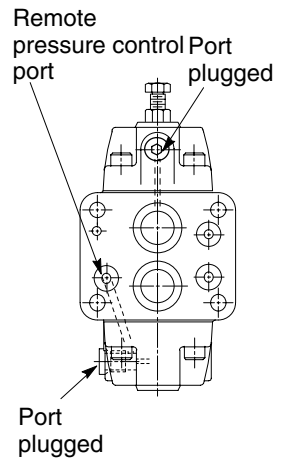
Directly operated, external drain, type 2



Remotely controlled, external drain, type 3

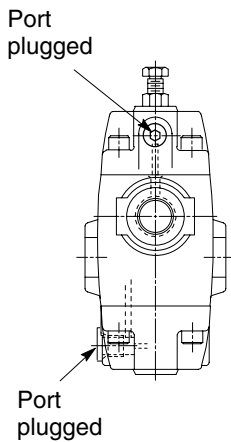


Remotely controlled, internal drain, type 4

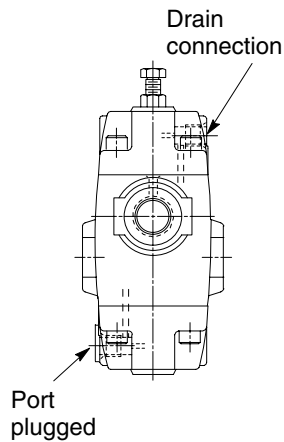


**R(C)T models**

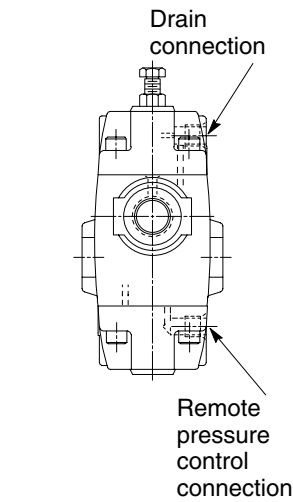
Directly operated, internal drain, type 1



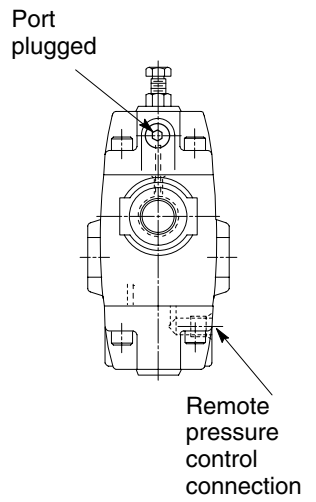
Directly operated, external drain, type 2



Remotely controlled, external drain, type 3



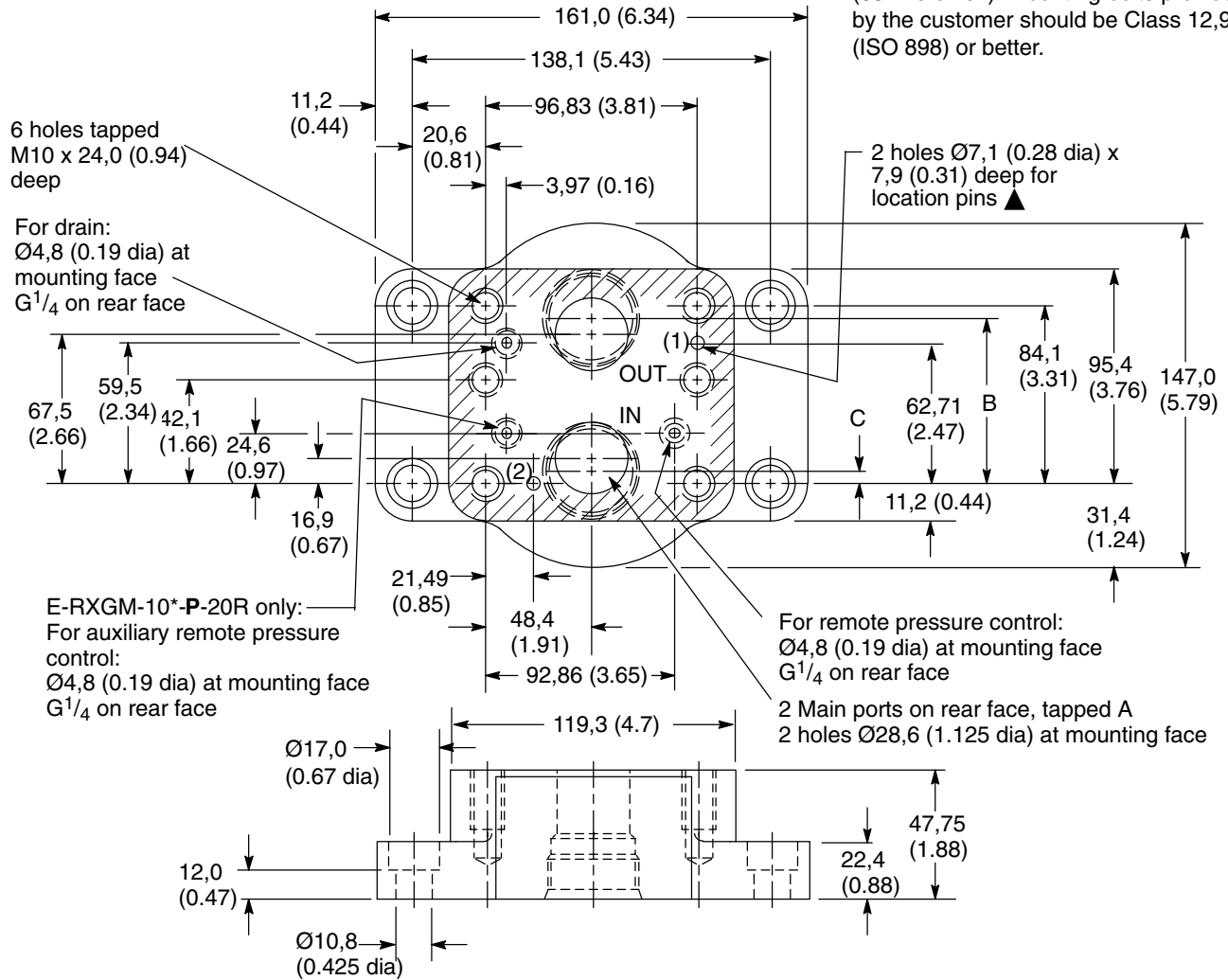
Remotely controlled, internal drain, type 4



Note: Type 2, 3 and 4 illustrations also apply to “normally open” models, available only in the R(C)GO and R(C)TO ranges. Functional symbols.

### E-RXGM-10(X) Subplate

When a subplate is not used, a machined pad (as indicated by shaded area) must be provided for mounting. The pad must be flat within 0,013 mm (0.0005 in) and smooth within 1,6 µm (63 microinch). Mounting bolts provided by the customer should be Class 12,9 (ISO 898) or better.

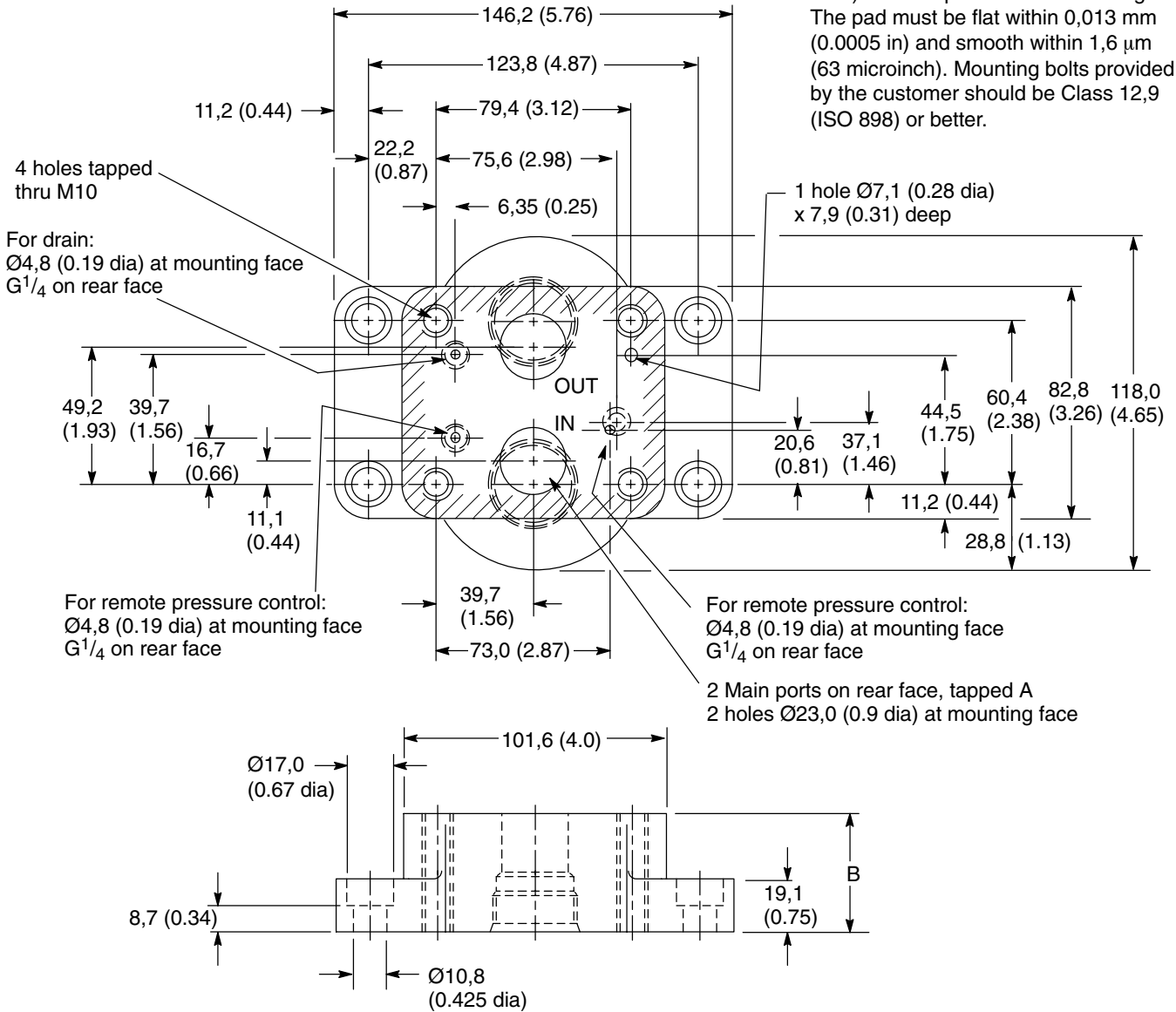


▲ Pin at location (1) for pilot operated check valves; at location (2) for pressure reducing valves.

Model	A	B	C
E-RXGM-10-20R	G <sup>1</sup> / <sub>4</sub>	76,2 (3.0)	7,9 (0.31)
E-RXGM-10X-20R	G <sup>1</sup> / <sub>2</sub>	78,1 (3.1)	6,0 (0.24)

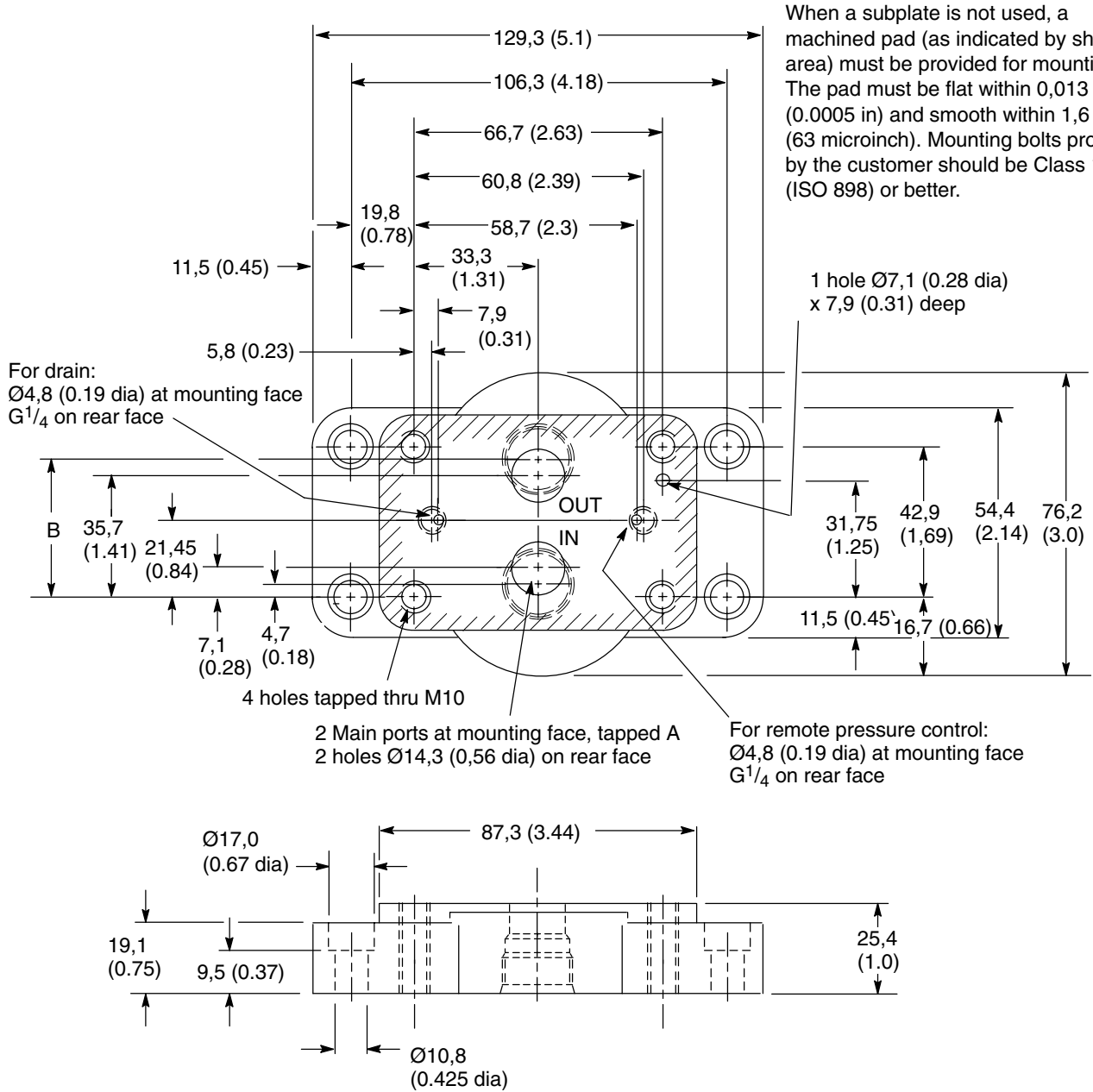
**E-RXGM-06**  
**Subplate**

When a subplate is not used, a machined pad (as indicated by shaded area) must be provided for mounting. The pad must be flat within 0,013 mm (0.0005 in) and smooth within 1,6 µm (63 microinch). Mounting bolts provided by the customer should be Class 12,9 (ISO 898) or better.



Model	A	B
E-RXGM-06-20R	G <sup>3</sup> / <sub>4</sub>	34,9 (1.37)
E-RXGM-06X-20R	G1	41,2 (1.62)

**E-RXGM-03**  
Subplate



Model	A	B
E-RXGM-03-20R	G <sup>3</sup> / <sub>8</sub>	38,1 (1.5)
E-RXGM-03X-20R	G <sup>1</sup> / <sub>2</sub>	40,4 (1.59)

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## Mass

Valve model code	Mass kg (lb)
RG(O)-03	3,7 (1.7)
RG(O)-06	6,4 (2.9)
RG(O)-10	12,0 (5.5)
RCG(O)-03	4,2 (2.0)
RCG(O)-06	7,0 (3.2)
RCG(O)-10	13,0 (5.9)
RT(O)-03	2,8 (1.3)
RT(O)-06	5,7 (2.6)
RT(O)-10	12,1 (5.5)
RCT(O)-03	3,0 (1.4)
RCT(O)-06	5,9 (2.7)
RCT(O)-10	13,0 (5.9)

## Mounting Attitude

Optional, horizontal preferred.

## Ordering Procedure

When ordering a unit please specify the complete model code which is applicable to your requirements.

Subplates and bolt kits are supplied as separate units and therefore must be ordered as such.

### Example

Valve ..... RG-06-A-2-23-UG  
Subplate ..... E-RXGM-06X-20R  
Bolt kit ..... BKRX-06-661M

### Bolt kits available

#### Model code

BKRX-03-660M ..... M10 x 70  
BKRX-06-661M ..... M10 x 80  
BKRX-10-662M ..... M10 x 110