



**hydraulics**®  
LIMITED

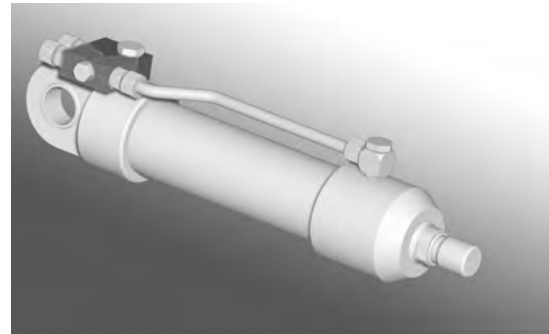
**BANJO BOLT MANIFOLDS**



**COMPONENTS FOR INDUSTRIAL AND MOBILE HYDRAULICS**

## ADVANTAGES OF SUN BANJO BOLT MANIFOLDS

- Standard cavity for:
  - Counterbalance valves
  - Pilot to open check valves
  - Flow fuse valves
  - Flow control valves
  - 2/2 way directional valves
- Reduced piping
- Load holding valve can be mounted directly on the cylinder
- Direct mounting for high safety requirements
- For banjo bolts with male BSPP thread, metric thread on request
- Body rotatable
- High pressure banjo bolts (Parker Ermeto) with soft seal ring
- System pressure up to 350 bar (with cast iron bodies)

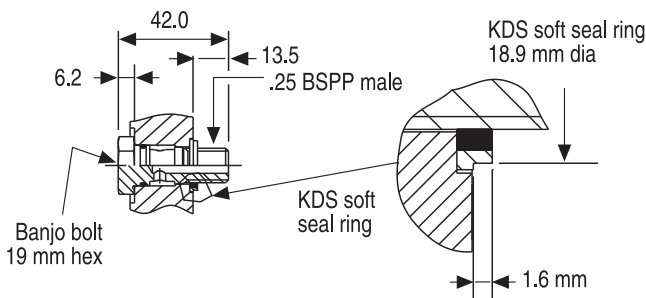


Example of use: X4C body with CK\*\* valve

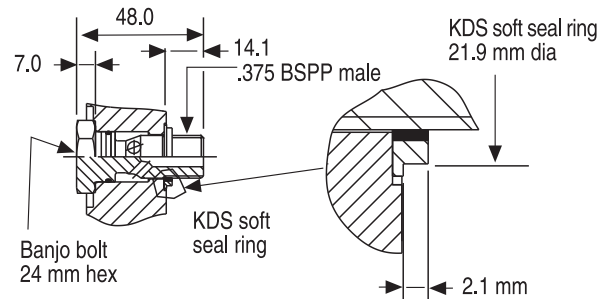
- Aluminium bodies optional for max. pressure 210 bar
- All manifolds come with banjo bolt and seal ring

## INSTALLATION INSTRUCTIONS AND SPECIFICATIONS

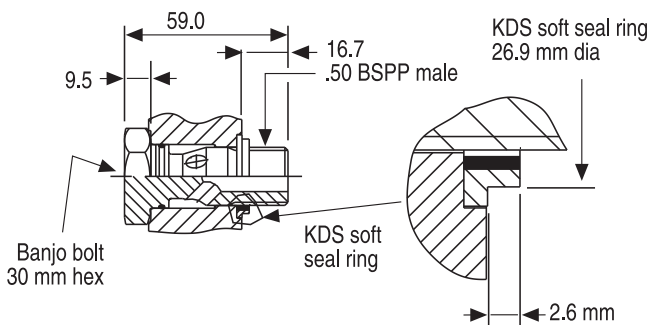
Installation:  
Recommended torque for banjo bolt 45 Nm to 49 Nm  
(34-37 lb.ft.)



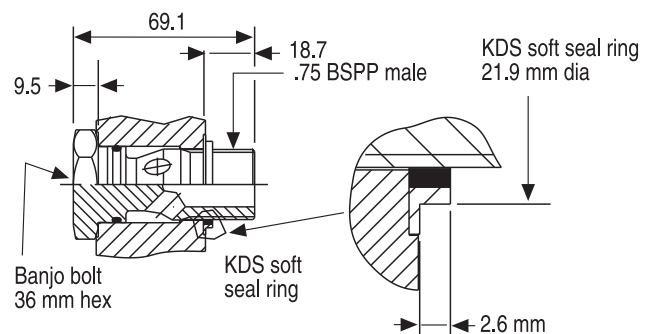
Installation:  
Recommended torque for banjo bolt 70 Nm to 77 Nm  
(52-58 lb.ft.)



Installation:  
Recommended torque for banjo bolt 120 Nm to 132 Nm  
(90-99 lb.ft.)



Installation:  
Recommended torque for banjo bolt 230 Nm to 250 Nm  
(172-187 lb.ft.)



See SUN Hydraulics datasheets for standard settings, adjustment ranges, max. pressures, seal materials, torques etc.

<b>.25 BSPP ports</b>	1 x T-162A	1 x T-163A	1 x T-163A	
Aluminium	<b>X3S</b> Page 2	<b>X4E</b> Page 4	<b>X4A</b> Page 6	<b>On request</b> Page 8
SG iron	<b>X3S/S</b> Page 2	<b>X4E/S</b> Page 4	<b>X4A/S</b> Page 6	
<b>.375 BSPP ports</b>	1 x T-13A	1 x T-11A	1 x T-11A	1 x T-11A
Aluminium	<b>X4L</b> Page 2	<b>X4F</b> Page 4	<b>X4B</b> Page 6	<b>X4I</b> Page 8
SG iron	<b>X4L/S</b> Page 2	<b>X4F/S</b> Page 4	<b>X4B/S</b> Page 6	<b>X4I/S</b> Page 8
<b>.50 BSPP ports</b>	1 x T-13A	1 x T-11A	1 x T-11A	1 x T-11A
Aluminium	<b>X4M</b> Page 3	<b>X4G</b> Page 5	<b>X4C</b> Page 7	<b>X4J</b> Page 9
SG iron	<b>X4M/S</b> Page 3	<b>X4G/S</b> Page 5	<b>X4C/S</b> Page 7	<b>X4J/S</b> Page 9
<b>.75 BSPP ports</b>	1 x T-5A	1 x T-2A	1 x T-2A	1 x T-2A
Aluminium	<b>X4N</b> Page 3	<b>X4H</b> Page 5	<b>X4D</b> Page 7	<b>X4K</b> Page 9
SG iron	<b>X4N/S</b> Page 3	<b>X4H/S</b> Page 5	<b>X4D/S</b> Page 7	<b>X4K/S</b> Page 9
<b>.25 BSPP ports</b>	1 x T-163A			
Aluminium	<b>X3T</b> Page 10	<b>On request</b> Page 12	<b>On request</b> Page 14	
SG iron	<b>X3T/S</b> Page 10			
<b>.375 BSPP ports</b>	1 x T-11A	2 x T-11A	1 x T-21A	
Aluminium	<b>X3U</b> Page 10	<b>X3X</b> Page 12	<b>X5Y</b> Page 14	
SG iron	<b>X3U/S</b> Page 10	<b>X3X/S</b> Page 12	<b>X5Y/S</b> Page 14	
<b>.50 BSPP ports</b>	1 x T-11A	2 x T-11A	1 x T-21A	
Aluminium	<b>X3V</b> Page 11	<b>X3Y</b> Page 13	<b>X5Z</b> Page 15	
SG iron	<b>X3V/S</b> Page 11	<b>X3Y/S</b> Page 13	<b>X5Z/S</b> Page 15	
<b>.75 BSPP ports</b>	1 x T-2A	2 x T-2A	1 x T-22A	
Aluminium	<b>X3W</b> Page 11	<b>X3Z</b> Page 13	<b>X6A</b> Page 15	
SG iron	<b>X3W/S</b> Page 11	<b>X3Z/S</b> Page 13	<b>X6A/S</b> Page 15	

Please ask for further manifolds not shown here and for metric porting

Typical cartridges for this body (model / catalogue page)

FQ\*\*A-XAN / 10.14



NF\*\*-\* / 5.12



NC\*\*-\* / 5.16



FC\*\*B-\*A\* / 5.22



FD\*\*-\*A\* / 5.24



DTDA-M\*\* / 8.17

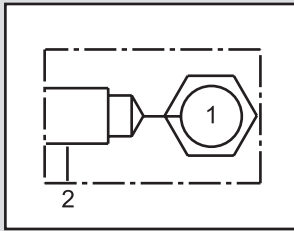


DLDA-M\*\* / 8.16



## Ports .25 BSPP

### 1 Cavity T-162A



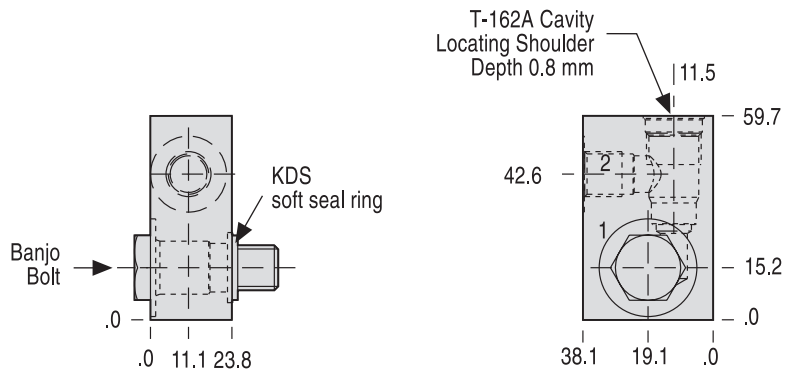
Typical cartridges for this body (model)

FQBA-XAN

NFBC-\*\*\*

NCBB-\*\*\*

FCBB-\*\*\*



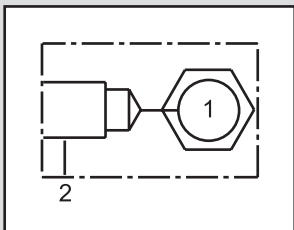
#### Options

Aluminium

SG iron

## Ports .375 BSPP

### 1 Cavity T-13A



Typical cartridges for this body (model)

FQCA-XAN

NFC\*-\*\*\*

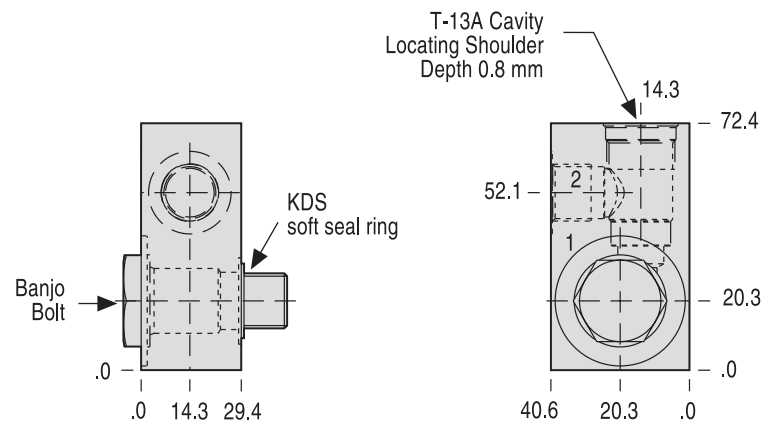
NCC\*-\*\*\*

FCCB-\*A\*

FDB\*-\*\*\*

DLDA-M\*\*

DTDA-M\*\*



#### Options

Aluminium

SG iron

Typical cartridges for this body (model / catalogue page)

FQ\*\*A-XAN / 10.14



NF\*\*-\* / 5.12



NC\*\*-\* / 5.16



FC\*B-\*A\* / 5.22



FD\*\*-\*A\* / 5.24



DTDA-M\*\* / 8.17

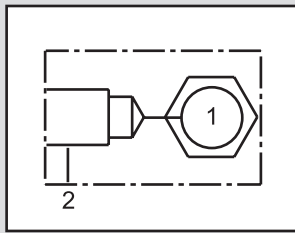


DLDA-M\*\* / 8.16



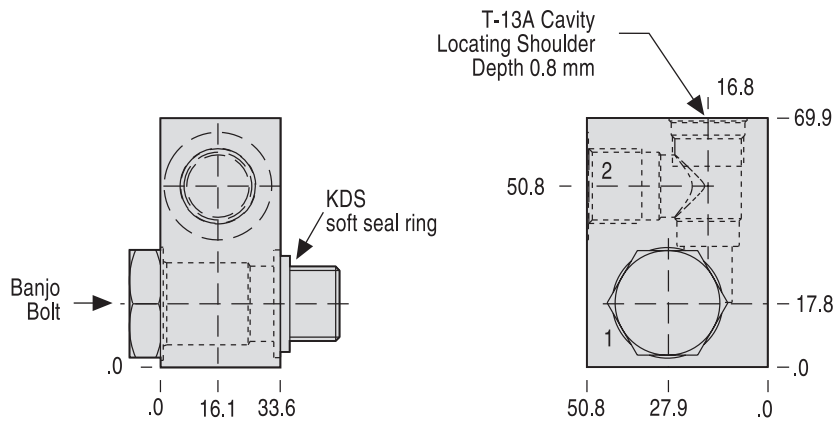
## Ports .50 BSPP

### 1 Cavity T-13A



Typical cartridges for this body (model)

- FQCA-XAN
- NFC\*-\*\*\*\*
- NCC\*-\*\*\*\*
- FCCB-\*A\*
- FDB\*-\*A\*
- DLDA-M\*\*
- DTDA-M\*\*



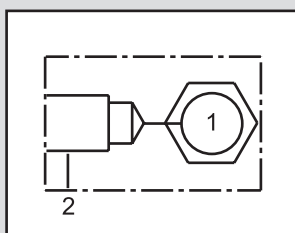
Options

Aluminium

SG iron

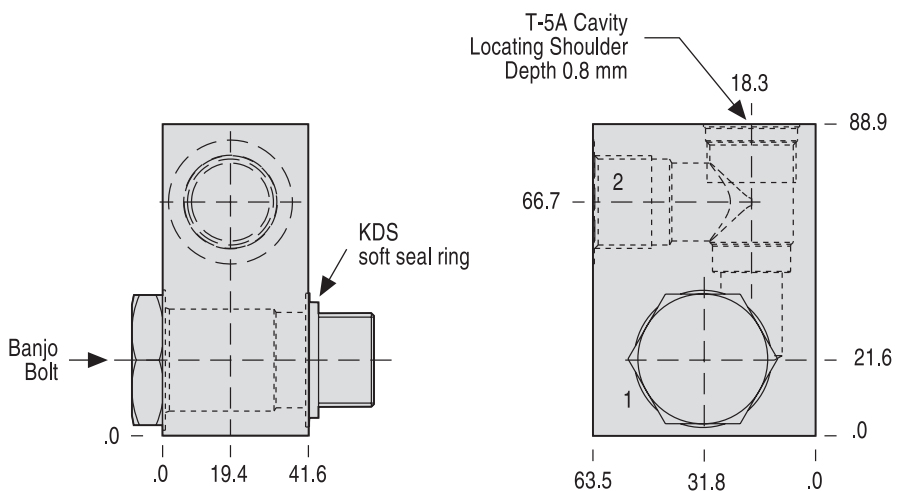
## Ports .75 BSPP

### 1 Cavity T-5A



Typical cartridges for this body (model)

- FQEA-XAN
- NFD\*-\*\*\*\*
- NCE\*-\*\*\*\*
- FCDB-\*\*\*
- FDCB-\*\*\*



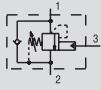
Options

Aluminium

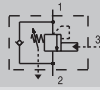
SG iron

Typical cartridges for this body (model / catalogue page )

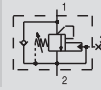
CB\*-\*\*\* / 4.10



CA\*\*-\* / 4.09



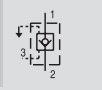
CC\*A-\*\*\* / 4.09



CK\*\*-\* / 4.16

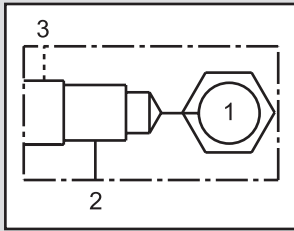


CK\*V-\*\*\*



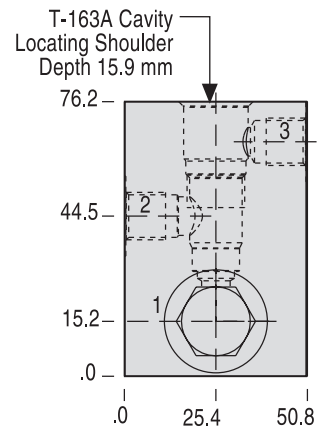
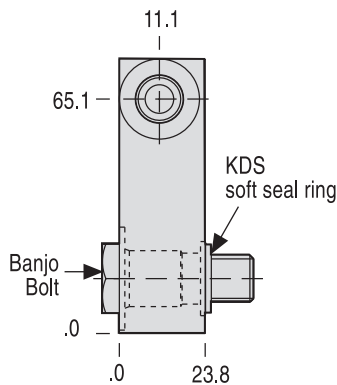
## Ports .25 BSPP

### 1 Cavity T-163A



Typical cartridges for this body (model)

CKB\*-\*\*\*



#### Options

Aluminium

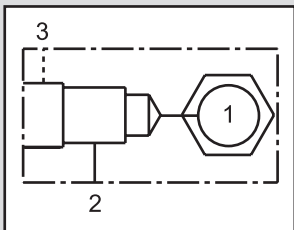
X4E

SG iron

X4E/S

## Ports .375 BSPP \*

### 1 Cavity T-11A



Typical cartridges for this body (model)

CBC\*-\*\*\*

CBB\*-\*\*\*

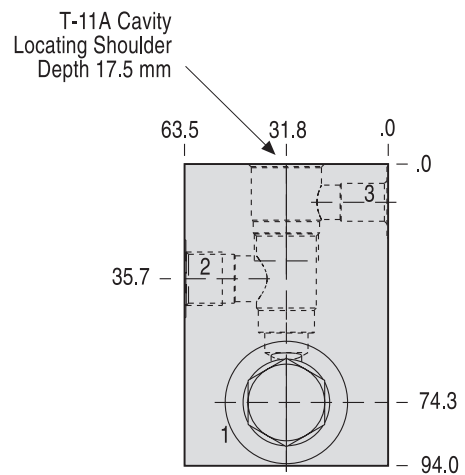
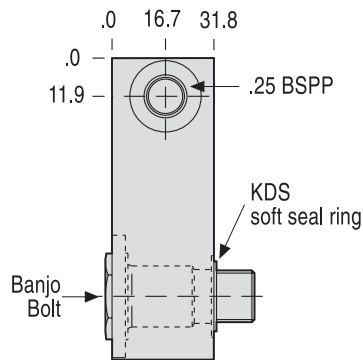
CAC\*-\*\*\*

CCC\*-\*\*\*

CKC\*-\*\*\*

CKCV-\*\*\*

\* Port 3 = .25 BSPP



#### Options

Aluminium

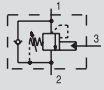
X4F

SG iron

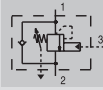
X4F/S

Typical cartridges for this body (model / catalogue page)

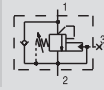
CB\*-\*\*\* / 4.10



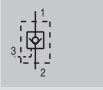
CA\*-\*\*\* / 4.09



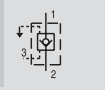
CC\*A-\*\*\* / 4.09



CK\*-\*\*\* / 4.16

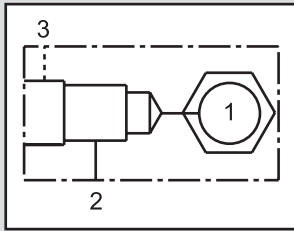


CK\*V-\*\*\*



## Ports .50 BSPP \*

1 Cavity T-11A



Typical cartridges for this body (model)

CBC\*-\*\*\*

CBB\*-\*\*\*

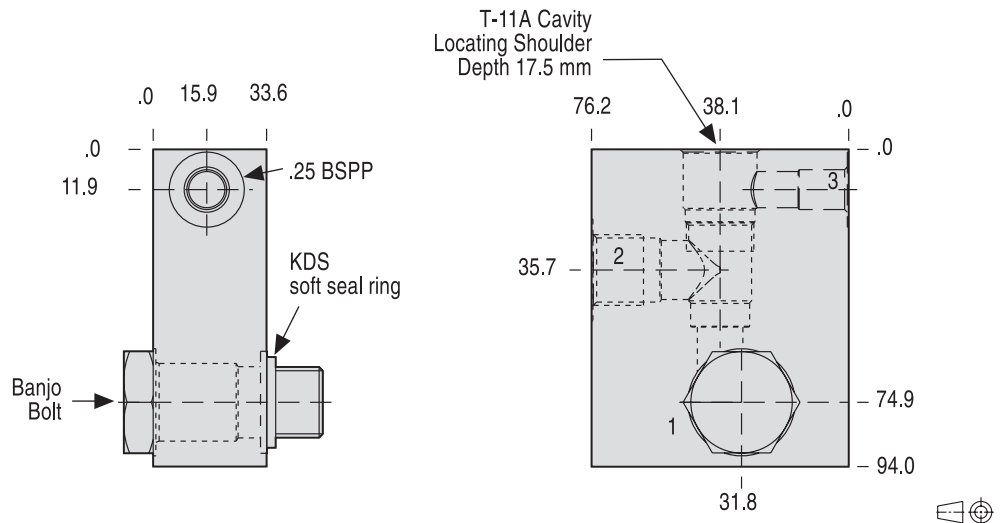
CAC\*-\*\*\*

CCC\*-\*\*\*

CKC\*-\*\*\*

CKCV-\*\*\*

\* Port 3 = .25 BSPP



Options

Aluminium

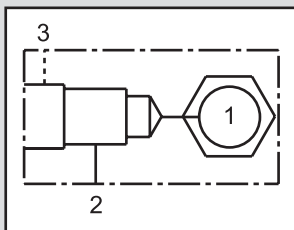
X4G

SG iron

X4G/S

## Ports .75 BSPP \*

1 Cavity T-2A



Typical cartridges for this body (model)

CBE\*-\*\*\*

CBD\*-\*\*\*

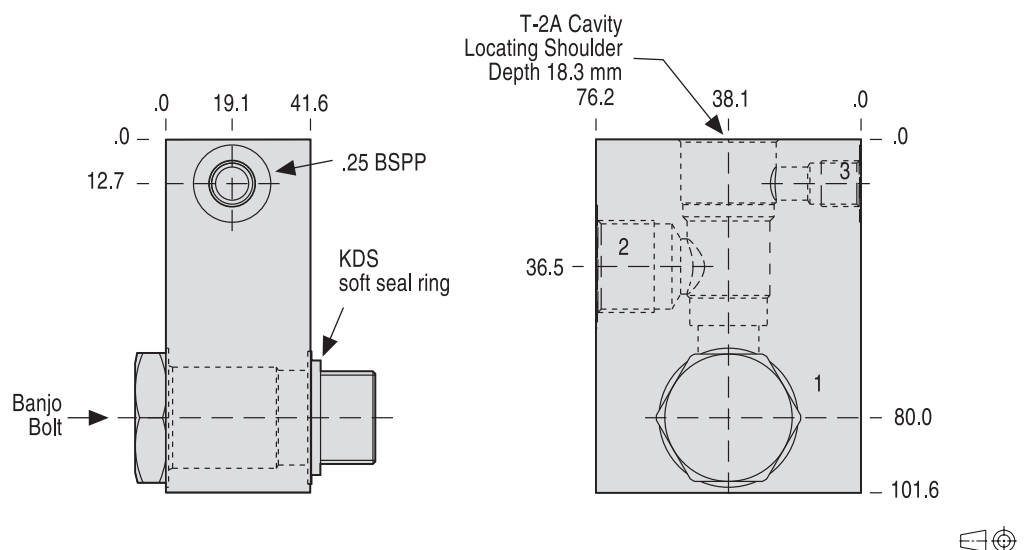
CAE\*-\*\*\*

CCE\*-\*\*\*

CKE\*-\*\*\*

CKEV-\*\*\*

\* Port 3 = .25 BSPP



Options

Aluminium

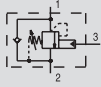
X4H

SG iron

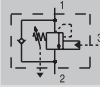
X4H/S

Typical cartridges for this body (model / catalogue page )

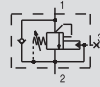
CB\*-\*\*\* / 4.10



CA\*-\*\*\* / 4.09



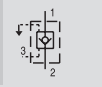
CC\*A-\*\*\* / 4.09



CK\*-\*\*\* / 4.16

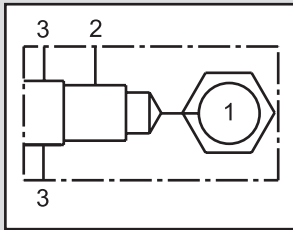


CK\*V-\*\*\*



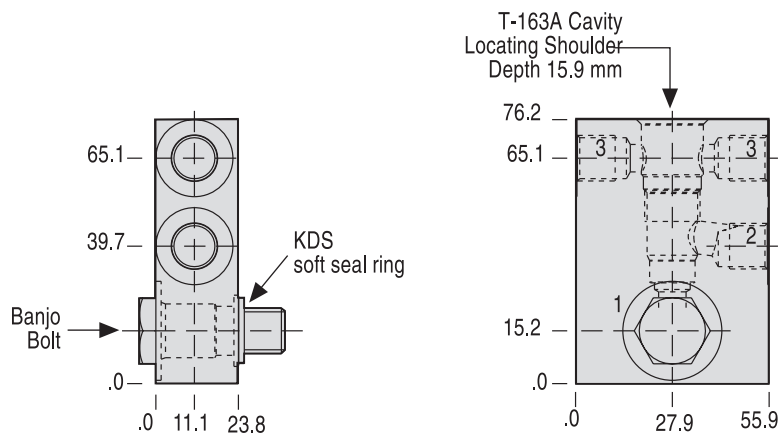
## Ports .25 BSPP \*

### 1 Cavity T-163A



Typical cartridges for this body (model)

CKB\*-\*\*\*



\*Qmax at port 3 < 60% nominal flow

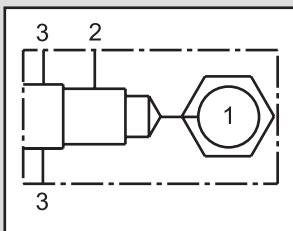
#### Options

Aluminium

SG iron

## Ports .375 BSPP \*

### 1 Cavity T-11A



Typical cartridges for this body (model)

CBC\*-\*\*\*

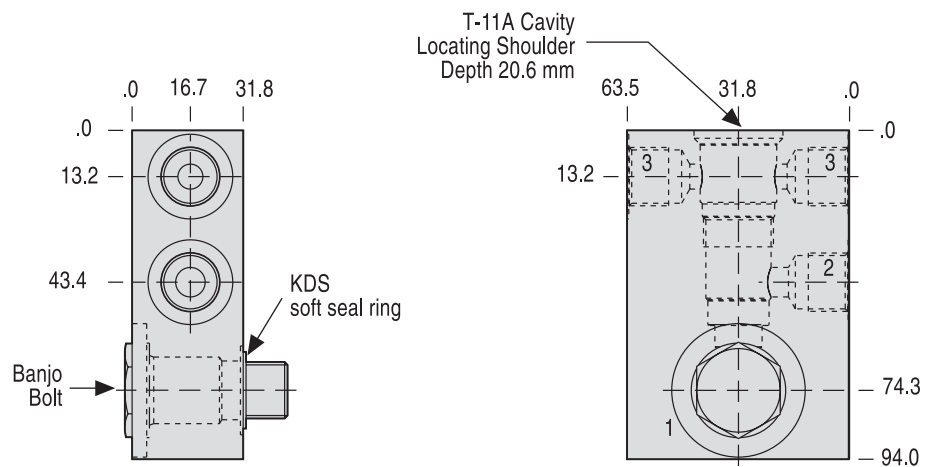
CBB\*-\*\*\*

CAC\*-\*\*\*

CCC\*-\*\*\*

CKC\*-\*\*\*

CKCV-\*\*\*



\*Qmax at port 3 < 60% nominal flow

#### Options

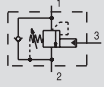
Aluminium

SG iron

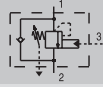


Typical cartridges for this body (model / catalogue page)

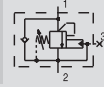
CB\*-\*\*\* / 4.10



CA\*-\*\*\* / 4.09



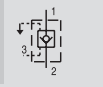
CC\*A-\*\*\* / 4.09



CK\*-\*\*\* / 4.16

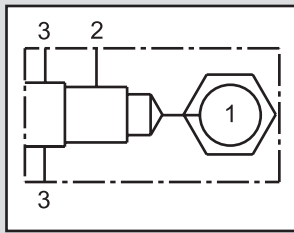


CK\*V-\*\*\*



## Ports .50 BSPP \*

### 1 Cavity T-11A



Typical cartridges for this body (model)

CBC\*-\*\*\*

CBB\*-\*\*\*

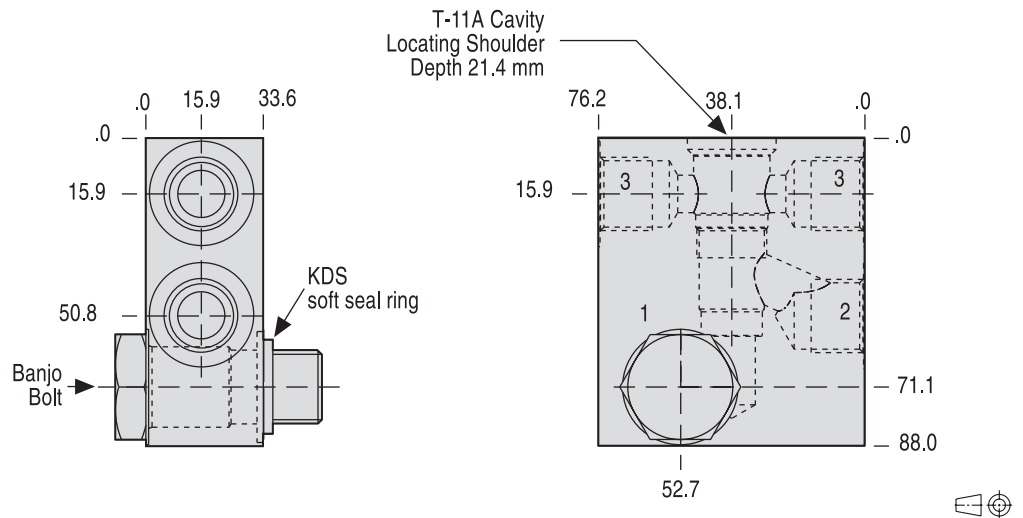
CAC\*-\*\*\*

CCC\*-\*\*\*

CKC\*-\*\*\*

CKCV-\*\*\*

\*Qmax at port 3 < 60% nominal flow



Options

Aluminium

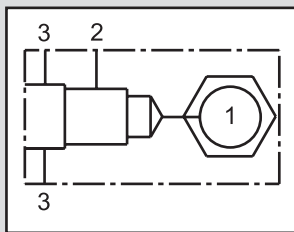
X4C

SG iron

X4C/S

## Ports .75 BSPP \*

### 1 Cavity T-2A



Typical cartridges for this body (model)

CBE\*-\*\*\*

CBD\*-\*\*\*

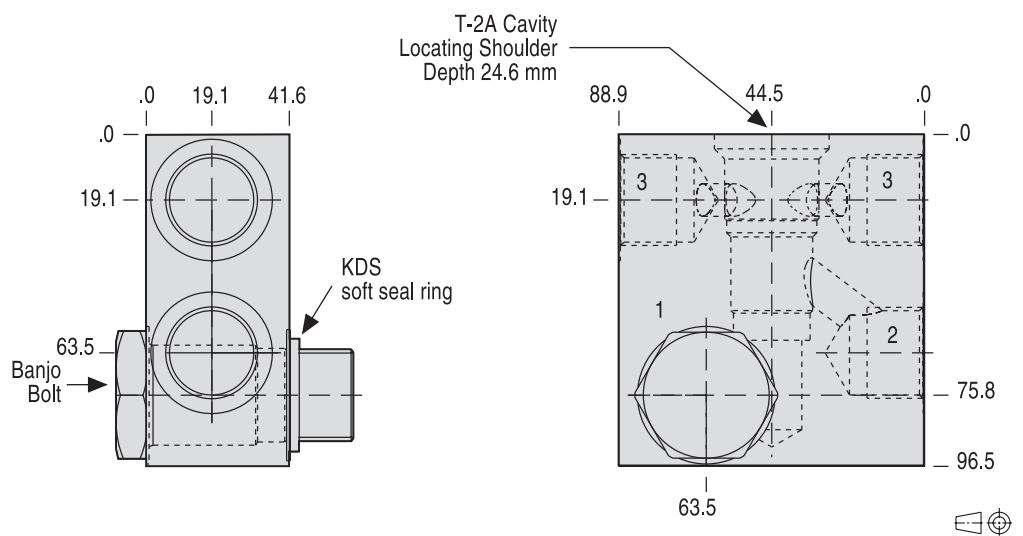
CAE\*-\*\*\*

CCE\*-\*\*\*

CKE\*-\*\*\*

CKEV-\*\*\*

\*Qmax at port 3 < 60% nominal flow



Options

Aluminium

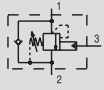
X4D

SG iron

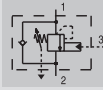
X4D/S

Typical cartridges for this body (model / catalogue page)

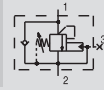
CB\*-\*\*\* / 4.10



CA\*-\*\*\* / 4.09



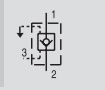
CC\*A-\*\*\* / 4.09



CK\*-\*\*\* / 4.16

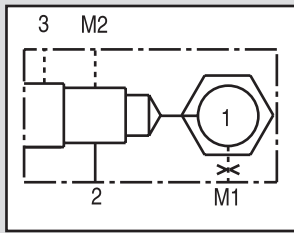


CK\*V-\*\*\*



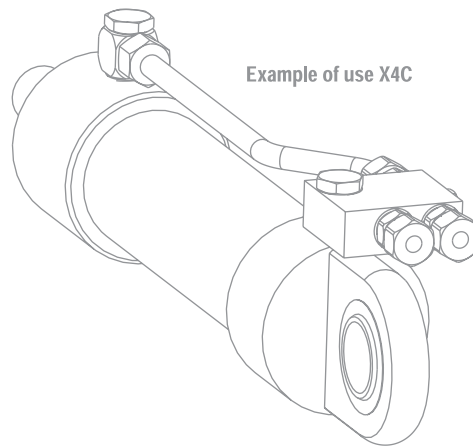
## Ports .25 BSPP

1 Cavity



Typical cartridges for this body (model)

CKB\*-\*\*\*



Example of use X4C

Options

Aluminium

\*\*\*

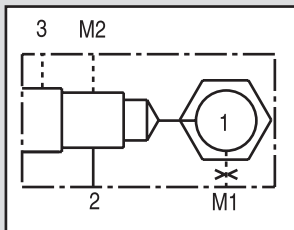
On request

SG iron

\*\*\*/S

## Ports .375 BSPP \*

1 Cavity T-11A



Typical cartridges for this body (model)

CBC\*-\*\*\*

CBB\*-\*\*\*

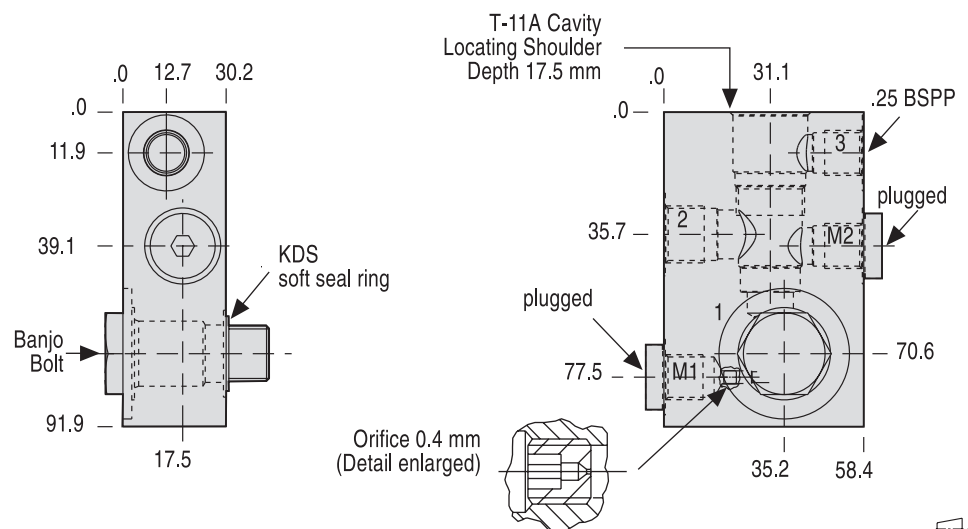
CAC\*-\*\*\*

CCC\*-\*\*\*

CKC\*-\*\*\*

CKCV-\*\*\*

\* Port 3, M1 + M2 = .25 BSPP



Options

Aluminium

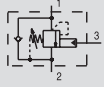
X4I

SG iron

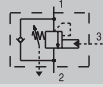
X4I/S

Typical cartridges for this body (model / catalogue page)

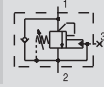
CB\*-\*\*\* / 4.10



CA\*-\*\*\* / 4.09



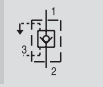
CC\*A-\*\*\* / 4.09



CK\*-\*\*\* / 4.16

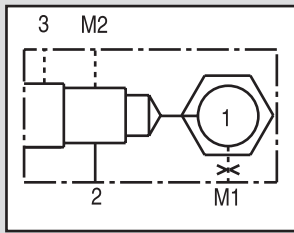


CK\*V-\*\*\*



## Ports .50 BSPP \*

### 1 Cavity T-11A



Typical cartridges for this body (model)

CBC\*-\*\*\*

CBB\*-\*\*\*

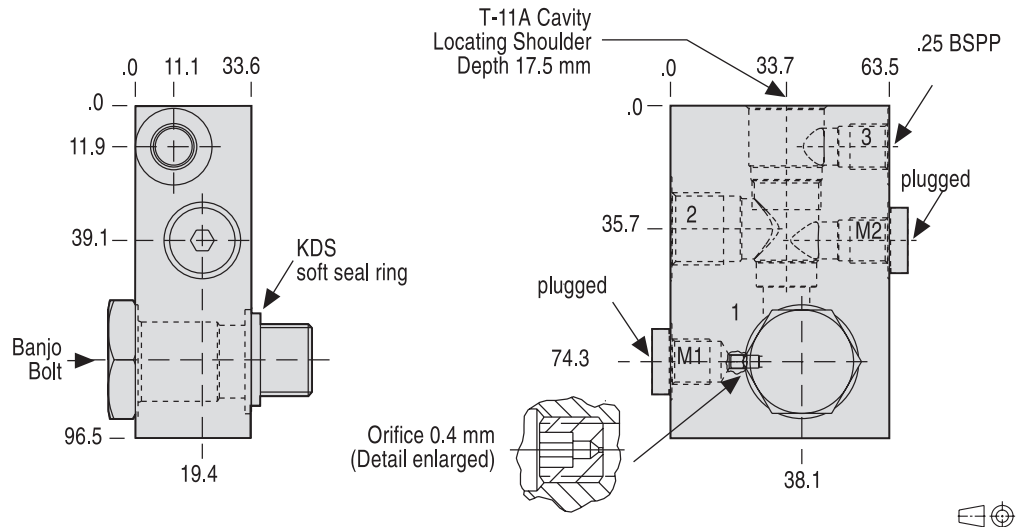
CAC\*-\*\*\*

CCC\*-\*\*\*

CKC\*-\*\*\*

CKCV-\*\*\*

\* Port 3, M1 + M2 = .25 BSPP



#### Options

Aluminium

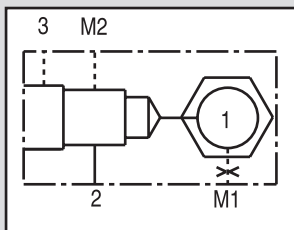
X4J

SG iron

X4J/S

## Ports .75 BSPP \*

### 1 Cavity T-2A



Typical cartridges for this body (model)

CBE\*-\*\*\*

CBD\*-\*\*\*

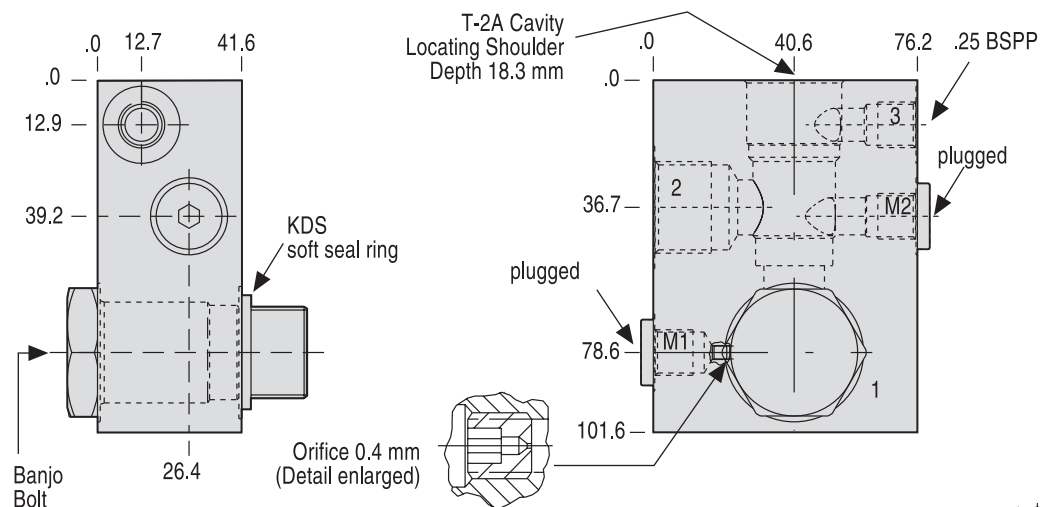
CAE\*-\*\*\*

CCE\*-\*\*\*

CKE\*-\*\*\*

CKEV-\*\*\*

\* Port 3, M1 + M2 = .25 BSPP



#### Options

Aluminium

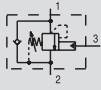
X4K

SG iron

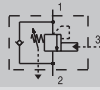
X4K/S

Typical cartridges for this body (model / catalogue page )

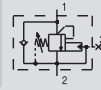
CB\*-\*\*\* / 4.10



CA\*-\*\*\* / 4.09



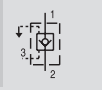
CC\*A-\*\*\* / 4.09



CK\*-\*\*\* / 4.16

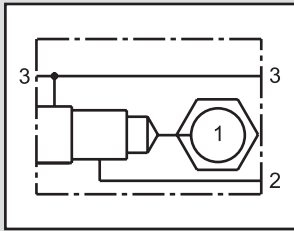


CK\*V-\*\*\*



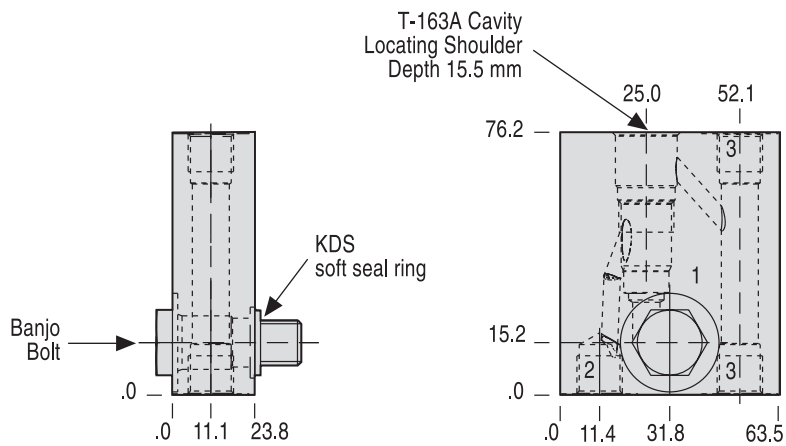
## Ports .25 BSPP

### 1 Cavity T-163A



Typical cartridges for this body (model)

CKB\*-\*\*\*



#### Options

Aluminium

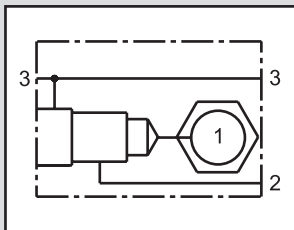
X3T

SG iron

X3T/S

## Ports .375 BSPP

### 1 Cavity T-11A



Typical cartridges for this body (model)

CBC\*-\*\*\*

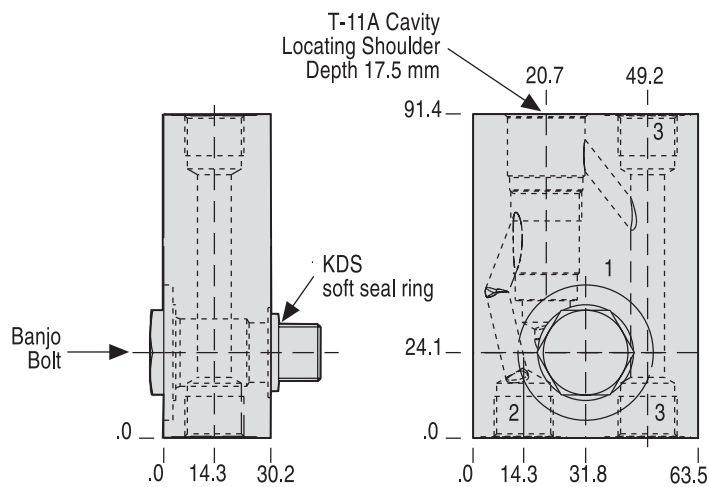
CBB\*-\*\*\*

CAC\*-\*\*\*

CCC\*-\*\*\*

CKC\*-\*\*\*

CKCV-\*\*\*



#### Options

Aluminium

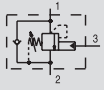
X3U

SG iron

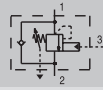
X3U/S

Typical cartridges for this body (model / catalogue page)

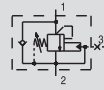
CB\*-\*\*\* / 4.10



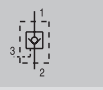
CA\*\*-\* / 4.09



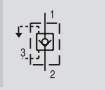
CC\*A-\*\*\* / 4.09



CK\*\*-\* / 4.16

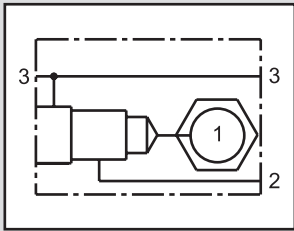


CK\*V-\*\*\*



## Ports .50 BSPP

### 1 Cavity T-11A



Typical cartridges for this body (model)

CBC\*-\*\*\*

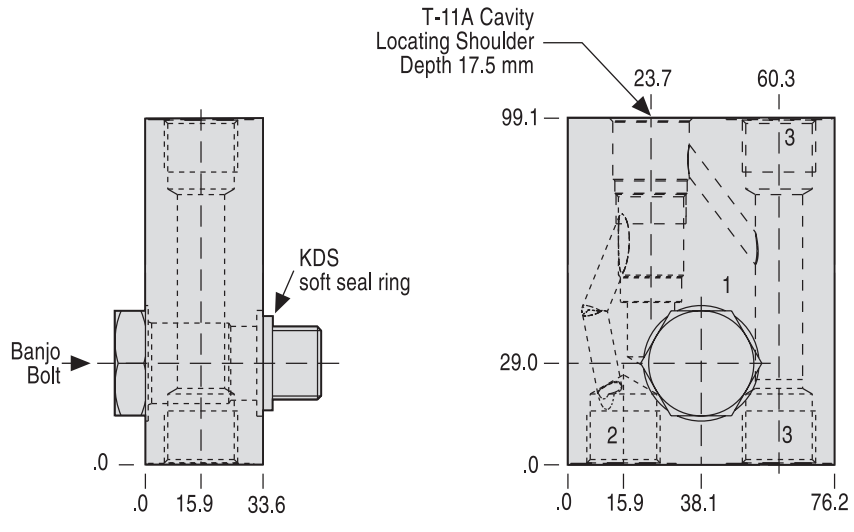
CBB\*-\*\*\*

CAC\*-\*\*\*

CCC\*-\*\*\*

CKC\*-\*\*\*

CKCV-\*\*\*



#### Options

Aluminium

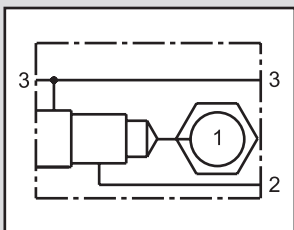
X3V

SG iron

X3V/S

## Ports .75 BSPP

### 1 Cavity T-2A



Typical cartridges for this body (model)

CBE\*-\*\*\*

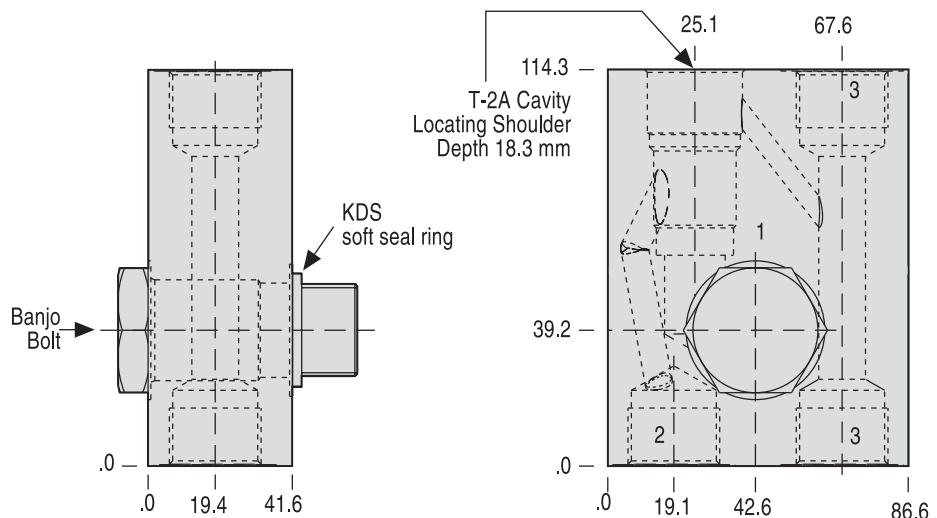
CBD\*-\*\*\*

CAE\*-\*\*\*

CCE\*-\*\*\*

CKE\*-\*\*\*

CKEV-\*\*\*



#### Options

Aluminium

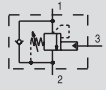
X3W

SG iron

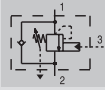
X3W/S

Typical cartridges for this body (model / catalogue page )

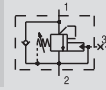
CB\*-\*\*\* / 4.10



CA\*\*-\* / 4.09



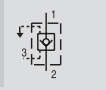
CC\*A-\*\*\* / 4.09



CK\*\*-\* / 4.16

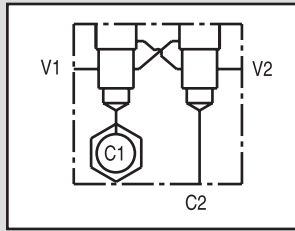


CK\*V-\*\*\*



## Ports .25 BSPP

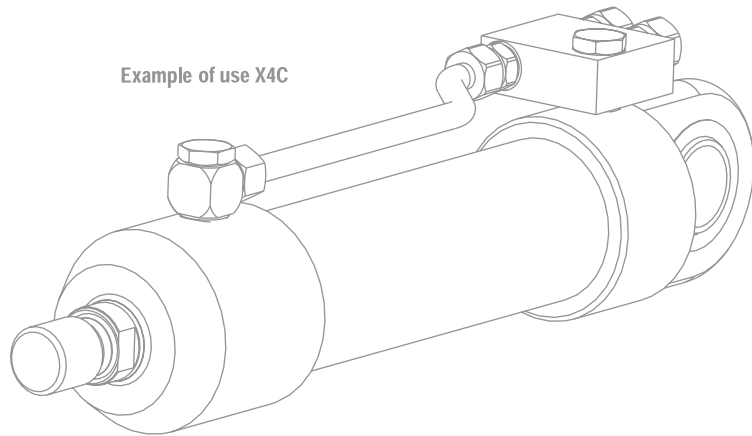
2 Cavities



Typical cartridges for this body (model)

CKB\*-\*\*\*

Example of use X4C



Options

Aluminium

\*\*\*

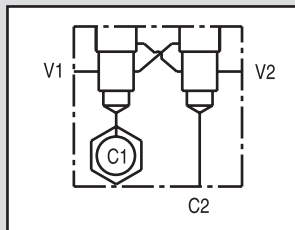
On request

SG iron

\*\*\*S

## Ports .375 BSPP

2 Cavities T-11A



Typical cartridges for this body (model)

CBC\*-\*\*\*

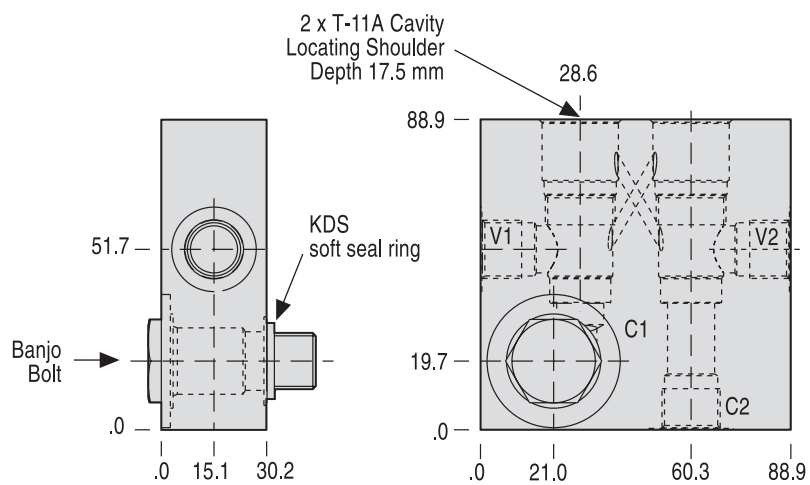
CBB\*-\*\*\*

CAC\*-\*\*\*

CCC\*-\*\*\*

CKC\*-\*\*\*

CKCV-\*\*\*



Options

Aluminium

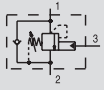
X3X

SG iron

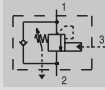
X3X/S

Typical cartridges for this body (model / catalogue page)

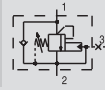
CB\*-\*\*\* / 4.10



CA\*-\*\*\* / 4.09



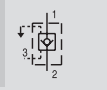
CC\*A-\*\*\* / 4.09



CK\*-\*\*\* / 4.16

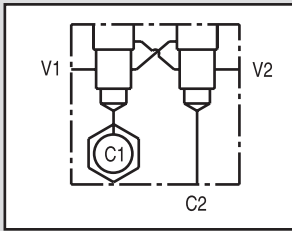


CK\*V-\*\*\*



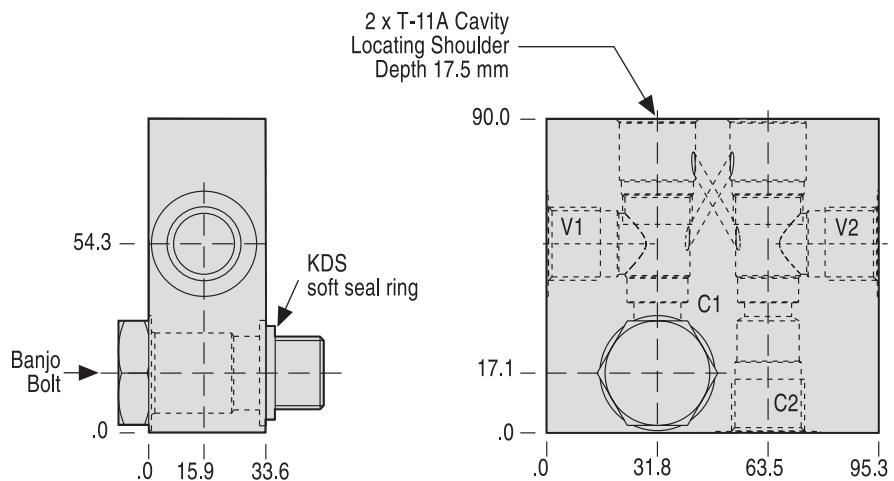
## Ports .50 BSPP

2 Cavities T-11A



Typical cartridges for this body (model)

- CBC\*-\*\*\*
- CBB\*-\*\*\*
- CAC\*-\*\*\*
- CCC\*-\*\*\*
- CKC\*-\*\*\*
- CKCV-\*\*\*



Options

Aluminium

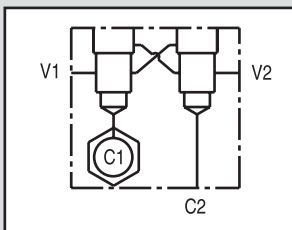
X3Y

SG iron

X3Y/S

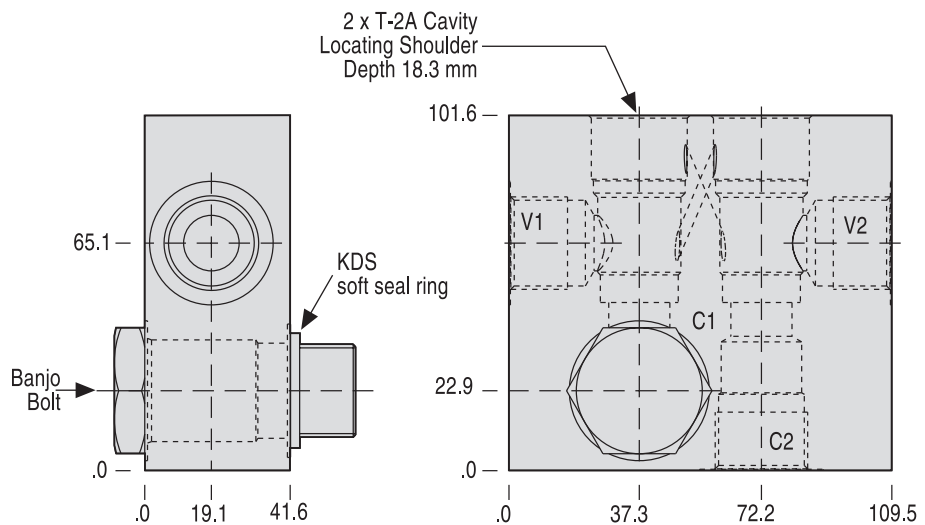
## Ports .75 BSPP

2 Cavities T-2A



Typical cartridges for this body (model)

- CBE\*-\*\*\*
- CBD\*-\*\*\*
- CAE\*-\*\*\*
- CCE\*-\*\*\*
- CKE\*-\*\*\*
- CKEV-\*\*\*



Options

Aluminium

X3Z

SG iron

X3Z/S

Typical cartridges for this body (model / catalogue page )

CW\*-\*\*\* / 4.09

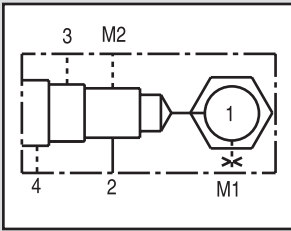


CV\*-V-\*\*\* / 4.09

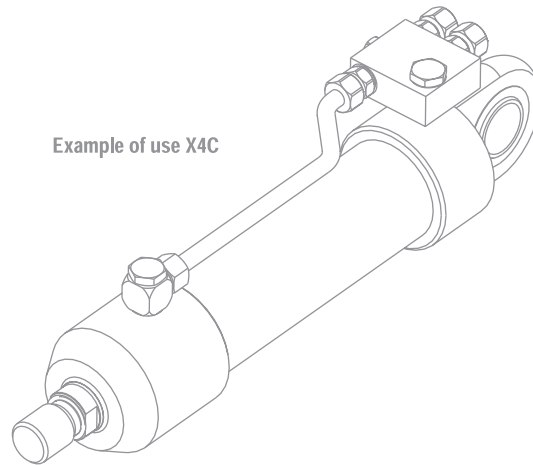


## Ports .25 BSPP

1 Cavity



Typical cartridges for this body (model)



Example of use X4C

Options

Aluminium

\*\*\*

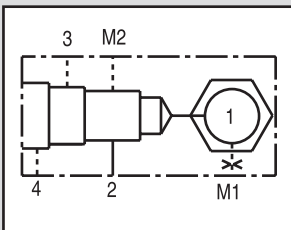
On request

SG iron

\*\*\*/S

## Ports .375 BSPP \*

1 Cavity

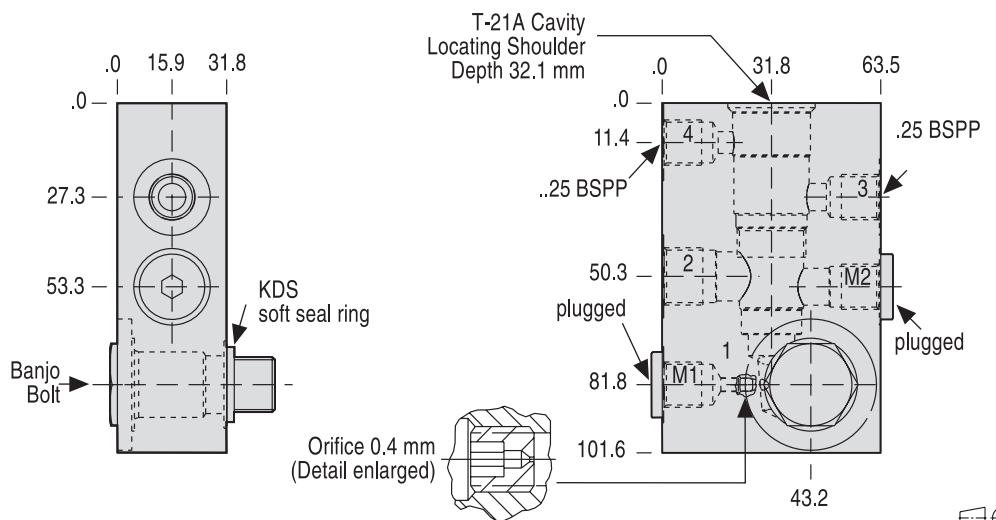


Typical cartridges for this body (model)

CWC\*-\*\*\*

CVCV-\*\*\*

\* Port 3, 4, M1 + M2 = .25 BSPP



Options

Aluminium

X5Y

SG iron

X5Y/S



Typical cartridges for this body (model / catalogue page)

CW\*-\*\*\* / 4.09

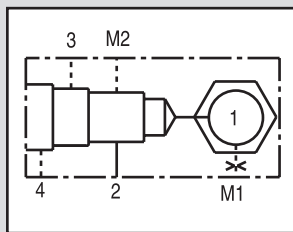


CV\*V-\*\*\* / 4.09



## Ports .50 BSPP \*

### 1 Cavity T-21A

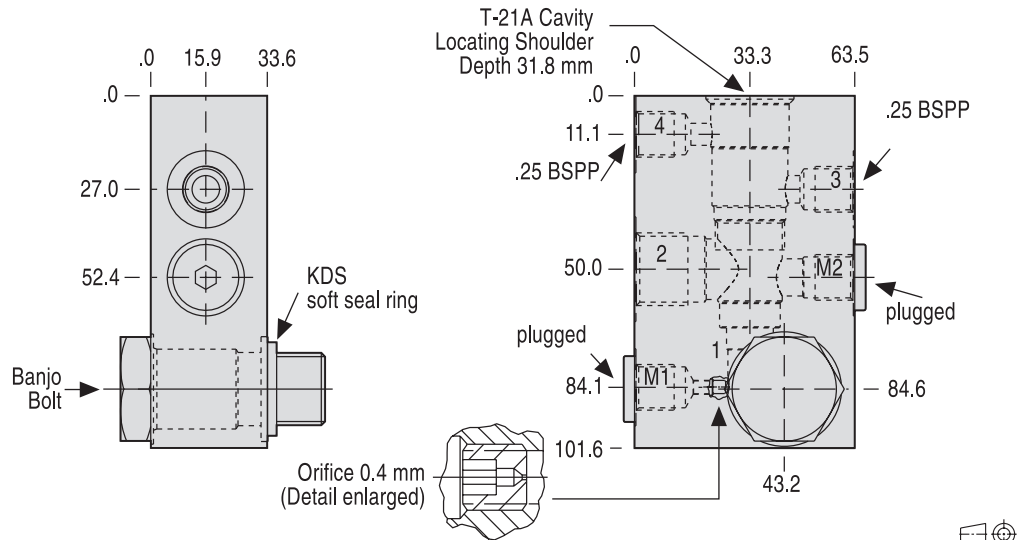


Typical cartridges for this body (model)

CWC\*-\*\*\*

CVCV-\*\*\*

\* Port 3, 4, M1 + M2 = .25 BSPP



#### Options

Aluminium

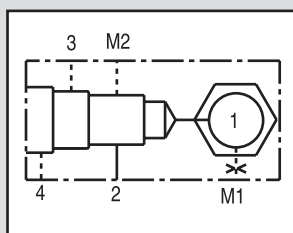
**X5Z**

SG iron

**X5Z/S**

## Ports .75 BSPP \*

### 1 Cavity T-22A

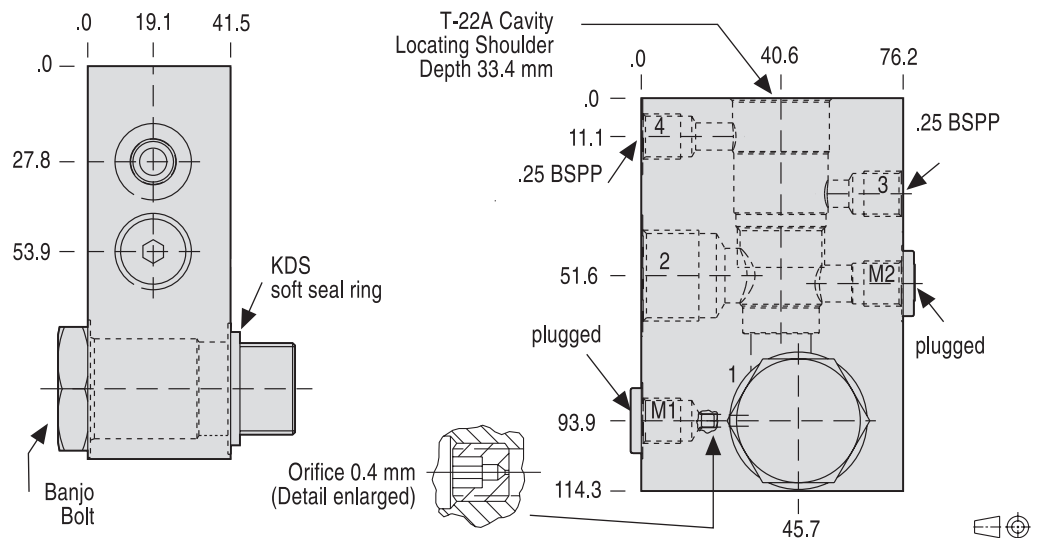


Typical cartridges for this body (model)

CWE\*-\*\*\*

CVEV-\*\*\*

\* Port 3, 4, M1 + M2 = .26 BSPP



#### Options

Aluminium

**X6A**

SG iron

**X6A/S**





## WARRANTY INFORMATION, PERFORMANCE ASSURANCE, AND APPLICATION LIMITATIONS



### CAUTION

Sun Hydraulics Corporation manufactures a variety of cartridge valves that will fit into the same Sun cavity. Each cartridge is marked with a seven-digit part identification code and a four-digit date code, stamped on the hex surfaces. Designers and users of Sun components are advised that **physical interchangeability of cartridges does not necessarily mean functional interchangeability.** When

replacing any Sun cartridges, users should first check with the manufacturer's service literature, their local Sun distributor, or the Sun factory before making any part substitutions.

**NOTE: To avoid serious injury, the manufacturer's service manual must be consulted before working on any hydraulic system.**

### LIMITED WARRANTY

Sun Hydraulics Corporation warrants its products free from defects in material, workmanship, and design for a period of three years after installation, provided the installation date is less than one year after manufacture. "O-rings" and seals are specifically exempted from this warranty. In no instance is there any warranty of fitness for a particular use and Sun Hydraulics Corporation cannot and does not accept responsibility of any type for any of its products that have been subjected to improper installation, improper application, negligence, tampering, or abuse, or which have been repaired or

altered outside of the Sun Hydraulics factory. Sun Hydraulics Corporation liability under this warranty shall extend only to replacement or correction, f.o.b. our factory, of any defective part or product determined by inspection as not conforming to this warranty. We make no other warranties, expressed or implied, and are not responsible for any consequential damages resulting from use by any buyer or user, our liability being limited to the value of product sold or obligation to replace a defective part.

### PERFORMANCE ASSURANCE

All Sun cartridges are individually tested at the factory and preset to specific pressure or flow settings where indicated in this catalogue. However, as the actual performance of buyers' equipment cannot be reproduced in Sun's testing laboratory,

assurance of suitability of all Sun products in the buyer's application is the responsibility of the buyer. This is typically accomplished by the manufacture of a prototype followed by a test or qualification program on the part of the buyer.

### APPLICATION LIMITATIONS

Sun's product designs and manufacturing facilities have been specifically developed to provide products for commercial, industrial and mobile hydraulic applications and Sun's products are only warranted for this type of use. Sun's distributors are not authorised to approve the use of Sun products in any of the following applications:

- Any steering or braking systems for passenger-carrying vehicles or on-highway trucks.
- Aircraft or space vehicles.

- Ordnance equipment.
- Life support equipment.
- Any end product which is used in a nuclear power plant application.

Specific written approval for any application of Sun products in any of the above named applications should be obtained from Sun Hydraulics Corporation. Consultation with Sun distributors or factory engineers is advised in unusual situations where applicability is questionable.



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