

Алматы (7273)495-231  
 Ангарск (3955)60-70-56  
 Архангельск (8182)63-90-72  
 Астрахань (8512)99-46-04  
 Белгород (4722)40-23-64  
 Барнаул (3852)73-04-60  
 Белгород (4722)40-23-64  
 Благовещенск (4162)22-76-07  
 Брянск (4832)59-03-52  
 Владивосток (423)249-28-31  
 Владикавказ (8672)28-90-48  
 Владимир (4922)49-43-18  
 Волгоград (844)278-03-48  
 Вологда (8172)26-41-59  
 Воронеж (473)204-51-73  
 Екатеринбург (343)384-55-89

Иваново (4932)77-34-06  
 Ижевск (3412)26-03-58  
 Иркутск (395)279-98-46  
 Казань (843)206-01-48  
 Калининград (4012)72-03-81  
 Калуга (4842)92-23-67  
 Кемерово (3842)65-04-62  
 Киров (8332)68-02-04  
 Коломна (4966)23-41-49  
 Кострома (4942)77-07-48  
 Краснодар (861)203-40-90  
 Красноярск (391)204-63-61  
 Курск (4712)77-13-04  
 Курган (3522)50-90-47  
 Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13  
 Москва (495)268-04-70  
 Мурманск (8152)59-64-93  
 Набережные Челны (8552)20-53-41  
 Нижний Новгород (831)429-08-12  
 Новокузнецк (3843)20-46-81  
 Ноябрьск (3496)41-32-12  
 Новосибирск (383)227-86-73  
 Омск (3812)21-46-40  
 Орел (4862)44-53-42  
 Оренбург (3532)37-68-04  
 Пенза (8412)22-31-16  
 Петроаводск (8142)55-98-37  
 Псков (8112)59-10-37  
 Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15  
 Рязань (4912)46-61-64  
 Самара (846)206-03-16  
 Санкт-Петербург (812)309-46-40  
 Саратов (845)249-38-78  
 Севастополь (8692)22-31-93  
 Саранск (8342)22-96-24  
 Симферополь (3652)67-13-56  
 Смоленск (4812)29-41-54  
 Сочи (862)225-72-31  
 Ставрополь (8652)20-65-13  
 Сургут (3462)77-98-35  
 Сыктывкар (8212)25-95-17  
 Тамбов (4752)50-40-97  
 Тверь (4822)63-31-35

Тольятти (8482)63-91-07  
 Томск (3822)98-41-53  
 Тула (4872)33-79-87  
 Тюмень (3452)66-21-18  
 Ульяновск (8422)24-23-59  
 Улан-Удэ (3012)59-97-51  
 Уфа (347)229-48-12  
 Хабаровск (4212)92-98-04  
 Чебоксары (8352)28-53-07  
 Челябинск (351)202-03-61  
 Череповец (8202)49-02-64  
 Чита (3022)38-34-83  
 Якутск (4112)23-90-97  
 Ярославль (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(7172)727-132

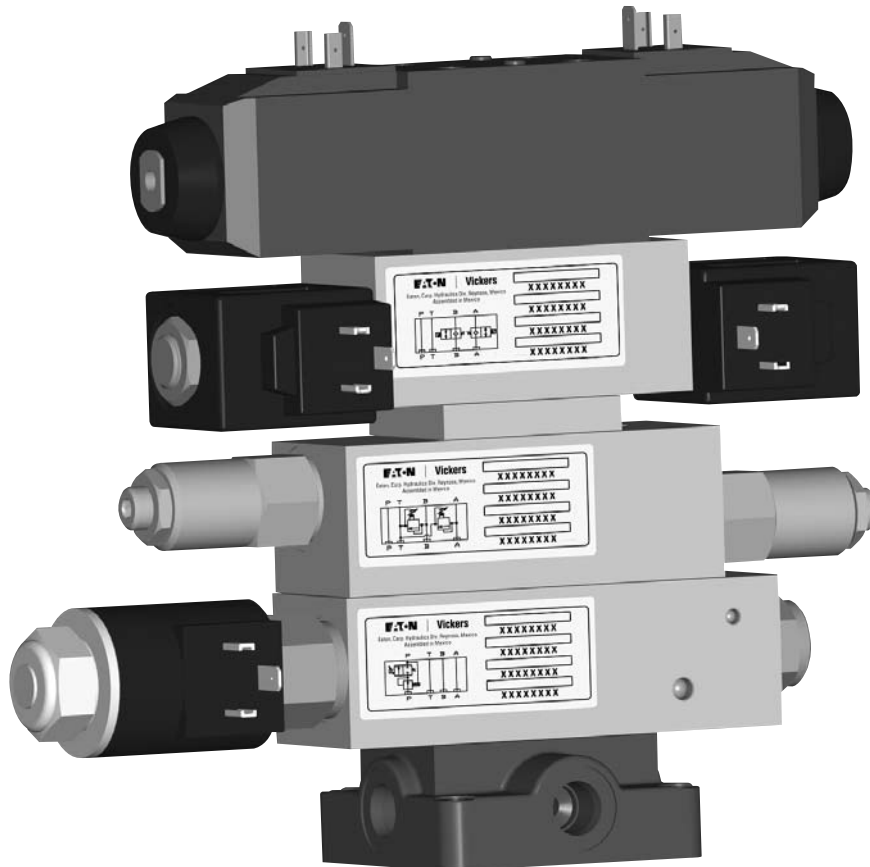
Киргизия +996(312)96-26-47

<https://vickers.nt-rt.ru> || [vsh@nt-rt.ru](mailto:vsh@nt-rt.ru)



## Sandwich Valves

CETOP03 (NG6) Sandwich valve bodies and assemblies for applications up to 210 bar (3000 psi)

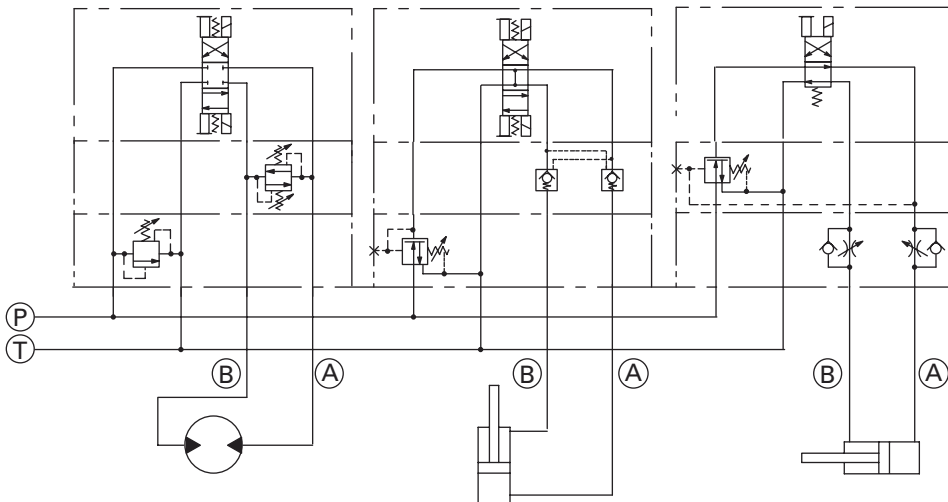


# Section Contents

Sandwich Valve  
Systems

| Model   | Page |
|---|------|
| Section Introduction, application guidelines and ordering information ..... | L-3  |
| Spare parts & Accessories for Sandwich Valve assemblies .....               | L-5  |
| <b>Valve Locator</b>  |      |
| Pressure control valves .....   | L-6  |
| Check and Pilot control valves .....  | L-9  |
| Flow control valves .....   | L-10 |
| Solenoid valves .....   | L-13 |
| Load control valves .....   | L-18 |
| Spacer / Blanking / Linking Plates .....                                    | L-19 |
| <b>Model Code Detail</b>  |      |
| Model Code descriptions for assemblies with two cartridges .....            | L-20 |
| <b>Housing Dimensions</b>   |      |
| ISO 4401-03 CETOP3 Housings - Dimensions .....                              | L-25 |

## Typical Sandwich Valve System



**WARNING**  
Aluminum housing is only to be used for pressures up to 210 bar (3000 psi).



**WARNING**  
Application of these products beyond published performance specifications may cause valve malfunction which may result in personal injury and/or damage to the machine.

# Sandwich Valves

Build a Compact, Cost effective, Reliable Hydraulic System with Vickers aluminum Sandwich Valves and SICV valves

## Reduces System Space Requirements

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

## Reduce Cost

Sandwich valves eliminate inter valve piping and leak-prone tube and pipe connections. Installed cost is less than when using conventional valves.

## Versatile and Easy to Install

Sandwich 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 Sandwich valves.

Linking and blanking plates are available to facilitate a variety of circuit designs and flexibility in applying these valves.

## Rugged and Reliable

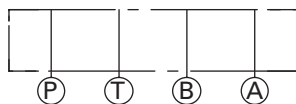
Cartridges are produced from hardened steel and mounted in aluminum housings. Excellent reliability is ensured. Cartridges are accessible without removing valves from an assembled stack. The housings are assembled in a kit

containing a locating pin for error free installation, all necessary plugs and standard Viton seals.

## Sandwich Systems... Easy to Understand, Easy to Design

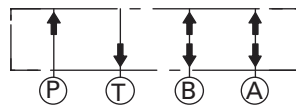
Sandwich circuitry is best shown using slightly different symbols than those for traditional valve configurations. Each Sandwich symbol has the same basic form and size as shown in figure 1.

Figure 1



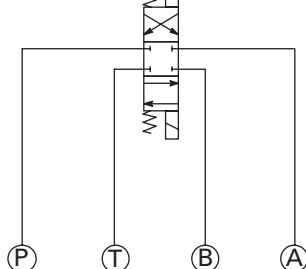
For ease of understanding, remember the directions of flow for each line, and that all four flow paths pass through each valve (see figure 2).

Figure 2



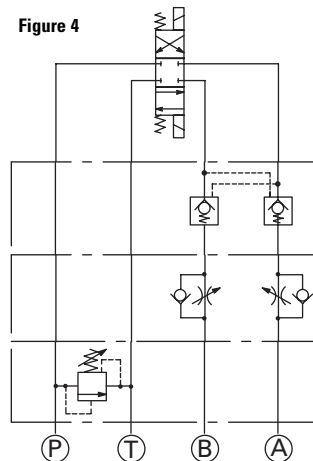
For clarity, directional valves are drawn vertically in Sandwich circuit diagrams (see figure 3).

Figure 3



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

Figure 4



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.

A combination of directional valve, sandwich valve(s) and subplate/manifold block completes the assembly.

## Sandwich Valve Assemblies

Aluminum sandwich valve assemblies consist of a housing kit, and one or more cartridges. They can be purchased complete by specifying a sandwich

model code or built by mixing an appropriate housing kit with cartridges to attain a desired function.

A housing kit contains a housing, locating pin, all necessary plugs and standard Viton seals.

## Sandwich Valve Locators

Sandwich valve locator group products by function and provides an easy way to identify a specific sandwich valve in the catalog.

It presents a sandwich valve functional symbol, function description and basic model code. Since every sandwich is put together by inserting cartridges into a housing kit, the locator provides concise information for easy selection of the components to build a specific function.

The following information is shown in the locator for every function: Housing kit model, part number, catalog page with the detailed information for the housing kit, model code and the catalog number for the cartridges & cartridge cavity.

## Housing Kits Data Page

Housing kits data pages L-25 thru L-44 provide the dimensional data, typical cartridges and functional information.

# Sandwich Model code information

Easy to understand, easy to design

## Sandwich Valves Ordering Information

To order sandwich valve components, use the information in the sandwich valves locator pages L-6 thru L-19.

To order a sandwich valve complete for models with one cartridge:

- Select the model code from the sandwich valve locator. Note that the housing kit model code substitutes for the standard inline body code in the same model field.
- Go to the referenced cartridge valve literature to complete the balance of the sandwich model code.

To order a sandwich valve complete for models with two cartridges:

- Select the model code from the sandwich valves locator.
- Go to the referenced page for the model code description.

## Sandwich Valve Model Codes

In order to speed the release of new products to customers, the sandwich valve product line has been configured with a fixed length model code. A fixed length model code simplifies the ordering process for our customers and facilitates the automated production release of new

valves and settings. In general, we have followed the standard model code for the base valve with the following three exceptions:

1. Seals: When specifying Buna-N seals, an N should be used in the model code for sandwich valves. (In the standard valve model code Buna-N seals are specified by leaving this column blank.)
2. Pressure settings: To avoid confusion on pressure settings, the setting should always be specified and not left blank. In addition, the confusing decimal system has been eliminated for sandwich valves. In the sandwich valve model code, simply specify the entire pressure setting in PSI using four digits for relief valves and 3 digits for check valves. Include leading zeros if necessary. For example:

### Relief and Counterbalance Valves

500 psi – 0500  
50 psi – 0050  
1525 psi – 1525

### Check Valves

210 psi – 210  
20 psi - 020  
3 psi - 003

3. Flow settings: To avoid confusion, the setting should always be specified and not left blank. In the sandwich valve model codes, all flow settings are specified in tenths of a GPM without decimal points. (include

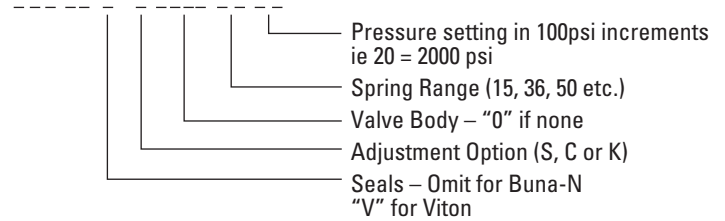
trailing zeroes and leading zeros if where required.) For example:

1 gpm – 010  
1.2 gpm – 012  
15 gpm - 150

Two examples are shown below:

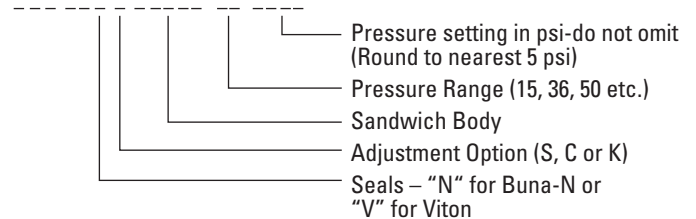
### Base valve model code

**RV5-10(V)-\*-\*\*\*\*\*-\*\*/\*\***



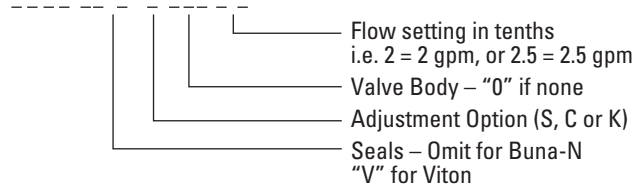
### Sandwich valve model code

**RV5-10\*\*\*-A321P-\*\*/\*\*\*\***



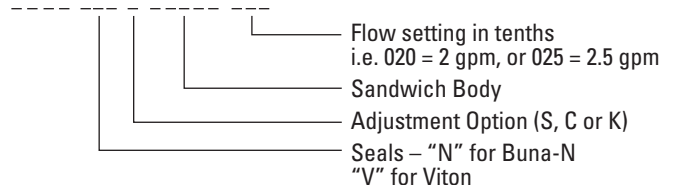
### Base valve model code

**FAR1-10(V)-\*-\*\*\*-\*.\***



### Sandwich valve model code (relieving from P to T)

**FAR1-10\*\*\*-A324A-\*\*\***



# Spare Parts

For Sandwich Valve Assemblies

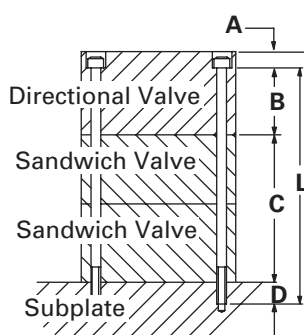
## Accessory Plates & Stud Rods

### Accessory Plates

Linking and blanking plates are available to facilitate a variety of circuit designs and flexibility in applying these valves. All accessory plates come with Viton O-Rings.

### Stud Rods

To simplify the installation of the sandwich valves, stud rod & nuts kits can be ordered and cut to length in the field. Once the rods are installed, they act as a guide when assembling the sandwich valves stack. After assembling the directional control valve on top of the stack, special nuts are used to retain the stack. Eaton offers 178 mm (7 in) or 305 mm (12 in) bolt kits (one bolt kit for these Sandwich valves comprises 4 bolts). To determine your needs, use the following guide for bolt length calculation.



- A** Amount of thread required for the stud nut 10,2 (0.40)
- B** Bolt clamp length in directional valve, blanking plate etc.
- C** Height of intermediate valve stack, comprising Vickers Sandwich valve(s) plus tapping plates etc.
- D** Depth of thread engagement in sub-plate/ manifold block. Minimum amount of thread required 10,2 mm (0.40 in.)
- L** Required bolt length; select from the table

### Filtration Requirements

For products in this catalog the recommendation fluid cleanliness levels is:  
Up to 210 bar (3000 psi)  
18/16/13

### Note

1. Bolts should be torqued to 4.5-6.0 Nm (40-53 in. lbs) with threads lubricated.
2. If not using Eaton bolt kits, bolts must be to Grade 12.9 (ISO 898) or better.

### STUD ROD & NUT KIT\*

| Metric: M5-0.8thd |            | Inch: 10-24 |            |
|-------------------|------------|-------------|------------|
| Length (mm)       | Kit number | Length (in) | Kit number |
| 178               | 02-184934  | 7           | 02-184932  |
| 305               | 02-184935  | 12          | 02-184933  |

\*Kit contains four stud rods and four stud nuts

### Spare Parts

Stud rod and nut kits are listed above. Individual nuts are also available:

| NUTS         |            | SEAL KITS     |                 |
|--------------|------------|---------------|-----------------|
| Length (Thd) | Kit number | Seal material | Seal Kit number |
| 10-24        | 02-184940  | Buna N        | 02-184951       |
| M5-0.8       | 02-184941  | Viton         | 02-185282       |

### Temperature Limits

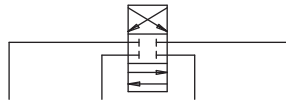
Ambient range:  
-40° C to +120° C  
(-40° F to +248° F)

### Ordering Procedure

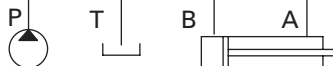
Specify requirements by housing kit, or valve model code, and by seal kit number.

# Pressure Control Functions

Sandwich Valves Locator  
ISO 4401-03/CETOP  
03 series



| Function                      | Functional Symbol | Model Code                   | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity |
|-------------------------------|-------------------|------------------------------|-------------------------|---------------------------------------|
| Relief valve P-T              |                   | RV1 10 * * A321P **/**** 00  | A321P<br>02-185342      | RV1-10<br>Section E<br>C-10-2         |
| Relief valve A-T              |                   | RV1 10 * * A321A **/**** 00  | A321A<br>02-185340      | RV1-10<br>Section E<br>C-10-2         |
| Relief valve B-T              |                   | RV1 10 * * A321B **/**** 00  | A321B<br>02-185341      | RV1-10<br>Section E<br>C-10-2         |
| Proportional relief valve P-T |                   | ERV1 10 * *** A321P *** * 00 | A321P<br>02-185342      | ERV1-10<br>Section E<br>C-10-2        |
| Proportional relief valve A-T |                   | ERV1 10 * *** A321A *** * 00 | A321A<br>02-185340      | ERV1-10<br>Section E<br>C-10-2        |
| Proportional relief valve B-T |                   | ERV1 10 * *** A321B *** * 00 | A321B<br>02-185341      | ERV1-10<br>Section E<br>C-10-2        |
| Relief valve P-T              |                   | RV5 10 * * A321P **/**** 00  | A321P<br>02-185342      | RV5-10<br>Section E<br>C-10-2         |
| Relief valve A-T              |                   | RV5 10 * * A321A **/**** 00  | A321A<br>02-185340      | RV5-10<br>Section E<br>C-10-2         |
| Relief valve B-T              |                   | RV5 10 * * A321B **/**** 00  | A321B<br>02-185341      | RV5-10<br>Section E<br>C-10-2         |



**CAUTION**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

# Pressure Control Functions

| Function   | Functional Symbol | Model Code   | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity    |
|--|-------------------|--|-------------------------|--|
| Solenoid Controlled Relief valve P-T Normally Open   |                   | SRV 10 * 0 S A322P 35/ *** **<br>Refer to page L-20 for model code breakdown         | A322P 02-185344         | SV5-8-0/RV1-10 Section A/E C-8-2/C-10-2  |
| Solenoid Controlled Relief valve P-T Normally Closed |                   | SRV 10 * C S A322P 35/ *** **<br>Refer to page L-20 for model code breakdown         | A322P 02-185344         | SV5-8-C/RV1-10 Section A/E C-8-2/C-10-2  |
| Dual Relief valve A-T, B-T                           |                   | RV1 8 * * A311W A**/****B**/**** 00<br>Refer to page L-21 for model code breakdown   | A311W 02-185364         | RV1-8 qty 2 Section E C-8-2 qty 2        |
| Dual Relief valve A-T, B-T                           |                   | RV1 10 * * A312W A**/****B**/**** 00<br>Refer to page L-20 for model code breakdown  | A312W 02-185365         | RV1-10 qty 2 Section E C-10-2 qty 2      |
| Dual Relief valve A-T, B-T                           |                   | RV5 10 * * A312W A**/****B**/**** 00<br>Refer to page L-20 for model code breakdown  | A312W 02-185365         | RV5-10 qty 2 Section E C-10-2 qty 2      |
| Cross port relief valve A-B                          |                   | RV3A 10 * * A321W A**/****B**/**** 00<br>Refer to page L-20 for model code breakdown | A321W 02-185343         | RV3A-10 qty 2 Section E C-10-2 qty 2     |
| Cross port relief valve A-B                          |                   | RV5A 10 * * A321W A**/****B**/**** 00<br>Refer to page L-20 for model code breakdown | A321W 02-185343         | RV5A-10 qty 2 Section E C-10-2 qty 2     |
| Sequence valve In to P                               |                   | PSV7 10 * * A316P **/**** 00<br>Refer to page L-21 for model code breakdown          | A316P 02-185374         | PSV7-10 Section E C-10-3                 |
| Sequence valve In to A Reverse FF Check              |                   | PSV7 10 * * A316A **/**** 00<br>Refer to page L-21 for model code breakdown          | A316A 02-185372         | PSV7-10/CV3-10 Section E/G C-10-3/C-10-2 |



**CAUTION**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

# Pressure Control Functions

| Function  | Functional Symbol | Model Code   | Hsg kit: model Part No.    | Cartridge Cartridge Data Sheet Cavity                       |
|---|-------------------|--|----------------------------|---|
| Sequence Valve<br>Out of A<br>Reverse FF<br>Check                         |                   | <b>PSV7 10 * * A319A **/**** 00</b><br>Refer to page L-21 for model code breakdown | <b>A319A</b><br>02-185377  | <b>PSV7-10/CV3-10</b><br>Section E/G<br>C-10-3/C-10-2       |
| Sequence Valve<br>In to B<br>Reverse FF<br>Check                          |                   | <b>PSV7 10 * * A316B **/**** 00</b><br>Refer to page L-21 for model code breakdown | <b>A316B</b><br>02-185373  | <b>PSV7-10/CV3-10</b><br>Section E/G<br>C-10-3/C-10-2       |
| Sequence Valve<br>Out of B<br>Reverse FF<br>Check                         |                   | <b>PSV7 10 * * A319B **/**** 00</b><br>Refer to page L-21 for model code breakdown | <b>A319B</b><br>02-185378  | <b>PSV7-10/CV3-10</b><br>Section E/G<br>C-10-3/C-10-2       |
| Reducing Valve<br>on (P)<br>Drained to T                                  |                   | <b>PRV2 10 * * A326P **/**** 00</b><br>Refer to page L-21 for model code breakdown | <b>A326P</b><br>02-185353  | <b>PRV2-10</b><br>Section E<br>C-10-3                       |
| Reducing on A<br>Drained to T<br>Reverse FF Check                         |                   | <b>PRV2 10 * * A310A **/**** 00</b><br>Refer to page L-21 for model code breakdown | <b>A310A</b><br>02-185362  | <b>PRV2-10/CV3-10</b><br>Section E/G<br>C-10-3/C-10-2       |
| Reducing on B<br>Drained to T<br>Reverse FF Check                         |                   | <b>PRV2 10 * * A310B **/**** 00</b><br>Refer to page L-21 for model code breakdown | <b>A3210B</b><br>02-185363 | <b>PRV2-10/CV3-10</b><br>Section E/G<br>C-10-3/C-10-2       |
| Pressure Compensator<br>Restrictive on P<br>w/Shuttle sense<br>from A & B |                   | <b>PCR 10 * A309P *** 00</b><br>Refer to page L-22 for model code breakdown        | <b>A309P</b><br>02-185381  | <b>DPS2-10-F-F-0/DSV2-8</b><br>Section E/D<br>C-10-3S/C-8-3 |
| Pressure Compensator<br>Bypass to T<br>w/Shuttle sense<br>from A & B      |                   | <b>PCB 10 * A319P *** 00</b><br>Refer to page L-22 for model code breakdown        | <b>A319P</b><br>02-185382  | <b>DPS2-10-P-F-0/DSV2-8</b><br>Section E/D<br>C-8-3/C-10-3S |

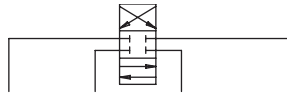


## CAUTION

Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



# Check & Pilot Check Functions



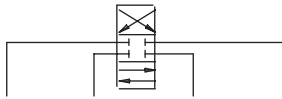
| Function  | Functional Symbol | Model Code               | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity      |
|---|-------------------|--------------------------|-------------------------|--|
| Pilot Operated Check Valve On A Pilot from B      |                   | POC1 10 * * A323A *** 00 | A323A<br>02-185345      | POC1-10<br>Section G<br>C-10-3S            |
| Pilot Operated Check Valve On B Pilot from A      |                   | POC1 10 * * A323B *** 00 | A323B<br>02-185346      | POC1-10<br>Section G<br>C-10-3S            |
| Pilot Operated Check Valve On A & B Cross Piloted |                   | POC1 10 * * A323W *** 00 | A323W<br>02-185347      | POC1-10qty 2<br>Section G<br>C-10-3S qty 2 |
| Check Valve On P                                  |                   | CV3 8 * P A307P *** 00   | A307P<br>02-185356      | CV3-8<br>Section G<br>C-8-2                |
| Check Valve On P                                  |                   | CV3 10 * P A324P *** 00  | A324P<br>02-185350      | CV3-10<br>Section G<br>C-10-2              |
| Check Valve On T                                  |                   | CV3 8 * P A307T *** 00   | A307T<br>02-185357      | CV3-8<br>Section G<br>C-8-2                |
| Check Valve On T                                  |                   | CV3 10 * P A308T *** 00  | A308T<br>02-185360      | CV3-10<br>Section G<br>C-10-2              |
| Check Valve On A Free Flow Out                    |                   | CV3 8 * P A307A *** 00   | A307A<br>02-185354      | CV3-8<br>Section G<br>C-8-2                |
| Check Valve On A Free Flow Out                    |                   | CV3 10 * P A314A *** 00  | A314A<br>02-185367      | CV3-10<br>Section G<br>C-10-2              |



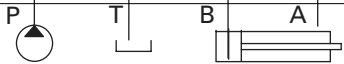
**CAUTION**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



# Check and Flow Control Functions

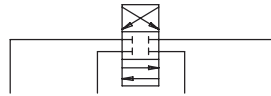


| Function                            | Functional Symbol | Model Code               | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity |
|-------------------------------------|-------------------|--------------------------|-------------------------|---------------------------------------|
| Check Valve On B Free Flow Out      |                   | CV3 8 * P A307B *** 00   | A307B 02-185355         | CV3-8 Section G C-8-2                 |
| Check Valve On B Free Flow Out      |                   | CV3 10 * P A314B *** 00  | A314B 02-185368         | CV3-10 Section G C-10-2               |
| Check Valve On T to A & B           |                   | CV3 8 * P A320T *** 00   | A320T 02-185379         | CV3-8 qty 2 Section G C-8-2 qty 2     |
| Check Valve On T to A & B           |                   | CV3 10 * P A317T *** 00  | A317T 02-185375         | CV3-10 qty 2 Section G C-10-2 qty 2   |
| Anti-Cavitation Check P-T           |                   | CV16 10 * P A321P *** 00 | A321P 02-185342         | CV16-10-P-0-5 Section G C-10-2        |
| Shuttle Valve A & B Output External |                   | DSV2 8 * B A309W 00      | A309W 02-185361         | DSV2-8-B-0 Section F C-8-3            |
| Flow Control Meter in P             |                   | NV1 10 * * A324P 00      | A324P 02-185350         | NV1-10 Section F C-10-2               |
| Flow Control & Check Meter in A     |                   | FCV7 10 * * A324A FF 00  | A324A 02-185348         | FCV7-10 Section F C-10-2              |
| Flow Control & Check Meter Out A    |                   | FCV7 10 * * A314A FF 00  | A314A 02-185367         | FCV7-10 Section F C-10-2              |
| Flow Control & Check Meter in B     |                   | FCV 7 10 * * A324B FF 00 | A324B 02-185349         | FCV7-10 Section F C-10-2              |



**CAUTION**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

# Flow Control Functions



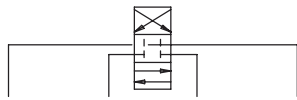
| Function  | Functional Symbol | Model Code  | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity      |
|---|-------------------|---|-------------------------|--|
| Flow Control & Check Meter Out B                              |                   | FCV7 10 * * A314B FF 00   | A314B<br>02-185368      | FCV7-10<br>Section F<br>C-10-2             |
| Flow Control & Check Meter In A & B                           |                   | FCV7 10 * * A324W FF 00<br><small>Refer to page L-22 for model code breakdown</small> | A324W<br>02-185351      | FCV7-10 qty 2<br>Section F<br>C-10-2 qty 2 |
| Flow Control & Check Meter Out A & B                          |                   | FCV7 10 * * A314W FF 00<br><small>Refer to page L-22 for model code breakdown</small> | A314W<br>02-185369      | FCV7-10 qty 2<br>Section F<br>C-10-2 qty 2 |
| Flow Regulator Pressure Compensated Meter In P                |                   | FAR1 10 * * A324P *** 00  | A324P<br>02-185350      | FAR1-10<br>Section F<br>C-10-2             |
| Flow Regulator Pressure Compensated and Check Meter In A      |                   | FAR1 10 * * A324A *** 00  | A324A<br>02-185348      | FAR1-10<br>Section F<br>C-10-2             |
| Flow Regulator Pressure Compensated and Check Meter Out A     |                   | FAR1 10 * * A314A *** 00  | A314A<br>02-185367      | FAR1-10<br>Section F<br>C-10-2             |
| Flow Regulator Pressure Compensated and Check Meter In B      |                   | FAR1 10 * * A324B *** 00  | A324B<br>02-185349      | FAR1-10<br>Section F<br>C-10-2             |
| Flow Regulator Pressure Compensated and Check Meter Out B     |                   | FAR1 10 * * A314B *** 00  | A314B<br>02-185368      | FAR1-10<br>Section F<br>C-10-2             |
| Flow Regulator Pressure Compensated and Check Meter In, A & B |                   | FAR1 10 * * A324W A***B*** 00   | A324W<br>02-185351      | FAR1-10 qty 2<br>Section F<br>C-10-2 qty 2 |



**CAUTION**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



# Flow Control & Solenoid Control Functions

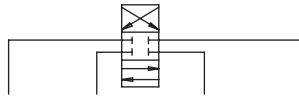


| Function   | Functional Symbol | Model Code   | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity      |
|--|-------------------|--|-------------------------|--|
| Flow Regulator Pressure Compensated and Check Meter Out, A & B |                   | FAR1 10 * * A314W A***B*** 00  | A314W<br>02-185369      | FAR1-10 qty 2<br>Section F<br>C-10-2 qty 2 |
| Proportional Flow Control Pressure Compensated On P            |                   | EPV 10 * * A313P *** * * 00<br><br>Refer to page L-23 for model code breakdown | A313P<br>02-185366      | EPV-10, DPS2-10 I & B<br>C-10-2/C-10-3S    |
| Solenoid 2 Way Poppet Type (P-T), N/C                          |                   | SV1 10 * C A325P *** * 00  | A325P<br>02-185352      | SV1-10-C<br>Section A<br>C-10-2            |
| Solenoid 2 Way Poppet Type (P-T), N/O                          |                   | SV5 10 * O A325P *** * 00  | A325P<br>02-185352      | SV5-10-O<br>Section A<br>C-10-2            |
| Solenoid 2 Way Poppet Type (P-T), N/C                          |                   | SV3 10 * C A325P *** * 00  | A325P<br>02-185352      | SV3-10-C<br>Section A<br>C-10-2            |
| Solenoid 2 Way Poppet Type (P-T), N/O                          |                   | SV3 10 * O A325P *** * 00  | A325P<br>02-185352      | SV3-10-O<br>Section A<br>C-10-2            |
| Solenoid 2 Way Spool Type (P-T), N/C                           |                   | SV4 10 * C A325P *** * 00  | A325P<br>02-185352      | SV4-10-C<br>Section A<br>C-10-2            |
| Solenoid 2 Way Spool Type (P-T), N/O                           |                   | SV4 10 * O A325P *** * 00  | A325P<br>02-185352      | SV4-10-O<br>Section A<br>C-10-2            |
| Solenoid 2 Way Poppet Type Blocked on A Normally Closed        |                   | SV3 10 * C A324A *** * 00  | A324A<br>02-185348      | SV3-10-C<br>Section A<br>C-10-2            |



**CAUTION**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

# Solenoid Control Functions

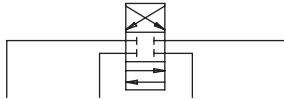


| Function                                     | Functional Symbol | Model Code               | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity |
|--|-------------------|--------------------------|-------------------------|---------------------------------------|
| Poppet Type Blocked on A Normally Open       |                   | SV3 10 * 0 A324A **** 00 | A324A 02-185348         | SV3-10-0 Section A C-10-2             |
| Spool Type Blocked on A Normally Closed      |                   | SV4 10 * C A324A **** 00 | A324A 02-185348         | SV4-10-C Section A C-10-2             |
| Spool Type Blocked on A Normally Open        |                   | SV4 10 * 0 A324A **** 00 | A324A 02-185348         | SV4-10-0 Section A C-10-2             |
| Poppet Type Blocked on B Normally Closed     |                   | SV3 10 * C A324B **** 00 | A324B 02-185349         | SVC3-10-C Section A C-10-2            |
| Poppet Type Blocked on B Normally Open       |                   | SV3 10 * 0 A324B **** 00 | A324B 02-185349         | SV3-10-C Section A C-10-2             |
| Spool Type Blocked on B Normally Closed      |                   | SV4 10 * C A324B **** 00 | A324B 02-185349         | SV4-10-C Section A C-10-2             |
| Spool Type Blocked on B Normally Open        |                   | SV4 10 * 0 A324B **** 00 | A324B 02-185349         | SV4-10-0 Section A C-10-2             |
| Poppet Type Blocked on A & B Normally Closed |                   | SV3 10 * C A324W **** 00 | A324W 02-185351         | SV3-10-C qty 2 Section A C-10-2 qty 2 |
| Poppet Type Blocked on A & B Normally Open   |                   | SV3 10 * 0 A324W **** 00 | A324W 02-185351         | SV3-10-0 qty 2 Section A C-10-2 qty 2 |



CAUTION  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

# Solenoid Control Functions

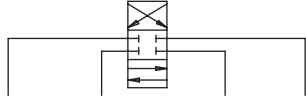


| Function  | Functional Symbol | Model Code              | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity |
|---|-------------------|-------------------------|-------------------------|---------------------------------------|
| Spool Type Blocked on A & B Normally Closed       |                   | SV4 10 * C A324W *** 00 | A324W 02-185351         | SV4-10-C qty 2 Section A C-10-2 qty 2 |
| Spool Type Blocked on A & B Normally Open         |                   | SV4 10 * O A324W *** 00 | A324W 02-185351         | SV4-10-O qty 2 Section A C-10-2 qty 2 |
| Poppet Type Load Holding on A Normally Closed     |                   | SV3 10 * C A314A *** 00 | A314A 02-185367         | SV3-10-C Section A C-10-2             |
| Poppet Type Load Holding on A Normally Open       |                   | SV3 10 * O A314A *** 00 | A314A 02-185367         | SV3-10-O Section A C-10-2             |
| Poppet Type Load Holding on B Normally Closed     |                   | SV3 10 * C A314B *** 00 | A314B 02-185368         | SV3-10-C Section A C-10-2             |
| Poppet Type Load Holding on B Normally Open       |                   | SV3 10 * O A314B *** 00 | A314B 02-185368         | SV3-10-O Section A C-10-2             |
| Poppet Type Load Holding on A & B Normally Closed |                   | SV3 10 * C A314W *** 00 | A314W 02-185369         | SV3-10-C qty 2 Section A C-10-2 qty 2 |
| Poppet Type Load Holding on A & B Normally Open   |                   | SV3 10 * O A314W *** 00 | A314W 02-185369         | SV3-10-O qty 2 Section A C-10-2 qty 2 |



**CAUTION**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

# Solenoid Control Functions



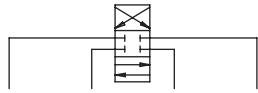
| Function   | Functional Symbol | Model Code                | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity   |
|--|-------------------|---------------------------|-------------------------|---|
| Poppet Type Bi-Directional Load Holding on A Normally Closed     |                   | SBV11 10 * C A314A *** 00 | A314A 02-185367         | SBV11-10-C Section A C-10-2             |
| Poppet Type Bi-Directional Load Holding on A Normally Open       |                   | SBV11 10 * O A314A *** 00 | A314A 02-185367         | SBV11-10-0 Section A C-10-2             |
| Poppet Type Bi-Directional Load Holding on B Normally Closed     |                   | SBV11 10 * C A314B *** 00 | A314B 02-185368         | SBV11-10-C Section A C-10-2             |
| Poppet Type Bi-Directional Load Holding on B Normally Open       |                   | SBV11 10 * O A314B *** 00 | A314B 02-185368         | SBV11-10-0 Section A C-10-2             |
| Poppet Type Bi-Directional Load Holding on A & B Normally Closed |                   | SBV11 10 * C A314W *** 00 | A314W 02-185369         | SBV11-10-C qty 2 Section A C-10-2 qty 2 |
| Poppet Type Bi-Directional Load Holding on A & B Normally Open   |                   | SBV11 10 * O A314W *** 00 | A314W 02-185369         | SBV11-10-0 qty 2 Section A C-10-2 qty 2 |
| Poppet Type Unload A - T Normally Closed                         |                   | SV1 10 * C A315A *** 00   | A315A 02-185370         | SV1-10-C Section A C-10-2               |
| Poppet Type Unload A - T Normally Open                           |                   | SV5 10 * O A315A *** 00   | A315A 02-185370         | SV5-10-C Section A C-10-2               |



**CAUTION**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



# Solenoid Control Functions



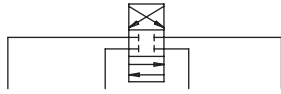
| Function                                 | Functional Symbol | Model Code                | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity |
|--|-------------------|---------------------------|-------------------------|---------------------------------------|
| Poppet Type Unload A - T Normally Closed |                   | SV3 10 * C A315A *** * 00 | A315A 02-185370         | SV3-10-C Section A C-10-2             |
| Poppet Type Unload A - T Normally Open   |                   | SV3 10 * O A315A *** * 00 | A315A 02-185370         | SV3-10-O Section A C-10-2             |
| Spool Type Unload A - T Normally Closed  |                   | SV4 10 * C A315A *** * 00 | A315A 02-185370         | SV4-10-C Section A C-10-2             |
| Spool Type Unload A - T Normally Open    |                   | SV4 10 * O A315A *** * 00 | A315A 02-185370         | SV4-10-O Section A C-10-2             |
| Poppet Type Unload B - T Normally Closed |                   | SV1 10 * C A315B *** * 00 | A315B 02-185371         | SV1-10-C Section A C-10-2             |
| Poppet Type Unload B - T Normally Open   |                   | SV5 10 * O A315B *** * 00 | A315B 02-185371         | SV5-10-O Section A C-10-2             |
| Poppet Type Unload B - T Normally Closed |                   | SV3 10 * C A315B *** * 00 | A315B 02-185371         | SV3-10-C Section A C-10-2             |
| Poppet Type Unload B - T Normally Open   |                   | SV3 10 * O A315B *** * 00 | A315B 02-185371         | SV3-10-O Section A C-10-2             |
| Poppet Type Unload B - T Normally Closed |                   | SV4 10 * C A315B *** * 00 | A315B 02-185371         | SV4-10-C Section A C-10-2             |



**CAUTION**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



# Solenoid Control Functions



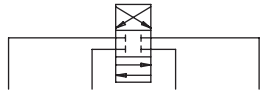
| Function   | Functional Symbol | Model Code                  | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity       |
|--|-------------------|-----------------------------|-------------------------|---|
| 2 Way<br>Spool Type<br>Unload B - T<br>Normally Open                         |                   | SV4 10 * 0 A315B **** 00    | A315B<br>02-185371      | SV4-10-0<br>Section A<br>C-10-2             |
| 2 Way<br>Poppet Type<br>Unload A & B - T<br>Normally Closed                  |                   | SV1 10 * C A317T **** 00    | A317T<br>02-185375      | SV1-10-C qty 2<br>Section A<br>C-10-2 qty 2 |
| 2 Way<br>Poppet Type<br>Unload A & B - T<br>Normally Open                    |                   | SV5 10 * 0 A317T **** 00    | A317T<br>02-185375      | SV5-10-0 qty 2<br>Section A<br>C-10-2 qty 2 |
| 2 Way<br>Poppet Type<br>Unload A & B - T<br>Normally Closed                  |                   | SV3 10 * C A317T **** 00    | A317T<br>02-185375      | SV3-10-C qty 2<br>Section A<br>C-10-2 qty 2 |
| 2 Way<br>Poppet Type<br>Unload A & B - T<br>Normally Open                    |                   | SV3 10 * 0 A317T **** 00    | A317T<br>02-185375      | SV3-10-0 qty 2<br>Section A<br>C-10-2 qty 2 |
| 2 Way<br>Spool Type<br>Unload A & B - T<br>Normally Closed                   |                   | SV4 10 * C A317T **** 00    | A317T<br>02-185375      | SV4-10-C qty 2<br>Section A<br>C-10-2 qty 2 |
| 2 Way<br>Spool Type<br>Unload A & B - T<br>Normally Open                     |                   | SV4 10 * 0 A317T **** 00    | A317T<br>02-185375      | SV4-10-0 qty 2<br>Section A<br>C-10-2 qty 2 |
| Poppet Type<br>Bi-Directional<br>Blocked A - B<br>& B - A<br>Normally Closed |                   | SBV11 10 * C A318W **** 00  | A318W<br>02-185376      | SBV11-10-C<br>Section A<br>C-10-2           |
| Poppet Type<br>Bi-Directional<br>Blocked A - B<br>& B - A<br>Normally Open   |                   | SBV11 10 * CO A318W **** 00 | A318W<br>02-185376      | SBV11-10-0<br>Section A<br>C-10-2           |



**CAUTION**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.



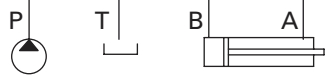
# Solenoid Control & Load Control Functions



| Function   | Functional Symbol | Model Code              | Hsg kit: model Part No. | Cartridge Cartridge Data Sheet Cavity |
|--|-------------------|-------------------------|-------------------------|---------------------------------------|
| Solenoid Valve<br>Spool Type Blocked<br>A to B & B to A<br>Normally Closed |                   | SV4 10 * C A318W *** 00 | A318W<br>02-185376      | SV4-10-C<br>Section A<br>C-10-2       |
| Solenoid Valve<br>Spool Type Blocked<br>A to B & B to A<br>Normally Open   |                   | SV4 10 * O A318W *** 00 | A318W<br>02-185376      | SV4-10-O<br>Section A<br>C-10-2       |
| Solenoid 3-Way<br>Selector on P  |                   | SV1 10 * 3 A326P *** 00 | A326P<br>02-185353      | SV1-10-3<br>Section A<br>C-10-3       |
| Solenoid 3-Way<br>Selector on P  |                   | SV4 10 * 3 A326P *** 00 | A326P<br>02-185353      | SV4-10-3<br>Section A<br>C-10-3       |
| Manual Rotary<br>Selector on P   |                   | MRV3 10 * K A236P 00    | A326P<br>02 185353      | MRV3-10-K-0<br>Section A<br>C-10-3    |

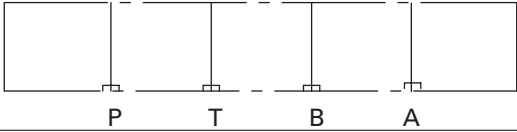
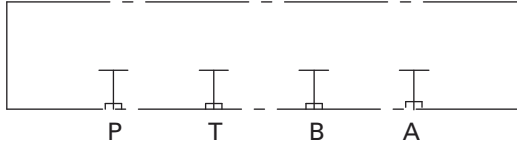
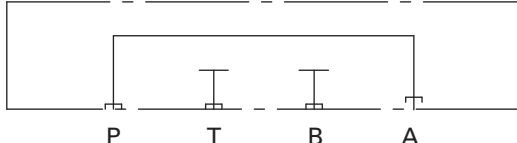
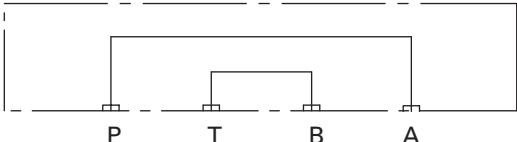
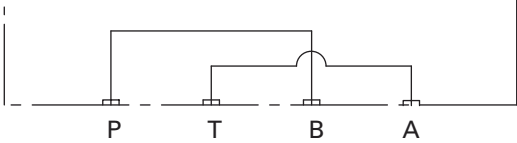
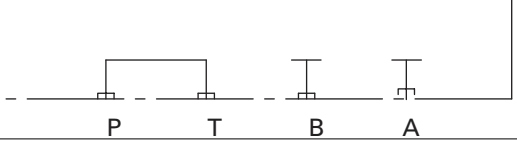
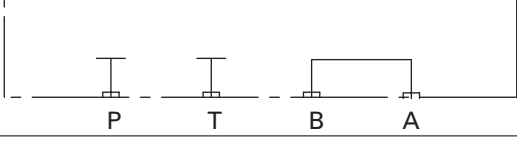
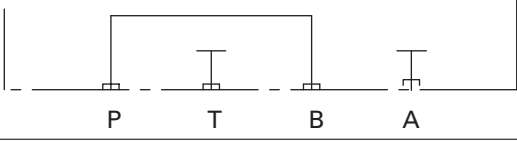
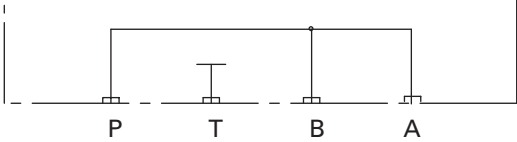
## Load Control Functions

|   |  |   |                    |   |
|---|--|---|--------------------|---|
| Counterbalance<br>Valve On A<br>Pilot from B      |  | CBV* 10 * * A323A * 30/**** 00  | A323A<br>02-185345 | CBV*-10<br>Section H<br>C-10-3S             |
| Counterbalance<br>Valve On B<br>Pilot from A      |  | CBV* 10 * * A323B * 30/**** 00  | A323B<br>02-185346 | CBV*-10<br>Section H<br>C-10-3S             |
| Counterbalance<br>Valve On A & B<br>Cross Piloted |  | CBV* 10 * * A323WA* 30/**** B * 30/**** 00<br><br>Refer to page L-23 for model code breakdown | A323W<br>02-185347 | CBV*-10 qty 2<br>Section H<br>C-10-3S qty 2 |



**CAUTION**  
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

# Spacer / Blanking / Linking Plates

| Function                                      | Functional Symbol   | Part Number  |
|---|---|--|
| Spacer Plate<br>10 mm (.39) thick             |    | 02-185273<br>Note:<br>O-Rings to be ordered separately<br>See page<br>Buna N O-Ring Kit 02-184951<br>Viton O-Ring Kit 02185282 |
| Blanking Plate                                |    | 02-185274<br>Note:<br>O-Rings to be ordered separately<br>See page<br>Buna N O-Ring Kit 02-184951<br>Viton O-Ring Kit 02185282 |
| Linking Plate<br>P to A with<br>B & T Blocked |    | 02-185275<br>Note:<br>O-Rings to be ordered separately<br>See page<br>Buna N O-Ring Kit 02-184951<br>Viton O-Ring Kit 02185282 |
| Linking Plate<br>P to A &<br>B to T           |   | 02-185276<br>Note:<br>O-Rings to be ordered separately<br>See page<br>Buna N O-Ring Kit 02-184951<br>Viton O-Ring Kit 02185282 |
| Linking Plate<br>P to B &<br>A to T           |  | 02-185277<br>Note:<br>O-Rings to be ordered separately<br>See page<br>Buna N O-Ring Kit 02-184951<br>Viton O-Ring Kit 02185282 |
| Linking Plate<br>P to A with<br>A & B Blocked |  | 02-185278<br>Note:<br>O-Rings to be ordered separately<br>See page<br>Buna N O-Ring Kit 02-184951<br>Viton O-Ring Kit 02185282 |
| Linking Plate<br>P to A with<br>P & T Blocked |  | 02-185279<br>Note:<br>O-Rings to be ordered separately<br>See page<br>Buna N O-Ring Kit 02-184951<br>Viton O-Ring Kit 02185282 |
| Linking Plate<br>P to B with<br>A & T Blocked |  | 02-185280<br>Note:<br>O-Rings to be ordered separately<br>See page<br>Buna N O-Ring Kit 02-184951<br>Viton O-Ring Kit 02185282 |
| Linking Plate<br>P to A & B with<br>T Blocked |  | 02-185281<br>Note:<br>O-Rings to be ordered separately<br>See page<br>Buna N O-Ring Kit 02-184951<br>Viton O-Ring Kit 02185282 |

Viton is a registered trademark of E.I.DuPont

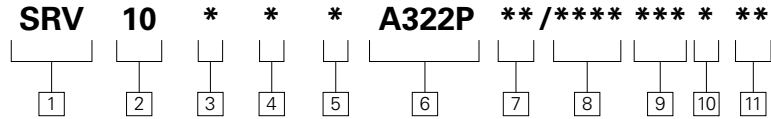


### CAUTION

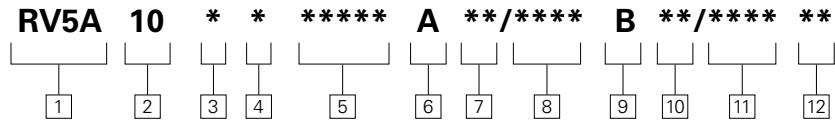
Sandwich valve flow ratings are limited by the ratings of individual cartridges. Consult cartridge valve literature.

# Model Codes

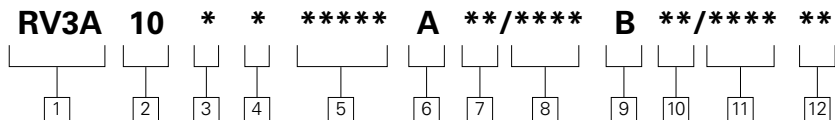
For Sandwich valve assemblies with two valves



|  |  |  |  |
|--|--|--|--|
| <b>1 Function</b><br>SRV – Solenoid actuated relief valve  | <b>4 Style</b><br>C – Normally closed<br>O – Normally open                           | <b>6 Housing Kit</b><br>A322P – Solenoid Relief Valve  | <b>9 Voltage Range</b><br>12D – 24 VDC<br>24D – 24 VDC<br>115A – 115 VAC<br>230A – 230 VAC |
| <b>2 Size</b><br>10 – 10 Size  | <b>5 Adjustment</b><br>C – Cap<br>F – Fixed<br>I – Internal<br>K – Knob<br>S – Screw | <b>7 Cracking Pressure Range</b><br>03 -3,5-20 bar (50-300 psi)<br>35 -17-240 bar (250-3500 psi) | <b>10 Connector Type</b><br>G – ISO 4401 DIN 43650<br>P – 1/2" NPT conduit<br>W – Leadwire |
| <b>3 Seals</b><br>N – Buna-N<br>V – Viton<br>This Assembly includes an SV5-8 solenoid valve and an RV5-10 relief valve |  | <b>8 Pressure Setting</b><br>User requested setting in psi                                       | <b>11 Special Features</b><br>00 – None  |



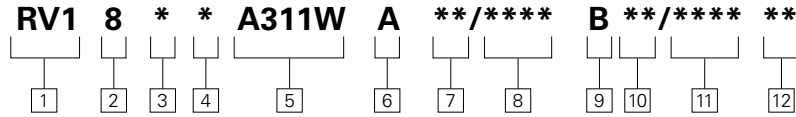
|   |  |  |   |
|---|--|--|---|
| <b>1 Function</b><br>RV5 – Relief valve   | <b>4 Adjustment</b><br>C – Cap<br>F – Fixed<br>I – Internal<br>K – Knob<br>S – Screw | <b>6 A Port Acted Upon</b>   | <b>9 B Port Acted Upon</b>  |
| <b>2 Size</b><br>10 – 10 Size             | <b>5 Housing Kit</b><br>A312W – Dual A & B to T relief<br>A321W – Cross port relief  | <b>7 Cracking Pressure Range</b><br>03 – 3,5-20 bar (50-300 psi)<br>20 – 7-140 bar (100-2000 psi)<br>35 – 17-240 bar (50-3500 psi) | <b>10 Cracking Pressure Range</b><br>03 – 3,5-20 bar (50-300 psi)<br>20 – 7-140 bar (100-2000 psi)<br>35 – 17-240 bar (50-3500 psi) |
| <b>3 Seals</b><br>N – Buna-N<br>V – Viton |  | <b>8 Pressure Setting</b><br>User requested setting in psi   | <b>11 Pressure Setting</b><br>User requested setting in psi   |
|   |  |  | <b>12 Special Features</b><br>00 – None   |



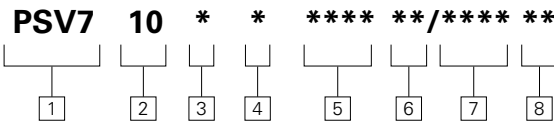
|   |   |  |   |
|---|---|--|---|
| <b>1 Function</b><br>RV1 – Relief valve   | <b>4 Adjustment</b><br>C – Cap<br>F – Fixed<br>K – Knob<br>S – Screw                | <b>6 A Port Acted Upon</b>   | <b>9 B Port Acted Upon</b>  |
| <b>2 Size</b><br>10 – 10 Size             | <b>5 Housing Kit</b><br>A312W – Dual A & B to T relief<br>A321W – Cross port relief | <b>7 Cracking Pressure Range</b><br>03 -3,5-20 bar (50-300 psi)<br>09 -7-62 bar (100-900 psi)<br>18 -7-124 bar (250-1800 psi)<br>36 -35-250 bar (500-3600 psi) | <b>10 Cracking Pressure</b><br>03 -3,5-20 bar (50-300 psi)<br>09 -7-62 bar (100-900 psi)<br>18 -7-124 bar (250-1800 psi)<br>36 -35-250 bar (500-3600 psi) |
| <b>3 Seals</b><br>N – Buna-N<br>V – Viton |   | <b>8 Pressure Setting</b><br>User requested setting in psi   | <b>11 Pressure Setting</b><br>User requested setting in psi   |
|   |   |  | <b>12 Special Features</b><br>00 – None   |

# Model Codes

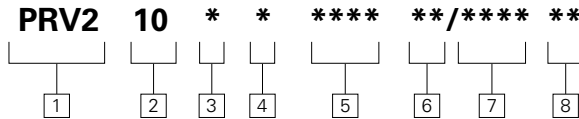
For Sandwich valve assemblies with two valves



|   |   |  |   |
|---|---|--|---|
| <b>1 Function</b><br>RV1 – Relief valve   | <b>4 Adjustment</b><br>C – Cap<br>K – Knob<br>S – Screw | <b>7 Cracking Pressure Range</b><br>03 -3, 5-20 bar (50-300 psi)<br>20 -41- 140 bar (100-900 psi)<br>36 -20-250 bar (300-3600 psi) | <b>10 Cracking Pressure</b><br>03 -3, 5-20 bar (50-300 psi)<br>20 -41- 140 bar (100-900 psi)<br>36 -20-250 bar (300-3600 psi) |
| <b>2 Size</b><br>8 – 8 Size               | <b>5 Housing Kit</b>                                    | <b>8 Pressure Setting</b><br>Specify in psi  | <b>11 Pressure Setting</b><br>Specify in psi  |
| <b>3 Seals</b><br>N – Buna-N<br>V – Viton | <b>6 A Port Acted Upon</b>                              | <b>9 B Port Acted Upon</b>   | <b>12 Special Features</b><br>00 – None   |



|   |  |   |   |
|---|--|---|---|
| <b>1 Function</b><br>PSV2 – Pressure sequence valve | <b>4 Adjustment</b><br>C – Cap<br>F – Fixed<br>I – Internal<br>K – Knob<br>S – Screw | <b>6 Cracking Pressure</b><br>02 - 3,5-10 bar (50-150 psi)<br>03 - 5-20 bar (75-300 psi)<br>05 - 7-30 bar (100-450 psi)<br>10 - 14-65 bar (200-950 psi)<br>18 - 20-125 bar (300-1800 psi) | <b>7 Pressure Setting</b><br>User requested setting in psi<br>Note<br>The other cartridge used in this assembly is a CV3-10-P-020 |
| <b>2 Size</b><br>10 – 10 Size                       | <b>5 Housing Kit</b>   | <b>8 Special Features</b><br>00 – None  |   |
| <b>3 Seals</b><br>N – Buna-N<br>V – Viton           |  |   |   |

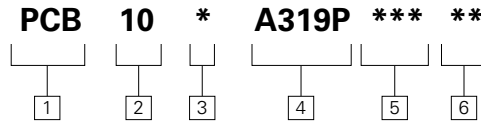


|   |  |  |  |
|---|--|--|--|
| <b>1 Function</b><br>PRV2 – Pressure reducing valve | <b>3 Seals</b><br>N – Buna-N<br>V – Viton  | <b>5 Housing Kit</b>   | <b>7 Pressure Setting</b><br>User requested setting in psi |
| <b>2 Size</b><br>10 – 10 Size                       | <b>4 Adjustment</b><br>C – Cap<br>F – Fixed<br>I – Internal<br>K – Knob<br>S – Screw | <b>6 Cracking Pressure</b><br>03 -3,5-20 bar (50-300 psi)<br>20 - 7-140 bar (100-2000 psi)<br>35 - 17-240 bar (250-3500 psi) | <b>8 Special Features</b><br>00 – None                     |



# Model Codes

For Sandwich valve assemblies with two valves



**1 Function**  
**PCB** – Pressure compensator, bypass

**2 Size**  
**10** – 10 Size

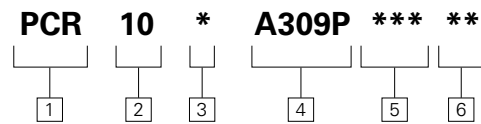
**3 Seals**  
**N** – Buna-N  
**V** – Viton

**4 Housing Kit**  
**5 Differential Pressure**  
 (of DPS2-10-P-F cartridge)  
**005** – 0,3 bar (5 psi)  
**010** – 0,7 bar (10 psi)  
**020** – 1,38 bar (20 psi)  
**040** – 2,75 bar (40 psi)  
**080** – 5,5 bar (80 psi)  
**160** – 11,0 bar (160 psi)

**6 Special Features**  
**00** – None

Note  
 The operating back pressure at port 3 (at A & B) must never be less than 1.3 times the spring set pressure

The other cartridge used in the assembly is a DSV2-8-B-0



**1 Function**  
**PCR** – Pressure compensator, restrictive

**2 Size**  
**10** – 10 Size

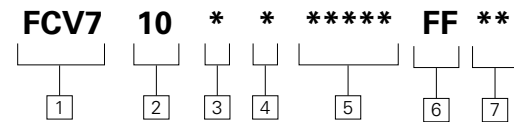
**3 Seals**  
**N** – Buna-N  
**V** – Viton

**4 Housing Kit**  
**5 Differential Pressure**  
 (of DPS2-10-F-F cartridge)  
**005** – 0,3 bar (5 psi)  
**010** – 0,7 bar (10 psi)  
**020** – 1,38 bar (20 psi)  
**040** – 2,75 bar (40 psi)  
**080** – 5,5 bar (80 psi)  
**160** – 11,0 bar (160 psi)

**6 Special Features**  
**00** – None

Note  
 The operating back pressure at port 3 (at A & B) must never be less than 1.3 times the spring set pressure

The other cartridge used in the assembly is a DSV2-8-B-0



**1 Function**  
**FCV7** – Flow control valve

**2 Size**  
**10** – 10 Size

**3 Seals**  
**N** – Buna-N  
**V** – Viton

**4 Adjustment**  
**C** – Cap  
**F** – Fixed  
**K** – Knob  
**S** – Screw

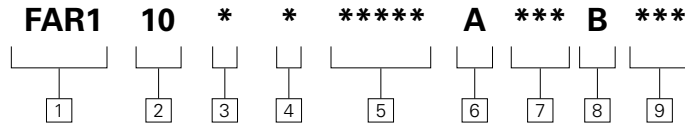
**5 Housing Kit**  
**A314W** – Meter out  
**A324W** – Meter in

**6 Control Flow Option**  
**FF** – Needle valve with free reverse flow

**7 Special Features**  
**00** – None

# Model Codes

For Sandwich valve assemblies with two valves



**1 Function**

**FAR1** – Fully adjustable flow regulator

**2 Size**

**10** – 10 Size

**3 Seals**

**N** – Buna-N  
**V** – Viton

**4 Adjustment**

**H** – Calibrated handknob with locknut  
**K** – Handknob with locknut  
**S** – Screw with locknut

**5 Housing Kit**

**A314W** – Meter out  
**A324W** – Meter in

**6 A Port Acted Upon**

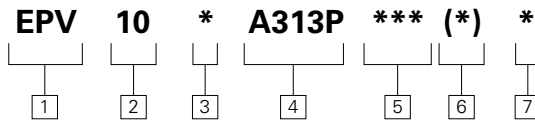
**7 Factory Set Flow Rate**

Specify in tenths of a gallon per minute.  
i.e. 025=2.5 USgpm

**8 B Port Acted Upon**

**9 Factory Set Flow Rate**

Specify in tenths of a gallon per minute.  
i.e. 025=2.5 USgpm



**1 Function**

**EPV** – Proportional flow control

**2 Size**

**10** – 10 Size

**3 Seals**

**N** – Buna-N  
**V** – Viton

**4 Housing Kit**

**5 Voltage Range**

12D – 24 VDC  
24D – 24 VDC

**6 Manual Override Option**

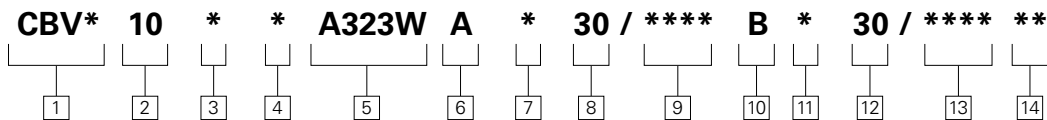
**Blank** – No manual override  
**M** – Pin type  
**S** – Screw type

**7 Coil Connector Type**

**F** – Weatherpack  
**Q** – Spade terminals  
**U** – DIN 43650  
**W** – Leadwire  
**Y** – Metri-pak

Note

The other cartridge used in the assembly is a DPS2-10-F-F-0-160



**1 Pilot Ratio/function**

**CBV 1** – 4:1 CBV  
**CBV 2** – 10:1 CBV

**2 Size**

**10** – 10 Size

**3 Seals**

**N** – Buna-N  
**V** – Viton

**4 Adjustment**

**C** – Cap over screw  
**K** – Handknob  
**S** – Screw with locknut

**5 Housing Kit**

**6 A Port Acted Upon**

**7 Free Flow Crack Pressure Range**

**A** – 1,38 bar (20 psi) standard  
**B** – 0,28 bar (4 psi) anti-cavitation

**8 Pressure Range**

**30** – 62, 210 bar (900 – 3000 psi)

**9 Pressure Setting**

Specify in psi

**10 B Port Acted Upon**

**11 Free Flow Crack Pressure Range**

**A** – 1, 38 bar (20 psi) standard  
**B** – 0, 28 bar (4 psi) anti-cavitation

**12 Pressure Range**

**30** – 62, 210 bar (900 – 3000 psi)

**13 Pressure Setting**

Specify in psi

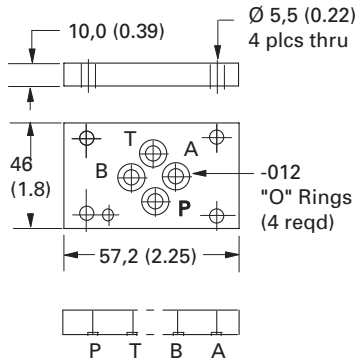
**14 Special Features**

**00** – None

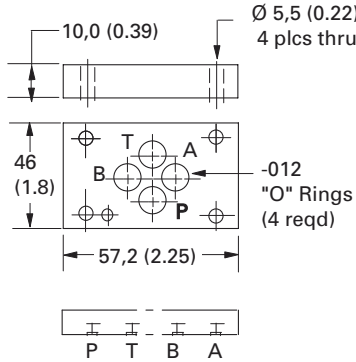
# Dimensions

Spacer, blanking & linking plates

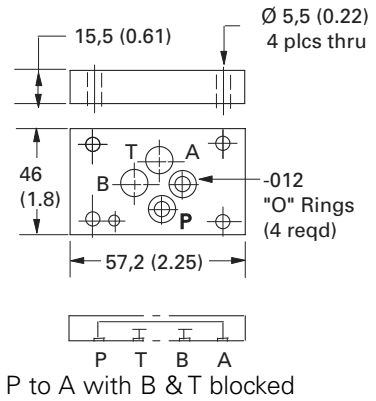
Spacer Plate 02-185273



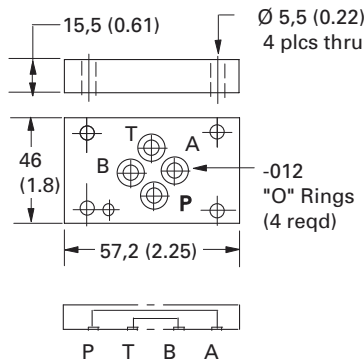
Blanking Plate 02-185274



Linking Plate 02-185275

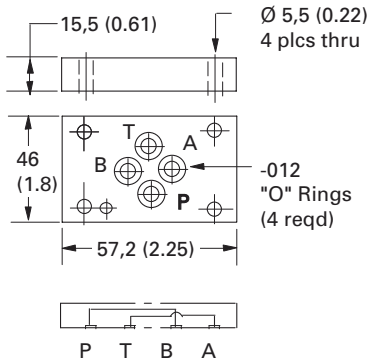


Linking Plate 02-185276



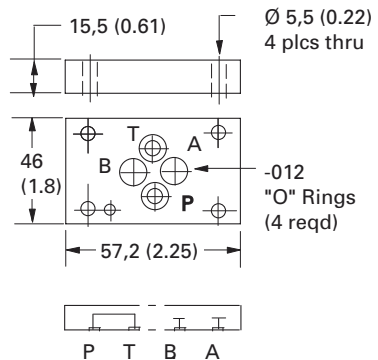
P to A & B to T

Linking Plate 02-185277



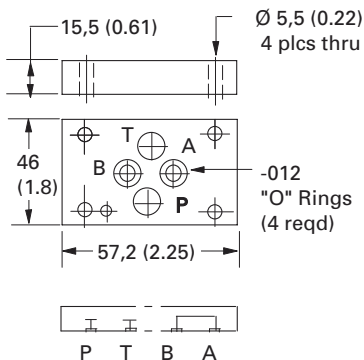
P to B with A to T

Linking Plate 02-185278



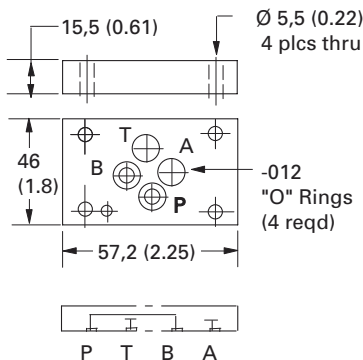
P to T with B & A blocked

Linking Plate 02-185279



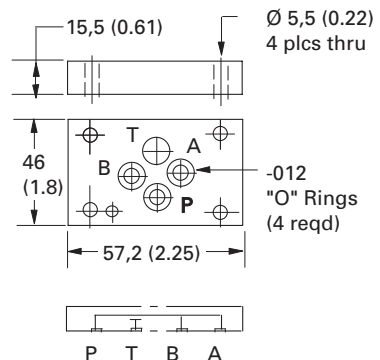
A to B with P & T blocked

Linking Plate 02-185280



P to B with A & T blocked

Linking Plate 02-185281



P to A & B with T blocked



# Dimensions

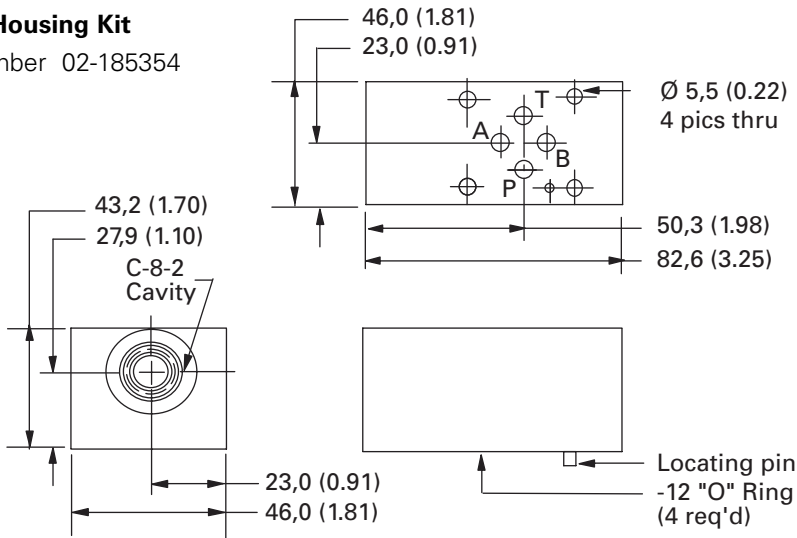
ISO 440103/CETOP3  
Housing Kits

## Dimensions

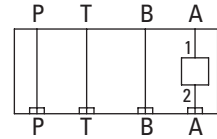
mm (inch)

### A307A Housing Kit

Part Number 02-185354



## Cavity Porting



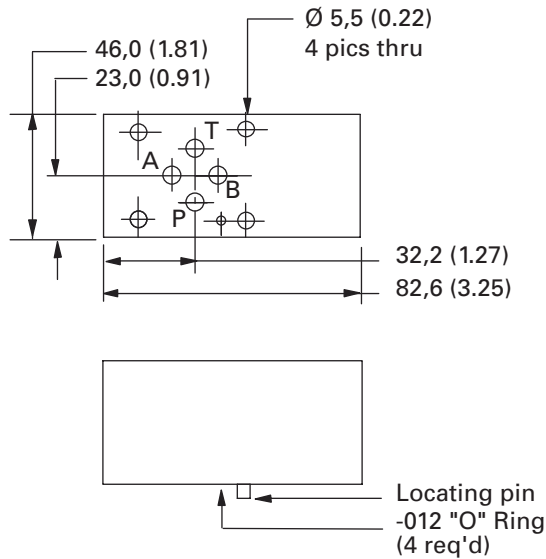
### TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION                        |
|--------------------|---------------------------------|
| CV3-8              | Check valve on A, Free flow out |

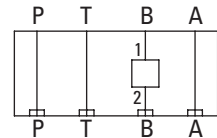
Torque cartridge in housing  
34-40 Nm (25-30 ft. lbs)

### A307B Housing Kit

Part Number 02-185355



## Cavity Porting



### TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION                        |
|--------------------|---------------------------------|
| CV3-8              | Check valve on B, Free flow out |

Torque cartridge in housing  
34-40 Nm (25-30 ft. lbs)

L

# Dimensions

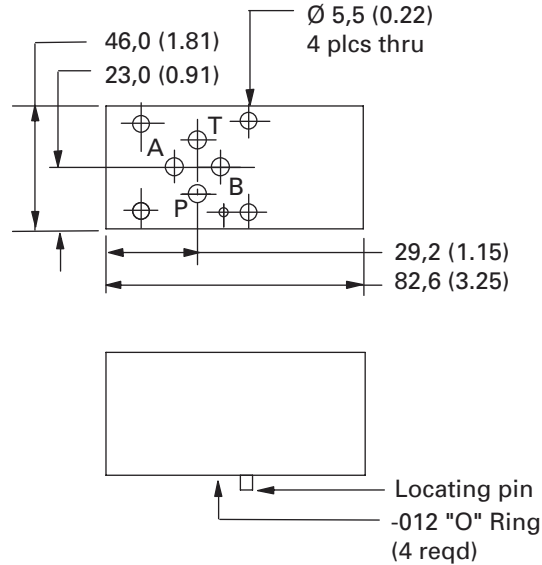
ISO 440103/CETOP3  
Housing Kits

## Dimensions

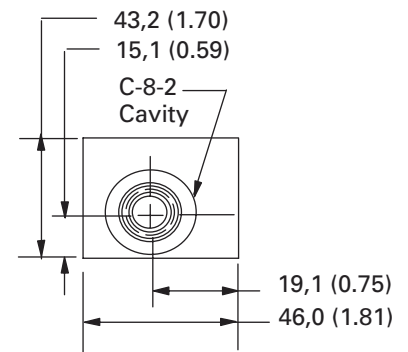
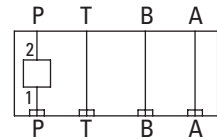
mm (inch)

### A307P Housing Kit

Part Number 02-185356



## Cavity Porting

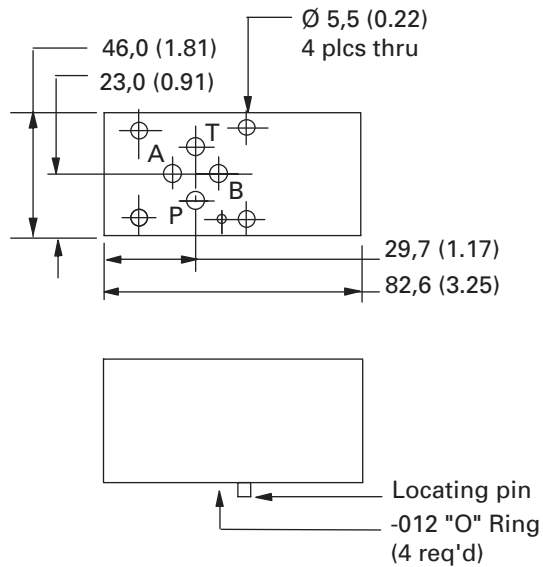


| TYPICAL CARTRIDGES | FUNCTION |
|--------------------|----------|
|--------------------|----------|

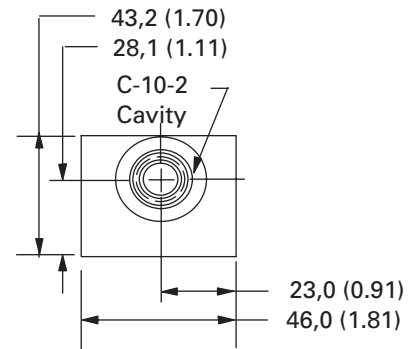
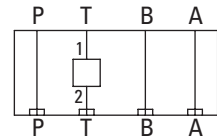
|       |                  |
|-------|------------------|
| CV3-8 | Check valve on P |
|-------|------------------|

### A308T Housing Kit

Part Number 02-185360



## Cavity Porting



| TYPICAL CARTRIDGES | FUNCTION |
|--------------------|----------|
|--------------------|----------|

|        |                  |
|--------|------------------|
| CV3-10 | Check valve on T |
|--------|------------------|

# Dimensions

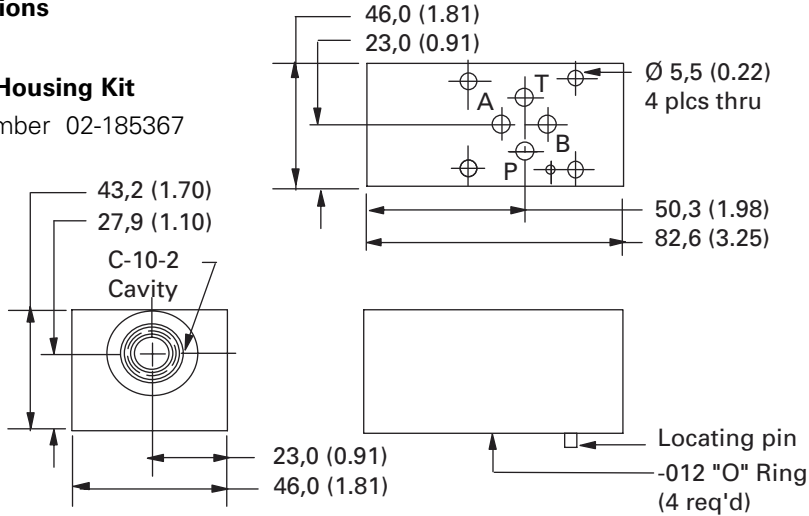
ISO 440103/CETOP3  
Housing Kits

## Dimensions

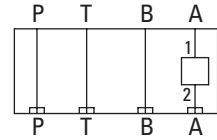
mm (inch)

### A314A Housing Kit

Part Number 02-185367



### Cavity Porting



### TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION   |
|--------------------|--|
| CV3-10-P           | Check valve on A, free flow out  |
| FAR1-10            | Flow regulator, pressure compensated and check, Meter out A                  |
| FCV7-10            | Flow control and check, Meter out A  |
| SBV11-10-C         | Solenoid 2-way poppet type bi-directional load holding on A, normally closed |
| SBV11-10-O         | Solenoid 2-way poppet type bi-directional load holding on A, normally open   |
| SV3-10-C           | Solenoid 2-way poppet type load holding on A, normally closed                |
| SV3-10-O           | Solenoid 2-way poppet type load holding on A, normally open                  |

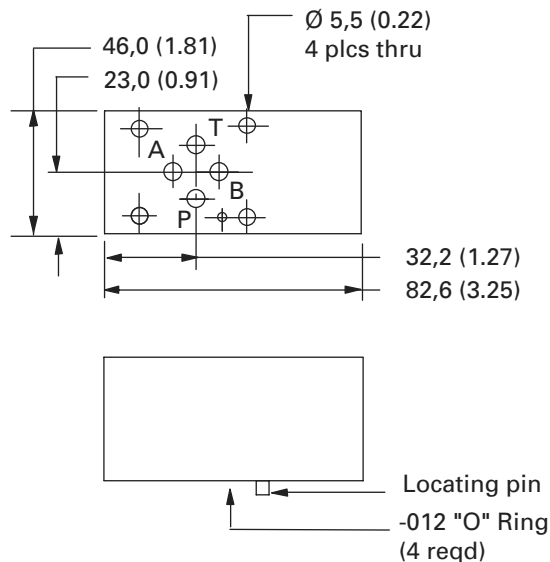
Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

### Note

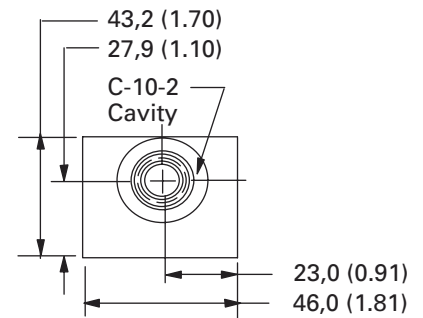
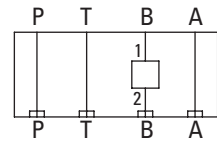
This housing may require the use of a spacer block 02-185273 depending upon cartridge valve selection.

### A314B Housing Kit

Part Number 02-185368



### Cavity Porting



### TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION   |
|--------------------|--|
| CV3-10 *-P         | Check valve on B, free flow out  |
| FAR1-10            | Flow regulator, pressure compensated and check, Meter out B                  |
| FCV7-10            | Flow control and check, Meter out B  |
| SBV11-10-C         | Solenoid 2-way poppet type bi-directional load holding on B, normally closed |
| SBV11-10-O         | Solenoid 2-way poppet type bi-directional load holding on B, normally open   |
| SV3-10-C           | Solenoid 2-way poppet type load holding on B, normally closed                |
| SV3-10-O           | Solenoid 2-way poppet type load holding on B, normally open                  |

Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

### NOTE

This housing may require the use of a spacer block 02-185273 depending upon cartridge valve selection.

# Dimensions

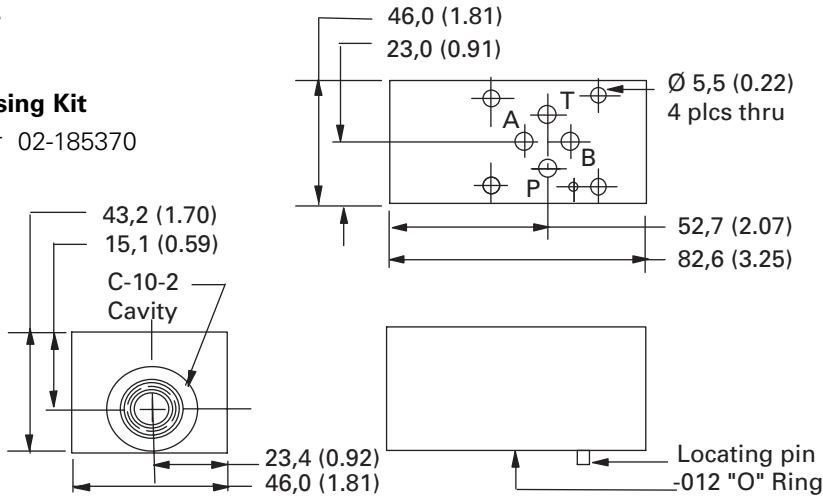
ISO 440103/CETOP3  
Housing Kits

## Dimensions

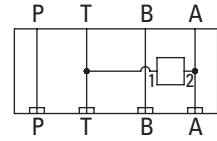
mm (inch)

### A315A Housing Kit

Part Number 02-185370



## Cavity Porting



### TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION  |
|--------------------|---|
| SV1-10-C           | Solenoid 2-way poppet type unload A-T normally closed |
| SV3-10-C           | Solenoid 2-way poppet type unload A-T normally closed |
| SV3-10-0           | Solenoid 2-way poppet type unload A-T normally open   |
| SV4-10-C           | Solenoid 2-way spool type unload A-T normally closed  |
| SV4-10-0           | Solenoid 2-way spool type unload A-T normally open    |
| SV5-10-0           | Solenoid 2-way poppet type unload A-T normally open   |

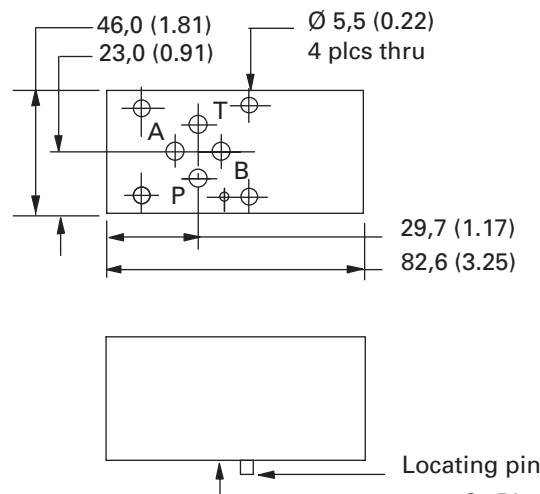
Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

Note

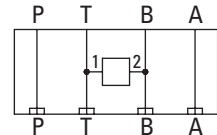
This housing may require the use of a spacer block 02-185273 depending upon cartridge valve selection.

### A315B Housing Kit

Part Number 02-185371



## Cavity Porting



### TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION  |
|--------------------|---|
| SV1-10-C           | Solenoid 2-way poppet type unload B-T normally closed |
| SV3-10-C           | Solenoid 2-way poppet type unload B-T normally closed |
| SV3-10-0           | Solenoid 2-way poppet type unload B-T normally open   |
| SV4-10-C           | Solenoid 2-way spool type unload B-T normally closed  |
| SV4-10-0           | Solenoid 2-way spool type unload B-T normally open    |
| SV5-10-0           | Solenoid 2-way poppet type unload B-T normally open   |

Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

Note

This housing may require the use of a spacer block 02-185273 depending upon cartridge valve selection.

# Dimensions

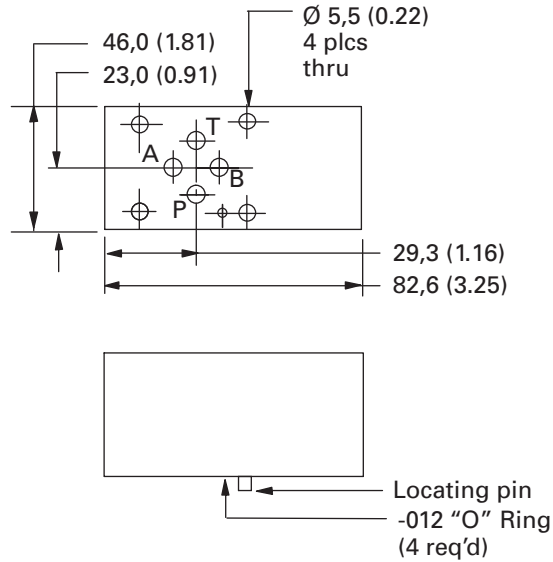
ISO 440103/CETOP3  
Housing Kits

## Dimensions

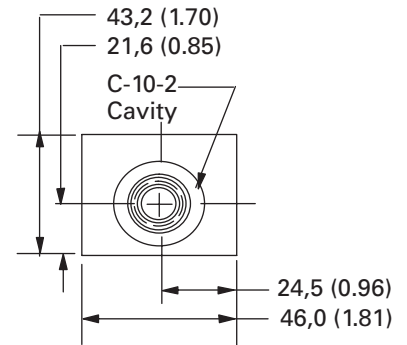
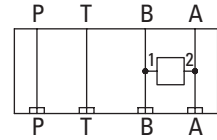
mm (inch)

### A318W Housing Kit

Part Number 02-185376



## Cavity Porting



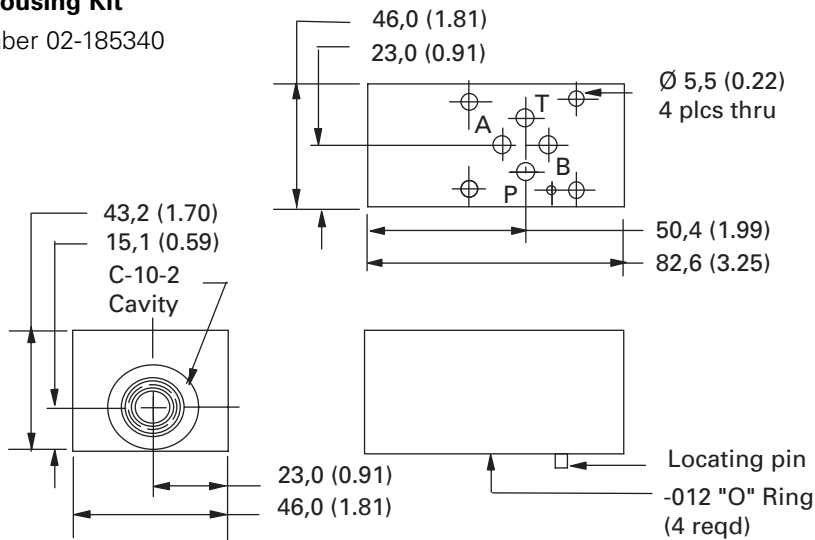
## TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION  |
|--------------------|---|
| SV4-10-C           | Solenoid 2-way spool type locking A-B & B-A normally closed                 |
| SV4-10-0           | Solenoid 2-way spool type locking A-B & B-A normally open                   |
| SV11-10-C          | Solenoid 2-way poppet type bi-directional locking A-B & B-A normally closed |
| SV11-10-0          | Solenoid 2-way poppet type bi-directional locking A-B & B-A normally open   |

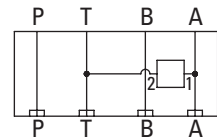
Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

### A321A Housing Kit

Part Number 02-185340



## Cavity Porting



## TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION                      |
|--------------------|-------------------------------|
| ERV1-10            | Proportional relief valve A-T |
| RV1-10             | Relief valve A-T              |
| RV5-10             | Relief valve A-T              |

Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

Note  
This housing may require the use of a spacer block 02-185273 depending upon cartridge valve selection.

# Dimensions

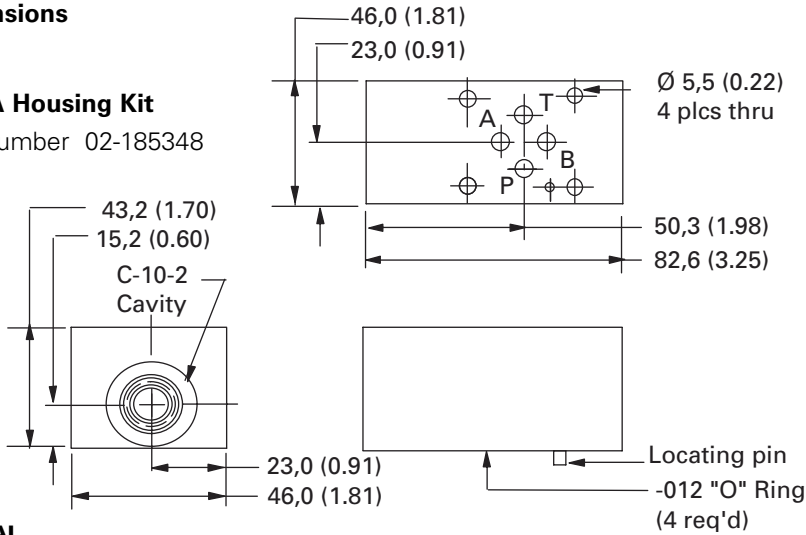
ISO 440103/CETOP3  
Housing Kits

## Dimensions

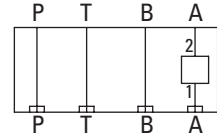
mm (inch)

### A324A Housing Kit

Part Number 02-185348



## Cavity Porting



## TYPICAL CARTRIDGES

## FUNCTION

| TYPICAL CARTRIDGES | FUNCTION  |
|--------------------|---|
| FAR1-10            | Flow regulator pressure compensated and check, meter in A |
| FCV7-10            | Flow control and check, meter in A                        |
| SV3-10-C           | Solenoid 2-way poppet type blocking on A, normally closed |
| SV3-10-0           | Solenoid 2-way poppet type blocking on A, normally open   |
| SV4-10-C           | Solenoid 2-way spool type blocking on A, normally closed  |
| SV4-10-0           | Solenoid 2-way spool type blocking on A, normally open    |

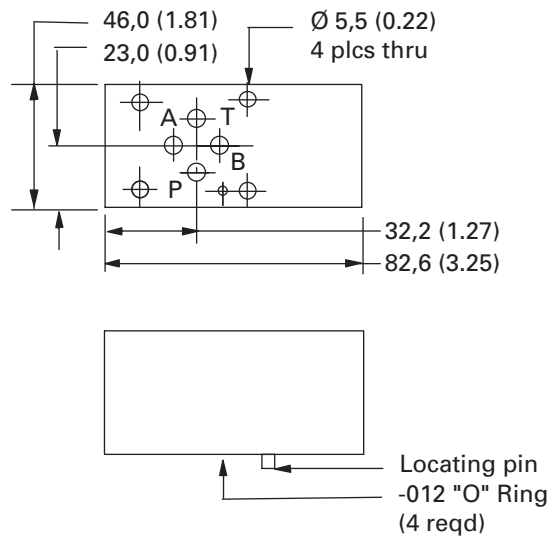
Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

## Note

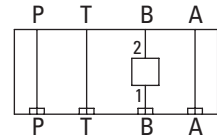
This housing may require the use of a spacer block 02-185273 depending upon cartridge valve selection.

### A324B Housing Kit

Part Number 02-185349



## Cavity Porting



## TYPICAL CARTRIDGES

## FUNCTION

| TYPICAL CARTRIDGES | FUNCTION  |
|--------------------|---|
| FAR1-10            | Flow regulator pressure compensated and check, meter in A |
| FCV7-10            | Flow control and check, meter in A                        |
| SV3-10-C           | Solenoid 2-way poppet type blocking on A, normally closed |
| SV3-10-0           | Solenoid 2-way poppet type blocking on A, normally open   |
| SV4-10-C           | Solenoid 2-way spool type blocking on A, normally closed  |
| SV4-10-0           | Solenoid 2-way spool type blocking on A, normally open    |

Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

# Dimensions

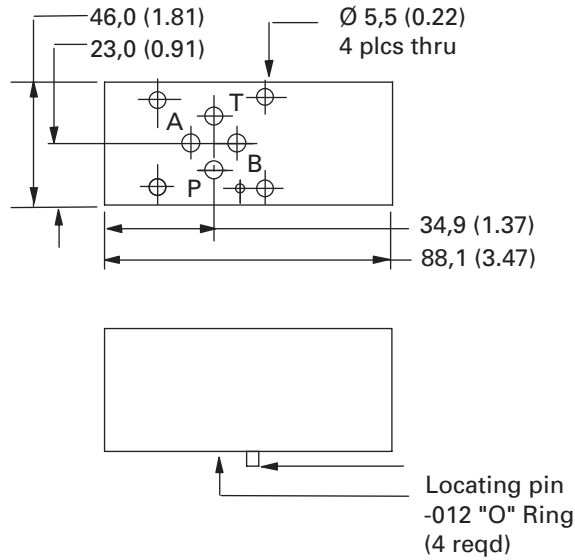
ISO 440103/CETOP3  
Housing Kits

## Dimensions

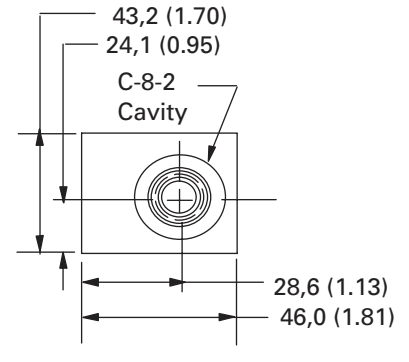
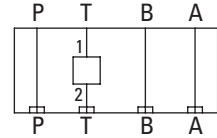
mm (inch)

### A307T Housing Kit

Part Number 02-185357



## Cavity Porting



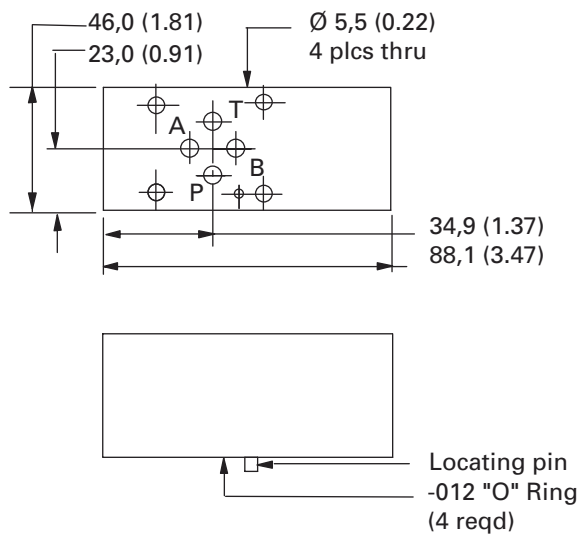
Torque cartridge in housing  
34-40 Nm (25-30 ft. lbs)

| TYPICAL CARTRIDGES | FUNCTION |
|--------------------|----------|
|--------------------|----------|

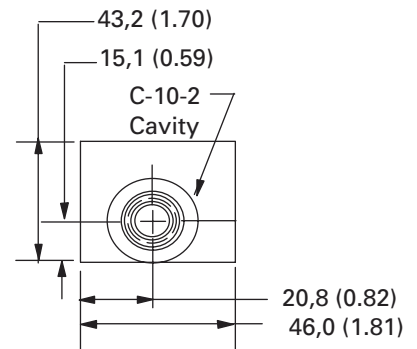
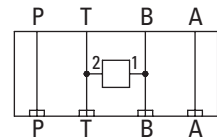
|       |                  |
|-------|------------------|
| CV3-8 | Check valve on T |
|-------|------------------|

### A321B Housing Kit

Part Number 02-185341



## Cavity Porting



Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

| TYPICAL CARTRIDGES | FUNCTION |
|--------------------|----------|
|--------------------|----------|

|         |                               |
|---------|-------------------------------|
| ERV1-10 | Proportional relief valve B-T |
| RV1-10  | Relief valve B-T              |
| RV5-20  | Relief valve B-T              |

# Dimensions

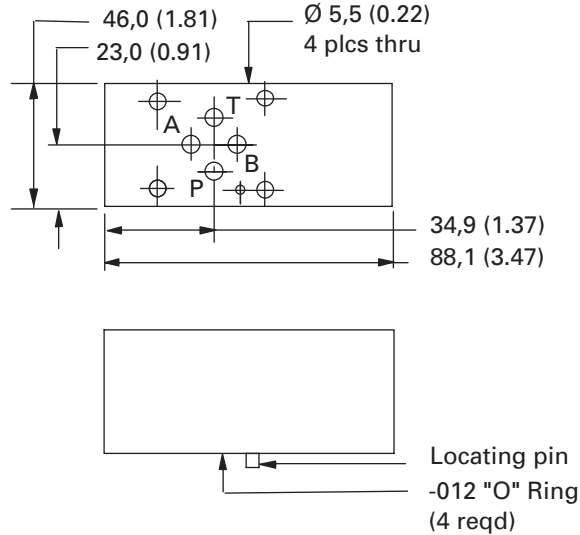
ISO 440103/CETOP3  
Housing Kits

## Dimensions

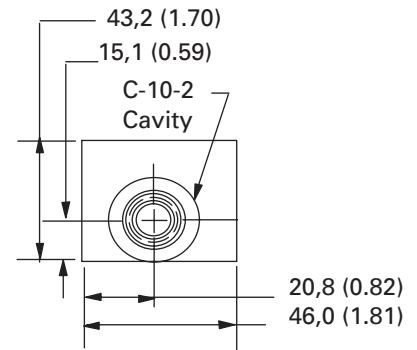
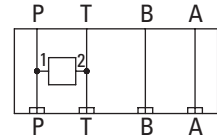
mm (inch)

### A321P Housing Kit

Part Number 02-185342



## Cavity Porting



Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

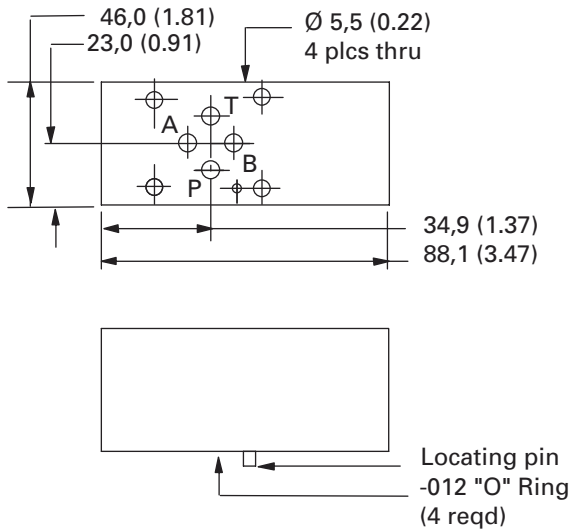
Note  
This housing may require  
the use of a spacer block  
02-185273 depending upon  
cartridge valve selection.

## TYPICAL CARTRIDGES FUNCTION

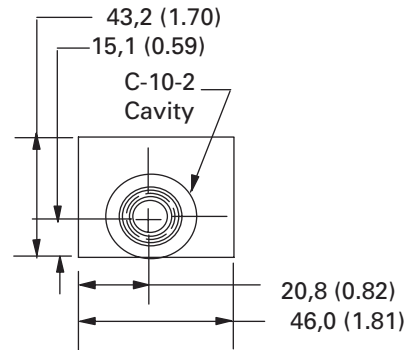
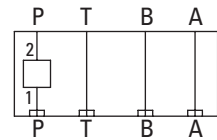
| TYPICAL CARTRIDGES | FUNCTION                      |
|--------------------|-------------------------------|
| CV16-10-P-O-5      | Anti-cavitation check P-T     |
| ERV1-10            | Proportional relief valve P-T |
| RV1-10             | Relief valve P-T              |
| RV5-10             | Relief valve P-T              |

### A324P Housing Kit

Part Number 02-185350



## Cavity Porting



Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

Note  
This housing may require  
the use of a spacer block  
02-185273 depending upon  
cartridge valve selection.

## TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION  |
|--------------------|---|
| CV3-10             | Check valve on P                                |
| FR5-10             | Flow regulator pressure compensated, meter in P |
| NV1-10             | Flow control, meter in P                        |



# Dimensions

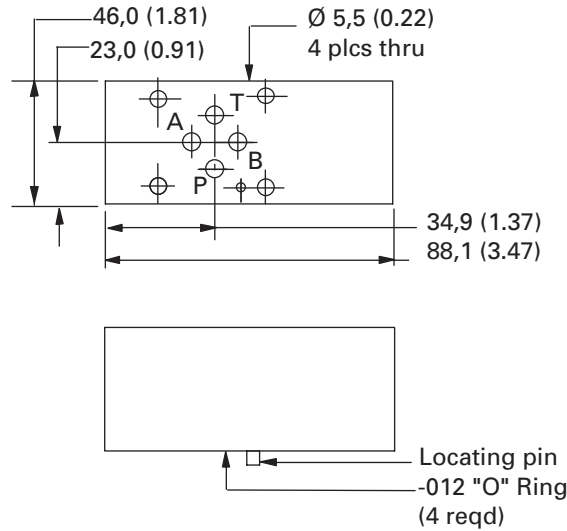
ISO 440103/CETOP3  
Housing Kits

## Dimensions

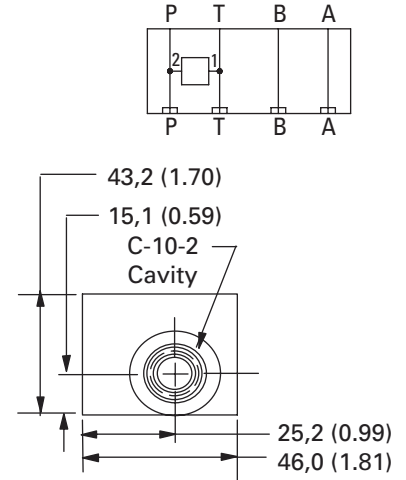
mm (inch)

### A325P Housing Kit

Part Number 02-185352



## Cavity Porting



Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

### Note

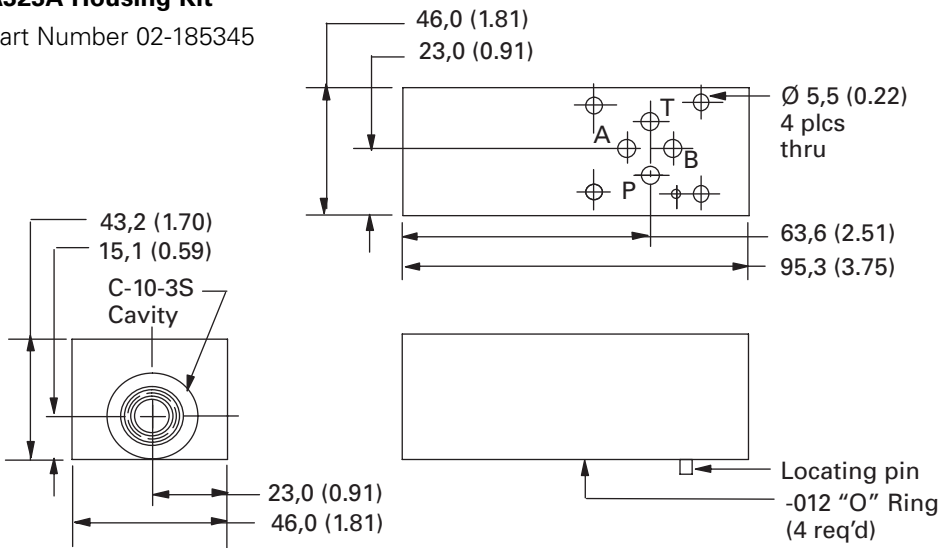
This housing may require the use of a spacer block 02-185273 depending upon cartridge valve selection.

## TYPICAL CARTRIDGES FUNCTION

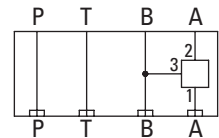
| TYPICAL CARTRIDGES | FUNCTION  |
|--------------------|---|
| SV1-10-C           | Solenoid 2-way poppet type P-T, normally closed |
| SV3-10-C           | Solenoid 2-way poppet type P-T, normally closed |
| SV3-10-O           | Solenoid 2-way poppet type P-T, normally open   |
| SV4-10-C           | Solenoid 2-way spool type P-T, normally closed  |
| SV4-10-O           | Solenoid 2-way spool type P-T, normally open    |
| SV5-10-O           | Solenoid 2-way poppet type P-T, normally open   |

### A323A Housing Kit

Part Number 02-185345



## Cavity Porting



Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

### Note

This housing may require the use of a spacer block 02-185273 depending upon cartridge valve selection.

## TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION                                      |
|--------------------|---|
| CBV*-10            | Counterbalance valve on A, pilot from B       |
| POC1-10            | Pilot operated check valve on A, pilot from B |

# Dimensions

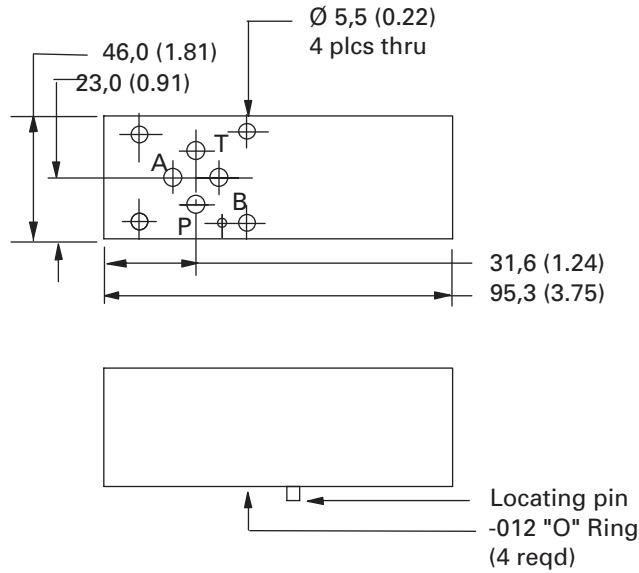
ISO 440103/CETOP3  
Housing Kits

## Dimensions

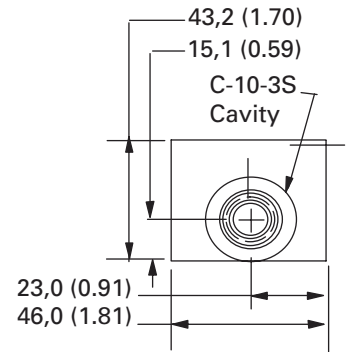
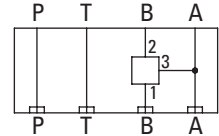
mm (inch)

### A323B Housing Kit

Part Number 02-185346



## Cavity Porting



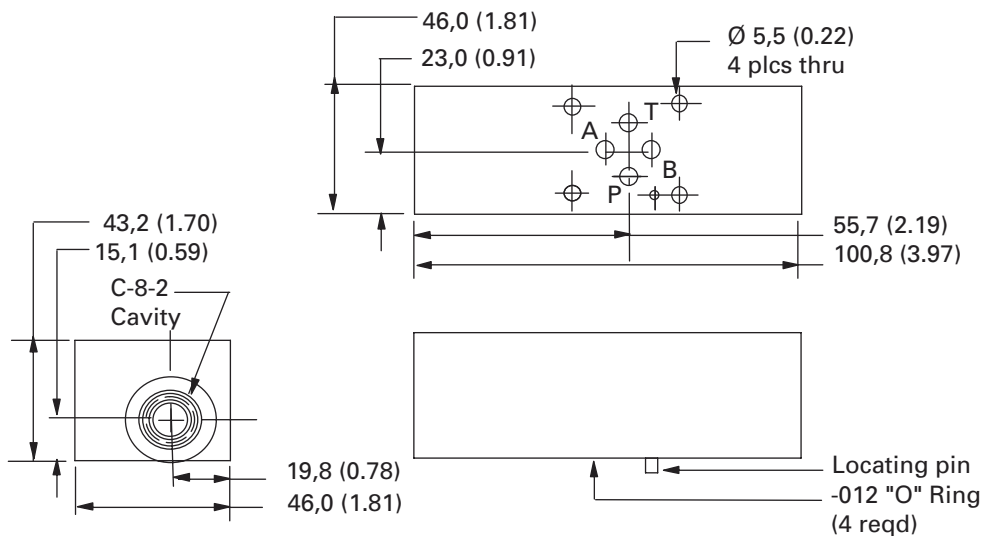
## TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION                                      |
|--------------------|---|
| CBV*-10            | Counterbalance valve on B, pilot from A       |
| POC1-10            | Pilot operated check valve on B, pilot from A |

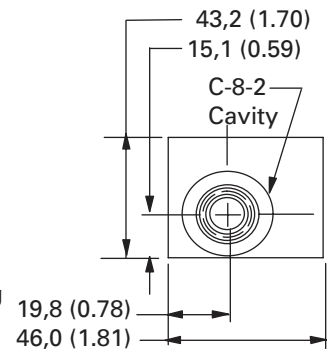
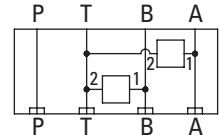
Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

### A311W Housing Kit

Part Number 02-185364



## Cavity Porting



## TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION                   |
|--------------------|----------------------------|
| RV1-8              | Dual relief valve A-T, B-T |

Torque cartridge in housing  
34-40 Nm (25-30 ft. lbs)

# Dimensions

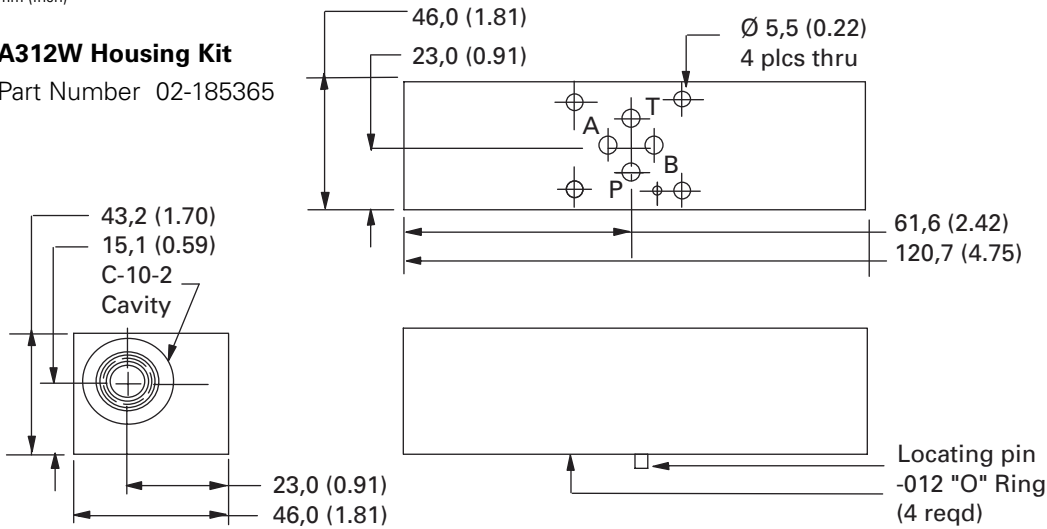
ISO 440103/CETOP3  
Housing Kits

## Dimensions

mm (inch)

### A312W Housing Kit

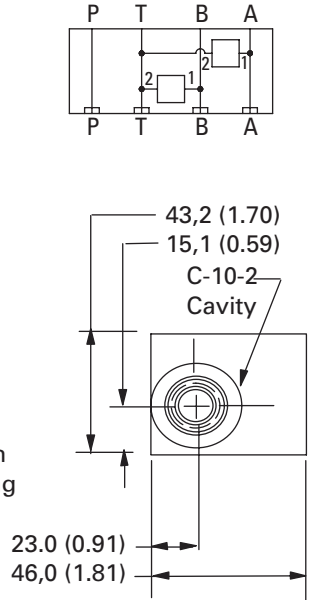
Part Number 02-185365



#### TYPICAL CARTRIDGES FUNCTION

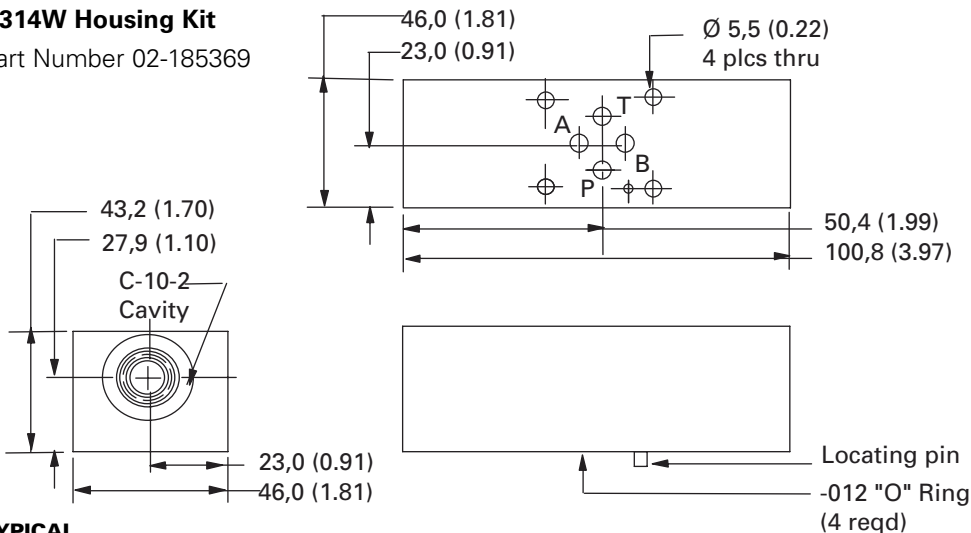
| TYPICAL CARTRIDGES | FUNCTION                   |
|--------------------|----------------------------|
| RV1-10             | Dual relief valve A-T, B-T |
| RV5-10             | Dual relief valve A-T, B-T |

## Cavity Porting



### A314W Housing Kit

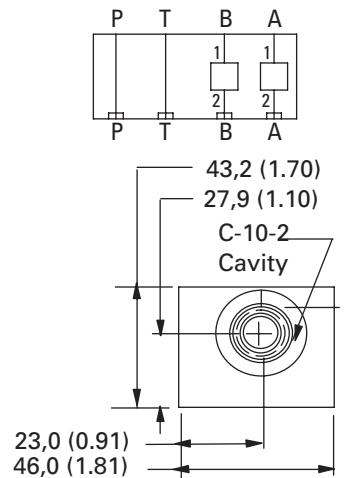
Part Number 02-185369



#### TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION   |
|--------------------|--|
| FAR1-10            | Flow regulator pressure compensated and check, meter out A & B                   |
| FCV7-10            | Flow control and check, meter out A & B  |
| SBV11-10-C         | Solenoid 2-way poppet type bi-directional load holding on A & B, normally closed |
| SBV11-10-O         | Solenoid 2-way poppet type bi-directional load holding on A & B, normally open   |
| SV3-10-C           | Solenoid 2 way poppet type load holding on A & B, normally closed                |
| SV3-10-O           | Solenoid 2 way poppet type load holding on A & B, normally open                  |

## Cavity Porting



Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

Note  
This housing may require  
the use of a spacer block  
02-185273 depending upon  
cartridge valve selection.

# Dimensions

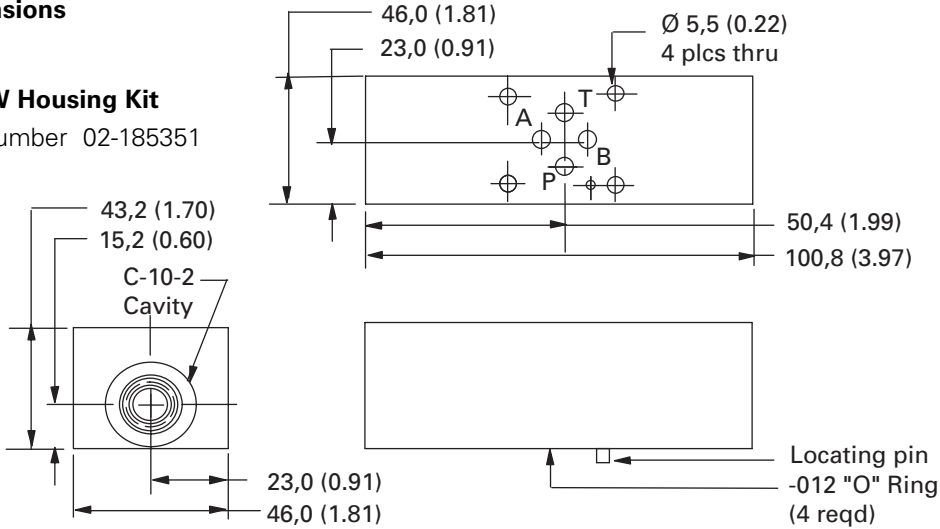
ISO 440103/CETOP3  
Housing Kits

## Dimensions

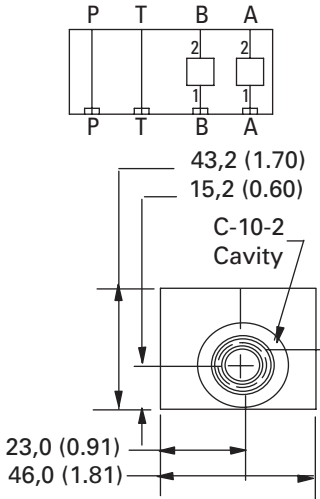
mm (inch)

### A324W Housing Kit

Part Number 02-185351



## Cavity Porting



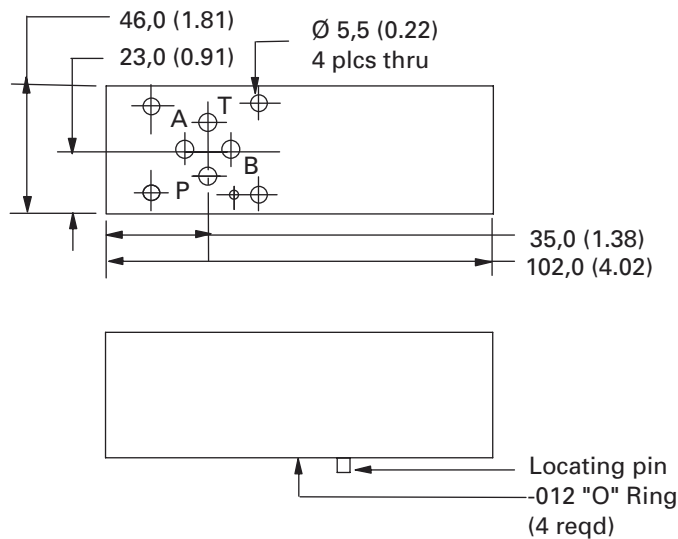
### TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION  |
|--------------------|---|
| FAR1-10            | Flow regulator pressure compensated and check, meter in A & B |
| FCV7-10            | Flow control & check, meter in A & B                          |
| SV3-10-C           | Solenoid 2-way poppet type blocking on A & B normally closed  |
| SV3-10-O           | Solenoid 2-way poppet type blocking on A & B normally open    |
| SV4-10-C           | Solenoid 2-way spool type blocking on A & B normally closed   |
| SV4-10-O           | Solenoid 2-way spool type blocking on A & B normally open     |

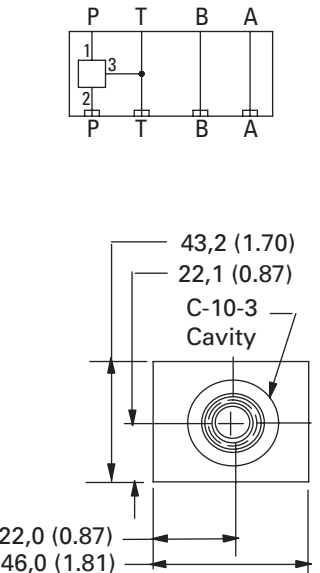
Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

### A326P Housing Kit

Part Number 02-185353



## Cavity Porting



### TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION                        |
|--------------------|---------------------------------|
| MRV3-10-K-0        | Manual rotary selector on P     |
| PRV2-10            | Reducing valve (P) drained to T |
| SV1-10-3           | Solenoid 3-way selector on P    |
| SV4-10-3           | Solenoid 3-way selector on P    |

Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

# Dimensions

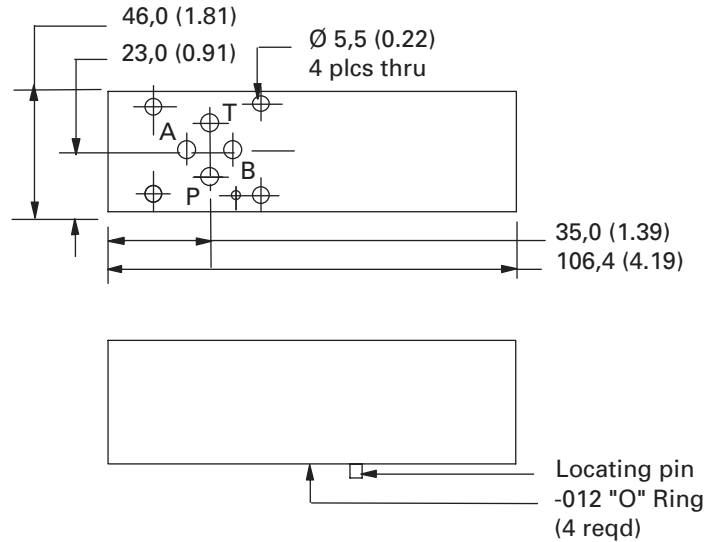
ISO 440103/CETOP3  
Housing Kits

## Dimensions

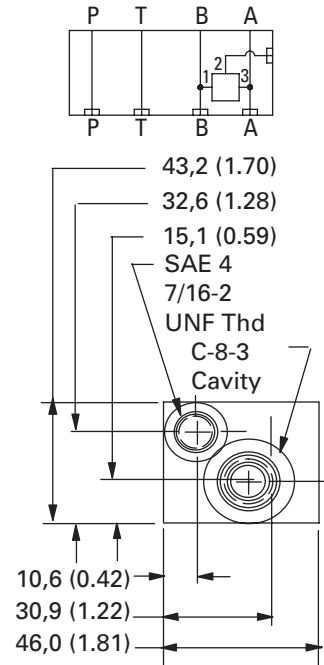
mm (inch)

### A309W Housing Kit

Part Number 02-185361



## Cavity Porting



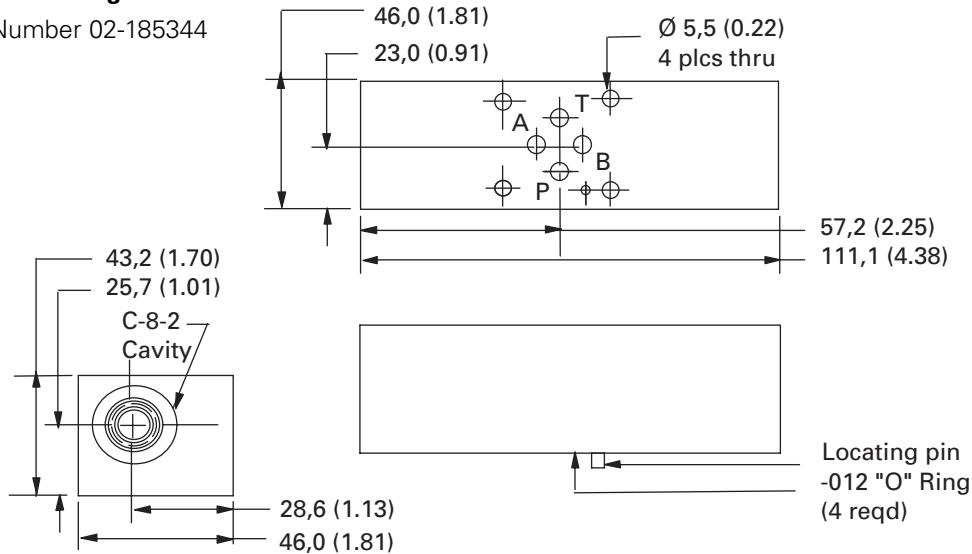
Torque cartridge in housing  
34-40 Nm (25-30 ft. lbs)

## TYPICAL CARTRIDGES FUNCTION

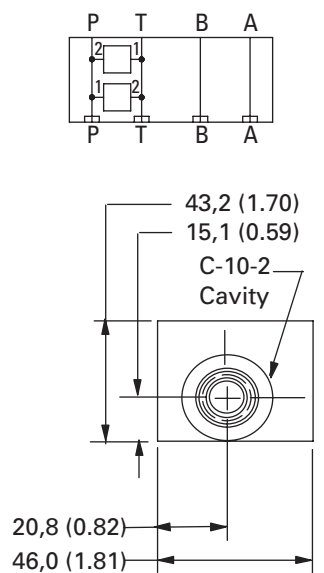
DSV2-8-B-0 Shuttle valve A & B Output external

### A322P Housing Kit

Part Number 02-185344



## Cavity Porting



Torque cartridge in housing  
C-8-2 34-40 Nm (25-30 ft. lbs)  
C-10-2 48-54 Nm (35-40 ft. lbs)

## TYPICAL CARTRIDGES FUNCTION

SV5-8-0 & RV1-10 Solenoid control relief valve P-T, normally open

SV5-8-C & RV1-10 Solenoid control relief valve P-T, normally closed

# Dimensions

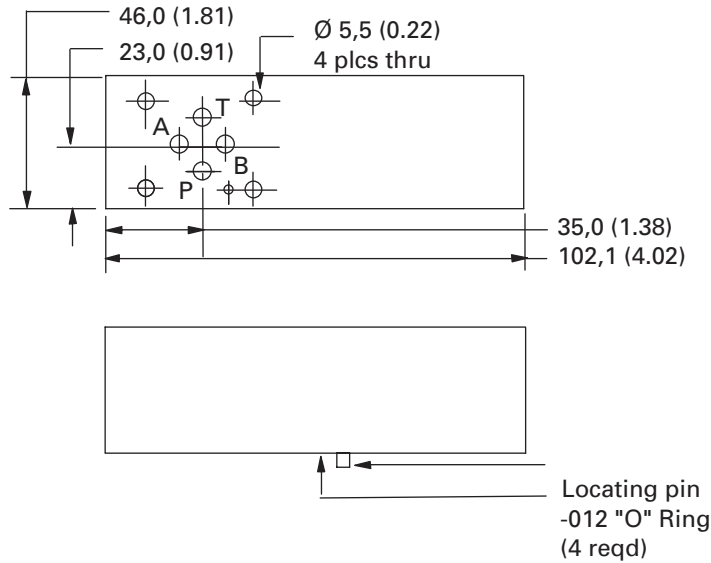
ISO 440103/CETOP3  
Housing Kits

## Dimensions

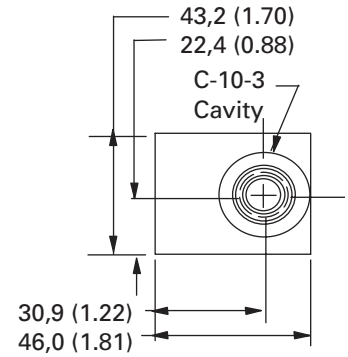
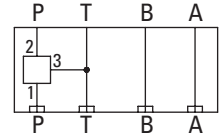
mm (inch)

### A316P Housing Kit

Part Number 02-185374



## Cavity Porting



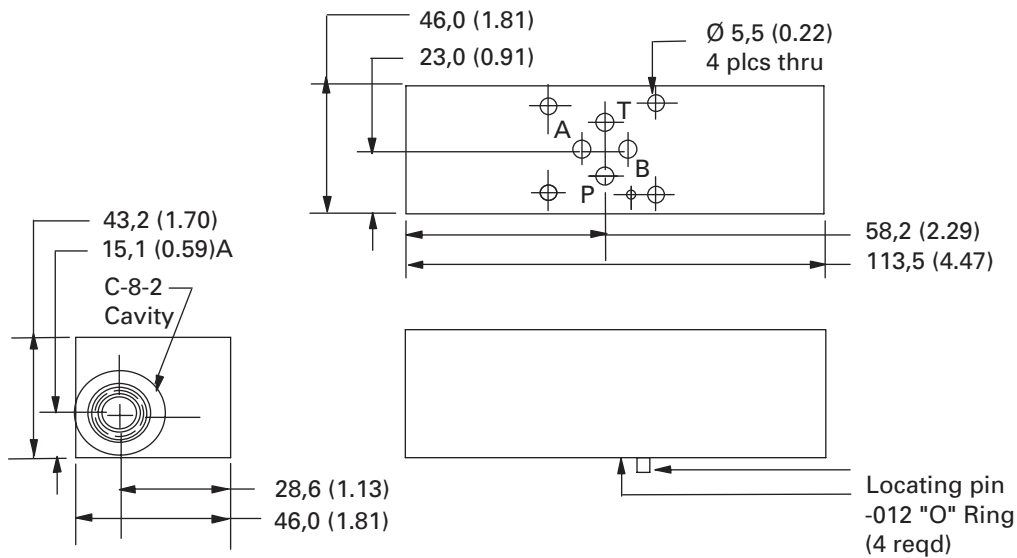
Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

## TYPICAL CARTRIDGES FUNCTION

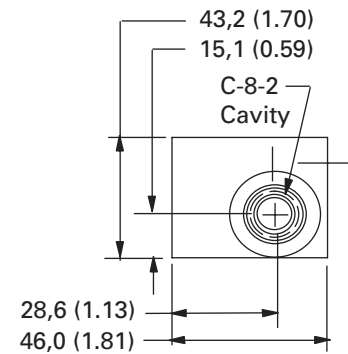
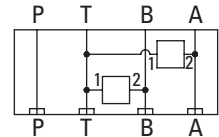
| TYPICAL CARTRIDGES | FUNCTION               |
|--------------------|------------------------|
| PSV7-10            | Sequence valve in to P |

### A320T Housing Kit

Part Number 02-185379



## Cavity Porting



Torque cartridge in housing  
34-40 Nm (25-30 ft. lbs)

## TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION                  |
|--------------------|---------------------------|
| CV3-8              | Check valve on T to A & B |

# Dimensions

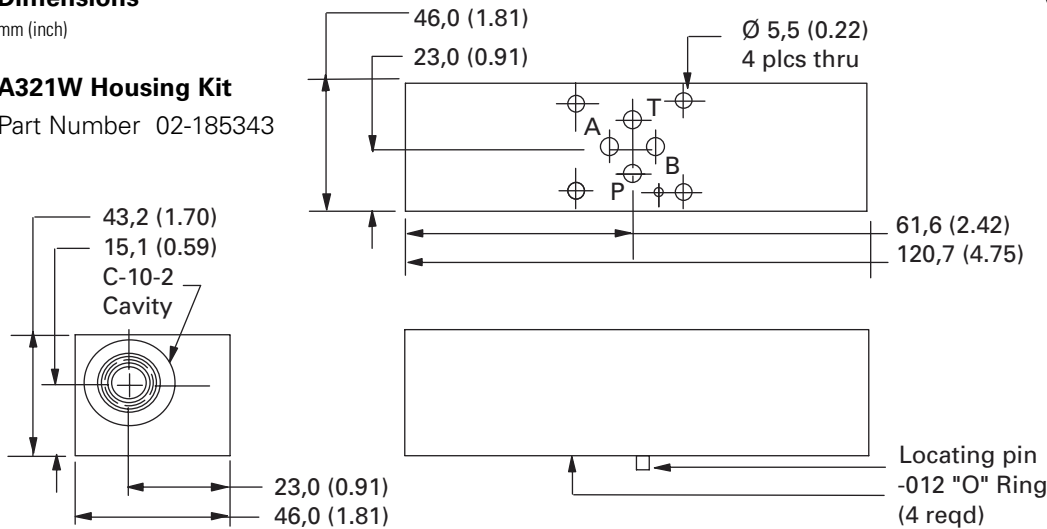
ISO 440103/CETOP3  
Housing Kits

## Dimensions

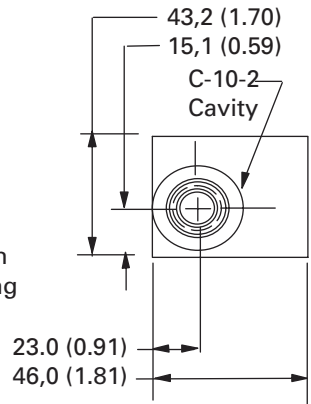
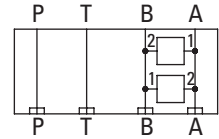
mm (inch)

### A321W Housing Kit

Part Number 02-185343



## Cavity Porting



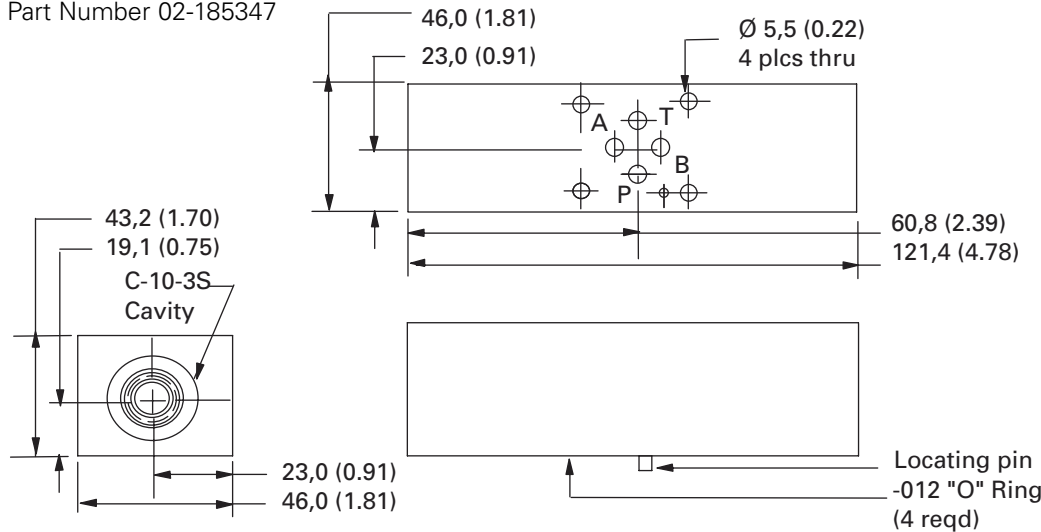
Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

## TYPICAL CARTRIDGES FUNCTION

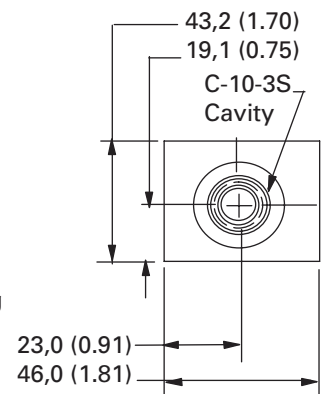
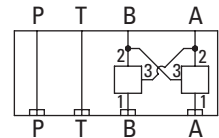
| TYPICAL CARTRIDGES | FUNCTION                      |
|--------------------|-------------------------------|
| RV1-10             | Cross port relief valve A & B |
| RV5-10             | Cross port relief valve A & B |

### A323W Housing Kit

Part Number 02-185347



## Cavity Porting



Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

## TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES | FUNCTION  |
|--------------------|---|
| CBV*-10            | Counterbalance valve on A & B cross piloted       |
| POC1-10            | Pilot operated check valve on A & B cross piloted |

# Dimensions

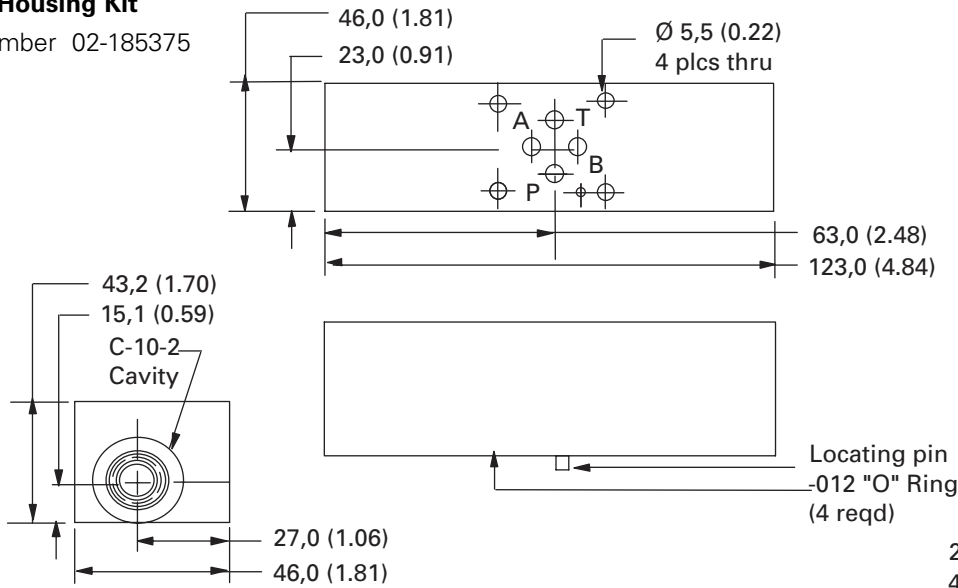
ISO 440103/CETOP3  
Housing Kits

## Dimensions

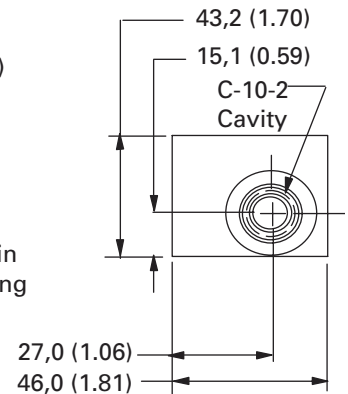
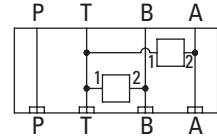
mm (inch)

### A317T Housing Kit

Part Number 02-185375



### Cavity Porting



#### TYPICAL CARTRIDGES FUNCTION

|          |  |
|----------|--|
| CV3-10   | Check valve on T to A & B                                  |
| SV1-10-C | Solenoid 2-way poppet type unload A & B-T, normally closed |
| SV3-10-C | Solenoid 2-way poppet type unload A & B-T, normally closed |
| SV3-10-0 | Solenoid 2-way poppet type unload A & B-T, normally open   |
| SV4-10-C | Solenoid 2-way spool type unload A & B-T, normally closed  |
| SV4-10-0 | Solenoid 2-way spool type unload A & B-T, normally open    |
| SV5-10-0 | Solenoid 2-way poppet type unload A & B-T, normally open   |

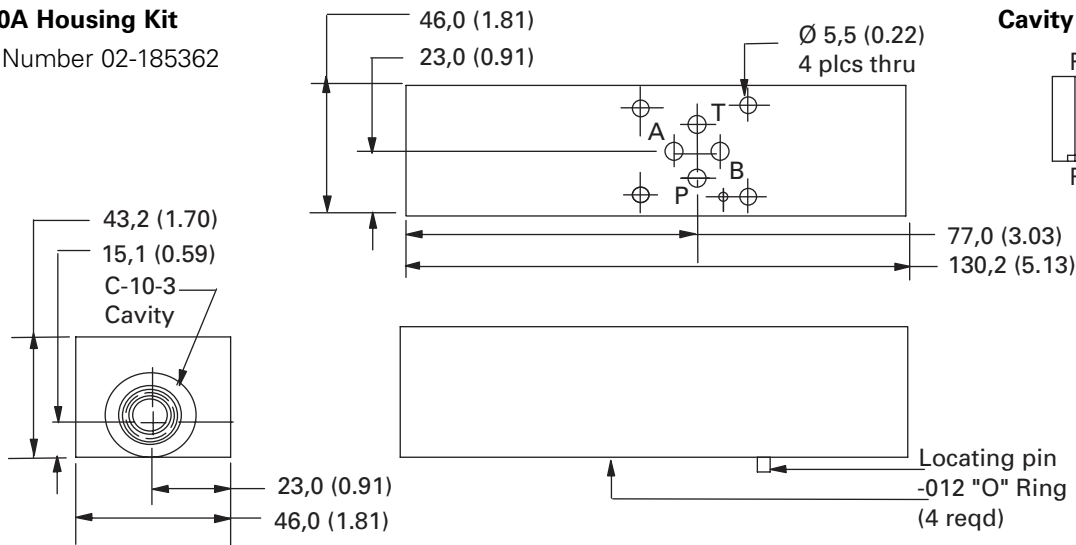
Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

#### Note

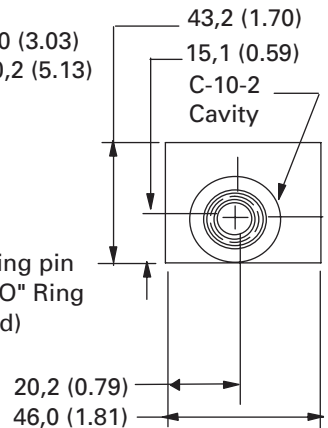
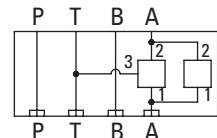
This housing may require the use of a spacer block 02-185273 depending upon cartridge valve selection.

### A310A Housing Kit

Part Number 02-185362



### Cavity Porting



#### TYPICAL CARTRIDGES FUNCTION

|                         |  |
|-------------------------|--|
| PRV2-10 &<br>CV3-10-P-3 | Reducing on A drained to T reverse free flow check |
|-------------------------|--|

#### Note

This housing may require the use of a spacer block 02-185273 depending upon cartridge valve selection.

Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)



# Dimensions

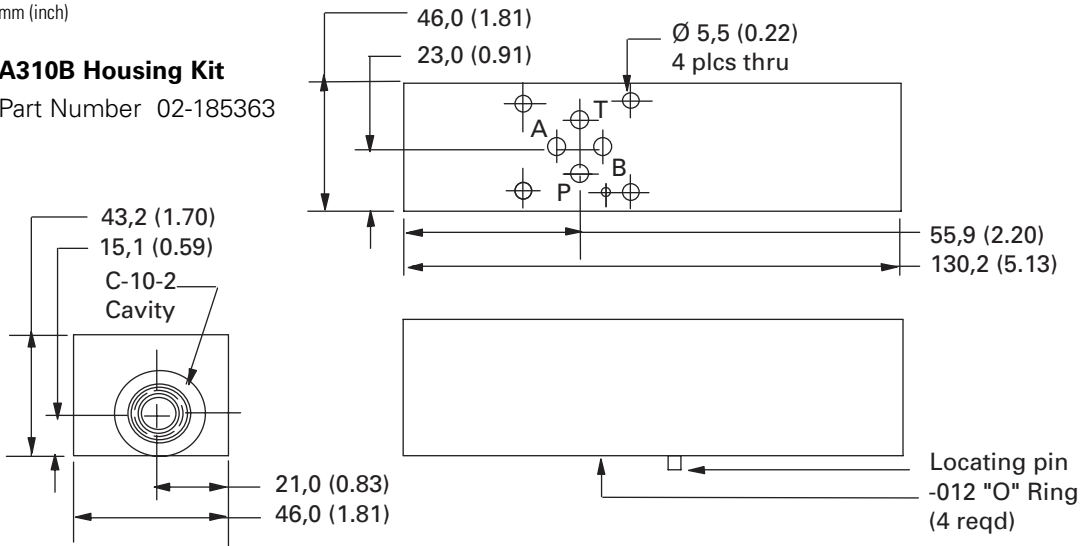
ISO 440103/CETOP3  
Housing Kits

## Dimensions

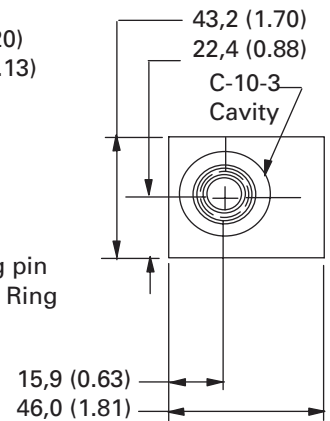
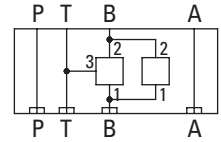
mm (inch)

### A310B Housing Kit

Part Number 02-185363



## Cavity Porting



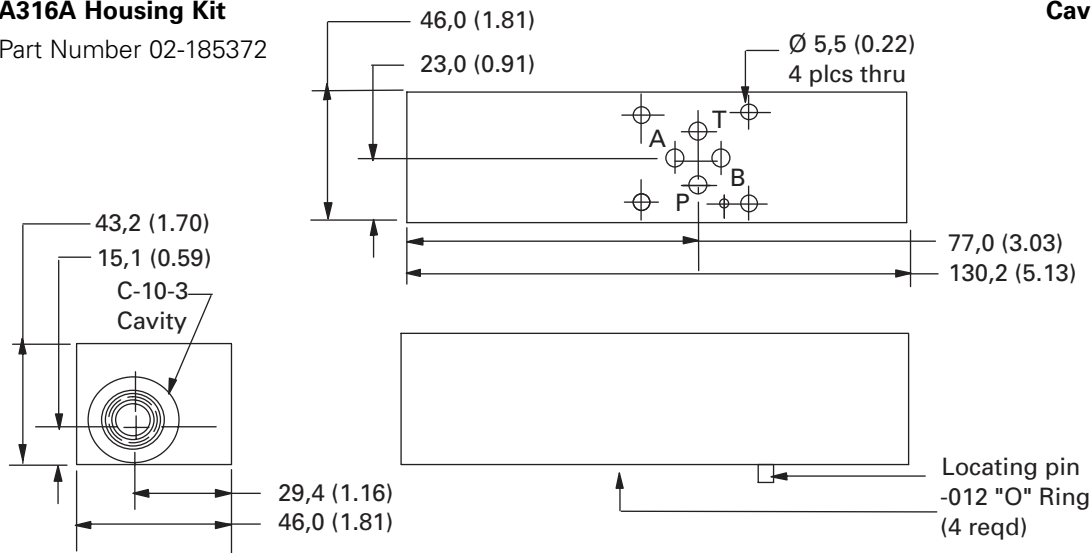
## TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES     | FUNCTION   |
|------------------------|--|
| PRV7-10 & CV3-10-P-0-3 | Reducing on B drained to T reverse free flow check |

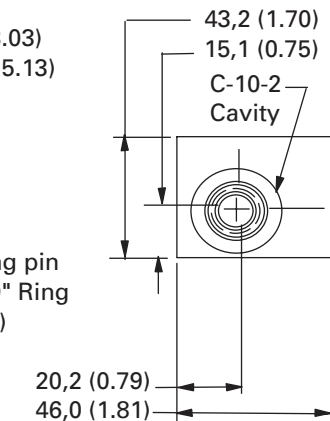
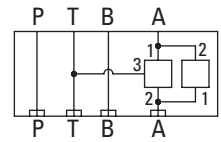
Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

### A316A Housing Kit

Part Number 02-185372



## Cavity Porting



## TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES     | FUNCTION                                       |
|------------------------|--|
| PSV7-10 & CV3-10-P-0-3 | Sequence valve in to A reverse free flow check |

Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

# Dimensions

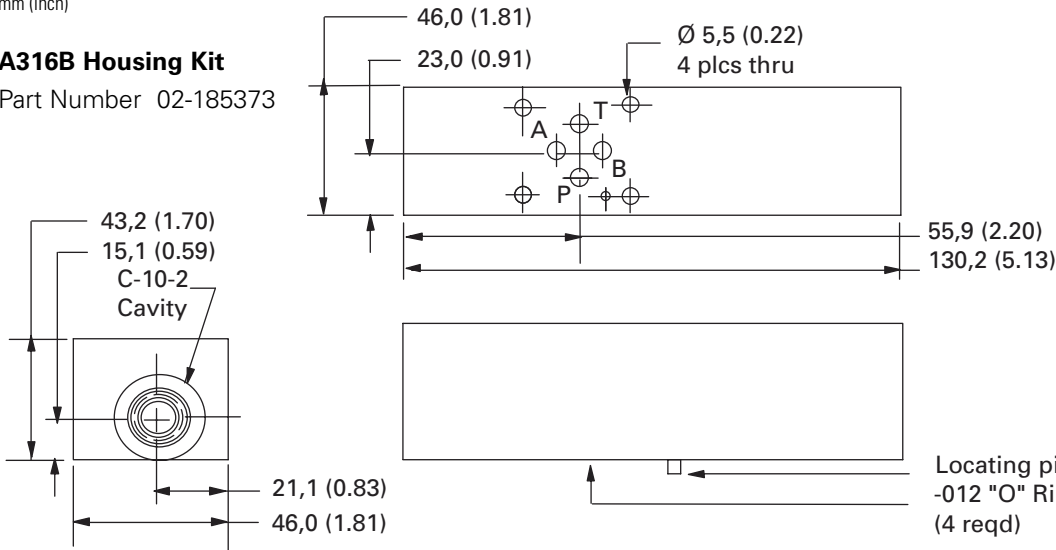
ISO 440103/CETOP3  
Housing Kits

## Dimensions

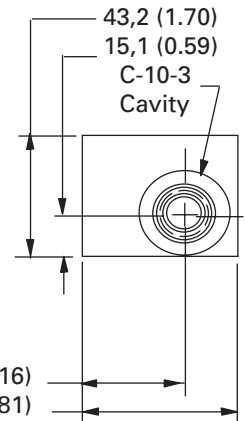
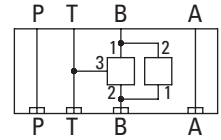
mm (inch)

### A316B Housing Kit

Part Number 02-185373



## Cavity Porting



## TYPICAL CARTRIDGES FUNCTION

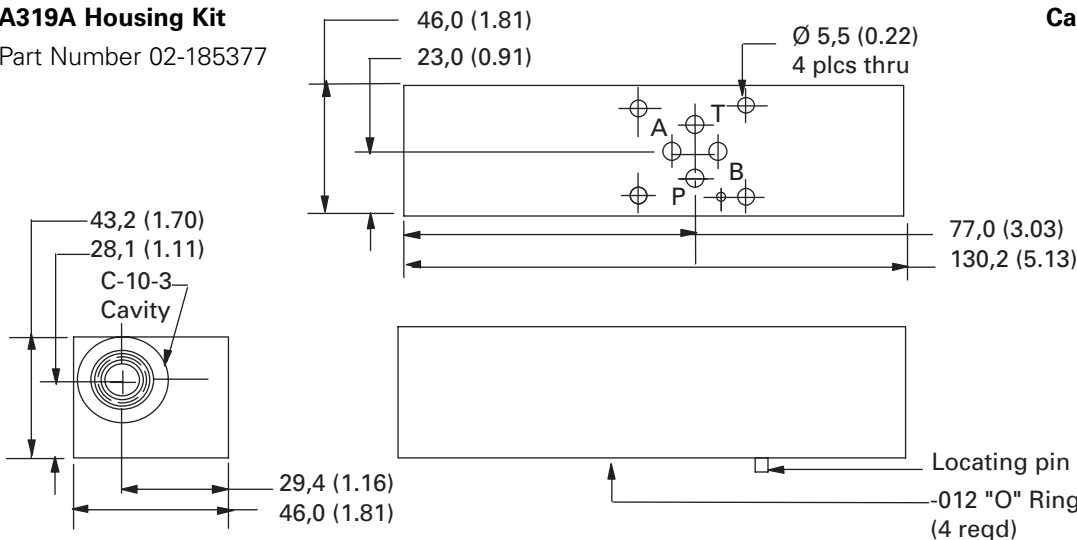
| TYPICAL CARTRIDGES     | FUNCTION                                       |
|------------------------|--|
| PSV7-10 & CV3-10-P-0-3 | Sequence valve in to B reverse free flow check |

29,4 (1.16)  
46,0 (1.81)

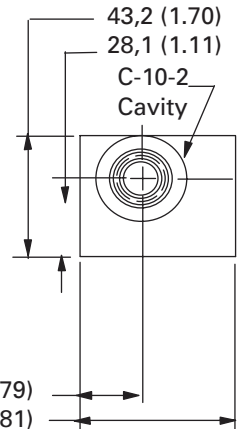
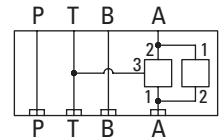
Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

### A319A Housing Kit

Part Number 02-185377



## Cavity Porting



## TYPICAL CARTRIDGES FUNCTION

| TYPICAL CARTRIDGES     | FUNCTION  |
|------------------------|---|
| PSV7-10 & CV3-10-P-0-3 | Sequence valve out of A reverse free flow check |

20,2 (0.79)  
46,0 (1.81)

Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

# Dimensions

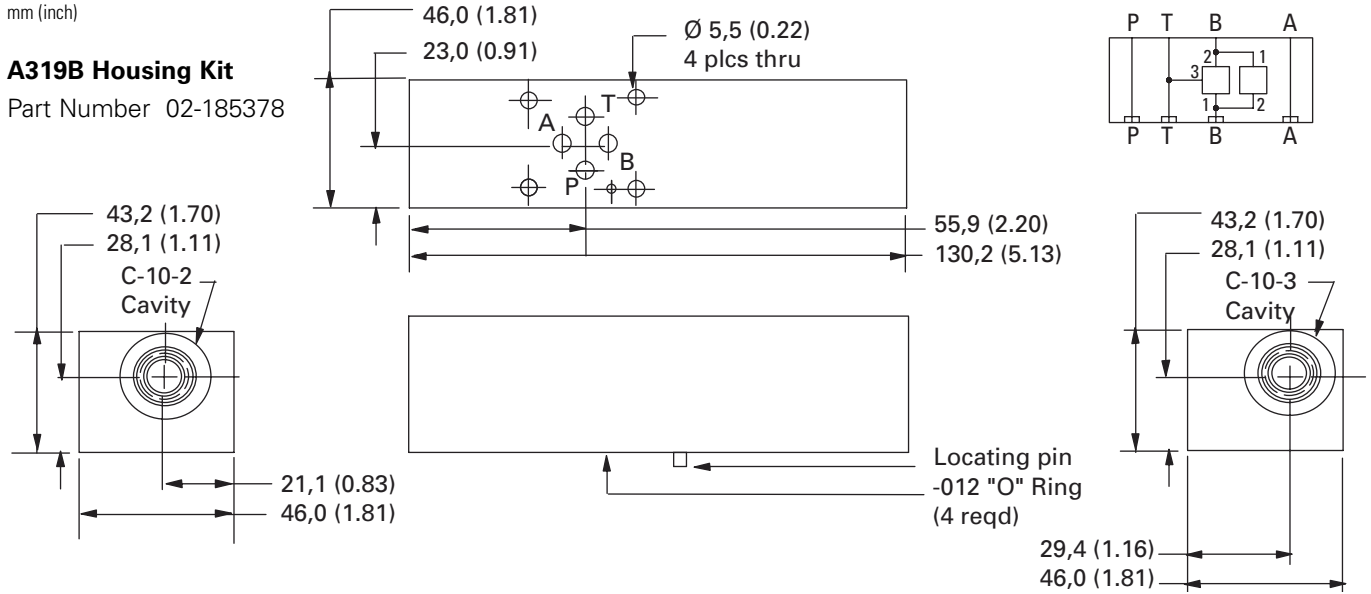
ISO 440103/CETOP3  
Housing Kits

## Dimensions

mm (inch)

### A319B Housing Kit

Part Number 02-185378



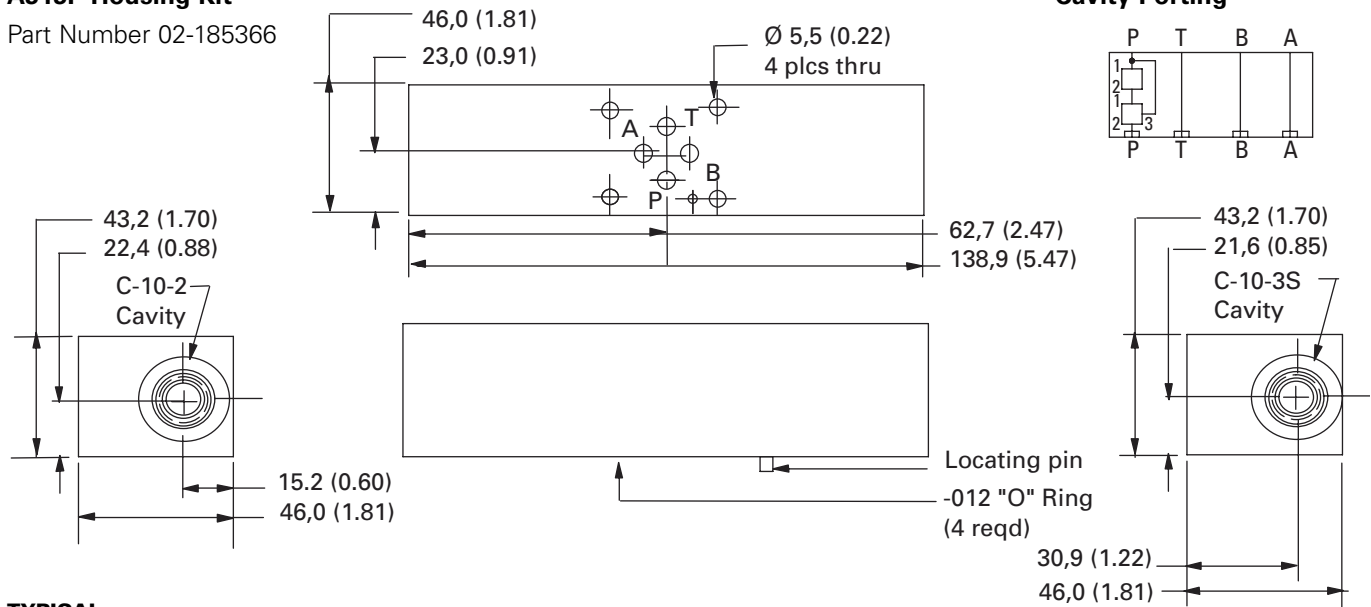
#### TYPICAL CARTRIDGES FUNCTION

|                           |   |
|---------------------------|---|
| PSV7-10 &<br>CV3-10-P-0-3 | Sequence valve out of B reverse free flow check |
|---------------------------|---|

Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

### A313P Housing Kit

Part Number 02-185366



#### TYPICAL CARTRIDGES FUNCTION

|                               |   |
|-------------------------------|---|
| EPV-10 &<br>DPS2-10-F-F-0-160 | Proportional flow control pressure compensated on P |
|-------------------------------|---|

Torque cartridge in housing  
48-54 Nm (35-40 ft. lbs)

# Dimensions

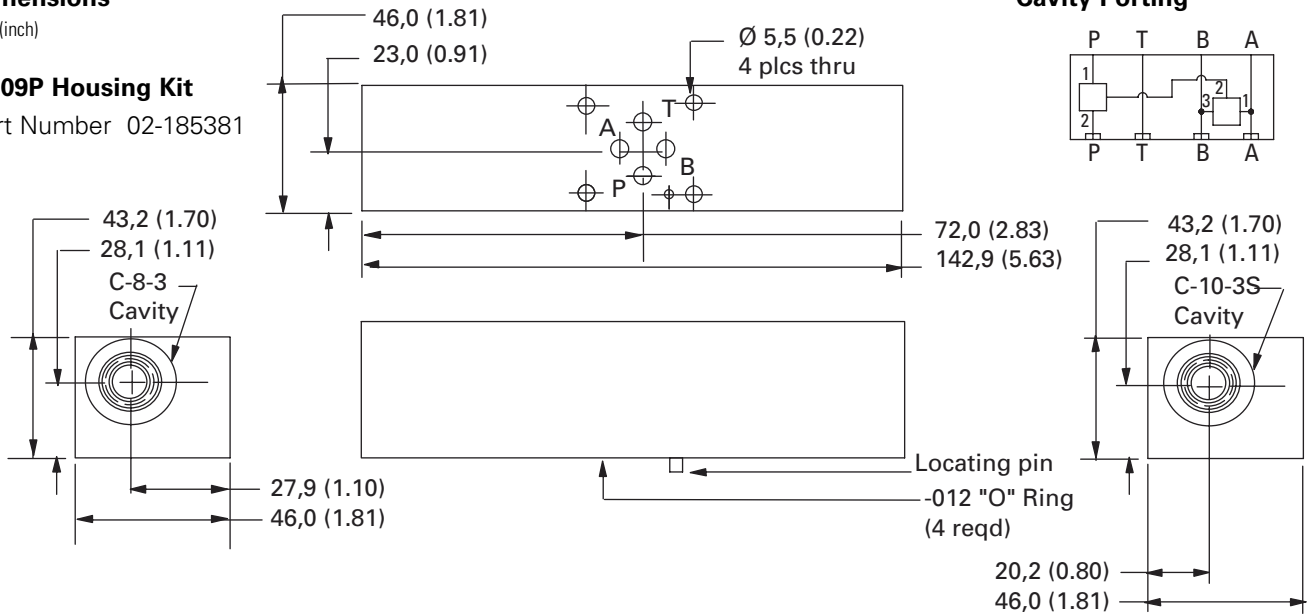
ISO 440103/CETOP3  
Housing Kits

## Dimensions

mm (inch)

### A309P Housing Kit

Part Number 02-185381



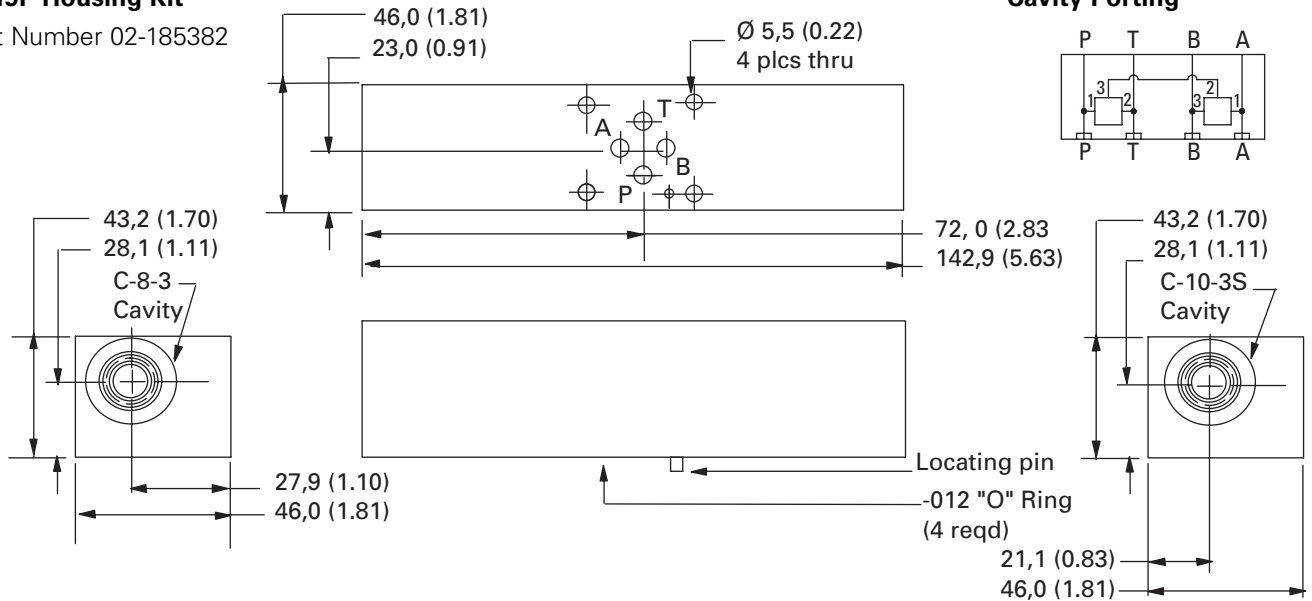
#### TYPICAL CARTRIDGES FUNCTION

DPS2-10-F-F-0-\* Pressure compensator restrictive on P with shuttle sense from A & B  
& DSV2-8-B-0

Torque cartridge in housing  
C-8-3 34-40 Nm (25-30 ft. lbs)  
C-10-3 48-54 Nm (35-40 ft. lbs)

### A319P Housing Kit

Part Number 02-185382



#### TYPICAL CARTRIDGES FUNCTION

DPS2-10-P-F-0-\* Pressure compensator bypass to T with shuttle sense from A & B  
& DSV2-8-B-0

Torque cartridge in housing  
C-8-3 34-40 Nm (25-30 ft. lbs)  
C-10-3 48-54 Nm (35-40 ft. lbs)

Алматы (7273)495-231  
Ангарск (3955)60-70-56  
Архангельск (8182)63-90-72  
Астрахань (8512)99-46-04  
Барнаул (3852)73-04-60  
Белгород (4722)40-23-64  
Благовещенск (4162)22-76-07  
Брянск (4832)59-03-52  
Владивосток (423)249-28-31  
Владикавказ (8672)28-90-48  
Владимир (4922)49-43-18  
Волгоград (844)278-03-48  
Вологда (8172)26-41-59  
Воронеж (473)204-51-73  
Екатеринбург (343)384-55-89

Иваново (4932)77-34-06  
Ижевск (3412)26-03-58  
Иркутск (395)279-98-46  
Казань (843)206-01-48  
Калининград (4012)72-03-81  
Калуга (4842)92-23-67  
Кемерово (3842)65-04-62  
Киров (8332)68-02-04  
Коломна (4966)23-41-49  
Кострома (4942)77-07-48  
Краснодар (861)203-40-90  
Красноярск (391)204-63-61  
Курск (4712)77-13-04  
Курган (3522)50-90-47  
Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13  
Москва (495)268-04-70  
Мурманск (8152)59-64-93  
Набережные Челны (8552)20-53-41  
Нижний Новгород (831)429-08-12  
Новокузнецк (3843)20-46-81  
Ноябрьск (3496)41-32-12  
Новосибирск (383)227-86-73  
Омск (3812)21-46-40  
Орел (4862)44-53-42  
Оренбург (3532)37-68-04  
Пенза (8412)22-31-16  
Петрозаводск (8142)55-98-37  
Псков (8112)59-10-37  
Пермь (342)205-81-47

Ростов-на-Дону (863)308-18-15  
Рязань (4912)46-61-64  
Самара (846)206-03-16  
Санкт-Петербург (812)309-46-40  
Саратов (845)249-38-78  
Севастополь (8692)22-31-93  
Саранск (8342)22-96-24  
Симферополь (3652)67-13-56  
Смоленск (4812)29-41-54  
Сочи (862)225-72-31  
Ставрополь (8652)20-65-13  
Сургут (3462)77-98-35  
Сыктывкар (8212)25-95-17  
Тамбов (4752)50-40-97  
Тверь (4822)63-31-35

Тольятти (8482)63-91-07  
Томск (3822)98-41-53  
Тула (4872)33-79-87  
Тюмень (3452)66-21-18  
Ульяновск (8422)24-23-59  
Улан-Удэ (3012)59-97-51  
Уфа (347)229-48-12  
Хабаровск (4212)92-98-04  
Чебоксары (8352)28-53-07  
Челябинск (351)202-03-61  
Череповец (8202)49-02-64  
Чита (3022)38-34-83  
Якутск (4112)23-90-97  
Ярославль (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

<https://vickers.nt-rt.ru> || [vsh@nt-rt.ru](mailto:vsh@nt-rt.ru)