

Seal Kit Installation & Ordering Guide

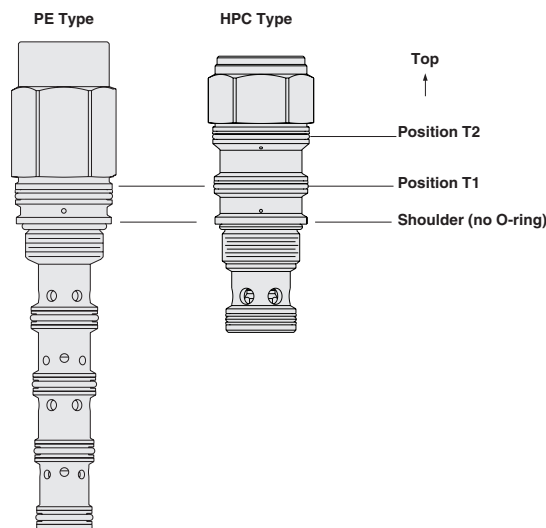
To order the correct seal kit for your HydraForce cartridge valve, first refer to the catalog page for the specific valve you are using.

Seal choices for each valve model are provided on the catalog page. The choice of seal will depend on the operating temperature and pressure of the application.

If in doubt, consult with your HydraForce distributor or contact HydraForce Technical Support.

This page provides some general guidelines for hydraulic cartridge valve seals and seal kits and is intended as a general reference.

SEAL POSITION



TEMPERATURE CONSIDERATIONS

(as per ASTM Standard D2000/SAE J200)

Buna N (N) nitrile seals are designed for applications that operate within the -40 to 100 °C (-40 to 212 °F) temperature range. Buna N seals can be single-piece **SoloSeal™** or O-ring style. O-ring seals are used with one or two backup rings.

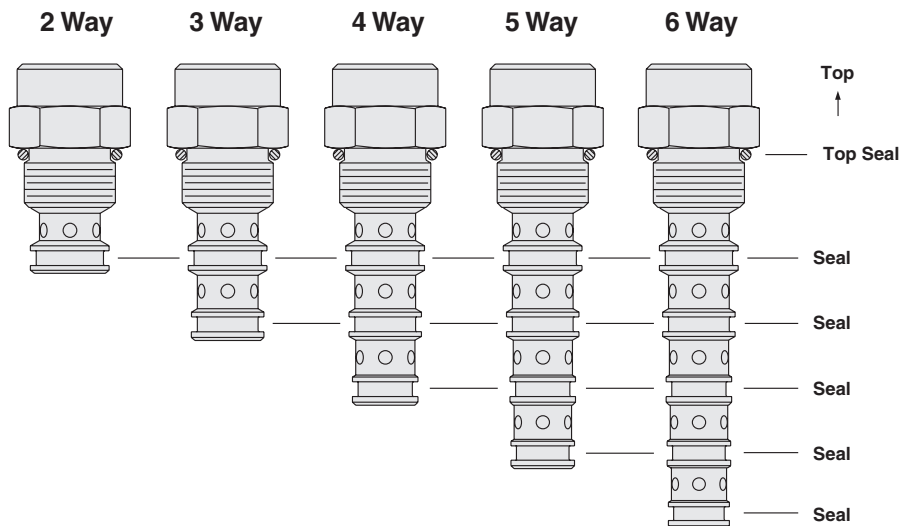
Hydrogenated Nitrile (HNBR) seals have high strength and resistance to extrusion and wear for applications with the temperature range of -48 to 150 °C (-40 to 300 °F).

Fluorocarbon (V) seals have excellent resistance to high temperatures and should be used for applications with an average temperature range between -26 to 204 °C (-15 to 400 °F).

Fluorocarbon seals can be single-piece **SoloSeal™** or O-ring style. O-ring seals are used with one or two backup rings.

Polyurethane (P) seals should be used for applications with a temperature range between -54 to 104 °C to (-65 to 225 °F). Polyurethane seals can be single-piece or O-ring style, which requires the use of one or two backup rings. They are used for high-pressure hydraulic sealing applications.

PPDI Urethane (U) seals should be used for applications with an average temperature range between -54 to 107 °C (-65 to 225 °F). These are single-piece D-shaped seals designed for use without backup rings for high-pressure hydraulic sealing applications.



SINGLE-PIECE SEALS

HydraForce uses engineered single-piece seals for its hydraulic cartridge valve products where appropriate. Single-piece seals are available in the following materials:

- Nitrile (Buna N) **SoloSeal™** single piece seals - **Model Code N**
- Fluorocarbon **SoloSeal™** single piece seals - **Model Code V**
- Polyurethane single-piece seals - **Model Code P**

The single-piece seals are specially engineered with pressure-containing ridges and pedestals that ensure superior sealing effectiveness without any backup rings. They have a unique ridged profile that differs in appearance from the smooth, rounded profile of a conventional O-ring.

The single-piece seals are fully interchangeable, forward- and backward-compatible with conventional O-ring seals with backup rings and there is no change in the valve model codes or seal kit part numbers when single-piece seals are used.

HOUSINGS AND ACCESSORY PRODUCTS

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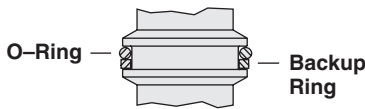
SEAL KIT INSTALLATION

When installing seals on your hydraulic valve, you will need to know the seal installation type, which is indicated on the catalog page for the valve under RATINGS/Seal Kit, i.e. SK08-3X-MM.

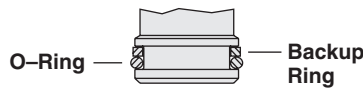
Knowing the installation type for the seal kit is especially important for seal kits that contain O-ring seals with backup rings. For example, Installation Type T requires the O-ring to be installed toward the top of the cavity and Installation Type B requires the O-ring to be installed toward the bottom of the cavity.

Seal Kits with single-piece SoloSeals have greater versatility - they are fully interchangeable and can be used in Installation Types B, M, T, as well as 0. Here are the commonly used Installation Types you will find in HydraForce cartridge valves:

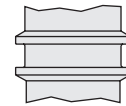
Installation Type T
O-Ring installed toward top of cavity



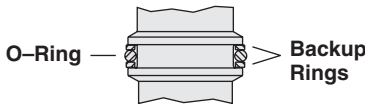
Installation Type B
O-Ring installed toward bottom of cavity



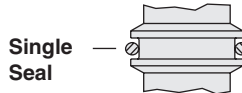
Installation Type X
No seals this location



Installation Type M
O-Ring installed between backups



Installation Type 0
Single seal only; no back-ups

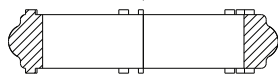
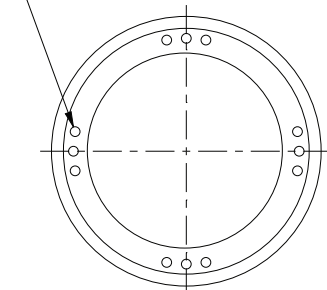


Note: Cartridges which are originally built with polyester elastomer (black) back-up rings, are serviced with single-turn (white) PTFE back-up rings. This facilitates field installation of the back-up rings, since the original production rings require special tools for installation.

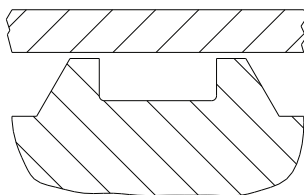
Type "M" back-up rings are 1/2 size single-turn PTFE rings on all cavities **except** VC12-3, VC12-4, VC16-S3, VC20-S3 and VC98-3.

Installation Type U
Single-Piece Urethane D-Ring

D-Seals have 3 relief bumps located in 4 places on the top and bottom of the seal.



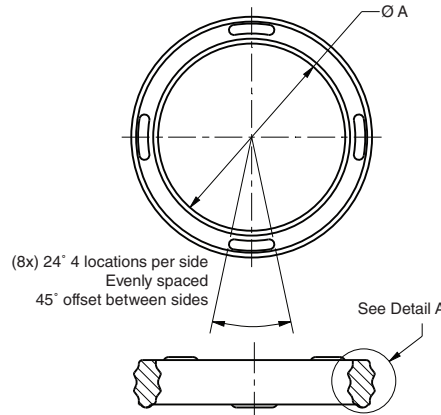
D-Seals side view - shows distinctive D shape



GLAND DETAIL

Single-piece urethane seals used in HyPerformance™ high pressure applications require no backup rings.

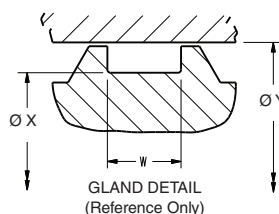
Installation Type - SoloSeal
Single-Piece SoloSeals (no backup rings)



0.008 TYP (Both Sides)



Detail A - Scale 10:1



GLAND DETAIL (Reference Only)