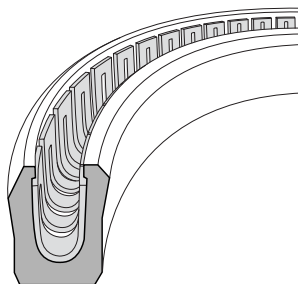


Piston Seals (Single Acting)

SP-11-2000, DK19

(Metric Size)

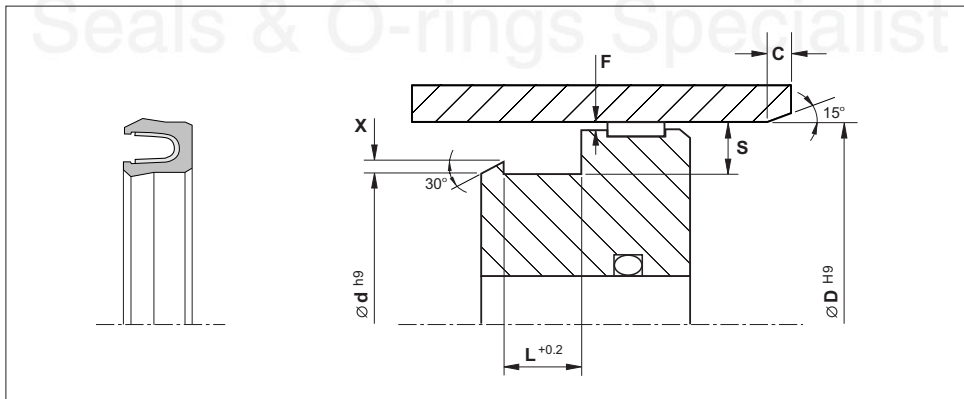


SP-11-2000, DK19

| Material              | Pressure (Bar) | Temp. (°c)   | Speed (m/s) |
|-----------------------|----------------|--------------|-------------|
| PTFE+Stainless Spring | 450            | -150<br>+225 | 15          |

- Resistant to most fluids and chemicals.
- Low coefficients of friction.
- Can handle rapid changes in temperature.
- Stick-slip free.

Installation Recommendation



| Surface roughness  | Ra       | Rt      | Chamfers |      |
|--------------------|----------|---------|----------|------|
| Sliding surface    | ≤ 0.3 μm | ≤ 4 μm  | S        | C    |
| Surface of housing | ≤ 1.8 μm | ≤ 10 μm | 1.45     | 4.2  |
| Sides of housing   | ≤ 3.0 μm | ≤ 16 μm | 2.25     | 4.7  |
|                    |          |         | 3.10     | 5.2  |
|                    |          |         | 4.70     | 8.2  |
|                    |          |         | 6.10     | 11.9 |

# PTFE Seal - 2000

## Installation Dimensions for grooves made for O-ring without back-up ring

| Series No. | Bore Dia. D    |                | Groove Dia. | Groove Width. | Radius | Step Height | Radial Clearance F max.* |         |         |         |
|------------|----------------|----------------|-------------|---------------|--------|-------------|--------------------------|---------|---------|---------|
|            | Standard Range | Extended Range |             |               |        |             | 20 Bar                   | 100 Bar | 200 Bar | 400 Bar |
| 2000       | 6 - 13.9       | 6 - 40.0       | D - 2.9     | 2.4           | 0.4    | 0.4         | 0.20                     | 0.10    | 0.08    | 0.05    |
| 2010       | 14 - 24.9      | 10 - 200.0     | D - 4.5     | 3.6           | 0.4    | 0.6         | 0.25                     | 0.15    | 0.10    | 0.07    |
| 2020       | 25 - 45.9      | 16 - 400.0     | D - 6.2     | 4.8           | 0.6    | 0.7         | 0.35                     | 0.20    | 0.15    | 0.08    |
| 2030       | 46 - 124.9     | 28 - 700.0     | D - 9.4     | 7.1           | 0.8    | 0.8         | 0.50                     | 0.25    | 0.20    | 0.10    |
| 2040       | 125 - 999.9    | 45 - 999.9     | D - 12.2    | 9.5           | 0.8    | 0.9         | 0.60                     | 0.30    | 0.25    | 0.12    |

## Installation Dimensions for grooves made for O-ring with one back-up ring

| Series No. | Bore Dia. D    |                | Groove Dia. | Groove Width. | Radius | Step Height | Radial Clearance F max.* |         |         |         |
|------------|----------------|----------------|-------------|---------------|--------|-------------|--------------------------|---------|---------|---------|
|            | Standard Range | Extended Range |             |               |        |             | 20 Bar                   | 100 Bar | 200 Bar | 400 Bar |
| 2200       | 6 - 13.9       | 6 - 40.0       | D - 2.9     | 3.80          | 0.4    | 0.4         | 0.20                     | 0.10    | 0.08    | 0.05    |
| 2210       | 14 - 24.9      | 10 - 200.0     | D - 4.5     | 4.65          | 0.4    | 0.6         | 0.25                     | 0.15    | 0.10    | 0.07    |
| 2220       | 25 - 45.9      | 16 - 400.0     | D - 6.2     | 5.70          | 0.6    | 0.7         | 0.35                     | 0.20    | 0.15    | 0.08    |
| 2230       | 46 - 124.9     | 28 - 700.0     | D - 9.4     | 8.50          | 0.8    | 0.8         | 0.50                     | 0.25    | 0.20    | 0.10    |
| 2240       | 125 - 999.9    | 45 - 999.9     | D - 12.2    | 11.20         | 0.8    | 0.9         | 0.60                     | 0.30    | 0.25    | 0.12    |

## (Metric Size)

| Bore Dia. | Groove Dia. | Groove Width. | Reference<br>(For order processing) |
|-----------|-------------|---------------|-------------------------------------|
| D         | d           | L             |                                     |
| 6.0       | 3.1         | 2.4           | SP-11-2000-0060                     |
| 8.0       | 5.1         | 2.4           | SP-11-2000-0080                     |
| 10.0      | 7.1         | 2.4           | SP-11-2000-0100                     |
| 12.0      | 9.1         | 2.4           | SP-11-2000-0120                     |
| 14.0      | 9.5         | 3.6           | SP-11-2010-0140                     |
| 15.0      | 10.5        | 3.6           | SP-11-2010-0150                     |
| 16.0      | 11.5        | 3.6           | SP-11-2010-0160                     |
| 18.0      | 13.5        | 3.6           | SP-11-2010-0180                     |
| 20.0      | 15.5        | 3.6           | SP-11-2010-0200                     |
| 22.0      | 17.5        | 3.6           | SP-11-2010-0220                     |
| 25.0      | 18.8        | 4.8           | SP-11-2020-0250                     |
| 28.0      | 21.8        | 4.8           | SP-11-2020-0280                     |
| 30.0      | 23.8        | 4.8           | SP-11-2020-0300                     |
| 32.0      | 25.8        | 4.8           | SP-11-2020-0320                     |
| 35.0      | 28.8        | 4.8           | SP-11-2020-0350                     |

(Metric Size)

| Bore Dia. | Groove Dia. | Groove Width. | Reference<br>(For order processing) |
|-----------|-------------|---------------|-------------------------------------|
| D         | d           | L             |                                     |
| 40.0      | 33.8        | 4.8           | SP-11-2020-0400                     |
| 42.0      | 35.8        | 4.8           | SP-11-2020-0420                     |
| 45.0      | 38.8        | 4.8           | SP-11-2020-0450                     |
| 48.0      | 38.6        | 7.1           | SP-11-2030-0480                     |
| 50.0      | 40.6        | 7.1           | SP-11-2030-0500                     |
| 52.0      | 42.6        | 7.1           | SP-11-2030-0520                     |
| 55.0      | 45.6        | 7.1           | SP-11-2030-0550                     |
| 56.0      | 46.6        | 7.1           | SP-11-2030-0560                     |
| 60.0      | 50.6        | 7.1           | SP-11-2030-0600                     |
| 63.0      | 53.6        | 7.1           | SP-11-2030-0630                     |
| 65.0      | 55.6        | 7.1           | SP-11-2030-0650                     |
| 70.0      | 60.6        | 7.1           | SP-11-2030-0700                     |
| 75.0      | 65.6        | 7.1           | SP-11-2030-0750                     |
| 80.0      | 70.6        | 7.1           | SP-11-2030-0800                     |
| 85.0      | 75.6        | 7.1           | SP-11-2030-0850                     |
| 90.0      | 80.6        | 7.1           | SP-11-2030-0900                     |
| 95.0      | 85.6        | 7.1           | SP-11-2030-0950                     |
| 100.0     | 90.6        | 7.1           | SP-11-2030-1000                     |
| 110.0     | 100.6       | 7.1           | SP-11-2030-1100                     |
| 115.0     | 105.6       | 7.1           | SP-11-2030-1150                     |
| 120.0     | 110.6       | 7.1           | SP-11-2030-1200                     |
| 125.0     | 112.8       | 9.5           | SP-11-2040-1250                     |
| 130.0     | 117.8       | 9.5           | SP-11-2040-1300                     |
| 135.0     | 122.8       | 9.5           | SP-11-2040-1350                     |
| 140.0     | 127.8       | 9.5           | SP-11-2040-1400                     |
| 150.0     | 137.8       | 9.5           | SP-11-2040-1500                     |
| 160.0     | 147.8       | 9.5           | SP-11-2040-1600                     |
| 170.0     | 157.8       | 9.5           | SP-11-2040-1700                     |
| 180.0     | 167.8       | 9.5           | SP-11-2040-1800                     |
| 190.0     | 177.8       | 9.5           | SP-11-2040-1900                     |
| 200.0     | 187.8       | 9.5           | SP-11-2040-2000                     |
| 210.0     | 197.8       | 9.5           | SP-11-2040-2100                     |
| 220.0     | 207.8       | 9.5           | SP-11-2040-2200                     |
| 230.0     | 217.8       | 9.5           | SP-11-2040-2300                     |
| 240.0     | 227.8       | 9.5           | SP-11-2040-2400                     |
| 250.0     | 237.8       | 9.5           | SP-11-2040-2500                     |
| 280.0     | 267.8       | 9.5           | SP-11-2040-2800                     |
| 300.0     | 287.8       | 9.5           | SP-11-2040-3000                     |
| 320.0     | 307.8       | 9.5           | SP-11-2040-3200                     |
| 350.0     | 337.8       | 9.5           | SP-11-2040-3500                     |

## PTFE Seal - 2000

(Metric Size)

| Bore Dia. | Groove Dia. | Groove Width. | Reference<br>(For order processing) |
|-----------|-------------|---------------|-------------------------------------|
| D         | d           | L             |                                     |
| 400.0     | 387.8       | 9.5           | SP-11-2040-4000                     |
| 420.0     | 407.8       | 9.5           | SP-11-2040-4200                     |
| 450.0     | 437.8       | 9.5           | SP-11-2040-4500                     |
| 480.0     | 467.8       | 9.5           | SP-11-2040-4800                     |
| 500.0     | 487.8       | 9.5           | SP-11-2040-5000                     |

Select the material of seal ring and o-ring from Compounds for Fluid Technology (page 8)

**Order No.**

SP-11 - 2000 - 0060

Seal ring material code \_\_\_\_\_

Series No. \_\_\_\_\_

Bore diameter x 10 \_\_\_\_\_

Seals & O-rings Specialist