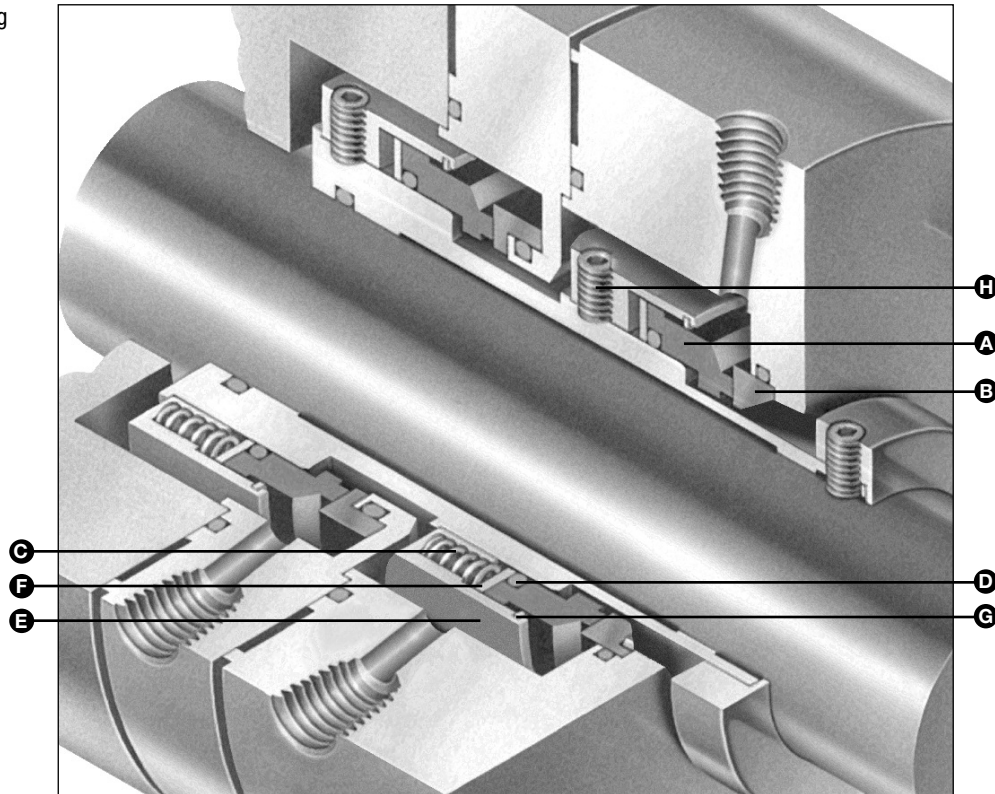




- A – Face/Primary Ring
- B – Seat/Mating Ring
- C – Spring
- D – O-Ring
- E – Retainer
- F – Disc
- G – Snap Ring
- H – Set Screw



Product Description

Self-cooling Type 48SC Seals are full contact dry-running secondary containment seals. This breakthrough in dry tandem sealing requires no external lubrication system, reducing hazards from buffer fluid contamination and eliminating contaminated fluid disposal problems. Available in retrofit kits, these secondary containment seals can fit into existing cartridges.

- For service in chemical processing, cryogenics, offshore platforms, oil production and refining, petrochemical processing, pharmaceutical, and pipeline transmission

Performance Capabilities

- Temperatures: -29°C to 205°C/-20°F to 400°F
- Pressures: Dry: 0.35 bar g/5 psig continuous
Wet: 35 bar g/500 psig*
- Speeds: up to 20 mps/4000 fpm

*Maximum containment pressure rating under dynamic conditions dependent upon process fluid properties. Shut down upon high pressure alarm activation is recommended. Contact John Crane for higher pressures or speeds.

Design Features

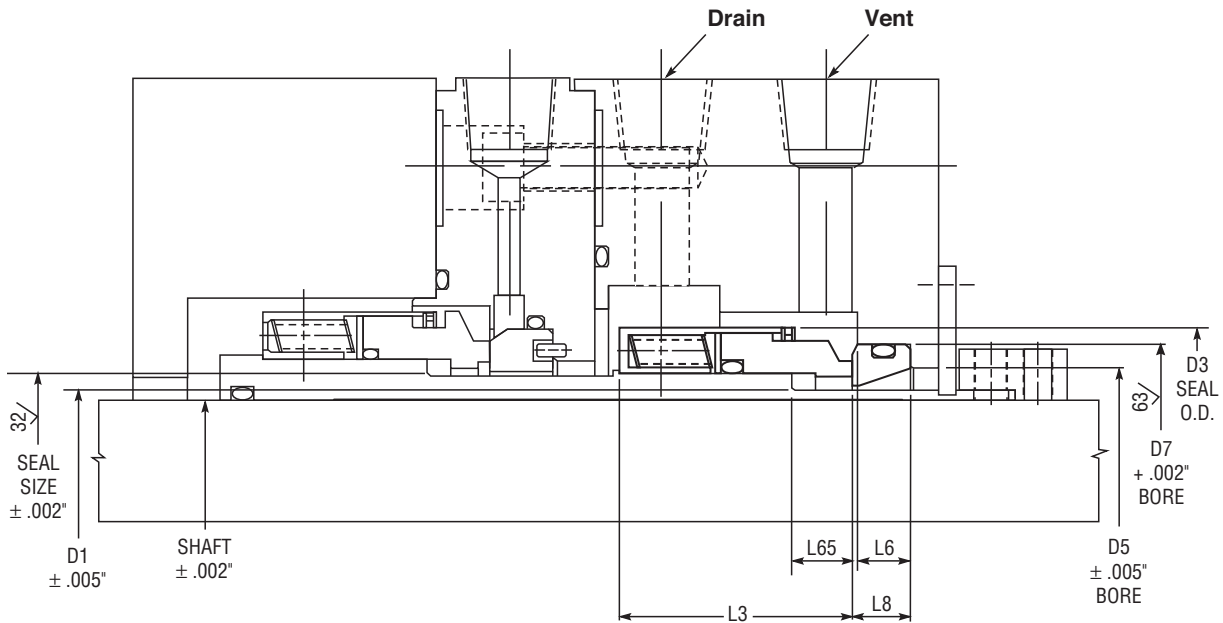
- For easy outboard seal replacement from existing liquid lubricated tandem arrangements to dry sealing.
- For (Maximum Achievable Control Technology (MACT) compliant emission control use in conjunction with Type 48.
- Available in short seal designed to fit ANSI and older edition API pumps where there is restricted axial length (Type S48SC).
- The primary ring/face is a John Crane proprietary carbon grade developed specifically for dry-running systems. The mating ring is highly thermal conductive silicon carbide.
- Primary ring has lightly-loaded springs to permit dry sealing at pump speeds. Lower spring rates keep load even over a wider working height range. Controlled O-ring squeeze and spring load minimizes seal head drag.
- Self-cooling performance is enhanced by tapered back surface of mating ring, allowing greater access of air at seal faces and increasing surface area exposed to cooling air which is created by specially designed drive collar. Also contributing to low heat at faces are narrow face width, with controlled pressure and thermal distortion.

TYPE 48SC/S48SC

DRY-RUNNING SECONDARY CONTAINMENT SEAL

Technical Specification

Type 48SC Typical Arrangement



Type 48SC Dimensional Data (inches)

| Shaft Size | Seal Size (inches) | D1 | D3 | D5 | D7 | L3 | L6 | L8 | L65 |
|------------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.500 | 1.000 | 0.750 | 1.562 | 1.062 | 1.375 | 1.312 | 0.343 | 0.406 | 0.343 |
| 0.625 | 1.125 | 0.875 | 1.687 | 1.187 | 1.500 | 1.375 | 0.343 | 0.406 | 0.343 |
| 0.750 | 1.250 | 1.000 | 1.875 | 1.312 | 1.625 | 1.375 | 0.375 | 0.437 | 0.343 |
| 0.875 | 1.375 | 1.125 | 2.000 | 1.468 | 1.750 | 1.437 | 0.375 | 0.437 | 0.343 |
| 1.000 | 1.500 | 1.250 | 2.125 | 1.593 | 1.875 | 1.437 | 0.375 | 0.437 | 0.343 |
| 1.125 | 1.625 | 1.375 | 2.375 | 1.703 | 2.000 | 1.750 | 0.375 | 0.437 | 0.437 |
| 1.250 | 1.750 | 1.500 | 2.500 | 1.812 | 2.125 | 1.750 | 0.375 | 0.437 | 0.437 |
| 1.375 | 1.875 | 1.625 | 2.625 | 1.968 | 2.375 | 1.750 | 0.437 | 0.500 | 0.437 |
| 1.500 | 2.000 | 1.750 | 2.750 | 2.093 | 2.500 | 1.750 | 0.437 | 0.500 | 0.437 |
| 1.625 | 2.125 | 1.875 | 3.000 | 2.218 | 2.625 | 2.062 | 0.437 | 0.500 | 0.500 |
| 1.750 | 2.250 | 2.000 | 3.125 | 2.343 | 2.750 | 2.062 | 0.437 | 0.500 | 0.500 |
| 1.875 | 2.375 | 2.125 | 3.250 | 2.500 | 3.000 | 2.062 | 0.500 | 0.562 | 0.500 |
| 2.000 | 2.500 | 2.250 | 3.375 | 2.625 | 3.125 | 2.062 | 0.500 | 0.562 | 0.500 |
| 2.125 | 2.625 | 2.375 | 3.500 | 2.750 | 3.250 | 2.062 | 0.500 | 0.562 | 0.500 |
| 2.250 | 2.750 | 2.500 | 3.625 | 2.890 | 3.375 | 2.062 | 0.500 | 0.562 | 0.500 |
| 2.375 | 2.875 | 2.625 | 3.750 | 3.046 | 3.625 | 2.062 | 0.562 | 0.625 | 0.500 |
| 2.500 | 3.000 | 2.750 | 3.812 | 3.171 | 3.500 | 2.062 | 0.562 | 0.625 | 0.500 |
| 2.625 | 3.125 | 2.875 | 3.937 | 3.296 | 3.750 | 2.062 | 0.562 | 0.625 | 0.562 |
| 2.750 | 3.250 | 3.000 | 4.125 | 3.437 | 3.875 | 2.062 | 0.562 | 0.625 | 0.562 |
| 2.875 | 3.375 | 3.125 | 4.250 | 3.546 | 4.000 | 2.062 | 0.656 | 0.781 | 0.562 |
| 3.000 | 3.500 | 3.250 | 4.375 | 3.671 | 4.125 | 2.062 | 0.656 | 0.781 | 0.562 |
| 3.125 | 3.625 | 3.375 | 4.500 | 3.796 | 4.250 | 2.062 | 0.656 | 0.781 | 0.562 |
| 3.250 | 3.750 | 3.500 | 4.625 | 3.921 | 4.375 | 2.062 | 0.656 | 0.781 | 0.562 |
| 3.375 | 3.875 | 3.625 | 4.750 | 4.046 | 4.500 | 2.062 | 0.656 | 0.781 | 0.562 |
| 3.500 | 4.000 | 3.750 | 4.875 | 4.171 | 4.625 | 2.062 | 0.656 | 0.781 | 0.562 |
| 3.625 | 4.125 | 3.875 | 5.125 | 4.296 | 4.750 | 2.062 | 0.656 | 0.781 | 0.562 |
| 3.750 | 4.250 | 4.000 | 5.250 | 4.421 | 4.875 | 2.062 | 0.656 | 0.781 | 0.562 |

TYPE 48SC/S48SC

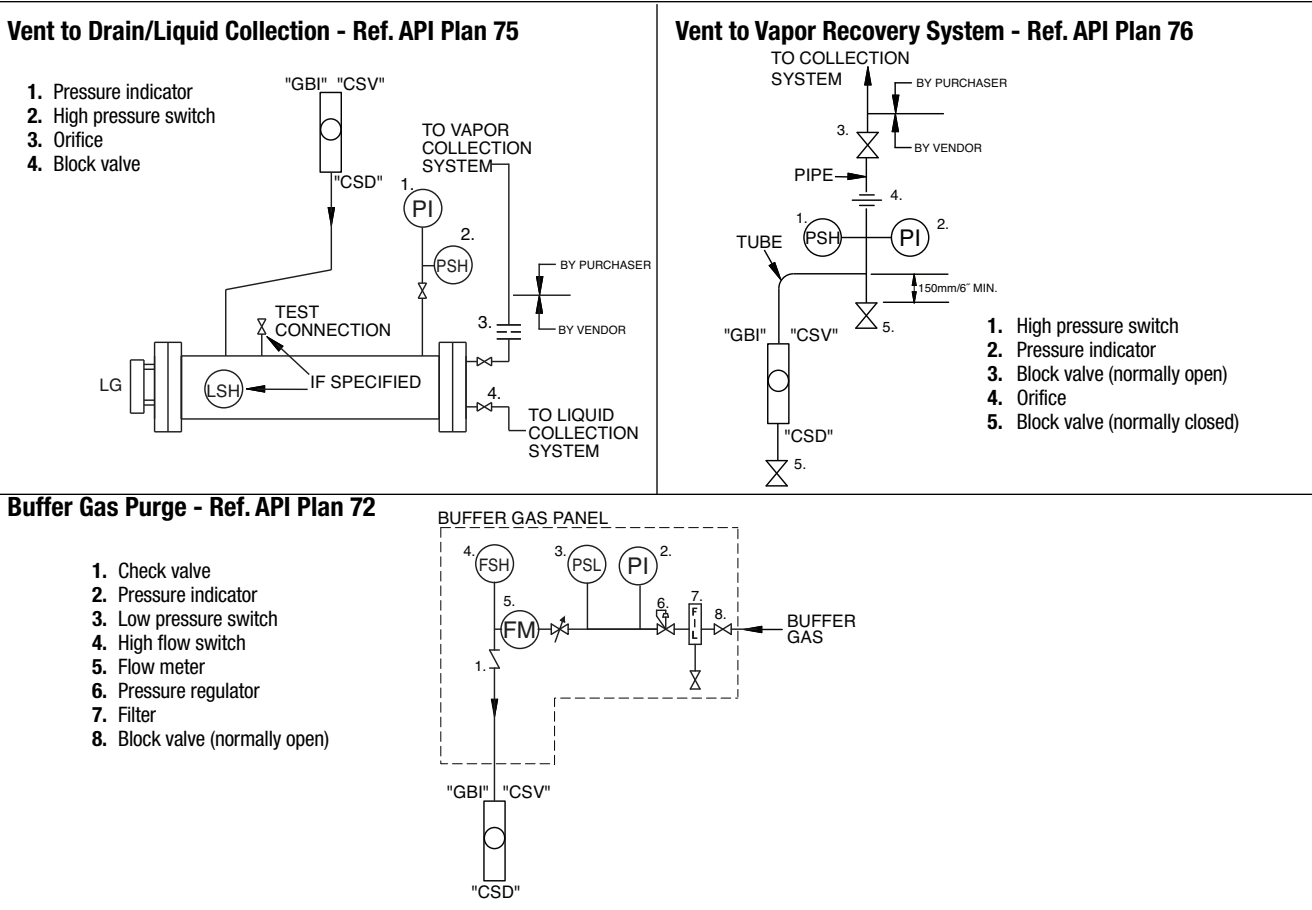
DRY-RUNNING SECONDARY CONTAINMENT SEAL

Type S48SC Dimensional Data (inches)

| Shaft Size | Seal Size (inches) | D1 | D3 | D5 | D7 | L3 | L6 | L8 | L65 |
|------------|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.500 | 1.000 | 0.750 | 1.567 | 1.062 | 1.375 | 1.000 | 0.343 | 0.406 | 0.250 |
| 0.625 | 1.125 | 0.875 | 1.692 | 1.187 | 1.500 | 1.000 | 0.343 | 0.406 | 0.250 |
| 0.750 | 1.250 | 1.000 | 1.880 | 1.312 | 1.625 | 1.000 | 0.375 | 0.437 | 0.250 |
| 0.875 | 1.375 | 1.125 | 2.005 | 1.468 | 1.750 | 1.187 | 0.375 | 0.437 | 0.312 |
| 1.000 | 1.500 | 1.250 | 2.130 | 1.593 | 1.875 | 1.187 | 0.375 | 0.437 | 0.312 |
| 1.125 | 1.625 | 1.375 | 2.380 | 1.703 | 2.000 | 1.187 | 0.375 | 0.437 | 0.312 |
| 1.250 | 1.750 | 1.500 | 2.505 | 1.812 | 2.125 | 1.187 | 0.375 | 0.437 | 0.312 |
| 1.375 | 1.875 | 1.625 | 2.630 | 1.968 | 2.375 | 1.187 | 0.437 | 0.500 | 0.312 |
| 1.500 | 2.000 | 1.750 | 2.755 | 2.093 | 2.500 | 1.187 | 0.437 | 0.500 | 0.312 |
| 1.625 | 2.125 | 1.875 | 3.005 | 2.218 | 2.625 | 1.312 | 0.437 | 0.500 | 0.406 |
| 1.750 | 2.250 | 2.000 | 3.130 | 2.343 | 2.750 | 1.312 | 0.437 | 0.500 | 0.406 |
| 1.875 | 2.375 | 2.125 | 3.255 | 2.500 | 3.000 | 1.312 | 0.500 | 0.562 | 0.406 |
| 2.000 | 2.500 | 2.250 | 3.380 | 2.625 | 3.125 | 1.312 | 0.500 | 0.562 | 0.406 |
| 2.125 | 2.625 | 2.375 | 3.505 | 2.750 | 3.250 | 1.312 | 0.500 | 0.562 | 0.406 |
| 2.250 | 2.750 | 2.500 | 3.630 | 2.890 | 3.375 | 1.312 | 0.500 | 0.562 | 0.406 |
| 2.375 | 2.875 | 2.625 | 3.755 | 3.046 | 3.625 | 1.312 | 0.562 | 0.625 | 0.406 |
| 2.500 | 3.000 | 2.750 | 3.880 | 3.171 | 3.500 | 1.312 | 0.562 | 0.625 | 0.406 |
| 2.625 | 3.125 | 2.875 | 4.005 | 3.296 | 3.750 | 1.312 | 0.562 | 0.625 | 0.406 |
| 2.750 | 3.250 | 3.000 | 4.130 | 3.437 | 3.875 | 1.312 | 0.562 | 0.625 | 0.406 |
| 2.875 | 3.375 | 3.125 | 4.255 | 3.546 | 4.000 | 1.312 | 0.656 | 0.781 | 0.406 |
| 3.000 | 3.500 | 3.250 | 4.380 | 3.671 | 4.125 | 1.312 | 0.656 | 0.781 | 0.406 |
| 3.125 | 3.625 | 3.375 | 4.505 | 3.796 | 4.250 | 1.312 | 0.656 | 0.781 | 0.406 |
| 3.250 | 3.750 | 3.500 | 4.630 | 3.921 | 4.375 | 1.312 | 0.656 | 0.781 | 0.406 |
| 3.375 | 3.875 | 3.625 | 4.755 | 4.046 | 4.500 | 1.312 | 0.656 | 0.781 | 0.406 |
| 3.500 | 4.000 | 3.750 | 4.880 | 4.171 | 4.625 | 1.312 | 0.656 | 0.781 | 0.406 |

Piping Schematics

The following piping schematics illustrate how auxiliary piping is connected to the outboard secondary containment seal gland connections.



TYPE 48SC/S48SC

DRY-RUNNING SECONDARY CONTAINMENT SEAL

Technical Specification

Criteria for Installation

| Shaft/Sleeve | Limits |
|------------------------------------|-------------------|
| Surface Finish | 32 Ra |
| Ovality/Out of Roundness (Shaft) | 0.051mm/0.002" |
| End Play/ Axial Float Allowance | 0.78mm/0.031" TIR |
| Shaft Runout | 0.05mm/0.002" TIR |
| Shaft Squareness to Housing | 0.13mm/0.005" TIR |

Materials of Construction

| SEAL COMPONENTS | MATERIALS | |
|---|---------------------------------|--------------------------------------|
| Description | Standard | Options |
| Face/Primary Ring | Carbon* | — |
| Seat/Mating Ring | Reaction Bonded Silicon Carbide | Alpha SiC |
| O-Ring | Fluoroelastomer | Buna-N EPDM Perfluoroelastomer |
| Disc Set Screws Retainer Snap Ring | 316 Stainless Steel | Monel® Alloy C-276 (UNS N10276) |
| Springs | 316 Stainless Steel | Monel Alloy C-276 (UNS N10276) |

*proprietary carbon grade

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