

YARWAY TYPE 721 UNIBODY SERIES THERMODYNAMIC DISK STEAM TRAPS

DATASHEET

In-line repairable thermodynamic disk steam trap designed for durability and ease-of-maintenance in primarily drip and tracing applications.



721

TECHNICAL DATA

| | |
|---------------------|---|
| Technology: | Thermodynamic Disk |
| Size: | 3/8", 1/2", 3/4", 1" (DN 10, 15, 20, 25) |
| Maximum Temperature | |
| Rating: | 750°F (400°C) |
| Operating Pressure: | Type 721 - 4 to 450 psig (0.3 to 31 bar) Type 721HP - 150 to 650 psig (10.3 to 45 bar) |
| Back pressure: | Up to 80% of inlet pressure, psia/bar |
| Capacity: | Up to 3500 lb/hr (1587.5 kg/hr) |
| Connections: | NPT, SWE |
| Materials: | Low carbon (0.15% max.) chrome moly body and stainless steel trim |

FEATURES

- Simple, In-line repair using quick change capsule
- Freeze proof
- Unaffected by water hammer
- Open failure mode prevents water hammer in steam distribution mains
- Easy to check cyclic operation
- Fail open design
- Self-draining (vertical mount)
- Energy efficient subcooled discharge
- Hardened stainless steel valve body and seat
- Single moving part
- Withstand superheat

GENERAL APPLICATION

The Yarway Type 721 steam trap is the ideal choice for light load applications such as drip and tracing in steam. It can also be used in certain light process applications.

The Yarway Type 721 thermodynamic disk steam trap is in the Yarway Unibody Series which is uniquely designed for fast, in-line trap renewal. The working portion of the trap is contained in easily installed stainless steel capsules that thread into the Unibody. Changing the capsule only takes a couple minutes and results in a brand new steam trap while the body, made of chrome moly for excellent erosion and corrosion resistance, remains in-line as a permanent holder.

In addition to fast renewals of like-for-like steam traps, changes in trap technology or capacity are also accomplished by simply replacing the capsule. The Yarway Unibody Series includes three different trap technologies and thirteen different capacity options across these technologies for changing process conditions and minimizing inventory.

Applicable codes and standards

Pressure rating per ANSI/FCI-69-1.
Performance testing per ANSI/ASME PTC-39.1.
End connections per ANSI B1.20.1 for threaded ends, per ANSI B16.11 for socket-welding ends.

OPTIONS

Universal Connector

- UC option when mounting the Universal Connector body in a top-entry orientation
- UC-A option when mounting the Universal Connector body in a side-entry orientation
- Contains body

Universal Connector Quick Change Kit

- Used for upgrading an already installed Universal Connector body to the Yarway Type 721. UC or UC-A options available. Future renewals require only the capsule.
- Does not contain body. Contains an adaptor for the Universal Connector to the Yarway Unibody, a Type 721 capsule, two bolts and gasket.

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HOW IT WORKS

Disk traps utilize the heat energy in hot condensate and the kinetic energy in steam to open and close the valve disk. They are phase detectors, sensing the difference between liquid and gas/vapor.

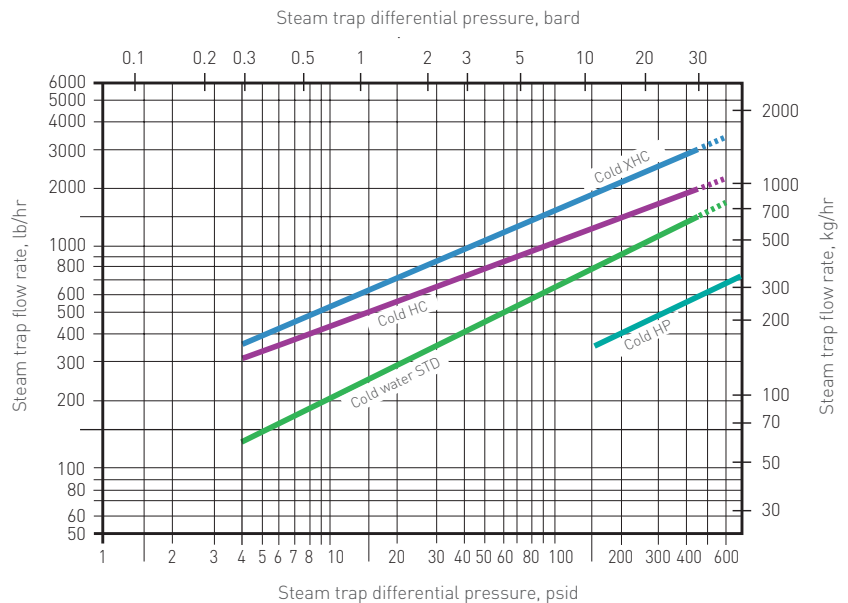
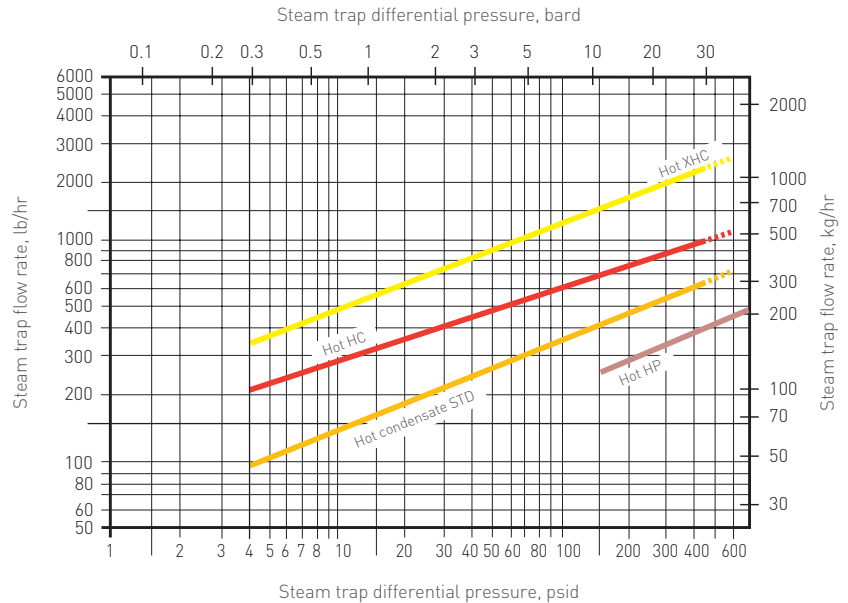
During initial start-up, pressure created by cold condensate pushes the valve disk off the seating surface. This uncovers the inlet and outlet ports, allowing discharge. As condensate reaches the inlet port, it experiences a decrease in pressure and an increase in velocity. If the condensate is very close to steam temperature, the lower pressure will cause it to flash into steam. The resulting high velocity flow beneath the disc, with its attendant localized pressure reduction under the disc, causes it to snap shut. A key feature is the closing on flashed condensate, maintaining a water seal and preventing steam loss.

Flow through the trap then stops until the pressure in the chamber over the disc decays sufficiently to allow the inlet pressure to force the disc off its seat. Condensate then flows through the trap until once again it reaches such a velocity and lowering of pressure that flashing occurs and the disc can snap shut. This cycle continuously repeats itself.

HOW TO SIZE

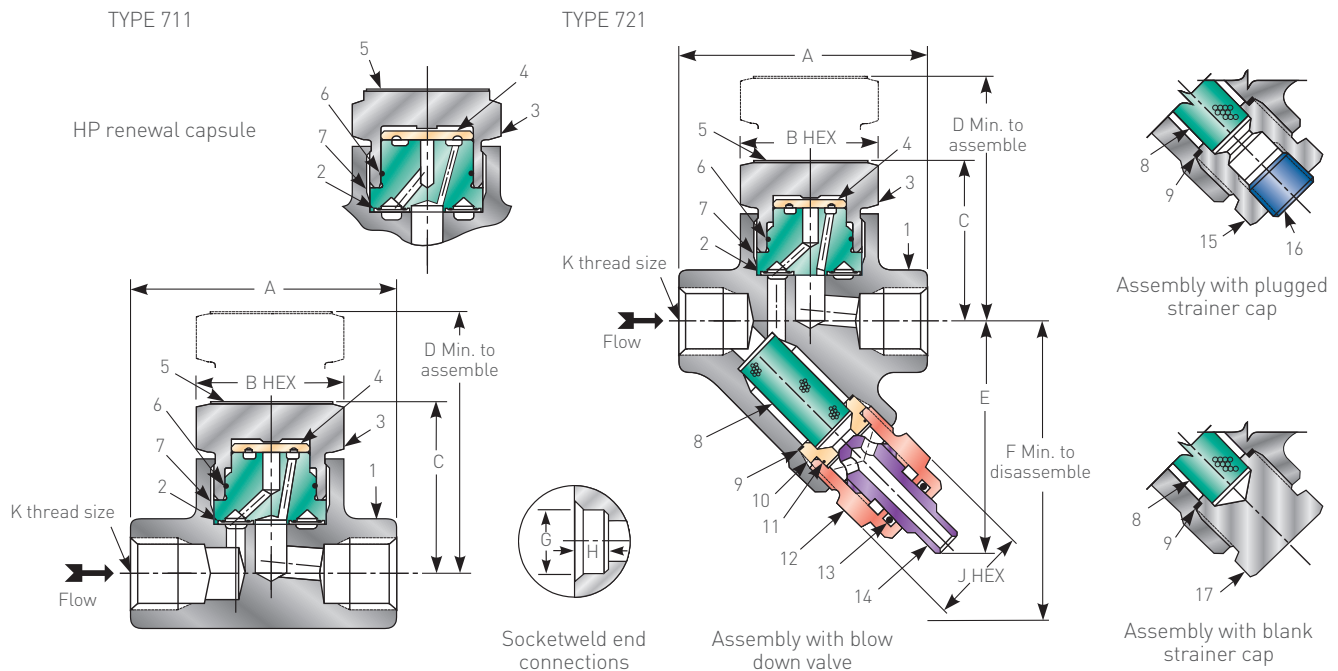
1. Determine maximum temperature and pressure of application and verify with trap.
2. Determine operating conditions - Temperature, Inlet Pressure, Outlet Pressure, and Condensate Load (including factor of safety).
3. Determine the condensate load at the operating differential pressure is below what trap can handle. The SC, HC and XHC capsules perform best when applied in service up to 450 psig / 31 bar. The HP capsule has been designed for 150 to 650 psig / 10.3 to 44.8 bar service to handle low load superheat service conditions.
4. Verify trap can handle back pressures including back pressure from installation.

CONDENSATE CAPACITY NEAR STEAM TEMPERATURE (for steam trap sizing)



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PARTS AND MATERIALS

| Item | Part | Material |
|-------------------|---|-------------------|
| 1 | Body | F11 Chrome moly |
| 2 ^[1] | Seat gasket | Clad non-asbestos |
| 3 ^[1] | Bonnet | Stainless steel |
| 4 ^[1] | Disk | Stainless steel |
| 5 ^[1] | Nameplate | Stainless steel |
| 6 ^[1] | Retaining ring | Stainless steel |
| 7 ^[1] | Seat | Stainless steel |
| 8 | Screen 0.033 in. (0.84 mm) perforations | Stainless steel |
| 9 ^[2] | Cap gasket | Monel® |
| 10 ^[2] | Blowdown seat | Stainless steel |
| 11 ^[2] | Retaining ring | Stainless steel |
| 12 ^[2] | Blowdown body | Stainless steel |
| 13 ^[2] | O-ring | Silicone |
| 14 ^[2] | Blowdown valve | Stainless steel |
| 15 ^[3] | Strainer cap | Stainless steel |
| 16 ^[3] | Plug 3/8 NPT | Carbon steel |
| 17 ^[3] | Blank strainer cap | Stainless steel |

NOTES

1. Part of factory assembled renewal capsule.
2. Factory assembled blowdown valve renewal kit.
3. Optional strainer caps.

DIMENSIONS AND WEIGHTS

| Trap size in. (DN) | Nominal dimensions, in. (mm) | | | | | | | | | | Weight lb. (kg) | |
|--------------------|------------------------------|------------|--------------|--------------|------------|---------------|--------------|------------|-------------|---------|-----------------|-------------|
| | A | B | C | D | E | F | G | H | J | K | Type 711 | Type 721 |
| 3/8 [10] | 3 5/32 [80] | 1 1/2 [38] | 1 15/16 [49] | 2 11/16 [68] | 2 7/8 [73] | 3 15/16 [100] | 0.695 [17.6] | 3/8 [9.5] | 1 1/16 [27] | 3/8 NPT | 1 1/2 [0.7] | 2 1/4 [1.1] |
| 1/2 [15] | 3 5/32 [80] | 1 1/2 [38] | 1 15/16 [49] | 2 11/16 [68] | 2 7/8 [73] | 3 15/16 [100] | 0.860 [21.8] | 3/8 [9.5] | 1 1/16 [27] | 1/2 NPT | 1 1/2 [0.7] | 2 1/4 [1.1] |
| 3/4 [20] | 3 35/64 [90] | 1 1/2 [38] | 1 15/16 [49] | 2 11/16 [68] | 3 1/4 [83] | 4 5/16 [110] | 1.070 [27.2] | 1/2 [12.7] | 1 3/16 [30] | 3/4 NPT | 2 [0.9] | 2 3/4 [1.3] |
| 1 [25] | 3 15/16 [100] | 1 1/2 [38] | 1 15/16 [49] | 2 11/16 [68] | 3 3/8 [86] | 4 7/16 [113] | 1.335 [33.9] | 1/2 [12.7] | 1 3/16 [30] | 1 NPT | 2 1/4 [1.1] | 3 1/2 [1.6] |

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ORDERING GUIDE

Available Configurations (select one)

- o Type 721 - includes strainer and blowdown valve
- o Type 711 - no strainer or blowdown valve

Capsule Type (select one)

- o SC capsule
- o HP capsule
- o HC capsule
- o XHC capsule

Body Sizes (select one)

- o NPS 3/8 (DN 10) (SC and HP capsules only)
- o NPS 1/2 (DN 15) (SC, HC and HP capsules only)
- o NPS 3/4 (DN 20)
- o NPS 1 (DN 25)

End Connection (select one)

- o NPT
- o SWE
- o Other _____

Options

- o UC version including body (NPS 1/2, 3/4 and 1 only)
- o UC Quick Change Kit (same as above but without body)
- o UC-A version including body (NPS 1/2, 3/4 and 1 only)
- o UC-A Quick Change Kit (same as above but without body)

Trap Station Accessories

- o Stop Valve - Inlet
- o Strainer
- o Sight Flow Indicator
- o Check Valve
- o Stop Valve - Test
- o Stop Valve - Outlet
- o Stop Valve - Drip Pocket
- o Stop Valve - Bypass
- o Wireless steam trap monitoring

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