Pure Performance
For Steam Mains and Tracers
Redefining the Disc Trap Concept

Minimize Disc Trap Life Cycle Cost by

1. Long Service Life
   Air jacketing for resistance to environmental conditions, and hardened valve trim to reduce wear and promote reliable operation.

2. Energy Conservation
   The mirror-polished, lapped disc provides tight sealing even under severe superheat conditions, effectively minimizing steam loss.

3. Increased Productivity
   Initial Air is automatically discharged by the thermostatic air venting design*, significantly reducing start-up time.
   * All models except HR150A, HR260A (due to superheat temperature limits) P46S, P21S ver.C

4. Easy Maintenance
   The replacement module design* enables quick inline repair of normal wear parts, reducing maintenance costs.
   * All models except P46S, P21S ver.C

Life Cycle Cost for steam trap management includes multiple factors such as:
- Purchasing
- Installation
- Maintenance
- Steam loss
Are you looking for Improved Performance?

Disc traps are valued for their compact size and wide pressure range, and are often chosen as an affordable product for condensate discharge.

But have you ever wondered how to...

... minimize chattering?

Disc traps can be susceptible to dirt, environmental conditions and no-load actuation, causing chattering which accelerates wear and shortens service life.

... improve steam sealing performance?

In order to prevent air binding, some valve discs have a rough-ground surface or machined leakage path. These actions reduce sealing and increase steam loss, and can eventually lead to a costly blowing condition.

... shorten start-up time?

Disc traps can air bind, which prolongs start-up time by preventing the discharge of condensate.

... reduce maintenance costs?

When disc traps fail, a common practice is to replace the entire trap, not just the internals. Short service life results in high replacement and maintenance costs.
Disc traps are highly versatile, yet typical models can be prone to air binding, short service life, and costly steam loss. TLV has resolved these drawbacks with the PowerDyne Series, available in a full pressure range from near atmosphere up to supercritical pressure (26 MPaG).

**Air Jacketing**

In traps with a single-layer cap, adverse weather conditions and radiant heat loss can result in steam loss from rapid-cycling actuation. The TLV PowerDyne series is equipped with an air-insulated jacket, giving resistance to environmental effects and minimizing unnecessary operation and steam loss.

**Mirror-polished Sealing Surfaces**

Some valve discs include an air leak pathway or rough finish to prevent air binding. However, this can result in greater surface wear and steam leakage due to no-load actuation. The TLV PowerDyne series solves this problem: the bimetal air vent ring* eliminates air binding and allows the hardened sealing surfaces to be mirror-polished, resulting in a tight seal that saves steam.

**Bimetal Air Vent Ring**

To reach full operating efficiency, initial air and cold condensate must be purged from steam lines quickly. PowerDyne’s bimetal air vent ring* quickly and efficiently vents start-up air without binding, eliminating the need for manual blowdown.

**Replaceable Module**

The replaceable module* facilitates inline replacement of normal wear parts, such as the valve disc and valve seat.
How they operate

1. At start-up, the bimetal air vent ring is contracted, lifting the disc off the valve seat and allowing rapid discharge of air and cold condensate.

2. As temperature in the trap rises, the bimetal expands and releases the disc. The disc is forced downward by the low-pressure area created by the rapid flow of flashing condensate/steam below the disc, and the simultaneous high pressure in the pressure chamber above it. An air jacket insulates the cap's pressure chamber from the radiant heat loss that could cause no-load actuation.

3. Eventually, as condensate enters the trap and the steam pressure in the pressure chamber lowers, the inlet pressure pushes the disc up and enables the discharge of condensate. Entering flashing condensate/steam then closes the trap, as in step 2.
### PowerDyne Series Lineup

#### up to 26 MPaG

**Compact trap design includes built-in Y-strainer**

P21S ver.C is designed for use in copper tracing applications.

<table>
<thead>
<tr>
<th>Model (Connection)</th>
<th>Appearance (Construction)</th>
<th>Operating Pressure Range (MPaG)</th>
<th>Max. Operating Temperature (°C)</th>
<th>Body Material</th>
<th>S</th>
<th>W</th>
<th>F</th>
<th>Air Jacketing</th>
<th>Thermostatic Air Venting</th>
<th>Replaceable Module</th>
<th>Built-in Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>P21S ver.C (S)*</td>
<td></td>
<td>0.025(0.04) - 2.1</td>
<td>425</td>
<td>Cast Stainless Steel</td>
<td>☑️</td>
<td></td>
<td></td>
<td></td>
<td>☑️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P46S (S)*</td>
<td></td>
<td>0.03 - 4.6**</td>
<td>425</td>
<td>Cast Stainless Steel</td>
<td>☑️</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>☑️</td>
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**Wide range of pressure and discharge capacities**

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<th>Appearance (Construction)</th>
<th>Operating Pressure Range (MPaG)</th>
<th>Max. Operating Temperature (°C)</th>
<th>Body Material</th>
<th>Max. Discharge Capacity (kg/h)</th>
<th>Air Jacketing</th>
<th>Thermostatic Air Venting</th>
<th>Replaceable Module</th>
<th>Built-in Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>P46SRN (S,W,F)*</td>
<td></td>
<td>0.03 - 4.6</td>
<td>425</td>
<td>Carbon Steel or Stainless Steel***</td>
<td>740</td>
<td>☑️</td>
<td></td>
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<tr>
<td>P46SRM (S,W,F)*</td>
<td></td>
<td>0.03 - 4.6</td>
<td>425</td>
<td>Carbon Steel or Stainless Steel***</td>
<td>740</td>
<td>☑️</td>
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<tr>
<td>P46SRW (S,W,F)*</td>
<td></td>
<td>0.03 - 6.5</td>
<td>425</td>
<td>Cast Steel</td>
<td>2520</td>
<td>☑️</td>
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**Universal flange allows easy inline trap unit replacement**

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<th>Max. Operating Temperature (°C)</th>
<th>Body Material</th>
<th>Max. Discharge Capacity (kg/h)</th>
<th>Air Jacketing</th>
<th>Thermostatic Air Venting</th>
<th>Replaceable Module</th>
<th>Built-in Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP46UC (S,W,F)*</td>
<td></td>
<td>0.03 - 4.6</td>
<td>425</td>
<td>Stainless Steel</td>
<td>740</td>
<td>☑️</td>
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**Ideal for use on high-temperature/high-pressure steam mains**

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<tr>
<td>HR80A (F,W)*</td>
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<td>0.8 - 8.0</td>
<td>475</td>
<td>Cro-Mo Alloy Steel</td>
<td>190</td>
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<tr>
<td>HR150A (F,W)*</td>
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<td>1.6 - 15.0</td>
<td>550</td>
<td>Cro-Mo Alloy Steel</td>
<td>220</td>
<td>☑️</td>
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<tr>
<td>HR260A (W)*</td>
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<td>1.6 - 26.0</td>
<td>230</td>
<td>Cro-Mo Alloy Steel</td>
<td>230</td>
<td>☑️</td>
<td></td>
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</tbody>
</table>

* Letters in brackets show pipe connections available: S = screwed, W = socket welded, F = flanged.

** For best performance over extended periods, it is recommended that the trap be operated at or below 2.1 MPaG.

*** Except for flanged models.

Full product details (sizes, pressures, capacities and materials) are included in the individual specification data sheets (SDS).

To avoid abnormal operation, accidents or serious injury, DO NOT use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.