

Technical Data Sheet

Quench Vent for MRI

SWQV

Product Line

SWQV - Quench Vent for MRI



Applications

Stainless steel, factory-built exhaust system designed to quickly expel a large volume of Helium gas resulting from MRI quench.



Purpose

MRI machines use liquid helium to keep the magnets cool. During an emergency shut down, the magnets heat up and cause the liquid helium to boil. The expanding gas erupts from the system and into the quench vent where it barrels through the pipe to the exterior discharge point.

The Quench Vent system must be capable of venting the large volume of gas (generated at the approximated expansion ratio of 1:700 as it changes from liquid to gas) and the drastic shift in temperature from that of liquid helium (-452.2 °F) to ambient within seconds. The exhaust system is critical for the safe operation of the magnet.

The Quench vent exhaust assembly must be non-magnetic stainless steel, such as type 304. Stainless steel bellows or flexible sections are provided according to specifications to compensate for thermal expansion and contraction. The weight of the vent system must be supported to the building. Support guides maintain proper alignment of the system during thermal expansion and contraction.

Jeremias will provide calculations that meet all requirements for the design and pressure drop according to the specifications provided.

Classifications

Temperature	- 452°F (-269°C)
Pressure	8.1 PSI (225" WC)
Anchor Plate strength	8,500 lbs.

Construction

- All stainless steel construction
- 0.035" thick (20 gauge) ASTM 304 stainless steel vent
- All supports and accessories are ASTM 304 stainless steel

Features

- Limited Lifetime Warranty
- Conical high-pressure joints
- Option to reinforce joints with KL Clamps, or field weld
- Cut length available for maximum field flexibility
- Lined bellow lengths for thermal contraction and superior flow characteristics
- Smooth flow and known resistance for perfected factory pressure calculations
- Dual anchor plate, multi-gore elbows
- CAD submittals and installation drawings available
- Optional factory 2.25" fiber insulation, Model DWQV+2



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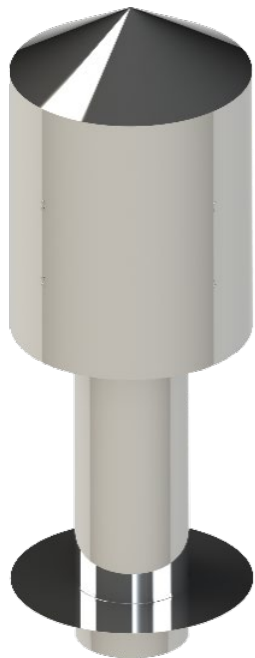
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Product Specifications

SWKL - Single Wall Conical Joining Pipe & Fittings

Diameters	5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 40, 42, 44, 46, & 48
Available Lengths	9", 12", 18", 24", 30", 36", 42", & 48" (or any fixed length between)
Available Fittings	Any elbow, many catalog fittings per each diameter
Available Accessories	All-stainless supports, guides, hangers, and adapters - over 25 accessories per each diameter



Connection / Installation Details

- Conical 2.2" overlapping joint.
- Requires tapping to fully engage.
- Use KL-Paste, a ceramic and mineral oil-based manufacturing paste, to help facilitate an easy engagement.
- Does not use silicone or sealant to make the high-pressure seal.
- Utilizes KL Clamp to ensure no movement during rapid temperature reduction, optional field welded joints
- Custom bolted flange connections or raw end for Ventglas connections to waveguides

Terminations and Custom Parts

- Custom terminations or other parts are available, as some specific terminations or other fittings or parts are required by some specifications.
- Since Helium vented in a Quench is an asphyxiant and an extremely cold gas, the termination must end at a point where access by people is not possible.
- Quench tube planning must only be done by qualified personnel. It is the owner's responsibility to ensure that the quench tube is maintained in an operative state.

