

Fugitive Emissions Control on Reciprocating Compressors



Dan Hannon
Ariel Corporation

Greenhouse Gasses

Pending Regulations for GHG's
Auditing Leakage Amount
Enforcing Leakage Levels?

Greenhouse Gasses Under Scrutiny Include:

Carbon Dioxide

Methane

Nitrous Oxide

Fluorinated gasses

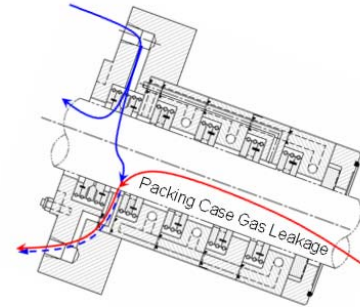


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Fugitive Emissions



Zero Emissions



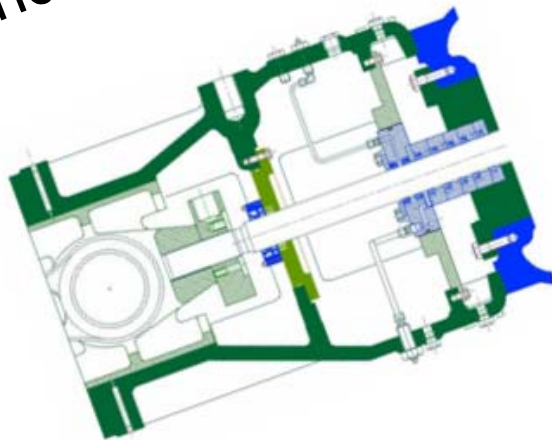
GHG's

Sour Gas

Purge and Vent

Leakless Packing

Lethal Gas



Flare Gas



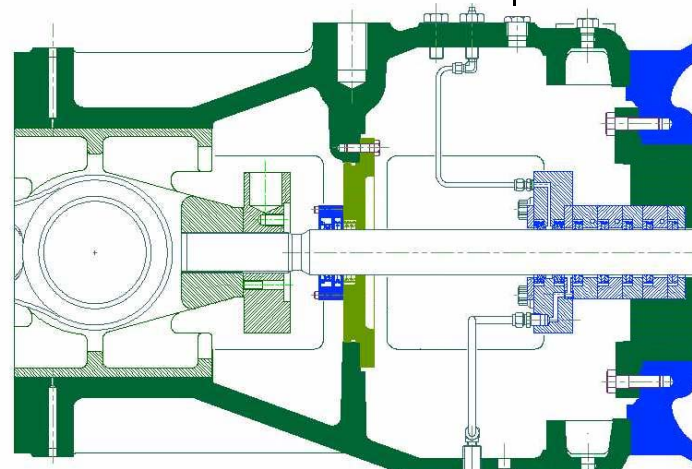
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Venting to Atmosphere

Vent to Atmosphere

Dist Piece Vent

VVCP Vent

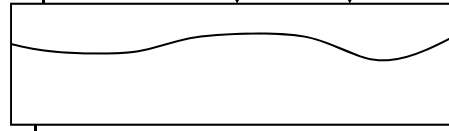
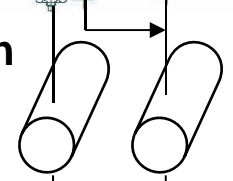
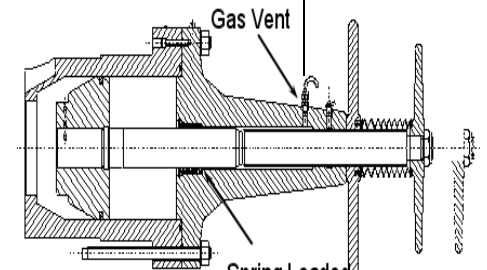


Packing Vent/Drain

Variable Volume Clearance Pocket

Gas Vent

Spring Loaded "V" Packing



Drain

Waste Oil Tank

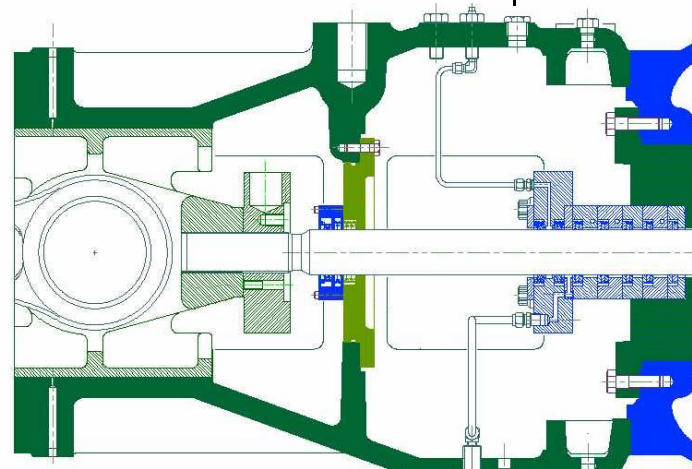


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Venting to Flare

Vent to Flare

Dist Piece Vent



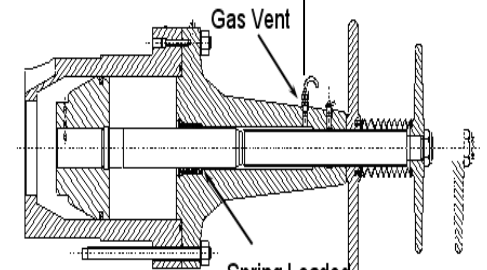
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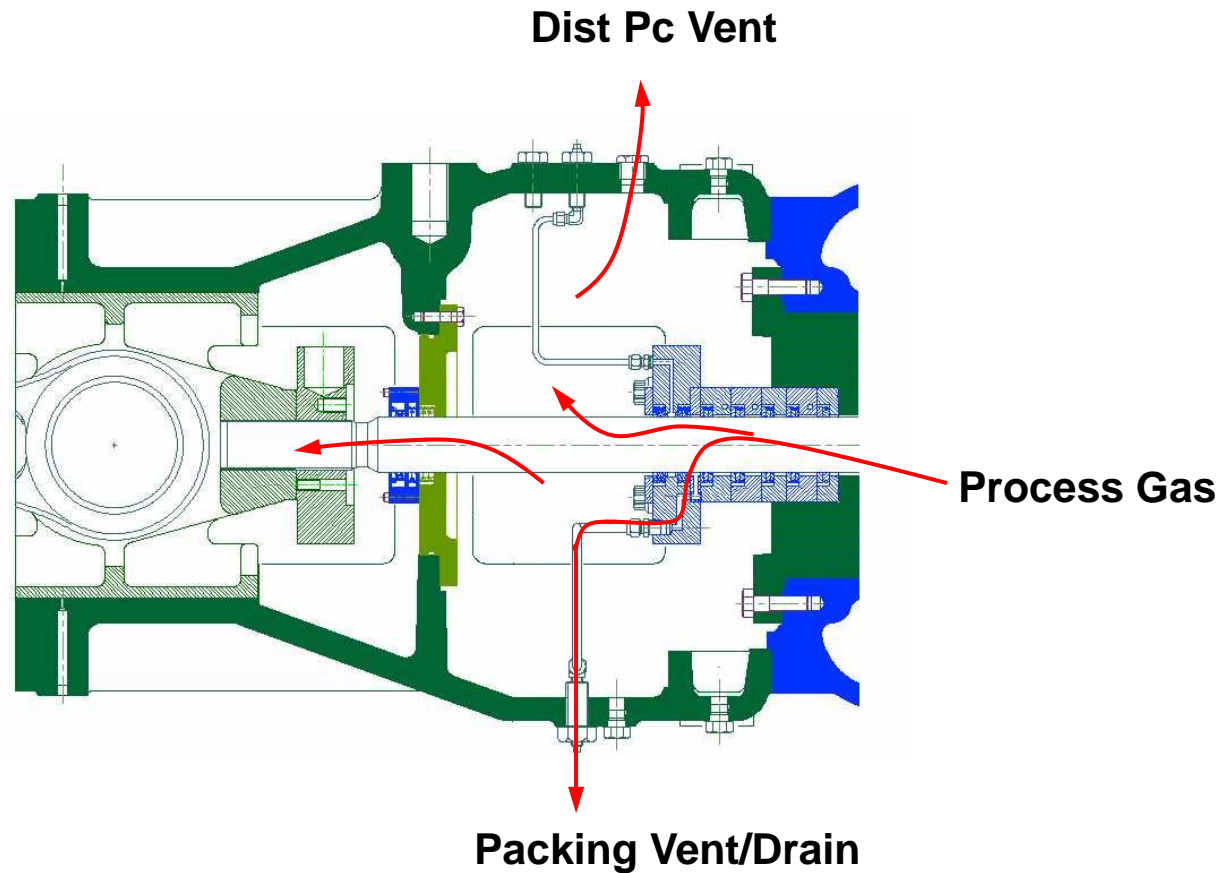
Drain

Waste Oil Tank



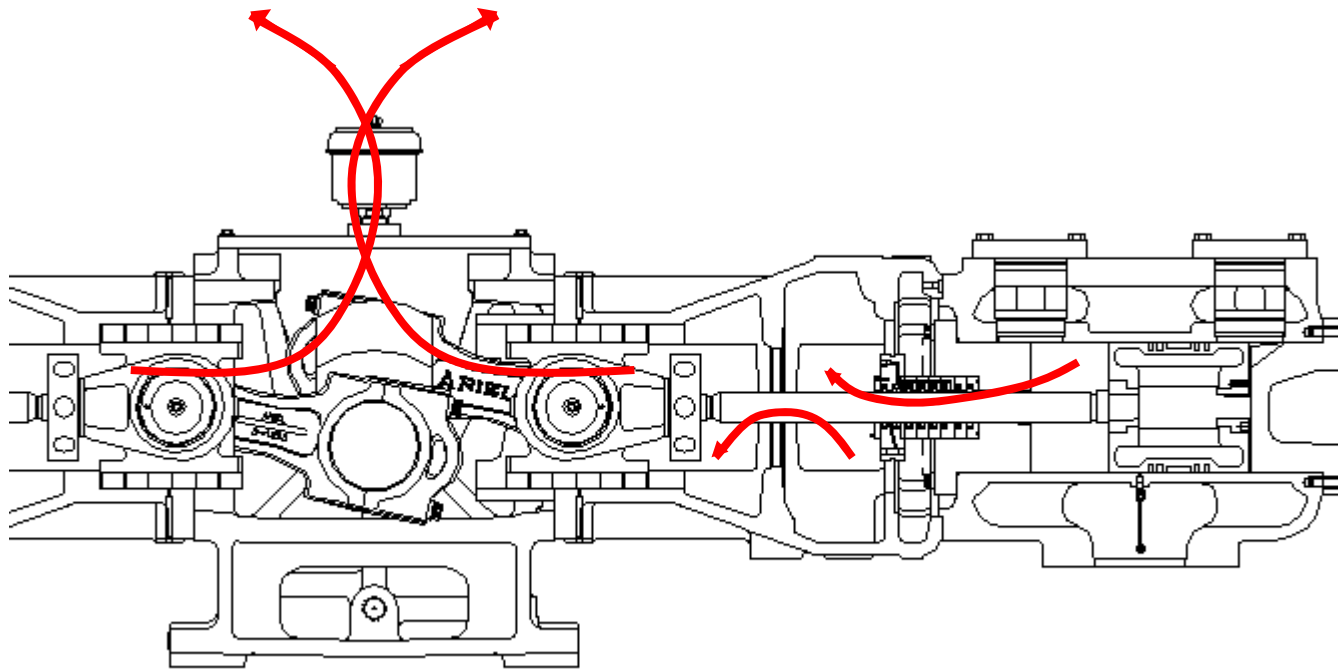
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Long Single Compartment Distance Piece



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Reciprocating Compressor Emissions

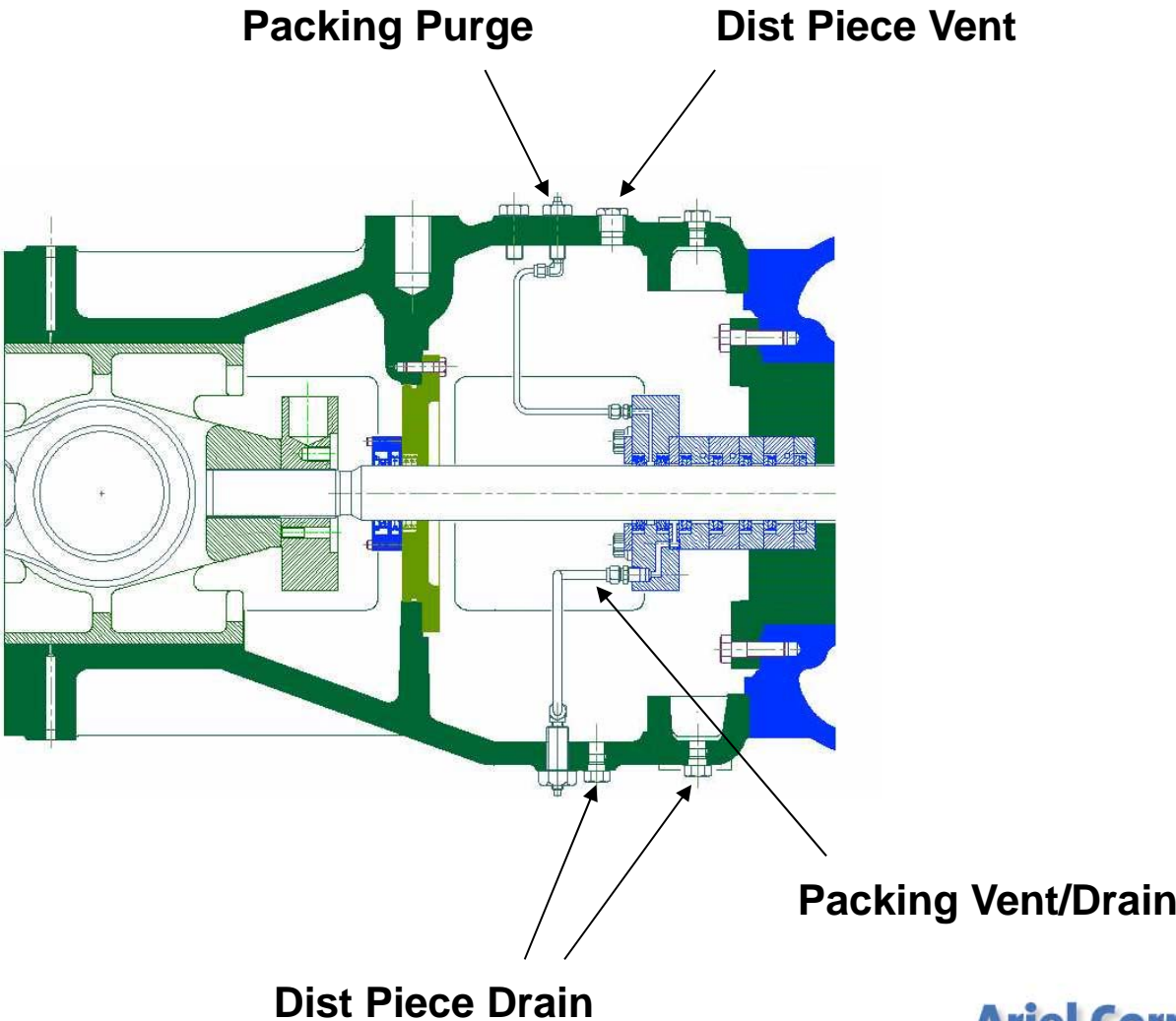


Process gas leaking into the frame WILL leak to the atmosphere

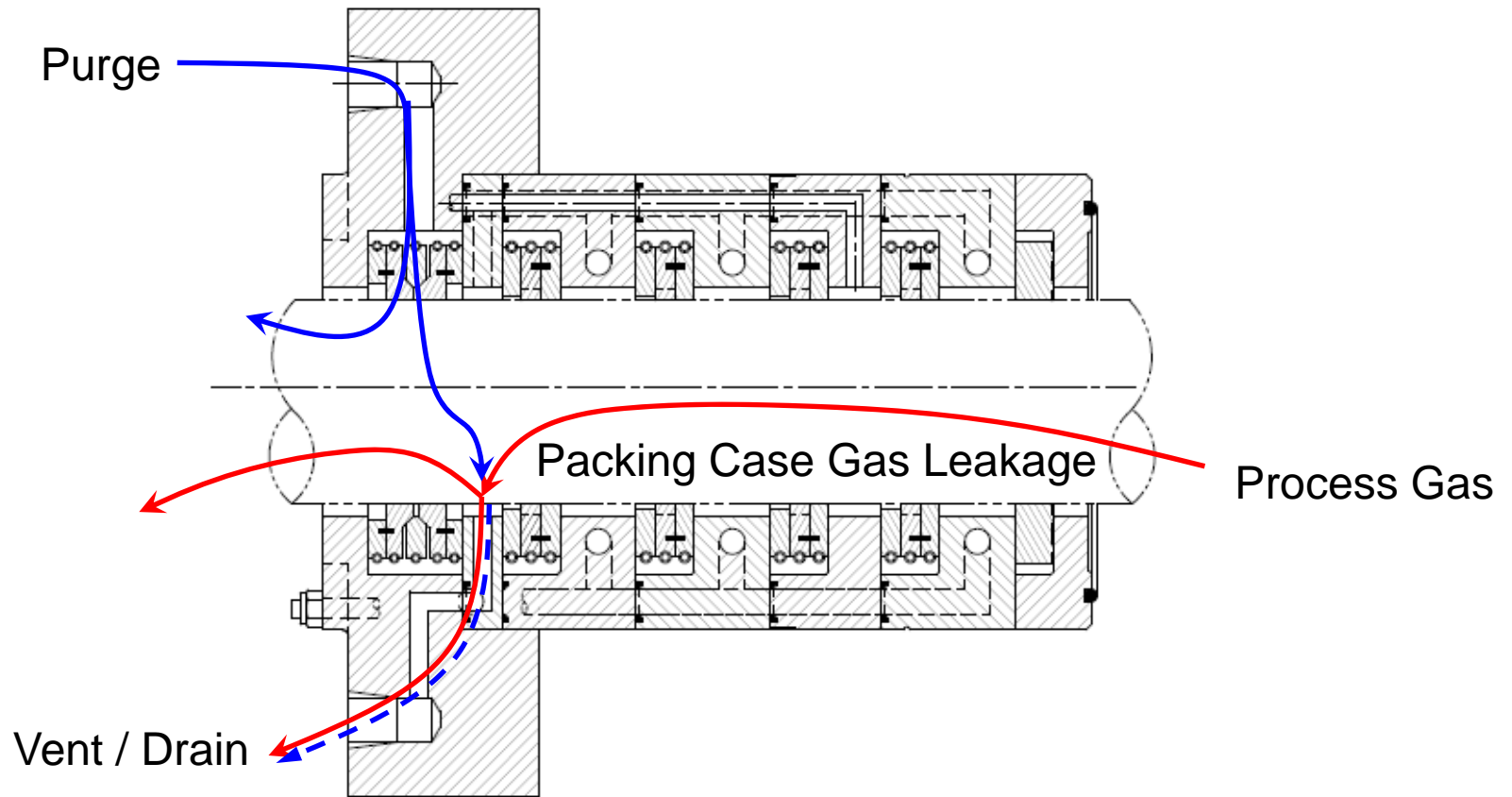


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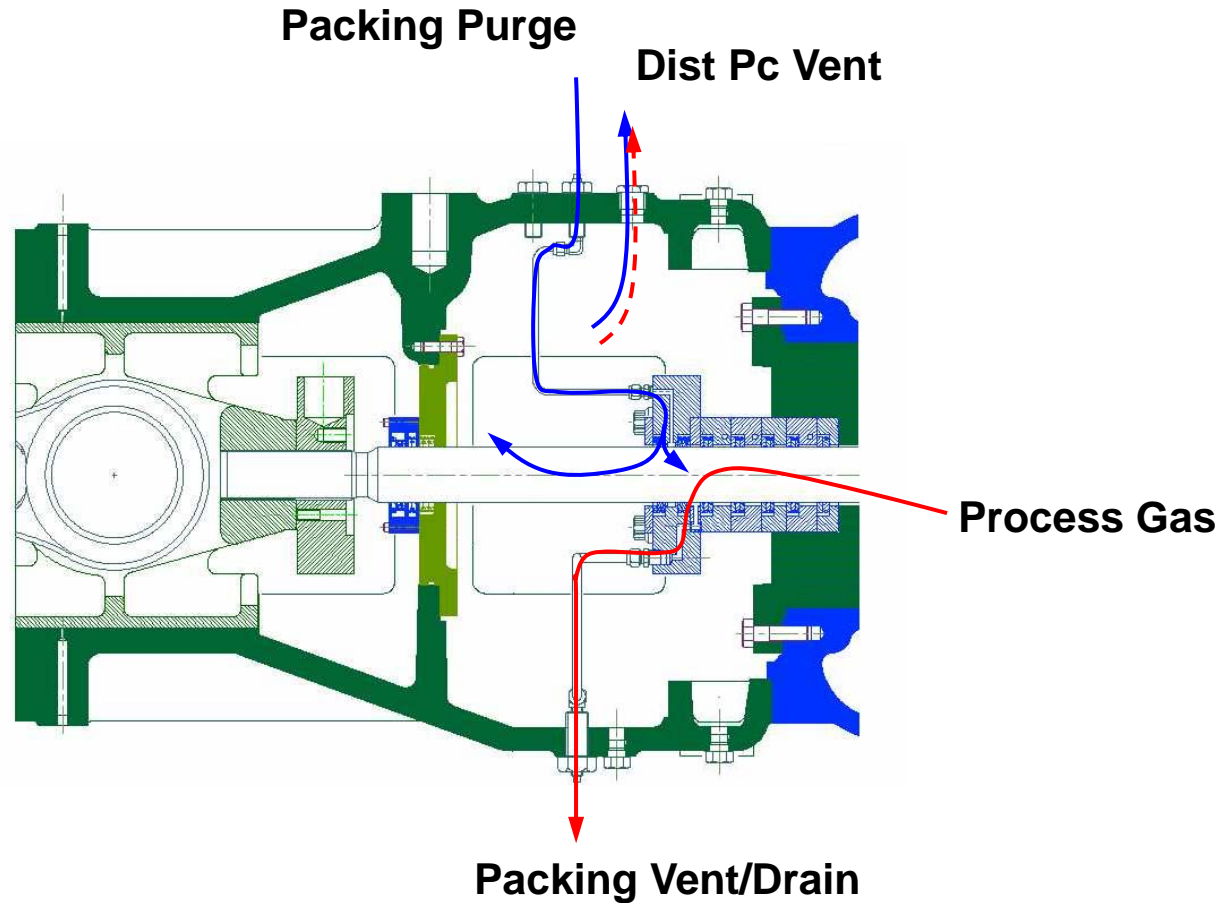
Long Single Compartment Distance Piece



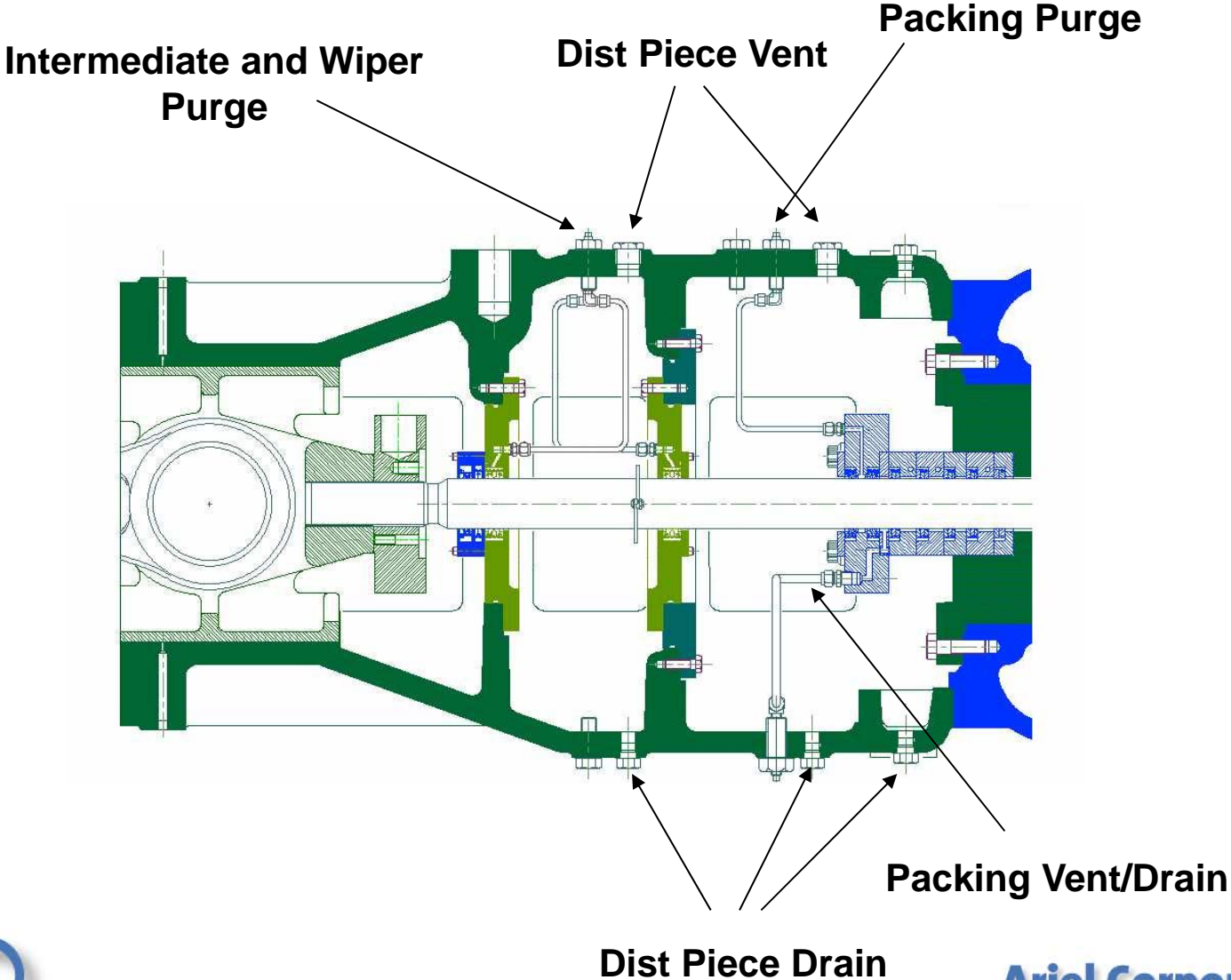
Pressure Packing



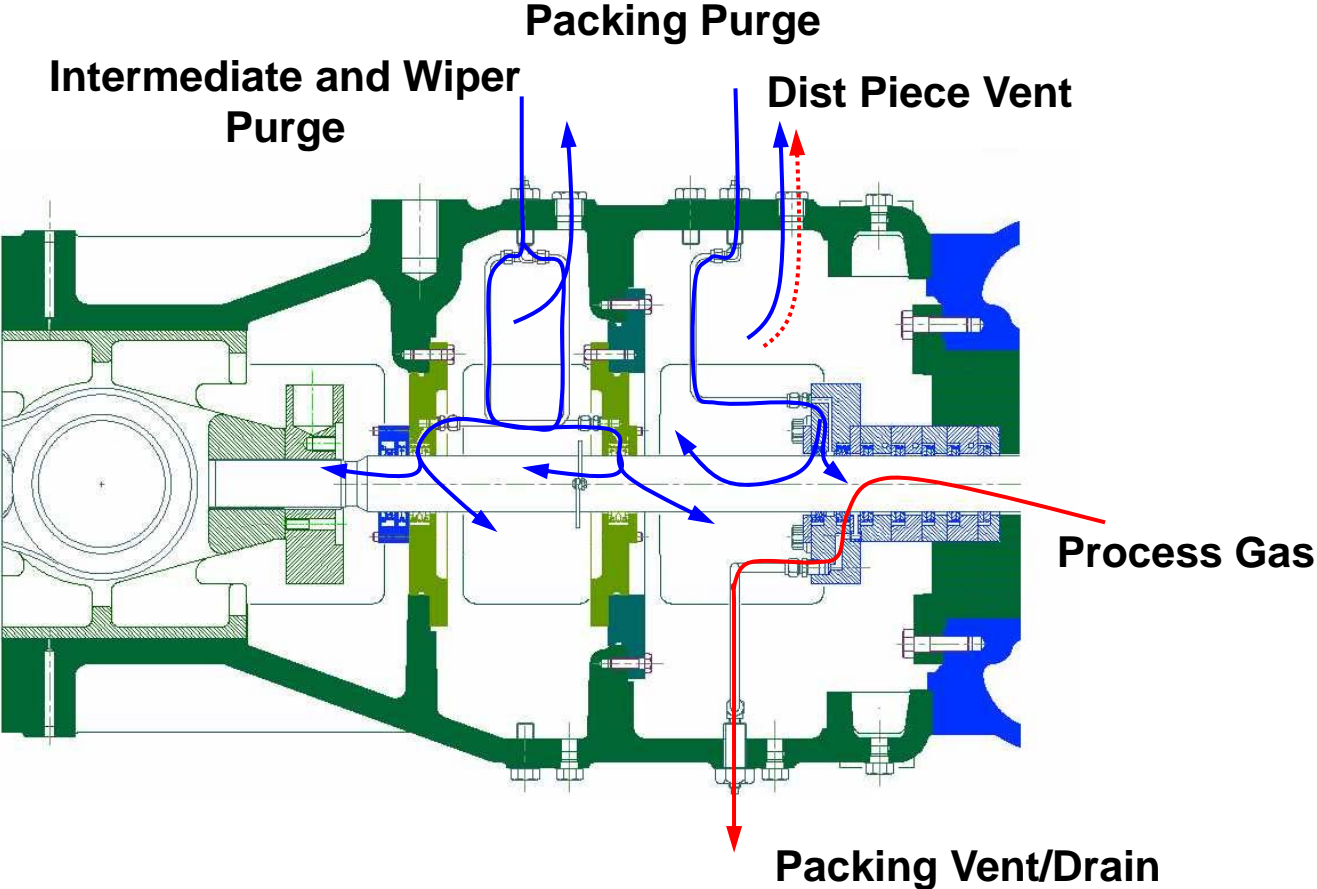
Long Single Compartment Distance Piece



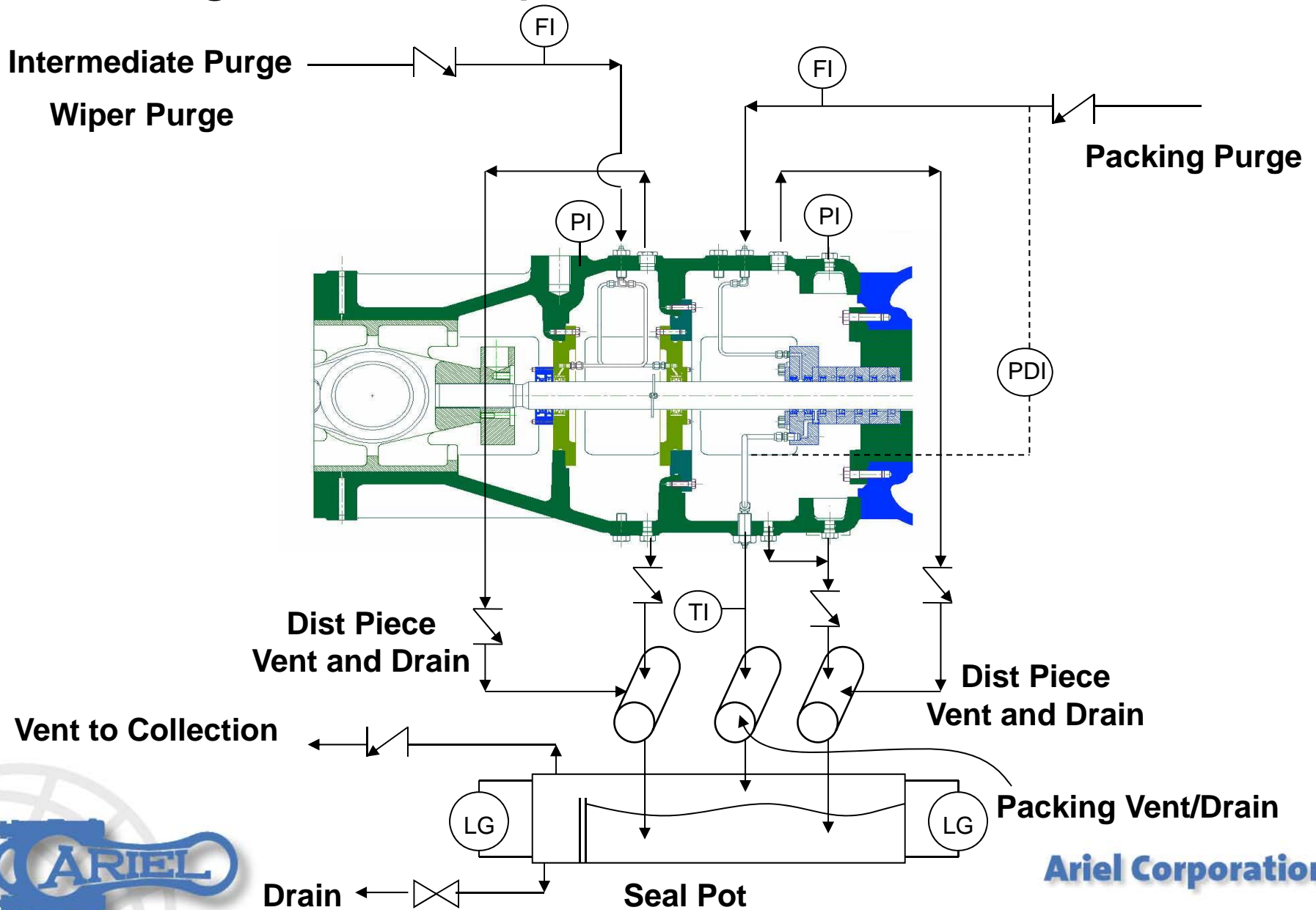
Long Two Compartment Distance Piece



Long Two Compartment Distance Piece



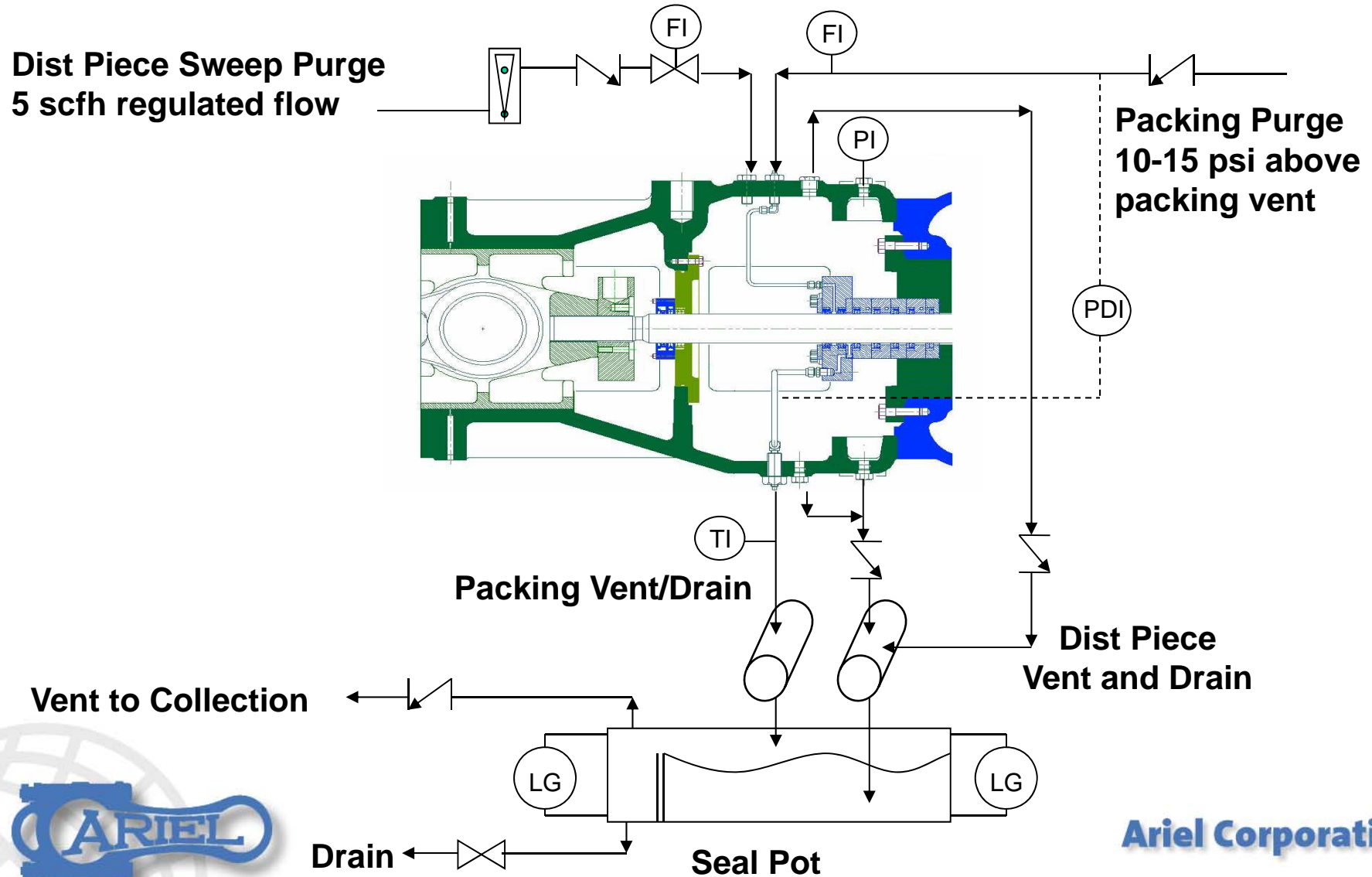
Long Two Compartment Distance Piece



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Long Single Compartment Distance Piece

Sweep Purge for Single Compartment Emissions Retrofits



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Expected Leakage Rates

5 to 10 SCFH per pressure packing case, new

Up to 100 SCFH per packing case, worn

Purge Gas Usage: 5 to 10 SCFH per purge point.

Purge gas pressure should be 5 to 15 psi higher than the vent pressure



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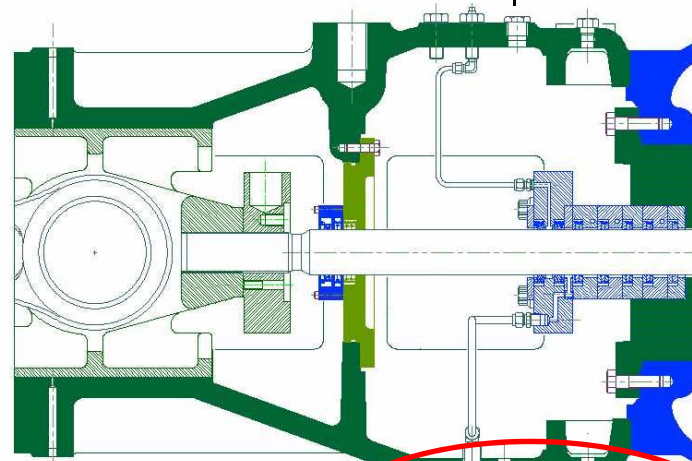
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Venting to Atmosphere

Vent to Atmosphere

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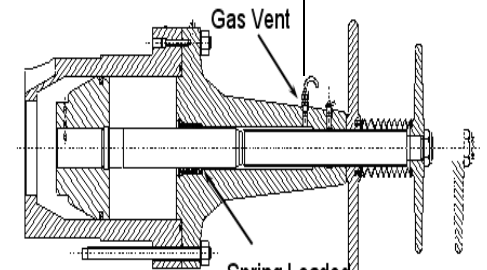
VVCP Vent



Variable Volume Clearance Pocket

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Packing Vent/Drain

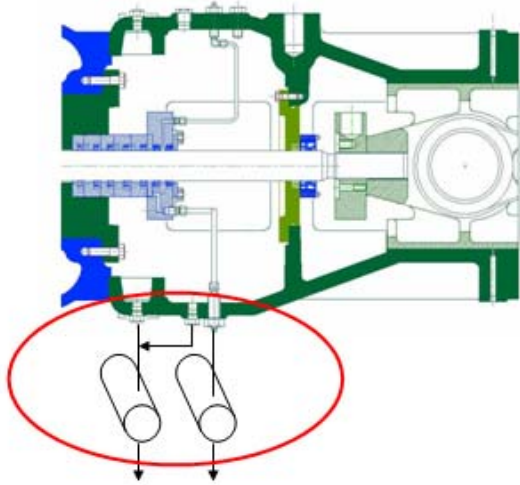


Drain

Waste Oil Tank

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Keeping Packing Vent Separate from Drains



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