

CPI Packing Rings How To Install



Packing Assembly and Installation

The assembly of the packing case and rings provides sealing to prevent the escape of gas along the piston rod. Careful handling of the assembly, observing a few simple precautions and following the instructions or drawings in the operator's manual will prevent damage or loss of compressor efficiency.

Packing Cases

Two methods of installation are used. With either method, the packing case and rings should be disassembled and thoroughly cleaned. Parts should be free of nicks, burrs, scratches, etc. and should be laid out in the order in which they are to be assembled.

Method 1. In some installations, the packing case with rings may be bolted into the stuffing box completely assembled and the rod plunged through the case making provisions to protect the rings by covering the threads with a sleeve. The entering sleeve should have a tapered end to help center the rings. *Caution: Tangent-to-the-rod rings should not be plunged as the tips may be damaged.*

Method 2. Some packing cases must be assembled on a piece by piece basis over the rod end.

Tie rods are provided for aligning oil, vent and coolant passage holes, as well as holding the assembly together during installation. Two or three tie rods are used depending on the size of the case. Tie rods are off-center so that packing cups can be assembled only one way.

With the packing assembled in the stuffing box, the flange studs should be tightened as any gasketed joint, applying pressure through opposite studs gradually to obtain even crushing on the gasket. This will prevent cocking of the packing cups and ensure their being in a perpendicular plane to the piston rod.

Fully-Lubricated Packing

Packing rings and cups should be coated with the proper lubricant during assembly. Each oil line should have a check valve between the lubricator and the connection to the packing case. This should be as close as convenient to the case connection. Refer to the operator's manual for recommended break-in procedure. Prior to each compressor start up, the oil line should be filled.

Min-Lube Packing: CPI Filled PTFE and CPI Special Polymer Alloys

During assembly, the CPI filled PTFE and CPI Special Polymer Alloy packing rings and the cups should be coated with the proper lubricant. CPI filled PTFE and CPI Special Polymer Alloy rings can normally be used under full load without the usual break-in procedures required with metal rings. Initially, a higher rate of lubricant feed should be used. However, this feed rate can be reduced within 24 hours after start up.

Non-Lube Packing: CPI Filled PTFE and CPI Special Polymer Alloys

The case and rings are assembled without oil and should be broken in without any oil feed. Check liquid cooled packing cases to assure proper coolant flow.

Vent Connection

Most packing cases are equipped with vents as a safety precaution. These vents may be piped to an approved collection or disposal point. If a sufficient pressure drop does not exist, particularly behind a vent, side loading of the vent rings may be necessary. Consult your CPI representative for further details and technical support.

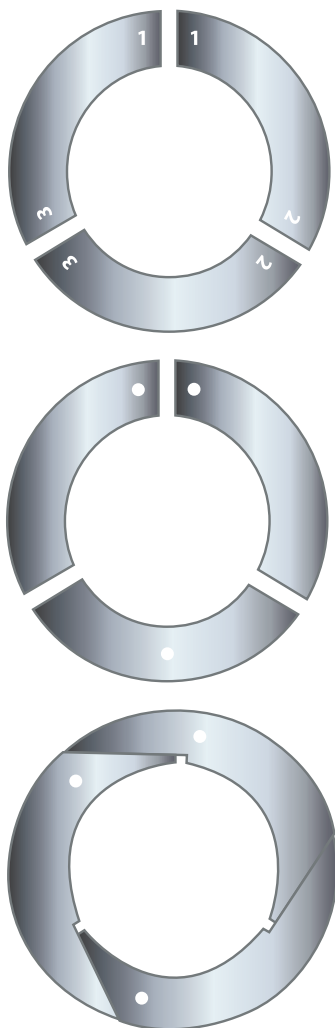
How to Install CPI Packing Rings

Renewal Ring Installation

Where packing is assembled over the rod, or renewal rings replaced in a case, the following method is used:

1. Refer to parts list drawing and make sure that rings are installed in the proper location.
2. Put garter spring around rod and connect ends.
3. Put each ring segment under the spring separately, making sure the segment identification markings **Fig.1**, match and face the pressure.
4. Dowels in the tangent ring should align with the hole in the other ring comprising the packing set.
5. Do not alter any edges on the packing ring. Some edges may be rounded and some must be square.
6. Assemble each component in accordance with the parts list drawing and instructions in the compressor operator's manual.

Fig.1 |



Why Proper Packing Ring Installation is Vital

The radial ring must always face maximum pressure. As shown in **Fig.2**, the joints of the radial ring permit pressure build-up on the OD of the rings for effective sealing during the compression stroke, and pressure relief during the suction stroke **Fig.3**. If the rings are reversed, gas will bypass the rings **Fig.4**, and leak through the joints of the radial ring. Avoid leakage by installing the rings properly.

Fig.2 |

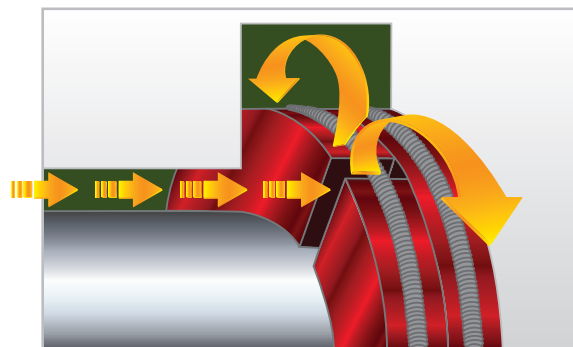


Fig.3 |

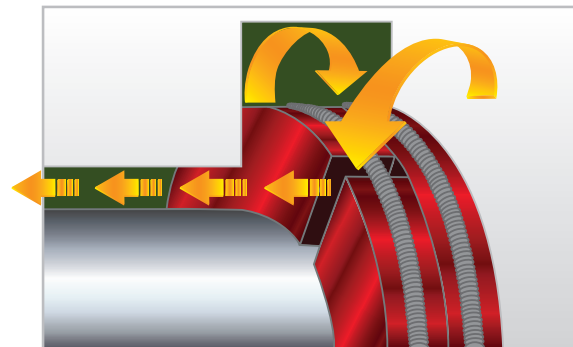
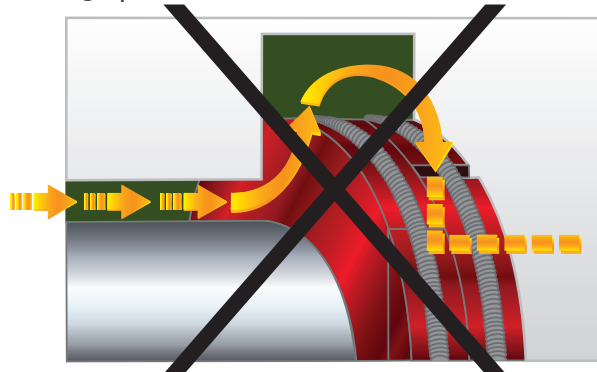


Fig.4 |



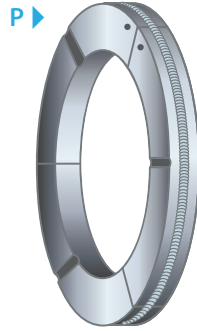
Basic Types of CPI Packing Rings

The following illustrations and descriptions are intended to explain the assembly of frequently used packing rings.

Please note that with all ring sets, the ring with radial gaps must face maximum pressure.



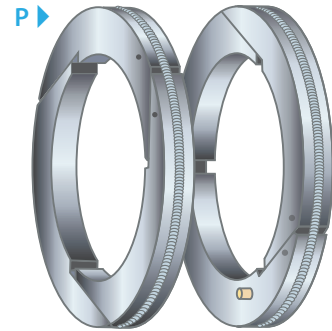
Pressure Breaker



Pressure Breaker with Relief Slots



Radial and Tangent



Double Tangent

Packing Ring Assemblies

When CPI filled PTFE and CPI Special Polymer Alloy packing assemblies are used for pressures over 400 psi, metal back-up rings are recommended to prevent extrusion of the seal rings. The back-up ring will also extend the ultimate ring life at all pressures.

The back-up ring, regardless of type, is bored a few thousandths larger than the rod diameter, with zero clearance at the joints to ensure a tight seal.

The back-up ring must always be installed farthest from the pressure to prevent extrusion.



Radial and Tangent with Back-up



Double Tangent with Back-up



Radial and Tangent with Back-up

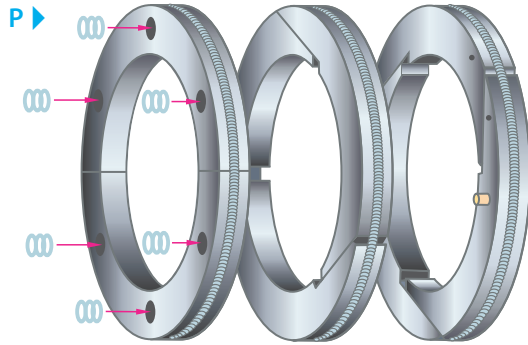


Tangent to Rod with Back-up

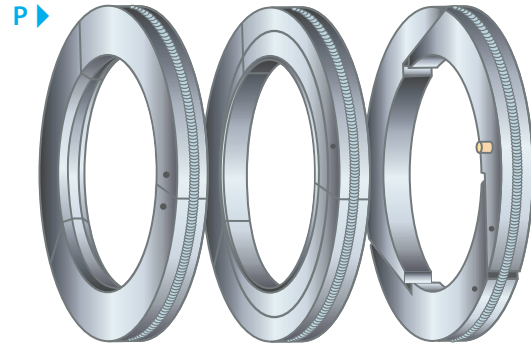
P ▶ = Pressure is on the left in all illustrations. Be sure rings are installed in the correct order, with identification markings on each ring segment facing the pressure.

Purge Ring Assemblies

Packing cases may provide a vent and/or purge. Axially loaded ring assemblies are required to prevent emissions to the atmosphere.



Pressure Plate with Double Tangent



Single Acting Wedge

CPI prides itself on its unique approach to developing new compressor valve concepts and non-metallic materials used in the production of valves, piston rings, rider rings, packing and oil wipers. Our application expertise has transformed the performance and reliability of reciprocating compressors in a wide range of applications around the world.