

Roller-Type Wear Detector



Design Features

- Used in either horizontal or V configuration reciprocating compressors
- ¼" NPT male connection threaded to accept standard pneumatic control system pipework
- Appropriate circuitry could be classed as intrinsically safe for hazardous environments
- Replaceable stainless steel vent with a viton steel rated at 190° C/ 5 bar

CPI's roller-type wear detector will trigger a notification to operators indicating piston rod drop, ensuring an adequate time frame and opportunity for convenient shut-down before critical damage can take place.

Installed on the packing case flange under the rod, if wear occurs to the rider ring, crosshead or liner, the piston rod makes contact with the wear detector's knurled wheel mechanism, causing a vent valve to open releasing control air or other inert gas to introduce a pressure drop. The resulting pressure drop can then be set to trigger an audible or visual warning or used to shut down the compressor automatically if required. The type of pressure switch and its location will vary depending on the instrument specification of each customer.

CPI's wear detector can be used in applications where low ambient temperatures, certain synthetic lubricants and incompatible rod coatings have ruled out the installation of heat-sensitive friction type protective devices.

The wear detector requires a constant pressure supply through a restrictor or orifice plate at a normal operating range of between 2 to 4 bar, the vent valve is rated to 5 bar maximum. The alarm is raised via a control valve pressure switch, calculated to trigger on failing pressure (at normally 1.3 bar). A pressure gauge should be sited near the wear detector to provide a constant monitor of the signal pressure.

The pressure system should be typically either air, nitrogen or other inert gas.

Special non-metallic wheels and dual valves are available on request to meet site specifications.

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Technical Specification

Replaceable stainless steel vent with a viton steel rated at 190° C/ 5 bar

Set up calculations:

The correct setting of the roller indicator is very important to the aim of preventing damage to the cylinder/piston assembly. Using the following procedures you will be able to calculate the value of **C** (roller/rod cold clearance).

A = Crosshead to packing flange distance

B = Crosshead to piston end

C = Clearance of piston rod to roller detector

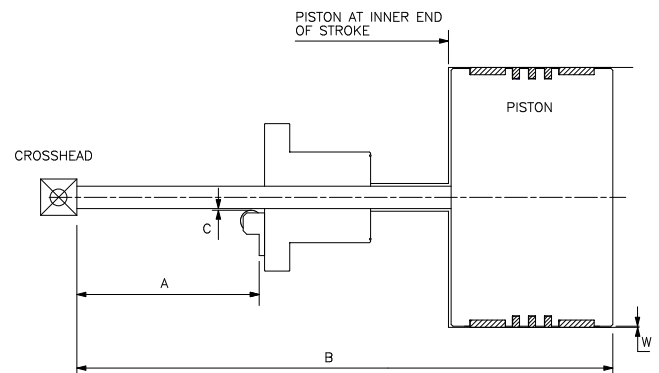
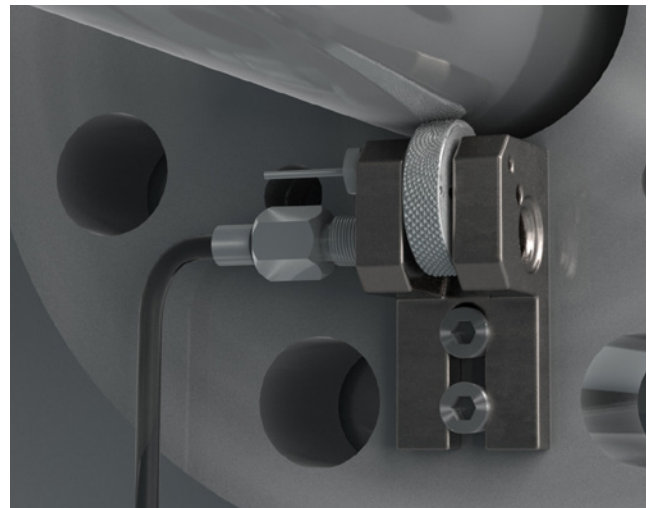
W = Cold piston to cylinder clearance (new)

Each setting is unique to each cylinder, however should all cylinders be identical then double-check sizes and calculate a minimum value of **W**, the piston cylinder cold clearance (new).

The wear down of the rider ring is the factor which triggers the roller indicator and hence the minimum worn piston to cylinder clearance **Wd** must be established either from the compressor manual or **CPI**.

The effects of operational temperatures on the piston and rider ring must also be calculated (**Tr**) and used to compensate for the roller clearance, which is set cold. Finally, the positions of **A** and **B** are used to ratio the rod drop at the roller detector.

Using the above results in the equation $C = (W - Wd - Tr) \times A/B$



CPI, part of the Howden group, is an industry-leading manufacturer of precision-engineered components for reciprocating compressors used in petrochemical, refining, natural gas, and offshore industries. The CPI product range includes packing, piston and rider rings and a complete line of compressor valves designed to provide each customer with maximum performance and reliability for their application. In addition, CPI offers the highest quality lubrication system technology for further compressor efficiency and protection.