

INFORMATION FOR OPERATORS

Hopper Wear Parts

Part 1 – Wear Ring & Thrust Ring



Over the next couple of editions, we will address in a bit more detail a few of the wear parts found in the hopper. We will break it up, and for this month, we will concentrate on two:

Component: Wear Ring (cutting ring) and Thrust (pressure) Ring

Function: The Wear ring (8) in conjunction with the Thrust ring (9) creates the point of contact between the S Tube (5) and the spectacle wear plate (7). It is this “flush / flat” contact that ensures that there is no delivery line pressure loss during the pumping operation.

How it works: When adjusted and set correctly, the wear ring should create a sealed connection over the spectacle plate outlet. This essentially is achieved by the **S tube final position** and a principal called “**axial preload**”. A wear ring that does not locate flat against the spectacle plate allows for “fines” and “slurry” in the concrete to escape during the pumping process, which in turn can lead to excessive wear and complete inefficiency in delivering the concrete through the delivery line.

Maintenance tip: Visual inspections should be carried out daily after washing out your hopper area. Ensure that there are no chips or excessive gaps on the point where the wear ring meets up against the spectacle plate. Also ensure that there is no visible concrete build up present on any of the wearing parts.

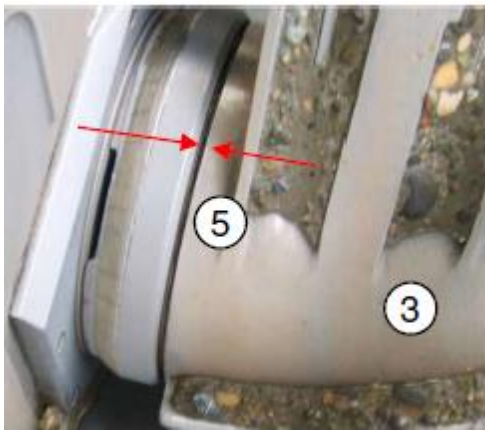
A useful way to test the efficiency of your contact between wearing ring and thrust ring, is to conduct a simple water pressure test by setting the boom vertical and filling the hopper with water. Start pumping water upwards.

In the example below the pump was stopped with a water column of 20m vertically, which corresponds to a water pressure of 2 bar. After stopping pumping the water level should lie just above the wear parts.



The example (3) shows heavy leaks between the wear ring and spectacle plate as well as between the S tube and wear ring. This provides clear information about worn out wear parts, defective thrust ring, or wrong installation.

With the wear parts intact and the thrust ring correctly preloaded the system should seal properly in both end positions.



Axial Preload simply is the load of compression achieved by the Thrust ring by "pushing" the wear ring against the spectacle plate.

Axial Preload is measured and adjusted during installation. Subsequent checking of the preload is only possible if you have measured and recorded the gap (5) between the wear ring and the S tube (3) immediately after installation. This value can then be kept and used as a reference for determining the preload.

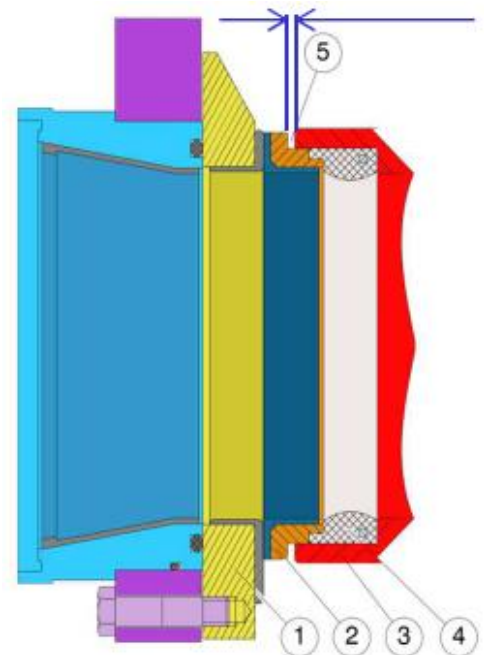
This gap (5) will increase over time as a result of wear between the wear ring and spectacle plate because the thrust ring (4) pushes the wear ring (2) further out towards the spectacle plate.

If the pressure ring was originally compressed by 1.5mm, the preload will reduce to 0 when the gap (5) has increased by 1.5mm

Example:

During installation before final adjustment, you measure the uncompressed gap (5) and record the measurement as 3.5mm. After doing the final adjustment the gap (5) is measured again and recorder as 2mm. You can then confirm that the axial preload is **1.5 mm**. (3.5mm-2mm= 1.5mm)

Three months later during inspection, you measure the gap (5) and you notice that it has increased to 3 mm, you can immediately know that the pressure ring (2) has unloaded by 1 mm and only carries a 0.5mm preload. Eventually when the pressure ring has completely unloaded, grout will begin to deposit between the wear ring (2) and pressure ring (4) and / or S tube (3). This grout solidifies, and will certainly be the start of inefficient pumping operations. Therefore always try and maintain a preload on the thrust ring which ensures that the wear ring is forced forward.



Safety: Never work within the hopper area of your pump, without ensuring a complete “lock out” procedure is followed. This essentially means:

- The machine is completely switched off.
- Ensure that the hydraulic pressure (particularly accumulator) has been dumped and no longer remains in the system.
- Display a sign or a “notice” of some sort bringing people’s attention to the fact that the machine is in a “lock out” zone.
- Ensure that the key to start the equipment is not in the ignition, in fact it should be in your pocket.

Link to Putzmeister Cutting Ring Adjustment Maintenance Video - This 2-minute video has information on how to do maintenance work by adjusting the cutting ring at the hopper on a Putzmeister truck-mounted concrete pump. <https://youtu.be/cs0z8QnI0S8>

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- Operating your pump
- Health & Safety when using your pump
- Trouble-shooting
- Maintenance
- Servicing.

[CLICK HERE](#) to let us know what type of training you're wanting or contact Kelly on 0276576444 or kelly@cpenz.co.nz for more information.