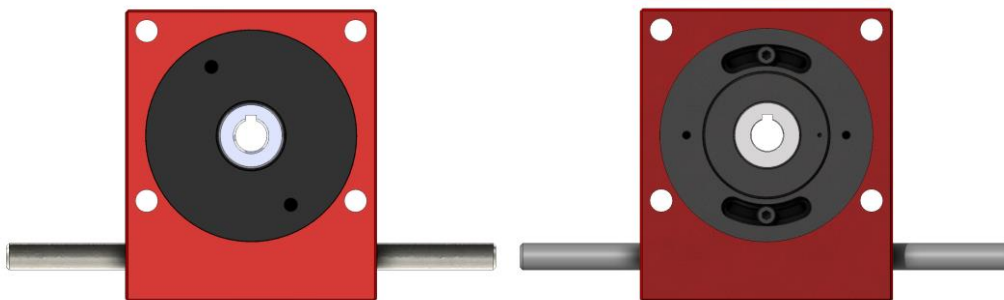


## Technical Bulletin

This document outlines the ongoing amendment to the designs of Ondrives P, PF and PFNM ranges of gearboxes including variants which are modified to suit customer requirements.

The external dimensions of the gearboxes including casing size, input shaft and output bore sizes and mounting hole positions and diameters will not be affected, however the gearboxes may look visually different to what customers are used to.

## Summary



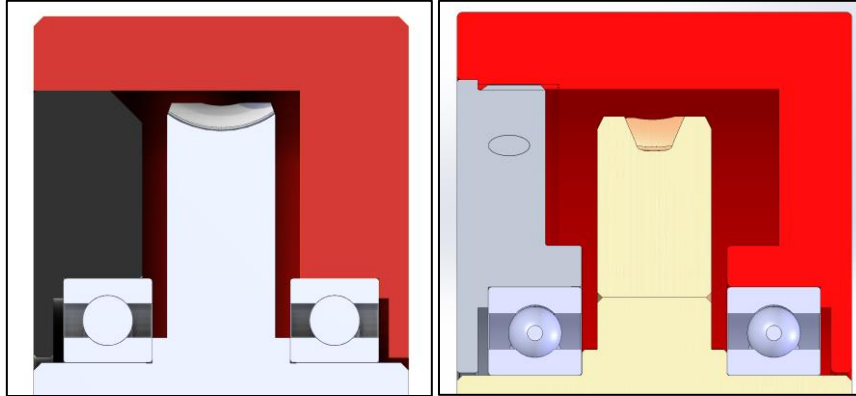
The previous long-standing iterations of our 'P' type gearboxes; standard and low backlash (including PF and PFNM types) featured chemically blackened steel input and output caps.

Throughout 2020 and 2021, these were gradually changed to 303 stainless steel to improve corrosion resistance and visual appearance of the gearboxes.

As part of our commitment to existing product improvement, we are further revising the design to improve quality and consistency, and eliminate the requirement for the eccentric output design of the low (-A) and further reduced (-AR) backlash versions.

Potential improvements include more consistent centre distances, smoother and quieter running, and reduced environmental impact.

### Design Changes



The design amendments include but are not limited to:

- Revised output cap design with locating register to improve centre distance tolerance.
- Revised bearing bore tolerances to improve centring of worm and wheel within gearbox.
- Revised casing with radiused edges and greater grease capacity.
- -2RS bearings on input and output to improve sealing.
- Stainless grubscrew fixings to secure input and output caps.
- Angled position of grubscrews to align with input/output axes.
- Removal of eccentric style low and reduced backlash variants – due to improvements in casing and cap manufacturing processes, the backlash can now be controlled wholly by the tooth thicknesses of the worm and worm wheel. The low and reduced backlash variants of these gearboxes will be indicated by laser etching on the front case of the gearbox.

