

Modification of ZX5 SR Axis Spigot to Eliminate Backlash


How to modify SR axis mechanics to improve backlash characteristic

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Problem

The design for locking the SR axis spigot to the top assembly initially relies on the friction of 4 off M6 cap heads to hold it firm. Under constant use, these bolts can loosen, giving up to 2 degrees of free play or backlash in the system. The symptom of this would be the axis suddenly jumping out of SR angle by a fixed amount up to 2 degrees. The only course of action being a recalibration. A workaround solution was implemented on Z057 using a secondary sensor and a recalibration on each turn of the SR axis. The procedure described below resolves the root cause of the issue.

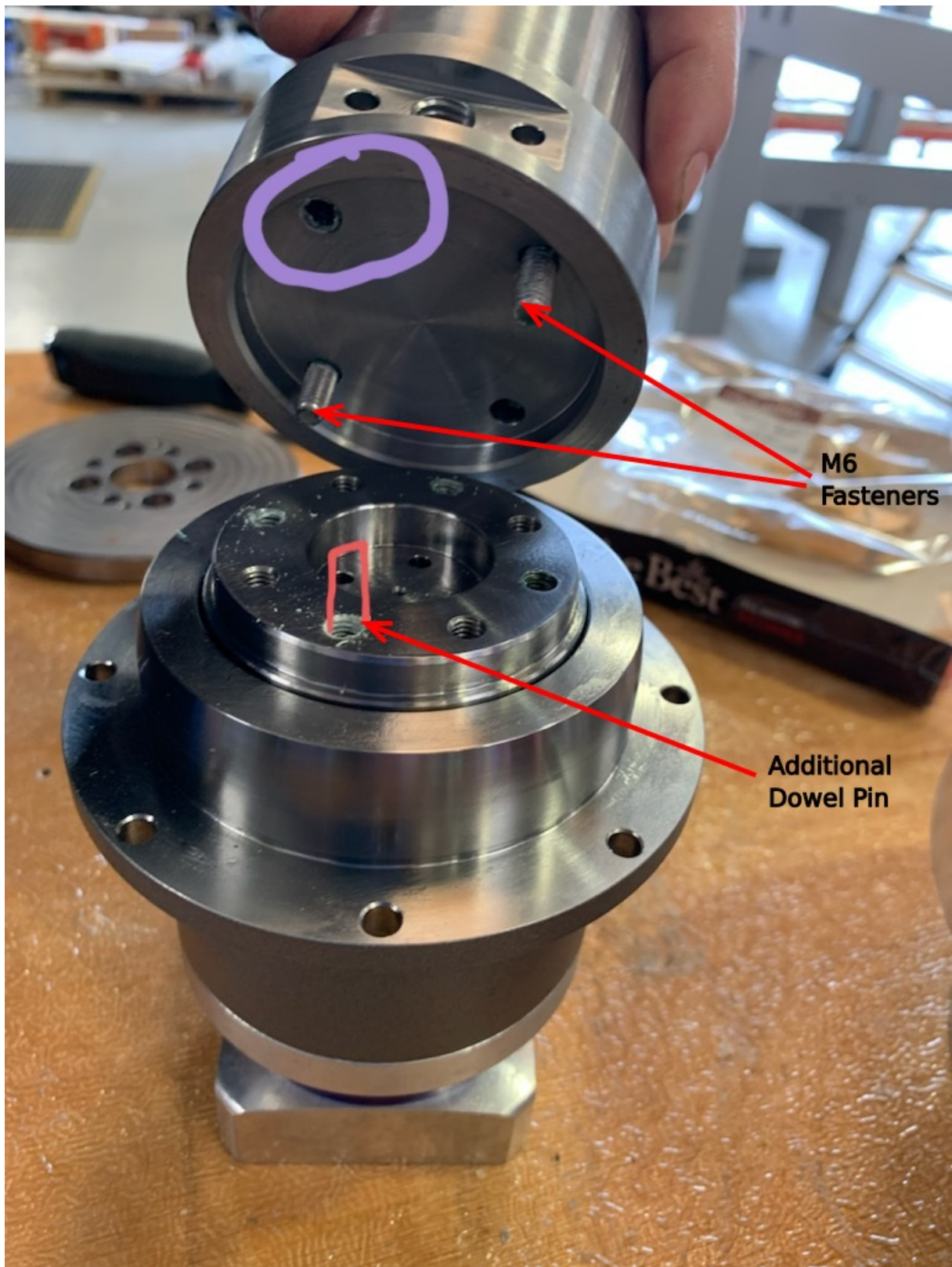
 ...This modification was fitted as standard from September 2021

Components

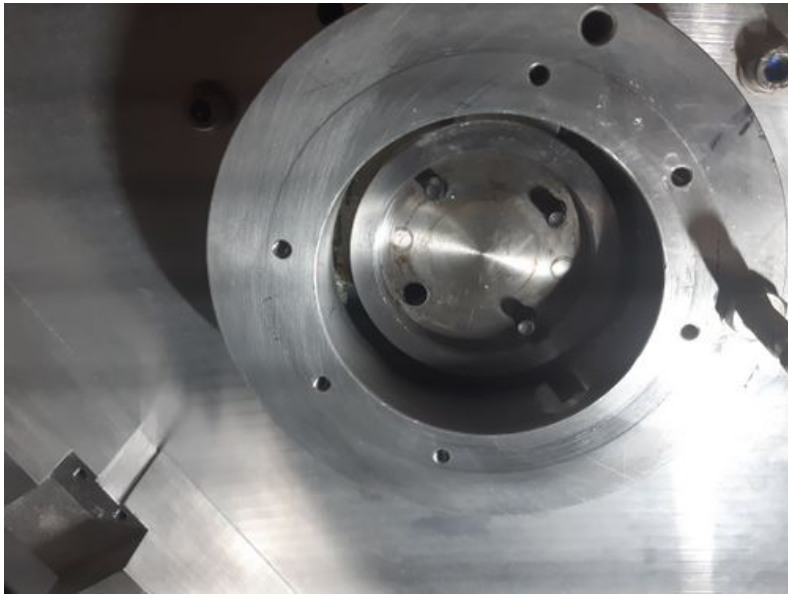
Part	Qty	Description
M0001176	2	Clinch shakeproof washer
F0000579	2	Unbrako M6x16mm Capheads
D0015976	2	Modified Shoulder bolt (dowel)
		8mm Reamer
		7.8mm Drill

Solution

A simple modification has been designed to eliminate this problem. The solution involves repurposing one of the 4 fixing holes and using a dowel pin to lock the position. Only one is needed because the spigot has a central flange precision location, only one dowel is needed to prevent rotation. The dowel pin has a thread on it and a cross slot for driving it in to the threaded hole.



1	Drop the motor and gearbox off the bottom - access to the M6 cap heads is gained under the M12 bolts in the main saw base plate. These can safely be removed because the plate is doweled in place.
2	From the bottom, drill out one of the M6 clearance holes in the top spigot to 8mm in small stages with a reaming tool
3	Insert an 8mm dowel with a screw thread on the bottom into the relevant hole in the gearbox
4	Reassemble - the gearbox now bolts on with 3 off bolts that we would like to replace with unbrako steel and a plate washer so they cannot come undone



Exceptions