

CLAMPING CYLINDER

Part Name: Main Frame Pin Bushing

Equipment: XL900, XL1100, XL2000 Cone Crushers

XL500, XL600 & XL900 Uses the Optimum Crush® Part Number: 502957

XL1100 & XL2000 Use the Optimum Crush® Part Number: 500226

Interchangeability with OEM Part: 502957 Clamping Cylinder is interchangeable with FLS RXL902-5002. 500226 Clamping Cylinder is interchangeable with FLS RXL1002-5003.

Purpose: Eliminate Bowl Vibration and Frequent Clamp Cylinder Failures.

Background

Several mines that are operating XL500, XL600, XL900, XL1100 and XL2000 cone crushers have experienced Bowl Shaking and frequent Clamp Cylinder failures. This issue has been linked to the lack of stroke in the FLS Clamping Cylinders. FLS changed the design of the Bowl Threads to create more clearance with the Adjustment Ring and Clamp Ring threads but they did not revise the design of the Clamp Cylinders and Clamp Ring Spacers. These original cylinders are only allowing for a few mm of total thread wear combined between the Bowl, Adjustment Ring, and Clamp Ring. After a few years of operation, the threads may wear this much. The result is that the Clamp Ring is not able to lift high enough to lock the Bowl in place against the Adjustment Ring Threads because the Clamp Ring contacts the Washer on top of the Clamp Ring Spacer around the bolts shown below. Therefore the Bowl shakes during operation (often leading to high vibration levels) and puts a side load on the Clamping Cylinders. This loading causes the Cylinder Bores to wear and then leak hydraulic oil. This condition should be occurring after several years of operation, not only a few. Some crusher owners have tried to shim the tube spacers but then the Clamping Cylinders fully extend and damage the retainer ring at the bottom of the cylinder which is not designed to withstand the full clamping pressure. While shimming may help temporarily, it quickly leads back to the same problematic condition.

Optimized Design

Optimum Crush® has engineered a solution to this problem. The existing Clamping Cylinders, bolts, washers, and clamp spacers can be removed and the Optimum Crush® design can be installed. The new Cylinders and hardware have more stroke. They allow the Clamp Ring to lift higher and fully lock the Bowl into position during operation. This adds several years of life to your Bowl, Adjustment Ring and Clamp Ring. Rather than having to repair threads with minimal total wear, they can be operated until their full wear on any individual part. Once threads wear to the maximum condition it is recommended to have them repaired or the part replaced. Contact Optimum Crush® for the exact wear limits of your parts. In addition, new cylinders have also been designed with modern-day seal technology.

Note that the Optimum Crush Clamping Cylinders may be used with the OEM Cylinders but the total system will be limited by the OEM Cylinders. To gain the full benefit of the extended stroke, all cylinders must be upgraded as well as the clamp ring spacer pipes and hardware to allow the cylinders to lift higher.

