



Loading and continuous-mining machines, since 1981, are required by MSHA to be equipped with load-locking valves in the boom and head lift cylinders. The load locking system installed must be maintained in proper working order. Machines that have no system or have systems that fail to support the machine structure in the raised position will be

cited as not being in compliance with Title 30 Code of Federal Regulations Part 75.503, failure to maintain face equipment in permissible condition.

An Original Equipment Manufacturer (OEM) recently reported to MSHA the test results of three recovered load-locking valves from mining equipment. Two of the valves were replacements installed in place of OEM valves. When tested, the pressure relief of each valve operated below the pressure rating stamped on the valve. Additionally, the leakage rate exceeded manufactures specifications. The valves would have required adjustment or repair to perform to the stamped rating.

Load-locking systems must be checked frequently for proper operation and adjustment to verify that machine structure will be supported in the raised position.

Equipment that uses hydraulic cylinders to elevate cutting heads and conveyor booms must have a load-locking valve system that meets the following criteria:

- i. The load-locking valve must be attached directly to the cylinder port that is subject to the hydraulic pressure induced by the weight of the boom or cutting head, or directly to a section of steel tubing welded to the cylinder port and attached to the cylinder. In either case the load locking valve shall be attached directly to the cylinder in a manner that precludes disconnecting the line between the load locking valve and the cylinder without first detaching the load locking valve from the cylinder.
- ii. The rated working pressure of the load-locking valve must be greater than the maximum system operating pressure.
- iii. If the load-locking valve has overpressure relief capability, the overpressure relief setting shall be sufficient to allow proper operation of the load-locking valve.
- iv. If the load-locking valve is pilot operated, the hydraulic system shall be designed to ensure that the residual pilot pressure or line backpressure will not hold the load-locking valve open when the control valve is in the neutral position.
- v. Adequate hydraulic filtration shall be provided to ensure that the load-locking valve will operate properly throughout its normal service life, when the hydraulic system is subjected to rigorous everyday mining conditions.