

Title: Mechanical Load Brake Knowledge

Target Audience: Crane Equipment Inspectors, Mechanics, and Load Test Directors

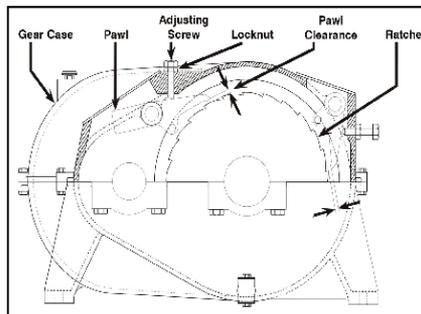
A MECHANICAL LOAD BRAKE IS ONE TYPE OF CONTROL AND SECONDARY BRAKING SYSTEM THAT PROVIDES AN INVALUABLE “FAIL SAFE” IN THE EVENT OF A HOIST MOTOR BRAKE FAILURE BY CONTROLLING AND STOPPING THE LOAD.

Recent weight handling audits have identified a potential weakness in the knowledge level relative to mechanical load brake inspection, testing and function. This Brief conveys basic requirements and information on mechanical load brakes.



Load Brake Testing

1. Raise load to a **safe height**.
2. **Carefully** release holding brake (the load brake shall hold the load).
3. Lower the load using hoist controller.
4. Return the controller to neutral (the load brake shall **STOP** the test load).
5. **Observe** behavior when motor brakes are **not accessible**.



- The mechanical load brake controls the load in the lowering direction between speed points. In the event of motor brake failure, the load brake will stop the load in most cases.
- The brake is a friction device and must have the correct type and level of lubricant.
- Adjustment and **repair must be performed** with the original equipment manufacturer's (OEM) processes and **with proper work authorization**.
- Poor performance can be indicated by lack of load control or by noise (grinding or friction sound) or a clicking noise (pawl or ratcheting sound in the lowering direction). Other indicators can include overheating or the presence of load brake material in the lubricant.
- Testing is performed by disabling the motor brake (NAVFAC P-307, Appendix E requires a written description of how the holding brake will be defeated or why the holding brake cannot be defeated) and performing two tests: (1) static (the load brake shall hold the load (there may be slight movement of the load until the ratchet engages the pawl) and (2) dynamic by lowering the load slowly. The load must never accelerate and shall slow to a stop without contacting the ground. **DO NOT ALLOW THE LOAD TO TOUCH THE GROUND**.
- Activities must notify the OEM in the event that the brake controls the load but does not stop on its own to ensure the brake is operating as designed. This communication shall be documented in the equipment history file.
- If the motor brake cannot be disabled, the load brake operation must be monitored during test (speed control between points, noise, etc.) and be disassembled every tenth annual inspection.
- Additional Information on Mechanical Load Brakes can be found in the CRANE MECHANIC Web Based training curriculum.