MGM Brakes
A Division of Indian Head Industries, Inc.

Type 30/36 Long Stroke Brake Actuators

Benefits of using Type 30/36 Long Stroke Brake Actuators

Commercial vehicle air brake systems require optimal performance from all components to ensure safe and reliable operation. Typical heavy duty applications use Type 30/30 standard stroke double diaphragm actuators for service and parking brake functions. Type 30/36 long stroke actuators offer unique advantages for heavy duty drum brake applications.

The brake actuator description includes numbers (ie. 30/30 or 30/36) that indicate the size of the brake actuator chambers which directly relate to the rated force output. The chamber size number is a calculation of the rated surface area in square inches. This is the effective area in which air pressure is converted to force output of the brake actuator. More area equates to higher brake force output from either increased air pressure contact or a larger parking spring.

The first two digits, “30”, designate the size of the service brake chamber, 30 in^2. Following suit, the second two digits, “36” refers to the size of the parking/emergency chamber, 36 in^2. A larger spring chamber size will provide greater parking force. For example, at 2.00” of stroke, the Type 30/30 standard stroke parking chamber generates 1,172 lbs. of force, while the Type 30/36 long stroke generates 1,767 lbs. of force; almost 600 lbs. of additional force per wheel. That equals approximately 34% of additional force per axle. This extra parking force can be particularly helpful when dealing with heavy loads and challenging parking situations.

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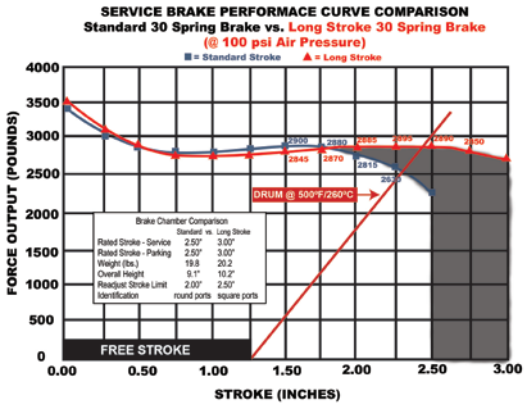
These larger brake actuators are commonly seen in vocational applications, including waste vehicles, fire trucks, dump trucks, ready-mix vehicles, cranes, and military tactical wheeled vehicles.

Long Stroke vs. Standard Stroke

Long stroke actuators have the advantage of providing an additional ½ inch of push-rod stroke over standard stroke models. This is especially helpful as the brake heats up. Elevated temperatures represent a significant factor in the loss of braking effectiveness. Brake drums expand as heat is generated. This expansion can result in reduction of brake force also known as “brake fade”. Vehicle tests have proven that even though the brakes may technically be in adjustment while cold, stopping distances greatly increase due to increased push-rod travel that resulted from brake drum expansion. Lengthening the brake actuator’s available stroke provides added “reserve” which increases the margin of safety. Long stroke actuators significantly improve braking performance during high demand braking and emergency situations.



Technologies to Prolong Service Life

All brake components have challenges due to the increasingly harsh operating environment. Brake actuators are located under the vehicle and are directly exposed to splash and debris from the tires. Extreme temperatures and deicing chemical exposure

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are also factors contributing to reduced durability of brake actuators. Brake actuators should include the following design characteristics to ensure prolonged service life:

Anti-Corrosion Coatings – Coatings such as Epoxy should be utilized on critical steel components to provide scratch resistance and protection from corrosive agents. Epoxy coat is ideally suited for protecting high output power springs from corrosion.

Reduced Power Spring Coil Clash – Proper power spring packaging design is critical to ensure coil clash is minimized while still providing optimum force output. Coil clash can result in damage to protective coatings resulting in reduced service life of the power spring.

Reduce Electrolytic Corrosion – Using a non-conductive spring guide between the steel head and power spring can help break the electrical conductivity that can occur between metal parts and reduce the corrosion that can often occur in this area which helps extend the life of the power spring.

Durable Diaphragms - Double diaphragm brake actuators include two diaphragms, one for service braking and the other for parking. Diaphragms are typically made of rubber although alternatives (like Neoprene) exist for specific applications. Neoprene is often used with diaphragms for applications where chemical exposure is likely to occur over time (waste vehicles for example). Hybrid neoprene diaphragm technology is also available and gives the advantage of rubber for durability and neoprene for chemical resistance.

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Summary

The Type 30/36 long stroke brake is beneficial in providing additional braking capacity in applications where increased grade holding is desired. Another solution the Type 30/36 long stroke brake provides is maintaining stopping power at extended brake strokes. This can result from drum brake use down long steep grades or frequent stops.

Vehicle downtime and brake component failures are costly to fleets. An upfront investment in a durable, high quality brake chamber can reduce these issues and provide a more reliable and cost effective braking system.