Electromagnet Performance

Tech Tip
TT–910

Models Affected: All Magnet Equipped Battery Extractors

Subject:
Without improvement of electromagnetic performance, the integrity of the battery structure, compartment configuration, and compartment roller trays can be compromised.

Description:
There are several conditions that can adversely effect the pulling power of electromagnets. The following are some of the most common issues and steps that should be taken to address these issues (if applicable).

1.) BATTERY CONDITION/STRUCTURE

a. **Paint:** A battery that has several thick coats of paint or a chipped and deteriorating coat of paint can cause a drastic reduction in magnet performance.
Corrective Action: Remove any excess layers of paint to yield a smooth contact area for the magnet.

b. **Decals:** Decals of any kind that are in the contact area of the magnet can cause a drastic reduction in magnet performance. Even the thinnest of decals can cause problems.
Corrective Action: Remove any decals in the contact area of the magnet.

c. **Battery Case "Crowning":** A battery case may appear to have a flat surface, but in reality have a slight outward bow or "crown" to it – even a brand new battery. This "crown" will reduce the contact area of the magnet to the battery case and can cause a drastic reduction in magnet performance.
Corrective Action: A thicker plate of steel may be welded to the battery case to give a flatter surface for the magnet to attach. Check with the battery manufacturer prior to performing any welding or modification to a battery.

d. **Battery Case Thickness:** The battery case thickness can play a large part in magnet performance. A thin battery case may be too shallow for the field of the magnet to attach, causing a reduction in magnet performance. Also, a thinner case battery can lead to the previously mentioned condition of "crowning" while extraction is taking place, causing the magnet to prematurely release.
Corrective Action: A thicker plate may be welded to the battery case to give a deeper field area for the magnet to attach and eliminate the "crowning" effect during extraction. Check with the battery manufacturer prior to performing any welding or modification to a battery.

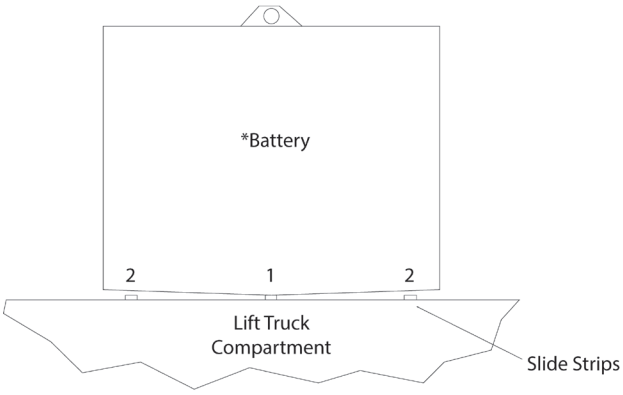
e. **Case Bottom:** If a battery has a very dirty and/or rough and corroded bottom, it can cause an increase in friction when pulling from slide strips or an increase in rolling resistance when pulling from a roller compartment.
Corrective Action: A thorough neutralizing and cleaning of the bottom of the battery is required. It is recommended the battery be scraped to remove as much scale, rust, and corrosion as possible. The battery should then be recoated with a good quality acid resistant enamel. This will greatly reduce friction and help extend the life of all components making contact with the bottom of the battery.

2.) BATTERY COMPARTMENT CONFIGURATION

a. **Slide Strips:** The most common impact on magnet performance when using slide strips is the number of slides in the compartment. All lift truck batteries have a natural "crown" to the bottom of the battery cases. When trucks are equipped with (3) slide strips, the majority of the battery weight rests on the center slide strip. This concentration of weight along

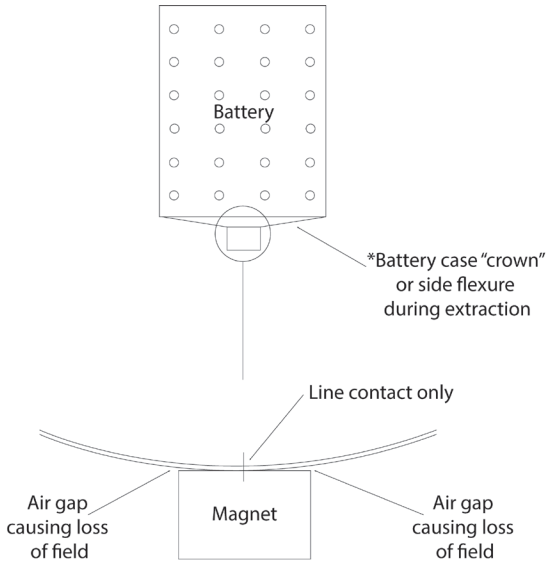
with a battery bouncing around for an entire work shift, causes the slide strip to cold-flow or conform to the irregularities of the bottom of the battery case. When this occurs, an excessive amount of force is necessary to start battery movement to overcome the increased friction between the battery case and the slide strip.
Corrective Action: In some instances, the center slide strip can be removed to allow for even distribution of the battery weight on the two remaining slide strips. Check with the lift truck manufacturer prior to performing any modifications to the lift truck.

b. **Compartment Roller Trays:** The condition of the roller compartment of a lift truck can effect magnet performance. Dirty or corroded rollers, damaged rollers or missing rollers combined with poor condition of the battery case bottom can cause a decrease in magnet performance.
Corrective Action: Maintenance to and/or replacement of rollers or roller trays should be performed.



1. High loading in center slide strip
2. Minimal loading on outer slide srips

*Battery case conditions shown exaggerated for illustration purposes only.



For more information call: 1.877.BHS.4YOU
(Outside the U.S. +1 314 890 0953)

P.O. Box 28990 • St. Louis, MO 63132 USA • 1.877.BHS.4YOU • Fax: 314.423.5948 • Email: service@bhs1.com • Web: BHS1.com