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Calibration of flexible beam crush tester

Scope

The flexible beam type crush tester is commonly used when performing a number of different types of laboratory and production quality tests. Among the procedures performed on the tester are edge crush, flat crush, ring crush, CONCOR Medium Test, CONCOR Liner Test and pin adhesion tests

The flexible beam tester most commonly used to perform these tests consists of an upper platen driven down at a constant speed onto a specimen placed on a lower platen. The lower platen is centrally mounted on a flexible bending beam. The deflection of the flexible beam depresses a plunger mounted to a dial indicator or an electronic load cell. The dial indicator or load cell is designed to read the force required to crush or separate the specimen being tested.

The flexible beam crush tester will consistently give reliable results if calibration is properly maintained. There are a number of daily, weekly, monthly, semi-annual, and annual checks that, if done, will ensure accuracy of the tester. A general summary of those checks by frequency is as follows:

Safety precautions

There are no safety requirements at this time.

Daily checks

1. V-Belts.
 - a. Adjust if loose.
 - b. Replace if worn or frayed.
2. Dial indicator plunger contact with flexible beam.
 - a. Ensure that plunger is making contact with bending beam.
 - 1) Loosen the holding screw that secures indicator to its mount and move indicator up until plunger comes into contact with beam.

TIP Category: Automatically Periodically Reviewed (Ten-year review)

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Weekly checks

1. Tightness of dial indicator mounting screw.
2. Condition of crocus cloth or sandpaper (if applicable).
 - a. Replace if worn.

Monthly checks

1. Platen parallelism.
2. Dial indicator plunger should move up and down freely.
 - a. If sticky, use an eyedropper and place several drops of a non-petroleum base solvent on plunger and allow solvent to run into indicator. DO NOT USE OIL.

Semiannual checks

1. Calibration of load sensing unit.
 - a. May be checked with a calibration load cell.
 - b. May be dead weight checked.
2. Lateral movement of upper drive screw.
 - a. If movement is greater than 1/8 in. (3.2 mm) the two keys that secure the screw located in rear of cast crosshead should be replaced.
3. Vertical movement of the upper drive screw
 - a. Run the upper platen half way up and then downward beyond where upper and lower platens engage.
 - b. If needle of dial indicator hesitates at or past point of platen engagement, there is a likelihood of excessive play vertical play in the gearbox assembly.
 - c. Excessive play in the upper gearbox may require rebuilding as this condition could significantly affect ECT test results.

Annual checks

1. Oil level in gearbox and motor.
 - a. Add 3-4 drops of 3-in-1 oil or equivalent to all required points.
2. Gear box grease.
 - a. Remove top cover of gear box assembly and add multipurpose white grease or equivalent.