



Hotbox detector views wheel hub (125)

The improved Wheel Thermo Scanner Unit has a single scanner on each side of the track which scans wheels passing in either direction at speeds from 5 to 85 mph. This wide range can be extended to 120 mph by reducing the output pulse width. A protective door on the radiometer closes when trains are not being scanned. An internal shutter ensures that the cell views only its intended target. An internal blower helps prevent the entry of dirt when the protective door is open.

As each train wheel passes the selected scanner wheel detector, the radiometer cell's internal shutter opens for 4 milliseconds, taking a "heat snapshot" of the passing wheel. Heat, radiated from the wheel hub, is focused on the lead selenide detector, where it instantly produces a voltage pulse proportional to the highest temperature scanned on the passing wheel. This voltage pulse is amplified and added to a wheel marker pulse which was produced when the wheel was detected. The sum of these two pulses is fed to a recorder (either directly or by carrier) where it appears as a deflection on a chart. An amplified deflection therefore is an indication of a hot wheel hub.

After the last car of the train passes, the blower stops, the protective door closes, and the cell takes one reading from the internal reference target (on the back of the protective door) which is heated to the

temperature of a hotbox. The pulse from this reading is registered on the recorder chart, and then the recorder stops. The operator is thus assured that the system was operating properly and capable of detecting a hotbox. *General Railway Signal Co.*