



Magnet Testing Procedure

HOPRA Approved 10/14/25

Procedure for Measuring Surface Gauss of Motor and Traction Magnets

Objective:

To obtain a consistent and repeatable average Gauss reading from motor and traction magnets removed from a slot car, using an official Gauss meter and designated HOPRA measurement fixture.

Required Equipment:

- Calibrated IDR-329-T-UL: High Precision DC Kilogauss meter with Hall Effect transverse probe.
- Official HOPRA magnet fixture designed to hold motor and traction magnets securely.
- Clean, non-magnetic work surface.

Procedure:

1. Preparation:

- The magnet will be at approximate room temperature (68 – 72.8 degrees F) when reviewed at time of magnet approval procedure.
- At a competitive event, the gauss reading of the motor or traction magnet shall take place after a 5 minute cool down period, approximate room temperature (68 – 72.8 degrees F).
- Inspect the magnet for dirt, wear, or surface irregularities and clean gently if necessary.
- Identify the lowest parallel area of the motor and traction magnet (flat face) relative to the track rail—this will be the measurement surface.
- A high down force motor magnet will be measured in line with the notches on the bottom surface of the magnet. This location is approximately where the rail of the track is located in relation to the motor magnet. (See HOPRA video for further explanation).

- All other motor magnets will be measured in line with the back of the step at the bottom surface of the magnet. This location is approximately where the rail of the track is located in relation to the motor magnet. (See HOPRA video for further explanation).
 - Traction magnets will be measured down the center of the magnet. This location is approximately where the rail of the track is located in relation to the traction magnet. (See HOPRA video for further explanation).
2. Insert the transverse probe into the HOPRA magnet fixture. Insure that the probe is flush with the top surface of the fixture (this reduces probe wear and maintains accuracy).
 3. Insert the magnet into the official HOPRA fixture:
 - Place the magnet into the official HOPRA fixture designed to hold the magnet in a stable position. The magnet will be centered in the fixture as described in the HOPRA video.
 4. Measure First Location – measure the gauss at the center of the magnet. (See HOPRA Video for further explanation).
 - Record the Gauss value.
 5. Measure Second Location – measurement will be .100” right from the previously measured center location:
 - Move the magnet to the second location of the fixture. (See HOPRA Video for further explanation).
 - Record the Gauss value.
 6. Measure Third Location – measurement will be .100” left from the previously measured center location:
 - Move the magnet to the third location of the fixture. (See HOPRA Video for further explanation).
 - Record the Gauss value.
 7. Calculate Average Gauss reading for this surface of the Magnet:
 - Add the three recorded gauss values and divide by three to determine the average surface gauss for the surface of the magnet.
 8. Repeat Procedure on the opposite side of the magnet (180 degrees):
 9. The highest average gauss reading of a magnet surface designed to be facing the track rail may not exceed the published HOPRA limit for the class and type magnet.

Notes:

- If any reading fluctuates or appears inconsistent, re-center and re-measure before averaging.
- The Magnet procedure and fixture are based on available magnets at this time. Should different designed magnets be submitted for approval in the future, HOPRA will address the situation at that time.