

POWERCELL GDD ENGINEERING SPECIFICATIONS

1 GENERAL PROVISIONS

- | Yes | No | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 1.1 The scale shall be fully electronic in design and shall not incorporate any mechanical weighing elements. |
| <input type="checkbox"/> | <input type="checkbox"/> | 1.2 The load cells shall be constructed of stainless steel and shall have integral cables with stainless steel sheathing. Load cells which are not stainless steel and hermetically sealed shall not be acceptable because of their inability to prevent moisture from entering the load cell and causing a premature failure. |
| <input type="checkbox"/> | <input type="checkbox"/> | 1.3 The system shall be minimally capable of predictive diagnostics that record and store maximum overloads, store and display all load cell serial numbers, record and store load cell voltage (minimum, maximum, and actual), and record and store load cell communication signal (high and low). |

2 LOAD CELL SPECIFICATIONS

- | | | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 2.1 Each load cell shall have a minimum capacity of <ul style="list-style-type: none"><input type="checkbox"/> 20 metric tons (44,000 pounds)<input type="checkbox"/> 30 metric tons (66,000 pounds)<input type="checkbox"/> 50 metric tons (110,000 pounds) with 250% ultimate overload rating. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2.2 All load cells shall be certified by NTEP and meet the specifications as set forth by NIST HB-44 for Class III L devices. The manufacturer shall provide a Certificate of Conformance to these standards upon request. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2.3 All load cells shall be certified to meet the specifications set forth by the International Organization of Legal Metrology (OIML) in document R60 for C3 load cells, which requires 60% tighter accuracy tolerances than NIST HB-44 for Class III L devices. The manufacturer shall provide a Certificate of Conformance to these standards upon request. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2.4 Load cells shall incorporate internal digital signal processing and have digital output signals. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2.5 Load cells shall have an internal diagnostic system that allows individual load cell outputs to be visible from the terminal. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2.6 The load cell assembly shall be constructed so as to perform as a rocker pin and shall have no positive fixed mechanical connectors, such as bolts or links that are required in mounting the load cell to the weighbridge or foundation base plates. |
| <input type="checkbox"/> | <input type="checkbox"/> | 2.7 The load cell shall not require check rods, flexures, or chain links for stabilization, as these items are sources of ongoing maintenance requirements. Checking is provided by the existing mechanical design. |

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- 2.8 The load cell shall be of stainless steel construction and hermetically sealed with a minimum NEMA 6P / IP68 and IP69K (submersible) rating.
- 2.9 The load cell shall come equipped with a neoprene rubber boot to keep debris from contaminating the lower bearing surface.
- 2.10 The load cell shall have the following specifications:
 - 2.10.1 V_{\min} (OIML) based on 3,000 divisions:
 - ≤ 3.3 kg or 7.27 lb (20t capacity)
 - ≤ 4.7 kg or 10.36 lb (30t capacity)
 - ≤ 5.7 kg or 12.56 lb (50t capacity)
 - 2.10.2 V_{\min} (NTEP) based on 10,000 divisions:
 - ≤ 1.2 kg or 2.65 lb (20t capacity)
 - ≤ 1.8 kg or 3.96 lb (30t capacity)
 - ≤ 2.2 kg or 4.85 lb (50t capacity)
 - 2.10.3 Non-Linearity: $\pm 0.01\%$ of load cell rated capacity
 - 2.10.4 Hysteresis: $\pm 0.016\%$ of load cell rated capacity
 - 2.10.5 Creep (30 minutes): $\pm 0.017\%$ of load cell capacity
 - 2.10.6 Compensated Temperature Range: $-10^{\circ}\text{C} + 40^{\circ}\text{C}$
 - 2.10.7 Operational Temperature Range: $-40^{\circ}\text{C} + 55^{\circ}\text{C}$
- 2.11 Load cells shall be METTLER TOLEDO POWERCELL® GDD® load cells or equivalent.

3 JUNCTION BOXES AND CABLES

- 3.1 All junction boxes shall be at least IP65 rated and constructed of stainless steel.
- 3.2 Junction boxes shall be accessible for inspection and maintenance from the side of the scale platform.
- 3.3 The connector shall be laser welded to the load cell at the factory and contain a glass-to-metal seal.
- 3.4 No metrology adjustments shall be made in the junction box. Metrology adjustments shall only be made at the terminal.

4 LIGHTNING PROTECTION SPECIFICATIONS

- 4.1 A comprehensive lightning protection kit shall be installed with the scale.
- 4.2 Major scale components, including load cells and scale instrument (terminal), shall be included in the lightning protection system.
- 4.3 Active lightning protection shall be provided both at the scale and at the instrument location.

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- 4.4 The components shall be capable of being replaced in the field and shall be separate from the active weighing components for ease of maintenance.
- 4.5 Grounding of all scale components, including load cells, scale instrument, and accessories, shall be to one common point. Systems with multiple ground points are not acceptable.
- 4.6 An AC line surge protector shall conveniently plug into a common electrical outlet and have a receptacle.
- 4.7 Each AC line surge protector required shall have one isolated, grounding, duplex receptacle and an internal 15-amp circuit breaker.
- 4.8 Verification of the lightning protection system's performance shall be available in writing from a third-party verification laboratory upon request. Proposals submitted without confirming the availability of third-party verification that the load cells, cables, and instrument as a system are capable of withstanding the equivalent of a lightning strike with 29,000 amperes will be rejected.
- 4.9 The lightning protection system shall be a METTLER TOLEDO StrikeShield™ Lightning Protection System or equivalent (if the system is not included in this kit, it must be purchased separately).

5 WARRANTY REQUIREMENTS

- 5.1 The load cell shall have a minimum 5-year warranty against defects in materials and workmanship and failure resulting from lightning or surge voltages. The warranty shall cover all costs associated with replacement parts, travel, mileage, on-site labor, and recalibration after repair, the full cost of which shall be supported solely by the manufacturer and not in part by any other third party.