

SEISMIC RACKS FOR INDUSTRIAL BATTERIES

1.0 SUPPORT FRAMES

1.1 MATERIALS

Support frames are manufactured from high yield square and rectangular hollow section steel with a wall thickness ranging from 2.5mm to 3mm. All Tubing will comply with BS EN 10219: 1997.

1.2 FABRICATION

The welding process undertaken to fabricate support frames shall only be undertaken by suitable qualified and experienced operators. Suitable operators are defined as having undertaken an apprenticeship or similar training in fabrication or welding processes and have been working for no less than 5 years in this field. Furthermore, in-house testing procedures based on elements of BS4872 must be completed satisfactorily. Weld filler material will meet with the requirements of BS2901 Part 1 : 1983.

1.3 SURFACE TREATMENT

Where required, the material will be pickled prior to processing. All material will be washed and phosphate treated prior to surface coating.

1.4 COATING

Frames are coated with epoxy. The standard colour specified is RAL9011 (Satin Black). Minimum thickness specified is 70µm. (See NTS02 for details)

2.0 RUNNERS (SUPPORT BEAMS)

2.1 MATERIALS

Runners are manufactured from high yield square hollow section steel with a wall thickness ranging from 1.5mm to 3mm. All Tubing will comply with BS EN 10219: 1997.

2.2 SURFACE TREATMENT

Where required, the material will be pickled prior to processing. All material will be washed and phosphate treated prior to surface coating.

2.3 LOADING CAPACITY

The load bearing capacity of a runner is defined by the calculated deflection under maximum shock at its midpoint. Maximum deflection allowed is 0.6mm. Under such deflection, stress in the runner will typically be around 20% of yield stress.

2.4 COATING

Runners are coated with epoxy. The standard colour specified is RAL9011 (Satin Black). Minimum thickness specified is 70µm. (See NTS02 for details)

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3.0 BATTERY RETAINING RAILS

3.1 MATERIALS

Retaining rails are manufactured from high yield square and rectangular hollow section steel with a wall thickness ranging from 2.5mm to 3mm. All Tubing will comply with BS EN 10219: 1997.

3.2 FABRICATION

The welding process undertaken to fabricate support frames shall only be undertaken by suitable qualified and experienced operators. Suitable operators are defined as having undertaken an apprenticeship or similar training in fabrication or welding processes and have been working for no less than 5 years in this field. Furthermore, in-house testing procedures based on elements of BS4872 must be completed satisfactorily. Weld filler material will meet with the requirements of BS2901 Part 1 : 1983.

3.3 SURFACE TREATMENT

Where required, the material will be pickled prior to processing. All material will be washed and phosphate treated prior to surface coating.

3.3 COATING

Retaining rails are coated with epoxy. The standard colour specified is RAL9011 (Satin Black). Minimum thickness specified is 70µm. (See NTS02 for details)

4.0 BRACES

4.1 MATERIALS

Braces are manufactured from flat steel strip ranging from 25mmx5mm to 50mmx10mm dependant on load conditions. Strip material will comply with BS EN 10113: 1993: Part 1.

4.2 SURFACE TREATMENT

The material will be pickled prior to processing. All material will be washed and phosphate treated prior to surface coating.

4.3 COATING

Braces are coated with epoxy. The standard colour specified is RAL9011 (Satin Black). Minimum thickness specified is 70µm. (See NTS02 for details)

5.0 FASTENERS

5.1 MATERIALS

All male fasteners will comply with BS3692 or DIN931 and will be grade 8.8. All female fasteners will comply with DIN934 and will be grade 8.

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5.2 COATING

All fasteners are to be supplied in a Bright Zinc Plate condition.

6.0 BOLT DOWN BASEPLATES

6.1 MATERIALS

Baseplates are manufactured from flat steel strip ranging from 100mm x 10mm to 150mm x 12mm dependant on load conditions. Strip material will comply with BS EN 10113: 1983: Part 1.

6.2 SURFACE TREATMENT

The material will be pickled prior to processing. All material will be washed and phosphate treated prior to surface coating.

6.3 COATING

Baseplates are a welded assembly with the support frame and therefore also coated with epoxy. The standard colour specified is RAL9011 (Satin Black). Minimum thickness specified is 70µm. (See NTS02 for details)

6.0 DESIGN BASIS

6.1 STRUCTURE

All seismic stand designs are verified using static analysis calculations derived from the following criteria :

- Chapter 16, Division 3 of the Uniform Building Code 1994, Volume 2 with categories of seismic zone levels from 1 to 4.
- Use of BS5950: Part 1: 1990, Structural Use Of Steelwork In Building. Specific limit state to be 'Ultimate, based on Item 1, Strength' and method of design to be 'Semi-rigid'.
- Use of BS2011: Part 2.1Ea: 1988 and BS2011 : Section 4.3: 1991
- Use of BS6133: 1995, Safe Operation of Stationary Lead Acid Batteries.

6.3 ACCEPTANCE

Acceptance of a stand design is made if no member exceeds its minimum yield stress in the static analysis calculations.