Rebling Datasheet
Commerical EMI Bulkhead-Mounted Receptacle & Cable-Mounted Plug

To meet the EMI and ESD requirements of certain electrified vehicle, energy storage system or control system applications, Rebling offers its two-pole, quick-disconnect EMI-shielded connectors. Our patented bulkhead-mounted EMI receptacle (7009-51) is created using a multiple stage injection molding process which surrounds the receptacle’s silver-plated copper pins with non-conductive black plastic which is, in turn, surrounded by conductive gray plastic. The conductive gray plastic of the bulkhead-mounted receptacle is grounded to the metal bulkhead as well as to the conductive gray plastic backshell of the cable-mounted plug connector (7020-E) via a conductive gasket (643A1625). The EMI receptacle and plug are not keyable, but can be used with the optional magnetic HVIL switch (643A1757).

**7009-51 Bulkhead-mounted Receptacle**

**ELECTRICAL**

- **Current**
  - Continuous Rated Current (CRC) (per UL1977) 400 amp
  - Current Profile #2 - 50% CRC for 60min + 1 sec peak + 50% CRC for 60 min 2,200 amp
  - Current Profile #3 - 50% CRC for 60min + 10 sec peak + 50% CRC for 60 min 1,500 amp
  - Current Profile #4 - 50% CRC for 60min + 30 sec peak + 50% CRC for 60 min 1,000 amp
  - Current Profile #5 - 50% CRC for 60min + 60 sec peak + 50% CRC for 60 min 800 amp
- **Voltage**
  - Rated Voltage (volts, continuous) 1,000
  - Dielectric Withstanding Voltage (volts, AC or DC) 4,000
- **Contact Resistance Max (Micro Ohms)** 70
- **HVIL Circuit** Yes - Optional
- **EMI Shielded** Yes

**MECHANICAL**

- **Wire Size Range**
  - Maximum Wire Size 4/0
  - Maximum Cable OD (inches) 1.1
  - Maximum Terminal Lug Tongue Width (inches) 0.80
  - Maximum Terminal Lug Web Width (inches) 0.24
- **Environmental Sealing when mated**
  - With standard kit components IP56
  - With optional gasket IP68
- **Operating Temperature**
  - Minimum (°C) -40°
  - Maximum (°C) 90°
- **Flammability Rating (per UL94)** V-0
- **Mechanical Shock** 50gs - 3 axes
- **Vibration** 10gs - 3 axes
- **Mating Cycles**
  - No Electrical Load 5,000
  - Live Electrical Load (24 volts & 100amps) 100
  - Torque on Electrical Connections
    - Recommended 30-40 in-lbs
    - Material Failure 80 in-lbs

**CERTIFICATIONS**

- UL Conformance Certificates are downloadable from Rebling.com
- RoHS Compliance All parts itemized on this datasheet are RoHS compliant

**7020-E Cable-Mounted Plug**

**ELECTRICAL**

- **Current**
  - Continuous Rated Current (CRC) (per UL1977) 400 amp
  - Current Profile #2 - 50% CRC for 60min + 1 sec peak + 50% CRC for 60 min 2,200 amp
  - Current Profile #3 - 50% CRC for 60min + 10 sec peak + 50% CRC for 60 min 1,500 amp
  - Current Profile #4 - 50% CRC for 60min + 30 sec peak + 50% CRC for 60 min 1,000 amp
  - Current Profile #5 - 50% CRC for 60min + 60 sec peak + 50% CRC for 60 min 800 amp
- **Voltage**
  - Rated Voltage (volts, continuous) 1,000
  - Dielectric Withstanding Voltage (volts, AC or DC) 4,000
- **Contact Resistance Max (Micro Ohms)** 70
- **HVIL Circuit** Yes - Optional
- **EMI Shielded** Yes - Optional

**MECHANICAL**

- **Wire Size Range**
  - Maximum Wire Size 4/0
  - Maximum Cable OD (inches) 1.1
  - Maximum Terminal Lug Tongue Width (inches) 1.08
  - Maximum Terminal Lug Web Width (inches) 0.45
- **Environmental Sealing when mated**
  - With standard kit components IP56
  - With optional, shrink tubing IP68
- **Operating Temperature**
  - Minimum (°C) -40°
  - Maximum (°C) 90°
- **Flammability Rating (per UL94)** V-0
- **Mechanical Shock** 50gs - 3 axes
- **Vibration** 10gs - 3 axes
- **Mating Cycles**
  - No Electrical Load 5,000
  - Live Electrical Load (24 volts & 100amps) 100
  - Torque on Electrical Connections
    - Recommended 30-40 in-lbs
    - Material Failure 80 in-lbs
- **Mating Force**
  - Maximum Mating or Unmating torque after 10 matings 12 in-lbs
  - Maximum Mating or Unmating torque after 5,000 matings 12 in-lbs

**CERTIFICATIONS**

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- RoHS Compliance All parts itemized on this datasheet are RoHS compliant
### Rebling Datasheet

**Commerical EMI Bulkhead-Mounted Receptacle & Cable-Mounted Plug**

<table>
<thead>
<tr>
<th>P/N</th>
<th>Description</th>
<th>Plastic Color</th>
<th>Weight (Grams)</th>
<th>UL 94 Rating</th>
<th>Plastic Material #</th>
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<tbody>
<tr>
<td>7009-51</td>
<td>Receptacle, EMI, With Threaded Posts*</td>
<td>Gray</td>
<td>115</td>
<td>V-O</td>
<td>000A1272</td>
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<tr>
<td>643A1625</td>
<td>Conductive EMI Gasket for 7009-51</td>
<td>Black</td>
<td>10</td>
<td>V-O</td>
<td>000A1854</td>
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<tr>
<td>643A1757</td>
<td>HVIL Switch &amp; Magnet Kit</td>
<td>Black</td>
<td>25</td>
<td>-</td>
<td>-</td>
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<tr>
<td>7020-E</td>
<td>Cable-mounted with EMI-ESD conductive Gray Backshell**</td>
<td>Gray</td>
<td>300</td>
<td>V-O</td>
<td>000A1272</td>
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<td></td>
<td>Backshell 7020-E included in Kit (no HW)</td>
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<td>V-O</td>
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<tr>
<td></td>
<td>T-Handle for 7020-E included in kit</td>
<td>Black</td>
<td>15</td>
<td>V-O</td>
<td>000A1861</td>
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</tbody>
</table>

*7009-51 Receptacle includes two silver plated conductive spacers, 5/16 nuts and 5/16 split washers
**7020-E Plug includes 5/16 bolts, 5/16 split washers, 10/32 x 13/4 bolts and 10/32 hex locknut

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**MOUNTING and ASSEMBLY**

**Mounting Hole Pattern (see diagram)**

**Recommended Torque on Electrical Connection bolts** 30 to 40 in-lbs

**Application Recommendations**

- When attaching 4/0 cable to the 7009-51 rear threaded posts, use Bumdyl narrow tongue crimp lugs
- Assembly of the EMI Bulkhead-mounted Receptacle: each 7009-51 EMI Shielded Receptacle is packaged with two nuts, two split washers and two silver plated conductive spacers. A conductive spacer should be placed on each threaded post first, then the cable terminal lug, then the split washer, then the nut. The purpose of the conductive spacer is to provide sufficient distance between the cable lug and the connector’s conductive gray plastic body to achieve the required dielectric strength.
- Assembly of the EMI Cable-mounted Plug: use the 5/16 stainless bolts to attach the cable crimp lugs to the plug connector’s terminals then attach the conductive backshell to the connector using the 10-32 bolts and lock nuts. If using individually shielded cables, pig-tail or flare-out each cable’s shielding braid and use a metal or plastic zip tie to secure the braid to the cable entrance tunnel of the plug connector’s conductive backshell. If using a conductive sheath which encompasses both cables, use a metal or plastic zip tie to secure the sheath around both cable entrance tunnels of the plug connector’s conductive backshell.
- Resistivity Testing of Conductive Plastic: the plastic used in Rebling’s EMI-shielded connectors is infused with conductive nickel fibers. The resistivity/conductivity of a fiber-infused material cannot be measured at a single point using the sharp tipped probes found on a multimeter, it must be measured with a surface-area probe, not a sharp-tipped probe. Measurement of a conductive plastic’s resistivity/conductivity can be achieved by placing a 10 mm diameter metal disk on the surface of the conductive plastic then touching the disk with a sharp-tipped multimeter probe.
- Optional HVIL Switch - HVIL Kit P/N 643A1757 includes a 1/8” x 5/8” cylindrical neodymium magnet which is inserted into a cylindrical opening on the face of the cable-mounted plug which aligns with the magnetic reed switch which is mounted on the panel below the bulkhead-mounted receptacle.
- Torque on Backshell Bolts 6 to 8 in-lbs

**Mounting Hole Pattern (inches)**

![Mounting Hole Pattern Diagram](image_url)

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![Diagram Image](image_url)