

Rebling Datasheet: EMI Shielded Panel-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 Panel-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 Panel-mounted receptacle is grounded to the metal Panel 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).

EMI Plug



EMI Receptacle with EMI Gasket

7009-51 Panel-mounted Receptacle

Electrical

Current

Current Profile #1	Continuous Rated Current (CRC) (per UL1977)	-----	400 amps
Current Profile #2	50% CRC for 60min + 1 sec peak + 50% CRC for 60 min		2,200 amps
Current Profile #3	50% CRC for 60min + 10 sec peak + 50% CRC for 60 min	-----	1,500 amps
Current Profile #4	50% CRC for 60min + 30 sec peak + 50% CRC for 60 min		1,000 amps
Current Profile #5	50% CRC for 60min + 60 sec peak + 50% CRC for 60 min	-----	800 amps

Voltage & Resistance

Continuous Rated Voltage	UL1977 Section 17	1,000 volts
Minimum Dielectric Withstanding Voltage	UL1977 Section 17	4,000 volts
Insulation Resistance	MIL-PRF-18148D Section 3.12.6	500 mega-ohms
Maximum Contact Resistance	MIL-STD-202H Method 307	70 micro-ohms
HVIL Circuit		Yes- Optional
EMI Shielded		Yes

Mechanical & Environmental

Flammability Rating:	-----	UL 94	V-0
Environmental Sealing:	with standard Kit Components	-----	IEC 60529
	with Optional Gasket		IEC 60529
Operating Temperature:	-----		-40 to +90° C
Mechanical Shock	MIL-STD-202H Method 213 Condition A		50 Gs – 3 axes
Vibration	MIL-STD-202H Method 204 Condition A		10 Gs – 3 axes
Mating Cycles	No Electrical Load		5,000
Maximum Wire Size	-----		4/0 (110 mm ²)
Maximum Terminal Lug Tongue Width			0.80" (20 mm)
Maximum Terminal Lug Web Width			0.24" (6 mm)
Torque on Electrical Connections Nuts	Recommended:		30-40 in-lbs (3.4-4.5 Nm)

Compliance & Conformance

RoHS, REACH, CMRT/3TG
 UL and CE Conformance

All parts listed on this datasheet are RoHS, REACH and CMRT/3TG Compliant
 Declarations of UL and CE Conformity can be downloaded from Rebling.com

7020-E Cable-mounted Plug

Electrical

Current

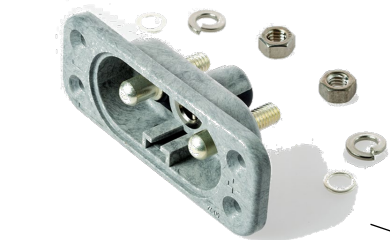
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Voltage & Resistance

Continuous Rated Voltage	UL1977 Section 17	1,000 volts
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Insulation Resistance	MIL-PRF-18148D Section 3.12.6	500 mega-ohms
Maximum Contact Resistance	MIL-STD-202H Method 307	70 micro-ohms
HVIL Circuit		Yes - Optional
EMI Shielded		Yes

Mechanical & Environmental

Flammability Rating:	-----	UL 94	V-0
Environmental Sealing:	with standard Kit Components	-----	IEC 60529
	with Optional shrink tubing		IEC 60529
Operating Temperature:	-----		-40° to +90° C
Mechanical Shock	MIL-STD-202H Method 213 Condition A		50 Gs – 3 axes
Vibration	MIL-STD-202H Method 204 Condition A		10 Gs – 3 axes
Mating Cycles	No Electrical Load		5,000
Maximum Wire Size	-----		4/0 (110 mm ²)
Maximum Terminal Lug Tongue Width			1.08" (28 mm)
Maximum Terminal Lug Web Width			0.45" (12 mm)
Torque on the 5/16 Electrical Connection Bolts	Recommended:		30-40 in-lbs (3.4-4.5 Nm)
Torque on 10-32 Backshell Bolts	Recommended		6-8 in-lbs (0.68-0.90 Nm)



P/N	Description	Plastic Color	Weight (Grams)	UL 94 Rating	UL Material Yellow Card # ***
7009-51	EMI Panel-mounted Receptacle Kit*	Gray	115	V-0	E95746-102108324
7020-E	EMI Cable-mounted Plug Kit **	Gray	300	V-0	E95746-102108324
643A1625	Conductive EMI Gasket for 7009-51 receptacle	Black	10	V-0	SNE-554 Nickel-infused Silicone
643A1757	HVIL Switch & Magnet Kit	n/a	25	-	n/a

*7009-51 Receptacle Kit includes Receptacle + two silver plated conductive spacers + two 5/16 nuts + two 5/16 split washers
 ** 7020-E Plug includes Connector + two Backshell halves + two 5/16 bolts + two 5/16 split washers + two 10-32 x 1 3/4 bolts + two 10-32 locknuts
 ***UL Material Yellow Cards can be downloaded from ULprospector.com

For complete dimensions, download 3D Step files of Terminal and Accessories at Rebling.com

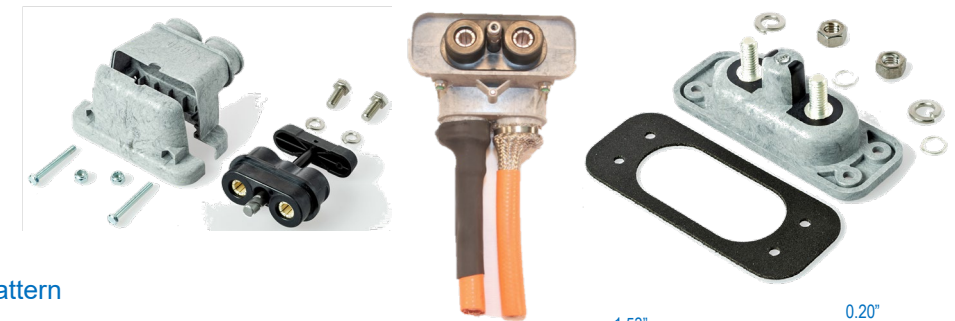
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Mounting and Assembly

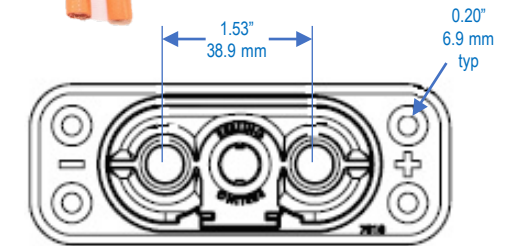
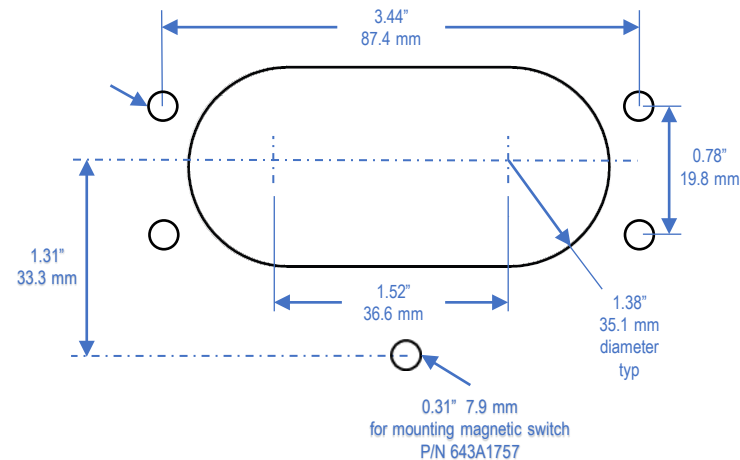
Recommended Torque on the Receptacle's 5/16 electrical connection nuts	30-40 in-lbs (3.4-4.5 Nm)
Torque on the Receptacle's 5/16 electrical connection nuts that causes material failure	80 in-lbs (9 Nm)
Recommended Torque on the Plug's 5/16 electrical connection bolts	30-40 in-lbs (3.4-4.5 Nm)
Torque on the Plug's 5/16 electrical connection bolts that causes material failure	80 in-lbs (9 Nm)
Recommended Torque on the Plug's 10-32 backshell bolts	6-8 in-lbs (0.68-0.90 Nm)

Application Notes

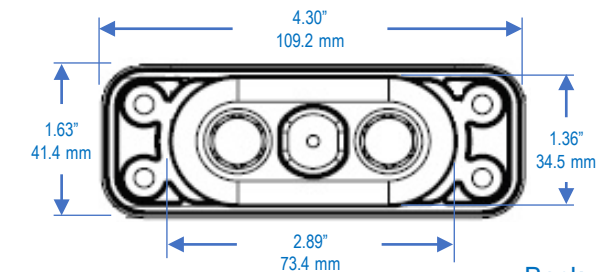
- The conductive EMI Gasket (P/N 643A1625) must be placed between the metal panel and the 7009-51 receptacle to assure EMI conductivity between the 7009-51 receptacle and the 7020-E plug.
- When attaching 4/0 cable to the 7009-51 rear threaded posts, use Burndy narrow tongue crimp lugs
- #8 or M4 flathead 82 degree screws are recommended for mounting the 7009-51 to the panel
- Assembly of the EMI Panel-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 panel-mounted receptacle



Mounting Hole Pattern



Front



Back

