

3M™ Mechanical Shearbolt Connectors, QCI Series

Data Sheet

September 2017

Description 3M Mechanical Shearbolt Connectors, QCI Series are designed to cover a wide range of conductor sizes from 2 AWG to 1250 kcmil. This shearbolt connector design provides excellent performance and features not found in many other shearbolt connectors. No dies are needed for installation: following cable preparation, simply slide the connector over the conductor and tighten the bolts until they shear. The 3M QCI connectors are designed to connect either aluminum and/or copper conductors. The connectors are tin plated to resist corrosion. Individual sizes cover ranges from 2 AWG–250 kcmil, 1/0 AWG– 350 kcmil, 4/0 AWG–600 kcmil, 350–750 kcmil, 500–1000 kcmil and 1000-1250 kcmil.

Kit Contents Each kit includes the following materials:

- Connector with centering rings, if needed (no centering rings included/required with 1000-1250 kcmil connector)
- Bolt well covering caps
- Instruction sheet

NOTE: A 3M Shearbolt Holding Tool is not included in the 3M Mechanical Shearbolt QCI Series, kits and must be purchased separately. This is highly recommended in order to provide physical support for the Shearbolt Connector during shearing of the bolts during installation on the cable conductor. See Shearbolt Holding Tool Selection Table section for appropriately sized holding tool.

-
- Features**
- Greater contact force versus standard shearbolt connectors
 - Contact disk (friction plate) on the bolt end prevents damage to the conductor, providing increased contact force and will not damage fine strand conductors
 - Bolts are continuous shearing, thus no filing is needed; bolts shear below the connector surface
 - No specialty tools needed
 - Meets, or exceeds, the requirements of ANSI C119.4, Class 2 (40% Mechanical Pullout Strength)
 - Sized for American wire gauge conductors
 - Tapered ends allow for smooth splice body transition from the connector to the cable
 - Centering rings are provided for smaller conductors (not included/required with 1000-1250 kcmil connector)
 - Designed to fit 3M cold shrink QS-III splices and 3M cold shrink QS4 integrated splices
-

3M™ Mechanical Shearbolt Connectors, QCI Series

- Applications**
- To connect aluminum and/or copper conductors from 2 AWG through 1250 kcmil (MCM)
 - For low and medium voltage up to 46 kV (Contact 3M for 69 kV and higher voltage applications. We offer splice kits that utilize shearbolt connectors specifically designed for these voltage classes.)

QCI Connector Selection Table

3M QCI* Connector Number	Conductor Size Range AWG/kcmil	Connector O.D. Inches (mm)	Connector Length, with centering rings Inches (mm)	Connector I.D. Inches (mm)
QCI 2-250	2-250	1.10 (27,9)	3.50" (89 mm)	0.64 (16,3)
QCI 1/0-350	1/0-350	1.30 (33,0)	4.41" (112 mm)	0.78 (19,8)
QCI 4/0-600	4/0-600	1.50 (38,1)	5.20" (132 mm)	0.94 (23,9)
QCI 350-750	350-750	1.65 (41,9)	6.73" (171 mm)	1.02 (25,9)
QCI 500-1000	500-1000	2.05 (52,1)	7.80" (198 mm)	1.22 (31,0)
QCI 1000-1250	1000-1250	2.05 (52,1)	7.87" (200 mm)**	1.34 (34,0)

***NOTE:** These connectors are designed to be used with 3M™ Cold Shrink QS-III Splice Kits and 3M cold shrink QS4 integrated splices. Refer to the splice instruction sheet for specific information regarding 3M QCI connector usage for each kit. For non-3M splices, contact the splice manufacturer before installing the connector to determine proper sizing.

** No centering rings used with this connector.

Shearbolt Holding Tool Selection Table

3M Connector Part Number	Shearbolt Holding Tool SB Size 1 (Stock # 80-6116-1338-3)	Shearbolt Holding Tool SB Size 2 (Stock # 80-6116-1339-1)
QCI 2-250	Yes	Yes
QCI 1/0-350	Yes	Yes
QCI 4/0-600	Yes	Yes
QCI 350-750	Yes	Yes
QCI 500-1000	No	Yes
QCI 1000-1250	No	Yes

3M™ Mechanical Shearbolt Connectors, QCI Series

Tool Installation Information The installer can use a ratchet (long handle, if available) with the correct hex socket (5, 6, or 8 mm; see Instruction Sheet for correct hex socket size for each specific 3M Shearbolt Connector part number.) or an electric impact wrench, 18 volts, or greater, to tighten and shear the bolts. Depending on the battery condition, and the torque available (160ft-lbs (217 Nm) or greater), some electric impact wrenches may not be able to complete bolt shear. In these cases, another electric impact wrench, or a ratchet, should be used to complete bolt shearing.

Typical Properties Not for specifications. Values are typical, not to be considered minimum or maximum. Properties measured at room temperature 73°F (23°C) unless otherwise stated.

The 3M Mechanical Shearbolt Connectors, QCI Series aluminum /copper connectors can be used on cables with an operating temperature of 221°F (105°C) and an emergency overload rating of 284°F (140°C). The 3M QCI connectors pass the requirements of ANSI C119.4, Class 2. The current rating of these connectors meets or exceeds the current rating of the conductor size for which it is intended.

Electrical Property Test Method - ANSI C119.4	Requirement	Results
Current Cycle Test - Class A @ 284°F (140°C) Conductor	Thermal Stability Resistance Stability	Pass Pass
Mechanical Pullout Test - Class 2 Partial Tension	40% pullout force	Pass

Storage Components of the 3M™ Mechanical Shearbolt Connectors, QCI Series connectors are not impaired by freezing or overheating due to ambient temperatures found in typical storage or shipping. Normal stock rotation procedures are recommended.

Availability Please contact your local distributor; available from 3M.com/electrical; Select your Market (Electrical Utility Products, Electrical Construction and Industrial Products or Electrical OEM Materials), then select Where to Buy (Find a Distributor) or Call 1.800.245.3573.

3M™ Mechanical Shearbolt Connectors, QCI Series

3M is a trademark of 3M Company.

**Important
Notice**

All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product, which are not contained in 3M's current publications, or any contrary statements contained on your purchase order, shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

**Warranty;
Limited
Remedy;
Limited
Liability**

This product will be free from defects in material and manufacture at the time of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. **Except where prohibited by law, 3M will not be liable for any direct, indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.**

**Electrical Markets Division**

6801 River Place Blvd.
Austin, TX 78726-9000
800.245.3573
FAX: 800.245.0329
www.3M.com/electrical

Please recycle
© 3M 2017 All rights reserved
78-8127-9895-3 Rev D

3M™ Mechanical Shearbolt Lugs QL2 Series, Two-Hole

Data Sheet

September 2017

Description 3M Shearbolt Lugs QL2 Series, Two-Hole are designed to cover a wide range of conductor sizes from 2 AWG to 1250 kcmil. This shearbolt lug design provides excellent performance and features not found in many other shearbolt lugs. No dies are needed for installation: following cable preparation, simply slide the lug over the conductor, attach a Shearbolt Holding Tool (highly recommended; see NOTE in next section) and tighten the bolts until they shear. The 3M Lugs QL2 Series are designed to terminate either aluminum and/or copper conductors. The lugs are tin plated to resist corrosion. Individual sizes cover ranges from 2 AWG–250 kcmil, 1/0 AWG– 350 kcmil, 4/0 AWG–600 kcmil, 350–750 kcmil, 500–1000 kcmil and 1000-1250 kcmil.

Kit Contents Each Kit includes the following materials:

- Lug with centering rings, if needed (no centering rings included/required with 1000-1250 kcmil lug)
- Bolt Well Covering Caps
- Cold Shrink Sealing Tube
- Instruction sheet

NOTE: A 3M Shearbolt Holding Tool is not included in the 3M mechanical shearbolt lugs QL2 series, two hole kits and must be purchased separately. This is highly recommended in order to provide physical support for the Shearbolt Lug during shearing of the bolts during installation on the cable conductor. See Shearbolt Holding Tool Selection Table section for appropriately sized Holding Tool.

-
- Features**
- Greater contact force versus standard shearbolt lugs
 - Contact disk (friction plate) on the bolt end prevents damage to the conductor, providing increased contact force and will not damage fine strand conductors
 - Bolts are continuous shearing, thus no filing is needed; bolts shear below the lug surface
 - Meets, or exceeds, the requirements of ANSI C119.4, Class 2 (40% Mechanical Pullout Strength)
 - The center-of-hole to center-of-hole spacing of the mounting holes meets the NEMA® Standard of 1.75" (44,5 mm)
 - Sized for American wire gauge conductors
 - Tapered ends allow for smooth termination body transition from the lug to the cable
 - Centering rings are provided for smaller conductors (not included/required with 1000-1250 kcmil lug)
 - Designed to fit 3M cold shrink QT-III terminations
-

3M™ Mechanical Shearbolt Lugs QL2 Series, Two-Hole

- Applications**
- To terminate aluminum and/or copper conductors from 2 AWG through 1250 kcmil (MCM)
 - For low and medium voltage up to 46 kV (Contact 3M for 69 kV and higher voltage applications. We offer termination kits that utilize shearbolt lugs specifically designed for these voltage classes.)

3M Mechanical Shearbolt Lugs QL2 Series, Two-Hole Selection Table

3M QL2* Lug Number	Conductor Size Range AWG/kcmil	Lug O.D. Inches (mm)	Lug Length, with centering rings Inches (mm)	Lug I.D. Inches (mm)
QL2-A-2-250	2-250	1.10 (28)	5.98 (152,0)	0.64 (16,3)
QL2-A-1/0-350	1/0-350	1.30 (33)	6.32 (160,5)	0.78 (19,8)
QL2-A-4/0-600	4/0-600	1.50 (38)	6.79 (172,5)	0.94 (23,9)
QL2-A-350-750	350-750	1.65 (42)	7.54 (191,5)	1.03 (26,2)
QL2-A-500-1000	500-1000	2.05 (52)	8.37 (212,5)	1.22 (31,0)
QL2-A-1000-1250	1000-1250	2.05 (52)	8.2 (208)**	1.31 (33,3)

***NOTE:** These lugs are designed to be used with 3M™ Cold Shrink QT-III Terminations. Refer to the termination instruction sheet for specific information regarding 3M lugs QL2 series usage for each termination kit. For non-3M terminations, contact the termination manufacturer before installing the lug to determine proper sizing.

** No centering rings used with this lug.

Shearbolt Holding Tool Selection Table

3M Lug Part #	Shearbolt Holding Tool SB Size 1 (Stock #80-6116-1338-3)	Shearbolt Holding Tool SB Size 2 (Stock #80-6116-1339-1)
QL2-A-2-250	Yes	No
QL2-A-1/0-350	Yes	Yes
QL2-A-4/0-600	Yes	Yes
QL2-A-350-750	Yes	Yes
QL2-A-500-1000	No	Yes
QL2-A-1000-1250	No	Yes

Tool Installation Information

The installer can use a ratchet (long handle, if available) with the correct hex socket (5, 6, or 8 mm; see Instruction Sheet for correct hex socket size for each specific 3M™ Shearbolt Lug part number.) or an electric impact wrench, 18 volts, or greater, to tighten and shear the bolts. Depending on the battery condition, and the torque available (160ft-lbs (217 Nm) or greater), some electric impact wrenches may not be able to complete bolt shear. In these cases, another electric impact wrench, or a ratchet, should be used to complete bolt shearing.

3M™ Mechanical Shearbolt Lugs QL2 Series, Two-Hole

Typical Properties Not for specifications. Values are typical, not to be considered minimum or maximum. Properties measured at room temperature 73°F (23°C) unless otherwise stated.

The 3M™ Mechanical Shearbolt Lugs QL2 Series, Two Hole aluminum /copper lugs can be used on cables with an operating temperature of 221°F (105°C) and an emergency overload rating of 284°F (140°C). The 3M lugs QL2 series pass the requirements of ANSI C119.4, Class 2. The current rating of these lugs meets or exceeds the current rating of the conductor size for which it is intended.

Electrical Property Test Method - ANSI C119.4	Requirement	Results
Current Cycle Test - Class A @ 284°F (140°C) Conductor	Thermal Stability Resistance Stability	Pass Pass
Mechanical Pullout Test - Class 2 Partial Tension	40% pullout force	Pass

Storage Components of the 3M mechanical shearbolt lugs QL2 series, two-hole lugs are not impaired by freezing or overheating due to ambient temperatures found in typical storage or shipping. Normal stock rotation procedures are recommended.

Availability Please contact your local distributor; available from 3M.com/electrical; Select your Market (Electrical Utility Products, Electrical Construction and Industrial Products or Electrical OEM Materials), then select Where to Buy (Find a Distributor) or Call 1.800.245.3573.

3M is a trademark of 3M Company.

NEMA is a trademark of the National Electrical Manufacturers Association.

Important Notice All statements, technical information, and recommendations related to 3M's products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use. Any statements related to the product, which are not contained in 3M's current publications, or any contrary statements contained on your purchase order, shall have no force or effect unless expressly agreed upon, in writing, by an authorized officer of 3M.

Warranty; Limited Remedy; Limited Liability This product will be free from defects in material and manufacture at the time of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. **Except where prohibited by law, 3M will not be liable for any direct, indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.**



Electrical Markets Division

6801 River Place Blvd.
Austin, TX 78726-9000
800.245.3573
FAX: 800.245.0329
www.3M.com/electrical

Please recycle
© 3M 2017 All rights reserved
78-8141-8074-7 Rev D