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Heyco Corporation

Heyco® PVB 101 Single Diode Solar Junction Box

For Single Diode, Double Ribbon Photovoltaic Panels (ACF Part No. HEY-S6115)



- Highest performance rated axial diode on the market for a single diode box application.
- Low insertion force connection of PV ribbons for quick and easy assembly with no soldering.
- Low profile single panel design to accommodate a two ribbon panel.
- Cable strain relief incorporated in box.
- Practical internal volume and venting for good thermal dissipation and low interior temperatures.
- IP65 rated.
- RoHS and REACH compliant eco-friendly solderless internal connections.
- Sizeable opening for conductor ribbons.
- Ambient temperature range of -40°F (-40°C) to 221°F (105°C) (UL).
- UL recognized under file E325860.
- TUV certification pending.
- Patent pending.

Heyco® PVB 301 Multi-Diode Solar Junction Box

For Larger, Multiple Diode, Four Ribbon Photovoltaic Panels (ACF Part No. HEY-S6135)



- Robust built-in heat sink guards against heat buildup and allows the use of higher current T0-220 bypass diodes. Excellent for temperature sensitive applications.
- Low insertion force connection of PV Ribbons for quick and easy assembly with no soldering.
- Practical internal volume and venting for good thermal dissipation and low interior temperatures.
- IP65 rated.
- RoHS and REACH compliant eco-friendly solderless internal connections.
- Sizeable opening for conductor ribbons.
- Ground wire (included) required for UL applications.
- UL recognized under file E325860.
- TUV certification No. R72111836.
- U.S. Patent No. 8113853B2

Heyco® CPV Solar Bulkhead Connectors

With Integral Sealing Ring for Creating a Liquid Tight Seal Through a Panel (ACF Part No. HEY-S6360, HEY-S6362)



- Bulkhead connectors mate with Heyco CPV Solar Connectors creating a liquid tight seal through the panel.
- Provided with an assembled metal locknut.
- Integral sealing ring ensures a superior seal at the mounting hole location, every time.
- Crimp to stranded wire 14 to 10 gauge for internal connections.
- 1/2" NPT thread for installation into 1/2" knock out hole.
- Polycarbonate construction for good chemical and impact resistance.
- Disconnection (PN S6390) and crimping tools (PN S6392 for 10 & 12 AWG wire) available.
- RoHS and REACH compliant.
- UL recognized under File E344722.
- TUV certification No. R60033714.
- Patent pending.

Heyco CPV Solar Connectors

For Photovoltaic Wire Interconnections (ACF Part No. HEY-S6350, HEY-S6351, HEY-S6352, HEY-S6353)



- Large cable diameter range covers a wide range of USE-2 and 1000V PV cables.
- CPV Solar Connectors mate with Heyco Bulkhead Connectors creating a liquid tight seal through the panel.
- Acme threads on cap to prevent skipping and speed install.
- Connectors meet all UL cold impact requirements of -35°C test.
- Connectors meet all NEC requirements for solar installations.
- Polycarbonate construction for good chemical and impact resistance.
- Disconnection (PN S6390) and crimping tools (PN S6392 for 10 & 12 AWG wire) available.
- Rated Current: 22A (2,5 mm²), 30A (4 mm² - 6 mm²).
- Rated Voltage, 1kV DC.
- Overvoltage category III.
- Pollution degree, 3.
- Crimped terminal connections.
- Non-rewireable conductor connections.
- Reference to DIN V VDE V0126-3:2006.
- RoHS and REACH compliant.
- UL recognized under file E344722.
- TUV certification No. R60033714.
- Patent pending.

Heyco® Standard CPV Connector Sets

(ACF Part No. HEY-S6310-6.0, HEY-S6311-6.0, HEY-S6314-6.0, HEY-S6315-6.0, HEY-S6318-6.0, HEY-S6319-6.0, HEY-S6322-6.0, HEY-S6323-6.0, HEY-S6326-6.0, HEY-S6327-6.0)



- Precut and terminated CPV assemblies.
- Constructed from UV resistant 10AWG UL/TUV approved solar cable.
- Suitable for UL and IEC solar installations.
- Heyco Connectors are UL and TUV approved.
- Connectors meet UL cold impact test of -35°C.
- Connectors meet all NEC requirements for solar installations.
- Maximum cable assembly current rating - 30 amps.
- MC4 conversion cables and additional cable lengths available upon request.

Heyco CPV Solar Crimping Tool S6392



Heyco® CPV Solar Crimping & Disconnection Tools

ACF Part No. HEY-S6392

- Heyco CPV Solar Crimping Tool
- Heyco CPV Solar or CPV Solar Bulkhead Connector
- Heyco CPV Solar Disconnection Tool

HEYClip SunRunner® 90 Cable Clip

Double-Compression Right Angle Design (ACF Part No. HEY-S6406, HEY-S6446)

- SunRunner 90 Cable Clip is designed to mount at a 90 angle to the original SunRunner. The SunRunner 90 will accommodate a single cable from .20" (5,0 mm) to .30" (7,6 mm).
- SunRunner 90 is designed for use with PV modules mounted in the landscape mode. PV modules with shorter than normal junction box cables cannot be dressed out to the sides of the module. The SunRunner 90 will allow the junction box cables to be run to the adjacent modules across the short side of the PV module frame.

HEYClip™ SunRunner® 2 and 2-R Cable Clips

For Mini-Inverter Cables (ACF Part No. HEY-S6404, HEY-S6444, HEY-S6402, HEY-S6442)

- Designed to hold Micro-Inverter cables .413" (10,5 mm) to .472" (12,0 mm) in diameter.
- Smooth clip edges prevent damage to cable insulation.
- "S" hook clip design will fit a wide variety of extruded aluminum profiles.
- SunRunner 2 is designed for commercial solar mounting frames such as the ones used by Unirac, Solar Mount, and Mountain Systems.
- SunRunner 2-R is designed for residential grade racking systems such as Haticon Solar or





- equivalent.
- Neatly dresses cables on PV panels or along mounting frame channels from .060" (1,5 mm) to .250" (6,4 mm) thick.
- Constructed from heat treated 410 stainless steel for excellent strength and corrosion protection for outdoor exposure.

HEYClip™ MaxRunner Cable Clip Array

Accommodates up to 12 Cables (ACF Part No. HEY-S6403)



- Patent Pending design is the ultimate in solar wire management.
- Holds up to 12 cables with wire diameters ranging from .20" (5,2 mm) to .28" (7,2 mm).
- Constructed from PPE+PS flame retardant "Noryl" material with a 301 stainless steel mounting clip.
- The versatile stainless steel mounting clip is designed to secure the holder to a wide variety of aluminum extruded mounting frames of various thicknesses and profiles up to .250" (6,4 mm) thick.
- The injection molded wire holder has a V0 flame rating and a UV (f1) rating for excellent resistance to outdoor exposure.
- Molded internal locking tabs securely hold the cables in place preventing side-to-side movement or slippage of the cables.

HEYClip™ MaxRunner Cable Clip Array - Flush Mount

Accommodates up to 12 Cables, Flush Mount with Screws (ACF Part No. HEY-S6433)



- Designed to mount on flat panels or extrusions without mounting ledges.
- Easily attaches to any flat surface with four mounting screws.
- Patent Pending design is the ultimate in solar wire management.
- Holds up to 12 cables with wire diameters ranging from .20" (5,2 mm) to .28" (7,2 mm).
- Constructed from PPE+PS flame retardant "Noryl" material.
- The injection molded wire holder has a V0 flame rating and a UV (f1) rating for excellent resistance to outdoor exposure.
- Molded internal locking tabs securely hold the cables in place preventing side-to-side movement or slippage of the cables.

Heyco® SunBundler™ Cable Ties

- Extremely durable, vinyl jacketed
- Stainless Steel Cable Tie.
- Smooth vinyl jacketing prevents damage to installation cable insulation.
- Tin plated copper crimp sleeve for easy field installation.
- UV protected vinyl jacket is excellent for solar installation where product durability is required.
- Constructed from Commercial Aircraft
- Grade Stainless wire with UV protected vinyl jacket.



HEYClip™ SunRunner™ Cable Clip

- Robust "double-compression" design accommodates from (1) 12 gauge USE-2 to (2) 10 gauge PV-1000 solar wires. Also for use with other cables from .20" (5,0 mm) to .30" (7,6 mm) in diameter.
- Heyco SunRunner clips are designed to provide a better method for PV module wire management and may be used wherever single or multiple cable management is needed.
- Smooth clip edges prevent damage to cable insulation.
- Locking tabs securely fasten clips to module extrusions, or other panels.
- Generous lead-in for installation without tools.
- Screwdriver slot for easy removal or movement of clips if necessary.
- Neatly dresses cables on PV panel frames or along mounting channels.
- Fits module frames up to .125" (3,2 mm) thick.
- Constructed from corrosion resistant 304 stainless steel.



PVB-101 Junction Boxes

- Low profile single panel design to accommodate a two ribbon panel
- Highest performance rated axial diode on the market for a single diode box application
- Sizeable opening for conductor ribbons
- Low insertion force connection of PV ribbons for quick and easy assembly with no soldering
- Cable strain relief incorporated in box
- RoHS and REACH compliant ecofriendly solderless internal connections
- Practical internal volume and venting for good thermal dissipation and low interior temperatures
- Ambient temperature range of -40°F (40°C) to 221°F (105°C) (UL)
- IP65 rated-pending
- UL approved
- TUV certification-pending
- Patent pending



Heyco Potted Solar Junction Box

- Low cost two piece construction for potted applications.
- Designed for USE-2 and 1000V PV wire.
- Lid securely snaps on without use of tools—speeds panel fabrication.
- Low profile design minimizes use of potting material while permitting ample access for electrical connections.
- Durably constructed of high temperature polycarbonate with 5VA and UL f1 ratings to withstand outdoor exposure with excellent cold impact capabilities.

Heyco®-Tite Solar Masthead™ II Liquid Tight Cordgrips

- Integral Sealing Ring ensures a superior seal at the clearance or threaded mounting hole location, every time.
- IP 68 rated..
- Provide a watertight seal for PV module output leads to inverters.
- Accommodate USE-2 12 AWG and 10 AWG wire; consult Heyco for other wire types and sizes.
- Secure input PV leads from solar panel array strings to fuse holder hookup within solar combiner boxes.
- UV resistant nylon construction with TPE sealing gland resists salt water, weak acids, gasoline, alcohol, oil, grease, and common solvents.
- Solar Masthead II Cordgrips provided with assembled metal locknut.

Heyco's Solar Masthead™ Cordgrips

- Designed for solar rooftop installations
- Provide a watertight seal for PV module output leads to inverters
- Feature NPT threads that easily assemble into schedule 40 fittings
- Have generous wrenching flats for ease of assembly
- Require no disassembly for installation
- Constructed of UV resistant Nylon with TPE or Buna N Sealing Gland to resist salt water, weak acids, gasoline, alcohol, oil, grease, and common solvents
- Rated IP 68
- Available in a multitude of sizes and gland configurations

Heyco® Liquid Tight Snap-In Multi-Hole Cordgrips

- Houses multiple wires at one entry point providing a liquid tight seal around each wire and at the panel.
- Secure “click in place” fit reduces tightening errors by installers.
- Ratchet design of sealing nut assembly provides superior anti-vibration and ensures a firm grip on the cable.
- Easy to install—no tools required.
- Unique fingers securely lock into a range of panel sizes without use of locknut.
- Rotation prevented when used in “Double D” mounting holes.
- Limited intrusion into enclosure where access is tight.
- Consult Heyco for cordgrips molded in other colors.
- Made of nylon construction with TPE sealing glands that resist salt water, weak acids, gasoline, alcohol, oil, grease, and common solvents. This feature is not assessed by UL.
- Foam sealing washer included with Cord Grip.
- Can be used for solar rooftop installation.

Heyco Solar Power Components LabKit #9 (Part No. HEY-3000)

- Heyco LabKits are perfect for product design departments, experimental labs, and for all prototype work.
- The Heyco Solar Power Components LabKit #9 contains an assortment of our most popular Solar Panel Connectors, Cordgrips, Clips and other accessories.
- Heyco also offers LabKits for Liquid Tight Cordgrips, Strain Relief Bushings, Hole Plugs, Hardware, Power Components and Grommets.
- Parts in LabKits are available in various sizes and colors. Please consult Heyco for further information.



3M™ Solar Tapes & Adhesives

3M™ Charge-Collection Tapes

Low-resistance solutions for thin film photovoltaic solar applications, 3M™ Charge-Collection Tapes consist of tin-plated, deadsoft copper foil with a pressure-sensitive adhesive. The tin plating resists oxidation and corrosion and facilitates soldering to the backing. They're available in a wide range of configurations for solar applications as a charge collector or bus within thin film solar panels.

- [Slitting Instructions for 3M™ Charge-Collection Tapes](#)

3M™ Dielectric Tapes

3M™ Dielectric Tapes are excellent high temperature tapes for crystalline silicon (c-Si) and thin film solar applications. Available in a wide variety of widths, they're reliable electric insulators and can be





applied automatically to maximize productivity.

- [3M Tape and Adhesive Solutions for Solar Energy](#)

3M™ Specialty Tapes

For more than 30 years, industries around the world have relied on the performance of 3M™ Solar Acrylic Foam Tapes—while improving productivity, bonding strength, long-term durability and product appearance. These high strength tapes are ideal for a variety of solar bonding applications, including frame bonding and junction box bonding.

- [3M Tape and Adhesive Solutions for Solar Energy](#)

3M™ Solar Acrylic Foam Tapes

3M provides a wide range of tapes designed specifically for use in PV modules. Durable 3M tapes ensure reliable, long-term application for everything from cosmetic masking to cell positioning.

- [3M™ Solar Acrylic Foam Tape Glass Bonding and Silane Coupling Agents](#)

3M™ Adhesives

A world leader in adhesive technology, 3M has developed thousands of structural and non-structural bonding products in a wide range of formulations, cure times and dispensing systems. 3M™ Adhesives are optimized to meet the unique and demanding conditions of the solar industry.

- [3M™ Wind Adhesives and Accessories](#)

3M™ Scotch-Weld™ Epoxy Adhesive DP420/460

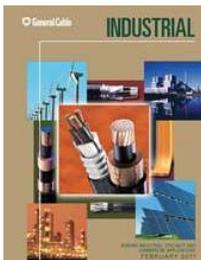
3M™ Scotch-Weld™ Epoxy Adhesive DP420 is a toughened, two-part epoxy. 2:1 mix ratio, 20 minute work life and handling strength in 2 hours. Dispensed with a 3M™ Scotch-Weld™ EPX™ Plus II applicator.

3M™ Scotch-Weld™ Epoxy Adhesive DP420 has medium viscosity that allows for easy dispensing. Bonds to a variety of materials such as, metals, ceramics, wood and some plastics.

- [3M™ Brochure](#)
- [3M™ Data Sheet](#)



General Cable Corporation



SunGen® XLPE, Photovoltaic Wire SPEC 5850

- Features:
- Rated 90°C wet and dry
- Deformation-resistant at high temperatures
- Excellent moisture resistance, exceeds UL 44
- Stable electrical properties over a broad temperature range
- Excellent resistance to crush and compression cuts
- Resistant to most oils and chemicals
- UV/sunlight-resistant
- Meets cold bend test at -40°C
- [Download SunGen® XLPE, Photovoltaic Wire SPEC 5850 PDF](#)



Keystone Electronics

Threaded Mounting Brackets



- Mounting Brackets are available in Brass, Steel or Aluminum materials with a choice of threaded or non-threaded mounting holes to accommodate #4, #6 & #8 screw sizes.
- Selections include various bracket height and width sizes with either Tin, Nickel and Zinc finishes.

Handles for Instrumentation



- Brass and Aluminum Instrumentation Handles in a variety of diameter, lengths, platings and thread styles
- Aluminum Instrumentation Handles in an Oval shape in a variety of diameter and lengths
- Retractable, foldable & flat Carrying Handles as well as Nickel plated Zinc Contemporary Handles

Screw Terminals & Terminal Blocks

- PCB mountable Horizontal, Vertical, Extended and 45° Configurations Available in Snap-In and Press-In Mounting Styles
- PCB mountable Horizontal and Vertical Configurations M3, M4 or M5 Threads Available in Snap-In and Press-In Mounting Styles
- Offset, Straight and Solder legs, Snap-In, Rivet (Standard and Mini-Binding Post Terminals)

Brass, Aluminum, Nylon, Phenolic and Ceramic Materials

- Round or Hex, Threaded and Clear Hole Styles



ND Industries Adhesives



Anti-Seize 917

Anti-Seize 917 is a Nickel based lubricant specially formulated to prevent seizing, galling, pitting, excessive wear and corrosion. The protective paste consists of fine flakes of graphite suspended in a blend of lubricants and oils. It will not wash, squeeze or burn out, even at elevated temperatures and high pressures.

- [Printable Sell Sheet](#)



ND Microspheres® Acrylic

ND Microspheres Acrylic Series contains a microencapsulated activator that is suspended in a quick curing waterborne resin. The shearing forces caused by engagement with a mating part releases the activator and allow it to mix with the resin. The resulting chemical reaction rapidly bonds the surfaces, locking the parts together and sealing leak paths. ND Microspheres Acrylic Series offers consistent and predictable torque values and requires no heat or primers for curing.

- [Printable Sell Sheet](#)
- [Printable Data Sheet](#)



ND Microspheres® Epoxy

ND Microspheres remain inert until the coated fastener is assembled to its mating part. The forces of engagement crush the microscopic capsules of epoxy resin, mix the separate reactant components, and initiate a chemical reaction which locks the parts together.

- [Printable Sell Sheet](#)



Optifuse



FPK Industrial Fuses - UL Class M

- Fast Acting - 13/32" x 1-1/2"
- For use as supplemental protection in general purpose and lighting applications.

Electrical Specifications
600VAC - 100mA - 50AM
600VDC - 100mA - 30A



Aluminum Marker Plates – Pan-Alum™ MMP Series



Aluminum marker plates offered in Natural, Black, Red, Yellow, Green and Blue.

- Lightweight, aluminum construction for flexibility and ease of handling
- Five color options in addition to natural aluminum provide quick visual identification, ideal for applications requiring color-coding
- Easy feed marker plate design includes a raised slot to simplify cable tie installation and improve productivity

C400X100AWT - Panel Labels



- Delivers the look of engraved laminated plates with the convenience of printing on demand
- Strong holding power for rough, textured, and powder coated surfaces
- Provides crisp, clear, and durable legends for your reliable, high performance identification needs
- Use thermal transfer resin ribbon
- UL969 recognized, File # MH14979; cUL recognized, C22.2 No. 0.15-01, File # MH14979
- Temperature range: -40°F to 212°F (-40°C to 100°C)
- RoHS Compliant
- Outdoor rated

PC038-H25D-C0, PC050-H25D-C0, PC062-H25D-C0, PC075-H25D-C0, PC087-H25D-C0, PC100-H25D-C0, PC112-H25D-C0, PC125-H25D-COPAN-CLAMP™ Heavy Duty Fixed Diameter Clamps



The heavy duty fixed diameter clamps shall be used as a substitute for hanger straps, fixed diameter metal clamps and metal cushion clamps where the holding force does not exceed 70 lbs. maximum. The one-piece part shall have a retained barb that when inserted into the rivet locks the clamp securely into place. The clamp shall have sufficient spring back so the wire, cable, or hydraulic hose is retained during the assembly process. The fixed diameter clamps shall be manufactured from impact modified weather resistant Nylon 6.6 to resist fluids and other elements found in transportation, outdoor, and chassis applications.

technical information

- Material: Impact modified weather resistant Nylon 6.6
- Flammability: Meets UL94 HB, passes FMVSS 302
- Color: Black
- Temperature range: -76°F (-60°C) – 185°F (85°C); continuous
- Chemical Excellent resistance to common transportation fluids including: ethyl and resistance methyl alcohols, ethylene glycol, diesel fuel, gasoline, jet fuel, hydraulic @ 21°C (70°F): fluid, transmission fluids and 10% sodium chloride solution
- Strength: Over 125 lbs. (56.7kg) in shear, 70 lbs. (31.8kg) in tension

SGABM20-AV-C300, MACC62-AV-C, SGABM25-AV-C300, SGABM30-AV-C300, ABDCM30-AV-C High Bond Adhesive Backed Mounts



High bond adhesive backed mounts shall utilize multi-purpose acrylic adhesive on both sides of conformable foam. The adhesive shall provide excellent adhesion to a broad range of high and medium surface energy substrates including metals, glass, and a wide variety of plastics. The conformable foam shall provide good contact, even with mismatched substrates.*

technical information

- Material: SGABM: Heat stabilized weather resistant Nylon 6.6 with high bond adhesive
ABDCM: Nylon 6.6 with high bond adhesive
- Temperature SGABM: -31°F (-35°C) to 200°F (93°C) continuous range: ABDCM: -31°F (-35°C) to 185°F (85°C) continuous
- Solvent and fuel Water, salt water, hydraulic fluid, 10W30 motor oil, glycol antifreeze – resistance: 100% adhesive retention; kerosene – 90% adhesive retention, isopropyl alcohol, jet fuel – 50% adhesive retention, gasoline – 35% adhesive retention
- Environmental RoHS compliant compliance:
- Application Indoor/outdoor environment:

MACC25-AV-D, MACC62-AV-C, ACC19-AV-M300, ACC38-AV-M300, ACC62-AV-D300 High Bond Adhesive Backed Cord Clips

High bond adhesive backed cord clips shall utilize multi-purpose acrylic adhesive on both sides of conformable foam. The adhesive shall provide excellent adhesion to a broad range of high and medium surface energy substrates including metals, glass, and a wide variety of plastics. The conformable foam shall provide good contact, even with mismatched substrates.*



- High bond adhesive Provides maximum adhesion, especially in harsh, high temperature, and outdoor environments; extending service life
- Smooth surfaces and Protect the cable bundle and the installer; improving rounded edges productivity, job site safety, and reliability
- Flexible, lightweight material Easily handled; improving productivity
- One-piece design Eliminates the need for screws, rivets, and nut-and-bolt assemblies, installs by hand with low insertion force; lowering installed cost, improving productivity, and minimizing fatigue

MLT2.7WH-LP, MLT6WH-LP, MLT4WH-LP Stainless Steel Wave-Ty™



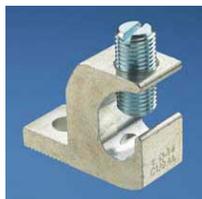
- The unique wave-form spring maintains greater installed tension on non-resilient objects
- Loop tensile strength of 200 lbs. provides superior strength for increased performance and reliability on most bundling applications
- Type 304 and 316 stainless steel offer excellent resistance to temperature extremes, corrosion, weather and UV radiation for use in harsh environments
- Still incorporates all the features of the original Metal Locking Tie (MLT)
- Minimum bundle diameter 2.00 inches (50 mm)
- [Brochures: Stainless Steel Wave Ty Metal-Locking Cable Ties Brochure - pdf](#)

CT-1700, CT-1701 Contour Crimp™ Controlled-Cycle Crimping Tool



- Controlled cycle mechanism assures high quality, consistent terminations
- Ergonomic tool design assures operator comfort, safety, and performance
- Polypropylene handles provide chemical resistance and a cushioned, non-slip grip
- Integrated into the tool head is a convenient, five (5) Pocket, Rotary Die featuring a push button lock out. Simply push the button, rotate the die to the color-keyed die pocket of your choice and release the button to lock the die in place.
- [Operation Manuals: CT-1700 Controlled-Cycle Crimp Tool - pdf](#)

LI-50S-C, LI-112S-L, LI-252S-Q Aluminum lay-in-lug, #14 – #4 AWG wire range.



- For Use with Stranded Aluminum or Copper Code Conductors
- Used for quick installation of a continuous grounding conductor
- Made from high strength, extruded aluminum alloy to provide premium electrical and mechanical performance
- Tin-plated to inhibit corrosion
- Wide wire range-taking capability minimizes inventory requirements
- UL Listed and CSA Certified for use up to 600 V and UL temperature rated 90°C
- [Part Drawings: Aluminum Lay-In Lug - LI-50S-C - pdf](#)



Richco Corporation

N -Cable Loop Clamp,Screw Mount



Richco provides a comprehensive range of wire management, cable management and hose management products in both plastic and metal materials. Cable management products are available with both fixed and adjustable holding diameters. Richco offers plastic clips, plastic clamps, wire saddles and curly lock designs in addition to innovative products such as Cableater (SHR). Richco also offers a variety of cable clamps, wire clamps, and hose clamps. These parts have a wide variety of mounting methods including self-adhesive tape, screws, rivets, blind hole, and push through arrowhead designs.

- [Alternative Energy PDF](#)

Card Guides and Pullers : RCGH - Card Guide,Tension

Richco's printed circuit board pullers are designed to solve difficult PCB insertion and PCB extraction problems associated with removing large PCB's and tight gripping multi-pin edge connectors. Our PCB pullers use a cam in/out action enabling leverages of up to 4:1. Ease of use, installation and protection from undue stress for damage-free insertions and extractions of PCB's, components, and connectors are the main benefits from the use of our card guides and pullers. Passivated stainless steel spring pins as per MIL-P-10971 are provided with certain ejectors. Richco PCB pullers have

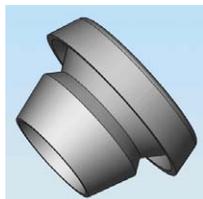


been designed to meet the increasing need to support PCB's mounted in a vertical position in order to save space. Our wide selection of PCB card guides and pullers accommodates various board sizes and allows for paired mounting and gang or tandem mounting. The use of standard fasteners simplifies mounting.

- [Alternative Energy PDF](#)

Grommets, Bushings & Cable Glands

Richco has an extensive range of plastic grommets, rubber grommets, metal grommets, bushings and strain relief products. The wide range of grommets that Richco offers are designed to protect cabling against sharp edges, especially where vibration is an issue. The grommets can be used on straight edges, holes or irregular shapes.



Richco's grommet range is available in a variety of materials including plastic, rubber and metal. They can be easily installed without the need of adhesives, glue or installation tools. Richco has specific grommets to enable the user to install in irregular shapes or on straight edges.

Richco bushings are designed to easily snap into pre-drilled holes. They convert sharp-edged holes into smooth, insulated holes. Richco offers a split design which allows retrofitting on pre-assembled cable harnesses.

The elimination of cable strain and wear is solved via the use of Richco's strain relief bushings which are easily installed with an installation tool.

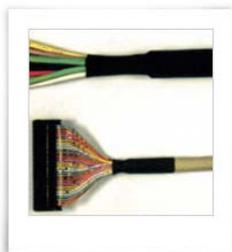
- [Alternative Energy PDF](#)



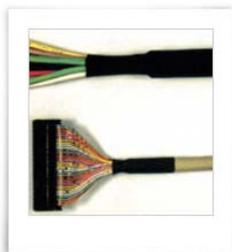
Sumitomo Electric

Sumitube W3B2S

Sumitube W3B2S black heat-shrinkable dual wall tubing has been tested by Underwriters Laboratories (UL) and was determined to have the necessary properties after long term UV exposure to be classified as "Sunlight Resistant" or "SUN-RES".



- W3B2S
- Typical applications include but are not limited to the following:
 - Photovoltaic (PV) electrical connections (industrial, commercial, residential).
 - Solar power generation cabling and bundling.
 - Repair or splicing of outdoor cables.
 - Specialized harnesses used in alternative energy facilities.
 - Waterproofing and sealing of outdoor electrical connections.
 - Submersible applications / splash protection.
 - Mechanical protection against impact, flexing, vibration and abrasion.
 - Underground uses
- [Download Brochure - PDF](#)
- [Download Data Sheet - PDF](#)



Sumitube® B11(3x)

Commercial flame retardant, flexible polyolefin tubing. Versatile and suitable for a wide range of industrial applications. 3:1 shrink ratio.

- ASTM, SAE-AMS-DTL-23053
- [Download Brochure - PDF](#)

Sumitube® NH

Halogen free flame retardant flexible polyolefin tubing. Low smoke index to meet strict fire security standards in electrical insulation and protection in public areas. LUL (London Underground) certified.

- ASTM, BS 6853, BS EN ISO 4589-3, BSS 7239 Boeing Specification Support Standard, Japanese Standard for railway vehicle material, LUL: London Underground Limited Eng. Stand. E 1042. A6
- [Download PDF](#)



Tamperproof Screw Co. Inc.



PHILLIPS PIN-HEAD

Traditional Phillips drive with tamper-resistant pin added for security. Easy to drive & remove with matching tool. (Cannot be removed with Phillips Screwdriver.) Available in machine & sheet metal screws with Flat or Pan-Head design.



SPANNER NUT / REMOVABLE SECURITY NUT

Zinc Alloy (non-ferrous rust resistant)



TOOLS AND KITS

- MAGNETIC HAND DRIVERS
- COMPLETE TOOL KIT
- SPANNER SCREW KIT
- TORX® SECURITY SCREW KIT



SOLAR CABLE

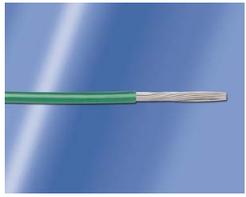
The multiconductor solar cable is the cable designed for any solar application. It is rated for direct burial. It handles extreme temperatures. It's rated for temperatures as low as -40°C static and -30°C bending and as high as 90°C. And its tough, abrasion-resistant jacket also resists sunlight, ozone, and UV radiation. Designed specifically for solar inverters and similar applications, it's the perfect choice that goes wherever your solar farm is installed.



- Features:
- TC-ER
 - UL MTW
 - VW-1
 - 1000 V
 - Stranded bare copper conductors
 - PVC jacket
 - PVC/nylon insulation
 - Tinned copper braid shield, 85% coverage
 - Sunlight, ozone, and UV resistant
 - Direct burial
 - Oil Res. I
 - Moisture resistant
 - 10x bend radius
 - Wide temperature range: -40°C static/-30°C bending to +90°C

HOOK-UP WIRE

Alpha Wire's new EcoWire is the latest innovation in hook-up wire. A true engineering breakthrough, EcoWire achieves increased performance in a wire that is fully recyclable. EcoWire derives its advantage from its unique insulation, a modified polyphenylene ether (mPPE)



thermoplastic. mPPE-based insulation is non-halogenated and contains no heavy metal pigments, allowing it to help manufacturers meet Waste Electrical and Electronic Equipment (WEEE) requirements.

In addition to its ecological benefits, EcoWire brings many performance advantages, including:

- Better dielectric strength
- Wide temperature range that meets VW-1
- Low specific gravity
- More durable with up to 10x better abrasion and pinch resistance
- Up to 45% smaller diameter
- Up to 40% lighter
- Fully Recyclable