

Alexander & Poole

# An Introduction to Connectors (Anderson Plugs)

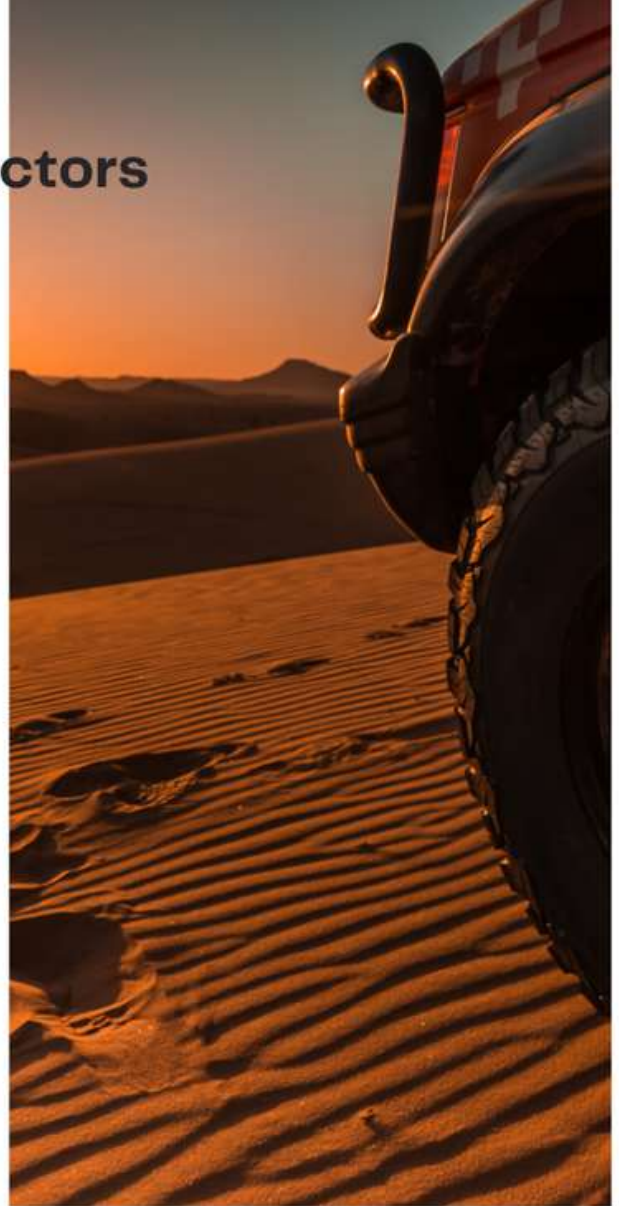
Issue No. 1

If you're looking at setting up a dual battery system in your 4wd or towing a caravan or camper, chances are, you've heard of a heavy-duty connector, also known as an Anderson plug. But what exactly are they? What are the benefits of using one over a 12-pin plug? And how do you install them? Read on to find out!

### What is a Anderson Plug?

An Anderson plug is a moulded, heavy-duty connector designed for high current 12V circuits. They are commonly used to create a safe and secure power connection between a caravan or camper and a tow vehicle. Indeed, most caravans and campers these days have an Anderson plug installed from factory. Heavy-duty connectors can also be used to connect to a fridge in your tow vehicle or camper, or a portable solar panel.

Heavy-duty connectors come in a variety of sizes and current ratings. The larger the plug, the higher the current rating. They also come in a range of colours, including red, black and grey. It's important to note, though, you can only connect one heavy-duty connector to another of the same colour (red to red, black to black). This colour coding allows you to assign different colour Anderson plugs to different applications or purposes. This is particularly useful where one heavy-duty connector might be used to power an electronic stability control system and another your fridge or compressor.



What's more, heavy-duty connectors are non-gender; they are male/female and a plug/socket in one. They have the smarts built-in to maintain the correct battery polarity when you plug them together (by flipping one upside down).

### What are the benefits of using an Anderson connector over a standard 12-pin connector?

Heavy-duty connectors are one of the most simple and robust means of high current transfer. Engineered to handle continuous charging loads, they are ideal for powering dual battery set-ups (along with a DC-DC charger), fridges, air compresses, solar systems and other high current accessories in your 4WD Tourer.



## How do I install a connector?

Installing an Anderson heavy-duty connector isn't particularly challenging. However, we recommend that you research your vehicle and understand your power requirements before attempting a DIY installation. If you're in any way confused or apprehensive about doing it yourself, then it's best to get a qualified auto electrician to install the heavy-duty connector for you.

It goes without saying that you'll need the right tools for the job. Most DIYers will already have a good understanding of the tools required to perform this task. A heavy-duty crimper is recommended, and you may also require a soldering iron, drill, and various other tools for cable access and attachment.

Determine where the cable will be routed and feed it through, remembering to seal any point where the cable may enter and exit the cabin. Remember to use the shortest route possible to reduce voltage drop, to insulate the cable against chaffing, and to secure the cable against snagging.



With the cabling routed you are now ready to connect the heavy-duty connector. In most instances the connector will be located on or near your vehicle's tow bar. We recommend crimping and soldering the terminals to the cable, and using heat shrink to reduce water and dust ingress into the cable.

Once you've secured the terminals and cable ends within the heavy-duty connector housing you may mount the connector to your 4WD. Secure any loose cable, insert your fuse (or enable the circuit breaker) and connect the terminals to your vehicle's battery. Use a multimeter or test light to test the circuit if need be.

Remember, an improperly installed heavy-duty connector can cause damage to you, your vehicle, and your 12-volt accessories, so take your time and employ the services of an auto electrician if required.



## 100% Genuine Anderson



**Genderless Housing & Contacts**  
**Self Cleaning Design**

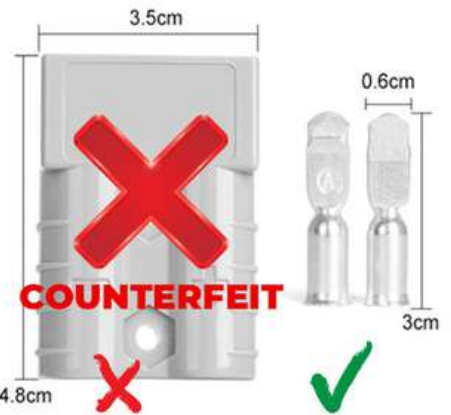


**Anderson Flat Wiping Technology**

**High Mating Cycles- 10,000**

**Genderless Housing & Contacts**  
**UL Rated Housing- Heat Resistant**

**High Grade Copper Contacts with Silver Plating**



**COUNTERFEIT**

**Un-Identified Branding**  
- No Trade Mark

**Genuine Anderson Branding**

**Tin Contacts - Melts away when exposed to Heat**

**Pure Copper and Silver coated Contacts for higher conductivity**

**Recycled Plastic - Shorter Length, Grip Ridges don't extend over body**

**1500 UL Hot Plug Rated- Hot Swapping Approved**

**Amperage Drop due to Non Consistent Contact**

**Securely Held in Mated Position by Contact Normal Force**



**COUNTERFEIT**

• Tin Contacts whereas Anderson is Pure Copper

• Anderson Offering 10,000 mating cycles

• Non Consistent Contact

• Anderson Flat Wiping Technology-Self Securing and Wiping

**1 Round Hole**

**2 Rectangular Broach**

**3 Left - Justified Warning Text**

**4 Round Contact Spring Retainers**





# Anderson Connectors - What Cable Size?

Issue No. 3



The Anderson Connector product range are an industry leading family of electrical connectors developed by the global Anderson Power Products. Anderson connectors are the world leader in high current and waterproof DC electrical connectors. APP are the leading global developer and manufacturer of high power interconnect solutions.

Anderson plug sizes, cable sizes, and Anderson connector sizes sometimes cause a little confusion. A question that commonly raises its head when it comes to the installation and use of Anderson connectors is - what cable size should be used with an Anderson Connector?

Firstly, let's examine how the connector works and why it is such a popular choice.

The genderless connection makes them very easy to use. You do not have to worry about colour, direction or version of the unit as they are readily compatible with one another. The genderless hermaphroditic state of the Anderson connector means that the mating surface of the unit includes both male and female aspects with complementary paired identical parts each containing protrusions and indentations. This set up is ideal when it comes to saving time and ensuring simple and quick compatibility. And there are a range of Anderson connectors sizes to choose from.

## Are Anderson Connectors Waterproof?

Yes, Anderson are the world leading manufacturer of high current and waterproof DC electrical connectors - the Anderson plug / connector range are waterproof and suitable for outdoor use.

Take a moment to take a look at each, and the appropriate cable size that should be used in each instance. The Anderson plug amp rating connectors of 50A, 175A, and 350A cover the vast majority of applications.

### What Cable Size Do I Need for my Anderson Connectors?

For the 50 Amp Grey Anderson connector you should be using 16mm battery cable. This cable is available on truck electrics in black or red and is sold in 10 metre rolls. The cable is petrol, oils and acid resistant and is rated to 110 Amps.

For the 175 Amp Grey Anderson connector you should be using 35mm battery cable. This cable is available on site in black or red and is sold in 10 metre rolls. The cable is petrol, oils and acid resistant and is rated to 240 Amps.

For the 350 Amp Grey Anderson connector you should be using 50mm battery starter cable. This cable is available on site in either black or red and is sold in 10 metre rolls. The cable is petrol, oils and acid resistant and has conductor specification of 395/0.40.

# EXTEND THE LIFE OF YOUR ANDERSON CONNECTORS

Issue No. 4

Anderson Power Products (APP) suggests a series of procedures for maintaining and extending the performance life of Anderson Connectors. Following these installation tips, preventative maintenance and corrective procedures can result in lower connector operating costs, greater efficiency and productivity.

## Connector Installation Tips

- Reference Assembly Instructions specific to the connector. Assembly instructions for a connector can be obtained from APP or a distributor.
- Use proper assembly tools.
- Reference all applicable electrical standards requirements such as NEC, UL, CSA, etc.
- Perform a sample assembly of a few pieces for assembly verification testing. Test these samples for proper crimp dimensions, crimp tightness, crimp resistance and operating temperature.
- Perform periodic assembly verification testing to assure assembly process and tooling are performing correctly. Typically, crimp dimensions are checked at short intervals and crimp resistance and secureness are checked at longer intervals. The changes in the wire gauge, wire stranding, wire coatings, contact crimp tools, crimp dies and crimp dimensions will affect the quality characteristics of the crimp. Verification testing should be performed when any of these change.

Contacts should never be forced into housing. If the contact does not fit easily, check the contact barrel for distortion. Replace the barrel if it is distorted or shows signs of wear or damage.







At Alexander & Poole, we only stock genuine Anderson Power Products Connectors. APP Anderson Connectors are made to make a better connection, they're more durable and will last much longer than cheaper brands.

The Anderson Powerpole Connector facilitates a quick, easy and secure electrical connection. The connectors are moulded with dovetails so that the housings can be interlocked to form multiple connections. The housings can be interlocked as many times as needed and different colour Anderson housings can be utilised. The housings simply and quickly slide into place to create multiple connections.

## ADVANTAGES OF ANDERSON CONNECTORS

What are the advantages:

- High Current Systems - they are ideal for use with high current systems and have been designed to offer minimal contact resistance.
- High Durability - the durability and robust nature of these units allows for 10,000 mating cycles across their lifetime. They also demonstrate excellent resistance to chemicals such as solvents and hydrocarbons.
- Easy Quick Assembly - the genderless connection feature facilitates quick and easy assembly and reduces inventory requirements.
- Finger Probe Safe - the housing has been designed to help prevent any accidental contact with live components - in compliance with the UL 1950 finger probe test.
- Colour Coded - the colour of the Anderson Power Connector designates the recommended application voltage as per industry standards. This safety feature helps prevent two different voltage colour housings from being connected and avoids the occurrence of a mismatch between power supplies/ electrical systems.

We stock a range of Anderson Connector accessories. We stock brackets for mounting, and dust covers and protectors for keeping the connector clean and dry when not in use.

# ALEXANDER & POOLE

## CONNECTORS

## PRODUCT GUIDE



Anderson is a brand known for their quality connectors and providing superior strength and durability. In addition to Anderson's line of SB Connectors, their Powerpole line is very popular. Like the SB Connectors, the Powerpole connectors are genderless and interchangeable. The main difference when it comes to the Powerpole line is allowing for custom multi-pole configurations. This allows the connectors to be more versatile and work in a wide variety of applications. For even more on why Anderson Powerpole connectors may be the products for you, read on!

These accommodate smaller gauge sizes the SB connectors cannot. The Powerpole series is single-contact instead of dual contact which makes for a smaller housing as well as a different look.

One major benefit of the Powerpole line is the stackable feature. This allows users to build custom multi-pole configurations for any specific application. When the 15-45 amp connectors are stacked, they can be placed into an outer housing in order to hold the connection in place. The SB and Powerpole connectors share similar contacts.

The contacts are silver plated and are self-cleaning. This allows for limited corrosion and a long life. The contacts added exclusively for Powerpole are the 15 and 30 amp contacts. As discussed earlier, there are to fit the smaller gauge applications and fit within the same 15-45 amp housing.

Powerpole Connector housings are available in 15-45, 75, 120, and 180 amp options. To clarify, Powerpole 15-45 all use the same type of housing, and the difference would be in the amperage of the contact. We will go into more detail on contacts in the next section. Like the Anderson SB series, the Powerpole line offers benefits such as an interchangeable, genderless design. Made out of a strong single piece of polycarbonate and color-coded housings, Anderson connectors make for a durable connection and easy connection.

Being spring loaded and contoured, the contacts are used for up to 600 volts continuous AC or DC operation.

Overall, Anderson Powerpole Connectors are an industry standard for a secure and reliable connection. With the multi-pole configurations, these products are sure to fit your specific application. To see the completed assembly video of Anderson Powerpole connectors, [click here](#). Best used in electrical equipment in commercial and industrial applications, the Anderson line is sure to please.

# Your 'How To' Guide

Proper crimping and cleaning of the wire is essential for optimizing connector service. A proper crimp that is performed on oxidized wire may have high resistance and could result in excess heat. Cutting back cable to a non-oxidized area and / or cleaning the wire with a wire brush or 3M Scotch Bright is recommended.

**Stripping Cable Insulation:** Problems with cable harness and connector systems often begin with improper or accidental cutting of wire strands while stripping cable insulation. Each strand is important, and all of them must be included in the contact barrel to avoid unnecessary hot spots during operation. When removing insulation, position a sharp blade at a right angle and apply steady, controlled pressure, cutting only the cable insulation, not the copper wire. Strip cable to the proper length for the contact being crimped. Proper lengths are listed in the instruction sheet with each APP connector.



## Cleaning Copper Wire

Aged and badly tarnished copper should be thoroughly scraped with a stiff wire brush that penetrates the entire bundle cleaning every strand. The wires will then be ready for insertion into the contact barrel when they are brushed to their original bright copper finish. Contact barrels are lined with silver or tin plating to assure consistent conductivity, which will be reduced if the barrel is crimped around aged or tarnished wire.

## Crimping

The best preparation will be defeated if inadequate tools or improper crimping procedures are performed

Use an APP crimp tool. Make sure the stripped cable is inserted all the way into the barrel of the contact and that the contact point is centered in the crimp tool. A crimp tool will effectively compress the contact barrel tightly around the cable strands, allowing them to be pressed tightly against each other and against the inside wall of the contact barrel.

When the crimp has been completed, check the appearance of the contact. A properly crimped contact barrel is compacted tightly with the outer strands. The outer strands on an improperly crimped barrel will be loose and will not have adequate clamping force. Test for low pull-out force. If the cable can be loosened, recrimp until it is tight.

## Soldering

The alternative to crimping is to solder all cable strands within the contact barrel. When using an open flame, make sure that you are not in an area where explosive gasses are present. The right proportion of solder is essential if this procedure is employed. Use a quality 60/40 soldering in wire form with a rosin flux core. Cable strands should be separately fluxed with rosin paste, and the contact should be held in a vise with the barrel end facing up. Apply heat to the outside of the barrel while the solder flows in beside the wire strands.

Contacts should never be forced into housing.



# ALEXANDER & POOLE

## IP67 PLUG STRUCTURE

Talking about waterproof industrial socket and plug, there are two main categories for sale: IP44 and IP67.

Besides the different grades of waterproof capability, another minor difference between the two types lies in the outer dimension, the design of the pin, the slot diameter.

The IP67 plug consists of shell, ring, seal, pin, grip, cable clamp, cable seal, screw, etc. the structure diagram of an IP67 industrial plug. For IP67 and IP44 industrial socket and plug, they have basically the same structure, except for the shell, the section rind, and the sealing ring.

The shell is designed as protection and enclosure for the pins inside. It is connected with the handler. The most important property for the shell is its waterproof performance. The handler, which is connected with the shell, is the other shell part for an industrial plug. The surface is designed with non-slip stripes. At the tail end, there is a cable entry. According to the IP67 standard, the cable entry is reinforced with thread cover, metal washer, and rubber sealing ring.

It is the key part of an IP67 industrial plug. The lock ring can be freely rotating around the shell while the fixing tooth protects the lock ring from falling off.

The sealing ring plays the main role in water protection. Normally it is made of rubber or other elastic material. In an IP67 industrial plug, three sealing rings are used:

- (a) the sealing ring used between the socket and plug insertion surface.
- (b) the sealing ring used between the shell and the handler.
- (c) the sealing ring used for the cable.



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### Why a GENUINE Anderson plug?



Low Resistance Silver or Tin Plated Copper Contacts. Allows UL rated currents up to 120 Amps.



Wire, PCB, and Busbar Contacts. Allows one connection system to meet multiple needs.

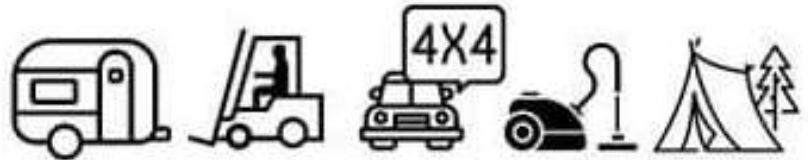


Chemical Resistant Housings.



UL Rated for Hot Plugging up to 50 Amps. Great for battery or other applications where the ability to interrupt circuits is required.

Alexander & Poole are the Sole Distributors of original Anderson Plugs in Southern Africa.

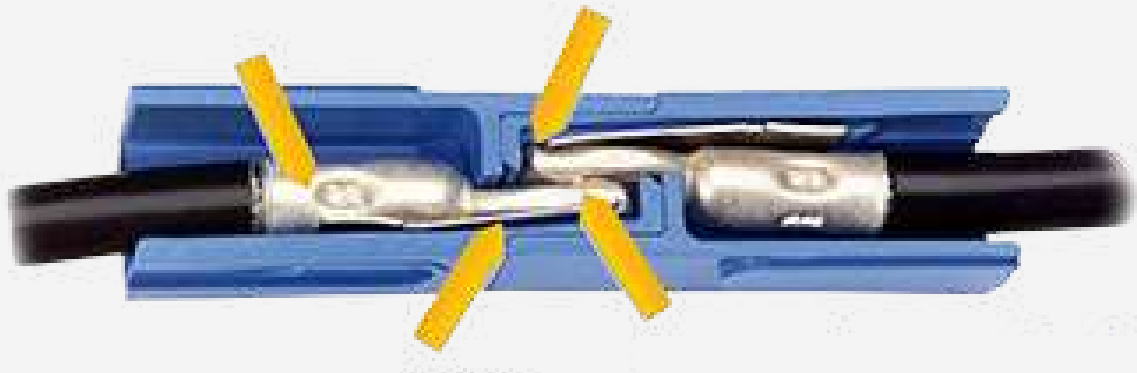


Paying MORE for knock-off plugs?

**ORIGINAL**



# 3 REASONS GENUINE ANDERSON CONNECTORS ARE FIRST CHOICE



Have you been wondering if Anderson Power Products (APP) connectors should be mated with similar connectors from other manufacturers? Wouldn't it be easier if you could mate all of the connectors that you have?

This would be an ideal situation but there are three main reasons why this can't be true. Now, before we get started let's understand the key component... flat-wiping contact.

This contact system has been so popular that other manufacturers also copied Anderson's original designs. The flat-wiping contact technology can be found in a lot of the APP connectors like SB and Powerpole.

## Component Standardisation

The vast majority of component standardisation efforts are focused on AC power such as The National Electrical Manufacturers Association (NEMA) or The International Electrotechnical Commission (IEC) wall outlets and plugs. AC power is primarily used to distribute electrical power in commercial and residential facilities that require standards for fire prevention and building code standards. Standardisation is necessary to ensure consistency among all manufacturers. Anderson connectors using flat-wiping contact technology; (Powerpole, SB, SBS, SBE, SBX, etc.) are not manufactured to a dimensional or performance normative standard. Other manufacturers have simply attempted to reverse engineer the original Anderson design. The performance of these copies varies significantly in absence of the APP expertise from invention of the flat-wiping technology.

## Manufacturing Differences

Copies of APP original designs often do not use the same raw materials, manufacturing, or assembly techniques. This directly results in performance differences and lack of compatibility. Every manufacturer also makes ongoing adjustments to product design or manufacturing methods which are only tested for reverse compatibility with their own products. As a result, any basis of compatibility established cannot be assured going forward. Further, the quality control differences can vary significantly from one manufacturer to the next.

## Safety Agency Certifications

Non-standardised components from different manufacturers do not maintain their certifications when mated with a product from another manufacturer. The certification is based on a mated set of product from the same manufacturer. In contrast, certification of standardised components like IEC or NEMA connectors are established based on compliance of only one half of the connection to allow mixing between different manufacturers. This is because the standard defines the parameters of both sides of the connection which all suppliers manufacture to.

The three above reasons highlight why Anderson connectors are not compatible with copies from other manufacturers: Component Standardisation, Manufacturing Differences, and Safety Agency Certifications.

# CEE OVERVIEW



Industrial products are different from the ones found in your household. They have the ability to support higher currents and voltages. This is why industrial plugs and sockets are suitable for use in polyphase systems with high currents. They are also ideal for use in scenarios where you need protection from environmental hazards.

Industrial outlets have several important supporting features. They have weatherproof covers or waterproof sleeves. Some industrial sockets come interlocked with a switch. This switch will help from accidentally disconnecting when connected to an energized plug. Besides, some industrial connectors are approved for use in “high-risk” areas, for example, in places like petrochemical plants and coal mines. These places have flammable gases, which can pose a threat.

The CEE Form, or the CEEForm, stands for Certification of Electrotechnical Equipment. This is a certificate issued for electrical products, and useful to trade electrical products globally.

The best-known CEE standards are the CEE 7, CEE 13, CEE 17, and CEE 22.

1. The CEE 7 is the standard used for household plugs and sockets.
2. The CEE 13 is the standard used for cables and cords.
- 3 The CEE17 is the standard used for industrial plugs and sockets.

Today, the CEE 17 is known as the IEC 60309 (formerly called the IEC 309). This is an international standard governed by the International Electrotechnical Commission (IEC). The IEC 60309 regulates industrial plugs, sockets, outlets, and couplers. In Europe, industrial connectors are made to the IEC 60309 standard. Various other criteria based on IEC 60309 include the BS EN 60309-2 and the BS 4343.

Usage scenarios for different industrial plug and socket models:

**Industrial plug:** This is similar to the plugs in the electrical equipment of our households. Used for any type of sockets.

**Industrial Connector:** This is a movable socket used in extended power supplies. They are suitable for portable use too.

**Wall-Mounted Industrial Socket:** This is mounted on walls and equipment surfaces. The wires that connect to this socket are on the wall and the device’s body.

**Panel Mounted Industrial Socket:** Typically used for cabinets or equipment. The user will fix the main body of this product on the surface. And the wiring inside the equipment or panel is not visible.

**Angled Mounted Industrial Socket:** This socket has a similar function to the panel-mounted ones. But the significant difference is the socket and the panel of the concealed inclined seat are angled. It does not have a typical 90-degree angle.

**Reverse Industrial Plug:** This is a fixed plug. You can expect only connectors to work with it. This reverse plug is divided into the panel and wall-mounted plugs. The installation form of the plug is similar to the one on the socket.



# Waterproof Industrial Socket

## WHAT IS IT?



The industrial sockets are designed to be used in many environments according to the application where the industrial socket is needed.

The secure reason is one of the top priorities when you choose an industrial socket. Especially when the products are used in the place of heavy dust and wet.

A waterproof industrial socket is invented driven by this requirement. Not all industrial sockets are waterproof. No matter which manufacturer produces it, they have the waterproof socket something in common.

The housing material: for a water-resistant industrial socket, the shell is made by PP (polypropylene) / PA (Nylon, Polyamide). These materials have good stability to water. Besides, they have a wide temperature range of tolerance from -40°C to 90°C.

The inner parts: almost all the plastic inner parts are made by flameproof PA material.

Actually, for a waterproof industrial socket, it is also a flameproof product.

For a waterproof industrial socket, you will find one of these marks on the shell IP44, IP55, or IP67. What is that? These marks are called IP degree, an abbreviation for Ingress Protection rating.

The IP degree is recommended by IEC. It has as many as 9 categories of protection rating, using for defining how an electric device is water and dust resistant. In different application environments, the rating level will be different.

The correct writing of a IP degree is IPXX, take IP67 for example. The first number “6” refers to the dust protection rating.

From IEC (cee), there are 7 categories to describe dustproof rating. They are numbers from 0 to 6.

The 6 is the highest rating, meaning that the dust is completely prevented from entering into the device.

The second number “7” refers to the water resistance capability. Similar to the dustproof grades, there are 9 waterproof degrees, showing with numbers from 0 to 8.

The 7 is the second-highest protection rating, meaning that the socket can still work safely when it is underwater (no deeper than 1 meter) in a short time.

For the waterproof industrial socket, there are 3 grades which are the most commonly seen: IP44, IP55, IP67.

# POOLE

ALEXANDER & POOLE CC

## PLUGS, SOCKETS AND CONNECTORS

South Africa's only approved supplier



Transparent poly carbonate lid for ease of visual inspection and phase colours are correct for the necessary phase rotation uniformity.

Clear indication of single or dropped phase voltage.

Three red LED lights to indicate that each individual phase voltage is present at the isolator.

Three green LED lights to indicate that each individual phase voltage is present at the socket outlet plug.

Mechanically dual interlocked for safe operation.

Durable weather resistant plastic.



### PERFECT FOR APPLICATION



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# INGENIOUS CONNECTIONS

Quickly and easily install the plugs and sockets using a minimum of tools.



## Clever Energy Distribution with Alexander & Poole

Around-the-clock production: the conveyor belts and machines of a manufacturing plant hardly ever stand still. To prevent downtimes, they need to be consistently and reliably supplied with power and data. We can help! You'll find a variety of tried-and-proven plugs and sockets in our product range. Combination units are available for wall mounting, suspending from the ceiling, and carrying around. For data transmission, we offer a wide range of solutions including industrial network distributors, data port sockets, and compact network distributors.

Thanks to clever features, it's easy for you to install our solutions and safely and reliably use them for years. Our CEE plugs and sockets boast an ergonomically optimised design, nubbed grip zones, a rubberised nubbed cable gland, an easy-open hinged cover, and locking sliders to ensure that CEE plugs and connectors are easy to grip, rest perfectly in the hand without slipping, even when moist or wet, and have a lifetime of several thousand mating cycles.

Our plugs and sockets are made of robust, durable materials. The plugs and connectors feature ingress protection, this means that they are optimally protected from dust and water.

Featuring highly heat resistant contact carrier and are optionally available with nickel-plated contacts. The plugs also have nickel-plated contacts.

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**COMBINATIONS FOR WALLS, CEILINGS, AND FLOORS**

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**SPECIAL SOLUTIONS FOR SPECIAL REQUIREMENTS**

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**EASY TO CONNECT AND DISCONNECT**

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**ROBUST, LONG-LIVED MATERIAL**

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# HOW TO USE A CEE PLUG WHEN CAMPING?



## SAFE WITH CEE

It is always the same image in each campsite or motorhome area: no sooner has a caravan or motorhome reached the location allocated to it than the crew jumps out of the vehicle. After a quick search in the gas box or an outside storage compartment, the cable drum and the blue CEE plug are on the floor. Then the CEE plug is quickly plugged into the exterior pocket of the vehicle and connected to the cable drum. After unwinding the cable drum, the plug is inserted into the power column. And the vehicle's electrical devices already work with electricity from the campsite or pitch.

Besides the robustness and protection against dust and moisture, there are several other reasons for using CEE plugs. As we have already mentioned, it is impossible to connect a CEE plug "incorrectly." In addition, the connections are consistently designed for 16 amps. Many campsites often have a 4, 6, or 10 amp low fuse power supply. Your kettle or hairdryer can quickly blow your location fuse.

You can also use adapter cables that you connect via an extension cable. These are available on cable drums in various lengths. However, when using the cable, unwind it completely from the drum to prevent heat build-up. If you secure the connections with suitable rain and dirt safety boxes, nothing can go wrong.

## HOW DOES IT WORK WITH THE ELECTRICITY FROM THE CAMPSITE?

Once there was a bucket of cold water next to the trailer for chilling beer. Today there is an electric cooker. Electric power, which supplies the energy necessary for recreational vehicles, is now the norm. After all, the coffee machine, refrigerator, and lighting should contribute to the usual comfort of camping trips. In addition, the vehicle battery or that of the cell phone, tablet, or camera needs their juice for the next use.

Your motorhome or caravan is fitted with a CEE plug socket, which is housed in a box located in the outer wall of the vehicle. Inside, the cable is fused and goes to electrical devices and 230-volt outlets in your vehicle. If you now open the flap, you will discover the three pins of the CEE adapter. The CEE connector of your power cable is plugged in here. Directly connect the other end to the power column of your parking space, and your vehicle will already have 230 volts.

You cannot avoid buying a CEE adapter, whether with a tent, caravan, or motorhome, camping. You need the CEE plug and an extension cord if you want to be supplied with electricity at your campsite.



# THE IMPORTANCE OF WELDING CABLES

## AND HOW TO CARE FOR THEM

### »»» WHY IS IT IMPORTANT TO CARE FOR YOUR WELDING CABLES?

Did you know that welding cables are vital to the proper functioning of your welding machine? Neglecting them could lead to issues for your machine. Just like how preventative health care is important for yourself, it's essential to do some preventative maintenance on your welding equipment.

Welding cables are a frequently overlooked and mistreated component of the welding process. Cables that are run over, excessively taped up, spliced, or undersized can cause the following issues:

1. Overworking or over-duty-cycling of the welding machine, which can lead to unnecessary downtime and repairs.
2. Increased electricity or fuel costs due to the overworked machine, which can eat into your bottom line.
3. Poor weld characteristics that may cause additional rework, repairs, and downtime on the job.

### »»» HOW TO CARE FOR YOUR WELDING CABLES?

1. Keep the weld cables short. For example, it's crucial to avoid using a 30-meter length of cable for a 15-meter welding job. Instead, use quick connects if possible and save the extra cable for future needs.
2. Do not coil the weld cables during welding. Coiling creates a large electromagnetic field around the cable hanger that can impact the welding machine's internal components and the arc quality over prolonged use.
3. Inspect the weld cables, output studs, and connections every morning. Replace or repair any faulty cables or connections, tighten any loose connections, and clean dirty connections with a wire brush. It only takes a few minutes to inspect at the start of a shift and is preferable to losing a day's work to replace a burnt connection or purchase new cables that weren't checked.



# POWER YOUR BUSINESS



**T**

hanks to clever features, it's easy for you to install our solutions and safely and reliably use them for years and have a lifetime of several thousand mating cycles.

Our plugs and sockets boast an ergonomically optimised design, nubbed grip zonest, a rubberised nubbed cable gland, an easy-open hinged cover, and locking sliders to ensure that CEE plugs and connectors are easy to grip, rest perfectly in the hand without slipping, even when moist or wet.

Our plugs and sockets are made of robust, durable materials. The plugs and connectors feature IP 44, 54 or 67 ingress protection and the sockets IP 44 or 67. This means that they are optimally protected from dust and water. The connectors for 63A and 125A feature highly heat resistant contact carrier and are optionally available with nickel-plated contacts. The plugs also have nickel-plated contacts. The five-pole plugs and sockets for 16A and 32A are also available in a R version with the same robust features. They are therefore resistant to aggressive substances.

Our wall and panel mounted receptacles are made of high-quality plastic with foamed housing seals.

The wall mounted receptacles are also optionally available in special plastic. This provides especially effective protection from chemicals, oils, and similar substances. The special plastic version is also equipped with highly heat resistant contact carrier and nickel-plated contacts.

Where high currents have to be transferred safely and economically, our customers and partners can always rely on Alexander & Poole. We think holistically and create powerful connections that enable people to handle energy more innovatively and to distribute and manage it more intelligently.

Dust, stones and mud, moisture, extreme temperatures and equipment that can weigh tons: below-ground and surface mining is a rough business. The harsh conditions take a heavy toll on tools and materials. Fortunately, our plugs and sockets as well as receptacle combinations let you safely and flexibly distribute power in even the most adverse environments. The products are robust, long-lived, and easy to use. Our solutions also deliver maximum user safety. They have all been thoroughly put through their paces in our certified testing lab. For brown coal and salt mining, quarries, gravel pits, or mines: our solutions give you the power you need above or below the surface



# Ergonomic Genderless Design



The concept of genderless design in relation to Anderson plugs refers to the creation of a design that is not specifically associated with or tailored for a particular gender. In this context, Anderson plugs are connectors commonly used in electrical systems, typically in automotive and industrial applications, to facilitate the connection and disconnection of power sources.

A genderless design for Anderson plugs would mean that the connectors have a universal design that does not cater to a specific gender's preferences or needs. This could involve creating a plug design that is neutral and not designed with any gender-specific elements or attributes.



The idea behind genderless design is to create products that can be used by anyone regardless of their gender identity or expression. It promotes inclusivity and eliminates the assumption that certain designs or products are only suited for specific genders. By incorporating a genderless approach, Anderson plugs can be designed to be more universally applicable and accessible to all users.



## Anderson Plugs

Have you been searching for a simple yet durable solution for power connection (batteries, backup power, automotive/caravan power, telecommunications and data transmission)?

Look no further, the Anderson plug made is designed to handle a high, continuous load.

Made of ultra tough polycarbonate housing, the Anderson plug is built to beat any harsh conditions, including impact, shock, vibration and scratch, so you can go anywhere with reliable power connection.



**Power distribution:** Anderson plugs are used to connect heavy-duty cables to distribute electrical power to different mining equipment and machinery. They provide a reliable and secure connection, allowing for efficient power distribution throughout the site.



## ANDERSON PLUGS ARE COMMONLY USED IN MINING OPERATIONS FOR A VARIETY OF APPLICATIONS.

**Battery charging:** Mining operations often rely on battery-powered equipment, such as electric vehicles or underground machinery. Anderson plugs are used to charge these batteries, ensuring a safe and efficient power transfer.



**Welding:** In mining, there is often a need for on-site welding to repair or fabricate equipment. Anderson plugs are used to connect welding equipment to the power source, enabling the welding process to be carried out effectively.

**Communication systems:** Reliable communication is vital in mining operations for both safety and operational purposes. Anderson plugs may be used to connect communication devices, such as radios or intercom systems, to the power source or battery backup.

**Instrumentation and control systems:** Anderson plugs can be employed in mining for connecting sensors, data loggers, or other monitoring equipment to the control systems. This enables real-time monitoring of various parameters such as temperature, pressure, or flow rate, ensuring optimal operation and safety.

Overall, Anderson plugs play a crucial role in ensuring efficient power transfer, connectivity, and safety in mining operations. They are designed to withstand harsh environments, rugged conditions, and heavy electrical loads commonly encountered in mining sites.



### Power Transfer:

Battery plugs facilitate the transfer of electrical power between the battery and the connected device or system.

### Polarity

Identification: Lead-acid battery plugs often have different shapes or markings to indicate their polarity, distinguishing between positive (+) and negative (-) terminals. This polarity identification ensures correct and safe connections, preventing reverse polarity, which could damage the battery or connected devices.

Lead-acid battery plugs, also known as battery connectors or terminals, serve as the interface between the battery and external devices or electrical systems. The main purpose of lead-acid battery plugs is to establish a secure and reliable electrical connection between the battery and the load or charging source.



### SPECIFIC PURPOSES OF LEAD-ACID BATTERY PLUGS

**Easy Installation and Removal:** Battery plugs are designed for easy installation and removal, allowing for quick and convenient battery replacement or connection changes. They often feature a simple plug-and-play mechanism, making them user-friendly and time-efficient.

**Connection Stability:** Battery plugs provide a secure connection that prevents accidental disconnection due to vibration, movement, or external forces.

**Safety Features:** Some battery plugs incorporate safety features such as built-in fuses or circuit breakers. These protective elements help prevent overcurrent or short circuits, safeguarding the battery, connected devices, and the overall electrical system.



## CEE PLUGS

CEE plugs are designed to provide a safe and efficient way of connecting electrical devices to power sources. They are commonly used in industrial, commercial, and domestic applications and are known for their robustness and reliability. CEE plugs are often used for high-power equipment, such as machinery, tools, and appliances.

CEE plugs are designed to ensure safety and prevent accidental disconnection. They feature sturdy construction with robust materials and are resistant to mechanical stress, water, and dust. The plugs have a standardised shape and are colour-coded for easy identification.

In addition to their safety features, CEE plugs also offer convenience and versatility. Many CEE plugs have a locking mechanism that securely holds the plug in place, preventing accidental unplugging. They also allow for easy connection and disconnection, making them ideal for temporary installations or applications where devices need to be moved frequently.

One of the main advantages of CEE plugs is the ability to handle high currents.



## CEE PLUGS COME IN DIFFERENT CONFIGURATIONS

CEE plugs are widely used for their high current rating, safety features, and versatility. They provide a reliable and efficient way of connecting electrical devices to power sources, ensuring the safe and secure operation of various electrical equipment. Whether in industrial, commercial, or domestic settings, CEE plugs play a crucial role in powering and operating a wide range of devices.






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## SECURE & ROBUST CONNECTION

- Quick and easy connection.
- Handle high current loads without overheating or losing voltage.
- Sustain heavy-duty usage.
- Maintain a reliable connection in harsh environments.

Anderson plugs are highly sought after by off-road enthusiasts and adventure seekers who rely on their vehicles for extended journeys and remote camping. The reliability and durability of Anderson plugs make them a popular choice for ensuring uninterrupted power supply while on the road.

Providing a safe and efficient electrical connection for off-road vehicle accessories, enhancing the convenience and functionality of 4x4 vehicles during outdoor adventures.