

Cadillac® Trainline Connectors, Assemblies & Junction Boxes for Freight & Rail Passenger Transportation



Cadillac 480V HEP

Clements National's Cadillac brand of trainline jumpers and receptacles provide head end power (HEP) primarily to locomotive hauled passenger rail cars.

The power source can also be from a power car or wayside ground based source. Head end power is a convenient and flexible means by which electrical power can be generated by a central source and transmitted through each rail car via a trainline connection to operate auxiliary equipment. Typical HEP loads include HVAC, lighting battery charging/low voltage power supply, food service equipment and water heating equipment. The Cadillac brand of HEP trainline products has been time tested and provides the reliability and quality that you expect!

Design Benefits:

- Integrally molded plug (standard color – yellow) and receptacle (standard color – red) connectors. Optional colors available upon request.
- Integral molded design per Amtrak specification D77-24 provides superior environmental and shock protection.
- Qualified to APTA and Amtrak D77-24 specifications
- ASTM Class M copper wire stranded cables assure maximum flexibility under adverse temperature conditions.
- Multi-tined socket contact design for enhanced contact performance.
- Floating silver-plated copper contacts, self aligning for easy mating, resist excessive voltage drop.
- Maximum water tightness achieved with:
 - Outer peripheral O-ring seal on plug body
 - Individual contact "closed entry" sealing between plug and receptacle interface
- Receptacle skirt features a patented, integrally molded, expandable stabilizer to eliminate insertion problems often encountered in connectors with glued support rings.



*MPA Series
with female contacts*

*MRA Series
with male contacts*

*Integrally
molded
stabilizer*

RRA/RPA Series 480V Connector Kits, ideal for quick in-field installation or repair situations.

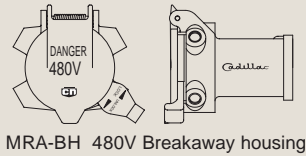
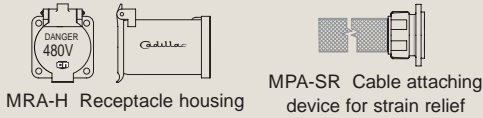
*RRA receptacle kit
with male contacts
(RPA plug kit available
but not shown)*



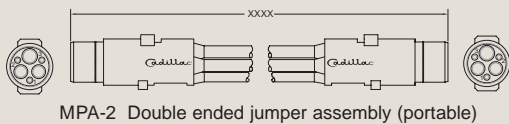
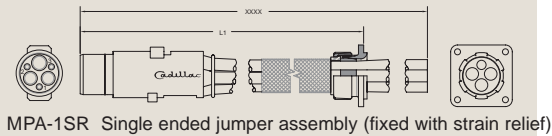
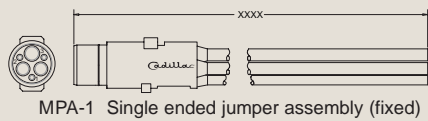
*Utilizes the same field-proven
contact system as the
integrally molded series*

MRA-H-V55
Improved receptacle
housing with integral
OOO ring latch

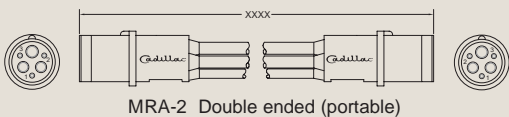
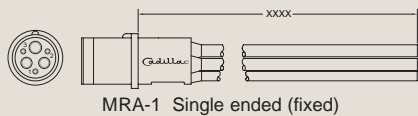
Receptacle Housings



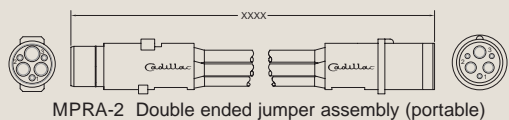
MPA Series Jumper Assembly Ø Plug assembly with female contacts



MRA Series Ø Receptacle assembly with male contacts



MPRA Series Jumper Assembly Ø Plug/Receptacle assembly with female/male contacts



MPA/MRA-MPRA Performance Specifications:

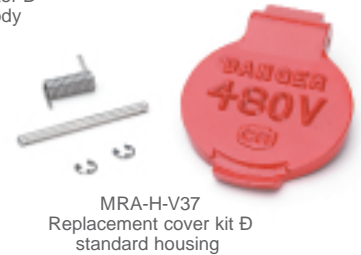
Amtrak D77-24 & APTA RP-E-016-99
Operating temperatures: -40°F to 140°F (-40°C to 60°C)
Electrical rating: Ø Power contacts: 600 VAC, 400 amperes
Ø Control contacts: 600 VAC, 40 amperes
Dielectric strength: 2000 V rms
Connector body material: DuPont Hypalon Rubber
Mating/unmating forces: 70 lbs. Maximum Ø 30 lbs. Minimum
Contact shock: Mated connector pairs shall withstand 6' drop onto concrete surface
Watertightness & Weather Proofness: The mating of cable assemblies should provide a connection which is weatherproof when exposed to the conditions described in APTA RP-E-016-99 Section 4.5.

Note: XXXX denotes customer specified length in inches.
Ex: MPA-2-0060 = 60" in length.

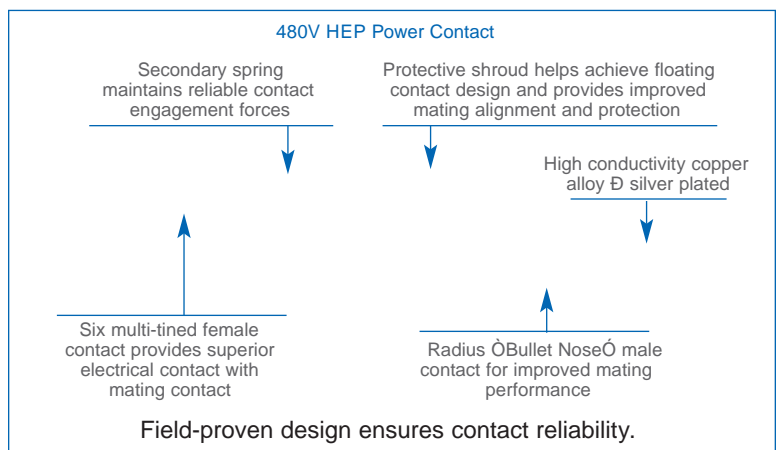
MRA-H
Standard receptacle
housing

MRA-BH
Improved breakaway
designed receptacle
housing

MRA-1-XXXXA
480V receptacle kit which
includes housing and
receptacle assembly



MPA-SR
Cable strain relief
for fixed jumper



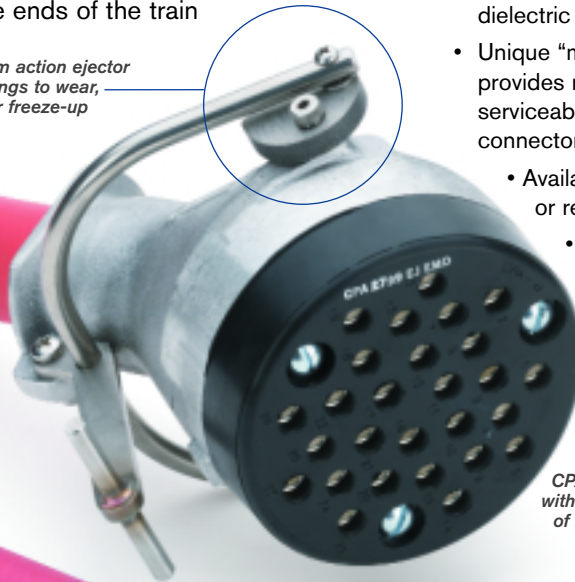
Cadillac 27 Point Trainline

Clements National's Cadillac brand of 27-point jumper assemblies and receptacles are available in a variety of configurations for trainline (COMM) car control/communication and (MU) multiple unit locomotive control.

Car control/communication trainlines are interconnected between the entire length of the car. Typical electrical signals include: door controls and indications, public address, brake applied/released indications. Multiple unit trainlines carry traction and dynamic brake commands and indications. Typical signals between equipment include:

- Locomotives coupled together
- Cab car and locomotive
- Locomotives or power cars placed at opposite ends of the train

Heavy-duty cam action ejector has no springs to wear, corrode or freeze-up



A full line of 27-point trainlines and accessories are available. Cadillac connectors have been designed for hostile environments and rugged use. Stay connected with Cadillac 27-point trainlines!

Design Benefits:

- Manufactured to conform to AAR S-512 and APTA RP-E-019-99 specifications.
- Qualified for use on all Amtrak equipment.
- Self aligning silver plated copper socket contacts permit low mating forces, prevent excessive voltage drop and promote long contact life.
- Interchangeable and intermateable with other major brands
- Environmentally protected design with individual contact seal boots and outer "O" ring seal on front dielectric to connector body.
- Unique "multi-contact" band design on pin contacts provides reliable electrical engagement and is field serviceable and replaceable without removing connector from train.
 - Available receptacle cover kits for field repair or replacement
 - Wired receptacle assemblies are available for any length or configuration
 - Durable powder paint coating offers a multitude of color options and provides superior long-term protection of hardware.

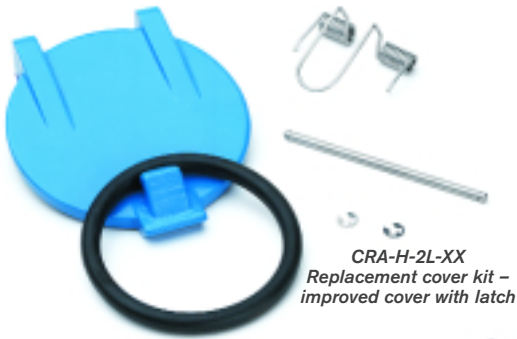
CPA-EJ Series - Plug jumper with ejector lever to allow ease of removal from receptacles



CPA Series - Plug jumper with female contacts

MU

COMM



CRA-H-2L-XX
Replacement cover kit – improved cover with latch



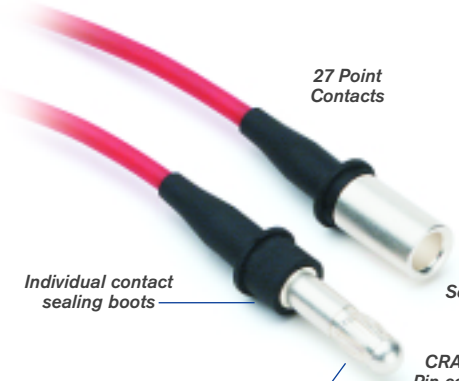
CRA-H-2-XX
Standard replacement cover kit – standard cover

Note: XX=Specify color. BK=Black, BL=Blue, RD=Red, OR=Orange, GR=Green, YL=Yellow

CPA-27-V85 - Blue flag plug with locomotive lock-out protection



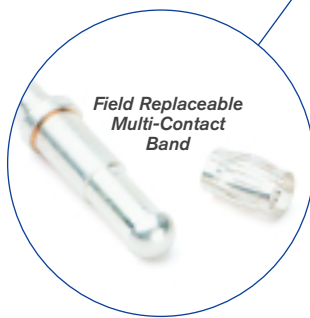
Consult factory for optional connector housing colors



27 Point Contacts

Individual contact sealing boots

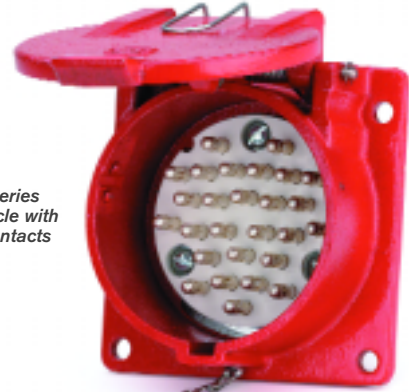
CPA-42S-K
Socket contact kit



CRA-42P-K
Pin contact kit

Field Replaceable Multi-Contact Band

No removal or disassembly of receptacle is required



CRA Series
Receptacle with male contacts

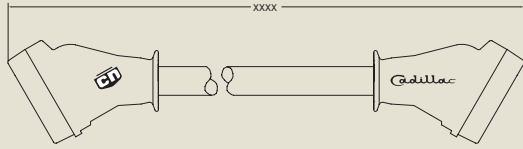


Locking tab holds cover open to allow easier plug connection & removal

CRA Series Receptacle with optional Locking Cover

- CRA-27-MU-CL - MU receptacle assembly
 - CRA-27-AMTK-CL - COMM receptacle assembly
- Consult factory for optional connector housing colors

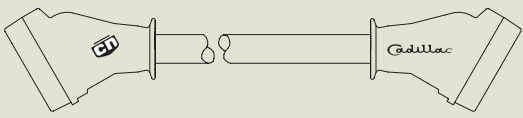
CPA Series Jumper Assembly – Plug assembly with female contacts



CPA-27XX-AMTK Communications Jumper Assembly



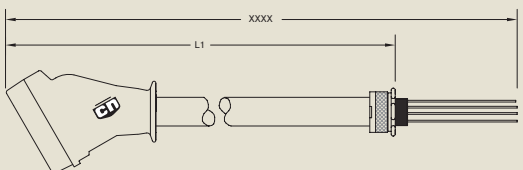
COMM



CPA-27XX-MU Locomotive Control Jumper Assembly

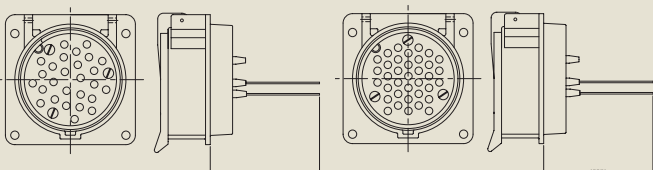


MU



CPA-27XX-VXX Single ended jumper fixed

Receptacles with Male Contacts



CRA-27 AMTK Receptacle

CRA-27 MU Multiple-Unit Receptacle

27 Point Performance Specifications

- Operating temperature:** -40°F to 140°F (-40°C to 60°C)
- Electrical rating:** 30 amps 600V
- Dielectric strength:** 1000 volts RMS
- Housing material:** Aluminum alloy
- Contact mating force:** 54+/-10 lbs.

Note: XXXX denotes customer specified length in inches. Ex: CRA-2760-MU = 60" in length

Cadillac CN Series

Threaded Power and Control Connectors for Rail Transit Applications

The Cadillac CN Series is a heavy-duty, threaded, circular metal shell, multi-pin and socket interconnection system that meets and exceeds the electrical and mechanical requirements of Mil-C-5015. Standard cable plug and receptacle styles are available in popular rail transit insert configurations combining power, or power and signal circuits. Various shell hardware and component variations are available to meet your design objective. The unique double lead threaded coupling provides quick and positive mating even under the most severe and hostile environments. Popularized in the off-shore petroleum, power distribution, and process automation/control system applications, the heavy-duty Cadillac CN Series is suited perfectly for rail transit applications.

Design Benefits:

- Operating temperature: -67°F to 225°F (-55°C to 107°C)
- Quick coupling achieved with positive double lead thread
- Overall heavy-duty shell and insert construction
- Available in crimp, silver plated contacts
- Wide wire range sizes from 20 AWG to 4/0 AWG
- Durable corrosion resistant finish with black hard anodic coating
- Contacts are rear inserted and offer convenient disassembly without tools by removal of integral pressurizing sleeve and gland nut
- Environmental protection achieved by large adapter compression grommet, adapter internal seal, elastomeric shell seal, and rear elastomeric insert grommet
- Extended length, heavy duty cable adapter and available stainless steel mesh basket weave cable grip for improved cable protection
- All Cadillac CN Series connectors are intermateable with all major brands



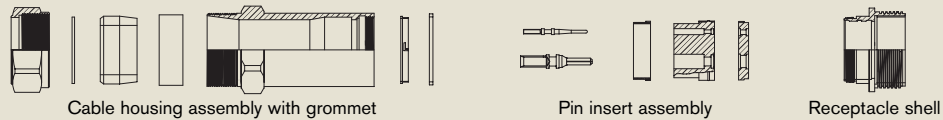
CPLMLJ cable plug with jack nut, shown with pin insert



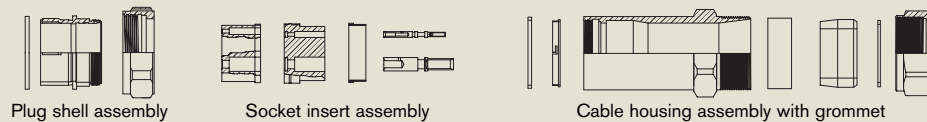
CREP square flange receptacle shown with pin insert and optional flip cover

Custom cable assemblies are available using CN Series connectors, consult Clements for information

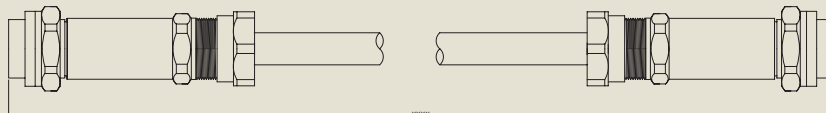
Typical Plug Connector/Components with Pin Contacts – Cadillac CR



Typical Receptacle Connector/Components with Socket Contacts – Cadillac CP



Typical Receptacle Custom Jumper Assembly (shown as portable jumper assembly)



Cadillac 50 Series

Quick Disconnect Bayonet Power and Control Connectors for Transit Applications

The Cadillac 50 Series bayonet connector is the most versatile electrical multi-pin connector available. Originally designed for the hostile environment of the transportation industry, 50 Series connectors are based on the MIL-C-5015 specification. They offer improved performance characteristics while maintaining the standard MS shell sizes and insert configurations, and are available in quick couple/de-coupling bayonet or standard threaded styles. With a wide array of available options and insert configurations, the versatility offered by these connectors is unmatched.

Contact Clements for a detailed 50 Series catalog or help with your specific application. We'll provide you with an interconnect solution that is both cost effective and meets your design objective.



Heavy-duty coupling nut for severe service applications

Sure grip protective molded coupling nuts are available in various colors

Durable polyurethane black finish for transit environments



The 51 Series Rail Transit Connectors offer interconnect solutions where high reliability is required in hostile environments.

Special circular connectors provide threaded or bayonet coupling solutions for a wide range of applications.

Consult Clements for more information.

Two bayonet coupling styles are available. Each offers the same unique positive lock/quick disconnect that surpasses standard Mil-Spec environmental requirements.



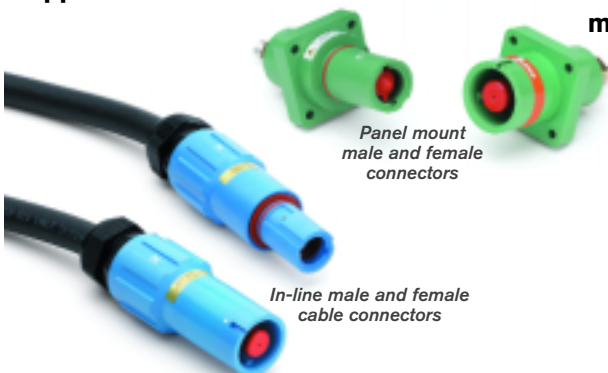
Improved bayonet coupling system for increased reliability in hostile environments such as rail transit applications. Ask for Cadillac 51 Series connectors.

Standard/traditional Mil-Spec bayonet coupling system utilizing a dynamic sealing gasket. Ask for Cadillac 50 Series connectors.

Design Benefits:

- Operating Temperature: -67°F to 257°F (-55°C to 125°C)
- Rapid coupling/de-coupling action
- Increased vibration resistance with wave spring and washer inside coupling nut
- Waterproof protection after coupling
- Coupling operation ensured by audible snap-in lock
- Shells manufactured from high quality aluminum alloys
- Protection of the critical point of the receptacle's bayonet ramps by means of a stainless steel pin
- Crimp or solder type contacts are available for all sizes
- Available gold plated over nickel or silver plated contacts
- A wide range of contact sizes - 20 AWG to 4/0 AWG
- Available flame resistant insulator and elastomeric components conforming to specifications requiring low smoke and low toxicity performance
- Available extended coupling life performance with Cadillac 52 Series
- All Cadillac 50 Series connectors are intermateable with all major brands
- Also available Cadillac 53 Series Threaded connectors conforming to Mil-C-5015 specification

Power Line Series, quick mating single pole high current connector for harsh environment applications feature rear removable contacts and safety protection with an optional "dead front" male & female interface.



Panel mount male and female connectors

In-line male and female cable connectors

Design Benefits:

- Temperature rating: -30° to +125° C Rated IP68 when mated.
- Maximum current: 750A for cables up to 300 mm²
- Accepts cable ranges from 50mm² - 300 mm²
- Different keying orientations are available to eliminate the possibility of accidental cross-mating.
- Various color codes are available for easy circuit identification: black, blue, brown, green, grey, red, white and yellow.

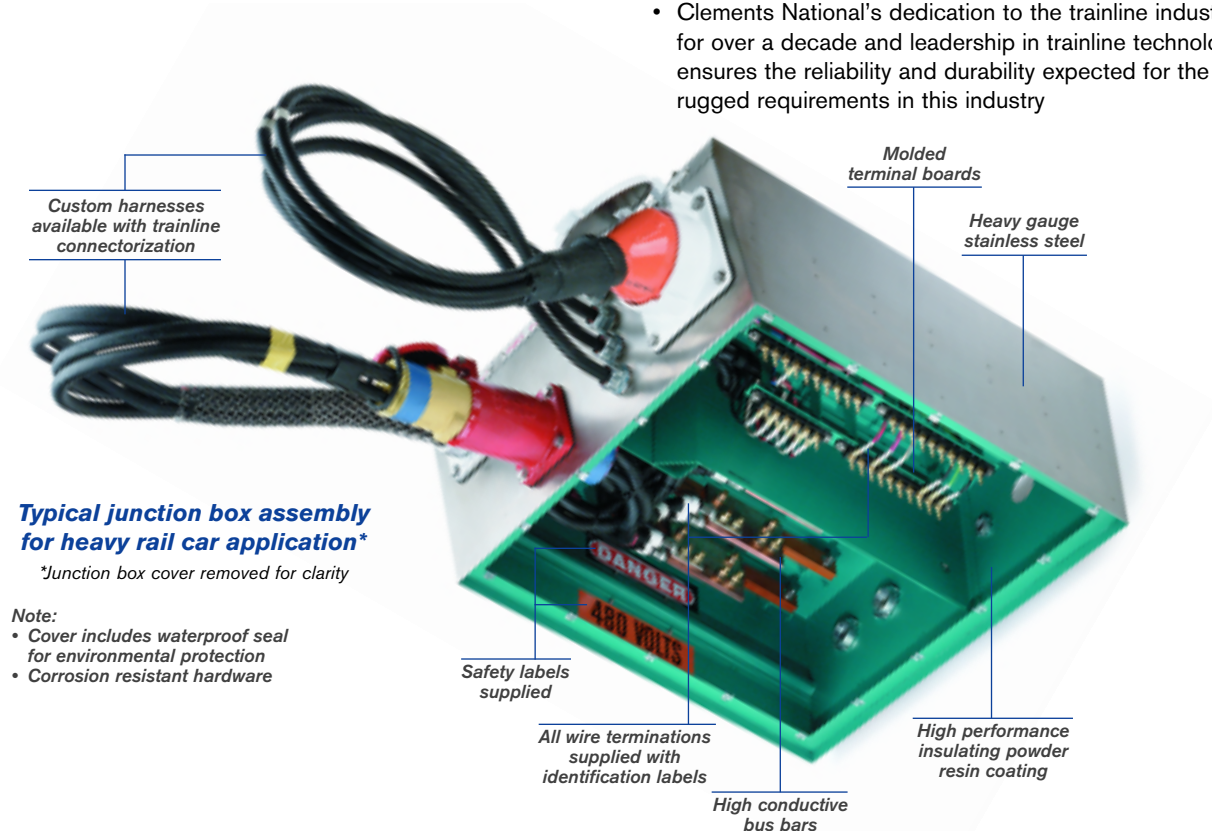
Cadillac Junction Boxes

Cadillac Custom Junction Box Assemblies for Transit Applications.

High quality, modular, fully-assembled junction boxes for new transit rail car, re-hab, and repair/maintenance projects. Cadillac junction boxes are provided as customer specified or Clements National designed to specification requirements. Clements National provides “one source” manufacturing of junction boxes requiring the procurement and supply of specific internal components, cabling, wire termination, connectors, and electrical testing. Each junction box is serialized for quality control purposes prior to leaving our facility.

Design Benefits:

- “One Source” manufacturing eliminates multiple out-sourcing tasks, helps avoid costly project delays, and improves overall project budgets
- A wide range of Cadillac Series trainline connector products are available for any transit car manufacture, rehab, or maintenance/repair projects
- As an ISO 9001:2000 certified facility all junction boxes are quality inspected, serialized and tested prior to shipment
- Heavy gauge stainless steel is used in fabrication providing a durable, long lasting unit protected from the hostile rail transit environment
- Use of high performance insulating powder resin coating provides superior electrical properties, high adhesion, improved edge coverage, and excellent thermal and mechanical shock resistance
- A Clements National “designed” junction box incorporates the most cost effective solution to meet your design objectives
- Clements National’s dedication to the trainline industry for over a decade and leadership in trainline technology ensures the reliability and durability expected for the rugged requirements in this industry



Typical junction box assembly for heavy rail car application*

**Junction box cover removed for clarity*

Note:

- Cover includes waterproof seal for environmental protection
- Corrosion resistant hardware



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Specifications subject to change without notice.

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