



The Right Connection™

Static Bonding and Grounding Solutions

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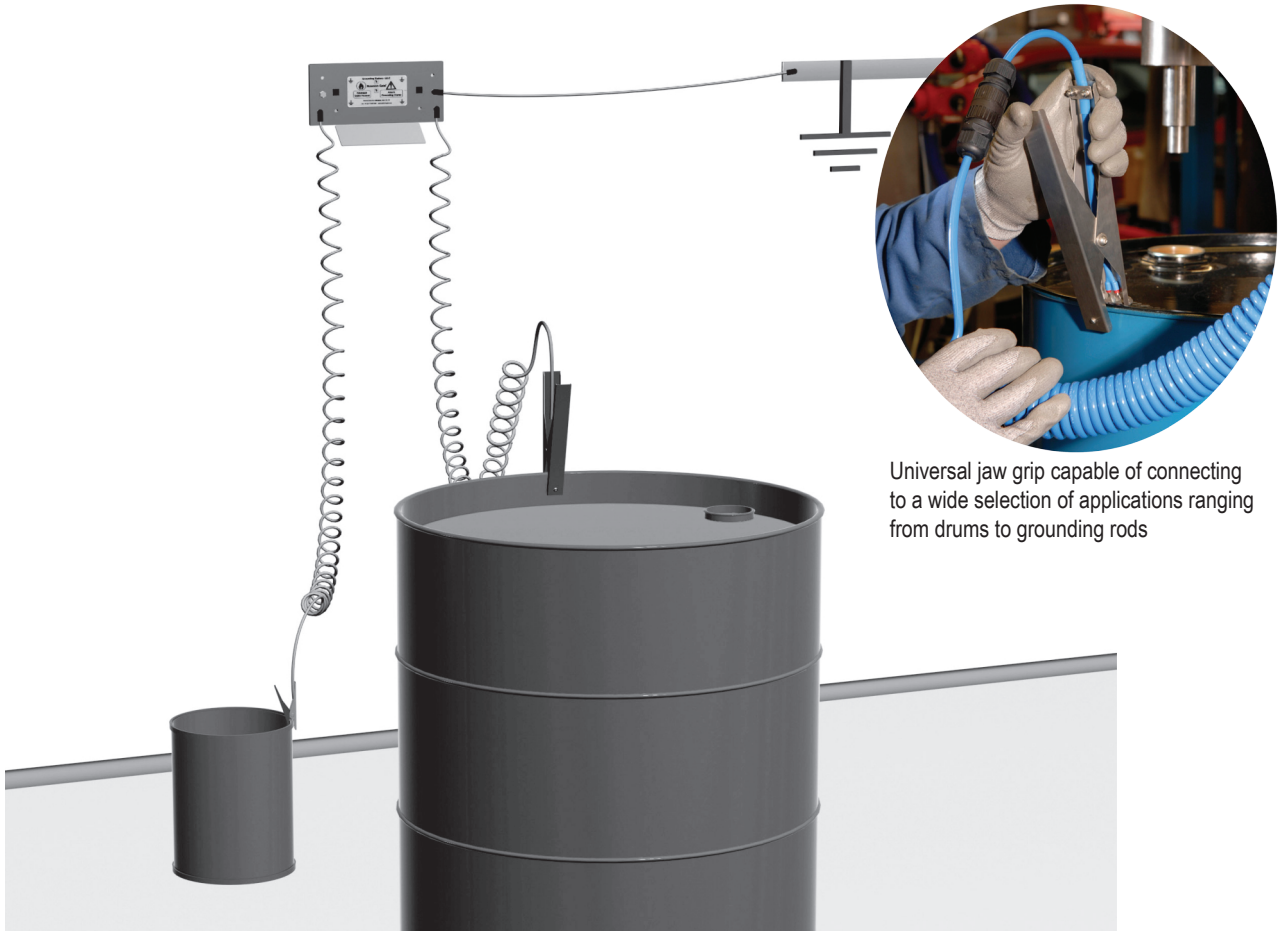
GOODYEAR
RUBBER PRODUCTS INC.

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Bonding and Grounding Mobile Vessels and Small Containers



Universal jaw grip capable of connecting to a wide selection of applications ranging from drums to grounding rods

Movable metal items may be connected to the ground using the type of clamps and cables illustrated above. The clamp should be designed to grip the container securely and to bite through any paint or rust layers. As a mechanical device, it should be approved for use in the appropriate Potentially Explosive Atmosphere zone. Cable cores and connections should be strong enough to avoid damage from repeated movement as the clamp is brought to and from the container.

CLC/TR 50404 states that: There are items of equipment such as drums, funnels and trolleys, which cannot be permanently connected to earth through the main plant structure, to allow for this, suitable temporary earthing connections should be used (11.3.1.2).

NFPA77 states that: When being filled, metal containers and associated fill equipment should be bonded together and grounded (7.13.3).

Features:

- Grounding clamps, cables and reels provide static control solutions for a wide range of electrostatic hazards in flammable and explosive atmospheres.
- Typical grounding applications in flammable or explosive atmospheres include:
 - filling containers, drums or IBCs with flammable / combustible material
 - grounding vessels engaged in mixing or agitating flammable / combustible materials
 - ensuring isolated conductors are fully grounded within potentially hazardous atmospheres
- Static grounding clamps are approved and certified for use within ATEX zones and North American classified areas. In order to meet and exceed these requirements the grounding clamps must be capable of passing a range of stringent tests.

Stainless Steel Static Grounding and Bonding Clamps



- FM and ATEX approved
- All stainless steel VESX45 and VESX90 clamps feature durable, sharp, hardened Tungsten Carbide pointed contacts to help make good metal to metal contact, multi-turn stainless steel torsion springs and cable strain relief.
- chemical and abrasion resistant retractable, spiral Hytrel® sheathed grounding and bonding cable

One VESX45 Stainless Clamp with Spiral Retractable Cable Attached Indoor Use

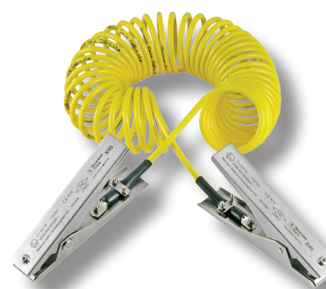
Working Length	Description	Stainless Steel Part #
6'	10' Hytrel® sheathed spiral retracta cable with 1 VESX45 clamp	CAB10
12'	20' Hytrel® sheathed spiral retracta cable with 1 VESX45 clamp	CAB1010



1 VESX45 clamp and cable

Two VESX45 Stainless Clamps with Spiral Retractable Cable Attached (one clamped attached to each side of cable) Indoor Use

Working Length	Description	Stainless Steel Part #
6'	10' Hytrel® sheathed spiral retracta cable with 2 VESX45 clamps	CAB10-2
12'	20' Hytrel® sheathed spiral retracta cable with 2 VESX45 clamps	CAB1010-2



2 VESX45 clamps and cable

VESX90 Heavy Duty Stainless Clamp and Spiral Retractable Cable Indoor / Outdoor Use

Working Length	Description	Stainless Steel Part #
16'	28' Hytrel® sheathed spiral Cen-Stat retracta cable with 1 VESX90 clamp	VESC901U05



VESX90 clamp and cable

Cen-Stat Stainless Steel Static Grounding Clamps

Cen-Stat grounding clamps provide a robust and long-life solution in harsh operating environments. The clamps are supplied in two sizes and are specified based on the operating environment and the size of the equipment to be grounded.

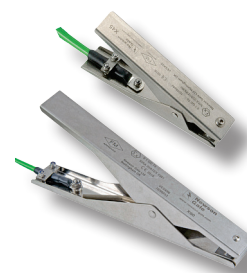
Medium duty Clamps:

- recommended for use in processes using drums, containers, solvent safety cans and mixing vessels of 26 gallon capacity or less in situations where space does not permit the use of heavy duty clamps
- jaw opening diameter of 0.6"

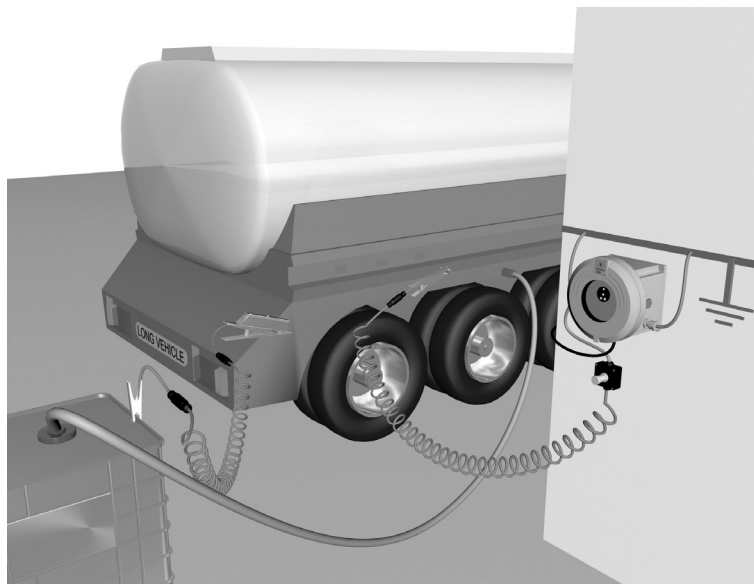
Heavy Duty Clamps:

- recommended for grounding large equipment ranging from 26 gallon drums to 500 gallon IBCs, mixing vessels and mobile tanks
- jaw opening diameter of 1.57"

Description	Part #
Medium duty stainless steel grounding and bond clamp	VESX45
Heavy duty stainless steel static grounding clamp	VESX90



Trans-Loading Road Tanker/Railcar Transfers to IBC/Tote/Drum (using a ground monitoring system and portable bonding assembly)



When working in hazardous areas, specialized trucks and service vehicles are typically equipped with simple bonding lines to provide a means of grounding the vehicle to the plant equipment (pipeline, reactor, tank, etc.). However, the provision of such bonding lines does not verify that they are used correctly and that they are in a satisfactory working condition. For this reason, many organizations in industrial and emergency response situations use self-testing bonding and grounding systems like Bond-Rite® to add an important safety check to their operations.

These type of systems are intrinsically safe monitoring equipment that tests the bond either between the vehicle and the plant equipment or back to a verified ground point.

- API 2219 (5.3) states "Even when using conductive hose, vacuum truck operators should both ground and bond their trucks when practical to reduce the possibility of electrostatic charges."
- NFPA77 (8.7) recommends use of conductive or semi-conductive hose and/or bonding of all conductive components and grounding the truck.



Bond-Rite® Self Testing Clamps

The Bond-Rite® range of self testing clamps enables personnel handling flammable and combustible products to confirm that equipment subjected to electrostatic charge accumulation is capable of dissipating the static charge safely and effectively.

- FM, ATEX, CSA International approved
- If the green LED light flashes continuously once the clamp is connected, the operator running the process can proceed knowing that hazardous electrostatic charges will not accumulate on the equipment.
- Once connected the Bond-Rite® clamps continuously monitor the resistance of the circuit between the equipment and the verified ground point.
- If a resistance greater than 10 ohms is detected in the circuit the LED will **Stop Flashing** warning the operator of a potential static hazard.

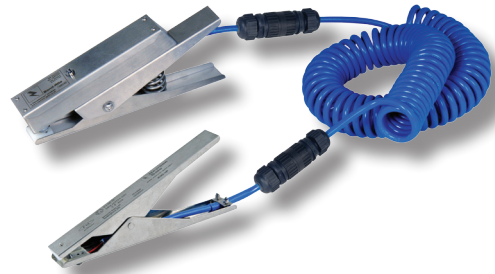
Applications:

- Grounding conductive containers, drums, IBCs and vessels engaged in a wide range of potentially hazardous processes including filling, mixing and blending operations carried out in potentially flammable or combustible atmospheres.
- grounding vacuum trucks engaged in hazardous material recovery operations
- bonding vehicles and pump skids transferring flammable product into containers, IBCs and drums



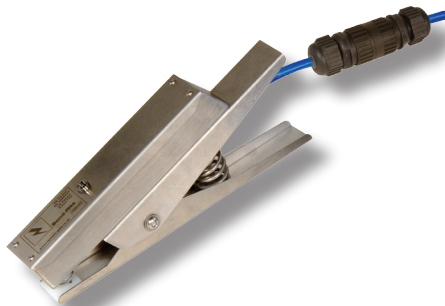
The Bond-Rite® EZ is a portable unit that bonds equipment engaged in liquid or powder transfers conducted in locations where installed grounding and bonding equipment is not provided. The EZ comprises a Bond-Rite® clamp with a flashing LED located in the clamp housing combined with the option of a heavy-duty or medium duty 2-pole clamp, plus a flexible range of cable length options to complete the assembly.

- provides the user with the flexibility of bonding equipment in locations where permanent grounding and bonding installations are not provided
- 10 ohms loop resistance monitoring is compliant with NFPA77 and international Best Practice standards.
- FM, ATEX, CSA International approved: Class I, Div 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III, T4



The Bond-Rite® clamp is the only static grounding clamp which provides operators with visual verification that potentially charged equipment is connected to a verified static grounding point. The clamp contains a bright green LED which flashes continuously when the clamp detects the grounding circuit has a resistance of 10 ohms or less, informing the operator that hazardous electrostatic charges do not have the potential to accumulate on the equipment. The battery provides up to 6 months of power for equipment grounded for up to an average of 6 hours per day.

- utilizes a highly visible LED housed in the grounding clamp alerting operators when low resistance connection is achieved with potentially charged equipment
- Tungsten carbide tips bite through product deposits, paint and rust to ensure proper bonding connections are made.
- Stainless steel clamps are designed to withstand tough chemical processing and industrial environments.
- Quick connect provides personnel with the flexibility of removing the clamp from zoned / classified areas for battery replacement.



Bond-Rite® clamp with
quick connect



quick connect



Bond-Rite® EZ Spiral Cable and Medium Duty Clamp with VESX45-IP Clamp Attached

- recommended for use in processes using drums, containers, solvent safety cans and mixing vessels of 26 gallon capacity or less in situations where space does not permit the use of heavy duty clamps
- jaw opening diameter of 0.6"

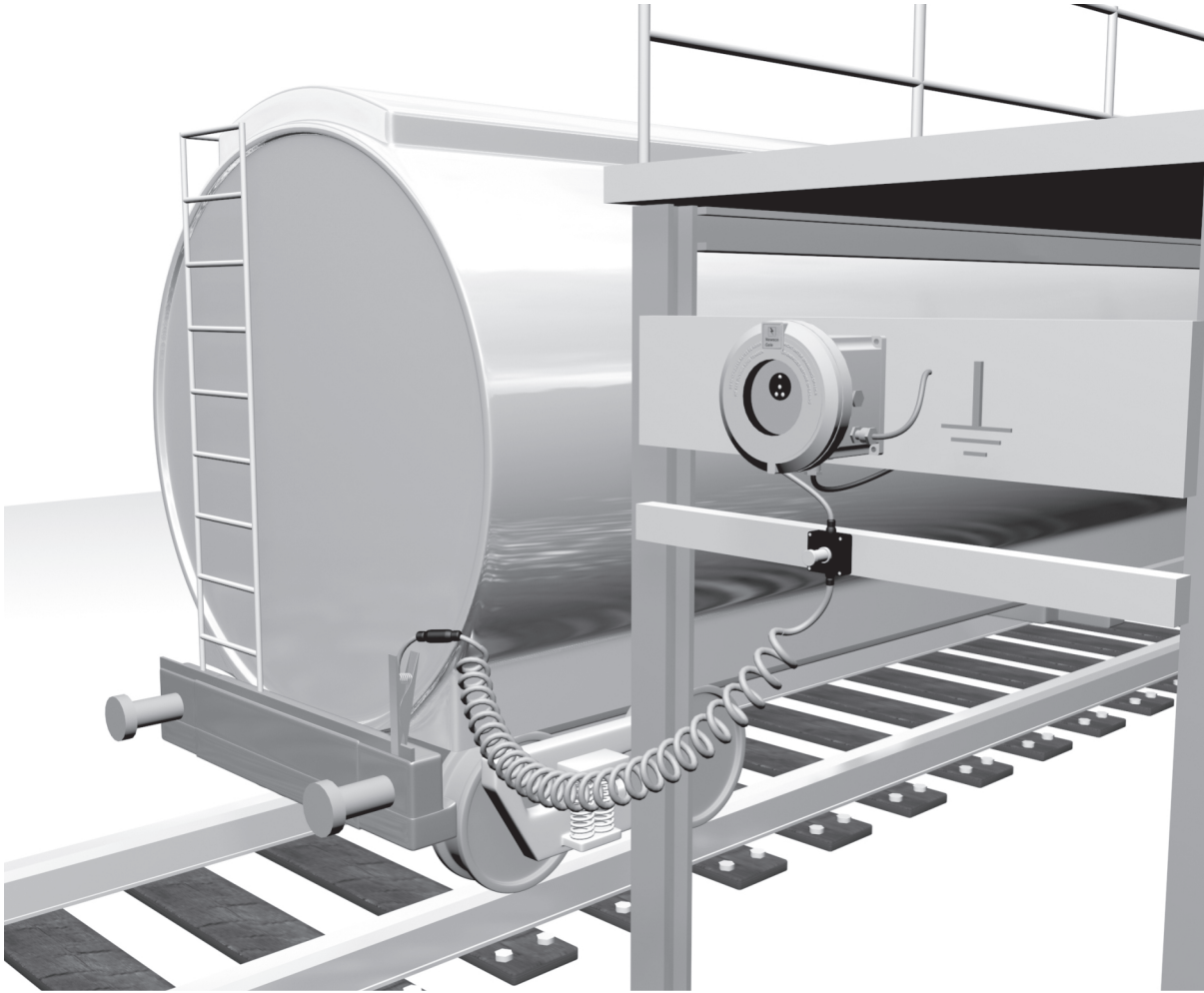
Working Length	Description	Part #
10'	18' cable with VESX45-IP medium duty clamp	BREZ03IPX45
16'	28' cable with VESX45-IP medium duty clamp	BREZ05IPX45

Bond-Rite® EZ Spiral Cable and Heavy Duty Clamp with VESX90-IP Clamp Attached

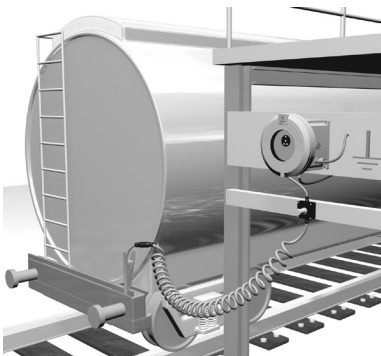
- recommended for grounding large equipment ranging from 26 gallon drums to 500 gallon IBC's, mixing vessels and mobile tanks
- jaw opening diameter of 1.57"

Working Length	Description	Part #
10'	18' cable with VESX90-IP heavy duty clamp	BREZ03IPX90

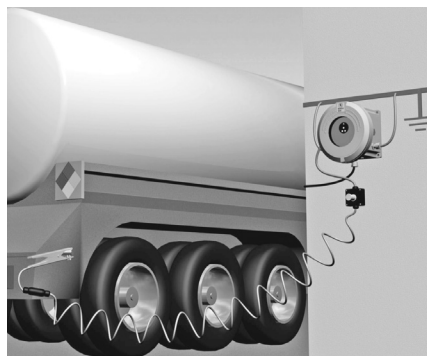
Earth-Rite® Plus Static Ground Indication and Interlock System



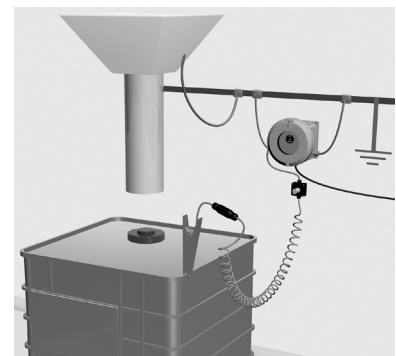
Bulk loading or unloading railcars with liquids or powdered / loose solid materials can generate large electrostatic charges which poses a significant risk in a potentially explosive atmosphere. Although the railcar is in contact with (earthed) tracks, many tank cars are equipped with non-conductive bearings and wear pads located between the car itself and the wheel assemblies (trucks). This may lead to an unsafe condition where an unearthed railcar accumulates a high static charge. Ground monitoring/verification systems may be used to provide an interlock with the filling systems to prevent product transfer unless the railcar is properly bonded to earth. The Earth-Rite® Plus provides indication of proper ground as well as relay contacts to control the transfer process. Earth-Rite® Plus can be used in a wide range of industrial plant equipment including railcars, drums, containers and other conductive equipment.



railcar loading



tank truck loading



filling, totes, drums and containers

- confirms safe, low-resistance static dissipation path (<10 ohms) from tanker, drum, etc. to designated ground point
- meets requirements of NFPA 77, API RP 2003 and CENELEC CLC/TR: 50404 recommended Best Practice on controlling static electricity in hazardous areas
- universal grounding clamp suits all common tankers, drums, conductive plant equipment

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Earth-Rite® Plus Static Grounding System



The Earth-Rite® Plus provides positive verification of a static ground connection on a wide range of industrial plant equipment including railcars, drums, containers, tanker trucks and other conductive equipment. Whenever flammable liquids or powders are transferred, or wherever there is a risk of conductive plant items becoming isolated from earth within hazardous locations, effective grounding and bonding is necessary to ensure safe dissipation of static electricity to prevent fires and explosions which can be ignited by static. When connected to a drum or other conductive equipment, the intrinsically safe monitoring circuit verifies a low resistance connection and dissipation path to ground. Good connection is confirmed by pulsing LED indicators, releasing a pair of voltage free output contacts and enabling the transfer of product to start.

- USA and Canadian CSA certification: Associated Equipment [Exia] for use in Class I, Div 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III, Div 1.
- IP 66 / NEMA 4X cast aluminum enclosure
- red/pulsing green indication LED's
- intrinsically safe monitoring to <10 ohms
- 2 interface relay contacts
- input power requirement 110/120 VAC or 220/240 VAC or 12/24 VDC
- VESX90-IP 2-pole heavy duty stainless grounding and monitoring clamp with spiral cable in-line-quick-connect fittings attached and tungsten carbide pointed contacts to help ease metal to metal contact



pulsing LEDs confirm positive ground condition

Part #	Description
PLUSMUA1A3	Earth-Rite® Plus II static grounding system

- every unit supplied with full installation and operating manual
- easy to install, operate and maintain
- explosion proof controller with intrinsically safe monitoring module
- universal grounding clamp with 32' of 2 conductor Hytrel™ protected cable
- ground connection junction box with stowage pin for universal grounding clamp



Dixon is recognized as the premier manufacturer and supplier of hose fittings and accessories spanning a wide range of industrial uses. Dixon's range includes products for food, dairy processing, beverage and brewery, mobile tankers, mining, construction, chemical processing, petroleum, oilfields, refining and manufacturing.

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