

3 Gaines Standard Axial 12,5X32 (300Amp)

EARTHING RETURN CURRENT UNITS (ERCU)

EARTHING CONTACTS FOR METRO AND TRAM



In the patented Earth Return Current Unit the contact is made to the axle end by means of 2 independent brushes guided in 2 boxes of rectangular section in the radial direction of the axle. Two independent pressure systems of the close coiled roller spring type without inertia, apply a constant pressure to each of the 2 brushes.

The Earth Return Current unit is fitted to the axle by means of an adaptation part which replaces the axle box end cover, and is therefore easily accessible. For the inspection purposes, it is a simple matter of undoing 3 screws removing the cover/spring assembly for access to the brushes. An insulating support positioned between the Earth Return

Current Unit and part ensures the effective shunting of the roller bearing by the unit.

The connection lug for the electrical connection is an integral part of the unit.

The rotating contact face is a disc fitted to the axle end and possibly protected against lubricants emanating from the axle box bearing by a guard.

Due to the simplicity of the device and the very slow rate of brush wear (about 1 to 3mm per 100'000 km or 190'000 miles after patina creation), maintenance required is virtually zero. With the appropriate brush grade the formation of the skin on the surface of the contact disc can be observed and no evidence of hammering nor bevelling appears on the brush contact faces. The brushes are generally a metal graphite mixture grade manufactured by Mersen.

Some references :

Metro :

FEATURES & BENEFITS

- Protected against dust penetration, water splash and shock
- Permanence of contact
- Very Low maintenance cost
- Fast and easy brush replacement
- Low cost and simple fixing on the bogie
- The Axial contact 3 brushes 12,5 x 32 Earth Return Current Unit is installed at the end of the axle, to provide an effective shunt around the bearings.
- There is a possibility to supply a complete adaptation including the contact disc, the support of the contact, the adapter, etc...
- Possibility to adapt the height dimension

APPLICATIONS

- Earth Return Current Unit for Metro and Tram



3 Gaines Standard Axial 12,5X32 (300Amp)

Los Angeles LACMTA (US)

SMRT (Singapore)

Cairo (EG)

Tramway :

Toronto, Portland, St Jose, Bonn, Rotterdam, Los Angeles, Melbourne

TECHNICAL DATA

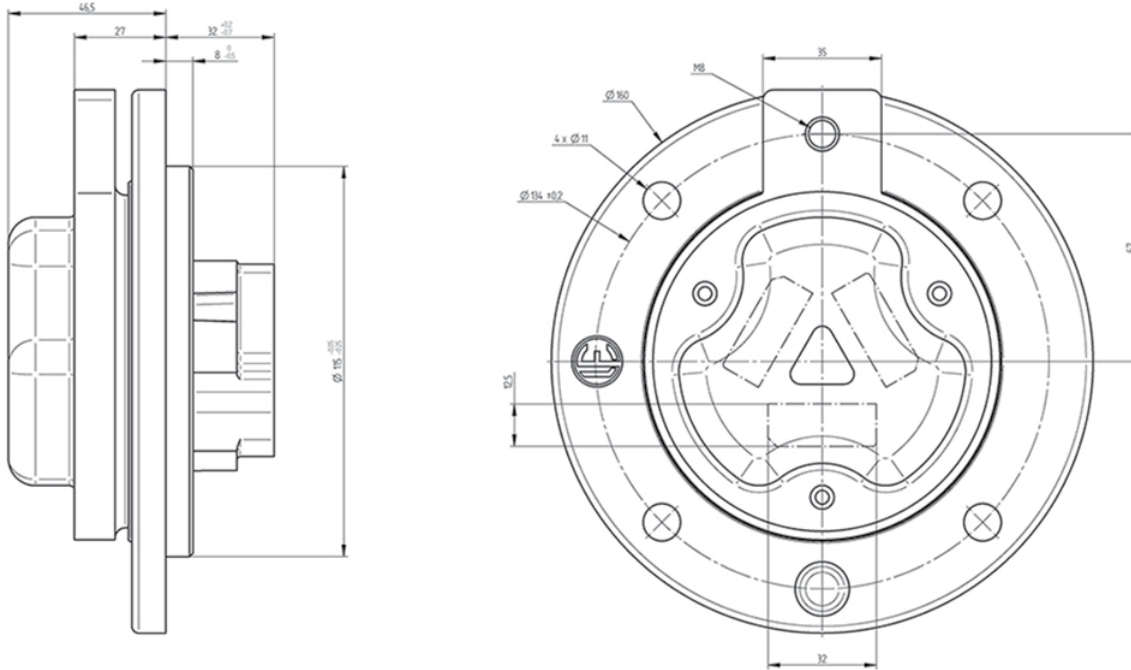
300 Amp 3G 12,5x32	
Mounting	Axial
Rated current	300 A
Number of brushes	3
Cross section of the brushes	12,5 x 32 mm
Short time withstand current 100ms	10 kA
Short time withstand current 200ms	4 kA
Short time peak withstand current	19 kA
Constant brush pressure	34 kPa
Resistance value at stand still	0.2 mHms
Resistance when rolling	1.9 mHms
Material of body	CuPro Aluminium, connection tinned
Material of cover	3 mm thick zinc plated (15 microns) steel cover plate
Material of spring and screws	stainless steel
Material of insulating ring	Compound polyester
IP	547

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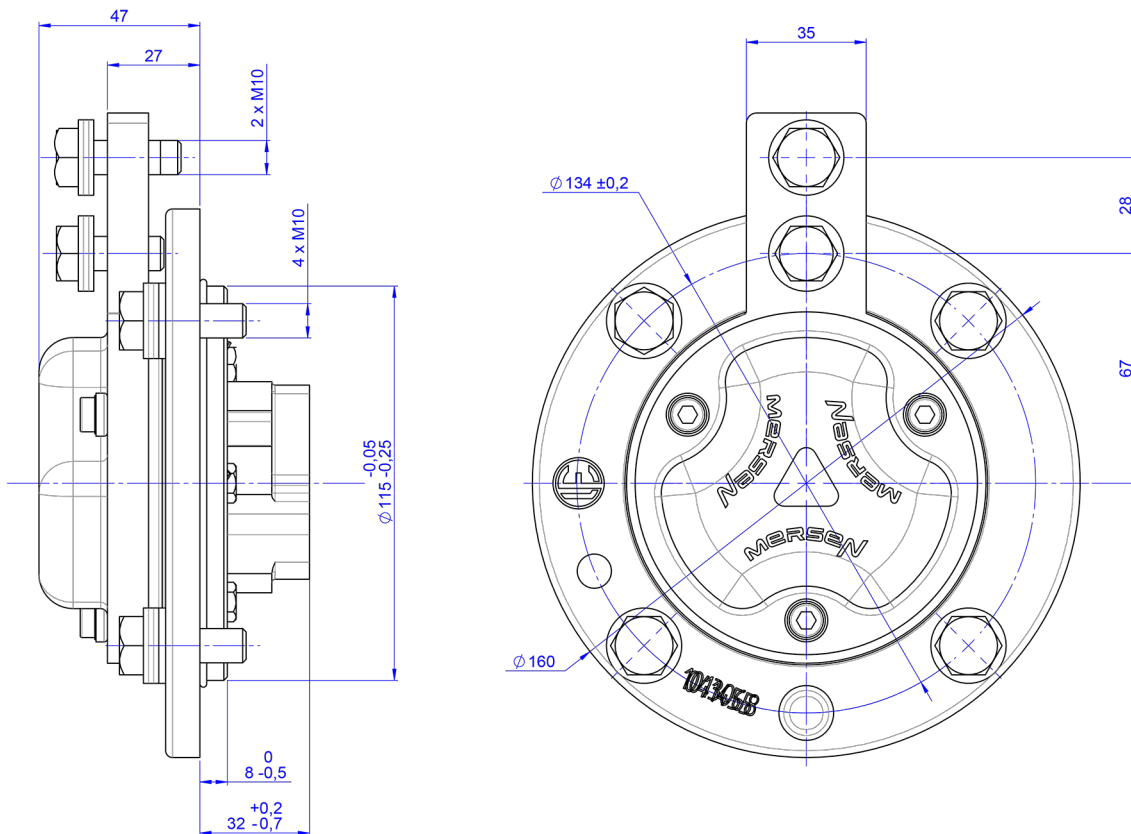
3 Gaines Standard Axial 12,5X32 (300Amp)

DIMENSIONS

Earth Return Current Unit - 3 brushes 12,5 x 32 - Standard
(dwg 067778)



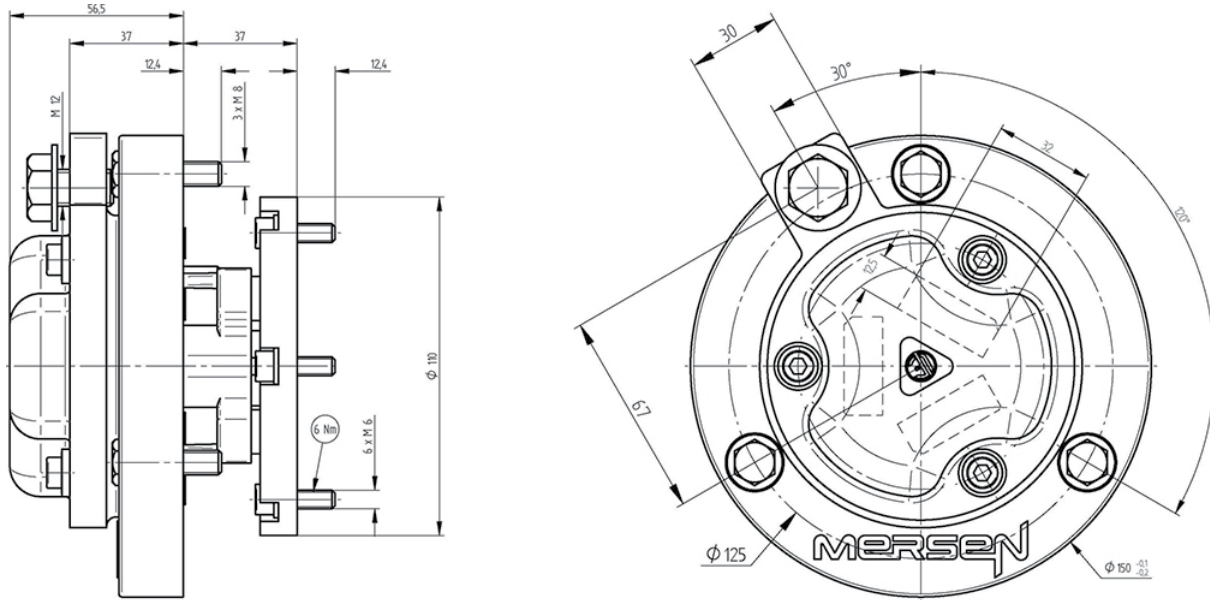
Earth Return Current Unit - 3 brushes 12,5 x 32 - Standard
(dwg 1011023)



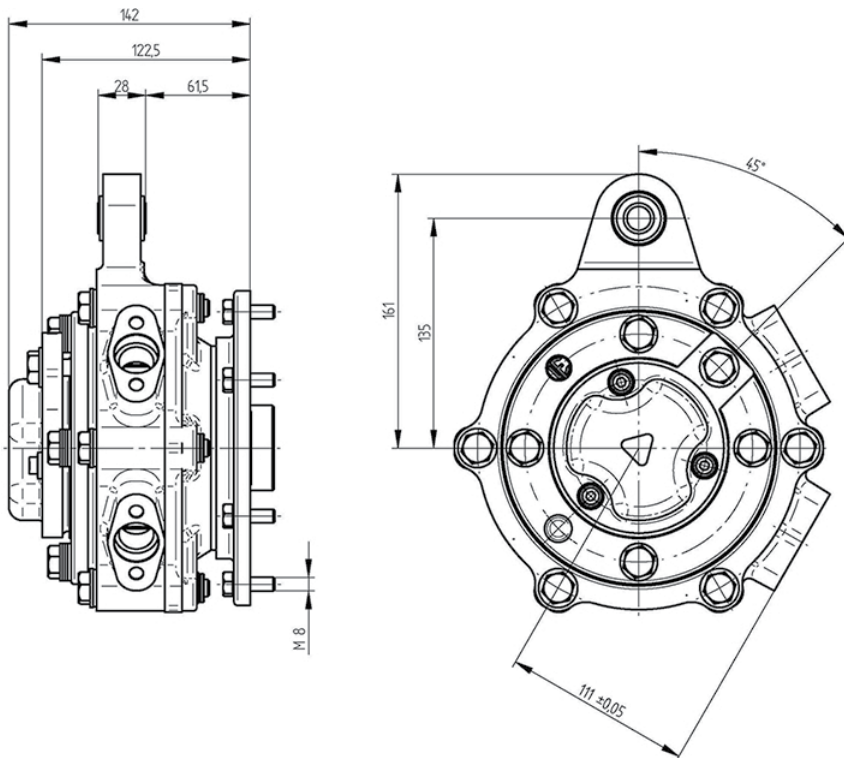
3 Gaines Standard Axial 12,5X32 (300Amp)

DIMENSIONS

**Earth Return Current Unit - 3 brushes 12,5 x 32 - Compact version - Adaptation (including slip disc)
(dwg 1038486)**

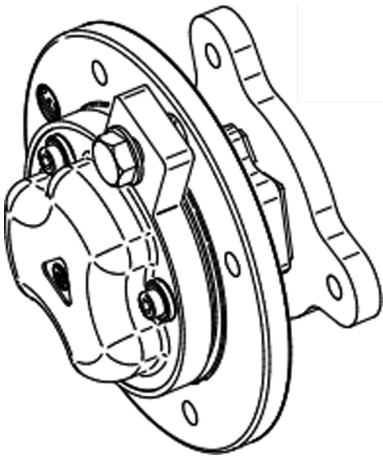


**Earth Return Current Unit - 3 brushes 12,5 x 32 - Adaptation (including slip disc)
(dwg 136242)**



3 Gaines Standard Axial 12,5X32 (300Amp)

FUNCTIONS



Operations

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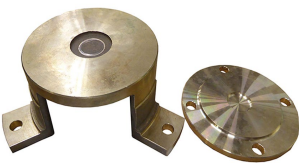
The connection lug for the electrical connection is an integral part of the unit.

The rotating contact face is a disc fitted to the axle end and possibly protected against lubricants emanating from the axle box bearing by a guard.

Due to the simplicity of the device and the very slow rate of brush wear (about 1 to 3mm per 100'000 km or 190'000 miles after patina creation), maintenance required is virtually zero. With the appropriate brush grade the formation of the skin on the surface of the contact disc can be observed and no evidence of hammering nor bevelling appears on the brush contact faces. The brushes are generally a metal graphite mixture grade manufactured by Mersen.

Contact disc - Slip disc

Mersen can study, design and supply the slip disc adapted to your axel end (material is CuSn8Ni3P)



Brushes

For the maintenance, the replacement brushes designed and dedicated to your Ground Brush can be provided by Mersen



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FUNCTIONS

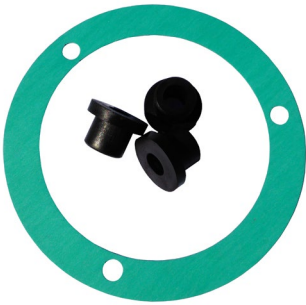


Connexion cables + Braided cable

Connexion cables or braided cables are studied for your application.

Mersen can supply and guarantee them.

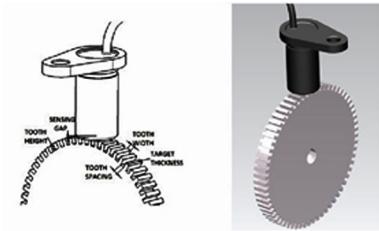
They are delivered with the possibility to customized the total length plus the adapted hardware for bolted connection.



Electrical isolation

ERCU are sealed to offer electrical isolation and a perfect protection from outside aggression and dirty environments.

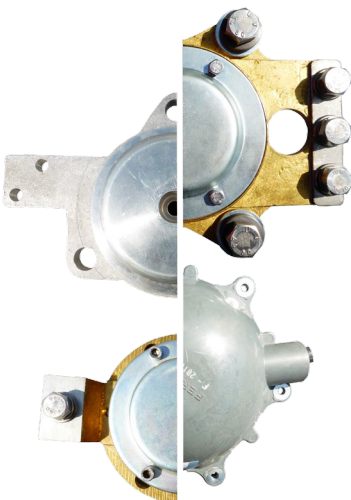
On a regular basis, they offer IP547 but they can be modified to offer IP65.



Speed sensor - Pulse generator

An angular speed sensor is mounted on the ERCU and transmits the pulses generated by the dented wheel inside the ERCU to an electronic system which can:

- Detect when a wheel slips to control traction or engine speed, or to trigger an anti-skid system.
- Detect whether the train is running or stopped, in order to trip or release safety systems such as door locks.
- Detect which way the train is traveling.



Connexion plate

Connection plate can be designed for "external" or "internal" connections to meet your requirements.

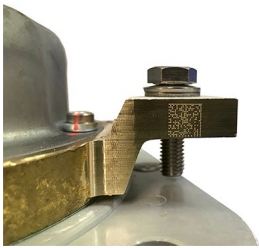
Also the cover of the ERCU can be electrically isolated

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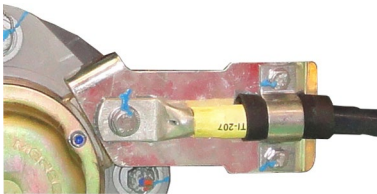
Salt mist protection

Standard version of ERCU offer 96 hours protection against salt mist but Mersen can propose higher protection with Zinc Nickel coating on the cover for 500 hours protection and a cataphoresis coating on the cover for a protection up to 1000h against salty mist.



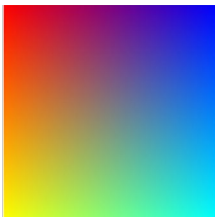
Personal identification

Mersen can add identification like data Matrix or QR code on each product



Cable support

Cable supports system can be studied to hold the cable and enlarge its life.



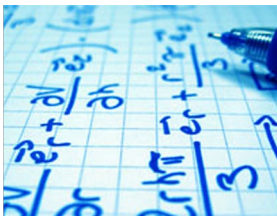
Painting of Steel covers

We can paint the metal covers on your ERCUs to the color specified as per the RAL chart, for purely cosmetic reasons.



Training and technical support

All around the world, Mersen technical team can help you for technical support and can offer you customized training sessions for your Maintenance team.



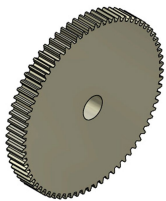
LCC; RAMS; Type tests

Mersen teams can supply Life Cycle Costs "LCC" and Reliability Availability Maintainability Safety "RAMS" and Faillure Mode and Effect Analysis "FMEA" studies. They can operate Qualification type tests.

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ACCESSORIES



Indented Wheel

Indication facilities

Catalog number	Package	Weight
Indented Wheel 128188	1 piece	600 kg



ERCU Cover

Covers/cover caps

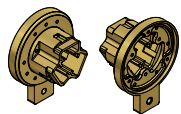
Catalog number	Package	Weight
ERCU COVER	1 piece	2 kg
ISOLATED ERCU COVER	1 piece	1.5 kg



12,5 X 32 mm Brush

Brushes

Catalog number	Package	Weight
Brushes 12,5 X 32	24	15 g



2G 12,5 X 32 Radial
Brush Holder

Brush Holder

Catalog number	Package	Weight
Brush Holder 3G 12,5 X 32 Axial	1 piece	1 kg



O Ring and Gaskets

Seal

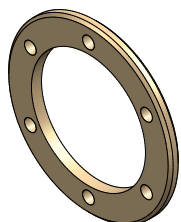
Catalog number	Package	Weight
Gasket	1 piece	10 g
O-Ring seal	1 piece	5 g



Insulating Spacer

Insulating spacer

Catalog number	Package
Insulating Spacer	1 piece



Clamping plate

Clamping plate

Catalog number	Package	Weight
Clamping Plate	1 piece	0.2 kg

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ACCESSORIES



Slip Disc

Slip disc

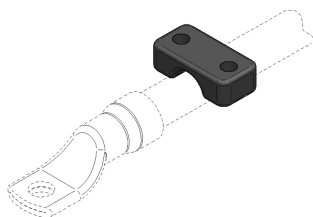
Catalog number	Package	Weight
Slip Disc	1 piece	0.3 kg



Insulating bushing

Insulating bushing

Catalog number	Item number	Package	Weight
ISOLATING SPACER DIAM 17	Q109471	1 piece	25 g
ISOLATING SPACER DIAM 7	D116383	1 piece	20 g
ISOLATING SPACER DIAM 8,5	Y116861	1 piece	20 g
ISOLATING SPACER DIAM 9	T118559	1 piece	20 g
ISOLATING SPACER TGV DIAM 11	G041314A	1 piece	25 g



Cable Clamp Strain Relief

Cable clamp strain relief

Catalog number	Package	Weight
Cable Clamp Strain Relief	1 piece	0.1 kg



Silohm resistances

Silohm resistances

Catalog number	Item number	Package	Weight
COVER 8x53	Y1048430	-	10 g
INSULATING BUSHING 16X19	W1048428	10 pieces	25 g
INSULATING BUSHING 30X18	G154014	-	25 g
PAPYEX WASHER EP:0,4 48MM	Z202445A	-	5 g
RD6 R0,010/10 EPAIS.11	P1048422A	-	40 g
RD6 R0,04/10 EPAIS.11	N1048421A	-	40 g
RD6 R0,04/20 EPAIS10	X202443A	-	40 g
RD6 R0,05/20 EPAIS.11	Y202444A	-	40 g
STAINLESS STEEL WASHER 17X50	A154008	-	50 g
STAINLESS STEEL WASHER DIAM 50	X1048429	-	60 g

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ACCESSORIES

Cables

Braided cables

Braided cables



Connexion cables