

ZM100A-33 Zeromag demagnetizer **DIVERSE**

Our Highest power dynamic magnetism system
control to stop arc blow

www.diverse-technologies.net

Applications using Zeromag

- Overcoming Arc blow
- Pipe butt welding
- Plate and pressure vessel welding
- Use with TIG, MIG, MMA, SAW welding
- Dynamic compensation in variable fields



Features

- Portable weld preparation demagnetism for steel structures in smelters
- Suitable for very large pipes or large structures
- Cancels magnetism to prevent arc blow
- Uses proprietary DIVERSE technology
- Reduces or eliminates weld repairs caused by magnetic arc blow
- Compact rugged construction
- Can be used in conjunction with preheat
- Rapidly deployed and simple to operate
- Two sets of handles for shared lifting



Overview

The Diverse ZEROMAG measures and neutralizes magnetic fields which may be present in the weld preparation region of mating steel components.

Our 1.5kW Zeromag ZM100A is ideal for demagnetizing steel parts such as pipes, plates or beams. However there are situations where more power is required. Examples are where where the object size is very large or where there is a magnetic field induced by a large electrical currents.

The Zeromag ZM100A-33 with an output power of 3kW, working with up to 200m of demagnetizing cable provides twice the capability of our standard unit. It provides the necessary power for reverse magnetic field for virtually all scenarios and magnetic saturation required for degauss operation. Normally specified to be used with the Zeromag clam coils, the ZM100A-33 can nominally balance over 1000G in steel components allowing welding to proceed without problem when without Zeromag welding would be totally impossible.

The ZM100A-33 can operate from any single phase ac supply voltage from 180V to 265V ac 3KW. It has its own cooling and does not require any other services. It weighs 33Kg, which means that it can easily be move into position by just 2 people. It is only 6kg heavier than a standard Zeromag ZM100A and has the same 4U footprint.

For preheat weld scenarios, the demagnetizing cable and clam coils should be protected with Diverse insulation blankets.



Options

- Clam coils for joint & pipe end degauss
- ZM150 Joint/pipe end degauss control
- Bobbins
- Protection blankets

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Technical overview

Background

The Zeromag system finds its key application in arc welding. Magnetic fields may cause arc instability, and at worst can cause magnetic arc blow. The fields can be caused by induction of the earth's magnetic field in large structures and pipes. Alternatively, the steel may be magnetised at manufacture or by the use of magnetic clamps or magnetic pipe pigs.

Arc blow occurs when welding is attempted in the presence of a magnetic field. Some processes are more prone to arc blow than others, but TIG welding is particularly sensitive. Disruption of the welding arc generally occurs in a magnetic field of greater than 20 gauss. Arc blow can be expected with magnetic fields of greater than 40 gauss.

The shape of the weld prep influences the shape and direction of the magnetic field, often magnifying the magnetic effect over 100 times. The effect of shape can be extended to the shape of the cut of the pipe: if cut at an angle then there will be preferential routes for the magnetic flux which will concentrate in specific zones.

The Zeromag ZM100A-33 is at the heart of the of the system. This 3kW unit is suitable for balancing the magnetic field in steel components even with intense local magnetism such as that found in smelters. Working with the ZM150 the high power ensures a high degree of magnetic saturation for degauss downcycling.

It is fast and simple to use. Simply the best way to remove magnetism for welders.

This is the system favoured by many of the world's leading welders. We offer excellent post sales support and a variety of options.

Applications

One of the most attractive features of Zeromag is its simplicity of use: simply wind the demagnetizing cables around the pipe (or over the surface if working with plate steel) site the

magnetic sensing probe and press start. Welding can then proceed with a near zero magnetic field.

Usually Zeromag is only used when magnetism is encountered so is not normally made part of the pre job weld validation process. For critical welding tasks where validation is obligatory, the important point about Zeromag is that it does not change the state of the pipe, and only reduces magnetism to the levels used at validation allowing approvals all previously obtained approvals to be valid.

Typical applications are pipelines, tie-ins, LPG vessels, lay barges, storage tanks, oil drilling operations, framework constructions, oil rig structures etc.

Options

The ZM100A-33 is the basic instrument. For a fully operational system, you can choose from a number of demagnetizing cables, open cable, clam coils or bobbins, and, other ancillary parts such as probe, and Magmeter.

Clam coils used for frameworks or pipe joint degauss



ZM150 Joint/pipe end degauss controller



Bobbins used for pipe end degauss



ZM100A-33: Performance Specification

Magnetic field reduction	In auto mode typically reduced 40x, for most weld scenarios magnetic field reduced to <10 Gauss In manual mode for most scenarios field reduced to 0G
Gaussmeter measurement range	0 to +/-1800 Gauss
Resolution	1 Gauss
Magnetic Probe Size	5mm x 20mm x 100mm long. Encased in stainless steel
Controls	Auto/Manual switch Push buttons to start and stop automatic mode Manual adjustment control used for manual override Gaussmeter null
Current Output range	0 to +/-100 Amps max
Output voltage range	0V to 33V (I x V must be <= 3kW)
Magnetic field nulling time	3 seconds typical
Manual Control	-100A to +100A continuously variable with 10 turn control
Auto Control	Auto-tracking and nulling of magnetic field
Line Power	Line voltage range 180V - 265V ac 48 - 62Hz Power 3kW
Temperature - operating	-20C to 50C
Temperature - storage	-40C to 85C
Humidity	0 - 90%, non-condensing
Environmental	Not water proof so do not operate or store in a wet environment
Weight	33kg
Dimensions WxLxH	520 x 220 x 550mm
Storage/shipping case dimensions Zeromag Accessories	WxLxH 62 x 27 x 63, weight 40kg WxLxH 62 x 27 x 53, weight 29kg
Calibration	Calibrated by Diverse to NPL traceable standard
Housing	Built into a carrying case to enable it to be used on site; 19" portable rack, 4U
Demagnetizing cable:	50m and up to 3 x 50m. Options: bobbins and clam coils
EMC	Validated to CE and FCC standards for emissions and immunity
Warranty	12 months