

Magnetic Analysis Corporation

DEMAGNETIZERS

- Demagnetize rod, wire, bar and tube during production
- Eight models for material up to 8.5" (215 mm) diameter
- Effective demagnetizing even for problem alloys
- Simple operation at production line speeds
- Use with MAC eddy current and Flux Leakage test systems



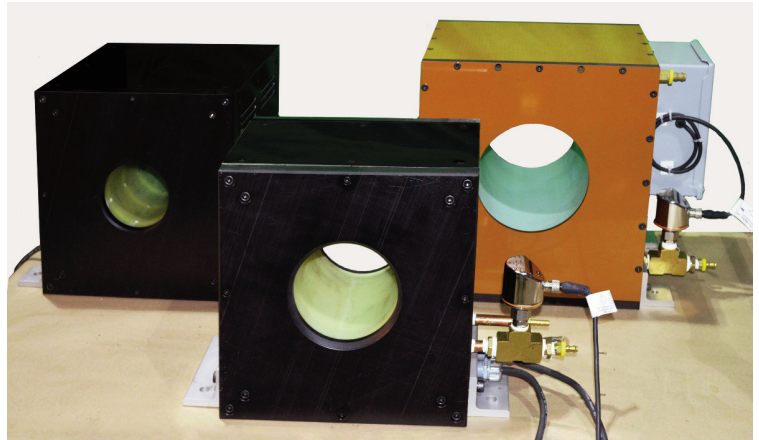
MAC's 470 Demagnetizer is perfect for small diameter, thin wall tubes and parts.

DESCRIPTION

Demagnetizers permit efficient, continuous elimination of unwanted magnetism in ferrous rod, wire, bar and tubing. Unwanted magnetism can develop during production, or it can be intentionally introduced to permit the material to be tested, such as when using MAC eddy current saturation coil test systems or flux leakage rotaries.

MAC Demagnetizers can also be used for general applications, including finished parts where the fields of residual magnetism are complex and require the unique features of these units.

Demagnetizers can be installed as independent stations, or on the production line in conjunction with eddy current and/or flux leakage test equipment. Models are



From left to right: A 476 Air Cooled, a 475 Water Cooled, and a 600 Water Cooled Demagnetizer with Junction Box

available to handle material sizes up to 8.5" (215 mm) with various metallurgical characteristics.

MAC Demagnetizers include a control unit and a demagnetizing coil. A flux coil with a separate meter may be included with some models, and offered as an option with others. For high power models designed for demagnetizing larger or difficult material, an appropriate input transformer with disconnect switch is required. The demagnetizer coil creates the demagnetizing field, while the flux coil detects the degree of residual magnetism in the material, if any, after demagnetizing.

MAC's Demagnetizers use a unique technique which simultaneously applies both alternating and direct current demagnetizing fields. The AC field serves to break up the alignment of the domains that, when magnetized, are uniformly orientated with their north poles in the same direction. The DC field overcomes the realignment of domains caused by external influences and is adjusted in field strength and direction with fine tuning to ensure the material is thoroughly demagnetized.

The final level of residual magnetization can be verified automatically by the flux coil which produces a meter reading, or by hand with a MAC Magnetism Detector.

Demagnetizing Large Cut Lengths

Variations in the strength of the residual magnetic field in the ends of cut length bar stock can interfere with effective demagnetization of the full length of the bar.

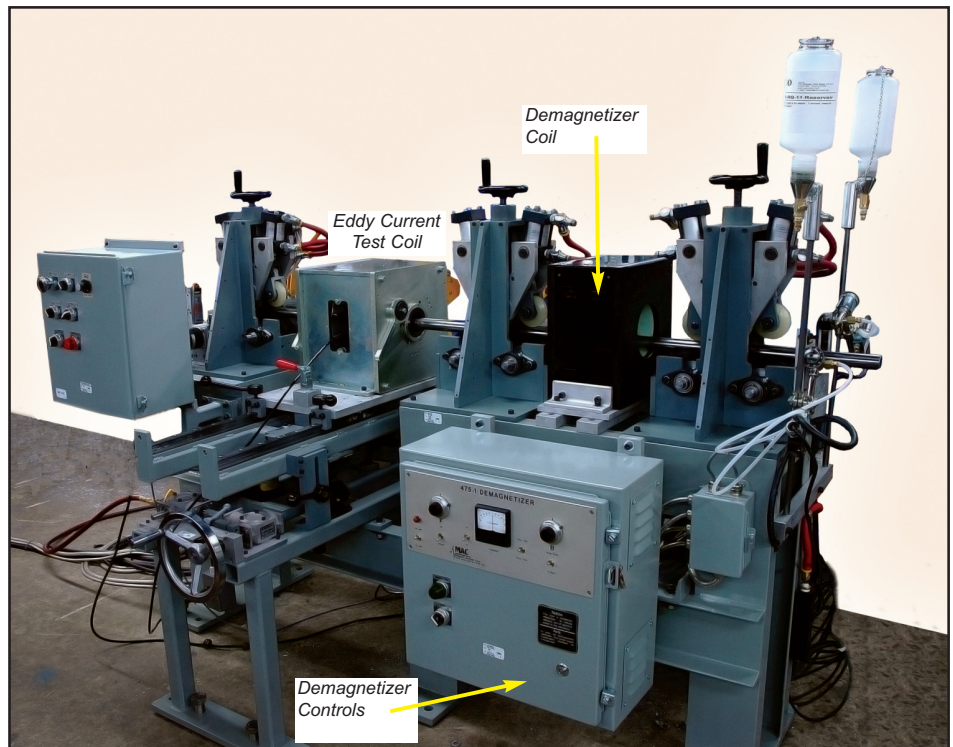
MAC's Models 400, 475, or 750 provide DC power control to automatically compensate for different levels in field strength near the ends. This DC Power Control can automatically switch between two levels which may be individually pre-set.

For example, when the cut end leaves the eddy current saturation test coil while the bar is still passing through the demagnetizing coil, the DC Field strength required to demagnetize the bar decreases because of a decoupling effect.

The pre-set DC Power Control will automatically shift to a lower power level in the demagnetizing coil to compensate and ensure uniform demagnetization over the entire cut length.

Demagnetizing Heavy Wall Tubing

To successfully demagnetize heavy wall tubing and certain materials, a high current AC field operating at reduced voltage is used with Demagnetizer Models 400, 475, 600, or 750. Their Demagnetizer coils are water cooled to permit continuous operation. A 25 KVA or 75 KVA power transformer is supplied with these models.



System is comprised of an eddy current coil, demagnetizer coil and control unit with automatic paint markers for a large tube mill in India.

High Speed Applications

For some high speed applications, generally greater than 500 fpm, use of MAC's specially developed longer Demagnetizer coil may be necessary. High speed applications can cause problems in achieving adequate demagnetization because they do not allow a full 60 Hz wave to penetrate each portion of the material as it passes through the standard length coil. The longer air cooled coil, used with a 475 Demagnetizer control unit, usually provides a solution to this problem.

Specialized Applications

Demagnetizing bundles, large parts, certain alloys and unusual patterns of magnetization, particularly in barstock, may require more power than any of MAC's standard Demagnetizers can

apply to achieve low gauss readings in one pass.

Magnetic Analysis Corp. has available an additional line of custom built high power demagnetization systems that are suitable for special applications. You should consult MAC's Field Staff or Engineering Department for more information on these custom systems.



475 Demagnetizer and electronics on a "V" Roll Guide bench

SPECIFICATIONS

The primary factor in selecting the most appropriate Demagnetizer model for a specific application is the AC power needed to properly demagnetize the material. The more substantial the material, the greater the power needed.

Low Power for up to 1.75" (44 mm) Diameter Light Material such as thin wall tube and small parts

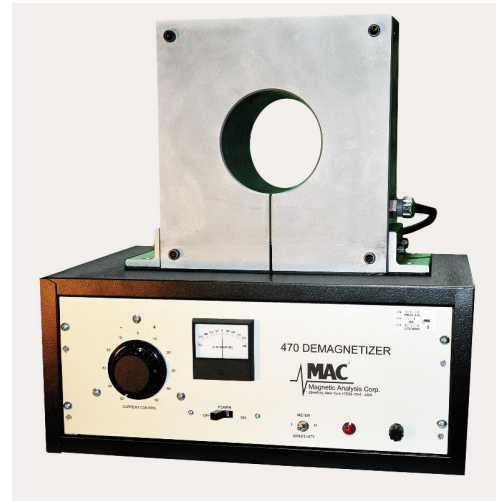
MODEL 200H - Ambient Air Cooled

Direct Current Control	None - AC power only
Display	No meter provided. Optional Magnetism Detector available
Cabinet Dimensions & Weight	12" H x 10" W x 5" D (30.5cm x 25.4cm x 12.7cm) Weight: approx. 20 lbs (9 kg)
Demagnetizing Coil Dimensions & Weight	Outside dimensions 7 1/4" H x 7 1/4" W x 5" D (18.4cm x 18.4cm x 12.7cm) Interior diameter - 2" (5.08cm) Packaged Weight: approx. 23 lbs (10.4 kg)
Power Requirements	117 VAC, single phase, 50/60 Hz 3 amps maximum

1 KVA Power for 1.75", 4.75" or 5.75" (44, 114, 146 mm) Diameter Material

MODELS 470/471H - Ambient Air Cooled

Direct Current Control	50 step positive or negative dial adjusts strength and direction of direct current field
Display	Meter shows the degree of magnetism in the material
Cabinet Dimensions & Weight	10" H x 22" W x 16" D (25.4cm x 55.9cm x 40.6cm) Weight: approximately 44 lbs (20 Kg)
Demagnetizing Coil Dimensions & Weight	Outside dimensions: 12" H x 14" wide x 6 1/2" D (30.5cm x 35.6 cm x 16.5 cm) Interior Diameter: 2" (5.1cm), 5" (12.7cm) or 6" (15.2cm) Packaged Weight: approx. 156 lbs (70.8 kg)
Flux Coil Dimensions & Weight	Outside dimension & Interior diameter - same as Demagnetizing Coil. Weight: approximately 31 lbs (14 Kg)
Power Requirements	117 VAC, single phase, 50/60 Hz, 10 amps maximum



Medium Duty 4 KVA Power for 4.5" (114 mm) Diameter Material

MODEL 475H - Water or Air Cooled*

Direct Current Control	Front & Back Dual Level DC current control switch, sets two independent levels. Semi Auto & Front Only two position switch sets one level only, or switches from F to B level at a specified point
Display	Optional Flux Coil & Meter
Cabinet Dimensions & Weight	20"H x 20"W x 8" D (50.8 cm x 50.8 cm x 20.3 cm) Weight: approximately 70 lbs (32 Kg)
Demagnetizing Coil Dimensions & Weight:	Outside Dimensions: 14" H x 12" W x 6.5" D (35.6 cm x 30.5 cm x 16.5 cm x) Interior Diameter: 5" (12.7 cm) Packaged Weight: approx. 540 lbs (245 kg)
Flux Coil Dimensions & Weight	Dimensions are same as Demagnetizing coil. Weight: approx 31 lbs. (14 Kg)
Power Requirements	240/480 VAC single phase 50/60 Hz, 35 amps maximum
Water Requirements	Up to 1 gallon per minute. 40 PSI minimum pressure
Transformer & Disconnect	4 KVA input transformer with Disconnect unit. 24" x 21 1/2" x 10" enclosure

*Air cooled coils can be used on some thin walled tubing

Also available with optional XDM476 demagnetizing coil for high speed applications on thin wall tubing.

SPECIFICATIONS *(continued)*

Heavy Duty 25 KVA Power for 3.75", 4.75" or 5.75" (95, 114, 146 mm) Diameter Material

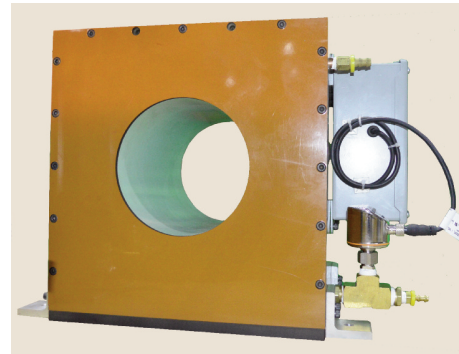
MODEL 400H - Water Cooled

Direct Current Control	Front & Back Dual Level Semi Auto DC current control switch, sets two independent levels for demagnetizing cut lengths. Semi Auto & Front Only two position switch sets one level only, or switches from F to B level at a specified point
Display	Optional Flux Coil & Meter
Cabinet Dimensions & Weight	20" H x 20" W x 8" D (50.8 cm x 50.8 cm x 20.3 cm) Weight: approximately 70 lbs (32 Kg)
Demagnetizing Coil Dimensions & Weight	Outside dimensions: 11"H 11 7/8 W" x 10 3/4 D" (27.9cm x 30.2cm x 27.3cm) Interior diameter - 4" (10.2cm) Packaged Weight: approx. 1020 lbs (463 kg)
Flux Coil Dimensions & Weight	Outside dimension: 11" H x 11 7/8" W x 6 1/2" D (27.9cm x 30.2cm x 16.5cm) Interior diameter - 4" (10.2cm) , 5" (12.7cm) or 6" (15.2cm) Weight: approximately 31 lbs (14 Kg)
Power Requirements	240/480 VAC, three phase, 50/60 Hz 40 amps maximum
Water Requirements	up to 1 gallon per minute, 40 PSI Minimum pressure
Transformer & Disconnect	25 KVA input transformer with Disconnect unit 33" x 23" x 18 1/2" enclosure. Disconnect unit is in a 30" x 25 1/2" x 10" enclosure

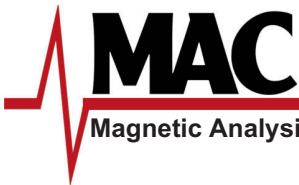
Extra Heavy Duty 75 KVA for 6", 7.5" or 8.5" (150,190, 215 mm) Diameter Material

MODEL 600H/750H - Water Cooled

Direct Current Control	Front & Back Dual Level Semi Auto DC current control switch, sets two independent levels for demagnetizing cut lengths. Semi Auto and Front only two position switch sets one level only, or switches from F to B level at a specified point.
Display	Optional Flux Coil & Meter
Cabinet Dimensions & Weight	24"H x 24"W x 10" D (70 cm x 70 cm x 25.4 cm) Weight: approximately 70 lbs (32 Kg)
Demagnetizing Coil Dimensions & Weight	Outside Dimensions: 20" H x 20" W x 15" D (50.8cm x 50.8cm x 38.1cm) Interior Diameter: 9" (22.9cm) Packaged Weight: approx. 572 lbs (259.5 kg)
Flux Coil Dimensions & Weight	Dimensions are same as Demagnetizing coil. Weight: approx. 31 lbs (14 Kg)
Power Requirements	480 VAC three phase 50/60 Hz, 100 amps maximum
Water Requirements	Up to 2 gallons per minute. 40 PSI minimum pressure
Transformer & AC Disconnect	75 KVA input, 3 phase, 480/208/120 volts transformer unit. AC Contactor & Disconnect Switch 600 VAC, 3 pole, 270 amp. continuous current limiting.



A 600 Water Cooled Demagnetizer with a junction box to conceal all the cables. Ideal for diameters up to 6" and heavier wall material. May be used with eddy current and/or flux leakage systems to inspect tube or bar. A Common application may include oil & gas or automotive carbon steel tube or bar products.



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Demagnetizer 4.20

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