OPERATING MANUAL

for

TYPE SB-911

SERIAL No. 

DEMAG unit

MAGNAFLUX
OPERATING INSTRUCTIONS

FOR

MAGNAFLUX® EQUIPMENT

Type SB

The type SB Demagnetizers produce the intense alternating magnetic fields required for demagnetizing operations. The units designated with the suffix "T" are equipped with track and carriage for ease in handling large parts.

INSTALLATION

Make permanent electrical connection to the box through proper fused disconnect switch using current of characteristics specified on nameplate. Standard SB units are constructed for dual voltage. 230 or 460 volt operation; changeover can be accomplished as shown on the wiring diagram. Ground unit using attached ground lug in junction box. Use line size wire.

OPERATION

Close the fused disconnect switch to energize unit. This will cause the "line" red pilot light to glow indicating that "line current" is available at the unit.

Energize the demagnetizing coil by operating the timer switch. This will cause white "demag" pilot light to glow. This timer limits the operating periods from a few seconds to one minute as selected by the operator. A strong pull will be felt on a piece of magnetic material held near the coil.

CAUTION: Because of high currents operation should be intermittent; i.e. each operating period should be followed by an equal period of rest to allow for cooling. The maximum "on" period should seldom be greater than 30 seconds.

To demagnetize a part, turn on the current and pass the piece completely through the demagnetizer, or the part may be placed completely inside and then slowly withdrawn from the magnetic field (at least 3 or 4 feet).

CAUTION: Do not allow the current to turn off while the part is within the magnetic field as incomplete demagnetization may result. Repeat demagnetization process if this occurs.

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* * MAGNAFLUX, Registered U.S. Patent Office a trademark of Magnaflux Corp. * *
* * Corporation applied to its equipment and materials for magnetic * *
* * particle inspection. Processes and methods used in magnetic par- * *
* * ticle inspection are covered by various U.S. Letters Patent. * *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
Small parts, much smaller in cross-section than the demagnetizer opening, should be passed through close to one wall or corner and not through the center of the opening.

For parts too large to pass entirely through this opening, satisfactory demagnetization can often be accomplished by bringing the part as close as possible to the opening, turning it to bring all sides into the field, and then withdrawing it slowly before current turns off.

Striking the part with a mallet while in the field and while being withdrawn will often improve the results on parts difficult to demagnetize completely.

Demagnetization may often be facilitated by the "transient current method". The part to be demagnetized is placed in the demagnetizer coil, the current turned on and off several times, and then while the current is on the part is withdrawn from the magnetic field in the regular manner.
# PARTS LIST

**FOR**

MAGNAFLUX EQUIPMENT

**SB-911 DEMAGNETIZER UNIT**

**NOTE:** When ordering parts **always** indicate unit serial number.

<table>
<thead>
<tr>
<th>Name</th>
<th>Part No.</th>
<th>No. Req'd.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table Top</td>
<td>25930</td>
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<tr>
<td><strong>COIL ASSEMBLY</strong></td>
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<tr>
<td>Coil Casting Assembly</td>
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<tr>
<td>Wound Coil</td>
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<td>Insulator</td>
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<td>Coil Cover Assembly</td>
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<td><strong>ELECTRICAL COMPONENTS</strong></td>
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<td>Timer</td>
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<tr>
<td>Isolation Transformer</td>
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<td>Slip Cover (Optional)</td>
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<td>White Jewel</td>
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<td><strong>RAIL EXTENSION ASSEMBLY</strong></td>
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<tr>
<td>Right Support Assembly</td>
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<tr>
<td>Left Support Assembly</td>
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<tr>
<td>Axle Stud</td>
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</tbody>
</table>

* See wiring diagram

**  ** Provide current characteristics of unit

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Form #19690
Rev 9 - 81
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WE WILL QUOTE AT A COMPETITIVE RATE
Magnetic Particle Testing

Operating Accessories Catalog
A. Digital Black Light Meter
Model DM365X. Assures that the output of your black lights is sufficient for proper inspection. Gives accurate digital readout of black light intensity in microwatts/cm². Tuned for long wave UV (black light) at 356 nanometers, the most commonly used wavelength for fluorescent inspection. Includes instructions and certification report. **No. 507522**

Carrying Case (not illustrated) Optional accessory item for #507522 Digital Black Light Meter. **#513976**

B. Analog Black Light Meter
Model J-221. Accurate measurement of black light intensity by analog type meter. Includes long wave sensor cell, reduction screen, contrast filter, extension cord, instructions and certification report. **No. 108254**

**Note**: Recertification of black light meters to NBS Standards, required by many military and industrial specifications, is available from MAGNAFLUX.

C. Centrifuge Tube and Stand. Used for measuring concentration of magnetic particles in MAGNAFLUX or MAGNAGLO® bath. Regular use assures consistent test results by preventing over- or under-sensitivity due to incorrect bath concentration. **No. 1837A**

Centrifuge tube stand (C3)
No. 2461
Centrifuge tube, 100 ml, 0-1.5 ml in 0.10 increments — for MAGNAFLUX color-contrast materials (not illustrated)

No. 8493
Centrifuge tube, 100 ml, 0-0.10 ml in 0.05 increments — for MAGNAGLO fluorescent materials (C2)

No. 507923
Centrifuge tube, 100 ml, 0-0.2 ml in 0.01 ml increments — for “super-bright” or daylight fluorescent MAGNAGLO® materials (not illustrated)

D. Test Meters. Easy-to-use test meter verifies accuracy of built-in ammeter of standard wet horizontal magnetic particle units. Regular testing is required by many military and industrial specifications. Calibration of Test Meter to NBS standards is available.

**No. 10090**
For Full-wave D.C. units to 6000 angereps (D)

**No. 10097**
Half-wave 0-1000 amps (not illustrated)

**No. 10099**
Half-wave 0-2000 amps (not illustrated)

**No. 10095**
Half-wave 0-4000 amps (not illustrated)

**No. 10098**
Half-wave 0-6000 amps (not illustrated)

Test Meters for A.C. units available upon request.


**#186125** 0-6000A A.C. and F.W.D.C. (E)

**#186436** 0-6000A A.C., F.W.D.C. and H.W.D.C. (not illustrated)

**#197279** 0-10,000A A.C. and F.W.D.C. (not illustrated)
METHOD RELIABILITY

A. Quick Break Tester. Fast test confirms proper function of "Quick Break" circuitry in DC magnetic particle units. The tester is placed inside the unit's coil. The tester's neon bulb will flash if "Quick Break" operates normally. Absence of a flash indicates excessive current decay time. No. 148335

B. Ketos Test Ring. Fast, reliable performance test for circular magnetization. Successively deeper drilled holes simulate subsurface discontinuities, which should be revealed by surface indications at various magnetizing current levels. Meets MIL-I-68680 requirements. No. 159999

C. Wet Residual Test Block. Quick, convenient check for proper magnetizing technique on wet horizontal units. Crack indication will form on test block if current flow and bath concentration are adequate. No. 153750

D. Magnetic Particle Field Indicator. Used to establish adequacy of field per requirements of MIL-STD 2710, MIL-S-23284, ASTM NAVSHIPS 250-1500 and B&W S-1021 Specifications. No. 169799

E. Demag Efficiency Pocket Field Indicator. Rugged, pocket-size meter, used to indicate residual magnetism remaining in part after demagnetizing. Ceramic magnet element resists demagnetization. No. 2480

F. Magnetic Particle Test Bar. Used to evaluate both materials and procedures. Bar has artificial surface and subsurface "defects," coarse and fine, in both directions. Meets or exceeds most industry and military specifications. No. 18938

G. Calibrated Field Indicator. Reliably measures residual leakage field in parts after demag. Each large scale division represents 2 gausses, over a scale range of 20-0-20. Accurate to ± 1/2 gauces, and can retain accuracy even when exposed to fields up to 400 earded. No. 105645

Precision Calibrated Field Indicator. (Not illustrated) Offers highly accurate measurement of residual leakage field in parts after demag. Each large scale division represents 1 gauces, over a scale range of 10-0-10. Accurate to ± 0.3 gauces. Meets requirements of McDonnell-Douglas Specifications. No. 505056
A. Digital Ammeter Retrofit Kit. The "meter that remembers" in kit form for retrofit on analog-meter-equipped units. This advanced MAGNAFLUX digital ammeter displays magnetizing current in bright LED numerals and holds reading between magnetizing shots. "It remembers." Kit comes complete with ammeter, adapter plate, wiring diagram and installation instructions.
No. 215503 for H-700, ARQ, ARIV and TAQ series.

B.C. Braided Copper Contact Pads. Assure good electrical contact between test part and contact heads. These pads help prevent "burning" of parts due to poor contact. Made of heavy copper braid over neoprene base, and can flex to give contact over greater surface area. The base has a molded-in V-block to center and support test parts. Assemblies mount with pegs to holes on the unit head and tailstock shelves. Pads are reversible, providing two wear faces, and replacement copper pads are available.

No. 18948
Contact pad assembly neoprene based with V-block (for H-series, DR and TAQ units)

No. 1848
Replacement copper pads for above (C)
No. 169588
Contact pad assembly (for MAG III, MAG IV, MAG V, MAG VI units) (not illustrated)

D. Replacement Lead Plates. Duplicate original equipment contact plates on headstock and tailstock
No. 2627 (for H-series, DR, TAQ units)
No. 169542 (for MAG III, MAG IV, MAG V and MAG VI units) (not illustrated)

E. Leaded Braid Contact Pads. Braided copper contact pads impregnated with lead are available in several sizes. These pads give improved electrical contact over solid lead plates, and last up to 10 times longer. Ideal for as-forged parts
No. 184815 (for H-series, DR, and TAQ units)
A. Replacement Nozzles. Bath application nozzles are subject to wear or damage in use. This nozzle is an exact replacement of the original equipment and attaches quickly to bath applicator hose. No. 2070

B. Contact Block. Permits remote testing of parts which are too heavy or large for processing on unit. Contact block, when clamped between heads, supplies magnetizing current to remote probes or clamps through flexible cable (not included). No. 1830

C. Automatic Magnetizing Feature. Frees operator’s hands to speed parts processing (up to 400-500 parts/hr). Foot-switch action clamps, magnetizes and unclamps parts under test. No. 189315 for H-800 series, H-660 & H-680 (C)
No. 163125 for H-600 & H-620 (not illustrated)

D. Headstock Mounted Steadyrest. Mounted directly to the headstock of wet horizontal units, allowing coil magnetizing of long heavy parts such as crankshafts. Steadyrest is ruggedly built to withstand shock and heavy loads. It supports one end of part. Use rail-mounted steadyrest to support other end.

No. 47180 for H-series, DR, TAQ units
No. 166965 for MAG II, MAG III, MAG IV, MAG V, MAG VI (V-type—without rollers—not illustrated)
A. Adjustable Headstock Steadyrest. Supports and allows rotation of round parts such as automotive crankshafts, cylinders, heavy bars, etc. Mounts directly to the headstock of wet horizontal units; height is adjustable.
No. 46950
for H-series, DR, TAO only.

B. Roller-Type Adjustable Rail-Mounted Steadyrest. Supports and allows rotation of round parts, such as crankshafts, cylinders, bars, etc. Height is adjustable.
No. 1857
Note: For centering parts on units with 16" or 20" coils, order #14786 (3") raising block for use with P/N 1857. Use #14767 (5 3/4") raising block for 25" coils.

C. V-Type Adjustable-Height Rail-Mounted Steadyrest. Mounts and moves on rails to accommodate parts of various lengths. Height is adjustable.
No. 156970
for H-series, DR, TAO units
(C)
No. 169675
For MAG III, MAG IV, MAG V, MAG VI units with 12 inch I.D. coils (height is non-adjustable—not illustrated)
No. 169683
For MAG IV, MAG V, MAG VI units with 16 inch or 20 inch I.D. coils (height is non-adjustable—not illustrated).

D. V-Block Steadyrest. Attaches to headstock and tailstock shelves of wet horizontal units. Made of canvas-base laminated phenolic resin with metal mounting pins, and removable stops.
No. 26147
(for H-series, DR, TAO units)
Protective Hand Cream, (not illustrated) “Invisible work glove” keeps dirt, grime, oil, and grease from penetrating the pores of the skin. 8-ounce tubes of hand cream, available in kits of 6, 12 or 24 tubes.
Kit 1 No. 1-9110-02 (6)
Kit 2 No. 1-9110-04 (12)
Kit 3 No. 1-9110-74 (24)
A. Carry-all Transport Truck. Two-wheel truck accepts any standard MAGNAFLUX Portable Magnetic Particle unit for easy transport between test locations. Includes deep bin for storage of materials and hanger rack for cables and prods. No. 169748 Lightweight Hand Cart (not illustrated). Light 2-wheel cart constructed of welded steel tube. Accepts any portable test unit. No. 150597

Contact Prods and Clamps. For passing magnetizing current through sections of welds, castings, forgings and large fabrications. A wide selection of prods and clamps are available. There is a prod set, clamp or combination to fit your inspection needs.

B. C. Contact Clamps. Specifically designed for more accurate inspection of tubing, bars and tubular assemblies, such as aircraft engine mounts and fuselage sections. Clamps connect via lugs and flexible cables, to electrical terminals of portable units or No. 1830 Contact Block on Wet units. No. 169802 for parts up to 7" diameter (6)
No. 1865A for 1 1/4" to 2 1/2" diameter parts (Replacement braid No. 14710). (C)

D. E. Individual Contact Prod Sets. Offer greatest flexibility in prod spacing and magnetizing of complex shaped parts. One prod in the pair has trigger switch built into handle and 20 feet of control cable for turning on magnetizing current.

Note: All part numbers below have 3 PTL plugs and are for use with portable units. Alternate part numbers available (with 4PTL plugs) upon request for use with mobile units.
No. 157662—solid tips (D)
No. 166195—braided tips (E)
Fixed, In-Line, Prod Assemblies. Offer one man operation and come with cables and eitherend connectors permanently attached. Prod spacing is 6"—not adjustable.

A. Braid Tip:
No. 157658. 15 foot cables
No. 157659. 5 foot cables (not illustrated)

Solid Tip:
No. 78174. 15 foot cables (not illustrated)
No. 78177. 5 foot cables (not illustrated)

B, C. Adjustable Dual Prod Assemblies. Offer one man operation, combined with variable prod spacing. Choice of horizontal or in-line adjustment.

In-Line Assembly (adjustable 3"-6")
No. 157087 (Solid Tip—B)
No. 157094 (Braid Tip—not illustrated)
No. 190596. Lightweight design with solid tips, adjustable 4"-6", 2 10' 2/0 cables and 4/0 EE connectors. (C)
No. 190595. Same as No. 190596, but with cam-lok connectors (not illustrated)

D. Horizontal Assembly (adjustable 4"-8")
No. 157781 (Solid Tip Only)

Rubber-Covered Flexible Cables (not illustrated) are available in sizes 4/0 and 2/0 and in standard lengths of 10, 15 and 20 feet with choice of eitherend or lug connectors attached. Other lengths available upon request. Also available with cam-lok connectors.

E. Connectors. Available to replace those worn or damaged in use, without the need for purchasing a complete cable assembly. See illustration E. Eitherend/Lug Adapters change lug terminals to eitherend terminals. Illustrated left to right:

<table>
<thead>
<tr>
<th>Number</th>
<th>Length</th>
<th>Size</th>
<th>Fittings</th>
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<tr>
<td>11300</td>
<td>40 Ft.</td>
<td>4/0</td>
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<tr>
<td>11301</td>
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<td>Lug and eitherend</td>
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<td>2/0</td>
<td>2 Eitherends</td>
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<td>2 Lugs</td>
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<tr>
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<td>Lug and eitherend</td>
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<td>11506</td>
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<tr>
<td>11316</td>
<td>20 Ft.</td>
<td>2/0</td>
<td>Lug and eitherend</td>
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F. Split Coil. Multiple-loop, quick-connect cable coil saves time and eliminates complicated coil winding. Split coil is easily placed around or through part and snap-locked together. Particularly useful for inspecting heavy equipment, rolling stock and heavy machinery. Standard diameters are 12, 18 and 24 inches.

No. 14725 12" Diam. Coil (F)
No. 14723 18" Diam. Coil (not illustrated)
No. 14727 24" Diam. Coil (not illustrated)
For Dry Powder Application


B. Powder Blower Gun. Low-cost gun for applying MAGNAFLUX dry powders under production conditions. Requires only 20 psi air supply. Also provides regulated air-only blowoff for removing any excess powder. No. 58600.

C. Portable Manual Applicator Gun. Convenient sprayer brings MAGNAFLUX wet method sensitively to portable applications, such as maintenance inspection of crane hooks, punch press shafts, or lift truck forks. Hand operated spray with nozzle and container adapted for use with either water or oil carrier. No. 14769.

D. Electric Powder Blower. High production, self-contained powder blower for inspection of parts with hard-to-reach surfaces, or in hostile environments. Excellent for foundry or outdoor use. Hopper holds 20 lbs. of dry MAGNAFLUX powders. Operates on standard 115/60/1 line current. No. XB-2A.

E. Portable Hand Pressure Sprayer. Portable and easy-to-use as an aerosol can, this heavy duty pressure sprayer is ideal for spot application of materials. Chrome plated solid brass construction, 1 quart capacity. Pressurize with shop compressed air, or with optional CO₂ cartridges. Supplied with interchangeable nozzles for mist or pin spray. No. 195260.