MAGAZON SBU SERIES

MAGNETIC PARTICLE INSPECTION (MPI) BENCHES

Baugh & Weedon Ltd is a trusted supplier of Magnetic Particle Inspection (MPI) equipment to the aerospace and rail NDT industry. Our Magazon Series of benches have a proven track record for reliability and durability, and are in daily use by most of the leading UK Aerospace companies. Designed and manufactured in Hereford, UK, the Magazon Series provides the capability to test components of all shapes and sizes.

The SBU version of the Magazon Series is ideal for smaller test pieces and components up to 1200mm long and requiring lower magnetising currents.

All Baugh & Weedon MPI Benches are made to fit your application specifically. Although there are standard SBU bench designs, we have the flexibility, knowledge and experience to design the perfect bench for you.

CONSTRUCTION

The Magazon SBU MPI Bench is fitted with a stainless steel drain tank incorporating bed bars to support the fixed position, pneumatically operated headstock and moveable tailstock. The Power Pack is integrally mounted underneath the tank in a heavy-duty steel cabinet. This is mounted on a steel plinth, hence the whole bench can be easily moved with a fork lift truck

When testing small delicate components the optional addition of spring pressure can be included to provide protection against damage. A small piece device can also be fitted, which allows rotation of the component for easy viewing. The head and tailstock are fitted with V-block supports, but for heavier test pieces support rollers mounted on the bed bars are available.

CONTROLS & METERING

The SBU and its larger counterpart, the EBU share the same control system and digital ammeters. The control panel is populated to reflect the individual equipment specification and only those controls needed for your application are included. Digital metering is standard on all units and can be calibrated to display the output current in PEAK, AC RMS or HWDC 2xMEAN. Two meters are provided, each with independent control. One meter displays current flow between heads, and the other displays the FLUX or COIL current.

The Magazon SBU Series has a microprocessor-based, electronic control system providing current pre-selection (CPS) as standard. CPS allows the operator to easily set the current level required and this is automatically achieved during magnetising. As an option the unit can include a memory for up to 99 sets of test parameters.

POWER PACKS

The basic Magazon SBU Series has a nominal 2500 AC power pack with HWDC (half wave rectified) and single phase, or 3-phase FWDC (full wave rectified) waveforms as options.

On standard models infinitely variable current control is achieved using thyristors resulting in a complex current waveform. However, where a sinusoidal waveform is required for compliance with some test specifications, the option of variable transformer control is available for all Magazon Series benches.

INLINE OPERATION

In a high-volume production line, component throughput is vital and can be a limitation on output. Two further options are available with a standard Magazon SBU bench to provide increased inspection capacity.

- Multi-directional magnetising or “Swinging Field” allows two magnetising circuits to operate simultaneously, eliminating the need for multiple “shots”. Defects in any orientation are highlighted in a single operation and consequently only one viewing is necessary.
- Automatic sequencing provides a degree of automation that limits operator involvement to loading the test piece, initiating the cycle and unloading. The normal sequence of clamping, inking, magnetising and unclamping can be achieved automatically. During this time the operator is able to inspect the previously magnetised component.

INK APPLICATION & INSPECTION

The Magazon Series is suitable for use with either kerosene or water-based magnetic particle inspection inks. Ink is applied to the test piece by a manually-controlled spray or from an overhead shower with timed control as part of an automatic sequence. Excess ink drains to a separate freestanding stainless steel reservoir, fitted with an integral pumped recirculation system. The reservoir shape and system design is critical in ensuring all particles are maintained in suspension. The inking system is a self-contained unit with its own controls mounted on the reservoir to assist emptying and cleaning.

Where fluorescent inks are used, inspection conditions are critical. To satisfy specified lighting requirements ultraviolet lamps and a viewing canopy are available. The free-standing canopy consists of a metal frame covered in a heavy flame-resistant PVC material and can enclose a sufficient area to include an inspection station or a supply of test pieces. The canopy has an extractor fan, white light and background UV light fitted as standard.


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DANGER
HAZARDOUS VOLTAGE
INSIDE

Max Testpiece:	SBU	800	1000	1200
Length, mm:		800	1000	1200
Weight, kg:		25	25	25
Equipment Dimensions:				
Width, mm:		1400	1600	1800
Depth, mm:		650	650	650
Height to bed bar, mm:		975	975	975
Bed to pad centre, mm:		200	200	200

SPECIFICATION

	STANDARD MODELS	OPTIONS & ALTERNATIVES
Power Pack:	AC waveform with rated output current of 2500 A (RMS).	HWDC (half wave rectified), single phase and 3 phase FWDC (full wave rectified)) waveforms.
Current Flow Magnetising:	Max output nominal 2500 AC (RMS), measured through a standard shunt.	Max output nominal 2500 A HWDC (2xMEAN), single phase FWDC 2500 A (MEAN), 3 phase FWDC 2500 A (MEAN)
Encircling Coil Magnetising:	Carriage mounted, 5 turn, 300 mm ID coil, length 100 mm. Nominal maximum output in an empty coil. 4200 AT AC (RMS). Coil can be parked at either head or tailstock.	Smaller ID coils for clamping between head and tailstock. Option of higher outputs on request.
Flux Flow Magnetising:		Head and tailstock integral flux coils powered by single phase FWDC nominal 20000 AT.
Multi-Directional Magnetising:		Swinging Field: Simultaneous operation of two magnetising circuits, to produce a “swinging field” or rotating vector.
Current Control System:	Variable thyristor, with resulting complex waveform.	A variable transformer can be fitted to provide a sinusoidal current waveform.
Working Range:	Current range: 10% to 100% of maximum output.	Extended working range down to 100 AC (RMS) minimum.
Metering:	Digital metering, calibrated to display PEAK or RMS to within 5% over working range to meet customer requirements.	HWDC and FWDC outputs displayed as peak or MEAN to meet customer requirements.
Shot Time:	Pre-set single shot of 1, 2 or 3 seconds (other timings can be accommodated).	Any shot-time combination can be catered for, including multiple shots.
Duty Cycle:	Dynamic duty cycle from 20% at maximum output, to 100% at around 900A RMS.	
Max “ON” Time:	3 seconds at 20% duty cycle.	
Demagnetising:	Automatic decaying AC DEMAG.	On FWDC demag cycle is low frequency, reversing polarity, with current step down to zero.
Headstock:	Pneumatically operated, manual control. Clamping stroke: 25mm. Contact pads: 100mm x 100mm.	Foot switch operation. Spring incorporated to reduce pressure.
Tailstock:	Fully adjustable, manual positioning over entire bed length. Manual quick release locking mechanism.	
Testpiece Support:	V-blocks on head and tailstocks.	Removable small piece device with manual rotation for components up to 15mm diameter. Bed bar mounted adjustable support.
Inking System:	Ink Tank: 50 litre stainless steel (covered) reservoir with recirculating pump, manual application & integral controls.	Automatic inking as part of the automated process sequence.
Services: Power Supply:	230V 50 Hz, 1-phase + neutral + earth, current drawn approx 60 A. 415V 50Hz, 3-phase + neutral + earth, current drawn approx 30A.	The multi-directional magnetising option requires 415 V, 50 Hz, 3 phase + neutral + earth: Current drawn approx 65 max.
Air Supply:	6 bar. (FR unit fitted as standard).	

Also available from Baugh & Weedon for MPI applications:

MAGAZON EBU MPI Benches
ideal for testing large components

Demagnetising Coils

Stand alone
Power Packs

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