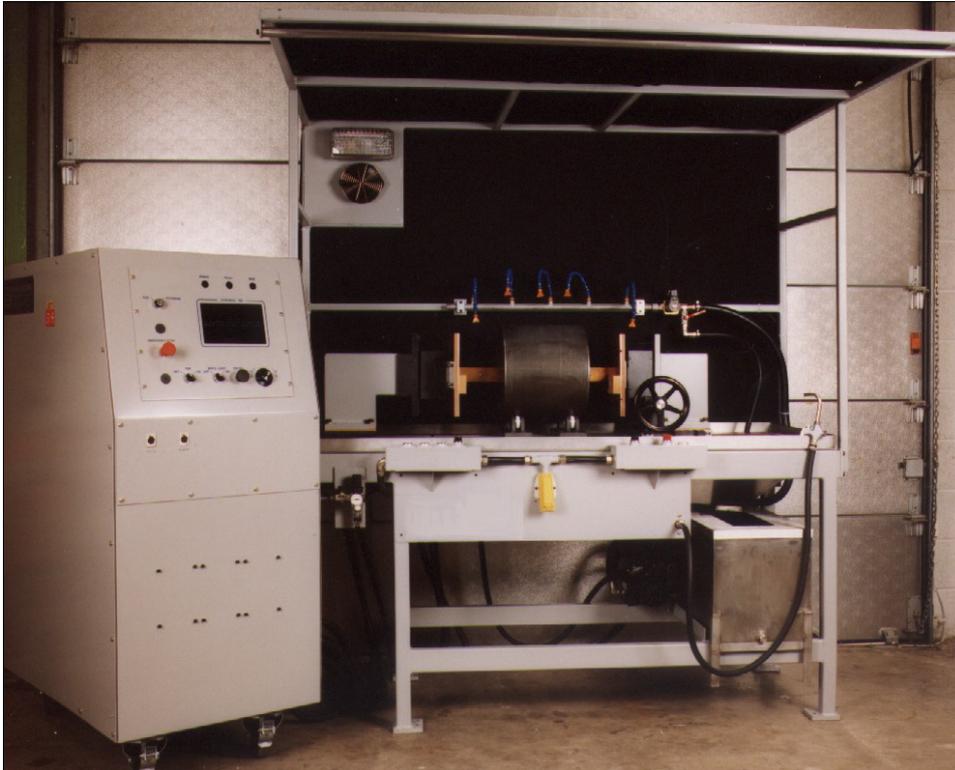


UNIVERSAL MAGNETIC PARTICLE INSPECTION EQUIPMENT



Magnetic Particle Inspection reveals not only cracks invisible to the un-aided eye, but also makes easily visible those defects which, would require a close and tedious examination of the component surface.

The technique is used in a wide variety of industries including automotive, aircraft engine and structures, power generation, oil and gas, foundry, and in industries which process steel or iron. It is invaluable for the inspection of components which have been in service where fatigue cracks could be present

Multi-directional swinging field magnetising.

Circular magnetizing with current flow or threader bar.

Longitudinal magnetizing with coil or magnetic flux flow.

Induced A.C. Current flow for ring shaped components.

**Separate power pack with current output
up to 20,000 Amps peak.**

**Separate ink tank with ink agitation to keep
particles in suspension.**

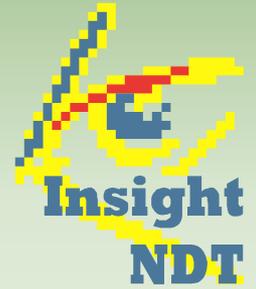
Options of:

Fixed or folding canopy, motorized if required.

Automatic inking of components.

Split headstock for magnetizing conrod ends Etc.

Programmable up to 100 user programs available.



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The EUROMAG universal crack detectors are suitable for testing a wide variety of component sizes and shapes, locating surface and sub-surface defects in any direction. The system is designed to be modular so that the equipment is constructed to only include facilities appropriate to the users applications. Those which are not necessary are not included and therefore the equipment is entirely suitable for the planned application and at the most economic cost.

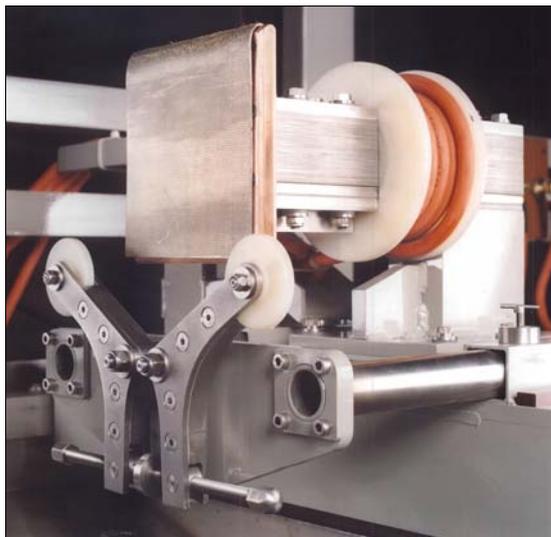
MAGNETISING MODES AVAILABLE

- Circular Magnetisation with Current Flow or Threader Bar
- Longitudinal Magnetising with Coil or Magnetic Flux Flow
- Multi-directional Magnetising using simultaneous Longitudinal and Circular Magnetising Modes
- Induced AC Current Flow for Ring shaped Components
- Current waveforms available A.C., H.W.D.C., F.W.D.C. and Three Phase F.W.D.C.

INNOVATIVE FEATURES

A.C. MAGNETIC FLOW

For the longitudinal magnetisation of small parts which might otherwise be obscured by the encircling coil. It can also be used for the longitudinal magnetising element in multi-directional magnetising and for the induced current technique



CONSTANT CURRENT CONTROL

The magnetising current is pre-selected and will be delivered to the selected magnetising mode irrespective of load conditions within maximum limits.



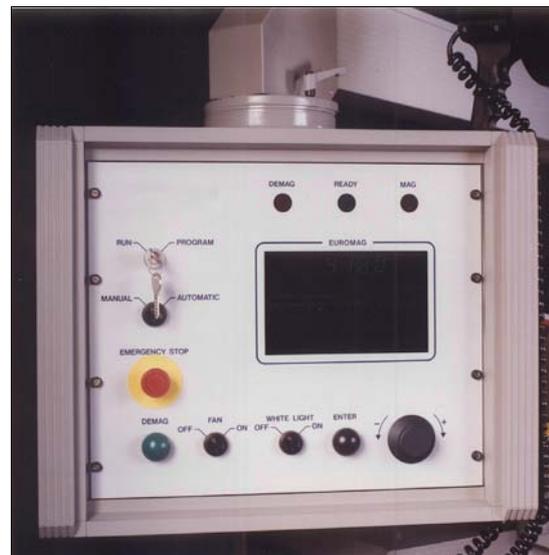
VARIABLE MAGNETISING DURATION

The period of magnetisation is adjustable, as is the number of **shots**. This is a useful facility for small parts to avoid overheating.



MICROPROCESSOR CONTROL SYSTEM

By interactive display the EUROMAG Control System allows selection and adjustment of all magnetising parameters and other functions by means of single simple rotary control and **Enter** button.



PROGRAMMABILITY

Once a set of parameters has been entered it can be stored under a simple code identified with a particular component or technique. Recall of this program will automatically make the necessary adjustments to the parameters. This system avoids mistakes in work in which repeated and frequent adjustments by the operator are necessary.



SEPARATE POWER PACK

In conformance with current safety requirements all high voltage components are housed in a rigid steel enclosure. The enclosure may be situated next to main frame or within it.

DUTY CYCLE MONITORING

In common with all equipments of a similar nature the high power system is not constantly rated. To obtain maximum duty from the EUROMAG a system is included which allows continuous rating until the temperature rises above the threshold. Then a delay is imposed between **shots**, which increases with rising temperature. This is instead of the normal practice of a fixed delay which is inconvenient and unnecessary in most testing circumstances.

AUTOMATIC DEMAGNETISING

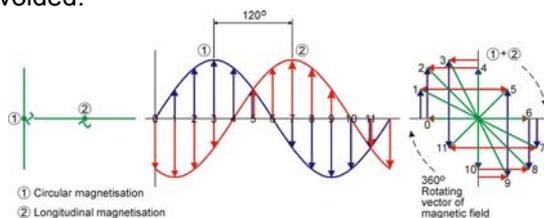
Rapid automatic demagnetisation, using reducing $16\frac{2}{3}$ Hz A.C., is possible in all the magnetising modes. The demagnetising cycle automatically starts at a point 10% higher than the magnetising value. Units which have a F.W.D.C. facility include demagnetisation by reducing, reversing polarity pulses of DC at a frequency of 0.5 Hz.

```
Automatic Demagnetising Required: Y
Set Above Using +/- & ENTER To Continue
```

MULTI-DIRECTIONAL MAGNETISING

To ensure complete inspection of the part, conventional magnetic particle inspection normally requires at least two separate magnetisings, the second magnetising at 90° to the first. In some complex shaped components even more **shots** are necessary. Examination of the surface for defect indications is required after each magnetising therefore the complete process can take considerable time.

With the Insight NDT technique of phase shifted multi-directional magnetising all defects, regardless of their direction on the surface, will be indicated in a single **shot** therefore needing only one inspection. Considerable time can therefore be saved and adjustment errors avoided.



TECHNICAL DATA

STANDARD

- EUROMAG 1000 to test pieces up to 1 metre (40") long/300mm (12") diameter
- EUROMAG 1500 to test pieces up to 1.5 metres (60") long/300mm (12") diameter
- EUROMAG 2500 to test pieces up to 2.5 metres (100") long/300mm (12") diameter

CONSTRUCTION

A fabricated rectangular section steel frame which has rails extending the full length of unit, to support the fixed headstock and adjustable tailstock. Beneath the work area is a stainless steel tray to collect surplus indicating fluid.

HEADSTOCK

Is fixed to the left end of unit, it has a pneumatically operated steel backed copper faced contact pad and a stroke of 50mm. The power pack connection is directly to copper pad. Magnetic flux flow versions have a pole piece of iron laminations wound with induction coil.

TAILSTOCK

Has a similar construction to headstock, and is mounted on carriage running along the support rails. It can be locked at any position, with positive pinion lock. The Contact pad construction identical to Headstock.

MAGNETISING COIL

Has a 250mm diameter aperture with three or five turns of copper conductor wound on rigid former. It is mounted on carriage, to allow positioning at any location between Headstock and Tailstock, with positive lock.



INDICATING FLUID SYSTEM

All parts of system non-ferrous. A sloping tank is provided along the length of the unit which drains into the separate ink storage and agitation tank via a coarse filter. Mounted within this agitation tank is a spraybar assembly, which is pressurised by a pump mounted on the side of the tank and maintains the particles in suspension. A drain plug is fitted to the agitation tank which is withdrawable from the front of the machine to allow convenient cleaning and maintenance

The output from the pump is coupled to the agitation spraybar and the hand applicator hose on the unit as well as the automatic inking arrangement if provided.

POWER PACK

Is a separate enclosure adjacent to magnetising unit. It is constructed in robust frame with removable panels and incorporates the control system and containing the main 3000 amps A.C. (nominal) transformer to class E, heavy duty contactors including infinitely variable thyristor output regulator, current pre-selection and automatic 16²/₃ Hz demagnetising system.



CONTROL SYSTEM

Is integral within the power pack or mounted on a boom and is microprocessor based. It includes an interactive display, test parameter adjustment rotary control and confirmation button. Other controls include **Magnetise** and **Demagnetise** buttons and **Emergency Stop** together with indicator lamps.

The control software allows the adjustment of the magnetising parameters, create, store and recall technique programs and to manage the current pre-selection system. Also included on the display is a four digit LED ammeter, with reading hold facility, to indicate actual output current. The calibration of the system is traceable to National Standards.

OPTIONAL FACILITIES AVAILABLE

HALFWAVE RECTIFIED D.C.

To detect subsurface defects.

MULTI-DIRECTIONAL MAGNETISING

To detect defects in all directions in a single magnetising **shot**. An additional transformer powered from different phase to that of the main transformer, together with the necessary control system, all housed in the power pack.

MAGNETIC FLOW

Provides an alternative longitudinal magnetising method, but without the use of a coil, for A.C. or H.W.D.C. waveforms. The head and tailstock design to include laminated iron pole pieces wound with coil.

UPGRADED POWER PACK

To provide variable output current up to 6,000, 10,000, 15,000 and 20,000 amps true peak (nominal).

FULL WAVE THREE PHASE RECTIFIED DIRECT CURRENT.

For detection of subsurface defects.

MAGNETISING COILS

350mm I/D, 550mm I/D or a custom I/D, both continuous or split and hinged

VIEWING BOOTHS AND CANOPIES

MOTORISED PART STEADY RESTS

MOTORISED COIL AND TAILSTOCK

MOTORISED CANOPIES