Arora Technologies (P) Limited

Operation Manual

AC/DC Magnetic Yoke

AY – 7D

Introduction

This manual contains the necessary information to acquaint the operator of the AY-7D model AC/HWDC electromagnetic yoke with its capabilities and operation. The purpose of this manual is to furnish the operator with a functional knowledge of the operation and to make understand the safety precautions which should be applied during operation and maintenance of the equipment.

General Description

The light weight electromagnetic yoke is the ideal tool for detection of surface or sub-surface cracks and flaws in any ferromagnetic material. Fast and simple to operate, it is widely used with either dry or wet method fluorescent or non-fluorescent magnetic powders, in the testing of welds, automotive or rail road components, machine parts, steel or grey iron castings, forgings, and in plant inspection maintenance and repair.

Features

- Choice of content level AC or variable intensity pulsed HWDC current for surface or sub-surface flaw detection.
- Solid state circuitry for infinitely variable (stepless). Potentiometric adjustment of DC magnetic field.
- Articulated legs to suit differing component contours. Interpol distance adjustable from 0 to 300mm.
- Low power consumption. Current drawn at 220V, 1 phase supply is only 2 amperes.
- Extremely strong and intense magnetic field for superior sensitivity.
- Portable and light weight.
- Can be used for AC demagnetization too.
- No risk of sparking or 'hot spots' on the job.
- No current flows through the component being tested.

Demagnetization

MAGNETIZATION: Adjust the legs to a spacing of 120mm to 180mm and place the yoke firmly upon the work piece by securing best possible contact, with the suspected defect transverse to the magnetic field between the legs. With the selector switch in either the AC or the DC position; press the test switch to energize the Yoke and lightly dust the magnetic particles (Dry method) or flow the magnetic particle suspension (Wet method) over the area being inspected. As an example, when testing for longitudinal cracks in a "butt weld" the Yoke would be positioned so that the legs straddle the weld. If the direction of a possible defect is not known, two inspections should be made in such area, turning the yoke approximately 90 degrees for second

inspection. In the dry method using the power blower bulb, the area between the legs of the Yoke is dusted lightly with Magnetic POWDER and inspected closely for flaws or other defects. Current should remain "ON" (Continuous method). This process is repeated until the entire area of part is inspected. The "Continuous method" should always be used for maximum sensitivity. Avoid excessively strong fields which may magnetically saturate the test piece and cause "Masking effect" or "Back ground" which will interfere with flaw indication. Demagnetization: The AY-7D Yoke can usually be used to obtain a satisfactory level of demagnetization. Place the part across the poles and while the current is flowing, slowly withdraw the part from the field to a distance of at least 60 cm(23.62") before turning off the magnetizing current.

Technical Specifications

Specifications	Meets requirements of ASTM E 1444-12
Input supply	220V, 50Hz, 1 Phase
Input current	2.2 Amps
Distance across poles	50-280mm (centre to centre)
Magnetic field	AC- Constant level, infinitely variable
Flux density	Approx. 10,500 lines of force /cm2 at 100mm(3.93") pole spacing
Pulling capacity	Approx. 22.6kg (50 lbs.) in DC mode at 100mm spacing. 4.5kg (10 lbs.) in AC mode at 100mm spacing
Yoke weight	3.7 kg Approx.
Duty cycle	23% (3sec On followed by 10sec Off)
Controls	• On/off switch • AC/DC switch • DC field intensity potentiometer

Maintenance

- A periodic visual inspection of the interior electrical components is highly recommended. Such an inspection can preclude operational malfunctions and components failure. Disconnect the supply before gaining access to the interior of the magnetic yoke.
- Check all the wiring for the discoloration, burnt insulation and loose connections. Ensure the cables are free from cuts which expose the wiring.
- Prevent the yoke body and its interior from wet particles and liquids. Liquid baths or wet magnetic particles if peeped inside the body can damage the yoke components and can affect its working efficiency.
- The equipment should be cleaned with a soft brush to loosen stubborn particles with care being exercised to avoid damaging delicate electrical leads.
- After every six months yokes should be checked for its pulling capacity. It should lift minimum 4.5 KG at 100 mm spacing for A.C. selection and 22.6 KG at 100 mm spacing for D.C. selection.

Precautions

- Do NOT energize the Yoke for more than the duty cycle recommended. If the yoke is too hot to hold in the bare hand it is a sign that the duty cycle has been exceeded. Wait for the yoke to cool before continuing.
- Do NOT connect the Yoke to a battery for portable work.
- Do NOT change the AC/DC selector switch while the unit is energized.
- Ensure that there is firm contact between test piece and Yoke legs for better indications of the defects and less noise.
- DO NOT open the yoke handle and change any settings on the PCB.
- DO NOT drop the Yoke from a height or subject the handle to any service impact.
- Ensure that Yoke is connected to 'earth' through proper 3 pin plug for operator safety.
- Do not replace any parts with other than those recommended by Arora Technologies (P) Ltd.
- Do not use the supply cable to pull, lift or carry the equipment.

Thank you for your business!

WE trust, we have catered as per your expectations...

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