

Western Instruments

Established 1965

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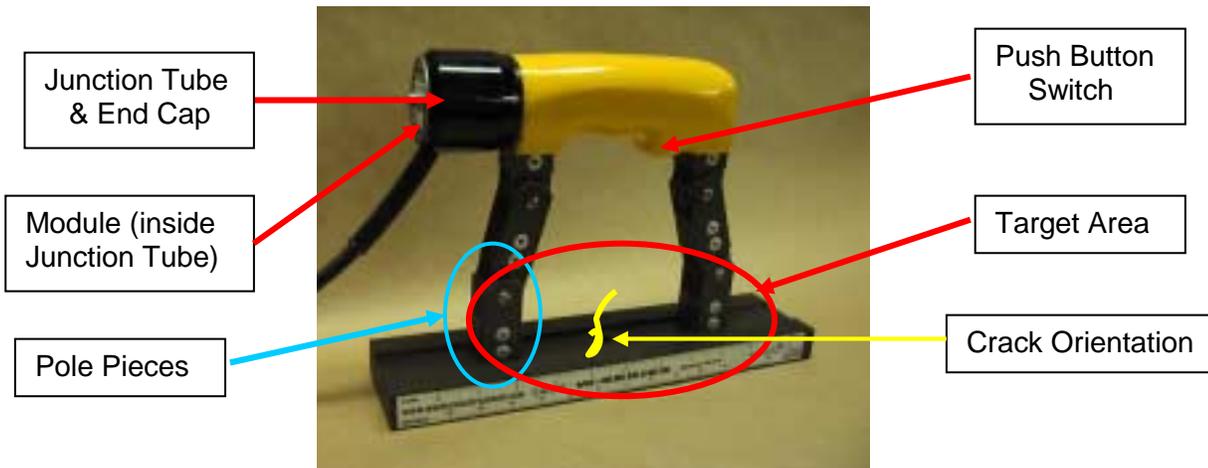
Operating Instructions February 2010



WC-42

Safety AC Yoke

The WC-42 is an AC Yoke which induces a magnetic field into the ferrous material being tested. The unit should be used within the parameters as set out in the specifications within this guide. This Manual also applies to similar Low Voltage Models such as the WC-48.



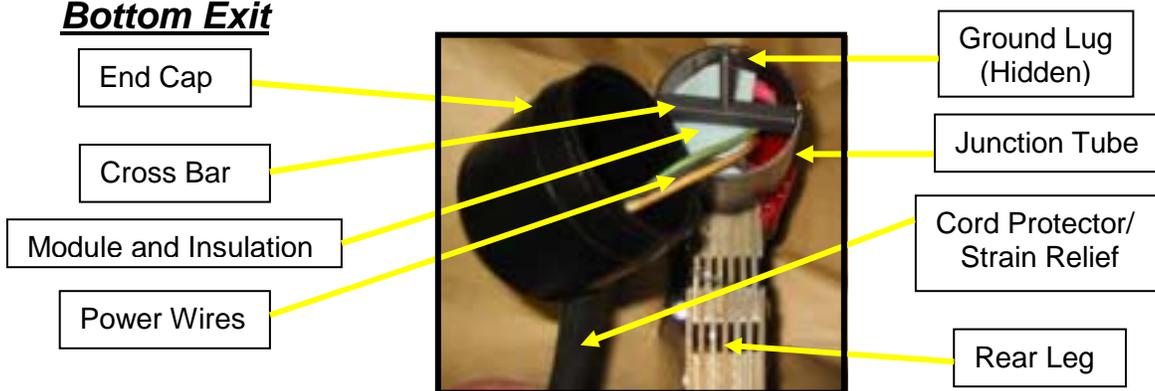
1. Solid State Push Button Switch – The Solid State Push Button Switch was designed for comfort and safety. While depressed, the switch delivers a ½ Watt control signal to the electronic controls (semiconductors) sealed in the Output Module. The Module connected to a receptacle plug in the Junction Tube of the Yoke, and supplies the necessary power (AC) to the coil encapsulated in the Yoke housing.

If the Yoke fails to turn on when the switch is depressed, check the following items in this order; AC Power, Power Plug, Power Cord, connection of the Output Module, and lastly the switch via the internal receptacle, if these connections are all fine, replace the Output Module. Removing the rubber switch cover voids the 2 year warranty on this item.

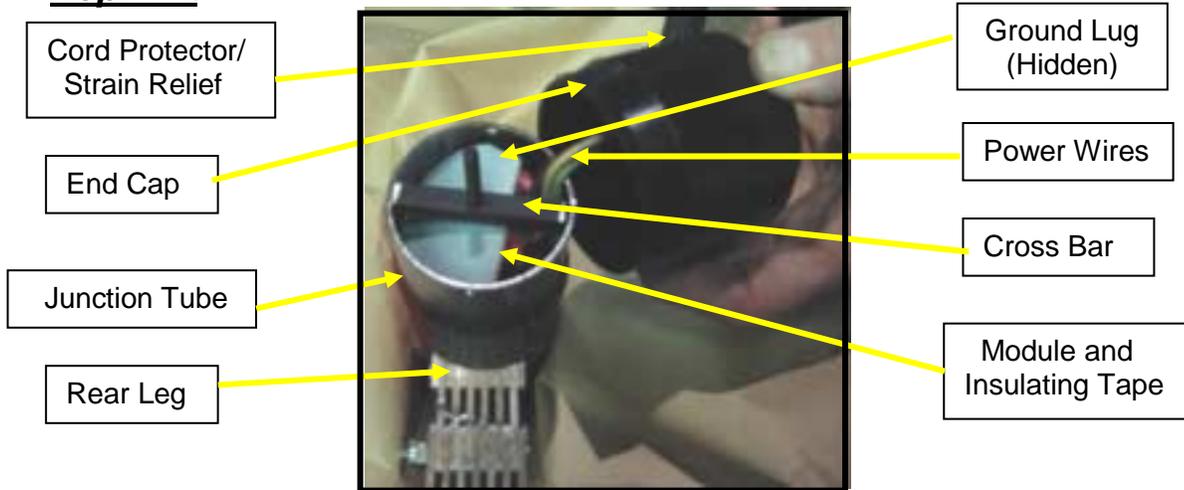
Do not hold the Push Button Switch on when plugging the Yoke into power.

2. End Cap Rotation – The End Cap may be rotated to reposition the Cord Protector (Strain Relief), for operator convenience, within the Bottom 120° or Top 120° of the Junction tube. Carefully remove the End Cap, followed by the internal Cross Bar, and reposition the power wires. Replace the cross bar, ensuring the insulation disk (or tape) is in place and carefully reinstall the End Cap. Care must be taken not to twist or ‘pinch’ wires, on either the mounting bar or End Cap.

Bottom Exit



Top Exit



3. Operational Parameters – The Operational Parameters or Duty Cycle for the operation is set to avoid damage to the internal coil or the Output Module, and must be observed.

AC Operation: It is recommended that the operator does not keep the Yoke on for more than 5 minutes at a time, as the Yoke housing may get to warm to hold. However, the basic design of any Yoke inherently produces heat. Typical operation is 5 - 15 seconds on, while applying inspection media, followed by 5 - 15 seconds off for inspection and repositioning the Yoke to the target area.

If the Yoke is used for prolonged periods of time such as 2 to 3 hours of continuous cycling, as outline above, the Yoke will get warm. If the WC-42 is used in this manner the operator must provide time for a sufficient cooling period, or components in the Electronic Control Module may fail.

4. Field Characteristics

AC Field – AC Magnetic Fields are sensitive to surface and near surface defects due to the ‘Skin Effect’ as the magnetic field travels from one Pole Piece to another. The Inspection Media (Dry Powder or Wet Method Particles) has a tendency to migrate toward interruptions (or defects) in the magnetic field. The direction and intensity of an AC Field, by it’s nature, alternates causing high particle mobility, so defects tend to be revealed immediately when the Media is applied.

Demagnetization – Small Parts may be demagnetized by positioning the contact surfaces of the Pole Pieces together, activating an AC Field and pass the part through the opening formed between the Legs and Yoke Housing. Larger Work Pieces can be demagnetized by placing the Yoke on the surface, in a similar manner as used during inspection, activating an AC Field and pull the Yoke off the surface. The work piece can be tested with a Magnetic Field Indicator, such as the W-Series W-FI®, to ensure it is fully demagnetized.

5. Operation:

Position the Pole Pieces (Feet) on the work piece. The area between the pole pieces is your target area, which also extends laterally out, approximately 1.5” (38mm), from either edge of the pole pieces. The Field will expose defects that are transverse to the centerline between the Pole Pieces. The Pole Pieces should be positioned so that as

much of their contact surfaces as possible, are on the work piece. The Yoke is then energized, by pressing Push Button Switch, and Magnetic particles are applied. Dry Method Particles are dusted between the Pole Pieces and over the target area, while Wet Method Particles are sprayed in a similar manner.

The Target Area is then inspected visually for a collection of Particles around defects. A Black Light is used to aid visual inspection when Fluorescent Particles are used. Indications found with Dry Powder will tend to form immediately, and will take slightly longer with Wet Method Particles. If the typical direction of defects is not known, rotate the Yoke through 90° and repeat the inspection of the target area.

The WC-42 produces a standard amount of Field Blow as other AC Yokes. Field Blow is a collection of Inspection Media between the Pole Pieces, transverse to the centerline between the Pole Pieces, and may cause a masking of indications. Field Blow can be minimized by extending the Pole Pieces farther apart, If work piece configuration does not permit extending Pole Pieces, reduce the contact area of the Pole Pieces on the work piece. Follow the Operational Parameters outlined in these instructions.

6. Maintenance:

After extended use the Yoke should be cleaned with a mild soap solution and thoroughly dried. The unit should be visually inspected for any damage that could cause harm to the operator, or the material being inspected. Special attention should be paid to the Push Button Switch Cover, to ensure it is fully adhered to the body of the Yoke. Furthermore, the Power Plug, Power Cord, and the End Cap/Cord Protector should be in a good state of repair. Before performing maintenance, cleaning, or repositioning the End Cap, the Yoke should be disconnected from any power source, with safe industrial practices employed. Any potential problems to these assemblies must be reported to the Distributor or Western Instruments for instructions on corrective action.

Whether industrial specifications are being observed or not, the Yoke should be tested periodically, using a certified Pull Test Bar such as the W-Series W-PT®, to ensure it continues to lift the specified amount of weight. If the unit fails such a test, first inspect the Pole Pieces to ensure they fully contact the test weight. If the unit continues to fail, contact the Distributor or Western Instruments for instructions on corrective action.

Wiring:

The WC-42 is supplied from a 42 Volt Power Supply, which in turn is supplied with 230 Volts and 50 hertz power. Commercially available 42 Volt Power Supplies are fitted with an appropriate output plug (or terminals), which the WC-42 is connected to. Western offers the PD-42 AC Power Supply, which is supplied from 230VAC/50Hz input, and provides 42VAC/50Hz output. When in operation with interconnection cable (Yoke to Power Supply) of 5 meters, a WC-42 will lift over 4.6kg (10 Pounds).

The power supply should be used in accordance with the manufactures instructions. When installing a Power Plug or connecting the WC-42's AWG 18-3 Power Cord, the following is the identity of the 3 Color Coded Conductors;

- Green – Ground
- White - Neutral
- Black – Live

Care must be taken to insure the proper installation of an AC Power Plug, and if there is any question, contact your distributor or Western Instruments. If an fully grounded AC Plug in not installed, before use, any warranty is void.

7. Pull Test / Calibration

When performing a 10 Pound (4.5Kg) Pull Test, ensure the contact feet are flat as possible to the Pull Test Bar (W-PT®), which ensures as much magnetic attraction as possible. If a Yoke fails a pull test, it should be sent to an authorized repair facility for Contact Foot Dressing.

Warranty

Western Instruments warrants its products, against defects in materials and workmanship for a period of 1 year from receipt by the end user. If Western Instruments receives notice of such defects during the warranty period, Western Instruments will either, at it's option, repair, replace, or condemn products that prove to be defective. Consumable items, such as Batteries are warranted for 30 days, from receipt by the end user.

Any warranty is void if the unit has been modified in any way, or if it has been repaired by an unauthorized agency. The end user agrees that any equipment's disposition, when returned for warranty work, is at the full discretion of Western Instruments as to whether a claim is under warranty, or due to misuse. Western Instruments warranty shall overlook normal wear, however does not include operation outside the environmental specification of the product. All warranty work is FOB Western Instruments, and any returned units shall include a written description, by the end user, of the fault.

Western Instruments makes no other warranty, either expressed or implied, with respect to this product. Western Instruments specifically disclaims any liability arising form the use of this equipment. For the correct use of the product, refer to the Operating Instructions, furthermore we recommend instructional training to CGSB, ASNT, or other regulatory authority qualifications. Western Instruments highly recommends the end user exercise all possible safety precautions, including use of protective equipment, while operating this or other industrial equipment.

Specifications:

Model: WC-42 (WC-48)
Voltage: 42VAC (48VAC)
Frequency: 50 Hz
Current: 6.5 Amps 'In Air', 5.5 Amps on work piece.
WC-48 is 6 Amps in Air and 5 Amps on work piece
Controls: Solid State (Thyristor)
Capacity: <10 Pounds (4.5 Kg)
Pole Spacing: 0 – 11" (0 – 280mm)
Pole Cross Section 1" (25mm)
Weight: 6.5 Pounds (3.0 Kg)



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