

# Western Instruments Inc.

Established 1965

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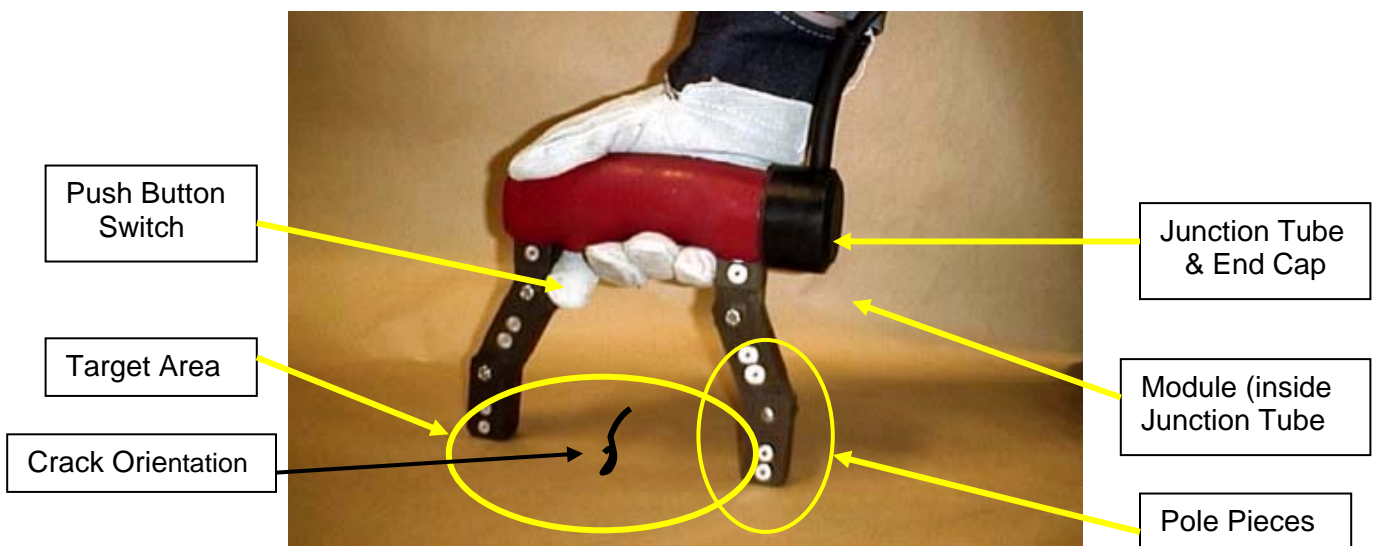
## Operating Instructions



# WC-6X2

## High Output Compact AC Yoke

The WC-6X2 is a High Intensity AC Yoke, which induces a magnetic field into the ferrous material being tested. The device should be used within the parameters set by the operational specifications within this guide.



- 1. Solid State Push Button Switch** – The Solid State Push Button Switch was designed for comfort and safety. While depressed, the switch delivers power (AC) to the coil encapsulated in the Yoke housing.

The Solid State Push Button Switch provides a ½ Watt control signal to the electronic controls in the Output Module, where semiconductors are used to activate the magnetization field.

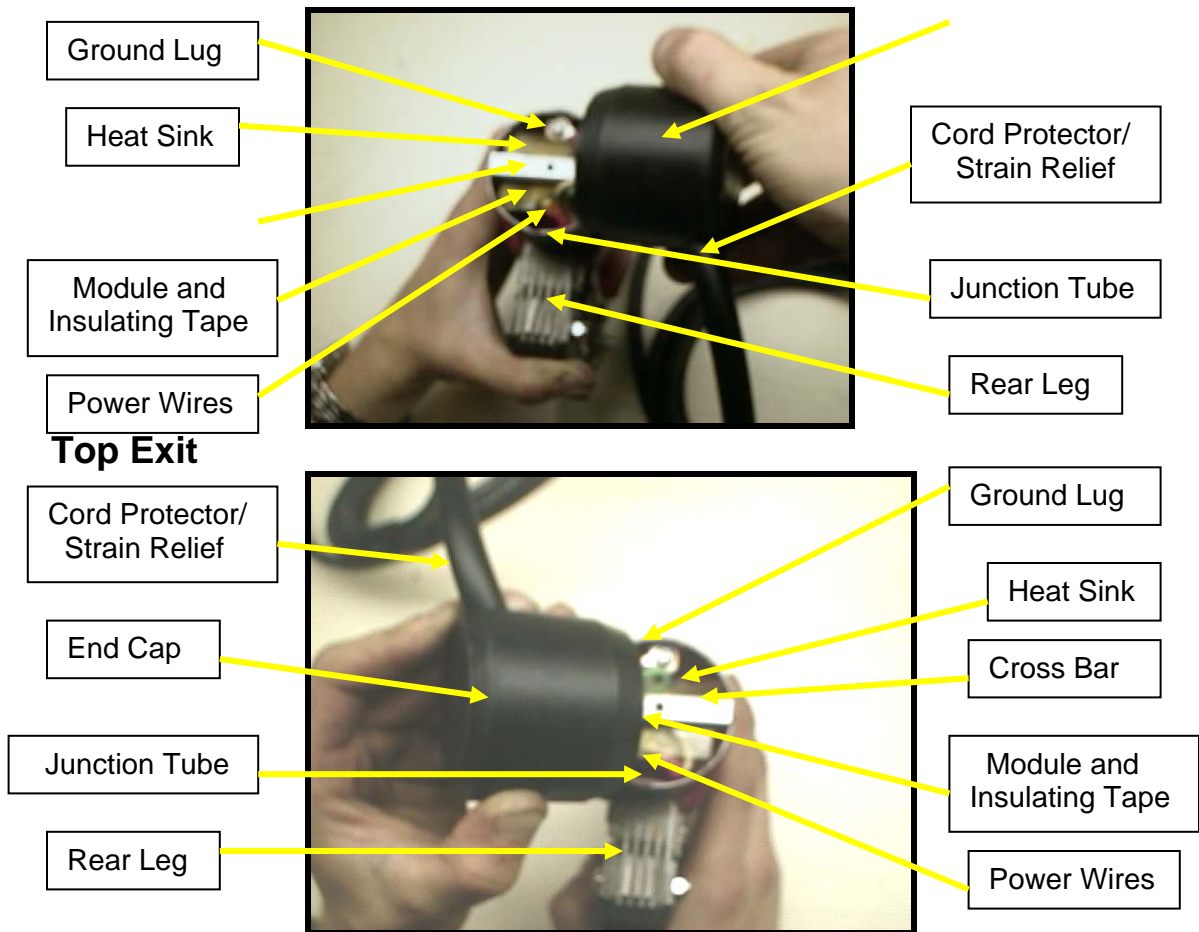
**Do not hold the Push Button Switch on when plugging the Yoke into power.**

- 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 mounting bar, ensuring the insulating 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 or the Heat Sink.

**Bottom Exit**

End Cap (Name Plate and Fastener not shown)

Cross Bar



**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 repositioning the yoke to the target area.

If the Yoke is used for prolonged periods of time such as 60 to 90 minutes of continuous cycling, as outline above, the Yoke will get hot. If the WC-6X2 is used in this manner the operator must provide time for a sufficient cooling period, or components in the Electronic Control Module may fail.

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

**4. Field Characteristics**

**AC Field** – AC Magnetic Fields are sensitive to surface and near surface defects due to the ‘Skin Effect’ as the field travels from one Pole Piece to another. The WC-6X2 is designed to produce a very strong AC field, to aid the operator while inspecting through nonmagnetic coatings, or using extra scrutiny for inspecting

critical components. The Inspection Media (Dry Powder or Wet Method Particles) has a tendency to migrate toward interruptions (or defects) in the field. The direction and intensity of an AC Field, by its nature, alternates causing high particle mobility, so defects tend to be revealed immediately.

**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 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-PT®, to ensure it is fully demagnetized.

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

## **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 inspect of the target area.

As the WC-6X2 produces such a strong magnetic field, Field Blow will be higher than on standard AC Yokes. Field Blow is a collection of Inspection Media between the Pole Pieces in the target area, 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. 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. While 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 certified Pull Test Bars 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** – Western Instruments 230 Volt Models, are designated by a “K” placed after the Serial Number and the Models number (e.g. WC-6K), are shipped without an AC Power Plug as there is no international standardization. When installing an AC Power Plug onto the 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 AC Plug is not installed before use, any warranty is void.

## 7. Pull Test / Calibration

When performing a 20 Pound (9 kg) 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 its 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 from 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-6X2 or WC-6X2K

Voltage: 115VAC or 230VAC

Frequency: 50 or 60 Hz

Current: AC – 7.0 Amps @ 115 Volts or 4 Amps @ 230 Volts

Capacity: <20 Pounds (9.2 Kg)

Pole Spacing: 0 – 11" (0 – 280mm)

Weight: 7.2 Pounds (3.3 Kg)



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