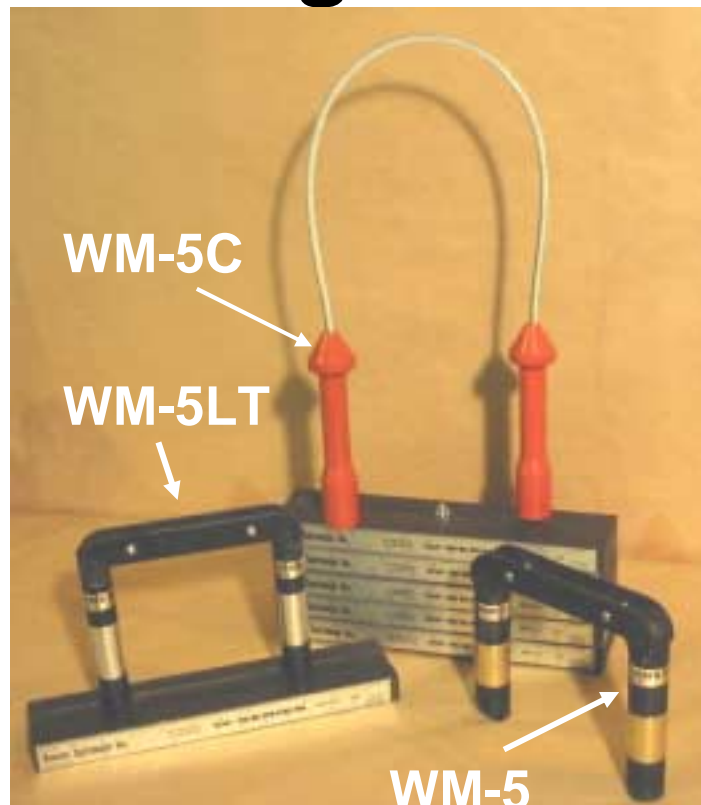


# Western Instruments

Established 1965

## Operating Instructions

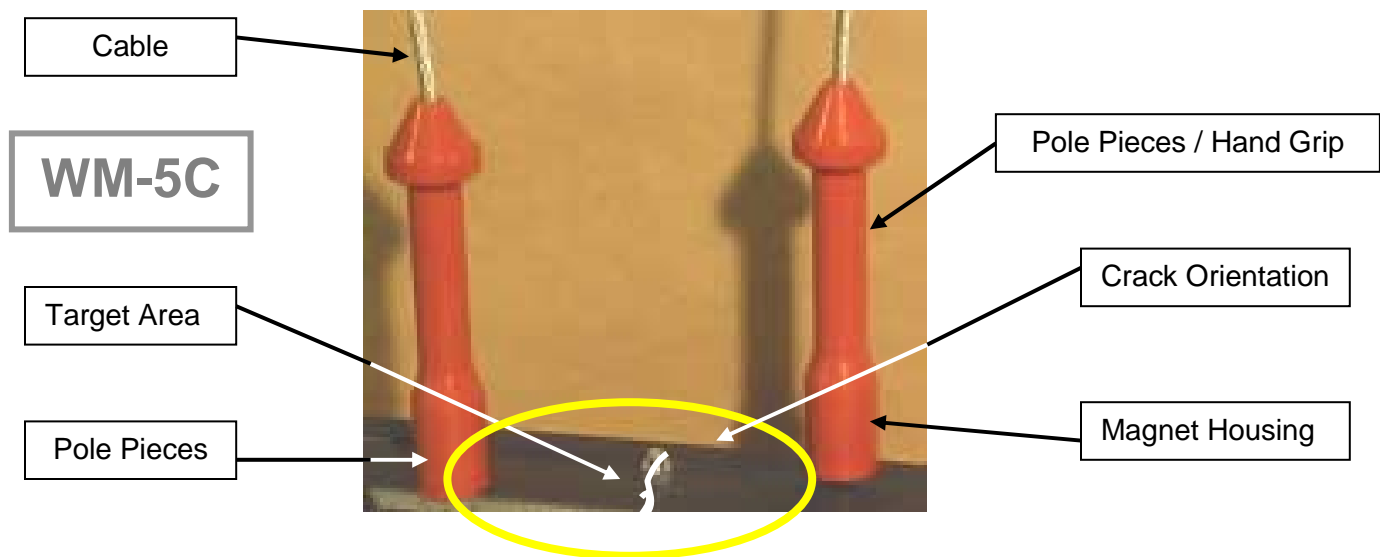
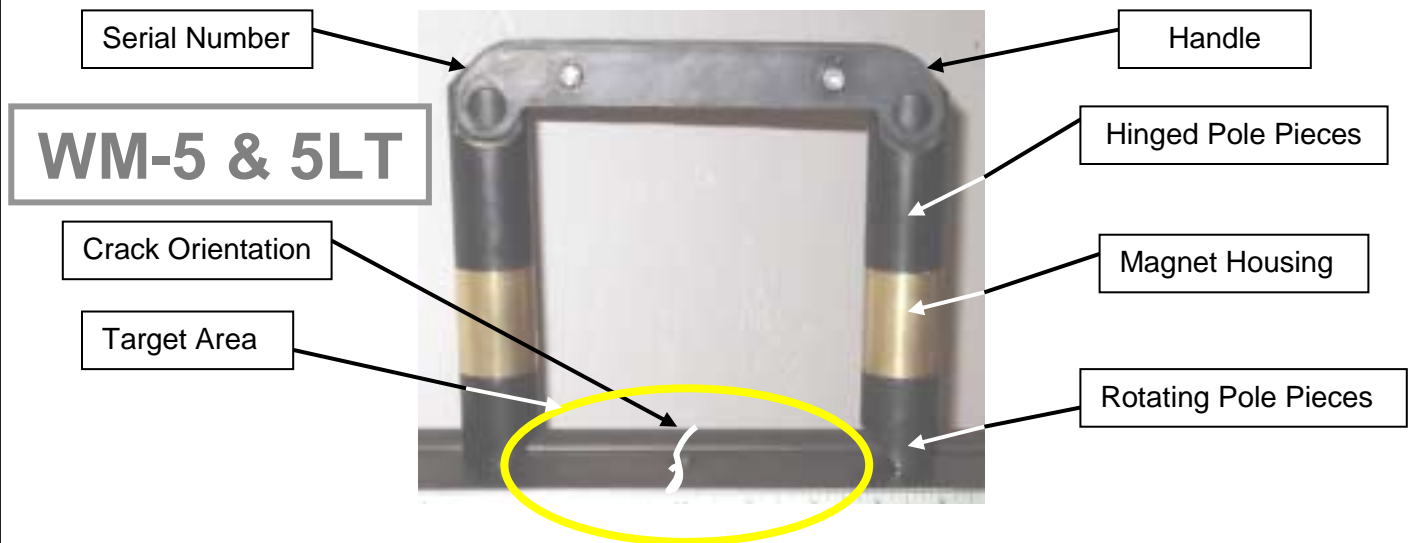


# *WM-Series*

## Permanent Magnet Yokes

January, 2005

The WM-Series are Permanent Magnet Yokes (WM-5, WM-5LT, and WM-5C), induces a magnetic field into the ferrous material being tested. These Yokes should be used within the parameters set in this specifications and guide.



### **1. Operational Parameters**

The WM-Series utilizes the highest specification of Rare Earth Permanent Magnet Cartridges available, so re-magnetization is not required. These cartridges are housed in the illustrated Magnet Housings, and under normal operating conditions, can be expected to maintain their strength for many years.

Magnet strength can be diminished if the Yoke is exposed to very high magnetic fields, high temperatures or impact. Magnet strength can be reduced if the cartridges are scratched or cracked so rough handling should be avoided. In the unlikely event of failure, the Magnet Cartridges are easily field replaceable on the WM-5 and WM-5LT.

When new, WM-Series Yokes are tested to over 50 Pounds (23kg) lift, so over an extended period of time, or with slightly worn Pole Pieces they will continue to meet applicable specifications. For traceability, the Serial Number is placed on each unit.

## **2. Operation**



The WM-5 and WM-5LT Pole Pieces are equipped with 2 different contact surfaces, flat and angled. When held by the handle the flat contact surfaces are used (like a standard AC Yoke). When using the angled contact surfaces, the operator holds the unit by the Magnet housing and Pole Pieces, allowing him to rotate the Pole Pieces for maximum contact area with the workpiece.

The area between the pole pieces is your target area, which also extends laterally out, approximately 1.5" (38mm), from the centerline of the unit. 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 are on the work piece. 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.

All WM-Series Yokes lift more than required by industry specifications, however these same specifications will reference maximum pole spacing. This pole spacing is more critical than lift for testing, as a magnetic circuit is required so the negative field on one pole will travel to the opposite or positive pole. These maximum pole spacings, typically do not exceed 150mm (6"), however the extra pole spacing on WM-Series Yokes allows convenient positioning of poles for maximum contact to the workpiece, while maintaining a specified pole spacing.

The Flat Contact Surfaces on the WM-5 and WM-5LT are very useful to ensure pole spacing does not exceed those set out in Reference Specifications (ASTM E317/E1444, BS6072, etc). Furthermore, they are conveniently used for Pull Test Verifications as well, as the angled feet are somewhat cumbersome to perform a pull test with.

To remove WM-Series Yokes from the workpiece, rock the unit so the Pole Pieces are contacting the workpiece on the rounded edge only. This drastically diminishes the lifting power of the Yoke, so it is easily removed with a gentle pull.

## **3. Field Characteristics**

The DC Magnetic Field is stronger than an AC Field and tends to penetrate the work piece more deeply, however DC is still sensitive to surface defects. Inspection media tends to adhere to the entire target area of the work piece, due to the reduced particle mobility, and may need to be 'blown off' to fully reveal an indication.

#### **4. Storage**

All WM-Series Yokes, when not in use, should be left with the Pole Pieces together. With the WM-5 and WM-5LT, this means simply allowing the Pole Pieces to come together. With the WM-5C, the cable is of sufficient length to bring the face of the Pole Pieces together.



#### **5. Maintenance**

After extended use the Yoke should be cleaned with a mild soap solution. The WM-5 and WM-5LT should then be rubbed with a light oil or corrosion inhibitor. We recommend using *LPS 3® Heavy Duty Corrosion Inhibitor* and an old tooth brush. Depending on the environment, surface treatment may have to be more or less aggressive.

The unit should be visually inspected for any damage that could cause harm to the operator, or the material being inspected. Any potential problems to a WM-Series Yoke 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.

#### **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  
*Warranty Continued*

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 WM-5, WM-5LT, and WM-5C

Capacity: WM-5 – 23kg (50 Pounds), WM-5LT – 23kg (50 Pounds),  
WM-5C – 23kg (50 Pounds).

Field Strength with Tips in Contact;

WM-5 9200 Gauss

WM-5LT 8500 Gauss

WM-5C 10900 Gauss, 2mm (0.80") Air Gap

Field Strength with 2" (50mm) Air Gap

WM-5 510 Gauss

WM-5LT 410 Gauss

WM-5C 5700 Gauss (Single Pole Only)

Pole Spacing: WM-5, 0 – 14" (0 – 350mm)

WM-5LT, 0 – 14" (0 – 350mm)

WM-5C, 0 – 24" (0 – 610mm)

\*Specifications Limit Pole Spacing to 6" (150mm).

Weight: WM-5, 5 Pounds (2.3 Kg)

WM-5LT, 3 Pounds (1.4 Kg)

WM-5C, 1.6 Pounds (0.7 Kg)

Specifications subject to change without notice



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