



NDT SUPPLY

MAGNETIC PARTICLE CRACK DETECTION BENCH

TMM MP 2800 – AC & HWDC MOBILE (A)

and / or

TMM MP 4000 – AC & HWDC MOBILE (B)

and / or

TMM MP 6000 – AC & HWDC MOBILE (C)

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OFFER

1. SUBJECT

Mobile magnetic particle crack detection unit is used to detect surface and sub-surface defects of ferromagnetic materials. This unit has been prepared for NDT Supply. Project defines the complete design, test electronics, mechanical manufacturing, acceptance.

No.	Date	Revision	Caused by	Executed by
01	05.11.2020	First version	NDT Supply	Hasan YILDIZ
02	12.11.2020	Addition TMM MP 600 AC & HWDC	NDT Supply	Hasan YILDIZ

2. DESCRIPTION OF THE SYSTEM

Mechanical:

Dimensions : ~ 600 x 800 x 1000 mm (wxdxh)

Weight : ~ 200 kg (A) / 300 kg (B) / 450 kg (C) without cables

Electric-Electronics:

Mains : 480 V 1-phase AC 60 Hz

This detail are provisional and may change!!!



Figure 1. General view

3. TECHNICAL DETAIL OF THE SYSTEM

According to EN 9934.1-2-3, device was manufactured for the magnetic particle crack testing and magnetized with the following methods:

Field Flux	with AC & HWDC Rigid Coil or Cable Wrap Magnetization
Current Flow, Directly	with AC & HWDC High Current Magnetization
Current Flow, Central Conductor	with AC & HWDC High Current Indirect Magnetization

This manual test unit will be able to run 24 hours a day, 7 days a week.

The crack detection unit is a combination of following units and delivered as a compact unit. Only the electrical power connection will be made on your plant.

Unit generally consists of the following sections:

- 1- Base Frame
- 2- Electro-Physical Structure
- 3- Electric-Electronics

3.1. Base Frame

The main chassis of the test unit is steel frame. It has a structure which operators can work ergonomically and all safety precautions are taken.

3.2. Electro-Physical Structure

Test unit has one magnetization circuit. Circuit provides to detect surface and sub-surface defect and is designed according to standards.

3.2.1. Copper Prods

A pair of copper prods are used to pass current through the test piece. Prods are connected to transformer with flexible high current cables. One of the prod has start button on its handle.

3.2.2. Coil (Optional)

For coil application, a rigid coil which has 400 mm inner diameter aperture with 3 turns of copper conductor wound. Copper wound is isolated with silicone hose to prevent short cut risks during test. High current cables which are mounted to prods, will be dismantled and connected to the coil.

3.3. Electric-Electronics

3.3.1. Control and Transformer Section

In this section a transformer, TMM 3UV DC microprocessor controlled electronic current driver board, fuses, residual current circuit breaker and electrical control equipment take place. It easily accessible by dismounting left and right-side covers. Unit A has a transformer which produces effectively 2000 ampere AC and 1400 ampere HWDC currents. Unit B has a transformer which produces effectively 2800 ampere AC and 2000 ampere HWDC. Unit C has a transformer which produces effectively 4200 ampere AC and 3000 ampere HWDC.



Figure 2. Control and Transformer Section Layout

3.3.2. Control Panel

On the front face of the unit, there is a control panel. All functions and settings of the unit is done on control panel.



Figure 3. Control Panel (sample)

On control panel, there are digital ammeter, prod/coil outlets, potentiometer, main switch, AC-HWDC switch, demagnetization on-off switch and foot switch socket.

4. TESTING PROCEDURE

Prods are handheld electrodes that are pressed against the surface of the component being inspected to make contact for passing electrical current through the material. Then, as soon as pressing the foot switch or prod switch, the functions of the test unit take place in the correct sequence of time. The current passing between the prods creates a circular magnetic field around. Until ammeter displays zero, prods should be keep in contact with the test piece. High electric current comes from the transformer by flexible high current cables. Required current will be set by potentiometer. Demagnetization is carried out automatically. After the test procedure, the test piece visually inspected under UV light.

5. TECHNICAL SUMMARY

Current Flow Mag.	: It is used for longitudinal cracks detection. Magnetic field is generated by passing current through to test piece. It is fed by transformer which produces: Unit A - peak 2800 ampere AC, effectively 2000 ampere AC current and 1400 ampere HWDC current. Unit B - peak 4000 ampere AC, effectively 2800 ampere AC current and 2000 ampere HWDC current. Unit C - peak 6000 ampere AC, effectively 4200 ampere AC current and 3000 ampere HWDC current.
Current Control	: Electronic, stepless.
Duty Cycle	: Increased from %40 to %60.
Mains	: 480 V 1-phase AC 60 Hz
Power Consumption	: ~ 20 kVA / ~30 kVA / ~50 kVA
Power Cable	: 5 meters (with 3P+N+PE socket)
Demagnetization	: Automatically
High Current Cables	: 120 mm ² cross section area, 3 meters length and 2 pieces.

6. COLOUR

Our standard colors are; main body RAL 7004 (gray) and covers RAL 3018 (red).

7. PRICE

Below price includes design, mechanics and electric-electronics. Price also includes training and technical documents. The quoted prices do not include export packing and transport insurance. Our prices are quoted Ex-Works Incoterm 2010. Foot pedal switch, current probes and high current cables are included.

TMM MP 2800 AC & HWDC Mobil Unit

TMM MP 4000 AC & HWDC Mobil Unit

TMM MP 6000 AC & HWDC Mobil Unit

Coil (inner diameter 400 mm)

1 Set Technical Document

Seaworthy packing

* Validity of our offer is 45 days from to date of order.

8. DELIVERY TIME

Approximately 4-5 weeks after full technical and commercial clarification and receipt of written order. The quoted delivery lead time is based on current order backlog. A firm delivery will be stated in our order confirmation after receipt of order and clarification of all technical details.

9. TERMS OF PAYMENTS

Payment will be realized by wire transfer before delivery.

10. DOCUMENTS SUPPLIED WITH THE SYSTEM

Along with the device, TMMNDT shall provide the following information and documents in English for approval, information and use.

- Operator instructions; for information and use
- Maintenance; for information and use
- Part lists (mechanical, electric-electronical and spare); for information and use



11. DELIVERY

System will be delivered according to acceptance approval. Transport and insurance cost will be covered by customer.

12. GUARANTEE & WARRANTY

Guarantee expires 12 months after delivery expect wearing parts and operator faults. In any case the guarantee period expires 16 months after acceptance approval.

TMMNDT will provide the necessary spare parts against payments for 10 years as warranty.

We thank you for inquiry and would be glad to send you official order and receive your order.

With my best regards.

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