

DEFECTOMETER® 2.837



- √ High detection sensitivity to surface flaws (even underneath paint)
- √ Simple, microprocessor-controlled operation
- √ Automatic lift-off and zero compensation
- √ Several alternatives for signal display
- √ Integrated crack standards (optional)
- √ Comprehensive range of test probes
- √ Two alarm thresholds
- √ External control through PC or PLC systems
- √ Modern capabilities for test documentation to printer and PC via RS232 serial interface
- √ Fully compatible with all predecessor instruments and existing probes



Eddy current test instrument DEFECTOMETER 2.837

Features:

- * The DEFECTOMETER 2.837 is a modern eddy current instrument for non-destructive testing of conductive materials for surface flaws. The material surface may be painted, lacquered or untreated.
- * Material with electrical conductivity between 0.5 and 60 MS/m (1 to 103% IACS) can be tested, including ferromagnetic (Fe) materials.
- * Flaw depth resolution down to approximately 20 μm (less than 0.001 inch under best conditions).
- * The instrument can also be used for simple hardness testing and material sorting.
- * Modern microprocessor technology and a RS232 serial interface allow flaw signal documentation on a printer and signal storage on a computer.
- * Versatility and simplicity make the DEFECTOMETER 2.837 an ideal instrument for maintenance inspection and metal-producing and metal-processing industries.

Example applications:

Aircraft Maintenance

- Testing for surface cracks on wings around rivets, on turbine blades, wheels, etc.

Automotive and component manufacturers

- Testing for cracks and hardness changes

Metal processing industries

- Simple sorting tasks

Power industries

- Testing of turbine components and heat condenser tubing for cracks



Mode of operation

Like its predecessor instruments, the DEFECTOMETER 2.837 is based on a highly sensitive resonance principle. Even shallow cracks, down to a depth of approximately 20 μm (less than 0.001 inch under best conditions) can be detected on the surface of electrically conductive materials. Metals with conductivities between 0.5 and 60 MS/m (1 to 103% IACS) can be tested. To ensure highly sensitive flaw detection, operating modes are customized to the material under test.

“Aust” for austenitic steels and titanium alloys
“NFe” for other non-ferrous metals
“Fe” for all ferromagnetic materials

Microprocessor control simplifies operation of the instrument. An operator is guided through the power-up and compensation procedure to reduce the chance of improper operation. First, the probe corresponding to the type of material to be tested is plugged into the instrument. After turning the instrument on, the operation mode (Aust, NFe or Fe) is selected according to material type and the probe is compensated in air (lift-off). Then the probe is placed on the corresponding crack standard and the zero compensation is performed.

After this, the gain is adjusted while the probe is moved across a notch, and the alarm thresholds are set. After these simple steps the instrument is ready for use.

The operator can choose between three alternatives for signal display on the LCD, depending on personal preference. The first display mode simulates a horizontally moving needle. The second mode shows the signal as a horizontally moving bargraph. The third mode displays the signal amplitude as a function of time, similar to an oscilloscope. This type of display allows the operator to test a section of his material without having to observe the LCD. He or she can concentrate on guiding the probe and can evaluate the signal afterwards.

The signals displayed on the LCD can be sent to an EPSON compatible printer for documentation. This feature and others, such as warnings when the sensor element in the probe is broken or when the battery power is insufficient, increase the confidence in the test results.

Construction

The DEFECTOMETER 2.837, in its compact housing for laboratory and field use, can be operated in all positions, standing or flat. The housing, made of impact-proof ABS plastics, is fuel and oil resistant and qualifies for European IP 54 dust- and splash-proofing. Hard-foam protective collars provide additional protection from damage.

The LCD is integrated in a dust and waterproof membrane keypad and is used for the display of instrument settings and measurement signals. Sockets for probe, external power supply, printer/PC, headphones and analog I/O are positioned on the side of the instrument.

The instrument can be powered by alkaline batteries, rechargeable Ni-CD batteries or by an external power supply. The battery compartment is at the back of the instrument.

Accessories

Probes

FOERSTER offers a comprehensive product line of shielded and unshielded probes. All probes already in use with predecessor Defectometer instruments are fully compatible.



Headphones

The instrument can be used with commercially available headphones with standard mini-connector (Ø3.5 mm). The internal speaker is disconnected when the headphones are plugged in. Speaker and headphones produce a continuous tone when a signal crosses an alarm threshold.

Power

The instrument may be powered by an external power supply, three (3) batteries (type "D" alkaline, 1.5V) or three rechargeable Ni-CD batteries.

We recommend the use of an external battery charger to completely discharge the batteries before recharging and to avoid the usual memory effects.

RS232 Interface

The RS232 serial interface is used for data documentation on a printer or for communication with a computer. Any serial cable with DB-9S connectors (null-modem wiring) can be used.

Printer and Printer Cable

Any EPSON compatible printer with serial interface (RS232) can be attached. The printer must be capable of printing at least 80 characters per line. Any standard printer cable with a DB-9S and a DB-25P connector can be used.

Analog Input/Output

A 6-pin socket provides output capabilities for the analog signal (to be recorded e.g. on a chart recorder) and for trigger signals from each alarm threshold. A voltage, called the "operation point" of the instrument, used for tuning of self-made probes is also provided.

Crack Standards

The DEFECTOMETER 2.837 can be supplied with integrated crack standards. These are used for zero compensation and to set the instrument gain. Their dimensions are 3x14x45 mm (0.1x0.6x1.8 inches). Each standard contains notches of 0.2, 0.5 and 1.0 mm (0.008, 0.02 and 0.04 inches) depth and 0.1 mm (0.004 inch) width. The following materials are used:

Crack Standard	Material	Conductivity**		Order No.
		MS/m	% IACS	
"NFe"	Alumin. alloy Al 2024 T351	17	29	144 817 0
"Aust"	Austenitic steel Cronifer	1.1	1.9	144 818 8
"Ti"	Titanium alloy TiAl6V4	0.6	1.0	144 819 6
"Fe"	Ferromagnetic steel St 37-2			144 820 0

(** approximate values)

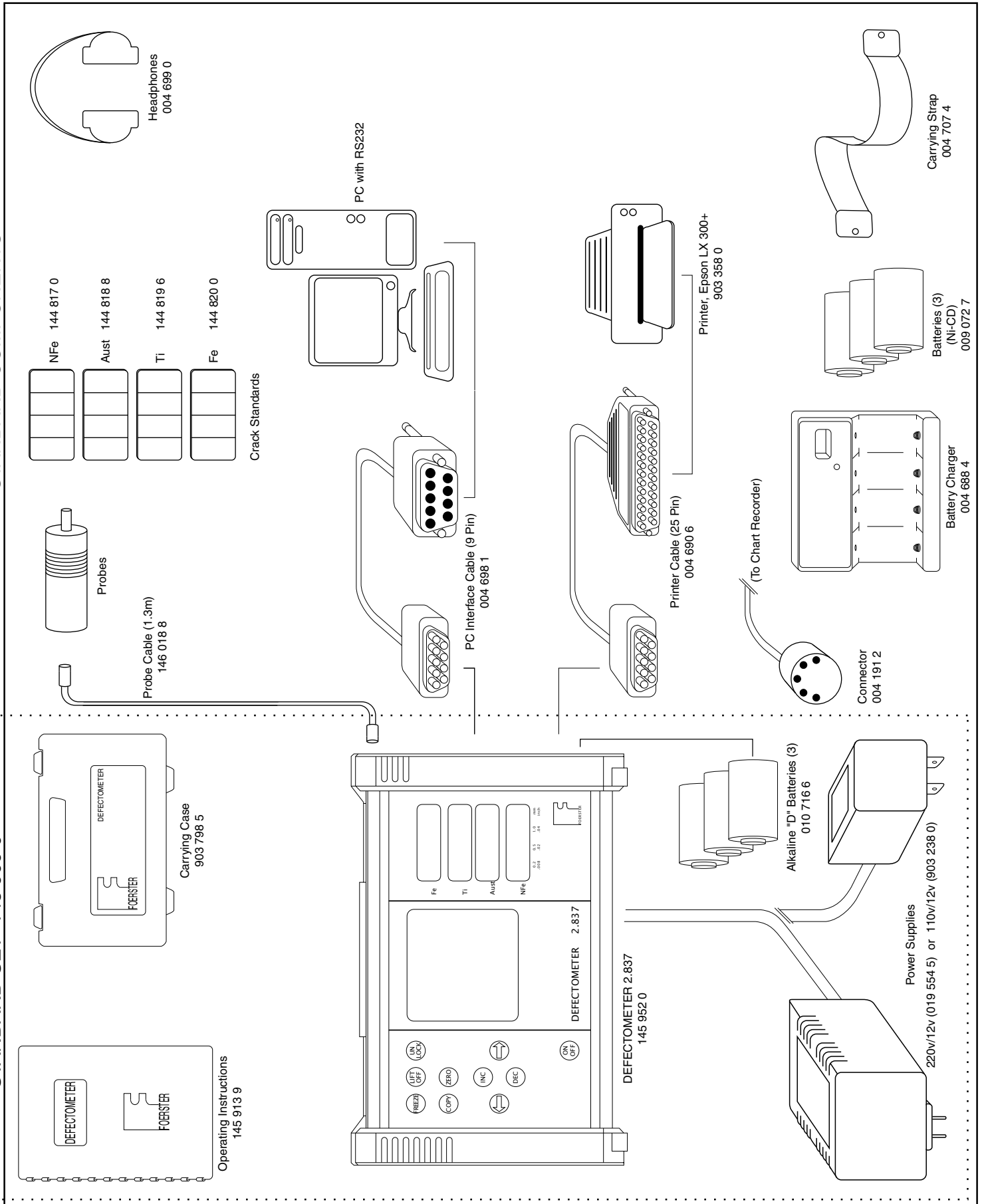
Other crack standards can be used for calibration. Your FOERSTER representative will gladly advise you.

Transport Case

Extremely robust version of the transport case for DEFECTOMETER with accessories.

STANDARD COMPONENTS

STANDARD SET 145 909 0



DEFECTOMETER - Overview of the standard components

Technical Data

Flaw resolution	To approximately 20 μm (less than 0.001 inch under best conditions)
Sensitivity adjustment	0 - 20 dB in steps of 0.5 dB
Zero offset	0 to 100 scale divisions (sd) in steps of 1 sd
Alarm thresholds	Two, variable in steps of 1 sd, with on/off option
Flaw indicator	Visual as segment on the LCD, acoustic on speaker or headphones, analog signal on pin in analog I/O socket
LCD	128 x 128 pixel, with switchable back lighting, high contrast in sunlight
Power	3x battery (alkaline "D", IEC LR20, 1.5V), or 3x Ni-CD battery (e.g. IEC KR 35/62), or external power supply (input 220 VAC, output 12 VDC; 110VAC/12VDC in USA)
Operating duration with batteries	>8h
Battery indicator	Warning "BAT" if operating time is less than 10 minutes
Housing	ABS plastics, kerosene and oil resistant
Membrane keypad	10 membrane keys, dust and water proof
Dust and water proofing	IP 54
Permissible ambient temperature	-10 °C to +55 °C (14 °F to 131 °F)
Permissible storage temperature	-55 °C to +85 °C (-67 °F to 185 °F)
Permissible humidity	5% to 95%
Mass (with batteries)	0.95 kg (2.1 lb)
Connections: Probe	Socket 5-pin DIN 41524
RS232	Connector DB-9P
Analog I/O	Socket 6-pin DIN 45322
Accessories: Printer cable	DB-9S to DB-25P for EPSON compatible printer
PC cable	DB-9S to DB-9S, null modem wiring for data communication PC-to-PC
Maximum test speed	Approx. 0.1 - 0.15 m/s (4 - 6 inch/s) depending on probe characteristics

DEFECTOMETER

STANDARD SETS

Description

Order Number

DEFECTOMETER WITH POWER SUPPLY
110V OR 220V (CUSTOMER TO SPECIFY)
WITHOUT CRACK STANDARDS
(BLANKS WILL BE AFFIXED TO UNIT IN
PLACE OF THE STANDARDS), KIT

1459090

Consisting of:

- 1 DEFECTOMETER instrument with plastic inserts
- 1 Operating instructions
- 1 Carrying case
- 3 "D" cell 1.5V alkaline batteries
- 1 Power supply 110V/12V

-or-

- 1 Power supply 220V/12V

Description

Order Number

DEFECTOMETER WITHOUT POWER SUPPLY
WITH CRACK STANDARDS AFFIXED
TO THE UNIT
NSN NO. 6635 01 418 7945, KIT

1459082

Consisting of:

- 1 DEFECTOMETER instrument with crack standards
- 1 Operating instructions
- 1 Carrying case
- 3 "D" cell 1.5V alkaline batteries

DEFECTOMETER

STANDARD SETS

Description

DEFECTOMETER WITH POWER SUPPLY
110V OR 220V (CUSTOMER TO SPECIFY)
WITH CRACK STANDARDS AFFIXED
TO THE UNIT, KIT

Order Number

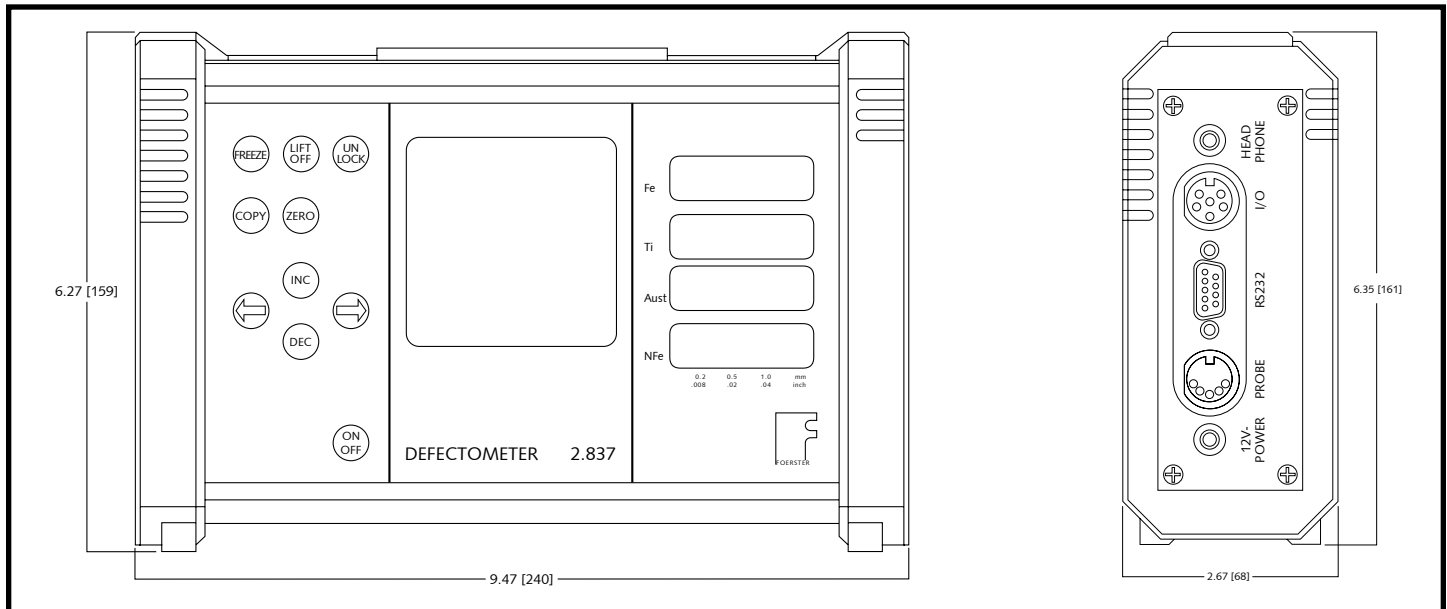
1459074

Consisting of:

- 1 DEFECTOMETER instrument with crack standards
- 1 Operating instructions
- 1 Carrying case
- 3 "D" cell 1.5V alkaline batteries
- 1 Power supply 110V/12V

-or-

- 1 Power supply 220V/12V



DEFECTOMETER

STANDARD COMPONENTS

Description

Order Number

INSTRUMENTS

Operating Instructions	1459139
DEFECTOMETER without crack standards (plastic inserts affixed to the unit in place of crack standards)	1459520
DEFECTOMETER with crack standards (affixed to the unit)	1437569

CRACK STANDARDS

Crack Standard NFE ND=0.2/0.5/1 NW=0.1 size: 3x14x45	1448170
Crack Standard AUST ND=0.2/0.5/1 NW=0.1 size: 3x14x45	1448188
Crack Standard TI ND=0.2/0.5/1 NW=0.1 size: 3x14x45	1448196
Crack Standard FE ND=0.2/0.5/1 NW=0.1 size: 3x14x45	1448200

NOTE: All crack standard dimensions are listed in millimeters. ND = Notch Depth / NW = Notch Width.

POWER SUPPLIES

Battery 1.5V	0107166
Ni/CD battery 1.2V	0090727
Power supply 220V/12V	0195545
Power supply 110V/12V	9032380
Battery charger 230V 50Hz	0046884

NOTE: NO INSTRUMENT WILL BE SHIPPED WITHOUT EITHER PLASTIC INSERTS OR STANDARDS AFFIXED IN EACH POSITION. CUSTOMER SPECIAL CONFIGURATION MUST BE SPECIFIED AT THE TIME OF ORDER PLACEMENT.

DEFECTOMETER

STANDARD COMPONENTS

Description

Order Number

ACCESSORIES

Probe Cable, 1.3 meter	1460188
Cover Plate PVC hard black	1459538
Carrying case	9037985
Carrying Strap	0047074
PC Cable 3 meter, 2.837	0046981
Cable Plug connect cable to Strip Chart Recorder (6 contacts)	0041912
Headphone with 3.5mm connector	0046990
Printer, EPSON	9033580
Printer Cable, 3 meter (25 PIN)	0046906

Should you have any questions, please contact:

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