

# The Probe

2011



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## Product Profile

**When you look at  
Magnetic yokes  
they all seem the  
same, Right!  
But are they?**



**1 year replacement or repair warranty  
Due to User Damage or Malfunction.  
How's that for outstanding!**

Parker Corporation USA the inventor of the Articulated Contour Probe have been manufacturing quality yokes for more than 40 years.

Their 8 different yoke models offer suitability to any testing application.

Parker's Robust double moulded construction, Powerful AC field, Inbuilt inspection light, Double jointed legs and totally repairable construction make Parker Yokes the outstanding choice.

Parker offer Portable battery powered AC yokes, Coils, UV lights, Gaussmeters, High Amp magnetic units, Lift weight test bars, Radiometer & Photometer kits, Powder blowers, Field flux strips, Magnetometers, Heavy duty yokes for airline maintenance and even good old fashioned quality welded steel storage / carry cases.

**KK&S offer FREE Australia Wide Delivery**

Sometimes you get more than expected, KK&S INSTRUMENTS go all the way.

**\$100. TRADE IN on your old yoke - Working or Not!**

# Coating Thickness & Analysis

**Helmut Fischer has developed innovative measuring technology for coating thickness measurement, materials analysis, micro hardness measurement and materials testing equipment or almost 60 years.**

The Fischer product line comprises of a broad spectrum of measuring and analysis instruments for the most diverse applications and industries. The appropriate measurement methods are used for correct results yielding optimum precision. Whether magnetic induction or eddy current, beta-backscatter, coulometric, micro hardness or x-ray fluorescence. Fischer has the proper technology.

Modern, powerful electronics and software turn instruments into impressive tools. Thus, even the smallest Fischer measuring instruments include functions for evaluating and presenting the measurement data. This is significant because one can only react properly if the measurements and the arising conclusions are correct. This is done easily with Fischer measuring instruments. You can rely on that.

Today, Fischer measuring technology is used around the globe, wherever accuracy, precision and quality is required. In the end, only carefully conceived and built products will operate optimally. Only such products carry the Fischer name.



**Call or Email for an Instrument for your application**  
**02 88503755 - [contact@kks.com.au](mailto:contact@kks.com.au)**

# Application - a'-martensite content with Feritscope

Fischer Application Report hpv04062009

## Measurement of the a'-martensite content with the Feritscope

### Abstract :

Our Feritscope probes measure the d'-ferrite content of austenitic stainless steel and duplex ferritic-austenitic stainless steel (delta-ferrite percent and ferrite number, respectively).

However these probes can also be applied to measure the strain induced a'-martensite content of austenitic stainless steel. A respective paper has been published dealing with the conversion between d'-ferrite content and a'-martensite content.

The Feritscope-probes (EGAB1.3-Fe, FGAB1.3-Fe, FGA06H-Fe) are calibrated to measure the d'-ferrite content of austenitic stainless steel and duplex ferritic-austenitic stainless steel (delta-ferrite percent and ferrite number, respectively). A typical group of material measured to determine exclusively the d'-ferrite content are weld metals. This calibration is traceable to TWI secondary standards.

However many customers are also interested in the strain induced a'-martensite content as a result e.g. of plastic deformation of metastable austenitic stainless steel. But the a'-martensite phase shows a different permeability than the d'-ferrite phase. Consequently our original manufacturer calibration is wrong in this application. A paper has been published investigating the relationship between the Feritscope readings and the actual a'-martensite content. This relationship has been proved with different measurement techniques. The respective Feritscope readings  $F$  (delta-ferrite %) can be converted to the a'-martensite content  $c_{a'}$  with the following simple linear equation :

$$c \text{ (mass\%)} = 1.7 \times F a'$$

This result should be very helpful for many new applications if the steel of interest only contains the a'- martensite phase and the customer doesn't have his own reference standards for a new calibration. The conversion factor 1.7 could be easily implemented in the software at request.

The following paper can be used as a reference (a copy can be provided at request) :  
J. Talonen, A. Aspegren; H. Hänninen

"Comparison of different methods for measuring strain induced a'-martensite content in austenitic steels"  
Materials Science and Technology; Dec.2004; Vol. 20; p. 1506

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# News

## KARL DEUTSCH introduces the new ECHOMETER 1076 TC

TC = Through Coat thickness gauge for exact wall thickness measurement. The influence of paint and lacquer is achieved by assessing consecutive back wall echoes ("BE-BE"-mode). With this feature items can be inspected without surface treatment.

In "Through Coat" mode the 5 MHz standard probe is used with a measuring range of 2 mm through 28 mm in steel (with coatings up to 6 mm thickness). Thickness variations of the coupling layer as well as temperature drifts during the measurement work cannot affect the result due to consecutive back wall echo measurements. To validate the signal quality KARL DEUTSCH has developed an innovative coupling verification where clear measurement results through varnish or paint can be achieved.

Furthermore by connecting the digital calliper to the instrument the speed of sound can be determined if unknown. Customers appreciate this unique capability to check the nodularity in cast iron parts (as a function of speed of sound).

The new software iCom is used to configure the ECHOMETER 1076 TC which has an intelligent data management. The system is network-compatible and enables the data transfer into almost every PC format.



## Helmut Fischer now offers full PC software at no charge with their Feritscope, a saving of \$395.00,

Fischer's Feritscope for Measurement of the Ferrite Content in Austenitic and Duplex Steel.

The FERITSCOPE® measures the ferrite content in austenitic and duplex steel according to the magnetic induction method. All magnetic components of the otherwise non-magnetic structure are recognized, that is, in addition to delta ferrite and other ferritic components transformation martensite is also recognized. The instrument is suitable for measurements according to the Basler Standard or according to DIN 32514-1. Areas of application are on-site measurements, e.g. of austenitic claddings as well as weld seams in stainless steel pipes, containers, boilers or other products made of austenitic or duplex steel.

Chemical, utility and other processing plants are often exposed to heat, aggressive media and high pressure. These circumstances require corrosion and acid resistant steel that is mechanically resilient even at high temperatures. If the ferrite content is too low, the weld is susceptible to cracking under heat, if the ferrite content is too high, the weld loses its toughness and ductility. For duplex steel, a lack of ferrite in the area of the weld seam is an indicator of susceptibility to cracking under tension or vibration.

**Have any questions or like a price, contact us now !**  
**Ph 02 88503755 - [contact@kks.com.au](mailto:contact@kks.com.au) - [www.kks.com.au](http://www.kks.com.au)**