



**OPERATING INSTRUCTIONS
MODEL 400 SERIES
CONTOUR PROBES**

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NONDESTRUCTIVE TEST METHODS, SYSTEMS, INSTRUMENTS
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The **400 Series** Contour Probes are rugged high performance instruments designed for Magnetic Particle inspection to accepted Nondestructive testing standards. Certain operating procedures and safety precautions should be observed.

INSTRUMENT DESCRIPTION: Basically, the Contour Probe is an electromagnet producing a strong magnetic field. Placement of the two poles (legs) upon ferrous metal provides a path for the intense magnetic field to pass from one pole to the other. The part completes the flux path and becomes highly magnetized.

Electronic circuitry contained within the rugged molded housing of the DA models permits selection of a strong constant AC field, or high intensity pulsed DC field. Flexibility of the legs permit the field to be "focused" at the precise area of inspection.

OPERATION: Plug the Contour Probe into a **Grounded power source**. Place the Probe legs upon the work surface with the suspected defect at right angles to the legs. Push the test switch and lightly dust or float inspection powder over the area being inspected. Defect indications will be revealed in a direction shown on figure 2. Turn the Probe 90 degrees from the first test and repeat the procedure. Test switch should be released after powder application. **However**, if excess powder is to be lightly blown away, as is the procedure to reveal minute indications, the Probe should remain energized while this procedure is performed.

SPECIFICATIONS

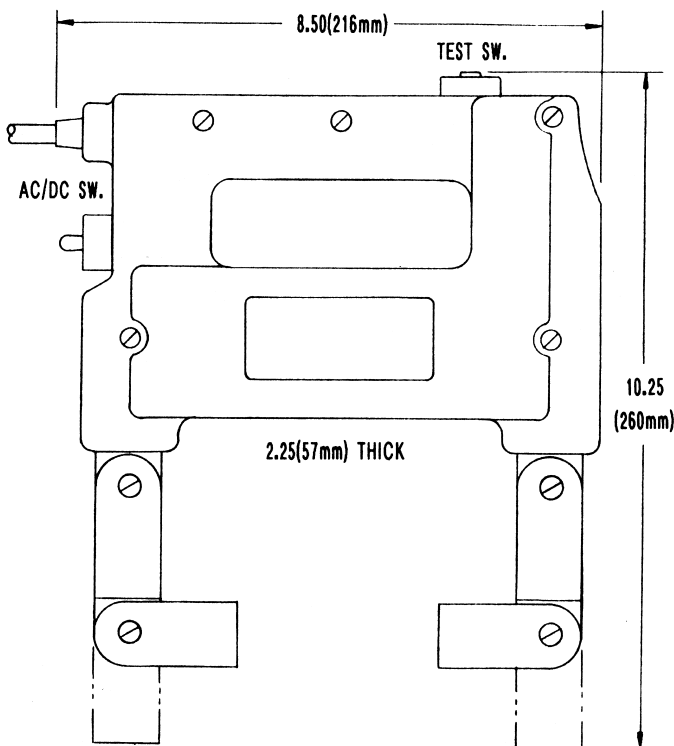


FIG. 1

MODEL	POWER REQUIREMENTS	FIELD	NET WEIGHT
DA400	117 VAC ±10% 47-63 Hz 4 AMPS	AC OR PULSED DC	8 lb (3.6 kg)
DA400S	230 VAC ±10% 47-63 Hz 3 AMPS	AC OR PULSED DC	9 lb (4.1 kg)
A410	117 VAC ±10% 47-63 Hz 4 AMPS	AC ONLY	8 lb (3.6 kg)
A410S	230 VAC ±10% 47-63 Hz 3 AMPS	AC ONLY	8 lb (3.6 kg)
A448	42-48 VAC 47-63 Hz 6 AMPS	AC ONLY	8 lb (3.6 kg)

DO NOT OPERATE unit from a DC power source

USE OF AC AND DC FIELDS: The following is a brief outline of the advantages and limitations of the two magnetic fields. Familiarization will greatly increase the utilization of your Probe and the reliability of your inspection work.

AC MAGNETIZATION: An AC field induced into a part is a skin or surface field and does not penetrate the cross section of the material. A bi-product of AC is in the form of eddy currents which tend to guide or direct the magnetic field in a basically narrow pattern between the poles. Another bi-product is a vibratory action which adds mobility to the inspection particles to form a highly defined powder build-up at the defect. For these reasons, an AC field is the most desirable for the detection of surface or surface breaking defects.

PULSED DC MAGNETIZATION: A DC field induced into a small work piece penetrates a larger cross section of the part and is inclined to spread out on each side of the line between the poles. The field energy is dispersed over a greater area. Thus, DC provides greater penetration for the detection of near-surface defects in small parts.

DEMAGNETIZATION: Small pieces which have become residually magnetized, may be easily demagnetized by the following procedure. Energize the Probe and pass small parts through the area between the pole ends "feet" and withdraw to a distance of about two feet. On large pieces, place the Probe in the same position as inspection, energize and lift from the work surface to a distance of about two feet. This procedure may need to be repeated more than once to remove the residual field.

CAUTION: Often, on small parts, it is possible that an excessive amount of field will saturate the part and cause a masking effect to the point where it is impossible to define a defect.

The DA400S is equipped with a conducted emissions suppressor located near the end of the power cord. If the cord/suppressor is damaged, return to the factory for repair.

The DA400S, A410S and A448 are sold without electrical power plugs. Only approved plugs should be used and installed by certified personnel.

⚠ **Warning:** Do not change AC/DC selector switch with probe on.

⚠ **Duty Cycle:** Two Minutes "On", Two Minutes "Off"

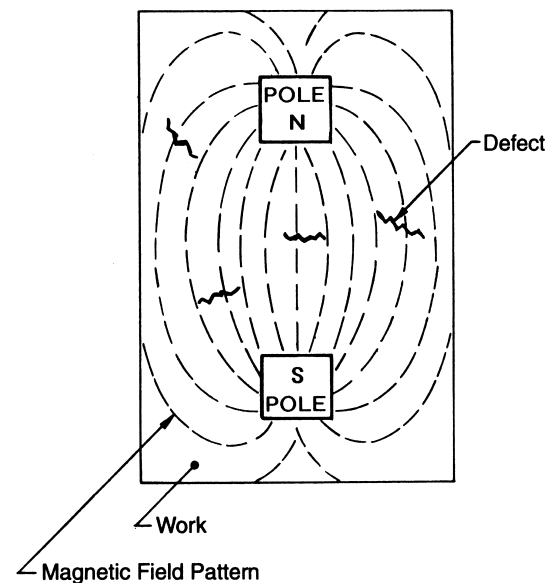


FIG. 2

Operating Environment: Temperature: 32° to 104°F (0° to 40°C). Relative humidity: 10% to 95%, non-condensing.

Shipping and Storage Environment: Temperature: -40° to 140°F (-40° to 60°C). Relative humidity: 5% to 95%. Vibration and shock: As encountered in normal shipping and handling with no degradation.

The 400 series contour probes are designed to provide a strong magnetic field for the detection of cracks and flaws in ferrous metals. The instrument should be tested periodically to assure adequate field strength, per applicable inspection agency.

The instrument should be wiped clean with a general purpose cleaner after each use.

**PARKER RESEARCH
YOU BREAK IT — WE FIX IT
ONE YEAR GUARANTEE**

All new Parker Contour Probes, with the exception of those units that have been altered, will be repaired or replaced due to malfunction or user damage at no charge (less incoming freight charges) for a period of one year from the date of sale.

The warranty shall cover repair or replacement of the returned Probe(s) due to malfunction caused by defective material and workmanship, and including repair or replacement of user damaged Probe(s). Warranty does not apply to altered units.

Simply return the unit(s) (prepaid) to the factory. Repair versus replacement of the Probe(s) will be made at the discretion of Parker Research Corporation. Repaired or replacement unit(s) will be returned to the original customer prepaid.

The obligation of Parker Research Corporation is limited to the repair or replacement of the defective unit. No other obligation is expressed or implied. Parker Research Corp. assumes no liability from any claim arising from the use of this equipment.

CAUTION: For the correct and safe use of this equipment, proper training of operating personnel to required inspection techniques, specifications and safety requirements is necessary, and is the obligation of the user. **ALWAYS WEAR SAFETY GLASSES WHEN USING THE EQUIPMENT.**

Repairs should not be attempted on these units. Units are sealed and should be returned to the factory for service.

**SHIP TO:
REPAIR DEPT.
PARKER RESEARCH CORP.
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