Tool Code: GCJ

Document: MN-GCJ001-E

Gamma Ray Calibration Jig

GAMMA RAY CALIBRATION JIG

GCJ001, 003, 004, 005, 010, 012

User Manual

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C o n t e n t s

0 ABOUT THIS MANUAL

0.1 MANUAL HISTORY

Date	Issue	Description	Auth	Chk	App
29/04/92	A	First Issue.	RH		
26/09/95	B	Revised.	JB		
31/01/01	C	Revised to include $1^{3}/_{8}''$ jig. Reformatted to use new templates.	DMO		
21/02/01	D	Revised to include $1^{1}/_{2}''$ jig GCJ010.	DMO		DO
23/05/05	E	GCJ005 Added. Template update.	FV	SA	RH

0.2 UPDATES TO BE USED WITH THIS MANUAL

Date[a]	Update	Description

[a.] Note: This section may include details of updates to be used with this manual, irrespective of its current issue.

0.3 TECHNICAL HELP

For further technical help contact Sondex as follows:

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0.4 FEEDBACK

Please help us improve future issues of this manual by sending your comments or corrections to Documentation-UK@sondex.com, referencing the document number.

Thank you.

Photographs and sketches are for illustration purposes only. Depending on the tool model that you have, certain features or dimensions may differ from those shown.

1 DESCRIPTION

The Sondex GCJ series Gamma Ray Tool Calibration Jig consists of a number of 12″ long sealed tubes, containing radioactive material. The tubes are enclosed in a flexible nylon ‘bag’. The GCJ Calibration Jig is designed to strap onto the outside of a Gamma Ray Tool by means of Velcro straps. The width of the jig is matched to the diameter of the tool.

Gamma rays are emitted by the RA material (Thorium 232) within the 12″ tubes. As the activity of the material varies, each jig is individually constructed and calibrated to give an API value.

During use, calibration is made by comparing the difference between the background countrate and the countrate with the jig attached to the tool. This difference in countrate is equivalent to the API value of the jig.

The radiation and chemical risk is particularly low.

1.1 PURPOSE

The Sondex GCJ provides a simple method of calibrating gamma ray tools in API units.

It can also provide an indication that the response of a particular tool is changing. This gives an early warning of potential tool failure.

1.2 SPECIFICATION

GCJ Series No.	Tool Diameter (inches)	API (nominal)[a]	Radiation Level (Becquerel)[b]
GCJ001	$1\,{}^{11}/_{16}$″	400	3.7×10^4
GCJ003	$1\,{}^{11}/_{16}$″	200	3.7×10^4
GCJ004	$1\,{}^{11}/_{16}$″	100	3.7×10^4
GCJ005	$1\,{}^{1}/_{2}$″	400	3.7×10^4
GCJ010	$1\,{}^{1}/_{2}$″	200	3.7×10^4
GCJ012	$1\,{}^{3}/_{8}$″ or $1\,{}^{1}/_{2}$″	400	3.7×10^4

a. A calibration sheet is supplied with the jig indicating the actual API reading. This is also shown on the label attached to the jig.
b. The values given are calculated values.

2 SAFETY

2.1 GENERAL

Warning! **HOT WORK!** Sondex equipment may, under certain circumstances or failure modes, become a potential source of ignition. Using it must therefore be considered "HOT WORK" and appropriate precautionary procedures should be followed when testing at surface in areas where there is a risk of gas leaks or other potentially explosive atmospheres.

2.2 RADIATION

All local rules and regulations covering the possession and use of radioactive material must be obeyed.

The radiation risk from all GCJ series jigs is extremely small due to the particularly low strength source used. Currently the material is classed as exempt from UK regulations. Prolonged, close exposure should be avoided although it is unlikely to present any health risk.

The jig must not be dismantled.

The radioactive rods **MUST NOT** be machined in any way since dangerous radioactive dust will be generated. Inhalation or ingestion of radioactive dust is a health hazard.

3 CALIBRATION

Note: Some recording systems have calibration procedures built into their software (e.g. Sondex MIDAS and Sondex WARRIOR). These procedures should be followed where available. All procedures are based on the following outline.

1 With the Gamma Ray Tool at least 20 feet clear of the calibration jig and all other known radiation sources, take a background count reading over a period of at least a one minute (or longer).

2 Wrap the calibration jig around the Gamma Tool, so that its centre is over the detector. Hold it tightly in place by the two Velcro straps.

Note: For the Sondex PGR series Gamma Tools, the lower end of the jig should be 1″ **below** the lower tool joint.

Note: A 1″ position error may produce a 2% reduction in count rate.

3 Measure the detected count rate over a period of one minute (or longer). Calibration of the tool response is a ratio of the difference in countrate and the API value of the jig.

For example: If the difference is 450 cps (counts per second) and the jig value is 400 cps, 1 API unit is equivalent to 450/400 = 1.125 cps.

Depending upon the procedure built into the measurement system, it may be required to repeat the background reading after removing the jig from the tool.