

5.3.2. MAIN METROLOGICAL PARAMETERS OF ULTRASONIC FLAW DETECTOR WITH TOMOGRAPHIC MODE

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Today, wide application of antenna arrays for acoustic visualization of the internal structure of tested objects is one of the ways for further development of ultrasonic (US) flaw detection of articles of various materials. As a rule, such instruments can operate in two modes: flaw detection and tomography.

In the Russian Federation, parameters of ultrasonic flaw detectors are measured under GOST 23667–85 (“Methods for measurement of main parameters”). GOST 23049–84 (“Ultrasonic flaw detectors. Main parameters and general specifications”). As to applicable GOST 23667, not all of its provisions are perceived uniquely. Nevertheless, it is the main standard for evaluation of parameters of applicable and newly developed US flaw detectors. In author’s opinion, attempts to use non-standard parameters featuring US flaw detectors or standards of other states not approved in our country are not reasonable due to the absence of legal and technical framework, as well as unambiguity and reproducibility of results with different participants of metrological process. However, they can be used as an addition to applicable normative documents. European Standard EN 12668 and US Standard ASTM E1324 are referred to such normative documents. On the other hand, it is not possible yet to ascertain that currently GOST 23667 is able to resolve completely problems US flaw detection problems and, especially, ones of flaw detectors-tomographs.

The present work considers one of the options for evaluation of parameters of flaw detector-tomograph. For evaluation of metrological characteristics of US flaw detector-tomograph “A1550 IntroVisor” operating in the “flaw detector” mode as an ordinary flaw detector, GOST 23667 is used, while operation in “tomography” mode requires some modification of methods for measurement of instrument’s parameters. Paper touches also upon subjects of application in these purposes of comparatively new standard ASTM E2491-06, as well as some problems occurred during certification of products of the given type as measuring means.