**Krautkramer DMS 2/2E**

This attachment delineates the essential variables for thickness measurements using a Krautkramer DMS 2/2E as required by ASME Sec. V Article 5 Table T-522.

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| **Ultrasonic instrument(s)** | **Krautkramer DMS 2/2E** | | | |
| Search unit type(s), frequency,(ies), and element size(s), shape(s) | FH2E-D | 8 MHz | .38” Dia. | Round |
| KBA560-D | 5 MHz | .625” Dia. | Round |
| HT400 \HT400-A | 5 MHz | .5” Dia. | Round |
|  | DA-303 | 2 MHz | .635” Dia. | Round |
|  | DA-301 | 5 MHz | .475” Dia. | Round |
|  | TC-560 | 5 MHz | .675” Dia. | Round |
|  | DA-312 | 10 MHz | .675” Dia. | Round |
| Material Types and configuration | This unit can be used to measure thickness on ferrous and non-ferrous plate, sheet, bar, shapes, strip, seamless & welded, forged, or centrifugal cast, pipe & tubing, castings, forgings, E.R.W. tube, wrought fittings | | | |
| The surface from which the examination shall be performed | Examination may take place from any accessible surface, | | | |
| Technique(s) (straight beam , angle beam, contact, and/or immersion) | Technique is straight beam, dual beam, contact method | | | |
| Angles and mode(s) of wave propagation | N/A | | | |
| Calibration [calibration block(s) and technique(s) Calibration blocks shall be of the same material or material of similar ultrasonic frequency as the material being tested. Refe. Para. 7.1.D.1 The calibration step blocks shall have dimensions certified by NIST or measured with equipment calibrated and certified to NIST. | Step block  .1” to .5”  Steel s/n 6194  Step block  .1” to .5”  Steel s/n 94-6256  Step block  .1” to .5”  Steel s/n 6091  Step block  .1” to .5”  Steel s/n V32807  Step block  .1” to .5”  304 SS s/n 095513  Step block  .1” to .5”  304 SS s/n 095313  Block 1.00” and .100” 303 SS 118-540-004  Block .015” 304 SS  Block .030” 304 SS  Block .045” 304 SS  Block .060” 304 SS  Block .075” 304 SS  Block .090” 304 SS  Copper .241~ V=1854 in/µs sn#00KR9F  Step block  .1” to .75”  Brass Fabricated  Step block  .1” to .5”  Aluminum Fabricated  Step block  .5” to 1.25”  Aluminum Fabricated  Step block  .5” to 1.25”  304 SS Fabricated  DS Test Block  Steel 2” and 4”  s/n 03-6978 | | | |
| Direction and extent of scanning | Each thickness measurement shall be avg. of three readings within 1” circle | | | |
| Scanning (manual vs automatic) | Manual | | | |
| Scan overlap (decrease only) | Each thickness measurement shall be avg. of three readings within 1” circle | | | |
| Method for sizing indications | N/A | | | |
| Computer enhanced data acquisition | N/A | | | |
| Personnel performance requirements | N/A | | | |
| Surface Condition (examination surface, calibration blocks) | Surface must be free of dirt, grease, oil, loose paint | | | |
| Couplant: brand name or type | Sonotech Echogel or Ultragell II | | | |
| Post-examination cleaning technique | Wipe couplant away with clean cloth | | | |
| Automatic alarm and/or recording equipment, when applicable | N/A | | | |
| Records, including minimum calibration data to be recorded (e.g., instrument settings) | Records must include description of the item, a map of location where thicknesses were taken, and applicable record data items from the procedure (*Section 7.4* *and Form 1*) | | | |

Record copy signed by Richard K. Bingham, 10/5/2015

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| Level III |  | Date |