

Ultrasonic Testing Classroom Training Book

Errata - 1st Printing 03/07 through 6th Printing 08/13

The following text correction applies to the first through sixth printings of the *Ultrasonic Testing Classroom Training Book*. The next printing of this publication will incorporate the correction into the published text.

The attached corrected page applies to the sixth printing 08/13. In order to verify the print run of your book, refer to the copyright page. Ebooks are updated as corrections are found.

PageCorrection113The attenuation factor (C) is twice the sound path to the indication minus 2.5 cm (1 in.), or $(SP-1)^2$ $(SP-1) \times 2$.

Figure 7.12: IIW block: (a) 12.7 cm (5 in.) screen; and (b) 25.4 cm (10 in.) screen.



governing code or specification) and that gain setting is recorded as the reference level for the tests performed using this calibration.

With this type of calibration, as opposed to that with a DAC curve, the acceptance and rejection criteria are based on variations in signal amplitude related to sound path. Scanning is done at higher gain settings, as described in the governing code or specification. When an indication is seen, the signal is maximized and the amplitude is set to 80% FSH or whatever FSH percentage was used for calibration. This gain setting is called the defect level. The sound path (SP) to the maximized indication is then read from the screen. With these three values, the defect rating can be determined. The defect rating is calculated using the: A - B - C = D, where A is the defect level in decibels; B is the reference level in decibels; C is the attenuation factor; and D is the defect rating. The attenuation factor (C), is twice the sound path to the indication minus 2.5 cm (1 in.), or (SP - 1) × 2. Here is an example of how this formula is used (in inches).

Assume an indication was found at a sound path of 3 in. The reference level *B* was 40 dB at 80% FSH, and the indication amplitude, when set to 80% FSH required a gain setting of 46 dB (defect level *A*).

Based on this data, A would be 46, B would be 40, and the attenuation factor C would be $(3-1) \times 2$, or 4. Plugging these values into the A – B – C = D formula, we get 46 – 40 – 4 = 2. Therefore, the defect level for this indication would be 2.

The defect rating by itself is just a number (without units); to determine whether or not the indication is rejectable, the governing code or specification has to give ranges of values for rejection. A typical set of ranges might be as follows:

If D (defect rating) is less than +5, the indication is rejectable regardless of length. If D is from +6 through +9, the indication