

DICOM Correction Item

Correction Number	CP 746
Log Summary: Conditions under which Pixel Spacing may be zero	
Type of Modification	Name of Standard
Clarification	PS 3.3 2007
Rationale for Correction Pixel spacing values of zero are meaningless for any image or image-like object that actually has any rows or columns; there are circumstances in which rows and columns may be one however, specifically in MR Spectroscopy objects, yet spacing values are required. Rather than add complex conditions to wherever spacing attributes might be invoked, specify under what circumstances zero is a legitimate spacing value.	
Sections of documents affected PS 3.3 10.7	
Correction Wording:	

Add note to describe spectroscopy-specific use case:

C.8.14.4.1 Spectroscopy Data

...

The number of voxels on each frame are described by Rows (0028,0010) and Columns (0028,0011). The number of frames is described by Number of Frames (0028,0008). The frames may represent different locations in a 3D acquisition, or the same position at a different point of time, or a difference of some other combination of attributes.

Note: Either Rows or Columns or both may have a value of 1 (e.g., for single voxel spectroscopy). A value of zero for the corresponding value of Pixel Spacing in the Pixel Measures Macro is permitted under these circumstances. See 10.7.1.3.

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Add to generic pixel spacing section a description of valid pixel spacing values:

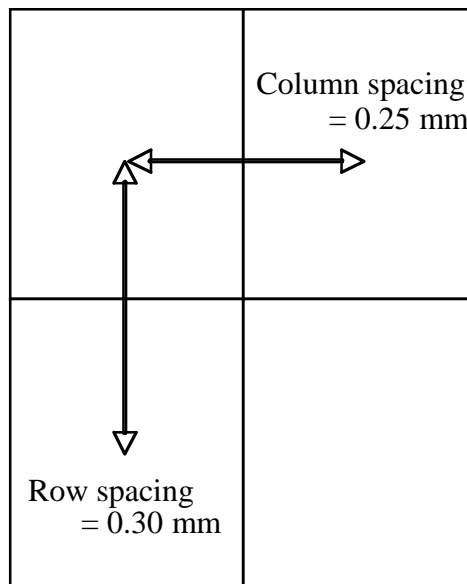
10.7.1.3 Pixel Spacing Value Order and Valid Values

All pixel spacing related attributes are encoded as the physical distance between the centers of each two-dimensional pixel, specified by two numeric values.

The first value is the row spacing in mm, that is the spacing between the centers of adjacent rows, or vertical spacing.

The second value is the column spacing in mm, that is the spacing between the centers of adjacent columns, or horizontal spacing.

To illustrate, consider the following example:



Pixel Spacing = Row Spacing \ Column Spacing = 0.30 mm \ 0.25 mm.

All pixel spacing related attributes shall have non-zero values, except when there is only a single row or column or pixel of data present, in which case the corresponding value may be zero.

Note: A single row or column or "pixel" may occur in MR Spectroscopy instances.

This description applies to:

- Pixel Spacing (0028,0030)
- Imager Pixel Spacing (0018,1164)
- Nominal Scanned Pixel Spacing (0018,2010)
- Image Plane Pixel Spacing (3002,0011)
- Compensator Pixel Spacing (300A,00E9)
- Detector Element Spacing (0018,7022)

- Presentation Pixel Spacing (0070,0101)
- Printer Pixel Spacing (2010,0376)
- Object Pixel Spacing in Center of Beam (0018,9404)