

# NIST Fully-Toleranced Test Case 10 - Feature and Specification Index [FTC10]

12/14/2016

Rev. B

Bryan Fischer

Advanced Dimensional Management LLC

Feature ID	Feature Description	Specification	Element ID	Comments
F1	Datum Feature A	Flatness 0.2	T1	
		Datum Feature Symbol A	DF1	
F2	Datum Feature B	$\varnothing 6 \pm 0.15$	D1	
		Perpendicularity $\varnothing 0.25   A$	T2	
		Datum Feature Symbol B	DF2	
F3	Datum Feature C	$\varnothing 6 \pm 0.15$	D2	
		Position $\varnothing 0.5   A   B$	T3	
		Datum Feature Symbol C	DF3	
F4-F6	Datum Feature D	Profile 1.2   A   B   C Profile 0.2   A	T4	
		3 COPLANAR SURFACES	STR1	
		Datum Feature Symbol D	DF4	
F7	Datum Feature E	$\varnothing 3.5 G6$	D3	
		Flag Note Symbol 4	FN1	
		Position $\varnothing 0.8   D   B   C$	T5	
		Perpendicularity $\varnothing 0.12   D$	T6	
		Datum Feature Symbol E	DF5	
F8	Datum Feature F	$\varnothing 3.5 G6$	D4	
		Flag Note Symbol 4	FN2	
		Position $\varnothing 0.8   D   B   C$	T7	
		Perpendicularity $\varnothing 0.12   D$	T8	
		Datum Feature Symbol F	DF6	
F9	Datum Feature G	$\varnothing 3.5 G6$	D5	
		Flag Note Symbol 4	FN3	
		Position $\varnothing 0.8   D   B   C$	T9	
		Perpendicularity $\varnothing 0.12   D$	T10	
		Datum Feature Symbol G	DF7	
F10	Datum Feature H	Profile 1.2   A   B   C Profile 0.15   A	T11	
		Datum Feature Symbol H	DF8	
F11	Datum Feature J	15 $\pm 0.2$	D6	
		Position 1   A   B   C	T12	
		Perpendicularity 0.1   A	T13	
		Datum Feature Symbol J	DF9	
F12-F13	Datum Target K1, K2	Supplemental geometry planes representing Vee K1-K2	SG1	Features 12 and 13 are not on model
		Datum Target Symbols K1-K2	DT1, DT2	
F14-F15	Movable Datum Target L1, L2	Supplemental geometry planes representing Vee L1-L2	SG2	Features 14 and 15 are not on model
		Movable Datum Target Symbols L1-L2	MDT1, MDT2	Movable datum targets from ASME Y14.41-2003
F16-F17	Pattern of 2 Other Mtg Holes	2X $\varnothing 6 \pm 0.15$	D7	
		Position $\varnothing 0.65   A   B   C$	T14	
F18-F25	Pattern of 8 Holes in Pocket	8X $\varnothing 2.5 \pm 0.15$	D8	
		Flag Note Symbol 4	FN4	
		Position $\varnothing 0.75   A   B   C$	T15	
F26-F42	17 Surfaces Inside Pocket	Profile 1.2   A   B   C	T16	
		ALL SURFACES INSIDE POCKET	STR2	
F43-F46	Pattern of 4 Counterbored Holes Perpendicular to Base	4X $\perp \varnothing 10 \pm 0.25$	D9	
		Position $\varnothing 1 \textcircled{M}   A   B   C$	T17	
F47-F50	Bottom of Holes	$\nabla 2 \pm 0.15$	D10	Moved to end of stack in this chart for feature numbering

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F51-F54	Edge Curves at Bottom of Counterbored Holes	4X R0.2 MAX	LDN1	Applies at bottom of counterbored holes
F55	Cross-Drilled Hole Below 3 Rectangular Bosses	$\varnothing 5.5 \pm 0.2$	D11	Applies to entire hole
		$\varnothing 5.5 \pm 0.08$	D13	Applies to limited length
		INDICATED AREA	STR3	
		Position $\varnothing 0.08   D   E \textcircled{M} - F \textcircled{M} - G \textcircled{M}$	T18	
F56	Bottom of Holes	$\nabla 35 \pm 1$	D12	Moved to end of stack in this chart for feature numbering
F57-F60	Pattern of 4 Counterbored Holes	4X $\perp \varnothing 10 \pm 0.25$	D14	Holes on side of part in +X direction of A B C
		Position $\varnothing 0.8   A   B   C$	T19	
		AT SURFACE F65	STR4	Outside surface on +X side of part pierced by counterbored holes
		Position $\varnothing 1.2   A   B   C$	T20	
		AT BOTTOM OF COUNTERBORES	STR5	
F61-F64	Bottom of Holes	$\nabla 10 \pm 0.2$	D15	Moved to end of stack in this chart for feature numbering
F65	Outside Surface on +X Side of Part Pierced by Counterbored Holes	Leader-Directed Note F65	LDN3	Needed for semantic reference in counterbore spec
F66	Hemi-Cylindrical Surface on Top	Profile 1.75   A   B   C	T21	
		Straightness 0.2 / 15	T22	Direction-dependent tolerance; direction defined semantically by rule and by RLE1
		Represented line element	RLE1	
F67	Slot-Shaped Boss Walls	Profile 1.5   A   B   C All Around	T23	
		Perpendicularity 0.25   H All Around	T24	
		Represented line element	RLE2	
		EACH LINE ELEMENT	STR6	
F68	Symmetry Key	$5 \pm 0.2$	D16	
		Symmetry 0.5   A   J	T25	
F69-F72	Edge Curves at Bottom of Datum Feature J and Symmetry Key	4X R0.15 MAX	LDN2	
F73-F76	Pattern of 4 Counterbored Holes	4X $\perp \varnothing 10 \pm 0.25$	D17	Holes on side of part in -X direction of A B C
		Position $\varnothing 0.8   A   B   C$	T26	
		AT SURFACE F81	STR7	Outside surface on -X side of part pierced by counterbored holes
		Position $\varnothing 1.2   A   B   C$	T27	
		AT BOTTOM OF COUNTERBORES	STR8	
F77-F80	Bottom of Holes	$\nabla 10 \pm 0.2$	D18	Moved to end of stack in this chart for feature numbering
F81	Outside Surface on -X Side of Part Pierced by Counterbored Holes	Leader-Directed Note F81	LDN4	Needed for semantic reference in counterbore spec
F82-F84	Pattern of 3 Holes in Slot-Shaped Boss	3X $\varnothing 3.5 \pm 0.2$	D19	
		Flag Note Symbol 4	FN5	
		Position $\varnothing 0 \textcircled{L}   H   K   L$	T28	
		Cylindricity 0.1	T29	
F85	Cross-Drilled Hole Below Slot-Shaped Boss	$\varnothing 5.5 \pm 0.2$	D20	Applies to entire hole
		$\varnothing 5.5 \pm 0.08$	D22	Applies to limited length
		INDICATED AREA	STR9	
		Position $\varnothing 0.8   H   K   L$	T30	

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Feature ID	Feature Description	Specification	Element ID	Comments
F86	Bottom of Holes	$\sqrt{27.5 \pm 1}$	D21	Moved to end of stack in this chart for feature numbering
F87-F88	Top Surfaces of 2 Mounting Tabs	Profile 1 A B C Profile 0.12 A	T31	
		2 COPLANAR SURFACES	STR10	
F89-F90	Pattern of 2 M3 Threaded Holes	2X M3 x 0.5 - 6g	D23	
		Position $\varnothing 0.8 \text{ (P)} 3.2   D   E   B$	T32	
F91-F92	Pattern of 2 M3 Threaded Holes	2X M3 x 0.5 - 6g	D24	
		Position $\varnothing 0.8 \text{ (P)} 3.2   D   F   B$	T33	
F93-F94	Pattern of 2 M3 Threaded Holes	2X M3 x 0.5 - 6g	D25	
		Position $\varnothing 0.8 \text{ (P)} 3.2   D   G   B$	T34	
F95-F98	Pattern of 4 Cross-Drilled Manifold Holes	4X $\varnothing 7 \pm 0.25$	D26	
		Position $\varnothing 0 \text{ (M)}   A   B   C$	T35	
		Cylindricity 0.1	T36	
-	General Profile Tolerance	Profile Surface 1.5 A B C	T37	
MCS1	MCS for Views A, B, C, D, E		CS1-1	Main MCS for model
	MCS for DRF A		CS1-2	Same location as CS1-1
	MCS for DRF A B		CS1-3	Same location as CS1-1
	MCS for DRF A B C		CS1-4	Same location as CS1-1
MCS2	MCS for DRF H		CS2-1	
	MCS for DRF H K L		CS2-2	Same location as CS2-1
MCS3	MCS for DRF A J		CS3	
MCS4	MCS for DRF D		CS4-1	
	MCS for DRF D B C		CS4-2	Same location as CS4-1
	MCS for DRF D F B		CS4-3	Same location as CS4-1
	MCS for DRF D E(M)-F(M)-G(M)		CS4-4	Same location as CS4-1
MCS5	MCS for DRF D E B		CS5	
MCS6	MCS for DRF D G B		CS6	
-	General Notes	NOTES...	STR11	Flat to screen

Notes:

- Hole and counterbore depth dimensions that are part of stacked annotation have been moved to the end of the stack in the Feature and Specification Index list to facilitate applying unique feature number(s) to the bottom geometry of the hole(s).
- There are no specifications in this FTC that contain semantically-important extension lines or annotation plane placement.

Revisions:

- Added STR11 for General Notes

LEGEND	
CS	Coordinate System
D	Dimension
DF	Datum Feature
DT	Datum Target
FN	Flag Note
LDN	Leader-Directed Note
MDT	Movable Datum Target
RLE	Represented Line Element
SG	Supplemental Geometry
STR	String
T	Tolerance
SIELD	PMI entity contains Semantically-Important Extension Line Direction