1. SCOPE

There is no National or International Standard on six (6) projection weld nuts as covered by this standard. The specifications are based upon local manufacturer and user requirements. Commercial availability of these six (6) projection weld nuts is generally restricted to North America.

The specification for three (3) projection weld nuts is based on German Institute of Standardization DIN 929. Weld nuts to DIN 929 do not meet proof load requirements calculated for full loadability and therefore they are restricted to applications where local availability and existing tooling and equipment mandates their use.

When a standard is referenced in a drawing or specification, it is understood that the reference is to the latest revision of the standard, unless stated otherwise.

2. PART DESCRIPTION

Typical part description for BOM's and CAD drawings entered by Standards.

NUT, WELD M8 STD LONG PLN

For cross-reference listing of company part numbers, go to CNH Catalogue.

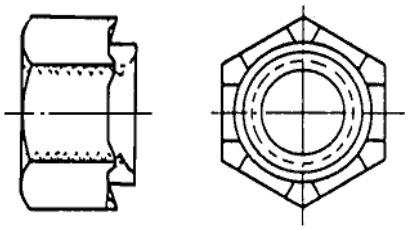
3. RELATED DOCUMENTS

3.1 REFERENCE STANDARDS

CNH STPA020—Fastener Finishes and Material Specifications
CNH MAT0310—Zinc Plating
FIAT 52605/02—Property classes of special service fasteners
SAE J122—Surface Discontinuities on Nuts
ANSI B18.16.1M—Mech. and Perf. Requirements For Prevailing-Torque Type Steel Metric Hex Nuts
DIN 928—Square weld nuts
DIN 929—Hexagon weld nuts
FIAT 01328—Body Holes Nominal Dimensions and Required Tolerance
FIAT 01329— Body Holes Nominal Dimensions and Required Tolerance
FIAT 10143—Embossed Hexagon Nuts for Projection Welding
FIAT 10143/02—Hexagon High Nuts for Projection Welding-Severe Applications
FIAT 10143/22— Square Nuts w/ Embossments for Projection Welding
FIAT 10143/23— Square Nuts w/ Embossments for Projection Welding
Iveco 18-1103—Zinc-Nickel Electrolytic Coating for Ferrous Metal Parts

3.2 REPLACED STANDARDS

Case EM-070—Weld Nuts Metric Projection Preferred
Case EM-072—Weld Nuts Metric Prevailing Torque Projection Preferred
NH ES10.04—Square Weld Nuts



4. REQUIREMENTS

4.1 MATERIAL

Material as designated by part number per CNH STPA020. Six-projection weld nuts shall be steel, 1010, 1015, 1018 or 1117.

Three-projection weld nuts shall be steel with a maximum carbon content of 0.25% and a maximum sulfur content of 0.13% that meets the following proof loads:

Size	Proof Load in N
M3	3,800
M4	6,800
M5	11,000
M6	15,500
M8	28,300
M10	44,800
M12	65,300
M14	89,700
M16	123,000

Materials specified as R40SD, R80SD or 8SD will conform to Fiat material standard 52605/02 ‘Property classes of special service fasteners’.

4.2 PREFERRED PARTS POLICY

Preferred parts are so designated to reduce variety of parts and assure maximum availability and cost savings:

Sizes: 6 Projection Regular Series - M6, 8, 10
6 Projection Heavy Series - M10, 12, 16

4.3 MECHANICAL DIMENSIONS

All dimensions in this standard are in millimetres. All unspecified detail must conform to standards listed above.

4.4 SURFACE DISCONTINUITIES

All products under this specification shall be free from burrs, seams, laps, loose scale, irregular surfaces and any defects affecting their serviceability.

4.5 THREADS

Threads shall be standard (coarse) pitch ISO Metric Screw Threads, tolerance class 6G for 3-projection nuts per DIN 929 and class 6H for 6-projection nuts.

4.6 MARKING

Six-projection weld nuts shall be identified as metric by the symbol “M” or a numerical “9" indented on the top surface of the nut.

4.7 PREVAILING TORQUE

When specified, prevailing torque weld nuts shall be all metal, one-piece construction. The prevailing torque characteristics are developed by controlled distortion of the nut thread and/or body on the upper portion or dome of the nut and are to meet the prevailing torque requirements specified in ANSI B18.16.1M.

Hex Piloted Projection Weld Nuts

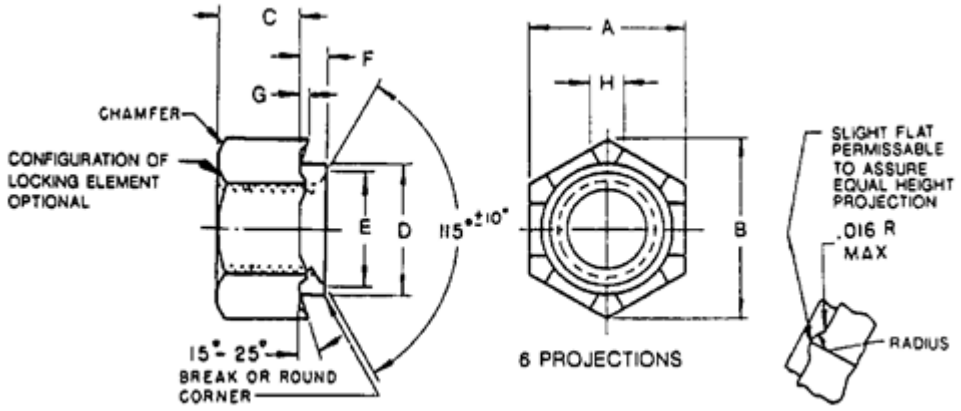


Table 1: Hex 6 Projections, Regular Series - Short Pilot, Preferred

Nominal Size			M5*	M6	M8	M10	M12*
Pitch, Nominal			0.8	1	1.25	1.5	1.75
A	Width Across Flats	max	11	13	15	18	21
		min	10.7	12.7	14.7	17.7	20.6
B	Width Across Corners	min	12.12	14.38	16.64	20.03	23.35
C	Nut Thickness	max	4.8	5.6	7.1	8.2	9.9
		min	4.4	5.1	6.6	7.7	9.4
D	Pilot Diameter	max	7.65	9.1	11.1	13.6	16.1
		min	7.35	8.8	10.8	13.3	15.8
E	Chamfer Diameter	min	5.8	6.8	8.8	11	13
F	Pilot Height	max	1.03	1.13	1.13	1.29	1.39
		min	0.77	0.87	0.87	1.03	1.13
G	Projection Height	max	0.47	0.52	0.52	0.63	0.73
		min	0.31	0.36	0.36	0.47	0.57
H	Projection Width	min	2.64	3.17	3.69	4.49	5.29
J	Projection Locating Height	ref	0.3	0.35	0.35	0.4	0.4
R	Projection Radius	nom	2.87	3.54	4.64	5.4	6.25
Plate Thickness		max	1.5	1.6	1.6	1.9	1.9
		min	1	1.1	1.1	1.3	1.4
Hole Size in Plate ±0.25			8	9.5	11.5	14	16.5
Part Number				86639237	86639238	86639239	86639641
			87301293#				

* Non- Preferred #Prevailing Torque Nut

Hex Piloted Projection Weld Nuts

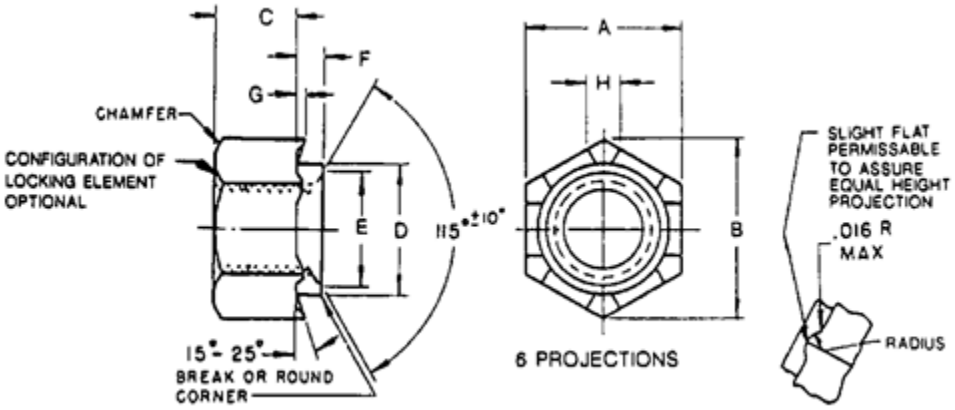


Table 2: Hex 6 Projections, Heavy Series - Short Pilot, Preferred

Nominal Size			M8*	M10	M12	M14*	M16
Pitch, Nominal			1.25	1.5	1.75	2	2
A	Width Across Flats	max	15	18	21	24	26
		min	14.7	17.7	20.6	23.6	24.9
B	Width Across Corners	min	16.6	20	23.3	26.7	29.1
C	Nut Thickness	max	9.3	12.2	14.3	16.5	19
		min	8.8	11.7	13.8	15.9	18.4
D	Pilot Diameter	max	11.1	13.4	16.1	19	20.5
		min	10.8	13.1	15.8	18.7	20.2
E	Chamfer Diameter	min	8.6	10.7	12.8	15	17
F	Pilot Height	max	0.83	1.13	1.33	1.33	1.33
		min	0.57	0.87	1.07	1.07	1.07
G	Projection Height	max	0.53	0.63	0.73	0.73	0.73
		min	0.37	0.47	0.57	0.57	0.57
H	Projection Width	min	3.69	4.49	5.29	6.09	6.61
J	Projection Locating Height	ref	0.25	0.45	0.55	0.55	0.55
K	Counterbore Diameter	max	10.5	12.8	15.3	18.3	19.5
		min	10.2	12.5	15	18	19.2
M	Counterbore Depth	max	1.5	1.5	1.5	1.5	1.5
		min	1.25	1.25	1.25	1.25	1.25
R		nom	4.54	5.4	6.25	8.09	9.41
Plate Thickness		max	1.8	1.8	2.2	2.2	2.2
		min	0.7	1	1.2	1.2	1.2
Hole Size in Plate +0.1/-0.2			11.4	13.7	16.4	19.4	20.9
Part Number			86639240	--	--	--	--

* Non- Preferred

Hex Piloted Projection Weld Nuts

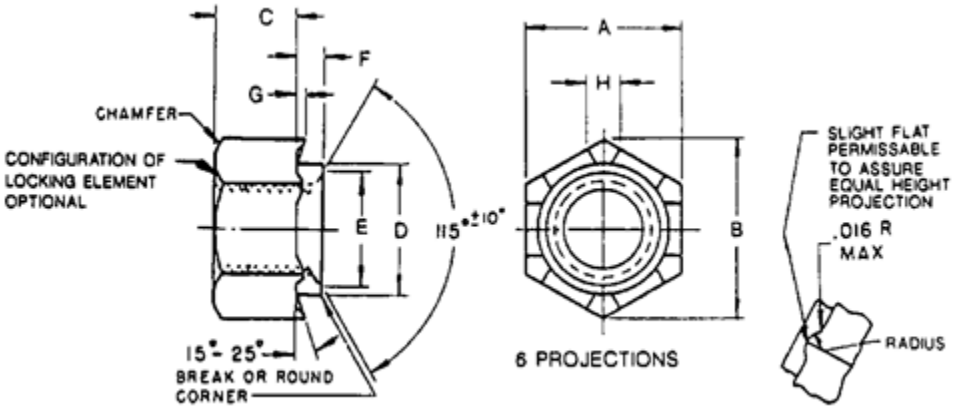


Table 3a: Hex 6 Projections, Heavy Series - Long Pilot, Preferred

Nominal Size			M6*	M8*	M10	M12	M14*	M16
Pitch, Nominal			1	1.25	1.5	1.75	2	2
A	Width Across Flats	max	13	15	18	21	24	26
		min	12.73	14.7	17.7	20.6	23.6	24.9
B	Width Across Corners	min	14.38	16.6	20	23.3	26.7	29.1
C	Nut Thickness	max	8	9.3	12.2	14.3	16.5	19
		min	7.5	8.8	11.7	13.8	15.9	18.4
D	Pilot Diameter	max	9	11.1	13.4	16.1	19	20.5
		min	8.7	10.8	13.1	15.8	18.7	20.2
E	Chamfer Diameter	min	6.6	8.6	10.7	12.8	15	17
F	Pilot Height	max	1.93	1.93	1.93	1.93	1.93	1.93
		min	1.67	1.67	1.67	1.67	1.67	1.67
G	Projection Height	max	1.08	1.08	1.08	1.08	1.08	1.08
		min	0.92	0.92	0.92	0.92	0.92	0.92
H	Projection Width	min	3.17	3.69	4.49	5.29	6.09	6.61
J	Projection Locating Height	ref	0.8	0.8	0.8	0.8	0.8	0.8
K	Counterbore Diameter	max	8.4	10.5	12.8	15.3	18.3	19.5
		min	8.15	10.2	12.5	15	18	19.2
M	Counterbore Depth	max	1.5	1.5	1.5	1.5	1.5	1.5
		min	1.25	1.25	1.25	1.25	1.25	1.25
R		nom	1.96	2.44	3.31	4.34	5.53	6.38
Plate Thickness		max	6.5	6.5	6.5	6.5	6.5	6.5
		min	1.8	1.8	1.8	1.8	1.8	1.8
Hole Size in Plate +0.1/-0.2			9.3	11.4	13.7	16.4	19.4	20.9
Part Number			76088686	87026741	86978773	87017612	--	87020955
Part Number			47458649#	91807709#	82879448#			
Part Number @ZnNi				@90441982	@90468863			

*Non- Preferred; #Prevailing Torque Nut; @ZnNi – Zinc Nickel per Iveco 18-1103 Fe/ZnNi 7 IV

Hex Piloted Projection Weld Nuts

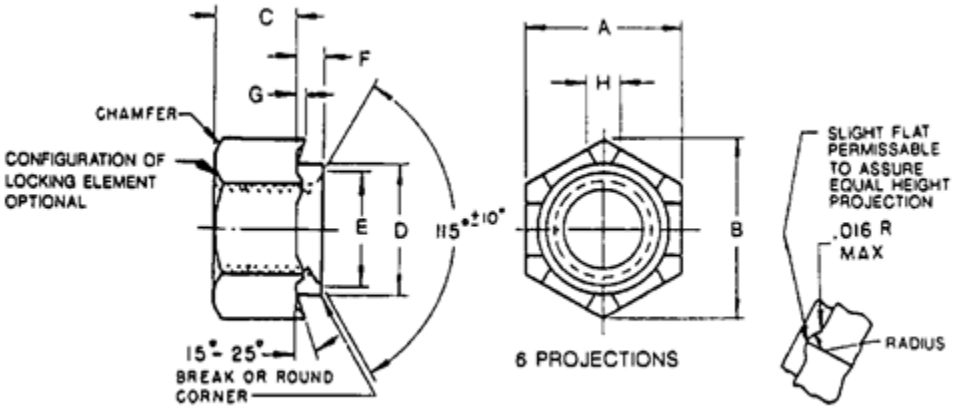


Table 3b: Hex 6 Projections, Heavy Series - Long Pilot, Non-Preferred
Material: R80SD (10.9) and Finish: PFL

Nominal Size			M6	M8	M10	M12	M14	M16
Pitch, Nominal			1	1.25	1.5	1.75	2	2
A	Width Across Flats	max	13	15	18	21	24	26
		min	12.73	14.7	17.7	20.6	23.6	24.9
B	Width Across Corners	min	14.38	16.6	20	23.3	26.7	29.1
C	Nut Thickness	max	8	9.3	12.2	14.3	16.5	19
		min	7.5	8.8	11.7	13.8	15.9	18.4
D	Pilot Diameter	max	9	11.1	13.4	16.1	19	20.5
		min	8.7	10.8	13.1	15.8	18.7	20.2
E	Chamfer Diameter	min	6.6	8.6	10.7	12.8	15	17
F	Pilot Height	max	1.93	1.93	1.93	1.93	1.93	1.93
		min	1.67	1.67	1.67	1.67	1.67	1.67
G	Projection Height	max	1.08	1.08	1.08	1.08	1.08	1.08
		min	0.92	0.92	0.92	0.92	0.92	0.92
H	Projection Width	min	3.17	3.69	4.49	5.29	6.09	6.61
J	Projection Locating Height	ref	0.8	0.8	0.8	0.8	0.8	0.8
K	Counterbore Diameter	max	8.4	10.5	12.8	15.3	18.3	19.5
		min	8.15	10.2	12.5	15	18	19.2
M	Counterbore Depth	max	1.5	1.5	1.5	1.5	1.5	1.5
		min	1.25	1.25	1.25	1.25	1.25	1.25
R		nom	1.96	2.44	3.31	4.34	5.53	6.38
Plate Thickness		max	6.5	6.5	6.5	6.5	6.5	6.5
		min	1.8	1.8	1.8	1.8	1.8	1.8
Hole Size in Plate +0.1/-0.2			9.3	11.4	13.7	16.4	19.4	20.9
Part Number			91714010		47910914			

Hex Piloted Projection Weld Nuts

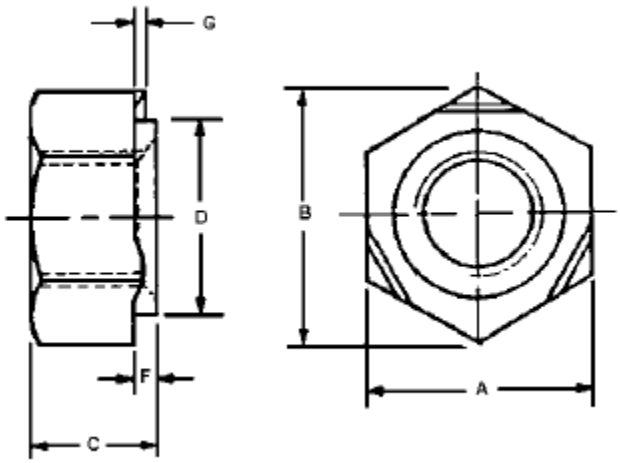


Table 4: Hex 3 Projections, Preferred

Nuts are to conform to DIN 929

Nominal Size			M4	M5	M6	M8
Pitch, Nominal			0.7	0.8	1	1.25
A	Width Across Flats	max	9	10	11	14
B	Width Across Corners	min	9.83	10.95	12.02	15.38
C	Nut Thickness	max	3.5	4	5	6.5
D	Pilot Diameter	max	5.97	6.96	7.96	10.45
		min	5.895	6.87	7.87	10.34
F	Pilot Height	max	0.65	0.7	0.75	0.9
		min	0.55	0.6	0.6	0.75
G	Projection Height	max	0.35	0.4	0.4	0.5
		min	0.25	0.3	0.3	0.35
Plate Thickness		max	3	3.5	4	4.5
		min	0.75	0.88	0.88	1
Hole Size in Plate +0.1/-0.2			6.2	7.2	8.2	10.7
Part Number			86639953	86639233	86639234	86625084
Part Number *18-8 Stainless Steel					*90400383	*51548941
Part Number @ZnNi				@90441979	@90441980	@90441981

@ZnNi – Zinc Nickel per Iveco 18-1103 Fe/ZnNi 7 IV

Hex Piloted Projection Weld Nuts

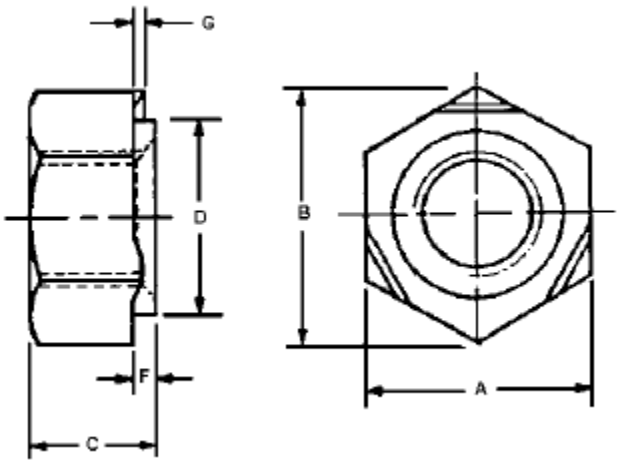


Table 4: Hex 3 Projections, Preferred (Continued)

Nuts are to conform to DIN 929

Nominal Size			M10	M12	M14&	M16
Pitch, Nominal			1.5	1.75	2	2
A	Width Across Flats	max	17	19	22	24
B	Width Across Corners	min	18.74	20.91	24.27	26.51
C	Nut Thickness	max	8	10	11	13
D	Pilot Diameter	max	12.45	14.75	16.75	18.735
		min	12.34	14.64	16.64	18.605
F	Pilot Height	max	1.15	1.4	1.8	1.8
		min	0.95	1.2	1.6	1.6
G	Projection Height	max	0.65	0.8	1	1
		min	0.5	0.6	0.8	0.8
Plate Thickness		max	5	5	6	6
		min	1.25	1.5	2	2
Hole Size in Plate +0.1/-0.2			12.7	15.0	17.0	19.0
Part Number			86013959	86619782	84218881	86619383
Part Number *18-8 Stainless Steel				*90324906		

& Non- Preferred

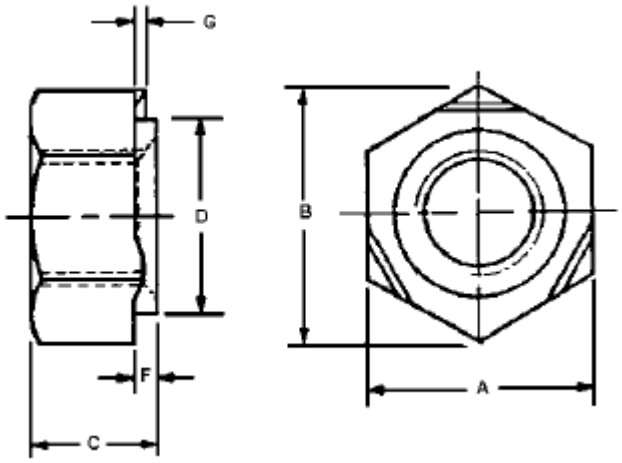


Table 5a: Hex 3 Projections, Non-Preferred

Nuts are to conform to DIN 929

		C	A	F	D	G	
Nominal Diameter	**Pitch**	**Nut Thickness**	**Width Across Flats**	**Pilot Height**	**Pilot Diameter**	**Projection Height**	**Part Number**
10	1	8	17	1.15	12.5	0.65	100086
10	1.5	8	17	1.15	12.5	0.65	*84408059

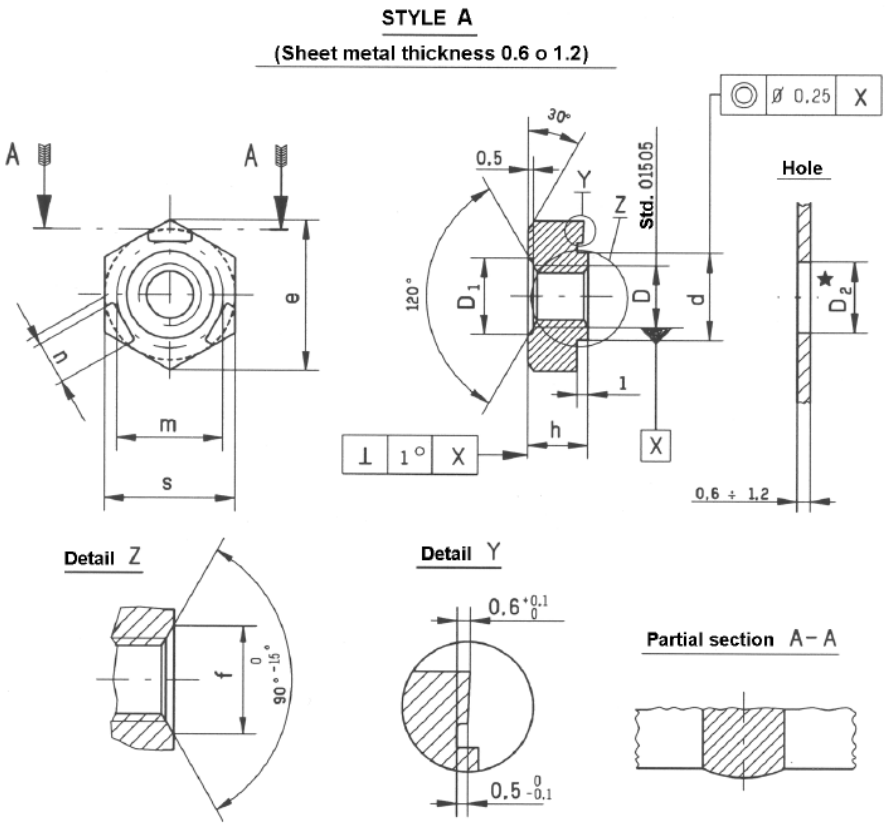
* SST – Stainless Steel

Table 5b: Hex 3 Projections, Non-Preferred

		C	A	B	F	D	G	
Nominal Diameter	**Pitch**	**Nut Thickness**	**Width Across Flats**	**Min. Width Across Corners**	**Pilot Height ± 0.13**	**Pilot Diameter +0.0/-0.3**	**Projection Height ± 0.075**	**Part Number**
8	1.25	6.85	15	16.61	1.8	11.1	1.0	47995552

Table 6: Dimensions of Embossed Hexagon Nuts for Projection Welding (Style A)

Fiat 10143



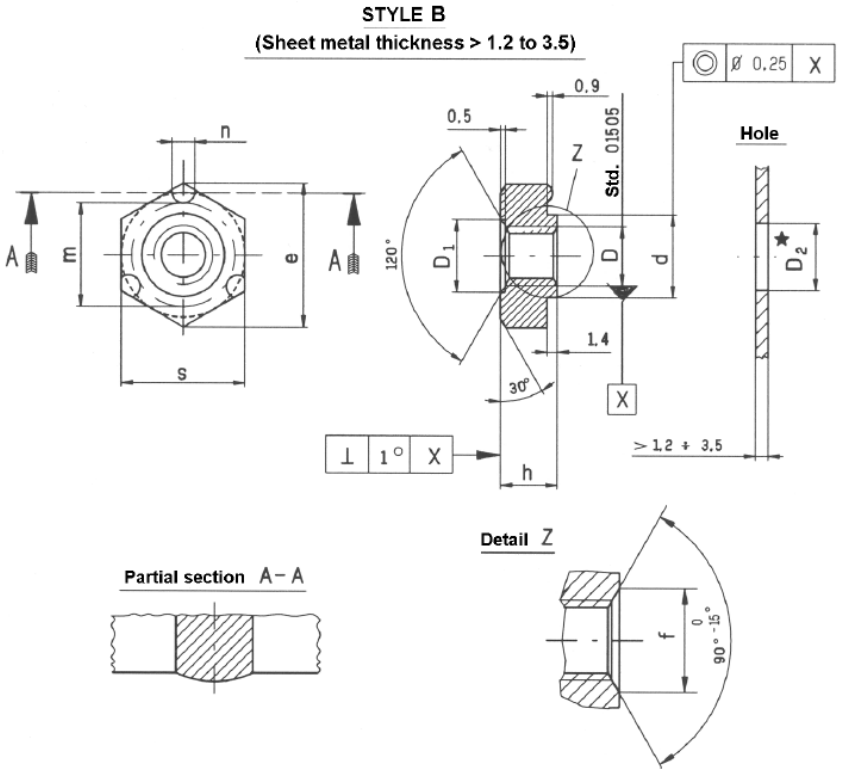
D(h6)	D (h11)		D_2	D_1		m	n	f	h (h13)		s (h13)		e
	Nom.	Tol.		Nom.	Tol.			0 -0.5	Nom.	Tol.	Nom.	Tol.	Min.
M4	8	0 -0.090	8	7	+0.150 0	9.8	4	4.8	5.5	0 -0.180	12	0 -0.270	13.25
M5	8		8	7		9.8	4	5.8	5.5		12		13.25
M6	8		8	7		10	4.5	6.8	6.0		13		14.38
M8	11	0 -0.110	11	10		13	5	9	7.5	0 -0.220	16		17.77
M10x1.25	13		13	12	+0.180 0	15	6	11	8.5		17		18.90

Table 7: Embossed Hexagon Nuts for Projection Welding (Style A)

Diameter	Projections	Material	Finish	Part Number
M4	3	8SD	PLN	14098410
M5	3	R40SD	PLN	14098000
M5	3	8SD	PLN	14098010
M6	3	R40SD	PLN	14096900
M8	3	R40SD	PLN	14098200
M8	3	8SD	PLN	14098210
M10X1.25	3	8SD	PLN	14098310
M10	3	8SD	PLN	14098610

Table 8: Dimensions of Embossed Hexagon Nuts for Projection Welding (Part 1 / Style B)

Fiat 10143



*D_2 For hole tolerance see Fiat 01329

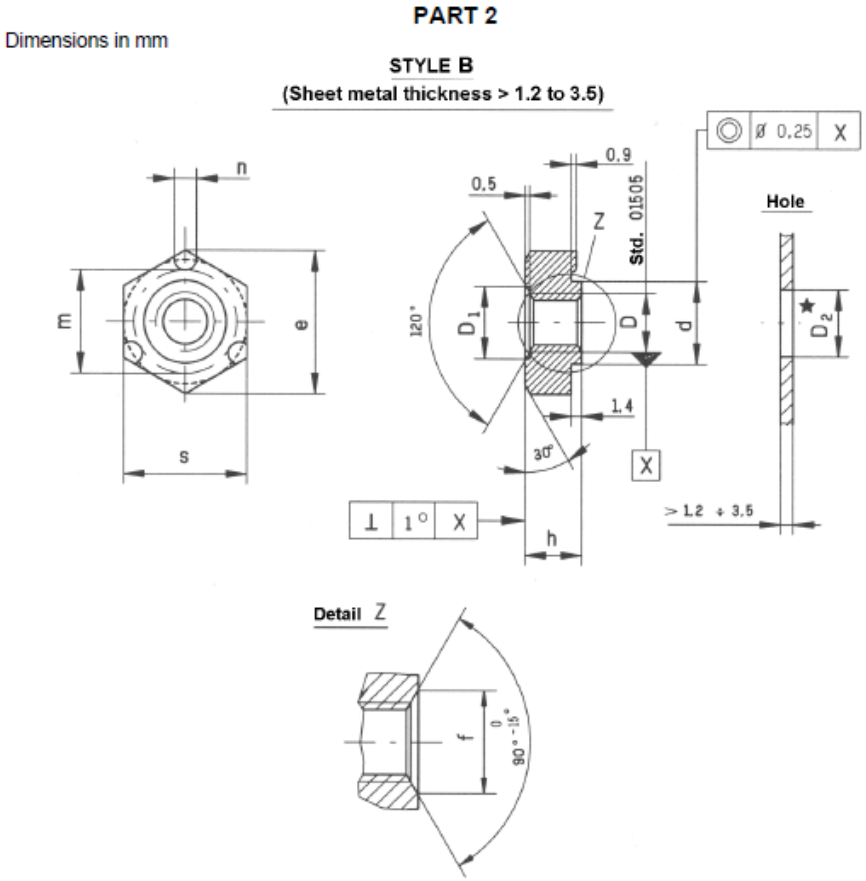
D(h6)	**d** (h11)		D_2	D_1		**m**	**n**	**f**	**h** (h13)		**s** (h13)		**e**
	Nom.	Tol.		Nom.	Tol.			0 -0.5	Nom.	Tol.	Nom.	Tol.	Min.
M4	8	0 -0.090	8	7	+0.150 0	10	2.2	4.8	6	0 -0.180	13	0 -0.270	14.38
M5	8		8	7		10	2.2	5.8	6		13		14.38
M6	8		8	7		10	2.2	6.8	6		13		14.38
M8	11	0 -0.110	11	10		14	3	9	7	0 -0.220	17		18.90
M10x1.25	13		13	12	+0.180 0	16	3	11	8		19	0 -0.270	21.10
M12x1.25	15.5		15.5	14		18.5	3.5	13	10		22		24.49
M14x1.5	18		18	16		21	3.5	15	12	0 -0.270	24		26.75

Table 9: Embossed Hexagon Nuts for Projection Welding (Fiat 10143 Part 1 / Style B)

Diameter	Projections	Material	Finish	Part Number
M4	3	R40SD	PLN	14077900
M5	3	R40SD	PLN	14078000
M5	3	8SD	PLN	14078010
M5	3	8SD	PFL	14078013
M6	3	8SD	PLN	14098710
M6	3	R40SD	PLN	14098700
M6	3	8SD	PFL	14098713
M6	3	8SD	PFL	&48084995
M8	3	8SD	PLN	14098810
M8	3	8SD	PFL	14098813
M8	3	R40SD	PLN	14098800
M10x1.25	3	R40SD	PLN	14098900
M10x1.25	3	8SD	PLN	14098910
M10x1.25	3	8SD	PFL	14098913
M12x1.25	3	R40SD	PLN	14096800
M12x1.25	3	8SD	PLN	14096810
M14x1.5	3	R40SD	PLN	47727180

& Left Hand Thread

Table 10: Dimensions of Embossed Hexagon Nuts for Projection Welding (Part 2 / Style B)
Fiat 10143

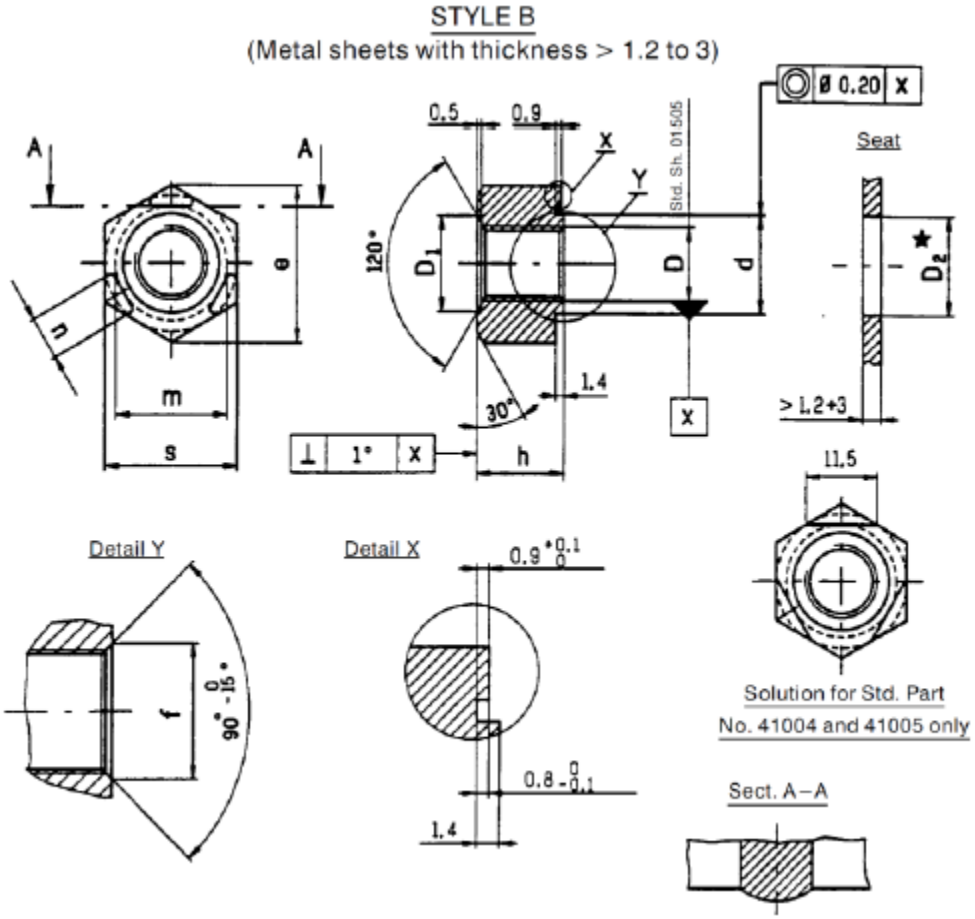


*D_2 For hole tolerance see Fiat 01328

D(h6)	d (h11)		D_2	D_1		m	n	f	h (h13)		s (h13)		e
	Nom.	Tol.		Nom.	Tol.			0 -0.5	Nom.	Tol.	Nom.	Tol.	Min.
M10x1.5	13	0 -0.110	13	12	+0.180 0	16	3	11	11	0 -0.270	19	0 -0.270	21.10

Diameter	Projections	Material	Finish	Part Number
M10x1.5	3	8 SD	PFL	47661213
M10x1.5	3	R80SD	PFL	47732805

Hexagon High Nuts for Projection Welding – Severe Applications (Fiat 10143/02 / Style B)



*D_2 For hole tolerance see Fiat 01329

Table 11a: Basic Dimension Hexagon High Nuts for Projection Welding

D(h6)	d (h11)		D_2	D_1	f	m	n	h	s (h13)		e
	Nom.	Tol.			0 -0.5				Nom.	Tol.	Min.
M6	8	0 -0.090	8	7	6.8	10	4.5	8.5	13	0 -0.270	14.38
M8	11	0 -0.110	11	10	9	14	5	10	17	0 -0.270	18.90
M10x1.25	13	0 -0.110	13	12	11	16	6	12	19	0 -0.330	21.10
M12x1.25	16	0 -0.110	16	14	13	18.5	7	14.5	22	0 -0.330	24.49

Table 11b: Hexagon High Nuts for Projection Welding – Severe Applications (Fiat 10143/02 /Style B)

Diameter	Material	Finish	Part Number
M6	8 SD	PLN	14100010
M8	8 SD	PLN	14100110
M10x1.25	8 SD	PLN	14100210
M12x1.25	8 SD	PLN	14100310

Square Weld Nut, Non-Preferred (DIN 928)

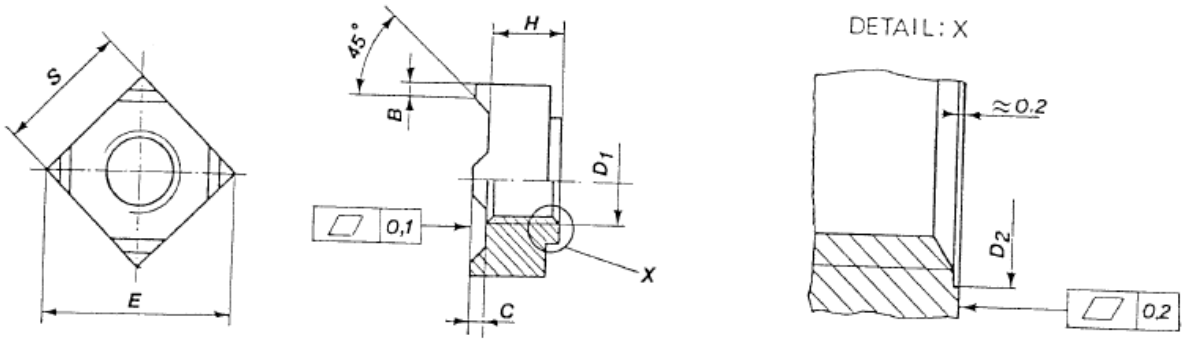


Table 12a: Square Weld Nut, Non-Preferred (DIN 928)
Material – Class 8 – ISO 898-2
Finish – Lightly Oiled with rust resistant oil

D1		H		S	C	
Nominal Diameter	Pitch	Nut Thickness (h14)	Projections	Width Across Flats (h14)	Projection Height (+/- 0.1)	Part Number
4	0.7	3.5	4	7	0.6	334480
5	0.8	4.2	4	9	0.8	383995
6	1	5	4	10	0.8	9706761
8	1.25	6.5	4	14	1	86629545
10	1.25	8	4	17	1.2	47670152
10	1.5	8	4	17	1.2	100076
12	1.75	9.5	4	19	1.4	331290
16	2	13	4	24	1.6	379329

The weld nuts in this table are suitable for cold rolled sheets and pickled H.R. sheet with a maximum sheet thickness of 3mm

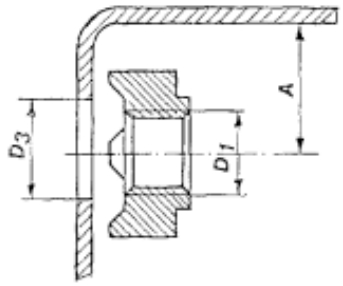
For practical reasons, these weld nuts may be replaced in Manufacturing by normal nuts which guarantee the same strength after welding. The drawing will NOT be changed.

If a normal blank nut with a fillet weld has been specified on the drawing, the hole (D3) will be selected as follows:

Sheet thickness <= 3mm: Select D3 according to below mentioned table 12b

Sheet thickness >= 3mm: Select D3 according to DWGD120

TABLE 12b: Minimum moment of twist N.m. for PNs listed in Table 12a



D1	D3 +/- 0.2	A min.	Min. moment of twist off N.m. *
M4	5.5	10	6
M6	7.5	10	20
M8	10.5	14	50
M10	13.5	20	100
M12	16.5	20	180
M16	20.5	20	450

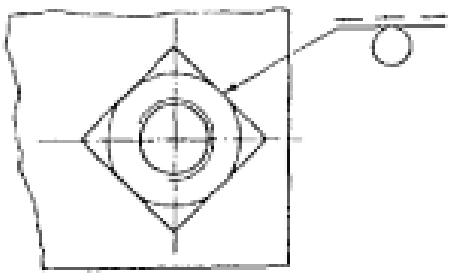
***** The nuts must be able to withstand this min. moment of twist off after welding

Do not use these type of weld nuts on steel with a carbon equivalent K > 0.30

K = C % + Mn%/6 + Cr%/5 + Ni%/15 + Mo%/4

The position of the nut shall be such that the weld is not subject to tensile load.

Symbolization on the drawing



Fiat 10143/22 Square Nut With Embossments for Projection Welding

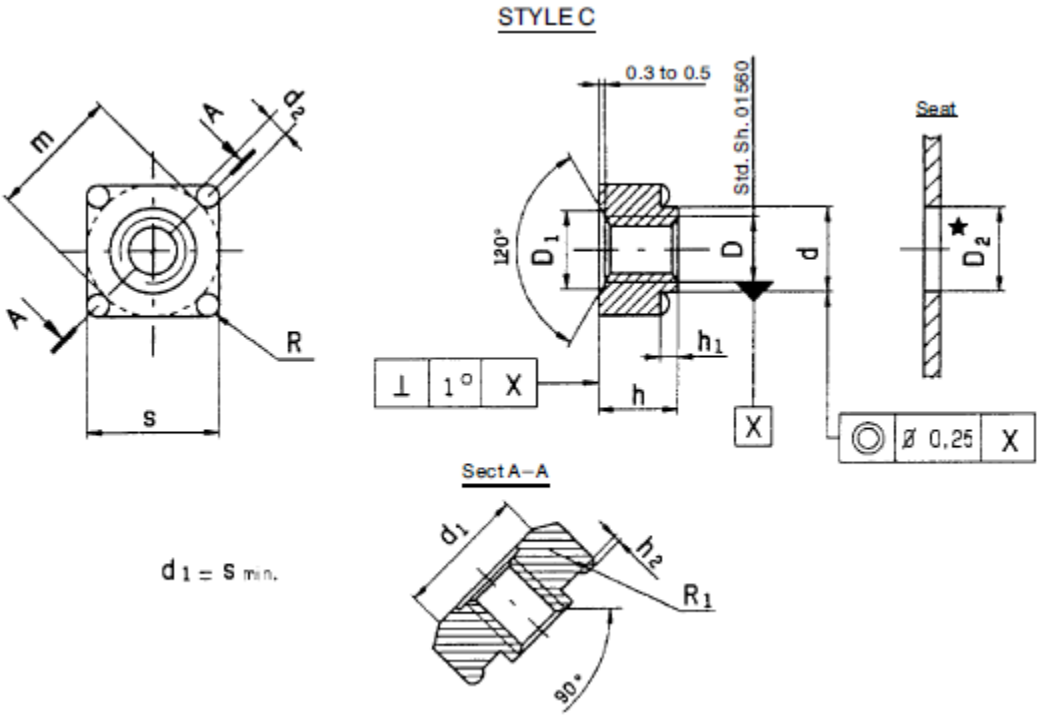


Table 13: Square Weld Nut, Non-Preferred (Fiat 10143/22 Style C)

Part Number	D	d (h11)	d2 +0.3 0	D2 *	D1 (H13)	m	h (h14)	h1	h2 0 -0.15	s max	R	R1	Matl	Finish
14050000	M4	6	2	6	5	10.5	5.5	1	0.5	11.6	1	1.25	R40SD	PLN
47912137	M5	7	2	7	6	10.5	5.5	1	0.5	11.6	1	1.25	R40SD	PLN
14050200	M6	8	2	8	7	10.5	5.5	1	0.5	11.6	1	1.25	R40SD	PLN
14050300	M8	10.5	3	10.5	9.5	17	8.5	1.2	0.7	17.9	1.5	1.95	R40SD	PLN

* For hole diameter tolerance see Fiat Std. 01328.

Fiat 10143/22 Square Nut With Embossments for Projection Welding

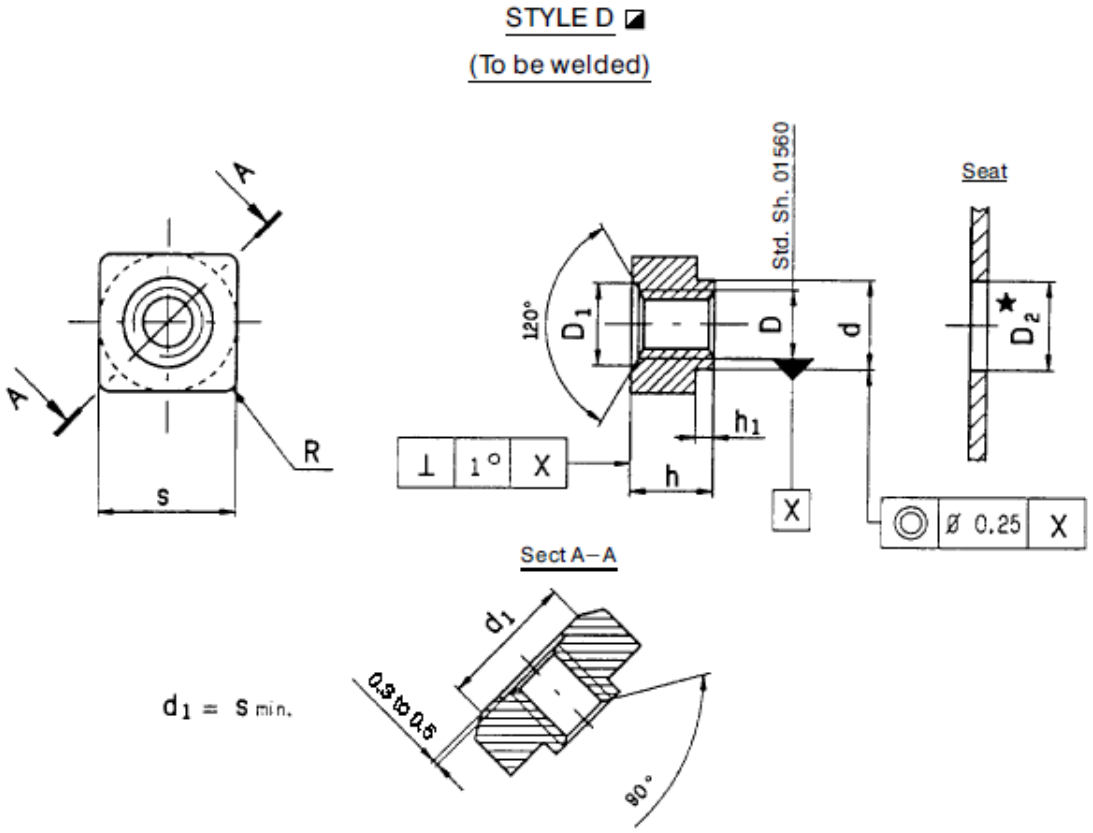


Table 14: Square Weld Nut, Non-Preferred (Fiat 10143/22 Style D)

Part Number	D	d (h11)	D2 *	D1 (H13)	h (h14)	h_1	s max	s min	R	Matl	Finish
14051000	M6	8	8	7	5.5	0.6	11.6	10.8	1	R40SD	PLN
14051100	M8	10.5	10.5	9.5	8.5	0.6	17.9	17.0	1.5	R40SD	PLN

* For hole diameter tolerance see Fiat Std. 01328.

Fiat 10143/23 Square Nut With Embossments for welding

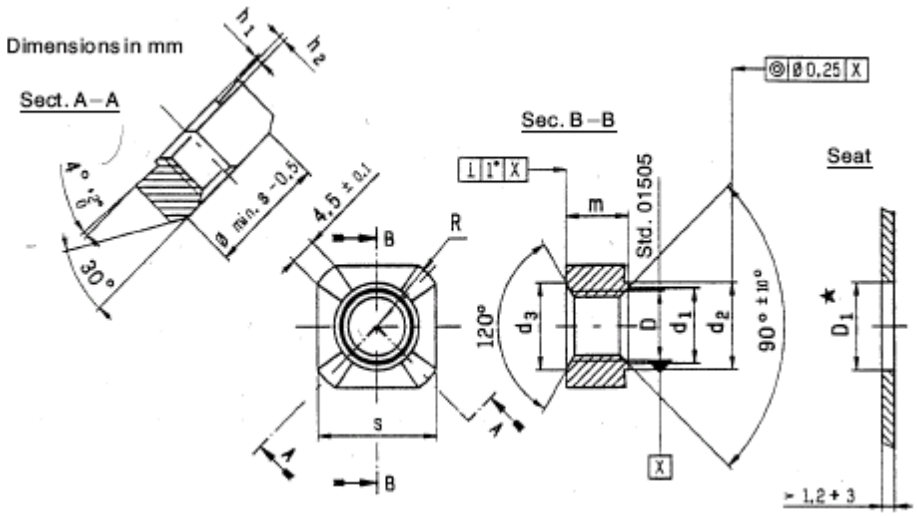


Table 15: Square Weld Nut, Non-Preferred (Fiat 10143/23)

Part Number	D	d1 +/-0.2	d2 +/-0.2	d3 +0.1 -0.2	D1 *	m +0.5 0	h1 +0.25 -0.1	h2 +/-0.1	h +/-0.25	R	Matl	Finish
14061310	M10X1.25	11	13	13	13.2	8.8	1.5	1	17	10	8 SD	PLN

* For hole diameter tolerance see Fiat Std. 01328.