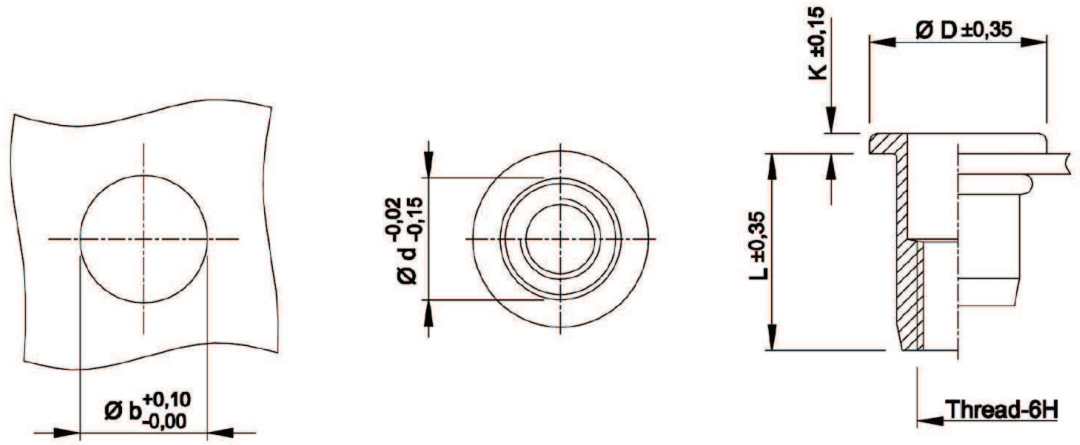
Technical Data

● General tolerances

	Head form	Dimensions in mm	Dimensions in inches
D (head diameter)	Flat head Countersunk head Low profile head	± 0,35 0 -0,5 -0,15 +0,3	±.014 0 -.020 -.006 +.012
K (head thickness)	Flat head Countersunk head Low profile head	±0,15 0 +0,3 -0,05 +0,3	±.006 0 +.012 -.002 +.012
L (length)	General Stainless M10 shank 13 mm	±0,35 ±0,5	±.014 ±.020
Metric thread= 6H			
Shank size	General (incl. KN) Splined shank (RS) M10 shank 12,4 mm	-0,02 -0,15 ±0,08 ±0,08	-.001 -.006 ±.003 ±.003

Example:



● Recommended tightening torque values (Nm)

Max. recommended torque to avoid damaging the threaded connection and ensure optimal screw-nut assembly:

	M3	M4	M5	M6	M8	M10	M12
Aluminium	2,0	2,2	4,5	9,5	17,0	30,0	
Steel	2,5	3,0	5,9	11,0	25,0	49,0	80,0
Stainless Steel	2,5	3,0	5,9	11,0	25,0	49,0	80,0

Recommendations for 8.8 bolts in steel and class A2-70 bolts in stainless steel.

Mechanical properties - How do we test them?

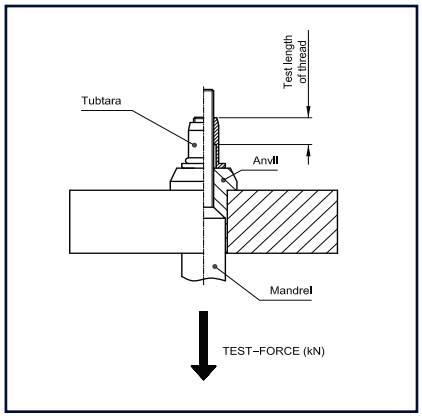
PULL-OUT (thread strength)

Determines the force (kN) required to destroy (pull out) the threads of the **Tubtara®** blind rivet nut, by pulling a screwed-in mandrel towards the head of the **Tubtara®**.

In many cases the mandrel will break before the threads would fail (see ">" in mechanical values table)

The strength towards the opposite direction is ± 1/3 of the pull out strength.

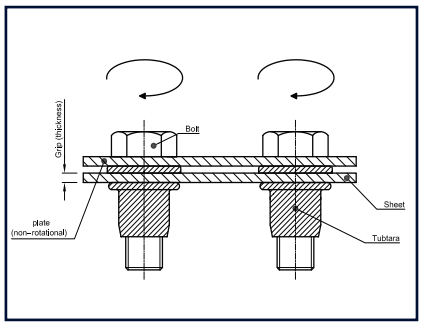
PROOF LOAD test according to ISO 898-2 possible (on request).



MAXIMUM TORQUE

Determines the maximum torque (Nm) that the **Tubtara®** can resist. The Tubtaras are installed in a bolted assembly, using a non-rotational plate.

In most cases the bolt will break before the threads would fail. (see ">" in mechanical values table)

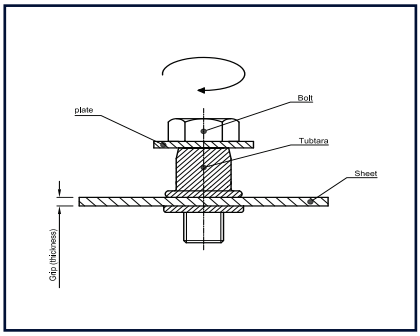


TORQUE-TO-TURN (spin out)

Determines at which couple (Nm) the **Tubtara®** starts to rotate (spin) in the parent material in which it is installed. Tested from the blind side with a tightened bolt and a washer.

In an assembly, required torque-to-turn force will be higher, due to increased clamping pressure and friction resistance after tightening the assembled bolt.

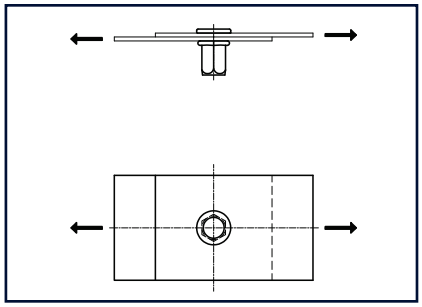
In some cases the bolt will break before the threads would fail. (see ">" in mechanical values table)



SHEAR TEST

Tests the strength (kN) of an installed **Tubtara®** (without assembled bolt) towards shearing. In many cases the **Tubtara®** will be pulled out of the plate without shearing, or shear in the middle between the 2 plates.

Plate material, hardness and how holes are formed (drilled, punched or laser cut) will influence test results.



Mechanical properties

The tables below show some indicative standard values for Tubtara's with round or hexagonal shank and flat head in first grip for middle sheet thickness within range.

Mechanical reference values

product	material	pull-out	max. torque	torque-to-turn	shear test
		kN	Nm	Nm	kN
Round shank					
M3 UPO 20	Steel C8C	> 5,8	> 2,0	1,8	1,9
	Alu 5052	> 3,1	1,9	0,8	0,6
	SS 304Cu	-	-	-	-
M4 UPO 30	Steel C8C	> 10,8	> 7,5	2,7	2,6
M4 UPO 30	Alu 5052	> 4,5	4,9	1,4	1,1
M4 UPO 20	SS 304Cu	> 11,0	7,1	2,6	3,5
M5 UPO 30	Steel C8C	> 12,0	> 10,0	4,7	3,5
	Alu 5052	> 5,2	6,1	1,5	1,6
	SS 304Cu	> 14,5	> 16,0	3,0	4,8
M6 UPO 30	Steel C8C	> 21,0	> 19,0	7,0	5,0
	Alu 5052	> 10,5	16,0	3,2	2,4
	SS 304Cu	> 27,0	> 22,0	6,8	7,3
M8 UPO 30	Steel C8C	> 33,0	> 50,0	13,0	6,0
	Alu 5052	> 15,0	33,0	5,3	2,9
	SS 304Cu	> 40,0	> 70,0	9,0	9,0
M10 UPO 35	Steel C8C	> 40,0	> 70,0	15,0	8,0
	Alu 5052	> 20,0	39,5	7,0	3,7
	SS 304Cu	> 43,0	> 70,0	8,0	8,5
M10 SPO 35	Steel C8C	> 40,0	> 70,0	15,0	8,0
	Alu 5052	-	-	-	-
	SS 304Cu	> 43,0	> 70,0	13,0	8,4
M12 UPO 40	Steel C8C	> 63,0	> 120,0	32,0	11,5
	Alu 5052	-	-	-	-
	SS 304Cu	> 70,0	> 130,0	25,0	14,0
Hexagonal shank					
M4 HUPO 20	Steel C8C	> 8,8	> 7,5	> 5,5	2,6
	SS 304Cu	> 10,8	> 7,1	6,0	3,7
M5 HUPO 30	Steel C8C	> 12,0	12,0	> 6,5	3,6
	SS 304Cu	> 15,5	15,0	> 9,0	4,8
M6 HUPO 30	Steel C8C	23,0	> 24,5	> 21,0	5,1
	SS 304Cu	24,5	> 23,0	> 22,0	7,2

product	material	pull-out	max. torque	torque-to-turn	shear test
		kN	Nm	Nm	kN
M8 HUPO 30	Steel C8C	32,8	> 50,0	> 30,0	6,6
	SS 304Cu	39,0	> 64,0	32,0	9,4
M10 HSPO 35	Steel C8C	> 40,0	> 70,0	50,0	7,9
	SS 304Cu	> 43,0	> 70,0	> 50,0	10,2
M12 HUPO 40	Steel C8C	> 63,0	> 120,0	68,0	12,5
	SS 304Cu	> 70,0	> 130,0	> 70,0	14,6

- Bolts class 8.8 were used
- > : value will be higher, but test could not be completed due to breakage of bolt or min. value is used as reference
- Steel plate (HRB 55) was used to set the **Tubtara®** (approximately middle of grip range)

Geometrical reference values (open end parts)
For setting force of leakproof parts, see page 100

product	material	setting force	stroke	size bulb forming	length under plate
		kN	mm	mm	mm
Round shank					
M3 UPO 20	Steel C8C	4,0	2,6	6,6 to 6,7	5,9 to 6,1
	Alu 5052	2,3	1,9	6,0 to 6,1	6,4 to 6,6
	SS 304Cu	-	-	-	-
M4 UPO 30	Steel C8C	4,5	2,8	7,8 to 7,9	6,7 to 6,8
M4 UPO 30	Alu 5052	2,2	2,7	7,7 to 7,8	6,8 to 7,0
M4 UPO 20	SS 304Cu	6,0	2,4	7,3 to 7,4	7,6 to 7,8
M5 UPO 30	Steel C8C	6,5	3,8	9,4 to 9,5	7,3 to 7,4
	Alu 5052	3,4	3,6	9,3 to 9,4	7,3 to 7,4
	SS 304Cu	8,0	3,5	8,9 to 9,2	7,3 to 7,5
M6 UPO 30	Steel C8C	9,5	4,0	11,6 to 11,8	9,3 to 9,6
	Alu 5052	4,9	3,3	11,2 to 11,3	10,0 to 10,2
	SS 304Cu	13,0	4,0	11,3 to 11,6	9,6 to 10,0
M8 UPO 30	Steel C8C	12,0	4,0	13,6 to 13,8	10,9 to 11,2
	Alu 5052	5,5	3,8	13,6 to 13,8	11,1 to 11,3
	SS 304Cu	15,4	4,2	13,6 to 13,7	11,3 to 11,6
M10 UPO 35	Steel C8C	14,5	4,4	15,7 to 15,8	14,4 to 14,5
	Alu 5052	8,0	4,7	15,6 to 15,9	14,1 to 14,4
	SS 304Cu	15,5	4,0	14,8 to 15,0	13,6 to 14,0
M10 SPO 35	Steel C8C	15,5	4,5	16,1 to 16,3	15,5 to 15,7
	Alu 5052	-	-	-	-
	SS 304Cu	23,5	4,6	15,9 to 16,1	16,6 to 16,9

product	material	setting force	stroke	size bulb forming	length under plate
		kN	mm	mm	mm
M12 UPO 40	Steel C8C	20,5	6,5	20,8 to 21,0	17,5 to 18,0
	Alu 5052	-	-	-	-
	SS 304Cu	30,0	7,0	20,5 to 21,5	17,0 to 17,5
Hexagonal shank					
M4 HUPO 20	Steel C8C	5,5	2,8	7,6 to 8,3	6,1 to 6,4
	SS 304Cu	5,3	2,5	7,5 to 7,9	7,5 to 7,9
M5 HUPO 30	Steel C8C	6,1	4,0	9,8 to 10,4	7,8 to 8,2
	SS 304Cu	7,2	3,3	9,1 to 9,5	7,1 to 7,3
M6 HUPO 30	Steel C8C	11,5	3,6	11,4 to 12,5	9,7 to 10,1
	SS 304Cu	10,0	4,3	11,9 to 12,3	9,0 to 9,3
M8 HUPO 30	Steel C8C	14,0	4,6	14,3 to 15,4	10,7 to 11,1
	SS 304Cu	14,0	4,5	14,0 to 14,5	10,7 to 11,1
M10 HSPO 35	Steel C8C	18,0	5,5	17,5 to 18,6	14,4 to 14,7
	SS 304Cu	19,0	6,0	17,0 to 17,6	16,0 to 16,7
M12 HUPO 40	Steel C8C	21,0	6,6	20,7 to 21,6	15,0 to 16,1
	SS 304Cu	25,0	7,0	21,0 to 22,0	17,0 to 17,5

Length under plate of open end parts: values obtained after setting.

To obtain the length under the plate after setting of **closed end parts**, you can add the following sizes to the above-mentioned:

Steel and aluminium (mm)	
M3	3,5
M4	4,5
M5	6,0
M6	7,0
M8	8,0
M10	10,0
M12	10,0

Stainless steel (mm)	
M4	**4,5**
M5	**6,0**
M6	**7,0**
M8	**8,0**
M10	**7,0**
M12	**10,0**

In some cases the real length will be shorter. All dimensions can be checked on the technical data sheets in our catalogue.

In practice, variations may result from differing setting and environmental conditions. The values mentioned can be used as a reference and optimised by using additional features. We strongly advise customers to perform their own tests in the correct material thickness and specific application.

Grip range influences

The following values can be used as a guidance for other versions:
For setting force of leakproof parts, see page 100

		ALUMINIUM			STEEL			STAINLESS STEEL 304 + 316		
TYPE	Grip	SETTING FORCE	STROKE	PULL-OUT	SETTING FORCE	STROKE	PULL-OUT	SETTING FORCE	STROKE	PULL-OUT
	mm	N	mm	N	N	mm	N	N	mm	N
M3 UPO 20	1,0	2000	2,0	3750	4000	2,5	> 5000			
	2,0	2600	1,5	3280	4750	2,0	> 5000			
M3 UPO 30	2,0	1850	1,5	3900	3700	2,5	> 5000			
	3,0	2050	1,0	3968	4750	2,0	> 5000			
M4 UPO 20	1,0							4900	2,0	> 9000
	2,0							5500	1,5	> 9000
M4 UPO 30	1,0	2100	3,0	5170	4300	2,5	> 8000			
	3,0	2430	1,0	4330	5650	1,5	> 8000			
M4 UPO 35	2,0							5500	2,6	> 9000
	3,5							6000	1,7	> 9000
M4 UPO 45	3,0	2050	2,8	4838	4200	2,5	> 8000			
	4,5	2875	1,5	4421	5000	1,5	> 8000			
M5 UPO 30	1,0	3050	3,5	5500	6150	3,5	12240	7500	3,0	> 15000
	3,0	3650	2,0	5000	7200	2,5	9600	8500	1,7	> 15000
M5 UPO 50	3,0							7500	4,0	> 15000
	5,0							8500	2,0	> 15000
M5 UPO 55	3,0	3000	3,5	6450	5750	4,0	11800			
	5,5	4300	1,5	5525	9650	2,0	10300			
M6 UPO 30	1,0	4500	3,0	11000	9400	4,0	21200	11850	4,0	> 24000
	3,0	5750	2,0	10000	12000	3,0	18500	14460	3,0	> 24000
M6 UPO 50	3,0							13500	4,5	> 24000
	5,0							15000	2,8	> 24000
M6 UPO 55	3,0	4500	3,5	11000	9000	3,5	22700			
	5,5	6100	1,8	10000	11000	2,0	19700			
M6 UPO 80	5,5	4950	4,7	9160	8700	4,0	19900			
	8,0	5400	2,0	8200	11750	2,5	17200			
M8 UPO 30	1,0	5000	3,0	14900	11500	4,0	30400	14500	4,2	> 41000
	3,0	6600	2,0	14000	13750	2,5	26100	18000	2,8	> 41000
M8 UPO 55	3,0	5400	4,0	15500	11500	4,0	32500	14500	5,5	> 41000
	5,5	7400	2,0	11200	15500	2,5	31900	18500	3,0	> 41000

		ALUMINIUM			STEEL			STAINLESS STEEL 304 + 316		
TYPE	Grip	SETTING FORCE	STROKE	PULL-OUT	SETTING FORCE	STROKE	PULL-OUT	SETTING FORCE	STROKE	PULL-OUT
	mm	N	mm	N	N	mm	N	N	mm	N
M8 UPO 80	5,5	5900	4,0	16100	10700	4,0	32400			
	8,0	7850	2,0	13600	14700	2,5	26500			
M10 UPO 30	1,0							14500	3,5	> 45000
	3,0							18500	2,5	> 45000
M10 UPO 35	1,0	6750	4,0	22100	13600	4,5	39600			
	3,5	9000	2,5	17700	17000	2,5	32400			
M10 UPO 50	3,0							14500	3,5	> 39500
	5,0							18500	2,5	> 37000
M10 UPO 60	3,5	9000	5,0	25250	14900	4,0	42300			
	6,0	13000	3,0	23000	17900	2,5	31700			
M10 SPO 35	1,0				13500	4,5	40500	19500	4,5	> 45000
	3,5				16100	2,5	36100	26500	3,5	> 45000
M10 SPO 60	3,5				15900	5,5	48000	21000	5,5	> 45000
	6,0				20400	3,0	37500	25000	3,5	> 45000
M12 UPO 40	1,0				19500	5,5	> 50000	26000	8,0	> 75000
	4,0				25000	4,0	> 50000	34000	5,0	> 70000
M12 UPO 70	4,0				19500	5,5	> 50000	28000	8,0	> 75000
	7,0				25000	4,0	> 50000	37000	5,0	> 70000

Setting Force or Upset Load: Force (in Newton) necessary to deform the **Tubtara®** referred to in an adequate way.

Upset Stroke: Stroke (in mm) that should be set on the setting tool to give the **Tubtara®** referred to, the adequate deformation.

The mentioned values are average reference values only.
We strongly advise the customer to do his own tests in the proper material thickness and specific application.

Semi-hex parts have a setting force which is 10 to 15% lower than full hex or round parts but have the same fixation strength.

Check the installation tool's max. setting capacity, especially for M10 and M12.

High Strength Materials

- 23MnB4: +20% higher mechanical strength compared to C8C
- AlMg3,5: +20% higher mechanical strength compared to AlMg2,5

● HX/KX **Tubtara®** with O-ring seal under the head

Information about NBR O-Ring & compatibility with other products					
Shore Hardness	70	Aromatic Hydrocarbons	x	Lye	x
Hydraulic fluids	xxxx	Aliphatic Hydrocarbons	xxx	Chlorinated Hydrocarbons	x
Fuel Oils	xx	Water under 80°C	xxx	Ozone & Sunlight	x
Organic Oils	xxxx	Water over 80°C	x	Temperature range °C	-30 +120
Brake Fluid	-	Alcohols	xx	Electr. properties	-
Silicone & Grease	xx	Ketone	-	Compression sets	xxx
Gasoline	xxx	Acid (concentrated)	-	Flame resistance	No
Aromatic fluids up to 50 %	xx	Acid (diluted)	x	Kerosene	xxx

Key: xxxx very good --> x satisfactory - not suitable.
Seals in other materials like EPDM on request. Store in a dry and dark place (all boxes are marked)

● (H)DPX/HDKX **Tubtara®** with applied (chemical) seal under the head

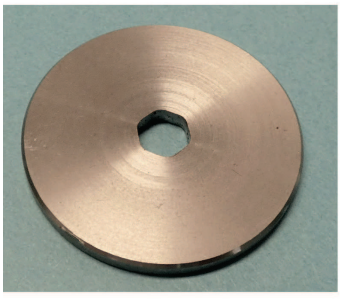
Several seal options are possible for our (H)DPX and HDKX series, depending on head shape and application requirements. For P (flat head) parts, we advise precote® 200 or Rimlex® 620B, or Rimlex® 310 for high temperature applications.

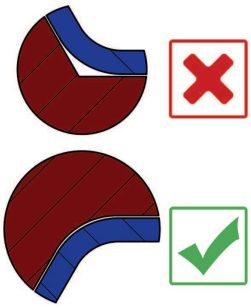
Our HDKX series with low profile head, feature a thin precote® 5 or 15 acrylate seal, but note that these require specific hole preparation to obtain a leakproof assembly (see below).

These seals are resistant to many automotive oils, antifreeze and transmission fluids, and ensure a leakproof assembly, if correctly installed. Technical data sheets are available on request.

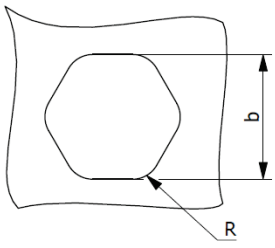
● Hole preparation for semi-hex HDKX + Precote® seal

To obtain an IP x7 leakproof assembly with semi-hex (stainless steel) HDKX series, the hexagonal holes need to be formed with a radius:





Radius hexagonal hole		
THREAD	$b^{+0,1}$	$R^{+/-0,05}$
M4	6,0	1,6
M5	7,0	1,8
M6	9,0	2,2
M8	11,0	2,7
M10	13,0	2,8

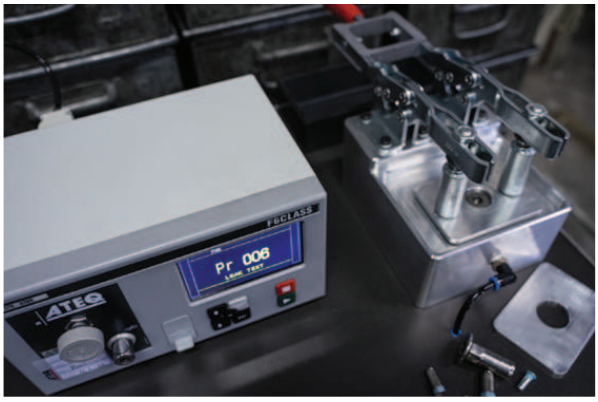


Testing of leakproof **Tubtara®** rivet nuts

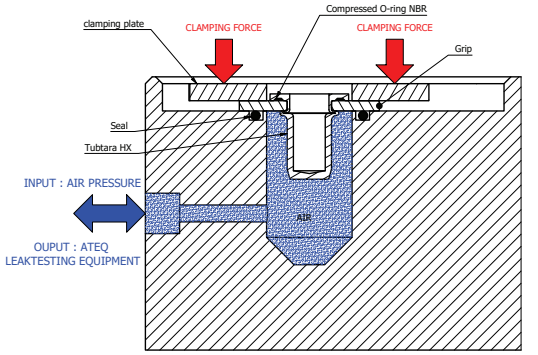
Together with ATEQ we developed a reliable test method for our watertight blind rivet nuts. We designed a housing, in which a test plate with an installed sealed rivet nut (no torque applied), is mounted and tightly clamped. The housing is connected to leak-detection equipment, generating a dedicated air pressure during a certain amount of time and for a specific part volume. Any decrease in pressure, however small, will be detected and compared to predefined parameters, which are calculated and correlated to verify that the rivet nut-plate assembly is in fact leaktight.

Following IEC 60529, an IPx7 classification means immersion for up to 30min. at a depth between 15 – 100cm. 1m water column = 100mbar, at DEJOND we test at 200mbar.

With the ATEQ leak testing equipment we measure a pressure drop ΔP in Pa, which can be converted into a leak (cm^3/min. or ml/min.) where air is allowed to pass through an opening but no water yet, until the surface tension of water is broken. The pressure drop threshold determination is a confidential ATEQ algorithm.



HX LEAKTEST SETUP WITH ATEQ EQUIPMENT



Setting forces for leakproof parts HX / KX, (H)DPX and HDKX

For optimal seal compression and UV-light shielding, we recommend a 10-20% higher setting force to ensure a leaktight assembly. Below reference values can vary depending on size, shape and seal material.

steel zinktop				
recommended setting force (kN) thread size	HX/KX	HDPX	DPX	HDKX
M4	-	7	9	-
M5	9,5	9,5	10	9,5
M6	16	15	15,5	16
M8	20	18	20	20
M10	24	22,5	24	24
M12	33			

stainless steel 304Cu				
recommended setting force (kN) thread size	HX/KX	HDPX	DPX	HDKX
M4	-	7,5	7,8	-
M5	11	10	11	11
M6	20	16	16,5	20
M8	24	19	21	24
M10	30	31	29	30
M12	42			

Conversion table

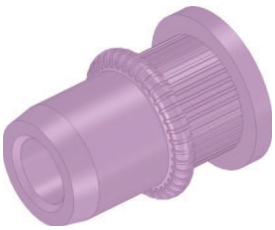
Multiply	by	To get
millimeter (mm)	.03937	inch (in)
inch (in)	25,4	millimeter (mm)
kilogram (kg)	2,2046	pound (lb)
pound (lb)	0,4536	kilogram (kg)
Newton (N)	0,2248	pound-force (lbf)
Newton metre (Nm)	8,8507	pound-inch (Lb-In)

3D drawings

See our website www.dejond.com and click on '3D drawings'

3D and 2D drawings available for all **Tubtara®** stainless steel blind rivet nuts:

- downloadable in installed or uninstalled condition
- user input option for exact grip
- multiple formats supported (DWG, STP, SolidWorks, Autodesk, Spaceclaim, AutoCAD, etc.)
- ability to insert **Tubtara®** CAD drawings directly into the product design



External website hosted by "Traceparts":

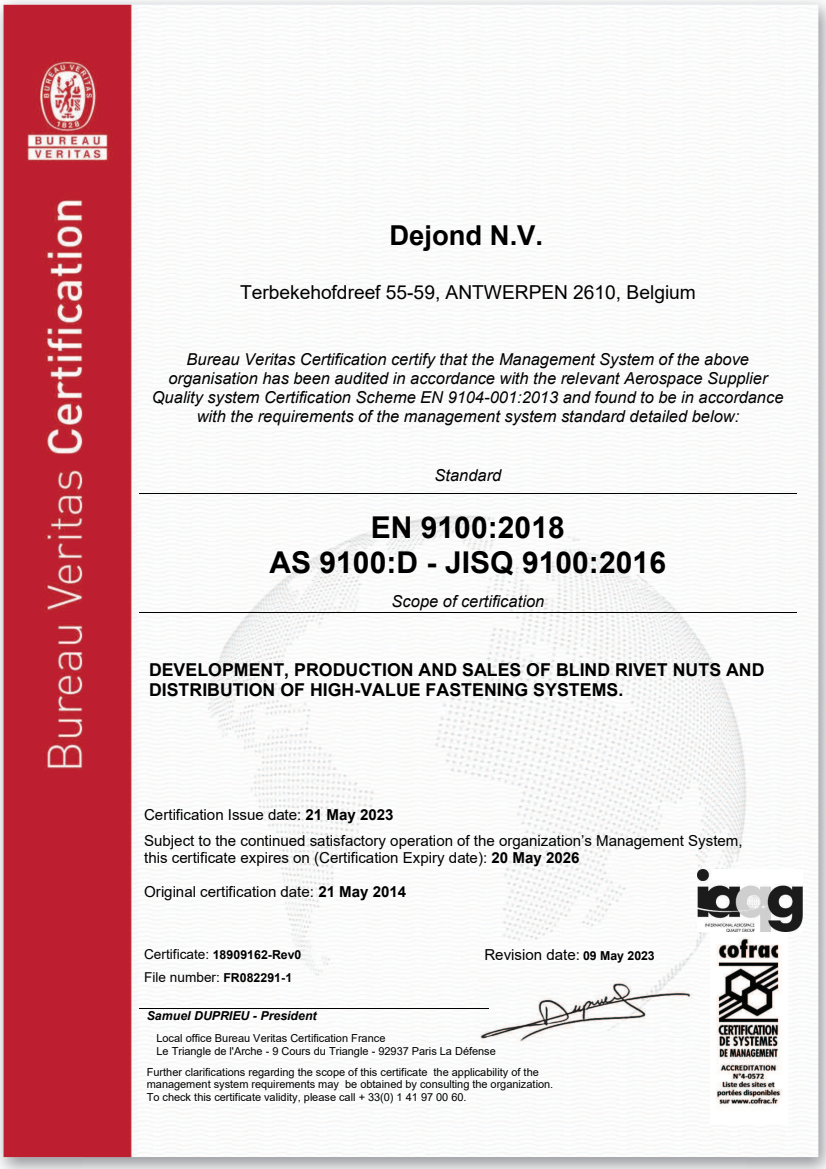
www.traceparts.com/els/dejond

Quality

Statements on Reach / RoHS / Conflict Minerals:

- see our website www.dejond.com
- contact our customer service for updated information.

EN 9100 - AS 9100 - JISQ 9100 certified



BUREAU VERITAS

Bureau Veritas Certification

Dejond N.V.

Terbekehofdreef 55-59, ANTWERPEN 2610, Belgium

Bureau Veritas Certification certify that the Management System of the above organisation has been audited in accordance with the relevant Aerospace Supplier Quality system Certification Scheme EN 9104-001:2013 and found to be in accordance with the requirements of the management system standard detailed below:

Standard

EN 9100:2018
AS 9100:D - JISQ 9100:2016

Scope of certification

DEVELOPMENT, PRODUCTION AND SALES OF BLIND RIVET NUTS AND DISTRIBUTION OF HIGH-VALUE FASTENING SYSTEMS.

Certification Issue date: **21 May 2023**

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on (Certification Expiry date): **20 May 2026**

Original certification date: **21 May 2014**

Certificate: **18909162-Rev0** Revision date: **09 May 2023**

File number: **FR082291-1**

Samuel DUPRIEU - President

Local office Bureau Veritas Certification France
Le Triangle de l'Arche - 9 Cours du Triangle - 92937 Paris La Défense

Further clarifications regarding the scope of this certificate the applicability of the management system requirements may be obtained by consulting the organization.
To check this certificate validity, please call + 33(0) 1 41 97 00 60.

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CERTIFICATION DE SYSTEMES DE MANAGEMENT
ACCREDITATION N°4-0572
Liste des sites et portées disponibles sur www.cofrac.fr