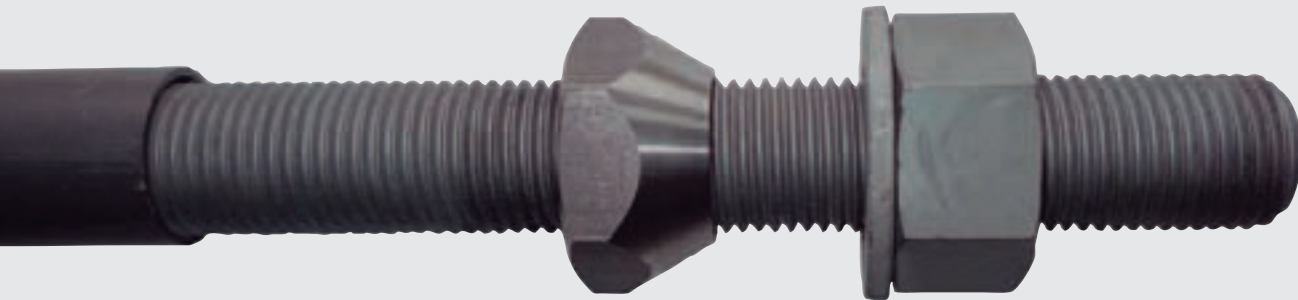
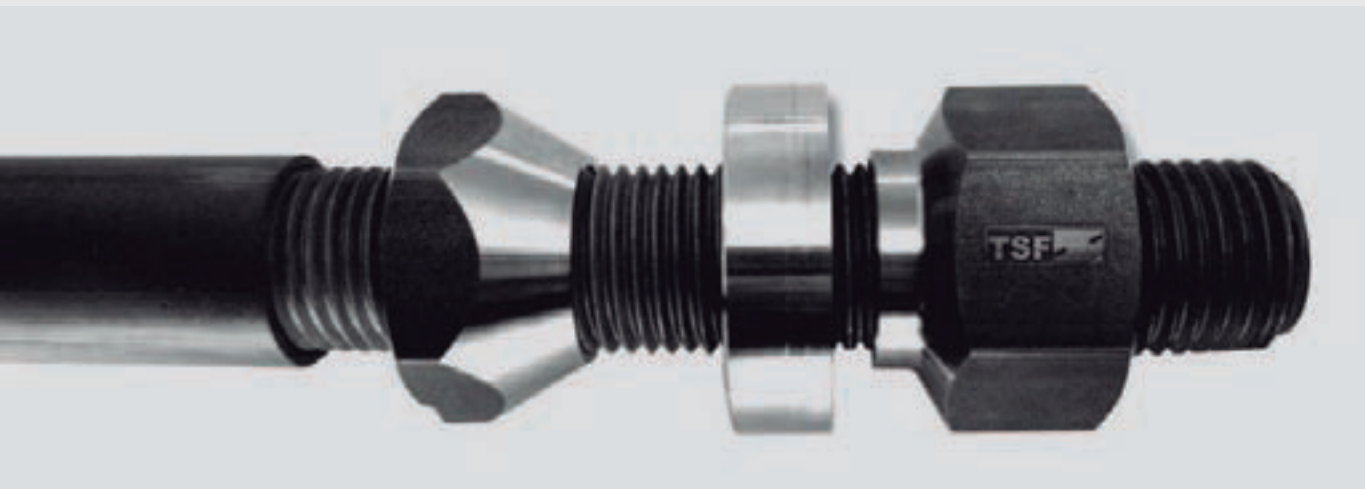




global fastening solutions
FOUNDATION ANCHOR BOLTS

automotive - **wind energy** - aeronautics - petrochemical - nuclear - **civil engineering** - rail - naval



TSF manufacture our own stud bolts;

thread rolling after heat treatment to warranty mechanical characteristics of material and geometrical requirements of the customer.

Different coating available, hot deep galvanizing, inorganic zinc flake coatings, temporary corrosion wax, etc...

Also we supply the studs with sleeve protector type: armaflex, pvc tube, according to each customer requirements.



Courtesy of Gamesa



Courtesy of AIR

Our Engineering Service proposes solutions for special applications, collaborating with our customers in their products development

Standard solutions

Stud bolts in cl.10.9 according to EN 1993-1-8 (Standard Metric sizes)

10,9 Bolts

According to EN 898 (Standard Metric sizes)

Metric	Pitch	Nominal stress area	Yield Strength 900 N/mm ²	TH Preload minimum guaranteed 900 N/mm	Weight
		mm ²	kN	kN	
M16	2	157	141,3	105,98	1,2
M18	2,5	192	172,8	129,60	1,5
M20	2,5	245	220,5	165,38	2,5
M22	2,5	303	272,7	204,53	3
M24	3	353	317,7	238,28	3,6
M27	3	459	413,1	309,83	3,9
M30	3,5	561	504,9	378,68	5,5
M33	3,5	694	624,6	468,45	6,7
M36	4	817	735,3	551,48	8
M39	4	976	878,4	658,80	9,4
M42	4,5	1121	1008,9	756,68	10,9
M45	4,5	1306	1175,4	881,55	12,5
M48	5	1478	1330,2	997,65	14,2
M52	5	1758	1582,2	1186,65	16,7
M56	5,5	2016	1814,4	1360,80	19,3
M60	5,5	2360	2124,0	1593,00	22,8
M64	6	2680	2412,0	1809,00	26
M68	6	3060	2754,0	2065,00	29,7



The **TSF anchor bolts** are assembled with nuts and washers according to standard EN4032, EN 14399, ISO 7089, DIN6319, DIN 6330B, tronco-conical nuts in class 10, and in TSF Solution with the TH Tension Holder.



Stud bolts in cl.10.9 according to ISO-898-1 (coarse pitch and fine pitch)



For pulled unions we propose our own system under patent of nut and washer named **TH Tension Holder**, through which it is controlled the pre-charge lose with a maximum of 25% on the basis of the yield strength value with less than 5% dispersion.

10,9 Bolts (coarse pitch)

According to ISO 898 (Standard Metric sizes)

Metric	Pitch	Nominal stress area	Yield Strength 940 N/mm ²	TH Preload minimum guaranteed 940 N/mm	Weight
		mm ²	kN	kN	
M16	2	157	14,58	110,69	1,3
M18	2,5	192	158,48	135,36	1,6
M20	2,5	245	230,30	172,73	2,5
M22	2,5	303	284,82	213,62	3
M24	3	353	331,82	248,87	3,6
M27	3	459	431,46	323,60	3,9
M30	3,5	561	527,34	395,51	5,5
M33	3,5	694	652,36	489,27	6,7
M36	4	817	767,98	575,99	8
M39	4	976	917,44	688,08	9,4
M42	4,5	1121	1052,80	789,60	10,9
M45	4,5	1306	1231,80	923,85	12,5
M48	5	1478	1381,80	1036,35	14,2
M52	5	1758	1654,40	1240,80	16,7
M56	5,5	2016	1908,20	1431,15	19,3
M60	5,5	2360	2218,40	1663,80	22,8
M64	6	2680	2519,20	1889,40	26
M68	6	3060	2876,40	2157,30	29,7

10,9 Bolts (fine pitch)

According to ISO 898-1 (Standard Metric sizes)

Metric	Pitch	Nominal stress area	Yield Strength 900 N/mm ²	TH Preload minimum guaranteed 900 N/mm	Weight
		mm ²	kN	kN	
M16	1,5	167	156,98	117,74	1,3
M18	2	204	191,76	143,82	1,6
M20	2	258	242,52	181,89	2,2
M22	2	318	298,92	224,19	2,7
M24	2	364	342,16	256,62	3,2
M27	2	496	466,24	349,68	4,5
M30	2	621	583,74	437,81	5,7
M33	2	761	715,34	536,51	7,1
M36	3	855	803,70	602,78	8,1
M39	3	1030	968,20	726,15	9,8
M42	3	1210	1137,40	853,05	11,6
M45	3	1400	1316,00	987,00	13,4
M48	3	1600	1504,00	1128,00	15,4
M52	3	1900	1786,00	1339,50	18,4
M56	4	2140	2011,60	1508,70	20,8
M60	4	2460	2312,40	1734,30	23,9
M64	4	2850	2679,00	2009,25	27,8
M68	4	3240	3045,60	2284,20	31,6



Our product is certified by Lloyd 's

achieving a great uniformity of the charges share in each of the anchor bolts and on the whole union.

TSF also supply flanges, leveling systems of plates and shims, couplers and any other parts under customer requirement.



TSF anchor bolts are dully conditioned in the adequate packing systems for road and sea transits and always adapting to our customer packing requirements.



TSF manufacture our own stud bolts; thread rolling after heat treatment to warranty mechanical characteristics of material and geometrical requirements of the customer.



global fastening solutions **FOUNDATION ANCHOR BOLTS**



Norte 2 4, Nuevo San Juan
76807 San Juan del Río,
Querétaro **México**
Tel.: + 52 55 5082 0185
infomx@tsftsh.com



MEXICO

GERMANY



Johannes - Obernburger - Strasse 14
63785 Obernburg, **Germany**
Tel: +49 6022 2655675
Fax: +49 6022 2655680
Mobil: +49 172 9716185
infode@tsftsh.com



Área Industrial Arazuri-Orcoyen.
31170 Arazuri, Navarra. **Spain**
Tel.: +34 948 324 420
Fax: +34 948 324 388
infoes@tsftsh.com

automotive - **wind energy** - aeronautics - petrochemical - nuclear - civil engineering - rail - naval

www.tsftsh.com