

1. TIGHTENING TORQUE VALUES FOR STEEL SCREWS



Use only half of the values shown in heated-up condition!

maximal tightening torque [Nm]									
metric regular thread ISO1502					metric fine thread ISO1502				
	6.9	8.8 / 1.4301	10.9	12.9		6.9	8.8 / 1.4301	10.9	12.9
M 4	2,4	2,9	4,1	4,9					
M 5	5,0	6,0	8,5	10					
M 6	8,5	10	14	17	M 8 x1	23	27	38	45
M 8	21	25	35	41	M 10 x1,25	44	52	73	88
M 10	41	49	6,9	83	M 12 x1,25	80	95	135	160
M 12	72	86	120	145	M 12 x1,5	76	90	125	150
M 14	115	135	190	230	M 14 x1,5	125	150	210	250
M 16	180	210	295	355	M 16 x1,5	190	225	315	380
M 18	245	290	405	485	M 18 x1,5	275	325	460	550
M 20	345	410	580	690	M 20 x1,5	385	460	640	770
M 22	465	550	780	930	M 22 x1,5	520	610	860	1050
M 24	600	710	1000	1200	M 24 x2	650	780	1100	1300
M 27	890	1050	1500	1800	M 27 x2	970	1150	1600	1950
M 30	1200	1450	2000	2400	M 30 x2	1350	1600	2250	2700



Tighten all screws in several steps and in crosswise (alternate) pattern.
Retighten all screws and nuts after heating-up.
Always use a torque wrench!
Lubrication (anti-seize) is recommended on all threads.

2. ASSEMBLY ORDER FOR PATTERNED BOLT CONNECTIONS

- screw on bolts in the order shown below with 30% of required torque
- retighten bolts with 60% of required torque
- retighten bolts with 100% of required torque
- retighten bolts again with 100% of required torque and repeat procedure until all screws do not turn anymore.



**Retighten all screws, nuts and metal heaterbands after heating-up.
Always use a torque wrench!
Lubrication (anti-seize) is recommended on all threads.**

