Grip Tolerances for HRC TCBs (using HRD Nut and 1 Washer)

BOLT SIZE	MIN	MAX
M12 X 30	13	11
M12 X 35	13	16
M12 X 40	13	21
M12 X 45	13	26
M12 X 50	18	31
M12 X 55	23	36
M12 X 65	33	46
M12 X 75	43	56
M16 X 40	15	16
M16 X 45	15	21
M16 X 50	15	26
M16 X 55	15	31
M16 X 60	15	36
M16 X 65	25	41
M16 X 70	30	46
M16 X 75	35	51
M16 X 80	40	56
M16 X 90	46	66
M16 X 100	57	76
M16 X 105	62	81
M16 X 110	67	86
M16 X 120	77	96
M16 X 130	87	106
M16 X 140	97	116
M16 X 150	107	126
M16 X 160	117	136
M16 X 170	127	146
TC Studs		
M16	up to	155

BOLT SIZE	MIN	MAX
M20 X 50	21	21
M20 X 55	21	26
M20 X 60	21	31
M20 X 65	21	36
M20 X 70	24	41
M20 X 75	27	46
M20 X 80	34	51
M20 X 85	39	56
M20 X 90	42	61
M20 X 95	49	66
M20 X 100	54	71
M20 X 105	59	76
M20 X 110	64	81
M20 X 115	69	86
M20 X 120	74	91
M20 X 125	79	96
M20 X 130	81	101
M20 X 135	86	106
M20 X 140	91	111
M20 X 145	96	116
M20 X 150	101	121
M20 X 155	106	126
M20 X 160	111	131
M20 X 165	116	136
M20 X 175	126	146
M20 X 185	136	156
M20 X 200	151	171
M20 X 220	171	191
TC Studs		
M20	up to	245

BOLT SIZE	MIN	MAX
M22 X 55	23	22
M22 X 60	23	27
M22 X 65	21	32
M22 X 70	21	37
M22 X 75	27	42
M22 X 80	30	47
M22 X 85	35	52
M22 X 90	40	57
M22 X 95	45	62
M22 X 100	50	67
M22 X 105	55	72
M22 X 110	60	77
M22 X 120	70	87
M22 X 130	80	97
M22 X 140	90	107
M22 X 150	100	117
M22 X 160	110	127
M22 X 170	120	137
M22 X 200	150	167
M22 X 210	160	177
TC Studs		
M22	up to	285

BOLT SIZE	MIN	MAX
M24 X 60	25	25
M24 X 65	25	30
M24 X 70	25	35
M24 X 75	26	40
M24 X 80	26	45
M24 X 85	31	50
M24 X 90	35	55
M24 X 95	41	60
M24 X 100	45	65
M24 X 105	51	70
M24 X 110	55	75
M24 X 115	61	80
M24 X 120	64	85
M24 X 125	71	90
M24 X 130	71	95
M24 X 140	81	105
M24 X 150	91	115
M24 X 160	101	125
M24 X 170	111	135
M24 X 180	121	145
M24 X 190	131	155
M24 X 200	141	165
M24 X 210	151	175
M24 X 220	161	185
M24 X 230	171	195
M24 X 240	181	205
M24 X 260	201	225
M24 X 280	221	245
TC Studs		
M24	up to	485

BOLT SIZE	MIN	MAX
M27 X 70	30	31
M27 X 80	29	41
M27 X 90	32	51
M27 X 100	42	61
M27 X 110	52	71
M27 X 120	61	81
M27 X 130	71	91
M27 X 140	81	101
M27 X 150	91	111
M27 X 160	101	121
M27 X 170	111	131
M27 X 180	121	141
M27 X 190	131	151
M27 X 200	141	161
M27 X 220	161	181
M27 X 240	181	201
TC Studs		
M27	up to	280

BOLT SIZE	MIN	MAX
M30 X 80	22	38
M30 X 90	32	48
M30 X 100	42	58
M30 X 110	52	68
M30 X 120	62	78
M30 X 130	72	88
M30 X 140	82	98
M30 X 150	92	108
M30 X 160	102	118
M30 X 170	112	128
M30 X 180	122	138
M30 X 190	132	148
M30 X 200	142	158
M30 X 210	152	168
M30 X 220	162	178
M30 X 240	182	198
M30 X 260	202	218
M30 X 280	222	238
TC Studs		
M30	up to	275

BOLT SIZE	MIN	MAX
M36 X 100	24	47
M36 X 120	44	67
M36 X 140	64	87
M36 X 160	84	107
M36 X 170	94	117
M36 X 180	104	127
M36 X 190	114	137
M36 X 200	124	147
M36 X 210	134	157
M36 X 220	144	167
M36 X 240	164	187
M36 X 260	184	207
M36 X 280	204	227
TC Studs		
M36	up to	307

Note: The revision of EN 14399-10 due to be published in 2017 has been modified to allow short bolts to be fully threaded.
This will remove the anomaly detailed below and will apply to bolt lengths shown above the heavy line.
The highlighted minimum grips will be amended once all old stock is exhausted and the table will be re-issued.

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This grip tolerance chart has been compiled to meet the technical requirements of EN 1090-2 section 8.2.2 (see notes below)
This has resulted in an anomaly whereby shorter bolt lengths, in order to meet these requirements, have a similar minimum and maximum value or even a minimum value that is too large - in these cases additional washers either under the bolt head or the nut will need to be used to reduce the minimum grip value.
Obviously this is an oversight as far as the standard is concerned therefore "common sense" may need to be used in such situations.

Notes from BS EN 1090-2:2008 section 8.2.2

Reference Min Grip: For preloaded bolts, at least four full threads (in addition to the thread run out) shall remain clear between the bearing surface of the nut and the unthreaded part of the shank.
Reference Max Grip: The length of protrusion shall be at least the length of one thread pitch measured from the outer face of the nut to the end of the bolt