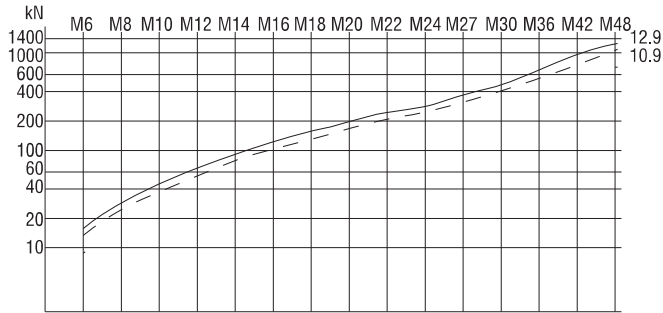


CİVATALAR

BOLTS



		Kalite Dayanım Sınıfları Quality Strength Classes		
		10	10.9	12.9
DIN 787		-	-	X
DIN 6379		-	X	-
DIN 6330B DIN 6331 Nr. 1830		X	-	-
Sembol gerilme mukavemeti [N/mm ²] Nominal tensile strength [N/mm ²]		1000	1000	1200
Minimum akma noktası [N/mm ²] Minimum yield point [N/mm ²]		-	900	1080



Standart Anahtar ile Öngerilme Kuvveti
Pre-stress Force With Standard Spanner

Çizelge Özelliklerinin Açıklanması:

- **İzin Verilen Civata Yüğü** : Maksimum gerilim yükü ve vida hesabı alınarak vurgu yapıldı. Aktif kuvvetler, akma noktası, sadece güvenlik için %80 kullanılır.
- **İzin Verilen Ön Gerilme Kuvveti** : Yük, vida ve somun uygulamasında, tablodaki rakamların sürtünmeye karşılık, itme yüzeyleri ve parçanın $\mu = 0,14$ sürtünme kat sayısı geçerlidir.
- **İzin Verilen Ön Gerilme Kuvveti Yağlı Hesaplama** : Yük, vida ve somun uygulamasında, parçanın $\mu = 0,1$ sürtünme kat sayısı hesaplanmalıdır.

Explanation Of Table Characteristics:

- **Permissible Bolt Load**: is the maximum tension load, the screw can be stressed with taking into account all active forces. The yield point is only utilized to 80% for safety.
- **Permissible Pre-stress Force**: is the load, the screw can be pre-stressed at most, when tightening the matching nut. Figures of table are valid for a friction of $\mu = 0,14$ in thrust faces and thread, corresponding to the friction of greased medium faces.
- **Allowed pretension with oil calculation**: At an application with screws and nuts, the load must be calculated with a $\mu = 0,1$ frictional factor of the workpiece.

Civata ve Somun İçin Mukavemet 10.9 ve 12.9 Kalite ve Momentleri / Strength Figures And Torques For Bolts And Nuts:

Diş / Threads	Kalite Quality	M6	M8	M10	M12	M14	M16	M18	M20	M22	M24	M27	M30	M36	M42	M48	
Hatve / Pitch of thread	mm	1	1.25	1.50	1.75	2	2	2.50	2.50	2.50	3	3	3.50	4	4.50	5	
Somun / Nuts																	
Sertlik / Hardness DIN 6330 / 6331 / 6334	HRC	10	28-32														
Test Kuvveti (AS x Sp) Test force DIN EN 20898-2	kN	10	20.9	38.1	60	88	121	165	203	260	321	374	486	595	866	-	-
"T" Pabuç DIN 508 / Nr. 1710 Nuts for T-Slots DIN 508 / Nr. 1710																	
Ölçü / Size		M6x8	M8x10	M10x12	M12x14	-	M16x18	-	M20x22	-	M24x28	-	M30x36	M36x42	M42x48	M48x54	
Sertlik / Hardness	HRC	22 - 30															
Test Kuvveti / Test Force	kN	16	29	46	67	-	128	-	196	-	282	-	448	653	653	653	
Civata / Bolts																	
Sertlik / Hardness	HRC	10.9	32 - 39														
		12.9	39 - 44														



Sıkma Verileri / Tightening Data																	
Minimum Kırılma Kuvveti Minimum Breaking Force (AS x Rm)	kN	10.9	21	38	60	88	(120)	(163)	(200)	(255)	(315)	(367)	(477)	(583)	(850)	(1165)	(1531)
İzin verilen civata yükü max. Verim noktası % 80	kN	10.9	14	27	43	63	86	118	144	184	228	265	345	421	614	843	1107
İzin verilen ön gerilme kuvveti max. Verim % 90 Nokta ve sürtünme $\mu = 0,14$	kN	10.9	17	30	48	70	(96)	(130)	(159)	(203)	(252)	(293)	(381)	(466)	(678)	(930)	(1222)
Gerilme öncesi midede edilen tork değeri Kuvvet ve sürtünme $\mu = 0,14$	Nm	10.9	14	36	67	120	191	302	405	580	772	994	1455	1930	3378	5415	8162
Midede edilen kol uzunluğu ön gerilme kuvveti	mm	10.9	42	90	175	300	450	700	920	1200	1560	-	-	-	-	-	-
Standart anahtar ile tork değeri elde etmek mümkündür	Nm	-	60	80	90	100	110	125	140	150	170	185	225	240	300	330	410
Öngerilme kuvveti	kN	-	54	53	48	43	43	43	42	42	43	45	43	45	46	50	
Bu öngerilme kuvveti ile tehlikesi var		10.9	Kırılma breakage														
		12.9	kalıcı deformasyon permanent deformation														
			hareket kuvvetinin başlangıcında bağlama ünitesinin gevşemesi loosening of clamping unit at start of motive force														



As = Sembolik kesit mm²
As = Nominal cross section in mm²

Sp = Min. N / mm² cinsinden sıkma kuvveti
Sp = min. Clamping force in N/mm²

Rm = Min. N/mm² yük faktörü
Rm = min. load factor in N/mm²

μ = sürtünme
 μ = friction

Referans Nr.	dx 	x L	b	a	e	k	Sıkma Verileri Tightening Data		
							Nm	kN	
1590-0606025	M6x6	x25	15	5.7	10	4	17	17	8
1590-0606040		x40	28						11
1590-0606063		x63	40						15
1590-0808032	M8x8	x32	22	7.7	12	6	43	32	13
1590-0808050		x50	35						16
1590-0808080		x80	50						20
1590-1010040	M10x10	x40	23	9.7	15	6	79	51	35
1590-1010063		x63	45						45
1590-1010080		x80	50						60
1590-1010100	x100	60	70						
1590-1012050	M10x12	x50	35	11.7	18	7	79	51	50
1590-1012063		x63	40						60
1590-1012080		x80	55						65
1590-1012100		x100	60						75
1590-1012125		x125	75						90
1590-1012160		x160	90						105
1590-1012200	x200	120	120						
1590-1212050	M12x12	x50	35	11.7	18	7	141	74	65
1590-1212063		x63	40						70
1590-1212080		x80	55						80
1590-1212100		x100	65						100
1590-1212125		x125	75						110
1590-1212160		x160	100						140
1590-1212200	x200	120	160						
1590-1214050	M12x14	x50	35	13.7	22	8	141	74	80
1590-1214063		x63	45						90
1590-1214080		x80	55						100
1590-1214100		x100	65						110
1590-1214125		x125	75						135
1590-1214160		x160	100						160
1590-1214200	x200	120	180						
1590-1416063	M14x16	x63	45	15.7	25	9	223	101	115
1590-1416080		x80	55						140
1590-1416100		x100	65						160
1590-1416125		x125	75						180
1590-1416160		x160	100						220
1590-1416200		x200	120						255
1590-1416250	x250	150	300						
1590-1616063	M16x16	x63	45	15.7	25	9	354	138	140
1590-1616080		x80	55						160
1590-1616100		x100	65						190
1590-1616125		x125	85						225
1590-1616160		x160	100						270
1590-1616200		x200	120						315
1590-1616250	x250	150	380						
1590-1618063	M16x18	x63	45	17.7	28	10	354	138	170
1590-1618080		x80	55						185
1590-1618100		x100	65						220
1590-1618125		x125	85						245
1590-1618160		x160	100						295
1590-1618200		x200	120						340
1590-1618250	x250	150	405						
1590-1820080	M18x20	x80	55	19.7	32	12	474	169	260
1590-1820100		x100	65						290
1590-1820125		x125	85						340
1590-1820160		x160	110						390
1590-1820200		x200	125						455
1590-1820250		x250	150						535
1590-1820315	x315	190	650						
1590-2020080	M20x20	x80	55	19.7	32	12	679	215	300
1590-2020100		x100	65						330
1590-2020125		x125	85						380
1590-2020160		x160	110						450
1590-2020200		x200	125						535
1590-2020250		x250	160						635
1590-2020315	x315	190	760						
1590-2022080	M20x22	x80	55	21.7	35	14	679	215	345
1590-2022100		x100	65						380
1590-2022125		x125	85						435
1590-2022160		x160	110						500
1590-2022200		x200	125						590
1590-2022250		x250	150						695
1590-2022315	x315	190	820						

Referans Nr.	dx 	x L	b	a	e	k	Sıkma Verileri Tightening Data		
							Nm	kN	
1590-2224080	M22x24	x80	55	23.7	40	16	903	266	465
1590-2224100		x100	65						515
1590-2224125		x125	85						580
1590-2224160		x160	110						660
1590-2224200		x200	125						775
1590-2224250		x250	150						805
1590-2224315	x315	190	1050						
1590-2424100	M24x24	x100	70	23.7	40	16	1163	310	550
1590-2424125		x125	85						630
1590-2424160		x160	110						725
1590-2424200		x200	125						850
1590-2424250		x250	150						990
1590-2424315		x315	190						1180
1590-2424400	x400	240	1410						
1590-2428100	M24x28	x100	70	27.7	44	18	1163	310	660
1590-2428125		x125	85						730
1590-2428160		x160	110						820
1590-2428200		x200	125						950
1590-2428250		x250	150						1090
1590-2428315		x315	190						1300
1590-2428400	x400	240	1530						
1590-2428500	x500	290	1800						
1590-3036125	M30x36	x125	80	35.6	54	22	2258	493	1280
1590-3036160		x160	110						1440
1590-3036200		x200	135						1620
1590-3036250		x250	150						1880
1590-3036315		x315	200						2150
1590-3036500		x500	300						3010
1590-3642160	M36x42	x160	100	41.6	65	26	3953	719	2260
1590-3642250		x250	175						2890
1590-3642400		x400	250						4010
1590-3642600		x600	340						5900
1590-4248160	M42x48	x160	100	47.6	75	30	6337	986	3550
1590-4248250		x250	175						4530
1590-4248400		x400	250						6160

DIN 787
Ürün Nr. 1590 T-Ayaklı Saplama

- Kalite 12,9
- Siyah kaplama

Product Nr. 1590 T-Slot Bolt

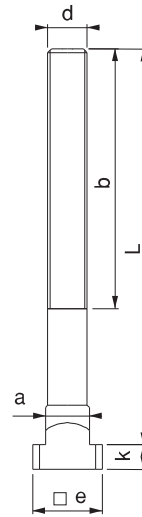
- Quality 12,9
- Black coating







Loctite 8150

Not: 150 °C üzerindeki ortamlarda sıkma işlemi yapılırken dişlerin üzerine Loctite 8150 kullanılır.

Note: Environments on the 150 °C when clamping action on the thread Loctite 8150 is used.



Referans Nr.	dx 	x L	b	a	e	k	Sıkma Verileri		
							Nm	kN	
1610-0606025	M6x6	x25	15	5.7	10	4	17	17	19
1610-0606040		x40	28						25
1610-0606063		x63	40						36
1610-0808032	M8x8	x32	22	7.7	12	6	43	32	39
1610-0808050		x50	35						45
1610-0808080		x80	50						56
1610-1010040	M10x10	x40	23	9.7	15	6	79	51	65
1610-1010063		x63	45						80
1610-1010080		x80	50						90
1610-1010100	x100	60	110						
1610-1012050	M10x12	x50	35	11.7	18	7	79	51	85
1610-1012063		x63	40						95
1610-1012080		x80	55						100
1610-1012100		x100	60						110
1610-1012125		x125	75						125
1610-1012160		x160	90						140
1610-1012200	x200	120	160						
1610-1212050	M12x12	x50	35	11.7	18	7	141	74	120
1610-1212063		x63	40						128
1610-1212080		x80	55						140
1610-1212100		x100	65						160
1610-1212125		x125	75						170
1610-1212160		x160	100						195
1610-1212200		x200	120						220
1610-1214050		M12x14	x50						35
1610-1214063	x63		45	150					
1610-1214080	x80		55	155					
1610-1214100	x100		65	175					
1610-1214125	x125		75	195					
1610-1214160	x160		100	220					
1610-1214200	x200	120	240						
1610-1416063	M14x16	x63	45	15.7	25	9	223	101	200
1610-1416080		x80	55						230
1610-1416100		x100	65						245
1610-1416125		x125	75						270
1610-1416160		x160	100						310
1610-1416200		x200	120						340
1610-1416250		x250	150						390
1610-1616063		M16x16	x63						45
1610-1616080	x80		55	285					
1610-1616100	x100		65	310					
1610-1616125	x125		85	345					
1610-1616160	x160		100	385					
1610-1616200	x200		120	435					
1610-1616250	x250	150	505						
1610-1618063	M16x18	x63	45	17.7	28	10	354	138	290
1610-1618080		x80	55						305
1610-1618100		x100	65						340
1610-1618125		x125	85						370
1610-1618160		x160	100						415
1610-1618200		x200	120						460
1610-1618250	x250	150	525						
1610-1820080	M18x20	x80	55	19.7	32	12	474	169	405
1610-1820100		x100	65						435
1610-1820125		x125	85						480
1610-1820160		x160	110						535
1610-1820200		x200	125						610
1610-1820250		x250	150						680
1610-1820315	x315	190	790						
1610-2020080	M20x20	x80	55	19.7	32	12	679	215	480
1610-2020100		x100	65						515
1610-2020125		x125	85						570
1610-2020160		x160	110						635
1610-2020200		x200	125						725
1610-2020250		x250	160						820
1610-2020315	x315	190	950						
1610-2022080	M20x22	x80	55	21.7	35	14	679	215	530
1610-2022100		x100	65						565
1610-2022125		x125	85						620
1610-2022160		x160	110						690
1610-2022200		x200	125						775
1610-2022250		x250	150						880
1610-2022315	x315	190	1050						

Referans Nr.	dx 	x L	b	a	e	k	Sıkma Verileri		
							Nm	kN	
1610-2224080	M22x24	x80	55	23.7	40	16	903	266	700
1610-2224100		x100	65						740
1610-2224125		x125	85						805
1610-2224160		x160	110						890
1610-2224200		x200	125						1000
1610-2224250		x250	150						1115
1610-2224315	x315	190	1280						
1610-2424100	M24x24	x100	70	23.7	40	16	1163	310	885
1610-2424125		x125	85						970
1610-2424160		x160	110						1060
1610-2424200		x200	125						1180
1610-2424250		x250	150						1320
1610-2424315		x315	190						1515
1610-2424400	x400	240	1750						
1610-2428100	M24x28	x100	70	27.7	44	18	1163	310	1000
1610-2428125		x125	85						1065
1610-2428160		x160	110						1150
1610-2428200		x200	125						1280
1610-2428250		x250	150						1425
1610-2428315		x315	190						1640
1610-2428400	x400	240	1870						
1610-2428500	x500	290	2170						
1610-3036125	M30x36	x125	80	35.6	54	22	2258	493	1900
1610-3036160		x160	110						2065
1610-3036200		x200	135						2250
1610-3036250		x250	150						2500
1610-3036315		x315	200						2770
1610-3036500		x500	300						3630
1610-3642160	M36x42	x160	100	41.6	65	26	3953	719	3310
1610-3642250		x250	175						3930
1610-3642400		x400	250						5010
1610-3642600		x600	340						6900
1610-4248160	M42x48	x160	100	47.6	75	30	6337	986	4600
1610-4248250		x250	175						5600
1610-4248400		x400	250						7200

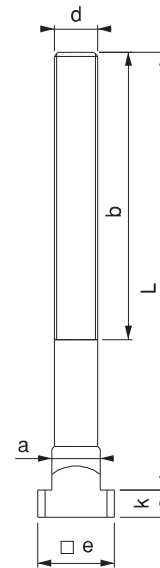
DIN 787

Ürün Nr. 1610 Somunlu Pullu T-Ayaklı Saplama

- Kalite 12,9
- Siyah kaplama

Product Nr. 1610 T-Slot Bolt with Nut and Washer

- Quality 12,9
- Black coating





Not: 150 °C üzerindeki ortamlarda sıkma işlemi yapılırken dişlerin üzerine Loctite 8150 kullanılır.



Loctite 8150

Note: Environments on the 150 °C when clamping action on the thread Loctite 8150 is used.

Referans Nr.	dx  xL	a	e	k	h-H	e1	e2	c	s	f	sw	Sıkma Verileri Tightening Data		
												Nm	kN	
1630-2022200	M20x22x200	21.7	35	14	25-75	49	69	92	12	30	30	679	215	1635
1630-2022250	M20x22x250	21.7	35	14	70-120	49	69	92	12	30	30	679	215	1720
1630-2424200	M24x24x200	23.7	40	16	25-75	53	74	92	12	30	36	1163	310	2075
1630-2424250	M24x24x250	23.7	40	16	70-120	53	74	92	12	30	36	1163	310	2250
1630-2428200	M24x28x200	27.7	44	18	25-75	53	74	92	12	30	36	1163	310	2180
1630-2428250	M24x28x250	27.7	44	18	70-120	53	74	92	12	30	36	1163	310	2340
1630-3036200	M30x36x200	35.6	54	22	25-75	68	88	94	14	30	46	2258	493	3660
1630-3036250	M30x36x250	35.6	54	22	70-120	68	88	94	14	30	46	2258	493	3910

Ürün Nr. 1630 Kombine T-Ayaklı Saplama

- Ağır preslerde, büyük kalıplarda çalışma esnasında vibrasyondan kaynaklanan olabilecek gevşemeyi somunun kontra sıkma yapısından dolayı önler
- Kalite 12.9
- Siyah kaplama

Product Nr. 1630 Combined T-Slot Bolt

- Because of it's contra tightening structure, it prevents loosening which may be generated by the vibration during working with heavy presses and big moulds.
- Quality 12.9
- Black coating

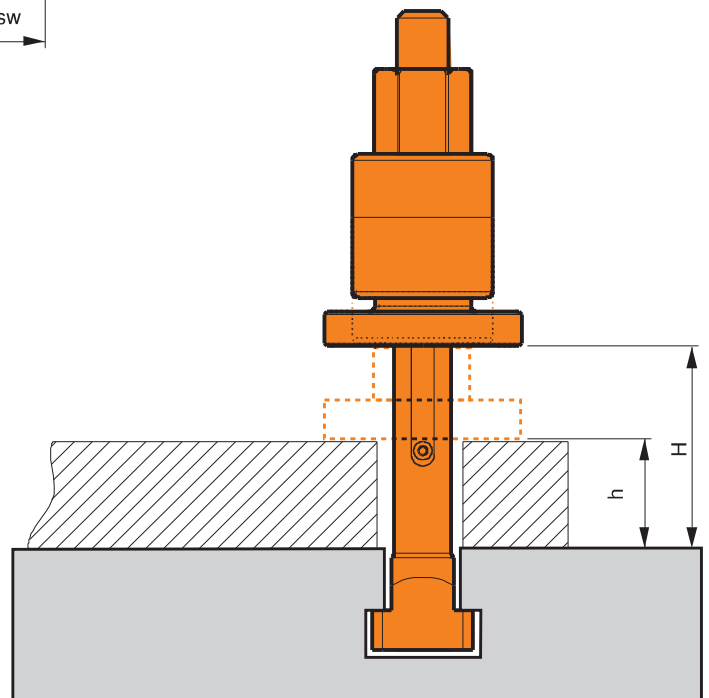
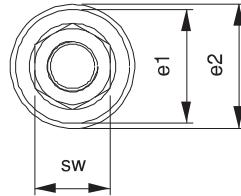
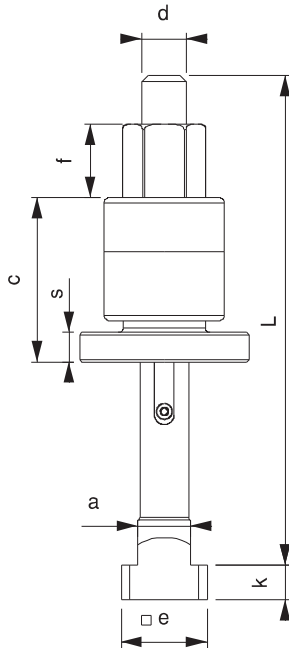



Not: 150 °C üzerindeki ortamlarda sıkma işlemi yapılırken dişlerin üzerine Loctite 8150 kullanılır.

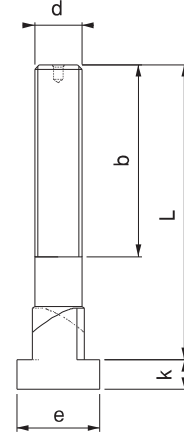
Note: Environments on the 150 °C when clamping action on the thread Loctite 8150 is used.



Loctite
8150



Referans Nr.	dx	x L	b	a	e	k	Sıkma Verileri Tightening Data		
							Nm	kN	
1650-1214050		x50	35						70
1650-1214080	M12x14	x80	55	13.7	22	8	141	74	100
1650-1214125		x125	75						120
1650-1618063		x63	45						160
1650-1618100	M16x18	x100	65	17.7	28	10	354	138	220
1650-1618160		x160	100						280
1650-2022080		x80	55						330
1650-2022125	M20x22	x125	85	21.7	35	14	679	215	430
1650-2022200		x200	120						570
1650-2428100		x100	70						650
1650-2428125	M24x28	x125	85	27.7	44	18	1163	310	770
1650-2428250		x250	150						1150

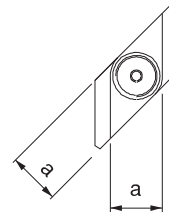


Ürün Nr. 1650 Dereceli T-Ayaklı Saplama

- T-Kanal pleytlerde üstten T-Kanala girip bağlama özelliği vardır
- Kalite 12.9
- Siyah kaplama

Product Nr. 1650 Graded T-Slot Bolt

- In T-Slot plates it has the feature of making the coupling by entering T-Slot the top.
- Quality 12.9
- Black coating




Not: 150 °C üzerindeki ortamlarda sıkma işlemi yapılırken dişlerin üzerine Loctite 8150 kullanılır.



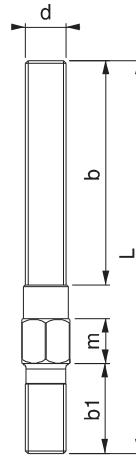
Loctite
8150

Note: Environments on the 150 °C when clamping action on the thread Loctite 8150 is used.

Referans Nr.	d	L	b	b1	m	sw	Sıkma Verileri Tightening Data		
							Nm	kN	
1670-12130		130	65						160
1670-12160	M12	160	90	24	14	14	120	63	185
1670-14130		130	65						216
1670-14160	M14	160	90	28	15	15	191	86	246
1670-16140		140	70						310
1670-16160	M16	160	95	32	16	17	302	118	340
1670-18150		150	70						395
1670-18180	M18	180	95	35	19	19	405	144	450
1670-20150		150	70						520
1670-20180	M20	180	95	40	22	22	580	184	575
1670-22150		150	70						610
1670-22180	M22	180	95	40	22	24	772	228	705
1670-24170		170	75						875
1670-24205	M24	205	105	47	22	27	994	265	990
1670-24250		250	140						1125
1670-30250		250	135						1950
1670-30315	M30	315	195	55	32	36	1930	421	2260

Anahtar Ağızlı Saplama

Wrench Mouth Stud



Ürün Nr. 1670 Anahtar Ağızlı Saplama

- Kullanım alanı; Enjeksiyon makinalarında ve M12-14-16-18-20-22-24-30 diş açılmış pleytlerde kullanılır.
- Kalite 10.9
- Siyah kaplama

Product Nr. 1670 Wrench Mouth Stud

- Area of Use: This stud is used in injection machines and in plates with M12-14-16-18-20-22-24-30 threads
- Quality 10.9
- Black coating





Loctite
8150

Not: 150 °C üzerindeki ortamlarda sıkma işlemi yapılırken dişlerin üzerine Loctite 8150 kullanılır.

Note: Environments on the 150 °C when clamping action on the thread Loctite 8150 is used.



Referans Nr.	d x L	b1	b	Sıkma Verileri Tightening Data		
				Nm	kN	
1690-08040 1690-08063 1690-08080 1690-08100 1690-08125 1690-08160	M8 x40 x63 x80 x100 x125 x160	11	20 40 50 63 75 100	36	27	10 15 20 30 35 45
1690-10050 1690-10063 1690-10080 1690-10100 1690-10125 1690-10160 1690-10200	M10 x50 x63 x80 x100 x125 x160 x200	13	25 32 50 63 75 100 125	67	43	20 25 35 45 55 70 95
1690-12050 1690-12063 1690-12080 1690-12100 1690-12125 1690-12160 1690-12200	M12 x50 x63 x80 x100 x125 x160 x200	15	25 32 50 63 75 100 125	120	63	35 40 55 70 90 115 140
1690-14063 1690-14080 1690-14100 1690-14125 1690-14160 1690-14200 1690-14250	M14 x63 x80 x100 x125 x160 x200 x250	17	32 50 63 75 100 125 160	191	86	60 75 95 120 150 195 240
1690-16063 1690-16080 1690-16100 1690-16125 1690-16160 1690-16200 1690-16250 1690-16315 1690-16500	M16 x63 x80 x100 x125 x160 x200 x250 x315 x500	19	32 50 63 75 100 125 160 180 315	302	118	85 105 130 160 205 260 325 405 650
1690-18080 1690-18100 1690-18125 1690-18160 1690-18200 1690-18250 1690-18315	M18 x80 x100 x125 x160 x200 x250 x315	23	50 60 75 100 125 150 180	405	144	130 160 200 260 320 400 510
1690-20080 1690-20100 1690-20125 1690-20160 1690-20200 1690-20250 1690-20315 1690-20400 1690-20500	M20 x80 x100 x125 x160 x200 x250 x315 x400 x500	27	32 60 70 100 125 160 200 250 315	580	184	155 200 250 330 400 510 640 815 1020
1690-22100 1690-22125 1690-22160 1690-22200 1690-22250 1690-22315 1690-22400	M22 x100 x125 x160 x200 x250 x315 x400	31	45 70 100 125 160 180 250	772	228	250 305 400 500 620 780 1010
1690-24100 1690-24125 1690-24160 1690-24200 1690-24250 1690-24315 1690-24400 1690-24500 1690-24630	M24 x100 x125 x160 x200 x250 x315 x400 x500 x630	35	45 70 100 125 160 200 250 315 315	994	265	290 365 470 580 730 920 1170 1470 1860
1690-30125 1690-30200 1690-30250 1690-30315 1690-30500 1690-30700 1690-301000	M30 x125 x200 x250 x315 x500 x700 x1000	43	56 125 160 200 315 400 400	1930	421	570 910 1150 1435 2315 3215 4700

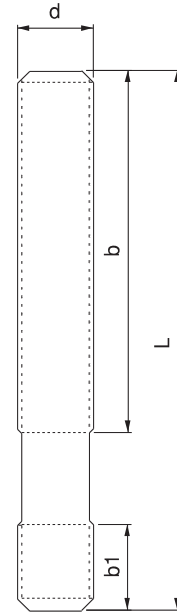
Referans Nr.	d x L	b1	b	Sıkma Verileri Tightening Data		
				Nm	kN	
1690-36160 1690-36200 1690-36250 1690-36315 1690-36400 1690-36500 1690-36700	M36 x160 x200 x250 x315 x400 x500 x700	51	80 125 160 200 250 315 400	3378	614	1100 1340 1710 2150 2700 3450 4750
1690-42315 1690-42400 1690-42500	M42 x315 x400 x500	59	200 250 315	5415	843	2950 3750 4690

DIN 6379
Ürün Nr. 1690 Düz Saplama

- Kalite 10.9
- Siyah kaplama

Product Nr. 1690 Straight Stud

- Quality 10.9
- Black coating



Not: 150 °C üzerindeki ortamlarda sıkma işlemi yapılırken dişlerin üzerine Loctite 8150 kullanılır,

Note: Environments on the 150 °C when clamping action on the thread Loctite 8150 is used.


 Loctite
8150