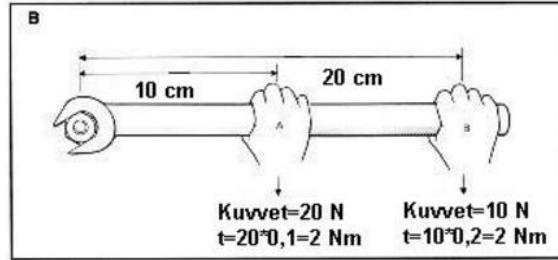
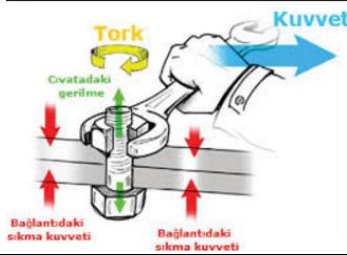


Doğru sıkıştırma:

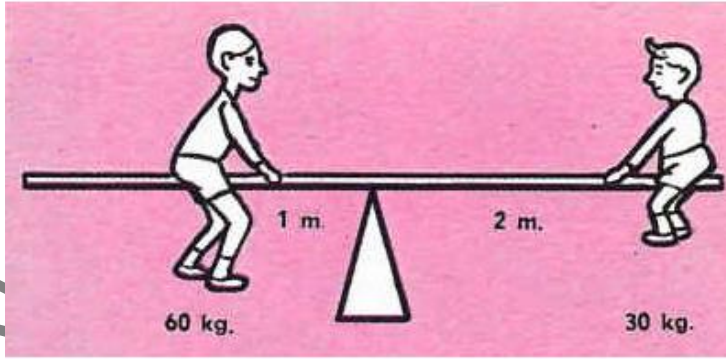
- Cıvata ve ürünleri **elastik sınırları** içinde kullanmaktır.
- **Vibrasyon veya şok** gibi dış kuvvetler olsa bile **sınır değerinin aşılmamasıdır**.
- **Gevşemenin önlenmesi için yeterli kuvvetin** uygulanmasıdır.

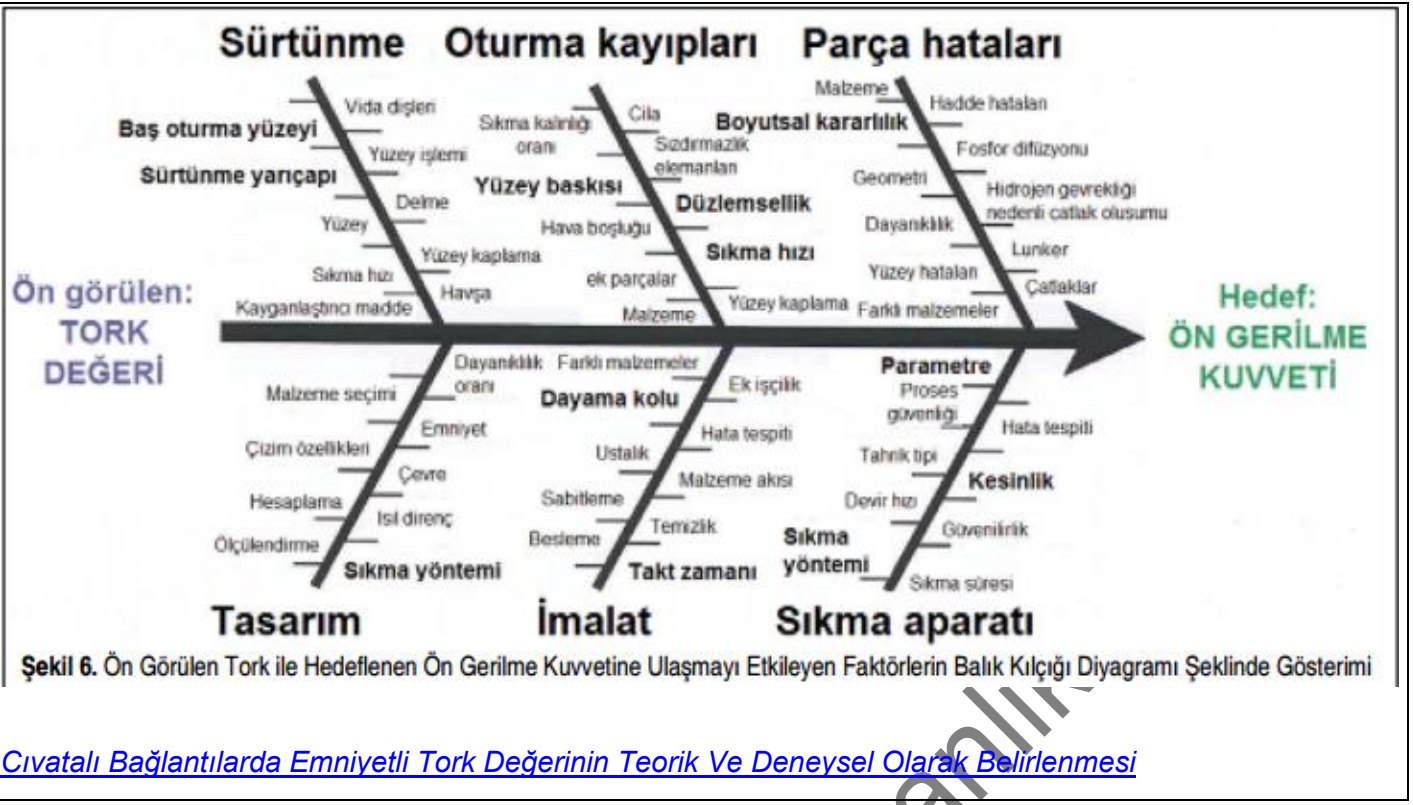
Doğru yeniden-sıkıştırma:

- **Vibrasyon veya şok** gibi dış kuvvetler **nedeniyle gevşeyen cıvatanın ilk sıkılığına, ilk torkunu aşmayacak şekilde** getirilmesidir.



N= kg.m/s²
 10 N ≈ 1 kgf
 kgf: kg-kuvvet

Uygulama	Faydası																																																																																																																																																																																																																																																																					
Doğru tork (Döndürme momenti) hesabı	Döndürme momenti = $M_d = T \text{ (kg m)} = F \text{ (kg)} \times L \text{ (m)}$																																																																																																																																																																																																																																																																					
	<u>Örneğin</u> anahtar ucuna $F_1=20 \text{ kg}$ 'lık kuvvet uygulandığında, L mesafesi de 20 cm iken meydana gelen torkun (M_d) değeri: $Tork = M_d = F_1 \times L = 18 \text{ kg} \times 0.2 \text{ m} = 4 \text{ kg.m}$																																																																																																																																																																																																																																																																					
Örnek Resim																																																																																																																																																																																																																																																																						
Standart tork sıkma değerleri tablo örneği	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th rowspan="2">S</th> <th rowspan="2">J</th> <th colspan="9">Saplama Kalitesi / Bolt Grade</th> </tr> <tr> <th>3.6</th> <th>4.6</th> <th>5.6</th> <th>5.8</th> <th>6.8</th> <th>8.8</th> <th>9.8</th> <th>10.9</th> <th>12.9</th> </tr> <tr> <th colspan="12">Tork Değeri / Torque Value (N.m)</th> </tr> </thead> <tbody> <tr><td>M1.6</td><td>3.2</td><td>-</td><td>0.05</td><td>0.07</td><td>0.09</td><td>0.11</td><td>0.14</td><td>0.18</td><td>0.21</td><td>0.26</td><td>0.31</td></tr> <tr><td>M2</td><td>4</td><td>-</td><td>0.11</td><td>0.14</td><td>0.18</td><td>0.24</td><td>0.28</td><td>0.38</td><td>0.42</td><td>0.53</td><td>0.63</td></tr> <tr><td>M2.5</td><td>5</td><td>-</td><td>0.22</td><td>0.29</td><td>0.36</td><td>0.48</td><td>0.58</td><td>0.78</td><td>0.87</td><td>1.09</td><td>1.31</td></tr> <tr><td>M3</td><td>5.5</td><td>-</td><td>0.38</td><td>0.51</td><td>0.63</td><td>0.84</td><td>1.01</td><td>1.35</td><td>1.52</td><td>1.9</td><td>2.27</td></tr> <tr><td>M4</td><td>7</td><td>-</td><td>0.71</td><td>0.95</td><td>1.19</td><td>1.59</td><td>1.91</td><td>2.54</td><td>2.86</td><td>3.57</td><td>4.29</td></tr> <tr><td>M5</td><td>8</td><td>-</td><td>1.71</td><td>2.28</td><td>2.85</td><td>3.8</td><td>4.56</td><td>6.09</td><td>6.85</td><td>8.56</td><td>10.3</td></tr> <tr><td>M6</td><td>10</td><td>-</td><td>2.94</td><td>3.92</td><td>4.91</td><td>6.54</td><td>7.85</td><td>10.5</td><td>11.8</td><td>14.7</td><td>17.7</td></tr> <tr><td>M8</td><td>13</td><td>-</td><td>7.11</td><td>9.48</td><td>11.9</td><td>15.8</td><td>19</td><td>25.3</td><td>28.4</td><td>35.5</td><td>42.7</td></tr> <tr><td>M10</td><td>17</td><td>8</td><td>14.3</td><td>19.1</td><td>23.8</td><td>31.8</td><td>38.1</td><td>50.8</td><td>57.2</td><td>71.5</td><td>85.8</td></tr> <tr><td>M12</td><td>19</td><td>10</td><td>24.4</td><td>32.6</td><td>40.7</td><td>54.3</td><td>65.1</td><td>86.9</td><td>97.7</td><td>122</td><td>147</td></tr> <tr><td>M14</td><td>22</td><td>12</td><td>39</td><td>52</td><td>65</td><td>86.6</td><td>104</td><td>139</td><td>156</td><td>195</td><td>234</td></tr> <tr><td>M16</td><td>24</td><td>14</td><td>59.9</td><td>79.9</td><td>99.8</td><td>133</td><td>160</td><td>213</td><td>240</td><td>299</td><td>359</td></tr> <tr><td>M18</td><td>27</td><td>14</td><td>82.5</td><td>110</td><td>138</td><td>183</td><td>220</td><td>293</td><td>330</td><td>413</td><td>495</td></tr> <tr><td>M20</td><td>30</td><td>17</td><td>117</td><td>156</td><td>195</td><td>260</td><td>312</td><td>416</td><td>468</td><td>585</td><td>702</td></tr> <tr><td>M22</td><td>32</td><td>17</td><td>158</td><td>211</td><td>264</td><td>352</td><td>422</td><td>563</td><td>634</td><td>792</td><td>950</td></tr> <tr><td>M24</td><td>36</td><td>19</td><td>202</td><td>270</td><td>337</td><td>449</td><td>539</td><td>719</td><td>809</td><td>1.011</td><td>1.213</td></tr> <tr><td>M27</td><td>41</td><td>19</td><td>298</td><td>398</td><td>497</td><td>663</td><td>795</td><td>1.060</td><td>1.193</td><td>1.491</td><td>1.789</td></tr> <tr><td>M30</td><td>46</td><td>22</td><td>405</td><td>540</td><td>675</td><td>900</td><td>1.080</td><td>1.440</td><td>1.620</td><td>2.025</td><td>2.430</td></tr> <tr><td>M33</td><td>50</td><td>24</td><td>550</td><td>734</td><td>917</td><td>1.223</td><td>1.467</td><td>1.956</td><td>2.201</td><td>2.751</td><td>3.301</td></tr> </tbody> </table>		S	J	Saplama Kalitesi / Bolt Grade									3.6	4.6	5.6	5.8	6.8	8.8	9.8	10.9	12.9	Tork Değeri / Torque Value (N.m)												M1.6	3.2	-	0.05	0.07	0.09	0.11	0.14	0.18	0.21	0.26	0.31	M2	4	-	0.11	0.14	0.18	0.24	0.28	0.38	0.42	0.53	0.63	M2.5	5	-	0.22	0.29	0.36	0.48	0.58	0.78	0.87	1.09	1.31	M3	5.5	-	0.38	0.51	0.63	0.84	1.01	1.35	1.52	1.9	2.27	M4	7	-	0.71	0.95	1.19	1.59	1.91	2.54	2.86	3.57	4.29	M5	8	-	1.71	2.28	2.85	3.8	4.56	6.09	6.85	8.56	10.3	M6	10	-	2.94	3.92	4.91	6.54	7.85	10.5	11.8	14.7	17.7	M8	13	-	7.11	9.48	11.9	15.8	19	25.3	28.4	35.5	42.7	M10	17	8	14.3	19.1	23.8	31.8	38.1	50.8	57.2	71.5	85.8	M12	19	10	24.4	32.6	40.7	54.3	65.1	86.9	97.7	122	147	M14	22	12	39	52	65	86.6	104	139	156	195	234	M16	24	14	59.9	79.9	99.8	133	160	213	240	299	359	M18	27	14	82.5	110	138	183	220	293	330	413	495	M20	30	17	117	156	195	260	312	416	468	585	702	M22	32	17	158	211	264	352	422	563	634	792	950	M24	36	19	202	270	337	449	539	719	809	1.011	1.213	M27	41	19	298	398	497	663	795	1.060	1.193	1.491	1.789	M30	46	22	405	540	675	900	1.080	1.440	1.620	2.025	2.430	M33	50	24	550	734	917	1.223	1.467	1.956	2.201	2.751	3.301
	S				J	Saplama Kalitesi / Bolt Grade																																																																																																																																																																																																																																																																
		3.6	4.6	5.6		5.8	6.8	8.8	9.8	10.9	12.9																																																																																																																																																																																																																																																											
Tork Değeri / Torque Value (N.m)																																																																																																																																																																																																																																																																						
M1.6	3.2	-	0.05	0.07	0.09	0.11	0.14	0.18	0.21	0.26	0.31																																																																																																																																																																																																																																																											
M2	4	-	0.11	0.14	0.18	0.24	0.28	0.38	0.42	0.53	0.63																																																																																																																																																																																																																																																											
M2.5	5	-	0.22	0.29	0.36	0.48	0.58	0.78	0.87	1.09	1.31																																																																																																																																																																																																																																																											
M3	5.5	-	0.38	0.51	0.63	0.84	1.01	1.35	1.52	1.9	2.27																																																																																																																																																																																																																																																											
M4	7	-	0.71	0.95	1.19	1.59	1.91	2.54	2.86	3.57	4.29																																																																																																																																																																																																																																																											
M5	8	-	1.71	2.28	2.85	3.8	4.56	6.09	6.85	8.56	10.3																																																																																																																																																																																																																																																											
M6	10	-	2.94	3.92	4.91	6.54	7.85	10.5	11.8	14.7	17.7																																																																																																																																																																																																																																																											
M8	13	-	7.11	9.48	11.9	15.8	19	25.3	28.4	35.5	42.7																																																																																																																																																																																																																																																											
M10	17	8	14.3	19.1	23.8	31.8	38.1	50.8	57.2	71.5	85.8																																																																																																																																																																																																																																																											
M12	19	10	24.4	32.6	40.7	54.3	65.1	86.9	97.7	122	147																																																																																																																																																																																																																																																											
M14	22	12	39	52	65	86.6	104	139	156	195	234																																																																																																																																																																																																																																																											
M16	24	14	59.9	79.9	99.8	133	160	213	240	299	359																																																																																																																																																																																																																																																											
M18	27	14	82.5	110	138	183	220	293	330	413	495																																																																																																																																																																																																																																																											
M20	30	17	117	156	195	260	312	416	468	585	702																																																																																																																																																																																																																																																											
M22	32	17	158	211	264	352	422	563	634	792	950																																																																																																																																																																																																																																																											
M24	36	19	202	270	337	449	539	719	809	1.011	1.213																																																																																																																																																																																																																																																											
M27	41	19	298	398	497	663	795	1.060	1.193	1.491	1.789																																																																																																																																																																																																																																																											
M30	46	22	405	540	675	900	1.080	1.440	1.620	2.025	2.430																																																																																																																																																																																																																																																											
M33	50	24	550	734	917	1.223	1.467	1.956	2.201	2.751	3.301																																																																																																																																																																																																																																																											



Eğitim Tarihi	Eğitimci	Kalıtmıcı			Kalıtmıcı			Kalıtmıcı		
		4	3		4	3		4	3	
		4	3		4	3		4	3	
		2	1		2	1		2	1	
		4	3		4	3		4	3	
		2	1		2	1		2	1	
		4	3		4	3		4	3	
		2	1		2	1		2	1	
		4	3		4	3		4	3	
		2	1		2	1		2	1	
		4	3		4	3		4	3	
		2	1		2	1		2	1	
		4	3		4	3		4	3	
		2	1		2	1		2	1	
		4	3		4	3		4	3	
		2	1		2	1		2	1	
		4	3		4	3		4	3	
		2	1		2	1		2	1	
		4	3		4	3		4	3	
		2	1		2	1		2	1	
		4	3		4	3		4	3	
		2	1		2	1		2	1	
		4	3		4	3		4	3	
		2	1		2	1		2	1	

Değerlendirme: 1. Anlamakta, ancak işi yapamaz. 2. Bazı işleri yapabilir. 3. İş tamamen yapabilir. 4. Diğerlerine öğretebilir.