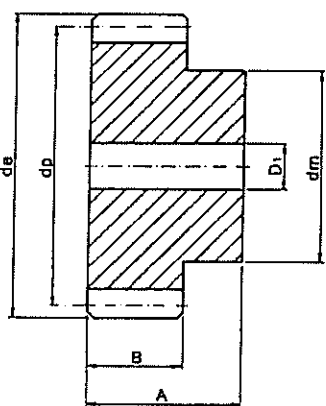
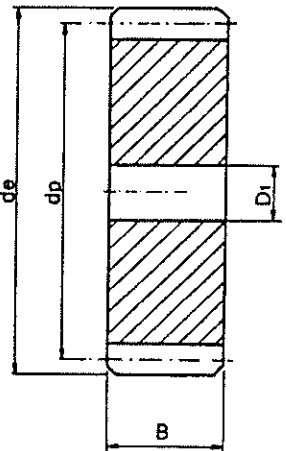


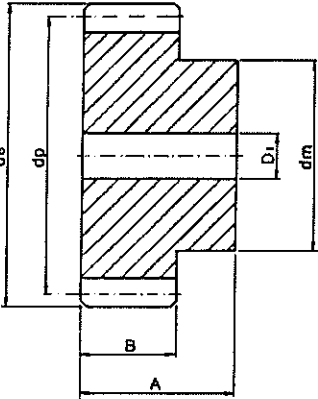
ENGRANAJES CILINDRICOS RECTOS

M- 1

| | Z | De | Dp | B | A | D1 | dm |
|-------------------------------------------------------------------------------------|-----|-----|-----|----|----|----|----|
|  | 12 | 14 | 12 | 15 | 25 | - | 9 |
| | 13 | 15 | 13 | 15 | 25 | - | 10 |
| | 14 | 16 | 14 | 15 | 25 | - | 11 |
| | 15 | 17 | 15 | 15 | 25 | - | 12 |
| | 16 | 18 | 16 | 15 | 25 | - | 13 |
| | 17 | 19 | 17 | 15 | 25 | - | 14 |
| | 18 | 20 | 18 | 15 | 25 | 8 | 15 |
| | 19 | 21 | 19 | 15 | 25 | 8 | 15 |
| | 20 | 22 | 20 | 15 | 25 | 8 | 16 |
| | 21 | 23 | 21 | 15 | 25 | 8 | 16 |
| | 22 | 24 | 22 | 15 | 25 | 8 | 16 |
| | 23 | 25 | 23 | 15 | 25 | 8 | 18 |
| | 24 | 26 | 24 | 15 | 25 | 10 | 20 |
| | 25 | 27 | 25 | 15 | 25 | 10 | 20 |
| | 26 | 28 | 26 | 15 | 25 | 10 | 20 |
| | 27 | 29 | 27 | 15 | 25 | 10 | 20 |
| | 28 | 30 | 28 | 15 | 25 | 10 | 20 |
| | 29 | 31 | 29 | 15 | 25 | 10 | 20 |
| | 30 | 32 | 30 | 15 | 25 | 10 | 20 |
| | 35 | 37 | 35 | 15 | 25 | 10 | 25 |
| | 40 | 42 | 40 | 15 | 25 | 10 | 25 |
| | 45 | 47 | 45 | 15 | 25 | 10 | 30 |
| | 50 | 52 | 50 | 15 | 25 | 12 | 30 |
| | 55 | 57 | 55 | 15 | 25 | 12 | 40 |
| | 60 | 62 | 60 | 15 | 25 | 12 | 40 |
| | 65 | 67 | 65 | 15 | 25 | 12 | 50 |
| | 70 | 72 | 70 | 15 | 25 | 12 | 50 |
|  | 75 | 77 | 75 | 15 | - | 12 | - |
| | 80 | 82 | 80 | 15 | - | 12 | - |
| | 85 | 87 | 85 | 15 | - | 12 | - |
| | 90 | 92 | 90 | 15 | - | 12 | - |
| | 95 | 97 | 95 | 15 | - | 12 | - |
| | 100 | 102 | 100 | 15 | - | 12 | - |
| | 110 | 112 | 110 | 15 | - | 12 | - |
| | 120 | 122 | 120 | 15 | - | 12 | - |
| | 127 | 129 | 127 | 15 | - | 12 | - |

ENGRANAJES CILINDRICOS RECTOS

M- 1,5

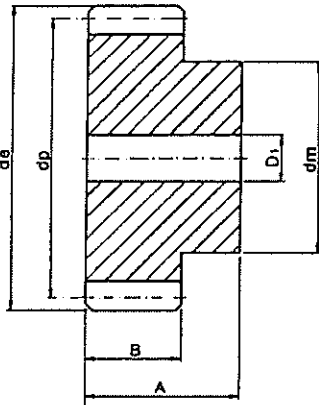
| | Z | De | Dp | B | A | D1 | dm |
|------------------------------------------------------------------------------------|-----|-------|-------|----|----|----|----|
|  | 12 | 21,0 | 18,0 | 17 | 30 | 8 | 14 |
| | 13 | 22,5 | 19,5 | 17 | 30 | 8 | 15 |
| | 14 | 24,0 | 21,0 | 17 | 30 | 8 | 17 |
| | 15 | 25,5 | 22,5 | 17 | 30 | 8 | 18 |
| | 16 | 27,0 | 24,0 | 17 | 30 | 8 | 19 |
| | 17 | 28,5 | 25,5 | 17 | 30 | 8 | 20 |
| | 18 | 30,0 | 27,0 | 17 | 30 | 8 | 20 |
| | 19 | 31,5 | 28,5 | 17 | 30 | 8 | 20 |
| | 20 | 33,0 | 30,0 | 17 | 30 | 8 | 25 |
| | 21 | 34,5 | 31,5 | 17 | 30 | 10 | 25 |
| | 22 | 36,0 | 33,0 | 17 | 30 | 10 | 25 |
| | 23 | 37,5 | 34,5 | 17 | 30 | 10 | 25 |
| | 24 | 39,0 | 36,0 | 17 | 30 | 10 | 25 |
| | 25 | 40,5 | 37,5 | 17 | 30 | 10 | 25 |
| | 26 | 42,0 | 39,0 | 17 | 30 | 12 | 30 |
| | 27 | 43,5 | 40,5 | 17 | 30 | 12 | 30 |
| | 28 | 45,0 | 42,0 | 17 | 30 | 12 | 30 |
| | 29 | 46,5 | 43,5 | 17 | 30 | 12 | 30 |
| | 30 | 48,0 | 45,0 | 17 | 30 | 12 | 30 |
| | 35 | 55,5 | 52,5 | 17 | 30 | 12 | 35 |
| | 40 | 63,0 | 60,0 | 17 | 30 | 12 | 40 |
| | 45 | 70,5 | 67,5 | 17 | 30 | 12 | 50 |
| | 50 | 78,0 | 75,0 | 17 | 30 | 14 | 50 |
| | 55 | 85,5 | 82,5 | 17 | 30 | 14 | 60 |
| | 60 | 93,0 | 90,0 | 17 | 30 | 16 | 60 |
| | 65 | 100,5 | 97,5 | 17 | 30 | 16 | 70 |
| | 70 | 108,0 | 105,0 | 17 | 30 | 16 | 70 |
| | 75 | 115,5 | 112,5 | 17 | - | 16 | - |
| | 80 | 123,0 | 120,0 | 17 | - | 16 | - |
| | 85 | 130,5 | 127,5 | 17 | - | 16 | - |
| | 90 | 138,0 | 135,0 | 17 | - | 16 | - |
| | 95 | 145,5 | 142,5 | 17 | - | 16 | - |
| | 100 | 153,0 | 150,0 | 17 | - | 16 | - |
| | 110 | 168,0 | 165,0 | 17 | - | 16 | - |
| | 120 | 183,0 | 180,0 | 17 | - | 16 | - |
| | 127 | 193,5 | 190,5 | 17 | - | 16 | - |



ENGRANAJES MIRALLES

Mare de Deu de Bellvitge 309
 08907 HOSPITALET DE LLOBREGAT.
 Tel. 93.226.84.04 Fax. 93.226.93-64
www.engranajesmiralles.com

ENGRANAJES CILINDRICOS RECTOS M - 2

| | Z | De | Dp | B | A35 | D1 | dm |
|------------------------------------------------------------------------------------|-----|-----|-----|----|-----|----|----|
|  | 12 | 28 | 24 | 20 | 35 | 10 | 18 |
| | 13 | 30 | 26 | 20 | 35 | 10 | 20 |
| | 14 | 32 | 28 | 20 | 35 | 10 | 22 |
| | 15 | 34 | 30 | 20 | 35 | 10 | 24 |
| | 16 | 36 | 32 | 20 | 35 | 10 | 25 |
| | 17 | 38 | 34 | 20 | 35 | 10 | 25 |
| | 18 | 40 | 36 | 20 | 35 | 10 | 25 |
| | 19 | 42 | 38 | 20 | 35 | 10 | 25 |
| | 20 | 44 | 40 | 20 | 35 | 10 | 30 |
| | 21 | 46 | 42 | 20 | 35 | 12 | 30 |
| | 22 | 48 | 44 | 20 | 35 | 12 | 30 |
| | 23 | 50 | 46 | 20 | 35 | 12 | 30 |
| | 24 | 52 | 48 | 20 | 35 | 12 | 35 |
| | 25 | 54 | 50 | 20 | 35 | 12 | 35 |
| | 26 | 56 | 52 | 20 | 35 | 12 | 40 |
| | 27 | 58 | 54 | 20 | 35 | 12 | 40 |
| | 28 | 60 | 56 | 20 | 35 | 12 | 40 |
| | 29 | 62 | 58 | 20 | 35 | 14 | 40 |
| | 30 | 64 | 60 | 20 | 35 | 14 | 40 |
| | 35 | 74 | 70 | 20 | 35 | 14 | 45 |
| | 40 | 84 | 80 | 20 | 35 | 14 | 50 |
| | 45 | 94 | 90 | 20 | 35 | 16 | 60 |
| | 50 | 104 | 100 | 20 | 35 | 16 | 70 |
| | 55 | 114 | 110 | 20 | 35 | 16 | 70 |
| | 60 | 124 | 120 | 20 | 35 | 16 | 70 |
| | 65 | 134 | 130 | 20 | 35 | 16 | 80 |
| | 70 | 144 | 140 | 20 | 35 | 16 | 80 |
| | 75 | 154 | 150 | 20 | - | 20 | - |
| | 80 | 164 | 160 | 20 | - | 20 | - |
| | 85 | 174 | 170 | 20 | - | 20 | - |
| | 90 | 184 | 180 | 20 | - | 20 | - |
| | 95 | 194 | 190 | 20 | - | 20 | - |
| | 100 | 204 | 200 | 20 | - | 20 | - |
| | 110 | 224 | 220 | 20 | - | 20 | - |
| | 120 | 244 | 240 | 20 | - | 20 | - |
| | 127 | 258 | 254 | 20 | - | 20 | - |

ENGRANAJES CILINDRICOS RECTOS

M - 2,5

| Z | De | Dp | B | A | D1 | dm |
|-----|-------|-------|----|----|----|-----|
| 12 | 35,0 | 30,0 | 25 | 45 | 10 | 22 |
| 13 | 37,5 | 32,5 | 25 | 45 | 10 | 25 |
| 14 | 40,0 | 35,0 | 25 | 5 | 10 | 28 |
| 15 | 42,5 | 37,5 | 25 | 45 | 10 | 30 |
| 16 | 45,0 | 40,0 | 25 | 45 | 12 | 32 |
| 17 | 47,5 | 42,5 | 25 | 45 | 12 | 35 |
| 18 | 50,0 | 45,0 | 25 | 45 | 12 | 35 |
| 19 | 52,5 | 47,5 | 25 | 45 | 12 | 35 |
| 20 | 55,0 | 50,0 | 25 | 45 | 12 | 40 |
| 21 | 57,5 | 52,5 | 25 | 45 | 14 | 40 |
| 22 | 60,0 | 55,0 | 25 | 45 | 14 | 45 |
| 23 | 62,5 | 57,5 | 25 | 45 | 14 | 45 |
| 24 | 65,0 | 60,0 | 25 | 45 | 14 | 45 |
| 25 | 67,5 | 62,5 | 25 | 45 | 14 | 50 |
| 26 | 70,0 | 65,0 | 25 | 45 | 14 | 50 |
| 27 | 72,5 | 67,5 | 25 | 45 | 14 | 50 |
| 28 | 75,0 | 70,0 | 25 | 45 | 14 | 50 |
| 29 | 77,5 | 72,5 | 25 | 45 | 14 | 50 |
| 30 | 80,0 | 75,0 | 25 | 45 | 14 | 55 |
| 35 | 92,5 | 87,5 | 25 | 45 | 16 | 60 |
| 40 | 105,0 | 100,0 | 25 | 45 | 16 | 70 |
| 45 | 117,5 | 112,5 | 25 | 45 | 16 | 70 |
| 50 | 130,0 | 125,0 | 25 | 45 | 20 | 80 |
| 55 | 142,5 | 137,5 | 25 | 45 | 20 | 90 |
| 60 | 155,0 | 150,0 | 25 | 45 | 20 | 100 |
| 65 | 167,5 | 162,5 | 25 | - | 20 | - |
| 70 | 180,0 | 175,0 | 25 | - | 20 | - |
| 75 | 192,5 | 187,5 | 25 | - | 20 | - |
| 80 | 205,0 | 200,0 | 25 | - | 25 | - |
| 85 | 217,5 | 212,5 | 25 | - | 25 | - |
| 90 | 230,0 | 225,0 | 25 | - | 25 | - |
| 95 | 242,5 | 237,5 | 25 | - | 25 | - |
| 100 | 255,0 | 250,0 | 25 | - | 25 | - |
| 110 | 280,0 | 275,0 | 25 | - | 25 | - |
| 120 | 305,0 | 300,0 | 25 | - | 25 | - |
| 127 | 322,5 | 317,5 | 25 | - | 25 | - |

ENGRANAJES CILINDRICOS RECTOS

M - 3

| | Z | De | Dp | B | A | D1 | dm |
|--|-----|-----|-----|----|----|----|-----|
| | 12 | 42 | 36 | 30 | 50 | 12 | 27 |
| | 13 | 45 | 39 | 30 | 50 | 12 | 30 |
| | 14 | 48 | 42 | 30 | 50 | 12 | 33 |
| | 15 | 51 | 45 | 30 | 50 | 12 | 35 |
| | 16 | 54 | 48 | 30 | 50 | 14 | 3.8 |
| | 17 | 57 | 51 | 30 | 50 | 14 | 42 |
| | 18 | 60 | 54 | 30 | 50 | 14 | 45 |
| | 19 | 63 | 57 | 30 | 50 | 14 | 45 |
| | 20 | 66 | 60 | 30 | 50 | 14 | 45 |
| | 21 | 69 | 63 | 30 | 50 | 16 | 45 |
| | 22 | 72 | 66 | 30 | 50 | 16 | 50 |
| | 23 | 75 | 69 | 30 | 50 | 16 | 50 |
| | 24 | 78 | 72 | 30 | 50 | 16 | 50 |
| | 25 | 81 | 75 | 30 | 50 | 16 | 60 |
| | 26 | 84 | 78 | 30 | 50 | 16 | 60 |
| | 27 | 87 | 81 | 30 | 50 | 16 | 60 |
| | 28 | 90 | 84 | 30 | 50 | 16 | 60 |
| | 29 | 93 | 87 | 30 | 50 | 16 | 60 |
| | 30 | 96 | 90 | 30 | 50 | 16 | 60 |
| | 35 | 111 | 105 | 30 | 50 | 16 | 70 |
| | 40 | 126 | 120 | 30 | 50 | 16 | 80 |
| | 45 | 141 | 135 | 30 | 50 | 20 | 90 |
| | 50 | 156 | 150 | 30 | - | 20 | - |
| | 55 | 171 | 165 | 30 | - | 20 | - |
| | 60 | 186 | 180 | 30 | - | 20 | - |
| | 65 | 201 | 195 | 30 | - | 20 | - |
| | 70 | 216 | 210 | 30 | - | 25 | - |
| | 80 | 246 | 240 | 30 | - | 25 | - |
| | 90 | 276 | 270 | 30 | - | 25 | - |
| | 100 | 306 | 300 | 30 | - | 25 | - |
| | | | | | | | |
| | | | | | | | |

ENGRANAJES CILINDRICOS RECTOS

M - 4

| | Z | De | Dp | B | A | D1 | dm | |
|--|----|-----|-----|----|----|----|----|--|
| | 12 | 56 | 48 | 40 | 60 | 14 | 35 | |
| | 13 | 60 | 52 | 40 | 60 | 14 | 40 | |
| | 14 | 64 | 56 | 40 | 60 | 14 | 45 | |
| | 15 | 68 | 60 | 40 | 60 | 14 | 45 | |
| | 16 | 72 | 64 | 40 | 60 | 16 | 50 | |
| | 17 | 76 | 68 | 40 | 60 | 16 | 50 | |
| | 18 | 80 | 72 | 40 | 60 | 16 | 50 | |
| | 19 | 84 | 76 | 40 | 60 | 16 | 60 | |
| | 20 | 88 | 80 | 40 | 60 | 16 | 60 | |
| | 21 | 92 | 84 | 40 | 60 | 16 | 70 | |
| | 22 | 96 | 88 | 40 | 60 | 16 | 70 | |
| | 23 | 100 | 92 | 40 | 60 | 20 | 75 | |
| | 24 | 104 | 96 | 40 | 60 | 20 | 75 | |
| | 25 | 108 | 100 | 40 | 60 | 20 | 75 | |
| | 30 | 128 | 120 | 40 | 60 | 20 | 75 | |
| | 35 | 148 | 140 | 40 | 60 | 20 | 80 | |
| | 40 | 168 | 160 | 40 | - | 25 | - | |
| | 45 | 188 | 180 | 40 | - | 25 | - | |
| | 50 | 208 | 200 | 40 | - | 25 | - | |
| | 55 | 228 | 220 | 40 | - | 25 | - | |
| | 60 | 248 | 240 | 40 | - | 25 | - | |
| | | | | | | | | |
| | | | | | | | | |

ENGRANAJES CILINDRICOS RECTOS

M - 5

| | Z | De | Dp | B | A | D1 | dm |
|--|----|-----|-----|----|----|----|-----|
| | 12 | 70 | 60 | 50 | 75 | 20 | 45 |
| | 15 | 85 | 75 | 50 | 75 | 20 | 60 |
| | 20 | 110 | 100 | 50 | 75 | 20 | 80 |
| | 25 | 135 | 125 | 50 | 75 | 20 | 90 |
| | 30 | 160 | 150 | 50 | 75 | 25 | 110 |
| | 35 | 185 | 175 | 50 | - | 25 | - |
| | 40 | 210 | 200 | 50 | - | 25 | - |
| | 45 | 235 | 225 | 50 | - | 25 | - |
| | 50 | 260 | 250 | 50 | - | 30 | - |
| | 55 | 285 | 275 | 50 | - | 30 | - |
| | 60 | 310 | 300 | 50 | - | 30 | - |
| | | | | | | | |
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