



PZD

series

TWIN SCREW PUMPS DIVISION



MAIN CHARACTERISTICS



SERIES

PZD

LARGE FLOW, FOR LUBRICATING MEDIA, OIL, FUEL OIL FLOW RANGE: 2000 to 9000 litres/minute (120 to 540 m^3/h)

MAX PRESSURE: 16 bar (8 bar for 1.6 – 10 cSt range)

MAIN APPLICATIONS:

- Marine: oil or fuel transfer
- Power generation: lubrication or cooling of large equiment

AVAILABLE IN TWO MAIN INTERNAL VERSIONS:

- Three screw configuration: PZD
- Twin screw WTG (Without Timing Gear) PZD WTG



MAIN CHARACTERISTICS



SERIES

PZD

NPSHr is at best low level in similar pump product ranges

PZD and PZD-WTG are equipped with a renevable liner

Screw-set and liner can be dismounted from shaft side flange, for easy main maintanance

Internal valve:

Pumps are equipped with an internal recirculation valve limiting the pressure

In case of air in the fluid:

An adjustable internal device helps reducing significantly noise and pressure changes



| INSTALLATION DATA | |
|-------------------------------------|--|
| Installation DATA Installation | Indoor or Outdoor |
| Environment | Marine, Industrial |
| LIIVIIOOIII6IIL | Wallie, Huustial |
| | |
| OPERATING DATA | |
| Handled fluid | Hydraulic and Lube oils, HFO, DO, LSMGO |
| Viscosity range | From 1.6 to 5000 cSt (*) |
| Pump speed | From 750 to 1750 rpm |
| Rotation (viewed from coupling end) | CW (Std version); CCW on demand |
| | |
| | |
| TECHNICAL CHARACTERISTICS | |
| Flow range | 2000 to 9000 litres/min (120 to 540 m^3/h) |
| Suction pressure | From - 0,5 to 10 bar |
| Delivery pressure | Up to 16 bar (8 bar for 1.6-10 cSt range) |
| Operating temperature range | From 0 to 120 °C (*) |
| Seal | Mechanical seal |
| Bearing type | Radial ball bearing on main shaft |
| Bearing lubrication | Lubricated by pumped fluid |
| Mounting arrangement | Vertical or horizontal |
| Inlet & Outlet connection | DIN standard (double internal entry and delivery port in the middle) |
| | |
| | |
| MATERIALS | |
| Casing/Flanges | Cast Iron GGG40, GG25 ^(*) |
| Screws | Nitrided steel |
| 0-rings | Viton ® |
| Surface protection | On demand |
| | |

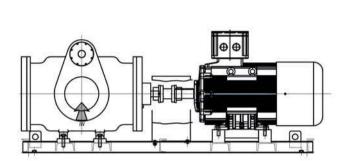
(*) For different values contact Seim



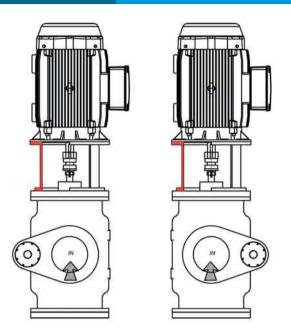
SERIES

PZD

MAX PRESSURE VALVE CONFIGURATIONS

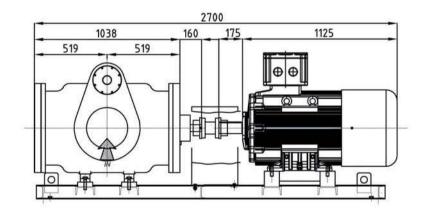


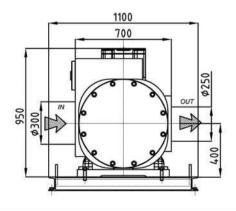
HORIZONTAL VERSIONS MAX PRESSURE VALVE ON THE TOP



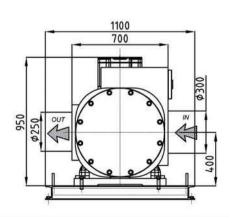
VERTICAL VERSIONS MAX PRESSURE VALVE ON THE LEFT OR RIGHT SIDE

HORIZONTAL VERSIONS - PZD 156 & PZD WTG 170





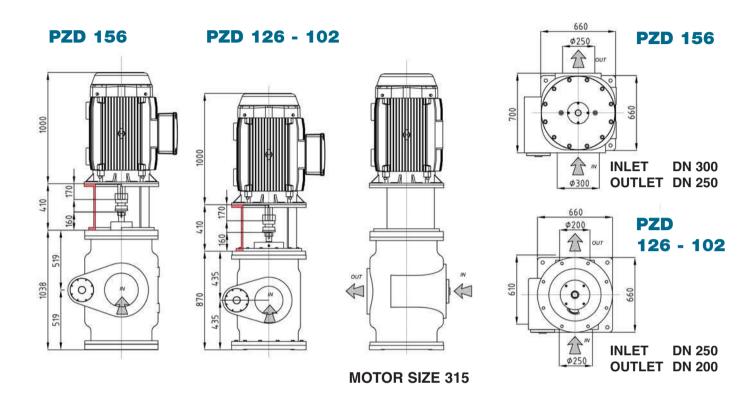
SUCTION ON THE LEFT OR THE RIGHT SIDE



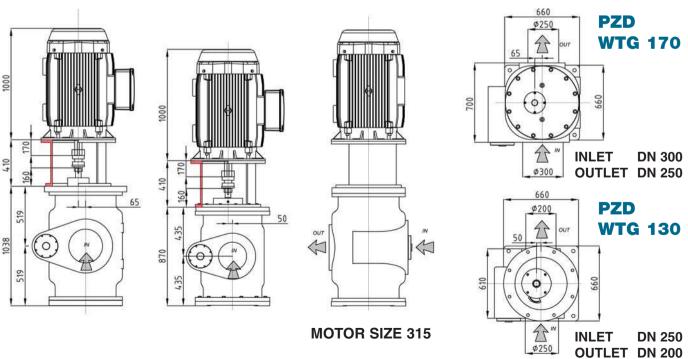


SERIES

PZD







PERFORMANCE CHART



SERIES

PZD

THREE SCREW VERSION

| | cSt » | 25 | | | | | | | | 50 | | | | | | | |
|--------------------------------|-------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|--|----|
| | rpm » | 1000 | | 1200 | | 1500 | | 1800 | | 1000 | | 1200 | | 1500 | | 1800 | |
| P/N° | bar | It/1 | kW | lt/1 | kW | lt/1 | kW | lt/1 | kW | lt/1 | kW | 16/1 | kW | lt/1 | kW | lt/1 | kW |
| | 5 | 1434 | 17 | 1749 | 20 | 2222 | 26 | 2694 | 32 | 1476 | 18 | 1791 | 22 | 2263 | 28 | 2736 | 35 |
| PZD 102#3B | 10 | 1376 | 30 | 1691 | 36 | 2163 | 46 | 2636 | 56 | 1434 | 31 | 1749 | 37 | 2222 | 48 | 2694 | 58 |
| | 15 | 1331 | 43 | 1646 | 52 | 2118 | 66 | 2591 | 80 | 1402 | 44 | 1717 | 53 | 2190 | 67 | 2663 | 82 |
| | 5 | 1776 | 21 | 2166 | 25 | 2751 | 32 | 3336 | 40 | 1827 | 22 | 2217 | 27 | 2802 | 35 | 3387 | 43 |
| PZD 102#3C | 10 | 1703 | 37 | 2093 | 45 | 2678 | 57 | 3264 | 69 | 1776 | 38 | 2166 | 46 | 2751 | 59 | 3336 | 7: |
| | 15 | 1647 | 53 | 2038 | 64 | 2623 | 81 | 3208 | 98 | 1736 | 54 | 2126 | 66 | 2712 | 83 | 3297 | 10 |
| PZD 126#3A | 5 | 2221 | 25 | 2702 | 31 | 3423 | 40 | 4144 | 49 | 2275 | 27 | 2756 | 33 | 3477 | 43 | 4198 | 53 |
| | 10 | 2145 | 45 | 2626 | 55 | 3347 | 70 | 4069 | 85 | 2221 | 47 | 2702 | 57 | 3423 | 73 | 4144 | 8 |
| | 15 | 2087 | 65 | 2568 | 79 | 3289 | 100 | 4011 | 121 | 2180 | 67 | 2661 | 81 | 3382 | 103 | 4103 | 12 |
| | 5 | 2750 | 31 | 3345 | 38 | 4238 | 49 | 5131 | 61 | 2816 | 33 | 3412 | 41 | 4305 | 53 | 5197 | 6 |
| PZD 126#3B | 10 | 2656 | 56 | 3252 | 68 | 4144 | 87 | 5037 | 106 | 2750 | 58 | 3345 | 71 | 4238 | 90 | 5131 | 11 |
| | 15 | 2584 | 81 | 3180 | 98 | 4072 | 124 | 4965 | 150 | 2699 | 83 | 3294 | 100 | 4187 | 127 | 5080 | 15 |
| | 5 | 3385 | 39 | 4117 | 47 | 5216 | 61 | 6315 | 75 | 3466 | 41 | 4199 | 50 | 5298 | 65 | lt/1 2736 2694 2663 3387 3336 3297 4198 4144 4103 5197 5131 | 8 |
| PZD 126#3C | 10 | 3269 | 69 | 4002 | 84 | 5101 | 107 | 6200 | 130 | 3385 | 71 | 4117 | 87 | 5216 | 111 | 6315 | 13 |
| | 15 | 3181 | 100 | 3913 | 121 | 5012 | 152 | 6111 | 185 | 3322 | 102 | 4055 | 124 | 5154 | 157 | 59 3336 83 3297 43 4198 73 4144 103 4103 53 5197 90 5131 127 5080 65 6397 111 6315 157 6253 81 8005 138 7919 195 7853 | 19 |
| Marcologo - Salasana Marcologo | 5 | 4269 | 48 | 5181 | 59 | 6550 | 76 | 7919 | 93 | 4355 | 51 | 5267 | 63 | 6636 | 81 | 8005 | 10 |
| PZD 156#3A | 10 | 4147 | 86 | 5059 | 104 | 6428 | 133 | 7797 | 162 | 4269 | 89 | 5181 | 108 | 6550 | 138 | 7919 | 16 |
| | 15 | 4054 | 124 | 4966 | 150 | 6335 | 190 | 7704 | 230 | 4203 | 127 | 5115 | 154 | 6484 | 195 | 7853 | 23 |
| | 5 | 5254 | 59 | 6377 | 72 | 8061 | 93 | | | 5360 | 62 | 6483 | 77 | 8167 | 100 | | |
| PZD 156#3B | 10 | 5104 | 106 | 6227 | 129 | 7912 | 164 | | | 5254 | 109 | 6377 | 133 | 8061 | 170 | | |
| | 15 | 4989 | 153 | 6112 | 185 | 7797 | 234 | | | 5173 | 156 | 6296 | 189 | 7980 | 240 | | |

| | cSt » | 50 | | | | | | | | 75 | | | | | | | |
|-----------------------------|-------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|---|-----|
| | rpm » | 1000 | | 1200 | | 1500 | | 1800 | | 1000 | | 1200 | | 1500 | | 1800 | |
| P/N° | bar | IV1 | kW | It/1 | kW | lt/1 | kW | IV1 | kW | It/1 | kW | 11/1 | kW | lt/1 | kW | It/1 | kW |
| | 5 | 1476 | 18 | 1791 | 22 | 2263 | 28 | 2736 | 35 | 1494 | 18 | 1809 | 23 | 2282 | 29 | 2754 | 36 |
| PZD 102#3B | 10 | 1434 | 31 | 1749 | 37 | 2222 | 48 | 2694 | 58 | 1460 | 31 | 1775 | 38 | 2248 | 49 | 2720 | 60 |
| | 15 | 1402 | 44 | 1717 | 53 | 2190 | 67 | 2663 | 82 | 1434 | 44 | 1749 | 54 | 2222 | 69 | 2694 | 84 |
| PARLICIPET MARKETANGANG-TAN | 5 | 1827 | 22 | 2217 | 27 | 2802 | 35 | 3387 | 43 | 1850 | 23 | 2240 | 28 | 2825 | 36 | 3410 | 45 |
| PZD 102#3C | 10 | 1776 | 38 | 2166 | 46 | 2751 | 59 | 3336 | 72 | 1808 | 39 | 2198 | 47 | 2783 | 61 | 3368 | 74 |
| | 15 | 1736 | 54 | 2126 | 66 | 2712 | 83 | 3297 | 101 | 1776 | 55 | 2166 | 67 | 2751 | 85 | 3336 | 10- |
| PZD 126#3A | 5 | 2275 | 27 | 2756 | 33 | 3477 | 43 | 4198 | 53 | 2298 | 28 | 2779 | 34 | 3500 | 45 | 4222 | 56 |
| | 10 | 2221 | 47 | 2702 | 57 | 3423 | 73 | 4144 | 89 | 2255 | 48 | 2736 | 58 | 3457 | 75 | 4178 | 92 |
| | 15 | 2180 | 67 | 2661 | 81 | 3382 | 103 | 4103 | 125 | 2221 | 68 | 2702 | 82 | 3423 | 105 | 4144 | 12 |
| | 5 | 2816 | 33 | 3412 | 41 | 4305 | 53 | 5197 | 66 | 2846 | 34 | 3441 | 43 | 4334 | 55 | 5227 | 69 |
| PZD 126#3B | 10 | 2750 | 58 | 3345 | 71 | 4238 | 90 | 5131 | 110 | 2792 | 59 | 3387 | 72 | 4280 | 93 | 5173 | 11 |
| | 15 | 2699 | 83 | 3294 | 100 | 4187 | 127 | 5080 | 155 | 2750 | 84 | 3345 | 102 | 4238 | 130 | 5131 | 15 |
| | 5 | 3466 | 41 | 4199 | 50 | 5298 | 65 | 6397 | 81 | 3502 | 42 | 4235 | 52 | 5334 | 68 | lv1 2754 2720 2694 3410 3368 3336 4222 4178 4144 5227 5173 | 85 |
| PZD 126#3C | 10 | 3385 | 71 | 4117 | 87 | 5216 | 111 | 6315 | 136 | 3436 | 73 | 4168 | 89 | 5267 | 114 | 6366 | 14 |
| | 15 | 3322 | 102 | 4055 | 124 | 5154 | 157 | 6253 | 191 | 3385 | 103 | 4117 | 126 | 5216 | 160 | 6315 | 19 |
| | 5 | 4355 | 51 | 5267 | 63 | 6636 | 81 | 8005 | 101 | 4393 | 53 | 5305 | 65 | 6674 | 85 | 8043 | 10 |
| PZD 156#3A | 10 | 4269 | 89 | 5181 | 108 | 6550 | 138 | 7919 | 169 | 4323 | 91 | 5235 | 111 | 6604 | 142 | 7973 | 17 |
| | 15 | 4203 | 127 | 5115 | 154 | 6484 | 195 | 7853 | 237 | 4269 | 129 | 5181 | 156 | 6550 | 199 | 7919 | 24 |
| | 5 | 5360 | 62 | 6483 | 77 | 8167 | 100 | | | 5407 | 65 | 6530 | 80 | 8214 | 104 | | |
| PZD 156#3B | 10 | 5254 | 109 | 6377 | 133 | 8061 | 170 | | | 5320 | 112 | 6443 | 136 | 8128 | 175 | | |
| | 15 | 5173 | 156 | 6296 | 189 | 7980 | 240 | | | 5254 | 159 | 6377 | 193 | 8061 | 245 | | |

| | cSt » | 150 | | | | | | | | 400 | | | | | | | |
|------------|-------|------|-----|---------|-----|------|------|------|------|------|------|------|------|------|------|--------------|-----|
| rpm » | | 1000 | | 1200 15 | | 1500 | 1500 | | 1800 | | 1000 | | 1200 | | 1500 | | |
| P/N° | bar | It/1 | kW | 11/1 | kW | lt/1 | kW | IV1 | kW | It/1 | kW | It/1 | kW | It/1 | kW | lt/1 | kW |
| | 5 | 1518 | 20 | 1833 | 24 | 2305 | 32 | 2778 | 40 | 1540 | 22 | 1855 | 28 | 2328 | 37 | 2800 | 47 |
| PZD 102#3B | 10 | 1494 | 33 | 1809 | 40 | 2282 | 52 | 2754 | 64 | 1525 | 36 | 1841 | 44 | 2313 | 57 | 2786 | 71 |
| | 15 | 1476 | 46 | 1791 | 56 | 2263 | 71 | 2736 | 87 | 1514 | 49 | 1829 | 60 | 2302 | 77 | 2775 | 94 |
| | 5 | 1879 | 24 | 2269 | 30 | 2854 | 40 | 3440 | 50 | 1907 | 28 | 2297 | 35 | 2882 | 46 | 2800 2786 | 58 |
| PZD 102#3C | 10 | 1850 | 41 | 2240 | 50 | 2825 | 64 | 3410 | 79 | 1889 | 44 | 2279 | 54 | 2864 | 70 | 3449 | 87 |
| | 15 | 1827 | 57 | 2217 | 69 | 2802 | 88 | 3387 | 108 | 1875 | 60 | 2265 | 74 | 2850 | 95 | 3435 | 117 |
| | 5 | 2329 | 30 | 2810 | 37 | 3531 | 49 | 4253 | 61 | 2358 | 34 | 2839 | 43 | 3560 | 57 | 4282 | 72 |
| PZD 126#3A | 10 | 2298 | 50 | 2779 | 61 | 3500 | 79 | 4222 | 97 | 2339 | 54 | 2820 | 67 | 3541 | 87 | 4263 | 108 |
| | 15 | 2275 | 70 | 2756 | 85 | 3477 | 109 | 4198 | 133 | 2325 | 74 | 2806 | 91 | 3527 | 117 | 4248 | 144 |
| | 5 | 2884 | 37 | 3479 | 46 | 4372 | 60 | 5265 | 76 | 2920 | 42 | 3515 | 53 | 4408 | 70 | 5301 | 89 |
| PZD 126#3B | 10 | 2846 | 62 | 3441 | 76 | 4334 | 98 | 5227 | 120 | 2896 | 67 | 3492 | 83 | 4385 | 107 | 5278 | 133 |
| | 15 | 2816 | 87 | 3412 | 106 | 4305 | 135 | 5197 | 165 | 2878 | 92 | 3474 | 113 | 4367 | 145 | 5260 | 178 |
| | 5 | 3550 | 46 | 4282 | 57 | 5381 | 74 | 6480 | 93 | 3594 | 52 | 4326 | 65 | 5425 | 86 | 6524 | 109 |
| PZD 126#3C | 10 | 3502 | 76 | 4235 | 93 | 5334 | 120 | 6433 | 148 | 3565 | 83 | 4297 | 102 | 5396 | 132 | 6495 | 164 |
| | 15 | 3466 | 107 | 4199 | 130 | 5298 | 166 | 6397 | 203 | 3543 | 113 | 4275 | 139 | 5374 | 178 | 6473 | 219 |
| | 5 | 4443 | 57 | 5355 | 71 | 6724 | 93 | 8093 | 116 | 4489 | 65 | 5402 | 81 | 6770 | 108 | 8139 | 136 |
| PZD 156#3A | 10 | 4393 | 95 | 5305 | 116 | 6674 | 150 | 8043 | 184 | 4459 | 103 | 5371 | 127 | 6740 | 165 | 8109 | 204 |
| | 15 | 4355 | 133 | 5267 | 162 | 6636 | 207 | 8005 | 253 | 4435 | 141 | 5348 | 173 | 6717 | 222 | 8085 | 273 |
| | 5 | 5468 | 70 | 6591 | 87 | 8275 | 114 | | | 5525 | 80 | 6648 | 100 | 8333 | 133 | | |
| PZD 156#3B | 10 | 5407 | 117 | 6530 | 143 | 8214 | 184 | | | 5488 | 127 | 6611 | 156 | 8295 | 203 | | |
| | 15 | 5360 | 164 | 6483 | 199 | 8167 | 254 | | | 5459 | 173 | 6582 | 212 | 8267 | 273 | | ľ |

PERFORMANCE CHART



SERIES

PZD WTG

TWIN SCREW VERSION

| | | | | | 5 cSt | | | 50 cSt | 16 | | | |
|---------------------|---------------|-------------|-----------------|--------------|----------------|---------------|--------------|----------------|---------------|--------------|----------------|----------------|
| | MODEL | pitch mm | differ-P bar | litr/min | low m^3/h | power kW | litr/min | ow m^3/h | power | litr/min | m^3/h | power kW |
| 980 rpm | | 130 | 4 | 2088 | 125.3 | 19.0 | 2255 | 135.3 | 22.5 | 2333 | 140.0 | 30.0 |
| 300 ipin | | 130 130 | 8 12 | 1777 1465 | 106.6 87.9 | 35.0 51.0 | 2111 1966 | 126.6 118.0 | 38.5 54.5 | 2266 2198 | 135.9 131.9 | 46.0 62.0 |
| | | 130 | 16 | 1154 | 69.2 | 67.0 | 1821 | 109.3 | 70.5 | 2131 | 127.9 | 78.0 |
| | | 160 | 4 | 2554 | 153.2 | 22.8 | 2768 | 166.1 | 26.5 | 2868 | 172.1 | 34.3 |
| | 130 | 160 160 | 8 12 | 2154 1755 | 129.3 105.3 | 42.5 62.2 | 2583 2397 | 155.0 143.8 | 46.2 65.9 | 2781 2695 | 166.9 161.7 | 54.0 73.7 |
| | .11.6036 | 160 | 16 | 1355 | 81.3 | 81.9 | 2212 | 132.7 | 85.6 | 2609 | 156.6 | 93.4 |
| | | 190 | 4 | 3016 | 181.0 | 26.7 | 3279 | 196.8 | 30.5 | 3402 | 204.1 | 38.6 |
| | | 190 190 | 8 12 | 2525 2034 | 151.5 122.0 | 50.0 73.4 | 3051 2823 | 183.1 169.4 | 53.8 77.2 | 3296 3190 | 197.7 191.4 | 62.0 85.4 |
| | | 190 | 16 | 1542 | 92.5 | 96.8 | 2595 | 155.7 | 100.6 | 3084 | 185.0 | 108.8 |
| | | 150 | 4 | 4159 | 249.6 | 36.6 | 4438 | 266.3 | 42.9 | 4568 | 274.1 | 56.4 |
| | | 150 150 | 8 12 | 3639 3119 | 218.4 187.1 | 67.8 99.0 | 4197 3955 | 251.8 237.3 | 74.1 105.3 | 4456 4343 | 267.3 260.6 | 87.6 118.8 |
| | | 150 | 16 | 2599 | 155.9 | 130.2 | 3714 | 222.8 | 136.5 | 4231 | 253.9 | 150.0 |
| | 100000-06111 | 180 180 | 8 | 4968 4321 | 298.1 259.2 | 43.1 80.5 | 5315 5015 | 318.9 300.9 | 49.6 87.1 | 5476 5337 | 328.6 320.2 | 63.7 101.2 |
| | 170 | 180 | 12 | 3673 | 220.4 | 118.0 | 4714 | 282.8 | 124.5 | 5197 | 311.8 | 138.6 |
| | | 180 | 16 | 3026 | 181.5 | 155.4 | 4413 | 264.8 | 161.9 | 5058 | 303.5 | 176.0 |
| | | 210 210 | 8 | 5773 4993 | 346.4 299.6 | 49.5 93.2 | 6190 5828 | 371.4 349.7 | 56.3 100.0 | 6384 6216 | 383.0 373.0 | 70.9 114.6 |
| | | 210 | 12 | 4214 | 252.9 | 136.9 | 5467 | 328.0 | 143.7 | 6048 | 362.9 | 158.2 |
| | | 210 | 16 | 3435 | 206.1 | 180.6 | 5105 | 306.3 | 187.3 | 5880 | 352.8 | 201.9 |
| 1150 rpm | | 130 130 | 8 | 2505 2193 | 150.3 131.6 | 22.5 41.3 | 2672 2527 | 160.3 151.6 | 26.8 45.6 | 2749 2682 | 164.9 160.9 | 36.1 54.9 |
| Connect IF No. PART | | 130 | 12 | 1881 | 112.9 | 60.1 | 2382 | 142.9 | 64.4 | 2615 | 156.9 | 73.6 |
| | | 130 | 16 | 1570 | 94.2 | 78.8 | 2238 | 134.3 | 83.1 | 2548 | 152.9 | 92.4 |
| | 2222 | 160 160 | 8 | 3066 2667 | 184.0 160.0 | 27.0 50.1 | 3281 3095 | 196.8 185.7 | 31.5 54.6 | 3380 3294 | 202.8 197.6 | 41.2 64.3 |
| | 130 | 160 | 12 | 2267 | 136.0 | 73.2 | 2909 | 174.6 | 77.7 | 3208 | 192.5 | 87.5 |
| | | 160 | 16 | 1867 | 112.0 | 96.3 | 2724 | 163.4 | 100.8 | 3122 | 187.3 | 110.6 |
| | | 190 190 | 8 | 3625 3133 | 217.5 188.0 | 31.5 58.9 | 3888 3660 | 233.3 219.6 | 36.2 63.6 | 4010 3904 | 240.6 234.3 | 46.3 73.7 |
| | | 190 | 12 | 2642 | 158.5 | 86.4 | 3432 | 205.9 | 91.1 | 3798 | 227.9 | 101.2 |
| | | 190 | 16 | 2151 | 129.1 | 113.8 | 3204 | 192.2 | 118.5 | 3693 | 221.6 | 128.6 |
| | | 150 150 | 8 | 4971 4451 | 298.3 267.1 | 43.3 79.9 | 5250 5009 | 315.0 300.5 | 51.1 87.7 | 5379 5267 | 322.8 316.0 | 67.8 104.4 |
| | | 150 | 12 | 3931 | 235.8 | 116.6 | 4767 | 286.0 | 124.3 | 5155 | 309.3 | 141.1 |
| | | 150 | 16 | 3410 | 204.6 | 153.2 | 4526 | 271.5 | 160.9 | 5043 | 302.6 | 177.7 |
| | | 180 180 | 8 | 5942 5295 | 356.5 317.7 | 50.9 94.9 | 6289 5989 | 377.4 359.3 | 59.0 103.0 | 6450 6311 | 387.0 378.7 | 76.5 120.4 |
| | 170 | 180 | 12 | 4647 | 278.8 | 138.8 | 5688 | 341.3 | 146.9 | 6171 | 370.3 | 164.3 |
| | | 180 | 16 | 4000 | 240.0 | 182.7 | 5388 | 323.3 | 190.8 | 6032 | 361.9 | 208.3 |
| | | 210 210 | 8 | 6909 6130 | 414.5 367.8 | 58.5 109.8 | 7327 6965 | 439.6 417.9 | 66.9 118.1 | 7520 7352 | 451.2 441.1 | 84.9 136.2 |
| | | 210 | 12 | 5351 | 321.1 | 161.0 | 6603 | 396.2 | 169.4 | 7185 | 431.1 | 187.4 |
| | | 210 | 16 | 4572 | 274.3 | 212.3 | 6242 | 374.5 | 220.6 | 7017 | 421.0 | 238.7 |
| 1450 rpm | | 130 130 | 8 | 3239 2928 | 194.4 175.7 | 28.7 52.4 | 3406 3262 | 204.4 195.7 | 34.6 58.3 | 3484 3417 | 209.0 205.0 | 47.2 70.9 |
| • | 3 | 130 | 12 | 2616 | 157.0 | 76.1 | 3117 | 187.0 | 82.0 | 3349 | 201.0 | 94.6 |
| | | 130 | 16 | 2305 | 138.3 | 99.8 | 2972 | 178.3 | 105.6 | 3282 | 196.9 | 118.3 |
| | 400 | 160 160 | 8 | 3971 3571 | 238.2 214.2 | 34.5 63.6 | 4185 3999 | 251.1 240.0 | 40.6 69.7 | 4284 4198 | 257.0 251.9 | 53.8 83.0 |
| | 130 | 160 | 12 | 3171 | 190.3 | 92.7 | 3814 | 228.8 | 98.9 | 4112 | 246.7 | 112.1 |
| | | 160 190 | 16 | 2771 4698 | 166.3 281.9 | 121.9 40.1 | 3628 4962 | 217.7 297.7 | 128.0 46.5 | 4026 5084 | 241.5 305.0 | 141.2 |
| | | 190 | 8 | 4207 | 252.4 | 74.7 | 4734 | 284.0 | 81.1 | 4978 | 298.7 | 60.3 94.9 |
| | | 190 | 12 | 3716 | 223.0 | 109.3 | 4506 | 270.3 | 115.7 | 4872 | 292.3 | 129.5 |
| | | 190 150 | 16 | 3225 | 193.5 384.2 | 143.9 55.3 | 4278 6683 | 256.7 | 150.3 65.9 | 4766 | 286.0 | 164.1 |
| | | 150 | 8 | 6404 5884 | 353.0 | 55.3 101.5 | 6683 | 401.0 386.5 | 112.1 | 6812 6700 | 408.7 402.0 | 88.7 134.9 |
| | | 150 | 12 | 5363 | 321.8 | 147.6 | 6200 | 372.0 | 158.2 | 6588 | 395.3 | 181.0 |
| | | 150 180 | 16 | 4843 7661 | 290.6 459.7 | 193.8 64.9 | 5958 8008 | 357.5 480.5 | 204.4 76.0 | 6476 | 388.5 490.2 | 227.2 99.7 |
| | 470 | 180 | 8 | 7014 | 459.7 | 120.3 | 7708 | 462.5 | 131.3 | 8169 8030 | 490.2 | 155.1 |
| | 170 | 180 | 12 | 6366 | 382.0 | 175.7 | 7407 | 444.4 | 186.7 | 7890 | 473.4 | 210.5 |
| | | 180 210 | 16 | 5719 8915 | 343.1 534.9 | 231.1 74.5 | 7107 9332 | 426.4 559.9 | 242.1 85.9 | 7751 9526 | 465.1 571.6 | 265.9 110.5 |
| | | 210 | 8 | 8136 | 488.1 | 139.1 | 8971 | 538.2 | 150.5 | 9358 | 561.5 | 175.1 |
| | | 210 | 12 | 7356 | 441.4 | 203.8 | 8609 | 516.5 | 215.2 | 9190 | 551.4 | 239.7 |
| | | 210 130 | 16 | 6577 3974 | 394.6 238.4 | 268.4 35.1 | 8247 4141 | 494.8 248.5 | 279.8 42.6 | 9022 4218 | 541.3 253.1 | 304.4 58.9 |
| 1750 rpm | | 130 | 8 | 3662 | 219.7 | 63.7 | 3996 | 239.8 | 71.2 | 4151 | 249.1 | 87.4 |
| | To the second | 130 | 12 | 3351 | 201.0 | 92.2 | 3852 | 231.1 | 99.8 | 4084 | 245.0 | 116.0 |
| | | 130 | 16 | 3039 4875 | 182.4 292.5 | 120.8 42.0 | 3707 5089 | 222.4 305.3 | 128.3 49.9 | 4017 5188 | 241.0 311.3 | 144.6 66.9 |
| | 420 | 160 | 8 | 4475 | 268.5 | 77.2 | 4903 | 294.2 | 85.1 | 5102 | 306.1 | 102.1 |
| | 130 | 160 | 12 | 4075 | 244.5 | 112.3 | 4718 | 283.1 | 120.2 | 5016 | 301.0 | 137.2 |
| | | 160 190 | 16 | 3676 5772 | 220.5 346.3 | 147.5 48.9 | 4532 6035 | 271.9 362.1 | 155.4 57.1 | 4930 6158 | 295.8 369.5 | 172.4 74.8 |
| | | 190 | 8 | 5281 | 346.3 | 90.6 | 5807 | 362.1 | 98.8 | 6052 | 369.5 | 116.5 |
| | | 190 | 12 | 4790 | 287.4 | 132.4 | 5579 | 334.8 | 140.6 | 5946 | 356.8 | 158.3 |
| | | 190 | 16 | 4298 | 257.9 | 174.1 | 5351 | 321.1 | 182.3 | 5840 | 350.4 | 200.0 |
| | | 150 150 | 8 | 7836 7316 | 470.2 439.0 | 67.5 123.2 | 8115 7874 | 486.9 472.4 | 81.1 136.8 | 8245 8133 | 494.7 488.0 | 110.4 166.1 |
| | | 150 | 12 | 6796 | 407.8 | 178.9 | 7632 | 457.9 | 192.5 | 8020 | 481.2 | 221.8 |
| | 170 | 150 | 16 | 6276 | 376.5 | 234.6 | 7391 | 443.4 | 248.2 | 7908 | 474.5 | 277.5 |
| | | 180 180 | 8 | 9381 8733 | 562.8 524.0 | 79.1 146.0 | 9727 9427 | 583.6 565.6 | 93.3 160.1 | 9889 9749 | 593.3 584.9 | 123.8 190.6 |
| | | 180 | 12 | 8085 | 485.1 | 212.8 | 9126 | 547.6 | 227.0 | 9610 | 576.6 | 257.5 |
| | | 180 | 16 | 7438 | 446.3 | 279.7 | 8826 | 529.5 | 293.8 | 9470 | 568.2 | 324.3 |

