

Bevel and Mitre Gears



Bevel and Mitre Gears are used to transmit power between shafts intersecting at 90°, on low speed, high torque applications where pitch line velocity does not exceed 5 m/s. All Cross+Morse gears are cut to the Gleason System to provide equal strength between pinion and gear.

Interchangeability

Bevel gears of identical pitch and teeth but from different drive ratio gearsets are not interchangeable. All bevel gears are generated on the pitch cone radius which varies with the ratio of gears within a given diametral pitch.

Installation

All mitre and bevel gears develop end thrust which must be counteracted by bearings of adequate capacity. Accurate and rigid mounting of both gear and pinion provide quiet operation and long life. Bearing spacing and shaft stiffness should be selected to keep shaft deflection below .025mm.

Lubrication

Grease lubrication can be adequate for low speed applications but oil splash lubrication is always preferable. The oil level should cover the face of the lower gear, and sufficient capacity should be available to keep oil temperature below 95°C.

Efficiency

When correctly aligned, a bevel gearset with oil lubrication can operate with transmission efficiency up to 98 per cent.

Power Rating Tables - Standard Metric Mitre Gears

| Gear Set Catalogue No. | Gear Speed R.P.M. | | | | | | | | | | | | | |
|------------------------|-------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 10 | 50 | 100 | 200 | 300 | 400 | 500 | 600 | 800 | 1000 | 1200 | 1500 | 2000 | 3000 |
| M1016 | .001 | .003 | .005 | .010 | .014 | .018 | .021 | .025 | .030 | .037 | .044 | .052 | .063 | .085 |
| M1019 | .001 | .005 | .009 | .016 | .023 | .029 | .034 | .040 | .049 | .060 | .070 | .083 | .100 | .137 |
| M1022 | .002 | .008 | .015 | .026 | .037 | .046 | .055 | .066 | .079 | .097 | .114 | .135 | .164 | .222 |
| M1026 | .004 | .014 | .025 | .044 | .062 | .078 | .093 | .110 | .133 | .163 | .192 | .227 | .275 | .374 |
| M1030 | .006 | .021 | .038 | .069 | .096 | .121 | .145 | .171 | .206 | .253 | .298 | .352 | .427 | .580 |
| M1516 | .003 | .010 | .017 | .031 | .044 | .055 | .066 | .078 | .094 | .115 | .136 | .161 | .195 | .264 |
| M1519 | .005 | .017 | .030 | .055 | .077 | .097 | .115 | .136 | .164 | .201 | .237 | .280 | .340 | .462 |
| M1522 | .007 | .027 | .048 | .085 | .119 | .150 | .179 | .211 | .255 | .313 | .368 | .435 | .528 | .717 |
| M1526 | .012 | .043 | .078 | .139 | .195 | .215 | .293 | .346 | .417 | .512 | .603 | .712 | .863 | 1.172 |
| M1530 | .019 | .069 | .123 | .220 | .308 | .387 | .462 | .545 | .657 | .806 | .950 | 1.122 | 1.361 | 1.848 |
| M2016 | .006 | .022 | .039 | .070 | .099 | .124 | .148 | .175 | .210 | .258 | .304 | .359 | .436 | .592 |
| M2019 | .010 | .038 | .068 | .121 | .169 | .212 | .253 | .299 | .360 | .442 | .521 | .616 | .747 | 1.014 |
| M2022 | .016 | .060 | .107 | .191 | .267 | .336 | .401 | .474 | .570 | .700 | .825 | .974 | 1.182 | 1.605 |
| M2026 | .028 | .101 | .180 | .322 | .451 | .567 | .676 | .799 | .962 | 1.181 | 1.392 | 1.643 | 1.993 | 2.706 |
| M2030 | .042 | .152 | .272 | .485 | .680 | .854 | 1.019 | 1.204 | 1.450 | 1.780 | 2.097 | 2.475 | 3.003 | 4.077 |
| M2516 | .001 | .004 | .007 | .013 | .018 | .023 | .027 | .033 | .039 | .048 | .057 | .067 | .081 | 1.10 |
| M2519 | .002 | .007 | .012 | .022 | .031 | .039 | .047 | .055 | .066 | .081 | .096 | 1.14 | 1.38 | 1.87 |
| M2522 | .003 | .011 | .019 | .035 | .049 | .061 | .073 | .086 | 1.04 | 1.28 | 1.50 | 1.78 | 2.15 | 2.93 |
| M2526 | .005 | .019 | .033 | .060 | .084 | 1.05 | 1.26 | 1.48 | 1.79 | 2.20 | 2.59 | 3.06 | 3.71 | |
| M2530 | .007 | .028 | .050 | .089 | 1.25 | 1.58 | 1.88 | 2.23 | 2.68 | 3.29 | 3.88 | 4.58 | 5.55 | |
| M3016 | .002 | .007 | .012 | .022 | .030 | .038 | .046 | .054 | .065 | .080 | .095 | 1.12 | 1.35 | 1.84 |
| M3019 | .003 | .011 | .021 | .037 | .051 | .065 | .077 | .091 | 1.10 | 1.35 | 1.59 | 1.88 | 2.28 | 3.10 |
| M3022 | .005 | .018 | .033 | .059 | .083 | 1.05 | 1.25 | 1.47 | 1.77 | 2.18 | 2.57 | 3.03 | 3.68 | |
| M3026 | .008 | .030 | .054 | .097 | 1.36 | 1.71 | 2.04 | 2.41 | 2.90 | 3.56 | 4.20 | 4.96 | 6.01 | |
| M3030 | .013 | .046 | .083 | 1.48 | 2.08 | 2.62 | 3.12 | 3.69 | 4.44 | 5.45 | 6.42 | 7.58 | 9.20 | |
| M3516 | .003 | .010 | .019 | .034 | .047 | .059 | .071 | .084 | 1.01 | 1.24 | 1.46 | 1.72 | 2.09 | 2.84 |
| M3519 | .005 | .017 | .031 | .056 | .079 | .099 | 1.18 | 1.40 | 1.69 | 2.07 | 2.44 | 2.88 | 3.49 | |
| M3522 | .007 | .028 | .050 | .090 | 1.26 | 1.58 | 1.89 | 2.23 | 2.69 | 3.30 | 3.89 | 4.59 | 5.57 | |
| M3526 | .013 | .047 | .084 | 1.50 | 2.10 | 2.64 | 3.15 | 3.73 | 4.49 | 5.51 | 6.49 | 7.66 | 9.30 | |
| M3530 | .020 | .073 | 1.31 | 2.34 | 3.27 | 4.11 | 4.91 | 5.80 | 6.98 | 8.57 | 10.10 | 11.92 | | |
| M4016 | .004 | .015 | .026 | .047 | .066 | .083 | 1.00 | 1.18 | 1.42 | 1.74 | 2.05 | 2.42 | 2.94 | 4.00 |
| M4019 | .007 | .026 | .047 | .084 | 1.18 | 1.48 | 1.76 | 2.09 | 2.51 | 3.08 | 3.63 | 4.29 | 5.20 | |
| M4022 | .011 | .041 | .074 | 1.33 | 1.86 | 2.34 | 2.79 | 3.29 | 3.97 | 4.87 | 5.74 | 6.77 | 8.22 | |
| M4026 | .020 | .072 | 1.28 | 2.29 | 3.20 | 4.03 | 4.80 | 5.67 | 6.83 | 8.39 | 9.89 | 11.67 | | |
| M4030 | .029 | 1.06 | 1.89 | 3.38 | 4.73 | 5.95 | 7.10 | 8.38 | 10.10 | 12.40 | 14.60 | 17.24 | | |
| M4516 | .006 | .021 | .037 | .067 | .094 | 1.18 | 1.41 | 1.67 | 2.01 | 2.47 | 2.91 | 3.44 | 4.17 | |
| M4519 | .010 | .036 | .065 | 1.16 | 1.63 | 2.04 | 2.44 | 2.88 | 3.47 | 4.26 | 5.02 | 5.93 | 7.19 | |
| M4522 | .016 | .057 | 1.02 | 1.83 | 2.56 | 3.21 | 3.84 | 4.53 | 5.46 | 6.70 | 7.90 | 9.32 | | |
| M4526 | .026 | .093 | 1.67 | 2.99 | 4.19 | 5.26 | 6.28 | 7.42 | 8.93 | 10.97 | 12.92 | 15.25 | | |
| M4530 | .040 | 1.46 | 2.62 | 4.67 | 6.54 | 8.22 | 9.81 | 11.59 | 13.96 | 17.14 | 20.19 | | | |
| M5016 | .007 | .027 | .048 | .087 | 1.22 | 1.53 | 1.83 | 2.16 | 2.60 | 3.19 | 3.76 | 4.44 | 5.39 | |
| M5019 | .013 | .048 | .087 | 1.55 | 2.17 | 2.73 | 3.26 | 3.85 | 4.63 | 5.69 | 6.70 | 7.92 | 9.11 | |
| M5022 | .021 | .076 | 1.36 | 2.43 | 3.40 | 4.27 | 5.10 | 6.02 | 7.25 | 8.90 | 10.49 | 12.38 | | |
| M5026 | .035 | 1.29 | 2.30 | 4.12 | 5.76 | 7.24 | 8.64 | 10.21 | 12.30 | 15.09 | 17.78 | | | |
| M5030 | .054 | 1.96 | 3.50 | 6.25 | 8.75 | 11.00 | 13.13 | 15.51 | 18.67 | 22.93 | 27.01 | | | |

Selections in tinted area have pitch line velocity over 5 m/s. For these selections it is recommended teeth are induction hardened.

Design and Selection

The power steel bevel gears can transmit under ideal lubrication conditions is normally limited by wear life. The following tables give design power in kW for a normal operating life of 10,000 hours for stock gears. For increased life gears can be induction hardened.

For correct selection of a Bevel Gearset first assemble application data, including Power, shaft speeds and drive ratio required.

- From details of Driver and Driven equipment select correct Service Factor from table below.
- Calculate Design Power kW
Design Power = Actual Power × Service factor.
- If Drive ratio not available determine from
Ratio = $\frac{R.P.M. \text{ High Speed Shaft}}{R.P.M. \text{ Low Speed Shaft}}$
- From table for Drive Ratio (i.e. 1:1 Mitre Gear, 1.5:1 to 4:1 Bevel Gears), select smallest gearset where Power equals or exceeds Design power at Pinion R.P.M. For variable speed drives check selection at max. shaft speed, torque and power.

For useful formulae on Bevel Gears design refer to appendix pages.

Design Factors

| Power Source | Character of Load of Driven Equipment | | |
|---------------|---------------------------------------|----------------|-------------|
| | Uniform | Moderate Shock | Heavy Shock |
| Uniform | 1.00 | 1.25 | 1.75 |
| Light Impulse | 1.25 | 1.50 | 2.00 |
| Heavy Impulse | 1.50 | 1.75 | 2.25 |

For speed increase drives add 0.1 to above factors.

Bevel and Mitre Gears



Power Rating Tables - Standard Metric Bevel Gears

| Gear Set Catalogue No. | Gear Speed R.P.M. | | | | | | | | | | | | | |
|--|-------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| | 10 | 50 | 100 | 200 | 300 | 400 | 500 | 600 | 800 | 1000 | 1200 | 1500 | 2000 | 3000 |
| 1.5:1 Ratio - Standard Metric Bevel Gears | | | | | | | | | | | | | | |
| M101624 | .001 | .004 | .007 | .013 | .019 | .024 | .028 | .033 | .040 | .050 | .058 | .069 | .084 | .114 |
| M151624 | .004 | .014 | .026 | .047 | .065 | .083 | .098 | .116 | .140 | .172 | .203 | .239 | .290 | .394 |
| M201624 | .009 | .032 | .057 | .102 | .143 | .179 | .214 | .253 | .305 | .374 | .441 | .520 | .631 | .857 |
| M251624 | .017 | .061 | .108 | .194 | .272 | .342 | .407 | .481 | .579 | .711 | .838 | .989 | 1.200 | 1.630 |
| M301624 | .027 | .098 | .175 | .313 | .438 | .550 | .657 | .776 | .934 | 1.147 | 1.351 | 1.595 | 1.935 | 2.627 |
| M351624 | .043 | .155 | .277 | .495 | .694 | .872 | 1.040 | 1.229 | 1.480 | 1.817 | 2.140 | 2.527 | 3.065 | 4.162 |
| M401624 | .058 | .211 | .377 | .674 | .944 | 1.186 | 1.415 | 1.672 | 2.013 | 2.472 | 2.912 | 3.438 | 4.171 | 5.663 |
| M451624 | .080 | .292 | .521 | .931 | 1.304 | 1.639 | 1.956 | 2.310 | 2.782 | 3.415 | 4.023 | 4.750 | 5.762 | |
| M501624 | .113 | .408 | .729 | 1.302 | 1.823 | 2.292 | 2.734 | 3.229 | 3.889 | 4.775 | 5.625 | 6.641 | 8.056 | |
| 2.0:1 Ratio - Standard Metric Bevel Gears | | | | | | | | | | | | | | |
| M101530 | .001 | .004 | .008 | .015 | .021 | .026 | .031 | .036 | .044 | .054 | .064 | .075 | .091 | .124 |
| M151530 | .004 | .016 | .028 | .050 | .071 | .089 | .106 | .125 | .151 | .185 | .218 | .257 | .312 | .424 |
| M201530 | .009 | .035 | .062 | .110 | .155 | .195 | .232 | .274 | .330 | .406 | .478 | .564 | .685 | .930 |
| M251530 | .018 | .066 | .118 | .211 | .295 | .371 | .442 | .532 | .629 | .773 | .910 | 1.075 | 1.304 | 1.771 |
| M301530 | .029 | .107 | .191 | .342 | .479 | .602 | .718 | .848 | 1.022 | 1.254 | 1.478 | 1.745 | 2.116 | 2.874 |
| M351530 | .046 | .168 | .300 | .535 | .750 | .942 | 1.124 | 1.328 | 1.599 | 1.963 | 2.313 | 2.713 | 3.313 | 4.498 |
| M401530 | .066 | .239 | .427 | .763 | 1.069 | 1.344 | 1.603 | 1.893 | 2.280 | 2.800 | 3.298 | 3.894 | 4.723 | 6.413 |
| M451530 | .093 | .336 | .601 | 1.074 | 1.504 | 1.890 | 2.255 | 2.664 | 3.208 | 3.939 | 4.640 | 5.478 | 6.645 | |
| M501530 | .127 | .460 | .822 | 1.468 | 2.056 | 2.585 | 3.084 | 3.642 | 4.386 | 5.385 | 6.344 | 7.490 | 9.085 | |
| 3.0:1 Ratio - Standard Metric Bevel Gears | | | | | | | | | | | | | | |
| M101545 | .002 | .007 | .013 | .023 | .033 | .040 | .048 | .057 | .069 | .084 | .098 | .117 | .142 | .193 |
| M151545 | .006 | .022 | .040 | .071 | .099 | .125 | .149 | .176 | .212 | .260 | .307 | .362 | .440 | .597 |
| M201545 | .013 | .049 | .089 | .158 | .222 | .279 | .331 | .393 | .473 | .582 | .685 | .809 | .981 | 1.332 |
| M251545 | .026 | .094 | .168 | .300 | .421 | .529 | .631 | .746 | .898 | 1.103 | 1.299 | 1.534 | 1.860 | 2.526 |
| M301545 | .043 | .154 | .276 | .494 | .691 | .869 | 1.037 | 1.224 | 1.474 | 1.810 | 2.132 | 2.517 | 3.054 | 4.147 |
| M351545 | .064 | .232 | .415 | .741 | 1.038 | 1.305 | 1.557 | 1.839 | 2.214 | 2.718 | 3.203 | 3.781 | 4.587 | 6.227 |
| M401545 | .095 | .342 | .612 | 1.093 | 1.530 | 1.923 | 2.294 | 2.709 | 3.263 | 4.006 | 4.720 | 5.572 | 6.759 | 9.178 |
| M451545 | .125 | .452 | .809 | 1.445 | 2.023 | 2.543 | 3.034 | 3.583 | 4.316 | 5.298 | 6.242 | 7.370 | 8.940 | |
| M501545 | .172 | .624 | 1.115 | 1.992 | 2.789 | 3.506 | 4.184 | 4.940 | 5.950 | 7.305 | 8.605 | 10.160 | 12.325 | |
| 4.0:1 Ratio - Standard Metric Bevel Gears | | | | | | | | | | | | | | |
| M101560 | .002 | .009 | .017 | .031 | .043 | .055 | .065 | .077 | .092 | .114 | .134 | .158 | .192 | .261 |
| M151560 | .007 | .026 | .046 | .083 | .116 | .146 | .175 | .206 | .248 | .305 | .359 | .424 | .515 | .698 |
| M201560 | .017 | .062 | .110 | .197 | .276 | .347 | .414 | .489 | .589 | .723 | .852 | 1.005 | 1.220 | 1.656 |
| M251560 | .031 | .111 | .199 | .356 | .498 | .626 | .748 | .883 | 1.063 | 1.305 | 1.538 | 1.816 | 2.203 | 2.991 |
| M301560 | .051 | .187 | .334 | .597 | .836 | 1.050 | 1.254 | 1.480 | 1.783 | 2.189 | 2.579 | 3.045 | 3.693 | 5.015 |
| M351560 | .078 | .282 | .504 | .900 | 1.260 | 1.584 | 1.890 | 2.232 | 2.688 | 3.300 | 3.888 | 4.590 | 5.569 | 7.561 |
| M401560 | .114 | .412 | .736 | 1.315 | 1.842 | 2.315 | 2.763 | 3.263 | 3.929 | 4.824 | 5.684 | 6.709 | 8.139 | 11.050 |
| M451560 | .152 | .553 | .988 | 1.764 | 2.470 | 3.105 | 3.705 | 4.375 | 5.270 | 6.470 | 7.620 | 9.000 | 10.915 | |
| M501560 | .199 | .719 | 1.285 | 2.295 | 3.210 | 4.040 | 4.820 | 5.690 | 6.855 | 8.415 | 9.920 | 11.700 | 14.200 | |

Power Rating Tables - Imperial Series D.P. Stock Bevel and Mitre Gears

| Gear Set Catalogue No. | Pinion Speed R.P.M. | | | | | | | | | | | | | |
|--|---------------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|-------|-------|
| | 10 | 50 | 100 | 200 | 300 | 400 | 500 | 600 | 800 | 1000 | 1200 | 1500 | 2000 | 3000 |
| Mitre Gears - D.P. Standard | | | | | | | | | | | | | | |
| 1618 | .005 | .020 | .035 | .064 | .089 | .112 | .134 | .158 | .190 | .233 | .275 | .325 | .394 | .535 |
| 1218 | .012 | .045 | .081 | .145 | .203 | .255 | .304 | .359 | .433 | .531 | .626 | .739 | .897 | 1.218 |
| 1224 | .029 | .107 | .191 | .341 | .478 | .601 | .717 | .847 | 1.020 | 1.252 | 1.475 | 1.742 | 2.113 | 2.870 |
| 1024 | .052 | .188 | .336 | .600 | .840 | 1.056 | 1.261 | 1.489 | 1.793 | 2.201 | 2.593 | 3.062 | 3.714 | 5.043 |
| 824 | .098 | .353 | .632 | 1.128 | 1.580 | 1.986 | 2.370 | 2.800 | 3.370 | 4.135 | 4.875 | 5.750 | 6.980 | |
| 624 | .216 | .780 | 1.395 | 2.490 | 3.490 | 4.385 | 5.230 | 6.180 | 7.440 | 9.130 | 10.760 | 12.710 | | |
| 524 | .350 | 1.265 | 2.260 | 4.040 | 5.650 | 7.110 | 8.480 | 10.20 | 12.060 | 14.810 | 17.450 | 20.600 | | |
| 2:1 Ratio - Standard D.P. Gears | | | | | | | | | | | | | | |
| 161530 | .005 | .019 | .034 | .060 | .084 | .106 | .126 | .149 | .180 | .221 | .260 | .307 | .372 | .506 |
| 121530 | .013 | .046 | .083 | .148 | .207 | .260 | .311 | .367 | .442 | .542 | .639 | .755 | .916 | 1.294 |
| 101530 | .022 | .079 | .140 | .251 | .352 | .442 | .527 | .623 | .750 | .921 | 1.085 | 1.281 | 1.554 | 2.110 |
| 81530 | .041 | .149 | .266 | .476 | .666 | .837 | .999 | 1.180 | 1.421 | 1.745 | 2.056 | 2.427 | 2.944 | 4.000 |
| 61530 | .094 | .338 | .605 | 1.080 | 1.511 | 1.900 | 2.267 | 2.677 | 3.225 | 3.959 | 4.664 | 5.506 | 6.680 | 9.070 |
| 3:1 Ratio - Standard D.P. Gears | | | | | | | | | | | | | | |
| 161236 | .004 | .015 | .026 | .047 | .066 | .083 | .099 | .117 | .141 | .173 | .204 | .241 | .292 | .397 |
| 121236 | .008 | .030 | .055 | .098 | .137 | .172 | .206 | .243 | .293 | .359 | .423 | .500 | .606 | .823 |
| 101236 | .015 | .056 | .100 | .180 | .252 | .317 | .378 | .446 | .537 | .659 | .777 | .917 | 1.113 | 1.511 |
| 81236 | .028 | .103 | .184 | .329 | .461 | .580 | .692 | .817 | .984 | 1.208 | 1.423 | 1.680 | 2.038 | 2.767 |
| 61236 | .064 | .231 | .421 | .737 | 1.031 | 1.296 | 1.547 | 1.827 | 2.200 | 2.701 | 3.182 | 3.757 | 4.558 | 6.188 |

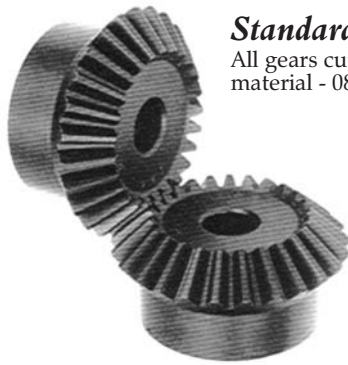
Selections in tinted area have pitch line velocity over 5 m/s. For these selections it is recommended teeth are induction hardened.

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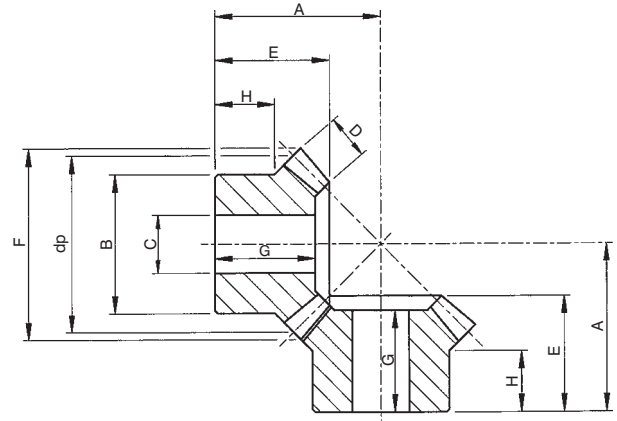
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Standard D.P. Mitre and Bevel Gears



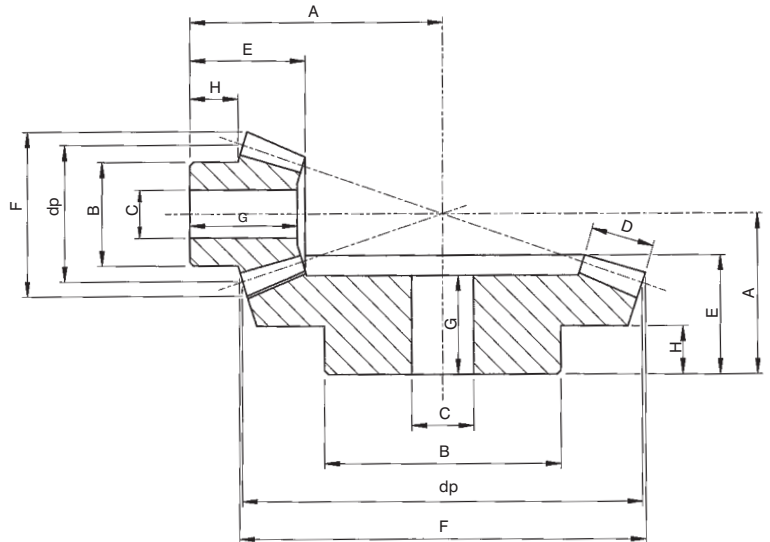
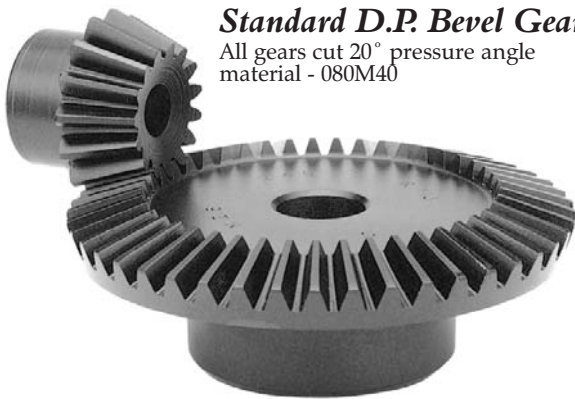
Standard D.P. Mitre Gears
All gears cut 20° pressure angle
material - 080M40



Imperial Series Mitre Gears 16 D.P. to 5 D.P.

| Catalogue No. | D.P. | No. of Teeth | Pitch Dia. dp | A | B | C | | D | E | F | G | H | Approx Wt. per Gear kg |
|---------------|------|--------------|---------------|--------|------|-------|-----|------|------|-------|------|------|------------------------|
| | | | | | | Min | Max | | | | | | |
| 1618 | 16 | 18 | 28.57 | 26.19 | 22.2 | 7.94 | 12 | 7.9 | 18.0 | 30.7 | 16.5 | 8.7 | 0.05 |
| 1218 | 12 | 18 | 38.10 | 34.92 | 31.7 | 9.52 | 16 | 11.1 | 24.4 | 41.1 | 22.1 | 12.7 | 0.12 |
| 1224 | 12 | 24 | 50.80 | 47.62 | 41.3 | 12.70 | 23 | 12.7 | 32.0 | 53.8 | 29.7 | 17.5 | 0.30 |
| 1024 | 10 | 24 | 60.96 | 53.97 | 50.8 | 15.87 | 27 | 17.5 | 36.8 | 64.5 | 34.3 | 18.4 | 0.50 |
| 824 | 8 | 24 | 76.20 | 69.85 | 50.8 | 15.87 | 32 | 22.2 | 48.5 | 80.8 | 45.5 | 19.1 | 0.86 |
| 624 | 6 | 24 | 101.60 | 88.90 | 66.7 | 25.40 | 44 | 28.6 | 59.9 | 107.7 | 55.1 | 20.6 | 1.84 |
| 524 | 5 | 24 | 121.92 | 101.60 | 76.2 | 31.75 | 51 | 31.7 | 65.0 | 129.0 | 58.9 | 17.8 | 2.88 |

Standard D.P. Bevel Gears
All gears cut 20° pressure angle
material - 080M40



Imperial Series Bevel Gears 16 D.P. to 6 D.P.

| Catalogue No. | D.P. | No. of Teeth | Pitch Dia. dp | A | B | C | | D | E | F | G | H | Approx Wt. per Gear kg |
|----------------------------------|------|--------------|-----------------|-----------------|--------------|----------------|----------|--------------|--------------|---------------|--------------|--------------|------------------------|
| | | | | | | Min | Max | | | | | | |
| Bevel Gear Sets 2:1 Ratio | | | | | | | | | | | | | |
| 161530 | 16 | 15 30 | 23.80 47.62 | 34.92 25.40 | 17.5 34.9 | 7.94 9.52 | 11 24 | 7.9 7.9 | 18.8 17.5 | 27.7 48.5 | 17.5 15.5 | 9.3 7.2 | 0.04 0.14 |
| 121530 | 12 | 15 30 | 31.75 63.50 | 43.66 33.33 | 25.4 42.9 | 9.52 12.70 | 15 28 | 12.7 12.7 | 23.9 23.9 | 36.8 64.8 | 22.1 21.1 | 10.3 9.3 | 0.08 0.31 |
| 101530 | 10 | 15 30 | 38.10 76.20 | 50.80 38.10 | 28.6 44.5 | 9.52 12.70 | 17 29 | 15.8 15.8 | 27.7 26.9 | 44.2 77.7 | 25.1 23.4 | 10.3 10.3 | 0.14 0.48 |
| 81530 | 8 | 15 30 | 47.62 95.25 | 63.50 57.15 | 34.9 60.3 | 12.70 15.87 | 22 40 | 20.6 20.6 | 35.3 43.4 | 55.4 97.0 | 32.8 39.4 | 12.3 17.6 | 0.27 1.26 |
| 61530 | 6 | 15 30 | 63.50 127.00 | 85.72 73.12 | 44.5 79.4 | 19.05 19.05 | 28 53 | 28.6 28.6 | 49.0 55.1 | 73.7 129.5 | 45.5 49.8 | 17.8 21.9 | 0.60 2.94 |
| Bevel Gear Sets 3:1 Ratio | | | | | | | | | | | | | |
| 161236 | 16 | 12 36 | 19.05 57.15 | 38.10 25.40 | 14.3 38.1 | 7.94 12.70 | 9 26 | 9.5 9.5 | 19.1 19.6 | 23.4 57.7 | 19.1 16.2 | 9.8 6.3 | 0.02 0.22 |
| 121236 | 12 | 12 36 | 25.40 76.20 | 50.80 31.75 | 19.1 50.8 | 9.52 12.70 | 11 34 | 11.1 11.1 | 23.9 23.4 | 31.0 77.0 | 23.9 19.3 | 11.6 10.3 | 0.05 0.44 |
| 101236 | 10 | 12 36 | 30.48 91.44 | 57.15 44.45 | 25.4 57.2 | 9.52 14.29 | 14 38 | 15.8 15.8 | 27.2 35.1 | 37.3 92.5 | 27.2 30.2 | 10.6 12.7 | 0.05 1.02 |
| 81236 | 8 | 12 36 | 38.10 114.30 | 71.44 44.45 | 31.7 76.2 | 12.70 15.87 | 18 50 | 19.1 19.1 | 33.3 32.5 | 46.5 115.6 | 33.3 26.2 | 13.2 12.7 | 0.19 1.44 |
| 61236 | 6 | 12 36 | 50.80 152.40 | 101.60 63.50 | 41.3 95.3 | 19.05 25.40 | 24 63 | 25.4 25.4 | 50.8 47.7 | 62.2 153.9 | 50.8 40.4 | 23.8 19.1 | 0.45 3.64 |

All Gears Stocked with Standard Plain Bore. Rebore, Keyway, Setscrew and Induction Hardening Services available.
Bevel and Mitre Gears with other D.P. and Module can be supplied to order up to 375mm diameter.

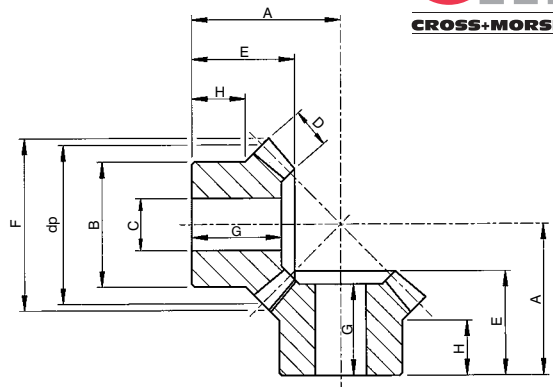
Standard Metric Mitre Gears



Gear Type 'A' *

Gear Type 'B'

Standard Metric Mitre Gears
Manufactured in medium carbon steels for high strength and durability.
All gears cut 20 degree pressure angle.



Cross+Morse standard stock metric mitre gears complement the existing range of diametral pitch gears to provide the designer a wider range of selection. The mitre gear sets are available in 7 tooth sizes in 9 pitches from 1.0 Mod to 5.0 Mod, providing the correct solution for right angle drives in applications from light instrumentation and office equipment to heavy manufacturing machinery. All gears are manufactured in medium carbon steels for high strength and durability, and can be optionally induction/flame hardened for more arduous applications. The gears are cut to the Gleason System with 20 degree pressure angle, and supplied only in pairs to ensure correct matching.

For long life and efficient operation it is essential that mitre gears are correctly mounted on rigidly supported shafts with bearings able to support the axial and radial loads imposed. The shafts should be at a true right angle within the following tolerances:-

Shaft Axis to intersect within $\pm 0.025\text{mm}$. Shafts to be at right angles within $\pm 5'$ angle. The mounting distance (Dimension 'A') to be true within $+0.0/-0.05\text{mm}$

| Cat. No. | Pitch Module | No. Teeth | Type | dp | A | B | Bore C | | D | E | F | G | H | Approx Weight per Gear Kg |
|----------|--------------|-----------|------|-------|--------|-------|--------|------|------|------|-------|------|------|---------------------------|
| | | | | | | | min | max | | | | | | |
| M1016 | 1 | 16 | B | 16.0 | 16.00 | 13.3 | 4 | 7.5 | 4.0 | 11.2 | 17.4 | 11.2 | 6.5 | 0.013 |
| M1019 | | 19 | B | 19.0 | 18.00 | 15.3 | 4 | 9.0 | 4.0 | 11.8 | 20.4 | 11.8 | 6.5 | 0.015 |
| M1022 | | 22 | B | 22.0 | 20.00 | 16.3 | 5 | 10.0 | 4.7 | 12.8 | 23.4 | 12.8 | 6.5 | 0.022 |
| M1026 | | 26 | B | 26.0 | 22.00 | 20.3 | 5 | 13.0 | 5.5 | 13.3 | 27.4 | 13.3 | 7.0 | 0.033 |
| M1030 | | 30 | B | 30.0 | 26.00 | 20.3 | 5 | 13.0 | 6.4 | 16.0 | 31.4 | 16.0 | 8.0 | 0.040 |
| M1516 | 1.5 | 16 | B | 24.0 | 26.00 | 20.3 | 8 | 10.0 | 6.0 | 18.9 | 26.1 | 18.9 | 12.0 | 0.028 |
| M1519 | | 19 | B | 28.5 | 30.00 | 20.3 | 8 | 12.5 | 6.0 | 21.3 | 30.6 | 21.3 | 12.0 | 0.050 |
| M1520 | | 20 | A | 30.0 | 27.40 | 22.0 | 8 | 14.0 | 10.0 | 20.0 | 32.1 | 18.0 | 8.5 | 0.061 |
| M1522 | | 22 | B | 33.0 | 33.00 | 25.3 | 8 | 16.0 | 7.5 | 22.5 | 35.1 | 22.5 | 12.0 | 0.081 |
| M1525 | | 25 | A | 37.5 | 34.09 | 28.0 | 10 | 18.0 | 10.0 | 23.0 | 39.6 | 21.0 | 12.0 | 0.111 |
| M1526 | | 26 | B | 39.0 | 36.00 | 28.3 | 8 | 19.0 | 8.5 | 23.2 | 41.1 | 23.2 | 12.0 | 0.117 |
| M1530 | | 30 | B | 45.0 | 42.00 | 30.3 | 12 | 20.0 | 10.0 | 27.2 | 47.1 | 27.2 | 12.0 | 0.167 |
| M2016 | 2 | 16 | B | 32.0 | 33.00 | 25.3 | 8 | 14.0 | 8.0 | 23.5 | 34.8 | 23.5 | 14.0 | 0.070 |
| M2019 | | 19 | B | 38.0 | 36.00 | 25.3 | 8 | 16.0 | 9.0 | 24.2 | 40.8 | 24.2 | 12.0 | 0.105 |
| M2020 | | 20 | A | 40.0 | 35.78 | 32.0 | 10 | 18.0 | 12.0 | 25.0 | 42.8 | 22.0 | 12.0 | 0.158 |
| M2022 | | 22 | B | 44.0 | 42.00 | 30.3 | 12 | 20.0 | 10.0 | 27.9 | 46.8 | 27.9 | 14.0 | 0.158 |
| M2025 | | 25 | A | 50.0 | 42.28 | 40.0 | 12 | 24.0 | 14.0 | 28.0 | 52.8 | 25.0 | 12.3 | 0.280 |
| M2026 | | 26 | B | 52.0 | 48.00 | 35.3 | 12 | 24.0 | 12.0 | 31.4 | 54.8 | 31.4 | 14.0 | 0.261 |
| M2030 | | 30 | B | 60.0 | 54.00 | 40.3 | 14 | 27.0 | 13.0 | 34.1 | 62.8 | 34.1 | 17.0 | 0.385 |
| M2516 | | 2.5 | 16 | B | 40.0 | 40.00 | 30.3 | 12 | 18.0 | 10.0 | 28.1 | 43.5 | 28.1 | 15.0 |
| M2519 | 19 | | B | 47.5 | 42.00 | 35.3 | 12 | 23.0 | 11.0 | 27.1 | 51.0 | 27.1 | 13.0 | 0.200 |
| M2520 | 20 | | A | 50.0 | 45.93 | 40.0 | 12 | 26.0 | 12.0 | 30.5 | 53.5 | 27.0 | 16.0 | 0.300 |
| M2522 | 22 | | B | 55.0 | 48.00 | 45.3 | 16 | 28.0 | 12.0 | 30.1 | 58.5 | 30.1 | 16.0 | 0.328 |
| M2525 | 25 | | A | 62.5 | 52.98 | 50.0 | 15 | 34.0 | 15.0 | 33.5 | 66.0 | 30.0 | 16.0 | 0.520 |
| M2526 | 26 | | B | 65.0 | 54.00 | 45.3 | 16 | 30.0 | 15.0 | 33.2 | 68.5 | 33.2 | 16.0 | 0.490 |
| M2530 | 30 | | B | 75.0 | 64.00 | 50.3 | 16 | 34.0 | 16.0 | 39.0 | 78.5 | 39.0 | 20.0 | 0.700 |
| M3016 | 3 | 16 | B | 48.0 | 45.00 | 40.3 | 12 | 21.0 | 12.0 | 31.7 | 52.2 | 31.7 | 18.0 | 0.280 |
| M3019 | | 19 | B | 57.0 | 54.00 | 40.3 | 14 | 27.0 | 13.0 | 36.0 | 61.2 | 36.0 | 17.0 | 0.370 |
| M3020 | | 20 | A | 60.0 | 51.00 | 45.0 | 15 | 30.0 | 18.0 | 35.0 | 64.2 | 31.0 | 13.6 | 0.450 |
| M3022 | | 22 | B | 66.0 | 58.00 | 50.3 | 16 | 34.0 | 15.0 | 36.9 | 70.2 | 36.9 | 17.0 | 0.540 |
| M3025 | | 25 | A | 75.0 | 60.00 | 55.0 | 15 | 37.0 | 20.0 | 38.0 | 79.2 | 34.0 | 16.0 | 0.770 |
| M3026 | | 26 | B | 78.0 | 64.00 | 50.3 | 16 | 34.0 | 17.0 | 38.4 | 82.2 | 38.4 | 18.0 | 0.750 |
| M3030 | | 30 | B | 90.0 | 74.00 | 60.3 | 20 | 40.0 | 19.0 | 43.8 | 94.2 | 43.8 | 22.0 | 0.950 |
| M3516 | 3.5 | 16 | B | 56.0 | 53.00 | 45.3 | 16 | 24.0 | 14.0 | 36.4 | 61.0 | 36.4 | 20.0 | 0.450 |
| M3519 | | 19 | B | 66.5 | 58.80 | 50.3 | 18 | 34.0 | 15.0 | 37.8 | 71.5 | 37.8 | 19.0 | 0.650 |
| M3520 | | 20 | A | 70.0 | 58.63 | 55.0 | 15 | 37.0 | 22.0 | 40.5 | 75.0 | 36.0 | 17.0 | 0.790 |
| M3522 | | 22 | B | 77.0 | 64.00 | 55.3 | 20 | 37.0 | 17.0 | 39.1 | 82.0 | 39.1 | 18.0 | 0.720 |
| M3525 | | 25 | A | 87.5 | 67.47 | 65.0 | 20 | 44.0 | 26.0 | 43.5 | 92.5 | 39.0 | 18.0 | 1.200 |
| M3526 | | 26 | B | 91.0 | 73.05 | 62.3 | 20 | 41.0 | 20.0 | 43.4 | 96.0 | 43.4 | 20.0 | 1.290 |
| M3530 | | 30 | B | 105.0 | 82.00 | 70.3 | 20 | 46.0 | 23.0 | 47.1 | 110.0 | 47.1 | 22.0 | 1.800 |
| M4016 | 4 | 16 | B | 64.0 | 64.00 | 50.3 | 16 | 31.0 | 15.0 | 44.3 | 69.7 | 44.3 | 25.0 | 0.680 |
| M4019 | | 19 | B | 76.0 | 68.00 | 55.3 | 20 | 36.0 | 18.0 | 44.4 | 81.7 | 44.4 | 22.0 | 0.900 |
| M4020 | | 20 | A | 80.0 | 63.74 | 60.0 | 18 | 40.0 | 25.0 | 43.0 | 85.7 | 38.0 | 18.0 | 1.000 |
| M4022 | | 22 | B | 88.0 | 74.00 | 60.3 | 20 | 40.0 | 20.0 | 45.9 | 93.7 | 45.9 | 22.0 | 1.050 |
| M4025 | | 25 | A | 100.0 | 73.50 | 70.0 | 20 | 46.0 | 28.0 | 45.0 | 105.7 | 40.0 | 18.0 | 1.530 |
| M4026 | | 26 | B | 104.0 | 82.00 | 70.3 | 20 | 46.0 | 25.0 | 48.0 | 109.7 | 48.0 | 22.0 | 1.900 |
| M4030 | | 30 | B | 120.0 | 94.00 | 80.3 | 20 | 54.0 | 26.0 | 54.2 | 125.7 | 54.2 | 25.0 | 2.450 |
| M4516 | 4.5 | 16 | B | 72.0 | 68.00 | 55.3 | 20 | 34.0 | 17.5 | 46.3 | 78.4 | 46.3 | 25.0 | 0.750 |
| M4519 | | 19 | B | 85.5 | 75.57 | 62.3 | 20 | 41.0 | 20.0 | 49.0 | 91.9 | 49.0 | 25.0 | 1.290 |
| M4520 | | 20 | A | 90.0 | 71.41 | 65.0 | 20 | 44.0 | 28.0 | 48.0 | 96.4 | 42.0 | 18.0 | 1.370 |
| M4522 | | 22 | B | 99.0 | 82.00 | 70.3 | 20 | 46.0 | 22.0 | 50.1 | 105.4 | 50.1 | 25.0 | 1.550 |
| M4525 | | 25 | A | 112.5 | 81.76 | 75.0 | 20 | 50.0 | 32.0 | 50.0 | 118.9 | 44.0 | 18.0 | 2.070 |
| M4526 | | 26 | B | 117.0 | 93.30 | 75.3 | 20 | 50.0 | 25.0 | 54.7 | 123.4 | 54.7 | 26.0 | 2.790 |
| M4530 | | 30 | B | 135.0 | 105.00 | 80.3 | 20 | 54.0 | 29.0 | 60.0 | 141.4 | 60.0 | 28.0 | 3.100 |
| M5016 | 5 | 16 | B | 80.0 | 74.00 | 60.3 | 20 | 40.0 | 18.0 | 48.9 | 87.1 | 48.9 | 25.0 | 0.920 |
| M5019 | | 19 | B | 95.0 | 82.00 | 60.3 | 20 | 40.0 | 22.0 | 52.2 | 102.1 | 52.2 | 25.0 | 1.500 |
| M5020 | | 20 | A | 100.0 | 77.36 | 70.0 | 20 | 46.0 | 30.0 | 50.5 | 107.1 | 44.0 | 18.5 | 1.730 |
| M5022 | | 22 | B | 110.0 | 94.00 | 80.3 | 20 | 54.0 | 24.0 | 58.2 | 117.1 | 58.2 | 30.0 | 2.390 |
| M5025 | | 25 | A | 125.0 | 89.86 | 90.0 | 20 | 60.0 | 34.0 | 53.5 | 132.1 | 47.0 | 18.0 | 3.080 |
| M5026 | | 26 | B | 130.0 | 105.00 | 80.3 | 20 | 54.0 | 29.0 | 62.7 | 137.1 | 62.7 | 30.0 | 3.140 |
| M5030 | | 30 | B | 150.0 | 119.00 | 80.3 | 20 | 54.0 | 32.0 | 68.9 | 157.1 | 68.9 | 35.0 | 4.200 |

All gears stocked with standard plain bore. Rebore, keyway, setscrew and induction hardening services available. Bevel and mitre gears with other D.P. and module can be supplied to order up to 375mm diameter. All dimensions in mm. *Type A where 'G' less than 'E'

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Standard Metric Series Bevel Gears



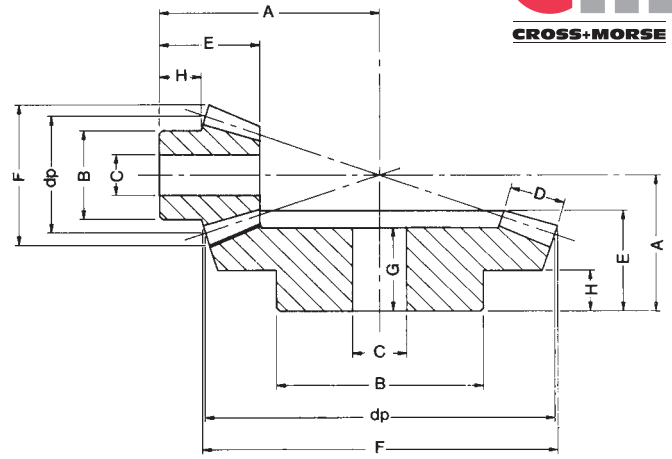
Cross+Morse standard stock bevel gears complement the existing range of diametral pitch gears to provide the designer a wider range of selection. Available in 4 standard ratios with 9 different pitches ranging from 1.0 Mod to 5.0 Mod, these bevels provide the ideal solution for many right angle drive applications from light instrumentation to rugged manufacturing plant and agricultural equipment. All gears are manufactured in medium carbon steels for high strength and durability, and can be optionally induction/flame hardened for more arduous applications. The gears are all gear cut to the Gleason System with 20 degree pressure angle, and supplied only in complete sets to ensure correct matching.

For long life and efficient operation it is essential that bevel gears are correctly mounted on rigidly supported shafts with bearings able to support the axial and radial loads imposed. The shafts should be at a true right angle within the following tolerances:-

Shaft Axis to intersect within $\pm 0.025\text{mm}$

Shafts to be at right angles within $\pm 5'$ angle

The mounting distance (Dimension 'A') to be true within $+0.0/-0.05\text{mm}$



Metric Series Bevel Gears 1.0 Mod to 5.0 Mod

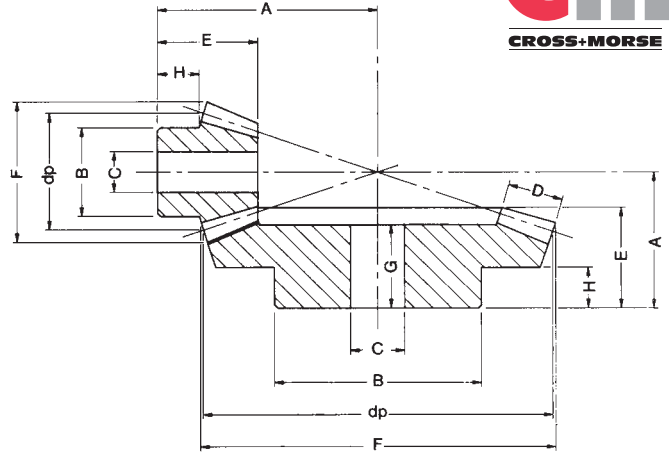
| Catalogue No. | Pitch Module | No. Teeth | Pitch Dia. dp | A | B | Bore C | | D | E | F | G | H | Approx Wt. kg |
|--------------------------------------|--------------|-----------|---------------|-----------------|---------------|----------|----------|--------------|--------------|---------------|--------------|--------------|---------------|
| | | | | | | min | max | | | | | | |
| Bevel Gear Sets 1.5 : 1 Ratio | | | | | | | | | | | | | |
| M101624 | 1 | 16 24 | 16.0 24.0 | 20 20 | 13.3 20.3 | 4 5 | 8 12 | 4.3 4.3 | 12.0 14.8 | 18.1 24.8 | 12.0 13.3 | 7.0 9.3 | .012 .035 |
| M151624 | 1.5 | 16 24 | 24.0 36.0 | 31 32 | 20.3 28.3 | 8 8 | 10 13 | 8 8 | 20.3 24.9 | 27.1 37.2 | 20.3 22.7 | 11.8 16.0 | .040 .115 |
| M201624 | 2 | 16 24 | 32.0 48.0 | 40 37 | 25.3 32.3 | 8 8 | 15 21 | 10 10 | 25.2 27.2 | 36.2 49.7 | 25.2 24.7 | 13.8 16.0 | .080 .255 |
| M251624 | 2.5 | 16 24 | 40.0 60.0 | 49 46 | 32.3 45.3 | 12 16 | 18 29 | 13 13 | 30.8 34.0 | 45.2 62.1 | 30.8 30.8 | 16.4 20.0 | .17 .40 |
| M301624 | 3 | 16 24 | 48.0 72.0 | 55 51 | 40.3 55.3 | 12 16 | 23 36 | 14.5 14.5 | 32.4 36.2 | 54.3 74.5 | 32.4 32.0 | 16.4 20.0 | .30 .65 |
| M351624 | 3.5 | 16 24 | 56.0 84.0 | 66 61 | 45.3 55.3 | 16 20 | 26 36 | 18 18 | 40.4 44.2 | 63.3 86.9 | 40.4 40.0 | 20.4 25.0 | .57 .90 |
| M401624 | 4 | 16 24 | 64.0 96.0 | 78 66 | 50.3 60.3 | 16 20 | 32 40 | 18 18 | 46.8 45.5 | 72.4 99.3 | 46.8 40.0 | 25.4 25.0 | .68 1.20 |
| M451624 | 4.5 | 16 24 | 72.0 108.0 | 83 81 | 60.3 80.3 | 20 20 | 38 54 | 20 20 | 47.6 57.8 | 81.4 111.7 | 47.6 51.3 | 25.1 35.0 | .93 2.20 |
| M501624 | 5 | 16 24 | 80.0 120.0 | 92 86 | 60.3 80.3 | 20 20 | 40 54 | 24 24 | 54.1 61.1 | 90.5 124.1 | 54.1 54.5 | 25.4 35.0 | 1.06 2.40 |
| Bevel Gear Sets 2.0 : 1 Ratio | | | | | | | | | | | | | |
| M101530 | 1 | 15 30 | 15.0 30.0 | 22 20 | 13.3 20.3 | 4 5 | 8 13 | 5 5 | 11.9 15.1 | 17.4 30.6 | 11.9 13.7 | 6.5 9.0 | .010 .040 |
| M151530 | 1.5 | 15 30 | 22.5 45.0 | 35 32 | 19.3 32.3 | 8 8 | 10 21 | 9 9 | 21.1 25.2 | 26.1 45.9 | 21.1 23.0 | 11.9 16.0 | .040 .170 |
| M151632 | 1.5 | 16 32 | 24.0 48.0 | 35.83 27.45 | 21.0 32.0 | 10 12 | 11 21 | 8 8 | 19.5 20.0 | 26.7 49.3 | 18.0 17.0 | 11.3 10.0 | .04 .12 |
| M201530 | 2 | 15 30 | 30.0 60.0 | 45 39 | 25.3 40.3 | 8 14 | 13 27 | 11.5 11.5 | 26.0 29.8 | 34.8 61.2 | 26.0 26.8 | 14.1 18.0 | .090 .320 |
| M201632 | 2 | 16 32 | 32.0 64.0 | 45.41 35.21 | 26.0 40.0 | 10 12 | 15 27 | 10 10 | 23 25.0 | 35.6 65.8 | 21.0 21.0 | 11.9 10.0 | .08 .26 |
| M251530 | 2.5 | 15 30 | 37.5 75.0 | 55 45 | 32.3 45.3 | 12 16 | 17 30 | 15 15 | 31.8 33.7 | 43.5 76.5 | 31.8 30.0 | 16.2 20.0 | .170 .500 |
| M251632 | 2.5 | 16 30 | 40.0 75.0 | 55.88 45 | 34.0 40.3 | 12 14 | 18 27 | 12 11.5 | 27.5 29.8 | 44.5 61.2 | 25.0 26.8 | 14.4 18.0 | .170 .320 |
| M301530 | 3 | 15 30 | 45.0 90.0 | 66 56 | 40.3 55.3 | 12 16 | 22 36 | 17 17 | 37.3 42.1 | 52.2 91.8 | 37.3 38.0 | 19.9 25.0 | .315 .960 |
| M301632 | 3 | 16 32 | 48.0 96.0 | 61.64 45.31 | 40.0 60.0 | 15 15 | 24 40 | 15 15 | 28.0 30.0 | 53.4 98.7 | 25.0 24.0 | 11.6 10.0 | .23 .72 |
| M351530 | 3.5 | 15 30 | 52.5 105.0 | 79 61 | 45.3 60.3 | 16 20 | 25 40 | 20.5 20.5 | 46.1 45.0 | 60.9 107.1 | 46.1 40.0 | 24.7 25.0 | .49 1.35 |
| M351632 | 3.5 | 15 30 | 52.5 105.0 | 79 61 | 45.3 60.3 | 16 20 | 25 40 | 20.5 20.5 | 46.1 45.0 | 60.9 107.1 | 46.1 40.0 | 24.7 25.0 | .49 1.35 |
| M401530 | 4 | 15 30 | 60.0 120.0 | 87 76 | 50.3 80.3 | 20 20 | 30 54 | 22.5 22.5 | 48.6 57.3 | 69.6 122.3 | 48.6 51.9 | 24.6 35.0 | .63 2.45 |
| M401632 | 4 | 16 32 | 64.0 128.0 | 80.81 52.42 | 50.0 80.0 | 15 20 | 32 54 | 20 20 | 36.0 32.0 | 71.2 131.6 | 32.0 24.0 | 13.4 10.0 | .52 1.32 |
| M451530 | 4.5 | 15 30 | 67.5 135.0 | 94 81 | 60.3 80.3 | 20 20 | 34 54 | 26 26 | 51.4 60.3 | 78.3 137.6 | 51.4 54.3 | 24.7 35.0 | 1.20 3.18 |
| M451632 | 4.5 | 16 32 | 72.0 144.0 | 90.5 59.21 | 60.0 90.0 | 20 20 | 36 60 | 22 22 | 39.5 36.0 | 80.1 148.0 | 35.0 27.0 | 15.4 10.0 | .76 1.94 |
| M501530 | 5 | 15 30 | 75.0 150.0 | 104 85 | 60.3 80.3 | 20 20 | 37 54 | 30 30 | 57.6 62.5 | 87.0 152.9 | 57.6 56.0 | 25.3 35.0 | 1.38 3.87 |
| M501632 | 5 | 16 32 | 80.0 160.0 | 106.06 63.52 | 60.0 100.0 | 20 20 | 40 65 | 25 25 | 50.0 38.0 | 88.9 164.5 | 45.0 28.0 | 21.1 10.0 | 1.04 2.53 |

All dimensions in mm.

All gears stocked with standard plain bore. Rebore, keyway, setscrew and induction hardening services available.

Bevel and mitre gears with other D.P. and module can be supplied to order up to 375mm diameter.

Standard Metric Bevel Gears



Metric Series Bevel Gears 1.0 Mod to 5.0 Mod

| Catalogue No. | Pitch Module | No. Teeth | Pitch Dia. dp | A | B | Bore C | | D | E | F | G | H | Approx Wt. kg |
|------------------------------------|--------------|-----------|---------------|--------|-------|--------|-----|------|------|-------|------|------|---------------|
| | | | | | | min | max | | | | | | |
| Bevel Gear Sets 3 : 1 Ratio | | | | | | | | | | | | | |
| M101545 | 1 | 15 | 15.0 | 32.00 | 13.3 | 4 | 8 | 7.1 | 16.6 | 17.7 | 16.6 | 9.2 | 0.02 |
| | | 45 | 45.0 | 22.00 | 25.3 | 8 | 16 | 7.1 | 17.1 | 45.3 | 15.2 | 10.0 | 0.09 |
| M151545 | 1.5 | 15 | 22.5 | 46.00 | 19.3 | 8 | 10 | 10.5 | 22.6 | 26.5 | 22.6 | 11.7 | 0.05 |
| | | 45 | 67.5 | 37.00 | 45.3 | 14 | 30 | 10.5 | 29.6 | 68.1 | 27.2 | 20.0 | 0.41 |
| M151648 | 1.5 | 16 | 24.0 | 46.44 | 20.0 | 10 | 11 | 12.0 | 24.0 | 26.8 | 23.0 | 11.7 | 0.05 |
| | | 48 | 72.0 | 27.27 | 50.0 | 12 | 33 | 12.0 | 20.0 | 73.0 | 17.0 | 10.0 | 0.33 |
| M201545 | 2 | 15 | 30.0 | 60.00 | 25.3 | 8 | 15 | 14.0 | 28.9 | 35.4 | 28.9 | 14.2 | 0.09 |
| | | 45 | 90.0 | 42.00 | 45.3 | 16 | 30 | 14.0 | 32.1 | 90.8 | 28.4 | 20.0 | 0.61 |
| M201648 | 2 | 16 | 32.0 | 61.76 | 26.0 | 12 | 16 | 15.0 | 28.5 | 35.8 | 27.0 | 12.4 | 0.10 |
| | | 48 | 96.0 | 32.90 | 60.0 | 15 | 40 | 15.0 | 23.0 | 97.3 | 19.0 | 10.0 | 0.65 |
| M251545 | 2.5 | 15 | 37.5 | 73.00 | 32.3 | 12 | 18 | 18.0 | 34.6 | 44.2 | 34.6 | 15.9 | 0.13 |
| | | 45 | 112.5 | 52.00 | 60.3 | 20 | 40 | 18.0 | 39.7 | 113.4 | 35.3 | 25.0 | 1.22 |
| M251648 | 2.5 | 16 | 40.0 | 74.41 | 32.0 | 12 | 18 | 18.0 | 32.0 | 44.7 | 30.0 | 13.0 | 0.18 |
| | | 48 | 120.0 | 38.60 | 70.0 | 20 | 48 | 18.0 | 26.0 | 121.6 | 21.0 | 10.0 | 1.13 |
| M301545 | 3 | 15 | 45.0 | 88.00 | 40.3 | 16 | 22 | 21.0 | 41.3 | 53.0 | 41.3 | 19.7 | 0.34 |
| | | 45 | 135.0 | 62.00 | 60.3 | 20 | 40 | 21.0 | 47.2 | 136.1 | 42.0 | 30.0 | 1.85 |
| M301648 | 3 | 16 | 48.0 | 86.25 | 40.0 | 15 | 22 | 18.0 | 32.0 | 53.7 | 30.0 | 12.1 | 0.28 |
| | | 48 | 144.0 | 45.20 | 80.0 | 20 | 54 | 18.0 | 29.0 | 145.9 | 23.0 | 10.0 | 1.85 |
| M351545 | 3.5 | 15 | 52.5 | 105.00 | 45.3 | 20 | 28 | 23.5 | 49.6 | 61.9 | 49.6 | 25.0 | 0.60 |
| | | 45 | 157.5 | 72.00 | 80.3 | 20 | 54 | 23.5 | 54.4 | 158.8 | 48.6 | 35.0 | 3.25 |
| M351648 | 3.5 | 16 | 56.0 | 100.29 | 48.0 | 15 | 30 | 22.0 | 38.0 | 62.6 | 35.5 | 15.0 | 0.50 |
| | | 48 | 168.0 | 49.48 | 90.0 | 20 | 60 | 22.0 | 31.0 | 170.2 | 24.0 | 10.0 | 2.69 |
| M401545 | 4 | 15 | 60.0 | 117.00 | 50.3 | 20 | 32 | 27.5 | 54.3 | 70.7 | 54.3 | 25.4 | 0.75 |
| | | 45 | 180.0 | 77.00 | 80.3 | 20 | 54 | 27.5 | 57.0 | 181.5 | 50.5 | 35.0 | 3.95 |
| M401648 | 4 | 16 | 64.0 | 112.73 | 55.0 | 20 | 35 | 25.0 | 41.5 | 71.6 | 38.5 | 15.2 | 0.68 |
| | | 48 | 192.0 | 54.20 | 100.0 | 20 | 66 | 25.0 | 33.0 | 194.5 | 25.0 | 10.0 | 3.74 |
| M451545 | 4.5 | 15 | 67.5 | 128.00 | 55.3 | 20 | 36 | 28.5 | 55.2 | 79.5 | 55.2 | 24.8 | 0.87 |
| | | 45 | 202.5 | 87.00 | 90.3 | 20 | 60 | 28.5 | 63.9 | 204.2 | 57.0 | 40.0 | 5.60 |
| M451648 | 4.5 | 16 | 72.0 | 133.27 | 60.0 | 20 | 40 | 28.0 | 53.0 | 80.5 | 50.0 | 23.4 | 1.08 |
| | | 48 | 216.0 | 72.93 | 100.0 | 20 | 66 | 28.0 | 49.0 | 218.8 | 40.0 | 18.0 | 6.70 |
| M501545 | 5 | 15 | 75.0 | 145.00 | 60.3 | 20 | 40 | 33.0 | 65.3 | 88.4 | 65.3 | 30.0 | 1.35 |
| | | 45 | 225.0 | 92.00 | 90.3 | 20 | 60 | 33.0 | 66.7 | 226.9 | 59.2 | 40.0 | 7.05 |
| M501648 | 5 | 16 | 80.0 | 145.61 | 60.0 | 20 | 40 | 35.0 | 60.0 | 89.5 | 57.0 | 22.5 | 1.34 |
| | | 48 | 240.0 | 75.45 | 150.0 | 20 | 100 | 35.0 | 50.0 | 243.2 | 40.0 | 20.0 | 9.00 |
| Bevel Gear Sets 4 : 1 Ratio | | | | | | | | | | | | | |
| M101560 | 1 | 15 | 15.0 | 38.00 | 13.3 | 4 | 8 | 9.3 | 17.2 | 17.8 | 17.2 | 7.7 | 0.02 |
| | | 60 | 60.0 | 22.00 | 30.3 | 8 | 20 | 9.3 | 17.1 | 60.3 | 15.2 | 10.0 | 0.24 |
| M151560 | 1.5 | 15 | 22.5 | 57.00 | 20.3 | 8 | 11 | 11.0 | 23.0 | 26.7 | 23.0 | 11.7 | 0.04 |
| | | 60 | 90.0 | 42.00 | 50.3 | 16 | 34 | 11.0 | 34.0 | 90.4 | 31.2 | 25.0 | 0.78 |
| M151664 | 1.5 | 16 | 24.0 | 61.02 | 18.0 | 10 | 12 | 12.0 | 25.0 | 26.9 | 24.0 | 12.2 | 0.05 |
| | | 64 | 96.0 | 30.53 | 70.0 | 15 | 48 | 12.0 | 22.0 | 96.7 | 19.0 | 10.0 | 0.71 |
| M201560 | 2 | 15 | 30.0 | 75.00 | 25.3 | 8 | 14 | 16.0 | 31.0 | 35.6 | 31.0 | 14.4 | 0.12 |
| | | 60 | 120.0 | 48.00 | 60.3 | 16 | 40 | 16.0 | 37.6 | 120.6 | 34.2 | 25.0 | 1.30 |
| M201664 | 2 | 16 | 32.0 | 73.07 | 25.0 | 12 | 15 | 15.0 | 24.0 | 35.9 | 23.0 | 8.2 | 0.09 |
| | | 64 | 128.0 | 35.79 | 80.0 | 20 | 54 | 15.0 | 24.0 | 129.0 | 20.0 | 10.0 | 1.23 |
| M251560 | 2.5 | 15 | 37.5 | 94.00 | 32.3 | 14 | 20 | 19.0 | 38.1 | 44.5 | 38.1 | 18.4 | 0.21 |
| | | 60 | 150.0 | 58.00 | 60.3 | 20 | 40 | 19.0 | 44.8 | 150.7 | 40.0 | 30.0 | 1.95 |
| M251664 | 2.5 | 16 | 40.0 | 92.49 | 30.0 | 12 | 20 | 18.0 | 30.5 | 44.9 | 29.0 | 11.7 | 0.18 |
| | | 64 | 160.0 | 42.77 | 90.0 | 20 | 60 | 18.0 | 29.0 | 161.2 | 24.0 | 10.0 | 2.38 |
| M301560 | 3 | 15 | 45.0 | 115.00 | 40.3 | 16 | 24 | 23.0 | 48.1 | 53.3 | 48.1 | 24.5 | 0.40 |
| | | 60 | 180.0 | 69.00 | 80.3 | 20 | 54 | 23.0 | 53.2 | 180.8 | 48.2 | 35.0 | 3.65 |
| M301664 | 3 | 16 | 48.0 | 108.05 | 40.0 | 15 | 25 | 22.0 | 34.0 | 53.8 | 32.0 | 11.0 | 0.32 |
| | | 64 | 192.0 | 46.41 | 100.0 | 20 | 66 | 22.0 | 30.0 | 193.5 | 24.0 | 10.0 | 3.43 |
| M351560 | 3.5 | 15 | 52.5 | 131.00 | 45.3 | 20 | 30 | 26.0 | 52.1 | 62.6 | 52.1 | 25.1 | 0.56 |
| | | 60 | 210.0 | 79.00 | 90.3 | 20 | 60 | 26.0 | 60.4 | 211 | 54.4 | 40.0 | 5.40 |
| M351664 | 3.5 | 16 | 56.0 | 132.13 | 48.0 | 15 | 32 | 25.0 | 45.0 | 62.8 | 43.0 | 19.1 | 0.60 |
| | | 64 | 224.0 | 69.32 | 100.0 | 20 | 66 | 25.0 | 50.0 | 225.7 | 43.0 | 22.0 | 7.00 |
| M401560 | 4 | 15 | 60.0 | 145.00 | 50.3 | 20 | 34 | 30.0 | 55.1 | 71.1 | 55.1 | 23.0 | 0.79 |
| | | 60 | 240.0 | 82.00 | 90.3 | 20 | 60 | 30.0 | 60.8 | 241.1 | 53.0 | 40.0 | 6.20 |
| M401664 | 4 | 16 | 64.0 | 148.21 | 50.0 | 20 | 34 | 30.0 | 50.0 | 71.8 | 48.0 | 18.5 | 0.79 |
| | | 64 | 256.0 | 71.72 | 120.0 | 20 | 80 | 30.0 | 50.0 | 257.9 | 42.0 | 20.0 | 9.60 |
| M451560 | 4.5 | 15 | 67.5 | 159.90 | 52.3 | 20 | 35 | 32.0 | 57.0 | 79.97 | 57.0 | 23.0 | 1.08 |
| | | 60 | 270.0 | 86.30 | 90.3 | 20 | 60 | 32.0 | 62.0 | 271.2 | 53.5 | 40.0 | 7.95 |
| M451664 | 4.5 | 16 | 72.0 | 165.08 | 55.0 | 20 | 38 | 32.0 | 53.0 | 80.7 | 50.5 | 19.0 | 1.07 |
| | | 64 | 288.0 | 77.83 | 130.0 | 20 | 84 | 32.0 | 53.0 | 290.2 | 44.0 | 23.0 | 12.00 |
| M501560 | 5 | 15 | 75.0 | 177.70 | 55.3 | 20 | 36 | 34.0 | 62.0 | 88.8 | 62.0 | 25.0 | 1.40 |
| | | 60 | 300.0 | 92.00 | 90.3 | 20 | 60 | 34.0 | 65.0 | 301.3 | 55.0 | 40.0 | 10.30 |
| M501664 | 5 | 16 | 80.0 | 183.06 | 60.0 | 20 | 40 | 35.0 | 58.0 | 89.7 | 55.5 | 20.6 | 1.46 |
| | | 64 | 320.0 | 85.65 | 150.0 | 20 | 100 | 35.0 | 58.0 | 322.4 | 48.0 | 25.0 | 16.50 |

All dimensions in mm.

All gears stocked with standard plain bore. Rebore, keyway, setscrew and induction hardening services available.

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