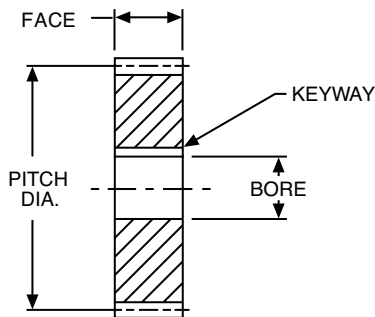


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Helical Gears

24 through 10 Transverse Diametral Pitch (Steel – Hardened)

14-1/2° Normal Pressure Angle – 45° Helix Angle



STANDARD TOLERANCES

| DIMENSION | | TOLERANCE |
|-----------|-----|-----------|
| BORE | All | ±.0005 |

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NOTE: Normal Diametral Pitch is equal to the Transverse Diametral Pitch divided by the cosine of the Helix Angle.

These gears are hardened all over, except as noted. Teeth on all steel gears are polished.

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth | Pitch Dia. | Bore | Keyway | Style See Page 323 | RIGHT HAND | | LEFT HAND | | | |
|-----------------------------------|------------|-------|-------------|--------------------|---------------------------------|-----------|----------------|-----------|--|--|
| | | | | | Catalog Number | Item Code | Catalog Number | Item Code | | |
| 24 | | | | | Face: 8-15 Teeth = .375" | | | | | |
| TRANSVERSE DIAMETRAL PITCH | | | | | 18-72 Teeth = .250" | | | | | |
| 8 | .333 | .1875 | * | A | H2408R | 18268 | H2408L | 18270 | | |
| 10 | .417 | .250 | ** | | H2410R | 18272 | H2410L | 18274 | | |
| 12 | .500 | | | | H2412R | 18276 | H2412L | 18278 | | |
| 15 | .625 | .375 | 1/8 x 1/16 | | H2415R | 18280 | H2415L | 18282 | | |
| 18 | .750 | | | | H2418R | 18284 | H2418L | 18286 | | |
| 20 | .833 | .500 | | | H2420R | 18288 | H2420L | 18290 | | |
| 24 | 1.000 | | | | H2424R | 18292 | H2424L | 18294 | | |
| 30 | 1.250 | | | | H2430R | 18296 | H2430L | 18298 | | |
| 36 | 1.500 | .625 | | | H2436R† | 18300 | H2436L† | 18302 | | |
| 48 | 2.000 | | H2448R† | | 18304 | H2448L† | 18306 | | | |
| 60 | 2.500 | | H2460R† | | 18308 | H2460L† | 18310 | | | |
| 72 | 3.000 | | H2472R† | | 18312 | H2472L† | 18314 | | | |
| 20 | | | | | Face: 8-15 Teeth = .563" | | | | | |
| TRANSVERSE DIAMETRAL PITCH | | | | | 18-72 Teeth = .375" | | | | | |
| 8 | .400 | .250 | ** | A | H2008R | 18228 | H2008L | 18230 | | |
| 10 | .500 | .3125 | | | H2010R | 18232 | H2010L | 18234 | | |
| 12 | .600 | .375 | 1/8 x 1/16 | | H2012R | 18236 | H2012L | 18238 | | |
| 15 | .750 | .4375 | | | H2015R | 18240 | H2015L | 18242 | | |
| 20 | 1.000 | .500 | | | H2020R | 18244 | H2020L | 18246 | | |
| 25 | 1.250 | .625 | | | H2025R | 18248 | H2025L | 18250 | | |
| 30 | 1.500 | | | | H2030R† | 18252 | H2030L† | 18254 | | |
| 40 | 2.000 | .750 | | | H2040R† | 18256 | H2040L† | 18258 | | |
| 50 | 2.500 | | H2050R† | | 18260 | H2050L† | 18262 | | | |
| 60 | 3.000 | | H2060R† | | 18264 | H2060L† | 18266 | | | |
| 16 | | | | | Face = .500" | | | | | |
| TRANSVERSE DIAMETRAL PITCH | | | | | | | | | | |
| 12 | .750 | .375 | 1/16 x 1/32 | A | H1612R | 18200 | H1612L | 18202 | | |
| 16 | 1.000 | | 1/8 x 1/16 | | H1616R | 18204 | H1616L | 18206 | | |
| 20 | 1.250 | | | | H1620R | 18208 | H1620L | 18210 | | |
| 24 | 1.500 | .500 | | | H1624R† | 18212 | H1624L† | 18214 | | |
| 32 | 2.000 | | | | H1632R† | 18216 | H1632L† | 18218 | | |
| 40 | 2.500 | | | | H1640R† | 18220 | H1640L† | 18222 | | |
| 48 | 3.000 | | | | H1648R† | 18224 | H1648L† | 18226 | | |
| 12 | | | | | Face = .750" | | | | | |
| TRANSVERSE DIAMETRAL PITCH | | | | | | | | | | |
| 12 | 1.000 | | 1/8 x 1/16 | A | H1212R | 18170 | H1212L | 18168 | | |
| 15 | 1.250 | .625 | | | H1215R | 18174 | H1215L | 18172 | | |
| 18 | 1.500 | | | | H1218R† | 18178 | H1218L† | 18176 | | |
| 24 | 2.000 | | | | H1224R† | 18182 | H1224L† | 18180 | | |
| 30 | 2.500 | | | | H1230R† | 18186 | H1230L† | 18184 | | |
| 36 | 3.000 | | | | H1236R† | 18190 | H1236L† | 18188 | | |
| 10 | | | | | Face = .875" | | | | | |
| TRANSVERSE DIAMETRAL PITCH | | | | | | | | | | |
| 8 | .800 | .375 | 1/16 x 1/32 | A | H1008R | 18130 | H1008L | 18128 | | |
| 10 | 1.000 | .500 | 1/8 x 1/16 | | H1010R | 18134 | H1010L | 18132 | | |
| 12 | 1.200 | .625 | | | H1012R | 18138 | H1012L | 18136 | | |
| 15 | 1.500 | | | | H1015R† | 18142 | H1015L† | 18140 | | |
| 20 | 2.000 | | | | H1020R† | 18146 | H1020L† | 18144 | | |
| 25 | 2.500 | .750 | | | H1025R† | 18148 | H1025L† | 18150 | | |
| 30 | 3.000 | | | | H1030R† | 18154 | H1030L† | 18152 | | |
| 40 | 4.000 | | H1040R† | | 18158 | H1040L† | 18156 | | | |

*1/16" wide x .04" deep slot cut on end of gear for drive pin, not key.
 **3/32" wide x .06" deep slot cut on end of gear for drive pin, not key.
 †Teeth only hardened.

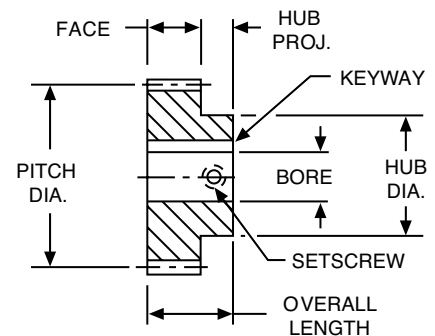
8 and 6 Transverse Diametral Pitch (Bronze & Steel – Hardened)

14-1/2° Normal Pressure Angle – 45° Helix Angle

All gears with hubs have setscrew at 90° to keyway. Steel gears have teeth only hardened, except as noted. Teeth on all steel gears are polished.

ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

| No. of Teeth | Pitch Dia. | Bore | Hub | | Keyway | Style See Page 323 | RIGHT HAND | | LEFT HAND | |
|-------------------------------------|------------|-------|------|-------|-------------|--------------------|--|-----------|----------------|-----------|
| | | | Dia. | Proj. | | | Catalog Number | Item Code | Catalog Number | Item Code |
| 8 TRANSVERSE DIAMETRAL PITCH | | | | | | | | | | |
| | | | | | | | Face without Hubs = 1.000" -with Hubs = .750" Overall Length = Face + Hub Proj. | | | |
| STEEL-HARDENED | | | | | | | | | | |
| 8 | 1.000 | .500 | - | - | 1/8 x 1/16 | A | H808R* | 18066 | H808L* | 18064 |
| 10 | 1.250 | .625 | - | - | 1/8 x 1/16 | A | H810R* | 18070 | H810L* | 18068 |
| 12 | 1.500 | .750 | - | - | 1/8 x 1/16 | A | H812R | 18074 | H812L | 18072 |
| 16 | 2.000 | .875 | - | - | 3/16 x 3/32 | A | H816R | 18078 | H816L | 18076 |
| 20 | 2.500 | | | | | | H820R | 18082 | H820L | 18080 |
| 24 | 3.000 | | | | | | H824R | 18086 | H824L | 18084 |
| 32 | 4.000 | | | | | | H832R | 18090 | H832L | 18088 |
| 8 | 1.000 | .500 | .75 | .50 | 1/8 x 1/16 | A | HS808R* | 18092 | HS808L* | 18094 |
| 10 | 1.250 | .625 | 1.00 | .50 | 1/8 x 1/16 | A | HS810R* | 18096 | HS810L* | 18098 |
| 12 | 1.500 | .750 | 1.25 | .50 | 3/16 x 3/32 | A | HS812R* | 18100 | HS812L* | 18102 |
| 16 | 2.000 | 1.000 | 2.00 | .50 | 1/4 x 1/8 | A | HS816R | 18104 | HS816L | 18106 |
| 20 | 2.500 | | | | | | HS820R | 18108 | HS820L | 18110 |
| 24 | 3.000 | | | | | | HS824R | 18112 | HS824L | 18114 |
| 32 | 4.000 | | | | | | HS832R | 18116 | HS832L | 18118 |
| 40 | 5.000 | | | | | | HS840R | 18120 | HS840L | 18122 |
| 48 | 6.000 | | 2.25 | | | | HS848R | 18124 | HS848L | 18126 |
| BRONZE | | | | | | | | | | |
| 8 | 1.000 | .500 | .75 | .50 | 1/8 x 1/16 | A | HB808R | 18356 | HB808L | 18358 |
| 10 | 1.250 | .625 | 1.00 | .50 | 1/8 x 1/16 | A | HB810R | 18360 | HB810L | 18362 |
| 12 | 1.500 | .750 | 1.24 | .50 | 3/16 x 3/32 | A | HB812R | 18364 | HB812L | 18366 |
| 16 | 2.000 | 1.000 | 2.00 | .50 | 1/4 x 1/8 | A | HB816R | 18368 | HB816L | 18370 |
| 20 | 2.500 | | | | | | HB820R | 18372 | HB820L | 18374 |
| 24 | 3.000 | | | | | | HB824R | 18376 | HB824L | 18378 |
| 32 | 4.000 | | | | | | HB832R | 18380 | HB832L | 18382 |
| 40 | 5.000 | | | | | B | HB840R | 18384 | HB840L | 18386 |
| 48 | 6.000 | | 2.25 | | | B | HB848R | 18388 | HB848L | 18390 |
| 6 TRANSVERSE DIAMETRAL PITCH | | | | | | | | | | |
| | | | | | | | Face without Hubs = 1.250" -with Hubs = 1.000" Overall Length = Face + Hub Proj. | | | |
| STEEL-HARDENED | | | | | | | | | | |
| 8 | 1.333 | .625 | - | - | 1/8 x 1/16 | A | H608R | 18000 | H608L | 18002 |
| 10 | 1.667 | .750 | - | - | 3/16 x 3/32 | A | H610R | 18004 | H610L | 18006 |
| 12 | 2.000 | 1.000 | - | - | 1/4 x 1/8 | A | H612R | 18010 | H612L | 18008 |
| 15 | 2.500 | | | | | | H615R | 18014 | H615L | 18012 |
| 18 | 3.000 | | | | | | H618R | 18018 | H618L | 18016 |
| 24 | 4.000 | | | | | | H624R | 18022 | H624L | 18020 |
| 8 | 1.333 | .625 | 1.00 | .75 | 1/8 x 1/16 | A | HS608R | 18024 | HS608L | 18026 |
| 9 | 1.500 | .750 | 1.18 | .75 | 3/16 x 3/32 | A | HS609R | 18028 | HS609L | 18030 |
| 10 | 1.667 | .750 | 1.34 | .75 | 3/16 x 3/32 | A | HS610R | 18032 | HS610L | 18034 |
| 12 | 2.000 | 1.000 | 1.62 | .75 | 1/4 x 1/8 | A | HS612R | 18036 | HS612L | 18038 |
| 15 | 2.500 | 1.250 | 2.00 | .75 | 5/16 x 5/32 | A | HS615R | 18040 | HS615L | 18042 |
| 18 | 3.000 | | | | | | HS618R | 18044 | HS618L | 18046 |
| 20 | 3.333 | | | | | | HS620R | 18048 | HS620L | 18050 |
| 24 | 4.000 | | | | | | HS624R | 18052 | HS624L | 18054 |
| 30 | 5.000 | | 2.50 | | | | HS630R | 18056 | HS630L | 18058 |
| 36 | 6.000 | | | | | | HS636R | 18060 | HS636L | 18062 |
| BRONZE | | | | | | | | | | |
| 12 | 2.000 | 1.000 | 1.62 | .75 | 1/4 x 1/8 | A | HB612R | 18328 | HB612L | 18330 |
| 15 | 2.500 | 1.250 | 2.00 | .75 | 5/16 x 5/32 | A | HB615R | 18332 | HB615L | 18334 |
| 18 | 3.000 | | | | | | HB618R | 18336 | HB618L | 18338 |
| 20 | 3.333 | | | | | | HB620R | 18340 | HB620L | 18342 |
| 24 | 4.000 | | | | | | HB624R | 18344 | HB624L | 18346 |
| 30 | 5.000 | | 2.50 | | | B | HB630R | 18348 | HB630L | 18350 |
| 36 | 6.000 | | | | | B | HB636R | 18352 | HB636L | 18354 |



STANDARD TOLERANCES

| DIMENSION | TOLERANCE |
|-----------|------------|
| BORE | All ±.0005 |

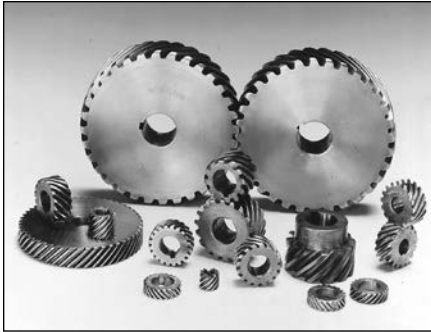
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- Horsepower Ratings — 67, 68
- Lubrication — 322
- Materials — 323
- Selection Procedure — 66

NOTE: Normal Diametral Pitch is equal to the Transverse Diametral Pitch divided by the cosine of the Helix Angle.

*Hardened all over.

Helical Gears



Boston standard stock helical gears are made with a 45° helix angle to transmit motion and/or power between non-intersecting shafts that are parallel or at 90° to each other. They are stocked both right and left-handed. For parallel shaft operation, helical gears having opposite hand helix angles are required, while for shafts at 90° the same hand helix must be used.

For parallel shaft applications, helical gears provide overlapping tooth contact. This results in a smoother, quieter operation and higher horsepower capacity than afforded by spur gears of comparable size.

For 90° shaft applications, the tooth contact area is very small which considerably limits the load capacity. Horsepower ratings are not tabulated in this catalog, for 90° applications.

Boston helical gears are top hobbed, resulting in extremely close concentricity between the pitch diameter and the outside diameter.

B

Selection Procedure

Approximate horsepower and torque ratings for selected sizes (numbers of teeth) at various operating speeds (RPM) are given for hardened steel helical gears. The ratings are based on the beam strength of the gear tooth. These ratings are for parallel shaft applications under normal operating conditions, that is: properly mounted and lubricated, carrying a smooth load for not more than 10 hours per day or a moderate shock load not more than 15 minutes in two hours (Service Factor 1.0). Refer to Table 1, below, for other types of service.

Ratings for gear sizes or speeds not listed may be interpolated from the values indicated. Pitchline velocities are limited as reflected by the lack of ratings for larger numbers of teeth at higher RPM's in the selection chart. Application in this area is not recommended.

Ref. Parallel shafts are approximately 98% efficient
90° shafts are approximately 50% efficient

Horsepower ratings for bronze gears are approximately 33% of these ratings.

1. Determine service factor.
 - a. Using Application Classification Chart I, pages 331-332 determine service factor or
 - b. With knowledge of operating conditions and load classification, select service factor from Table 1.

2. Determine Design Horsepower.

Design HP = Application Load × Service Factor (Table 1)

3. Select pinion with horsepower capacity equal to (or greater than) design horsepower determined in Step 2. Reference Rating Pages 67, 68.
4. Select a driven gear with a catalog rating equal to (or greater than) the horsepower determined in Step 2.

TABLE 1

| Service Factor | Operating Conditions |
|----------------|--|
| .8 | Uniform – not more than 15 minutes in 2 hours. |
| 1.0 | Moderate Shock – not more than 15 minutes in 2 hours. Uniform – not more than 10 hours per day. |
| 1.25 | Moderate Shock – not more than 10 hours per day. Uniform – more than 10 hours per day. |
| 1.50 | Heavy Shock – not more than 15 minutes in 2 hours. Moderate Shock – more than 10 hours per day. |
| 1.75 | Heavy Shock – not more than 10 hours per day. |
| 2.0 | Heavy Shock – more than 10 hours per day. |

Heavy shock loads and/or severe wear conditions may require the use of higher service factors. Consultation with factory is recommended in these applications.

Approximate Horsepower and Torque* Ratings For Class I Service (Service Factor = 1.0)

| No. Teeth | 25 RPM | | 50 RPM | | 100 RPM | | 200 RPM | | 300 RPM | | 600 RPM | | 900 RPM | | 1200 RPM | | 1800 RPM | | 3600 RPM | |
|---|--------|--------|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|--------|----------|--------|----------|--------|----------|--------|
| | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque |
| 24 DIAMETRAL PITCH - 33.94 NORMAL DIAMETRAL PITCH HARDENED STEEL .250-.375" FACE | | | | | | | | | | | | | | | | | | | | |
| 8 | .01 | 13.5 | .01 | 13.5 | .02 | 13.4 | .04 | 13.2 | .06 | 13.0 | .12 | 12.5 | .17 | 12.0 | .22 | 11.6 | .31 | 10.8 | .51 | 8.9 |
| 10 | .01 | 18.0 | .01 | 17.9 | .03 | 17.8 | .06 | 17.4 | .08 | 17.1 | .16 | 16.3 | .22 | 15.5 | .28 | 14.8 | .39 | 13.6 | .62 | 10.9 |
| 12 | .01 | 22.5 | .02 | 22.3 | .04 | 22.1 | .07 | 21.6 | .10 | 21.1 | .19 | 20.0 | .27 | 18.9 | .34 | 17.9 | .46 | 16.2 | .72 | 12.6 |
| 15 | .01 | 29.1 | .02 | 28.9 | .05 | 28.5 | .09 | 27.8 | .13 | 27.1 | .24 | 25.2 | .34 | 23.5 | .42 | 22.0 | .56 | 19.6 | .84 | 14.8 |
| 18 | .01 | 23.6 | .02 | 23.4 | .04 | 23.1 | .07 | 22.4 | .10 | 21.7 | .19 | 19.9 | .26 | 18.4 | .33 | 17.1 | .43 | 15.0 | .62 | 10.9 |
| 20 | .01 | 26.8 | .02 | 26.5 | .04 | 26.1 | .08 | 25.2 | .12 | 24.3 | .21 | 22.2 | .29 | 20.4 | .36 | 18.8 | .47 | 16.3 | .67 | 11.7 |
| 24 | .01 | 32.6 | .03 | 32.3 | .05 | 31.6 | .10 | 30.3 | .14 | 29.2 | .25 | 26.1 | .34 | 23.7 | .41 | 21.6 | .53 | 18.5 | .73 | 12.8 |
| 30 | .02 | 41.3 | .03 | 40.8 | .06 | 39.7 | .12 | 37.8 | .17 | 36.0 | .30 | 31.6 | .40 | 28.1 | .48 | 25.3 | .60 | 21.1 | .81 | 14.1 |
| 36 | .02 | 49.9 | .04 | 49.1 | .08 | 47.6 | .14 | 44.9 | .20 | 42.4 | .35 | 36.4 | .46 | 31.9 | .54 | 28.4 | .66 | 23.3 | .86 | 15.1 |
| 48 | .03 | 67.0 | .05 | 65.6 | .10 | 63.0 | .19 | 58.3 | .26 | 54.3 | .43 | 45.0 | .55 | 38.4 | .64 | 33.5 | .76 | 26.6 | .94 | 16.5 |
| 60 | .03 | 83.8 | .06 | 81.6 | .12 | 77.6 | .22 | 70.7 | .31 | 64.9 | .50 | 52.0 | .62 | 43.4 | .71 | 37.3 | .83 | 29.0 | 1.00 | 17.5 |
| 72 | .04 | 101 | .08 | 97.7 | .15 | 92.1 | .26 | 82.5 | .36 | 74.8 | .56 | 58.3 | .68 | 47.8 | .77 | 40.5 | .89 | 31.0 | 1.00 | 18.2 |
| 20 DIAMETRAL PITCH - 28.28 NORMAL DIAMETRAL PITCH HARDENED STEEL .375-.563" FACE | | | | | | | | | | | | | | | | | | | | |
| 8 | .01 | 29.2 | .02 | 29.1 | .05 | 28.8 | .09 | 28.4 | .13 | 27.9 | .25 | 26.6 | .36 | 25.4 | .46 | 24.3 | .64 | 22.3 | 1.00 | 18.0 |
| 10 | .01 | 37.7 | .03 | 37.5 | .06 | 37.1 | .12 | 36.3 | .17 | 35.6 | .32 | 33.5 | .45 | 31.7 | .57 | 30.1 | .78 | 27.2 | 1.20 | 21.2 |
| 12 | .02 | 48.5 | .04 | 48.2 | .08 | 47.5 | .15 | 46.4 | .22 | 45.2 | .40 | 42.2 | .56 | 39.5 | .71 | 37.1 | .95 | 33.2 | 1.44 | 25.1 |
| 15 | .02 | 62.7 | .05 | 62.2 | .10 | 61.2 | .19 | 59.3 | .27 | 51.6 | .50 | 52.8 | .70 | 48.8 | .86 | 45.4 | 1.14 | 39.8 | 1.66 | 29.0 |
| 20 | .02 | 57.7 | .05 | 57.1 | .09 | 55.9 | .17 | 53.7 | .25 | 51.6 | .44 | 46.2 | .60 | 41.9 | .73 | 38.3 | .93 | 32.7 | 1.30 | 22.7 |
| 25 | .03 | 73.8 | .06 | 72.8 | .11 | 70.9 | .21 | 67.4 | .31 | 64.3 | .54 | 56.4 | .72 | 50.2 | .86 | 45.2 | 1.08 | 37.7 | 1.44 | 25.2 |
| 30 | .04 | 89.1 | .07 | 87.6 | .13 | 85.0 | .25 | 80.0 | .36 | 75.7 | .62 | 65.0 | .81 | 56.9 | .96 | 50.7 | 1.19 | 41.5 | 1.54 | 27.0 |
| 40 | .05 | 120 | .09 | 118 | .18 | 113 | .33 | 104 | .46 | 97.2 | .77 | 80.5 | .98 | 68.7 | 1.14 | 59.9 | 1.36 | 47.7 | 1.69 | 29.6 |
| 50 | .06 | 151 | .12 | 147 | .22 | 139 | .40 | 127 | .55 | 117 | .89 | 93.4 | 1.11 | 78.0 | 1.27 | 66.9 | 1.49 | 52.1 | 1.79 | 31.4 |
| 60 | .07 | 180 | .14 | 175 | .26 | 165 | .47 | 147 | .64 | 134 | .99 | 104 | 1.22 | 85.4 | 1.38 | 72.3 | 1.58 | 55.4 | 1.86 | 32.5 |
| 16 DIAMETRAL PITCH - 22.63 NORMAL DIAMETRAL PITCH HARDENED STEEL .500" FACE | | | | | | | | | | | | | | | | | | | | |
| 12 | .03 | 67.2 | .05 | 66.6 | .10 | 65.6 | .20 | 63.6 | .29 | 61.7 | .54 | 56.6 | .75 | 52.3 | .93 | 48.6 | 1.20 | 42.6 | 1.80 | 31.1 |
| 16 | .04 | 93.4 | .07 | 92.4 | .14 | 90.5 | .28 | 86.9 | .40 | 83.5 | .71 | 74.8 | .97 | 67.8 | 1.18 | 62.0 | 1.51 | 52.9 | 2.10 | 36.7 |
| 20 | .05 | 120 | .09 | 118 | .18 | 115 | .35 | 110 | .50 | 104 | .87 | 91.5 | 1.16 | 81.5 | 1.40 | 73.4 | 1.75 | 61.3 | 2.34 | 41.0 |
| 24 | .06 | 146 | .11 | 144 | .22 | 139 | .42 | 131 | .59 | 124 | 1.00 | 107 | 1.33 | 93.3 | 1.58 | 83.0 | 1.94 | 68.1 | 2.52 | 44.2 |
| 32 | .08 | 197 | .15 | 193 | .29 | 185 | .54 | 172 | .76 | 160 | 1.26 | 132 | 1.61 | 113 | 1.87 | 98.4 | 2.24 | 78.4 | 2.78 | 48.7 |
| 40 | .10 | 249 | .19 | 242 | .37 | 230 | .67 | 210 | .92 | 193 | 1.47 | 154 | 1.84 | 129 | 2.11 | 111 | 2.46 | 86.2 | 3.00 | 51.8 |
| 48 | .12 | 298 | .23 | 289 | .43 | 273 | .77 | 244 | 1.05 | 221 | 1.64 | 173 | 2.02 | 141 | 2.28 | 120 | 2.62 | 91.8 | 3.08 | 53.9 |
| 12 DIAMETRAL PITCH - 16.97 NORMAL DIAMETRAL PITCH HARDENED STEEL .750" FACE | | | | | | | | | | | | | | | | | | | | |
| 12 | .07 | 179 | .14 | 177 | .27 | 173 | .53 | 166 | .76 | 160 | 1.36 | 143.2 | 1.85 | 130 | 2.26 | 119 | 2.89 | 101 | 4.01 | 70.2 |
| 15 | .09 | 231 | .18 | 228 | .35 | 222 | .67 | 211 | .96 | 201 | 1.68 | 176 | 2.24 | 157 | 2.69 | 142 | 3.37 | 118 | 4.51 | 79.0 |
| 18 | .11 | 281 | .22 | 277 | .43 | 268 | .80 | 253 | 1.14 | 239 | 1.95 | 205 | 2.57 | 180 | 3.05 | 160 | 3.75 | 131 | 4.86 | 85.1 |
| 24 | .15 | 387 | .30 | 379 | .58 | 364 | 1.07 | 337 | 1.49 | 313 | 2.47 | 260 | 3.16 | 222 | 3.68 | 193 | 4.39 | 154 | 5.45 | 95.5 |
| 30 | .19 | 489 | .38 | 477 | .72 | 453 | 1.31 | 413 | 1.80 | 379 | 2.89 | 304 | 3.62 | 254 | 4.14 | 218 | 4.84 | 170 | 5.82 | 102 |
| 36 | .23 | 589 | .45 | 571 | .85 | 538 | 1.53 | 482 | 2.08 | 437 | 3.24 | 341 | 3.99 | 279 | 4.50 | 237 | 5.17 | 181 | 6.08 | 106 |
| 10 DIAMETRAL PITCH - 14.14 NORMAL DIAMETRAL PITCH HARDENED STEEL .875" FACE | | | | | | | | | | | | | | | | | | | | |
| 8 | .07 | 181 | .14 | 179 | .28 | 176 | .54 | 171 | .79 | 165 | 1.44 | 151 | 1.78 | 139 | 2.45 | 129 | 3.20 | 112 | 4.62 | 80.9 |
| 10 | .10 | 240 | .19 | 238 | .37 | 233 | .71 | 223 | 1.02 | 215 | 1.83 | 193 | 2.49 | 174 | 3.03 | 159 | 3.88 | 136 | 5.39 | 94.4 |
| 12 | .12 | 300 | .23 | 296 | .46 | 288 | .87 | 275 | 1.25 | 262 | 2.20 | 231 | 2.95 | 206 | 3.55 | 186 | 4.46 | 156 | 6.01 | 105 |
| 15 | .15 | 387 | .30 | 381 | .59 | 369 | 1.10 | 348 | 1.56 | 329 | 2.69 | 282 | 3.53 | 247 | 4.19 | 220 | 5.16 | 181 | 6.69 | 117 |
| 20 | .21 | 533 | .41 | 522 | .79 | 501 | 1.47 | 464 | 2.05 | 432 | 3.40 | 357 | 4.35 | 305 | 5.06 | 266 | 6.05 | 212 | 7.51 | 131 |
| 25 | .27 | 680 | .53 | 662 | 1.00 | 630 | 1.82 | 573 | 2.50 | 526 | 4.01 | 422 | 5.03 | 352 | 5.75 | 302 | 6.72 | 235 | 8.09 | 142 |
| 30 | .32 | 818 | .63 | 793 | 1.19 | 747 | 2.12 | 669 | 2.89 | 606 | 4.50 | 473 | 5.54 | 388 | 6.25 | 328 | 7.18 | 252 | 8.44 | 148 |
| 40 | .44 | 1097 | .84 | 1053 | 1.55 | 975 | 2.69 | 849 | 3.58 | 751 | 5.32 | 559 | 6.36 | 445 | 7.04 | 370 | 7.89 | 276 | 8.97 | 157 |
| 8 DIAMETRAL PITCH - 11.31 NORMAL DIAMETRAL PITCH HARDENED STEEL .750" FACE | | | | | | | | | | | | | | | | | | | | |
| 8 | .10 | 242 | .19 | 239 | .37 | 234 | .71 | 225 | 1.03 | 216 | 1.85 | 194 | 2.51 | 176 | 3.06 | 160 | 3.91 | 137 | 5.43 | 95 |
| 10 | .13 | 321 | .25 | 317 | .49 | 309 | .93 | 293 | 1.33 | 280 | 2.53 | 245 | 3.12 | 218 | 3.74 | 197 | 4.69 | 164 | 6.27 | 110 |
| 12 | .16 | 400 | .31 | 394 | .61 | 382 | 1.14 | 360 | 1.62 | 340 | 2.78 | 292 | 3.65 | 256 | 4.34 | 228 | 5.33 | 187 | 6.92 | 121 |
| 16 | .22 | 555 | .43 | 543 | .83 | 521 | 1.53 | 483 | 2.14 | 447 | 3.54 | 372 | 4.53 | 318 | 5.27 | 277 | 6.30 | 221 | 7.82 | 137 |
| 20 | .28 | 710 | .55 | 692 | 1.04 | 658 | 1.90 | 599 | 2.62 | 550 | 4.20 | 441 | 5.26 | 368 | 6.01 | 316 | 7.03 | 246 | 8.45 | 148 |
| 24 | .34 | 862 | .66 | 836 | 1.25 | 787 | 2.24 | 706 | 3.04 | 639 | 4.75 | 499 | 5.84 | 409 | 6.59 | 346 | 7.57 | 265 | 8.90 | 156 |
| 32 | .46 | 1160 | .88 | 1113 | 1.64 | 1031 | 2.85 | 897 | 3.78 | 794 | 5.63 | 591 | 6.72 | 471 | 7.44 | 391 | 8.34 | 292 | | |
| 40 | .58 | 1454 | 1.10 | 1383 | 2.00 | 1259 | 3.39 | 1068 | 4.41 | 927 | 6.32 | 664 | 7.39 | 517 | 8.07 | 424 | 8.88 | 311 | | |
| 48 | .69 | 1137 | 1.30 | 1636 | 2.33 | 1466 | 3.85 | 1214 | 4.93 | 1036 | 6.85 | 719 | 7.87 | 551 | 8.50 | 447 | | | | |



Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.
NOTE: Ratings to right of heavy line exceed 1500 Feet per Minute and should be used for interpolation purposes only.

*Torque Rating (Lb. Ins.)

Helical Gears

Approximate Horsepower and Torque* Ratings

For Class I Service (Service Factor = 1.0)

| No. | 25 RPM | | 50 RPM | | 100 RPM | | 200 RPM | | 300 RPM | | 600 RPM | | 900 RPM | | 1200 RPM | | 1800 RPM | | 3600 RPM | | | | | | | | | | | | | | | | | | | | | | |
|--|--------|------|--------|------|---------|------|---------|------|---------|------|---------|------|---------|------|----------|------|----------|------|----------|------|--------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | Teeth | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | H.P. | Torque | | | | | | | | | | | | | | | | | | | | |
| 8 DIAMETRAL PITCH – 11.31 NORMAL DIAMETRAL PITCH HARDENED STEEL | | | | | | | | | | | | | | | | | | | | | 1.000" FACE | | | | | | | | | | | | | | | | | | | | |
| 8 | .13 | 323 | .25 | 319 | .50 | 313 | .95 | 300 | 1.4 | 288 | 2.5 | 258 | 3.3 | 234 | 4.1 | 214 | 5.2 | 183 | 7.2 | 127 | | | | | | | | | | | | | | | | | | | | | |
| 10 | .17 | 428 | .34 | 422 | .65 | 412 | 1.20 | 391 | 1.8 | 373 | 3.1 | 327 | 4.2 | 291 | 5.0 | 262 | 6.3 | 219 | 8.4 | 146 | | | | | | | | | | | | | | | | | | | | | |
| 12 | .21 | 534 | .42 | 525 | .81 | 509 | 1.50 | 480 | 2.2 | 453 | 3.7 | 389 | 4.9 | 341 | 5.8 | 304 | 7.1 | 249 | 9.2 | 162 | | | | | | | | | | | | | | | | | | | | | |
| 16 | .29 | 740 | .57 | 725 | 1.1 | 696 | 2.00 | 644 | 2.9 | 599 | 4.7 | 496 | 6.1 | 423 | 7.0 | 370 | 8.4 | 294 | 10.4 | 182 | | | | | | | | | | | | | | | | | | | | | |
| 20 | .38 | 947 | .73 | 923 | 1.4 | 877 | 2.50 | 799 | 3.5 | 733 | 5.6 | 588 | 7.0 | 491 | 8.0 | 421 | 9.3 | 328 | 11.1 | 197 | | | | | | | | | | | | | | | | | | | | | |
| 24 | .46 | 1150 | .88 | 1114 | 1.7 | 1050 | 3.00 | 941 | 4.1 | 852 | 6.3 | 665 | 7.7 | 545 | 8.8 | 462 | 10.1 | 352 | 11.9 | 208 | | | | | | | | | | | | | | | | | | | | | |
| 32 | .61 | 1547 | 1.20 | 1485 | 2.2 | 1374 | 3.80 | 1196 | 5.0 | 1059 | 7.5 | 788 | 9.0 | 628 | 9.9 | 521 | 11.1 | 389 | 12.7 | 221 | | | | | | | | | | | | | | | | | | | | | |
| 8 DIAMETRAL PITCH – 11.31 NORMAL DIAMETRAL PITCH BRONZE | | | | | | | | | | | | | | | | | | | | | .750" FACE | | | | | | | | | | | | | | | | | | | | |
| 8 | .04 | 97 | .08 | 95.8 | .15 | 93.8 | .29 | 90.0 | .41 | 86.5 | .74 | 77.5 | 1.00 | 70.2 | 1.22 | 64.2 | 1.56 | 54.8 | 2.17 | 38.0 | | | | | | | | | | | | | | | | | | | | | |
| 10 | .05 | 128 | .10 | 127 | .20 | 123 | .37 | 117 | .53 | 112 | .93 | 98.1 | 1.25 | 87.3 | 1.50 | 78.7 | 1.88 | 65.7 | 2.51 | 43.9 | | | | | | | | | | | | | | | | | | | | | |
| 12 | .06 | 160 | .12 | 158 | .24 | 153 | .46 | 144 | .65 | 136 | 1.11 | 117 | 1.46 | 102 | 1.73 | 91.1 | 2.13 | 74.7 | 2.77 | 48.4 | | | | | | | | | | | | | | | | | | | | | |
| 16 | .09 | 222 | .17 | 217 | .33 | 209 | .61 | 193 | .86 | 180 | 1.42 | 149 | 1.81 | 127 | 2.11 | 111 | 2.52 | 88.2 | 3.13 | 54.7 | | | | | | | | | | | | | | | | | | | | | |
| 20 | .11 | 284 | .22 | 277 | .42 | 263 | .76 | 240 | 1.05 | 220 | 1.68 | 176 | 2.10 | 147 | 2.41 | 126 | 2.81 | 98.4 | 3.38 | 59.2 | | | | | | | | | | | | | | | | | | | | | |
| 24 | .14 | 345 | .27 | 334 | .50 | 315 | .90 | 282 | 1.22 | 256 | 1.90 | 199 | 2.33 | 163 | 2.64 | 138 | 3.03 | 106 | 3.56 | 62.3 | | | | | | | | | | | | | | | | | | | | | |
| 32 | .18 | 464 | .35 | 445 | .65 | 412 | 1.14 | 359 | 1.51 | 318 | 2.75 | 236 | 2.69 | 188 | 2.98 | 156 | 3.34 | 117 | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | .23 | 582 | .44 | 553 | .80 | 504 | 1.36 | 427 | 1.76 | 371 | 2.53 | 266 | 2.95 | 207 | 3.23 | 169 | 3.55 | 124 | | | | | | | | | | | | | | | | | | | | | | | |
| 48 | .28 | 695 | .52 | 655 | .93 | 587 | 1.54 | 486 | 1.97 | 414 | 2.74 | 288 | 3.15 | 220 | 3.40 | 179 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 DIAMETRAL PITCH – 8.48 NORMAL DIAMETRAL PITCH HARDENED STEEL | | | | | | | | | | | | | | | | | | | | | 1.000" FACE | | | | | | | | | | | | | | | | | | | | |
| 8 | .01 | 572 | .45 | 564 | .87 | 548 | 1.65 | 520 | 2.35 | 494 | 4.09 | 430 | 5.44 | 381 | 6.50 | 342 | 8.09 | 283 | 10.70 | 187 | | | | | | | | | | | | | | | | | | | | | |
| 9 | .26 | 664 | .52 | 653 | 1.00 | 633 | 1.89 | 597 | 2.68 | 564 | 4.61 | 484 | 6.06 | 424 | 7.19 | 378 | 8.84 | 310 | 11.47 | 201 | | | | | | | | | | | | | | | | | | | | | |
| 10 | .30 | 758 | .59 | 745 | 1.14 | 720 | 2.14 | 674 | 3.02 | 634 | 5.11 | 537 | 6.66 | 466 | 7.84 | 412 | 9.54 | 334 | 12.17 | 213 | | | | | | | | | | | | | | | | | | | | | |
| 12 | .37 | 944 | .73 | 924 | 1.41 | 887 | 2.61 | 821 | 3.64 | 764 | 6.02 | 633 | 7.71 | 540 | 8.97 | 471 | 10.71 | 375 | 13.29 | 233 | | | | | | | | | | | | | | | | | | | | | |
| 15 | .48 | 1217 | .94 | 1185 | 1.79 | 1127 | 3.26 | 1026 | 4.48 | 942 | 7.19 | 755 | 9.00 | 630 | 10.30 | 541 | 12.04 | 421 | 14.48 | 253 | | | | | | | | | | | | | | | | | | | | | |
| 18 | .59 | 1478 | 1.14 | 1433 | 2.14 | 1350 | 3.84 | 1210 | 5.22 | 1096 | 8.14 | 855 | 10.00 | 700 | 11.30 | 593 | 12.98 | 454 | 15.25 | 267 | | | | | | | | | | | | | | | | | | | | | |
| 20 | .66 | 1670 | 1.28 | 1613 | 2.40 | 1511 | 4.25 | 1340 | 5.73 | 1204 | 8.79 | 924 | 10.69 | 749 | 11.99 | 630 | 13.65 | 478 | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | .80 | 2024 | 1.54 | 1942 | 2.85 | 1798 | 4.97 | 1565 | 6.60 | 1386 | 9.82 | 1031 | 11.72 | 821 | 12.98 | 682 | 14.55 | 510 | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 1.01 | 2546 | 1.92 | 2420 | 3.50 | 2203 | 5.93 | 1868 | 7.72 | 1622 | 11.06 | 1162 | 12.92 | 905 | 14.11 | 741 | 15.54 | 544 | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | 1.21 | 3048 | 2.28 | 2872 | 4.08 | 2573 | 6.76 | 2131 | 8.65 | 1818 | 12.02 | 1262 | 13.81 | 967 | 14.92 | 783 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 DIAMETRAL PITCH – 8.48 NORMAL DIAMETRAL PITCH HARDENED STEEL | | | | | | | | | | | | | | | | | | | | | 1.250" FACE | | | | | | | | | | | | | | | | | | | | |
| 8 | .28 | 715 | .56 | 705 | 1.09 | 685 | 2.06 | 650 | 2.94 | 617 | 5.12 | 537 | 6.79 | 476 | 8.13 | 427 | 10.11 | 354 | 13.37 | 234 | | | | | | | | | | | | | | | | | | | | | |
| 10 | .38 | 948 | .74 | 931 | 1.43 | 899 | 2.67 | 842 | 3.77 | 792 | 6.39 | 672 | 8.32 | 583 | 9.80 | 515 | 11.93 | 418 | 15.22 | 266 | | | | | | | | | | | | | | | | | | | | | |
| 12 | .47 | 1180 | .92 | 1155 | 1.76 | 1109 | 3.26 | 1026 | 4.55 | 955 | 7.53 | 791 | 9.64 | 675 | 11.21 | 589 | 13.38 | 469 | 16.61 | 291 | | | | | | | | | | | | | | | | | | | | | |
| 15 | .60 | 1521 | 1.18 | 1482 | 2.24 | 1409 | 4.07 | 1282 | 5.60 | 1177 | 8.99 | 944 | 11.25 | 788 | 12.87 | 676 | 15.04 | 527 | 18.10 | 317 | | | | | | | | | | | | | | | | | | | | | |
| 18 | .73 | 1848 | 1.42 | 1791 | 2.68 | 1687 | 4.80 | 1512 | 6.52 | 1370 | 10.17 | 1068 | 12.50 | 876 | 14.12 | 742 | 16.22 | 568 | 19.06 | 334 | | | | | | | | | | | | | | | | | | | | | |
| 24 | 1.00 | 2529 | 1.93 | 2428 | 3.57 | 2247 | 6.21 | 1956 | 8.24 | 1732 | 12.27 | 1289 | 14.65 | 1026 | 16.23 | 852 | 18.19 | 637 | | | | | | | | | | | | | | | | | | | | | | | |
| 6 DIAMETRAL PITCH – 8.48 NORMAL DIAMETRAL PITCH BRONZE | | | | | | | | | | | | | | | | | | | | | 1.000" FACE | | | | | | | | | | | | | | | | | | | | |
| 12 | .15 | 378 | .29 | 370 | .56 | 355 | 1.04 | 328 | 1.46 | 306 | 2.41 | 253 | 3.08 | 216 | 3.59 | 188 | 4.28 | 150 | 5.32 | 93.1 | | | | | | | | | | | | | | | | | | | | | |
| 15 | .19 | 487 | .38 | 474 | .72 | 451 | 1.30 | 410 | 1.79 | 377 | 2.88 | 302 | 3.60 | 252 | 4.12 | 216 | 4.81 | 169 | 5.79 | 101 | | | | | | | | | | | | | | | | | | | | | |
| 18 | .23 | 591 | .45 | 513 | .86 | 540 | 1.54 | 484 | 2.09 | 439 | 3.25 | 342 | 4.00 | 280 | 4.52 | 237 | 5.19 | 182 | 6.10 | 107 | | | | | | | | | | | | | | | | | | | | | |
| 20 | .26 | 668 | .51 | 645 | .96 | 604 | 1.70 | 536 | 2.29 | 482 | 3.52 | 369 | 4.28 | 300 | 4.80 | 252 | 5.46 | 191 | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | .32 | 810 | .62 | 777 | 1.14 | 719 | 1.99 | 626 | 2.64 | 554 | 3.93 | 412 | 4.69 | 328 | 5.19 | 273 | 5.82 | 204 | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | .40 | 1018 | .77 | 968 | 1.40 | 881 | 2.37 | 747 | 3.09 | 649 | 4.42 | 465 | 5.17 | 362 | 5.65 | 296 | 6.22 | 218 | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | .48 | 1219 | .91 | 1149 | 1.63 | 1029 | 2.70 | 852 | 3.46 | 727 | 4.81 | 505 | 5.52 | 387 | 5.97 | 313 | | | | | | | | | | | | | | | | | | | | | | | | | |

Ratings are based on strength calculation. Basic static strength rating, or for hand operation of above gears is approximately 3 times the 100 RPM rating.

NOTE: Ratings to right of heavy line exceed 1500 Feet per Minute and should be used for interpolation purposes only.

*Torque Rating (Lb. Ins.)