



GEARS

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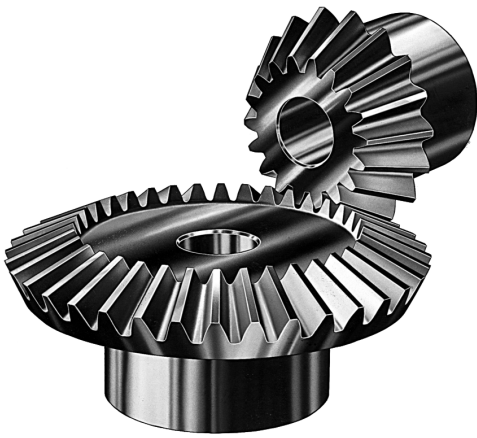
GEARS

Stock Gears

Martin



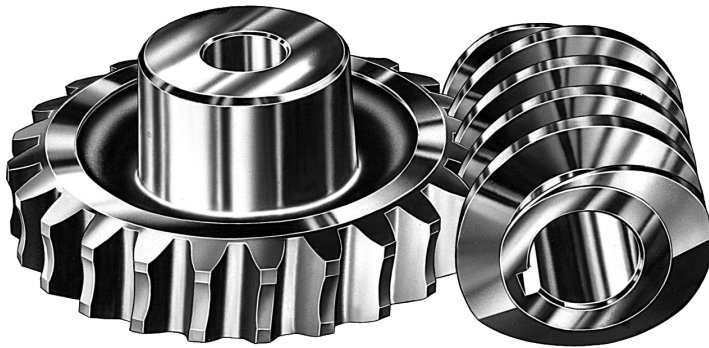
Spur Gears



Bevel Gears



Miter Gears



Worm and Worm Gears



Gear Rack

GEARS

Martin

**“Made-To-Order”
Gears**



GEARS

Stock Gears Numbering System



Letters (Prefix) Indicate Material and Type Gear.
Letters (Suffix) Indicate Hardened, Number of Threads, Direction of Rotation and KW and SS.
Numbers Indicate Pitch, Number of Teeth, and Ratio (Suffix).

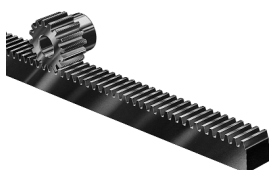


Spur Gears

S=Steel
TS=Steel 20°
C=Cast
TC=Cast 20°
H=Hardened Teeth
NM=Non-Metallic
Note: Pressure Angle is Shown as a Suffix to Part Number of All Our Spur Gears.

Examples

S620-14½° (Steel 6P 20T-14½°PA)
TS620-20° (Steel 6P 20T-20°PA)
C660-14½° (Cast 6P 60T-14½°PA)
TC660-20° (Cast 6P 60T-20°PA)
S620H-14½° (Steel 6P 20T-Hardened 14½°PA)
NM620-14½° (Non-Metallic 6P 20T-14½°PA)



Rack

R=Rack — Steel
RA=Rack — Steel Heavy Backing
TR=Rack — Steel 20° Heavy Backing
R20=Rack — Steel 20° Wide Face

Examples

R-6X2 (14½° STD Backing 6PX2' Long)
RA-6X4 (14½° Heavy Backing 6PX4' Long)
TR-6X6 (20° STD Width 6PX6' Long)
R20-6X6 (20° Wide Face 6PX6' Long)



Bevel Gears

B=Bevel — Cast Iron Gears
B=Bevel — Steel Pinions
BS=Bevel — Steel Gears
BS=Bevel — Steel Pinions
Note: B Steel Pinions May Run With BS Gears of Same Ratio

Examples

B1040-2 (Cast 10P 40T 2:1 Ratio)
B1020-2 (Steel 10P 20T 2:1 Ratio)
BS1040-2 (Steel 10P 40T 2:1 Ratio)
BS1020-2 (Steel 10P 20T 2:1 Ratio)



Miter Gears

M=Miter — Steel Gears
A or B=Larger Bore (Suffix)
HM=Miter-Hardened Teeth
K=KW & SS

Examples

M824 (Steel 8P 24T)
M824A (Steel 8P 24T Larger Bore)
M2424BR (Brass 24P 24T)
HM1020 (Steel-Hardened Teeth 10P 20T)
HMK1020 (Steel-Hardened 10P 20T With KW & SS)



Worm

W=Worm — Steel
WH=Worm — Steel With Hub Projection
WG=Worm — Steel Hardened Ground Threads
WHG=Worm — Steel Hardened Ground Threads With Hub Projection
L=(Prefix) Longer Face
D or Q=(Suffix) Double or Quadruple Thread
R=Right Hand

Examples

W6R (Steel 6P Right Hand)
WH6R (Steel with Hub Projection 6P Right Hand)
WG6R (Steel-Hardened Ground Threads 6P Right Hand)
WHG6R (Steel with Hub Projection Hardened Ground Threads 6P Right Hand)
LW6R Steel Long Face 6P Right Hand
W6DR (Steel 6P Double Thread Right Hand)



Worm Gears

W=Worm Gear — Cast Iron
WB=Worm Gear — Bronze
D or Q=Double or Quadruple Thread (Suffix)
R=Right Hand (Suffix)

Examples

W660R (Cast Iron 6P 60T Right Hand)
WB660R (Bronze 6P 60T Right Hand)
W660DR (Cast Iron 6P 60T Double Thread Right Hand)



Styles of Spur Gears

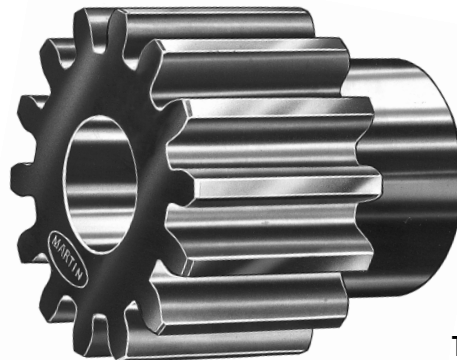
Martin Stock Spur Gears are available in five different styles. Steel Gears are furnished in plain style and plain style with hub. Cast gears are furnished, plain with hub, web with lightening holes, and spoke. Cast gears are machined on all operating surfaces. *Martin* cast gears are cast with larger hub to provide extra strength and to allow for larger bores.



Type A
• Plain Without Hubs
• All Steel



Type B₁
• Web
• All Steel
• Cast



Type B
• Plain With Hubs
• All Steel
• Cast



Type B₂
• Web With Lighten Holes
• All Steel
• Cast



Type B₃
• Web With Spokes
• Cast

GEARS

3 DP 3" Face

Steel Stock Spur Gears 14½° Pressure Angle



Type A
Plain Without Hub



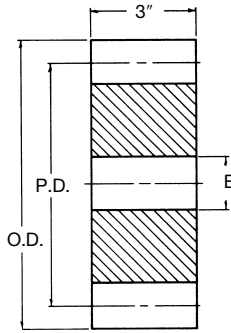
Type B
Plain With Hub



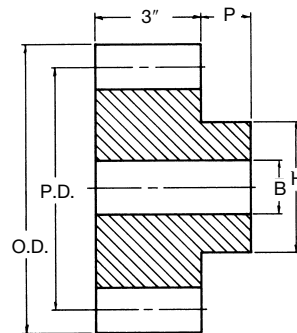
Type B₁
Web



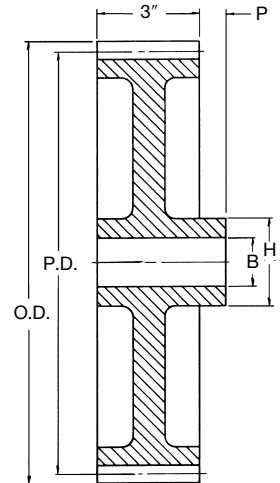
Type B₂
Web With
Lighten Holes



Type A



Type B



Type B₁, B₂

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 11 | S311 | 14½ | 4.000¥† | 4.666 | A | 1⅞ | 2 | | | 12.0 |
| 12 | S312 | 14½ | 4.000¥ | 4.666 | A | 1⅞ | 2 | | | 11.0 |
| 13 | S313 | 14½ | 4.333 | 5.000 | A | 1⅞ | 2¼ | | | 10.7 |
| 14 | S314 | 14½ | 4.667 | 5.333 | A | 1⅞ | 2½ | | | 12.8 |
| 15 | S315 | 14½ | 5.000 | 5.666 | A | 1⅞ | 2¾ | | | 14.8 |
| 16 | S316 | 14½ | 5.333 | 6.000 | A | 1⅞ | 2⅞ | | | 17.0 |
| 18 | S318 | 14½ | 6.000 | 6.666 | A | 1⅞ | 3¼ | | | 22.0 |
| 20 | S320 | 14½ | 6.667 | 7.333 | A | 1⅞ | 3½ | | | 27.4 |
| 21 | S321 | 14½ | 7.000 | 7.666 | A | 1⅞ | 3¾ | | | 30.7 |
| 24 | S324 | 14½ | 8.000 | 8.666 | B | 1⅞ | 3¼ | 5½ | 1¼ | 48.2 |
| 30 | S330 | 14½ | 10.000 | 10.666 | B | 1⅞ | 3¾ | 6¼ | 1¼ | 74.5 |
| 36 | S336 | 14½ | 12.000 | 12.666 | B | 1⅞ | 4¼ | 6½ | 1¼ | 114 |
| 42 | S342 | 14½ | 14.000 | 14.666 | B1 | 1⅞ | 4¾ | 6¾ | 1¼ | 106 |
| 48 | S348 | 14½ | 16.000 | 16.666 | B1 | 1⅞ | 4¾ | 6¾ | 1¼ | 120 |
| 54 | S354 | 14½ | 18.000 | 18.666 | B2 | 1⅞ | 4¾ | 6¾ | 1¼ | 134 |
| 60 | S360 | 14½ | 20.000 | 20.666 | B2 | 1⅞ | 4¾ | 6¾ | 1¼ | 150 |
| 72 | S372 | 14½ | 24.000 | 24.666 | B2 | 1⅞ | 4¾ | 7 | 1¼ | 180 |
| 84 | S384 | 14½ | 28.000 | 28.666 | B2 | 1⅞ | 4¾ | 7 | 1¼ | 215 |
| 96 | S396 | 14½ | 32.000 | 32.666 | B2 | 1⅞ | 4¾ | 7 | 1¼ | 264 |
| 108 | S3108 | 14½ | 36.000 | 36.666 | B2 | 1⅞ | 4¾ | 7 | 1¼ | 305 |
| 120 | S3120 | 14½ | 40.000 | 40.666 | B2 | 1⅞ | 5 | 7½ | 1¼ | 367 |

* Recommended Maximum Bore With Keyway and Setscrew.

† Enlarged Pitch Diameter with Special Tooth Form.

¥ 4" Face.

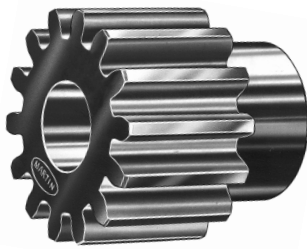
14½ P.A. Gears Will Not Operate With 20° P.A.

GEARS



**Cast Iron Stock
Spur Gears**
14½° Pressure Angle

**3 DP
3" Face**



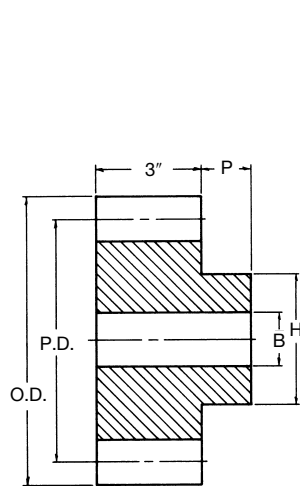
Type B
Plain With Hub



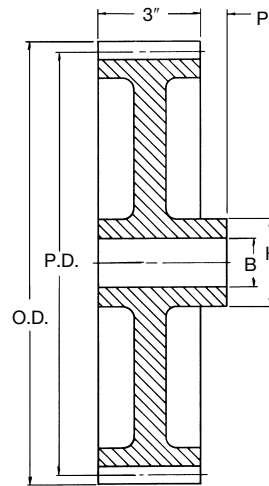
Type B₂
Web With
Lighten Holes



Type B₃
Web With Spokes



Type B



Type B₂, B₃

Cast — Style “B”

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 24 | C324 | 14½ | 8.000 | 8.666 | B | 1⅞ | 2⅞ | 4⅞ | 1⅞ | 40.4 |
| 28 | C328 | 14½ | 9.333 | 10.000 | B | 1⅞ | 3⅞ | 5⅞ | 1⅞ | 54.2 |
| 30 | C330 | 14½ | 10.000 | 10.666 | B | 1⅞ | 3⅞ | 5⅞ | 1⅞ | 57.1 |
| 32 | C332 | 14½ | 10.667 | 11.333 | B | 1⅞ | 3⅞ | 5⅞ | 1⅞ | 62.4 |
| 36 | C336 | 14½ | 12.000 | 12.666 | B ₂ | 1⅞ | 3⅞ | 5⅞ | 1⅞ | 71.3 |
| 40 | C340 | 14½ | 13.333 | 14.000 | B ₂ | 1⅞ | 3⅞ | 5⅞ | 1⅞ | 75.9 |
| 42 | C342 | 14½ | 14.000 | 14.666 | B ₂ | 1⅞ | 3⅞ | 5⅞ | 1⅞ | 79.5 |
| 45 | C345 | 14½ | 15.000 | 15.666 | B ₂ | 1⅞ | 3⅞ | 5⅞ | 1⅞ | 85.0 |
| 48 | C348 | 14½ | 16.000 | 16.666 | B ₃ | 1⅞ | 3⅞ | 5⅞ | 1⅞ | 92.9 |
| 54 | C354 | 14½ | 18.000 | 18.666 | B ₃ | 1⅞ | 3⅞ | 5⅞ | 1⅞ | 104 |
| 60 | C360 | 14½ | 20.000 | 20.666 | B ₃ | 1⅞ | 3⅞ | 5⅞ | 1⅞ | 115 |
| 72 | C372 | 14½ | 24.000 | 24.666 | B ₃ | 1⅞ | 3⅞ | 6 | 1⅞ | 153 |
| 75 | C375 | 14½ | 25.000 | 25.666 | B ₃ | 1⅞ | 3⅞ | 6 | 1⅞ | 155 |
| 84 | C384 | 14½ | 28.000 | 28.666 | B ₃ | 1⅞ | 3⅞ | 6 | 1⅞ | 178 |
| 90 | C390 | 14½ | 30.000 | 30.666 | B ₃ | 1⅞ | 3⅞ | 6 | 1⅞ | 185 |
| 96 | C396 | 14½ | 32.000 | 32.666 | B ₃ | 1⅞ | 3⅞ | 6 | 1⅞ | 205 |
| 105 | C3105 | 14½ | 35.000 | 35.666 | B ₃ | 1⅞ | 3⅞ | 6 | 1⅞ | 216 |
| 108 | C3108 | 14½ | 36.000 | 36.666 | B ₃ | 1⅞ | 3⅞ | 6 | 1⅞ | 228 |
| 120 | C3120 | 14½ | 40.000 | 40.666 | B ₃ | 1⅞ | 4 | 6½ | 1⅞ | 226 |

* Recommended Maximum Bore With Keyway and Setscrew.

14½° P.A. Gears Will Not Operate With 20° P.A.

GEARS

4 DP 2" Face

Steel Stock Spur Gears 14½° Pressure Angle



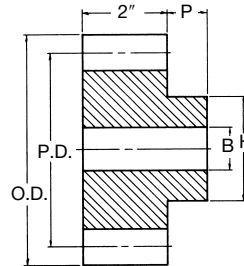
Type B
Plain With Hub



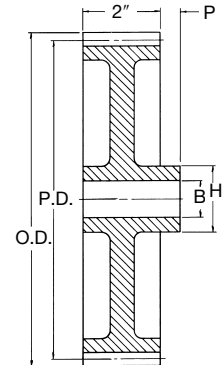
Type B₁
Web



Type B₂
Web With
Lighten Holes



Type B



Type B₁, B₂

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 11 | S411 | 14½ | 3.000† | 3.500 | B | 1½ | 1⅝ | 2¼ | ¾ | 4.0 |
| 12 | S412 | 14½ | 3.000 | 3.500 | B | 1½ | 1⅝ | 2¼ | ¾ | 3.9 |
| 13 | S413 | 14½ | 3.250 | 3.750 | B | 1½ | 1⅝ | 2¼ | ¾ | 4.6 |
| 14 | S414 | 14½ | 3.500 | 4.000 | B | 1½ | 1¾ | 2¾ | ¾ | 5.7 |
| 15 | S415 | 14½ | 3.750 | 4.250 | B | 1½ | 1¾ | 3 | ¾ | 6.8 |
| 16 | S416 | 14½ | 4.000 | 4.500 | B | 1½ | 1¾ | 3¼ | ¾ | 8.0 |
| 17 | S417 | 14½ | 4.250 | 4.750 | B | 1½ | 2 | 3½ | ¾ | 9.2 |
| 18 | S418 | 14½ | 4.500 | 5.000 | B | 1½ | 2¼ | 3¾ | ¾ | 10.4 |
| 19 | S419 | 14½ | 4.750 | 5.250 | B | 1½ | 2¼ | 4 | ¾ | 10.5 |
| 20 | S420 | 14½ | 5.000 | 5.500 | B | 1½ | 2½ | 4¼ | ¾ | 13.4 |
| 21 | S421 | 14½ | 5.250 | 5.750 | B | 1½ | 2½ | 4½ | ¾ | 14.9 |
| 22 | S422 | 14½ | 5.500 | 6.000 | B | 1½ | 2½ | 4¾ | ¾ | 16.5 |
| 24 | S424 | 14½ | 6.000 | 6.500 | B | 1½ | 2¾ | 4¾ | 1½ | 22.8 |
| 26 | S426 | 14½ | 6.500 | 7.000 | B | 1½ | 2¾ | 4¾ | 1½ | 24.8 |
| 28 | S428 | 14½ | 7.000 | 7.500 | B | 1½ | 2¾ | 4¾ | 1½ | 27.8 |
| 30 | S430 | 14½ | 7.500 | 8.000 | B | 1½ | 2¾ | 4¾ | 1½ | 31.0 |
| 32 | S432 | 14½ | 8.000 | 8.500 | B | 1½ | 2¾ | 4¾ | 1½ | 34.4 |
| 36 | S436 | 14½ | 9.000 | 9.500 | B | 1½ | 2¾ | 4¾ | 1½ | 41.7 |
| 40 | S440 | 14½ | 10.000 | 10.500 | B | 1½ | 3½ | 5½ | 1½ | 51.8 |
| 42 | S442 | 14½ | 10.500 | 11.000 | B | 1½ | 3½ | 5½ | 1½ | 56.0 |
| 44 | S444 | 14½ | 11.000 | 11.500 | B | 1½ | 3½ | 5½ | 1½ | 60.8 |
| 48 | S448 | 14½ | 12.000 | 12.500 | B | 1½ | 3½ | 5½ | 1½ | 70.8 |
| 54 | S454 | 14½ | 13.500 | 14.000 | B ₁ | 1½ | 3 | 5 | 1½ | 57.4 |
| 56 | S456 | 14½ | 14.000 | 14.500 | B ₁ | 1½ | 3 | 5 | 1½ | 59.9 |
| 60 | S460 | 14½ | 15.000 | 15.500 | B ₂ | 1½ | 3 | 5 | 1½ | 62.8 |
| 64 | S464 | 14½ | 16.000 | 16.500 | B ₂ | 1½ | 3 | 5 | 1½ | 66.2 |
| 72 | S472 | 14½ | 18.000 | 18.500 | B ₂ | 1½ | 3¼ | 5½ | 1½ | 82.9 |
| 80 | S480 | 14½ | 20.000 | 20.500 | B ₂ | 1½ | 3¼ | 5½ | 1½ | 95.0 |
| 84 | S484 | 14½ | 21.000 | 21.500 | B ₂ | 1½ | 3¼ | 5½ | 1½ | 92.0 |
| 88 | S488 | 14½ | 22.000 | 22.500 | B ₂ | 1½ | 3¼ | 6½ | 1¾ | 95.8 |
| 96 | S496 | 14½ | 24.000 | 24.500 | B ₂ | 1½ | 3¾ | 6½ | 1¾ | 124 |
| 120 | S4120 | 14½ | 30.000 | 30.500 | B ₂ | 1½ | 3¾ | 6 | 1¾ | 155 |
| 144 | S4144 | 14½ | 36.000 | 36.500 | B ₂ | 1½ | 4 | 6½ | 1¾ | 208 |

* Recommended Maximum Bore With Keyway and Set Screw.
† Enlarged Pitch Diameter with Special Tooth Form.

14½° P.A. Gears Will Not Operate With 20° P.A.

GEARS



Cast Iron Stock Spur Gears

14½° Pressure Angle

4 DP 2" Face



Type B
Plain With Hub



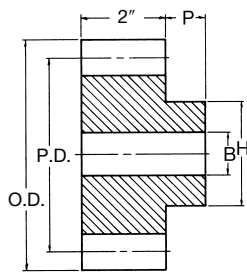
Type B₁
Web



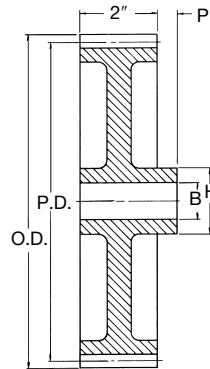
Type B₂
Web With
Lighten Holes



Type B₃
Web With Spokes



Type B



Type B₁, B₂, B₃

Cast — Style “B”

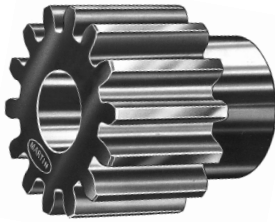
| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 24 | C424 | 14½ | 6.000 | 6.500 | B | 1½ | 2½ | 3½ | 1½ | 17.0 v |
| 28 | C428 | 14½ | 7.000 | 7.500 | B ₁ | 1½ | 2½ | 3½ | 1½ | 20.2 |
| 30 | C430 | 14½ | 7.500 | 8.000 | B ₁ | 1½ | 2½ | 3½ | 1½ | 21.1 |
| 32 | C432 | 14½ | 8.000 | 8.500 | B ₁ | 1½ | 2½ | 3½ | 1½ | 23.2 |
| 36 | C436 | 14½ | 9.000 | 9.500 | B ₂ | 1½ | 2½ | 4 | 1½ | 30.5 |
| 40 | C440 | 14½ | 10.000 | 10.500 | B ₂ | 1½ | 2½ | 4 | 1½ | 26.4 |
| 42 | C442 | 14½ | 10.500 | 11.000 | B ₂ | 1½ | 2½ | 4 | 1½ | 33.9 |
| 44 | C444 | 14½ | 11.000 | 11.500 | B ₂ | 1½ | 2½ | 4 | 1½ | 32.0 |
| 48 | C448 | 14½ | 12.000 | 12.500 | B ₃ | 1½ | 2½ | 4 | 1½ | 38.4 |
| 52 | C452 | 14½ | 13.000 | 13.500 | B ₃ | 1½ | 2½ | 4 | 1½ | 42.5 |
| 54 | C454 | 14½ | 13.500 | 14.000 | B ₃ | 1½ | 2½ | 4 | 1½ | 44.7 |
| 56 | C456 | 14½ | 14.000 | 14.500 | B ₃ | 1½ | 2½ | 4 | 1½ | 46.7 |
| 60 | C460 | 14½ | 15.000 | 15.500 | B ₃ | 1½ | 2½ | 4 | 1½ | 49.5 |
| 64 | C464 | 14½ | 16.000 | 16.500 | B ₃ | 1½ | 2½ | 4 | 1½ | 54.5 |
| 68 | C468 | 14½ | 17.000 | 17.500 | B ₃ | 1½ | 2½ | 4 | 1½ | 56.0 |
| 72 | C472 | 14½ | 18.000 | 18.500 | B ₃ | 1½ | 2½/16 | 4½ | 1½ | 63.0 |
| 80 | C480 | 14½ | 20.000 | 20.500 | B ₃ | 1½ | 2½/16 | 4½ | 1½ | 72.0 |
| 84 | C484 | 14½ | 21.000 | 21.500 | B ₃ | 1½ | 2½/16 | 4½ | 1½ | 73.0 |
| 88 | C488 | 14½ | 22.000 | 22.500 | B ₃ | 1½ | 2½/16 | 4½ | 1½ | 75.0 |
| 96 | C496 | 14½ | 24.000 | 24.500 | B ₃ | 1½ | 2½/16 | 4½ | 1½ | 86.0 |
| 100 | C4100 | 14½ | 25.000 | 25.500 | B ₃ | 1½ | 2½/16 | 4½ | 1½ | 91.0 |
| 104 | C4104 | 14½ | 26.000 | 26.500 | B ₃ | 1½ | 2½/16 | 4½ | 1½ | 105 |
| 112 | C4112 | 14½ | 28.000 | 28.500 | B ₃ | 1½ | 3½ | 5 | 1½ | 108 |
| 120 | C4120 | 14½ | 30.000 | 30.500 | B ₃ | 1½ | 3½ | 5 | 1½ | 115 |
| 132 | C4132 | 14½ | 33.000 | 33.500 | B ₃ | 1½ | 3½ | 5 | 1½ | 129 |
| 144 | C4144 | 14½ | 36.000 | 36.500 | B ₃ | 1½ | 3½ | 5½ | 1½ | 140 |

* Recommended Maximum Bore With Keyway and Set Screw.

14½° P.A. Gears Will Not Operate With 20° P.A.

5 DP 1³/₄" Face

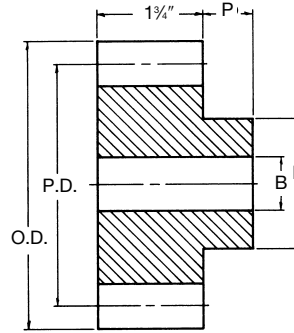
Steel Stock Spur Gears 14¹/₂° Pressure Angle



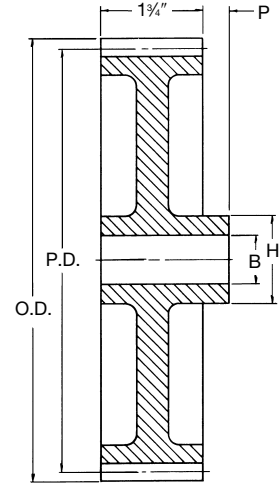
Type B
Plain With Hub



Type B₂
Web With Lighten Holes



Type B



Type B₂

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|--------------------------------|----------|---------|----------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 11 | S511 | 14 ¹ / ₂ | 2.400† | 2.800 | B | 1 ¹ / ₁₆ | 1 ¹ / ₁₆ | 1 ⁵ / ₁₆ | ⁷ / ₁₆ | 2.0 |
| 12 | S512 | 14 ¹ / ₂ | 2.400 | 2.800 | B | 1 ¹ / ₁₆ | 1 ¹ / ₁₆ | 1 ⁵ / ₁₆ | ⁷ / ₁₆ | 2.0 |
| 13 | S513 | 14 ¹ / ₂ | 2.600 | 3.000 | B | 1 ¹ / ₁₆ | 1 ¹ / ₄ | 2 | ⁷ / ₁₆ | 2.6 |
| 14 | S514 | 14 ¹ / ₂ | 2.800 | 3.200 | B | 1 ¹ / ₁₆ | 1 ⁵ / ₁₆ | 2 ¹ / ₁₆ | ⁷ / ₁₆ | 3.1 |
| 15 | S515 | 14 ¹ / ₂ | 3.000 | 3.400 | B | 1 ¹ / ₁₆ | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | ⁷ / ₁₆ | 3.7 |
| 16 | S516 | 14 ¹ / ₂ | 3.200 | 3.600 | B | 1 ¹ / ₁₆ | 1 ¹ / ₈ | 2 ¹ / ₁₆ | ⁷ / ₁₆ | 4.5 |
| 17 | S517 | 14 ¹ / ₂ | 3.400 | 3.800 | B | 1 ¹ / ₁₆ | 1 ⁹ / ₁₆ | 2 ¹ / ₁₆ | ⁷ / ₁₆ | 5.2 |
| 18 | S518 | 14 ¹ / ₂ | 3.600 | 4.000 | B | 1 ¹ / ₁₆ | 1 ¹ / ₈ | 3 | ⁷ / ₁₆ | 5.9 |
| 19 | S519 | 14 ¹ / ₂ | 3.800 | 4.200 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 3 ¹ / ₁₆ | ⁷ / ₁₆ | 6.7 |
| 20 | S520 | 14 ¹ / ₂ | 4.000 | 4.400 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 3 ¹ / ₁₆ | ⁷ / ₁₆ | 7.5 |
| 21 | S521 | 14 ¹ / ₂ | 4.200 | 4.600 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 3 ¹ / ₁₆ | ⁷ / ₁₆ | 8.1 |
| 22 | S522 | 14 ¹ / ₂ | 4.400 | 4.800 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 3 ¹ / ₁₆ | ⁷ / ₁₆ | 8.8 |
| 23 | S523 | 14 ¹ / ₂ | 4.600 | 5.000 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 3 ¹ / ₁₆ | ⁷ / ₁₆ | 9.5 |
| 24 | S524 | 14 ¹ / ₂ | 4.800 | 5.200 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 3 ¹ / ₁₆ | 1 ¹ / ₁₆ | 11.0 |
| 25 | S525 | 14 ¹ / ₂ | 5.000 | 5.400 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 3 ¹ / ₁₆ | 1 ¹ / ₁₆ | 11.8 |
| 26 | S526 | 14 ¹ / ₂ | 5.200 | 5.600 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 3 ¹ / ₁₆ | 1 ¹ / ₁₆ | 12.9 |
| 28 | S528 | 14 ¹ / ₂ | 5.600 | 6.000 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 3 ¹ / ₁₆ | 1 ¹ / ₁₆ | 14.3 |
| 30 | S530 | 14 ¹ / ₂ | 6.000 | 6.400 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 3 ¹ / ₁₆ | 1 ¹ / ₁₆ | 16.0 |
| 35 | S535 | 14 ¹ / ₂ | 7.000 | 7.400 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 4 ¹ / ₁₆ | 1 ¹ / ₁₆ | 22.8 |
| 40 | S540 | 14 ¹ / ₂ | 8.000 | 8.400 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 4 ¹ / ₁₆ | 1 ¹ / ₁₆ | 28.5 |
| 45 | S545 | 14 ¹ / ₂ | 9.000 | 9.400 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 4 ¹ / ₁₆ | 1 ¹ / ₁₆ | 35.0 |
| 50 | S550 | 14 ¹ / ₂ | 10.000 | 10.400 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 4 ¹ / ₁₆ | 1 ¹ / ₁₆ | 43.6 |
| 55 | S555 | 14 ¹ / ₂ | 11.000 | 11.400 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 4 ¹ / ₁₆ | 1 ¹ / ₁₆ | 52.0 |
| 60 | S560 | 14 ¹ / ₂ | 12.000 | 12.400 | B | 1 ¹ / ₁₆ | 2 ¹ / ₁₆ | 4 ¹ / ₁₆ | 1 ¹ / ₁₆ | 60.9 |
| 70 | S570 | 14 ¹ / ₂ | 14.000 | 14.400 | B ₂ | 1 ¹ / ₁₆ | 3 ¹ / ₁₆ | 5 | 1 ¹ / ₁₆ | 48.4 |
| 80 | S580 | 14 ¹ / ₂ | 16.000 | 16.400 | B ₂ | 1 ¹ / ₁₆ | 3 ¹ / ₁₆ | 5 | 1 ¹ / ₁₆ | 57.0 |
| 90 | S590 | 14 ¹ / ₂ | 18.000 | 18.400 | B ₂ | 1 ¹ / ₁₆ | 3 ¹ / ₁₆ | 5 | 1 ¹ / ₁₆ | 67.0 |
| 100 | S5100 | 14 ¹ / ₂ | 20.000 | 20.400 | B ₂ | 1 ¹ / ₁₆ | 3 ¹ / ₁₆ | 5 ¹ / ₁₆ | 1 ¹ / ₁₆ | 62.0 |
| 110 | S5110 | 14 ¹ / ₂ | 22.000 | 22.400 | B ₂ | 1 ¹ / ₁₆ | 3 ¹ / ₁₆ | 5 ¹ / ₁₆ | 1 ¹ / ₁₆ | 87.6 |
| 120 | S5120 | 14 ¹ / ₂ | 24.000 | 24.400 | B ₂ | 1 ¹ / ₁₆ | 3 ¹ / ₁₆ | 6 ¹ / ₁₆ | 1 ¹ / ₁₆ | 113 |

* Recommended Maximum Bore With Keyway and Setscrew.
† Enlarged Pitch Diameter with Special Tooth Form.

14¹/₂° P.A. Gears Will Not Operate With 20° P.A.

GEARS



**Cast Iron Stock
Spur Gears**
14½° Pressure Angle

5 DP
1¾" Face



Type B
Plain With Hub



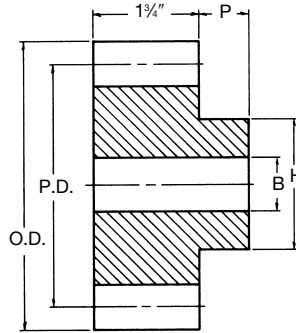
Type B₁
Web



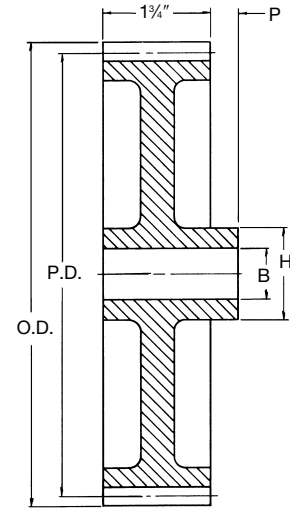
Type B₂
Web With
Lighten Holes



Type B₃
Web With
Spokes



Type B



Type B₁, B₂, B₃

Cast — Style “B”

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 24 | C524 | 14½ | 4.800 | 5.200 | B | 1½ | 2½ | 3¼ | 1¼ | 9.9 |
| 25 | C525 | 14½ | 5.000 | 5.400 | B | 1½ | 2½ | 3¼ | 1¼ | 10.6 |
| 28 | C528 | 14½ | 5.600 | 6.000 | B ₁ | 1½ | 2½ | 3¼ | 1¼ | 12.1 |
| 30 | C530 | 14½ | 6.000 | 6.400 | B ₁ | 1½ | 2½ | 3¼ | 1¼ | 13.9 |
| 32 | C532 | 14½ | 6.400 | 6.800 | B ₁ | 1½ | 2½ | 3¼ | 1¼ | 13.5 |
| 35 | C535 | 14½ | 7.000 | 7.400 | B ₁ | 1½ | 2½ | 3¼ | 1¼ | 16.9 |
| 36 | C536 | 14½ | 7.200 | 7.600 | B ₁ | 1½ | 2½ | 3¼ | 1¼ | 15.5 |
| 40 | C540 | 14½ | 8.000 | 8.400 | B ₁ | 1½ | 2½ | 3¼ | 1¼ | 17.4 |
| 45 | C545 | 14½ | 9.000 | 9.400 | B ₂ | 1½ | 2½ | 3¼ | 1¼ | 20.3 |
| 48 | C548 | 14½ | 9.600 | 10.000 | B ₂ | 1½ | 2½ | 3¼ | 1¼ | 25.2 |
| 50 | C550 | 14½ | 10.000 | 10.400 | B ₂ | 1½ | 2½ | 3¼ | 1¼ | 23.7 |
| 54 | C554 | 14½ | 10.800 | 11.200 | B ₂ | 1½ | 2½ | 3¼ | 1¼ | 25.1 |
| 55 | C555 | 14½ | 11.000 | 11.400 | B ₂ | 1½ | 2½ | 3¼ | 1¼ | 26.0 |
| 60 | C560 | 14½ | 12.000 | 12.400 | B ₂ | 1½ | 2½ | 3¼ | 1¼ | 30.6 |
| 64 | C564 | 14½ | 12.800 | 13.200 | B ₂ | 1½ | 2½ | 3¼ | 1¼ | 31.2 |
| 66 | C566 | 14½ | 13.200 | 13.600 | B ₂ | 1½ | 2½ | 3¼ | 1¼ | 30.8 |
| 70 | C570 | 14½ | 14.000 | 14.400 | B ₂ | 1½ | 2½ | 4 | 1¼ | 34.5 |
| 72 | C572 | 14½ | 14.400 | 14.800 | B ₂ | 1½ | 2½ | 4 | 1¼ | 35.0 |
| 75 | C575 | 14½ | 15.000 | 15.400 | B ₂ | 1½ | 2½ | 4 | 1¼ | 36.7 |
| 80 | C580 | 14½ | 16.000 | 16.400 | B ₂ | 1½ | 2½ | 4 | 1¼ | 40.8 |
| 84 | C584 | 14½ | 16.800 | 17.200 | B ₂ | 1½ | 2½ | 4 | 1¼ | 40.0 |
| 90 | C590 | 14½ | 18.000 | 18.400 | B ₂ | 1½ | 2½ | 4 | 1¼ | 45.4 |
| 96 | C596 | 14½ | 19.200 | 19.600 | B ₂ | 1½ | 2½ | 4 | 1¼ | 48.6 |
| 100 | C5100 | 14½ | 20.000 | 20.400 | B ₂ | 1½ | 2½ | 4½ | 1½ | 54.4 |
| 120 | C5120 | 14½ | 24.000 | 24.400 | B ₂ | 1½ | 2¾ | 4¾ | 1½ | 56.1 |
| 130 | C5130 | 14½ | 26.000 | 26.400 | B ₂ | 1½ | 2¾ | 4¾ | 1½ | 70.2 |

* Recommended maximum bore with keyway and set screw.

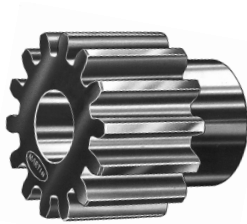
Quotes for large quantity discontinued cast iron sizes, contact your nearest *Martin* Facility.

14½° P.A. Gears Will Not Operate With 20° P.A.

GEARS

6 DP 1 1/2" Face

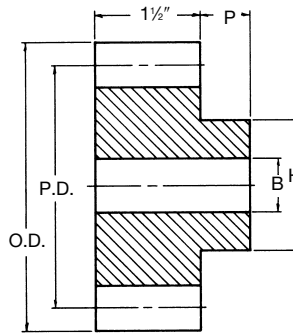
Steel Stock Spur Gears 14 1/2° Pressure Angle



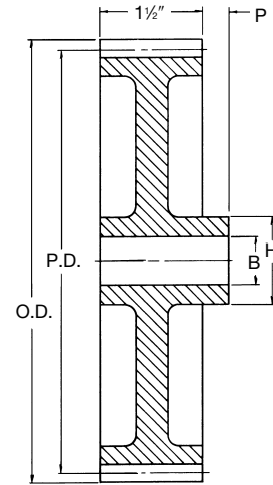
Type B
Plain With Hub



Type B₂
Web With
Lighten Holes



Type B



Type B₂

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|---------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 11 | S611 | 14 1/2 | 2.000† | 2.333 | B | 1 | ** | 1 1/2 | 3/8 | 1.1 |
| 12 | S612 | 14 1/2 | 2.000 | 2.333 | B | 1 | ** | 1 1/2 | 3/8 | 1.1 |
| 14 | S614 | 14 1/2 | 2.333 | 2.666 | B | 1 | 1 1/16 | 1 1/16 | 3/8 | 1.8 |
| 15 | S615 | 14 1/2 | 2.500 | 2.833 | B | 1 | 1 1/4 | 2 | 3/8 | 2.2 |
| 16 | S616 | 14 1/2 | 2.666 | 3.000 | B | 1 | 1 1/8 | 2 1/2 | 3/8 | 2.6 |
| 18 | S618 | 14 1/2 | 3.000 | 3.333 | B | 1 | 1 1/2 | 2 1/2 | 3/8 | 3.5 |
| 20 | S620 | 14 1/2 | 3.333 | 3.666 | B | 1 | 1 3/4 | 2 7/8 | 3/8 | 4.6 |
| 21 | S621 | 14 1/2 | 3.500 | 3.833 | B | 1 | 1 1/2 | 3 | 3/8 | 5.1 |
| 22 | S622 | 14 1/2 | 3.666 | 4.000 | B | 1 | 1 1/8 | 3 | 3/8 | 5.5 |
| 24 | S624 | 14 1/2 | 4.000 | 4.333 | B | 1 1/8 | 1 1/8 | 3 | 1 | 6.5 |
| 27 | S627 | 14 1/2 | 4.500 | 4.833 | B | 1 1/8 | 1 1/8 | 3 | 1 | 6.6 |
| 28 | S628 | 14 1/2 | 4.666 | 5.000 | B | 1 1/8 | 1 1/8 | 3 | 1 | 8.3 |
| 30 | S630 | 14 1/2 | 5.000 | 5.333 | B | 1 1/8 | 2" | 3 1/2 | 1 | 9.5 |
| 32 | S632 | 14 1/2 | 5.333 | 5.666 | B | 1 1/8 | 2" | 3 1/2 | 1 | 10.7 |
| 33 | S633 | 14 1/2 | 5.500 | 5.833 | B | 1 1/8 | 2 1/8 | 3 1/2 | 1 | 11.3 |
| 36 | S636 | 14 1/2 | 6.000 | 6.333 | B | 1 1/8 | 2 1/8 | 3 1/2 | 1 | 13.3 |
| 39 | S639 | 14 1/2 | 6.500 | 6.833 | B | 1 1/8 | 2 1/2 | 4 | 1 | 16.6 |
| 40 | S640 | 14 1/2 | 6.666 | 7.000 | B | 1 1/8 | 2 1/2 | 4 | 1 | 17.6 |
| 42 | S642 | 14 1/2 | 7.000 | 7.333 | B | 1 1/8 | 2 1/2 | 4 | 1 | 18.9 |
| 45 | S645 | 14 1/2 | 7.500 | 7.833 | B | 1 1/8 | 2 1/2 | 4 | 1 | 21.3 |
| 48 | S648 | 14 1/2 | 8.000 | 8.333 | B | 1 1/8 | 2 1/2 | 4 1/8 | 1 | 24.3 |
| 52 | S652 | 14 1/2 | 8.666 | 9.000 | B | 1 1/8 | 2 3/8 | 4 1/8 | 1 | 27.9 |
| 54 | S654 | 14 1/2 | 9.000 | 9.333 | B | 1 1/8 | 2 3/8 | 4 1/8 | 1 | 30.4 |
| 58 | S658 | 14 1/2 | 9.666 | 10.000 | B | 1 1/8 | 2 3/8 | 4 1/8 | 1 | 33.9 |
| 60 | S660 | 14 1/2 | 10.000 | 10.333 | B | 1 1/8 | 2 3/8 | 4 1/8 | 1 1/4 | 34.3 |
| 64 | S664 | 14 1/2 | 10.666 | 11.000 | B | 1 1/8 | 2 3/8 | 4 1/8 | 1 1/4 | 42.2 |
| 66 | S666 | 14 1/2 | 11.000 | 11.333 | B | 1 1/8 | 2 3/8 | 4 1/8 | 1 1/4 | 50.0 |
| 72 | S672 | 14 1/2 | 12.000 | 12.333 | B | 1 1/8 | 2 11/16 | 4 1/8 | 1 1/4 | 53.0 |
| 84 | S684 | 14 1/2 | 14.000 | 14.333 | B ₂ | 1 1/8 | 2 11/16 | 4 1/2 | 1 1/4 | 40.0 |
| 96 | S696 | 14 1/2 | 16.000 | 16.333 | B ₂ | 1 1/8 | 2 9/16 | 5 1/8 | 1 1/4 | 43.8 |
| 108 | S6108 | 14 1/2 | 18.000 | 18.333 | B ₂ | 1 1/8 | 2 9/16 | 5 1/8 | 1 1/4 | 53.0 |
| 120 | S6120 | 14 1/2 | 20.000 | 20.333 | B ₂ | 1 1/8 | 2 9/16 | 5 1/8 | 1 1/4 | 63.2 |
| 132 | S6132 | 14 1/2 | 22.000 | 22.333 | B ₂ | 1 1/8 | 2 3/8 | 5 1/8 | 1 1/2 | 68.3 |
| 144 | S6144 | 14 1/2 | 24.000 | 24.333 | B ₂ | 1 1/8 | 3 1/8 | 5 | 1 1/2 | 82.7 |

* Recommended maximum bore with keyway and set screw.

** Check application with factory.

† Enlarged pitch diameter with special tooth form.

14 1/2° P.A. Gears Will Not Operate With 20° P.A.

Martin

Cast Iron Stock Spur Gears

14½° Pressure Angle

6 DP

1½" Face



Type B Plain With Hub



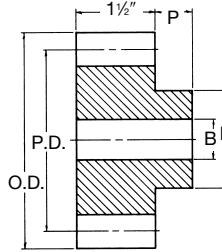
Type B₁ Web



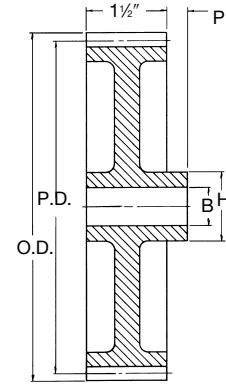
Type B₂
Web With Lighten Holes



Type B₃
Web With Spokes



Type B



Type B₁, B₂, B₃

Cast — Style "B"

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| • 32 | C632 | 14½ | 5.333 | 5.666 | B ₁ | 1½ | 1⅞ | 2½ | 1 | 7.2 |
| • 40 | C640 | 14½ | 6.666 | 7.000 | B ₁ | 1½ | 1⅞ | 3 | 1 | 11.9 |
| • 42 | C642 | 14½ | 7.000 | 7.333 | B ₁ | 1½ | 1⅞ | 3 | 1 | 13.0 |
| • 48 | C648 | 14½ | 8.000 | 8.333 | B ₁ | 1½ | 1⅞ | 3 | 1 | 12.1 |
| • 54 | C654 | 14½ | 9.000 | 9.333 | B ₁ | 1½ | 2⅞ | 3¼ | 1 | 14.4 |
| • 60 | C660 | 14½ | 10.000 | 10.333 | B ₁ | 1½ | 2⅞ | 3¼ | 1¼ | 17.0 |
| • 64 | C664 | 14½ | 10.666 | 11.000 | B ₁ | 1½ | 2⅞ | 3¼ | 1¼ | 18.5 |
| 66 | C666 | 14½ | 11.000 | 11.333 | B ₁ | 1½ | 2⅞ | 3¼ | 1¼ | 19.0 |
| 70 | C670 | 14½ | 11.666 | 12.000 | B ₁ | 1½ | 2⅞ | 3¼ | 1¼ | 20.6 |
| 72 | C672 | 14½ | 12.000 | 12.333 | B ₁ | 1½ | 2⅞ | 3½ | 1¼ | 23.7 |
| 75 | C675 | 14½ | 12.500 | 12.833 | B ₁ | 1½ | 2⅞ | 3½ | 1¼ | 25.4 |
| 80 | C680 | 14½ | 13.333 | 13.666 | B ₁ | 1½ | 2⅞ | 3½ | 1¼ | 25.8 |
| 84 | C684 | 14½ | 14.000 | 14.333 | B ₁ | 1½ | 2⅞ | 3½ | 1¼ | 25.0 |
| 90 | C690 | 14½ | 15.000 | 15.333 | B ₁ | 1½ | 2⅞ | 3½ | 1¼ | 25.8 |
| 96 | C696 | 14½ | 16.000 | 16.333 | B ₁ | 1½ | 2⅞ | 3½ | 1¼ | 28.0 |
| 108 | C6108 | 14½ | 18.000 | 18.333 | B ₁ | 1½ | 2⅞ | 3¾ | 1¼ | 32.0 |
| 120 | C6120 | 14½ | 20.000 | 20.333 | B ₁ | 1½ | 2⅞ | 3¾ | 1½ | 34.8 |
| 132 | C6132 | 14½ | 22.000 | 22.333 | B ₁ | 1½ | 2⅞ | 3¾ | 1½ | 43.4 |
| 144 | C6144 | 14½ | 24.000 | 24.333 | B ₁ | 1½ | 2⅞ | 4 | 1½ | 45.2 |
| 180 | C6180 | 14½ | 30.000 | 30.333 | B ₁ | 1½ | 2⅞ | 4 | 1½ | 58.3 |

* Recommended maximum bore with keyway and set screw
• Consult Factory.

14½° P.A. Gears Will Not Operate With 20° P.A.

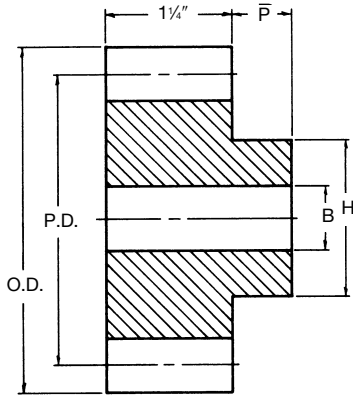
Bored-to-Size

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|--------|------------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 11 | S611BS 1 | 14½ | 2.000 | 2.333 | B | 1 | ¼ X ⅞ | (1) 1/4-20 @ 90 | 1½ | ⅞ | 1.10 |
| 12 | S612BS 1 | 14½ | 2.000 | 2.333 | B | 1 | ¼ X ⅞ | (1) 1/4-20 @ 90 | 1½ | ⅞ | 1.10 |
| 14 | S614BS 1 | 14½ | 2.333 | 2.667 | B | 1 | ¼ X ⅞ | (1) 5/16-18 @ 90 | 1⅞ | ⅞ | 1.80 |
| 14 | S614BS 1-1/8 | 14½ | 2.333 | 2.667 | B | 1-½ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 1⅞ | ⅞ | 1.80 |
| 15 | S615BS 1 | 14½ | 2.500 | 2.833 | B | 1 | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 | ⅞ | 2.20 |
| 15 | S615BS 1-1/8 | 14½ | 2.500 | 2.833 | B | 1-½ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 | ⅞ | 2.20 |
| 15 | S615BS 1-3/16 | 14½ | 2.500 | 2.833 | B | 1-¾ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 | ⅞ | 2.20 |
| 15 | S615BS 1-1/4 | 14½ | 2.500 | 2.833 | B | 1-½ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 | ⅞ | 2.20 |
| 16 | S616BS 1 | 14½ | 2.667 | 3.000 | B | 1 | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ⅞ | ⅞ | 2.60 |
| 16 | S616BS 1-1/8 | 14½ | 2.667 | 3.000 | B | 1-½ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ⅞ | ⅞ | 2.60 |
| 16 | S616BS 1-3/16 | 14½ | 2.667 | 3.000 | B | 1-¾ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ⅞ | ⅞ | 2.60 |
| 16 | S616BS 1-1/4 | 14½ | 2.667 | 3.000 | B | 1-½ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ⅞ | ⅞ | 2.60 |
| 18 | S618BS 1 | 14½ | 3.000 | 3.333 | B | 1 | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ½ | ⅞ | 3.50 |
| 18 | S618BS 1-1/8 | 14½ | 3.000 | 3.333 | B | 1-½ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ½ | ⅞ | 3.50 |
| 18 | S618BS 1-3/16 | 14½ | 3.000 | 3.333 | B | 1-¾ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ½ | ⅞ | 3.50 |
| 18 | S618BS 1-1/4 | 14½ | 3.000 | 3.333 | B | 1-½ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ½ | ⅞ | 3.50 |
| 20 | S620BS 1 | 14½ | 3.333 | 3.667 | B | 1 | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ⅞ | ⅞ | 4.60 |
| 20 | S620BS 1-1/8 | 14½ | 3.333 | 3.667 | B | 1-½ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ⅞ | ⅞ | 4.60 |
| 20 | S620BS 1-3/16 | 14½ | 3.333 | 3.667 | B | 1-¾ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ⅞ | ⅞ | 4.60 |
| 20 | S620BS 1-1/4 | 14½ | 3.333 | 3.667 | B | 1-½ | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2 ⅞ | ⅞ | 4.60 |

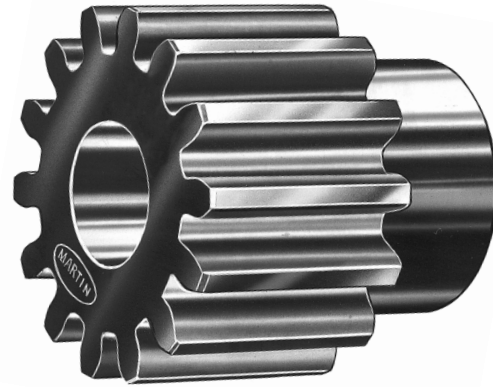
GEARS

8 DP 1 1/4" Face

Steel Stock Spur Gears 14 1/2° Pressure Angle



Type B



Type B
Plain With Hub

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 11 | S811 | 14 1/2 | 1.500† | 1.750 | B | 3/8 | ** | 1 1/8 | 3/8 | .5 |
| 12 | S812 | 14 1/2 | 1.500 | 1.750 | B | 3/8 | ** | 1 1/8 | 3/8 | .5 |
| 13 | S813 | 14 1/2 | 1.625 | 1.875 | B | 3/8 | ** | 1 1/8 | 3/8 | .7 |
| 14 | S814 | 14 1/2 | 1.750 | 2.000 | B | 3/8 | 1/16 | 1 1/8 | 3/8 | .9 |
| 15 | S815 | 14 1/2 | 1.875 | 2.125 | B | 7/8 | 7/8 | 1 1/2 | 3/8 | .9 |
| 16 | S816 | 14 1/2 | 2.000 | 2.250 | B | 7/8 | 1/16 | 1 1/2 | 3/8 | 1.1 |
| 17 | S817 | 14 1/2 | 2.125 | 2.375 | B | 7/8 | 1 | 1 1/2 | 3/8 | 1.3 |
| 18 | S818 | 14 1/2 | 2.250 | 2.500 | B | 7/8 | 1 1/8 | 1 1/2 | 3/8 | 1.6 |
| 19 | S819 | 14 1/2 | 2.375 | 2.625 | B | 7/8 | 1 1/4 | 2 | 3/8 | 1.8 |
| 20 | S820 | 14 1/2 | 2.500 | 2.750 | B | 7/8 | 1 1/8 | 2 1/8 | 3/8 | 2.0 |
| 21 | S821 | 14 1/2 | 2.625 | 2.875 | B | 7/8 | 1 1/8 | 2 1/4 | 3/8 | 2.3 |
| 22 | S822 | 14 1/2 | 2.750 | 3.000 | B | 7/8 | 1 1/2 | 2 3/8 | 3/8 | 2.6 |
| 24 | S824 | 14 1/2 | 3.000 | 3.250 | B | 7/8 | 1 1/2 | 2 3/8 | 1 | 3.6 |
| 26 | S826 | 14 1/2 | 3.250 | 3.500 | B | 7/8 | 1 1/2 | 2 3/8 | 1 | 3.9 |
| 28 | S828 | 14 1/2 | 3.500 | 3.750 | B | 7/8 | 1 1/2 | 2 3/8 | 1 | 4.4 |
| 30 | S830 | 14 1/2 | 3.750 | 4.000 | B | 7/8 | 1 3/4 | 2 3/8 | 1 | 5.1 |
| 32 | S832 | 14 1/2 | 4.000 | 4.250 | B | 1 | 1 1/8 | 2 3/8 | 1 | 5.6 |
| 36 | S836 | 14 1/2 | 4.500 | 4.750 | B | 1 | 1 1/2 | 3 | 1 | 7.0 |
| 40 | S840 | 14 1/2 | 5.000 | 5.250 | B | 1 | 1 1/2 | 3 | 1 | 8.3 |
| 42 | S842 | 14 1/2 | 5.250 | 5.500 | B | 1 | 1 1/2 | 3 | 1 | 9.0 |
| 44 | S844 | 14 1/2 | 5.500 | 5.750 | B | 1 | 1 1/2 | 3 | 1 | 9.7 |
| 48 | S848 | 14 1/2 | 6.000 | 6.250 | B | 1 | 1 1/2 | 3 | 1 | 11.3 |

* Recommended maximum bore with keyway and set screw.

** Check application with factory.

† Enlarged pitch diameter with special tooth form.

14 1/2° P.A. Gears Will Not Operate With 20° P.A.

GEARS

Martin

Cast Iron Stock Spur Gears

14½° Pressure Angle

8 DP

1¼" Face



Type B Plain With Hub



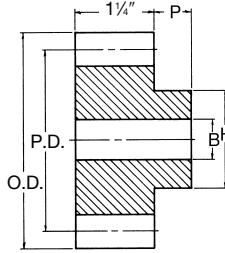
Type B₁ Web



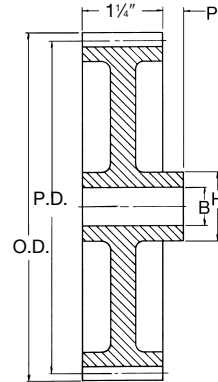
Type B₂
Web With Lighten Holes



Type B₃
Web With Spokes



Type B



Type B₁, B₂, B₃

Cast — Style “B”

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|--------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| • 36 | C836 | 14½ | 4.500 | 4.750 | B ₁ | 1 | 1 1/16 | 2 1/2 | 1 | 4.5 |
| • 40 | C840 | 14½ | 5.000 | 5.250 | B ₁ | 1 | 1 1/16 | 2 1/2 | 1 | 5.1 |
| • 42 | C842 | 14½ | 5.250 | 5.500 | B ₁ | 1 | 1 1/16 | 2 1/2 | 1 | 5.5 |
| • 44 | C844 | 14½ | 5.500 | 5.750 | B ₁ | 1 | 1 1/16 | 2 1/2 | 1 | 6.0 |
| 52 | C852 | 14½ | 6.500 | 6.750 | B ₁ | 1 | 1 1/16 | 2 3/4 | 1 | 10.3 |
| 54 | C854 | 14½ | 6.750 | 7.000 | B ₂ | 1 | 1 1/16 | 2 3/4 | 1 | 8.1 |
| 56 | C856 | 14½ | 7.000 | 7.250 | B ₂ | 1 | 1 1/16 | 2 3/4 | 1 | 8.2 |
| 60 | C860 | 14½ | 7.500 | 7.750 | B ₂ | 1 | 1 1/16 | 2 3/4 | 1 | 8.8 |
| 64 | C864 | 14½ | 8.000 | 8.250 | B ₂ | 1 | 1 1/16 | 2 3/4 | 1 | 11.2 |
| 68 | C868 | 14½ | 8.500 | 8.750 | B ₂ | 1 | 1 1/16 | 3" | 1 | 11.5 |
| 72 | C872 | 14½ | 9.000 | 9.250 | B ₂ | 1 | 1 1/16 | 3" | 1 | 11.7 |
| 76 | C876 | 14½ | 9.500 | 9.750 | B ₂ | 1 | 1 1/16 | 3" | 1 | 12.0 |
| 80 | C880 | 14½ | 10.000 | 10.250 | B ₂ | 1 1/8 | 1 1/16 | 3" | 1 1/8 | 12.2 |
| 84 | C884 | 14½ | 10.500 | 10.750 | B ₂ | 1 1/8 | 1 1/16 | 3" | 1 1/8 | 13.2 |
| 88 | C888 | 14½ | 11.000 | 11.250 | B ₂ | 1 1/8 | 1 1/16 | 3" | 1 1/8 | 13.5 |
| 92 | C892 | 14½ | 11.500 | 11.750 | B ₂ | 1 1/8 | 2 1/16 | 3 1/4 | 1 1/8 | 15.0 |
| 96 | C896 | 14½ | 12.000 | 12.250 | B ₂ | 1 1/8 | 2 1/16 | 3 1/4 | 1 1/8 | 15.8 |
| 100 | C8100 | 14½ | 12.500 | 12.750 | B ₂ | 1 1/8 | 2 1/16 | 3 1/4 | 1 1/8 | 16.5 |
| 112 | C8112 | 14½ | 14.000 | 14.250 | B ₂ | 1 1/8 | 2 1/16 | 3 1/4 | 1 1/8 | 17.7 |
| 120 | C8120 | 14½ | 15.000 | 15.250 | B ₂ | 1 1/8 | 2 1/16 | 3 1/4 | 1 1/8 | 18.4 |
| 128 | C8128 | 14½ | 16.000 | 16.250 | B ₂ | 1 1/8 | 2 3/16 | 3 1/2 | 1 1/8 | 21.3 |
| 144 | C8144 | 14½ | 18.000 | 18.250 | B ₂ | 1 1/8 | 2 3/16 | 3 1/2 | 1 1/8 | 24.2 |
| 160 | C8160 | 14½ | 20.000 | 20.250 | B ₂ | 1 1/8 | 2 3/16 | 3 3/4 | 1 1/4 | 26.6 |
| 168 | C8168 | 14½ | 21.000 | 21.250 | B ₂ | 1 1/8 | 2 3/16 | 3 3/4 | 1 1/4 | 28.9 |

* Recommended maximum bore with keyway and set screw.
• Consult Factory.

14½° P.A. Gears Will Not Operate With 20° P.A.

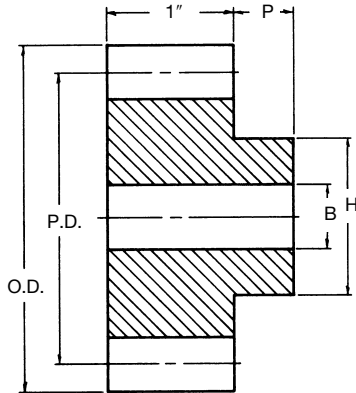
Bored-to-Size

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------------|------------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 11 | S811BS 3/4 | 14½ | 1.500 | 1.750 | B | 3/8 | 3/16 X 3/32 | (1) 10-24 @ 90 | 1 1/8 | 3/8 | 0.50 |
| 12 | S812BS 3/4 | 14½ | 1.500 | 1.750 | B | 3/8 | 3/16 X 3/32 | (1) 10-24 @ 90 | 1 1/8 | 3/8 | 0.50 |
| 14 | S814BS 3/4 | 14½ | 1.750 | 2.000 | B | 3/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/8 | 3/8 | 0.90 |
| 15 | S815BS 7/8 | 14½ | 1.875 | 2.125 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/2 | 3/8 | 1.00 |
| 16 | S816BS 7/8 | 14½ | 2.000 | 2.250 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/8 | 3/8 | 1.10 |
| 16 | S816BS 1 | 14½ | 2.000 | 2.250 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 1 1/8 | 3/8 | 1.10 |
| 18 | S818BS 7/8 | 14½ | 2.250 | 2.500 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/8 | 3/8 | 1.60 |
| 18 | S818BS 1 | 14½ | 2.250 | 2.500 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 1 1/8 | 3/8 | 1.60 |
| 18 | S818BS 1-1/8 | 14½ | 2.250 | 2.500 | B | 1 1/8 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 1 1/8 | 3/8 | 1.60 |
| 20 | S820BS 7/8 | 14½ | 2.500 | 2.750 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 2 1/8 | 3/8 | 2.00 |
| 20 | S820BS 1 | 14½ | 2.500 | 2.750 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 2 1/8 | 3/8 | 2.00 |
| 20 | S820BS 1-1/8 | 14½ | 2.500 | 2.750 | B | 1 1/8 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 2 1/8 | 3/8 | 2.00 |
| 22 | S822BS 7/8 | 14½ | 2.750 | 3.000 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 2 3/8 | 3/8 | 2.60 |

GEARS

10 DP 1" Face

Steel Stock Spur Gears 14½° Pressure Angle



Type B



Type B
Plain With Hub

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 11 | S1011 | 14½ | 1.200 † | 1.400 | B | ¾ | ** | ⅞ | ⅞ | .3 |
| 12 | S1012 | 14½ | 1.200 | 1.400 | B | ¾ | ** | ⅞ | ⅞ | .3 |
| 13 | S1013 | 14½ | 1.300 | 1.500 | B | ¾ | ** | 1 | ⅞ | .3 |
| 14 | S1014 | 14½ | 1.400 | 1.600 | B | ¾ | ⅞ | 1 | ⅞ | .4 |
| 15 | S1015 | 14½ | 1.500 | 1.700 | B | ¾ | ¾ | 1½ | ⅞ | .5 |
| 16 | S1016 | 14½ | 1.600 | 1.800 | B | ¾ | ¾ | 1½ | ⅞ | .6 |
| 17 | S1017 | 14½ | 1.700 | 1.900 | B | ¾ | ⅞ | 1 | ⅞ | .6 |
| 18 | S1018 | 14½ | 1.800 | 2.000 | B | ¾ | ⅞ | 1½ | ⅞ | .8 |
| 19 | S1019 | 14½ | 1.900 | 2.100 | B | ¾ | ¾ | 1 | ⅞ | .9 |
| 20 | S1020 | 14½ | 2.000 | 2.200 | B | ¾ | 1 | 1½ | ⅞ | 1.0 |
| 21 | S1021 | 14½ | 2.100 | 2.300 | B | ¾ | 1 | 1 | ⅞ | 1.2 |
| 22 | S1022 | 14½ | 2.200 | 2.400 | B | ¾ | 1½ | 1 | ⅞ | 1.3 |
| 24 | S1024 | 14½ | 2.400 | 2.600 | B | ¾ | 1¼ | 2 | ⅞ | 1.6 |
| 25 | S1025 | 14½ | 2.500 | 2.700 | B | ¾ | 1½ | 2½ | ⅞ | 1.8 |
| 26 | S1026 | 14½ | 2.600 | 2.800 | B | ¾ | 1¼ | 2 | ⅞ | 1.9 |
| 28 | S1028 | 14½ | 2.800 | 3.000 | B | ¾ | 1¼ | 2 | ⅞ | 2.3 |
| 30 | S1030 | 14½ | 3.000 | 3.200 | B | ¾ | 1¼ | 2 | ⅞ | 2.6 |
| 32 | S1032 | 14½ | 3.200 | 3.400 | B | ¾ | 1¼ | 2 | ⅞ | 2.9 |
| 35 | S1035 | 14½ | 3.500 | 3.700 | B | ¾ | 1½ | 2 | ⅞ | 3.4 |
| 36 | S1036 | 14½ | 3.600 | 3.800 | B | ¾ | 1½ | 2 | ⅞ | 3.5 |
| 38 | S1038 | 14½ | 3.800 | 4.000 | B | ¾ | 1½ | 2 | ⅞ | 3.8 |
| 40 | S1040 | 14½ | 4.000 | 4.200 | B | ¾ | 1½ | 2 | ⅞ | 4.1 |
| 42 | S1042 | 14½ | 4.200 | 4.400 | B | ¾ | 1½ | 2 | ⅞ | 4.5 |
| 45 | S1045 | 14½ | 4.500 | 4.700 | B | ¾ | 1½ | 2 | ⅞ | 5.3 |
| 48 | S1048 | 14½ | 4.800 | 5.000 | B | ¾ | 1½ | 2 | ⅞ | 5.9 |
| 50 | S1050 | 14½ | 5.000 | 5.200 | B | ¾ | 1½ | 2 | ⅞ | 6.4 |
| 54 | S1054 | 14½ | 5.400 | 5.600 | B | ¾ | 1½ | 2 | ⅞ | 7.8 |
| 55 | S1055 | 14½ | 5.500 | 5.700 | B | ¾ | 1½ | 2 | ⅞ | 7.9 |
| 60 | S1060 | 14½ | 6.000 | 6.200 | B | ¾ | 1½ | 2 | ⅞ | 8.7 |

* Recommended maximum bore with keyway and set screw.

** Check application with factory.

† Enlarged pitch diameter with special tooth form.

14½° P.A. Gears Will Not Operate With 20° P.A.

GEARS



Cast Iron Stock Spur Gears

14½° Pressure Angle

10 DP 1" Face



Type B
Plain With Hub



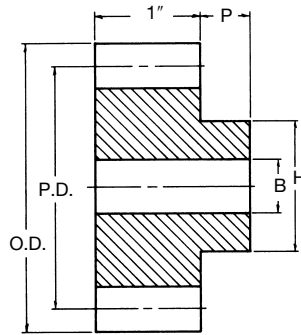
Type B₁
Web



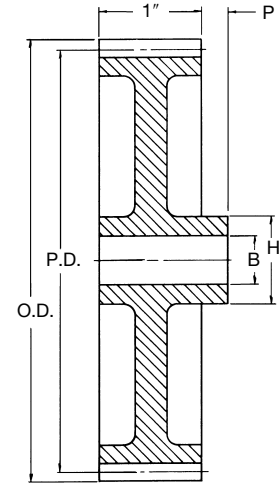
Type B₂
Web With
Lighten Holes



Type B₃
Web With
Spokes



Type B



Type B₁, B₂, B₃

Cast — Style “B”

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| • 60 | C1060 | 14½ | 6.000 | 6.200 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 4.3 |
| 64 | C1064 | 14½ | 6.400 | 6.600 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 5.6 |
| 65 | C1065 | 14½ | 6.500 | 6.700 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 5.6 |
| 70 | C1070 | 14½ | 7.000 | 7.200 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 5.9 |
| 72 | C1072 | 14½ | 7.200 | 7.500 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 6.3 |
| 75 | C1075 | 14½ | 7.500 | 7.700 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 6.7 |
| 80 | C1080 | 14½ | 8.000 | 8.200 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 7.0 |
| 84 | C1084 | 14½ | 8.400 | 8.600 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 6.9 |
| 85 | C1085 | 14½ | 8.500 | 8.700 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 7.3 |
| 90 | C1090 | 14½ | 9.000 | 9.200 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 7.6 |
| 95 | C1095 | 14½ | 9.500 | 9.700 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 8.1 |
| 96 | C1096 | 14½ | 9.600 | 9.800 | B ₃ | ¾ | 1⅞ | 2½ | ⅞ | 8.1 |
| 100 | C10100 | 14½ | 10.000 | 10.200 | B ₃ | 1 | 1⅞ | 2½ | ⅞ | 10.3 |
| 105 | C10105 | 14½ | 10.500 | 10.700 | B ₃ | 1 | 1⅞ | 2½ | 1 | 10.4 |
| 110 | C10110 | 14½ | 11.000 | 11.200 | B ₃ | 1 | 1⅞ | 2½ | 1 | 10.0 |
| 112 | C10112 | 14½ | 11.200 | 11.400 | B ₃ | 1 | 1⅞ | 2½ | 1 | 10.2 |
| 120 | C10120 | 14½ | 12.000 | 12.200 | B ₃ | 1 | 1⅞ | 2½ | 1 | 11.1 |
| 130 | C10130 | 14½ | 13.000 | 13.200 | B ₃ | 1 | 1⅞ | 2½ | 1 | 13.4 |
| 140 | C10140 | 14½ | 14.000 | 14.200 | B ₁ | 1 | 1⅞ | 2½ | 1 | 30.8 |
| 150 | C10150 | 14½ | 15.000 | 15.200 | B ₁ | 1 | 1⅞ | 2½ | 1 | 33.0 |
| 160 | C10160 | 14½ | 16.000 | 16.200 | B ₁ | 1 | 1⅞ | 2½ | 1 | 38.3 |
| 180 | C10180 | 14½ | 18.000 | 18.200 | B ₃ | 1 | 1⅞ | 3 | 1 | 43.6 |

* Recommended maximum bore with keyway and set screw.
• Consult Factory.

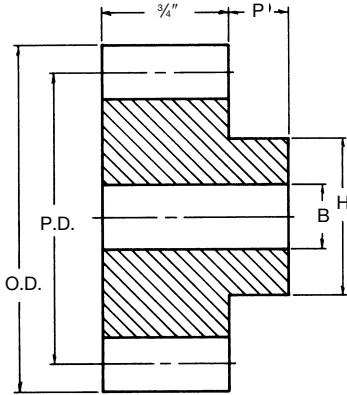
14½° P.A. Gears Will Not Operate With 20° P.A.

Bored-to-Size

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|--------|------------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 11 | S1011BS 5/8 | 14½ | 1.200 | 1.400 | B | ⅝ | ⅜ X ⅜ | (1) 10-24 @ 90 | 1⅞ | ⅝ | 0.30 |
| 12 | S1012BS 5/8 | 14½ | 1.200 | 1.400 | B | ⅝ | ⅜ X ⅜ | (1) 10-24 @ 90 | 1⅞ | ⅝ | 0.30 |
| 14 | S1014BS 5/8 | 14½ | 1.400 | 1.600 | B | ⅝ | ⅜ X ⅜ | (1) 1/4-20 @ 90 | 1⅞ | ⅝ | 0.40 |
| 15 | S1015BS 3/4 | 14½ | 1.500 | 1.700 | B | ⅝ | ⅜ X ⅜ | (1) 1/4-20 @ 90 | 1⅞ | ⅝ | 0.50 |
| 16 | S1016BS 3/4 | 14½ | 1.600 | 1.800 | B | ⅝ | ⅜ X ⅜ | (1) 1/4-20 @ 90 | 1⅞ | ⅝ | 0.60 |
| 18 | S1018BS 3/4 | 14½ | 1.800 | 2.000 | B | ⅝ | ⅜ X ⅜ | (1) 1/4-20 @ 90 | 1⅞ | ⅝ | 0.80 |
| 18 | S1018BS 7/8 | 14½ | 1.800 | 2.000 | B | ⅞ | ⅜ X ⅜ | (1) 1/4-20 @ 90 | 1⅞ | ⅝ | 0.80 |
| 20 | S1020BS 3/4 | 14½ | 2.000 | 2.200 | B | ⅝ | ⅜ X ⅜ | (1) 1/4-20 @ 90 | 1⅞ | ⅝ | 1.00 |
| 20 | S1020BS 7/8 | 14½ | 2.000 | 2.200 | B | ⅞ | ⅜ X ⅜ | (1) 1/4-20 @ 90 | 1⅞ | ⅝ | 1.00 |
| 20 | S1020BS 1 | 14½ | 2.000 | 2.200 | B | 1 | ¼ X ⅞ | (1) 5/16-18 @ 90 | 1⅞ | ⅝ | 1.00 |
| 24 | S1024BS 3/4 | 14½ | 2.400 | 2.600 | B | ⅝ | ⅜ X ⅜ | (1) 1/4-20 @ 90 | 2⅞ | ⅝ | 1.60 |
| 24 | S1024BS 7/8 | 14½ | 2.400 | 2.600 | B | ⅞ | ⅜ X ⅜ | (1) 1/4-20 @ 90 | 2⅞ | ⅝ | 1.60 |
| 24 | S1024BS 1 | 14½ | 2.400 | 2.600 | B | 1 | ¼ X ⅞ | (1) 5/16-18 @ 90 | 2⅞ | ⅝ | 1.60 |

12 DP
3/4" Face

**Steel Stock
 Spur Gears**
 14½° Pressure Angle



Type B



**Type B
 Plain With Hub**

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 11 | S1211 | 14½ | 1.000† | 1.167 | B | ½ | ** | ¾ | ½ | .14 |
| 12 | S1212 | 14½ | 1.000 | 1.167 | B | ½ | ** | ¾ | ½ | .16 |
| 13 | S1213 | 14½ | 1.083 | 1.250 | B | ½ | ** | ⅞ | ½ | .20 |
| 14 | S1214 | 14½ | 1.167 | 1.333 | B | ½ | ** | ¾ | ½ | .24 |
| 15 | S1215 | 14½ | 1.250 | 1.417 | B | ¾ | ** | 1 | ½ | .27 |
| 16 | S1216 | 14½ | 1.333 | 1.500 | B | ¾ | ⅝ | 1 ⅛ | ½ | .34 |
| 17 | S1217 | 14½ | 1.417 | 1.580 | B | ¾ | ⅝ | 1 ⅛ | ½ | .36 |
| 18 | S1218 | 14½ | 1.500 | 1.667 | B | ¾ | ⅞ | 1 ¼ | ½ | .42 |
| 19 | S1219 | 14½ | 1.583 | 1.750 | B | ¾ | ¾ | 1 ⅞ | ½ | .48 |
| 20 | S1220 | 14½ | 1.667 | 1.833 | B | ¾ | ⅞ | 1 ¾ | ½ | .56 |
| 21 | S1221 | 14½ | 1.750 | 1.917 | B | ¾ | ¾ | 1 ½ | ½ | .64 |
| 22 | S1222 | 14½ | 1.833 | 2.000 | B | ¾ | ¾ | 1 ⅞ | ½ | .70 |
| 23 | S1223 | 14½ | 1.917 | 2.083 | B | ¾ | ⅞ | 1 ¾ | ½ | .78 |
| 24 | S1224 | 14½ | 2.000 | 2.166 | B | ¾ | 1 | 1 ¾ | ½ | .88 |
| 25 | S1225 | 14½ | 2.083 | 2.250 | B | ¾ | 1 ⅛ | 1 ¾ | ½ | .96 |
| 26 | S1226 | 14½ | 2.167 | 2.333 | B | ¾ | 1 ⅞ | 1 ¾ | ¾ | 1.14 |
| 28 | S1228 | 14½ | 2.333 | 2.500 | B | ¾ | 1 ½ | 2 ⅛ | ¾ | 1.34 |
| 30 | S1230 | 14½ | 2.500 | 2.667 | B | ¾ | 1 ⅞ | 2 ¼ | ¾ | 1.60 |
| 32 | S1232 | 14½ | 2.667 | 2.833 | B | ¾ | 1 ⅞ | 2 ¼ | ¾ | 1.72 |
| 34 | S1234 | 14½ | 2.833 | 3.000 | B | ¾ | 1 ⅞ | 2 ¼ | ¾ | 1.88 |
| 36 | S1236 | 14½ | 3.000 | 3.167 | B | ¾ | 1 ½ | 2 ½ | ¾ | 2.20 |
| 38 | S1238 | 14½ | 3.167 | 3.333 | B | ¾ | 1 ½ | 2 ½ | ¾ | 2.38 |
| 40 | S1240 | 14½ | 3.333 | 3.500 | B | ¾ | 1 ½ | 2 ½ | ¾ | 2.54 |
| 42 | S1242 | 14½ | 3.500 | 3.666 | B | ¾ | 1 ½ | 2 ½ | ¾ | 2.72 |
| 44 | S1244 | 14½ | 3.667 | 3.833 | B | ¾ | 1 ½ | 2 ½ | ¾ | 2.94 |
| 48 | S1248 | 14½ | 4.000 | 4.166 | B | ¾ | 1 ½ | 2 ½ | ¾ | 3.50 |
| 54 | S1254 | 14½ | 4.500 | 4.666 | B | ¾ | 1 ¾ | 2 ¾ | ¾ | 4.40 |
| 56 | S1256 | 14½ | 4.667 | 4.833 | B | ¾ | 1 ¾ | 2 ¾ | ¾ | 4.60 |
| 60 | S1260 | 14½ | 5.000 | 5.166 | B | ¾ | 1 ¾ | 2 ¾ | ¾ | 5.14 |
| 64 | S1264 | 14½ | 5.333 | 5.500 | B | ¾ | 1 ¾ | 2 ¾ | ¾ | 5.74 |
| 66 | S1266 | 14½ | 5.500 | 5.666 | B | ¾ | 1 ¾ | 2 ¾ | ¾ | 6.02 |
| 72 | S1272 | 14½ | 6.000 | 6.166 | B | ¾ | 1 ¾ | 2 ¾ | ¾ | 7.02 |

* Recommended maximum bore with keyway and set screw.
 ** Check application with factory.
 † Enlarged pitch diameter with special tooth form.

14½° P.A. Gears Will Not Operate With 20° P.A.

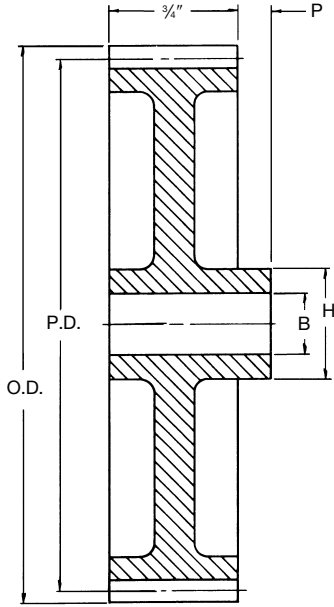
GEARS



Cast Iron Stock Spur Gears

14½° Pressure Angle

12 DP
¾" Face



Type B₁, B₃



Type B₃
Web With Spokes



Type B₁
Web

Cast — Style "B"

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 78 | C1278 | 14½ | 6.500 | 6.666 | B ₃ | ¾ | 1⅞ | 2½ | ¾ | 4.1 |
| 84 | C1284 | 14½ | 7.000 | 7.166 | B ₃ | ¾ | 1⅞ | 2½ | ¾ | 4.4 |
| 90 | C1290 | 14½ | 7.500 | 7.666 | B ₃ | ¾ | 1⅞ | 2½ | ¾ | 5.2 |
| 96 | C1296 | 14½ | 8.000 | 8.166 | B ₃ | ¾ | 1⅞ | 2½ | ¾ | 5.5 |
| 102 | C12102 | 14½ | 8.500 | 8.666 | B ₃ | ¾ | 1⅞ | 2½ | ¾ | 5.9 |
| 108 | C12108 | 14½ | 9.000 | 9.166 | B ₃ | ¾ | 1⅞ | 2½ | ¾ | 6.4 |
| 112 | C12112 | 14½ | 9.333 | 9.500 | B ₃ | ¾ | 1⅞ | 2½ | ¾ | 6.4 |
| 114 | C12114 | 14½ | 9.500 | 9.666 | B ₃ | ¾ | 1⅞ | 2½ | ¾ | 6.4 |
| 120 | C12120 | 14½ | 10.000 | 10.166 | B ₃ | ⅞ | 1⅞ | 2½ | ¾ | 8.1 |
| 126 | C12126 | 14½ | 10.500 | 10.666 | B ₃ | ⅞ | 1⅞ | 3 | ¾ | 7.4 |
| 144 | C12144 | 14½ | 12.000 | 12.166 | B ₃ | ⅞ | 1⅞ | 3 | 1 | 10.1 |
| 168 | C12168 | 14½ | 14.000 | 14.166 | B ₁ | ⅞ | 1⅞ | 3 | 1 | 10.6 |

* Recommended maximum bore with keyway and set screw.

14½° P.A. Gears Will Not Operate With 20° P.A.

Bored-to-Size

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|--------|------------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 11 | S1211BS 1/2 | 14½ | 1.000 | 1.167 | B | ½ | NONE | (1) 10-24 | ¾ | ½ | 0.14 |
| 12 | S1212BS 1/2 | 14½ | 1.000 | 1.167 | B | ½ | NONE | (1) 10-24 | ¾ | ½ | 0.16 |
| 13 | S1213BS 1/2 | 14½ | 1.083 | 1.250 | B | ½ | NONE | (1) 10-24 | ⅞ | ½ | 0.20 |
| 14 | S1214BS 1/2 | 14½ | 1.167 | 1.333 | B | ½ | NONE | (1) 10-24 | ⅞ | ½ | 0.24 |
| 15 | S1215BS 5/8 | 14½ | 1.250 | 1.417 | B | ⅝ | ⅜ X ⅝ | (1) 10-24 @ 90 | 1 | ½ | 0.27 |
| 16 | S1216BS 5/8 | 14½ | 1.333 | 1.500 | B | ⅝ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.34 |
| 18 | S1218BS 5/8 | 14½ | 1.500 | 1.667 | B | ⅝ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.42 |
| 20 | S1220BS 5/8 | 14½ | 1.667 | 1.833 | B | ⅝ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.56 |
| 20 | S1220BS 3/4 | 14½ | 1.667 | 1.833 | B | ¾ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.56 |
| 21 | S1221BS 5/8 | 14½ | 1.750 | 1.917 | B | ⅝ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.56 |
| 21 | S1221BS 3/4 | 14½ | 1.750 | 1.917 | B | ¾ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.56 |
| 21 | S1221BS 7/8 | 14½ | 1.750 | 1.917 | B | ⅞ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.56 |
| 22 | S1222BS 5/8 | 14½ | 1.833 | 2.000 | B | ⅝ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.70 |
| 22 | S1222BS 3/4 | 14½ | 1.833 | 2.000 | B | ¾ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.70 |
| 22 | S1222BS 7/8 | 14½ | 1.833 | 2.000 | B | ⅞ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.70 |
| 22 | S1222BS 1 | 14½ | 1.833 | 2.000 | B | 1 | ¼ X ⅞ | (1) 5/16-18 @ 90 | 1⅞ | ½ | 0.70 |
| 24 | S1224BS 5/8 | 14½ | 2.000 | 2.167 | B | ⅝ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.88 |
| 24 | S1224BS 3/4 | 14½ | 2.000 | 2.167 | B | ¾ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.88 |
| 24 | S1224BS 7/8 | 14½ | 2.000 | 2.167 | B | ⅞ | ⅜ X ⅝ | (1) 1/4-20 @ 90 | 1⅞ | ½ | 0.88 |
| 24 | S1224BS 1 | 14½ | 2.000 | 2.167 | B | 1 | ¼ X ⅞ | (1) 5/16-18 @ 90 | 1⅞ | ½ | 0.88 |

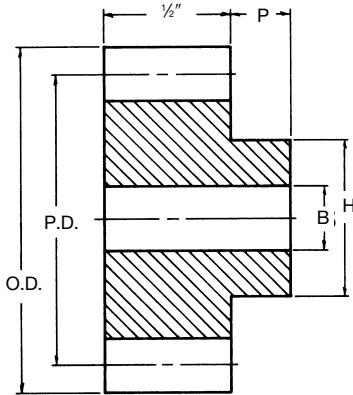
GEARS

16 DP

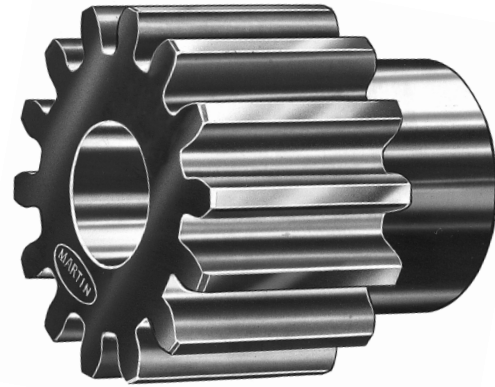
1/2" Face

Steel Stock Spur Gears

14½° Pressure Angle



Type B



Type B
Plain With Hub

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 11 | S1611 | 14½ | .750† | .875 | B | ¾ | ** | ⅞ | ⅞ | 0.06 |
| 12 | S1612 | 14½ | .750 | .875 | B | ¾ | ** | ⅞ | ⅞ | 0.06 |
| 13 | S1613 | 14½ | .812 | .937 | B | ¾ | ** | ⅞ | ⅞ | 0.08 |
| 14 | S1614 | 14½ | .875 | 1.000 | B | ¾ | ** | 1⅞ | ⅞ | 0.08 |
| 15 | S1615 | 14½ | .937 | 1.062 | B | ½ | ** | ¾ | ⅞ | 0.10 |
| 16 | S1616 | 14½ | 1.000 | 1.125 | B | ½ | ** | ⅞ | ⅞ | 0.12 |
| 17 | S1617 | 14½ | 1.062 | 1.187 | B | ½ | ** | ¾ | ⅞ | 0.14 |
| 18 | S1618 | 14½ | 1.125 | 1.250 | B | ½ | ** | ⅞ | ⅞ | 0.16 |
| 19 | S1619 | 14½ | 1.187 | 1.312 | B | ½ | ½ | 1 | ⅞ | 0.20 |
| 20 | S1620 | 14½ | 1.250 | 1.375 | B | ½ | ⅞ | 1⅞ | ⅞ | 0.22 |
| 21 | S1621 | 14½ | 1.312 | 1.438 | B | ½ | ¾ | 1⅞ | ⅞ | 0.24 |
| 22 | S1622 | 14½ | 1.375 | 1.500 | B | ½ | ¾ | 1⅞ | ⅞ | 0.28 |
| 23 | S1623 | 14½ | 1.437 | 1.562 | B | ½ | ⅞ | 1⅞ | ⅞ | 0.32 |
| 24 | S1624 | 14½ | 1.500 | 1.625 | B | ½ | ¾ | 1⅞ | ⅞ | 0.34 |
| 26 | S1626 | 14½ | 1.625 | 1.750 | B | ½ | ¾ | 1⅞ | ⅞ | 0.42 |
| 28 | S1628 | 14½ | 1.750 | 1.875 | B | ½ | ¾ | 1⅞ | ⅞ | 0.52 |
| 30 | S1630 | 14½ | 1.875 | 2.000 | B | ½ | ⅞ | 1⅞ | ⅞ | 0.60 |
| 32 | S1632 | 14½ | 2.000 | 2.125 | B | ½ | 1 | 1⅞ | ⅞ | 0.70 |
| 34 | S1634 | 14½ | 2.125 | 2.250 | B | ½ | 1⅞ | 1⅞ | ⅞ | 0.80 |
| 36 | S1636 | 14½ | 2.250 | 2.375 | B | ½ | 1¼ | 2 | ⅞ | 0.92 |
| 38 | S1638 | 14½ | 2.375 | 2.500 | B | ½ | 1¼ | 2 | ⅞ | 0.98 |
| 40 | S1640 | 14½ | 2.500 | 2.626 | B | ½ | 1¼ | 2 | ⅞ | 1.1 |
| 44 | S1644 | 14½ | 2.750 | 2.875 | B | ½ | 1¼ | 2 | ⅞ | 1.2 |
| 48 | S1648 | 14½ | 3.000 | 3.125 | B | ½ | 1¼ | 2 | ⅞ | 1.4 |
| 52 | S1652 | 14½ | 3.250 | 3.375 | B | ½ | 1¼ | 2 | ⅞ | 1.5 |
| 54 | S1654 | 14½ | 3.375 | 3.500 | B | ½ | 1¼ | 2 | ⅞ | 1.6 |
| 56 | S1656 | 14½ | 3.500 | 3.625 | B | ½ | 1¼ | 2 | ⅞ | 1.7 |
| 60 | S1660 | 14½ | 3.750 | 3.875 | B | ½ | 1¼ | 2 | ⅞ | 1.3 |
| 64 | S1664 | 14½ | 4.000 | 4.125 | B | ¾ | 1¼ | 2 | ⅞ | 2.2 |
| 68 | S1668 | 14½ | 4.250 | 4.375 | B | ¾ | 1⅞ | 2¼ | ⅞ | 2.5 |
| 72 | S1672 | 14½ | 4.500 | 4.625 | B | ¾ | 1⅞ | 2¼ | ⅞ | 2.8 |
| 80 | S1680 | 14½ | 5.000 | 5.125 | B | ¾ | 1⅞ | 2¼ | ⅞ | 3.4 |
| 84 | S1684 | 14½ | 5.250 | 5.375 | B | ¾ | 1⅞ | 2¼ | ⅞ | 3.6 |
| 88 | S1688 | 14½ | 5.500 | 5.625 | B | ¾ | 1⅞ | 2¼ | ⅞ | 3.9 |
| 96 | S1696 | 14½ | 6.000 | 6.125 | B | ¾ | 1⅞ | 2¼ | ⅞ | 4.6 |
| 104 | S16104 | 14½ | 6.500 | 6.625 | B | ¾ | 1⅞ | 2¼ | ⅞ | 5.2 |

* Recommended maximum bore with keyway and set screw.

** Check application with factory.

† Enlarged pitch diameter with special tooth form.

14½° P.A. Gears Will Not Operate With 20° P.A.

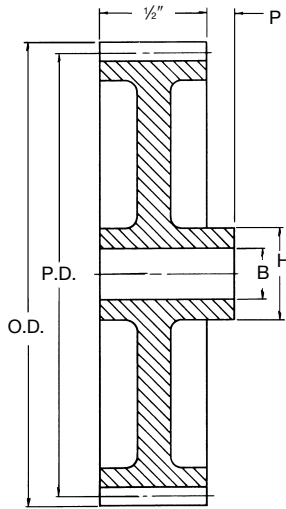
GEARS



Cast Iron Stock Spur Gears

14½° Pressure Angle

16 DP
1½" Face



Type B₁, B₃



Type B₃
Web With Spokes



Type B₁
Web

Cast — Style "B"

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 112 | C16112 | 14½ | 7.000 | 7.125 | B ₃ | ¾ | 1½ | 2½ | ¾ | 3.4 |
| 120 | C16120 | 14½ | 7.500 | 7.625 | B ₃ | ¾ | 1½ | 2½ | ¾ | 3.5 |
| 128 | C16128 | 14½ | 8.000 | 8.125 | B ₃ | ¾ | 1½ | 2½ | ¾ | 3.7 |
| 144 | C16144 | 14½ | 9.000 | 9.125 | B ₃ | ¾ | 1½ | 2½ | ¾ | 5.0 |
| 160 | C16160 | 14½ | 10.000 | 10.125 | B ₃ | ¾ | 1½ | 2½ | ¾ | 5.2 |
| 192 | C16192 | 14½ | 12.000 | 12.125 | B ₁ | ¾ | 1½ | 2½ | ¾ | 8.1 |

* Recommended maximum bore with keyway and set screw.

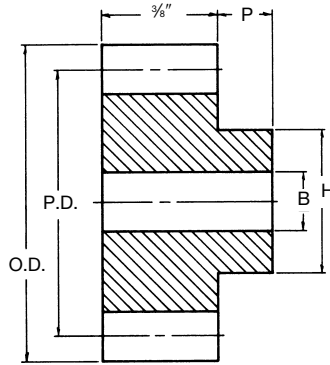
14½° P.A. Gears Will Not Operate With 20° P.A.

Bored-to-Size

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|--------|------------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 11 | S1611BS 3/8 | 14½ | 0.750 | 0.875 | B | ¾ | None | (1) 8-32 | ¾ | ¼ | 0.06 |
| 12 | S1612BS 3/8 | 14½ | 0.752 | 0.875 | B | ¾ | None | (1) 8-32 | ¾ | ¼ | 0.06 |
| 13 | S1613BS 3/8 | 14½ | 0.812 | 0.937 | B | ¾ | None | (1) 8-32 | ¾ | ¼ | 0.08 |
| 14 | S1614BS 3/8 | 14½ | 0.875 | 1.000 | B | ¾ | None | (1) 10-24 | 1½ | ¼ | 0.08 |
| 15 | S1615BS 1/2 | 14½ | 0.937 | 1.062 | B | ½ | None | (1) 10-24 | ¾ | ¼ | 0.10 |
| 16 | S1616BS 1/2 | 14½ | 1.000 | 1.125 | B | ½ | None | (1) 10-24 | 1¼ | ¼ | 0.12 |
| 18 | S1618BS 1/2 | 14½ | 1.125 | 1.250 | B | ½ | None | (1) 1/4-20 | 1½ | ¼ | 0.16 |
| 20 | S1620BS 1/2 | 14½ | 1.250 | 1.375 | B | ½ | None | (1) 1/4-20 | 1½ | ¼ | 0.22 |
| 20 | S1620BS 5/8 | 14½ | 1.250 | 1.375 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.22 |
| 22 | S1622BS 1/2 | 14½ | 1.375 | 1.500 | B | ½ | None | (1) 1/4-20 | 1½ | ¼ | 0.28 |
| 22 | S1622BS 5/8 | 14½ | 1.375 | 1.500 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.28 |
| 24 | S1624BS 1/2 | 14½ | 1.500 | 1.625 | B | ½ | None | (1) 1/4-20 | 1½ | ¼ | 0.34 |
| 24 | S1624BS 5/8 | 14½ | 1.500 | 1.625 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.34 |
| 24 | S1624BS 3/4 | 14½ | 1.500 | 1.625 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.34 |
| 26 | S1626BS 1/2 | 14½ | 1.625 | 1.750 | B | ½ | None | (1) 1/4-20 | 1½ | ¼ | 0.42 |
| 26 | S1626BS 5/8 | 14½ | 1.625 | 1.750 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.42 |
| 26 | S1626BS 3/4 | 14½ | 1.625 | 1.750 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.42 |
| 28 | S1628BS 1/2 | 14½ | 1.750 | 1.875 | B | ½ | None | (1) 1/4-20 | 1½ | ¼ | 0.52 |
| 28 | S1628BS 5/8 | 14½ | 1.750 | 1.875 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.52 |
| 28 | S1628BS 3/4 | 14½ | 1.750 | 1.875 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.52 |
| 28 | S1628BS 7/8 | 14½ | 1.750 | 1.875 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.52 |
| 30 | S1630BS 1/2 | 14½ | 1.875 | 2.000 | B | ½ | None | (1) 1/4-20 | 1½ | ¼ | 0.60 |
| 30 | S1630BS 5/8 | 14½ | 1.875 | 2.000 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.60 |
| 30 | S1630BS 3/4 | 14½ | 1.875 | 2.000 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.60 |
| 30 | S1630BS 7/8 | 14½ | 1.875 | 2.000 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.60 |
| 30 | S1630BS 1 | 14½ | 1.875 | 2.000 | B | 1 | ¾ X ¾ | (1) 5/16-18 @ 90 | 1½ | ¼ | 0.60 |
| 32 | S1632BS 1/2 | 14½ | 2.000 | 2.125 | B | ½ | None | (1) 1/4-20 | 1½ | ¼ | 0.70 |
| 32 | S1632BS 5/8 | 14½ | 2.000 | 2.125 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.70 |
| 32 | S1632BS 3/4 | 14½ | 2.000 | 2.125 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.70 |
| 32 | S1632BS 7/8 | 14½ | 2.000 | 2.125 | B | ¾ | ¾ X ¾ | (1) 1/4-20 @ 90 | 1½ | ¼ | 0.70 |
| 32 | S1632BS 1 | 14½ | 2.000 | 2.125 | B | 1 | ¾ X ¾ | (1) 5/16-18 @ 90 | 1½ | ¼ | 0.70 |

20 DP
3/8" Face

**Steel Stock
Spur Gears**
14½° Pressure Angle



Type B



Type B
Plain With Hub

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|--------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 11 | S2011 | 14½ | .600† | .700 | B | 3/16 | ** | 1/32 | 3/8 | .02 |
| 12 | S2012 | 14½ | .600 | .700 | B | 5/16 | ** | 1/32 | 3/8 | .02 |
| 13 | S2013 | 14½ | .650 | .750 | B | 3/16 | ** | 1/8 | 3/8 | .04 |
| 14 | S2014 | 14½ | .700 | .800 | B | 3/16 | ** | 3/64 | 3/8 | .04 |
| 15 | S2015 | 14½ | .750 | .850 | B | 3/8 | ** | 3/64 | 3/8 | .04 |
| 16 | S2016 | 14½ | .800 | .900 | B | 3/8 | ** | 2/32 | 3/8 | .04 |
| 17 | S2017 | 14½ | .850 | .950 | B | 3/8 | ** | 4/64 | 3/8 | .08 |
| 18 | S2018 | 14½ | .900 | 1.000 | B | 3/8 | ** | 1/4 | 3/8 | .08 |
| 19 | S2019 | 14½ | .950 | 1.050 | B | 3/8 | ** | 5/64 | 3/8 | .10 |
| 20 | S2020 | 14½ | 1.000 | 1.100 | B | 3/8 | ** | 5/64 | 3/8 | .12 |
| 21 | S2021 | 14½ | 1.050 | 1.150 | B | 3/8 | ** | 7/8 | 3/8 | .12 |
| 22 | S2022 | 14½ | 1.100 | 1.200 | B | 3/8 | ** | 3/32 | 3/8 | .14 |
| 23 | S2023 | 14½ | 1.150 | 1.250 | B | 3/8 | ** | 3/32 | 3/8 | .16 |
| 24 | S2024 | 14½ | 1.200 | 1.300 | B | 3/8 | 1/16 | 1 1/16 | 3/8 | .19 |
| 25 | S2025 | 14½ | 1.250 | 1.350 | B | 3/8 | 1/8 | 1 1/64 | 3/8 | .20 |
| 28 | S2028 | 14½ | 1.400 | 1.500 | B | 3/8 | 1 1/16 | 1 1/64 | 3/8 | .26 |
| 30 | S2030 | 14½ | 1.500 | 1.600 | B | 3/8 | 1 1/16 | 1 3/64 | 3/8 | .30 |
| 32 | S2032 | 14½ | 1.600 | 1.700 | B | 3/8 | 7/8 | 1 1/16 | 1/2 | .40 |
| 35 | S2035 | 14½ | 1.750 | 1.850 | B | 3/8 | 7/8 | 1 1/16 | 1/2 | .50 |
| 36 | S2036 | 14½ | 1.800 | 1.900 | B | 3/8 | 1 1/16 | 1 1/8 | 1/2 | .52 |
| 40 | S2040 | 14½ | 2.000 | 2.100 | B | 3/8 | 1 1/16 | 1 1 1/16 | 1/2 | .64 |
| 45 | S2045 | 14½ | 2.250 | 2.350 | B | 3/8 | 1 1/4 | 2 | 1/2 | .82 |
| 48 | S2048 | 14½ | 2.400 | 2.500 | B | 3/8 | 1 1/4 | 2 | 1/2 | .88 |
| 50 | S2050 | 14½ | 2.500 | 2.600 | B | 3/8 | 1 1/4 | 2 | 1/2 | .90 |
| 55 | S2055 | 14½ | 2.750 | 2.850 | B | 3/8 | 1 1/4 | 2 | 1/2 | 1.04 |
| 60 | S2060 | 14½ | 3.000 | 3.100 | B | 3/8 | 1 1/4 | 2 | 1/2 | 1.16 |
| 64 | S2064 | 14½ | 3.200 | 3.300 | B | 3/8 | 1 1/4 | 2 | 1/2 | 1.26 |
| 70 | S2070 | 14½ | 3.500 | 3.600 | B | 3/8 | 1 1/4 | 2 | 1/2 | 1.40 |
| 72 | S2072 | 14½ | 3.600 | 3.700 | B | 3/8 | 1 1/16 | 2 1/4 | 1/2 | 1.60 |
| 75 | S2075 | 14½ | 3.750 | 3.850 | B | 3/8 | 1 1/16 | 2 1/4 | 1/2 | 1.70 |
| 80 | S2080 | 14½ | 4.000 | 4.100 | B | 1/2 | 1 1/16 | 2 1/4 | 1/2 | 1.82 |
| 84 | S2084 | 14½ | 4.200 | 4.300 | B | 1/2 | 1 1/16 | 2 1/4 | 1/2 | 1.96 |
| 90 | S2090 | 14½ | 4.500 | 4.600 | B | 1/2 | 1 1/16 | 2 1/4 | 1/2 | 2.20 |
| 96 | S2096 | 14½ | 4.800 | 4.900 | B | 1/2 | 1 1/16 | 2 1/4 | 1/2 | 2.42 |
| 100 | S20100 | 14½ | 5.000 | 5.100 | B | 1/2 | 1 1/16 | 2 1/4 | 1/2 | 2.60 |
| 112 | S20112 | 14½ | 5.600 | 5.700 | B | 1/2 | 1 | 1 1/4 | 1/2 | 2.86 |
| 120 | S20120 | 14½ | 6.000 | 6.100 | B ₁ | 1/2 | 1 | 1 1/4 | 1/2 | 3.24 |
| 132 | S20132 | 14½ | 6.600 | 6.700 | B | 1/2 | 1 | 1 1/4 | 1/2 | 3.80 |

* Recommended maximum bore with keyway and set screw.

** Check application with factory.

† Enlarged pitch diameter with special tooth form.

14½° P.A. Gears Will Not Operate With 20° P.A.

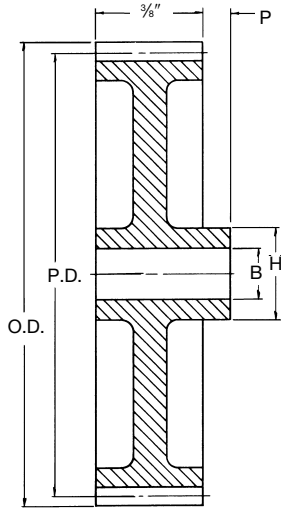
GEARS



Cast Iron Stock Spur Gears

14½° Pressure Angle

20 DP
3/8" Face



Type B₁, B₃



Type B₃
Web With Spokes



Type B₁
Web

Cast — Style "B"

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| •48 | C2048 | 14½ | 2.400 | 2.500 | B ₁ | ¾ | ¾ | 1½ | ½ | .50 |
| •64 | C2064 | 14½ | 3.200 | 3.300 | B ₁ | ¾ | ¾ | 1½ | ½ | .68 |
| 140 | C20140 | 14½ | 7.000 | 7.100 | B ₁ | ½ | 1 | 1½ | ½ | 2.00 |
| 160 | C20160 | 14½ | 8.000 | 8.100 | B ₁ | ½ | 1 | 1½ | ¾ | 2.34 |
| 180 | C20180 | 14½ | 9.000 | 9.100 | B ₁ | ½ | 1 | 1½ | ¾ | 2.66 |
| 200 | C20200 | 14½ | 10.000 | 10.100 | B ₁ | ½ | 1 | 1½ | ¾ | 2.84 |

* Recommended maximum bore with keyway and set screw.
• Consult Factory.

14½° P.A. Gears Will Not Operate With 20° P.A.

Bored-to-Size

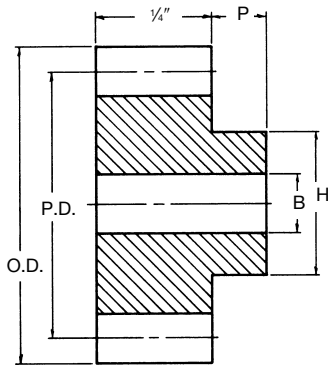
| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|----------|-----------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 11 | S2011BS 5/16 | 14½ | 0.600 | 0.700 | B | 5/16 | None | #35 P.H. | 15/32 | ¾ | 0.02 |
| 12 | S2012BS 5/16 | 14½ | 0.600 | 0.700 | B | 5/16 | None | #35 P.H. | 15/32 | ¾ | 0.02 |
| 13 | S2013BS 5/16 | 14½ | 0.650 | 0.750 | B | 5/16 | None | #35 P.H. | ½ | ¾ | 0.04 |
| 14 | S2014BS 5/16 | 14½ | 0.700 | 0.800 | B | 5/16 | None | #35 P.H. | 35/64 | ¾ | 0.04 |
| 15 | S2015BS 3/8 | 14½ | 0.750 | 0.850 | B | ¾ | None | (1) 8-32 | 39/64 | ¾ | 0.04 |
| 16 | S2016BS 3/8 | 14½ | 1.800 | 0.900 | B | ¾ | None | (1) 8-32 | 21/32 | ¾ | 0.04 |
| 18 | S2018BS 3/8 | 14½ | 1.900 | 1.000 | B | ¾ | None | (1) 10-24 | ¾ | ¾ | 0.08 |
| 20 | S2020BS 3/8 | 14½ | 1.000 | 1.100 | B | ¾ | None | (1) 10-24 | 55/64 | ¾ | 0.12 |
| 20 | S2020BS 1/2 | 14½ | 1.000 | 1.100 | B | ½ | None | (1) 10-24 | 55/64 | ¾ | 0.12 |
| 22 | S2022BS 3/8 | 14½ | 1.100 | 1.200 | B | ¾ | None | (1) 1/4-20 | 31/32 | ¾ | 0.14 |
| 22 | S2022BS 1/2 | 14½ | 1.100 | 1.200 | B | ½ | None | (1) 1/4-20 | 31/32 | ¾ | 0.14 |
| 24 | S2024BS 3/8 | 14½ | 1.200 | 1.300 | B | ¾ | None | (1) 1/4-20 | 17/16 | ¾ | 0.19 |
| 24 | S2024BS 1/2 | 14½ | 1.200 | 1.300 | B | ½ | None | (1) 1/4-20 | 17/16 | ¾ | 0.19 |
| 25 | S2025BS 3/8 | 14½ | 1.250 | 1.350 | B | ¾ | None | (1) 1/4-20 | 17/16 | ¾ | 0.20 |
| 25 | S2025BS 1/2 | 14½ | 1.250 | 1.350 | B | ½ | None | (1) 1/4-20 | 17/16 | ¾ | 0.20 |
| 28 | S2028BS 3/8 | 14½ | 1.400 | 1.500 | B | ¾ | None | (1) 1/4-20 | 117/64 | ¾ | 0.26 |
| 28 | S2028BS 1/2 | 14½ | 1.400 | 1.500 | B | ½ | None | (1) 1/4-20 | 117/64 | ¾ | 0.26 |
| 30 | S2030BS 3/8 | 14½ | 1.500 | 1.600 | B | ¾ | None | (1) 1/4-20 | 123/64 | ¾ | 0.30 |
| 30 | S2030BS 1/2 | 14½ | 1.500 | 1.600 | B | ½ | None | (1) 1/4-20 | 123/64 | ¾ | 0.30 |
| 32 | S2032BS 3/8 | 14½ | 1.600 | 1.700 | B | ¾ | None | (1) 1/4-20 | 17/16 | ½ | 0.40 |
| 32 | S2032BS 1/2 | 14½ | 1.600 | 1.700 | B | ½ | None | (1) 1/4-20 | 17/16 | ½ | 0.40 |
| 35 | S2035BS 3/8 | 14½ | 1.750 | 1.850 | B | ¾ | None | (1) 1/4-20 | 19/16 | ½ | 0.50 |
| 35 | S2035BS 1/2 | 14½ | 1.750 | 1.850 | B | ½ | None | (1) 1/4-20 | 19/16 | ½ | 0.50 |
| 36 | S2036BS 3/8 | 14½ | 1.800 | 1.900 | B | ¾ | None | (1) 1/4-20 | 19/16 | ½ | 0.52 |
| 36 | S2036BS 1/2 | 14½ | 1.800 | 1.900 | B | ½ | None | (1) 1/4-20 | 19/16 | ½ | 0.52 |
| 40 | S2040BS 3/8 | 14½ | 2.000 | 2.100 | B | ¾ | None | (1) 1/4-20 | 119/16 | ½ | 0.64 |
| 40 | S2040BS 1/2 | 14½ | 2.000 | 2.100 | B | ½ | None | (1) 1/4-20 | 119/16 | ½ | 0.64 |
| 40 | S2040BS 5/8 | 14½ | 2.000 | 2.100 | B | 5/8 | ¾ X 3/32 | (1) 1/4-20 @ 90 | 119/16 | ½ | 0.64 |
| 40 | S2040BS 3/4 | 14½ | 2.000 | 2.100 | B | ¾ | ¾ X 3/32 | (1) 1/4-20 @ 90 | 119/16 | ½ | 0.64 |

24 DP

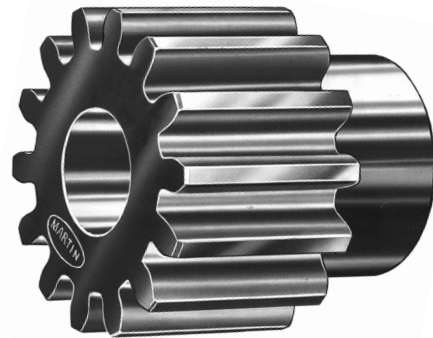
1/4" Face

Steel Stock Spur Gears

14½° Pressure Angle



Type B



Type B
Plain With Hub

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|--------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max. * | Diameter | Proj. | |
| 11 | S2411 | 14½ | .500† | .583 | B | ¼ | ** | ¾ | ⅝ | .02 |
| 12 | S2412 | 14½ | .500 | .583 | B | ¼ | ** | ¾ | ⅝ | .02 |
| 14 | S2414 | 14½ | .583 | .666 | B | ¼ | ** | ⅞ | ⅝ | .04 |
| 15 | S2415 | 14½ | .625 | .708 | B | ¼ | ** | ¾ | ⅝ | .04 |
| 16 | S2416 | 14½ | .666 | .750 | B | ⅝ | ** | ¾ | ⅝ | .04 |
| 17 | S2417 | 14½ | .709 | .791 | B | ⅝ | ** | ¾ | ⅝ | .04 |
| 18 | S2418 | 14½ | .750 | .833 | B | ⅝ | ** | ¾ | ⅝ | .04 |
| 19 | S2419 | 14½ | .791 | .875 | B | ⅝ | ** | ¾ | ⅝ | .06 |
| 20 | S2420 | 14½ | .833 | .917 | B | ⅝ | ** | ¾ | ⅝ | .06 |
| 21 | S2421 | 14½ | .875 | .959 | B | ¾ | ** | ¾ | ⅝ | .06 |
| 22 | S2422 | 14½ | .917 | 1.000 | B | ¾ | ** | ¾ | ⅝ | .06 |
| 24 | S2424 | 14½ | 1.000 | 1.083 | B | ¾ | ** | ¾ | ⅝ | .10 |
| 26 | S2426 | 14½ | 1.083 | 1.166 | B | ¾ | ** | ¾ | ⅝ | .10 |
| 27 | S2427 | 14½ | 1.125 | 1.208 | B | ¾ | ** | ¾ | ⅝ | .12 |
| 30 | S2430 | 14½ | 1.250 | 1.333 | B | ¾ | ½ | 1 | ¾ | .16 |
| 33 | S2433 | 14½ | 1.375 | 1.458 | B | ¾ | ⅝ | 1 | ¾ | .20 |
| 36 | S2436 | 14½ | 1.500 | 1.583 | B | ¾ | ⅝ | 1 | ¾ | .20 |
| 40 | S2440 | 14½ | 1.666 | 1.750 | B | ¾ | ⅝ | 1 | ¾ | .24 |
| 42 | S2442 | 14½ | 1.750 | 1.833 | B | ¾ | ⅝ | 1 | ¾ | .28 |
| 44 | S2444 | 14½ | 1.833 | 1.917 | B | ¾ | ⅝ | 1 | ¾ | .30 |
| 45 | S2445 | 14½ | 1.875 | 1.959 | B | ¾ | ⅝ | 1 | ¾ | .30 |
| 48 | S2448 | 14½ | 2.000 | 2.083 | B | ¾ | ⅝ | 1 | ¾ | .32 |
| 54 | S2454 | 14½ | 2.250 | 2.333 | B | ¾ | ⅝ | 1 | ¾ | .38 |
| 56 | S2456 | 14½ | 2.333 | 2.416 | B | ¾ | ⅝ | 1 | ¾ | .40 |
| 60 | S2460 | 14½ | 2.500 | 2.583 | B | ¾ | ⅝ | 1 | ¾ | .46 |
| 66 | S2466 | 14½ | 2.750 | 2.833 | B | ¾ | ⅝ | 1 | ¾ | .52 |
| 72 | S2472 | 14½ | 3.000 | 3.083 | B | ¾ | ⅝ | 1 | ¾ | .64 |
| 84 | S2484 | 14½ | 3.500 | 3.583 | B | ¾ | ⅝ | 1 | ¾ | .88 |
| 96 | S2496 | 14½ | 4.000 | 4.083 | B | ¾ | ⅝ | 1 | ¾ | 1.08 |
| 120 | S24120 | 14½ | 5.000 | 5.083 | B | ¾ | ⅝ | 1 | ¾ | 2.60 |
| 144 | S24144 | 14½ | 6.000 | 6.083 | B | ¾ | ⅝ | 1 | ¾ | 2.28 |

* Recommended maximum bore with keyway and set screw.
 ** Check application with factory.
 † Enlarged pitch diameter with special tooth form.

14½° P.A. Gears Will Not Operate With 20° P.A.

GEARS



14¹/₂° Spur Gear Horsepower Ratings

(S) = Steel

(CI) = Cast Iron

3 D.P. 3" Face

| Number Teeth | 12 | | 15 | | 18 | | 21 | | 24 | | 48 | | 72 | | 96 | | 120 | |
|-----------------|----|----|----|----|----|----|----|----|----|----|-----|----|-----|----|-----|----|-----|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI |
| 50 | 6 | | 9 | | 12 | | 13 | | 16 | 10 | 33 | 20 | 45 | 27 | 55 | 33 | 63 | 38 |
| 100 | 11 | | 16 | | 21 | | 25 | | 29 | 17 | 52 | 31 | 67 | 41 | 76 | 47 | 86 | 52 |
| 200 | 20 | | 27 | | 35 | | 40 | | 45 | 27 | 73 | 45 | 89 | 54 | 96 | 59 | 105 | 63 |
| 300 | 26 | | 35 | | 44 | | 50 | | 56 | 33 | 85 | 52 | 99 | 60 | 106 | 65 | 113 | 69 |
| 500 | 35 | | 46 | | 57 | | 64 | | 70 | 41 | 98 | 60 | 110 | 66 | 115 | 70 | 121 | 73 |
| 600 | 39 | | 51 | | 61 | | 68 | | 74 | 44 | 102 | 62 | 113 | 68 | 117 | 71 | 123 | 74 |
| 900 | 46 | | 59 | | 70 | | 77 | | 83 | 49 | 109 | 66 | 118 | 72 | 121 | 74 | 126 | 77 |
| 1200 | 51 | | 64 | | 76 | | 83 | | 89 | 53 | 112 | 68 | 121 | 73 | 124 | 75 | 128 | 78 |
| 1800 | 58 | | 71 | | 82 | | 89 | | 95 | 56 | 117 | 71 | 124 | 76 | 126 | 77 | 130 | 79 |

4 D.P. 2" Face

| Number Teeth | 12 | | 16 | | 20 | | 24 | | 48 | | 72 | | 96 | | 144 | | S | CI |
|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|---|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | | | | |
| 50 | 2 | | 4 | | 5 | | 6 | 4 | 13 | 8 | 18 | 11 | 23 | 14 | 30 | 18 | | |
| 100 | 4 | | 7 | | 9 | | 11 | 7 | 22 | 13 | 29 | 17 | 34 | 21 | 42 | 25 | | |
| 200 | 8 | | 12 | | 16 | | 19 | 11 | 32 | 20 | 40 | 24 | 35 | 27 | 52 | 31 | | |
| 300 | 11 | | 16 | | 20 | | 24 | 14 | 38 | 23 | 46 | 28 | 51 | 31 | 56 | 34 | | |
| 500 | 15 | | 22 | | 27 | | 31 | 19 | 45 | 28 | 52 | 32 | 56 | 34 | 60 | 36 | | |
| 600 | 17 | | 24 | | 29 | | 33 | 20 | 57 | 29 | 54 | 33 | 58 | 35 | 61 | 37 | | |
| 900 | 20 | | 29 | | 34 | | 38 | 23 | 52 | 31 | 57 | 35 | 60 | 36 | 64 | 38 | | |
| 1200 | 23 | | 32 | | 37 | | 41 | 25 | 54 | 33 | 59 | 36 | 62 | 37 | 65 | 39 | | |
| 1800 | 27 | | 36 | | 41 | | 45 | 27 | 57 | 34 | 61 | 37 | 63 | 38 | 66 | 41 | | |

5 D.P. 1³/₄" Face

| Number Teeth | 12 | | 18 | | 24 | | 30 | | 45 | | 80 | | 120 | | 160 | | S | CI |
|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-----|----|---|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | | | | |
| 50 | 1 | | 2 | | 4 | 2 | 5 | 3 | 8 | 4 | 12 | 7 | 16 | 10 | | 12 | | |
| 100 | 2 | | 4 | | 7 | 4 | 9 | 5 | 12 | 7 | 19 | 12 | 24 | 15 | | 17 | | |
| 200 | 4 | | 8 | | 11 | 7 | 14 | 8 | 19 | 11 | 27 | 16 | 32 | 19 | | 21 | | |
| 300 | 6 | | 11 | | 15 | 9 | 18 | 11 | 23 | 14 | 31 | 19 | 36 | 22 | | 23 | | |
| 500 | 9 | | 14 | | 20 | 12 | 23 | 14 | 29 | 17 | 36 | 22 | 40 | 24 | | 25 | | |
| 600 | 10 | | 16 | | 22 | 13 | 25 | 15 | 30 | 20 | 37 | 23 | 41 | 25 | | 26 | | |
| 900 | 12 | | 20 | | 25 | 15 | 29 | 17 | 34 | 21 | 40 | 24 | 43 | 26 | | 27 | | |
| 1200 | 14 | | 22 | | 28 | 17 | 31 | 19 | 36 | 25 | 41 | 25 | 44 | 27 | | 27 | | |
| 1800 | 16 | | 25 | | 30 | 18 | 42 | 25 | 38 | 26 | 43 | 26 | 45 | 28 | | 28 | | |

GEARS

14¹/₂^o Spur Gear Horsepower Ratings



(S) = Steel

(CI) = Cast Iron

6 D.P. 1¹/₂" Face

| Number Teeth | 12 | | 18 | | 24 | | 30 | | 36 | | 48 | | 84 | | 120 | | 180 | | |
|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|----|-----|----|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | |
| 100 | 2 | | 3 | | 4 | 2 | 5 | 3 | 6 | 4 | 8 | 5 | 13 | 8 | 16 | 10 | | | 12 |
| 200 | 3 | | 5 | | 7 | 4 | 9 | 5 | 10 | 6 | 13 | 8 | 18 | 11 | 21 | 13 | | | 15 |
| 300 | 4 | | 7 | | 10 | 5 | 11 | 7 | 13 | 7 | 16 | 10 | 21 | 13 | 24 | 15 | | | 16 |
| 600 | 7 | | 11 | | 13 | 8 | 17 | 10 | 18 | 11 | 21 | 13 | 26 | 16 | 28 | 17 | | | 18 |
| 900 | 8 | | 13 | | 17 | 9 | 19 | 11 | 21 | 13 | 24 | 14 | 28 | 17 | 30 | 18 | | | 19 |
| 1200 | 10 | | 15 | | 19 | 10 | 21 | 13 | 22 | 14 | 25 | 15 | 29 | 18 | 31 | 19 | | | 19 |
| 1800 | 12 | | 18 | | 21 | 11 | 23 | 14 | 24 | 15 | 27 | 16 | 30 | 19 | 32 | 19 | | | 20 |

8 D.P. 1¹/₄" Face

| RPM | Steel | | | | Cast Iron | | | | | |
|------|-----------------|-------|-------|-------|-----------------|------|-------|-------|-------|-------|
| | Number of Teeth | | | | Number of Teeth | | | | | |
| | 12 | 24 | 36 | 48 | 24 | 48 | 72 | 96 | 120 | 160 |
| 100 | .72 | 1.98 | 3.02 | 4.08 | 1.18 | 2.50 | 3.47 | 4.40 | 5.05 | 6.02 |
| 200 | 1.37 | 3.59 | 5.13 | 6.76 | 2.13 | 4.14 | 5.45 | 6.49 | 7.22 | 8.21 |
| 300 | 1.95 | 4.81 | 6.73 | 8.58 | 2.86 | 5.26 | 6.67 | 7.75 | 8.48 | 9.35 |
| 600 | 3.32 | 7.55 | 9.85 | 11.91 | 4.48 | 7.29 | 8.72 | 9.63 | 10.31 | 10.83 |
| 900 | 4.36 | 9.25 | 11.66 | 13.73 | 5.49 | 8.41 | 9.33 | 10.41 | 10.87 | 11.44 |
| 1200 | 5.21 | 10.48 | 12.86 | 15.10 | 6.22 | 9.07 | 9.86 | 10.88 | 11.29 | 11.76 |
| 1800 | 6.38 | 12.08 | 14.27 | 16.41 | 7.17 | 9.86 | 10.45 | 11.37 | 11.78 | 12.11 |

10 D.P. 1" Face

| RPM | Steel | | | | Cast Iron | | | | |
|------|-----------------|------|------|-------|-----------------|------|------|------|------|
| | Number of Teeth | | | | Number of Teeth | | | | |
| | 12 | 24 | 48 | 60 | 28 | 72 | 140 | 180 | 200 |
| 100 | .38 | 1.08 | 2.26 | 2.68 | .80 | 1.88 | 3.12 | 3.63 | 3.88 |
| 200 | .75 | 1.98 | 3.77 | 4.45 | 1.44 | 3.02 | 4.52 | 5.04 | 5.29 |
| 300 | 1.08 | 2.71 | 4.94 | 5.65 | 1.94 | 3.80 | 5.33 | 5.81 | 6.02 |
| 600 | 1.88 | 4.33 | 7.13 | 7.84 | 3.03 | 5.16 | 6.38 | 6.83 | 6.99 |
| 900 | 2.50 | 5.41 | 8.23 | 9.04 | 3.71 | 5.81 | 6.96 | 7.24 | 7.36 |
| 1200 | 3.00 | 6.25 | 9.06 | 9.74 | 4.21 | 6.25 | 7.23 | 7.46 | 7.59 |
| 1800 | 3.75 | 7.21 | 9.95 | 10.59 | 4.85 | 6.78 | 7.55 | 7.74 | 7.86 |

GEARS



14 1/2° Spur Gear Horsepower Ratings

12 D.P. 3/4" Face

| RPM | Steel | | | | | Cast Iron | | | |
|------|-----------------|------|------|------|------|-----------------|------|------|------|
| | Number of Teeth | | | | | Number of Teeth | | | |
| | 12 | 24 | 48 | 60 | 72 | 36 | 72 | 120 | 200 |
| 100 | .21 | .56 | 1.16 | 1.46 | 1.71 | .53 | 1.04 | 1.54 | 2.19 |
| 200 | .39 | 1.05 | 2.02 | 2.44 | 2.84 | .95 | 1.72 | 2.37 | 3.08 |
| 300 | .55 | 1.43 | 2.70 | 3.19 | 3.60 | 1.28 | 2.18 | 2.90 | 3.56 |
| 600 | .99 | 2.37 | 3.99 | 4.61 | 5.00 | 2.01 | 3.03 | 3.68 | 4.21 |
| 900 | 1.33 | 3.01 | 4.76 | 5.32 | 5.76 | 2.46 | 3.49 | 4.07 | 4.50 |
| 1200 | 1.64 | 3.50 | 5.28 | 5.85 | 6.21 | 2.79 | 3.77 | 4.18 | 4.65 |
| 1800 | 2.09 | 4.17 | 5.92 | 6.42 | 6.75 | 3.21 | 4.09 | 4.41 | 4.85 |

16 D.P. 1/2" Face

| RPM | Steel | | | | | Cast Iron | | | | |
|------|-----------------|------|------|------|------|-----------------|------|------|------|------|
| | Number of Teeth | | | | | Number of Teeth | | | | |
| | 12 | 24 | 36 | 48 | 80 | 36 | 80 | 120 | 160 | 200 |
| 100 | .08 | .21 | .32 | .45 | .76 | .14 | .45 | .63 | .78 | .93 |
| 200 | .14 | .39 | .60 | .82 | 1.26 | .27 | .75 | 1.00 | 1.21 | 1.34 |
| 300 | .21 | .56 | .82 | 1.10 | 1.65 | .37 | .99 | 1.25 | 1.48 | 1.60 |
| 600 | .40 | .96 | 1.35 | 1.72 | 2.38 | .60 | 1.43 | 1.68 | 1.78 | 1.92 |
| 900 | .53 | 1.26 | 1.71 | 2.11 | 2.75 | .68 | 1.64 | 1.88 | 1.87 | 1.99 |
| 1200 | .66 | 1.50 | 1.97 | 2.39 | 3.02 | .87 | 1.81 | 2.03 | 2.17 | 2.24 |
| 1800 | .87 | 1.84 | 2.33 | 2.75 | 3.32 | 1.03 | 1.99 | 2.16 | 2.29 | 2.36 |

20 D.P. 3/8" Face

| RPM | Steel | | | | | Cast Iron | | | | |
|------|-----------------|------|------|------|------|-----------------|------|------|------|------|
| | Number of Teeth | | | | | Number of Teeth | | | | |
| | 12 | 24 | 48 | 60 | 96 | 48 | 80 | 120 | 160 | 200 |
| 100 | .05 | .11 | .22 | .28 | .46 | .14 | .22 | .32 | .40 | .47 |
| 200 | .07 | .20 | .43 | .50 | .76 | .26 | .39 | .53 | .64 | .73 |
| 300 | .10 | .29 | .58 | .67 | .99 | .35 | .52 | .66 | .79 | .89 |
| 600 | .19 | .51 | .93 | 1.06 | 1.44 | .56 | .76 | .92 | 1.05 | 1.08 |
| 900 | .27 | .68 | 1.16 | 1.29 | 1.66 | .70 | .91 | 1.06 | 1.16 | 1.14 |
| 1200 | .33 | .81 | 1.34 | 1.47 | 1.70 | .81 | 1.01 | 1.14 | 1.25 | 1.32 |
| 1800 | .46 | 1.02 | 1.55 | 1.69 | 2.00 | .94 | 1.13 | 1.26 | 1.33 | 1.39 |

24 D.P. 1/4" Face

| RPM | Steel | | | | |
|------|-----------------|------|------|------|-------|
| | Number of Teeth | | | | |
| | 12 | 24 | 48 | 60 | 144 |
| 100 | .017 | .047 | .105 | .200 | .291 |
| 200 | .033 | .091 | .197 | .349 | .482 |
| 300 | .049 | .132 | .275 | .462 | .617 |
| 600 | .092 | .236 | .455 | .688 | .857 |
| 900 | .131 | .321 | .583 | .822 | .984 |
| 1200 | .165 | .391 | .679 | .910 | 1.063 |

4 DP 3 1/2" Face

Steel Stock Spur Gears 20° Pressure Angle



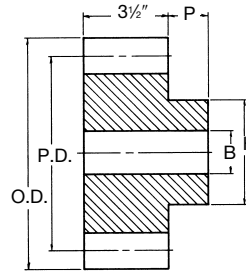
Type B
Plain With Hub
All Steel



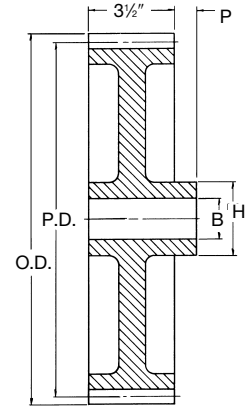
Type B₁
Web
All Steel



Type B₂
Web With
Lighten Holes
All Steel



Type B



Type B₁, B₂

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|--------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 12 | TS412 | 20 | 3.000 | 3.500 | B | 1 1/8 | 1 1/16 | 2 1/4 | 3/8 | 6.8 |
| 14 | TS414 | 20 | 3.500 | 4.000 | B | 1 1/8 | 1 3/8 | 2 9/16 | 3/8 | 9.8 |
| 15 | TS415 | 20 | 3.750 | 4.250 | B | 1 1/8 | 1 1/2 | 3 1/16 | 3/8 | 11.5 |
| 16 | TS416 | 20 | 4.000 | 4.500 | B | 1 1/8 | 2 1/8 | 3 1/4 | 3/8 | 13.3 |
| 18 | TS418 | 20 | 4.500 | 5.000 | B | 1 1/8 | 2 3/8 | 3 9/16 | 3/8 | 17.3 |
| 20 | TS420 | 20 | 5.000 | 5.500 | B | 1 1/8 | 2 3/4 | 4 1/8 | 3/8 | 21.8 |
| 22 | TS422 | 20 | 5.500 | 6.000 | B | 1 1/8 | 3 | 4 9/16 | 3/8 | 26.7 |
| 24 | TS424 | 20 | 6.000 | 6.500 | B | 1 1/8 | 3 3/8 | 5 | 1 1/8 | 33.7 |
| 28 | TS428 | 20 | 7.000 | 7.500 | B | 1 1/8 | 3 3/8 | 5 | 1 1/4 | 43.8 |
| 30 | TS430 | 20 | 7.500 | 8.000 | B | 1 1/8 | 3 3/8 | 5 | 1 1/4 | 49.4 |
| 32 | TS432 | 20 | 8.000 | 8.500 | B | 1 1/8 | 3 3/8 | 5 | 1 1/2 | 56.8 |
| 36 | TS436 | 20 | 9.000 | 9.500 | B | 1 1/8 | 3 3/8 | 5 | 1 1/2 | 70.0 |
| 40 | TS440 | 20 | 10.000 | 10.500 | B | 1 1/8 | 3 3/8 | 5 1/2 | 1 1/2 | 85.2 |
| 44 | TS444 | 20 | 11.000 | 11.500 | B | 1 1/8 | 3 3/8 | 5 1/2 | 1 1/2 | 101.6 |
| 48 | TS448 | 20 | 12.000 | 12.500 | B | 1 1/8 | 3 3/8 | 5 1/2 | 1 1/2 | 119.5 |
| 56 | TS456 | 20 | 14.000 | 14.500 | B ₁ | 1 1/8 | 3 3/8 | 5 1/2 | 1 1/2 | 96.9 |
| 60 | TS460 | 20 | 15.000 | 15.500 | B ₂ | 1 1/8 | 3 3/8 | 5 1/2 | 1 1/2 | 88.1 |
| 64 | TS464 | 20 | 16.000 | 16.500 | B ₂ | 1 1/8 | 3 3/8 | 5 1/2 | 1 1/2 | 86.9 |
| 72 | TS472 | 20 | 18.000 | 18.500 | B ₂ | 1 1/8 | 3 3/8 | 5 1/2 | 1 1/2 | 86.5 |
| 80 | TS480 | 20 | 20.000 | 20.500 | B ₂ | 1 1/8 | 3 3/8 | 5 1/2 | 1 1/2 | 90.9 |

* Recommended maximum bore with keyway and set screw.

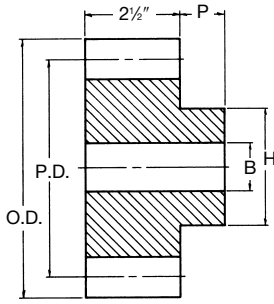
20° P.A. Gears Will Not Operate With 14 1/2° P.A.

GEARS

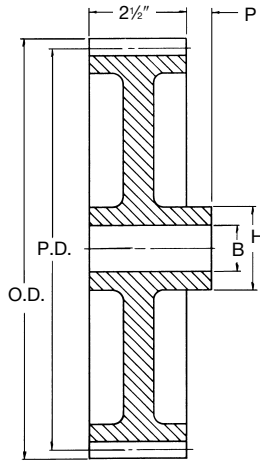


**Steel Stock
Spur Gears**
20° Pressure Angle

5 DP
2 1/2" Face



Type B



Type B₂



Type B
Plain With Hub
All Steel



Type B₂
Web With Lighten Holes
All Steel

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 12 | TS512 | 20 | 2.400 | 2.800 | B | 1 1/8 | 1 1/8 | 1 5/16 | 3/8 | 2.9 |
| 14 | TS514 | 20 | 2.800 | 3.200 | B | 1 1/8 | 1 1/8 | 2 1/16 | 3/8 | 4.3 |
| 15 | TS515 | 20 | 3.000 | 3.400 | B | 1 1/8 | 1 1/8 | 2 3/8 | 3/8 | 5.2 |
| 16 | TS516 | 20 | 3.200 | 3.600 | B | 1 1/8 | 1 1/8 | 2 1/2 | 3/8 | 6.1 |
| 18 | TS518 | 20 | 3.600 | 4.000 | B | 1 1/8 | 1 1/8 | 3 | 3/8 | 8.0 |
| 20 | TS520 | 20 | 4.000 | 4.400 | B | 1 1/8 | 2 1/4 | 3 3/8 | 3/8 | 10.2 |
| 24 | TS524 | 20 | 4.800 | 5.200 | B | 1 1/8 | 2 3/8 | 3 3/8 | 1 1/4 | 15.7 |
| 25 | TS525 | 20 | 5.000 | 5.400 | B | 1 1/8 | 2 3/8 | 3 3/8 | 1 1/4 | 20.3 |
| 28 | TS528 | 20 | 5.600 | 6.000 | B | 1 1/8 | 2 3/8 | 3 3/8 | 1 1/4 | 22.9 |
| 30 | TS530 | 20 | 6.000 | 6.400 | B | 1 1/8 | 2 3/8 | 3 3/8 | 1 1/4 | 23.9 |
| 35 | TS535 | 20 | 7.000 | 7.400 | B | 1 1/8 | 2 3/8 | 3 3/8 | 1 1/4 | 29.9 |
| 40 | TS540 | 20 | 8.000 | 8.400 | B | 1 1/8 | 2 3/8 | 3 3/8 | 1 1/4 | 38.2 |
| 45 | TS545 | 20 | 9.000 | 9.400 | B | 1 1/8 | 2 3/8 | 3 3/8 | 1 1/4 | 47.7 |
| 50 | TS550 | 20 | 10.000 | 10.400 | B | 1 1/8 | 2 3/8 | 4 1/8 | 1 1/4 | 60.3 |
| 60 | TS560 | 20 | 12.000 | 12.400 | B | 1 1/8 | 2 3/8 | 4 1/8 | 1 1/4 | 84.7 |
| 70 | TS570 | 20 | 14.000 | 14.400 | B ₂ | 1 3/16 | 3 1/8 | 5 1/8 | 1 1/4 | 51.6 |
| 80 | TS580 | 20 | 16.000 | 16.400 | B ₂ | 1 3/16 | 3 1/8 | 5 1/8 | 1 1/4 | 55.8 |
| 90 | TS590 | 20 | 18.000 | 18.400 | B ₂ | 1 3/16 | 3 1/8 | 5 1/8 | 1 1/4 | 59.7 |
| 100 | TS5100 | 20 | 20.000 | 20.400 | B ₂ | 1 3/16 | 3 1/8 | 5 1/8 | 1 1/2 | 69.2 |
| 110 | TS5110 | 20 | 22.000 | 22.400 | B ₂ | 1 3/16 | 3 1/8 | 5 1/8 | 1 1/2 | 72.3 |
| 120 | TS5120 | 20 | 24.000 | 24.400 | B ₂ | 1 3/16 | 3 1/8 | 6 1/8 | 1 1/2 | 80.2 |

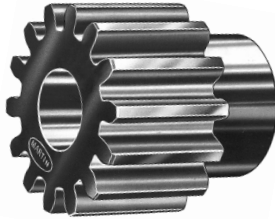
* Recommended maximum bore with keyway and set screw.

20° P.A. Gears Will Not Operate With 14 1/2° P.A.

GEARS

6 DP 2" Face

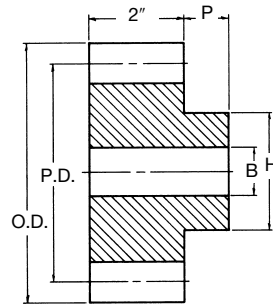
Steel Stock Spur Gears 20° Pressure Angle



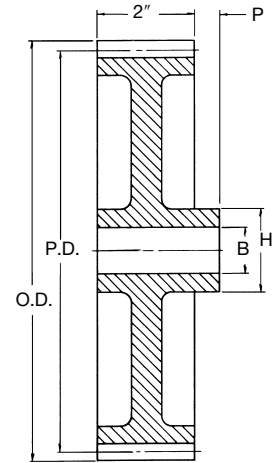
Type B
Plain With Hub
All Steel



Type B₂
Web With Lighten Holes
All Steel



Type B



Type B₂

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 11 | TS611† | 20 | 2.000 | 2.333 | B | 1 | 1 | 1½ | ¾ | 1.6 |
| 12 | TS612 | 20 | 2.000 | 2.333 | B | 1 | 1 | 1½ | ¾ | 1.6 |
| 14 | TS614 | 20 | 2.333 | 2.666 | B | 1 | 1 | 1⅝ | ¾ | 2.4 |
| 15 | TS615 | 20 | 2.500 | 2.833 | B | 1 | 1¼ | 2 | ¾ | 2.9 |
| 16 | TS616 | 20 | 2.666 | 3.000 | B | 1 | 1⅙ | 2½ | ¾ | 3.4 |
| 18 | TS618 | 20 | 3.000 | 3.333 | B | 1 | 1½ | 2½ | ¾ | 4.6 |
| 21 | TS621 | 20 | 3.500 | 3.833 | B | 1 | 1⅝ | 3 | ¾ | 6.6 |
| 24 | TS624 | 20 | 4.000 | 4.333 | B | 1¼ | 1⅝ | 3 | ¾ | 8.1 |
| 27 | TS627 | 20 | 4.500 | 4.833 | B | 1½ | 2½ | 3½ | ¾ | 10.6 |
| 30 | TS630 | 20 | 5.000 | 5.333 | B | 1½ | 2½ | 4 | ¾ | 13.4 |
| 33 | TS633 | 20 | 5.500 | 5.833 | B | 1½ | 2½ | 4 | 1½ | 17.8 |
| 36 | TS636 | 20 | 6.000 | 6.333 | B | 1½ | 2½ | 4 | 1½ | 20.4 |
| 42 | TS642 | 20 | 7.000 | 7.333 | B | 1½ | 2½ | 4 | 1½ | 26.2 |
| 48 | TS648 | 20 | 8.000 | 8.333 | B | 1½ | 2½ | 4 | 1½ | 32.8 |
| 54 | TS654 | 20 | 9.000 | 9.333 | B | 1½ | 2½ | 4 | 1½ | 40.4 |
| 60 | TS660 | 20 | 10.000 | 10.333 | B | 1½ | 2⅝ | 4½ | 1½ | 50.0 |
| 64 | TS664 | 20 | 10.666 | 11.000 | B | 1½ | 2⅝ | 4½ | 1½ | 56.5 |
| 66 | TS666 | 20 | 11.000 | 11.333 | B | 1½ | 2⅝ | 4½ | 1½ | 59.8 |
| 72 | TS672 | 20 | 12.000 | 12.333 | B | 1½ | 2⅝ | 4½ | 1½ | 70.0 |
| 84 | TS684 | 20 | 14.000 | 14.333 | B ₂ | 1¼ | 2⅝ | 5 | 1½ | 42.8 |
| 96 | TS696 | 20 | 16.000 | 16.333 | B ₂ | 1¼ | 2⅝ | 5 | 1½ | 46.0 |
| 108 | TS6108 | 20 | 18.000 | 18.333 | B ₂ | 1¼ | 2⅝ | 5 | 1½ | 48.8 |
| 120 | TS6120 | 20 | 20.000 | 20.333 | B ₂ | 1¼ | 2⅝ | 5 | 1½ | 51.3 |

* Recommended maximum bore with keyway and set screw.

† Enlarged pitch diameter with special tooth form.

20° P.A. Gears Will Not Operate With 14½° P.A.

Bored-to-Size

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|--------|-----------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 12 | TS612BS 1 | 20 | 2.000 | 2.333 | B | 1 | ¼X ⅝ | (f) 1/4-20 @90 | 1½ | ¾ | 1.60 |
| 14 | TS614BS 1 | 20 | 2.333 | 2.667 | B | 1 | ¼X ⅝ | (f) 5/16-18 @90 | 1⅝ | ¾ | 2.40 |
| 14 | TS614BS 1-1/8 | 20 | 2.333 | 2.667 | B | 1½ | ¼X ⅝ | (f) 5/16-18 @90 | 1⅝ | ¾ | 2.40 |
| 15 | TS615BS 1 | 20 | 2.500 | 2.833 | B | 1 | ¼X ⅝ | (f) 5/16-18 @90 | 2 | ¾ | 2.90 |
| 15 | TS615BS 1-1/8 | 20 | 2.500 | 2.833 | B | 1¼ | ¼X ⅝ | (f) 5/16-18 @90 | 2 | ¾ | 2.90 |
| 15 | TS615BS 1-3/16 | 20 | 2.500 | 2.833 | B | 1⅝ | ¼X ⅝ | (f) 5/16-18 @90 | 2 | ¾ | 2.90 |
| 15 | TS615BS 1-1/4 | 20 | 2.500 | 2.833 | B | 1½ | ¼X ⅝ | (f) 5/16-18 @90 | 2 | ¾ | 2.90 |
| 16 | TS616BS 1 | 20 | 2.667 | 3.000 | B | 1 | ¼X ⅝ | (f) 5/16-18 @90 | 2½ | ¾ | 3.40 |
| 16 | TS616BS 1-1/8 | 20 | 2.667 | 3.000 | B | 1¼ | ¼X ⅝ | (f) 5/16-18 @90 | 2½ | ¾ | 3.40 |
| 16 | TS616BS 1-3/16 | 20 | 2.667 | 3.000 | B | 1⅝ | ¼X ⅝ | (f) 5/16-18 @90 | 2½ | ¾ | 3.40 |
| 16 | TS616BS 1-1/4 | 20 | 2.667 | 3.000 | B | 1½ | ¼X ⅝ | (f) 5/16-18 @90 | 2½ | ¾ | 3.40 |
| 18 | TS618BS 1 | 20 | 3.000 | 3.333 | B | 1 | ¼X ⅝ | (f) 5/16-18 @90 | 2½ | ¾ | 4.60 |
| 18 | TS618BS 1-1/8 | 20 | 3.000 | 3.333 | B | 1½ | ¼X ⅝ | (f) 5/16-18 @90 | 2½ | ¾ | 4.60 |
| 18 | TS618BS 1-3/16 | 20 | 3.000 | 3.333 | B | 1⅝ | ¼X ⅝ | (f) 5/16-18 @90 | 2½ | ¾ | 4.60 |
| 18 | TS618BS 1-1/4 | 20 | 3.000 | 3.333 | B | 1½ | ¼X ⅝ | (f) 5/16-18 @90 | 2½ | ¾ | 4.60 |
| 21 | TS621BS 1 | 20 | 3.500 | 3.833 | B | 1 | ¼X ⅝ | (f) 5/16-18 @90 | 3 | ¾ | 6.60 |
| 21 | TS621BS 1-1/8 | 20 | 3.500 | 3.833 | B | 1½ | ¼X ⅝ | (f) 5/16-18 @90 | 3 | ¾ | 6.60 |
| 21 | TS621BS 1-3/16 | 20 | 3.500 | 3.833 | B | 1⅝ | ¼X ⅝ | (f) 5/16-18 @90 | 3 | ¾ | 6.60 |
| 21 | TS621BS 1-1/4 | 20 | 3.500 | 3.833 | B | 1½ | ¼X ⅝ | (f) 5/16-18 @90 | 3 | ¾ | 6.60 |

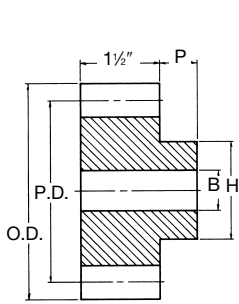


Steel & Cast Stock Spur Gears

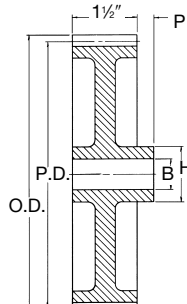
20° Pressure Angle

8 DP

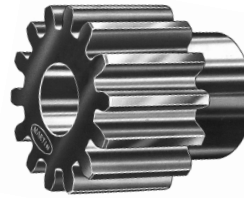
1 1/2" Face



Type B



Type B₂, B₃



Type B
Plain With Hub All Steel



Type B₃
Web With Spokes Cast

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|--------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 12 | TS812 | 20 | 1.500 | 1.750 | B | 3/4 | 3/4 | 1 1/8 | 3/4 | 0.7 |
| 14 | TS814 | 20 | 1.750 | 2.000 | B | 3/4 | 1 1/16 | 1 1/8 | 3/4 | 1.0 |
| 15 | TS815 | 20 | 1.875 | 2.125 | B | 3/4 | 7/8 | 1 1/8 | 3/4 | 1.2 |
| 16 | TS816 | 20 | 2.000 | 2.250 | B | 7/8 | 1 1/16 | 1 1/8 | 3/4 | 1.4 |
| 18 | TS818 | 20 | 2.250 | 2.500 | B | 7/8 | 1 1/8 | 1 13/16 | 7/8 | 1.9 |
| 19 | TS819 | 20 | 2.375 | 2.625 | B | 7/8 | 1 1/4 | 2 | 7/8 | 2.3 |
| 20 | TS820 | 20 | 2.500 | 2.750 | B | 7/8 | 1 1/16 | 2 1/16 | 7/8 | 2.5 |
| 22 | TS822 | 20 | 2.750 | 3.000 | B | 7/8 | 1 1/2 | 2 1/8 | 7/8 | 3.2 |
| 24 | TS824 | 20 | 3.000 | 3.250 | B | 7/8 | 1 1/8 | 2 1/16 | 7/8 | 3.9 |
| 26 | TS826 | 20 | 3.250 | 3.500 | B | 7/8 | 1 3/4 | 2 3/8 | 7/8 | 4.6 |
| 28 | TS828 | 20 | 3.500 | 3.750 | B | 7/8 | 1 1/4 | 2 3/8 | 7/8 | 5.2 |
| 30 | TS830 | 20 | 3.750 | 4.000 | B | 1 | 1 3/4 | 2 3/8 | 7/8 | 5.6 |
| 32 | TS832 | 20 | 4.000 | 4.250 | B | 1 | 1 1/8 | 3 1/4 | 7/8 | 6.6 |
| 36 | TS836 | 20 | 4.500 | 4.750 | B | 1 | 2 1/8 | 3 3/8 | 7/8 | 8.6 |
| 40 | TS840 | 20 | 5.000 | 5.250 | B | 1 | 2 1/8 | 3 3/8 | 7/8 | 10.2 |
| 42 | TS842 | 20 | 5.250 | 5.500 | B | 1 | 2 1/8 | 3 3/8 | 1 | 11.4 |
| 44 | TS844 | 20 | 5.500 | 5.750 | B | 1 | 2 1/8 | 3 3/8 | 1 | 12.3 |
| 48 | TS848 | 20 | 6.000 | 6.250 | B | 1 | 2 1/8 | 3 3/8 | 1 | 14.2 |

Cast

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|--------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 52 | TC852 | 20 | 6.500 | 6.750 | B | 1 | 1 1/8 | 3 | 1 | 11.9 |
| 56 | TC856 | 20 | 7.000 | 7.250 | B | 1 | 1 1/8 | 3 | 1 | 13.0 |
| 60 | TC860 | 20 | 7.500 | 7.750 | B ₂ | 1 | 1 1/8 | 3 | 1 | 12.0 |
| 64 | TC864 | 20 | 8.000 | 8.250 | B ₃ | 1 | 1 1/8 | 3 | 1 | 12.1 |
| 72 | TC872 | 20 | 9.000 | 9.250 | B ₃ | 1 | 2 1/16 | 3 1/4 | 1 | 14.4 |
| 80 | TC880 | 20 | 10.000 | 10.250 | B ₃ | 1 1/8 | 2 1/16 | 3 3/4 | 1 1/4 | 17.0 |
| 88 | TC888 | 20 | 11.000 | 11.250 | B ₃ | 1 1/8 | 2 1/16 | 3 3/4 | 1 1/4 | 19.0 |
| 96 | TC896 | 20 | 12.000 | 12.250 | B ₃ | 1 1/8 | 2 1/8 | 3 3/8 | 1 1/4 | 23.7 |
| 112 | TC8112 | 20 | 14.000 | 14.250 | B ₃ | 1 1/8 | 2 1/8 | 3 3/8 | 1 1/4 | 25.0 |
| 120 | TC8120 | 20 | 15.000 | 15.250 | B ₃ | 1 1/8 | 2 1/8 | 3 3/8 | 1 1/4 | 25.8 |
| 128 | TC8128 | 20 | 16.000 | 16.250 | B ₃ | 1 1/8 | 2 1/8 | 3 3/8 | 1 1/4 | 28.0 |
| 144 | TC8144 | 20 | 18.000 | 18.250 | B ₃ | 1 1/8 | 2 1/4 | 3 3/8 | 1 1/4 | 32.0 |
| 160 | TC8160 | 20 | 20.000 | 20.250 | B ₃ | 1 1/4 | 2 1/4 | 3 3/8 | 1 1/2 | 34.8 |

Bored-to-Size

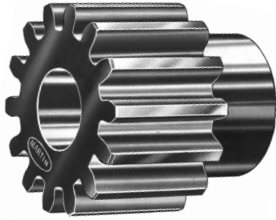
| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------------|------------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 12 | TS812BS 3/4 | 20 | 1.500 | 1.750 | B | 3/4 | 3/16 X 3/32 | (1) 10-24 @ 90 | 1 1/8 | 3/4 | 0.70 |
| 14 | TS814BS 3/4 | 20 | 1.750 | 2.000 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/8 | 3/4 | 1.00 |
| 15 | TS815BS 3/4 | 20 | 1.875 | 2.125 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/8 | 3/4 | 1.20 |
| 15 | TS815BS 7/8 | 20 | 1.875 | 2.125 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/8 | 3/4 | 1.20 |
| 16 | TS816BS 7/8 | 20 | 2.000 | 2.250 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/8 | 7/8 | 1.40 |
| 16 | TS816BS 1 | 20 | 2.000 | 2.250 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 1 1/8 | 7/8 | 1.40 |
| 18 | TS818BS 7/8 | 20 | 2.250 | 2.500 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 13/16 | 7/8 | 1.90 |
| 18 | TS818BS 1 | 20 | 2.250 | 2.500 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 1 13/16 | 7/8 | 1.90 |
| 18 | TS818BS 1-1/8 | 20 | 2.250 | 2.500 | B | 1 1/8 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 1 13/16 | 7/8 | 1.90 |
| 20 | TS820BS 7/8 | 20 | 2.500 | 2.750 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 2 1/16 | 7/8 | 2.50 |
| 20 | TS820BS 1 | 20 | 2.500 | 2.750 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 2 1/16 | 7/8 | 2.50 |
| 20 | TS820BS 1-1/8 | 20 | 2.500 | 2.750 | B | 1 1/8 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 2 1/16 | 7/8 | 2.50 |
| 22 | TS822BS 7/8 | 20 | 2.750 | 3.000 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 2 3/16 | 7/8 | 3.20 |
| 22 | TS822BS 1 | 20 | 2.750 | 3.000 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 2 3/16 | 7/8 | 3.20 |
| 22 | TS822BS 1-1/8 | 20 | 2.750 | 3.000 | B | 1 1/8 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 2 3/16 | 7/8 | 3.20 |
| 24 | TS824BS 7/8 | 20 | 3.000 | 3.250 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 2 3/16 | 7/8 | 3.90 |
| 24 | TS824BS 1 | 20 | 3.000 | 3.250 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 2 3/16 | 7/8 | 3.90 |
| 24 | TS824BS 1-1/8 | 20 | 3.000 | 3.250 | B | 1 1/8 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 2 3/16 | 7/8 | 3.90 |

* Recommended maximum bore with keyway and set screw.

20° P.A. Gears Will Not Operate With 14 1/2° P.A.

10 DP 1 1/4" Face

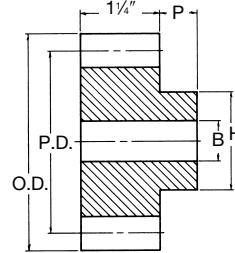
Steel & Cast Stock Spur Gears 20° Pressure Angle



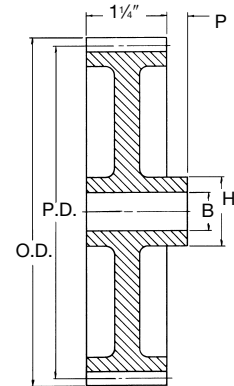
Type B
Plain With Hub
All Steel



Type B₃
Web With Spokes
Cast



Type B



Type B₃

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|--------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 12 | TS1012 | 20 | 1.200 | 1.400 | B | 5/8 | 5/8 | 29/32 | 5/8 | 0.4 |
| 14 | TS1014 | 20 | 1.400 | 1.600 | B | 3/4 | 3/4 | 1 1/64 | 5/8 | 0.6 |
| 15 | TS1015 | 20 | 1.500 | 1.700 | B | 3/4 | 3/4 | 1 1/32 | 5/8 | 0.6 |
| 16 | TS1016 | 20 | 1.600 | 1.800 | B | 3/4 | 3/4 | 1 1/16 | 5/8 | 0.7 |
| 18 | TS1018 | 20 | 1.800 | 2.000 | B | 3/4 | 1 1/16 | 1 1/32 | 5/8 | 0.9 |
| 20 | TS1020 | 20 | 2.000 | 2.200 | B | 7/8 | 7/8 | 1 39/64 | 5/8 | 1.2 |
| 22 | TS1022 | 20 | 2.200 | 2.400 | B | 7/8 | 1 1/16 | 1 1/16 | 5/8 | 1.5 |
| 24 | TS1024 | 20 | 2.400 | 2.600 | B | 7/8 | 1 1/16 | 2 1/64 | 5/8 | 1.8 |
| 25 | TS1025 | 20 | 2.500 | 2.700 | B | 7/8 | 1 1/4 | 2 7/64 | 5/8 | 2.0 |
| 26 | TS1026 | 20 | 2.600 | 2.800 | B | 7/8 | 1 1/4 | 2 1/2 | 5/8 | 2.2 |
| 28 | TS1028 | 20 | 2.800 | 3.000 | B | 7/8 | 1 1/8 | 2 13/32 | 5/8 | 2.7 |
| 30 | TS1030 | 20 | 3.000 | 3.200 | B | 7/8 | 1 1/2 | 2 1/2 | 7/8 | 3.4 |
| 32 | TS1032 | 20 | 3.200 | 3.400 | B | 7/8 | 1 3/4 | 2 1/2 | 7/8 | 3.7 |
| 35 | TS1035 | 20 | 3.500 | 3.700 | B | 1 | 1 1/2 | 2 1/2 | 7/8 | 4.2 |
| 36 | TS1036 | 20 | 3.600 | 3.800 | B | 1 | 1 3/4 | 2 1/2 | 7/8 | 4.3 |
| 40 | TS1040 | 20 | 4.000 | 4.200 | B | 1 | 2 1/8 | 3 1/2 | 7/8 | 6.4 |
| 45 | TS1045 | 20 | 4.500 | 4.700 | B | 1 | 2 1/2 | 3 1/2 | 7/8 | 7.5 |
| 48 | TS1048 | 20 | 4.800 | 5.000 | B | 1 | 2 3/8 | 3 3/4 | 7/8 | 8.7 |
| 50 | TS1050 | 20 | 5.000 | 5.200 | B | 1 | 2 1/2 | 4 | 7/8 | 9.6 |
| 55 | TS1055 | 20 | 5.500 | 5.700 | B | 1 | 2 1/2 | 4 | 1 | 11.5 |
| 60 | TS1060 | 20 | 6.000 | 6.200 | B | 1 | 2 1/2 | 4 | 1 | 13.1 |

Cast

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|---------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 70 | TC1070 | 20 | 7.000 | 7.200 | B ₃ | 1 | 1 1/16 | 2 3/4 | 1 | 8.2 |
| 80 | TC1080 | 20 | 8.000 | 8.200 | B ₃ | 1 | 1 1/16 | 2 3/4 | 1 | 11.2 |
| 90 | TC1090 | 20 | 9.000 | 9.200 | B ₃ | 1 | 1 15/16 | 3 | 1 | 11.7 |
| 100 | TC10100 | 20 | 10.000 | 10.200 | B ₃ | 1 1/8 | 1 15/16 | 3 | 1 1/8 | 12.2 |

* Recommended maximum bore with keyway and set screw.

20° P.A. Gears Will Not Operate With 14 1/2° P.A.

Bored-to-Size

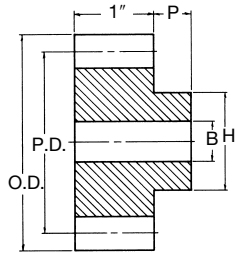
| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------------|------------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 12 | TS1012BS 5/8 | 20 | 1.200 | 1.400 | B | 5/8 | 3/16 X 3/32 | (1) 10-24 @ 90 | 29/32 | 5/8 | 0.40 |
| 14 | TS1014BS 5/8 | 20 | 1.400 | 1.600 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/64 | 5/8 | 0.60 |
| 15 | TS1015BS 3/4 | 20 | 1.500 | 1.700 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/32 | 5/8 | 0.60 |
| 16 | TS1016BS 3/4 | 20 | 1.600 | 1.800 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/16 | 5/8 | 0.70 |
| 18 | TS1018BS 7/8 | 20 | 1.800 | 2.000 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/32 | 5/8 | 0.90 |
| 20 | TS1020BS 7/8 | 20 | 2.000 | 2.200 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 39/64 | 5/8 | 1.20 |
| 20 | TS1020BS 1 | 20 | 2.000 | 2.200 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 1 39/64 | 5/8 | 1.20 |
| 24 | TS1024BS 7/8 | 20 | 2.400 | 2.600 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 13/16 | 5/8 | 1.50 |
| 24 | TS1024BS 1 | 20 | 2.400 | 2.600 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 1 13/16 | 5/8 | 1.50 |
| 25 | TS1025BS 7/8 | 20 | 2.500 | 2.700 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 2 1/64 | 5/8 | 2.00 |
| 25 | TS1025BS 1 | 20 | 2.500 | 2.700 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 2 1/64 | 5/8 | 2.00 |
| 28 | TS1028BS 7/8 | 20 | 2.800 | 3.000 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 2 13/32 | 5/8 | 2.70 |
| 28 | TS1028BS 1 | 20 | 2.800 | 3.000 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 2 13/32 | 5/8 | 2.70 |



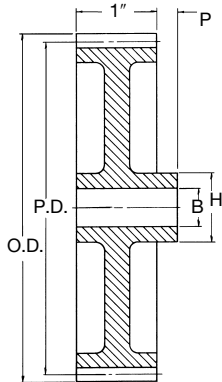
Steel & Cast Stock Spur Gears

20° Pressure Angle

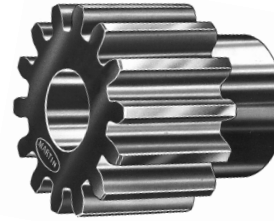
12 DP 1" Face



Type B



Type B₃



Type B
Plain With Hub All Steel



Type B₃
Web With Spokes Cast

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|--------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 12 | TS1212 | 20 | 1.000 | 1.167 | B | 1/2 | 1/2 | 3/4 | 5/8 | 0.21 |
| 13 | TS1213 | 20 | 1.083 | 1.250 | B | 5/8 | 5/8 | 13/16 | 5/8 | 0.21 |
| 14 | TS1214 | 20 | 1.167 | 1.333 | B | 5/8 | 5/8 | 29/32 | 5/8 | 0.28 |
| 15 | TS1215 | 20 | 1.250 | 1.417 | B | 5/8 | 5/8 | 63/64 | 5/8 | 0.34 |
| 16 | TS1216 | 20 | 1.333 | 1.500 | B | 5/8 | 5/8 | 1 1/16 | 5/8 | 0.41 |
| 18 | TS1218 | 20 | 1.500 | 1.667 | B | 3/4 | 3/4 | 1 1/4 | 5/8 | 0.51 |
| 19 | TS1219 | 20 | 1.583 | 1.750 | B | 3/4 | 3/4 | 1 1/16 | 5/8 | 0.59 |
| 20 | TS1220 | 20 | 1.667 | 1.833 | B | 3/4 | 3/4 | 1 1/16 | 5/8 | 0.65 |
| 21 | TS1221 | 20 | 1.750 | 1.917 | B | 3/4 | 13/16 | 1 5/16 | 5/8 | 0.75 |
| 22 | TS1222 | 20 | 1.833 | 2.000 | B | 3/4 | 7/8 | 1 1/8 | 5/8 | 0.88 |
| 24 | TS1224 | 20 | 2.000 | 2.166 | B | 3/4 | 15/16 | 1 3/4 | 5/8 | 1.06 |
| 25 | TS1225 | 20 | 2.083 | 2.250 | B | 3/4 | 1 1/16 | 1 1/16 | 5/8 | 1.22 |
| 26 | TS1226 | 20 | 2.167 | 2.333 | B | 3/4 | 1 1/8 | 1 1/8 | 5/8 | 1.33 |
| 28 | TS1228 | 20 | 2.333 | 2.500 | B | 3/4 | 1 1/4 | 2 1/16 | 5/8 | 1.60 |
| 30 | TS1230 | 20 | 2.500 | 2.667 | B | 3/4 | 1 5/16 | 2 5/16 | 5/8 | 1.83 |
| 32 | TS1232 | 20 | 2.667 | 2.833 | B | 3/4 | 1 5/8 | 2 1/4 | 5/8 | 2.08 |
| 36 | TS1236 | 20 | 3.000 | 3.167 | B | 3/4 | 1 3/4 | 2 1/2 | 7/8 | 2.98 |
| 42 | TS1242 | 20 | 3.500 | 3.666 | B | 3/4 | 1 3/4 | 2 1/2 | 7/8 | 3.71 |
| 48 | TS1248 | 20 | 4.000 | 4.166 | B | 7/8 | 1 1/2 | 3 | 7/8 | 4.99 |
| 54 | TS1254 | 20 | 4.500 | 4.666 | B | 7/8 | 2 1/8 | 3 1/2 | 7/8 | 6.57 |
| 60 | TS1260 | 20 | 5.000 | 5.166 | B | 7/8 | 2 1/2 | 3 1/2 | 7/8 | 7.63 |
| 66 | TS1266 | 20 | 5.500 | 5.666 | B | 7/8 | 2 1/2 | 3 1/2 | 7/8 | 8.80 |
| 72 | TS1272 | 20 | 6.000 | 6.166 | B | 7/8 | 2 1/2 | 3 1/2 | 7/8 | 10.08 |

Cast

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|--------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 84 | TC1284 | 20 | 7.000 | 7.166 | B ₃ | 7/8 | 1 1/16 | 2 1/2 | 7/8 | 5.9 |
| 96 | TC1296 | 20 | 8.000 | 8.166 | B ₃ | 7/8 | 1 1/16 | 2 1/2 | 7/8 | 7.0 |
| 108 | TC12108 | 20 | 9.000 | 9.166 | B ₃ | 7/8 | 1 1/16 | 2 1/2 | 7/8 | 7.6 |
| 120 | TC12120 | 20 | 10.000 | 10.166 | B ₃ | 1 | 1 1/16 | 2 1/2 | 7/8 | 10.3 |
| 144 | TC12144 | 20 | 12.000 | 12.166 | B ₃ | 1 | 1 1/16 | 2 1/2 | 1 | 10.4 |

Bored-to-Size

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------------|------------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 12 | TS1212BS 1/2 | 20 | 1.000 | 1.167 | B | 1/2 | NONE | (1) 10-24 | 3/4 | 5/8 | 0.21 |
| 13 | TS1213BS 5/8 | 20 | 1.083 | 1.250 | B | 5/8 | NONE | (1) 1/4-20 @ 90 | 13/16 | 5/8 | 0.21 |
| 14 | TS1214BS 5/8 | 20 | 1.167 | 1.333 | B | 5/8 | 3/16 X 3/32 | (1) 10-24 @ 90 | 29/32 | 5/8 | 0.28 |
| 15 | TS1215BS 5/8 | 20 | 1.250 | 1.417 | B | 5/8 | 3/16 X 3/32 | (1) 10-24 @ 90 | 63/64 | 5/8 | 0.34 |
| 16 | TS1216BS 5/8 | 20 | 1.333 | 1.500 | B | 5/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/16 | 5/8 | 0.41 |
| 18 | TS1218BS 3/4 | 20 | 1.500 | 1.667 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/4 | 5/8 | 0.51 |
| 20 | TS1220BS 3/4 | 20 | 1.667 | 1.833 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/16 | 5/8 | 0.65 |
| 21 | TS1221BS 3/4 | 20 | 1.750 | 1.917 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 25/64 | 5/8 | 0.75 |
| 21 | TS1221BS 7/8 | 20 | 1.750 | 1.917 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 25/64 | 5/8 | 0.75 |
| 24 | TS1224BS 3/4 | 20 | 2.000 | 2.167 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/16 | 5/8 | 1.06 |
| 24 | TS1224BS 7/8 | 20 | 2.000 | 2.167 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1 1/16 | 5/8 | 1.06 |
| 24 | TS1224BS 1 | 20 | 2.000 | 2.167 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 1 1/16 | 5/8 | 1.06 |
| 28 | TS1228BS 3/4 | 20 | 2.333 | 2.500 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 2 1/16 | 5/8 | 1.60 |
| 28 | TS1228BS 7/8 | 20 | 2.333 | 2.500 | B | 7/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 2 1/16 | 5/8 | 1.60 |
| 28 | TS1228BS 1 | 20 | 2.333 | 2.500 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 2 1/16 | 5/8 | 1.60 |

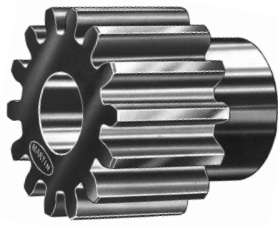
* Recommended maximum bore with keyway and set screw.

GEARS

16 DP 3/4" Face

Steel & Cast Stock Spur Gears 20° Pressure Angle

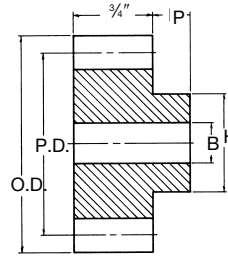
Martin



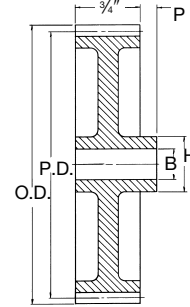
Type B
Plain With Hub All Steel



Type B₃
Web With Spokes Cast



Type B



Type B₃

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 12 | TS1612 | 20 | .750 | .875 | B | 3/8 | 3/8 | 3/16 | 1/2 | 0.09 |
| 13 | TS1613 | 20 | .812 | .938 | B | 3/8 | 3/8 | 3/16 | 1/2 | 0.11 |
| 14 | TS1614 | 20 | .875 | 1.000 | B | 3/8 | 3/8 | 1/16 | 1/2 | 0.14 |
| 15 | TS1615 | 20 | .937 | 1.063 | B | 3/8 | 1/2 | 3/16 | 1/2 | 0.17 |
| 16 | TS1616 | 20 | 1.000 | 1.125 | B | 1/2 | 1/2 | 1/16 | 1/2 | 0.17 |
| 17 | TS1617 | 20 | 1.062 | 1.188 | B | 1/2 | 1/2 | 7/16 | 1/2 | 0.20 |
| 18 | TS1618 | 20 | 1.125 | 1.250 | B | 1/2 | 1/2 | 1/16 | 1/2 | 0.24 |
| 20 | TS1620 | 20 | 1.250 | 1.375 | B | 3/4 | 3/4 | 1/16 | 1/2 | 0.28 |
| 21 | TS1621 | 20 | 1.312 | 1.438 | B | 3/4 | 3/4 | 1/16 | 1/2 | 0.32 |
| 22 | TS1622 | 20 | 1.375 | 1.500 | B | 3/4 | 3/4 | 1/16 | 1/2 | 0.36 |
| 24 | TS1624 | 20 | 1.500 | 1.625 | B | 3/4 | 3/4 | 1/16 | 1/2 | 0.46 |
| 26 | TS1626 | 20 | 1.625 | 1.750 | B | 3/4 | 3/4 | 1/16 | 1/2 | 0.56 |
| 28 | TS1628 | 20 | 1.750 | 1.875 | B | 3/4 | 3/4 | 1/2 | 1/2 | 0.65 |
| 30 | TS1630 | 20 | 1.875 | 2.000 | B | 3/4 | 1/16 | 1/2 | 1/2 | 0.77 |
| 32 | TS1632 | 20 | 2.000 | 2.125 | B | 3/4 | 1 | 1/4 | 1/2 | 0.90 |
| 36 | TS1636 | 20 | 2.250 | 2.375 | B | 3/4 | 1 1/4 | 2 | 1/2 | 1.18 |
| 40 | TS1640 | 20 | 2.500 | 2.625 | B | 3/4 | 1 1/4 | 2 | 3/8 | 1.48 |
| 48 | TS1648 | 20 | 3.000 | 3.125 | B | 3/4 | 1 1/4 | 2 | 3/8 | 1.94 |
| 56 | TS1656 | 20 | 3.500 | 3.625 | B | 3/4 | 1 1/2 | 2 1/2 | 3/8 | 2.79 |
| 60 | TS1660 | 20 | 3.750 | 3.875 | B | 3/4 | 1 1/2 | 2 1/2 | 3/8 | 3.28 |
| 64 | TS1664 | 20 | 4.000 | 4.125 | B | 3/4 | 1 1/2 | 2 1/2 | 3/4 | 3.74 |
| 72 | TS1672 | 20 | 4.500 | 4.625 | B | 3/4 | 1 1/2 | 3 | 3/4 | 4.69 |
| 80 | TS1680 | 20 | 5.000 | 5.125 | B | 3/4 | 2 1/2 | 3 1/2 | 3/4 | 6.03 |
| 84 | TS1684 | 20 | 5.250 | 5.375 | B | 3/4 | 2 1/2 | 3 1/2 | 3/4 | 6.46 |
| 96 | TS1696 | 20 | 6.000 | 6.125 | B | 3/4 | 2 1/2 | 3 1/2 | 3/4 | 7.86 |
| 104 | TS16104 | 20 | 6.500 | 6.625 | B | 3/4 | 2 1/2 | 3 1/2 | 3/4 | 8.91 |

Cast

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|----------------|---------------|--------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 112 | TC16112 | 20 | 7.000 | 7.125 | B ₃ | 3/4 | 1 1/16 | 2 1/2 | 3/4 | 4.4 |
| 128 | TC16128 | 20 | 8.000 | 8.125 | B ₃ | 3/4 | 1 1/16 | 2 3/4 | 3/4 | 5.5 |
| 144 | TC16144 | 20 | 9.000 | 9.125 | B ₃ | 3/4 | 1 1/16 | 2 3/4 | 3/4 | 6.4 |
| 160 | TC16160 | 20 | 10.000 | 10.125 | B ₃ | 3/4 | 1 1/16 | 2 3/4 | 3/4 | 8.1 |
| 192 | TC16192 | 20 | 12.000 | 12.125 | B ₃ | 3/4 | 1 3/16 | 3 | 1 | 10.1 |

* Recommended maximum bore with keyway and set screw.

20° P.A. Gears Will Not Operate With 14 1/2° P.A.

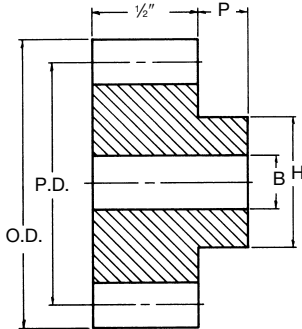
Bored-to-Size

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------------|------------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 12 | TS1612BS 3/8 | 20 | 0.750 | 0.875 | B | 3/8 | NONE | (1) 8-32 | 3/16 | 1/2 | 0.09 |
| 14 | TS1614BS 3/8 | 20 | 0.875 | 1.000 | B | 3/8 | NONE | (1) 10-24 | 1/16 | 1/2 | 0.14 |
| 15 | TS1615BS 3/8 | 20 | 0.937 | 1.063 | B | 3/8 | NONE | (1) 10-24 | 3/4 | 1/2 | 0.17 |
| 15 | TS1615BS 1/2 | 20 | 0.937 | 1.063 | B | 1/2 | NONE | (1) 10-24 | 3/4 | 1/2 | 0.17 |
| 16 | TS1616BS 1/2 | 20 | 1.000 | 1.125 | B | 1/2 | NONE | (1) 10-24 | 13/16 | 1/2 | 0.17 |
| 18 | TS1618BS 1/2 | 20 | 1.125 | 1.250 | B | 1/2 | NONE | (1) 1/4-20 | 15/16 | 1/2 | 0.24 |
| 20 | TS1620BS 5/8 | 20 | 1.250 | 1.375 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1/16 | 1/2 | 0.28 |
| 24 | TS1624BS 5/8 | 20 | 1.500 | 1.625 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1/16 | 1/2 | 0.46 |
| 24 | TS1624BS 3/4 | 20 | 1.500 | 1.625 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1/16 | 1/2 | 0.46 |
| 28 | TS1628BS 5/8 | 20 | 1.750 | 1.875 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1/2 | 1/2 | 0.65 |
| 28 | TS1628BS 3/4 | 20 | 1.750 | 1.875 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1/2 | 1/2 | 0.65 |
| 30 | TS1630BS 5/8 | 20 | 1.875 | 2.000 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1/2 | 1/2 | 0.77 |
| 30 | TS1630BS 3/4 | 20 | 1.875 | 2.000 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1/2 | 1/2 | 0.77 |
| 30 | TS1630BS 7/8 | 20 | 1.875 | 2.000 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1/2 | 1/2 | 0.77 |
| 32 | TS1632BS 5/8 | 20 | 2.000 | 2.125 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1/4 | 1/2 | 0.90 |
| 32 | TS1632BS 3/4 | 20 | 2.000 | 2.125 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1/4 | 1/2 | 0.90 |
| 32 | TS1632BS 7/8 | 20 | 2.000 | 2.125 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 1/4 | 1/2 | 0.90 |
| 32 | TS1632BS 1 | 20 | 2.000 | 2.125 | B | 1 | 1/4 X 1/8 | (1) 5/16-18 @ 90 | 1/4 | 1/2 | 0.90 |



**Steel Stock
Spur Gears**
20° Pressure Angle

20 DP
1/2" Face



Type B



Type B
Plain With Hub
All Steel

Steel

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Max.* | Diameter | Proj. | |
| 12 | TS2012 | 20 | .600 | .700 | B | 5/16 | 5/16 | 15/32 | 7/16 | 0.04 |
| 14 | TS2014 | 20 | .700 | .800 | B | 5/16 | 5/16 | 39/64 | 7/16 | 0.06 |
| 15 | TS2015 | 20 | .750 | .850 | B | 3/8 | 3/8 | 39/64 | 7/16 | 0.07 |
| 16 | TS2016 | 20 | .800 | .900 | B | 3/8 | 3/8 | 21/32 | 7/16 | 0.08 |
| 18 | TS2018 | 20 | .900 | 1.000 | B | 3/8 | 3/8 | 3/4 | 7/16 | 0.12 |
| 20 | TS2020 | 20 | 1.000 | 1.100 | B | 1/2 | 1/2 | 59/64 | 7/16 | 0.13 |
| 21 | TS2021 | 20 | 1.050 | 1.150 | B | 1/2 | 1/2 | 1/2 | 7/16 | 0.15 |
| 22 | TS2022 | 20 | 1.100 | 1.200 | B | 1/2 | 1/2 | 39/32 | 7/16 | 0.17 |
| 24 | TS2024 | 20 | 1.200 | 1.300 | B | 1/2 | 5/16 | 11/16 | 7/16 | 0.22 |
| 25 | TS2025 | 20 | 1.250 | 1.350 | B | 1/2 | 5/16 | 11/64 | 7/16 | 0.24 |
| 28 | TS2028 | 20 | 1.400 | 1.500 | B | 1/2 | 11/16 | 11/64 | 7/16 | 0.32 |
| 30 | TS2030 | 20 | 1.500 | 1.600 | B | 1/2 | 13/16 | 123/64 | 7/16 | 0.38 |
| 32 | TS2032 | 20 | 1.600 | 1.700 | B | 1/2 | 3/4 | 11/16 | 1/2 | 0.46 |
| 35 | TS2035 | 20 | 1.750 | 1.850 | B | 1/2 | 3/4 | 11/16 | 1/2 | 0.56 |
| 36 | TS2036 | 20 | 1.800 | 1.900 | B | 1/2 | 5/8 | 11/16 | 1/2 | 0.60 |
| 40 | TS2040 | 20 | 2.000 | 2.100 | B | 1/2 | 11/16 | 11/16 | 1/2 | 0.76 |
| 45 | TS2045 | 20 | 2.250 | 2.350 | B | 1/2 | 1 1/4 | 2 | 1/2 | 0.95 |
| 50 | TS2050 | 20 | 2.500 | 2.600 | B | 1/2 | 1 1/4 | 2 | 1/2 | 1.08 |
| 60 | TS2060 | 20 | 3.000 | 3.100 | B | 1/2 | 1 5/8 | 2 1/2 | 1/2 | 1.45 |
| 70 | TS2070 | 20 | 3.500 | 3.600 | B | 1/2 | 1 1/2 | 2 3/8 | 1/2 | 1.93 |
| 72 | TS2072 | 20 | 3.600 | 3.700 | B | 1/2 | 1 1/8 | 2 3/8 | 1/2 | 2.01 |
| 80 | TS2080 | 20 | 4.000 | 4.100 | B | 3/4 | 1 1/2 | 2 1/2 | 5/8 | 2.35 |
| 84 | TS2084 | 20 | 4.200 | 4.300 | B | 3/4 | 1 1/2 | 2 1/2 | 5/8 | 2.53 |
| 90 | TS2090 | 20 | 4.500 | 4.600 | B | 3/4 | 1 1/2 | 2 1/2 | 5/8 | 2.82 |
| 96 | TS2096 | 20 | 4.800 | 4.900 | B | 3/4 | 1 1/2 | 2 1/2 | 5/8 | 3.14 |
| 100 | TS20100 | 20 | 5.000 | 5.100 | B | 3/4 | 1 1/2 | 2 1/2 | 5/8 | 3.35 |
| 120 | TS20120 | 20 | 6.000 | 6.100 | B | 3/4 | 1 1/2 | 2 1/2 | 5/8 | 4.58 |

* Recommended maximum bore with keyway and set screw.

20° P.A. Gears Will Not Operate With 14 1/2° P.A.

Bored-to-Size

| No. Teeth | Catalog Number | Pressure Angle (Deg.) | Diameter | | Type | Bore (Inches) | | Set Screw | Hub (Inches) | | Weight Lbs. (App.) |
|-----------|----------------|-----------------------|----------|---------|------|---------------|-------------|-----------------|--------------|-------|--------------------|
| | | | Pitch | Outside | | Stock | Keyway | | Diameter | Proj. | |
| 12 | TS2012BS 5/16 | 20 | 0.600 | 0.700 | B | 5/16 | NONE | #35 P.H. | 15/32 | 7/16 | 0.04 |
| 14 | TS2014BS 5/16 | 20 | 0.700 | 0.800 | B | 5/16 | NONE | #35 P.H. | 35/64 | 7/16 | 0.06 |
| 15 | TS2015BS 3/8 | 20 | 0.750 | 0.850 | B | 3/8 | NONE | (1) 8-32 | 39/64 | 7/16 | 0.07 |
| 16 | TS2016BS 3/8 | 20 | 0.800 | 0.900 | B | 3/8 | NONE | (1) 8-32 | 21/32 | 7/16 | 0.08 |
| 18 | TS2018BS 3/8 | 20 | 0.900 | 1.000 | B | 3/8 | NONE | (1) 10-24 | 3/4 | 7/16 | 0.12 |
| 20 | TS2020BS 1/2 | 20 | 1.000 | 1.100 | B | 1/2 | NONE | (1) 10-24 | 59/64 | 7/16 | 0.13 |
| 24 | TS2024BS 1/2 | 20 | 1.200 | 1.300 | B | 1/2 | NONE | (1) 1/4-20 | 11/16 | 7/16 | 0.22 |
| 25 | TS2025BS 1/2 | 20 | 1.250 | 1.350 | B | 1/2 | NONE | (1) 1/4-20 | 11/64 | 7/16 | 0.24 |
| 30 | TS2030BS 1/2 | 20 | 1.500 | 1.600 | B | 1/2 | NONE | (1) 1/4-20 | 123/64 | 7/16 | 0.38 |
| 35 | TS2035BS 1/2 | 20 | 1.750 | 1.850 | B | 1/2 | NONE | (1) 1/4-20 | 119/16 | 1/2 | 0.56 |
| 40 | TS2040BS 1/2 | 20 | 2.000 | 2.100 | B | 1/2 | NONE | (1) 1/4-20 | 113/16 | 1/2 | 0.76 |
| 40 | TS2040BS 5/8 | 20 | 2.000 | 2.100 | B | 5/8 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 113/16 | 1/2 | 0.76 |
| 40 | TS2040BS 3/4 | 20 | 2.000 | 2.100 | B | 3/4 | 3/16 X 3/32 | (1) 1/4-20 @ 90 | 113/16 | 1/2 | 0.76 |

20° Horsepower Ratings (Approximate)



For
Class I Service (Service Factor = 1.0)

4 Diametral Pitch

20° Pressure Angle

3½" Face

| No. Teeth | 25 RPM | | 50 RPM | | 100 RPM | | 200 RPM | | 300 RPM | | 500 RPM | | 600 RPM | | 900 RPM | | 1200 RPM | | 1800 RPM | |
|-----------|--------|----|--------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|----------|----|----------|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI |
| 11 | 2.62 | | 5.09 | | 9.64 | | 17.41 | | 23.81 | | 33.72 | | 37.64 | | 46.69 | | 53.06 | | | |
| 12• | 3.10 | | 6.02 | | 11.40 | | 20.59 | | 28.15 | | 39.88 | | 44.52 | | 55.21 | | 62.75 | | | |
| 13 | 3.62 | | 7.03 | | 13.30 | | 24.03 | | 32.86 | | 46.55 | | 51.97 | | 64.45 | | 73.25 | | | |
| 14• | 4.07 | | 7.91 | | 14.98 | | 27.06 | | 37.00 | | 52.41 | | 58.51 | | 72.57 | | 82.48 | | | |
| 15• | 4.57 | | 8.88 | | 16.80 | | 30.35 | | 41.51 | | 58.80 | | 65.64 | | 81.41 | | 92.53 | | | |
| 16• | 4.97 | | 9.67 | | 18.30 | | 33.05 | | 45.20 | | 64.03 | | 71.47 | | 88.64 | | 100.75 | | | |
| 17 | 5.41 | | 10.51 | | 19.90 | | 35.95 | | 49.16 | | 69.64 | | 77.74 | | 96.42 | | | | | |
| 18• | 5.84 | | 11.35 | | 21.49 | | 38.82 | | 53.09 | | 75.20 | | 83.95 | | 104.12 | | | | | |
| 19 | 6.29 | | 12.22 | | 23.13 | | 41.77 | | 57.13 | | 80.93 | | 90.33 | | 112.04 | | | | | |
| 20• | 6.74 | | 13.11 | | 24.81 | | 44.81 | | 61.29 | | 86.81 | | 96.91 | | | | | | | |
| 21 | 7.19 | | 13.98 | | 26.46 | | 47.79 | | 65.36 | | 92.58 | | 103.34 | | | | | | | |
| 22• | 7.65 | | 14.87 | | 28.14 | | 50.83 | | 69.52 | | 98.48 | | 109.93 | | | | | | | |
| 24• | 8.52 | | 16.56 | | 31.35 | | 56.63 | | 77.45 | | 109.71 | | 122.47 | | | | | | | |
| 25 | 8.96 | | 17.41 | | 32.95 | | 59.52 | | 81.39 | | 115.30 | | 128.70 | | | | | | | |
| 26 | 9.43 | | 18.32 | | 34.67 | | 62.63 | | 85.65 | | 121.32 | | 135.43 | | | | | | | |
| 27 | 9.90 | | 19.24 | | 36.42 | | 65.79 | | 89.97 | | 127.45 | | 142.27 | | | | | | | |
| 28• | 10.39 | | 20.18 | | 38.21 | | 69.01 | | 94.38 | | 133.69 | | 149.24 | | | | | | | |
| 30• | 11.32 | | 22.00 | | 41.63 | | 75.20 | | 102.84 | | 145.69 | | | | | | | | | |
| 32• | 12.27 | | 23.85 | | 45.15 | | 81.56 | | 111.54 | | 158.00 | | | | | | | | | |
| 33 | 12.76 | | 24.80 | | 46.95 | | 84.80 | | 115.97 | | 164.28 | | | | | | | | | |
| 35 | 13.79 | | 26.81 | | 50.74 | | 91.66 | | 125.35 | | 177.56 | | | | | | | | | |
| 36• | 14.30 | | 27.79 | | 52.61 | | 95.03 | | 129.96 | | 184.10 | | | | | | | | | |
| 40• | 16.40 | | 31.87 | | 60.32 | | 108.95 | | 149.00 | | | | | | | | | | | |
| 42 | 17.39 | | 33.80 | | 63.98 | | 115.58 | | 158.06 | | | | | | | | | | | |
| 44• | 18.41 | | 35.77 | | 67.71 | | 122.31 | | 167.27 | | | | | | | | | | | |
| 45 | 18.92 | | 36.77 | | 69.60 | | 125.72 | | 171.93 | | | | | | | | | | | |
| 48• | 20.54 | | 39.91 | | 75.54 | | 136.46 | | 186.61 | | | | | | | | | | | |
| 50 | 21.50 | | 41.78 | | 79.08 | | 142.84 | | 195.35 | | | | | | | | | | | |
| 52 | 22.52 | | 43.77 | | 82.85 | | 149.65 | | 204.66 | | | | | | | | | | | |
| 54 | 23.56 | | 45.78 | | 86.66 | | 156.54 | | 214.08 | | | | | | | | | | | |
| 55 | 24.00 | | 46.63 | | 88.26 | | 159.44 | | 218.04 | | | | | | | | | | | |
| 56• | 24.49 | | 47.59 | | 90.09 | | 162.73 | | | | | | | | | | | | | |
| 60• | 26.62 | | 51.73 | | 97.92 | | 176.87 | | | | | | | | | | | | | |
| 64• | 28.60 | | 55.57 | | 105.19 | | 190.01 | | | | | | | | | | | | | |
| 66 | 29.63 | | 57.58 | | 108.99 | | 196.87 | | | | | | | | | | | | | |
| 70 | 31.65 | | 61.50 | | 116.41 | | 210.27 | | | | | | | | | | | | | |
| 72• | 32.55 | | 63.26 | | 119.73 | | 216.28 | | | | | | | | | | | | | |
| 80• | 36.76 | | 71.43 | | 135.21 | | 244.23 | | | | | | | | | | | | | |
| 84 | 38.86 | | 75.52 | | 142.94 | | 258.21 | | | | | | | | | | | | | |
| 88 | 40.80 | | 79.30 | | 150.09 | | | | | | | | | | | | | | | |
| 90 | 41.83 | | 81.28 | | 153.85 | | | | | | | | | | | | | | | |
| 96 | 44.92 | | 87.29 | | 165.23 | | | | | | | | | | | | | | | |
| 100 | 46.90 | | 91.13 | | 172.50 | | | | | | | | | | | | | | | |
| 108 | 50.87 | | 98.87 | | 187.14 | | | | | | | | | | | | | | | |
| 110 | 51.93 | | 100.92 | | 191.03 | | | | | | | | | | | | | | | |
| 112 | 52.88 | | 102.76 | | 194.50 | | | | | | | | | | | | | | | |
| 120 | 57.03 | | 110.84 | | 209.79 | | | | | | | | | | | | | | | |
| 144 | 54.18 | | 105.28 | | 199.28 | | | | | | | | | | | | | | | |
| 160 | 77.39 | | 150.40 | | 284.68 | | | | | | | | | | | | | | | |
| 200 | 97.58 | | 189.64 | | 358.95 | | | | | | | | | | | | | | | |

Ratings are based on strength calculation.

• Designates stock sizes for this pitch.

Note: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

GEARS



20° Horsepower Ratings (Approximate)

For
Class I Service (Service Factor = 1.0)

5 Diametral Pitch

20° Pressure Angle

2½" Face

| No. Teeth | 25 RPM | | 50 RPM | | 100 RPM | | 200 RPM | | 300 RPM | | 500 RPM | | 600 RPM | | 900 RPM | | 1200 RPM | | 1800 RPM | |
|-----------|--------|----|--------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|----------|----|----------|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI |
| 11• | 1.20 | | 2.35 | | 4.50 | | 8.28 | | 11.49 | | 16.67 | | 18.78 | | 23.82 | | 27.50 | | 32.54 | |
| 12 | 1.42 | | 2.78 | | 5.32 | | 9.79 | | 13.59 | | 19.71 | | 22.21 | | 28.17 | | 32.53 | | | |
| 13• | 1.66 | | 3.25 | | 6.21 | | 11.43 | | 15.86 | | 23.01 | | 25.93 | | 32.88 | | 37.97 | | | |
| 14• | 1.87 | | 3.66 | | 7.00 | | 12.87 | | 17.86 | | 25.90 | | 29.19 | | 37.02 | | 42.75 | | | |
| 15• | 2.10 | | 4.10 | | 7.85 | | 14.44 | | 20.04 | | 29.06 | | 32.75 | | 41.53 | | 47.96 | | | |
| 16 | 2.29 | | 4.47 | | 8.55 | | 15.72 | | 21.82 | | 31.64 | | 35.66 | | 45.22 | | 52.22 | | | |
| 17• | 2.49 | | 4.86 | | 9.30 | | 17.10 | | 23.73 | | 34.42 | | 38.79 | | 49.19 | | 56.80 | | | |
| 18 | 2.69 | | 5.25 | | 10.04 | | 18.46 | | 25.63 | | 37.17 | | 41.88 | | 53.11 | | 61.34 | | | |
| 19• | 2.89 | | 5.65 | | 10.80 | | 19.87 | | 27.58 | | 40.00 | | 45.07 | | 57.16 | | 66.01 | | | |
| 20 | 3.10 | | 6.06 | | 11.59 | | 21.31 | | 29.58 | | 42.91 | | 48.35 | | 61.31 | | | | | |
| 21 | 3.31 | | 6.46 | | 12.36 | | 22.73 | | 31.55 | | 45.76 | | 51.56 | | 65.39 | | | | | |
| 22• | 3.52 | | 6.87 | | 13.15 | | 24.18 | | 33.56 | | 48.67 | | 54.85 | | 69.55 | | | | | |
| 24• | 3.92 | | 7.66 | | 14.65 | | 26.93 | | 37.39 | | 54.22 | | 61.10 | | 77.49 | | | | | |
| 25 | 4.12 | | 8.05 | | 15.39 | | 28.30 | | 39.29 | | 56.98 | | 64.21 | | 81.43 | | | | | |
| 26 | 4.33 | | 8.47 | | 16.20 | | 29.78 | | 41.34 | | 59.96 | | 67.57 | | | | | | | |
| 27• | 4.55 | | 8.90 | | 17.02 | | 31.29 | | 43.43 | | 62.99 | | 70.98 | | | | | | | |
| 28• | 4.78 | | 9.33 | | 17.85 | | 32.82 | | 45.56 | | 66.08 | | 74.46 | | | | | | | |
| 30 | 5.20 | | 10.17 | | 19.45 | | 35.76 | | 49.64 | | 72.00 | | 81.14 | | | | | | | |
| 32 | 5.64 | | 11.03 | | 21.09 | | 38.79 | | 53.84 | | 78.09 | | 88.00 | | | | | | | |
| 33• | 5.87 | | 11.47 | | 21.93 | | 40.33 | | 55.98 | | 81.19 | | 91.49 | | | | | | | |
| 35 | 6.34 | | 12.40 | | 23.70 | | 43.59 | | 60.51 | | 87.76 | | 98.89 | | | | | | | |
| 36• | 6.58 | | 12.85 | | 24.58 | | 45.19 | | 62.73 | | 90.99 | | | | | | | | | |
| 40 | 7.54 | | 14.73 | | 28.18 | | 51.81 | | 71.92 | | 104.32 | | | | | | | | | |
| 42 | 8.00 | | 15.63 | | 29.89 | | 54.96 | | 76.30 | | 110.66 | | | | | | | | | |
| 44• | 8.46 | | 16.54 | | 31.63 | | 58.17 | | 80.74 | | 117.11 | | | | | | | | | |
| 45 | 8.70 | | 17.00 | | 32.51 | | 59.79 | | 82.99 | | | | | | | | | | | |
| 48• | 9.44 | | 18.45 | | 35.29 | | 64.89 | | 90.08 | | | | | | | | | | | |
| 50 | 9.89 | | 19.32 | | 36.94 | | 67.93 | | 94.30 | | | | | | | | | | | |
| 52 | 10.36 | | 20.24 | | 38.70 | | 71.17 | | 98.79 | | | | | | | | | | | |
| 54 | 10.83 | | 21.17 | | 40.48 | | 74.44 | | 103.34 | | | | | | | | | | | |
| 55 | 11.03 | | 21.56 | | 41.23 | | 75.82 | | 105.25 | | | | | | | | | | | |
| 56• | 11.26 | | 22.01 | | 42.08 | | 77.39 | | 107.42 | | | | | | | | | | | |
| 60 | 12.24 | | 23.92 | | 45.74 | | 84.11 | | 116.76 | | | | | | | | | | | |
| 64 | 13.15 | | 25.70 | | 49.14 | | 90.36 | | 125.43 | | | | | | | | | | | |
| 66• | 13.62 | | 26.62 | | 50.91 | | 93.62 | | 129.96 | | | | | | | | | | | |
| 70 | 14.55 | | 28.44 | | 54.38 | | 100.00 | | 138.81 | | | | | | | | | | | |
| 72• | 14.97 | | 29.25 | | 55.93 | | 102.85 | | | | | | | | | | | | | |
| 80 | 16.90 | | 33.03 | | 63.16 | | 116.15 | | | | | | | | | | | | | |
| 84 | 17.87 | | 34.92 | | 66.78 | | 122.79 | | | | | | | | | | | | | |
| 88• | 18.76 | | 36.67 | | 70.12 | | 128.93 | | | | | | | | | | | | | |
| 90 | 19.23 | | 37.58 | | 71.87 | | 132.16 | | | | | | | | | | | | | |
| 96• | 20.65 | | 40.36 | | 77.19 | | 141.93 | | | | | | | | | | | | | |
| 100 | 21.56 | | 42.14 | | 80.58 | | | | | | | | | | | | | | | |
| 108• | 23.39 | | 45.71 | | 87.42 | | | | | | | | | | | | | | | |
| 110 | 23.88 | | 46.67 | | 89.24 | | | | | | | | | | | | | | | |
| 112• | 24.31 | | 47.51 | | | | | | | | | | | | | | | | | |
| 120 | 26.23 | | 51.25 | | | | | | | | | | | | | | | | | |
| 144 | 24.91 | | 48.68 | | | | | | | | | | | | | | | | | |
| 160 | 35.59 | | 69.54 | | | | | | | | | | | | | | | | | |
| 200 | 44.87 | | 87.69 | | | | | | | | | | | | | | | | | |

Ratings are based on strength calculation.

• Designates stock sizes for this pitch.

Note: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

GEARS

20° Horsepower Ratings (Approximate)



For
Class I Service (Service Factor = 1.0)

6 Diametral Pitch

20° Pressure Angle

2" Face

| No. Teeth | 25 RPM | | 50 RPM | | 100 RPM | | 200 RPM | | 300 RPM | | 500 RPM | | 600 RPM | | 900 RPM | | 1200 RPM | | 1800 RPM | |
|-----------|--------|----|--------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|----------|----|----------|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI |
| 11• | 0.67 | | 1.32 | | 2.54 | | 4.73 | | 6.63 | | 9.79 | | 11.11 | | 14.34 | | 16.78 | | 20.21 | |
| 12• | 0.79 | | 1.56 | | 3.00 | | 5.59 | | 7.84 | | 11.58 | | 13.14 | | 16.96 | | 19.84 | | 23.91 | |
| 13 | 0.93 | | 1.82 | | 3.50 | | 6.52 | | 9.15 | | 13.51 | | 15.34 | | 19.80 | | 23.16 | | 27.91 | |
| 14• | 1.04 | | 2.05 | | 3.94 | | 7.35 | | 10.31 | | 15.21 | | 17.27 | | 22.29 | | 26.08 | | 31.42 | |
| 15• | 1.17 | | 2.30 | | 4.43 | | 8.24 | | 11.56 | | 17.07 | | 19.37 | | 25.01 | | 29.26 | | 35.25 | |
| 16• | 1.28 | | 2.50 | | 4.82 | | 8.97 | | 12.59 | | 18.58 | | 21.10 | | 27.23 | | 31.85 | | 38.38 | |
| 17 | 1.39 | | 2.72 | | 5.24 | | 9.76 | | 13.69 | | 20.21 | | 22.95 | | 29.61 | | 34.65 | | | |
| 18• | 1.50 | | 2.94 | | 5.66 | | 10.54 | | 14.79 | | 21.83 | | 24.78 | | 31.98 | | 37.42 | | | |
| 19 | 1.61 | | 3.16 | | 6.09 | | 11.34 | | 15.91 | | 23.49 | | 26.66 | | 34.41 | | 40.26 | | | |
| 20 | 1.73 | | 3.39 | | 6.53 | | 12.17 | | 17.07 | | 25.20 | | 28.60 | | 36.92 | | 43.19 | | | |
| 21• | 1.84 | | 3.62 | | 6.97 | | 12.97 | | 18.21 | | 26.87 | | 30.50 | | 39.37 | | 46.06 | | | |
| 22 | 1.96 | | 3.85 | | 7.41 | | 13.80 | | 19.37 | | 28.59 | | 32.45 | | 41.88 | | 49.00 | | | |
| 24• | 2.19 | | 4.29 | | 8.26 | | 15.38 | | 21.57 | | 31.85 | | 36.15 | | 46.65 | | 54.59 | | | |
| 25 | 2.30 | | 4.51 | | 8.68 | | 16.16 | | 22.67 | | 33.47 | | 37.99 | | 49.03 | | | | | |
| 26 | 2.42 | | 4.74 | | 9.13 | | 17.00 | | 23.86 | | 35.22 | | 39.97 | | 51.59 | | | | | |
| 27• | 2.54 | | 4.98 | | 9.59 | | 17.86 | | 25.06 | | 37.00 | | 41.99 | | 54.20 | | | | | |
| 28 | 2.66 | | 5.22 | | 10.06 | | 18.74 | | 26.29 | | 38.81 | | 44.05 | | 56.85 | | | | | |
| 30• | 2.90 | | 5.69 | | 10.97 | | 20.42 | | 28.65 | | 42.29 | | 48.00 | | 61.95 | | | | | |
| 32 | 3.15 | | 6.17 | | 11.89 | | 22.14 | | 31.07 | | 45.86 | | 52.06 | | | | | | | |
| 33• | 3.27 | | 6.42 | | 12.36 | | 23.02 | | 32.31 | | 47.69 | | 54.13 | | | | | | | |
| 35 | 3.54 | | 6.94 | | 13.36 | | 24.88 | | 34.92 | | 51.54 | | 58.50 | | | | | | | |
| 36• | 3.67 | | 7.19 | | 13.86 | | 25.80 | | 36.20 | | 53.44 | | 60.66 | | | | | | | |
| 40 | 4.21 | | 8.25 | | 15.89 | | 29.58 | | 41.51 | | 61.27 | | 69.54 | | | | | | | |
| 42• | 4.46 | | 8.75 | | 16.85 | | 31.38 | | 44.03 | | 64.99 | | 73.77 | | | | | | | |
| 44 | 4.72 | | 9.26 | | 17.83 | | 33.21 | | 46.59 | | 68.78 | | 78.07 | | | | | | | |
| 45 | 4.85 | | 9.52 | | 18.33 | | 34.13 | | 47.89 | | 70.70 | | 80.25 | | | | | | | |
| 48• | 5.27 | | 10.33 | | 19.90 | | 37.05 | | 51.98 | | 76.73 | | | | | | | | | |
| 50 | 5.51 | | 10.81 | | 20.83 | | 38.78 | | 54.42 | | 80.32 | | | | | | | | | |
| 52 | 5.78 | | 11.33 | | 21.82 | | 40.63 | | 57.01 | | 84.15 | | | | | | | | | |
| 54• | 6.04 | | 11.85 | | 22.82 | | 42.50 | | 59.63 | | 88.02 | | | | | | | | | |
| 55 | 6.15 | | 12.07 | | 23.25 | | 43.29 | | 60.74 | | | | | | | | | | | |
| 56 | 6.28 | | 12.32 | | 23.73 | | 44.18 | | 61.99 | | | | | | | | | | | |
| 60• | 6.83 | | 13.39 | | 25.79 | | 48.02 | | 67.38 | | | | | | | | | | | |
| 64• | 7.33 | | 14.39 | | 27.70 | | 51.59 | | 72.38 | | | | | | | | | | | |
| 66• | 7.60 | | 14.91 | | 28.71 | | 53.45 | | 75.00 | | | | | | | | | | | |
| 70 | 8.12 | | 15.92 | | 30.66 | | 57.09 | | 80.10 | | | | | | | | | | | |
| 72• | 8.35 | | 16.37 | | 31.54 | | 58.72 | | 82.39 | | | | | | | | | | | |
| 80 | 9.43 | | 18.49 | | 35.61 | | 66.31 | | 93.04 | | | | | | | | | | | |
| 84• | 9.97 | | 19.55 | | 37.65 | | 70.10 | | 98.36 | | | | | | | | | | | |
| 88 | 10.46 | | 20.53 | | 39.53 | | 73.61 | | 103.28 | | | | | | | | | | | |
| 90 | 10.73 | | 21.04 | | 40.52 | | 75.45 | | | | | | | | | | | | | |
| 96• | 11.52 | | 22.60 | | 43.52 | | 81.03 | | | | | | | | | | | | | |
| 100 | 12.03 | | 23.59 | | 45.43 | | 84.60 | | | | | | | | | | | | | |
| 108• | 13.05 | | 25.59 | | 49.29 | | 91.77 | | | | | | | | | | | | | |
| 110 | 13.32 | | 26.12 | | 50.31 | | 93.68 | | | | | | | | | | | | | |
| 112 | 13.56 | | 26.60 | | 51.23 | | 95.39 | | | | | | | | | | | | | |
| 120• | 14.63 | | 28.69 | | 55.25 | | | | | | | | | | | | | | | |
| 144 | 13.89 | | 27.25 | | 52.49 | | | | | | | | | | | | | | | |
| 160 | 19.85 | | 38.93 | | 74.98 | | | | | | | | | | | | | | | |
| 200 | 25.03 | | 49.09 | | 94.54 | | | | | | | | | | | | | | | |

Ratings are based on strength calculation.

• Designates stock sizes for this pitch.

Note: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

GEARS



20° Horsepower Ratings (Approximate)

For
Class I Service (Service Factor = 1.0)

8 Diametral Pitch

20° Pressure Angle

1½" Face

| No. Teeth | 25 RPM | | 50 RPM | | 100 RPM | | 200 RPM | | 300 RPM | | 500 RPM | | 600 RPM | | 900 RPM | | 1200 RPM | | 1800 RPM | |
|-----------|--------|------|--------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|----|----------|----|----------|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI |
| 11 | 0.28 | | 0.56 | | 1.09 | | 2.06 | | 2.94 | | 4.45 | | 5.10 | | 6.76 | | 8.07 | | 10.00 | |
| 12• | 0.34 | | 0.66 | | 1.29 | | 2.44 | | 3.48 | | 5.26 | | 6.03 | | 7.99 | | 9.54 | | 11.83 | |
| 13 | 0.39 | | 0.78 | | 1.51 | | 2.85 | | 4.06 | | 6.14 | | 7.04 | | 9.33 | | 11.14 | | 13.81 | |
| 14• | 0.44 | | 0.87 | | 1.70 | | 3.21 | | 4.57 | | 6.91 | | 7.93 | | 10.50 | | 12.54 | | 15.55 | |
| 15• | 0.50 | | 0.98 | | 1.90 | | 3.60 | | 5.13 | | 7.76 | | 8.90 | | 11.78 | | 14.07 | | 17.45 | |
| 16• | 0.54 | | 1.07 | | 2.07 | | 3.92 | | 5.58 | | 8.44 | | 9.69 | | 12.83 | | 15.31 | | 18.99 | |
| 17 | 0.59 | | 1.16 | | 2.25 | | 4.26 | | 6.07 | | 9.18 | | 10.53 | | 13.95 | | 16.66 | | 20.66 | |
| 18• | 0.64 | | 1.25 | | 2.43 | | 4.61 | | 6.56 | | 9.92 | | 11.38 | | 15.07 | | 17.99 | | 22.31 | |
| 19• | 0.68 | | 1.35 | | 2.62 | | 4.96 | | 7.06 | | 10.67 | | 12.24 | | 16.22 | | 19.36 | | 24.01 | |
| 20• | 0.73 | | 1.45 | | 2.81 | | 5.32 | | 7.57 | | 11.45 | | 13.13 | | 17.40 | | 20.77 | | 25.76 | |
| 21 | 0.78 | | 1.54 | | 3.00 | | 5.67 | | 8.07 | | 12.21 | | 14.00 | | 18.55 | | 22.14 | | | |
| 22• | 0.83 | | 1.64 | | 3.19 | | 6.03 | | 8.59 | | 12.99 | | 14.90 | | 19.73 | | 23.56 | | | |
| 24• | 0.93 | | 1.83 | | 3.55 | | 6.72 | | 9.56 | | 14.47 | | 16.60 | | 21.98 | | 26.24 | | | |
| 25 | 0.97 | | 1.92 | | 3.73 | | 7.06 | | 10.05 | | 15.21 | | 17.44 | | 23.10 | | 27.58 | | | |
| 26• | 1.02 | | 2.02 | | 3.93 | | 7.43 | | 10.58 | | 16.00 | | 18.35 | | 24.31 | | 29.02 | | | |
| 27 | 1.08 | | 2.12 | | 4.12 | | 7.80 | | 11.11 | | 16.81 | | 19.28 | | 25.54 | | 30.49 | | | |
| 28• | 1.13 | | 2.23 | | 4.33 | | 8.19 | | 11.66 | | 17.63 | | 20.22 | | 26.79 | | 31.98 | | | |
| 30• | 1.23 | | 2.43 | | 4.71 | | 8.92 | | 12.70 | | 19.21 | | 22.04 | | 29.19 | | 34.85 | | | |
| 32• | 1.33 | | 2.63 | | 5.11 | | 9.68 | | 13.77 | | 20.84 | | 23.90 | | 31.66 | | | | | |
| 33 | 1.39 | | 2.73 | | 5.31 | | 10.06 | | 14.32 | | 21.67 | | 24.85 | | 32.92 | | | | | |
| 35 | 1.50 | | 2.96 | | 5.74 | | 10.87 | | 15.48 | | 23.42 | | 26.86 | | 35.58 | | | | | |
| 36• | 1.56 | | 3.06 | | 5.96 | | 11.27 | | 16.05 | | 24.28 | | 27.85 | | 36.89 | | | | | |
| 40• | 1.78 | | 3.51 | | 6.83 | | 12.92 | | 18.40 | | 27.84 | | 31.93 | | 42.29 | | | | | |
| 42• | 1.89 | | 3.73 | | 7.24 | | 13.71 | | 19.52 | | 29.53 | | 33.87 | | 44.86 | | | | | |
| 44• | 2.00 | | 3.94 | | 7.67 | | 14.51 | | 20.66 | | 31.25 | | 35.84 | | 47.48 | | | | | |
| 45 | 2.06 | | 4.05 | | 7.88 | | 14.91 | | 21.23 | | 32.12 | | 36.84 | | | | | | | |
| 48• | 2.23 | | 4.40 | | 8.55 | | 16.19 | | 23.05 | | 34.86 | | 39.99 | | | | | | | |
| 50 | | 1.12 | | 2.21 | | 4.30 | | 8.13 | | 11.58 | | 17.52 | | 20.09 | | | | | | |
| 52• | | 1.18 | | 2.32 | | 4.50 | | 8.52 | | 12.13 | | 18.35 | | 21.05 | | | | | | |
| 54 | | 1.23 | | 2.42 | | 4.71 | | 8.91 | | 12.69 | | 19.20 | | 22.02 | | | | | | |
| 55 | | 1.25 | | 2.47 | | 4.80 | | 9.08 | | 12.93 | | 19.55 | | 22.43 | | | | | | |
| 56• | | 1.28 | | 2.52 | | 4.90 | | 9.27 | | 13.19 | | 19.96 | | 22.89 | | | | | | |
| 60• | | 1.39 | | 2.74 | | 5.32 | | 10.07 | | 14.34 | | 21.69 | | 24.88 | | | | | | |
| 64• | | 1.49 | | 2.94 | | 5.72 | | 10.82 | | 15.40 | | 23.30 | | | | | | | | |
| 66 | | 1.55 | | 3.05 | | 5.92 | | 11.21 | | 15.96 | | 24.14 | | | | | | | | |
| 70 | | 1.65 | | 3.26 | | 6.33 | | 11.97 | | 17.05 | | 25.79 | | | | | | | | |
| 72• | | 1.70 | | 3.35 | | 6.51 | | 12.32 | | 17.53 | | | | | | | | | | |
| 80• | | 1.92 | | 3.78 | | 7.35 | | 13.91 | | 19.80 | | | | | | | | | | |
| 84 | | 2.03 | | 4.00 | | 7.77 | | 14.70 | | 20.93 | | | | | | | | | | |
| 88• | | 2.13 | | 4.20 | | 8.16 | | 15.44 | | 21.98 | | | | | | | | | | |
| 90 | | 2.18 | | 4.30 | | 8.36 | | 15.82 | | 22.53 | | | | | | | | | | |
| 96• | | 2.34 | | 4.62 | | 8.98 | | 16.99 | | 24.20 | | | | | | | | | | |
| 100 | | 2.45 | | 4.82 | | 9.37 | | 17.74 | | 25.26 | | | | | | | | | | |
| 108 | | 2.66 | | 5.23 | | 10.17 | | 19.25 | | 27.40 | | | | | | | | | | |
| 110 | | 2.71 | | 5.34 | | 10.38 | | 19.65 | | 27.97 | | | | | | | | | | |
| 112• | | 2.76 | | 5.44 | | 10.57 | | 20.01 | | 28.48 | | | | | | | | | | |
| 120• | | 2.98 | | 5.87 | | 11.40 | | 21.58 | | 30.72 | | | | | | | | | | |
| 144• | | 2.83 | | 5.57 | | 10.83 | | 20.50 | | | | | | | | | | | | |
| 160• | | 4.04 | | 7.96 | | 15.47 | | 29.28 | | | | | | | | | | | | |
| 200 | | 5.09 | | 10.04 | | 19.51 | | 36.92 | | | | | | | | | | | | |

Ratings are based on strength calculation.

• Designates stock sizes for this pitch.

Note: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

GEARS

20° Horsepower Ratings (Approximate)



For
Class I Service (Service Factor = 1.0)

10 Diametral Pitch

20° Pressure Angle

1¼" Face

| No. Teeth | 25 RPM | | 50 RPM | | 100 RPM | | 200 RPM | | 300 RPM | | 500 RPM | | 600 RPM | | 900 RPM | | 1200 RPM | | 1800 RPM | |
|-----------|--------|------|--------|------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|----|----------|----|----------|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI |
| 11 | 0.15 | | 0.30 | | 0.59 | | 1.13 | | 1.62 | | 2.49 | | 2.87 | | 3.88 | | 4.70 | | 5.95 | |
| 12• | 0.18 | | 0.36 | | 0.70 | | 1.33 | | 1.91 | | 2.94 | | 3.40 | | 4.58 | | 5.55 | | 7.04 | |
| 13 | 0.21 | | 0.42 | | 0.81 | | 1.55 | | 2.23 | | 3.43 | | 3.97 | | 5.35 | | 6.48 | | 8.22 | |
| 14• | 0.24 | | 0.47 | | 0.91 | | 1.75 | | 2.51 | | 3.87 | | 4.47 | | 6.02 | | 7.30 | | 9.25 | |
| 15• | 0.27 | | 0.53 | | 1.03 | | 1.96 | | 2.82 | | 4.34 | | 5.01 | | 6.76 | | 8.19 | | 10.38 | |
| 16• | 0.29 | | 0.57 | | 1.12 | | 2.14 | | 3.07 | | 4.72 | | 5.45 | | 7.36 | | 8.91 | | 11.30 | |
| 17 | 0.31 | | 0.62 | | 1.22 | | 2.32 | | 3.34 | | 5.14 | | 5.93 | | 8.00 | | 9.70 | | 12.30 | |
| 18• | 0.34 | | 0.67 | | 1.31 | | 2.51 | | 3.61 | | 5.55 | | 6.41 | | 8.64 | | 10.47 | | 13.28 | |
| 19 | 0.37 | | 0.72 | | 1.41 | | 2.70 | | 3.88 | | 5.97 | | 6.89 | | 9.30 | | 11.27 | | 14.29 | |
| 20• | 0.39 | | 0.78 | | 1.52 | | 2.90 | | 4.16 | | 6.40 | | 7.40 | | 9.98 | | 12.09 | | 15.33 | |
| 21 | 0.42 | | 0.83 | | 1.62 | | 3.09 | | 4.44 | | 6.83 | | 7.89 | | 10.64 | | 12.89 | | 16.35 | |
| 22• | 0.44 | | 0.88 | | 1.72 | | 3.29 | | 4.72 | | 7.26 | | 8.39 | | 11.32 | | 13.71 | | 17.39 | |
| 24• | 0.50 | | 0.98 | | 1.91 | | 3.66 | | 5.26 | | 8.09 | | 9.35 | | 12.61 | | 15.28 | | 19.37 | |
| 25• | 0.52 | | 1.03 | | 2.01 | | 3.85 | | 5.53 | | 8.50 | | 9.82 | | 13.25 | | 16.05 | | 20.36 | |
| 26• | 0.55 | | 1.08 | | 2.12 | | 4.05 | | 5.82 | | 8.95 | | 10.34 | | 13.94 | | 16.89 | | | |
| 27 | 0.58 | | 1.14 | | 2.22 | | 4.25 | | 6.11 | | 9.40 | | 10.86 | | 14.65 | | 17.75 | | | |
| 28• | 0.60 | | 1.19 | | 2.33 | | 4.46 | | 6.41 | | 9.86 | | 11.39 | | 15.37 | | 18.61 | | | |
| 30• | 0.66 | | 1.30 | | 2.54 | | 4.86 | | 6.99 | | 10.74 | | 12.41 | | 16.74 | | 20.28 | | | |
| 32• | 0.71 | | 1.41 | | 2.76 | | 5.27 | | 7.58 | | 11.65 | | 13.46 | | 18.16 | | 22.00 | | | |
| 33 | 0.74 | | 1.47 | | 2.87 | | 5.48 | | 7.88 | | 12.11 | | 14.00 | | 18.88 | | 22.87 | | | |
| 35• | 0.80 | | 1.59 | | 3.10 | | 5.93 | | 8.52 | | 13.09 | | 15.13 | | 20.41 | | 24.72 | | | |
| 36• | 0.83 | | 1.64 | | 3.21 | | 6.14 | | 8.83 | | 13.58 | | 15.68 | | 21.16 | | 25.63 | | | |
| 40• | 0.95 | | 1.88 | | 3.68 | | 7.04 | | 10.12 | | 15.56 | | 17.98 | | 24.26 | | | | | |
| 42 | 1.01 | | 2.00 | | 3.91 | | 7.47 | | 10.74 | | 16.51 | | 19.07 | | 25.73 | | | | | |
| 44 | 1.07 | | 2.12 | | 4.14 | | 7.91 | | 11.36 | | 17.47 | | 20.19 | | 27.23 | | | | | |
| 45• | 1.10 | | 2.18 | | 4.25 | | 8.13 | | 11.68 | | 17.96 | | 20.75 | | 27.99 | | | | | |
| 48• | 1.19 | | 2.36 | | 4.61 | | 8.82 | | 12.68 | | 19.49 | | 22.52 | | 30.38 | | | | | |
| 50• | 1.25 | | 2.47 | | 4.83 | | 9.24 | | 13.27 | | 20.41 | | 23.57 | | | | | | | |
| 52 | 1.31 | | 2.59 | | 5.06 | | 9.68 | | 13.90 | | 21.38 | | 24.70 | | | | | | | |
| 54 | 1.37 | | 2.71 | | 5.29 | | 10.12 | | 14.54 | | 22.36 | | 25.83 | | | | | | | |
| 55• | 1.40 | | 2.76 | | 5.39 | | 10.31 | | 14.81 | | 22.78 | | 26.31 | | | | | | | |
| 56 | 1.42 | | 2.82 | | 5.50 | | 10.52 | | 15.12 | | 23.25 | | 26.86 | | | | | | | |
| 60• | 1.55 | | 3.06 | | 5.98 | | 11.44 | | 16.43 | | 25.27 | | 29.19 | | | | | | | |
| 64 | | 0.80 | | 1.58 | | 3.08 | | 5.90 | | 8.47 | | 13.03 | | 15.05 | | | | | | |
| 66 | | 0.83 | | 1.63 | | 3.19 | | 6.11 | | 8.78 | | 13.50 | | 15.60 | | | | | | |
| 70• | | 0.88 | | 1.75 | | 3.41 | | 6.53 | | 9.38 | | 14.42 | | 16.66 | | | | | | |
| 72 | | 0.91 | | 1.80 | | 3.51 | | 6.71 | | 9.65 | | 14.83 | | 17.13 | | | | | | |
| 80• | | 1.03 | | 2.03 | | 3.96 | | 7.58 | | 10.89 | | 16.75 | | | | | | | | |
| 84 | | 1.08 | | 2.14 | | 4.19 | | 8.01 | | 11.52 | | 17.71 | | | | | | | | |
| 88 | | 1.14 | | 2.25 | | 4.40 | | 8.41 | | 12.09 | | 18.59 | | | | | | | | |
| 90• | | 1.17 | | 2.31 | | 4.51 | | 8.62 | | 12.39 | | 19.06 | | | | | | | | |
| 96 | | 1.25 | | 2.48 | | 4.84 | | 9.26 | | 13.31 | | | | | | | | | | |
| 100• | | 1.31 | | 2.59 | | 5.06 | | 9.67 | | 13.90 | | | | | | | | | | |
| 108 | | 1.42 | | 2.81 | | 5.49 | | 10.49 | | 15.08 | | | | | | | | | | |
| 110 | | 1.45 | | 2.87 | | 5.60 | | 10.71 | | 15.39 | | | | | | | | | | |
| 112 | | 1.48 | | 2.92 | | 5.70 | | 10.90 | | 15.67 | | | | | | | | | | |
| 120 | | 1.59 | | 3.15 | | 6.15 | | 11.76 | | 16.90 | | | | | | | | | | |
| 144 | | 1.51 | | 2.99 | | 5.84 | | 11.17 | | 16.05 | | | | | | | | | | |
| 160 | | 2.16 | | 4.27 | | 8.35 | | 15.96 | | 22.93 | | | | | | | | | | |
| 200 | | 2.72 | | 5.38 | | 10.52 | | 20.12 | | 28.92 | | | | | | | | | | |

Ratings are based on strength calculation.

• Designates stock sizes for this pitch.

Note: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

GEARS



20° Horsepower Ratings (Approximate)

For
Class I Service (Service Factor = 1.0)

12 Diametral Pitch

20° Pressure Angle

1" Face

| No. Teeth | 25 RPM | | 50 RPM | | 100 RPM | | 200 RPM | | 300 RPM | | 500 RPM | | 600 RPM | | 900 RPM | | 1200 RPM | | 1800 RPM | |
|-----------|--------|------|--------|------|---------|------|---------|-------|---------|-------|---------|-------|---------|-------|---------|----|----------|----|----------|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI |
| 11 | 0.08 | | 0.17 | | 0.33 | | 0.63 | | 0.92 | | 1.43 | | 1.66 | | 2.27 | | 2.78 | | 3.58 | |
| 12• | 0.10 | | 0.20 | | 0.39 | | 0.75 | | 1.09 | | 1.69 | | 1.96 | | 2.68 | | 3.28 | | 4.24 | |
| 13• | 0.12 | | 0.23 | | 0.45 | | 0.88 | | 1.27 | | 1.97 | | 2.29 | | 3.13 | | 3.83 | | 4.95 | |
| 14• | 0.13 | | 0.26 | | 0.51 | | 0.99 | | 1.43 | | 2.22 | | 2.58 | | 3.52 | | 4.32 | | 5.57 | |
| 15• | 0.15 | | 0.29 | | 0.57 | | 1.11 | | 1.60 | | 2.49 | | 2.89 | | 3.95 | | 4.84 | | 6.25 | |
| 16• | 0.16 | | 0.32 | | 0.63 | | 1.20 | | 1.74 | | 2.71 | | 3.15 | | 4.30 | | 5.27 | | 6.81 | |
| 17 | 0.18 | | 0.35 | | 0.68 | | 1.31 | | 1.90 | | 2.95 | | 3.42 | | 4.68 | | 5.74 | | 7.40 | |
| 18• | 0.19 | | 0.37 | | 0.73 | | 1.42 | | 2.05 | | 3.18 | | 3.70 | | 5.06 | | 6.19 | | 7.99 | |
| 19• | 0.20 | | 0.40 | | 0.79 | | 1.52 | | 2.20 | | 3.43 | | 3.98 | | 5.44 | | 6.67 | | 8.60 | |
| 20• | 0.22 | | 0.43 | | 0.85 | | 1.63 | | 2.36 | | 3.68 | | 4.27 | | 5.84 | | 7.15 | | 9.23 | |
| 21• | 0.23 | | 0.46 | | 0.90 | | 1.74 | | 2.52 | | 3.92 | | 4.55 | | 6.22 | | 7.63 | | 9.84 | |
| 22• | 0.25 | | 0.49 | | 0.96 | | 1.85 | | 2.68 | | 4.17 | | 4.84 | | 6.62 | | 8.11 | | 10.47 | |
| 24• | 0.28 | | 0.55 | | 1.07 | | 2.06 | | 2.99 | | 4.64 | | 5.39 | | 7.38 | | 9.04 | | 11.66 | |
| 25• | 0.29 | | 0.57 | | 1.13 | | 2.17 | | 3.14 | | 4.88 | | 5.67 | | 7.75 | | 9.50 | | 12.26 | |
| 26• | 0.31 | | 0.60 | | 1.19 | | 2.28 | | 3.30 | | 5.14 | | 5.96 | | 8.16 | | 9.99 | | 12.90 | |
| 27 | 0.32 | | 0.63 | | 1.25 | | 2.40 | | 3.47 | | 5.40 | | 6.27 | | 8.57 | | 10.50 | | 13.55 | |
| 28• | 0.34 | | 0.67 | | 1.31 | | 2.52 | | 3.64 | | 5.66 | | 6.57 | | 8.99 | | 11.01 | | 14.21 | |
| 30• | 0.37 | | 0.73 | | 1.42 | | 2.74 | | 3.96 | | 6.17 | | 7.16 | | 9.79 | | 12.00 | | 15.49 | |
| 32• | 0.40 | | 0.79 | | 1.54 | | 2.97 | | 4.30 | | 6.69 | | 7.77 | | 10.62 | | 13.01 | | | |
| 33 | 0.41 | | 0.82 | | 1.61 | | 3.09 | | 4.47 | | 6.95 | | 8.08 | | 11.05 | | 13.53 | | | |
| 35 | 0.45 | | 0.88 | | 1.73 | | 3.34 | | 4.83 | | 7.52 | | 8.73 | | 11.94 | | 14.63 | | | |
| 36• | 0.46 | | 0.92 | | 1.80 | | 3.46 | | 5.01 | | 7.79 | | 9.05 | | 12.38 | | 15.16 | | | |
| 40 | 0.53 | | 1.05 | | 2.06 | | 3.97 | | 5.74 | | 8.94 | | 10.38 | | 14.19 | | 17.39 | | | |
| 42• | 0.56 | | 1.12 | | 2.19 | | 4.21 | | 6.09 | | 9.48 | | 11.01 | | 15.05 | | 18.44 | | | |
| 44 | 0.60 | | 1.18 | | 2.32 | | 4.46 | | 6.45 | | 10.03 | | 11.65 | | 15.93 | | 19.52 | | | |
| 45 | 0.61 | | 1.21 | | 2.38 | | 4.58 | | 6.63 | | 10.31 | | 11.97 | | 16.37 | | 20.06 | | | |
| 48• | 0.66 | | 1.32 | | 2.58 | | 4.97 | | 7.19 | | 11.19 | | 13.00 | | 17.77 | | | | | |
| 50 | 0.70 | | 1.38 | | 2.70 | | 5.21 | | 7.53 | | 11.71 | | 13.60 | | 18.60 | | | | | |
| 52 | 0.73 | | 1.44 | | 2.83 | | 5.45 | | 7.89 | | 12.27 | | 14.25 | | 19.49 | | | | | |
| 54• | 0.76 | | 1.51 | | 2.96 | | 5.71 | | 8.25 | | 12.84 | | 14.91 | | 20.39 | | | | | |
| 55 | 0.78 | | 1.54 | | 3.02 | | 5.81 | | 8.41 | | 13.08 | | 15.18 | | 20.77 | | | | | |
| 56 | 0.79 | | 1.57 | | 3.08 | | 5.93 | | 8.58 | | 13.35 | | 15.50 | | 21.19 | | | | | |
| 60• | 0.86 | | 1.71 | | 3.35 | | 6.45 | | 9.33 | | 14.51 | | 16.84 | | 23.04 | | | | | |
| 64 | 0.93 | | 1.83 | | 3.60 | | 6.93 | | 10.02 | | 15.58 | | 18.10 | | 24.75 | | | | | |
| 66• | 0.96 | | 1.90 | | 3.73 | | 7.18 | | 10.38 | | 16.15 | | 18.75 | | | | | | | |
| 70 | 1.02 | | 2.03 | | 3.98 | | 7.66 | | 11.09 | | 17.24 | | 20.03 | | | | | | | |
| 72• | 1.05 | | 2.09 | | 4.09 | | 7.88 | | 11.40 | | | | | | | | | | | |
| 80 | | 0.57 | | 1.13 | | 2.22 | | 4.27 | | 6.18 | | 9.61 | | 11.16 | | | | | | |
| 84• | | 0.60 | | 1.20 | | 2.35 | | 4.52 | | 6.53 | | 10.16 | | 11.80 | | | | | | |
| 88 | | 0.63 | | 1.26 | | 2.46 | | 4.74 | | 6.86 | | 10.67 | | 12.39 | | | | | | |
| 90 | | 0.65 | | 1.29 | | 2.52 | | 4.86 | | 7.03 | | 10.94 | | | | | | | | |
| 96• | | 0.70 | | 1.38 | | 2.71 | | 5.22 | | 7.55 | | 11.75 | | | | | | | | |
| 100 | | 0.73 | | 1.44 | | 2.83 | | 5.45 | | 7.89 | | 12.27 | | | | | | | | |
| 108• | | 0.79 | | 1.57 | | 3.07 | | 5.91 | | 8.55 | | 13.31 | | | | | | | | |
| 110 | | 0.81 | | 1.60 | | 3.13 | | 6.04 | | 8.73 | | 13.58 | | | | | | | | |
| 112 | | 0.82 | | 1.63 | | 3.19 | | 6.15 | | 8.89 | | | | | | | | | | |
| 120• | | 0.89 | | 1.76 | | 3.44 | | 6.63 | | 9.59 | | | | | | | | | | |
| 144• | | 0.84 | | 1.67 | | 3.27 | | 6.30 | | 9.11 | | | | | | | | | | |
| 160 | | 1.20 | | 2.38 | | 4.67 | | 9.00 | | 13.01 | | | | | | | | | | |
| 200 | | 1.52 | | 3.00 | | 5.89 | | 11.34 | | 16.41 | | | | | | | | | | |

Ratings are based on strength calculation.

• Designates stock sizes for this pitch.

Note: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

GEARS

20° Horsepower Ratings (Approximate)



For
Class I Service (Service Factor = 1.0)

16 Diametral Pitch

20° Pressure Angle

3/4" Face

| No. Teeth | 25 RPM | | 50 RPM | | 100 RPM | | 200 RPM | | 300 RPM | | 500 RPM | | 600 RPM | | 900 RPM | | 1200 RPM | | 1800 RPM | |
|-----------|--------|------|--------|------|---------|------|---------|------|---------|------|---------|-------|---------|------|---------|----|----------|----|----------|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI |
| 11 | 0.04 | | 0.07 | | 0.14 | | 0.27 | | 0.40 | | 0.63 | | 0.73 | | 1.02 | | 1.28 | | 1.69 | |
| 12• | 0.04 | | 0.08 | | 0.17 | | 0.32 | | 0.47 | | 0.74 | | 0.87 | | 1.21 | | 1.51 | | 2.00 | |
| 13• | 0.05 | | 0.10 | | 0.19 | | 0.38 | | 0.55 | | 0.87 | | 1.01 | | 1.41 | | 1.76 | | 2.33 | |
| 14• | 0.06 | | 0.11 | | 0.22 | | 0.42 | | 0.62 | | 0.98 | | 1.14 | | 1.59 | | 1.98 | | 2.63 | |
| 15• | 0.06 | | 0.12 | | 0.24 | | 0.48 | | 0.69 | | 1.10 | | 1.28 | | 1.79 | | 2.22 | | 2.95 | |
| 16• | 0.07 | | 0.14 | | 0.27 | | 0.52 | | 0.76 | | 1.19 | | 1.40 | | 1.94 | | 2.42 | | 3.21 | |
| 17• | 0.07 | | 0.15 | | 0.29 | | 0.56 | | 0.82 | | 1.30 | | 1.52 | | 2.12 | | 2.63 | | 3.49 | |
| 18• | 0.08 | | 0.16 | | 0.31 | | 0.61 | | 0.89 | | 1.40 | | 1.64 | | 2.28 | | 2.84 | | 3.77 | |
| 19 | 0.09 | | 0.17 | | 0.34 | | 0.65 | | 0.95 | | 1.51 | | 1.76 | | 2.46 | | 3.06 | | 4.05 | |
| 20• | 0.09 | | 0.18 | | 0.36 | | 0.70 | | 1.02 | | 1.62 | | 1.89 | | 2.64 | | 3.28 | | 4.35 | |
| 21• | 0.10 | | 0.20 | | 0.39 | | 0.75 | | 1.09 | | 1.73 | | 2.02 | | 2.81 | | 3.50 | | 4.64 | |
| 22• | 0.10 | | 0.21 | | 0.41 | | 0.80 | | 1.16 | | 1.84 | | 2.15 | | 2.99 | | 3.72 | | 4.93 | |
| 24• | 0.12 | | 0.23 | | 0.46 | | 0.89 | | 1.29 | | 2.04 | | 2.39 | | 3.33 | | 4.15 | | 5.50 | |
| 25 | 0.12 | | 0.24 | | 0.48 | | 0.93 | | 1.36 | | 2.15 | | 2.51 | | 3.50 | | 4.36 | | 5.78 | |
| 26• | 0.13 | | 0.26 | | 0.50 | | 0.98 | | 1.43 | | 2.26 | | 2.64 | | 3.69 | | 4.59 | | 6.08 | |
| 27 | 0.14 | | 0.27 | | 0.53 | | 1.03 | | 1.50 | | 2.38 | | 2.78 | | 3.87 | | 4.82 | | 6.38 | |
| 28• | 0.14 | | 0.28 | | 0.56 | | 1.08 | | 1.58 | | 2.49 | | 2.91 | | 4.06 | | 5.06 | | 6.70 | |
| 30• | 0.15 | | 0.31 | | 0.61 | | 1.18 | | 1.72 | | 2.72 | | 3.18 | | 4.43 | | 5.51 | | 7.30 | |
| 32• | 0.17 | | 0.33 | | 0.66 | | 1.28 | | 1.86 | | 2.94 | | 3.44 | | 4.80 | | 5.98 | | 7.91 | |
| 33 | 0.17 | | 0.35 | | 0.68 | | 1.33 | | 1.94 | | 3.06 | | 3.58 | | 4.99 | | 6.21 | | 8.23 | |
| 35 | 0.19 | | 0.37 | | 0.74 | | 1.44 | | 2.09 | | 3.31 | | 3.87 | | 5.39 | | 6.72 | | 8.89 | |
| 36• | 0.20 | | 0.39 | | 0.77 | | 1.49 | | 2.17 | | 3.43 | | 4.01 | | 5.59 | | 6.96 | | 9.22 | |
| 40• | 0.22 | | 0.45 | | 0.88 | | 1.71 | | 2.49 | | 3.93 | | 4.60 | | 6.41 | | 7.98 | | 10.57 | |
| 42 | 0.24 | | 0.47 | | 0.93 | | 1.81 | | 2.64 | | 4.17 | | 4.88 | | 6.80 | | 8.47 | | | |
| 44 | 0.25 | | 0.50 | | 0.99 | | 1.92 | | 2.80 | | 4.42 | | 5.16 | | 7.20 | | 8.96 | | | |
| 45 | 0.26 | | 0.51 | | 1.01 | | 1.97 | | 2.87 | | 4.54 | | 5.31 | | 7.40 | | 9.21 | | | |
| 48• | 0.28 | | 0.56 | | 1.10 | | 2.14 | | 3.12 | | 4.93 | | 5.76 | | 8.03 | | 10.00 | | | |
| 50 | 0.29 | | 0.58 | | 1.15 | | 2.24 | | 3.26 | | 5.16 | | 6.03 | | 8.41 | | 10.47 | | | |
| 52 | 0.31 | | 0.61 | | 1.21 | | 2.34 | | 3.42 | | 5.40 | | 6.32 | | 8.81 | | 10.96 | | | |
| 54 | 0.32 | | 0.64 | | 1.26 | | 2.45 | | 3.58 | | 5.65 | | 6.61 | | 9.21 | | 11.47 | | | |
| 55 | 0.33 | | 0.65 | | 1.29 | | 2.50 | | 3.64 | | 5.76 | | 6.73 | | 9.38 | | 11.68 | | | |
| 56• | 0.34 | | 0.67 | | 1.31 | | 2.55 | | 3.72 | | 5.88 | | 6.87 | | 9.58 | | | | | |
| 60• | 0.36 | | 0.72 | | 1.43 | | 2.77 | | 4.04 | | 6.39 | | 7.47 | | 10.41 | | | | | |
| 64• | 0.39 | | 0.78 | | 1.53 | | 2.98 | | 4.34 | | 6.86 | | 8.02 | | 11.18 | | | | | |
| 66 | 0.41 | | 0.81 | | 1.59 | | 3.08 | | 4.50 | | 7.11 | | 8.31 | | 11.58 | | | | | |
| 70 | 0.43 | | 0.86 | | 1.70 | | 3.29 | | 4.81 | | 7.59 | | 8.88 | | 12.37 | | | | | |
| 72• | 0.45 | | 0.88 | | 1.74 | | 3.39 | | 4.94 | | 7.81 | | 9.13 | | 12.73 | | | | | |
| 80• | 0.50 | | 1.00 | | 1.97 | | 3.83 | | 5.58 | | 8.82 | | 10.31 | | 14.37 | | | | | |
| 84• | 0.53 | | 1.06 | | 2.08 | | 4.05 | | 5.90 | | 9.32 | | 10.90 | | 15.19 | | | | | |
| 88• | 0.56 | | 1.11 | | 2.19 | | 4.25 | | 6.20 | | 9.79 | | 11.45 | | | | | | | |
| 90 | 0.57 | | 1.14 | | 2.24 | | 4.35 | | 6.35 | | 10.03 | | 11.73 | | | | | | | |
| 96• | 0.62 | | 1.22 | | 2.41 | | 4.68 | | 6.82 | | 10.78 | | 12.60 | | | | | | | |
| 100 | 0.64 | | 1.27 | | 2.51 | | 4.88 | | 7.12 | | 11.25 | | 13.16 | | | | | | | |
| 108 | | 0.33 | | 0.66 | | 1.31 | | 2.54 | | 3.71 | | 5.86 | | 6.85 | | | | | | |
| 110 | | 0.34 | | 0.68 | | 1.34 | | 2.60 | | 3.79 | | 5.98 | | 6.99 | | | | | | |
| 112• | | 0.35 | | 0.69 | | 1.36 | | 2.64 | | 3.85 | | 6.09 | | 7.12 | | | | | | |
| 120 | | 0.37 | | 0.74 | | 1.47 | | 2.85 | | 4.16 | | 6.57 | | 7.68 | | | | | | |
| 144• | | 0.36 | | 0.71 | | 1.39 | | 2.71 | | 3.95 | | 6.24 | | | | | | | | |
| 160• | | 0.51 | | 1.01 | | 1.99 | | 3.87 | | 5.64 | | 8.91 | | | | | | | | |
| 200 | | 0.64 | | 1.27 | | 2.51 | | 4.88 | | 7.11 | | 11.24 | | | | | | | | |

Ratings are based on strength calculation.

• Designates stock sizes for this pitch.

Note: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

GEARS



20° Horsepower Ratings (Approximate)

For
Class I Service (Service Factor = 1.0)

20 Diametral Pitch

20° Pressure Angle

½" Face

| No. Teeth | 25 RPM | | 50 RPM | | 100 RPM | | 200 RPM | | 300 RPM | | 500 RPM | | 600 RPM | | 900 RPM | | 1200 RPM | | 1800 RPM | |
|-----------|--------|----|--------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|----------|----|----------|----|
| | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI | S | CI |
| 11 | 0.02 | | 0.03 | | 0.06 | | 0.12 | | 0.17 | | 0.28 | | 0.32 | | 0.46 | | 0.57 | | 0.78 | |
| 12• | 0.02 | | 0.04 | | 0.07 | | 0.14 | | 0.20 | | 0.33 | | 0.38 | | 0.54 | | 0.68 | | 0.92 | |
| 13 | 0.02 | | 0.04 | | 0.08 | | 0.16 | | 0.24 | | 0.38 | | 0.45 | | 0.63 | | 0.79 | | 1.07 | |
| 14• | 0.02 | | 0.05 | | 0.09 | | 0.18 | | 0.27 | | 0.43 | | 0.50 | | 0.71 | | 0.89 | | 1.20 | |
| 15• | 0.03 | | 0.05 | | 0.11 | | 0.21 | | 0.30 | | 0.48 | | 0.56 | | 0.80 | | 1.00 | | 1.35 | |
| 16• | 0.03 | | 0.06 | | 0.11 | | 0.22 | | 0.33 | | 0.52 | | 0.61 | | 0.87 | | 1.09 | | 1.47 | |
| 17 | 0.03 | | 0.06 | | 0.12 | | 0.24 | | 0.36 | | 0.57 | | 0.67 | | 0.94 | | 1.19 | | 1.60 | |
| 18• | 0.03 | | 0.07 | | 0.13 | | 0.26 | | 0.38 | | 0.61 | | 0.72 | | 1.02 | | 1.28 | | 1.73 | |
| 19 | 0.04 | | 0.07 | | 0.14 | | 0.28 | | 0.41 | | 0.66 | | 0.78 | | 1.10 | | 1.38 | | 1.86 | |
| 20• | 0.04 | | 0.08 | | 0.16 | | 0.30 | | 0.44 | | 0.71 | | 0.83 | | 1.18 | | 1.48 | | 2.00 | |
| 21• | 0.04 | | 0.08 | | 0.17 | | 0.32 | | 0.47 | | 0.76 | | 0.89 | | 1.25 | | 1.58 | | 2.13 | |
| 22• | 0.04 | | 0.09 | | 0.18 | | 0.34 | | 0.50 | | 0.80 | | 0.94 | | 1.33 | | 1.68 | | 2.26 | |
| 24• | 0.05 | | 0.10 | | 0.20 | | 0.38 | | 0.56 | | 0.90 | | 1.05 | | 1.49 | | 1.87 | | 2.52 | |
| 25• | 0.05 | | 0.10 | | 0.21 | | 0.40 | | 0.59 | | 0.94 | | 1.11 | | 1.56 | | 1.96 | | 2.65 | |
| 26 | 0.06 | | 0.11 | | 0.22 | | 0.42 | | 0.62 | | 0.99 | | 1.16 | | 1.64 | | 2.07 | | 2.79 | |
| 27 | 0.06 | | 0.12 | | 0.23 | | 0.44 | | 0.65 | | 1.04 | | 1.22 | | 1.73 | | 2.17 | | 2.93 | |
| 28• | 0.06 | | 0.12 | | 0.24 | | 0.47 | | 0.68 | | 1.09 | | 1.28 | | 1.81 | | 2.28 | | 3.07 | |
| 30• | 0.07 | | 0.13 | | 0.26 | | 0.51 | | 0.75 | | 1.19 | | 1.40 | | 1.97 | | 2.48 | | 3.35 | |
| 32• | 0.07 | | 0.14 | | 0.28 | | 0.55 | | 0.81 | | 1.29 | | 1.52 | | 2.14 | | 2.69 | | 3.63 | |
| 33 | 0.07 | | 0.15 | | 0.29 | | 0.57 | | 0.84 | | 1.34 | | 1.58 | | 2.22 | | 2.80 | | 3.78 | |
| 35• | 0.08 | | 0.16 | | 0.32 | | 0.62 | | 0.91 | | 1.45 | | 1.70 | | 2.40 | | 3.03 | | 4.08 | |
| 36• | 0.08 | | 0.17 | | 0.33 | | 0.64 | | 0.94 | | 1.50 | | 1.77 | | 2.49 | | 3.14 | | 4.23 | |
| 40• | 0.10 | | 0.19 | | 0.38 | | 0.74 | | 1.08 | | 1.72 | | 2.02 | | 2.86 | | 3.60 | | 4.85 | |
| 42 | 0.10 | | 0.20 | | 0.40 | | 0.78 | | 1.15 | | 1.83 | | 2.15 | | 3.03 | | 3.81 | | 5.15 | |
| 44 | 0.11 | | 0.21 | | 0.42 | | 0.83 | | 1.21 | | 1.93 | | 2.27 | | 3.21 | | 4.04 | | 5.45 | |
| 45• | 0.11 | | 0.22 | | 0.44 | | 0.85 | | 1.25 | | 1.99 | | 2.34 | | 3.30 | | 4.15 | | 5.60 | |
| 48 | 0.12 | | 0.24 | | 0.47 | | 0.92 | | 1.35 | | 2.16 | | 2.54 | | 3.58 | | 4.50 | | 6.08 | |
| 50• | 0.13 | | 0.25 | | 0.49 | | 0.97 | | 1.42 | | 2.26 | | 2.65 | | 3.75 | | 4.71 | | 6.36 | |
| 52 | 0.13 | | 0.26 | | 0.52 | | 1.01 | | 1.48 | | 2.37 | | 2.78 | | 3.92 | | 4.94 | | 6.66 | |
| 54 | 0.14 | | 0.27 | | 0.54 | | 1.06 | | 1.55 | | 2.48 | | 2.91 | | 4.10 | | 5.17 | | | |
| 55 | 0.14 | | 0.28 | | 0.55 | | 1.08 | | 1.58 | | 2.52 | | 2.96 | | 4.18 | | 5.26 | | | |
| 56 | 0.14 | | 0.28 | | 0.56 | | 1.10 | | 1.61 | | 2.57 | | 3.02 | | 4.27 | | 5.37 | | | |
| 60• | 0.16 | | 0.31 | | 0.61 | | 1.20 | | 1.75 | | 2.80 | | 3.29 | | 4.64 | | 5.84 | | | |
| 64 | 0.17 | | 0.33 | | 0.66 | | 1.28 | | 1.88 | | 3.01 | | 3.53 | | 4.98 | | 6.27 | | | |
| 66 | 0.17 | | 0.34 | | 0.68 | | 1.33 | | 1.95 | | 3.11 | | 3.66 | | 5.16 | | 6.50 | | | |
| 70• | 0.19 | | 0.37 | | 0.73 | | 1.42 | | 2.08 | | 3.33 | | 3.91 | | 5.51 | | 6.94 | | | |
| 72• | 0.19 | | 0.38 | | 0.75 | | 1.46 | | 2.14 | | 3.42 | | 4.02 | | 5.67 | | 7.14 | | | |
| 80• | 0.22 | | 0.43 | | 0.85 | | 1.65 | | 2.42 | | 3.86 | | 4.54 | | 6.40 | | | | | |
| 84• | 0.23 | | 0.45 | | 0.89 | | 1.75 | | 2.56 | | 4.08 | | 4.80 | | 6.77 | | | | | |
| 88 | 0.24 | | 0.47 | | 0.94 | | 1.83 | | 2.69 | | 4.29 | | 5.04 | | 7.11 | | | | | |
| 90• | 0.24 | | 0.49 | | 0.96 | | 1.88 | | 2.76 | | 4.40 | | 5.16 | | 7.29 | | | | | |
| 96• | 0.26 | | 0.52 | | 1.03 | | 2.02 | | 2.96 | | 4.72 | | 5.55 | | 7.83 | | | | | |
| 100• | 0.27 | | 0.55 | | 1.08 | | 2.11 | | 3.09 | | 4.93 | | 5.79 | | 8.17 | | | | | |
| 108 | 0.30 | | 0.59 | | 1.17 | | 2.29 | | 3.35 | | 5.35 | | 6.28 | | | | | | | |
| 110 | 0.30 | | 0.60 | | 1.19 | | 2.33 | | 3.42 | | 5.46 | | 6.41 | | | | | | | |
| 112 | 0.31 | | 0.62 | | 1.22 | | 2.38 | | 3.48 | | 5.56 | | 6.53 | | | | | | | |
| 120• | 0.33 | | 0.66 | | 1.31 | | 2.56 | | 3.76 | | 5.99 | | 7.04 | | | | | | | |
| 144 | 0.32 | | 0.63 | | 1.25 | | 2.43 | | 3.57 | | 5.69 | | 6.69 | | | | | | | |
| 160 | 0.45 | | 0.90 | | 1.78 | | 3.48 | | 5.10 | | 8.13 | | 9.56 | | | | | | | |
| 200 | 0.57 | | 1.14 | | 2.24 | | 4.38 | | 6.43 | | 10.26 | | 12.05 | | | | | | | |

Ratings are based on strength calculation.

• Designates stock sizes for this pitch.

Note: 1. Ratings to right of heavy line are not recommended, as pitch line velocity exceeds 1000 feet per minute. They should be used for interpolation purposes only.

2. Non-metallic gears are most commonly used for the driving pinion of a pair of gears, with mating gear made of Cast Iron or Steel, where pitch line velocities exceed 1000 FPM and are not subjected to shock loads.

GEARS

Machined Gear Rack



Standard Face Width Steel — 14½° & 20° Pressure Angle

| Catalog Number | | Pitch | Face Width (Inches) | Overall Thickness (Inches) | Pitch Line Backing | App. Weight Lbs./Pc |
|----------------|----------|-------|---------------------|----------------------------|--------------------|---------------------|
| 14½° P.A. | 20° P.A. | | | | | |
| R3x2 | TR3x2 | 3 | 3 | 1½ | 1.167 | 24.0 |
| R3x4 | TR3x4 | 3 | 3 | 1½ | 1.167 | 48.0 |
| R3x6 | TR3x6 | 3 | 3 | 1½ | 1.167 | 72.0 |
| R4x2 | TR4x2 | 4 | 2 | 1½ | 1.250 | 17.4 |
| R4x4 | TR4x4 | 4 | 2 | 1½ | 1.250 | 34.8 |
| R4x6 | TR4x6 | 4 | 2 | 1½ | 1.250 | 52.2 |
| RA4x2 | | 4 | 2 | 2 | 1.750 | 23.6 |
| RA4x4 | | 4 | 2 | 2 | 1.750 | 47.2 |
| RA4x6 | | 4 | 2 | 2 | 1.750 | 70.8 |
| R5x2 | TR5x2 | 5 | 1½ | 1½ | 1.050 | 12.8 |
| R5x4 | TR5x4 | 5 | 1½ | 1½ | 1.050 | 25.6 |
| R5x6 | TR5x6 | 5 | 1½ | 1½ | 1.050 | 38.4 |
| RA5x2 | | 5 | 1½ | 1½ | 1.300 | 16.0 |
| RA5x4 | | 5 | 1½ | 1½ | 1.300 | 32.0 |
| RA5x6 | | 5 | 1½ | 1½ | 1.300 | 48.0 |
| R6x2 | | 6 | 1½ | 1 | .833 | 8.6 |
| R6x4 | | 6 | 1½ | 1 | .833 | 17.2 |
| R6x6 | | 6 | 1½ | 1 | .833 | 25.8 |
| RA6x2 | TR6x2 | 6 | 1½ | 1½ | 1.333 | 13.8 |
| RA6x4 | TR6x4 | 6 | 1½ | 1½ | 1.333 | 27.6 |
| RA6x6 | TR6x6 | 6 | 1½ | 1½ | 1.333 | 41.4 |
| R8x2 | | 8 | 1½ | ¾ | .625 | 5.2 |
| R8x4 | | 8 | 1½ | ¾ | .625 | 10.4 |
| R8x6 | | 8 | 1½ | ¾ | .625 | 15.6 |
| RA8x2 | TR8x2 | 8 | 1½ | 1½ | 1.125 | 9.8 |
| RA8x4 | TR8x4 | 8 | 1½ | 1½ | 1.125 | 19.6 |
| RA8x6 | TR8x6 | 8 | 1½ | 1½ | 1.125 | 29.4 |
| R10x2 | | 10 | 1 | ¾ | .525 | 3.6 |
| R10x4 | | 10 | 1 | ¾ | .525 | 7.2 |
| R10x6 | | 10 | 1 | ¾ | .525 | 10.8 |
| RA10x2 | TR10x2 | 10 | 1 | 1 | .900 | 6.0 |
| RA10x4 | TR10x4 | 10 | 1 | 1 | .900 | 12.0 |
| RA10x6 | TR10x6 | 10 | 1 | 1 | .900 | 18.0 |
| R12x2 | | 12 | ¾ | ½ | .417 | 2.0 |
| R12x4 | | 12 | ¾ | ½ | .417 | 4.0 |
| R12x6 | | 12 | ¾ | ½ | .417 | 6.0 |
| RA12x2 | TR12x2 | 12 | ¾ | ¾ | .667 | 3.4 |
| RA12x4 | TR12x4 | 12 | ¾ | ¾ | .667 | 6.8 |
| RA12x6 | TR12x6 | 12 | ¾ | ¾ | .667 | 10.2 |
| R16x2 | | 16 | ⅝ | ⅝ | .250 | .50 |
| R16x4 | | 16 | ⅝ | ⅝ | .250 | 1.00 |
| R16x6 | | 16 | ⅝ | ⅝ | .250 | 1.50 |
| RA16x2 | TR16x2 | 16 | ½ | ½ | .438 | 1.52 |
| RA16x4 | TR16x4 | 16 | ½ | ½ | .438 | 3.04 |
| RA16x6 | TR16x6 | 16 | ½ | ½ | .438 | 4.56 |
| R20x2 | TR20x2 | 20 | ¾ | ¾ | .325 | .84 |
| R20x4 | TR20x4 | 20 | ¾ | ¾ | .325 | 1.68 |
| R20x6 | TR20x6 | 20 | ¾ | ¾ | .325 | 2.52 |
| R24x2 | | 24 | ¾ | ¾ | .208 | .38 |
| R24x4 | | 24 | ¾ | ¾ | .208 | .76 |
| R24x6 | | 24 | ¾ | ¾ | .208 | 1.14 |

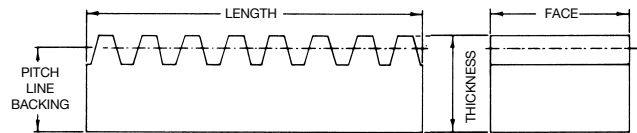
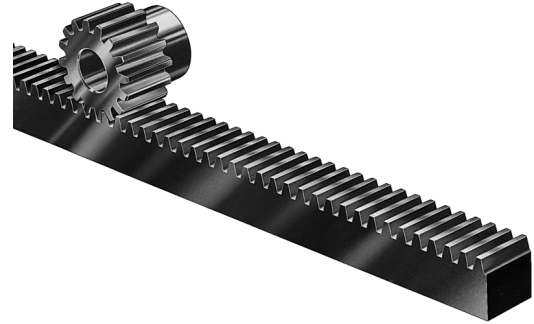
Martin Rack is made from low carbon cold drawn steel. It is available in 14½° and 20° pressure angle in 2, 4, and 6 foot lengths. Allowance is made for cutting and machining. Pinions to run with the rack may be selected from the Spur Gear section of the catalog. Special rack can be supplied in other materials, sizes, and pitches.



Machined Gear Rack

Wide Face Width Steel — 20° Pressure Angle

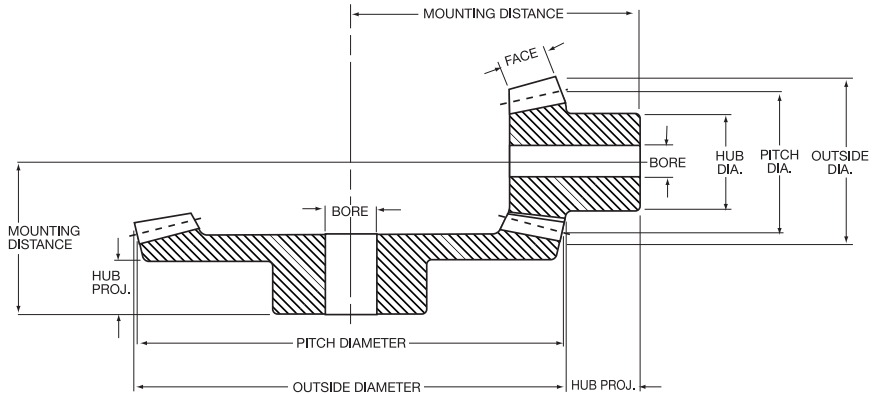
| Catalog Number | Pitch | Face Width (Inches) | Overall Thickness (Inches) | Pitch Line Backing | App. Weight Lbs./Pc |
|----------------|-------|---------------------|----------------------------|--------------------|---------------------|
| R204x2 | 4 | 3½ | 2 | 1.750 | 41.0 |
| R204x4 | 4 | 3½ | 2 | 1.750 | 82.0 |
| R204x6 | 4 | 3½ | 2 | 1.750 | 123.0 |
| R205x2 | 5 | 2½ | 1½ | 1.300 | 22.4 |
| R205x4 | 5 | 2½ | 1½ | 1.300 | 44.8 |
| R205x6 | 5 | 2½ | 1½ | 1.300 | 67.2 |
| R206x2 | 6 | 2 | 1½ | 1.333 | 17.0 |
| R206x4 | 6 | 2 | 1½ | 1.333 | 34.0 |
| R206x6 | 6 | 2 | 1½ | 1.333 | 51.0 |
| R208x2 | 8 | 1½ | 1½ | 1.375 | 13.8 |
| R208x4 | 8 | 1½ | 1½ | 1.375 | 27.6 |
| R208x6 | 8 | 1½ | 1½ | 1.375 | 41.3 |
| R2010x2 | 10 | 1¼ | 1¼ | 1.150 | 9.0 |
| R2010x4 | 10 | 1¼ | 1¼ | 1.150 | 18.0 |
| R2010x6 | 10 | 1¼ | 1¼ | 1.150 | 27.0 |
| R2012x2 | 12 | 1 | 1 | .917 | 6.4 |
| R2012x4 | 12 | 1 | 1 | .917 | 12.8 |
| R2012x6 | 12 | 1 | 1 | .917 | 19.2 |
| R2016x2 | 16 | ¾ | ¾ | .688 | 3.4 |
| R2016x4 | 16 | ¾ | ¾ | .688 | 6.8 |
| R2016x6 | 16 | ¾ | ¾ | .688 | 10.2 |
| R2020x2 | 20 | ½ | ½ | .450 | .8 |
| R2020x4 | 20 | ½ | ½ | .450 | 1.6 |
| R2020x6 | 20 | ½ | ½ | .450 | 2.5 |



Martin Stocks
14½° Spur Gears.
&
20° Spur Gears

GEARS

Bevel Gears 20° Pressure Angle



Bevel Gears are used as right angle drives where high efficiency is required. They are carried in stock as 1:1 to 6:1 ratios. Bevel Gears are cut with the long and short addendum system and 20 degree pressure angle to compensate for tooth undercut in gears and pinions having low numbers of teeth. Most all of *Martin* Bevel Gears are cut with the Coniflex tooth form to

allow for a slight misalignment at assembly and during operation. Gears should be mounted at the correct distance from the core of apex center with thrust bearings being used in back of hubs to absorb the backward thrust created in this type of gearing.

Cast Iron Gears With Steel Pinions

| Number Teeth | Catalog Number | Diameter | | Face (Inches) | Bore (Inches) | | Mounting (Inches) | Hub (Inches) | | Wt. Lbs. (App.) |
|--------------|----------------|----------|---------|---------------|---------------|--------|-------------------|--------------|--------------|-----------------|
| | | Pitch | Outside | | Diameter | Length | | Diameter | Proj. (App.) | |

3 Pitch

| | | | | | | | | | | |
|----|--------|-------|-------|------|-------|-------|-------|-------|-------|------|
| 30 | B330-2 | 10.00 | 10.19 | 1.87 | 1 1/4 | 3 1/2 | 5 1/2 | 5 | 2 | 32.8 |
| 15 | B315-2 | 5.00 | 5.80 | 1.87 | 1 1/2 | 4 1/2 | 7 1/4 | 3 3/4 | 1 1/2 | 13.4 |

4 Pitch

| | | | | | | | | | | |
|----|--------|-------|-------|------|-------|-------|-------|-------|-------|------|
| 32 | B432-2 | 8.00 | 8.10 | 1.40 | 1 1/2 | 2 1/4 | 4 1/4 | 3 3/4 | 1 1/2 | 14.7 |
| 16 | B416-2 | 4.00 | 4.60 | 1.40 | 1 1/2 | 3 1/2 | 6 | 3 3/4 | 1 1/2 | 7.5 |
| 42 | B442-3 | 10.50 | 10.59 | 1.42 | 1 1/2 | 2 1/4 | 4 | 3 3/4 | 1 1/2 | 20.5 |
| 14 | B414-3 | 3.50 | 4.17 | 1.42 | 1 1/2 | 3 3/4 | 7 1/4 | 3 3/4 | 1 1/2 | 6.8 |
| 56 | B456-4 | 14.00 | 14.07 | 1.69 | 1 1/2 | 2 1/2 | 4 1/4 | 4 1/4 | 1 1/2 | 37.8 |
| 14 | B414-4 | 3.50 | 4.20 | 1.69 | 1 1/2 | 3 3/4 | 9 | 3 3/4 | 1 1/2 | 7.6 |

5 Pitch

| | | | | | | | | | | |
|----|--------|-------|-------|------|-------|-------|-------|-------|-------|------|
| 30 | B530-2 | 6.00 | 6.12 | 1.04 | 1 1/2 | 2 1/4 | 3 1/2 | 3 3/4 | 1 1/2 | 8.6 |
| 15 | B515-2 | 3.00 | 3.48 | 1.04 | 1 | 2 3/4 | 4 3/4 | 2 3/4 | 1 1/2 | 3.1 |
| 45 | B545-3 | 9.00 | 9.07 | 1.31 | 1 1/2 | 2 1/2 | 3 3/4 | 3 3/4 | 1 1/2 | 14.6 |
| 15 | B515-3 | 3.00 | 3.54 | 1.31 | 1 | 2 1/4 | 5 1/2 | 2 3/4 | 1 1/2 | 3.6 |
| 60 | B560-4 | 12.00 | 12.05 | 1.70 | 1 1/2 | 2 3/4 | 3 3/4 | 4 | 1 1/2 | 23.2 |
| 15 | B515-4 | 3.00 | 3.56 | 1.70 | 1 | 3 1/4 | 7 1/2 | 3 | 1 1/2 | 5.0 |

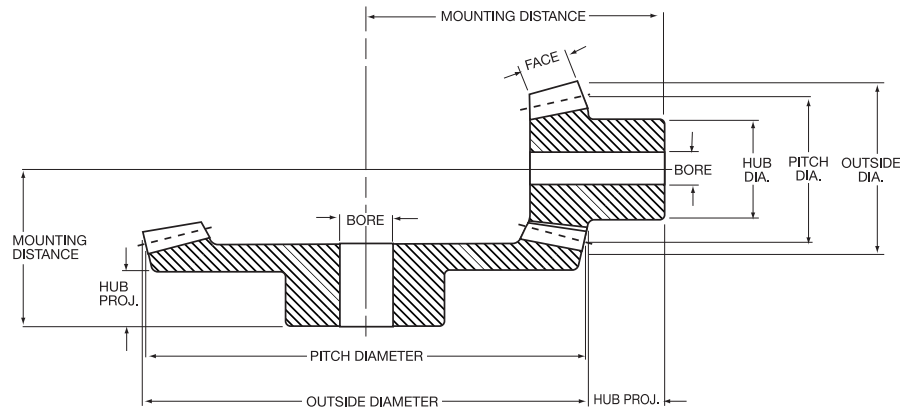
6 Pitch

| | | | | | | | | | | |
|----|---------|-------|-------|------|-------|-------|-------|-------|-------|------|
| 36 | BS636-2 | 6.00 | 6.10 | 1.06 | 1 1/2 | 2 1/4 | 3 1/2 | 3 3/4 | 1 1/2 | 7.5 |
| 18 | B618-2 | 3.00 | 3.42 | 1.06 | 1 | 2 3/4 | 4 3/4 | 2 3/4 | 1 1/2 | 3.3 |
| 42 | B642-2 | 7.00 | 7.10 | 1.05 | 1 1/2 | 2 3/4 | 3 3/4 | 3 3/4 | 1 1/2 | 9.5 |
| 21 | B621-2 | 3.50 | 3.90 | 1.05 | 1 | 2 3/4 | 5 | 2 3/4 | 1 1/2 | 3.8 |
| 45 | B645-3 | 7.50 | 7.56 | 1.07 | 1 1/2 | 2 1/2 | 3 | 3 3/4 | 1 1/2 | 8.9 |
| 15 | B615-3 | 2.50 | 2.94 | 1.07 | 3/4 | 2 3/4 | 5 1/4 | 2 3/4 | 1 1/2 | 2.2 |
| 48 | B648-2 | 8.00 | 8.10 | 1.17 | 1 1/2 | 1 3/4 | 3 1/2 | 3 3/4 | 1 | 11.6 |
| 24 | B624-2 | 4.00 | 4.40 | 1.17 | 1 | 2 3/4 | 5 1/2 | 2 3/4 | 1 1/2 | 4.9 |
| 60 | B660-4 | 10.00 | 10.04 | 1.21 | 1 1/2 | 2 1/4 | 3 3/4 | 3 3/4 | 1 1/2 | 14.3 |
| 15 | B615-4 | 2.50 | 2.97 | 1.21 | 1 | 2 3/4 | 6 3/4 | 2 3/4 | 1 1/2 | 3.2 |

Steel Bevel Gears may be furnished with hardened teeth at slight additional cost.



Bevel Gears 20° Pressure Angle



Cast Iron Gears With Steel Pinions

| Number Teeth | Catalog Number | Diameter | | Face (Inches) | Bore (Inches) | | Mounting (Inches) | Hub (Inches) | | Wt. Lbs. (App.) |
|--------------|----------------|----------|---------|---------------|---------------|--------|-------------------|--------------|--------------|-----------------|
| | | Pitch | Outside | | Diameter | Length | | Diameter | Proj. (App.) | |

8 Pitch

| | | | | | | | | | | |
|----|---------|------|------|------|-------------------------------|---------------------------------|-------------------------------|-------------------------------|---------------------------------|------|
| 40 | BS840-2 | 5.00 | 5.07 | .82 | 1 | 1 ²⁷ / ₃₂ | 2 ⁷ / ₈ | 3 | 1 ¹ / ₄ | 4.9 |
| 20 | B820-2 | 2.50 | 2.80 | .82 | ⁷ / ₈ | 2 ³ / ₃₂ | 4 | 2 ⁷ / ₈ | 1 ¹³ / ₃₂ | 1.9 |
| 48 | B848-3 | 6.05 | 6.20 | .84 | ⁷ / ₈ | 1 ¹ / ₈ | 2 ³ / ₈ | 2 ³ / ₈ | 1 | 4.5 |
| 16 | B816-3 | 2.00 | 2.33 | .84 | ³ / ₄ | 2 ³ / ₆₄ | 4 ¹ / ₄ | 1 ¹ / ₄ | 1 ³ / ₁₆ | 1.2 |
| 64 | B864-4 | 8.00 | 8.03 | .84 | 1 | 1 ¹ / ₈ | 2 ³ / ₈ | 2 ³ / ₈ | 1 ¹ / ₄ | 9.0 |
| 16 | B816-4 | 2.00 | 2.35 | .84 | ⁷ / ₈ | 2 ³ / ₃₂ | 5 ¹ / ₄ | 1 ⁷ / ₈ | 1 ¹ / ₃₂ | 1.3 |
| 72 | B872-4 | 9.00 | 9.03 | 1.22 | 1 ¹ / ₈ | 2 ⁷ / ₁₆ | 3 ³ / ₄ | 3 | 1 ¹ / ₁₆ | 12.2 |
| 18 | B818-4 | 2.25 | 2.60 | 1.22 | ⁷ / ₈ | 2 ¹ / ₃₂ | 5 ¹ / ₄ | 2 ⁷ / ₈ | 1 ¹ / ₃₂ | 1.9 |

10 Pitch

| | | | | | | | | | | |
|----|---------|------|------|-----|-----------------------------|---------------------------------|-------------------------------|--------------------------------|--------------------------------|-----|
| 60 | B1060-3 | 6.00 | 6.04 | .78 | ⁷ / ₈ | 1 ²⁷ / ₃₂ | 2 ³ / ₄ | 3 | 1 ¹ / ₈ | 5.1 |
| 20 | B1020-3 | 2.00 | 2.27 | .78 | ³ / ₄ | 2 ³ / ₃₂ | 4 ³ / ₈ | 1 ³ / ₄ | 1 ³ / ₁₆ | 1.3 |
| 60 | B1060-4 | 6.00 | 6.03 | .72 | ⁷ / ₈ | 1 ¹ / ₈ | 2 ¹ / ₄ | 2 ¹ / ₈ | 1 ¹ / ₈ | 4.5 |
| 15 | B1015-4 | 1.50 | 1.78 | .72 | ⁵ / ₈ | 1 ³⁹ / ₆₄ | 3 ³ / ₈ | 1 ¹ / ₁₆ | 2 ⁷ / ₃₂ | .6 |
| 90 | B1090-6 | 9.00 | 9.03 | .86 | 1 | 1 ¹ / ₁₆ | 2 ¹ / ₂ | 2 ³ / ₈ | 1 ¹ / ₁₆ | 9.7 |
| 15 | B1015-6 | 1.50 | 1.79 | .86 | ⁵ / ₈ | 1 ⁵ / ₆₄ | 5 ¹ / ₂ | 1 ¹ / ₁₆ | 3 ¹ / ₃₂ | .7 |

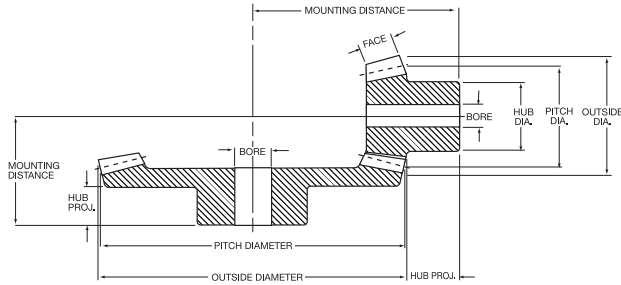
12 Pitch

| | | | | | | | | | | |
|----|---------|------|------|-----|-----------------------------|--------------------------------|-------------------------------|---------------------------------|---------------------------------|-----|
| 36 | B1236-2 | 3.00 | 3.05 | .46 | ⁵ / ₈ | ⁷ / ₈ | 1 ¹ / ₂ | 1 ¹ / ₁₆ | ¹ / ₂ | .8 |
| 18 | B1218-2 | 1.50 | 1.70 | .46 | ¹ / ₂ | 1 ¹ / ₆₄ | 2 ¹ / ₄ | 1 ¹ / ₄ | 1 ¹ / ₁₆ | .5 |
| 72 | B1272-4 | 6.00 | 6.02 | .60 | ³ / ₄ | 1 ¹ / ₁₆ | 2 | 2 | 6 ¹ / ₆₄ | 2.6 |
| 18 | B1218-4 | 1.50 | 1.73 | .60 | ¹ / ₂ | 1 ² / ₆₄ | 3 ³ / ₄ | 1 ¹ / ₄ | 2 ²⁹ / ₃₂ | .4 |
| 72 | B1272-6 | 6.00 | 6.02 | .74 | ³ / ₄ | 1 ¹ / ₁₆ | 1 ¹ / ₄ | 2 | 6 ¹ / ₆₄ | 2.6 |
| 12 | B1212-6 | 1.00 | 1.24 | .74 | ¹ / ₂ | 1 ³ / ₆₄ | 3 ³ / ₄ | 1 ¹⁵ / ₁₆ | 2 ²⁹ / ₃₂ | .4 |

Steel Bevel Gears may be furnished with hardened teeth at slight additional cost.

GEARS

Bevel Gears 20° Pressure Angle



Steel Gears With Steel Pinions

| Number Teeth | Catalog Number | Diameter | | Face (Inches) | Bore (Inches) | | Mounting (Inches) | Hub (Inches) | | Wt. Lbs. (App.) |
|--------------|----------------|----------|---------|---------------|---------------|--------|-------------------|--------------|--------------|-----------------|
| | | Pitch | Outside | | Diameter | Length | | Diameter | Proj. (App.) | |

6 Pitch

| | | | | | | | | | | |
|----|---------|------|------|------|-------|-------|-------|-------|-------|-----|
| 36 | BS636-2 | 6.00 | 6.10 | 1.06 | 1 1/8 | 2 1/4 | 3 1/2 | 3 3/4 | 1 1/2 | 8.7 |
| 18 | BS618-2 | 3.00 | 3.42 | 1.06 | 1 1/8 | 2 3/8 | 4 | 2 1/2 | 1 3/8 | 3.2 |

8 Pitch

| | | | | | | | | | | |
|----|---------|------|------|-----|---|-------|-------|-------|-------|-----|
| 40 | BS840-2 | 5.00 | 5.07 | .82 | 1 | 1 7/8 | 2 1/2 | 3 | 1 1/4 | 4.9 |
| 20 | BS820-2 | 2.50 | 2.80 | .82 | 1 | 2 1/2 | 4 | 2 1/2 | 1 3/8 | 1.8 |

10 Pitch

| | | | | | | | | | | |
|----|-----------|------|------|-----|-----|-------|-------|-------|-------|-----|
| 30 | BS1030-15 | 3.00 | 3.08 | .57 | 3/4 | 1 1/8 | 2 1/4 | 2 1/2 | 1 | 2.0 |
| 20 | BS1020-15 | 2.00 | 2.21 | .57 | 3/4 | 1 3/8 | 2 1/2 | 1 3/4 | 29/32 | .8 |
| 40 | BS1040-2 | 4.00 | 4.06 | .71 | 7/8 | 1 1/8 | 2 1/2 | 3 | 1 1/8 | 3.7 |
| 20 | BS1020-2 | 2.00 | 2.24 | .71 | 3/4 | 1 3/8 | 3 1/2 | 1 3/4 | 1 1/8 | 1.0 |
| 50 | BS1050-2 | 5.00 | 5.06 | .70 | 3/4 | 1 1/2 | 2 1/2 | 2 | 1 | 4.0 |
| 25 | B1025-2 | 2.50 | 2.74 | .70 | 3/4 | 1 3/8 | 3 1/2 | 2 | 3/4 | 1.5 |
| 60 | BS1060-3 | 6.00 | 6.04 | .78 | 1 | 1 3/4 | 2 1/4 | 3 | 1 1/8 | 6.0 |
| 20 | BS1020-3 | 2.00 | 2.27 | .78 | 3/4 | 2 1/2 | 4 | 1 3/4 | 1 1/8 | .9 |

12 Pitch

| | | | | | | | | | | |
|----|-----------|------|------|-----|-----|-------|-------|-------|--------|-----|
| 27 | BS1227-15 | 2.25 | 2.32 | .41 | 1/2 | 1 1/8 | 1 3/4 | 1 1/2 | 25/32 | .6 |
| 18 | BS1218-15 | 1.50 | 1.67 | .41 | 1/2 | 1 1/8 | 1 1/2 | 1 1/4 | 2 1/32 | .3 |
| 36 | BS1236-2 | 3.00 | 3.05 | .53 | 1 | 1 1/4 | 1 1/2 | 2 1/2 | 7/8 | 1.3 |
| 18 | BS1218-2 | 1.50 | 1.70 | .53 | 3/4 | 1 1/4 | 2 1/2 | 1 1/8 | 13/16 | .3 |
| 36 | BS1236-2A | 3.00 | 3.05 | .53 | 5/8 | 1 1/4 | 1 1/2 | 2 1/2 | 7/8 | 1.4 |
| 18 | BS1218-2A | 1.50 | 1.70 | .53 | 1/2 | 1 1/4 | 2 1/2 | 1 1/8 | 13/16 | .4 |
| 48 | BS1248-2 | 4.00 | 4.05 | .59 | 5/8 | 1 1/4 | 2 | 1 1/2 | 3/4 | 1.6 |
| 24 | B1224-2 | 2.00 | 2.20 | .59 | 1/2 | 1 1/4 | 2 1/2 | 1 1/2 | 3/4 | .8 |
| 54 | BS1254-3 | 4.50 | 4.53 | .60 | 5/8 | 1 1/8 | 1 3/4 | 1 3/4 | 3/4 | 1.9 |
| 18 | B1218-3 | 1.50 | 1.72 | .60 | 1/2 | 1 1/2 | 3 | 1 1/4 | 1 1/16 | .4 |

14 Pitch

| | | | | | | | | | | |
|----|----------|------|------|-----|-----|-------|-------|--------|--------|----|
| 28 | BS1428-2 | 2.00 | 2.04 | .35 | 1/2 | 1 1/8 | 1 1/2 | 1 1/2 | 2 1/32 | .5 |
| 14 | BS1414-2 | 1.00 | 1.17 | .35 | 1/2 | 3 1/2 | 1 1/2 | 1 3/16 | 9/16 | .1 |

16 Pitch

| | | | | | | | | | | |
|----|-----------|------|------|-----|------|-------|-------|--------|--------|-----|
| 24 | BS1624-2 | 1.50 | 1.54 | .19 | 1/2 | 5/8 | 1 | 1 | 7/16 | .15 |
| 12 | BS1612-2 | .75 | .91 | .19 | 3/8 | 3 3/4 | 1 1/2 | 2 1/32 | 1 1/32 | .08 |
| 24 | BS1624-15 | 1.50 | 1.55 | .25 | 1/2 | 3/4 | 1 1/8 | 1 1/2 | 9/16 | .40 |
| 16 | BS1616-15 | 1.00 | 1.13 | .25 | 3/8 | 4 1/4 | 1 1/4 | 1 3/8 | 7/16 | .09 |
| 32 | BS1632-2 | 2.00 | 2.04 | .35 | 1/2 | 9/8 | 1 1/8 | 1 1/2 | 1/2 | .30 |
| 16 | BS1616-2 | 1.00 | 1.15 | .35 | 3/8 | 2 1/2 | 1 1/2 | 1 3/8 | 7/16 | .04 |
| 48 | BS1648-3 | 3.00 | 3.02 | .42 | 5/8 | 7/8 | 1 1/8 | 1 1/2 | 9/16 | .74 |
| 16 | B1616-3 | 1.00 | 1.17 | .42 | 7/16 | 5 3/4 | 2 | 7/8 | 1 1/32 | .13 |
| 64 | BS1664-4 | 4.00 | 4.02 | .48 | 5/8 | 5 1/4 | 1 1/2 | 2 1/4 | 1 1/8 | 1.7 |
| 16 | B1616-4 | 1.00 | 1.17 | .48 | 1/2 | 6 3/4 | 2 1/2 | 1 3/8 | 1 1/32 | .12 |

Steel Bevel Gears may be furnished with hardened teeth at slight additional cost.



Bevel Gears Horsepower Ratings

Cast Iron

| Catalog Number | Revolutions per Minute | | | | | | | |
|----------------|------------------------|-----|-----|------|------|------|------|------|
| | 50 | 100 | 200 | 300 | 600 | 900 | 1200 | 1800 |
| B330-2 | 2.5 | 4.5 | 7.7 | 10.0 | 15.3 | | | |
| B315-2 | 2.5 | 4.5 | 7.7 | 10.0 | 15.3 | | | |
| B432-2 | 1.33 | 2.3 | 4.0 | 5.3 | 8.0 | 9.5 | | |
| B416-2 | 1.33 | 2.3 | 4.0 | 5.3 | 8.0 | 9.5 | | |
| B442-3 | 1.10 | 2.0 | 3.7 | 5.0 | 7.5 | 9.0 | | |
| B414-3 | 1.10 | 2.0 | 3.7 | 5.0 | 7.5 | 9.0 | | |
| B456-4 | 1.4 | 2.5 | 4.4 | 6.0 | 9.0 | 10.9 | | |
| B414-4 | 1.4 | 2.5 | 4.4 | 6.0 | 9.0 | 10.9 | | |
| B530-2 | .5 | 1.0 | 1.9 | 2.5 | 3.9 | 4.8 | 5.5 | |
| B515-2 | .5 | 1.0 | 1.9 | 2.5 | 3.9 | 4.8 | 5.5 | |
| B545-3 | .7 | 1.4 | 2.4 | 3.3 | 5.2 | 6.4 | 7.2 | |
| B515-3 | .7 | 1.4 | 2.4 | 3.3 | 5.2 | 6.4 | 7.2 | |
| B560-4 | 1.0 | 1.8 | 3.3 | 4.4 | 6.9 | 8.4 | 9.5 | |
| B515-4 | 1.0 | 1.8 | 3.3 | 4.4 | 6.9 | 8.4 | 9.5 | |
| B636-2 | .5 | 1.0 | 1.7 | 2.3 | 3.7 | 4.4 | 5.0 | |
| B618-2 | .5 | 1.0 | 1.7 | 2.3 | 3.7 | 4.4 | 5.0 | |
| B642-2 | .6 | 1.1 | 2.0 | 2.7 | 4.0 | 5.0 | | |
| B621-2 | .6 | 1.1 | 2.0 | 2.7 | 4.0 | 5.0 | | |
| B645-3 | .4 | .8 | 1.4 | 2.0 | 3.2 | 3.9 | 4.6 | |
| B615-3 | .4 | .8 | 1.4 | 2.0 | 3.2 | 3.9 | 4.6 | |
| B648-2 | .8 | 1.5 | 2.5 | 3.4 | 5.1 | 6.1 | | |
| B624-2 | .8 | 1.5 | 2.5 | 3.4 | 5.1 | 6.1 | | |
| B660-4 | .5 | .9 | 1.7 | 2.3 | 3.7 | 4.6 | 5.2 | |
| B615-4 | .5 | .9 | 1.7 | 2.3 | 3.7 | 4.6 | 5.2 | |
| B840-2 | .4 | .7 | 1.3 | 1.8 | 2.9 | 3.7 | 4.2 | |
| B820-2 | .4 | .7 | 1.3 | 1.8 | 2.9 | 3.7 | 4.2 | |
| B848-3 | .2 | .4 | .7 | 1.0 | 1.7 | 2.2 | 2.5 | 2.9 |
| B816-3 | .2 | .4 | .7 | 1.0 | 1.7 | 2.2 | 2.5 | 2.9 |
| B864-4 | .2 | .4 | .7 | 1.0 | 1.7 | 2.2 | 2.5 | |
| B816-4 | .2 | .4 | .7 | 1.0 | 1.7 | 2.2 | 2.5 | |
| B872-4 | .4 | .7 | 1.2 | 1.8 | 2.8 | 3.6 | 4.2 | |
| B818-4 | .4 | .7 | 1.2 | 1.8 | 2.8 | 3.6 | 4.2 | |
| B1060-3 | .17 | .3 | .6 | .8 | 1.3 | 1.7 | 1.9 | 2.3 |
| B1020-3 | .17 | .3 | .6 | .8 | 1.3 | 1.7 | 1.9 | 2.3 |
| B1060-4 | .1 | .2 | .4 | .5 | .9 | 1.2 | 1.4 | 1.8 |
| B1015-4 | .1 | .2 | .4 | .5 | .9 | 1.2 | 1.4 | 1.8 |
| B1090-6 | .14 | .25 | .5 | .7 | 1.2 | 1.7 | 1.9 | 2.3 |
| B1015-6 | .14 | .25 | .5 | .7 | 1.2 | 1.7 | 1.9 | 2.3 |
| B1236-2 | .05 | .11 | .2 | .3 | .5 | .6 | .8 | 1.0 |
| B1218-2 | .05 | .11 | .2 | .3 | .5 | .6 | .8 | 1.0 |
| B1254-3 | .07 | .15 | .3 | .4 | .7 | .9 | 1.0 | 1.3 |
| B1218-3 | .07 | .15 | .3 | .4 | .7 | .9 | 1.0 | 1.3 |
| B1272-4 | .07 | .15 | .3 | .4 | .7 | .9 | 1.1 | 1.4 |
| B1218-4 | .07 | .15 | .3 | .4 | .7 | .9 | 1.1 | 1.4 |
| B1272-6 | .06 | .11 | .2 | .3 | .6 | .8 | 1.0 | 1.2 |
| B1212-6 | .06 | .11 | .2 | .3 | .6 | .8 | 1.0 | 1.2 |

Steel

| Catalog Number | Revolutions per Minute | | | | | | | |
|----------------|------------------------|-----|-----|-----|-----|-----|------|------|
| | 50 | 100 | 200 | 300 | 600 | 900 | 1200 | 1800 |
| BS636-2 | .9 | 1.7 | 3.0 | 4.1 | 6.4 | 8.0 | 9.0 | |
| BS618-2 | .9 | 1.7 | 3.0 | 4.1 | 6.4 | 8.0 | 9.0 | |
| BS840-2 | .5 | .9 | 1.5 | 2.1 | 3.5 | 4.4 | 5.0 | |
| BS820-2 | .5 | .9 | 1.5 | 2.1 | 3.5 | 4.4 | 5.0 | |
| BS1030-15 | .2 | .4 | .7 | 1.0 | 1.7 | 2.1 | 2.3 | 2.9 |
| BS1020-15 | .2 | .4 | .7 | 1.0 | 1.7 | 2.1 | 2.3 | 2.9 |
| BS1040-2 | .25 | .5 | .9 | 1.3 | 2.1 | 2.7 | 3.0 | 3.7 |
| BS1020-2 | .25 | .5 | .9 | 1.3 | 2.1 | 2.7 | 3.0 | 3.7 |
| BS1050-2 | .33 | .64 | 1.2 | 1.6 | 2.5 | 3.2 | 3.7 | |
| B 1025-2 | .33 | .64 | 1.2 | 1.6 | 2.5 | 3.2 | 3.7 | |
| BS1060-3 | .3 | .5 | 1.0 | 1.4 | 2.4 | 3.0 | 3.5 | 4.3 |
| BS1020-3 | .3 | .5 | 1.0 | 1.4 | 2.4 | 3.0 | 3.5 | 4.3 |
| BS1227-15 | .09 | .17 | .33 | .5 | .8 | 1.0 | 1.2 | 1.6 |
| BS1218-15 | .09 | .17 | .33 | .5 | .8 | 1.0 | 1.2 | 1.6 |
| BS1236-2 | .12 | .25 | .4 | .6 | 1.0 | 1.4 | 1.7 | 2.0 |
| BS1218-2 | .12 | .25 | .4 | .6 | 1.0 | 1.4 | 1.7 | 2.0 |
| BS1236-2A | .12 | .25 | .4 | .6 | 1.0 | 1.4 | 1.7 | 2.0 |
| BS1218-2A | .12 | .25 | .4 | .6 | 1.0 | 1.4 | 1.7 | 2.0 |
| BS1248-2 | .18 | .37 | .7 | .9 | 1.6 | 2.0 | 2.3 | 2.8 |
| B1224-2 | .18 | .37 | .7 | .9 | 1.6 | 2.0 | 2.3 | 2.8 |
| BS1254-3 | .14 | .28 | .5 | .7 | 1.2 | 1.6 | 1.9 | 2.3 |
| B1218-3 | .14 | .28 | .5 | .7 | 1.2 | 1.6 | 1.9 | 2.3 |
| BS1428-2 | .05 | .08 | .16 | .20 | .40 | .54 | .7 | .8 |
| BS1414-2 | .05 | .08 | .16 | .20 | .40 | .54 | .7 | .8 |
| BS1624-2 | .02 | .03 | .05 | .08 | .14 | .20 | .25 | .3 |
| BS1612-2 | .02 | .03 | .05 | .08 | .14 | .20 | .25 | .3 |
| BS1624-15 | .03 | .05 | .09 | .14 | .25 | .33 | .4 | .5 |
| BS1612-15 | .03 | .05 | .09 | .14 | .25 | .33 | .4 | .5 |
| BS1632-2 | .03 | .08 | .14 | .20 | .37 | .5 | .6 | .8 |
| BS1616-2 | .03 | .08 | .14 | .20 | .37 | .5 | .6 | .8 |
| BS1648-3 | .05 | .09 | .17 | .25 | .50 | .6 | .8 | 1.0 |
| BS1616-3 | .05 | .09 | .17 | .25 | .50 | .6 | .8 | 1.0 |
| BS1664-4 | .05 | .10 | .20 | .33 | .50 | .7 | .9 | 1.1 |
| BS1616-4 | .05 | .10 | .20 | .33 | .50 | .7 | .9 | 1.1 |

GEARS

Miter Gears 20° Pressure Angle

Martin



Miter Gears are ordinarily used as right angle drives, transmitting horsepower between intersecting shafts at a 1:1 ratio. They are used where high efficiency is required. Only miters of the same number of teeth, pitch, and pressure angle can be operated together. More than two miters may be used in sets, as in a differential.

The thrust of Miter Gears causes the gears to separate; therefore, ball bearings or roller bearings should be used rather than sleeve bearings. Provisions should be made using thrust bearings to absorb backward thrust.

All standard stock Miter Gears must be mounted at right angles (90 degrees) for proper tooth bearing.

All *Martin* Miter and Bevel Gears are generated with the Coniflex tooth form. A slight misalignment of gears is permissible because of the localized tooth bearing running lengthwise along the gear tooth.

The mounting distance must be held in order to maintain proper backlash between gears. This will also insure that the ends of the gear teeth will be flush with each other. The use of a straight mineral oil as a lubricant is recommended for most Miter Gear applications.

Martin Stock Miter Gears are manufactured from .40 carbon steel.

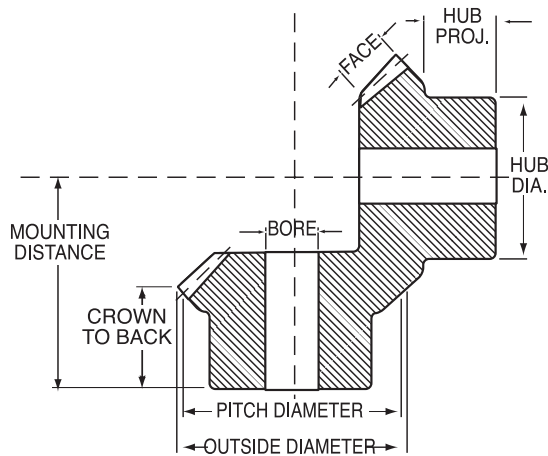
The "M" Series is furnished unhardened with plain bore. The "HM" Series is furnished hardened teeth with plain bore. The "HMK" Series is furnished hardened teeth with keyway and setscrew for installation on the shaft.

Hardened Miter Gears have approximately 50% more horsepower capacity and provide greater gear wear than untreated gears.

All *Martin* Miter Gears are cut with the 20° pressure angle system. They will not operate with any other pressure angle system.



Miter Gears 20° Pressure Angle



Steel - Plain Bore — Unhardened Teeth

| Number Teeth | Catalog Number | Diameter | | Face (Inches) | Bore (Inches) | | Mounting (Inches) | Hub (Inches) | | Wt. Lbs. (App.) |
|--------------|----------------|----------|---------|---------------|---------------|--------|-------------------|--------------|--------------|-----------------|
| | | Pitch | Outside | | Diameter | Length | | Diameter | Proj. (App.) | |

4 Pitch

| | | | | | | | | | | |
|----|-------|------|------|------|----|--------------------------------|----|---|---------------------------------|------|
| 24 | M424 | 6.00 | 6.36 | 1.33 | 1½ | 3 ⁹ / ₁₆ | 5½ | 4 | 1 ¹⁵ / ₁₆ | 14.4 |
| 24 | M424A | 6.00 | 6.36 | 1.33 | 1¾ | 3 ⁹ / ₁₆ | 5½ | 4 | 1 ¹⁵ / ₁₆ | 13.7 |
| 28 | M428 | 7.00 | 7.36 | 1.43 | 2 | 3 | 6 | 5 | 1 ¹⁵ / ₁₆ | 21.1 |

5 Pitch

| | | | | | | | | | | |
|----|-------|------|------|------|----|---|----|----|----|-----|
| 25 | M525 | 5.00 | 5.29 | 1.10 | 1¾ | 3 | 4¾ | 3½ | 1¾ | 8.5 |
| 25 | M525A | 5.00 | 5.29 | 1.10 | 1½ | 3 | 4¾ | 3½ | 1¾ | 8.3 |
| 25 | M525B | 5.00 | 5.29 | 1.10 | 1¾ | 3 | 4¾ | 3½ | 1¾ | 7.8 |

6 Pitch

| | | | | | | | | | | |
|----|-------|------|------|-----|----|--------------------------------|----|----|---------------------------------|-----|
| 24 | M624 | 4.00 | 4.24 | .86 | 1¾ | 2 ⁷ / ₁₆ | 3¾ | 3 | 1 ¹⁵ / ₁₆ | 4.4 |
| 24 | M624A | 4.00 | 4.24 | .86 | 1½ | 2 ⁷ / ₁₆ | 3¾ | 3 | 1 ¹⁵ / ₁₆ | 4.3 |
| 27 | M627 | 4.50 | 4.74 | .96 | 1¾ | 2¾ | 4¾ | 3¾ | 1½ | 6.3 |
| 27 | M627A | 4.50 | 4.74 | .96 | 1½ | 2¾ | 4¾ | 3¾ | 1½ | 5.9 |

8 Pitch

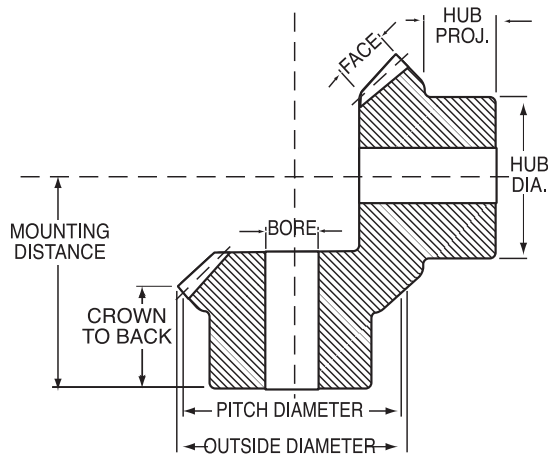
| | | | | | | | | | | |
|----|-------|------|------|-----|--------------------------------|--------------------------------|--------------------------------|----|---------------------------------|-----|
| 24 | M824 | 3.00 | 3.18 | .64 | ¾ | 1 ³ / ₄ | 2 ⁷ / ₁₆ | 1¾ | 1 ¹³ / ₁₆ | 1.5 |
| 24 | M824A | 3.00 | 3.18 | .64 | 1 | 1 ⁹ / ₁₆ | 2¾ | 2½ | 1 | 2.1 |
| 24 | M824B | 3.00 | 3.18 | .64 | 1¾ | 1 ⁹ / ₁₆ | 2¾ | 2½ | 1 | 1.9 |
| 28 | M828 | 3.50 | 3.68 | .75 | 1 | 2 ³ / ₁₆ | 3¾ | 2½ | 1¼ | 2.9 |
| 28 | M828A | 3.50 | 3.68 | .75 | 1 ¹ / ₁₆ | 2 ³ / ₁₆ | 3¾ | 2½ | 1¼ | 2.8 |
| 28 | M828B | 3.50 | 3.68 | .75 | 1¼ | 2 ³ / ₁₆ | 3¾ | 2½ | 1¼ | 2.6 |
| 32 | M832 | 4.00 | 4.18 | .84 | 1 | 2 ³ / ₁₆ | 3¾ | 3 | 1¾ | 4.8 |

10 Pitch

| | | | | | | | | | | |
|----|--------|------|------|-----|--------------------------------|-------------------------------|--------------------------------|----|---------------------------------|-----|
| 20 | M1020A | 2.00 | 2.14 | .44 | ½ | 1 ³ / ₄ | 2 | 1¾ | 1 ¹³ / ₁₆ | .75 |
| 20 | M1020B | 2.00 | 2.14 | .44 | 5 ⁸ / ₁₆ | 1 ³ / ₄ | 2 | 1¾ | 1 ¹³ / ₁₆ | .72 |
| 20 | M1020 | 2.00 | 2.14 | .44 | ¾ | 1 ³ / ₄ | 2 | 1¾ | 1 ¹³ / ₁₆ | .67 |
| 20 | M1020C | 2.00 | 2.14 | .44 | 7 ⁸ / ₁₆ | 1 ³ / ₄ | 2 | 1¾ | 1 ¹³ / ₁₆ | .58 |
| 25 | M1025 | 2.50 | 2.64 | .55 | ¾ | 1¾ | 2 ⁷ / ₁₆ | 2 | 1 ¹⁵ / ₁₆ | 1.2 |
| 25 | M1025A | 2.50 | 2.64 | .55 | 7 ⁸ / ₁₆ | 1¾ | 2 ⁷ / ₁₆ | 2 | 1 ¹⁵ / ₁₆ | 1.2 |
| 25 | M1025B | 2.50 | 2.64 | .55 | 1 | 1¾ | 2 ⁷ / ₁₆ | 2 | 1 ¹⁵ / ₁₆ | 1.2 |
| 30 | M1030 | 3.00 | 3.14 | .64 | ¾ | 1¾ | 2¾ | 2 | 1 | 1.8 |

Miter Gears

20° Pressure Angle



Steel - Plain Bore — Unhardened Teeth

| Number Teeth | Catalog Number | Diameter | | Face (Inches) | Bore (Inches) | | Mounting (Inches) | Hub (Inches) | | Wt. Lbs. (App.) |
|--------------|----------------|----------|---------|---------------|---------------|--------|-------------------|--------------|--------------|-----------------|
| | | Pitch | Outside | | Diameter | Length | | Diameter | Proj. (App.) | |

12 Pitch

| | | | | | | | | | | |
|----|--------|------|------|-----|----------------|------------------|------------------|-----------------|------------------|------|
| 15 | M1215 | 1.25 | 1.37 | .27 | $\frac{3}{8}$ | $\frac{55}{64}$ | 1 $\frac{1}{4}$ | 1 | $\frac{1}{2}$ | .17 |
| 15 | M1215A | 1.25 | 1.37 | .27 | $\frac{7}{16}$ | $\frac{55}{64}$ | 1 $\frac{1}{4}$ | 1 | $\frac{1}{2}$ | .16 |
| 15 | M1215B | 1.25 | 1.37 | .27 | $\frac{1}{2}$ | $\frac{55}{64}$ | 1 $\frac{1}{4}$ | 1 | $\frac{1}{2}$ | .15 |
| 18 | M1218 | 1.50 | 1.62 | .32 | $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | $\frac{5}{8}$ | .30 |
| 18 | M1218A | 1.50 | 1.62 | .32 | $\frac{5}{8}$ | 1 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | $\frac{5}{8}$ | .25 |
| 18 | M1218B | 1.50 | 1.62 | .32 | $\frac{3}{4}$ | 1 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | $\frac{5}{8}$ | .22 |
| 21 | M1221 | 1.75 | 1.87 | .39 | $\frac{1}{2}$ | 1 $\frac{3}{16}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{16}$ | .45 |
| 21 | M1221A | 1.75 | 1.87 | .39 | $\frac{9}{16}$ | 1 $\frac{3}{16}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{16}$ | .45 |
| 21 | M1221B | 1.75 | 1.87 | .39 | $\frac{5}{8}$ | 1 $\frac{3}{16}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{16}$ | .43 |
| 21 | M1221C | 1.75 | 1.87 | .39 | $\frac{3}{4}$ | 1 $\frac{3}{16}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{16}$ | .38 |
| 24 | M1224 | 2.00 | 2.12 | .43 | $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{16}$ | .62 |
| 30 | M1230 | 2.50 | 2.62 | .54 | $\frac{5}{8}$ | 1 $\frac{3}{4}$ | 2 $\frac{5}{16}$ | 1 $\frac{3}{4}$ | 2 $\frac{7}{32}$ | 1.10 |

14 Pitch

| | | | | | | | | | | |
|----|--------|------|------|-----|----------------|-----------------|------------------|---------------|---------------|-----|
| 14 | M1414 | 1.00 | 1.11 | .19 | $\frac{3}{8}$ | $\frac{47}{64}$ | 1 $\frac{1}{16}$ | $\frac{7}{8}$ | $\frac{1}{2}$ | .10 |
| 14 | M1414A | 1.00 | 1.11 | .19 | $\frac{7}{16}$ | $\frac{47}{64}$ | 1 $\frac{1}{16}$ | $\frac{7}{8}$ | $\frac{1}{2}$ | .09 |

16 Pitch

| | | | | | | | | | | |
|----|-------|------|------|-----|----------------|------------------|------------------|---------------|----------------|-----|
| 12 | M1612 | .75 | .84 | .16 | $\frac{5}{16}$ | $\frac{37}{64}$ | 1 $\frac{1}{16}$ | $\frac{5}{8}$ | $\frac{3}{8}$ | .05 |
| 16 | M1616 | 1.00 | 1.09 | .22 | $\frac{3}{8}$ | $\frac{3}{4}$ | 1 $\frac{1}{16}$ | $\frac{3}{4}$ | $\frac{7}{16}$ | .07 |
| 20 | M1620 | 1.25 | 1.34 | .27 | $\frac{7}{16}$ | 2 $\frac{7}{32}$ | 1 $\frac{1}{4}$ | 1 | $\frac{1}{2}$ | .16 |
| 24 | M1624 | 1.50 | 1.59 | .31 | $\frac{1}{2}$ | $\frac{7}{8}$ | 1 $\frac{1}{2}$ | 1 | $\frac{1}{2}$ | .20 |

20 Pitch

| | | | | | | | | | | |
|----|-------|------|------|-----|---------------|------------------|------------------|---------------|---------------|-----|
| 20 | M2020 | 1.00 | 1.07 | .23 | $\frac{3}{8}$ | 1 $\frac{3}{16}$ | 1 $\frac{1}{2}$ | $\frac{3}{4}$ | $\frac{1}{2}$ | .06 |
| 25 | M2025 | 1.25 | 1.32 | .25 | $\frac{3}{8}$ | $\frac{3}{4}$ | 1 $\frac{3}{16}$ | 1 | $\frac{3}{8}$ | .14 |

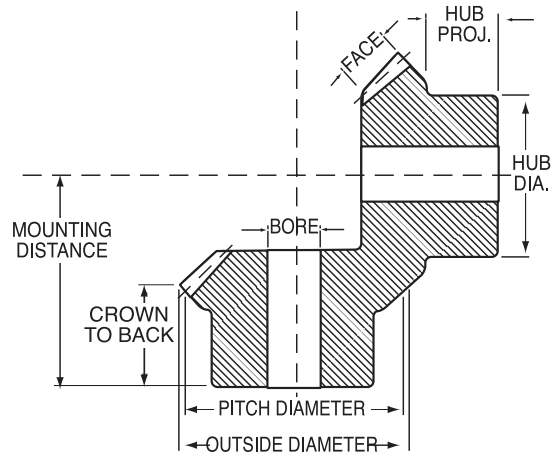
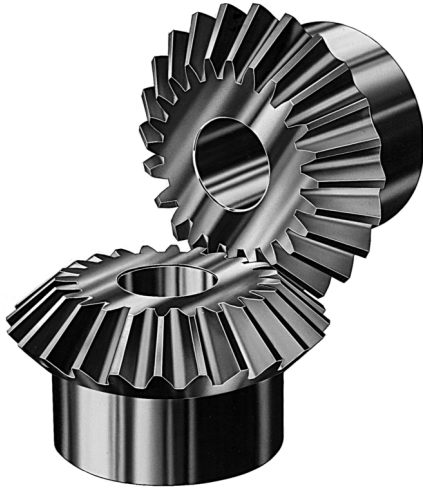
24 Pitch

| | | | | | | | | | | |
|----|-------|------|------|-----|---------------|----------------|------------------|---------------|---------------|-----|
| 24 | M2424 | 1.00 | 1.06 | .20 | $\frac{1}{4}$ | $\frac{9}{16}$ | 2 $\frac{3}{32}$ | $\frac{5}{8}$ | $\frac{3}{8}$ | .12 |
|----|-------|------|------|-----|---------------|----------------|------------------|---------------|---------------|-----|

GEARS



Miter Gears 20° Pressure Angle



Steel - Plain Bore — Hardened Teeth

| Number Teeth | Catalog Number | Diameter | | Face (Inches) | Bore (Inches) | | Mounting (Inches) | Hub (Inches) | | Wt. Lbs. (App.) |
|--------------|----------------|----------|---------|---------------|---------------|--------|-------------------|--------------|--------------|-----------------|
| | | Pitch | Outside | | Diameter | Length | | Diameter | Proj. (App.) | |

4 Pitch

| | | | | | | | | | | |
|----|--------|------|------|------|----|----|----|---|----|------|
| 24 | HM424 | 6.00 | 6.36 | 1.33 | 1½ | 3⅞ | 5½ | 4 | 1⅝ | 14.4 |
| 24 | HM424A | 6.00 | 6.36 | 1.33 | 1¾ | 3⅞ | 5½ | 4 | 1⅝ | 13.7 |
| 28 | HM428 | 7.00 | 7.36 | 1.43 | 2 | 3¾ | 6 | 5 | 1⅝ | 21.1 |

5 Pitch

| | | | | | | | | | | |
|----|--------|------|------|------|----|---|----|----|----|-----|
| 25 | HM525 | 5.00 | 5.29 | 1.10 | 1¾ | 3 | 4¾ | 3½ | 1¾ | 8.5 |
| 25 | HM525A | 5.00 | 5.29 | 1.10 | 1½ | 3 | 4¾ | 3½ | 1¾ | 8.3 |
| 25 | HM525B | 5.00 | 5.29 | 1.10 | 1¾ | 3 | 4¾ | 3½ | 1¾ | 7.5 |

6 Pitch

| | | | | | | | | | | |
|----|--------|------|------|-----|----|----|----|----|----|-----|
| 24 | HM624 | 4.00 | 4.24 | .86 | 1¼ | 2⅞ | 3¾ | 3 | 1⅞ | 4.4 |
| 24 | HM624A | 4.00 | 4.24 | .86 | 1½ | 2⅞ | 3¾ | 3 | 1⅞ | 4.0 |
| 27 | HM627 | 4.50 | 4.74 | .96 | 1¼ | 2¾ | 4¾ | 3¼ | 1½ | 6.3 |
| 27 | HM627A | 4.50 | 4.74 | .96 | 1½ | 2¾ | 4¾ | 3¼ | 1½ | 5.9 |

8 Pitch

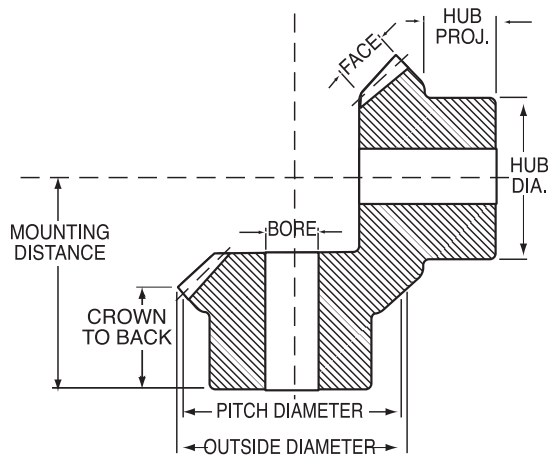
| | | | | | | | | | | |
|----|--------|------|------|-----|----|----|----|----|----|-----|
| 24 | HM824 | 3.00 | 3.18 | .64 | ¾ | 1⅞ | 2⅞ | 1¾ | 1⅞ | 1.5 |
| 24 | HM824A | 3.00 | 3.18 | .64 | 1 | 1⅞ | 2¾ | 2½ | 1 | 2.1 |
| 24 | HM824B | 3.00 | 3.18 | .64 | 1¼ | 1⅞ | 2¾ | 2½ | 1 | 2.6 |
| 28 | HM828 | 3.50 | 3.68 | .75 | 1 | 2⅞ | 3¾ | 2½ | 1¼ | 3.0 |
| 28 | HM828A | 3.50 | 3.68 | .75 | 1⅞ | 2⅞ | 3¾ | 2½ | 1¼ | 2.8 |
| 28 | HM828B | 3.50 | 3.68 | .75 | 1¼ | 2⅞ | 3¾ | 2½ | 1¼ | 2.6 |
| 32 | HM832 | 4.00 | 4.18 | .85 | 1 | 2⅞ | 3¾ | 3 | 1½ | 4.7 |

10 Pitch

| | | | | | | | | | | |
|----|---------|------|------|-----|---|----|----|----|----|-----|
| 20 | HM1020A | 2.00 | 2.14 | .44 | ½ | 1⅞ | 2 | 1¾ | 1⅞ | .76 |
| 20 | HM1020B | 2.00 | 2.14 | .44 | ⅝ | 1⅞ | 2 | 1¾ | 1⅞ | .70 |
| 20 | HM1020 | 2.00 | 2.14 | .44 | ¾ | 1⅞ | 2 | 1¾ | 1⅞ | .64 |
| 20 | HM1020C | 2.00 | 2.14 | .44 | ⅞ | 1⅞ | 2 | 1¾ | 1⅞ | .58 |
| 25 | HM1025 | 2.50 | 2.64 | .55 | ¾ | 1¾ | 2⅞ | 2 | 1⅞ | 1.3 |
| 25 | HM1025A | 2.50 | 2.64 | .55 | ⅞ | 1¾ | 2⅞ | 2 | 1⅞ | 1.2 |
| 25 | HM1025B | 2.50 | 2.64 | .55 | 1 | 1¾ | 2⅞ | 2 | 1⅞ | 1.2 |
| 30 | HM1030 | 3.00 | 3.14 | .64 | ¾ | 1¾ | 2¾ | 2 | 1 | 1.8 |

GEARS

Miter Gears 20° Pressure Angle



Steel - Plain Bore — Hardened Teeth

| Number Teeth | Catalog Number | Diameter | | Face (Inches) | Bore (Inches) | | Mounting (Inches) | Hub (Inches) | | Wt. Lbs. (App.) |
|--------------|----------------|----------|---------|---------------|---------------|--------|-------------------|--------------|--------------|-----------------|
| | | Pitch | Outside | | Diameter | Length | | Diameter | Proj. (App.) | |

12 Pitch

| | | | | | | | | | | |
|----|---------|------|------|-----|----------------|-----------------|------------------|-----------------|-----------------|-----|
| 15 | HM1215 | 1.25 | 1.37 | .27 | $\frac{3}{8}$ | $\frac{5}{64}$ | $1\frac{1}{4}$ | 1 | $\frac{1}{2}$ | .15 |
| 15 | HM1215A | 1.25 | 1.37 | .27 | $\frac{7}{16}$ | $\frac{5}{64}$ | $1\frac{1}{4}$ | 1 | $\frac{1}{2}$ | .15 |
| 15 | HM1215B | 1.25 | 1.37 | .27 | $\frac{1}{2}$ | $\frac{5}{64}$ | $1\frac{1}{4}$ | 1 | $\frac{1}{2}$ | .15 |
| 18 | HM1218 | 1.50 | 1.62 | .32 | $\frac{1}{2}$ | $1\frac{1}{64}$ | $1\frac{1}{2}$ | $1\frac{1}{4}$ | $\frac{5}{8}$ | .30 |
| 18 | HM1218A | 1.50 | 1.62 | .32 | $\frac{5}{8}$ | $1\frac{1}{64}$ | $1\frac{1}{2}$ | $1\frac{1}{4}$ | $\frac{5}{8}$ | .25 |
| 18 | HM1218B | 1.50 | 1.62 | .32 | $\frac{3}{4}$ | $1\frac{1}{64}$ | $1\frac{1}{2}$ | $1\frac{1}{4}$ | $\frac{5}{8}$ | .22 |
| 21 | HM1221 | 1.75 | 1.87 | .39 | $\frac{1}{2}$ | $1\frac{1}{16}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | $\frac{11}{16}$ | .22 |
| 21 | HM1221B | 1.75 | 1.87 | .39 | $\frac{5}{8}$ | $1\frac{1}{16}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | $\frac{11}{16}$ | .42 |
| 24 | HM1224 | 2.00 | 2.12 | .43 | $\frac{1}{2}$ | $1\frac{1}{32}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | $\frac{11}{16}$ | .62 |
| 30 | HM1230 | 2.50 | 2.62 | .54 | $\frac{5}{8}$ | $1\frac{3}{64}$ | 2 $\frac{1}{16}$ | 1 $\frac{1}{2}$ | $\frac{27}{32}$ | 1.1 |

14 Pitch

| | | | | | | | | | | |
|----|---------|------|------|-----|----------------|-----------------|-----------------|---------------|---------------|-----|
| 14 | HM1414 | 1.00 | 1.11 | .19 | $\frac{3}{8}$ | $\frac{47}{64}$ | $1\frac{1}{16}$ | $\frac{7}{8}$ | $\frac{1}{2}$ | .10 |
| 14 | HM1414A | 1.00 | 1.11 | .19 | $\frac{7}{16}$ | $\frac{47}{64}$ | $1\frac{1}{16}$ | $\frac{7}{8}$ | $\frac{1}{2}$ | .10 |

16 Pitch

| | | | | | | | | | | |
|----|--------|------|------|-----|---------------|---------------|-----------------|---------------|----------------|-----|
| 16 | HM1616 | 1.00 | 1.09 | .22 | $\frac{3}{8}$ | $\frac{3}{4}$ | $1\frac{1}{16}$ | $\frac{3}{4}$ | $\frac{7}{16}$ | .07 |
| 24 | HM1624 | 1.50 | 1.59 | .31 | $\frac{1}{2}$ | $\frac{7}{8}$ | 1 $\frac{1}{8}$ | 1 | $\frac{1}{2}$ | .20 |

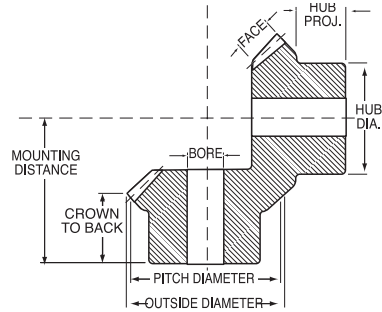
24 Pitch

| | | | | | | | | | | |
|----|--------|------|------|-----|---------------|----------------|-----------------|---------------|----------------|-----|
| 24 | HM2424 | 1.00 | 1.06 | .20 | $\frac{1}{4}$ | $\frac{3}{16}$ | $\frac{29}{32}$ | $\frac{5}{8}$ | $\frac{3}{32}$ | .06 |
|----|--------|------|------|-----|---------------|----------------|-----------------|---------------|----------------|-----|

GEARS



Miter Gears 20° Pressure Angle



Steel - Furnished With Keyway and Set Screw — Hardened Teeth

| Number Teeth | Catalog Number | Diameter | | Face (Inches) | Bore (Inches) | | Mounting (Inches) | Hub (Inches) | | Wt. Lbs. (App.) |
|--------------|----------------|----------|---------|---------------|---------------|--------|-------------------|--------------|--------------|-----------------|
| | | Pitch | Outside | | Diameter | Length | | Diameter | Proj. (App.) | |

4 Pitch

| | | | | | | | | | | |
|----|---------|------|------|------|-----------------|------------------|-----------------|---|------------------|------|
| 24 | HMK424A | 6.00 | 6.36 | 1.33 | 1 $\frac{1}{4}$ | 3 $\frac{3}{16}$ | 5 $\frac{1}{2}$ | 4 | 1 $\frac{1}{16}$ | 13.7 |
| 28 | HMK428 | 7.00 | 7.36 | 1.43 | 2 | 3 $\frac{3}{8}$ | 6 | 5 | 1 $\frac{1}{8}$ | 20.4 |

5 Pitch

| | | | | | | | | | | |
|----|---------|------|------|------|-----------------|---|-----------------|-----------------|-----------------|-----|
| 25 | HMK525 | 5.00 | 5.29 | 1.10 | 1 $\frac{1}{4}$ | 3 | 4 $\frac{1}{2}$ | 3 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 8.5 |
| 25 | HMK525B | 5.00 | 5.29 | 1.10 | 1 $\frac{1}{4}$ | 3 | 4 $\frac{1}{2}$ | 3 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 7.5 |

6 Pitch

| | | | | | | | | | | |
|----|---------|------|------|-----|-----------------|------------------|-----------------|-----------------|------------------|-----|
| 24 | HMK624 | 4.00 | 4.24 | .86 | 1 $\frac{1}{4}$ | 2 $\frac{1}{16}$ | 3 $\frac{3}{8}$ | 3 | 1 $\frac{1}{16}$ | 4.4 |
| 24 | HMK624A | 4.00 | 4.24 | .86 | 1 $\frac{1}{4}$ | 2 $\frac{1}{16}$ | 3 $\frac{3}{8}$ | 3 | 1 $\frac{1}{16}$ | 4.0 |
| 27 | HMK627 | 4.50 | 4.74 | .96 | 1 $\frac{1}{4}$ | 2 $\frac{1}{2}$ | 4 $\frac{1}{8}$ | 3 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | 6.3 |
| 27 | HMK627A | 4.50 | 4.74 | .96 | 1 $\frac{1}{2}$ | 2 $\frac{1}{2}$ | 4 $\frac{1}{8}$ | 3 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | 5.9 |

8 Pitch

| | | | | | | | | | | |
|----|---------|------|------|-----|------------------|------------------|------------------|-----------------|------------------|-----|
| 24 | HMK824 | 3.00 | 3.18 | .64 | $\frac{3}{4}$ | 1 $\frac{3}{16}$ | 2 $\frac{1}{16}$ | 1 $\frac{1}{2}$ | 1 $\frac{3}{16}$ | 1.5 |
| 24 | HMK824A | 3.00 | 3.18 | .64 | 1 | 1 $\frac{9}{16}$ | 2 $\frac{1}{8}$ | 2 $\frac{1}{2}$ | 1 | 2.1 |
| 24 | HMK824B | 3.00 | 3.18 | .64 | 1 $\frac{1}{4}$ | 1 $\frac{5}{8}$ | 2 $\frac{1}{4}$ | 2 $\frac{1}{2}$ | 1 | 1.8 |
| 28 | HMK828 | 3.50 | 3.68 | .75 | 1 | 2 $\frac{3}{32}$ | 3 $\frac{1}{4}$ | 2 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 2.9 |
| 28 | HMK828A | 3.50 | 3.68 | .75 | 1 $\frac{1}{16}$ | 2 $\frac{3}{32}$ | 3 $\frac{1}{4}$ | 2 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 2.7 |
| 28 | HMK828B | 3.50 | 3.68 | .75 | 1 $\frac{1}{4}$ | 2 $\frac{3}{32}$ | 3 $\frac{1}{4}$ | 2 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | 2.6 |

10 Pitch

| | | | | | | | | | | |
|----|----------|------|------|-----|---------------|------------------|------------------|-----------------|------------------|------|
| 20 | HMK1020A | 2.00 | 2.14 | .44 | $\frac{1}{2}$ | 1 $\frac{3}{16}$ | 2 | 1 $\frac{1}{2}$ | 1 $\frac{3}{16}$ | .74 |
| 20 | HMK1020B | 2.00 | 2.14 | .44 | $\frac{5}{8}$ | 1 $\frac{1}{2}$ | 2 | 1 $\frac{1}{2}$ | 1 $\frac{3}{16}$ | .70 |
| 20 | HMK1020 | 2.00 | 2.14 | .44 | $\frac{3}{4}$ | 1 $\frac{5}{8}$ | 2 | 1 $\frac{1}{2}$ | 1 $\frac{3}{16}$ | .63 |
| 20 | HMK1020C | 2.00 | 2.14 | .44 | $\frac{7}{8}$ | 1 $\frac{3}{4}$ | 2 | 1 $\frac{1}{2}$ | 1 $\frac{3}{16}$ | .58 |
| 25 | HMK1025 | 2.50 | 2.64 | .55 | $\frac{3}{4}$ | 1 $\frac{1}{2}$ | 2 $\frac{1}{16}$ | 2 | 1 $\frac{5}{16}$ | 1.30 |
| 25 | HMK1025A | 2.50 | 2.64 | .55 | $\frac{7}{8}$ | 1 $\frac{1}{2}$ | 2 $\frac{1}{16}$ | 2 | 1 $\frac{5}{16}$ | 1.20 |
| 25 | HMK1025B | 2.50 | 2.64 | .55 | 1 | 1 $\frac{1}{2}$ | 2 $\frac{1}{16}$ | 2 | 1 $\frac{5}{16}$ | 1.10 |

12 Pitch

| | | | | | | | | | | |
|----|----------|------|------|-----|---------------|-----------------|------------------|-----------------|------------------|-----|
| 15 | HMK1215B | 1.25 | 1.37 | .27 | $\frac{1}{2}$ | $\frac{5}{16}$ | 1 $\frac{1}{4}$ | 1 | $\frac{1}{2}$ | .14 |
| 18 | HMK1218A | 1.50 | 1.62 | .32 | $\frac{5}{8}$ | 1 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{4}$ | $\frac{5}{8}$ | .25 |
| 21 | HMK1221B | 1.75 | 1.87 | .39 | $\frac{3}{4}$ | 1 $\frac{1}{8}$ | 1 $\frac{1}{4}$ | 1 $\frac{1}{2}$ | 1 $\frac{1}{16}$ | .41 |
| 30 | HMK1230 | 2.50 | 2.62 | .54 | $\frac{5}{8}$ | 1 $\frac{3}{4}$ | 2 $\frac{1}{16}$ | 1 $\frac{1}{2}$ | 2 $\frac{7}{32}$ | 1.1 |

16 Pitch

| | | | | | | | | | | |
|----|---------|------|------|-----|---------------|---------------|------------------|---------------|----------------|-----|
| 16 | HMK1616 | 1.00 | 1.09 | .22 | $\frac{3}{8}$ | $\frac{3}{8}$ | 1 $\frac{1}{16}$ | $\frac{3}{4}$ | $\frac{7}{16}$ | .07 |
| 24 | HMK1624 | 1.50 | 1.59 | .31 | $\frac{1}{2}$ | $\frac{7}{8}$ | 1 $\frac{1}{8}$ | 1 | $\frac{1}{2}$ | .20 |

GEARS

Miter Gear Horsepower Ratings



Steel

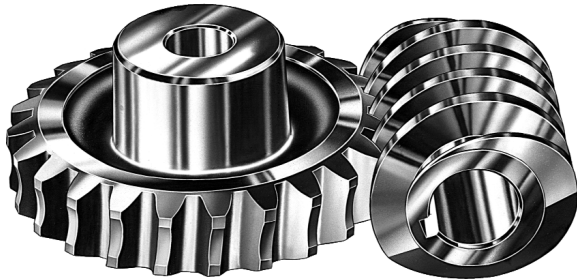
| Catalog Number | Revolutions Per Minute | | | | | | | | | |
|----------------|------------------------|------|-----|------|------|------|------|------|------|------|
| | 10 | 25 | 50 | 100 | 200 | 300 | 600 | 900 | 1200 | 1800 |
| M424 | .80 | 1.90 | 3.6 | 6.4 | 10.6 | 13.5 | 18.8 | 21.5 | 23.0 | |
| HM424 | 1.40 | 3.33 | 6.3 | 11.2 | 18.6 | 23.6 | 33.0 | 38.0 | 40.0 | |
| M428 | 1.07 | 2.50 | 4.8 | 8.4 | 13.6 | 17.2 | 23.3 | 26.5 | 28.5 | |
| HM428 | 1.90 | 4.50 | 8.4 | 14.7 | 23.8 | 30.0 | 40.0 | 46.0 | 50.0 | |
| M525 | .45 | 1.05 | 2.0 | 3.7 | 6.3 | 8.1 | 11.6 | 13.6 | 15.0 | |
| HM525 | .75 | 1.90 | 3.6 | 6.5 | 11.0 | 14.2 | 20.0 | 24.0 | 26.0 | |
| M624 | .25 | .55 | 1.1 | 2.0 | 3.5 | 4.6 | 6.9 | 8.2 | 19.0 | 10.2 |
| HM624 | .40 | 1.00 | 1.9 | 3.5 | 6.1 | 8.0 | 12.0 | 14.5 | 16.0 | 18.0 |
| M627 | .30 | .75 | 1.4 | 2.5 | 4.3 | 5.7 | 8.5 | 9.9 | 11.0 | 12.0 |
| HM627 | .50 | 1.33 | 2.5 | 4.4 | 7.5 | 10.0 | 1.5 | 17.5 | 19.0 | 21.0 |
| M824 | .10 | .25 | .5 | .9 | 1.5 | 2.1 | 3.3 | 4.0 | 4.5 | 5.3 |
| HM824 | .20 | .40 | .8 | 1.5 | 2.6 | 3.7 | 5.8 | 7.0 | 8.0 | 9.3 |
| M828 | .15 | .33 | .7 | 1.2 | 2.2 | 2.9 | 4.4 | 5.3 | 6.0 | 6.8 |
| HM828 | .25 | .60 | 1.2 | 2.1 | 3.9 | 5.0 | 7.7 | 9.3 | 10.5 | 12.0 |
| M832 | .20 | .45 | .9 | 1.6 | 2.8 | 3.7 | 5.5 | 6.5 | 7.2 | 8.0 |
| HM832 | .33 | .80 | 1.5 | 2.8 | 4.9 | 6.5 | 9.6 | 11.4 | 12.5 | 14.2 |
| M1020 | .03 | .08 | .2 | .3 | .6 | .8 | 1.3 | 1.7 | 2.0 | 2.4 |
| HM1020 | .05 | .15 | .3 | .5 | 1.0 | 1.4 | 2.3 | 3.0 | 3.5 | 4.2 |
| M1025 | .06 | .15 | .3 | .5 | .9 | 1.3 | 2.0 | 2.5 | 2.9 | 3.5 |
| HM1025 | .10 | .25 | .5 | .9 | 1.6 | 2.3 | 3.5 | 4.4 | 5.0 | 6.0 |
| M1030 | .08 | .20 | .4 | .7 | 1.3 | 1.8 | 2.8 | 3.5 | 3.9 | 4.5 |
| HM1030 | .15 | .33 | .7 | 1.3 | 2.3 | 3.2 | 4.9 | 6.1 | 6.8 | 8.0 |
| M1215 | .01 | .02 | .05 | .10 | .20 | .3 | .5 | .6 | .8 | .9 |
| HM1215 | .02 | .04 | .10 | .17 | .33 | .4 | .8 | 1.0 | 1.3 | 1.6 |
| M1218 | .01 | .03 | .08 | .14 | .25 | .4 | .7 | .9 | 1.0 | 1.3 |
| HM1218 | .02 | .05 | .15 | .25 | .47 | .7 | 1.1 | 1.5 | 1.8 | 2.2 |
| M1221 | .02 | .05 | .11 | .20 | .40 | .5 | .9 | 1.2 | 1.4 | 1.7 |
| HM1221 | .04 | .10 | .20 | .33 | .70 | 1.0 | 1.6 | 2.1 | 2.5 | 3.0 |
| M1224 | .03 | .07 | .15 | .25 | .50 | .7 | 1.2 | 1.5 | 1.7 | 2.0 |
| HM1224 | .05 | .12 | .25 | .47 | .90 | 1.2 | 2.1 | 2.6 | 3.0 | 3.5 |
| M1230 | .05 | .12 | .25 | .44 | .80 | 1.1 | 1.8 | 2.2 | 2.5 | 3.0 |
| HM1230 | .09 | .21 | .40 | .75 | 1.40 | 1.9 | 3.2 | 4.0 | 4.4 | 5.3 |
| M1414 | | .01 | .02 | .05 | .09 | .1 | .2 | .3 | .4 | .5 |
| HM1414 | | .02 | .04 | .09 | .16 | .2 | .4 | .6 | .7 | .9 |
| M1616 | | .01 | .02 | .05 | .09 | .1 | .2 | .3 | .4 | .5 |
| HM1616 | | .02 | .04 | .09 | .16 | .2 | .4 | .6 | .7 | .9 |
| M1620 | | .02 | .04 | .08 | .14 | .2 | .4 | .5 | .6 | .8 |
| HM1620 | | .04 | .07 | .15 | .25 | .4 | .7 | .9 | 1.0 | 1.3 |
| M1624 | | .03 | .06 | .12 | .20 | .3 | .5 | .7 | .8 | 1.0 |
| HM1624 | | .05 | .10 | .21 | .40 | .5 | .9 | 1.2 | 1.4 | 1.8 |
| M2020 | | .01 | .02 | .04 | .08 | .1 | .2 | .2 | .4 | .5 |
| HM2020 | | .02 | .04 | .07 | .14 | .2 | .4 | .5 | .6 | .8 |
| M2025 | | .02 | .03 | .06 | .12 | .2 | .3 | .4 | .5 | .6 |
| HM2025 | | .04 | .05 | .10 | .21 | .3 | .5 | .7 | .9 | 1.0 |

Ratings listed to right of dark line exceed recommended pitch line velocity.

GEARS



Worm Gears



Right Hand Worm and Gear



Single, Double, Quadruple Thread Worms

***NOTE: SELF-LOCKING ABILITY**

There is often some confusion as to the self-locking ability of a worm and gear set. *Martin* worm gear sets, under no condition should be considered to hold a load when at rest. The statement is made to cover the broad spectrum of variables affecting self-locking characteristics of a particular gear set in a specific application. Theoretically, a worm gear will not back drive if the friction angle is greater than the worm lead angle. However, the actual surface finish and lubrication may reduce this significantly. More important, vibration may cause motion at the point of mesh with further reduction in the friction angle.

Generally speaking, if the worm lead angle is less than 5°, there is reasonable expectation of self-locking. Again, no guarantee should be made and customer should be advised. **If safety is involved, a positive brake should be used.**

Originally, worm gearing was used to secure, by compact means, a large reduction of speed between driving and driven shafts with a proportionate increase (except for frictional loss) in the torque of the driven shaft. Worm gearing is still used for this purpose, and frequently the wheel is driven by a single-thread worm of such low helix angle that the drive cannot be reversed; that is the wheel cannot drive the worm as the gearing automatically locks itself against backward rotation. (*See note below.)

Although a multiple-threaded worm when applied under like conditions is much more efficient than a single-threaded worm, it does not follow that the multiple-threaded worm should always be used.

A single-threaded worm might be preferable when the most important requirement is to obtain a high ratio and especially if the worm must be self-locking.

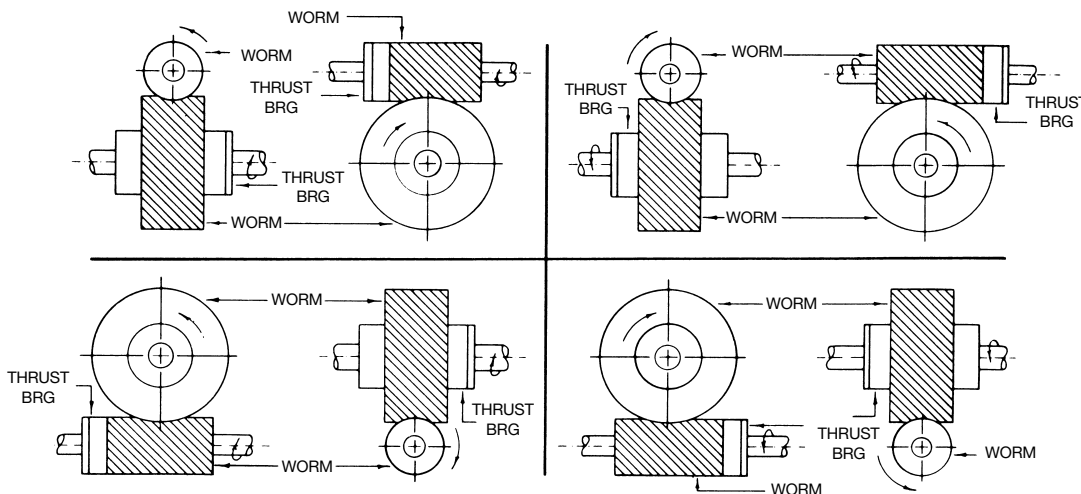
When power is the primary factor, the multiple-threaded worms should be used.

LUBRICATION is an important factor when using worm gearing. An increase in heat generated means a decrease in efficiency. The amount of power which can be transmitted at a given temperature increases as the efficiency of the gearing increases.

MATERIALS for worm and worm gears are generally confined to steel for worms and bronze or cast iron for gears. When steel worms are run with bronze gears at high speeds, the worm is usually hardened with ground threads.

GEARS

Direction of Rotation and Thrust Right Hand

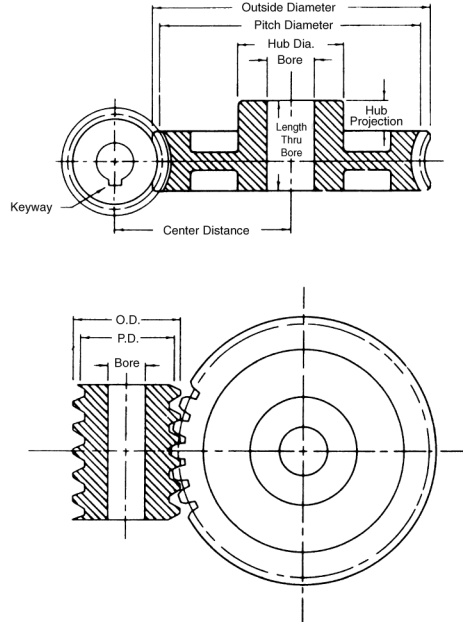
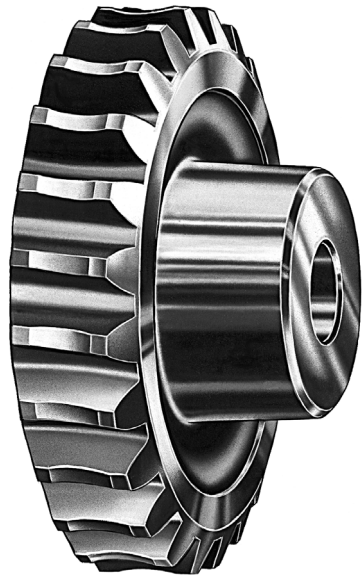


Worm and Worm Gears

3 Pitch • 2" Face • 14½° Pressure Angle



Right Hand Single Thread (Stocked Right Hand Only)



GEARS

Cast Iron

| No. Teeth | Catalog Number Cast Iron | Wt. Lbs. (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|-----------|--------------------------|-----------------|------------|---------------|--------------|-------|-------|
| | | | | | Dia. | Proj. | |
| 18 | W318 | 16.2 | 6.000 | 1 | 3 | 1½ | W |
| 24 | W324 | 22.8 | 8.000 | 1½ | 3½ | 1½ | S |
| 30 | W330 | 30.2 | 10.000 | 1½ | 3½ | 1½ | S |
| 36 | W336 | 36.4 | 12.000 | 1½ | 3½ | 1½ | S |
| 54 | W354 | 60.2 | 18.000 | 1½ | 4 | 1½ | S |

W = WEB S = SPOKE



Steel — 4° 46' Helix Angle Worms

| Catalog Number Soft | Wt. Lbs. (App.) | Catalog Number Hardened | Wt. Lbs. (App.) | Faces (Inches) | Pitch Dia. | Bore (Inches) | Keyway (Inches) |
|---------------------|-----------------|-------------------------|-----------------|----------------|------------|---------------|-----------------|
| W3 | 12.2 | WG3 | 12.0 | 4 | 4.000 | 1½ | ¾x¾ |

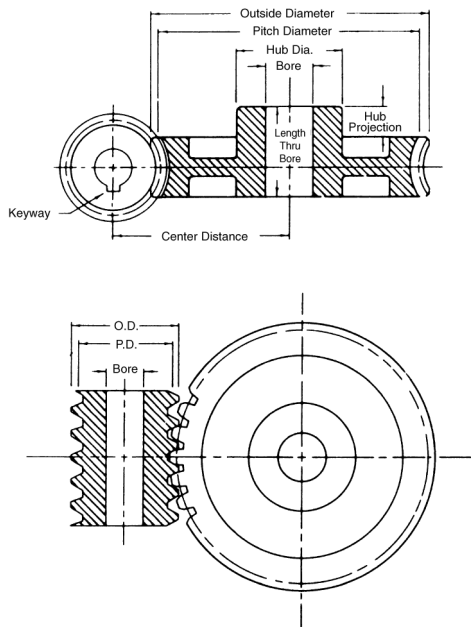
Case hardened worms have ground and polished threads (Indicated by letter "G" in catalog number).



Worm and Worm Gears

4 Pitch • 1½" Face • 14½° Pressure Angle

Right Hand Single Thread (Stocked Right Hand Only)



Cast Iron

| No. Teeth | Catalog Number Cast Iron | Wt. Lbs. (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|-----------|--------------------------|-----------------|------------|---------------|--------------|-------|-------|
| | | | | | Dia. | Proj. | |
| 20 | W420 | 8.4 | 5.000 | 1 | 2½ | 1¼ | W |
| 24 | W424 | 12.9 | 6.000 | 1 | 2½ | 1¼ | W |
| 32 | W432 | 15.6 | 8.000 | 1¼ | 3 | 1¼ | W |
| 40 | W440 | 27.5 | 10.000 | 1¼ | 3 | 1¼ | W |
| 48 | W448 | 34.1 | 12.000 | 1½ | 4 | 1¼ | W |
| 64 | W464 | 43.9 | 16.000 | 1½ | 4 | 1¼ | S |

W = WEB S = SPOKE



Steel — 4° 46' Helix Angle Worms

| Catalog Number Soft | Wt. Lbs. (App.) | Catalog Number Hardened | Wt. Lbs. (App.) | Faces (Inches) | Pitch Dia. | Bore (Inches) | Keyway (Inches) |
|---------------------|-----------------|-------------------------|-----------------|----------------|------------|---------------|-----------------|
| W4 | 5.6 | WG4 | 5.5 | 3½ | 3.000 | 1¼ | 5/16x5/32 |

Case hardened worms have ground and polished threads (Indicated by letter "G" in catalog number).

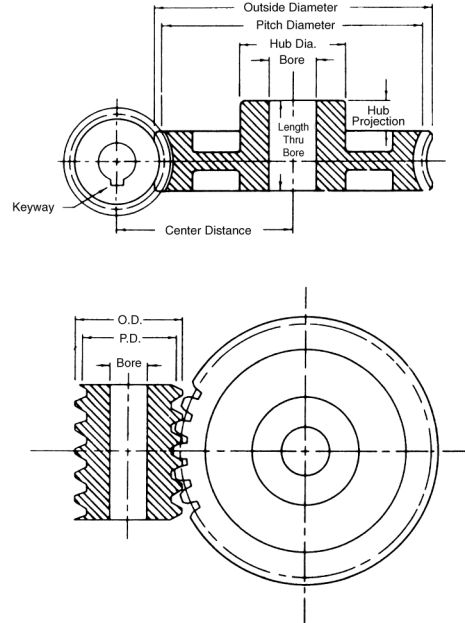
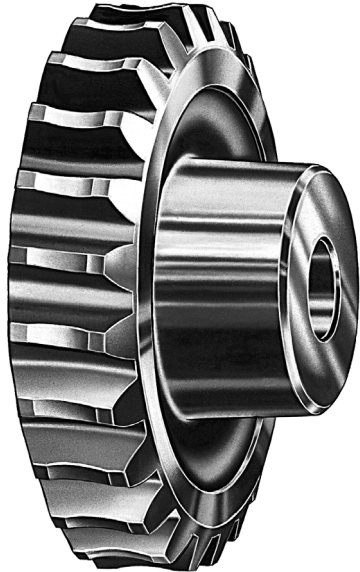
GEARS

Worm and Worm Gears

6 Pitch • 1" Face • 14½° Pressure Angle



Right Hand Single Thread (Stocked Right Hand Only)



GEARS

Cast Iron

| No. Teeth | Catalog Number Cast Iron | Wt. Lbs. (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|-----------|--------------------------|-----------------|------------|---------------|--------------|-------|-------|
| | | | | | Dia. | Proj. | |
| 20 | W620 | 2.5 | 3.333 | ¾ | 1½ | ¾ | W |
| 24 | W624 | 3.6 | 4.000 | ¾ | 1½ | ¾ | W |
| 30 | W630 | 5.0 | 5.000 | ¾ | 2½ | ¾ | W |
| 36 | W636 | 6.0 | 6.000 | 1 | 2½ | ¾ | W |
| 40 | W640 | 7.6 | 6.667 | 1 | 2½ | ¾ | W |
| 48 | W648 | 9.2 | 8.000 | 1½ | 2¾ | 1 | W |
| 60 | W660 | 13.7 | 10.000 | 1½ | 3 | 1½ | W |
| 72 | W672 | 14.9 | 12.000 | 1½ | 3 | 1½ | W |

Has 2¾" hub diameter and 1¼" hub proj. W = WEB



Steel — 4° 46' Helix Angle Worms

| Catalog Number Soft | Wt. Lbs. (App.) | Catalog Number Hardened | Wt. Lbs. (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Keyway (Inches) |
|---------------------|-----------------|-------------------------|-----------------|---------------|------------|---------------|--------------|-------|-----------------|
| | | | | | | | Dia. | Proj. | |
| W6 | 1.8 | WG6 | 1.7 | 2½ | 2.000 | ¾ | 1⅙ | ¾ | ⅜x⅜ |
| WH6 | 2.7 | | | 2½ | 2.000 | ¾ | 1⅙ | ¾ | ⅜x⅜ |

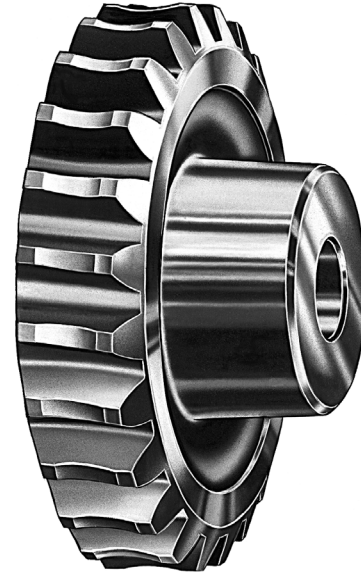
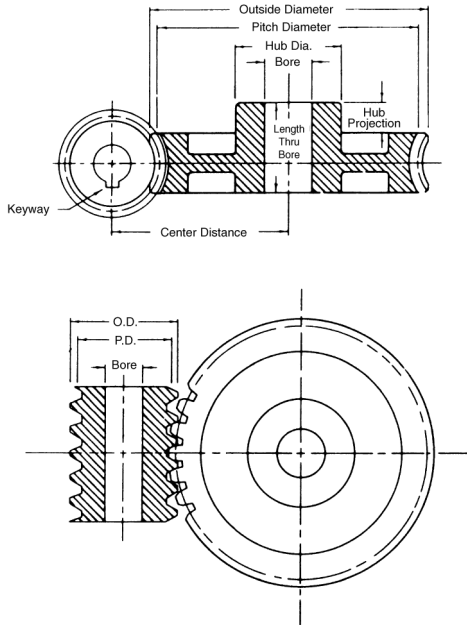
Case hardened worms have ground and polished threads (Indicated by letter "G" in catalog number).



Worm and Worm Gears

6 Pitch • 1" Face • 14½° Pressure Angle

Right Hand Double Thread (Stocked Right Hand Only)



Cast Iron

| Number Teeth | Catalog Number Cast Iron | Wt. Lbs. (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|--------------|--------------------------|-----------------|------------|---------------|--------------|-------|-------|
| | | | | | Dia. | Proj. | |
| 20 | W620D | 3.3 | 3.333 | 1 | 2½ | 1 | PLAIN |
| 24 | W624D | 4.1 | 4.000 | 1½ | 2½ | 1 | PLAIN |
| 30 | W630D | 5.2 | 5.000 | 1½ | 2½ | 1 | W |
| 40 | W640D | 7.6 | 6.667 | 1½ | 2½ | 1 | W |

W = WEB



Steel — 9° 28' Helix Angle Worms

| Catalog Number Soft | Weight Pounds (App.) | Face (Inches) | Pitch Diameter | Bore (Inches) | Keyway (Inches) |
|---------------------|----------------------|---------------|----------------|---------------|-----------------|
| W6D | 1.6 | 2½ | 2.000 | 1 | ¼x¼ |

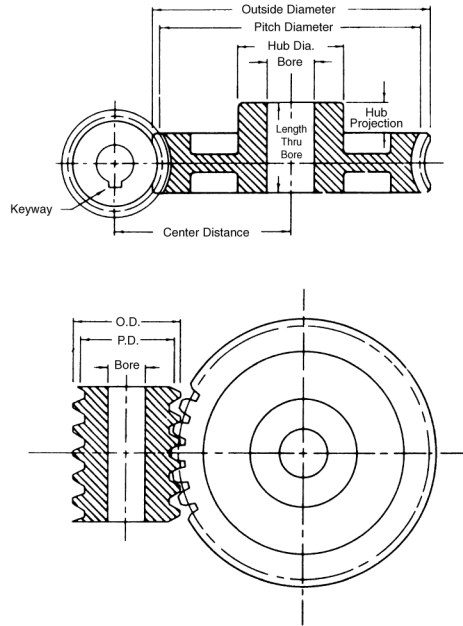
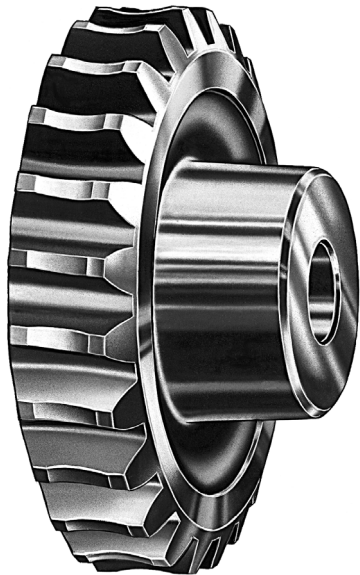
GEARS

Worm and Worm Gears

6 Pitch • 1" Face • 14½° Pressure Angle



Right Hand Quadruple Thread (Stocked Right Hand Only)



GEARS

Cast Iron

| Number Teeth | Catalog Number Cast Iron | Wt. Lbs. (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|--------------|--------------------------|-----------------|------------|---------------|--------------|-------|-------|
| | | | | | Dia. | Proj. | |
| 20 | W620Q | 3.4 | 3.333 | 1 | 2½ | 1 | PLAIN |
| 24 | W624Q | 4.1 | 4.000 | 1½ | 2½ | 1 | PLAIN |



Steel — 18° 26' Helix Angle Worms

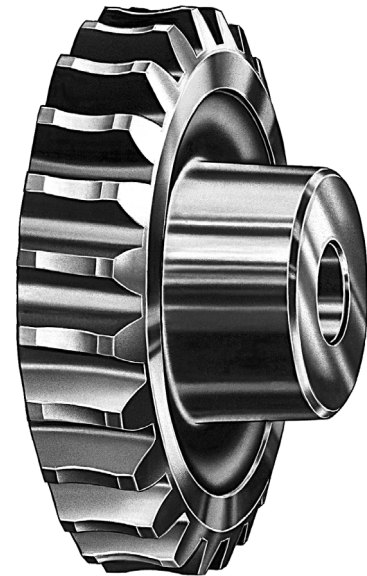
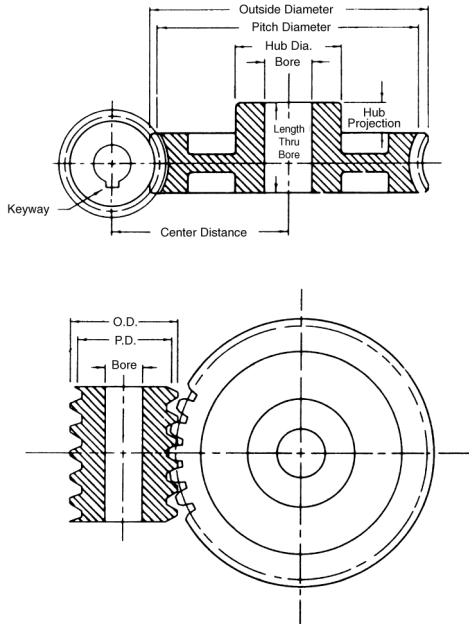
| Catalog Number Soft | Wt. Lbs. (App.) | Face (Inches) | Pitch Diameter | Bore (Inches) | Keyway (Inches) |
|---------------------|-----------------|---------------|----------------|---------------|-----------------|
| W6Q | 1.6 | 2½ | 2.000 | 1 | ¼x¼ |



Worm and Worm Gears

8 Pitch • $\frac{3}{4}$ " Face • $14\frac{1}{2}^\circ$ Pressure Angle

Right Hand Single Thread (Stocked Right Hand Only)



Cast Iron

| Number Teeth | Catalog Number Cast Iron | Weight Pounds (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|--------------|--------------------------|----------------------|------------|----------------|----------------|---------------|-------|
| | | | | | Dia. | Proj. | |
| 20 | W820 | 1.3 | 2.500 | $\frac{3}{4}$ | $1\frac{1}{4}$ | $\frac{3}{4}$ | PLAIN |
| 30 | W830 | 2.4 | 3.750 | $\frac{3}{4}$ | $1\frac{1}{4}$ | $\frac{3}{4}$ | W |
| 40 | W840 | 3.7 | 5.000 | 1 | $2\frac{1}{2}$ | $\frac{7}{8}$ | W |
| 48 | W848 | 4.5 | 6.000 | 1 | $2\frac{3}{4}$ | $\frac{7}{8}$ | W |
| 50 | W850 | 5.1 | 6.250 | 1 | $2\frac{3}{4}$ | $\frac{7}{8}$ | W |
| 60 | W860 | 6.1 | 7.500 | 1 | $2\frac{1}{2}$ | $\frac{7}{8}$ | W |
| 80 | W880 | 8.9 | 10.000 | $1\frac{1}{4}$ | 3 | $\frac{7}{8}$ | W |

W = WEB



Steel — $4^\circ 46'$ Helix Angle Worms

| Catalog Number Soft | Weight Pounds (App.) | Catalog Number Hardened | Wt. Lbs. (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Keyway (Inches) |
|---------------------|----------------------|-------------------------|-----------------|----------------|------------|---------------|----------------|---------------|------------------------------------|
| | | | | | | | Dia. | Proj. | |
| W8 | .64 | WG8 | .62 | $1\frac{1}{4}$ | 1.500 | $\frac{3}{4}$ | $1\frac{1}{6}$ | $\frac{3}{8}$ | $\frac{3}{16} \times \frac{3}{32}$ |
| WH8 | .74 | | | $1\frac{1}{4}$ | 1.500 | $\frac{3}{4}$ | $\frac{3}{8}$ | $\frac{3}{8}$ | |

Case hardened worms have ground and polished threads (Indicated by letter "G" in catalog number).

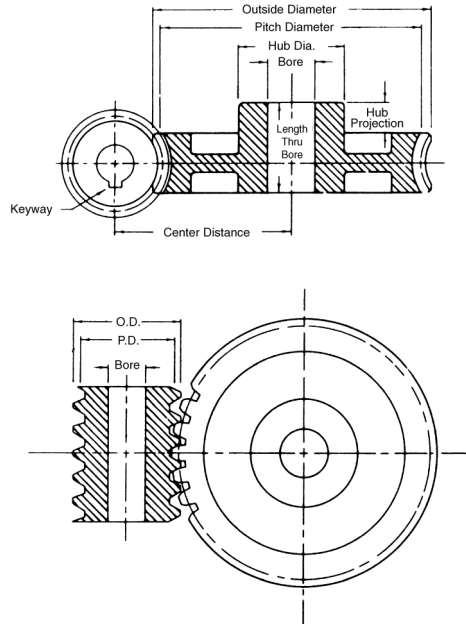
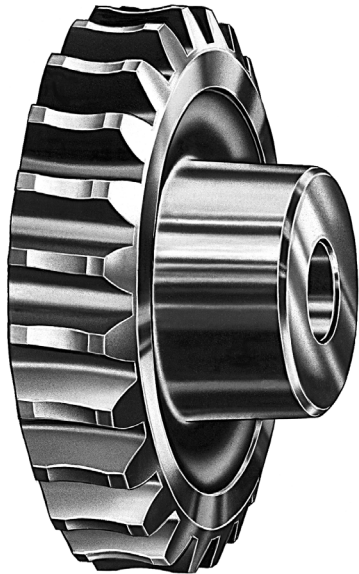
GEARS

Worm and Worm Gears

8 Pitch • $\frac{3}{4}$ " Face • $14\frac{1}{2}$ ° Pressure Angle



Right Hand Double Thread (Stocked Right Hand Only)



GEARS

Cast Iron

| Number Teeth | Catalog Number Cast Iron | Weight Pounds (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|--------------|--------------------------|----------------------|------------|---------------|-----------------|---------------|-------|
| | | | | | Dia. | Proj. | |
| 20 | W820D | 1.2 | 2.500 | 1 | 2 | $\frac{3}{4}$ | PLAIN |
| 30 | W830D | 2.5 | 3.750 | 1 | 2 $\frac{1}{2}$ | $\frac{3}{4}$ | W |
| 40 | W840D | 3.4 | 5.000 | 1 | 2 $\frac{1}{2}$ | $\frac{3}{4}$ | W |

W = WEB



Steel — 9° 28' Helix Angle Worms

| Catalog Number Soft | Weight Pounds (App.) | Catalog Number Hardened | Wt. Lbs. (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Keyway (Inches) |
|---------------------|----------------------|-------------------------|-----------------|-----------------|------------|---------------|------------------|---------------|------------------------------------|
| | | | | | | | Dia. | Proj. | |
| W8D | .56 | WG8D | .54 | 1 $\frac{1}{4}$ | 1.500 | $\frac{3}{8}$ | | | $\frac{3}{16} \times \frac{3}{32}$ |
| WH8D | .74 | | | 1 $\frac{1}{4}$ | 1.500 | $\frac{3}{8}$ | 1 $\frac{1}{16}$ | $\frac{3}{8}$ | |

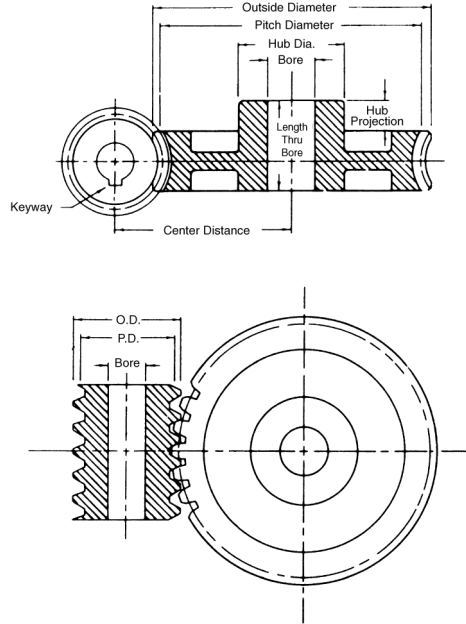
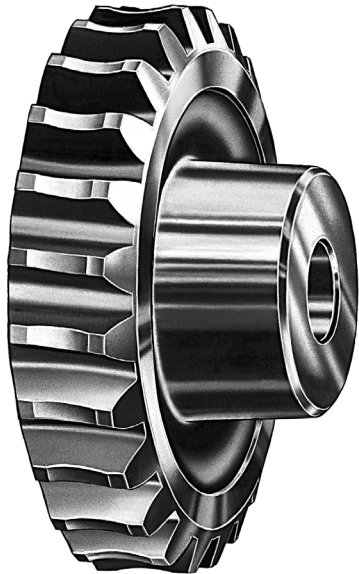
Case hardened worms have ground and polished threads (Indicated by letter "G" in catalog number).



Worm and Worm Gears

8 Pitch • $\frac{3}{4}$ " Face • $14\frac{1}{2}$ ° Pressure Angle

Right Hand Quadruple Thread (Stocked Right Hand Only)



Cast Iron

| Number Teeth | Catalog Number Cast Iron | Weight Pounds (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|--------------|--------------------------|----------------------|------------|---------------|-----------------|---------------|-------|
| | | | | | Dia. | Proj. | |
| 20 | W820Q | 1.2 | 2.500 | 1 | 2 | $\frac{3}{4}$ | PLAIN |
| 30 | W830Q | 2.5 | 3.750 | 1 | 2 $\frac{1}{2}$ | $\frac{3}{4}$ | W |

W = WEB



Steel — 18° 26' Helix Angle Worms

| Catalog Number Cast Iron | Weight Pounds (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Keyway (Inches) |
|--------------------------|----------------------|-----------------|------------|---------------|----------------|---------------|------------------------------------|
| | | | | | Dia. | Proj. | |
| W8Q | .58 | 1 $\frac{1}{4}$ | 1.500 | $\frac{7}{8}$ | $1\frac{1}{6}$ | $\frac{3}{4}$ | $\frac{3}{16} \times \frac{3}{32}$ |
| WH8Q | .76 | 1 $\frac{1}{4}$ | 1.500 | $\frac{3}{4}$ | $1\frac{1}{6}$ | $\frac{3}{4}$ | $\frac{3}{16} \times \frac{3}{32}$ |

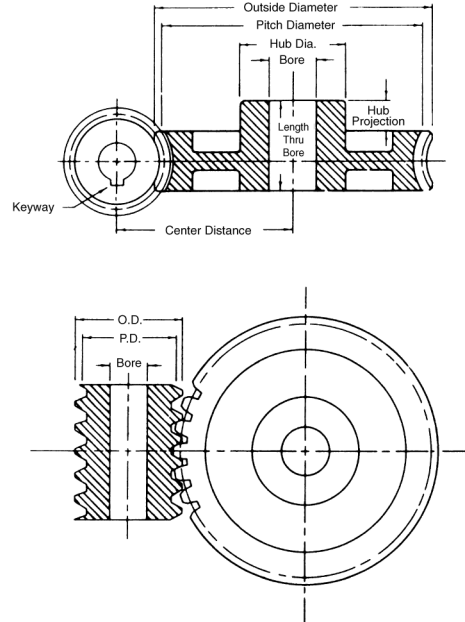
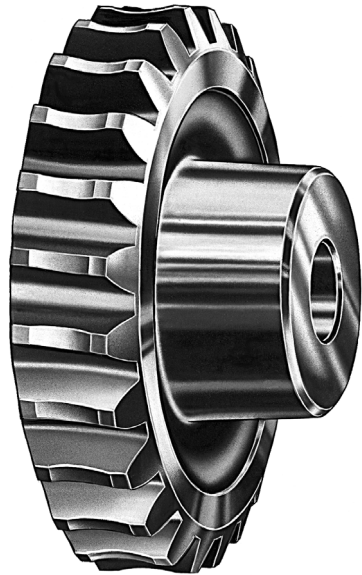
GEARS

Worm and Worm Gears

10 Pitch • $\frac{5}{8}$ " Face • $14\frac{1}{2}$ ° Pressure Angle



Right Hand Single Thread (Stocked Right Hand Only)



GEARS

Cast Iron and Bronze

| Number Teeth | Catalog Number Cast Iron | Weight Pounds (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style | Catalog Number Bronze | Weight Pounds (App.) |
|--------------|--------------------------|----------------------|------------|---------------|----------------|---------------|-------|-----------------------|----------------------|
| | | | | | Dia. | Proj. | | | |
| 20 | W1020 | .7 | 2.000 | $\frac{1}{2}$ | $1\frac{1}{4}$ | $\frac{3}{4}$ | PLAIN | WB1020 | .8 |
| 30 | W1030 | 1.5 | 3.000 | $\frac{3}{4}$ | $1\frac{1}{2}$ | $\frac{3}{4}$ | PLAIN | WB1030 | 1.7 |
| 40 | W1040 | 1.8 | 4.000 | $\frac{3}{4}$ | $1\frac{3}{4}$ | $\frac{3}{4}$ | W | WB1040 | 2.4 |
| 50 | W1050 | 2.8 | 5.000 | $\frac{3}{4}$ | 2 | $\frac{3}{4}$ | W | | |
| 60 | W1060 | 3.6 | 6.000 | $\frac{3}{4}$ | 2 | $\frac{3}{4}$ | W | | |
| 80 | W1080 | 4.8 | 8.000 | $\frac{3}{4}$ | 2 | $\frac{3}{4}$ | W | | |
| 100 | W10100 | 6.0 | 10.000 | $\frac{3}{4}$ | 2 | $\frac{3}{4}$ | W | | |

W = WEB



Steel — $4^{\circ} 34'$ Helix Angle Worms

| Catalog Number Soft | Weight Pounds (App.) | Catalog Number Hardened | Weight Pounds (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Keyway (Inches) |
|---------------------|----------------------|-------------------------|----------------------|----------------|------------|---------------|--------------|---------------|------------------------------------|
| | | | | | | | Dia. | Proj. | |
| W10 | .36 | WG10 | .32 | $1\frac{1}{2}$ | 1.250 | $\frac{3}{4}$ | | | $\frac{3}{16} \times \frac{3}{32}$ |
| WH10 | .42 | | .38 | $1\frac{1}{2}$ | 1.250 | $\frac{3}{4}$ | 1 | $\frac{1}{2}$ | |

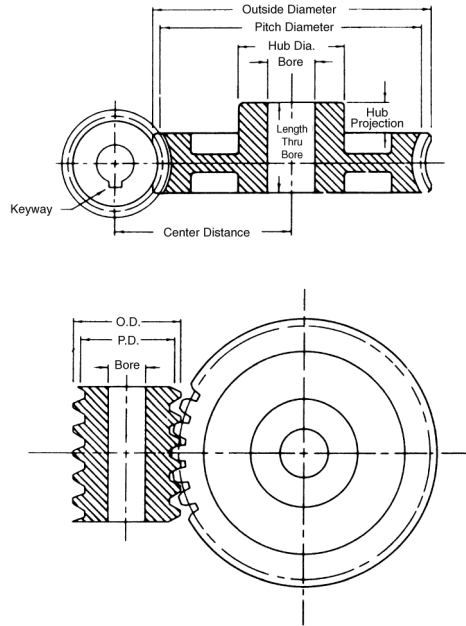
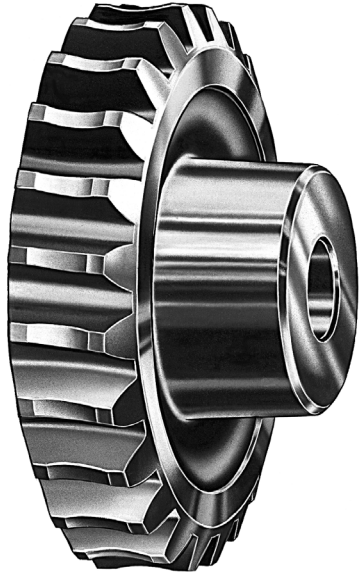
Case hardened worms have ground and polished threads (Indicated by letter "G" in catalog number).



Worm and Worm Gears

10 Pitch • $\frac{5}{8}$ " Face • $14\frac{1}{2}^\circ$ Pressure Angle

Right Hand Double Thread (Stocked Right Hand Only)



Cast Iron and Bronze

| No. Teeth | Catalog Number Cast Iron | Wt. Lbs. (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style | Catalog Number Bronze | Wt. Lbs. (App.) |
|-----------|--------------------------|-----------------|------------|---------------|----------------|---------------|-------|-----------------------|-----------------|
| | | | | | Dia. | Proj. | | | |
| 20 | W1020D | .65 | 2.000 | $\frac{7}{8}$ | $1\frac{1}{2}$ | $\frac{3}{8}$ | PLAIN | WB1020D | .75 |
| 30 | W1030D | 1.3 | 3.000 | $\frac{7}{8}$ | $1\frac{1}{2}$ | $\frac{3}{8}$ | W | WB1030D | 1.3 |
| 40 | W1040D | 1.6 | 4.000 | $\frac{7}{8}$ | $1\frac{1}{2}$ | $\frac{3}{8}$ | W | | |
| 50 | W1050D | 2.9 | 5.000 | $\frac{7}{8}$ | 2 | 1 | W | | |
| 60 | W1060D | 3.0 | 6.000 | $\frac{7}{8}$ | 2 | 1 | W | | |

W = WEB



Steel — $9^\circ 5'$ Helix Angle Worms

| Catalog Number Soft | Weight Pounds (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Keyway (Inches) |
|---------------------|----------------------|----------------|------------|---------------|--------------|---------------|------------------------------------|
| | | | | | Dia. | Proj. | |
| W10D | .28 | $1\frac{1}{2}$ | 1.2500 | $\frac{3}{4}$ | 1 | $\frac{1}{2}$ | $\frac{3}{16} \times \frac{3}{32}$ |
| WH10D | .42 | $1\frac{1}{2}$ | 1.2500 | $\frac{3}{4}$ | 1 | $\frac{1}{2}$ | |

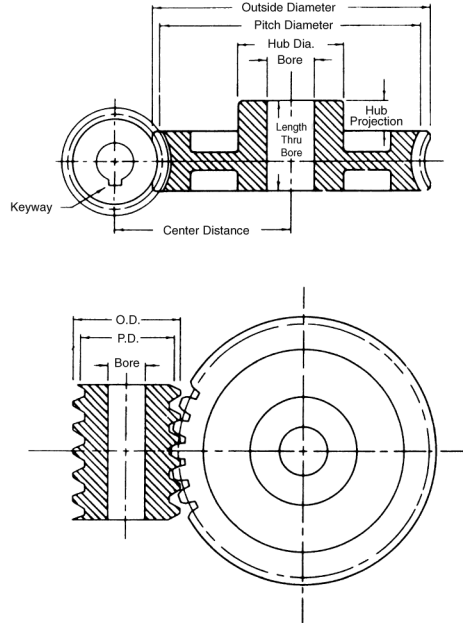
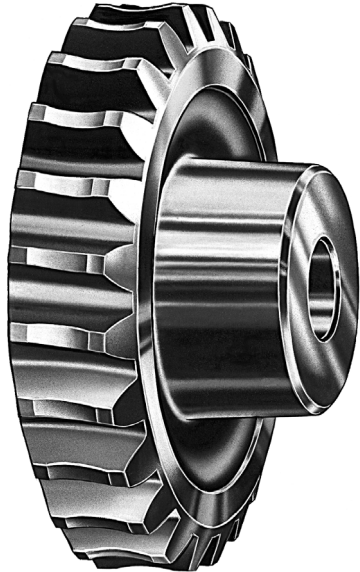
GEARS

Worm and Worm Gears

10 Pitch • $\frac{5}{8}$ " Face • $14\frac{1}{2}^\circ$ Pressure Angle



Right Hand Quadruple Thread (Stocked Right Hand Only)



GEARS

Cast Iron

| Number Teeth | Catalog Number Cast Iron | Weight Pounds (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|--------------|--------------------------|----------------------|------------|---------------|----------------|---------------|-------|
| | | | | | Dia. | Proj. | |
| 20 | W1020Q | .64 | 2.000 | $\frac{7}{8}$ | $1\frac{1}{2}$ | $\frac{5}{8}$ | PLAIN |
| 30 | W1030Q | 1.3 | 3.000 | $\frac{7}{8}$ | $1\frac{1}{2}$ | $\frac{5}{8}$ | W |
| 40 | W1040Q | 1.6 | 4.000 | $\frac{7}{8}$ | $1\frac{1}{2}$ | $\frac{5}{8}$ | W |

W = WEB



Steel — $17^\circ 45'$ Helix Angle Worms

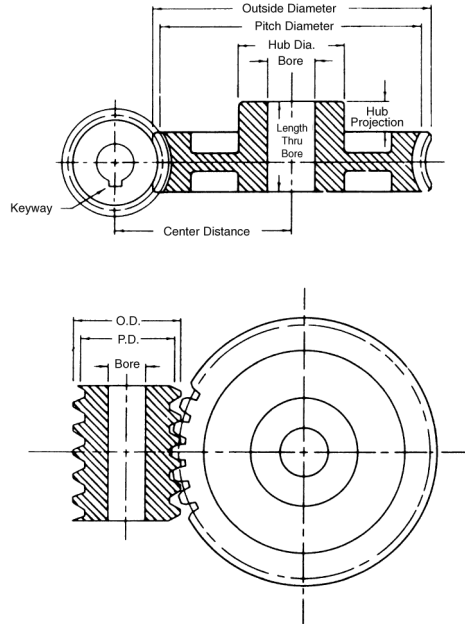
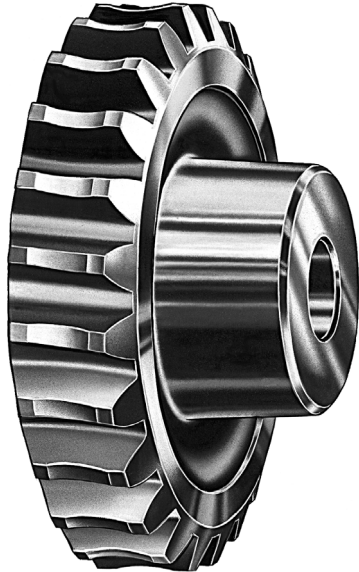
| Catalog Number Soft | Weight Pounds (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Keyway (Inches) |
|---------------------|----------------------|----------------|------------|---------------|--------------|---------------|-----------------------------------|
| | | | | | Dia. | Proj. | |
| W10Q | .28 | $1\frac{1}{2}$ | 1.250 | $\frac{3}{4}$ | 1 | $\frac{1}{2}$ | $\frac{3}{4} \times \frac{3}{32}$ |
| WH10Q | .40 | $1\frac{1}{2}$ | 1.250 | $\frac{3}{4}$ | 1 | $\frac{1}{2}$ | $\frac{3}{4} \times \frac{3}{32}$ |



Worm and Worm Gears

12 Pitch • 1/2" Face • 14 1/2° Pressure Angle

Right Hand Single Thread (Stocked Right Hand Only)



Cast Iron and Bronze

| Number Teeth | Catalog Number Cast Iron | Weight Pounds (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style | Catalog Number Bronze | Wt. Lbs. (App.) |
|--------------|--------------------------|----------------------|------------|---------------|--------------|-------|-------|-----------------------|-----------------|
| | | | | | Dia. | Proj. | | | |
| 18 | W1218 | .28 | 1.500 | 1/2 | 1 1/4 | 3/8 | PLAIN | WB1220 | .45 |
| 20 | W1220 | .35 | 1.667 | 1/2 | 1 1/4 | 3/8 | PLAIN | | |
| 30 | W1230 | .71 | 2.500 | 1/2 | 1 1/4 | 3/8 | W | | |
| 40 | W1240 | 1.2 | 3.333 | 3/4 | 1 1/2 | 3/4 | W | | |
| 50 | W1250 | 1.5 | 4.166 | 3/4 | 1 1/2 | 3/4 | W | | |
| 60 | W1260 | 2.0 | 5.000 | 3/4 | 1 3/4 | 3/4 | W | | |
| 80 | W1280 | 3.9 | 6.666 | 3/4 | 2 1/2 | 3/4 | W | | |
| 100 | W12100 | 4.4 | 8.333 | 3/4 | 2 | 3/4 | W | | |

W = WEB



Steel — 4° 46' Helix Angle Worms

| Catalog Number Soft | Weight Pounds (App.) | Catalog Number Hardened | Weight Pounds (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Keyway (Inches) |
|---------------------|----------------------|-------------------------|----------------------|---------------|------------|---------------|--------------|-------|-----------------|
| | | | | | | | Dia. | Proj. | |
| W12 | .17 | WG12 | .14 | 1 1/4 | 1.000 | 1/2 | 3/4 | 3/4 | 1/8 x 1/16 |
| WH12 | .20 | | | 1 1/4 | 1.000 | 1/2 | 3/4 | 3/4 | |

Case hardened worms have ground and polished threads (Indicated by letter "G" in catalog number).

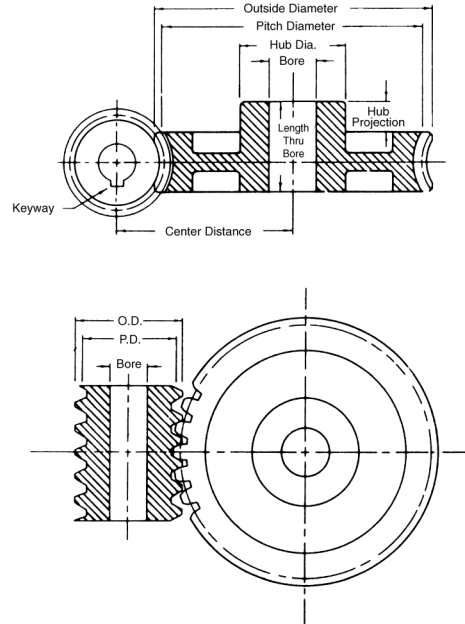
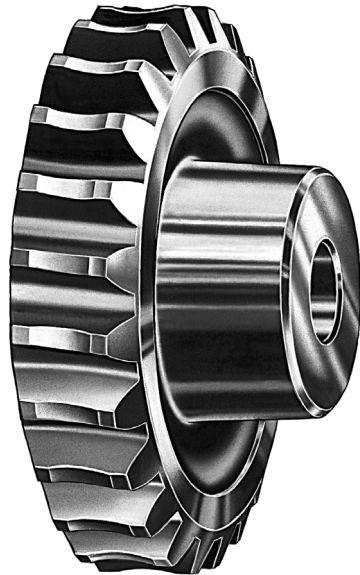
GEARS

Worm and Worm Gears

12 Pitch • 1/2" Face • 14 1/2° Pressure Angle



Right Hand Double Thread (Stocked Right Hand Only)



GEARS

Cast Iron and Bronze

| Number Teeth | Catalog Number Cast Iron | Weight Pounds (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style | Catalog Number Bronze | Wt. Lbs. (App.) |
|--------------|--------------------------|----------------------|------------|---------------|--------------|-------|-------|-----------------------|-----------------|
| | | | | | Dia. | Proj. | | | |
| 20 | W1220D | .32 | 1.666 | 1/2 | 1 1/4 | 1/2 | PLAIN | WB1220D | .40 |
| 30 | W1230D | .78 | 2.500 | 3/4 | 1 1/2 | 5/8 | PLAIN | | |
| 40 | W1240D | 1.3 | 3.333 | 1 | 1 3/4 | 3/4 | W | | |

W = WEB



Steel — 9° 28' Helix Angle Worms

| Catalog Number Soft | Weight Pounds (App.) | Catalog Number Hardened | Weight Pounds (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Keyway (Inches) |
|---------------------|----------------------|-------------------------|----------------------|---------------|------------|---------------|--------------|-------|-----------------|
| | | | | | | | Dia. | Proj. | |
| W12D | .14 | WG12D | .14 | 1 1/2 | 1.000 | 3/4 | 1 1/4 | 1/2 | 1/8 x 1/16 |
| WH12D | .20 | | | 1 1/2 | 1.000 | 3/4 | 1 1/4 | 1/2 | 1/8 x 1/16 |

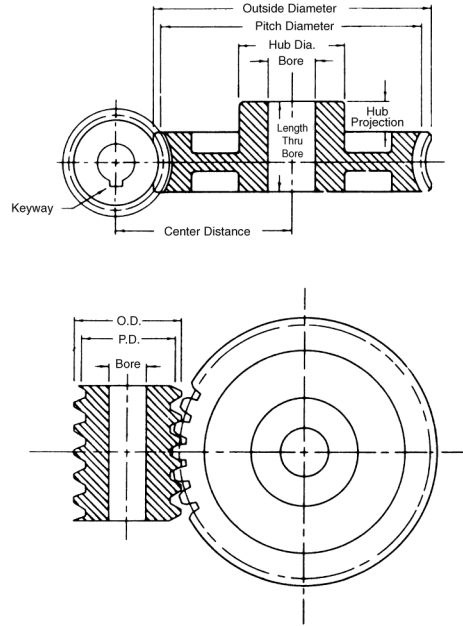
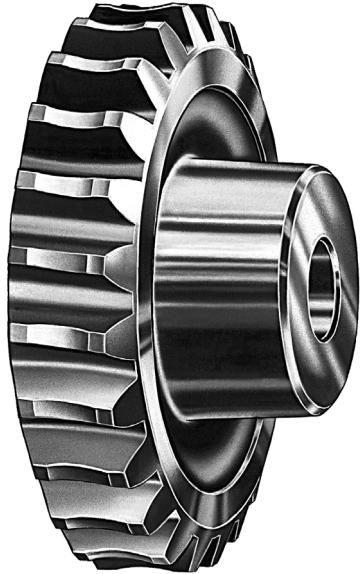
Case hardened worms have ground and polished threads (Indicated by letter "G" in catalog number).



Worm and Worm Gears

12 Pitch • 1/2" Face • 14 1/2° Pressure Angle

Right Hand Quadruple Thread (Stocked Right Hand Only)



Cast Iron

| Number Teeth | Catalog Number Cast Iron | Weight Pounds (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|--------------|--------------------------|----------------------|------------|---------------|--------------|-------|-------|
| | | | | | Dia. | Proj. | |
| 20 | W1220Q | .32 | 1.666 | 1/2 | 1 1/4 | 1/2 | PLAIN |
| 30 | W1230Q | .38 | 2.500 | 3/4 | 1 1/2 | 3/4 | PLAIN |
| 40 | W1240Q | .80 | 3.333 | 1 | 1 3/4 | 1 | W |

W = WEB



Steel — 18° 26' Helix Angle Worms

| Catalog Number Soft | Weight Pounds (App.) | Catalog Number Hardened | Weight Pounds (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Keyway (Inches) |
|---------------------|----------------------|-------------------------|----------------------|---------------|------------|---------------|--------------|-------|-----------------|
| | | | | | | | Dia. | Proj. | |
| W12Q | .14 | WG12Q | .14 | 1 1/2 | 1.000 | 3/4 | 1 1/4 | 1/2 | 1/8 x 1/16 |
| WH12Q | .20 | | | 1 1/2 | 1.000 | 1/2 | 1 1/4 | 1/2 | |

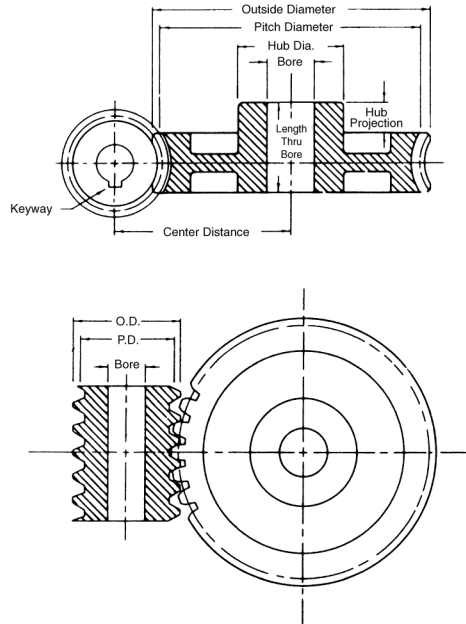
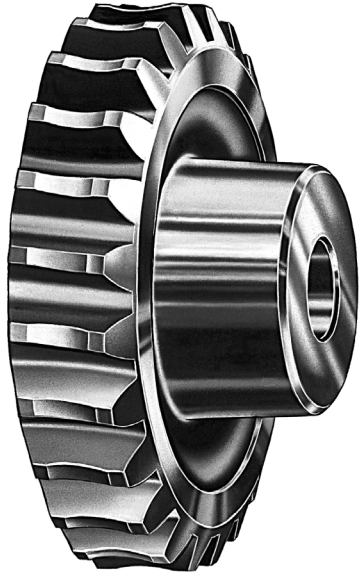
GEARS

Worm and Worm Gears

16 Pitch • $\frac{5}{16}$ " Face • $14\frac{1}{2}^\circ$ Pressure Angle



Right Hand Single Thread (Stocked Right Hand Only)



GEARS

Bronze

| Number Teeth | Catalog Number | Weight Pounds (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|--------------|----------------|----------------------|------------|----------------|---------------|----------------|-------|
| | | | | | Dia. | Proj. | |
| 20 | WB1620 | .13 | 1.250 | $\frac{1}{4}$ | $\frac{3}{8}$ | $\frac{3}{16}$ | PLAIN |
| 30 | WB1630 | .28 | 1.875 | $\frac{3}{16}$ | $\frac{3}{4}$ | $\frac{3}{8}$ | W |
| 40 | WB1640 | .42 | 2.500 | $\frac{3}{16}$ | $\frac{3}{4}$ | $\frac{3}{8}$ | W |
| 50 | WB1650 | .50 | 3.125 | $\frac{3}{8}$ | $\frac{3}{4}$ | $\frac{7}{16}$ | W |

W = WEB



Steel — $5^\circ 43'$ Helix Angle Worms

| Catalog Number Soft | Weight Pounds (App.) | Catalog Number Hardened | Weight Pounds (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | |
|---------------------|----------------------|-------------------------|----------------------|---------------|------------|----------------|--------------|---------------|
| | | | | | | | Dia. | Proj. |
| WH16 | .08 | WHG16 | .07 | 1 | .625 | $\frac{1}{4}$ | .46 | $\frac{1}{4}$ |
| | | | | 1 | .625 | $\frac{3}{16}$ | .46 | $\frac{1}{4}$ |

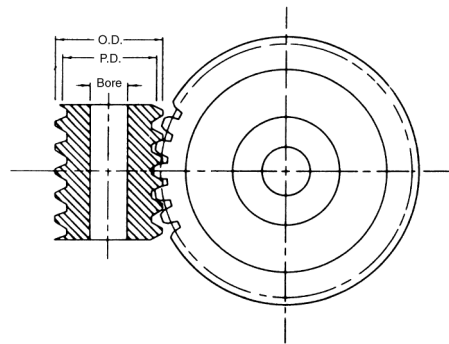
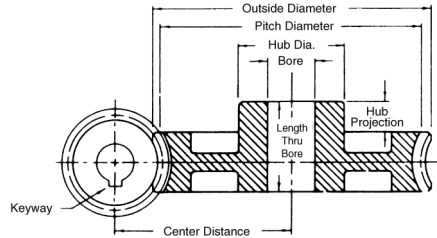
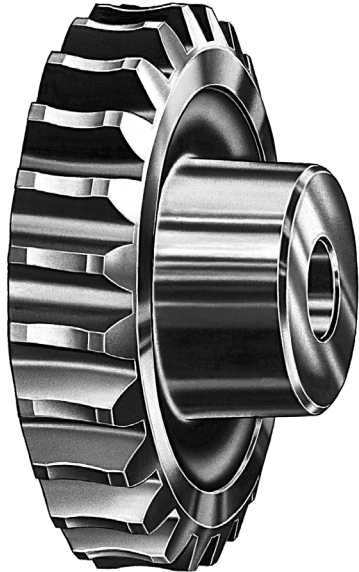
Case hardened worms have ground and polished threads (indicated by letter "G" in catalog number).



Worm and Worm Gears

16 Pitch • $\frac{5}{16}$ " Face • $14\frac{1}{2}^\circ$ Pressure Angle

Right Hand Double Thread (Stocked Right Hand Only)



Bronze

| Number Teeth | Catalog Number | Weight Pounds (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|--------------|----------------|----------------------|------------|---------------|---------------|----------------|-------|
| | | | | | Dia. | Proj. | |
| 20 | WB1620D | .14 | 1.250 | $\frac{1}{4}$ | $\frac{5}{8}$ | $\frac{3}{16}$ | PLAIN |

GEARS



Steel — $11^\circ 19'$ Helix Angle Worms

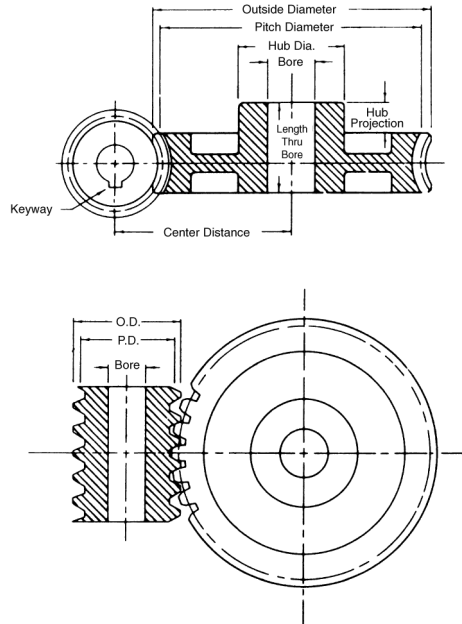
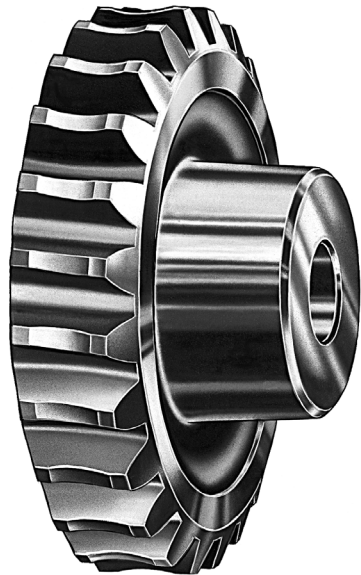
| Catalog Number Soft | Weight Pounds (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | |
|---------------------|----------------------|---------------|------------|---------------|--------------|---------------|
| | | | | | Dia. | Proj. |
| WH16D | .09 | 1 | .625 | $\frac{1}{4}$ | .46 | $\frac{1}{4}$ |

Worm and Worm Gears

16 Pitch • $\frac{5}{16}$ " Face • $14\frac{1}{2}^\circ$ Pressure Angle



Right Hand Quadruple Thread (Stocked Right Hand Only)



GEARS

Bronze

| Number Teeth | Catalog Number | Weight Pounds (App.) | Pitch Dia. | Bore (Inches) | Hub (Inches) | | Style |
|--------------|----------------|----------------------|------------|---------------|---------------|----------------|-------|
| | | | | | Dia. | Proj. | |
| 20 | WB1620Q | .14 | 1.250 | $\frac{1}{4}$ | $\frac{5}{8}$ | $\frac{3}{16}$ | PLAIN |



Steel — $21^\circ 48'$ Helix Angle Worms

| Catalog Number Soft | Weight Pounds (App.) | Face (Inches) | Pitch Dia. | Bore (Inches) | Hub (Inches) | |
|---------------------|----------------------|---------------|------------|---------------|--------------|---------------|
| | | | | | Dia. | Proj. |
| WH16Q | .08 | 1 | .625 | $\frac{1}{4}$ | .46 | $\frac{1}{4}$ |



Worm Gears

Ratio-Center Distance Listings With Approximate Horsepower and Torque† Ratings for Hardened and Ground Worms With Bronze Worm Gears

| RPM of Worm | | *Gear | 1800 | | 900 | | 300 | | 100 | |
|-------------|----------|---------|--------------|--------|--------------|--------|--------------|--------|--------------|--------|
| Center | | | Input-Output | | Input-Output | | Input-Output | | Input-Output | |
| Ratio | Distance | | HP | Torque | HP | Torque | HP | Torque | HP | Torque |
| 5 | .938 | WB1620Q | .37 | 60 | .25 | 70 | .09 | 80 | .03 | 80 |
| 5 | 1.333 | WB1220Q | .80 | 130 | .55 | 170 | .25 | 200 | .08 | 215 |
| 5 | 1.625 | WB1020Q | 1.25 | 200 | .90 | 275 | .40 | 350 | .15 | 370 |
| 5 | 2.000 | WB820Q | 2.00 | 315 | 1.50 | 460 | .80 | 890 | .33 | 965 |
| 5 | 2.667 | WB620Q | 3.70 | 600 | 2.75 | 880 | 1.40 | 1280 | .55 | 1430 |
| 6 | 3.000 | WB624Q | 4.50 | 880 | 3.40 | 1300 | 1.75 | 1900 | .70 | 2180 |
| 7.5 | 1.250 | WB1630Q | .50 | 130 | .33 | 160 | .14 | 180 | .05 | 185 |
| 7.5 | 1.750 | WB1230Q | 1.25 | 300 | .85 | 390 | .33 | 460 | .13 | 490 |
| 7.5 | 2.125 | WB1030Q | 1.90 | 450 | 1.33 | 560 | .60 | 790 | .25 | 850 |
| 7.5 | 2.625 | WB830Q | 3.00 | 725 | 2.25 | 1060 | 1.00 | 1400 | .40 | 1520 |
| 7.5 | 3.500 | WB630Q | 5.75 | 1400 | 4.33 | 2060 | 2.20 | 2960 | .87 | 3330 |
| 9.67 | 4.050 | WB529T | 8.40 | 2615 | 6.25 | 3785 | 3.33 | 5730 | 1.33 | 6540 |
| 10 | .938 | WB1620D | .25 | 70 | .15 | 85 | .06 | 90 | .02 | 95 |
| 10 | 1.333 | WB1220D | .50 | 155 | .33 | 205 | .16 | 240 | .06 | 250 |
| 10 | 1.562 | WB1640Q | .75 | 240 | .50 | 285 | .18 | 320 | .06 | 330 |
| 10 | 1.625 | WB1020D | .80 | 230 | .60 | 325 | .25 | 400 | .10 | 430 |
| 10 | 2.000 | WB820D | 1.25 | 365 | .90 | 525 | .45 | 690 | .15 | 750 |
| 10 | 2.167 | WB1240Q | 1.67 | 530 | 1.10 | 700 | .50 | 830 | .17 | 880 |
| 10 | 2.625 | WB1040Q | 2.50 | 805 | 1.75 | 1120 | .80 | 1400 | .30 | 1500 |
| 10 | 2.667 | WB620D | 2.40 | 735 | 1.80 | 1075 | .95 | 1540 | .37 | 1700 |
| 10 | 3.250 | WB840Q | 4.00 | 1300 | 3.00 | 1880 | 1.40 | 2500 | .50 | 2700 |
| 10 | 4.333 | WB640Q | 7.75 | 2500 | 5.75 | 3675 | 3.00 | 5333 | 1.15 | 5980 |
| 12 | 3.000 | WB624D | 2.85 | 1050 | 2.20 | 1550 | 1.15 | 2200 | .45 | 2450 |
| 12.5 | 1.875 | WB1650Q | .95 | 375 | .60 | 445 | .25 | 500 | .08 | 515 |
| 12.5 | 2.583 | WB1250Q | 2.00 | 820 | 1.40 | 1080 | .60 | 1300 | .20 | 1370 |
| 12.5 | 3.125 | WB1050Q | 3.00 | 1250 | 2.25 | 1740 | 1.00 | 2200 | .33 | 2340 |
| 12.5 | 3.875 | WB850Q | 4.90 | 2000 | 3.70 | 2900 | 1.70 | 3840 | .65 | 4170 |
| 12.5 | 5.167 | WB650Q | 9.50 | 3800 | 7.00 | 5600 | 3.60 | 8200 | 1.40 | 9200 |
| 13.33 | 5.150 | WB540T | 11.00 | 4720 | 8.20 | 6830 | 4.40 | 10360 | 1.75 | 11800 |
| 15 | 1.250 | WB1630D | .33 | 155 | .25 | 180 | .08 | 200 | .03 | 210 |
| 15 | 1.750 | WB1230D | .75 | 350 | .50 | 450 | .25 | 535 | .07 | 560 |
| 15 | 2.125 | WB1030D | 1.20 | 520 | .87 | 725 | .37 | 900 | .15 | 965 |
| 15 | 2.188 | WB1660Q | 1.10 | 570 | .70 | 680 | .25 | 760 | .10 | 790 |
| 15 | 2.625 | WB830D | 1.67 | 750 | 1.25 | 1080 | .60 | 1415 | .25 | 1530 |
| 15 | 3.000 | WB1260Q | 2.50 | 1170 | 1.67 | 1540 | .70 | 1800 | .25 | 1930 |
| 15 | 3.500 | WB630D | 3.50 | 1620 | 2.70 | 2375 | 1.40 | 3370 | .55 | 3770 |
| 15 | 3.625 | WB1060Q | 3.75 | 1700 | 2.67 | 2500 | 1.17 | 3100 | .50 | 3300 |
| 15 | 4.500 | WB860Q | 5.75 | 2820 | 4.33 | 4100 | 2.00 | 5470 | .75 | 6000 |
| 15 | 6.000 | WB660Q | 11.33 | 5550 | 8.50 | 8000 | 4.33 | 11700 | 1.70 | 13100 |
| 16.67 | 6.150 | WB550T | 13.50 | 7250 | 10.00 | 10500 | 5.40 | 16000 | 2.20 | 18000 |
| 18 | 5.000 | WB318 | 6.00 | 3100 | 4.67 | 4570 | 3.00 | 8000 | 1.50 | 10000 |
| 18 | 7.000 | WB672Q | 13.50 | 7800 | 10.00 | 11400 | 5.00 | 16500 | 2.00 | 18500 |
| 20 | .938 | WB1620 | .15 | 75 | .10 | 90 | .04 | 100 | .02 | 105 |
| 20 | 1.333 | WB1220 | .33 | 170 | .25 | 220 | .10 | 260 | .04 | 275 |
| 20 | 1.562 | WB1640D | .50 | 270 | .30 | 310 | .10 | 350 | .04 | 350 |
| 20 | 1.625 | WB1020 | .50 | 250 | .33 | 350 | .20 | 440 | .07 | 470 |

* Ratings listed are for bronze worm gears operating with hardened and ground steel worms. For ratings of cast iron worm gears with hardened steel worm, multiply listed ratings by 30%. For cast iron with hardened and ground steel worm, multiply by 50%.
 † Torque ratings in inch pounds.

GEARS

Worm Gears



Ratio-Center Distance Listings With Approximate Horsepower and Torque† Ratings for Hardened and Ground Worms With Bronze Worm Gears

| RPM of Worm | | *Gear | 1800 | | 900 | | 300 | | 100 | |
|-------------|----------|----------|--------------|--------|--------------|--------|--------------|--------|--------------|--------|
| Center | | | Input-Output | | Input-Output | | Input-Output | | Input-Output | |
| Ratio | Distance | | HP | Torque | HP | Torque | HP | Torque | HP | Torque |
| 20 | 2.000 | WB820 | .75 | 400 | .60 | 600 | .33 | 775 | .12 | 850 |
| 20 | 2.167 | WB1240D | 1.00 | 600 | .67 | 775 | .33 | 920 | .10 | 970 |
| 20 | 2.625 | WB1040D | 1.50 | 900 | .85 | 1230 | .50 | 1500 | .20 | 1650 |
| 20 | 2.667 | WB620 | 1.50 | 800 | 1.15 | 1170 | .75 | 1660 | .25 | 1850 |
| 20 | 2.812 | WB1680Q | 1.40 | 900 | .90 | 1075 | .33 | 1200 | .12 | 1240 |
| 20 | 3.250 | WB840D | 2.30 | 1400 | 1.75 | 2000 | .80 | 2580 | .33 | 2800 |
| 20 | 3.833 | WB1280Q | 3.12 | 2000 | 2.12 | 2600 | .90 | 3120 | .33 | 3300 |
| 20 | 4.000 | WB420 | 3.50 | 2000 | 2.75 | 2880 | 1.75 | 4700 | .75 | 5600 |
| 20 | 4.333 | WB640D | 4.50 | 2780 | 3.40 | 4050 | 1.75 | 5800 | .70 | 6500 |
| 20 | 4.625 | WB1080Q | 4.75 | 3000 | 3.40 | 4250 | 1.50 | 5340 | .50 | 5700 |
| 20 | 5.750 | WB880Q | 7.50 | 4800 | 5.60 | 7000 | 2.60 | 9400 | 1.00 | 10200 |
| 20 | 7.667 | WB680Q | 15.00 | 9500 | 10.75 | 13800 | 5.50 | 20000 | 2.20 | 22500 |
| 24 | 3.000 | WB624 | 1.75 | 1120 | 1.33 | 1630 | .75 | 2300 | .33 | 2600 |
| 24 | 4.500 | WB424 | 4.00 | 2800 | 3.00 | 4000 | 2.00 | 6600 | .90 | 7800 |
| 24 | 6.000 | WB324 | 7.50 | 5300 | 5.90 | 7750 | 3.90 | 13500 | 1.90 | 17000 |
| 25 | 1.875 | WB1650D | .50 | 370 | .33 | 470 | .12 | 520 | .05 | 540 |
| 25 | 2.583 | WB1250D | 1.20 | 890 | .80 | 1150 | .33 | 1380 | .12 | 1450 |
| 25 | 3.125 | WB1050D | 1.80 | 1340 | 1.33 | 1850 | .60 | 2300 | .25 | 2500 |
| 25 | 3.438 | WB16100Q | 1.75 | 1300 | 1.00 | 1575 | .40 | 1750 | .12 | 1800 |
| 25 | 3.875 | WB850D | 3.00 | 2200 | 2.25 | 3250 | 1.00 | 4200 | .40 | 4500 |
| 25 | 4.667 | WB12100Q | 3.67 | 2800 | 2.50 | 3660 | 1.00 | 4400 | .40 | 4630 |
| 25 | 5.167 | WB650D | 5.50 | 4000 | 4.00 | 6000 | 2.15 | 8700 | .87 | 9700 |
| 25 | 5.625 | WB10100Q | 5.70 | 4500 | 4.10 | 6380 | 1.75 | 8000 | .67 | 8500 |
| 25 | 7.000 | WB8100Q | 10.00 | 9700 | 7.00 | 11500 | 4.00 | 17500 | 1.25 | 19000 |
| 25 | 9.333 | WB6100Q | 17.50 | 14250 | 13.00 | 20750 | 6.66 | 30000 | 2.60 | 33000 |
| 29 | 4.050 | WB529 | 3.50 | 2800 | 2.75 | 4200 | 1.50 | 6300 | .67 | 7000 |
| 30 | 1.250 | WB1630 | .20 | 160 | .12 | 190 | .06 | 210 | .02 | 215 |
| 30 | 1.750 | WB1230 | .50 | 350 | .33 | 450 | .15 | 540 | .06 | 570 |
| 30 | 2.125 | WB1030 | .70 | 530 | .50 | 750 | .25 | 925 | .10 | 1000 |
| 30 | 2.188 | WB1660 | .60 | 590 | .40 | 700 | .15 | 760 | .05 | 800 |
| 30 | 2.625 | WB830 | 1.00 | 870 | .85 | 1260 | .40 | 1600 | .17 | 1750 |
| 30 | 3.000 | WB1260D | 1.33 | 1230 | 1.00 | 1600 | .40 | 1900 | .15 | 2000 |
| 30 | 3.500 | WB630 | 2.00 | 1700 | 1.60 | 2430 | .87 | 3500 | .33 | 3800 |
| 30 | 3.625 | WB1060D | 2.00 | 1850 | 1.50 | 2500 | .70 | 3200 | .25 | 3430 |
| 30 | 4.500 | WB860D | 3.25 | 2900 | 2.50 | 4300 | 1.12 | 5650 | .50 | 6000 |
| 30 | 6.000 | WB660D | 6.30 | 5800 | 4.80 | 6075 | 2.50 | 12110 | 1.00 | 13510 |
| 30 | 7.000 | WB330 | 9.05 | 7880 | 7.00 | 11570 | 4.60 | 20280 | 2.25 | 25560 |
| 32 | 5.500 | WB432 | 5.15 | 4680 | 4.00 | 6750 | 2.50 | 11140 | 1.10 | 13200 |
| 36 | 4.000 | WB636 | 2.33 | 2310 | 1.80 | 3380 | 1.00 | 4800 | .42 | 5360 |
| 36 | 7.000 | WB672D | 7.25 | 8010 | 5.50 | 11670 | 2.87 | 16700 | 1.15 | 18650 |
| 36 | 8.000 | WB336 | 10.40 | 10900 | 8.10 | 15960 | 5.35 | 27950 | 2.60 | 35280 |
| 40 | 1.562 | WB1640 | .25 | 266 | .12 | 330 | .07 | 350 | .02 | 360 |
| 40 | 2.167 | WB1240 | .55 | 580 | .30 | 825 | .18 | 900 | .07 | 940 |
| 40 | 2.625 | WB1040 | .87 | 890 | .65 | 1220 | .30 | 1520 | .12 | 1630 |
| 40 | 2.812 | WB1680D | .75 | 910 | .33 | 1140 | .20 | 1200 | .07 | 1230 |

* Ratings listed are for bronze worm gears operating with hardened and ground steel worms. For ratings of cast iron worm gears with hardened steel worm, multiply listed ratings by 30%. For cast iron with hardened and ground steel worm, multiply by 50%.

† Torque ratings in inch pounds.



Worm Gears

Ratio-Center Distance Listings With Approximate Horsepower and Torque† Ratings for Hardened and Ground Worms With Bronze Worm Gears

| RPM of Worm | | | 1800 | | 900 | | 300 | | 100 | |
|-------------|----------|----------|--------------|--------|--------------|--------|--------------|--------|--------------|--------|
| Center | | *Gear | Input-Output | | Input-Output | | Input-Output | | Input-Output | |
| Ratio | Distance | | HP | Torque | HP | Torque | HP | Torque | HP | Torque |
| 40 | 3.250 | WB840 | 1.35 | 1440 | .85 | 2350 | .50 | 2700 | .20 | 2900 |
| 40 | 3.833 | WB1280D | 1.70 | 2040 | 1.15 | 2675 | .50 | 3160 | .20 | 3330 |
| 40 | 4.333 | WB640 | 2.50 | 2770 | 2.00 | 4033 | 1.00 | 5760 | .45 | 6420 |
| 40 | 4.625 | WB1080D | 2.60 | 3070 | 1.90 | 4270 | .85 | 5315 | .33 | 5680 |
| 40 | 5.150 | WB540 | 4.33 | 4930 | 3.40 | 7145 | 2.00 | 10725 | .83 | 12170 |
| 40 | 5.750 | WB880D | 4.00 | 4740 | 3.00 | 6850 | 1.40 | 8940 | .55 | 9680 |
| 40 | 6.500 | WB440 | 6.00 | 5520 | 4.65 | 7950 | 3.00 | 13200 | 1.33 | 15480 |
| 40 | 7.667 | WB680D | 7.83 | 9600 | 6.00 | 14000 | 3.00 | 20025 | 1.25 | 22340 |
| 48 | 3.750 | WB848 | 1.50 | 1950 | 1.20 | 2820 | .60 | 3650 | .25 | 3960 |
| 48 | 5.000 | WB648 | 2.80 | 3730 | 2.25 | 5460 | 1.25 | 7750 | .50 | 8640 |
| 48 | 7.500 | WB448 | 6.80 | 9320 | 5.25 | 13400 | 3.33 | 22200 | 1.50 | 26160 |
| 48 | 10.000 | WB348 | 12.70 | 17640 | 9.87 | 25920 | 6.50 | 45360 | 3.16 | 57120 |
| 50 | 1.875 | WB1650 | .30 | 380 | .20 | 450 | .08 | 490 | .03 | 515 |
| 50 | 2.583 | WB1250 | .66 | 840 | .50 | 1090 | .20 | 1300 | .08 | 1360 |
| 50 | 3.125 | WB1050 | 1.00 | 1280 | .75 | 1770 | .33 | 2200 | .14 | 2340 |
| 50 | 3.438 | WB16100D | .90 | 1290 | .50 | 1525 | .25 | 1690 | .08 | 1730 |
| 50 | 3.875 | WB850 | 1.60 | 2140 | 1.25 | 3130 | .66 | 4090 | .25 | 4430 |
| 50 | 4.667 | WB12100D | 2.00 | 2875 | 1.33 | 3600 | .50 | 4460 | .22 | 4700 |
| 50 | 5.167 | WB650 | 2.90 | 4000 | 2.25 | 5825 | 1.25 | 8310 | .50 | 9260 |
| 50 | 5.625 | WB10100D | 3.00 | 4440 | 2.16 | 6110 | 1.00 | 7675 | .33 | 8000 |
| 50 | 6.150 | WB550 | 5.12 | 7120 | 4.00 | 10320 | 2.25 | 15480 | 1.00 | 17570 |
| 50 | 7.000 | WB8100D | 4.10 | 5000 | 2.75 | 7500 | 1.50 | 8000 | .60 | 10000 |
| 50 | 9.333 | WB6100D | 9.00 | 13800 | 6.75 | 20200 | 3.50 | 28930 | 1.40 | 32280 |
| 54 | 11.000 | WB354 | 13.50 | 21230 | 10.50 | 31200 | 7.00 | 54480 | 3.33 | 68760 |
| 59 | 7.050 | WB559 | 5.50 | 9230 | 4.50 | 13900 | 2.50 | 20075 | 1.00 | 23160 |
| 60 | 2.188 | WB1660 | .33 | 550 | .20 | 650 | .08 | 720 | .03 | 740 |
| 60 | 3.000 | WB1260 | .75 | 1100 | .50 | 1440 | .25 | 1700 | .09 | 1790 |
| 60 | 3.625 | WB1060 | 1.00 | 1690 | .80 | 2330 | .33 | 2890 | .16 | 3080 |
| 60 | 4.500 | WB860 | 1.66 | 2660 | 1.33 | 3900 | .66 | 5090 | .25 | 5500 |
| 60 | 6.000 | WB660 | 3.20 | 5240 | 2.50 | 7670 | 1.40 | 1080 | .60 | 1225 |
| 64 | 9.500 | WB464 | 7.87 | 14280 | 6.00 | 20640 | 3.80 | 34080 | 1.70 | 40320 |
| 72 | 7.000 | WB672 | 3.33 | 6610 | 2.50 | 9660 | 1.50 | 13700 | .60 | 15360 |
| 80 | 2.812 | WB1680 | .33 | 705 | .22 | 830 | .09 | 920 | .04 | 950 |
| 80 | 3.833 | WB1280 | .75 | 1550 | .50 | 2030 | .25 | 2375 | .10 | 2520 |
| 80 | 4.625 | WB1080 | 1.15 | 2375 | .87 | 3275 | .40 | 4050 | .16 | 4330 |
| 80 | 5.750 | WB880 | 1.80 | 3800 | 1.40 | 5500 | .70 | 7140 | .30 | 7750 |
| 80 | 7.667 | WB680 | 3.33 | 7380 | 2.66 | 10750 | 1.50 | 15350 | .60 | 17110 |
| 96 | 6.750 | WB896 | 1.50 | 4200 | 1.00 | 6000 | .50 | 7000 | .20 | 8500 |
| 96 | 9.000 | WB696 | 3.25 | 8490 | 2.50 | 12370 | 1.33 | 17660 | .50 | 19680 |
| 100 | 3.438 | WB16100 | .33 | 810 | .20 | 960 | .09 | 1060 | .33 | 1100 |
| 100 | 4.667 | WB12100 | .75 | 1790 | .50 | 2330 | .25 | 2730 | .90 | 2800 |
| 100 | 5.625 | WB10100 | 1.00 | 2780 | .80 | 3850 | .33 | 4775 | .16 | 5100 |
| 100 | 7.000 | WB8100 | 1.67 | 4450 | 1.25 | 6300 | .67 | 8000 | .24 | 9000 |
| 100 | 9.333 | WB6100 | 3.20 | 8700 | 2.50 | 12675 | 1.33 | 18090 | .55 | 20160 |

* Ratings listed are for bronze worm gears operating with hardened and ground steel worms. For ratings of cast iron worm gears with hardened steel worm, multiply listed ratings by 30%. For cast iron with hardened and ground steel worm, multiply by 50%.
 † Torque ratings in inch pounds.

GEARS

Gear Standards



Quality is the most important factor in buying a gear. We have established Standards and Tolerances to insure our customers of accurate, dependable and long-lasting gears. All gears are checked with precision pins to assure correct backlash and center distances.

BACKLASH: All stock gears are checked between centers for backlash. The recommended backlash for mating gears when assembled is:

| | | | |
|-----------|-------------|-------------|-------------|
| 3 DP..... | .009 — .014 | 10 DP | .003 — .005 |
| 4 DP..... | .007 — .011 | 12 DP | .003 — .005 |
| 5 DP..... | .006 — .009 | 16 DP | .002 — .004 |
| 6 DP..... | .005 — .008 | 20 DP | .002 — .004 |
| 8 DP..... | .004 — .006 | 24 DP | .002 — .004 |

CONCENTRICITY of pitch line with bore (Total Indicator Reading) is held within:

| | | | |
|-----------|------|-------------|-------|
| 3 DP..... | .006 | 10 DP | .004 |
| 4 DP..... | .006 | 12 DP | .004 |
| 5 DP..... | .005 | 16 DP | .0025 |
| 6 DP..... | .005 | 20 DP | .0025 |
| 8 DP..... | .005 | 24 DP | .0025 |

Stock bores are reamed, honed or ground to a smooth finish and standard commercial tolerances or closer. For rust prevention on distributor's shelf and for better appearance when received by the user, all stock gears go through a special finishing process. They present a pleasing appearance when on display or on the shelf. They are not boxed. All gears are identified by part numbers.

Martin

Engineering

**Gear
Engineering
Data**

**Spur Gear
Gear Formulas
Drive Selection
Horsepower and Torque
Tables**

GEARS

Gear Selection



Stock Spur Gear Drive Selection

When designing a stock gear drive using the horsepower tables in this catalog, the following steps must be taken:

- I. Find out these five necessary things:
- Exact center distance in inches
 - Ratio and speeds
 - Service factor (from page G-84)
 - Actual horsepower
 - Bore sizes of both gears

- II. Determine Design Horsepower using formula:

$$DHP = HP \times SF$$

Where: DHP = Design Horsepower

HP = Actual Horsepower

SF = Service Factor (from page G-84)

- III. Determine Pitch Diameters using the formulas:

$$PD_1 = \frac{CD \times 2}{\text{Ratio} + 1}$$

$$PD_2 = PD_1 \times \text{Ratio}$$

Where: PD_1 = Pitch Diameter of Pinion (small gear)

PD_2 = Pitch Diameter of Gear (large gear)

CD = Center Distance

- IV. Check the Center Distance:

$$CD = \frac{PD_1 + PD_2}{2}$$

- V. Select Pitch from Horsepower tables on pages G-25 — G-27.

- VI. Check Selected pitch for necessary Pitch Diameters.

- VII. Check Horsepower capacity of Large Gear.

- VIII. Check maximum bore capacity of selected Gears.



Spur Gear Drive Selection II (Other Than Stock)

When designing a gear drive when horsepower and speeds exceed the stock gear tables on pages G-25 — G-27, the following steps must be taken:

I. We must obtain all of the following data:

- a. Exact center distance in inches
- b. Ratio and speeds
- c. Service factor (from page G-84)
- d. Actual horsepower
- e. Bore sizes of both gears

II. Determine Design Horsepower using formula:

$$DHP = HP \times SF$$

Where: DHP = Design Horsepower

HP = Actual Horsepower

SF = Service Factor (from page G-84)

III. Determine Pitch Diameters using the formulas:

$$PD_1 = \frac{CD \times 2}{Ratio + 1}$$

$$PD_2 = PD_1 \times Ratio$$

Where: PD₁ = Pitch Diameter of Pinion (small gear)

PD₂ = Pitch Diameter of Gear (large gear)

CD = Center Distance

IV. Determine velocity using the formula:

$$V = .262 \times PD \times RPM$$

Where: V = Velocity in feet per minute @ pitch line

PD = Pitch Diameter

RPM = Revolutions per minute of either gear*

V. Determine approximate pitch using the formula:

$$DP = \frac{\sqrt{3.1416 \times S \times 3 \times V \times .25}}{\sqrt{DHP \times 27.5 (1200 + V)}}$$

Where: DP = Diametral Pitch

S = Safe Static Stress per Square Inch of material
(see table one, page G-84)

V = Velocity in FPM

DHP = Design Horsepower

Note: To round off answers, go to the nearest DP
(standard DP's larger than 3 DP are: 1 DP, 1¼ DP, 1½ DP, 1¾ DP, 2 DP, 2½ DP)

VI. Determine number of teeth on both gears:

$$N = PD \times DP$$

Where: N = Number of teeth

PD = Pitch Diameter of gear

DP = Diametral Pitch of gear

NOTE: Velocities of both gears will always be the same. When using the above formula make sure to use the proper speed (RPM) with the proper pitch diameter.

Gear Selection



Spur Gear Drive Selection II (Other Than Stock)

VII. Determine Face Width:

$$F = DP \left(\frac{DHP \times 33,000}{V} \right) \frac{1}{SY \left(\frac{600}{600 + V} \right)}$$

Where: F = Face Width

DP = Diametral Pitch

V = Velocity in FPM

S = Safe Static Stress per Square Inch of material
(Table 1, page G-84)

Y = Outline formula from Table 2, page G-84

Note: To round off each answer, go to the next one inch.

VIII. Check HP rating of selected pinion using the formula:

$$HP = \frac{LV}{33,000}$$

Where: $L = \frac{SYF}{DP} \times \frac{600}{600 + V}$

From horsepower formulas on page G-83.

Note: If the horsepower capacity is below the design horsepower, the following options can be taken:

- A. Harden pinion (check gear HP capacity first)
- B. Increase face
- C. Increase pitch

Center Distance, Pitch Diameters and Ratios of Spur Gears

To determine the pitch diameters of a gear set, we must find two basic things:

1. Required ratio
2. Required center distance

Knowing this, first figure out the pitch diameter of the pinion (smaller gear) using the formula:

$$PD_1 = \frac{CD \times 2}{Ratio + 1}$$

Where: PD₁ = Pitch Diameter of the Pinion

CD = Center Distance

Then, find the pitch diameter of the larger gear, PD₂, by using the formula:

$$PD_2 = PD_1 \times Ratio$$

Then check the center distance by using the formula:

$$CD = \frac{PD_1 + PD_2}{2}$$



Horsepower Formulas

See page G-84 for tables one, two and three

Engineering Data

Lewis Formula (with Barth Revision)

L = Load in pounds at pitch line

V = Velocity in feet per minute

$$V = .262 \times PD \times RPM$$

S = Safe static stress per square inch of material
(see table one)

PD = Pitch Diameter

DP = Diametral Pitch

RPM = Revolutions Per Minute

F = Face width of gear

HP = Horsepower

Y = Strength factor based on Pressure Angle and
Number of Teeth (See table two)

$$L = \frac{SFY}{DP} \times \frac{600}{600 + V}$$

Maximum allowable torque (T) that should be imposed on a gear will be the safe tooth load (L) multiplied by

$$\frac{DP}{2} \text{ or } T = \frac{L \times PD}{2}$$

The safe Horsepower capacity of the gear (at a given RPM)

can be calculated from $HP = \frac{T \times RPM}{63,025}$

or directly from (L) and (V):

$$*HP = \frac{LV}{33,000}$$

For a known HP, $T = \frac{63025 \times HP}{RPM}$

For NON-METALLIC GEARS, the modified Lewis Formula shown below may be used with (S) values of 6000 PSI for Phenolic Laminated material.

$$L = \frac{SFY}{DP} \left(\frac{150}{200 + V} + .25 \right)$$

* Apply SERVICE FACTOR (table three) for required horsepower.

Gear Standards



Table One

(S) Average values in pounds per square inch

| Material | S |
|---------------------------------|-------|
| Steel — .40 Carbon | 25000 |
| — .20 Carbon | 20000 |
| Steel — .40 Carbon Heat Treated | 35000 |
| Cast Iron | 12000 |
| Bronze | 10000 |
| Non-Metallic | 6000 |

Table Two

Outline factor Y for use with Diametral Pitch

| Number of Teeth | 14½ P.A. Involute | 20 P.A. Involute | Number of Teeth | 14½ P.A. Involute | 20 P.A. Involute |
|-----------------|-------------------|------------------|-----------------|-------------------|------------------|
| 10 | .176 | .201 | 26 | .308 | .344 |
| 11 | .192 | .226 | 28 | .314 | .352 |
| 12 | .210 | .245 | 30 | .318 | .358 |
| 13 | .223 | .264 | 35 | .327 | .373 |
| 14 | .235 | .276 | 40 | .336 | .389 |
| 15 | .245 | .289 | 45 | .340 | .399 |
| 16 | .255 | .295 | 50 | .346 | .408 |
| 17 | .264 | .302 | 60 | .355 | .421 |
| 18 | .270 | .308 | 70 | .360 | .429 |
| 19 | .277 | .314 | 80 | .363 | .436 |
| 20 | .283 | .320 | 90 | .366 | .442 |
| 21 | .289 | .326 | 100 | .368 | .446 |
| 22 | .292 | .330 | 150 | .375 | .458 |
| 23 | .296 | .333 | 200 | .378 | .463 |
| 24 | .302 | .337 | RACK | .390 | .484 |
| 25 | .305 | .340 | | | |

GEARS

Table Three

Service factors

Multiply required horsepower by service factor recommended for type of service

| Type of Load | Intermittent or 3 Hours per Day | 8-10 Hours per Day | Continuous 24 Hours per Day |
|--------------|---------------------------------|--------------------|-----------------------------|
| UNIFORM | .80 | 1.00 | 1.25 |
| LIGHT SHOCK | 1.00 | 1.25 | 1.50 |
| MEDIUM SHOCK | 1.25 | 1.50 | 1.80 |
| HEAVY SHOCK | 1.50 | 1.80 | 2.00 |



Spur Gear Dimensional Formulas Diametral Pitch

Rules and Formulas For Spur Gear Calculations

Diametral Pitch
Diametral Pitch is the Number of Teeth to Each Inch of the Pitch Diameter.

| To Find | Having | Rule | Formula |
|---------------------|--|--|-----------------------------|
| The Diametral Pitch | The Circular Pitch | Divide 3.1416 by the Circular Pitch | $DP = \frac{3.1416}{CP}$ |
| The Diametral Pitch | The Pitch Diameter and the Number of Teeth | Divide the Number of Teeth by Pitch Diameter | $DP = \frac{N}{D'}$ |
| The Diametral Pitch | The Outside Diameter and Number of Teeth | Divide the Number of Teeth plus 2 by Outside Diameter | $DP = \frac{N+2}{D}$ |
| Pitch Diameter | The Number of Teeth and the Diametral Pitch | Divide Number of Teeth by the Diametral Pitch | $D' = \frac{N}{P}$ |
| Pitch Diameter | The Number of Teeth and Outside Diameter | Divide the product of Outside Diameter and Number of Teeth by Number of Teeth plus 2 | $D' = \frac{DN}{N+2}$ |
| Pitch Diameter | The Outside Diameter and the Diametral Pitch | Subtract from the Outside Diameter the Quotient of 2 Divided by the Diametral Pitch | $D' = D - \frac{2}{P}$ |
| Pitch Diameter | Addendum and the Number of Teeth | Multiply Addendum by the Number of Teeth | $D' = sN$ |
| Outside Diameter | The Number of Teeth and the Diametral Pitch | Divide number of Teeth plus 2 by the Diametral Pitch | $D = \frac{N+2}{P}$ |
| Outside Diameter | The Pitch Diameter and the Diametral Pitch | Add to the Pitch Diameter the quotient of 2 divided by the Diametral Pitch | $D = D' + \frac{2}{P}$ |
| Outside Diameter | The Pitch Diameter and the Number of Teeth | Divide the Number of Teeth plus 2 by the quotient of Number of Teeth divided by Pitch Diameter | $D = \frac{N+2}{N \div D'}$ |
| Outside Diameter | The Number of Teeth and Addendum | Multiply the Number of Teeth plus 2 by Addendum | $D = (N+2)s$ |
| Number of Teeth | The Pitch Diameter and the Diametral Pitch | Multiply the Pitch Diameter by the Diametral Pitch | $N = D'P$ |
| Number of Teeth | The Outside Diameter and the Diametral Pitch | Multiply Outside Diameter by the Diametral Pitch and subtract 2 | $N = DP - 2$ |
| Thickness of Tooth | The Diametral Pitch | Divide 1.5708 by the Diametral Pitch | $t = \frac{1.5708}{P}$ |
| Addendum | The Diametral Pitch | Divide 1 by the Diametral Pitch or $A = \frac{D'}{N}$ | $A = \frac{1}{P}$ |
| Dedendum | The Diametral Pitch | Divide 1.157 by the Diametral Pitch | $A+L = \frac{1.157}{P}$ |
| Working Depth | The Diametral Pitch | Divide 2 by the Diametral Pitch | $WD = \frac{2}{P}$ |
| Whole Depth | The Diametral Pitch | Divide 2.157 by the Diametral Pitch | $D'' = \frac{2.157}{P}$ |
| Clearance | The Diametral Pitch | Divide .157 by the Diametral Pitch | $L = \frac{.157}{P}$ |
| Clearance | Thickness of Tooth | Divide Thickness of Tooth at Pitch Line by 10 | $L = \frac{t}{10}$ |

NOTE: Rules and Formulas Relating to Tooth Depth and Outside Diameter Apply to Full-Depth, Equal Addendum Gears.

Diametral Pitch Tooth Dimensions



Dimensions of Standard Full-depth Teeth

Diametral Pitches and Equivalent Circular Pitches

| Diametral Pitch | Circular Pitch | Module | Arc Thickness of Tooth on Pitch Line | Addendum | Working Depth of Tooth | Dedendum or Depth of Space Below Pitch Line | Whole Depth of Tooth* |
|-----------------|----------------|---------|--------------------------------------|----------|------------------------|---|-----------------------|
| ½ | 6.2832 | 50.8 | 3.1416 | 2.0000 | 4.0000 | 2.3142 | 4.3142 |
| ¾ | 4.1888 | 33.8667 | 2.0944 | 1.3333 | 2.6666 | 1.5428 | 2.8761 |
| 1 | 3.1416 | 25.4 | 1.5708 | 1.0000 | 2.0000 | 1.1571 | 2.1571 |
| 1-¼ | 2.5133 | 20.32 | 1.2566 | 0.8000 | 1.6000 | 0.9257 | 1.7257 |
| 1-½ | 2.0944 | 16.9333 | 1.0472 | 0.6666 | 1.3333 | 0.7714 | 1.4381 |
| 1-¾ | 1.7952 | 14.5143 | 0.8976 | 0.5714 | 1.1429 | 0.6612 | 1.2326 |
| 2 | 1.5708 | 12.7 | 0.7854 | 0.5000 | 1.0000 | 0.5785 | 1.0785 |
| 2-¼ | 1.3963 | 11.2889 | 0.6981 | 0.4444 | 0.8888 | 0.5143 | 0.9587 |
| 2-½ | 1.2566 | 10.16 | 0.6283 | 0.4000 | 0.8000 | 0.4628 | 0.8628 |
| 2-¾ | 1.1424 | 9.2364 | 0.5712 | 0.3636 | 0.7273 | 0.4208 | 0.7844 |
| 3 | 1.0472 | 8.4667 | 0.5236 | 0.3333 | 0.6666 | 0.3857 | 0.7190 |
| 3-½ | 0.8976 | 7.2571 | 0.4488 | 0.2857 | 0.5714 | 0.3306 | 0.6163 |
| 4 | 0.7854 | 6.35 | 0.3927 | 0.2500 | 0.5000 | 0.2893 | 0.5393 |
| 5 | 0.6283 | 5.08 | 0.3142 | 0.2000 | 0.4000 | 0.2314 | 0.4314 |
| 6 | 0.5236 | 4.2333 | 0.2618 | 0.1666 | 0.3333 | 0.1928 | 0.3595 |
| 7 | 0.4488 | 3.6286 | 0.2244 | 0.1429 | 0.2857 | 0.1653 | 0.3081 |
| 8 | 0.3927 | 3.175 | 0.1963 | 0.1250 | 0.2500 | 0.1446 | 0.2696 |
| 9 | 0.3491 | 2.8222 | 0.1745 | 0.1111 | 0.2222 | 0.1286 | 0.2397 |
| 10 | 0.3142 | 2.54 | 0.1571 | 0.1000 | 0.2000 | 0.1157 | 0.2157 |
| 11 | 0.2856 | 2.3091 | 0.1428 | 0.0909 | 0.1818 | 0.1052 | 0.1961 |
| 12 | 0.2618 | 2.1167 | 0.1309 | 0.0833 | 0.1666 | 0.0964 | 0.1798 |
| 13 | 0.2417 | 1.9538 | 0.1208 | 0.0769 | 0.1538 | 0.0890 | 0.1659 |
| 14 | 0.2244 | 1.8143 | 0.1122 | 0.0714 | 0.1429 | 0.0826 | 0.1541 |
| 15 | 0.2094 | 1.6933 | 0.1047 | 0.0666 | 0.1333 | 0.0771 | 0.1438 |
| 16 | 0.1963 | 1.5875 | 0.0982 | 0.0625 | 0.1250 | 0.0723 | 0.1348 |
| 17 | 0.1848 | 1.4941 | 0.0924 | 0.0588 | 0.1176 | 0.0681 | 0.1269 |
| 18 | 0.1745 | 1.4111 | 0.0873 | 0.0555 | 0.1111 | 0.0643 | 0.1198 |
| 19 | 0.1653 | 1.3368 | 0.0827 | 0.0526 | 0.1053 | 0.0609 | 0.1135 |
| 20 | 0.1571 | 1.27 | 0.0785 | 0.0500 | 0.1000 | 0.0579 | 0.1079 |
| 22 | 0.1428 | 1.1545 | 0.0714 | 0.0455 | 0.0909 | 0.0526 | 0.0980 |
| 24 | 0.1309 | 1.0583 | 0.0654 | 0.0417 | 0.0833 | 0.0482 | 0.0898 |
| 26 | 0.1208 | .9769 | 0.0604 | 0.0385 | 0.0769 | 0.0445 | 0.0829 |
| 28 | 0.1122 | .9071 | 0.0561 | 0.0357 | 0.0714 | 0.0413 | 0.0770 |
| 30 | 0.1047 | .8467 | 0.0524 | 0.0333 | 0.0666 | 0.0386 | 0.0719 |
| 32 | 0.0982 | .7938 | 0.0491 | 0.0312 | 0.0625 | 0.0362 | 0.0674 |
| 34 | 0.0924 | .7471 | 0.0462 | 0.0294 | 0.0588 | 0.0340 | 0.0634 |
| 36 | 0.0873 | .7056 | 0.0436 | 0.0278 | 0.0555 | 0.0321 | 0.0599 |
| 38 | 0.0827 | .6684 | 0.0413 | 0.0263 | 0.0526 | 0.0304 | 0.0568 |
| 40 | 0.0785 | .635 | 0.0393 | 0.0250 | 0.0500 | 0.0289 | 0.0539 |

*NOTE: Dimensions listed are for HOB CUT TEETH ONLY. Shaper cut teeth may be slightly larger. Consult factory for exact measurement.

All Gears In Stock Are Diametral Pitch

GEARS



Spur Gear Dimensional Formulas Circular Pitch

Rules and Formulas For Spur Gear Calculations

Circular Pitch

Circular Pitch is the Distance from the Center of One Tooth to the Center of the Next Tooth, Measured Along the Pitch Circle.

| To Find | Having | Rule | Formula |
|--------------------|--|--|---------------------------------|
| The Circular Pitch | The Diametral Pitch | Divide 3.1416 by the Diametral Pitch | $C' = \frac{3.1416}{DP}$ |
| The Circular Pitch | The Pitch Diameter and the Number of Teeth | Divide Pitch Diameter by the product of .3183 and Number of Teeth | $C' = \frac{PD}{.3183N}$ |
| The Circular Pitch | The Outside Diameter and the Number of Teeth | Divide Outside Diameter by the product of .3183 and Number of Teeth plus 2 | $C' = \frac{OD}{.3183N + 2}$ |
| Pitch Diameter | The Number of Teeth and the Circular Pitch | The continued product of the Number of Teeth, the Circular Pitch and .3183 | $D' = NC' .3183$ |
| Pitch Diameter | The Number of Teeth and the Outside Diameter | Divide the product of Number of Teeth and Outside Diameter by Number of Teeth plus 2 | $D = \frac{N \times OD}{N + 2}$ |
| Pitch Diameter | The Outside Diameter and the Circular Pitch | Subtract from the Outside Diameter the product of the Circular Pitch and .6366 | $D' = OD - (C' .6366)$ |
| Pitch Diameter | Addendum and the Number of Teeth | Multiply the Number of Teeth by the Addendum | $D' = NA$ |
| Outside Diameter | The Number of Teeth and the Circular Pitch | The continued product of the Number of Teeth plus 2, the Circular Pitch and .3183 | $D = (N + 2) C' .3183$ |
| Outside Diameter | The Pitch Diameter and the Circular Pitch | Add to the Pitch Diameter the product of the Circular Pitch and .6366 | $D = PD + (C' .6366)$ |
| Outside Diameter | The Number of Teeth and the Addendum | Multiply Addendum by Number of Teeth plus 2 | $D = A (N + 2)$ |
| Number of Teeth | The Pitch Diameter and the Circular Pitch | Divide the product of Pitch Diameter and 3.1416 by the Circular Pitch | $N = \frac{PD 3.1416}{C'}$ |
| Thickness of Tooth | The Circular Pitch | One-half the Circular Pitch | $t = \frac{C'}{2}$ |
| Addendum | The Circular Pitch | Multiply the Circular Pitch by .3183 or $s = \frac{D'}{N}$ | $A = C' .3183$ |
| Dedendum | The Circular Pitch | Multiply the Circular Pitch by .3683 | $A + L = C' .3683$ |
| Working Depth | The Circular Pitch | Multiply the Circular Pitch by .6366 | $WD = C' .6366$ |
| Whole Depth | The Circular Pitch | Multiply the Circular Pitch by .6866 | $D'' = C' .6866$ |
| Clearance | The Circular Pitch | Multiply the Circular Pitch by .05 | $L = C .05$ |
| Clearance | Thickness of Tooth | One-Tenth the Thickness of Tooth at Pitch Line | $L = \frac{t}{10}$ |

NOTE: Rules and Formulas Relating to Tooth Depth and Outside Diameter Apply to Full-Depth, Equal Addendum Gears.

Circular Pitch Gears Made To Order Only

Circular Pitch Tooth Dimensions



Dimensions of Standard Full-depth Teeth

Circular Pitches and Equivalent Diametral Pitches

| Circular Pitch | Diametral Pitch | Module | Arc Thickness of Tooth on Pitch Line | Addendum | Working Depth of Tooth | Dedendum or Depth of Space Below Pitch Line | Whole Depth of Tooth |
|----------------|-----------------|---------|--------------------------------------|----------|------------------------|---|----------------------|
| 4 | 0.7854 | 32.3402 | 2.0000 | 1.2732 | 2.5464 | 1.4732 | 2.7464 |
| 3-1/2 | 0.8976 | 28.2581 | 1.7500 | 1.1140 | 2.2281 | 1.2890 | 2.4031 |
| 3 | 1.0472 | 24.2552 | 1.5000 | 0.9549 | 1.9098 | 1.1049 | 2.0598 |
| 2-3/4 | 1.1424 | 22.2339 | 1.3750 | 0.8753 | 1.7506 | 1.0128 | 1.8881 |
| 2-1/2 | 1.2566 | 20.2117 | 1.2500 | 0.7957 | 1.5915 | 0.9207 | 1.7165 |
| 2-1/4 | 1.3963 | 18.1913 | 1.1250 | 0.7162 | 1.4323 | 0.8287 | 1.5448 |
| 2 | 1.5708 | 16.1701 | 1.0000 | 0.6366 | 1.2732 | 0.7366 | 1.3732 |
| 1-3/4 | 1.6755 | 15.1595 | 0.9375 | 0.5968 | 1.1937 | 0.6906 | 1.2874 |
| 1-3/4 | 1.7952 | 14.1488 | 0.8750 | 0.5570 | 1.1141 | 0.6445 | 1.2016 |
| 1-3/4 | 1.9333 | 13.1382 | 0.8125 | 0.5173 | 1.0345 | 0.5985 | 1.1158 |
| 1-1/2 | 2.0944 | 12.1276 | 0.7500 | 0.4775 | 0.9549 | 0.5525 | 1.0299 |
| 1-1/2 | 2.1855 | 11.6223 | 0.7187 | 0.4576 | 0.9151 | 0.5294 | 0.9870 |
| 1-1/2 | 2.2848 | 11.1169 | 0.6875 | 0.4377 | 0.8754 | 0.5064 | 0.9441 |
| 1-3/8 | 2.3936 | 10.6116 | 0.6562 | 0.4178 | 0.8356 | 0.4834 | 0.9012 |
| 1-1/4 | 2.5133 | 10.1062 | 0.6250 | 0.3979 | 0.7958 | 0.4604 | 0.8583 |
| 1-3/8 | 2.6456 | 9.6010 | 0.5937 | 0.3780 | 0.7560 | 0.4374 | 0.8154 |
| 1-1/4 | 2.7925 | 9.0958 | 0.5625 | 0.3581 | 0.7162 | 0.4143 | 0.7724 |
| 1-1/4 | 2.9568 | 8.5904 | 0.5312 | 0.3382 | 0.6764 | 0.3913 | 0.7295 |
| 1 | 3.1416 | 8.0851 | 0.5000 | 0.3183 | 0.6366 | 0.3683 | 0.6866 |
| 3/4 | 3.3510 | 7.5798 | 0.4687 | 0.2984 | 0.5968 | 0.3453 | 0.6437 |
| 3/4 | 3.5904 | 7.0744 | 0.4375 | 0.2785 | 0.5570 | 0.3223 | 0.6007 |
| 3/4 | 3.8666 | 6.5692 | 0.4062 | 0.2586 | 0.5173 | 0.2993 | 0.5579 |
| 3/4 | 4.1888 | 6.0639 | 0.3750 | 0.2387 | 0.4775 | 0.2762 | 0.5150 |
| 1/2 | 4.5696 | 5.5586 | 0.3437 | 0.2189 | 0.4377 | 0.2532 | 0.4720 |
| 1/2 | 4.7124 | 5.3903 | 0.3333 | 0.2122 | 0.4244 | 0.2455 | 0.4577 |
| 1/2 | 5.0265 | 5.0532 | 0.3125 | 0.1989 | 0.3979 | 0.2301 | 0.4291 |
| 1/2 | 5.5851 | 4.5479 | 0.2812 | 0.1790 | 0.3581 | 0.2071 | 0.3862 |
| 1/2 | 6.2832 | 4.0426 | 0.2500 | 0.1592 | 0.3183 | 0.1842 | 0.3433 |
| 1/2 | 7.1808 | 3.5373 | 0.2187 | 0.1393 | 0.2785 | 0.1611 | 0.3003 |
| 1/2 | 7.8540 | 3.2340 | 0.2000 | 0.1273 | 0.2546 | 0.1473 | 0.2746 |
| 1/2 | 8.3776 | 3.0319 | 0.1875 | 0.1194 | 0.2387 | 0.1381 | 0.2575 |
| 1/2 | 9.4248 | 2.6947 | 0.1666 | 0.1061 | 0.2122 | 0.1228 | 0.2289 |
| 1/2 | 10.0531 | 2.5266 | 0.1562 | 0.0995 | 0.1989 | 0.1151 | 0.2146 |
| 1/2 | 10.9956 | 2.3100 | 0.1429 | 0.0909 | 0.1819 | 0.1052 | 0.1962 |
| 1/2 | 12.5664 | 2.0213 | 0.1250 | 0.0796 | 0.1591 | 0.0921 | 0.1716 |
| 1/2 | 14.1372 | 1.7967 | 0.1111 | 0.0707 | 0.1415 | 0.0818 | 0.1526 |
| 1/2 | 15.7080 | 1.6170 | 0.1000 | 0.0637 | 0.1273 | 0.0737 | 0.1373 |
| 1/2 | 16.7552 | 1.5160 | 0.0937 | 0.0597 | 0.1194 | 0.0690 | 0.1287 |
| 1/2 | 18.8496 | .5053 | 0.0833 | 0.0531 | 0.1061 | 0.0614 | 0.1144 |

All Circular Pitch Gears Are Made-To-Order

GEARS



Spur Gear Dimensional Formulas Module

Rules and Formulas For Module (Metric) Spur Gear Calculations

(Module Represents the Amount of Pitch Diameter per Tooth)

| To Find | Having | Rule | Formula |
|--------------------|--|--|--|
| Metric Module | Pitch Diameter and Number of Teeth | Divide Pitch Diameter in Millimeters by the Number of Teeth | $M = \frac{PD \text{ (Millimeters)}}{N}$ |
| Metric Module | Circular Pitch in Millimeter | Divide Circular Pitch in Millimeters by Pi (3.1416) | $M = \frac{C \text{ (Millimeters)}}{3.1416}$ |
| Metric Module | Diametral Pitch | Divide 25.4 by Diametral Pitch | $M = \frac{25.4}{DP}$ |
| Metric Module | Outside Diameter and Number of Teeth | Divide Outside Diameter (in Millimeters) by the Number of Teeth plus 2 | $M = \frac{OD}{N + 2}$ |
| Pitch Diameter | Module and Number of Teeth | Multiply Module by Number of Teeth | $D' \text{ (In MM)} = M \times N$ |
| Pitch Diameter | Number of Teeth and Outside Diameter | Divide the product of Outside Diameter and No. of Teeth by No. of Teeth plus 2 | $D' = \frac{OD \times N}{N + 2}$ |
| Pitch Diameter | Outside Diameter and the Module | Multiply Module by 2 and Subtract from Outside Diameter | $D' = OD - 2M$ |
| Outside Diameter | Module and Number of Teeth | Number of Teeth plus 2 Multiplied by Module | $OD \text{ (In MM)} = (N + 2) \times M$ |
| Diametral Pitch | Module | Divide 25.4 by Module | $DP = \frac{25.4}{M}$ |
| Circular Pitch | Module | Multiply Module by Pi (3.1416) | $C' \text{ (In MM)} = M \times 3.1416$ |
| Addendum | Module Known | The Addendum equals the Module | $A = M$ |
| Whole Depth | Module Known | Multiply 2.157 by Module | $D'' \text{ (In MM)} = 2.157 \times M$ |
| Thickness of Tooth | Module and Outside Diameter | Multiply Pitch Diameter (in Millimeters) by the Sine of the Angle of 90 Divided by the Number of Teeth | $t \text{ (In MM)} = PD \text{ (MM)} \times \text{Sine } \frac{90}{N}$ |
| English Module | Pitch Diameter in Inches and Number of Teeth | Divide Pitch Diameter in Inches by Number of Teeth | $M = \frac{PD \text{ (Inches)}}{N}$ (Answer in Fraction) |

NOTE: Rules and Formulas Relating to Tooth Depth and Outside Diameter Apply to Full-Depth, Equal Addendum Gears.

Module Pitch Tooth Dimensions



Tooth Dimensions Based Upon Module System

(One millimeter equals 0.03937 inch)

| Module, DIN Standard Series | Equivalent Diametral Pitch | Circular Pitch | | Addendum, Millimeters | Dedendum, Millimeters† | Whole Depth, † Millimeters | Whole Depth, ‡ Millimeters |
|-----------------------------------|----------------------------------|----------------|--------|--------------------------|---------------------------|----------------------------------|----------------------------------|
| | | Millimeters | Inches | | | | |
| 0.3 | 84.667 | 0.943 | 0.0371 | 0.30 | 0.35 | 0.650 | 0.647 |
| 0.4 | 63.500 | 1.257 | 0.0495 | 0.40 | 0.467 | 0.867 | 0.863 |
| 0.5 | 50.800 | 1.571 | 0.0618 | 0.50 | 0.583 | 1.083 | 1.079 |
| 0.6 | 42.333 | 1.885 | 0.0742 | 0.60 | 0.700 | 1.300 | 1.294 |
| 0.7 | 36.286 | 2.199 | 0.0865 | 0.70 | 0.817 | 1.517 | 1.510 |
| 0.8 | 31.750 | 2.513 | 0.0989 | 0.80 | 0.933 | 1.733 | 1.726 |
| 0.9 | 28.222 | 2.827 | 0.1113 | 0.90 | 1.050 | 1.950 | 1.941 |
| 1 | 25.400 | 3.142 | 0.1237 | 1.00 | 1.167 | 2.167 | 2.157 |
| 1.25 | 20.320 | 3.927 | 0.1546 | 1.25 | 1.458 | 2.708 | 2.697 |
| 1.5 | 16.933 | 4.712 | 0.1855 | 1.50 | 1.750 | 3.250 | 3.236 |
| 1.75 | 14.514 | 5.498 | 0.2164 | 1.75 | 2.042 | 3.792 | 3.774 |
| 2 | 12.700 | 6.283 | 0.2474 | 2.00 | 2.333 | 4.333 | 4.314 |
| 2.25 | 11.289 | 7.069 | 0.2783 | 2.25 | 2.625 | 4.875 | 4.853 |
| 2.5 | 10.160 | 7.854 | 0.3092 | 2.50 | 2.917 | 5.417 | 5.392 |
| 2.75 | 9.236 | 8.639 | 0.3401 | 2.75 | 3.208 | 5.958 | 5.932 |
| 3 | 8.466 | 9.425 | 0.3711 | 3.00 | 3.500 | 6.500 | 6.471 |
| 3.25 | 7.815 | 10.210 | 0.4020 | 3.25 | 3.791 | 7.041 | 7.010 |
| 3.5 | 7.257 | 10.996 | 0.4329 | 3.50 | 4.083 | 7.583 | 7.550 |
| 3.75 | 6.773 | 11.781 | 0.4638 | 3.75 | 4.375 | 8.125 | 8.089 |
| 4 | 6.350 | 12.566 | 0.4947 | 4.00 | 4.666 | 8.666 | 8.628 |
| 4.5 | 5.644 | 14.137 | 0.5566 | 4.50 | 5.25 | 9.750 | 9.707 |
| 5 | 5.080 | 15.708 | 0.6184 | 5.00 | 5.833 | 10.833 | 10.785 |
| 5.5 | 4.618 | 17.279 | 0.6803 | 5.50 | 6.416 | 11.916 | 11.864 |
| 6 | 4.233 | 18.850 | 0.7421 | 6.00 | 7.000 | 13.000 | 12.942 |
| 6.5 | 3.908 | 20.420 | 0.8035 | 6.50 | 7.583 | 14.083 | 14.021 |
| 7 | 3.628 | 21.991 | 0.8658 | 7.00 | 8.166 | 15.166 | 15.099 |
| 8 | 3.175 | 25.132 | 0.9895 | 8.00 | 9.333 | 17.333 | 17.256 |
| 9 | 2.822 | 28.274 | 1.1132 | 9.00 | 10.499 | 19.499 | 19.413 |
| 10 | 2.540 | 31.416 | 1.2368 | 10.00 | 11.666 | 21.666 | 21.571 |
| 11 | 2.309 | 34.558 | 1.3606 | 11.00 | 12.833 | 23.833 | 23.728 |
| 12 | 2.117 | 37.699 | 1.4843 | 12.00 | 14.000 | 26.000 | 25.884 |
| 13 | 1.954 | 40.841 | 1.6079 | 13.00 | 15.166 | 28.166 | 28.041 |
| 14 | 1.814 | 43.982 | 1.7317 | 14.00 | 16.332 | 30.332 | 30.198 |
| 15 | 1.693 | 47.124 | 1.8541 | 15.00 | 17.499 | 32.499 | 32.355 |
| 16 | 1.587 | 50.266 | 1.9790 | 16.00 | 18.666 | 34.666 | 34.512 |
| 18 | 1.411 | 56.549 | 2.2263 | 18.00 | 21.000 | 39.000 | 38.826 |
| 20 | 1.270 | 62.832 | 2.4737 | 20.00 | 23.332 | 43.332 | 43.142 |
| 22 | 1.155 | 69.115 | 2.7210 | 22.00 | 25.665 | 47.665 | 47.454 |
| 24 | 1.058 | 75.398 | 2.9685 | 24.00 | 28.000 | 52.000 | 51.768 |
| 27 | 0.941 | 84.823 | 3.339 | 27.00 | 31.498 | 58.498 | 58.239 |
| 30 | 0.847 | 94.248 | 3.711 | 30.00 | 35.000 | 65.000 | 64.713 |
| 33 | 0.770 | 103.673 | 4.082 | 33.00 | 38.498 | 71.498 | 71.181 |
| 36 | 0.706 | 113.097 | 4.453 | 36.00 | 41.998 | 77.998 | 77.652 |
| 39 | 0.651 | 122.522 | 4.824 | 39.00 | 45.497 | 84.497 | 84.123 |
| 42 | 0.605 | 131.947 | 5.195 | 42.00 | 48.997 | 90.997 | 90.594 |
| 45 | 0.564 | 141.372 | 5.566 | 45.00 | 52.497 | 97.497 | 97.065 |
| 50 | 0.508 | 157.080 | 6.184 | 50.00 | 58.330 | 108.330 | 107.855 |
| 55 | 0.462 | 172.788 | 6.803 | 55.00 | 64.163 | 119.163 | 118.635 |
| 60 | 0.423 | 188.496 | 7.421 | 60.00 | 69.996 | 129.996 | 129.426 |
| 65 | 0.391 | 204.204 | 8.040 | 65.00 | 75.829 | 140.829 | 140.205 |
| 70 | 0.363 | 219.911 | 8.658 | 70.00 | 81.662 | 151.662 | 150.997 |
| 75 | 0.339 | 235.619 | 9.276 | 75.00 | 87.495 | 162.495 | 161.775 |

† Dedendum and total depth when clearance = 0.1666 x module, or one-sixth module.

‡ Total Depth equivalent to American standard full-depth teeth. (Clearance = 0.157 x Module.)



Bevel & Miter Gear Formulas

| To Find | Rule | Formula |
|------------------------------------|--|---|
| Pitch Diameter | Divide Number of Teeth by Diametral Pitch | $\text{Pitch Diameter} = \frac{\text{Number of Teeth}}{\text{Diametral Pitch}}$ |
| Tangent of Pitch Angle Of Driven | Divide Number of Teeth in Driven by Number of Teeth in Driver | $\text{Tangent Pitch Angle of Driven} = \frac{\text{Number of Teeth in Driven}}{\text{Number of Teeth in Driver}} = \text{Ratio}$ |
| Pitch Angle of Driver | Subtract Pitch Angle of Driven from 90 Degrees | $\text{Pitch Angle Of Driver} = 90 \text{ Degrees} - \text{Pitch Angle of Driven}$ |
| Pitch Cone Radius | Divide Pitch Diameter by Twice the Sine of the Pitch Angle | $\text{Pitch Cone Radius} = \frac{\text{Pitch Diameter}}{2 \times \text{Sine Pitch Angle}}$ |
| Tangent of Addendum Angle | Divide Addendum by the Pitch Cone Radius | $\text{Tangent of Addendum Angle} = \frac{\text{Addendum}}{\text{Pitch Cone Radius}}$ |
| Face Angle | Add Addendum Angle to Pitch Angle | $\text{Face Angle} = \text{Addendum Angle} + \text{Pitch Angle}$ |
| Tangent of Dedendum Angle | Divide Dedendum by the Pitch Cone Radius | $\text{Tangent of Dedendum Angle} = \frac{\text{Dedendum}}{\text{Pitch Cone Radius}}$ |
| Root Angle | Subtract Dedendum Angle from Pitch Angle | $\text{Root Angle} = \text{Pitch Angle} - \text{Dedendum Angle}$ |
| Angular Addendum | Multiply Addendum by Cosine of Pitch Angle | $\text{Angular Addendum} = \text{Addendum} \times \text{Cosine Pitch Angle}$ |
| Outside Diameter | Add 2 Angular Addenda to Pitch Diameter | $\text{Outside Diameter} = 2 \text{ Angular Addenda} \times \text{Pitch Diameter}$ |
| Mounting Distance | Add one-half the Pitch Diameter of Mating to Pitch Line | $\text{Mounting Distance} = \frac{\text{Pitch Diameter of Mate}}{2} + \text{Backing to Pitch Line}$ |
| Distance From Cone Center to Crown | Multiply one-half Outside Diameter by Co-tangent of Face Angle | $\text{Cone Center to Crown} = \frac{\text{Outside Diameter}}{2} \times \text{Co-Tangent Face Angle}$ |
| Backing to Crown | Subtract Cone Center to Crown from Mounting Distance | $\text{Backing to Crown} = \text{Mounting Distance} - \text{Cone Center to Crown}$ |
| Ratio | Divide Teeth in Driven by Teeth in Driver | $\text{Ratio} = \frac{\text{Number of Teeth in Driven}}{\text{Number of Teeth in Driver}}$ |

Formula For Worm Gears



(Based On Diametral Pitch)

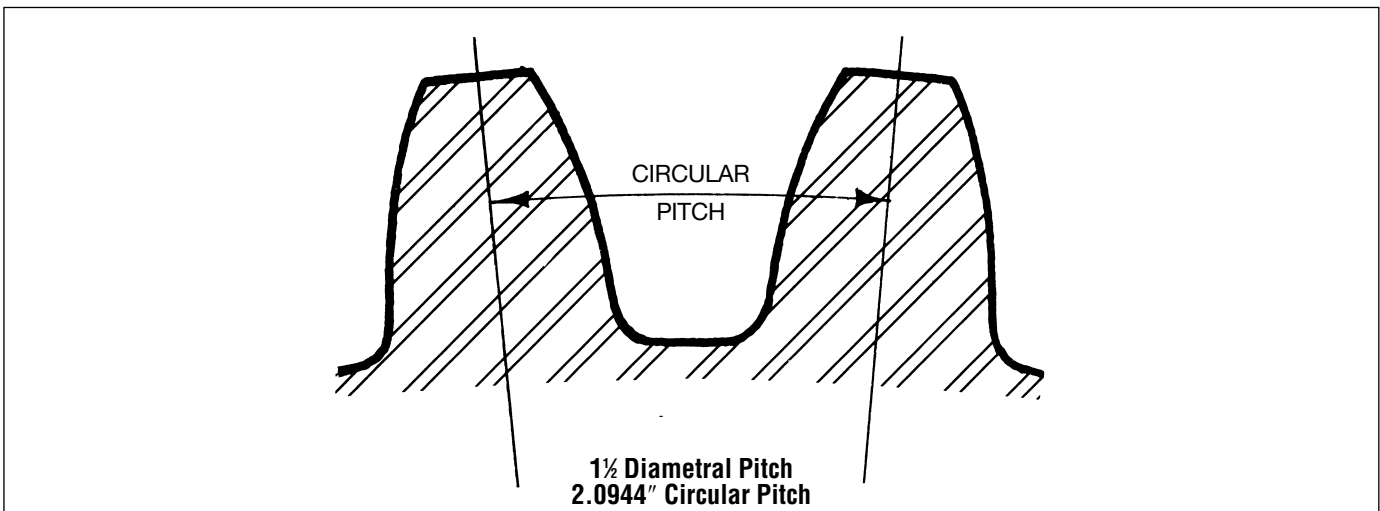
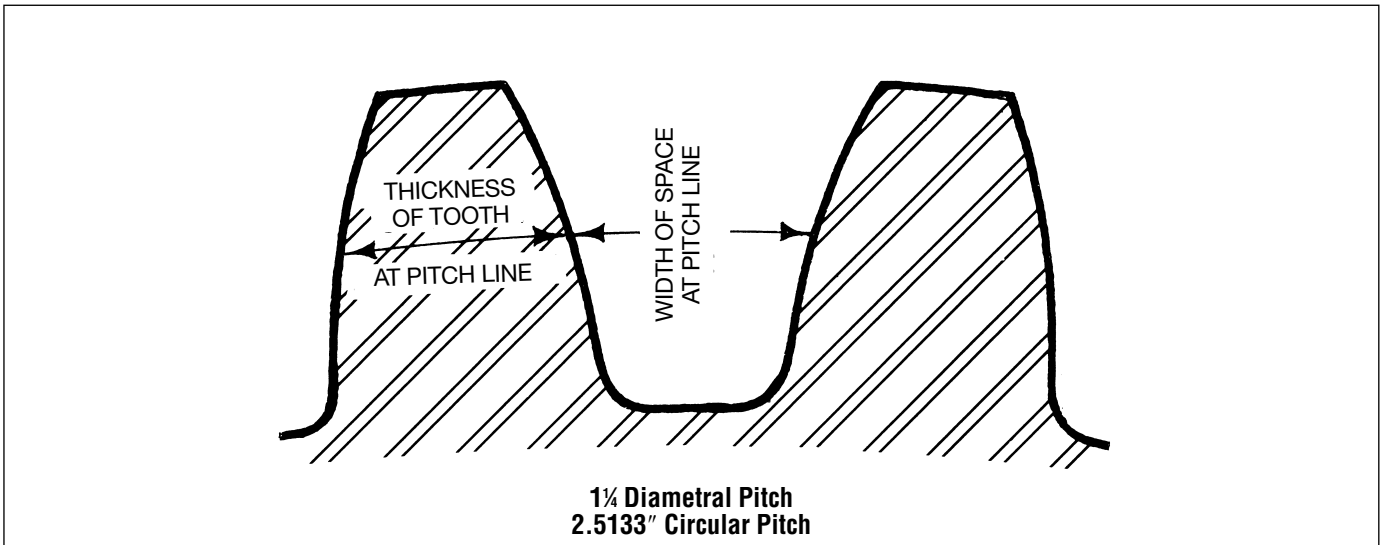
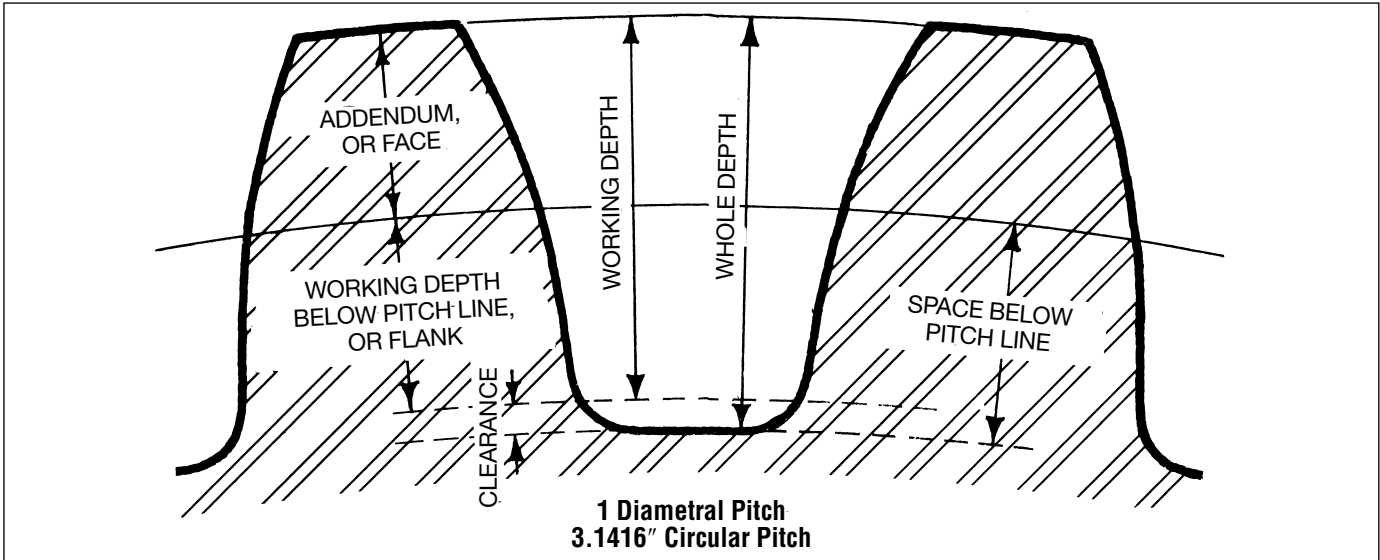
| To Find | Rule | Formula |
|--------------------------------|--|--|
| Worm Gear Pitch Diameter | Divide Number of Teeth by Diametral Pitch | $\text{Pitch Diameter} = \frac{\text{Number of Teeth in Worm Gear}}{\text{Diametral Pitch}}$ |
| Worm Gear Throat Diameter | Add 2 Addenda to Pitch Diameter | $\text{Throat Diameter} = (2 \times \text{Addendum}) + \text{Pitch Diameter}$ |
| Worm Gear Outside Diameter | Add 3 Addenda to Pitch Diameter | $\text{Outside Diameter} = (3 \times \text{Addendum}) + \text{Pitch Diameter}$ |
| Worm Pitch Diameter | Subtract the Worm Gear Pitch Diameter from Twice the Center Distance | $\text{Worm Pitch Diameter} = (2 \times \text{Center Distance}) - \text{Worm Gear Pitch Diameter}$ |
| Worm Outside Diameter | Add 2 Addenda to Worm Pitch Diameter | $\text{Worm Outside Diameter} = \text{Worm Pitch Diameter} + 2 \times \text{Addendum}$ |
| Worm Lead | Divide 3.1416 by Diametral Pitch and Multiply by Number of Threads in Worm | $\text{Worm Lead} = \frac{3.1416}{\text{Diametral Pitch}} \times \text{Number of Threads in Worm}$ |
| Co-Tangent of Worm Helix Angle | Multiply Worm Pitch Diameter by Diametral Pitch and Divide by Number of Worm Threads | $\text{Co-Tangent Worm Helix Angle} = \frac{\text{Worm Pitch Diameter} \times \text{Diametral Pitch}}{\text{Number Worm Threads}}$ |
| Center Distance | Add Worm Pitch Diameter to Worm Gear Pitch Diameter and Divide Sum by 2 | $\text{Center Distance} = \frac{\text{Worm Pitch Diameter} + \text{Worm Gear Pitch Diameter}}{2}$ |
| Ratio | Divide Number of Teeth in Worm Gear by Number of Worm Threads | $\text{Ratio} = \frac{\text{Number of Teeth in Worm Gear}}{\text{Number of Worm Threads}}$ |

NOTE: Tooth data (Addendum, Full Depth, Etc.) is same as for Spur Gears.



Cut Spur Gears 14½° P.A.

Comparative Sizes of Involute Gear Teeth

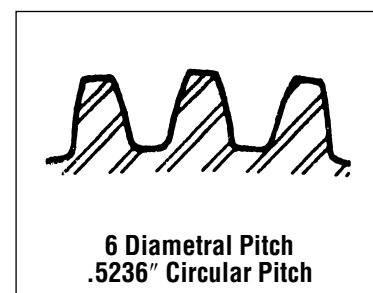
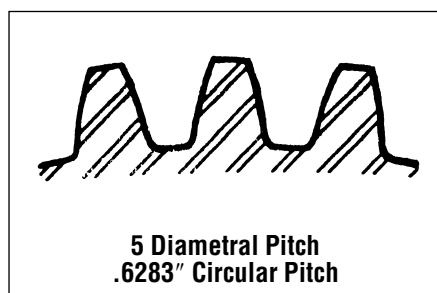
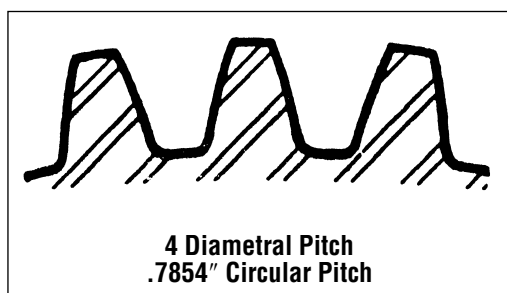
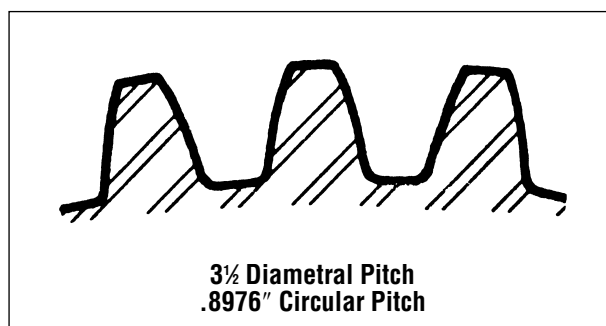
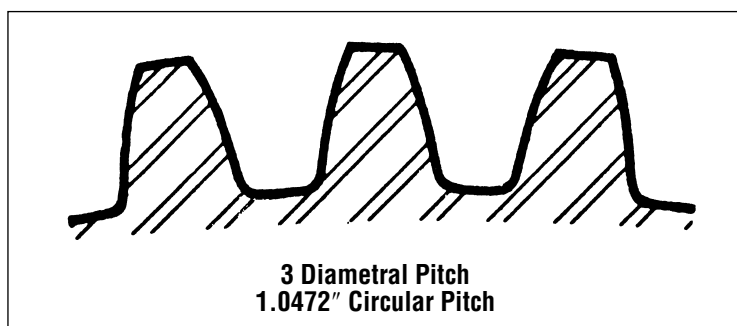
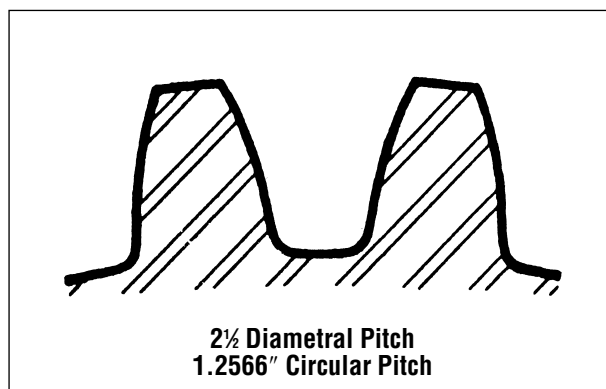
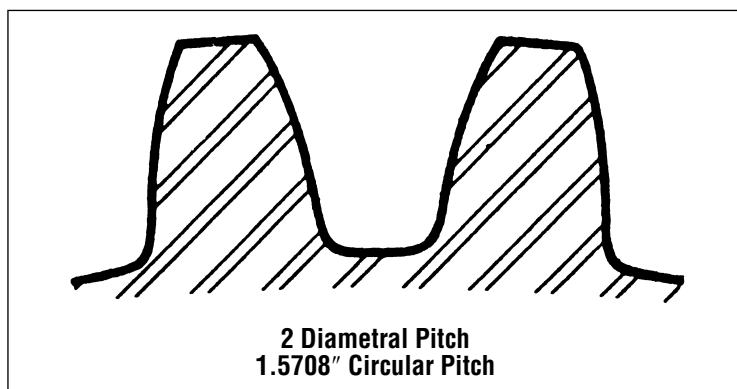
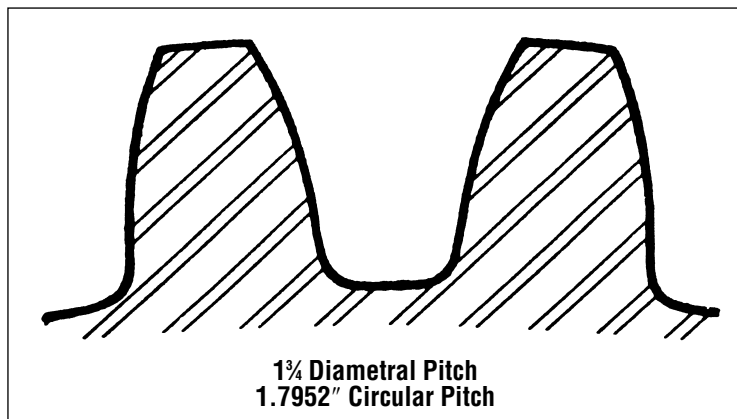


GEARS

Cut Spur Gears

14½° P.A.

Comparative Sizes of Involute Gear Teeth



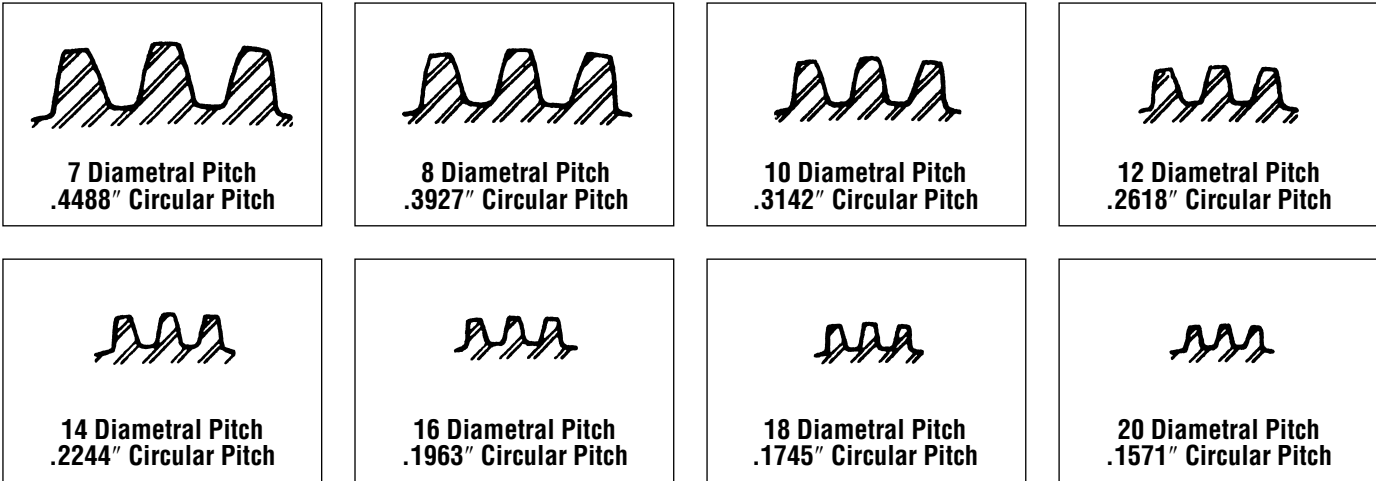
GEARS



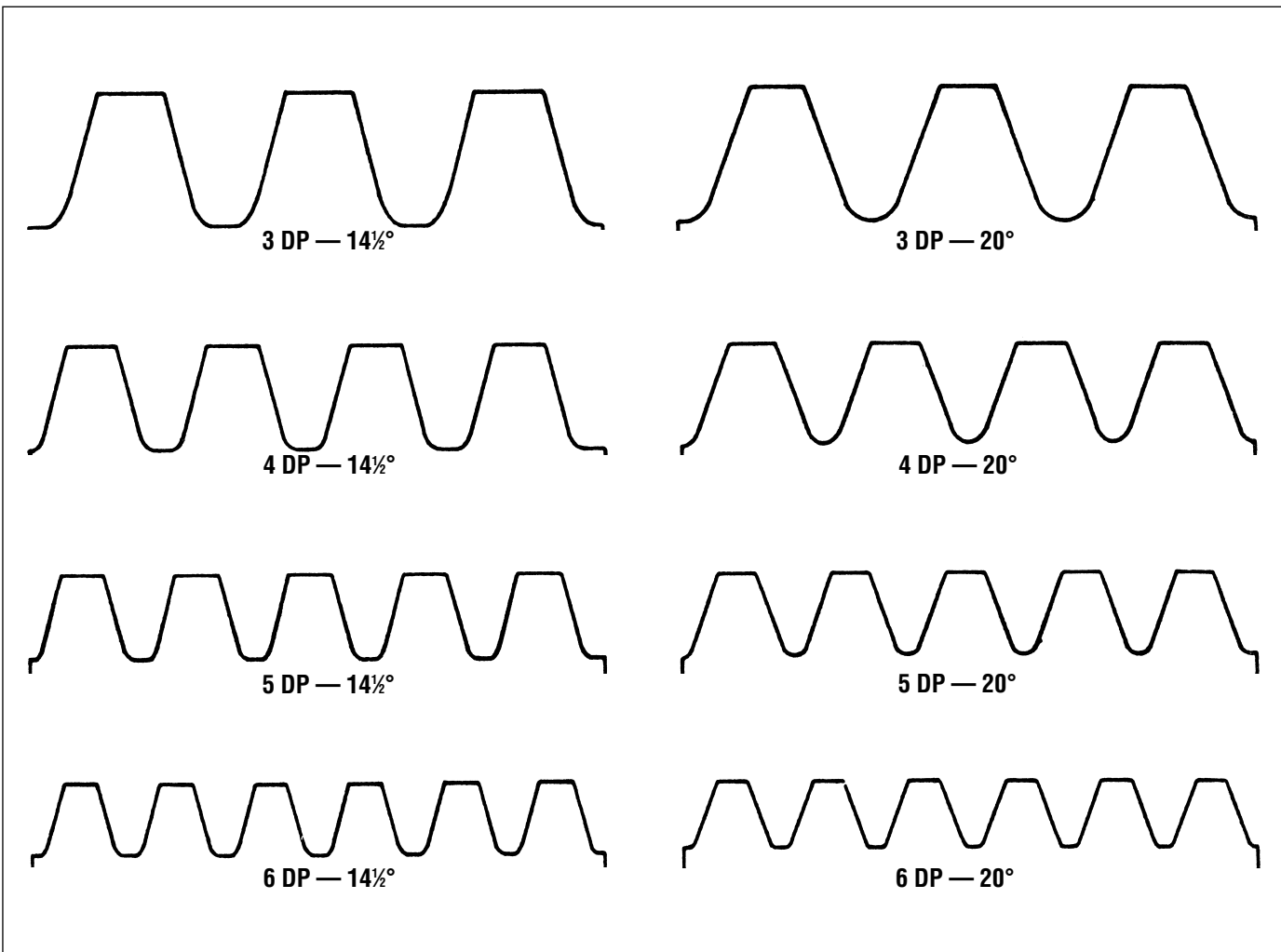
Cut Spur Gears

14½° P.A.

Comparative Sizes of Involute Gear Teeth



Gear Rack Comparison — 14½ and 20°



GEARS

Gear Materials



Stock Steel Gears

Martin steel gears are manufactured from high quality carbon steel material. This material is used for strength and good hardening characteristics. These gears may be hardened by any method acceptable to good practice such as flame or induction hardening. Flame hardening is preferred so that only the teeth are hardened. Distortion is virtually eliminated and the bore is left soft for subsequent work.

Cast Gears

Martin cast iron gears are manufactured from high quality close grained controlled specification irons.

Reboring of Stock Gears

Most of *Martin's* Stock Gears may be rebored. The maximum recommended bore size is given for each gear. In reboring gears, care must be taken to hold the bore concentric with the pitch diameter. In most cases this would require a great amount of time. To cut costly set-up time when reboring, *Martin* holds the outside diameter of its gears concentric with the bore which in turn is concentric with the pitch diameter. The outside diameter is held to a closer total indicator reading than the pitch diameter. In the finer pitches, care should be taken not to distort the outside diameter when chucking.

Martin's steel gears are machined all over.

Rebore or rework may be accomplished by chucking on the hub. Concentricity must be controlled in order for gears to run at maximum efficiency.