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D

# Worms & Worm Gears

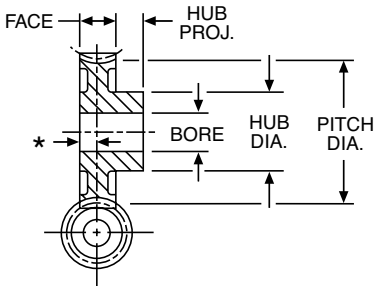
## 48 Diametral Pitch (Bronze Worm Gears, Steel Worms – Unhardened & Hardened, Acetal Worm Gears & Worms)

### Pressure Angle – Single thread 14-1/2° – Double thread 20° – Quad thread 25°



RATIO = Gear Teeth ÷ Worm Threads

All Worms and Worm Gears stocked RIGHT HAND ONLY.




**ALL DIMENSIONS IN INCHES**
**ORDER BY CATALOG NUMBER OR ITEM CODE**

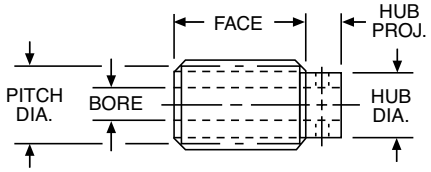
| 48 DIAMETRAL PITCH | | | | | | WORM GEARS | | FACE = .156" *CENTER LINE WORM TO FLUSH END = .078" | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Hub | | Style See | SINGLE Thread | | DOUBLE Thread | | QUAD Thread | |
| No. of Teeth | Pitch Dia. | Bore | Dia. | Proj. | Page 315 | Catalog Number | Item Code | Catalog Number | Item Code | Catalog Number | Item Code |
| **ACETAL**** | | | | | | | | | | | |
| 20 | .417 | .187 | .34 | .19 | B | GP1018 | 54106 | – | – | – | – |
| 30 | .625 | | .44 | .25 | | GP1019 | 54107 | – | – | – | – |
| 40 | .833 | | .50 | | | GP1020 | 54108 | – | – | – | – |
| 50 | 1.042 | | | | | GP1021 | 54109 | – | – | – | – |
| **ACETAL WITH BRASS INSERTS**** | | | | | | | | | | | |
| 20 | .417 | .125 | .34 | .19 | B | GP1018-1/8 | 54118 | – | – | – | – |
| 30 | .625 | .125 | .44 | .25 | | GP1019-1/8 | 54119 | – | – | – | – |
| | | .188 | | | | GP1019-3/16 | 54120 | – | – | – | – |
| 40 | .833 | .188 | .50 | .25 | | GP1020-3/16 | 54121 | – | – | – | – |
| | | .250 | | | | GP1020-1/4 | 54122 | – | – | – | – |
| 50 | 1.042 | .188 | .50 | .25 | | GP1021-3/16 | 54123 | – | – | – | – |
| | | .250 | | | | GP1021-1/4 | 54124 | – | – | – | – |
| **BRONZE** | | | | | | | | | | | |
| 20 | .417 | .1875 | .34 | .19 | A | G1018 | 13564 | D1118 | 13488 | Q1318 | 13440 |
| 30 | .625 | | .44 | .25 | | G1019 | 13566 | D1119 | 13490 | Q1319 | 13442 |
| 40 | .833 | | .50 | | | G1020 | 13568 | D1120 | 13492 | Q1320 | 13444 |
| 50 | 1.042 | | .50 | | | G1021 | 13570 | D1121 | 13494 | Q1321 | 13446 |
| 60 | 1.250 | | .62 | | | G1024 | 13572 | D1124 | 13500 | Q1324 | 13452 |
| 80 | 1.667 | .250 | .62 | .31 | | G1022 | 13574 | D1122 | 13496 | Q1322 | 13448 |
| 100 | 2.083 | | .69 | | B | G1023 | 13576 | D1123 | 13498 | Q1323 | 13450 |

### *STANDARD TOLERANCES*

| DIMENSION | | | TOLERANCE |
|---|---|---|---|
| BORE | Bronze and Steel | All | ±.0005 |
| | Acetal | All | +.001 –.002 |
| | Acetal with Brass Insert | All | +.001 –.000 |

### *WORM LEAD and LEAD ANGLE*

| | SINGLE | DOUBLE | QUAD |
|---|---|---|---|
| LEAD | .0654" | .1309" | .2618" |
| LEAD ANGLE | 3°35′ | 7°7′ | 14°2′ |




| 48 DIAMETRAL PITCH | | | | | WORMS FOR ABOVE GEARS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Hub | | SINGLE Thread | | DOUBLE Thread | | QUAD Thread | |
| Pitch Dia. | Face | Bore | Dia. | Proj. | Catalog Number | Item Code | Catalog Number | Item Code | Catalog Number | Item Code |
| **ACETAL** | | | | | | | | | | |
| .333 | .562 | .187 | .26 | .19 | LSHP | 54141 | – | – | – | – |
| **UNHARDENED – STEEL** | | | | | | | | | | |
| .333 | .562 | .1875 | .26 | .19 | LSH-1 | 12920 | DSH-1 | 12928 | QSH-1 | 12934 |
| **HARDENED – STEEL** | | | | | | | | | | |
| .333 | .562 | .1875 | .26 | .19 | HLSH-1 | 13026 | HDSH-1 | 13052 | HQSH-1 | 13062 |
| | | | | | GLSH-1 | 12952 | GDSH-1 | 13036 | GQSH-1 | 13042 |

All Steel worms have .0625 drilled hole in hub.
Hxxx worms have polished threads.
Gxxx worms have ground and polished threads.

### *REFERENCE PAGES*


Alterations — 322
Lubrication — 322
Materials — 323


D

# 32 Diametral Pitch (Bronze Worm Gears, Steel Worms – Unhardened & Hardened, Acetal Worm Gears & Worms)

## Pressure Angle – Single thread 14-1/2° – Double thread 20° – Quad thread 25°

RATIO = Gear Teeth ÷ Worm Threads

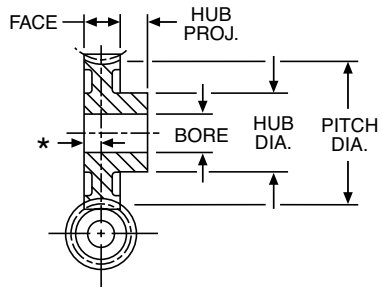
All Worms and Worm Gears stocked RIGHT HAND ONLY.



ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

**32 DIAMETRAL PITCH — WORM GEARS** — FACE = .219" *CENTER LINE WORM TO FLUSH END = .109"

| No. of Teeth | Pitch Dia. | Bore | Hub Dia. | Hub Proj. | Style See Page 315 | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **ACETAL**** | | | | | | | | | | | |
| 20 | .625 | .187 | .50 | .25 | B | GP1026 | 54110 | – | – | – | – |
| 30 | .938 | | .63 | | | GP1027 | 54111 | – | – | – | – |
| 40 | 1.250 | .250 | .63 | .31 | | GP1028 | 54112 | – | – | – | – |
| 50 | 1.562 | | .63 | | | GP1029 | 54113 | – | – | – | – |
| **ACETAL WITH BRASS INSERTS**** | | | | | | | | | | | |
| 20 | .625 | .188 | .50 | .25 | B | GP1026-3/16 | 54125 | – | – | – | – |
| | | .250 | | | | GP1026-1/4 | 54126 | – | – | – | – |
| 30 | .938 | .188 | .63 | .25 | | GP1027-3/16 | 54127 | – | – | – | – |
| | | .250 | | | | GP1027-1/4 | 54128 | – | – | – | – |
| 40 | 1.250 | .250 | .63 | .31 | | GP1028-1/4 | 54129 | – | – | – | – |
| | | .313 | | | | GP1028-5/16 | 54130 | – | – | – | – |
| 50 | 1.562 | .250 | .63 | .31 | | GP1029-1/4 | 54131 | – | – | – | – |
| | | .3125 | | | | GP1029-5/16 | 54132 | – | – | – | – |
| **BRONZE** | | | | | | | | | | | |
| 20 | .625 | .1875 | .50 | .25 | A | G1026 | 13578 | D1126 | 13502 | Q1326 | 13454 |
| 30 | .938 | | .62 | | | G1027 | 13580 | D1127 | 13504 | Q1327 | 13456 |
| 40 | 1.250 | .250 | .62 | .31 | | G1028 | 13582 | D1128 | 13506 | Q1328 | 13458 |
| 50 | 1.562 | | .62 | | | G1029 | 13584 | D1129 | 13508 | Q1329 | 13460 |
| 60 | 1.875 | | .69 | | | G1032 | 13586 | D1132 | 13514 | Q1332 | 13466 |
| 80 | 2.500 | .3125 | .69 | .31 | D | G1030 | 13588 | D1130 | 13510 | Q1330 | 13462 |
| 96 | 3.000 | | | | | G1031 | 13590 | – | – | Q1331 | 13464 |
| 100 | 3.125 | | | | | G1033 | 13592 | D1133 | 13516 | – | – |




### STANDARD TOLERANCES

| DIMENSION | | | TOLERANCE |
|---|---|---|---|
| BORE | Bronze and Steel | All | ±.0005 |
| | Acetal | All | +.001 –.002 |
| | Acetal with Brass Insert | All | +.001 –.000 |

D

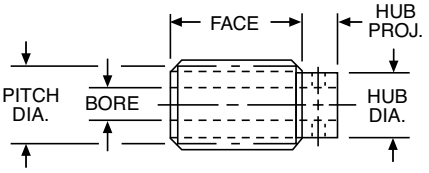
**32 DIAMETRAL PITCH — WORMS FOR ABOVE GEARS**

| Pitch Dia. | Face | Bore | Hub Dia. | Hub Proj. | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
|---|---|---|---|---|---|---|---|---|---|---|
| **ACETAL** | | | | | | | | | | |
| .438 | .641 | .187 | .32 | .19 | LTHBP | 54142 | – | – | – | – |
| **UNHARDENED – STEEL** | | | | | | | | | | |
| .438 | .688 | .1875 | .32 | .19 | LTHB-1 | 12922 | DTH-1 | 12930 | QTH-1 | 12936 |
| **HARDENED – STEEL** | | | | | | | | | | |
| .438 | .688 | .2187 | .32 | .19 | HLTH-1 | 13028 | HDTH-1 | 13054 | HQTH-1 | 13064 |
| | | | | | GLTH-1 | 12954 | GDTH-1 | 13038 | GQTH-1 | 13044 |

All Steel worms have .0625 drilled hole in hub.
Hxxx worms have polished threads.
Gxxx worms have ground and polished threads.
**These are in effect Helical Gears with a Helix Angle compatible with the worms. When in mesh they operate as a worm pair at right angles. Face Width is 3/16".

### WORM LEAD and LEAD ANGLE

| | SINGLE | DOUBLE | QUAD |
|---|---|---|---|
| LEAD | .0982" | .1963" | .3927" |
| LEAD ANGLE | 4°5′ | 8°8′ | 15°57′ |




### REFERENCE PAGES

Alterations — 322
Lubrication — 322
Materials — 323

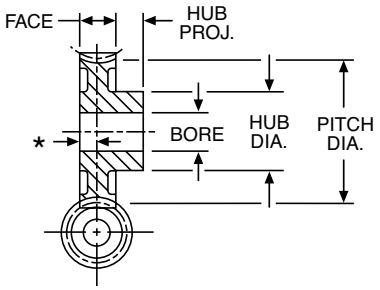
## 24 Diametral Pitch (Bronze Worm Gears, Steel Worms – Unhardened & Hardened, Minlon® Worm Gears – Nylon Worms)

### Pressure Angle – Single thread 14-1/2° – Double thread 20° – Quad thread 25°



RATIO = Gear Teeth ÷ Worm Threads

All Worms and Worm Gears stocked RIGHT HAND ONLY.




**ALL DIMENSIONS IN INCHES**
**ORDER BY CATALOG NUMBER OR ITEM CODE**

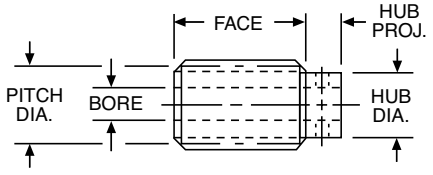
| 24 DIAMETRAL PITCH | | | | | | WORM GEARS | | FACE = .250" *CENTER LINE WORM TO FLUSH END = .125" | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of Teeth | Pitch Dia. | Bore | Hub Dia. | Hub Proj. | Style See Page 315 | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
| **MINLON**** | | | | | | | | | | | |
| 20 | .833 | .187 | .63 | .31 | B | GP1034 | 54114 | – | – | – | – |
| 30 | 1.250 | | | | | GP1035 | 54115 | – | – | – | – |
| 40 | 1.667 | .3125 | .75 | | | GP1036 | 54116 | – | – | – | – |
| 50 | 2.083 | | | | | GP1037 | 54117 | – | – | – | – |
| **MINLON WITH BRASS INSERTS**** | | | | | | | | | | | |
| 20 | .833 | .1875 | .63 | .31 | B | GP1034-3/16 | 54133 | – | – | – | – |
| | | .250 | | | | GP1034-1/4 | 54134 | – | – | – | – |
| 30 | 1.250 | .1875 | | | | GP1035-3/16 | 54135 | – | – | – | – |
| | | .250 | | | | GP1035-1/4 | 54136 | – | – | – | – |
| 40 | 1.667 | .250 | .75 | | | GP1036-1/4 | 54137 | – | – | – | – |
| | | .3125 | | | | GP1036-5/16 | 54138 | – | – | – | – |
| 50 | 2.083 | .250 | | | | GP1037-1/4 | 54139 | – | – | – | – |
| | | .3125 | | | | GP1037-5/16 | 54140 | – | – | – | – |
| **BRONZE** | | | | | | | | | | | |
| 20 | .833 | .1875 | .62 | .31 | A | G1034 | 13594 | D1134 | 13518 | Q1334 | 13470 |
| 30 | 1.250 | | | | | G1035 | 13596 | D1135 | 13520 | Q1335 | 13472 |
| 40 | 1.667 | .250 | .62 | .31 | | G1036 | 13598 | D1136 | 13522 | Q1336 | 13474 |
| 50 | 2.083 | .3125 | .75 | .31 | B | G1037 | 13600 | D1137 | 13524 | Q1337 | 13476 |
| 60 | 2.500 | | | | C | G1040 | 13602 | D1140 | 13530 | Q1340 | 13482 |
| 72 | 3.000 | | | | D | G1038 | 13604 | D1138 | 13526 | Q1338 | 13478 |
| 80 | 3.333 | | .88 | .38 | | G1041 | 13606 | D1141 | 13532 | Q1341 | 13484 |
| 96 | 4.000 | .375 | .88 | .38 | | G1039 | 13608 | D1139 | 13528 | – | – |
| 100 | 4.167 | | | | | G1049 | 13610 | D1149 | 13534 | – | – |

### *STANDARD TOLERANCES*

| DIMENSION | | | TOLERANCE |
|---|---|---|---|
| BORE | Bronze and Steel | All | ±.0005 |
| | Minlon/Nylon | All | +.001 –.002 |
| | Minlon/Nylon w/Brass Insert | All | +.001 –.000 |

### *WORM LEAD and LEAD ANGLE*

| | SINGLE | DOUBLE | QUAD |
|---|---|---|---|
| LEAD | .1309" | .2618" | .5236" |
| LEAD ANGLE | 4°46´ | 9°28´ | 18°26´ |




| 24 DIAMETRAL PITCH | | | | | WORMS FOR ABOVE GEARS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pitch Dia. | Face | Bore | Hub Dia. | Hub Proj. | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
| **NYLON** | | | | | | | | | | |
| .500 | .643 | .187 | .38 | .25 | LUHBP | 54143 | – | – | – | – |
| **UNHARDENED – STEEL** | | | | | | | | | | |
| .500 | .812 | .1875 | .38 | .25 | LUHB | 12924 | DUH | 12932 | QUH | 12938 |
| **HARDENED – STEEL** | | | | | | | | | | |
| .500 | .812 | .25 | .38 | .25 | HLUH | 13030 | HDUH | 13056 | HQUH | 13066 |
| | | | | | GLUH | 12956 | GDUH | 13040 | GQUH | 13060 |

### *REFERENCE PAGES*

Alterations — 322
Lubrication — 322
Materials — 323

All Steel worms have .0938 drilled hole in hub.
Hxxx worms have polished threads.
Gxxx worms have ground and polished threads.
MINLON® is a registered trademark of E.I. DuPont.
** These are in effect Helical Gears with a Helix Angle compatible with the worms. When in mesh they operate as a worm pair at right angles.

D

# 16 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

## Pressure Angle – Single thread 14-1/2° – Double thread 14-1/2° – Quad thread 25°

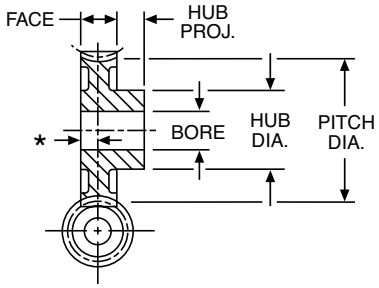
RATIO = Gear Teeth ÷ Worm Threads

All Worms and Worm Gears stocked RIGHT HAND ONLY.



ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

| 16 DIAMETRAL PITCH | | | WORM GEARS | | FACE = .313" *CENTER LINE WORM TO FLUSH END = .156" | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Hub | | Style See | SINGLE Thread | | DOUBLE Thread | | QUAD Thread | |
| No. of Teeth | Pitch Dia. | Bore | Dia. | Proj. | Page 315 | Catalog Number | Item Code | Catalog Number | Item Code | Catalog Number | Item Code |
| BRONZE | | | | | | | | | | | |
| 20 | 1.250 | .250 | .62 | .31 | A | G1042 | 13612 | D1142 | 13700 | Q1342 | 13536 |
| 30 | 1.875 | .3125 | .75 | .38 | B | G1043 | 13614 | D1143 | 13702 | Q1343 | 13538 |
| 40 | 2.500 | | | | C | G1044 | 13616 | D1144 | 13704 | Q1344 | 13540 |
| 50 | 3.125 | .375 | .88 | .44 | D | G1045 | 13618 | D1145 | 13706 | Q1345 | 13542 |
| 60 | 3.750 | | | | | G1048 | 13620 | D1148 | 13708 | Q1348 | 13544 |
| 80 | 5.000 | | | | | G1046 | 13622 | – | – | Q1346 | 13546 |
| 100 | 6.250 | | 1.00 | .50 | | G1047 | 13624 | – | – | – | – |
| CAST IRON | | | | | | | | | | | |
| 20 | 1.250 | .250 | .62 | .31 | A | CG1042 | 63506 | CD1142 | 63513 | CQ1342 | 63518 |
| 30 | 1.875 | .3125 | .75 | .38 | B | CG1043 | 63507 | CD1143 | 63514 | CQ1343 | 63519 |
| 40 | 2.500 | | | | C | CG1044 | 63508 | CD1144 | 63515 | CQ1344 | 63520 |
| 50 | 3.125 | .375 | .88 | .44 | | CG1045 | 63509 | CD1145 | 63516 | CQ1345 | 63521 |
| 60 | 3.750 | | | | | CG1048 | 63510 | CD1148 | 63517 | CQ1348 | 63522 |
| 80 | 5.000 | | | | | CG1046 | 63511 | – | – | CQ1346 | 63523 |
| 100 | 6.250 | | 1.00 | .50 | | CG1047 | 63512 | – | – | – | – |




### STANDARD TOLERANCES

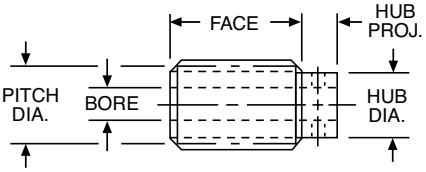
| DIMENSION | | TOLERANCE |
|---|---|---|
| BORE | All | ±.0005 |

D

### WORM LEAD and LEAD ANGLE

| | SINGLE | DOUBLE | QUAD |
|---|---|---|---|
| LEAD | .1963" | .3927" | .7854" |
| LEAD ANGLE | 5°43´ | 11°19´ | 21°48´ |

| 16 DIAMETRAL PITCH | | | WORMS FOR ABOVE GEARS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Hub | | SINGLE Thread | | DOUBLE Thread | | QUAD Thread | |
| Pitch Dia. | Face | Bore | Dia. | Proj. | Catalog Number | Item Code | Catalog Number | Item Code | Catalog Number | Item Code |
| UNHARDENED – STEEL | | | | | | | | | | |
| .625 | 1.00 | .250 | .44 | .25 | LVHB-1 | 12926 | DVH-1 | 12862 | QVH-1 | 12940 |
| HARDENED – STEEL | | | | | | | | | | |
| .625 | 1.00 | .3125 | .44 | .25 | HLVH-1<br>GLVH-1 | 13032<br>12958 | HDVH-1<br>GDVH-1 | 13004<br>12950 | HQVH-1<br>GQVH-1 | 13058<br>13046 |




All worms have .0938 drilled hole in hub.
Hxxx worms have polished threads.
Gxxx worms have ground and polished threads.

### REFERENCE PAGES

Alterations — 322
Lubrication — 322
Materials — 323

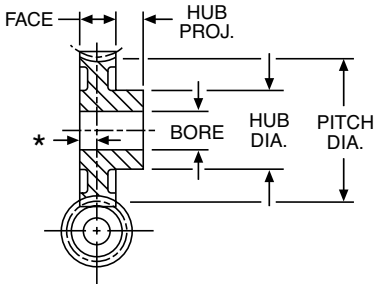
# Worms & Worm Gears

## 12 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

### Pressure Angle – 14-1/2°

RATIO = Gear Teeth ÷ Worm Threads
RH = RIGHT HAND — LH = LEFT HAND
All others stocked RIGHT HAND ONLY.



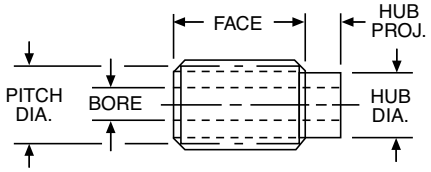



### STANDARD TOLERANCES

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

### WORM LEAD and LEAD ANGLE

| | SINGLE | DOUBLE | QUAD |
|---|---|---|---|
| LEAD | .2618" | .5236" | 1.0472" |
| LEAD ANGLE | 4°46´ | 9°28´ | 18°26´ |




### REFERENCE PAGES


Alterations — 322
Horsepower Ratings — 97, 98
Lubrication — 322
Materials — 323
Selection Procedure — 96


**ALL DIMENSIONS IN INCHES**
**ORDER BY CATALOG NUMBER OR ITEM CODE**

**12 DIAMETRAL PITCH — WORM GEARS — FACE = .500" *CENTER LINE WORM TO FLUSH END = .250"**

| No. of Teeth | Pitch Dia. | Bore | Hub Dia. | Hub Proj. | Style See Page 315 | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **BRONZE** | | | | | | | | | | | |
| 12 | 1.000 | .5625 | 1.00 | .62 | A | – | – | – | – | QB1212† | 13762 |
| 16 | 1.333 | .6875 | 1.25 | .62 | | – | – | – | – | QB1216† | 13764 |
| 20 | 1.667 | .500 | 1.25 | .50 | | GB1050A | 13626 | DB1400 | 13714 | DB1600 | 13766 |
| 30 | 2.500 | .500 | 1.19 | .62 | B | GB1051 | 13628 | – | – | – | – |
| | | .750 | | .62 | | – | – | DB1401A | 13716 | DB1601A | 13768 |
| 40 | 3.333 | .625 | 1.44 | .62 | | GB1052A | 13630 | – | – | – | – |
| | | .750 | | .62 | | – | – | DB1402A | 13718 | DB1602A | 13770 |
| 50 | 4.167 | .625 | 1.44 | .62 | | GB1053A | 13632 | – | – | – | – |
| | | .750 | | .62 | | – | – | DB1403A | 13720 | DB1603A | 13772 |
| 60 | 5.000 | .625 | 1.69 | .62 | | GB1260A | 13634 | – | – | – | – |
| | | .750 | | .62 | | – | – | DB1260A | 13722 | QB1260A | 13774 |
| 80 | 6.667 | .625 | 1.94 | .75 | C | GB1054 | 13636 | – | – | – | – |
| 100 | 8.333 | .750 | 1.94 | .75 | | GB1055 | 13638 | – | – | – | – |
| **CAST IRON** | | | | | | | | | | | |
| 20 | 1.667 | .500 | 1.25 | .50 | A | G1050ARH<br>G1050ALH | 13110<br>13112 | D1400RH<br>D1400LH | 13260<br>13262 | D1600 | 13352 |
| 30 | 2.500 | .500 | 1.19 | .62 | B | G1051RH<br>G1051LH | 13114<br>13116 | – | – | – | – |
| | | .750 | | .62 | | – | – | D1401ARH<br>D1401ALH | 13264<br>13266 | D1601A | 13354 |
| 40 | 3.333 | .625 | 1.44 | .62 | | G1052ARH<br>G1052ALH | 13118<br>13120 | – | – | – | – |
| | | .750 | | .62 | | – | – | D1402ARH<br>D1402ALH | 13268<br>13270 | D1602A | 13356 |
| 50 | 4.167 | .625 | 1.44 | .62 | | G1053ARH<br>G1053ALH | 13122<br>13124 | – | – | – | – |
| | | .750 | | .62 | | – | – | D1403ARH<br>D1403ALH | 13272<br>13274 | D1603A | 13358 |
| 60 | 5.000 | .625 | 1.69 | .75 | | G1260RH<br>G1260LH | 13126<br>13128 | – | – | – | – |
| | | .750 | | | | – | – | D1260A | 13276 | Q1260A | 13360 |
| 80 | 6.667 | .625 | 1.94 | .75 | | G1054 | 13130 | – | – | – | – |
| | | .750 | | | | – | – | D1404 | 13278 | – | – |
| 100 | 8.333 | .750 | 1.94 | .75 | C | G1055 | 13134 | – | – | – | – |

**12 DIAMETRAL PITCH — WORMS FOR ABOVE GEARS**

| Pitch Dia. | Face | Bore | Hub Dia. | Hub Proj. | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
|---|---|---|---|---|---|---|---|---|---|---|
| **UNHARDENED – STEEL** | | | | | | | | | | |
| 1.000 | 1.125 | .625 | – | – | – | – | D1407KRH‡<br>D1407KLH‡ | 12806<br>12808 | D1607KRH‡<br>D1607KLH‡ | 12822<br>12824 |
| | 1.625 | .625 | – | – | – | – | L1407‡ | 12912 | – | – |
| | | .500 | – | – | L1056‡ | 12900 | – | – | – | – |
| | 1.125 | .500 | .75 | .38 | GH1056RH<br>GH1056LH | 12884<br>12886 | DH1407RH<br>DH1407LH | 12838<br>12840 | DH1607<br>– | 12854<br>– |
| **HARDENED – STEEL** | | | | | | | | | | |
| 1.000 | 1.125 | .625 | – | – | – | – | H1407RH‡<br>H1407LH‡ | 12980<br>12982 | H1607‡<br>– | 12996<br>– |
| | 1.625 | .625 | – | – | – | – | HL1407‡ | 13018 | – | – |
| | | .500 | – | – | HL1056‡ | 13006 | – | – | – | – |
| | 1.125 | .500 | – | – | H1056RH‡<br>H1056LH‡ | 12962<br>12960 | –<br>– | –<br>– | –<br>– | –<br>– |

†.750" Face, Center Line Worm to Flush End = .375"
‡Furnished with .125" Keyway.
Hardened Worms have ground and polished threads.

# 10 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

## Pressure Angle – 14-1/2°

RATIO = Gear Teeth ÷ Worm Threads
RH = RIGHT HAND — LH = LEFT HAND
All others stocked RIGHT HAND ONLY.

**ALL DIMENSIONS IN INCHES**
**ORDER BY CATALOG NUMBER OR ITEM CODE**

**10 DIAMETRAL PITCH — WORM GEARS — FACE = .625" *CENTER LINE WORM TO FLUSH END = .312"**

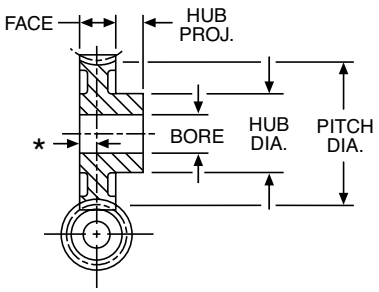
| No. of Teeth | Pitch Dia. | Bore | Hub Dia. | Hub Proj. | Style See Page 315 | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **BRONZE** | | | | | | | | | | | |
| 16 | 1.600 | .750 | 1.50 | .75 | A | – | – | – | – | QB1016† | 13780 |
| 20 | 2.000 | .500 | 1.25 | .62 | A | GB1060A | 13640 | – | – | – | – |
| | | .875 | 1.62 | | | – | – | DB1410 | 13728 | DB1610 | 13782 |
| 30 | 3.000 | .625 | 1.69 | .62 | B | GB1061A | 13648 | – | – | – | – |
| | | .875 | | | | – | – | DB1411 | 13736 | DB1611 | 13788 |
| 40 | 4.000 | .625 | 1.69 | .62 | B | GB1062A | 13642 | – | – | – | – |
| | | .875 | | | | – | – | DB1412 | 13730 | DB1612 | 13784 |
| 50 | 5.000 | .750 | 1.94 | .75 | B | GB1063 | 13644 | – | – | – | – |
| | | .875 | | | | – | – | DB1413A | 13732 | DB1613A | 13786 |
| 60 | 6.000 | .750 | 1.94 | .75 | B | GB1064 | 13646 | – | – | – | – |
| | | .875 | | | | – | – | DB1414A | 13734 | – | – |
| 80 | 8.000 | .750 | 1.94 | .75 | C | GB1067 | 13650 | – | – | – | – |
| 100 | 10.000 | .750 | 2.00 | .75 | C | GB1065 | 13652 | – | – | – | – |
| **CAST IRON** | | | | | | | | | | | |
| 20 | 2.000 | .500 | 1.25 | .62 | A | G1060ARH<br>G1060ALH | 13136<br>13138 | – | – | – | – |
| | | .875 | 1.62 | | | – | – | D1410RH<br>D1410LH | 13282<br>13284 | D1610 | 13366 |
| 30 | 3.000 | .625 | 1.69 | .62 | B | G1061ARH<br>G1061ALH | 13142<br>13140 | – | – | – | – |
| | | .875 | 1.69 | | | – | – | D1411RH<br>D1411LH | 13286<br>13288 | D1611 | 13368 |
| 40 | 4.000 | .625 | 1.69 | .62 | B | G1062ARH<br>G1062ALH | 13144<br>13146 | – | – | – | – |
| | | .875 | 1.69 | | | – | – | D1412RH<br>D1412LH | 13290<br>13292 | D1612 | 13370 |
| 50 | 5.000 | .750 | 1.94 | .75 | B | G1063RH<br>G1063LH | 13148<br>13150 | – | – | – | – |
| | | .875 | 1.94 | | | – | – | D1413ARH<br>D1413ALH | 13294<br>13296 | D1613A | 13372 |
| 60 | 6.000 | .750 | 1.94 | .75 | B | G1064RH<br>G1064LH | 13152<br>13154 | – | – | – | – |
| | | .875 | 1.94 | | | – | – | D1414A | 13298 | D1614A | 13374 |
| 80 | 8.000 | .750 | 1.94 | .75 | C | G1067RH | 13156 | – | – | – | – |
| | | .875 | 1.94 | | | – | – | D1080A | 13300 | Q1080A | 13376 |
| 100 | 10.000 | .750 | 1.94 | .75 | C | G1065 | 13158 | – | – | – | – |
| | | .875 | 1.94 | | | – | – | D1415A | 13302 | – | – |

**10 DIAMETRAL PITCH — WORMS FOR ABOVE GEARS**

| Pitch Dia. | Face | Bore | Hub Dia. | Hub Proj. | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | **UNHARDENED – STEEL** | | | | | | |
| 1.250 | 1.375 | .750 | – | – | –<br>– | –<br>– | D1418KRH‡<br>D1418KLH‡ | 12810<br>12812 | D1618KRH‡<br>D1618KLH‡ | 12826<br>12828 |
| | 2.000 | .750 | – | – | – | – | L1418‡ | 12914 | – | – |
| | | .625 | – | – | L1066‡ | 12902 | – | – | – | – |
| | 1.375 | .625 | – | – | G1066KRH‡<br>G1066KLH‡ | 12864<br>12866 | – | – | – | – |
| | | | .97 | .50 | GH1066RH<br>GH1066LH | 12888<br>12890 | DH1418RH<br>DH1418LH | 12842<br>12844 | DH1618<br>– | 12856<br>– |
| | | | | **HARDENED STEEL** | | | | | | |
| 1.250 | 1.375 | .750 | – | – | –<br>– | –<br>– | H1418RH‡<br>H1418LH‡ | 12986<br>12984 | H1618‡<br>– | 12998<br>– |
| | 2.000 | .750 | – | – | – | – | HL1418‡ | 13020 | – | – |
| | | .625 | – | – | HL1066‡ | 13008 | – | – | – | – |
| | 1.375 | .625 | – | – | H1066RH‡<br>H1066LH‡ | 12966<br>12964 | – | – | – | – |

†.875" Face, Center Line Worm to Flush End = .438"
‡Furnished with 3/16" Keyway.
Hardened Worms have ground and polished threads.



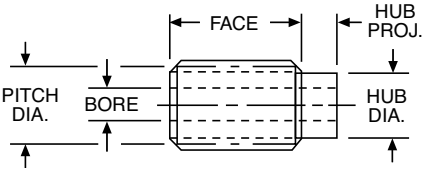



### STANDARD TOLERANCES

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

### WORM LEAD and LEAD ANGLE

| | SINGLE | DOUBLE | QUAD |
|---|---|---|---|
| LEAD | .3142" | .6283" | 1.2566" |
| LEAD ANGLE | 4°34′ | 9°5′ | 17°45′ |




### REFERENCE PAGES

Alterations — 322
Horsepower Ratings — 97, 98
Lubrication — 322
Materials — 323
Selection Procedure — 96

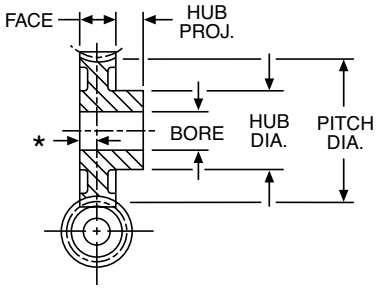
D

## 8 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

### Pressure Angle – 14-1/2°

RATIO = Gear Teeth ÷ Worm Threads
RH = RIGHT HAND — LH = LEFT HAND
All others stocked RIGHT HAND ONLY.






ALL DIMENSIONS IN INCHES
ORDER BY CATALOG NUMBER OR ITEM CODE

**8 DIAMETRAL PITCH — WORM GEARS — FACE = .750" *CENTER LINE WORM TO FLUSH END = .375"**

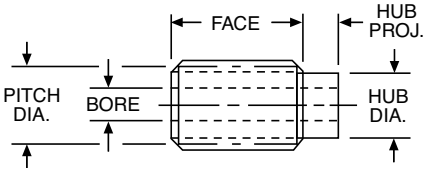
| No. of Teeth | Pitch Dia. | Bore | Hub Dia. | Hub Proj. | Style See Page 315 | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **BRONZE** | | | | | | | | | | | |
| 8 | 1.000 | .500 | 1.12 | .88 | A | – | – | – | – | QB808† | 13790 |
| 12 | 1.500 | .750 | 1.50 | .88 | A | – | – | – | – | QB812† | 13792 |
| 16 | 2.000 | 1.000 | 2.00 | .88 | A | – | – | – | – | QB816† | 13794 |
| 20 | 2.500 | .750 | 1.75 | .75 | A | GB1070 | 13654 | – | – | – | – |
| | | 1.000 | 1.75 | .75 | A | – | – | DB1420A | 13740 | DB1620A | 13796 |
| 30 | 3.750 | .750 | 1.69 | .75 | B | GB1071 | 13656 | – | – | – | – |
| | | 1.000 | 1.69 | .75 | B | – | – | DB1421A | 13742 | DB1621A | 13798 |
| 40 | 5.000 | 1.000 | 2.19 | .75 | B | GB1072A | 13658 | DB1422 | 13744 | DB1622 | 13800 |
| 48 | 6.000 | 1.000 | 2.38 | .88 | B | GB1073 | 13660 | – | – | – | – |
| 50 | 6.250 | 1.000 | 2.31 | .88 | B | GB850 | 13662 | DB1423A | 13746 | DB1623A | 13802 |
| 60 | 7.500 | 1.000 | 2.44 | .88 | C | GB860 | 13664 | DB860A | 13748 | – | – |
| 80 | 10.000 | 1.250 | 2.75 | .88 | D | GB1074A | 13666 | – | – | – | – |
| 100 | 12.500 | 1.250 | 3.00 | 1.00 | C | GB8100 | 13668 | – | – | – | – |
| **CAST IRON** | | | | | | | | | | | |
| 20 | 2.500 | .750 | 1.75 | .75 | A | G1070RH<br>G1070LH | 13160<br>13162 | – | – | – | – |
| | | 1.000 | 1.75 | .75 | A | – | – | D1420ARH<br>D1420ALH | 13304<br>13306 | D1620A | 13380 |
| 30 | 3.750 | .750 | 1.69 | .75 | B | G1071RH<br>G1071LH | 13164<br>13166 | – | – | – | – |
| | | 1.000 | 1.69 | .75 | B | – | – | D1421ARH<br>D1421ALH | 13308<br>13310 | D1621A | 13382 |
| 40 | 5.000 | 1.000 | 1.69 | .75 | B | G1072ARH<br>G1072ALH | 13168<br>13170 | D1422ARH<br>D1422ALH | 13312<br>13314 | D1622A | 13384 |
| 48 | 6.000 | 1.000 | 2.38 | .88 | B | G1073RH<br>G1073LH | 13174<br>13172 | – | – | – | – |
| 50 | 6.250 | 1.000 | 2.31 | .88 | B | G850RH<br>G850LH | 13176<br>13178 | D1423A | 13316 | D1623A | 13386 |
| 60 | 7.500 | 1.000 | 2.44 | .88 | C | G860 | 13180 | D860A | 13320 | Q860A | 13388 |
| 80 | 10.000 | 1.000 | 2.69 | .88 | D | – | – | D1424A | 13322 | D1624A | 13390 |
| | | 1.250 | 2.69 | .88 | D | G1074ARH | 13182 | – | – | – | – |
| 96 | 12.000 | 1.250 | 3.00 | 1.00 | C | G1075 | 13186 | – | – | – | – |
| 100 | 12.500 | 1.250 | 2.69 | 1.00 | C | G8100A | 13188 | – | – | – | – |

### STANDARD TOLERANCES

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

### WORM LEAD and LEAD ANGLE

| | SINGLE | DOUBLE | QUAD |
|---|---|---|---|
| LEAD | .3927" | .7854" | 1.5708" |
| LEAD ANGLE | 4°46´ | 9°28´ | 18°26´ |




**8 DIAMETRAL PITCH — WORMS FOR ABOVE GEARS**

| Pitch Dia. | Face | Bore | Hub Dia. | Hub Proj. | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
|---|---|---|---|---|---|---|---|---|---|---|
| **UNHARDENED – STEEL** | | | | | | | | | | |
| 1.500 | 1.750 | .875 | – | – | – | – | D1427KRH‡<br>D1427KLH‡ | 12814<br>12816 | D1627KRH‡<br>D1627KLH‡ | 12830<br>12832 |
| | 2.500 | .875 | – | – | – | – | L1427‡ | 12916 | – | – |
| | | .750 | – | – | L1076‡ | 12904 | – | – | – | – |
| | 1.750 | .750 | – | – | G1076KRH‡<br>G1076KLH‡ | 12868<br>12870 | – | – | – | – |
| | | .750 | 1.18 | .62 | GH1076RH<br>GH1076LH | 12892<br>12894 | DH1427RH<br>DH1427LH | 12846<br>12848 | DH1627 | 12858 |
| **HARDENED STEEL** | | | | | | | | | | |
| 1.500 | 1.750 | .875 | – | – | – | – | H1427RH‡<br>H1427LH‡ | 12990<br>12988 | H1627‡<br>– | 13000<br>– |
| | 2.500 | .875 | – | – | – | – | HL1427‡ | 13022 | – | – |
| | | .750 | – | – | HL1076‡ | 13010 | – | – | – | – |
| | 1.750 | .750 | – | – | H1076RH‡<br>H1076LH‡ | 12970<br>12968 | – | – | – | – |

†1.000" Face, Center Line Worm to Flush End = .500"
‡Furnished with .188" Keyway.
Hardened Worms have ground and polished threads.

### REFERENCE PAGES

Alterations — 322
Horsepower Ratings — 97, 98
Lubrication — 322
Materials — 323
Selection Procedure — 96

D

# 6 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

## Pressure Angle – 14-1/2°

**ALL DIMENSIONS IN INCHES**
**ORDER BY CATALOG NUMBER OR ITEM CODE**

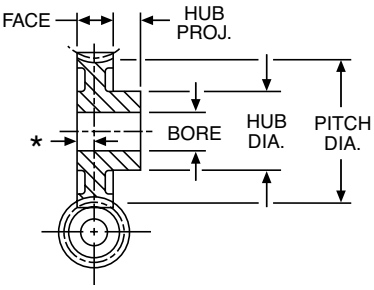
**6 DIAMETRAL PITCH — WORM GEARS — FACE = 1.000" *CENTER LINE WORM TO FLUSH END = .500"**

| No. of Teeth | Pitch Dia. | Bore | Hub Dia. | Hub Proj. | Style See Page 315 | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **BRONZE** | | | | | | | | | | | |
| 16 | 2.667 | 1.250 | 2.38 | 1.00 | A | – | – | – | – | QB616** | 13804 |
| 20 | 3.333 | .750 | 2.00 | .88 | A | GB1077A | 13670 | – | – | – | – |
| | | 1.000 | 2.00 | | | – | – | DB620A | 13752 | – | – |
| | | 1.250 | 2.00 | | | – | – | – | – | QB620A | 13806 |
| 24 | 4.000 | .750 | 1.94 | .88 | B | GB1080A | 13672 | – | – | – | – |
| | | 1.250 | | | | – | – | DB1430A | 13754 | DB1630A | 13808 |
| 30 | 5.000 | .875 | 2.19 | .88 | B | GB1081 | 13674 | – | – | – | – |
| | | 1.250 | | | | – | – | DB1431A | 13756 | DB1631A | 13810 |
| 36 | 6.000 | 1.000 | 2.50 | .88 | B | GB1082 | 13676 | – | – | – | – |
| 40 | 6.667 | 1.000 | 2.44 | .88 | B | GB1078 | 13678 | – | – | – | – |
| | | 1.250 | | | | – | – | DB1432A | 13758 | DB1632A | 13812 |
| 48 | 8.000 | 1.250 | 2.75 | 1.00 | C | GB1083 | 13680 | – | – | – | – |
| 50 | 8.333 | 1.250 | 2.69 | 1.00 | C | GB1079 | 13682 | – | – | – | – |
| 60 | 10.000 | 1.250 | 3.00 | 1.00 | C | GB1087 | 13684 | – | – | – | – |
| 72 | 12.000 | 1.250 | 3.00 | 1.25 | C | GB1084 | 13686 | – | – | – | – |
| **CAST IRON** | | | | | | | | | | | |
| 20 | 3.333 | .750 | 1.81 | .88 | B | G1077RH<br>G1077LH | 13190<br>13192 | – | – | – | – |
| | | 1.000 | | | | – | – | D620ARH<br>D620ALH | 13326<br>13328 | Q620A | 13394 |
| 24 | 4.000 | .750 | 1.94 | .88 | B | G1080ARH<br>G1080ALH | 13194<br>13196 | – | – | – | – |
| | | 1.250 | | | | – | – | D1430ARH<br>D1430ALH | 13330<br>13332 | D1630A | 13396 |
| 30 | 5.000 | .875 | 2.19 | .88 | B | G1081RH<br>G1081LH | 13198<br>13200 | – | – | – | – |
| | | 1.250 | | | | – | – | D1431ARH<br>D1431ALH | 13334<br>13336 | D1631A | 13398 |
| 36 | 6.000 | 1.000 | 2.50 | .88 | B | G1082RH<br>G1082LH | 13202<br>13204 | – | – | – | – |
| 40 | 6.667 | 1.000 | 2.44 | .88 | B | G1078RH<br>G1078LH | 13206<br>13208 | – | – | – | – |
| | | 1.250 | | | | – | – | D1432ARH<br>D1432ALH | 13338<br>13340 | D1632A | 13400 |
| 48 | 8.000 | 1.250 | 2.75 | 1.00 | B | G1083RH<br>G1083LH | 13212<br>13210 | – | – | – | – |
| 50 | 8.333 | 1.250 | 2.69 | 1.00 | C | G1079RH | 13214 | D1433 | 13342 | D1633 | 13402 |
| 60 | 10.000 | 1.250 | 2.69 | 1.00 | C | G1087ARH | 13218 | D660 | 13344 | Q660 | 13404 |
| 72 | 12.000 | 1.250 | 2.94 | 1.00 | C | G1084ARH | 13220 | D1434 | 13346 | D1634 | 13406 |
| 80 | 13.333 | 1.250 | 3.00 | 1.00 | C | G1088ARH | 13224 | – | – | – | – |
| 96 | 16.000 | 1.375 | 3.00 | 1.00 | C | G1085ARH | 13226 | – | – | – | – |
| 100 | 16.667 | 1.375 | 3.00 | 1.00 | D | G1089ARH | 13228 | – | – | – | – |

**6 DIAMETRAL PITCH — WORMS FOR ABOVE GEARS**

| Pitch Dia. | Face | Bore | Hub Dia. | Hub Proj. | SINGLE Thread Catalog Number | SINGLE Thread Item Code | DOUBLE Thread Catalog Number | DOUBLE Thread Item Code | QUAD Thread Catalog Number | QUAD Thread Item Code |
|---|---|---|---|---|---|---|---|---|---|---|
| **UNHARDENED – STEEL** | | | | | | | | | | |
| 2.000 | 2.500 | 1.000 | – | – | – | – | D1438KRH†<br>D1438KLH† | 12818<br>12820 | D1638KRH†<br>D1638KLH† | 12834<br>12836 |
| | 3.500 | 1.000 | – | – | – | – | L1438 | 12918 | – | – |
| | | .875 | – | – | L1086‡ | 12906 | – | – | – | – |
| | 2.500 | .875 | – | – | G1086KRH‡<br>G1086KLH‡ | 12872<br>12874 | – | – | – | – |
| | | .875 | 1.56 | .75 | GH1086RH<br>GH1086LH | 12896<br>12898 | DH1438RH<br>DH1438LH | 12850<br>12852 | DH1638 | 12860 |
| **HARDENED STEEL** | | | | | | | | | | |
| 2.000 | 2.500 | 1.000 | – | – | – | – | H1438RH†<br>H1438LH‡ | 12994<br>12992 | H1638† | 13002 |
| | 3.500 | 1.000 | – | – | – | – | HL1438† | 13024 | – | – |
| | | .875 | – | – | HL1086‡ | 13012 | – | – | – | – |
| | 2.500 | .875 | – | – | H1086RH‡<br>H1086LH‡ | 12974<br>12972 | – | – | – | – |



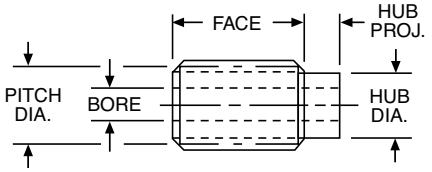



### STANDARD TOLERANCES

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

### WORM LEAD and LEAD ANGLE

| | SINGLE | DOUBLE | QUAD |
|---|---|---|---|
| LEAD | .5236" | 1.0472" | 2.0944" |
| LEAD ANGLE | 4°46´ | 9°28´ | 18°26´ |




### REFERENCE PAGES

Alterations — 322
Horsepower Ratings — 97, 98
Lubrication — 322
Materials — 323
Selection Procedure — 96

RATIO = Gear Teeth ÷ Worm Threads
RH = RIGHT HAND — LH = LEFT HAND
All others stocked RIGHT HAND ONLY.

**1.250" Face, Center Line Worm to Flush End = .625"
‡Furnished with .188" Keyway.
†Furnished with .250" Keyway.
Hardened Worms have ground and polished threads.

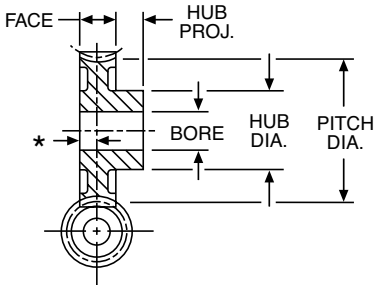
D

## 4 Diametral Pitch (Bronze & Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

### Pressure Angle – 14-1/2°

RATIO = Gear Teeth ÷ Worm Threads
RH = RIGHT HAND — LH = LEFT HAND
All others stocked RIGHT HAND ONLY.



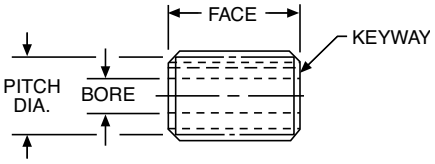



### *STANDARD TOLERANCES*

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

### *WORM LEAD and LEAD ANGLE*

| | |
|---|---|
| LEAD | .7854 |
| LEAD ANGLE | 4°46´ |




### *REFERENCE PAGES*

Alterations — 322
Horsepower Ratings — 97, 98
Lubrication — 322
Materials — 323
Selection Procedure — 96

**ALL DIMENSIONS IN INCHES**
**ORDER BY CATALOG NUMBER OR ITEM CODE**

**4 DIAMETRAL PITCH WORM GEARS** — FACE = 1.500" — *CENTER LINE WORM TO FLUSH END = .750"

| No. of Teeth | Pitch Dia. | Bore | Hub Dia. | Hub Proj. | Style See Page 315 | SINGLE Thread Catalog Number | SINGLE Thread Item Code |
|---|---|---|---|---|---|---|---|
| **BRONZE** | | | | | | | |
| 20 | 5.000 | 1.000 | 2.50 | 1.25 | B | GB1100 | 13688 |
| 24 | 6.000 | | | | | GB1101 | 13690 |
| **CAST IRON** | | | | | | | |
| 20 | 5.000 | 1.000 | 2.50 | 1.25 | B | G1100RH | 13230 |
| | | | | | | G1100LH | 13232 |
| 24 | 6.000 | | | | | G1101RH | 13234 |
| | | | | | | G1101LH | 13236 |
| 32 | 8.000 | 1.250 | 3.00 | | | G1102RH | 13238 |
| | | | | | | G1102LH | 13240 |
| 40 | 10.000 | | | | | G1103RH | 13242 |
| 48 | 12.000 | 1.500 | 3.50 | | | G1104RH | 13244 |
| 64 | 16.000 | | | | D | G1105RH | 13246 |

**4 DIAMETRAL PITCH WORMS FOR ABOVE GEARS**

| Pitch Dia. | Face | Bore | Hub Dia. | Hub Proj. | SINGLE Thread Catalog Number* | SINGLE Thread Item Code |
|---|---|---|---|---|---|---|
| **UNHARDENED – STEEL** | | | | | | |
| 3.000 | 3.500 | 1.250 | – | – | G1106KRH | 12876 |
| | | | | | G1106KLH | 12878 |
| | 4.500 | 1.250 | – | – | L1106 | 12908 |
| **HARDENED STEEL** | | | | | | |
| 3.000 | 3.500 | 1.250 | – | – | H1106 | 12976 |
| | 4.500 | 1.250 | – | – | HL1106 | 13014 |
| | 5.750 | | | | HP1106 | 13034 |

*All worms furnished with .313 keyway.
Hardened Worms have ground and polished threads.

## 3 Diametral Pitch (Cast Iron Worm Gears, Steel Worms – Unhardened & Hardened)

### Pressure Angle – 14-1/2°

RATIO = Gear Teeth ÷ Worm Threads
All Worm and Worm Gears stocked RIGHT HAND ONLY.



**ALL DIMENSIONS IN INCHES**
**ORDER BY CATALOG NUMBER OR ITEM CODE**

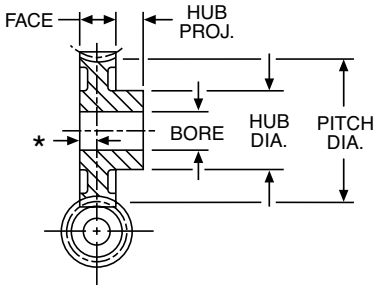
**3 DIAMETRAL PITCH — FACE = 2.000" *CENTER LINE WORM TO FLUSH END = 1.000" — WORM GEARS**

| No. of Teeth | Pitch Dia. | Bore | Hub Dia. | Hub Proj. | Style See Page 315 | SINGLE Thread Catalog Number | SINGLE Thread Item Code |
|---|---|---|---|---|---|---|---|
| 18 | 6.000 | 1.000 | 3.00 | 1.50 | B | G1110 | 13248 |
| 24 | 8.000 | 1.500 | 3.50 | 1.50 | B | G1111 | 13250 |
| 30 | 10.000 | 1.500 | 3.50 | 1.50 | B | G1112 | 13252 |
| 36 | 12.000 | 1.500 | 3.50 | 1.50 | B | G1113 | 13254 |
| 48 | 16.000 | 1.500 | 4.00 | 1.50 | C | G1114 | 13256 |
| 54 | 18.000 | 1.500 | 4.00 | 1.50 | D | G1115 | 13258 |

**3 DIAMETRAL PITCH — WORMS FOR ABOVE GEARS†**

| Pitch Dia. | Face | Bore | Hub Dia. | Hub Proj. | SINGLE Thread Catalog Number | SINGLE Thread Item Code |
|---|---|---|---|---|---|---|
| **UNHARDENED – STEEL** | | | | | | |
| 4.000 | 4.000 | 1.500 | – | – | G1116KRH | 12880 |
| | 5.500 | | | | L1116 | 12910 |
| **HARDENED STEEL** | | | | | | |
| 4.000 | 4.000 | 1.500 | – | – | H1116 | 12978 |
| | 5.500 | | | | HL1116 | 13016 |

†All worms furnished with .375" keyway.
Hardened Worms have ground and polished threads.

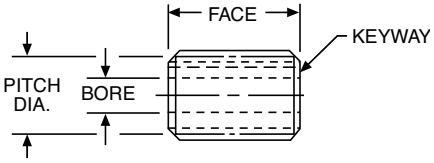



### *STANDARD TOLERANCES*

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

### *WORM LEAD and LEAD ANGLE*

| | |
|---|---|
| LEAD | 1.0472" |
| LEAD ANGLE | 4°46' |




### *REFERENCE PAGES*

Alterations — 322
Horsepower Ratings — 97, 98
Lubrication — 322
Materials — 323
Selection Procedure — 96

D

# Worms & Worm Gears



Boston worms and worm gears provide an effective answer for such power transmission applications as high-ratio speed reduction, limited space, right-angle shafts and non-intersecting shafts. When properly applied, they are the smoothest and quietest form of gearing. Steel worms and cast iron or bronze worm gears are available in single, double or quadruple threads, 48 to 3 diametral pitch.

Acetal worms and worm gears are available in single thread, 48 to 24 diametral pitch.

## Selection Procedure

Approximate input horsepower and output torque ratings for Boston stock worm and worm gear combinations from 12 to 3 DP are listed on Pages 97, 98. These ratings are for hardened, ground and polished worms operating with bronze worm gears. For other combinations multiply the listed ratings by the following percentages:

Hardened, ground and polished steel worms with cast iron gears 50%. Unhardened steel worms with cast iron gears 25%.

These ratings are listed at selected worm speeds. Ratings for intermediate speeds can be interpolated from the values indicated.

These ratings are based on gears operating with a Service Factor of 1.0, properly mounted in accordance with good design practice and continuously lubricated with a sufficient supply of oil.

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

   **Design HP = Application Load x Service Factor (Table 1)**
3. Select worm gear set with horsepower capacity equal to [or greater than] design horsepower determined in Step 2.

D

**TABLE 1**

| Service Factor | Operating Conditions |
|---|---|
| 0.8 | Uniform—not more than 15 minutes in 2 hours. |
| 1.0 | Moderate Shock—not more than 15 minutes in 2 hours.<br>Uniform—not more than 10 hours per day. |
| 1.25 | Moderate Shock—not more than 10 hours per day.<br>Uniform—more than 10 hours per day. |
| 1.50 | Heavy Shock—not more than 15 minutes in 2 hours.<br>Moderate Shock—more than 10 hours per day. |
| 1.75 | Heavy Shock—not more than 10 hours per day. |
| 2.0 | Heavy Shock—more than 10 hours per day. |

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

## Steel-Hardened, Ground & Polished Worms
## Bronze Worm Gears

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

| Worm RPM | | 1800 | | 600 | | 100 | | Worm Cat. No. | Gear Cat. No. | DP |
|---|---|---|---|---|---|---|---|---|---|---|
| Ratio | Center Distance | Input HP | Output Torque | Input HP | Output Torque | Input HP | Output Torque | | | |
| 3 | 1.000 | .52 | 50 | .27 | 72 | .06 | 83 | H1607 | QB1212 | 12 |
| | 1.500 | 1.19 | 109 | .66 | 183 | .15 | 227 | H1627 | QB812 | 8 |
| 4 | 1.167 | .78 | 99 | .40 | 143 | .08 | 166 | H1607 | QB1216 | 12 |
| | 1.425 | 1.11 | 142 | .61 | 223 | .13 | 267 | H1618 | QB1016 | 10 |
| | 1.750 | 1.77 | 216 | .98 | 361 | .22 | 454 | H1627 | QB816 | 8 |
| | 2.333 | 3.01 | 392 | 1.84 | 689 | .45 | 933 | H1638 | QB616 | 6 |
| 5 | 1.333 | .68 | 109 | .34 | 158 | .07 | 180 | H1607 | DB1600 | 12 |
| | 1.625 | 1.03 | 165 | .57 | 257 | .12 | 309 | H1618 | DB1610 | 10 |
| | 2.000 | 1.73 | 264 | .96 | 441 | .22 | 551 | H1627 | DB1620A | 8 |
| | 2.667 | 3.92 | 639 | 2.40 | 1124 | .59 | 1512 | H1638 | QB620A | 6 |
| 6 | 3.000 | 3.82 | 746 | 2.34 | 1317 | .57 | 1777 | H1638 | DB1630A | 6 |
| 7.5 | 1.750 | 1.04 | 247 | .53 | 355 | .11 | 411 | H1607 | DB1601A | 12 |
| | 2.125 | 1.59 | 381 | .87 | 599 | .19 | 714 | H1618 | DB1611 | 10 |
| | 2.625 | 2.65 | 607 | 1.47 | 1016 | .33 | 1276 | H1627 | DB1621A | 8 |
| | 3.500 | 4.80 | 1174 | 2.94 | 2064 | .72 | 2789 | H1638 | DB1631A | 6 |
| 10 | 1.333 | .44 | 130 | .23 | 189 | .05 | 208 | H1407 | DB1400 | 12 |
| | 1.625 | .67 | 196 | .38 | 305 | .09 | 366 | H1418 | DB1410 | 10 |
| | 2.000 | 1.05 | 318 | .63 | 525 | .15 | 649 | H1427 | DB1420A | 8 |
| | 2.167 | 1.39 | 441 | .71 | 641 | .15 | 756 | H1607 | DB1602A | 12 |
| | 2.667 | 2.01 | 616 | 1.26 | 1071 | .32 | 1450 | H1438 | DB620A | 6 |
| | 2.625 | 2.11 | 672 | 1.16 | 1061 | .25 | 1267 | H1618 | DB1612 | 10 |
| | 3.250 | 3.54 | 1082 | 1.96 | 1806 | .44 | 2270 | H1627 | DB1622 | 8 |
| | 4.333 | 6.43 | 2094 | 3.94 | 3685 | .96 | 4980 | H1638 | DB1632A | 6 |
| 12 | 3.000 | 2.39 | 882 | 1.50 | 1537 | .38 | 2042 | H1438 | DB1430A | 6 |
| 12.5 | 2.583 | 1.72 | 683 | .87 | 985 | .18 | 1134 | H1607 | DB1603A | 12 |
| | 3.125 | 2.61 | 1042 | 1.44 | 1641 | .31 | 1961 | H1618 | DB1613A | 10 |
| | 3.875 | 4.40 | 1681 | 2.44 | 2810 | .55 | 3466 | H1627 | DB1623A | 8 |
| 15 | 1.750 | .64 | 284 | .33 | 410 | .07 | 463 | H1407 | DB1401A | 12 |
| | 2.125 | .98 | 436 | .55 | 678 | .13 | 804 | H1418 | DB1411 | 10 |
| | 2.625 | 1.54 | 699 | .92 | 1150 | .22 | 1428 | H1427 | DB1421A | 8 |
| | 3.000 | 2.04 | 966 | 1.03 | 1402 | .22 | 1617 | H1607 | QB1260A | 12 |
| | 3.500 | 2.94 | 1355 | 1.84 | 2364 | .47 | 3120 | H1438 | DB1431A | 6 |
| 18 | 5.000† | 2.27 | 1308 | 1.38 | 2373 | .41 | 4198 | H1116 | G1110† | 3 |
| 20 | 1.333 | .28 | 140 | .15 | 210 | .04 | 227 | H1056 | GB1050A | 12 |
| | 1.625 | .42 | 217 | .25 | 336 | .06 | 391 | H1066 | GB1060A | 10 |
| | 2.000 | .65 | 343 | .41 | 567 | .10 | 706 | H1076 | GB1070 | 8 |
| | 2.167 | .83 | 483 | .43 | 693 | .09 | 794 | H1407 | DB1402A | 12 |
| | 2.667 | 1.22 | 665 | .80 | 1156 | .22 | 1550 | H1086 | GB1077A | 6 |
| | 2.625 | 1.25 | 742 | .71 | 1156 | .16 | 1374 | H1418 | DB1412 | 10 |
| | 3.250 | 1.98 | 1191 | 1.18 | 1974 | .28 | 2433 | H1427 | DB1422 | 8 |
| | 4.000 | 2.92 | 1667 | 1.99 | 3025 | .64 | 4663 | H1106 | GB1100 | 4 |
| | 4.333 | 3.77 | 2318 | 2.36 | 4034 | .60 | 5420 | H1438 | DB1432A | 6 |
| 24 | 3.000 | 1.42 | 933 | .93 | 1613 | .26 | 2163 | H1086 | GB1080A | 6 |
| | 6.000† | 3.23 | 2218 | 1.81 | 4020 | .53 | 7109 | H1116 | G1111† | 3 |
| | 4.500 | 3.41 | 2336 | 2.32 | 4235 | .75 | 6504 | H1106 | GB1101 | 4 |
| 25 | 2.583 | .99 | 726 | .52 | 1048 | .11 | 1197 | H1407 | DB1403A | 12 |
| | 3.125 | 1.50 | 1112 | .85 | 1730 | .19 | 2048 | H1418 | DB1413A | 10 |
| | 3.875 | 2.39 | 1794 | 1.43 | 2962 | .34 | 3671 | H1427 | DB1423A | 8 |
| | 5.167 | 2.27 | 1738 | 1.42 | 3028 | .36 | 4018 | H1438 | D1433† | 6 |
| 30 | 1.750 | .40 | 294 | .21 | 410 | .05 | 473 | H1056 | GB1051 | 12 |
| | 2.125 | .59 | 452 | .35 | 693 | .09 | 831 | H1066 | GB1061A | 10 |
| | 2.625 | .90 | 725 | .57 | 1197 | .13 | 1286 | H1076 | GB1071 | 8 |
| | 3.000 | 1.15 | 1008 | .60 | 1450 | .13 | 1663 | H1407 | DB1260A | 12 |
| | 3.500 | 1.69 | 1386 | 1.12 | 2426 | .31 | 3233 | H1086 | GB1081A | 6 |
| | 3.625 | 1.74 | 1544 | .98 | 2395 | .22 | 2836 | H1418 | DB1414A | 10 |
| | 4.500 | 2.75 | 2489 | 1.65 | 4128 | .39 | 5105 | H1427 | DB860A | 8 |
| | 7.000† | 4.23 | 3326 | 2.53 | 6002 | .76 | 10683 | H1116 | G1112† | 3 |
| 32 | 5.500 | 2.13 | 1955 | 1.46 | 3546 | .47 | 5445 | H1106 | G1102† | 4 |
| 36 | 4.000 | 1.95 | 1915 | 1.29 | 3366 | .36 | 4470 | H1086 | GB1082A | 6 |
| | 8.000† | 3.87 | 3990 | 1.33 | 4130 | .68 | 12816 | H1116 | G1113† | 3 |

*Torque in Lb. Ins.

†Cast Iron Gear Rating with Hardened Worm shown.

**All Worm and Worm Gear Ratings are based on a Hardened Steel Worm used with a Bronze Worm Gear.**

1. **For a Hardened Steel Worm used with a Cast Iron Gear, multiply the listed Rating by .50.**
2. **For an Unhardened Steel Worm used with a Cast Iron Gear, multiply the listed Rating by .25.**

D

# Worms & Worm Gears

## Steel-Hardened, Ground & Polished Worms
## Bronze Worm Gears

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

| Worm RPM | | 1800 | | 600 | | 100 | | Worm Cat. No. | Gear Cat. No. | DP |
|---|---|---|---|---|---|---|---|---|---|---|
| Ratio | Center Distance | Input HP | Output Torque | Input HP | Output Torque | Input HP | Output Torque | | | |
| 40 | 2.167 | .48 | 490 | .26 | 672 | .06 | 782 | H1056 | GB1052A | 12 |
| | 2.625 | .72 | 742 | .43 | 1134 | .11 | 1361 | H1066 | GB1062A | 10 |
| | 3.250 | 1.12 | 1190 | .71 | 1974 | .18 | 2420 | H1076 | GB1072A | 8 |
| | 4.333 | 2.11 | 2310 | 1.39 | 4034 | .38 | 5345 | H1086 | GB1078 | 6 |
| 48 | 3.750 | 1.26 | 1614 | .79 | 2622 | .20 | 3267 | H1076 | GB1073 | 8 |
| | 5.000 | 2.37 | 3110 | 1.56 | 5445 | .43 | 7260 | H1086 | GB1083 | 6 |
| | 10.000† | 4.06 | 5320 | 1.68 | 6608 | .72 | 17088 | H1116 | G1114† | 3 |
| 50 | 2.583 | .55 | 700 | .30 | 998 | .07 | 1134 | H1056 | GB1053A | 12 |
| | 3.125 | .83 | 1068 | .51 | 1733 | .12 | 1954 | H1066 | GB1063 | 10 |
| | 3.875 | 1.30 | 1716 | .82 | 2836 | .21 | 3498 | H1076 | GB850 | 8 |
| | 5.167 | 2.43 | 3327 | 1.60 | 5777 | .44 | 7563 | H1086 | GB1079 | 6 |
| 54 | 11.000† | 4.34 | 5985 | 1.79 | 7434 | .77 | 19224 | H1116 | G1115† | 3 |
| 60 | 3.000 | .60 | 924 | .33 | 1323 | .08 | 1664 | H1056 | GB1260A | 12 |
| | 3.625 | .91 | 1408 | .54 | 2142 | .13 | 2571 | H1066 | GB1064 | 10 |
| | 4.500 | 1.42 | 2269 | .89 | 3718 | .23 | 4538 | H1076 | GB860 | 8 |
| | 6.000 | 2.66 | 4370 | 1.75 | 7625 | .49 | 10210 | H1086 | GB1087 | 6 |
| 72 | 7.000 | 2.79 | 5521 | 1.84 | 9605 | .51 | 12705 | H1086 | GB1084 | 6 |
| 80 | 3.833 | .64 | 1288 | .35 | 1849 | .08 | 2118 | H1056 | GB1054 | 12 |
| | 4.625 | .96 | 1961 | .57 | 3042 | .14 | 3630 | H1066 | GB1067 | 10 |
| | 5.750 | 1.49 | 3165 | .94 | 5210 | .24 | 6555 | H1076 | GB1074A | 8 |
| 100 | 4.667 | .60 | 1505 | .33 | 2206 | .08 | 2458 | H1056 | GB1055 | 12 |
| | 5.625 | .90 | 2310 | .54 | 3571 | .13 | 4223 | H1066 | GB1065 | 10 |
| | 7.000 | 1.40 | 3711 | .88 | 6092 | .22 | 7563 | H1076 | GB8100 | 8 |

*Torque in Lb. Ins.

†Cast Iron Gear Rating with Hardened Worm shown.

**All Worm and Worm Gear Ratings are based on a Hardened Steel Worm used with a Bronze Worm Gear.**

1. **For a Hardened Steel Worm used with a Cast Iron Gear, multiply the listed Rating by .50.**
2. **For an Unhardened Steel Worm used with a Cast Iron Gear, multiply the listed Rating by .25.**
3. **For an Unhardened Steel Worm used with a Bronze Gear, multiply the listed Rating by .35.**

## CENTER DISTANCES AND RATIOS AVAILABLE WITH STOCK WORM GEARING

| Center Distance (inches) | Pitch | No. of Teeth in Gear | Worm Thread | | |
|---|---|---|---|---|---|
| | | | Single | Double | Quad |
| | | | Ratio | | |
| .375 | 48 | 20 | 20 | 10 | 5 |
| .479 | 48 | 30 | 30 | 15 | 7.5 |
| .531 | 32 | 20 | 20 | 10 | 5 |
| .583 | 48 | 40 | 40 | 20 | 10 |
| .666 | 24 | 20 | 20 | 10 | 5 |
| .688 | 48 | 50 | 50 | 25 | 12.5 |
| .688 | 32 | 30 | 30 | 15 | 7.5 |
| .792 | 48 | 60 | 60 | 30 | 15 |
| .844 | 32 | 40 | 40 | 20 | 10 |
| .875 | 24 | 30 | 30 | 15 | 7.5 |
| .938 | 16 | 20 | 20 | 10 | 5 |
| 1.000 | 48 | 80 | 80 | 40 | 20 |
| 1.000 | 32 | 50 | 50 | 25 | 12.5 |
| 1.083 | 24 | 40 | 40 | 20 | 10 |
| 1.156 | 32 | 60 | 60 | 30 | 15 |
| 1.208 | 48 | 100 | 100 | 50 | 25 |
| 1.250 | 16 | 30 | 30 | 15 | 7.5 |
| 1.292 | 24 | 50 | 50 | 25 | 12.5 |
| 1.333 | 12 | 20 | 20 | 10 | 5 |
| 1.469 | 32 | 80 | 80 | 40 | 20 |
| 1.500 | 24 | 60 | 60 | 30 | 15 |
| 1.562 | 16 | 40 | 40 | 20 | 10 |
| 1.625 | 10 | 20 | 20 | 10 | 5 |
| 1.719 | 32 | 96 | 96 | 48 | 24 |
| 1.750 | 24 | 72 | 72 | 36 | 18 |
| 1.750 | 12 | 30 | 30 | 15 | 7.5 |
| 1.781 | 32 | 100 | 100 | 50 | 25 |
| 1.875 | 16 | 50 | 50 | 25 | 12.5 |
| 1.917 | 24 | 80 | 80 | 40 | 20 |
| 2.000 | 8 | 20 | 20 | 10 | 5 |
| 2.125 | 10 | 30 | 30 | 15 | 7.5 |
| 2.167 | 12 | 40 | 40 | 20 | 10 |
| 2.188 | 16 | 60 | 60 | 30 | 15 |
| 2.250 | 24 | 96 | 96 | 48 | 24 |
| 2.333 | 24 | 100 | 100 | 50 | 25 |
| 2.583 | 12 | 50 | 50 | 25 | 12.5 |
| 2.625 | 10 | 40 | 40 | 20 | 10 |
| 2.625 | 8 | 30 | 30 | 15 | 7.5 |
| 2.667 | 6 | 20 | 20 | 10 | 5 |
| 2.812 | 16 | 80 | 80 | – | 20 |
| 3.000 | 12 | 60 | 60 | 30 | 15 |
| 3.000 | 6 | 24 | 24 | 12 | 6 |
| 3.125 | 10 | 50 | 50 | 25 | 12.5 |
| 3.250 | 8 | 40 | 40 | 20 | 10 |
| 3.438 | 16 | 100 | 100 | – | – |
| 3.500 | 6 | 30 | 30 | 15 | 7.5 |
| 3.625 | 10 | 60 | 60 | 30 | 15 |
| 3.750 | 8 | 48 | 48 | – | – |
| 3.833 | 12 | 80 | 80 | 40 | – |
| 3.875 | 8 | 50 | 50 | 25 | 12.5 |
| 4.000 | 6 | 36 | 36 | – | – |
| 4.000 | 4 | 20 | 20 | – | – |
| 4.333 | 6 | 40 | 40 | 20 | 10 |
| 4.500 | 8 | 60 | 60 | 30 | 15 |
| 4.500 | 4 | 24 | 24 | – | – |
| 4.625 | 10 | 80 | 80 | 40 | 20 |
| 4.667 | 12 | 100 | 100 | – | – |
| 5.000 | 6 | 48 | 48 | – | – |
| 5.000 | 3 | 18 | 18 | – | – |
| 5.167 | 6 | 50 | 50 | 25 | 12.5 |
| 5.500 | 4 | 32 | 32 | – | – |
| 5.625 | 10 | 100 | 100 | 50 | – |
| 5.750 | 8 | 80 | 80 | – | – |
| 6.000 | 6 | 60 | 60 | 30 | 15 |
| 6.000 | 3 | 24 | 24 | – | – |
| 6.500 | 4 | 40 | 40 | – | – |
| 6.750 | 8 | 96 | 96 | – | – |
| 7.000 | 8 | 100 | 100 | – | – |
| 7.000 | 6 | 72 | 72 | 36 | 18 |
| 7.000 | 3 | 30 | 30 | – | – |
| 7.500 | 4 | 48 | 48 | – | – |
| 7.667 | 6 | 80 | 80 | – | – |
| 8.000 | 3 | 36 | 36 | – | – |
| 9.000 | 6 | 96 | 96 | – | – |
| 9.333 | 6 | 100 | 100 | – | – |
| 9.500 | 4 | 64 | 64 | – | – |
| 10.000 | 3 | 48 | 48 | – | – |
| 11.000 | 3 | 54 | 54 | – | – |

Example: Given a center distance of 2.625", Table lists Worm and Worm Gear Ratios available:
10 Pitch, 40 tooth, single = 40 to 1
10 Pitch, 40 tooth, double = 20 to 1
10 Pitch, 40 tooth, quad = 10 to 1
8 Pitch, 30 tooth, single = 30 to 1
8 Pitch, 30 tooth, double = 15 to 1
8 Pitch, 30 tooth, quad = 7.5 to 1