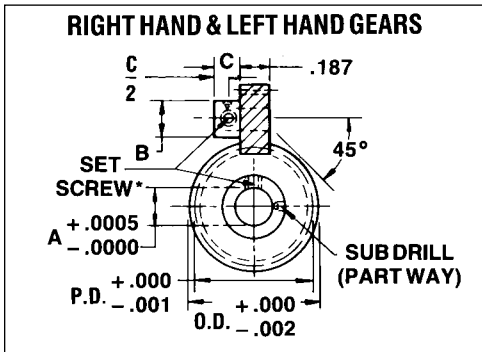


HELICAL GEAR-48 NORMAL PITCH $\frac{3}{16}$ " Face Width ■ 20° Pressure Angle

45° Helical Angle ■ Pin Hub — $\frac{3}{16}$ ", $\frac{1}{4}$ " Bores ■ AGMA Quality No. 10



Material: 303 Stainless Steel
2024-T4 Aluminum (Anodized Before Cutting)

* Set Screw 90° To Subdrill
CW/CCW At PIC Option

Dimen.	Bore	
	3/16	1/4
A	.1873	.2498
B	.375	.500
C	.219	.250
Set Screw	#4-40	#6-32

Gear Data				3/16" Bore		1/4" Bore	
No. Teeth	P.D.	O.D.	Material	Part No. Right Hand	Part No. Left Hand	Part No. Right Hand	Part No. Left Hand
20	.5892	.631	Stainless Aluminum	AC3-20 AC4-20	AD3-20 AD4-20	AC1-20 AC2-20	AD1-20 AD2-20
25	.7365	.778	Stainless Aluminum	AC3-25 AC4-25	AD3-25 AD4-25	AC1-25 AC2-25	AD1-25 AD2-25
30	.8838	.925	Stainless Aluminum	AC3-30 AC4-30	AD3-30 AD4-30	AC1-30 AC2-30	AD1-30 AD2-30
35	1.0311	1.072	Stainless Aluminum	AC3-35 AC4-35	AD3-35 AD4-35	AC1-35 AC2-35	AD1-35 AD2-35
40	1.1784	1.220	Stainless Aluminum	AC3-40 AC4-40	AD3-40 AD4-40	AC1-40 AC2-40	AD1-40 AD2-40
45	1.3258	1.367	Stainless Aluminum	AC3-45 AC4-45	AD3-45 AD4-45	AC1-45 AC2-45	AD1-45 AD2-45
50	1.4730	1.514	Stainless Aluminum	AC3-50 AC4-50	AD3-50 AD4-50	AC1-50 AC2-50	AD1-50 AD2-50
60	1.7676	1.809	Stainless Aluminum	AC3-60 AC4-60	AD3-60 AD4-60	AC1-60 AC2-60	AD1-60 AD2-60
70	2.0622	2.104	Stainless Aluminum	AC3-70 AC4-70	AD3-70 AD4-70	AC1-70 AC2-70	AD1-70 AD2-70

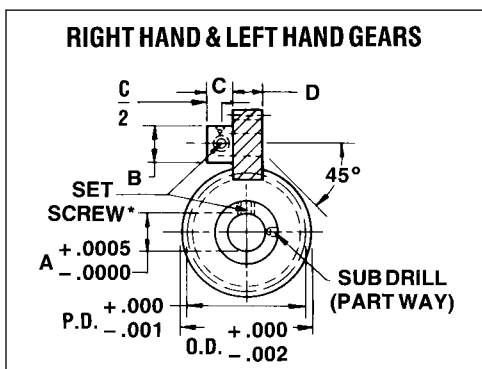
Other Size Bores Available, Consult Factory.

FOR SPECIAL HELICAL GEARS, ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.
EXAMPLE: For a 55 Tooth Gear, Specify Part Number AD1-55.

HELICAL GEAR-64 NORMAL PITCH $\frac{1}{8}$ ", $\frac{3}{16}$ " Face Width ■ 20° Pressure Angle

45° Helical Angle ■ Pin Hub — $\frac{1}{8}$ ", $\frac{3}{16}$ " Bores ■ AGMA Quality No. 10



Material: 303 Stainless Steel
2024-T4 Aluminum (Anodized Before Cutting)

* Set Screw 90° To Subdrill
CW/CCW At PIC Option

Dimen.	Bore	
	1/8	3/16
A	.1248	.1873
B	.312	.375
C	.187	.219
D	.125	.187
Set Screw	#2-56	#4-40

Gear Data				1/8" Bore		3/16" Bore	
No. Teeth	+ .000 - .001 P.D.	+ .000 - .002 O.D.	Material	Part No. Right Hand	Part No. Left Hand	Part No. Right Hand	Part No. Left Hand
20	.4419	.473	Stainless Aluminum	AC7-20 AC8-20	AD7-20 AD8-20	AC5-20 AC6-20	AD5-20 AD6-20
25	.5524	.583	Stainless Aluminum	AC7-25 AC8-25	AD7-25 AD8-25	AC5-25 AC6-25	AD5-25 AD6-25
30	.6629	.694	Stainless Aluminum	AC7-30 AC8-30	AD7-30 AD8-30	AC5-30 AC6-30	AD5-30 AD6-30
35	.7733	.804	Stainless Aluminum	AC7-35 AC8-35	AD7-35 AD8-35	AC5-35 AC6-35	AD5-35 AD6-35
40	.8838	.915	Stainless Aluminum	AC7-40 AC8-40	AD7-40 AD8-40	AC5-40 AC6-40	AD5-40 AD6-40
45	.9943	1.025	Stainless Aluminum	AC7-45 AC8-45	AD7-45 AD8-45	AC5-45 AC6-45	AD5-45 AD6-45
50	1.1048	1.136	Stainless Aluminum	AC7-50 AC8-50	AD7-50 AD8-50	AC5-50 AC6-50	AD5-50 AD6-50
60	1.3257	1.357	Stainless Aluminum	AC7-60 AC8-60	AD7-60 AD8-60	AC5-60 AC6-60	AD5-60 AD6-60
70	1.5466	1.577	Stainless Aluminum	AC7-70 AC8-70	AD7-70 AD8-70	AC5-70 AC6-70	AD5-70 AD6-70

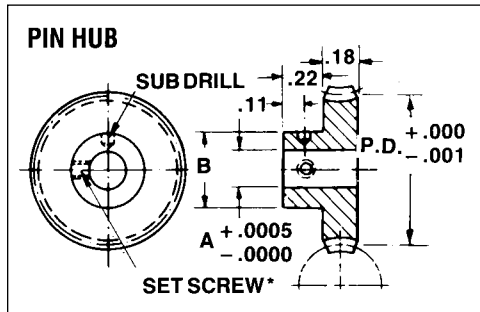
Other Size Bores Available, Consult Factory.

FOR SPECIAL HELICAL GEARS, ORDER AS FOLLOWS:

For Unlisted Number of Teeth, Specify the Number of Teeth desired as the last figure in the part number.
EXAMPLE: For a 55 Tooth Gear, Specify Part Number AD6-55.

WORM WHEEL - 48 PITCH — 14½°, 20°, 25° Pressure Angle

Right Hand ■ Single, Double & Four Thread ■ Pin Hub, Split Hub — 1/8", 3/16" & 1/4" Bores ■ AGMA Quality No. 10

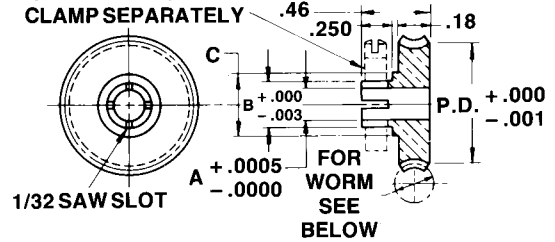


Material: Bronze ASTM B21
Alloy 464

Ratio = $\frac{\text{No. Teeth}}{\text{No. Threads}}$

*SPLIT HUB

ORDER "L1" SERIES
CLAMP SEPARATELY



* Set Screw 90° To Subdrill
CW/CCW At PIC Option

PIN HUB

Gear Data					Single Thread (14½° P.A.)	Double Thread (20° P.A.)	Four Thread (25° P.A.)
No. Teeth	Pitch Dia.	A	B	Set Screw	Part No.	Part No.	Part No.
30	.6250	.1248 (1/8)	.312	#2-56	Q7-14	Q9-14	Q11-14
40	.8333				Q7-15	Q9-15	Q11-15
50	1.0417				Q7-1	Q9-1	Q11-1
60	1.2500				Q7-2	Q9-2	Q11-2
70	1.4583				Q7-16	Q9-16	Q11-16
80	1.6667				Q7-3	Q9-3	Q11-3
90	1.8750				Q7-4	Q9-4	Q11-4
100	2.0833	.1873 (3/16)	.375	#4-40	Q7-17	Q9-17	Q11-17
120	2.5000				Q7-18	Q9-18	Q11-18
30	.6250				Q7-19	Q9-19	Q11-19
40	.8333				Q7-20	Q9-20	Q11-20
50	1.0417				Q7-5	Q9-5	Q11-5
60	1.2500				Q7-6	Q9-6	Q11-6
70	1.4583				Q7-21	Q9-21	Q11-21
80	1.6667				Q7-7	Q9-7	Q11-7
90	1.8750				Q7-8	Q9-8	Q11-8
100	2.0833	.2498 (1/4)	.500	#6-32	Q7-22	Q9-22	Q11-22
120	2.5000				Q7-23	Q9-23	Q11-23
30	.6250				Q7-24	Q9-24	Q11-24
40	.8333				Q7-25	Q9-25	Q11-25
50	1.0417				Q7-9	Q9-9	Q11-9
60	1.2500				Q7-10	Q9-10	Q11-10
70	1.4583				Q7-26	Q9-26	Q11-26
80	1.6667				Q7-11	Q9-11	Q11-11
90	1.8750				Q7-12	Q9-12	Q11-12
100	2.0833				Q7-27	Q9-27	Q11-27
120	2.5000				Q7-28	Q9-28	Q11-28
180	3.7500				Q7-13	Q9-13	Q11-13

Other Numbers of Teeth and Material Available on Request, Consult Factory.

SPLIT HUB

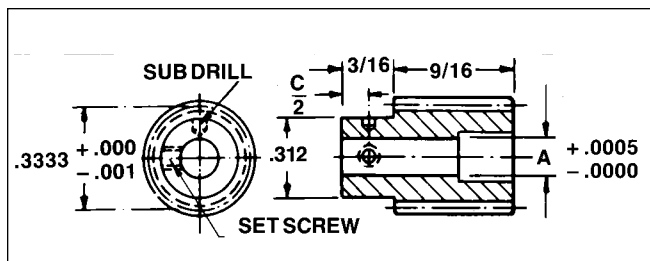
Gear Data						Single Thread (14½° P.A.)	Double Thread (20° P.A.)	Four Thread (25° P.A.)
No. Teeth	Pitch Dia.	A	B	C	Clamp No. (Ref.)	Part No.	Part No.	Part No.
50	1.042	.1248 (1/8)	.188	1/4	L1-4	Q7-1-C	Q9-1-C	Q11-1-C
60	1.250					Q7-2-C	Q9-2-C	Q11-2-C
80	1.667					Q7-3-C	Q9-3-C	Q11-3-C
90	1.875					Q7-4-C	Q9-4-C	Q11-4-C
50	1.042	.1873 (3/16)	.250	5/16	L1-5	Q7-5-C	Q9-5-C	Q11-5-C
60	1.250					Q7-6-C	Q9-6-C	Q11-6-C
80	1.667					Q7-7-C	Q9-7-C	Q11-7-C
90	1.875					Q7-8-C	Q9-8-C	Q11-8-C
50	1.042	.2498 (1/4)	.312	3/8	L1-6	Q7-9-C	Q9-9-C	Q11-9-C
60	1.250					Q7-10-C	Q9-10-C	Q11-10-C
80	1.667					Q7-11-C	Q9-11-C	Q11-11-C
90	1.875					Q7-12-C	Q9-12-C	Q11-12-C
180	3.750					Q7-13-C	Q9-13-C	Q11-13-C

Other Numbers of Teeth and Material Available on Request, Consult Factory.

Single Thread (Q7 Series) Meshes With Q8 Worm Only
Double Thread (Q9 Series) Meshes With Q10 Worm Only
Four Thread (Q11 Series) Meshes With Q12 Worm Only

WORM - 48 PITCH — 14½°, 20°, 25° Pressure Angle

Right Hand ■ Single, Double & Four Thread ■ Pin Hub — 1/8" & 3/16" Bores



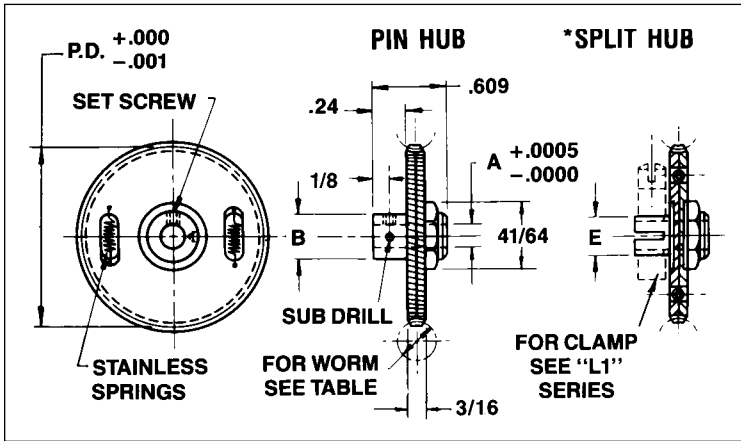
Shaft Size	A	Set Screw	Use With Single Thread (14½° P.A.)	Use With Double Thread (20° P.A.)	Use With Four Thread (25° P.A.)
			Part No.	Part No.	Part No.
1/8	.1248	#2-56	Q8-1	Q10-1	Q12-1
3/16	.1873	#4-40	Q8-2	Q10-2	Q12-2

Material: 303 Stainless Steel

Part No.	Lead	Lead Angle
Q8	.0654	3° 35'
Q10	.1309	7° 7'
Q12	.2618	14° 2'

ANTI-BACKLASH WORM WHEEL - 48 PITCH

Single, Double & Four Thread ■ Pin Hub — 1/8", 3/16" & 1/4" Bores ■ AGMA Quality No. 10



Material:

Gears — Bronze QQB 639 Alloy 464

Hubs — 303 Stainless Steel

*For Split Hub Add -C to Part No.

Dimen.	Bore		
	1/8	3/16	1/4
A	.1248	.1873	.2498
B	.31	.37	.500
E	.188	.250	.312
Set Screw	#2-56	#4-40	#6-32

Matched Pairs
Right Hand

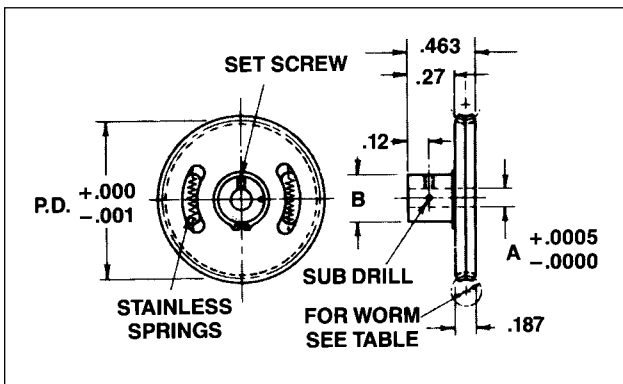
Gear Data				Part Number Bore Size		
No. Teeth	Pitch Dia.	Thread	Use With Worm #	.1248	.1873	.2498
70	1.4583	Single	Q8	Q14-1	Q14-7	Q14-13
72	1.5000			Q14-19	Q14-31	Q14-43
80	1.6667			Q14-20	Q14-32	Q14-44
90	1.8750			Q14-21	Q14-33	Q14-45
96	2.0000			Q14-22	Q14-34	Q14-46
100	2.0833			Q14-2	Q14-8	Q14-14
70	1.4583	Double	Q10	Q14-3	Q14-9	Q14-15
72	1.5000			Q14-23	Q14-35	Q14-47
80	1.6667			Q14-24	Q14-36	Q14-48
90	1.8750			Q15-25	Q14-37	Q14-49
96	2.0000			Q14-26	Q14-38	Q14-50
100	2.0833			Q14-4	Q14-10	Q14-16
70	1.4583	Four	Q12	Q14-5	Q14-11	Q14-17
72	1.5000			Q14-27	Q14-39	Q14-51
80	1.6667			Q14-28	Q14-40	Q14-52
90	1.8750			Q14-29	Q14-41	Q14-53
96	2.0000			Q14-30	Q14-42	Q14-54
100	2.0833			Q14-6	Q14-12	Q14-18

For Unlisted Number of Teeth and Bore Sizes, Consult Factory.

Thread	Pressure Angle
Single	14½°
Double	20°
Four	25°

ANTI-BACKLASH WORM WHEEL - MINIATURE - 48 PITCH

Single, Double & Four Thread ■ Pin Hub — 1/8", 3/16" & 1/4" Bores



Material:

Gears — Bronze QQB 639 Alloy 464

Hubs — 303 Stainless Steel

Dimen.	Bore		
	1/8	3/16	1/4
A	.1248	.1873	.2498
B	.312	.375	.500
Set Screw	#2-56	#4-40	#6-32

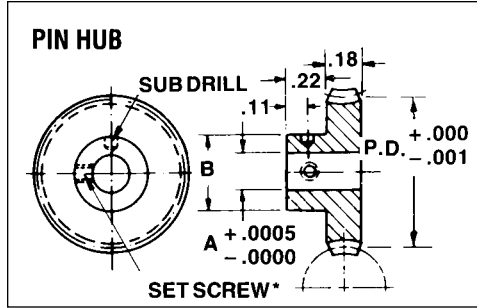
Gear Data				Part Number Bore Size		
No. Teeth	Pitch	Thread	Use With Worm #	.1248	.1873	.2498
40	0.8333	Single	Q8	Q15-1	—	—
50	1.0417			Q15-3	Q17-2	Q19-1
60	1.2500			Q15-5	Q17-4	Q19-3
40	0.8333	Double	Q10	Q15-6	—	—
50	1.0417			Q15-8	Q17-6	Q19-4
60	1.2500			Q15-10	Q17-8	Q19-6
40	0.8333	Four	Q12	Q15-11	—	—
50	1.0417			Q15-13	Q17-10	Q19-7
60	1.2500			Q15-15	Q17-12	Q19-9

For Unlisted Number of Teeth and Other Bore Sizes, Consult Factory.

Thread	Pressure Angle
Single	14½°
Double	20°
Four	25°

WORM WHEEL - 64 PITCH — 14 1/2° Pressure Angle

Right Hand ■ Single, Double & Four Thread ■ Pin Hub, Split Hub — 1/8", 3/16" & 1/4" Bores ■ AGMA Quality No. 10

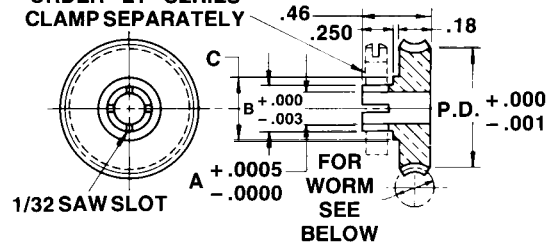


Material: Bronze QQ-B-637
Alloy 464

$$\text{Ratio} = \frac{\text{No. Teeth}}{\text{No. Threads}}$$

*SPLIT HUB

ORDER "L1" SERIES
CLAMP SEPARATELY



* Set Screw 90° To Subdrill
CW/CCW At PIC Option

PIN HUB

Gear Data					Single Thread	Double Thread	Four Thread
No. Teeth	Pitch Dia.	A	B	Set Screw	Cat. No.	Cat. No.	Cat. No.
40	.6250	.1248 (1/8)	.312	#2-56	Q1-14	Q3-14	Q5-14
50	.7813				Q1-15	Q3-15	Q5-15
60	.9375				Q1-1	Q3-1	Q5-1
70	1.0938				Q1-16	Q3-16	Q5-16
80	1.2500				Q1-2	Q3-2	Q5-2
90	1.4063				Q1-17	Q3-17	Q5-17
100	1.5625	.1873 (3/16)	.375	#4-40	Q1-3	Q3-3	Q5-3
110	1.7187				Q1-18	Q3-18	Q5-18
120	1.8750				Q1-4	Q3-4	Q5-4
40	.6250				Q1-19	Q3-19	Q5-19
50	.7813				Q1-20	Q3-20	Q5-20
60	.9375				Q1-5	Q3-5	Q5-5
70	1.0938				Q1-21	Q3-21	Q5-21
80	1.2500				Q1-6	Q3-6	Q5-6
90	1.4063				Q1-22	Q3-22	Q5-22
100	1.5625	.2498 (1/4)	.500	#6-32	Q1-7	Q3-7	Q5-7
110	1.7187				Q1-23	Q3-23	Q5-23
120	1.8750				Q1-8	Q3-8	Q5-8
40	.6250				Q1-24	Q3-24	Q5-24
50	.7813				Q1-25	Q3-25	Q5-25
60	.9375				Q1-9	Q3-9	Q5-9
70	1.0938				Q1-26	Q3-26	Q5-26
80	1.2500				Q1-10	Q3-10	Q5-10
90	1.4063				Q1-27	Q3-27	Q5-27
100	1.5625				Q1-11	Q3-11	Q5-11
110	1.7187				Q1-28	Q3-28	Q5-28
120	1.8750				Q1-12	Q3-12	Q5-12
360	5.6250				Q1-13	Q3-13	Q5-13

Other Numbers of Teeth and Material Available on Request, Consult Factory.

SPLIT HUB

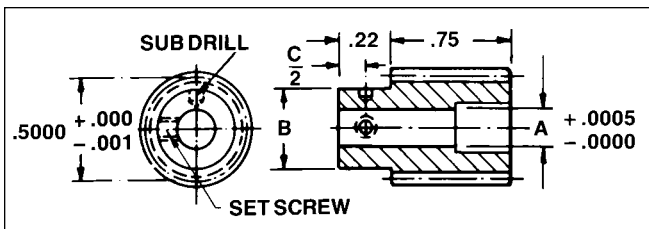
Gear Data						Single Thread	Double Thread	Four Thread
No. Teeth	Pitch Dia.	A	B	C	Clamp No. (Ref.)	Part No.	Part No.	Part No.
60	.937	.1248 (1/8)	.188	1/4	L1-4	Q1-1-C	Q3-1-C	Q5-1-C
80	1.250					Q1-2-C	Q3-2-C	Q5-2-C
100	1.562					Q1-3-C	Q3-3-C	Q5-3-C
120	1.875					Q1-4-C	Q3-4-C	Q5-4-C
60	.937	.1873 (3/16)	.250	5/16	L1-5	Q1-5-C	Q3-5-C	Q5-5-C
80	1.250					Q1-6-C	Q3-6-C	Q5-6-C
100	1.562					Q1-7-C	Q3-7-C	Q5-7-C
120	1.875					Q1-8-C	Q3-8-C	Q5-8-C
60	.937	.2498 (1/4)	.312	3/8	L1-6	Q1-9-C	Q3-9-C	Q5-9-C
80	1.250					Q1-10-C	Q3-10-C	Q5-10-C
100	1.562					Q1-11-C	Q3-11-C	Q5-11-C
120	1.875					Q1-12-C	Q3-12-C	Q5-12-C
360	5.625					Q1-13-C	Q3-13-C	Q5-13-C

Other Numbers of Teeth and Material Available on Request, Consult Factory.

Single Thread (Q1 Series) Meshes With Q2 Worm Only
Double Thread (Q3 Series) Meshes With Q4 Worm Only
Four Thread (Q5 Series) Meshes With Q6 Worm Only

WORM - 64 PITCH — 14 1/2° Pressure Angle

Right Hand ■ Single, Double & Four Thread ■ Pin Hub — 1/8", 3/16" & 1/4" Bores ■ AGMA Quality No. 10



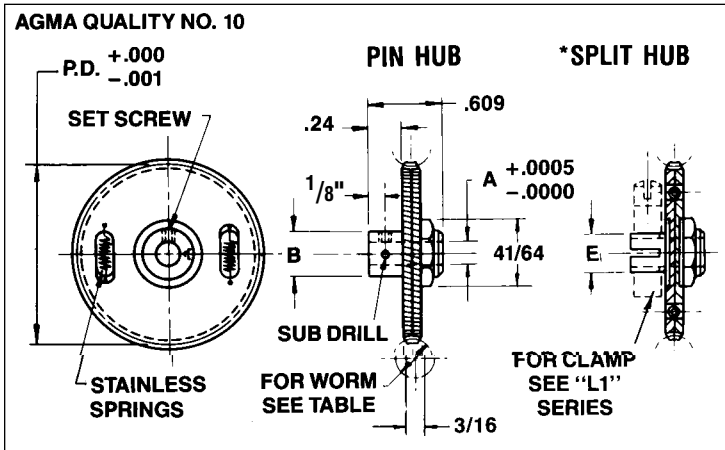
Material: 303 Stainless Steel

Shaft Size	A	B	Set Screw	Use With Single Thread	Use With Double Thread	Use With Four Thread
				Part No.	Part No.	Part No.
1/8	.1248	.312	#2-56	Q2-1	Q4-1	Q6-1
3/16	.1873	.375	#4-40	Q2-2	Q4-2	Q6-2
1/4	.2498	.437	#6-32	Q2-3	Q4-3	Q6-3

Part No.	Lead	Lead Angle
Q2	.04908	1° 47'
Q4	.09817	3° 35'
Q6	.19635	7° 11'

ANTI-BACKLASH WORM WHEEL - 64 PITCH

14 1/2° Pressure Angle ■ Single, Double & Four Thread ■ Pin Hub — 1/8", 3/16" & 1/4" Bores



Material:

Gears — Bronze QQB 639 Alloy 464
Hubs — 303 Stainless Steel

*For Split Hub Add -C to Part No.

Dimen.	Bore		
	1/8	3/16	1/4
A	.1248	.1873	.2498
B	.31	.37	.500
E	.188	.250	.312
Set Screw	#2-56	#4-40	#6-32

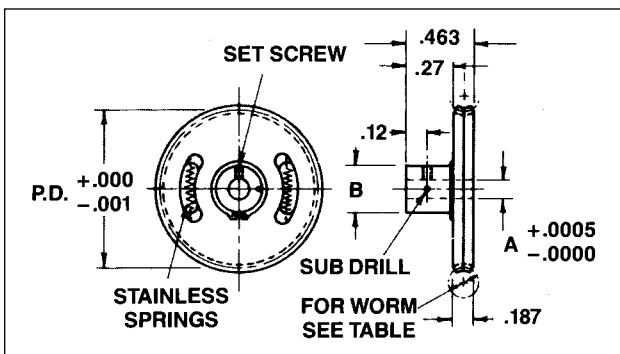
Matched Pairs
Right Hand

Gear Data				Part Number Bore Size		
No. Teeth	Pitch Dia.	Thread	Use With Worm #	.1248	.1873	.2498
96	1.5000	Single	Q2	Q13-19	Q13-31	Q13-43
100	1.5625			Q13-1	Q13-7	Q13-13
110	1.7187			Q13-20	Q13-32	Q13-44
120	1.8750			Q13-21	Q13-33	Q13-45
130	2.0312			Q13-22	Q13-34	Q13-46
140	2.1875			Q13-2	Q13-8	Q13-14
96	1.5000	Double	Q4	Q13-23	Q13-35	Q13-47
100	1.5625			Q13-3	Q13-9	Q13-15
110	1.7187			Q13-24	Q13-36	Q13-48
120	1.8750			Q13-25	Q13-37	Q13-49
130	2.0312			Q13-26	Q13-38	Q13-50
140	2.1875			Q13-4	Q13-10	Q13-16
96	1.5000	Four	Q6	Q13-27	Q13-39	Q13-51
100	1.5625			Q13-5	Q13-11	Q13-17
110	1.7187			Q13-28	Q13-40	Q13-52
120	1.8750			Q13-29	Q13-41	Q13-53
130	2.0312			Q13-30	Q13-42	Q13-54
140	2.1875			Q13-6	Q13-12	Q13-18

For Unlisted Number of Teeth and Bore Sizes, Consult Factory.

ANTI-BACKLASH WORM WHEEL - MINIATURE - 64 PITCH

14 1/2° Pressure Angle ■ Single, Double & Four Thread ■ Pin Hub — 1/8", 3/16" & 1/4" Bores



Material:

Gears — Bronze QQB 639 Alloy 464
Hubs — 303 Stainless Steel

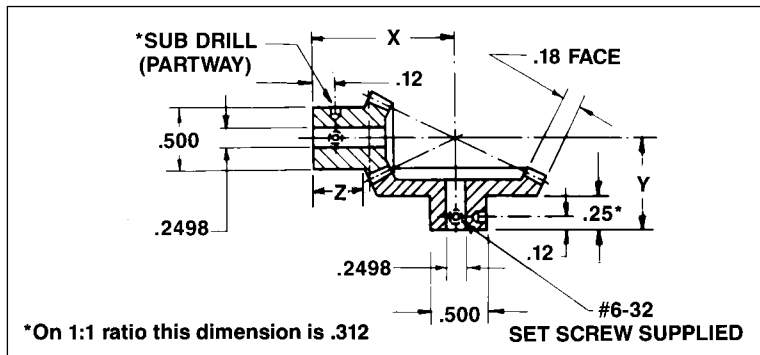
Dimen.	Bore		
	1/8	3/16	1/4
A	.1248	.1873	.2498
B	.312	.375	.500
Set Screw	#2-56	#4-40	#6-32

Gear Data				Part Number Bore Size		
No. Teeth	Pitch Dia.	Thread	Use With Worm #	.1248	.1873	.2498
60	0.9375	Single	Q2	Q16-2	Q18-1	—
70	1.0937			Q16-4	Q18-3	Q20-2
80	1.2500			Q16-5	Q18-4	Q20-3
90	1.4062			Q16-6	Q18-5	Q20-4
60	0.9375	Double	Q4	Q16-8	Q18-6	—
70	1.0937			Q16-10	Q18-8	Q20-6
80	1.2500			Q16-11	Q18-9	Q20-7
90	1.4062			Q16-12	Q18-10	Q20-8
60	0.9375	Four	Q6	Q16-14	Q18-11	—
70	1.0937			Q16-16	Q18-13	Q20-10
80	1.2500			Q16-17	Q18-14	Q20-11
90	1.4062			Q16-18	Q18-15	Q20-12

For Unlisted Number of Teeth and Other Bore Sizes, Consult Factory.

MITER & BEVEL GEARS- 48 PITCH — 20° Pressure Angle

Pin Hub — 1/4" Bore ■ Matched Pairs ■ AGMA Quality No. 10 and 12



Material: 303 Stainless Steel — S
2024-T4 Aluminum (Anodized Before Cutting) — A

*Sub Drill 90° To Set Screw
Location Optional

Miter Gear Sets (1:1 Ratio)
Consists of 2 Gears of Identical
Dimensions

Tolerances	Q10	Q12
Bore	+ .0005 - .0000	+ .0003 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2	
Tooth to Tooth Tolerance		

Gear Data							Part No. Per Set
Ratio	No. Teeth	Material	P.D.	X	Y	Z	
1:1	30/30	S/A S/S A/A	.625/.625	.687	.687	.312	N3-1 N3-1-S N3-1-A
1:1½	30/45	S/A S/S A/A	.625/.937	.812	.687	.302	N3-5 N3-5-S N3-5-A
1:2	30/60	S/A S/S A/A	.625/1.250	.937	.687	.281	N3-2 N3-2-S N3-2-A
1:3	30/90	S/A S/S A/A	.625/1.875	1.250	.687	.292	N3-3 N3-3-S N3-3-A
1:4	30/120	S/A S/S A/A	.625/2.500	1.531	.687	.265	N3-4 N3-4-S N3-4-A

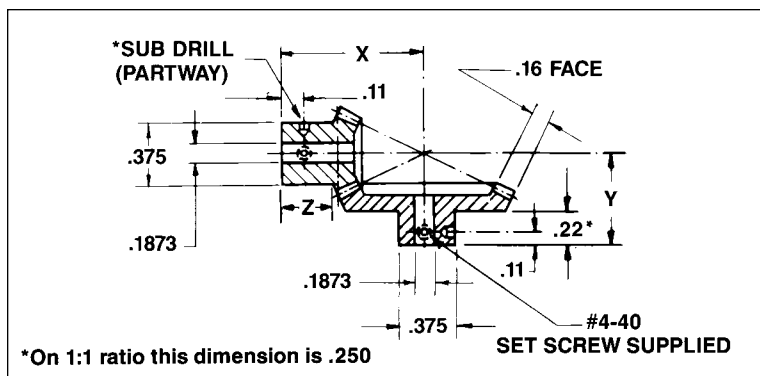
Split Hubs, Other Ratios and Bores Available on Request, Consult Factory.

To order AGMA 12 Gears, add — Q12 to Part No.

When ordering individual parts, specify set no. along with individual part.
EXAMPLE: N3-1 (Pinion Only) or N3-1 (Gear Only).

MITER & BEVEL GEARS- 64 PITCH — 20° Pressure Angle

Pin Hub — 3/16" Bore ■ Matched Pairs ■ AGMA Quality No. 10 and 12



Material: 303 Stainless Steel — S
2024-T4 Aluminum (Anodized Before Cutting) — A

*Sub Drill 90° To Set Screw
Location Optional

Miter Gear Sets (1:1 Ratio)
Consists of 2 Gears of Identical
Dimensions

Tolerances	Q10	Q12
Bore	+ .0005 - .0000	+ .0003 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2	
Tooth to Tooth Tolerance		

Gear Data							Part No. Per Set
Ratio	No. Teeth	Material	P.D.	X	Y	Z	
1:1	32/32	S/A S/S A/A	.500/.500	.562	.562	.250	N2-1 N2-1-S N2-1-A
1:1½	32/48	S/A S/S A/A	.500/.750	.656	.562	.248	N2-8 N2-8-S N2-8-A
1:2	32/64	S/A S/S A/A	.500/1.000	.750	.562	.218	N2-2 N2-2-S N2-2-A
1:3	32/96	S/A S/S A/A	.500/1.500	1.000	.562	.228	N2-3 N2-3-S N2-3-A
1:4	32/128	S/A S/S A/A	.500/2.000	1.250	.562	.234	N2-4 N2-4-S N2-4-A

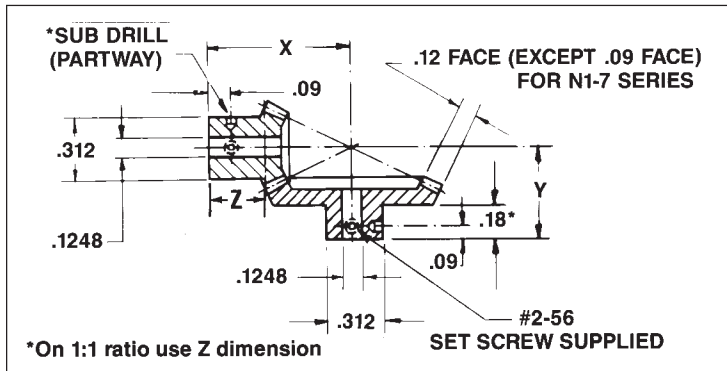
Split Hubs, Other Ratios and Bores Available on Request, Consult Factory.

To order AGMA 12 Gears, add — Q12 to Part No.

When ordering individual parts, specify set no. along with individual part.
EXAMPLE: N3-1 (Pinion Only) or N3-1 (Gear Only).

MITER & BEVEL GEARS- 72 PITCH — 20° Pressure Angle

Pin Hub — 1/8" Bore ■ Matched Pairs ■ AGMA Quality No. 10 and 12



Material: 303 Stainless Steel — S
2024-T4 Aluminum (Anodized Before Cutting) — A

*Sub Drill 90° To Set Screw
Location Optional

Miter Gear Sets (1:1 Ratio)
Consists of 2 Gears of Identical Dimensions

Tolerances	Q10	Q12
Bore	+ .0005 - .0000	+ .0003 - .0000
Pitch Diameter	+ .000 - .001	+ .0000 - .0007
Total Composite Tolerance	FOR AGMA QUALITY STANDARDS SEE PAGE 12-2	
Tooth to Tooth Tolerance		

Gear Data							Part No. Per Set
Ratio	No. Teeth	Material	P.D.	X	Y	Z	
1:1	24/24	S/A S/S A/A	.333/ .333	.437	.437	.260	N1-7 N1-7-S N1-7-A
1:1	36/36	S/A S/S A/A	.500/ .500	.531	.531	.187	N1-1 N1-1-S N1-1-A
1:1½	36/54	S/A S/S A/A	.500/ .750	.640	.531	.215	N1-8 N1-8-S N1-8-A
1:2	36/72	S/A S/S A/A	.500/1.000	.750	.531	.203	N1-2 N1-2-S N1-2-A
1:3	36/108	S/A S/S A/A	.500/1.500	1.000	.531	.218	N1-3 N1-3-S N1-3-A
1:4	36/144	S/A S/S A/A	.500/2.000	1.250	.531	.228	N1-9 N1-9-S N1-9-A

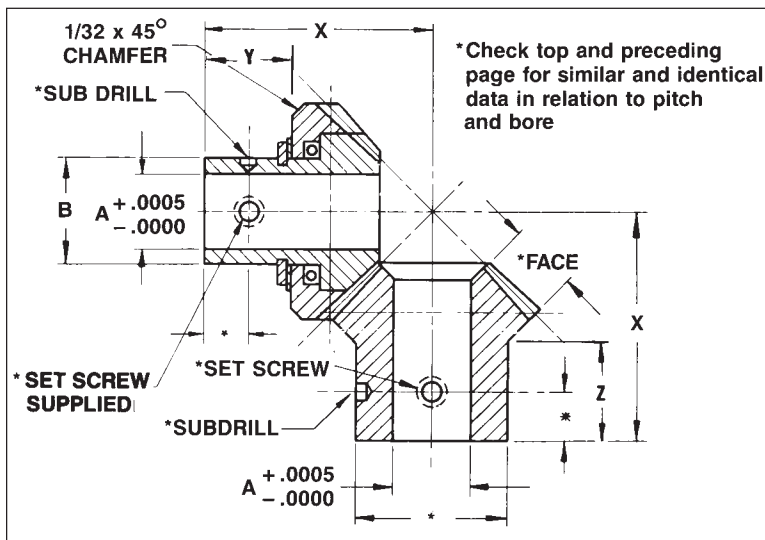
Split Hubs, Other Ratios and Bore Available on Request, Consult Factory.

To order AGMA 12 Gears, add - Q12 to Part No.

When ordering individual parts, specify set no. along with individual part.
EXAMPLE: N1-7 (Pinion Only) or N1-7 (Gear Only).

ANTI-BACKLASH MITER GEARS- 48, 64 & 72 PITCH — 20° Pressure Angle

Pin Hub — 1/8", 3/16" & 1/4" Bore ■ Matched Pairs ■ AGMA Quality No. 10 ■ 1:1 Ratio Only



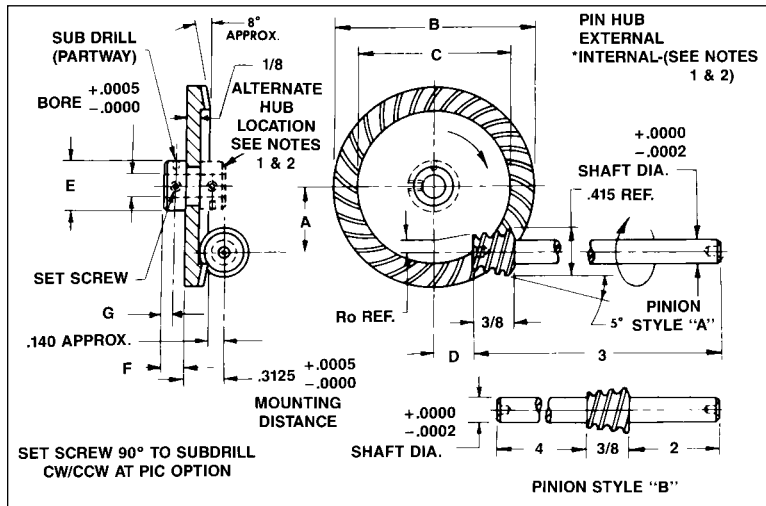
Gear Data									Part No. Per Set
Pitch	No. Teeth	Material	P.D.	A	B	X	Y	Z	
72	36/36	S/A	.500/ .500	.1248	1/4	.531	.185	.187	N1-1-AB
	36/36	S/S	.500/ .500	.1248	1/4	.531	.185	.187	N1-1-AB-S
64	32/32	S/A	.500/ .500	.1873	17/64	.562	.212	.250	N2-1-AB
	32/32	S/S	.500/ .500	.1873	17/64	.562	.212	.250	N2-1-AB-S
48	30/30	S/A	.625/ .625	.2498	3/8	.687	.257	.312	N3-1-AB
	30/30	S/S	.625/ .625	.2498	3/8	.687	.257	.312	N3-1-AB-S

Other Ratios and Bore Available, Consult Factory.

Material: Anti-Backlash Gear — 303 Stainless Steel
Mating Gear — 303 Stainless Steel or 2024-T4
Aluminum (Anodized Before Cutting) — A

PRECISION SPIRAL GEARS

Pin Hub ■ Left Hand ■ $\frac{1}{8}$ ", $\frac{3}{16}$ " & $\frac{1}{4}$ " Shafts & Bores



Material: Gears — Bronze ASTM B21, Alloy 464
Pinions and Hubs — 303 Stainless Steel

Bores			Gear — Runs With All Pinions					
.1248 Dia.	.1873 Dia.	.2498 Dia.	Ratio	A	B	C	D	Ro
Part No.	Part No.	Part No.						
EK1-1	EK2-1	EK3-1	36:1	.330	1.375	.868	.281	.1501
EK1-2	EK2-2	EK3-2	40:1	.368	1.453	.948	.297	.1487
EK1-5	EK2-5	EK3-5	70:1	.650	2.038	1.553	.411	.1388
EK1-6	EK2-6	EK3-6	80:1	.744	2.233	1.755	.450	.1353
EK1-7	EK2-7	EK3-7	90:1	.837	2.427	1.957	.488	.1320
EK1-8	EK2-8	EK3-8	100:1	.931	2.622	2.158	.526	.1287
EK1-9	EK2-9	EK3-9	120:1	1.119	3.012	2.562	.602	.1220
EK1-11	EK2-11	EK3-11	180:1	1.683	4.182	3.772	.832	.1019
EK1-12	EK2-12	EK3-12	200:1	1.871	4.571	4.175	.908	.0953

Split Hubs Available On Request, Consult Factory.

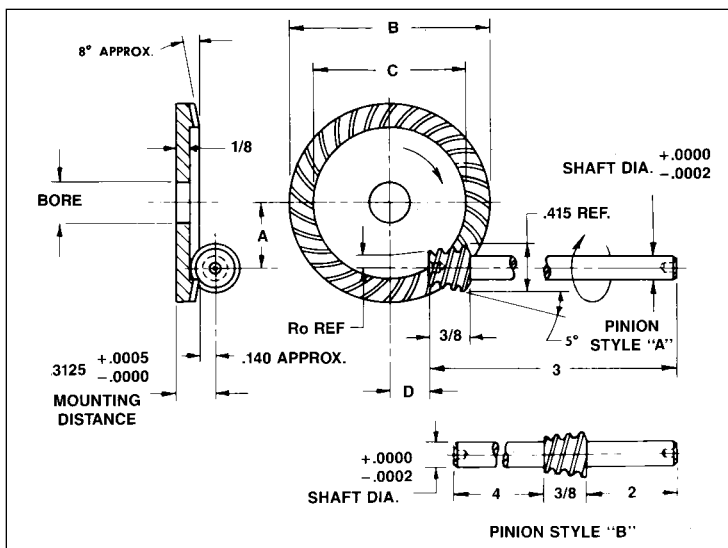
Notes: 1. *For Internal Hub, add -X to Part Number.
2. Check Clearance between Pinion and Hub when using Gears with Ratios of 36:1 and 40:1.

Dimen.	Hub Data		
	EK1	EK2	EK3
E	7/16	7/16	1/2
F	.22	.22	.25
G	.11	.11	.12
Set Screw	#2-56	#4-40	#6-32

Pinions		
Part No.	Style	Shaft Dia.
EJ1-A	"A"	.1247
EJ2-A		.1872
EJ3-A		.2497
EJ1-B	"B"	.1247
EJ2-B		.1872
EJ3-B		.2497

PRECISION SPIRAL GEARS

Hubless ■ Left Hand ■ $\frac{3}{8}$ ", $\frac{11}{16}$ " Bores



Material: Gears — Bronze ASTM B21, Alloy 464
Pinions and Hubs — 303 Stainless Steel

Bores		Gear — Runs With All Pinions					
.3750 +.0000 -.0002	.6875 +.0003 -.0000						
Part No.	Part No.						
EK13-1	EK14-1	36:1	.330	1.375	.868	.281	.1501
EK13-2	EK14-2	40:1	.368	1.453	.948	.297	.1487
EK13-5	EK14-5	70:1	.650	2.038	1.553	.411	.1388
EK13-6	EK14-6	80:1	.744	2.233	1.755	.450	.1353
EK13-7	EK14-7	90:1	.837	2.427	1.957	.488	.1320
EK13-8	EK14-8	100:1	.931	2.622	2.158	.526	.1287
EK13-9	EK14-9	120:1	1.119	3.012	2.562	.602	.1220
EK13-10	EK14-10	150:1	1.401	3.597	3.167	.717	.1120
EK13-11	EK14-11	180:1	1.683	4.182	3.772	.832	.1019
EK13-12	EK14-12	200:1	1.871	4.571	4.175	.908	.0953

Split Hubs Available On Request, Consult Factory.

Pinions		
Part No.	Style	Shaft Dia.
EJ1-A	"A"	.1247
EJ2-A		.1872
EJ3-A		.2497
EJ1-B	"B"	.1247
EJ2-B		.1872
EJ3-B		.2497