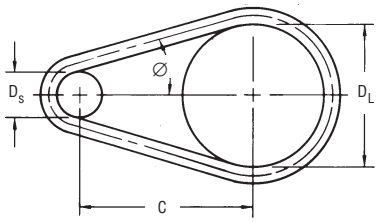
ROUND BELTS AND PRECISION GROOVED PULLEYS

Round belts are manufactured from a polyurethane seal compound that finds use in drive belt applications where petroleum and chemical products may be encountered and temperatures will not exceed 180°F. The flex life and abrasion resistance of this belt are excellent. The formulas listed on this and the adjacent page are to be used in the selection of belt length and pulley size for the Round Belt drive system.

Open Belt Drive



The following formulas are to calculate the belt length for either an Open Belt or Cross Cut Belt drive. Tensile = 3,500 psi.

Open Belt Drive

Belt Half Angle ∅

$$\sin \varnothing = \frac{DL - DS}{2C}$$

Length of Belt Under Tension

$$L1 = \frac{\pi}{2}(DL + DS) + \frac{\pi \varnothing}{180}(DL - DS) + 2C \cos \varnothing$$

Free Belt Length

$$LF = L_1 (.88)$$

Cross Cut Belt Drive

Belt Half Angle ∅

$$\sin \varnothing = \frac{DL + DS}{2C}$$

Length of Belt Under Tension

$$L1 = \left[\frac{\pi}{2}\left(1 + \frac{\varnothing}{90}\right)(DL + DS)\right] + 2C \cos \varnothing$$

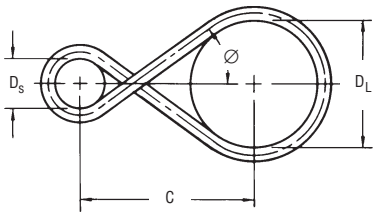
Inside Diameter Of Belt

$$ID = \frac{LF}{\pi} - W$$

NOTE: It is recommened that belt be installed with an initial stretch of approx. 12%

Open Belt Drives are used in most applications. In a crossed belt drive, the direction of rotation of the driven pulley is reversed. If the axes of the pulleys are parallel to each other, the two belts will rub at the crossing point; this may cause premature wearing of the belt. Tilting one axis will eliminate rubbing of the belt, but may complicate the design of the drive.

Crosscut Belt Drive (O-Ring)



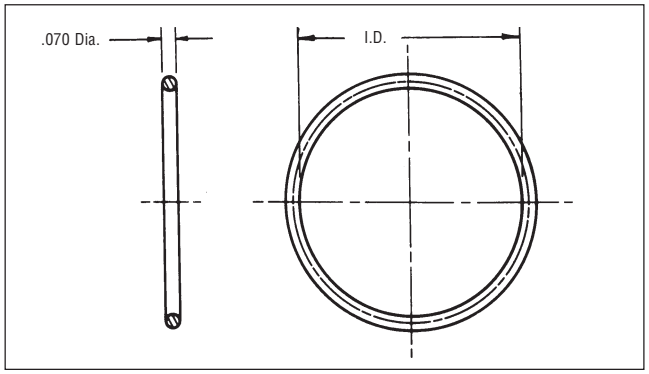
The pulleys are available in aluminum for the 1/6", 3/32" and 3/16" diameter belts. Pulleys for 1/8" and 1/4" diameter belts are available as a standard in stainless steel. The outside diameter of the pulley is equivalent to the pitch diameter of the pulley; therefore the diameters listed could be used to determine the proper ratio. For maximum flex life, the diameter of the smaller pulleys should be at least six times the actual belt width W.

Nominal Belt Size	W	Minimum Pulley Diameter
1/16"	.070	.42
3/32"	.103	.618
1/8"	.139	.834
3/16"	.210	1.260
1/4"	.275	1.650

DS = Smaller Diameter Pulley
DL = Larger Diameter Pulley

The ratio of change in speed is DL/DS

1/16" Diameter



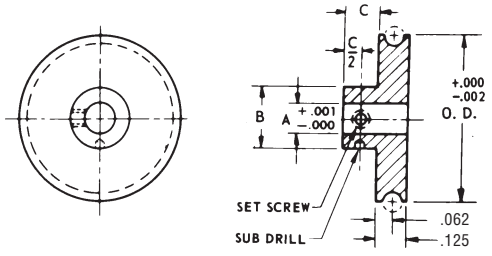
Material: Polyurethane
Temperature Range: -30° to +180°F 70 Durometer

Inside Cir. Approx.	I.D.	Part Number
4.71	1.489	**AF2-1**
5.49	1.739	**AF2-2**
6.28	1.989	**AF2-3**
6.67	2.114	**AF2-4**
7.06	2.239	**AF2-5**
7.46	2.364	**AF2-6**
7.85	2.489	**AF2-7**
8.24	2.614	**AF2-8**

Inside Cir. Approx.	I.D.	Part Number
8.63	2.739	**AF2-9**
9.03	2.864	**AF2-10**
9.42	2.989	**AF2-11**
10.21	3.239	**AF2-12**
10.99	3.489	**AF2-13**
11.78	3.739	**AF2-14**
12.56	3.989	**AF2-15**

For 1/16" Diameter Pulley Belts

Pin Hub



Material: 2024-T4 Aluminum, Anodized

Shaft Size	O.D.	A	B	C	Set Screw	Part Number
1/8	.500	.1248	.312	.187	#2-56	**AE5-1**
	.750					**AE5-2**
	1.000					**AE5-3**
	1.500					**AE5-4**
	2.000					**AE5-5**
3/16	.500	.1873	.375	.218	#4-40	**AE6-1**
	.750					**AE6-2**
	1.000					**AE6-3**
	1.500					**AE6-4**
	2.000					**AE6-5**
1/4	1.000	.2498	.500	.250	#6-32	**AE7-1**
	1.500					**AE7-2**
	2.000					**AE7-3**
	2.500					**AE7-4**
	3.000					**AE7-5**

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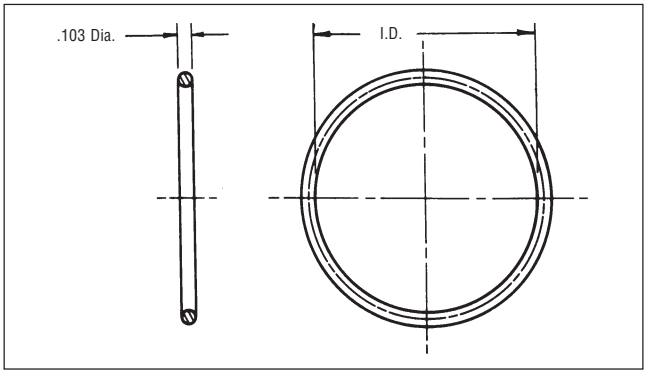
ROUND BELTS AND PRECISION GROOVED PULLEYS

3/32" Diameter



Material: Polyurethane

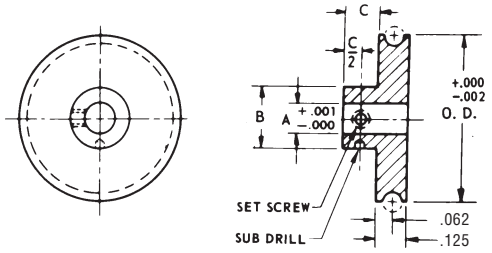
Temperature Range: -30º to +180ºF 70 Durometer

Inside Cir. Approx.	I.D.	Part Number
7.85	2.487	**AF3-1**
8.63	2.737	**AF3-2**
9.42	2.800	**AF3-3**
10.21	3.237	**AF3-4**
10.99	3.487	**AF3-5**
11.78	3.737	**AF3-6**
12.56	3.987	**AF3-7**
13.35	4.237	**AF3-8**

Inside Cir. Approx.	I.D.	Part Number
14.13	4.487	**AF3-9**
14.92	4.737	**AF3-10**
15.70	4.987	**AF3-11**
16.29	5.237	**AF3-12**
17.27	5.487	**AF3-13**
18.06	5.737	**AF3-14**
18.84	5.987	**AF3-15**

For 3/32" Diameter Pulley Belts

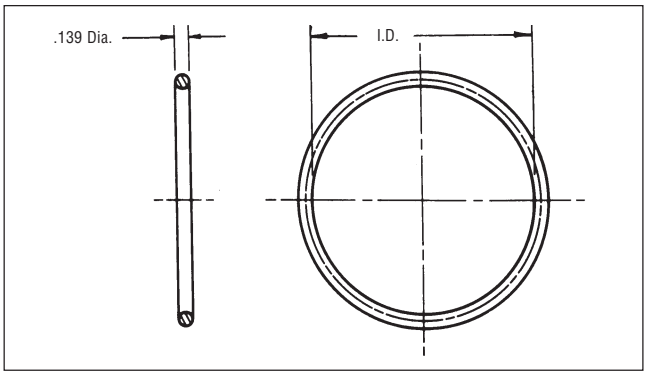
Pin Hub



Material: 2024-T4 Aluminum, Anodized

Shaft Size	O.D.	A	B	C	Set Screw	Part Number
1/8	.500	.1248	.312	.187	#2-56	**AE8-1**
	.750					**AE8-2**
	1.000					**AE8-3**
	1.500					**AE8-4**
	2.000					**AE8-5**
3/16	.500	.1873	.375	.218	#4-40	**AE9-1**
	.750					**AE9-2**
	1.000					**AE9-3**
	1.500					**AE9-4**
	2.000					**AE9-5**
1/4	1.000	.2498	.500	.250	#6-32	**AE10-1**
	1.500					**AE10-2**
	2.000					**AE10-3**
	2.500					**AE10-4**
	3.000					**AE10-5**

1/8" Diameter



Material: Polyurethane

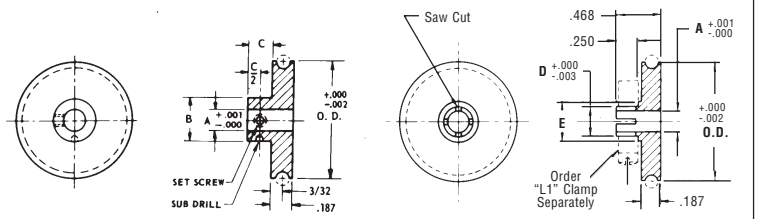
Temperature Range: -30º to +180ºF 70 Durometer

Inside Cir. Approx.	I.D.	Part Number
13.35	4.234	**AF4-1**
14.13	4.484	**AF4-2**
14.92	4.734	**AF4-3**
15.70	4.984	**AF4-4**
16.49	5.234	**AF4-5**
17.27	5.484	**AF4-6**
18.06	5.734	**AF4-7**
18.84	5.984	**AF4-8**
19.63	6.234	**AF4-9**
20.42	6.484	**AF4-10**
21.99	6.984	**AF4-11**
23.56	7.484	**AF4-12**

Inside Cir. Approx.	I.D.	Part Number
25.13	7.984	**AF4-13**
26.70	8.484	**AF4-14**
28.27	8.984	**AF4-15**
29.84	9.484	**AF4-16**
31.41	9.984	**AF4-17**
32.98	10.484	**AF4-18**
34.55	10.984	**AF4-19**
36.12	11.484	**AF4-20**
37.69	11.984	**AF4-21**
40.84	12.984	**AF4-22**
43.98	13.984	**AF4-23**
47.12	14.984	**AF4-24**

For 1/8" Diameter Round Pulley Belts

Pin Hub **Split Hub**

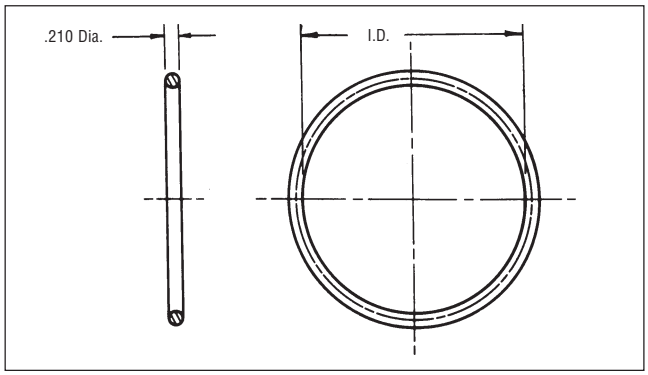


Material: 303 Stainless Steel

Shaft Size	O.D.	A	B	C	D	E	Set Screw	Clamp	Pin Hub Part No.	Split Hub Part No.
1/8	.500	.1248	.312	.187	.188	1/4	#2-56	L1-1 or L1-4	**AE-1**	**AE-21**
	.750								**AE-2**	**AE-22**
	1.000								**AE-3**	**AE-23**
	1.500								**AE-4**	**AE-24**
	2.000								**AE-5**	**AE-25**
3/16	.500	.1873	.375	.218	.250	5/16	#4-40	L1-2 or L1-5	**AE-6**	**AE-26**
	.750								**AE-7**	**AE-27**
	1.000								**AE-8**	**AE-28**
	1.500								**AE-9**	**AE-29**
	2.000								**AE-10**	**AE-30**
1/4	.500	.2498	.500	.250	.312	3/8	#6-32	L1-3 or L1-6	**AE-11**	**AE-31**
	.750								**AE-12**	**AE-32**
	1.000								**AE-13**	**AE-33**
	1.500								**AE-14**	**AE-34**
	2.000								**AE-15**	**AE-35**
	2.500								**AE-16**	**AE-36**
	3.000								**AE-17**	**AE-37**

ROUND BELTS AND PRECISION GROOVED PULLEYS

3/16" Diameter



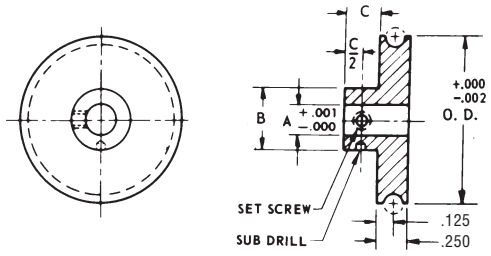
Material: Polyurethane
Temperature Range: -30º to +180ºF 70 Durometer

Inside Cir. Approx.	I.D.	Part Number
6.28	1.975	**AF5-1**
7.06	2.225	**AF5-2**
7.85	2.475	**AF5-3**
8.63	2.725	**AF5-4**
9.42	2.975	**AF5-5**
10.21	3.225	**AF5-6**

Inside Cir. Approx.	I.D.	Part Number
10.99	3.475	**AF5-7**
11.78	3.725	**AF5-8**
12.56	3.975	**AF5-9**
13.35	4.225	**AF5-10**
14.13	4.475	**AF5-11**

For 3/16" Diameter Pulley Belts

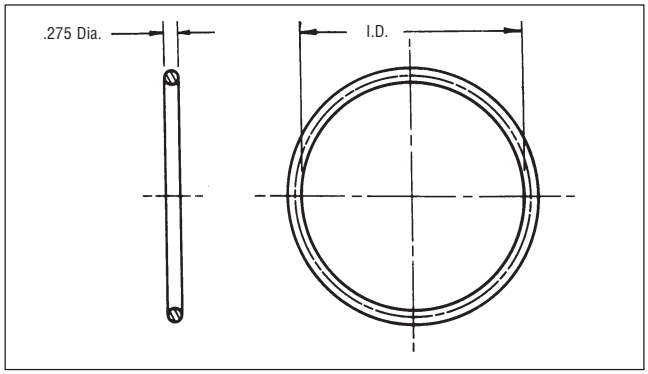
Pin Hub



Material: 2024-T4 Aluminum, Anodized

Shaft Size	O.D.	A	B	C	Set Screw	Part Number
1/4	1.000	.2498	.500	.250	#6-32	**AE14-1**
	1.500					**AE14-2**
	2.000					**AE14-3**
	3.000					**AE14-4**
5/16	1.000	.3123	.750	.375	#8-32	**AE15-1**
	1.500					**AE15-2**
	2.000					**AE15-3**
	3.000					**AE15-4**
3/8	1.000	.3748	.750	.500	#10-32	**AE16-1**
	1.500					**AE16-2**
	2.000					**AE16-3**
	3.000					**AE16-4**

1/4" Diameter

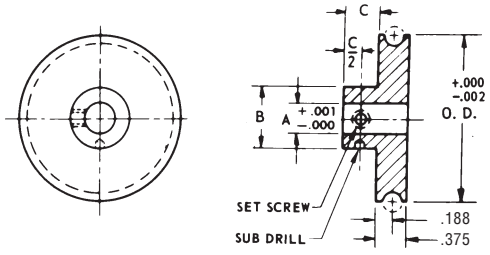


Material: Polyurethane
Temperature Range: -30º to +180ºF 70 Durometer

Inside Cir. Approx.	I.D.	Part Number
18.84	5.975	**AF6-1**
20.42	6.475	**AF6-2**
21.99	6.975	**AF6-3**
25.13	7.975	**AF6-4**
28.27	8.975	**AF6-5**
31.41	9.975	**AF6-6**
37.69	11.975	**AF6-7**
40.84	12.975	**AF6-8**
43.98	13.975	**AF6-9**
47.12	14.975	**AF6-10**

For 1/4" Diameter Pulley Belts

Pin Hub



Material: 303 Stainless Steel

Shaft Size	O.D.	A	B	C	Set Screw	Part Number
3/8	1.000	.3748	.750	.500	#10-32	**AE17-1**
	1.500					**AE17-2**
	2.000					**AE17-3**
	3.000					**AE17-4**
	4.000					**AE17-5**
1/2	1.000	.4998	1.000	.500	#1/4-20	**AE18-1**
	1.500					**AE18-2**
	2.000					**AE18-3**
	3.000					**AE18-4**
	4.000					**AE18-5**

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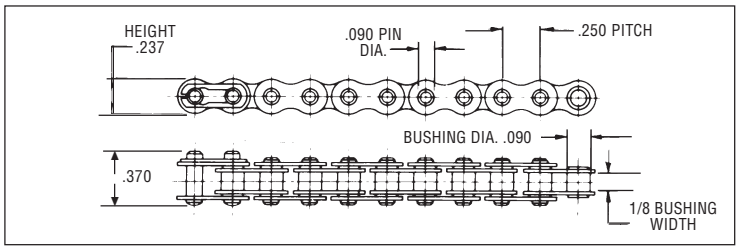
.250 PITCH CHAIN AND SPROCKETS

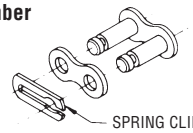
#25 Roller Chain



Chain Material: Stainless Steel Type 18-8 **Weight per Foot:** .0828 lbs.
Tensile Strength: 700 lbs. Average

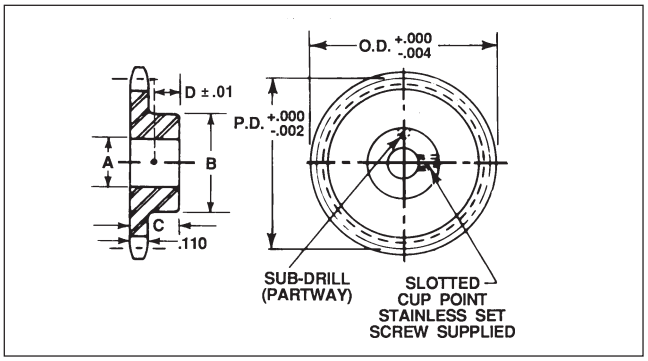
Extra Connectors Available

Catalog Number EL25-C



All Chains Supplied With Connectors

Random lengths available: Specify part number by indicating total number of links ÷ 10 after series number. Specify even numbers of links including connector.



Sprocket Material: Stainless Steel
2024-T4 Aluminum (Anodize Before Cutting)

No. of Teeth	Bore A +.001	B	C	D	Set Size
9-22	1/4	1/2	1/2	.19	#6-32
24-36	3/8	3/4	5/8	.25	#10-32
40-50	1/2	1-1/2	3/4	.31	#10-32

Part Number	L
EL25-4	10.000
EL25-5	12.500
EL25-6	15.000
EL25-7	17.500
EL25-8	20.000
EL25-9	22.500
EL25-10	25.000
EL25-12	30.000
EL25-13	32.500
EL25-14	35.000
EL25-15	37.500
EL25-16	40.000

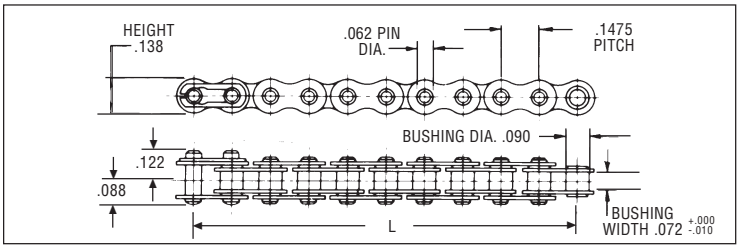
Part Number	L
EL25-17	42.500
EL25-18	45.000
EL25-19	47.500
EL25-20	50.000
EL25-21	52.500
EL25-22	55.000
EL25-23	57.500
EL25-24	60.000
EL25-25	62.500
EL25-26	65.000
EL25-27	67.500
EL25-28	70.000

Sprocket Data			Stainless Steel	Aluminum
No. Teeth	P.D.	O.D.	Part Number	Part Number
9	.7310	.836	EM255-9	EM256-9
10	.8090	.919	EM255-10	EM256-10
11	.8874	1.001	EM255-11	EM256-11
12	.9659	1.083	EM255-12	EM256-12
13	1.0446	1.164	EM255-13	EM256-13
14	1.1235	1.245	EM255-14	EM256-14
15	1.2024	1.326	EM255-15	EM256-15
16	1.2813	1.406	EM255-16	EM256-16
18	1.4397	1.567	EM255-18	EM256-18
20	1.5981	1.728	EM255-20	EM256-20
21	1.6773	1.808	EM255-21	EM256-21
22	1.7566	1.880	EM255-22	EM256-22

Sprocket Data			Stainless Steel	Aluminum
No. Teeth	P.D.	O.D.	Part Number	Part Number
24	1.9153	2.049	EM255-24	EM256-24
25	1.9946	2.129	EM255-25	EM256-25
26	2.0740	2.209	EM255-26	EM256-26
28	2.2328	2.368	EM255-28	EM256-28
30	2.3917	2.528	EM255-30	EM256-30
32	2.5505	2.688	EM255-32	EM256-32
36	2.8684	3.007	EM255-36	EM256-36
40	3.1863	3.326	EM255-40	EM256-40
45	3.5838	3.725	EM255-45	EM256-45
48	3.8220	3.964	EM255-48	EM256-48
50	3.9815	4.123	EM255-50	EM256-50

.1475 MINIATURE PITCH CHAINS

.1475 Pitch-Prestretched



Material: Stainless Steel Type 18-8 **Weight per Foot:** .035 lbs.
Tensile Strength: 180 lbs. Average

Part Number	L
EL-4	5.900
EL-5	7.375
EL-6	8.850
EL-7	10.325
EL-8	11.800
EL-9	13.275
EL-10	14.750
EL-11	16.225
EL-12	17.700

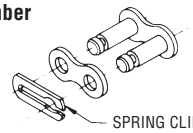
Part Number	L
EL-13	19.175
EL-14	20.650
EL-15	22.125
EL-16	23.600
EL-17	25.075
EL-18	26.550
EL-19	28.025
EL-20	29.500
EL-21	30.975

Part Number	L
EL-22	32.450
EL-23	33.925
EL-24	35.400
EL-25	36.875
EL-26	38.350
EL-27	39.825
EL-28	41.300
EL-29	42.775
EL-30	44.250

Part Number	L
EL-31	45.725
EL-32	47.200
EL-33	48.675
EL-34	50.150
EL-35	51.625
EL-36	53.100
EL-37	54.575
EL-38	56.050
EL-39	57.525

Extra Connectors Available

Catalog Number EL-C



Prestretched For:

- Reduced run in time
- Negligible preload expansion

All Chains Supplied With Connectors

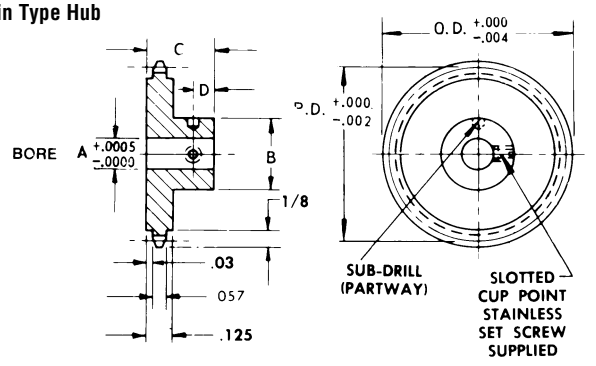
Random lengths available: Specify part number by indicating total number of links ÷ 10 after series number. Specify even numbers of links including connector.

Example: EL-54.4 contains 544 links; **EL-12.8** contains 128 links.

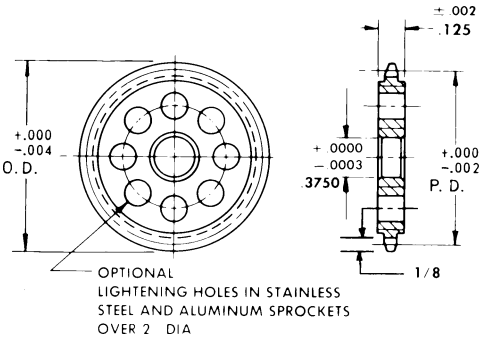
Closed loop chain available on request (specify length)

.1475 PITCH MINIATURE PITCH SPROCKETS

Pin Type Hub



Hubless



Material: 303 Stainless Steel
2024-T4 Aluminum (Chromic Acid Anodize - Before Cutting)

Dimension	Bore				
	1/8	3/16	1/4	4mm	6mm
A	.1248	.1873	.2498	.1573	.2360
B	.312	.375	.500	.375	.500
C	.312	.343	.375	.343	.375
D	.090	.110	.120	.110	.120
Set Screw	#2-56	#4-40	#6-32	M2 x .4	M3 x .5

Sprocket Data			Stainless Steel						Aluminum					
			Pin Hub Part Number Bore Size					Hubless Part No. Bore Size	Pin Hub Part Number Bore Size					Hubless Part No. Bore Size
Number Teeth	P.D.	O.D.	.1248	.1873	.2498	4mm	6mm	.3750	.1248	.1873	.2498	4mm	6mm	.3750
9	.431	.483	EM1-9	—	—	—	—	—	EM2-9	—	—	—	—	—
10	.477	.529	EM1-10	EM3-10	—	MMS1-10	—	—	EM2-10	EM4-10	—	MMS2-10	—	—
11	.524	.576	EM1-11	EM3-11	—	MMS1-11	—	—	EM2-11	EM4-11	—	MMS2-11	—	—
12	.570	.622	EM1-12	EM3-12	—	MMS1-12	—	—	EM2-12	EM4-12	—	MMS2-12	—	—
13	.616	.668	EM1-13	EM3-13	EM5-13	MMS1-13	MMS3-13	—	EM2-13	EM4-13	EM6-13	MMS2-13	MMS4-13	—
14	.663	.715	EM1-14	EM3-14	EM5-14	MMS1-14	MMS3-14	—	EM2-14	EM4-14	EM6-14	MMS2-14	MMS4-14	—
15	.709	.761	EM1-15	EM3-15	EM5-15	MMS1-15	MMS3-15	—	EM2-15	EM4-15	EM6-15	MMS2-15	MMS4-15	—
16	.756	.808	EM1-16	EM3-16	EM5-16	MMS1-16	MMS3-16	—	EM2-16	EM4-16	EM6-16	MMS2-16	MMS4-16	—
17	.803	.855	EM1-17	EM3-17	EM5-17	MMS1-17	MMS3-17	—	EM2-17	EM4-17	EM6-17	MMS2-17	MMS4-17	—
18	.849	.901	EM1-18	EM3-18	EM5-18	MMS1-18	MMS3-18	—	EM2-18	EM4-18	EM6-18	MMS2-18	MMS4-18	—
19	.896	.948	EM1-19	EM3-19	EM5-19	MMS1-19	MMS3-19	—	EM2-19	EM4-19	EM6-19	MMS2-19	MMS4-19	—
20	.943	.995	EM1-20	EM3-20	EM5-20	MMS1-20	MMS3-20	—	EM2-20	EM4-20	EM6-20	MMS2-20	MMS4-20	—
21	.990	1.042	EM1-21	EM3-21	EM5-21	MMS1-21	MMS3-21	—	EM2-21	EM4-21	EM6-21	MMS2-21	MMS4-21	—
22	1.036	1.088	EM1-22	EM3-22	EM5-22	MMS1-22	MMS3-22	—	EM2-22	EM4-22	EM6-22	MMS2-22	MMS4-22	—
23	1.083	1.135	EM1-23	EM3-23	EM5-23	MMS1-23	MMS3-23	—	EM2-23	EM4-23	EM6-23	MMS2-23	MMS4-23	—
24	1.130	1.182	EM1-24	EM3-24	EM5-24	MMS1-24	MMS3-24	—	EM2-24	EM4-24	EM6-24	MMS2-24	MMS4-24	—
25	1.177	1.228	EM1-25	EM3-25	EM5-25	MMS1-25	MMS3-25	—	EM2-25	EM4-25	EM6-25	MMS2-25	MMS4-25	—
26	1.224	1.276	EM1-26	EM3-26	EM5-26	MMS1-26	MMS3-26	—	EM2-26	EM4-26	EM6-26	MMS2-26	MMS4-26	—
27	1.270	1.322	EM1-27	EM3-27	EM5-27	MMS1-27	MMS3-27	EM13-27	EM2-27	EM4-27	EM6-27	MMS2-27	MMS4-27	EM14-27
28	1.317	1.369	EM1-28	EM3-28	EM5-28	MMS1-28	MMS3-28	EM13-28	EM2-28	EM4-28	EM6-28	MMS2-28	MMS4-28	EM14-28
29	1.364	1.416	EM1-29	EM3-29	EM5-29	MMS1-29	MMS3-29	EM13-29	EM2-29	EM4-29	EM6-29	MMS2-29	MMS4-29	EM14-29
30	1.411	1.463	EM1-30	EM3-30	EM5-30	MMS1-30	MMS3-30	EM13-30	EM2-30	EM4-30	EM6-30	MMS2-30	MMS4-30	EM14-30
31	1.458	1.510	EM1-31	EM3-31	EM5-31	MMS1-31	MMS3-31	EM13-31	EM2-31	EM4-31	EM6-31	MMS2-31	MMS4-31	EM14-31
32	1.505	1.557	EM1-32	EM3-32	EM5-32	MMS1-32	MMS3-32	EM13-32	EM2-32	EM4-32	EM6-32	MMS2-32	MMS4-32	EM14-32
33	1.552	1.604	EM1-33	EM3-33	EM5-33	MMS1-33	MMS3-33	EM13-33	EM2-33	EM4-33	EM6-33	MMS2-33	MMS4-33	EM14-33
34	1.598	1.650	EM1-34	EM3-34	EM5-34	MMS1-34	MMS3-34	EM13-34	EM2-34	EM4-34	EM6-34	MMS2-34	MMS4-34	EM14-34
35	1.645	1.697	EM1-35	EM3-35	EM5-35	MMS1-35	MMS3-35	EM13-35	EM2-35	EM4-35	EM6-35	MMS2-35	MMS4-35	EM14-35
36	1.692	1.744	EM1-36	EM3-36	EM5-36	MMS1-36	MMS3-36	EM13-36	EM2-36	EM4-36	EM6-36	MMS2-36	MMS4-36	EM14-36
38	1.786	1.838	EM1-38	EM3-38	EM5-38	MMS1-38	MMS3-38	EM13-38	EM2-38	EM4-38	EM6-38	MMS2-38	MMS4-38	EM14-38
40	1.880	1.932	EM1-40	EM3-40	EM5-40	MMS1-40	MMS3-40	EM13-40	EM2-40	EM4-40	EM6-40	MMS2-40	MMS4-40	EM14-40
42	1.974	2.026	EM1-42	EM3-42	EM5-42	MMS1-42	MMS3-42	EM13-42	EM2-42	EM4-42	EM6-42	MMS2-42	MMS4-42	EM14-42
44	2.068	2.120	EM1-44	EM3-44	EM5-44	MMS1-44	MMS3-44	EM13-44	EM2-44	EM4-44	EM6-44	MMS2-44	MMS4-44	EM14-44
45	2.114	2.166	—	—	—	—	—	EM13-45	—	—	—	—	—	EM14-45
48	2.255	2.307	—	—	—	—	—	EM13-48	—	—	—	—	—	EM14-48
50	2.349	2.401	—	—	—	—	—	EM13-50	—	—	—	—	—	EM14-50
52	2.443	2.495	—	—	—	—	—	EM13-52	—	—	—	—	—	EM14-52
54	2.537	2.589	—	—	—	—	—	EM13-54	—	—	—	—	—	EM14-54
55	2.584	2.636	—	—	—	—	—	EM13-55	—	—	—	—	—	EM14-55
56	2.631	2.683	—	—	—	—	—	EM13-56	—	—	—	—	—	EM14-56
60	2.818	2.870	—	—	—	—	—	EM13-60	—	—	—	—	—	EM14-60
65	3.053	3.105	—	—	—	—	—	EM13-65	—	—	—	—	—	EM14-65
70	3.288	3.340	—	—	—	—	—	EM13-70	—	—	—	—	—	EM14-70
72	3.382	3.434	—	—	—	—	—	EM13-72	—	—	—	—	—	EM14-72
75	3.522	3.574	—	—	—	—	—	EM13-75	—	—	—	—	—	EM14-75
80	3.757	3.809	—	—	—	—	—	EM13-80	—	—	—	—	—	EM14-80
85	3.992	4.044	—	—	—	—	—	EM13-85	—	—	—	—	—	EM14-85

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