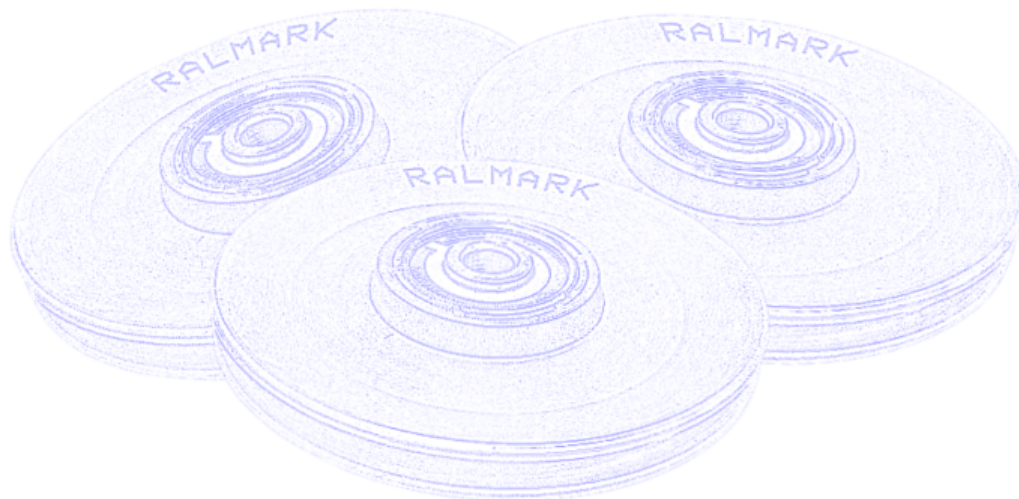


# RALMARK

*PRECISION PULLEYS FOR DIVERSE APPLICATIONS*





<b>INTRODUCTION</b>	<b>3</b>	<b>LOCKHEED MARTIN</b>	<b>8</b>
<b>MILITARY STANDARDS</b>	<b>4</b>	<b>BB, A, &amp; NAS SERIES</b>	<b>9</b>
<b>BOEING BACP30F</b>	<b>5</b>	<b>CUSTOM PULLEYS</b>	<b>10</b>
<b>BACP30M &amp; BACP30K</b>	<b>6</b>	<b>MATERIALS &amp; FINISHES</b>	<b>11</b>
<b>MCDONNELL DOUGLAS</b>	<b>7</b>	<b>BALL BEARINGS</b>	<b>12</b>
		<b>CAPABILITIES</b>	<b>13</b>

The information presented in this catalog is intended as a guide for the selection of pulleys. To the best of our knowledge it is accurate. However, we cannot be held responsible for possible errors or omissions.

We reserve the right to change information in this catalog without notice.

### Our Mission

It is the mission of Ralmark Company to manufacture quality precision pulleys and provide superior value to our customers. We are committed to creating value by increasing our customer's productivity through on-time delivery of high-performance products and technical support that meets customer and regulatory requirements worldwide.

### The Beginning

Their first objective was to earn Qualified Product List approval from the Department of Defense for Military Standard pulleys. As a flight critical component, control pulleys are manufactured to stringent Military Specification requirements. The full qualification process took approximately 2 years to complete.



Market Street Bridge - Located in the heart of Northeastern Pennsylvania

### Milestone Reached

Marcus F. Hozempa and Alfred H. Engel founded Ralmark Company in Wilkes-Barre, Pennsylvania in 1964. These individuals contributed years of manufacturing and administrative experience, both producing aircraft pulleys since 1945. The company is founded on the principles of providing quality products and dealing fairly with customers and approved suppliers.



Quality inspector performing load testing

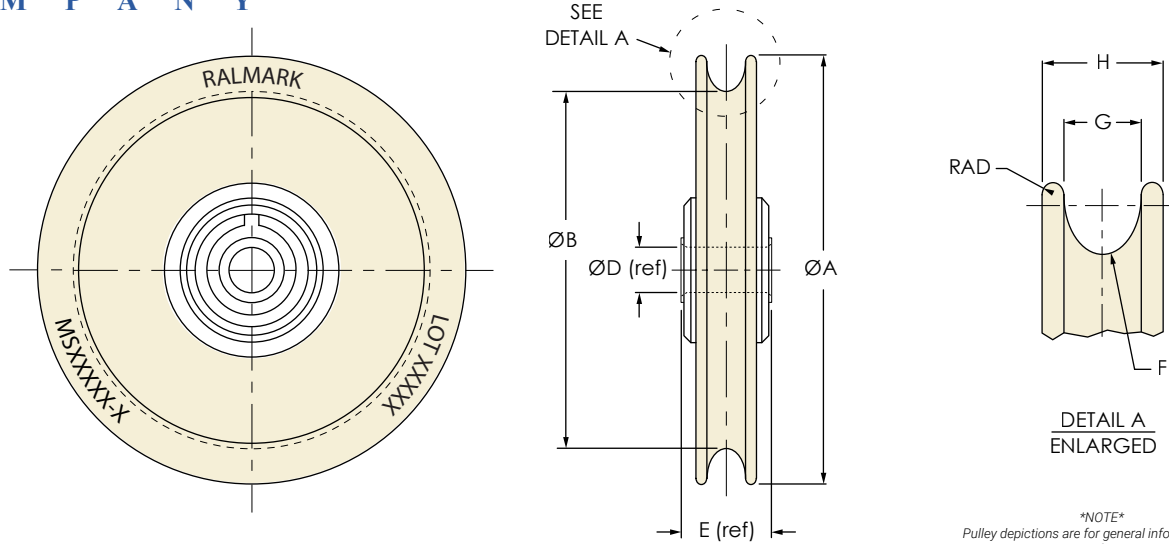
### The Future

As we prepare to meet the market demands of the 21st Century, new manufacturing technologies and business systems are continuously being adopted, so that we are now capable of converting a customer's concept into finished parts. Our Sales and Engineering Departments will work closely with our customers to reduce costs and provide a high quality product.



Ralmark pulleys can be found on many state of the art vehicles such as the Stratolaunch aircarrier platform built by Scaled Composites.





\*NOTE\*  
Pulley depictions are for general information only.  
Actual product configuration may differ.

All dimensions are in inches unless otherwise noted

Military Standard Non-Metallic Sheave P/N	Military Standard Metallic Sheave P/N	ØA	ØB	ØD	E	F	G	H	Pulley Assem. Weight MAX (lbs)	SAE Bearing P/N	Pulley Strength			
		Outside Dia. ±.005	Groove Dia. ±.005	Bore Dia. (ref) -.0005	Width I.R. (ref) -.005	Groove Radius	Groove Width	Width at Flange Points MAX			Allowable Limit Load of Pulley (lbs)	Max Limit Load on Cable Independent of Wrap Angle (lbs)		
MIL-DTL-7034/1A												1/16" cable	3/32" cable	
MS20219-1	MS20219A1	1.312	1.000	.2500	.438	.050 -.003	.150 -.003	.310	.058	MS21443-4A MS21443-4B	480	307	460	
MS20219-2	MS20219A2	1.750	1.438	.2500	.438	.050 -.003	.150 -.003	.310	.066	MS21443-4B	480	307	460	
MS20219-3	MS20219A3	1.750	1.438	.6250	.438	.050 -.003	.150 -.003	.310	.096	MS21443-10	480	307	460	
MS20219-4	MS20219A4	2.625	2.312	.1900	.438	.050 -.003	.150 -.003	.310	.110	MS21443-4B	920	307	460	
MS20219-5	MS20219A5	2.625	2.312	.6250	.438	.050 -.003	.150 -.003	.310	.125	MS21443-10	920	307	460	
MIL-DTL-7034/2A												1/8" cable	5/32" cable	3/16" cable
MS20220-1	MS20220A1	1.750	1.250	.3125	.625	.097 -.003	.275 -.020	.422	.070	MS21443-5A	500	830	1,040	1,250
MS20220-2	MS20220A2	3.000	2.500	.3125	.625	.097 -.003	.275 -.020	.422	.175	MS21443-5B	1,680	830	1,040	1,250
MS20220-3	MS20220A3	4.250	3.750	.3125	.625	.097 -.003	.275 -.020	.422	.260	MS21443-5B	2,500	830	1,040	1,250
MS20220-4	MS20220A4	5.500	5.000	.3125	.625	.097 -.003	.275 -.020	.422	.370	MS21443-5B	2,500	830	1,040	1,250
MIL-DTL-7034/3A												3/16" cable	7/32" cable	1/4" cable
-	MS20221A1	2.625	2.000	.3125	.625	.130 -.005	.360 -.020	.507	.165	MS21443-5B	2,800	2,620	3,060	3,500
MS20221-2	MS20221A2	4.125	3.500	.5000	.750	.130 -.005	.360 -.020	.507	.450	MS21443-8	4,900	2,620	3,060	3,500
MS20221-3	MS20221A3	5.625	5.000	.5000	.750	.130 -.005	.360 -.020	.507	.680	MS21443-8	7,000	2,620	3,060	3,500
MIL-DTL-7034/4A												Cable Size		
MS24566-1B	-	1.245	0.967	.1900	.297	.055 -.003	-	.250	.026	MS21443-3A	300	1/16" 3/32"		
MS24566-2B	-	2.495	2.217	.1900	.297	.055 -.003	-	.250	.075	MS21443-3B	500			
MS24566-3B	-	1.995	1.505	.2500	.484	.112 -.003	-	.422	.090	MS21443-4C	600	1/8" 5/32" 3/16"		
MS24566-4B	-	3.495	3.005	.2500	.484	.112 -.003	-	.422	.200	MS21443-4C	1,200			
MS24566-5B	-	4.995	4.369	.3750	.620	.145 -.005	-	.507	.500	MS27640-6	3,000	3/16" 7/32" 1/4"		
MS24566-6B	-	5.995	5.369	.3750	.620	.145 -.005	-	.507	.660	MS27640-6	4,000			

#### Materials:

Non-metallic pulley sheaves conform to MIL-DTL-7034 and exceed the performance requirements of MIL-I-24768/16. Metallic pulley sheaves are machined from an aluminum alloy 2024-T351 conforming to SAE AMSQQA225/6, or SAE AMS4037.

#### Finish:

Metallic pulley sheaves are anodized in accordance with MIL-PRF-8625, Type II, Class I.

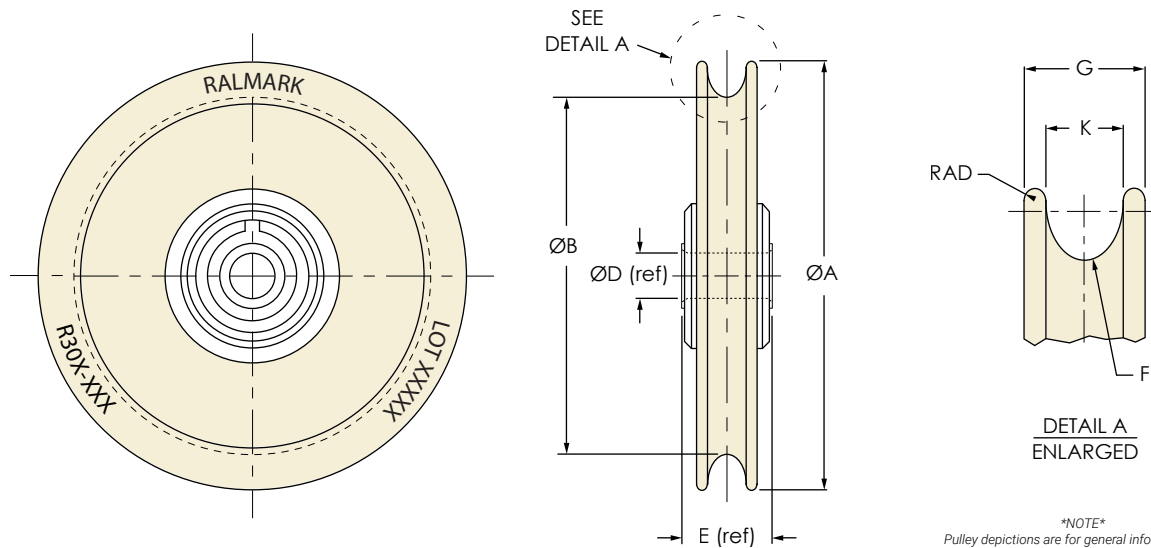
#### Bearing:

Bearings conform to the requirements of SAE AS7949 and related SAE AS21443 or SAE AS27640 bearing standards.

#### Lubrication:

MIL-PRF-81322 or MIL-PRF-23827 Type I.





*\*NOTE\**  
Pulley depictions are for general information only.  
Actual product configuration may differ.

All dimensions are in inches unless otherwise noted

Boeing Standard P/N		Ralmark Company P/N		Cable Size MAX (ref)	ØA	ØB	ØD	E	F		G				K	Bearing P/N
Non-Metallic	Metallic	Non-Metallic	Metallic		Outside Dia.	Groove Dia.	Bore Dia. (ref)	I.R. Width (ref)	MIN	MAX	Width at Flange				Groove Width -.010	
					-.010	-.010	-.0005	-.005			Non-Metallic	Metallic				
											MIN	MAX	MIN	MAX	MIN	MAX
BACP30F1C	BACP30F1AC	R30F-1C*	R30F-1AC*	3/32"	1.317	1.005	.2500	.438	.047	.050	.275	.310	.270	.310	.150	BACB10GN2SJ AS21443/1-4AGET
BACP30F2C	BACP30F2AC	R30F-2C*	R30F-2AC*	3/32"	1.755	1.443	.2500	.438	.047	.050	.275	.310	.270	.310	.150	BACB10GN2SJ
BACP30F3C	BACP30F3AC	R30F-3C*	R30F-3AC*	3/32"	1.755	1.443	.6250	.438	.047	.050	.275	.310	.270	.310	.150	BACB10GN5SJ
BACP30F4C	BACP30F4AC	R30F-4C*	R30F-4AC*	3/32"	2.630	2.317	.2500	.438	.047	.050	.275	.310	.270	.310	.150	BACB10GN2SJ
BACP30F5C	BACP30F5AC	R30F-5C*	R30F-5AC*	3/32"	2.630	2.317	.6250	.438	.047	.050	.275	.310	.270	.310	.150	BACB10GN5SJ
BACP30F6C	BACP30F6AC	R30F-6C*	R30F-6AC*	3/16"	1.755	1.255	.3125	.625	.094	.097	.405	.422	.375	.422	.265	BACB10GN3SJ
BACP30F7C	BACP30F7AC	R30F-7C*	R30F-7AC*	3/16"	3.005	2.505	.3125	.625	.094	.097	.405	.422	.380	.422	.265	BACB10GN3DJ
BACP30F8C	BACP30F8AC	R30F-8C*	R30F-8AC*	3/16"	4.255	3.755	.3125	.625	.094	.097	.405	.422	.380	.422	.265	BACB10GN3DJ
BACP30F9C	BACP30F9AC	R30F-9C*	R30F-9AC*	3/16"	5.505	5.005	.3125	.625	.094	.097	.405	.422	.380	.422	.265	BACB10GN3DJ
BACP30F10C	BACP30F10AC	R30F-10C*	R30F-10AC*	1/4"	2.630	2.005	.3125	.625	.125	.130	.490	.507	.477	.507	.350	BACB10GN3DJ
BACP30F11C	BACP30F11AC	R30F-11C*	R30F-11AC*	1/4"	4.130	3.505	.5000	.750	.125	.130	.490	.507	.477	.507	.350	BACB10GN1SMJ
BACP30F12C	BACP30F12AC	R30F-12C*	R30F-12AC*	1/4"	5.630	5.005	.5000	.750	.125	.130	.490	.507	.477	.507	.350	BACB10GN1SMJ
BACP30F13C	BACP30F13AC	R30F-13C*	R30F-13AC*	3/32"	1.250	.972	.1900	.297	.052	.055	.240	.250	.240	.250	-	BACB10GN1SBJ
BACP30F14C	BACP30F14AC	R30F-14C*	R30F-14AC*	3/32"	2.500	2.222	.1900	.297	.052	.055	.240	.250	.240	.250	-	BACB10GN1SAJ
BACP30F15C	BACP30F15AC	R30F-15C*	R30F-15AC*	3/16"	2.000	1.510	.2500	.484	.109	.112	.410	.422	.410	.422	-	BACB10GN2SAJ
BACP30F16C	BACP30F16AC	R30F-16C*	R30F-16AC*	3/16"	3.500	3.010	.2500	.484	.109	.112	.410	.422	.410	.422	-	BACB10GN2SAJ
BACP30F17C	BACP30F17AC	R30F-17C*	R30F-17AC*	1/4"	5.000	4.374	.3750	.620	.140	.145	.493	.507	.493	.507	-	BACB10FT06J
BACP30F18C	BACP30F18AC	R30F-18C*	R30F-18AC*	1/4"	6.000	5.374	.3750	.620	.140	.145	.493	.507	.493	.507	-	BACB10FT06J

FAA-PMA Approval is indicated with \* next to part number:

#### Materials:

Non-metallic pulley sheaves conform to MIL-DTL-7034 and exceed the performance requirements of MIL-I-24768/16.  
Metallic pulley sheaves are machined from an aluminum alloy 2024-T351 conforming to SAE AMSQQA225/6, or SAE AMS4037.

#### Finish:

Metallic pulley sheaves are anodized in accordance with MIL-PRF-8625, Type II, Class I.

#### Bearing:

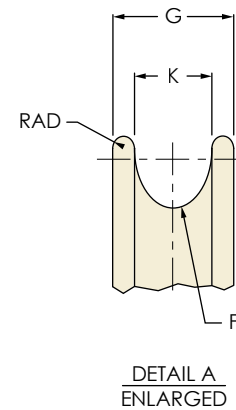
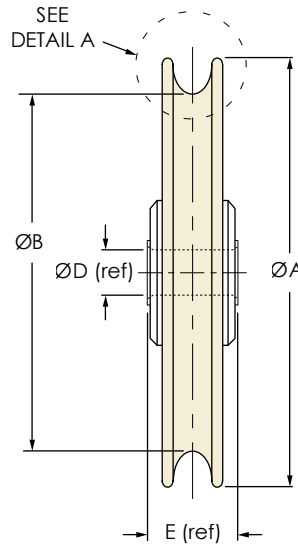
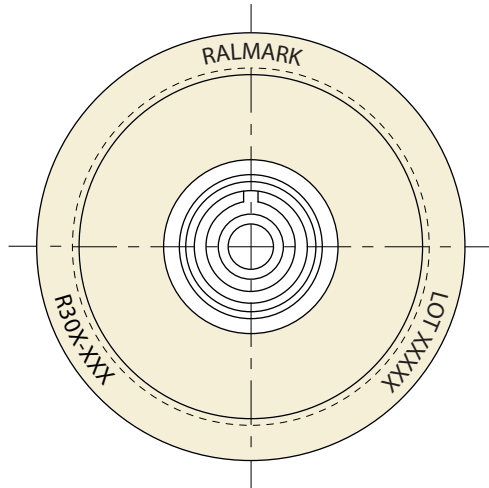
Bearings conform to the requirements of SAE AS7949 and related SAE AS21443 or SAE AS27640 bearing standards.

#### Lubrication:

BMS3-33 or MIL-PRF-23827 Type I.

#### FAA-PMA APPROVAL:

Ralmark company has FAA-PMA approval for replacement pulley part numbers listed in BACP30F standard.



\*NOTE\*  
Pulley depictions are for general information only.  
Actual product configuration may differ.

All dimensions are in inches unless otherwise noted

Boeing Standard P/N		Ralmark Company P/N		Cable Size Max (ref)	ØA	ØB	ØD	E	F		G		K	Bearing P/N
Non-Metallic	Metallic	Non-Metallic	Metallic		Outside Dia.	Groove Dia.	Bore Dia.	I.R. Width (ref)	Groove Radius		Width at Flange		Groove Width -.010	
					-.010	-.010	(ref) -.0005	I.R. Width (ref) -.005	MIN	MAX	MIN	MAX		
BACP30M SERIES														
BACP30M1C	-	R30M-1AC*	-	1/8"	8.250	7.875	.3125	.938	.072	.075	.40	.44	.270	BACB10FY05NJ
BACP30M2C	-	R30M-2C*	-	3/32"	6.218	5.906	.2500	.484	.055	.058	.33	.37	.219	BACB10FT04RJ
BACP30M3C	-	R30M-3C*	-	1/8"	5.380	5.005	.3125	.625	.072	.075	.40	.44	.270	BACB10GN3DJ
BACP30M4C	-	R30M-4C*	-	3/32"	4.218	3.906	.2500	.484	.055	.058	.33	.37	.219	BACB10FT04RJ
BACP30M5C	-	R30M-5C*	-	1/8"	6.250	5.875	.3125	.625	.072	.075	.40	.44	.270	BACB10GN3DJ
BACP30M6C	-	R30M-6C*	-	1/8"	3.380	3.005	.1900							BACB10GN1SJ
BACP30K SERIES SINGLE GROOVE														
BACP30K1SC	-	R30K-1SC*	-	3/32"	3.313	3.000	.2500	.438	.047	.050	.275	.310	.150	BACB10GN2SJ
BACP30K2SC	-	R30K-2SC*	-	3/16" Jacketed	5.500	4.875	.3125	.625	.125	.130	.493	.507	.350	BACB10GN3DJ
BACP30K3SC	-	R30K-3SC*	-	3/16" Jacketed	4.250	3.625	.3125	.625	.125	.130	.493	.507	.350	BACB10GN3DJ
BACP30K4SC	-	R30K-4SC*	-	3/16" Jacketed	3.000	2.375	.3125	.625	.125	.130	.493	.507	.350	BACB10GN3DJ
BACP30K5SC	-	R30K-5SC*	-	3/16"	5.630	5.005	.5000	.750	.094	.097	.497	.507	.265	BACB10GN4MJ
BACP30K6SC	-	R30K-6SC*	-	3/16"	4.130	3.505	.5000	.750	.094	.097	.497	.507	.265	BACB10GN5SJ
BACP30K7SC	-	R30K-7SC*	-	3/32"	2.630	2.317	.6250	.438	.047	.050	.275	.310	.150	BACB10GN5SJ
BACP30K SERIES DUAL GROOVE														
BACP30K1DC	-	R30K-1DC*	-	3/32"	2.630	2.317	.2500	.620	.047	.050	.525	.535	.150	BACB10FX4J
BACP30K2DC	-	R30K-2DC*	-	3/32"	1.755	1.443	.2500	.620	.047	.050	.525	.535	.150	BACB10FX4J

FAA-PMA Approval is indicated with \* next to part number

### Materials:

Non-metallic pulley sheaves conform to MIL-DTL-7034 and exceed the performance requirements of MIL-I-24768/16. Metallic pulley sheaves are machined from an aluminum alloy 2024-T351 conforming to SAE AMSQQA225/6, or SAE AMS4037.

### Finish:

Metallic pulley sheaves are anodized in accordance with MIL-PRF-8625, Type II, Class I.

### Bearing:

Bearings conform to the requirements of SAE AS7949 and related SAE AS21443 or SAE AS27640 bearing standards.

### Lubrication:

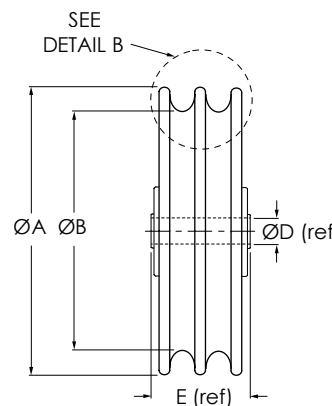
BMS3-33 or MIL-PRF-23827 Type I.

### Temperature Limits:

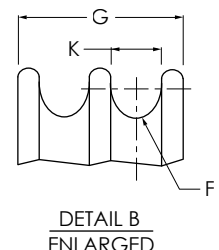
BMS3-33 Grease: -65°F to +250°F  
MIL-PRF-23827 Grease: -65°F to +250°F

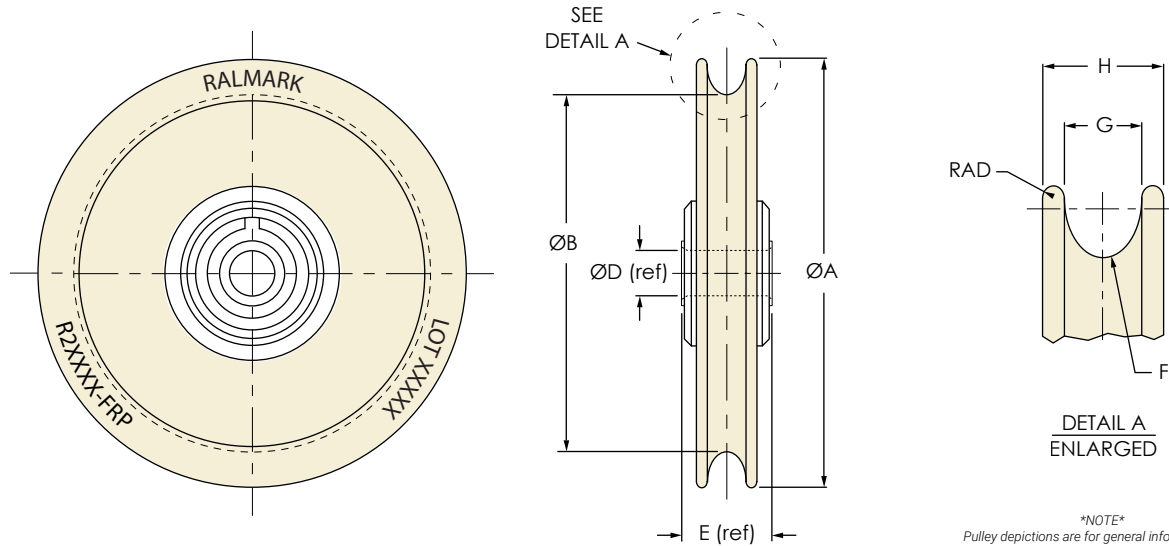
### FAA-PMA Approval:

Ralmark company has FAA-PMA approval for replacement pulley part numbers listed in BACP30M and BACP30K standard.



Double Groove  
K Series Diagram





\*NOTE\*  
Pulley depictions are for general information only.  
Actual product configuration may differ.

All dimensions are in inches unless otherwise noted

Ralmark Metallic Sheave P/N	DAC Metallic Sheave P/N	ØA	ØB	ØD	E	F	G	H	Pulley Assem. Weight MAX (lbs)	SAE Bearing P/N	Pulley Strength			
		Outside Dia.	Groove Dia.	Bore Dia. (ref)	Width I.R. (ref)	Groove Radius	Groove Width	Width at Flange Points MAX			Allowable Limit Load of Pulley (lbs)	Max Limit Load on Cable Independent of Wrap Angle (lbs)		
		±.005	±.005	-.0005	-.005									
9D0199												1/16" cable	3/32" cable	
R219A1-FRP	9D0199A1	1.312	1.000	.2500	.438	.050 -.003	.150 -.003	.310	.058	MS21443-4A MS21443-4B	480	307	460	
R219A2-FRP*	9D0199A2*	1.750	1.438	.2500	.438	.050 -.003	.150 -.003	.310	.066	MS21443-4B	480	307	460	
R219A3-FRP	9D0199A3	1.750	1.438	.6250	.438	.050 -.003	.150 -.003	.310	.096	MS21443-10	480	307	460	
R219A4-FRP*	9D0199A4*	2.625	2.312	.1900	.438	.050 -.003	.150 -.003	.310	.110	MS21443-4B	920	307	460	
R219A5-FRP	9D0199A5	2.625	2.312	.6250	.438	.050 -.003	.150 -.003	.310	.125	MS21443-10	920	307	460	
9D0200												1/8" cable	5/32" cable	3/16" cable
R220A1-FRP	9D0200A1	1.750	1.250	.3125	.625	.097 -.003	.275 -.020	.422	.070	MS21443-5A	500	830	1,040	1,250
R220A2-FRP	9D0200A2	3.000	2.500	.3125	.625	.097 -.003	.275 -.020	.422	.175	MS21443-5B	1,680	830	1,040	1,250
R220A3-FRP*	9D0200A3*	4.250	3.750	.3125	.625	.097 -.003	.275 -.020	.422	.260	MS21443-5B	2,500	830	1,040	1,250
R220A4-FRP	9D0200A4	5.500	5.000	.3125	.625	.097 -.003	.275 -.020	.422	.370	MS21443-5B	2,500	830	1,040	1,250
9D0201												3/16" cable	7/32" cable	1/4" cable
R221A1-FRP	9D0201A1	2.625	2.000	.3125	.625	.130 -.005	.360 -.020	.507	.165	MS21443-5B	2,800	2,620	3,060	3,500
R221A2-FRP	9D0201A2	4.125	3.500	.5000	.750	.130 -.005	.360 -.020	.507	.450	MS21443-8	4,900	2,620	3,060	3,500
R221A3-FRP*	9D0201A3*	5.625	5.000	.5000	.750	.130 -.005	.360 -.020	.507	.680	MS21443-8	7,000	2,620	3,060	3,500

FAA-PMA Approval is indicated with \* next to part number:

#### Materials:

Metallic pulley sheaves are machined from an aluminum alloy 2024-T351 conforming to SAE AMSQQA225/6, or SAE AMS4037.

#### Finish:

Metallic pulley sheaves are anodized in accordance with MIL-PRF-8625, Type II, Class I.

#### FAA-PMA Approval:

Ralmark company has FAA-PMA approval for replacement of specific McDonnell Douglas part numbers.

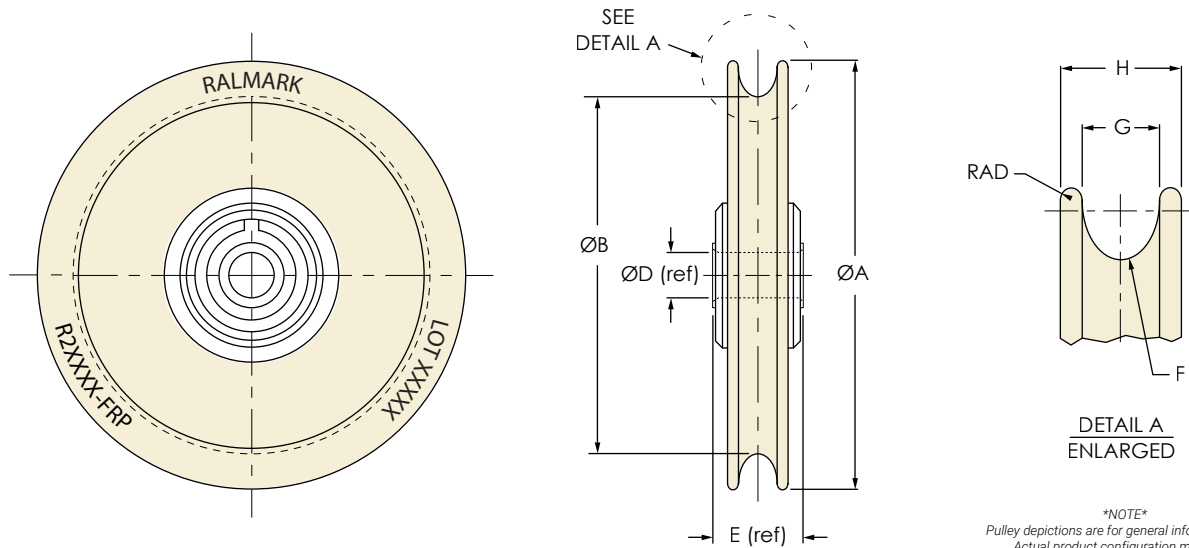
#### Bearing:

Bearings conform to the requirements of SAE AS7949 and related SAE AS21443 or SAE AS27640 bearing standards.

#### Lubrication:

MIL-PRF-81322 or MIL-PRF-23827 Type I.





\*NOTE\*  
Pulley depictions are for general information only.  
Actual product configuration may differ.

All dimensions are in inches unless otherwise noted

Lockheed Standard Non-Metallic Sheave P/N	Lockheed Standard Metallic Sheave P/N	ØA	ØB	ØD	E	F	G	H	Pulley Assem. Weight MAX (lbs)	SAE Bearing P/N	Pulley Strength			
		Outside Dia.	Groove Dia.	Bore Dia. (ref)	Width I.R. (ref)	Groove Radius	Groove Width	Width at Flange Points MAX			Allowable Limit Load of Pulley (lbs)	Max Limit Load on Cable Independent of Wrap Angle (lbs)		
		±.005	±.005	-.0005	-.005									
LS10179												1/16" cable	3/32" cable	
-	LS10179A1*	1.312	1.000	.2500	.438	.050 -.003	.150 -.003	.310	.058	MS21443-4A MS21443-4B	480	307	460	
LS10179-2*	LS10179A2*	1.750	1.438	.2500	.438	.050 -.003	.150 -.003	.310	.066	MS21443-4B	480	307	460	
LS10179-3*	LS10179A3*	1.750	1.438	.6250	.438	.050 -.003	.150 -.003	.310	.096	MS21443-10	480	307	460	
LS10179-4*	LS10179A4*	2.625	2.312	.1900	.438	.050 -.003	.150 -.003	.310	.110	MS21443-4B	920	307	460	
LS10179-5*	LS10179A5*	2.625	2.312	.6250	.438	.050 -.003	.150 -.003	.310	.125	MS21443-10	920	307	460	
LS10180												1/8" cable	5/32" cable	3/16" cable
LS10180-1*	LS10180A1*	1.750	1.250	.3125	.625	.097 -.003	.275 -.020	.422	.070	MS21443-5A	500	830	1,040	1,250
LS10180-2*	LS10180A2*	3.000	2.500	.3125	.625	.097 -.003	.275 -.020	.422	.175	MS21443-5B	1,680	830	1,040	1,250
LS10180-3*	LS10180A3*	4.250	3.750	.3125	.625	.097 -.003	.275 -.020	.422	.260	MS21443-5B	2,500	830	1,040	1,250
LS10180-4*	LS10180A4*	5.500	5.000	.3125	.625	.097 -.003	.275 -.020	.422	.370	MS21443-5B	2,500	830	1,040	1,250
LS10181												3/16" cable	7/32" cable	1/4" cable
	LS10181A1*	2.625	2.000	.3125	.625	.130 -.005	.360 -.020	.507	.165	MS21443-5B	2,800	2,620	3,060	3,500
LS10181-2*	LS10181A2*	4.125	3.500	.5000	.750	.130 -.005	.360 -.020	.507	.450	MS21443-8	4,900	2,620	3,060	3,500
LS10181-3*	LS10181A3*	5.625	5.000	.5000	.750	.130 -.005	.360 -.020	.507	.680	MS21443-8	7,000	2,620	3,060	3,500

FAA-PMA Approval is indicated with \* next to part number:

## Materials:

Non-metallic pulley sheaves conform to MIL-DTL-7034 and exceed the performance requirements of MIL-I-24768/16.  
Metallic pulley sheaves are machined from an aluminum alloy 2024-T351 conforming to SAE AMSQQA225/6, or SAE AMS4037.

## Finish:

Metallic pulley sheaves are anodized in accordance with MIL-PRF-8625, Type II, Class I.

## Bearing:

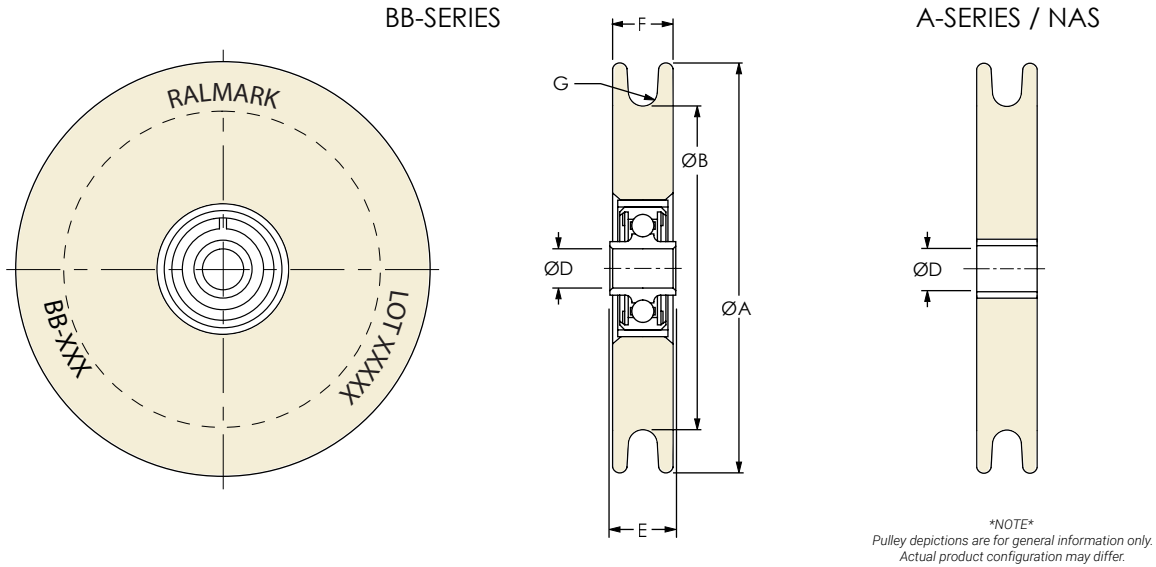
Bearings conform to the requirements of SAE AS7949 and related SAE AS21443 or SAE AS27640 bearing standards.

## Lubrication:

MIL-PRF-81322 or MIL-PRF-23827 Type I.

## FAA-PMA APPROVAL:

Ralmark company has FAA-PMA approval for replacement pulley part numbers listed in BACP30F standard.



All dimensions are in inches unless otherwise noted

Part Number	Cable Size Max (ref)	ØA	ØB	ØD	E	F	G	Bearing P/N
		Outside Diameter ±.010	Groove Diameter ±.010	Bore Diameter (ref)	Inner Race Width (ref)	Material Width +.010	Groove Radius +.003	
BB-SERIES								
BB-138	3/32"	1.250	.9375	.1900	.297	.260	.052	MS21443-3A
BB-123	3/32"	2.000	1.500	.1900	.297	.260	.052	MS21443-3A
BB-124	3/32"	2.500	2.000	.1900	.297	.260	.052	MS21443-3B
BB-131	3/16"	2.000	1.562	.2500	.484	.433	.109	MS21443-3B
BB-128	3/16"	2.500	1.875	.2500	.484	.433	.109	MS21443-4A
BB-120	3/16"	3.000	2.375	.2500	.484	.433	.109	MS21443-4A
BB-114	3/16"	3.500	2.875	.2500	.484	.433	.109	MS21443-4A
BB-108	3/16"	4.000	3.375	.2500	.484	.433	.109	MS21443-4A
A-SERIES								
A-138 NAS383-1	3/32"	1.250	.875	.255 -.004	-	.260	.052	-
A-123	3/32"	2.000	1.500	.255 -.004	-	.260	.052	-
A-124 NAS383-2	3/32"	2.500	2.000	.255 -.004	-	.260	.052	-
A-130 NAS383-3	3/16"	2.000	1.375	.380 -.004	-	.433	.109	-
A-139	3/16"	2.500	1.375	.380 -.004	-	.433	.109	-
A-120	3/16"	3.000	2.375	.380 -.004	-	.433	.109	-
A-114 NAS383-4	3/16"	3.500	2.875	.380 -.004	-	.433	.109	-
A-108	3/16"	4.000	3.375	.380 -.004	-	.433	.109	-
A-105	3/16"	5.000	4.375	.380 -.004	-	.433	.109	-

#### Materials:

Non-metallic pulley sheaves conform to MIL-DTL-7034 and exceed the performance requirements of MIL-I-24768/16.

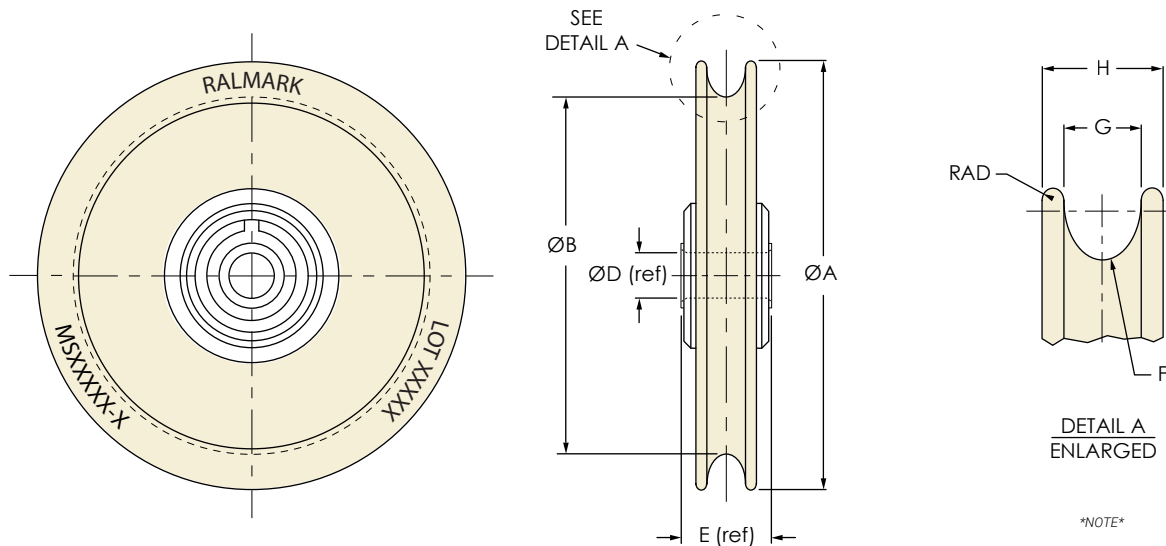
#### Lubrication:

BB-SERIES: MIL-PRF-81322 or MIL-PRF-23827 Type I.

#### Bearing:

BB-SERIES: Bearings conform to the requirements of SAE AS7949 and related SAE AS21443 or SAE AS27640 bearing standards.

A-SERIES: Graphite impregnated bronze sleeve bearings.



*All dimensions are in inches unless otherwise noted*

Part Number	Cable Size (ref)	ØA	ØB	ØD	E	F	G	H	Pulley Assem. Weight MAX (lbs)	Allowable Limit Load of Pulley (lbs)	SAE Bearing P/N
		Outside Dia. ±.005	Groove Dia. ±.005	Bore Dia. (ref) -.0005	Width I.R. (ref) -.005	Groove Radius	Groove Width	Width at Flange Points MAX			
M-1B	1/16	1.250	0.972	0.1900	0.297	.055 ±.003	.060 ±.005	.250 ±.012	0.026	300	MS21443-3A
M-2B	3/32	2.500	2.222	0.1900	0.297	.055 ±.003	.060 ±.005	.250 ±.012	0.075	500	MS21443-3B
M-3B	1/8	2.000	1.510	0.2500	0.484	.112 ±.003	.086 ±.006	.422 ±.012	0.090	600	MS21443-4C
M-4B	5/32	3.500	3.010	0.2500	0.484	.112 ±.003	.086 ±.006	.422 ±.012	0.200	1,200	MS21443-4C
M-5B	3/16	5.000	4.374	0.375	0.620	.145 ±.005	.092 ±.007	.507 ±.014	0.500	3,000	MS27640-6
M-6B	7/32	6.000	5.374	0.375	0.620	.145 ±.005	.092 ±.007	.507 ±.014	0.660	4,000	MS27640-6

### Materials:

Non-metallic pulley sheaves conform to MIL-DTL-7034 and exceed the performance requirements of MIL-I-24768/16. Metallic pulley sheaves are machined from an aluminum alloy 2024-T351 conforming to SAE AMSQQA225/6, or SAE AMS4037.

### Finish:

Metallic pulley sheaves are anodized in accordance with MIL-PRF-8625, Type II, Class I.

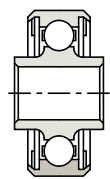
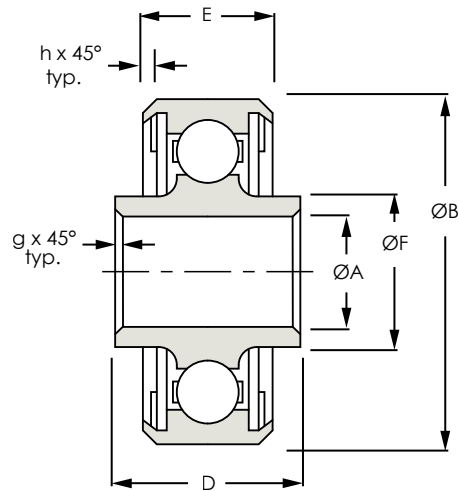
### Bearing:

Bearings conform to the requirements of SAE AS7949 and related SAE AS21443 or SAE AS27640 bearing standards.

### Lubrication:

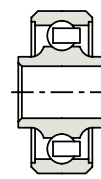
MIL-PRF-81322 or MIL-PRF-23827 Type I.





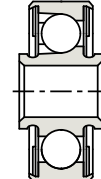
SINGLE ROW  
CAGE TYPE

P4K KP3K  
P5K KP3AK  
P10K KP4K  
W4AK



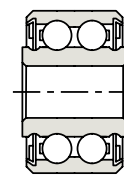
SINGLE ROW  
NYLON CAGE

K3K  
K3AK  
K3K



SINGLE ROW  
FULL BALL  
COMPLEMENT

P8  
KP6



DOUBLE ROW  
CAGE TYPE

PD5K

All dimensions are in inches unless otherwise noted

SAE BEARING P/N	Bearing P/N Reference	ØA	ØB	D	E	ØF	G	H	Radial Limit Load Rating (lbs)	Thrust Limit Load Rating (lbs)
		Bore Diameter +.0000 -.0005	Outside Diameter +.0000 -.0005	Inner Ring Width +.000 -.005	Outer Ring Width +.0000 -.005	Inner Ring Shoulder Diameter approx.	Inner Ring Chamfer +.015 -.000	Outer Ring Chamfer +.015 -.000		
MS21443-3A	KP3AK	.1900	.6250	.297	.234	.297	.005	.016	705	385
MS21443-3B	KP3K	.1900	.7774	.297	.270	.332	.005	.024	1,090	600
MS21443-4A	W4AK	.2500	.7500	.438	.312	.372	.005	.016	1,090	600
MS21443-4C	KP4K	.2500	.9014	.484	.335	.390	.005	.034	1,710	800
MS21443-4B	P4K	.2500	.8750	.438	.375	.423	.005	.022	1,710	800
MS21443-5A	P5K	.3215	.8750	.625	.375	.455	.005	.022	1,710	800
MS21443-5B	PD5K	.3125	.9375	.625	.563	.455	.005	.022	3,420	1,030
MS21443-8	P8	.5000	1.6875	.750	.563	.768	.005	.032	11,800	5,200
MS21443-10	P10K	.6250	1.1875	.438	.375	.768	.005	.022	2,440	1,100
MS27640-6	KP6	.375	1.4375	.620	.469	.591	.015	.032	7,910	3,500

All bearings used in specification MIL-DTL-7034 pulleys are precision type aerospace bearings for airframe control. These bearings have one piece inner and outer raceways and conform to the SAE AS7949 specification. The KP6 and P8 heavy duty bearings have a full ball complement and other "KP" and "P" numbered bearings with the "K" suffix have ball cages. These bearings have contact seals and are lubricated according to current specification requirements.

Ralmark also offers a wide variety ball bearings for commercial, industrial and specialty pulley applications. Among our various offerings we can provide commercial off-shelf bearings, flight control bearings with non-standard lubrication, and graphite impregnated bronze bushings.

Special grease available when required.



The experienced engineering and production staff at Ralmark Company are capable of bringing customer specified pulley designs to life. Whether it be a small batch or full production run quantities, we deliver product to your exact specifications for performance, reliability, and safety.

By maintaining a close relationship with our suppliers, any aspect of your custom pulley can be modified such as sheave material, specialty lubrication, groove configuration, ball bearings, and more.

Our team of highly motivated and dedicated personnel have extensive experience to establish us as an industry leader in custom pulley manufacturing.

## CAPABILITIES

Ralmark Company has automated turning capabilities for high volume pulley fabrication utilizing aluminum, ferrous metals, engineered laminated phenolic and various grades of industrial plastics. Automated secondary operation equipment is available for drilling, milling and assembly. Tooling and fixtures are developed in-house saving cost and reducing lead times.

Ralmark's manufacturing process is developed to accommodate a wide variety of pulley products from 1 inch to 14 inches outside diameter. Our business management system is certified to AS9100 Rev D and ISO9001:2015. Therefore, our products are designed, planned, and produced to meet or exceed customer requirements. Our Modern manufacturing and testing facility is maintained to ensure functional performance and application reliability.

Regardless of the intended application of our products, Ralmark's routine testing of new materials and concurrent inspection of key characteristics assures each part will perform as expected. Qualification and Quality Conformance testing is done in strict conformance with MIL-DTL-7034 and to referenced Standards and Specifications.





**Phenolic** – Material is constructed from a woven cotton fabric with a phenolic resin. Phenolic is intended for mechanical applications of high strength, wearability, and high impact strength. This material is commonly used military and commercial aviation as well as in industrial applications that require high performance characteristics.

**Aluminum** – This material most frequently utilized in sheave applications. It is lightweight, durable, greater tensile strength, and resistant to higher temperatures. It's tensile strength capacity makes it an ideal selection for higher load capacities. Aluminum is a stable material if your application is involved working in a high temperature environment. Aluminum is a durable and stable material with regards to dimensions. Aluminum pulleys are common in aerospace, military, theatrical, and a wide array of industrial applications.

**Plastics** – Sometimes this may be the least durable material among the list, but plastics are still preferred and have many applications where it can be used. Plastics are also very light, so they make it an ideal choice for lighter projects. Unlike steel and aluminum plastics do not oxidize. Therefore, you do not have to worry about special process coating protection. Common name of plastic materials that sheaves can be designed from: Acetal, Delrin, Nylon, Nylon 6/6, and UHMW to name a few. Plastic pulleys are widely used in all applications that can be imagined.

**Stainless Steel** – This material has many desirable properties that contribute to the widespread application of sheaves across many industrial sectors. Above all, because of its chromium content, it is extremely resistance to corrosion. The most common grades are type 304 and 316 that consist of austenitic chromium nickel alloys. These grades are used to support products that are used in food preparation equipment, laboratory equipment, medical equipment, marine applications, textile, and chemical processing equipment.

**Finishes** – We can offer multiple plating and finishing process for your sheaves. Our supply network includes NADCAP accredited coaters, and experienced specialists in many coating technologies. Whether it's a hard-coat anodize or a MIL-SPEC epoxy, we can help. Some of the coating and finishes we offer are listed below. If you don't see what you need call us and we will do our best to adapt to your finishing requirements.

- Anodize
- Steel Conversion Coating
- Chemical Agent Resistant Coatings (CARC)
- Hard-Coat Anodize
- Passivation
- Power Coat
- Aluminum Conversion Coating
- Ceramic Coating



# RALMARK

C O M P A N Y



## PRODUCT CATALOG

P.O. BOX 1507 KINGSTON, PA 18704

PHONE: (570) 288-9331

FAX: (570) 288-0902

[WWW.RALMARK.COM](http://WWW.RALMARK.COM)