

# TOLERANCES & GUIDELINES FOR ASSEMBLIES



## STANDARD LENGTH TOLERANCES FOR CABLE ASSEMBLIES AND CUT-LENGTH CABLE

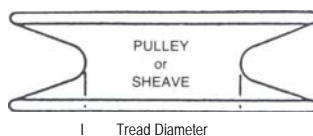
Liberal tolerances allow a faster rate of production and lower cost. The "standard" tolerances shown in the chart normally permit a cost saving over "close" tolerances. Tolerances closer than those shown can be supplied at a higher cost upon (1) reviewing your specific requirements and (2) mutual agreement regarding methods of inspection.

Tolerance in Inches Plus or Minus			
Length in Feet	Aircraft Assys.	Up to 5/16"	Above 5/16"
0 – 6	.063"	.125"	.250"
Over 6 – 10	.094"	.187"	.375"
Over 10 – 20	.125"	.250"	.500"
Over 20 – 40	.187"	.375"	.750"
Over 40 – 60	.375"	.500"	1.00"
Over 60 – 80	.438"	.875"	1.75"
Over 80 – 100	.500"	1.00"	2.00"
>100	.563"	1%*	2%*

\* Percentage per foot – Round tol. up to next whole inch

## CABLE DIAMETER RELATED TO PULLEY OR SHEAVE DIAMETER

Cable or wire rope will give increased service if (1) it operates over the largest possible pulley or sheave diameter and (2) it is properly supported in the pulley or sheave groove. Working life of the individual wire strands is greatly reduced as the pulley or sheave diameter is diminished. The chart shows minimum tread diameters over which various sizes and constructions of cable should operate.



When designing a pulley groove, the groove should be 150% of the maximum tolerance of the wire rope.

### EXAMPLE:

A 1/8" 7 x 19 aircraft cable has a minimum tolerance of .014" (.125 minimum, .139 maximum). Multiplying the .014" maximum tolerance by 150% = .021". Adding .021" to .139" maximum diameter = .160" which should be the pulley groove dimension.



## OUTSIDE-DIAMETER TOLERANCES FOR PLASTIC COATED CABLE

Inner Cable Diameter in Inches	Coated to Outside-Diameter in Inches	Standard Tolerance Of O.D. in Inches
3/64 to 1/8	up to 1/4 max.	± .007
5/32 to 1/4	up to 3/8 max.	± .010
9/32 to 3/8	up to 1/2 max.	± .015
7/16 to 1/2	up to 3/4 max.	± .020

## MINIMUM TREAD DIAMETER FOR PULLEYS OR SHEAVES

Cable Diameter In inches	Ratio of cable diameter to pulley diameter:					
	Desirable Minimum in Inches			Critical Minimum in Inches		
	42:1	24:1	12:1	28:1	18:1	10:1
	6 x 7 or 7 x 7	6 x 19 or 7 x 19	6 x 31 or 7 x 31 or 6 x 37	6 x 7 or 7 x 7	6 x 19 or 7 x 19	6 x 31 or 7 x 31 or 6 x 37
1/16	2-5/8			1-3/4		
3/32	2-15/16	2-1/4	—	2-5/8	1-11/16	
1/8	5-1/4	3	—	3-1/2	2-1/4	
5/32	6-9/16	3-3/4	—	4-3/8	2-7/8	
3/16	7-7/8	4-1/2	—	5-1/4	3-3/8	
7/32	9-3/16	5-1/4	—	6-1/8	4	
1/4	10-1/2	6	3	7	4-1/2	2-1/2
5/16	13-1/8	7-1/2	3-3/4	8-3/4	5-5/8	3-1/8
3/8	15-3/4	9	4-1/2	10-1/2	6-3/4	3-3/4
7/16	18-3/8	10-1/2	5-1/4	12-1/4	7-7/8	4-3/8
1/2	21	12	6	14	9	5

When designing aircraft control cable systems, minimum ratio of cable diameter to pulley diameter is 35:1.

Pre-stretched aircraft cable, both stainless steel and galvanized, are available in 1/16", 3/32" and 1/8" diameter at 10% added charge.

