

SPECIFICATIONS FOR CATALOG SERIES KEYLESS LOCKING ASSEMBLIES

CALCULATION OF MINIMUM HUB DIAMETER DM

By installing Climax locking assemblies surface pressures P_s and P_h are exerted along the shaft and hub mating surfaces. The effect of this pressure must be considered in choosing appropriate hub material and minimum hub thickness. The information below is provided to assist you in calculating the minimum hub diameter DM for following three application types. Factor C is based on application type.

For minimum hub diameter DM calculation the following formula must be applied:

$$DM \geq D \cdot K$$

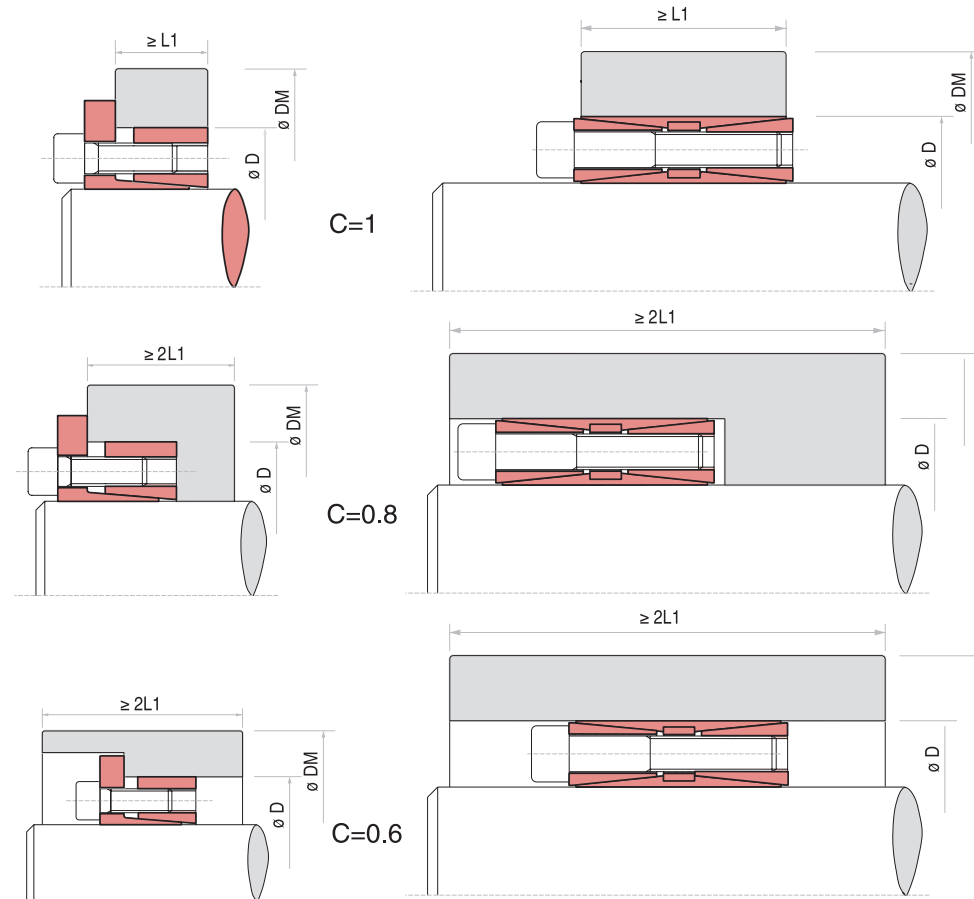
where K is equal to:
$$K = \sqrt{\frac{\sigma_{02} + (C \cdot Ph)}{\sigma_{02} - (C \cdot Ph)}}$$

Example:

Locking Assembly type CLIMAX C133E-243 \varnothing 2 7/16 x 3.740.
 Hub pressure $P_h = 19146$ psi (see table page 6).
 Hub material 1045 Annealed (yield strength: $\sigma_{02} = 50000$ psi).
 Hub length and shape equivalent $C = 1$.

$$DM \geq 3.740 \cdot 1.497 \geq 5.599 \text{ inch}$$

Common Material	
Yield Strength (psi)	
1045 Annealed - 50000	4150 Hardened - 120000
Ductile Iron, Ferrite - 40000	Inconel 600 - 35000
Aluminum 356 Cast - 22000	



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ADVANTAGES

These shaft to hub locking devices are unique keyless, frictional devices that provide an easily adjustable and releasable mechanical shrink fit. They offer all the advantages of a shrink fit with none of their problems. Axial or torque loads are transmitted by radial clamping pressures and friction between the functional surfaces of the shaft, hub and locking assembly. They are capable of high torques and axial loads and offer easy installation and adjustments.

Tolerance Charts

ØD - Hub Diameter (inch)

Over	0.118	0.236	0.394	0.709	1.181	1.969	3.150	4.724
Including	0.236	0.394	0.709	1.181	1.969	3.150	4.724	7.087

ØD - Hub Diameter (mm)

Over	3	6	10	18	30	50	80	120
Including	6	10	18	30	50	80	120	180
H6 [-0.0] inch	+0.0003	+0.0004	+0.0004	+0.0005	+0.001	+0.001	+0.001	+0.001
mm	+0.01	+0.01	+0.01	+0.01	+0.02	+0.02	+0.02	+0.03
H7 [-0.0] inch	+0.001	+0.001	+0.001	+0.001	+0.001	+0.001	+0.001	+0.002
mm	+0.01	+0.02	+0.02	+0.02	+0.03	+0.03	+0.04	+0.04
H8 [-0.0] inch	+0.001	+0.001	+0.001	+0.001	+0.002	+0.002	+0.002	+0.002
mm	+0.02	+0.02	+0.03	+0.03	+0.04	+0.05	+0.05	+0.06
H11[-0.0]inch	+0.003	+0.004	+0.004	+0.005	+0.006	+0.007	+0.009	+0.010
mm	+0.08	+0.09	+0.11	+0.13	+0.16	+0.19	+0.22	+0.25

ØD - Hub Shaft (inch)

Over	0.118	0.236	0.394	0.709	1.181	1.969	3.150
Including	0.236	0.394	0.709	1.181	1.969	3.150	4.724

ØD - Hub Shaft (mm)

Over	3	6	10	18	30	50	80	
Including	6	10	18	30	50	80	120	
f7	inch	-0.0004	-0.0005	-0.0006	-0.0008	-0.0010	-0.0012	-0.0014
	mm	-0.01	-0.01	-0.02	-0.02	-0.03	-0.03	-0.04
		-0.02	-0.03	-0.03	-0.04	-0.05	-0.06	-0.07
g6	inch	-0.0002	-0.0002	-0.0002	-0.0003	-0.0004	-0.0004	-0.0005
	mm	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
		-0.004	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
		-0.01	-0.01	-0.02	-0.02	-0.03	-0.03	-0.03
h6[+0.0]	inch	-0.0003	-0.0004	-0.0004	-0.0005	-0.001	-0.001	-0.001
	mm	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02
h8[+0.0]	inch	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002
	mm	-0.02	-0.02	-0.03	-0.03	-0.04	-0.05	-0.05
h11[+0.0]	inch	-0.003	-0.004	-0.004	-0.005	-0.006	-0.007	-0.009
	mm	-0.08	-0.09	-0.11	-0.13	-0.16	-0.19	-0.22
j6	inch	+0.0002	+0.0003	+0.0003	+0.0004	+0.0004	+0.0005	+0.0005
	mm	-0.0001	-0.0001	-0.0001	-0.0002	-0.0002	-0.0003	-0.0004
		+0.01	+0.01	+0.01	+0.01	+0.01	+0.01	+0.01
		-0.002	-0.002	-0.003	-0.004	-0.01	-0.01	-0.01

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TECHNICAL INFORMATION