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Interference Press Fit Cylinder Design Calculator			
Blocks shown as light blue are editable			
Outer hub diameter d_o =	2.0000	in	
Outer hub inner diameter d_h =	1.4000	in	
shaft outer diameter d_s =	1.5100	in	
shaft inner diameter d_i =	1.0000	in	
radius within outer cylinder material r_o =	0.8000	in	
radius within inner cylinder material r_i =	0.5500	in	
contact surface diameter, in compression d_c =	1.5050	in	
contact pressure applied p_c =	3.000	psi	
modulus of elasticity E =	42,000	psi	
modulus of elasticity hub E_h =	65,000	psi	
modulus of elasticity shaft E_s =	65,000	psi	
modulus of elasticity cast iron hub on steel shaft E_o =	32,000	psi	
modulus of elasticity steel shaft on cast iron hub E_c =	36,000	psi	
Poisson’s ratio v =	0.350	-	
Poisson’s ratio v_s =	0.350	-	
Poisson’s ratio v_h =	0.350	-	
Calculated Results			
change in diameter of the inner member Δd_i =	-0.00024	in	Eq. 2
change in diameter of the outer member Δd_o =	0.00043	in	Eq. 3
original difference in diameters δ =	0.00019	in	Eq. 4
Δd_s =	0.00015	in	Eq. 5a
Δd_h =	0.00025	in	Eq. 5b
(exact) total change dia. of hub and hollow shaft δ =	0.00040	in	Eq. 5
(approx) total change dia. of hub and hollow shaft δ =	0.00043	in	Eq. 5c
shrinkage stress in the band σ_θ =	5.19006	psi	Eq. 6
Calculated contact pressure both materials same P_c =	0.838	psi	Eq. 7
tangential stress at radius r_o of outer cylinder $\sigma_{\theta\text{-}o}$ =	10.03610	psi	Eq. 8
tangential stress at radius r_i of inner cylinder $\sigma_{\theta\text{-}i}$ =	-7.15332	psi	Eq. 9
radial stress at radius r_o of outer cylinder $\sigma_{r\text{-}o}$ =	-2.20305	psi	Eq. 10
radial stress at radius ri of inner cylinder $\sigma_{r\text{-}I}$ =	0.93224	psi	Eq. 11
tangential stress outside dia. of outer cylinder $\sigma_{\theta\text{-}oo}$ =	7.83305	psi	Eq. 12
tangential stress inside dia. of outer cylinder $\sigma_{\theta\text{-}oi}$ =	10.83305	psi	Eq. 13
tangential stress outside dia. of inner cylinder $\sigma_{\theta\text{ -}io}$ =	-7.74299	psi	Eq. 14
tangential stress inside dia. of inner cylinder $\sigma_{\theta\text{-}ii}$ =	-10.74299	psi	Eq. 15
radial stress outside dia. of outer cylinder σ_r =	0.00000	psi	Eq. 16
radial stress inside dia. of outer cylinder $\sigma_{r\text{-}oi}$ =	-3.00000	psi	Eq. 17
radial stress outside dia. of inner cylinder $\sigma_{r\text{-}oi}$ =	-3.00000	psi	Eq. 18
radial stress inside dia. of inner cylinder $\sigma_{r\text{-}ii}$ =	0.00000	psi	Eq. 19
tangential stress cast-iron hub on steel shaft σ_θ =	3.33405	psi	Eq. 20
allowable stress for brittle materials σ_{all} =	1.58133	psi	Eq. 21