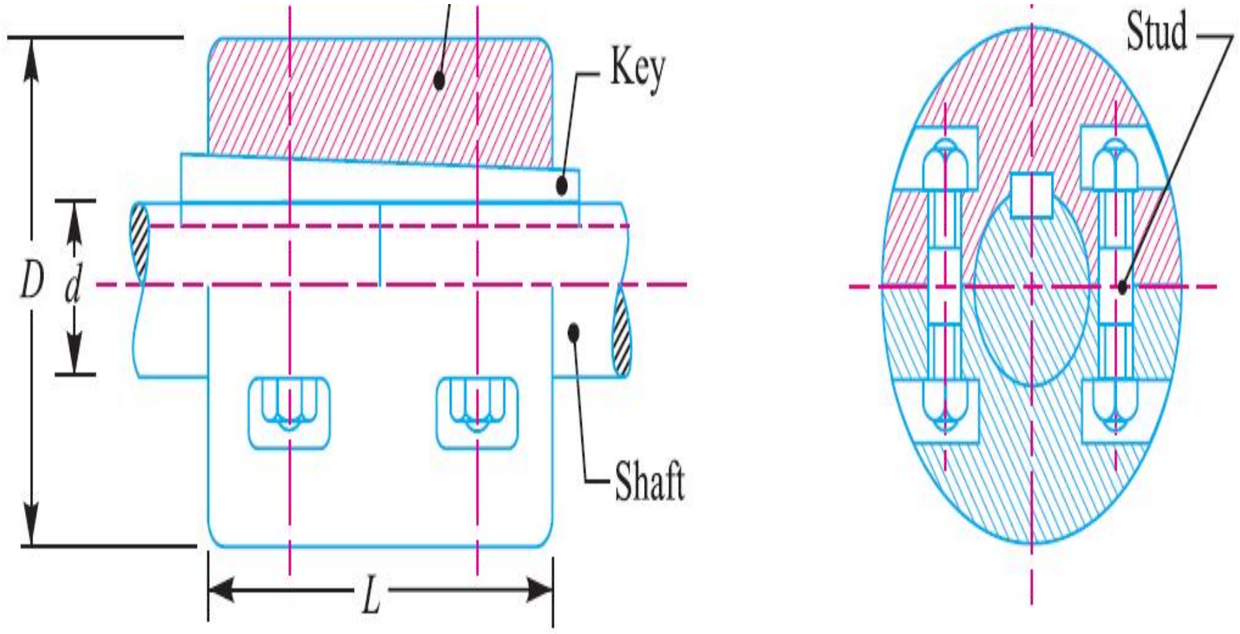
Design of Split -Muff Coupling

Source:Text book by RS Khurmi



Split Muff Coupling

Design of Rigid Flange Coupling

(d): Diameter of shaft

(D):Diameter of Hub

(w):Width of key

(h):Height of key

(l):Length of key

(L):Length of hub

(D):Outside diameter

(d_c) :Core diameter

(d_b) :Nominal diameter

Design of Shaft

Parameter to be calculated	Stress Induced	Equation
Diameter of shaft (d):	Maximum shear stress (τ_{max})	$\tau_{max} = \frac{16T}{\pi d^3}$

Source:Indiamart.com

Shaft

Design of Key

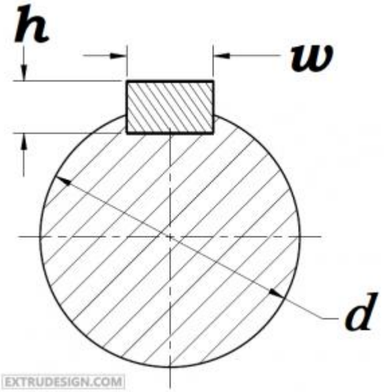
Parameter to be calculated	Stress Induced	Equation
Key dimensions:	By proportion	w=d/4
i. Width of key (w)	By proportion	h = (2/3)w
ii.Height of key (h)	· By proportion	for rectangular key
iii.Length of key (l)	· Direct shear stress (τ_d)	h=w
		for square key
	· Crushing stress (σ_c)	l =L/2 = 1.75d

$$\tau_d = \frac{2T}{dwl}$$

$$\sigma_c = \frac{4T}{dlh}$$

Source:Researchgate.com

Rectangular Key



Design of Hub

Parameter to be calculated	Stress Induced	Equation
Dimensions of hub:		
i. Length of hub (l)	By proportion	l is taken as length of key
ii.Outside diameter (D)	By proportion	D=2d
iii.Stress in hub	Torsional shear stress (τ_h)	$\tau_h = \frac{16T}{\pi D^3(1-K^4)}$

SourceIndianmart.com

Split Muff

Design of Sleeve Bolt

Parameter to be calculated	Stress Induced	Equation
Dimensions of clamping bolts:		
i. Core diameter(d_c)	Tensile stress(σ_t)	$d_c = \sqrt{\frac{16T}{\pi^2 \mu N d \sigma_t}}$
i. Nominal diameter (d_b)	By proportion	$d_b = d_c / 0.84$

Source:indianmart.com

Bolts and Nuts

References

- https://www.machinedesign.com/archive/article/21817862/best-sites-on-the-web
- https://www.machinedesignonline.com
- https://www.quora.com/What-are-the-websites-a-machine-design-lover-should-visit
- https://imechanica.org/files/theories%20of%20failure.pdf