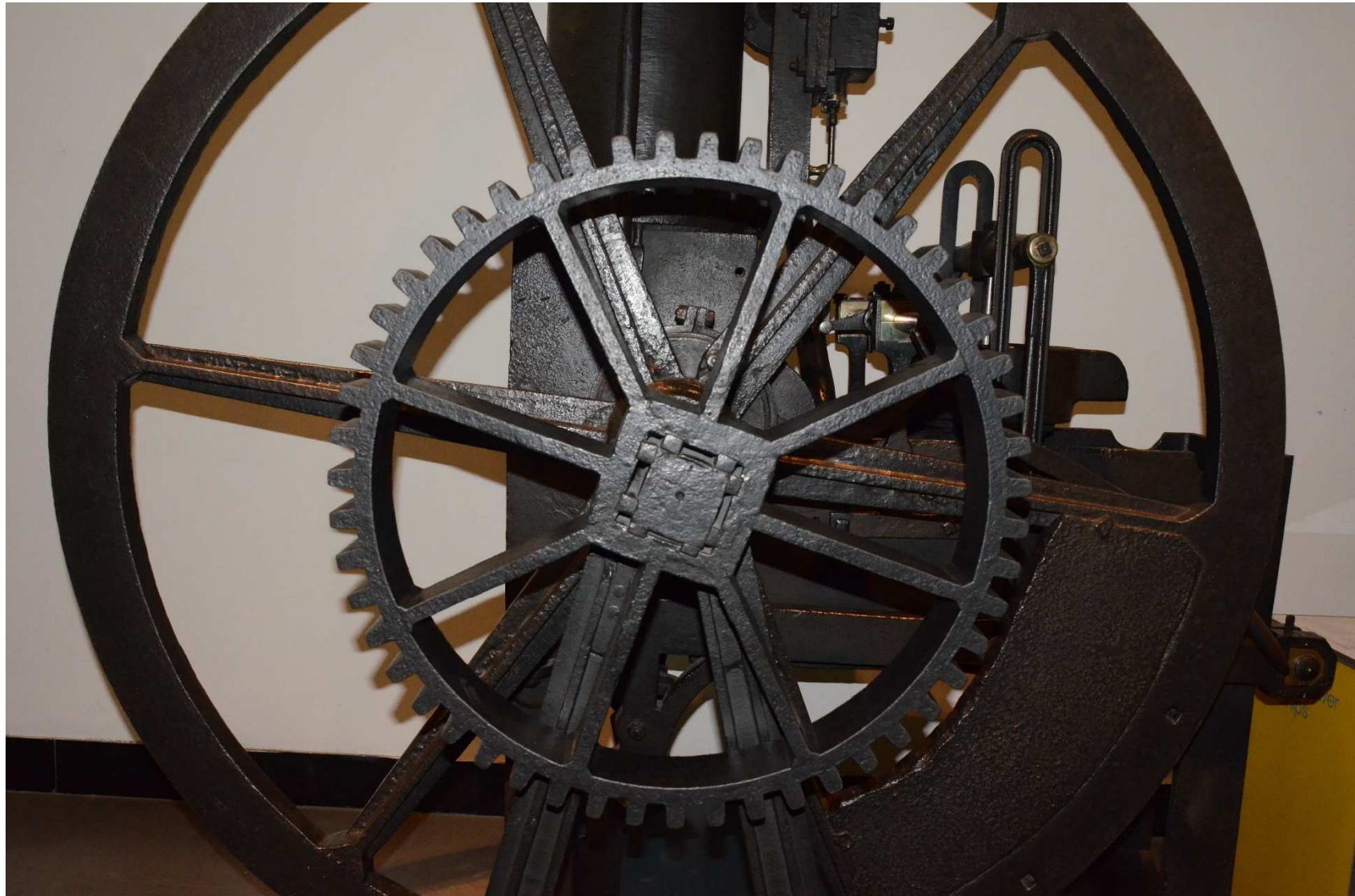




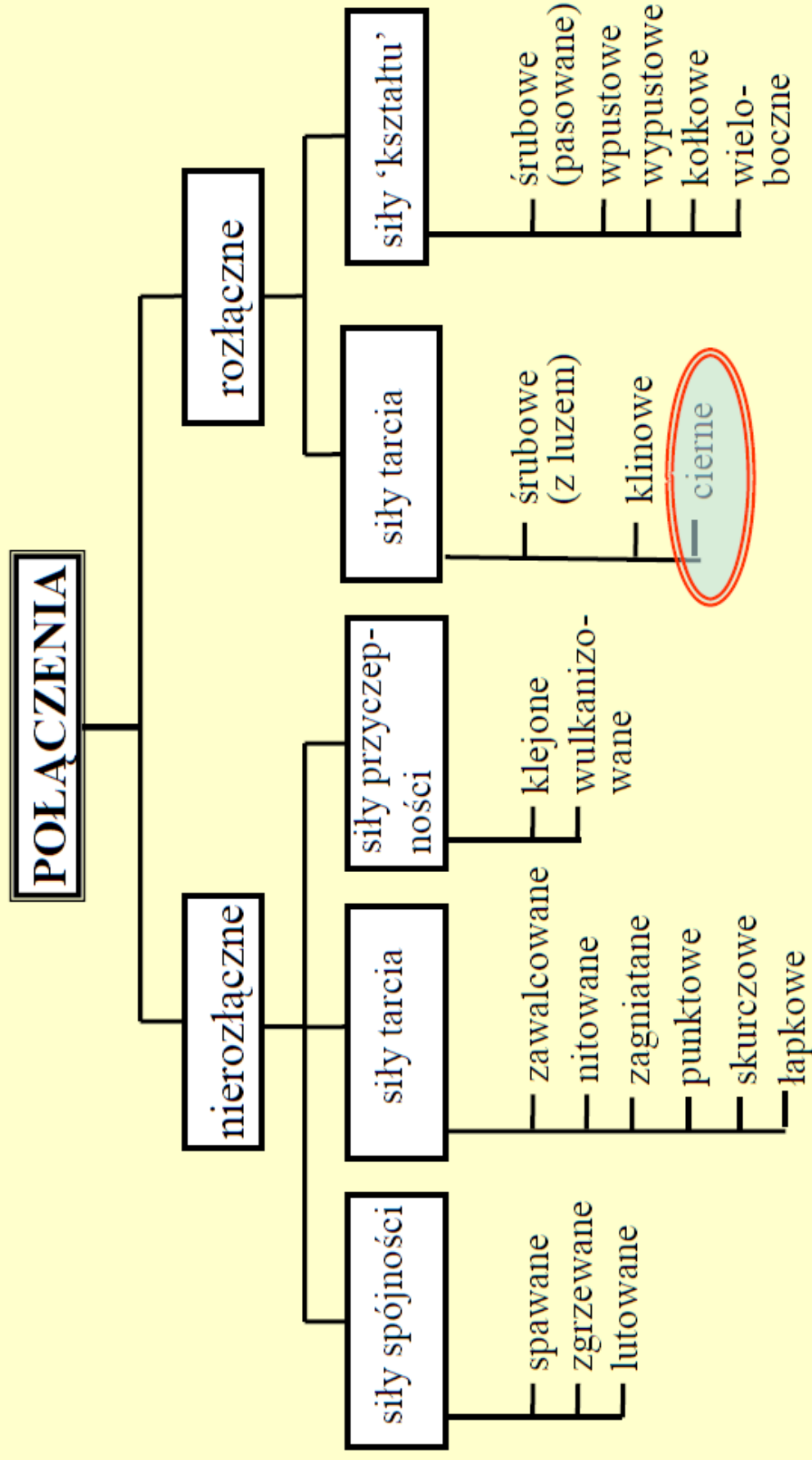
Połączenia wału z piastą  
Podstawy konstrukcji maszyn  
Wykład nr. 9



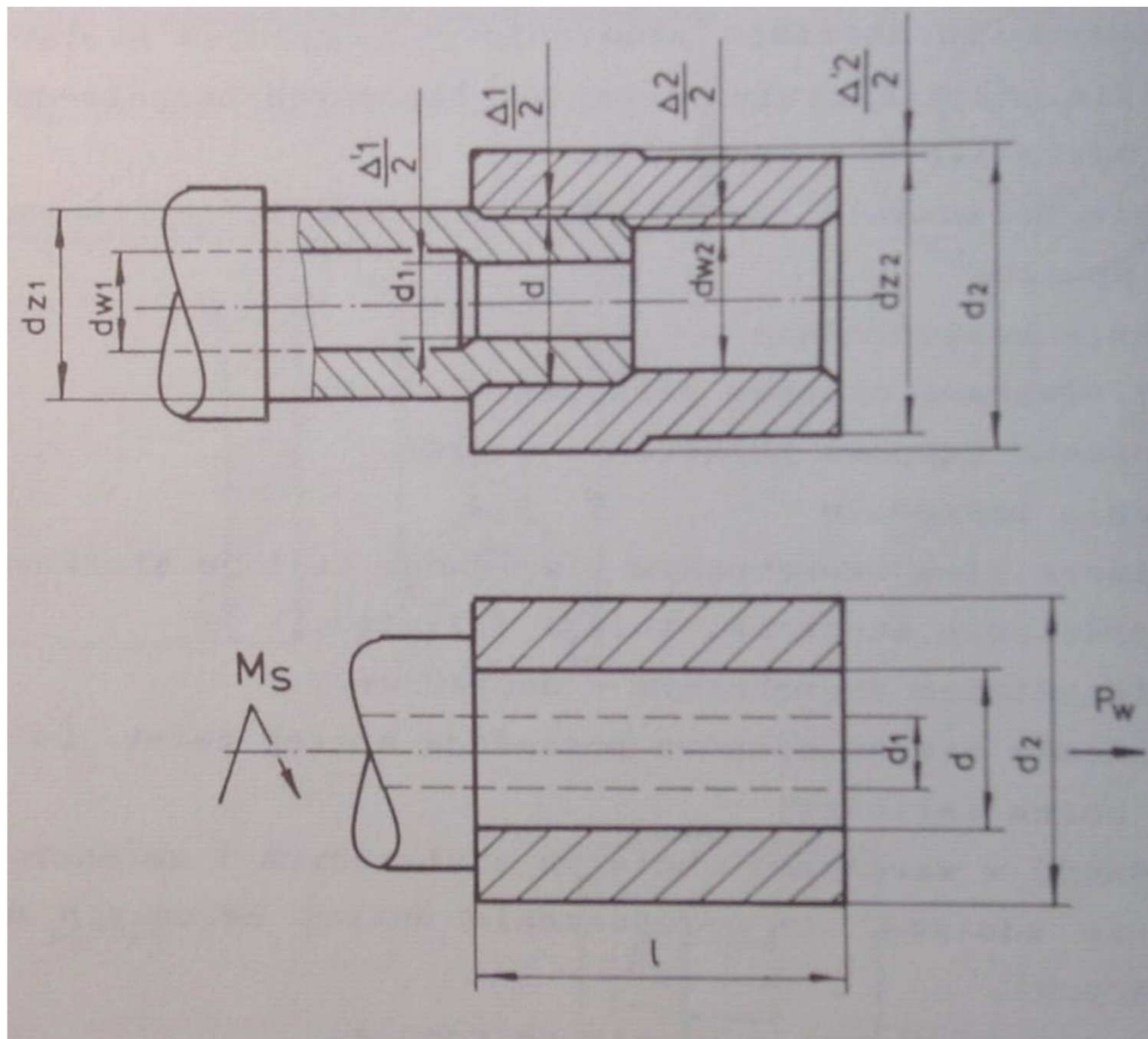
## Połączenia wału z piastą



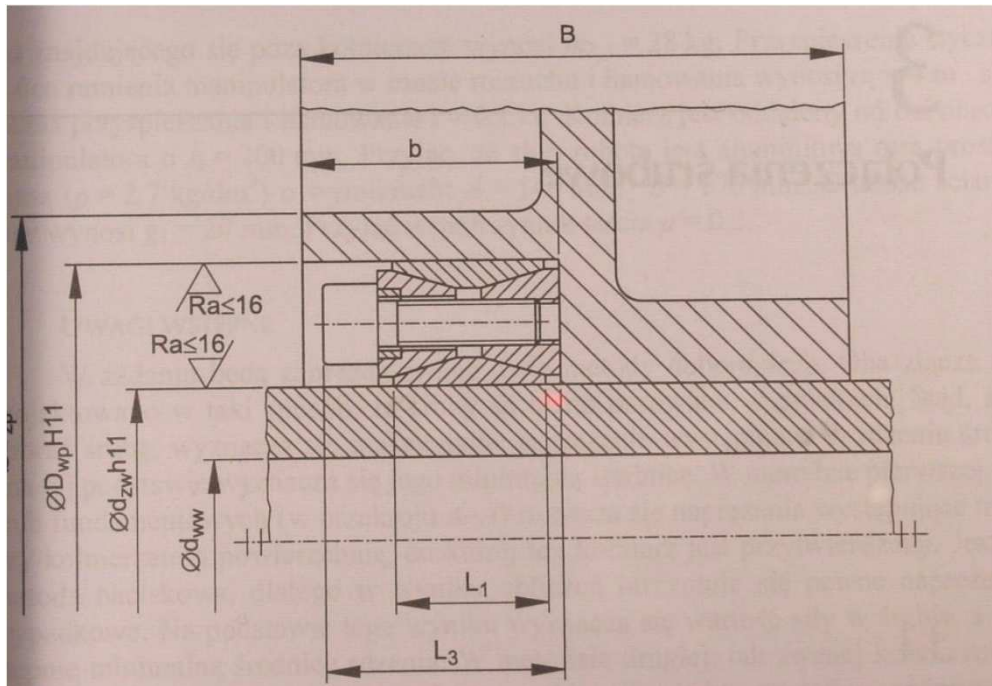
# Klasyfikacja połączeń maszynowych



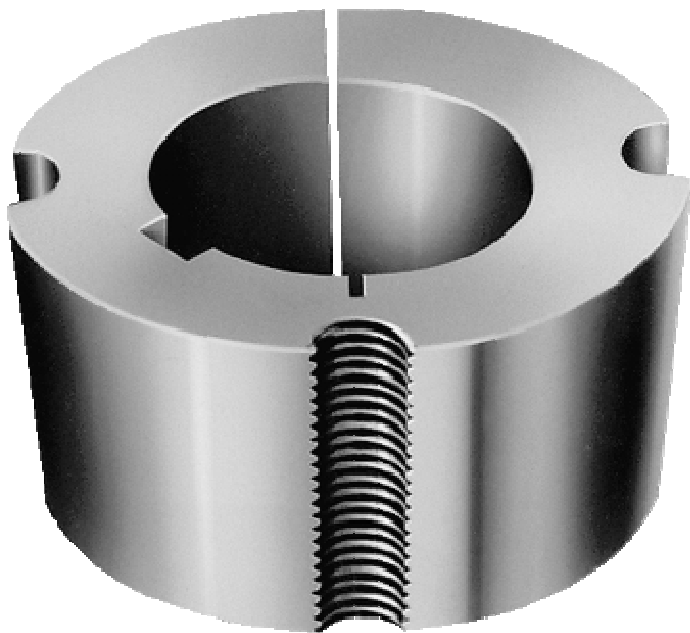
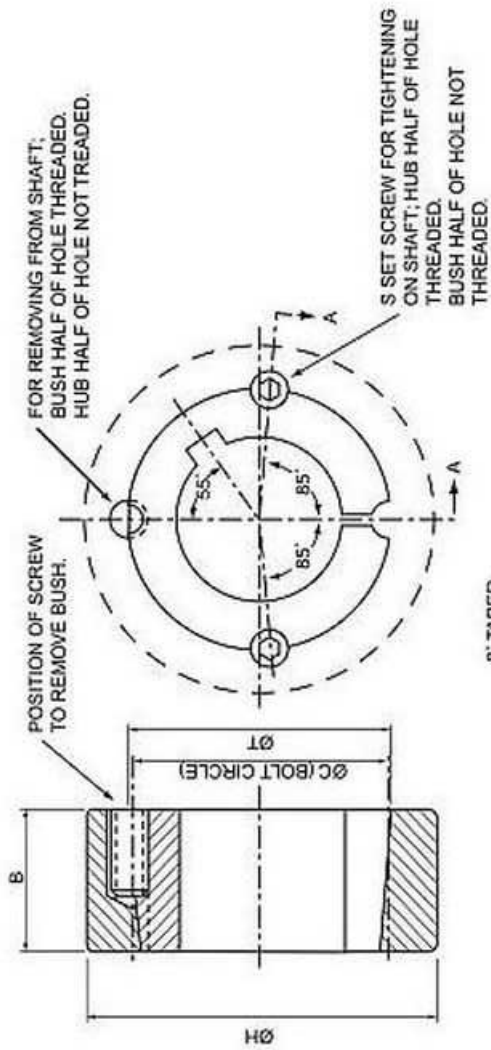
Połączenie walcowe cierne (zmontowane wciskowo lub termicznie)



# Inne cierne np. „taper bush”



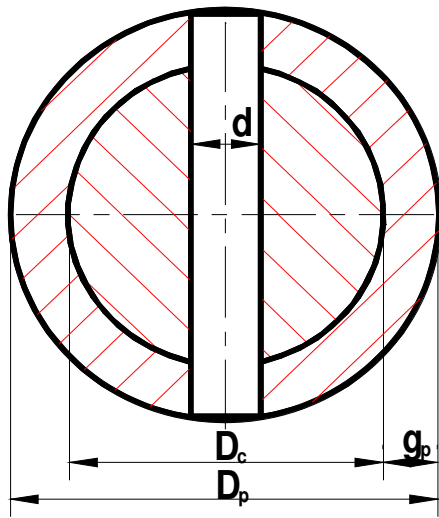




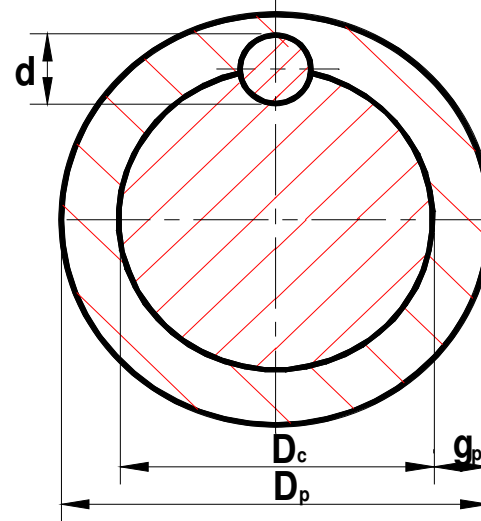
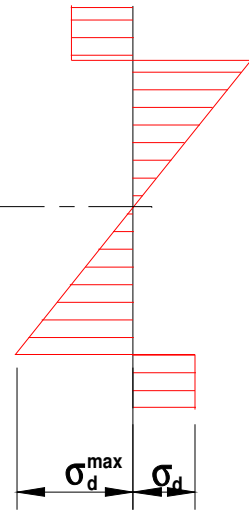
Zacisk za pomocą śrub – połączenie cierne



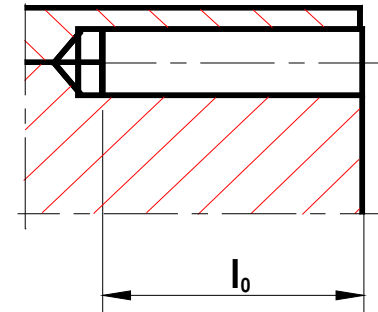
## Połączenia kołkowe



Kołek promieniowy

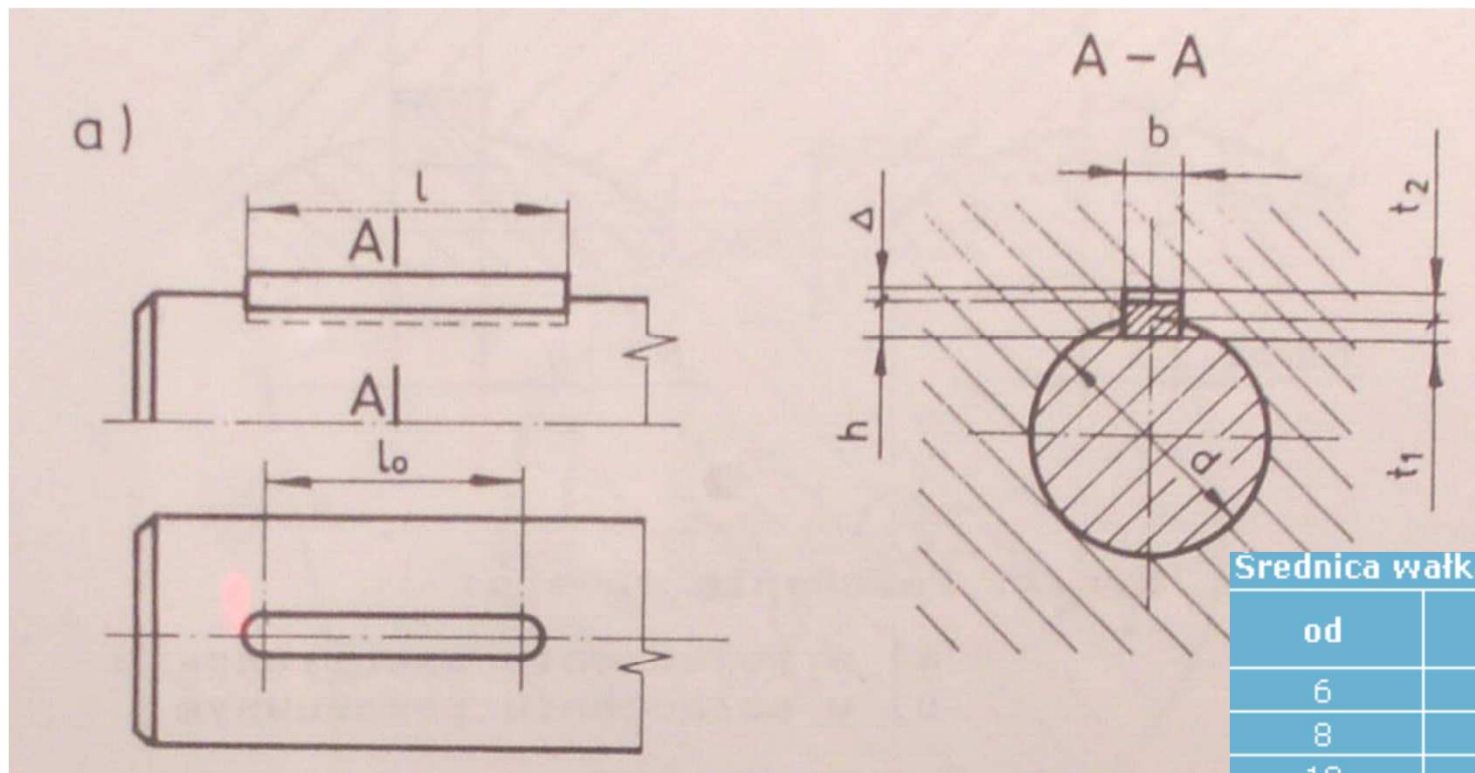


Kołek wzdłużny





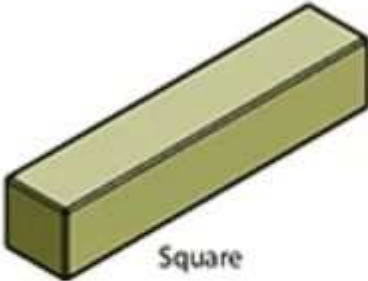
## Połączenia wpustowe



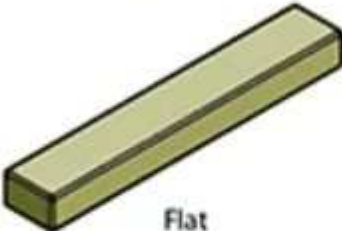
Średnica wałka $d$ [mm]		$b \times h$
od	do	
6	8	2 × 2
8	10	3 × 3
10	12	4 × 4
12	17	5 × 5
17	22	6 × 6
22	30	8 × 7
30	38	10 × 8
38	44	12 × 8
44	50	14 × 9
50	58	16 × 10
58	65	18 × 11
65	75	20 × 12
75	85	22 × 14
85	95	25 × 14
95	110	28 × 16

# Różne typy wpustów

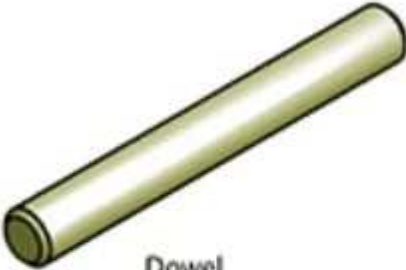
## Key types



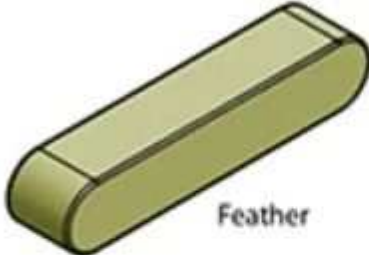
Square



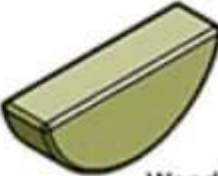
Flat



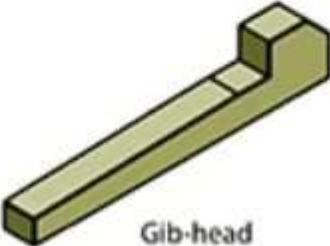
Dowel



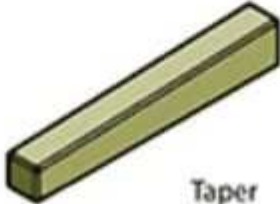
Feather



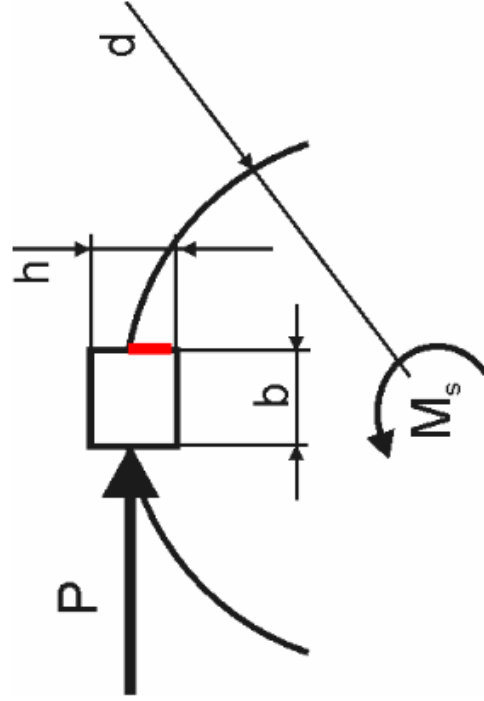
Woodruff



Gib-head



Taper

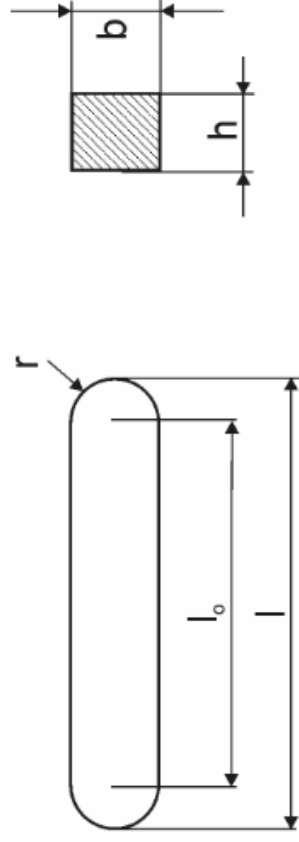


$$l_0 = l - 2 \cdot r = l - b$$

$$p = \frac{P}{h \cdot \frac{l_0}{2}} = \frac{2 \cdot P}{h \cdot l_0} \leq P_{dop}$$

Gdzie:

$l_0$  – długość części pryzmatycznej wpustu





Zniszczone połączenie wpustowe – ścięty wpust



# Połączenie cierno - wpustowe





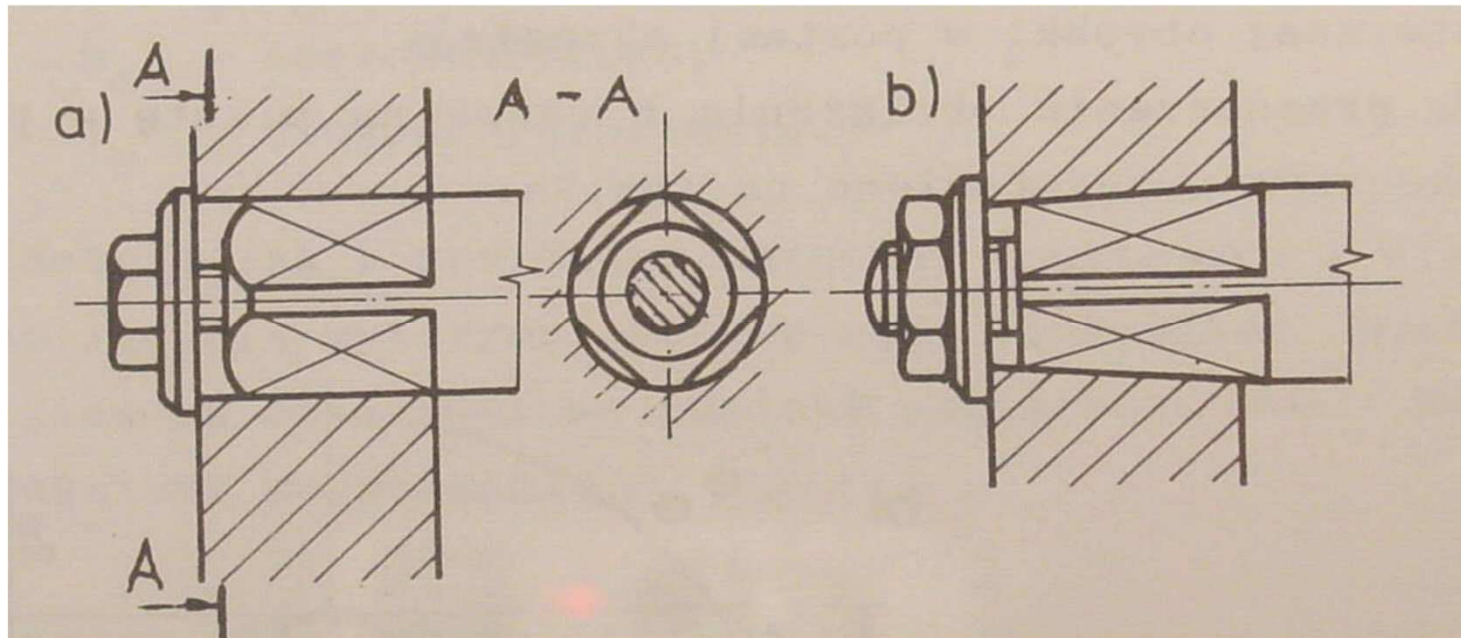


Instalowanie śruby napędowej na stożku wału śrubowego statku





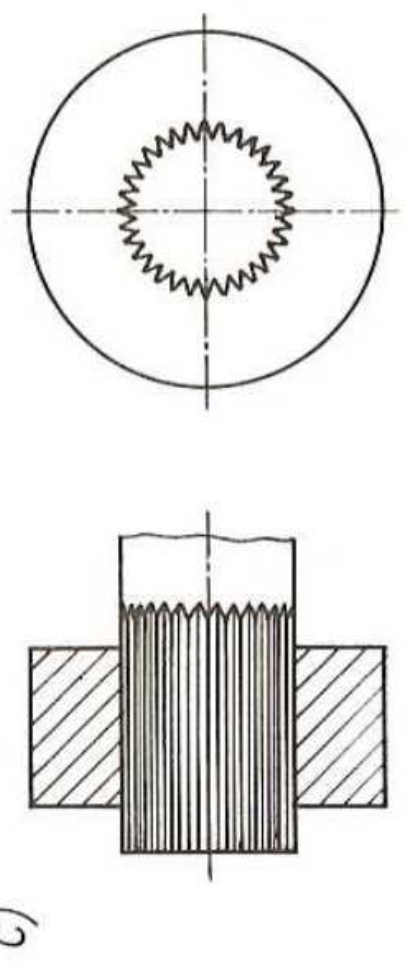
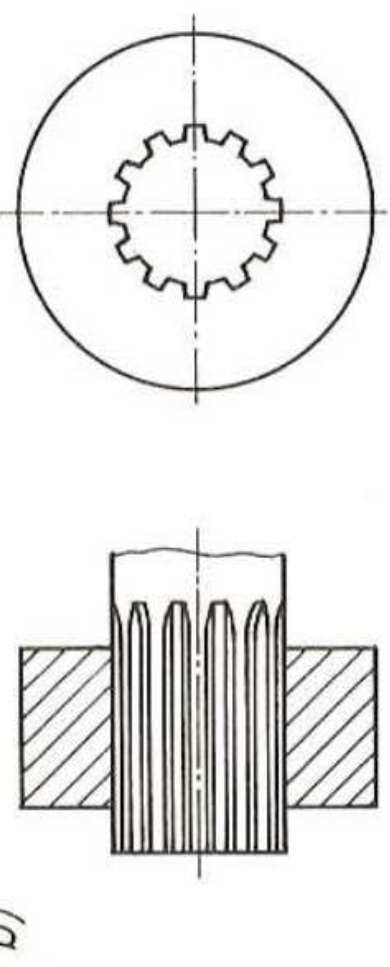
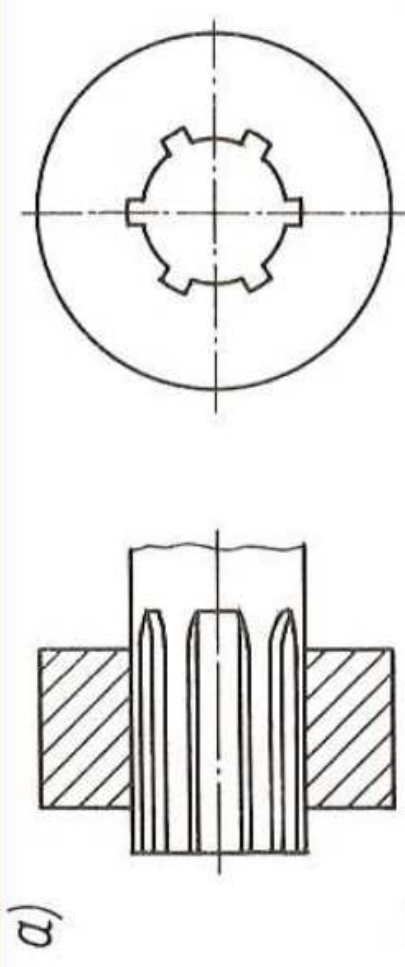
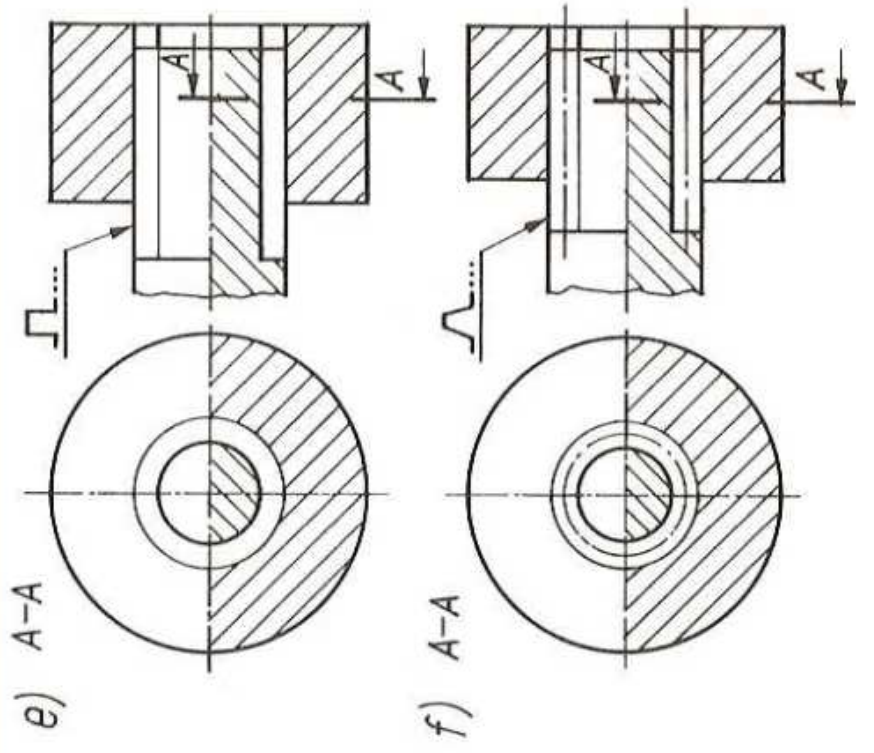
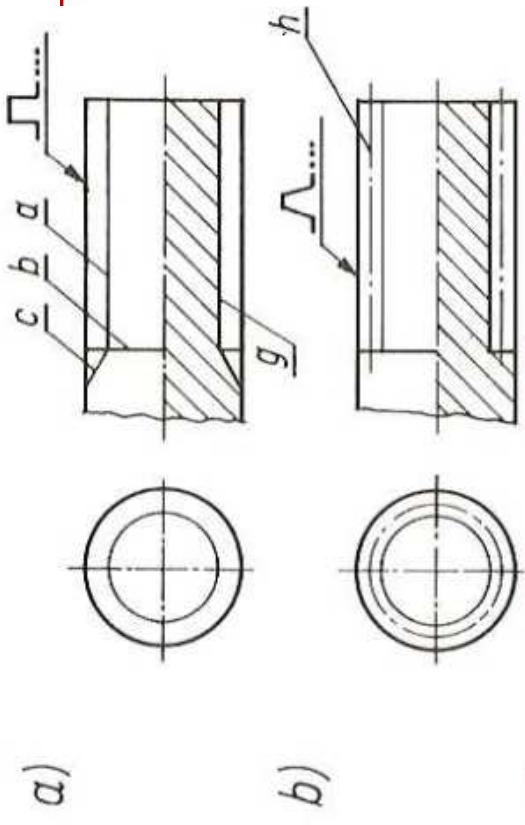
## Połączenia wieloboczne





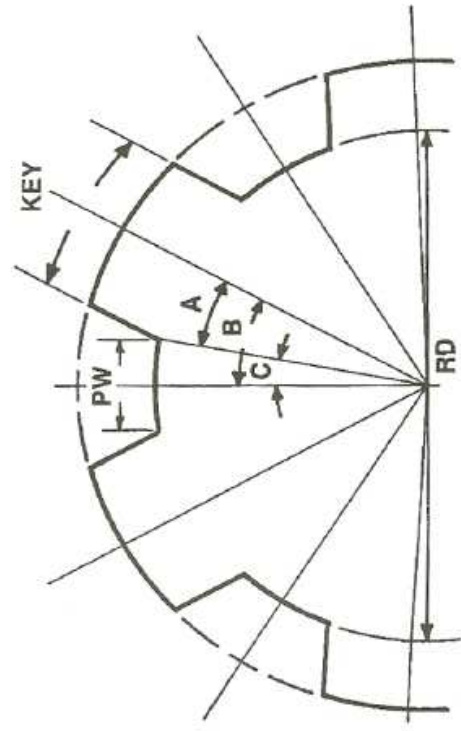
## Połączenie wielowypustowe





STANDARD SAE PARALLEL KEY SPLINE

No. of Keys	Space Width Internal	(A) Fit Permanent Fit		(B) Fit to Slide Not Under Load		(C) Fit to Slide Under Load		Normal Major Diameter
		WD	Minor	WD	Minor	WD	Minor	
4	0.241D	0.075D	0.850D	0.125D	0.750D			To 3"
6	0.250D	0.050D	0.900D	0.075D	0.850D	0.100D	0.800D	To 3"
10	0.156D	0.045D	0.910D	0.070D	0.860D	0.095D	0.810D	To 6"
13	0.098D	0.045D	0.910D	0.070D	0.860D	0.095D	0.810D	To 6"



**N= # of Keys**  
**B=180°/N**  
**SIN A= KW/RD**  
**C= B-A**  
**PW= RD X SIN "C"**  
**N=6**  
**KW= .371**

**RD= 1.271**  
**B= 180/6= 30°**  
**SIN "A"= .2919**  
**A= 16.97151°**  
**C= 13.02849**  
**SIN "C"= .22543**  
**W= 1.271\*.22543**  
**PW= .2865**



Zdeformowany wielowypust w wyniku przeciążenia momentem obrotowym