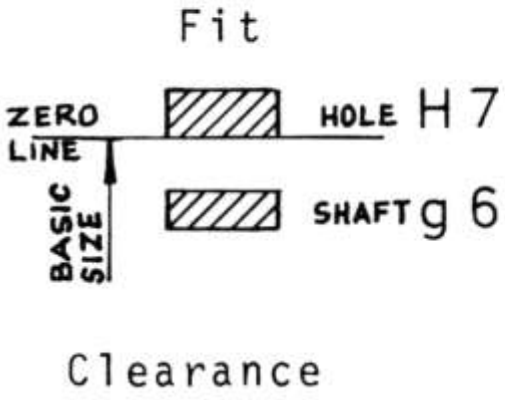
Work Sheet

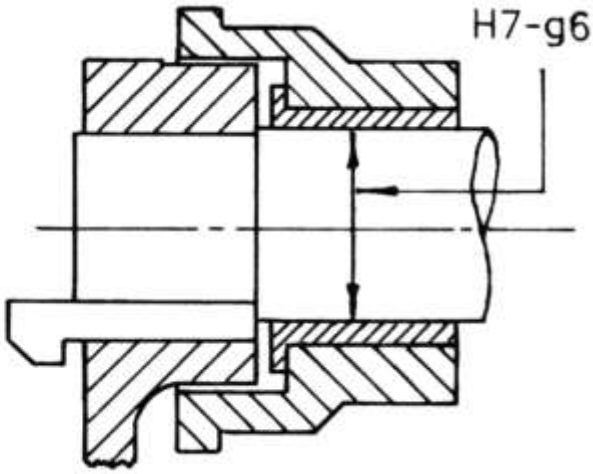
Consider an example of a spindle (shaft) running in a bush, fitted in a housing. The driven crank is keyed to the spindle in order to enable transition of torque.

1) Clearance fit.

The design of the assembly requires a 'Close fit', class H7 - g6, between the shaft and the bush that it rotates in. The 'Close fit' is a clearance fit and ensures ability to rotate and locate accurately.
Using the supplied BS4500A Data Sheet complete the table given below determining the maximum and minimum working limits for the diameter of the hole (bush) and shaft running in the bush using:

- Class of fit: **H7 - g6**
- Basic size of **40**mm
- Basic size of **90**mm
- Basic size of your own choice



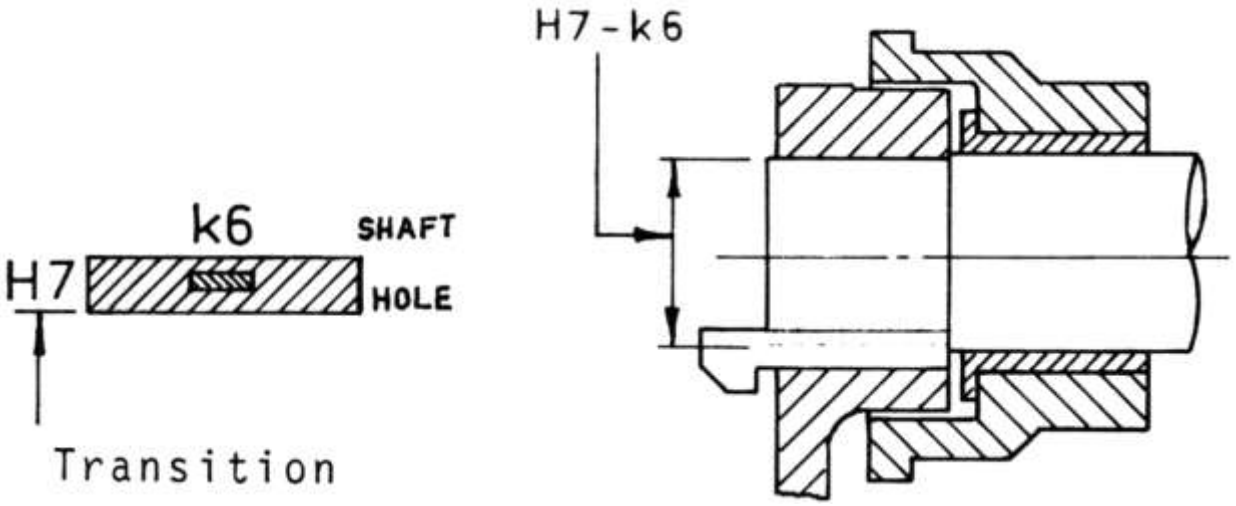


Hole					**Shaft**				
Basic size	Upper tol.	Lower tol.	Max. size	Min. size	Basic size	Upper tol.	Lower tol.	Max. size	Min. size
10	+0.015	0	10.015	10.000	**10**	-0.005	-0.014	9.995	9.986
40					**40**				
90					**90**				

2) Transition fit.

The design of the previous assembly also requires a 'Push fit', class H7 - k6, between the shaft and the crank housing being rotated. The 'Push fit' is a transition fit and ensures accurate location and stability under varying loads. Some form of mechanical assistance may be required to fit the crank to the shaft.
Using the supplied BS4500A Data Sheet complete the table given below determining the maximum and minimum working limits for the diameter of the hole (bush) and shaft end diameter using:

- Class of fit: **H7 - k6**
- Basic size of **35**mm
- Basic size of **85**mm
- Basic size of your own choice

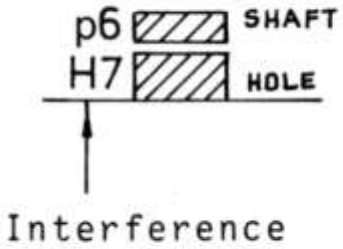


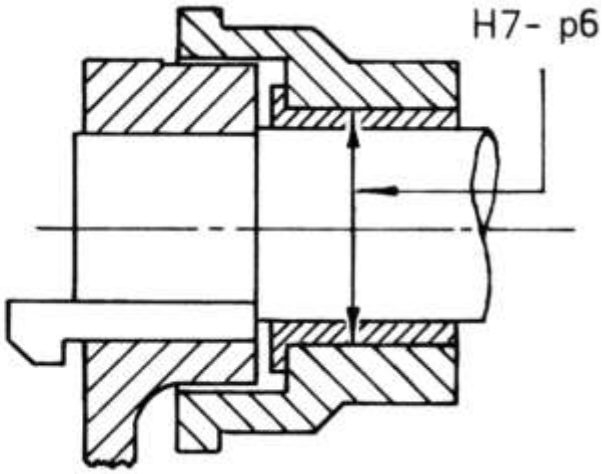
Hole					**Shaft**				
Basic size	Upper tol.	Lower tol.	Max. size	Min. size	Basic size	Upper tol.	Lower tol.	Max. size	Min. size
8	+0.015	0	8.015	8.000	**8**	+0.010	+0.001	8.010	8.001
35					**35**				
85					**85**				

3) Interference fit.

Consider now the fitting of the bush into the housing. The design of the assembly requires that the bush must be accurately located and must be self retaining, so a 'Press fit' of class H7 - p6 is specified. A 'Press fit' is an interference fit and ensures accurate location and stability under varying loads. As the description suggests, a press of some description would be required to fit the bush into the housing.
Using the supplied BS4500A Data Sheet complete the table given below determining the maximum and minimum working limits for the diameter of the hole (housing) and bush diameter using:

- Class of fit: **H7 - p6**
- Basic size of **45**mm
- Basic size of **95**mm
- Basic size of your own choice





Hole					**Shaft**				
Basic size	Upper tol.	Lower tol.	Max. size	Min. size	Basic size	Upper tol.	Lower tol.	Max. size	Min. size
12	+0.018	0	12.018	12.000	**12**	+0.029	+0.018	12.029	12.018
45					**45**				
95					**95**				

BS4500A Data Sheet

Nominal Sizes		Slack Fit			Loose Fit		Easy Fit		Normal Fit		Close Fit		Slide Fit		Push Fit		Drive Fit		Press Fit		Force Fit	
Over	To	Tolerance			Tolerance		Tolerance		Tolerance		Tolerance		Tolerance		Tolerance		Tolerance		Tolerance			
		H11	c11		H9	d10	H9	e9	H8	f7	H7	g6	H7	h6	H7	k6	H7	n6	H7	p6	H7	s6	Over	To
mm	mm	0.001 mm	0.001 mm		0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	0.001 mm	mm	mm
-	3	60	-60		25	-20	25	-14	14	-6	10	-2	10	-6	10	6	10	10	10	12	10	20	-	3
		0	-120		0	-60	0	-39	0	-16	0	-8	0	0	0	0	0	4	0	6	0	14		
3	6	75	-70		30	-30	30	-20	18	-10	12	-4	12	-8	12	9	12	16	12	20	12	27	3	6
		0	-145		0	-78	0	-50	0	-22	0	-12	0	0	0	1	0	8	0	12	0	19		
6	10	90	-80		36	-40	36	-25	22	-13	15	-5	15	-9	15	10	15	19	15	24	15	32	6	10
		0	-170		0	-98	0	-61	0	-28	0	-14	0	0	0	1	0	10	0	15	0	23		
10	18	110	-95		43	-50	43	-32	27	-16	18	-6	18	-11	18	12	18	23	18	29	18	39	10	18
		0	-205		0	-120	0	-75	0	-34	0	-17	0	0	0	1	0	12	0	18	0	28		
18	30	130	-110		52	-65	52	-40	33	-20	21	-7	21	-13	21	15	21	28	21	35	21	48	18	30
		0	-240		0	-149	0	-92	0	-41	0	-20	0	0	0	2	0	15	0	22	0	35		
30	40	160	-120		62	-80	62	-50	39	-25	25	-9	25	-16	25	18	25	33	25	42	25	59	30	40
		0	-280																					
40	50	160	-130		0	-180	0	-112	0	-50	0	-25	0	0	0	2	0	17	0	26	0	7	40	50
		0	-290																					
50	65	190	-140		74	-100	74	-60	46	-30	30	-10	30	-19	30	21	30	39	30	51	30	72	50	65
		0	-330																		0	53		
65	80	190	-150		0	-220	0	-134	0	-60	0	-29	0	0	0	2	0	20	0	32	30	78	65	80
		0	-340																		0	59		
80	100	220	-170		87	-120	87	-72	54	-36	35	-12	35	-22	35	25	35	45	35	59	35	93	80	100
		0	-390																		0	91		
100	120	220	-180		0	-260	0	-159	0	-71	0	-34	0	0	0	3	0	23	0	37	35	101	100	120
		0	-400																		0	79		
120	140	250	-200		100	-145	100	-84	63	-43	40	-14	40	-25	40	28	40	52	40	68	40	117	120	140
		0	-450																		0	92		
140	160	250	-210																		40	125	140	160
		0	-460																		0	100		
160	180	250	-230		0	-305	0	-185	0	-83	0	-39	0	0	0	3	0	27	0	43	40	133	160	180
		0	-480																		0	108		
180	200	290	-240		115	-170	115	-100	72	-50	46	-15	46	-29	46	33	46	60	46	79	46	151	180	200
		0	-530																		0	122		
200	225	290	-260																		46	159	200	225
		0	-550																		0	130		
225	250	290	-280		0	-355	0	-215	0	-96	0	-44	0	0	0	4	0	31	0	50	46	169	225	250
		0	-570																		0	140		
250	280	320	-300		130	-190	130	-110	81	-56	52	-17	52	-32	52	36	52	66	52	88	52	190	250	280
		0	-620																		0	158		
280	315	320	-330																		52	202	280	315
		0	-650		0	-400	0	-240	0	-108	0	-49	0	0	0	4	0	34	0	56	0	170		
315	355	360	-360		140	-210	140	-125	89	-62	57	-18	57	-36	57	40	57	73	57	98	57	226	315	355
		0	-720																		0	190		
355	400	360	-400																		57	244	355	400
		0	-760		0	-440	0	-265	0	-119	0	-54	0	0	0	4	0	37	0	62	0	208		
400	450	400	-440		155	-230	155	-135	97	-68	63	-20	63	-40	63	45	63	80	63	108	63	272	400	450
		0	-840																		0	232		
450	500	400	-480																		63	292	450	500
		0	-880		0	-480	0	-290	0	-131	0	-60	0	0	0	5	0	40	0	68	0	252		