Thread Ends to DIN 78
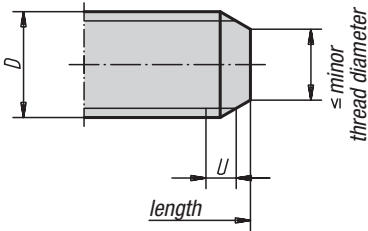# Thrust Points to DIN 6332
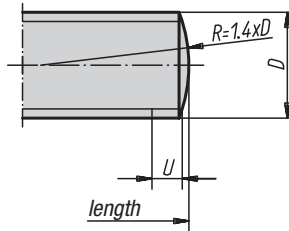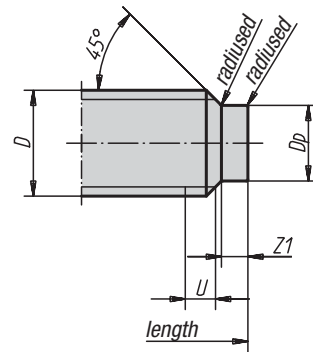
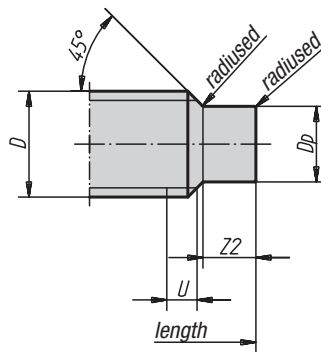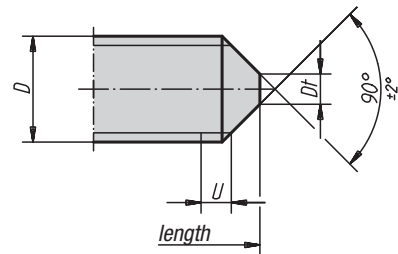K flat point

Standard form:
Flat point to DIN 78.
Depending on the quantity ordered,
thread ends will incur extra charges.
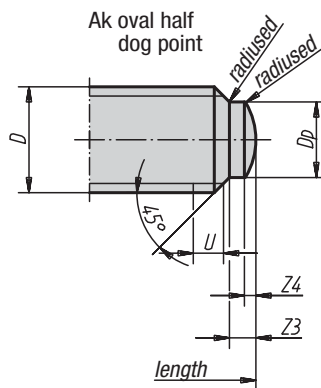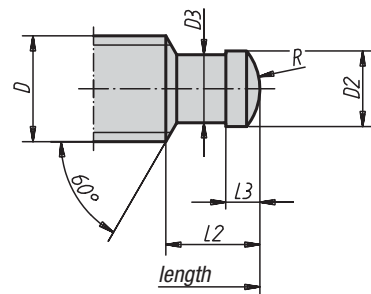
U = max. 2P incomplete thread

L oval point

Ka short dog point

Za long dog point

Sp cone point

Ak oval half dog point

thrust point to DIN 6332

Thread diameter D	Thread ends to DIN 78						Thread ends with thrust points to DIN 6332				
	Dp h13	Dt h16*	Z1 +IT14	Z2 +IT14	Z3 +IT14	Z4 ≈	D2 h11	D3 -0,1	L2	L3	R
M4	2.5	–	1	2	1	0.5	–	–	–	–	–
M5	3.5	–	1.25	2.5	1.25	0.6	–	–	–	–	–
M6	4	1.5	1.5	3	1.5	0.7	4.5	4	6	2.5	3
M8	5.5	2	2	4	2	1	6	5.4	7.5	3	5
M10	7	2.5	2.5	5	2.5	1	8	7.2	9	4.5	6
M12	8.5	3	3	6	3	1.25	8	7.2	10	4.5	6
M14	10	4	3.5	7	3.5	1.5	–	–	–	–	–
M16	12	4	4	8	4	1.75	12	11	12	5	9
M18	13	5	4.5	9	4.5	2	–	–	–	–	–
M20	15	5	5	10	5	2	15.5	14.4	14	5.5	13
M22	17	6	5.5	11	5.5	2.5	–	–	–	–	–
M24	18	6	6	12	6	2.5	–	–	–	–	–
M27	21	8	6.7	13.5	6.7	3	–	–	–	–	–

* Up to 5 mm diameter: thread end lightly flattened or lightly rounded.

ISO Metric Screw Threads to DIN 13

nut thread
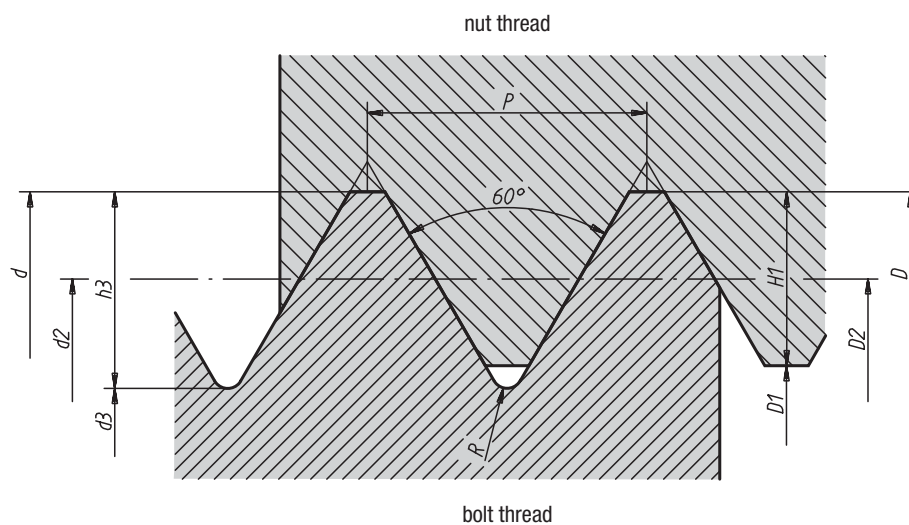
bolt thread

The medium tolerance class applies to the threads listed, i.e. 6H for nut threads and 6g for bolt threads. The (metal) threads in this catalogue are manufactured according to these tolerance classes.

Coarse Screw Thread line 1

Thread description d = D	Pitch P	Thread-pitch Ø d2 = D2	Minor Ø bolt d3	Minor Ø nut D1	Thread depth bolt h3	Thread depth nut H1	Radius R	Core hole drill Ø
M3	0.5	2.68	2.39	2.46	0.31	0.27	0.07	2.5
M4	0.7	3.55	3.14	3.24	0.43	0.38	0.10	3.3
M5	0.8	4.48	4.02	4.13	0.49	0.43	0.12	4.2
M6	1	5.35	4.77	4.92	0.61	0.54	0.14	5
M8	1.25	7.19	6.47	6.65	0.77	0.68	0.18	6.8
M10	1.5	9.03	8.16	8.38	0.92	0.81	0.22	8.5
M12	1.75	10.86	9.85	10.11	1.07	0.95	0.25	10.2
M16	2	14.70	13.55	13.84	1.23	1.08	0.29	14
M20	2.5	18.38	16.93	17.29	1.53	1.35	0.36	17.5
M24	3	22.05	20.32	20.75	1.84	1.62	0.43	21
M30	3.5	27.73	25.71	26.21	2.15	1.89	0.51	26.5
M36	4	33.40	31.09	31.67	2.45	2.17	0.58	32

T-Slots to DIN 650
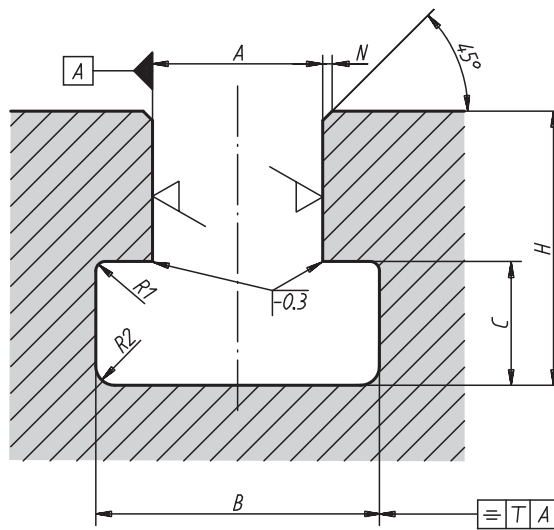
$$\overset{6.3}{\nabla} \left(\nabla = \overset{1.6}{\nabla} \text{ for tolerance H8 or } \nabla = \overset{3.2}{\nabla} \text{ for tolerance H12} \right)$$

A*	B	B permissible deviation	C	C permissible deviation	H max.	H min.	N max.	R1 max.	R2 max.	T
6	11	+1.5 0	5	+1 0	13	11	1	0.6	1	0.5
8	14.5	+1.5 0	7	+1 0	18	15	1	0.6	1	0.5
10	16	+2 0	7	+1 0	21	17	1	0.6	1	0.5
12	19	+2 0	8	+1 0	25	20	1	0.6	1	0.5
14	23	+2 0	9	+2 0	28	23	1.6	0.6	1.6	0.5
18	30	+2 0	12	+2 0	36	30	1.6	1	1.6	0.5
22	37	+3 0	16	+2 0	45	38	1.6	1	2.5	0.5
28	46	+3 0	20	+2 0	56	48	1.6	1	2.5	0.5
36	56	+4 0	25	+3 0	71	61	2.5	1	2.5	1
42	68	+4 0	32	+3 0	85	74	2.5	1.6	4	1

* Tolerance H8 for tenon and clamping slots, H12 for clamping slots

Slots and Feathers to DIN 6885
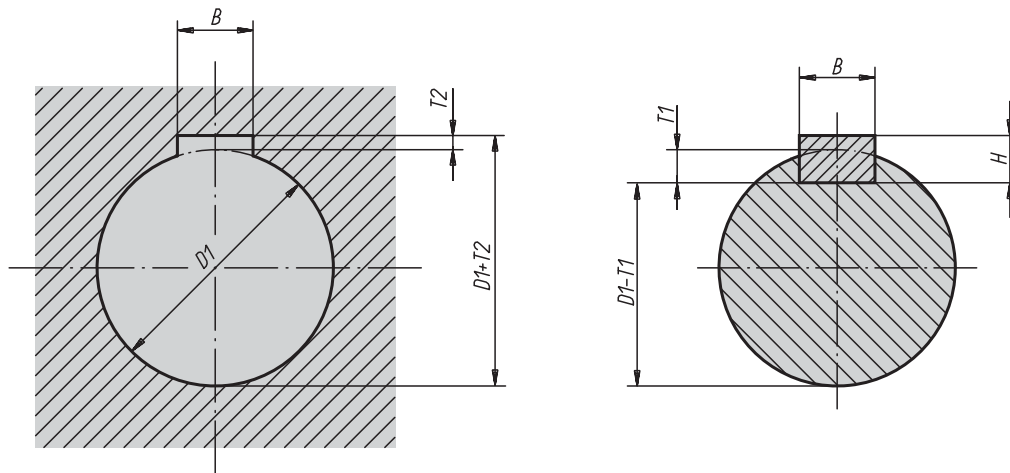
High Form (sheet 1)

| For shaft Ø D1 | tight fit P9 | sliding fit N9 | Hub slot B* | | H | T1 with back clearance | T2 back clearance | T2 oversize |
			tight fit P9	sliding fit IS9				
over 8 up to 10	3	3	3	3	3	$1.8^{+0.1}$	$1.4^{+0.1}$	$0.9^{+0.1}$
over 10 up to 12	4	4	4	4	4	$2.5^{+0.1}$	$1.8^{+0.1}$	$1.2^{+0.1}$
over 12 up to 17	5	5	5	5	5	$3^{+0.1}$	$2.3^{+0.1}$	$1.7^{+0.1}$
over 17 up to 22	6	6	6	6	6	$3.5^{+0.1}$	$2.8^{+0.1}$	$2.2^{+0.1}$
over 22 up to 30	8	8	8	8	7	$4^{+0.2}$	$3.3^{+0.2}$	$2.4^{+0.2}$
over 30 up to 38	10	10	10	10	8	$5^{+0.2}$	$3.3^{+0.2}$	$2.4^{+0.2}$
over 38 up to 44	12	12	12	12	8	$5^{+0.2}$	$3.3^{+0.2}$	$2.4^{+0.2}$
over 44 up to 50	14	14	14	14	9	$5.5^{+0.2}$	$3.8^{+0.2}$	$2.9^{+0.2}$
over 50 up to 58	16	16	16	16	10	$6^{+0.2}$	$4.3^{+0.2}$	$3.4^{+0.2}$

High Form for Machine Tools (sheet 2)

| For shaft Ø D1 | Shaft slot B* | | Hub slot B* | | H | T1 | T2 |
	tight fit P9	sliding fit N9	tight fit P9	sliding fit IS9			
over 10 up to 12	4	4	4	4	4	$3^{+0.1}$	$1.1^{+0.1}$
over 12 up to 17	5	5	5	5	5	$3.8^{+0.1}$	$1.3^{+0.1}$
over 17 up to 22	6	6	6	6	6	$4.4^{+0.1}$	$1.7^{+0.1}$
over 22 up to 30	8	8	8	8	7	$5.4^{+0.2}$	$1.7^{+0.2}$
over 30 up to 38	10	10	10	10	8	$6^{+0.2}$	$2.1^{+0.2}$
over 38 up to 44	12	12	12	12	8	$6^{+0.2}$	$2.1^{+0.2}$
over 44 up to 50	14	14	14	14	9	$6^{+0.2}$	$2.6^{+0.2}$
over 50 up to 58	16	16	16	16	10	$7.5^{+0.2}$	$2.6^{+0.2}$

* The indicated tolerances for slot widths apply, as a rule, for milled slots.
  ISO quality IT8 (i.e. P8 instead of P9, N8 instead of N9 and IS8 instead of IS9) are recommended for the width of broached slots.
  Tolerance H9 for the shaft slot and D10 for the hub slot are recommended for sliding fits.
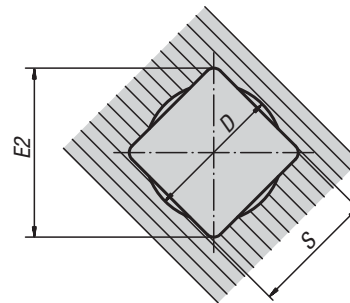
Squares for Operating Spindles and Operating Parts to DIN 79

A External square
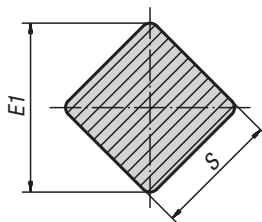
B Internal square

S H11 / h11	D max.*	E1 max.	E1 min.**	E2 min.
4	4.2	5	4.8	5.3
5	5.3	6.5	6	6.6
5.5	5.8	7	6.6	7.2
6	6.3	8	7.2	8.1
7	7.3	9	8.4	9.1
8	8.4	10	9.6	10.1
9	9.5	12	10.8	12.1
10	10.5	13	12	13.1
11	11.6	14	13.2	14.1
12	12.6	16	14.4	16.1
13	13.7	17	15.6	17.1
14	14.7	18	16.8	18.1
16	16.8	21	19.2	21.2
17	17.9	22	20.4	22.2
19	20	25	22.8	25.2
22	23.1	28	26.4	28.2

* Internal squares are allowed to be recessed in the middle third of each side. D max. defines the borehole diameter which leaves appropriate clearance when disposed concentrically to the internal square.

** External squares made on round steel bar may fall below the minimum size by the amount of tolerance on the steel bar, i.e. by h11.

Method of Indicating Surface Finish to DIN ISO 1302
General Tolerances to DIN ISO 2768 T1 and T2

Method of Indicating Surface Finish to DIN ISO 1302

Graphical symbol of surface finish to DIN 3141	Surface finish values, Ra for permissible roughness height Rt		meaning according to ISO 1302
	assignation according to DIN 3141 line 1	line 2	
(Surface without graphical symbol)			Surfaces which do not need to meet specific requirements
	even		Surfaces which only have to meet requirements of general evenness and better appearance
	rough		Individual raw surfaces which may be remachined
	6,3		Clean raw surface with higher requirements
	25	12,5	Surface with a roughness value which must not exceed the highest permissible medium roughness value
	6,3	3,2	
	1,6	0,8	

- KIPP products are adapted and manufactured in such a way that they are suitable for their general purpose with reference to material and surface finish. As such, they meet all normal tolerance requirements.

- All dimensions are indicated in mm.

- The latest DIN standard sheet version applies to all parts made to DIN standards.

- Variations on dimensions without tolerance values are according to "DIN ISO 2768-mk".

General Tolerances for Linear and Angular Dimensions (DIN ISO 2768 T1)

Tolerance class		Linear Dimensions							
		Permissible deviations in mm for ranges of nominal sizes							
designation	description	0.5 up to 3	over 3 up to 6	over 6 up to 30	over 30 up to 120	over 120 up to 400	over 400 up to 1000	over 1000 up to 2000	over 2000 up to 4000
f	fine	± 0.05	± 0.05	± 0.1	± 0.15	± 0.2	± 0.3	± 0.5	−
m	medium	± 0.1	± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2
c	coarse	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2	± 3	± 4
v	very coarse	−	± 0.5	± 1	± 1.5	± 2.5	± 4	± 6	± 8

Tolerance class		External Radii and Chamfer Heights			Angular Dimensions				
		Permissible deviations in mm for ranges of inal sizes							
designation	description	0.5 up to 3	over 3 up to 6	over 6	over 10	over 10 up to 50	over 50 up to 120	over 120 up to 400	over 400
f	fine	± 0.2	± 0.5	± 1	± 1°	± 0°30'	± 0°20'	± 0°10'	± 0°5'
m	medium	± 0.2	± 0.5	± 1	± 1°	± 0°30'	± 0°20'	± 0°10'	± 0°5'
c	coarse	± 0.4	± 1	± 2	± 1°30'	± 1°	± 0°30'	± 0°15'	± 0°10'
v	very coarse	± 0.4	± 1	± 2	± 3°	± 2°	± 1°	± 0°30'	± 0°20'

General Tolerances for Form and Position (DIN ISO 2768 T2)

Tolerance class	Straightness and Flatness						Perpendicularity				Symmetry				Run-out
	Ranges of nominal sizes in mm						Ranges of nominal sizes in mm				Ranges of nominal sizes in mm				
	up to 10	over 10 up to 30	over 30 up to 100	over 100 up to 300	over 300 up to 1000	over 1000 up to 3000	up to 100	over 100 up to 300	over 300 up to 1000	over 1000 up to 3000	up to 100	over 100 up to 300	over 300 up to 1000	over 1000 up to 3000	
H	0.02	0.05	0.1	0.2	0.3	0.4	0.2	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.1
K	0.05	0.1	0.2	0.4	0.6	0.8	0.4	0.6	0.8	1	0.6	0.6	0.8	1	0.2
L	0.1	0.2	0.4	0.8	1.2	1.6	0.6	1	1.5	2	0.6	1	1.5	2	0.5