

General-purpose knuckle threads
Part 1: Profiles and nominal sizes**DIN**
405-1

ICS 21.040.30

This standard, together with DIN 405-2, November 1997 edition, supersedes the November 1975 edition of DIN 405-1.

Rundgewinde allgemeiner Anwendung –
Teil 1: Gewindeprofile, Nennmaße

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Foreword

This standard has been prepared by the *Normenausschuß Technische Grundlagen* (Fundamentals in Technology Standards Committee), Technical Committee *Grundlagen*.

Amendments

The following amendments have been made to the January 1983 edition.

- a) The basic profile is no longer specified.
- b) Some symbols have been changed.
- c) Values for a_c have been introduced.
- d) The standard has been editorially revised.

Previous editions

DIN 405: 1922-04, 1928-04, 1953x-01; DIN 405-1: 1975-11.

Dimensions in mm

1 Scope and field of application

This standard specifies profiles and dimensions of general purpose internal and external knuckle threads. See DIN 405-2 for fundamental deviations and tolerances and DIN 405-3 for gauges for external and internal threads.

Continued on pages 2 to 6.

Translation by DIN-Sprachendienst.

In case of doubt, the German-language original should be consulted as the authoritative text.

2 Normative references

This standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and titles of the publications are listed below. For dated references, subsequent amendments to or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

DIN 405-2 General purpose knuckle threads – Tolerances

DIN 405-3 General purpose knuckle threads – Gauges for external and internal threads – Types, profiles and tolerances

DIN 2244 Screw threads – Terminology

3 Concepts and symbols

3.1 Concepts

For the purposes of this standard, the concepts defined in DIN 2244 shall apply.

3.2 Symbols

See table 1.

Table 1: Symbols

Symbol	Quantity
a_c	Crest clearance
d	Major diameter of external thread
d_2	Pitch diameter of external thread
d_3	Minor diameter of external thread
D_1	Minor diameter of internal thread
D_2	Pitch diameter of internal thread
D_4	Major diameter of internal thread
es	Fundamental deviation of external thread (upper deviation)
P	Lead of single-start thread and pitch of multi-start thread
Ph	Lead of multi-start thread
H	Height of fundamental triangle
$h_3 = H_4$	Height of threads
H_1	Flank overlapping
R_1	Crest radius or root radius of external thread
R_2	Crest radius of internal thread
R_3	Root radius of internal thread
n	Number of threads

4 Design profiles

External and internal knuckle threads as specified in this standard do not have the same design profile. External threads have the same radii at the crest and at the root, while internal threads have different radii. The major, pitch and minor diameters are based on the design profile.

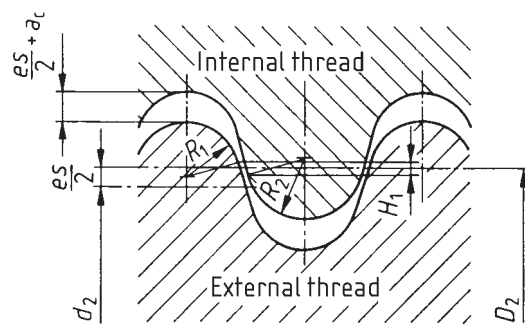


Figure 3: Flank overlapping (notation)

6 Profiles for multi-start threads

Multi-start threads have the same profile as single-start threads if the pitch of the former is equal to the lead of the latter. The pitch, P , of multi-start threads shall be selected from the values specified in table 3 for the lead of single-start threads. The lead, Ph , of multi-start threads shall be determined by multiplying the pitch by the number of threads (i.e. $Ph = P \times n$), whereby Ph does not have to be equal to one of the values given for P in table 3.

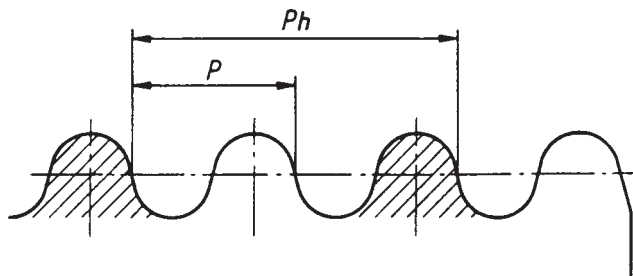


Figure 4: Profile for double-start threads

7 Designation

Knuckle threads as specified in this standard are to be designated as specified in DIN 405-2.

8 Nominal sizes

Nominal sizes are specified in table 3. Series 1 diameters should be given preference.

Table 3: Nominal sizes

Nominal thread diameter, d		Number of threads, per 25,4 mm	Lead (or pitch) P	Pitch diameter, $d_2 = D_2$	Major diameter, D_4	Minor diameters,	
Series 1	Series 2					d_3	D_1
8		10	2,54	6,73	8,254	5,46	5,714
9		10	2,54	7,73	9,254	6,46	6,714
10		10	2,54	8,73	10,254	7,46	7,714
11		10	2,54	9,73	11,254	8,46	8,714
12		10	2,54	10,73	12,254	9,46	9,714
14		8	3,175	12,412	14,318	10,825	11,142
16		8	3,175	14,412	16,318	12,825	13,142
18		8	3,175	16,412	18,318	14,825	15,142
20		8	3,175	18,412	20,318	16,825	17,142
22		8	3,175	20,412	22,318	18,825	19,142
24		8	3,175	22,412	24,318	20,825	21,142
26		8	3,175	24,412	26,318	22,825	23,142
28		8	3,175	26,412	28,318	24,825	25,142
30		8	3,175	28,412	30,318	26,825	27,142
32		8	3,175	30,412	32,318	28,825	29,142
36	34	8	3,175	32,412	34,318	30,825	31,142
	38	8	3,175	34,412	36,318	32,825	33,142
		8	3,175	36,412	38,318	34,825	35,142
40	42	6	4,233	37,883	40,423	35,767	36,19
		6	4,233	39,883	42,423	37,767	38,19
		6	4,233	41,883	44,423	39,767	40,19
48	46	6	4,233	43,883	46,423	41,767	42,19
	50	6	4,233	45,883	48,423	43,767	44,19
		6	4,233	47,883	50,423	45,767	46,19
52	58	6	4,233	49,883	52,423	47,767	48,19
		6	4,233	52,883	55,423	50,767	51,19
		6	4,233	55,883	58,423	53,767	54,19
60	62	6	4,233	57,883	60,423	55,767	56,19
		6	4,233	59,883	62,423	57,767	58,19
		6	4,233	62,883	65,423	60,767	61,19
70	68	6	4,233	65,883	68,423	63,767	64,19
	72	6	4,233	67,883	70,423	65,767	66,19
		6	4,233	69,883	72,423	67,767	68,19
75	78	6	4,233	72,883	75,423	70,767	71,19
		6	4,233	75,883	78,423	73,767	74,19
		6	4,233	77,883	80,423	75,767	76,19
85	82	6	4,233	79,883	82,423	77,767	78,19
	88	6	4,233	82,883	85,423	80,767	81,19
		6	4,233	85,883	88,423	83,767	84,19
90	92	6	4,233	87,883	90,423	85,767	86,19
		6	4,233	89,883	92,423	87,767	88,19
		6	4,233	92,883	95,423	90,767	91,19
100	98	6	4,233	95,883	98,423	93,767	94,19
	105	6	4,233	97,883	100,423	95,767	96,19
4		6,35	101,825	105,635	98,65	99,285	
110	115	4	6,35	106,825	110,635	103,65	104,285
		4	6,35	111,825	115,635	108,65	109,285
		4	6,35	116,825	120,635	113,65	114,285
130	125	4	6,35	121,825	125,635	118,65	119,285
	135	4	6,35	126,825	130,635	123,65	124,285
		4	6,35	131,825	135,635	128,65	129,285

(continued)

Table 3 (concluded)

Nominal thread diameter, d		Number of threads, per 25,4 mm	Lead (or pitch) P	Pitch diameter, $d_2 = D_2$	Major diameter, D_4	Minor diameters,	
Series 1	Series 2					d_3	D_1
140	145	4	6,35	136,825	140,635	133,65	134,285
		4	6,35	141,825	145,635	138,65	139,285
150		4	6,35	146,825	150,635	143,65	144,285
160	155	4	6,35	151,825	155,635	148,65	149,285
	165	4	6,35	156,825	160,635	153,65	154,285
		4	6,35	161,825	165,635	158,65	159,285
170	175	4	6,35	166,825	170,635	163,65	164,285
		4	6,35	171,825	175,635	168,65	169,285
180		4	6,35	176,825	180,635	173,65	174,285
190	185	4	6,35	181,825	185,635	178,65	179,285
	195	4	6,35	186,825	190,635	183,65	184,285
		4	6,35	191,825	195,635	188,65	189,285
200		4	6,35	196,825	200,635	193,65	194,285