VERGNANO

Forming Taps

www.vergnano.com

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COMPANY POLICY

The declared objective of Vergnano is complete customer satisfaction.
The quality of Vergnano tools is the consequence of strict controls of processes and products, constant research in new technical solutions and continuous investments both in technology and human resources.
In order to enable and promote continuous improvement in all company aspects, Vergnano has a Certified Quality System according to ISO 9001.

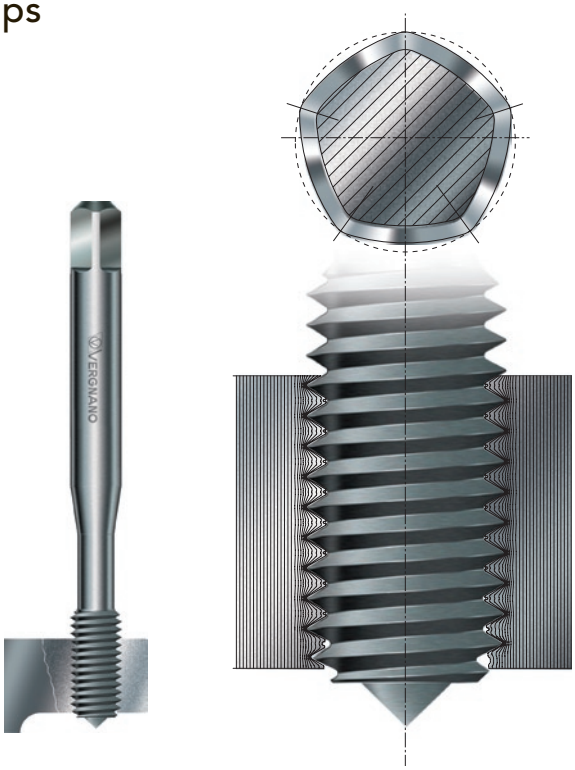
FORMING TAPS

In recent years the use of cold forming taps for tapping processes has increased significantly. Since its introduction, Vergnano has embraced this technology continuously improving and extending its cold forming tap range. This catalogue summarises the four Vergnano cold forming tap families, updated with new sizes and geometries. Research in PVD technology has permitted the development of the new TiH1 coating particularly suitable for cold forming of light alloys.

FORMING TAPS

Characteristics and advantages of forming taps

- Thread obtained by plastic deformation of material
- No chip formation and therefore high process stability and reliability compared to normal cutting process
- Single tool for both blind and through holes
- Possibility of threading deep blind holes
- Higher tool life
- Higher machining speeds compared to cutting taps
- Better surface finish on formed thread
- Better tensile strength of formed thread due to material work-hardening
- More resistant tap geometry, with lower risk of breakage, due to larger core diameter
- Ecological tool: lower quantity of tools consumed, no costs for chip disposal and possibility of using minimum quantity lubrication



Thread obtained by plastic deformation of workpiece material

Requirements

- Larger and more precise drilled hole diameter compared to cutting taps
- Workpiece material with a minimum elongation coefficient A_5 of at least 10% and a maximum tensile strength of 1200 N/mm^2
- Good lubrication
- Higher power requirement (100 – 150%) as compared to cutting taps

Tolerance fields

Forming taps are constructed with oversize tolerances compared to cutting taps in order to obtain threads which are in tolerance.
For internal thread tolerances 6H and 6G, forming taps with 6HX and 6GX tolerances must be used, respectively.

Forming Taps - Tolerance Ranges			
Internal Thread Tolerance	Tap Tolerance DIN	Tap Tolerance ISO	Forming Tap Tolerance
4H 5H	4H	ISO1	4HX
4G 5G 6H	6H	ISO2	6HX
6H 7H 8H	6G	ISO3	6GX
7G 8G	7G		7GX

THE RANGE

The Vergnano forming tap range includes four tap types which meet the demanding industrial requirements regarding precision, reliability and productivity.

All-Purpose **A**-type forming tap

The **A**-type forming taps are all-purpose taps for both blind and through holes and can be used to machine a wide range of materials. The taps are available in two types of coatings (TiN and TiCN) as well as a vapourised version particularly suitable for tapping soft materials.

High performance **P**-type forming tap

The **P** range is characterised by high tool life and excellent surface finish on the workpiece thread. The taps represent the state-of-the-art in Vergnano technology: powder metallurgy high speed steel HSSK, specially-developed polygon geometry for high performance and optimised PVD coatings with dedicated process parameters and characteristics. The **P**-type range also includes tap versions with internal lubrication which have an increased tool life and can be used together with ecological minimum quantity lubrication (MQL).

Sincro-type forming tap for synchronised tapping

The **S**incro range taps are designed specifically for synchronous tapping and for high speed machining. They are produced in top quality powder metallurgy high speed steel, HSSK. The reduced thread length compared to standard taps permits tapping of deep holes. A version with internal coolant and radial outlets is also available (BS80NR) for tapping very deep blind and through holes.

H-type carbide forming taps

The Vergnano **H**-type carbide forming tap is available in a single version (HB80NR). The tap is equipped with an internal coolant channel with radial outlets and can be used to machine a wide range of materials: from steels (including stainless steel) to aluminium alloys. On steel, the increase in tool life compared to high speed steel forming taps can be up to 20-fold.

ARTICLE LEGEND

INTERNAL COOLANT

IKZ Axial hole
IKZ-R Radial holes

LUBRICATION

E Emulsion
O Oil
MQL Minimum quantity lubrication

TAP MATERIAL

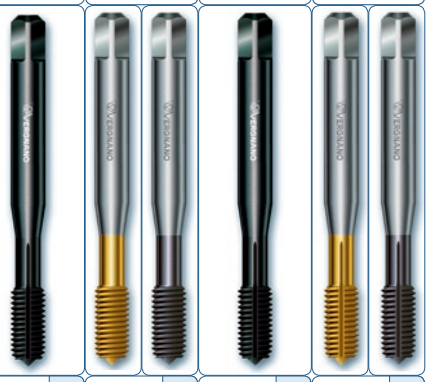
HSSE Conventional high speed steel
HSSK Powder metallurgy high speed steel
HM Solid carbide

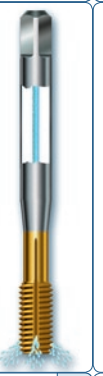
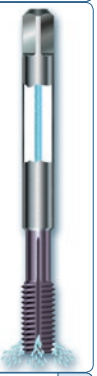
P81 15 Product code / page

P80 NE New product

● 25-30 Ideal tap / cutting speed m/min

❑ 20-25 Suitable tap / cutting speed m/min

		SERIES		A	A	A	A
		MATERIAL		HSSE	HSSE	HSSE	HSSE
		CHAMFER FORM		C (2-3)	C (2-3)	C (2-3)	C (2-3)
		TYPES OF HOLE		1,5 x D	1,5 x D	2,5 x D	2,5 x D
							
		M	6HX	A80 8	A80 8	A80 N 10	A80 N 10
			6GX	A80 9	A80 9	A80 N 11	A80 N 11
			7GX				
		MF	6HX	A81 12	A81 12	A81 N 14	A81 N 14
			6GX	A81 13	A81 13	A81 N 15	A81 N 15
		G	5969X			A82 N 16	A82 N 16
			COOLANT				
			COATING	VAP	TiN/TiCN	VAP	TiN/TiCN
Material	Group	Description	T.S. N/mm²	Lubrication			
Steel	1.1	Mild / magnetic steel	200 - 400	E, O, MQL		● 35-40		● 35-40
	1.2	Construction steel, case hardening steel	350 - 700	E, O, MQL	● 18-22	● 35-40	● 18-22	● 35-40
	1.3	Carbon steel	350 - 850	E, O, MQL	● 15-18	● 30-35	● 15-18	● 30-35
	1.4	Alloyed steel / tempered steel	500 - 850	E, O, MQL				
	1.5	Alloyed steel / tempered steel	850 - 1200	O, MQL				
Stainless steel	2.1	Ferritic	< 850	E, O, MQL		● 10-15		● 10-15
	2.2	Austenitic	< 850	O, MQL		● 10-15		● 10-15
	2.3	Ferritic+austenitic, martensitic, precipitation hardening	< 1000	O, MQL				
Aluminium Aluminium alloys	4.1	Pure aluminium	< 300	E, O, MQL		● 40-45		● 40-45
	4.2	Aluminium wrought and die cast alloys with Si<0,5% (long chipping)	< 500	E, O, MQL		● 40-45		● 40-45
	4.3	Aluminium wrought and die cast alloys with Si<10% (mean chipping)	< 500	E, O, MQL		● 40-45		● 40-45
Copper Copper Alloys	5.1	Pure copper	250 - 350	E, O, MQL				
	5.2	Copper alloys (long chipping), soft brass	< 700	E, O, MQL		● 15-20		● 15-20
Nickel	8.1	Pure nickel	400 - 600	E, O, MQL				

P	P	P	P	P	P	P	S	S	S	H
HSSK	HSSK	HSSK	HSSK	HSSK	HSSK	HSSK	HSSK	HSSK	HSSK	HM
C (2-3)	C (2-3)	C (2-3)	E (1,5-2)	E (1,5-2)	C (2-3)	C (2-3)	C (2-3)	C (2-3)	E (1,5-2)	C (2-3)
1,5 x D	2,5 x D	2,5 x D	1,5 x D	2,5 x D	2,5 x D	2,5 x D	2,5 x D	2,5 x D	2,5 x D	2,5 x D
										
P80 17	P80 N 18	**P80 N** 18	P80 E 19	**P80 N E** 19	BP80 N 20	BP80 NR 20	S80 N 23	BS80 NR 23	**BS80 NRE** 23	HB80 NR 24
P80 17	P80 N 18			**P80 N E** 19			S80 N 23			
P80 17	P80 N 18									
P81 21	P81 N 21									
P81 21	P81 N 21									
	P82 N 22									
					IKZ	IKZ-R		IKZ-R	IKZ-R	IKZ-R
TiN	TiN	TiH1	TiN	TiN	TiN	TiN	TiN	TiN	TiH1	TiCN
● 35-40	● 35-40		● 35-40	● 35-40	● 35-40	● 35-40	● 45-50	● 45-50		● 35-50
● 35-40	● 35-40		● 35-40	● 35-40	● 35-40	● 35-40	● 45-50	● 45-50		● 35-50
● 30-35	● 30-35		● 30-35	● 30-35	● 30-35	● 30-35	● 40-45	● 40-45		● 30-45
● 25-30	● 25-30		● 25-30	● 25-30	● 25-30	● 25-30	● 30-35	● 30-35		● 25-40
● 10-15	● 10-15		● 10-15	● 10-15	● 10-15	● 10-15	● 15-20	● 15-20		● 15-30
● 10-15	● 10-15		● 10-15	● 10-15	● 10-15	● 10-15	● 15-20	● 15-20		● 10-25
● 10-15	● 10-15		● 10-15	● 10-15	● 10-15	● 10-15	● 15-20	● 15-20		● 10-25
❑ 8-10	❑ 8-10		❑ 8-10	❑ 8-10	❑ 8-10	❑ 8-10	❑ 10-15	❑ 10-15		
● 40-45	● 40-45	● 40-45	● 40-45	● 40-45	● 40-45	● 40-45	● 55-60	● 55-60	● 55-60	● 40-50
● 40-45	● 40-45	● 40-45	● 40-45	● 40-45	● 40-45	● 40-45	● 55-60	● 55-60	● 55-60	● 40-50
● 40-45	● 40-45	● 40-45	● 40-45	● 40-45	● 40-45	● 40-45	● 55-60	● 55-60	● 55-60	● 40-50
❑ 15-20	❑ 15-20	❑ 15-20	❑ 15-20	❑ 15-20	❑ 15-20	❑ 15-20	❑ 20-25	❑ 20-25	❑ 20-25	● 15-40
● 15-20	● 15-20	● 15-20	● 15-20	● 15-20	● 15-20	● 15-20	● 20-25	● 20-25	● 20-25	● 15-30
❑ 15-20	❑ 15-20		❑ 15-20	❑ 15-20	❑ 15-20	❑ 15-20	❑ 25-30	❑ 25-30		❑ 15-20

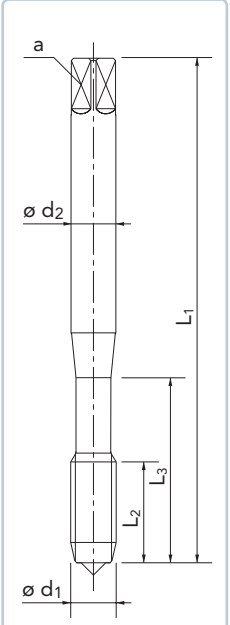
COLD FORMING TAPS

For blind and through holes

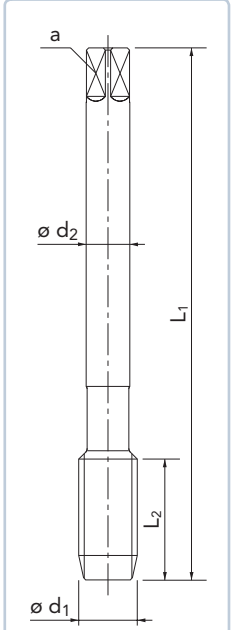
ISO Metric coarse thread - DIN 13

A

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 376 ≥ø12



Tool code	A80 VAP	A80 TiN	A80 TiCN	
				
Tolerance	6HX	6HX	6HX	
Chamfer form	C (2-3)	C (2-3)	C (2-3)	
Application range	1.2-3	1.1-3 2.1-2 4.1-3 5.2	1.1-3 2.1-2 4.1-3 5.2	
Hole type	1,5 x D	1,5 x D	1,5 x D	
Direction of cut	RH	RH	RH	
Through coolant				

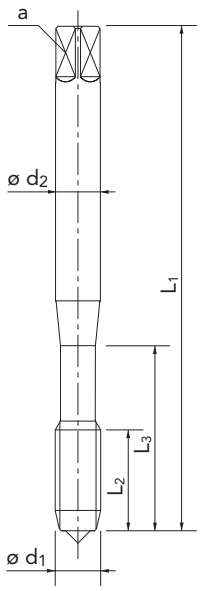
Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 2	0,4	45	7	11	2,8	2,1	3	1,85	•	•	•	
2,5	0,45	50	9	15	2,8	2,1	3	2,3	•	•	•	
3	0,5	56	10	18	3,5	2,7	4	2,8	•	•	•	
3,5	0,6	56	11	20	4	3	4	3,25	•	•	•	
4	0,7	63	12	21	4,5	3,4	5	3,7	•	•	•	
5	0,8	70	14	24,5	6	4,9	5	4,65	•	•	•	
6	1	80	16	29	6	4,9	5	5,55	•	•	•	
8	1,25	90	18	33	8	6,2	5	7,45	•	•	•	
10	1,5	100	20	36	10	8	5	9,3	•	•	•	
12	1,75	110	24	-	9	7	5	11,2	•	•	•	
14	2	110	25	-	11	9	6	13,1	•	•	•	
16	2	110	28	-	12	9	6	15,1	•	•	•	

• = standard execution

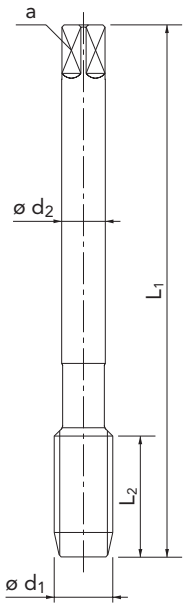
See price list on page 15 15 15

COLD FORMING TAPS
For blind and through holes
ISO Metric coarse thread - DIN 13

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 376 ≥ø12



Tool code	A80 6GX VAP	A80 6GX TiN	A80 6GX TiCN	
				
Tolerance	6GX	6GX	6GX	
Chamfer form	C (2-3)	C (2-3)	C (2-3)	
Application range	1.2-3	1.1-3 2.1-2 4.1-3 5.2	1.1-3 2.1-2 4.1-3 5.2	
Hole type	1,5xD	1,5xD	1,5xD	
Direction of cut	RH	RH	RH	
Through coolant				

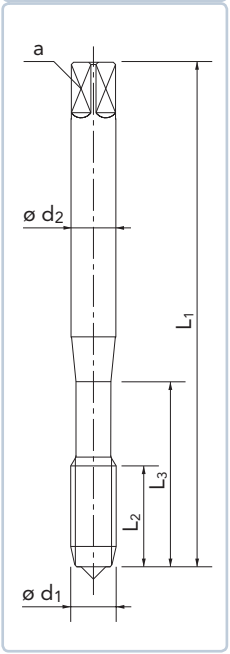
Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 2	0,4	45	7	11	2,8	2,1	3	1,85	•	•	•	
2,5	0,45	50	9	15	2,8	2,1	3	2,3	•	•	•	
3	0,5	56	10	18	3,5	2,7	4	2,8	•	•	•	
3,5	0,6	56	11	20	4	3	4	3,25	•	•	•	
4	0,7	63	12	21	4,5	3,4	5	3,7	•	•	•	
5	0,8	70	14	24,5	6	4,9	5	4,65	•	•	•	
6	1	80	16	29	6	4,9	5	5,55	•	•	•	
8	1,25	90	18	33	8	6,2	5	7,45	•	•	•	
10	1,5	100	20	36	10	8	5	9,3	•	•	•	
12	1,75	110	24	-	9	7	5	11,2	•	•	•	
14	2	110	25	-	11	9	6	13,1	•	•	•	
16	2	110	28	-	12	9	6	15,1	•	•	•	

• = standard execution

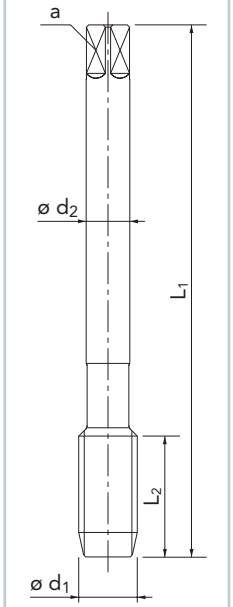
See price list on page 15 15 15

COLD FORMING TAPS - Oil grooves
For blind and through holes
ISO Metric coarse thread - DIN 13

DIN 2174 | DIN 371 ≤ø10



DIN 2174 | DIN 376 ≥ø12



Tool code	A80 N VAP	A80 N TiN	A80 N TiCN	
				
Tolerance	6HX	6HX	6HX	
Chamfer form	C (2-3)	C (2-3)	C (2-3)	
Application range	1.2-3	1.1-3 2.1-2 4.1-3 5.2	1.1-3 2.1-2 4.1-3 5.2	
Hole type	2,5 x D	2,5 x D	2,5 x D	
Direction of cut	RH	RH	RH	
Through coolant				

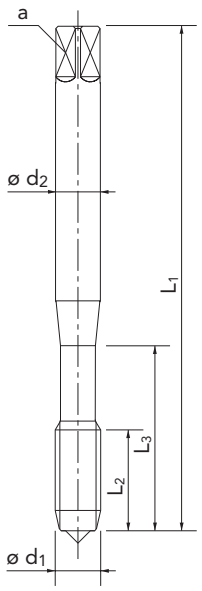
Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 2	0,4	45	7	11	2,8	2,1	3	1,85	•	•	•	
2,5	0,45	50	9	15	2,8	2,1	3	2,3	•	•	•	
3	0,5	56	10	18	3,5	2,7	4	2,8	•	•	•	
3,5	0,6	56	11	20	4	3	4	3,25	•	•	•	
4	0,7	63	12	21	4,5	3,4	5	3,7	•	•	•	
5	0,8	70	14	24,5	6	4,9	5	4,65	•	•	•	
6	1	80	16	29	6	4,9	5	5,55	•	•	•	
8	1,25	90	18	33	8	6,2	5	7,45	•	•	•	
10	1,5	100	20	36	10	8	5	9,3	•	•	•	
12	1,75	110	24	-	9	7	5	11,2	•	•	•	
14	2	110	25	-	11	9	6	13,1	•	•	•	
16	2	110	28	-	12	9	6	15,1	•	•	•	
18	2,5	125	28	-	14	11	8	16,9	•	•	•	
20	2,5	140	30	-	16	12	8	18,9	•	•	•	

• = standard execution

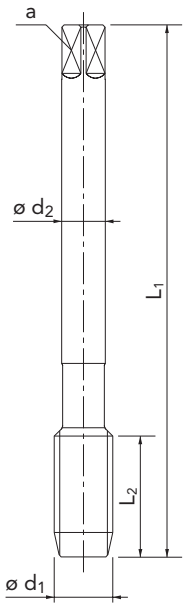
See price list on page 15 15 15

COLD FORMING TAPS - Oil grooves
For blind and through holes
ISO Metric coarse thread - DIN 13

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 376 ≥ø12



Tool code	A80 N 6GX VAP	A80 N 6GX TiN	A80 N 6GX TiCN	
				
Tolerance	6GX	6GX	6GX	
Chamfer form	C (2-3)	C (2-3)	C (2-3)	
Application range	1.2-3	1.1-3 2.1-2 4.1-3 5.2	1.1-3 2.1-2 4.1-3 5.2	
Hole type	2,5 x D	2,5 x D	2,5 x D	
Direction of cut	RH	RH	RH	
Through coolant				

Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 2	0,4	45	7	11	2,8	2,1	3	1,85	•	•	•	
2,5	0,45	50	9	15	2,8	2,1	3	2,3	•	•	•	
3	0,5	56	10	18	3,5	2,7	4	2,8	•	•	•	
3,5	0,6	56	11	20	4	3	4	3,25	•	•	•	
4	0,7	63	12	21	4,5	3,4	5	3,7	•	•	•	
5	0,8	70	14	24,5	6	4,9	5	4,65	•	•	•	
6	1	80	16	29	6	4,9	5	5,55	•	•	•	
8	1,25	90	18	33	8	6,2	5	7,45	•	•	•	
10	1,5	100	20	36	10	8	5	9,3	•	•	•	
12	1,75	110	24	-	9	7	5	11,2	•	•	•	
14	2	110	25	-	11	9	6	13,1	•	•	•	
16	2	110	28	-	12	9	6	15,1	•	•	•	

• = standard execution

See price list on page 15 15 15

1,5 x D | DIN 13 | HSSE

VERGNANO

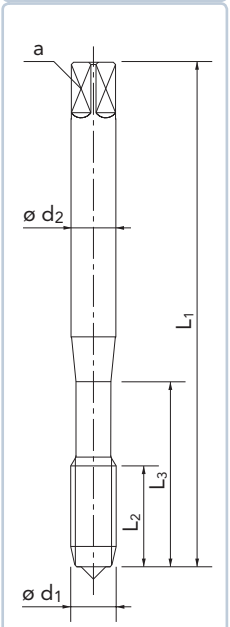
COLD FORMING TAPS

For blind and through holes

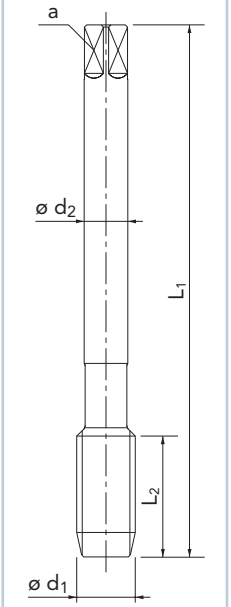
ISO Metric fine thread - DIN 13

A

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 374 ≥ø12



Tool code	A81 VAP	A81 TiN	A81 TiCN	
				
Tolerance	6HX	6HX	6HX	
Chamfer form	C (2-3)	C (2-3)	C (2-3)	
Application range	1.2-3	1.1-3 2.1-2 4.1-3 5.2	1.1-3 2.1-2 4.1-3 5.2	
Hole type	1,5 x D	1,5 x D	1,5 x D	
Direction of cut	RH	RH	RH	
Through coolant				

Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 3	0,35	56	10	18	3,5	2,7	4	2,85	•	•	•	
4	0,5	63	12	21	4,5	3,4	5	3,8	•	•	•	
5	0,5	70	14	24,5	6	4,9	5	4,8	•	•	•	
6	0,75	80	16	29	6	4,9	5	5,65	•	•	•	
8	1	90	18	33	8	6,2	5	7,55	•	•	•	
10	1	90	18	34	10	8	6	9,55	•	•	•	
10	1,25	100	20	36	10	8	6	9,45	•	•	•	
12	1	100	22	-	9	7	6	11,55	•	•	•	
12	1,25	100	22	-	9	7	6	11,45	•	•	•	
12	1,5	100	22	-	9	7	6	11,3	•	•	•	
14	1,25	100	22	-	11	9	6	13,45	•	•	•	
14	1,5	100	22	-	11	9	6	13,3	•	•	•	
16	1,5	100	22	-	12	9	6	15,3	•	•	•	

• = standard execution

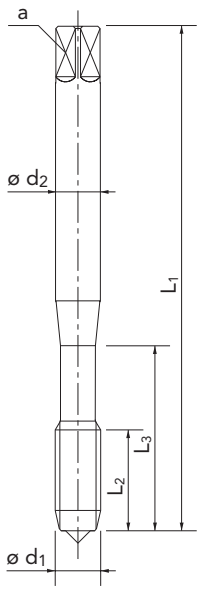
See price list on page 23 23 23

COLD FORMING TAPS

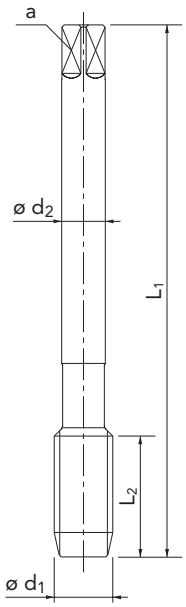
For blind and through holes

ISO Metric fine thread - DIN 13

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 374 ≥ø12



Tool code	A81 6GX VAP	A81 6GX TiN	A81 6GX TiCN	
				
Tolerance	6GX	6GX	6GX	
Chamfer form	C (2-3)	C (2-3)	C (2-3)	
Application range	1.2-3	1.1-3 2.1-2 4.1-3 5.2	1.1-3 2.1-2 4.1-3 5.2	
Hole type	1,5xD	1,5xD	1,5xD	
Direction of cut	RH	RH	RH	
Through coolant				

Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 3	0,35	56	10	18	3,5	2,7	4	2,85	•	•	•	
4	0,5	63	12	21	4,5	3,4	5	3,8	•	•	•	
5	0,5	70	14	24,5	6	4,9	5	4,8	•	•	•	
6	0,75	80	16	29	6	4,9	5	5,65	•	•	•	
8	1	90	18	33	8	6,2	5	7,55	•	•	•	
10	1	90	18	34	10	8	6	9,55	•	•	•	
10	1,25	100	20	36	10	8	6	9,45	•	•	•	
12	1	100	22	-	9	7	6	11,55	•	•	•	
12	1,25	100	22	-	9	7	6	11,45	•	•	•	
12	1,5	100	22	-	9	7	6	11,3	•	•	•	
14	1,25	100	22	-	11	9	6	13,45	•	•	•	
14	1,5	100	22	-	11	9	6	13,3	•	•	•	
16	1,5	100	22	-	12	9	6	15,3	•	•	•	

• = standard execution

See price list on page 23 23 23

2,5 x D | DIN 13 | HSSE

VERGNANO

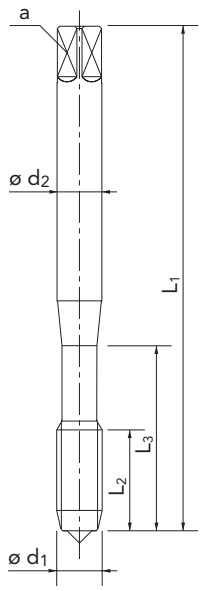
COLD FORMING TAPS - Oil grooves

For blind and through holes

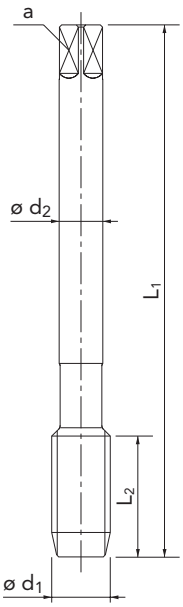
ISO Metric fine thread - DIN 13

A

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 374 ≥ø12



Tool code	A81 N VAP	A81 N TiN	A81 N TiCN	
				
Tolerance	6HX	6HX	6HX	
Chamfer form	C (2-3)	C (2-3)	C (2-3)	
Application range	1.2-3	1.1-3 2.1-2 4.1-3 5.2	1.1-3 2.1-2 4.1-3 5.2	
Hole type	2,5 x D	2,5 x D	2,5 x D	
Direction of cut	RH	RH	RH	
Through coolant				

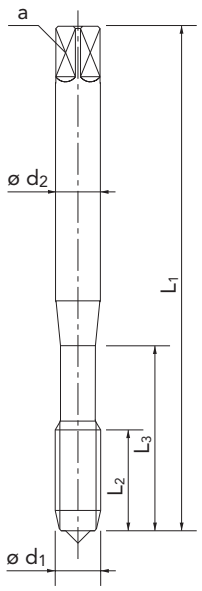
Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 3	0,35	56	10	18	3,5	2,7	4	2,85	•	•	•	
4	0,5	63	12	21	4,5	3,4	5	3,8	•	•	•	
5	0,5	70	14	24,5	6	4,9	5	4,8	•	•	•	
6	0,75	80	16	29	6	4,9	5	5,65	•	•	•	
8	1	90	18	33	8	6,2	5	7,55	•	•	•	
10	1	90	18	34	10	8	6	9,55	•	•	•	
10	1,25	100	20	36	10	8	6	9,45	•	•	•	
12	1	100	22	-	9	7	6	11,55	•	•	•	
12	1,25	100	22	-	9	7	6	11,45	•	•	•	
12	1,5	100	22	-	9	7	6	11,3	•	•	•	
14	1,25	100	22	-	11	9	6	13,45	•	•	•	
14	1,5	100	22	-	11	9	6	13,3	•	•	•	
16	1,5	100	22	-	12	9	6	15,3	•	•	•	
18	1,5	110	22	-	14	11	8	17,3	•	•	•	
20	1,5	125	25	-	16	12	8	19,3	•	•	•	

• = standard execution

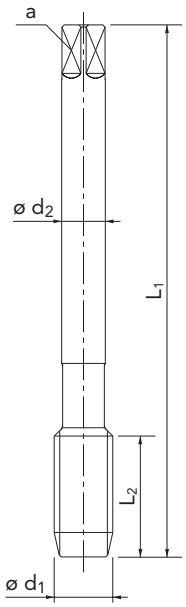
See price list on page 23 23 23

COLD FORMING TAPS - Oil grooves
For blind and through holes
ISO Metric fine thread - DIN 13

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 374 ≥ø12



Tool code	A81 N 6GX VAP	A81 N 6GX TiN	A81 N 6GX TiCN	
				
Tolerance	6GX	6GX	6GX	
Chamfer form	C (2-3)	C (2-3)	C (2-3)	
Chamfer form	1.2-3	1.1-3 2.1-2 4.1-3 5.2	1.1-3 2.1-2 4.1-3 5.2	
Hole type	2,5 x D	2,5 x D	2,5 x D	
Direction of cut	RH	RH	RH	
Through coolant				

Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 3	0,35	56	10	18	3,5	2,7	4	2,85	•	•	•	
4	0,5	63	12	21	4,5	3,4	5	3,8	•	•	•	
5	0,5	70	14	24,5	6	4,9	5	4,8	•	•	•	
6	0,75	80	16	29	6	4,9	5	5,65	•	•	•	
8	1	90	18	33	8	6,2	5	7,55	•	•	•	
10	1	90	18	34	10	8	6	9,55	•	•	•	
10	1,25	100	20	36	10	8	6	9,45	•	•	•	
12	1	100	22	-	9	7	6	11,55	•	•	•	
12	1,25	100	22	-	9	7	6	11,45	•	•	•	
12	1,5	100	22	-	9	7	6	11,3	•	•	•	
14	1,25	100	22	-	11	9	6	13,45	•	•	•	
14	1,5	100	22	-	11	9	6	13,3	•	•	•	
16	1,5	100	22	-	12	9	6	15,3	•	•	•	
18	1,5	110	22	-	14	11	8	17,3	•	•	•	
20	1,5	125	25	-	16	12	8	19,3	•	•	•	

• = standard execution

See price list on page 23 23 23

2,5 x D | EN ISO 228 | HSSE

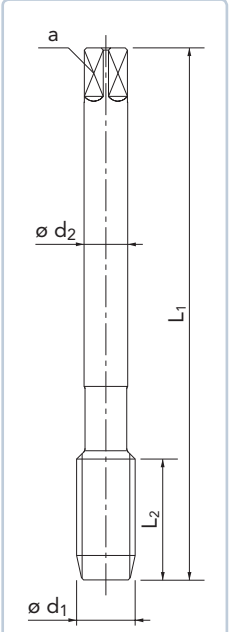
VERGNANO

COLD FORMING TAPS - Oil grooves

For blind and through holes

Whitworth pipe thread - EN ISO 228

DIN 2189



Tool code	A82 N VAP	A82 N TiN	A82 N TiCN	
				
Tolerance	ISO 5969 X	ISO 5969 X	ISO 5969 X	
Chamfer form	C (2-3)	C (2-3)	C (2-3)	
Application range	1.2-3	1.1-3 2.1-2 4.1-3 5.2	1.1-4 2.1-2 4.1-3 5.2	
Hole type	2,5 x D	2,5 x D	2,5 x D	
Direction of cut	RH	RH	RH	
Through coolant				

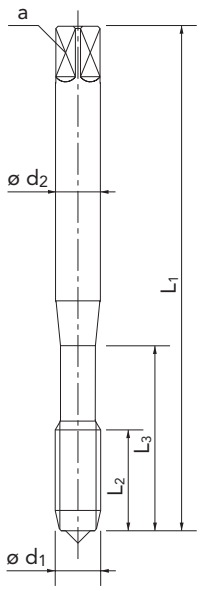
G	P [Sp/1"]	Ød1 [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
1/8"	28	9,728	90	18	-	7	5,5	6	9,25	•	•	•	
1/4"	19	13,157	100	22	-	11	9	6	12,5	•	•	•	
3/8"	19	16,662	100	22	-	12	9	6	16	•	•	•	
1/2"	14	20,955	125	25	-	16	12	6	20	•	•	•	
3/4"	14	26,441	140	28	-	20	16	6	25,5	•	•	•	

• = standard execution

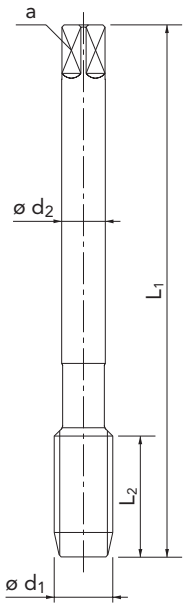
See price list on page 33 33 33

High Performance COLD FORMING TAPS
For blind and through holes
ISO Metric coarse thread - DIN 13

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 376 ≥ø12



Tool code	P80 TiN	P80 6GX TiN	P80 7GX TiN	
				
Tolerance	6HX	6GX	7GX	
Chamfer form	C (2-3)	C (2-3)	C (2-3)	
Application range	1.1-5 2.1-2 4.1-3 5.2	1.1-5 2.1-2 4.1-3 5.2	1.1-5 2.1-2 4.1-3 5.2	
Hole type	1,5xD	1,5xD	1,5xD	
Direction of cut	RH	RH	RH	
Through coolant				

Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 2	0,4	45	7	11	2,8	2,1	3	1,85	•	•		
2,5	0,45	50	9	15	2,8	2,1	3	2,3	•	•		
3	0,5	56	10	18	3,5	2,7	4	2,8	•	•	•	
3,5	0,6	56	11	20	4	3	4	3,25	•	•	•	
4	0,7	63	12	21	4,5	3,4	5	3,7	•	•	•	
5	0,8	70	14	24,5	6	4,9	5	4,65	•	•	•	
6	1	80	16	29	6	4,9	5	5,55	•	•	•	
8	1,25	90	18	33	8	6,2	5	7,45	•	•	•	
10	1,5	100	20	36	10	8	5	9,3	•	•	•	
12	1,75	110	24	-	9	7	5	11,2	•	•	•	
14	2	110	25	-	11	9	6	13,1	•	•	•	
16	2	110	28	-	12	9	6	15,1	•	•	•	

• = standard execution

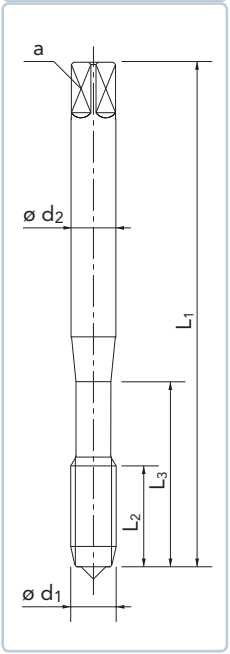
See price list on page 38 38 38

2,5 x D | DIN 13 | HSSK

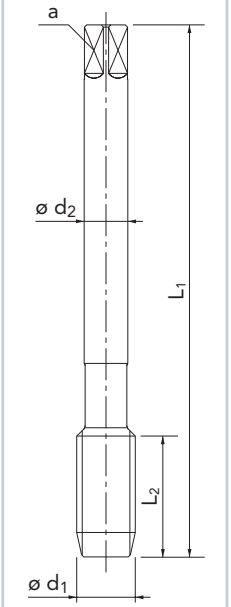
VERGNANO

High Performance COLD FORMING TAPS - Oil grooves
For blind and through holes
ISO Metric coarse thread - DIN 13

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 376 ≥ø12



Tool code	P80 N TiN	P80 N TiH1	P80 N 6GX TiN	P80 N 7GX TiN
				
Tolerance	6HX	6HX	6GX	7GX
Chamfer form	C (2-3)	C (2-3)	C (2-3)	C (2-3)
Application range	1.1-5 2.1-2 4.1-3 5.2	4.1-3 5.1-2	1.1-5 2.1-2 4.1-3 5.2	1.1-5 2.1-2 4.1-3 5.2
Hole type	2,5 x D	2,5 x D	2,5 x D	2,5 x D
Direction of cut	RH	RH	RH	RH
Through coolant				

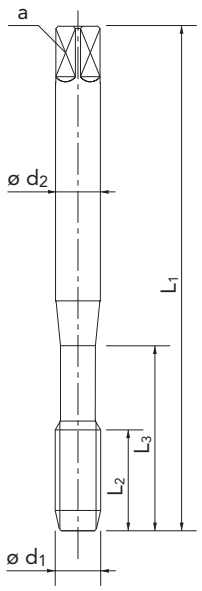
Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 2	0,4	45	7	11	2,8	2,1	3	1,85	•	•	•	
2,5	0,45	50	9	15	2,8	2,1	3	2,3	•	•	•	
3	0,5	56	10	18	3,5	2,7	4	2,8	•	•	•	•
3,5	0,6	56	11	20	4	3	4	3,25	•	•	•	•
4	0,7	63	12	21	4,5	3,4	5	3,7	•	•	•	•
5	0,8	70	14	24,5	6	4,9	5	4,65	•	•	•	•
6	1	80	16	29	6	4,9	5	5,55	•	•	•	•
8	1,25	90	18	33	8	6,2	5	7,45	•	•	•	•
10	1,5	100	20	36	10	8	5	9,3	•	•	•	•
12	1,75	110	24	-	9	7	5	11,2	•	•	•	•
14	2	110	25	-	11	9	6	13,1	•	•	•	•
16	2	110	28	-	12	9	6	15,1	•	•	•	•
18	2,5	125	28	-	14	11	8	16,9	•	•	•	
20	2,5	140	30	-	16	12	8	18,9	•	•	•	

• = standard execution

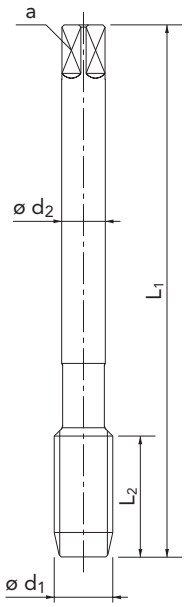
See price list on page 38 38 38

High Performance COLD FORMING TAPS - Short chamfer form "E"
For blind holes
ISO Metric coarse thread - DIN 13

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 376 ≥ø12



Tool code	P80 E TiN	P80 N E TiN	P80 N E 6GX TiN	
				
Tolerance	6HX	6HX	6GX	
Chamfer form	E (1,5-2)	E (1,5-2)	E (1,5-2)	
Application range	1.1-5 2.1-2 4.1-3 5.2	1.1-5 2.1-2 4.1-3 5.2	1.1-5 2.1-2 4.1-3 5.2	
Hole type	1,5 x D	2,5 x D	2,5 x D	
Direction of cut	RH	RH	RH	
Through coolant				

Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 3	0,5	56	10	18	3,5	2,7	4	2,8	•	•	•	
3,5	0,6	56	11	20	4	3	4	3,25	•	•	•	
4	0,7	63	12	21	4,5	3,4	5	3,7	•	•	•	
5	0,8	70	14	24,5	6	4,9	5	4,65	•	•	•	
6	1	80	16	29	6	4,9	5	5,55	•	•	•	
8	1,25	90	18	33	8	6,2	5	7,45	•	•	•	
10	1,5	100	20	36	10	8	5	9,3	•	•	•	
12	1,75	110	24	-	9	7	5	11,2		•		

• = standard execution

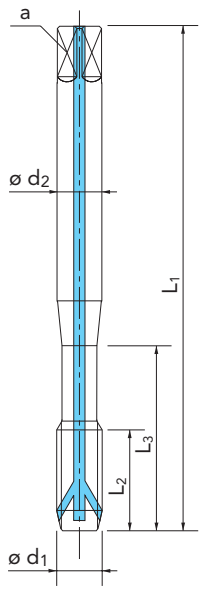
See price list on page 39 39 39

2,5 x D | DIN 13 | HSSK

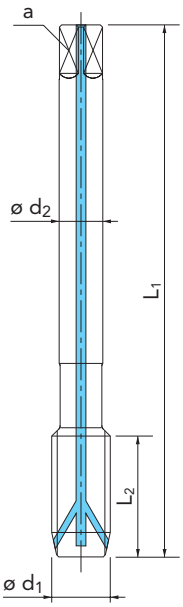
VERGNANO

High Performance COLD FORMING TAPS - Oil grooves - Internal coolant
For blind and through holes
ISO Metric coarse thread - DIN 13

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 376 ≥ø12



Tool code	BP80 N TiN	BP80 NR TiN		
				
Tolerance	6HX	6HX		
Chamfer form	C (2-3)	C (2-3)		
Application range	1.1-5 2.1-2 4.1-3 5.2	1.1-5 2.1-2 4.1-3 5.2		
Hole type	2,5 x D	2,5 x D		
Direction of cut	RH	RH		
Through coolant				

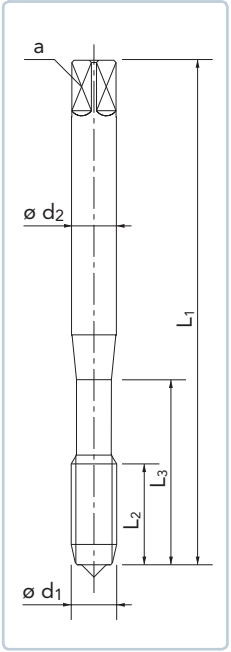
Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 5	0,8	70	14	24,5	6	4,9	4	4,65	•	•		
6	1	80	16	29	6	4,9	5	5,55	•	•		
8	1,25	90	18	33	8	6,2	5	7,45	•	•		
10	1,5	100	20	36	10	8	5	9,3	•	•		
12	1,75	110	24	-	9	7	5	11,2		•		
16	2	110	28	-	12	9	6	15,1		•		
20	2,5	140	30	-	16	12	8	18,9		•		
24	3	160	35	-	18	14,5	8	22,7		•		
27	3	160	35	-	20	16	8	25,7		•		
30	3,5	180	40	-	22	18	8	28,45		•		

• = standard execution

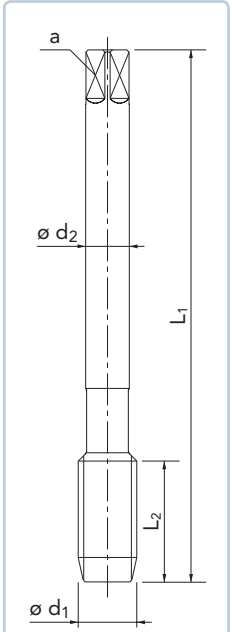
See price list on page 39 39

High Performance COLD FORMING TAPS
For blind and through holes
ISO Metric fine thread - DIN 13

DIN 2174 DIN 371 ≤ø10



DIN 2174 DIN 374 ≥ø12



Tool code	P81 TiN	P81 6GX TiN	P81 N TiN	P81 N 6GX TiN
				
Tolerance	6HX	6GX	6HX	6GX
Chamfer form	C (2-3)	C (2-3)	C (2-3)	C (2-3)
Application range	1.1-5 2.1-2 4.1-3 5.2	1.1-5 2.1-2 4.1-3 5.2	1.1-5 2.1-2 4.1-3 5.2	1.1-5 2.1-2 4.1-3 5.2
Hole type	1,5 x D	1,5 x D	2,5 x D	2,5 x D
Direction of cut	RH	RH	RH	RH
Through coolant				

Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
M 4	0,5	63	12	21	4,5	3,4	5	3,8	•	•	•	•
5	0,5	70	14	24,5	6	4,9	5	4,8	•	•	•	•
6	0,75	80	16	29	6	4,9	5	5,65	•	•	•	•
8	1	90	18	33	8	6,2	5	7,55	•	•	•	•
10	1	90	18	34	10	8	6	9,55	•	•	•	•
10	1,25	100	20	36	10	8	6	9,45	•	•	•	•
12	1	100	22	-	9	7	6	11,55	•	•	•	•
12	1,25	100	22	-	9	7	6	11,45	•	•	•	•
12	1,5	100	22	-	9	7	6	11,3	•	•	•	•
14	1,25	100	22	-	11	9	6	13,45	•	•	•	•
14	1,5	100	22	-	11	9	6	13,3	•	•	•	•
16	1,5	100	22	-	12	9	6	15,3	•	•	•	•
18	1,5	110	22	-	14	11	8	17,3			•	•
20	1,5	125	25	-	16	12	8	19,3			•	•

• = standard execution

See price list on page 40 40 40 40

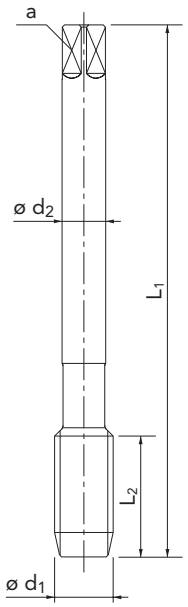
VERGNANO

High Performance COLD FORMING TAPS - Oil grooves

For blind and through holes

Whitworth pipe thread - EN ISO 2288

DIN 2189



Tool code	P82 N TiN			
				
Tolerance	ISO 5969 X			
Chamfer form	C (2-3)			
Application range	1.1-5 2.1-2 4.1-3 5.2			
Hole type	2,5 x D			
Direction of cut	RH			
Through coolant				

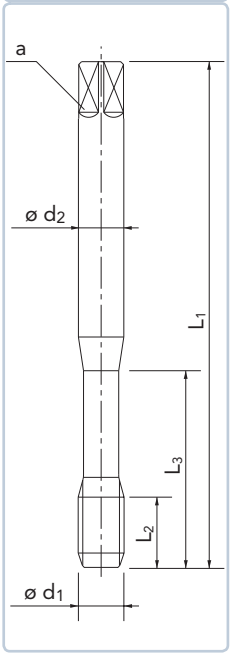
G	P [Sp/1"]	Ød1 [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h9 [mm]	a h12 [mm]	z [-]	[mm]				
1/8"	28	9,728	90	18	-	7	5,5	6	9,25	•			
1/4"	19	13,157	100	22	-	11	9	6	12,5	•			
3/8"	19	16,662	100	22	-	12	9	6	16	•			
1/2"	14	20,955	125	25	-	16	12	6	20	•			
3/4"	14	26,441	140	28	-	20	16	6	25,5	•			

• = standard execution

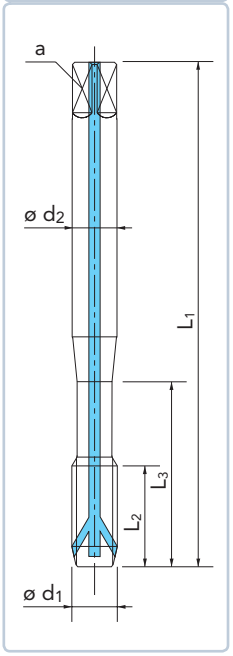
See price list on page 41

COLD FORMING TAPS for Synchronous Tapping - Oil grooves
For blind and through holes
ISO Metric coarse thread - DIN 13

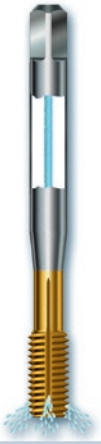
~ DIN 371 ≤ø12 (*)



~ DIN 371 ≤ø12 (*)



(*) DIN 1835-B on request

Tool code	S80 N TiN	S80 N 6GX TiN	BS80 NR TiN	BS80 NRE TiH1
				
Tolerance	6HX	6GX	6HX	6HX
Chamfer form	C (2-3)	C (2-3)	C (2-3)	E (1,5-2)
Application range	1.1-5 2.1-2 4.1-3 5.2	1.1-5 2.1-2 4.1-3 5.2	1.1-5 2.1-2 4.1-3 5.2	4.1-3 5.1-2
Hole type	2,5 x D	2,5 x D	2,5 x D	2,5 x D
Direction of cut	RH	RH	RH	RH
Through coolant				

Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h6 [mm]	a h12 [mm]	z [-]	[mm]				
M 4	0,7	70	7	18	6	4,9	5	3,7	•	•		
5	0,8	70	8	23	6	4,9	5	4,65	•	•		•
6	1	80	10	29	6	4,9	5	5,55	•	•	•	•
8	1,25	90	11	33	8	6,2	5	7,45	•	•	•	•
10	1,5	100	13	36	10	8	5	9,3	•	•	•	•
12	1,75	110	16	42	12	9	5	11,2	•	•	•	•

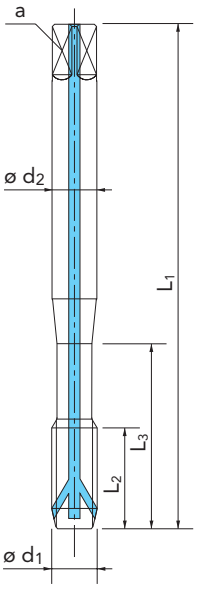
• = standard execution

See price list on page 42 42 42

VERGNANO

SOLID CARBIDE COLD FORMING TAPS - Oil grooves - Internal coolant
For blind and through holes
ISO Metric coarse thread - DIN 13

DIN 371



Tool code	HB80 NR TiCN			
				
Tolerance	6HX			
Chamfer form	C (2-3)			
Application range	1.1-5 2.1-2 4.1-3 5.1-2			
Hole type	2,5 x D			
Direction of cut	RH			
Through coolant				

Ød1 [mm]	P [mm]	L1 js 16 [mm]	L2 [mm]	L3 [mm]	Ød2 h6 [mm]	a h12 [mm]	z [-]	[mm]				
M 3(*)	0,5	56	6	18	3,5	2,7	4	2,8	•			
4(*)	0,7	63	7,5	21	4,5	3,4	4	3,7	•			
5	0,8	70	8,5	25	6	4,9	4	4,65	•			
6	1	80	11	30	6	4,9	4	5,55	•			
8	1,25	90	14	35	8	6,2	5	7,4	•			
10	1,5	100	16	39	10	8	5	9,25	•			

• = standard execution
(*)= Taps without through coolant

See price list on page 44

DRILL SIZES FORMING TAPS

ISO Metric coarse thread DIN 13		
M	Pitch	Drill size
M 2	0,4	1,85 ± 0,03
2,5	0,45	2,30 ± 0,03
3	0,5	2,80 ± 0,03
3,5	0,6	3,25 ± 0,03
4	0,7	3,70 ± 0,03
5	0,8	4,65 ± 0,03
6	1	5,55 ± 0,05
8	1,25	7,45 ± 0,05
10	1,5	9,30 ± 0,05
12	1,75	11,20 ± 0,05
14	2	13,10 ± 0,05
16	2	15,10 ± 0,05
18	2,5	16,90 ± 0,05
20	2,5	18,90 ± 0,05
24	3	22,70 ± 0,05
27	3	25,70 ± 0,05
30	3,5	28,45 ± 0,05

ISO Metric fine thread DIN 13		
MF	Pitch	Drill size
M 3	0,35	2,85 ± 0,03
4	0,5	3,80 ± 0,03
5	0,5	4,80 ± 0,03
6	0,75	5,65 ± 0,03
8	1	7,55 ± 0,05
10	1	9,55 ± 0,05
10	1,25	9,45 ± 0,05
12	1	11,55 ± 0,05
12	1,25	11,45 ± 0,05
12	1,5	11,30 ± 0,05
14	1,25	13,45 ± 0,05
14	1,5	13,30 ± 0,05
16	1,5	15,30 ± 0,05
18	1,5	17,30 ± 0,05
20	1,5	19,30 ± 0,05

Whitworth pipe thread EN - ISO 228		
G	T.P.I.	Drill size
G 1/8"	28	9,25 ± 0,05
1/4"	19	12,50 ± 0,05
3/8"	19	16,00 ± 0,05
1/2"	11	20,00 ± 0,05
3/4"	11	25,50 ± 0,05
1"	11	32,00 ± 0,05

Other drill sizes: theoretical flank diameter + pitch/5

In order to obtain the requested tolerance, the formation of a complete internal thread and guarantee the tap tool life, it is important to respect the drill hole diameters and their tight tolerances.

The core diameter of the internal thread obtained by forming is not only a function of the drill hole diameter but also depends on the workpiece material properties. For this reason the tolerance on the core diameter is 7H compared to 6H for cutting taps. For more detailed information see the DIN 13-50 standard.

ICON DESCRIPTION

TAP AND DIE GEOMETRY

- Forming tap without oil grooves
- Forming tap with oil grooves
- Through coolant forming tap with internal axial hole, for blind holes
- Through coolant forming tap with internal axial and radial holes, for through holes

HOLE TYPE AND DEPTH

- 1,5 x D — Blind, up to 1,5 x d_1
- 1,5 x D — Blind and through, up to 1,5 x d_1
- 2,5 x D — Blind, up to 2,5 x d_1
- 2,5 x D — Blind and through, up to 2,5 x d_1

CHAMFER FORM

- C (2-3) — Chamfer form C: 2 - 3 threads for blind and through holes
- E (1,5-2) — Chamfer form E: 1,5 - 2 threads for blind holes

TAP DIMENSIONS

- DIN 371 — Dimensions according to DIN 371
- DIN 376 — Dimensions according to DIN 376
- DIN 2174 — Dimensions according to DIN 2174
- DIN 2189 — Dimensions according to DIN 2189

DIRECTION OF CUT

- RH — Right hand cut

Plastic deformation without chip formation

APPLICATION INFORMATION

- 1.1-3 / 3.2 / 4.1-2 — Application range: MG materials groups
- S — Tap only for rigid tapping attachment (synchronous)
- High recommended cutting speed
- High tool life

TAP AND DIE TOLERANCE

- 6HX — Tolerance 6HX
- 6GX — Tolerance 6GX
- 7GX — Tolerance 7GX
- ISO 5969 X — Tolerance ISO 5969X

MATERIAL

- HM — Material: solid carbide
- HSSE — Material: conventional high speed steel
- HSSK — Material: powder metallurgy high speed steel

THREAD TYPE

- DIN 13 — Thread type: DIN 13
- EN ISO 228 — Thread type: GAS Whitworth EN ISO 228

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