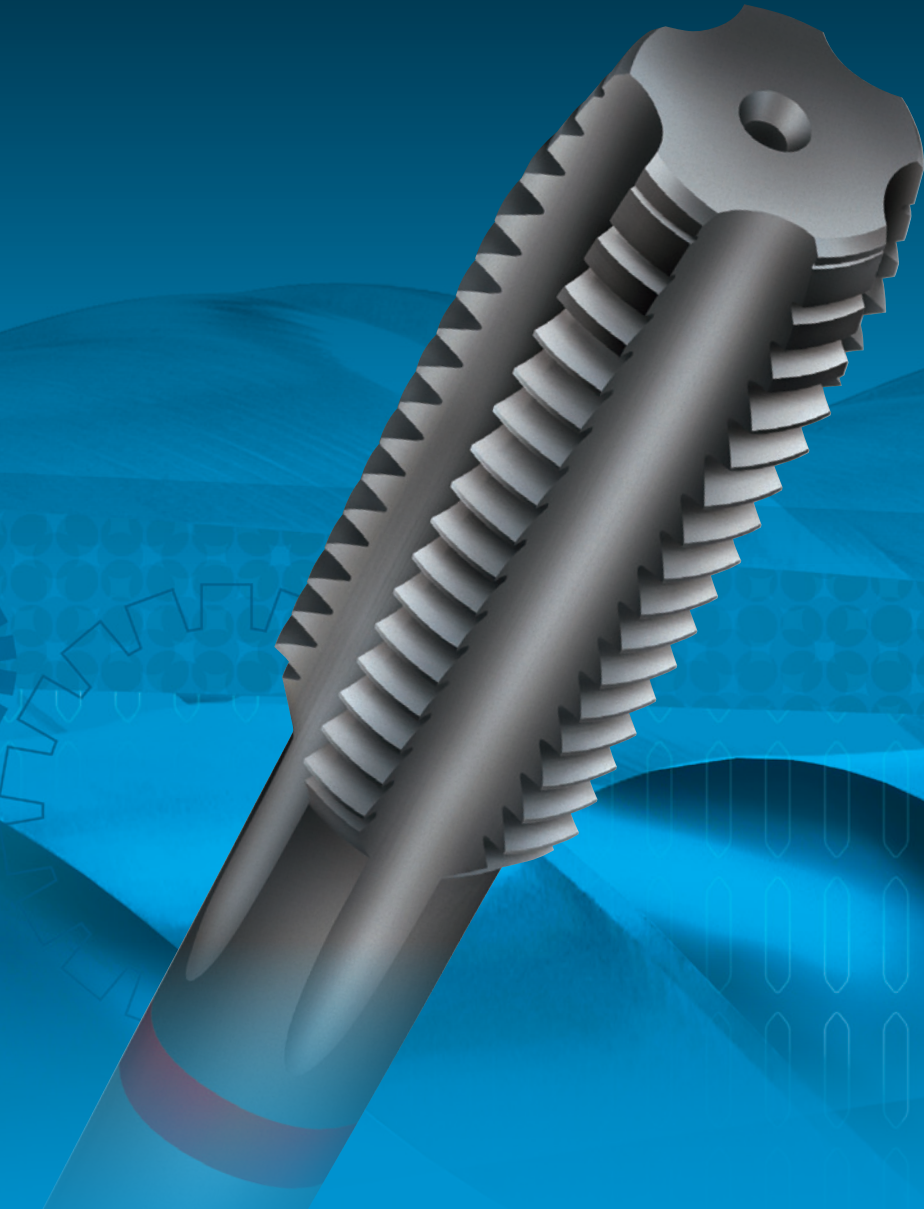


Tapping Hardened Steel...

We have the solution



- Specially developed carbide for extra toughness
- Optimised hard coating
- Specific geometry for hardened steel

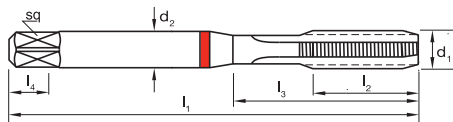
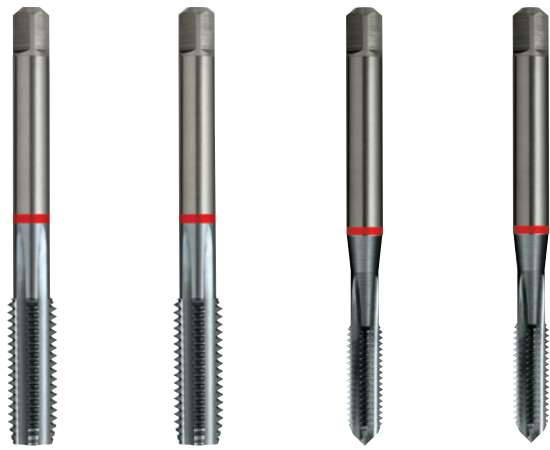
VH & XH
TAPS

suttontools
world class cutting tools

Taps Metric, Straight Flute, XH & VH

suttontools

XH - Use in hardened steels 42-52 HR_c
 VH - Use in hardened steels 50-60 HR_c
 - Through & blind holes
 - Depths up to approx. 1,5 x d₁



Catalogue Code
 Discount Group
 Material
 Surface Finish
 Colour Ring & Application
 Geometry
 Chamfer
 Limit & Nut Tolerance

	T294	T295	T296	T297
Catalogue Code	D0408	D0408	D0414	D0414
Discount Group	SPM	SPM	VHM	VHM
Material	TICN	TICN	TICN	TICN
Surface Finish	XH	XH	VH	VH
Geometry	Special Relief	Special Relief	Special Relief	Special Relief
Chamfer	Form C / 3 x P	Form D / 5 x P	Form C / 3 x P	Form D / 5 x P
Limit & Nut Tolerance	6HX	6HX	6HX	6HX
Item #	Item #	Item #	Item #	Item #

Size Ref.	d ₁	Pitch	l ₁	l ₂	l ₃	d ₂	sq	l ₄	z	drill Ø
0300	M 3	x 0.5	46	11	18	3.5	2.7	6	4	2.55
0400	M 4	x 0.7	52	13	21	4.5	3.4	6	4	3.4
0500	M 5	x 0.8	60	16	25	6.0	4.9	8	4	4.3
0600	M 6	x 1	62	19	30	6.0	4.9	8	4	5.1
0800	M 8	x 1.25	70	22	-	6.0	4.9	9	5	6.9
1000	M 10	x 1.5	75	24	-	7.0	5.5	11	5	8.6
1200	M 12	x 1.75	82	29	-	9.0	7.0	10	5	10.3
1600	M 16	x 2	95	32	-	12.0	9.0	12	5	14.1
2000	M 20	x 2.5	105	37	-	16.0	12.0	15	5	17.7
DIN 371 / DIN 376										
0300	M 3	x 0.5	56	11	18	3.5	2.7	6	4	2.55
0400	M 4	x 0.7	63	13	21	4.5	3.4	6	4	3.4
0500	M 5	x 0.8	70	16	25	6.0	4.9	8	4	4.3
0600	M 6	x 1	80	19	30	6.0	4.9	8	5	5.1
0800	M 8	x 1.25	90	22	35	8.0	6.2	9	5	6.9
1000	M 10	x 1.5	100	24	39	10.0	8.0	11	5	8.6
1200	M 12	x 1.75	110	28	-	9.0	7.0	10	5	10.3
1600	M 16	x 2	110	32	-	12.0	9.0	12	6	14.1
2000	M 20	x 2.5	140	34	-	16.0	12.0	15	6	17.7

ISO	VDI 3323	Material	Condition	HB	N/mm ²	Vc (m/min)				
P	5	Steel - Non-alloy, cast & free cutting	~ 0.75 %C	QT	300	1010	11	11	-	-
	8	Steel - Low alloy & cast		QT	300	1010	7	7	-	-
	9	< 5% of alloying elements		QT	350	1180	4	4	5	5
	11	Steel - High alloy, cast & tool		HT	325	1100	7	7	11	11
K	13	Steel - Corrosion resistant & cast	Martensitic	QT	240	810	4	4	5	5
	16	Cast Iron - Grey (GG)	Pearlitic		260	880	12	12	-	-
N	18	Cast Iron - Nodular (GGG)	Pearlitic		250	840	12	12	-	-
	27	Copper & Cu alloys	Brass (CuZn, CuSnZn)		90	320	21	21	32	32
H	38.1	Hardened steel		HT	45 HRC		4	4	5	5
	38.2			HT	55 HRC		-	-	4	4
	39.1			HT	58 HRC		-	-	4	4
	39.2			HT	62 HRC		-	-	4	4
	40	Cast Iron	Chilled	C	400	1350	9	9	14	14
41			HT	55 HRC		-	-	4	4	

Notes on Tapping Hardened steel

- A neat cutting oil must be used
- After each tapped thread, the chips/swarf must be removed
- When using a tapping chuck with a torque clutch, torque should be set to high. Preferably Quick-change adapters without torque clutch should be used

- For Machine use only, not for use by hand
- The maximum thread depth is 1.5 x d₁
- When using machines with synchronized spindle, and the tap is used in a solid rigid holder, the specified speed values can be increased by approximately 10%

LEGEND

n = rev. per minute
 v_c = cutting speed (m/min)
 f = pitch (mm)
 v_f = feed rate (mm/min)

FORMULAS

$n = (v_c \times 1000) / (\phi \times \pi)$
 $v_c = (\phi \times \pi \times n) / 1000$
 $v_f = f \times n$

Case Study

Torque comparison between Sutton VH Carbide Tap & European competitors tap.

Test Details

Material:	D2 (60HRC)		
Vc:	2m/min		
Coating:	TiCN		
Lubrication:	7% water soluble		
Drill Size:	5.1mm		
Depth:	9mm		
Holder Type	Average Torque (Ncm)	Average Down Cut Torque (Ncm) Entering Hole	Average Reverse Torque (Ncm) Exiting Hole
Sutton VH (T296)	340	414	103
Competitor	397	472	134

