

The Right Tool at the Right Time



# ***NEW*** SHARK LINE

*Material specific application taps*



# Introduction

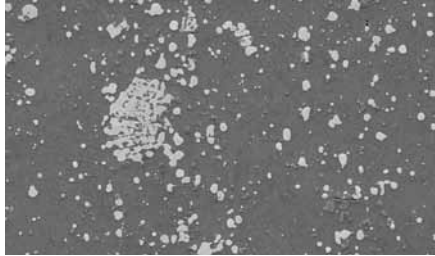
- Dormer's application-based ranges of DIN taps, branded Shark Line, are renowned for their high performance and are easily recognisable by their coloured rings, denoting recommendation for use on specific materials.
- Research has led to the development of new features on specific Shark Lines, such as special coatings and geometries.
- Shark Line taps are a dependable solution when high quality threads are required in specific materials.

## Features & Benefits

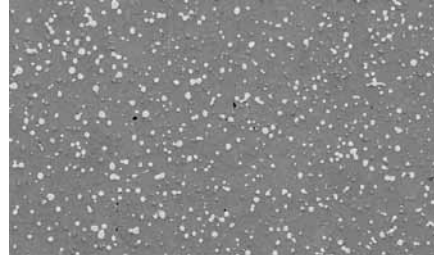
- **Application**  
Problem-free threading of blind and through holes in specific materials.
- **Colour Ring Coding**  
The colour ring identifies the taps for specific materials.
- Improved chip evacuation reduces interruptions to your production process.
- Significant reduction in axial forces compared to conventional taps reduces the risk of inaccurate threads.
- Significant reduction in torque compared to conventional taps reduces machine wear and decreases the risk of chipping or breakage.
- **Flute Geometry**  
Special flute geometry on Yellow, Red and Green Shark spiral flute taps means the nest formation of swarf is prevented, reducing the risk of re-cutting swarf on reversal.
- **Edge Treatment**  
Yellow, Red and Blue Shark spiral flute taps for steels and stainless steels have a special edge treatment to increase strength and reduce the chance of micro-chipping on the cutting edges.  
This considerably improves performance and tool life.

# Tool *Material*

- Shark Line taps are manufactured from special powder metalurgy tool steel (HSS-E-PM). This provides an unbeatable combination of toughness and edge strength allowing increased hot hardness properties, resulting in excellent performance under higher cutting conditions.



Micro structure of traditional HSS-E (M35)



Micro structure of HSS-E-PM\*

\* Courtesy of Erasteel

# Surface *Treatments*

- Applying the optimum surface treatment to suit the work piece material can significantly increase productivity, tool life and dependability.
- **Steam Tempering (ST)**  
Steam Tempering gives anti-oxidation properties and enables the surface of the tool to absorb lubrication during machining operations. It is a good solution for tapping stainless steel.
- **Hard Chrome (Cr)**  
Hard Chrome Plating increases surface hardness significantly, achieving values up to 68HRc. It prevents the swarf from sticking and is especially suitable when tapping structural grade steels, carbon steels, copper and brass.
- **Super-B**  
Super-B is a low friction self lubricating, hard coating which prevents built-up edge and provides very high wear resistance. This is particularly advantageous when threading tough, long-chipping heat resistant materials such as stainless steel.
- **TiAlN**  
TiAlN is a multi-layer ceramic coating which is very tough and resistant to wear caused by high temperature. This is particularly advantageous when threading abrasive materials such as cast irons.
- **TiAlN-Top**  
TiAlN-Top is a multi-layer ceramic coating which has been through a smoothing process. It exhibits high toughness and oxidation stability making it ideal for higher speeds and feeds, whilst improving tool life. This is particularly advantageous when threading tough alloys and hardened steels, but also has benefits when tapping aluminium.

# Yellow Shark

- **Designed for high performance thread production in low alloy steels.**

- **Surface Treatment**

Available with Hard Chrome Plating (Cr) to prevent built up edge when tapping materials which are prone to sticking to the cutting edges.  
Yellow Shark also has an additional edge treatment to guarantee excellent performance in steels.

- **Flute Geometry**

Available in spiral point for through holes and spiral flute (40° angle) for blind holes.  
Special flute geometry on Yellow Shark spiral flute taps means the nest formation of swarf is prevented, reducing the risk of re-cutting swarf on reversal.

**Metric**

Spiral Point - Hard chrome  
E297 from M3 to M30  
Spiral Flute - Hard chrome  
E298 from M3 to M30  
DIN 371, M3 - M10; DIN 376, M12 - M30



**Metric Fine**

Spiral Point - Hard chrome  
E299 from M4x0.5 to M30x2.0  
Spiral Flute - Hard chrome  
E300 from M4x0.5 to M30x2.0  
DIN 374

# Red Shark

- **Designed for high performance thread production in alloy steels.**

- **Surface Treatment**

Available in Bright Finish or TiAlN-Top coating combined with an additional edge treatment guarantees excellent performance in alloy steels.

- **Flute Geometry**

Available in spiral point for through holes and spiral flute (45° angle) for blind holes.  
Special flute geometry on Red Shark spiral flute taps means the nest formation of swarf is prevented, reducing the risk of re-cutting swarf on reversal.

- **Back Tapered**

On spiral flute Red Shark the back taper further facilitates chip evacuation, reducing chipping on the last threads of the taps and also reducing the torque when the tap reverses.

- **Tool Holding**

When using spiral flute Red Shark taps, it is recommended to use a tool holder with minimal float or soft start.

**Metric**

Spiral Point - Bright  
E255 from M3 to M20  
Spiral Point - TiAlN-Top  
E256 from M3 to M20



Spiral Flute - Bright  
E260 from M3 to M20  
Spiral Flute - TiAlN-Top  
E261 from M3 to M20

DIN 371, M3 - M10; DIN 376, M12 - M20

# Blue Shark

- **Designed for high performance thread production in a wide range of stainless steels.**

- **Surface Treatment**

Available in Steam Tempered (ST) or Super-B (TiAlN + WC/C) coating combined with an additional edge treatment guarantees excellent performance in most stainless steels.

- **Flute Geometry**

Available in spiral point for through holes and spiral flute (40° angle) for blind holes.

- **Back Tapered**

On the E238 and E239 spiral flute Blue Shark, the back taper further facilitates chip evacuation, reducing chipping on the last threads of the taps and also reducing the torque when the tap reverses.

### Metric

Spiral Point - Steam Tempered  
E240 from M3 to M30  
Spiral Point - Super-B  
E241 from M3 to M20  
Spiral Flute - Steam Tempered - back tapered  
E238 from M3 to M30  
Spiral Flute - Super-B - back tapered  
E239 from M3 to M20  
DIN 371, M3 - M10; DIN 376, M12 - M20



### Metric Fine

Spiral Point - Steam Tempered  
E384 from M6x0.75 to M20x1.5  
Spiral Flute - Steam Tempered  
E383 from M6x0.75 to M20x1.5  
DIN 374

### BSP(G)

Spiral Flute - Steam Tempered  
E382 from 1/8"-28 to 1"-11  
DIN 5156

# White Shark

- **Designed for high performance thread production in cast irons.**

- **Surface Treatment**

Steam Temper (ST) or TiAlN coating provides excellent performance in most cast irons.

- **Flute Geometry**

Straight flute design gives excellent performance when threading both through and blind holes in short chipping materials.

### Metric

Straight Flute - Steam Tempered  
E201 from M3 to M10 - DIN 371  
Straight Flute - Steam Tempered  
E252 from M8 to M24 - DIN 376



Straight Flute - TiAlN  
E390 from M3 to M20  
DIN 371, M3 - M10; DIN 376, M12 - M20

# Green Shark

- **Designed for high performance thread production in non-ferrous materials.**

- **Surface Treatment**

Available in Bright Finish or Super-B (TiAlN + WC/C) coating guarantees excellent performance in aluminiums, brass and copper.

- **Flute Geometry**

Available in spiral point for through holes and spiral flute (35° angle) for blind holes.

Special flute geometry on Green Shark spiral flute taps means the nest formation of swarf is prevented, reducing the risk of re-cutting swarf on reversal.



## Metric

Spiral Point - Bright

E471 from M3 to M20

Spiral Point - Super-B

E472 from M3 to M20

Spiral Flute - Bright

E473 from M3 to M20

Spiral Flute - Super-B

E474 from M3 to M20

DIN 371, M3 - M10; DIN 376, M12 - M20

## Hints & Tips

- Rigid tapping is recommended particularly when tapping blind holes with spiral flute taps.
- When rigid tapping on CNC machines with Shark taps, it is recommended to use a tool holder with minimal float or soft start.
- If rigid tapping using ER collet chucks, it is recommended to use collets with square drive. This will reduce the chance of slipping and increase tool life.
- When tapping stainless steels on machines with soluble oil, it is recommended to increase the oil content to 8 – 10 %.
- Be sure to calculate the drill diameter accurately. If the application should allow, when tapping difficult materials you should consider pre-drilling the hole slightly larger. This can considerably increase tap life.
- When using hand applied cutting fluids, be sure to choose the correct grade from Dormer Tools.
- If the application allows, when tapping blind holes its recommended to drill 1-2 pitches deeper to prevent the chance of bottoming and breakage.

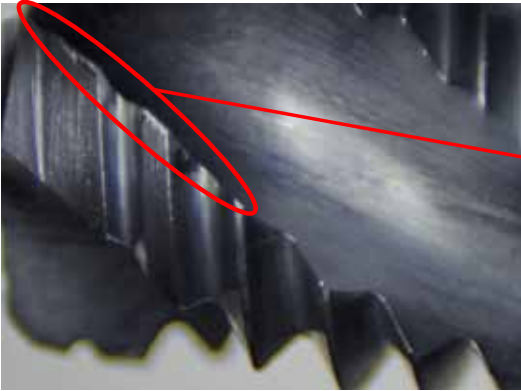
## Special *Flute Geometry*

- Special shaped grinding wheels create a flute geometry on spiral flute Shark taps to help control swarf, preventing nest formation and re-cutting of swarf on reversal.

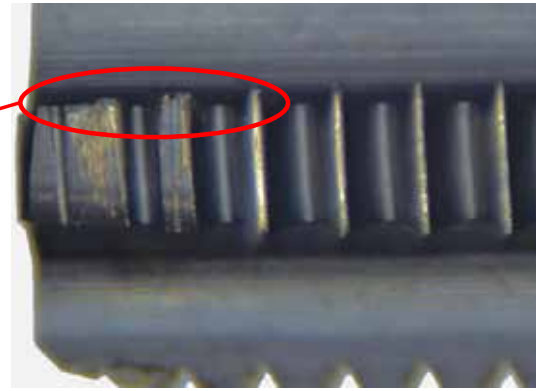


# Superior *Cutting Edge Strength*

- HSS-E-PM has a more controlled structure which provides more uniform wear and therefore delivers more consistent performance and process stability. Essential when tapping.








E261 M8 after 1600 Holes in Steel  
 Uddeholm Orvar Supreme (AMG 1.5)  
 Vc = 20 M/min Depth = 20 mm



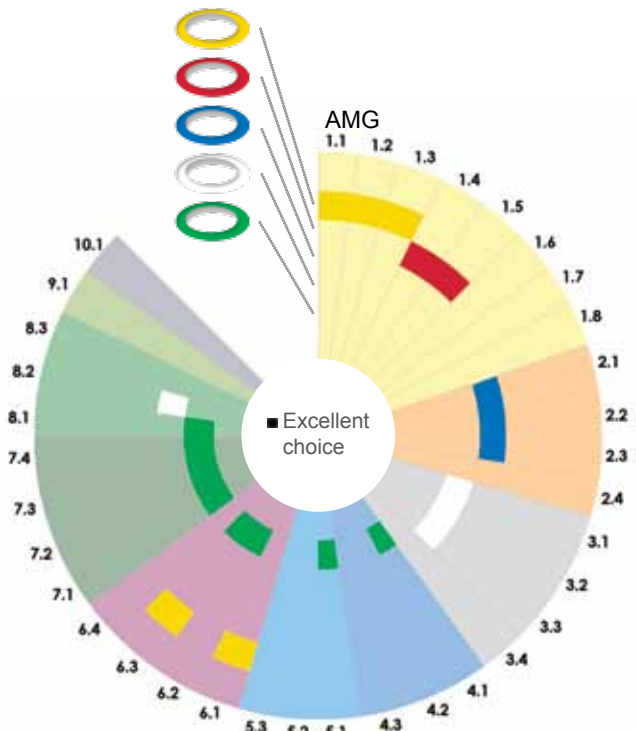
E390 M8 after 10000 Holes in Cast Iron  
 SS0727 (AMG 3.3)  
 Vc = 35 M/min Depth = 16 mm

Minimal lead wear after many holes

## Cutting Fluids *for Shark Line taps*

Shark	Application	Cutting Oil
	Steel	M200 No 1 (Blue)
	Brass/ Copper	M200 No 2 (Red)
	Alloy steels	M200 No 1 (Blue)
	Stainless Steel	M200 No 1 (Blue)
	Cast Irons < 230HB	Emulsion
	Cast Irons > 230HB	M200 No 1 (Blue)
	Non Ferrous Materials	M200 No 2 (Red)





# Application Material Groups

- Excellent for Application
- Good for Application

Example  
10 = Peripheral speed in metres/minute +/- 10%

M	M	MF	MF	M	M	M
DIN 3716:10 3769:12	DIN 3716:10 3769:12	DIN 374	DIN 374	DIN 3716:10 3769:12	DIN 3716:10 3769:12	DIN 3716:10 3769:12
6H	6H	6H	6H	6H	6H	6H
2.5XD	2XD	2.5XD	2XD	2.5XD	2.5XD	2.5XD
HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW
B 3.5-5	C 2-3	B 3.5-5	C 2-3	B 3.5-5	B 3.5-5	C 2-3
$\lambda 40^\circ$	$\lambda 40^\circ$	$\lambda 40^\circ$	$\lambda 40^\circ$	$\lambda 40^\circ$	$\lambda 40^\circ$	$\lambda 45^\circ$
Cr	Cr	Cr	Cr	Cr	TiAlN Top	Cr
E297	E298	E299	E300	E255	E256	E260
M3 - M30	M3 - M30	M4 - M30	M4 - M30	M3 - M20	M3 - M20	M3 - M20
<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>
SHARK LINE	SHARK LINE	SHARK LINE	SHARK LINE	SHARK LINE	SHARK LINE	SHARK LINE

Application Material Group		Hardness HB	Tensile strength N/mm <sup>2</sup>	
1. Steel	1.1 Magnetic soft steel	< 120	< 400	1.1
	1.2 Structural steel, case carburizing steel	< 200	< 700	1.2
	1.3 Plain Carbon steel	< 250	< 850	1.3
	1.4 Alloy steel	< 250	< 850	1.4
	1.5 Alloy steel, Hardened and tempered steel	> 250 < 350	> 850 < 1200	1.5
	1.6 Alloy steel, Hardened and tempered steel	> 350	> 1200 < 1620	1.6
	1.7 Alloy steel, Heat treated	49-55 HRc	> 1620	1.7
	1.8 Alloy steel, Hardened & Wear resistant steel	55-63 HRc	> 1980	1.8
2. Stainless Steel	2.1 Free machining, Stainless Steel	< 250	< 850	2.1
	2.2 Austenitic	< 250	< 1100	2.2
	2.3 Ferritic + Austenitic, Ferritic, Martensitic	< 300	< 1000	2.3
	2.4 Precipitation Hardened	> 320 < 410	> 1100 < 1400	2.4
3. Cast Iron	3.1 Lamellar graphite	< 150	< 500	3.1
	3.2 Lamellar graphite	> 150 ≤ 300	> 500 ≤ 1000	3.2
	3.3 Nodular graphite, Malleable Cast Iron	< 200	< 700	3.3
	3.4 Nodular graphite, Malleable Cast Iron	> 200 < 300	> 700 < 1000	3.4
4. Titanium	4.1 Titanium, unalloyed	< 200	< 700	4.1
	4.2 Titanium, alloyed	< 270	< 900	4.2
	4.3 Titanium, alloyed	> 270 < 350	> 900 ≤ 1250	4.3
5. Nickel	5.1 Nickel, unalloyed	< 150	< 500	5.1
	5.2 Nickel, alloyed	< 270	< 900	5.2
	5.3 Nickel, alloyed	> 270 < 350	> 900 < 1200	5.3
6. Copper	6.1 Copper	< 100	< 350	6.1
	6.2 β-Brass, Bronze	< 200	< 700	6.2
	6.3 α-Brass	< 200	< 700	6.3
	6.4 High Strength Bronze	< 470	< 1500	6.4
7. Aluminium Magnesium	7.1 Al, Mg, unalloyed	< 100	< 350	7.1
	7.2 Al alloyed, Si < 0.5%	< 150	< 500	7.2
	7.3 Al alloyed, Si > 0.5% < 10%	< 120	< 400	7.3
	7.4 Al alloyed, Si > 10% Whisker reinforced Al-alloys Mg-alloys	< 120	< 400	7.4
8. Synthetic materials	8.1 Thermoplastics	---	---	8.1
	8.2 Thermosetting plastics	---	---	8.2
	8.3 Reinforced plastic materials	---	---	8.3
9. Hard material	9.1 Cermets (metals-ceramics)	< 550	< 1700	9.1
10. Graphite	10.1 Graphite	---	< 100	10.1

	M	M	M	M	M	MF	MF	G	M	M	M	M	M	M	M	M	
	DIN 371610 3763-12	DIN 371610 3763-12	DIN 371610 3763-12	DIN 371610 3763-12	DIN 371610 3763-12	DIN 374	DIN 374	DIN 5156	DIN 371	DIN 376	DIN 371610 3763-12	DIN 371610 3763-12	DIN 371610 3763-12	DIN 371610 3763-12	DIN 371610 3763-12		
	6H	6H	6H	6H	6H	6H	6H	Normal	6HX	6HX	6HX	6H	6H	6H	6H		
	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2XD	2XD	2XD	2XD	2XD	2.5XD	2.5XD	2.5XD	2.5XD		
	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	HSS-E-PW	
	C 2-3	B 3.5-5	B 3.5-5	C 2-3	C 2-3	B 3.5-5	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	B 3.5-5	B 3.5-5	C 2-3	C 2-3		
	λ45°			λ40°	λ40°		λ40°	λ40°							λ35°	λ35°	
	TAIN Top	ST	Super B	ST	Super B	ST	ST	ST	ST	ST	TAIN	TAIN	Super B	Super B	Super B	Super B	
	E261	E240	E241	E238	E239	E384	E383	E382	E201	E252	E390	E471	E472	E473	E474	L114	
	M3 - M20	M3 - M30	M3 - M20	M3 - M30	M3 - M20	M6 - M20	M6 - M20	1/8 - 1"	M3 - M10	M8 - M24	M3 - M20	M3 - M20	M3 - M20	M3 - M20	M3 - M20	Set	
	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	<b>NEW</b>	
	SHARK   LINE SHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINESHARK   LINE SHARK   LINE SHARK																
1.1												●25		●25			
1.2												●22		●40	●22	●40	
1.3												●18		●32	●18	●32	
1.4	■30		●32		●32												
1.5	■20	●10	●17	●10	●13	●10	●10	●10									
1.6	●11	●5	●11	●5	●11	●5	●5	●5									
1.7																	
1.8																	
2.1		■8	■14	■8	■14	■8	■8	■8									
2.2		■7	■10	■7	■10	■7	■7	■7									
2.3		■5	■6	■5	■6	■5	■5	■5									
2.4																	
3.1									■15	■15	■30						
3.2									■8	■8	■25						
3.3									■15	■15	■35						
3.4									●8	●8	●25						
4.1																	
4.2	●10												■25		■25		
4.3																	
5.1																	
5.2	●10																
5.3																	
6.1												●12		●12			
6.2									●20	●20	●30	■30	■45	■30	■45		
6.3												■20	●35	■20	●35		
6.4									●5	●5	●4						
7.1												■16	●35	■16	●35		
7.2												■35	●45	■35	●45		
7.3												■20	■30	■20	■30		
7.4												●15	■20	●15	■20		
8.1									●15	●15	●20	■25	●30	■25	●30		
8.2									■10	■10	■15						
8.3																	
9.1																	
10.1																	

E297



## E297

- M Machine Tap Spiral Point , Yellow Shark
- M Maschinen-Gewindebohrer, Geradegenutet mit Schälanschnitt , Gelbring Shark
- M Machinetappen, rechte spaangroef, Yellow Shark
- M Tarauts machine Coupe gun , Shark bague jaune
- M Macho de máquina con entrada en hélice Shark (Anillo Amarillo)
- M Macho Máquina Ponta Helicoidal , Shark - Anel Amarelo



E297 ■ 1.1 1.2 1.3 6.1 6.3  
 ■ 1.4 1.5 6.2



M	P mm	l <sub>1</sub> mm	l <sub>2</sub> mm	d <sub>2</sub> Ø mm	□ a mm	l <sub>3</sub> mm	z		l <sub>4</sub> mm	E297
3	0.50	56	9	3.5	2.7	6	3	2.5	18	E297M3
4	0.70	63	12	4.5	3.4	6	3	3.3	21	E297M4
5	0.80	70	13	6.0	4.9	8	3	4.2	25	E297M5
6	1.00	80	15	6.0	4.9	8	3	5.0	30	E297M6
8	1.25	90	18	8.0	6.2	9	3	6.8	35	E297M8
10	1.50	100	20	10.0	8.0	11	3	8.5	39	E297M10
12	1.75	110	23	9.0	7.0	10	3	10.3		E297M12
14	2.00	110	25	11.0	9.0	12	3	12.0		E297M14
16	2.00	110	25	12.0	9.0	12	3	14.0		E297M16
18	2.50	125	30	14.0	11.0	14	3	15.5		E297M18
20	2.50	140	30	16.0	12.0	15	3	17.5		E297M20
22	2.50	140	34	18.0	14.5	17	4	19.5		E297M22
24	3.00	160	38	18.0	14.5	17	4	21.0		E297M24
27	3.00	160	38	20.0	16.0	19	4	24.0		E297M27
30	3.50	180	45	22.0	18.0	21	4	26.5		E297M30

Supplied in HSS-E until new stock available / Lieferung in HSS-E bis neuer Lagerbestand verfügbar / Geleverd in HSS-E tot de nieuwe voorraad beschikbaar is / Fourni en HSS-E jusqu'à ce que le nouveau stock soit disponible / Suministrado en HSS-E hasta disponibilidad de nuevo stock / Fornecido em HSS-E até disponibilidade do novo estoque

E298



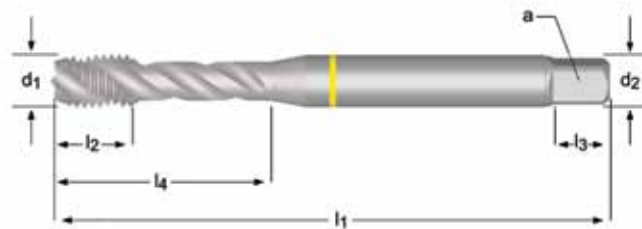
## E298

- M Machine Tap Spiral Flute 40° , Yellow Shark
- M Maschinen-Gewindebohrer, Rechtsgedrallte Nuten 40° , Gelbring Shark
- M Machinetappen, spiraalgroeven 40° , Yellow Shark
- M Tarauds machine goujures hélicoïdales 40° , Shark bague jaune
- M Macho de máquina helicoidal 40° Shark (Anillo Amarillo)
- M Macho Máquina Canal Helicoidal 40° , Shark - Anel Amarelo



E298

- 1.1 1.2 1.3 6.1 6.3
- 1.4 1.5 6.2



M	P mm	l <sub>1</sub> mm	l <sub>2</sub> mm	d <sub>2</sub> Ø mm	□ a mm	l <sub>3</sub> mm	z		l <sub>4</sub> mm	E298
3	0.50	56	6	3.5	2.7	6	3	2.5	18	E298M3
4	0.70	63	7	4.5	3.4	6	3	3.3	21	E298M4
5	0.80	70	8	6.0	4.9	8	3	4.2	25	E298M5
6	1.00	80	10	6.0	4.9	8	3	5.0	30	E298M6
8	1.25	90	13	8.0	6.2	9	3	6.8	35	E298M8
10	1.50	100	15	10.0	8.0	11	3	8.5	39	E298M10
12	1.75	110	18	9.0	7.0	10	3	10.3		E298M12
14	2.00	110	20	11.0	9.0	12	3	12.0		E298M14
16	2.00	110	20	12.0	9.0	12	4	14.0		E298M16
18	2.50	125	25	14.0	11.0	14	4	15.5		E298M18
20	2.50	140	25	16.0	12.0	15	4	17.5		E298M20
22	2.50	140	25	18.0	14.5	17	4	19.5		E298M22
24	3.00	160	30	18.0	14.5	17	4	21.0		E298M24
27	3.00	160	30	20.0	16.0	19	4	24.0		E298M27
30	3.50	160	36	22.0	18.0	21	4	26.5		E298M30

E299

MF

DIN  
374

6H



2.5XD

HSS-E-PM

B  
3.5-5



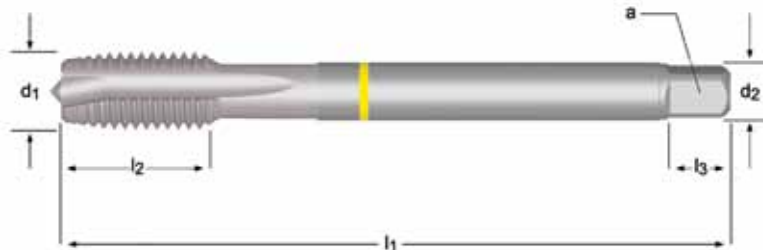
## E299

- MF Machine Tap Spiral Point , Yellow Shark
- MF Maschinen-Gewindebohrer, Geradegenutet mit Schälanschnitt , Gelbring Shark
- MF Machinetappen, rechte spaangroef , Yellow Shark
- MF Tarauds machine Coupe gun , Shark bague jaune
- MF Macho de máquina con entrada en hélice Shark (Anillo Amarillo)
- MF Macho Máquina Ponta Helicoidal , Shark - Anel Amarelo



E299

- 1.1 1.2 1.3 6.1 6.3
- 1.4 1.5 6.2



E299



SHARK LINE

M4 - M30

MF	P mm	l <sub>1</sub> mm	l <sub>2</sub> mm	d <sub>2</sub> Ø mm	a mm	l <sub>3</sub> mm	z		E299
4	0.50	63	12	2.8	2.1	5	3	3.5	E299M4X.5
5	0.50	70	13	3.5	2.7	6	3	4.5	E299M5X.5
6	0.75	80	15	4.5	3.4	6	3	5.3	E299M6X.75
8	0.75	80	15	6.0	4.9	8	3	7.3	E299M8X.75
8	1.00	90	18	6.0	4.9	8	3	7.0	E299M8X1.0
10	0.75	90	20	7.0	5.5	8	3	9.3	E299M10X.75
10	1.00	90	20	7.0	5.5	8	3	9.0	E299M10X1.0
10	1.25	100	20	7.0	5.5	8	3	8.8	E299M10X1.25
12	1.00	100	21	9.0	7.0	10	4	11.0	E299M12X1.0
12	1.25	100	21	9.0	7.0	10	4	10.8	E299M12X1.25
12	1.50	110	21	9.0	7.0	10	4	10.5	E299M12X1.5
14	1.00	100	21	11.0	9.0	12	4	13.0	E299M14X1.0
14	1.25	100	21	11.0	9.0	12	4	12.8	E299M14X1.25
14	1.50	100	21	11.0	9.0	12	4	12.5	E299M14X1.5
16	1.00	100	21	12.0	9.0	12	4	15.0	E299M16X1.0
16	1.50	100	21	12.0	9.0	12	4	14.5	E299M16X1.5
18	1.00	110	24	14.0	11.0	14	4	17.0	E299M18X1.0
18	1.50	110	24	14.0	11.0	14	4	16.5	E299M18X1.5
20	1.50	125	24	16.0	12.0	15	4	18.5	E299M20X1.5
22	1.50	125	25	18.0	14.5	17	4	20.5	E299M22X1.5
24	1.50	140	28	18.0	14.5	17	4	22.5	E299M24X1.5
24	2.00	140	28	18.0	14.5	17	4	22.0	E299M24X2.0
27	2.00	140	28	20.0	16.0	19	4	25.0	E299M27X2.0
30	2.00	150	28	22.0	18.0	21	4	28.0	E299M30X2.0

Supplied in HSS-E until new stock available / Lieferung in HSS-E bis neuer Lagerbestand verfügbar / Geleverd in HSS-E tot de nieuwe voorraad beschikbaar is / Fourni en HSS-E jusqu'à ce que le nouveau stock soit disponible / Suministrado en HSS-E hasta disponibilidad de nuevo stock / Fornecido em HSS-E até disponibilidade do novo estoque

E300

MF

DIN  
374

6H



2XD

HSS-E-PM

C  
2-3



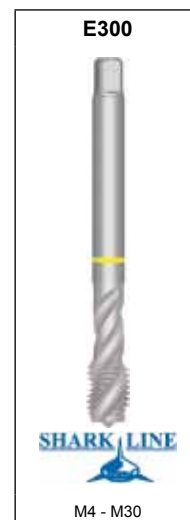
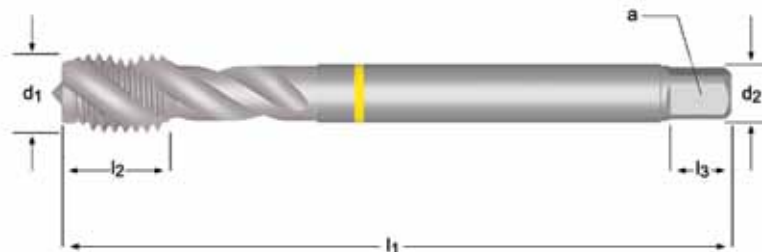
## E300

- MF Machine Tap Spiral Flute 40° , Yellow Shark
- MF Maschinen-Gewindebohrer, Rechtsgedrallte Nuten 40° , Gelbring Shark
- MF Machinetappen spiraalgroeven 40° , Yellow Shark
- MF Tarauds machine goujures hélicoidales 40° , Shark bague jaune
- MF Macho de máquina helicoidal 40° Shark (Anillo Amarillo)
- MF Macho Máquina Canal Helicoidal 40° , Shark - Anel Amarelo



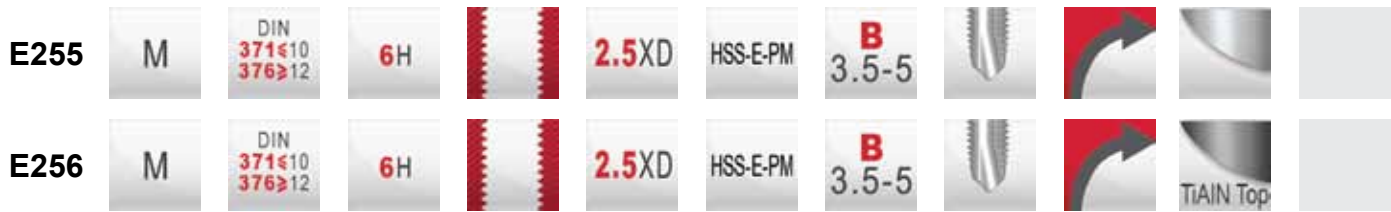
E300

- 1.1 1.2 1.3 6.1 6.3
- 1.4 1.5 6.2



MF	P mm	l <sub>1</sub> mm	l <sub>2</sub> mm	d <sub>2</sub> Ø mm	□ a mm	l <sub>3</sub> mm	z		E300
4	0.50	63	6.5	2.8	2.1	5	3	3.5	E300M4X.5
5	0.50	70	7.5	3.5	2.7	6	3	4.5	E300M5X.5
6	0.75	80	10	4.5	3.4	6	3	5.3	E300M6X.75
8	0.75	80	13	6.0	4.9	8	3	7.3	E300M8X.75
8	1.00	90	13	6.0	4.9	8	3	7.0	E300M8X1.0
10	0.75	90	13	7.0	5.5	8	3	9.3	E300M10X.75
10	1.00	90	12	7.0	5.5	8	3	9.0	E300M10X1.0
10	1.25	100	15	7.0	5.5	8	3	8.8	E300M10X1.25
12	1.00	100	15	9.0	7.0	10	4	11.0	E300M12X1.0
12	1.25	100	13	9.0	7.0	10	4	10.8	E300M12X1.25
12	1.50	100	13	9.0	7.0	10	4	10.5	E300M12X1.5
14	1.00	100	15	11.0	9.0	12	4	13.0	E300M14X1.0
14	1.25	100	15	11.0	9.0	12	4	12.8	E300M14X1.25
14	1.50	100	15	11.0	9.0	12	4	12.5	E300M14X1.5
16	1.00	100	15	12.0	9.0	12	5	15.0	E300M16X1.0
16	1.50	100	15	12.0	9.0	12	5	14.5	E300M16X1.5
18	1.00	110	17	14.0	11.0	14	5	17.0	E300M18X1.0
18	1.50	110	17	14.0	11.0	14	5	16.5	E300M18X1.5
20	1.50	125	17	16.0	12.0	15	5	18.5	E300M20X1.5
22	1.50	125	17	18.0	14.5	17	5	20.5	E300M22X1.5
24	1.50	140	20	18.0	14.5	17	5	22.5	E300M24X1.5
24	2.00	140	20	18.0	14.5	17	5	22.0	E300M24X2.0
27	2.00	140	20	20.0	16.0	19	5	25.0	E300M27X2.0
30	2.00	150	20	22.0	18.0	21	5	28.0	E300M30X2.0

Supplied in HSS-E until new stock available / Lieferung in HSS-E bis neuer Lagerbestand verfügbar / Geleverd in HSS-E tot de nieuwe voorraad beschikbaar is / Fourni en HSS-E jusqu'à ce que le nouveau stock soit disponible / Suministrado en HSS-E hasta disponibilidad de nuevo stock / Fornecido em HSS-E até disponibilidade do novo estoque



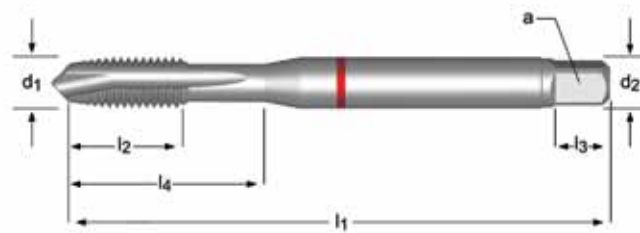
## E255

## E256

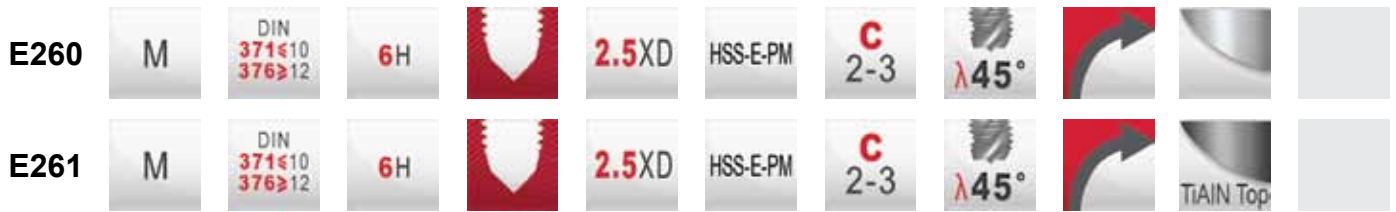
- M Machine Tap Spiral Point , Red Shark
- M Maschinen-Gewindebohrer, Geradegenutet mit Schälanschnitt , Rotring Shark
- M Machinetappen, rechte spaangroef, Red Shark
- M Tarauds machine Coupe gun , Shark bague rouge
- M Macho de máquina con entrada en hélice Shark (Anillo Rojo)
- M Macho Máquina Ponta Helicoidal , Shark - Anel Vermelho



E255	▪	1.4				
	▪	1.5	1.6	4.2	5.2	
E256	▪	1.4	1.5			
	▪	1.6	4.2	5.2		



M	P mm	$l_1$ mm	$l_2$ mm	$d_2$ $\varnothing$ mm	$a$ mm	$l_3$ mm	z		$l_4$ mm	E255	E256
3	0.50	56	9	3.5	2.7	6	3	2.5	18	E255M3	E256M3
4	0.70	63	12	4.5	3.4	6	3	3.3	21	E255M4	E256M4
5	0.80	70	13	6.0	4.9	8	3	4.2	25	E255M5	E256M5
6	1.00	80	15	6.0	4.9	8	3	5.0	30	E255M6	E256M6
8	1.25	90	18	8.0	6.2	9	3	6.8	35	E255M8	E256M8
10	1.50	100	20	10.0	8.0	11	3	8.5	39	E255M10	E256M10
12	1.75	110	23	9.0	7.0	10	3	10.3		E255M12	E256M12
14	2.00	110	25	11.0	9.0	12	3	12.0		E255M14	
16	2.00	110	25	12.0	9.0	12	3	14.0		E255M16	E256M16
20	2.50	140	30	16.0	12.0	15	4	17.5		E255M20	E256M20

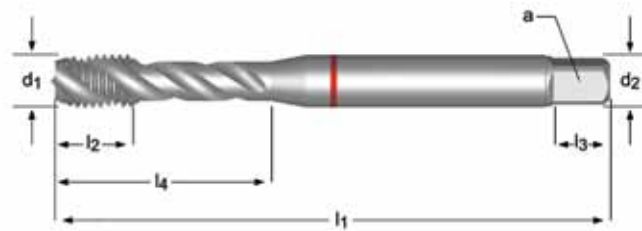


## E260 E261

- M Machine Tap Spiral Flute 45° Red Shark, back tapered
- M Maschinen-Gewindebohrer, Rechtsgedrahte Nuten 45°, Rotring Shark, abgeflacht
- M Machinetappen, spiraalgroeven 45°, Red Shark, achter geslepen
- M Tarauds machine goujures hélicoïdales 45°, Shark bague rouge, conicité arrière
- M Macho de máquina helicoidal 45° Shark con chaflán de salida (Anillo Rojo)
- M Macho Máquina Canal Helicoidal 45° Shark - Anel Vermelho, Redução na Saída



E260	■	1.4	1.5
	■	1.6	4.2
E261	■	1.4	1.5
	■	1.6	4.2



M	P mm	$l_1$ mm	$l_2$ mm	$d_2$ $\varnothing$ mm	$\square$ a mm	$l_3$ mm	z		$l_4$ mm	E260	E261
3	0.50	56	9	3.5	2.7	6	3	2.5	18	E260M3	E261M3
4	0.70	63	12	4.5	3.4	6	3	3.3	21	E260M4	E261M4
5	0.80	70	13	6.0	4.9	8	3	4.2	25	E260M5	E261M5
6	1.00	80	15	6.0	4.9	8	3	5.0	30	E260M6	E261M6
8	1.25	90	18	8.0	6.2	9	3	6.8	35	E260M8	E261M8
10	1.50	100	20	10.0	8.0	11	3	8.5	39	E260M10	E261M10
12	1.75	110	23	9.0	7.0	10	3	10.3		E260M12	E261M12
14	2.00	110	25	11.0	9.0	12	3	12.0		E260M14	
16	2.00	110	25	12.0	9.0	12	4	14.0		E260M16	E261M16
20	2.50	140	30	16.0	12.0	15	4	17.5		E260M20	E261M20





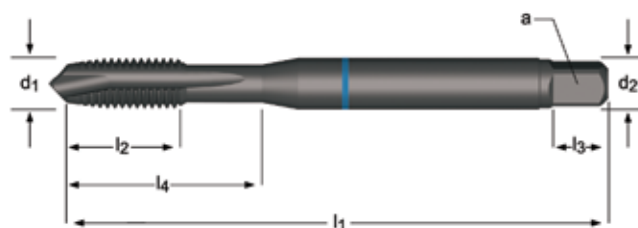
## E240

## E241

- M Machine Tap Spiral Point Blue Shark
- M Maschinen-Gewindebohrer, Geradegenutet mit Schälanschnitt, Blauring Shark
- M M Machinetappen, rechte spaangroeven, Blue Shark
- M Tarauts machine Coupe gun, Shark bague bleue
- M Macho de máquina con entrada en hélice Shark (Anillo Azul)
- M Macho Máquina Ponta Helicoidal Shark - Anel Azul

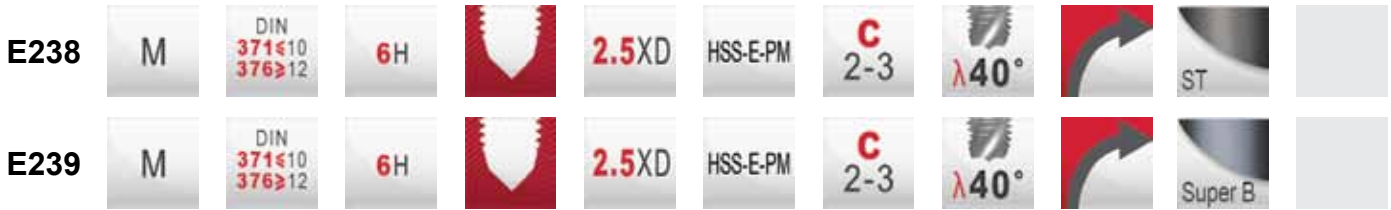


E240	▪	2.1	2.2	2.3
	▪	1.5	1.6	
E241	▪	2.1	2.2	2.3
	▪	1.3	1.4	1.5



M	P mm	l <sub>1</sub> mm	l <sub>2</sub> mm	d <sub>2</sub> ∅ mm	a mm	l <sub>3</sub> mm	z	↔	l <sub>4</sub> mm	E240	E241
3	0.50	56	9	3.5	2.7	6	3	2.5	18	E240M3	E241M3
4	0.70	63	12	4.5	3.4	6	3	3.3	21	E240M4	E241M4
5	0.80	70	13	6.0	4.9	8	3	4.2	25	E240M5	E241M5
6	1.00	80	15	6.0	4.9	8	3	5.0	30	E240M6	E241M6
8	1.25	90	18	8.0	6.2	9	3	6.8	35	E240M8	E241M8
10	1.50	100	20	10.0	8.0	11	3	8.5	39	E240M10	E241M10
12	1.75	110	23	9.0	7.0	10	4	10.3		E240M12	E241M12
14	2.00	110	25	11.0	9.0	12	4	12.0		E240M14	E241M14
16	2.00	110	25	12.0	9.0	12	4	14.0		E240M16	E241M16
18	2.50	125	30	14.0	11.0	14	4	15.5		E240M18	E241M18
20	2.50	140	30	16.0	12.0	15	4	17.5		E240M20	E241M20
22	2.50	140	34	18.0	14.5	17	4	19.5		E240M22	
24	3.00	160	38	18.0	14.5	17	4	21.0		E240M24	
27	3.00	160	38	20.0	16.0	19	4	24.0		E240M27	
30	3.50	180	45	22.0	18.0	21	4	26.5		E240M30	

Supplied in HSS-E until new stock available / Lieferung in HSS-E bis neuer Lagerbestand verfügbar / Geleverd in HSS-E tot de nieuwe voorraad beschikbaar is / Fourni en HSS-E jusqu'à ce que le nouveau stock soit disponible / Suministrado en HSS-E hasta disponibilidad de nuevo stock / Fornecido em HSS-E até disponibilidade do novo estoque



- E238**
- M Machine Tap Spiral Flute 40° Blue Shark, back tapered
  - M Maschinen-Gewindebohrer, Rechtsgedrallte Nuten 40°, Blauring, Shark abgeflacht
  - M Machinetappen, spiraalgroeven 40°, Blue Shark, achter geslepen
- E239**
- M Tarauds machine goujures hélicoïdales 40°, Shark bague bleue, conicité arrière
  - M Macho de máquina helicoidal 40° Shark con chaflán de salida (Anillo Azul)
  - M Macho Máquina Canal Helicoidal 40° Shark - Anel Azul, Redução na Saída



<b>E238</b>	▪	<b>2.1</b>	<b>2.2</b>	<b>2.3</b>
	▪	1.5	1.6	
<b>E239</b>	▪	<b>2.1</b>	<b>2.2</b>	<b>2.3</b>
	▪	1.3	1.4	1.5



M	P mm	$l_1$ mm	$l_2$ mm	$d_2$ Ø mm	$a$ mm	$l_3$ mm	z	$l_4$ mm	E238	E239
3	0.50	56	6	3.5	2.7	6	3	2.5	E238M3	E239M3
4	0.70	63	7	4.5	3.4	6	3	3.3	E238M4	E239M4
5	0.80	70	8	6.0	4.9	8	3	4.2	E238M5	E239M5
6	1.00	80	10	6.0	4.9	8	3	5.0	E238M6	E239M6
8	1.25	90	13	8.0	6.2	9	3	6.8	E238M8	E239M8
10	1.50	100	15	10.0	8.0	11	3	8.5	E238M10	E239M10
12	1.75	110	18	9.0	7.0	10	4	10.3	E238M12	E239M12
14	2.00	110	20	11.0	9.0	12	4	12.0	E238M14	E239M14
16	2.00	110	20	12.0	9.0	12	4	14.0	E238M16	E239M16
18	2.50	125	25	14.0	11.0	14	4	15.5	E238M18	
20	2.50	140	25	16.0	12.0	15	4	17.5	E238M20	E239M20
22	2.50	140	25	18.0	14.5	17	4	19.8	E238M22	
24	3.00	160	30	18.0	14.5	17	4	21.0	E238M24	
27	3.00	160	30	20.0	16.0	19	4	24.0	E238M27	
30	3.50	180	36	22.0	18.0	21	4	26.5	E238M30	

**E384**
**MF**
**DIN  
374**
**6H**

**2.5XD**
**HSS-E-PM**
**B  
3.5-5**

**E384**

- MF Machine Tap Spiral Point Blue Shark
- MF Maschinen-Gewindebohrer, Geradegenutet mit Schälanschnitt, Blauring Shark
- MF Machinetappen, rechte spaangroeven, Blue Shark
- MF Tarauds machine Coupe gun, Shark bague bleue
- MF Macho de máquina con entrada en hélice Shark (Anillo Azul)
- MF Macho Máquina Ponta Helicoidal Shark - Anel Azul


**E384**

- **2.1 2.2 2.3**
- **1.5 1.6**


**E384**


M6 - M20

MF	P mm	$l_1$ mm	$l_2$ mm	$d_2$ Ø mm	$a$ mm	$l_3$ mm	z		E384
6	0.75	80	15	4.5	3.4	6	3	5.3	E384M6X.75
8	1.00	90	18	6.0	4.9	8	3	7.0	E384M8X1.0
10	1.00	90	20	7.0	5.5	8	3	9.0	E384M10X1.0
10	1.25	100	20	7.0	5.5	8	3	8.8	E384M10X1.25
12	1.00	100	21	9.0	7.0	10	4	11.0	E384M12X1.0
12	1.25	100	21	9.0	7.0	10	4	10.8	E384M12X1.25
12	1.50	100	21	9.0	7.0	10	4	10.5	E384M12X1.5
14	1.50	100	21	11.0	9.0	12	4	12.5	E384M14X1.5
16	1.50	100	21	12.0	9.0	12	5	14.5	E384M16X1.5
18	1.50	110	24	14.0	11.0	14	5	16.5	E384M18X1.5
20	1.50	125	24	16.0	12.0	15	5	18.5	E384M20X1.5

E383

MF

DIN  
374

6H



2XD

HSS-E-PM

C  
2-3



## E383

- MF Machine Tap Spiral Flute 40° Blue Shark
- MF Maschinen-Gewindebohrer, Rechtsgedrallte Nuten 40°, Blauring Shark
- MF Machinetappen, spiraalgroeven 40°, Blue Shark
- MF Tarauds machine goujures hélicoïdales 40°, Shark bague bleue
- MF Macho de máquina helicoidal 40° Shark (Anillo Azul)
- MF Macho Máquina Canal Helicoidal 40° Shark - Anel Azul



E383

- 2.1 2.2 2.3
- 1.5 1.6



E383

M6 - M20



M6 - M20

MF	P mm	$l_1$ mm	$l_2$ mm	$d_2$ Ø mm	□ a mm	$l_3$ mm	z		E383
6	0.75	80	10	4.5	3.4	6	3	5.3	E383M6X.75
8	1.00	90	13	6.0	4.9	8	3	7.0	E383M8X1.0
10	1.00	90	12	7.0	5.5	8	3	9.0	E383M10X1.0
10	1.25	100	15	7.0	5.5	8	3	8.8	E383M10X1.25
12	1.00	100	13	9.0	7.0	10	4	11.0	E383M12X1.0
12	1.25	100	13	9.0	7.0	10	4	10.8	E383M12X1.25
12	1.50	100	13	9.0	7.0	10	4	10.5	E383M12X1.5
14	1.50	100	21	11.0	9.0	12	4	12.5	E383M14X1.5
16	1.50	100	21	12.0	9.0	12	5	14.5	E383M16X1.5
18	1.50	110	24	14.0	11.0	14	5	16.5	E383M18X1.5
20	1.50	125	24	16.0	12.0	15	5	18.5	E383M20X1.5

E382



E382

- G(BSP) Machine Tap Spiral Flute 40° Blue Shark
- G(BSP) Maschinen-Gewindebohrer, Rechtsgedrallte Nuten 40°, Blauring Shark
- G(BSP) Machinetappen, spiraalgroeven 40°, Blue Shark
- G(BSP) Tarauds machine goujures hélicoïdales 40°, Shark bague bleue
- G(BSP) Macho de máquina helicoidal 40° Shark (Anillo Azul)
- G(BSP) Macho Máquina Canal Helicoidal 40° Shark - Anel Azul



E382 ■ 2.1 2.2 2.3  
 ■ 1.5 1.6



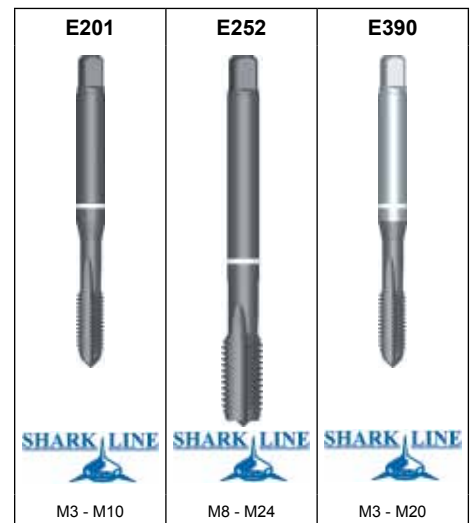
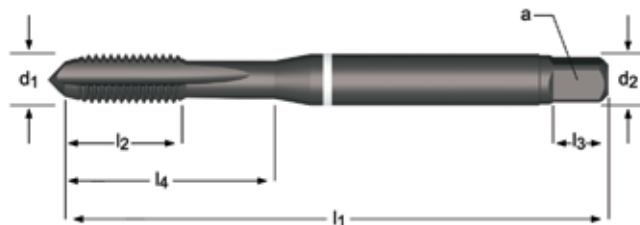
G(BSP)	TPI	d <sub>1</sub> nom mm	l <sub>1</sub> mm	l <sub>2</sub> mm	d <sub>2</sub> ∅ mm	a mm	l <sub>3</sub> mm	z		E382
1/8	28	9.73	90	12	7.0	5.5	8	3	8.8	E3821/8
1/4	19	13.16	100	15	11.0	9.0	12	4	11.8	E3821/4
3/8	19	16.66	100	15	12.0	9.0	12	4	15.2	E3823/8
1/2	14	20.96	125	24	16.0	12.0	15	4	19.0	E3821/2
3/4	14	26.44	140	20	20.0	16.0	19	4	24.5	E3823/4
1"	11	33.25	160	24	25.0	20.0	23	4	30.7	E3821

<b>E201</b>	M	DIN 371	6HX		2XD	HSS-E-PM	C 2-3			ST	
<b>E252</b>	M	DIN 376	6HX		2XD	HSS-E-PM	C 2-3			ST	
<b>E390</b>	M	DIN 371 <math>\leq 10</math> 376 > 12	6HX		2XD	HSS-E-PM	C 2-3			TAIN	

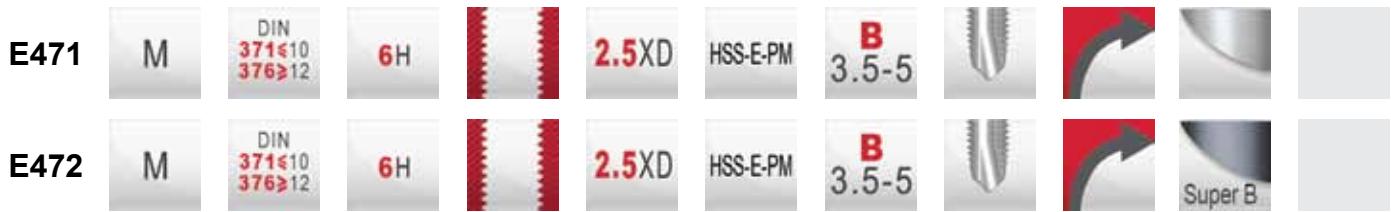
- E201**
- M Machine Tap Straight Flute , White Shark
  - M Maschinen-Gewindebohrer, geradegenutet , Weissring Shark
- E252**
- M Machinetappen, rechte spaangroeven, White Shark
  - M Tarauds machine Goujures droites , Shark bague blanche
- E390**
- M Macho de máquina recto Shark (Anillo Blanco)
  - M Macho Máquina Canal Reto , Shark - Anel Branco



<b>E201</b>	▪	3.1	3.2	3.3	8.2
	•	3.4	6.2	6.4	7.4
<b>E252</b>	▪	3.1	3.2	3.3	8.2
	•	3.4	6.2	6.4	7.4
<b>E390</b>	▪	3.1	3.2	3.3	8.2
	•	3.4	6.2	6.4	7.4



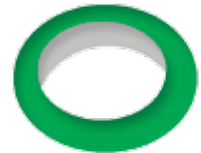
M	P mm	$l_1$ mm	$l_2$ mm	$d_2$ Ø mm	$\square$ a mm	$l_3$ mm	$z$	$l_4$ mm	E201	E252	E390
3	0.50	56	9	3.5	2.7	6	3	2.5	E201M3		E390M3
4	0.70	63	12	4.5	3.4	6	4	3.3	E201M4		E390M4
5	0.80	70	13	6.0	4.9	8	4	4.2	E201M5		E390M5
6	1.00	80	15	6.0	4.9	8	4	5	E201M6		E390M6
8	1.25	90	18	6.0	4.9	8	4	6.8		E252M8	E390M8
8	1.25	90	18	8.0	6.2	9	4	6.8	E201M8		
10	1.50	100	20	10.0	8.0	11	4	8.5	E201M10		E390M10
10	1.50	100	20	7.0	5.5	8	4	8.5		E252M10	
12	1.75	110	23	9.0	7.0	10	4	10.3		E252M12	E390M12
14	2.00	110	25	11.0	9.0	12	4	12		E252M14	
16	2.00	110	25	12.0	9.0	12	4	14		E252M16	E390M16
18	2.50	125	30	14.0	11.0	14	4	15.5		E252M18	
20	2.50	140	30	16.0	12.0	15	4	17.5		E252M20	E390M20
22	2.50	140	34	18.0	14.5	17	4	19.5		E252M22	
24	3.00	160	38	18.0	14.5	17	4	21		E252M24	



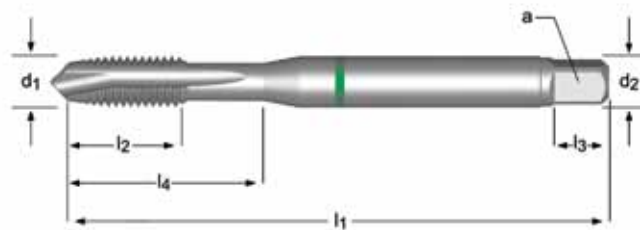
# E471

# E472

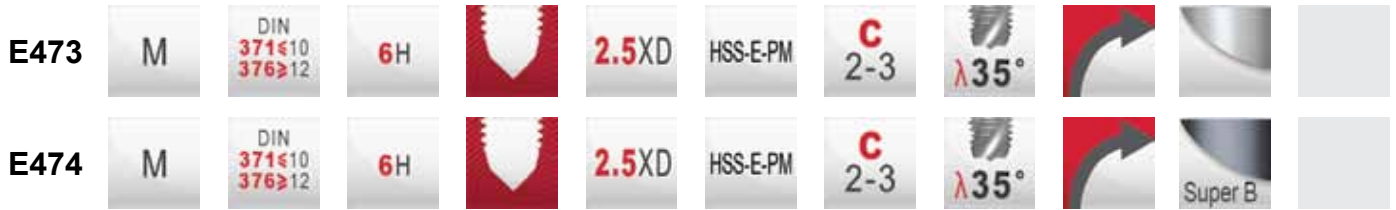
- M Machine Tap Spiral Point , Green Shark
- M Maschinen-Gewindebohrer, Geradegenutet mit Schälanschnitt , Grünring Shark
- M Machinetappen, rechte spaangroeven, Green Shark
- M Tarauts machine Coupe gun , Shark bague verte
- M Macho de máquina con entrada en hélice Shark (Anillo Verde)
- M Macho Máquina Ponta Helicoidal , Shark - Anel Verde



E471	▪	6.2	6.3	7.1	7.2	7.3	8.1
	•	1.1	1.2	1.3	6.1	7.4	
E472	▪	4.1	5.1	6.2	7.2	7.3	7.4
	•	1.2	1.3	6.3	7.1	8.1	



M	P mm	l <sub>1</sub> mm	l <sub>2</sub> mm	d <sub>2</sub> Ø mm	□ a mm	l <sub>3</sub> mm	z		l <sub>4</sub> mm	E471	E472
3	0.50	56	9	3.5	2.7	6	2	2.5	18	E471M3	E472M3
4	0.70	63	12	4.5	3.4	6	2	3.3	21	E471M4	E472M4
5	0.80	70	13	6.0	4.9	8	2	4.2	25	E471M5	E472M5
6	1.00	80	15	6.0	4.9	8	3	5.0	30	E471M6	E472M6
8	1.25	90	18	8.0	6.2	9	3	6.8	35	E471M8	E472M8
10	1.50	100	20	10.0	8.0	11	3	8.5	39	E471M10	E472M10
12	1.75	110	23	9.0	7.0	10	3	10.3		E471M12	E472M12
16	2.00	110	25	12.0	9.0	12	4	14.0		E471M16	E472M16
20	2.50	140	30	16.0	12.0	15	4	17.5		E471M20	E472M20



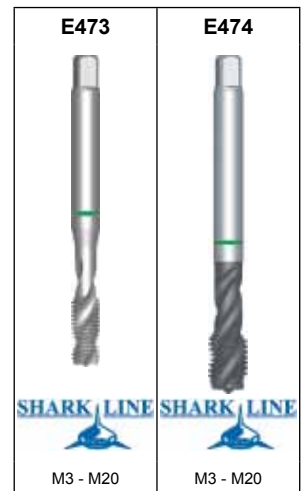
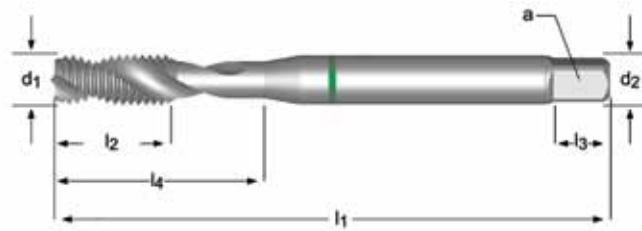
## E473

## E474

- M Machine Tap Spiral Flute 35°, Green Shark
- M Maschinen-Gewindebohrer, Rechtsgedrallte Nuten 35°, Grünring Shark
- M Machinetappen, spiraalgroeven 35°, Green Shark
- M Tarauds machine goujures hélicoidales 35°, Shark bague verte
- M Macho de máquina helicoidal 35° Shark (Anillo Verde)
- M Macho Máquina Canal Helicoidal 35°, Shark - Anel Verde



E473	▪	6.2	6.3	7.1	7.2	7.3	8.1
	▪	1.1	1.2	1.3	6.1	7.4	
E474	▪	4.1	5.1	6.2	7.2	7.3	7.4
	▪	1.2	1.3	6.3	7.1	8.1	



M	P mm	$l_1$ mm	$l_2$ mm	$d_2$ Ø mm	$\square$ a mm	$l_3$ mm	z		$l_4$ mm	E473	E474
3	0.50	56	9	3.5	2.7	6	2	2.5	18	E473M3	E474M3
4	0.70	63	12	4.5	3.4	6	2	3.3	21	E473M4	E474M4
5	0.80	70	13	6.0	4.9	8	2	4.2	25	E473M5	E474M5
6	1.00	80	15	6.0	4.9	8	2	5.0	30	E473M6	E474M6
8	1.25	90	18	8.0	6.2	9	2	6.8	35	E473M8	E474M8
10	1.50	100	20	10.0	8.0	11	2	8.5	39	E473M10	E474M10
12	1.75	110	23	9.0	7.0	10	3	10.3		E473M12	E474M12
16	2.00	110	25	12.0	9.0	12	3	14.0		E473M16	E474M16
20	2.50	140	30	16.0	12.0	15	3	17.5		E473M20	E474M20



# L114

- DIN Tap-Drill Set
- DIN Gewinde-Kernlochbohrer Satz
- DIN Tappen-Boren Set
- Jeu de forets-tarauds DIN
- Juego de Machos y Brocas DIN
- Jogo de Broca e Macho - DIN

A= Styles in Set, B= No. in Set, M= Tap diameters in Set, D= Drill diameters in Set  
 A= Typen in Satz, B= Anz. in Satz, M= Gewindebohrerdurchmesser in Satz, D= Bohrerdurchmesser in Satz  
 A= Uitvoering in Set, B= No. in Set, M= Tap diameters in Set, D= Boor diameters in Set  
 A= Styles dans le jeu, B= Numéro dans le jeu, M= Diamètres des tarauds dans le jeu, D= Diamètres des forets dans le jeu  
 A= Tipos en el juego, B= N° en el juego, M= Diámetro de machos en el juego, D= Diámetro de brocas en el juego  
 A= Família da Ferramenta no Jogo, B= No. no Jogo, M= Diâmetro dos Machos no Jogo, D= Diâmetro das Brocas no Jogo



Nr.	A	B	M	D	L114
Nr.303	E297 + A002	14	E297M3, E297M4, E297M5, E297M6, E297M8, E297M10, E297M12	A0022.5, A0023.3, A0024.2, A0025.0, A0026.8, A0028.5, A00210.2	L114303
Nr.304	E298 + A002	14	E298M3, E298M4, E298M5, E298M6, E298M8, E298M10, E298M12	A0022.5, A0023.3, A0024.2, A0025.0, A0026.8, A0028.5, A00210.2	L114304
Nr.305	E238 + A108	14	E238M3, E238M4, E238M5, E238M6, E238M8, E238M10, E238M12	A1082.5, A1083.3, A1084.2, A1085.0, A1086.8, A1088.5, A10810.2	L114305
Nr.306	E240 + A108	14	E240M3, E240M4, E240M5, E240M6, E240M8, E240M10, E240M12	A1082.5, A1083.3, A1084.2, A1085.0, A1086.8, A1088.5, A10810.2	L114306

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