



## **HeliCoil® tangfree**

The tangfree coil thread insert  
for a high-strength thread

**BÖLLHOFF**

**HELICOIL® thread inserts – approved and high-strength**

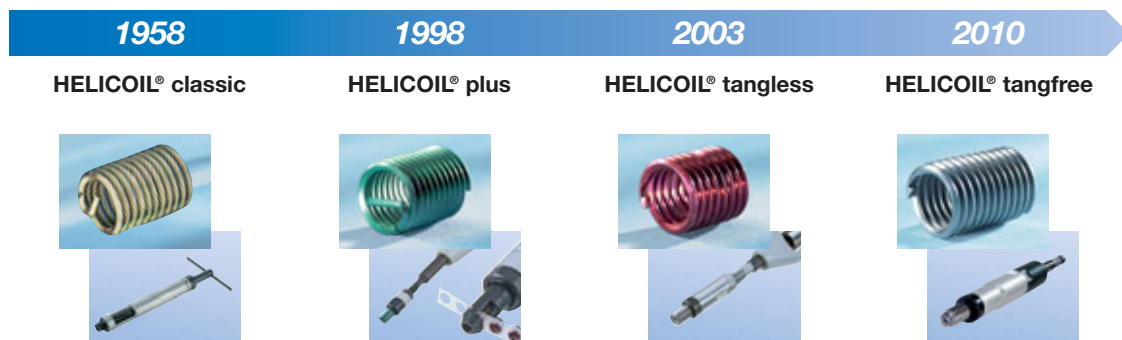
For over 50 years, HELICOIL® thread inserts have been creating high-strength threads in your low-strength materials.

The stainless steel coil thread inserts are formed into elastic spirals in proven quality from wire with rhombic profile. They feature high wear resistance and low thread friction within small tolerances. HELICOIL® coil thread inserts by Böllhoff also stand for high surface finish and heat resistance.



Cross section of a HELICOIL® thread insert

**HELICOIL® since 1958 – history of innovation**



**HELICOIL® technology with tang**

After installation, the tang is broken off at the notch (predetermined breaking point) if through-hole threads shall be the result.

**HELICOIL® technology without tang**

No tang is required for the installation of these thread inserts – therefore, tang break or tang removal are not required either. The up-to-date HELICOIL® coil thread insert technology is called HELICOIL® tangfree. Together with the corresponding installation tools, the HELICOIL® tangfree coil thread perfectly fits into the HELICOIL® product family.

**A comparison of the two systems**

<p><b>HELICOIL® tangfree without tang</b></p> <ul style="list-style-type: none"> <li>■ No tang break</li> <li>■ No tang removal</li> <li>■ Installation on both sides</li> </ul> 	<p><b>Common advantages</b></p> <ul style="list-style-type: none"> <li>■ High-strength</li> <li>■ Corrosion- and heat-resistant</li> <li>■ Wear-free</li> <li>■ Uniform load and stress distribution</li> </ul>	<p><b>HELICOIL® plus with tang</b></p> <ul style="list-style-type: none"> <li>■ Robust installation</li> <li>■ Easy handling</li> </ul> 
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**HELICOIL® tangfree thread inserts**

*The advantages*

HELICOIL® tangfree – a major step forward in HELICOIL® technology.



**Innovative installation**

- Installation on both sides with identical inlet quality
- No preferable side
- No directional orientation

**Tangfree thread insert**

- No tang break – no tang removal
- No risks from tangs left in component
- Reduced installation time due to less process steps
- Reduced testing and documentation effort

**Low tool wear**

- Minimum wear of tool blade
- Easy maintenance

**Improved quality**

- Simplified quality assurance
- High-strength threads also for blind holes with small depth or pre-assembled subassemblies
- Compliance with NA0276 standard

**The system in the focus**

Your benefit: You obtain a complete system solution consisting of coil thread inserts and especially developed installation tools. This reduces your costs and assures the quality of the joints.

An overview of the installation tools is provided on pages 7 and 8.

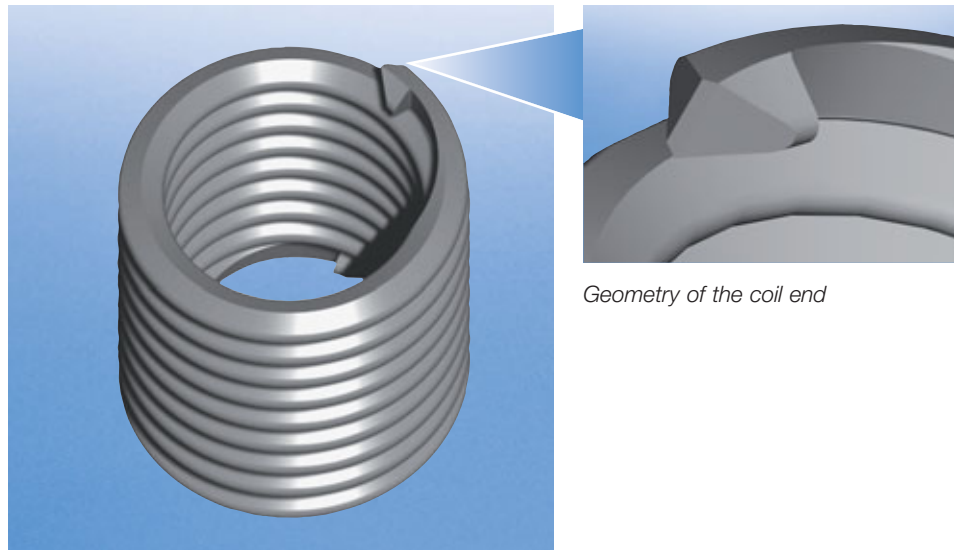


**Competence for your thread**

Feel free to contact us for customised HELICOIL® tangfree thread inserts. It is our expertise. Please do not hesitate to ask.

**HELICOIL® tangfree thread inserts**

*The innovative production concept*



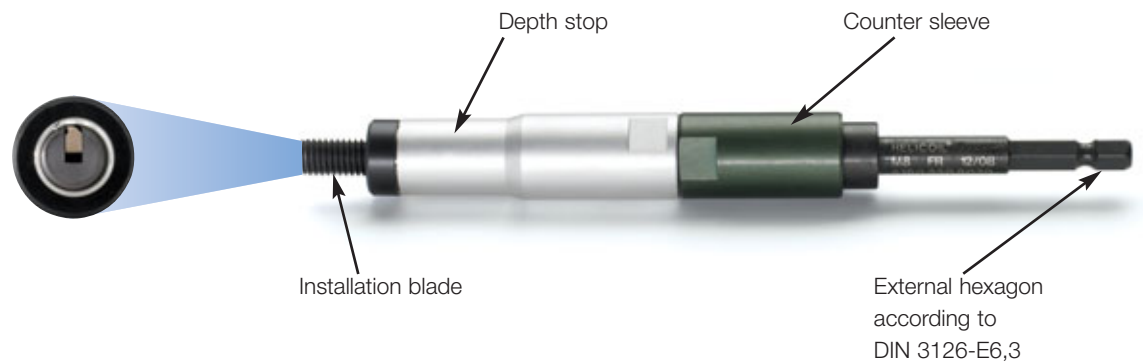
*HELICOIL® tangfree: Innovative installation on both sides*

The innovative coil of the insert allows installation from both sides at identical quality. Thanks to the thread reduced on both sides and to the inlet-optimised coil ends, the HELICOIL® tangfree thread insert can be installed without special alignment. The coil thread insert does not have a preferable side for installation. Therefore, the HELICOIL® tangfree must not be turned around for successful installation.

This ensures quick and safe installation. The HELICOIL® tangfree can be easily spinned on and smoothly enters the holding thread. During spin-on, the spring-mounted installation blade grips into the notch of the coil thread insert and securely installs it in the prepared holding thread.

Apart from that does the optimised geometry of the HELICOIL® tangfree thread insert minimise tool wear. Tool blade life for HELICOIL® tangfree is longer and maintenance of the installation tools is easier than for the HELICOIL® tangless tool generation. Particularly the replacement of the tool blade has been optimised.

*Installation tool*



## HELICOIL® tangfree *thread inserts*

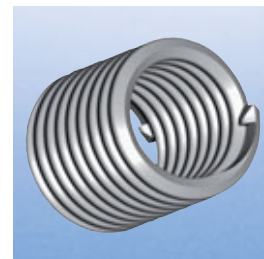
### *The versions*

HELICOIL® tangfree thread inserts are available in two versions: HELICOIL® tangfree free running and HELICOIL® tangfree screwlock.

Both versions can be screwed in like a screw with an installation mandrel.

#### **HELICOIL® tangfree free running**

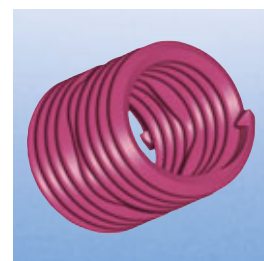
Every thread of the thread insert with precision-formed profile is free running. The result is an internal thread true to gauge that can be used on both sides.



*HELICOIL® tangfree  
free running version*

#### **HELICOIL® tangfree screwlock**

HELICOIL® tangfree screwlock has the same advantages relating to thread technology as HELICOIL® tangfree free running. In addition, an integrated screw-locking area serves as a screw lock. Locking of the screw is achieved by one or several polygonal-shaped threads that clamp the flanks of the screwed-in screw. The result is an elastically resilient frictional locking.



*HELICOIL® tangfree  
screwlock version*

### *The original*

The new geometry of the last coil of the thread inserts unmistakably identifies each HELICOIL® tangfree thread insert as an original!

Maximum precision made by Böllhoff.

There is only one original!



### *Further product information*

Information about our wide HELICOIL® plus product range is provided in our complete catalogue (0100).

**HELICOIL® tangfree range of applications**

**Automotive industry**

The HELICOIL® tangfree thread insert is used wherever tangfree thread inserts shall be installed into existing assembly concepts such as into pre-assembled subassemblies.

- Gear box housings with assembled gears
- Cylinder head fitting screw joint
- Braking system
- Steering box



*Cast aluminium gear box housing. Tang break difficult due to small residual wall thickness.*



*Cast aluminium gear box housing. Tang removal challenging due to heavy workpiece.*

**General industry**

HELICOIL® tangfree is of great use when a blind hole shall be a completely lined thread and the construction does not allow to increase the blind hole depth. This is often required in the following fields:

- Electronic industry: switch cabinets, controls, measuring equipment, controllers
- Tool manufacturing
- Mobile telephony



*Controller. Three-phase servo motor with electronic positioning unit. Loose tangs would result in faults.*



*Cast aluminium component. Completely lined thread at small tap hole depth.*

**Aerospace industry**

The aerospace industry places exacting demands on thread technology. HELICOIL® tangfree complies with the technical specifications of common international aerospace standards. Since there is no tang break, quality assurance is simplified. In addition, time and costs are considerably reduced due to the reduced installation and inspection effort.

- Structural assemblies
- Aeroplane engines
- Cabin interior
- Repair of components



*Thread reinforcement in light metal housings for actuators and attachments.*



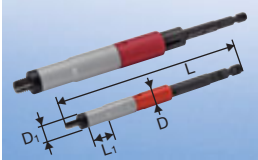
*Repair of components.*

## HELICOIL® tangfree *installation tools*

### HELICOIL® tangfree *installation tool with 1/4" hex drive*

Compatible with the hexagon holder of the HELICOIL® plus installation tools which allows the use of well-established HELICOIL® plus installation tools.

#### Complete installation tool



Thread diameter d	free running	screwlock	L (mm)	D <sub>1</sub> x L <sub>1</sub> /D (mm)
M 2.5	5160 332 5020	5160 332 5022	107	Ø 8 x 13/10
M 3	5160 330 3020	5160 330 3022	110	
M 4	5160 330 4020	5160 330 4022	126	
M 5	5160 330 5020	5160 330 5022	130	Ø 10 x 17/11
M 6	5160 330 6020	5160 330 6022	133	
M 8	5160 350 8020	5160 350 8022	171	Ø 16 x 26/18
M 10	5160 351 0020	5160 351 0022	107	
M 12	5160 351 2020	5160 351 2022	200	

Max. length HELICOIL® tangfree = 3 x d

#### Wear parts



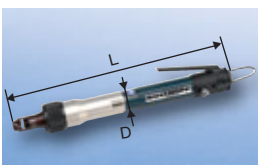
Thread diameter d	Depth stop with plastic ring	Blade (installation)	Spring washer (spare part)
M 2.5	5160 332 5026	5160 332 5023	5160 330 0202
M 3	5160 330 3026	5160 330 3023	
M 4	5160 330 4026	5160 330 4023	
M 5	5160 330 5026	5160 330 5023	
M 6	5160 330 6026	5160 330 6023	5160 350 0201
M 8	5160 350 8026	5160 350 8023	
M 10	5160 351 0026	5160 351 0023	
M 12	5160 351 2026	5160 351 2023	

### HELICOIL® tangfree *installation tool with pre-stressing cartridge*

and pneumatic drive – preferably for processing HELICOIL® tangfree stripfeed.

Processing of HELICOIL® tangfree loose is also possible. Length limitation thread inserts 2.0 x D.

#### Complete installation tool



Thread diameter d	free running	screwlock	D (mm)	L (mm)	Weight (kg)	Air connection (bar)	Air consumption (l/min.)
M 2.5	5160 372 5000	5160 372 5002	29	295	0.8	2.5 – 4.0	204
M 3	5160 370 3000	5160 370 3002					
M 4	5160 370 4000	5160 370 4002					
M 5	5160 370 5000	5160 370 5002					
M 6	5160 370 6000	5160 370 6002					
M 8	5160 280 8000	5160 280 8002					
M 10	5160 281 0000	5160 281 0002	310	1.3	4.0 – 5.0	282	

**HELICOIL® tangfree installation tools**

**Assemblies**



Motor



Basic tool



Exchange unit

Thread diameter d	Motor	Basic tool with exchange unit and adjustment tool	Exchange unit complete free running	Exchange unit complete screwlock
M 2.5	0160 370 0000	5160 370 0040	5160 372 5050	5160 372 5052
M 3			5160 370 3050	5160 370 3052
M 4			5160 370 4050	5160 370 4052
M 5			5160 370 5050	5160 370 5052
M 6		5160 370 6050	5160 370 6052	
M 8		5160 180 0040	5160 280 8050	5160 280 8052
M 10	5160 281 0050		5160 281 0052	

**Wear and spare parts**



Installation mandrel with pin without blade



Leader cartridge



Blade with spring and pin

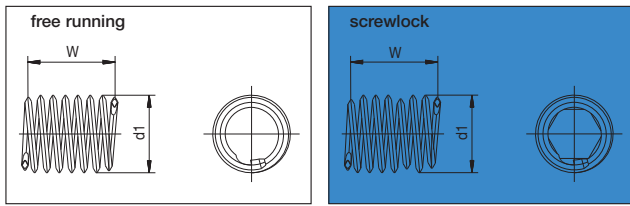


Range of compensation washers

Thread diameter d	Installation mandrel with pin without blade free running	Installation mandrel with pin without blade screwlock	Pre-stressing cartridge	Blade (installation) with spring and pin
M 2.5	5160 372 5070	5160 372 5072	5160 372 5032	5160 372 5024
M 3	5160 370 3070	5160 370 3072	5160 370 3032	5160 370 3024
M 4	5160 370 4070	5160 370 4072	5160 370 4032	5160 370 4024
M 5	5160 370 5070	5160 370 5072	5160 370 5032	5160 370 5024
M 6	5160 370 6070	5160 370 6072	5160 370 6032	5160 370 6024
M 8	5160 280 8070	5160 280 8072	5160 280 8032	5160 280 8024
M 10	5160 281 0070	5160 281 0072	5160 281 0032	5160 281 0024

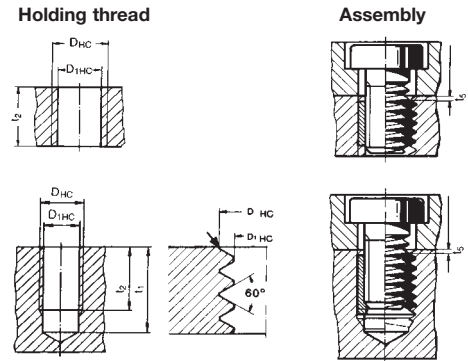
Thread diameter d	Sleeve (no illustration)	Adjustment tool for coupling (no illustration)	Range of compensation washers
M 2.5	5160 370 0006	5160 370 0049	0160 170 0060
M 3			
M 4			
M 5			
M 6	5160 280 0006		0160 280 0060
M 8			
M 10			

**HELICOIL® tangfree thread inserts**



The control values of not installed thread inserts free running and screwlock are W and d<sub>1</sub>. This length can only be measured for installed thread inserts.

- d = Nominal thread diameter
- P = Thread pitch
- d<sub>1</sub> = Outside diameter of thread insert prior to installation
- W = Number of threads prior to installation
- D<sub>HC</sub> = Outside diameter of holding thread
- D<sub>1HC</sub> = Crest diameter
- B = Suitable twist drill diameter. Please note: D<sub>1HC</sub> is decisive for selecting the correct twist drill diameter.
- t<sub>1</sub> = Minimum depth of tap hole according to DIN 76 – Part 1 (guide value)
- t<sub>2</sub> = The nominal length of the thread insert corresponds to the minimum length of the full holding thread for blind holes or to the minimum plate thickness for a through hole.
- t<sub>5</sub> = Distance of the thread insert to the joint face = 0.25 to 0.5 P, if t<sub>2</sub> corresponds to the above-mentioned minimum value



- If countersunk or burred: maximum countersinking diameter ≤ outer thread diameter D<sub>HC</sub>.
- HELICOIL® tangfree stripfeed (magazined) and imperial sizes UNC and UNF are available on request.

All dimensions in mm. Subject to technical change without notice.

Dimensions	P	t <sub>2</sub> min		W	d <sub>1</sub> min.	d <sub>1</sub> max.	d <sub>1HC</sub> min.	d <sub>1HC</sub> max.	B	D <sub>HC</sub> min.	HELICOIL®	HELICOIL®
		x d	mm								tangfree free running*	tangfree screwlock**
M 2.5	0.45	1	2.50	3.38	3.20	3.35	2.60	2.70	2.60	3.08	5130 025 0025	5132 025 0025
		1.5	3.75	5.63	3.20	3.35	2.60	2.70	2.60	3.08	5130 025 0375	5132 025 0375
		2	5.00	8.00	3.20	3.35	2.60	2.70	2.60	3.08	5130 025 0005	5132 025 0005
		2.5	6.25	10.50	3.20	3.35	2.60	2.70	2.60	3.08	5130 025 0625	5132 025 0625
M 3	0.5	1	3.00	3.75	3.80	3.99	3.11	3.22	3.20	3.65	5130 003 0003	5132 003 0003
		1.5	4.50	6.38	3.80	3.99	3.11	3.22	3.20	3.65	5130 003 0045	5132 003 0045
		2	6.00	8.88	3.80	3.99	3.11	3.22	3.20	3.65	5130 003 0006	5132 003 0006
		2.5	7.50	11.10	3.80	3.99	3.11	3.22	3.20	3.65	5130 003 0750	5132 003 0750
M 4	0.7	1	4.00	3.63	5.05	5.28	4.15	4.29	4.20	4.91	5130 004 0004	5132 004 0004
		1.5	6.00	6.13	5.05	5.28	4.15	4.29	4.20	4.91	5130 004 0006	5132 004 0006
		2	8.00	8.63	5.05	5.28	4.15	4.29	4.20	4.91	5130 004 0008	5132 004 0008
		2.5	10.00	10.90	5.05	5.28	4.15	4.29	4.20	4.91	5130 004 0010	5132 004 0010
M 5	0.8	1	5.00	4.13	6.20	6.50	5.17	5.33	5.20	6.04	5130 005 0005	5132 005 0005
		1.5	7.50	6.88	6.20	6.50	5.17	5.33	5.20	6.04	5130 005 0075	5132 005 0075
		2	10.00	9.63	6.20	6.50	5.17	5.33	5.20	6.04	5130 005 0010	5132 005 0010
		2.5	12.50	12.30	6.20	6.50	5.17	5.33	5.20	6.04	5130 005 0125	5132 005 0125
M 6	1.0	1	6.00	4.00	7.40	7.78	6.22	6.41	6.30	7.30	5130 006 0006	5132 006 0006
		1.5	9.00	6.75	7.40	7.78	6.22	6.41	6.30	7.30	5130 006 0009	5132 006 0009
		2	12.00	9.50	7.40	7.78	6.22	6.41	6.30	7.30	5130 006 0012	5132 006 0012
		2.5	15.00	12.30	7.40	7.78	6.22	6.41	6.30	7.30	5130 006 0015	5132 006 0015
M 8	1.25	1	8.00	4.50	9.80	10.18	8.27	8.48	8.40	9.62	5130 008 0008	5132 008 0008
		1.5	12.00	7.38	9.80	10.18	8.27	8.48	8.40	9.62	5130 008 0012	5132 008 0012
		2	16.00	10.25	9.80	10.18	8.27	8.48	8.40	9.62	5130 008 0016	5132 008 0016
		2.5	20.00	13.50	9.80	10.18	8.27	8.48	8.40	9.62	5130 008 0020	5132 008 0020
M 10	1.5	1	10.00	4.88	11.95	12.20	10.32	10.56	10.50	11.95	5130 010 0010	5132 010 0010
		1.5	15.00	8.00	11.95	12.20	10.32	10.56	10.50	11.95	5130 010 0015	5132 010 0015
		2	20.00	11.13	11.95	12.20	10.32	10.56	10.50	11.95	5130 010 0020	5132 010 0020
		2.5	25.00	14.20	11.95	12.20	10.32	10.56	10.50	11.95	5130 010 0025	5132 010 0025
M 12	1.75	1	12.00	4.90	14.40	14.80	12.38	12.64	12.50	14.27	5130 012 0012	5132 012 0012
		1.5	18.00	8.13	14.40	14.80	12.38	12.64	12.50	14.27	5130 012 0018	5132 012 0018
		2	24.00	11.35	14.40	14.80	12.38	12.64	12.50	14.27	5130 012 0024	5132 012 0024
		2.5	30.00	14.70	14.40	14.80	12.38	12.64	12.50	14.27	5130 012 0030	5132 012 0030
M 14	2.0	1	14.00	5.6	16.80	17.20	14.43	14.73	14.50	16.60	5130 014 0014	5132 014 0014
		1.5	21.00	8.8	16.80	17.20	14.43	14.73	14.50	16.60	5130 014 0021	5132 014 0021
		2.0	28.00	12.0	16.80	17.20	14.43	14.73	14.50	16.60	5130 014 0028	5132 014 0028
		2.5	35.00	15.2	16.80	17.20	14.43	14.73	14.50	16.60	5130 014 0035	5132 014 0035
M 16	2.0	1	16.00	6.5	19.00	19.40	16.43	16.73	16.50	18.60	5130 016 0016	5132 016 0016
		1.5	24.00	10.1	19.00	19.40	16.43	16.73	16.50	18.60	5130 016 0024	5132 016 0024
		2.0	32.00	13.8	19.00	19.40	16.43	16.73	16.50	18.60	5130 016 0032	5132 016 0032
		2.5	40.00	17.5	19.00	19.40	16.43	16.73	16.50	18.60	5130 016 0040	5132 016 0040
M 16	2.0	3.0	48.00	21.4	19.00	19.40	16.43	16.73	16.50	18.60	5130 016 0048	5132 016 0048

\* HELICOIL® tangfree free running is available at short notice as M 3 to M 12 (1 d to 2 d). Further dimensions on request.

\*\* HELICOIL® tangfree screwlock available on request.

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