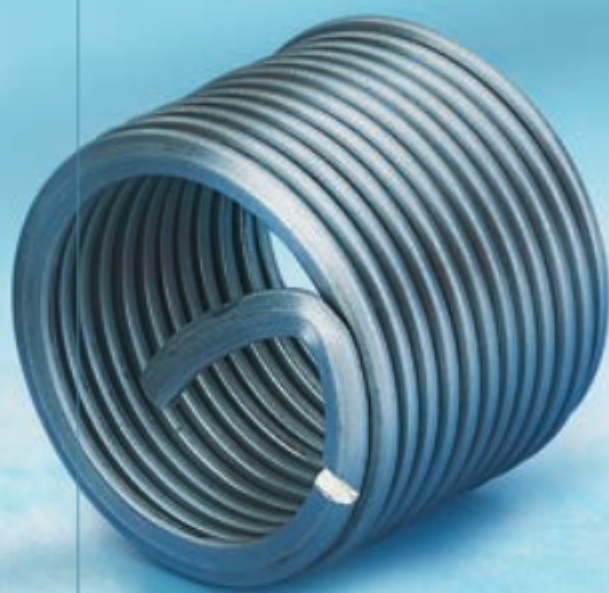




HELICOIL®

Thread technology for high-strength fastenings
Simple – quick – robust

BÖLLHOFF

HELICOIL® 優勢

HELICOIL® 護套能有效提升螺紋結合強度及修補潰牙等功能。

螺紋護套能強化內螺紋，是冷軋18-8不鏽鋼，硬度43-53Rc，或其它專業用材質所製成的，硬度遠遠超過通常利用的材料。

HELICOIL® 護套傑出的工程特性，已經過主導的航太工業和軍事設備製造商的認可，並已在這些產業界中廣泛的使用。

HELICOIL® 靈活性

款式設計的靈活性和工程用的慣用性，產業界的工程師可以不受限的使用**HELICOIL®** 護套來組裝。

護套有5種長度，分別是螺紋直徑1、1.5、2、2.5、3的倍數。

這些長度能提供工程師去衡量螺栓的抗拉強度和母材的剪變強度。

各種尺寸的護套可支援工程師符合常見的工程實踐，就是寧可確定螺栓失敗，而不使母材受到破壞性的損失。

目錄上有各種表格資料，以協助工程師在螺栓和母材的啮合上提供參考選擇。

這些產品數據資料都在目錄的章節裡。

HELICOIL® 組裝後的強度

這些圖表以公制尺寸從M2.2到M24和英制尺寸2-56到1" 呈現。

圖表提供所有需要的數據如下：

- 護套的裝配。
- 螺紋啮合的最小長度。
- 各種螺栓等級的抗剪強度。

這些圖表提供護套尺寸和長度選擇的彈性。

若需要更多資料，可與我們的技術部門接洽。

HELICOIL® 好處

設計上的靈活性

HELICOIL® 護套能提供零件材質選擇最大彈性、緊固，甚至能符合機器性能和生產需求，防止磨損螺紋。

防螺紋磨損

保護螺紋以防磨損和損害在所有金屬和金屬合金鋁、鎂、鈦、銅、銅、塑膠和其它材質。

最大的夾緊扭矩

HELICOIL® 護套，透過正確有效的轉矩應用，能產最大的夾緊負荷和螺栓張力，光滑的旋捲螺紋表面，再配合高強度合金鋼上，能呈現最有效率的使用。

使重量和空間減到最小

節省重量是很多產品在設計上無與倫比的重要設計特點，特別是在航太設備上。

節省最大的空間以達標準的輪殼結構，而不會有超尺寸的需求一如能容納轉接器，是必要的。輪殼半徑範圍等於螺栓尺寸能滿足最大負荷狀態。

平衡強度的分佈

平衡動力和靜力負載的分佈，以強化螺紋能更啮合，護套的彈性能抵消引導和角度誤差，並容許每一個線圈支撐應分擔的負荷。

可重用的鎖住特色

防鬆型護套能確實穩固螺紋結構，以防搖擺震動所引起的鬆脫。可重用的條件能容許螺栓頻繁的調動和重組，而不會有嚴重的扭矩損失。

抗腐蝕性

HELICOIL® 不鏽鋼護套優越的抗腐蝕特性，能適用於多數材質和一般環境條件下。這個特性是經過嚴謹工程作業製作而成的，所用的其它材料會有磷青銅、鎳90或鎳60等。

縮減成本

使用物美價廉的**HELICOIL®** 護套，既能節省整體的生產成本，也能保有螺紋強度的需求。

節省來自多方面一低成本的裝置設備，和較小的輪殼...等所有生產的節省。

HELICOIL® 電動工具組及環帶式護套配合使用能有助於降低組裝成本，每小時800或更多的生產速度，可將成本損耗減到最低。

質量和可靠性

生產的每個階段都受到嚴格質量控管。

HELICOIL®標準型螺紋護套

HELICOIL® 護套是用高强度的不鏽鋼線生產的，這鋼線被加工成菱形切割面以達精確的尺寸標準。

當安裝 **HELICOIL®** 護套，高品質的表面光潔度和強度能提供精確的內孔螺紋。

如何安裝

HELICOIL® 護套的安裝搭配專用裝入工具。首先把護套放置於裝入工具之前端套管中，並轉動握柄讓護套及套管相互吻合後就不需再施壓。

步驟二：使用裝入工具對準工件物的孔洞，輕微的順向旋轉1/4或1/2讓護套順著牙孔進入孔洞直到與工件物平行時，再以逆時針方式取出裝入工具。

步驟三：使用折斷工具打斷導舌，並拿尖嘴鉗取出導舌。

裝入的維持力

用正確的方式安裝，就能達到護套穩固不移動，護套的鋼圈透過彈力張力的放射，能牢牢的緊固在鑽孔中。

放射性的彈力之所以會存在，是因為護套的外徑大於鑽孔孔徑。

牙矩的變化性

所有的公母牙都有牙矩角度誤差，也就是說所有的螺紋在啮合的過程中，推測可能只有1或2個可以緊密吻合。

當組合時，螺栓會延伸而引起牙矩伸張誤差，因此在啮合過程中也可能有70%會佔用2個螺紋。

極高度的緊迫力被釋放出來，可提早減少裝置所漸漸產生的鬆弛和疲勞。

- 牙矩和角度錯誤，會引起：
- 公母螺紋啮合不能完全緊密吻合。
- 螺紋啮合與裝置的不等分配。
- 提早耗損。

HELICOIL®防鬆型螺紋護套

除了這些護套的性能之外，**HELICOIL®** 還有防鬆型護套，防鬆型護套中間有1個六角形線圈，能加強護套的彈力，使螺栓裝入時能緊緊卡住螺紋有效安全的鎖定螺栓圈，以防震動或撞擊所引起的鬆脫。

用手動轉入螺栓，等螺栓抓住線圈後，再以螺絲板手技巧性的扭矩。

顏色辨識

HELICOIL® 的防鬆型護套一般被做為紅色，做成紅色的目的只是用來與其他護套區隔，除此之外，紅色並不具有其他功能：如潤滑的功能。

出色的性能

為得到 **HELICOIL®** 防鬆型護套最佳性能，應有良好的品質安裝，須與滾捲過的螺紋和經過油潤滑過的螺栓，一起搭配使用，不可使用“黑”螺栓（熱處理規格）

鎖化合物

如果使用鎖化合物安裝，螺栓可能會卡住護套，而引起護套與螺栓抽離，所以我們不建議使用鎖化合物。

HELICOIL®的靈活性

HELICOIL® 護套有軸向和放射狀的伸縮性設計，這可以使得每個線圈除了發揮獨立的作用，也能在護套圈內的螺紋和螺牙與螺紋間的牙矩角度誤差上發揮互補的作用。

裝配後的張力能平均的分散到所有的螺紋上，不會有集中在某一特定點上的現象。

如此能確保整個組合在劇烈的撞擊和震動下不會產生鬆脫。

消除牙矩和角度的缺陷

- 能完美的與螺紋接合。
- 螺紋能均等的分散負載。
- 維持裝配的功能。
- 減少應力強度。
- 疲勞壽命得以延長。

護套材質



18-8 Stainless Steel 不銹鋼(SUS304)

通用材質



Nimonic90 鎳基超合金90

能承受高溫，標準型護套達650°C
防鬆型護套達500°C



Inconel X750 鎳基超合金 X750

能承受高溫，標準型護套達550°C
防鬆型護套達500°C



Zeron 100 超級雙相不銹鋼

超級雙相不銹鋼能優越抵抗的
腐蝕和裂化。

能達石化、化肥及採礦業的基本要求



Phosphor Bronze 磷青銅

鹽水應用
無磁性
具優秀的導電性



Other Material 其他材質

在 **HELICOIL®** 護套的生產上，我們持續研發新材質的應用，並不斷改良生產程序。特別是在高溫特質上，並有鑑於食品業和製藥業對使用不銹鋼螺絲的嚴格需求而選用特殊材質。

表面處理

鍍鎳

能提供高度的耐腐蝕性和潤滑
以防止磨損

規格
DEF STAN 03-19
QQ-P-416
Previously DTD904

適用於攝氏 250°C
顏色：虹彩黃

鍍銀

減少螺紋在高溫時的磨損

規格
DEF STAN 03-9
BS2816:1989
Previously DTD939

顏色：銀白

鍍鋅

對鋁提供耐腐蝕性的選擇

規格
DEF STAN 03-20
Previously DTD903

顏色：虹彩黃

鍍鎳 & 橄欖綠

依美國在軍事 specs NASM21209
的指定

規格
QQ-P-416

顏色：橄欖綠

潤滑乾燥的薄膜

在高磨擦力時提供額外的潤滑
作用普遍被使用在防鬆型護套
上

規格
MIL-L-8937

顏色：灰色

鍍層：染黑

防止護套和母材之間，直流電
的腐蝕

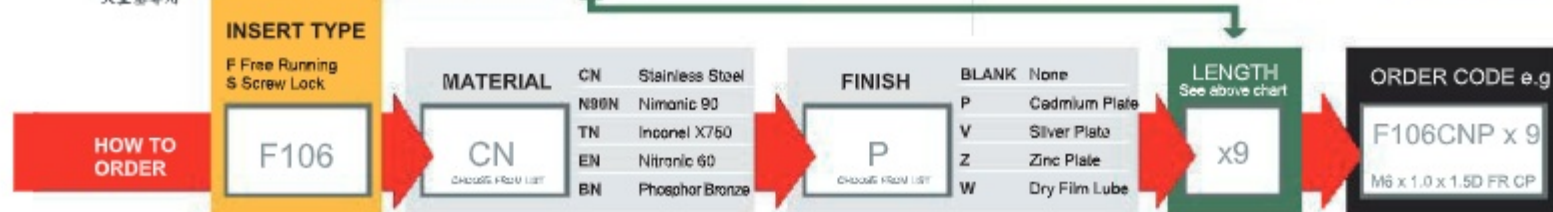
消除對鉍鉻鹽酸的需要，改進
設備的生產力

顏色：亮黑色

METRIC

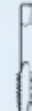
規 格	FR 標準型 編號	SL 防鬆型 編號	護套長度					自由外徑		護套圈數					扭 矩	
			1D	1.5D	2D	2.5D	3D	MIN	MAX	1D	1.5D	2D	2.5D	3D	MAX	MIN
1	2	3	4	5	6	7	8			11	12	13	14	15	16	17
M2 x 0.4	F102	S102	2	3	4	5	6	2.6	2.8	2.9	4.9	6.9	8.9	10.9	0.12 Nm	0.003 Nm
M2.2 x 0.45	F1022	S1022	2.2	3.3	4.4	5.5	6.6	2.8	2.9	3.2	5.4	7.8	10	12.3	0.14 Nm	0.02 Nm
M2.5 x 0.45	F1025	S1025	2.5	3.75	5	6.25	7.5	3.3	3.5	3.5	5.9	8.1	10.5	12.9	0.23 Nm	0.05 Nm
M3 x 0.5	F103	S103	3	4.5	6	7.5	9	3.8	4.0	3.9	6.3	8.7	11.1	13.5	0.45 Nm	0.1 Nm
M3.5 x 0.6	F1035	S1035	3.5	5.25	7	8.75	10.5	4.42	4.6	3.7	6.3	8.7	11.2	13.3	0.69 Nm	0.12 Nm
M4 x 0.7	F104	S104	4	6	8	10	12	5.05	5.25	3.7	6.1	8.4	10.9	13.2	0.9 Nm	0.15 Nm
M4.5 x 0.75	F1045	S1045	4.5	6.75	9	11.25	13.5	6.02	5.77	3.9	6.6	9.3	11.9	14.6		
M5 x 0.8	F105	S105	5	7.5	10	12.5	15	6.35	6.6	4.3	6.9	9.7	12.3	14.8	1.6 Nm	0.3 Nm
M6 x 1.0	F106	S106	6	9	12	15	18	7.6	7.85	4.2	6.9	9.6	12.3	14.6	3 Nm	0.4 Nm
M7 x 1.0	F107	S107	7	10.5	14	17.5	21	8.65	8.9	5.3	8.2	11.1	14.3	17.4	4.5 Nm	0.6 Nm
M8 x 1.0	F408	S408	8	12	16	20	24	9.85	10.1	6.1	9.5	12.9	16.5	19.9		
M8 x 1.25	F108	S108	8	12	16	20	24	9.85	10.1	4.7	7.4	10.6	13.5	16.4	6 Nm	0.8 Nm
M9 x 1.25	F109	S109	9	13.5	18	22.5	27	10.85	11.1	5.3	8.6	11.9	15.3	18.1		
M10 x 1.0*	474		1/4	3/8	7/16	1/2	3/4	12.1	12.5	2.8	5.6	7.0	8.4	13.9		
M10 x 1.25	F510	S510	10	15	20	25	30	12.1	12.5	6.0	9.7	13.1	16.9	20.1		
M10 x 1.5	F110	S110	10	15	20	25	30	12.1	12.5	5.0	8.1	11.2	14.2	17.2	10.5 Nm	1.4 Nm
M11 x 1.5	F111	S111	11	16.5	22	27.5	33	13.1	13.5	5.6	9.0	12.3	15.7	19.1		
M12 x 1.25*	IN139		1/2	3/4				12.5	13.1	6.1	10.6					
M12 x 1.25	F512	S512	12	18	24	30	36	14.4	14.8	7.4	11.6	15.9	20.0	24.3		
M12 x 1.5	F412	S412	12	18	24	30	36	14.4	14.8	14.8	6.2	13.5	16.8	20.8		
M12 x 1.75	F112	S112	12	18	24	30	36	14.4	14.8	5.2	8.4	11.7	14.7	18.0	15.5 Nm	2.1 Nm
M14 x 1.25*	512		3/8	7/16	1/2	5/8	3/4	16.8	17.2	3.5	4.6	5.7	7.9	10.1		
M14 x 1.5	F414	S414	14	21	28	35	42	16.8	17.2	7.1	7.4	11.6	15.7	19.9		
M14 x 2.0	F114	S114	14	21	28	35	42	16.8	17.2	6.2	8.3	11.5	14.6	18.4	23.6 Nm	3 Nm
M16 x 1.5	F416	S416	16	24	32	40	48	19.0	19.4	8.3	13.0	17.7	22.4	27.6		
M16 x 2.0	F116	S116	16	24	32	40	48	19.0	19.4	6.1	9.7	13.3	16.8	21.4	31.6 Nm	4.2 Nm
M18 x 1.5*	514		1/2	5/8				22.2	22.8	4.6	6.5					
M18 x 1.5	F418	S418	18	27	36	45	54	21.5	22.0	9.5	14.9	20.2	25.3	31.4		
M18 x 2.0	F218	S218	18	27	36	45	54	21.5	22.0	7.1	11.2	15.1	19.1	23.1		
M18 x 2.5	F118	S118	18	27	36	45	54	21.5	22.0	5.6	9.0	12.3	15.5	19.1	42 Nm	5.5 Nm
M20 x 1.5	F420	S420	20	30	40	50	60	23.7	24.2	10.7	16.7	22.4	29.9	35.0		
M20 x 2.0	F220	S220	20	30	40	50	60	23.7	24.2	8.0	12.5	16.8	21.3	25.9		
M20 x 2.5	F120	S120	20	30	40	50	60	23.7	24.2	6.3	10.0	13.7	17.7	21.6	54 Nm	7 Nm
M22 x 1.5	F422	S422	22	33	44	55	66	26.3	26.8	11.7	18.1	24.5	32.0	38.6		
M22 x 2.0	F222	S222	22	33	44	55	66	26.3	26.8	8.7	13.6	18.4	23.7	28.7		
M22 x 2.5	F122	S122	22	33	44	55	66	26.3	26.8	6.9	10.9	15.0	19.6	23.8	67.5 Nm	9 Nm
M24 x 2.0	F224	S224	24	36	48	60	72	28.6	29.1	9.6	15.0	20.2	25.9	31.4		
M24 x 3.0	F124	S124	24	36	48			28.6	29.1	8.2	10.0	14.0	17.7	21.5	80 Nm	10.5 Nm
M27 x 2.0	F227	S227	27	40.5	54	67.5		32.2	32.7	10.9	17.1	22.6				
M27 x 3.0	F127	S127	27	40.5	54	67.5		32.2	32.7	7.1	11.4	15.4	20.1		94 Nm	12 Nm
M30 x 2.0	F230	S230	30	45	60	75		35.2	35.7	12.3	19.0	25.5	32.8			
M30 x 3.5	F130	S130	30	45	60	75	90	35.2	35.7	7.0	11.0	14.9	19	23.1	108 Nm	14 Nm
M33 x 2.0	F233	S233	33	49.5				38.3	38.8	13.7	21.2					
M33 x 3.5	F133	S133	33	49.5	66			38.3	38.8	7.8	12.2	16.5			122 Nm	15.5 Nm
M36 x 2.0	F436	S436	36	54	72			42.1	42.6	14.1	21.9	31.1				
M36 x 4.0	F136	S136	36	54	72			42.1	42.6	7.0	11.0	15.2			136 Nm	17.5 Nm
M39 x 2.0	F639	S639	39	58.5				45.1	45.6	16.3	25.0					
M39 x 4.0	F139	S139	39	58.5	78			45.1	45.6	7.7	12.2	16.6			150 Nm	19.6 Nm

*次至零專用



METRIC

Tooling

THREAD SIZE	HELICOIL® TAPS					HELICOIL® GAUGES		INSERTING TOOL				TANG BREAK OFF	AUTO TANG BREAK OFF
	Rough	Finish	Bottom	SP Flute	SP Point								
													
	Class 5H		Class 6H		Type	Order No.	Type	Order No.					
1	2	3	4	5	6	7	8	9	10	11	12	13	14
M2 x 0.4		020040P	020040B	020040S	020040V	020040S	020040B			H-PSG	0150 010 2000	0158 040 0000	0158 602 0000
M2.2 x 0.45	022045R	022045P	022045B	022045S	022045V	022045S	022045B	Request	Request	H-PSG	Request	Request	Request
M2.5 X 0.45	025045R	025045P	025045B	025045S	025045V	025045S	025045B	H-PMG	0150 022 5000	H-PSG	0150 012 5000	0158 040 1000	0158 625 0000
M3 X 0.5	030050R	030050P	030050B	030050S	030050V	030050S	030050B	H-PMG	0150 020 3000	H-PSG	0150 010 3000	0158 040 1000	0158 603 0000
M3.5 X 0.6	035060R	035060P	035060B	035060S	035060V	035060S	035060B	H-PMG	0150 023 5000			0158 040 2000	0158 635 0000
M4 X 0.7	040070R	040070P	040070B	040070S	040070V	040070S	040070B	H-PMG	0150 020 4000	H-PSG	0150 010 4000	0158 040 2000	0158 604 0000
M4.5 X 0.75	045075R	045075P	045075B	045075S	045075V	045075S	045075B	Request	Request	Request	Request	Request	Request
M5 X 0.8	050080R	050080P	050080B	050080S	050080V	050080S	050080B	H-PMG	0150 020 5000	H-PSG	0150 010 5000	0158 040 3000	0158 605 0000
M6 X 1.0	060100R	060100P	060100B	060100S	060100V	060100S	060100B	H-PM	0150 040 6000	H-PSG	0150 010 6000	0158 040 3000	0158 606 0000
M7 X 1.0	070100R	070100P	070100B	070100S	070100V	070100S	070100B			H-PSG	0150 010 7000	0158 040 4000	0158 607 0000
M8 X 1.0	080100R	080100P	080100B	080100S	080100V	080100S	080100B			H-PSG	0150 010 8300	0158 040 4000	0158 608 0000
M8 X 1.25	080125R	080125P	080125B	080125S	080125V	080125S	080125B	H-PM	0150 040 8000	H-PSG	0150 010 8000	0158 040 4000	0158 608 0000
M9 X 1.25	090125R	090125P	090125B	090125S	090125V	090125S	090125B	H-PM	0150 040 9000			0158 040 4000	0158 609 0000
M10 X 1.0*	475	476					477			H-PSG	0150 011 0300	0158 040 5000	0158 610 0000
M10 X 1.25	100125R	100125P	100125B	100125S	100125V	100125S	100125B			H-PSG	0150 011 0900	0158 040 5000	0158 610 0000
M10 X 1.5	100150R	100150P	100150B	100150S	100150V	100150S	100150B	H-PM	0150 041 0000			0158 040 5000	0158 610 0000
M11 X 1.5	110150R	110150P	110150B	110150S	110150V	110150S	110150B	H-PM	0150 041 1000			0158 040 5000	0158 610 0000
M12 X 1.25*	ST534	ST535					ST536			H-PSG	0150 011 2900	USE PLIERS	
M12 X 1.25	120125R	120125P	120125B	120125S	120125V	120125S	120125B			H-PSG	0150 011 2900	0158 040 6000	0158 612 0000
M12 X 1.5	120150R	120150P	120150B	120150S	120150V	120150S	120150B			H-PSG	0150 011 2400	0158 040 6000	0158 612 0000
M12 X 1.75	120175R	120175P	120175B	120175S	120175V	120175S	120175B	H-PM	0150 041 2000			0158 040 6000	0158 612 0000
M14 X 1.25*	525	521					845			H-PSG	0150 011 4900	USE PLIERS	
M14 X 1.5	140150R	140150P	140150B	140150S	140150V	140150S	140150B			H-PSG	0150 011 4400	USE PLIERS	
M14 X 2.0	140200R	140200P	140200B	140200S	140200V	140200S	140200B	H-PM	0150 041 4000			USE PLIERS	
M16 X 1.5	160150R	160150P	160150B	160150S	160150V	160150S	160150B	H-PMG	0150 021 6400	H-PSG	0150 011 6400	USE PLIERS	
M16 X 2.0	160200R	160200P	160200B	160200S	160200V	160200S	160200B	H-PM	0150 041 6000			USE PLIERS	
M18 X 1.5*	526	522					846			H-PSG	0150 011 8400	USE PLIERS	
M18 X 1.5	180150R	180150P	180150B	180150S	180150V	180150S	180150B			H-PSG	0150 011 8400	USE PLIERS	
M18 X 2.0	180200R	180200P	180200B	180200S	180200V	180200S	180200B			H-PSG	0150 011 8500	USE PLIERS	
M18 X 2.5	180250R	180250P	180250B	180250S	180250V	180250S	180250B	H-M	0150 071 8000			USE PLIERS	
M20 X 1.5	200150R	200150P	200150B	200150S	200150V	200150S	200150B			H-PSG	0150 012 0400	USE PLIERS	
M20 X 2.0	200200R	200200P	200200B	200200S	200200V	200200S	200200B			H-PSG	0150 012 0500	USE PLIERS	
M20 X 2.5	200250R	200250P	200250B	200250S	200250V	200250S	200250B	H-M	0150 072 0000			USE PLIERS	
M22 X 1.5	220150R	220150P	220150B	220150S	220150V	220150S	220150B			H-PSG	0150 012 2400	USE PLIERS	
M22 X 2.0	220200R	220200P	220200B	220200S	220200V	220200S	220200B			H-PSG	0150 012 2500	USE PLIERS	
M22 X 2.5	220250R	220250P	220250B	220250S	220250V	220250S	220250B	H-M	0150 072 2000			USE PLIERS	
M24 X 2.0	240200R	240200P	240200B	240200S	240200V	240200S	240200B			H-PSG	0150 012 4500	USE PLIERS	
M24 X 3.0	240300R	240300P	240300B	240300S	240300V	240300S	240300B	H-M	0150 072 4000			USE PLIERS	
M27 X 2.0	270200R	270200P	270200B	270200S	270200V	270200S	270200B			H-PSG	0150 012 7500	USE PLIERS	
M27 X 3.0	270300R	270300P	270300B	270300S	270300V	270300S	270300B	H-M	0150 072 7000			USE PLIERS	
M30 X 2.0	300200R	300200P	300200B	300200S	300200V	300200S	300200B			H-PSG	0150 013 0500	USE PLIERS	
M30 X 3.5	300350R	300350P	300350B	300350S	300350V	300350S	300350B	H-M	0150 073 0000			USE PLIERS	
M33 X 2.0	330200R	330200P	330200B	330200S	330200V	330200S	330200B			H-PSG	0150 013 3500	USE PLIERS	
M33 X 3.5	330350R	330350P	330350B	330350S	330350V	330350S	330350B	H-M	0150 073 3000			USE PLIERS	
M36 X 2.0	360200R	360200P	360200B	360200S	360200V	360200S	360200B			H-PSG	0150 013 6500	USE PLIERS	
M36 X 4.0	360400R	360400P	360400B	360400S	360400V	360400S	360400B	H-M	0150 073 6000			USE PLIERS	
M39 X 2.0	390200R	390200P	390200B	390200S	390200V	390200S	390200B			H-PSG	0150 013 9500	USE PLIERS	
M39 X 4.0	390400R	390400P	390400B	390400S	390400V	390400S	390400B	H-M	0150 073 9000			USE PLIERS	

*Spark Plug Sizes

For Drilling & Tapping Data See Page 12

UNC

規 格	FR 標準型 編號	SL 防鬆型 編號	護套長度					自由外徑		護套圈數					扭 矩	
			1D	1.5D	2D	2.5D	3D	MIN	MAX	1D	1.5D	2D	2.5D	3D	MAX	MIN
1	2	3	4	5	6	7	8			11	12	13	14	15	16	17
2-56	1185-02	3585-02	0.086	0.129	0.172	0.215	0.258	0.110	0.119	3.000	5.250	7.375	9.625	11.875	20 oz-in	3 oz-in
3-48	1185-03	3585-03	0.099	0.148	0.198	0.248	0.297	0.128	0.139	2.875	5.000	7.250	9.375	11.500	32 oz-in	7 oz-in
4-40	1185-04	3585-04	0.112	0.168	0.224	0.280	0.336	0.144	0.159	2.750	4.750	6.750	8.875	10.875	48 oz-in	10 oz-in
5-40	1185-05	3585-05	0.125	0.188	0.250	0.312	0.375	0.158	0.173	3.250	5.500	7.750	10.000	12.250	75 oz-in	13 oz-in
6-32	1185-06	3585-06	0.138	0.207	0.276	0.345	0.414	0.178	0.193	2.750	4.750	6.875	8.875	10.875	6 lb-in	1.0 lb-in
8-32	1185-2	3585-2	0.164	0.246	0.328	0.410	0.492	0.205	0.220	3.500	6.000	8.375	10.750	13.250	9 lb-in	1.5 lb-in
10-24	1185-3	3585-3	0.190	0.285	0.380	0.475	0.570	0.244	0.259	2.875	5.000	7.125	9.250	11.375	13 lb-in	2.0 lb-in
12-24	1185-1	3585-1	0.216	0.324	0.432	0.540	0.648	0.270	0.285	3.500	6.000	8.375	10.625	13.125	24 lb-in	3.0 lb-in
1/4-20	1185-4	3585-4	0.250	0.375	0.500	0.625	0.750	0.310	0.330	3.375	5.750	8.000	10.375	12.750	30 lb-in	4.5 lb-in
5/16-18	1185-5	3585-5	0.312	0.469	0.625	0.781	0.938	0.380	0.400	4.000	6.625	9.250	11.875	14.625	60 lb-in	7.5 lb-in
3/8-16	1185-6	3585-6	0.375	0.562	0.750	0.938	1.125	0.452	0.472	4.375	7.250	10.000	12.875	15.750	60 lb-in	12.0 lb-in
7/16-14	1185-7	3585-7	0.438	0.656	0.875	1.094	1.313	0.528	0.551	4.500	7.375	10.250	13.125	16.125	100 lb-in	16.5 lb-in
1/2-13	1185-8	3585-8	0.500	0.750	1.000	1.250	1.500	0.597	0.622	4.875	7.875	11.000	14.125	17.125	150 lb-in	24.0 lb-in
9/16-12	1185-9	3585-9	0.563	0.844	1.125	1.406	1.688	0.669	0.694	5.125	8.250	11.500	14.750	17.875	200 lb-in	30.0 lb-in
5/8-11	1185-10	3585-10	0.625	0.938	1.250	1.563	1.875	0.742	0.767	5.250	8.500	11.750	15.000	18.375	300 lb-in	40.0 lb-in
3/4-10	1185-12	3585-12	0.750	1.125	1.500	1.875	2.250	0.881	0.906	5.875	9.375	13.000	16.500	20.125	400 lb-in	60.0 lb-in
7/8-9	1185-14	3585-14	0.875	1.313	1.750	2.188	2.625	1.022	1.052	6.250	10.000	13.750	17.500	21.250	600 lb-in	82.0 lb-in
1-8	1185-16	3585-16	1.000	1.500	2.000	2.500	3.000	1.168	1.198	6.375	10.125	14.000	17.750	21.625	800 lb-in	110.0 lb-in
1-1/8-7	1185-18	3585-18	1.125	1.688	2.250	2.813	3.375	1.315	1.355	6.125	9.875	13.625	17.500	21.250	900 lb-in	137.0 lb-in
1-1/4-7	1185-20	3585-20	1.250	1.875	2.500	3.125	3.750	1.443	1.483	7.000	11.250	15.375	19.500	23.750	1000 lb-in	165.0 lb-in
1-3/8-6	1185-22	3585-22	1.375	2.063	2.750	3.438	4.125	1.598	1.643	6.500	10.500	14.375	18.375	22.250	1150 lb-in	185.0 lb-in
1-1/2-6	1185-24	3585-24	1.500	2.250	3.000	3.750	4.500	1.727	1.772	7.250	11.500	15.875	20.125	24.500	1350 lb-in	210.0 lb-in

UNF

規 格	FR 標準型 編號	SL 防鬆型 編號	護套長度					自由外徑		護套圈數					扭 矩	
			1D	1.5D	2D	2.5D	3D	MIN	MAX	1D	1.5D	2D	2.5D	3D	MAX	MIN
1	2	3	4	5	6	7	8			11	12	13	14	15	16	17
2-64	1191-02	3591-02	0.086	0.129	0.172	0.215	0.258	0.110	0.119	3.500	5.875	8.375	10.750	13.125	20 oz-in	3 oz-in
3-56	1191-03	3591-03	0.099	0.148	0.198	0.248	0.297	0.131	0.146	3.375	5.625	8.000	10.375	12.625	32 oz-in	7 oz-in
4-48	1191-04	3591-04	0.112	0.168	0.224	0.280	0.336	0.147	0.162	3.375	5.625	7.875	10.250	12.500	48 oz-in	10 oz-in
5-44	1191-05	3591-05	0.125	0.188	0.250	0.312	0.375	0.163	0.178	3.583	5.938	8.313	10.750	13.125		
6-40	1191-06	3591-06	0.138	0.207	0.276	0.345	0.414	0.173	0.193	3.500	6.000	8.375	10.750	13.250	6 lb-in	1.0 lb-in
8-36	1191-2	3591-2	0.164	0.246	0.328	0.410	0.492	0.204	0.224	3.875	6.500	9.125	11.625	14.250	9 lb-in	1.5 lb-in
10-32	1191-3	3591-3	0.190	0.285	0.380	0.475	0.570	0.236	0.256	4.125	6.875	9.500	12.250	14.875	13 lb-in	2.0 lb-in
1/4-28	1191-4	3591-4	0.250	0.375	0.500	0.625	0.750	0.306	0.326	5.000	8.250	11.375	14.500	17.625	30 lb-in	3.5 lb-in
5/16-24	1191-5	3591-5	0.312	0.469	0.625	0.781	0.938	0.380	0.400	5.500	8.875	12.250	15.625	19.000	60 lb-in	6.5 lb-in
3/8-24	1191-6	3591-6	0.375	0.563	0.750	0.938	1.125	0.448	0.468	6.875	11.000	15.000	19.125	23.125	80 lb-in	9.5 lb-in
7/16-20	1191-7	3591-7	0.438	0.656	0.875	1.094	1.313	0.524	0.549	6.625	10.625	14.625	18.500	22.500	100 lb-in	14.0 lb-in
1/2-20	1191-8	3591-8	0.500	0.750	1.000	1.250	1.500	0.592	0.617	7.875	12.375	16.875	21.375	25.875	150 lb-in	18.0 lb-in
9/16-18	1191-9	3591-9	0.563	0.844	1.125	1.406	1.688	0.666	0.691	8.000	12.500	17.125	21.750	26.250	200 lb-in	24.0 lb-in
5/8-18	1191-10	3591-10	0.625	0.938	1.250	1.563	1.875	0.733	0.758	9.000	14.125	19.250	24.250	29.375	300 lb-in	32.0 lb-in
3/4-16	1191-12	3591-12	0.750	1.125	1.500	1.875	2.250	0.876	0.901	9.750	15.125	20.625	26.000	31.500	400 lb-in	50.0 lb-in
7/8-14	1191-14	3591-14	0.875	1.313	1.750	2.188	2.625	1.021	1.051	9.875	15.600	21.125	26.625	32.250	600 lb-in	70.0 lb-in
1-12	1191-161	3591-161	1.000	1.500	2.000	2.500	3.000	1.168	1.199	9.625	15.000	20.500	26.000	31.500	800 lb-in	90.0 lb-in
1-1/8-12	1191-18	3591-18	1.125	1.688	2.250	2.813	3.375	1.304	1.334	11.125	17.250	23.375	29.500	35.750	900 lb-in	117.0 lb-in
1-1/4-12	1191-20	3591-20	1.250	1.875	2.500	3.125	3.750	1.439	1.469	12.500	19.375	26.250	33.000	39.875	1000 lb-in	143.0 lb-in
1-3/8-12	1191-22	3591-22	1.375	2.063	2.750	3.438	4.125	1.575	1.610	13.750	21.375	28.875	36.500	44.000	1150 lb-in	165.0 lb-in
1-1/2-12	1191-24	3591-24	1.500	2.250	3.000	3.750	4.500	1.710	1.745	15.250	23.500	31.625	39.875	48.125	1350 lb-in	190.0 lb-in

INSERT TYPE

1185 UNC FR
3585 UNC SL
1191 UNF FR
3591 UNF SL

HOW TO ORDER

1191-3

MATERIAL

CN Stainless Steel
N80N Nimonic 80
TN Inconel X750
EN Nitronic 60
BN Phosphor Bronze

FINISH

P Cadmium Plate
V Silver Plate
Z Zinc Plate
W Dry Film Lube

LENGTH

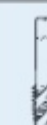
See above chart
x .190

ORDER CODE e.g

1191-3CNP x .190
10-32UNF x 1D FR CP

UNC

Unified Tooling

THREAD SIZE	HELICOIL® TAPS					HELICOIL® GAUGES		INSERTING TOOL				TANG BREAK OFF	AUTO TANG BREAK OFF
	Rough	Finish	Bottom	SP Flute	SP Point								
													
	Class 2B		Class 3B		Plain Mandrel		Threaded Mandrel						
1	2	3	4	5	6	7	8	9	10	11	12	13	14
2-56	02CRU	02CPB	02CBB	02CS	02CSB	1440-02	1688-02			H-PSG	Request	0158 040 0000	0158 602 0000
3-48	03CRU	03CPB	03CBB	03CS	03CSB	1440-03	1688-03			H-PSG	Request	Request	
4-40	04CRU	04CPB	04CBB	04CS	04CSB	1440-04	1688-04			H-PSG	0150 016 5600	0158 040 1000	0158 603 0000
5-40	05CRU	05CPB	05CBB	05CS	05CSB	1440-05	1688-05			H-PSG	0150 016 6600	0158 040 1000	0158 603 0000
6-32	06CRU	06CPB	06CBB	06CS	06CSB	1440-06	1688-06			H-PSG	0150 016 7600	0158 040 2000	0158 603 0000
8-32	2CRU	2CPB	2CBB	2CS	2CSB	1440-2	1688-2			H-PSG	0150 016 8600	0158 040 2000	0158 604 0000
10-24	3CRU	3CPB	3CBB	3CS	3CSB	1440-3	1688-3			H-PSG	0150 016 9600	0158 040 3000	0158 604 0000
12-24	1CRU	1CPB	1CBB	1CS	1CSB	1440-1	1688-1	H-PM	0150 047 0600			0158 040 3000	0158 605 0000
1/4-20	4CRU	4CPB	4CBB	4CS	4CSB	1440-4	1688-4	H-PM	0150 047 4600			0158 040 3000	0158 606 0000
5/16-18	5CRU	5CPB	5CBB	5CS	5CSB	1440-5	1688-5	H-PM	0150 047 6600			0158 040 5000	0158 607 0000
3/8-16	6CRU	6CPB	6CBB	6CS	6CSB	1440-6	1688-6	H-PM	0150 047 7600			0158 040 5000	0158 609 0000
7/16-14	7CRU	7CPB	7CBB	7CS	7CSB	1440-7	1688-7	H-PM	0150 047 8600			0158 040 6000	0158 610 0000
1/2-13	8CRU	8CPB	8CBB	8CS	8CSB	1440-8	1688-8	H-PM	0150 047 9600			0158 040 6000	0158 611 0000
9/16-12	9CRU	9CPB	9CBB	9CS	9CSB	1440-9	1688-9	H-PM	0150 048 0600			USE PLIERS	
5/8-11	10CRU	10CPB	10CBB	10CS	10CSB	1440-10	1688-10	H-M	0150 078 1000			USE PLIERS	
3/4-10	12CRU	12CPB	12CBB	12CS	12CSB	1440-12	1688-12	H-M	0150 078 3000			USE PLIERS	
7/8-9	14CRU	14CPB	14CBB	14CS	14CSB	1440-14	1688-14	H-M	0150 078 5000			USE PLIERS	
1-8	16CRU	16CPB	16CBB	16CS	16CSB	1440-16	1688-16	H-M	0150 078 6000			USE PLIERS	
1-1/8-7	18CRU	18CPB	18CBB	18CS	18CSB	1440-18	1688-18	H-M	0150 078 7000			USE PLIERS	
1-1/4-7	20CRU	20CPB	20CBB	20CS	20CSB	1440-20	1688-20	H-M	0150 078 8000			USE PLIERS	
1-3/8-6	22CRU	22CPB	22CBB	22CS	22CSB	1440-22	1688-22	H-M	0150 078 9000			USE PLIERS	
1-1/2-6	24CRU	24CPB	24CBB	24CS	24CSB	1440-24	1688-24	H-M	0150 079 0000			USE PLIERS	

UNF

THREAD SIZE	HELICOIL® TAPS					HELICOIL® GAUGES		INSERTING TOOL				TANG BREAK OFF	AUTO TANG BREAK OFF
	Rough	Finish	Bottom	SP Flute	SP Point								
													
	Class 2B		Class 3B		Plain Mandrel		Threaded Mandrel						
	Type	Order No.	Type	Order No.									
1	2	3	4	5	6	7	8	9	10	11	12	13	14
2-64	02FRU	02FPB	02FBB	02FS	02FSB	1441-02	1694-02		Request				
3-56	03FRU	03FPB	03FBB	03FS	03FSB	1441-03	1694-03		Request				
4-48	04FRU	04FPB	04FBB	04FS	04FSB	1441-04	1694-04			H-PSG	0150 016 5700	0158 040 1000	0158 603 0000
5-44	05FRU	05FPB	05FBB	05FS	05FSB	1441-05	1694-05		Request				
6-40	06FRU	06FPB	06FBB	06FS	06FSB	1441-06	1694-06			H-PSG	0150 016 7700	0158 040 2000	0158 603 0000
8-36	2FRU	2FPB	2FBB	2FS	2FSB	1441-2	1694-2			H-PSG	0150 016 8700	0158 040 2000	0158 604 0000
10-32	3FRU	3FPB	3FBB	3FS	3FSB	1441-3	1694-3			H-PSG	0150 016 9700	0158 040 3000	0158 604 0000
1/4-28	4FRU	4FPB	4FBB	4FS	4FSB	1441-4	1694-4			H-PSG	0150 017 4700	0158 040 3000	0158 606 0000
5/16-24	5FRU	5FPB	5FBB	5FS	5FSB	1441-5	1694-5			H-PSG	0150 017 6700	0158 040 4000	0158 608 0000
3/8-24	6FRU	6FPB	6FBB	6FS	6FSB	1441-6	1694-6			H-PSG	0150 017 7700	0158 040 4000	0158 609 0000
7/16-20	7FRU	7FPB	7FBB	7FS	7FSB	1441-7	1694-7			H-PSG	0150 017 8700	0158 040 5000	0158 611 0000
1/2-20	8FRU	8FPB	8FBB	8FS	8FSB	1441-8	1694-8			H-PSG	0150 017 9700	0158 040 6000	0158 612 0000
9/16-18	9FRU	9FPB	9FBB	9FS	9FSB	1441-9	1694-9	H-PMG	0150 028 0700			USE PLIERS	0158 614 0000
5/8-18	10FRU	10FPB	10FBB	10FS	10FSB	1441-10	1694-10	H-PMG	0150 028 1700			USE PLIERS	0158 616 0000
3/4-16	12FRU	12FPB	12FBB	12FS	12FSB	1441-12	1694-12	H-PMG	0150 028 3700			USE PLIERS	
7/8-14	14FRU	14FPB	14FBB	14FS	14FSB	1441-14	1694-14	H-PMG	0150 028 5700			USE PLIERS	
1-12	16FRU	16FPB	16FBB	16FS	16FSB	1441-16	1694-16	H-PMG	0150 028 6700			USE PLIERS	
1-1/8-12	18FRU	18FPB	18FBB	18FS	18FSB	1441-18	1694-18	H-PMG	0150 028 7700			USE PLIERS	
1-1/4-12	20FRU	20FPB	20FBB	20FS	20FSB	1441-20	1694-20	H-PMG	0150 028 8700			USE PLIERS	
1-3/8-12	22FRU	22FPB	22FBB	22FS	22FSB	1441-22	1694-22	H-PMG	0150 028 9700			USE PLIERS	
1-1/2-12	24FRU	24FPB	24FBB	24FS	24FSB	1441-24	1694-24	H-PMG	0150 029 0700			USE PLIERS	

For Drilling & Tapping Data See Page 13

BSW

規 格	FR 標準型 編號	SL 防鬆型 編號	護套長度					自由外徑		護套圈數					扭 矩	
			1D	1.5D	2D	2.5D	3D	MIN	MAX	1D	1.5D	2D	2.5D	3D	MAX	MIN
1	2	3	4	5	6	7	8			11	12	13	14	15	16	17
1/8-40	1255-2	2455-2	0.125	0.188	0.250	0.313	0.375	0.157	0.172	3.250	5.500	7.75	10.125	12.375	-	-
3/16-24	1255-3	2455-3	0.188	0.281	0.375	0.469	0.563	0.240	0.255	2.937	5.062	7.187	9.312	11.437	-	-
1/4-20	1255-4	2455-4	0.250	0.375	0.500	0.625	0.750	0.314	0.330	3.437	6.812	9.187	10.625	13.000	-	-
5/16-18	1255-5	2455-5	0.313	0.469	0.625	0.781	0.938	0.385	0.400	4.062	6.75	9.437	12.062	14.75	-	-
3/8-16	1255-6	2455-6	0.375	0.563	0.750	0.938	1.125	0.457	0.472	4.375	7.187	10.062	12.875	15.75	-	-
7/16-14	1255-7	2455-7	0.438	0.656	0.875	1.094	1.313	0.532	0.552	4.375	7.375	10.250	13.125	16.063	-	-
1/2-12	1255-8	2455-8	0.500	0.750	1.000	1.250	1.500	0.610	0.630	4.312	7.187	10.000	13.000	16.687	-	-
9/16-12	1255-9	2455-9	0.563	0.844	1.125	1.406	1.688	0.675	0.695	5.062	8.25	11.437	14.687	17.875	-	-
5/8-11	1255-10	2455-10	0.625	0.938	1.250	1.563	1.875	0.747	0.767	5.25	8.562	11.875	15.125	18.437	-	-
11/16-11	1255-11	2455-11	0.688	1.031	1.375	1.719	2.063	0.811	0.831	5.938	9.563	13.188	16.750	20.375	-	-
3/4-10	1255-12	2455-12	0.750	1.125	1.500	1.875	2.250	0.886	0.906	5.875	9.500	13.062	16.625	20.250	-	-
7/8-9	1255-14	2455-14	0.875	1.313	1.750	2.188	2.625	1.027	1.052	6.25	10.000	13.750	17.562	21.312	-	-
1-8	1255-16	2455-16	1.000	1.500	2.000	2.500	3.000	1.172	1.197	6.375	10.187	14.000	17.812	21.75	-	-
1-1/8-7	1255-18	2455-18	1.125	1.688	2.250	2.813		1.321	1.356	6.25	10.000	13.750	17.500		-	-
1-1/4-7	1255-20	2455-20	1.250	1.875	2.500	3.125		1.449	1.484	7.125	11.250	15.375	19.625		-	-
1-1/2-6	1255-24	2455-24	1.500	2.250	3.000	3.750		1.734	1.774	7.250	11.312	15.875	20.187		-	-

BSF

規 格	FR 標準型 編號	SL 防鬆型 編號	護套長度					自由外徑		護套圈數					扭 矩	
			1D	1.5D	2D	2.5D	3D	MIN	MAX	1D	1.5D	2D	2.5D	3D	MAX	MIN
1	2	3	4	5	6	7	8			11	12	13	14	15	16	17
3/16-32	1261-3	2461-3	0.188	0.281	0.375	0.469	0.563	0.238	0.253	4.000	6.687	9.312	12.000	14.688	-	-
7/32-28	1261-35	2461-35	0.219	0.328	0.438	0.547	0.656	0.277	0.292	4.188	6.875	9.625	12.375	16.063	-	-
1/4-26	1261-4	2461-4	0.250	0.375	0.500	0.625	0.750	0.314	0.329	4.500	7.437	10.312	13.250	16.125	-	-
9/32-26	1261-45	2461-45	0.281	0.422	0.563	0.703	0.844	0.348	0.363	5.250	8.562	11.813	15.125	18.375	-	-
5/16-22	1261-5	2461-5	0.313	0.469	0.625	0.781	0.938	0.389	0.404	4.875	8.000	11.062	14.187	17.312	-	-
3/8-20	1261-6	2461-6	0.375	0.563	0.750	0.938	1.125	0.462	0.477	5.500	8.875	12.25	15.625	19.062	-	-
7/16-18	1261-7	2461-7	0.438	0.656	0.875	1.094	1.313	0.536	0.555	5.812	9.375	12.937	16.500	20.062	-	-
1/2-16	1261-8	2461-8	0.500	0.750	1.000	1.250	1.500	0.611	0.631	5.937	9.562	13.187	16.812	20.437	-	-
9/16-16	1261-9	2461-9	0.563	0.844	1.056	1.406	1.688	0.679	0.699	7.625	10.937	15.000	19.125	23.188	-	-
5/8-14	1261-10	2461-10	0.625	0.938	1.250	1.563	1.875	0.756	0.776	6.625	10.625	14.625	18.562	22.562	-	-
11/16-14	1261-11	2461-11	0.688	1.031	1.375	1.719	2.063	0.824	0.844	7.438	11.812	16.188	20.625	25.000	-	-
3/4-12	1261-12	2461-12	0.750	1.125	1.500	1.875	2.250	0.905	0.925	6.875	11.000	15.062	19.187	23.25	-	-
13/16-12	1261-13	2461-13	0.813	1.219	1.625	2.031	2.438	0.972	0.992	7.563	12.000	16.500	20.938	25.375	-	-
7/8-11	1261-14	2461-14	0.875	1.313	1.750	2.188	2.625	1.048	1.073	7.437	11.812	16.250	20.625	25.000	-	-
1-10	1261-15	2461-15	1.000	1.500	2.000	2.500		1.194	1.219	7.812	12.375	16.937	21.500		-	-
1-1/8-9	1261-18	2461-18	1.056	1.688	2.071	2.813		1.341	1.366	7.937	12.562	17.187	21.812		-	-
1-1/4-9	1261-20	2461-20	1.250	1.875	2.500	3.125		1.476	1.501	8.937	14.125	19.250	24.437		-	-
1-3/8-8	1261-22	2461-22	1.375	2.063	2.750			1.627	1.657	8.688	13.750	18.625			-	-
1-1/2-8	1261-24	2461-24	1.500	2.250	3.000			1.762	1.792	9.625	15.125	20.625			-	-

INSERT TYPE

1255 BSW FR
2455 BSW SL
1191 BSF FR
2461 BSF SL

HOW TO ORDER

2455-4

MATERIAL

CN
CHOOSE FROM LIST

CN Stainless Steel

N90N Nimonic 90

TN Inconel X750

EN Nitronic 60

BN Phosphor Bronze

FINISH

Z
CHOOSE FROM LIST

BLANK None

P Cadmium Plate

V Silver Plate

Z Zinc Plate

W Dry Film Lube

LENGTH

See above chart

x .375

ORDER CODE e.g

2455-4CNZ x .375
1/4BSW x 1.5D SL ZP

BSW

Tooling

THREAD SIZE	HELICOIL® TAPS					HELICOIL® GAUGES		INSERTING TOOL				TANG BREAK OFF	AUTO TANG BREAK OFF
	Rough	Finish	Bottom	SP Flute	SP Point								
													
						Medium Class	Close Class	Plain Mandrel		Threaded Mandrel			
								Type	Order No.	Type	Order No.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1/8-40	2WR	2WP	2WB	2WS	2WV	WGM-2				H-PSG	0150 017 1300	0158 040 1000	0158 603 0000
3/16-24	3WR	3WP	3WB	3WS	3WV	WGM-3				H-PSG	0150 017 2300	0158 040 2000	0158 604 0000
1/4-20	4WR	4WP	4WB	4WS	4WV	WGM-4	WGC-4	H-PM	0150 047 4300			0158 040 3000	0158 605 0000
5/16-18	5WR	5WP	5WB	5WS	5WV	WGM-5	WGC-5	H-PM	0150 047 6300			0158 040 3000	0158 607 0000
3/8-16	6WR	6WP	6WB	6WS	6WV	WGM-6	WGC-6	H-PM	0150 047 7300			0158 040 4000	0158 608 0000
7/16-14	7WR	7WP	7WB	7WS	7WV	WGM-7	WGC-7	H-PM	0150 047 8300			0158 040 4000	0158 609 0000
1/2-12	8WR	8WP	8WB	8WS	8WV	WGM-8	WGC-8	H-PM	0150 047 9300			0158 040 5000	0158 611 0000
9/16-12	9WR	9WP	9WB			WGM-9	WGC-9	H-PM	0150 048 0300			USE PLIERS	
5/8-11	10WR	10WP	10WB			WGM-10	WGC-10	H-M	0150 078 1000			USE PLIERS	
11/16-11	11WR	11WP	11WB			WGM-11	WGC-11	H-M	0150 078 2000			USE PLIERS	
3/4-10	12WR	12WP	12WB			WGM-12	WGC-12	H-M	0150 078 3000			USE PLIERS	
7/8-9	14WR	14WP	14WB			WGM-14	WGC-14	H-M	0150 078 5000			USE PLIERS	
1-8	16WR	16WP	16WB			WGM-16	WGC-16	H-M	0150 078 6000			USE PLIERS	
1-1/8-7	18WR	18WP	18WB			WGM-18	WGC-18	H-M	0150 078 7000			USE PLIERS	
1-1/4-7	20WR	20WP	20WB			WGM-20	WGC-20	H-M	0150 078 8000			USE PLIERS	
1-1/2-6	24WR	24WP	24WB			WGM-24	WGC-24	H-M	0150 079 0000			USE PLIERS	

BSF

THREAD SIZE	HELICOIL® TAPS					HELICOIL® GAUGES		INSERTING TOOL				TANG BREAK OFF	AUTO TANG BREAK OFF
	Rough	Finish	Bottom	SP Flute	SP Point								
													
						Medium Class	Close Class	Plain Mandrel		Threaded Mandrel			
								Type	Order No.	Type	Order No.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
3/16-32	3XR	3XP	3XB	3XS	3XV	XGM-3				H-PSG	0150 017 2500	0158 040 2000	0158 604 0000
7/32-28	35XR	35XP	35XB	35XS	35XV	XGM-35				H-PSG	0150 017 3500	0158 040 3000	0158 605 0000
1/4-26	4XR	4XP	4XB	4XS	4XV	XGM-4		H-PM	0150 047 4500			0158 040 3000	0158 606 0000
9/32-26	45XR	45XP	45XB	45XS	45XV	XGM-45		H-PM	0150 047 5500			0158 040 3000	0158 606 0000
5/16-22	5XR	5XP	5XB	5XS	5XV	XGM-5	XGC-5	H-PM	0150 047 6500			0158 040 5000	0158 607 0000
3/8-20	6XR	6XP	6XB	6XS	6XV	XGM-6	XGC-6	H-PM	0150 047 7500			0158 040 5000	0158 609 0000
7/16-18	7XR	7XP	7XB	7XS	7XV	XGM-7	XGC-7	H-PM	0150 047 8500			0158 040 6000	0158 610 0000
1/2-16	8XR	8XP	8XB	8XS	8XV	XGM-8	XGC-8	H-PM	0150 047 9500			0158 040 6000	0158 611 0000
9/16-16	9XR	9XP	9XB	9XS	9XV	XGM-9	XGC-9	H-PM	0150 048 0500			USE PLIERS	
5/8-14	10XR	10XP	10XB	10XS	10XV	XGM-10	XGC-10	H-PM	0150 048 1500			USE PLIERS	
11/16-14	11XR	11XP	11XB	11XS	11XV	XGM-11	XGC-11	H-PM	0150 048 2500			USE PLIERS	
3/4-12	12XR	12XP	12XB	12XS	12XV	XGM-12	XGC-12	H-PM	0150 048 3500			USE PLIERS	
13/16-12	13XR	13XP	13XB	13XS	13XV	XGM-13	XGC-13	H-PM	0150 048 4500			USE PLIERS	
7/8-11	14XR	14XP	14XB	14XS	14XV	XGM-14	XGC-14	H-PM	0150 048 5500			USE PLIERS	
1-10	16XR	16XP	16XB	16XS	16XV	XGM-16	XGC-16	H-PM	0150 048 6500			USE PLIERS	
1-1/8-9	18XR	18XP	18XB	18XS	18XV	XGM-18	XGC-18	H-PM	0150 048 7500			USE PLIERS	
1-1/4-9	20XR	20XP	20XB	20XS	20XV	XGM-20	XGC-20	H-PM	0150 048 8500			USE PLIERS	
1-3/8-8	22XR	22XP	22XB	22XS	22XV	XGM-22	XGC-22	H-PM	0150 048 9500			USE PLIERS	
1-1/2-8	24XR	24XP	24XB	24XS	24XV	XGM-24	XGC-24	H-PM	0150 049 0500			USE PLIERS	

For Drilling & Tapping Data See Page 13

G (BSPF)

Insert Data

THREAD SIZE	FR PART NUMBER	SL PART NUMBER	INSERT LENGTH					FREE O/DIA.		NO. FREE COILS					PREVAILING TORQUE	
			1D	1.5D	2D	2.5D	3D	MIN	MAX	1D	1.5D	2D	2.5D	3D	MAX	MIN
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1/8-28	1325-2	-	0.125	0.188	0.250	0.313	0.375	0.454	0.474	1.813	3.438	5.000	6.563	8.125	-	-
1/4-19	1325-4	-	0.250	0.375	0.500	0.625	0.750	0.619	0.639	2.875	5.125	7.313	9.438	11.625	-	-
3/8-19	1325-6	-	0.375	0.563	0.750	0.938	1.125	0.768	0.788	5.188	8.375	11.688	14.875	18.125	-	-
1/2-14	1325-8	-	0.500	0.750	1.000	1.250	1.500	0.972	0.992	5.063	8.250	11.438	14.688	17.875	-	-
5/8-14	1325-10	-	0.625	0.938	1.250	1.563	1.875	1.065	1.075	6.688	10.688	14.688	18.688	22.813	-	-
3/4-14	1325-12	-	0.750	1.125	1.500	1.875		1.205	1.225	8.313	13.125	17.938	22.750		-	-
7/8-14	1325-14	-	0.875	1.313	1.750		2.625	1.365	1.385	9.875	15.500	21.125		32.500	-	-
1-11	1325-16	-	1.000	1.500	2.000			1.517	1.537	8.750	13.813	18.875			-	-
1-1/4-11	1325-20	-	1.250	1.875	2.500		3.750	1.885	1.905	11.313	17.625	23.938		36.688	-	-
1-1/2-11	1325-24	-	1.500	2.250	3.000		4.500	2.136	2.156	13.813	21.438	29.125		44.313	-	-

BA

THREAD SIZE	FR PART NUMBER	SL PART NUMBER	INSERT LENGTH					FREE O/DIA.		NO. FREE COILS					PREVAILING TORQUE	
			1D	1.5D	2D	2.5D	3D	MIN	MAX	1D	1.5D	2D	2.5D	3D	MAX	MIN
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
0BA	1331-0	2631-0	0.236	0.354	0.472	0.590	0.708	0.294	0.309	4.125	6.813	9.500	12.188	14.875	-	-
1BA	1331-1	2631-1	0.209	0.313	0.418	0.522	0.627	0.261	0.276	4.000	6.625	9.250	11.875	14.500	-	-
2BA	1331-2	2631-2	0.185	0.277	0.370	0.462	0.555	0.232	0.247	3.875	6.438	9.000	11.563	14.125	-	-
3BA	1331-3	2631-3	0.161	0.241	0.322	0.402	0.483	0.203	0.218	3.750	6.188	8.688	11.125	13.625	-	-
4BA	1331-4	2631-4	0.142	0.213	0.284	0.355	0.426	0.179	0.194	3.563	5.938	8.313	10.750	13.125	-	-
5BA	1331-5	2631-5	0.126	0.189	0.252	0.315	0.378	0.159	0.174	3.500	5.875	8.250	10.625	13.000	-	-
6BA	1331-6	2631-6	0.110	0.165	0.220	0.275	0.330	0.140	0.155	3.375	5.625	7.875	10.188	12.438	-	-

INSERT TYPE

1325 G (BSPF) FR
1331 BA FR
2631 BA SL

HOW TO ORDER

1325-4

MATERIAL

CN Stainless Steel
N90N Nimonic 90
TN Inconel X750
EN Nitronic 60
BN Phosphor Bronze

FINISH

BLANK None
P Cadmium Plate
V Silver Plate
Z Zinc Plate
W Dry Film Lube

LENGTH

See above chart

x .375

ORDER CODE e.g.

1325-4CN x .375
G1/4(BSPF) x 1.5D FR

Extraction Tooling

Removal tool featuring a precision replaceable steel blade suitable for use with a tap wrench, or power screwdriver.



NOMINAL THREAD	PART NO	NOMINAL THREAD	PART NO
M3	01806030000	UNC 2-56	01806636000
M4	01806040000	UNC 3-48	01806646000
M5	01806050000	UNC 4-40	01806656000
M6	01806060000	UNC 6-32	01806676000
M8	01806080000	UNC 8-32	01806686000
M10	01806100000	UNC 10-32	01806697000
M12	01806120000		

G (BSPF)

Tooling

THREAD SIZE	HELICOIL® TAPS					HELICOIL® GAUGES		INSERTING TOOL				TANG BREAK OFF	AUTO TANG BREAK OFF
	Rough	Finish	Bottom	SP Flute	SP Point								
						Medium Class	Close Class						
	Type	Order No.	Type	Order No.									
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1/8-28	2PR	2PP	2PB	2PS	2PV	PGM-2	-			H-PSG	0150 017 1400	0158 609 0000	
1/4-19	4PR	4PP	4PB	4PS	4PV	PGM-4	-	H-PMG	0150 027 4400			USE PLIERS	-
3/8-19	6PR	6PP	6PB	6PS	6PV	PGM-6	-	H-PMG	0150 027 7400			USE PLIERS	-
1/2-14	8PR	8PP	8PB	8PS	8PV	PGM-8	PGC-8	H-PMG	0150 027 9400			USE PLIERS	-
5/8-14	10PR	10PP	10PB	10PS	10PV	PGM-10	PGC-10	H-PMG	0150 028 1400			USE PLIERS	-
3/4-14	12PR	12PP	12PB	12PS	12PV	PGM-12	PGC-12	H-PMG	0150 028 3400			USE PLIERS	-
7/8-14	14PR	14PP	14PB	14PS	14PV	PGM-14	PGC-14	H-PMG	0150 028 5400			USE PLIERS	-
1-11	16PR	16PP	16PB	16PS	16PV	PGM-16	PGC-16	H-PMG	0150 028 6400			USE PLIERS	-
1-1/4-11	20PR	20PP	20PB	20PS	20PV	PGM-20	PGC-20	H-PMG	0150 028 8400			USE PLIERS	-
1-1/2-11	24PR	24PP	24PB	24PS	24PV	PGM-24	PGC-24	H-PMG	0150 029 0400			USE PLIERS	-

BA

THREAD SIZE	HELICOIL® TAPS					HELICOIL® GAUGES	INSERTING TOOL				TANG BREAK OFF	AUTO TANG BREAK OFF
	Rough	Finish	Bottom	SP Flute	SP Point							
												
	STD Nut Fit											
	Type	Order No.	Type	Order No.								
1	2	3	4	5	6	7	8	9	10	11	12	13
0BA	0BAR	0BAP	0BAB	0BAS	0BV	0BAG	H-PM	0150 049 2200			0158 040 3000	0158 605 0000
1BA	1BAR	1BAP	1BAB	1BAS	1BV	1BAG			H-PSG	0150 019 3200	0158 040 3000	0158 604 0000
2BA	2BAR	2BAP	2BAB	2BAS	2BV	2BAG			H-PSG	0150 019 4200	0158 040 3000	0158 604 0000
3BA	3BAR	3BAP	3BAB	3BAS	3BV	3BAG			H-PSG	0150 019 5200	0158 040 2000	0158 603 0000
4BA	4BAR	4BAP	4BAB	4BAS	4BV	4BAG			H-PSG	0150 019 6200	0158 040 2000	0158 603 0000
5BA	5BAR	5BAP	5BAB	5BAS	5BV	5BAG			H-PSG	0150 019 7200	0158 040 1000	0158 603 0000
6BA	6BAR	6BAP	6BAB	6BAS	6BV	6BAG			H-PSG	0150 019 8200	0158 040 1000	0158 603 0000

For Drilling & Tapping Data See Page 13

Extraction Tooling



NOMINAL THREAD	MANUAL PART NO	MECHANICAL WITH 1/4 HEX DRIVE PART NO	NOMINAL THREAD	MANUAL PART NO	MECHANICAL WITH 1/4 HEX DRIVE PART NO
M2 - M3.5	01803000000		UNC 3/4-10 TO 7/8-9	01803030000	
M4-M10	01803010000		UNF 5/8-18 TO 7/8-14	01803030000	
M11 - M16	01803020000		UNC 1-8 TO 1 1/8-7	01803040000	
M2-M6		01805010000	UNF 1-14 TO 1 1/8-12	01803040000	
M7-M16		01805020000	UNC 1 1/4-7 TO 1 1/2-6	01803050000	
UNC 2-56 TO 6-32	01803000000		UNF 1 1/4-12 TO 1 1/2-12	01803050000	
UNF 4-48 TO 6-40	01803000000		UNC 2-56 TO 12-24		01805010000
UNC 8-32 TO 3/8-16	01803010000		UNF 4-48 TO 1/4-28		01805010000
UNF 8-36 TO 3/8-24	01803010000		UNC 1/4-20 TO 5/8-11		01805020000
UNC 7/16-14 TO 5/8-11	01803020000		UNF 5/16-24 TO 5/8-18		01805020000
UNF 7/16-20 TO 9/16-1	01803020000				

METRIC To BS 4377		螺紋				FITTED MINOR DIA.
		線攻下孔徑 MAX - MIN	線攻外徑	精度 5H MAX - MIN	精度 6H MAX - MIN	
規 格	鑽頭	A	B	C	C	E
M2 X 0.4	2.10	2.18 - 2.09	2.52	2.30 - 2.26	2.31 - 2.26	1.57
M2.2 X 0.45	2.30	2.40 - 2.30	2.79	2.53 - 2.49	2.55 - 2.49	1.71
M2.5 X 0.45	2.60	2.70 - 2.60	3.09	2.83 - 2.79	2.85 - 2.79	2.01
M3 X 0.5	3.20	3.22 - 3.11	3.65	3.37 - 3.33	3.38 - 3.33	2.46
M3.5 X 0.6	3.70	3.75 - 3.63	4.28	3.94 - 3.89	3.96 - 3.89	2.85
M4 X 0.7	4.20	4.29 - 4.15	4.91	4.51 - 4.46	4.53 - 4.46	3.24
M4.5 X 0.75	4.70	4.81 - 4.66	5.47	5.04 - 4.99	5.06 - 4.99	3.69
M5 X 0.8	5.20	5.33 - 5.17	6.04	5.58 - 5.52	5.60 - 5.52	4.13
M6 X 1.0	6.30	6.41 - 6.22	7.30	6.72 - 6.65	6.74 - 6.65	4.92
M7 X 1.0	7.30	7.41 - 7.22	8.30	7.72 - 7.65	7.74 - 7.65	5.92
M8 X 1.0	8.30	8.41 - 8.22	9.30	8.72 - 8.65	8.74 - 8.65	6.92
M8 X 1.25	8.40	8.48 - 8.27	9.62	8.89 - 8.81	8.91 - 8.81	6.85
M9 X 1.25	9.40	9.48 - 9.27	10.62	9.89 - 9.81	9.91 - 9.81	7.85
M10 X 1.0 *	10.30	10.39 - 10.26	11.20		10.71 - 10.65	8.86
M10 X 1.25	10.40	10.48 - 10.27	11.62	10.89 - 10.81	10.91 - 10.81	8.85
M10 X 1.5	10.50	10.56 - 10.33	11.95	11.06 - 10.97	11.09 - 10.97	8.38
M11 X 1.5	11.50	11.56 - 11.33	12.95	12.06 - 11.97	12.09 - 11.97	9.36
M12 X 1.25 *	12.30	12.47 - 12.27	13.51		12.90 - 12.81	10.64
M12 X 1.25	12.30	12.48 - 12.27	13.62	12.90 - 12.81	12.93 - 12.81	10.65
M12 X 1.5	12.50	12.52 - 12.56	13.95	13.07 - 12.97	13.10 - 12.97	
M12 X 1.75	12.40	12.64 - 12.38	14.27	13.24 - 13.14	13.27 - 13.14	10.11
M14 X 1.25 *	9/16	14.40 - 14.28	15.57		15.04 - 14.97	12.65
M14 X 1.5	14.30	14.56 - 14.33	15.95	15.07 - 14.97	15.10 - 14.97	12.38
M14 X 2.0	14.50	14.73 - 14.43	16.50	15.41 - 15.30	15.44 - 15.30	11.84
M16 X 1.5	16.25	16.56 - 16.33	17.95	17.07 - 16.97	17.10 - 16.97	14.38
M16 X 2.0	16.50	16.73 - 16.43	18.60	17.41 - 17.30	17.44 - 17.30	13.84
M18 X 1.5 *	23/32	18.38 - 18.24	20.14		19.15 - 19.06	16.05
M18 X 1.5	18.25	18.56 - 18.33	19.95	19.07 - 18.97	19.10 - 18.97	16.38
M18 X 2.0	18.50	18.73 - 18.43	20.60	19.41 - 19.30	19.44 - 19.30	15.84
M18 X 2.5	18.50	18.90 - 18.54	21.25	19.74 - 19.62	19.78 - 19.62	15.29
M20 X 1.5	20.25	20.56 - 20.33	21.95	21.07 - 20.97	21.10 - 20.97	16.38
M20 X 2.0	20.50	20.73 - 20.43	22.60	21.41 - 21.30	21.44 - 21.30	17.84
M20 X 2.5	20.50	20.90 - 20.54	23.25	21.74 - 21.62	21.78 - 21.62	17.29
M22 X 1.5	22.50	22.56 - 22.33	23.95	23.07 - 22.97	23.10 - 22.97	20.38
M22 X 2.0	22.50	22.73 - 22.43	24.60	23.41 - 23.30	23.44 - 23.30	19.84
M22 X 2.5	22.50	22.90 - 22.54	25.25	23.74 - 23.62	23.78 - 23.62	19.29
M24 X 2.0	24.25	24.73 - 24.43	26.60	25.41 - 25.30	25.45 - 25.30	21.84
M24 X 3.0	24.75	25.05 - 24.65	27.90	26.09 - 25.95	26.14 - 25.95	20.75
M27 X 2.0	27.50	27.43 - 27.73	29.60			
M27 X 3.0	27.50	28.05 - 27.65	30.90	29.09 - 28.95	29.14 - 28.95	23.75
M30 X 2.0	30.50	30.43 - 30.73	32.60			
M30 X 3.5	30.50	31.21 - 30.76	34.55	32.43 - 32.27	32.47 - 32.27	26.21
M33 X 2.0	33.50	33.43 - 33.78	35.60			
M33 X 3.5	33.50	34.21 - 33.76	37.55	35.43 - 35.27	35.47 - 35.27	29.21
M36 X 2.0	36.50	36.43 - 36.73	38.60			
M36 X 4.0	36.50	37.34 - 36.87	41.20	38.76 - 38.60	38.81 - 38.60	31.67
M39 X 2.0	39.50	39.43 - 39.73	41.60			
M39 X 4.0	39.50	40.34 - 39.87	44.20	41.75 - 41.60	41.81 - 41.60	34.67

* 火星塞專用

推薦使用防鬆形護套

UNC To BS 3409		螺紋				FITTED MINOR DIA.
		線攻下孔徑 MAX - MIN	線攻外徑	精度 2B MAX - MIN	精度 3B MAX - MIN	
規 格	鑽頭	A	B	C	C	E
2-66	2.3MM	0.094 - 0.090	0.1092	0.0996 - 0.0976	0.0969 - 0.0976	0.0667
3-48	2.7MM	0.106 - 0.104	0.1261	0.1147 - 0.1125	0.1139 - 0.1125	0.0764
4-40	3MM	0.122 - 0.118	0.1445	0.1307 - 0.1282	0.1299 - 0.1282	0.0849
5-40	3.4MM	0.136 - 0.131	0.1675	0.1437 - 0.1412	0.1429 - 0.1412	0.0979
6-32	3.7MM	0.150 - 0.145	0.1786	0.1611 - 0.1583	0.1601 - 0.1583	0.1042
8-32	11/64	0.175 - 0.171	0.2046	0.1872 - 0.1843	0.1862 - 0.1843	0.1302
10-24	5.1MM	0.206 - 0.199	0.2441	0.2204 - 0.2171	0.2193 - 0.2171	0.1449
12-24	5.8MM	0.230 - 0.225	0.2701	0.2465 - 0.2431	0.2454 - 0.2431	0.1709
1/4-20	6.7MM	0.270 - 0.261	0.3150	0.2863 - 0.2825	0.2851 - 0.2825	0.1959
5/16-18	8.3MM	0.334 - 0.325	0.3847	0.3529 - 0.3486	0.3515 - 0.3486	0.2524
3/8-16	9.9MM	0.398 - 0.389	0.4562	0.4203 - 0.4156	0.4189 - 0.4156	0.3073
7/16-14	29/64	0.463 - 0.453	0.5303	0.4890 - 0.4839	0.4875 - 0.4839	0.3602
1/2-13	33/64	0.527 - 0.517	0.5989	0.5554 - 0.5499	0.5537 - 0.5499	0.4167
9/16-12	14.75MM	0.591 - 0.581	0.6706	0.6225 - 0.6167	0.6208 - 0.6167	0.4723
5/8-11	16.5MM	0.656 - 0.645	0.7431	0.6903 - 0.6841	0.6885 - 0.6841	0.5268
3/4-10	19.75MM	0.783 - 0.772	0.8789	0.8216 - 0.8149	0.8196 - 0.8149	0.6417
7/8-9	23MM	0.912 - 0.899	1.0183	0.9543 - 0.9471	0.9522 - 0.9471	0.7547
1-8	1-1/32	1.042 - 1.027	1.1624	1.0650 - 1.0612	1.0639 - 1.0612	0.8647
1-1/8-7	1-5/32	1.170 - 1.156	1.3106	1.2252 - 1.2178	1.2239 - 1.2178	0.9704
1-1/4-7	1-8/32	1.285 - 1.281	1.4356	1.3514 - 1.3428	1.3490 - 1.3428	1.0954
1-3/8-6	36MM	1.431 - 1.411	1.5914	1.4926 - 1.4832	1.4900 - 1.4832	1.1948
1-1/2-6	1-35/64	1.556 - 1.536	1.7164	1.6177 - 1.6082	1.6151 - 1.6082	1.3196

UNF To BS 3409		螺紋				FITTED MINOR DIA.
		線攻下孔徑 MAX - MIN	線攻外徑	精度 2B MAX - MIN	精度 3B MAX - MIN	
規 格	鑽頭	A	B	C	C	E
2-64	2.3MM	0.093 - 0.090	0.1063	0.0960 - 0.0962	0.0974 - 0.0962	0.0661
3-56	2.65MM	0.106 - 0.103	0.1222	0.1126 - 0.1106	0.1119 - 0.1106	0.0797
4-48	3MM	0.120 - 0.117	0.1391	0.1278 - 0.1255	0.1270 - 0.1255	0.0894
5-44	3.3MM	0.134 - 0.130	0.1545	0.1422 - 0.1393	0.1414 - 0.1393	0.1004
6-40	3.7MM	0.148 - 0.144	0.1705	0.1568 - 0.1542	0.1559 - 0.1542	0.1109
8-36	11/64	0.174 - 0.170	0.2001	0.1848 - 0.1820	0.1839 - 0.1820	0.1339
10-32	5.1MM	0.201 - 0.197	0.2306	0.2133 - 0.2103	0.2123 - 0.2103	0.1562
1/4-28	6.6MM	0.264 - 0.258	0.2964	0.2765 - 0.2732	0.2754 - 0.2732	0.2113
5/16-24	8.2MM	0.328 - 0.322	0.3666	0.3433 - 0.3395	0.3421 - 0.3395	0.2674
3/8-24	9.8MM	0.390 - 0.384	0.4291	0.4059 - 0.4020	0.4047 - 0.4020	0.3299
7/16-20	29/64	0.456 - 0.449	0.5025	0.4744 - 0.4700	0.4731 - 0.4700	0.3834
1/2-20	33/64	0.518 - 0.511	0.5650	0.5371 - 0.5325	0.5357 - 0.5325	0.4459
9/16-18	37/64	0.582 - 0.575	0.6347	0.6035 - 0.5996	0.6020 - 0.5996	0.5024
5/8-18	41/64	0.644 - 0.637	0.6972	0.6661 - 0.6611	0.6646 - 0.6611	0.5649
3/4-16	49/64	0.771 - 0.764	0.8312	0.7961 - 0.7908	0.7945 - 0.7908	0.6823
7/8-14	22.75MM	0.899 - 0.891	0.9678	0.9274 - 0.9214	0.9257 - 0.9214	0.7977
1-12	26MM	1.028 - 1.018	1.1083	1.0608 - 1.0542	1.0589 - 1.0542	0.9098
1-1/8-12	29.25MM	1.153 - 1.143	1.2333	1.1660 - 1.1792	1.1641 - 1.1792	1.0349
1-1/4-12	1-17/64	1.278 - 1.268	1.3583	1.3112 - 1.3042	1.3092 - 1.3042	1.1598
1-3/8-12	35.5MM	1.403 - 1.393	1.4833	1.4364 - 1.4292	1.4343 - 1.4292	1.2848
1-1/2-12	38.5MM	1.528 - 1.518	1.6083	1.5615 - 1.5542	1.5595 - 1.5542	1.4098

BSW		螺 紋				FITTED MINOR DIA.
		絲攻下孔徑 MAX - MIN	絲攻外徑	MED CLASS MAX - MIN	CLOSE CLASS MAX - MIN	
規 格	鑽頭	A	B	C	C	E
1/8-40	3.3MM	0.135 - 0.129	0.1648	0.1430 - 0.1410	NOT RECOMMENDED	0.0930
3/16-24	5MM	0.202 - 0.196	0.2365	0.2166 - 0.2142		0.1341
1/4-20	6.7MM	0.267 - 0.261	0.3087	0.2849 - 0.2820		0.1860
5/16-18	21/64	0.334 - 0.328	0.3777	0.3512 - 0.3490		0.2413
3/8-16	25/64	0.396 - 0.390	0.4493	0.4185 - 0.4150		0.2950
7/16-14	29/64	0.463 - 0.453	0.5212	0.4871 - 0.4833	0.4655 - 0.4633	0.3461
1/2-12	33/64	0.525 - 0.515	0.5973	0.5575 - 0.5533	0.5357 - 0.5333	0.3932
9/16-12	37/64	0.588 - 0.578	0.6600	0.6201 - 0.6158	0.6184 - 0.6158	0.4557
5/8-11	21/32	0.663 - 0.653	0.7312	0.6873 - 0.6832	0.6859 - 0.6832	0.5086
11/16-11	23/32	0.727 - 0.717	0.7938	0.7505 - 0.7457	0.7485 - 0.7457	0.5711
3/4-10	25/32	0.781 - 0.781	0.8669	0.8181 - 0.8141	0.8171 - 0.8141	0.6220
7/8-9	29/32	0.916 - 0.906	1.0048	0.9516 - 0.9482	0.9495 - 0.9482	0.7328
1-8	1-1/32	1.044 - 1.031	1.1457	1.0859 - 1.0801	1.0836 - 1.0801	0.8400
1-1/8-7	1-11/64	1.186 - 1.171	1.2912	1.2227 - 1.2185	1.2203 - 1.2185	0.9420
1-1/4-7	1-15/64	1.311 - 1.296	1.4163	1.3479 - 1.3415	1.3454 - 1.3415	1.0670
1-1/2-6	1-35/64	1.571 - 1.546	1.6936	1.6137 - 1.6067	1.6110 - 1.6067	1.2866

G (BSPF)		螺 紋				FITTED MINOR DIA.
		絲攻下孔徑 MAX - MIN	絲攻外徑	MED CLASS MAX - MIN	CLOSE CLASS MAX - MIN	
規 格	鑽頭	A	B	C	C	E
1/8-28	25/64	0.400 - 0.390	0.4268	0.4090 - 0.4058	NOT RECOMMENDED	0.3372
1/4-19	17/32	0.540 - 0.530	0.5803	0.5556 - 0.5517		0.4506
3/8-19	43/64	0.680 - 0.670	0.7184	0.6937 - 0.6897		0.5886
1/2-14	27/32	0.850 - 0.840	0.9092	0.8754 - 0.8708		0.7336
5/8-14	59/64	0.927 - 0.915	0.9863	0.9524 - 0.9478		0.8108
3/4-14	1-1/8	1.066 - 1.053	1.1255	1.0918 - 1.0869	1.0898 - 1.0869	0.9496
7/8-14	1-13/64	1.213 - 1.200	1.2735	1.2399 - 1.2348	1.2378 - 1.2348	1.0976
1-11	1-21/64	1.335 - 1.320	1.4158	1.3727 - 1.3673	1.3705 - 1.3673	1.1928
1-1/4-11	1-43/64	1.580 - 1.565	1.7571	1.7141 - 1.7083	1.7118 - 1.7083	1.5336
1-1/2-11	1-29/32	1.921 - 1.905	1.9893	1.9464 - 1.9403	1.9440 - 1.9403	1.7656

建議使用砂型型頭套。

BSF		螺 紋				FITTED MINOR DIA.
		絲攻下孔徑 MAX - MIN	絲攻外徑	MED CLASS MAX - MIN	CLOSE CLASS MAX - MIN	
規 格	鑽頭	A	B	C	C	E
3/16-32	4.9MM	0.196 - 0.192	0.2247	0.2098 - 0.2075	NOT RECOMMENDED	0.1475
7/32-28	5.8MM	0.231 - 0.225	0.2612	0.2442 - 0.2416		0.1730
1/4-26	6.6MM	0.264 - 0.257	0.2957	0.2774 - 0.2747		0.2008
9/32-26	7.4MM	0.295 - 0.288	0.3270	0.3088 - 0.3059		0.2320
5/16-22	8.3MM	0.330 - 0.323	0.3662	0.3447 - 0.3416		0.2543
3/8-20	9.8MM	0.392 - 0.385	0.4340	0.4104 - 0.4070	0.4751 - 0.4730	0.3110
7/16-18	29/64	0.458 - 0.450	0.5030	0.4767 - 0.4730		0.3663
1/2-16	33/64	0.522 - 0.513	0.5736	0.5440 - 0.5400	0.5423 - 0.5400	0.4200
9/16-16	37/64	0.586 - 0.577	0.6362	0.6067 - 0.6025	0.6049 - 0.6025	0.4825
5/8-14	41/64	0.649 - 0.640	0.7091	0.6752 - 0.6708	0.6734 - 0.6708	0.5336
11/16-14	45/64	0.713 - 0.703	0.7717	0.7379 - 0.7383	0.7360 - 0.7333	0.5861
3/4-12	49/64	0.775 - 0.765	0.8478	0.8082 - 0.8033	0.8062 - 0.8033	0.6432
13/16-12	53/64	0.836 - 0.826	0.9104	0.8708 - 0.8653	0.8688 - 0.8653	0.7057
7/8-11	67/64	0.900 - 0.890	0.9617	0.9394 - 0.9332	0.9364 - 0.9332	0.7586
1-10	1-1/32	1.044 - 1.031	1.1173	1.0697 - 1.0641	1.0675 - 1.0641	0.8720
1-1/8-9	1-5/32	1.170 - 1.158	1.2551	1.2021 - 1.1982	1.1998 - 1.1982	0.9828
1-1/4-9	1-9/32	1.295 - 1.281	1.3803	1.3274 - 1.3212	1.3250 - 1.3212	1.1078
1-3/8-8	1-13/32	1.420 - 1.406	1.5212	1.4618 - 1.4551	1.4591 - 1.4551	1.2150
1-1/2-8	1-17/32	1.545 - 1.531	1.6464	1.5868 - 1.5801	1.5843 - 1.5801	1.3400

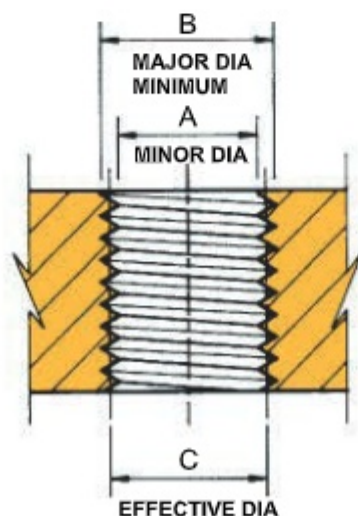
BA		螺 紋			FITTED MINOR DIA.
		絲攻下孔徑 MAX - MIN	絲攻外徑	STANDARO NUT FIT MAX - MIN	
規 格	鑽頭	A	B	C	E
0BA	6.2MM	0.246 - 0.241	0.2805	0.2645 - 0.2598	0.1890
1BA	5.5MM	0.22 - 0.213	0.2485	0.2342 - 0.2299	0.1661
2BA	4.9MM	0.196 - 0.191	0.2208	0.2079 - 0.2042	0.1458
3BA	4.3MM	0.171 - 0.166	0.1938	0.1821 - 0.1786	0.1268
4BA	3.8MM	0.152 - 0.147	0.1711	0.1605 - 0.1574	0.1108
5BA	3.3MM	0.135 - 0.129	0.1522	0.1426 - 0.1399	0.0980
6BA	2.9MM	0.116 - 0.113	0.1339	0.1252 - 0.1226	0.0850

TAPPED HOLE

Drilling and tapping procedures should follow good workshop practice at all times.

It is most important to adhere to the limits given for the drilled and tapped hole to achieve the class of fit required.

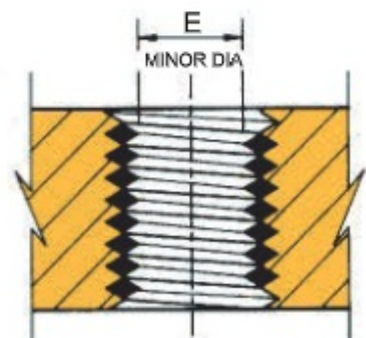
Minimum drilling and tapping depths are given in the tables.



INSERT (FITTED)

HeliCoil when fitted will 'mimic' the class of fit of the tapped hole. It is important that the class of fit is checked with an **HeliCoil** gauge before insertion.

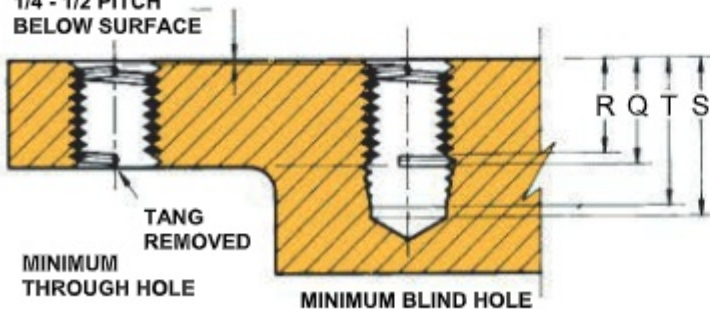
For maximum performance, Tangs should be removed to permit full length thread engagement between insert and bolt. In Screw Lock applications this ensures full form thread engagement with the locking feature.



METRIC

METRIC 規格	1D				1.5D				2D				2.5D				3D			
	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T
M2 X 0.4	2.00	1.60	3.80	3.40	3.00	2.60	4.80	4.40	4.00	3.60	5.80	5.40	6.00	4.60	6.80	6.40	8.00	6.60	7.80	7.40
M2.2 X 0.45	2.20	1.75	4.23	3.78	3.30	2.85	5.33	4.88	4.40	3.95	6.43	5.98	6.50	5.05	7.53	7.08	8.60	7.15	8.83	8.18
M2.5 X 0.45	2.50	2.05	4.53	4.08	3.75	3.30	5.78	5.33	5.00	4.55	7.03	6.58	7.25	5.80	8.28	7.83	9.50	7.05	9.53	9.08
M3 X 0.5	3.00	2.50	5.25	4.75	4.50	4.00	6.75	6.25	6.00	5.50	8.25	7.75	8.50	7.00	9.75	9.25	11.00	8.50	11.25	10.75
M3.5 X 0.6	3.50	2.90	6.20	5.80	5.25	4.85	7.95	7.35	7.00	6.40	9.70	9.10	9.75	8.15	11.45	10.85	12.50	9.90	13.20	12.60
M4 X 0.7	4.00	3.30	7.15	6.45	6.00	5.30	9.15	8.45	8.00	7.30	11.15	10.45	10.00	9.30	13.15	12.45	14.00	11.30	15.15	14.45
M4.5 X 0.75	4.50	3.75	7.88	7.13	6.75	6.00	10.13	9.38	9.00	8.25	12.38	11.63	11.25	10.50	14.63	13.88	15.50	12.75	16.88	16.13
M5 X 0.8	5.00	4.20	8.80	7.80	7.50	6.70	11.10	10.30	10.00	9.20	13.60	12.80	12.50	11.70	16.10	15.30	17.00	14.20	18.60	17.80
M6 X 1.0	6.00	5.00	10.50	9.50	9.00	8.00	13.50	12.50	12.00	11.00	16.50	15.50	15.00	14.00	19.50	18.50	20.00	17.00	22.50	21.50
M7 X 1.0	7.00	6.00	11.50	10.50	10.50	9.50	15.00	14.00	14.00	13.00	18.50	17.50	17.50	16.50	22.00	21.00	21.00	20.00	25.50	24.50
M8 X 1.0	8.00	7.00	12.50	11.50	12.00	11.00	16.50	15.50	16.00	15.00	20.50	19.50	20.00	19.00	24.50	23.50	24.00	23.00	28.60	27.60
M8 X 1.25	8.00	6.75	13.63	12.38	12.00	10.75	17.63	16.38	16.00	14.75	21.63	20.38	20.00	18.75	25.63	24.38	24.00	22.75	29.63	28.38
M9 X 1.25	9.00	7.75	14.63	13.38	13.50	12.25	18.13	17.88	18.00	16.75	23.63	22.38	22.50	21.25	28.13	26.88	27.00	25.75	32.63	31.38
M10 X 1.25	10.00	8.75	15.63	14.38	15.00	13.75	20.63	19.38	20.00	18.75	25.63	24.38	25.00	23.75	30.63	29.38	30.00	28.75	35.63	34.38
M10 X 1.5	10.00	8.50	16.75	15.25	15.00	13.50	21.75	20.25	20.00	18.50	26.75	25.25	25.00	23.50	31.75	30.25	30.00	28.50	36.75	35.25
M11 X 1.5	11.00	9.50	17.75	16.25	16.50	15.00	23.25	21.75	22.00	20.50	28.75	27.25	27.50	26.00	34.25	32.75	33.00	31.50	39.75	38.25
M12 X 1.25	12.00	10.75	17.63	16.38	18.00	16.75	23.63	22.38	24.00	22.75	29.63	27.38	30.00	28.75	35.63	34.38	36.00	34.75	41.63	40.38
M12 X 1.75	12.00	10.25	19.88	18.13	18.00	16.25	25.88	24.13	24.00	22.25	31.88	30.13	30.00	28.25	37.88	36.13	36.00	34.25	43.88	42.13
M14 X 1.5	14.00	12.50	20.75	19.25	21.00	19.50	27.75	26.25	28.00	26.50	34.75	33.25	35.00	33.50	41.75	40.25	42.00	40.50	48.75	47.25
M14 X 2.0	14.00	12.00	23.00	21.00	21.00	19.00	30.00	28.00	28.00	26.00	37.00	35.00	35.00	33.00	44.00	42.00	42.00	40.00	51.00	49.00
M16 X 1.5	16.00	14.50	22.75	21.25	24.00	22.50	30.75	29.25	32.00	30.50	38.75	37.25	40.00	38.50	48.75	46.25	48.00	46.50	54.75	53.25
M16 X 2.0	16.00	14.00	25.00	23.00	24.00	22.00	33.00	31.00	32.00	30.00	41.00	39.00	40.00	38.00	49.00	47.00	48.00	46.00	57.00	55.00
M18 X 1.5	18.00	16.50	24.75	23.25	27.00	25.50	33.75	32.25	36.00	34.50	42.75	41.25	45.00	43.50	51.75	50.25	54.00	52.50	60.75	59.25
M18 X 2.0	18.00	16.00	27.00	25.00	27.00	25.00	36.00	34.00	36.00	34.00	45.00	43.00	45.00	43.00	54.00	52.00	54.00	52.00	63.00	61.00
M18 X 2.5	18.00	15.50	29.25	28.75	27.00	24.50	38.25	35.75	36.00	33.50	47.25	44.75	45.00	42.50	56.25	53.75	54.00	51.50	65.25	62.75
M20 X 1.5	20.00	18.50	26.75	25.25	30.00	28.50	36.75	35.25	40.00	38.50	46.75	45.25	50.00	48.50	58.75	56.25	60.00	58.50	66.75	65.25
M20 X 2.0	20.00	18.00	29.00	27.00	30.00	28.00	39.00	37.00	40.00	38.00	49.00	47.00	50.00	48.00	59.00	57.00	60.00	58.00	69.00	67.00
M20 X 2.5	20.00	17.50	31.25	28.75	30.00	27.50	41.25	38.75	40.00	37.50	51.25	48.75	50.00	47.50	61.25	58.75	60.00	57.50	71.25	68.75
M22 X 1.5	22.00	20.50	28.75	27.25	33.00	31.50	39.75	38.25	44.00	42.50	50.75	49.25	55.00	53.50	61.75	60.25	66.00	64.50	72.75	71.25
M22 X 2.0	22.00	20.00	31.00	29.00	33.00	31.00	42.00	40.00	44.00	42.00	53.00	51.00	55.00	53.00	64.00	62.00	66.00	64.00	75.00	73.00
M22 X 2.5	22.00	19.50	33.25	30.75	33.00	30.50	44.25	41.75	44.00	41.50	55.25	52.75	55.00	52.50	66.25	63.75	68.00	65.50	77.25	74.75
M24 X 2.0	24.00	22.00	33.00	31.00	36.00	34.00	45.00	43.00	46.00	44.00	57.00	55.00	60.00	58.00	69.00	67.00	72.00	70.00	81.00	79.00
M24 X 3.0	24.00	21.00	37.50	34.50	36.00	33.00	49.50	46.50	48.00	45.00	61.50	58.50	60.00	57.00	73.50	70.50	72.00	69.00	85.50	82.50
M27 X 3.0	27.00	24.00	40.50	37.50	40.50	37.50	54.00	51.00	54.00	51.00	67.50	64.50	67.50	64.50	81.00	78.00	81.00	78.00	94.50	91.50
M30 X 3.5	30.00	26.50	45.75	42.25	45.00	41.50	60.75	57.25	60.00	56.50	75.75	72.25	75.00	71.50	90.75	87.25	90.00	86.50	105.75	102.25
M33 X 3.5	33.00	29.50	48.75	45.25	49.50	46.00	65.25	61.75	66.00	62.50	81.75	78.25	82.50	79.00	98.25	94.75	99.00	95.50	114.75	111.25
M36 X 4.0	36.00	32.00	54.00	50.00	54.00	50.00	72.00	68.00	72.00	68.00	90.00	86.00	90.00	86.00	108.00	104.00	108.00	104.00	126.00	122.00
M39 X 4.0	39.00	35.00	57.00	53.00	58.50	54.50	76.50	72.50	78.00	74.00	96.00	92.00	97.50	93.50	115.50	111.50	117.00	113.00	135.00	131.00

INSTALL INSERT
1/4 - 1/2 PITCH
BELOW SURFACE



Q - Full tapped thread length (min.)

R - Entering portion of screw (max.). If Tang is not removed.

S - Drill depth (min.) - excluding point.

T - Tap depth (min.) - including 3 1/2 threads chamfer of plug tap.

1. Figures in table are for min. depth holes. When possible, add 1 pitch to Q, S and T. Insert can then be installed 1/4 - 1/2 pitch below surface.

2. Depths of C-bores or C'sks. If any, must be added to values for Q, R, S and T.

3. If bottoming taps are used, S and T may be reduced by an amount equal to 2 x pitch.

UNC

UNC 規格	1D				1.5D				2D				2.5D				3D			
	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T
2-56	0.086	0.068	0.166	0.148	0.129	0.111	0.209	0.191	0.172	0.154	0.252	0.234	0.215	0.197	0.295	0.277	0.258	0.240	0.338	0.320
3-48	0.099	0.078	0.193	0.172	0.148	0.127	0.242	0.221	0.198	0.177	0.292	0.271	0.248	0.227	0.342	0.321	0.297	0.276	0.391	0.370
4-40	0.112	0.087	0.224	0.199	0.168	0.143	0.280	0.255	0.224	0.199	0.336	0.311	0.280	0.255	0.392	0.367	0.336	0.311	0.448	0.423
5-40	0.125	0.100	0.237	0.212	0.187	0.162	0.300	0.275	0.250	0.225	0.362	0.337	0.312	0.287	0.425	0.400	0.375	0.350	0.487	0.462
6-32	0.138	0.107	0.279	0.247	0.207	0.176	0.348	0.316	0.276	0.245	0.417	0.385	0.345	0.314	0.468	0.454	0.414	0.383	0.555	0.523
8-32	0.164	0.133	0.305	0.273	0.246	0.215	0.387	0.355	0.326	0.297	0.469	0.437	0.410	0.379	0.551	0.519	0.492	0.461	0.633	0.601
10-24	0.190	0.148	0.377	0.336	0.285	0.243	0.472	0.431	0.380	0.336	0.567	0.526	0.475	0.433	0.662	0.621	0.570	0.528	0.757	0.716
12-24	0.216	0.174	0.404	0.362	0.324	0.282	0.512	0.470	0.432	0.390	0.620	0.578	0.540	0.498	0.727	0.686	0.648	0.606	0.836	0.794
1/4-20	0.250	0.200	0.475	0.425	0.375	0.325	0.600	0.550	0.500	0.450	0.725	0.675	0.625	0.575	0.850	0.800	0.750	0.700	0.975	0.925
5/16-18	0.312	0.257	0.562	0.507	0.469	0.413	0.719	0.663	0.625	0.569	0.875	0.819	0.781	0.726	1.031	0.976	0.937	0.892	1.187	1.132
3/8-16	0.375	0.312	0.656	0.594	0.562	0.500	0.844	0.781	0.750	0.687	1.031	0.969	0.937	0.875	1.219	1.156	1.125	1.062	1.406	1.344
7/16-14	0.437	0.366	0.799	0.687	0.656	0.585	0.978	0.906	0.875	0.804	1.196	1.125	1.084	1.022	1.416	1.343	1.312	1.241	1.634	1.562
1/2-13	0.500	0.423	0.846	0.769	0.750	0.673	1.096	1.019	1.000	0.923	1.346	1.269	1.250	1.173	1.696	1.619	1.600	1.423	1.846	1.769
9/16-12	0.562	0.479	0.937	0.854	0.844	0.760	1.219	1.135	1.125	1.042	1.500	1.417	1.406	1.323	1.781	1.698	1.687	1.604	2.062	1.979
6/8-11	0.625	0.534	1.034	0.943	0.937	0.846	1.347	1.256	1.250	1.159	1.659	1.568	1.562	1.471	1.872	1.881	1.875	1.784	2.284	2.193
3/4-10	0.750	0.650	1.200	1.100	1.125	1.025	1.575	1.475	1.500	1.400	1.950	1.850	1.875	1.775	2.325	2.225	2.250	2.150	2.700	2.600
7/8-9	0.875	0.764	1.375	1.264	1.312	1.201	1.812	1.701	1.750	1.639	2.250	2.139	2.187	2.076	2.687	2.576	2.625	2.514	3.125	3.014
1-8	1.000	0.875	1.563	1.437	1.500	1.375	2.062	1.937	2.000	1.875	2.562	2.437	2.500	2.375	3.062	2.937	3.000	2.875	3.562	3.437
1-1/8-7	1.125	0.982	1.768	1.625	1.687	1.545	2.330	2.187	2.250	2.107	2.893	2.750	2.812	2.670	3.455	3.312	3.375	3.232	4.018	3.875
1-1/4-7	1.250	1.107	1.893	1.750	1.875	1.732	2.518	2.375	2.500	2.357	3.143	3.000	3.125	2.982	3.768	3.625	3.750	3.607	4.393	4.250
1-3/8-6	1.375	1.208	2.125	1.958	2.062	1.896	2.812	2.646	2.750	2.583	3.500	3.333	3.437	3.270	4.187	4.021	4.125	3.958	4.875	4.708
1-1/2-6	1.500	1.333	2.250	2.083	2.250	2.083	3.000	2.833	3.000	2.833	3.750	3.583	3.750	3.583	4.500	4.333	4.500	4.333	5.250	5.083

UNF

UNF 規格	1D				1.5D				2D				2.5D				3D			
	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T
2-64	0.086	0.070	0.156	0.141	0.129	0.113	0.199	0.184	0.172	0.156	0.242	0.227	0.215	0.199	0.285	0.270	0.258	0.242	0.328	0.313
3-56	0.099	0.081	0.179	0.161	0.148	0.130	0.228	0.210	0.198	0.180	0.278	0.260	0.248	0.230	0.328	0.310	0.297	0.279	0.377	0.359
4-48	0.112	0.091	0.206	0.186	0.168	0.147	0.262	0.241	0.224	0.203	0.318	0.297	0.280	0.269	0.374	0.353	0.338	0.315	0.430	0.409
5-44	0.125	0.102	0.227	0.205	0.188	0.165	0.290	0.268	0.250	0.227	0.352	0.330	0.312	0.289	0.414	0.392	0.375	0.352	0.477	0.455
6-40	0.138	0.113	0.250	0.225	0.207	0.182	0.319	0.294	0.276	0.251	0.388	0.363	0.345	0.320	0.457	0.432	0.414	0.389	0.526	0.501
8-36	0.164	0.136	0.289	0.261	0.246	0.218	0.371	0.343	0.328	0.300	0.463	0.425	0.410	0.382	0.536	0.507	0.492	0.464	0.617	0.589
10-32	0.190	0.159	0.331	0.299	0.285	0.254	0.426	0.394	0.380	0.349	0.521	0.489	0.475	0.444	0.616	0.584	0.570	0.539	0.711	0.679
1/4-28	0.250	0.214	0.411	0.375	0.375	0.339	0.536	0.500	0.500	0.464	0.661	0.625	0.625	0.589	0.786	0.750	0.750	0.714	0.911	0.875
5/16-24	0.312	0.271	0.500	0.458	0.469	0.428	0.656	0.615	0.625	0.583	0.812	0.771	0.781	0.740	0.969	0.927	0.937	0.896	1.125	1.083
3/8-24	0.375	0.333	0.562	0.521	0.562	0.521	0.750	0.708	0.750	0.708	0.937	0.896	0.937	0.896	1.125	1.083	1.125	1.083	1.312	1.271
7/16-20	0.437	0.387	0.662	0.612	0.656	0.606	0.881	0.831	0.875	0.825	1.100	1.050	1.094	1.044	1.319	1.269	1.312	1.262	1.537	1.488
1/2-20	0.500	0.450	0.725	0.675	0.750	0.700	0.975	0.925	1.000	0.950	1.225	1.175	1.250	1.200	1.475	1.425	1.500	1.450	1.725	1.675
9/16-18	0.562	0.507	0.812	0.757	0.844	0.788	1.094	1.038	1.125	1.068	1.375	1.319	1.406	1.351	1.656	1.601	1.687	1.632	1.937	1.882
5/8-18	0.625	0.569	0.875	0.819	0.937	0.882	1.187	1.132	1.250	1.194	1.500	1.444	1.562	1.507	1.812	1.757	1.875	1.819	2.125	2.069
3/4-16	0.750	0.687	1.031	0.969	1.125	1.062	1.406	1.344	1.500	1.437	1.781	1.719	1.875	1.812	2.156	2.094	2.250	2.187	2.631	2.469
7/8-14	0.875	0.804	1.196	1.125	1.312	1.241	1.634	1.562	1.750	1.679	2.071	2.000	2.187	2.116	2.509	2.437	2.625	2.554	2.946	2.875
1-12	1.000	0.917	1.375	1.292	1.500	1.417	1.875	1.792	2.000	1.917	2.375	2.292	2.500	2.417	2.875	2.792	3.000	2.917	3.375	3.292
1-1/8-12	1.125	1.042	1.500	1.417	1.687	1.604	2.062	1.979	2.250	2.167	2.625	2.542	2.812	2.729	3.187	3.104	3.375	3.292	3.750	3.667
1-1/4-12	1.250	1.167	1.625	1.542	1.875	1.792	2.250	2.167	2.500	2.417	2.875	2.792	3.125	3.042	3.500	3.417	3.750	3.667	4.125	4.042
1-3/8-12	1.375	1.292	1.750	1.667	2.062	1.979	2.437	2.354	2.750	2.667	3.125	3.042	3.437	3.354	3.812	3.729	4.125	4.042	4.500	4.417
1-1/2-12	1.500	1.417	1.875	1.792	2.250	2.167	2.625	2.542	3.000	2.917	3.375	3.292	3.750	3.667	4.125	4.042	4.500	4.417	4.875	4.792

BSW

BSW 規格	1D				1.5D				2D				2.5D				3D			
	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T
1/8-40	0.125	0.100	0.237	0.212	0.187	0.162	0.299	0.274	0.250	0.225	0.362	0.337	0.312	0.287	0.425	0.400	0.375	0.350	0.487	0.462
3/16-24	0.187	0.146	0.375	0.332	0.281	0.240	0.468	0.426	0.375	0.334	0.562	0.520	0.468	0.427	0.656	0.612	0.562	0.521	0.750	0.708
1/4-20	0.250	0.200	0.475	0.425	0.375	0.325	0.600	0.550	0.500	0.450	0.725	0.675	0.625	0.575	0.850	0.800	0.750	0.700	0.975	0.925
5/16-16	0.312	0.257	0.562	0.507	0.469	0.413	0.719	0.663	0.625	0.589	0.875	0.819	0.781	0.726	1.031	0.978	0.937	0.882	1.187	1.132
3/8-16	0.375	0.312	0.556	0.594	0.562	0.500	0.844	0.781	0.750	0.687	1.031	0.969	0.937	0.875	1.219	1.156	1.125	1.062	1.406	1.344
7/16-14	0.437	0.366	0.759	0.687	0.656	0.585	0.978	0.908	0.875	0.804	1.196	1.126	1.093	1.022	1.415	1.343	1.312	1.241	1.634	1.582
1/2-12	0.500	0.417	0.875	0.792	0.750	0.667	1.125	1.042	1.000	0.917	1.375	1.292	1.250	1.167	1.625	1.542	1.500	1.417	1.875	1.792
9/16-12	0.562	0.479	0.937	0.854	0.844	0.750	1.219	1.135	1.125	1.042	1.500	1.417	1.406	1.323	1.781	1.698	1.687	1.604	2.062	1.979
5/8-11	0.625	0.534	1.034	0.943	0.937	0.846	1.347	1.258	1.250	1.159	1.659	1.568	1.562	1.471	1.972	1.881	1.875	1.784	2.284	2.193
11/16-11	0.687	0.596	1.097	1.006	1.031	0.940	1.441	1.350	1.375	1.284	1.785	1.694	1.716	1.627	2.128	2.037	2.062	1.971	2.472	2.381
3/4-10	0.750	0.650	1.200	1.100	1.125	1.025	1.575	1.475	1.500	1.400	1.950	1.850	1.875	1.775	2.325	2.225	2.250	2.150	2.700	2.600
7/8-9	0.875	0.764	1.375	1.264	1.312	1.201	1.812	1.701	1.750	1.639	2.250	2.139	2.187	2.076	2.687	2.576	2.625	2.514	3.125	3.014
1-8	1.000	0.875	1.563	1.437	1.500	1.375	2.062	1.937	2.000	1.875	2.562	2.437	2.500	2.375	3.062	2.937	3.000	2.875	3.562	3.437
1-1/8-7	1.125	0.982	1.768	1.625	1.687	1.545	2.330	2.187	2.250	2.107	2.893	2.750	2.812	2.670	3.455	3.312	3.375	3.232	4.018	3.875
1-1/4-7	1.250	1.107	1.893	1.750	1.875	1.732	2.518	2.375	2.500	2.357	3.143	3.000	3.125	2.982	3.768	3.625	3.750	3.607	4.393	4.250
1-1/2-6	1.500	1.333	2.250	2.083	2.250	2.083	3.000	2.833	3.000	2.833	3.750	3.583	3.750	3.583	4.500	4.333	4.500	4.333	5.250	5.083

BSF

BSF 規格	1D				1.5D				2D				2.5D				3D			
	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T
3/16-32	0.187	0.156	0.327	0.296	0.281	0.250	0.421	0.390	0.375	0.344	0.515	0.484	0.468	0.437	0.608	0.577	0.562	0.531	0.702	0.671
7/32-28	0.218	0.182	0.379	0.343	0.328	0.292	0.489	0.453	0.437	0.401	0.598	0.562	0.546	0.510	0.707	0.671	0.656	0.620	0.817	0.781
1/4-26	0.250	0.212	0.423	0.385	0.375	0.337	0.548	0.510	0.500	0.462	0.673	0.635	0.625	0.587	0.798	0.760	0.750	0.712	0.923	0.885
9/32-26	0.281	0.243	0.454	0.416	0.421	0.383	0.594	0.556	0.562	0.524	0.736	0.697	0.703	0.666	0.876	0.838	0.843	0.806	1.016	0.978
5/16-22	0.312	0.267	0.516	0.471	0.469	0.424	0.673	0.628	0.625	0.580	0.829	0.784	0.781	0.736	0.985	0.940	0.937	0.892	1.141	1.096
3/8-20	0.375	0.325	0.600	0.550	0.562	0.512	0.787	0.737	0.750	0.700	0.975	0.925	0.937	0.887	1.162	1.112	1.125	1.075	1.350	1.300
7/16-18	0.437	0.381	0.687	0.631	0.656	0.600	0.906	0.850	0.875	0.819	1.125	1.069	1.093	1.037	1.343	1.287	1.312	1.256	1.562	1.506
1/2-16	0.500	0.437	0.781	0.719	0.750	0.688	1.031	0.969	1.000	0.938	1.281	1.219	1.250	1.188	1.531	1.469	1.500	1.438	1.781	1.719
9/16-16	0.562	0.500	0.843	0.781	0.844	0.782	1.125	1.063	1.125	1.062	1.406	1.344	1.406	1.344	1.687	1.625	1.687	1.625	1.968	1.906
5/8-14	0.625	0.554	0.946	0.875	0.937	0.866	1.258	1.187	1.250	1.179	1.571	1.500	1.562	1.491	1.883	1.812	1.875	1.804	2.196	2.125
11/16-14	0.687	0.616	1.008	0.937	1.031	0.960	1.352	1.281	1.375	1.304	1.696	1.625	1.718	1.647	2.039	1.968	2.062	1.991	2.383	2.312
3/4-12	0.750	0.667	1.125	1.042	1.125	1.042	1.500	1.417	1.500	1.417	1.875	1.792	1.875	1.792	2.250	2.167	2.250	2.167	2.825	2.742
13/16-12	0.812	0.729	1.187	1.104	1.218	1.135	1.593	1.510	1.625	1.542	2.000	1.917	2.031	1.948	2.406	2.323	2.437	2.354	2.812	2.729
7/8-11	0.875	0.784	1.284	1.193	1.312	1.221	1.721	1.630	1.750	1.669	2.159	2.068	2.187	2.096	2.596	2.505	2.625	2.534	3.034	2.943
1-10	1.000	0.900	1.450	1.350	1.500	1.400	1.950	1.850	2.000	1.900	2.450	2.350	2.500	2.400	2.950	2.850	3.000	2.900	3.450	3.350
1-1/8-9	1.125	1.014	1.625	1.514	1.687	1.576	2.187	2.076	2.250	2.139	2.750	2.639	2.812	2.701	3.312	3.201	3.375	3.264	3.875	3.764
1-1/4-9	1.250	1.139	1.750	1.639	1.875	1.764	2.375	2.264	2.500	2.389	3.000	2.889	3.125	3.014	3.625	3.514	3.750	3.639	4.250	4.139
1-3/8-8	1.375	1.250	1.938	1.813	2.062	1.937	2.625	2.500	2.750	2.625	3.312	3.188	3.437	3.312	4.000	3.875	4.125	4.000	4.688	4.563
1-1/2-8	1.500	1.375	2.063	1.938	2.250	2.125	2.813	2.688	3.000	2.875	3.563	3.438	3.750	3.625	4.313	4.188	4.500	4.375	5.063	4.938

G(BSPF)

G(BSPF) 規格	1D				1.5D				2D				2.5D				3D			
	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T
1/8-28	0.125	0.089	0.287	0.251	0.187	0.151	0.349	0.313	0.250	0.214	0.412	0.376	0.312	0.276	0.474	0.438	0.375	0.339	0.537	0.501
1/4-19	0.250	0.197	0.488	0.435	0.375	0.322	0.613	0.560	0.500	0.447	0.738	0.685	0.625	0.572	0.863	0.810	0.750	0.697	0.988	0.935
3/8-19	0.375	0.322	0.613	0.560	0.509	0.456	0.800	0.747	0.750	0.697	0.988	0.935	0.875	0.822	1.175	1.122	1.125	1.072	1.363	1.310
1/2-14	0.500	0.429	0.820	0.749	0.750	0.679	1.070	0.999	1.000	0.929	1.320	1.249	1.250	1.179	1.570	1.499	1.500	1.429	1.820	1.749
5/8-14	0.625	0.554	0.945	0.874	0.937	0.866	1.257	1.186	1.250	1.179	1.570	1.499	1.562	1.491	1.882	1.811	1.875	1.804	2.195	2.124
3/4-14	0.750	0.679	1.070	0.999	1.125	1.054	1.445	1.374	1.500	1.429	1.820	1.749	1.875	1.804	2.195	2.124	2.250	2.179	2.570	2.499
7/8-14	0.875	0.804	1.195	1.124	1.312	1.241	1.632	1.561	1.750	1.679	2.070	1.999	2.187	2.116	2.507	2.436	2.625	2.554	2.945	2.874
1-11	1.000	0.909	1.410	1.319	1.500	1.409	1.910	1.819	2.000	1.909	2.410	2.319	2.500	2.409	2.910	2.819	3.000	2.909	3.410	3.319
1-1/4-11	1.250	1.159	1.660	1.569	1.875	1.784	2.285	2.194	2.500	2.409	2.910	2.819	3.125	3.034	3.535	3.444	3.750	3.659	4.160	4.069
1-1/2-11	1.500	1.409	1.910	1.819	2.250	2.159	2.660	2.569	3.000	2.909	3.410	3.319	3.750	3.659	4.160	4.069	4.500	4.409	4.910	4.819

BA

BA 規 格	1D				1.5D				2D				2.5D				3D			
	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T	Q	R	S	T
0BA	0.236	0.197	0.413	0.374	0.354	0.315	0.531	0.492	0.472	0.433	0.649	0.610	0.591	0.552	0.768	0.729	0.709	0.670	0.886	0.847
1BA	0.209	0.174	0.368	0.333	0.313	0.278	0.472	0.437	0.417	0.382	0.576	0.541	0.522	0.487	0.681	0.646	0.626	0.591	0.785	0.750
2BA	0.185	0.153	0.329	0.297	0.278	0.246	0.422	0.390	0.370	0.338	0.514	0.482	0.463	0.431	0.607	0.575	0.555	0.523	0.699	0.667
3BA	0.161	0.132	0.291	0.262	0.242	0.213	0.372	0.343	0.323	0.294	0.453	0.424	0.404	0.375	0.534	0.505	0.484	0.455	0.614	0.585
4BA	0.142	0.116	0.259	0.233	0.213	0.187	0.330	0.304	0.283	0.267	0.400	0.374	0.354	0.328	0.471	0.445	0.425	0.399	0.542	0.516
5BA	0.126	0.103	0.230	0.207	0.189	0.166	0.293	0.270	0.252	0.229	0.356	0.333	0.315	0.292	0.419	0.396	0.878	0.355	0.462	0.459
6BA	0.110	0.089	0.204	0.183	0.165	0.144	0.259	0.238	0.220	0.199	0.314	0.293	0.276	0.255	0.370	0.349	0.331	0.310	0.425	0.404

化學成份&相關材料

TABLE 1

18-8 STAINLESS STEEL	C	Si	Mn	Ni	Cr
DTD734	0.08 MAX	0.20 MIN 1.0 MAX	2.0 MAX	8.0 MIN 11.0 MAX	17.5 MAX 20.0 MAX
302 302S01	0.15 MAX	0.20 MIN 1.0 MAX	2.0 MAX	8.0 MIN 11.0 MAX	17.5 MAX 19.0 MAX
302S25	0.12 MAX	0.20 MIN 1.0 MAX	0.5 MIN 2.0 MAX	8.0 MIN 11.0 MAX	17.5 MAX 19.0 MAX
304 304S01	0.09 MAX	1.0 MAX	2.0 MAX	8.0 MIN 13.0 MAX	17.5 MAX 20.0 MAX
304S12	0.03 MAX	0.20 MIN 1.0 MAX	0.5 MIN 2.0 MAX	9.0 MIN 12.0 MAX	17.5 MAX 20.0 MAX
304S15	0.06 MAX	0.20 MIN 1.0 MAX	0.5 MIN 2.0 MAX	8.0 MIN 11.0 MAX	17.5 MAX 19.0 MAX
304S16	0.06 MAX	0.20 MIN 1.0 MAX	0.5 MIN 2.0 MAX	9.0 MIN 11.0 MAX	17.5 MAX 19.0 MAX

材料規格明細表

TABLE 2

規 格	材質敘述	相關規格
DTD734	Stainless Steel	AISI302 / 304 AMS 7245 X5 Cr Ni 18 9
HR503	Nimonic 90	
X-750	Inconel X-750	AMS 7246
BS2783 Pb 103	Phosphor Bronze	
Nitronic 60	Nitronic 60	UNS S21800
Zeron 100	Zeron 100	UNS S32750

溫度範圍&特別應用

TABLE 3

DTD734	一般可用溫度425℃
Cadmium & Zinc Plated	最高可達 250℃
Nimonic 90	防鬆型最高可達 600℃ (Screw Lock) 標準型最高可達 650℃ (Free Running only)
Nitronic 60	使用不銹鋼螺絲抗腐蝕。
Zeron 100	在石油化工工業中耐腐蝕

推薦螺紋啮合

TABLE 4

母材 MPa 的剪切強度	適合使用的螺栓等級						
	4.8	5.8	6.6	8.8	10.9	12.9	14.9
	螺紋啮合 X 象徵性的直徑						
70 - 90	2	2.5	2.5	-	-	-	-
100 - 149	1.5	1.5	2	3	-	-	-
150 - 199	1	1.5	1.5	2	2.5	3	-
200 - 249	1	1	1	1.5	2	2	2.5
250 - 299	1	1	1	1.5	1.5	2	2
300 - 349	1	1	1	1	1.5	1.5	2
350	1	1	1	1	1	1.5	1.5

磁性

HELICOIL® 不銹鋼護套，由於在冷加工製造過程帶有輕微的磁性，以高斯米磁性進行測試，有2到10的高斯殘餘。

在可能受到磁性影響的儀器上，應該避免使用**HELICOIL®** 不銹鋼護套。

如需無磁性的裝入物件，請使用鎳鉻合金60或磷青銅護套。

航太 & 軍事規格

TABLE 5

AS4736 to 4748	BA/BSF/BSW/BSPF FR - Natural
AS4947 to 4959	BA/BSF/BSW/BSPF FR - Cadmium Plated
AS6733 to 3734	UNF FR - Natural
AS8455 to 8456	UNF/UNC FR - Cadmium Plated
AGS3600 to 3699	UNF/UNC SL - Cadmium Plated
AGS3700 to 3799	UNF SL - Silver Plated (HR503)
LN8039	Metric FR - Natural & Cadmium Plated
LN9499	Metric SL - Natural & Cadmium Plated
MA3279 to 3281	Metric FR - Natural, Dry Film & Cadmium
MA3329 to 3331	Metric SL - Natural, Dry Film & Cadmium
NASM122076 to 124950	UNF/UNC FR - Natural
NASM21209	UNF/UNC SL - Natural, Dry Film & Cadmium

HELICOIL® 護套依上述零件號，材質，機械和化工規格、產品尺寸標準，並根據特定產品應有的標準表面處理，提供精確的成分生產而成的。

高溫應用

鎳鉻合金90**HELICOIL®** 螺紋護套可高溫使用，被S.B.A.C.認可的標準資料如下：

HELICOIL® 鎳鉻合金90護套（航太標準相關AGS零件號碼）

TABLE 6

規 格	1D	1.5D	2D	2.5D	3D
10-32	AGS3706	AGS3731	AGS3756	AGS3781	AGS3718
1/4-28	AGS3707	AGS3732	AGS3757	AGS3782	AGS3719
5/16-24	AGS3708	AGS3733	AGS3758	AGS3783	AGS3720
3/8-24	AGS3709	AGS3734	AGS3759	AGS3784	AGS3721
7/16-20	AGS3710	AGS3735	AGS3760	AGS3785	AGS3722
1/2-20	AGS3711	AGS3736	AGS3761	AGS3786	AGS3723
9/16-18	AGS3712				
5/8-18	AGS3713				

為達到S.B.A.C.提出的標準規格，必須使用下述專用工具安裝

HELICOIL® 鎳鉻合金90工具

TABLE 7

規 格	裝入工具	折斷工具	拔取工具
10-32	ST1062	3581-3(-3)	1227-6
1/4-28	ST1088	3581-4(-3)	1227-6
5/16-24	ST1089	3581-5(-3)	1227-6
3/8-24	ST1090	3581-6(-3)	1227-6
7/16-20	ST1091	3581-7(-3)	1227-16
1/2-20	ST1092	3581-8(-3)	1227-16
9/16-18	ST1130	1196-9(-3)	1227-16
5/8-18	ST1099	1196-10(-3)	1227-16

General Description... Power Tool



氣動裝入本體

Forward and reverse motion controlled by lever and button operation.
Two motor speeds are available. 1500RPM for normal operation and 900RPM for Nimonic 90 **HELICOIL®** screw lock Inserts.



適配器

The connection between the motor and prewinder, which houses the clutch mechanism of the threaded mandrel. Threads connecting to the Motor and Prewinder lock nut are Left Hand threads.

配件 I

Each prewinder is specific to a single thread size and in most cases has the slot incorporated for use with Tape feed **HELICOIL®**. Tape feed Prewinders are capable of installing hand fed inserts.



配件 II

The threaded mandrel ensures correct feed of the insert during installation and eliminates cross pitching.



配件 III

Spacer sets enable the tool to be set to install **HELICOIL®** of varying lengths. Fine adjustment on the depth of the insert is controlled using the spacer shims included.

前
端
外
套
整
組

Air Pressure Settings

TABLE 1

SIZE RANGE		Set air pressure within these limits		
METRIC	UNIFIED	BAR	p.s.i.	Mpa
BELOW M3	BELOW NO.4	1.0 - 1.4	15 - 20	0.10 - 0.14
M3	NO.4	1.4 - 2.1	20 - 30	0.14 - 0.21
	NO.5	1.7 - 2.4	25 - 35	0.17 - 0.24
M3.5	NO.6	2.1 - 3.1	30 - 45	0.21 - 0.31
M4 - M5	NO.8 & 10	2.4 - 2.8	35 - 40	0.24 - 0.28
M6	NO.12 & 1/4	2.8 - 3.5	40 - 50	0.28 - 0.35
M7		3.1 - 3.8	45 - 55	0.31 - 0.38
M8	5/16	3.5 - 4.1	50 - 60	0.35 - 0.41
M9		3.8 - 4.5	55 - 65	0.38 - 0.45
M10	3/8	4.1 - 4.8	60 - 70	0.41 - 0.48
M11	7/16	4.8 - 5.5	70 - 80	0.48 - 0.55
M12-M14	1/2	5.5 - 6.2	80 - 90	0.55 - 0.62

Twinserts 雙護套

雙護套包含兩個**HELICOIL®**螺紋護套（一個外護套＋一個內護套）在工件物上，先使用外護套專用絲攻攻牙，接著使用外護套專用裝入工具鎖入外護套，然後依所需鎖入內護套（標準型Free Running或防鬆型Screw Lock）

因為內護套須由外護套支撐，所以裡面的護套長度比外護套短，這允許內護套可在外護套的末端被安裝。

螺紋護套的長度少於1.5倍是無法使用。這是由於減少的螺紋啮合會影響組裝強度不能達到接受的程度。

Twinserts 雙護套的應用

在航太業、汽車業皆可使用。
用於修復損壞、磨損的螺紋，也可校正孔的位置。

Twinserts Kits 雙護套工具組

雙護套工具組被廣範使用在統一規格，英制尺寸達3/4，公制尺寸達M20

工具組內附的工具和配件是用來補救疲乏磨損或歪孔的修護。

雙護套工具組含有外護套與內護套，加一支外護套絲攻和外護套的裝入工具。

工具組不含內護套的裝入工具。

HELICOIL® 雙護套



Other repair kit options



HELICOIL® Eco-Kits

The Eco-Kit can be used in numerous situations

It is a quick and economical solution to any type of thread repair, regardless of application. HELICOIL® Eco-Kits contain all the necessary tools and inserts together with step by step instructions for use.

Kits are available in all common Metric, unified (UNF & UNC), BSF, BSW, G (BSP) thread forms as well as M10, M12 & M14 spark plug repair kits. (Leaflet available)



HELICOIL® plus thread repair kit

The flexible and engineered solution

HELICOIL® plus thread repair kits allow easy installation of a new thread in only a few steps. Kits contain all the necessary tools and three different lengths of HELICOIL® plus inserts, together with step by step instructions for use. The reduced first coil of the HELICOIL® plus insert further simplifies the repair.

(see HELICOIL® plus repairing of damaged threads catalogue)



HELICOIL® plus range kit

The workshop and automotive solution

Kits include different diameters of tools and inserts e.g. M5-M12 and M6-M14. They each contain three different lengths of HELICOIL® plus inserts, HSS taps, drills, installation and tang break off tools. Available in metric, unified and traditional British thread forms. Specialist automotive kits are available for spark plug, lambda sensor, sump plug and steering joint repairs.

(see HELICOIL® plus repairing of damaged threads catalogue)



HELICOIL® professional kit

The professional repair solution

If a technical component fails that requires professional repair to the highest level, the single size HELICOIL® professional kit meets the most stringent requirements. It provides full aerospace traceability and manufacturers' release certificates for the inserts.



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Apart from these 24 countries, Böllhoff supports its international customers in other important industrial markets in close partnership with agents and dealers.

進口商：

海聚貿易有限公司

臺北市中山區中山北路二段 62 巷 36 號

電話：(02)2511-8900

傳真：(02)2511-8902

郵遞區號：10448

電子信箱：service@oceanus.com.tw

網址：www.oceanus.com.tw

