

# Insert taps and fitting tools

Delivery from stock

ISO Metric Dimensions in mm											
Insert size	Insert Taps		Tapped Hole Gauge	Inserting Handle	Inserting Stems					Tang Break-off Punches	
	Spiral Flute	Straight Flute			Plain Type	Shouldered Type*					
			1 Diam.	1½ Diam.		2 Diam.	2½ Diam.	3 Diam.			
M3 x .50	3 MCTS	3 MCTP	3 MCG	KH 1	6 MCKS	K3 MC10	K3 MC15	K3 MC20	K3 MC25	K3 MC30	P3 MC
M4 x .70	4 MCTS	4 MCTP	4 MCG			KH 2	8 MCKS	K4 MC10	K4 MC15	K4 MC20	K4 MC25
M5 x .80	5 MCTS	5 MCTP	5 MCG		10 MCKS		K5 MC10	K5 MC15	K5 MC20	K5 MC25	K5 MC30
M6 x 1.00	6 MCTS	6 MCTP	6 MCG		12 MCKS						P6 MC
M8 x 1.25	8 MCTS	8 MCTP	8 MCG		16 MCKS						
M10 x 1.50	10 MCTS	10 MCTP	10 MCG								
M12 x 1.75	12 MCTS	12 MCTP	12 MCG								
M16 x 2.00	16 MCTS	16 MCTP	16 MCG								

UNC Dimensions in inches																		
Insert size	Insert Taps		Tapped Hole Gauge	Inserting Handle	Plain Type	Inserting Stems					Tang Break-off Punches							
	N	CTS				CTP	CG	CK	10	15		20	25	30				
4-40			N4	CTS	N4						CTP				N4	CG	N4	CK10
6-32	N6	CTS	N6	CTP	N6	CG	N6	CK10	N6	CK15	N6	CK20	N6	CK25	N6	CK30	N6	CP
8-32	N8	CTS	N8	CTP	N8	CG												N8 CP
10-24	N10	CTS	N10	CTP	N10	CG												N10 CP
¼-20	4	CTS	4	CTP	4	CG												4 CP
5/16-18	5	CTS	5	CTP	5	CG												
¾-16	6	CTS	6	CTP	6	CG												
7/16-14	7	CTS	7	CTP	7	CG												

UNF Dimensions in inches																		
Insert size	Insert Taps		Tapped Hole Gauge	Inserting Handle	Plain Type	Inserting Stems					Tang Break-off Punches							
	N	FTS				FTP	FG	FK	10	15		20	25	30				
10-32			N10	FTS	N10						FTP				N10	FG	N10	FK10
¼-28	4	FTS	4	FTP	4	FG												4 FP
5/16-24	5	FTS	5	FTP	5	FG												
¾-24	6	FTS	6	FTP	6	FG												
7/16-20	7	FTS	7	FTP	7	FG												

\*For easy fitting use shouldered type stem on small sizes. Select stem to suit length of inserts.



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# Cross Spirallock\* Thread Locking System

Publication No. CMR53-8  
Issue date: 08/04

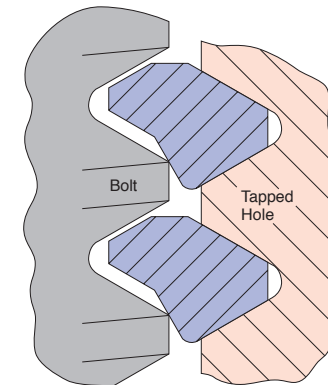
Exclusively designed and manufactured by the Cross Manufacturing Company, the Cross Spirallock thread locking system incorporates the unique features and benefits of the Spirallock thread form on a comprehensive range of wire inserts.

Developed for high performance resistance to vibration-induced loosening, combined with ease of fitting, without pre-winding.

- easy to fit and free-running
- high number of re-uses
- uses standard bolt
- fastening load evenly distributed along the bolt
- improved fatigue life



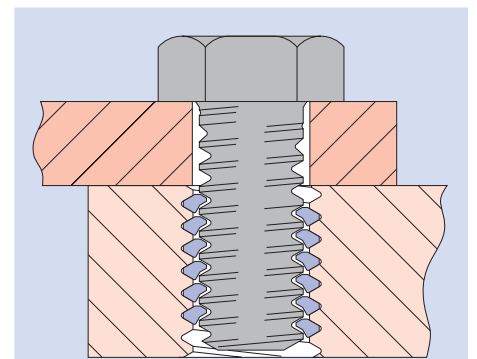
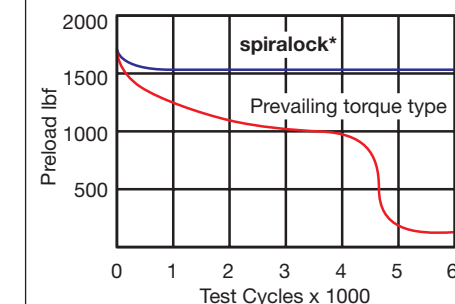
Proven applications include helicopter rotor heads and gearboxes, locomotive gearboxes and rock drills.



Crest of standard bolt seats against ramp of special insert thread profile, preventing transverse movement of bolt relative to insert and resisting loosening due to vibration.



Results from the Junkers Test Machine confirm superior performance compared to other locking insert designs.



## Enhanced fatigue performance

The Cross Spirallock Thread Insert radially centres the bolt to the tapped hole. The compressive loads engage on the "wedge ramp" of each turn of the thread. This results in a more even distribution of the bearing load down the length of the thread insert. This can reduce the risk of fatigue failures caused by excess concentration of these bearing loads on the first few turns as is common where there is no thread insert.



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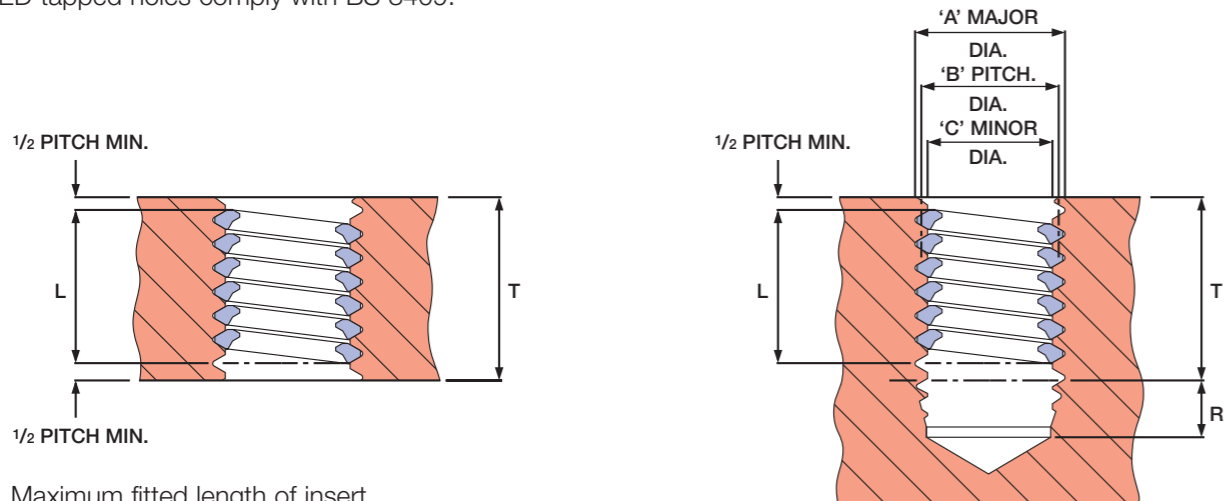
# Tapped hole & standard length data

Made from austenitic stainless steel to DTD 734A. The standard range of ISO metric and UNIFIED inserts are listed below. Special lengths are available on request. Quality control to ISO 9001 : 2000

Part numbers shown for unplated, cadmium plated and silver plated. Zinc plated inserts also available. Apply to Cross for details.

## Insert provides an internal Spirallock\* thread to suit standard bolt

ISO Metric tapped holes comply with BS 4377.  
UNIFIED tapped holes comply with BS 3409.

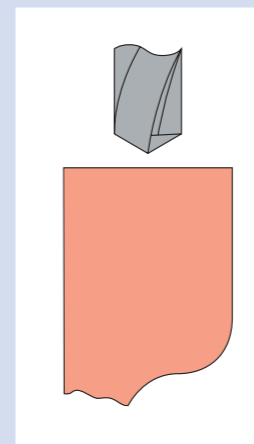


- L Maximum fitted length of insert
- T Minimum full thread depth for blind holes and minimum metal thickness for through holes.
- R Minimum run out required for general purpose 15° lead tap. Plug taps are available if required.

# Fitting instructions

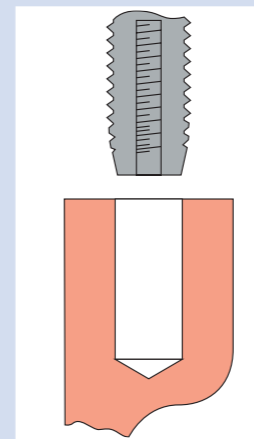
## 1 Drill the hole

Select drill size from table.



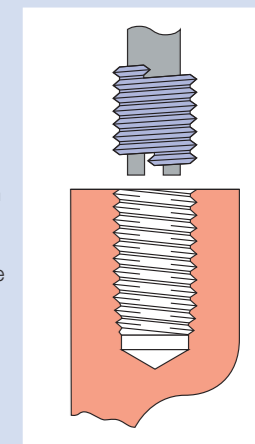
## 2 Tap the hole

With special insert tap.  
Gauge the hole (optional).



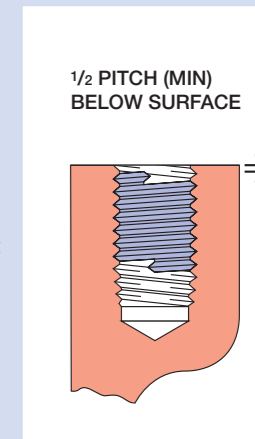
## 3 Fit the insert

1. Select the appropriate insert key. Slide the insert on to the key so that the tang of the insert engages in the driving slot at the forward end.  
2. Apply assembly to the tapped hole. **Avoiding a downward load on the tang** wind in the insert until the top coil is no less than half a coil below the top of the tapped hole. The key stems supplied for thread inserts up to and including M4 are stepped to prevent forcing of the tang during fitting. N.B. When ordering stems for these sizes the length of the insert should be specified.



## 4 Break off tang

For insert sizes up to M6 or 1/4 use the punch provided to remove the tang. Locate punch on tang and give sharp downward blow with a light hammer.  
For insert sizes above M6 or 1/4 the insert key may be used to remove the tang. First turn the key so that it no longer engages in the tang of the insert. A sharp downward blow with a light hammer will remove the tang. Do not attempt to twist the tang off in any manner with the key.



ISO Metric Dimensions in mm																																
Insert size	Tapped Hole for Insert (ISO Metric Nut form)							1xDia. Long Insert					1.5xDia. Long Insert				2xDia. Long Insert				2.5xDia. Long Insert				3xDia. Long Insert							
	Major Dia. A Min.	Pitch Dia. B		Minor Dia. C		Tapping Drill	Runout R	Part numbers: Unplated Cadmium Silver Plated Plated			L	T	Part numbers: Unplated Cadmium Silver Plated Plated			L	T	Part numbers: Unplated Cadmium Silver Plated Plated			L	T	Part numbers: Unplated Cadmium Silver Plated Plated			L	T					
M3 x .50	3.650	3.325	3.367	3.108	3.220	3.20	2.00	340030	341030	346030	2.75	3.25	340031	341031	346031	4.25	4.75	340032	341032	346032	5.75	6.25	340033	341033	346033	7.25	7.75	340034	341034	346034	8.75	9.25
M4 x .70	4.909	4.455	4.509	4.152	4.292	4.20	2.80	340040	341040	346040	3.65	4.35	340041	341041	346041	5.65	6.35	340042	341042	346042	7.65	8.35	340043	341043	346043	9.65	10.35	340044	341044	346044	11.65	12.35
M5 x .80	6.039	5.520	5.577	5.173	5.333	5.20	3.20	340045	341045	346045	4.60	5.40	340046	341046	346046	7.10	7.90	340047	341047	346047	9.60	10.40	340048	341048	346048	12.10	12.90	340049	341049	346049	14.60	15.40
M6 x 1.00	7.299	6.650	6.719	6.216	6.406	6.25	4.00	340050	341050	346050	5.50	6.50	340051	341051	346051	8.50	9.50	340052	341052	346052	11.50	12.50	340053	341053	346053	14.50	15.50	340054	341054	346054	17.50	18.50
M8 x 1.25	9.624	8.812	8.886	8.271	8.483	8.30	5.00	340060	341060	346060	7.37	8.62	340061	341061	346061	11.37	12.62	340062	341062	346062	15.37	16.62	340063	341063	346063	19.37	20.62	340064	341064	346064	23.37	24.62
M10 x 1.50	11.949	10.974	11.061	10.325	10.561	10.40	6.00	340070	341070	346070	9.25	10.75	340071	341071	346071	14.25	15.75	340072	341072	346072	19.25	20.75	340073	341073	346073	24.25	25.75	340074	341074	346074	29.25	30.75
M12 x 1.75	14.273	13.137	13.236	12.379	12.644	12.40	7.00	340080	341080	346080	11.12	12.87	340081	341081	346081	17.12	18.87	340082	341082	346082	23.12	24.87	340083	341083	346083	29.12	30.87	340084	341084	346084	35.12	36.87
M16 x 2.00	18.598	17.299	17.406	16.433	16.733	16.50	8.00	340100	341100	346100	15.00	17.00	340101	341101	346101	23.00	25.00	340102	341102	346102	31.00	33.00	340103	341103	346103	39.00	41.00	340104	341104	346104	47.00	49.00
UNC Dimensions in inches																																
4-40	.1445	.1282	.1299	.1174	.1223	3.0mm	.100	342025	343025	347025	.100	.125	342026	343026	347026	.160	.185	342027	343027	347027	.210	.235	342028	343028	347028	.270	.295	342029	343029	347029	.320	.345
6-32	.1786	.1583	.1601	.1448	.1530	3.7mm	.125	342030	343030	347030	.130	.160	342031	343031	347031	.200	.230	342032	343032	347032	.270	.300	342033	343033	347033	.340	.370	342034	343034	347034	.400	.430
8-32	.2046	.1843	.1862	.1705	.1783	4.4mm	.125	342035	343035	347035	.150	.180	342036	343036	347036	.240	.270	342037	343037	347037	.320	.350	342038	343038	347038	.400	.430	342039	343039	347039	.480	.510
10-24	.2441	.2170	.2192	.1990	.2081	5.1mm	.170	342040	343040	347040	.180	.222	342041	343041	347041	.270	.312	342042	343042	347042	.370	.412	342043	343043	347043	.470	.512	342044	343044	347044	.560	.602
1/4-20	.3150	.2825	.2851	.2608	.2703	6.7mm	.200	342045	343045	347045	.240	.290	342046	343046	347046	.370	.420	342047	343047	347047	.490	.540	342048	343048	347048	.610	.660	342049	343049	347049	.740	.790
5/16-18	.3847	.3486	.3515	.3245	.3341	8.4mm	.220	342050	343050	347050	.300	.355	342051	343051	347051	.460	.515	342052	343052	347052	.610	.665	342053	343053	347053	.770	.825	342054	343054	347054	.930	.985
3/8-16	.4562	.4156	.4189	.3885	.3985	10.0mm	.250	342055	343055	347055	.360	.420	342056	343056	347056	.540	.600	342057	343057	347057	.730	.790	342058	343058	347058	.920	.980	342059	343059	347059	1.100	1.160
7/16-14	.5303	.4839	.4875	.4530	.4636	11.6mm	.285	342060	343060	347060	.420	.490	342061	343061	347061	.640	.710	342062	343062	347062	.860	.930	342063	343063	347063	1.070	1.140	342064	343064	347064	1.290	1.360
UNF Dimensions in inches																																
10-32	.2306	.2103	.2123	.1968	.2038	5.1mm	.125	342095	343095	347095	.180	.211	342096	343096	347096	.270	.300	342097	343097	347097	.370	.400	342098	343098	347098	.470	.500	342099	343099	347099	.560	.590
1/4-28	.2964	.2732	.2754	.2577	.2647	6.6mm	.145	342100	343100	347100	.240	.275	342101	343101	347101	.370	.405	342102	343102	347102	.490	.525	342103	343103	347103	.610	.645	342104	343104	347104	.740	.775
5/16-24	.3666	.3395	.3421	.3215	.3289	8.2mm	.170	342105	343105	347105	.300	.340	342106	343106	347106	.460	.500	342107	343107	347107	.610	.650	342108	343108	347108	.770	.810	342109	343109	347109	.930	.970
3/8-24	.4291	.4020	.4047	.3840	.3909	9.8mm	.170	342110	343110	347110	.370	.410	342111	343111	347111	.550	.590	342112	343112	347112	.740	.780	342113	343113	347113	.930	.970	342114	343114	347114	1.110	1.150
7/16-20	.5025	.4700	.4731	.4483	.4561	11.5mm	.200	342115	343115	347115	.430	.480	342116	343116	347116	.650	.700	342117	343117	347117	.870	.920	342118	343118	347118	1.080	1.130	342119	343119	347119	1.300	1.350