

STANLEY[®]
Engineered Fastening

HELI-COIL[®]
8-Pitch Inserts

Technical Bulletin 913C



Helicoil[®]

8-PITCH INSERTS

A UNIQUE SERIES OF SCREW THREAD INSERTS

This series of inserts is especially designed for 8-pitch threaded holes. The wire cross-section of HELI-COIL 8-Pitch Inserts is precisely engineered to reduce the pitch diameter of a standard 8-pitch tapped thread by exactly 1/8" so that HELI-COIL assemblies can be made in normal 1/8" thread-size increments.

For example, if a 1-1/4"-8 thread is damaged, it can be readily repaired by tapping with the next eighth-inch larger standard 8-pitch tap – in this case, 1-3/8"-8; no special taps are ever needed. When the insert is installed, the resulting assembly provides a permanently repaired thread to the original 1-1/4"-8 size.

Compared with other methods, thread repair with HELI-COIL 8-Pitch Inserts is fast and economical, providing better-than-original threads and saving expensive parts with a minimum of down-time.

INSERT IDENTIFICATION DATA								
THREAD SIZE	NOMINAL LENGTH			OUTSIDE DIAMETER		NOMINAL LENGTH		
	1 Dia.	1-1/2 Dia.	2 Dia.	Min.	Max.	1 Dia.	1-1/2 Dia.	2 Dia.
						NUMBER OF COILS*		
1 1/8-8	1.125	1.688	2.250	1.262	1.302	7 1/8	11 3/8	15 5/8
1 1/4-8	1.250	1.875	2.500	1.391	1.431	8	12 7/8	17 1/2
1 3/8-8	1.375	2.062	2.750	1.520	1.565	9	14 1/4	19 1/2
1 1/2-8	1.500	2.250	3.000	1.649	1.694	10	15 5/8	21 3/8
1 5/8-8	1.625	2.438	3.250	1.859	1.904	10 1/2	16 3/8	22 1/4
1 3/4-8	1.750	2.625	3.500	1.993	2.039	11 3/8	17 3/4	24 1/8
1 7/8-8	1.875	2.812	3.750	2.128	2.163	12 3/8	19 1/8	26
2-8	2.000	3.000	4.000	2.239	2.274	13 3/8	20 3/4	28 1/8

*The number of free coils is counted 90° from the tang.

BOLT THREAD PROJECTION MINIMUM AND MAXIMUM						
NOMINAL THREAD SIZE	N*			K**		
	NOMINAL LENGTH			NOMINAL LENGTH		
	1 Dia.	1-1/2 Dia.	2 Dia.	1 Dia.	1-1/2 Dia.	2 Dia.
1 1/8-8	.96	1.24	1.52	1.06	1.63	2.19
1 1/4-8	1.02	1.34	1.65	1.19	1.81	2.44
1 3/8-8	1.09	1.43	1.77	1.31	2.00	2.69
1 1/2-8	1.15	1.52	1.90	1.44	2.19	2.94
1 5/8-8	1.27	1.68	2.09	1.56	2.38	3.19
1 3/4-8	1.52	1.96	2.40	1.69	2.56	3.44
1 7/8-8	1.59	2.05	2.52	1.81	2.75	3.69
2-8	1.65	2.15	2.65	1.94	2.94	3.94

*Minimum bolt projection "N" applies to Screw-Lock Inserts only. It is the minimum distance that the first full thread of the bolt must project to insure adequate thread engagement with the locking coils when the assembly is completed.

**Maximum bolt projection "K" applies when the tang is not removed. When the tang is removed in a blind hole, the maximum bolt projection must not exceed the minimum drill depth.

INSERT MATERIALS

HELI-COIL 8-Pitch Inserts are available in 18-8 stainless steel and Inconel X-750. For most repairs and applications in which temperatures will not exceed 800°F, stainless steel is recommended. When temperatures reach 800 to 1000°F, or when seizure with stainless steel screws or studs must be avoided, Inconel X inserts are recommended. Both materials have a tensile strength of approximately 200,000 psi.

AVAILABILITY

8-Pitch Free-Running and Screw-Lock inserts are available in thread sizes 1-1/8" to 2", in lengths of 1, 1-1/2 and 2 times the nominal diameter. Other sizes and lengths can be supplied on special order.

HELI-COIL 8-Pitch Inserts: • Provide wear-resistant, harder-than-original threads (RC 43-50). • Provide reusable, smoother-than-original threads (8-16 RMS). • Eliminate other costly repair methods. • Save valuable parts that would otherwise have to be scrapped. • Are applicable in existing bosses and flanges where repairs are impossible with other types of inserts or solid bushings • **Require no special taps.**

GENERAL SPECIFICATIONS

Nominal Thread Size of Final Assembly	Insert Part No. Basic* + Length	TAPPED HOLE PREPARATION								Assembled Insert Pitch Dia. (2B)		Hand Inserting Tool Part No.	
		Min. Drill*** Depth		Drilled*** Hole Dia.		Tap (Std. 8P) Nom. Size	Pitch Dia.		Tap Major Dia. Max.				
		Plug Tap	Bottoming Tap	Min.	Max.		Min.	Max.		Min.	Max.		
1-1/8"-8	4190-18 { CN LTN	1.125	1.813	1.438	1.130	1.155	1-1/4	1.1688	1.1757	1.261	1.0438	1.0528	4288-18
		1.688	2.376	2.001									
		2.250	2.938	2.563									
1-1/4"-8	4190-20 { CN LTN	1.250	1.938	1.563	1.255	1.280	1-3/8	1.2938	1.3008	1.386	1.1688	1.1780	4288-20
		1.875	2.563	2.188									
		2.500	3.188	2.813									
1-3/8"-8	4190-22 { CN LTN	1.375	2.063	1.688	1.380	1.405	1-1/2	1.4188	1.4259	1.511	1.2938	1.3031	4288-22
		2.062	2.750	2.375									
		2.750	3.438	3.063									
1-1/2"-8	4190-24 { CN LTN	1.500	2.188	1.813	1.505	1.530	1-5/8	1.5438	1.5510	1.636	1.4188	1.4283	4588-24
		2.250	2.938	2.563									
		3.000	3.688	3.313									
1-5/8"-8	4190-26 { CN LTN	1.625	2.313	1.938	1.630	1.655	1-3/4	1.6688	1.6762	1.761	1.5438	1.5535	4588-26
		2.438	3.126	2.751									
		3.250	3.938	3.563									
1-3/4"-8	4190-28 { CN LTN	1.750	2.438	2.063	1.755	1.780	1-7/8	1.7938	1.8013	1.886	1.6688	1.6786	4588-28
		2.625	3.313	2.938									
		3.500	4.188	3.813									
1-7/8"-8	4190 30 { CN LTN	1.875	2.563	2.188	1.880	1.905	2	1.9188	1.9264	2.011	1.7938	1.8038	4588-30
		2.812	3.500	3.125									
		3.750	4.438	4.063									
2"-8	4190-32 { CN LTN	2.000	2.688	2.313	2.005	2.030	2-1/8	2.0438	2.0515	2.136	1.9188	1.9289	4588-32
		3.000	3.688	3.313									
		4.000	4.688	4.313									

* The complete part number consists of these elements: Series + size + material + nominal length. The 8-pitch series designation is 4190 for Free-Running and 4490 for Screw-Lock. C = stainless steel and T = Inconel X-750.

Thus the number for a 1-1/2"-8x 2.250" stainless steel insert is 4190-24CN2250. An Inconel X insert of the same size would be designated 4190-24TN2250.

** Minimum drill depth for a bottoming tap equals .313 plus the insert nominal length; for plug taps it equals .688 plus insert nominal length. These drilling depths allow approximately 1/2 pitch tap end clearance.

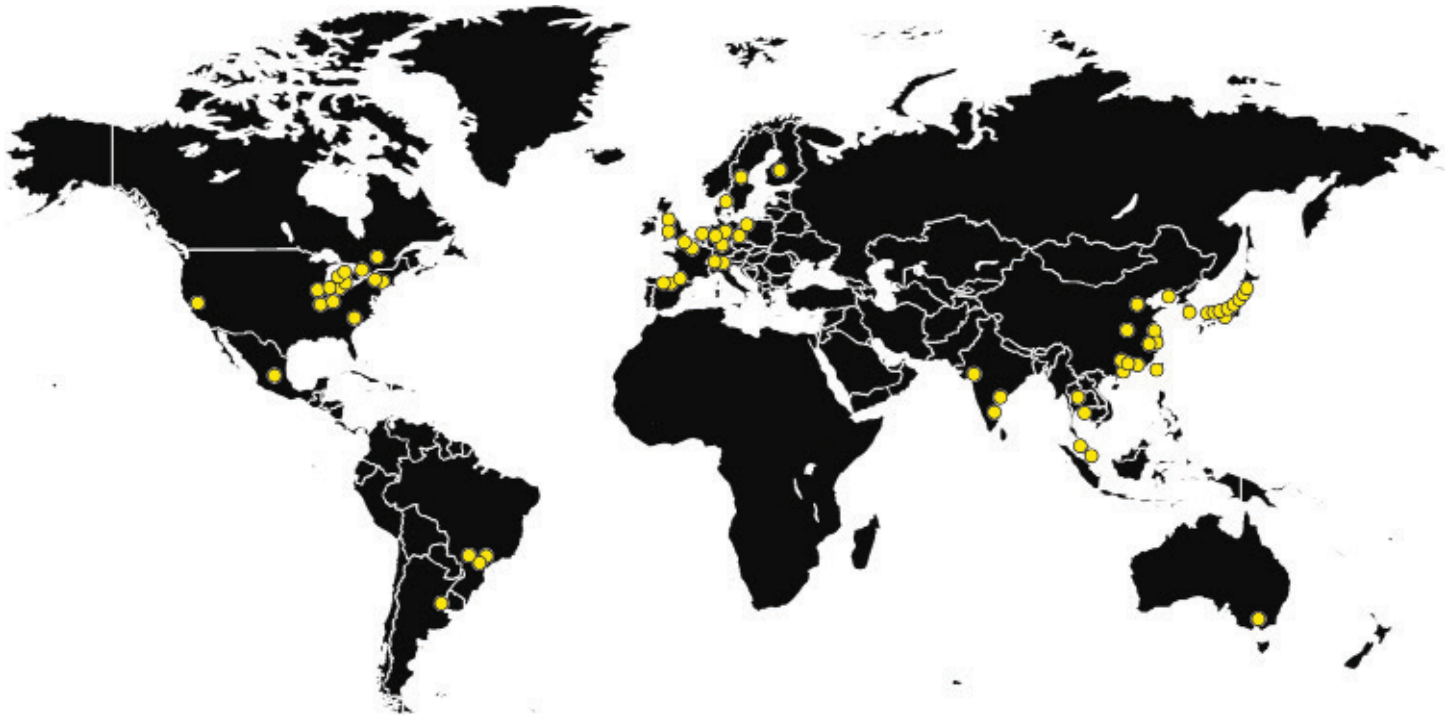
Minimum full thread tapping depth equals insert nominal length. The tapped hole will accommodate an insert installed 1/4 to 1/2 pitch below the top surface of the tapped hole. When holes are to be countersunk, the drilling and tapping depths and insert installation depth should be increased 1/2 pitch. The recommended countersink is 120° included angle to the tap major diameter ±.015

*** The minimum and maximum drilled hole diameters listed are larger than standard to allow clearance for the major diameter of the mating threaded member. A drill size equal to the nominal thread diameter is suggested because it will generally produce an oversize hole within the tabulated drilled hole limits.

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