



Recoil Tangless® Inserts

The Next Step in Wire
Thread Insert Evolution



Recoil Tangless Inserts – Next Step in Wire Thread Insert Evolution

Key Benefits

Increased Installation Speed

- No tang to break off post insert installation, eliminating a stage in the installation process; ideal for automatic installation in high volume applications.
- No tang to retrieve post insert installation, eliminates vacuuming or extraction and counting of the displaced tangs.
- Bi-directional design eliminates insert orientation. No need for time consuming insert checking prior to each installation.

Installation adjustment and removal flexibility

- Tangless inserts are easily adjusted or removed after initial installation, just re-insert the installation tool and wind or insert the removal tool and unwind.
- Tangless inserts removal tools never touch the application ensuring no damage occurs unlike outmoded insert removal techniques.

Foreign object damage (FOD) – Free

- No loose tangs to potentially damage the finished product.

Combined with all the benefits of standard Recoil wire thread inserts

Wire thread inserts are used to strengthen threads, giving applications a longer life. Each insert shares the load over the entire bolt and hole, improving holding or pull out resistance. With a Recoil insert installed, a more even distribution of load and stress can be achieved.

Recoil Tangless Inserts are available in the following forms:

Free-running Inserts

Quick and easy to install even with basic hand tooling.
Creating high strength threads in low strength materials.



Locking Inserts

Designed to retain screws or bolts under the most severe vibration or varying temperature conditions. The insert comprises a series of uniquely designed locking chords which, upon the engagement of a screw or bolt, deflect radially to permit the installation of the bolt. Upon bolt entry, these straight segments are flexed outwardly, creating pressure on the bolt. This pressure is applied between the flanks of the bolt thread so that contact area is maximized.



Strip Feed

When used in combination with Recoil pneumatic installation tooling, each insert is retained in a plastic strip which is passed through a slot in the front end assembly nozzle, indexing the insert to the installation mandrel. Optimizing production with increased installation cycles and reducing operator fatigue.

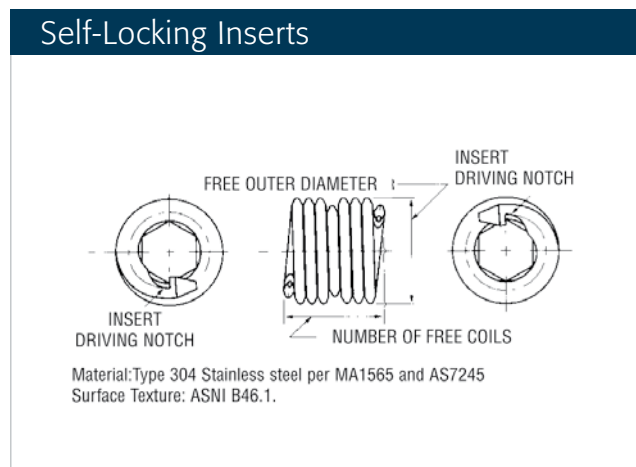
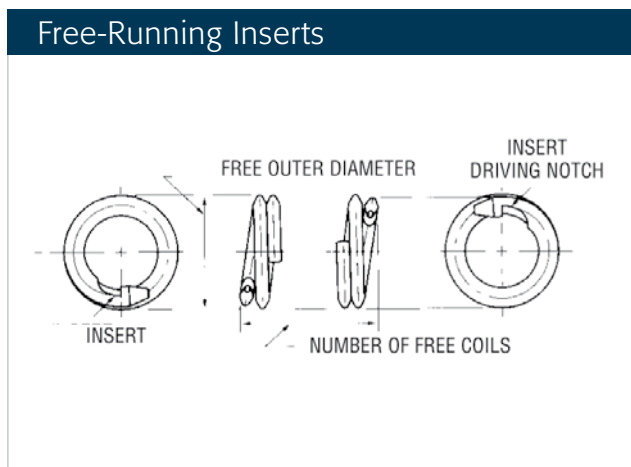
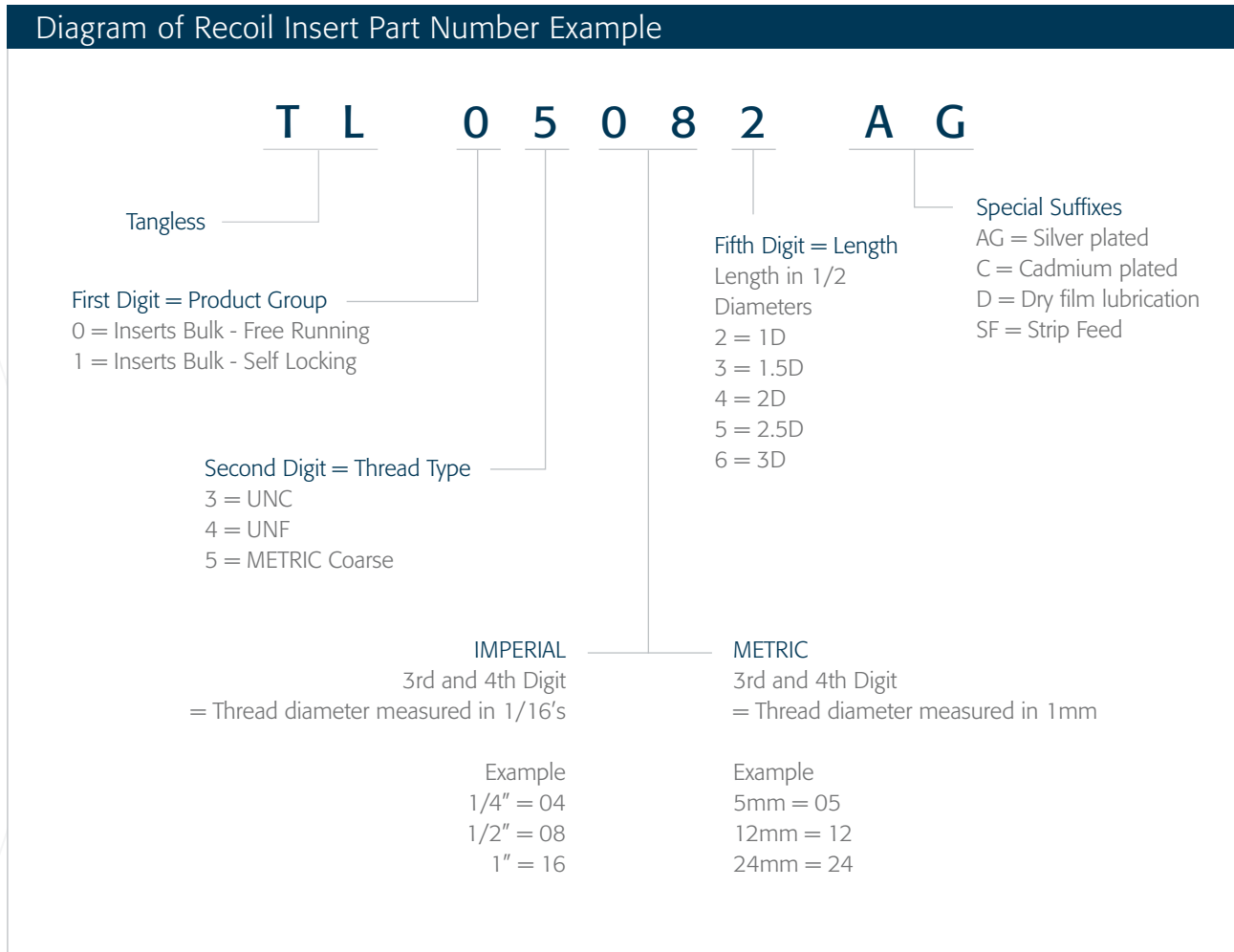


Tangless Inserts are designed to replace tanged helical coil inserts as specified in MA3279 through MA3281 (standard thread) and MA3329 through MA3331 (locking thread). Inch MS122076 through to MS124690 (free running) and NASM21209 (locking). They install in standard STI tapped holes per MA1567 and MIL-I-8846. Installed inserts provide a finished thread meeting the requirements of FED-STD-H28, M Profile, Tolerance Classes 4H or 5H, as well as ISO metric thread specifications, and accept standard or MJ profile bolts or screws.

Recoil Thread Insert Part Numbering System

Recoil insert product part numbering system uses a logically structured 5 digit basic part number. Suffixes are typically added to differentiate between special or non-standard features. This guide defines the structure of Recoil part numbers and may be used for reference to identify a Recoil insert from its part number.

*Refer to Recoil Technical Catalogue for taps and gauges information.



Metric Tangless Series

Thread Nominal	Nominal Length	Part Number		Recoil Free Coil Dia <u>Min</u> /Max.	Number of Coils	Length (REF)	KATO (ADVANEX) Part Number	
		Free Running	Locking				Free Running	Locking
M2.5 x 0.45	1	TL05252	TL15252		3.375	2.5	2TNM2.5x.45C-2.5	2TLM2.5x.45C-2.5
	1.5	TL05253	TL15253	<u>3.20</u>	5.625	3.75	2TNM2.5x.45C-3.8	2TLM2.5x.45C-3.8
	2	TL05254	TL15254	3.70	8	5	2TNM2.5x.45C-5	2TLM2.5x.45C-5
	2.5	TL05255	TL15255		10.5	6.25	2TNM2.5x.45C-6.3	2TLM2.5x.45C-6.3
	3	TL05056	TL15256		12.750	7.5	2TNM2.5x.45C-7.5	2TLM2.5x.45C-7.5
M3 x 0.5	1	TL05032	TL15032		3.75	3		
	1.5	TL05033	TL15033	<u>3.80</u>	6.375	4.5		
	2	TL05034	TL15034	4.35	8.875	6		
	2.5	TL05035	TL15035		11.375	7.5		
	3	TL05036	TL15036		13.875	9.0		
M4 x 0.7	1	TL05042	TL15042		3.625	4		
	1.5	TL05043	TL15043	<u>5.05</u>	6.125	6		
	2	TL05044	TL15044	5.60	8.625	8		
	2.5	TL05045	TL15045		11.125	10		
	3	TL05046	TL15046		13.625	12		
M5 x 0.8	1	TL05052	TL15052		4.125	5		
	1.5	TL05053	TL15053	<u>6.20</u>	6.875	7.5		
	2	TL05054	TL15054	6.80	9.625	10		
	2.5	TL05055	TL15055		12.375	12.5		
	3	TL05056	TL15056		15.125	15		
M6 x 1	1	TL05062	TL15062		4.00	6		
	1.5	TL05063	TL15063	<u>7.40</u>	6.75	9		
	2	TL05064	TL15064	7.95	9.50	12		
	2.5	TL05065	TL15065		12.125	15		
	3	TL05066	TL15066		14.875	18		
M8 x 1.25	1	TL05082	TL15082		4.500	8		
	1.5	TL05083	TL15083	<u>9.80</u>	7.375	12		
	2	TL05084	TL15084	10.35	10.250	16		
	2.5	TL05085	TL15085		13.250	18		
	3	TL05086	TL15086		16.125	20		
M10 x 1.5	1	TL05102	TL15102		4.9	10		
	1.5	TL05103	TL15103	<u>11.95</u>	8.000	15		
	2	TL05104	TL15104	12.50	11.1	20		
	2.5	TL05105	TL15105		14.250	25		
	3	TL05106	TL15106		17.375	30		
M12 x 1.75	1						2TNM12X1.75C-12	2TLM12X1.75C-12
	1.5						2TNM12X1.75C-18	2TLM12X1.75C-18
	2						2TNM12X1.75C-24	2TLM12X1.75C-24

Alcoa Fastening Systems and Advanex Europe Ltd

Alcoa Fastening Systems is an official distributor of KATO Tangless Products from Advanex Europe Ltd, hence we are able to offer KATO Tangless product as an alternative to Recoil Tangless or where Recoil do not currently have a product in the range.

Inch Tangless Series

Thread Nominal	Nominal Length	Part Number		Recoil Free Coil Dia <u>Min</u> /Max.	Number of Coils	Length (REF)	KATO (ADVANEX) Part Number	
		Free Running	Locking				Free Running	Locking
#2-56 (.086-56) UNC	1	TL03522	TL13522		3.00	.86	2TNC-02C-0086	2LNC-02C-0086
	1.5	TL03523	TL13523	<u>.110</u>	5.25	.129	2TNC-02C-0129	2LNC-02C-0129
	2	TL03524	TL13524	.119	7.375	.172	2TNC-02C-0172	2TLC-02C-0172
	2.5	TL03525	TL13525		9.625	.215	2TNC-02C-0215	2TLC-02C-0215
	3	TL03526	TL13526		11.875	.258	2TNC-02C-0258	2TLC-02C-0258
#4-40 (.112-40) UNC	1	TL03542	TL13542		2.75	.112	2TNC-04C-0112	2TLC-04C-0112
	1.5	TL03543	TL13543	<u>.144</u>	4.75	.168	2TNC-04C-0168	2TLC-04C-0168
	2	TL03544	TL13544	.159	6.75	.224	2TNC-04C-0224	2TLC-04C-0224
	2.5	TL03545	TL13545		8.875	.280	2TNC-04C-0280	2TLC-04C-0280
	3	TL03546	TL13546		10.875	.336	2TNC-04C-0336	2TLC-04C-0336
#6-32 (.138-32) UNC	1	TL03562	TL13562		2.750	.138	2TNC-06C-0138	2TLC-06C-0138
	1.5	TL03563	TL13563	<u>.178</u>	4.750	.207	2TNC-06C-0207	2TLC-06C-0207
	2	TL03564	TL13564	.193	6.875	.276	2TNC-06C-0276	2TLC-06C-0276
	2.5	TL03565	TL13565		8.875	.345	2TNC-06C-0345	2TLC-06C-0345
	3	TL03566	TL13566		10.750	.414	2TNC-06C-0414	2TLC-06C-0414
#8-32 (.164-32) UNC	1	TL03582	TL13582		3.500	.164	2TNC-2C-0164	2TLC-2C-0164
	1.5	TL03583	TL13583	<u>.205</u>	6.000	.246	2TNC-2C-0246	2TLC-2C-0246
	2	TL03584	TL13584	.220	8.375	.328	2TNC-2C-0328	2TLC-2C-0328
	2.5	TL03585	TL13585		10.750	.410	2TNC-2C-0410	2TLC-2C-0410
	3	TL03586	TL13586		13.250	.492	2TNC-2C-0492	2TLC-2C-0492
#10-24 (.190-24) UNC	1	TL03602	TL13602		2.875	.190	2TNC-3C-0190	2TLC-3C-0190
	1.5	TL03603	TL13603	<u>.244</u>	5.000	.285	2TNC-3C-0285	2TLC-3C-0285
	2	TL03604	TL13604	.259	7.125	.380	2TNC-3C-0380	2TLC-3C-0380
	2.5	TL03605	TL13605		9.250	.475	2TNC-3C-0475	2TLC-3C-0475
	3	TL03606	TL13606		11.375	.570	2TNC-3C-0570	2TLC-3C-0570
#1/4-20 (.250-20) UNC	1	TL03042	TL13042		3.375	.250	2TNC-4C-0250	2TLC-4C-0250
	1.5	TL03043	TL13043	<u>.310</u>	5.750	.375	2TNC-4C-0375	2TLC-4C-0375
	2	TL03044	TL13044	.330	8.000	.500	2TNC-4C-0500	2TLC-4C-0500
	2.5	TL03045	TL13045		10.375	.625	2TNC-4C-0625	2TLC-4C-0625
	3	TL03046	TL13046		12.750	.750	2TNC-4C-0750	2TLC-4C-0750
#10-32 (.190-32) UNF	1	TL04602	TL14602		4.125	.190	2TNF-3C-0190	2TLF-3C-0190
	1.5	TL04603	TL14603	<u>.236</u>	6.875	.285	2TNF-3C-0285	2TLF-3C-0285
	2	TL04604	TL14604	.256	9.500	.380	2TNF-3C-0380	2TLF-3C-0380
	2.5	TL04605	TL14605		12.000	.475	2TNF-3C-0475	2TLF-3C-0475
	3	TL04606	TL14606		14.875	.570	2TNF-3C-0570	2TLF-3C-0570
#1/4-28 (.250-28) UNF	1	TL04042	TL14042		5.000	.250	2TNF-4C-0250	2TLF-4C-0250
	1.5	TL04043	TL14043	<u>.306</u>	8.250	.375	2TNF-4C-0375	2TLF-4C-0375
	2	TL04044	TL14044	.326	11.375	.500	2TNF-4C-0500	2TLF-4C-0500
	2.5	TL04045	TL14045		14.500	.625	2TNF-4C-0625	2TLF-4C-0625
	3	TL04046	TL14046		17.625	.750	2TNF-4C-0750	2TLF-4C-0750

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Recoil Tangless Tooling Options

There are four ways to install Tangless inserts, which one suits you depends greatly on the type of application you are installing in and how many inserts you are installing per day.

Manual Hand Tooling

To install and remove by hand all you need is one of the tools from the mandrel/tool table below, depending on your thread form and diameter: Each Part number includes mandrel and handle.



Metric Mandrel/Tool Table

		Installation	Removal
M2.5 x 0.45	Free Running	2CT10-M2.5F	2CT30-M2.5F
	Locking	2CT10-M2.5L	2CT30-M2.5L
	Replacement Pawl	2CT20-M2.5	2CT40-M2.5
M3 x 0.5	Free Running	2CT10-M3F	2CT30-M3F
	Locking	2CT10-M3L	2CT30-M3L
	Replacement Pawl	2CT20-M3	2CT40-M3
M4 x 0.7	Free Running	2CT10-M4F	2CT30-M4F
	Locking	2CT10-M4L	2CT30-M4L
	Replacement Pawl	2CT20-M4	2CT40-M4
M5 x 0.8	Free Running	2CT10-M5F	2CT30-M5F
	Locking	2CT10-M5L	2CT30-M5L
	Replacement Pawl	2CT20-M5	2CT40-M5
M6 x 1	Free Running	2CT10-M6F	2CT30-M6F
	Locking	2CT10-M6L	2CT30-M6L
	Replacement Pawl	2CT20-M6	2CT40-M6
M8 x 1.25	Free Running	2CT10-M8F	2CT30-M8F
	Locking	2CT10-M8L	2CT30-M8L
	Replacement Pawl	2CT20-M8	2CT40-M8
M10 x 1.25	Free Running	2CT10-M10F	2CT30-M10F
	Locking	2CT10-M10L	2CT30-M10L
	Replacement Pawl	2CT20-M10	2CT40-M10
M12 x 1.75	Free Running	2CT10-M12F	2CT30-M12F
	Locking	2CT10-M12L	2CT30-M12L
	Replacement Pawl	2CT20-M12	2CT40-M12

Inch Mandrel/Tool Table

		Installation	Removal
UNC 2-56	Free Running & Locking	2KREC-02	2KRTC-02
	Replacement Pawl	2KIPC-02K	2KRPC-02K
UNC 4-40	Free Running & Locking	2KREC-04	2KRTC-04
	Replacement Pawl	2KIPC-04K	2KRPC-04K
UNC 6-32	Free Running & Locking	2KREC-06	2KRTC-06
	Replacement Pawl	2KIPC-06K	2KRPC-06K
UNC 8-32	Free Running & Locking	2KREC-08	2KRTC-08
	Replacement Pawl	2KIPC-08K	2KRPC-08K
UNC 10-24	Free Running & Locking	2KREC-3	2KRTC-3
	Replacement Pawl	2KIPC-3K	2KRPC-3K
UNC 1/4-20	Free Running & Locking	2KREC-4	2KRTC-4
	Replacement Pawl	2KIPC-4K	2KRPC-4K
UNF 10-32	Free Running & Locking	2KREF-3	2KRTF-3
	Replacement Pawl	2KIPF-3K	2KRPF-3K

Hand Prewinder Tooling

Ideal for installing inserts in small production runs or in areas where compressed air or electricity are not available and offers a quicker alternative to the simple hand installation tool. The tool is suitable for use when installing free running and locking inserts.



Metric Prewinder Table

		Installation
M2.5 x 0.45	Free Running & Locking	2KPHM-2.5
	Replacement Pawl	2KPIM-2.5
M3 x 0.5	Free Running & Locking	2KPHM-3
	Replacement Pawl	2KPIM-3
M4 x 0.7	Free Running & Locking	2KPHM-4
	Replacement Pawl	2KPIM-4
M5 x 0.8	Free Running & Locking	2KPHM-5
	Replacement Pawl	2KPIM-5
M6 x 1	Free Running & Locking	2KPHM-6
	Replacement Pawl	2KPIM-6
M8 x 1.25	Free Running & Locking	2KPHM-8
	Replacement Pawl	2KPIM-8
M10 x 1.25	Free Running & Locking	2KPHM-10
	Replacement Pawl	2KPIM-10
M12 x 1.75	Free Running & Locking	2KPHM-12
	Replacement Pawl	2KPIM-12

Inch Prewinder Table

		Installation
UNC 2-56	Free Running & Locking	2KREC-02
	Replacement Pawl	2KIPC-02K
UNC 4-40	Free Running & Locking	2KPHC-04
	Replacement Pawl	2KIPC-04K
UNC 6-32	Free Running & Locking	2KPHC-06
	Replacement Pawl	2KIPC-06K
UNC 8-32	Free Running & Locking	2KPHC-2
	Replacement Pawl	2KIPC-2K
UNC 10-24	Free Running & Locking	2KPHC-3
	Replacement Pawl	2KIPC-3K
UNC 1/4-20	Free Running & Locking	2KPHF-3
	Replacement Pawl	2KIPF-3K
UNF 10-32	Free Running & Locking	2KPHC-4
	Replacement Pawl	2KIPC-4K
UNF 1/4-28	Free Running & Locking	2KPHF-4
	Replacement Pawl	2KIPF-4K

Recoil Tangless Tooling Options

Electric Tooling

Recoil electric powered installation tooling uses a small generator to install fasteners at a much higher rate than a manual installation tool or pre-winder tool. This tool is ideal for installation of medium to large quantities of inserts.

To install using electric tooling all you need is:

- Transformer** SBT-50-240UK
- Electric Tool** Alpha 5000
- Mandrel** Choose from the mandrel/tool table below depending on your thread form and diameter



Metric Mandrel/Tool Table

		Installation	Removal
M2.5 x 0.45	Free Running	2CT10-M2.5F	2CT30-M2.5F
	Locking	2CT10-M2.5L	2CT30-M2.5L
	Replacement Pawl	2CT20-M2.5	2CT40-M2.5
M3 x 0.5	Free Running	2CT10-M3F	2CT30-M3F
	Locking	2CT10-M3L	2CT30-M3L
	Replacement Pawl	2CT20-M3	2CT40-M3
M4 x 0.7	Free Running	2CT10-M4F	2CT30-M4F
	Locking	2CT10-M4L	2CT30-M4L
	Replacement Pawl	2CT20-M4	2CT40-M4
M5 x 0.8	Free Running	2CT10-M5F	2CT30-M5F
	Locking	2CT10-M5L	2CT30-M5L
	Replacement Pawl	2CT20-M5	2CT40-M5
M6 x 1	Free Running	2CT10-M6F	2CT30-M6F
	Locking	2CT10-M6L	2CT30-M6L
	Replacement Pawl	2CT20-M6	2CT40-M6
M8 x 1.25	Free Running	2CT10-M8F	2CT30-M8F
	Locking	2CT10-M8L	2CT30-M8L
	Replacement Pawl	2CT20-M8	2CT40-M8
M10 x 1.25	Free Running	2CT10-M10F	2CT30-M10F
	Locking	2CT10-M10L	2CT30-M10L
	Replacement Pawl	2CT20-M10	2CT40-M10
M12 x 1.75	Free Running	2CT10-M12F	2CT30-M12F
	Locking	2CT10-M12L	2CT30-M12L
	Replacement Pawl	2CT20-M12	2CT40-M12

Inch Mandrel/Tool Table

		Installation	Removal
UNC 2-56	Free Running & Locking	2KREC-02	2KRTC-02
	Replacement Pawl	2KIPC-02K	2KRPC-02K
UNC 4-40	Free Running & Locking	2KREC-04	2KRTC-04
	Replacement Pawl	2KIPC-04K	2KRPC-04K
UNC 6-32	Free Running & Locking	2KREC-06	2KRTC-06
	Replacement Pawl	2KIPC-06K	2KRPC-06K
UNC 8-32	Free Running & Locking	2KREC-08	2KRTC-08
	Replacement Pawl	2KIPC-08K	2KRPC-08K
UNC 10-24	Free Running & Locking	2KREC-3	2KRTC-3
	Replacement Pawl	2KIPC-3K	2KRPC-3K
UNC 1/4-20	Free Running & Locking	2KREC-4	2KRTC-4
	Replacement Pawl	2KIPC-4K	2KRPC-4K
UNF 10-32	Free Running & Locking	2KREF-3	2KRTF-3
	Replacement Pawl	2KIPF-3K	2KRPF-3K

Air Tooling

Recoil pneumatic powered installation tooling uses standard air supply to install fasteners at a much higher rate than a manual installation tool or prewinder tool. This tool is ideal for installation of medium to large quantities of inserts, especially when used in combination with Stripfeed.

To install using air tooling all you need is:

- Air Motor and Adapter** NR-HL 1409 (M2.5 to M6) and (2-56 to 1/4")
NR-HL 1410 (M8 to M12)
- Front End Assembly** Choose from the table below depending on your thread form and diameter



Metric Front End Assembly Table

	Installation
M2.5 x 0.45	2KPAM-2.5
M3 x 0.5	2KPAM-3
M4 x 0.7	2KPAM-4
M5 x 0.8	2KPAM-5
M6 x 1	2KPAM-6
M8 x 1.25	2KPAM-8
M10 x 1.25	2KPAM-10
M12 x 1.75	2KPAM-12

Inch Front End Assembly Table

	Installation
UNC 2-56	2KPAC-02
UNC 4-40	2KPAC-04
UNC 6-32	2KPAC-06
UNC 8-32	2KPAC-2
UNC 10-24	2KPAC-3
UNC 1/4-20	2KPAF-3A
UNF 10-32	2KPAC-4
UNF 1/4-28	2KPAF-4

Recoil bringing versatility to a range of applications

The range of wire thread inserts by Recoil are designed to enable you to produce strong threads in softer materials or more evenly distributed thread loads in harder materials. Thread strengthening needs to be fast, reliable and cost effective - decades of engineering experience means Recoil products carry a global reputation for delivering these OEM essentials.

With a choice of free-running or screw-locking designs, Recoil offers a broad range of thread insert systems to ensure the best match of product to the application. The standard Recoil free-running insert provides for easy installation of a female thread, delivering the necessary "holding power" for most applications.

For particularly demanding or extreme high-vibration applications, Recoil offers a screw-locking design, which provides a superior locking function in the female thread.

Alcoa Fastening Systems' (AFS) Recoil manufacturing operations are located in Australia, with sales and warehouse facilities strategically placed in North America, Asia and Europe. The European distribution centre is based in Telford, UK.

Applications include: consumer electronics where the tang could potentially cause a short circuit in electronic components, or other computerised equipment that may be found in aircraft, missiles, or other aerospace systems. Tangless inserts are a clean environment application.

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