

Tangless@ANDTanged iNsms&



S TO[®]

SATISFACTION PLUS™

PH[®]



The single best source for helical coil inserts, tools and thread repair kits in the industry.

KATO® Fastening Systems Mission Statement:

"We F.A.S.T.E.N."

- **FUTURE:** *At KFS our goal is to assure that our products stay a step ahead of the fastener needs of the future. "We think tomorrow... today!"*
- **ADVANCED:** *Our manufacturing and quality systems are the most advanced in the industry, and we have licensed this technology to our largest competitors!*
- **SERVICE:** *Satisfaction- Plus™ is your guarantee that if you are not satisfied with any of our products, for any reason — simply return the unused parts for replacement, or a full refund. No other insert manufacturer can make that promise!*
- **TECHNOLOGY:** *Our technology is recognized as being the best in the industry. Using our network of global resources, we developed the innovative line of Tangless® Inserts & Tools!*
- **EXCELLENCE:** *Our goal is for the KFS name to be synonymous with an unsurpassed level of excellence and distinction in the industry.*
- **NEXT:** *Complacency is not in our vocabulary. We are constantly working on the next generation of fasteners and tools.*

ISO Certification



BS EN ISO 9001: 2000, Amended May 2003.
Certificate No. FM 20982

All dimensions expressed in inches unless otherwise specified. Specifications subject to change without notice.

KATO® Tangless® and Tanged CoilThread® Inserts and Tools are covered by existing U.S. and foreign patents.

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Tangless[®] or Tanged...it's your choice. Your best source for both is CoilThread[®] from KATO[®]!

Tangless Inserts:

- FOD-Free Design: No tangs to break off, retrieve...or lose.
- Approved for use on military programs by NASM8846 and NAS1130.
- Cost Reduction: Significantly decreased installation and inspection time.
- Bi-directional design eliminates insert orientation requirement.
- Quick, non-destructive removal prevents damage to castings.

Tangless Inserts meet the requirements of NAS1130 and NASM8846, and were added to NASM8846, the procurement standard for helical coil inserts to give you the option to use the Tangless design on military programs. Paragraph 6.3.1 of NASM8846 states "The decision to select tanged inserts or tangless inserts shall be made by the design activity."

Tangless Inserts are designed to replace tanged helical coil inserts as specified in NASM122076 and NASM124651 series (standard thread) and NASM21209 (locking thread); they install in standard STI tapped holes per NASM33537. Installed inserts provide a finished thread meeting the requirements of FED-STD-H28/2 and accept standard bolts or screws (MIL-S-7742) or UNJ (MIL-S-8879).



Tanged Inserts:

- Lower pricing than competitive inserts.
- Complete range of locking and free-running sizes, bulk or strip-feed, including metric.
- Full line of taps, gages, hand tools, air tools, and electric tools available...interchangeable with and will install all major brands of inserts.
- Meet or exceed all applicable military, aerospace, and commercial standards. Full traceability.
- Design and Application Assistance: over 25 years of manufacturing and engineering experience.



CoilThread® Inserts

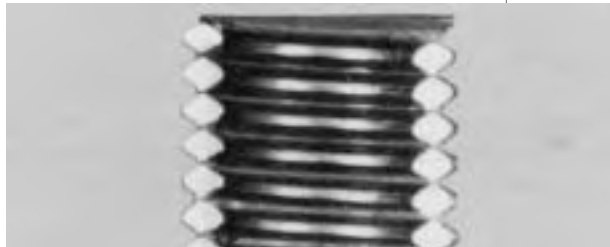
In either their tanged or Tangless® configurations, CoilThread Inserts are economical, helically-coiled fastening devices that provide permanent, wear-resistant screw threads that exceed the strength of most parent materials.

They protect tapped threads against failures due to stripping, seizing, corrosion and wear. They save time and money because of their low initial cost and permit flexibility of installation when using Kato tools detailed in the tooling section of the catalog.

CoilThread Inserts are made of cold-rolled Type 304 stainless steel wire (AS7245), work-hardened to a tensile strength above 200,000 psi and a hardness of Rc43-50. The finished surface (8-16 microinches) is exceedingly smooth, virtually eliminating friction-induced thread erosion.



CoilThread Inserts are precision-formed continuous helical coils. With minimal wall thickness, they are the most compact and lightweight inserts available.



Cross section view shows just how little extra hole diameter is needed to provide the outstanding thread strength that CoilThread inserts offer.

When assembled in STI tapped holes, CoilThread Inserts form Unified Coarse or Unified Fine threads that conform to National Bureau of Standards Handbook H-28, Screw-Thread Standards for Federal Services, Classes 2B and 3B. Assembled CoilThread Inserts will also accommodate UNJ, MIL-S-8879, male threaded fasteners.

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Performance & Features

CoilThread inserts improve the reliability of fastening systems.

The resilient characteristics of each coil in the CoilThread insert allows it to adjust independently to secure the maximum surface contact with individual threads in the parent material. As a result, loads are distributed more evenly. Stress and fatigue concentrations are reduced to maximize thread strength and increase the reliability and life of the fastening system.

The stainless steel used resists corrosion under normal environmental conditions. Galvanic action within the thread assembly is reduced, further adding to the life of the fastening assembly. These inserts are used with temperatures from -320° F. to $+800^{\circ}$ F.

PREFORMED NOTCH
Simplifies removal of tang if required.

TANG
Used to drive insert into tapped hole. Can be left attached or removed per requirements of the application.

DIAMOND SHAPED CROSS SECTION
Keens insert weight to a minimum and allows the smallest possible hole diameter.



HIGH TENSION ANCHOR

The high tensile coils of a CoilThread Insert undergo a diameter reduction during installation. The outward spring-like force of the coils "locks" the insert into place.



INDEPENDENT THREAD COILS **PARENT MATERIAL**

Each coil can flex independently to contact the greatest amount of parent material thread surface. Both static and dynamic load bearing capabilities are improved.

CoilThread Inserts provide design and manufacturing flexibility.

Design opportunities are provided by the structure of these inserts. Because of the continuous helically-coiled design, they need no thick wall structure to support the internal and external threads: the diamond-shaped coil is the thread!

The inserts can be installed in reduced-size bosses or flanges and within constricted areas, thus saving space and weight while providing high strength. A boss radius equal to the nominal bolt diameter is usually sufficient.

KATO Tools provide a choice of installation methods best suited to specific production techniques. Convenient hand tools can be supplied for small runs, repairs and prototyping: or high-speed electric or air-powered tools may be selected for rapid, low-cost installation. CoilThread Inserts are available in Bulk and on Strip Feed Reels...providing flexibility for any production set-up.

COILOCK THREAD LOCKING ELEMENT
CoiLock Self-Locking Inserts incorporate one or more coils with straight run segments that apply pressure to and lock the threads of the male fastener. Additional information on these Self-Locking Inserts can be found on Pages 6 and 7.

HARD WEAR-RESISTANT THREADS

Work-hardened, stainless steel forms a smooth, hard surface that reduces thread wear and resists corrosion. Result: A highly reliable, long-life insert.

Performance & Features, *continued*

Corrosion Protection:

Corrosion is the deterioration of a metal because of a reaction with its environment. The products of corrosion vary widely from the flaky red rust of iron to the relatively benign oxide over aluminum. In general, corrosion should be avoided or minimized where possible.

There are many types of corrosion, but a particular type called galvanic corrosion is most important for inserts and fasteners. Galvanic corrosion occurs when dissimilar metals are in contact in the presence of an electrolytic solution. All metals exhibit different degrees of “activity” or “nobility” and can be arranged in a galvanic series of increasing activity. Gold and platinum are most noble while zinc and magnesium are most active. The most common electrolytic solution encountered is ordinary water. Seawater or salt spray is more damaging because of high concentrations of dissolved salts.

The best way to preclude galvanic corrosion is to use similar potential metals and eliminate the electrolyte conductor. The active stainless steel CoilThread Inserts are not passivated. This minimizes the possibility of galvanic corrosion occurring when they are installed in aluminum or magnesium parent materials.

Some additional precautions for reducing galvanic corrosion are:

1. Isolate the fasteners from the electrolyte. This can be done through gasketing or sealing.
2. Specify cadmium plated inserts. The cadmium plate provides a sacrificial barrier against corrosion. In addition, the cadmium plate has lubricating properties that minimize galling when stainless steel screws are used.
3. Apply corrosion inhibiting pastes or compounds to the screw. These include zinc chromate primer (MIL-P-8585) and strontium chromate primer (MIL-P-23377). Note: Pastes applied to the CoilThread Insert can become trapped between the wire and the hole and cause loss of proper tolerance. It is therefore recommended to apply the paste only to the screw, not the insert. If zinc chromate primer is applied to the tapped hole it should be thinned and applied sparingly. The insert should be installed while the primer is still wet.
4. Specify a dry film lubricant such as molybdenum disulphide on the inserts. This provides a secondary barrier against corrosion.
5. Where practical or where it will not interfere with the completed assembly, the external joint should be coated with a suitable paint.

Military, Aerospace & Commercial Standards

CoilThread Tanged and Tangless® Inserts are precision-engineered and have been put through rigorous torque, tension and vibration tests as well as comprehensive dimensional inspections and metallurgical analysis in attaining their MIL-Spec qualifications.

CoilThread Inserts have been thoroughly tested by an independent testing laboratory and are certified to conform to NASM8846. Copies of these reports are available upon request.

In addition, CoilThread Inserts and Tools are in conformance with the following military standards and other specifications:

Unified Inserts

NASM122076 series*

- Insert, Corrosion Resistant Helical Coil Coarse Thread

NASM124651 series*

- Insert, Corrosion Resistant Helical Coil Fine Thread

MS21208

- Insert-Screw Thread Free Running (Superseded by MS122076 and MS124651 series)

NASM21209*

- Insert-Screw Thread Screw-Locking

NASM33537

- Assembly and Dimensions, Helical Coil Inserts

NASM8846*

- Inserts, Screw thread, Helical Coil

A-A-59158

- Tools for Inserting and Extracting Helical Coil Inserts

AS7245

- Insert, Screw Thread, Helical Coil, Corrosion Resistant Steel

QQ-P-416

- Cadmium Plating (Type II)

AS5272

- Optional coating
- Dry Film Lubricant (Type I)
- Optional coating

NAS1130

- Tangless Inserts, Free-running & Locking

ASME B18.29.1

- Helical Coil, Screw Thread Inserts - Free-Running & Locking

Metric Inserts

MA3279

- Inserts, Metric, Free-Running, Helical Coil, Uncoated

MA3280

- Inserts, Metric, Free-Running, Helical Coil, Lubricated

MA3281

- Inserts, Metric, Free-Running, Helical Coil, Cadmium Plated

MA3329

- Inserts, Metric, Locking, Helical Coil, Uncoated

MA3330

- Inserts, Metric, Locking, Helical Coil, Lubricated

MA3331

- Inserts, Metric, Locking, Helical Coil, Cadmium Plated.

MA1565

- Procurement Standard, Metric Helical Coil Inserts

MA1567

- Assembly Dimensions, Metric Helical Coil Inserts

* Note: In 1998 and 1999, the Military Specifications (MS) of the same number were superseded by the NASM specifications.

Design Data

Selection of Correct Insert Length

CoilThread Inserts are available in nominal thread sizes from UNC #2 through 1-1/2," and from UNF #3 through 1-1/2." Metric sizes include M2.2 through M12. Five insert lengths are available for each thread size.

It is important to select the correct insert length in order to balance the bolt tensile strength against the shear strength of the parent material.

These five insert lengths (recommended thread engagement of the CoilThread Insert), 1, 1-1/2, 2, 2-1/2 and 3 are shown in the shaded area of the table below. These are calculated numbers since the inserts cannot be measured in the free state. The numbers are multiples of the nominal thread size, or diameter, of the insert. The actual insert lengths in the installed position are listed in the insert selection tables. There they represent the actual installed length plus 1/2 pitch.

Using the table below, an insert length can be selected which will produce a thread system strong enough to fracture a bolt before it will strip or damage either the parent material or the insert.

Recommended Nominal Insert lengths Based on Parent Material Versus Bolt Material Strengths UNIFIED

Shear Strength of Parent Material (KSI)	Bolt Material Minimum Ultimate Tensile Strength (KSI)									
	54	75	96	108	125	132	160	180	220	
10	2	2-1/2	3	3	—	—	—	—	—	—
15	1-1/2	1-1/2	2	2-1/2	2-1/2	3	3	—	—	—
20	1	1-1/2	1-1/2	2	2	2	2-1/2	3	3	—
25	1	1	1-1/2	1-1/2	1-1/2	2	2	2-1/2	2-1/2	2-1/2
30	1	1	1	1-1/2	1-1/2	1-1/2	2	2	2-1/2	2-1/2
40	1	1	1	1	1	1-1/2	1-1/2	1-1/2	2	2
50	1	1	1	1	1	1	1	1-1/2	1-1/2	1-1/2

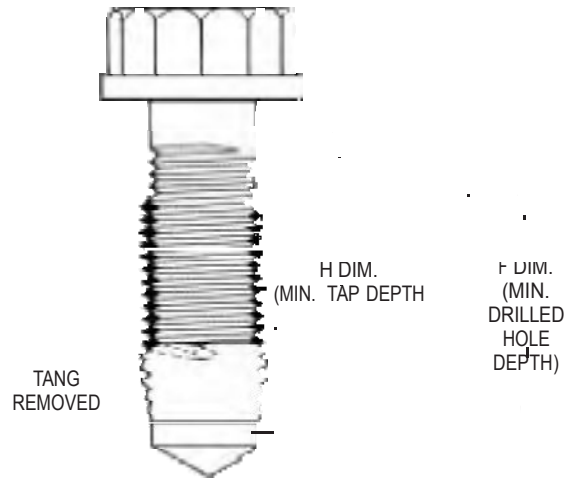
EXAMPLE: If parent material shear strength is 10KSI and the bolt tensile strength is 54 KSI, the correct insert length is 2 diameters.

METRIC

Shear Strength of Parent Material MPa(megapascals) (Alum., Mag., Steel)	Bolt Ultimate Tensile Strength MPa (megapascals)							
	300	400	500	600	800	1000	1200	1400
70	1-1/2	2	2-1/2	2-1/2	—	—	—	—
100	1	1-1/2	1-1/2	2	2-1/2	3	—	—
150	1	1	1-1/2	1-1/2	2	2	2-1/2	3
200	1	1	1	1	1-1/2	1-1/2	2	2-1/2
250	1	1	1	1	1	1-1/2	1-1/2	2
300	1	1	1	1	1	1-1/2	1-1/2	1-1/2
350	1	1	1	1	1	1	1-1/2	1-1/2

Bolt Projection

Standard, readily available bolts and screws that require no special hardware are used with CoilThread Inserts.



The bolt must engage the entire insert length to achieve maximum assembly strength. To insure against partial engagement, it is recommended that the tang always be removed. This will also guarantee that the locking coil(s) will be engaged by the full threads of the bolt. If design parameters prevent this, contact the KATO Engineering Department for assistance.

NOTES:

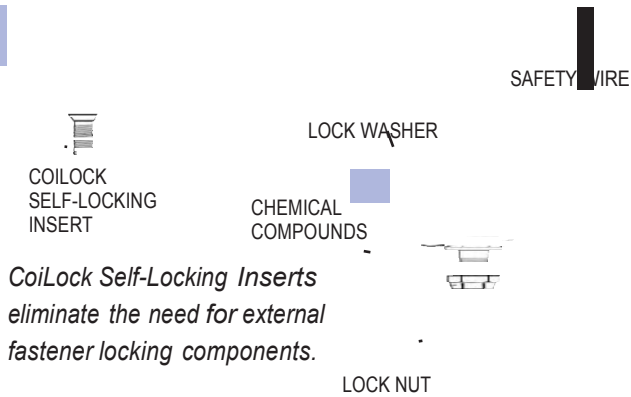
1. Bolt tensile strengths are specified minimums. When choosing an insert length, consideration should be given the maximum tensile strength allowed by the bolt drawing or procurement specification.
2. Service temperatures can cause significant variations in strength values, therefore compensation should be allowed.
3. The importance of shear values should be kept in mind because the parent material is subject to shear ing stress near the major diameter of the tapped threads.
4. When the strength values fall between two values in the table above, use next lower material shear value, or the next higher bolt tensile strength value.
5. To achieve maximum strength, bolt length and thread length as well as full tapped thread depth must be sufficient to assure full thread engagement over the entire length of the insert.
6. Specific charts detailing load values by thread size are available: contact the KATO Engineering Department.

CoiLock® Self-Locking Inserts – Tangless® & Tanged

CoiLock Inserts exert a prevailing torque on male threaded fasteners to prevent loosening due to vibration or impact. They eliminate the need for other, less desirable and costly locking mechanisms. They are excellent in adjusting screw applications by preventing the male fastener from creeping.

Location of Locking Coils

For 1, 1½, and 2 diameter lengths: The center of the locking coil (or coils) equals ½ the number of free coils. For 2½ and 3 diameter lengths: The locking coil is located the same distance from the tang as 2 diameter length inserts. For Tangless inserts, the center of the locking coil equals ½ the number of free coils.



CoiLock Self-Locking Inserts eliminate the need for external fastener locking components.

Locking Torques

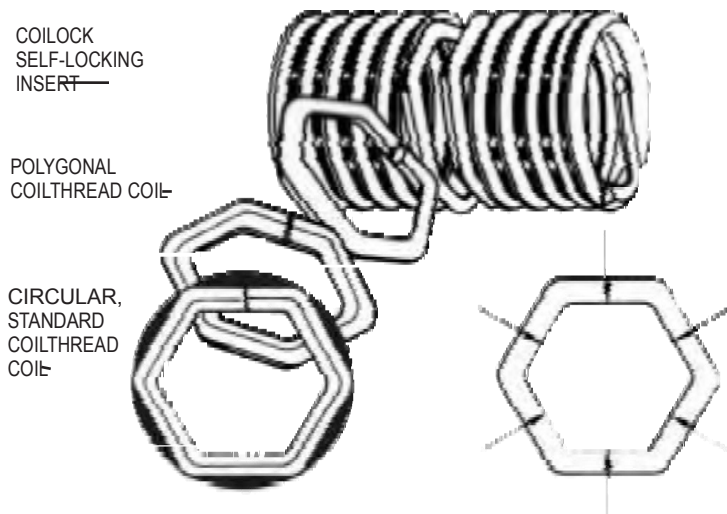
Unified size CoiLock Inserts conform to NASM21209 (Tanged) and NAS1130 (Tangless) and produce locking torques in accordance with NASM8846 when used with heat treated cadmium-plated bolts. When using heat treated unplated or stainless steel bolts, an anti-seize compound, e.g., molybdenum disulfide, must be used in order to minimize galling and assure maximum cycle life. Wear life of screw or bolt using CoiLock Inserts can also be improved by specifying dry film lubrication or cadmium plating.

How CoiLock Inserts work

One or more of the coils in the insert have a series of straight segments. Upon entry of the bolt 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 and unit pressure is minimized. It is often possible to realize cycle life far in excess of specification requirements.

KATO engineers are available for consultation on applications using brass or aluminum screws, low torque adjusting screws and severe high torque requirements.

CoiLock inserts in Unified sizes are dyed red for easy identification purposes only. It is alcohol soluble and can be removed if desired. (Metric locking inserts are not dyed red.)



Locking coil segments exert prevailing torque between the thread flanks of the screw or bolt to resist loosening.

Nominal Thread Size	Max. Locking Torque	Min. Locking Torque 15th Cycle	Nominal Thread Size	Max. Locking Torque	Min. Locking Torque 15th Cycle
Unified Coarse			Coarse		
2 (.086)-56	20 oz-in	3 oz-in	M2.2x0.45	0.14 N.m.	0.02 N.m.
3 (.099)-48	32 oz-in	7 oz-in	M2.5x0.45	0.23 N.m.	0.05 N.m.
4 (.112)-40	48 oz-in	10 oz-in	M3x0.5	0.45 N.m.	0.1 N.m.
5 (.125)-40	75 oz-in	13 oz-in	M3.5x0.6	0.68 N.m.	0.12 N.m.
6 (.138)-32	6 lb-in	1.0 lb-in			
8 (.164)-32	9 lb-in	1.5 lb-in	M4x0.7	0.9 N.m.	0.15 N.m.
10 (.190)-24	13 lb-in	2.0 lb-in	M5x0.8	1.6 N.m.	0.3 N.m.
12 (.216)-24	24 lb-in	3.0 lb-in	M6x1	3 N.m.	0.4 N.m.
1/4 (.250)-20	30 lb-in	4.5 lb-in			
5/16 (.3125)-18	60 lb-in	7.5 lb-in			
3/8 (.3750)-16	80 lb-in	12.0 lb-in	M7x1	4.5 N.m.	0.6 N.m.
7/16 (.4375)-14	100 lb-in	16.5 lb-in	M8x1.25	6 N.m.	0.8 N.m.
1/2 (.5000)-13	150 lb-in	24.0 lb-in	M10x1.5	10.5 N.m.	1.4 N.m.
9/16 (.5625)-12	200 lb-in	30.0 lb-in	M12x1.75	15.5 N.m.	2.1 N.m.
5/8 (.6250)-11	300 lb-in	40.0 lb-in			
3/4 (.7500)-10	400 lb-in	60.0 lb-in	M14x2	23 N.m.	3 N.m.
7/8 (.8750)- 9	600 lb-in	82.0 lb-in	M16x2	31.5 N.m.	4.2 N.m.
1 (1.0000)- 8	800 lb-in	110.0 lb-in	M18x2.5	42 N.m.	5.5 N.m.
1-1/8 (1.1250)- 7	900 lb-in	137.0 lb-in	M20x2.5	54 N.m.	7 N.m.
1-1/4 (1.2500)- 7	1000 lb-in	165.0 lb-in			
1-3/8 (1.3750)- 6	1150 lb-in	185.0 lb-in	M22x2.5	67.5 N.m.	9 N.m.
1-1/2 (1.5000)- 6	1350 lb-in	210.0 lb-in	M24x3	80 N.m.	10.5 N.m.
Unified Fine			Fine		
3 (.099)-56	32 oz-in	7 oz-in	M8x1	6 N.m.	0.8 N.m.
4 (.112)-48	48 oz-in	10 oz-in	M10x1	10.5 N.m.	1.4 N.m.
6 (.138)-40	6 lb-in	1.0 lb-in			
8 (.164)- 36	9 lb-in	1.5 lb-in	M10x1.25	10.5 N.m.	1.4 N.m.
10 (.190)- 32	13 lb-in	2.0 lb-in	M12x1.25	15.5 N.m.	2.1 N.m.
1/4 (.250)- 28	30 lb-in	3.5 lb-in	M12x1.5	15.5 N.m.	2.1 N.m.
5/16 (.3125)- 24	60 lb-in	6.5 lb-in	M14x1.5	23.5 N.m.	3 N.m.
3/8 (.3750)- 24	80 lb-in	9.5 lb-in			
7/16 (.4375)- 20	100 lb-in	14.0 lb-in	M16x1.5	31.5 N.m.	4.2 N.m.
1/2 (.5000)- 20	150 lb-in	18.0 lb-in	M18x1.5	42 N.m.	5.5 N.m.
9/16 (.5625)- 18	200 lb-in	24.0 lb-in	M20x1.5	54 N.m.	7 N.m.
5/8 (.6250)- 18	300 lb-in	32.0 lb-in	M22x1.5	67.5 N.m.	9 N.m.
3/4 (.7500)- 16	400 lb-in	50.0 lb-in			
7/8 (.8750)- 14	600 lb-in	70.0 lb-in	M18x2	42 N.m.	5.5 N.m.
1 (1.0000)- 12	800 lb-in	90.0 lb-in	M20x2	54 N.m.	7 N.m.
1-1/8 (1.1250)- 12	900 lb-in	117.0 lb-in	M22x2	67.5 N.m.	9 N.m.
1-1/4 (1.2500)- 12	1000 lb-in	143.0 lb-in	M24x2	80 N.m.	10.5 N.m.
1-3/8 (1.3750)- 12	1150 lb-in	165.0 lb-in			
1-1/2 (1.5000)- 12	1350 lb-in	190.0 lb-in			

Locking torque values for Metric CoilThread Inserts conform to ISO2320, when tested in accordance with NASM8846. For convenience these locking torque limits are shown above in Newton-meters.

Locking torque values for Unified CoilThread Inserts conform to NASM8846.

Torque Units - Conversion Factors

To Convert From	To	Multiply By
N.m.	oz-in	141.6119
N.m.	lb-in	8.850748
oz-in	N.m.	0.0070615
lb-in	N.m.	0.1129848

Unified and Metric Sizes, Tanged & Tangless® Inserts

CoilThread Inserts are normally installed 3/4 to 1-1/2 pitch below the surface of the parent material in counter-sunk holes. Modification of this set-down depth may be made to suit certain limitations. Without a countersink the inserts are typically installed 1/4 to 1/2 pitch below the surface.



The “F” dimension minimum is based on installed insert length, plus set-down, plus tap chamfer length, plus chip clearance.

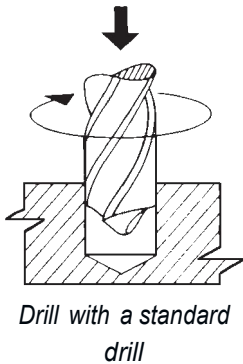
For plug taps with a nominal diameter of 5/16” or smaller the “F” dimension minimum allows for a male center on the tap equal in length to nominal tap diameter divided by 2.

Minimum Material Thickness for Through Holes:

The nominal insert length is the minimum through hole length (material thickness) without counter-sinking and with the insert located 1/4 to 1/2 pitch below the top surface. With normal countersink and set-down, the minimum through hole material thickness equals “H” dimension, the minimum full thread depth...or minimum tapping depth shown tabulated on pages 10–13.

Drilling the Hole:

Drilled hole dimensions are tabulated on pages 10–13. The minor diameters tabulated conform to NASM33537 (inch sizes), and MA1567 (metric sizes), and must be met after tapping.



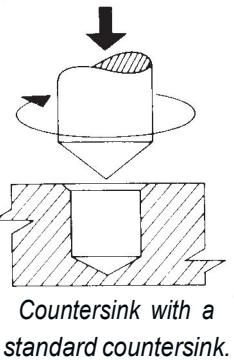
The drill sizes shown are recommendations only, based on expected material behavior and for increased tap life in harder materials. Actual individual conditions may require varied drill sizes in order to produce the correct minor diameter after tapping.

Edge Distance Minimum:

For most materials, a minimum edge distance equal to the nominal bolt diameter may be used when measured from the centerline of the hole.

Countersinking:

Countersinking dimensions are also tabulated on Pages 11 and 13. These conform to NASM33537 and MA1567.

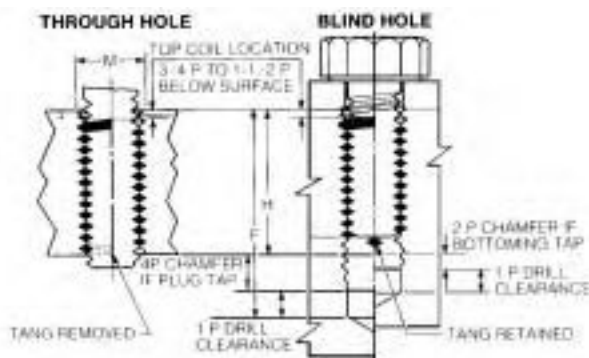
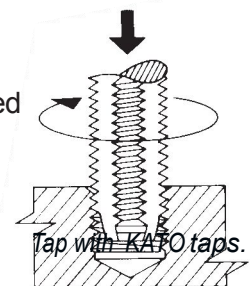


Before tapping, it is good practice to countersink $120^\circ \pm 5^\circ$ to “M” diameter in order to prevent a feather edge at the start of the hole. The 60° per side countersink angle is used because it is the same as the angles of the tapped thread, insert cross section and inserting tool prewinder tip. This combination provides for smooth and rapid production installation.

The “F” and “H” values are calculated with a countersink depth of 1/2 pitch.

Tapping:

The pitch diameter limits shown tabulated on pages 11 and 13 conform to NASM33537 and MA1567 and must be met in order to assure proper thread fit after installation of the CoilThread Insert.



The Minimum Drilled Hole Depth is designed to allow for:

1. The use of standard countersink as tabulated.
2. The use of standard Screw-Thread Insert (STI) plug or bottoming tap for the maximum tool life.
3. The use of the standard installation set-down of 3/4 to 1 1/2 pitch below the work surface.

styles are included see pages 14, 15, and 17):

1. **Plug Style:** Provides easy starting for through holes and blind holes.
2. **Bottoming Style:** Ideal for blind holes that are drilled to a minimum depth. Also for blind holes that require threads to be close to the bottom of the hole.
3. **Spiral Pointed Style (Plug):** Free-cutting suited for use in long through holes and in blind holes with ample chip clearance.
4. **Spiral Flute Style (Bottoming):** Pulls chips out of deep or blind holes in soft materials.

Roughing Taps are also available for use where tapping operations are difficult. These reduce the load on the finishing tap. Contact KATO for availability.

As in drilling the tap “H” dimension limits are recommendations only and may be varied where necessary to produce the required class of fit. CoilThread Inserts are identical for the various classes of fit. The class of fit is controlled by the tapped hole tolerance.

The class of fit specifies the pitch diameter tolerance, with 3B (inch) and 4H (metric) being the tighter ranges and usually specified for military/aerospace applications. The tighter classes of fit are recommended when using locking-type inserts for more consistent locking torque. Class 2B (inch) and 5H (metric) tapped holes provide a broader tolerance range, and are frequently specified for commercial/industrial and thread repair applications.

The minimum tap depth “H” dimension is calculated for use of a standard countersink and standard insert set-down depth. Modification of set-down or elimination of countersink will permit a corresponding reduction in thread depth. All tapped hole dimensions must be met after application of any desired surface finish such as anodize.

Gaging:



“No Go” (Hi)



“Go”

KATO STI Plug Gages used to check the tapped holes are described on pages 16 and 18.

Working gages are recommended for production use since their greater tolerance allows for more wear.

Reference gages have pitch diameters at or very close to basic size and are to be used as master gages.

Installation of the Tanged CoilThread Inserts:

CoilThread Inserts may be installed with tools conforming to A-A-59158.

KATO tools for inserting, tang breakoff and insert extraction are also included on Pages 37-42 and 48-50.

The accuracy of the finished thread with the CoilThread Insert installed depends upon the accuracy of the tapped hole. If the tapped hole gages correctly, the installed CoilThread Insert will be within the thread tolerance. No further gaging is necessary. If gaging is attempted after the CoilThread is installed, the GO thread plug gage may not enter freely...however, the insert will seat itself when the bolt or screw is installed and tightened. (Reference NASM33537 and MA1567)

Tang Removal:



With needle nose pliers



With automatic tool

It is recommended that the tang always be removed to insure that the full threads of the bolt fully engage the locking coils when using CoilLock Inserts. To achieve maximum assembly strength the bolt must engage the entire insert length.

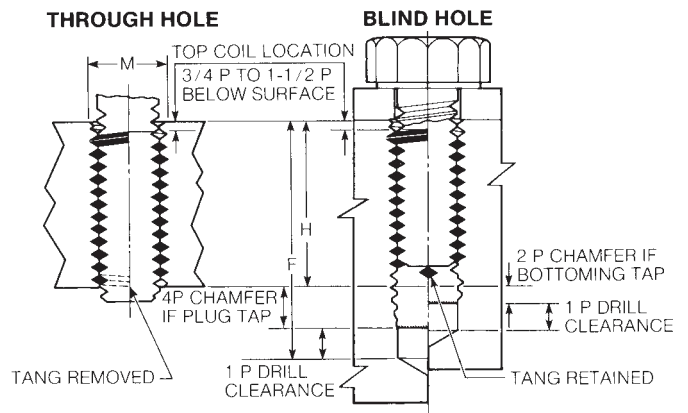
Note: If necessary, CoilThread inserts can be removed from their tapped holes even after tangs have been removed. Removal tools are listed on pages 42 and 50.

Power Tools:

For rapid installation, KATO Power Tools are available. These are detailed on Pages 38-41 and 49.

Installation Data - Unified Sizes

Drilled Hole Dimensions



Nominal Thread Size	Minor Diameter (After Tapping)			Suggested Drill Size ¹		F Dim. ² Minimum Drilling Depth for Taps				
	Min. All Classes	Max Class 3B	Max Class 2B	Aluminum	Steel Magnesium Plastic	Plug Taps				
						1	1 1/2	2	2 1/2	3
Unified Coarse										
2 (.086)-56	.0899	.0961	.0961	3/32 (.0938)	#41 (.0960)	.236	.279	.322	.365	.408
3 (.099)-48	.1036	.1104	.1104	#36 (.1065)	7/64 (.1094)	.273	.323	.372	.422	.471
4 (.112)-40	.1175	.1252	.1252	#31 (.1200)	#31 (.1200)	.318	.374	.430	.486	.542
5 (.125)-40	.1305	.1373	.1373	3.4mm (.1339)	#29 (.1360)	.338	.400	.462	.525	.588
6 (.138)-32	.1448	.1527	.1527	#26 (.1470)	#25 (.1495)	.394	.464	.532	.602	.670
8 (.164)-32	.1708	.1781	.1781	#17 (.1730)	#16 (.1770)	.434	.516	.598	.680	.762
10 (.190)-24	.1990	.2080	.2087	13/64 (.2031)	#5 (.2055)	.535	.630	.725	.820	.915
12 (.216)-24	.2250	.2340	.2347	#1 (.2280)	#1 (.2280)	.574	.682	.790	.898	1.006
1 1/4 (.250)-20	.2608	.2704	.2723	H (.2660)	H (.2660)	.675	.800	.925	1.050	1.175
5/16 (.3125)-18	.3245	.3342	.3372	Q (.3320)	Q (.3320)	.801	.957	1.113	1.269	1.425
3/8 (.3750)-16	.3885	.3987	.4026	X (.3970)	X (.3970)	.750	.938	1.125	1.312	1.500
7/16 (.4375)-14	.4530	.4639	.4688	29/64 (.4531)	29/64 (.4531)	.867	1.086	1.305	1.524	1.743
1/2 (.5000)-13*	.5166	.5273	.5335	33/64 (.5156)	17/32 (.5312)	.962	1.212	1.462	1.712	1.962
9/16 (.5625)-12*	.5806	.5918	.5986	37/64 (.5781)	19/32 (.5938)	1.062	1.343	1.624	1.905	2.186
5/8 (.6250)-11	.6447	.6564	.6641	21/32 (.6562)	21/32 (.6562)	1.170	1.483	1.795	2.108	2.420
3/4 (.7500)-10	.7716	.7838	.7926	25/32 (.7812)	25/32 (.7812)	1.350	1.725	2.100	2.475	2.850
7/8 (.8750)-9	.8990	.9119	.9213	29/32 (.9062)	29/32 (.9062)	1.542	1.979	2.417	2.854	3.292
1 (1.0000)-8	1.0271	1.0421	1.0521	1-1/32 (1.0312)	1-1/32 (1.0312)	1.750	2.250	2.750	3.250	3.750
1-1/8 (1.1250)-7	1.1559	1.1730	1.1834	1-11/64 (1.1719)	1-11/64 (1.1719)	1.982	2.545	3.107	3.670	4.232
1-1/4 (1.2500)-7	1.2809	1.2980	1.3084	1-19/64 (1.2969)	1-19/64 (1.2969)	2.107	2.732	3.357	3.982	4.607
1-3/8 (1.3750)-6	1.4110	1.4310	1.4416	1-27/64 (1.4219)	1-27/64 (1.4219)	2.375	3.062	3.750	4.437	5.125
1-1/2 (1.5000)-6	1.5360	1.5560	1.5665	1-35/64 (1.5469)	1-35/64 (1.5469)	2.500	3.250	4.000	4.750	5.500
Unified Fine										
3 (.099)-56	.1029	.1086	.1086	#37 (.1040)	#36 (.1065)	.256	.305	.355	.404	.454
4 (.112)-48	.1166	.1229	.1229	3mm (.1181)	#31 (.1200)	.293	.349	.405	.461	.517
6 (.138)-40	.1435	.1503	.1503	#26 (.1470)	#25 (.1495)	.357	.426	.495	.564	.633
8 (.164)-36	.1701	.1771	.1771	#17 (.1730)	#16 (.1770)	.413	.495	.577	.659	.741
10 (.190)-32	.1968	.2041	.2041	#7 (.2010)	13/64 (.2031)	.472	.568	.662	.758	.852
1/4 (.2500)-28	.2577	.2646	.2661	G (.2610)	6.7mm (.2638)	.589	.714	.839	.964	1.089
5/16 (.3125)-24	.3215	.3288	.3312	21/64 (.3281)	21/64 (.3281)	.718	.874	1.030	1.186	1.342
3/8 (.3750)-24	.3840	.3910	.3937	25/64 (.3906)	25/64 (.3906)	.625	.812	1.000	1.187	1.375
7/16 (.4375)-20	.4483	.4561	.4593	29/64 (.4531)	29/64 (.4531)	.738	.957	1.176	1.395	1.614
1/2 (.5000)-20	.5108	.5186	.5223	33/64 (.5156)	33/64 (.5156)	.800	1.050	1.300	1.550	1.800
9/16 (.5625)-18	.5745	.5826	.5872	37/64 (.5781)	37/64 (.5781)	.895	1.176	1.457	1.738	2.019
5/8 (.6250)-18	.6370	.6451	.6497	41/64 (.6406)	41/64 (.6406)	.958	1.271	1.583	1.896	2.208
3/4 (.7500)-16	.7635	.7720	.7776	49/64 (.7656)	49/64 (.7656)	1.125	1.500	1.875	2.250	2.625
7/8 (.8750)-14	.8905	.8994	.9063	57/64 (.8906)	57/64 (.8906)	1.304	1.741	2.179	2.616	3.054
1 (1.0000)-12 ¹	1.0181	1.0281	1.0361	1-1/64 (1.0156)	1-1/32 (1.0312)	1.500	2.000	2.500	3.000	3.500
1-1/8 (1.1250)-12 ¹	1.1431	1.1531	1.1611	1-9/64 (1.1406)	1-5/32 (1.1562)	1.625	2.187	2.750	3.312	3.875
1-1/4 (1.2500)-12 ¹	1.2681	1.2781	1.2861	1-17/64 (1.2656)	1-9/32 (1.2812)	1.750	2.375	3.000	3.625	4.250
1-3/8 (1.3750)-12 ¹	1.3931	1.4031	1.4111	1-25/64 (1.3906)	1-13/32 (1.4062)	1.875	2.562	3.250	3.937	4.625
1-1/2 (1.5000)-12 ¹	1.5181	1.5281	1.5361	1-33/64 (1.5156)	1-17/32 (1.5312)	2.000	2.750	3.500	4.250	5.000

¹ Standard size drills are suggested even though in these sizes they vary slightly from minor diameter specifications in NASM33537.

² For plug taps with a nominal diameter of 5/16" or smaller, (F) minimum allows for a male center on the tap equal in length to nominal tap diameter divided by 2.

Unified Sizes

F Dim Minimum Drilling Depth for Taps					Countersink M Diameter (120°± 5° included angle)		Pitch Diameter			H Dim Minimum Tapping Depth Diameter					Tap Major Dia. Max.	Thread Pitch P
Bottoming Taps					Min.	Max.	Min.	3B Max.	2B Max.	1	1½	2	2½	3		
1	1½	2	2½	3												
Unified Coarse																
.157	.200	.243	.286	.329	.09	.11	.0976	.0989	.0996	.10	.15	.19	.23	.28	.1117	.01786
.182	.232	.281	.331	.380	.11	.14	.1126	.1140	.1148	.12	.17	.22	.27	.32	.1289	.02083
.212	.268	.324	.380	.436	.14	.17	.1283	.1299	.1306	.14	.19	.25	.31	.36	.1473	.02500
.225	.288	.350	.412	.475	.16	.19	.1413	.1430	.1438	.15	.21	.28	.34	.40	.1603	.02500
.263	.332	.401	.470	.539	.18	.21	.1583	.1601	.1611	.17	.24	.31	.38	.45	.1817	.03125
.289	.371	.453	.535	.617	.20	.23	.1843	.1862	.1872	.20	.28	.36	.44	.52	.2077	.03125
.357	.452	.547	.642	.737	.24	.27	.2170	.2192	.2203	.23	.33	.42	.52	.61	.2475	.04167
.383	.491	.599	.707	.815	.26	.29	.2430	.2453	.2464	.26	.37	.47	.58	.69	.2735	.04167
.450	.575	.700	.825	.950	.31	.34	.2825	.2851	.2863	.30	.43	.55	.68	.80	.3187	.05000
.534	.690	.846	1.002	1.158	.38	.41	.3486	.3515	.3529	.37	.53	.68	.84	.99	.3884	.05556
.625	.812	1.000	1.188	1.375	.45	.48	.4156	.4189	.4203	.44	.63	.81	1.00	1.19	.4602	.06250
.724	.943	1.162	1.381	1.600	.52	.55	.4839	.4875	.4890	.51	.73	.95	1.17	1.38	.5343	.07143
.808	1.058	1.308	1.558	1.808	.59	.62	.5499	.5537	.5554	.58	.83	1.08	1.33	1.58	.6042	.07692
.895	1.176	1.457	1.738	2.019	.66	.69	.6167	.6208	.6225	.65	.93	1.21	1.49	1.77	.6751	.08333
.989	1.301	1.614	1.926	2.239	.73	.76	.6841	.6885	.6903	.72	1.03	1.34	1.65	1.97	.7477	.09091
1.150	1.525	1.900	2.275	2.650	.87	.90	.8149	.8196	.8216	.85	1.23	1.60	1.98	2.35	.8850	.10000
1.319	1.757	2.194	2.632	3.069	1.00	1.03	.9471	.9522	.9543	.99	1.42	1.86	2.30	2.74	1.0247	.11111
1.500	2.000	2.500	3.000	3.500	1.14	1.17	1.0812	1.0890	1.0868	1.13	1.63	2.13	2.63	3.13	1.1681	.12500
1.696	2.259	2.821	3.384	3.946	1.29	1.32	1.2178	1.2239	1.2262	1.27	1.83	2.39	2.96	3.52	1.3171	.14286
1.821	2.446	3.071	3.696	4.321	1.41	1.44	1.3428	1.3490	1.3514	1.39	2.02	2.64	3.27	3.89	1.4421	.14286
2.042	2.729	3.417	4.104	4.792	1.56	1.59	1.4832	1.4900	1.4926	1.54	2.23	2.92	3.60	4.29	1.5982	.16667
2.167	2.917	3.667	4.417	5.167	1.69	1.72	1.6082	1.6151	1.6177	1.67	2.42	3.17	3.92	4.67	1.7232	.16667
Unified Fine																
.170	.220	.269	.319	.368	.11	.14	.1106	.1119	.1126	.12	.17	.22	.27	.31	.1247	.01786
.195	.251	.307	.363	.419	.13	.16	.1256	.1271	.1279	.13	.19	.24	.30	.36	.1419	.02083
.238	.307	.376	.445	.514	.17	.20	.1543	.1560	.1569	.16	.23	.30	.37	.44	.1733	.02500
.275	.357	.439	.521	.603	.20	.23	.1821	.1840	.1849	.19	.27	.36	.44	.52	.2032	.02778
.315	.410	.505	.600	.695	.23	.26	.2103	.2123	.2133	.22	.32	.41	.51	.60	.2337	.03125
.393	.518	.643	.768	.893	.29	.32	.2732	.2754	.2765	.29	.41	.54	.66	.79	.2995	.03751
.479	.635	.791	.947	1.103	.36	.39	.3395	.3421	.3433	.35	.51	.67	.82	.98	.3700	.04167
.542	.729	.917	1.104	1.292	.42	.45	.4020	.4047	.4059	.42	.60	.79	.98	1.17	.4325	.04167
.638	.857	1.076	1.295	1.514	.50	.53	.4700	.4731	.4744	.49	.71	.93	1.14	1.36	.5062	.05000
.700	.950	1.200	1.450	1.700	.56	.59	.5325	.5357	.5371	.55	.80	1.05	1.30	1.55	.5687	.05000
.784	1.065	1.346	1.627	1.908	.63	.66	.5986	.6020	.6035	.62	.90	1.18	1.46	1.74	.6384	.05556
.847	1.160	1.472	1.785	2.097	.69	.72	.6611	.6646	.6661	.68	.99	1.31	1.62	1.93	.7009	.05556
1.000	1.375	1.750	2.125	2.500	.82	.85	.7906	.7945	.7961	.81	1.19	1.56	1.94	2.31	.8352	.06250
1.161	1.598	2.036	2.473	2.911	.96	.99	.9214	.9257	.9274	.95	1.38	1.82	2.26	2.70	.9718	.07143
1.333	1.833	2.333	2.833	3.333	1.10	1.13	1.0542	1.0589	1.0608	1.08	1.58	2.08	2.58	3.08	1.1126	.08333
1.458	2.021	2.583	3.146	3.708	1.22	1.25	1.1792	1.1841	1.1860	1.21	1.77	2.33	2.90	3.46	1.2376	.08333
1.583	2.208	2.833	3.458	4.083	1.35	1.38	1.3042	1.3092	1.3112	1.33	1.96	2.58	3.21	3.83	1.3626	.08333
1.708	2.396	3.083	3.771	4.458	1.47	1.50	1.4292	1.4343	1.4364	1.46	2.15	2.83	3.52	4.21	1.4876	.08333
1.833	2.583	3.333	4.083	4.833	1.60	1.63	1.5542	1.5595	1.5615	1.58	2.33	3.08	3.83	4.58	1.6126	.08333

Metric Sizes

Nominal Thread Size	Minor Diameter		Suggested Drill Size (Inch) ^{1, 2}		F Dim. ³ Minimum Drilling Depth for Taps				
	Minimum	Maximum	Aluminum	Steel Magnesium Plastic	Plug Taps				
					1	1½	2	2½	3
Coarse Series									
M2.2x0.45	2.297	2.397	#42 (.0935)	#42 (.0935)	6.00	7.10	8.20	9.30	10.40
M2.5x0.45	2.597	2.697	#37 (.1040)	#37 (.1040)	6.45	7.70	8.95	10.20	11.45
M3x0.5	3.108	3.220	1/8 (.1250)	1/8 (.1250)	7.50	9.00	10.50	12.00	13.50
M3.5x0.6	3.630	3.755	#27 (.1440)	#26 (.1470)	8.85	10.60	12.35	14.10	15.85
M4x0.7	4.152	4.292	#19 (.1660)	#19 (.1660)	10.20	12.20	14.20	16.20	18.20
M5x0.8	5.174	5.344	# 5 (.2055)	# 4 (.2090)	12.30	14.80	17.30	19.80	22.30
M6x1	6.217	6.407	D (.2460)	1/4 (.2500)	15.00	18.00	21.00	24.00	27.00
M7x1	7.217	7.407	L (.2900)	L (.2900)	16.50	20.00	23.50	27.00	30.50
M8x1.25	8.271	8.483	21/64 (.3281)	Q (.3320)	19.50	23.50	27.50	31.50	35.50
M10x1.5	10.324	10.560	Z (.4130)	Z (.4130)	19.00	24.00	29.00	34.00	39.00
M12x1.75 ¹	12.379	12.644	31/64 (.4844)	1/2 (.5000)	22.50	28.50	34.50	40.50	46.50
M14x2	14.433	14.733	37/64 (.5781)	37/64 (.5781)	26.00	33.00	40.00	47.00	54.00
M16x2	16.433	16.733	21/32 (.6562)	21/32 (.6562)	28.00	36.00	44.00	52.00	60.00
M18x2.5	18.541	18.896	47/64 (.7344)	47/64 (.7344)	33.00	42.00	51.00	60.00	69.00
M20x2.5	20.541	20.896	13/16 (.8125)	13/16 (.8125)	35.00	45.00	55.00	65.00	75.00
M22x2.5	22.541	22.896	57/64 (.8906)	57/64 (.8906)	37.00	48.00	59.00	70.00	81.00
M24x3	24.649	25.049	63/64 (.9844)	63/64 (.9844)	42.00	54.00	66.00	78.00	90.00
Fine Series									
M8x1	8.217	8.407	21/64 (.3281)	21/64 (.3281)	18.00	22.00	26.00	30.00	34.00
M10x1	10.217	10.407	Y (.4040)	13/32 (.4062)	16.00	21.00	26.00	31.00	36.00
M10x1.25 ¹	10.271	10.483	Y (.4040)	13/32 (.4062)	17.50	22.50	27.50	32.50	37.50
M12x1.25 ¹	12.271	12.483	31/64 (.4844)	31/64 (.4844)	19.50	25.50	31.50	37.50	43.50
M12x1.5 ¹	12.324	12.560	31/64 (.4844)	1/2 (.5000)	21.00	27.00	33.00	39.00	45.00
M14x1.5 ¹	14.324	14.560	9/16 (.5625)	37/64 (.5781)	23.00	30.00	37.00	44.00	51.00
M16x1.5 ¹	16.324	16.560	41/64 (.6406)	21/32 (.6562)	25.00	33.00	41.00	49.00	57.00
M18x1.5 ¹	18.324	18.560	23/32 (.7188)	47/64 (.7344)	27.00	36.00	45.00	54.00	63.00
M20x1.5 ¹	20.324	20.560	51/64 (.7969)	13/16 (.8125)	29.00	39.00	49.00	59.00	69.00
M22x1.5 ¹	22.324	22.560	7/8 (.8750)	57/64 (.8906)	31.00	42.00	53.00	64.00	75.00
M18x2	18.433	18.733	47/64 (.7344)	47/64 (.7344)	30.00	39.00	48.00	57.00	66.00
M20x2	20.433	20.733	13/16 (.8125)	13/16 (.8125)	32.00	42.00	52.00	62.00	72.00
M22x2	22.433	22.733	57/64 (.8906)	57/64 (.8906)	34.00	45.00	56.00	67.00	78.00
M24x2	24.433	24.733	31/32 (.9688)	31/32 (.9688)	36.00	48.00	60.00	72.00	84.00

Notes:

- Standard size drills are suggested even though some sizes may vary slightly from the specified minor diameter limits.
- Metric size drills may be substituted, provided they fall within the minor diameter limits.
- For plug taps with a nominal diameter of M8 or smaller, (F) minimum allows for a male center on the tap equal in length to nominal tap diameter divided by 2.
- Dimensions shown are in millimeters (mm).

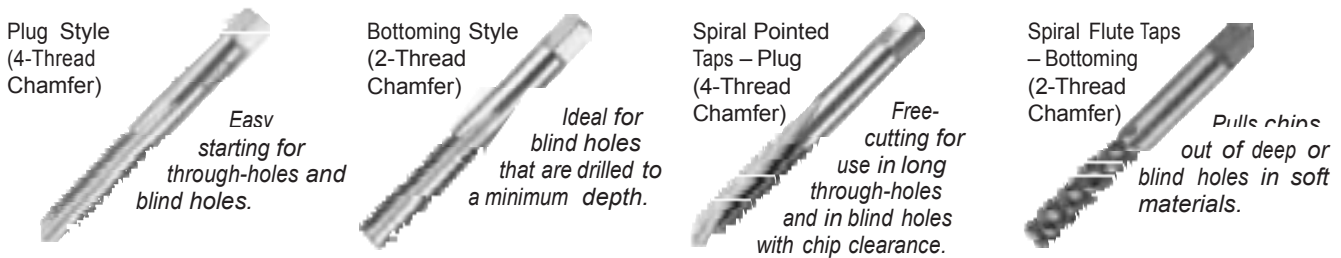
Metric Sizes

F Dim Minimum Drilling Depth for Taps					Countersink M Diameter (120°± 5° included angle)		Pitch Diameter			H Dim Minimum Tapping Depth					Tap Major Dia. Max
Bottoming Taps					Max.	Min.	Min.	4H Max.	5H Max.	1	1 1/2	2	2 1/2	3	
1	1 1/2	2	2 1/2	3											
Coarse Series															
4.00	5.10	6.20	7.30	8.40	2.90	2.40	2.492	2.532	2.547	2.7	3.8	4.9	6.0	7.1	2.845
4.30	5.55	6.80	8.05	9.30	3.40	2.90	2.792	2.832	2.847	3.0	4.2	5.5	6.7	8.0	3.145
5.00	6.50	8.00	9.50	11.00	4.00	3.40	3.325	3.367	3.384	3.5	5.0	6.5	8.0	9.5	3.716
5.90	7.65	9.40	11.15	12.90	4.70	4.10	3.890	3.940	3.959	4.1	5.9	7.6	9.4	11.1	4.354
6.80	8.80	10.80	12.80	14.80	5.30	4.70	4.455	4.509	4.529	4.7	6.7	8.7	10.7	12.7	5.007
8.20	10.70	13.20	15.70	18.20	6.40	5.80	5.520	5.577	5.597	5.8	8.3	10.8	13.3	15.8	6.145
10.00	13.00	16.00	19.00	22.00	7.70	7.10	6.650	6.719	6.742	7.0	10.0	13.0	16.0	19.0	7.422
11.00	14.50	18.00	21.50	25.00	8.70	8.10	7.650	7.719	7.742	8.0	11.5	15.0	18.5	22.0	8.422
13.00	17.00	21.00	25.00	29.00	10.10	9.50	8.812	8.886	8.911	9.3	13.3	17.3	21.3	25.3	9.787
16.00	21.00	26.00	31.00	36.00	12.40	11.80	10.974	11.061	11.089	11.5	16.5	21.5	26.5	31.5	12.131
19.00	25.00	31.00	37.00	43.00	14.80	14.20	13.137	13.236	13.271	13.8	19.8	25.8	31.8	37.8	14.478
22.00	29.00	36.00	43.00	50.00	17.10	16.50	15.299	15.406	15.444	16.0	23.0	30.0	37.0	44.0	16.822
24.00	32.00	40.00	48.00	56.00	19.10	18.50	17.299	17.406	17.444	18.0	26.0	34.0	42.0	50.0	18.822
28.00	37.00	46.00	55.00	64.00	21.80	21.20	19.624	19.738	19.778	20.5	29.5	38.5	47.5	56.5	21.513
30.00	40.00	50.00	60.00	70.00	23.80	23.20	21.624	21.738	21.778	22.5	32.5	42.5	52.5	62.5	23.513
32.00	43.00	54.00	65.00	76.00	25.80	25.20	23.624	23.738	23.778	24.5	35.5	46.5	57.5	68.5	25.513
36.00	48.00	60.00	72.00	84.00	28.50	27.90	25.948	26.093	26.135	27.0	39.0	51.0	63.0	75.0	28.238
Fine Series															
12.00	16.00	20.00	24.00	28.00	9.70	9.10	8.650	8.719	8.742	9.0	13.0	17.0	21.0	25.0	9.422
14.00	19.00	24.00	29.00	34.00	11.70	11.10	10.650	10.719	10.742	11.0	16.0	21.0	26.0	31.0	11.422
15.00	20.00	25.00	30.00	35.00	12.10	11.50	10.812	10.886	10.911	11.3	16.3	21.3	26.3	31.3	11.787
17.00	23.00	29.00	35.00	41.00	14.10	13.50	12.812	12.898	12.926	13.3	19.3	25.3	31.3	37.3	13.787
18.00	24.00	30.00	36.00	42.00	14.40	13.80	12.974	13.067	13.099	13.5	19.5	25.5	31.5	37.5	14.131
20.00	27.00	34.00	41.00	48.00	16.40	15.80	14.974	15.067	15.099	15.5	22.5	29.5	36.5	43.5	16.131
22.00	30.00	38.00	46.00	54.00	18.40	17.80	16.974	17.067	17.099	17.5	25.5	33.5	41.5	49.5	18.131
24.00	33.00	42.00	51.00	60.00	20.40	19.80	18.974	19.067	19.099	19.5	28.5	37.5	46.5	55.5	20.131
26.00	36.00	46.00	56.00	66.00	22.40	21.80	20.974	21.067	21.099	21.5	31.5	41.5	51.5	61.5	22.131
28.00	39.00	50.00	61.00	72.00	24.40	23.80	22.974	23.067	23.099	23.5	34.5	45.5	56.5	67.5	24.131
26.00	35.00	44.00	53.00	62.00	21.10	20.50	19.299	19.406	19.444	20.0	29.0	38.0	47.0	56.0	20.822
28.00	38.00	48.00	58.00	68.00	23.10	22.50	21.299	21.406	21.444	22.0	32.0	42.0	52.0	62.0	22.822
30.00	41.00	52.00	63.00	74.00	25.10	24.50	23.299	23.406	23.444	24.0	35.0	46.0	57.0	68.0	24.822
32.00	44.00	56.00	68.00	80.00	27.10	26.50	25.299	25.414	25.454	26.0	38.0	50.0	62.0	74.0	26.822

(For free machining materials)

For general hand and machine operations.

Provide chip disposal in tapping operations.



To order, add the prefix CTC- to all Unified Coarse part numbers tabulated, and add CTF- to all Unified Fine part numbers. Example: **CTC-02SRP-H1**.

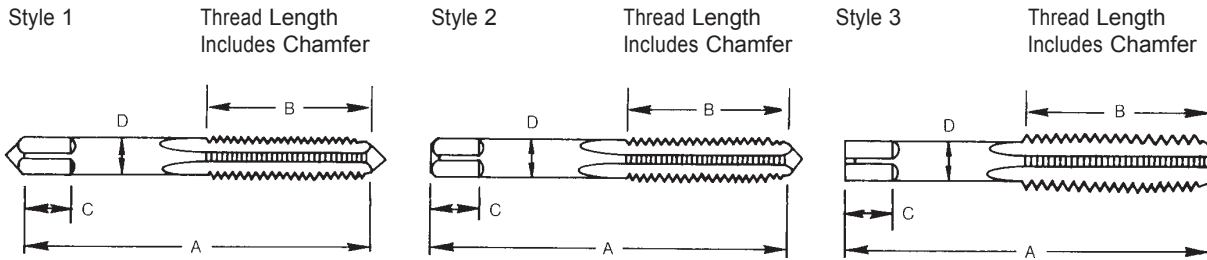
Nominal Thread Size	Standard Regular Finishing				Spiral Pointed		Spiral Flute	
	Plug		Bottoming		Plug		Bottoming	
	3B	2B	3B	2B	3B	2B	3B	2B
Unified Coarse								
2 (.086)-56	02SRP-H1	02SRP-H2	02SRB-H1	02SRB-H2	02SPP-H1	02SPP-H2	02SFB-H1	02SFB-H2
3 (.099)-48	03SRP-H1	03SRP-H2	03SRB-H1	03SRB-H2	03SPP-H1	03SPP-H2	03SFB-H1	03SFB-H2
4 (.112)-40	04SRP-H1	04SRP-H2	04SRB-H1	04SRB-H2	04SPP-H1	04SPP-H2	04SFB-H1	04SFB-H2
5 (.125)-40	05SRP-H1	05SRP-H2	05SRB-H1	05SRB-H2	05SPP-H1	05SPP-H2	05SFB-H1	05SFB-H2
6 (.138)-32	06SRP-H2	06SRP-H3	06SRB-H2	06SRB-H3	06SPP-H2	06SPP-H3	06SFB-H2	06SFB-H3
8 (.164)-32	2SRP-H2	2SRP-H3	2SRB-H2	2SRB-H3	2SPP-H2	2SPP-H3	2SFB-H2	2SFB-H3
10 (.190)-24	3SRP-H2	3SRP-H3	3SRB-H2	3SRB-H3	3SPP-H2	3SPP-H3	3SFB-H2	3SFB-H3
12 (.216)-24	1SRP-H2	1SRP-H3	1SRB-H2	1SRB-H3	1SPP-H2	1SPP-H3	1SFB-H2	1SFB-H3
1/4 (.250)-20	4SRP-H2	4SRP-H3	4SRB-H2	4SRB-H3	4SPP-H2	4SPP-H3	4SFB-H2	4SFB-H3
5/16 (.3125)-18	5SRP-H3	5SRP-H4	5SRB-H3	5SRB-H4	5SPP-H3	5SPP-H4	5SFB-H3	5SFB-H4
3/8 (.3750)-16	6SRP-H3	6SRP-H4	6SRB-H3	6SRB-H4	6SPP-H3	6SPP-H4	6SFB-H3	6SFB-H4
7/16 (.4375)-14	7SRP-H3	7SRP-H4	7SRB-H3	7SRB-H4	7SPP-H3	7SPP-H4	7SFB-H3	7SFB-H4
1/2 (.5000)-13	8SRP-H3	8SRP-H4	8SRB-H3	8SRB-H4	8SPP-H3	8SPP-H4	8SFB-H3	8SFB-H4
9/16 (.5625)-12	9SRP-H3	9SRP-H4	9SRB-H3	9SRB-H4	—	—	—	—
5/8 (.6250)-11	10SRP-H3	10SRP-H4	10SRB-H3	10SRB-H4	—	—	—	—
3/4 (.7500)-10	12SRP-H3	12SRP-H5	12SRB-H3	12SRB-H5	—	—	—	—
7/8 (.8750)-9	14SRP-H3	14SRP-H5	14SRB-H3	14SRB-H5	—	—	—	—
1 (1.000)-8	16SRP-H4	16SRP-H6	16SRB-H4	16SRB-H6	—	—	—	—

Unified Fine

3 (.099)-56	03SRP-H1	03SRP-H2	03SRB-H1	03SRB-H2	03SPP-H1	03SPP-H2	03SFB-H1	03SFB-H2
4 (.112)-48	04SRP-H1	04SRP-H2	04SRB-H1	04SRB-H2	04SPP-H1	04SPP-H2	04SFB-H1	04SFB-H2
6 (.138)-40	06SRP-H1	06SRP-H2	06SRB-H1	06SRB-H2	06SPP-H1	06SPP-H2	06SFB-H1	06SFB-H2
8 (.164)-36	2SRP-H1	2SRP-H2	2SRB-H1	2SRB-H2	2SPP-H1	2SPP-H2	2SFB-H1	2SFB-H2
10 (.190)-32	3SRP-H2	3SRP-H3	3SRB-H2	3SRB-H3	3SPP-H2	3SPP-H3	3SFB-H2	3SFB-H3
1/4 (.2500)-28	4SRP-H2	4SRP-H3	4SRB-H2	4SRB-H3	4SPP-H2	4SPP-H3	4SFB-H2	4SFB-H3
5/16 (.3125)-24	5SRP-H2	5SRP-H3	5SRB-H2	5SRB-H3	5SPP-H2	5SPP-H3	5SFB-H2	5SFB-H3
3/8 (.3750)-24	6SRP-H2	6SRP-H3	6SRB-H2	6SRB-H3	6SPP-H2	6SPP-H3	6SFB-H2	6SFB-H3
7/16 (.4375)-20	7SRP-H3	7SRP-H4	7SRB-H3	7SRB-H4	7SPP-H3	7SPP-H4	7SFB-H3	7SFB-H4
1/2 (.5000)-20	8SRP-H3	8SRP-H4	8SRB-H3	8SRB-H4	8SPP-H3	8SPP-H4	8SFB-H3	8SFB-H4
9/16 (.5625)-18	9SRP-H3	9SRP-H4	9SRB-H3	9SRB-H4	.	—	.	.
5/8 (.6250)-18	10SRP-H3	10SRP-H4	10SRB-H3	10SRB-H4	.	—	.	.
3/4 (.7500)-16	12SRP-H3	12SRP-H4	12SRB-H3	12SRB-H4	.	—	.	.
7/8 (.8750)-14	14SRP-H3	14SRP-H4	14SRB-H3	14SRB-H4	.	—	.	.
1 (1.000)-12	161SRP-H4	161SRP-H6	161SRB-H4	161SRB-H6	.	—	.	.

The "H" limit number (last digit in Part Numbers above) indicates the number of .0005 inch increments the tap's maximum pitch diameter is above the basic (minimum).

The Class of Fit specifies the pitch diameter tolerance of the tapped hole, with 3B being the tighter range usually specified in military/aerospace applications, and when consistent locking torque is desired when using locking inserts. Class 2B taps provide a broader tolerance range or looser fit, and are normally specified in commercial/industrial applications. The class of fit of the installed insert is controlled by the class of fit of the tap.



Nominal Thread Size	Length Overall A	Tap Dimensions			Dia. of Shank D	Size of Square	Hand Finishing Plug & Bott.	Number of Flutes		Style *
		Length of Thread B	Length of Square C	Length of Square				Spiral Point Plug	Spiral Flute Bott.	
Unified Coarse										
2 (.086)-56	1-7/8	9/16	3/16	.141	.110	3	2	2	1	
3 (.099)-48	1-15/16	5/8	3/16	.141	.110	3	2	2	1	
4 (.112)-40	2	11/16	3/16	.141	.110	3	2	2	1	
5 (.125)-40	2-1/8	3/4	1/4	.168	.131	3	2	3	1	
6 (.138)-32	2-3/8	7/8	1/4	.194	.152	3	2	3	1	
8 (.164)-32	2-3/8	15/16	9/32	.220	.165	3	2	3	1	
10 (.190)-24	2-1/2	1	5/16	.255	.191	3	2	3	2	
12 (.216)-24	2-23/32	1-1/8	3/8	.318	.238	3	2	3	2	
1/4 (.250)-20	2-23/32	1-1/8	3/8	.318	.238	3	2	3	2	
5/16 (.3125)-18	2-15/16	1-1/4	7/16	.381	.286	4	3	3	2	
3/8 (.3750)-16	3-3/8	1-21/32	7/16	.367	.275	4	3	3	3	
7/16 (.4375)-14	3-19/32	1-21/32	1/2	.429	.322	4	3	4	3	
1/2 (.5000)-13	3-13/16	1-13/16	9/16	.480	.360	4	3	4	3	
9/16 (.5625)-12	4-1/32	1-13/16	5/8	.542	.406	4	.	.	3	
5/8 (.6250)-11	4-1/4	2	11/16	.590	.442	4	.	.	3	
3/4 (.7500)-10	4-11/16	2-7/32	3/4	.697	.523	4	.	.	3	
7/8 (.8750)-9	5-1/8	2-1/2	13/16	.800	.600	4	.	.	3	
1 (1.0000)-8	5-3/4	2-9/16	1	1.021	.766	4	.	.	3	
Unified Fine										
3 (.099)-56	1-15/16	5/8	3/16	.141	.110	3	2	2	1	
4 (.112)-48	2	11/16	3/16	.141	.110	3	2	2	1	
6 (.138)-40	2-1/8	3/4	1/4	.168	.131	3	2	3	1	
8 (.164)-36	2-3/8	15/16	9/32	.220	.165	3	2	3	1	
10 (.190)-32	2-1/2	1	5/16	.255	.191	3	2	3	2	
1/4 (.2500)-28	2-23/32	1-1/8	3/8	.318	.238	3	2	3	2	
5/16 (.3125)-24	2-15/16	1-1/4	7/16	.381	.286	4	3	3	3	
3/8 (.3750)-24	3-5/32	1-7/16	13/32	.323	.242	4	3	3	3	
7/16 (.4375)-20	3-3/8	1-21/32	7/16	.367	.275	4	3	3	3	
1/2 (.5000)-20	3-19/32	1-21/32	1/2	.429	.322	4	3	4	3	
9/16 (.5625)-18	3-13/16	1-13/16	9/16	.480	.360	4	.	.	3	
5/8 (.6250)-18	4-1/32	1-13/16	5/8	.542	.406	4	.	.	3	
3/4 (.7500)-16	4-15/32	2	11/16	.652	.489	4	.	.	3	
7/8 (.8750)-14	5-1/8	2-1/2	13/16	.800	.600	4	.	.	3	
1 (1.0000)-12	5-7/16	2-9/16	7/8	.896	.672	4	.	.	3	

* All bottoming taps have male center on thread end removed.

KATO STI Gage
with GO and HI
members.



KATO STI Thread Plug Gages are used to check the accuracy of the tapped hole. If the tapped hole is correct, the finished thread will also be accurate when the insert is installed. It is not necessary to gage the installed insert.

You will note that both "Working Gages" and "Reference Gages" are shown tabulated. Working Gages are recommended for use with production since their greater tolerance allows for more wear. Reference Gages have pitch diameters at or very close to basic sizes and are to be used as master gages.

NOTES:

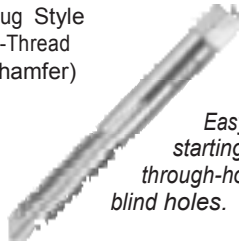
1. The Working Gage "GO" member has a .0002 wear allowance on the pitch diameter.
2. Gaging of the tapped thread is specified because a standard gage may not freely enter an installed insert. The insert will seat itself once a bolt or screw is installed and tightened. (REF. NASM33537.)
3. KATO STI Gages comply with A-A-59158.
4. The "GO" member checks basic pitch diameters, major diameter minimum and lead. The "HI" member checks maximum pitch diameter. Minor diameter is checked separately with a graduated pin set, for example.

Nominal Thread Size	Working Gages		Reference Gages	
	3B	2B	3B	2B
Unified Coarse				
2 (.086)-56	CGC-02X-3B	CGC-02X-2B	CGC-02W-3B	CGC-02W-2B
3 (.099)-48	CGC-03X-3B	CGC-03X-2B	CGC-03W-3B	CGC-03W-2B
4 (.112)-40	CGC-04X-3B	CGC-04X-2B	CGC-04W-3B	CGC-04W-2B
5 (.125)-40	CGC-05X-3B	CGC-05X-2B	CGC-05W-3B	CGC-05W-2B
6 (.138)-32	CGC-06X-3B	CGC-06X-2B	CGC-06W-3B	CGC-06W-2B
8 (.164)-32	CGC-2X-3B	CGC-2X-2B	CGC-2W-3B	CGC-2W-2B
10 (.190)-24	CGC-3X-3B	CGC-3X-2B	CGC-3W-3B	CGC-3W-2B
12 (.216)-24	CGC-1X-3B	CGC-1X-2B	CGC-1W-3B	CGC-1W-2B
1/4 (.250)-20	CGC-4X-3B	CGC-4X-2B	CGC-4W-3B	CGC-4W-2B
5/16 (.3125)-18	CGC-5X-3B	CGC-5X-2B	CGC-5W-3B	CGC-5W-2B
3/8 (.3750)-16	CGC-6X-3B	CGC-6X-2B	CGC-6W-3B	CGC-6W-2B
7/16 (.4375)-14	CGC-7X-3B	CGC-7X-2B	CGC-7W-3B	CGC-7W-2B
1/2 (.5000)-13	CGC-8X-3B	CGC-8X-2B	CGC-8W-3B	CGC-8W-2B
9/16 (.5625)-12	—	—	CGC-9W-3B	CGC-9W-2B
5/8 (.6250)-11	—	—	CGC-10W-3B	CGC-10W-2B
3/4 (.7500)-10	—	—	CGC-12W-3B	CGC-12W-2B
7/8 (.8750)-9	—	—	CGC-14W-3B	CGC-14W-2B
1 (1.0000)-8	—	—	CGC-16W-3B	CGC-16W-2B
Unified Fine				
3 (.099)-56	CGF-03X-3B	CGF-03X-2B	CGF-03W-3B	CGC-03W-2B
4 (.112)-48	CGF-04X-3B	CGF-04X-2B	CGF-04W-3B	CGC-04W-2B
6 (.138)-40	CGF-06X-3B	CGF-06X-2B	CGF-06W-3B	CGC-06W-2B
8 (.164)-32	CGF-2X-3B	CGF-2X-2B	CGF-2W-3B	CGC-2W-2B
10 (.190)-24	CGF-3X-3B	CGF-3X-2B	CGF-3W-3B	CGC-3W-2B
1/4 (.250)-20	CGF-4X-3B	CGF-4X-2B	CGF-4W-3B	CGC-4W-2B
5/16 (.3125)-18	CGF-5X-3B	CGF-5X-2B	CGF-5W-3B	CGC-5W-2B
3/8 (.3750)-16	CGF-6X-3B	CGF-6X-2B	CGF-6W-3B	CGC-6W-2B
7/16 (.4375)-14	CGF-7X-3B	CGF-7X-2B	CGF-7W-3B	CGC-7W-2B
1/2 (.5000)-12	CGF-8X-3B	CGF-8X-2B	CGF-8W-3B	CGC-8W-2B
9/16 (.5625)-10	—	—	CGF-9W-3B	CGC-9W-2B
5/8 (.6250)-8	—	—	CGF-10W-3B	CGC-10W-2B
3/4 (.7500)-6	—	—	CGF-12W-3B	CGC-12W-2B
7/8 (.8750)-4	—	—	CGF-14W-3B	CGC-14W-2B
1 (1.0000)-3	—	—	CGF-16W-3B	CGC-16W-2B

(For free machining materials)

For general hand and machine operations.

Plug Style
(4-Thread
Chamfer)



Easy
starting for
through-holes and
blind holes.

Bottoming Style
(2-Thread
Chamfer)



Ideal for
blind holes
that are drilled to
a minimum depth.

Spiral Pointed
Taps – Plug
(4-Thread
Chamfer)



Free-
cutting for
use in long
through-holes and
in blind holes with
chip clearance.

Nominal Thread Size	Standard Regular Finishing				Spiral Pointed	
	Plug		Bottoming		Plug	
	4H	5H	4H	5H	4H	5H
Coarse						
M2.2x0.45	CTM-2.2x.45SRP-4H	CTM-2.2x.45SRP-5H	CTM-2.2x.45SRB-4H	CTM-2.2x.45SRB-5H	CTM-2.2x.45SPP-4H	CTM-2.2x.45SPP-5H
M2.5x0.45	CTM-2.5x.45SRP-4H	CTM-2.5x.45SRP-5H	CTM-2.5x.45SRB-4H	CTM-2.5x.45SRB-5H	CTM-2.5x.45SPP-4H	CTM-2.5x.45SPP-5H
M3x0.5	CTM-3x.5SRP-4H	CTM-3x.5SRP-5H	CTM-3x.5SRB-4H	CTM-3x.5SRB-5H	CTM-3x.5SPP-4H	CTM-3x.5SPP-5H
M3.5x0.6	CTM-3.5x.6SRP-	CTM-3.5x.6SRP-	CTM-3.5x.6SRB-4H	CTM-3.5x.6SRB-	CTM-3.5x.6SPP-	CTM-3.5x.6SPP-
M4x0.7	CTM-4x.7SRP-4H	CTM-4x.7SRP-5H	CTM-4x.7SRB-4H	CTM-4x.7SRB-5H	CTM-4x.7SPP-4H	CTM-4x.7SPP-5H
M5x0.8	CTM-5x.8SRP-4H	CTM-5x.8SRP-5H	CTM-5x.8SRB-4H	CTM-5x.8SRB-5H	CTM-5x.8SPP-4H	CTM-5x.8SPP-5H
M6x1	CTM-6x1SRP-4H	CTM-6x1SRP-5H	CTM-6x1SRB-4H	CTM-6x1SRB-5H	CTM-6x1SPP-4H	CTM-6x1SPP-5H
M7x1	CTM-7x1SRP-4H	CTM-7x1SRP-5H	CTM-7x1SRB-4H	CTM-7x1SRB-5H	CTM-7x1SPP-4H	CTM-7x1SPP-5H
M8x1.25	CTM-8x1.25SRP-	CTM-8x1.25SRP-	CTM-8x1.25SRB-	CTM-8x1.25SRB-	CTM-8x1.25SPP-	CTM-8x1.25SPP-
M10x1.5	CTM-10x1.5SRP-4H	CTM-10x1.5SRP-5H	CTM-10x1.5SRB-4H	CTM-10x1.5SRB-5H	CTM-10x1.5SPP-4H	CTM-10x1.5SPP-5H
M12x1.75	CTM-12x1.75SRP-4H	CTM-12x1.75SRP-5H	CTM-12x1.75SRB-4H	CTM-12x1.75SRB-5H	CTM-12x1.75SPP-4H	CTM-12x1.75SPP-5H
M14x2	CTM-14x2SRP-4H	CTM-14x2SRP-5H	CTM-14x2SRB-4H	CTM-14x2SRB-5H	CTM-14x2SPP-4H	CTM-14x2SPP-5H
M16x2	CTM-16x2SRP-4H	CTM-16x2SRP-5H	CTM-16x2SRB-4H	CTM-16x2SRB-5H	CTM-16x2SPP-4H	CTM-16x2SPP-5H
M18x2.5	CTM-18x2.5SRP-4H	CTM-18x2.5SRP-5H	CTM-18x2.5SRB-4H	CTM-18x2.5SRB-5H	CTM-18x2.5SPP-4H	CTM-18x2.5SPP-5H
M20x2.5	CTM-20x2.5SRP-4H	CTM-20x2.5SRP-5H	CTM-20x2.5SRB-4H	CTM-20x2.5SRB-5H	CTM-20x2.5SPP-4H	CTM-20x2.5SPP-5H
M22x2.5	CTM-22x2.5SRP-4H	CTM-22x2.5SRP-5H	CTM-22x2.5SRB-4H	CTM-22x2.5SRB-5H	CTM-22x2.5SPP-4H	CTM-22x2.5SPP-5H
M24x3	CTM-24x3SRP-4H	CTM-24x3SRP-5H	CTM-24x3SRB-4H	CTM-24x3SRB-5H	CTM-24x3SPP-4H	CTM-24x3SPP-5H
Fine						
M8x1	CTM-8x1SRP-4H	CTM-8x1SRP-5H	CTM-8x1SRB-4H	CTM-8x1SRB-5H	CTM-8x1SPP-4H	CTM-8x1SPP-5H
M10x1	CTM-10x1SRP-4H	CTM-10x1SRP-5H	CTM-10x1SRB-4H	CTM-10x1SRB-5H	CTM-10x1SPP-4H	CTM-10x1SPP-5H
M10x1.25	CTM-10x1.25SRP-4H	CTM-10x1.25SRP-5H	CTM-10x1.25SRB-4H	CTM-10x1.25SRB-5H	CTM-10x1.25SPP-4H	CTM-10x1.25SPP-5H
M12x1.25	CTM-12x1.25SRP-4H	CTM-12x1.25SRP-5H	CTM-12x1.25SRB-4H	CTM-12x1.25SRB-5H	CTM-12x1.25SPP-4H	CTM-12x1.25SPP-5H
M12x1.5	CTM-12x1.5SRP-4H	CTM-12x1.5SRP-5H	CTM-12x1.5SRB-4H	CTM-12x1.5SRB-5H	CTM-12x1.5SPP-4H	CTM-12x1.5SPP-5H
M14x1.5	CTM-14x1.5SRP-4H	CTM-14x1.5SRP-5H	CTM-14x1.5SRB-4H	CTM-14x1.5SRB-5H	CTM-14x1.5SPP-4H	CTM-14x1.5SPP-5H
M16x1.5	CTM-16x1.5SRP-4H	CTM-16x1.5SRP-5H	CTM-16x1.5SRB-4H	CTM-16x1.5SRB-5H	CTM-16x1.5SPP-4H	CTM-16x1.5SPP-5H
M18x1.5	CTM-18x1.5SRP-4H	CTM-18x1.5SRP-5H	CTM-18x1.5SRB-4H	CTM-18x1.5SRB-5H	CTM-18x1.5SPP-4H	CTM-18x1.5SPP-5H
M20x1.5	CTM-20x1.5SRP-4H	CTM-20x1.5SRP-5H	CTM-20x1.5SRB-4H	CTM-20x1.5SRB-5H	CTM-20x1.5SPP-4H	CTM-20x1.5SPP-5H
M22x1.5	CTM-22x1.5SRP-4H	CTM-22x1.5SRP-5H	CTM-22x1.5SRB-4H	CTM-22x1.5SRB-5H	CTM-22x1.5SPP-4H	CTM-22x1.5SPP-5H
M18x2	CTM-18x2SRP-4H	CTM-18x2SRP-5H	CTM-18x2SRB-4H	CTM-18x2SRB-5H	CTM-18x2SPP-4H	CTM-18x2SPP-5H
M20x2	CTM-20x2SRP-4H	CTM-20x2SRP-5H	CTM-20x2SRB-4H	CTM-20x2SRB-5H	CTM-20x2SPP-4H	CTM-20x2SPP-5H
M22x2	CTM-22x2SRP-4H	CTM-22x2SRP-5H	CTM-22x2SRB-4H	CTM-22x2SRB-5H	CTM-22x2SPP-4H	CTM-22x2SPP-5H
M24x2	CTM-24x2SRP-4H	CTM-24x2SRP-5H	CTM-24x2SRB-4H	CTM-24x2SRB-5H	CTM-24x2SPP-4H	CTM-24x2SPP-5H

The Class of Fit (4H or 5H) specifies the pitch diameter tolerance of the tapped hole, with 4H being the tighter range usually specified in military/aerospace applications, and when consistent locking torque is desired when using locking inserts. Class 5H taps provide a broader tolerance range or looser fit, and are normally specified in commercial/industrial applications. The class of fit of the installed insert is controlled by the class of fit of the tap.

|



Nominal Thread Size	Class 4H Gage Part Number	Class 5H Gage Part Number
Coarse		
M2.2X0.45	CGM-2.2X.45-4H	CGM-2.2X.45-5H
M2.5X0.45	CGM-2.5X.45-4H	CGM-2.5X.45-5H
M3X0.5	CGM-3X.5-4H	CGM-3X.5-5H
M3.5X0.6	CGM-3.5X.6-4H	CGM-3.5X.6-5H
M4X0.7	CGM-4X.7-4H	CGM-4X.7-5H
M5X0.8	CGM-5X.8-4H	CGM-5X.8-5H
M6X1	CGM-6X1-4H	CGM-6X1-5H
M7X1	CGM-7X1-4H	CGM-7X1-5H
M8X1.25	CGM-8X1.25-4H	CGM-8X1.25-5H
M10X1.5	CGM-10X1.5-4H	CGM-10X1.5-5H
M12X1.75	CGM-12X1.75-4H	CGM-12X1.75-5H
M14X2	CGM-14X2-4H	CGM-14X2-5H
M16X2	CGM-16X2-4H	CGM-16X2-5H
M18X2.5	CGM-18X2.5-4H	CGM-18X2.5-5H
M20X2.5	CGM-20X2.5-4H	CGM-20X2.5-5H
M22X2.5	CGM-22X2.5-4H	CGM-22X2.5-5H
M24X3	CGM-24X3-4H	CGM-24X3-5H
Fine		
M8X1	CGM-8X1-4H	CGM-8X1-5H
M10X1	CGM-10X1-4H	CGM-10X1-5H
M10X1.25	CGM-10X1.25-4H	CGM-10X1.25-5H
M12X1.25	CGM-12X1.25-4H	CGM-12X1.25-5H
M12X1.5	CGM-12X1.5-4H	CGM-12X1.5-5H
M14X1.5	CGM-14X1.5-4H	CGM-14X1.5-5H
M16X1.5	CGM-16X1.5-4H	CGM-16X1.5-5H
M18X1.5	CGM-18X1.5-4H	CGM-18X1.5-5H
M20X1.5	CGM-20X1.5-4H	CGM-20X1.5-5H
M22X1.5	CGM-22X1.5-4H	CGM-22X1.5-5H
M18X2	CGM-18X2-4H	CGM-18X2-5H
M20X2	CGM-20X2-4H	CGM-20X2-5H
M22X2	CGM-22X2-4H	CGM-22X2-5H
M24X2	CGM-24X2-4H	CGM-24X2-5H

Kato STI Thread Plug Gages are used to check the accuracy of the tapped hole. If the tapped hole is correct, the finished thread will also be accurate when the insert is installed. It is not necessary to gage the installed insert.

Notes:

1. Gaging of the tapped thread is specified because a standard gage may not freely enter an installed insert. The insert will seat itself once a bolt or screw is installed and tightened.
2. The "GO" member checks basic pitch diameters, major diameter minimum, and thread lead. The "HI" member checks maximum pitch diameter. The minor diameter is checked separately with a graduated pin set, for example.

Tangless® CoilThread® Inserts – Unified Sizes

Insert Part Number Selection

Elements to form a complete and specific part number are selected from the table below. Follow the example shown for proper structure.



Part Number Example:

The example below consists of a Type 304 stainless steel Self-Locking Tangless CoilThread Insert in #6-32 nominal thread size, 1 1/2 diameter length, with dry film lubricant finish, supplied on strip feed for power tool installation.

.2TLC – .06C – 0207 W SF

Basic Insert Type:

- 2TNC = Standard free-running *Tangless CoilThread* Inserts. Unified Coarse.
- 2TNF = Standard free-running *Tangless CoilThread* Inserts. Unified Fine.
- 2TLC = Self-locking *Tangless CoilThread* Inserts. Unified Coarse.
- 2TLF = Self-locking *Tangless CoilThread* Inserts. Unified Fine.

Size Designation (Internal thread) and Material:

See tabulation below. All inserts are made of Type 304 stainless steel.

Nominal Length:

See tabulation below. Shown as 4-digit number without the decimal point.

Finish:

- W=Dry film lubricant per AS5272 Type I
- Y=Cadmium plated per QQ-P-416 Type II (Max. Thickness=.0001")

No finish=Leave blank if none is required.

Packaging:

- Supplied in bulk or on strip feed reels for power installation.
- SF = Strip Feed.
- Leave blank for bulk.

Free-Running Inserts

FREE OUTER DIAMETER INSERT DRIVING NOTCH

Self-Locking Inserts

INSERT DRIVING NOTCH NUMBER OF FREE COILS FREE OUTER DIAMETER INSERT DRIVING NOTCH NUMBER OF FREE COILS

Material: Type 304 Stainless steel per NASM8846 and AS7245.
Surface Texture: ANSI B46.1.

.2TLC – .06C – 0207 W SF

Nominal Thread Size	Basic Insert Type		Size Designation	Nominal Length ¹ Length of Insert (in Dia.) ³			Free Outer Diameter		Number of Free Coils ² Nominal Length		
	Free Running Inserts	Self-Locking Inserts		1	1-1/2	2	Min.	Max.	1	1-1/2	2
Unified Coarse											
2 (.086)-56	2TNC	2TLC	02C	0.086	0.129	0.172	.110	.119	3	5-1/4	7-3/8
4 (.112)-40	2TNC	2TLC	04C	0.112	0.168	0.224	.144	.159	2-3/4	4-3/4	6-3/4
6 (.138)-32	2TNC	2TLC	06C	0.138	0.207	0.276	.178	.193	2-3/4	4-3/4	6-7/8
8 (.164)-32	2TNC	2TLC	2C	0.164	0.246	0.328	.205	.220	3-1/2	6	8-3/8
10 (.190)-24	2TNC	2TLC	3C	0.190	0.285	0.380	.244	.259	2-7/8	5	7-1/8
1/4 (.250)-20	2TNC	2TLC	4C	0.250	0.375	0.500	.310	.330	3-3/8	5-3/4	8
5/16 (.3125)-18	2TNC	2TLC	5C	0.312	0.469	0.625	.380	.400	4	6-5/8	9-1/4
3/8 (.375)-16	2TNC	2TLC	6C	0.375	0.562	0.750	.452	.472	4-3/8	7-1/4	10
Unified Fine											
10 (.190)-32	2TNF	2TLF	3C	0.190	0.285	0.380	.236	.256	4-1/8	6-7/8	9-1/2
1/4 (.250)-28	2TNF	2TLF	4C	0.250	0.375	0.500	.306	.326	5	8-1/4	11-3/8
5/16 (.3125)-24	2TNF	2TLF	5C	0.312	0.469	0.625	.380	.400	5-1/2	8-7/8	12-1/4
3/8 (.375)-24	2TNF	2TLF	6C	0.375	0.562	0.750	.448	.468	6-7/8	11	15

Notes: 1. Nominal length is a calculated number and cannot be measured in the free state. It is the actual installed length plus 1/2 pitch.
2. Number of free coils is the total number of convolutions (counted from notch to notch) and has a tolerance of ± 1/4 coil.
3. Please consult factory for availability of 2-1/2 and 3 Dia. lengths.

Tangless® CoilThread® Inserts Cross Reference Table

Unified Sizes

Free-Running Series, UNC					
Size	Nominal Length** (in Dia.)	Length	Tangless CoilThread Insert Part Number	National Aerospace Standard Part Number	Equivalent MS Number
2-56	1	.086	2TNC-02C-0086	NAS1130-02-10	MS122095
	1-1/2	.129	2TNC-02C-0129	NAS1130-02-15	MS122135
	2	.172	2TNC-02C-0172	NAS1130-02-20	MS122175
4-40	1	.112	2TNC-04C-1112	NAS1130-04-10	MS122076
	1-1/2	.168	2TNC-04C-0168	NAS1130-04-15	MS122116
	2	.224	2TNC-04C-0224	NAS1130-04-20	MS122156
6-32	1	.138	2TNC-06C-0138	NAS1130-06-10	MS122078
	1-1/2	.207	2TNC-06C-0207	NAS1130-06-15	MS122118
	2	.276	2TNC-06C-0276	NAS1130-06-20	MS122158
8-32	1	.164	2TNC-2C-0164	NAS1130-08-10	MS122079
	1-1/2	.246	2TNC-2C-0246	NAS1130-08-15	MS122119
	2	.328	2TNC-2C-0328	NAS1130-08-20	MS122159
10-24	1	.190	2TNC-3C-0190	NAS1130-3C-10	MS122080
	1-1/2	.285	2TNC-3C-0285	NAS1130-3C-15	MS122120
	2	.380	2TNC-3C-0380	NAS1130-3C-20	MS122160
1/4-20	1	.250	2TNC-4C-0250	NAS1130-4-10	MS122081
	1-1/2	.375	2TNC-4C-0375	NAS1130-4-15	MS122121
	2	.500	2TNC-4C-0500	NAS1130-4-20	MS122161
5/16-18	1	.312	2TNC-5C-0312	*	MS122082
	1-1/2	.469	2TNC-5C-0469	*	MS122122
	2	.625	2TNC-5C-0625	*	MS122162
3/8-16	1	.375	2TNC-6C-0375	*	MS122083
	1-1/2	.562	2TNC-6C-0562	*	MS122123
	2	.750	2TNC-6C-0750	*	MS122163
Free-Running Series, UNF					
10-32	1	.190	2TNF-3C-0190	NAS1130-3-10	MS124655
	1-1/2	.285	2TNF-3C-0285	NAS1130-3-15	MS124695
	2	.380	2TNF-3C-0380	NAS1130-3-20	MS124735
1/4-28	1	.250	2TNF-4C-0250	NAS1130-4F-10	MS124656
	1-1/2	.375	2TNF-4C-0375	NAS1130-4F-15	MS124696
	2	.500	2TNF-4C-0500	NAS1130-4F-20	MS124736
5/16-24	1	.312	2TNF-5C-0312	*	MS124657
	1-1/2	.469	2TNF-5C-0469	*	MS124697
	2	.625	2TNF-5C-0625	*	MS124737
3/8-24	1	.375	2TNF-6C-0375	*	MS124658
	1-1/2	.562	2TNF-6C-0562	*	MS124698
	2	.750	2TNF-6C-0750	*	MS124738
Self-Locking Series, UNC					
2-56	1	.086	2TLC-02C-0086	NAS1130-02L10	MS21209-C0210
	1-1/2	.129	2TLC-02C-0129	NAS1130-02L15	MS21209-C0215
	2	.172	2TLC-02C-0172	NAS1130-02L20	MS21209-C0220

Self-Locking Series, UNC (continued)					
4-40	1	.112	2TLC-04C-0112	NAS1130-04L10	MS21209-C0410
	1-1/2	.168	2TLC-04C-0168	NAS1130-04L15	MS21209-C0415
	2	.224	2TLC-04C-0224	NAS1130-04L20	MS21209-C0420
6-32	1	.138	2TLC-06C-0138	NAS1130-06L10	MS21209-C0610
	1-1/2	.207	2TLC-06C-0207	NAS1130-06L15	MS21209-C0615
	2	.276	2TLC-06C-0276	NAS1130-06L20	MS21209-C0620
8-32	1	.164	2TLC-2C-0164	NAS1130-08L10	MS21209-C0810
	1-1/2	.246	2TLC-2C-0246	NAS1130-08L15	MS21209-C0815
	2	.328	2TLC-2C-0328	NAS1130-08L20	MS21209-C0820
10-24	1	.190	2TLC-3C-0190	NAS1130-3CL10	MS21209-C1-10
	1-1/2	.285	2TLC-3C-0285	NAS1130-3CL15	MS21209-C1-15
	2	.380	2TLC-3C-0380	NAS1130-3CL20	MS21209-C1-20
1/4-20	1	.250	2TLC-4C-0250	NAS1130-4L10	MS21209-C4-10
	1-1/2	.375	2TLC-4C-0375	NAS1130-4L15	MS21209-C4-15
	2	.500	2TLC-4C-0500	NAS1130-4L20	MS21209-C4-20
5/16-18	1	.312	2TLC-5C-0312	*	MS21209-C5-10
	1-1/2	.469	2TLC-5C-0469	*	MS21209-C5-15
	2	.625	2TLC-5C-0625	*	MS21209-C5-20
3/8-16	1	.375	2TLC-6C-0375	*	MS21209-C6-10
	1-1/2	.562	2TLC-6C-0562	*	MS21209-C6-15
	2	.750	2TLC-6C-0750	*	MS21209-C6-20
Self-Locking Series, UNF					
10-32	1	.190	2TLF-3C-0190	NAS1130-3L10	MS21209-F1-10
	1-1/2	.285	2TLF-3C-0285	NAS1130-3L15	MS21209-F1-15
	2	.380	2TLF-3C-0380	NAS1130-3L20	MS21209-F1-20
1/4-28	1	.250	2TLF-4C-0250	NAS1130-4FL10	MS21209-F4-10
	1-1/2	.375	2TLF-4C-0375	NAS1130-4FL15	MS21209-F4-15
	2	.500	2TLF-4C-0500	NAS1130-4FL20	MS21209-F4-20
5/16-24	1	.312	2TLF-5C-0312	*	MS21209-F5-10
	1-1/2	.469	2TLF-5C-0469	*	MS21209-F5-15
	2	.625	2TLF-5C-0625	*	MS21209-F5-20
3/8-24	1	.375	2TLF-6C-0375	*	MS21209-F6-10
	1-1/2	.562	2TLF-6C-0562	*	MS21209-F6-15
	2	.750	2TLF-6C-0750	*	MS21209-F6-20

*Note at the time of printing of this catalog, assignment of NAS Part Numbers to these sizes had not been completed.

** The less popular 2-1/2 and 3 diameter lengths are not shown, but are available. Contact KATO for information.

For optional Dry Film Lubricant or Cadmium Plating add the following suffix letter designations per the example:	Part Number Type	Suffix	Dry Film Labeled	Suffix	Cadmium Plated
			Examples		Examples
	MS Tanged Inserts	L	MS21209-CO415L	P	MS21209-CO415P
	NAS1130 Tangless Inserts	D	NAS1130-04L15D	P	NAS1130-04L15P
	Kato Tangless Inserts	W	2TLC-04C-0168W	Y	2TLC-04C-0168Y

Tangless® Insert Installation & Removal Tools

-Unified Sizes

Prewinder Type Hand Installation Tool



- UNF (fine) threads install easier with Prewinder Tools.
- Simple to use.
- Reduces insert diameter for smooth and quick installation.
- Maintains alignment of insert throughout installation cycle.

Prewinder Hand Installation Tools

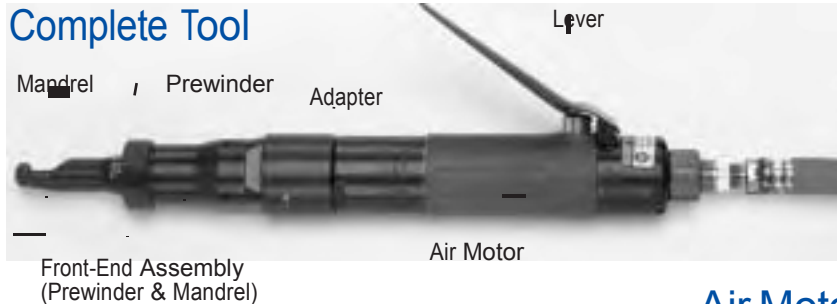
Thread Size	Complete Tool Part No.	Replacement Pawl Part No.
2-56	TCIC-02	TCIC-02P
4-40	TCIC-04	TCIC-04P
6-32	TCIC-06	TCIC-06P
8-32	TCIC-2	TCIC-2P
10-24	TCIC-3	TCIC-3P
10-32	TCIF-3	TCIF-3P
1/4-20	TCIC-4	TCIC-4P
1/4-28	TCIF-4	TCIF-4P
5/16-18	TCIC-5	TCIC-5P
5/16-24	TCIF-5	TCIF-5P
3/8-16	TCIC-6	TCIC-6P
3/8-24	TCIF-6	TCIF-6P

Tangless® Insert Air Driven Insertion Tools

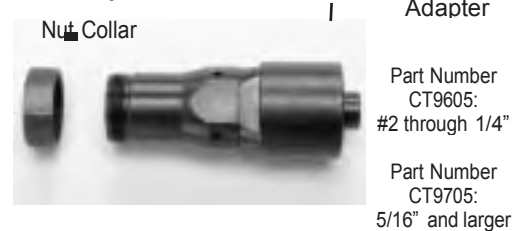
-Unified Sizes

- Increased productivity
- No handling of inserts with strip-feed
- Can be used with HeliCoil® brand air motors and adapters

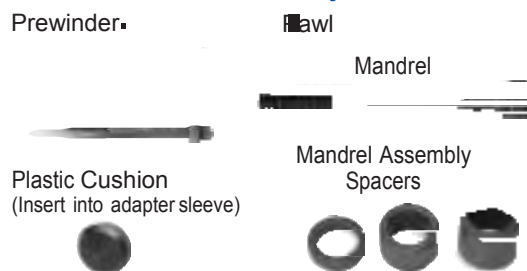
Complete Tool



Adapter



Front End Assembly



Air Motor

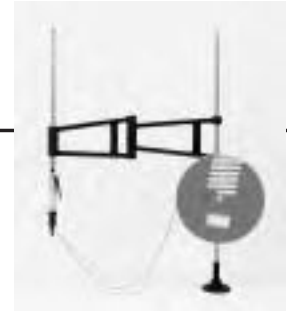
Reversible Air Motor with Hose Part Number CT25017



Tangless® Insert Air Driven Insertion Tools

-Unified Sizes, continued

Nominal Thread Size*	Inch Size Front End Assemblies*			Replacement Pawl	How to Order
	Complete Assembly	Replacement Mandrel Assembly	Replacement		
					<p>Example: for Size 4-40 Inserts: COMPLETE TOOL CONSISTS OF:</p> <p><i>Air Motor:</i> Part No. CT25017</p> <p><i>Adapter:</i> Part No. CT9605</p> <p><i>Front End Assembly:</i> Part No. 2CT11000-04</p> <p>(Select from Table)</p>
Unified Coarse					
2-56	2CT11000-02	2CT11200-02	3/16		
4-40	2CT11000-04	2CT11200-04	2CT11400-04		
6-32	2CT11000-06	2CT11200-06	2CT11400-06		
8-32	2CT11000-2	2CT11200-2	2CT11400-2		
10-24	2CT11000-3	2CT11200-3	2CT11400-3		
1/4-20	2CT11000-4	2CT11200-4	2CT11400-4		
Unified Fine					
10-32	2CT11001-3A	2CT11201-3A	2CT11401-3A		
1/4-28	2CT11001-4	2CT11201-4	2CT11401-4		



Air Driven Insertion Tool attached to the KATO Radial Arm Tool Holder Part No. CT21042

*Note: The KATO Clutch Drive must be used with size 2-56 and 4-40 Front End Assemblies to prevent the Mandrels from breaking. KFS will not warrantee the Mandrels and Pawls without the use of the Clutch Drive. KFS recommends Clutch-Drives be used for all size Front End Assemblies to prevent breakage and to extend the life of the tool. Contact KFS for availability of Front End Assemblies in sizes larger than 1/4 inch.

Air Motor Clutch Drive with Torque Adjusting Handle



Note: Clutch Drive fits into the CT9605 Adapter only.

Air Motor Brand	Air Motor Part No.	Clutch Drive Part No.
KATO®	CT25017	CT9602
HeliCoil®	8510-1	CT9602
Gardner Denver	*	*

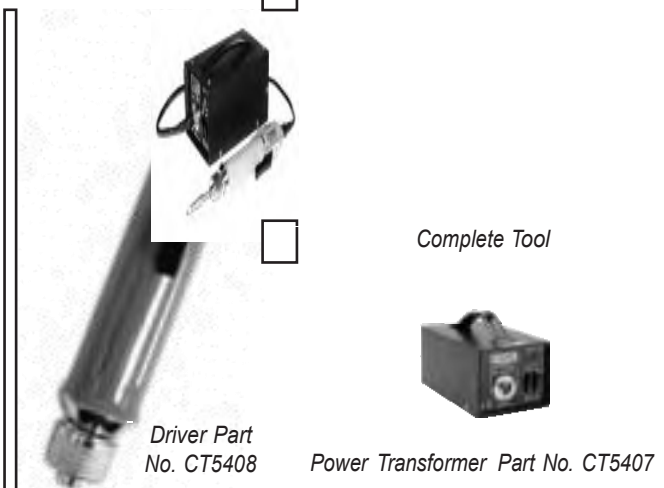
* Contact Kato for details.

Keyless Chuck Electric Driver

Designed by KATO® engineers — Specifically for faster and lower cost installation of KATO Tangless® Inserts. This tool will by itself install insert sizes 2-56 through 1/4 inch, replacing the previous need for 2 separate drivers!

Features:

- Lower cost than current electric drivers (small or large).
- Quick disconnect keyless chuck - Compatible with new, low-cost 2CTSB series Tangless tools, see page 24.
- Uses the same transformer currently sold by KATO®, Heli-Coil®, Recoil® and Microdot®.
- Installs the entire range of Tangless Inserts. (Unified sizes: 2-56 thru 1/4", Metric sizes: M2.5 thru M8).
- Eliminates the need to purchase both the small and large electric drivers.
- Lightweight and easy to use.
- Excellent for clean room applications.
- Auto-reversing feature speeds installation time.
- Plugs into 110 volt outlet.



Complete Tool

Driver Part No. CT5408

Power Transformer Part No. CT5407

Tangless® Hex Shank Insertion Tools –Unified Sizes

Features:

- Lower Cost than current electric tools and easier to use.
- Designed exclusively for use with new KFS Electric Driver.
- Hex shank allows for quick-disconnect.

* KATO recommends Prewinder type tools for UNF (Fine) thread sizes.

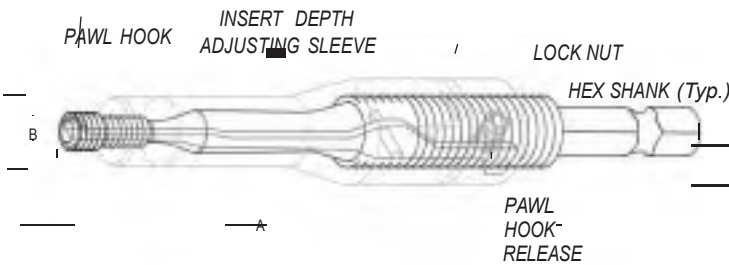


Hex Shank Mandrel Insertion Tools**

Thread Size	Complete Tool Part No.	Replacement Mandrel	Replacement Pawl
2-56	2CTSB-02C	2CTSB-02CM	2CTSB-02CP
4-40	2CTSB-04C	2CTSB-04CM	2CTSB-04CP
6-32	2CTSB-06C	2CTSB-06CM	2CTSB-06CP
8-32	2CTSB-2C	2CTSB-2CM	2CTSB-2CP
10-24	2CTSB-3C	2CTSB-3CM	2CTSB-3CP
10-32*	2CTSB-3F	2CTSB-3FM	2CTSB-3FP
1/4-20	2CTSB-4C	2CTSB-4CM	2CTSB-4CP

**Contact KATO for availability of sizes #10 & 1/4.

Electric Tool Installation Mandrel



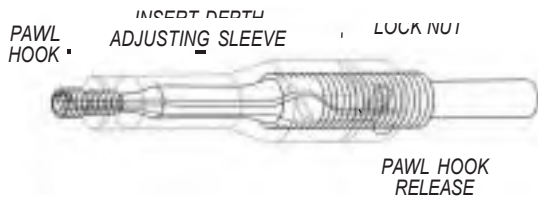
Dimensions	Thread Size					
	2-56	4-40	6-32	8-32	10-24 10-32	1/4-20
"A" Dim. Ref.	2.85	2.95	3.05	3.20	3.05	3.05
"B" Dia.	.250	.250	.375	.375	.375	.375
Hex Size (inch)	1/4	1/4	1/4	1/4	1/4	1/4

Tangless® Hand or Electric Insertion & Removal Tools, Mandrel Type–Unified Sizes

Hand Insertion/Removal Tool

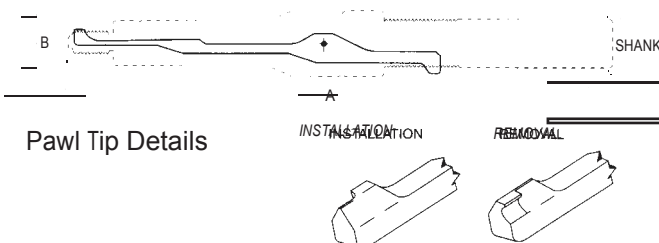


Insertion/Removal Tool Mandrel Assembly



- Hand Insertion and Removal Tools consist of a mandrel assembly, drive handle, 2 wrenches, and 1 extra pawl, spring, and pin.
- The mandrel assembly can be removed from the drive handle and used with the Electric Drivers, Part Nos. CT5405 and CT5406.
- These mandrels cannot be used with the CT5408 Keyless Chuck Electric Driver, since the chuck on this driver requires a hex shank.

Replacement Pawls



Dimensions	Thread Size						
	2-56	4-40	6-32	8-32	10-24	1/4-20	10-32
"A" Dim. Ref.	2.80	2.90	3.00	3.15	3.00	3.00	3.00
"B" Dia. Ref.	.250	.250	.360	.360	.360	.360	.360
Shank	0.164 Dia.						

Kato recommends Prewinder type tools for the UNF (Fine) thread sizes.

Tangless® Hand or Electric Insertion & Removal Tools, Mandrel Type—Unified Sizes, continued

Part Numbers								
	2-56	4-40	6-32	8-32	10-24	10-32 ²	1/4-20	1/4-28 ³
<i>Installation Tool Assembly</i>	CT16002-02	CT16002-04	CT16002-06	CT16002-2	CT16002-3	CT16003-3 ²	CT16002-4	-
<i>Removal Tool Assembly</i>	CT16002R-02	CT16002R-04	CT16002R-06	CT16002R-2	CT16002R-3	CT16003R-3	CT16002R-4	CT16003R-4
Replacement Pawl Kits¹								
<i>Installation</i>	CT16402-02K	CT16402-04K	CT16402-06K	CT16402-2K	CT16402-3K	CT16403-3K	CT16402-4K	-
<i>Removal</i>	CT16402R-02K	CT16402R-04K	CT16402R-06K	CT16402R-2K	CT16402R-3K	CT16403R-3K	CT16402R-4K	CT16403R-4K
Replacement Mandrels								
<i>Installation</i>	CT16410-02BH	CT16410-04BH	CT16410-06BH	CT16410-2BH	CT16410-3	CT16411-3	CT16410-4	-
<i>Removal</i>	CT16410-02	CT16410-04	CT16410-06	CT16410-2	CT16410R-3	CT16411R-3	CT16410R-4	CT16411R-4

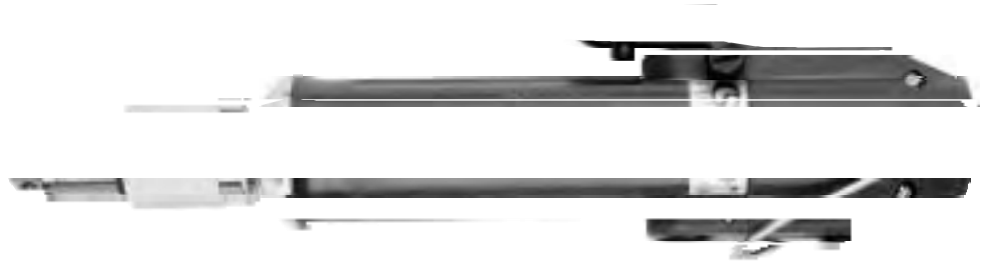
Notes:

¹Consists of installation or removal pawl, 2 pins and 2 springs.

²KATO recommends Prewinder type tools for UNF (FINE) thread sizes.

³The 1/4-28 size installation tool is available in the Prewinder Hand Tool and Air-Driven types only.

⁴Please contact KFS for Removal Tools for 5/16 and 3/8 UNC and UNF sizes Tangless Inserts.



Complete tool consists of Small or Large Driver, Power Transformer, and Mandrel.

Tool	Part Number	Length Ref.	Diameter Ref.	Chuck Capacity	Weight Ref.(lb.)
Small Driver¹	CT5405	8.6	1.125	5/32	1
Large Driver²					
Power Transformer	CT5407	Size Ref.			6
		Width	Depth	Height	
		4.0	8.0	4.2	

Radial Arm Tool Holder
Part No. CT21042



Use the Kato Power Tool with strip feed reels for vertical installation.

Adapter Part No.
CT21044A



Adapts electric tool to radial arm.

Notes:

¹Small Electric Driver for sizes #2 through #8

²Large Electric Driver for sizes #10 and 1/4.

Transformer plugs into standard 110 VAC outlet.

Tangless® CoilThread® Inserts – Metric Sizes



► **FOD-Free Design:** No tangs to break off, retrieve...or lose.

► **Bi-directional design eliminates insert orientation requirement.**

► **Cost Reduction:** Significantly decreased installation and inspection time.

► **Quick, non-destructive removal prevents damage to castings.**

Metric Tangless CoilThread Inserts are made of cold-rolled Type 304 stainless steel wire (AS7245 and MA1565), work-hardened to a tensile strength above 200,000 psi, a hardness of Rc 43-50 and an exceedingly smooth (8-16 micro-inches) surface finish. Metric Tangless Inserts are designed to replace tanged helical coil inserts as specified in MA3279 through MA3281 (standard thread) and

MA3329 through MA3331 (locking thread). They install in standard STI tapped holes per MA1567. 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.

Insert Part Number Selection

Elements to form a complete and specific part number are selected from the table below. Follow the example shown for proper structure.

Part Number Example:

The example below consists of a Type 304 stainless steel Self-Locking Metric Tangless CoilThread Insert in M4x.7 nominal thread size, 1-1/2 diameter length, with dry film lubricant finish, supplied on strip feed for power tool installation.

2TLM - 4x.7C - 6 W SF

Basic Insert Type:

2TNM = Standard, Free-Running, Metric Tangless Insert
 2TLM = Self-Locking, Metric Tangless Insert

Size Designation (Internal Thread) and Material:

See tabulation on following page. All inserts are made of Type 304 stainless steel.

Nominal Length (mm):

See tabulation.

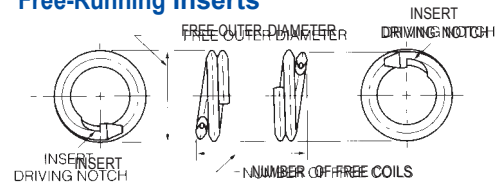
Finish:

W = Dry film lubricant per AS5272, Type I
Y = Cadmium plated per QQ-P-416, Type II (Max. Thickness = .0001")
No Finish = Leave blank if none is required.

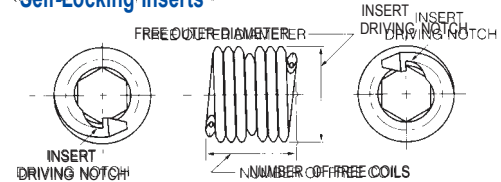
Packaging:

Supplied in bulk or on strip feed reels for power installation.
SF = Strip Feed. Leave blank for bulk.

Free-Running Inserts



Self-Locking Inserts



Material: Type 304 Stainless steel per MA1565 and AS7245 and AS7245.
 Surface Texture: AN 846.1.

Nominal Thread Size	Basic Insert Type		Nominal Length (mm) ¹			Free Outer Diameter (mm)		Number of Free Coils ²		
	Free-Running Inserts	Self-Locking Inserts	Length of Insert (in Dia.) ³			Min.	Max.	Nominal Length		
			1	1 1/2	2			1	1 1/2	2
M2.5x.45	2TNM	2TLM	2.5	3.8	5	3.20	3.70	3.375	5.625	8.000
M3x.5	2TNM	2TLM	3	4.5	6	3.80	4.35	3.750	6.375	8.875
M4x.7	2TNM	2TLM	4	6	8	5.05	5.60	3.625	6.125	8.625
M5x.8	2TNM	2TLM	5	7.5	10	6.25	6.80	4.125	6.875	9.625
M6x1	2TNM	2TLM	6	9	12	7.40	7.95	4.000	6.750	9.500
M8x1.25	2TNM	2TLM	8	12	16	9.80	10.35	4.500	7.375	10.250

Notes:

¹ Nominal length is a calculated number and cannot be measured in the free state. It is the actual installed length plus 1/2 pitch.

² Number of free coils is the total number of convolutions (counted from notch to notch) and has a tolerance of ±1/4 coil.

³ Please consult factory for 2-1/2 and 3 Diameter lengths.

Tangless® CoilThread® Inserts Cross Reference Table – Metric Sizes

Free-Running Series					
Size	Nominal Length (in Dia.)	Length (mm)	Tangless CoilThread Insert Part Number	National Aerospace Standard Part Number*	Equivalent MA Number**
M2.5x.45	1	2.5	2TNM-2.5x.45C-2.5	*	MA3279-101
	1-1/2	3.8	2TNM-2.5x.45C-3.8	*	MA3279-151
	2	5	2TNM-2.5x.45C-5.0	*	MA3279-201
M3x.5	1	3	2TNM-3x.5C-3.0	*	MA3279-102
	1-1/2	4.5	2TNM-3x.5C-4.5	*	MA3279-152
	2	6	2TNM-3x.5C-6.0	*	MA3279-202
M4x.7	1	4	2TNM-4x.7C-4.0	*	MA3279-104
	1-1/2	6	2TNM-4x.7C-6.0	*	MA3279-154
	2	8	2TNM-4x.7C-8.0	*	MA3279-204
M5x.8	1	5	2TNM-5x.8C-5.0	*	MA3279-105
	1-1/2	7.5	2TNM-5x.8C-7.5	*	MA3279-155
	2	10	2TNM-5x.8C-10.0	*	MA3279-205
M6x1	1	6	2TNM-6x1C-6.0	*	MA3279-106
	1-1/2	9	2TNM-6x1C-9.0	*	MA3279-156
	2	12	2TNM-6x1C-12.0	*	MA3279-206
M8x1.25	1	8	2TNM-8x1.25C-8.0	*	MA3279-109
	1-1/2	12	2TNM-8x1.25C-12.0	*	MA3279-159
	2	16	2TNM-8x1.25C-16.0	*	MA3279-209
Self-Locking Series					
M2.5x.45	1	2.5	2TLM-2.5x.45C-2.5	*	MA3329-101
	1-1/2	3.8	2TLM-2.5x.45C-3.8	*	MA3329-151
	2	5	2TLM-2.5x.45C-5.0	*	MA3329-201
M3x.5	1	3	2TLM-3x.5C-3.0	*	MA3329-102
	1-1/2	4.5	2TLM-3x.5C-4.5	*	MA3329-152
	2	6	2TLM-3x.5C-6.0	*	MA3329-202
M4x.7	1	4	2TLM-4x.7C-4.0	*	MA3329-104
	1-1/2	6	2TLM-4x.7C-6.0	*	MA3329-154
	2	8	2TLM-4x.7C-8.0	*	MA3329-204
M5x.8	1	5	2TLM-5x.8C-5.0	*	MA3329-105
	1-1/2	7.5	2TLM-5x.8C-7.5	*	MA3329-155
	2	10	2TLM-5x.8C-10.0	*	MA3329-205
M6x1	1	6	2TLM-6x1C-6.0	*	MA3329-106
	1-1/2	9	2TLM-6x1C-9.0	*	MA3329-156
	2	12	2TLM-6x1C-12.0	*	MA3329-206
M8x1.25	1	8	2TLM-8x1.25C-8.0	*	MA3329-109
	1-1/2	12	2TLM-8x1.25C-12.0	*	MA3329-159
	2	16	2TLM-8x1.25C-16.0	*	MA3329-209

*Note: At the time of printing of this catalog, NAS part numbers had not been assigned to the Metric Tangless Inserts. Please contact KFS for further information. **The equivalent MA part number is shown for reference only.

Optional Finishes

Dry Film Lubricant Coating:

Tangless Inserts: Add "W" suffix to Tangless Insert Part No. (see page 26.)

Tanged Inserts, Free-Running use **MA3280-** part number prefix.

Tanged Inserts, Locking use **MA3330-** part number prefix.

Cadmium Plating:

Tangless Inserts: Add "Y" suffix to Tangless Insert Part No. (see page 26.)

Tanged Inserts, Free-Running use **MA3281-** part number prefix.

Tanged Inserts, Locking use **MA3331-** part number prefix.

Tangless® Insert Installation & Removal Tools

– Metric Sizes

Prewinder Type Hand Installation Tool



- Metric threads install easier with Prewinder Tools.
- Steel mandrel and prewinder body.
- Simple to use.
- Reduces insert diameter for smooth and quick installation.
- Maintains alignment of insert throughout installation cycle.

Prewinder Hand Installation Tool	Thread Size					
	M2.5x.45	M3x.5	M4x.7	M5x.8	M6x1	M8x1.25
Complete Tool	TCIM-2.5	TCIM-3	TCIM-4	TCIM-5	TCIM-6	TCIM-8
Replacement Pawl	TCIM-2.5P	TCIM-3P	TCIM-4P	TCIM-5P	TCIM-6P	TCIM-8P

Hex Shank Insertion Tool



1. These tools are designed exclusively for use with the new KFS Electric Driver with the Quick Disconnect Hex Chuck.
2. Metric Inserts have finer threads than their corresponding inch sizes, making them more difficult to install. Because of this, KFS recommends that Prewinder Type Tools be used for hand installation, and Air Driven Tools be used with Strip-Feed Inserts for power installation.
3. Metric Tangless Inserts require a separate Tool be used for Free-Running Inserts, and Locking Inserts (see table). This applies only to the Hex Shank Insertion Tools.
4. Please contact KFS for technical assistance in choosing the optimum style tool for installing Metric Tangless Inserts, and for availability of Hex Shank Tool sizes.

Hex Shank Insertion Tool	Thread Size					
	M2.5x.45	M3x.5	M4x.7	M5x.8	M6x1	M8x1.25
Free-Running Insert Tool	2CTSB-M2.5F	2CTSB-M3F	2CTSB-M4F	2CTSB-M5F	2CTSB-M6F	2CTSB-M8F
Locking Insert Tool	2CTSB-M2.5L	2CTSB-M3L	2CTSB-M4L	2CTSB-M5L	2CTSB-M6L	2CTSB-M8L
Replacement Pawl	2CTSB-M2.5P	2CTSB-M3P	2CTSB-M4P	2CTSB-M5P	2CTSB-M6P	2CTSB-M8P

Removal Tool



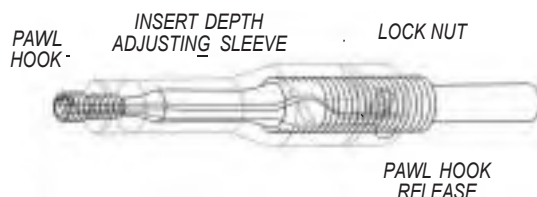
- Quick, non-destructive removal of inserts.
- No damage to the tapped threads.
- Can be used to adjust the depth of the installed insert.

Part Numbers

Tool/Component	Thread Size					
	M2.5x.45	M3x.5	M4x.7	M5x.8	M6x1	M8x1.25
Removal Tool Assembly	CT16002R-M2.5	CT16002R-M3	CT16002R-M4	CT16002R-M5	CT16002R-M6	CT16002R-M8
Replacement Removal Pawl	CT16402R-M2.5	CT16402R-M3	CT16402R-M4	CT16402R-M5	CT16402R-M6	CT16402R-M8

Note: Metric size Tangless Removal Tools do not include spare pawl, pin, and spring or wrenches.

Removal Tool Assembly



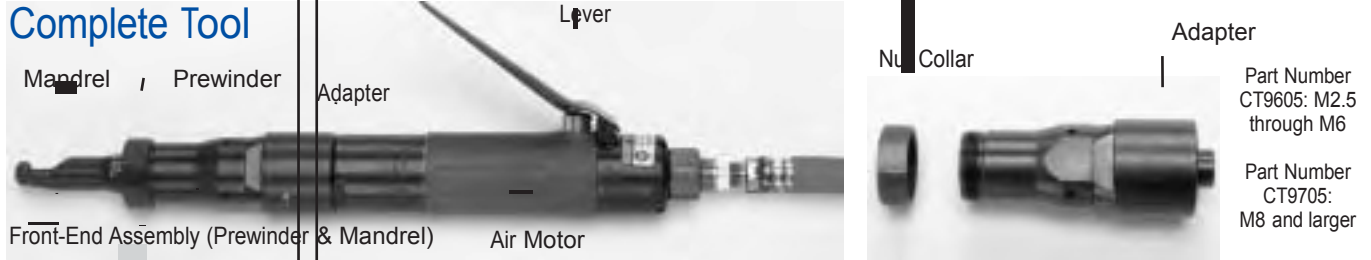
Replacement Pawls



Tangless® Insert Air Driven Insertion Tools – Metric Sizes

- Increased productivity.
- No handling of inserts with strip-feed.
- Can be used with HeliCoil® brand air motors and adapters.

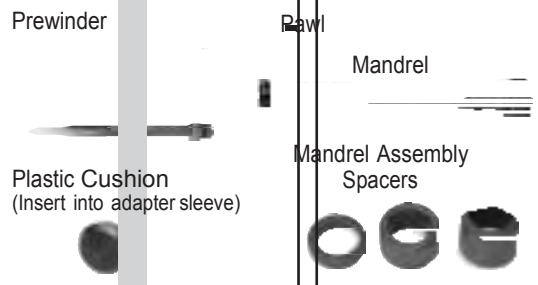
Complete Tool



Part Number
CT9605: M2.5 through M6

Part Number
CT9705: M8 and larger

Front End Assembly



Air Motor

Reversible Air Motor with Hose Part Number CT25017

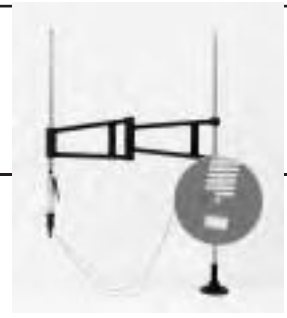


Tangless® Front End Assemblies & Clutch Drive –Metric Sizes

Metric Size Front End Assemblies*			
Nominal Thread Size*	Complete Assembly	Replacement Mandrel Assembly	Replacement Pawl
M2.5x.45	2CT11000-M2.5	2CT11200-M2.5	2CT11400-M2.5
M3x.5	2CT11000-M3	2CT11200-M3	2CT11400-M3
M4x.7	2CT11000-M4	2CT11200-M4	2CT11400-M4
M5x.8	2CT11000-M5	2CT11200-M5	2CT11400-M5
M6x1	2CT11000-M6	2CT11200-M6	2CT11400-M6
M8x1.25	2CT11000-M8	2CT11200-M8	2CT11400-M8

How to Order

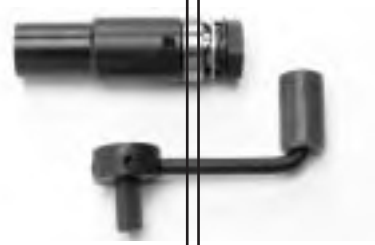
Example:
for Size M6 Inserts:
COMPLETE TOOL CONSISTS OF:
Air Motor:
Part No. CT25017
Adapter:
Part No. CT9605
Front End Assembly:
Part No. 2CT11000-M6
(Select from Table)



Air Driven Insertion Tool attached to the KATO Radial Arm Tool Holder Part No. CT21042

*Note: The KATO Clutch Drive must be used with size M2.5 and M3 Front End Assemblies to prevent the Mandrels from breaking. KFS will not warrantee the Mandrels and Pawls without the use of the Clutch Drive. KFS recommends Clutch-Drives be used for all size Front End Assemblies to prevent breakage and to extend the life of the tool.

Air Motor Clutch Drive with Torque Adjusting Handle



Note: Clutch Drive fits into the CT9605 Adapter only.

Air Motor Brand	Air Motor Part No.	Clutch Drive Part No.
KATO®	CT25017	CT9602
HeliCoil®	8510-1	CT9602

Tanged CoilThread® Inserts and Tools – Unified sizes

- Meet or exceed all applicable military, aerospace and commercial standards.
- Completely interchangeable with all major manufacturers' inserts and tools.
- Are available in a range of inch and metric sizes, free-running and locking, and bulk or strip-feed packaging.

Insert Part Number Selection and Identification

How to Order:

Part Number Example:

(Consists of a 304 stainless steel Self-locking CoilThread Insert, in 1/4-20 nominal thread size, 1-1/2 Dia. length, with dry film lubricant finish, supplied on strip-feed for power installation.)

TLC - 4C - 0375 W SF

Basic Part Number: —

TNC = Standard free-running CoilThread Insert, Unified Coarse

TNF = Standard free-running CoilThread Insert, Unified Fine

TLC = Self-locking CoilThread Insert, Unified Coarse

TLF = Self-locking CoilThread Insert, Unified Fine

Size Designation (Internal Thread) and Material: —

Packaging:

Supplied in bulk or on strip-feed in sizes through 5/16" Dia. for power installation.

SF = Strip-feed. Leave blank for bulk.

Finish:

W = Dry film lubricant
Y = Cadmium plated
Leave blank if none is required

Nominal Length:

See tabulation below. Shown as 4-digit number without the decimal point.



Sample Part Number (see full description above)

Nominal Thread Size	Basic Part Numbers		Size Designation	Nominal Length ¹						Free Outside Diameter		Number of Free Coils ²				
	Standard CoilThread Insert	CoilLock Insert		Length of Insert (in dia.)						Min.	Max.	Nominal Length				
				1	1/2	2	2 1/2	3	1			1/2	2	2 1/2	3	
Unified Coarse																
2 (.086)-56	TNC	TLC	02C	0.086	0.129	0.172	0.215	0.258	.110	.119	3	5-1/4	7-3/8	9-5/8	11-7/8	
3 (.099)-48	TNC	TLC	03C	0.099	0.148	0.198	0.248	0.297	.128	.139	2-7/8	5	7-1/4	9-3/8	11-1/2	
4 (.112)-40	TNC	TLC	04C	0.112	0.168	0.224	0.280	0.336	.144	.159	2-3/4	4-3/4	6-3/4	8-7/8	10-7/8	
5 (.125)-40	TNC	TLC	05C	0.125	0.188	0.250	0.312	0.375	.158	.173	3-1/4	5-1/2	7-3/4	10	12-1/4	
6 (.138)-32	TNC	TLC	06C	0.138	0.207	0.276	0.345	0.414	.178	.193	2-3/4	4-3/4	6-7/8	8-7/8	10-7/8	
8 (.164)-32	TNC	TLC	2C	0.164	0.246	0.328	0.410	0.492	.205	.220	3-1/2	6	8-3/8	10-3/4	13-1/4	
10 (.190)-24	TNC	TLC	3C	0.190	0.285	0.380	0.475	0.570	.244	.259	2-7/8	5	7-1/8	9-1/4	11-3/8	
12 (.216)-24	TNC	TLC	1C	0.216	0.324	0.432	0.540	0.648	.270	.285	3-1/2	6	8-3/8	10-5/8	13-1/8	
1/4 (.250)-20	TNC	TLC	4C	0.250	0.375	0.500	0.625	0.750	.310	.330	3-3/8	5-3/4	8	10-3/8	12-3/4	
5/16 (.3125)-18	TNC	TLC	5C	0.312	0.469	0.625	0.781	0.938	.380	.400	4	6-5/8	9-1/4	11-7/8	14-5/8	
3/8 (.3750)-16	TNC	TLC	6C	0.375	0.562	0.750	0.938	1.125	.452	.472	4-3/8	7-1/4	10	12-7/8	15-3/4	
7/16 (.4375)-14	TNC	TLC	7C	0.438	0.656	0.875	1.094	1.312	.526	.551	4-1/2	7-3/8	10-1/4	13-1/8	16-1/8	
1/2 (.5000)-13	TNC	TLC	8C	0.500	0.750	1.000	1.250	1.500	.597	.622	4-7/8	7-7/8	11	14-1/8	17-1/8	
9/16 (.5625)-12	TNC	TLC	9C	0.562	0.844	1.125	1.406	1.688	.669	.694	5-1/8	8-1/4	11-1/2	14-3/4	17-7/8	
5/8 (.6250)-11	TNC	TLC	10C	0.625	0.938	1.250	1.562	1.875	.742	.767	5-1/4	8-1/2	11-3/4	15	18-3/8	
3/4 (.7500)-10	TNC	TLC	12C	0.750	1.125	1.500	1.875	2.250	.881	.906	5-7/8	9-3/8	13	16-1/2	20-1/8	
7/8 (.8750)-9	TNC	TLC	14C	0.875	1.312	1.750	2.188	2.625	1.022	1.052	6-1/4	10	13-3/4	17-1/2	21-1/4	
1 (1.0000)-8	TNC	TLC	16C	1.000	1.500	2.000	2.500	3.000	1.166	1.196	6-3/8	10-1/8	14	17-3/4	21-5/8	
Unified Fine																
3 (.099)-56	TNF	TLF	03C	0.099	0.148	0.198	0.248	0.297	.131	.146	3-3/8	5-5/8	8	10-3/8	12-5/8	
4 (.112)-48	TNF	TLF	04C	0.112	0.168	0.224	0.280	0.336	.147	.162	3-3/8	5-5/8	7-7/8	10-1/4	12-1/2	
6 (.138)-40	TNF	TLF	06C	0.138	0.207	0.276	0.345	0.414	.173	.193	3-1/2	6	8-3/8	10-3/4	13-1/4	
8 (.164)-36	TNF	TLF	2C	0.164	0.246	0.328	0.410	0.492	.204	.224	3-7/8	6-1/2	9-1/8	11-5/8	14-1/4	
10 (.190)-32	TNF	TLF	3C	0.190	0.285	0.380	0.475	0.570	.236	.256	4-1/8	6-7/8	9-1/2	12-1/4	14-7/8	
1/4 (.2500)-28	TNF	TLF	4C	0.250	0.375	0.500	0.625	0.750	.306	.326	5	8-1/4	11-3/8	14-1/2	17-5/8	
5/16 (.3125)-24	TNF	TLF	5C	0.312	0.469	0.625	0.781	0.938	.380	.400	5-1/2	8-7/8	12-1/4	15-5/8	19	
3/8 (.3750)-24	TNF	TLF	6C	0.375	0.562	0.750	0.938	1.125	.448	.468	6-7/8	11	15	19-1/8	23-1/8	
7/16 (.4375)-20	TNF	TLF	7C	0.438	0.656	0.875	1.094	1.312	.524	.549	6-5/8	10-5/8	14-5/8	18-1/2	22-1/2	
1/2 (.5000)-20	TNF	TLF	8C	0.500	0.750	1.000	1.250	1.500	.592	.617	7-7/8	12-3/8	16-7/8	21-3/8	25-7/8	
9/16 (.5625)-18	TNF	TLF	9C	0.562	0.844	1.125	1.406	1.688	.666	.691	8	12-1/2	17-1/8	21-3/4	26-1/4	
5/8 (.6250)-18	TNF	TLF	10C	0.625	0.938	1.250	1.562	1.875	.733	.758	9	14-1/8	19-1/4	24-1/4	29-3/8	
3/4 (.7500)-16	TNF	TLF	12C	0.750	1.125	1.500	1.875	2.250	.876	.901	9-3/4	15-1/8	20-5/8	26	31-1/2	
7/8 (.8750)-14	TNF	TLF	14C	0.875	1.312	1.750	2.188	2.625	1.021	1.051	9-7/8	15-1/2	21-1/8	26-5/8	32-1/4	
1 (1.0000)-12	TNF	TLF	161C	1.000	1.500	2.000	2.500	3.000	1.169	1.199	9-5/8	15	20-1/2	26	31-1/2	

¹Nominal length is a calculated number and cannot be measured in the free state. It is the actual installed length plus 1/2 pitch.

²Number of free coils is the total number of convolutions and has a tolerance of $\pm 1/4$ coil. Convolutions are counted by starting 90° from the tang for all fine sizes and for Coarse sizes 5/8" and smaller. For Coarse sizes 3/4" and up convolutions are counted by starting 180° from the tang.

Cross Reference Table

Free-running Series, UNC

Size	Length (In Dia.)	Length	CoilThread Part Number	Heli-Coil Part Number	MS Number	Federal Stock Number
2-56	1	.086	TNC-02C-0086	1185-02CN-0086	MS122095	5340-850-6847
	1-1/2	.129	TNC-02C-0129	1185-02CN-0129	MS122135	5340-850-6848
	2	.172	TNC-02C-0172	1185-02CN-0172	MS122175	5340-834-8372
	2-1/2	.215	TNC-02C-0215	1185-02CN-0215	MS122215	—
	3	.258	TNC-02C-0258	1185-02CN-0258	MS122255	—
3-48	1	.099	TNC-03C-0099	1185-03CN-0099	MS122115	5340-111-4194
	1-1/2	.148	TNC-03C-0148	1185-03CN-0148	MS122155	—
	2	.198	TNC-03C-0198	1185-03CN-0198	MS122195	—
	2-1/2	.248	TNC-03C-0248	1185-03CN-0248	MS122235	—
	3	.297	TNC-03C-0297	1185-03CN-0297	MS122275	—
4-40	1	.112	TNC-04C-0112	1185-04CN-0112	MS122076	5340-826-4023
	1-1/2	.168	TNC-04C-0168	1185-04CN-0168	MS122116	5340-842-5290
	2	.224	TNC-04C-0224	1185-04CN-0224	MS122156	5340-825-8215
	2-1/2	.280	TNC-04C-0280	1185-04CN-0280	MS122196	5340-664-4157
	3	.336	TNC-04C-0336	1185-04CN-0336	MS122236	5340-660-1513
5-40	1	.125	TNC-05C-0125	1185-05CN-0125	MS122077	5340-058-4137
	1-1/2	.188	TNC-05C-0188	1185-05CN-0188	MS122117	5340-619-3138
	2	.250	TNC-05C-0250	1185-05CN-0250	MS122157	5340-928-9816
	2-1/2	.312	TNC-05C-0312	1185-05CN-0312	MS122197	—
	3	.375	TNC-05C-0375	1185-05CN-0375	MS122237	—
6-32	1	.138	TNC-06C-0138	1185-06CN-0138	MS122078	5340-843-0003
	1-1/2	.207	TNC-06C-0207	1185-06CN-0207	MS122118	5340-682-1520
	2	.276	TNC-06C-0276	1185-06CN-0276	MS122158	5340-825-4826
	2-1/2	.345	TNC-06C-0345	1185-06CN-0345	MS122198	5340-200-7755
	3	.414	TNC-06C-0414	1185-06CN-0414	MS122238	5340-061-4793
8-32	1	.164	TNC-2C-0164	1185-2CN-0164	MS122079	5340-141-6693
	1-1/2	.246	TNC-2C-0246	1185-2CN-0246	MS122119	5340-297-3841
	2	.328	TNC-2C-0328	1185-2CN-0328	MS122159	5340-290-4509
	2-1/2	.410	TNC-2C-0410	1185-2CN-0410	MS122199	5340-721-7906
	3	.492	TNC-2C-0492	1185-2CN-0492	MS122239	5340-291-3479
10-24	1	.190	TNC-3C-0190	1185-3CN-0190	MS122080	5340-290-4482
	1-1/2	.285	TNC-3C-0285	1185-3CN-0285	MS122120	5340-597-3304
	2	.380	TNC-3C-0380	1185-3CN-0380	MS122160	5340-290-4478
	2-1/2	.475	TNC-3C-0475	1185-3CN-0475	MS122200	5340-597-3305
	3	.570	TNC-3C-0570	1185-3CN-0570	MS122240	5340-291-3482
12-24	1	.216	TNC-1C-0216	1185-1CN-0216	—	5340-969-6086
	1-1/2	.324	TNC-1C-0324	1185-1CN-0324	—	5340-863-8119
	2	.432	TNC-1C-0432	1185-1CN-0432	—	5340-863-8118
	2-1/2	.540	TNC-1C-0540	1185-1CN-0540	—	—
	3	.648	TNC-1C-0648	1185-1CN-0648	—	—
1/4-20	1	.250	TNC-4C-0250	1185-4CN-0250	MS122081	5340-200-7224
	1-1/2	.375	TNC-4C-0375	1185-4CN-0375	MS122121	5340-290-4481
	2	.500	TNC-4C-0500	1185-4CN-0500	MS122161	5340-286-2458
	2-1/2	.625	TNC-4C-0625	1185-4CN-0625	MS122201	5340-290-4515
	3	.750	TNC-4C-0750	1185-4CN-0750	MS122241	5340-290-4489
5/16-18	1	.312	TNC-5C-0312	1185-5CN-0312	MS122082	5340-290-4550
	1-1/2	.469	TNC-5C-0469	1185-5CN-0469	MS122122	5340-290-4521
	2	.625	TNC-5C-0625	1185-5CN-0625	MS122162	5340-290-4520
	2-1/2	.781	TNC-5C-0781	1185-5CN-0781	MS122202	5340-290-4490
	3	.938	TNC-5C-0938	1185-5CN-0938	MS122242	5340-820-9629
3/8-16	1	.375	TNC-6C-0375	1185-6CN-0375	MS122083	5340-290-4519
	1-1/2	.562	TNC-6C-0562	1185-6CN-0562	MS122123	5340-290-4518
	2	.750	TNC-6C-0750	1185-6CN-0750	MS122163	5340-990-7157
	2-1/2	.938	TNC-6C-0938	1185-6CN-0938	MS122203	5340-290-4492
	3	1.125	TNC-6C-1125	1185-6CN-1125	MS122243	5340-682-1453
7/16-14	1	.438	TNC-7C-0438	1185-7CN-0438	MS122084	5340-993-7234
	1-1/2	.656	TNC-7C-0656	1185-7CN-0656	MS122124	5340-290-4506
	2	.875	TNC-7C-0875	1185-7CN-0875	MS122164	5340-990-9017
	2-1/2	1.094	TNC-7C-1094	1185-7CN-1094	MS122204	5340-993-7229
	3	1.312	TNC-7C-1312	1185-7CN-1312	MS122244	5340-993-8194
1/2-13	1	.500	TNC-8C-0500	1185-8CN-0500	MS122085	5340-290-4505
	1-1/2	.750	TNC-8C-0750	1185-8CN-0750	MS122125	5340-290-4504
	2	1.000	TNC-8C-1000	1185-8CN-1000	MS122165	5340-990-7158
	2-1/2	1.250	TNC-8C-1250	1185-8CN-1250	MS122205	5340-855-0802
	3	1.500	TNC-8C-1500	1185-8CN-1500	MS122245	5340-603-0365

Free-running Series, UNC, (continued)

Size	Length (In Dia.)	Length	CoilThread Part Number	Heli-Coil Part Number	MS Number	Federal Stock Number
9/16-12	1	.562	TNC-9C-0562	1185-9CN-0562	MS122086	5340-993-7237
	1-1/2	.844	TNC-9C-0844	1185-9CN-0844	MS122126	5340-290-4493
	2	1.125	TNC-9C-1125	1185-9CN-1125	MS122166	5340-993-7245
	2-1/2	1.406	TNC-9C-1406	1185-9CN-1406	MS122206	5340-726-9499
	3	1.688	TNC-9C-1688	1185-9CN-1688	MS122246	5340-993-8196
5/8-11	1	.625	TNC-10C-0625	1185-10CN-0625	MS122087	5340-682-1666
	1-1/2	.938	TNC-10C-0938	1185-10CN-0938	MS122127	5340-290-4494
	2	1.250	TNC-10C-1250	1185-10CN-1250	MS122167	5340-807-3488
	2-1/2	1.562	TNC-10C-1562	1185-10CN-1562	MS122207	5340-993-7231
	3	1.875	TNC-10C-1875	1185-10CN-1875	MS122247	5340-816-9381
3/4-10	1	.750	TNC-12C-0750	1185-12CN-0750	MS122088	5340-290-4503
	1-1/2	1.125	TNC-12C-1125	1185-12CN-1125	MS122128	5340-045-2812
	2	1.500	TNC-12C-1500	1185-12CN-1500	MS122168	5340-721-8356
	2-1/2	1.875	TNC-12C-1875	1185-12CN-1875	MS122208	5340-826-7864
	3	2.250	TNC-12C-2250	1185-12CN-2250	MS122248	5340-993-8197
7/8-9	1	.875	TNC-14C-0875	1185-14CN-0875	MS122089	5340-993-7236
	1-1/2	1.312	TNC-14C-1312	1185-14CN-1312	MS122129	5340-682-2216
	2	1.750	TNC-14C-1750	1185-14CN-1750	MS122169	5340-664-8332
	2-1/2	2.188	TNC-14C-2188	1185-14CN-2188	MS122209	5340-993-7232
	3	2.625	TNC-14C-2625	1185-14CN-2625	MS122249	5340-993-8198
1-8	1	1.000	TNC-16C-1000	1185-16CN-1000	MS122090	5340-200-2414
	1-1/2	1.500	TNC-16C-1500	1185-16CN-1500	MS122130	5340-530-5603
	2	2.000	TNC-16C-2000	1185-16CN-2000	MS122170	5340-993-7246
	2-1/2	2.500	TNC-16C-2500	1185-16CN-2500	MS122210	5340-993-7233
	3	3.000	TNC-16C-3000	1185-16CN-3000	MS122250	5340-993-8199
1-1/8-7	1	1.125	TNC-18C-1125	1185-18CN-1125	MS122091	5340-059-2371
	1-1/2	1.688	TNC-18C-1688	1185-18CN-1688	MS122131	5340-059-2372
	2	2.250	TNC-18C-2250	1185-18CN-2250	MS122171	5340-059-2373
	2-1/2	2.812	TNC-18C-2812	1185-18CN-2812	MS122211	-
	3	3.375	TNC-18C-3375	1185-18CN-3375	MS122251	-
1-1/4-7	1	1.250	TNC-20C-1250	1185-20CN-1250	MS122092	5340-059-2374
	1-1/2	1.875	TNC-20C-1875	1185-20CN-1875	MS122132	5340-059-2375
	2	2.500	TNC-20C-2500	1185-20CN-2500	MS122172	5340-619-8208
	2-1/2	3.125	TNC-20C-3125	1185-20CN-3125	MS122212	-
	3	3.750	TNC-20C-3750	1185-20CN-3750	MS122252	-
1-3/8-6	1	1.375	TNC-22C-1375	1185-22CN-1375	MS122093	5340-059-2376
	1-1/2	2.062	TNC-22C-2062	1185-22CN-2062	MS122133	5340-059-2377
	2	2.750	TNC-22C-2750	1185-22CN-2750	MS122173	5340-059-2378
	2-1/2	3.438	TNC-22C-3438	1185-22CN-3438	MS122213	-
	3	4.125	TNC-22C-4125	1185-22CN-4125	MS122253	-
1-1/2-6	1	1.500	TNC-24C-1500	1185-24CN-1500	MS122094	5340-059-2379
	1-1/2	2.250	TNC-24C-2250	1185-24CN-2250	MS122134	5340-059-2380
	2	3.000	TNC-24C-3000	1185-24CN-3000	MS122174	5340-059-2381
	2-1/2	3.750	TNC-24C-3750	1185-24CN-3750	MS122214	-
	3	4.500	TNC-24C-4500	1185-24CN-4500	MS122254	-

Free-running Series, UNF

3-56	1	.099	TNF-03C-0099	1191-03CN-0099	MS124670	-
	1-1/2	.148	TNF-03C-0148	1191-03CN-0148	MS124710	-
	2	.198	TNF-03C-0198	1191-03CN-0198	MS124750	-
	2-1/2	.248	TNF-03C-0248	1191-03CN-0248	MS124790	-
	3	.297	TNF-03C-0297	1191-03CN-0297	MS124830	-
4-48	1	.112	TNF-04C-0112	1191-04CN-0112	MS124671	-
	1-1/2	.168	TNF-04C-0168	1191-04CN-0168	MS124711	-
	2	.224	TNF-04C-0224	1191-04CN-0224	MS124751	-
	2-1/2	.280	TNF-04C-0280	1191-04CN-0280	MS124791	-
	3	.336	TNF-04C-0336	1191-04CN-0336	MS124831	-
6-40	1	.138	TNF-06C-0138	1191-06CN-0138	MS124653	5340-045-3553
	1-1/2	.207	TNF-06C-0207	1191-06CN-0207	MS124693	5340-982-7842
	2	.276	TNF-06C-0276	1191-06CN-0276	MS124733	5340-045-3555
	2-1/2	.345	TNF-06C-0345	1191-06CN-0345	MS124773	5340-726-3547
	3	.414	TNF-06C-0414	1191-06CN-0414	MS124813	5340-833-7459
8-36	1	.164	TNF-2C-0164	1191-2CN-0164	MS124654	-
	1-1/2	.246	TNF-2C-0246	1191-2CN-0246	MS124694	5340-097-6337
	2	.328	TNF-2C-0328	1191-2CN-0328	MS124734	5340-141-6688
	2-1/2	.410	TNF-2C-0410	1191-2CN-0410	MS124774	-
	3	.492	TNF-2C-0492	1191-2CN-0492	MS124814	5340-833-7457
10-32	1	.190	TNF-3C-0190	1191-3CN-0190	MS124655	5340-290-4476
	1-1/2	.285	TNF-3C-0285	1191-3CN-0285	MS124695	5340-597-3302
	2	.380	TNF-3C-0380	1191-3CN-0380	MS124735	5340-290-4480
	2-1/2	.475	TNF-3C-0475	1191-3CN-0475	MS124775	5340-597-3306
	3	.570	TNF-3C-0570	1191-3CN-0570	MS124815	5340-663-3267

Free-running Series, UNF (continued)

Size	Length (In Dia.)	Length	CoilThread Part Number	Heli-Coil Part Number	MS Number	Federal Stock Number
1/4-28	1	.250	TNF-4C-0250	1191-4CN-0250	MS124656	5340-286-6600
	1-1/2	.375	TNF-4C-0375	1191-4CN-0375	MS124696	5340-291-3484
	2	.500	TNF-4C-0500	1191-4CN-0500	MS124736	5340-290-4497
	2-1/2	.625	TNF-4C-0625	1191-4CN-0625	MS124776	5340-290-4502
	3	.750	TNF-4C-0750	1191-4CN-0750	MS124816	5340-290-4501
5/16-24	1	.312	TNF-5C-0312	1191-5CN-0312	MS124657	5340-290-4660
	1-1/2	.496	TNF-5C-0469	1191-5CN-0469	MS124697	5340-291-3495
	2	.625	TNF-5C-0625	1191-5CN-0625	MS124737	5340-514-2321
	2-1/2	.781	TNF-5C-0781	1191-5CN-0781	MS124777	5340-680-3131
	3	.938	TNF-5C-0938	1191-5CN-0938	MS124817	5340-291-3483
3/8-24	1	.375	TNF-6C-0375	1191-6CN-0375	MS124658	5340-291-3493
	1-1/2	.562	TNF-6C-0562	1191-6CN-0562	MS124698	5340-291-3492
	2	.750	TNF-6C-0750	1191-6CN-0750	MS124738	5340-990-7159
	2-1/2	.938	TNF-6C-0938	1191-6CN-0938	MS124778	5340-597-3328
	3	1.125	TNF-6C-1125	1191-6CN-1125	MS124818	5340-291-3491
7/16-20	1	.438	TNF-7C-0438	1191-7CN-0438	MS124659	5340-597-3329
	1-1/2	.656	TNF-7C-0656	1191-7CN-0656	MS124699	5340-634-7860
	2	.875	TNF-7C-0875	1191-7CN-0875	MS124739	5340-290-4511
	2-1/2	1.094	TNF-7C-1094	1191-7CN-1094	MS124779	5340-993-8180
	3	1.312	TNF-7C-1312	1191-7CN-1312	MS124819	5340-993-7207
1/2-20	1	.500	TNF-8C-0500	1191-8CN-0500	MS124660	5340-598-5634
	1-1/2	.750	TNF-8C-0750	1191-8CN-0750	MS124700	5340-291-3488
	2	1.000	TNF-8C-1000	1191-8CN-1000	MS124740	5340-290-4513
	2-1/2	1.250	TNF-8C-1250	1191-8CN-1250	MS124780	5340-290-4507
	3	1.500	TNF-8C-1500	1191-8CN-1500	MS124820	5340-845-1982
9/16-18	1	.562	TNF-9C-0562	1191-9CN-0562	MS124661	5340-290-5144
	1-1/2	.844	TNF-9C-0844	1191-9CN-0844	MS124701	5340-291-3487
	2	1.125	TNF-9C-1125	1191-9CN-1125	MS124741	5340-200-7223
	2-1/2	1.406	TNF-9C-1406	1191-9CN-1406	MS124781	5340-810-9943
	3	1.688	TNF-9C-1688	1191-9CN-1688	MS124821	5340-291-3486
5/8-18	1	.625	TNF-10C-0625	1191-10CN-0625	MS124662	5340-598-5643
	1-1/2	.938	TNF-10C-0938	1191-10CN-0938	MS124702	5340-530-7948
	2	1.250	TNF-10C-1250	1191-10CN-1250	MS124742	5340-597-5157
	2-1/2	1.562	TNF-10C-1562	1191-10CN-1562	MS124782	5340-993-8181
	3	1.875	TNF-10C-1875	1191-10CN-1875	MS124822	5340-993-7209
3/4-16	1	.750	TNF-12C-0750	1191-12CN-0750	MS124663	5340-141-6710
	1-1/2	1.125	TNF-12C-1125	1191-12CN-1125	MS124703	5340-655-7971
	2	1.500	TNF-12C-1500	1191-12CN-1500	MS124743	5340-200-7222
	2-1/2	1.875	TNF-12C-1875	1191-12CN-1875	MS124783	5340-993-8182
	3	2.250	TNF-12C-2250	1191-12CN-2250	MS124823	5340-993-7210
7/8-14	1	.875	TNF-14C-0875	1191-14CN-0875	MS124664	5340-598-5644
	1-1/2	1.312	TNF-14C-1312	1191-14CN-1312	MS124704	5340-045-2848
	2	1.750	TNF-14C-1750	1191-14CN-1750	MS124744	5340-754-2151
	2-1/2	2.188	TNF-14C-2188	1191-14CN-2188	MS124784	5340-993-8183
	3	2.625	TNF-14C-2625	1191-14CN-2625	MS124824	5340-993-7211
1-12	1	1.000	TNF-161C-1000	1191-161CN-1000	MS124651	5340-044-4971
	1-1/2	1.500	TNF-161C-1500	1191-161CN-1500	MS124691	5340-987-9145
	2	2.000	TNF-161C-2000	1191-161CN-2000	MS124731	5340-044-4970
	2-1/2	2.500	TNF-161C-2500	1191-161CN-2500	MS124771	-
	3	3.000	TNF-161C-3000	1191-161CN-3000	MS124811	-
1-1/8-12	1	1.125	TNF-18C-1125	1191-18CN-1125	MS124666	5340-598-5599
	1-1/2	1.688	TNF-18C-1688	1191-18CN-1688	MS124706	5340-846-7828
	2	2.250	TNF-18C-2250	1191-18CN-2250	MS124746	5340-059-2386
	2-1/2	2.812	TNF-18C-2812	1191-18CN-2812	MS124786	-
	3	3.375	TNF-18C-3375	1191-18CN-3375	MS124826	-
1-1/4-12	1	1.250	TNF-20C-1250	1191-20CN-1250	MS124667	5340-200-4033
	1-1/2	1.875	TNF-20C-1875	1191-20CN-1875	MS124707	5340-558-3435
	2	2.500	TNF-20C-2500	1191-20CN-2500	MS124747	5340-059-2385
	2-1/2	3.125	TNF-20C-3125	1191-20CN-3125	MS124787	-
	3	3.750	TNF-20C-3750	1191-20CN-3750	MS124827	-
1-3/8-12	1	1.375	TNF-22C-1375	1191-22CN-1375	MS124668	5340-059-2384
	1-1/2	2.062	TNF-22C-2062	1191-22CN-2062	MS124708	5340-059-2383
	2	2.750	TNF-22C-2750	1191-22CN-2750	MS124748	5340-059-2382
	2-1/2	3.438	TNF-22C-3438	1191-22CN-3438	MS124788	-
	3	4.125	TNF-22C-4125	1191-22CN-4125	MS124828	-
1-1/2-12	1	1.500	TNF-24C-1500	1191-24CN-1500	MS124669	5340-836-1941
	1-1/2	2.250	TNF-24C-2250	1191-24CN-2250	MS124709	5340-059-2389
	2	3.000	TNF-24C-3000	1191-24CN-3000	MS124749	5340-059-2388
	2-1/2	3.750	TNF-24C-3750	1191-24CN-3750	MS124789	-
	3	4.500	TNF-24C-4500	1191-24CN-4500	MS124829	-

Locking Series, UNC

Size	Length (In Dia.)	Length	CoilThread Part Number	Heli-Coil Part Number	MS Number	Federal Stock Number
2-56	1	.086	TLC-02C-0086	3585-02CN-0086	MS21209-C0210	5340-855-7892
	1-1/2	.129	TLC-02C-0129	3585-02CN-0129	MS21209-C0215	5340-855-7893
	2	.172	TLC-02C-0172	3585-02CN-0172	MS21209-C0220	5340-462-4226
	2-1/2	.215	TLC-02C-0215	3585-02CN-0215	MS21209-C0225	—
	3	.258	TLC-02C-0258	3585-02CN-0258	MS21209-C0230	—
3-48	1	.099	TLC-03C-0099	3585-03CN-0099	MS21209-C0310	—
	1-1/2	.148	TLC-03C-0148	3585-03CN-0148	MS21209-C0315	5340-886-6312
	2	.198	TLC-03C-0198	3585-03CN-0198	MS21209-C0320	—
	2-1/2	.248	TLC-03C-0248	3585-03CN-0248	MS21209-C0325	—
	3	.297	TLC-03C-0297	3585-03CN-0297	MS21209-C0330	—
4-40	1	.112	TLC-04C-0112	3585-04CN-0112	MS21209-C0410	5340-631-7897
	1-1/2	.168	TLC-04C-0168	3585-04CN-0168	MS21209-C0415	5340-631-7894
	2	.224	TLC-04C-0224	3585-04CN-0224	MS21209-C0420	5340-827-4024
	2-1/2	.280	TLC-04C-0280	3585-04CN-0280	MS21209-C0425	5340-631-7889
	3	.336	TLC-04C-0336	3585-04CN-0336	MS21209-C0430	5340-721-7849
5-40	1	.125	TLC-05C-0125	3585-05CN-0125	MS21209-C0510	—
	1-1/2	.188	TLC-05C-0188	3585-05CN-0188	MS21209-C0515	5340-863-8121
	2	.250	TLC-05C-0250	3585-05CN-0250	MS21209-C0520	5340-863-8120
	2-1/2	.312	TLC-05C-0312	3585-05CN-0312	MS21209-C0525	—
	3	.375	TLC-05C-0375	3585-05CN-0375	MS21209-C0530	—
6-32	1	.138	TLC-06C-0138	3585-06CN-0138	MS21209-C0610	5340-245-5195
	1-1/2	.207	TLC-06C-0207	3585-06CN-0207	MS21209-C0615	5340-815-4930
	2	.276	TLC-06C-0276	3585-06CN-0276	MS21209-C0620	5340-558-8826
	2-1/2	.345	TLC-06C-0345	3585-06CN-0345	MS21209-C0625	—
	3	.414	TLC-06C-0414	3585-06CN-0414	MS21209-C0630	—
8-32	1	.164	TLC-2C-0164	3585-2CN-0164	MS21209-C0810	5340-631-7891
	1-1/2	.246	TLC-2C-0246	3585-2CN-0246	MS21209-C0815	5340-815-4929
	2	.328	TLC-2C-0328	3585-2CN-0328	MS21209-C0820	5340-721-6936
	2-1/2	.410	TLC-2C-0410	3585-2CN-0410	MS21209-C0825	5340-965-9522
	3	.492	TLC-2C-0492	3585-2CN-0492	MS21209-C0830	5340-079-9570
10-24	1	.190	TLC-3C-0190	3585-3CN-0190	MS21209-C1-10	—
	1-1/2	.285	TLC-3C-0285	3585-3CN-0285	MS21209-C1-15	5340-680-3762
	2	.380	TLC-3C-0380	3585-3CN-0380	MS21209-C1-20	5340-990-8643
	2-1/2	.475	TLC-3C-0475	3585-3CN-0475	MS21209-C1-25	—
	3	.570	TLC-3C-0570	3585-3CN-0570	MS21209-C1-30	—
12-24	1	.216	TLC-1C-0216	3585-1CN-0216	MS21209-C2-10	—
	1-1/2	.324	TLC-1C-0324	3585-1CN-0324	MS21209-C2-15	5340-863-8116
	2	.432	TLC-1C-0432	3585-1CN-0432	MS21209-C2-20	5340-863-8113
	2-1/2	.540	TLC-1C-0540	3585-1CN-0540	MS21209-C2-25	—
	3	.648	TLC-1C-0648	3585-1CN-0648	MS21209-C2-30	—
1/4-20	1	.250	TLC-4C-0250	3585-4CN-0250	MS21209-C4-10	5340-999-1181
	1-1/2	.375	TLC-4C-0375	3585-4CN-0375	MS21209-C4-15	5340-754-0847
	2	.500	TLC-4C-0500	3585-4CN-0500	MS21209-C4-20	5340-721-8352
	2-1/2	.625	TLC-4C-0625	3585-4CN-0625	MS21209-C4-25	5340-805-6060
	3	.750	TLC-4C-0750	3585-4CN-0750	MS21209-C4-30	—
5/16-18	1	.312	TLC-5C-0312	3585-5CN-0312	MS21209-C5-10	5340-685-0926
	1-1/2	.496	TLC-5C-0469	3585-5CN-0469	MS21209-C5-15	5340-803-5574
	2	.625	TLC-5C-0625	3585-5CN-0625	MS21209-C5-20	5340-825-6938
	2-1/2	.781	TLC-5C-0781	3585-5CN-0781	MS21209-C5-25	—
	3	.938	TLC-5C-0938	3585-5CN-0938	MS21209-C5-30	—
3/8-16	1	.375	TLC-6C-0375	3585-6CN-0375	MS21209-C6-10	5340-812-1892
	1-1/2	.562	TLC-6C-0562	3585-6CN-0562	MS21209-C6-15	5340-754-1976
	2	.750	TLC-6C-0750	3585-6CN-0750	MS21209-C6-20	5340-812-1894
	2-1/2	.938	TLC-6C-0938	3585-6CN-0938	MS21209-C6-25	—
	3	1.125	TLC-6C-1125	3585-6CN-1125	MS21209-C6-30	—
7/16-14	1	.438	TLC-7C-0438	3585-7CN-0438	MS21209-C7-10	5340-045-0516
	1-1/2	.656	TLC-7C-0656	3585-7CN-0656	MS21209-C7-15	5340-701-3811
	2	.875	TLC-7C-0875	3585-7CN-0875	MS21209-C7-20	5340-723-6775
	2-1/2	1.094	TLC-7C-1094	3585-7CN-1094	MS21209-C7-25	—
	3	1.312	TLC-7C-1312	3585-7CN-1312	MS21209-C7-30	—
1/2-13	1	.500	TLC-8C-0500	3585-8CN-0500	MS21209-C8-10	5340-834-7050
	1-1/2	.750	TLC-8C-0750	3585-8CN-0750	MS21209-C8-15	5340-814-9865
	2	1.000	TLC-8C-1000	3585-8CN-1000	MS21209-C8-20	5340-812-1900
	2-1/2	1.250	TLC-8C-1250	3585-8CN-1250	MS21209-C8-25	—
	3	1.500	TLC-8C-1500	3585-8CN-1500	MS21209-C8-30	—
9/16-12	1	.562	TLC-9C-0562	3585-9CN-0562	MS21209-C9-10	—
	1-1/2	.844	TLC-9C-0844	3585-9CN-0844	MS21209-C9-15	5340-987-9146
	2	1.125	TLC-9C-1125	3585-9CN-1125	MS21209-C9-20	5340-723-6777
	2-1/2	1.406	TLC-9C-1406	3585-9CN-1406	MS21209-C9-25	—
	3	1.688	TLC-9C-1688	3585-9CN-1688	MS21209-C9-30	—

Locking Series, UNC (continued)

Size	Length (In Dia.)	Length	Coil Thread Part Number	Heli-Coil Part Number	MS Number	Federal Stock Number
5/8-11	1	.625	TLC-10C-0625	3585-10CN-0625	MS21209-C1010	5340-772-4849
	1-1/2	.938	TLC-10C-0938	3585-10CN-0938	MS21209-C1015	5340-811-9469
	2	1.250	TLC-10C-1250	3585-10CN-1250	MS21209-C1020	5340-812-1895
	2-1/2	1.562	TLC-10C-1562	3585-10CN-1562	MS21209-C1025	.
3/4-10	3	1.875	TLC-10C-1875	3585-10CN-1875	MS21209-C1030	.
	1	.750	TLC-12C-0750	3585-12CN-0750	MS21209-C1210	5340-753-3497
	1-1/2	1.125	TLC-12C-1125	3585-12CN-1125	MS21209-C1215	5340-723-6779
	2	1.500	TLC-12C-1500	3585-12CN-1500	MS21209-C1220	5340-800-1676
	2-1/2	1.875	TLC-12C-1875	3585-12CN-1875	MS21209-C1225	.
7/8-9	3	2.250	TLC-12C-2250	3585-12CN-2250	MS21209-C1230	.
	1	.875	TLC-14C-0875	3585-14CN-0875	MS21209-C1410	5340-724-1921
	1-1/2	1.312	TLC-14C-1312	3585-14CN-1312	MS21209-C1415	5340-724-1920
	2	1.750	TLC-14C-1750	3585-14CN-1750	MS21209-C1420	5340-724-1919
1-8	2-1/2	2.188	TLC-14C-2188	3585-14CN-2188	MS21209-C1425	5340-993-7232
	3	2.625	TLC-14C-2625	3585-14CN-2625	MS21209-C1430	.
	1	1.000	TLC-16C-1000	3585-16CN-1000	MS21209-C1610	.
	1-1/2	1.500	TLC-16C-1500	3585-16CN-1500	MS21209-C1615	5340-863--8111
1-1/8-7	2	2.000	TLC-16C-2000	3585-16CN-2000	MS21209-C1620	5340-812-1897
	2-1/2	2.500	TLC-16C-2500	3585-16CN-2500	MS21209-C1625	.
	3	3.000	TLC-16C-3000	3585-16CN-3000	MS21209-C1630	.
	1	1.125	TLC-18C-1125	3585-18CN-1125	MS21209-C1810	.
1-1/4-7	1-1/2	1.688	TLC-18C-1688	3585-18CN-1688	MS21209-C1815	---
	2	2.250	TLC-18C-2250	3585-18CN-2250	MS21209-C1820	---
	2-1/2	2.812	TLC-18C-2812	3585-18CN-2812	MS21209-C1825	---
	3	3.375	TLC-18C-3375	3585-18CN-3375	MS21209-C1830	.
1-1/2-6	1	1.250	TLC-20C-1250	3585-20CN-1250	MS21209-C2010	5340-956-3008
	1-1/2	1.875	TLC-20C-1875	3585-20CN-1875	MS21209-C2015	---
	2	2.500	TLC-20C-2500	3585-20CN-2500	MS21209-C2020	---
	2-1/2	3.125	TLC-20C-3125	3585-20CN-3125	MS21209-C2025	---
1-3/8-6	3	3.750	TLC-20C-3750	3585-20CN-3750	MS21209-C2030	.
	1	1.375	TLC-22C-1375	3585-22CN-1375	MS21209-C2210	---
	1-1/2	2.062	TLC-22C-2062	3585-22CN-2062	MS21209-C2215	---
	2	2.750	TLC-22C-2750	3585-22CN-2750	MS21209-C2220	---
1-1/2-6	2-1/2	3.438	TLC-22C-3438	3585-22CN-3438	MS21209-C2225	.
	3	4.125	TLC-22C-4125	3585-22CN-4125	MS21209-C2230	.
	1	1.500	TLC-24C-1500	3585-24CN-1500	MS21209-C2410	---
	1-1/2	2.250	TLC-24C-2250	3585-24CN-2250	MS21209-C2415	---
1-1/2-6	2	3.000	TLC-24C-3000	3585-24CN-3000	MS21209-C2420	---
	2-1/2	3.750	TLC-24C-3750	3585-24CN-3750	MS21209-C2425	---
	3	4.500	TLC-24C-4500	3585-24CN-4500	MS21209-C2430	---

Locking Series, UNF

3-56	1	.099	TLF-03C-0099	3591-03CN-0099	MS21209-F0310	.
	1-1/2	.148	TLF-03C-0148	3591-03CN-0148	MS21209-F0315	.
	2	.198	TLF-03C-0198	3591-03CN-0198	MS21209-F0320	.
	2-1/2	.248	TLF-03C-0248	3591-03CN-0248	MS21209-F0325	.
4-48	3	.297	TLF-03C-0297	3591-03CN-0297	MS21209-F0330	.
	1	.112	TLF-04C-0112	3591-04CN-0112	MS21209-F0410	.
	1-1/2	.168	TLF-04C-0168	3591-04CN-0168	MS21209-F0415	.
	2	.224	TLF-04C-0224	3591-04CN-0224	MS21209-F0420	.
6-40	2-1/2	.280	TLF-04C-0280	3591-04CN-0280	MS21209-F0425	.
	3	.336	TLF-04C-0336	3591-04CN-0336	MS21209-F0430	.
	1	.138	TLF-06C-0138	3591-06CN-0138	MS21209-F0610	5340-754-1207
	1-1/2	.207	TLF-06C-0207	3591-06CN-0207	MS21209-F0615	5340-825-1475
8-36	2	.276	TLF-06C-0276	3591-06CN-0276	MS21209-F0620	5340-813-2162
	2-1/2	.345	TLF-06C-0345	3591-06CN-0345	MS21209-F0625	.
	3	.414	TLF-06C-0414	3591-06CN-0414	MS21209-F0630	.
	1	.164	TLF-2C-0164	3591-2CN-0164	MS21209-F0810	.
10-32	1-1/2	.246	TLF-2C-0246	3591-2CN-0246	MS21209-F0815	.
	2	.328	TLF-2C-0328	3591-2CN-0328	MS21209-F0820	.
	2-1/2	.410	TLF-2C-0410	3591-2CN-0410	MS21209-F0825	.
	3	.492	TLF-2C-0492	3591-2CN-0492	MS21209-F0830	.
10-32	1	.190	TLF-3C-0190	3591-3CN-0190	MS21209-F1-10	5340-684-9501
	1-1/2	.285	TLF-3C-0285	3591-3CN-0285	MS21209-F1-15	5340-800-7874
	2	.380	TLF-3C-0380	3591-3CN-0380	MS21209-F1-20	5340-721-7653
	2-1/2	.475	TLF-3C-0475	3591-3CN-0475	MS21209-F1-25	---
10-32	3	.570	TLF-3C-0570	3591-3CN-0570	MS21209-F1-30	---

Locking Series, UNF (continued)

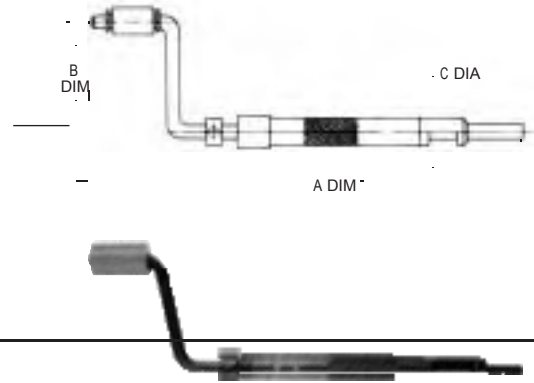
Size	Length (In Dia.)	Length	CoilThread Part Number	Heli-Coil Part Number	MS Number	Federal Stock Number
1/4-28	1	.250	TLF-4C-0250	3591-4CN-0250	MS21209-F4-10	5340-805-9658
	1-1/2	.375	TLF-4C-0375	3591-4CN-0375	MS21209-F4-15	5340-829-2141
	2	.500	TLF-4C-0500	3591-4CN-0500	MS21209-F4-20	5340-721-7498
	2-1/2	.625	TLF-4C-0625	3591-4CN-0625	MS21209-F4-25	5340-410-2476
	3	.750	TLF-4C-0750	3591-4CN-0750	MS21209-F4-30	5340-584-1891
5/16-24	1	.312	TLF-5C-0312	3591-5CN-0312	MS21209-F5-10	5340-579-3087
	1-1/2	.469	TLF-5C-0469	3591-5CN-0469	MS21209-F5-15	5340-847-0734
	2	.625	TLF-5C-0625	3591-5CN-0625	MS21209-F5-20	5340-582-7256
	2-1/2	.781	TLF-5C-0781	3591-5CN-0781	MS21209-F5-25	5340-819-2448
	3	.938	TLF-5C-0938	3591-5CN-0938	MS21209-F5-30	5340-079-4983
3/8-24	1	.375	TLF-6C-0375	3591-6CN-0375	MS21209-F6-10	5340-754-1817
	1-1/2	.562	TLF-6C-0562	3591-6CN-0562	MS21209-F6-15	5340-680-8768
	2	.750	TLF-6C-0750	3591-6CN-0750	MS21209-F6-20	5340-678-3311
	2-1/2	.938	TLF-6C-0938	3591-6CN-0938	MS21209-F6-25	5340-059-5685
	3	1.125	TLF-6C-1125	3591-6CN-1125	MS21209-F6-30	.
7/16-20	1	.438	TLF-7C-0438	3591-7CN-0438	MS21209-F7-10	5340-716-9148
	1-1/2	.656	TLF-7C-0656	3591-7CN-0656	MS21209-F7-15	5340-678-3310
	2	.875	TLF-7C-0875	3591-7CN-0875	MS21209-F7-20	5340-619-4227
	2-1/2	1.094	TLF-7C-1094	3591-7CN-1094	MS21209-F7-25	5340-067-7814
	3	1.312	TLF-7C-1312	3591-7CN-1312	MS21209-F7-30	.
1/2-20	1	.500	TLF-8C-0500	3591-8CN-0500	MS21209-F8-10	5340-803-7150
	1-1/2	.750	TLF-8C-0750	3591-8CN-0750	MS21209-F8-15	5340-678-3309
	2	1.000	TLF-8C-1000	3591-8CN-1000	MS21209-F8-20	5340-721-7915
	2-1/2	1.250	TLF-8C-1250	3591-8CN-1250	MS21209-F8-25	5340-982-7890
	3	1.500	TLF-8C-1500	3591-8CN-1500	MS21209-F8-30	.
9/16-18	1	.562	TLF-9C-0562	3591-9CN-0562	MS21209-F9-10	5340-688-0152
	1-1/2	.844	TLF-9C-0844	3591-9CN-0844	MS21209-F9-15	5340-685-0693
	2	1.125	TLF-9C-1125	3591-9CN-1125	MS21209-F9-20	5340-726-8526
	2-1/2	1.406	TLF-9C-1406	3591-9CN-1406	MS21209-F9-25	.
	3	1.688	TLF-9C-1688	3591-9CN-1688	MS21209-F9-30	.
5/8-18	1	.625	TLF-10C-0625	3591-10CN-0625	MS21209-F1010	5340-815-8338
	1-1/2	.938	TLF-10C-0938	3591-10CN-0938	MS21209-F1015	5340-834-8362
	2	1.250	TLF-10C-1250	3591-10CN-1250	MS21209-F1020	5340-728-9774
	2-1/2	1.562	TLF-10C-1562	3591-10CN-1562	MS21209-F1025	.
	3	1.875	TLF-10C-1875	3591-10CN-1875	MS21209-F1030	.
3/4-16	1	.750	TLF-12C-0750	3591-12CN-0750	MS21209-F1210	5340-893-1034
	1-1/2	1.125	TLF-12C-1125	3591-12CN-1125	MS21209-F1215	5340-723-6780
	2	1.500	TLF-12C-1500	3591-12CN-1500	MS21209-F1220	5340-836-2941
	2-1/2	1.875	TLF-12C-1875	3591-12CN-1875	MS21209-F1225	.
	3	2.250	TLF-12C-2250	3591-12CN-2250	MS21209-F1230	.
7/8-14	1	.875	TLF-14C-0875	3591-14CN-0875	MS21209-F1410	5340-985-6568
	1-1/2	1.312	TLF-14C-1312	3591-14CN-1312	MS21209-F1415	5340-068-1286
	2	1.750	TLF-14C-1750	3591-14CN-1750	MS21209-F1420	5340-721-5110
	2-1/2	2.188	TLF-14C-2188	3591-14CN-2188	MS21209-F1425	.
	3	2.625	TLF-14C-2625	3591-14CN-2625	MS21209-F1430	.
1-12	1	1.000	TLF-161C-1000	3591-161CN-1000	MS21209-F1610	5340-045-0528
	1-1/2	1.500	TLF-161C-1500	3591-161CN-1500	MS21209-F1615	5340-045-0514
	2	2.000	TLF-161C-2000	3591-161CN-2000	MS21209-F1620	5340-045-0515
	2-1/2	2.500	TLF-161C-2500	3591-161CN-2500	MS21209-F1625	.
	3	3.000	TLF-161C-3000	3591-161CN-3000	MS21209-F1630	.
1-1/8-12	1	1.125	TLF-18C-1125	3591-18CN-1125	MS21209-F1810	.
	1-1/2	1.688	TLF-18C-1688	3591-18CN-1688	MS21209-F1815	.
	2	2.250	TLF-18C-2250	3591-18CN-2250	MS21209-F1820	.
	2-1/2	2.812	TLF-18C-2812	3591-18CN-2812	MS21209-F1825	.
	3	3.375	TLF-18C-3375	3591-18CN-3375	MS21209-F1830	.
1-1/4-12	1	1.250	TLF-20C-1250	3591-20CN-1250	MS21209-F2010	.
	1-1/2	1.875	TLF-20C-1875	3591-20CN-1875	MS21209-F2015	.
	2	2.500	TLF-20C-2500	3591-20CN-2500	MS21209-F2020	.
	2-1/2	3.125	TLF-20C-3125	3591-20CN-3125	MS21209-F2025	.
	3	3.750	TLF-20C-3750	3591-20CN-3750	MS21209-F2030	.
1-3/8-12	1	1.375	TLF-22C-1375	3591-22CN-1375	MS21209-F2210	.
	1-1/2	2.062	TLF-22C-2062	3591-22CN-2062	MS21209-F2215	.
	2	2.750	TLF-22C-2750	3591-22CN-2750	MS21209-F2220	.
	2-1/2	3.438	TLF-22C-3438	3591-22CN-3438	MS21209-F2225	.
	3	4.125	TLF-22C-4125	3591-22CN-4125	MS21209-F2230	.
1-1/2-12	1	1.500	TLF-24C-1500	3591-24CN-1500	MS21209-F2410	.
	1-1/2	2.250	TLF-24C-2250	3591-24CN-2250	MS21209-F2415	.
	2	3.000	TLF-24C-3000	3591-24CN-3000	MS21209-F2420	.
	2-1/2	3.750	TLF-24C-3750	3591-24CN-3750	MS21209-F2425	.
	3	4.500	TLF-24C-4500	3591-24CN-4500	MS21209-F2430	.

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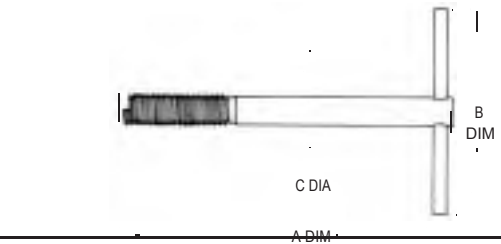
Part Numbers and Dimensions

Nominal Thread Size	Tool Style	Tool Part Number	A Dim.	B Dim.	C Dia.	
Unified Coarse						
2 (.086)-56	1	CIC-02	7-5/16	1-3/4	3/8	
3 (.099)-48		CIC-03	7-5/16	1-3/4	3/8	
4 (.112)- 40		CIC-04	7-5/16	1-3/4	3/8	
5 (.125)- 40		CIC-05	7-5/16	1-3/4	7/16	
6 (.138)- 32		CIC-06	7-5/16	1-3/4	7/16	
8 (.164)- 32		CIC-2	7-5/16	1-3/4	7/16	
10 (.190)- 24		CIC-3	7-5/16	1-3/4	7/16	
12 (.216)- 24		CIC-1	7-7/8	2	1/2	
1/4 (.250)- 20		CIC-4	7-7/8	2	1/2	
5/16 (.3125)- 18		CIC-5	7-21/32	2-1/2	5/8	
3/8 (.3750)- 16		CIC-6	7-15/16	2-1/2	11/16	
7/16 (.4375)- 14		CIC-7	8-19/32	2-1/2	3/4	
1/2 (.5000)- 13		CIC-8	9-1/4	2-1/2	13/16	
9/16 (.5625)- 12		2	CIC-9	4-7/8	3-1/2	5/8
5/8 (.6250)- 11			CIC-10	4-7/8	3-1/2	5/8
3/4 (.7500)- 10			CIC-12	4-7/8	3-1/2	3/4
7/8 (.8750)- 9	CIC-14		4-7/8	4	7/8	
1 (1.0000)- 8	CIC-16		5-1/2	4	1	
Unified Fine						
3 (.099)- 56	1	CIF-03	7-5/16	1-3/4	3/8	
4 (.112)- 48		CIF-04	7-5/16	1-3/4	3/8	
6 (.138)- 40		CIF-06	7-5/16	1-3/4	7/16	
8 (.164)- 36		CIF-2	7-5/16	1-3/4	7/16	
10 (.190)- 32		CIF-3	7-5/16	1-3/4	7/16	
1/4 (.2500)- 28		CIF-4	7-7/8	2	1/2	
5/16 (.3125)- 24		CIF-5	7-21/32	2-1/2	5/8	
3/8 (.3750)- 24		CIF-6	7-15/16	2-1/2	11/16	
7/16 (.4375)- 20		CIF-7	8-19/32	2-1/2	3/4	
1/2 (.5000)- 20		CIF-8	9-1/4	2-1/2	13/16	
9/16 (.5625)- 18		3	CIF-9	5-3/8	3-1/2	9/16
5/8 (.6250)- 18			CIF-10	5-5/8	3-1/2	5/8
3/4 (.7500)- 16			CIF-12	6-13/32	3-1/2	3/4
7/8 (.8750)- 14			CIF-14	7-5/32	4	7/8
1 (1.0000)- 12			CIF-16	7-15/16	4	1

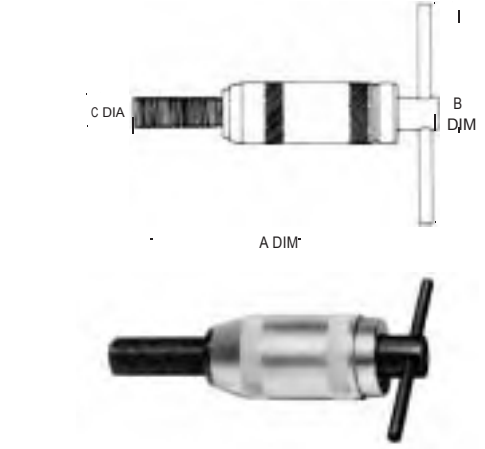
Prewinder, Captive Sleeve Type, Style #1
For sizes 2-56 through 1/2" UNC, and for 3-56 through 1/2" UNF



Threaded Mandrel, Style 2
For sizes 9/16" through 1" UNC



Prewinder, Non-Captive Sleeve Type, Style 3
For sizes 9/16" through 1" UNF



CoilThread Inserts are supplied in both coarse and fine threads. Fine thread inserts are generally more flexible in the free state than coarse thread inserts.

NOTE: The same tools are used for both free-running and locking inserts.

The Air Driven Installation Tool consists of the Air Motor, Adapter, and Front End Assembly. It can be used to install Tanged or Tangless Inserts, inch or metric sizes. The Front End Assembly is the only component that changes depending on the thread size, whether the inserts being installed are Tanged or Tangless, and if they are inch or metric.

A different Front End Assembly is required for each insert thread size.

Features:

- Adjustable for different insert lengths and installation depths.
- Semi-automatic installation.
- Strip feed speeds installation.
- Lightweight; can be used free-hand or with tool holder.
- Compatible with competitors' inserts and tool components.



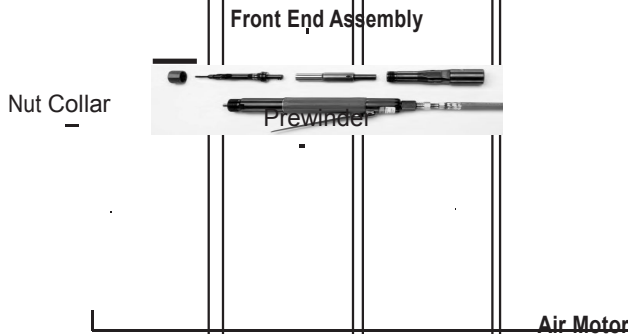
The Air Tool can be mounted on the Kato Radial Arm Tool Holder, Part Number CT21042.



Select KATO Air-Driven Installation Tools to provide heavy duty service for high volume production runs. Use vertically mounted in the KATO Power Tool Holder or freehand at any angle; a complete tool weighs little more than a pound. Operation is simple and semi-automatic: light thumb-pressure on a single lever prewinds and drives inserts into threaded hole: release of lever automatically retracts mandrel, resetting tool for the next insert.

(Usable with bulk or strip-feed inserts)

Note: For air installation of Tanged Metric, Tangless Unified or Tangless Metric Inserts, see the appropriate section of the catalog for the selection of the Front End Assemblies needed. The Air Motor and Adapter are the same for all insert sizes and types. Contact the KATO Tech Group with any questions on power tools.



Adapter (includes Nut Collar)

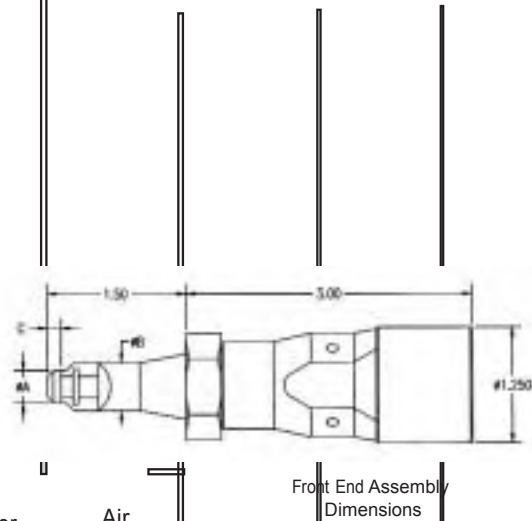
Air Motor

Hose (to air supply)

Lever

To Order:

Three separate parts are required to form a complete KATO Air-Driven Installation Tool. Please request all three part numbers (listed in shaded columns) when ordering. Part numbers to order replacement mandrels and prewinders are also listed in the table below.



Nominal Thread Size*	Complete Assembly	Replacement Mandrel	Replacement Prewinder	Adapter **	Air Motor	Front End Assembly Dimensions		
						A DIA.	B	C
Unified Coarse								
2 (.086)-56	CT11000-02	CT11200-02	CT11202-02			0.32	0.32	0.09
4 (.112)-40	CT11000-04	CT11200-04	CT11202-04			0.25	0.40	0.13
6 (.138)-32	CT11000-06	CT11200-06	CT11202-06	CT9605		0.32	0.50	0.14
8 (.164)-32	CT11000-2	CT11200-2	CT11202-2		CT25017	0.35	0.51	0.15
10 (.190)-24	CT11000-3	CT11200-3	CT11202-3			0.38	0.51	0.19
1/4 (.250)-20	CT11000-4	CT11200-4	CT11202-4			0.42	0.63	0.22
5/16 (.312)-18	CT11000-5	CT11200-5	CT11202-5	CT9705		0.56	0.75	0.26
Unified Fine								
10 (.190)-32	CT11001-3	CT11201-3	CT11203-3	CT9605		0.38	0.51	0.15
1/4 (.250)-28	CT11001-4	CT11201-4	CT11203-4		CT25017	0.43	0.63	0.19
5/16 (.312)-24	CT11001-5	CT11201-5	CT11203-5	CT9705		0.56	0.75	0.22

*Contact KATO Tech Group for sizes not shown. **Large adapter, part no. CT9705 required for sizes 5/16 and larger.

Tanged Unified Size Inserts

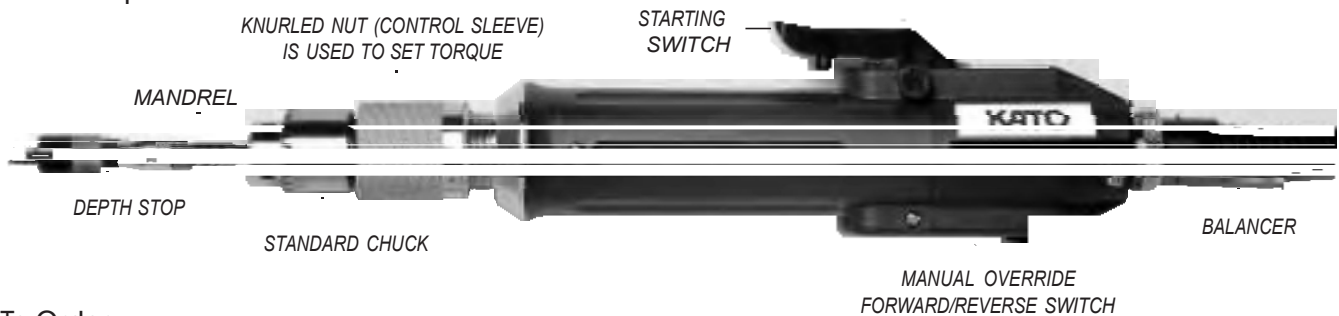
This UL-approved electric tool is an alternate to hand installation where increased production is required. Ideal for clean room applications, it is lightweight, easy to use and runs cleanly and quietly. Operates without operator force and without lubrication. It is also excellent for reaching tapped holes in constricted areas.

Features:

- Tool automatically reverses itself when preset torque is reached.
- With interchangeable fully-threaded mandrels, tool installs inserts of varying sizes and lengths.
- Unique design minimizes mandrel wear.
- Knurled control sleeve is rotated quickly and easily to set required torque (from 0.5 to 4.5 inch-lbs.)
- Installation depth is easy to set. Locks into place with a stop nut.
- A separate override “forward” and “reverse” switch, in convenient location at top of tool, assures controlled operation.



Transformer plugs into standard 110VAC outlet.



To Order:

Description	Part Numbers
Small Driver: For Sizes #2 thru #8	CT5405
Large Driver: for Sizes 10-24 & 10-32	CT5406
Transformer	CT5407

Note¹: Contact factory for drivers and mandrels larger than #10 size.

Note²: See next page for Electric Tool Mandrel part numbers and dimensions.

Radial Arm Tool Holder



Use the Kato Power Tool with strip feed reels for vertical installation.

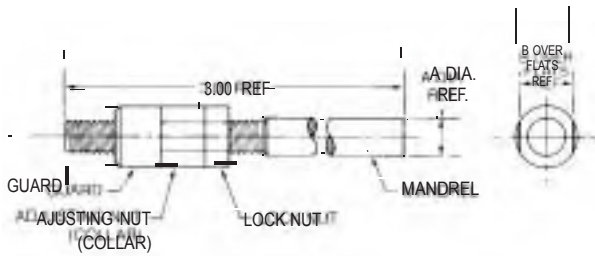
CT21044A Adapter



Adapts electric tool to Kato or HeliCoil brand radial arm




Description	Part Number
Radial Arm Tool Holder	CT21042
Adapter for Electric Tool	CT21044A

Mandrel Drive Assembly

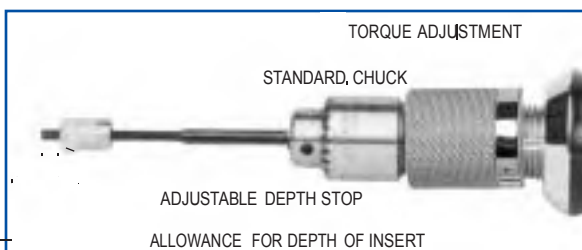


Thread Size	Mandrel Part Number	A Dia. Ref.	B Flats Ref.
2-56	CTSB-02C	.156	.281
4-40	CTSB-04C		
6-32	CTSB-06C		
8-32	CTSB-2C		
10-24	CTSB-3C	.250	.343
10-32	CTSB-3F	.250	.372
1/4-20	CTSB-4C		

Self-Reversing Electrical Driver

Tool	Part Number	Length Ref.	Diameter Ref.	Chuck Capacity	Weight Ref.(lb.)
Small Driver					
	CT5405	8.6	1.125	5/32	1
Large Driver					
	CT5406	10.8	1.455	1/4	1.8
Transformer		Size Ref.			
	CT5407	4.0	Width	Depth	4.2
			Height	6	

Installation Instructions



Hole Preparation:

1. Locate and drill hole to required depth with drill size specified.
2. Countersink hole.
3. Tap hole (gage hole occasionally to check for tap wear.)

Depth Stop Setting:

1. Back off lock nut from adjusting collar.
2. Place insert firmly on mandrel with tang engaged on tip.
3. Locate adjusting collar to 1 to 1 1/2 pitches from top end of insert.
4. Tighten lock nut against adjusting collar.

Torque Adjustment:

1. Reduce torque (by turning knurled sleeve outward) until insert will not install.
2. Increase torque gradually (by turning knurled sleeve inward) until insert installs properly. (Do not use higher torque than necessary to install insert.)

Insert Installation:

Figure 1



Place insert on mandrel with tang firmly engaged on tip.

Figure 2



Hold tool in line with tapped hole and install insert, using low speed setting on transformer. (Do not force the insert to start into tapped hole.)

Figure 3



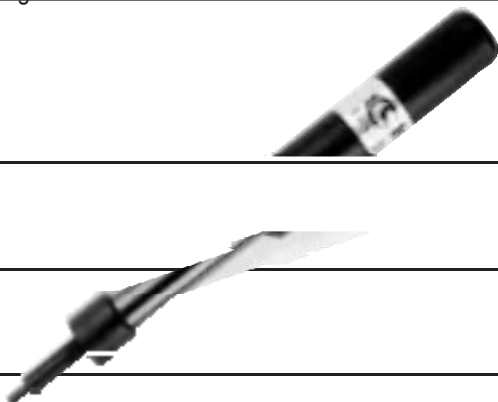
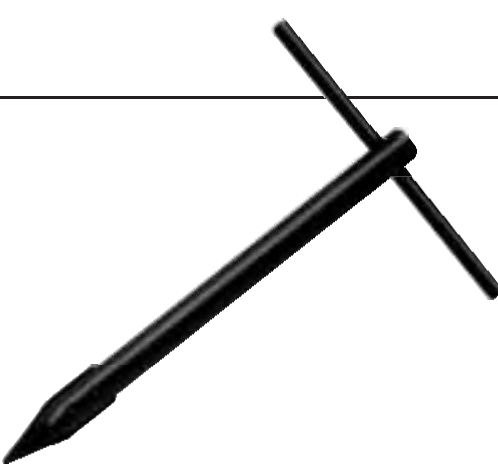
Hold switch down until insert is completely installed and mandrel has withdrawn fully from insert. (Tool will reverse automatically when set torque has been reached.)

NOTE:

Check for excessive torque if premature tang breakoff or accelerated mandrel wear is experienced.

If insert does not completely install (hangs up), the tool should be checked for low torque, or the mandrel should be checked for damaged or worn tip.

for Unified Size Tanged Inserts

Nominal Thread Size	Tang Break-Off Tool Part Number	Insert Extracting Tool Part No.	Tang Break-off Tool	
Unified Coarse				
2 (.086)-56	CAB-02	CET-02		
3 (.099)-48	CAB-02	CET-06		
4 (.112)-40	CAB-04	CET-06		
5 (.125)-40	CAB-04	CET-06		
6 (.138)-32	CAB-06	CET-06		
8 (.164)-32	CAB-2	CET-06		
10 (.190)-24	CAB-3	CET-6		
12 (.216)-24	CAB-3	CET-6		
1/4 (.250)-20	CAB-4	CET-6		
5/16 (.3125)-18	CAB-5	CET-6		
3/8 (.3750)-16	CAB-6	CET-6		
7/16 (.4375)-14	CAB-7	CET-16		
1/2 (.5000)-13	CAB-8	CET-16		
Unified Fine				
3 (.099)-56	CAB-02	CET-06		
4 (.112)-48	CAB-04	CET-06		
6 (.138)-40	CAB-06	CET-06		
8 (.164)- 36	CAB-2	CET-06		
10 (.190)- 32	CAB-3	CET-6		
1/4 (.250)- 28	CAB-4	CET-6		
5/16 (.3125)- 24	CAB-5	CET-6		
3/8 (.3750)- 24	CAB-6	CET-6		
7/16 (.4375)- 20	CAB-7	CET-16		
1/2 (.5000)- 20	CAB-8	CET-16		
<p><i>Tang Break-off Tools are for use with 1, 1 1/2 and 2 diameter length inserts. For 2 1/2 and 3 diameter, a separate punch must be ordered with each tool. To order these sizes, add -30 to end of part number. Replacement punches can be ordered by putting an "RP" at the end of the part number. Example: CAB-02RP.</i></p> <p><i>Use standard needle nose pliers to remove tangs on insert sizes above 1/2 inch. Bend tang up and down to snap off at notch.</i></p>				

Extracting Tool Instructions: Apply the tool to installed insert 90° from the end. Strike the head of the tool lightly with a hammer. Turn the tool counterclockwise while maintaining a steady downward pressure.



Insert Part Number Selection and Identification

Elements to form a complete and specific part number are selected from the table below.

Follow the example shown for proper structure.

Part Number Example:

The example below consists of a Type 304 stainless steel Self-locking **Metric Tanged CoilThread Insert** in M4x.7 nominal thread size, 1-1/2 Dia. length, with dry film lubricant finish, supplied on strip feed for power installation.

TLM - 4x.7C - 6 W SF

Basic Insert Type: _____

TNM = Standard free-running
Metric, Tanged Insert

TLM= Self-Locking, Metric
Tanged Insert

**Size Designation (Internal Thread)
and Material:** _____

See tabulation on following page. All inserts
are made of Type 304 stainless steel.

Nominal Length (mm): _____

See tabulation.

Finish: _____

W = Dry film lubricant per AS5272, Type I.

Y = Cadmium plated per QQ-P-416, Type II.
(Max. Thickness = .0001").

No Finish = Leave blank if none is required.

Packaging: _____

Supplied in bulk or on strip feed reels for power installation.

SF = Strip Feed.

Leave blank for bulk.

Nominal Thread Size	Basic Part Numbers		Nominal Length ¹					Free Outside Diameter		Number of Free Coils ²				
	Standard Non-Locking	Locking	Length of Insert (in dia.)					Min.	Max.	Nominal Length				
			1	1 1/2	2	2 1/2	3			1	1 1/2	2	2 1/2	3
Metric Coarse Series														
M2.2x0.45	TNM	TLM	2.2	3.3	4.4	5.5	6.6	2.80	3.00	3-1/8	5-3/8	7-5/8	9-7/8	12-1/8
M2.5x0.45	TNM	TLM	2.5	3.8	5.0	6.3	7.5	3.20	3.70	3-3/8	5-3/4	8-1/8	10-1/2	12-3/4
M3x0.5	TNM	TLM	3.0	4.5	6.0	7.5	9.0	3.80	4.35	3-3/4	6-3/8	8-7/8	11-3/8	13-7/8
M3.5x0.6	TNM	TLM	3.5	6.3	7.0	8.8	10.5	4.40	4.95	3-3/4	6-3/8	8-3/4	11-3/8	13-3/4
M4x0.7	TNM	TLM	4.0	6.0	8.0	10.0	12.0	5.05	5.60	3-5/8	6-1/8	8-5/8	11-1/8	13-5/8
M5x0.8	TNM	TLM	5.0	7.5	10.0	12.5	15.0	6.25	6.80	4-1/8	6-7/8	9-5/8	12-3/8	15-1/8
M6x1	TNM	TLM	6.0	9.0	12.0	15.0	18.0	7.40	7.95	4	6-3/4	9-1/2	12-1/8	14-7/8
M7x1	TNM	TLM	7.0	10.5	14.0	17.5	21.0	8.65	9.20	4-7/8	8	11-1/8	14-1/8	17-1/8
M8x1.25	TNM	TLM	8.0	12.0	16.0	20.0	24.0	9.80	10.35	4-1/2	7-3/8	10-1/4	13-1/4	16-1/8
M10x1.5	TNM	TLM	10.0	15.0	20.0	25.0	30.0	11.95	12.50	4-7/8	8	11-1/8	14-1/4	17-3/8
M12x1.75	TNM	TLM	12.0	18.0	24.0	30.0	36.0	14.30	15.00	5	8-1/4	11-1/2	14-5/8	17-7/8
M14x2	TNM	TLM	14.0	21.0	28.0	35.0	42.0	16.65	17.35	5-1/8	8-1/2	11-3/4	15	18-3/8
M16x2	TNM	TLM	16.0	24.0	32.0	40.0	48.0	18.90	19.60	6-1/8	9-3/4	13-1/2	17-1/4	21
M18x2.5	TNM	TLM	18.0	27.0	36.0	45.0	54.0	21.30	22.00	5-3/8	8-7/8	12-1/4	15-5/8	19
M20x2.5	TNM	TLM	20.0	30.0	40.0	50.0	60.0	23.55	24.40	6-1/8	9-7/8	13-5/8	17-5/8	21-1/8
M22x2.5	TNM	TLM	22.0	33.0	44.0	55.0	66.0	25.90	26.90	6-3/4	10-7/8	14-7/8	19	23-1/8
M24x3	TNM	TLM	24.0	36.0	48.0	60.0	72.0	28.00	29.00	6-1/8	10	13-3/4	17-1/2	21-3/8
Metric Fine Series														
M8X1	TNM	TLM	8.0	12.0	16.0	20.0	24.0	9.70	10.25	5-7/8	9-3/8	13	16-1/2	20-1/8
M10x1	TNM	TLM	10.0	15.0	20.0	25.0	30.0	11.95	12.50	7-5/8	12	16-1/2	21	25-1/2
M10x1.25	TNM	TLM	10.0	15.0	20.0	25.0	30.0	12.10	12.65	5-7/8	9-1/2	13-1/8	16-3/4	20-3/8
M12x1.25	TNM	TLM	12.0	18.0	24.0	30.0	36.0	14.30	15.00	7-1/4	11-5/8	15-7/8	20-1/4	24-1/2
M12x1.5	TNM	TLM	12.0	18.0	24.0	30.0	36.0	14.25	14.95	6	9-5/8	13-3/8	17	20-3/4
M14x1.5	TNM	TLM	14.0	21.0	28.0	35.0	42.0	16.55	17.25	7-1/8	11-3/8	15-5/8	20	24-1/4
M16x1.5	TNM	TLM	16.0	24.0	32.0	40.0	48.0	18.90	19.60	8-1/4	13-1/8	18	22-3/4	27-5/8
M18x1.5	TNM	TLM	18.0	27.0	36.0	45.0	54.0	21.05	21.75	9-1/2	15	20-3/8	25-7/8	31-3/8
M20x1.5	TNM	TLM	20.0	30.0	40.0	50.0	60.0	23.15	24.00	10-3/4	16-7/8	22-7/8	28-7/8	35
M22x1.5	TNM	TLM	22.0	33.0	44.0	55.0	66.0	25.55	26.45	11-7/8	18-1/2	25-1/8	31-5/8	38-1/4
M18x2	TNM	TLM	18.0	27.0	36.0	45.0	54.0	21.15	21.85	7	11-1/8	15-3/8	19-1/2	23-5/8
M20x2	TNM	TLM	20.0	30.0	40.0	50.0	60.0	23.20	24.05	7-7/8	12-1/2	17-1/4	21-7/8	26-1/2
M22x2	TNM	TLM	22.0	33.0	44.0	55.0	66.0	25.60	26.50	8-3/4	13-3/4	18-7/8	23-7/8	29
M24x2	TNM	TLM	24.0	36.0	48.0	60.0	72.0	28.10	29.10	9-1/2	15	20-3/8	25-7/8	31-1/4

¹Nominal Length is a calculated number and cannot be measured in the free state. It is the actual installed length plus 1/2 pitch.

²Number of Free Coils are counted 90° from the tang.

Metric, Free-running Series

Size	Length (In Dia.)	Length		Coil Thread Part Number	Heli-Coil Part Number	MA Number
		Inch	MM			
M2.2x0.45	1	.086	2.2	TNM-2.2x.45C-2.2	1084-2.2CN-2.2	MA3279-100
	1-1/2	.129	3.3	TNM-2.2x.45C-3.3	1084-2.2CN-3.3	MA3279-150
	2	.172	4.4	TNM-2.2x.45C-4.4	1084-2.2CN-4.4	MA3279-200
	2-1/2	.215	5.5	TNM-2.2x.45C-5.5	1084-2.2CN-5.5	MA3279-250
	3	.258	6.6	TNM-2.2x.45C-6.6	1084-2.2CN-6.6	MA3279-300
M2.5x0.45	1	.098	2.5	TNM-2.5x.45C-2.5	1084-2.5CN-2.5	MA3279-101
	1-1/2	.148	3.8	TNM-2.5x.45C-3.8	1084-2.5CN-3.8	MA3279-151
	2	.197	5.0	TNM-2.5x.45C-5.0	1084-2.5CN-5.0	MA3279-201
	2-1/2	.246	6.3	TNM-2.5x.45C-6.3	1084-2.5CN-6.3	MA3279-251
	3	.295	7.5	TNM-2.5x.45C-7.5	1084-2.5CN-7.5	MA3279-301
M3x0.5	1	.118	3.0	TNM-3x.5C-3.0	1084-3CN-3.0	MA3279-102
	1-1/2	.177	4.5	TNM-3x.5C-4.5	1084-3CN-4.5	MA3279-152
	2	.236	6.0	TNM-3x.5C-6.0	1084-3CN-6.0	MA3279-202
	2-1/2	.295	7.5	TNM-3x.5C-7.5	1084-3CN-7.5	MA3279-252
	3	.354	9.0	TNM-3x.5C-9.0	1084-3CN-9.0	MA3279-302
M3.5x0.6	1	.138	3.5	TNM-3.5x.6C-3.5	1084-3.5CN-3.5	MA3279-103
	1-1/2	.209	5.3	TNM-3.5x.6C-5.3	1084-3.5CN-5.3	MA3279-153
	2	.276	7.0	TNM-3.5x.6C-7.0	1084-3.5CN-7.0	MA3279-203
	2-1/2	.344	8.8	TNM-3.5x.6C-8.8	1084-3.5CN-8.8	MA3279-253
	3	.413	10.5	TNM-3.5x.6C-10.5	1084-3.5CN-10.5	MA3279-303
M4x0.7	1	.157	4.0	TNM-4x.7C-4.0	1084-4CN-4.0	MA3279-104
	1-1/2	.236	6.0	TNM-4x.7C-6.0	1084-4CN-6.0	MA3279-154
	2	.315	8.0	TNM-4x.7C-8.0	1084-4CN-8.0	MA3279-204
	2-1/2	.394	10.0	TNM-4x.7C-10.0	1084-4CN-10.0	MA3279-254
	3	.472	12.0	TNM-4x.7C-12.0	1084-4CN-12.0	MA3279-304
M5x0.8	1	.197	5.0	TNM-5x.8C-5.0	1048-5CN-5.0	MA3279-105
	1-1/2	.295	7.5	TNM-5x.8C-7.5	1084-5CN-7.5	MA3279-155
	2	.394	10.0	TNM-5x.8C-10.0	1084-5CN-10.0	MA3279-205
	2-1/2	.492	12.5	TNM-5x.8C-12.5	1084-5CN-12.5	MA3279-255
	3	.590	15.0	TNM-5x.8C-15.0	1084-5CN-15.0	MA3279-305
M6x1	1	.236	6.0	TNM-6x1C-6.0	1084-6CN-6.0	MA3279-106
	1-1/2	.354	9.0	TNM-6x1C-9.0	1084-6CN-9.0	MA3279-156
	2	.472	12.0	TNM-6x1C-12.0	1084-6CN-12.0	MA3279-206
	2-1/2	.590	15.0	TNM-6x1C-15.0	1084-6CN-15.0	MA3279-256
	3	.709	18.0	TNM-6x1C-18.0	1084-6CN-18.0	MA3279-306
M7x1	1	.276	7.0	TNM-7x1C-7.0	1084-7CN-7.0	MA3279-107
	1-1/2	.413	10.5	TNM-7x1C-10.5	1084-7CN-10.5	MA3279-157
	2	.551	14.0	TNM-7x1C-14.0	1084-7CN-14.0	MA3279-207
	2-1/2	.689	17.5	TNM-7x1C-17.5	1084-7CN-17.5	MA3279-257
	3	.827	21.0	TNM-7x1C-21.0	1084-7CN-21.0	MA3279-307
M8x1	1	.315	8.0	TNM-8x1C-8.0	4255-8CN-8.0	MA3279-108
	1-1/2	.472	12.0	TNM-8x1C-12.0	4255-8CN-12.0	MA3279-158
	2	.630	16.0	TNM-8x1C-16.0	4255-8CN-16.0	MA3279-208
	2-1/2	.787	20.0	TNM-8x1C-20.0	4255-8CN-20.0	MA3279-258
	3	.945	24.0	TNM-8x1C-24.0	4255-8CN-24.0	MA3279-308
M8x1.25	1	.315	8.0	TNM-8x1.25C-8.0	1084-8CN-8.0	MA3279-109
	1-1/2	.472	12.0	TNM-8x1.25C-12.0	1084-8CN-12.0	MA3279-159
	2	.630	16.0	TNM-8x1.25C-16.0	1084-8CN-16.0	MA3279-209
	2-1/2	.787	20.0	TNM-8x1.25C-20.0	1084-8CN-20.0	MA3279-259
	3	.945	24.0	TNM-8x1.25C-24.0	1084-8CN-24.0	MA3279-309
M10x1	1	.394	10.0	TNM-10x1C-10.0	4255-10CN-10.0	—
	1-1/2	.590	15.0	TNM-10x1C-15.0	4255-10CN-15.0	—
	2	.787	20.0	TNM-10x1C-20.0	4255-10CN-20.0	—
	2-1/2	.984	25.0	TNM-10x1C-25.0	4255-10CN-25.0	—
	3	1.181	30.0	TNM-10x1C-30.0	4255-10CN-30.0	—
M10x1.25	1	.394	10.0	TNM-10x1.25C-10.0	4649-10CN-10.0	MA3279-110
	1-1/2	.590	15.0	TNM-10x1.25C-15.0	4649-10CN-15.0	MA3279-160
	2	.787	20.0	TNM-10x1.25C-20.0	4649-10CN-20.0	MA3279-210
	2-1/2	.984	25.0	TNM-10x1.25C-25.0	4649-10CN-25.0	MA3279-260
	3	1.181	30.0	TNM-10x1.25C-30.0	4649-10CN-30.0	MA3279-310
M10x1.5	1	.394	10.0	TNM-10x1.5C-10.0	1084-10CN-10.0	MA3279-111
	1-1/2	.590	15.0	TNM-10x1.5C-15.0	1084-10CN-15.0	MA3279-161
	2	.787	20.0	TNM-10x1.5C-20.0	1084-10CN-20.0	MA3279-211
	2-1/2	.984	25.0	TNM-10x1.5C-25.0	1084-10CN-25.0	MA3279-261
	3	1.181	30.0	TNM-10x1.5C-30.0	1084-10CN-30.0	MA3279-311

Metric, Locking Series

Size	Length (In Dia.)	Length		CoilThread Part Number	Heli-Coil Part Number	MA Number
		Inch	MM			
M2.2x0.45	1	.086	2.2	TLM-2.2x.45C-2.2	4184-2.2CN-2.2	MA3329-100
	1-1/2	.129	3.3	TLM-2.2x.45C-3.3	4184-2.2CN-3.3	MA3329-150
	2	.172	4.4	TLM-2.2x.45C-4.4	4184-2.2CN-4.4	MA3329-200
	2-1/2	.215	5.5	TLM-2.2x.45C-5.5	4184-2.2CN-5.5	MA3329-250
	3	.258	6.6	TLM-2.2x.45C-6.6	4184-2.2CN-6.6	MA3329-300
M2.5x0.45	1	.098	2.5	TLM-2.5x.45C-2.5	4184-2.5CN-2.5	MA3329-101
	1-1/2	.148	3.8	TLM-2.5x.45C-3.8	4184-2.5CN-3.8	MA3329-151
	2	.197	5.0	TLM-2.5x.45C-5.0	4184-2.5CN-5.0	MA3329-201
	2-1/2	.246	6.3	TLM-2.5x.45C-6.3	4184-2.5CN-6.3	MA3329-251
	3	.295	7.5	TLM-2.5x.45C-7.5	4184-2.5CN-7.5	MA3329-301
M3x0.5	1	.118	3.0	TLM-3x.5C-3.0	4184-3CN-3.0	MA3329-102
	1-1/2	.177	4.5	TLM-3x.5C-4.5	4184-3CN-4.5	MA3329-152
	2	.236	6.0	TLM-3x.5C-6.0	4184-3CN-6.0	MA3329-202
	2-1/2	.295	7.5	TLM-3x.5C-7.5	4184-3CN-7.5	MA3329-252
	3	.354	9.0	TLM-3x.5C-9.0	4184-3CN-9.0	MA3329-302
M3.5x0.6	1	.138	3.5	TLM-3.5x.6C-3.5	4184-3.5CN-3.5	MA3329-103
	1-1/2	.209	5.3	TLM-3.5x.6C-5.3	4184-3.5CN-5.3	MA3329-153
	2	.276	7.0	TLM-3.5x.6C-7.0	4184-3.5CN-7.0	MA3329-203
	2-1/2	.344	8.8	TLM-3.5x.6C-8.8	4184-3.5CN-8.8	MA3329-253
	3	.413	10.0	TLM-3.5x.6C-10.5	4184-3.5CN-10.5	MA3329-303
M4x0.7	1	.157	4.0	TLM-4x.7C-4.0	4184-4CN-4.0	MA3329-104
	1-1/2	.236	6.0	TLM-4x.7C-6.0	4184-4CN-6.0	MA3329-154
	2	.315	8.0	TLM-4x.7C-8.0	4184-4CN-8.0	MA3329-204
	2-1/2	.394	10.0	TLM-4x.7C-10.0	4184-4CN-10.0	MA3329-254
	3	.472	12.0	TLM-4x.7C-12.0	4184-4CN-12.0	MA3329-304
M5x0.8	1	.197	5.0	TLM-5x.8C-5.0	4184-5CN-5.0	MA3329-105
	1-1/2	.295	7.5	TLM-5x.8C-7.5	4184-5CN-7.5	MA3329-155
	2	.394	10.0	TLM-5x.8C-10.0	4184-5CN-10.0	MA3329-205
	2-1/2	.492	12.5	TLM-5x.8C-12.5	4184-5CN-12.5	MA3329-255
	3	.590	15.0	TLM-5x.8C-15.0	4184-5CN-15.0	MA3329-305
M6x1	1	.236	6.0	TLM-6x1C-6.0	4184-6CN-6.0	MA3329-106
	1-1/2	.354	9.0	TLM-6x1C-9.0	4184-6CN-9.0	MA3329-156
	2	.472	12.0	TLM-6x1C-12.0	4184-6CN-12.0	MA3329-206
	2-1/2	.590	15.0	TLM-6x1C-15.0	4184-6CN-15.0	MA3329-256
	3	.709	18.0	TLM-6x1C-18.0	4184-6CN-18.0	MA3329-306
M7x1	1	.276	7.0	TLM-7x1C-7.0	4184-7CN-7.0	MA3329-107
	1-1/2	.413	10.5	TLM-7x1C-10.5	4184-7CN-10.5	MA3329-157
	2	.551	14.0	TLM-7x1C-14.0	4184-7CN-14.0	MA3329-207
	2-1/2	.689	17.5	TLM-7x1C-17.5	4184-7CN-17.5	MA3329-257
	3	.827	21.0	TLM-7x1C-21.0	4184-7CN-21.0	MA3329-307

Heli-Coil® is a Registered Trademark of Emhart, Inc.

Nominal Thread Size	Hand Inserting Tool Part Number	Tool Style
Coarse		
M2.2X0.45	CIM-2.2	1
M2.5X0.45	CIM-2.5	
M3X0.5	CIM-3	
M3.5X0.6	CIM-3.5	
M4X0.7	CIM-4	
M5X0.8	CIM-5	
M6X1	CIM-6	
M7X1	CIM-7	
M8X1.25	CIM-8X1.25	
M10X1.5	CIM-10X1.5	
M12X1.75	CIM-12X1.75	
M14X2	CIM-14X2	3
M16X2	CIM-16X2	
M18X2.5	CIM-18X2.5	
M20X2	CIM-20X2	
Fine		
M8X1	CIM-8X1	1
M10X1	CIM-10X1	
M10X1.25	CIM-10X1.25	
M12X1.25	CIM-12X1.25	
M12X1.5	CIM-12X1.5	3
M14X1.5	CIM-14X1.5	
M14X1.25	CIM-14X1.25	
M16X1.5	CIM-16X1.5	
M18X1.5	CIM-18X1.5	

*Prewinder Type, Style #1
Sizes M2.2 through M12*



*Non-captive Prewinder, Style #3
Sizes M14 and larger*



NOTE: The same tools are used for both free-running and locking inserts.




Air-Driven Insertion Tools – for Tanged Metric Inserts



Metric Size Front End Assemblies				Power Components	
Nominal Thread Size	Complete Assembly	Replacement Mandrel	Replacement Prewinder	Adapter	Air Motor
M2.5X0.45	CT11000-M2.5	CT11200-M2.5	CT11202-M2.5	CT9605	CT25017
M3X0.5	CT11000-M3	CT11200-M3	CT11202-M3		
M4X0.7	CT11000-M4	CT11200-M4	CT11202-M4		
M5X0.8	CT11000-M5	CT11200-M5	CT11202-M5		
M6X1	CT11000-M6	CT11200-M6	CT11202-M6	CT9705	
M8X1.25	CT11000-M8	CT11200-M8	CT11202-M8		

Note: Contact factory for sizes above M8.

Electrically-Driven Installation Tools – for Tanged Metric Inserts*

Nominal Thread Size	Mandrel Assembly	Electric Driver		Transformer
M2.5X0.45	CTSB-M2.5	CT5405	 small	CT5407 
M3X0.5	CTSB-M3			
M4X0.7	CTSB-M4			
M5X0.8	CTSB-M5	CT5406	 large	
M6X1	CTSB-M6			
M8X1.25	Contact factory for availability.			



Radial arm tool holder P/N CT21042

*Complete tool consists of Small or Large Electric Driver, Mandrel Assembly, and Transformer.



Complete Electric Tool



Bracket P/N 21044A adapts electric tool to KATO or HeliCoil brand radial arms

Tang Break-off and Insert Extracting Tools – for Tanged Metric Inserts

Nominal Thread Size	Tang Break-off Tool Part Number	Insert Extracting Tool Part Number*
M2.2X0.45	CAB-02	CET-02
M2.5X0.45	CAB-02	CET-02
M3X0.5	CAB-04	CET-06
M3.5X0.6	CAB-06	CET-06
M4X0.7	CAB-2	CET-06
M5X0.8	CAB-3	CET-6
M6X1	CAB-4	CET-6
M7X1	CAB-4	CET-6
M8X1.25	CAB-5	CET-6
M10X1.5	CAB-6	CET-6
M12X1.75	CAB-8	CET-16
Fine		
M8X1	CAB-5	CET-6
M10X1	CAB-6	CET-6
M10X1.25	CAB-6	CET-6
M12X1.25	CAB-8	CET-16
M12X1.5	CAB-8	CET-16



Tang Break-off Tool



Insert Extracting Tool

Note: For sizes 14 mm and up, use long-nosed pliers.
Bend tang up and down to snap off at notch.

Extracting Tool Instructions:

Apply tool to installed insert 90° from the end. Strike the head of the tool lightly with a hammer.
Turn tool counterclockwise while maintaining a steady downward pressure.

*Sizes M14 thru M24 use CET-16.

KATO-KITS™ - Thread Repair Kits

Screw Thread Inserts for Maintenance, Repair and Overhaul

Thread repair using CoilThread® Inserts is a universally accepted method of repairing stripped threads in all types of metals. Damaged threads can be brought back to the original thread size, and be better than new using stainless steel inserts. Thread wear, corrosion and galling will be virtually eliminated, and the assembly will be stronger than the original with CoilThread®.

Unlike threaded solid bushing type fasteners, CoilThread® Inserts provide space and weight savings to your repair process. In addition, they eliminate the need for oversized drilling and tapping, and welding or plugging of damaged holes. At Kato, there is only one standard of quality for original equipment or repair inserts - All CoilThread® Inserts meet or exceed all applicable military, aerospace and commercial standards.

Each individual thread size **Kato-Kit** comes with the following:

- Quantity of Tanged Free-Running **Inserts** in the (1 1/2 Diameter) most popular length.
- Proper **Drill** to be used with the STI (screw thread insert) tap*.
- STI **Tap** for the thread size to be repaired.
- Inserting **Tool**.
- Complete and foolproof **Instructions**.



*Drills are included in kits up to and including sizes 1/4 inch and M6.

INDIVIDUAL THREAD REPAIR KITS – INCH and METRIC SIZES:

INCH COARSE (UNC) THREAD REPAIR KITS								
KIT Contents and Replacement Parts								
Thread Size & Length	KatoKit Part No.	Inserts per Kit	Tap Part No.	Inserting Tool Part No.	Tool Style *	Insert Replacement Pack P/N	Insert Qty/ Pack	Drill Size
4-40 x .168	CTKK-04C	12	CTKT-04C	CTKI-04C	5	CTKP-04C	12	#31
5-40 x .188	CTKK-05C	12	CTKT-05C	CTKI-05C	5	CTKP-05C	12	#29
6-32 x .207	CTKK-06C	12	CTKT-06C	CTKI-06C	5	CTKP-06C	12	#25
8-32 x .246	CTKK-2C	12	CTKT-2C	CTKI-2C	5	CTKP-2C	12	11/64
10-24 x .285	CTKK-3C	12	CTKT-3C	CTKI-3C	5	CTKP-3C	12	13/64
12-24 x .324	CTKK-1C	12	CTKT-1C	CTKI-1C	5	CTKP-1C	12	15/64
1/4-20 x .375	CTKK-4C	12	CTKT-4C	CTKI-4C	5	CTKP-4C	12	17/64
5/16-18 x .469	CTKK-5C	12	CTKT-5C	CTKI-5C	5	CTKP-5C	12	21/64
3/8-16 x .562	CTKK-6C	12	CTKT-6C	CTKI-6C	5	CTKP-6C	12	25/64
7/16-14 x .656	CTKK-7C	12	CTKT-7C	CTKI-7C	5	CTKP-7C	12	29/64
1/2-13 x .750	CTKK-8C	12	CTKT-8C	CTKI-8C	5	CTKP-8C	12	17/32
9/16-12 x .844	CTKK-9C	6	CTKT-9C	CTKI-9C	5	CTKP-9C	6	19/32
5/8-11 x .938	CTKK-10C	6	CTKT-10C	CTKI-10C	5	CTKP-10C	6	21/32
3/4-10 x 1.125	CTKK-12C	4	CTKT-12C	CTKI-12C	5	CTKP-12C	4	25/32
7/8-9 x 1.312	CTKK-14C	4	CTKT-14C	CTKI-14C	5	CTKP-14C	4	29/32
1-8 x 1.500	CTKK-16C	4	CTKT-16C	CTKI-16C	5	CTKP-16C	4	1-1/32
1 1/8-7 x 1.688	CTKK-18C	4	CTKT-18C	CTKI-18C	3	CTKP-18C	4	1-5/32
1 1/4-7 x 1.875	CTKK-20C	4	CTKT-20C	CTKI-20C	3	CTKP-20C	4	1-9/32
1 3/8-6 x 2.062	CTKK-22C	4	CTKT-22C	CTKI-22C	3	CTKP-22C	4	1-13/32
1 1/2-6 x 2.250	CTKK-24C	4	CTKT-24C	CTKI-24C	3	CTKP-24C	4	1-17/32

INCH FINE (UNF) THREAD REPAIR KITS

KIT Contents and Replacement Parts

Thread Size & Length	KatoKit Part No.	Inserts per Kit	Tap Part No.	Inserting Tool Part No.	Tool Style *	Insert Replacement Pack P/N	Insert Qty/ Pack	Drill Size
6-40 x .207	CTKK-06F	12	CTKT-06F	CTKI-06F	2	CTKP-06F	12	#25
8-36 x .246	CTKK-2F	12	CTKT-2F	CTKI-2F	2	CTKP-2F	12	#17
10-32 x .285	CTKK-3F	12	CTKT-3F	CTKI-3F	6	CTKP-3F	12	13/64
1/4-28 x .375	CTKK-4F	12	CTKT-4F	CTKI-4F	6	CTKP-4F	12	17/64
5/16-24 x .469	CTKK-5F	12	CTKT-5F	CTKI-5F	6	CTKP-5F	12	21/64
3/8-24 x .562	CTKK-6F	12	CTKT-6F	CTKI-6F	6	CTKP-6F	12	25/64
7/16-20 x .656	CTKK-7F	12	CTKT-7F	CTKI-7F	6	CTKP-7F	12	29/64
1/2-20 x .750	CTKK-8F	12	CTKT-8F	CTKI-8F	6	CTKP-8F	12	33/64
9/16-18 x .844	CTKK-9F	6	CTKT-9F	CTKI-9F	6	CTKP-9F	6	37/64
5/8-18 x .938	CTKK-10F	6	CTKT-10F	CTKI-10F	6	CTKP-10F	6	41/64
3/4-16 x 1.125	CTKK-12F	4	CTKT-12F	CTKI-12F	6	CTKP-12F	4	49/64
7/8-14 x 1.312	CTKK-14F	4	CTKT-14F	CTKI-14F	4	CTKP-14F	4	57/64
1-14 x 1.500	CTKK-16F	4	CTKT-16F	CTKI-16F	4	CTKP-16F	4	1-1/64
1-12 x 1.500	CTKK-161	4	CTKT-161	CTKI-161	4	CTKP-161	4	1-1/64
1 1/8-12 x 1.688	CTKK-18F	4	CTKT-18F	CTKI-18F	4	CTKP-18F	4	1-5/32
1 1/4-12 x 1.875	CTKK-20F	4	CTKT-20F	CTKI-20F	4	CTKP-20F	4	1-9/32
1 3/8-12 x 2.062	CTKK-22F	4	CTKT-22F	CTKI-22F	4	CTKP-22F	4	1-13/32
1 1/2-12 x 2.250	CTKK-24F	4	CTKT-24F	CTKI-24F	4	CTKP-24F	4	1-17/32

METRIC COARSE THREAD REPAIR KITS

KIT Contents and Replacement Parts

Thread Size & Length	KatoKit Part No.	Inserts per Kit	Tap Part No.	Inserting Tool Part No.	Tool Style *	Insert Replacement Pack P/N	Insert Qty/ Pack	Drill Size
M3x0.5	CTKK-M3	12	CTKT-M3	CTKI-M3	6	CTKP-M3	12	1/8
M3.5x0.6	CTKK-M3.5	12	CTKT-M3.5	CTKI-M3.5	2	CTKP-M3.5	12	#27
M4x0.7	CTKK-M4	12	CTKT-M4	CTKI-M4	6	CTKP-M4	12	11/64
M5x0.8	CTKK-M5	12	CTKT-M5	CTKI-M5	6	CTKP-M5	12	13/64
M6x1	CTKK-M6	12	CTKT-M6	CTKI-M6	6	CTKP-M6	12	1/4
M7x1	CTKK-M7	12	CTKT-M7	CTKI-M7	5	CTKP-M7	12	9/32
M8x1.25	CTKK-M8x1.25	12	CTKT-M8x1.25	CTKI-M8x1.25	5	CTKP-M8x1.25	12	21/64
M10x1.5	CTKK-M10x1.5	12	CTKT-M10x1.5	CTKI-M10x1.5	5	CTKP-M10x1.5	12	13/32
M12x1.75	CTKK-M12x1.75	12	CTKT-M12x1.75	CTKI-M12x1.75	5	CTKP-M12x1.75	12	31/64
M14x2	CTKK-M14x2	12	CTKT-M14x2	CTKI-M14x2	5	CTKP-M14x2	12	37/64
M16x2	CTKK-M16x2	6	CTKT-M16x2	CTKI-M16x2	5	CTKP-M16x2	6	21/32
M18x2.5	CTKK-M18x2.5	6	CTKT-M18x2.5	CTKI-M18x2.5	5	CTKP-M18x2.5	4	47/64
M20x2.5	CTKK-M20x2.5	4	CTKT-M20x2.5	CTKI-M20x2.5	5	CTKP-M20x2.5	4	13/16

* Contact Kato for Tool Style.

METRIC FINE THREAD REPAIR KITS								
KIT Contents and Replacement Parts								
Thread Size & Length	KatoKit Part No.	Inserts per Kit	Tap Part No.	Inserting Tool Part No.	Tool Style	Insert Replacement Pack P/N	Insert Qty/ Pack	Drill Size
M8x1	CTKK-M8x1	12	CTKT-M8x1	CTKI-M8x1	6	CTKP-M8x1	12	21/64
M10x1	CTKK-M10x1	12	CTKT-M10x1	CTKI-M10x1	6	CTKP-M10x1	12	13/32
M10x1.25	CTKK-M10x1.25	12	CTKT-M10x1.25	CTKI-M10x1.25	6	CTKP-M10x1.25	12	13/32
M12x1.25	CTKK-M12x1.25	12	CTKT-M12x1.25	CTKI-M12x1.25	6	CTKP-M12x1.25	12	31/64
M12x1.5	CTKK-M12x1.5	12	CTKT-M12x1.5	CTKI-M12x1.5	6	CTKP-M12x1.5	12	31/64
M14x1.5	CTKK-M14x1.5	12	CTKT-M14x1.5	CTKI-M14x1.5	6	CTKP-M14x1.5	12	9/16
M16x1.5	CTKK-M16x1.5	6	CTKT-M16x1.5	CTKI-M16x1.5	6	CTKP-M16x1.5	6	21/32
M18x1.5	CTKK-M18x1.5	6	CTKT-M18x1.5	CTKI-M18x1.5	6	CTKP-M18x1.5	6	47/64

Custom Master Thread Repair Sets:

- Create your own custom set with the range of sizes you use most frequently.
- Available in inch or metric sizes, or a combination of both.
- Packaged in one convenient, attractive box.
- Reduced cost – no need to buy sizes that you do not need.
- Each kit contains the necessary drills, taps, inserts, inserting tools and instructions.

Pipe Thread Repair Kits:

- Available in 1/8-27 through 1 –11½ NPT sizes.
- Each kit contains inserts, drill, tap, inserting tool and instructions.
- Contact factory for availability and technical assistance.

Spark Plug Repair Kits:

- Available in 10 mm through 18 mm, and 7/8 – 18 spark plug sizes.
- Do not use to repair taper seat spark plug ports.
- Do not use in aircraft engine repairs.
- Each kit contains inserts, drill, tap, inserting tool and instructions.
- Contact factory for availability and technical assistance.

Special Applications Kits:

- Contact factory for availability of thread repair kits that are not shown, or for special applications.

HEXATORQ™

The Smooth Operator of Constant Torque Hinges

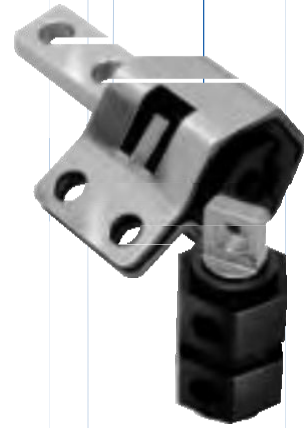
- Smooth Operation
- Consistent torque over life—designed for 30,000 cycles or more without failure
- High durability—virtually unaffected by wear
- Holds position throughout full range of motion—no spring-back
- Lightweight and compact—maximized space and weight savings
- Standardized design—six torque ranges and several mounting configurations
- Corrosion resistant stainless steel and engineered resin construction
- Hex configuration provides for easy mold-in mounting without brackets
- FOD-free design—no metal-to-metal friction means no foreign object damage from metal particles
- No lubrication required—eliminates the possibility of contamination or corrosion to sensitive parts

KATO® HEXATORQ™ torque controlling hinges now set the industry standard for reliable, cost effective motion control. Hexatorq™ hinges are innovative, high quality metal and plastic resin hinge assemblies that offer an unprecedented smoothness of motion. They are offered in standardized sizes to meet virtually all common application requirements.

We've done the testing for you! Our standardized range of HEXATORQ™ sizes and configurations was determined through extensive design and durability testing. By utilizing a HEXATORQ™ series hinge you can significantly reduce your typical design to manufacture time cycle. Add those savings right to your bottom line!

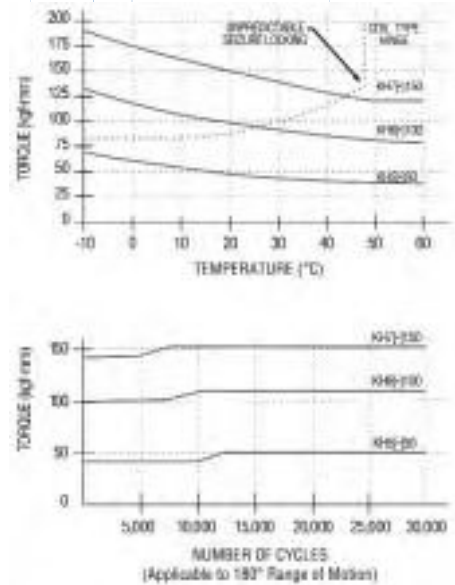
Applications

- Notebook/Laptop Computers • Cabinets/Enclosures • Access Panels
- Medical/Laboratory Equipment • Office Equipment/Computer Peripherals
- Covers/Equipment Guards
- Automotive/Aerospace
- Access & Motion Control



Typical Performance

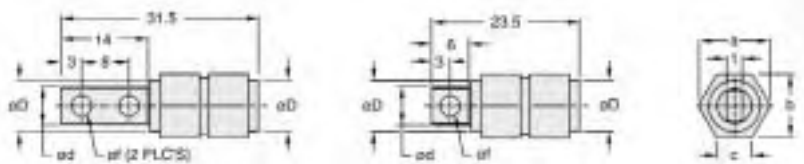
Torque vs. Temperature



Conventional spring type hinges can lose their lubrication and seize up to damage mating parts if used in high temperature environments, or where excessive cycling increases the temperature inside the hinge. The HEXATORQ design, utilizing a modern engineered plastic resin, requires no lubrication. In fact, in an elevated temperature application, HEXATORQ hinges experience a predictable drop-off in torque, and will then return to preset torque values after a minimal cool down period. This means no damage to your expensive parts!

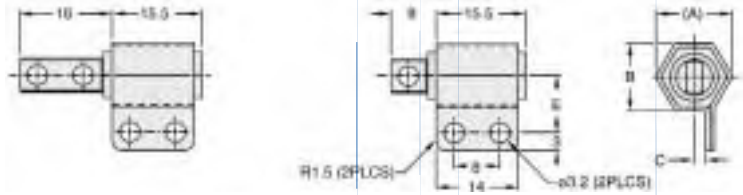
Dimensions and Specifications

Non-Bracketed



Bracketed

Lefthand mounting shown.



Model No.	Torque		Bracket Type				Without Bracket			ØD	Ød	Øf	t
	kgf-mm	lbf-in	A (REF)	B	C	E	a	b	c				
KH51[*]025 KH52[*]025	25	2.2	11.2	9.8	1.5	9.0	9.3	8.2	4.8	7.0	5.0	2.7	2.0
KH51[*]050 KH52[*]050	50	4.3	11.2	9.8	1.5	9.0	9.3	8.2	4.8	7.0	5.0	2.7	2.0
KH61[*]075 KH62[*]075	75	6.5	13.4	11.8	2.0	10.0	11.6	10.2	5.8	8.1	6.0	3.2	2.5
KH61[*]100 KH62[*]100	100	8.7	13.4	11.8	2.0	10.0	11.6	10.2	5.8	8.1	6.0	3.2	2.5
KH71[*]125 KH72[*]125	125	10.9	16.1	14.2	2.5	11.0	14.0	12.2	7.0	10.2	7.0	3.2	3.0
KH71[*]150 KH72[*]150	150	13.0	16.1	14.2	2.5	11.0	14.0	12.2	7.0	10.2	7.0	3.2	3.0

[*] Style designator; see ordering information below.

- Notes:
- All dimensions in millimeters (mm).
 - To convert torque from kgf-mm to lbf-in, multiply by 0.0868.

Ordering

Part number example: the example below consists of a KATO® HEXATORQ™ hinge with a torque rating of 50 kgf-mm, with bracket, righthand mounting, with a shaft diameter of 5.0 mm and 2 holes in the shaft.

KH52B050R

Type:-

KH = KATO® hinge

Shaft Diameter (mm):-

5.0, 6.0 or 7.0

Number of Shaft Holes:-

1 or 2

Style:-

A = without bracket

B = with bracket (Requires Mounting Suffix)

Mounting (Bracket Type Only):

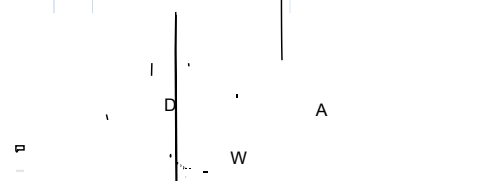
L = Lefthand

R = Righthand

Torque Rating (kgf-mm):

25, 50, 75, 100, 125 or 150

Calculating Torque Requirements



Use the following formula:

$$T = W \times D \times \cos(A)$$

Where:

- A = Angle
- D = Distance to Center of Gravity
- T = Torque
- W = Weight of Object to be Supported

Example: W = 2 lbs. D = 4 in. A = 0°

$$T = (2) (4) \cos(0^\circ)$$

$$T = 8 \text{ lbf-in}$$

Note: If two hinges are used: 8/2=4lbf-in

Tangless® and Tanged Tooling Guide



New! You asked for it, and now it's here. Everything you wanted to know about installation tools for Tangless and Tanged Inserts. The Guide includes hand tools, power tools (air and electric), not to mention taps, gages, tang break-off, and removal tools. The dimensions for the various tools are included for your reference, as well as the replacement parts that you might need. And, we have included interchangeable part number lists for our competitors' tools. The Guide is your best single source for all of your tooling needs, and by far the most comprehensive manual for helical coil insert tooling in the industry. Would you expect anything less from the company that brought you Tangless® Inserts and Tools?

The new tooling guide is available on our website www.katonet.com. Just log on and fill out the request form, and a link will be emailed to you, giving you access to the Guide in Adobe® PDF, or Word doc formats.

Need Technical Help?

Visit our website at www.katonet.com, email the Kato Tech Group at techgroup@katonet.com, or call us at (757) 873-8980.

KATO Fastening News™ is our on-line technical newsletter covering Tangless and Tanged Inserts and Tools, and their applications. See the inside back cover of this catalog for a list of tech subjects available for reference, and also how to subscribe to **KATO Fastening News™**.

KATO® Fastening News™ – Subscribe Now!

Kato Fastening News™, our on-line newsletter is published six times per year and jam-packed with technical information, helpful hints, and updates on new products. To view the tech articles go to our website, www.katonet.com, click on Tech Info and then Technical News Letter. To subscribe, go to our website and fill out the Technical Newsletter, On Line Form.

Kato Fastening Systems' website www.katonet.com is considered to be the most comprehensive site worldwide for technical information on helical coil inserts and tools, and their applications. Listed below are the tech subjects published on our website at the time of the printing of this catalog:

Tangless® AND Tanged



