Tormach Tooling System

Tormach Tooling System®:

The *Innovator* in Quick Change Tooling for CNC Mills

Tormach is the undisputed leader in quick-change tooling for CNC and Manual mills. Since its introduction, TTS has quickly become the standard for CNC mills utilizing R8 and Morse taper spindles. With TTS, you can be confident that your tools will have best-in-class precision, durability, and quality.

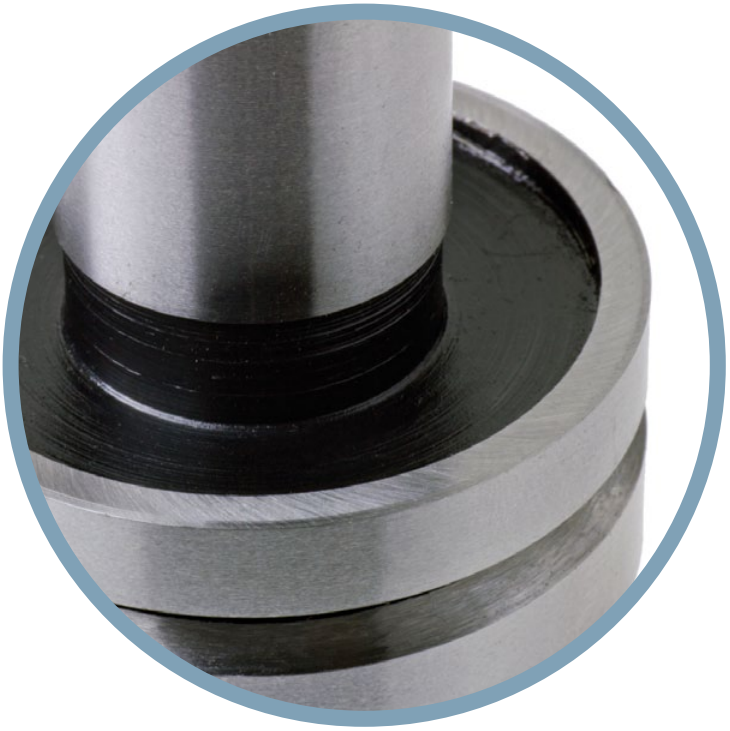
Tormach Tooling System

INNOVATION

TTS stands for Tormach Tooling System® and Tormach was the first to bring affordable quick-change tooling into the hands of CNC machinists worldwide. We remain committed to lead by innovation - look no further than our latest additions to line: Modular Insert cutters with modern cutting geometries, quick-change tapping heads and, balanced-by-design set screw and ER20 holders. You can rest easy knowing that each TTS product has been exclusively engineered and designed by Tormach and not a careless imitation.

AFFORDABILITY

The high cost of tooling was considered one of the barriers to truly affordable CNC. The Tormach Tooling System changes all that. TTS is compatible with the PCNC, or any small CNC using an R8 or MT3 taper and allows you to make what you need easier and quicker without breaking your budget.



Each TTS holder has a precision ground shank and ring with a recessed pocket that eliminates collet interference. This design provides repeatable Z position and improves rigidity.

QUICK CHANGE PRECISION

Simply loosen the drawbar, slide out the current tool holder, then slip in the next and retighten. The unique geometry of the TTS tool holder ensures that, as the drawbar is tightened, the tool holder moves into an exact Z height.

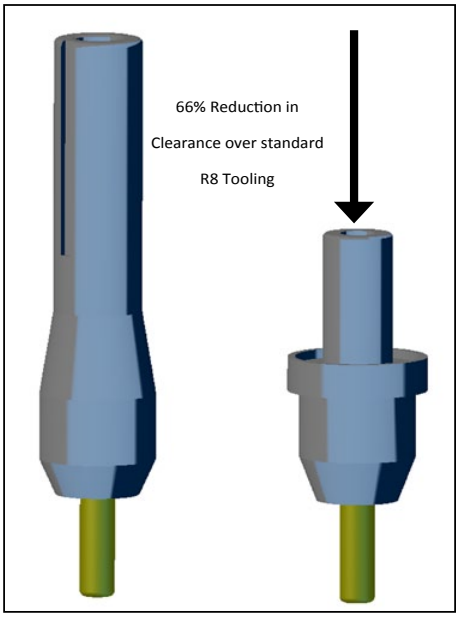
DUAL CONTACT GEOMETRY

The Dual Contact Geometry on TTS offers technical advantages normally only seen on high end machining spindles (HSK, BIG-PLUS®, and others)*, TTS tool holders reference both the spindle taper and the spindle face. The unique shape provides a wider base, giving the tool holder a more rigid connection to the machine spindle.

*HSK is a European standard, defined by DIN69893.
BIG-PLUS is a registered trademark of Big Kaiser.

REDUCED CLEARANCE

The clearance required to remove a TTS holder is only 1.375". This clearance is only 34% of that required by standard R8 tooling. This reduced clearance is particularly important on machines with limited quill travel. A simple tool change on an R8 toolholder can require the operator to move the table to one side, lower the table, or raise the head, all of which greatly impacts the time for tool change and runs the risk of losing the X, Y, or Z position reference.



Tormach Tooling System

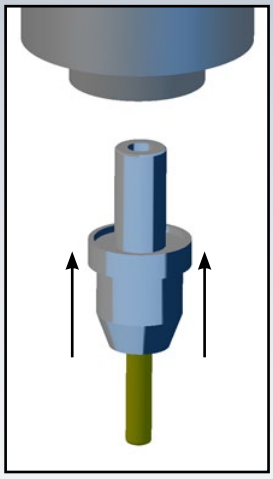
OFFLINE TOOL MEASUREMENT

Measuring the tools before you mount them on the machine is easier and quicker than tool touch off on the machine. TTS geometry makes off line measurement easy and accurate.

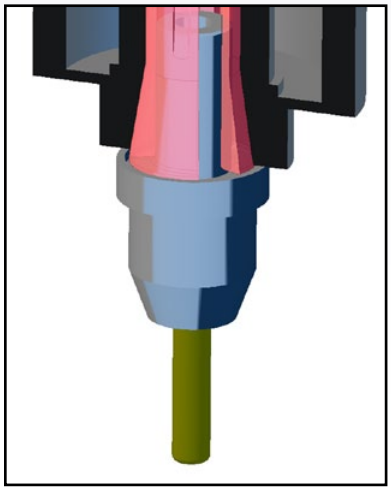
EXPANSIVE OPTIONS

The complete TTS line includes toolholders, tapping heads, electronic touch probes, measurement tools, and modular cutting heads – everything you need to get the job done and then some.

How Does TTS Tooling Work?



The TTS shoulder is undercut so it contacts the spindle itself, not the end of the collet. As the drawbar is tightened the collet will simultaneously squeeze the shank and move upward into the spindle taper. It is this simultaneous action, grasping while moving up, that pulls the toolholder tightly against the spindle face. The high pressure contact between the shoulder of the toolholder and the spindle is the equivalent of a zero tolerance fit; the vertical location of the tool is exact. The initial placement, created by simply sliding the toolholder up until it stops, is normally within a few thousandths of an inch. The final location, after tightening the collet, is exact, highly repeatable, and not affected by the variable tension of the drawbar or wear on the collet. And what's more, the zero tolerance fit, in combination with the wide base of the shoulder, provides a significant increase in toolholder rigidity.



Integral to the TTS design is dual contact geometry. As the collet (shown in red) is drawn into the spindle, it tightens against the TTS shaft, providing resistance to tool pull-out. The precision TTS ring contacts the face of the spindle, providing enhanced flexure resistance against lateral force.

TTS Tooling Sets

TOOLING SETS

The best way to get started with the TTS system. Everything you need to incorporate quick and repeatable manual tools changes with your PCNC mill or other system equipped with R8 spindle.

CNC OPERATORS SET

CNC operations work best with one holder for each tool. An interchangeable set of tool holders, along with a means for off-line tool measurement, allows full utilization of the tool length compensation table in your CNC controller. The CNC set includes a total of 15 tool holders, a granite surface plate with integrated locating hole and dial height gauge. If your CNC machine supports a tool offset table but you're not using it, then you're not realizing the full benefit of CNC machining.

- 2 1/4" Set Screw Tool holders
- 2 3/8" Set Screw Tool Holders
- 4 1/2" Set Screw Tool Holders
- 3 ER20 Collet Holders
- 9 of the most popular ER20 collets (3 ea of 1/8", 1/4", 3/8")
- 4 drill chucks and JT adaptors
- 8" Dial Height Gauge
- Compact Granite Surface Plate with integrated locating hole
- Precision TTS-R8 collet
- TTS Tool Tray
- Tormach Tool Assistant Software for PC and Manual
- USB interface cable with touch trigger
- Wrenches and installation tools

PN 32284: CNC OPERATORS SET

CNC METRIC SET

Similar to the CNC Operator's Kit, the TTS Metric Set includes a total of 15 tool holders, a granite surface plate with integrated locating hole and dial height gauge.

- 4 6mm Set Screw Tool Holders
- 4 10mm Set Screw Tool holders
- 3 ER20 Collet Holders
- 9 of the most popular ER20 collets (3 ea of 3mm, 6mm, 10mm)
- 4 drill chucks and JT adaptors
- 8" Dial Height Gauge
- Compact Granite Surface Plate with integrated locating hole
- Precision TTS-R8 collet
- TTS Tool Tray
- Tormach Tool Assistant Software for PC and Manual
- USB interface cable with touch trigger
- Wrenches and installation tools

PN 32291: CNC METRIC SET

TTS Tooling Sets

MANUAL OPERATORS SET

You don't need a CNC to take advantage of TTS. Manual operations benefit from quick change, reduced clearance, and increased rigidity. This is a basic set that will introduce users to all of those features. The manual mill operators set will improve productivity in manual milling.

The set has four tool holders.

- 1 1/2" Set Screw Adaptor
- 1 3/8" Set Screw Adaptor
- 1 ER20 Collet Holder
- 3 ER20 Collets (1 ea of 1/8", 1/4", 3/8")
- 1 JT1 Adaptor and Drill Chuck
- 1 Precision TTS-R8 collet
- Wrenches and installation tools

PN 30188: MANUAL OPERATORS SET

Set Screw Holders

SET SCREW HOLDERS

Our most popular and affordable tool holders. They are commonly used for general milling and facing. Set screw holders are intended to be used with end mills that have a Weldon flat on them. They can also be used with certain Silver & Deming style drill bits. Simply match the toolholder size to the shank size of your cutter you wish to hold. Best used with 1/4” diameter tools and larger.

PN	Size
31818	1/4”
31819	5/16”
31820	3/8”
31821	1/2”
31822	6mm
31823	10mm
31824	12mm

NEW *BALANCED BY DESIGN* TOOLHOLDERS REDUCE VIBRATION AND IMPROVE FINISH AT SPINDLE SPEEDS ABOVE 8000 RPM

Jacobs Taper Arbors & Drill Chucks

JACOBS TAPER ARBORS AND DRILL CHUCKS

We offer Jacobs taper arbors with a TTS geometry for mounting both keyed and keyless drill chucks. To order, simply match your drill chuck size to the correct arbor. Jacobs tapers are only suitable for drills and should never be used for side cutting tools.

(Shown with arbor and drill)

KEYED CHUCKS

	PN	Description	Use with Arbor PN
A	30102	¼”-JT1	31825
B	30244	3/8” –JT2	31826
C	30104	½” –JT6	31828

KEYLESS CHUCKS

	PN	Description	Use with Arbor PN
D	30474	¼”-JT1	31825
E	30245	3/8” –JT2	31826
F	30149	½” –JT6	31828

ARBORS

Used for mounting standard drill chucks. TTS Jacobs adaptors are available as JT1, JT33, JT2, and JT6. This covers most chucks from ¼" to ½".

PN	Description
31825	JT1 (#3 Taper)
31826	JT2 (#2 Taper)
31827	JT33 (#33 Taper)

ER Collets

ER TOOLHOLDERS AND COLLETS

ER collets are an industry standard (DIN 6499) self-extracting collet. The ER system is ideal for any small milling or drilling operation and is available in both ER20 and ER16 sizes.

COLLET SETS

PN 31688: ER16 COLLET 22 PC SET
3/64" TO 3/8" IN 1/64TH INCREMENTS

PN 31689: ER20 COLLET 12 PC SET (METRIC)
1-3MM IN 0.5MM INCREMENTS, 4-10MM IN 1MM INCREMENTS

PN 30584: ER20 COLLET 30 PC SET
3/64" TO 1/2" IN 1/64TH INCREMENTS

PN 30596: ER20 COLLET 15 PC SET
1/16" TO 1/2" IN 1/32ND INCREMENTS

PN 32306: ER20 COLLET 14 PC SET (METRIC)
1 TO 13MM IN 1MM INCREMENTS, PLUS ADDITIONAL 1.5MM COLLET

HOLDER

PN 31829: TTS-ER20

PN 31831: TTS-ER16

ER Collets

INDIVIDUAL ER16 & ER20 COLLETS

PN	Description
31690	ER16 1/8” Collet
31691	ER16 1/4” Collet
31692	ER16 3mm Collet
31693	ER16 4mm Collet
31694	ER16 6mm Collet
31695	ER16 8mm Collet

PN	Description
30112	ER20 1/8” Collet
30250	ER20 1/8” Collet
30210	ER20 1/4” Collet
30128	ER20 3/8” Collet
30598	ER20 1/2” Collet
31056	ER20 3mm Collet
31055	ER20 6mm Collet
31054	ER20 10mm Collet
31053	ER20 12 mm Collet

RECOMMENDED ACCESSORIES

PN 30148: ER20 REPLACEMENT NUT
PN 31970: ER20 BALANCED AND ENGRAVED REPLACEMENT NUT
PN 31778: ER16 BALANCED AND ENGRAVED REPLACEMENT NUT

PN 30106: 22MM TTS-ER20 WRENCH
PN 30151: 30MM TTS-ER20 WRENCH
PN 32349: 20MM TTS-ER16 WRENCH

Boring Bars & Tools

BORING BARS AND TOOLS

A boring system allows for precision finishing operations on large diameter holes and cylinders. We offer an arbor, head and bar set for a complete TTS boring solution. Our TTS Boring Arbor is also compatible with many popular third-party boring heads.

TTS BORING ARBOR (7/8" X 20)

The TTS adaptor fits to 7/8-20 UNF mounted heads or other tooling with the 7/8-20 thread.

PN 31801: TTS-BORING 7/8" X 20

BORING HEAD (7/8" X 20)

Center, off-center and horizontal bar mounting positions and an adjustable slide for precision bar placement. Mount with 30247 (above). Uses 1/2" boring bars.

PN 30248: BORING HEAD (7/8" X 20)

BORING BAR SET

Nine piece Carbide-faced boring bars with ½" shank.*

PN 30249: BORING BAR SET

*Wood display box not included.

Measurement

HAIMER ZERO MASTER

Haimer Zero Masters are professional quality universal 3D sensors for precise locating. These German-made, precision engineered instruments are the ultimate in 3D edge and surface detection.

HAIMER ZERO MASTER - DIGITAL

Professional edge finder with digital display for fast and precise locating of edges and surfaces in X, Y, and Z. Nominal measuring accuracy +/-0.01mm. .375" shaft diameter.

PN 32014: HAIMER ZERO MASTER DIGITAL SET

PN 31936: HAIMER ZERO MASTER DIGITAL (GAUGE ONLY)

PN 31933: TTS HOLDER FOR 31936

HAIMER ZERO MASTER - ANALOG

Professional edge finder with analog display for fast and precise locating of edges and surfaces in X, Y, and Z. Nominal measuring accuracy +/-0.01mm. 10mm shaft diameter.

PN 32015: HAIMER ZERO MASTER ANALOG SET

PN 31935: HAIMER ZERO MASTER ANALOG (GAUGE ONLY)

PN 32018: TTS HOLDER FOR 31935

ACCESSORIES AND REPLACEMENT PARTS

PN 31993: REPLACEMENT TIP FOR 31935 (ANALOG)

PN 31992: REPLACEMENT TIP FOR 31936 (DIGITAL)

PN 32630: LONG PROBE TIP FOR 31935 (ANALOG)

PN 32019: LONG PROBE TIP FOR 31936 (DIGITAL)

TTS ELECTRONIC EDGE FINDER

Electronic Edge finder suitable for use with metallic workpieces. Precision Steel body construction with TTS geometry. Nominal 0.4" ball diameter. Red LED for illumination.

PN 31861: TTS ELECTRONIC EDGE FINDER

Measurement

MEASUREMENT

The ability to measure tool height off-line greatly improves a machinist's efficiency. Whether replacing a broken tool in the middle of a process, using the tool compensation table of a CNC controller, or just switching tools in a manual process, off-line tool measurement will improve your work quality and streamline your setup.

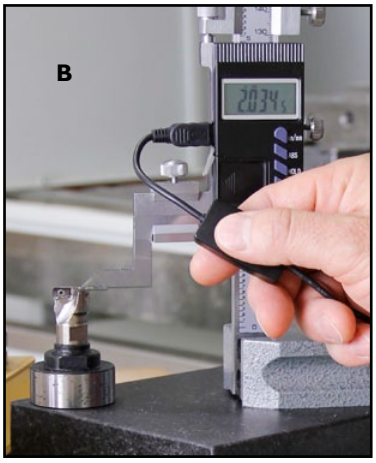
OFFLINE MEASUREMENT SYSTEM COMPONENTS

The design of TTS allows a quick and accurate measurement with a height gauge, precision surface, and simple measurement fixture.*

8" DIGITAL HEIGHT GAUGE

This is an 8" digital height gauge with 0.001" graduations.

A) PN 31761: 8" DIAL INDICATOR HEIGHT GAUGE



TORMACH TOOL ASSISTANT SET

The Tormach Tool Assistant Set includes 8" Digital Height Gauge (measurement accuracy +/-0.0005"), USB interface cable with touch trigger, Manual and Tool Assistant software for PC.

B) PN 31988: MEASUREMENT FIXTURE

SMALL GRANITE SURFACE PLATE

This granite surface plate designed for measuring TTS tooling. Integrated hole allows tools to be measured with spindle nose as the datum point. Meets Grade 'B' tool room standards (0.0002" flatness).

C) PN 31713: SMALL GRANITE SURFACE PLATE

TOUCH TOOLS

The touch tool allows you to set your work offset (i.e., touch off) with excellent accuracy and without the risk of colliding a tool with the work. This fixture only version allows you to mount your own indicator.

PN 31283: TTS TOUCH TOOL WITH MECHANICAL INDICATOR

PN 31284: TTS TOUCH TOOL WITH DIGITAL INDICATOR

PN 31278: TTS TOUCH TOOL FIXTURE ONLY

*By comparison, the vertical position of R8 and most other taper systems is controlled at the taper. Any tapered tool holder requires a specialized taper adapter for off-line tool measurement

Electronics

ELECTRONICS

Each Tormach PCNC includes control software for our plug-and-play electronic touch probe and tool setter accessories. Take your machining to the next level with these precision electronic measurement tools. All devices use industry standard electrical interfaces and can be configured for operation with other machine systems as well.

ELECTRONIC TOUCH PROBES

Touch probes are time-saving accessories for fast and accurate locating and measurement of parts and fixtures. They can also be used for:

- Automated detection of vise corners
- Automated center finding of holes or bosses
- Electronic recording of work offsets
- Surface detection (Z-probing)
- Rotation of coordinate axes relative to workpiece
- 3D point cloud generation for Reverse Engineering (Digitizing)

PN 31875: ELECTRONIC TOUCH PROBE

DIGITIZING ACTIVE PROBE

The Digitizing Active Probe is a professional quality tool for everyday use. Includes certification document.

Features:

- Normally open sensing logic
- Breakaway ceramic stylus with ruby sensor ball
- Compatible with Renishaw M4 Stylus Family
- LED touch indicator lights
- Oil immersed, hermetically sealed contact system
- Stainless Steel Housing w/ integrated TTS mounting arbor
- 5pin DIN connector (male)
- Includes Sturdy Storage Case and certification document

PN 31858: DIGITIZING PROBE

ACCESSORIES AND REPLACEMENT PARTS

PN 31899: REPLACEMENT RUBY PROBE TIP

PN 31902: PRACTICE STEEL PROBE TIP

PN 31901: PROBE BREAKAWAY SECTION (FOR PN 31902)

PN 30673: PROBE WRENCH SET

PN 31903: REPLACEMENT PROBE CORD

Electronics

PASSIVE PROBE

The passive probe is an affordable option for occasional and hobby use.

Features:

- Normally closed sensing logic
- Ground Steel Stylus with steel tip
- Compatible with Renishaw M4 Stylus Family
- 5pin DIN connector (male)
- 10mm ground shaft for mounting

PN 32309: PASSIVE PROBE W/10MM TTS MOUNT
PN 32310: PASSIVE PROBE (PROBE ONLY)

ACCESSORIES AND REPLACEMENT PARTS

PN 31899: REPLACEMENT RUBY PROBE TIP
PN 31902: PRACTICE STEEL PROBE TIP
PN 31901: PROBE BREAKAWAY SECTION (FOR PN 31902)
PN 32018: 10MM LOW PROFILE TTS HOLDER

Technical Specifications	31858 Digitizing Active Probe	32310 Passive Probe
Probe Sense Logic	Normally Open	Normally Closed
Sensing ball diameter	Nominal: 0.118” (3.0 mm) See Parameters Table provided with each probe for measured value. Tolerance: (+/-) 0.0002” (0.005 mm)	Nominal: 0.118” (3.0 mm) Tolerance: (+/-) 0.0005” (0.013 mm)
Deviation of sensing Ruby ball from spherical	(+/-) 0.00001” (0.00025 mm)	(+/-) 0.00005” (0.0013 mm)
Return position of swing arm repeatability	(+/-) 0.00008”, 0.002 mm	(+/-) 0.0005”, 0.0013 mm
Position tolerance of sensing ball	(+/-) 0.00012”, 0.003 mm	(+/-) 0.0005”, 0.0013 mm
Trigger force (Nominal at stylus tip)	XY 1.6-2.5 oz (45-78g); +Z 20.1 oz (570g)	XY 1.6-2.5 oz (45-78g); +Z 20.1 oz (570g)
Stylus compatibility	Probe is compatible with the Renishaw M4 Stylus family	Probe is compatible with the Renishaw M4 Stylus family
Electrical Protection Classification	IP 66	IP 66
Mounting	Tormach Tooling System (TTS) 3/4” shank	10mm shank Recommended holder: PN 32018 or ER Collet holder with 10mm collet
Overtravel Displacement	Nominal XY 15^{o} +Z 0.1969” (5 mm)	Nominal XY 15^{o} +Z 0.1969” (5 mm)

Note: Measurement accuracy will not be better than machine accuracy. Expect 0.001” for PCNC Mills

Tension/Compression Heads

TAPPING HEADS

Tormach offers both reversing and tension/compression tapping heads suitable for use with your PCNC or any other machine capable of accepting a ¾" shank. Both types have a TTS mount for quick manual tool changes and are compatible with any machine with R8 or Morse spindle taper.

PN 30612: SMALL TAPPING HEAD

PN 30613: LARGE TAPPING HEAD

AUTO REVERSING HEAD

The reversing head comes in two sizes, small and large. Each size features an adjustable internal gear/clutch mechanism that engages to reverse rotation as the head retracts and a quick-change rubber flex collet system.

The Small Tapping Head covers #0 to ¼" (M2-M7) taps

The Large Tapping Head ranges from #8 to ½" (M4-M12).

TENSION/COMPRESSION HEAD

The Tension/Compression Tapping Head is a modular tool holding system consisting of a tapping chuck and 9 quick-change collets. It is compatible with ANSI inch taps (#0 – ½") and metric taps (M1.6-M12.5). The float in the tapping head is approximately 0.75 in (+0.25/-0.50 in. tension/compression). Both the chuck and the collets can also be purchased individually as replacements or extras.

PN 31807: TENSION/COMPRESSION TAPPING SET

PN 31806: REPLACEMENT TENSION/COMPRESSION HEAD CHUCK

INDIVIDUAL TENSION/COMPRESSION COLLETS

PN	Description
31164	#0-#6, T/C Tapping Collet
31165	#8, 5/32" T/C Tapping Collet
31166	#10, 3/16" T/C Tapping Collet
31167	#12, 7/32" T/C Tapping Collet
31168	1/4" T/C Tapping Collet
31169	5/16" T/C Tapping Collet
31170	3/8" T/C Tapping Collet
31171	7/16" T/C Tapping Collet
31172	½" T/C Tapping Collet

Modular Inset Tooling

MODULAR INSERT TOOLING

Insert cutters offer lower cutting forces, longer tool life, and lower operating costs over solid tooling. Tormach's Modular Insert Tooling is an interchangeable system of carbide insert cutters, cutter heads, and TTS cutter mounts for the ultimate in customizable quick-change cutting tools. With replaceable cutting inserts and a variety of tool lengths and cutter head styles available, machinists can now build a tool tailored to their milling application.

Each cutting head uses carbide inserts with modern geometries and are compatible with similar brand name inserts from Sandvik, Ingersoll, Mitsubishi, and other suppliers.

FOUR EASY STEPS TO BUILDING A CUSTOM CUTTER

Step 1. Choose Cutter head geometry. Each cutter head includes mounting screws and tool. Inserts are not included.

Step 2. Select matching inserts for cutter head. Make sure to order the correct number of inserts. Consult Table 2 & Figure 1 for compatibility.

Step 3. Select compatible mount. Consult Table 1 & Figure 1 for compatibility.

Step 4. Additional/Replacement screws and tools can be purchased. Consult Table 2 for compatibility.

Modular Inset Tooling

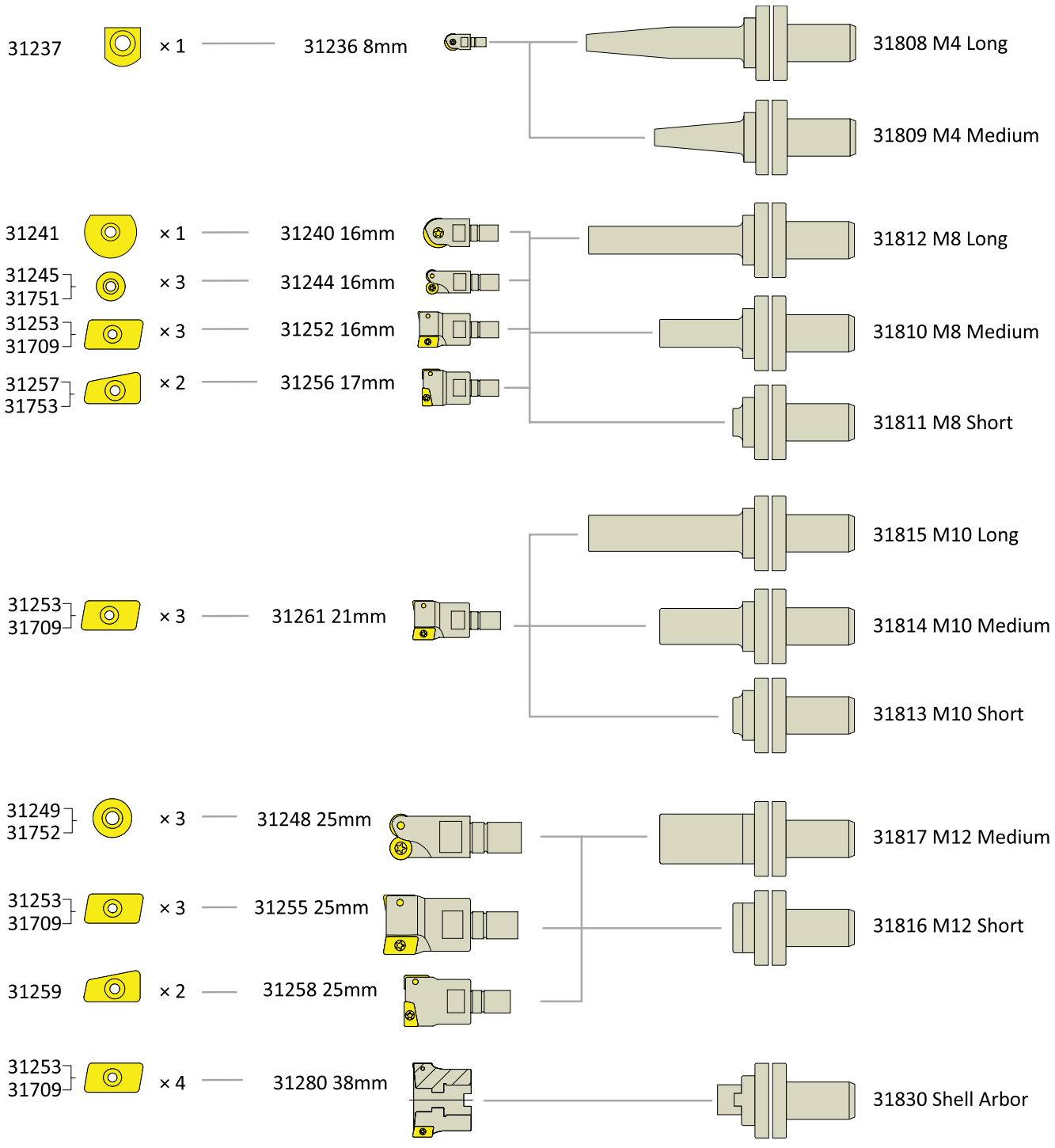
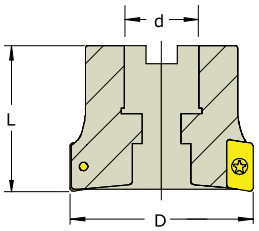
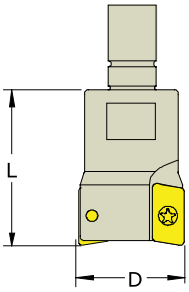
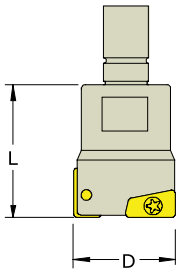
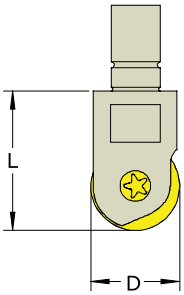
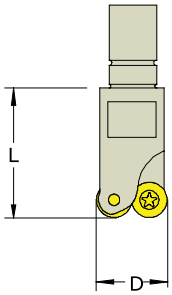


Figure 1. Tormach's Modular Insert Tooling System

Modular Inset Tooling

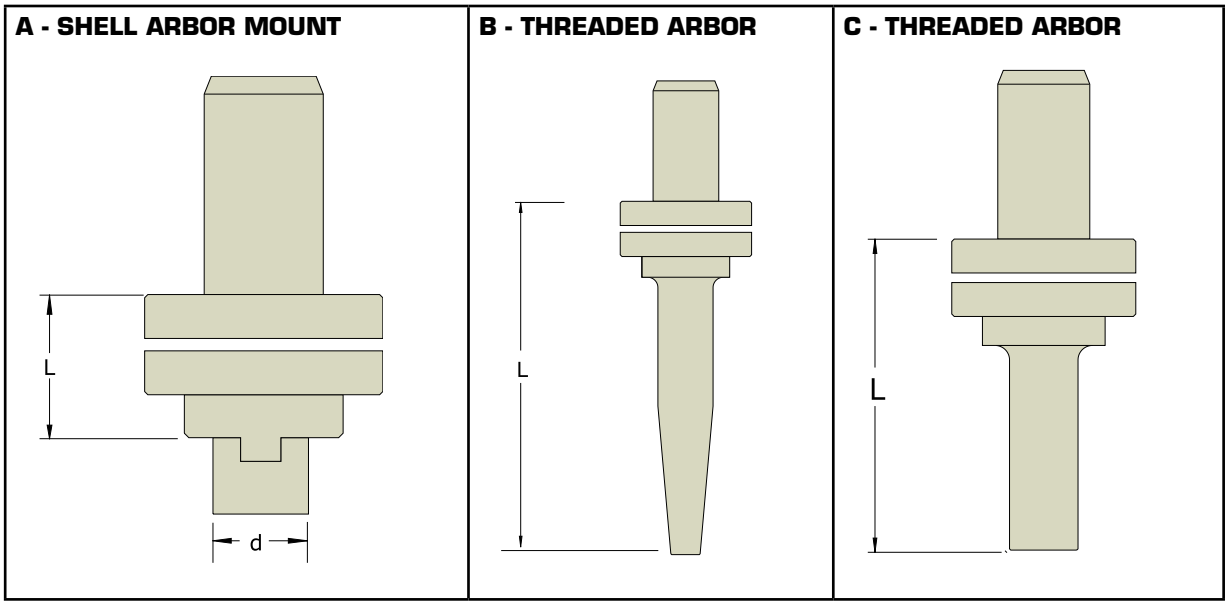
MILLS AND CUTTERS

A - FACE MILLS	B - END MILLS	C - CENTER CUT END MILLS	D - PRECISION BALL END MILLS	E - TORODIAL END MILLS
				

PN	Description	Figure	Stud	Length	Diameter
31280	38mm Face Mill	A	Arbor	1.378” (35mm)	1.5” (38mm) d = 0.5” (12.7mm)
31252	16mm End Mill	B	M8	1.181” (30mm)	0.630” (16mm)
31261	21mm End Mill	B	M10	1.181” (30mm)	0.827” (21mm)
31255	25mm End Mill	B	M12	1.378” (35mm)	0.984” (25mm)
31256	17mm Center Cut End Mill	C	M8	0.984” (25mm)	0.693” (17mm)
31258	25mm Center Cut End Mill	C	M12	1.378” (35mm)	0.984” (25mm)
31236	8mm Precision Ball End Mill	D	M4	0.630” (16mm)	0.315” (8mm)
31240	16mm Precision Ball End Mill	D	M8	1.102” (28mm)	0.630” (16mm)
31244	16mm Toroidal End Mill	E	M8	0.906” (23mm)	0.630” (16mm)
31248	25mm Toroidal End Mill	E	M12	1.378” (35mm)	0.984” (25mm)

Modular Inset Tooling

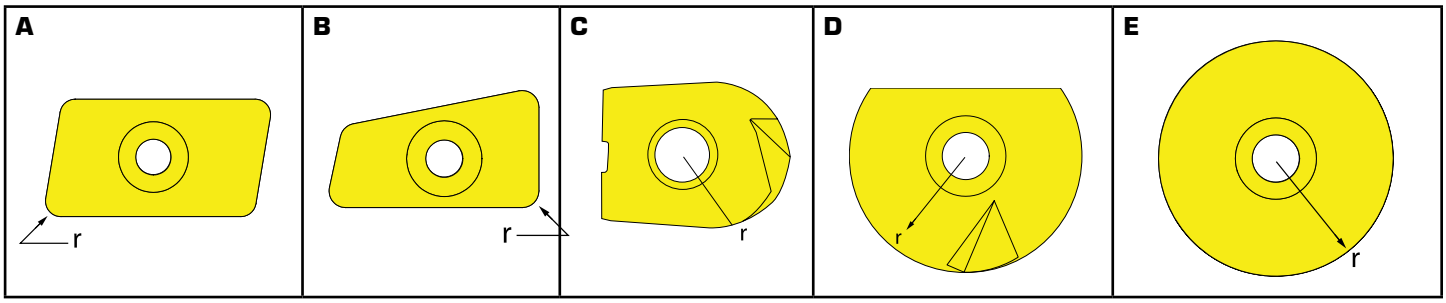
ARBORS



PN	Description	Fig.	Length
31830	0.5” TTS Shell Arbor Mount	A	1.224” (31mm)
31808	TTS Medium, 4mm	B	2.56” (65mm)
31809	TTS Long, 4mm	B	4.06” (103mm)
31811	TTS Short, 8mm	C	1.02” (26mm)
31810	TTS Medium, 8mm	C	2.56” (65mm)
31812	TTS Long, 8mm	C	4.06” (103mm)
31813	TTS Short, 10mm	C	1.02” (26mm)
31814	TTS Medium, 10mm	C	2.56” (65mm)
31815	TTS Long, 10mm	C	4.06” (103mm)
31816	TTS Short, 12mm	C	1.02” (26mm)
31817	TTS Medium, 12mm	C	2.56” (65mm)

Modular Inset Tooling

CARBIDE INSERT CUTTERS



PN	Description	Fig.	Material	r	Needs Screw PN	Needs Tool PN	Cross Reference
31253	APMT1135PDER-M	A	Steel	.0325”	31254	31247	Mitsubishi
31709	APGT1135PDFR-G2	A	Aluminum & Plastic/ Non-Ferrous/Cast Iron	.0325”	31254	31247	Mitsubishi
31257	QOMT0830R-M2	B	General Purpose, not recommended for non-ferrous	.0325”	31394	31392	Mitsubishi
31259	QOMT1342R-M2	B	General Purpose, not recommended for non-ferrous	.0350”	31260	31391	Mitsubishi
31753	QOGT0830R-G1	B	Aluminum & Plastic/ Non-Ferrous/Cast Iron	.0325”	31394	31392	Mitsubishi
31754	QOGT1342R-G1	B	Aluminum & Plastic/ Non-Ferrous/Cast Iron	8mm	31238	31247	Mitsubishi
31237	RC08-F	C	Aluminum/ Non-Ferrous/Cast Iron	8mm	31238	31239	Walter, Pramet
31241	RC16-F	D	General Purpose	16mm	31242	31243	Walter, Pramet
31245	RDMX0702M0	E	Steel	7mm	41246	31247	WIDIA, SECO
31249	RDMX1003M0E	E	Steel	10mm	31250	31251	Taegutec
31751	RDHT0702MO-FA K10	E	Aluminum & Plastic/ Non-Ferrous/Cast Iron	7mm	41246	31347	WIDIA, SECO
31752	RDHT1003MOFN HU7710	E	Aluminum & Plastic/ Non-Ferrous/Cast Iron	10mm	31250	31251	WIDIA, SECO

Modular Inset Tooling

Table 1. Modular Tooling System Compatibility: Cutter Heads, Inserts, Screws, and Tools

31240 Cutter Head				Insert			Screw		Tool	
PN	Desc.	Diameter	Stud Size	PN	Desc.	# per cutter	PN	# per cutter	PN	Desc.
31280	Face Mill	38mm	ARBOR	31253 31709	APMT1135PDER M2 APGT1135PDFR-G2 HTi10	4	31254	4	31247	TF9
31252	End Mill	16mm	M8	31253 31709	APMT1135PDER M2 APGT1135PDFR-G2 HTi10	2	31254	2	31247	TF9
31261	End Mill	21mm	M10	31253 31709	APMT1135PDER M2 APGT1135PDFR-G2 HTi10	2	31254	2	31247	TF9
31255	End Mill	25mm	M12	31253 31709	APMT1135PDER M2 APGT1135PDFR-G2 HTi10	3	31254	3	31247	TF9
31256	Center Cut End Mill	17mm	M8	31257 31753	QOG/MT0830RG1/M2 QOGT0830R-G1	2	31394	2	31392	TF7
31258	Center Cut End Mill	25mm	M12	31259 31754	QOG/MT1342R-G1/M2 QOGT1342R-G1	2	31260	2	31391	TF10
31236	Ball Precision Cutter	8mm	M4	31237	RC08	1	31238	1	31239	TF8
31240	Ball Precision Cutter	16mm	M8	31241	RC16	1	31242	1	31243	TF20
31244	Toroidal Cutter	16mm	M8	31245 31751	RDMX0702M RDHT0702MO-FA K10	3	31246	3	31247	TF9

Tormach Tooling System

SPINDLE COLLETS AND OTHER ACCESSORIES

The recessed area between the shank of a TTS holder and shoulder allows the holder to make contact with the spindle face even though the collet extends beyond the face of the spindle. Most machines can use TTS without modification, but sometimes the geometry of the machine or a collet creates some additional issues.

If you find geometry issues on a machine that has an R8 spindle taper, the best solution is to use the Tormach TTS-R8 collet. This is a special variation of a precision R8 collet with the end of the collet ground flat and the overall length slightly less than the standard R8 collet length.

*The TTS-R8 collet is included with each TTS tooling set.

TTS-R8 COLLET

Guaranteed to allow mounting of all TTS tool holders in R8 Taper spindles.

A) PN 31743: TTS-R8 COLLET

TTS-MT3 COLLET

Guaranteed to allow mounting of all TTS tool holders in Morse Taper #3 spindles.

B) PN 30251: TTS-MT3 COLLET

TTS MACHINABLE BLANK

Hardened and ground TTS geometry on the spindle end, but the working end is 38 mm x 60 mm cylinder of unhardened steel. Make your own tool holders, fly cutter, or whatever you like.

C) PN 31802: TTS MACHINABLE BLANK

TTS TOOL CONVERSION KIT

This kit can be used to convert many conventional tools into Tormach Tooling System tools.

PN 30675: TTS TOOL CONVERSION KIT

TOOL TIGHTENING FIXTURE

Heavy duty steel fixture designed to be bench mounted for one- handed tightening of ER20 collet holders. Also features a 3/4” bore for safely holding TTS tools. Black Oxide Finish.

PN 31904: TOOL TIGHTENING FIXTURE

TTS TOOL TRAY

Varnished wooden tray to store 21 TTS tools; tool tray included in TTS CNC Operator’s Set but may also be purchased separately.

PN 30302: TTS TOOL TRAY

Tormach Tooling System

ABOUT TORMACH

The people at Tormach are dedicated to delivering tools, accessories, and components of unprecedented value in the world of CNC and motion control. Whether you're involved in R&D, education, short run production, or simply an entrepreneur with an idea, you need to make things.

Tormach products allow you to make what you need easier, quicker, and more affordably. We want to help make your goal a reality, to enable your ideas. Our mission is to empower people who make things. Whether you're cutting parts with our machine tools or building your own equipment using our components, our focus is to manifest your concepts and help you bring your ideas into reality.

ORDERING, PAYMENT & SHIPPING

Quotations can be requested online using our web based quotation system, or through FAX, email, or over the phone. Machines and accessories can also be ordered using our secure web shopping cart. Payment can be made by check, credit card, or wire transfer. Machines and machine stands are shipped via truck freight in North America, while accessories are normally shipped via package service (UPS, USPS, FedEx). Tormach ships worldwide in cooperation with established international freight forwarding companies.

WARRANTY AND SUPPORT

Machines and accessories are warranted for 12 months. Warranty service is limited to repair or replacement of components with telephone support, there is no on-site field service staff. Replacement parts are stocked at our Wisconsin facility. **Additional information is available at www.tormach.com.**

DS10052_TTS_CATALOG_0212.PDF_0212A

TORMACH®

ENABLING YOUR IDEAS

204 Moravian Valley Road, Suite N
Waunakee, WI 53597 USA

Ph 608.849.8381 • Fx 209.885.4534

info@tormach.com