



TAPPEX THREAD INSERTS LIMITED

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INSERT TECHNOLOGY FOR PLASTICS
COMPOSITES AND METAL ALLOYS
50 YEARS OF FASTENER INNOVATION



50 YEARS OF INNOVATION



Tappex Thread Inserts Limited was incorporated in September 1956 by its founder the late Mr. Derrick Barnsdale. From very humble beginnings in a reclaimed cow shed on Masons Road in Stratford-upon-Avon the company flourished and grew into the modern purpose built manufacturing plant it resides in today, on the original site.

With over 50 years' experience in the design, development and manufacture of threaded inserts for plastics, the company, now led by his son Tim Barnsdale, is one of the UK's most successful privately owned specialist fastener manufacturing companies, supplying major OEMs and their moulding companies, throughout the world.

Tappex prides itself on its Technical Advisory Service and its Team of Applications Engineers have provided cost effective solutions for fastener applications throughout the world. It sees itself as a major resource for customers to solve fastening problems rather than simply a fastener supplier.

Tappex's extensive range of inserts for plastics, includes more than 23 standard variations from M1.6 to M12, for use in all grades of thermoplastic, thermoset, structural foam and composite material.

The company's continued success is not solely based on inserts for plastics. Its wide range of grooved pins and self-tapping steel and stainless steel inserts offer solutions for high performance applications in composites, light metal alloys and wood.



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TRISERT®

DOUBLE ENDED

REDUCED HEADED

REGULAR HEADED

ADVANCED

In line with our philosophy of continuous product development, Tappex have expanded the range of Trisert self-tapping inserts, which have the unique feature of enabling cold installation into most grades of plastic and composite materials.

The range includes three primary designs: Double Ended, Reduced Headed and Regular Headed variants, to solve most application problems in thermoset and thermoplastic grades including the latest engineering plastic alloys. The concept of the Trisert design is to provide a reliable and efficient post-mould production process, where the installation torque can be controlled and monitored for increased reliability. As the internal thread is used to install the Trisert, every insert is therefore automatically checked in the moulding for the existence of a good thread. See Page 22 for details of installation procedures.

The Trisert design has three equidistant cutting flutes plus three shallow flutes on

the central section of the thread form to provide balanced cutting and reduced installation torque. Compared to other designs where a cross-slot is used as the cutting feature, the Trisert provides a stronger insert body, which for smaller insert diameters is critical to modern engineering requirements. This slot-less design also allows pull-through applications, without any increased assembly torque problems.

DOUBLE ENDED

Available in three lengths - short, regular and long - the Double Ended Trisert has a lead on both ends and can therefore be installed either way up, significantly simplifying the installation procedure. For high volume applications in particular, the double ended version facilitates the design of simple bowl fed mechanisms for automatic installation equipment, thus reducing tooling costs.

REDUCED HEADED

The Reduced Headed Trisert allows higher tightening torques because of its

increased bearing surface, which also provides more support to softer mating components. The head diameter is designed to exactly fit the counter bore in the moulded hole and thus provides a neat flush fit finish, where required.

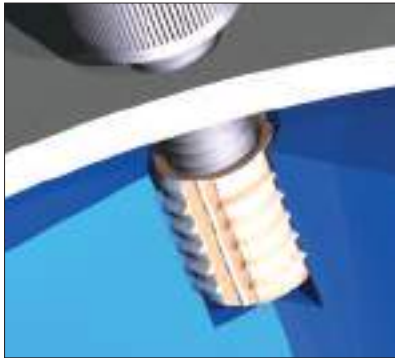
REGULAR HEADED

The Regular Headed Trisert is particularly suitable where there is a large or slotted clearance hole in the mating component, and is also designed for pull-through applications or where the insert head is required to sit proud of the boss surface.

TRISERT ADVANCED

This range has been developed specifically for thermoset and advanced plastic alloys, where the hardness of the material demands a larger hole dimension and less interference, so the external profile of the Trisert has to be more carefully controlled during manufacture.

DOUBLE ENDED

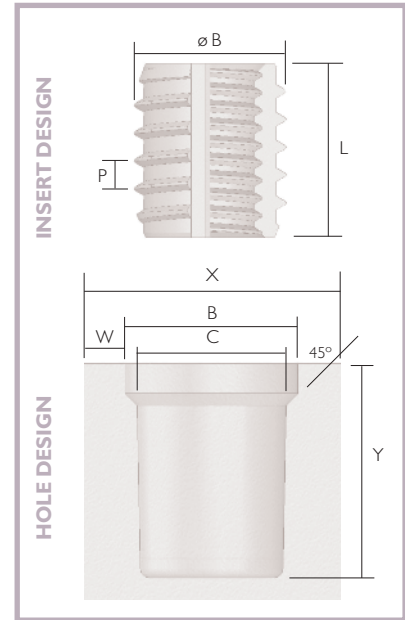


A self-tapping, double ended insert available in short, regular and long lengths in a range of thread sizes from M2 to M10.

Product Features

The Double Ended Trisert has a lead on both ends significantly simplifying the installation process and requiring less operator skill. The combination of the three cutting flutes and the coarse external thread form increases the radial and pull-out performance making the Double Ended Trisert ideal for use in thermoplastics where there is a gap, or gasket or 'O' ring, between the mating parts. It can also be used in a pull-through mode with the appropriate stepped Hole Design.

An additional full range of part numbers is available for use in thermoset materials such as melamine, phenolic and composites, and other critical engineering plastic alloys, where the external thread form has to be more closely controlled. See page 7.



DOUBLE ENDED									
SIZE	PITCH INTERNAL	PITCH EXTERNAL P	DIAMETER EXTERNAL B	LENGTH L	HOLE DIAMETER C	HOLE DEPTH Y	BOSS DIAMETER X	WALL THICKNESS W	PART NO.s THERMO PLASTIC
M2	0.40	0.79	3.50	4.00	3.1 - 3.3	4.4	5.8	1.25	I45M2
M2	0.40	0.79	3.50	4.80	3.1 - 3.3	5.3	5.8	1.25	I36M2
M2.5	0.45	1.06	4.33	4.00	3.8 - 4.1	4.4	7.2	1.55	I45M2.5
M2.5	0.45	1.06	4.33	5.25	3.8 - 4.1	5.8	7.2	1.55	I36M2.5
M2.5	0.45	1.06	4.33	6.25	3.8 - 4.1	6.9	7.2	1.55	I37M2.5
M3	0.50	1.06	4.73	4.00	4.1 - 4.4	4.4	7.7	1.65	I45M3
M3	0.50	1.06	4.73	5.25	4.1 - 4.4	5.8	7.7	1.65	I36M3
M3	0.50	1.06	4.73	6.25	4.1 - 4.4	6.9	7.7	1.65	I37M3
M3.5	0.60	1.15	5.52	5.00	5.0 - 5.3	5.5	9.3	2.00	I45M3.5
M3.5	0.60	1.15	5.52	6.20	5.0 - 5.3	6.9	9.3	2.00	I36M3.5
M3.5	0.60	1.15	5.52	7.30	5.0 - 5.3	8.1	9.3	2.00	I37M3.5
M4	0.70	1.27	6.31	5.60	5.8 - 6.1	6.2	10.7	2.30	I45M4
M4	0.70	1.27	6.31	7.10	5.8 - 6.1	7.9	10.7	2.30	I36M4
M4	0.70	1.27	6.31	8.40	5.8 - 6.1	9.3	10.7	2.30	I37M4
M5	0.80	1.41	7.50	6.40	6.9 - 7.2	7.1	12.6	2.70	I45M5
M5	0.80	1.41	7.50	8.40	6.9 - 7.2	9.3	12.6	2.70	I36M5
M5	0.80	1.41	7.50	10.00	6.9 - 7.2	11.0	12.6	2.70	I37M5
M6	1.00	1.59	8.69	7.90	8.0 - 8.4	8.7	14.7	3.15	I45M6
M6	1.00	1.59	8.69	9.80	8.0 - 8.4	10.8	14.7	3.15	I36M6
M6	1.00	1.59	8.69	12.00	8.0 - 8.4	13.2	14.7	3.15	I37M6
M8	1.25	1.95	11.06	9.50	10.1 - 10.6	10.5	18.6	4.00	I45M8
M8	1.25	1.95	11.06	12.40	10.1 - 10.6	13.7	18.6	4.00	I36M8
M10	1.50	1.95	13.95	12.00	13.0 - 13.5	13.2	23.7	5.10	I45M10
M10	1.50	1.95	13.95	16.00	13.0 - 13.5	17.6	23.7	5.10	I36M10

MATERIAL: Brass - to BS EN 12164 CW 614N This material is RoHS compliant

NOTE - all dimensions in mm

HOLE DIAMETER TOLERANCE INFORMATION

The information given under hole diameter 'C' are suggested dimensions for a range of grades of materials and applications.

DETAILED HOLE INFORMATION IS AVAILABLE FOR SPECIFIC APPLICATIONS AND MATERIALS

Information given under the hole design section above is intended to indicate approximate dimensional requirements for satisfactory installation of the insert, it is not intended for production tooling.

REDUCED / REGULAR HEADED

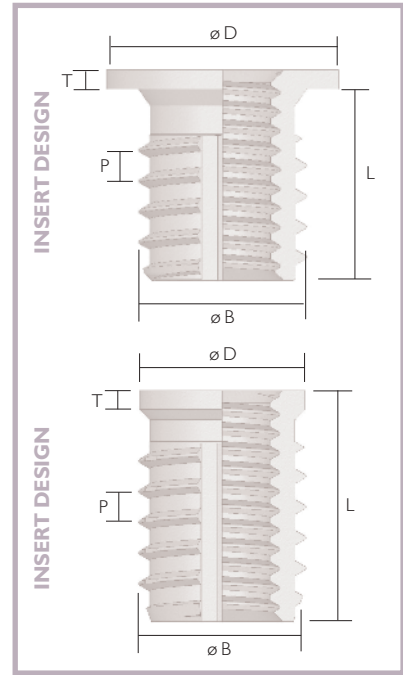


Self-tapping, headed inserts available in regular and long lengths in a range of thread sizes from M2.5 to M10.

Product Features

The Reduced and Regular Headed Triserts allow greater tightening torques because of their increased bearing surface, which also provide more support to softer mating components. The difference in head diameters are designed to give the optimum cost effective solution for a particular application. The larger Regular Headed versions are particularly suitable where there is a large or slotted clearance hole in the mating component, or where the insert head is required to sit proud on top of a boss section. For maximum performance they can be used in a suitable pull-through application.

An additional full range of part numbers is available for use in thermoset materials such as melamine, phenolic and composites, and other critical engineering plastic alloys, where the external thread form has to be more closely controlled. See page 7.



For hole design see page 5

REGULAR HEADED

SIZE	PITCH INTERNAL	PITCH EXTERNAL P	DIA. EXTERNAL B	LENGTH L	HEAD THICKNESS T	HEAD DIAMETER D	HOLE DIAMETER C	HOLE DEPTH Y	BOSS DIAMETER X	WALL THICKNESS W	PART NO.s THERMO PLASTIC
M2.5	0.45	1.06	4.33	4.00	0.60	6.35	3.8 - 4.1	4.4	7.2	1.55	345M2.5
M2.5	0.45	1.06	4.33	5.25	0.60	6.35	3.8 - 4.1	5.8	7.2	1.55	336M2.5
M3	0.50	1.06	4.73	4.00	0.75	7.10	4.1 - 4.4	4.4	7.7	1.65	345M3
M3	0.50	1.06	4.73	5.25	0.75	7.10	4.1 - 4.4	5.8	7.7	1.65	336M3
M3.5	0.60	1.15	5.52	5.00	0.75	8.30	5.0 - 5.3	5.5	9.3	2.00	345M3.5
M3.5	0.60	1.15	5.52	6.20	0.75	8.30	5.0 - 5.3	6.9	9.3	2.00	336M3.5
M4	0.70	1.27	6.31	5.60	0.75	8.70	5.8 - 6.1	6.2	10.7	2.30	345M4
M4	0.70	1.27	6.31	7.10	0.75	8.70	5.8 - 6.1	7.9	10.7	2.30	336M4
M5	0.80	1.41	7.50	6.40	0.90	11.10	6.9 - 7.2	7.1	12.6	2.70	345M5
M5	0.80	1.41	7.50	8.40	0.90	11.10	6.9 - 7.2	9.3	12.6	2.70	336M5
M6	1.00	1.59	8.69	7.90	1.00	12.00	8.0 - 8.4	8.7	14.7	3.15	345M6
M6	1.00	1.59	8.69	9.80	1.00	12.00	8.0 - 8.4	10.8	14.7	3.15	336M6
M8	1.25	1.95	11.06	7.50	1.25	14.30	10.1 - 10.6	8.3	18.6	4.00	345M8-02
M8	1.25	1.95	11.06	12.40	1.25	14.30	10.1 - 10.6	13.7	18.6	4.00	336M8
M10	1.50	1.95	13.95	12.00	1.50	18.00	13.0 - 13.5	13.2	23.7	5.10	345M10
M10	1.50	1.95	13.95	16.00	1.50	18.00	13.0 - 13.5	17.6	23.7	5.10	336M10

MATERIAL: Brass - to BS EN 12164 CW 614N This material is RoHS compliant

NOTE - all dimensions in mm

REDUCED HEADED

SIZE	PITCH INTERNAL	PITCH EXTERNAL P	DIA. EXTERNAL B	LENGTH L	HEAD THICKNESS T	HEAD DIAMETER D	HOLE DIAMETER C	HOLE DEPTH Y	BOSS DIAMETER X	WALL THICKNESS W	PART NO.s THERMO PLASTIC
M3	0.50	1.06	4.73	6.25	0.75	4.70	4.1 - 4.4	6.9	7.7	1.65	237M3
M4	0.70	1.27	6.31	8.40	0.80	6.30	5.8 - 6.1	9.3	10.7	2.30	237M4
M5	0.80	1.41	7.50	10.00	0.80	7.50	6.9 - 7.2	11.0	12.6	2.70	237M5
M6	1.00	1.59	8.69	7.90	0.90	8.60	8.0 - 8.4	8.7	14.7	3.15	245M6
M6	1.00	1.59	8.69	12.00	0.90	8.60	8.0 - 8.4	13.2	14.7	3.15	237M6
M8	1.25	1.95	11.06	14.00	1.00	11.10	10.1 - 10.6	15.6	18.6	4.00	237M8

MATERIAL: Brass - to BS EN 12164 CW 614N This material is RoHS compliant

NOTE - all dimensions in mm

HOLE DIAMETER TOLERANCE INFORMATION

The information given under hole diameter 'C' are suggested dimensions for a range of grades of materials and applications.

DETAILED HOLE INFORMATION IS AVAILABLE FOR SPECIFIC APPLICATIONS AND MATERIALS

Information given under the hole design section above is intended to indicate approximate dimensional requirements for satisfactory installation of the insert, it is not intended for production tooling.

TRISERT® ADVANCED



The unique Trisert self-tapping range of inserts is also available in an advanced engineered range for critical plastics and all thermoset materials .

Advanced Features

The closely controlled external thread allows effective cutting in hard urea, melamine and phenolic materials without cracking or moulding damage. The unique cutting form combined with the perfect symmetry of design significantly improves the performance of the insert in hard plastics.

Hole Design

The Advanced Trisert may be specified in high performance applications. Due to the varying mechanical characteristics of thermoset materials precise hole size specification is imperative. Detailed hole dimensions must therefore be specified for each particular application.

The Trisert, with its solid cylindrical design, provides significant cost savings allowing a brass insert to be used in critical environments where previously a more expensive slotted steel insert option may have been necessary.

DOUBLE ENDED		REGULAR HEADED		REDUCED HEADED	
PART NO.s		PART NO.s		PART NO.s	
THERMOPLASTIC	THERMOSET	THERMOPLASTIC	THERMOSET	THERMOPLASTIC	THERMOSET
I45M2	I39M2	345M2.5	339M2.5	237M3	270M3
I36M2	I38M2	336M2.5	338M2.5	237M4	270M4
I45M2.5	I39M2.5	345M3	339M3	237M5	270M5
I36M2.5	I38M2.5	336M3	338M3	245M6	239M6
I37M2.5	I70M2.5	345M3.5	339M3.5	237M6	270M6
I45M3	I39M3	336M3.5	338M3.5	237M8	270M8
I36M3	I38M3	345M4	339M4		
I37M3	I70M3	336M4	338M4		
I45M3.5	I39M3.5	345M5	339M5		
I36M3.5	I38M3.5	336M5	338M5		
I37M3.5	I70M3.5	345M6	339M6		
I45M4	I39M4	336M6	338M6		
I36M4	I38M4	345M8-02	339M8-02		
I37M4	I70M4	336M8	338M8		
I45M5	I39M5	345M10	339M10		
I36M5	I38M5	336M10	338M10		
I37M5	I70M5				
I45M6	I39M6				
I36M6	I38M6				
I37M6	I70M6				
I45M8	I39M8				
I36M8	I38M8				
I45M10	I39M10				
I36M10	I38M10				

TAPPEX TRISERT® ADVANCED FOR THERMOSET PLASTICS
 For thermoset applications use equivalent part numbers in **bold** above to specify advanced Triserts. Please refer to pages 5 & 6 for relevant details. **except hole dimensions.**

MATERIAL: Brass - to BS EN 12164 CW 614N This material is RoHS compliant

NOTE - all dimensions in mm

DETAILED HOLE INFORMATION IS AVAILABLE FOR SPECIFIC APPLICATIONS AND MATERIALS

TRISERT-3[®]

FOR CRITICAL APPLICATIONS



The standard Trisert range has for many years included three primary designs, Double Ended, Reduced Headed and Regular Headed variants. These solve most application problems in thermoset and thermoplastic grades, including the latest engineering plastics. The concept of the Trisert design is to provide a reliable and efficient post-mould process, where the installation torque can be controlled and monitored for greater reliability. As the internal thread is used to install the Trisert, every insert is therefore automatically checked in the moulding for the existence of a good thread.

Trisert-3 is the latest addition to this family and has been developed to expand the proven Trisert range into more critical applications.

Trisert-3 has three cutting features to provide more balanced cutting forces and therefore reduced installation

torque, compared to the many cross-slot designs available, that only have two cutting features.

The Trisert-3 design maintains the complete cylinder design that provides a stronger body, size-for-size, than the slotted design and also allows it to be used in pull-through applications, without any problems due to increased assembly torque associated with slotted inserts.

Trisert-3 is available in two lengths - regular and long - and is based upon the Trisert Reduced Headed design. This provides an increased bearing surface that not only allows higher tightening torques to be applied, but also provides more support to softer mating components. The head diameter is designed to exactly fit the counter bore in the prepared hole, and thus presents a neat flush fit finish, where required.

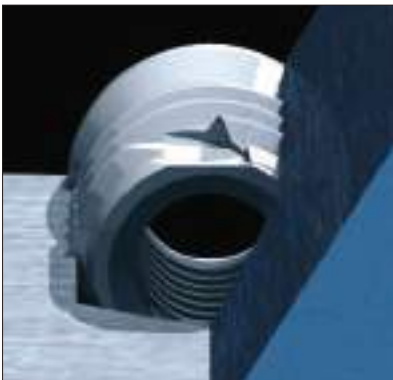
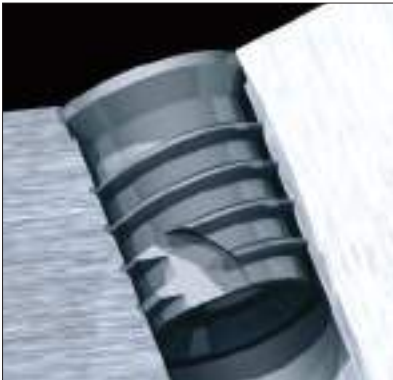
MATERIAL GRADES

In most applications into plastic, the standard brass Trisert offers a satisfactory and economic solution with good wear resistance and strength. Also it will withstand corrosion in most environments without any second operation surface treatment.

In order to meet the requirements of a wider range of host materials and harsher applications, the selection of the material for the Trisert-3 was very important. Thus the Trisert-3 is offered in two grades of Stainless Steel (303 and 316) and also in case hardened steel with a zinc nickel, trivalent passivated finish.

A key feature of the Trisert-3 is its ability to withstand critical environmental conditions, such as marine and chemical/food processing, while still retaining good wear resistance and strength.

TRISERT-3 REDUCED HEADED



The concept of the Trisert-3 design is to provide a reliable, strong and wear resistant thread in applications, environments and materials that would be unsuitable for brass inserts.

Product Features

The design combines three cutting facets with three shallow flutes offering balanced cutting and enhanced back out performance.

The internal thread is not interrupted by cutting features and therefore will guarantee a free running internal thread without the risk of swarf jamming the screw.

The Steel variant is case hardened and is offered with a zinc nickel trivalent passivated finish to meet the requirements of RoHS and provide good corrosion resistance.

Installation may be by hand tool or Tappex FlexiArm complete with air tool and Tappex Production Driver. Additionally the installation torque can be controlled and monitored for increased reliability.

In the case of metal alloys, the use of cutting fluid is necessary to enhance the cutting action of the insert and ease installation. Alufluid supplied by Tapmatic has proven very effective.

As with the brass insert, the internal thread is used for installation. Every insert is therefore automatically checked for the presence of a good thread.

The reduced head design offers greater surface area over which application loads can be taken without increasing the receiving hole diameter.

The head diameter is designed to fit the counter bore in the receiving hole and therefore provide a flush finish.

Material Grades for Trisert-3

A key feature of this type of insert is its ability to withstand harsh environments and corrosive atmospheres whilst retaining good wear resistance and strength.

Steel

Case Hardened Zinc Nickel and Trivalent Passivate

- RoHS Compliant
- Corrosion resistance up to 720hrs to red rust
- Coating is hard and wear resistant
- Low sensitivity to temperature and temperature cycling - up to 140°C
- When passivate layer breaks down the white corrosion product is not excessive

STAINLESS Steel

Conventional stainless steel has at least 12% chromium to provide corrosion resistance via the formation of a thin coating of chromium oxide, known as the passivity film, which forms spontaneously upon contact with an oxidising agent. Generally the higher the chromium content, the better the corrosion resistance.

Trisert-3 is available in two grades of Stainless Steel which are passivated to remove impurities from the surface left by the machining process. These impurities, if left, would interrupt the passivity film and create sites where corrosion could start.

Grade 303

This grade offers a good combination of machinability, corrosion resistance and toughness. In general, 303 has good resistance to mildly corrosive atmospheres but the sulphide inclusions act as pit initiation sites. It should not be exposed to marine or other similar environments, as these will result in rapid pitting corrosion. It is also subject to stress corrosion cracking in chloride containing environments above about 60°C.

Grade 316

This is the standard grade of austenitic stainless steel containing molybdenum. The molybdenum gives 316 better overall corrosion resistance, and its austenitic structure provides excellent toughness, even down to cryogenic temperatures.

It has excellent corrosion resistance in a range of atmospheric environments and many corrosive media. It is regarded as the standard "marine grade stainless steel", but it is not resistant to warm sea water. In many marine environments 316 does exhibit surface corrosion, usually visible by brown staining. This is particularly associated with crevices and rough surface finish.

TRISERT-3 REDUCED HEADED



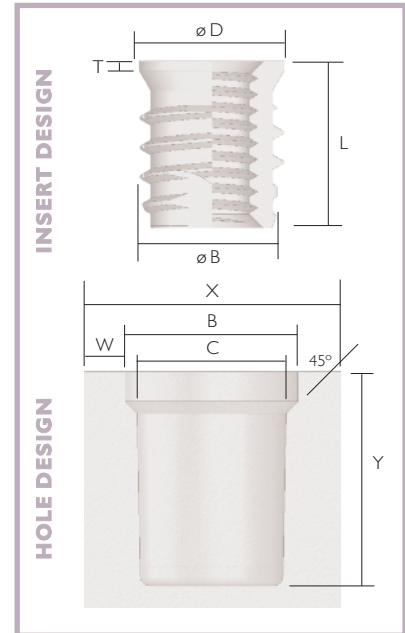
Due to the various mechanical characteristics, a precise hole size specification is imperative.

A minimum hole depth of 1.2 x the insert length would normally be specified, with the insert installed to a maximum of 0.3mm sub flush to the surface.

Stainless steel threaded fasteners generally should not be assembled using very high speed equipment, as mating surfaces will be subject to galling and may cold-weld together leaving a falsely tightened joint.

It is therefore recommended that when a stainless steel screw is assembled to a stainless steel Trisert-3, a suitable lubricant containing Molybdenum Di-sulphide and PTFE is used.

However, although lubricants can assist on the assembly of a joint, they will dramatically lower the torque resistance and could cause the thread to fail if tightening torques are not adjusted.



New for 2010 - M12 versions in both insert types

TRISERT-3 REDUCED HEADED

SIZE	PITCH INTERNAL	DIA. EXTERNAL B	LENGTH L	HEAD THICKNESS T	HEAD DIA. D	HOLE		HOLE DEPTH Y	BOSS DIA. X	WALL THICKNESS W
						DIA. C	DIA. C			
						PLASTICS	ALLOYS			
M3	0.50	4.73	5.25	0.38	4.70	4.10 - 4.40	4.35 - 4.55	5.80	7.70	1.65
M3	0.50	4.73	6.25	0.38	4.70	4.10 - 4.40	4.35 - 4.55	6.90	7.70	1.65
M4	0.70	6.31	7.10	0.38	6.30	5.80 - 6.10	5.95 - 6.15	7.90	10.70	2.30
M4	0.70	6.31	8.40	0.38	6.30	5.80 - 6.10	5.95 - 6.15	9.30	10.70	2.30
M5	0.80	7.50	8.40	0.40	7.50	6.90 - 7.20	7.15 - 7.35	9.30	12.60	2.70
M5	0.80	7.50	10.00	0.40	7.50	6.90 - 7.20	7.15 - 7.35	11.00	12.60	2.70
M6	1.00	8.69	9.80	0.45	8.60	8.00 - 8.40	8.35 - 8.55	10.80	14.70	3.15
M6	1.00	8.69	12.00	0.45	8.60	8.00 - 8.40	8.35 - 8.55	13.20	14.70	3.15
M8	1.25	11.06	12.40	0.50	11.10	10.10 - 10.60	10.55 - 10.85	13.70	18.60	4.00
M8	1.25	11.06	14.00	0.50	11.10	10.10 - 10.60	10.55 - 10.85	15.40	18.60	4.00
M10	1.50	13.95	12.00	0.75	14.10	13.00 - 13.50	13.45 - 13.65	13.20	23.70	5.10
M10	1.50	13.95	16.00	0.75	14.10	13.00 - 13.50	13.45 - 13.65	17.60	23.70	5.10
M10	1.50	13.95	18.00	0.75	14.10	13.00 - 13.50	13.45 - 13.65	19.80	23.70	5.10

These materials and coatings are RoHS compliant

NOTE - all dimensions in mm

TRISERT-3 BLIND ENDED

SIZE	PITCH INTERNAL	DIA. EXTERNAL B	LENGTH L	BOLT ENGAGEMENT E	HEAD THICKNESS T	HEAD DIA. D	HOLE		HOLE DEPTH Y	BOSS DIA. X	WALL THICKNESS W
							DIA. C	DIA. C			
							PLASTICS	ALLOYS			
M10	1.50	13.95	16.00	8.30	0.75	14.10	13.00 - 13.50	13.45 - 13.65	17.60	23.70	5.10
M10	1.50	13.95	18.00	10.30	0.75	14.10	13.00 - 13.50	13.45 - 13.65	19.80	23.70	5.10

HOLE DIAMETER TOLERANCE INFORMATION

The information given under hole diameter 'C' are suggested dimensions for a range of grades of materials and applications. The hole diameter for ALLOYS is determined by considering the ductility of the material. In most cases Cast alloys (low ductility) require a smaller hole; Extruded alloys (high ductility) require a larger hole. The hole diameter for PLASTICS is determined by considering the hardness of the material. Generally the softer grades of plastic require the smaller hole while harder grades or those with a filler require a larger hole. We would recommend testing the suitability of a particular hole size for the specific grade of material to be used.

DETAILED HOLE INFORMATION IS AVAILABLE FOR SPECIFIC APPLICATIONS AND MATERIALS

Information given under the hole design section above is intended to indicate approximate dimensional requirements for satisfactory installation of the insert, it is not intended for production tooling.

TRISERT-3 BLIND ENDED



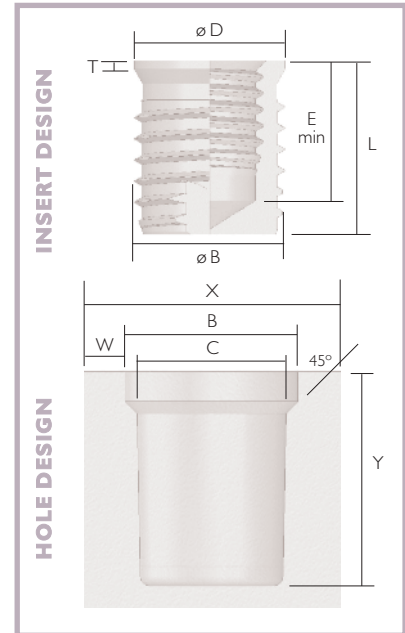
Self-tapping, reduced headed, blind ended, stainless steel inserts available in regular and long lengths in thread size M10.

Product Features

With the same external features as the standard Trisert-3 the blind ended version is supplied with a closed end.

This variant offers all the benefits of the standard part enhanced by the specific advantages offered by a blind insert where the application dictates this is required.

Offered in M10 and Stainless Steel only, other thread sizes will be considered when requested.



PART NO.s CASE HARDENED STEEL	PART NO.S STAINLESS STEEL 303	PART NO.S STAINLESS STEEL 316
6238M3	6238M3-303	6238M3-316
6270M3	6270M3-303	6270M3-316
6238M4	6238M4-303	6238M4-316
6270M4	6270M4-303	6270M4-316
6238M5	6238M5-303	6238M5-316
6270M5	6270M5-303	6270M5-316
6238M6	6238M6-303	6238M6-316
6270M6	6270M6-303	6270M6-316
6238M8	6238M8-303	6238M8-316
6270M8	6270M8-303	6270M8-316
6239M10	6239M10-303	6239M10-316
6238M10	6238M10-303	6238M10-316
-	6270M10-303	6270M10-316

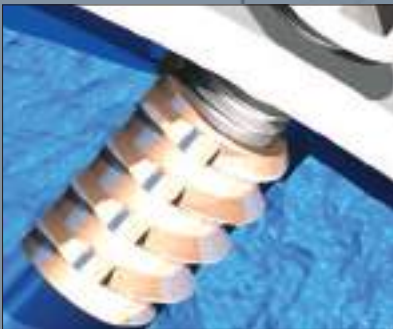
PART NO.s CASE HARDENED STEEL	PART NO.S STAINLESS STEEL 303	PART NO.S STAINLESS STEEL 316
-	6238M10B-303	6238M10B-316
-	6270M10B-303	6270M10B-316

Trisert-3 Principal Advantages

1. Available in 316 Stainless Steel, 303 Stainless Steel and Steel Case Hardened Zinc Nickel, plated and Trivalent Passivated.
2. The reduced head provides a large bearing surface to support the load transmitted through the bolt.
3. Quicker installation when compared to similar self tapping inserts.
 - Stainless Steel parts have a greater helix angle
4. Free running internal thread.
 - No peripheral through holes or slots which can allow swarf into the bore of the insert
 - Cutting features designed to encourage swarf to move forward ahead of the insert.
5. Compatible with brass Trisert hole sizes where both corrosive and non-corrosive environments must be considered.
6. Reduced external diameter as cutting edges are fully supported.
7. Ease of identification for manipulative orientation.
8. Steel variant is case hardened for use into alloys and critical hard composites.
9. Steel variant offers a fully RoHS compliant corrosion resistant plated finish giving a salt spray resistance of up to 720 hrs to red rust.
 - Zinc Nickel and Trivalent Passivate
10. The regular length insert will, under most circumstances, be strong enough where a free running re-usable thread is required; however a long version is available for higher load applications.
11. The insert has a self locking feature to help resist rotation where nylon patched bolts are used or where the application is subject to vibration.
12. The range includes thread sizes: M3, M4, M5, M6, M8, M10.
13. Also available as a blind ended variant in thread size M10 (316 and 303 Stainless Steel only).

FOAMSERT®

DOUBLE ENDED REDUCED HEADED



The Foamsert is a special version of the Trisert and has a very coarse truncated external thread form. Like the Trisert it has three equidistant cutting flutes over the length of the external form and it is this unique combination that makes the Foamsert ideally suited for use in structural foam materials, laminated chipboards, medium density fibre board and certain types of glass reinforced plastics.

Continuous product development has led to a headed version of the Foamsert providing all the benefits of the headed Trisert in an expanded range of materials. This innovative new design adds a significant degree of versatility to the existing inserts for plastics. Both the Double Ended and Reduced Headed versions are installed using a reversible driving mechanism. See Page 22 for details of installation procedures.

DOUBLE ENDED

The Foamsert has a lead on both ends and can, therefore, be installed either way up, significantly simplifying the installation process. For high volume applications in particular, the double ended version facilitates the design of simple bowl fed mechanisms for automatic installation equipment, thus reducing tooling costs.

REDUCED HEADED

The Reduced Headed Foamsert offers higher tightening torques and an increased bearing surface, and provides a flush fit finish where required.

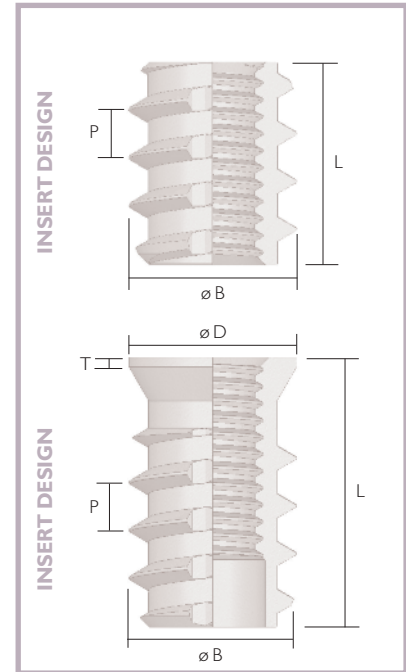
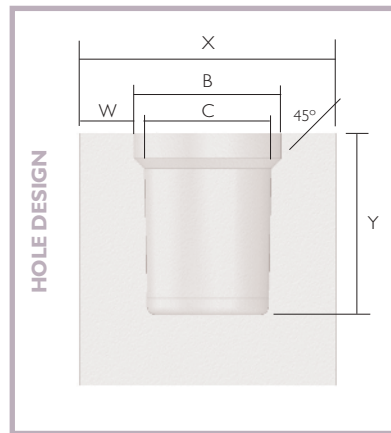
DOUBLE ENDED / REDUCED HEADED

Self-tapping, double ended and reduced headed inserts available in long lengths in a range of thread sizes from M2.5 to M8.

Product Features

The Double Ended and Reduced Headed Foamserts share the installation benefits of the Trisert range. In addition they provide a larger external diameter, increased length and coarse truncated external thread. These additional design features make the Foamsert ideally suited for use in structural foam and other low density materials to provide increased pull-out resistance.

The Foamsert may also be specified for applications where exceptional pull-out loading is required in laminated chip boards, MDF (medium density fibre) board and certain types of glass reinforced plastics.



DOUBLE ENDED									
SIZE	PITCH INTERNAL	PITCH EXTERNAL P	DIAMETER EXTERNAL B	LENGTH L	HOLE DIAMETER C	HOLE DEPTH Y	BOSS DIAMETER X	WALL THICKNESS W	PART NO.s
M2.5	0.45	1.81	5.50	8.00	4.25 - 5.00	8.80	12.50	3.75	040M2.5
M3	0.50	1.81	5.50	8.00	4.25 - 5.00	8.80	12.50	3.75	040M3
M3.5	0.60	2.12	6.30	8.50	5.00 - 5.75	9.40	14.40	4.33	040M3.5
M4	0.70	2.31	7.10	9.00	5.70 - 6.50	9.90	16.30	4.90	040M4
M5	0.80	2.54	8.70	10.00	7.20 - 8.10	11.00	20.30	6.10	040M5
M6	1.00	2.82	10.00	12.00	8.40 - 9.30	13.20	23.30	7.00	040M6
M8	1.25	3.63	12.00	16.00	10.40 - 11.30	17.60	28.30	8.50	040M8

MATERIAL: Brass - to BS EN 12164 CW 614N This material is RoHS compliant

NOTE - all dimensions in mm

REDUCED HEADED											
SIZE	PITCH INTERNAL	PITCH EXTERNAL P	DIA. EXTERNAL B	LENGTH L	HEAD THICKNESS T	HEAD DIAMETER D	HOLE DIAMETER C	HOLE DEPTH Y	BOSS DIAMETER X	WALL THICKNESS W	PART NO.s
M3	0.50	1.81	5.50	9.00	0.50	5.50	4.25 - 5.00	9.90	12.50	3.75	240M3
M4	0.70	2.31	7.10	11.00	0.50	7.10	5.70 - 6.50	12.10	16.30	4.90	240M4
M5	0.80	2.54	8.70	12.00	0.50	8.70	7.20 - 8.10	13.20	20.30	6.10	240M5
M6	1.00	2.82	10.00	16.00	0.60	10.00	8.40 - 9.30	17.60	23.30	7.00	240M6
M8	1.25	3.63	12.00	20.00	0.70	12.00	10.40 - 11.30	22.00	28.30	8.50	240M8

MATERIAL: Brass - to BS EN 12164 CW 614N This material is RoHS compliant

NOTE - all dimensions in mm

HOLE DIAMETER TOLERANCE INFORMATION

The information given under hole diameter 'C' are suggested dimensions for a range of grades of materials and applications.

DETAILED HOLE INFORMATION IS AVAILABLE FOR SPECIFIC APPLICATIONS AND MATERIALS

Information given under the hole design section above is intended to indicate approximate dimensional requirements for satisfactory installation of the insert, it is not intended for production tooling.

MULTISERT®

UNHEADED

SINGLE THICKNESS HEAD

DOUBLE THICKNESS HEAD

The Tappex Multisert range of brass inserts for plastics has been developed to provide a multi-purpose insert for various environments and application criteria. It includes four primary designs: Unheaded, Single Thickness Head (single thickness head at standard and reduced diameters), Double Thickness Head (double thickness head at standard and reduced diameters) and Microbarb. See pages 14 & 15.

UNHEADED

The most significant feature of the Multisert is its barb form that makes the insert suitable for different installation methods. The designer can therefore increase pull-out performance using the same insert by changing from press-fitting cold to heat or ultrasonic insertion. A plain top ring gives a good bearing surface for mating components and traps any molten plastic forced upwards during insertion providing a clean flush fit (correct hole size must be used). The insert is set in the plastic independently from the expansion action of the mating

screw. This prevents rotation or screw breakage during assembly. The external barb form gives good flow characteristics and high pull-out performance. A plain location spigot and pilot barb ensures that the insert locates squarely in the drilled or moulded hole prior to assembly.

SINGLE THICKNESS HEAD

The single thickness headed version of the Multisert incorporates all the standard features of the unheaded version but provides the designer and production engineer with three standard options to match product availability to common assembly situations not suitable to an unheaded insert. A large diameter head prevents jack out in applications where elongated slots or larger than standard clearance holes are necessary in the mating component. It also provides a larger bearing surface which may be beneficial in high torque applications. Two standard head diameters are available to provide for both performance and cost priorities.

DOUBLE THICKNESS HEAD

The double thickness headed version of the Multisert incorporates all the standard features of the unheaded insert but provides the designer and production engineer with a significantly stronger insert to give a higher performance particularly in pull-through applications, where a through hole design is possible, with sufficient access to the back of the component. Ultimate performance can be achieved with a stepped hole design.

The double thickness head can also be used as a stand off, where clearance is necessary, and it is possible to increase the head thickness still further, subject to quantities required. A large diameter head is used in very soft materials where a smaller head diameter would pull through due to the flexing of the plastic.

UNHEADED

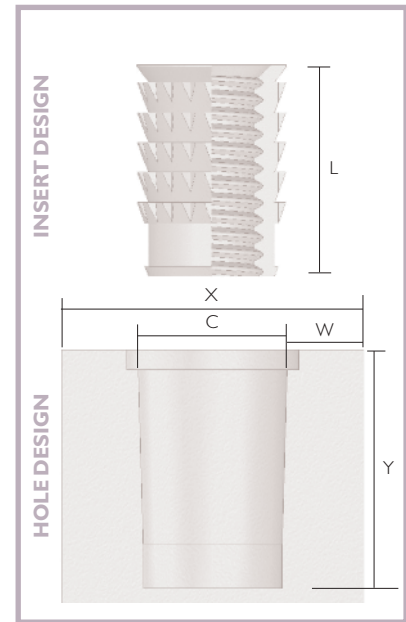


A barbed, unheaded insert available in short and regular lengths in a range of thread sizes from M2 to M12.

Product Features

The Unheaded Multisert is for use in thermoplastics where the mating component sits flush. The plain top ring provides a good bearing surface. It should be specified for use in flexible materials which allow cold press fit insertion, for optimum production rates. For improved performance, it can be press fitted with heat or ultrasonics, when the fill of molten plastic around the barb form is maximised. Press fitting into harder or flame retardant materials requires heat or ultrasonic assistance in any event. It can also be used as a pull-through insert where a stepped hole design is possible.

- Sample MultiRiv (025 series, standards) are available from stock, please contact the sales office for more details
- 025 Series samples do include M4-M8 sizes
- Grip ranges 0.5 - 8.5mm, overall
- Both Large Headed and Small Countersink available, other geometries, to order
- Hand Installation kits (027 series)



UNHEADED							
SIZE	PITCH INTERNAL	LENGTH L	HOLE DIAMETER C	HOLE DEPTH Y	BOSS DIAMETER X	WALL THICKNESS W	PART NO.s
M2	0.40	3.1	3.0 - 3.3	3.2	6.0	1.35	002M2
M2	0.40	4.2	3.0 - 3.3	4.3	6.0	1.35	001M2
M2.5	0.45	4.1	3.7 - 4.0	4.2	7.4	1.70	002M2.5
M2.5	0.45	5.2	3.7 - 4.0	5.3	7.4	1.70	001M2.5
M3	0.50	4.1	3.7 - 4.0	4.2	7.4	1.70	002M3
M3	0.50	5.2	3.7 - 4.0	5.3	7.4	1.70	001M3
M3.5	0.60	4.1	4.6 - 5.0	4.2	9.5	2.25	002M3.5
M3.5	0.60	7.0	4.6 - 5.0	7.2	9.5	2.25	001M3.5
M4	0.70	5.6	5.4 - 5.9	5.8	10.9	2.50	002M4
M4	0.70	8.5	5.4 - 5.9	8.6	10.9	2.50	001M4
M5	0.80	6.6	6.0 - 6.5	6.8	12.2	2.85	002M5
M5	0.80	10.1	6.0 - 6.5	10.2	12.2	2.85	001M5
M6	1.00	7.7	7.7 - 8.2	7.9	14.6	3.20	002M6
M6	1.00	12.3	7.7 - 8.2	12.5	14.6	3.20	001M6
M8	1.25	8.3	10.2 - 10.6	8.9	19.1	4.25	002M8
M8	1.25	13.8	10.2 - 10.6	14.0	19.1	4.25	001M8
M10	1.50	10.5	12.5 - 13.0	10.7	23.2	5.10	002M10
M10	1.50	16.1	12.5 - 13.0	16.3	23.2	5.10	001M10
M12	1.75	16.1	15.0 - 15.4	16.3	25.8	5.20	001M12

MATERIAL: Brass - to BS EN 12164 CW 614N This material is RoHS compliant

NOTE - all dimensions in mm

Further information

For part numbers and further information see the MultiRiv page on the Tappex website or contact our sales office on +44 (0)1789 20660

HOLE DIAMETER TOLERANCE INFORMATION

The information given under hole diameter 'C' are suggested dimensions for a range of grades of materials and applications.

DETAILED HOLE INFORMATION IS AVAILABLE FOR SPECIFIC APPLICATIONS AND MATERIALS

Information given under the hole design section above is intended to indicate approximate dimensional requirements for satisfactory installation of the insert, it is not intended for production tooling.

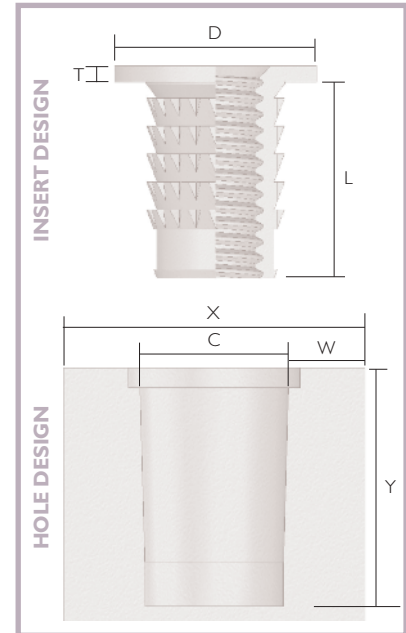
SINGLE THICKNESS HEAD



A barbed, single thickness headed insert available in short and regular lengths and two head diameter options. Available in a range of thread sizes from M2 to M8.

Product Features

The Single Thickness Head Multisert is for use in thermoplastics where increased rotation resistance is required. The head also helps prevent jack-out in applications where an air gap or gasket sits between the mating parts. The large diameter head option also provides an excellent electrical conductive surface for ring connectors or eyelets. Designed for cold press fit or installation with heat. Ultrasonic insertion is NOT recommended, with this version.



SINGLE THICKNESS HEAD

SIZE	PITCH INTERNAL	LENGTH L	HEAD THICKNESS T	HEAD DIAMETER D	HOLE DIAMETER C	HOLE DEPTH Y	BOSS DIAMETER X	WALL THICKNESS W	PART NO.
M2	0.40	4.2	0.50	4.80	3.0 - 3.3	4.3	6.0	1.35	071M2
M2.5	0.45	4.1	0.75	7.10	3.7 - 4.0	4.2	7.4	1.70	004M2.5
M2.5	0.45	5.2	0.75	5.50	3.7 - 4.0	5.3	7.4	1.70	071M2.5
M2.5	0.45	5.2	0.75	7.10	3.7 - 4.0	5.3	7.4	1.70	003M2.5
M3	0.50	4.1	0.75	7.10	3.7 - 4.0	4.2	7.4	1.70	004M3
M3	0.50	5.2	0.75	5.50	3.7 - 4.0	5.3	7.4	1.70	071M3
M3	0.50	5.2	0.75	7.10	3.7 - 4.0	5.3	7.4	1.70	003M3
M3.5	0.60	4.1	0.75	7.90	4.6 - 5.0	4.2	9.5	2.25	004M3.5
M3.5	0.60	7.0	0.75	6.40	4.6 - 5.0	7.2	9.5	2.25	071M3.5
M3.5	0.60	7.0	0.75	7.90	4.6 - 5.0	7.2	9.5	2.25	003M3.5
M4	0.70	5.6	0.75	7.10	5.4 - 5.9	5.8	10.9	2.50	072M4
M4	0.70	5.6	0.75	8.70	5.4 - 5.9	5.8	10.9	2.50	004M4
M4	0.70	8.5	0.75	7.10	5.4 - 5.9	8.6	10.9	2.50	071M4
M4	0.70	8.5	0.75	8.70	5.4 - 5.9	8.6	10.9	2.50	003M4
M5	0.80	6.6	1.00	7.90	6.0 - 6.5	6.8	12.2	2.85	072M5
M5	0.80	6.6	0.90	11.10	6.0 - 6.5	6.8	12.2	2.85	004M5
M5	0.80	10.1	1.00	7.90	6.0 - 6.5	10.2	12.2	2.85	071M5
M5	0.80	10.1	0.90	11.10	6.0 - 6.5	10.2	12.2	2.85	003M5
M6	1.00	7.7	1.30	9.50	7.7 - 8.2	7.9	14.6	3.20	072M6
M6	1.00	7.7	1.00	12.70	7.7 - 8.2	7.9	14.6	3.20	004M6
M6	1.00	12.3	1.30	9.50	7.7 - 8.2	12.5	14.6	3.20	071M6
M6	1.00	12.3	1.00	12.70	7.7 - 8.2	12.5	14.6	3.20	003M6
M8	1.25	10.1	1.25	14.30	10.2 - 10.6	10.3	19.1	4.25	004M8
M8	1.25	13.8	1.25	14.30	10.2 - 10.6	14.0	19.1	4.25	003M8

MATERIAL: Brass - to BSEN 12164 CW 614N This material is RoHS compliant

NOTE - all dimensions in mm

HOLE DIAMETER TOLERANCE INFORMATION

The information given under hole diameter 'C' are suggested dimensions for a range of grades of materials and applications.

DETAILED HOLE INFORMATION IS AVAILABLE FOR SPECIFIC APPLICATIONS AND MATERIALS

Information given under the hole design section above is intended to indicate approximate dimensional requirements for satisfactory installation of the insert, it is not intended for production tooling.

DOUBLE THICKNESS HEAD

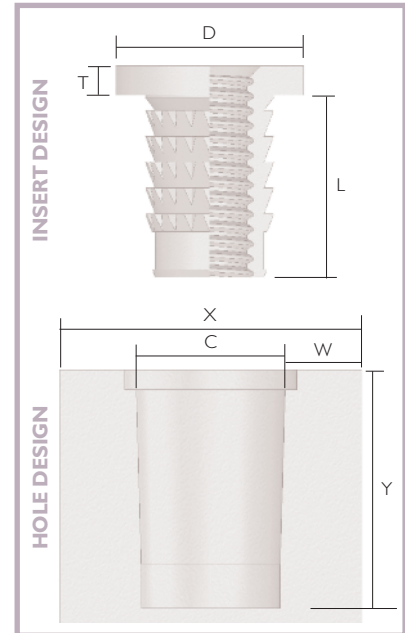


A barbed, double thickness headed insert available in short and regular lengths and two head diameter options. Available in a range of thread sizes from M1.6 to M10.

Product Features

The Double Thickness Head Multisert is for use in thermoplastics where a thicker head is needed to provide sufficient strength for high performance pull through applications. It can also provide a stand off assembly condition for clearance or heat sink applications.

Additional pull through performance can be obtained by using a suitable stepped hole design.



DOUBLE THICKNESS HEAD									
SIZE	PITCH INTERNAL	LENGTH L	HEAD THICKNESS T	HEAD DIAMETER D	HOLE DIAMETER C	HOLE DEPTH Y	BOSS DIAMETER X	WALL THICKNESS W	PART NO.
M1.6	0.35	2.14	0.50	3.20	2.3 - 2.5	2.2	4.5	1.00	073M1.6
M2	0.40	2.14	0.50	4.80	3.0 - 3.3	2.2	6.0	1.35	073M2
M2.5	0.45	4.1	0.75	5.50	3.7 - 4.0	4.2	7.4	1.70	073M2.5
M3	0.50	4.1	0.75	5.50	3.7 - 4.0	4.2	7.4	1.70	073M3
M3	0.50	4.1	1.50	7.10	3.7 - 4.0	4.2	7.4	1.70	006M3
M3	0.50	5.2	1.50	7.10	3.7 - 4.0	5.3	7.4	1.70	005M3
M3.5	0.60	4.1	1.25	6.40	4.6 - 5.0	4.2	9.5	2.25	073M3.5
M3.5	0.60	4.1	1.25	7.90	4.6 - 5.0	4.2	9.5	2.25	006M3.5
M3.5	0.60	7.0	1.25	7.90	4.6 - 5.0	7.2	9.5	2.25	005M3.5
M4	0.70	5.6	1.50	7.10	5.4 - 5.9	5.8	10.9	2.50	073M4
M4	0.70	5.6	1.50	8.70	5.4 - 5.9	5.8	10.9	2.50	006M4
M4	0.70	8.5	1.50	8.70	5.4 - 5.9	8.6	10.9	2.50	005M4
M5	0.80	6.6	1.75	7.90	6.0 - 6.5	6.8	12.2	2.85	073M5
M5	0.80	6.6	1.75	11.10	6.0 - 6.5	6.8	12.2	2.85	006M5
M5	0.80	10.1	1.75	11.10	6.0 - 6.5	10.2	12.2	2.85	005M5
M6	1.00	7.7	2.00	9.50	7.7 - 8.2	7.9	14.6	3.20	073M6
M6	1.00	7.7	2.00	12.70	7.7 - 8.2	7.9	14.6	3.20	006M6
M6	1.00	12.3	2.00	12.70	7.7 - 8.2	12.5	14.6	3.20	005M6
M8	1.25	10.1	2.50	12.70	10.2 - 10.6	10.3	19.1	4.25	073M8
M8	1.25	10.1	2.50	14.30	10.2 - 10.6	10.3	19.1	4.25	006M8
M8	1.25	13.8	2.50	14.30	10.2 - 10.6	14.0	19.1	4.25	005M8
M10	1.50	10.1	2.50	14.30	12.5 - 13.0	10.3	23.2	5.10	073M10

MATERIAL: Brass - to BS EN 12164 CW 614N This material is RoHS compliant

NOTE - all dimensions in mm

HOLE DIAMETER TOLERANCE INFORMATION

The information given under hole diameter 'C' are suggested dimensions for a range of grades of materials and applications.

DETAILED HOLE INFORMATION IS AVAILABLE FOR SPECIFIC APPLICATIONS AND MATERIALS

Information given under the hole design section above is intended to indicate approximate dimensional requirements for satisfactory installation of the insert, it is not intended for production tooling.



MICROBARB®

SHORT LENGTH LARGE HEADED MULTISERT

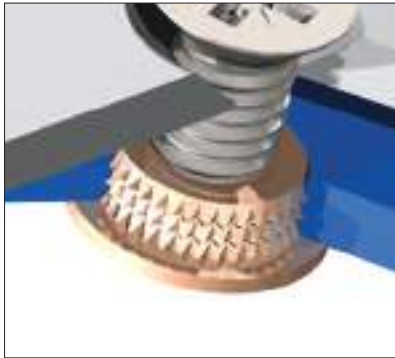
The Microbarb incorporates all the standard features of the Multisert range but provides the designer and production engineer with an insert suitable for pull through applications in thin section materials.

The design incorporates a larger head and barb diameter to provide increased bearing surfaces. For larger thread sizes the back of the head is chamfered to reduce the apparent projection. Maximum thread engagement is achieved by countersinking the limited thread length at only one end.

To provide optimum performance the plastic material section should be designed to be slightly in excess of the Microbarb under-head length. This ensures that upon assembly a clamp with the mating part is achieved, whilst limiting the compression of the plastic material to eliminate the effects of creep.

The Microbarb is ideal for use in vacuum formed, rotational moulded and fabricated components.

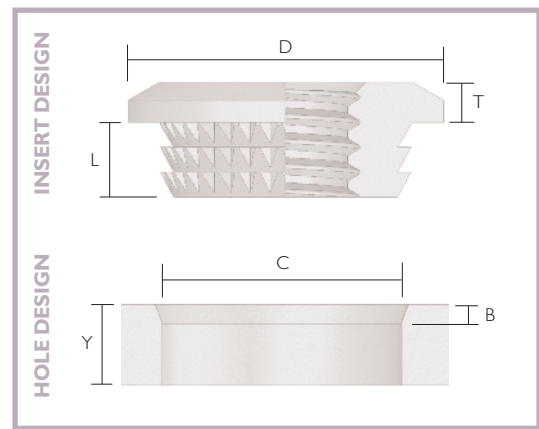
MICROBARB MULTISERT



A barbed, large headed insert available in extra short lengths in a range of thread sizes from M2 to M10.

Product Features

The Microbarb Multisert has been designed with a larger head and barb diameter to provide increased bearing surfaces in thin section materials. The insert can be pressed-in cold or with heat and is primarily used in a pull through mode in thermoplastics, but it can be used in thermosets with a tensile strength of less than 100Mpa and some degree of resilience.



HEADED									
SIZE	PITCH INTERNAL	LENGTH L	BARBS NO. OF ROWS	HEAD THICKNESS T	HEAD DIAMETER D	HOLE DIAMETER C +0.05	HOLE DEPTH Y	COUNTER-SINK B +0.10	PART NO.
M2	0.40	1.35	2	0.55	4.90	3.30	1.45	n/a	0006M2
M2.5	0.45	1.85	2	0.85	5.60	4.15	2.00	n/a	0006M2.5
M3	0.50	1.85	2	0.85	6.10	4.66	2.00	n/a	0006M3
M4	0.70	3.00	3	1.00	7.90	6.13	3.20	0.25	0006M4
M5	0.80	3.00	3	1.40	10.00	7.70	3.20	0.25	0006M5
M6	1.00	3.00	3	1.70	12.70	9.55	3.20	0.25	0006M6
M8	1.25	4.55	3	1.70	14.30	11.55	4.75	0.60	0006M8
M10	1.50	4.55	3	3.15	16.00	13.05	4.75	0.60	0006M10

MATERIAL: Brass - to BS EN 12164 CW 614N This material is RoHS compliant

NOTE - all dimensions in mm

HOLE DIAMETER TOLERANCE INFORMATION

The information given under hole diameter 'C' are suggested dimensions for a range of grades of materials and applications.

DETAILED HOLE INFORMATION IS AVAILABLE FOR SPECIFIC APPLICATIONS AND MATERIALS

Information given under the hole design section above is intended to indicate approximate dimensional requirements for satisfactory installation of the insert, it is not intended for production tooling.

HiMOULD®

TYPE A

TYPE B

TYPE C

The Tappex HiMould range of brass inserts has been designed as a technical improvement on the superseded Yardley style of insert, specifically for moulding-in during the cycle of the moulding machine. This is the traditional method of placing metal inserts in plastic mouldings, although normally the insert is laboriously screwed onto threaded pins located inside the mould tool. With the HiMould range, this costly and inefficient process becomes unnecessary, as the insert can be rapidly located on to plain pins giving higher productivity and reducing tool down time. Despite the use of plain pins the unique design of the HiMould insert still gives guaranteed flash free threads. By using sleeve ejectors around the pins to push off the moulding, this can simplify the mould tool design and also provide a faster and more reliable moulding process, thereby increasing productivity. Tappex HiMould inserts have become widely used in all types of thermoplastic and thermoset plastic mouldings.

The HiMould insert can be used in preference to post-mould installed inserts where the application of the insert is in a deep recess. In this type of situation, it is easier to locate inserts in the mould tool, where the recess in the moulding is reflected in a protruding portion in the tool, than to attempt to post-mould install in a difficult situation. The HiMould range of inserts has been designed as a standard item, which caters for all types of applications in the smallest possible insert diameter. This allows the designer to standardise and avoid the necessity of designing a special insert for each new application. In turn, this eliminates high costs for manufacturing specials and enables large stocks of standard components to be held, giving immediate delivery of small or large quantities.

The HiMould insert can be moulded-in very close to the edge of a component, or in situations where there are thin walls or bosses, which would be impractical for post-mould installed inserts.

Maximum performance is created by the external diamond knurl form combined with two undercuts. After moulding-in, a large number of shear points are created over the whole length of the insert. This gives better axial and radial performances than other mould-in inserts in relation to its diameter. The HiMould insert has proved most effective when used in rotational moulding where the fill is not pressurised, as the plastic can close around and grip the external form of the insert more easily without significantly impeding the flow, which provides excellent pull-out performance and resistance to rotation.

In addition to the environmental advantages of manufacturing all types of threaded insert in brass, there is another significant advantage for mould-in inserts. Brass is much softer than tool steel so the insert is unlikely to damage the mould tool surface if it becomes displaced during the mould cycle.

TYPE A



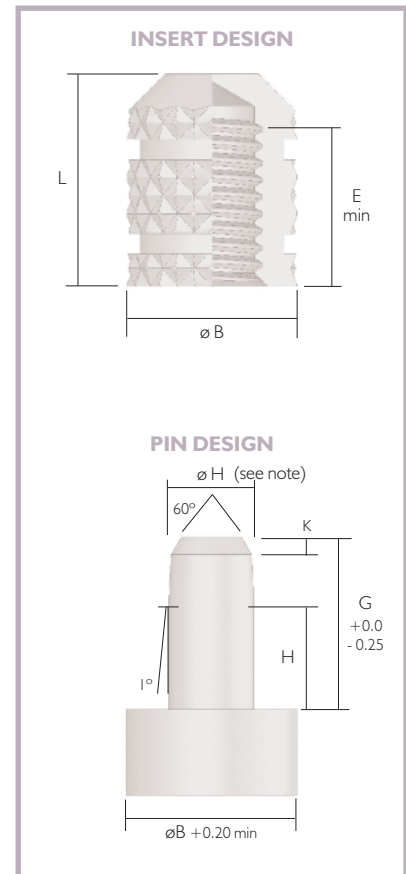
The HiMould Type A is a blind-ended design of insert specifically for moulding-in available in a range of thread sizes from M3 to M6.

Product Features

The Type A insert is designed to be installed on a plain pin in the mould tool. It has all of the advantages of the more popular Type C insert but is particularly suited for use in applications where space is restricted. The short length increases its versatility and whilst shortening the bolt engagement length still provides a similar number of full threads.

The HiMould Type A, part number 116-, replaces the original Yardley Type A part number 016- being identical, except for the addition of the two external undercuts which increase pull-out performance.

NOTE: Pin Design $\varnothing H$ tolerances ± 0.0125



TYPE A - INSERT DESIGN						
SIZE	PITCH INTERNAL	DIAMETER EXTERNAL B ± 0.25	LENGTH ± 0.25 L	BOLT ENGAGEMENT E min	No. of FULL THREADS **	PART NO.s
M3	0.50	4.15	6.40	3.70	6.8	116M3
M3.5	0.60	5.00	7.90	4.90	7.6	116M3.5
M4	0.70	5.90	8.70	5.45	7.0	116M4
M5	0.80	6.60	9.50	6.45	7.0	116M5
M6	1.00	10.00	12.50	8.30	7.5	116M6

NOTE - all dimensions in mm

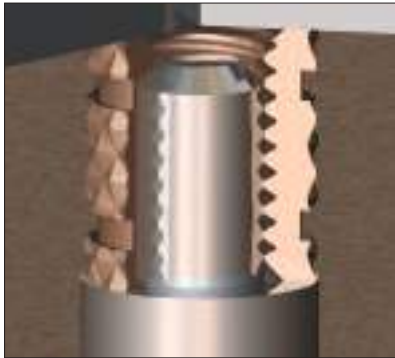
MATERIAL: Brass - to BSEN 12164 CW 614N This material is RoHS compliant

** Number of full turns measured with a thread gauge

TYPE A - PIN DESIGN			
SIZE	LENGTH ± 0.0125 G	DIAMETER H	PIN LEAD K
M3	4.80	2.50	0.75
M3.5	5.40	2.90	0.80
M4	5.80	3.30	0.85
M5	6.70	4.20	0.90
M6	7.50	5.00	0.95

PIN DESIGN: The pin design and tolerance information is intended to indicate the dimensional requirements for satisfactory installation of the insert. They should not be specified for production tooling without prior consultation with our Application Engineering Department - we accept no responsibility should the use of this information without consultation result in product failure.

TYPE B



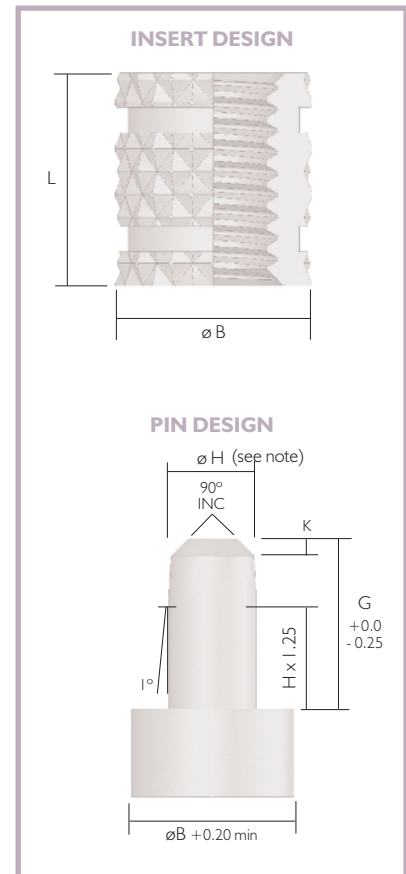
The HiMould Type B insert is an open ended design for moulding-in available in a range of thread sizes from M2 to M12.

Product Features

The Type B insert provides a low cost option where a through hole in a moulding is acceptable. The Type B insert is engineered to close tolerances enabling a guaranteed flash free thread when using fixed shouldered pins in the mould tool. Also as it offers the shortest standard length for a given thread size in the HiMould range it is ideally suited for use in thin section applications.

NOTE: For thread sizes M2 and M2.5 where the undercuts are impractical to include, the superseded Yardley part number 017- without undercuts, is specified.

NOTE: Pin Design ϕH tolerances:
 up to 5mm ϕ -0.05 to -0.075
 over 5mm ϕ -0.1 to -0.125



TYPE B - INSERT DESIGN				
SIZE	PITCH INTERNAL	DIAMETER EXTERNAL B +/- 0.25	LENGTH +/- 0.05 L	PART NO.s
M2	0.40	3.40	3.925	017M2
M2.5	0.45	4.15	4.725	017M2.5
M3	0.50	4.15	4.725	117M3
M3.5	0.60	5.00	5.875	117M3.5
M4	0.70	5.90	7.125	117M4
M5	0.80	6.60	7.825	117M5
M6	1.00	9.25	9.925	117M6
M8	1.25	11.50	12.475	117M8
M10	1.50	13.90	13.975	117M10
M12	1.75	16.30	13.975	117M12
1/8"BSP	28 T.P.I.	13.90	11.000	017125BSP
1/4"BSP	19 T.P.I.	18.00	13.950	017250BSP

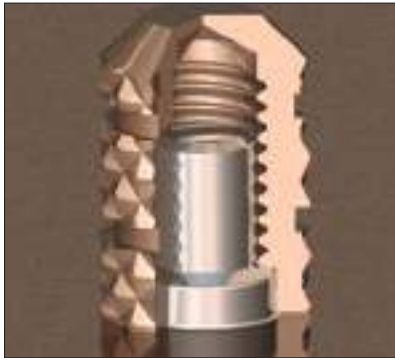
NOTE - all dimensions in mm

MATERIAL: Brass - to BSEN 12164 CW 614N This material is RoHS compliant

TYPE B - PIN DESIGN			
SIZE	LENGTH +0.0/-0.25 G	DIAMETER H	PIN LEAD K
M2	3.60	1.60	0.70
M2.5	4.40	2.05	0.70
M3	4.40	2.50	0.75
M3.5	5.85	2.90	0.80
M4	6.80	3.30	0.85
M5	7.50	4.20	0.90
M6	9.60	5.00	0.95
M8	12.15	6.80	1.00
M10	13.65	8.50	1.00
M12	13.65	10.25	1.00

PIN DESIGN: The pin design and tolerance information is intended to indicate the dimensional requirements for satisfactory installation of the insert. They should not be specified for production tooling without prior consultation with our Application Engineering Department - we accept no responsibility should the use of this information without consultation result in product failure.

TYPE C



The HiMould Type C is a blind-ended design of insert specifically for moulding-in available in a range of thread sizes from M2 to M10.

Product Features

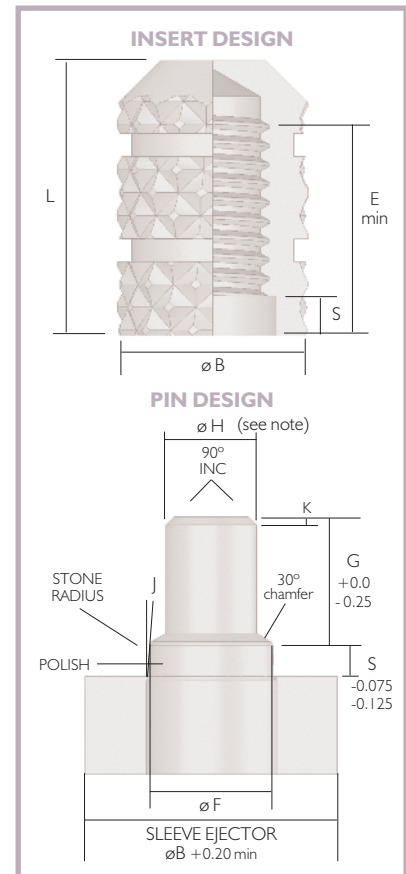
The Type C insert has been developed as a technical advance on the Type A by incorporating a counter-bore in the open end, which press fits on to a suitable design of tapered shouldered pin in the mould tool. This prevents any molten

plastic flashing into the insert threads, in both low and high pressure environments, whilst still allowing plain pins to be used in the mould tool.

This feature is particularly useful for high volume production where the moulding machine is fully automatic and the removal of the moulding is handled by a robotic arm, which can also be used for loading the inserts into the mould tool without interrupting the optimum mould cycle period. This is achieved by using small air cylinders to generate a percussive force to position each HiMould insert onto its shouldered pin. Sleeve ejectors are then used to push off the inserts with the moulding.

NOTE: For thread sizes M2 and M2.5 where the undercuts are impractical to include, the superseded Yardley part number 018- without undercuts, is specified.

NOTE: Pin Design ϕH tolerances:
up to 5mm ϕ -0.05 to -0.075
over 5mm ϕ -0.1 to -0.125



TYPE C - INSERT DESIGN							
SIZE	PITCH INTERNAL	DIAMETER EXTERNAL B +/- 0.25	LENGTH +0.00/-0.25 L	BOLT ENGAGEMENT E min	No. of FULL THREADS **	COUNTER- BORE S	PART NO.s
M2	0.40	3.40	5.60	3.75	6.3	0.85	018M2
M2.5	0.45	4.15	6.50	4.10	6.0	0.95	018M2.5
M3	0.50	4.60	7.45	4.75	6.3	1.10	118M3
M3.5	0.60	5.00	9.30	6.25	7.2	1.35	118M3.5
M4	0.70	5.90	10.30	7.05	6.8	1.60	118M4
M5	0.80	6.60	11.30	8.35	6.7	1.75	118M5
M6	1.00	10.00	14.50	10.35	7.0	1.85	118M6
M8	1.25	11.50	16.60	12.00	7.0	2.05	118M8
M10	1.50	13.90	18.00	13.00	6.3	2.15	118M10

NOTE - all dimensions in mm

MATERIAL: Brass - to BS EN 12164 CW 614N This material is RoHS compliant

** Number of full turns measured with a thread gauge

TYPE C - PIN DESIGN					
SIZE	LENGTH +0.0/-0.25 G	DIAMETER H	PIN LEAD K	TAPER ANGLE J°	TAPER DIAMETER F +/- 0.0125
M2	2.50	1.60	0.20	6.00	2.300
M2.5	3.00	2.05	0.20	5.00	2.800
M3	3.50	2.50	0.25	4.50	3.125
M3.5	4.50	2.90	0.30	4.50	3.750
M4	5.00	3.30	0.35	4.50	4.425
M5	5.75	4.20	0.40	5.00	5.125
M6	6.75	5.00	0.45	4.50	6.600
M8	9.00	6.80	0.50	4.50	8.500
M10	10.00	8.50	0.55	4.50	10.500

NOTE:
Example, where J = 4.5°
this means 2° 15' / 2° 30'
or 4° 30' / 5° inclusive

PIN DESIGN: The pin design and tolerance information is intended to indicate the dimensional requirements for satisfactory installation of the insert. They should not be specified for production tooling without prior consultation with our Application Engineering Department - we accept no responsibility should the use of this information without consultation result in product failure.

SETSERT



The Tappex Setsert is designed for cold press installation into hard and filled thermoplastic and thermoset plastic materials.

Available as a Single and Double Ended brass insert. The insert includes a helical knurl with a broaching form and undercuts to enhance rotational and pull out performance.

The part number is defined 076 and 476, followed by the thread size. Available in sizes from M3 to M5, other sizes available to customer order.

Advantages

- Reduced installation force over conventional press fit inserts.
- Suitable for glass filled or thermoset materials.
- Ideal for cold press fit but may be heat or ultrasonically installed.
- Double ended version simplifies automatic and manual installation.
- Pilots provide a means of alignment with the receiving hole.

SURESERT



The Tappex Suresert is designed for Ultrasonic or Heat installation into notch sensitive thermoplastics.

The double ended design, see image, includes two annular bands of knurling with a curved form, central undercut, and pilots at either end.

The part number is defined 202, followed by the thread size. Available in sizes M3 and M4, other sizes available to customer order. M6 under development and available in 2012.

Advantages

- Reduced in place stress over conventional barbed inserts.
- Particularly suitable in stress prone thermoplastic materials.
- Heat or ultrasonic installation.
- Double ended to simplify automatic and manual installation.
- Pilots provide a means of alignment with the receiving hole.

DEDSERT



The Tappex Dedsert range of inserts is suitable for heat or ultrasonic installation into Thermoplastic materials.

The Dedsert design includes two bands of helical knurling with left and right helix providing high performance.

The part number is defined 101 for regular and 102 for short length unheaded and 171 for reduced headed, followed by the thread size. Please contact us with your requirements.

Advantages

- High rotational and pull out performance.
- Rapid heat or ultrasonic installation.
- Short series and headed variants made to customer order.
- Pilot provides a means of alignment with the receiving hole.

If there is not a standard Tappex insert, which suits your application, you may well find that there is already a 'Special' Tappex insert available that is suitable. For larger order quantities inserts can often be produced as 'Specials' to the customer's requirements. For advice, please contact our Applications Engineering Department with your specific requirements.

SPECIALS



Where a standard product does not exactly meet the requirements of a given application then Tappex may already have stock of a special variation that is suitable. Typically, variations will be in the length or oversize body (i.e. M5 in an M6 body) or head dimensions.

For significantly large order quantities, inserts can often be produced as 'Specials' to the customer's requirements. For advice, please contact our applications department with your specific requirements.

Apart from these many variations on the standard range of inserts, Tappex have developed some specialised products for very particular applications i.e. Vandlguard® security fastener for critical installations.

MALE INSERTS



A range of Tappex inserts with male threads or studs is available based on the same body design and installation features of the female equivalent. Thus the basic forms of Trisert, Multisert or HiMould, can be produced in Unheaded and Headed versions with the same Short, Regular and Long body lengths as the relevant female insert, with a defined stud length.

Product Information

Tappex treat every male fastener as a special application, to meet the designer's specific needs. However, where possible the closest existing insert will be offered as an alternative, to eliminate the need for special manufacture and hence reduce costs and lead-time.

The head profile of a Tappex male insert would normally take the form of the Trisert, Multisert, or HiMould. The male thread required defines the head end size, that is the same as the female version of the same thread, therefore details of the head end dimensions may be taken from the equivalent female product. The hole designs for the equivalent female insert will also apply.

The coding for a Tappex male insert always commences with the number 5 and is followed by the part number for the equivalent profile found in the range of female inserts. (The number 5 replaces the first digit of the relevant female part number).

IMPERIAL RANGE

Tappex can manufacture most Imperial thread sizes using the external features of the nearest metric equivalent product, so design information will be the same as listed. Popular sizes are available from stock; other sizes are available to order in reasonable batch quantities.

Please apply for details.

METRIC TO IMPERIAL EQUIVALENTS

METRIC	UNC	UNF	BA	BSW
M2	2-56	-	8	-
M2.5	4-40	3-56	-	-
M3	-	-	6	-
M3.5	6-32	6-40	4	-
M4	8-32	8-36	4	-
M5	10-24	10-32	2	-
M6	1/4-20	1/4-28	0	1/4
M8	5/16-18	5/16-24	-	-

If there is not a standard Tappex insert, which suits your application, you may well find that there is already a 'Special' Tappex insert available that is suitable. For larger order quantities inserts can often be produced as 'Specials' to the customer's requirements. For advice, please contact our Applications Engineering Department with your specific requirements.

FLEXIARM® AND HAND TOOLS



To view a short video demonstrating the installation procedures for Triserts, please refer to the relevant product page on our website at www.tappex.co.uk



The FlexiArm has been designed for the rapid installation of the Tappex Trisert and Foamsert.

The Tappex FlexiArm installation machine consists of a pantograph arm with a Desoutter pneumatic screwdriver attached. The screwdriver can be specified with an automatic reverse torque-clutch control at either 510 rpm or 1,100rpm, or a manual reverse torque-clutch control at 510 rpm, depending upon the size of the insert and the material into which it is being installed.

The FlexiArm provides a low-cost assembly solution for many different post-mould applications and its size allows it to be installed alongside the respective moulding machine, so that inserts can be fitted during the waiting time of a typical mould cycle. It is available with one, two or three arms (which can be fitted at a later date) to suit most multi-task assembly requirements.

A range of production drivers is available to provide an accurate method of installing the inserts at various heights and positions in the moulding (see inset), and they are available separately to suit M2 to M8 threads and also equivalent Imperial sizes.

Tappex also provide a rapid installation tray for use with the FlexiArm and suitable for parts 136, 137, 138, 170, 336, 338 and 040 in a range of sizes from M2 to M6.



Hand Installation Equipment

Tappex have responded to market demands and developed a new and improved range of O3 I Hand Installation Tools for use with the Trisert, Trisert-3 and Ensats in thread sizes from M2 to M10, these come complete with an alignment bush.

- Extended nose feature for restricted access and depth control
- Hexagonal drive for universal ease of installation with retained alignment bush

HEAT INSERTER



To view a short video demonstrating the installation procedures for Multiserts, please refer to the relevant product page on our website at www.tappex.co.uk
Installation for SureSerts is similar.

Press-fit tools for the Tappex Multisert range.

Multiserts and SureSerts can be successfully press fitted cold, into the softer and more elastic grades of thermoplastic material, and the Tappex Arbor press has been designed for such low volume cold press fit applications. It provides a reliable and accurate installation, provided a suitable jig is made to locate the moulding firmly in the correct orientation for the inserts.

However for harder grades of thermoplastic, press fitting needs to be assisted by either heating the insert or by using ultrasonics to prevent the plastic becoming stressed which can lead to cracking over time, particularly in thin sections or in long thin bosses.

The Tappex Heat Inserter has been specifically designed to provide reliable and efficient heat insertion of Multiserts in many thermoplastic applications. It is of rugged construction and features a variable feed-back temperature control to suit virtually all grades of thermoplastic and also a speed control to prevent the operator overriding the correct insertion cycle time. An indicator light illuminates as soon as the insert is fully installed.

It has an output of 400w and comes complete with three interchangeable heat tips, for different sizes. Other heat tips are available to order to suit most applications.



ANTI-CREEP SPACERS



Anti-creep spacers are designed to provide reinforced clearance holes for bolts to pass through a plastic moulding, and thus allow metal-to-metal clamping forces to be applied to an assembly without over-stressing the plastic.

The design length of the spacer is carefully chosen with relation to the plastic section and the mating parts, so that the amount of clamping force applied to the plastic is limited. This prevents the plastic from "creeping away" with time and elevated temperature, which reduces the overall clamping force, allowing the bolt to loosen under vibration.

The spacers can be designed for either mould-in or post mould press-fitting, for use with both thermoset or thermoplastic mouldings, and can be manufactured in brass or steel depending upon the application.

Design Considerations

Every Anti-creep spacer or Compression Limiter has to be designed in relation to the material, type of fastener and both mating materials being used for the specific application.

Flanged hexagon headed bolts are the preferred fastener to use with the Anti-creep spacers. The bearing diameter under the head of the bolt or washer must be greater than the outside diameter of the spacer to effectively secure the component.

The axial retention of the spacer will vary dependent upon the length, diameter and external features of the spacer and the plastic around it.

SPLAYMOULD®



Further information

For part numbers and further information see the SplayMould® page on the Tappex website or contact our sales office on +44 (0)1789 206600

Tappex are extending the range of male inserts for moulding by introducing the SplayMould® male steel insert. Often customers expect to be able to apply standard tightening torques at the point of assembly and in application to enable existing equipment and set ups to be utilised. The Tappex SplayMould® offers a high strength solution.

- Mould in male, cold-formed steel fastener.
- Headed to provide a large bearing surface and support against the mating part.
- Standard strength equivalent to grade 8.8.
- Other strength grades considered to your requirement.
- Nut End Length to suit your requirements.
- With or without Dog Point.
- Head form generates high resistance to rotation and pull out in the parent material.
- Suitable for medium to high volume applications.
- Standard Finish is ZnNi and Cr3 Passivate to give +480hrs salt spray resistance.
- Special finishes considered to your requirements.
- Part number 5365M#... defines the SplayMould® range.
- M6 samples in NEL's of 15mm and 10mm available from stock.
- Other thread sizes and lengths may be developed at customer request.

If there is not a standard Tappex insert, which suits your application, you may well find that there is already a 'Special' Tappex insert available that is suitable. For larger order quantities inserts can often be produced as 'Specials' to the customer's requirements. For advice, please contact our Applications Engineering Department with your specific requirements.

MULTIRIV – RIVET NUTS FOR PLASTICS



The Tappex MultiRiv range of cold formed Rivet Nuts has been introduced primarily to serve and support the particular application requirements of the Plastics and Composites Industries.

Principal in the Tappex MultiRiv range of Rivet Nuts is a range of parts designed with four holes in the deformable shank or body. The prime purpose of these four holes is to control the physical deformation (collapse) of the fastener's shank or body when being installed.

As the Rivet Nut is installed the location of these holes determines where the bulge will start and how it develops.

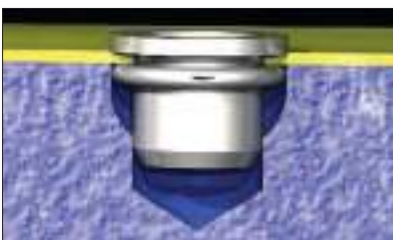
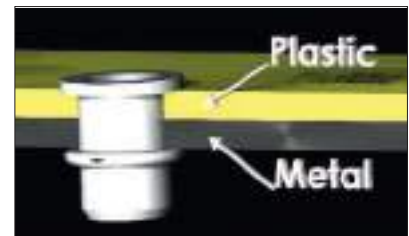
This feature enables the use of MultiRiv products where traditional Rivet Nuts would not normally be suitable. Such as in Plastics, Composites, Wood, and where it is necessary to install into **oversize or irregularly shaped holes**.

MultiRiv has been found in practice to offer a wider grip range and flexibility when compared to traditional rivet nuts for comparable size. Where traditional rivet nuts may have a grip range of 2.5 – 3.5mm, MultiRiv more typically have a range of 5 – 6mm which gives greater flexibility and lower inventory costs

Use in soft materials



or sandwich materials



The controlled bulge or deformation has a number of distinct benefits:

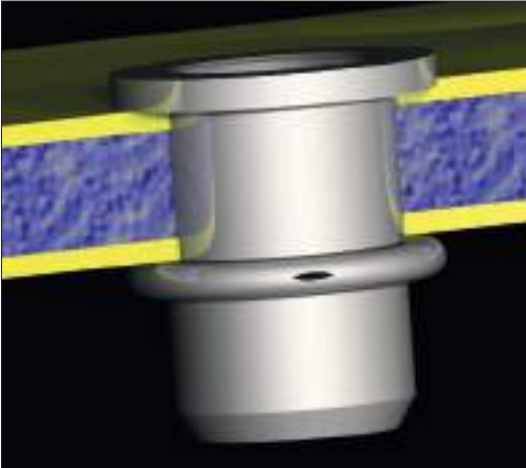
- Reduced stress in the parent material
- Larger deformed diameter for a given size
- Wide grip range
- High pull through strength
- Use in soft materials



Reduced Stress

MultiRiv properties are beneficial in materials that are prone to stress cracking where the pressures generated by the bulge of a traditional Rivet Nut could fail the material. Similarly in applications that require the Rivet Nut close to an edge the reduced stress induced can prevent the formation of cracks in the thin wall.

If there is not a standard Tappex insert, which suits your application, you may well find that there is already a 'Special' Tappex insert available that is suitable. For larger order quantities inserts can often be produced as 'Specials' to the customer's requirements. For advice, please contact our Applications Engineering Department with your specific requirements.



Sandwich Composites

More and more applications utilise the benefits of reduced weight and high rigidity for low cost that may be found using sandwich structured composite materials. These materials present the designer with some problems in relation to attaching / assembling parts securely whilst allowing disassembly / servicing.

In the past it has been necessary to include materials and features in the manufacture of the sandwich material to enable standard fasteners to be used. The MultiRiv offers an alternative where, depending on the material configuration, thickness and requirements, it can either bridge the entire thickness of the sandwich material or be attached securely to one skin while retaining the continuity of the other skin that could be an A surface.

Installation Tooling

Tappex are able to offer both a manually operated hand-held tool as well as pneumatic equipment (known as spin-pull operation) for installing MultiRiv products.



Hand Tool

Hand tools would typically be found for the placement and installation of small volumes of MultiRiv Rivet Nuts and in either R & D or Maintenance operations.

Pneumatic Tool

Pneumatic tools, because of their greater capability to generate higher pull forces and shorter cycle times are more suited for batch production volumes and larger than M8 diameter.

Product Information

The part number for the Tappex MultiRiv range of products is prefixed with 025/. Subsequent coding relates to specific size, style, head configuration, material type and installation condition. Please provide us with details of your application and we will specify a suitable Rivet Nut to meet your requirements.

Tappex hold a limited stock of standard MultiRiv Rivet Nuts, but will always try to be competitive on lead times for others. Specials may also be considered, these will be subject to review of both technical & commercial considerations.

Tappex has extensive in-house capabilities for design support and mechanical testing of customer's materials and moulded parts.

- Sample MultiRiv (025 series, standards) are available from stock, please contact the sales office for more details
- 025 Series samples do include M4-M8 sizes
- Grip ranges 0.5 - 8.5mm, overall
- Both Large Headed and Small Countersink available, other geometries, to order
- Hand Installation kits (027 series)



If there is not a standard Tappex insert, which suits your application, you may well find that there is already a 'Special' Tappex insert available that is suitable. For larger order quantities inserts can often be produced as 'Specials' to the customer's requirements. For advice, please contact our Applications Engineering Department with your specific requirements.



The Tappex TPX thread forming screws (not thread cutting) are designed to be used in most thermoplastic materials. These screws can be installed into drilled or moulded holes in a wide variety of applications.

Tappex TPX screws are produced by cold forging, not machined from bar or wire and therefore have good inherent mechanical properties with minimum residual stress. material into which it is being installed.

Features

- Range of diameters and thread lengths.
- Phillips or Recessed Star Drive.
- Hardened steel with a zinc and clear passivate.
- Stainless steel 303 grade.
- 30 degree thread flank angle offers the following benefits:
 - Reduced installation torque.
 - Reduced potential for over tightening.
 - Reduced stress induced in the plastic.
(care should be taken with notch sensitive plastics)
- With care the TPX screw can be re-installed multiple times.

Design Considerations

For successful installation and application a number of factors should be taken into consideration:

- Hole size and design - recommended hole geometry available from Tappex (See ETP 45 downloadable from Tappex website)
- Type and grade of Plastic.
- Boss wall thickness – to withstand installation forces and maximise performance.
- Installation depth.
- Required application and strip out performance.

For advice, please contact our Applications Engineering Department with your specific requirements.

Product Information

- The part number is prefixed 069 followed by diameter and length, subsequent coding relates to type, material, finish etc. Please discuss your requirements with us.
- Available in diameters 2.5, 3.0, 3.5, 4.0, 5.0, and 6.0mm.
- Lengths from 6-22mm (2mm increments), 25-50mm (5mm increments).
- Materials: Hardened Steel, Zinc and clear passivated or Stainless Steel (303 grade).
- Available in Pan Head style, Phillips or Recessed Star Drive.
- Refer to Tappex for availability and advice, ETP45 for further details of Dimensions, Hole Design recommendations and Features. (Available from website www.tappex.co.uk downloads or via the Tappex sales office)

If there is not a standard Tappex insert, which suits your application, you may well find that there is already a 'Special' Tappex insert available that is suitable. For larger order quantities inserts can often be produced as 'Specials' to the customer's requirements. For advice, please contact our Applications Engineering Department with your specific requirements.

OVERSEAS DISTRIBUTORS

TAPPEX INSERTS ARE AVAILABLE THROUGHOUT THE WORLD

EUROPE

AB C EDGREN 
Hjälmarberget, Mosåsvägen, S-702 31 Örebro, Sweden.
Telephone: +46 19 307450 Fax: +46 19 307459
e mail: kundinfo@c-edgren.se www.c-edgren.se

BELUMA N.V. 
Tragel 3, 9300 Aalst, Belgium.
Telephone: +32 53 60 63 70 Fax: +32 53 60 63 99
e mail: info@beluma.com www.beluma.be

BIOTEK KFT. 
Jászberényi út 29. 1106 Budapest, Hungary.
Telephone: +36 (1) 261 4733 Fax: +36 (1) 260 8635
e mail: biotek@biotek.hu www.biotek.hu

FASTFIX Ltd. 
Units 3 & 7, Coes Road, Dundalk, Co. Louth, Ireland.
Telephone: +353 (0) 42 933 5437 Fax: +353 (0) 42 33 3182
e mail: info@fastfix.ie www.fastfix.ie

FORIND AVIO ELETTRONICA SpA 
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e mail: fasteners@forind.it www.forind.it

INFIX - INDUSTRIAL DE FIJACIONES, S.L. 
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Contact the Tappex Sales Office for more information

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