

MINI ALUMINIUM TRI-STEP™ INSERTS FOR NOTEBOOK



The Mini Aluminium TRI-STEP™ is a unique three stepped threaded insert and mating hole combination, designed for heat installation into thermoplastic materials. The design incorporates two diameters of opposing helical knurls and a series of annular vanes.



The Mini Aluminium TRI-STEP™ Inserts are developed specifically for use in Notebook applications because of the lightweight performance and overall optimization efficiency of production and output.



BENEFITS

- High pull-out and direct torque performance.
- A large clearance between the vane and top hole diameter, equivalent to tapered inserts.
- Excellent location, eliminating misalignment during installation.
- Increased surface contact area giving greater resistance to a torque induced “jack-out”.
- Aluminium versions give a 66% weight reduction and insertion process cost savings.

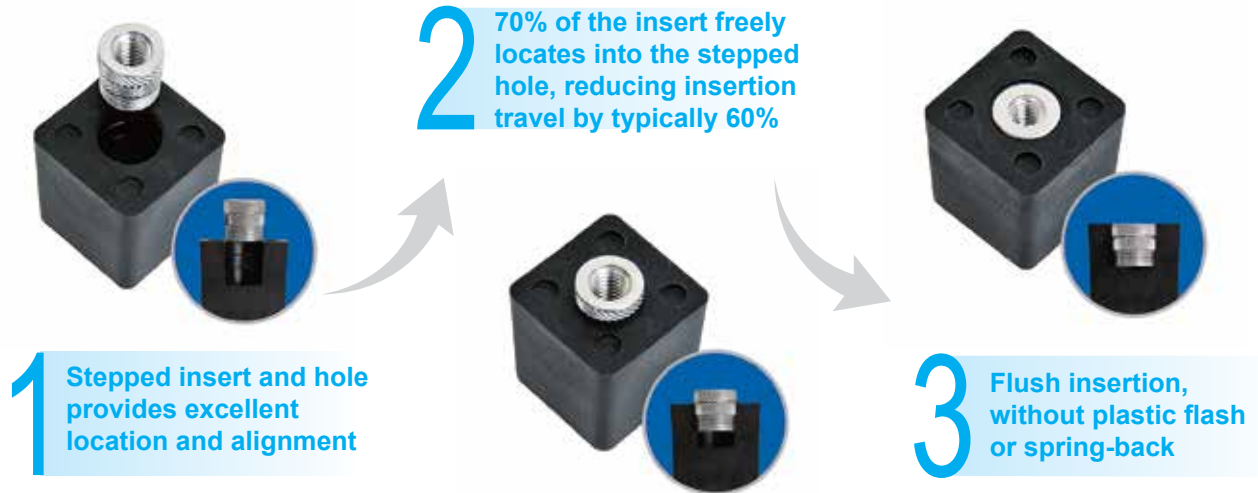
INSERTION PROCESS EFFICIENCIES

- 70% of the insert freely locates into the stepped hole, reducing insertion travel time by 60%.
- The stepped hole and insert eliminates spring-back associated with tapered inserts.
- Typically, a 2 second insertion dwell time saving, compared with tapered inserts.
- Aluminium TRI-STEP™ has 40% higher thermal conductivity compared to brass or steel.
- Aluminium reduces contact heating time, cools more rapidly, giving improved height stability.

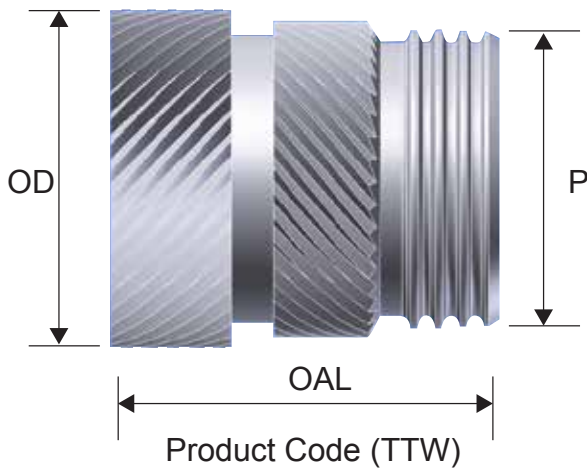
ECOLOGICAL

- 66% weight reduction compared with brass or steel.
- Reduced energy consumption when using contact heating.
- Lead free.
- Reduces Carbon Footprint.

IMENSIONS



MINI ALUMINIUM (TTW)



THREAD SIZE	OAL	OD	P	mm
M2	2	3.6	2.85	
M2	2.5	3.6	2.85	
M2	3	3.6	2.85	
M2.5	2	4.2	3.45	
M2.5	2.5	4.2	3.45	
M2.5	3	4.2	3.45	

THIN WALLED (TTW) Aluminium (A)

AVAILABLE DIMENSIONS

DRAWING N.O	DESCRIPTION
PSM019194	TTW-A-M2.0-OAL2.0-OD3.6
PSM019202	TTW-A-M2.0-OAL2.5-OD3.6
PSM019206	TTW-A-M2.0-OAL3.0-OD3.6
PSM019200	TTW-A-M2.5-OAL2.0-OD4.2
PSM019204	TTW-A-M2.5-OAL2.5-OD4.2
PSM019196	TTW-A-M2.5-OAL3.0-OD4.2

How to specify (METRIC)

TTW	
Product Code	TTW-A-M2.0-OAL2.0-OD3.6
Material Code	TTW-A-M2.0-OAL2.0-OD3.6
Thread Code	TTW-A-M2.0-OAL2.0-OD3.6
Length	TTW-A-M2.0-OAL2.0-OD3.6
Diameter	TTW-A-M2.0-OAL2.0-OD3.6

DESIGN GUIDE

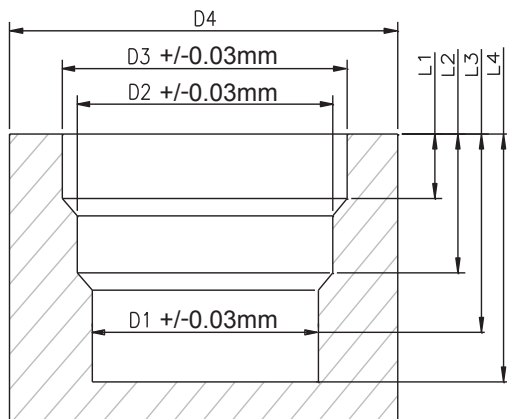
• Installation

The insert may be installed using either a pre-heating process or by using heat generated. An insert at the correct temperature should soften the plastic without melting, allowing plastic to flow into the knurls and vanes. Excessive heat can affect insert performance and generate plastic flash on the top surface of the boss. Inserts should be installed flush to slightly proud, relative to the top surface of the boss.

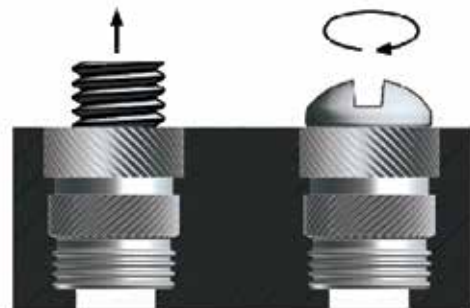
• Hole Preparation

The specified hole diameters apply at the bottom of each bore, with a tolerance of $\pm 0.03\text{mm}$. The hole depth should ideally exceed the insert length by 0.5mm . A 1° inclusive moulding taper must be used, slightly increasing the hole diameter at the top of each bore.

HOLE CONFIGURATION



PULL OUT DIRECT TORQUE



Test conducted using PA6 GF30
Nominal values shown at failure

METRIC DESCRIPTION	L1	L2	L3	L4	D1	D2	D3	D4(MIN)	TORQUE (kgf.cm)	PULL OUT (kg)
TTW-A-M2.0-OAL2.0-OD3.6	0.65	1.4	2	2.5	2.6	2.95	3.3	5.3	4.4	17.5
TTW-A-M2.0-OAL2.5-OD3.6	0.8	1.7	2.5	3	2.6	2.95	3.3	5.3	4.4	22
TTW-A-M2.0-OAL3.0-OD3.6	1	2.1	3	3.5	2.6	2.95	3.3	5.3	4.4	27
TTW-A-M2.5-OAL2.0-OD4.2	0.65	1.4	2	2.5	3.2	3.55	3.9	5.9	5.5	22
TTW-A-M2.5-OAL2.5-OD4.2	0.8	1.7	2.5	3	3.2	3.55	3.9	5.9	5.5	27
TTW-A-M2.5-OAL3.0-OD4.2	1	2.1	3	3.5	3.2	3.55	3.9	5.9	5.5	33