



SUNIL NARSEY
Senior State Engineer
MiTek Australia Ltd

NAILING BY HAND OR AIR

The ubiquitous framing anchor or metal connector used in timber buildings may appear humble but it is an engineered product that requires careful adherence to installation instructions in order to achieve its desired performance.

Fixing them with their specified nails guarantees quality results. Some builders substitute these nails with pneumatically driven nails for convenience, without considering the implications.

HAND-DRIVEN REINFORCED HEAD NAILS

The Australian Standard for truss installation, AS 4440, specifies the use of hand driven 2.8mm x 30mm reinforced head nails in all metal connectors such as Trip-L-Grips, Joist Hangers, Creeper Connectors & Speedbrace.

This nail is also stipulated in the connector manufacturer's specifications, whose published capacities are based on laboratory tests conducted with this fastening method.

The reinforced head nail is a double diameter, single piece nail that is specifically designed to provide a very tight fit at the wider collar under the head while making it easier to drive with a narrower main shank.

The enlarged diameter of the shank reinforces the nail head against embrittlement and separation during installation and load.

PNEUMATICALLY-DRIVEN NAILS

Although it is possible to source a gun nail with an equivalent strength to the reinforced head nail, that is not the complete picture.

The connector load capacity can also be compromised by poor nail application, either by locating them in unsatisfactory positions or by inadequate penetration from insufficient air pressure.

This is not to say that any bracket fixed with a nail gun will never meet design capacity and must be rejected.

It should be remembered that unless the nail can be targeted accurately into the pre-punched nail hole, it is very difficult to achieve an adequate

nailing pattern in a very small area of a compact connector.

In the past, it was accepted that if gun nails were driven through steel beside each hole in a similar approximate pattern, an equivalent performance could be achieved.

(Directing gun nails into holes was discouraged because if they were not driven in perfect alignment with the hole, a larger opening would be formed resulting in a loose connection.)

To accommodate this, these connectors are slightly oversized to allow for more tolerant nail placement.

In addition, clearly marked target rings are also provided for users to aim at, thereby cultivating precision by making it intuitive.

It goes without saying that safety procedures in the nail gun manual must then be strictly followed.

Although convenient, nail guns have the potential to cause serious



■ *Note: We thank Mr Lex Somerville for the use of his photographs in this article.



But it has been our constant observation and that of many other independent inspectors* as well, that the vast majority of pneumatically nailed connections are poorly fastened and that this situation has not improved since a warning on this subject (GN Guideline No 33) was published 12 years ago.

However, some products ARE specifically designed to be fitted with nail guns, e.g. BlockFast.

harm if not used as directed by the manufacturer. This is especially so when attempting to drive a nail through steel.

ADVICE

All engineered building products must be used in accordance with their specifications.

Connectors designed for hand-driven nails should be fixed with reinforced head nails for their performance to be assured.

