

# LRT SYSTEM

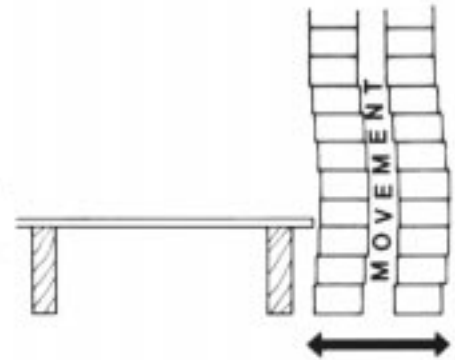


## LATERAL RESTRAINT – THE PROBLEM

There are many buildings where walls are in danger of moving or collapse because of inadequate lateral restraint of the wall to floor joists, ceiling joists or roof structure. The problem can be caused by one or a combination of several factors. For example:

- A decrease of wall stiffness and resistance to buckling and wind loading, can occur, with wall tie corrosion or insufficient wall ties installed during construction.
- Re-roofing using heavier materials would give increased vertical loads which could exceed the load-carrying capacity of the wall.
- The omission of lateral restraints or their failure in service can magnify the effects of other contributory causes.

Existing remedial systems involve disturbance of building occupants to provide access to the floor joists in order to fix bent steel straps to the wall and the joists. This disruptive and time consuming fixing method causes aggravation to the building occupant and is therefore unsatisfactory.

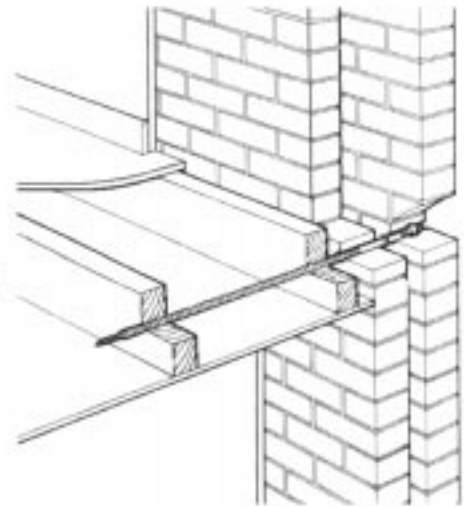


## THE SOLUTION THE SPIT LRT

ITW SPIT have designed and developed a lateral restraint tie system which is quick and easy to apply from the exterior of the building – no disruption from the inside is necessary.

The LRT is a solid A2, 300 Series stainless steel self drilling tie which saves fixing time dramatically.

The only drilling is through the brick, block or masonry external wall with a 13mm diameter drill. LRT guide tools are placed in the hole and the tie is driven under power through the guide tools, self-drilling into the joists. The Mac expander is independently set in the outer leaf of the brickwork to give a solid, high strength, lateral restraint to the wall.



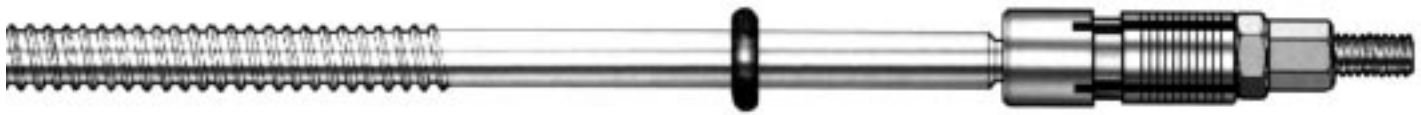
## THE BENEFITS

- One standard length-no site adjustment necessary
- Applied from outside the building – no disruption
- Simple guide tool – straight line installation
- Self-drilling to timber – quick and easy to install
- Cost effective – saves labour per tie
- Austenitic stainless steel – no corrosion
- Small hole in brickwork – neat finished appearance
- 8mm wood screw thread – high pull out loads and compressive loads
- Mac expander – resists tensile and compressive loads

## SPACING DATA

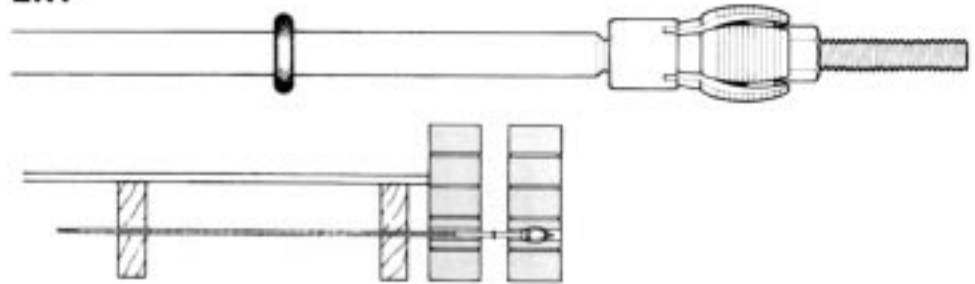
Horizontal centres 600 to 1000mm or as specified by Structural Engineer

# LRT LATERAL RESTRAINT TIE



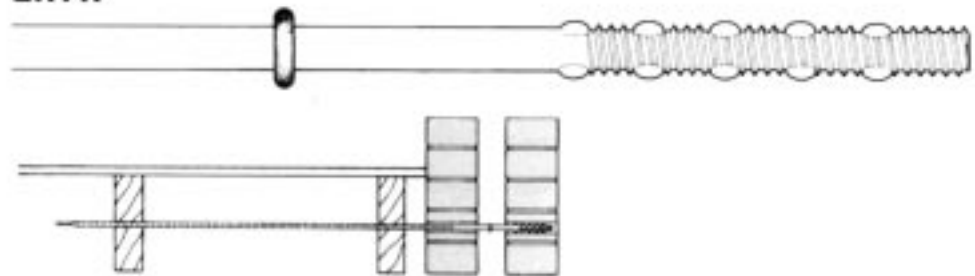
## LRT THE VARIETIES

### LRT



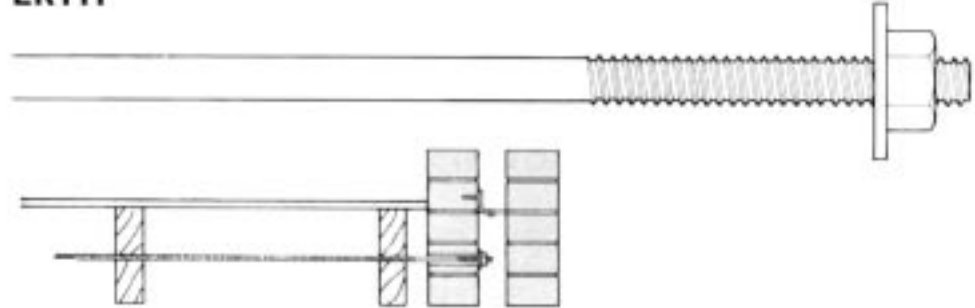
Mac expander version used for majority of brick applications

### LRTR



Resin end version, where an M8 thread with crimped sections provides strong keying points for SPIT C-Mix Resin. The resin is injected into the 13mm hole in the brickwork after driving the lateral restraint tie into position.

### LRTH



Where the outer skin of brickwork has been removed the LRTH – hexagon nut and washer version, can be used to restrain the inner skin relative to the joists. The outer skin is then built using secondary wall ties, such as MAC FRAME CRAMPS.

## TECHNICAL INFORMATION

Material – A2, 300 Series Austenitic Stainless Steel  
 Diameter – 8mm x 2.3mm pitch wood screw thread  
 Pilot drilling point/diameter – 6mm x 2.3mm pitch wood screw thread  
 M6 thread on Mac Expander  
 M8 thread crimped for resin version  
 Length – Standard 1000mm to fix to two joists of maximum 500mm centres  
 Centres – long version can be manufactured to special order to suit wider centres, or to fix to three joists where this is required. Total length of the tie must allow for pilot point (45mm long) to pass right through innermost joist.

## NOTE:

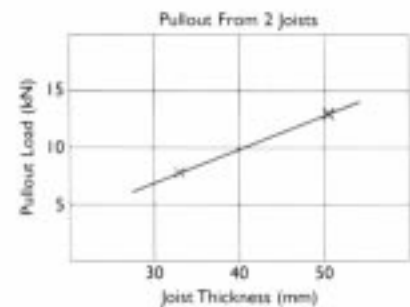
For walls at right angles to the line of the joists, a timber noggin can be installed between joists and any of the above varieties used to restrain the wall to the noggin. The length of tie ordered will depend on the position of the noggin.

Another variety suitable for fixing to a noggin is the LRTHS, provided with nuts and washers for clamping either side of the noggin.

# LRT LATERAL RESTRAINT TIE

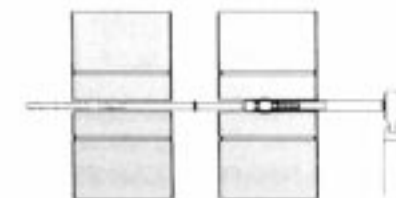
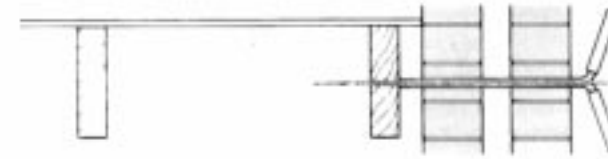
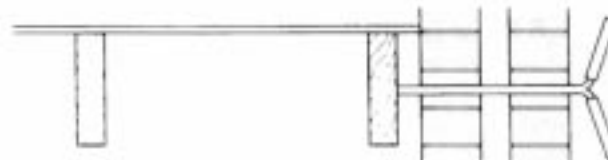
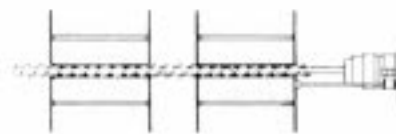
## PULLOUT PERFORMANCE

Tests were performed in two, 33mm thick and two, 50mm thick, timbers spaced apart at 500mm centres.



## APPLICATION METHOD

NB. Prior to installation, inspection must be carried out to ensure that no services are in line with the Lateral Restraint Tie position.



1. Drill through outer and inner wall leaves, using  $\text{Ø}13 \times 460\text{mm}$  drill bit.

2. Insert two part LRT guide tool into hole.

3. Using threaded setting tool (96826) and  $\frac{1}{4}$ " square drive adaptor (15101) insert LRT into guide tool (99045) Note: **Select rotation only on the drill.** You must also ensure that the drill has enough power to drive e.g. Spit 335 see page 22. Drive through first joist.

4. Stop drilling machine and remove guide tool. Continue to drive the LRT through second joist until mechanical expander has entered into the outer leaf of the wall. Unscrew threaded setting tool off LRT.

5. With hex setting tool (99041) and torque wrench (96825) set Mac Expander to 6.8Nm (5lb.ft)

6. Seal the hole in the outer brickwork – job complete

NB – With SDS drilling machines SDS to  $\frac{1}{4}$ " square drive adaptor (15101) is needed.

### SETTING TOOLS AND ACCESSORIES

99045 LRT Guide Tool  
99041 Hexagon Setting Tool  
15101  $\frac{1}{4}$ " Square Drive  
96826 Threaded Setting Tool™  
96825 Preset Torque Wrench  
97279  $\text{Ø}13 \times 460\text{mm}$   
SDS + drill bit

Use drilling machine model Spit 335 for drilling hole through brickwork and driving LRT.

**\*\*For Resin version of LRT use Threaded Setting Tool (96827)**