

INSULATION PINS

This Installation Guide provides recommendations to maximise the service life in various applications. Insulation Pins are used to mechanically fix and install insulation material that can be pierced by metal spindles.



WORKING HEALTH AND SAFETY

- Extreme care should be taken when working around pins, as spindles can cause serious injury
- Dispose of release liner immediately, as it can cause a slip hazard
- Refer to manufacturer's information on use of any solvent-borne adhesive used with PIN PERF
- Ensure that all electrical equipment is in good operating condition and that proper precautions are taken when dealing with high current, high voltage electrical systems

WHAT IS STUD WELDING?

Stud welding is a high-speed joining process where metal pin or stud is attached to a metal work piece in milliseconds. There are two major stud welding methods: CD (Capacitor Discharge) and Arc stud welding.

PROCESS

The fundamental principle by which both methods effect the weld is the same, but both forms are complementary more than competitive. In both processes, portable equipment with a hand-held gun for automated stud feeding is used. When the trigger is pulled, an electric discharge melts the base of the PIN and the work-piece zone. The molten zones join and solidify, establishing high-integrity welds in milliseconds. The welding cycle can be set and is controlled automatically by the equipment.

WELDING METHODS

CD stud welding method: Weld energy is stored in capacitors as the power source. The PIN is positioned against the work piece. The trigger activation produces an electric discharge through the pin, melting the full diameter of its base and a portion of the parent metal. Spring loading thrusts the pin into the molten metal and holds in place, as the zones solidify.

ARC stud welding method: The popular method because of its ability to efficiently join a metal stud or PIN to one side of a metal work surface under gun spring action. When the trigger is pulled, the weld gun lifts the stud a short distance from the base metal and initiates a controlled electric arc from the power source, melting the end of the pin and a portion of the base metal. When set control times out, the pin is thrust into the ceramic ferrule which contains the molten metal and a high quality fusion weld is accomplished.

Insulation pins are available for different fixing methods:

1. *Weldable insulation pins*
2. *Applying adhesives*
3. *Self-adhesive*

Self-locking washers, commonly referred to as speed clips, caps or domes, are used in conjunction with insulation pins to provide protection from the protruding spindle ends.

applications

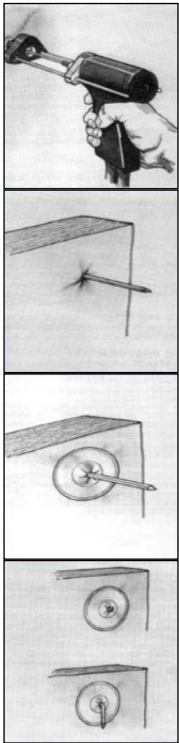
Insulation pins are applied where noise insulation need to be attached

- HVAC ducting
- Marine engine rooms
- Bus engine bays
- Truck engine bays
- Compressor enclosures

The insulation pins come in a variety of sizes: 50 mm, 63 mm, 90 mm, 110 mm and 150 mm. One type of pin can be used to hang multiple types of noise insulation, reducing inventory needs.



INSTALLING WELDABLE INSULATION PINS



1. Weld pins in place
2. Install insulation over Pins
3. Slide self-locking washer over Pins to secure insulation
4. Either clip pin off or bend pin over at washer

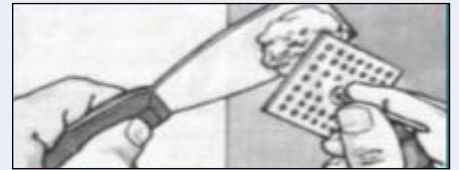
FACTORS INFLUENCING CHOICE OF PIN SA AND PIN PERF

- Thickness and weight of the insulation to be fixed.
- Glue line temperature and type / condition of the surface.
- Corrosion Resistance: The metal pins are zinc-coated and give good corrosion resistance.
- Thermal Conduction. In some situations the metal pins permit thermal bridging. For low-temperature applications (below 12°C) Nylon Pins can be obtained.
- Metal pins are completely fire resistant, but the adhesively-bonded PIN PERF and PIN SA systems rely on the heat resistance of the adhesive to hold the insulation in place. Pins welded to the base metal of a unit will hold in the event of a fire.
- PIN SA is much faster to apply and allows attachment of the insulation.
- Capital Equipment Cost: PIN PERF and PIN SA do not require any significant capital outlay. Pins require suitable stud welding equipment to be used.
- Availability of Electrical Power: Pins require a suitable electrical power source close to the application point to power the stud welding equipment. PIN PERF and PIN SA do not require any electrical power.

INSULATION PINS WITH ADHESIVE APPLICATION



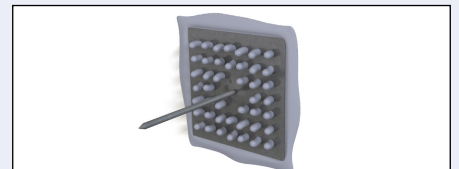
1. Wipe surface clean. Perforated base must be applied to a clean dry surface.



2. Apply adhesive to the base. Spread Mastic adhesive onto the preformed base with a putty knife.



3. Press into position with a twisting motion to allow even spread of the adhesive



4. The adhesive should protrude through the perforations and beyond the edges of the base. Allow adhesive to dry thoroughly before hanging insulation, usually 24 hours-72 hours. Drying time will vary.



5. Install insulation after adhesive is dry.



6. Secure the insulation with a self-locking washer. Bend over or snip off excess spindle length. For an aesthetic finish, use a washer-dome over the protruded spindle after snip-off.



GUIDELINES FOR USING PINS SA

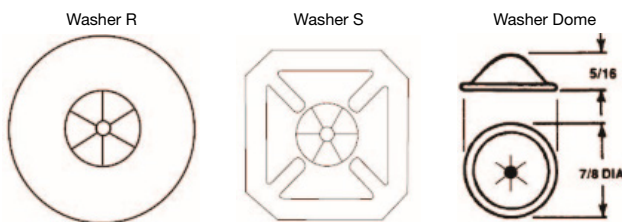
- PIN SA must be applied to a clean, non-porous surface that is completely free of all oil film, dust, rust etc.
- Not recommended on most painted surfaces, drywall or metal ceilings where the metal is exposed on the reverse side to direct sunlight.
- Best results are obtained when ambient temperatures are above 10°C at time of application.
- In use, temperature range for the foam tape is from -20°C to 90°C.
- Loading should not exceed 1.4kg per PIN.
- Base must be applied with very firm pressure. **DO NOT TWIST** during application. **DO NOT** remove release (backing) paper until ready to use.
- Insulation may be applied after 15-20 minutes of the bond being made.

NOTE: Please use our instructions as a general guide. The responsibility to assess and compensate for application environment lies with the installer. Carry out trial tests before final installation.

SELF-LOCKING WASHERS

Self-locking washers are slid over the protruded spindle after insulation is installed. They are simply slid over the protruded spindle ends, up against the insulation, until the desired position is reached. The remaining protrusion is either clipped off after leaving a reasonable margin, or bent over to secure insulation. The choice between round or square self-locking washers is a matter of personal preference.

Dome washers are used to cover the protruded spindle after installing self-locking washers, and offer safety and a final aesthetic finish.



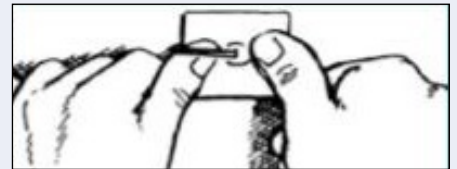
PIN SA: SELF-ADHESIVE INSULATION PINS



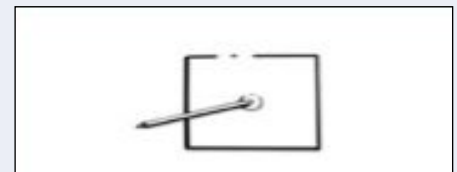
1. Wipe surface clean. Self-adhesive backing must be applied to a clean dry surface.



2. Peel off release backing. NB: Double faced foam tape has a one year active shelf life.



3. Press base firmly into position applying firm pressure. Very firm finger pressure should be applied all around the base of the anchor.



4. Allow to stand 15-20 minutes for the self-adhesive to build strength.



5. Install insulation after ensuring the time allowed has passed.



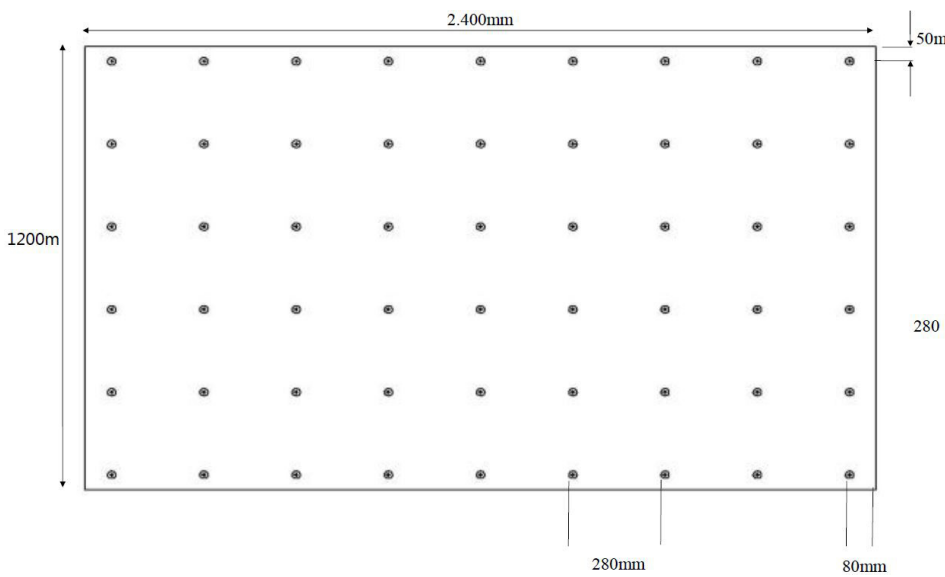
6. Secure the insulation with a self-locking washer. Bend over or clip off excess spindle length. For an aesthetic finish, use a washer-dome over the protruded spindle after clipping.

TYPICAL PIN LAYOUT

Adhesive coverage: Insulation pins with a 50 mm x 50 mm perforated metal base require 6-8 grams of adhesive per pin.

As an example for passive fire protection, a sheet size of 1.2 m x 2.4 m, with a typical pin layout of approximately 280 mm centers, would require 54 pins. That means 324 to 432 grams of adhesive per sheet.

Fig. PL1 Typical pin layout for passive fire protection (based on 2.4 m x 1.2 m, requiring 54 pins)



- Fig.PL1 is intended to serve as a guide only
- Please contact your local Pyrotek® representative for correct pin layout for specific structural fire protection products
- Values stated in this

Please contact Pyrotek for further information or detailed advice on your specific application.