ASSET INTERTECH

ASSET LGA1366 Top-side Probe

(Manual version 1.1)

For gaining test access to the debug port of Intel® processors that are designed for use in LGA1366 Sockets (Socket B). These include the Intel® Core™i7 processor family and the Intel® Xeon® processor 5500 series.

Note that the values of JTAG signal termination resistors built into this probe assume that there are no termination resistors on the board under test. Where termination resistors do exist on the board under test, this will result in double termination, affecting the JTAG signal characteristics. This could mean that external test equipment may not be able to establish JTAG communications. Please contact us if this is the case – we can advise you on how to overcome the double termination: http://www.asset-intertech.com/contact.html

This manual can be downloaded in digital format from the following address:
http://www.asset-intertech.com/download/LGA1366_Top-side_Probe_Manual.pdf

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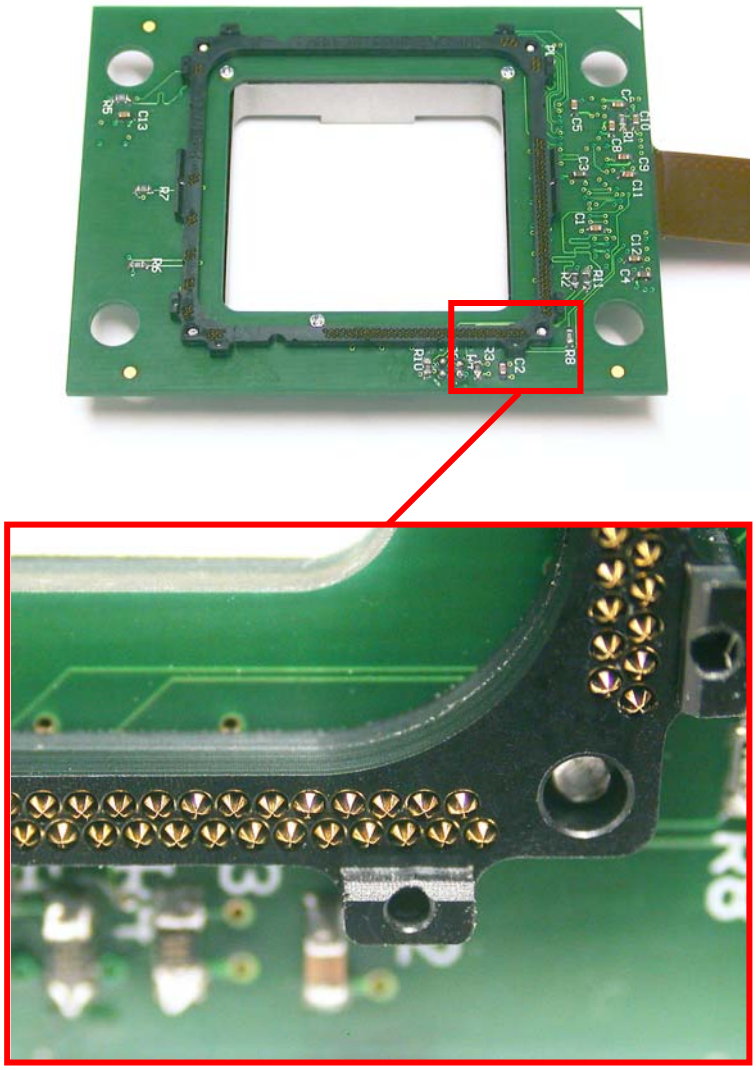
ASSET Driving Embedded Instrumentation

Handling and storage of the LGA1366 top-side probe

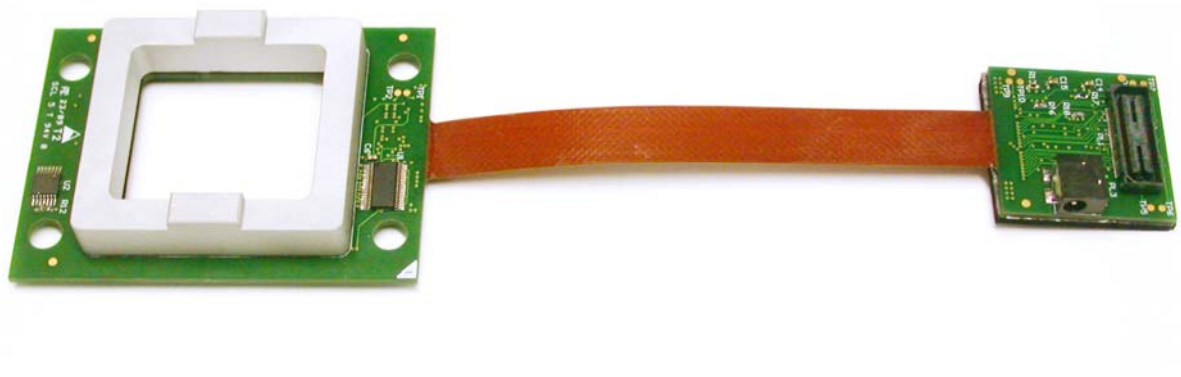
The ASSET LGA1366 top-side probe contains fragile components that can be easily damaged by incorrect handling or storage. There is no warranty cover for damage to the probe, so please note the following points:

1. The probe makes electrical contact with the pads on top of the CPU via small spring-loaded probe tips that are housed in a black plastic ring connector on the underside of the probe's main PCB, as shown in the photos below. **These fragile probe tips should not be allowed to come into contact with anything other than the pads on top of the CPU.**
2. When the probe is removed from its storage container, or from the top of the CPU after use, **it should be placed on a flat, dust-free surface with the ring connector facing upwards as in the photos below. The probe should be returned to the supplied storage container when not in use.**



Parts supplied (designs may vary slightly from the photographs)**:**

1. Top-side probe



2. 5 volt universal mains power adapter (100-240 V)

3. Stainless steel heatsink location plate

4. Stainless steel ILM stand-offs (4)

5. Copper heatsink spacer

6. Torx T20 screwdriver

Other required items, not supplied:

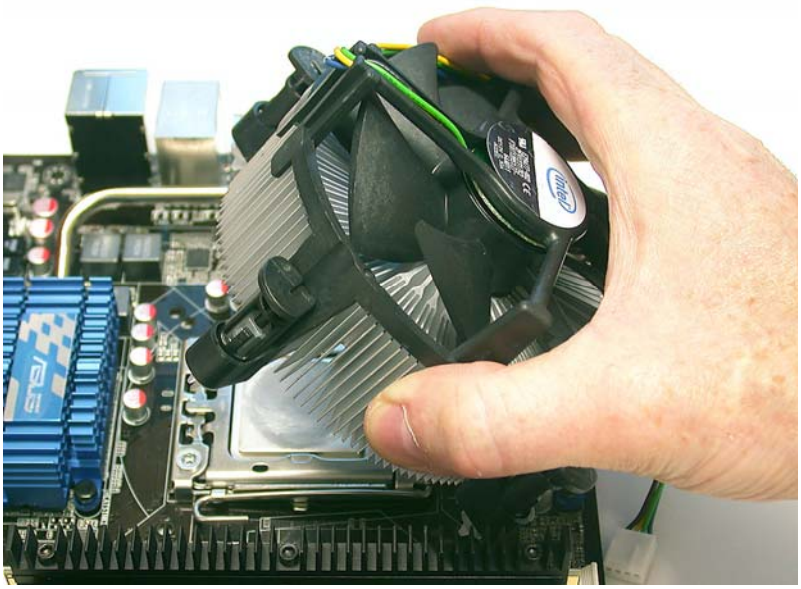
7. Intel® LGA1366 heatsink / fan with push-through-hole clips. This style of heatsink / fan with similar push-through-hole clips is also obtainable from a number of CPU cooling solution manufacturers. It may be possible for users to adapt the location method to suit other heatsink / fan varieties but adaptation is not dealt with in this manual.

Push-through-hole clip

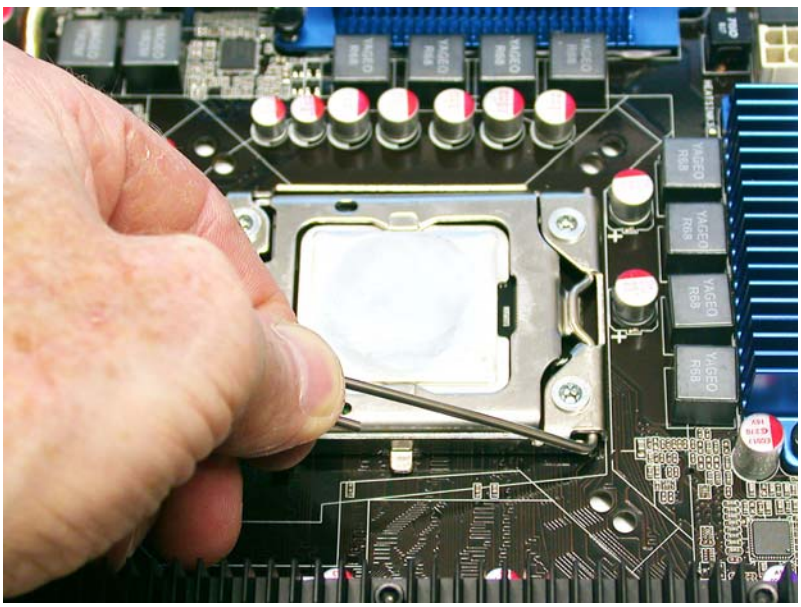
8. Heatsink thermal compound / paste to ensure good heat transfer from the CPU, through the copper heatsink spacer to the repositioned fan.

Top-side probe assembly sequence:

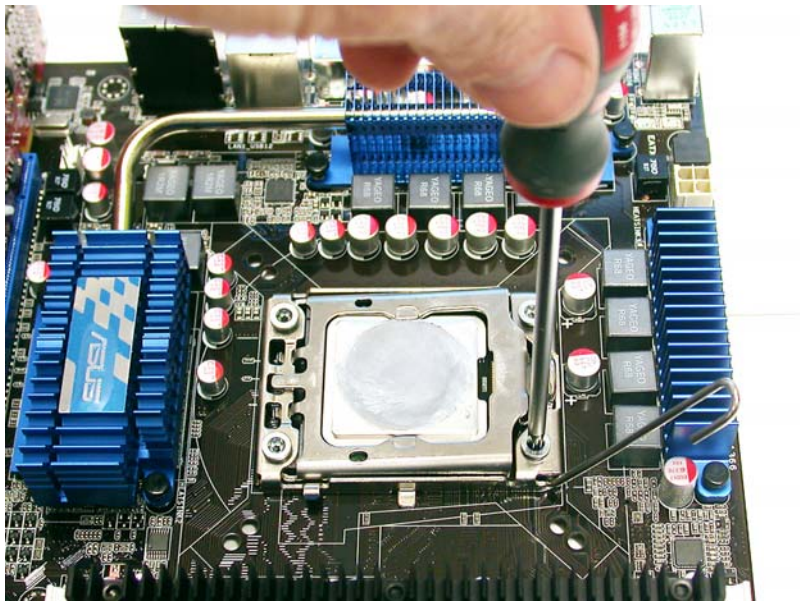
1. Remove heatsink / fan unit from the LGA1366 socket. The method of removal will depend on the heatsink's design, but in the case of the Intel style heatsink shown below, rotate the tops of the 4 plastic clips anti-clockwise through 90 degrees and then pull them upwards to release the inner pin. Lift the heatsink vertically upwards (not as shown in the photo).



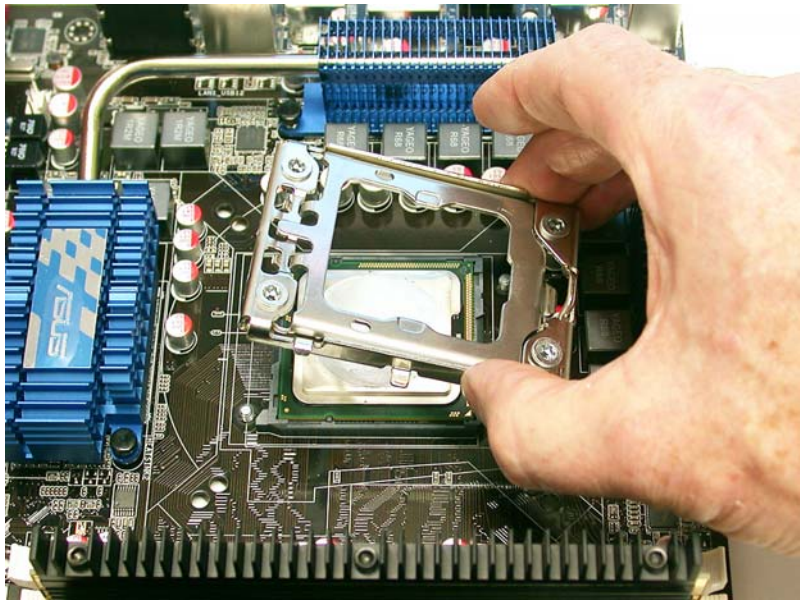
2. Unclip and slowly release the Independent Load Mechanism (ILM) lever, to remove the pressure from the CPU. The lever will rotate through about 110 degrees, at which point the pressure has been fully removed.



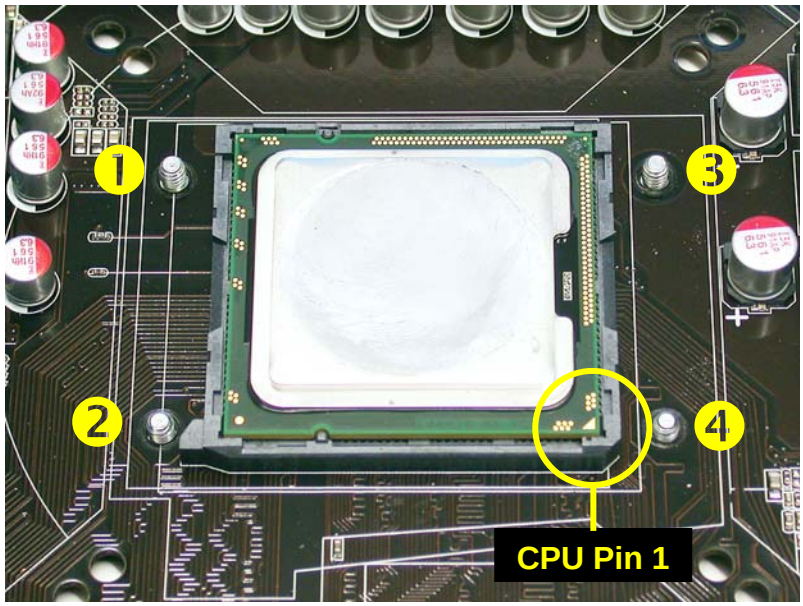
3. Leave the CPU in its socket to protect the socket pins. Unscrew the 4 Torx T20 nuts that retain the ILM, using the provided screwdriver. **This must not be attempted before releasing the load lever**, which can be seen below in its open position.



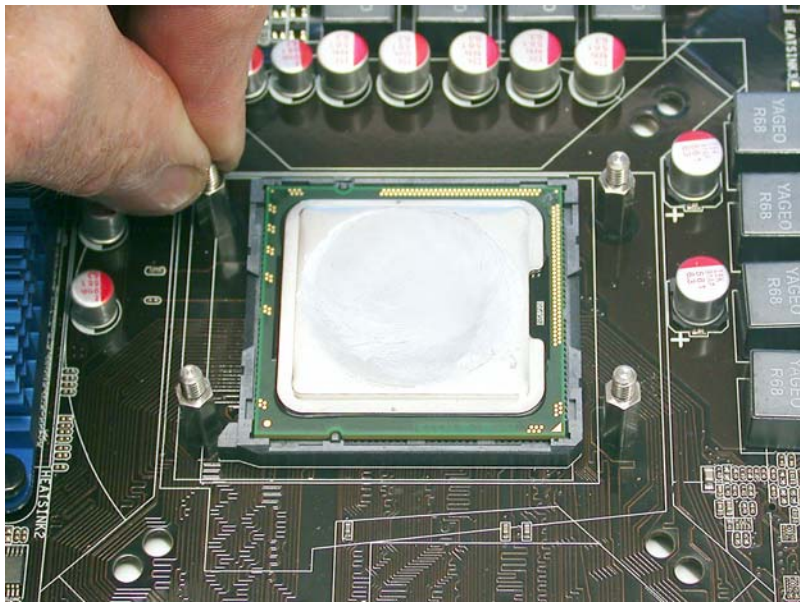
4. Carefully remove the ILM from the socket.



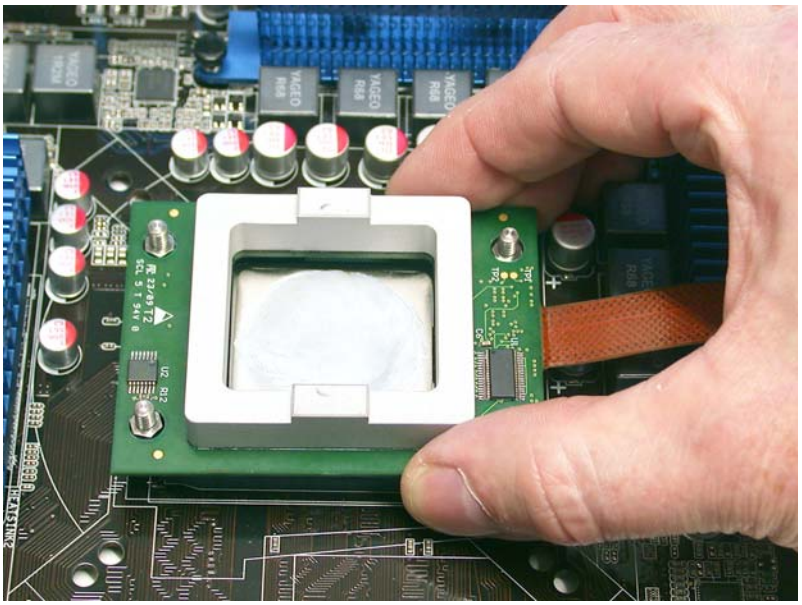
5. The photo below shows the ILM removed, with the 4 studs projecting through the board from the ILM backside stiffener plate below the board. Note also the position of pin 1 on the CPU, which will be referred to later.

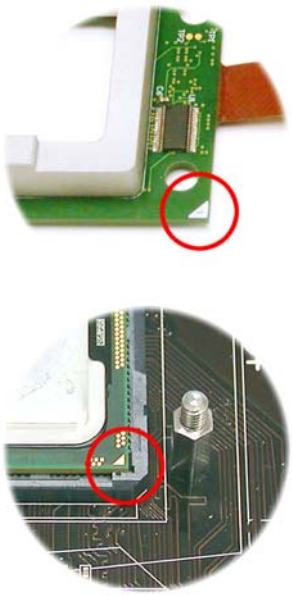


6. Screw the 4 stainless steel ILM stand-offs onto the 4 projecting backside stiffener plate studs. The ILM stand-offs should be finger tight; do not use a tool to tighten them, which could result in damage to the board.

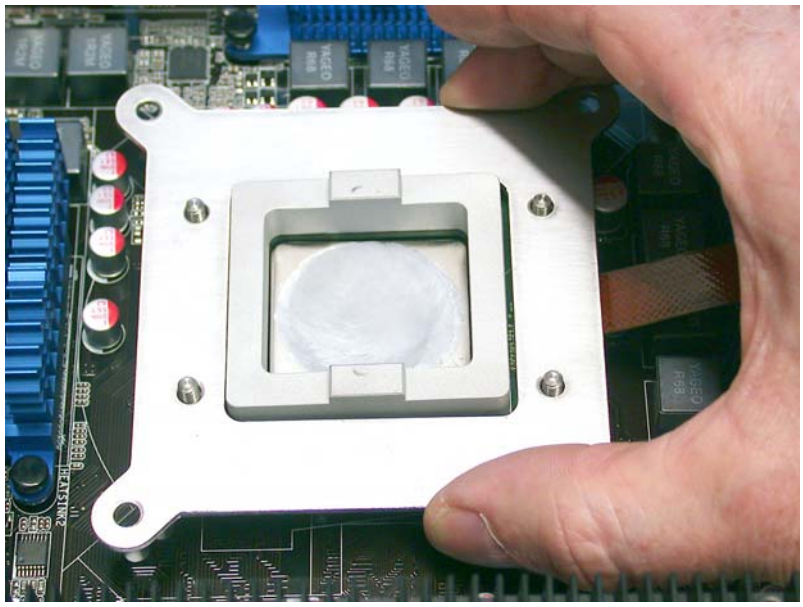


7. Locate the 4 holes in the main PCB of the top-side probe onto the 4 ILM stand-offs. Slowly lower the probe onto the CPU and socket, ensuring that the ring connector engages with the top of the CPU. **Note that the white triangle on the corner of the probe PCB (hidden by the thumb in the photo) must be positioned at the same corner as pin 1 on the CPU.**

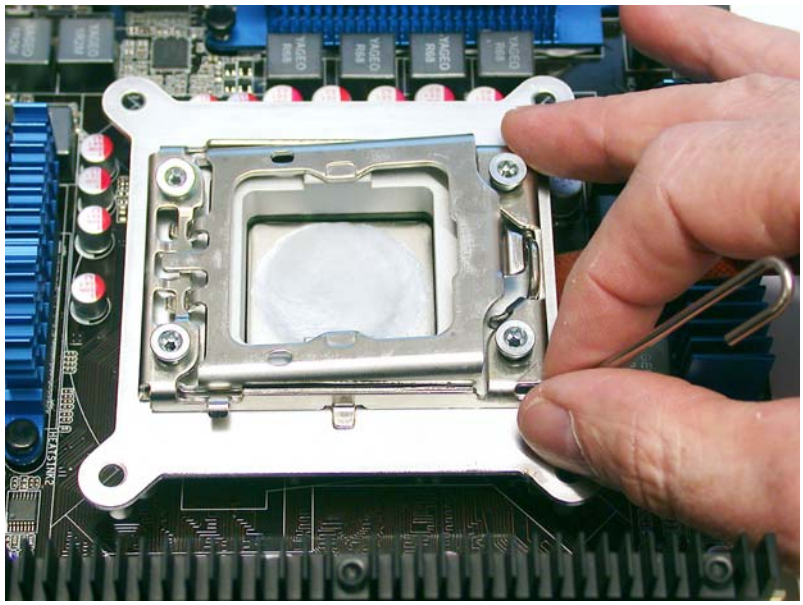




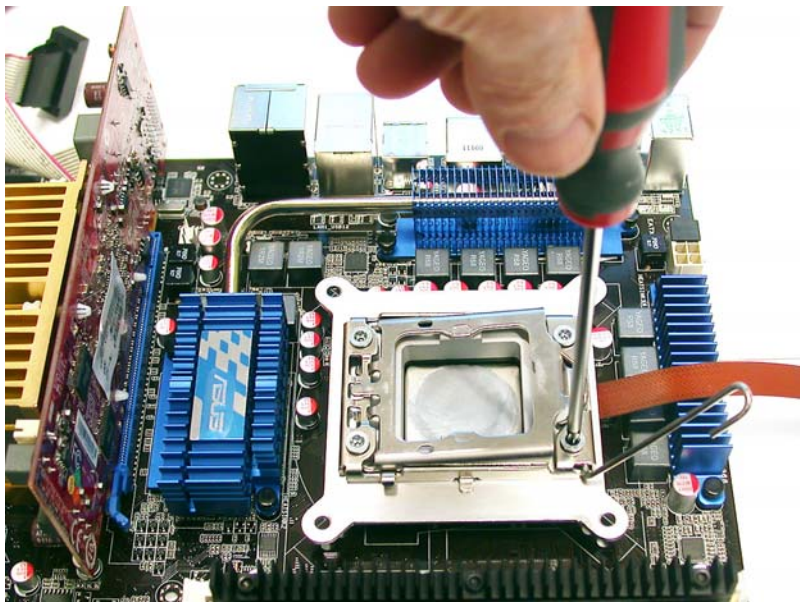
8. Place the heatsink location plate onto the projecting threaded studs of the ILM stand-offs.



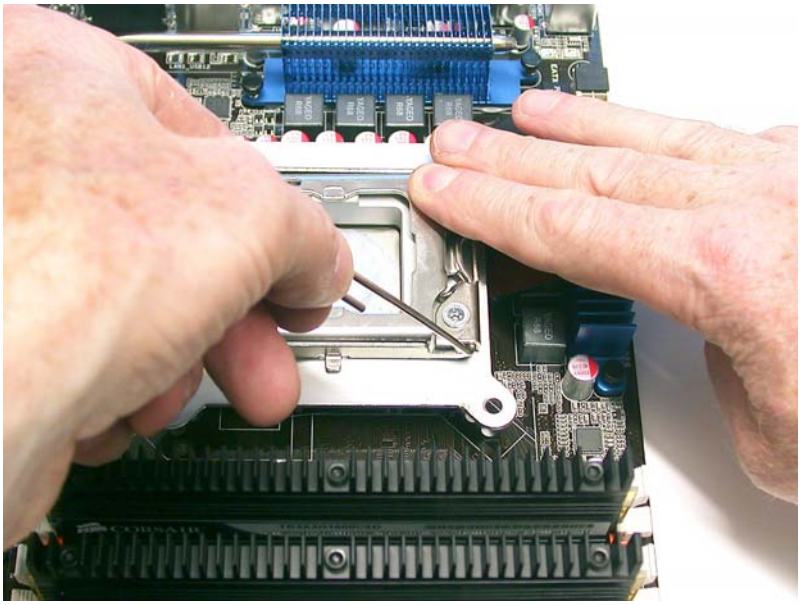
9. Locate the ILM so that its 4 nuts engage with the projecting threaded studs of the stand-offs. **Note that the ILM load lever is open and is positioned over pin 1 of the CPU (shown between thumb and index finger in the photo).**



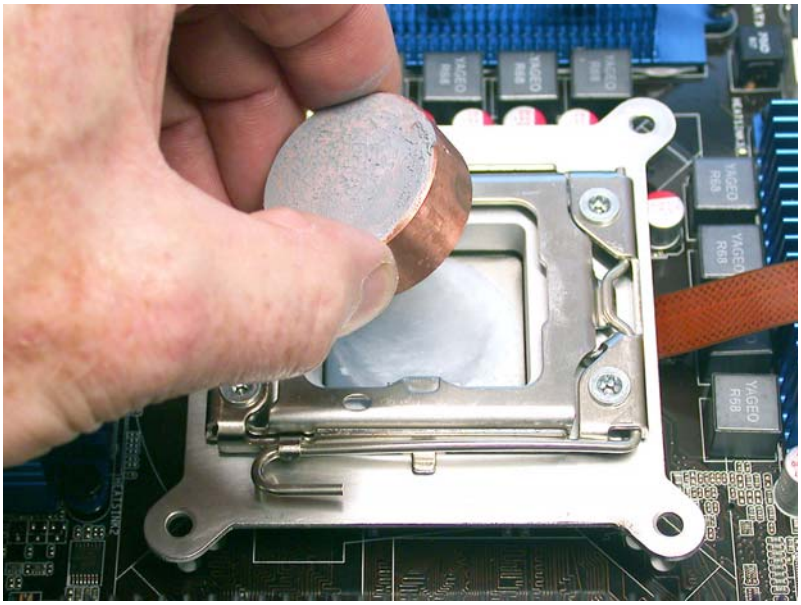
10. With the load lever still open, tighten the 4 ILM nuts onto the threaded studs using the provided Torx T20 screwdriver. To avoid cross-threading the nuts, ensure they are vertically engaged and turn anti-clockwise half a turn before tightening in the clockwise direction. Partially tighten all 4 nuts before fully tightening them. The nuts do not need to be excessively tight.



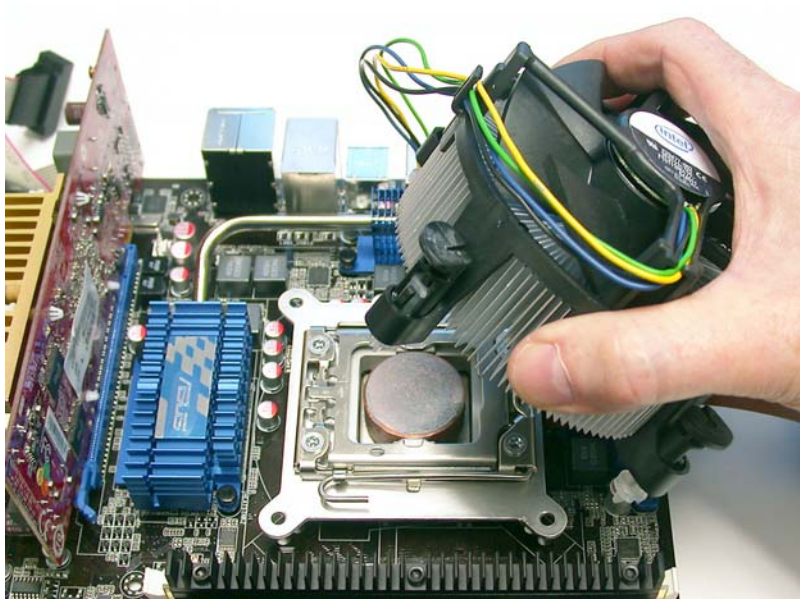
11. While pressing down the open edge of the ILM load plate with one hand, close the load lever with the other hand.



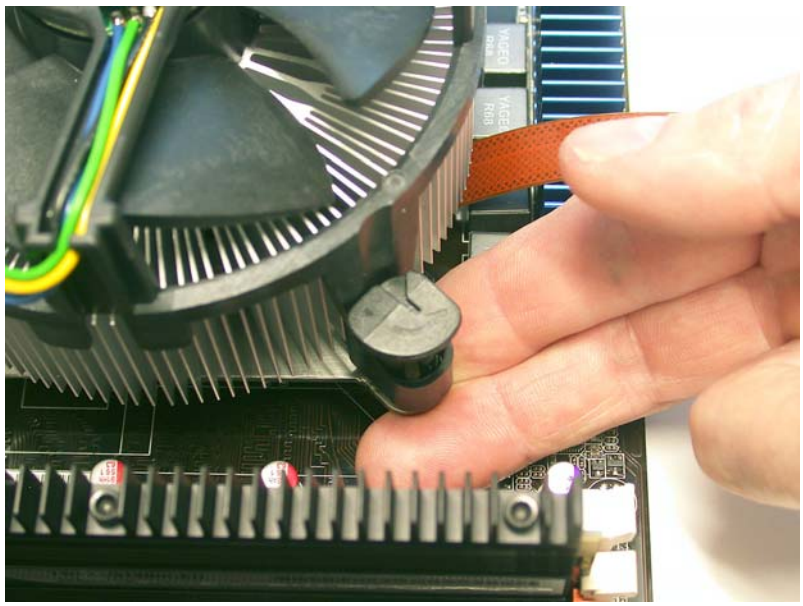
12. The closed load lever can be seen in the photo below. Apply a thin coating of heatsink thermal compound / paste to both surfaces of the copper heatsink spacer and then carefully and gently place it on top of the CPU, through the square hole in the probe.



13. Place an Intel LGA1366 style heatsink / fan with push-through-hole clips onto the heatsink location plate, ensuring that the clips locate into the 4 holes. **See point 14 below before securing the clips.**

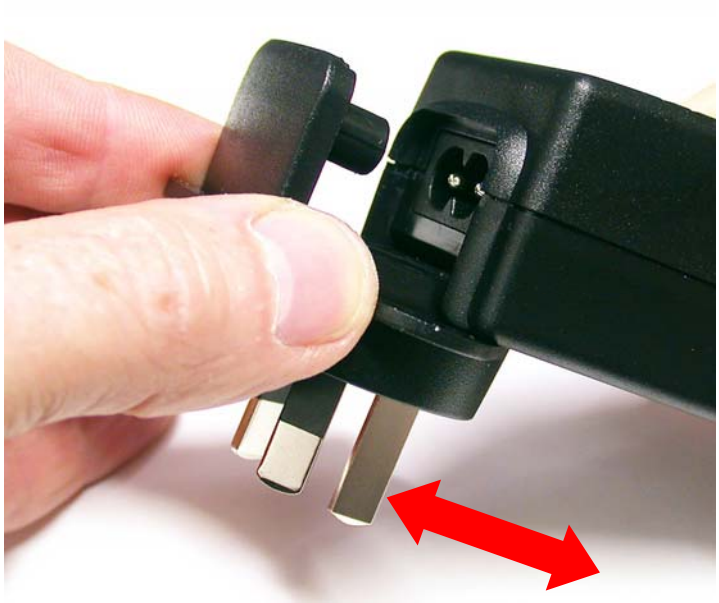


14. Use one hand to provide support below the heatsink location plate while pushing the clip down to engage the central pin. Note that the plastic top of the clip should be in the position shown in the photo before it is pushed down (it is rotated 90 degrees clockwise in relation to its removal position). After engaging the first clip, engage the one that is diametrically opposite to balance the pressure.

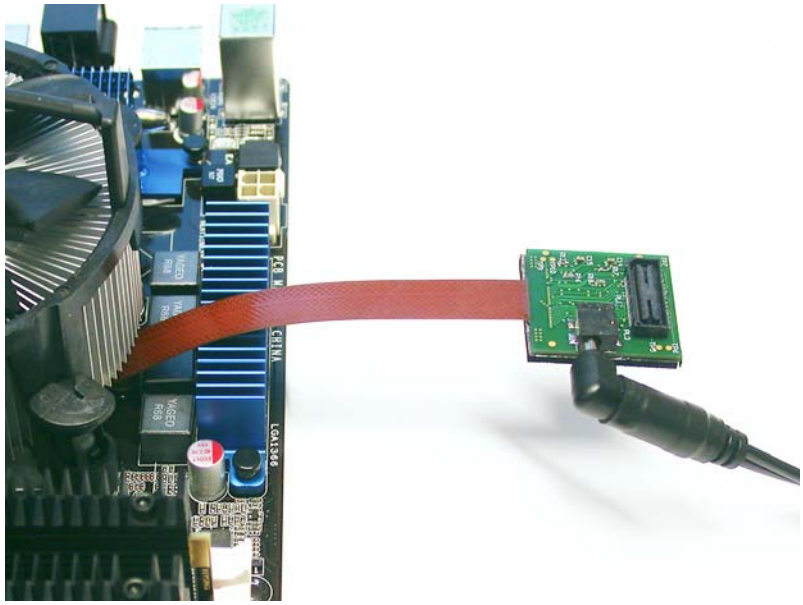


15. Plug the fan power connector into the appropriate CPU fan socket on the board.

16. Change the 5 volt universal mains adapter to the appropriate socket style for your locality. The socket inserts are removed from the body of the adapter and replaced in the direction of the red arrow shown below. The socket insert engages onto a two-pin connector in the body of the adapter; this should be pushed firmly into position so that it is fully engaged and flush with the adapter body. Then plug the adapter into the mains socket.



17. Plug the 5 volt adapter jack into the socket on the small PCB of the probe. The inner sleeve (or tip) of the jack is +5V and the outer sleeve is ground. **Ensure that the exposed circuitry of the probe's small PCB does not come into contact with any metal surfaces or other exposed circuitry, which could cause damage.** The top-side probe is now ready for use – the XDP header on the small PCB provides access for JTAG-based CPU debug port test equipment, such as the ASSET® ScanWorks® Processor-Controlled Test solution.



Note that the values of JTAG signal termination resistors built into this probe assume that there are no termination resistors on the board under test. Where termination resistors do exist on the board under test, this will result in double termination, affecting the JTAG signal characteristics. This could mean that external test equipment may not be able to establish JTAG communications.

Important! Top-side probe removal sequence:

Removal of the top-side probe is essentially the reverse of its assembly but please **be aware of the following cautions**:

1. When removing the heatsink / fan (as in point 1 of the assembly instructions), beware that the copper heatsink spacer may remain attached to the heatsink by the thermal compound. **This bond could easily break while lifting off the heatsink and the falling copper spacer could damage the board. Hold onto the copper spacer if it lifts with the heatsink.**
2. **The ILM load lever must be released** (reverse of point 11 in the assembly sequence) **before the ILM nuts are undone** (reverse of point 10 in the assembly sequence).

