

**1. INTRODUCTION**

Lever actuated LGA771 and LF-LGA771 sockets ( listed in Table 1 ) are designed to receive the FC-LGA4 processor package ( 771 pos LGA ).

Table 1 Part number

Part number
X-1747890-X (Refer to customer drawing for description)

Since the contacts of this socket aren't fully covered by socket housing, read these instructions thoroughly before installing the device onto the socket to prevent the damage to the socket contact

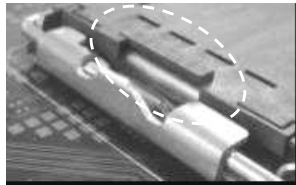
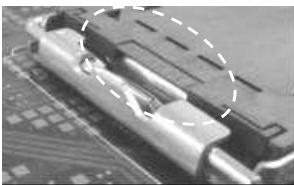


Fig 1-1 "Flat" tab cap      Fig 1-2 "Raised" tab cap  
There are 2 type PnP cap exists, but the usage is same

**2. DESCRIPTION**

The socket consists of contact, stiffener plate, load plate, lever, and housing. The product weight is 39g.

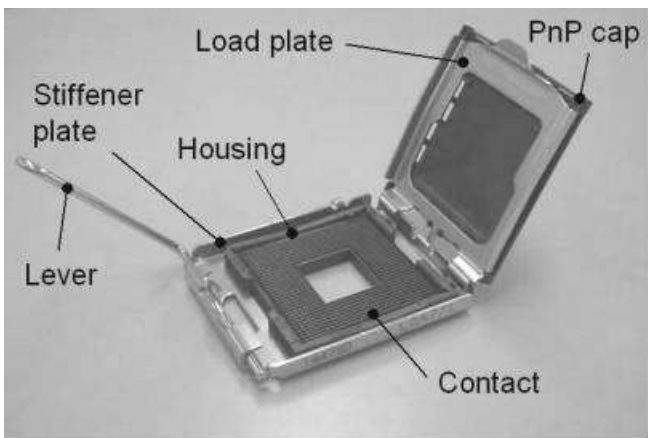


Figure 2-1 Socket configuration ( at open )

The stiffener plate holds the lever and it has a hook to retain the lever after actuation to sustain the Z axis load.

The body housing holds an array of the contacts. Also the solder balls are attached to the bottom surface of the contact.

The stiffener plate and load plate clamp the body housing and LGA package at same time so that the

socket generates the Z axis load to make the electrical contact to all of the connecting pads on LGA package.

To identify the orientation of the socket and package, here determines the orientation as Figure 2-2

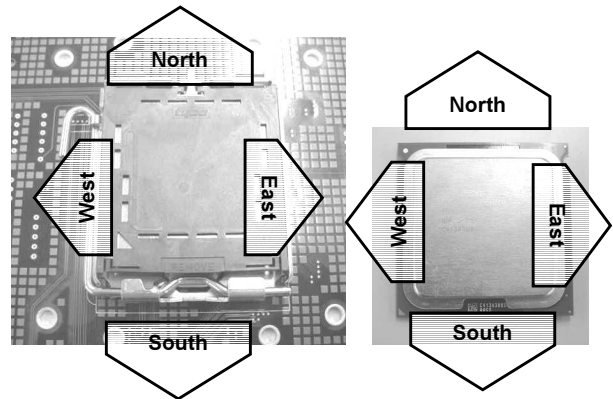
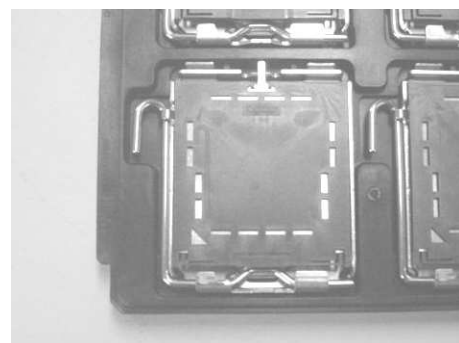


Figure 2-2 Socket and package orientation

The socket is delivered by JEDEC hard tray. The orientation of the socket in the tray is shown in Figure 2-3. The south-west corner ( Pin 1 position ) orientation matches with corner cut of the hard tray



(a) Overview



(b) Socket orientation

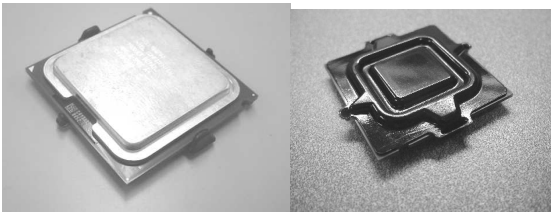
Figure 2-3 Socket in JEDEC hard tray

### 3. PREPARATION FOR PACKAGE

The processor package land side is protected by a cover when it delivers to customer.

To install the processor package with right orientation to socket, Tyco recommends to remove the land side cover from processor package before installation procedure.

Then arrange the package with same orientation in tray after removing land side cover. It reduces the risk of wrong-orientation insertion



(a) Top view      (b) Land side view  
Fig 3-1 Processor package with land side cover

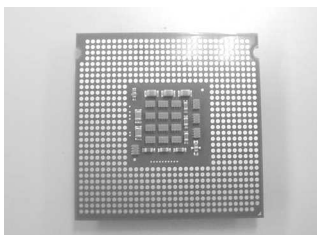


Fig 3-2 Package land side (without cover)



Fig 3-3 package alignment in tray

### 4. INSTALLATION PROCEDURE

Install the socket onto the printed circuit board (PCB) according to acceptable soldering guidelines

**NOTE** *Socket must be soldered to PCB BEFORE installing the device. For application requirements, refer to 114-5374*

The recommended socket orientation for the operation is to put the product south end to the operator side as Figure 4-1

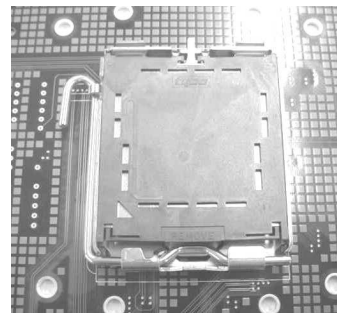


Figure 4-1 Socket orientation

#### 1) Open the lever

- Put the finger onto the lever end
- Push down the lever where the lever can escape the hook
- Move the lever to the far side of the socket with pushing down force applying

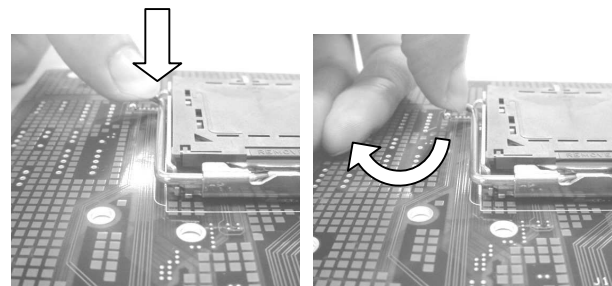


Figure 4-2 Release from hook

- Then gradually reduce the pushing down force by keeping the lever position to be far side to escape the hook
- After the lever is released from the hook, then open the lever to the open position

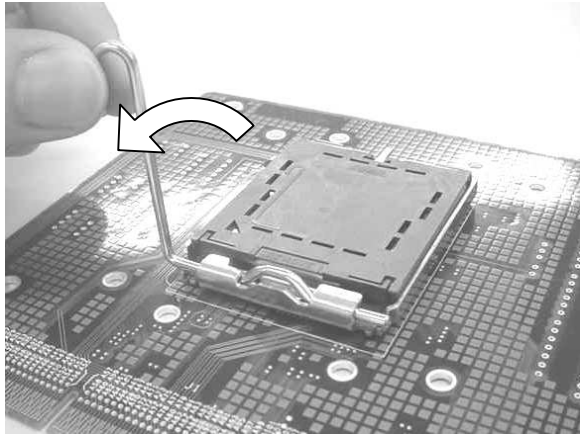


Figure 4-3 Open the lever

- 2) Open the load plate
- Put the finger to south end of the plastic cap (Tab end for raised tab parts)
  - Then open the load plate

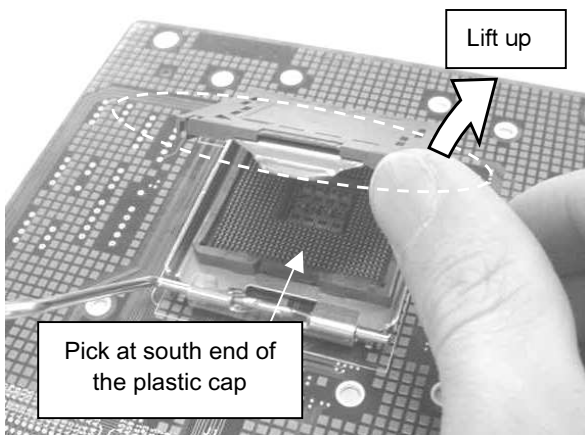


Figure 4-4 Lift up the load plate

- 3) Put the processor package into the socket
- Grasp the processor package at the center of north and south side edges

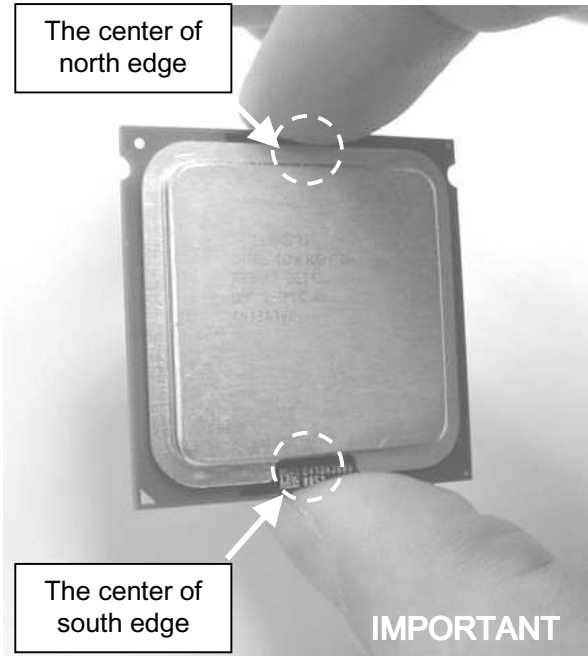


Figure 4-5 Where to grasp the processor package

**NOTE** Check the grasping positions are at center of the package. The package can't be put into the socket at proper position if the grasping positions shifts to each side

- The processor package orientation when it is picked up should be matched with the socket ( Check if the pin 1 indicator of the socket and processor package are matched )

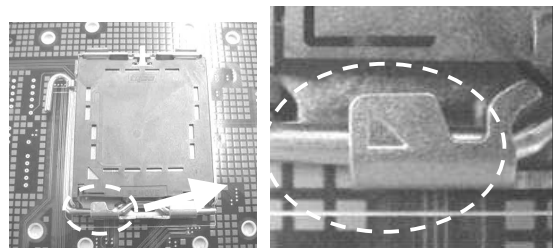


Figure 4-6 Pin 1 indicator of the socket

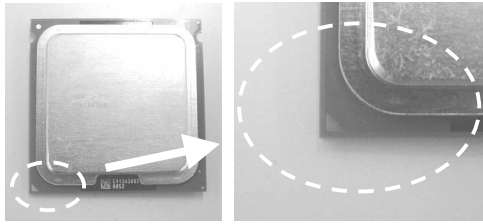


Figure 4-7 Pin 1 indicator of the package

- Carry the LGA package above the socket

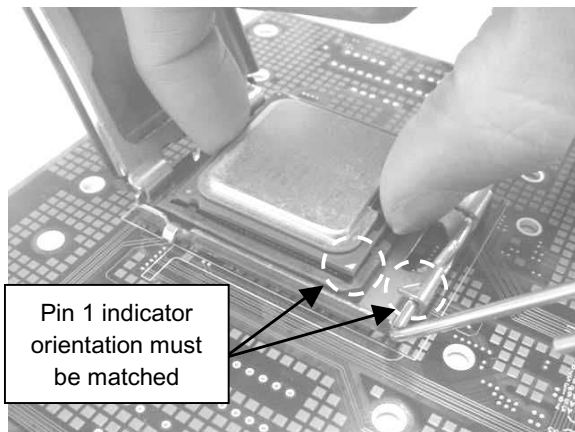


Figure 4-8 Carry the package to the socket

**NOTE** Check the package orientation *BEFORE* put the package into the socket. Wrong orientation insertion will damage the contacts

- Align the out side shape of the package to the cavity shape of the housing

**NOTE** Do not incline the package during the alignment operation. The contacts may be damaged if the package edges touch to the contact

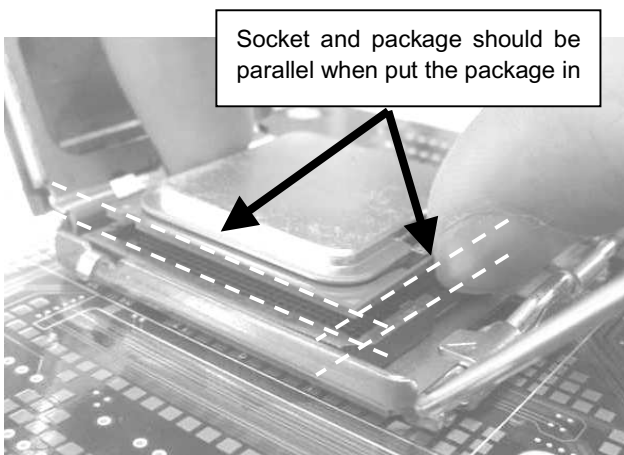


Figure 4-9 The socket and package must be parallel to each other

- Put the package into the body housing

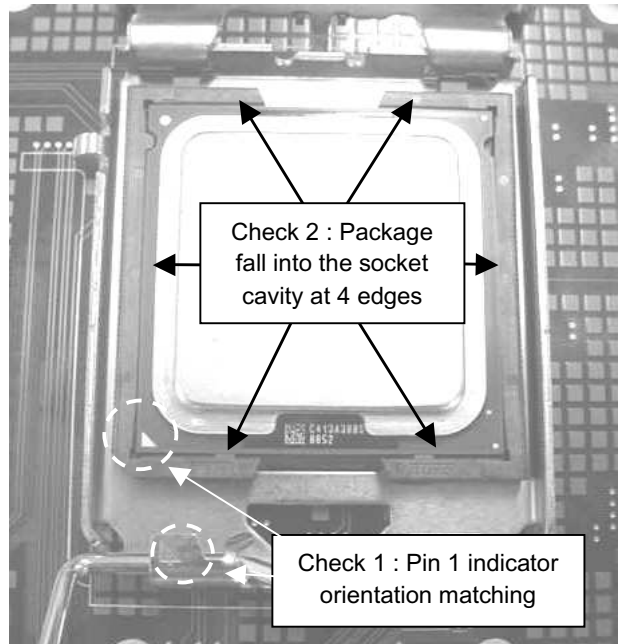


Figure 4-10 Check the package in the socket

- Check if the package properly falls into socket. If the package didn't fall into the body housing, follow "5. THE REMOVAL METHOD OF MISPLACED PACKAGE". Then repeat the procedure of "3) Put the package into the socket"
- Check the orientation of the package by pin 1 corner indication. If the orientation is wrong, follow "5. THE REMOVAL METHOD OF MISPLACED PACKAGE". Then repeat the procedure of "3) Put the package into the socket "Then pick up and open the load plate to the open position

4) Close the load plate

- Close the load plate.

**NOTE** Do not throw the load plate

**NOTE** Do not push down the load plate after close

5) Close the lever

- Turn up the lever to 90 deg
- Check if the lever catches the tab of the load plate

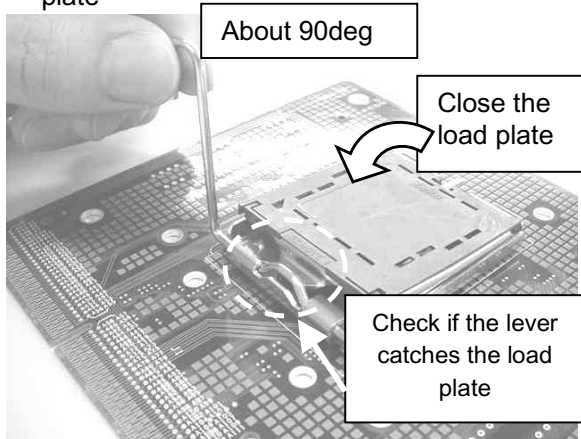


Figure 4-11 Check if lever catches load plate

- If the lever doesn't catch the tab of the load plate, check the package status again by opening the load plate whether if the orientation is right and the package fall into the housing

**NOTE**

*Do not push down the load plate during the close operation*

- Push down the lever end until it touches to the top surface of the hook
- After the lever touches to the hook, apply the force toward far side of the socket, then the lever can go down further
- Push the lever until it pass through the hook
- Release the push down force GRADUALLY
- Check if the lever properly retained by hook by observing if it touches to the stiffener plate wall

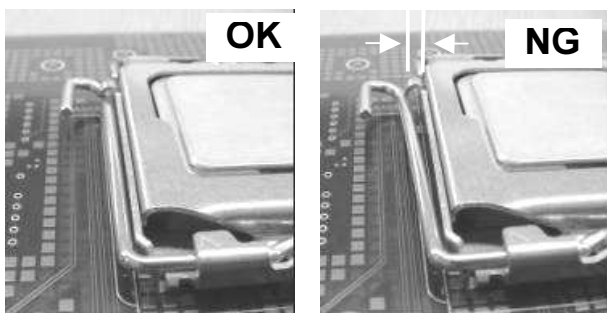


Figure 4-12 Check the retention of the lever

7) Remove the PnP cap

- PnP cap is automatically pop up after mating if package is in.

- Pick up the PnP cap after the load plate is closed

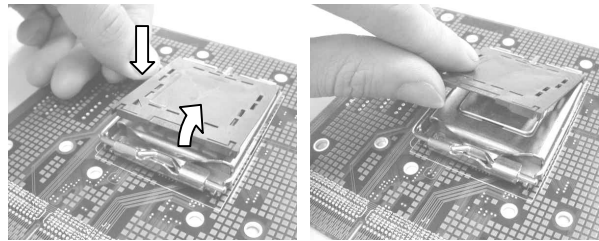


Figure 4-13 Remove the PnP cap

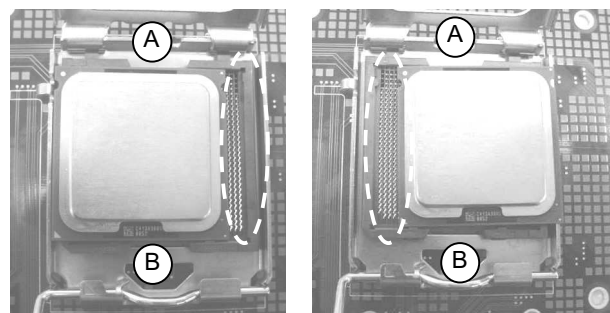
5. THE REMOVAL METHOD OF MISPLACED PACKAGE

If a package is inserted in wrong orientation or position, carefully remove the package from the socket by following the method described here. The method doesn't assure to avoid the contact bend during the removal operation but minimize that risk

The most recommended method to pick up the misplaced package is to use "ESD-Safe Vacuum Wand".

If the equipment isn't available, please follow the method below to minimize the contact bend risk.

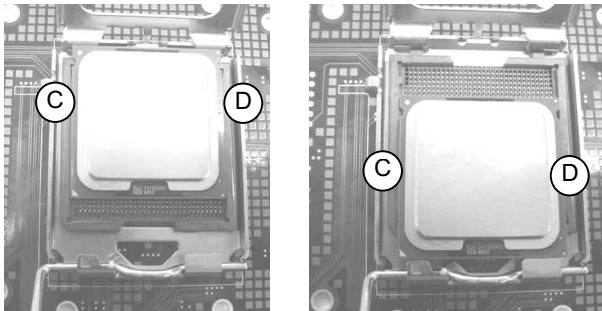
- Observe the package position from top of the socket if the contacts are visible at east or west lines only
- If yes, the package can be picked up at point A and B ( Type 1 misplacement )



If the contacts are visible only at the east or west side lines, the package can grasp at "A" and "B"

Figure 5-1 Type 1 misplacement

- Observe the socket from top if the contacts at east or west lines are visible
- If not, the package can be picked up at point C and D ( Type 2 misplacement )



If the contacts are visible only at the north or south side lines, the package can grasp at "C" and "D"

Figure 5-2 Type 2 misplacement

- If the package position isn't as mentioned above, follow the instructions below

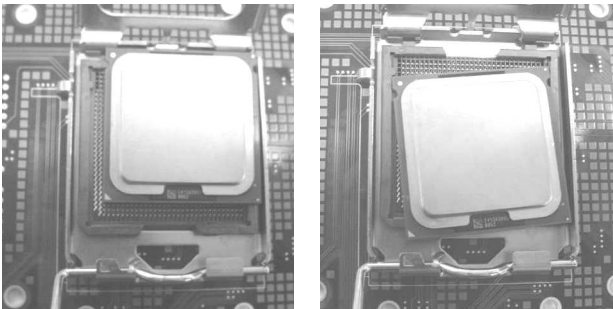


Figure 5-3 Other type misplacement ( sample )

- Incline the motherboard about 30deg with grasping the load plate to keep it open

**NOTE**

*Do not incline the board more than 45 deg. The processor package may drop off from socket*

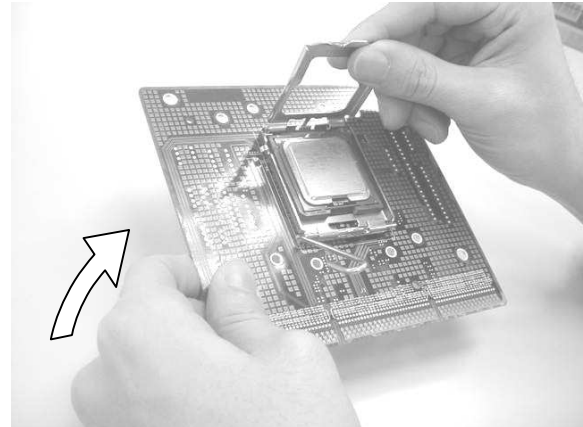
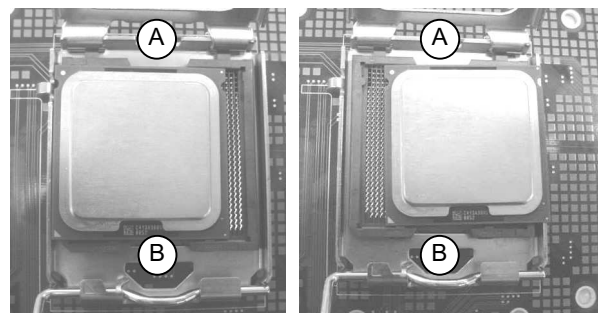


Figure 5-4 Incline the mother board to slip the package to pick up position

- Then the package will slip and will be stopped by housing wall ( Type 1 ) or by stiffener plate ( Type 3 )
- Pick up the package by following the Figure 5-5 to Figure 5-7 according to the actual package status after slip



If the package stopped by housing as above, please pick it at position "A" and "B"

Figure 5-5 Pick up method of Type 1 status package

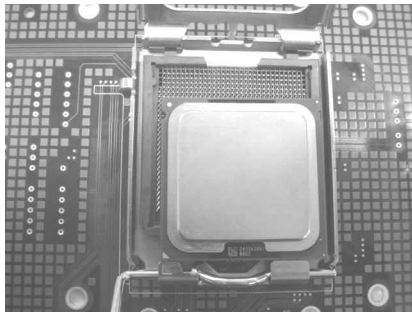


Figure 5-6 Type 3 status package  
( Stopped by stiffener plate )

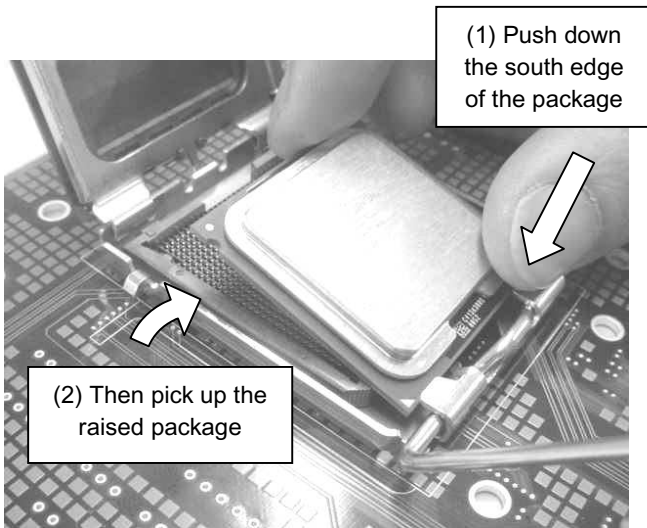
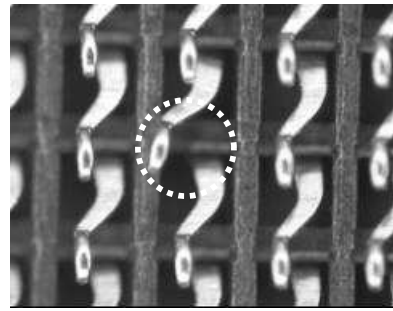


Figure 5-7 Pick up method of Type 3 status package

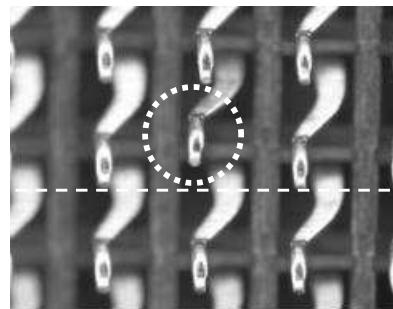
- After the misplaced package is removed, check for bent contact . Reference section 6 for checking bent contact.

## 6. CHECK THE CONTACT BEND

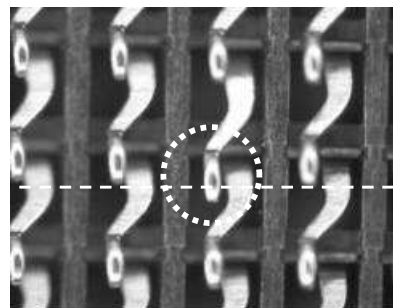
- Observe the contact grid area if there is any irregularity
- If there is a contact which shows irregular reflection, carefully observe it under micro scope
- The photographs in Figure 6-1 are the sample of the bent contacts
- Tyco does not recommend bent pin rework. Tyco's LGA775 socket has passed qualification test and meet the requirement of product specification. However, Tyco cannot ensure the socket reliability after contact rework.



(a) Side bend



(b) Up bend



(c) Down bend

Figure 6-1 Bent contact samples

## 7. PROCESSOR PACKAGE REMOVAL METHOD

### 1) Open the lever

- Put the finger onto the lever end
- Push down the lever until the lever end touches to the PCB surface
- Move the lever to the far side of the socket with pushing down force applying

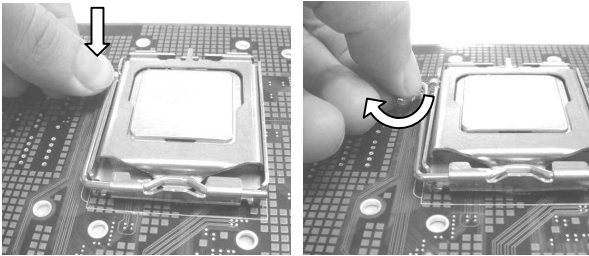


Figure 7-1 Release from hook

- Then GRADUALLY reduce the pushing down force by keeping the lever position to be far side to escape the hook
- After the reaction force from the lever is lost, then open the lever to the open position

**NOTE**

*Do not release the finger until the reaction force from lever is lost. Otherwise the lever jump to the open position and may hurt parts around the socket*

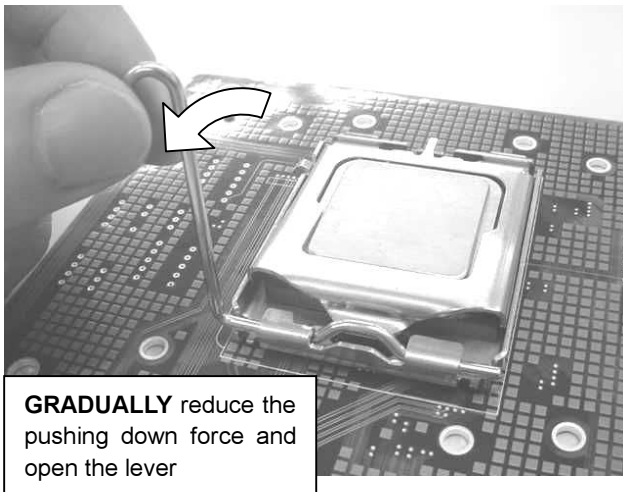


Figure 7-2 Open the lever

### 2) Open the load plate

- Put the finger end to a corner of the load plate
- Then pick up and open the load plate to the open position

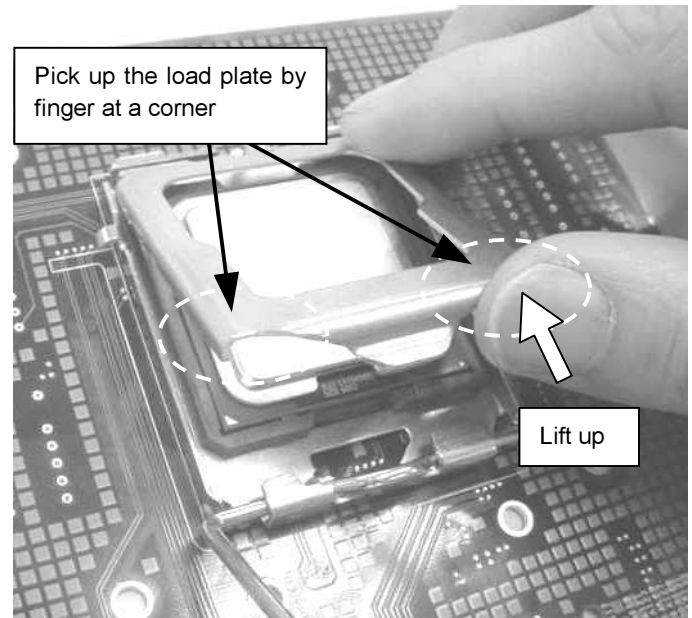


Figure 7-3 Lift up the load plate

### 3) Remove the package from the housing

- Grasp the package at center of north and south edges
- Pick up the package from the housing vertically.
- Don't inclined the package and drop on the socket

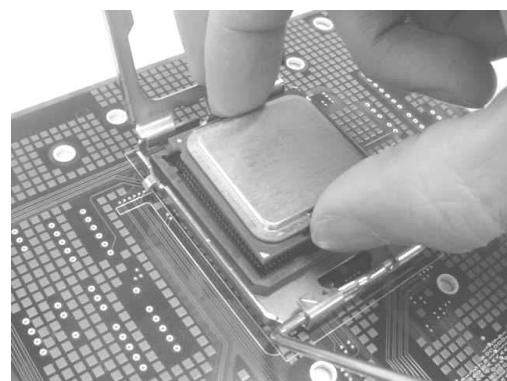


Figure 7-4 How to pick up the package



8. PnP cap attach method

- Confirm the orientation of the “REMOVE” tab is matched to the south end of the socket
- Hook the hinge end

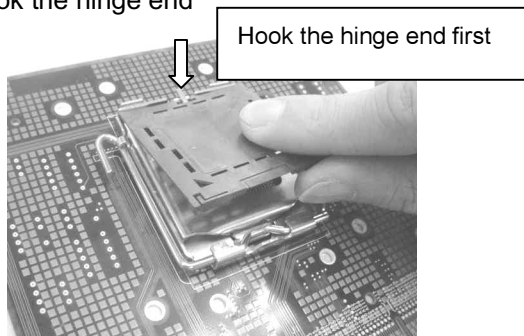


Figure 8-1 Hook the hinge end

- Rotate down to the tab end

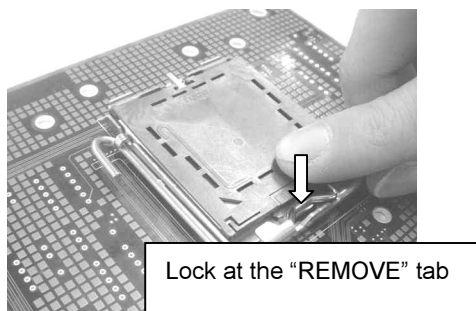


Figure 8-2 Lock to the socket