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Operating Note

Motorola MC68EC020  
QFP Surface Mount  
Adapter Assembly

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# Introduction

The HP QFP Surface Mount Adapter Assembly provides a connection for the Motorola MC68EC020 QFP microprocessor. The Surface Mount Adapter is soldered onto the target board in place of the microprocessor. A PGA Transition Socket allows either preprocessor interfaces or emulators with PGA pins to be connected. A PGA version of the microprocessor can then be mounted on the preprocessor interface.

Three connections can be made using this assembly:

- A PGA version of the microprocessor can be mounted on top of the PGA Transition Socket.
- A preprocessor interface probe can be mounted on top of the PGA Transition Socket.
- An emulator probe can be mounted on top of the PGA Transition Socket.

This Operating Note provides instructions for installing the HP QFP Surface Mount Adapter Assembly.

## Equipment Supplied

The QFP Surface Mount Adapter Assembly consists of the following:

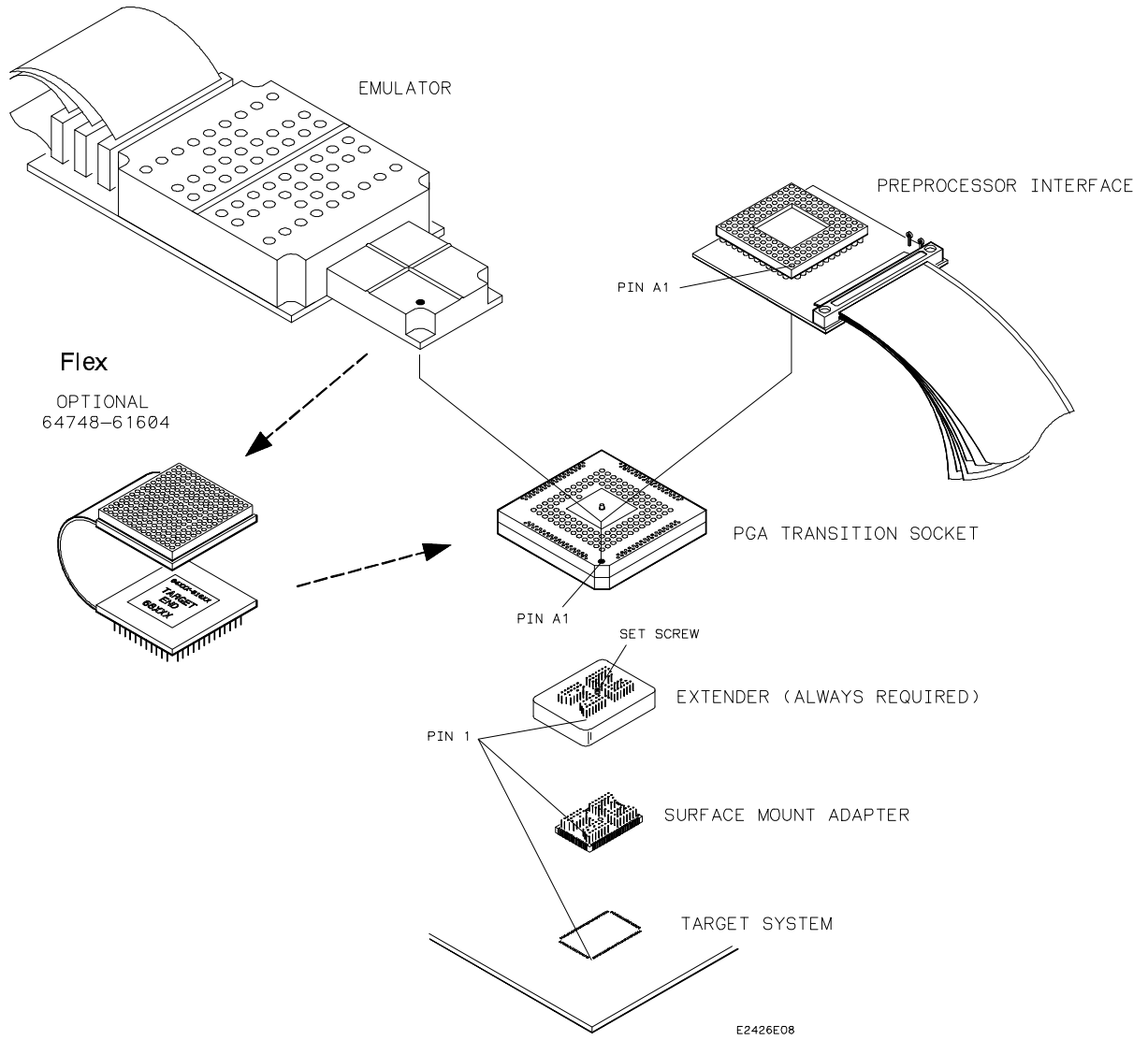
- A Surface Mount Adapter for the MC68EC020 QFP package.
- An Extender for increased clearance (must always be used).
- A PGA Transition Socket.
- A 6-32 by 3/8 set screw.
- A 1/16 allen wrench.
- This Operating Note.

## Tools and Equipment Required

The following tools and equipment are required:

- Soldering tools (very small soldering iron if hand soldered).
- A PGA-equivalent microprocessor (for use with preprocessor interfaces).
- For use with an emulator, a Flex Cable (HP part number 64748-61604) is recommended.

# Installation at a Glance



## Antistatic Precautions

Computer cards contain electrical components that are easily damaged by small amounts of static electricity. To avoid damage to the components, follow these guidelines:

- Disconnect all power to the system when installing or removing the surface mount adapter assembly.
- If possible, work at a static-free work station.
- Handle cards only by the edges; do not touch components or traces.
- Use a grounding wrist strap that is connected to the system's chassis. If you do not have a wrist strap, touch the chassis of the system frequently to equalize any static charge.

## Installation at a Glance

If possible, mount the Surface Mount Adapter with normal production-line SMT processes. The installation procedure includes the following steps:

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**Caution**

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Ensure that the microprocessor type shown on the PGA Transition Socket label matches the microprocessor to be probed.

- 1** Start with a new target board that does not have a microprocessor installed. Place the board on a stable, flat, horizontal surface, with all power off.
- 2** Check the microprocessor pad on the target board, to make sure that there are no traces that may be shorted to the set-screw insert on the Surface Mount Adapter. If there are traces that may be shorted to the set-screw insert, cover them with a thin tape insulator such as scotch tape, to keep the set screw from shorting.
- 3** Solder the Surface Mount Adapter onto the target board in place of the microprocessor, ensuring that pin 1 is properly aligned. There is a colored dot next to pin 1 on the Surface Mount Adapter.

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**Caution**

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Incorrect alignment of pin 1 can result in damage to the target board, preprocessor interface, or emulator.

- 4 Remove the set screw from the Extender. The set screw must be removed before installing the Extender. Very carefully align the pins on the Extender with the pins on the Surface Mount Adapter, and gently position the Extender on the Surface Mount Adapter, again ensuring that pin 1 is properly aligned. The Extender will be firmly seated when the PGA Transition Socket is installed. The Extender must always be used.

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**Caution**

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Installing the PGA Transition Socket directly on the Surface Mount Adapter will apply excessive mechanical force and may cause damage.

- 5 After starting the Extender, screw in the set screw such that two to four threads extend above the pins in the Extender top.

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**Note**

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The set screw serves two functions: it aligns the PGA Transition Socket with the Extender, and if you later decide to remove the Extender, it helps to back the Extender off of the Surface Mount Adapter.

- 6 Noting the alignment of pin 1 on the PGA Transition Socket (colored dot) and the Extender, place the PGA Transition Socket on top of the Extender, using the set screw for centering. Gently press down, seating the PGA Transition Socket pins into the Extender. As the PGA Transition Socket becomes seated, the Extender will also seat onto the Surface Mount Adapter. You can remove the set screw after the PGA Transition Socket is installed, although it is not necessary.

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**Caution**

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Do not use excessive force. If you encounter resistance, check the pin orientation and the alignment of the set screw with the PGA Transition Socket.

- 7 If you are using a preprocessor interface, install the PGA version of the microprocessor on top of the preprocessor interface, again noting the position of pin A1.

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**Caution**

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Ensure that the preprocessor interface probe or emulator probe is aligned with pin A1 when connecting to the PGA Transition Socket.

- 8 Install the preprocessor interface probe or the emulator probe into the PGA socket on the PGA Adapter. For emulators, the optional Flex Cable is recommended, to decrease the stresses associated with the additional weight. See figure for correct alignment of the preprocessor interface or emulator, with respect to pin 1 on the target system.

## Removing the Extender

Removing the Extender at a later time is not recommended, as it may crack the Surface Mount Adapter. If you do need to remove the Extender, use the following procedure:

- 1 Gently remove the PGA Transition Board.
- 2 If the set screw has been removed, screw it back into the Extender, ensuring that the threads do not get cross-threaded.
- 3 As the set screw begins to bottom out on the insert on the Surface Mount Adapter, continue to gently screw the set screw, while slightly pressing on the side of the Extender which first begins to rise. This will create a rocking effect, which will slowly back the Extender off of the Surface Mount Adapter.

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**Caution**

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Never pry the Extender off of the Surface Mount Adapter or try to pull it off with a tool.

- 4 Always inspect the Surface Mount Adapter connections after the Extender is removed. If cracks have occurred, you may need to resolder.

## Replaceable Parts

The table below lists some mechanical parts which may be replaced if they are lost, damaged, or used up.

Part Number	Description
64748-87604 (E2426B option 1CC) 64748-87606 64748-87607	Surface Mount Adapter Assembly Extender Surface Mount Adapter for 68EC020 footprint