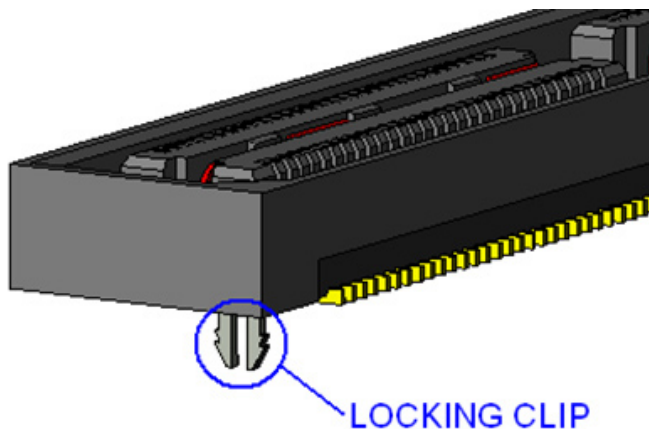


## Processing Tips - Locking Clips

Many Samtec connectors can be ordered with a “Locking Clip” or –LC option. Locking clips are friction fit pins designed to hold the connector in place prior to soldering and assure proper seating during reflow operations.



This feature is especially useful for double sided reflow (simultaneously soldering components to both sides of the PCB) or for operations requiring multiple reflow cycles.

### Placement of Components with Locking Clips

It is important to note that many pick and place machines can not apply the required force to place components with locking clips. If you plan to automatically place components with locking clips, it is important to check your equipment specifications to make sure the machine is capable of applying the needed force.

The force required to insert the locking clips will depend largely on the size of the hole in the board and ranges between 1.50 lbf and 7.0 lbf.

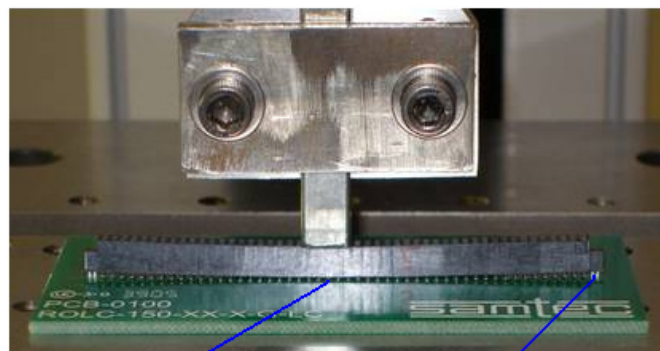
Depending on the manufacturer and model of the automatic placement machine, the maximum generated downward force ranges from 0.5 lbf to 10.0 lbf.

	SFM-120-02-S-D-LC		
	.044 Dia. Hole	.047 Dia. Hole	.050 Dia. Hole
	Force (lbs)	Force (lbs)	Force (lbs)
Minimum	6.5	2.9	1.8
Maximum	6.9	3.3	2.2
Average	6.6	3.1	1.9

Table 1 – Force required to place SFM-120-02-S-D-LC  
[SFM Technical Specification Page](#)

If the force required to seat the locking clips exceeds the limit of the placement equipment, the placement will have to be done manually.

Another potential issue with automatic placement of components with locking clips can occur with longer position parts. The part will sometimes bow in the center due to the long length and will bottom out before the locking clips are fully inserted. The maximum connector length for auto placement will depend on the insulator design. Below is a picture of an attempt to seat a 50-position SFM with locking clips.



INSULATOR PLASTIC TOUCHING BOARD      LOCKING CLIPS NOT FULLY SEATED

### Are Locking Clips Needed?

Before ordering components with locking clips, Samtec recommends considering whether locking clips are actually needed. Locking clips are designed for:

- Connectors being reflowed upside down or which are at risk of falling from the board. The surface tension of the molten solder has been proven to hold parts in place quite well during inverted reflow. As a result, many connectors will not need locking clips.
- Connectors that are sitting in wet solder paste on boards being transported by carts or conveyor belts (exposed to vibration or excessive handling prior to reflow).

If neither of these conditions pertain to your application, Samtec advises that locking clips not be used.

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