

MAX solutions

Mill-Max Compliant Pin Sockets and Interconnects

Mill-Max sockets and interconnects utilize machined, "truly" compliant pins (US patent #4,799,904) for reliable solderless press-fit.

The unique compliant pin design is characterized by a hollow and slotted tail that closes down and conforms to the size of the plated-through-hole thus preventing damage. In addition, the combination of slotted tail and a series of fine serrations make a reliable "gas-tight" connection with the tin plating inside the hole.



Mill-Max compliant tail sockets are available in dual-in-line packages (Series 146) and single and double row strips (Series 346 & 446 respectively). DIP packages are offered in numerous standard configurations from 6 to 40 pins. SIP packages come in single row standard lengths of 20, 32 and 64 pins and double row strips of 2x32 pins.

Single row (Series 800) and double row (Series 802) interconnects are available in standard 64 pin strips, 1x64 and 2x32 respectively. Multi-layer boards can be stacked by mating these pin headers with sockets containing highly reliable six-finger inner contacts that accept .030" diameter round pins as well as .025" square pins. Series 801 single row sockets come in 36 or 50 pin strips while series 803 double row sockets are available in 2x36 or 2x50 pin configurations.

Shorter strip lengths for both pin headers and sockets are available "cut to order".

Both compliant tail sockets and interconnects are available in two tail lengths, one for .060" - .100" thick panels and another for .090" - .130" thick panels. For additional information on compliant pin DIP and SIP sockets, refer to the index of Mill-Max assembly numbers in the back of our design guide. A numerical listing, by series number, will assist you in locating the applicable page number. Further technical detail on the compliant tail pin is also located on the back of this data sheet.

For additional information, visit www.mill-max.com/PR434.

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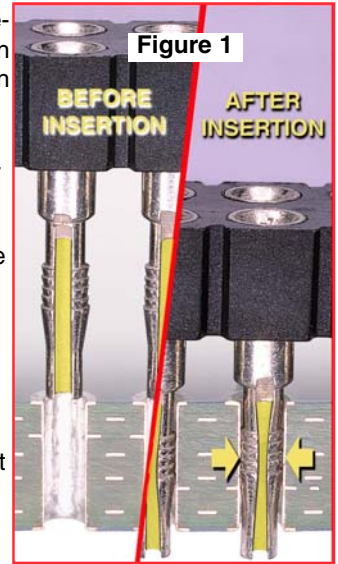


MILL-MAX COMPLIANT PIN SOCKETS AND INTERCONNECTS

Solderless connections can offer substantial benefits to printed circuit board designers especially if rework is ever required. Mill-Max compliant press-fit pins were designed for use in plated-through-holes, for instances in which it is impractical to make a soldered connection to your board.

Mill-Max press-fit compliant tails are unique because they can be pressed into your plated-through-hole and removed without damaging it. The compliant tail also lends itself to a wide range of holes from .043" to .037" (.040" \pm .003") in diameter. As shown in Figure 1, when the compliant tail is inserted into the hole it compresses the slot together to enter the hole, then in turn forms a "gas tight" fit in the hole.

After removing the compliant tail pin, the hole is left undamaged. Typically non-compliant pins require plated-through-hole tolerances of \pm .001", as compared to \pm .003" permitted for compliant connectors. To achieve a good stable contact, at least two rings or "barbs" are required to mate with the plated-through-hole. For instance, a .062" thick board will have four rings in contact, and a .093" board will have six. Mill-Max has verified the "gas tight" fit by exposing compliant tail pins to 4 hours of ammonium sulfide and one hour of nitric acid vapor with no change in electrical resistance. Mill-Max has also conducted tests to measure the insertion/extraction forces of our compliant tail (shown in chart 1).



Compliant tail press-fit pins are solving many packaging problems for design engineers, especially in use with multi-layer backplanes which are typically too thick for soldering. These multi-layer backplanes, or motherboards, are extremely intricate in their construction and can be easily damaged during board assembly.

Another growing application is in surface mount/through-hole technology PCBs where sockets need to be held upside down during reflow soldering. Compliant tail sockets are ideal for this purpose.

Receptacle P/N:	#4612	#4613	#4614	#4615
Mating Pin Dia.	.015"-.025"		.025"-.037"	
Board Thickness	.060"-.100"		.090"-.130"	

Pin P/N's	#5601	#5602	#5604
Pin Diameter	.030"		.018"
Board Thickness	.060"-.100"	.090"-.130"	.060"-.100"

AVERAGE INSERTION/EXTRACTION FORCES

Mill-Max compliant tail receptacles were press-fit into three different diameters of plated-through-holes. Shown below are average forces during the first cycle.

HOLE DIAMETER	.037"	.040"	.043"
PUSH-IN: (in Newtons)	157.5	87.2	33.8
PULL-OUT: (in Newtons)	108.6	72.1	36.9

Chart 1

Quick Selector Guide

Compliant Tail Sockets

Compliant Headers

	SINGLE ROW	DOUBLE ROW	DIP	SINGLE ROW	DOUBLE ROW	SINGLE ROW	DOUBLE ROW
PIN RANGE	.016" - .025" DIA.			.025" - .037" DIA. & .025" SQUARE		N/A	
STANDARD # OF PINS	20,32,64	2 X 32	6 - 40	36,50	2 X 36 2 X 50	1 X 64	2 X 32
SEE SERIES NO.	346	446	146	801	803	800	802