

# MAX solutions

## Mill-Max Spring-loaded Connectors Minimize Noise



When the power is on, you don't want shock or vibration to create spurious signals. Mill-Max Spring-loaded Connectors provide a reliable electrical connection in the most rigorous environments:

- **Maximum Continuity:** Precision-machined gold-plated components and a low-resistance spring maintain a consistent electrical path.
- **Maximum Stability:** Tested to a minimum of 50G shock and 10G vibration with no spikes  $>1\mu\text{s}$  and  $>1.15\text{V}$  with 0.5A applied.
- **Maximum Endurance:** 1,000,000 cycles and still electrically silent.
- **Maximum Range:** Six families of single and double row strip assemblies for .100" mounting grid - low and high profile surface mount styles available on carrier tape & a thru-hole style for manual placement. Plus – a choice of 45 discrete spring-loaded contacts for use in customer specific assemblies.

(1/09-506,525,534,537,540,546,554,560,561,562,568,571)

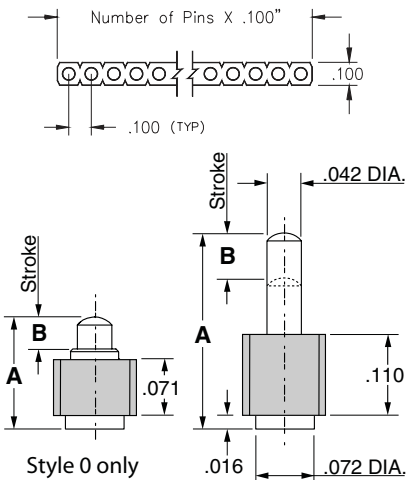
Mill-Max Mfg. Corp. • 190 Pine Hollow Road, Oyster Bay, NY 11771-0300  
516-922-6000 • Fax: 516-922-9253 • [www.mill-max.com](http://www.mill-max.com)



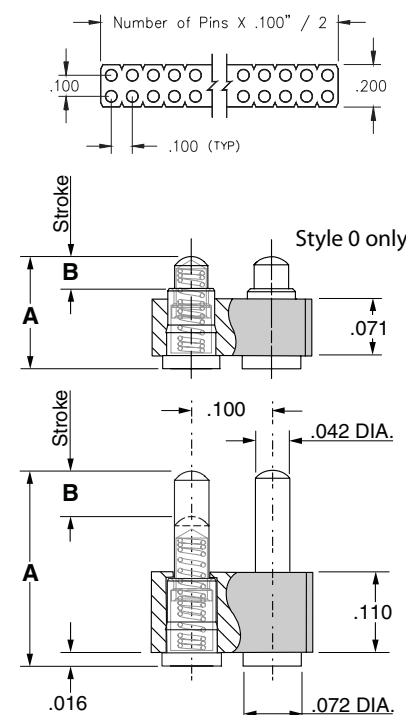
- Modular contacts for use on .100" grid, available in five heights from .137" to .236", supplied in single and double row contact strips.
- Precision machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a long stroke relative to the low profile of the assembly.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- Both 811 & 813 series, contact styles 1 thru 4, are available on 32mm wide carrier tape for pick and place assembly per EIA-481. See page 119 for strip lengths available and ordering information.



**SINGLE ROW Series 811**



**DOUBLE ROW Series 813**



**Ordering Information**

**Single Row Series 811**

811-22-0XX-30-00X-101

Specify # of contacts

Specify contact style 0-4

01-64

**Double Row Series 813**

813-22-0XX-30-00X-101

Specify # of contacts

Specify contact style 0-4

04-72

CONTACT STYLE	INITIAL HEIGHT A	Stroke B
0	.137	.039
1	.177	.045
2	.197	.055
3	.217	.055
4	.236	.055

**Technical Specifications**

**Materials:**

Contact piston & Base: Machined copper alloy plated 20µ" gold over 100µ" nickel  
 Spring: Beryllium copper plated 10µ" gold  
 Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**

Spring force @ initial height (A): 25 grams  
 Spring force @ mid stroke (B/2): 60 grams  
 Spring force @ full stroke (B): 95 grams  
 Durability: 1,000,000 cycles min.  
 Coplanarity: .005" (Single Row up to 10 pins; Double Row up to 20 pins) For higher pin counts contact Tech Support.

**Electrical:**

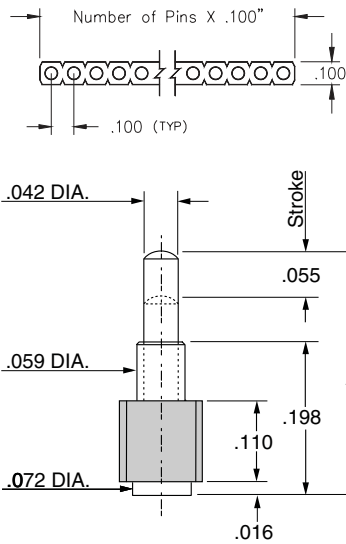
Voltage rating: 100Vrms/150Vdc  
 Current rating: 2A (continuous), 3A (peak) per contact  
 Contact resistance: 20mΩ max.  
 Insulation resistance: 10,000MΩ min.  
 Dielectric strength: 700Vrms min.  
 Capacitance: 1pF max.



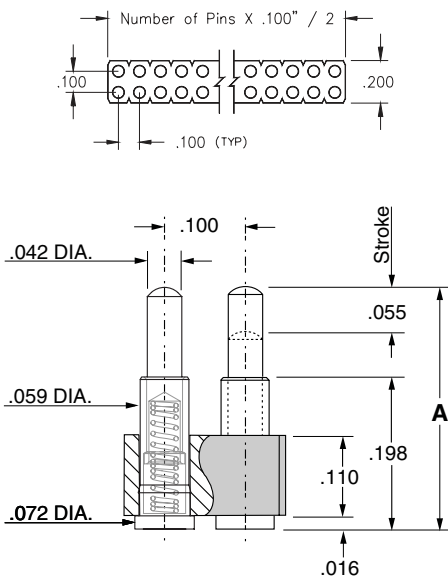
- Modular contacts for use on .100" grid, available in ten heights from .255" to .430", supplied in single and double row contact strips.
- Precision machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a long stroke relative to the low profile of the assembly.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- Both 812 & 814 series are available on 32mm wide carrier tape for automated pick and place assembly per EIA-481. See page 119 for strip lengths available and ordering information.



**SINGLE ROW Series 812**



**DOUBLE ROW Series 814**



**Ordering Information**

**Single Row Series 812**

812-22-0XX-30-00X-101

Specify # of contacts → 02-64  
 Specify contact style 0-9

**Double Row Series 814**

814-22-0XX-30-00X-101

Specify # of contacts → 04-72  
 Specify contact style 0-9

CONTACT STYLE	INITIAL HEIGHT A	CONTACT STYLE	INITIAL HEIGHT A
0	.255	5	.350
1	.275	6	.370
2	.295	7	.390
3	.315	8	.410
4	.335	9	.430

**Technical Specifications**

**Materials:**

Contact piston & Base: Machined copper alloy plated 20µ" gold over 100µ" nickel  
 Spring: Beryllium copper plated 10µ" gold  
 Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**

Spring force @ initial height (A): 25 grams  
 Spring force @ mid stroke (.0275): 60 grams  
 Spring force @ full stroke (.055): 95 grams  
 Durability: 1,000,000 cycles min.

**Electrical:**

Voltage rating: 100Vrms/150Vdc  
 Current rating: 2A (continuous), 3A (peak) per contact  
 Contact resistance: 20mΩ max.  
 Insulation resistance: 10,000MΩ min.  
 Dielectric strength: 700Vrms min.  
 Capacitance: 1pF max.



**Ordering Information for Series 811/812/813/814 in Carrier Tape**

**Single Row Series 811/812**

811-22-00X-30-00X-191  
Specify # of contacts → 2-8 (32mm wide tape, 400 parts per 13" reel) → **Specify contact style 1-4**

812-22-00X-30-00X-191  
Specify # of contacts → 2-8 (32mm wide tape, 400 parts per 13" reel) → **Specify contact style 0-2**

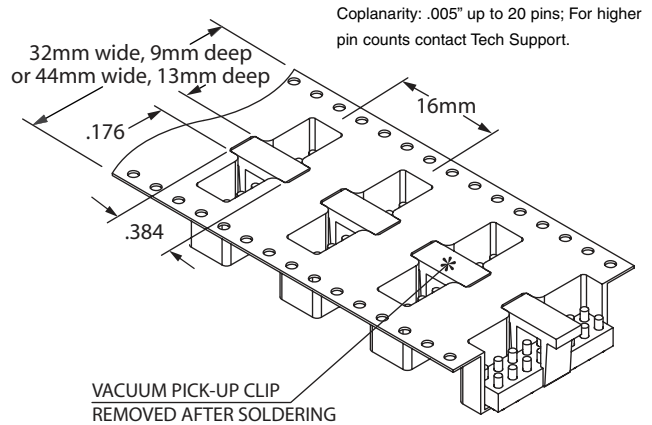
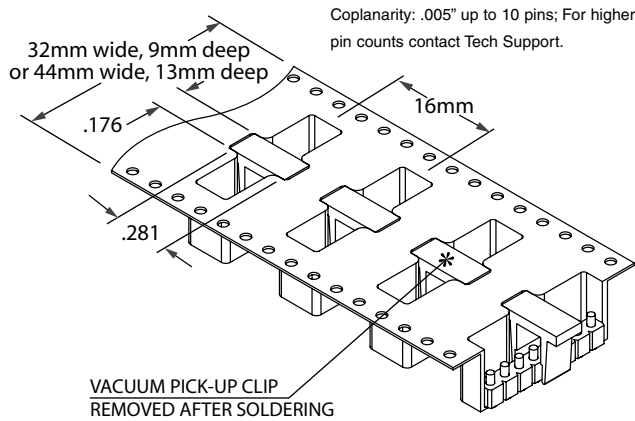
812-22-0XX-30-00X-191  
Specify # of contacts → 2-12 (44mm wide tape, 200 parts per 13" reel) → **Specify contact style 3-9**

**Double Row Series 813/814**

813-22-0XX-30-00X-191  
Specify # of contacts → 04-16 (32mm wide tape, 400 parts per 13" reel) → **Specify contact style 1-4**

814-22-0XX-30-00X-191  
Specify # of contacts → 04-16 (32mm wide tape, 400 parts per 13" reel) → **Specify contact style 0-2**

814-22-0XX-30-00X-191  
Specify # of contacts → 04-24 (44mm wide tape, 200 parts per 13" reel) → **Specify contact style 3-9**



**Some Typical Applications**

**Cable Termination**



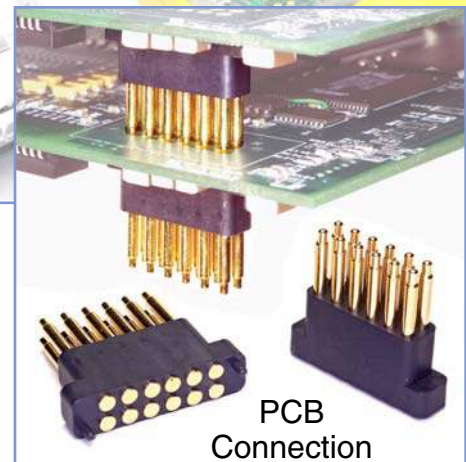
**Internal Battery Connection**



**Charging Base for Portable Instruments**



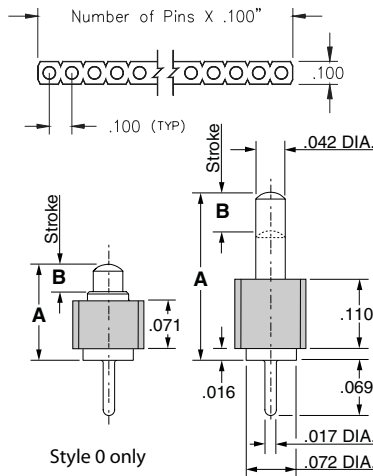
**PCB Connection**



- Modular contacts for use on .100" grid, available in five heights from .137" to .236", supplied in single and double row contact strips.
- Precision machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a long stroke relative to the low profile of the assembly.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- 821 & 823 series contact strips are designed for manual placement into  $\varnothing.022 \pm .003$ " plated-thru-holes in the circuit board prior to hand, wave or reflow soldering.



**SINGLE ROW Series 821**



**Ordering Information**

**Single Row Series 821**

821-22-0XX-10-00X-101

**Specify # of contacts**

Specify contact style 0-4

02-64

**Double Row Series 823**

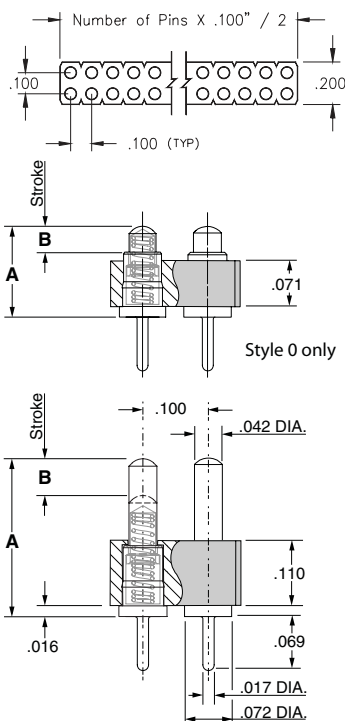
823-22-0XX-10-00X-101

**Specify # of contacts**

Specify contact style 0-4

04-72

**DOUBLE ROW Series 823**



CONTACT STYLE	INITIAL HEIGHT A	Stroke B
0	.137	.039
1	.177	.045
2	.197	.055
3	.217	.055
4	.236	.055

**Technical Specifications**

**Materials:**

Contact piston & Base: Machined copper alloy plated 20 $\mu$ " gold over 100 $\mu$ " nickel  
 Spring: Beryllium copper plated 10 $\mu$ " gold  
 Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**

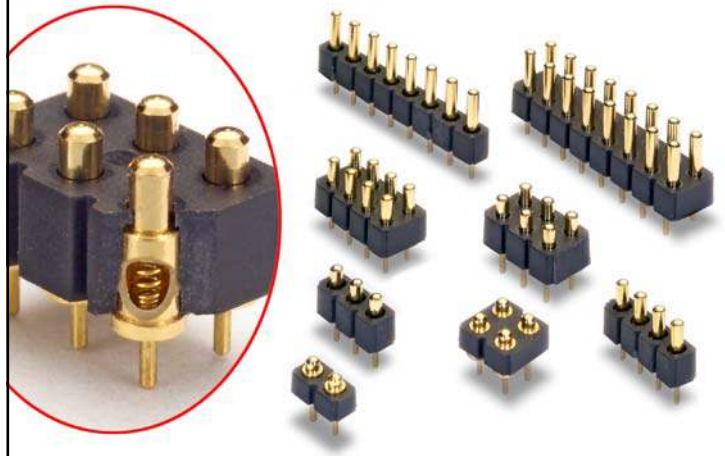
Spring force @ initial height (A): 25 grams  
 Spring force @ mid stroke (B/2): 60 grams  
 Spring force @ full stroke (B): 95 grams  
 Durability: 1,000,000 cycles min.

**Electrical:**

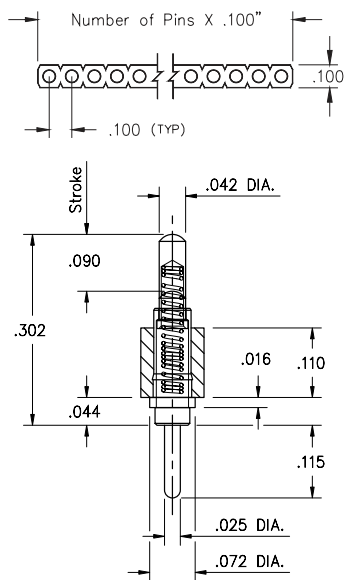
Voltage rating: 100Vrms/150Vdc  
 Current rating: 2A (continuous), 3A (peak) per contact  
 Contact resistance: 20m $\Omega$  max.  
 Insulation resistance: 10,000M $\Omega$  min.  
 Dielectric strength: 700Vrms min.  
 Capacitance: 1pF max.



- Modular contacts for use on .100" grid, available in a height of .302", supplied in single and double row contact strips.
- Precision machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a .045 mid stroke & .090 max stroke.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- 825 & 827 series contact strips are designed for manual placement into  $\varnothing .030 \pm .003$ " plated-thru-holes in the circuit board prior to hand, wave or reflow soldering.



**SINGLE ROW Series 825**



**Ordering Information**

**Fig. 1**

**Single Row Series 825**

825-22-0XX-10-001101

**Specify # of contacts** → 02-64

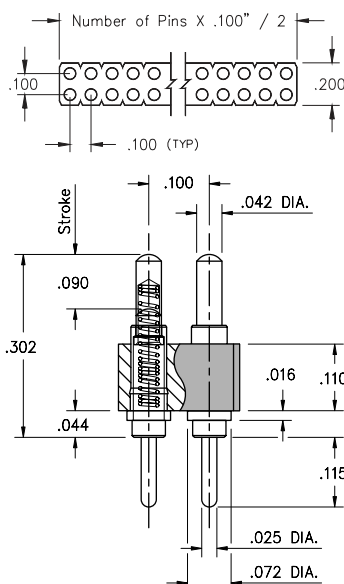
**Fig. 2**

**Double Row Series 827**

827-22-0XX-10-001101

**Specify # of contacts** → 04-72

**DOUBLE ROW Series 827**



**Technical Specifications**

**Materials:**

Contact piston & Base: Machined copper alloy plated 20 $\mu$ " gold over 100 $\mu$ " nickel  
 Spring: Beryllium copper plated 10 $\mu$ " gold  
 Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**

Spring force @ initial height (A): 25 grams  
 Spring force @ mid stroke (B/2): 60 grams  
 Spring force @ full stroke (B): 95 grams  
 Durability: 1,000,000 cycles min.

**Electrical:**

Voltage rating: 100Vrms/150Vdc  
 Current rating: 2A (continuous), 3A (peak) per contact  
 Contact resistance: 20m $\Omega$  max.  
 Insulation resistance: 10,000M $\Omega$  min.  
 Dielectric strength: 700Vrms min.  
 Capacitance: 1pF max.

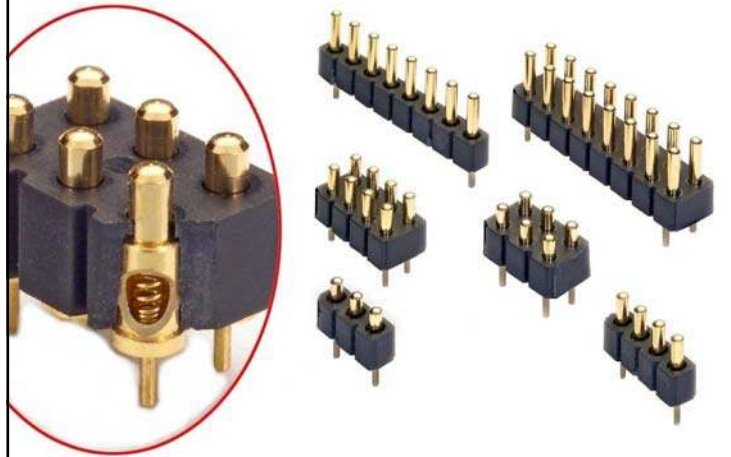




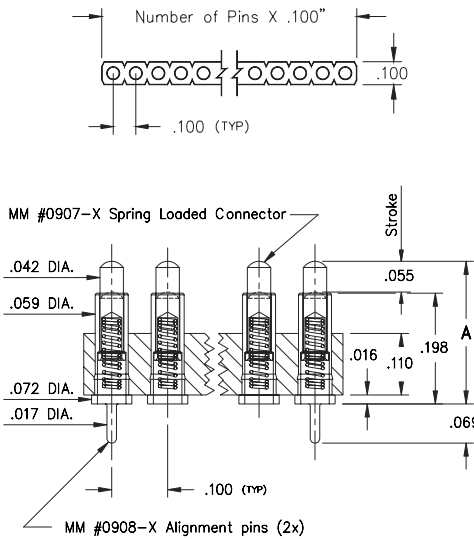
**SPRING LOADED CONNECTORS**  
**Surface Mount with Alignment pins**  
**Single and Double Row Strips**

Series 812...01X101  
 814...01X101

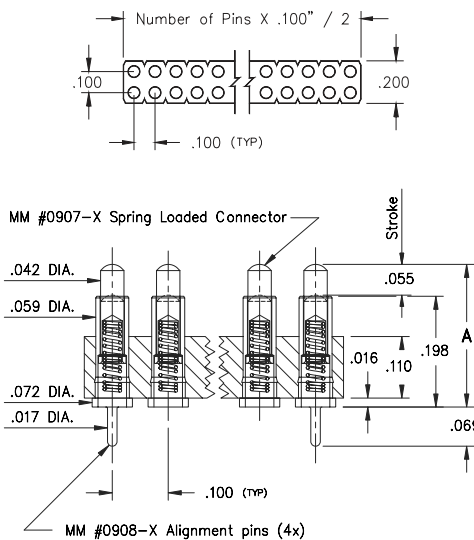
- Modular contacts for use on .100" grid, available in ten heights from .255" to .430", supplied in single and double row contact strips.
- Precision machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a .0275 mid stroke & .055 max stroke.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- 812 & 814 series contact strips are designed for manual placement into Ø .023±.003" plated-throughs in the circuit board prior to intrusive reflow soldering.



**Single Row Series 812...01X101**



**Double Row Series 814...01X101**



**Ordering Information**

**Single Row Series 812...01X101**

812-22-0XX-30-01X-101

Specify # of contacts → 03-64

Specify contact style 0-9

**Double Row Series 814...01X101**

814-22-XXX-30-01X-101

Specify # of contacts → 006-100

Specify contact style 0-9

CONTACT STYLE	INITIAL HEIGHT A	CONTACT STYLE	INITIAL HEIGHT A
0	.255	5	.350
1	.275	6	.370
2	.295	7	.390
3	.315	8	.410
4	.335	9	.430

**Technical Specifications**

**Materials:**

Contact piston & Base: Machined copper alloy plated 20µ" gold over 100µ" nickel  
 Spring: Beryllium copper plated 10µ" gold  
 Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**

Spring force @ initial height (A): 25 grams  
 Spring force @ mid stroke (B/2): 60 grams  
 Spring force @ full stroke (B): 95 grams  
 Durability: 1,000,000 cycles min.

**Electrical:**

Voltage rating: 100Vrms/150Vdc  
 Current rating: 2A (continuous), 3A (peak) per contact  
 Contact resistance: 20mΩ max.  
 Insulation resistance: 10,000MΩ min.  
 Dielectric strength: 700Vrms min.  
 Capacitance: 1pF max.





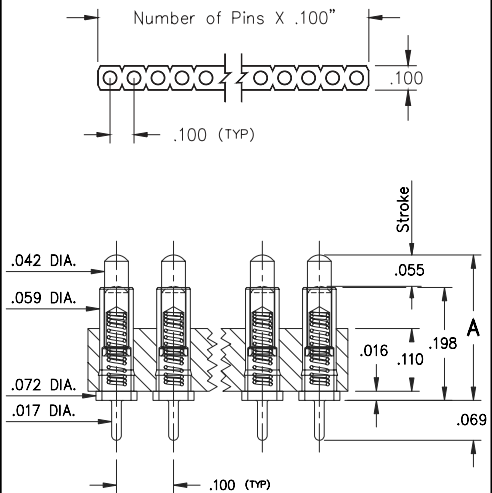
**SPRING LOADED CONNECTORS**  
**Thru Hole Mount**  
**Single and Double Row Strips**

**Series 816...00X101**  
**818...00X101**

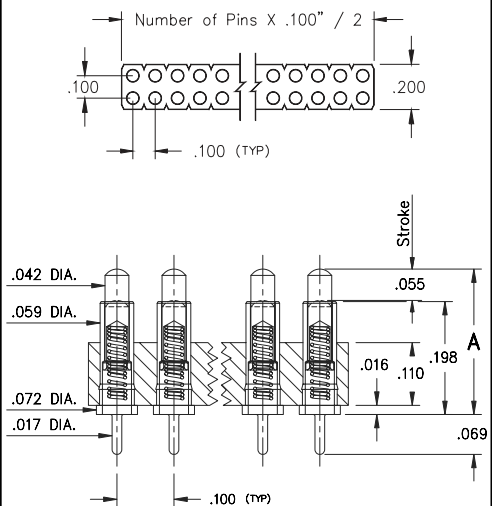
- Modular contacts for use on .100" grid, available in ten heights from .255" to .430", supplied in single and double row contact strips.
- Precision machined piston / base and gold plated components assure a 1,000,000 min. cycle life.
- Pistons have a .0275 mid stroke & .055 max stroke.
- Low resistance, high current contacts are rated at 2 amps continuous, 3 amps peak.
- High temperature thermoplastic insulators are suitable for surface mount processes.
- 816 & 818 series contact strips are designed for manual placement into Ø .023±.003" plated-throughs in the circuit board prior to intrusive reflow soldering.



**Single Row Series 816...00X101**



**Double Row Series 818...00X101**



**Ordering Information**

**Single Row Series 816...00X101**

816-22-0XX-10-00X-101

Specify # of contacts → 02-64  
 Specify contact style 0-9

**Double Row Series 818...00X101**

818-22-0XX-10-00X-101

Specify # of contacts → 04-72  
 Specify contact style 0-9

CONTACT STYLE	INITIAL HEIGHT A	CONTACT STYLE	INITIAL HEIGHT A
0	.255	5	.350
1	.275	6	.370
2	.295	7	.390
3	.315	8	.410
4	.335	9	.430

**Technical Specifications**

**Materials:**

Contact piston & Base: Machined copper alloy plated 20µ" gold over 100µ" nickel  
 Spring: Beryllium copper plated 10µ" gold  
 Insulator: High temp. thermoplastic rated UL94 V-0

**Mechanical:**

Spring force @ initial height (A): 25 grams  
 Spring force @ mid stroke (B/2): 60 grams  
 Spring force @ full stroke (B): 95 grams  
 Durability: 1,000,000 cycles min.

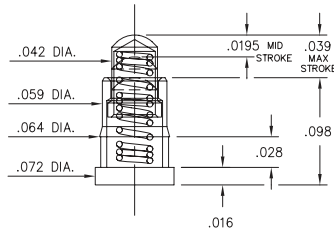
**Electrical:**

Voltage rating: 100Vrms/150Vdc  
 Current rating: 2A (continuous), 3A (peak) per contact  
 Contact resistance: 20mΩ max.  
 Insulation resistance: 10,000MΩ min.  
 Dielectric strength: 700Vrms min.  
 Capacitance: 1pF max.



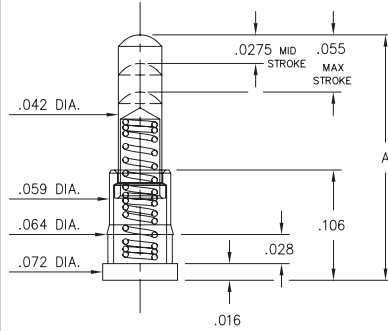


**0900-0**



**0900-0-00-00-00-00-11-0**  
Short stroke, Surface mount  
Lowest profile

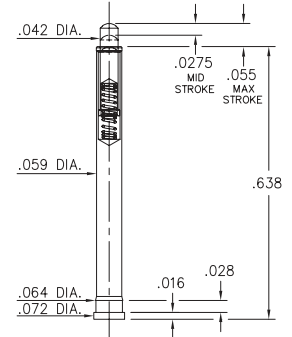
**0900-1⇒4**



**0900-X-00-00-00-00-11-0**  
Standard stroke, Surface mount  
Low profile

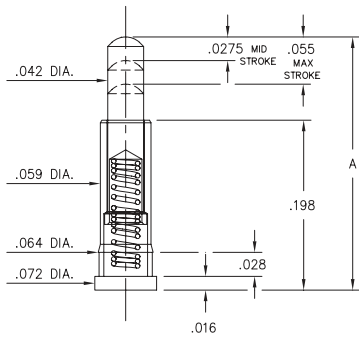
Basic Part Number	Length A
0900-1	.177
0900-2	.197
0900-3	.217
0900-4	.236

**0905**



**0905-0-00-00-00-00-11-0**  
Standard stroke, Surface mount  
Highest Profile

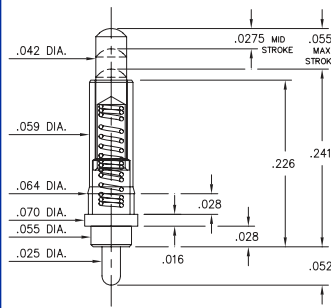
**0907-X**



**0907-X-15-20-75-14-11-0**  
Standard stroke, Surface mount  
High profile

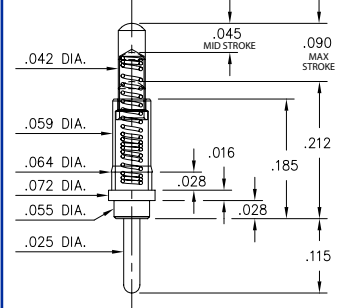
Basic Part Number	Length A
0907-0	.255
0907-1	.275
0907-2	.295
0907-3	.315
0907-4	.335
0907-5	.350
0907-6	.370
0907-7	.390
0907-8	.410
0907-9	.430

**0901**



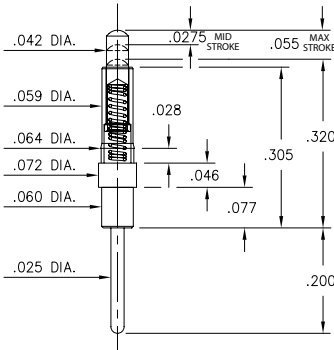
**0901-0-00-00-00-00-11-0**  
Standard stroke  
Solder mount in .027 min. mounting hole

**0914**



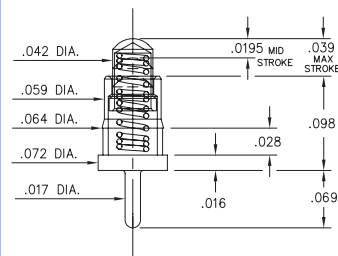
**0914-0-15-20-77-14-11-0**  
Long stroke.  
Solder mount in .027 min. mounting hole

**0922**



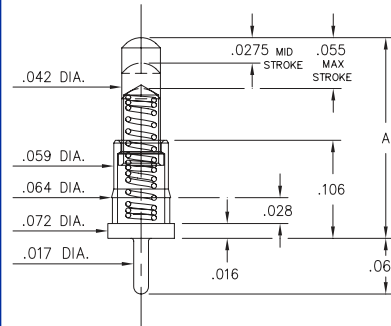
**0922-0-15-20-75-14-11-0**  
Standard stroke  
Solder mount in .027 min. mounting hole

**0906-0**



**0906-0-15-20-76-14-11-0**  
Short stroke  
Solder mount in .018 min. mounting hole

**0906-1⇒4**



**0906-X-15-20-75-14-11-0**  
Standard stroke  
Solder mount in .018 min. mounting hole

Basic Part Number	Length A
0906-1	.177
0906-2	.197
0906-3	.217
0906-4	.236

**SPECIFICATIONS**

**SLEEVE & PLUNGER MATERIAL:** Copper Alloy  
**SPRING MATERIAL:** Beryllium Copper  
**CURRENT RATING:** 2A continuous, 3A peak  
**CONTACT RESISTANCE:** 20mΩ max.  
**DURABILITY:** 1,000,000 cycles min.  
**DIMENSION IN INCHES**  
**TOLERANCES ON:** LENGTHS: ±.005  
 DIAMETERS: ±.002  
 ANGLES: ± 2°

**ORDER CODE: XXXX - X - 15 - 20 - 7X - 14 - 11 - 0**

**BASIC PART #** →  
**SLEEVE & PLUNGER FINISH:**  
 20 20μ" GOLD OVER NICKEL

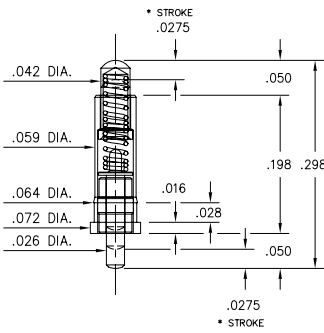
**SPRING FINISH:**  
 14 10μ" GOLD OVER NICKEL

**SPRING**  
 75 Standard Stroke (.055):  
 76 Short Stroke (.039):  
 77 Long Stroke (.090):

{ 25 grams@min stroke  
 { 60 grams@mid stroke  
 { 95 grams@max stroke

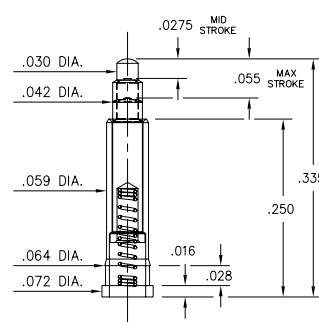


**0980**



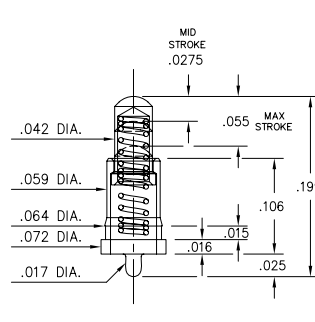
**0980-0-15-20-75-14-11-0**  
Double action, \*.055 Combined Stroke  
Mount between parallel circuit boards

**0925**



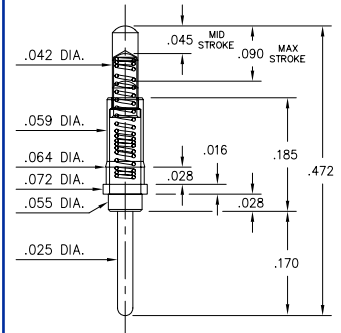
**0925-0-15-20-73-14-26-0**  
Standard Stroke  
Surface Mount

**0930**



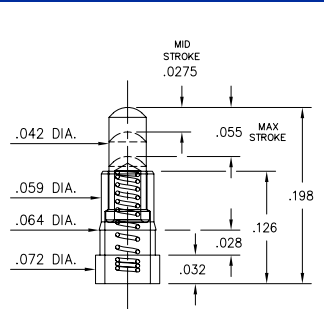
**0930-0-15-20-75-14-11-0**  
Standard Stroke  
Solder Mount in .018 min. mounting hole

**0932**



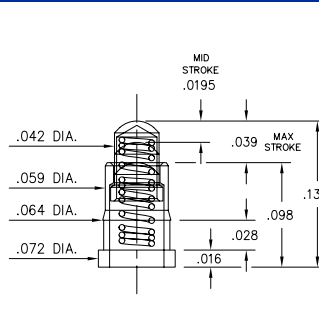
**0932-0-15-20-77-14-11-0**  
Long Stroke  
Solder Mount in .027 min. mounting hole

**0934**



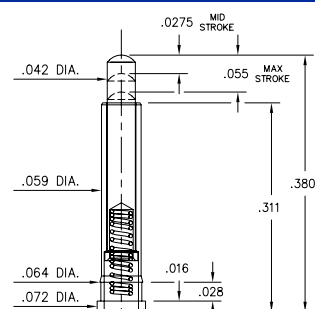
**0934-0-15-20-74-14-26-0**  
Standard Stroke  
Surface Mount

**0923**



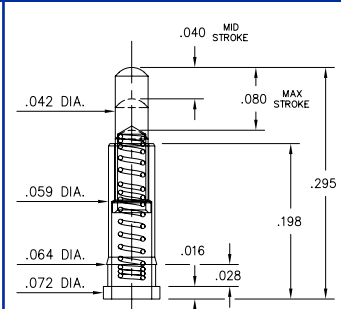
**0923-0-15-20-78-14-11-0**  
Short Stroke  
Surface Mount

**0927**



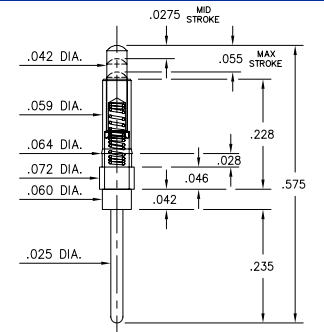
**0927-0-15-20-75-14-11-0**  
Standard Stroke  
Surface Mount

**0928**



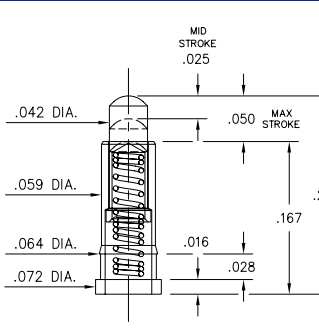
**0928-0-15-20-77-14-11-0**  
Long Stroke  
Surface Mount

**0929**



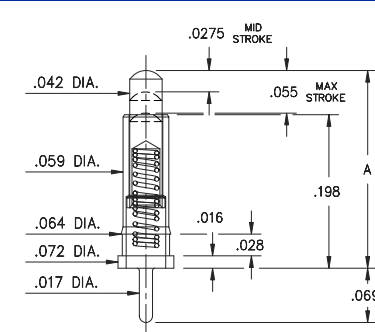
**0929-0-15-20-75-14-11-0**  
Standard Stroke  
Solder Mount in .027 min. mounting Hole

**0936**



**0936-0-15-20-75-14-11-0**  
Standard Stroke  
Surface Mount

**0908-X**



**0908-X-15-20-75-14-11-0**  
Standard Stroke  
Solder mount in .018 min. mounting hole

Basic Part Number	Length A
0908-0	.255
0908-1	.275
0908-2	.295
0908-3	.315
0908-4	.335
0908-5	.350
0908-6	.370
0908-7	.390
0908-8	.410
0908-9	.430

**SPECIFICATIONS**

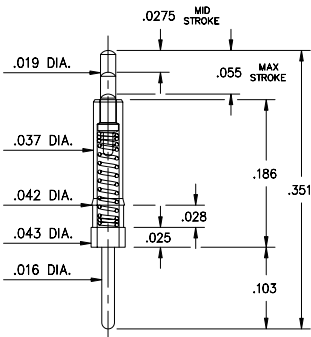
**SLEEVE & PLUNGER MATERIAL:** Copper Alloy  
**SPRING MATERIAL:** Beryllium Copper  
**CURRENT RATING:** 2A continuous, 3A peak  
**CONTACT RESISTANCE:** 20mΩ max.  
**DURABILITY:** 1,000,000 cycles min.  
**DIMENSION IN INCHES**  
**TOLERANCES ON:** LENGTHS: ±.005  
 DIAMETERS: ±.002  
 ANGLES: ± 2°

**ORDER CODE: XXXX - X - 15 - 20 - 7X - 14 - XX - 0**

**BASIC PART #** →  
**SLEEVE & PLUNGER FINISH:** 20 20μ" GOLD OVER NICKEL  
**SPRING FINISH:** 14 10μ" GOLD OVER NICKEL  
**SPRING**  
 71 Standard Stroke (.055): xx grams@min stroke  
 75 Standard Stroke (.055): 25 grams@min stroke  
 73/74 Standard Stroke (.055): 60 grams@min stroke  
 77 Long Stroke (.090): 95 grams@min stroke  
 78 Short Stroke (.039): xx grams@min stroke



# 0950



**0950-0-15-20-71-14-11-0**

Standard Stroke

Solder Mount in .018 min. mounting hole


**SPECIFICATIONS**

**SLEEVE & PLUNGER MATERIAL:** Copper Alloy  
**SPRING MATERIAL:** Beryllium Copper  
**CURRENT RATING:** 2A continuous, 3A peak  
**CONTACT RESISTANCE:** 20mΩ max.  
**DURABILITY:** 1,000,000 cycles min.  
**DIMENSION IN INCHES**  
**TOLERANCES ON:** LENGTHS: ±.005  
 DIAMETERS: ±.002  
 ANGLES: ± 2°

**ORDER CODE:** XXXX - X - 15 - 20 - 7X - 14 - XX - 0

**BASIC PART #** →  
**SLEEVE & PLUNGER FINISH:** →  
**SPRING FINISH:** →  
 20 20µ" GOLD OVER NICKEL  
 14 10µ" GOLD OVER NICKEL

**SPRING**

71 Standard Stroke (.055):	}	xx grams@min stroke
75 Standard Stroke (.055):		25 grams@min stroke
73/74 Standard Stroke (.055):		60 grams@min stroke
77 Long Stroke (.090):		95 grams@min stroke
78 Short Stroke (.039):		xx grams@min stroke

