

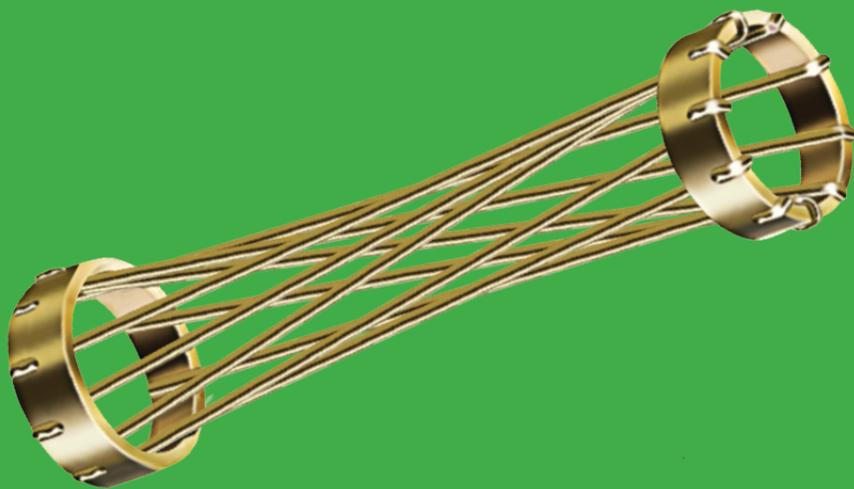
CONTACTS HYPERBOLOID SERIES



HYPERBOLOID CONNECTORS

FOR SUPERIOR PERFORMANCE IN ALL APPLICATIONS

IEH CORPORATION ISO 9001:2008



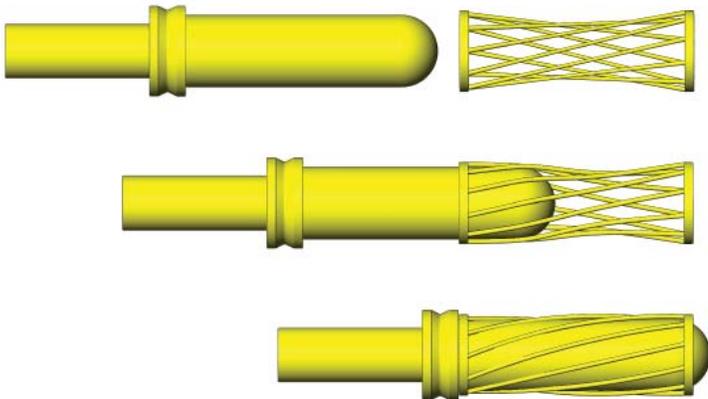
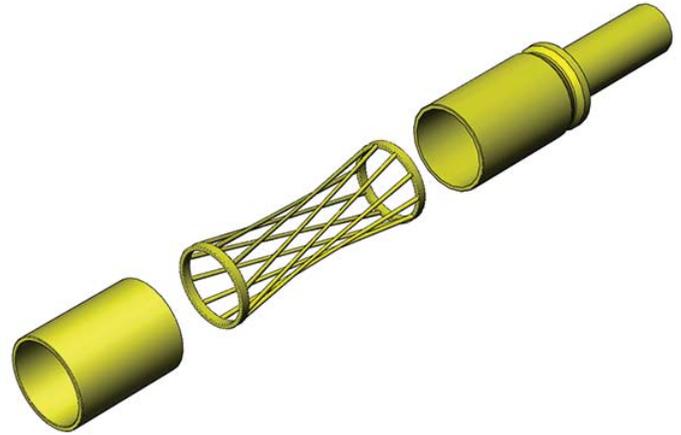
www.iehcorp.com

CONTENTS
HYPERBOLOID CONTACTS**Page**

2	Introduction
3	Specifications-1
4	Specifications-2
5	1200 Series Socket - Accepts Ø0.30mm (0.012) Mating Pin
6	1200 Series Pin - Ø0.30mm (0.012)
	1600 Series Socket - Accepts Ø0.40mm (0.016) Mating Pin
7	1800 Series Socket - Accepts Ø0.45mm (0.018) Mating Pin
8	1800 Series Pin - Ø0.45mm (0.018)
9	2300 Series Socket - Accepts Ø0.60mm (0.023) Mating Pin
10	2300 Series Pin - Ø0.60mm (0.023)
11	3000 Series Socket - Accepts Ø0.030 (0.76mm) Mating Pin
12	3000 Series Pin - Ø0.030 (0.76mm)
13	4000 Series Socket - Accepts Ø0.040 (1mm) Mating Pin
14	4000 Series Pin - Ø0.040 (1mm)
15	5900 Series Socket - Accepts Ø1.50mm (0.059) Mating Pin
16	5900 Series Pin - Ø1.50mm (0.059)
17	6200 Series Socket - Accepts Ø0.062 (1.57mm) Mating Pin,
18	6200 Series Pin - Ø0.062 (1.57mm)
19	7800 Series Socket - Accepts Ø2.00mm (0.078) Mating Pin
	9300 Series Socket - Accepts Ø0.093 (2.36mm) Mating Pin
20	9800 Series Socket - Accepts Ø2.50mm (0.098) Mating Pin
21	9800 Series Pin - Ø2.50mm (0.098)
	1180 Series Socket - Accepts Ø3.00mm (0.118) Mating Pin
22	1380 Series Socket - Accepts Ø3.50mm (0.138) Mating Pin
23	1380 Series Socket - Accepts Ø3.50mm (0.138) Mating Pin
24	1380 Series Pin - Ø3.50mm (0.138)
	1575 Series Socket - Accepts Ø4.00mm (0.157) Mating Pin
25	1690 Series Socket - Accepts Ø4.30mm (0.169) Mating Pin
26	1690 Series Pin - Ø4.30mm (0.169)
27	2541 Series Socket - Accepts Ø6.12mm (0.241) Mating Pin
28	2541 Series Pin - Ø6.12mm (0.241)
29	3570 Series Socket - Accepts Ø0.357 (9.07mm) Mating Pin

The HYPERBOLOID contact is an advanced design that satisfies performance requirements previously considered impossible. Radically different in concept, it is used in connectors having the highest standards of performance. The distinguishing feature of the HYPERBOLOID socket is the hyper-boloid-shaped sleeve formed by straight wires strung at an angle to the longitudinal axis. Viewed from the side, you see a curve defined by a series of apparent short straight line segments which are tangent lines to points along a hyperbolic curve. This geometry provides for a design which has a decreasing circumscribed circle when viewed from the entry. It begins larger than the pin acceptance diameter and is less than this same diameter at the center. When the pin is inserted into this sleeve, the wires stretch, well within elastic limits, to accommodate it. In so doing, the wires wrap themselves around the pin providing a number of continuous line contact paths. The illustration below will assist in visualization.

The unique geometry, precision processing, and careful attention to quality result in a highly desirable contact design which provides:



The actual physical construction of the contact involves several components. The wires are strung on an internal wire carrier (inner sleeve) which is subsequently capped or enclosed by a front outer ring (front sleeve) and rear ring which includes the termination configuration (terminal). All components to the assembly are completely finished with the specified electroplating prior to assembly. The wires are continuous process plated on reel before use. In this manner, interface finish requirements can be controlled very closely without the common problems of gradient, shadow, or other finish imperfections often appearing in alternative designs. Very often, this processing feature permits the specifier to reduce precious metal content with resultant savings. Joints are calculated interference fits, insuring gas tight interfaces between all elements of the HYPERBOLOID construction. An exploded view is provided next.

- **VLIF (Very Low Insertion Force):** Common sizes #22 and less average under one ounce per contact.
- **Extraordinary Resistance to Shock & Vibration:** Tests exceeding 300 g's without discontinuity.
- **Duty Cycle Exceeding 100,000 Mate/Demate:** The burnishing action of the wires on the pin surface is non-destructive. Unlike the "plow" and scrape action of common designs, HYPERBOLOID's gentle mating action enhances life.
- **Low, Low Contact Resistance:** The multiplicity of line contact, as opposed to point contact in other designs, provides an excellent interface exhibiting low contact resistance (often less than 1/2 of MIL spec. allowances). This characteristic also provides for a cooler running contact under load.
- **Improved Current Carrying Capacity:** The low contact resistance gives a lower °C rise from ambient under load. This feature often allows the user to operate the same size contact under higher load.
- **Highest Reliability:** In use for over 40 years under the most demanding conditions HYPERBOLOID has proven itself to be the leading design for integrity and reliability. On space platforms, ships and boats at sea, land vehicles, fighter and transport aircraft, missiles, torpedoes, medical and transplant electronics, industrial and environmental controls, rail, construction, ATE and test equipment, PGA sockets, test interface stations, and other applications, HYPERBOLOID has lived up to its promise of the highest reliability connector available.

SPECIFICATIONS

MATERIALS:

Pin Contacts:	PhBr per ASTM B139, BeCu per ASTM B196 or B197, or Cu alloy
Socket Contacts:	
Contact Wires:	BeCu per ASTM B196, or B197
Termination:	PhBr per ASTM B139 or Cu alloy
Support Elements:	Cu alloy

FINISHES:

Pin Contacts:	Gold per ASTM B488 Type II, Class 0.25, 0.50, or 1.27, Code C over Nickel, 0.000050 min., per SAE AMS QQ-N-290 over Copper per SAE AMS 2418 or ASTM B734
Socket Contacts:	
Contact Wires:	Gold per ASTM B488 Type II, Class 1.27, Code C over Nickel, 0.000050 min., per SAE AMS QQ-N-290 over Copper per SAE AMS 2418 or ASTM 734
Termination:	Gold per ASTM B488 Type II, Class 0.25, or 0.50, Code C over Nickel, 0.000050 min., per SAE AMS QQ-N-290 over Copper per SAE AMS 2418 or ASTM B734
Support Elements:	Nickel, 0.000050 min., over Copper

PERFORMANCE:

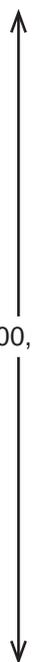
Contact Resistance:	See Chart - EIA-364-06 & MIL-DTL-55302 (par. 4.5.5)
Temperature:	-65°C to +125°C (-86°F to +257°F)
Mating Force:	See Chart - MIL-DTL-55302 (par. 4.5.4)
De-mating Force:	See Chart - MIL-DTL-55302 (par. 4.5.4)
Solderability:	(Where Applicable) IPC/EIA J-STD-002, Category 3
Humidity:	IAW EIA-364-31, Method IV, except 7A & 7B (not required)
Vibration:	IAW EIA-364-28 & MIL-DTL-55302 (par. 4.5.10)
Shock:	IAW EIA-364-27 & MIL-DTL-55302 (par. 4.5.14)
Salt Spray:	IAW EIA-364-26 & MIL-DTL-55302 (par. 4.5.11)
Temperature Cycling:	IAW EIA-364-32 & MIL-DTL-55302 (par. 4.5.13)

DIMENSIONS: Catalog product dimensions are nominal. Unless otherwise noted, dimensions are in inches.

All information contained herein is believed to be reliable as of the date of publication, but is subject to change without notice. Current product drawings and specifications are available upon request from IEH.

IEH warrants its products to be free of defects affecting normal use. If any shipment is found to be defective we will accept return for repair or replacement at our option within one year of shipment. IEH is not responsible for incidental or consequential damages arising out of the use of our products.

SPECIFICATIONS

CONTACT SIZES*				CURRENT RATING ⁴	CONTACT RESISTANCE	INSERTION FORCES (AVG.)	LIFE CYCLES
SERIES	INCH	mm	GAUGE (MIL-C-39029)	AMPS	MILLIOHMS	OUNCES	
1200	(0.012)	0.30	-	3	<10	0.4	 >100,000
1600	(0.016)	0.40	-	3.5	<8	0.7	
1800	(0.018)	0.45	-	4	<8	0.75	
2300	(0.023)	0.60	-	6.5	<5	0.8	
3000	0.030	(0.76)	22	8	<5	1.0	
4000	0.040	1.00	20	13	<2.5	1.0	
5900	(0.059)	1.50	-	34	<2.5	2.5	
6200	0.062	(1.57)	16	29	<2.5	2.5	
7800	(.078)	2.00	-	46	<1.5	2.5	
9300	0.093	(2.36)	12	50	<1	9	
9800	(0.098)	2.50	-	52	<1	12	
1180	(0.118)	3.00	-	68	<1	18	
1380	(0.138)	3.50	-	85	<0.5	18	
1575	(.157)	4.00	-	114	<0.5	20	
1690	(0.169)	4.30	-	152	<0.4	30	
2541	(0.241)	6.12	-	230	<0.25	120	
3570	0.357	(9.07)	0	280	<0.25	122	

*Contact size equivalent to mating pin diameter.

NOTES:

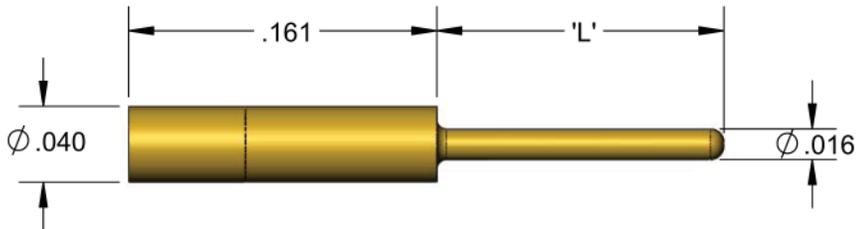
- Sizes and styles are the most common and do not include all sizes currently in production.** Diameter sizes in parenthesis are derived from the native dimension.
- Current ratings shown are for continuous duty and are conservative. IEH test data charts to substantiate current rating values are available upon request
- Hyperboloid interconnects are unequaled for service under severe shock and vibration. They exhibit no intermittence through test levels exceeding 300 G's.
- Contacts .012 - .040" rated for signal connections; .059 - .357" rated for power connections.
- IEH is pleased to consider custom designs. Please contact our sales department for your application specific needs.**

All information contained herein is believed to be reliable as of the date of publication, but is subject to change without notice. Current product drawings and specifications are available upon request from IEH.

IEH warrants its products to be free of defects affecting normal use. If any shipment is found to be defective we will accept return for repair or replacement at our option within one year of shipment. IEH is not responsible for incidental or consequential damages arising out of the use of our products.

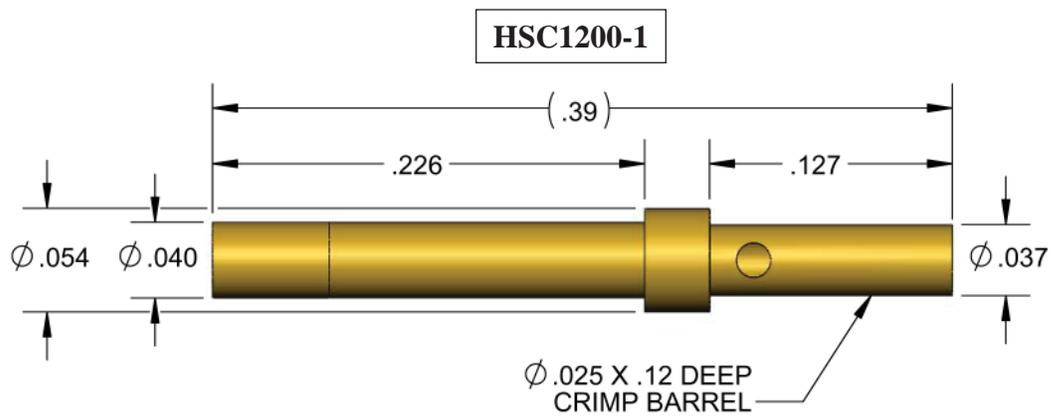
1200 SERIES SOCKET- ACCEPTS Ø0.30mm (0.012) MATING PIN

DIP SOLDER

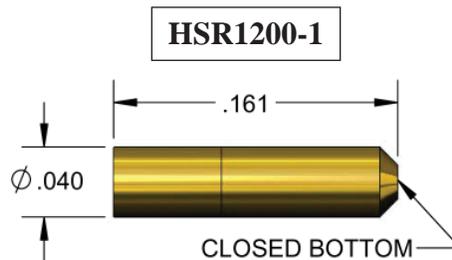


PART NO.	'L'
HSD1200-1	1.065
HSD1200-2	0.958
HSD1200-3	0.774
HSD1200-4	0.682
HSD1200-5	0.496
HSD1200-6	0.404

CRIMP



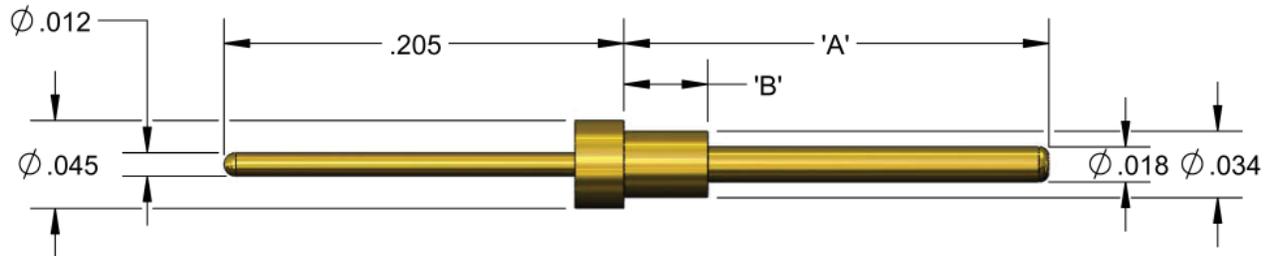
PWB



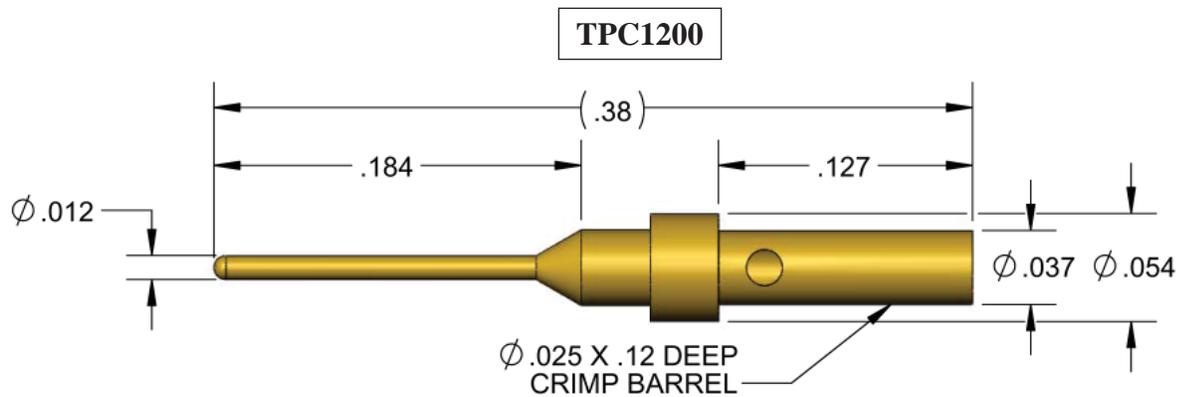
1200 SERIES PIN - Ø0.30mm (0.012)

DIP SOLDER

PART NO.	'A'	'B'
TPD1200	.218	.043
TPD1201	.650	.028

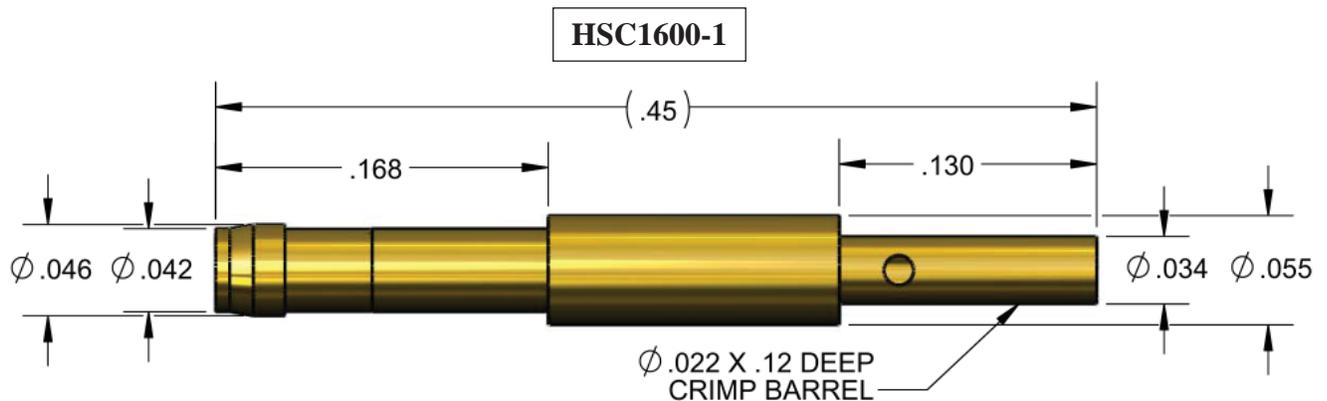


CRIMP



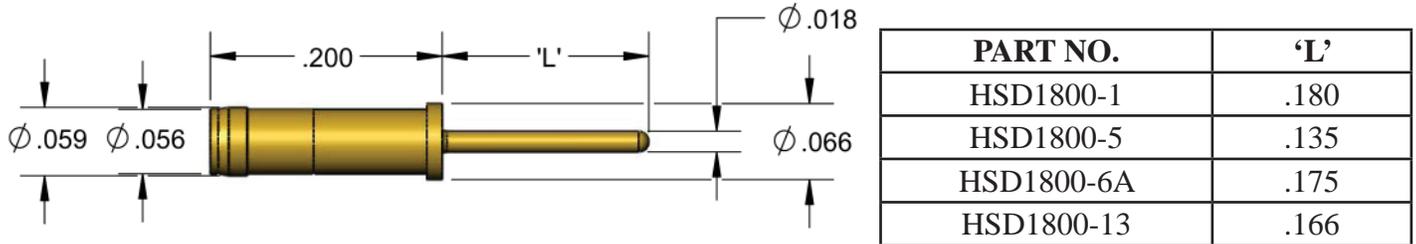
1600 SERIES SOCKET- ACCEPTS Ø0.40mm (0.016) MATING PIN

CRIMP

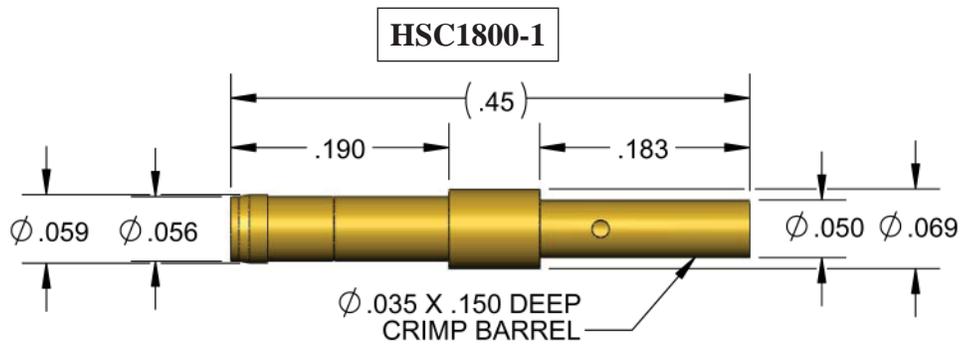


1800 SERIES SOCKET - ACCEPTS $\varnothing 0.45\text{mm}$ (0.018) MATING PIN

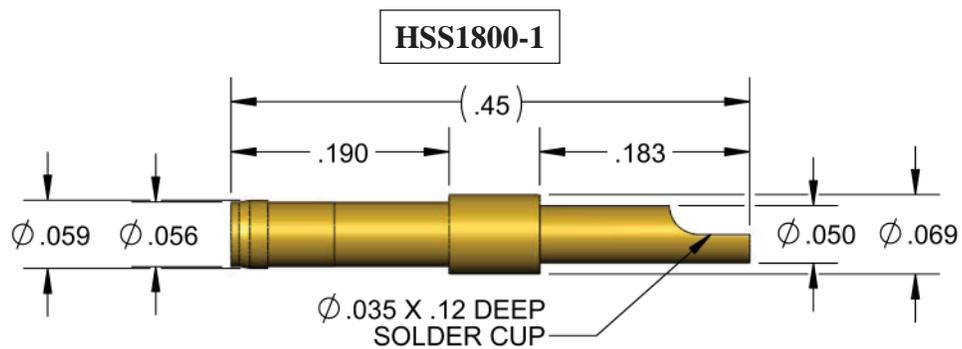
DIP SOLDER



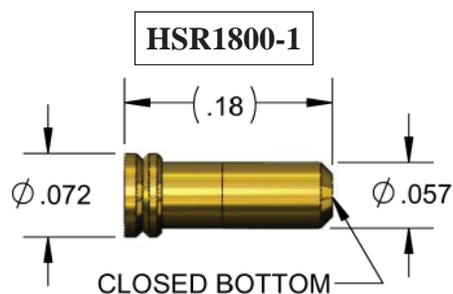
CRIMP



SOLDER CUP

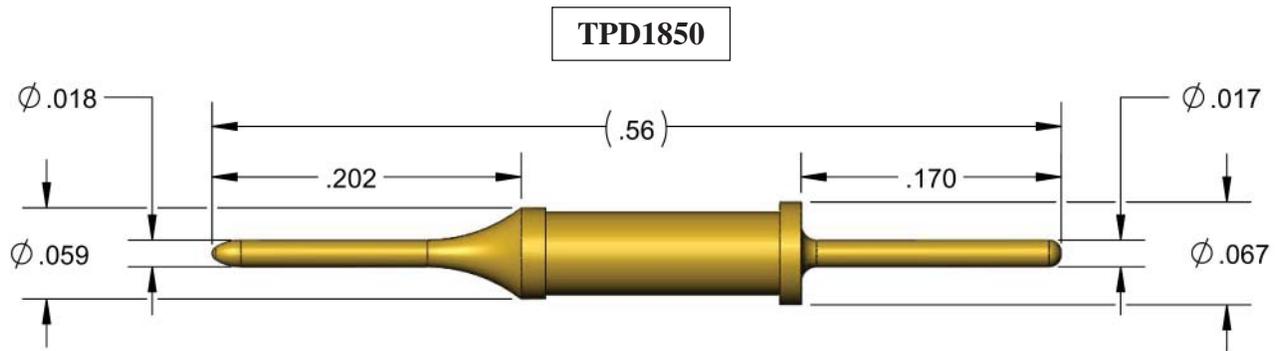


PWB

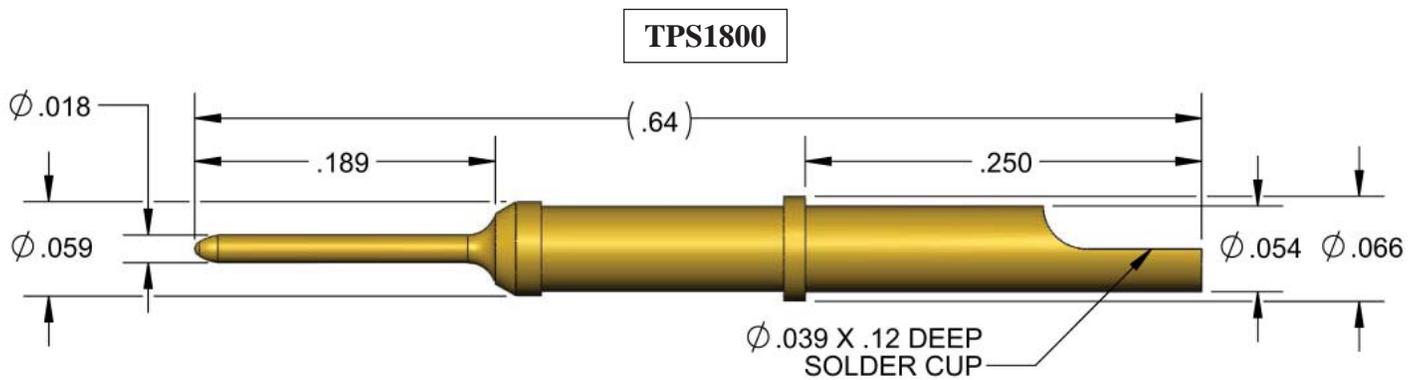


1800 SERIES PIN - Ø0.45mm (0.018)

DIP SOLDER

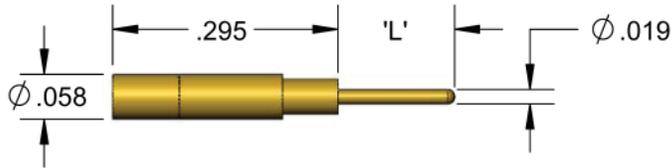


SOLDER CUP



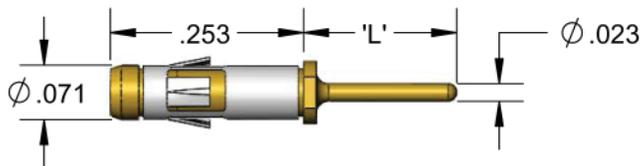
2300 SERIES SOCKET- ACCEPTS Ø0.60mm (0.023) MATING PIN

DIP SOLDER



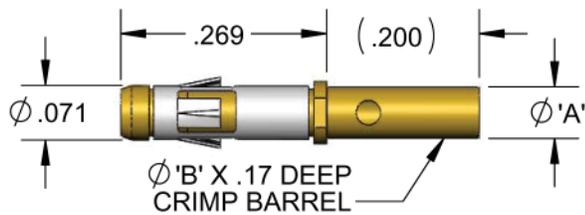
PART NO.	'L'
HSD2301-35	.156
HSD2301-45	.129
HSD2301-51	.113
HSD2301-52	.185
HSD2301-63	.229
HSD2301-64	.429
HSD2301-82	.292

DIP SOLDER



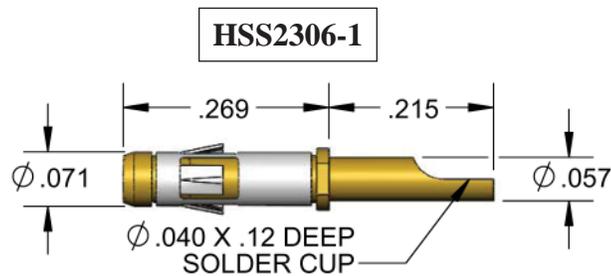
PART NO.	'L'
HSD2306-5	.222
HSD2306-6	.260

CRIMP



PART NO.	'A'	'B'
HSC2306-1	.072	.058
HSC2306-1A	.067	.048
HSC2306-1B	.051	.036

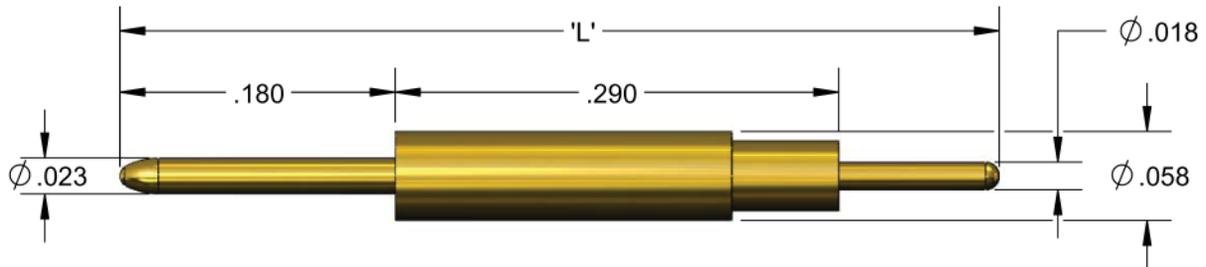
SOLDER CUP



2300 SERIES PIN - Ø0.60mm (0.023)

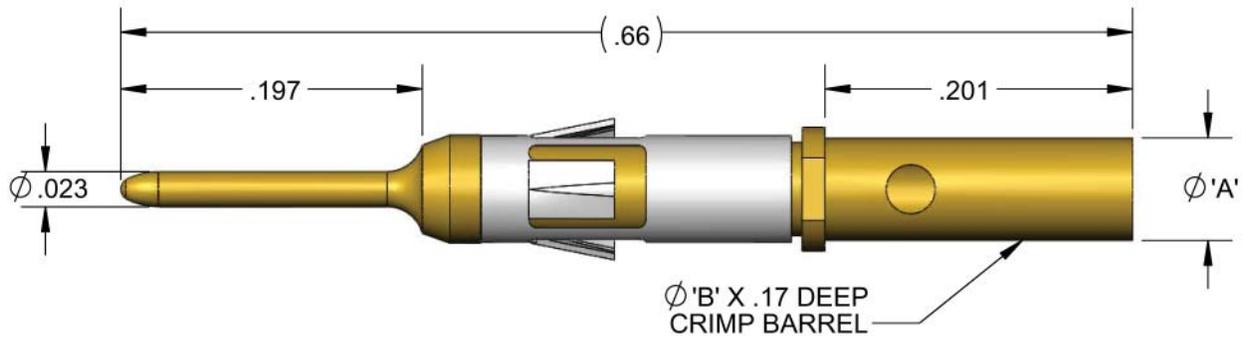
DIP SOLDER

PART NO.	'L'
TPD2328	.66
TPD2328A	.63
TPD2328B	.58
TPD2328C	.595



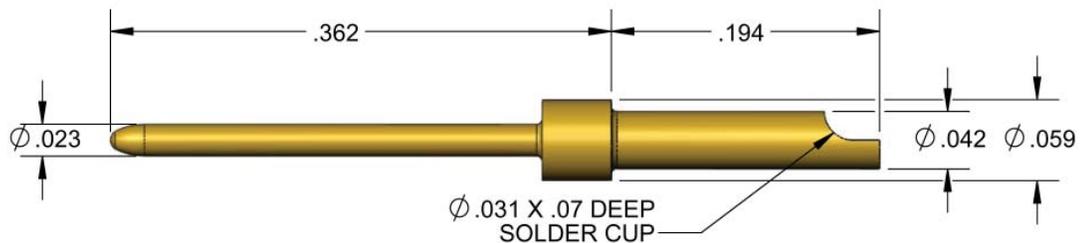
CRIMP

PART NO.	'A'	'B'
TPC2307	.072	.058
TPC2308	.067	.048
TPC2309	.051	.031



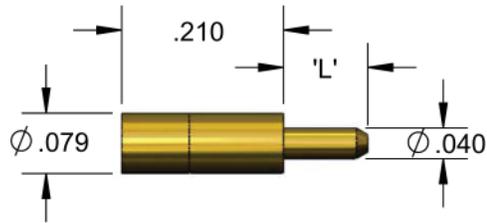
SOLDER CUP

TPS2306



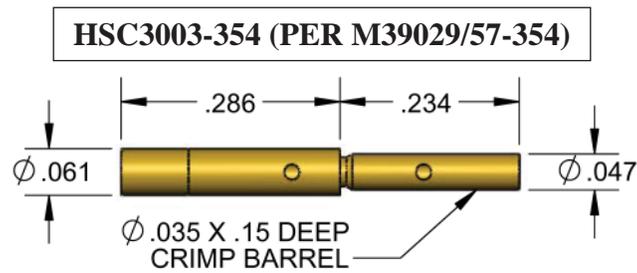
3000 SERIES SOCKET- ACCEPTS Ø0.030 (0.76mm) MATING PIN

DIP SOLDER

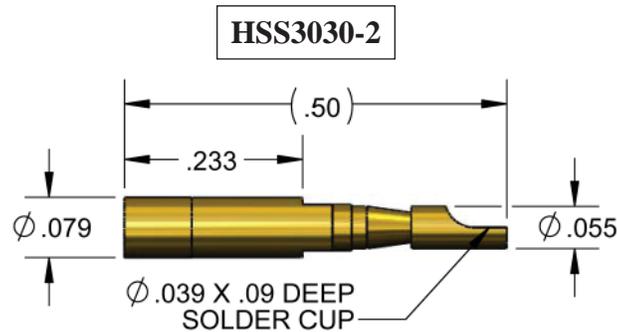


PART NO.	'L'
HSD3002-1	.110
HSD3002-2	.140
HSD3002-3	.160
HSD3002-7	.200

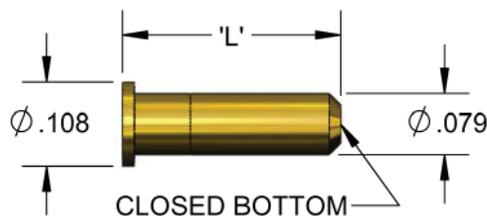
CRIMP



SOLDER CUP



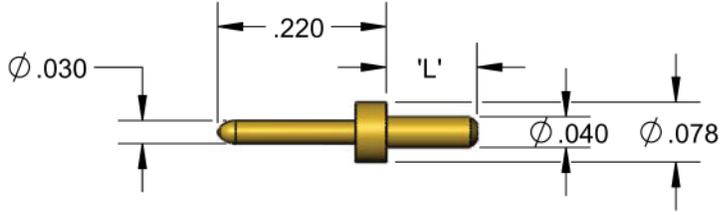
PWB



PART NO.	'L'
HSR3000-1	.28
HSR3000-2	.21

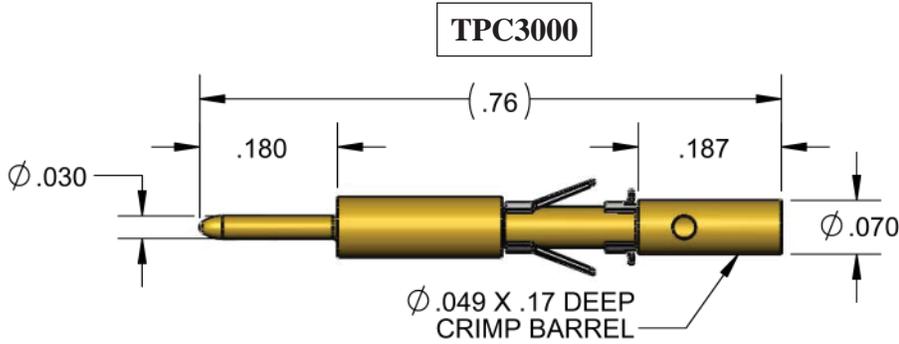
3000 SERIES PIN - Ø0.030 (0.76mm)

DIP SOLDER

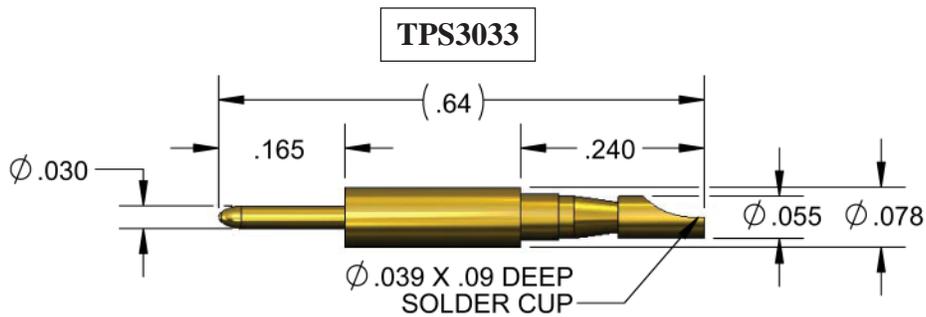


PART NO.	'L'
TPD3050	.110
TPD3052	.165
TPD3053	.130

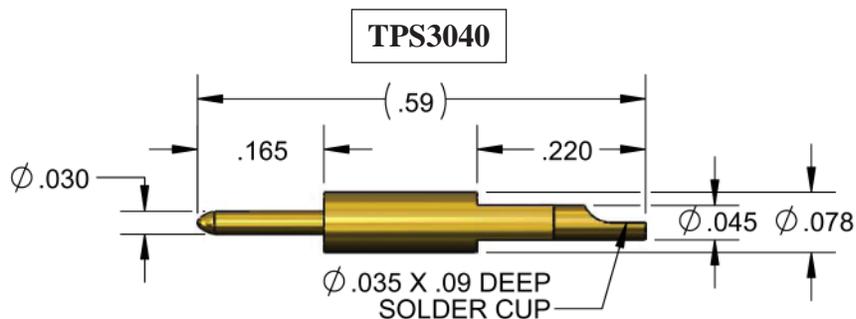
CRIMP



SOLDER CUP

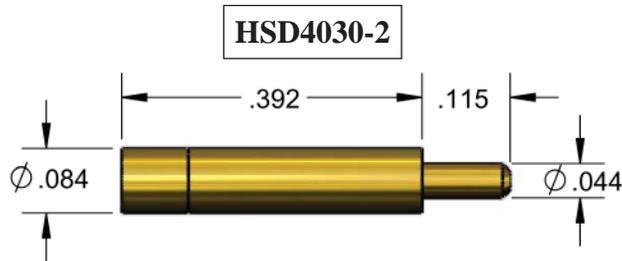


SOLDER CUP

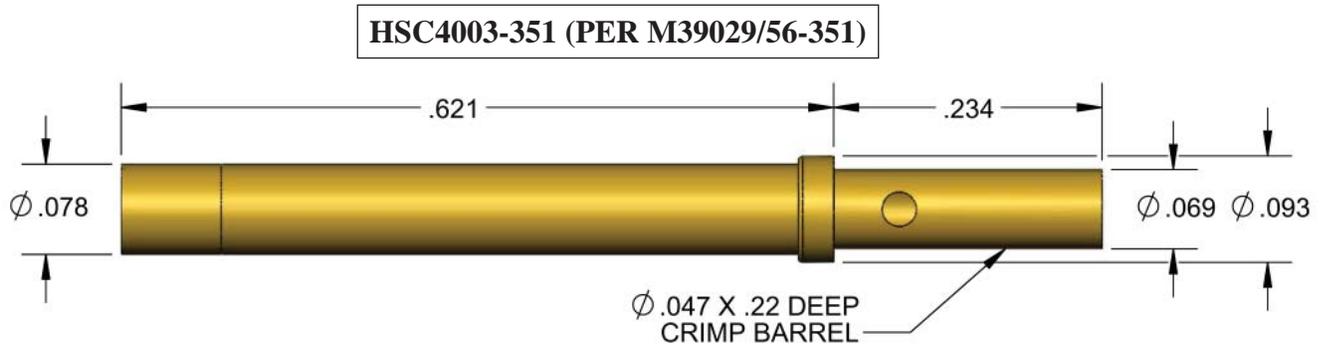


4000 SERIES SOCKET- ACCEPTS Ø0.040 (1mm) MATING PIN

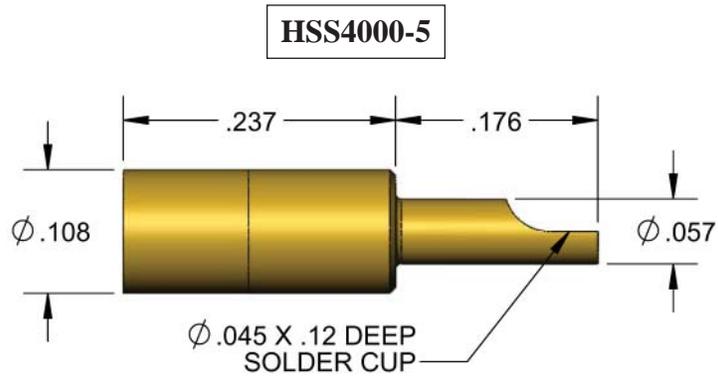
DIP SOLDER



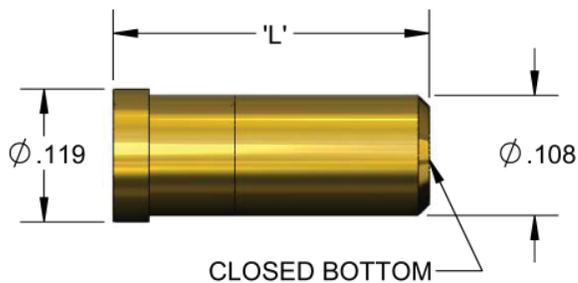
CRIMP



SOLDER CUP



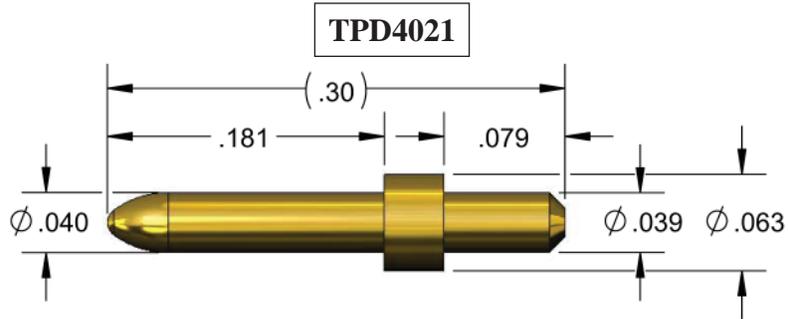
PWB



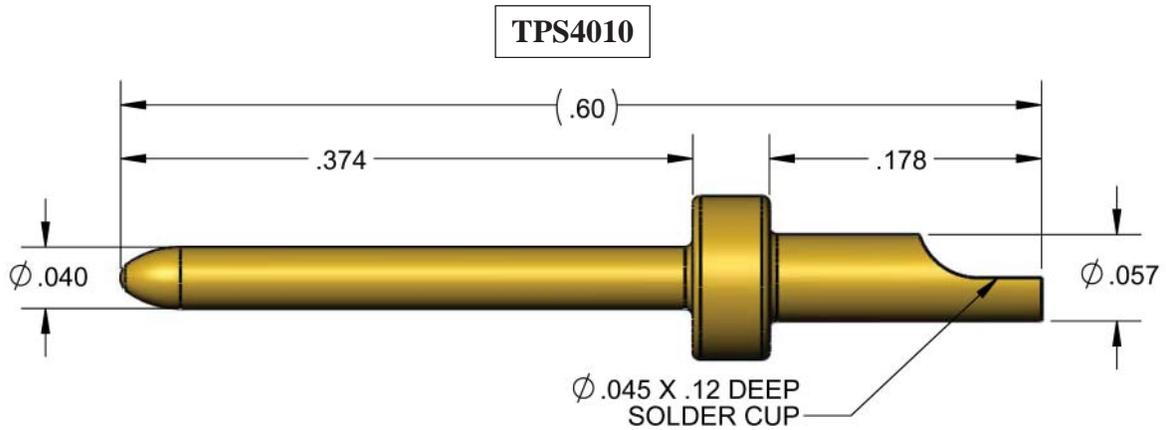
PART NO.	'L'
HSR4000-1	.285
HSR4000-3	.358

4000 SERIES PIN - Ø0.040 (1mm)

DIP SOLDER

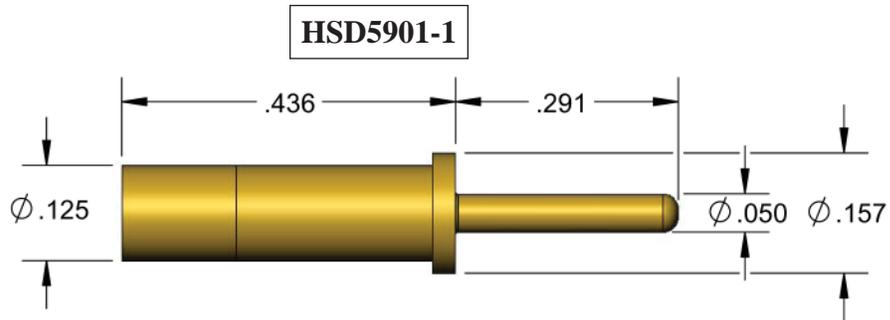


SOLDER CUP

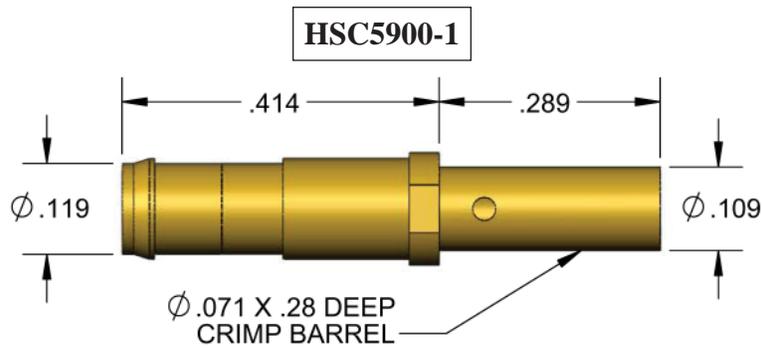


5900 SERIES SOCKET- ACCEPTS Ø1.50mm (0.059) MATING PIN

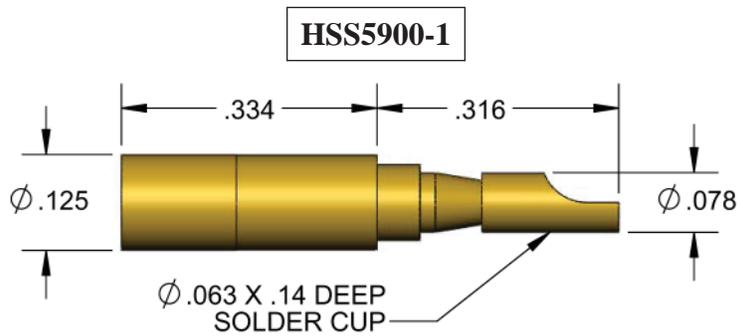
DIP SOLDER



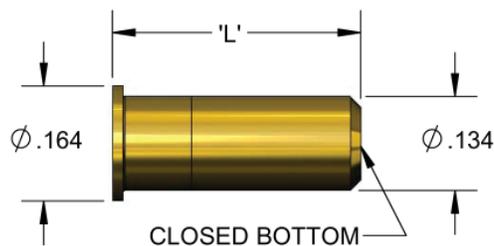
CRIMP



SOLDER CUP



PWB

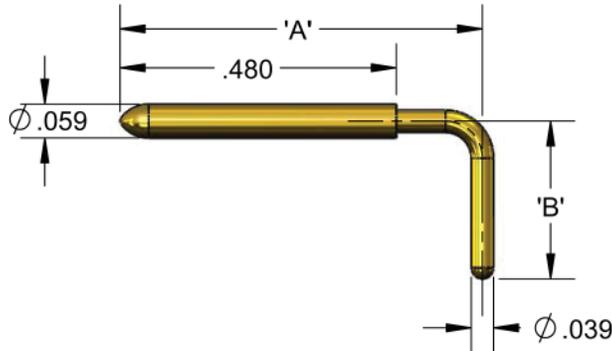


PART NO.	'L'
HSR5900-1	.28
HSR5900-2	.36

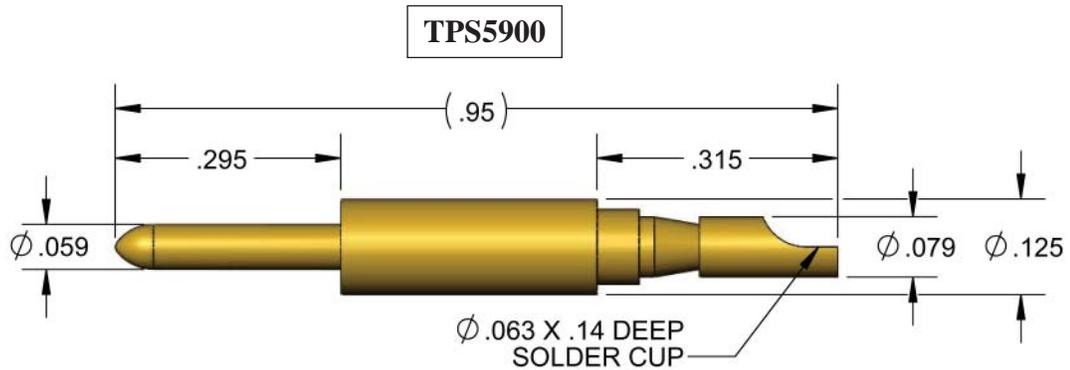
5900 SERIES PIN - Ø1.50mm (0.059)

DIP SOLDER, RIGHT ANGLE

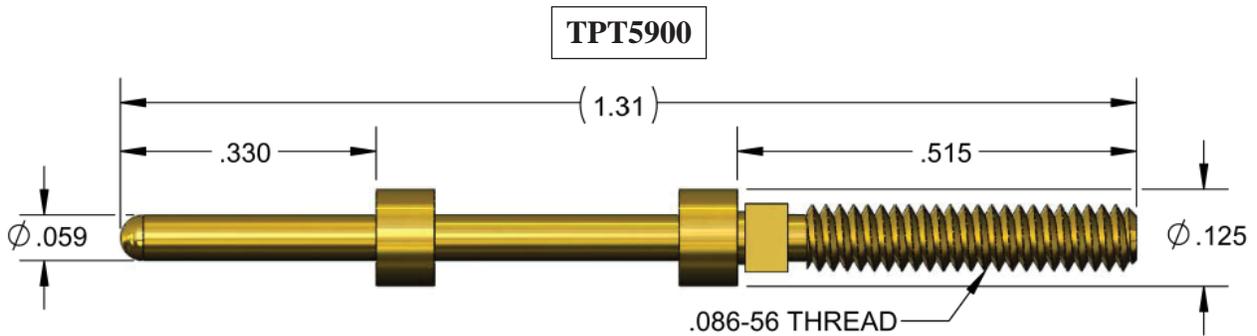
PART NO.	'A'	'B'
TPD5900	.63	.28
TPD5901	.83	.43



SOLDER CUP

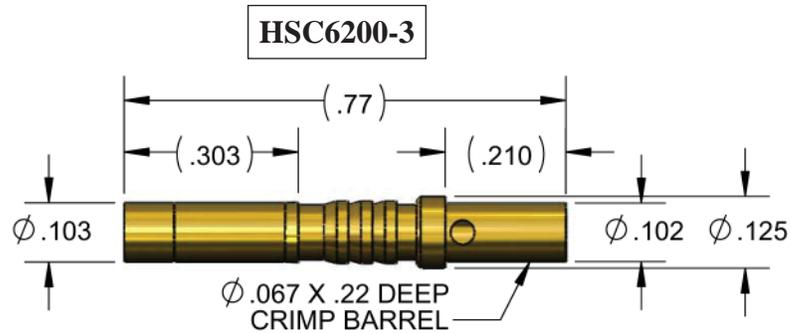


POWER TERMINAL

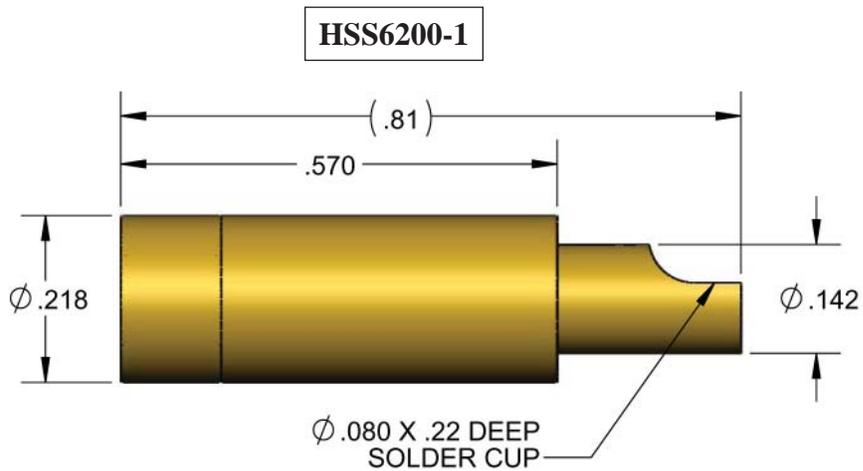


6200 SERIES SOCKET- ACCEPTS Ø0.062 (1.57mm) MATING PIN

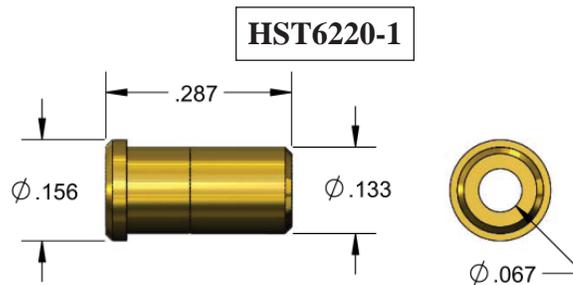
CRIMP



SOLDER CUP

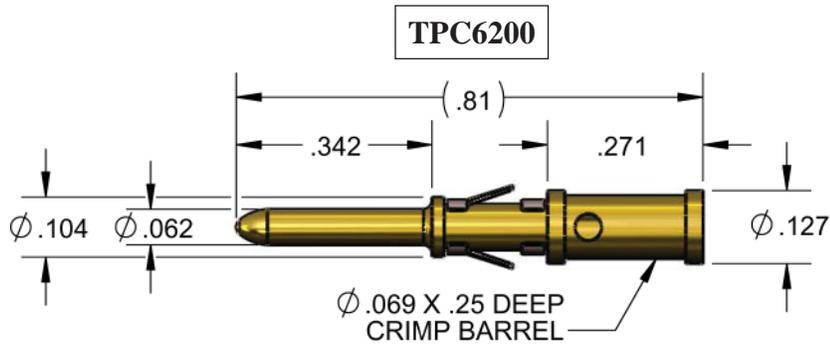


PWB

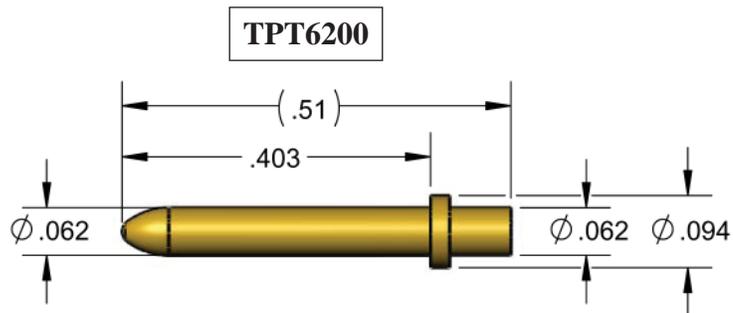


6200 SERIES PIN - Ø0.062 (1.57mm)

CRIMP

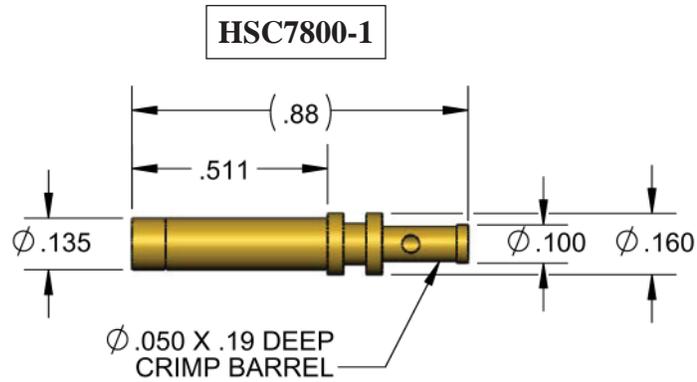


POWER TERMINAL



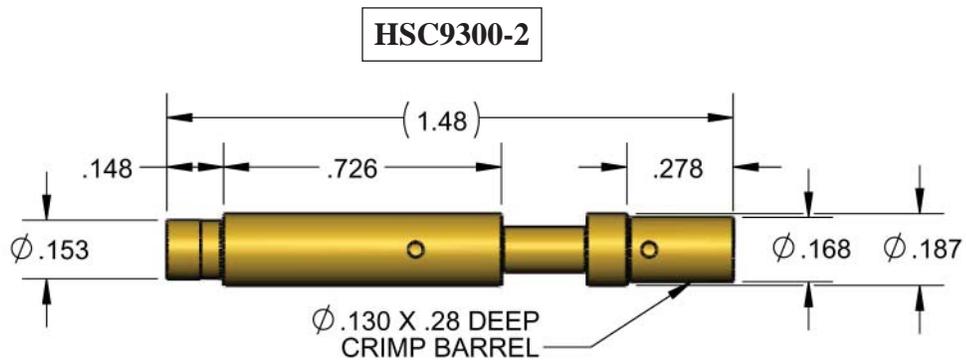
7800 SERIES SOCKET- ACCEPTS Ø2.00mm (0.078) MATING PIN

CRIMP



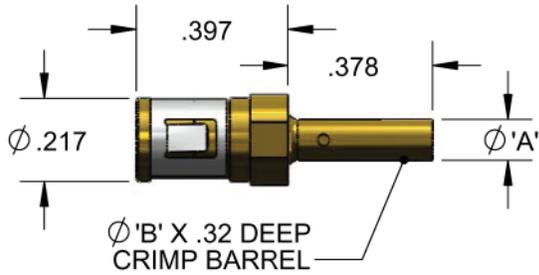
9300 SERIES SOCKET- ACCEPTS Ø0.093 (2.36mm) MATING PIN

CRIMP



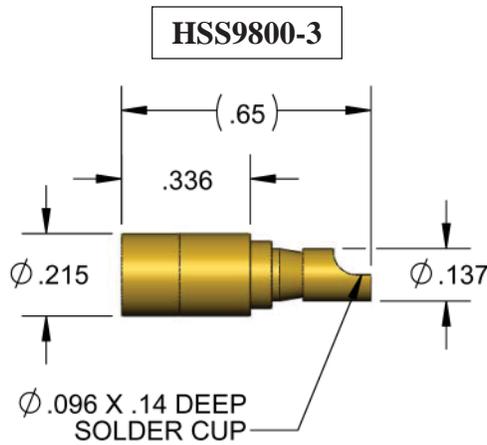
9800 SERIES SOCKET- ACCEPTS Ø2.50mm (0.098) MATING PIN

CRIMP

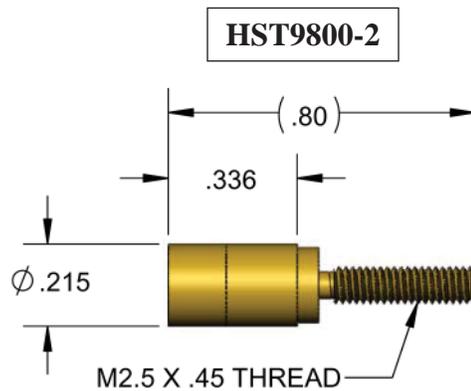


PART NO.	'A'	'B'
HSC9800-1	.107	.077
HSC9800-2	.122	.059

SOLDER CUP

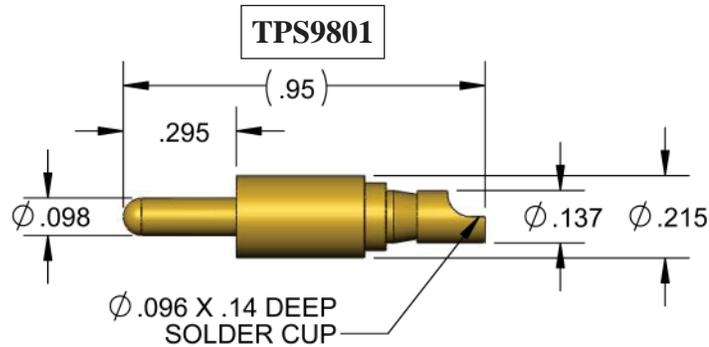


POWER TERMINAL

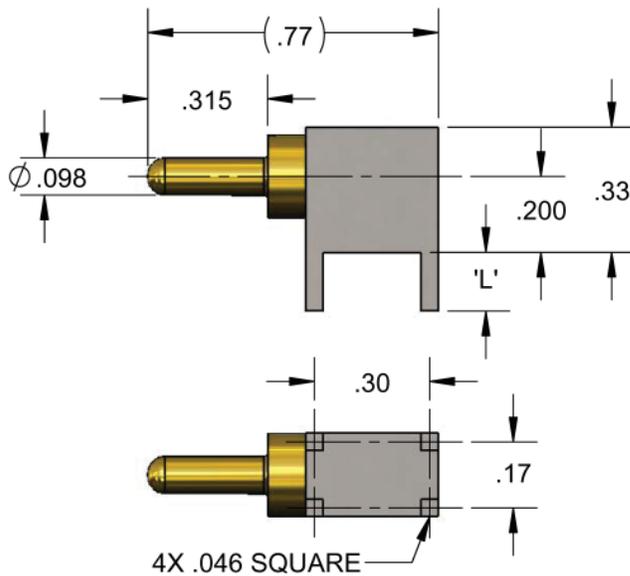


9800 SERIES PIN - Ø2.50mm (0.098)

SOLDER CUP



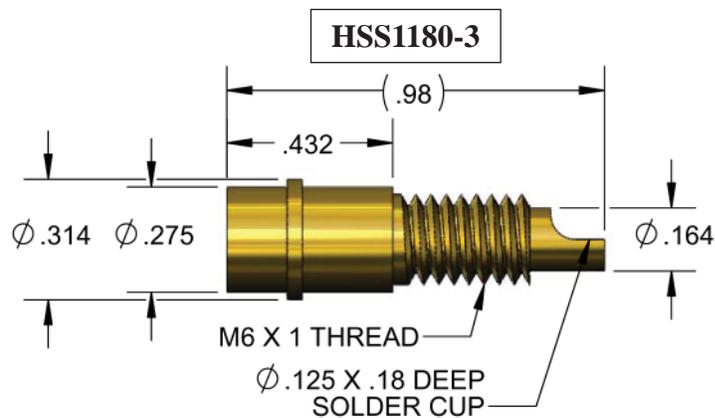
POWER TERMINAL



PART NO.	'L'
TPE0980-1	.155
TPE0980-2	.100

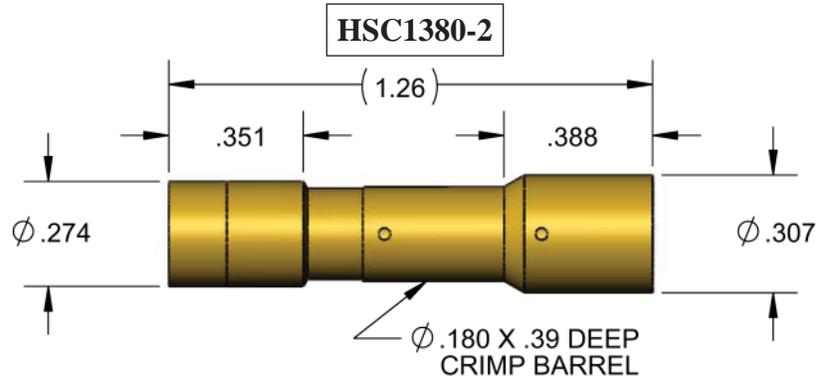
1180 SERIES SOCKET - ACCEPTS Ø3.00mm (0.118) MATING PIN

SOLDER CUP

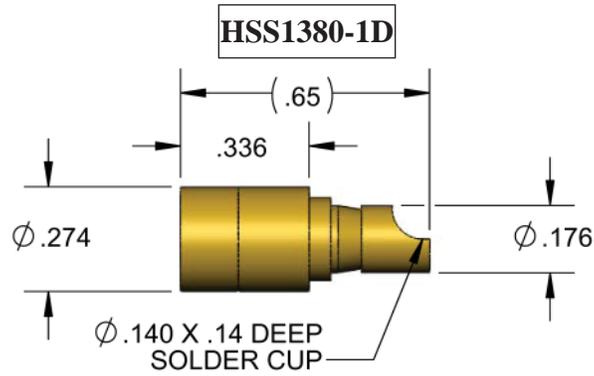


1380 SERIES SOCKET- ACCEPTS Ø3.50mm (0.138) MATING PIN

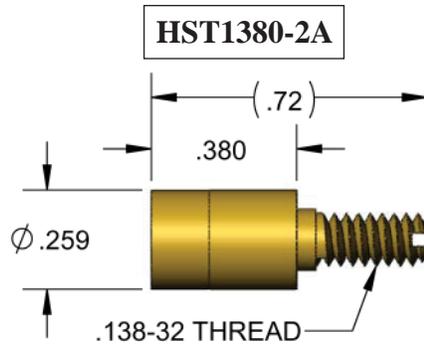
CRIMP



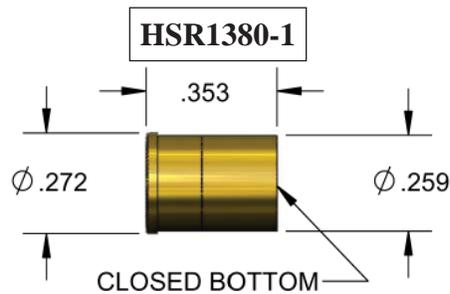
SOLDER CUP



POWER TERMINAL

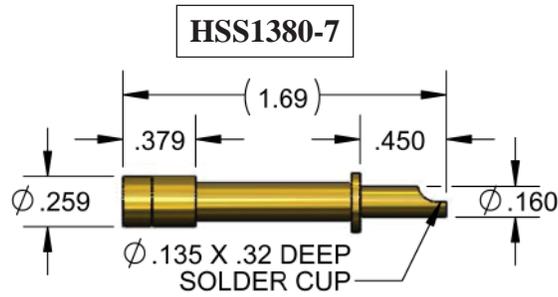


PWB

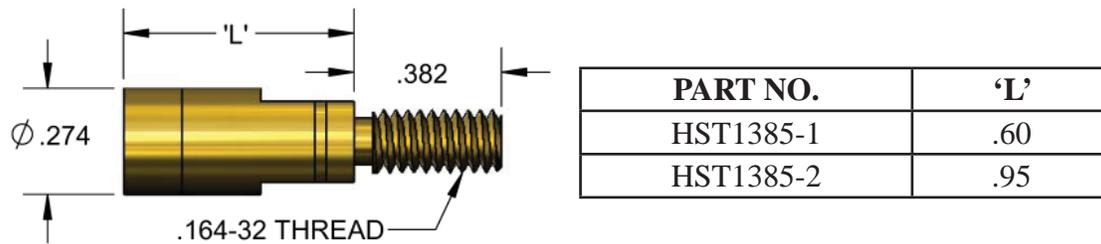


1380 SERIES SOCKET- ACCEPTS Ø3.50mm (0.138) MATING PIN

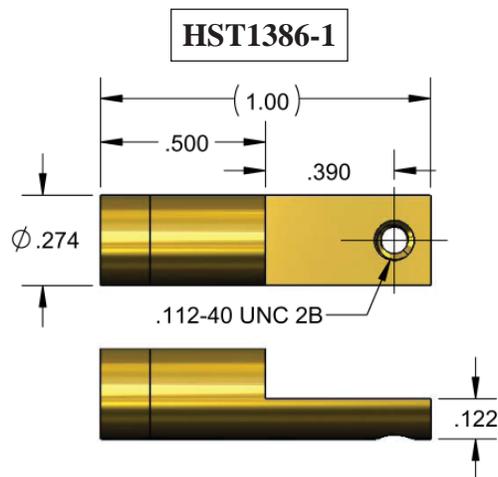
SOLDER CUP



POWER TERMINAL

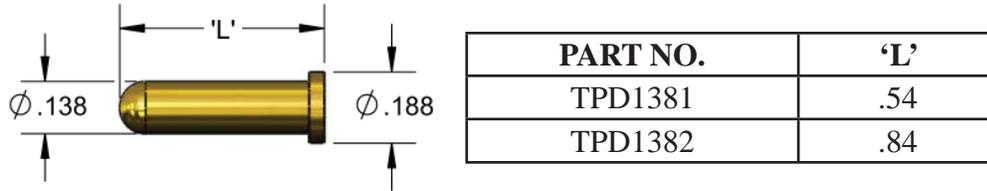


POWER TERMINAL

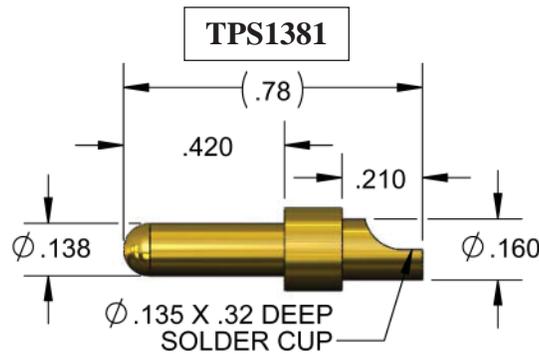


1380 SERIES PIN - Ø3.50mm (0.138)

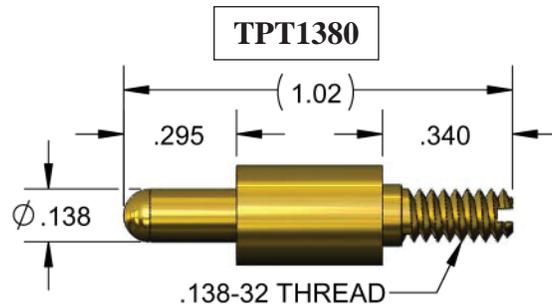
BUTT SOLDER



SOLDER CUP

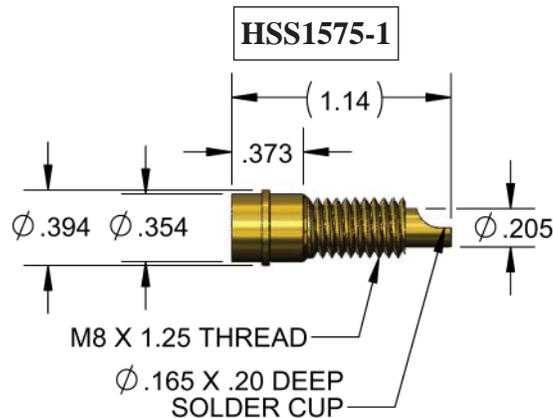


POWER TERMINAL



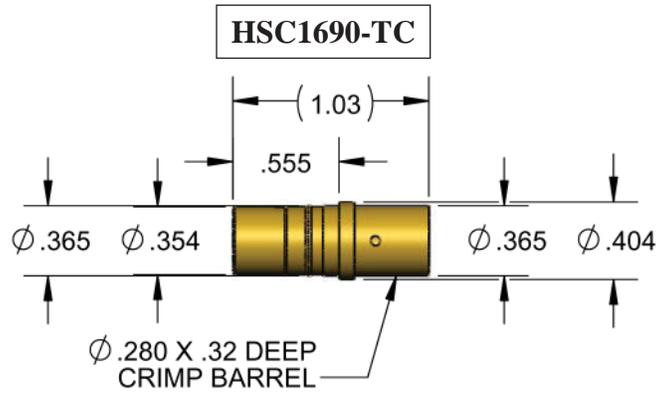
1575 SERIES SOCKET- ACCEPTS Ø4.00mm (0.157) MATING PIN

SOLDER CUP

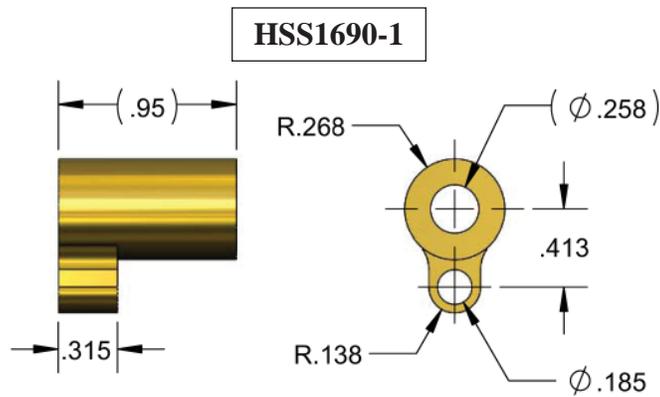


1690 SERIES SOCKET- ACCEPTS Ø4.30mm (0.169) MATING PIN

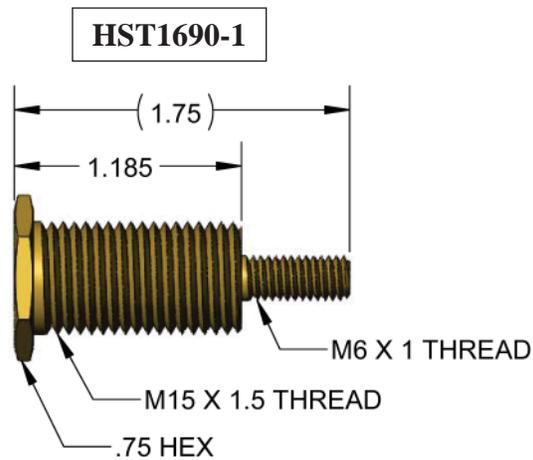
CRIMP



SOLDER CUP

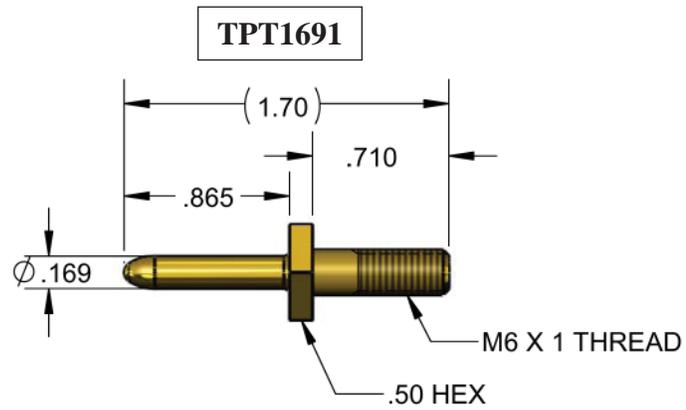


POWER TERMINAL

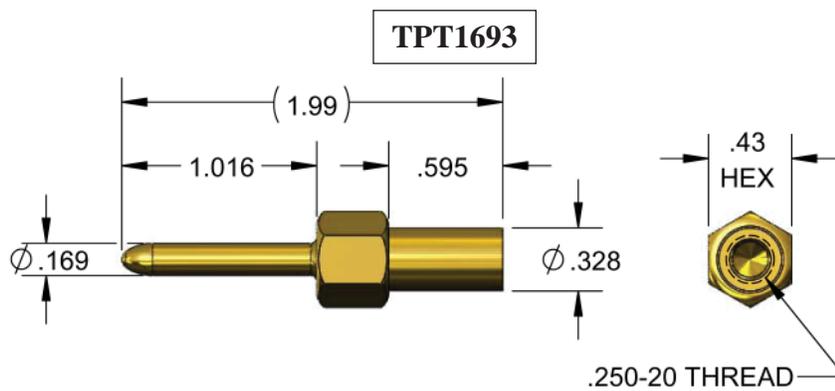


1690 SERIES PIN - Ø4.30mm (0.169)

POWER TERMINAL

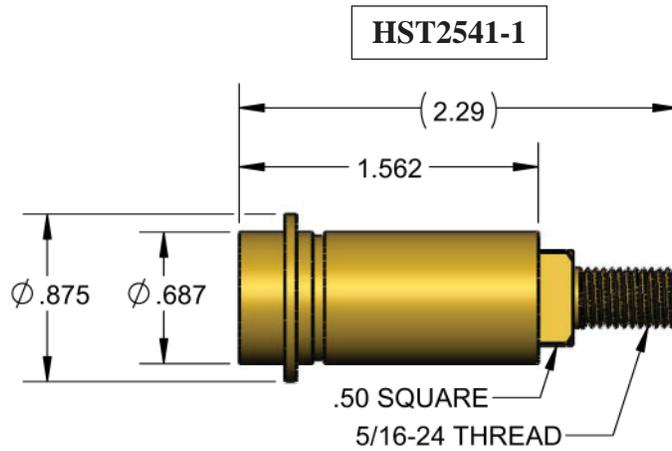


POWER TERMINAL

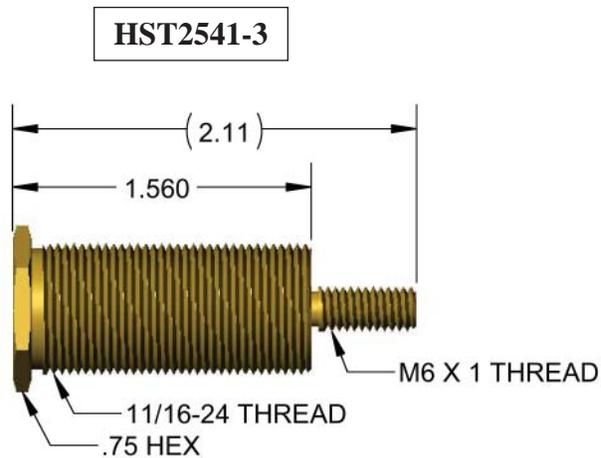


2541 SERIES SOCKET- ACCEPTS Ø6.12mm (0.241) MATING PIN

POWER TERMINAL

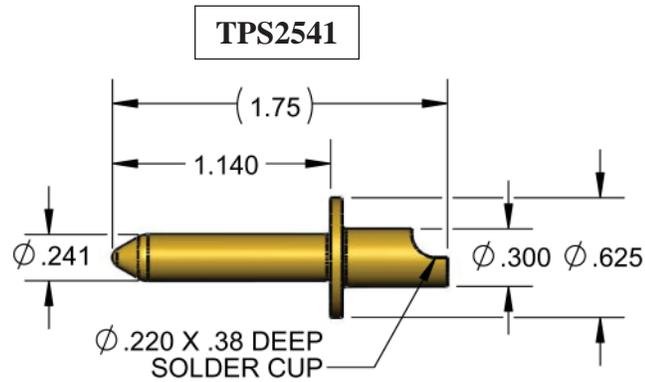


POWER TERMINAL

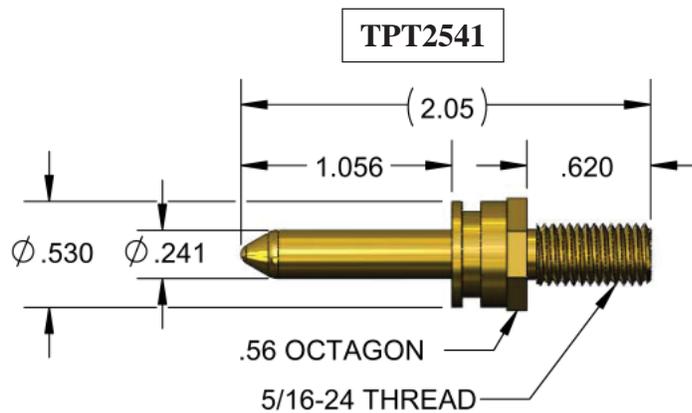


2541 SERIES PIN - Ø6.12mm (0.241)

SOLDER CUP

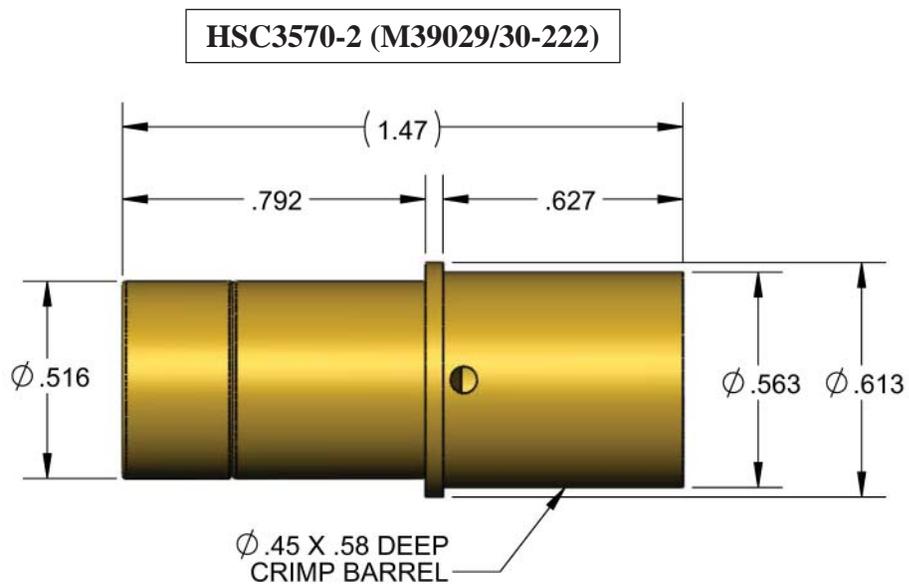


POWER TERMINAL



3570 SERIES SOCKET- ACCEPTS Ø0.357 (9.07mm) MATING PIN

POWER TERMINAL





IEH CORPORATION

140 58TH STREET, 8E, BROOKLYN, NY 11220

PHONE (718) 492-4448 • FAX (718) 492-9898

www.iehcorp.com • ieh@iehcorp.com