



## ZEUS POWER *CONNECTOR* *TECHNOLOGY*

Zeus power connectors are available in various contact configurations and layouts. Using IEH Hyperboloid contact technology and MIL-DTL-38999 III architecture the connectors can also withstand high vibration with no loss of continuity. Zeus Power Connectors can also be supplied with filtered power contacts.

Other layouts can be designed to customer specification with applications up to 260 Amps DC possible.

These connectors have been developed to fill the gaps where a standard catalogue item is not able to meet high power and high vibration requirements. Apollo have designed a range of connectors to meet these specific needs.

# ZEUS POWER PART NUMBERS

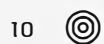
<b>PART NUMBER</b>	ZP	00	F	21	72	P	N
<b>SHELL STYLE</b>		00	07	06			
		Wall Mount	Jam Nut	Plug			
<b>MATERIAL &amp; FINISH</b>		F	W	Z	K	BN	BZ
		Aluminium, Electroless Nickel	Aluminium, Cadmium Olive Drab	Aluminium, Zinc Nickel	Stainless Steel, Passivated	Aluminium, Black Nickel	Aluminium Bronze
<b>SHELL SIZE</b>		11	17	21	23	25	
<b>INSERT LAYOUTS</b>	See table below						
<b>CONTACT STYLE</b>	P	S	Pin Socket (Hyperboloid Contact)				
<b>SHELL KEYRING</b>	N, A, B, C, D OR E						



	11-01	17-52	21-75	21-42
Service rating	M	M	I	I
No. of contacts	1	2	4	2
Contact size	8	8	8	4



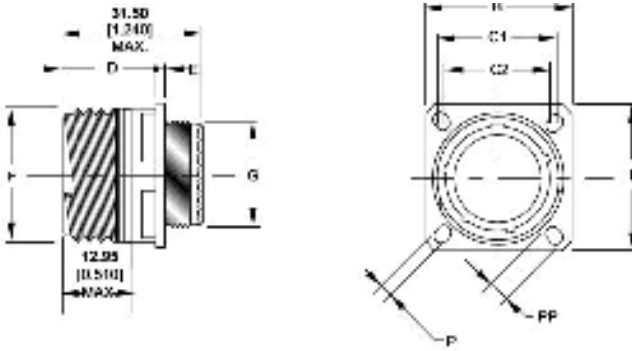
	21-72	21-48	23-06
Service rating	I	M	M
No. of contacts	2 6	4	6
Contact size	4 16	8	8



	25-08	25-11	25-1A
Service rating	M	N	M
No. of contacts	8	9 2	4 4
Contact size	8	10 20	4 16

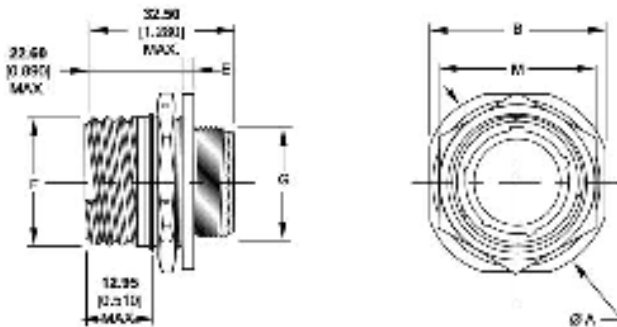
# ZP SHELL STYLES

## Shell Style ZPoo



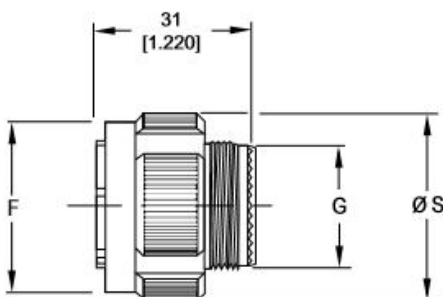
Shell Size	B	C1	C2	D Max.	E Max.	F	G	P	PP
09	23.00 0.907	10.25 0.771	15.00 0.594	20.50 0.807	2.50 0.196	15.75 0.620	11.90 0.469	3.25 0.128	5.40 0.213
11	26.20 1.031	20.62 0.812	16.16 0.719	20.90 0.823	2.50 0.196	16.50 0.748	14.50 0.571	3.25 0.128	4.95 0.195
14	28.60 1.126	23.01 0.906	20.82 0.812	20.90 0.823	2.50 0.196	22.30 0.878	17.90 0.705	3.25 0.128	4.85 0.190
16	31.00 1.220	24.81 0.976	24.01 0.945	20.90 0.823	2.50 0.196	24.26 0.954	21.90 0.862	3.25 0.128	4.85 0.190
17	33.60 1.321	26.87 1.062	24.81 0.982	20.90 0.823	2.50 0.196	26.86 1.057	24.90 0.982	3.25 0.128	4.85 0.190
18	36.60 1.437	29.26 1.152	26.87 1.062	20.90 0.823	2.50 0.196	31.55 1.242	27.90 1.098	3.25 0.128	4.85 0.190
21	39.70 1.563	31.75 1.250	29.26 1.152	20.90 0.823	2.50 0.196	34.70 1.366	30.90 1.217	3.25 0.128	4.90 0.193
23	42.90 1.689	34.95 1.376	31.75 1.250	20.90 0.823	2.50 0.196	37.90 1.492	33.90 1.332	3.25 0.128	5.15 0.203
25	46.00 1.811	38.30 1.506	34.95 1.376	20.90 0.823	2.50 0.196	41.10 1.618	36.90 1.452	3.25 0.128	5.15 0.203

## Shell Style ZP07



Shell Size	A	B	E	F	G	M Max.
09	40.20 1.583	27.00 1.063	2.20 0.087	16.76 0.660	11.80 0.465	24.00 0.945
11	44.90 1.768	31.80 1.252	2.20 0.087	18.30 0.724	14.30 0.563	27.00 1.063
13	48.10 1.901	34.90 1.376	2.20 0.087	21.40 0.843	15.90 0.626	30.00 1.181
15	41.30 1.626	38.10 1.500	2.20 0.087	25.25 0.994	21.90 0.862	36.00 1.417
17	44.50 1.752	41.30 1.626	2.20 0.087	29.95 1.179	24.90 0.980	37.00 1.457
18	49.20 1.937	46.00 1.811	2.20 0.087	31.55 1.242	27.90 1.098	41.00 1.614
21	52.40 2.062	49.20 1.937	2.20 0.087	34.70 1.366	30.90 1.217	45.00 1.771
23	56.80 2.236	52.40 2.062	2.20 0.087	37.90 1.492	33.90 1.332	49.00 1.940
25	60.90 2.394	56.80 2.236	2.20 0.087	41.10 1.618	36.90 1.452	53.24 2.117

## Shell Style ZP06

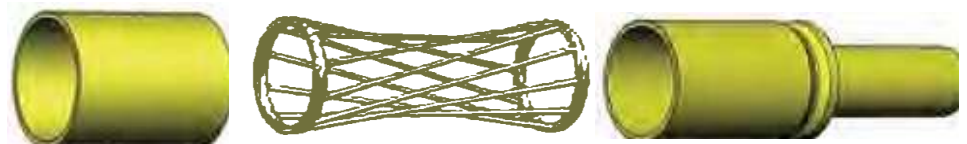


Shell Size	F Max.	G	S Max.	MOMENTS by shell Type		
				A1	SS	Composite
09	16.90 0.665	11.90 0.469	21.90 0.862	15	36	9
11	21.10 0.831	14.90 0.587	25.00 0.984	20	50	15
13	25.40 1.000	17.90 0.705	28.40 1.117	27	64	18
16	26.70 1.052	21.00 0.827	32.50 1.280	34	80	24
17	32.20 1.268	24.00 0.945	35.70 1.402	47	88	26
19	34.90 1.376	27.90 1.098	38.50 1.512	48	100	29
21	38.30 1.506	31.75 1.250	41.70 1.642	55	117	35
23	41.10 1.618	34.95 1.376	44.90 1.768	67	131	41
25	44.30 1.744	38.30 1.506	48.00 1.890	71	145	40

# CONTACT TECHNOLOGY

ZEUS power connectors use Hyperboloid contact technology with MIL-DTL-038999 III architecture to allow currents of up to 280 Amps DC to be passed.

The Hyperboloid contact is an advanced design that satisfies performance requirements previously considered impossible. The distinguishing feature of the socket is the hyperboloid shaped sleeve formed by straight wires strung at an angle to the longitudinal axis. 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 several continuous line contact paths.



## The contact design provides:

Very Low Insertion Force: Common sizes #22 and on average under one ounce per contact.

- Extraordinary Resistance to Shock & Vibration: Tests exceeding 300 g's without discontinuity.
- Duty Cycle Exceeding 100,000 Mate/De-mate: The burnishing action of the wires on the pin surface is non-destructive.
- Low, Low Contact Resistance: Excellent interface exhibiting low contact resistance (often less than 1/2 of MIL Spec. allowances).
- 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: The contact design has proven itself to be the leading design for integrity and reliability.

### 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 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

### 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

#### 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)

CONTACT SIZES*				CURRENT RATING		CONTACT RESISTANCE	INSERTION FORCE (AVG)	LIFE CYCLES
Series	Inch	mm	Gauge (MIL-C-39029)	@30°C Rise Amps DC	@120°C Rise Amps DC	Milliohms	Ounces	 *100,000
3000	0.030	0.76	22 AWG	8	N/A	<5.0	1.0	
4000	0.040	1.00	20 AWG	13	N/A	<2.5	1.0	
6200	0.062	1.57	16 AWG	15.5	29	<2.5	2.5	
7800	0.078	2.00	14 AWG	18.5	37	<1.5	2.5	
9300	0.093	2.36	12 AWG	27	40	<1.0	9.0	
1250	0.125	3.18	10 AWG	41	76	<0.75	18.0	
1420	0.142	3.61	8 AWG	57	116	<0.5	19.0	
3570	0.357	9.07	0 AWG	180	260	<0.25	122.0	

\* Contact size equivalent to mating pin diameter Other contact sizes available for custom arrangements

All information contained herein is believed to be reliable as of the date of publication and is subject to change without notice.

# FLEXIBLE POWER CABLES FROM HABIIA

These flexible Hi-Flex power cables are ideal for use with ZEUS connectors and the range supports both military and commercial applications. All our solutions come with insulated power cores for flexible use and are built using high-temperature insulation materials to provide an increased current rating.

The Hi-Flex cables are also mechanically robust and ensure a long flex-life by reducing strain on cable terminations and the Mean Time Before Failure (MTBF) of each cable. The Hi-Flex range was initially designed for use in military Hybrid Electric Drive (HED) vehicles to meet an increasing demand for high power ratings without the usual increase in copper size and weight. As a military product our flexible power cables combine several key characteristics for this market, including:



With the growing demand for hybrid and fully electric vehicles, Habia has developed a cost efficient high performance cable variant: Irle Hi-Flex ZH. Aimed at the commercial sector, cables offer the same power levels with the added benefits of a fully low smoke, zero-halogen, and flame-retardant solution.

## Hi-Flex

TPS 125 XL insulated power cores for flexible use  
Standard range from: 1mm<sup>2</sup> to 4mm<sup>2</sup> (300V) - 6mm<sup>2</sup> to 400mm<sup>2</sup> (600V) - 6mm<sup>2</sup> to 95mm<sup>2</sup> (1000V), 30 to 1554 Amps DC in free air @ 30°C



## Hi-Flex ZH

HFI 121 XL insulated power cores for flexible use, LSZH Standard range from: 1mm<sup>2</sup> to 4mm<sup>2</sup> (300V) - 6mm<sup>2</sup> to 400mm<sup>2</sup> (600V), 30 to 1554 Amps DC in free air @ 30°C



## Hi-Flex ZH - STJ 1

HFI 121 XL insulated & sheathed, shielded single cores for flexible use, LSZH Standard range from: 6mm<sup>2</sup> to 120mm<sup>2</sup> - 1 Core - Screened - Sheathed, 98 to 599 Amps DC in free air @ 30°C



**Apollo offer the answer for clients seeking a fast turnaround and non-biased product selection.**

- Ad hoc requirements to full consolidation agreements
- QPL listed assembling distributor
- Prototypes / special connectors and backshells
- Short lead times
- Alternative supply of special products (non-biased)
- Product design
- Consignment inventory – sub tier supplier management
- Fast quote turnaround on our complete electrical / electro-mechanical portfolio
- Fully approved to AS9100 Rev D and AS9120 Rev B

## **Franchises and Associates**

Ametek	ITT
Amphenol	Cannon
Caplugs	Martec
Cinch	Polamco
Conesys	RF Immunity
Corsair	RMS Connectors
Deutsch	Sealtron
DMC	Sealelectro
EMCA	Socapex
Glenair	Souriau
Habia Cable	TE
Hellermann Tyton	Tri-star
Hermetic Seal	VEAM
IEH	

