

HBB power connector

Product description

- Contact technology guarantees high reliability
- Push lock to mate connector
- Quick release latch to unmate
- Ruggedised metal and plastic versions available
- Cable and panel mount variants
- Compact ergonomic design
- Low component count
- Gender reversible
- Polarised
- 360 degree EMI/RFI shielding option
- 5000+ mating cycles without EMI/RFI band
- Sealed IPx7 and IP6K9K when mated
- Finger protected contacts
- Current rating 300A and 500A
- Temperature rating -55 to +150degC
- RoHS compliant versions available

1. Ordering information for HBB range connectors

1.1. Plug and receptacle order code

The order code for a plug or receptacle is a sixteen character code that defines all standard plug and receptacle options in the range.

HBB 030 P A 1 X * A A 000

Series

HBB	High power military
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Current rating

030	300 Amp
050	500 Amp

Shell gender

P	Plug
R	Receptacle

Shell polarising

A	Polarised code A, contact cap black
B	Polarised code B, contact cap orange
C	Polarised code C, contact cap blue
D	Polarised code D, contact cap grey
E	Polarised code E, contact cap green
F	Polarised code F, contact cap red

Shell material

1	High strength thermoplastic body, black
A	High strength aluminium alloy body, zinc-cobalt plated
B	High strength aluminium alloy body, electroless nickel plated
E	High strength aluminium alloy body, black zinc-nickel plated (RoHS compliant)

Contact gender

X	Pin, gold plated (1.27µm gold on mating surfaces)
Y	Socket, gold plated (1.27µm gold on mating surfaces)

Contact termination options

*	Contact to accept cable crimped directly on contact axis. See table Non-removable straight exit crimp contacts on following page
L	Contact to accept bolted termination e.g. lugged cable (lug ordered separately, see Accessories - Crimp lug codes below) or busbar. Also order this option for a plug with right angle backshell

Standard variations

000	No variant
00E	EMI band fitted (metal plugs only)
0C0	Rear mount metal receptacle with conductive panel o-ring
0J0	Front mount plastic receptacle with non-conductive panel gasket
0M0	Front mount metal receptacle with conductive panel o-ring (not available with backshell option B)
0N0	Front mount metal receptacle with non-conductive panel o-ring (not available with backshell option B)
012	EMI band and right-angle metal backshell with knurled cable port – plugs only
013	EMI band and straight metal backshell with knurled cable port – plugs only

Backshell exit code – see illustration below

0	Exit code 0 applies to all metal connectors (with or without backshells). For plastic connectors see Backshell code table below
Other codes	See Backshell code table (section 1.3). Only applies to plastic shelled connectors

Backshell options

0	No backshell
A	Right-angle backshell (plug only)
B	Straight backshell (metal plugs or receptacles only, not available on plastic connectors)
C	Plastic receptacle to accept boot Note: plug connectors supplied without backshells are designed to accept lipped heat shrink boots

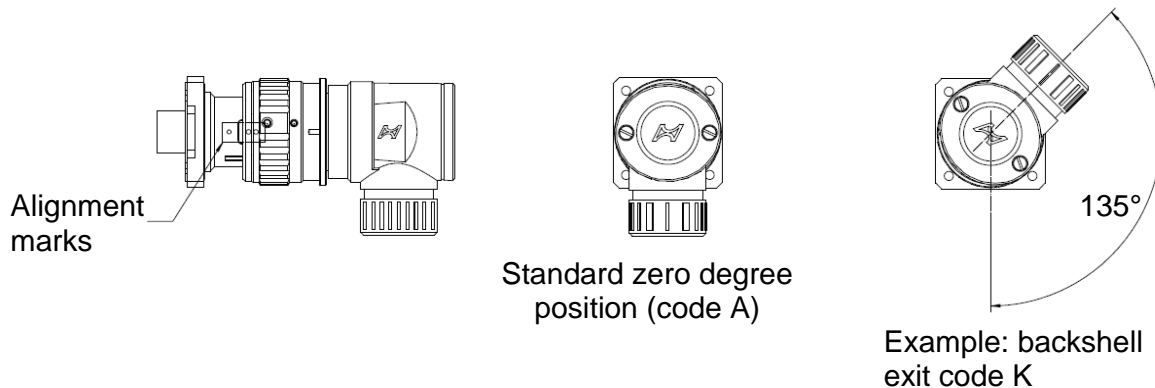
1.2. Non-removable straight exit crimp contacts

Crimp contact size codes				
Code	300 amp connector		500 amp connector	
	Conductor size (mm ²)	Crimp barrel bore (mm)	Conductor size (mm ²)	Crimp barrel bore (mm)
D	25	7.9	50	11.0
H	-	-	70	13.0
K	35	9.2	-	-
Q	-	-	95	14.5
S	50	11.0	-	-
V	-	-	120	15.0

1.3. Backshell exit codes

Important: This section applies only to plastic-bodied plugs with a right-angle backshell.

Right-angle backshells for plastic-bodied plugs are factory fitted and non-adjustable. The exit angle is related to the position of the red alignment marks printed on the plug and receptacle bodies. When the connectors are mated, the cable will emerge from the plug at a specified angle. The standard angle is zero degrees. Other angles are available in 15 degree increments to account for a wide range of panel and cable layouts; see code table below.



Backshell exit code table							
A	0°	G	90°	N	180°	U	270°
B	15°	H	105°	P	195°	V	285°
C	30°	J	120°	Q	210°	W	300°
D	45°	K	135°	R	225°	X	315°
E	60°	L	150°	S	240°	Y	330°
F	75°	M	165°	T	255°	Z	345°

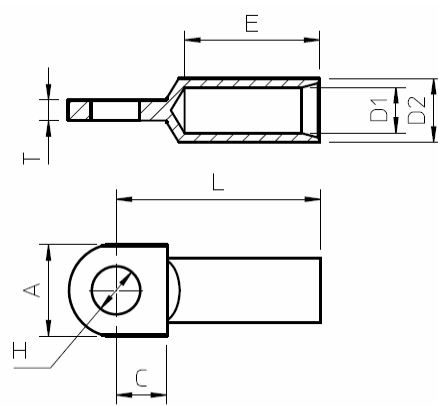
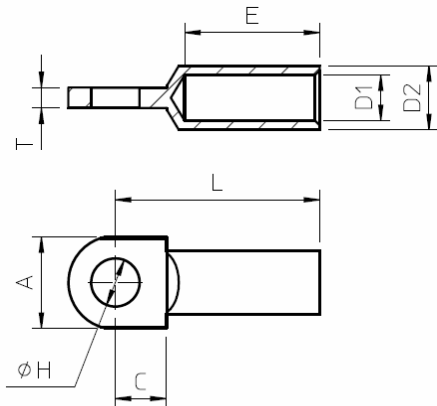
2. Accessories

If required, the following accessories must be ordered separately; they are not supplied with connectors.

2.1. Crimp lug codes and dimensions

Lug for standard cable (suffix –A-68)

Lug for fine stranded cable (suffix –B-68)



Important: These are special pattern Hypertac lugs which must be used on all connectors with right-angle backshells. They are also recommended for use on plug connectors with bolted contact terminations and no backshells.

Receptacle connectors where no boot is fitted can accept any other suitable lug.

Crimp lugs are tin plated (suffix -68) and designed to be compatible with fine-stranded power cables e.g. IEC 60228, Class 5.

Lugs require crimp tooling; see **Spares and special tools** section.

LUG CODES AND DIMENSIONS FOR 300A RANGE

Cable area, sq mm	Part Number	Dimensions							
		A max	C nom	D1 nom	D2 nom	E nom	H nom	L nom	T ref
25	HBB-950-8-25-A-68	18.1	10.0	7.0	10.0	25.0	8.3	38.1	4.0
25	HBB-950-8-25-B-68	18.1	10.0	7,9	11,0	27.0	8.3	40.4	4.0
35	HBB-950-8-35-A-68	18.1	10.0	8.5	12.0	25.0	8.3	39.0	4.0
35	HBB-950-8-35-B-68	18.1	10.0	9,2	12,5	27.0	8.3	41.0	4.0
50	HBB-950-8-50-A-68	18.1	10.0	10.0	14.0	25.0	8.3	39.6	4.0
50	HBB-950-8-50-B-68	18.1	10.0	11,0	15,0	27.0	8.3	41.9	4.0
70	HBB-950-8-70-A-68	18.1	10.0	12.0	16.5	25.0	8.3	40.5	4.0
70	HBB-950-8-70-B-68	18.1	10.0	13,0	17,0	27.0	8.3	42.5	4.0

LUG CODES AND DIMENSIONS FOR 500A RANGE

Cable area, sq mm	Part number	Dimensions							
		A max	C nom	D1 nom	D2 nom	E nom	H nom	L nom	T ref
50	HBB-950-10-50-A-68	20.1	12.0	10.0	14.0	25.0	10.3	41.5	4.5
50	HBB-950-10-50-B-68	20.1	12.0	11.0	15.0	27.0	10.3	43.8	4.5
70	HBB-950-10-70-A-68	20.1	12.0	12.0	16.0	25.0	10.3	42.1	4.5
70	HBB-950-10-70-B-68	20.1	12.0	13.0	17.0	27.0	10.3	44.4	4.5
95	HBB-950-10-95-A-68	20.1	12.0	13.5	18.0	25.0	10.3	42.8	4.5
95	HBB-950-10-95-B-68	20.1	12.0	14.5	19.0	27.0	10.3	45.1	4.5
120	HBB-950-10-120-A-68	20.1	12.0	15.0	19.5	25.0	10.3	43.4	4.5
120	HBB-950-10-120-B-68	20.1	12.0	16.2	21.0	27.0	10.3	45.8	4.5

2.2. Heat shrink boots

Connectors are designed to accept the following moulded lipped heat shrink boots which conform to specification number VG95343:

	Straight boot for bare connector	90° boot	Boot for right angle backshell	Boot for straight backshell
300A plastic plug	HBO-0008-B005A (see note A)	HBO-0009-E004A (see note B)	HBO-0008-B004A (see note C)	N/A
300A plastic receptacle	HBO-0008-B004A (see note C)	HBO-0009-E003A (see note D) * or HBO-0009-E004A (see note B) *	N/A	N/A
300A metal plug	HBO-0008-B005A (see note A)	HBO-0009-E004A (see note B)	HBO-0008-B005A (see note A)	HBO-0008-B005A (see note A)
300A metal receptacle	N/A	N/A	N/A	HBO-0008-B005A (see note A)
500A plastic plug	HBO-0008-C001A (see note F)	HBO-0009-E005A (see note E)	HBO-0008-B005A (see note A)	N/A
500A plastic receptacle	HBO-0008-B005A (see note A)	HBO-0009-E004A (see note B) * or HBO-0009-E005A (see note E) *	N/A	N/A
500A metal plug	HBO-0008-C001A (see note F)	HBO-0009-E005A (see note E)	HBO-0008-C001A (see note F)	HBO-0008-C001A (see note F)
500A metal receptacle	N/A	N/A	N/A	HBO-0008-C001A (see note F)

Notes

* If a Hypertac lug is used, then use the smaller boot.

A: VG spec = VG 95343 T18 B005A

B: VG spec = VG 95343 T18 E004A

C: VG spec = VG 95343 T18 B004A

D: VG spec = VG 95343 T18 E003A

E: VG spec = VG 95343 T18 E005A

F: VG spec = VG 95343 T18 C001A

It is the user's responsibility to ensure that boot material and adhesive / epoxy meet the requirements of their application.

For further application details see **Workshop Manual – single-pole HBB and HBC range** available from website or Hypertac technical services.

2.3. Heat shrink tubes

On the following connector types or connector-boot combinations, an insulating sleeve must be fitted to the crimp lugs or crimp barrels. Thick-walled adhesive-lined heat shrink tube meeting VG95343 is the recommended material for this application. Sleeves must be fitted prior to fitting one of the above heat shrink boots. Tubing must cover the entire crimp barrel and seal to the cable outer jacket.

	Hypertac pt. no.
300A plastic plug with 90 degree boot	HBO-0007-D006A-0050
300A plastic receptacle with 90 degree boot	HBO-0007-D006A-0050
300A metal plug, all options	HBO-0007-D006A-0050
300A metal receptacle, straight backshell	HBO-0007-D006A-0050
500A plastic plug with 90 degree boot with 50 sq mm cable with cable >50 sq mm	HBO-0007-D006A-0070 HBO-0007-D007A-0070
500A plastic receptacle with 90 degree boot with 50 sq mm cable with cable >50 sq mm	HBO-0007-D006A-0070 HBO-0007-D007A-0070
500A metal plug all options with 50 sq mm cable all options with cable >50 sq mm	HBO-0007-D006A-0070 HBO-0007-D007A-0070
500A metal receptacle, straight backshell all options with 50 sq mm cable all options with cable >50 sq mm	HBO-0007-D006A-0070 HBO-0007-D007A-0070

Tubing ordered according to this table is made from a self-extinguishing elastomer, internally coated with high-performance epoxy. The material/adhesive combination is rated to 150 degrees C. It is the user's responsibility to ensure that tube material and adhesive/epoxy meet the requirements of their application.

For further application details see **Workshop Manual – single-pole HBB and HBC range** available from website or Hypertac technical services.

2.4. Screen braid clamps

2.4.1. Band-It, stainless steel, passivated

Band-It clamp suitable for:	Hypertac pt. no.
300A connector with straight or right angle backshell	HBO-0005
500A connector with straight or right angle backshell	HBO-0005

Band-It clamps require an installation tool; see **Spares and special tools** section for tool order codes.

2.4.2. Constant force spring clamp, stainless steel, pre-stressed and heat treated

Constant force clamp suitable for:	Hypertac pt. no.
300A connector with straight or right angle backshell	HBB-971
500A connector with straight or right angle backshell	HBB-971

No tooling is required for constant force clamps. These clamps are removable and re-useable.

3. Spares and special tools

3.1. Spare parts

3.1.1. Receptacle interface o-rings

	Hypertac pt. no.
Fluorosilicone o-ring for 300A metal receptacle	HR-01560-0178-F-70
Fluorosilicone o-ring for 500A metal receptacle	HR-02350-0178-F-70

3.1.2. Panel o-rings

	Hypertac pt. no.
Fluorosilicone o-ring for 300A metal receptacles	HR-02987-0178-F-70
Fluorosilicone o-ring for 500A metal receptacles	HR-03782-0178-F-70
Fluorosilicone o-ring for 300A plastic receptacles	HR-03108-0178-F-70
Fluorosilicone o-ring for 500A plastic receptacles	HR-03782-0178-F-70
Conductive o-ring for 300A metal receptacles	HR-02987-0178-D-70
Conductive o-ring for 500A metal receptacles	HR-03782-0178-D-70

3.1.3. Panel gaskets

	Hypertac pt. no.
Moulded fluorosilicone gasket for 300A plastic receptacles	HBB-942-M
Moulded fluorosilicone gasket for 500A plastic receptacles	HBB-943-M

3.1.4. Backshell cap o-rings

	Hypertac pt. no.
Fluorosilicone o-ring for 300A metal right-angle b/shell	HR-02195-0178-F-70
Fluorosilicone o-ring for 500A metal right-angle b/shell	HR-02670-0178-F-70
Fluorosilicone o-ring for 300A plastic right-angle b/shell	HR-02300-0200-F-70
Fluorosilicone o-ring for 500A plastic right-angle b/shell	HR-02800-0200-F-70

3.2. Special tools

3.2.1. Band-It tooling

	Hypertac pt. no.
Hand tool for Band-It screen braid clamps	HBO-0006

3.2.2. Crimp tooling

Klauke crimp tooling is recommended for terminating cables to connector crimp barrels and terminal lugs.

Battery powered tool (mini electro-hydraulic) = Klauke® EK354.

Crimp tools and dies listed in the following tables to be sourced from Klauke®.

3.2.3. Crimp dies by code/lug and cable size – 300A range

Termination code or lug ref	Cable CSA (mm ²)	Crimp barrel ID (mm)	Crimp style	No. of crimps	Die for use with EK354 tool
D	25	7.9	Hex	2	HR425
K	35	9.2	Hex	2	HR435
S	50	11.0	Hex	2	HR450
HBB-950-8-25-A-68	25	7.0	Hex	2	HR425
HBB-950-8-25-B-68	25	7.9	Hex	2	HR425
HBB-950-8-35-A-68	35	8.5	Hex	2	HR435
HBB-950-8-35-B-68	35	9.2	Hex	2	HR435
HBB-950-8-50-A-68	50	10.0	Hex	2	HR450
HBB-950-8-50-B-68	50	11.0	Hex	2	HR450
HBB-950-8-70-A-68	70	12.0	Hex	2	HR470
HBB-950-8-70-B-68	70	13.0	Hex	2	HR470

3.2.4. Crimp dies by code/lug and cable size – 500A range

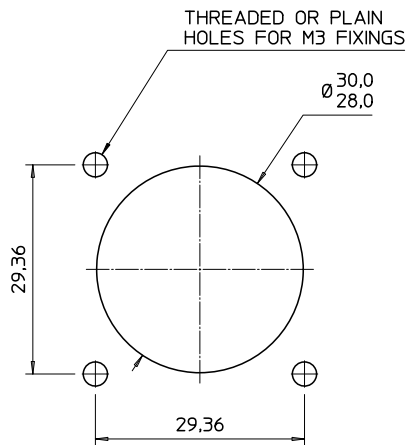
Termination code or lug ref	Cable CSA (mm ²)	Crimp barrel ID (mm)	Crimp style	No. of crimps	Die for use with EK354 tool
D	50	11.0	Hex	2	HR450
H	70	13.0	Hex	2	HR470
Q	95	14.5	Hex	2	HR495
V	120	15.0	Hex	2	HR4120
HBB-950-10-50-A-68	50	10.0	Hex	2	HR450
HBB-950-10-50-B-68	50	11.0	Hex	2	HR450
HBB-950-10-70-A-68	70	12.0	Hex	2	HR470
HBB-950-10-70-B-68	70	13.0	Hex	2	HR470
HBB-950-10-95-A-68	95	13.5	Hex	2	HR495
HBB-950-10-95-B-68	95	14.5	Hex	2	HR495
HBB-950-10-120-A-68	120	15.0	Hex	2	HR4120
HBB-950-10-120-B-68	120	16.2	Hex	2	HD4120

4. Panel preparations and connector outline drawings

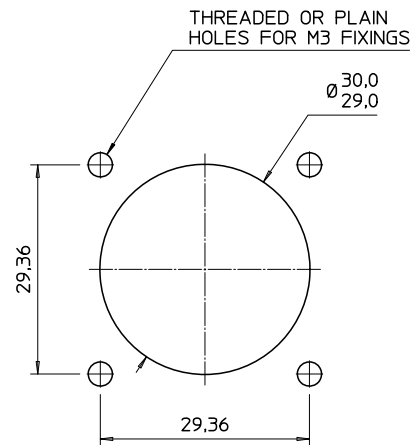
4.1. Panel preparation for receptacles

4.1.1. Standard rear mount (connector mounted behind panel / inside box)

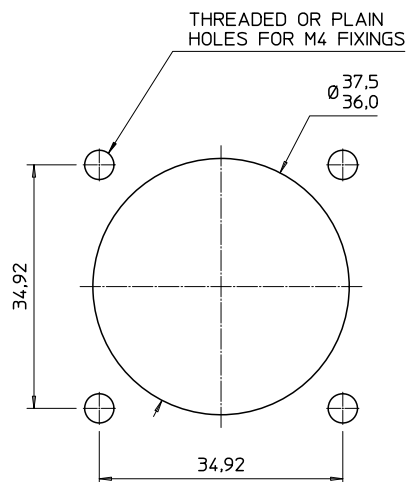
300 amp metal



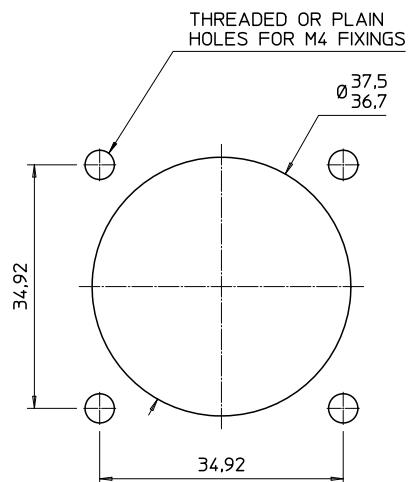
300 amp plastic



500 amp metal



500 amp plastic



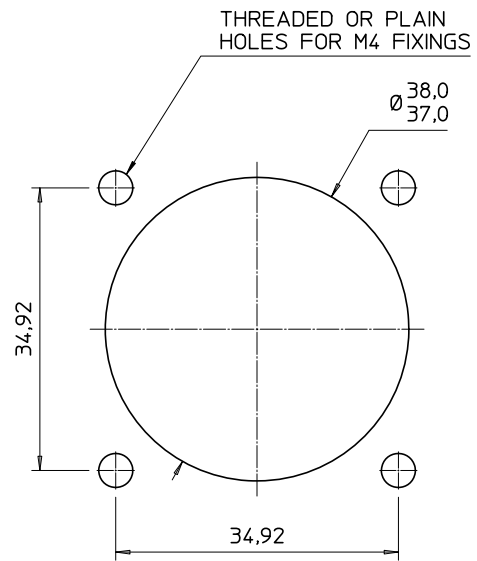
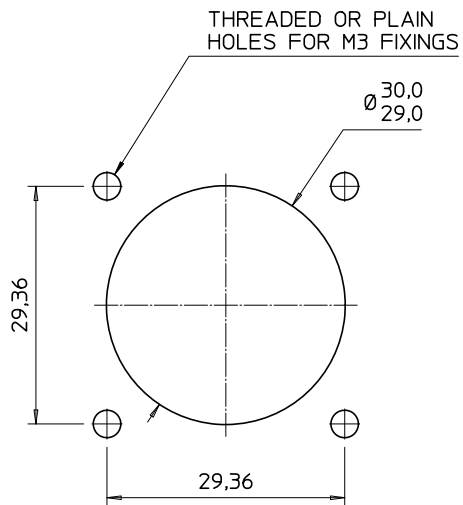
Maximum panel thickness 5.0mm.

If panel is more than 3.0mm thick then fixing screws will need to be recessed to give clearance for mating connector.

4.1.2. Outer mounting (connector mounted in front of panel / outside box)

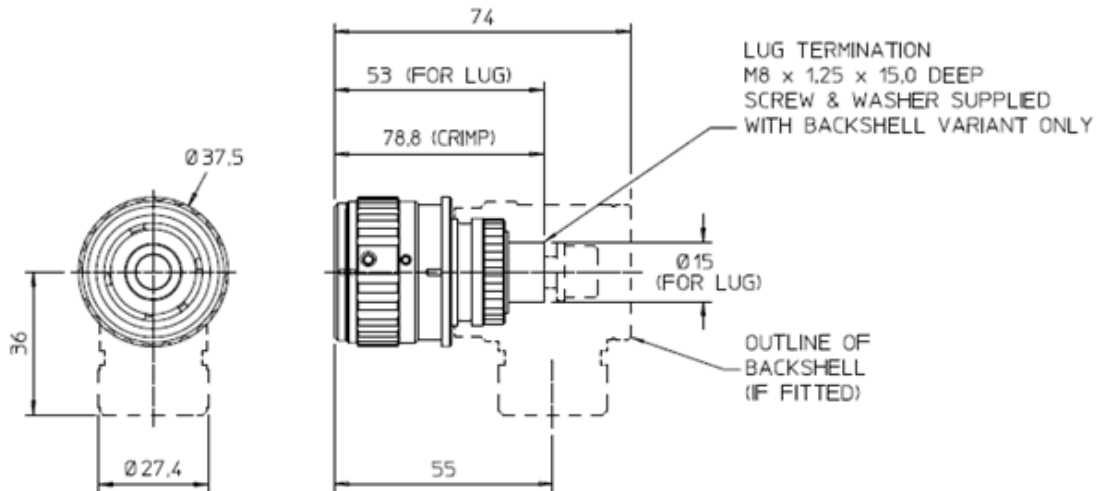
300 amp metal & plastic

500 amp metal & plastic

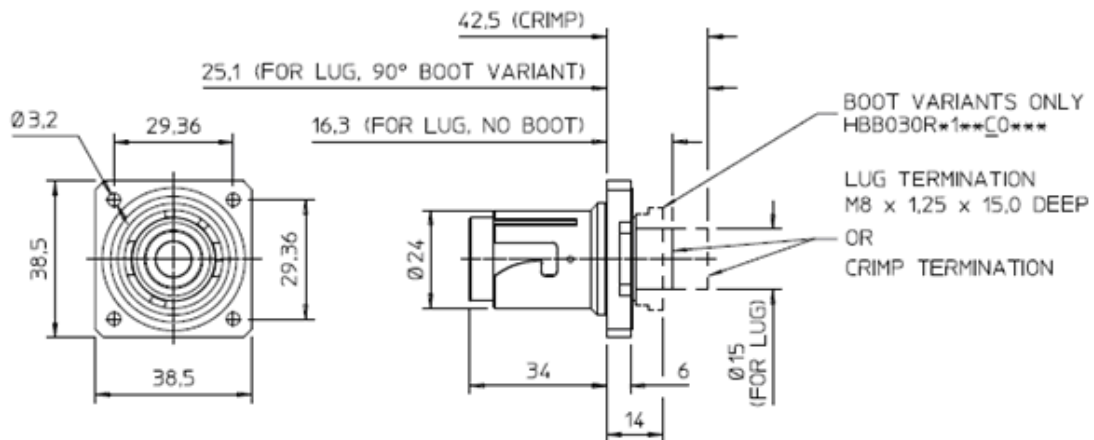


4.2. Connector outline drawings

4.2.1. 300 amp plastic plug – HBB030P*1*****

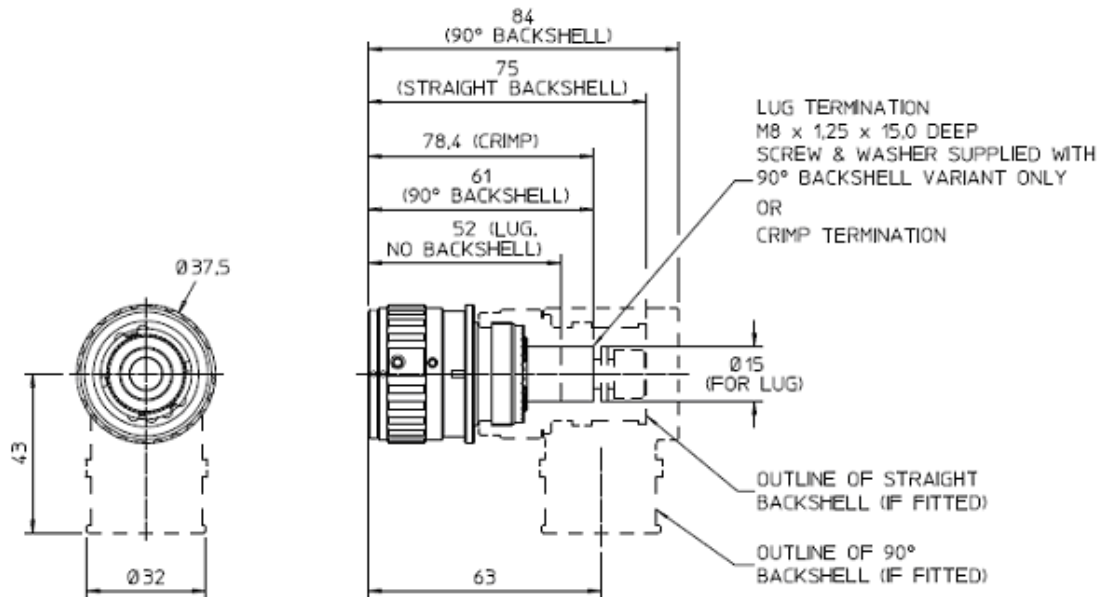


4.2.2. 300 amp plastic receptacle – HBB030R*1*****

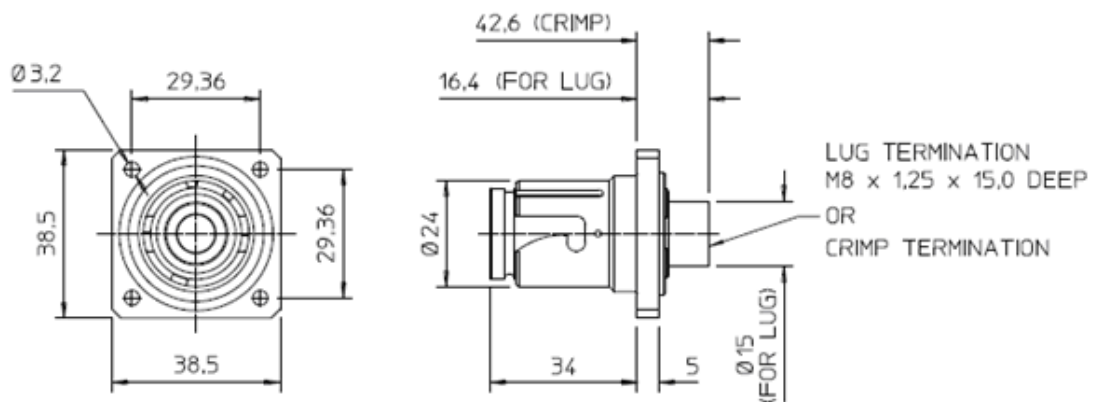


Dimensions in mm
Transit caps not shown

4.2.3. 300 amp metal plug – HBB030P*(A or B)*****

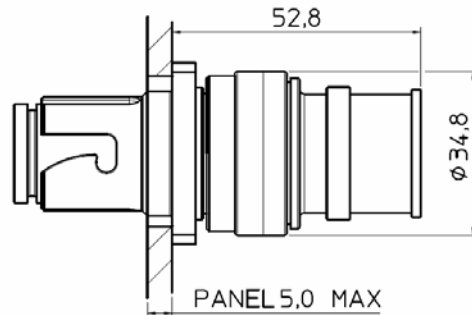


4.2.4. 300 amp metal receptacle – HBB030R*(A or B)*****



Dimensions in mm
Transit caps not shown

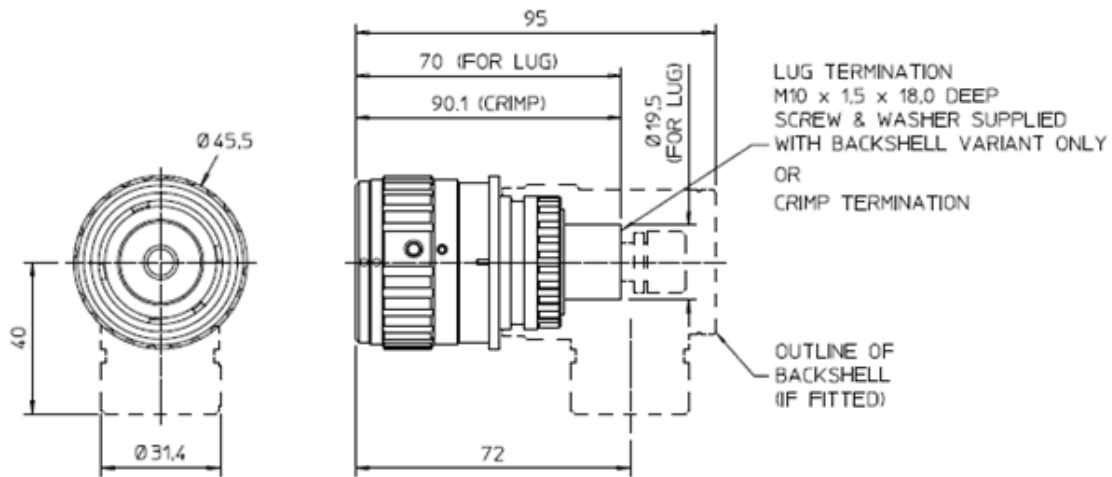
4.2.5. 300 amp metal receptacle with backshell – HBB030R*(A or B)**B****



NB: THIS VERSION IS FOR INTERNAL BOX MOUNTING AND IS ONLY AVAILABLE WITH CRIMP CONTACTS.

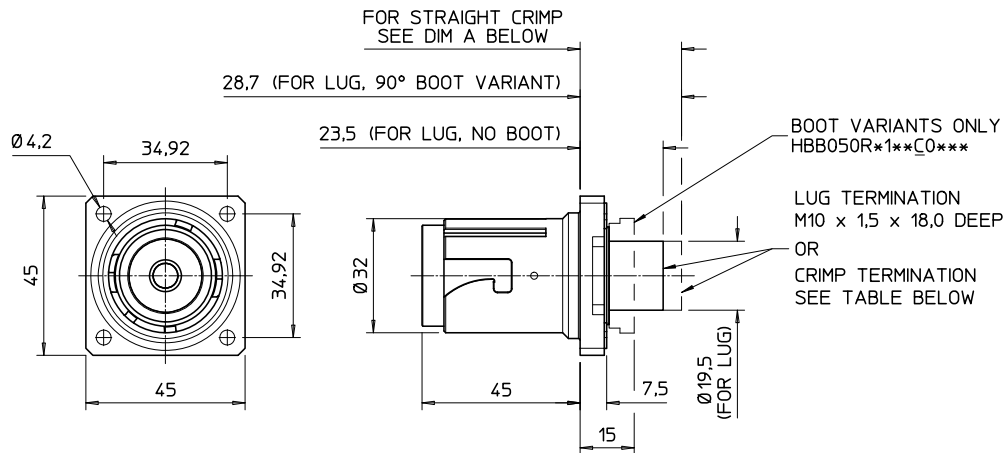
For this version, the contact crimp barrel must be specified when ordering: see section 1.2 above.

4.2.6. 500 amp plastic plug – HBB050P*1*****



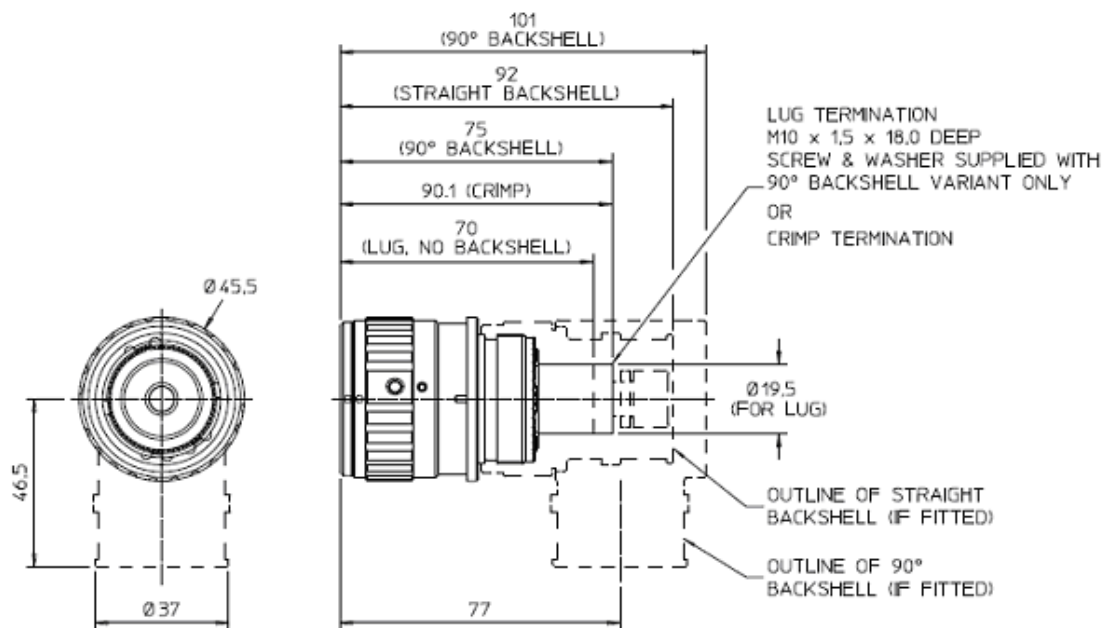
Dimensions in mm
Transit caps not shown

4.2.7. 500 amp plastic receptacle – HBB050R*1*****



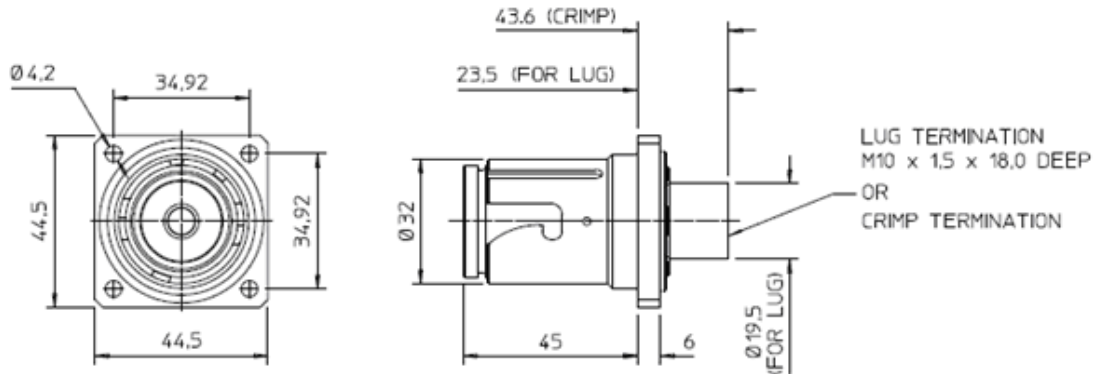
STRAIGHT CRIMP	STANDARD	BOOT VARIANT
Dim A	43,6	58,9

4.2.8. 500 amp metal plug – HBB050P*(A or B)*****

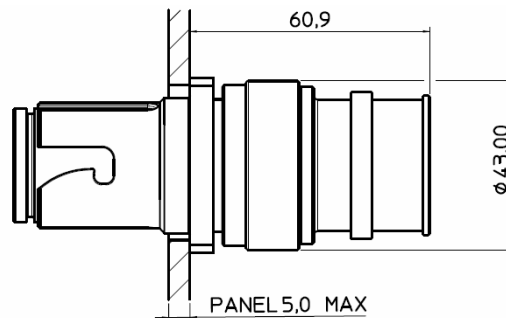


Dimensions in mm
Transit caps not shown

4.2.9. 500 amp metal receptacle – HBB050R*(A or B)*****



4.2.10. 500 amp metal receptacle with backshell – HBB050R*(A or B)**B****



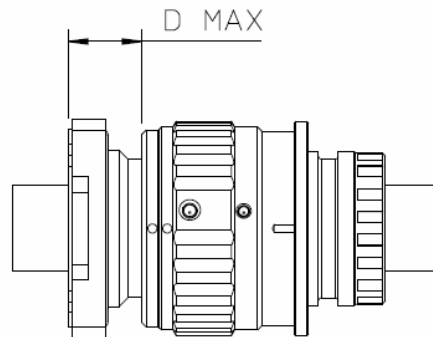
NB: THIS VERSION IS FOR INTERNAL BOX MOUNTING AND IS ONLY AVAILABLE WITH CRIMP CONTACTS.

For this version, the contact crimp barrel must be specified when ordering: see section 1.2 above.

Dimensions in mm
Transit caps not shown

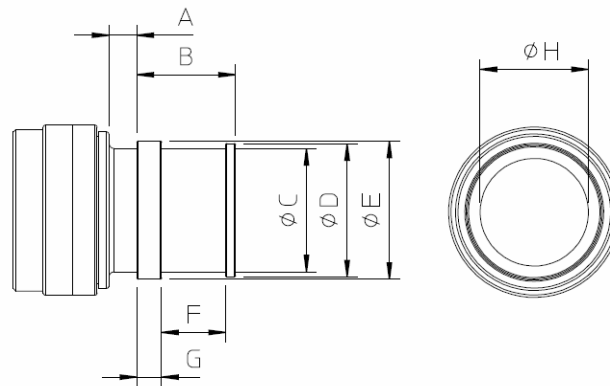
4.3. Mated dimensions

Dimension when fully mated, mm	D MAX
300A metal	13
300A plastic	13
500A metal	13.5
500A plastic	13.5



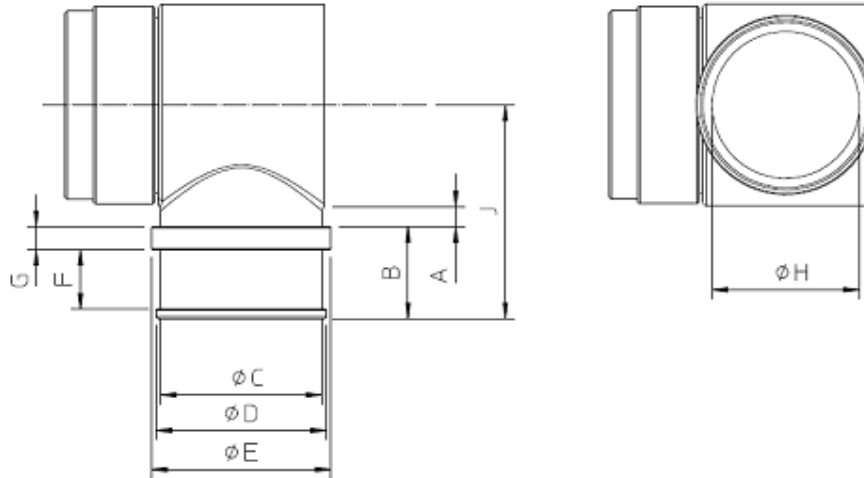
4.4. Metal backshell dimensions

4.4.1. Straight option (optional knurl on $\varnothing C$)



Dimensions in mm	A	B	$\varnothing C$	$\varnothing D$	$\varnothing E$	F	G	$\varnothing H$
300A straight	6	20	25	27	28	13	5	22
500A straight	9.5	20	34	36	38	13	5	30

4.4.2. Right-angle option (optional knurl on $\varnothing C$)



Dimensions in mm	A	B	$\varnothing C$	$\varnothing D$	$\varnothing E$	F	G	$\varnothing H$	J
300A right-angle	5	20	30	32	33	13	5	27	43
500A right-angle	4	20	35	37	39	13	5	32	47

5. Cable assemblies

Connectors can be supplied terminated to a range of cables. Refer to Hypertac sales or technical services for details.