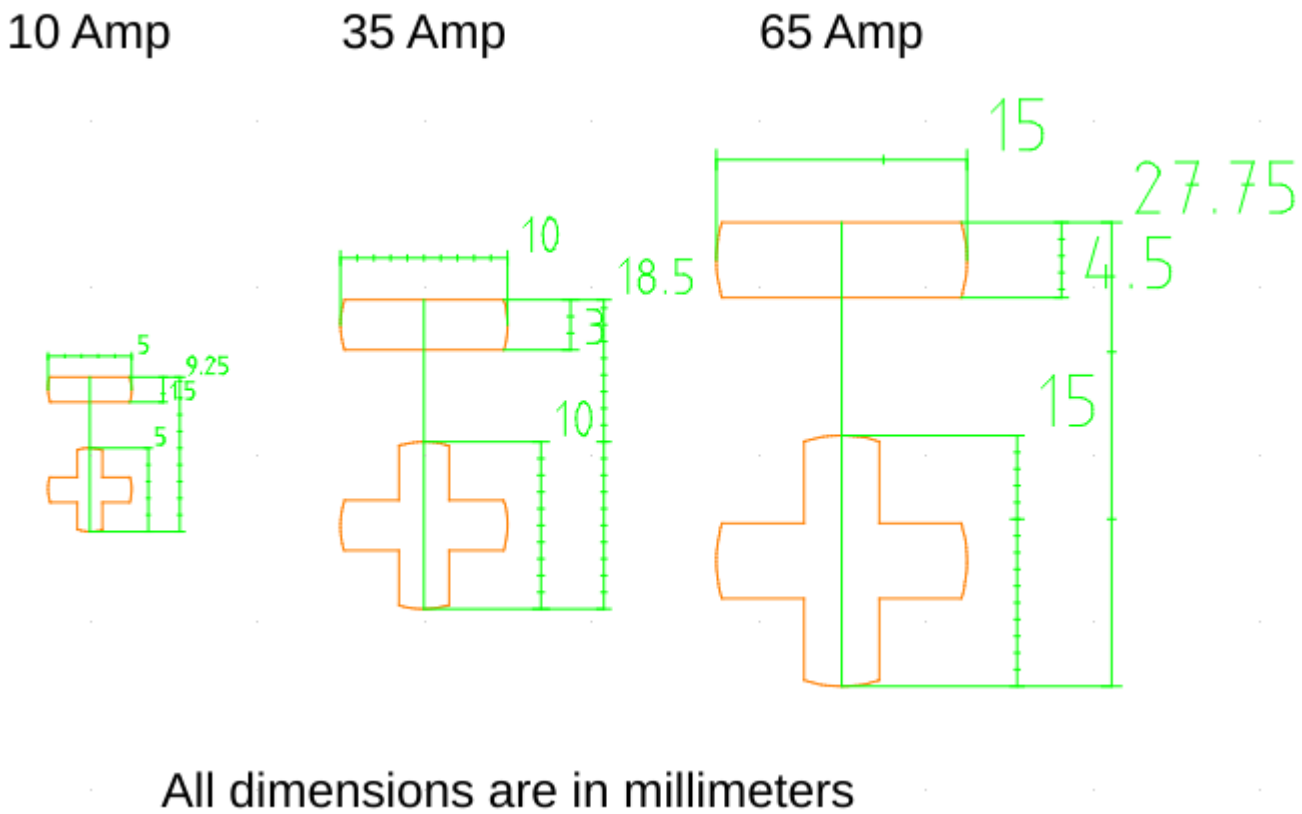
Wire , Electrical cords and plugs

There are 4 different federation cords and plugs , the + & - plugs are made from a “tough ceramic” held together with A286 Stainless Steel Torx screws and Spiralok nuts , all internal connections are soldered and the (separate) springs are 718 alloy , the stranding is tin plated and it is fine , further details are :

Name	Power	Number of conductors	Style	Primary use
10 Amp (5mm Dia.)	300 watts	2 x 2.5mm^2	+ & -	Lamps , fans , computers , Etc.
35 Amp (9 mm Dia.)	1050 watts	2	+ & -	Blenders, drills, bench grinders, , Hot pots , Etc.
65 Amp (13mm Dia.)	1950 watts	2	+ & -	Electric Woks , SCUBA tow chargers , Commercial hot pots.
CAN line (3.7mm Dia.)	15 watts data / 15 watts power (60 with specialSocket)	(2 + 2) x .52mm^2	2.5mm headphone	Internet and power for small devices

Loads larger than 65 Amps are hard wired using vacuum insulated copper pipe pairs recirculating chilled air.



- >.25 mm^2 copper per amp (CAN line is .26 mm^2 to match 20 AWG wire)

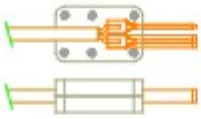
CAN line , 3.7mm Dia , .3mm thick nickel wire braid cover , Burnt Sienna , Federation Pink ,Van Dyke Brown , & Federation Gray ,fire resistant platinum catalized silcone Rubber , tin plated copper strands.

10 amp , 5mm Dia ,.3mm thick Nomex braid cover , Burnt Sienna & Van Dyke Brown , fire resistant platinum catalized silcone Rubber , tin plated copper strands.

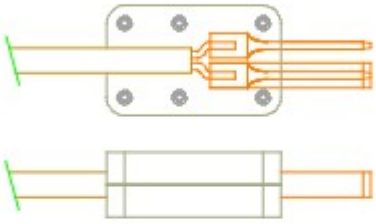
35 amp , 9mm Dia ,.5mm thick Nomex braid cover , Burnt Sienna & Van Dyke Brown , fire resistant platinum catalized silcone Rubber , tin plated copper strands.

65 amp , 13mm Dia ,.9mm thick Nomex braid cover , Burnt Sienna & Van Dyke Brown fire resistant platinum catalized silcone Rubber , tin plated copper strands.

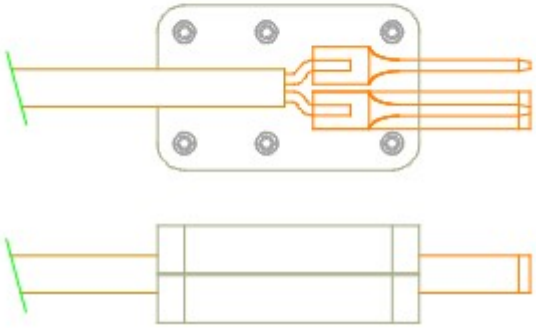
10 amps



35 amps



65 amps



Name	Area	Solution
10 amps	150mm²	5mm rod = 4.75 x 16 x 2 = 152mm²
35 amps	525mm²	10mm rod = 9.5 x 28 x 2 = 532mm²
65 amps	975mm²	15mm rod = 14 x 35 x 2 = 980mm²

15 square millimeters of contact area minimum per amp.

Electrical wiring

1. Course stranded Single conductor wire is available in 17.03mm² (**65 amps**) , 9.17mm² (**35 amps**) 2.58mm²(**10 amps**) , 1.43mm² (**5 amps**) , and .56mm² (**2 amps**).

2. Course stranded wire is available in Van Dyke Brown (Colorlex), Burnt Sienna (Colorlex), Raw Sienna , Yellow Ocher , Raw Umber , Burnt Umber , federation pink (HTML #d5838c) , and federation gray (HTML #adbac6) with and without a Antique White stripe as well as pure Antique White , for a total of 17 color codes in 5 sizes equaling **85 sizes and colors**. (note. colors are **NOT** standardized we must standardize them ourselves !)

3. Construction is as follows **.56**mm²-7x28ga , **1.43**mm²-7x24ga , **2.58**mm²-7x23ga , **9.17**mm²-7x16ga , **17.1**mm²-19 x .9mm , in tin plated strands (the tin is in addition to the copper) insulated with fireproof Van Dyke Brown silicone rubber and a bonded braided Nomex cover.

4. **ALL wire is tested for copper purity and tin purity !**

Transition Metal Complexes

Platinum, rhodium, and iridium complexes impart improved flame resistance to silicone rubber at low loadings (typically < 1%wt) [5, 6]. Platinum is particularly useful because it serves as both a flame retardant and a catalyst for addition cure silicone rubber. The catalytic action of platinum makes it a powerful flame retardant in silicone rubber. During thermal oxidation, the platinum compound catalyzes the formation of methylene-bridges, both inter- and intramolecularly, reducing the potential for thermal degradation [5]. This can be seen in TGA scans of a silicone rubber with and without ppm order of platinum complex added (FIG. 2) [5].

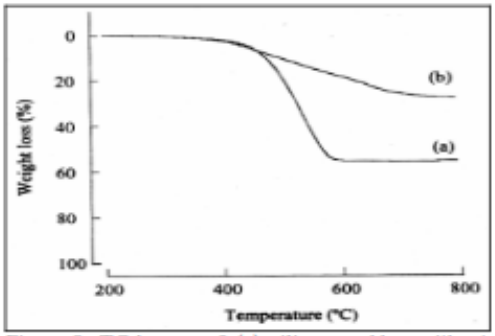


Figure 2: TGA scan of (a) silicone rubber without platinum complex and (b) silicone rubber with platinum complex [5].

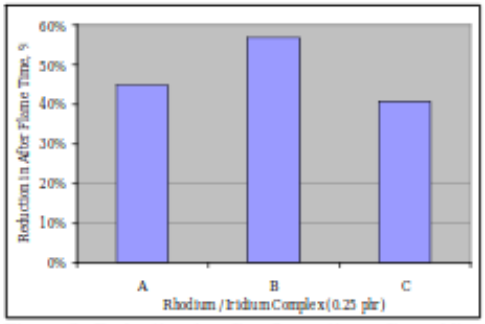


Figure 3: Reduction in after flame time after adding 0.25 phr (A) bis(1,5-cyclooctadiene diriridium(I) dichloride, (B) iridium(III) acetylacetonate or (C) rhodium(III) acetylacetonate.