



## POWER CORD CHARACTERISTICS

Understanding the attributes of a power cord

<http://www.stayonline.com/>

Stay Online White Paper

2010-1-27

Topic: **Characteristics of Cord types used in Data Environments**

This paper is a quick and dirty explanation of Portable AC cords. A detailed exploration of the topic would be exceedingly tedious and largely irrelevant to the lay person. There are seemingly endless types of AC Cord. Fortunately there is a subset most commonly used in manufacturing power cords for equipment in Data environments. The main attributes of a cord are jacket type, conductors, and gauge.

A) Jacket Types commonly used in North American Data environments; SPT, SVT, SJ, SJT, SOOW, STO.

<http://www.stayonline.com/reference-cord-jackets.aspx>

Decoding the jacket Abbreviations is relatively simple:

- 1) S = "Service" as in a cord powering a piece of equipment. Virtually all Data equipment cords start with S.
- 2) P = "Parallel" also known as (aka) zip cord. Much like the cord found attached to lamps where 2 or 3 wires run along side by side. Commonly used for notebook computers.
- 3) V = "Vacuum" which is sort of an anomaly. It is a cord which is popular in 18 gauge applications where a thin cord is desired.
- 4) J = "Junior" or 300 volts (V). The absence of a J most often indicates the cord is rated for 600 volts. SJT is the most prevalent cord found.
- 5) O = "Oil resistant" properties. One O means Oil Resistant Jacket. Two OO in succession indicate the additional attribute of Oil Resistant Insulation.
- 6) T = "Thermoplastic" as opposed to rubber. Thermoplastic slides on a surface well and also collects less debris on the jacket. Rubber has the advantage of flexibility thus a tighter bend radius.
- 7) W = Weather resistant. Any jacket type containing a W is meant for outside use.

In your travels you may encounter International rated cords.

HAR = "Harmonized" is an international standard. These are common to all continents other than North America. <http://www.stayonline.com/reference-international-cord-types.aspx>

B) Conductors are colored to represent function so either end of cord can be terminated accurately. Functions are either Ground, Neutral, or Line. The Line Conductors carry the current. There is a North American and an International Inner Conductor Color Code standard.

<http://www.stayonline.com/reference-conductor-color-chart.aspx>

Cords in Data equipment applications either carry 2, 3, 4, or 5 conductors. 2 and 3 conductors are always single phase. 4 conductors can be either single phase or three phase depending upon the standard. 5 conductors are always three phase.

C) Gauge aka (AWG) is a counter intuitive scale where the higher the number the thinner the cord. So a thin cord would be an 18 AWG whereas a thick cord is 2 AWG. The cords physical size is measured as Outer Diameter (OD). OD is significant when considering what ends will fit on the cord. International cord measurements are not in AWG but rather mm<sup>2</sup>. The following is a conversion chart. <http://www.stayonline.com/reference-conductor-size-ratings.aspx>

What cord is right for you?

- 1) Meet your Amp requirements. Assess number of Lines carrying current in relation to the gauge of cord to be used. <http://www.stayonline.com/reference-circuit-ampacity.aspx>
- 2) Determine whether International or North American approvals are necessary for the cord.
- 3) Assure your cord will fit the end you are applying by evaluating OD.
- 4) If voltage requirement is 300V or less SJ/HO VV03 are adequate. Otherwise don't use Junior.
- 5) Do you want clean manageable cords Thermoplastic or very flexible floppy Rubber cords.
- 6) Is the cord going to be used indoors or outdoors? If outdoors assure a W is in the jacket type.

Our cord selection:

<http://www.stayonline.com/power-bulk-cord.aspx>