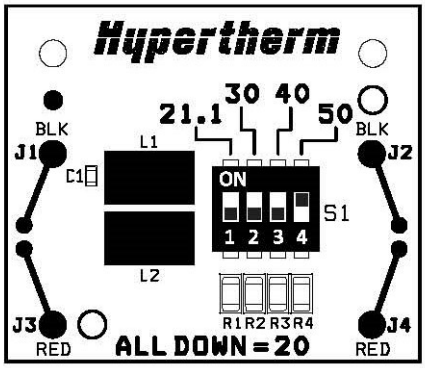
# Voltage Dividers

*Version 8.26*

In order to cut properly, it's important for plasma cutters to maintain a proper height from the material while cutting. In order to accomplish this, the controller samples voltage from the arc as the cutter moves. This voltage feedback alerts the controller to changes in the arc, which the controller can then use to precisely adjust the height of the torch.

One of the problems is the excessively high voltage of the arc. Typically, arc voltage is around 68 – 160 volts, with a potential momentary 300 volt output in the event of a consumable failure. This is much more voltage than the feedback circuit can handle. In order to protect the controller, an optional voltage divider board can be added inside the plasma cutter in order to reduce the feedback voltage.

By default, most plasma cutters are not equipped with voltage dividers. It's an option when buying, or alternatively, it sometimes can be added later. The Hypertherm 45XP plasma cutter has voltage divider settings of 20, 21.1, 30, 40 and 50. Inside, there are several dip switches which the user can position to select which particular setting to use:




Make certain to use the correct setting for your particular table. For ArcStar plasma tables, the voltage divider needs to be set to 50.

Finally a warning. We have seen instances where plasma table manufacturing companies have decided to save money and not install the factory voltage divider. Instead of adding an internal voltage divider board, they splice into the raw arc voltage circuit inside the plasma cutter with 20 gauge wires. This signal (potentially with up to 300 volts of electricity) was then connected to their own external proprietary voltage divider. Problem is, this was after a lengthy wire run, and well away from the confines and protective safety of the plasma cutter itself. Essentially, they placed anyone touching the machine at risk.