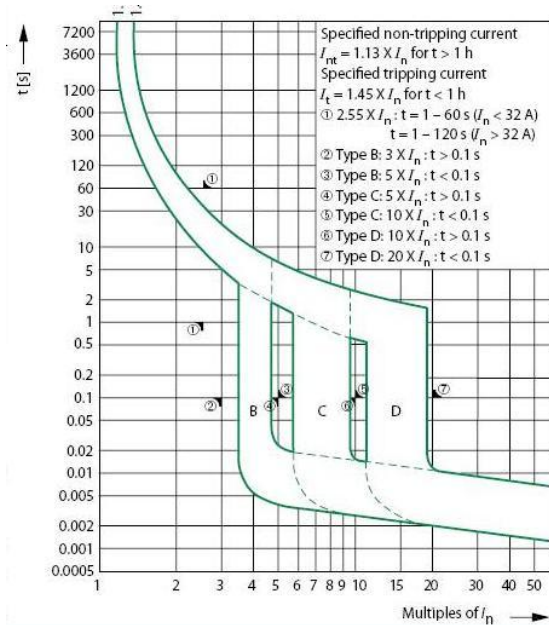


**Q Why does the circuit breaker in the iVAC Pro module keep tripping, even though the dust collector or power tool's rated amperage is within the rating of the iVAC Pro unit?**

To meet safety approval requirements the iVAC Pro modules are fitted with Supplementary Protectors (Circuit Breakers). These devices monitor the current passing through them and under certain conditions they trip and become open circuit, removing the power to the main circuitry.

The conditions required for the circuit breaker to trip are referred to as the sensitivity of the protector and vary with the application of the circuit breaker. The chart shows the characteristics of three levels of sensitivity; B, C and D. Circuit breakers in secondary items usually are more sensitive than the primary circuit protection. This means that the circuit breaker in an iVAC unit, which is of 'B' sensitivity, will trip before the circuit breaker in the power panel.



Refer to the chart.

In the case of all three sensitivities the circuit breaker should be able to carry 1.13 x its rated current for greater than 1 hour without tripping. In the case of a 20 Amp circuit breaker this would be 22.6Amps. The circuit breakers in the iVAC units are based at the 'B' sensitivity.

If we assume a 20 Amp circuit breaker; from the chart we will see that at 2 x the rated current (40Amps) the circuit breaker will trip in approximately 20seconds.

At 3 x the rated current (60Amps) it will trip in 5 seconds and at 3.5 times the rated current (75Amps) it will trip in 1/50<sup>th</sup> of a second.

Initially the problem of tripping circuit breakers was encountered with the iVAC Pro Switch module as it was applying power to a dust collector.

At the time of start up, a dust collector is under maximum load, since it is trying to move air that is stood still. Under these conditions the current

supplied to the dust collector can be four to six times the normal running current. This surge can also last for several seconds.

If we consider a 1.5HP dust collector operating at 115Vac, it has a running current in the range of 15Amps. At start up this can be as much as 75Amps for three seconds and as a result can trip the circuit breaker. The iVAC Pro Switch 115V is rated to power dust collectors up to 1HP and the iVAC Pro Switch 240V can power dust collectors up to 1.5HP.

To resolve the limitation of the iVAC Pro Switch in powering larger dust collectors, MBright Tools has developed the iVAC Contactor. This unit is controlled from an iVAC Pro Switch 115xx and is powered directly from an AC Mains circuit. It has the ability to switch voltages of either two or three phase up to 600Vac and at running currents of 25Amps. This equates to dust collectors of up to 7 HP.

In the case of most power tools they are not under load at the time of start up. The cutting head is of low mass and as a result the start up current is about three times the idle running current and is of short duration. There are however some tools that have a large mass and this results in a heavy current at start up and is again liable to trip the circuit breaker. Two examples of this type of power tool are the band saw and also a grinder. In the case of the band saw there are two large band wheels that can weigh many kilograms and they take significant power and several seconds to get up to speed. An example of a grinder was that the start up current was seven times the running current and lasted for nearly ten seconds.

At the present time MBright Tools does not have a solution for the high power tools such as the band saw; however the iVAC Pro Tool HP, which will be introduced in Q1 of 2012, will interface with power tools that have high start up surge currents and or running currents over 20Amps and either single or three phase supply.

