Voltage Supply
PC3-110 Volt

Specification:

Voltage: **110 Volts +/- 10%**
Range: **120 Volts to 100 Volts**
Amps: **9.8 Amps @ 110 Volts**

Definitions:

- **Line Voltage** = Voltage measured at Hoist when not running, this reading is usually the same as source voltage but may be a few volts less.
- **Start Voltage** = Voltage measured at Hoist while the Hoist is starting and will normally register for a short interval, this will be the lowest reading as the hoist is using the most power to overcome the load to start.
- **Run Voltage** = Voltage measured at Hoist when running, this reading is taken when the hoist is running and will be less then the Line voltage.
- **Voltage Drop** = Difference between Line Voltage and Run Voltage, this reading is dependent on the length and condition of the power cord and connections and load on hoist.
- **Buck** / **Boost** = Transformers that reduce (buck) or raise (boost) line voltage 5- 20%. Used to protect Equipment from being damaged, the function of a transformer is only to correct power source.

Voltage drop: Two contributing factors to Voltage Drop are load on the hoist and the length of extension power cord. The average voltage drop in field use for 10/3 Awg Power Cord is close to 2.5 volts per 100ft per PC3-110 Volt Hoist. There are variables related to the Power Cord other then length that will also affect the voltage drop such as; the condition of the connectors, condition of the cord inner wire, temperature will all combine to increase resistance in the cord increasing voltage drop. In addition, as the load increases on the hoist it takes more power to lift the load which also increases Voltage Drop.

The following three scenarios depict typical application of a two hoist on a swing stage with various voltages that could be expected in the field. These scenarios illustrate the importance of knowing the run voltage for the Hoists. There may be acceptable line voltage however once the hoists are operating the voltage drop from the combination of load and Power Cord resistance may be below the acceptable run voltage range.

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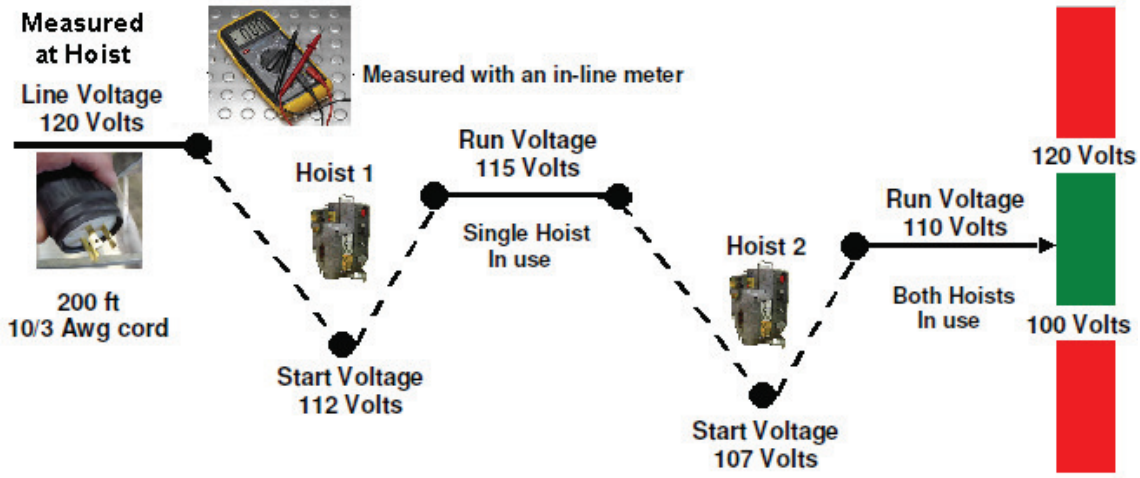
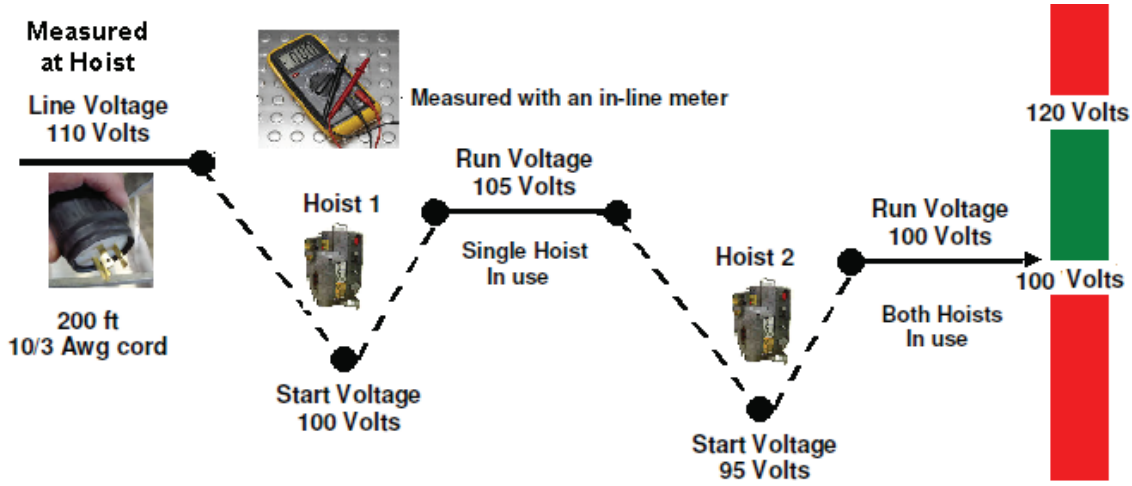
Scenario 1: Line Voltage 120 Volts two PC3-110 Volt Hoists at rated load.

In a typical application using 2 hoists yoked and a 200ft 10/3 Awg cord there will be a voltage drop of around 10Volts. With a line voltage of 120 volts the first hoist to start will see 115 Volts running where the second hoist will see 115 Volts at start, due to the staggered start requirement needed to not exceed 20amps circuit, and the net run voltage for both hoists would be 110 volts.



Scenario 2: Line Voltage 110 Volts two PC3-110 Volt Hoists at rated load.

In some areas or older buildings the source Voltage may be 110 volts due to several factors which would cause the hoists to see run voltage of 100 Volts.



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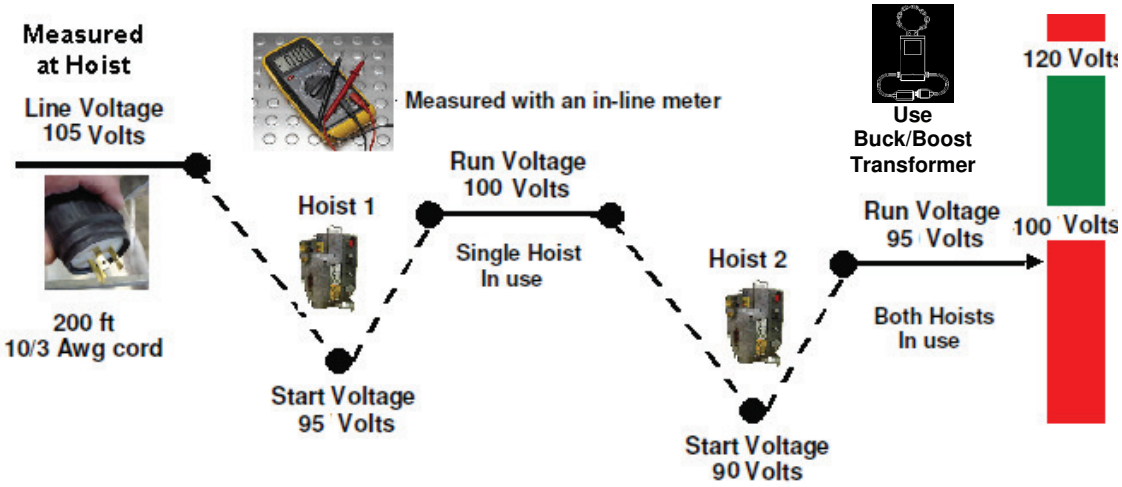
Scenario 3: Line Voltage 105 Volts two PC3-110 Volt Hoists at rated load.

There may be a scenario where the line voltage is low enough where it may be possible to start one hoist but the second hoist will not start normally. In a low voltage start the centrifugal switch may not disengage causing a very high amp draw which will contribute to arching of the contacts and failure of the start capacitor. Consider using a Buck/Boost transformer or independent power sources.



Conclusion:
It is important to understand that the run voltage the hoist sees will be less then what is measured at the source or line voltage. The length and gauge of the power cord, the condition of the connectors and inner wire of the power cord, the condition of source connection and environment temperature all play into what voltage will be available to the hoist. As a general guideline to ensure proper performance keep the run voltages measured at the hoist between 120 Volts to 100 Volts. The use of Buck/Boost transformers or independent power sources may be necessary. When voltage is out of range the hoist will not work correctly; there may be abnormally high amp draws which will lead to high hoist temperatures, there may also not be enough power for the hoist to overcome the load on start up which will contribute to starting capacitor damage and centrifugal switch arching.

NOTE: *These voltages are accurate when the hoists are being operated at the full rated load of the hoist.* ***If the load is larger than full rated load, the performance of the hoists will be affected.*** *Calculations are derived with best practices considered to include appropriately sized electrical connections and practice.*

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