

GENERAL PT - ELECTRICITY TERMINOLOGY

1. **PT - Power Transmission.** An industry of moving parts or "drive trains" including motors, controllers, transformers and reducers.
2. **Transformer** - Used to isolate line voltage from a control circuit or to change voltage and current to higher or lower values. Specify voltage of both primary and secondary windings.
3. **Ground** - A voltage reference point established by coupling the circuit to earth ground.
4. **Grounded Circuit** - A malfunction due to insulation breakdown allowing current to flow to ground rather than through the circuit.
5. **Resistance (R)** - Opposition to current flow measured in ohms. Resistance is compared to friction because it opposes motion and generates heat.
6. **Ambient** - The temperature of the air, water or other cooling medium that carries away the heat produced by a motor. Ambient is room temperature when referring to air cooled apparatus not provided with artificial ventilation.

CONTROL TERMINOLOGY

1. **Form Factor** - A phrase for how much AC component is present in the DC output from a rectified AC supply. The figure derived from dividing RMS by average current.
2. **Fuse** - A protection device usually containing a material with a low melting point which melts when current through it exceeds the ampere value for which it is rated and opens the circuit stopping the current flow.
3. **Hy-Pot** - High voltage insulation test to chassis.
4. **Open Circuit** - A break in an electrical circuit which prevents normal current flow.
5. **Relay** - A device which has two separate circuits. It is constructed that a small current in one of the circuits controls a large current in the other circuit. A motor starting relay opens or closes that starting circuit under predetermined electrical conditions in the main circuit (running winding).
6. **Short Circuit** - A defect or fault in a winding which causes part of the normal electrical circuit to be bypassed, frequently causing overheating of the winding and resulting in burnout.
7. **Speed Regulation** - The change in motor RPM from no load to full load and expressed as percentage of base speed.
8. **Thermocouple** - A pair of dissimilar conductors joined to produce a thermo-electric effect. Used to accurately determine temperature.
9. **Speed Range** - The ratio of minimum to maximum speed where the speed regulation published is obtained.
10. **Line Voltage Compensation** - Holds the motor speed constant when the line voltage fluctuates over a range of $\pm 10\%$.
11. **Potentiometer Speed Indicator** - A means of speed indication by monitoring the voltage on the speed set control.

12. **MIN and MAX Speeds** - Allows the operator to set the minimum and maximum speeds that the motor is to operate. The speed between this range is then adjusted by main speed dial.
13. **IR Compensation** - This compensates for the resistance change in the armature due to temperature changes and also increases the speed regulation range.
14. **Torque/Current Limit** - Permits operator to adjust the maximum current the motor will draw and limits the maximum torque the motor will produce.
15. **Rheostat** - A device that has two contacts which produces a variable resistance in a circuit.
16. **P.C. Board - Printed Circuit Board** - Contains 90% of the logic circuitry of the control. The item to buy if you are stocking only one replacement part.

MOTOR TERMINOLOGY

1. **Prime Mover** - The motor portion of a variable speed system. The motor converts electrical energy into mechanical energy to "move" the equipment (i.e. operate the machine). Motors may be AC, DC or universal (AC or DC) in design.
2. **Torque (T)** - The turning effort or twisting effect applied to the shaft of the motor. Torque is usually expressed in inch/pounds or inch/ounces for fractional and subfractional horsepower motors. Formula:

$$T(\text{in/lb}) = \frac{63,025 \times \text{HP}}{\text{RPM}}$$
3. **Horsepower (HP)** - A measure of the rate of work. One horsepower equals 746 watts. Formula:

$$\text{HP} = \frac{T(\text{in/lb}) \times \text{RPM}}{63,025}$$
4. **RPM's (Revolutions per minute)** - Base (top) speed of stock DC motors is approximately 1800 RPM.
5. **Load** - The work required of a motor to drive the related equipment. Express in HP or torque at certain RPM.
6. **Brush** - A conductive material, usually containing graphite, which rides on the commutator of a motor and forms an electrical connection between it and the source of power. DC Brushes should be checked for wear a minimum of every six months.
7. **Armature** - Rotating element of a brush type motor (DC).
8. **Cogging** - Erratic rotation of the motor shaft, usually occurring at low speeds.
9. **Plugging** - Braking of motor by applying partial or full voltage in reverse to quickly bring the motor down to zero speed.
10. **Duty Cycle** - The relationship between running and resting time of an electric motor. The 2 duty cycles are:

Continuous Duty (CONT) - Operation of load up to 24 hours a day.

Intermittent Duty (INT) - Operation during alternate periods of load and rest. Intermittent duty is expressed as 5 minutes, 15 minutes, 1 hour, etc.