ELECTRICAL SAFETY

Safety Training For The Non-Qualified

NO USER SERVICABLE PARTS INSIDE
CALL AN ELECTRICIAN FOR ALL REPAIRS!
LANGUAGE OF ELECTRICITY

- Electricity: Negatively Charged Particles Moving Over A Conductor
- Current: Movement Of Electrons Along A Conductor
- Ground Or Grounding: The Draining Or Passage Of Electricity Into The Earth
LANGUAGE OF ELECTRICITY

- **Alternating Current**: Current that alternates direction through a conductor.
- **Direct Current**: Current that flows in the same direction through a conductor.
- **Static Electricity**: Electrical charge resulting from friction between two objects or from objects striking.
LANGUAGE OF ELECTRICITY

- **Shock**: Condition When The Body Becomes A Part Of A Circuit
- **Polarity**: The Flow Of Electrons In The Proper Direction (From The Source To The Device Or Negative To The Positive Through A Device)
HOW DOES ELECTRICITY WORK?

- Like Charges Attract; Unlike Charges Repel
- Electricity: Negatively Charged Particles (Electrons) Moving Over A Conductor
- Conductor: A Material With A Relatively Low Resistance To The Flow Of Electrons
- Insulator: Material That Has A High Resistance To The Flow Of Electrons
HOW IS THE SERIOUSNESS OF AN ELECTRICAL SHOCK DETERMINED?

- The Voltage (Pressure) On Circuit
- Skin Resistance And Internal Resistance
- Amount Of Current Flowing Through The Body, A Function Of Volts And Amps
- Path The Current Takes
- Body’s Reaction To The Shock
- Length Of Time Electricity Is Applied
WHAT CAUSES SHOCKS?

- Touching Both Wires Of An Electrical Circuit
- Touching One Energized Wire And A Ground Conductor
- Touching The Case Of A Faulted Or “Short” Circuited Appliance Or Machine
EFFECTS OF ELECTRICAL SHOCK

- Volts Divided By Resistance in Ohms = Current In Amps
- 120 Volts Divided By 100,000 Ohms = 0.0012 Amps Or 1.2 Milliamps
- 1.2 Milliamps Is Perception Threshold
- 10-20 Milliamps Is Painful; Let-Go Threshold; Can Kill In Time
- 100 Milliamps Can Kill In A Second; Can’t Let Go
- 200 Milliamps Kills; Causes Heart Fibrillation; Burns Human Flesh
MEASURING ELECTRICITY

- Volts: A Measurement Of Electrical Pressure
- Watts: A Unit Of Electrical Power
- Amperes: A Measurement Of The Volume Of Electrical Current
- Ohms: Measure Of The Resistance To The Flow Of Electrons
ELECTRICAL SAFETY DEVICES

- Insulation
- Ground Fault Circuit Interrupters (GFCIs)
- Double-Insulated Devices
- Grounding (Circuit And Equipment)
- Guarding
- Fuses And Circuit Breakers
- Personal Protective Equipment
SAFE WORK PRACTICES

- Know Where The Hazards Are
- Properly Maintain Equipment
- No Exposed Parts Or Energized Surfaces
- Use Barriers And Devices Where Appropriate
- No Conductors To Walk On Or Trip On
- No Jewelry, Or Other Metal Objects Around Electricity
SAFE WORK PRACTICES

- Never Use Plugs Or Receptacles That Can Alter Polarity
- Properly Plug All Connecting Plug-Ins
- Install And Use Protective Devices
- Stay Away From All Unguarded Conductors
- Never Overload A Circuit Or A Conductor
WORKING SAFE WITH CORDS

- Inspect Cords Before Each Use
- Be Sure Plug And Receptacle Have Proper Mating Configuration
- To Unplug, Never Pull On The Cord, Pull On The Plug
- Don’t Use Nails, Staples, Screws, Etc, To Attach Or Fasten A Cord Or Plug
WORKING SAFE WITH CORDS

- Two Conductor Cords Are Illegal
- Damaged Cords Should Never Be Used
- Ensure Enough Slack To Prevent Strain On Plug Or Receptacle
- A Plug-Receptacle Should Have At Least 8 Ounces Of Contact Tension
WORKING SAFE WITH CORDS

- Cords Should Be Kept Clean And Free Of Kinks And Insulation Breaks
- Cords Crossing Vehicular Or Personnel Passageways Should Be Protected, Sign Posted, And Used Temporarily Or In An Emergency
- Cords Should Be Of Continuous Length And Without Splices
IF ELECTROCUTION OCCURS

- **DO NOT** Touch The Victim Or The Conductor
- Shut Off The Current At The Control Box
- If Shutoff Not Immediately Available, Use Non-Conducting Material To Free Victim
- Call For Help
- If Necessary And You Know How, Begin CPR
- In Dealing With Electricity, Never Exceed Your Expertise
CONTROL OF CIRCUITS

- Only Switches And Breakers Designed To Do So May Be Used To Control Current
- Only Approved Equipment May Be Used In Wet Or Damp areas. Always Use GFCI
- Never Energize Equipment When Shields Or Guards have Been Removed
- Always Honor LockOut/TagOut Situations
BEST ADVICE

Treat Electricity With The Respect It Demands, And It Will Serve You Efficiently And Effectively