SAFETY INFORMATION/PROCEDURES

Regarding Maintaining and Troubleshooting NELA Equipment

ROUTINE MAINTENANCE

OSHA regulations require that whenever guards are by-passed or employees must place their hands in the operating portion of a machine, the equipment must be locked out. Openings for lockout devices may be found on the on/off switch and the air supply. NELA recommends the following procedure be followed:

CAUTION: Locking out the on/off switch will not remove all electrical power from the electrical panel. If maintenance work requires that the panel doors be open, **the electrical power must be locked out at the energy source.**

Personal Protective Equipment Required: Safety Glasses

	Possible Hazards
1) Preparation	
a. Notify operator of repair work	
b. Obtain necessary locks and tags	
c. Identify hazardous energy sources	
1. Electrical	
2. Pneumatic	
2) Shutdown	
a. Remove Power	Shock
3) Lockout the Electrical Energy	
a. Place lock on switch	Shock
4) Lockout the Pneumatic Energy	
a. Turn Off Air	
b. Lockout the Air Switch/Regulator	Moving parts
5) Check for Sharp Surfaces or Parts.	
a. Pad or remove them from the work area.	Cuts

6) Test Start
    a. If it doesn't start, the lockout has been accomplished.

7) Perform Repair Work

8) Restore Operation
    a. Remove tools and other equipment used for maintenance — accidents/etc.
    b. Replace guards — moving parts
    c. Notify affected employees that you will be restoring energy
    d. Ensure no one will be exposed to danger.
    e. Remove locks and tags
    f. Restore all equipment/systems to normal operating conditions

TROUBLE SHOOTING

Diagnosis and trouble shooting may require that the equipment be operated with some of the guards removed and the power to the machine on. In this situation, extra precautions must be observed to ensure no one is exposed to energized circuits or unexpected movement within the equipment. NELA recommends the following precautions:

1. The equipment is operated only in the "step mode"
2. One person must be in charge of the operating controls.
3. Operating controls must be protected from accidental start up.
4. If more than one person is working on the equipment, the person operating the controls must hear a "clear" signal before moving any equipment parts
5. Only those parts necessary for troubleshooting are exposed. For example, do not remove cover from electrical panel unless absolutely necessary. If the cover must be removed, the safety precautions discussed under electrical service work must be followed.

ELECTRICAL SERVICE WORK

OSHA regulations require that electrical service work may be done by qualified persons. Only qualified persons may defeat an electrical safety interlock, and then only temporarily while the equipment is being worked on. Qualified persons must be able to distinguish between energized and un-energized circuits, determine nominal voltages , know safe clearance distances and be able to use a voltmeter. Electrical service work requires the use of a lock and a signed tag. OSHA regulations further require that persons working on energized equipment be protected from inadvertent contact with exposed energized circuits and have sufficient light to do their work safely. They must be provided with insulated tools and personal protective equipment. Conductive articles of jewelry may not be worn. Additionally, other employees must be protected by the use of alerting techniques to keep them away from exposed energized circuits. The complete regulations may be found in the Code of Federal Regulations 29 OSHA 1910.332-335. These regulations must be followed when servicing the equipment.