WRENCHES

- **Never** use a pipe extension or other form of "cheater" to increase the leverage of any wrench.

NEVER USE A LEVERAGE EXTENSION ON A WRENCH HANDLE.
WRONG

- Select a wrench whose opening exactly fits the nut. If the wrench is not exactly the correct size for the fastener, it is apt to damage the corners of the fastener, slip, or break. Care should be exercised in selecting only inch wrenches for inch fasteners and only metric sizes for metric fasteners. High strength fasteners - grades 5 and 8, 12 Pt. nuts and bolts, and many other aerospace fasteners require unusually high torques for their size and, therefore, require special care in the selection and use of wrenches.

- If possible, always pull on a wrench handle and adjust your stance to prevent a fall if sudden release occurs.

ADJUST YOUR STANCE AND PULL WHEN APPLYING HIGH TORQUE.
RIGHT

- The safest wrench is a box or socket type; both because it is stronger and because it has less chance of slipping off the fastener. Different types of wrenches are of different strengths and are designed for different purposes. Open end, flare nut, and adjustable wrenches are not as strong as the corresponding sizes of box or socket wrenches and are not intended for heavy loads, such as breaking loose frozen fasteners or final tightening.

- To free a "frozen" nut or bolt, use a striking-face box wrench or a heavy-duty box or socket wrench. Application of penetrating oil beforehand is recommended.

WEAR SAFETY GOGGLES AND USE A HEAVY SLEDGE TYPE HAMMER ON A STRIKING FACE.
RIGHT
Never cock an open-end wrench. Be sure the nut or bolt head is fully seated.

**NEVER COCK OR TILT AN OPEN-END WRENCH. THE NUT MUST BE FULLY SEATED.**

**WRONG**

- Adjustable wrenches should be tightly adjusted to the nut and pulled so that force is on the side of the fixed jaw.
- Avoid over torqueing. A Torque Wrench will permit tightening to the exact torque required for best performance, economy and safety.
- Never expose any wrench to excessive heat which may change the hardness and metal structure and ruin the tool.
- Wrenches should not be ground to change their shape.
- Periodic inspection of hand tools by competent personnel is a safety must. Do not use a wrench which has been damaged and probably weakened by being bent, cracked, or severely worn.
- **WARNING.** Ordinary plastic dipped handles are designed for comfort - not electrical insulation. Other tools that have high dielectric insulation are so identified. The high dielectric insulation is intended only as secondary protection. Never depend on an insulated tool to protect you from electricity.