AIRCRAFT TOOL LIST

The following is a list of tools that will be helpful when assembling your RANS S-19.

**HAND TOOLS**

- Pliers
- Needle Nose Pliers
- Needle-Nose Vise Grip Pliers
- Wire Strippers
- Aviation Snips
- Hammer
- Rubber Mallet*
- Several Small Clamps
- Wrench Set SAE & Metric
- Ruler & Tape Measure
- Adjustable Fly Cutter*
- Set of Drill Bits (sizes listed below)
- Deburring Tool
- Cleco pliers
- Fluting Pliers
- Safety Wire Pliers
- Vise Grip Pliers
- Side Cutters
- Small spring clamps
- Hand Pop-Rivet Tool
- Click Punch
- Screwdriver Set
- Safety Glasses
- 2 or 4 ft. Level
- Utility Knife
- Files
- Scotch-Brite Pads
- Digital Protractor*
- Flanging (Edge Rolling) Tool

**POWER TOOLS**

- Electric Hand Drill
- Dremel*
- Soldering Iron
- CD or MP3 Player*
- Small Electric Grinder
- Bench Disk Sander*
- Heat Gun*
- Right Angle Drill and Bits

It is highly recommended that you use a pneumatic riveter. These are the pneumatic riveters that we use at RANS:

- Marson V2 lightweight pneumatic riveter P/N 79014
- MSC Industrial Supply Co. P/N 04053278

**LUBRICANTS & ADHESIVES**

- Small Can Lithium Grease
- Contact Cement
- Super Glue
- Drill Lubricant (We use Walter Cool-Cut)*
- Double Stick Tape
- Clear Silicone
- WD40
- Lubricating oil
- Glue Stick
- Glue Stick
**CLECO FASTENERS**
The following are considered minimum quantities.

200 3/32" (Cadmium / Silver)  
200 1/8" (Copper)  
20 5/32" (Black)  
20 3/16" (Brass / Gold)

**DRILL BIT & REAM SIZES**
A Unibit® Step Drill ranging from 1/4" to 3/4" and conventional bits ranging from 1/8" to 3/8" is strongly recommended.

In addition to these the following bits will be required to assemble your S-19.

<table>
<thead>
<tr>
<th>CONVENTIONAL BITS</th>
<th>RIGHT ANGLE</th>
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<tbody>
<tr>
<td>#50</td>
<td>#40</td>
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<tr>
<td>#40</td>
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<td>#30</td>
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<td>#21</td>
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<td>#11</td>
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</tr>
<tr>
<td>1/2&quot; &amp; 3/4&quot; Unibit® Step Drill</td>
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<table>
<thead>
<tr>
<th>LONG BITS</th>
<th>REAMS</th>
</tr>
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<tbody>
<tr>
<td>#40 – 6&quot;</td>
<td>0.1885&quot;</td>
</tr>
<tr>
<td>#40 – 12&quot;*</td>
<td>0.375&quot;</td>
</tr>
<tr>
<td>#30 – 6&quot;</td>
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</tbody>
</table>

**TOOLS AND MATERIALS NEEDED FOR CASTING LEAD BALLAST WEIGHTS**

<table>
<thead>
<tr>
<th>Tool</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>Hot plate</td>
<td>Lead flux</td>
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<tr>
<td>Stainless steel spoon</td>
<td>Scale</td>
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<tr>
<td>Scrap wood</td>
<td>Screws or clamps</td>
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<tr>
<td>Lead (Tire shops are a good source)</td>
<td>Safety glasses</td>
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<tr>
<td>Respirator</td>
<td>Welding apron and gloves</td>
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<tr>
<td>Crucible (Or small sauce pan able to withstand 900°F)</td>
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* Indicates optional items. These are not required, but may make building easier