The JR and SR Series mandrels are tubing-retrievable gas lift mandrels installed as a component of the tubing string. The external ported lug of the mandrels is used to carry tubing-retrievable gas lift and orifice valves.

**JR Mandrel Series**
- this mandrel has a lug configured for 1" O.D. tubing-retrievable gas lift equipment.

**SR Mandrel Series**
- this mandrel has a lug configured for 1-1/2" O.D. tubing-retrievable gas lift equipment.

**Applications**
Installed as part of the tubing string to accept tubing-retrievable gas lift equipment for producing wells requiring gas lift. Both mandrels can be used in either a single or dual string completions. Several mandrels may be installed in the tubing while maintaining post-completion operations through the bore of the mandrel.

**Features**
- Full tubing I.D.
- Guard plates on side of mandrel protect valve from damage while running in hole
- Tubing-string connection threaded on both upper and lower ends with appropriate terminal threads
- Various ported-lug configurations for specialized applications
- Drift I.D. compatible with tubing connection drift in most tubing thread types, sizes and weights
- Available in various materials for standard, H2S service and hostile well environments

### Technical Specifications

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2-3/8</td>
<td>1.00</td>
<td>JR</td>
<td>3.78</td>
<td>1.901</td>
<td>51.00</td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>SR</td>
<td>4.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-7/8</td>
<td>1.00</td>
<td>JR</td>
<td>4.34</td>
<td>2.347</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>SR</td>
<td>4.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-1/2</td>
<td>1.50</td>
<td>SR</td>
<td>5.56</td>
<td>2.867</td>
<td></td>
</tr>
</tbody>
</table>

* O.D. and Length dimensions include coupling
** Mandrel Drift I.D. may vary according to the type of thread connection
Plunger Tracking and Fluid-Level Measurement

Leutert’s sonoecho™ plunger-tracking and fluid-level measurement instrumentation tracks the fall velocity of any plunger during its shut-in to optimize production and ensure safety without the need for costly wireline techniques. The sonoecho™ includes equipment, software, and allows technicians to gather and interpret the fall data.

Applications

- Determination of plunger-fall times to ensure that the plunger has enough time to reach bottom
- Assessment as to whether the plunger got stuck in the tubing string, due to tight spots, hydrates, or scale
- Determination if liquid loading is preventing the plunger from surfacing
- Indication of tubing leak above the fluid level
- Understanding of the liquid levels and their effect on inflow performance, bottomhole pressure, fall velocity, and uplift potential

Features

- The sonoecho™ incurs less cost than wireline because it can be run easily on wells already operating with plungers with only equipment rental and the services of one technician.
- The sonoecho™ is attached to the lubricator with minimal disturbances to surface equipment so the well does not need to have to be shut in and can operate normally for an accurate plunger fall measurement.
- Because the well requires no additional shut-in that would build unneeded perforation pressure, the plunger is in a fluid column when it reaches bottom, which keeps personnel safe and avoids damage to the bottomhole, plunger, and surface equipment.
- Files from the software can be interpreted on site and sent by email to a remote office for timely well optimization.