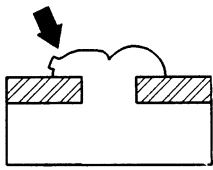
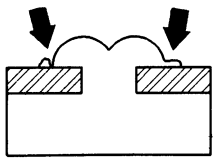
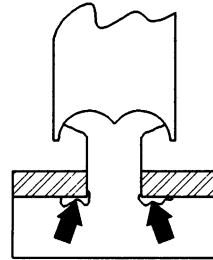
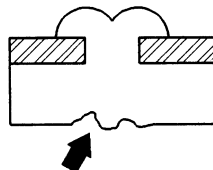
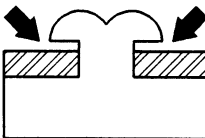
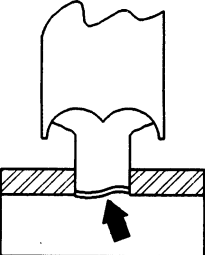
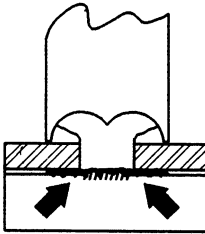
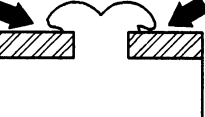
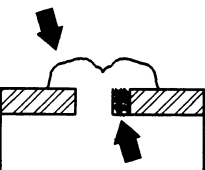
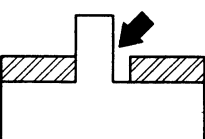


## *Ultrasonic Staking* *Troubleshooting Guide*

	PROBLEMS	POSSIBLE CAUSE	SOLUTION
1	 <p>Staked head is not uniform; it appears ragged.</p>	<p>Staking cavity is too large or stud is too short.</p> <p>High amplitude is degrading material.</p>	<p>Reduce cavity size or increase stud height.</p> <p>Reduce amplitude.</p>
2	 <p>Excessive flash around perimeter of staked head.</p>	<p>Staking cavity is too small or stud is too high.</p> <p>Stud is not centered in the cavity of the horn.</p>	<p>Increase cavity size or reduce height of stud.</p> <p>Check for proper alignment.</p>
3	 <p>Staking head is slightly formed at top of stud; the base of the stud is melted and beginning to collapse.</p>	<p>Sharp corner at base of stud is causing stress concentration.</p> <p>Clamp pressure is too high and/or amplitude is insufficient.</p> <p>Horn downstroke is too fast.</p>	<p>Add radius at base of stud.</p> <p>Reduce clamp pressure and/or increase amplitude.</p> <p>Use slower downstroke.</p>
4	 <p>Severe marking and distortion on opposite side of staked head.</p>	<p>Inadequate fixturing.</p> <p>Clamp pressure is too high.</p>	<p>Try supporting fixture with metal under staking area and reduce amplitude.</p> <p>Reduce clamp pressure. Also placing a metal disk between the stud and the fixture serves as a heat sink to reduce marking.</p>



# BRANSON

	PROBLEMS	POSSIBLE CAUSE	SOLUTION
5	 <p>Parts are loose after staking.</p>	<p>Melted stud did not completely solidify before pressure was released.</p> <p>Positive stop or lower limit set too high.</p>	<p>Use longer hold time. External clamps or nodal plunger may be used for better containment.</p> <p>Lower stop or limit switch.</p>
6	 <p>Studs break off at base during staking.</p> <p>When a stud breaks, energy dissipates at the break instead of at the top of the stud. This causes plastic to flow between the parts and creates distortion.</p>	<p>Stress concentration at root of stud because of sharp corner.</p> <p>Relationship of stud to horn tip is not square.</p>	<p>Add radius to base of stud.</p> <p>Check alignment.</p>
7	 <p>Plastic flows between parts during staking causing distortion.</p>	<p>Metal part is not properly seated against the plastic.</p>	<p>External clamps or a nodal plunger may be used for better containment.</p>
8	 <p>Stud not completely staked at end of cycle.</p>	<p>Insufficient weld time.</p> <p>Insufficient material.</p>	<p>Increase weld time or stud height.</p>
9a	 <p>Poorly formed head. (see 9a)</p>	<p>Poor fit between diameter of stud and through hole. (see 9b)</p>	<p>Have slip fit between stud and through hole.</p>
9b		<p>Material flows into gap between stud and part. (see 9a)</p>	<p>Improve fit between stud and through hole.</p>