

## Troubleshooting Guide

### Why Transformers Fail

The most common failures of resistance welding transformers, symptoms and checkpoints are shown in Table 1.

FAILURE	SYMPTOMS	FAILURE MODE	CHECK POINTS
<b>Overload</b>	<ul style="list-style-type: none"> <li>Burnt insulation odor</li> <li>Transformer is unusually hot</li> </ul>	Burnt primary coils leading to breakdown of insulation.	<ul style="list-style-type: none"> <li>Weld schedule</li> <li>Duty cycle</li> <li>Weld flash build up between secondary lugs</li> </ul>
<b>Half-cycling</b>	<ul style="list-style-type: none"> <li>Unusual transformer noise</li> <li>Fuse blowing or circuit breaker tripping</li> </ul>	Primary and secondary separation leading to failure of internal connections and insulation	Weld control
<b>Lack of Cooling Water</b>	Temperature of outgoing water and secondary terminals high (140° F)	Insulation on secondaries burned leading to failure of insulation	<ul style="list-style-type: none"> <li>Water flow</li> <li>Incoming water temperature</li> </ul>
<b>Condensation</b>	Condensation on transformer secondary components on humid days	Deterioration of insulation leading to failure of insulation	Shut off water when welder not in use
<b>Contamination</b>	Excessive accumulation of weld flash, lubrication oils, hydraulic fluids, water, etc.	Deterioration of insulation leading to failure of insulation	Preventative maintenance procedures
<b>Mechanical Abuse</b>	Damaged secondary connections, tapswitches, body frames, etc.	Unusable secondary connections, tapswitches, mounting holes, etc.	<ul style="list-style-type: none"> <li>Application</li> <li>Maintenance procedures</li> </ul>

TABLE 1

### Protection Of Transformers

Table 2 shows what means of protection can be provided by the transformer manufacturer against transformer failure.

MEANS OF PROTECTION	PROTECTS AGAINST
Overtemperature thermostat installed on the secondary	Lack of cooling water*
Overtemperature thermostat installed on the primary	Overload
Anti-sweat thermostat installed on the secondary	Condensation**
Fully potted transformer	<ul style="list-style-type: none"> <li>Condensation</li> <li>Contamination</li> <li>Mechanical shock</li> </ul>

TABLE 2

\* A flowmeter and flowswitch interlocked with weld control provides the best protection against lack of cooling water.

\*\* A water saver type valve interlocked with weld control or water temperature controller provides the best protection against condensation.