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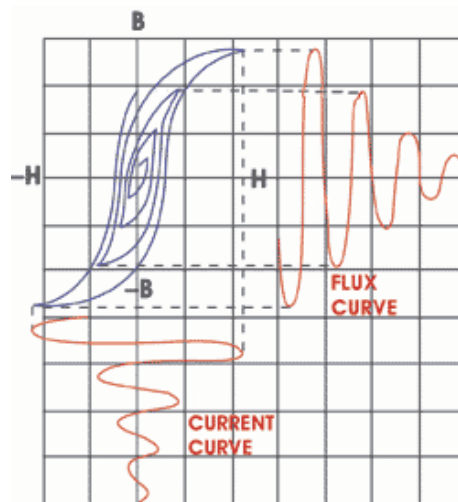
Demagnetization

After conducting a magnetic particle inspection, it is usually necessary to demagnetize the component. Remanent magnetic fields can:

- affect machining by causing cuttings to cling to a component.
- interfere with electronic equipment such as a compass.
- create a condition known as "arc blow" in the welding process. Arc blow may cause the weld arc to wander or filler metal to be repelled from the weld.
- cause abrasive particles to cling to bearing or faying surfaces and increase wear.

Removal of a field may be accomplished in several ways. This random orientation of the magnetic domains can be achieved most effectively by heating the material above its curie temperature. The curie temperature for a low carbon steel is 770°C or 1390°F. When steel is heated above its curie temperature, it will become austenitic and loses its magnetic properties. When it is cooled back down, it will go through a reverse transformation and will contain no residual magnetic field. The material should also be placed with its long axis in an east-west orientation to avoid any influence of the Earth's magnetic field.

It is often inconvenient to heat a material above its curie temperature to demagnetize it, so another method that returns the material to a nearly unmagnetized state is commonly used. Subjecting the component to a reversing and decreasing magnetic field will return the dipoles to a nearly random orientation throughout the material. This can be accomplished by pulling a component out and away from a coil with AC passing through it. The same can also be accomplished using an electromagnetic yoke with AC selected. Also, many stationary magnetic particle inspection units come with a demagnetization feature that slowly reduces the AC in a coil in which the component is placed.



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Quizzes

A field meter is often used to verify that the residual flux has been removed from a component. Industry standards usually require that the magnetic flux be reduced to less than 3 gauss after completing a magnetic particle inspection.

