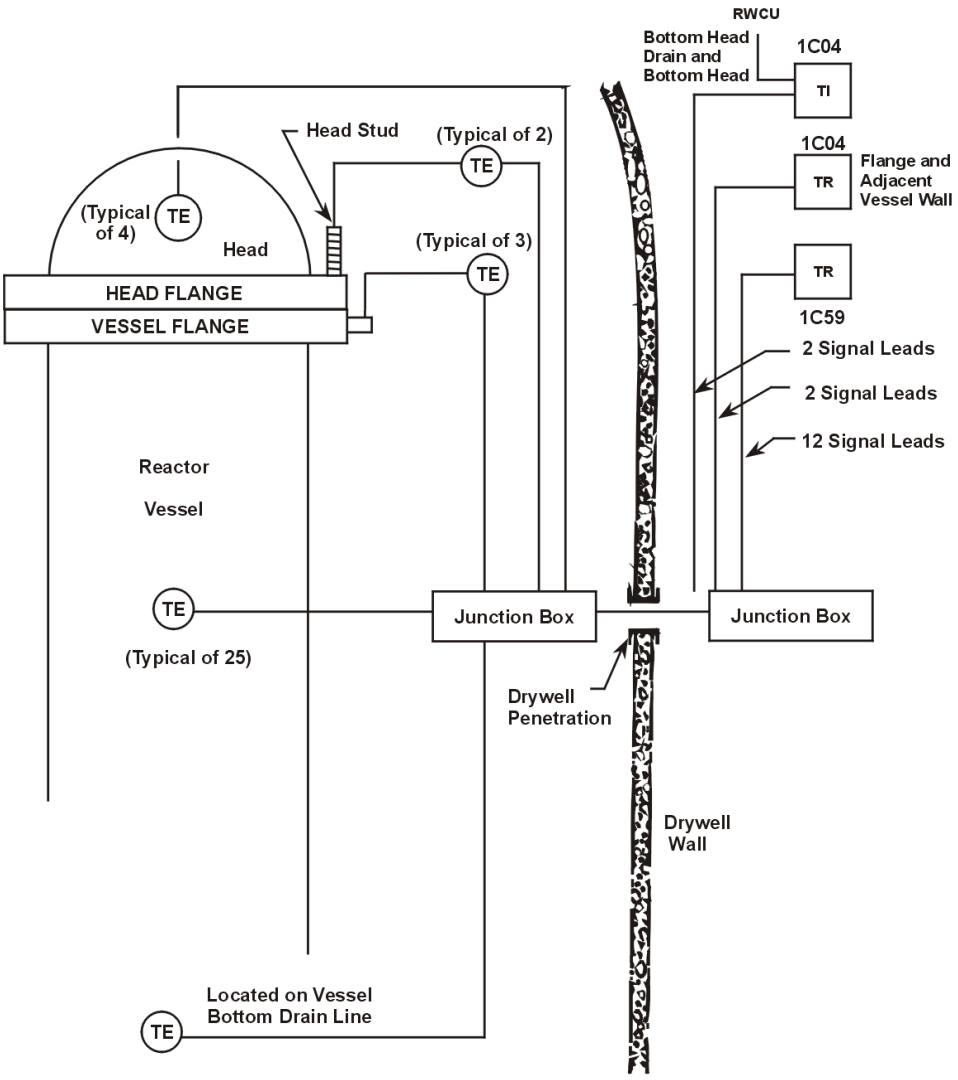
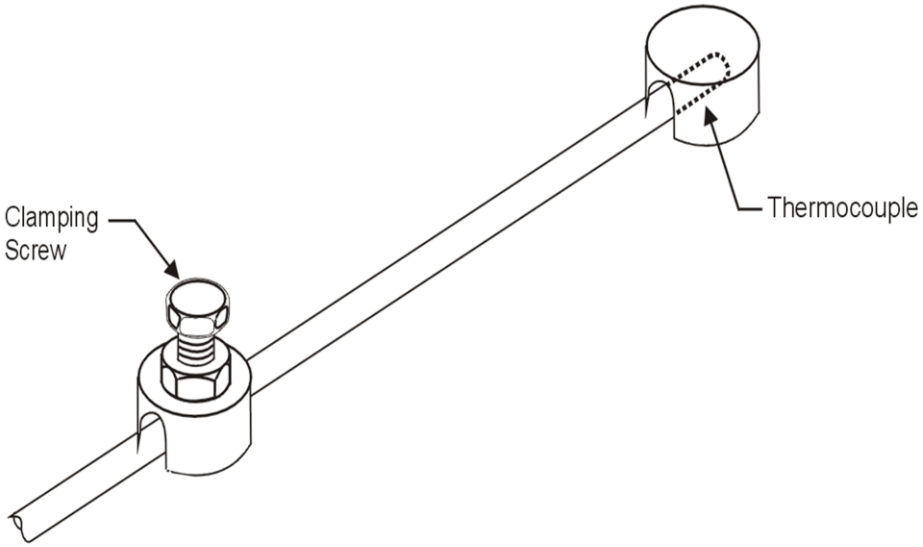


Thermocouples and Thermocouple Pads

The thermocouples, which monitor reactor vessel and head temperatures, are held in place by either magnetic or welded thermocouple pads. The active portion of the thermocouple is a fused junction of copper and constantan wires. When the fused junction is heated, a small potential voltage proportional to the temperature is produced. A high-gain amplifier is used to raise it to a usable level.

Copper-constantan (type “T”) thermocouples are used because of a wide temperature monitoring range, quick response, high accuracy, small size, and rugged construction. Their size and ruggedness make them excellent for measurements in remote or otherwise inaccessible locations.



Each thermocouple pad is actually a pair of pads: an end pad and a clamp pad. Each pad is 3/4 inches in diameter. The end pad has a narrow slot cut into it and is welded to the reactor vessel. One end of the thermocouple is then inserted into the slot. The other end of the thermocouple is clamped under the clamp pad which is usually located about 4 inches from the end pad. Thermocouple pads used on the reactor vessel head are not welded. These thermocouple pads use magnets for ease of removal during refueling when the reactor vessel head must be removed.