
Subject: McDonnell & Miller Guard Dog® LWCO's & Weil-McLain Residential Gas Boilers

Probe-style low water cut off (LWCO) limit controls are becoming more popular in hydronic heating systems. Many states now require them in residential applications. All boilers with radiation that is installed/positioned lower than the boiler water level should also have a low water cut off installed in the system. Weil-McLain does not recommend any specific brand or model over another brand. However, one product that has generated interest and requests for information is the McDonnell & Miller Guard Dog® probe style LWCO option for use on Weil-McLain residential gas-fired boiler models. The Guard Dog® is available either as a 24-volt model (RB-24) or a 120-volt model (RB-122).

Residential boilers do not typically have a tapping available in the casting for installation of a LWCO control. As an alternative, a LWCO can be installed in the system piping located above the boiler in a tee in the supply or return piping. The probe-style LWCO options can be installed in boilers utilizing hydronic heating antifreeze as well as water.

When installing a probe-style LWCO on Weil-McLain residential gas boilers, wiring can be simplified if the 120-volt version is used (McDonnell & Miller Model RB-122). Wiring the RB-122 into the service switch box after the service switch is quick and easy. The white wire of the RB-122 connects to the neutral wire (L2), and the black wire of the RB-122 connects to the hot lead (L1) of the service switch. The two yellow wires from the RB-122 are then connected in series with the limit switch to break the 24-volt limit circuit. The 120-volt LWCO is the best alternative for Weil-McLain Model GV, AHE, and all Ultra boilers.

If installing a McDonnell & Miller RB-24 on Weil-McLain boilers (*not recommended for Model GV, AHE or any Ultra boilers*), the wiring is a little more complicated. The RB-24 LWCO consumes very little power from the 24-volt transformer (about 2.5 VA), so it should work well with Weil-McLain boilers without a separate transformer. The red wire from the RB-24 connects to the 24-volt hot line, the white wire to the 24-volt common wire, and the two yellow wires from the RB-24 are wiring in series breaking the limit circuit. One **important note**: as indicated in the McDonnell & Miller Guard Dog® installation instructions, the green ground wire on the RB-24 must NOT be attached when the boiler's 24-volt transformer has a secondary ground. This situation would cause a 24-volt short circuit. All currently manufactured Weil-McLain residential gas-fired boilers have a secondary grounded 24-volt transformer. Place a wire nut on the free end of the green wire. This only pertains to the RB-24. The RB-122 does not have a green ground wire.

A low water cutoff can be an important limit control to protect a boiler. Proper installation and maintenance must always be followed per manufacturers' instructions. Probe-style low water cut off devices typically must be checked and serviced on a regular basis. Service technicians may sometimes overlook the fact that probe-style low water cut offs require annual inspection and cleaning of scale or build-up, if necessary. Inspection, cleaning and testing of this control should be part of normal annual service. If there are any questions, always refer to manufacturer's instructions for all components, devices, and equipment in the heating system.