

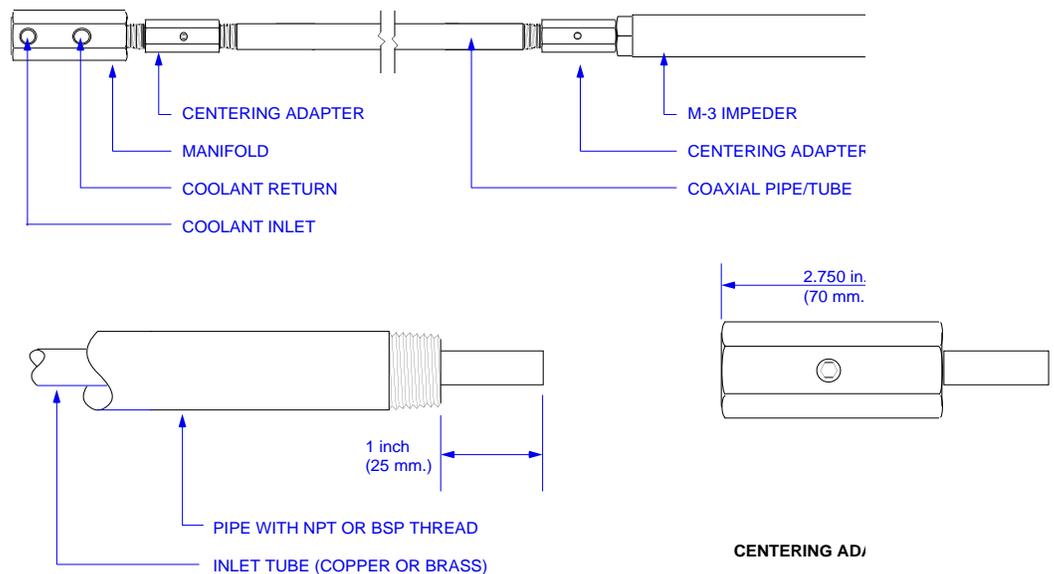
M-3 Return Flow Impeder installation & repair

EHE's M-3 series of return flow impeders offer many advantages over other types. These impeders have o-ring seals at both ends to eliminate leaking & facilitate repair.

Description

EHE M-3 return flow impeders are a third generation product that enables tube & pipe to be induction welded without leaving coolant inside of the tube. The M-3 design overcomes most of the limitations of earlier return flow impeders by eliminating all fasteners & using an internal mandrel to which all other parts are attached. O-rings are used to seal the impeders. This allows the impeder to be disassembled for cleaning or repair, and permits easy replacement of any damaged components.

The M-3 system uses a coaxial coolant delivery system & support. The outer portion of the coaxial assembly is common water pipe. A smaller tube runs down the center of the pipe to deliver coolant to the impeder. Coolant returns in the space between the center tube & the I.D. of the pipe. The use of pipe provides a rigid support for the impeder & prevents contact between the impeder & the product being welded. Standard NPT threads on the ends of the pipe produce a self sealing connection to the impeder and the inlet/outlet manifold.



The diagram above shows a typical installation using M-3 return flow impeders. Centering adapters & inlet/outlet manifolds are available from EHE for all sizes of impeders. The pipe & inner tubing can usually be obtained locally & cut & threaded to suit mill dimensions. EHE also offer complete impeder support systems engineered to suit each tube mill. These include all mounting brackets, fasteners etc., as well as coaxial tubes to suit mill dimensions.

Coaxial centering adapters are not essential, but they make assembly and use of the system much easier. In all cases, the center tube should project 1" (25mm) beyond the end of the threaded pipe. This will ensure that the coupling is fully seated for optimum flow conditions.

Pressure & Flow Requirements.

EHE return flow impeders require the same coolant flow as conventional through flow impeders, but because of the additional restriction caused by the coolant delivery & return system, higher pressure may be required. Recommended pressure is 80-150 PSI (6-10 bar). Higher pressure may result in leaking or failure of the outer glass reinforced shell. Because operating pressures are generally higher than with conventional impeders, the use of a booster pump & coolant filter is strongly recommended. Multi-stage centrifugal pumps are available from EHE as well as several other sources.

The flow requirements depend on many factors, including welder power, coil & impeder position, welder frequency & coolant temperature. By using the recommended sizes of coaxial support system & a minimum coolant pressure of 80 PSI (6 bar), all impeders will receive adequate cooling under normal conditions. In extreme cases, a small refrigerative chiller may be beneficial for impeder cooling.

Repairing M-3 impeders

M-3 return flow impeders may eventually begin to leak if the outer casing deteriorates due to weld heat. In addition, the ferrite may become broken as a result of thermal or mechanical shock. Both these components can be easily replaced by unscrewing the end cap from the impeder. The cap should be held in a vise while hexagonal coupling is rotated counterclockwise. When reassembling the impeder, always use a light coating of silicone grease or silicone RTV adhesive to lubricate & seat the o rings.

Impeders smaller than 16mm in diameter are more difficult to repair, and are usually discarded if they are damaged.



M-3 RETURN FLOW IMPEDERS

Electronic Heating Equipment, Inc.

P.O. Box 7139 - Bonney Lake - WA - 98390 - USA

Phone: 1-360-829-0168 Fax: 1-360-829-0170

email: impeder@sprynet.com Web: www.impeder.com