

Impeder Cluster Installation

QUICK CONNECT COUPLINGS

Unless otherwise specified by the customer, all EHE impeder clusters are supplied with Parker quick connect couplings, for simple “plug in” convenience. To operate the coupling, simply push the knurled ring towards the manifold & gently push the impeder into the coupling. When the knurled ring is released, the impeder is locked in place.

INSTALLATION

The impeder cluster may be assembled either on a workbench or table, or directly onto the I.D. scarfing mandrel. The aluminium manifold is placed over the scarfing mandrel & locked in place using the setscrew(s) or the compression collar provided. Larger clusters may be supplied with a two part saddle type clamp for attachment to the mandrel.

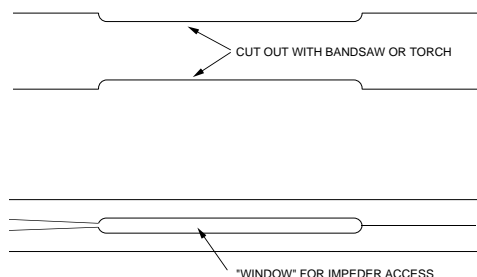
The manifold should be positioned on the mandrel in such a manner that the ends of the impeders extend approximately 1/2” (12mm) past the weld point. This position will result in maximum welding efficiency.

In some installations, the impeders may be positioned a short distance “upstream” (toward the mill entry end) from the recommended position. This may extend the life of the impeders, but will reduce welding efficiency.

Most impeder clusters are provided with a spacer ring to maintain alignment of the impeders with the mill axis. This spacer is normally manufactured from G-11 high temperature epoxy/glass board. The spacer ring should be positioned 1/3 to 1/2 of the impeder length from the manifold. Impeders are bound to the spacer ring using either nylon cable ties (provided) or high temperature silicone/glass tape (available as an optional item).

The easiest way to assemble the cluster is to place one or more rubber bands over the mandrel, in the vicinity of the spacer. The rubber band(s) will temporarily hold the impeders against the cutouts in the spacer ring as additional impeders are attached. When all impeders are in position, the nylon cable ties or silicone/glass tape can be installed & the rubber bands removed.

When using nylon cable ties to hold the impeders, they should be loose enough to allow the impeders to slide under them. This allows impeders to be replaced without removing the ties. On some mills, the top impeders in the cluster can be replaced without cutting the tube, by flame cutting or band sawing two apertures in the strip edges, then joggling the mill so that an opening provides access to the impeder cluster.



OPTIONS

The impeders closest to the faying edges of the tube contribute the most to weld efficiency. They support the highest magnetic flux & are also in close proximity to the heated portion of the tube, so these impeders also require the most frequent replacement. Peak welding efficiency occurs when one of the impeders is positioned directly below the open “vee” formed by the strip edges, however an impeder in this position is extremely vulnerable to damage from weld spatter (spume).

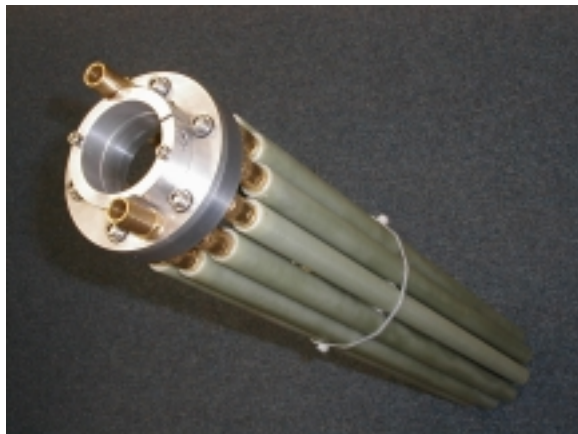
In most installations, the impeder cluster is rotated slightly on the mandrel so that the gap between two impeders is directly below the vee. Another alternative is to remove the impeder at top center & use either the aluminum flush tube, or remove the quick connect coupler & install a blanking plug. The flush tube is provided with a horizontal spray nozzle that directs a fine spray of coolant across the top of the mandrel in the weld area. This helps to eliminate any build up of weld spume or other debris.

Small clusters up to 4” (100mm) normally have impeders installed in all positions provided on the manifold. As the cluster size is increased, it is common practise to eliminate some of the bottom impeders. Magnetic flux can only enter the tube through the open “Vee”, so on large clusters, these lower impeders support increasingly small amounts of the total flux, & thus contribute little to the welding efficiency. Very large clusters, used for welding tubing & pipe 18” (500mm) & larger may only have impeders covering the top center 90 degrees of arc within the tube.

Either blanking plugs or self-sealing quick connect couplings are provided to allow unnecessary impeders to be removed from the cluster.

PRESSURE & FLOW.

Impeder clusters are normally cooled by mill coolant. At high power levels, impeders require more cooling, and a multi stage impeder boost pump is recommended to ensure adequate flow. Recommended inlet pressure for the coolant is 60 - 120 PSI (4 - 8 bar). Flow rates will depend upon the number of impeders used in the cluster, and on the amount of weld power used, but should not be less than 1 gallon/minute (4 liters/minute) for each impeder in the cluster. A 3 horse-power (2kW) pump will provide sufficient pressure & flow for all impeder clusters.



MANIFOLD WITH COMPRESSION COLLAR



CLUSTER WITH FLUSH TUBE INSTALLED

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