

## FAW-305



## FUSE-A-WIRE

**Join Magnet Wire to Tinned  
Stranded or Solid Wire  
Without Prior Removal of the  
Magnet Wire's Film Insulation**

**No Need for Terminals  
or Wire Stripping**

The Joyal® Fuse-A-Wire machine will join insulated magnet wire to bare tinned stranded or solid wire, without prior removal of the magnet wire's insulation. Wire can be joined as a splice (i.e. end to end) or a pigtail connection. When producing a pigtail connection, an optional cutting system can be provided for trimming any excess wire. This cutting system can be disabled when splice connections are required. Magnet wire to magnet wire connections are possible, with the addition of a small length of tinned helper wire, which can be added to the termination manually or automatically via a feed and cut-off mechanism.

The Fuse-A-Wire connection is a proven method of joining magnet wire, even with the high temperature film insulation, without stripping or otherwise removing the magnet wire's insulation. Multiple magnet wire strands can also be joined to tinned lead wire without previous removal of the magnet wire's film insulation. Instead of stranded or solid wire, pin shaped tinned copper or tinned brass terminals can be joined to magnet wire as well. The magnet wire's insulation is removed during the fusing process, which takes less than one second.

The Fuse-A-Wire machine is available in various configurations and capacities. All of the Joyal Fuse-A-Wire machines include Joyal's Currectron® Constant Current Fusing Control, which controls the energy that reaches the fusing electrodes, guaranteeing a consistent level of fusing energy. All of the machine's functions, such as the fusing head movement, constant current control, cutting system, etc. are microprocessor controlled. The Fuse-A-Wire machine can be supplied mounted on a heavy duty moveable frame or as bench top unit which would be placed on a customer supplied table.



The wire combinations that can be joined with the Fuse-A-Wire machine are listed below. The total CMA of wire to be terminated must fit into the machine's tooling. Also, each magnet wire must be able to touch the tinned wire. The tinned wire cleans the magnet wire after the film insulation is removed. The process is described below:

- The wire combination (tinned stranded wire and insulated magnet wire) is placed in the machine's tooling.
- The machine's operator depresses a foot switch and the machine is activated;
- The machine vaporizes the magnet wire's film insulation;
- The tin from the stranded wire wets the bare magnet wire;
- Heat is increased until the tin is removed from the joint area;
- Extremely clean bare stranded and magnet wire are held under heat and pressure;
- A bond (fused joint) is formed between the stranded and magnet wire;
- If the optional pigtail cutter is used, any excess wire is cut;
- The fused joint is manually removed from the machine's tooling

All of the above machine operations require less than two seconds plus the loading and unloading of the wire.

The chart below shows the capacities of seven common tooling types. Other size wire combinations can be accommodated with specifically designed tooling.

Tinned Stranded Wire (in AWG)	Maximum Possible Total CMA of the Terminal	CMA of the Stranded Wire	Maximum CMA of the Magnet Wire	Magnet Wire Range (in AWG)
14	5880	3831	2049	17 to 36
16	5000	2224	2776	17 to 36
18	3800	1769	2031	17 to 36
20	2730	1111	1619	18 to 36
22	1510	700	810	21 to 36
24	575	448	127	29 to 36
26	390	311	79	31 to 36

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