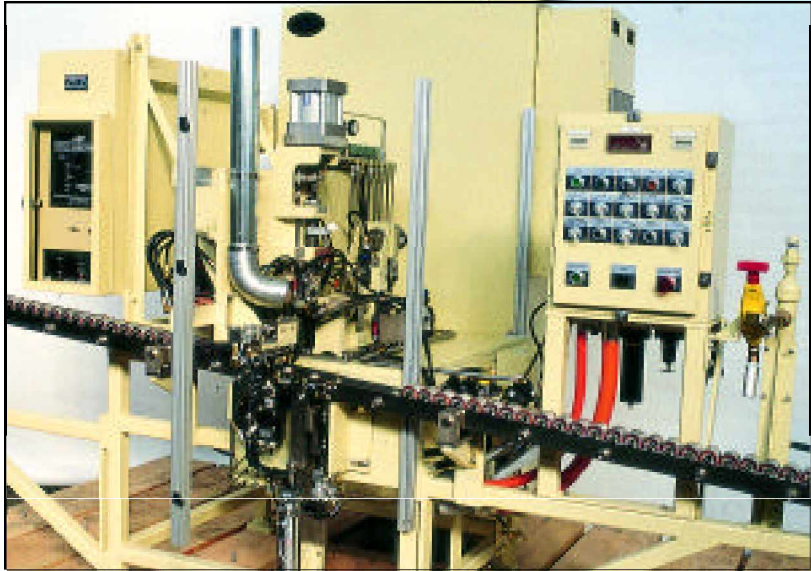




JOYAL – A Division of AWE, Inc.

3939 Vanguard Drive
Fort Wayne, IN 46809 U.S.A.
Ph: +1-260-478-2200
Fx: +1-260-478-1846
WWW.JOYAL.COM

System 80-AS Automatic Commutator Fusing Machine



- Fully or Semi Automatic
- Automatic Armature Load/Unload
- Microprocessor Machine Control
- Microprocessor Fusing Control
- AC or Inverter DC Power Supply
- Real Time Quality Control
- SPC Data Capture
- SPC Analysis Available
- Digital Fusing Pressure
- Digital Electrode Displacement
- Digital Thermal Control
- Digital Constant Current Control
- Digital Cooling Control
- Pneumatic and/or Motor Operation

The Joyal® Series 80-AS is a fully automatic (or can also be supplied as a semi-automatic) Commutator Fusing machine, where universal or DC electric motor armatures can be loaded from the following devices that are built into the system: a chain conveyor, a loop-conveyor or a gravity conveying system. The armature is held by its shaft in a collet, and indexed with a precision electronic indexing mechanism. The armature is automatically aligned when its shaft is first placed in the collet. The collet type index mechanism is used because it is extremely fast and accurate, and does not damage the armature's iron laminations in any way. The 80-AS system is available with either AC or Inverter DC power supplies, that both incorporate digital constant current control, and either a precision pneumatic or stepping motor controlled fusing head. Both fusing heads use Joyal's patented "floating head" system, which has been proven through the years on thousands of Commutator Fusing machines.

The Series 80-AS includes a real time digital fusing pressure control system, a real time digital fusing electrode displacement measurement system, a Thermal Monitor/Controller that in real time digitally controls the actual commutator fusing temperature. These control systems, plus the constant current fusing control system, can send data to a Statistical Process Control (SPC) system that can be built into the machine. This SPC system can capture data and/or analyze data with its built-in computer. In addition to the SPC system, real time monitoring can be incorporated into the system that will signal an alarm, if preset criteria are not met.

The entire system is controlled by an industry standard programmable machine controller, incorporating machine diagnostics, which can have a computer act as an interface between the setup personnel and the machine. Human interface controls can be either hard wired, through a video touch screen, or a combination of the two. Of course, all safety switching and devices are hard wired. The machine's control system can interface with a communication system for central control, central data capture of SPC data and

Joyal patented products are manufactured under one or more U.S. and foreign patents and additional U.S. and foreign patents on Joyal's products are now pending.

The information and any specifications in this catalog sheet are subject to change without notice.

Joyal shall not be liable for technical or editorial errors or omissions contained herein; nor for incidental or consequential damages resulting from the furnishing, performance, or use of this material.

© COPYRIGHT JOYAL – A DIVISION OF AWE, INC. - ALL RIGHTS RESERVED

machine diagnostics. The Series 80-AS is designed as a stand alone Commutator Fusing production system or can be incorporated into a new or existing electric motor production system. As with all Joyal equipment, this system can be built to CE specifications.

The Series 80-AS is designed to fuse just about any armature, from small appliance motor armatures to relatively large automotive starter motor armatures. The equipment will fuse slotted flush commutators, slotted riser commutators and tang commutators with normal extended armature shafts or special enclosed shafts. Depending upon the size of the armature, two fused connections per second can be produced. Wire with any known film magnet wire insulation can be fused.

This System requires three phase electrical input, cooling water input and compressed air [no less than 60 PSI or 4 Atmospheres]. Normally, a refrigerated recirculating water chiller is supplied with the System 80-AS.

Armature Dimensions That Can Be Accepted By The Series 80-AS:		
	Inches	MM
Maximum Overall Shaft Diameter	1.000	25.00
Minimum Attachable Shaft Length	0.187	4.76
Maximum Iron Lamination Diameter	6.750	171.45
Maximum Commutator Diameter	3.000	76.20
Minimum Commutator Length	0.125	3.17

Fusing is a system of joining low resistance metals with a type of resistance welding machine, but without appreciable distortion of the parts being joined. What actually happens is that the parts are heated and pushed together until all the air between them is eliminated and the high points of one part are pushed into the low points of the other, and vice versa. A surface adhesion contact then will hold the parts together. The surface adhesion contact is not a weld. It is a compression joint which affects only about 0.0002 inches (0.005 MM) of surface depth with normally no amalgamation of metals. As the strength of the joint is moderately strong, it must be used only with parts specifically designed to be fused, such as a slot or tang in a commutator.

Commutators can be made of brass, stainless steel, nickel, carbon, graphite, a carbon/graphite mixture, silver, gold, etc. These materials are used to satisfy specific requirements of specific electric motors. However, normally copper or silver-copper alloys are used to produce commutators used in high production motors. The armature's lead wires, called magnet wires, are normally made of copper, but can also be made of brass, silver, tin plated copper, nickel plated copper, as well as a number of special alloys. Non-copper wire is used, in specific applications, that require the characteristics of the non-copper material. The lead wires are coated with a film insulation. The magnet wire is connected to the commutator either by being placed in a slot or under a tang. The film insulation under the tang or in the slot is normally removed during the fusing process, so that bare wire is attached to the commutator.

Commutator fusing is now the only practical way of economically joining lead wires to commutators in the production of micro to relatively large universal or D.C. electric motors. With commutators designed for fusing, the fused joint has greater integrity than a silver brazed joint, and costs nothing except for the cost of the machinery and the utilities the machinery uses.

JOYAL – A Division of AWE, Inc.

3939 Vanguard Drive • Fort Wayne, IN 46809 • USA
Ph: 260-478-2200 • Fx: 260-478-1846 • WWW.JOYAL.COM