INSTRUCTION MANUAL

Jarrell-Ash

DIVISION OF FISHER SCIENTIFIC CO.

ELECTRODE SHAPERS
MODEL 50-500/50-600
50-700

JARRELL-ASH DIVISION/FISHER SCIENTIFIC COMPANY/ 590 LINCOLN STREET WALTHAM, MASS. 02154

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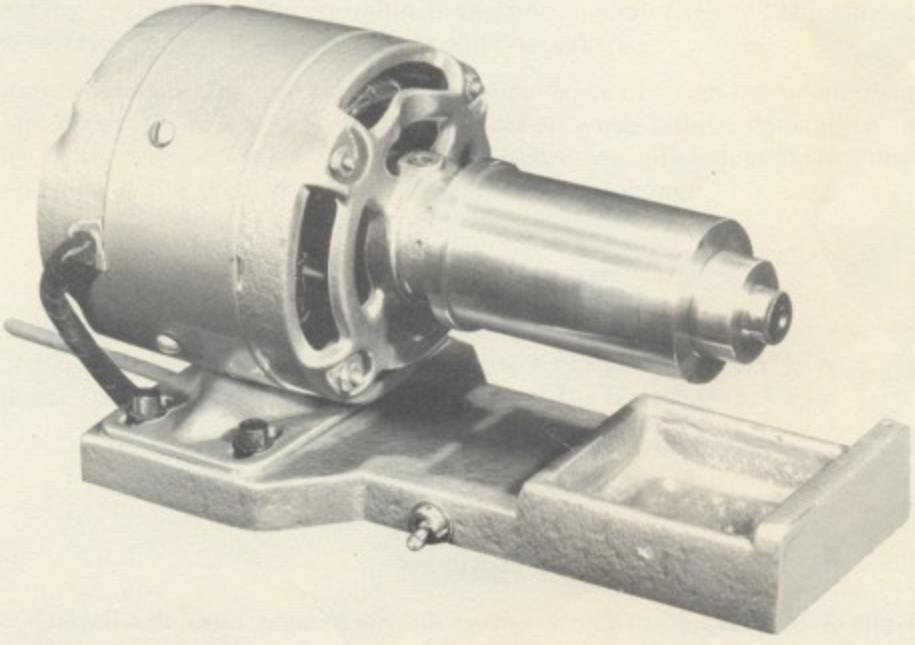
ELECTRODE SHAPERS

MODEL 50-500

MODEL 50-600

MODEL 50-700



Jarrell-Ash
DIVISION OF FISHER SCIENTIFIC CO.

Engineering Pub. No. 50-500/600/700 Rev. 2 $3.50 December 1969

Warranty

All Jarrell-Ash products are guaranteed against defective parts or workmanship for one year, except for electronic components which carry the guarantee of their manufacturer. In keeping with a policy of continued research and improvement, the Jarrell-Ash Division reserves the right to alter specifications and to supply equipment differing from that described. Defective items will be replaced free of charge, transportation charges to be borne by the customer.

DAMAGE IN SHIPMENT

IT IS THE RESPONSIBILITY OF THE BUYER TO INITIATE ANY CLAIMS FOR SHIPPING DAMAGE.

On all shipments the customer is responsible for reporting any damage in shipment to the carrier and for arranging inspection of any damaged parts. In the case of shipment F. O. B. Waltham, the customer is responsible for filing any damage claims with the carrier.

Although Jarrell-Ash instruments are sturdily constructed, they can be damaged through severe handling in shipment. The Jarrell-Ash Division cannot make any adjustment for such damage and will charge for any repairs and/or parts necessary.

Carefully examine the crate for superficial evidence of rough treatment. Even if such evidence is not apparent, do not waive claim for damage, since hidden damage can often be revealed only by close inspection of the assembled instrument. Reimbursement from the carrier will be facilitated, if the preceding recommendations are followed.

REPAIRS

The entire instrument has been constructed of rugged components selected for long life provided reasonable care is shown. If any major parts need repair or replacement, contact the nearest Jarrell-Ash Division representative or the factory for advice.

> Investigation of failures, and repair of electronic components should be performed only by qualified personnel.

RETURN OF GOODS

Jarrell-Ash sales policies do not permit goods to be returned to the factory for credit, repair, restocking or replacement under existing warranties including goods damaged in transit, without prior authorization. Indicate serial number of any instrument being returned.

CONTRACT DATA

Manufacturer's Model Number _____

Manufacturer's Serial Number _____

Customer's Contract Number _____

1. General Description

The Jarrell-Ash Models 50-500, 50-600 and 50-700 Electrode Shapers are identical units with the exception of the undercutting tool holder. Because of the similar construction of the motor, base, body and dust enclosure, it is possible to convert one type of shaper to the other. The 50-500-C tool holder can be used in the 50-600 shaper and vice versa. Either shaping tool holder will accept the 50-200 and 50-210 collets, the plain drills, the centerpost drills, and the pointing tools. The 50-510 shoulder cutting tool and the 50-560 facing tool are not required with the 50-600, which has a blade to undercut the formed electrode when desired.

The instruction manual should be read and understood thoroughly before commencing installation and operation.

Model 50-500	Carbon Electrode Shaper with tool and collet holder, 115V, 50/60Hz.
Model 50-600	Carbon Electrode Shaper with tool and collet holder and undercutting tool for 115V, 50/60Hz operation.
Model 50-700	Carbon Electrode Shaper with tool and collet holder and undercutting tool for 230V, 50/60Hz operation.

2. Component Identification

Model 50-500 Electrode Shaper - Figure 1

Model 50-500 Body, Tool and Collet Holder, Figure 2

50-500	
A1	Body
A3	Dust Collector
A5	Body Spring
A02	Body Locking Screw, #10-32x1/4"
A06	Ball Plunger Screw

50-500	
B1	Shaper Base
B01	Shaper Motor, 115V, 1725 rpm
B02,03	Mounting Screws, Washers
B04	Line Cord
B05	ON/OFF Toggle Switch (S-1)
B06	Shaper Base Feet

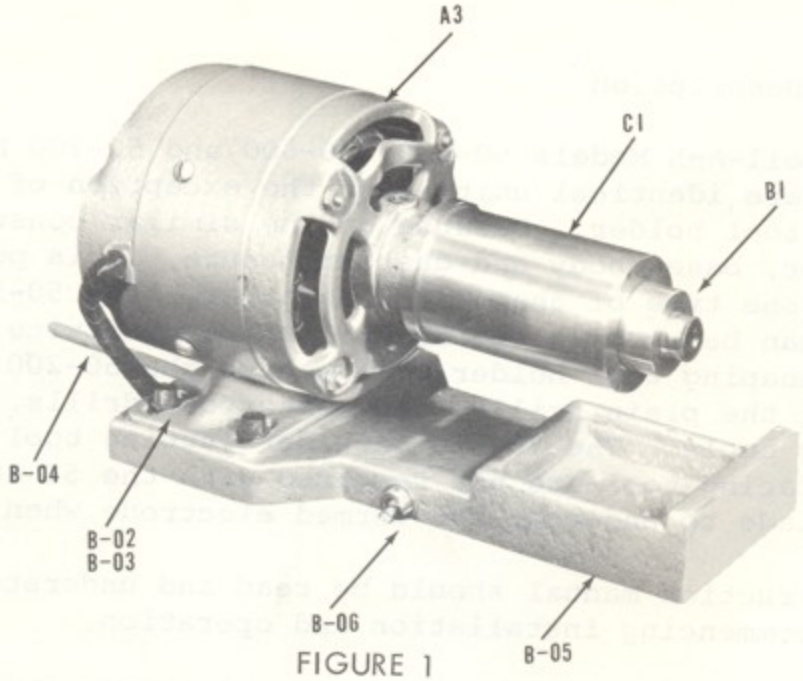
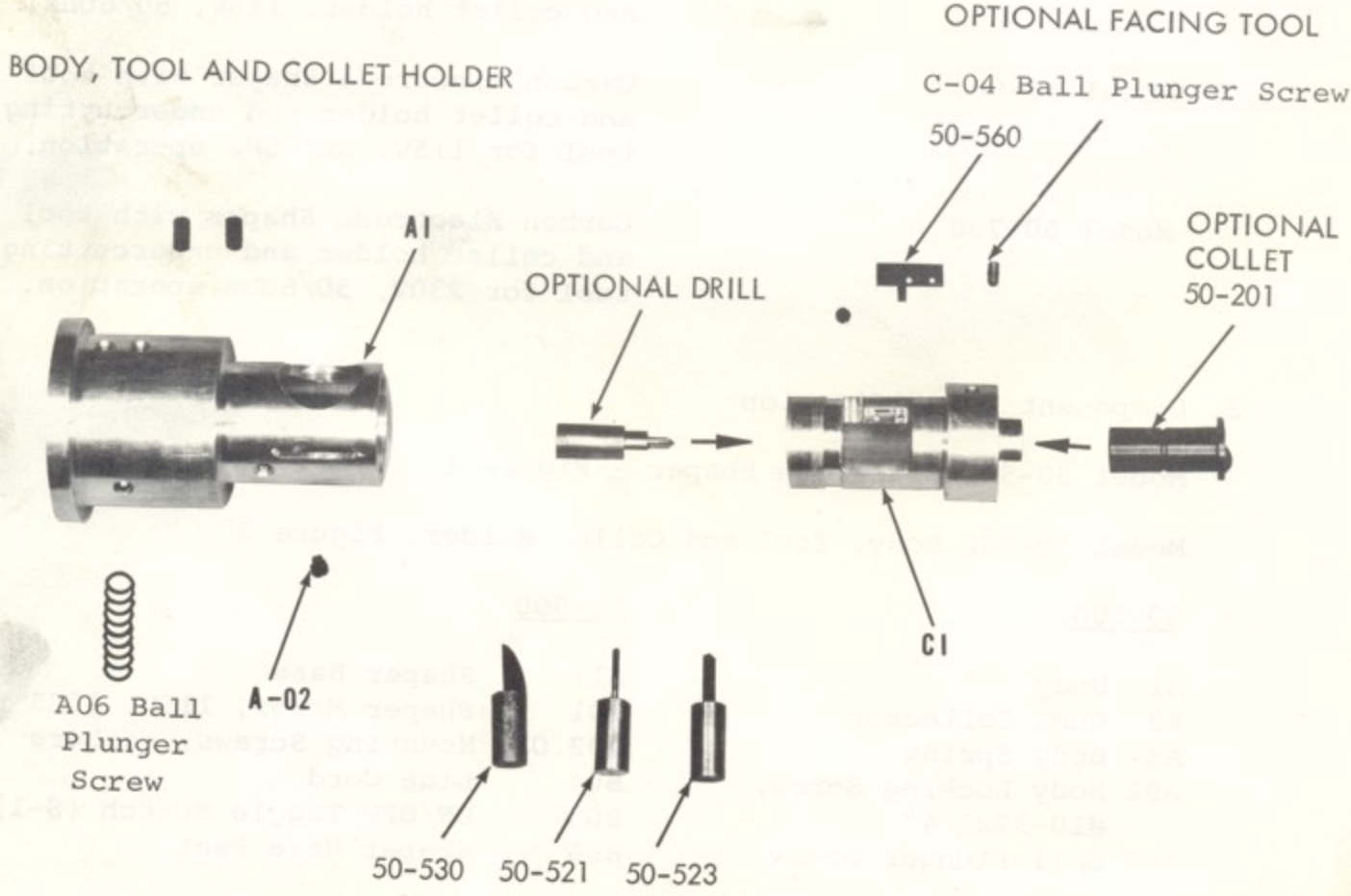


FIGURE 1



VARIOUS TOOLS

FIGURE 2

2. Component Identification (Continued)

50-500

C-1 Tool and Collet Holder
C-04 Ball Plunger Screw

50-200 Optional Collet for Special Pure Electrodes (various diameters).

50-560 Optional Facing Cutting Tool

50-561 Cutter for Flat End Electrode

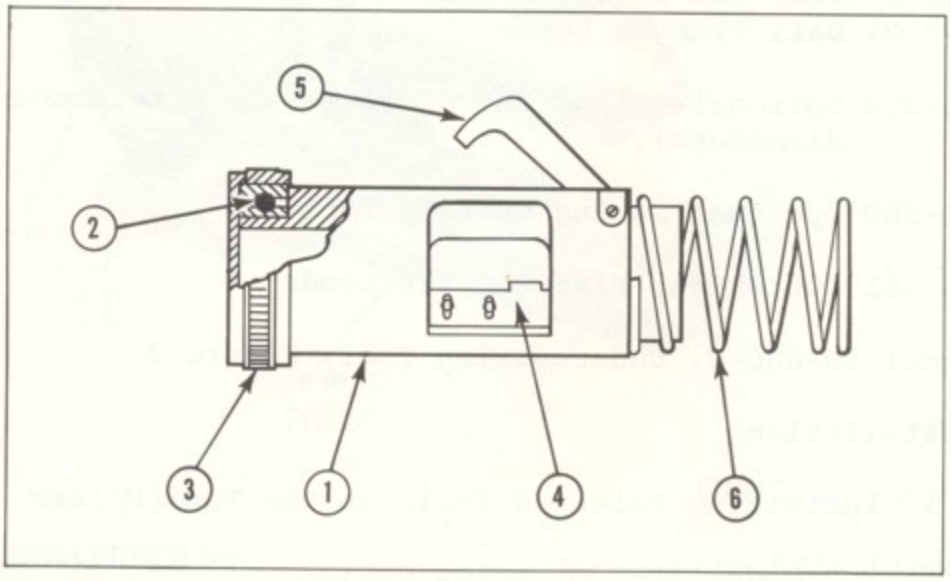
Model 50-600-C, Undercutting Tool, Figure 3

3. Installation

3.1 Installing Selected Tools in the Tool Holder

1. Model 50-200 Series Collet

Insert the collet, 50-201, Figure 2, into the opening at the front of the tool holder (A1, Figure 2, 1, Figure 3). It is held in position by a spring-loaded ball (C04, Figure 2), seated in a groove on the outside diameter of the collet shank. If the face of the collet has a groove, it is for special purity or specially ground electrodes. If the face is plain, it is for regular purity electrodes. The slight difference in diameter of the two grades of graphite rods necessitates two types of collets.



UNDERCUTTING TOOL

50-600-C

1. Blade Holder
2. Ball Bearing
3. Finger Grip
4. Guide Blade
5. Undercutting Blade
6. Spring

FIGURE 3

3. Installation

3.1 Installing Selected Tools in the Tool Holder (continued)

2. Inserting Electrode Drills

The plain drill, centerpost drill, pointing tool for 45 degree angle (Figure 2), and the pointing tool for 120 degree angle, all insert into the tool holder from the back, with the cutting edge toward the collet. The flat surface on the shank of the cutting tool should be in line with the Allen setscrew located in the body of the tool holder.

3. Inserting Facing Tools

If the drills are being used to form craters in the electrodes, mount the 50-560 facing tool in the tool holder, using the two screws supplied. Set the point of the drill in relation to the cutting edge of the facing tool, according to the depth of crater desired. The facing tool should be perpendicular to the flat edge of the drilling tool. If the 50-600 tool holder is being used, it is not necessary to use the 50-600 facing tool, since the guide blade supplied with the unit also served as a facing tool for cratered electrodes.

4. Inserting Pointing Tools

Mount the 50-540 pointing tool for hemispherically tipped electrodes in the tool holder with the two screws provided. Mount the 50-510 shoulder cutting tool in the same manner and adjust it to give a narrow shoulder of the desired diameter. When the 50-600 shaper is used, the guide blade can be adjusted either to support the side of the electrode during the undercutting operation or to form a shoulder on the electrode. If a shoulder is formed, it will not have a sharp rise between the two diameters, but will have a radius fillet between the diameters.

3.2 Install the Tool Holder in the Body

When the proper cutting tools are mounted into the tool holder, insert the holder into the body of the shaper (A-1, Figure 2) and tighten the set screw provided, locking the tool holder in position. Slip the dust collector onto the body. The unit is now ready for shaping operations.

3.3 Ground

Plug the line cord into a properly grounded power receptacle. The unit is now ready for operation.

4. Operation

4.1 Model 50-500 and 50-600/700 for Ordinary Cutting

1. Turn the switch on the side of the base ON and insert an electrode into the collet. Push the electrode slowly onto the cutting edges of the tool until a sufficient depth is reached. The proper rate of insertion can best be determined with a little practice. Withdraw the electrode slowly from the collet.
2. When the 50-600 tool holder is used for pointing operations or for drilling ordinary craters with no undercut, mount the cutters and lock the tool holder in position with the set screw provided in the body. Pointing and drilling operations can then be performed in the normal way.

4.2 Model 50-600/700 for Undercutting Operations

1. When an undercut crater is to be formed, replace the locking set screw by the Allen cap screw, which has a shoulder on the threads. This shoulder permits the undercutting head to slide in the shaper body for a short distance. A spring is located behind the undercutting head tool holder to keep the holder in its normal "out" position. When in this position, the undercutting blade is kept out of the path of the electrode by centrifugal force.
2. Adjust the guide blade so that it just scrapes the diameter of an electrode when inserted in the collet. If it is adjusted in this way for special purity electrodes, and then regular electrodes are drilled, the electrode diameter will be reduced to that of the special purity electrodes. This effect is desirable because it keeps the outside diameter constant.
3. Insert the electrode into the collet and drill in the normal way, except that the operator must hold the knurled ring on the tool holder with his left hand to keep the holder from sliding into the body during drilling. After the crater has been formed, push the tool holder slowly into the body, with the electrode remaining in the same position relative to the tool holder. The undercutter blade cuts into the side of the electrode to a definite depth. When the tool holder will go no further into the body, withdraw it slowly from the body. Then withdraw the electrode slowly from the collet.

CAUTION

The undercut neck of the electrode is fragile. Handle the electrode carefully.

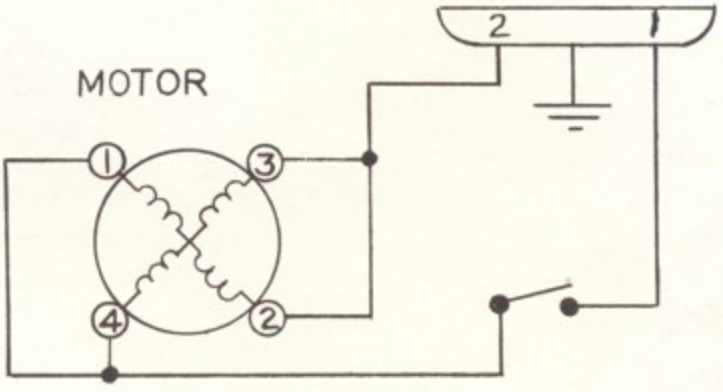
5. Servicing

1. Blade Sharpening

When the cutting of the electrodes becomes difficult, the cutter blades are probably dull. Resharpen by carefully touching them to a grinding wheel, or hand sharpen on a stone. Be careful to retain the same cutting angles.

2. Wiring Schematic: Model 50-500/600

NOTE: A 230/115 v step-down transformer is added for Model 50-700.



Motor Power Requirement: 115 v - 50/60 cycle - 1 phase

Full load amp - 1.6, 1725 rpm

6. List of Available Tools, Cutters, Collets

50-200	Collet Special Pure - various diameters
50-201	Collet Special Pure - 1/8" diameter
50-202	Collet Special Pure - 3/16" diameter
50-203	Collet Special Pure - 1/4" diameter
50-204	Collet Special Pure - 5/16" diameter
50-205	Collet Special Pure - 3/8" diameter
50-221	Plain Drill - 1/8" diameter
50-222	Plain Drill - 3/16" diameter
50-223	Plain Drill - 1/4" diameter
50-224	Plain Drill - 5/16" diameter
50-225	Plain Drill - 3/8" diameter
50-231	Centerpost Drill - 1/8" diameter
50-232	Centerpost Drill - 3/16" diameter
50-233	Centerpost Drill - 1/4" diameter
50-234	Centerpost Drill - 5/16" diameter
50-235	Centerpost Drill - 3/8" diameter
50-290	Plain Drill - for 1/4" electrodes
50-510	Shoulder Cutting Tool
50-520	Pointing Tool (120°)
50-521	Pointing Tool (120°)carbide tipped
50-530	Pointing Tool (45°)
50-540	Pointing Tool (45°) hemispherically tipped
50-550	Crown Tip Electrode Cutter
50-560	Facing Tool
50-570	Pointing Tool (20°)
50-571	Pointing Tool (20°) carbide tipped
50-800	Electrode Grinder
50-801	Grinding Paper Disc
50-802	Carbon Graphite Bushing
50-803	Carbon Graphite Anode
50-804	Tungsten Anode
50-805	Magnetic Brake