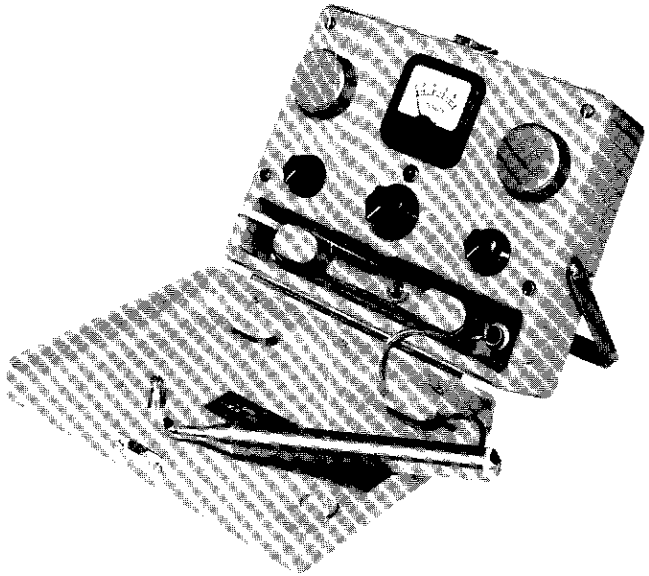
ELECTRO-MALLET

The electronic foil condenser



a Quality product

ELECTRO-MALLET OPERATION AND MAINTENANCE INSTRUCTIONS

TABLE OF CONTENTS

WARRANTY

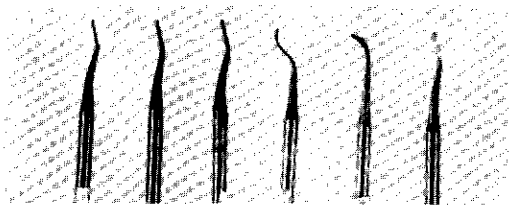
Workmanship and material in the Electro-Mallet are unconditionally guaranteed for a period of one year. Any part proving defective will be replaced without charge within that period if returned to our Glendale factory. We do not assume liability for shipping charges.

McShirley Products 6535 SAN FERNANDO ROAD, GLENDALE, CALIFORNIA 91201 / (213) 243-8994

ELECTRO-MALLET FOIL POINTS

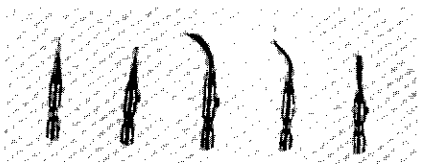
Round	Straight #1, 2, 3; Contra Angle #1, 2
Foot	Straight #5; Contra Angle #3
Parallelogram	Straight #6; Contra Angle #5
Bayonet	Straight #4; Contra Angle #4

Straight



1	2	3	4	5	6
.4	.55	.75	.5	.6	.5
4	4	4	1½	1½	9
4	4	4	0	20	4
					4

Contra Angle



1	2	3	4	5
.55	.75	.75	.5	.4
		1½	1½	.8
		23	0	

ILLUSTRATION A

ELECTRO-MALLET AMALGAM POINTS

Contra Angle

Rounds

1	2	3
		
3.0	2.3	1.7

Shapes

5	6	7	8	9
1.5X3.0	1.0X2.3	0.6X1.7	1.5X3.0	1.0X2.3

Specials

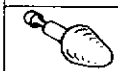
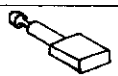
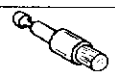
11	12	13	14
			
OVERPACK	CLASS FIVE	UNITEK PIN DRIVER	INLAY SEATING

ILLUSTRATION B

① Combination OFF-ON SWITCH and FREQUENCY REGULATOR. Initial clockwise movement turns on circuit. Movement after switch is on regulates frequency.

② INTENSITY CONTROL. Regulates magnitude of hammering force. Clockwise movement causes mallet to hit harder. See #3A in Operating Instructions for details.

②A METER for visual determination of intensity. Operates in unison with INTENSITY CONTROL ②.

③ BASE SPEED CONTROL. See #3B and 3E in Operating Instructions for details.

④ STORAGE COMPARTMENT for Contra Angle or Straight adapter.

⑤ STORAGE COMPARTMENT for points.

⑥ A.C. PLUG.

⑦ STRAIGHT ADAPTER for handpiece. Threads onto handpiece.

⑧ CONTRA ANGLE ADAPTER for handpiece. Threads onto handpiece.

⑨ FOOT CONTROL JACK.

⑩ HANDPIECE.

⑪ HANDPIECE DISCONNECTING PLUG.

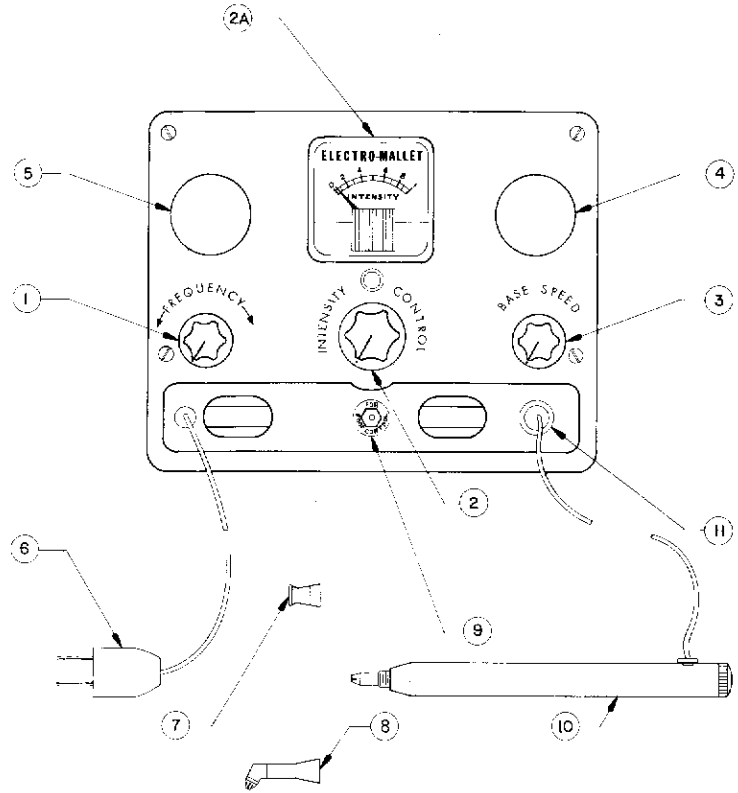


ILLUSTRATION C

The Electro-Mallet is an electronically operated instrument comprised of two units:

A. THE ELECTRONIC CONTROL. A means of regulating the frequency and the force of the blow.

B. THE MALLETING HANDPIECE. Responsive to the electronic control.

The schematic (ref. fig. C) identifies the various parts. Please note that the controls are identified by number and that these numbers are used in the Operating Instructions for greater clarity.

1. Plug cord (ref. (6)) into A.C. outlet 115-120 volts — 50-60 cycles. Do not plug into D.C. outlet.

2. Switch on circuit by turning control (1) clockwise. Allow at least a 30 second warm-up.

3. SETTING THE CONTROLS:
Adjust controls as follows:

A. Turn INTENSITY CONTROL (2) to its extreme clockwise position.

B. Turn BASE SPEED CONTROL (3) counter-clockwise as far as it will go.

C. Turn FREQUENCY CONTROL (1) in a counter-clockwise direction back against the switch without turning it off.

D. Take handpiece in left hand, depress condensing point against suitable surface and hold depressed.

E. Turn Base Speed control (3) clockwise until mallet starts to tap slowly. The correct adjustment is two blows during a normal stepping interval. A normal stepping interval is the length of time necessary to depress the point, apply firm digital pressure on the foil, and then retract sufficiently to stop mallet. This setting is referred to as Base Speed and is a means of adjusting the circuit down to the lowest frequency setting.

F. When adjusted, leave control (3) at this setting. It has no other function. Base speed is useful in starting the foil.

G. SUGGESTED INTENSITY & FREQUENCY SETTINGS:

	INTENSITY	FREQUENCY
TO START FOIL	10 on the meter	Use base speed setting (Ref. Illus. D)
BULK CONDENSATION	5 - 6 on the meter	1800 Strokes per minute
FINISHING or VENEERING	2 - 4 on the meter	3600 Strokes per minute

NOTE: The intensity or magnitude of blow is increased or decreased by turning intensity control (2). A visual indication of the change is the movement of the hand on the meter (2A). Always refer to meter when adjusting force of blow.

H. FREQUENCY CONTROL (1)
All frequencies are available by turning control (1) clockwise through its full rotation. Refer to the enlarged diagram of control (ref. Illustration D) and note that the increase of frequency is not gradual, but divided into bands, each being a number divisible into 3600. These bands are not uniform and cannot be calibrated; therefore, the adjustment from one band to another is accomplished by ear. The correct adjustment for each frequency is the approximate center of its band. 3600 is the last band in the clockwise rotation. Returning counter-clockwise, the next band is 1800, etc.

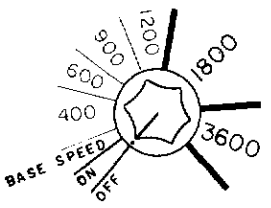


ILLUSTRATION D

CONDENSER POINTS

(Refer to Illustration, Page 2)

Illustration A, page 2, shows the U.S.C. selection of foil points* for the straight handpiece and contra angle. These fit either the Electro-Mallet or the Pneumatic Condenser.

STRAIGHT HANDPIECE POINTS engage the chuck by friction and are held from rotating by reason of the tongue which keys into the bottom of the chuck.

CONTRA ANGLE POINTS enter contra angle chuck freely and are held from dropping out by spring wire which engages retaining groove around shank of point. Lug on side of shank engages any one of 8 slots in chuck. This keeps points from rotating and affords 8 operating positions.

To increase your grip when inserting or removing points, use a piece of rubber dam material. If points fit as they should, pliers should not be necessary.

Generally, any point that fits the pneumatic may also be used in the Electro-Mallet. However, points should be tried in the chuck with the following information in mind.

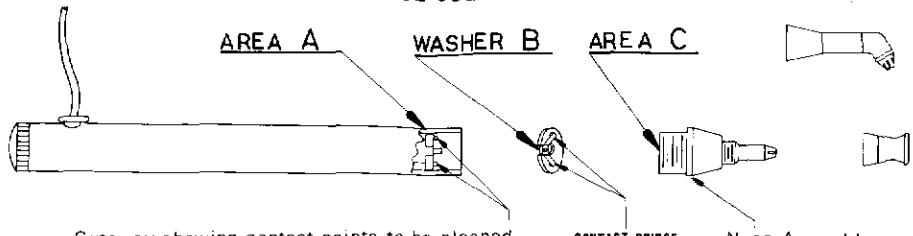
1. Points for straight handpiece:
   a. Determine if shank size is uniform. The Electro-Mallet chuck will hold a straight point with a shank diameter from .092 to .093. Points that are too tight or too loose should not be used.
   b. Tongue that keeps points from rotating will wedge in chuck if it is too thick. To correct, grind face of tongue to relieve wedging.
   c. Identification numerals stamped into the shank may increase diameter. To correct, stone raised area.

2. Points for contra angle:
   a. Points should engage chuck freely.
   b. Points with two ears or lugs should have one ground off.
   c. Avoid using points with a square retaining groove around shank as they cannot be removed from chuck.
   d. Points with a shoulder around shank may engage against end of chuck before entering far enough to activate the mallet. Relieve shoulder to lengthen shank, or discard.

*Additional points are available. Illustrated sheet will be sent on request.
A full set of amalgam points is also available (ref. Illus. B, page 2)

ILLUSTRATIONS OF HANDPIECE
MAINTENANCE SUGGESTIONS

ILLUSTRATION E



Cutaway showing contact points to be cleaned — Nose Assembly

Note that bridge is reassembled facing Area C

I HANDPIECE (Ref. Illus. E)

The contact points and adjacent areas in the handpiece may require cleaning. If handpiece is not activated when pressure is applied to the condenser point, disassemble and clean as follows:

A. Unscrew straight adapter or contra angle.
B. Unscrew the nose assembly of the handpiece at the top of the taper and remove fiber washer contact bridge assembly, as illustrated.
C. Wipe out areas A and C with alcohol. Submerge Washer B in alcohol. Swish around, remove from fluid, and wipe clean, being careful not to bend the contact bridge; when reassembling, please note that bridge is facing Area C. Make sure that the contact pins pass through the holes in the washer.

II CONTRA ANGLE MAINTENANCE

A. An occasional drop of handpiece oil in the contra angle is good practice. Use air to blow out all excess oil.

III STRAIGHT HANDPIECE CHUCK MAINTENANCE

To adjust handpiece straight chuck to hold points more firmly, proceed as follows:

A. Remove the straight handpiece chuck nose adapter.
B. Rest chuck on an anvil at a 30° angle. (Ref. Illus. F)
C. Tap lightly with small mallet rotating full 360° to insure an even closure. (Ref. Illus. F)

CAUTION: Try point after each rotation to avoid closing chuck too much.

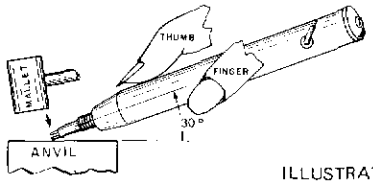


ILLUSTRATION F

SECTION I

The Electro-Mallet is designed to implement the idea of higher frequency malleting of mat gold* and gold foil* at a reduced force for each individual blow.

The desirability of such an instrument was indicated by laboratory experiments and clinical investigation carried out at the University of of Southern California, School of Dentistry, prior to 1956.

The findings reported in an article entitled "Mat gold foil with a veneer cohesive gold surface for Class V restorations",** were:

1. Condensation equal or superior to conventional methods.
2. Less traumatic.
3. Condensing accomplished with greater ease and rapidity.
4. Technic practical for a wider application of foil.

SECTION II

For those who have had no experience with higher frequency malleting, we suggest 1800 strokes per minute for condensing the bulk and 3600 strokes per minute for finishing or veneering.

The approximate intensity setting for 1800 is 6 and for 3600 is 4. However, in either instance, do not use a higher intensity than is necessary to get a good condensation.

As in other methods of condensing mat gold* or gold foil*, firm digital pressure on the condenser point should be applied at each stepping. We bring this to your attention as it is possible to activate the handpiece and not follow through to develop the necessary pressure on the gold for condensation; however, the interval of pressure should be held to a minimum. Stepping should be rapid. Bear in mind that the malleting rate is three blows in 1/10th of a second when the frequency is 1800 blows per minute.

NOTE: It is assumed that the user of this instrument is a gold foil operator. Therefore, the foregoing suggestions are very brief and related only to technic for operating the instrument when used for higher frequency malleting. For some it may be of interest that a most complete Atlas of Gold Foil and rubber dam procedures has become available. This Atlas is a teaching manual with over 400 illustrations and is highly recommended as an authoritative reference. The text is written by Dr. Rex Ingraham and illustrations are by Dr. John Koser. For further information contact Uni-Tro College Press, 5812 Beach Blvd., Buena Park, Calif.

SECTION III

AMALGAM CONDENSATION: Many doctors who use the Electro-Mallet for foils also find the instrument excellent for condensing amalgams with a low mercury ratio. However, it appears to be good practice to use hand condensing to start the filling and employ the Electro-Mallet after a base has been established. The tactile feel of hand condensing is maintained because the instrument does not operate unless pressure is applied on the point, but less pressure is needed due to the vibratory nature of the stroke. The setting suggested is 3600 strokes per minute, at an intensity of 2 to 3.

Amalgam points are available for the contra angle. (Ref. Illus. B, page 2)

SECTION IV

THE ELECTRO-MALLET FOR SEATING INLAYS: A set of points for seating inlays is available. These points have wooden inserts which may be modified for special use and also replaced when necessary. Extra inserts come with the set. Many doctors tell us these points are indispensable.

To use, we suggest a setting of the highest frequency and a low intensity. This provides a continuous movement which causes the cement to flow and the inlay to seat with minimum effort to the doctor and maximum comfort for the patient.

* Also applicable to Goldent, i.e. powdered gold.

** John R. Koser, D.D.S.
Rex Ingraham, D.D.S.
The Journal of the American Dental Association
Volume 52, Pgs. 714-727, June 1956

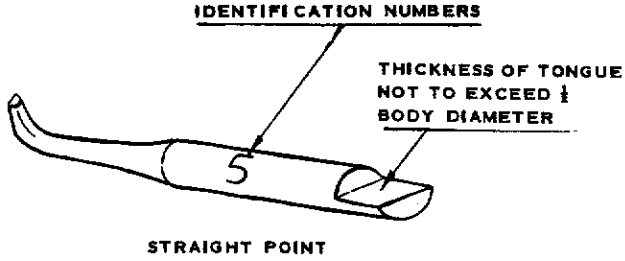
BULLETIN REGARDING STRAIGHT AND CONTRA ANGLE CONDENSER POINTS

Before using the Electro-Mallet, we urge every student to try the condenser points in their respective chucks, i.e., the straight and contra angle chucks, to determine if they engage as freely as they should.

Condenser points are not of our manufacture and therefore, we do not have the opportunity to check the fit.

Generally a point will engage freely as it should if the identification numbers are stoned off flush to the surface in which these numerals are imbedded.

After stoning, insert each straight point into the straight handpiece chuck. Make sure that the tongue designed to keep the point from rotating is engaged. If the tongue is oversized, wedging will occur and the point will not pull out easily. To relieve wedging, grind face of tongue.



To increase your grip when inserting or removing points, use a piece of rubber dam material. If points fit as they should, pliers should not be necessary.

Note: The contra angle points generally do not require modification beyond the stoning of the identification numerals.

McSHIRLEY PRODUCTS, INC.
6535 San Fernando Rd.
Glendale, CA 91201
(213) 243-8994

POINTS for the ELECTRO-MALLET

FOIL 440C stainless steel.

straight

	No.	
ROUNDS	1	.4 4 4
	2	.55 4 4
	3	.75 4 4
	10	.95 4 4
	11	.4 0 0
	12	.55 0 0
	13	.75 0 0
	14	.95 0 0
BAYONET	4	.5 1½ 0
	15	.4 1 3
FOOT	5	.6 1½ 20
	7	.85 3 17
	8	.45 1 20
	16	.4 .8 20
	9	.4 1½ 20
PARALLEL-OGRAM	6	.5 .9 4 4
	17	.9 .5 4 4
	18	.6 .25 5 5
MAT #10	19	.6 1.2
CHISEL	21	0 2.4 12

contra angle

	No.	
ROUNDS	1	.55
	2	.75
	11	.95
	8	.5
BAYONET	4	.5 1½ 0
	9	.4 1 3
FOOT	3	.75 1½ 23
	6	.4 .8 20
	7	.4 1.3 20
	10	.5 1.0 20

AMALGAM contra angle

1	2	3	4	5
3.0	2.3	1.7	1.0	1.5x3.0

6	7	8	9
1.0x2.3	0.6x1.7	1.5x3.0	1.0x2.3

SPECIALS

14	11	15
INLAY SEATING	OVERPACK CONE	OVERPACK WEDGE

PARALLEL-OGRAM		5	.4 .8 0
		13	.4 .95 2 5
SWAGGER		12	0 4 18

ELECTRO-MALLET

The electronic condenser

SOLID STATE

a Quality Product

ELECTRO-MALLET OPERATION AND MAINTENANCE INSTRUCTIONS

TABLE OF CONTENTS

MAINTENANCE SUGGESTIONS

I. HANDPIECE

A. Points in the Electro-Mallet do not require cleaning. DO NOT DISASSEMBLE.

If service is required, disengage connector in power supply and return handpiece for our inspection.

II. CONTRA ANGLE MAINTENANCE

A. An occasional drop of handpiece oil in the contra angle is good practice. Use air to blow out all excess oil.

III. STRAIGHT HANDPIECE CHUCK MAINTENANCE

To adjust handpiece straight chuck to hold points more firmly, proceed as follows:

A. Remove the straight handpiece chuck nose adapter.

B. Rest chuck on an anvil at a 30° angle. (reference Illustration C)

C. Tap lightly with small mallet, rotating full 360° to insure an even closure. (reference Illustration C)

CAUTION: Try point after each rotation to avoid closing chuck too much.

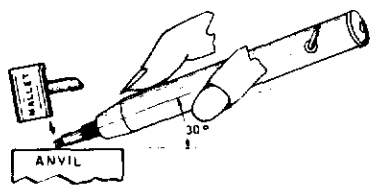


Illustration C

CONDENSER POINTS

(refer to Illustration, page 5)

Illustration A, page 5, shows a section of foil points for the straight handpiece and contra angle.

STRAIGHT HANDPIECE POINTS engage the chuck by friction and are held from rotating by reason of the tongue which keys into the bottom of the chuck.

CONTRA ANGLE POINTS enter contra angle chuck freely and are held from dropping out by spring wire which engages retaining groove around shank of point. Lug on side of shank engages any slot in chuck. This keeps points from rotating and affords 8 operating positions.

To increase your grip when inserting or removing points, use a piece of rubber dam material. If points fit as they should, pliers are not necessary.

Generally, any point that fits the pneumatic may also be used in the Electro-Mallet. However, points should be tried in the chuck with the following information in mind.

1. Points for straight handpiece:
   a. Determine if shank size is uniform. The Electro-Mallet chuck will hold a straight point with a shank diameter from .092 to .093. Points that are too tight or too loose should not be used.
   b. Tongue that keeps points from rotating will wedge in chuck if it is too thick. To correct, grind face of tongue to relieve wedging.
   c. Identification numerals stamped into the shank may increase diameter. To correct, stone raised area.
2. Points for contra angle:
   a. Points should engage chuck freely.
   b. Points with two ears or lugs should have one ground off, if there is an interference.
   c. Avoid using points with a square retaining groove around shank as they cannot be removed from chuck.
   d. Points with a shoulder around shank may engage against end of shank before entering far enough to activate the mallet. Relieve shoulder to lengthen shank, or discard.

McSHIRLEY POINTS for the ELECTRO–MALLET

FOIL POINTS (440C stainless steel)

straight	Nº		contra angle	Nº		contra angle	Nº	
ROUNDS	1	.4 4 4	FOOT	5	.6 1½ 20	ROUNDS	1	.55
	2	.55 4 4		7	.85 3 17		2	.75
	3	.75 4 4		8	.45 1 20		11	.95
	10	.95 4 4		16	.4 .8 20		8	.5
	11	.4 0 0		9	.4 1½ 20	BAYONET	4	.5 1½ 0
	12	.55 0 0	PARALLEL OGRAM	6	.5 .9 4 4		9	.4 1 3
	13	.75 0 0		17	.9 .5 4 4	FOOT	3	.75 1½ 23
	14	.95 0 0		18	.6 .25 5 5		6	.4 .8 20
BAYONET	4	.5 1½ 0	MAT 10	19	.6 1.2		7	.4 1.3 20
	15	.4 1 3	CHISEL	21	0 2.4 12		10	.5 1.0 20

AMALGAM contra angle

1	2	3	4	5
3.0	2.3	1.7	1.0	1.5x3.0

6	7	8	9
1.0x2.3	0.6x1.7	1.5x3.0	1.0x2.3

11	14	15
OVERPACK CONE	INLAY SEATING	OVERPACK WEDGE

PARALLEL-OGRAM	5	.4 .8 0
	13	.4 .95 2 5
SWAGGER CHISEL	12	0 4 18

SECTION I GENERAL INFORMATION

The Electro-Mallet is designed to implement either high frequency malleting at a reduced force for each individual blow, or low frequency malleting with increased force, to be used where indicated. With this range, it is a mallet which saves time and produces ideal results for the condensation of mat gold, gold foil, powdered gold, amalgam, and for the seating of inlays, crowns and bridges.

With the Electro-Mallet you will enjoy the following advantages:

1. Condensation equal or superior to restorations produced by other means
2. High frequency ranges for malleting with reduced stroke intensity
3. Malleting with greater ease and rapidity
4. A favorable patient reaction due to less trauma

SECTION II – Amalgam Condensation

Many doctors use the Electro-Mallet to condense amalgam. The stop buttons enable the operator to control the mallet for hand or mechanical condensing.

The suggested procedure is to introduce the amalgam into the cavity in small increments and adapt by hand pressure with the mallet stopped. As the filling progresses, mechanical condensation is used when indicated.

By alternating between hand and mechanical condensation, a low-mercury amalgam may be condensed without bringing excessive mercury to the surface of the filling.

A high frequency, i.e. 36, and a low intensity of 2 or 3 is suggested for mechanical condensation of amalgam. Points for amalgam are available for the contra-angle. (Reference, Illustration B, page 5)

SECTION III – The Electro-Mallet for Seating Inlays, Crowns and Bridges

Seat inlays, crowns, and bridges with our wooden insert points. Pressure with vibration causes the cement to flow evenly. Seating is done with minimum effort to the doctor and maximum comfort for the patient.

To use, set the Electro-Mallet at the high frequency, i.e. 36, and a low intensity of 2 or 3.

STUDENT WARRANTY

Workmanship and material in the Electro-Mallet are guaranteed for three years from the date of issue. Any part proving defective will be replaced without charge within that period if returned to our Glendale factory. We will assume return shipping charges. Warranty specifically does not cover burnt cables, damaged cases or other owner incurred accidents.

McShirley Products, Inc., 6535 San Fernando Road Glendale, Calif. 91201
213 / 243 - 8994