

# Connecting and Operating INSTRUCTIONS

FOR

MODEL "O-3" *Bovie*

ELECTROSURGICAL UNIT

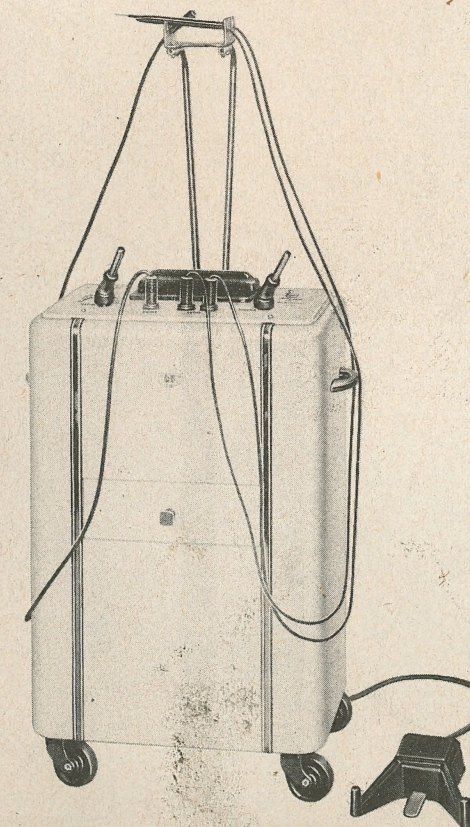


[THE OFFICE BOVIE]

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READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO SET UP OR USE THE MACHINE. OBSERVE ALL GENERAL PRECAUTIONS SET FORTH IN SECTION V.

The **LIEBEL**  **FLARSHEIM Co.**

CINCINNATI 2, OHIO



# Instructions for Connecting and Operating the Model "O-3" Bovie

## (I)

### SETTING UP THE APPARATUS

This apparatus, carefully packed and crated for shipment, will arrive in perfect condition unless grossly mishandled in shipment. If there is evidence of damage, a claim should be filed immediately with the transportation company.

The Bovie is packed in one specially constructed carton. The accessories will be found in the drawer of the unit. The Instrument Rack is packed in one corner of the carton.

All items should be carefully checked against the packing list which will be found in the drawer.

#### CONNECTION TO POWER SUPPLY

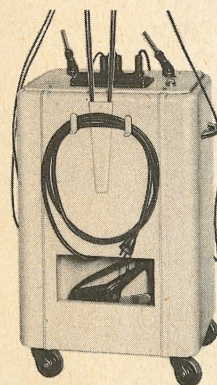
The Supply Cable is fitted with a male plug at one end (for connection to the supply receptacle) and a twist lock female plug for connection to the male receptacle located in the back of the footswitch bin (see picture at bottom of page).

Unless otherwise specified on the nameplate, this Bovie is constructed for use on 50 - 60 cycle alternating current with voltage range from 105 to 125 volts. Be sure current supply matches rating of machine shown on nameplate. If in doubt, call an electrician to test the line for correct voltage and sufficient amperage. The line should be safe for at least 15 amperes, and the voltage should be tested with the machine on load (operating with foot-switch depressed, selector switch on "cutting", and power control at 100).

#### FOOTSWITCH CONNECTION

The footswitch receptacle is located alongside the supply cable receptacle in the back of the footswitch bin (see picture below). The connecting plug of the footswitch cord is male so that there is no possibility of confusing supply cable and footswitch connections.

#### BIN FOR FOOTSWITCH AND HOOKS FOR SUPPLY CABLE



When it is necessary to move the Bovie from place to place, it is not necessary to disconnect the footswitch and supply cable from the machine. Simply slip the footswitch and cord into the bin in the back of the cabinet; disconnect the supply cable from the wall plug and coil it over the hooks which are provided on the back panel of the unit. (See illustration at left.)

#### INSTALLING INSTRUMENT RACK

The two screws (with black washers) in the center line of the cabinet back are for the purpose of attaching the Instrument Rack. Remove these two screws.

Unwrap the instrument rack, removing the tape which holds the bracket in place in its proper relationship to the support rods. With rack in place, attach the bracket to the back of the cabinet with the two screws (and washers) previously removed.

#### INSTRUCTIONS FOR GROUNDING CABINET

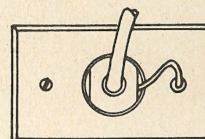
It is an accepted practice to ground all electrical apparatus housed in metal cabinets. Accordingly, the necessary wires and screws to ground the apparatus are included with the Bovie. These will be found in an envelope in the drawer.

Because most modern wall-box receptacles are grounded, a good ground can usually be had by connecting the green lead on the male end of the supply cable directly to the receptacle box cover (see example [1] and [2] below). However if there is any doubt about whether the wall-box receptacle offers an adequate ground, the ground connection should be made to a radiator steam line or a cold water pipe (see example [3] below).

To be sure about which method of grounding to use, determine first whether or not your wall-box receptacle is grounded. Remove the cover and see if a metal pipe or "BX" flexible cable is connected to the outlet box. If so, you may make your ground connection to the box as in examples [1] or [2]. If not, or if you are unable to determine whether the wall box is grounded, use method under example [3] -- or consult building superintendent, architect, or electrician.

#### EXAMPLE 1. - SINGLE RECEPTACLE WITH GROUND

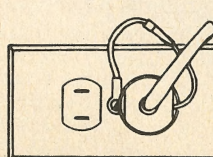
No. 1 - Single Outlet Receptacle with Ground.



Remove one of the screws from the outlet plate. Replace this screw with the threaded end-piece from the green grounding lead. This end-piece can be pulled off the green lead for the purpose of screwing it into the wall plate. Then push the sleeve back over the end piece and the cable is grounded.

#### EXAMPLE 2. - DOUBLE RECEPTACLE WITH GROUND

No. 2 - Double Outlet Receptacle with Ground.

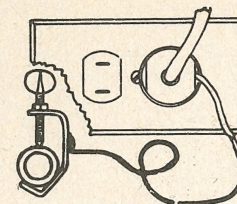


On this type of receptacle, it will be necessary to use the short-ground wire included with grounding accessories, because the screw only (as used with single outlet) would be in the way of plugging in the supply plug. Remove the screw from the plate and slip it through the ring

end of the ground wire -- then replace it and screw it tightly to the wall plate, being sure that you get a good metal-to-metal contact. Then connect the other end of the short-wire to the green lead, as illustrated.

#### EXAMPLE 3. - OUTLET RECEPTACLE WITHOUT GROUND

No. 3 - Outlet Receptacle Without Ground.



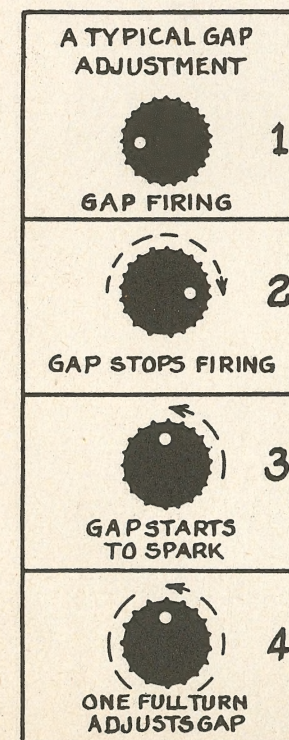
If it is necessary to ground to a water pipe, use the long grounding lead with pipe clamp furnished with grounding accessories. Be sure that the grounding clamp makes good metallic contact. Fasten the clamp securely to cold water pipe if possible -- making sure that point of clamp pierces through any paint and into metal. Then connect the other end of the long wire to the green lead, as illustrated.

#### ADJUSTING SPARK GAPS

Firing of the gaps may be observed through the glass window. Immediately above each gap is its adjustment knob. Turning the knob clockwise closes the gap; counter-clockwise opens the gap.

As the quality of the current is dependent on spark-gap adjustment, it is essential that this operation be accurately and properly performed. There is nothing difficult about the gap adjustment -- on the contrary, it is a rather simple procedure -- but it must be done just right to insure satisfactory performance.

TO ADJUST GAPS, first move Selector Switch to either the "Cut" or "Coagulate" position. Step on foot switch to start current flow through gaps. Then look at the gaps through observation window. If any of the gaps are not firing, turn the proper adjusting knob (or knobs) counter-clockwise to open the gaps slightly until all start to fire. It is essential that all gaps be firing prior to adjustment.



1 - After all gaps are firing, close each gap by turning the knob clockwise until gap stops firing and no spark is seen when looking through the window, (being sure your eye is carefully aligned with the gap). Close all gaps in this manner.

2 - Starting with the left knob, slowly turn it counter-clockwise until you see the gap start to spark, THEN STOP! ---- and note position of small white dot on knob.

3. TURN KNOB COUNTER-CLOCKWISE ONE FULL TURN, (as determined by position of dot) which will put that particular gap in proper adjustment. ADJUST ALL GAPS IN THIS MANNER.

It is important that the observer's eye be lined up directly in front of the sparking surface of gap being adjusted. The best way is to close one eye, and moving the head laterally in front of the gap, stop at the point where firing seems most intense. The arc that takes place is quite small and, if viewed from even a moderate angle, you may not see the first sparking in the gap from which point the subsequent one turn counter-clockwise adjustment must be made.

For best performance the gap adjustment should be made each day before operations are started. While the gaps will, under ordinary conditions, retain their adjustment over quite a period of time, they get slightly out of adjustment if the machine is moved around or jolted, and for assurance of satisfactory performance we recommend a complete gap adjustment each day before starting to work.

When correctly adjusted, intensity of the arc in each gap should appear about the same to the eye. If a particular gap appears to fire with less intensity than the others, it probably means that it has not been opened enough and should be completely readjusted in accordance with the above instructions.

If any one gap fires irregularly or sputters, it very likely means that the gap needs readjustment because it has been opened too wide.

With the gaps properly adjusted you will hardly hear the arc that takes place when current is on. (Don't confuse the 60 cycle transformer hum with the high pitched hissing note of the arc.) If one or more of the gaps are opened too wide, or if they are adjusted improperly so that one takes most of the load, there will be a decided sputtering in that one gap (or all gaps, if all are open too much). The sputter can be seen and its crackling sound is distinctly heard. A single sputter at rare intervals is of no consequence, but if heard often or continuously, all gaps should be correctly adjusted.

We have elaborated on this spark-gap adjustment, not because it is difficult or complicated, but rather on account of its relative importance. Correct gap adjustment is essential to satisfactory operation, particularly of the cutting current. If the machine seems to lack cutting power -- if it cuts slowly -- or if there is excessive amount of dehydrated tissue on edges of the wound -- these are sure signs that the gaps are not in adjustment and they should be properly set before further use.

Remember these simple instructions:

#### HAVE ALL GAPS FIRING BEFORE THE ADJUSTMENT IS STARTED

HAVE THE EYE LINED UP DIRECTLY WITH SPARKING SURFACE and catch the point where firing first begins. This is a critical factor in the adjustment. You must see the very first twinkle and then open the gap one full counter-clockwise turn from the point where firing was first observed.

#### ADJUST ALL GAPS EACH DAY BEFORE WORK IS STARTED

These Bovie gaps incorporate a unique, patented, self-compensating feature which insures their continuous, satisfactory operation and consistent performance. When properly adjusted,



the machine is brought to a condition of stability and, under equivalent conditions, results can always be duplicated -- you know in advance the results to be expected from a given power setting.

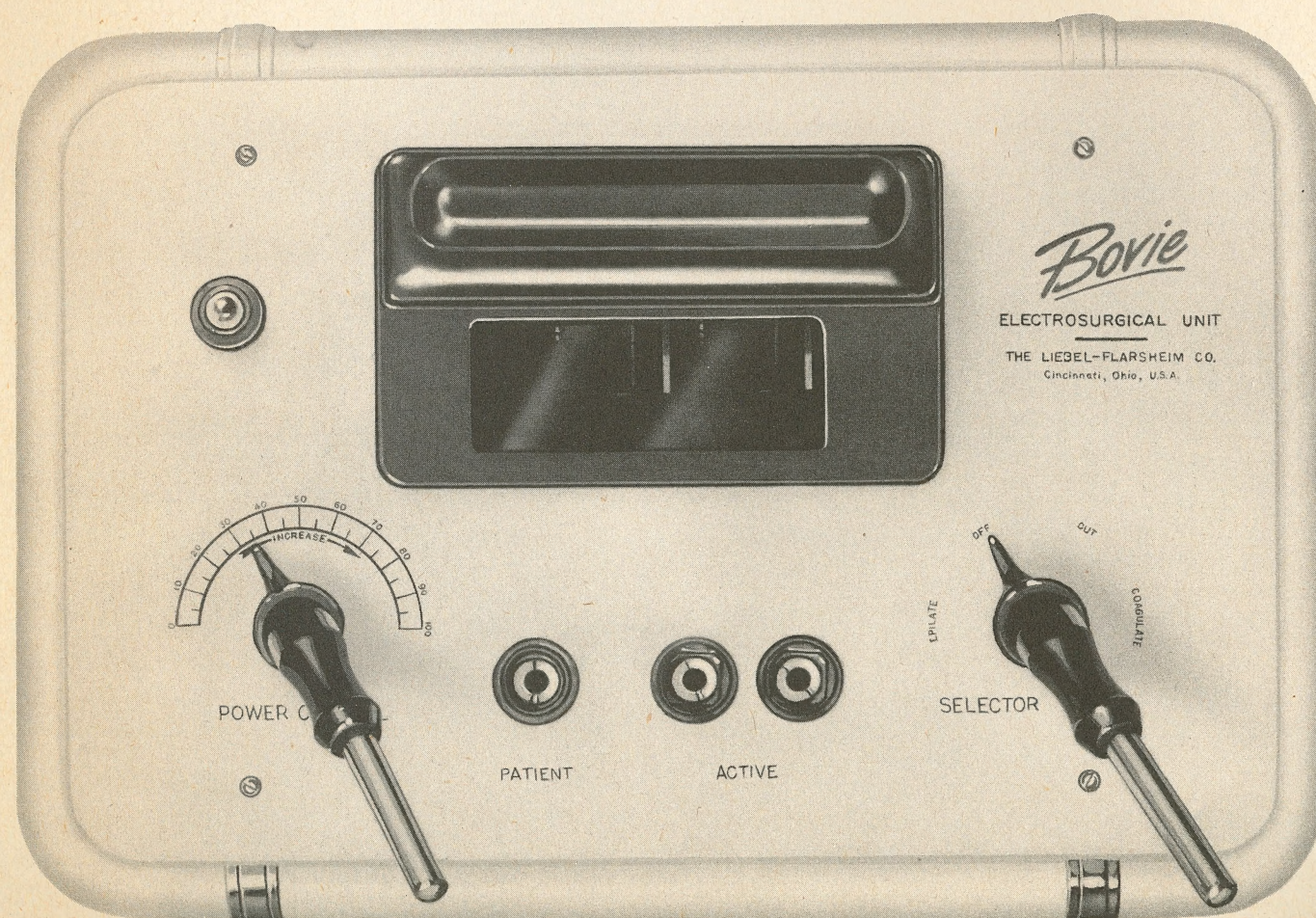
### IF UNABLE TO MAKE GAPS FIRE

1. Make sure that machine is connected to correct current supply.
2. Make sure that the supply line is not "dead" because of burned out fuses or other reasons. Pilot light will glow when machine is connected to proper current supply and Selector Switch is on "Cutting" or "Coagulating". If pilot light does not glow, look for trouble in your supply line.
3. See that the footswitch is connected.
4. See that current selector is on "Cut" or "Coagulate".
5. Occasionally some uninformed persons may start to "play" with the machine and close one or more gaps several turns or open them up a number of turns. If this occurs it may appear impossible to get the gaps to fire.

## (II)

### DESCRIPTION OF CONTROLS

All operator controls, with the exception of the footswitch, are located on the top panel of the unit.



Fortunately, there is a simple remedy for this seemingly perplexing condition.

The thing to do is first, close all gaps completely by turning each adjustment knob clockwise until resistance is felt and further motion arrested. This may require anywhere from two to three, to thirty or more turns, depending on whether gap is partially open or closed at the start. Stops limit the number of possible turns in either direction and considerable resistance will be felt when this limit is reached. Don't attempt to turn knob BEYOND POINT WHERE RESISTANCE IS FELT. To do so might damage gap mechanism.

After all gaps are completely closed -- after all knobs have been turned clockwise until resistance is felt -- then open one gap at a time until it starts firing. This will require from fifteen to twenty-five counter-clockwise turns. Then open the other gaps in the same manner until all are firing. After all gaps have started to fire they should be correctly adjusted in accordance with instructions in preceding section.

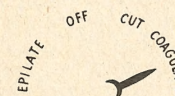
### SELECTOR SWITCH

#### For Selection of Type of Current Desired

An important feature of this Bovie is the selector switch that is located on the right side of the control panel, as the operator faces the unit. This selector switch controls turning the machine on and off, as well as allowing complete freedom in selection of the type of current desired.

#### COAGULATE

This setting delivers a highly damped current that is used for coagulation, fulguration, or desiccation.



#### CUT

When the selector switch is set on this position, a moderately damped current is delivered which will allow for easy severance of tissue with a moderate degree of hemostasis associated with the cut.



#### OFF

With the selector switch at this position the machine is turned off.



#### EPILETIC

This position of the selector switch causes the machine to deliver a very fine coagulating current that will allow the unit to be used for epilation and other types of surgery requiring small amounts of coagulation power.



### POWER CONTROL

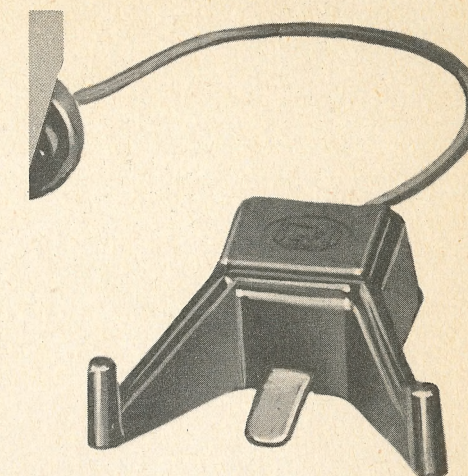
The power control is located on the left side of the control panel, when facing the unit. It provides for stepless control of the strength of current delivered to the operating electrode when the footswitch is depressed. The graduations shown on the dial are a relative measure of the power output.

### PILOT LIGHT

The pilot light is located in the upper left-hand corner of the control panel. The neon bulb will be lighted when the machine is set on either of the "On" positions; i.e., "Cutting" or "Coagulating".

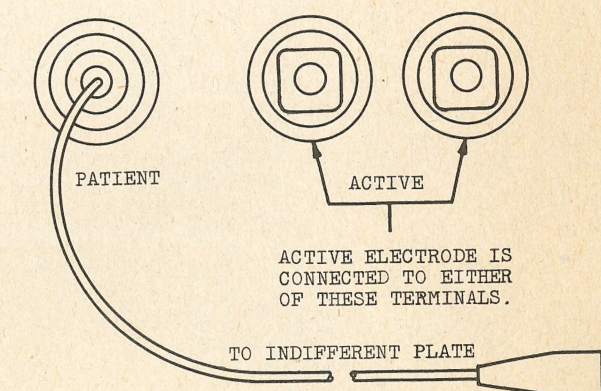
### FOOTSWITCH

The footswitch controls the delivery of current to the operating electrode. Depressing the footswitch causes the machine to deliver to the electrode the type of current that is called for by the setting of the selector switch.



### TERMINALS

The terminals are located on the front of the control panel. The round receptacle on the left side marked "patient" is for insertion of the connecting cord to the indifferent plate.



The active (operating electrode) is connected to either of the two square receptacles marked "active". The electrode terminals are connected together so that both deliver the same current, allowing two different operating electrodes to be connected simultaneously; and in the course of an operation, the surgeon can pick up the instrument desired at that moment. The "idle" electrode is placed in the instrument rack. It must be remembered that the "idle" electrode is "hot" when the footswitch is depressed; therefore, care must be taken not to touch it while the other electrode is being used.

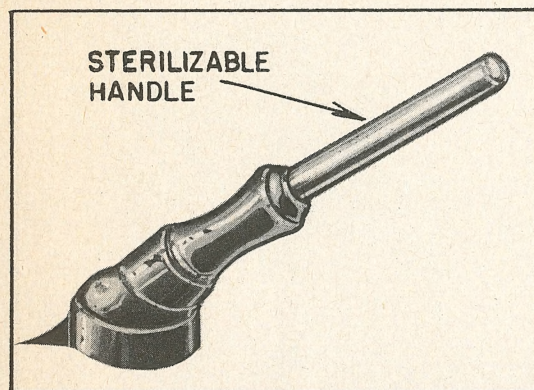
There is no danger of improper connection to the outlet terminals because the patient electrode cord has a round plug, and active electrode cords have square plugs. The round plugs will not fit the square receptacles or vice versa.



(III)

## PREPARATION FOR SURGERY

In preparing the Bovie for Aseptic Surgery, all parts that are handled or touched in the course of the operation should be sterilized prior to use. These include the operating electrode handles with their cords and plugs; the sterilizable handles which fit into the two controls; the sterilizable instrument rack; all needles, knives, loops, blades, and other operating instruments.



**STERILIZABLE HANDLE**  
(shows handle installed)

All metal parts can be sterilized by long boiling or autoclaving without damage. Rubber cords or bakelite parts will be subject to some deterioration when heat sterilization is used, and they will require replacement from time to time.

The usual life of the cords and chuck handles can be lengthened by sterilization in some adequate cold solution; i.e., 70% alcohol, bichloride of mercury (1 to 1000), etc.

For those operations where heat sterilization must be employed, the best method is to wrap all rubber and bakelite parts in a towel, and sterilize them in the autoclave for 15 minutes at 15 pounds pressure. This is considered adequate for most surgery, and does not cause undue deterioration of the bakelite and rubber parts.

### CONNECTIONS

Connect supply cable to machine and wall or base plug, being certain to connect grounding lead to an adequate ground.

Connect footswitch to machine and place it in a convenient spot for the surgeon.

Insert the sterilized control handles into the openings in the controls and give the two or three clockwise turns to lock them in place.

Insert the operating electrodes into the electrode handles by loosening the chuck to receive each of them; then tighten carefully. Place the electrode handles in the instrument rack and plug the square plugs at the other end of the cords into active terminals of machine.

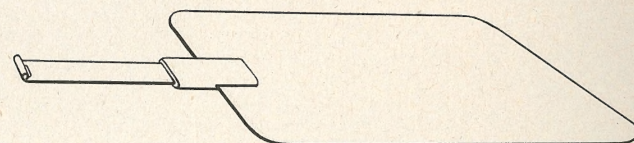
Electrosurgical techniques may be done with or without an indifferent electrode, depending on the type of surgery contemplated. The indifferent plate should be used on all cutting procedures, such as biopsies, conization, etc. It should also be used whenever heavy coagulation is desired, as in the removal of large warts, coagulation of tonsillar tabs, etc.

Monopolar application, without the indifferent electrode, is used where only light coagulation (desiccation, or fulguration) is desired, as is the case in the removal of warts and other skin blemishes.

The stainless-steel indifferent electrode is carefully made to provide good contact and minimize any chance of current concentration which might cause a burn. The surface and edges of the electrode are smooth and should be kept clean. The connection to the "everdur" connecting tab is rubber covered for safety.

The indifferent electrode should be covered with K-Y jelly or soap lather (never Vaseline or oil) and applied under the patient's buttocks or shoulders if the patient is supine; under the abdomen if the patient is prone. It should never be applied to a hairy surface or to an area of skin which is extensively scarred.

If it is desirable not to have the patient disrobe, the electrode may be placed on a wooden chair or table with the palmar surface of the patient's hand on the electrode and the patient sitting on his hand to insure good contact with the electrode.



### PATIENT (INDIFFERENT) ELECTRODE

The connection tab should extend over the side of the table or chair and should not contact the patient. Connect the clip of the patient cord to the end of this tab and plug the round plug on the other end of the cord into the "patient" terminal of the machine.

NOTE: Always clean the indifferent plate thoroughly after use. It must be kept perfectly clean for safety.

### SETTING THE CONTROLS

With the foregoing connections made, the machine is ready for service except for turning on the selector switch and setting the power control. These should be adjusted to the best values for the work at hand.

The amount of power required -- either for cutting or coagulating -- involves a number of variables so that experience and familiarity with the machine and different electrodes used under various conditions is required to determine the best settings. However, if the fundamental



## ELECTROSURGICAL ACCESSORIES

### STRAIGHT BLADE ELECTRODES

with 7/8" insulated shanks

| Cat. No. |            | 2905 | Code  | Price  |
|----------|------------|------|-------|--------|
| No. 2905 | Small..... |      | kiyab | \$1.25 |

|          |            | 2906 | Code  | Price  |
|----------|------------|------|-------|--------|
| No. 2906 | Large..... |      | kiyac | \$1.25 |

### ANGULATED BLADE ELECTRODES

with 7/8" insulated shanks

|          |            | 2907 | Code  | Price  |
|----------|------------|------|-------|--------|
| No. 2907 | Small..... |      | kiyad | \$1.25 |
| No. 2908 | Large..... |      | kiyaf | \$1.25 |

### NEEDLE ELECTRODES

|          |                                | 2902-2903 | Code  | Price  |
|----------|--------------------------------|-----------|-------|--------|
| No. 2902 | Fine, 7/8" ins. shank.....     |           | kiwab | \$1.00 |
| No. 2903 | Coarse, 7/8" ins. shank.....   |           | kiwoc | \$1.00 |
| No. 2904 | Coarse, 2-3/4" ins. shank..... |           | kiwod | \$1.25 |

### ROUND LOOP ELECTRODES

|          |                     | 2909 | Code  | Price  |
|----------|---------------------|------|-------|--------|
| No. 2909 | 1/4" diameter.....  |      | kiyeg | \$1.25 |
| No. 2910 | 5/16" diameter..... |      | kiyek | \$1.25 |
| No. 2911 | 3/8" diameter.....  |      | kiyel | \$1.25 |
| No. 2912 | 1/2" diameter.....  |      | kiyem | \$1.25 |
| No. 2913 | 3/4" diameter.....  |      | kiyep | \$1.25 |

|          |                     | 2914 | Code  | Price  |
|----------|---------------------|------|-------|--------|
| No. 2914 | 1/4" diameter.....  |      | kiyer | \$1.50 |
| No. 2915 | 5/16" diameter..... |      | kiyew | \$1.50 |

### BALL ELECTRODES

|          |                                   | 2916 | Code  | Price  |
|----------|-----------------------------------|------|-------|--------|
| No. 2916 | 1/8" dia., 1-3/4" ins. shank....  |      | kiyob | \$1.00 |
| No. 2917 | 3/16" dia., 1-3/4" ins. shank.... |      | kiyoj | \$1.00 |
| No. 2918 | 3/16" dia., 3-1/2" ins. shank.... |      | kiyos | \$1.25 |

### DISC ELECTRODES

|          |                     | 2919 | Code  | Price  |
|----------|---------------------|------|-------|--------|
| No. 2919 | 1/4" diameter.....  |      | kiwad | \$1.50 |
| No. 2920 | 5/16" diameter..... |      | kiwer | \$1.50 |
| No. 2921 | 3/8" diameter.....  |      | kiwol | \$1.50 |

### DR. BECK'S TURBinate NEEDLE

| Cat. No. |                       | 2107 | Code | Price  |
|----------|-----------------------|------|------|--------|
| No. 2107 | Turbinate needle..... |      | fawn | \$1.50 |

### STERILIZABLE ELECTRODE STAND

|          |       | 2116 | Code  | Price  |
|----------|-------|------|-------|--------|
| No. 2116 | ..... |      | fuont | \$2.00 |

### STERILIZABLE HANDLE

|          |       | 2174 | Code  | Price  |
|----------|-------|------|-------|--------|
| No. 2174 | ..... |      | fupem | \$1.00 |

### ADAPTOR PLUG

|                                                                                     |                                                                                                                           |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
|  | Moulded BAKELITE Bovie Plug with set screw, for attaching cords with small metal tips to Bovie Units and diathermy units. |
| No. 2110 .....                                                                      | eroti \$1.50                                                                                                              |

### SUPPLY CABLE

|          |                                                                                         |       |        |
|----------|-----------------------------------------------------------------------------------------|-------|--------|
| No. 2094 | STANDARD LEAD-IN SUPPLY CABLE, 10 ft., for use on Bovie units other than "AG" Model.... | epilt | \$3.50 |
| No. 2180 | SUPPLY CABLE FOR "AG" BOVIE, with twist-lock plug....                                   | epife | \$4.00 |

### STAINLESS STEEL COAGULATING ELECTRODES

with 3/2" insulated shanks

|          |                        | 2082 | Code  | Price  |
|----------|------------------------|------|-------|--------|
| No. 2082 | Straight point.....    |      | front | \$1.00 |
| No. 2083 | 1/4" curved point..... |      | frost | \$1.00 |
| No. 2084 | 3/8" curved point..... |      | froze | \$1.00 |

### CERVICAL CONIZATION ELECTRODES

|          |                                 |      |        |
|----------|---------------------------------|------|--------|
| No. 7612 | Straight Handle and Cord.....   | kiwi | \$3.50 |
| No. 7613 | Curved Handle and Cord.....     | kiwi | \$3.50 |
| No. 7614 | Flexible Cannulae.....          | kiwi | \$3.50 |
| No. 7615 | Trocar.....                     | kiwi | \$3.50 |
| No. 7616 | Ball electrodes.....            | kiwi | \$3.50 |
| No. 7617 | Point electrodes.....           | kiwi | \$3.50 |
| No. 7618 | Blade electrode.....            | kiwi | \$3.50 |
| No. 7619 | Wooden carrying handle and..... | kiwi | \$3.50 |
| No. 7620 | Pneumolysis.....                | kiwi | \$3.50 |





## ELECTROSURGICAL ACCESSORIES (Continued)

PATIENT INDIFFERENT ELECTRODE  
(Stainless Steel)

|          |                  |      |        |
|----------|------------------|------|--------|
| No. 2900 | Large (9" x 14") | kvos | \$6.50 |
| No. 2901 | Small (5" x 7")  | kvow | \$4.50 |

## 2½ LB. DIATHERMY METAL

|          |                                                                 |       |        |
|----------|-----------------------------------------------------------------|-------|--------|
| No. 2005 | LIGHT WEIGHT, 12" wide, approx. 6 sq. ft. to roll, Gauge, .007" | eland | \$2.75 |
| No. 2006 | HEAVY WEIGHT, 12" wide, approx. 3 sq. ft. to roll, Gauge, .015" | elite | \$2.75 |

## METAL ROLLER

for smoothing out diathermy metal electrodes  
No. 2004 ..... effet \$1.50

## SINGLE-TREADLE FOOTSWITCH

|          |                                                                                                                                                                                                                                               |       |         |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|
| No. 2015 | One-piece shell, stainless, rust-proof alloy treadle. Rubber feet to prevent slipping on floor. Electrical parts completely insulated, shockproof. Will not short on wet floors. Complete with 8 ft. rubber covered cord and attachment plug. | escor | \$12.00 |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|

## DOUBLE-TREADLE FOOTSWITCH

|          |                                                                                                                                                                                                                                                                                                     |       |         |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|
| No. 2173 | For use with Model "AG" and Davis-Bovie Electrosurgical Units. One-piece shell, stainless, rustproof alloy treadles. Rubber feet to prevent slipping on floor. Completely insulated, shockproof. Will not short on wet floors. Complete with 9 ft. rubber-covered cord and 3-prong attachment plug. | equal | \$25.00 |
| No. 2177 | SPECIAL DOUBLE-TREADLE FOOTSWITCH FOR "AG" BOVIE. Cord has twist-lock plug for use with "AG" Bovie                                                                                                                                                                                                  | equom | \$25.00 |

## CONNECTING CORDS

Patient (Indifferent) Cord

|          |                                                                                                                                                                                                                   |        |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| No. 2108 | PATIENT CORD, 6 ft. with insulated control handles, sterilized control handles, Bovie Plug. Used in the controls and give the Endoscopic instrument turns to lock them in instrument or Fulgurator to Bovie Unit. | \$2.50 |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|

ENDOSCOPIC CO. machine and place it at spot for the surgeon.

6 ft. with insulated, sterilized control handles, Bovie Plug. Used in the controls and give the Endoscopic instrument turns to lock them in instrument or Fulgurator to Bovie Unit.

generating electrodes into the loosening the chuck to re-tighten carefully.

No. 2095 ..... in the instrument at the other end of machine.

## CHUCK HANDLES

|          |                                                                                                                                                                                                                                              |       |        |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------|
| No. 2073 | SMALL CHUCK TYPE HANDLE<br>Moulded Bakelite handpiece. Small diameter affords easy manipulation. 6" long, 5/16" diameter. Easily taken apart for cleaning and sterilization. Complete with 6' rubber-covered cord and Bovie attachment plug. | faket | \$6.50 |
| No. 2073 | .....                                                                                                                                                                                                                                        |       |        |

|          |                                                                                                                                               |       |        |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------|--------|
| No. 3450 | LONG CHUCK TYPE HANDLE<br>(8-1/2"). Moulded bakelite handpiece. Screw on tip. Complete with 6' rubber-covered cord and Bovie attachment plug. | mecol | \$7.50 |
| No. 3450 | .....                                                                                                                                         |       |        |

## OFFSET GRIP FOR LONG CHUCK HANDLES

Offset grip as shown above, to fit long chuck handle.

|          |                                  |       |        |
|----------|----------------------------------|-------|--------|
| No. 3428 | Offset Grip on Long Chuck Handle | medin | \$3.00 |
| No. 3428 | .....                            |       |        |

## PARTS FOR CHUCK HANDLES

|            |                                              |       |        |
|------------|----------------------------------------------|-------|--------|
| No. 3429   | SPARE CHUCK TIP for long chuck handles.      | mefga | \$.85  |
| No. 2073-A | BAKELITE SLEEVE for small chuck-type handle. | felao | \$1.65 |
| No. 2073-B | CHUCK (Spring brass tubing for sleeve)       | foura | \$1.35 |
| No. 2073-C | CHUCK TIGHTENER (for small handle).          | fueat | \$1.35 |

## EPILATION NEEDLE, ADAPTOR AND CHUCK HANDLE

|          |                                                                                        |       |         |
|----------|----------------------------------------------------------------------------------------|-------|---------|
| No. 2112 | Adaptor and chuck Handle.                                                              |       |         |
| No. 2111 | Epilation Needle, Angulated                                                            | epill | \$.75   |
| No. 2112 | Epilation Adaptor with chuck handle. (Reduces power output for precise power settings) | epoa  | \$17.50 |



## ELECTROSURGICAL ACCESSORIES (Continued)

## CURVED LARYNGEAL COAGULATION ELECTRODE

|          |                                 |       |         |
|----------|---------------------------------|-------|---------|
| No. 2114 | For indirect work under mirror. | enigm | \$12.50 |
| No. 2114 | .....                           |       |         |

SPECIAL LONG-SHAFT ELECTRODES WITH OFFSET HANDLE  
For laryngeal, Bronchial, Esophageal or Proctologic Use

|          |                                                                                                                     |       |        |
|----------|---------------------------------------------------------------------------------------------------------------------|-------|--------|
| No. 2930 | Handle with angle bend to accommodate all shafts illustrated. Complete with attached connecting cord and Bovie plug | friol | \$7.50 |
| No. 2931 | 6" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                    | friom | \$4.00 |
| No. 2932 | 9" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                    | frior | \$4.50 |
| No. 2933 | 12" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                   | frios | \$5.00 |
| No. 2934 | 15" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                   | friot | \$5.50 |
| No. 2935 | 18" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                   | frioy | \$6.00 |
| No. 2936 | 24" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                   | frioz | \$6.50 |

## TIP STYLES

|          |                                                                                                                     |       |        |
|----------|---------------------------------------------------------------------------------------------------------------------|-------|--------|
| No. 2930 | Handle with angle bend to accommodate all shafts illustrated. Complete with attached connecting cord and Bovie plug | friol | \$7.50 |
| No. 2931 | 6" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                    | friom | \$4.00 |
| No. 2932 | 9" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                    | frior | \$4.50 |
| No. 2933 | 12" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                   | frios | \$5.00 |
| No. 2934 | 15" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                   | friot | \$5.50 |
| No. 2935 | 18" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                   | frioy | \$6.00 |
| No. 2936 | 24" shaft, with tip 1, 2, 3, 4 or 5 (Specify tip)                                                                   | frioz | \$6.50 |

## RESECTION LOOPS

|          |                                                    |       |        |
|----------|----------------------------------------------------|-------|--------|
| No. 2139 | Loop for 24 Fr. Electrotome, Size #12 (.012" wire) | awacy | \$5.50 |
| No. 2140 | Loop for 24 Fr. Electrotome, Size #15 (.015" wire) | awbel | \$5.50 |
| No. 2141 | Loop for 28 Fr. Electrotome, Size #12 (.012" wire) | awcup | \$5.50 |
| No. 2142 | Loop for 28 Fr. Electrotome, Size #15 (.015" wire) | awdde | \$5.50 |

## ELLIK EVACUATOR

|          |                 |       |        |
|----------|-----------------|-------|--------|
| No. 2170 | Ellik Evacuator | axcel | \$7.50 |
| No. 2170 | .....           |       |        |

## BI-TERMINAL, CERVICAL, TONSIL AND TURBinate COAGULATION ELECTRODES

|          |                                                                                                        |       |        |
|----------|--------------------------------------------------------------------------------------------------------|-------|--------|
| No. 2166 | ELECTRODE HANDLE with cords and plugs. (Can be fitted with cervical, tonsil, or turbinate electrodes.) | elaby | \$7.50 |
| No. 2167 | CERVICAL COAGULATION ELECTRODE                                                                         | emuob | \$7.50 |
| No. 2168 | TONSIL ELECTRODE                                                                                       | eourt | \$7.50 |
| No. 2172 | TURBinate ELECTRODE                                                                                    | equel | \$7.50 |

INTRA-PLEURAL PNEUMOLYSIS OPERATING INSTRUMENTS  
FOR CUTTING ADHESIONS IN ARTIFICIAL PNEUMOTHORAX

|          |                                                                                                                                                                                                                                                                          |       |          |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|
| No. 7600 | Dr. Julian A. Moore's INTRATHORACIC OPERATING INSTRUMENTS, complete set consisting of: 1 straight handle, 1 curved handle, 1 point, 2 blades, 1 ball, 2 flexible cannulae, 1 trocar, 2 high-frequency cords with attachment plugs, complete set in wooden carrying case. | agate | \$80.00  |
| No. 7603 | Dr. Moore's Improved Thoracoscope, with light cord and one spare lamp                                                                                                                                                                                                    | agult | \$130.00 |
| No. 7620 | SPARE LAMP FOR ABOVE                                                                                                                                                                                                                                                     | agsel | 2.25     |

## INDIVIDUAL PRICES

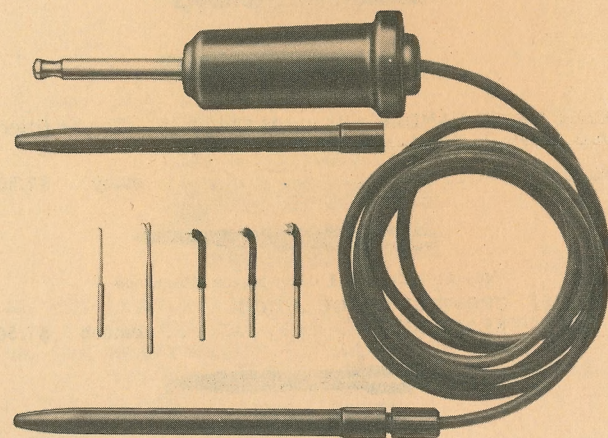
|          |                                                                    |       |       |
|----------|--------------------------------------------------------------------|-------|-------|
| No. 7612 | Straight Handle and Cord                                           | afeap | 18.50 |
| No. 7613 | Curved Handle and Cord                                             | agulo | 18.50 |
| No. 7614 | Flexible Cannulae                                                  | ahiml | 6.00  |
| No. 7615 | Trocar                                                             | ajult | 6.00  |
| No. 7616 | Ball electrodes                                                    | akand | 3.50  |
| No. 7617 | Point electrodes                                                   | alami | 3.50  |
| No. 7618 | Blade electrode                                                    | amour | 3.50  |
| No. 7619 | Wooden carrying case                                               | accul | 7.50  |
| No. 7620 | Pneumolysis Cord with fitting for handle and Bovie attachment plug | apurf | 3.00  |





## ELECTROSURGICAL ACCESSORIES (Continued)

### DETACHED RETINA ACCESSORIES



The Complete Kit

NOTE: The scalpel circuit of the Model "AG" Bovie and the Davis-Bovie units provides a special Retinal Detachment current with the Hemostatic Control Switch set on No. 4. The following electrodes are available for this technic:

|          |                                                                                     |       |         |
|----------|-------------------------------------------------------------------------------------|-------|---------|
| No. 7512 | Six-point Detached Retina Electrode on insulated, flexible extension shank. . . . . | becod | \$5.00  |
| No. 7513 | One-point Detached Retina Electrode on insulated, flexible extension shank. . . . . | bedni | \$2.75  |
| No. 7516 | Right-angle testing needle . . . . .                                                | begon | \$1.50  |
| No. 7518 | Two-point Schoenberg hook . . . . .                                                 | beite | \$2.50  |
| No. 7519 | Adaptor with connecting cord and chuck handle . . . . .                             | begot | \$17.50 |

NOTE: WITH BOVIES OTHER THAN THE MODEL "AG" BOVIE AND THE DAVIS-BOVIE, IT IS NECESSARY TO USE A SPECIAL CURRENT ADAPTOR BECAUSE THE UNITS THEMSELVES DO NOT PROVIDE THE APPROPRIATE CURRENT FOR DETACHED RETINA. THIS ADAPTOR IS AVAILABLE AS A PART OF THE DETACHED RETINA KIT DETAILED BELOW.

### DETACHED RETINA KIT (Illustrated Above)

No. 7520 Detached Retina Kit for performing Retinal Detachment technic with Portable, Intermediate, Universal and Mobile Bovie Units, consisting of the following items in keratol-covered case:

No. 7520 Complete Kit . . . . . bedom \$35.00

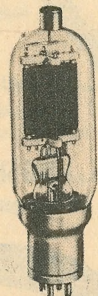
- 1 - Instruction sheet
- 1 - Adaptor with connecting cord and chuck handle
- 1 - Spare chuck handle sleeve
- 1 - Two-point Schoenberg hook
- 1 - Right-angle testing needle
- 2 - Single-point electrode with insulated flexible shanks
- 1 - Six-point electrode with insulated, flexible shank

### TUBE REPLACEMENTS

for Model "AG" Bovie.

No. 8500 Type CV-II Tube for Model "AG" Bovie Unit only . . . . . byag \$10.00

THE ABOVE PRICE IS FOR  
TUBE REPLACEMENT  
AFTER 12 MONTHS FROM  
DATE OF INSTALLATION.



NOTE: Should the tube furnished with model "AG" Bovie fail under normal usage conditions before 12 months from date of installation, a replacement tube will be supplied upon payment by the purchaser of 1/12 the retail price of the tube for each month or part of the month the tube has been in service.

### SPARK GAP REPLACEMENTS

Repairs on spark-gaps are handled on a replacement basis. When a spark-gap assembly is in need of replacement, send us the model and serial number of the Bovie Unit, when you order the new gaps. We will then ship the proper assembly on the plan stated below. The old gaps can be returned in the same shipping container.

|                                                                                                                      | List Price<br>of New<br>Assembly | *Credit for<br>Return of<br>Old As'mbly | Net<br>Cost of<br>Exchange |
|----------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------|----------------------------|
| 4-Gap <u>CUTTING</u> Gap Assembly (for Model AG Bovie Unit) . . . . .                                                | \$115.00                         | \$95.00                                 | \$20.00                    |
| 4-Gap <u>CUTTING</u> Gap Assembly (for Davis-Bovie, Intermediate, Universal, 4-Gap Portable, Mobile Bovie) . . . . . | 75.00                            | 60.00                                   | 15.00                      |
| 3-Gap <u>CUTTING</u> Assembly (for 3-Gap Portable, and Junior Bovie) . . . . .                                       | 52.50                            | 40.00                                   | 12.50                      |
| 3-Gap <u>COAGULATING</u> Gap Assembly (for Davis-Bovie and Coagulator) . . . . .                                     | 35.00                            | 25.00                                   | 10.00                      |

\* When the new gaps are sent out, a charge representing the complete cost is made. When old gaps are returned, a credit is issued, leaving only the net replacement charge as shown above.

PRICES LISTED ABOVE DO NOT INCLUDE PARCEL-POST CHARGES.

principles are understood, the surgeon will have little difficulty in making the correct settings for different types of work.

Cutting power required will vary, depending on -- (a) nature of tissue being sectioned. Fat or cartilage requires more power than skin or muscle. Sclerotic, fibrotic, or cicatricial tissues will require more power than softer tissues. (b) depth of incision. A deep incision (with the same electrode and a given speed of cut) requires more power than a shallow one. (c) rate of speed at which cutting electrode is moved. Fast cuts require more power than slow. (d) type of electrode used. For a given depth of incision with equivalent speed of cutting, the amount of power required will depend on the thickness of the electrode used. The thinner the electrode, the less power required.

Coagulation power required will also vary according to -- (a) time current is applied. Contrary to what might be expected, a lower power for a longer time will give greater depth of coagulation, than will a high power setting for a shorter time. (b) type of electrode used.

A heavy electrode (i.e., ball or disc) will require a higher power setting than pointed electrodes.

With these fundamentals in mind, it can be seen that power settings are not set, unalterable figures, but are subject to individual variation. The surgeon should learn that this is a flexible factor and that best results are secured by varying the power settings to meet the immediate conditions.

If the lowest possible power setting is used which will allow the surgeon to cut freely at the desired depth, there will be a minimum of sparking and flashing at the electrode, which will prolong the life of the operating instruments, and will prevent charring and excessive coagulation of the wound edges.

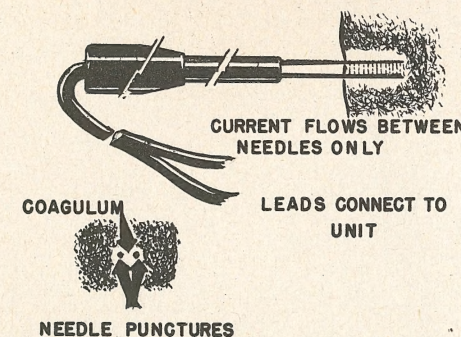
### IMPORTANT

Certain general precautions are necessary in the use of any electrosurgical unit. In section V following, the precautions applying to this model Bovie are set forth. Read and observe them carefully.

## (IV)

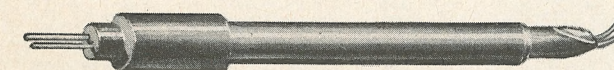
## SPECIAL TECHNIQUES

### COAGULATION WITH BITERMINAL ELECTRODES



In recent years there has been a steadily increasing use of the so-called biterminal coagulation electrodes. In these instruments there are two needles or points, each connected to one of the terminals of the Bovie. No indifferent electrode is used as the two points are each, in effect, active electrodes. Coagulation takes place only between and around the two needles. While made in a variety of designs, the tonsil, cervical, and turbinate electrodes, as illustrated, are the ones most extensively used.

BITERMINAL TONSIL ELECTRODE



BITERMINAL TURBinate ELECTRODE

Only a small amount of power is required when using biterminal electrodes as the current penetrates only the tissue lying between and immediately around the needles. Extreme care must be taken to avoid an excess of power so that arcing between the points or a breakdown within the handle will not occur.

BITERMINAL CERVICAL COAGULATION  
ELECTRODE

The biterminal cervical coagulation electrode consists of an insulating tip with two narrow metal plates at each side, which constitute the active electrodes. The tip is passed into the cervical canal, the current turned on and the electrode rotated through one half turn, which results in coagulation of the endo-cervical tissues -- the depth of destruction depending on the amount of current used and speed of rotation.

### EPILATION



The Model "O-3" Bovie incorporates a special circuit for epilation. Selector switch should be set on "epilate" and the standard chuck plugged into either of the active electrode receptacles. It is advisable to use the convenient 5" x 7" inactive electrode. The patient merely places her hand on the electrode and then rests the weight of her body on the hand to insure good contact. Power control settings will vary between 40 and 60 depending on depth of the follicle and diameter of the hair.

The special angulated epilation needle will easily slip into the follicle under magnification for good visibility. The needle should be inserted into the follicle for a distance of about 3/8" and the foot-switch depressed for about two seconds. Frequently the hair will slip out when the needle is withdrawn, or it may need slight traction with forceps.

Using the above procedure the physician can remove 80 to 100 hairs per hour. It is advisable not to work in too small an area at any one time to reduce the possibility of scar formation.



(V)

## GENERAL PRECAUTIONS

### THE ANESTHETIC

Most procedures will not require any anesthetic other than local; but should a general anesthetic be necessary, please consider the suggestions to follow.

The use of an electrosurgical apparatus imposes some limitations on the type of anesthetics which can be safely used. Choice of anesthesia should be made with full consideration of the danger of using electrical sparks in the presence of explosive gases.

The best rule is to avoid all inflammable anesthetics; and it should be recognized that all commonly used inhalant anesthetics are inflammable -- especially so when used with oxygen.

With present-day techniques of administering spinal, intramuscular, oral and rectal anesthetics, the surgeon or anesthetist has a wide choice from which to select an appropriate anesthesia for any electrosurgical procedure.

Even so, some surgeons and anesthetists consider nitrous oxide safe enough if the operating field is remote from the respiratory passages; or, even chance ether by the closed method with such precautions as continuous ventilation of the operating room, moist drapes separating the patient's head and the anesthetist from the operating field, exercise of care to avoid any spillage and prompt removal of empty ether cans from the room. It goes without saying, of course, that no inhalant of even the slightest degree of inflammability should be used if there is or can accidentally be any communication between the operating field and the respiratory system.

### GROUNDING UNIT

Be sure that the unit is grounded in accordance with grounding instructions given in Section I. Otherwise, there is a possibility of shock to patient or operator -- remote but real.

### CHECKING CORDS, CONNECTIONS

It is important that all cords and plugs be frequently checked for breaks in insulation or electrical contact. When plugs are pulled out of receptacles, grasp the plug, not the cord. Jerking on the cords may pull soldered connec-

tions loose. Age and repeated sterilizations can cause cracks in rubber insulation which might result in burns to patient or operator.

Always use an individual electrical outlet. Do not connect the Bovie to the same outlet with other appliances.

### PREVENTION OF HIGH-FREQUENCY SKIN BURNS

Accidental burns are possible either from the indifferent electrode (if improperly prepared or applied) or from the active electrode if it is carelessly handled or laid on the patient when not in use.

The indifferent electrode must be kept clean and smooth and should be applied with a generous application of heavy soap lather or K-Y jelly. Under no circumstances should the plate be applied over hair or hard scar tissue.

When not in use, the chuck handle and active electrode should be placed in the instrument rack. If more than one active electrode handle has been connected to the unit, it must be remembered that all connected electrodes are "hot" when the footswitch is depressed. Therefore, "idle" electrodes should be safely kept in their proper place on the instrument rack.

### PREVENTION OF BURNS RESULTING FROM ACCIDENTAL IGNITION OF INFLAMMABLE FLUIDS

When an inflammable fluid, such as alcohol or ether, is used to cleanse the field preparatory to surgery, it is important to remember that there is a possibility of igniting any gas or residual liquid by a spark from the electrode. When inflammable fluids or solvents are used, allow sufficient time for complete evaporation and be sure that drapes, dressings, coverings, clothing, etc., surrounding the field are thoroughly dry and not saturated with the liquid.

SEE GENERAL CAUTIONARY STATEMENT  
ON PAGE 10

(VI)

## SERVICE NOTES

The Bovie will require very little servicing except that occasioned by the normal wear on the spark gaps and rubber parts of the cords.

Excessive heating or exposure to ultraviolet will cause deterioration of the rubber insulation on the electrode cords. Care should be taken not to pull on the leads to disconnect them from the machine but, rather, to grasp the bakelite plugs.

After a great deal of use the tungsten surface on the gaps will become carbonized and

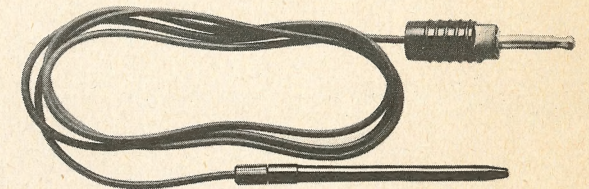
pitted so that they cannot be accurately adjusted. If gaps are properly set, this should not occur oftener than every few years under normal usage.

When it is necessary to replace gaps, your local Liebel-Flarsheim salesman, or the factory, should be contacted. A factory rebuilt set of gaps will be sent to you with complete instructions for replacing the old gap assembly. The old gap assembly should be returned to your dealer, or the factory, in the shipping container in which the new gaps were received. There is a nominal charge for this replacement service.

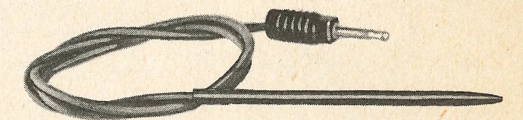
**CAUTION:** WHENEVER IT IS NECESSARY TO REMOVE THE BACK FROM THE MACHINE FOR ACCESS TO CIRCUIT PARTS, BE SURE THE SUPPLY CABLE IS DISCONNECTED.

## ABOUT THE ACCESSORIES

FOR THE ORDINARY ELECTROSURGICAL TECHNIQUES which do not require specialized instruments -- such as general surgery, neurosurgery, gynecological or tumor surgery, this Bovie comes equipped with a "Standard Set of Surgical Accessories" comprising chuck handles to hold the various electrodes and a generous assortment of cutting and coagulation tips. There are two types of chuck handles furnished -- the standard small chuck handle (illustration A) and the "long" chuck handle (illustration B) which may be used with the offset grip for visual accessibility through small orifices.



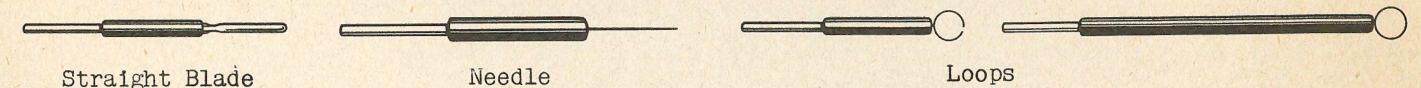
SMALL CHUCK HANDLE  
ILLUSTRATION A



LONG CHUCK HANDLE  
ILLUSTRATION B

The electrodes furnished with the standard set of surgical accessories are of the following types:

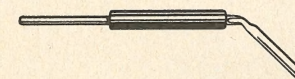
### CUTTING ELECTRODES



Straight Blade

Needle

Loops

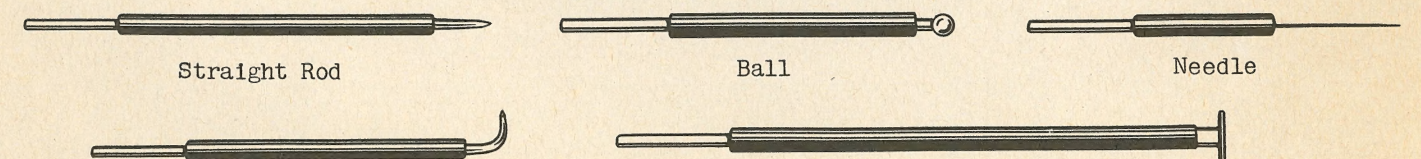


Angulated Blade



Conization Electrode

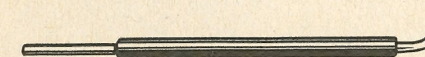
### COAGULATION ELECTRODES



Straight Rod

Ball

Needle



Curved Rod



Disc

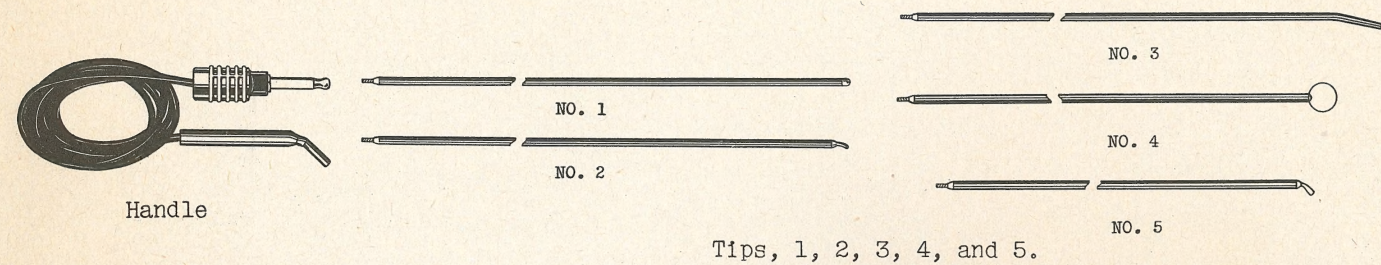
See next page for Special Electrodes



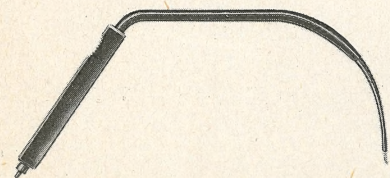
## SPECIAL ELECTRODES

A variety of special electrodes for special purposes are available from the Company on special order. Some of these are as follows:

### LONG-SHANK ELECTRODES (6" to 18" lengths)



### CURVED LARYNGEAL ELECTRODE



For indirect work under mirror.

### EPILATION NEEDLE



### CAUTION

CAUTION: This Bovie Electrosurgical Unit is sold only for use by qualified physicians and surgeons. The observance of safe and established medical practices is essential to its proper use, otherwise there are possibilities of injury to patients or operators.