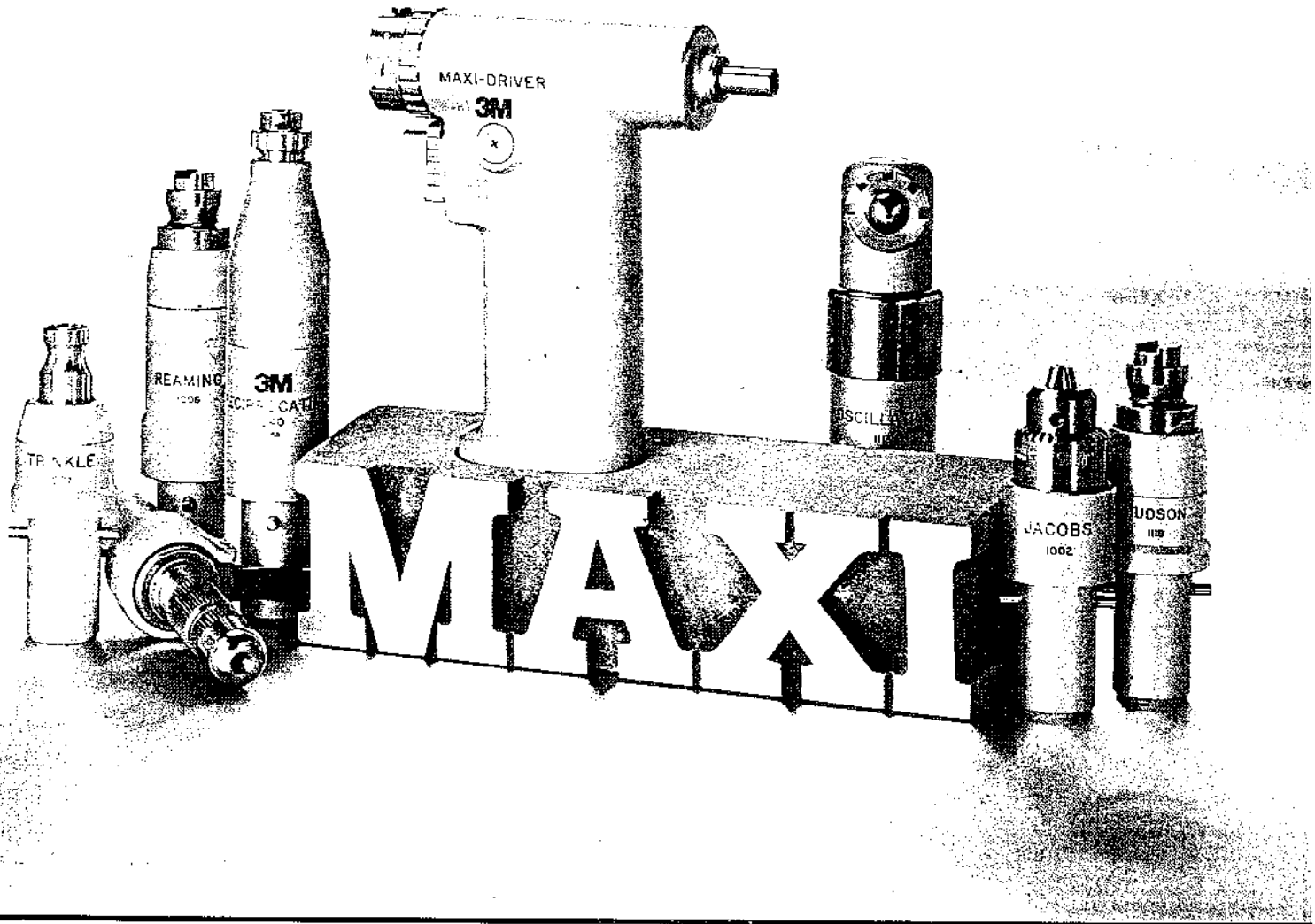
3M

# In large bone surgery



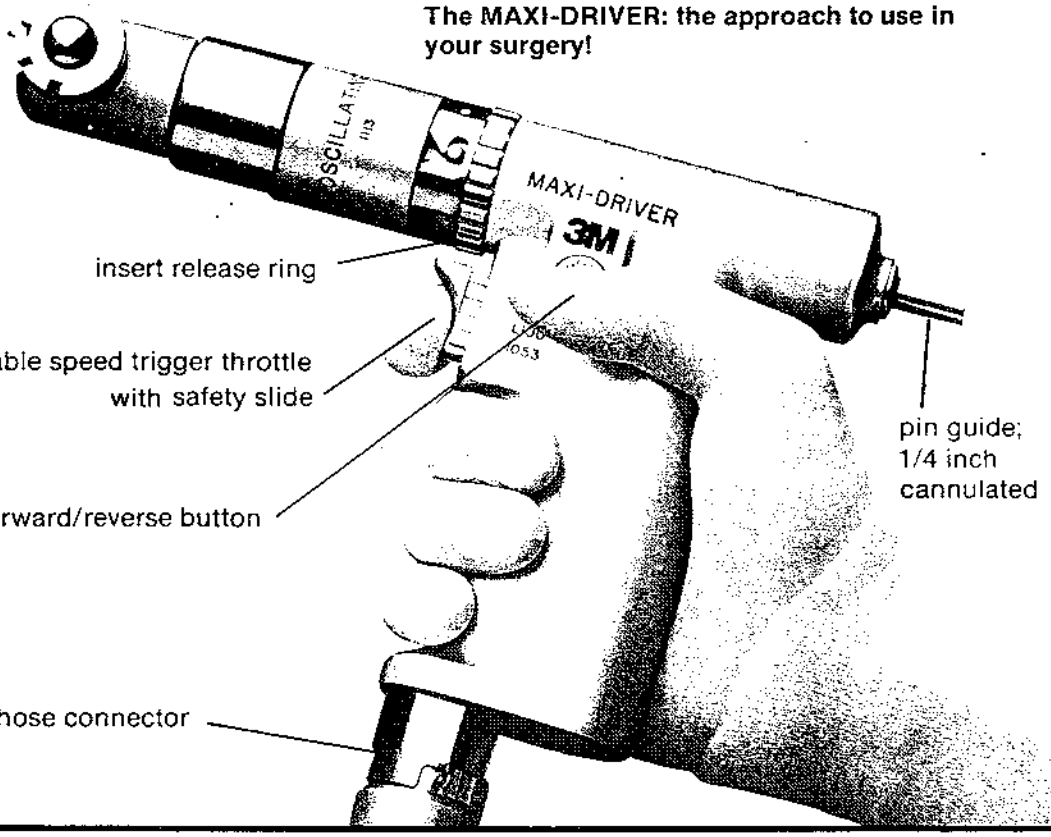
# 3M MAXI-DRIVER™

Air Instrument System

**the multi-purpose handpiece designed with interchangeable inserts for in-surgery convenience and operating efficiency**

Contoured and comfortably balanced, the Maxi-Driver develops sufficient power to deliver the speed and torque necessary for large bone surgery. All inserts can be changed quickly and easily without tools and the Maxi-Driver's unique positive locking mechanism minimizes the possibility of inserts disengaging during use. The handpiece is made of stainless steel and anodized aluminum and is powered by a dependable, heavy duty vane motor.

**The MAXI-DRIVER: the approach to use in your surgery!**

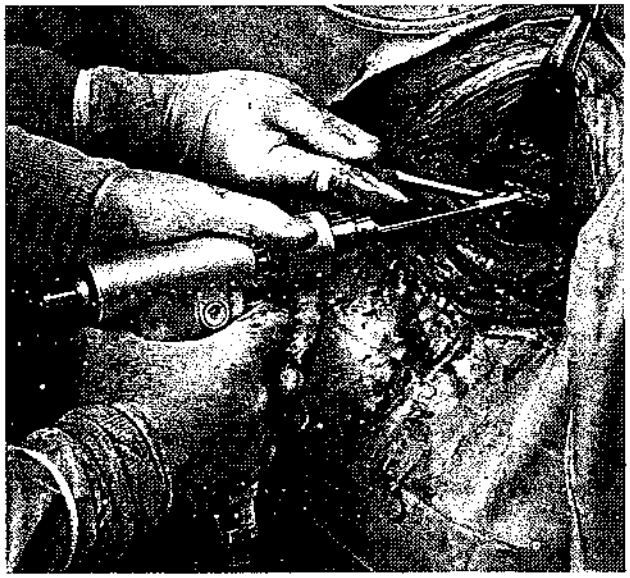



Patent Pending

# SEVEN LA

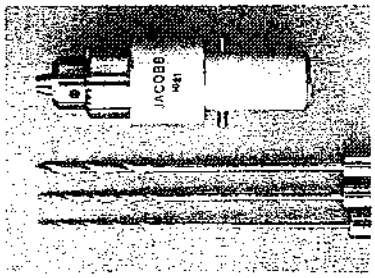
**Drilling**

Bone preparation to accept surgical screws



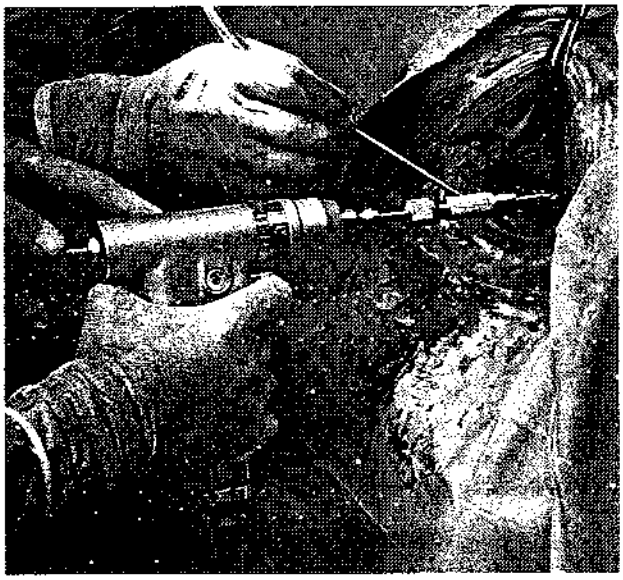
**Instrumentation:**

**L-110 Jacobs Chuck Insert**
Drills



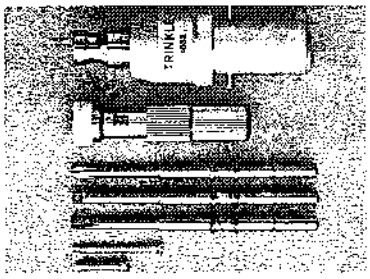

**Screwdriving**

Fixation of bone plates, nails and internal reduction devices



**Instrumentation:**

**L-112 Trinkle Chuck Insert**
**D-520 Automatic Screwdriver Insert**
Bits
Screws




**Reaming** (intr

Preparation of i
canal of femur f

**Instrumentation**

**L-113 Hudson C**
Intramedullary F

# GE BONE PROCEDURES: ONE AP

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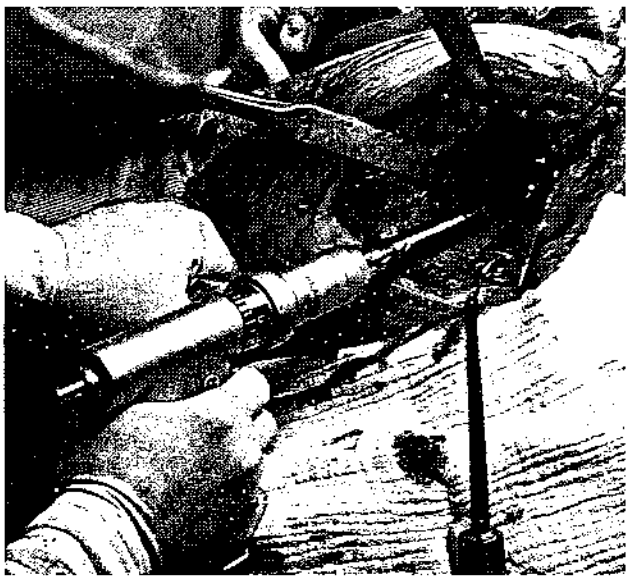
plant

**Reaming** (acetabulum)
Preparation for joint repair

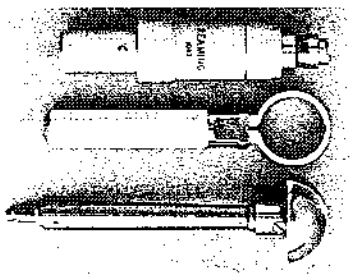
**Sawing** (oscillating)
Large bone osteotomy, removal of femoral head in preparation for implant

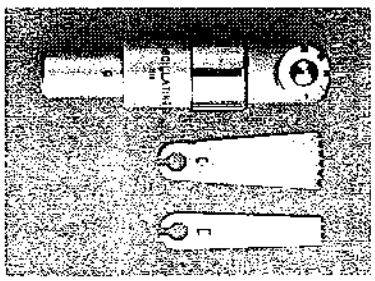


Insert
er

**Instrumentation:**
**L-150 Reaming Driver Insert**
**L-296 Holding Handle**
Mira Reamers

**Instrumentation:**
**L-120A Oscillating Saw Insert**
Blades





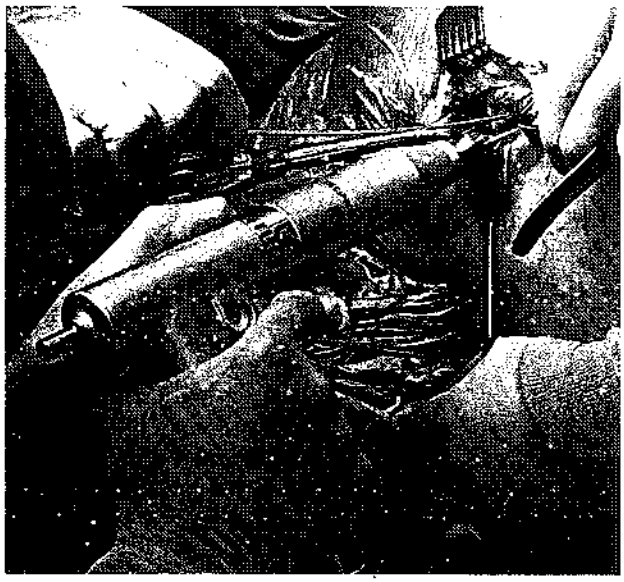
# 3M MAXI-DRIVER™

Air Instrument System

# PROACH

**Sawing** (reciprocating)

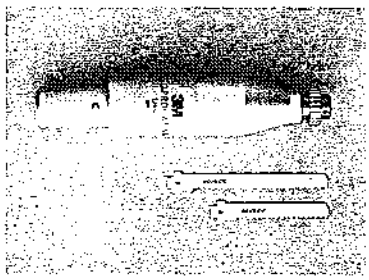
Large bone osteotomy
preparation of tibial plateau
for implant



**Instrumentation:**

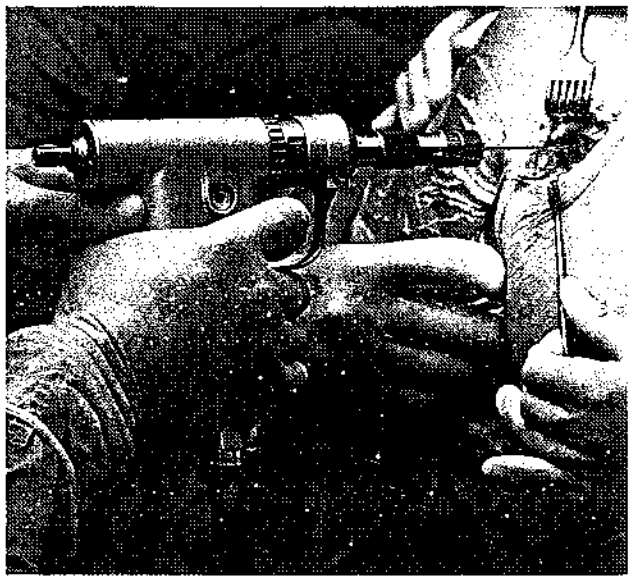
**L-140A Reciprocating Saw Insert**

Blades



**Pinning**

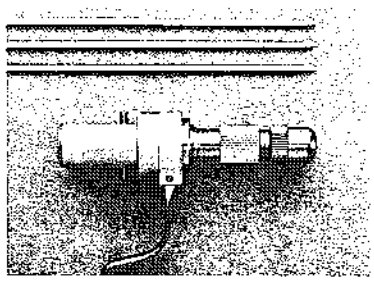
Internal placement of pins
temporary fixation of large bones,
guides for x-ray and reaming,
anchoring traction devices



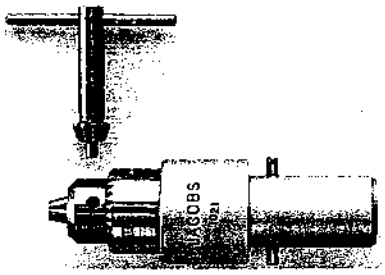
**Instrumentation:**

**L-111 Automatic Pin Insert**

Steinmann pins



### L-110 Jacobs Chuck Insert

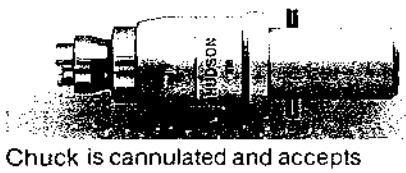


Chuck is cannulated and will accept drills, pins and accessories up to 1/4 inch diameter.

### L-112 Trinkle Chuck Insert

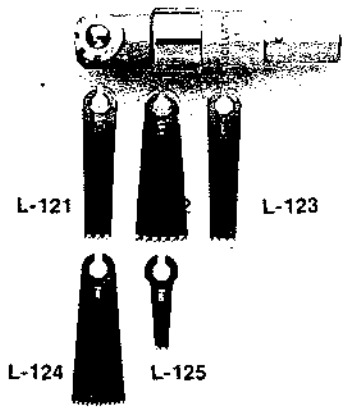
Chuck accepts screwdrivers, twist drills and other accessories that have Trinkle arbors.

### L-113 Hudson Chuck Insert



Chuck is cannulated and accepts accessories that have Hudson arbors.

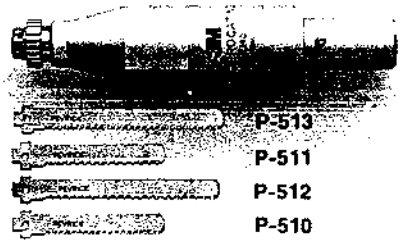
### L-120A Oscillating Saw Insert




The saw insert can be engaged into the handpiece in four positions. Blades can be attached in five positions
No tools are required to attach or remove blades. Blades oscillate at 11,000*cycles per minute with a maximum 1/4 inch excursion arc.

L-121 13mm,standard cut
L-122 31mm,standard cut
L-123 13mm,thin cut
L-124 31mm,thin cut
L-125 8mm,thin cut

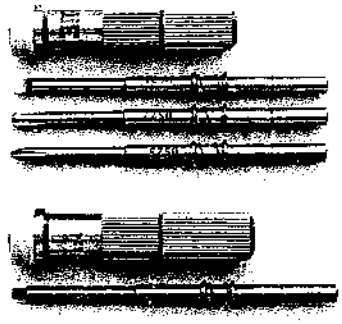
### L-140A Reciprocating Saw Insert




The saw insert can be engaged into the handpiece in four positions. Blades can be inserted in two positions. No tools are needed to insert or remove the blades. Positive blade locking mechanism minimizes chance of blades disengaging during surgery. Blades reciprocate at 3000 strokes per minute with a 1/4 inch stroke.

P-510 68.5 mm fine tooth
P-511 68.5 mm coarse tooth
P-512 94 mm coarse tooth
P-513 94 mm fine tooth

### D-520 Automatic Screwdriver



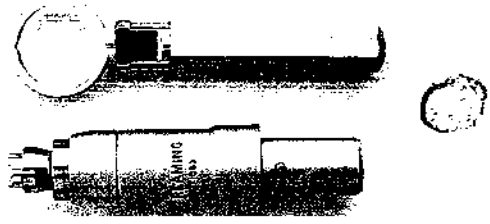
The screwdriver insert is designed with a unique four-ball holding mechanism that securely grasps a screw for positive positioning and driving without wobble. The screwdriver is made of stainless steel and features an automatic self-releasing collet that allows a screw to be inserted or removed without the screwdriver disengaging.

The insert is available with three interchangeable stainless steel bits — slotted, cruciate and Phillips. The D-520 insert fits into a L-112 Trinkle Chuck Insert for use with a Maxi-Driver.

Also available: D-524 Automatic Screwdriver Insert with hex bit for AO/ASIF screws.

Screwdrivers conform to ASTM specification F116.

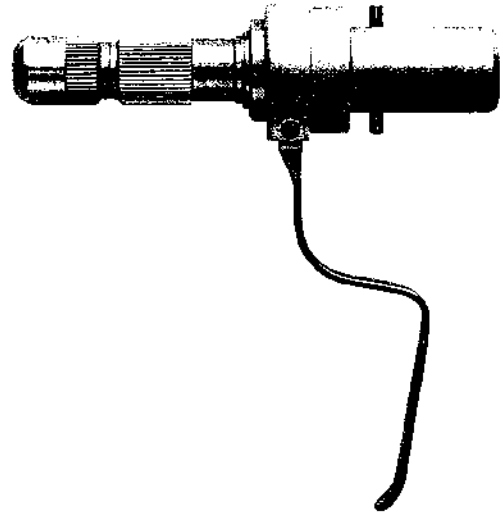
### L-150 Reaming Drive Insert
### L-296 Holding Handle



Reaming drive insert develops low speed and high torque for heavy duty reaming. The insert reduces the Maxi-Driver speed to 220 rpm. Holding handle provides additional stabilization.

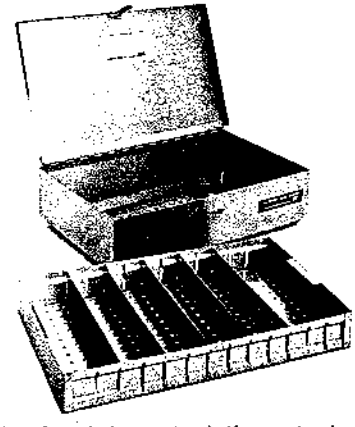
### L-111 Automatic Pin Insert

Patent No. 3975032



The quick-release chuck lever allows pin insertion and advancement without the use of additional keys and accessories. Internal cannulation of insert will accommodate wires and pins from 1/16 inch (1.6 mm) to 5/32 inch (4.0 mm).

### M-306 Autoclave Case



Made of stainless steel, the autoclave case was designed specifically for sterilization of powered instruments.

*nominal

Litho in U.S.A. with 3M BRAND Photo Offset Plates, Film and Chemicals.

SD-LMAX (311) JR



3M

3M

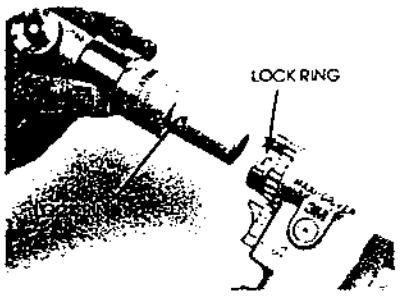
# Maxi-Driver™
## Air Instrument System

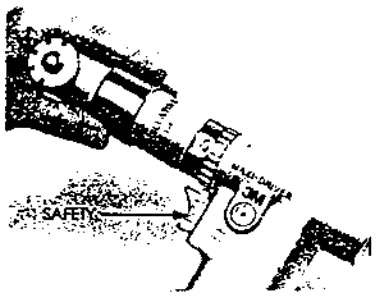
### ATTACHMENTS

ASSEMBLY

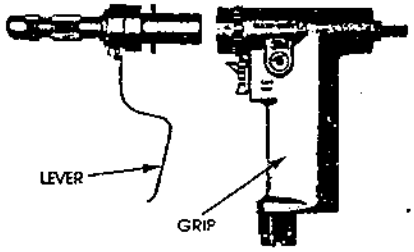
Activate safety.

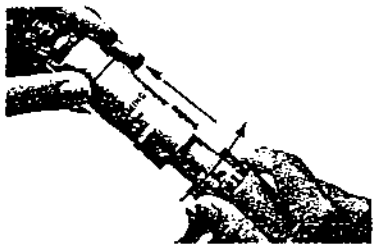
Select desired position of attachment. Line up lock pins with corresponding slots. Slide attachment into Maxi-Driver handpiece until lock ring secures attachment.




Note: Steinman pin chuck should be inserted so the securing lever is adjacent to handpiece grip.



To remove attachments, first activate safety, then rotate attachment lock, release ring and pull out attachment.

MAINTENANCE

DO NOT immerse attachment in any liquid.

DO NOT clean attachment in ultrasonic cleaners.

DO NOT place attachment in combination washer-sterilizers.

USE ONLY 3M Brand lubricants and cleaners.

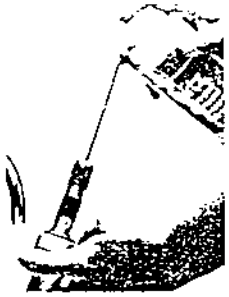
Take to clean-up room immediately after surgical procedure.

Remove attachment from MAXI-DRIVER handpiece.

Remove accessories (blades, chuck, reamers, etc.) from attachment.

Remove debris by spraying Blitz cleaner and lubricant liberally over all exposed surfaces and scrub with soft bristle brush, or use mild detergent and warm water and scrub with soft bristle brush. All traces of blood, coagulated material, etc., should be completely removed. Shake off excess. Wipe dry with soft cloth.

(Attachments except Steinman pin chuck): IF BLITZ CLEANER IS USED, NO FURTHER LUBRICATION IS REQUIRED. If Blitz cleaner is not used, lubricate chucks with one drop of M317 lubricant.



(Steinman pin chuck): Spray Blitz cleaner liberally into nosepiece. Make certain to shake out all excess fluid before wiping dry.

# Maxi-Driver™
## Air Instrument System

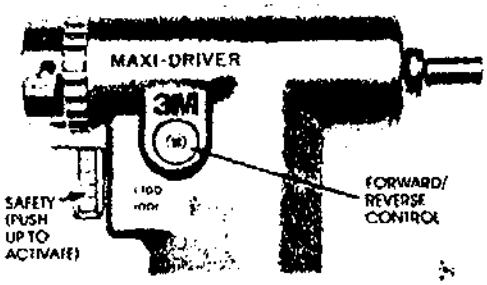
### HANDPIECE

OPERATION

Push in forward/reverse control to desired position

- Forward – control button pushed in on left side.
- Reverse – control button pushed in on right side

Set nitrogen regulator to 110 psi. Release safety. Depress trigger to activate motor. With motor running, make certain regulator still reads 110 psi. Adjust if necessary.

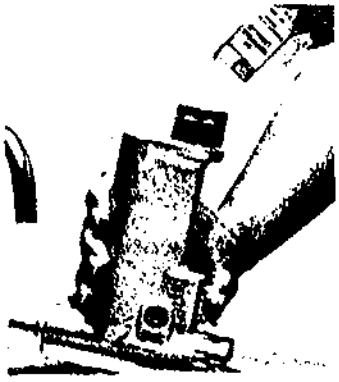



CLEANING

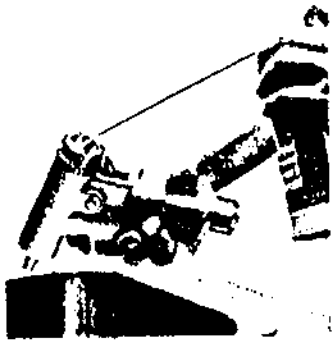
**DO NOT immerse instrument in any liquid.**
**DO NOT clean instrument in ultrasonic cleaners.**
**DO NOT place instrument in combination washer-sterilizers.**
**USE ONLY 3M Brand lubricants and cleaners.**
Take instrument to clean-up room immediately after surgical procedure.

Remove debris by spraying Blitz Surgical Instrument Cleaner and Lubricant over all exposed surfaces and scrub with soft bristle brush, or use mild detergent and warm water and scrub with soft bristle brush. All traces of blood, coagulated material, etc., should be completely removed. DO NOT ALLOW WATER TO ENTER INTERNAL PARTS. Shake off excess. Wipe dry with soft cloth.

LUBRICATION



Depress throttle and place three drops of M317 Air Instrument Lubricant into standpipe.



Blitz cleaner must be used to clean and lubricate nosepiece collet. Move forward/reverse control to insure operation.

Wipe hose with soft towel moistened with Blitz cleaner or mild soap solution. Lubricate and connectors with Blitz cleaner and lubricant.

Connect handpiece to dry nitrogen source and run at full speed (110 psi) for five seconds to disperse lubricant through bearings.

# Mini-Driver System Troubleshooting Guide



| Symptoms | Possible Cause |
|---|---|
| **Air Mini-Driver Handpiece** | |
| Loss of speed and torque. | Forward/Reverse button not in full operating position. |
| | Malfunctioning regulator. |
| Excessive noise and heat. | Foreign debris lodged in motor. Worn bearings. Lack of lubrication. |
| Forward/Reverse button difficult to move. | Lack of lubrication. |
| Trigger stick | Lack of lubrication—debris. |
| **Sagittal Saw Attachment** | |
| Blade will not go on. | Bent blade. |
| **All attachments** | |
| Do not lock in place. | Excessive internal debris. |
| Hudson-Trinkle sleeve moves with difficulty. | Foreign debris lodged in attachment. |
| **Swanson K-Wire Insert** | |
| Will not adjust to hold wires. | Internal debris. Possible immersion. |
| Excessive noise or heat. | Worn bearing, dry bearing. |
| **Hose** | |
| Leaking air at quick disconnect. | Worn or or missing O-ring. |
| Air leakage at center of connector (Driver end). | Debris around ball seal. |
| Cuts or tears in hose. | Improper storage. |
| **Battery Mini-Driver Handpiece, Cord, Canister** | |
| Unit will not run. | Forward/Reverse switch not in full operating position.<br>Battery not in canister or not charged.<br>Loose cord connection or canister not latched. |
| Unit runs continually. | Stuck trigger. |
| Unit runs intermittently. | Loose cord connection. |
| **Battery Charger** | |
| No lights on without a battery in charger. | Charger not plugged into outlet. |
| | User accessible fuse blown. |
| No lights on with battery in charger. | Battery has been disturbed while charging. |
| Ready light does not come on. | Battery has been disturbed while charging.<br>If this problem persists, the battery and charger should be sent into the service department for inspection. |

**Corrective Action.**

Push button fully into position.

Check regulator maintenance guide.

Lubricate according to instructions. Return to Service Center if malfunction persists.

Liberally apply Blitz or M317 lubricant. Move button back and forth.

If problem persists return to Service Center.

Liberally apply Blitz or M317.

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Try another blade—if problem persists, return to Service Center.

---

Return insert and driver to Service Center.
Blitz and lubricate sleeve areas of attachment.

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Blitz and lubricate according to instructions. Return to Service Center if malfunction persists.

Lubricate according to instructions. Return to Service Center if problem persists.

---

Replace O-ring. Order part 8026 from Service Center.

Disconnect hose. Spray ball seal with Blitz cleaner while depressing ball.
Reconnect hose. Depress ball to permit debris to be blown clear.

Make certain hose is disconnected from instrument before placing in autoclave case. Do not pinch hose when placing in autoclave case. Return to Service Center for hose repair.

---

Push button fully into position.

Place fully charged battery in canister.

Make sure all cord connections are fully seated and catches are closed.

Blitz trigger and work repeatedly to free debris.

Make sure all cord connections are fully seated.

---

Plug charger into outlet.

Replace with 3AG, 0.6 Amp. slow blow fuse.

Push start button to initiate new cycle.

Push start button to initiate new cycle.

# Recommended Sterilization Exposure Times (RSET)
# Mini-Driver™ Powered Instrument System
## (Air/Battery)



**Recommended Sterilization Exposure Times (RSET) Air Powered Surgical Instruments (Includes Time Safety Factors)**

| Method of Sterilization | Recommended exposure for all combinations of wrapped, disassembled instruments |
|---|---|
| Ethylene Oxide | |
| *100% (Cold Cycle) | 4 hours at 30°C (86°F) |
| *100% (Warm Cycle) | 90 min at 63°C (145°F) |
| **88%/12% | 150 min at 54°C (130°F) |
| Steam | |
| ***Gravity Displacement | |
| 250 ± 2°F | |
| 121 ± 1°C | 80 minutes |
| ***Gravity Displacement | |
| 272 ± 2°F | |
| 133 ± 1°C | 55 minutes |
| ****Gravity Displacement (flash-unwrapped) | "Single procedure" Average single procedure load—30 minutes****** |
| 272 ± 2°F | larger loads—55 min |
| 133 ± 1°C | |
| *****High Speed Vacuum | |
| 272 ± 2°F | |
| 133 ± 1°C | 8 minutes |
| High Speed Vacuum (flash-unwrapped) | |
| 272 ± 2°F | |
| 133 ± 1°C | *******8 minutes |

**Important Note:** All steam sterilization times represent exposure time only and not total cycle time

*STERI-VAC Gas Sterilizer Model 400 (3M Company)
**AMSCO Model Cyrotherm Console (Steam/Gas) Medallion Series
***AMSCO Manual Medallion Laboratory Sterilizer
****AMSCO gravity displacement flash unit in local hospital surgical area
*****AMSCO Vacumatic Model 8
******See referenced article for more detailed information on external sterilization.

**Reference:** McGlothlen GO, Weida DA. Recommendations for EO Gas Sterilization of Air Powered Surgical Instruments. AORN Jnl 21:87-102, January 1975

# 3M™ Powered Instrument Systems Sterilization Guidelines

**For the following Powered Instrument Systems*:**
***Large Bone:*** Maxi-Driver™ Air, Battery and Electric
***Small Bone:*** Mini-Driver™ Air and Electric; Micro-Driver;™ Minos™
***Neuro:*** Craniotome
***Specialty:*** Staplizer;™ Ronjair™

**Systems includes handpiece, attachments, hose or cord*

## Before Sterilization:

1. Clean instrument system with soap and water as soon as possible after use (do not immerse).
2. Disassemble any attachments, cords and/or hoses from handpiece.
3. Remove all accessories (e.g. drill bits, blades, burs or reamers) from attachments.
4. Lubricate according to specifications found in the assembly, operation and maintenance instructions.

## Warnings:

- **Do not** immerse any 3M Powered Instrument system component.
- **Do not** allow water to enter internal parts of the handpiece.
- **Do not** clean any of the instrument system components in an ultrasonic cleaner.
- **Do not** use a bleach, chlorine based or corrosive detergent to clean 3M Powered Instruments.
- **Do not** place any of the instrument system components in a washer/sterilizer.
- **Do not** autoclave the 3M Maxi-Driver L300 Battery Handpiece with the battery attached. See the battery sterilization guidelines (70-2009-0600-9).
- **Do not** sterilize any 3M Powered Instrument or attachment with the Steris,™ J & J Sterrad,™ Abtox Plazlyte,™ or comparable sterilization methods.
- **Do not** sterilize the 3M Maxi-Driver M332 Electric Cord or the 3M Mini-Driver M334 Electric Cord in a Flash Pak.™

## Notes:

- Dry times have no effect on powered surgical instruments.
- 3M sterilization studies verify that 3M™ Blitz II Cleaner and Lubricant (M105A) and 3M Instrument Lubricant (M317) can be sterilized by both steam and ethylene oxide gas.

## Recommended Sterilization Times

| Process | Condition of Case | Exposure Time | Dry Time or Aeration |
|---|---|---|---|
| Gravity Displacement 272º F +/- 2º F (133º C +/- 1º C) | Unwrapped | 10 min. | 8 min. |
| Vacuum Assisted 272º F +/- 2º F (133º C +/- 1º C) | Unwrapped | 3 min. | 8 min. |
| Gravity Displacement 272º F +/- 2º F (133º C +/- 1º C) | Flash Pak™ (Riley Mfg.) | 15 min. | None |
| Vacuum Assisted 272º F +/- 2º F (133º C +/- 1º C) | Flash Pak™ (Riley Mfg.) | 3 min. | None |
| Gravity Displacement 250º F +/- 2º F (121º C +/- 1º C) | Wrapped | 30 min. | 15 (metal case) 30 (non-metallic case) |
| Vacuum Assisted 250º F +/- 2º F (121º C +/- 1º C) | Wrapped | 3 min. | 15 (metal case) 30 (non-metallic case) |
| EtO 88%/12% or 90%/10% [54º C (130º F)] | Wrapped | 150 min. | 12 hr. Aeration |
| EtO 3M™ Steri-Vac™ Sterilizer 4XL/5XL/8XL Warm Cycle | Wrapped | See Steri-Vac™ Operator's Manual | 12 hr. Aeration |
| EtO 3M™ Steri-Vac™ Sterilizer 4XL/5XL/8XL Cool Cycle | Wrapped | See Steri-Vac™ Operator's Manual | 12 hr. Aeration |

**3M Health Care**