

# WELLS

DENTAL, INC.

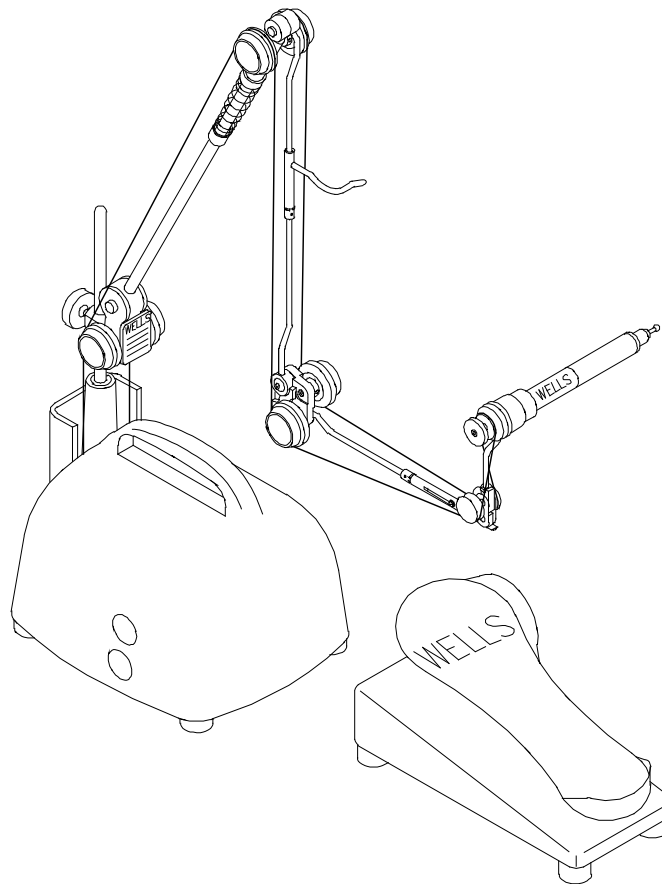
TECHNICAL BULLETIN  
U821-022510

5860 FLYNN CREEK ROAD  
P.O. BOX 106  
COMPTCHE, CALIFORNIA, U.S.A. 95427

**READ ALL INSTRUCTIONS  
BEFORE PROCEEDING  
SAVE THIS FOR FUTURE REFERENCE**

**THIS PRODUCT IS FOR PROFESSIONAL LABORATORY USE ONLY**

## USER'S MANUAL



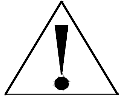
**WELLS ENGINE UNIT**  
**Product No. U900, U901, U903, U904**

**SALES      CUSTOMER SERVICE      TECHNICAL ASSISTANCE**  
**CALL TOLL-FREE: 1 800 233-0521**

**PHONE: (707) 937-0521, FAX: (707) 937-2809**  
**MONDAY-FRIDAY, 8:00 a.m.-4:30 p.m. P.S.T.**

DENTAL EQUIPMENT FOR TECHNICIANS WHO VALUE TIME AND QUALITY

## 1.0 SAFETY INSTRUCTIONS



**WARNING: WHEN USING ELECTRIC TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, AND PERSONAL INJURY INCLUDING THE FOLLOWING ITEMS:**



**1.1 GROUND THE DEVICE.** This machine must be grounded while in use to protect the user from electric shock. Plug into a three-hole grounded receptacle. If an adapter is used to accommodate a two-hole receptacle, the grounding lug must be connected to a known ground. Never remove the third prong. If in doubt, have a licensed electrician check the receptacle for **PROPER GROUNDING** and **POLARITY**.

**1.2 HANDLE WITH DRY HANDS.** Never handle the plug, power cord or any part of this unit with wet hands.



**1.3 DISCONNECT THE POWER CORD.** Before adjusting the belt, removing the collet or servicing, unplug the power cord to prevent unintentional starting or electric shock.



**1.4 ALWAYS USE SAFETY GLASSES.** Wear industrial certified safety glasses for **ALL** work and maintenance.

**1.5 SECURE LOOSE ARTICLES.** Fasten long hair. Do not wear loose clothing, necktie or jewelry. They can get caught in rotating and moving parts.



**1.6 USE A PARTICLE MASK** when there is dust or particles in the air.

**1.7 ALWAYS KEEP A TOOL IN THE COLLET.** Never operate the unit without a tool. The handpiece thumbscrew and collet can come loose.



**1.8 DO NOT EXCEED THE MAXIMUM OPERATING SPEED OF THE TOOL.** If a tool is operated at too high a speed, it can fly apart and cause serious personal injury. Always check the tool manufacturer's maximum operating speed for the tool being used. Parting disks and polishing wheels usually have lower maximum operating speeds than the smaller diameter tools. Position the belt onto the proper pulley diameter to limit the speed of the handpiece.

**1.9 MAINTAIN THE WHEEL OR TOOL.** Never operate with a damaged or bent tool. It could break apart or come loose causing serious personal injury.

**1.10 CHECK TOOL IS SECURE.** Insert the tool shank into the collet to the **MAXIMUM** depth that will allow free rotation of the tool. An extended tool is likely to break or bend causing serious personal injury. Always check that the tool is securely held in the collet.



**1.11 KEEP CHILDREN AWAY.** All visitors should be kept a safe distance from the work area. Do not run the unit unattended.

**1.12 MAINTAIN THE UNIT.** Inspect periodically for damaged or worn parts. Follow the instructions for maintenance. Don't use if the power cord, motor, switch, or other parts are in poor condition. Don't use if the unit has been dropped, damaged, or exposed to water. Have a qualified service person inspect and replace parts when necessary.

**1.13 FOR LABORATORY USE ONLY.** The WELLS Engine Unit is intended for use by trained professional laboratory personnel. Do not use the unit for any type of work done directly to a patient.

## 2.0 PRODUCT DESCRIPTION

The WELLS Engine Unit is designed for heavy duty laboratory service.

### U900 ENGINE UNIT GRAY LONG ARM

E027 HOOD & MOTOR GRAY 115V  
 F011 FOOT CONTROL 115V  
 AS052 WHISPER ARM LONG  
 H010 LABORATORY HANDPIECE  
 with WRIST JOINT

### U903 ENGINE UNIT CHROME LONG ARM

E026 HOOD & MOTOR CHROME 115V  
 F011 FOOT CONTROL 115V  
 AS052 WHISPER ARM LONG  
 H010 LABORATORY HANDPIECE  
 with WRIST JOINT

### U901 ENGINE UNIT GRAY SHORT ARM

E027 HOOD & MOTOR GRAY 115V  
 F011 FOOT CONTROL 115V  
 AS051 WHISPER ARM SHORT  
 H010 LABORATORY HANDPIECE  
 with WRIST JOINT

### U904 ENGINE UNIT CHROME SHORT ARM

E026 HOOD & MOTOR CHROME 115V  
 F011 FOOT CONTROL 115V  
 AS051 WHISPER ARM SHORT  
 H010 LABORATORY HANDPIECE  
 with WRIST JOINT

## 3.0 SPECIFICATIONS

**COLLET SIZE** ..... 3/32"

**MAXIMUM HANDPIECE RPM**

Forward ..... 24000 RPM  
 Reverse ..... 20000 RPM

**MAXIMUM NO LOAD MOTOR RPM** ..... 13000 RPM

**ELECTRICAL RATING** ..... 115 Volts, 2.0 Amps, 60 Hz/DC, Single Phase

**UNIT DIMENSIONS**

E026 and E027 Hood & Motor ..... 6 x 8 x 6" high  
 F011 Foot Control ..... 4 x 11 x 5.5" high  
 H010 Laboratory Handpiece with Wrist Joint ..... 1 x 1 x 6" long  
 U900 & U903 Engine Unit Long Arm  
     Normal working position ..... 24" high, 24" reach  
 U901 & U904 Engine Unit Short Arm  
     Normal working position ..... 18" high, 12" reach

**WEIGHT**

E026 and E027 Hood & Motor ..... 7.10 lbs  
 F011 Foot Control ..... 3.4 lbs  
 AS052 Whisper Arm Long ..... 2.0 lbs  
 AS051 Whisper Arm Short ..... 1.8 lbs  
 H010 Laboratory Handpiece with Wrist Joint ..... 0.4 lbs  
 U900 & U903 Engine Unit Long Arm ..... 13.6 lbs  
 U901 & U904 Engine Unit Short Arm ..... 13.4 lbs  
 U900, U901, U903 & U904 Shipping Weight ..... 16 lbs

**BELTS**

AS406 Pyrrathane Belt 9'-8" (long arm) ..... 3/32" dia  
 AS404 Pyrrathane Belt 6'-6" (short arm)..... 3/32" dia

**APPROVAL**

Electrical Testing Laboratory, City of Los Angeles, No. 245979

**WELLS ENGINE UNIT**  
**PRODUCT NO. U900, U901, U903 & U904**

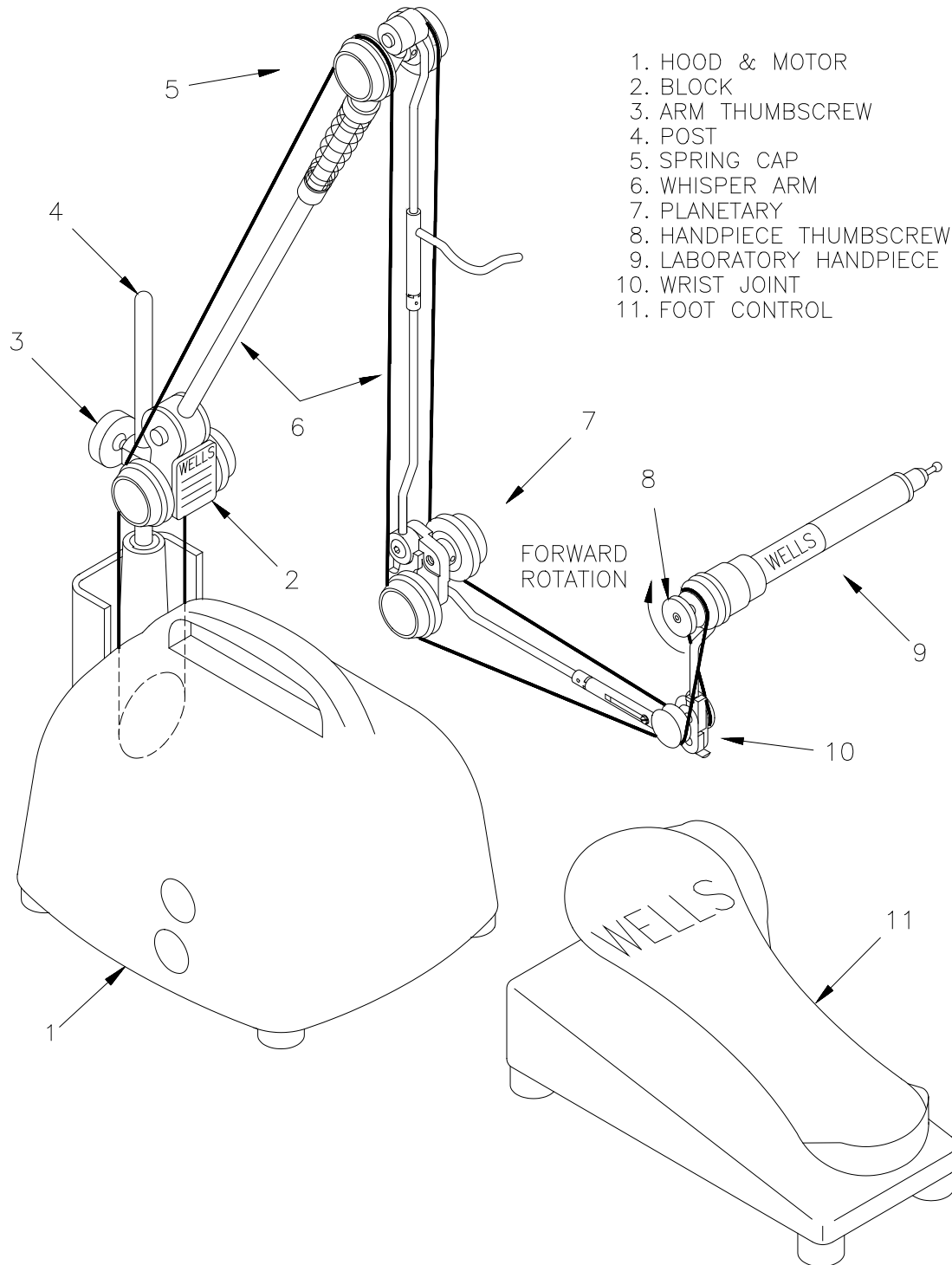


Figure 1. Engine Unit features

## 4.0 INSTALLATION

### 4.1 ASSEMBLY

- 4.1.1 Unpack and inspect all the components. Check that the following items were shipped:
- Hood & Motor
  - Accessory kit which contains one pair of motor brushes and a 3/32" hex wrench
  - Foot Control
  - Whisper Arm and belt
  - Handpiece with Wrist Joint and rubber wrench
  - User's Manual
- 4.1.2 Set the Hood & Motor on a solid level surface.
- 4.1.3 Remove the Whisper Arm from the carton. Loosen the arm thumbscrew and remove the post. Insert the long flat end of the post into the opposite (bottom) side of the block. With the post all the way in, tighten the arm thumbscrew.
- 4.1.4 Place the post and arm into the support on the hood. Swing the arm to center over the hood.
- 4.1.5 Remove the Handpiece with Wrist Joint from the carton. Insert the Wrist Joint onto the end of the arm and push to snap it into place.
- 4.1.6 To install the belt, first loop the belt around the motor pulley. Bring both sides of the belt over the block pulleys. See Figure 1. Continue both sides over the spring cap pulleys. Continue under the planetary pulleys. Now, with the Handpiece pointing down, loop the belt around the small handpiece pulley. Next, put one side of the belt under a wrist joint pulley. Finally, stretch the belt under the other wrist joint pulley. The belt may look too short but go ahead and stretch it.
- 4.1.7 The belt tension may be adjusted by loosening the arm thumbscrew and lifting the block until the tension spring is compressed about half an inch. Tighten the arm thumbscrew. A new belt will stretch and will require re-adjustment.
- 4.1.8 Insert a tool with a 3/32" shank into the handpiece collet and tighten the handpiece thumbscrew.
- 4.1.9 If the electric cord(s) are to go through a hole in the bench top or partition, bore a 1-1/4" hole and pass the cord(s) through.
- 4.1.10 Remove the Foot Control from the carton. Connect the six prong cord socket to the Foot Control. It will only fit one way. Slip the plug retainer over the connector to hold it in place.
- 4.1.11 Make sure that both electric cords are clear of the motor pulley and the belt. Secure them out of the way if necessary.
- 4.1.12 Connect the power cord to a 115 volt grounded receptacle. **WARNING:** To prevent danger of electrical shock, connect the power cord to a receptacle with **PROPER GROUNDING and POLARITY** only. If an adapter is used to accommodate a two-hole receptacle, the grounding lug must be connected to a known ground.

### 4.2 CHECK FOR CORRECT ROTATION

- 4.2.1 Be sure there is a tool in the handpiece collet and the thumbscrew is tight.
- 4.2.2 Check that the belt is properly positioned over each pulley. For now, use the large motor pulley and the small handpiece pulley.
- 4.2.3 Remove the Handpiece from the hook and slowly press the foot control pedal until the Handpiece is rotating.
- 4.2.4 If the rotation of the handpiece thumbscrew is forward (clockwise), the rotation is correct. See Figure 1. Continue with step 4.3, BELT BREAK-IN.
- 4.2.5 If the rotation is counterclockwise, the belt has been installed incorrectly. Disconnect the power cord and install the belt correctly. Follow steps 4.1.6 and 4.1.7.

### 4.3 BELT BREAK-IN

- 4.3.1 Be sure there is a tool in the handpiece collet and the thumbscrew is tight.
- 4.3.2 Remove the Handpiece from the hook and press the foot control pedal. Run the Engine Unit for about ten minutes at various speeds.
- 4.3.3 Disconnect the power cord from the receptacle to prevent unintentional starting.
- 4.3.4 Re-adjust the belt tension. Loosen the arm thumbscrew and lift the block assembly until the tension spring is compressed about half an inch. Tighten the arm thumbscrew.

### 4.4 HANDPIECE AND PULLEY BREAK-IN

The Wells Handpiece and arm pulleys will run hot when first put into operation. This condition may last several days depending upon the amount of use. The Handpiece and pulleys are "run in" at the factory until the bearing grease is channeled and running normally. During shipping, the grease re-enters the bearing races and causes the Handpiece and pulleys to run hot again until the grease is re-channeled.

### 4.5 SLOW SPEED ADJUSTMENT

An electronic trimmer located in the Foot Control regulates the slowest speed the motor will run. Adjust the trimmer by inserting a small screwdriver through the hole in the foot control base cover. See Figure 2.

- 4.5.1 Place the Foot Control upside down on a bench. Press the pedal slowly until the motor starts rotating. Hold the pedal in this position and turn the trimmer to select the desired speed. Take care not to turn the trimmer beyond its limits of about one full turn.

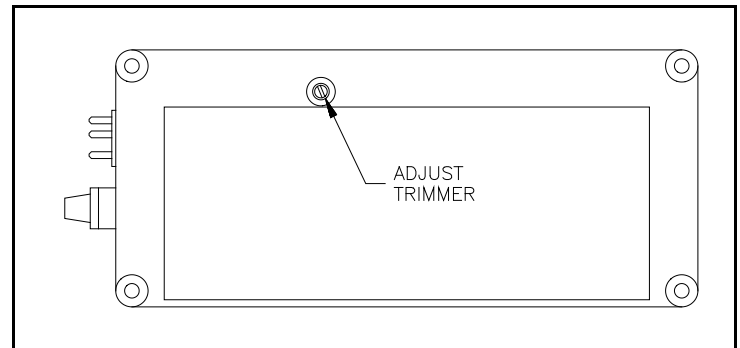
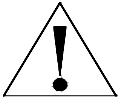


Figure 2. Bottom of Foot Control

## 5.0 OPERATION



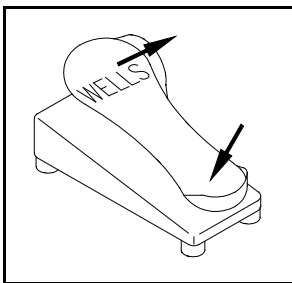
**WARNING:** READ ALL INSTRUCTIONS BEFORE OPERATING. FAILURE TO COMPLY WITH INSTRUCTIONS COULD RESULT IN SEVERE PERSONAL INJURY AND/OR PROPERTY DAMAGE.

### 5.1 READY THE ENGINE UNIT

- 5.1.1 Check the tool manufacturer's maximum operating speed for the tool you are using.
- 5.1.2 Disconnect the power cord before moving the belt to the desired pulley combination. See the table below.
- 5.1.3 Insert the tool shank into the collet to the **MAXIMUM** depth that will allow free rotation of the tool and tighten the handpiece thumbscrew.
- 5.1.4 Connect the power cord to a receptacle with **PROPER GROUNDING and POLARITY.**

### 5.2 FORWARD OPERATION

- 5.2.1 Remove the Handpiece from the hook and press the foot control pedal to increase the speed.



### 5.3 REVERSE OPERATION

- 5.3.1 Depress the rear of the pedal with the heel and swing the front to the right with the toes until it clicks.
- 5.3.2 Remove the handpiece from the hook and press the pedal for reverse operation.
- 5.3.3 To return to forward operation, depress the rear of the pedal with the heel and allow the spring to swing the pedal to the left.

Figure 3. Reverse



**CAUTION:** DISCONNECT THE POWER CORD WHEN NOT IN USE.  
To leave the WELLS Engine Unit unattended, unplug the power cord from the receptacle.

## 6.0 PULLEY RATIOS

Pulley combinations may be selected to limit the handpiece RPM to keep from exceeding the tool manufacturer's recommendations. For the maximum RPM, place the belt on the **LARGE** motor pulley and the **SMALL** handpiece pulley. Other pulley combinations will limit the handpiece RPM according to the table below:

MOTOR PULLEY	HANDPIECE PULLEY	MAX. FORWARD HANDPIECE RPM	MAX. REVERSE HANDPIECE RPM
LARGE	SMALL	24000	20000
SMALL	SMALL	20000	17000
LARGE	LARGE	18000	15000
SMALL	LARGE	15000	12000

## 7.0 MAINTENANCE

**CAUTION:** The bearings in the motor, pulleys and Handpiece are permanently lubricated with special compounds. If anything enters the bearings, they will be damaged. **KEEP OIL, SOLVENT AND COMPRESSED AIR AWAY** from these components.



NO OIL



NO SOLVENT



NO AIR

**CAUTION:** There are no user serviceable parts inside the pulleys, Wrist Joint or Handpiece except as described below. **DO NOT DISASSEMBLE** these parts.

### 7.1 CLEANING AND ADJUSTING THE COLLET

The collet should be cleaned monthly or after 200 hours of service.

7.1.1 Disconnect the power cord.

7.1.2 Slide the rubber wrench provided onto the nose cone and unscrew it. If the nose cone is too tight to remove by hand, use a pair of pliers over the rubber wrench. If the nose cone is still too tight, use another pair of pliers (padded with rubber or cloth) on the smooth **LARGER** diameter of the handpiece body. See Figure 4. Never use pliers on the knurled or labeled section of the handpiece body.

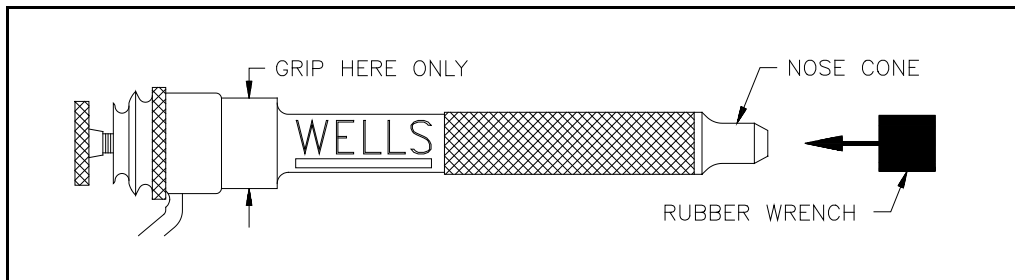


Figure 4. Remove the nose cone

7.1.3 Remove the thumbscrew from the rear and pull the collet out the front.

7.1.4 Use a 3/32" drill or small burr to remove material packed in the bottom of the collet. Wash the collet, thumbscrew and nose cone in solvent. Solvent may be used on these disassembled parts only. Dry the parts thoroughly.

7.1.5 Clean the hole in the end of the handpiece shaft with a pipe cleaner (or a small cloth on the end of a burr shaft).

7.1.6 Put a **THIN** film of grease or Vaseline outside the collet, on the threaded portion of the rod, on the thumbscrew threads and the nose cone threads. **DO NOT** use oil.

7.1.7 **CAUTION:** Insert the collet carefully. **IMPORTANT:** With a **VERY SLIGHT** pressure on the end of the collet, turn it slowly until it engages with the flat. Slide it in until it seats into the shaft. **DON'T** force the collet.

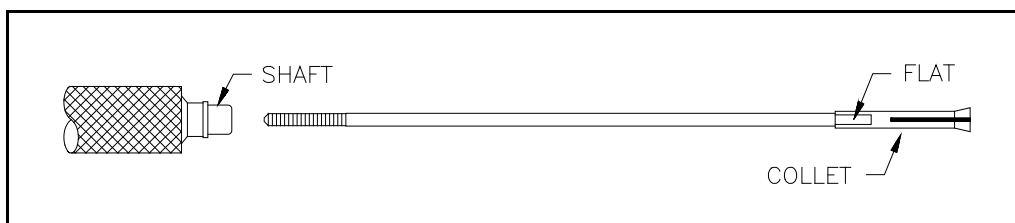


Figure 5. Insert the collet



- 7.1.8 Hold the collet all the way in so the threaded rod protrudes from the pulley. Engage the thumbscrew onto the threaded rod about 1/4 of a turn.

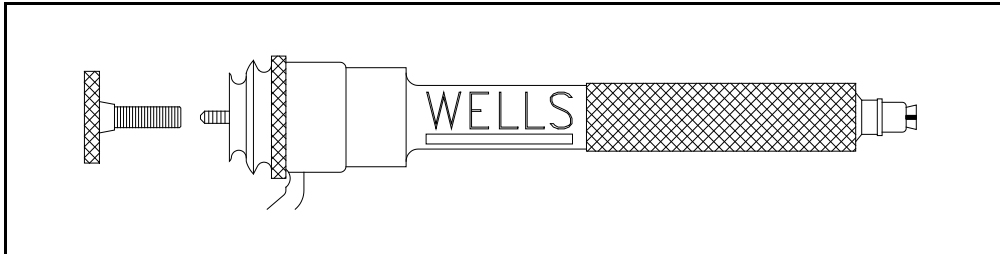


Figure 6. Engage the thumbscrew

- 7.1.9 Push the thumbscrew forward and engage the bronze threads into the pulley.  
 7.1.10 Insert a 3/32" shanked tool into the collet and tighten the thumbscrew.  
 7.1.11 There should be from 1/16 to 1/8" bronze threads visible between the pulley and the hub of the thumbscrew when the thumbscrew is tight on a tool.

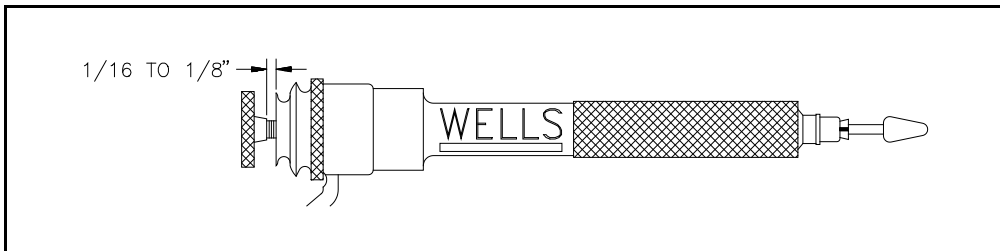


Figure 7. Check thumbscrew engagement

- 7.1.12 If less than 1/16" is visible, remove the thumbscrew and return to step 7.1.8 but engage the thumbscrew onto the threaded rod 1/4 of a turn more this time. (A worn collet will require that the thumbscrew be engaged further onto the threaded rod).  
 7.1.13 If more than 1/8" is visible, remove the thumbscrew and return to step 7.1.8 but engage the thumbscrew onto the threaded rod a little less this time.  
 7.1.14 Replace the nose cone and tighten it by hand using the rubber wrench. Remove the rubber wrench. **DON'T** operate the Handpiece with a loose nose cone.

## 7.2 BELT TENSION ADJUSTMENT

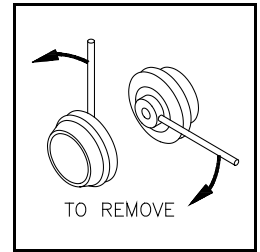
- 7.2.1 Disconnect the power cord.  
 7.2.2 Loosen the arm thumbscrew and lift the block assembly until the tension spring is compressed about half an inch. Tighten the arm thumbscrew.

## 7.3 FUSE REPLACEMENT

- 7.3.1 If the motor does not turn when the foot control pedal is pressed, first check that the power cord is connected to a live receptacle. Check the receptacle with a lamp or such to confirm that the power is on.  
 7.3.2 If the motor still does not turn, disconnect the power cord and replace the fuse in the foot control. You may order Wells part number **F109 FUSE 5 AMP PKG-2**. Use a type 3AG NORMAL BLOW 250 VOLT 5 AMP fuse **ONLY**. Connect the power cord to a grounded receptacle.  
 7.3.3 If the motor still does not turn, follow the instructions for MOTOR BRUSH MAINTENANCE in paragraph 7.6.  
 7.3.4 If the motor still does not turn when the pedal is pressed or the fuse blows a second time, contact Wells Dental, Inc.

**7.4 ARM PULLEY REPLACEMENT**

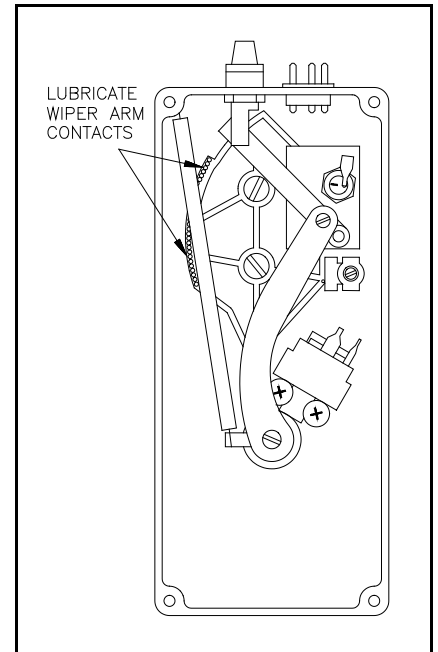
- 7.4.1 Disconnect the power cord and remove the belt.
- 7.4.2 To remove a pulley, insert a **AS505 PULLEY WRENCH** (7/64" diameter rod) into the hole behind the pulley and turn the pulley counterclockwise (as you face the flat side of the pulley). You will have to remove the pulley wrench and insert it into the opposite hole every half turn. See Figure 8.
- 7.4.3 To install a pulley, reverse the procedure of step 7.4.2. Make sure all the pulleys are tight.
- 7.4.4 Install the belt. See step 4.1.6.
- 7.4.5 Adjust the belt tension. See section 7.2.



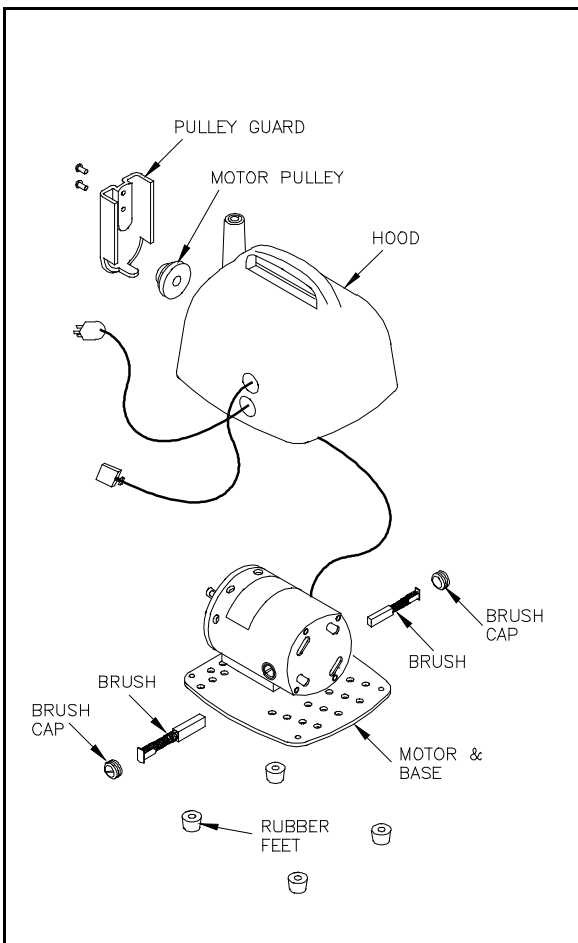
**Figure 8.**

**7.5 FOOT CONTROL LUBRICATION** (every six months)

- 7.5.1 Disconnect the power cord. Slip the plug retainer from the 6 prong connector and disconnect the Foot Control.
- 7.5.2 Remove the four rubber feet and lift off the base cover.
- 7.5.3 Apply a small amount of grease to the wiper arm contacts. Use Wells lubricant, part number **112 LUBRICANT**, or a high temperature automotive grease with molybdenum disulfide.
- 7.5.4 Replace the base cover and four rubber feet.
- 7.5.5 Apply a small amount of grease to the forward/reverse locating pin under the pedal.
- 7.5.6 Connect the 6 prong cord socket and slip the plug retainer over the connector.



**Figure 9. Foot Control**



**Figure 10. Brush maintenance**

**7.6 MOTOR BRUSH MAINTENANCE**

- Inspect the brushes periodically to detect worn out brushes which can cause jerky, erratic motor operation and damage to the commutator.** Brush life depends on the amount of use as well as the age of the motor and other factors. Brushes last about 4 to 9 months with continuous use.
- 7.6.1 Tools needed: 1/4" straight blade screwdriver, 3/16" straight blade screwdriver and the 3/32" hex wrench.
  - 7.6.2 Disconnect the power cord.
  - 7.6.3 Remove the belt and arm assembly from the hood.
  - 7.6.4 Remove the pulley guard.
  - 7.6.5 Remove the motor pulley after loosening the set screw with the 3/32" hex wrench.
  - 7.6.6 Turn the hood & motor upside down and remove the four rubber feet. **Do not** remove the four pan head screws in the center of the motor base.
  - 7.6.7 Carefully turn the hood & motor right side up and set it on a bench. Slowly lift the hood and note how the wires are routed. Lay the hood on its side next to the motor. **Do not** disconnect any wires.
  - 7.6.8 Remove both brush caps and brushes.

- 7.6.9 The brushes will stop working when they are about 1/4" long. If the length of the carbon brushes is less than 3/8" or the brushes are unequal lengths, replace **BOTH** brushes as a set. Use the brushes supplied in the accessory kit or order Wells part number **E101 BRUSHES BALDOR PKG-2**. See Figure 11.
- 7.6.10 Install the brushes making sure that they slide freely and make contact with the commutator. Do not over tighten the caps.
- 7.6.11 Place the hood over the motor routing the wires as was noted in step 7.6.7.

**CAUTION: Take extreme care that the wires do not lay on the motor shaft or get pinched under the hood.**

- 7.6.12 Fasten the four rubber feet, install the pulley, pulley guard, arm assembly and belt. Adjust the belt tension.

**For further maintenance or repairs, send the unit to WELLS DENTAL, INC. for factory service.**

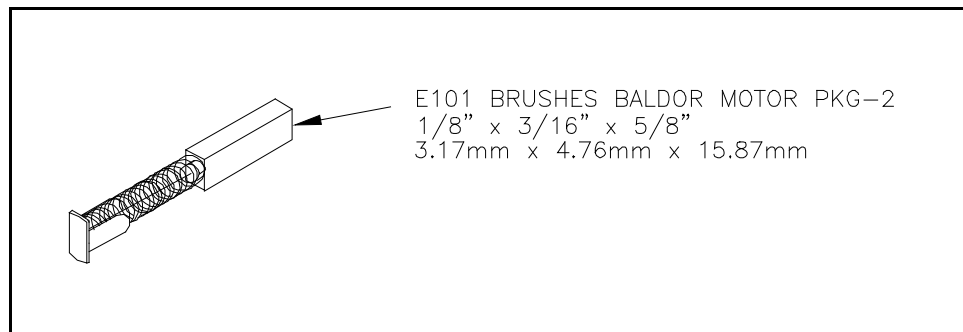


Figure 11. Replacement brushes

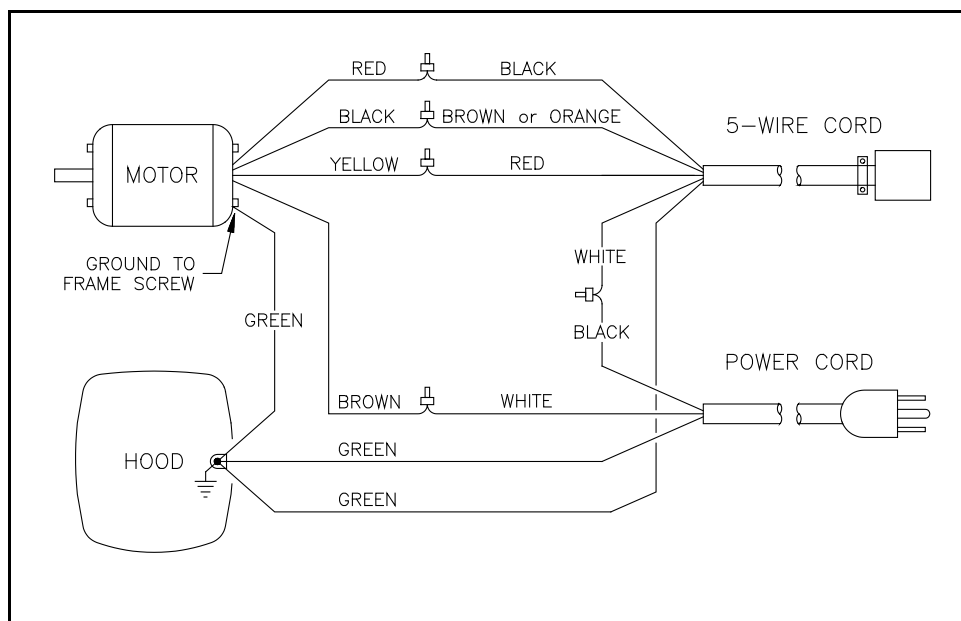
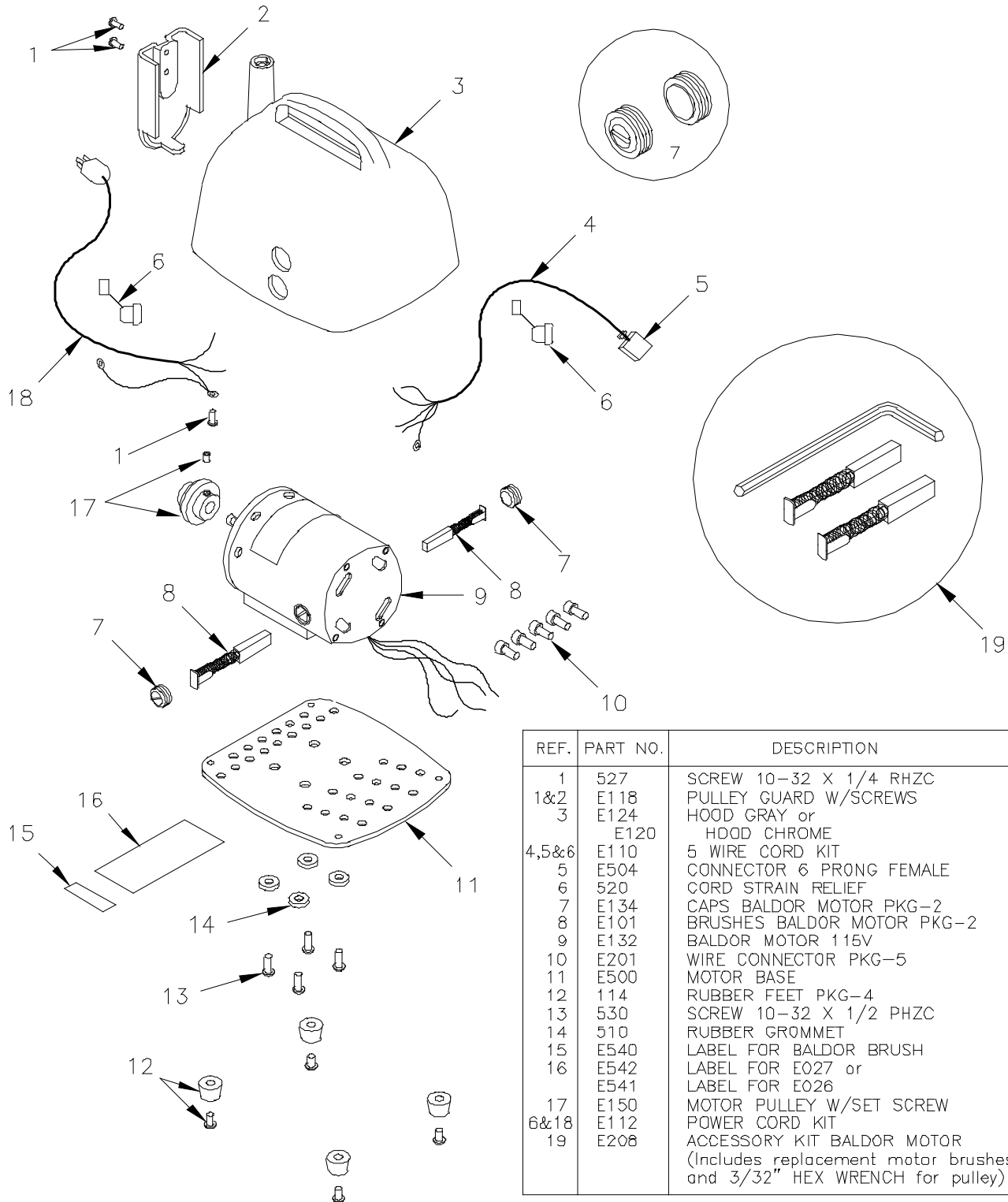


Figure 12. Wiring diagram for Hood & Motor

# WELLS

DENTAL, INC.  
 5860 FLYNN CREEK ROAD  
 P.O. BOX 106  
 COMPTCHE, CA USA 95427  
 PHONE (707) 937-0521  
 1 800 233-0521  
 FAX (707) 937-2809

## PARTS LIST for HOOD & MOTOR Product No. E026 or E027



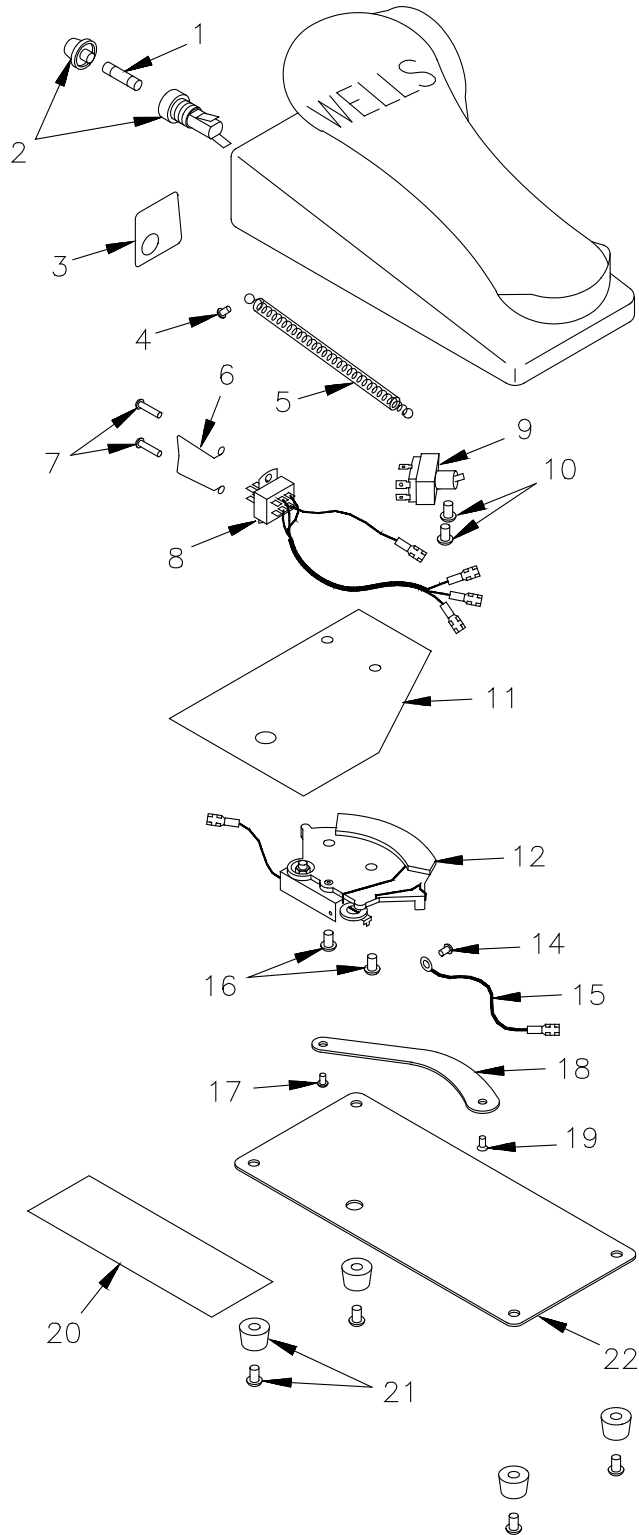
REF.	PART NO.	DESCRIPTION	QTY
1	527	SCREW 10-32 X 1/4 RHZC	3
1&2	E118	PULLEY GUARD W/SCREWS	1
3	E124	HOOD GRAY or E120 HOOD CHROME	1
4,5&6	E110	5 WIRE CORD KIT	1
5	E504	CONNECTOR 6 PRONG FEMALE	1
6	520	CORD STRAIN RELIEF	1
7	E134	CAPS BALDOR MOTOR PKG-2	1
8	E101	BRUSHES BALDOR MOTOR PKG-2	1
9	E132	BALDOR MOTOR 115V	1
10	E201	WIRE CONNECTOR PKG-5	1
11	E500	MOTOR BASE	1
12	114	RUBBER FEET PKG-4	1
13	530	SCREW 10-32 X 1/2 PHZC	4
14	510	RUBBER GROMMET	4
15	E540	LABEL FOR BALDOR BRUSH	1
16	E542	LABEL FOR E027 or E541 LABEL FOR E026	1
17	E150	MOTOR PULLEY W/SET SCREW	1
6&18	E112	POWER CORD KIT	1
19	E208	ACCESSORY KIT BALDOR MOTOR (Includes replacement motor brushes and 3/32" HEX WRENCH for pulley)	1

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 FAX (707) 937-2809

## PARTS LIST for FOOT CONTROL 115V Product No. F011

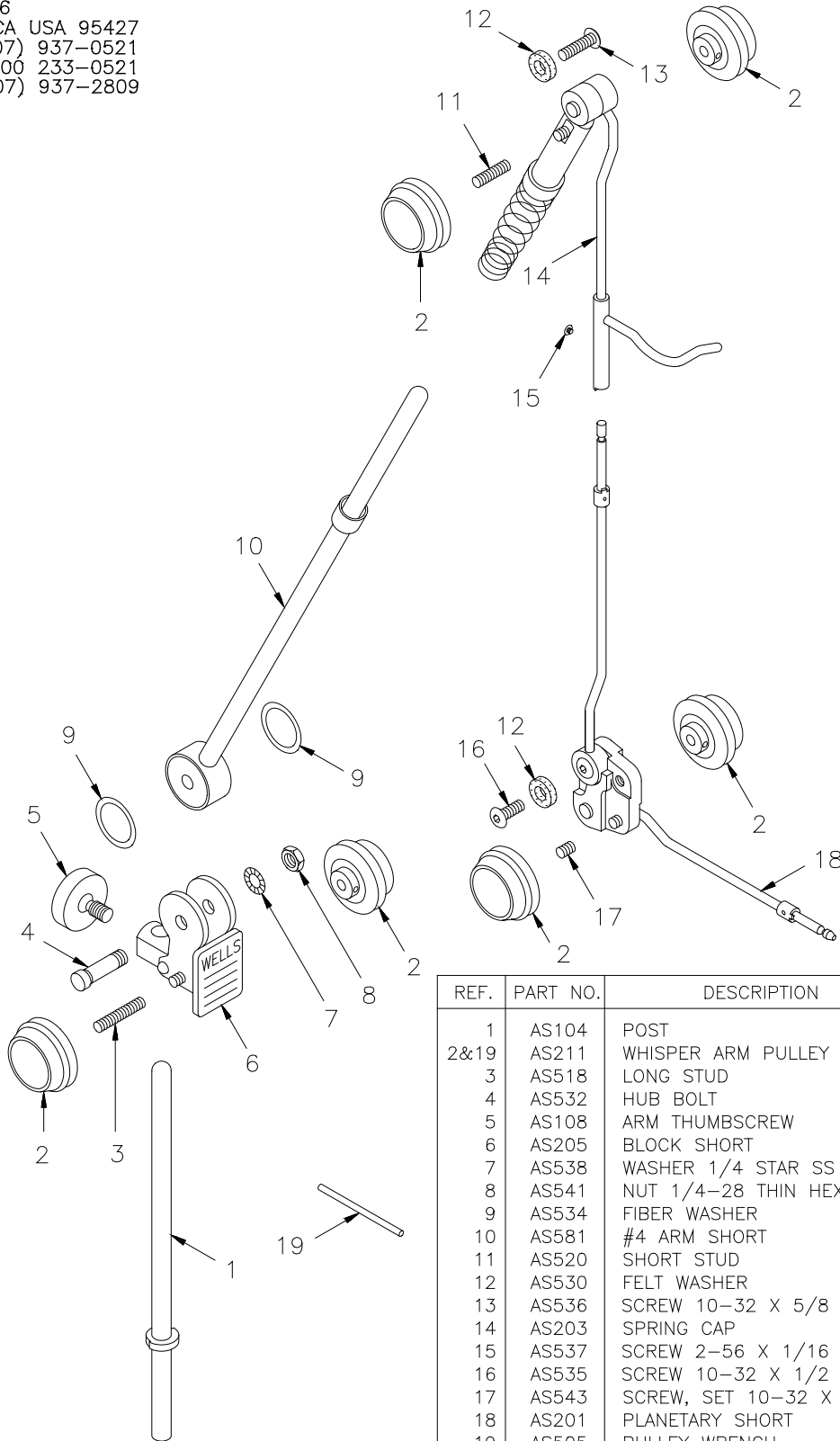


REF.	PART NO.	DESCRIPTION	QTY
1	F109	FUSE 5 AMP PKG-2	1
2	514	FUSE HOLDER W/NUT	1
3	F511	FUSE LABEL	1
4	EB515	SCREW 10-32 X 3/4 RHZC	1
5	F206	RETURN SPRING KIT	1
6&7	F113	PLUG RETAINER KIT	1
7	545	SCREW 6-32 X 3/8 CHCH	2
7&8	F202	MALE CONNECTOR KIT	1
9	F560	REVERSING SWITCH	1
10	571	SCREW 10-32 X 3/8 THZC	2
11	F510	COVER INSULATION	1
12	F200	CIRCUIT BOARD KIT	1
13	F208	SEMICONDUCTOR KIT (only)	1
14	538	SCREW 4-40 X 1/4 TCSF	1
15	F573	WIRE WHT 18GA 2-3/4 W/TERM	1
16	526	SCREW 10-32 X 3/8 RHZC	2
17	F542	SCREW 6-32 X 3/16 RHZC	1
18	F500	PHENOLIC ARM	1
19	F540	SCREW 6-32 X 3/16 FHZC	1
20	F515	LABEL 115V	1
21	114	RUBBER FEET PKG-4	1
22	F508	BASE COVER	1

# WELLS

WELLS DENTAL, INC.  
 5860 FLYNN CREEK ROAD  
 P.O. BOX 106  
 COMPTCHE, CA USA 95427  
 PHONE (707) 937-0521  
 1 800 233-0521  
 FAX (707) 937-2809

## PARTS LIST for WHISPER ARM SHORT Product No. AS051

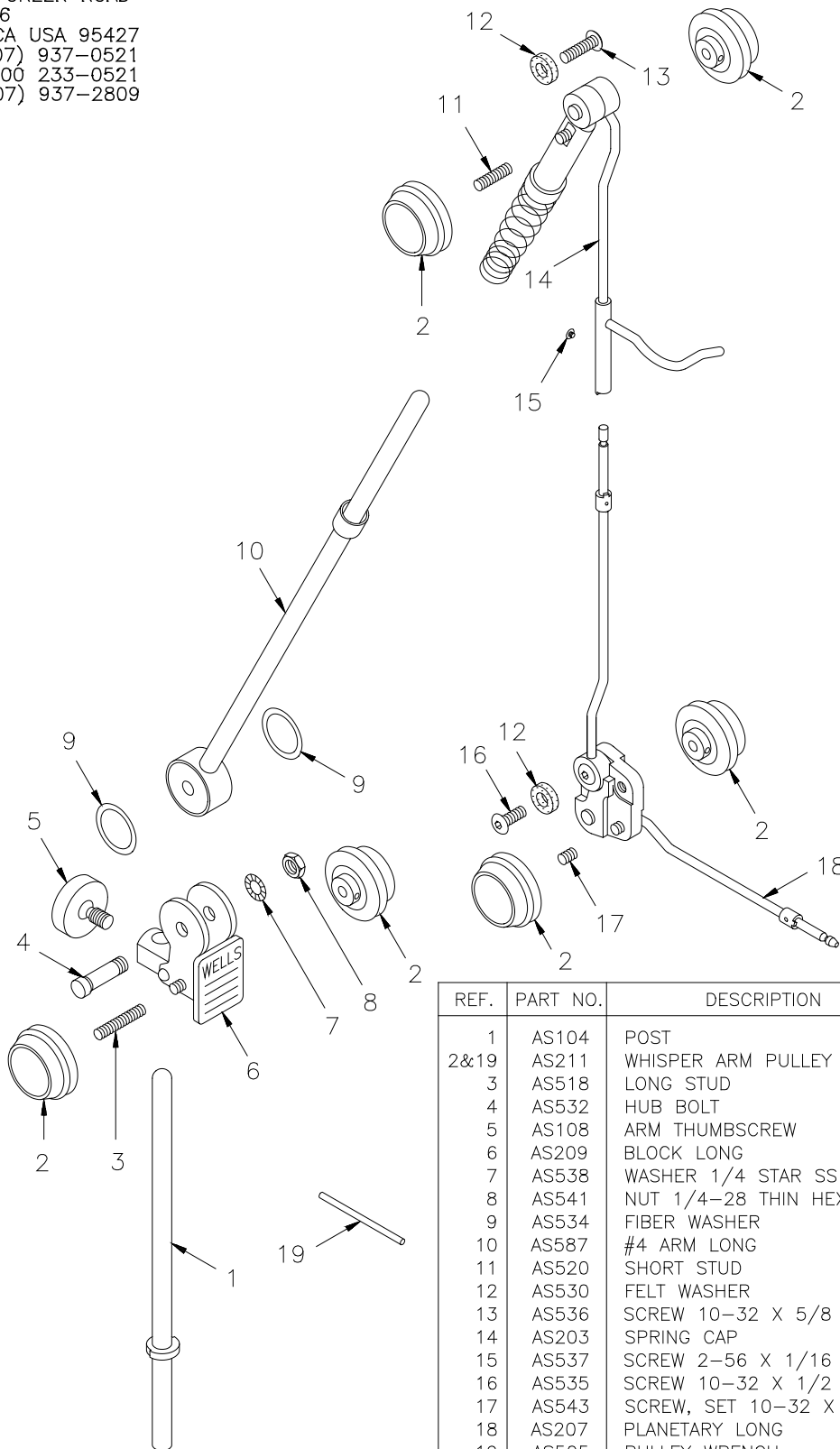


REF.	PART NO.	DESCRIPTION	QTY
1	AS104	POST	1
2&19	AS211	WHISPER ARM PULLEY W/WRENCH	6
3	AS518	LONG STUD	1
4	AS532	HUB BOLT	1
5	AS108	ARM THUMBSCREW	1
6	AS205	BLOCK SHORT	1
7	AS538	WASHER 1/4 STAR SS	1
8	AS541	NUT 1/4-28 THIN HEX SS	1
9	AS534	FIBER WASHER	2
10	AS581	#4 ARM SHORT	1
11	AS520	SHORT STUD	1
12	AS530	FELT WASHER	3
13	AS536	SCREW 10-32 X 5/8 BHSS	1
14	AS203	SPRING CAP	1
15	AS537	SCREW 2-56 X 1/16 PHSS	1
16	AS535	SCREW 10-32 X 1/2 BHSS	2
17	AS543	SCREW, SET 10-32 X 3/8	2
18	AS201	PLANETARY SHORT	1
19	AS505	PULLEY WRENCH	1
	AS404	PYRATHANE BELT 6'-6" (not illustrated)	1

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## PARTS LIST for WHISPER ARM LONG Product No. AS052

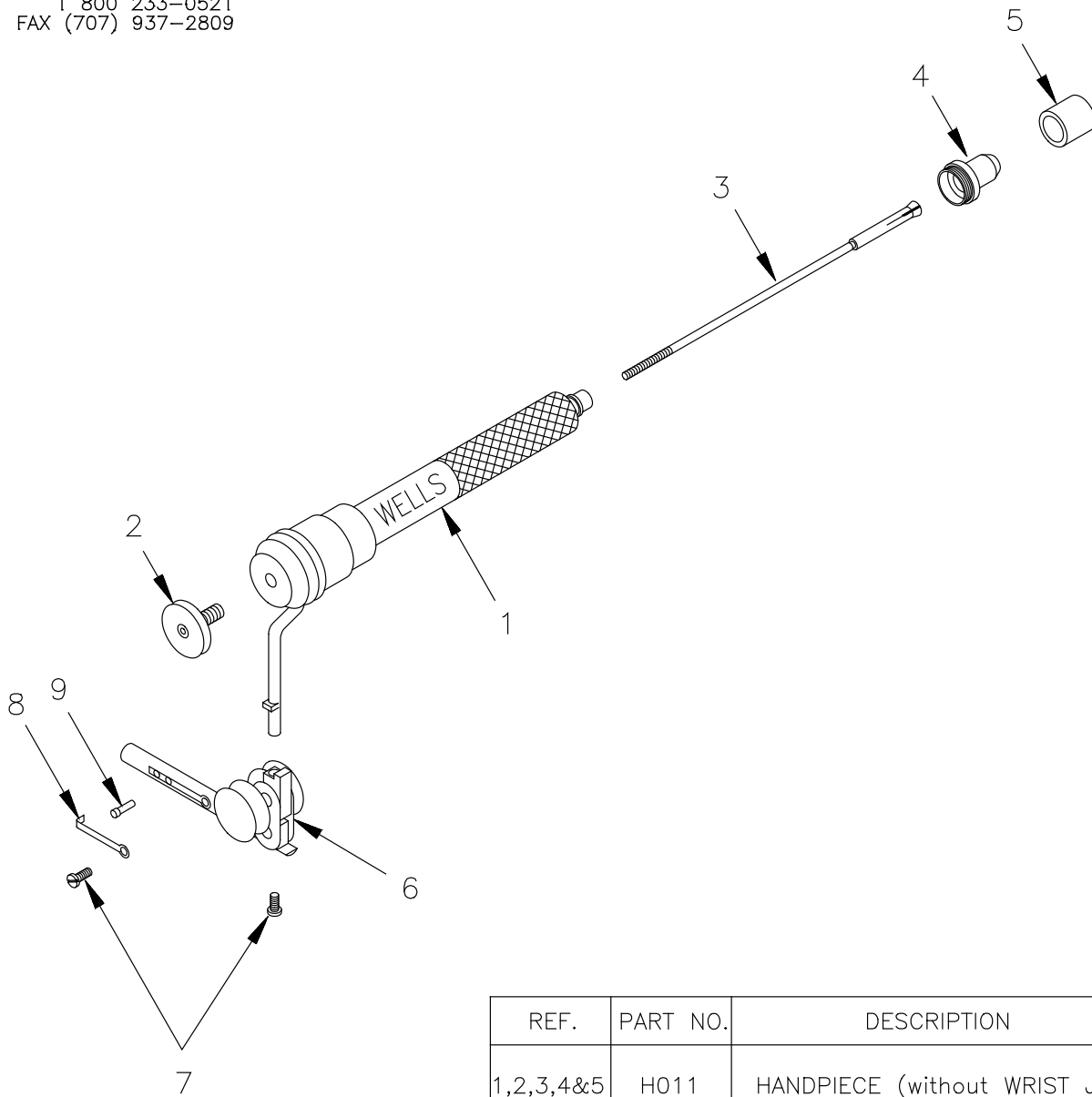


REF.	PART NO.	DESCRIPTION	QTY
1	AS104	POST	1
2&19	AS211	WHISPER ARM PULLEY W/WRENCH	6
3	AS518	LONG STUD	1
4	AS532	HUB BOLT	1
5	AS108	ARM THUMBSCREW	1
6	AS209	BLOCK LONG	1
7	AS538	WASHER 1/4 STAR SS	1
8	AS541	NUT 1/4-28 THIN HEX SS	1
9	AS534	FIBER WASHER	2
10	AS587	#4 ARM LONG	1
11	AS520	SHORT STUD	1
12	AS530	FELT WASHER	3
13	AS536	SCREW 10-32 X 5/8 BHSS	1
14	AS203	SPRING CAP	1
15	AS537	SCREW 2-56 X 1/16 PHSS	1
16	AS535	SCREW 10-32 X 1/2 BHSS	2
17	AS543	SCREW, SET 10-32 X 3/8	2
18	AS207	PLANETARY LONG	1
19	AS505	PULLEY WRENCH	1
	AS406	PYRATHANE BELT 9'-8" (not illustrated)	1

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## PARTS LIST for HANDPIECE WITH WRIST JOINT Product No. H010



REF.	PART NO.	DESCRIPTION	QTY
1,2,3,4&5	H011	HANDPIECE (without WRIST JOINT)	1
2	H108	THUMBSCREW	1
3	H102	COLLET	1
4	H104	NOSE CONE	1
5	H110	RUBBER WRENCH	1
2&3	H206	COLLET & THUMBSCREW	1
4&5	H208	NOSE CONE WITH RUBBER WRENCH	1
6,7,8&9	W011	WRIST JOINT	1
7	W102	RETAINING SCREW PKG-2	1
8	W505	SPRING CLIP	1
9	W509	PLUNGER	1
7,8&9	W204	SPRING CLIP KIT	1