

## CHAMPION AVIATION PRODUCTS

Cleaner Tester Series CT-475 AV

Serial Number

.....  
Date of Purchase

.....

Please record your unit's serial number and date of purchase in the appropriate spaces. Keep this booklet in a *safe place* so it may be referred to when necessary. It contains both operating and maintenance instructions and will permit you to obtain the maximum use from this product.



# AEROSPACE®

**CT475AV: 115 VOLT**

**&**

**CT475AV-CE: 230 VOLT**

**SPARK PLUG CLEANER AND TESTER**  
Operation and Maintenance Instructions



### Specifications:

#### Dimensions:

Height: 11-1/2 inches  
29.2 cm

Weight: 14LB 5 oz.  
6.5 KG

Width: 16-3/8 inches  
30.6 cm

#### Compressed Air Requirement:

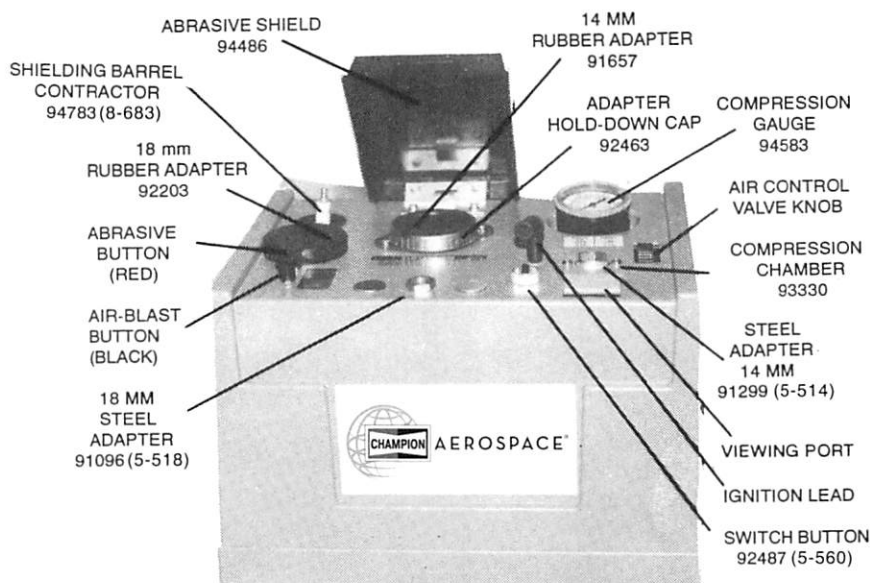
125-180 PSI      8.8 KG/cm<sup>2</sup> – 12.7 KG/cm<sup>2</sup>

#### Electrical Requirements: Requirement:

115/230 Volt      60 HZ

115 Volt

230 Volt



## INSTALLATION

Figure 1

1. The unit has a metal mounting frame slipped into its base. The frame is predrilled to permit attaching it to your bench. The frame is a slip fit into the base of the machine and should not be permanently fastened to it. This will permit easy removal for periodic required service.
2. Plug into applicable outlet.
3. Attach a compressed air line to the 1/4-inch nipple on the left side of the unit. Minimum pressure 125 psi, maximum 185 psi.
4. Lead the water trap drain line out the back of the unit. This will prevent expelled moisture from reaching the abrasive. The drain valve should be in the full counterclockwise position which permits automatic discharge of moisture whenever air is being used.
5. Pour the full bag of abrasive compound supplied directly into the top of the cleaner by removing the hold down cap and rubber adapter.
6. CALIBRATE TESTER

## CALIBRATION OF TESTER

Set a new 924M to .060 (1.524 MM) gap. Install it in the pressure chamber, increase the pressure until the indicator needle reaches 125 psi. Firmly push the tester button switch. Adjust the voltage control on the bottom of the electronic control module until the arc is bright & steady, the output Voltage should be (17-18 k V). This is a peak voltage output that is measured using a scope. The unit is now properly calibrated for all Aviation Spark Plug Testing.

**CAUTION: If a large number of plugs are to be cleaned in a small restricted area, a mask should be used to prevent inhaling abrasive dust.**

Figure 2

ADAPTER  
HOLD-DOWN  
CAP

## CLEANING FIRING-END

**CAUTION: Oil or wet fouled spark plugs should be degreased before cleaning.**

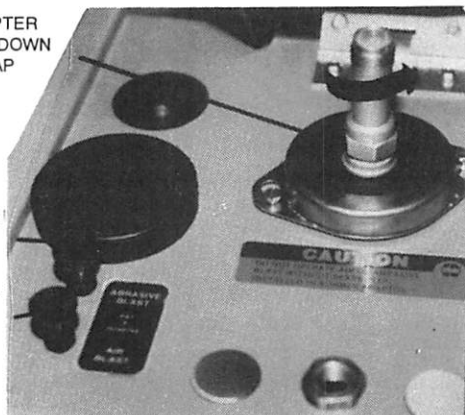
1. Select the proper size rubber adapter, secure in place with the hold down cap.

2. Insert spark plug to be cleaned into rubber adapter and press red button marked "Abrasive Blast". Wobble the top of the plug in a complete circle for three to five seconds (See Figure 2).

3. Continue wobbling action and press black button marked "Air Blast" to remove abrasive particles from spark plug firing end.

4. Remove and inspect the spark plug. If cleaning is incomplete, repeat the cleaning cycle. (Champion CT-456 Viewer is an excellent tool for making these inspections).

ABRASIVE  
BUTTON  
(RED)  
  
AIR BLAST  
BUTTON  
(BLACK)



## CLEANING BARREL-END

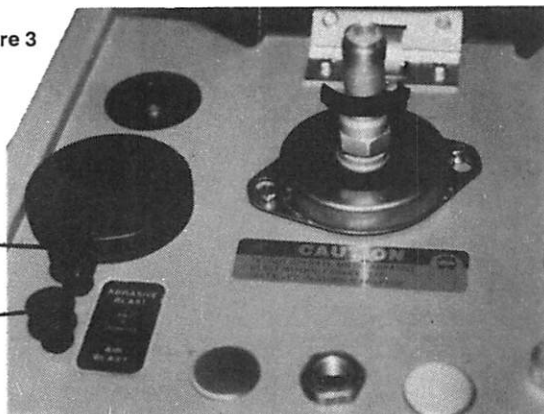
1. Insert the barrel end approximately half the length into the rubber adapter and press red button marked "Abrasive Blast". Rotate the plug for three to five seconds (See Figure 3).

2. Pull spark plug up until barrel threads rest against rubber adapter. Continue rotating action and press the black button marked "Air Blast" to remove abrasive particles from the barrel-end.

3. Remove and inspect the spark plug. If cleaning is incomplete, repeat cleaning cycle.

Figure 3

ABRASIVE  
BUTTON  
(RED)  
  
AIR BLAST  
BUTTON  
(BLACK)



## TESTING

1. Select the proper size steel adapter and install in test chamber. Screw the serviced plug into the compression chamber—finger tight.

### NOTE:

*Leakage of air at the adapter or spark plug threads is desirable as it helps to facilitate steady control of air pressure and permits the exhaust of ionized air.*

2. Connect the high voltage lead to the spark plug shielding barrel contactor. Insert in barrel-end. (See Figure 4).

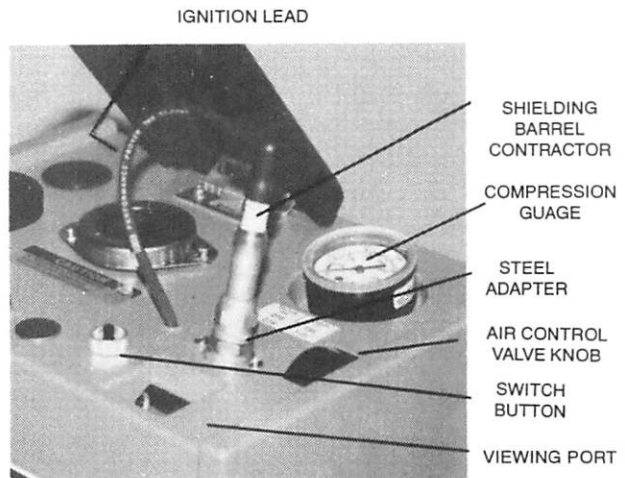
3. Press tester switch button. Observe that spark is jumping gaps satisfactorily. Open tester air valve until gauge register the proper pressure for the gap setting on the plug being tested. Observe that the plug is sparking satisfactorily. (See "NOTE" and Table below for gap and pressure).

### NOTE:

*Voltage required to spark the plug gap varies directly with electrode gap opening and bomb test pressure. To insure satisfactory plug operation in the engine, the plug being tested should spark steadily at the following gap settings and their corresponding test pressures.*

ELECTRODE GAP	TEST PRESSURE P.S.I.
.016	135
.019	115

Figure 4



## MAINTENANCE

For location of all parts see Figures 5 & 6

This section contains instructions for the necessary routine maintenance that will assure continued effective cleaning.

### 1. After Operation:

Brush away loose abrasive which may accumulate on cleaner.  
Close the abrasive shield. Slip the high tension cable back into the cabinet.

### 2. After cleaning 250 to 300 spark plugs:

- Tip the unit on its back.
- Disconnect the two air lines connected to the cleaner bag manifold (See Figure 5).
- Remove the two screws holding the Cleaner bag assembly to the unit and remove the entire assembly pulling straight out.

- d. Invert and dump the old abrasive. Open the zipper and dump the dust from the collection area. Shake and tap the bag vigorously to dislodge clinging dust. *(There is no need to remove bag from cleaner manifold.)*
- e. Close zipper. Replace nozzle tip, reinstall assembly in unit. Return to upright position.
- f. Remove rubber adapter and recharge with full bag (15 oz.) of new abrasive. The part number for the abrasive is 91893 and contains a new nozzle. Replace old rubber nozzle with new part contained in the abrasive bag.

**TROUBLE SHOOTING - CLEANING SYSTEM**

<b>MALFUNCTION</b>	<b>CAUSE AND CORRECTION</b>
1. No cleaning	<ul style="list-style-type: none"> <li>a. MISSING RUBBER NOZZLE (Part # 94023): Replace</li> <li>b. MOISTURE IN ABRASIVE: Replace abrasive and nozzle tip. Correct cause of water entry. <i>(Incorrect routing of drain hose or excessive moisture in air line.)</i></li> <li>c. CLOGGED PICK UP TUBE: Remove rubber nozzle tip. Using a coat hanger, welding rod, or similar piece of wire, gently probe down the pick up tube to clear it. Excessive force could result in damage to the bag or pick up tube.</li> </ul>
2. Poor cleaning action	<ul style="list-style-type: none"> <li>a. WORN, DIRTY ABRASIVE: Drain and recharge.</li> <li>b. WORN RUBBER NOZZLE TIP (Part # 94023): Replace.</li> <li>c. WORN STEEL NOZZLE JET (Part # 93274): Jet is in pick up assembly below the rubber nozzle tip. Unscrew and replace.</li> </ul>
3. Cleaner valves sticking.	<ul style="list-style-type: none"> <li>a. ABRASIVE OR DIRT BETWEEN VALVE STEM AND NUTS: Disassemble and clean valves. <b>DO NOT LUBRICATE.</b></li> </ul>
4. Automatic water trap does not function or restricts flow.	<ul style="list-style-type: none"> <li>a. DIRTY, CLOGGED: Clean—It is not necessary to remove the entire trap. Disconnect or turn off air supply. Grasp the plastic bowl and unscrew. Wash the porous bronze filter with denatured alcohol. Clean plastic parts with household soap only. To drain accumulated water, turn valve clockwise. After draining, turn fully counterclockwise to restore automatic action.</li> </ul>

# PARTS LIST

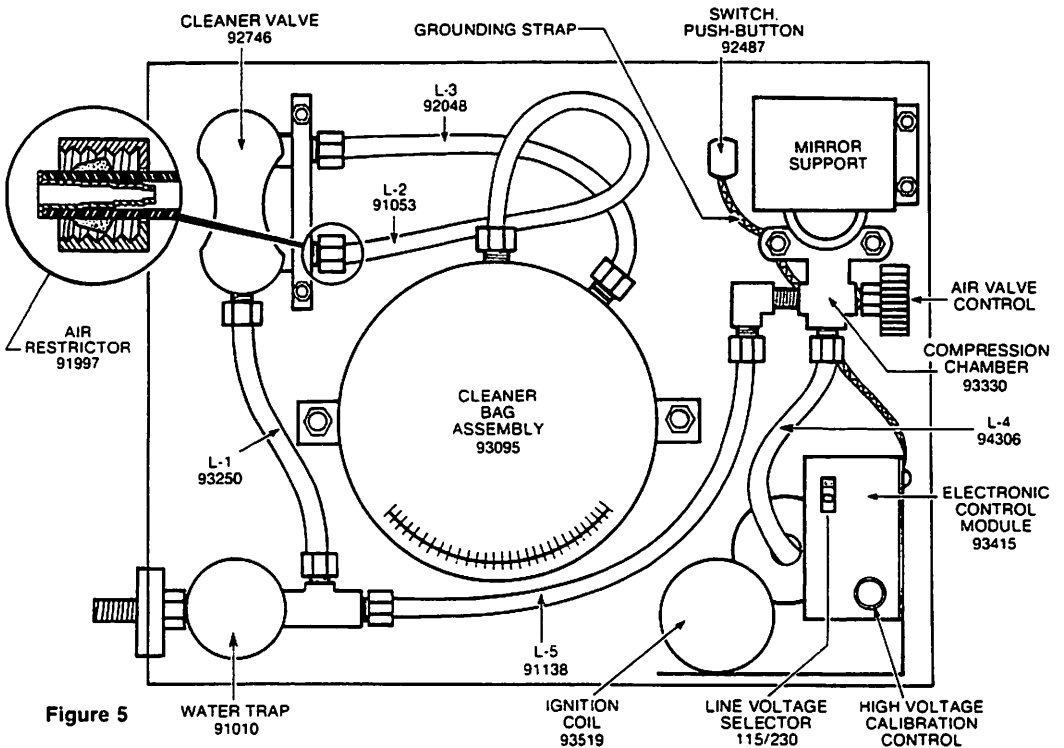
This unit is designed for easy maintenance and repair by the owner. All parts are easily replaceable using only conventional hand tools. If parts are required, use the diagrams and below listed parts list to order the correct replacements.

## SPARE PARTS

CLEANING SECTION	PART NO.
Cleaning bag and manifold assembly	93095
Cleaner bag only .....	93453
Steel nozzle jet .....	(5-512) . 93274
Rubber nozzle tip .....	(622)..... 94023
Cleaner Valve Assembly .....	(617A).. 92746
Compressor chamber assembly.(8-802)	93330
Valve stem,knob and O'ring ..	(8-814). 92548
Red and black knob kit .....	92401
Rubber cleaner adapters	
14 mm .....	91657
18 mm .....	92203
Abrasive compound .....	91893

TESTER SECTION	PART NO.
Compression chamber assembly.(8-802)	93330
Valve Stem, knob and "O" ring ....	(8-814) 92548
<b>Steel Adapter</b>	
14 mm .....	(5-514).....91299
18 mm.....	(5-518).....91096

Electrical System	PART NO.
Electronic control module with switch & leads .....	93415
Switch (push button) .....	(5-560)..... 92487
Coil .....	93519



AIR LINE SECTION (locate from drawing)	PART NO.	MISCELLANEOUS	PART NO.
L1.....	93250	Abrasive shield .....	94486
L2.....	91053	Hinge and spring kit .....	94245
Air restrictor.....	91997	Water trap.....	91010
L3.....	92048	Water trap bowl kit .....	(L300BK)...92784
L4.....	94306	Air inlet nipple w/mounting nut.....	94283
L5.....	91138	Mirror .....	91836
		Shielding barrel contactor..(8-863)..	94783

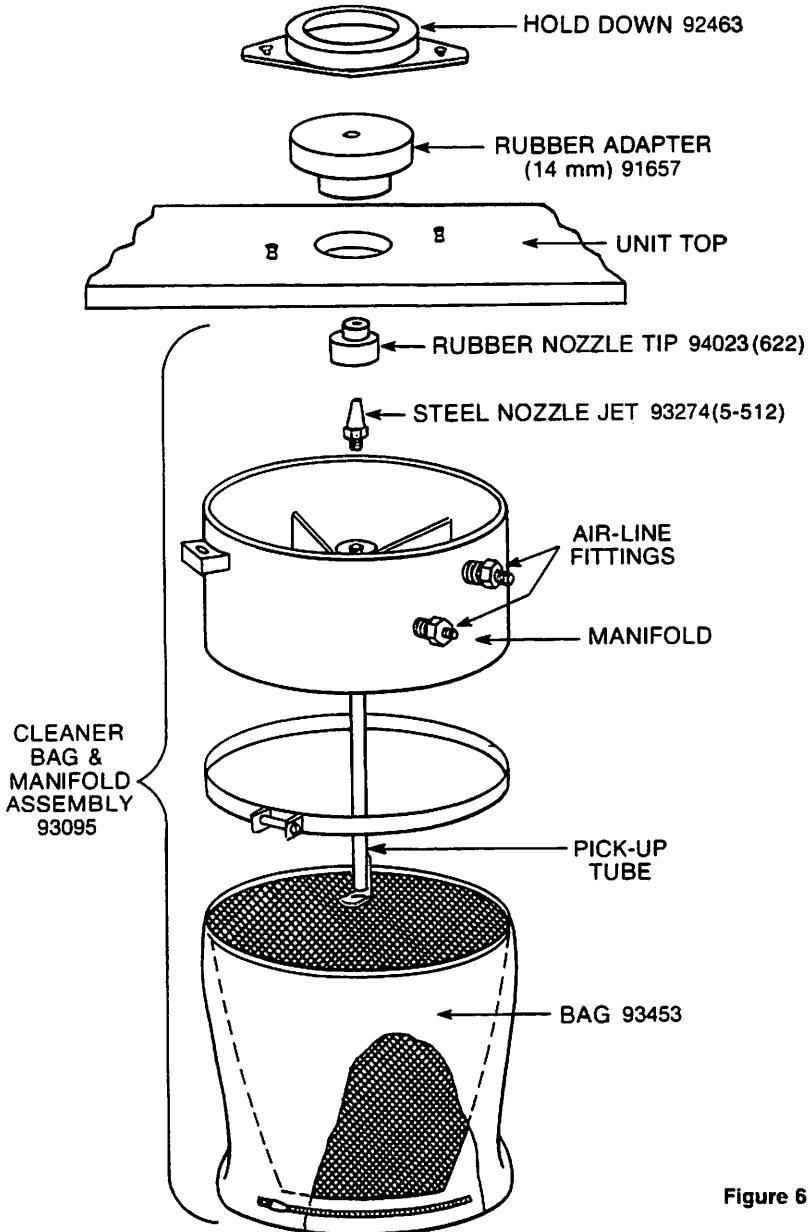


Figure 6

## TROUBLE SHOOTING—ELECTRICAL SYSTEM

MALFUNCTION	CAUSE AND CORRECTION
1. No spark or weak spark (Good plugs test bad.)	<p><b>A. UNIT UNPLUGGED:</b> Reconnect to electrical supply.</p> <p><b>B. SYSTEM NOT PROPERLY BONDED:</b> This service unit is made of a nonconductive material. In order to operate the electrical system, the high voltage components must be grounded to each other. There is a bonding strap which must connect to the button switch, compression chamber and the ignition system bracket. (See Figure 5)</p> <p><b>C. INCORRECT CALIBRATION OF ELECTRICAL SYSTEM:</b> Recalibrate as shown on unit set up on page 2.</p> <p><b>D. SHIELDING BARREL CONTACTOR:</b> Verify complete circuit with Ohm meter.</p> <p><b>E. SWITCH INOPERATIVE:</b> (Part #92487). To check-disconnect coil primary leads. (<i>Do not let them short together.</i>) Hook a D.C. voltmeter across the leads and press the button switch. Each time you press it, the needle of your voltmeter should deflect 3 to 8 volts. If not replace switch.</p> <p><b>F. WEAK COIL OR DEFECTIVE CONTROL MODULE:</b> To check-remove the coil from the machine and install on a vehicle with conventional 12 volt ignition. Hold the coil high tension so as to create a 1/2-inch gap. Crank the engine. If a spark jumps the gap, replace the electronic control module (Part # 93415). If it doesn't jump the gap, replace the coil. (Part # 93519).</p> <p><b>NOTE: DO NOT USE AN AUTOMOTIVE COIL. IT MAY CAUSE REDUCED VOLTAGE OUTPUT OR DAMAGE THE CONTROL MODULE.</b></p> <p><b>DO NOT LEAVE TESTER COIL ON VEHICLE. IT COULD RESULT IN POINT BURNING AND/OR MISFIRE.</b></p>



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