

**DEPARTMENT  
OF THE ARMY TECHNICAL MANUAL**

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OPERATOR, ORGANIZATIONAL, DIRECT SUPPORT  
AND GENERAL SUPPORT MAINTENANCE  
MANUAL INCLUDING REPAIR PARTS LIST

**FOR**

**CLEANER & TESTER, SPARK PLUG**

**MODEL 82**

**(BANNER METALS) (4910-00-261-5868)**

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**HEADQUARTERS,  
DEPARTMENT OF THE ARMY**

JANUARY 1981



Technical Manual }  
No. 9-4910-631-14&P }

HEADQUARTERS  
DEPARTMENT OF THE ARMY  
Washington, DC, 26 *January 1981*

**OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT  
AND GENERAL SUPPORT MAINTENANCE  
MANUAL INCLUDING REPAIR PARTS LIST  
FOR  
CLEANER AND TESTER, SPARK PLUG  
MODEL 82  
(NSN 4910-00-261-5868)**

**REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS**

**You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2, located in the back of this manual direct to: Commander, US Army Armament Materiel Readiness Command, ATTN: DRSAR-MAS, Rock Island, IL 61299. A reply will be furnished directly to you.**

**NOTE**

This manual is published for the purpose of identifying an authorized commercial manual for the use of the personnel to whom this spark plug cleaner and tester is issued.

Manufactured by: Banner Metals  
Div. of Intercole Automation, Inc.  
Stroudsburg, PA 18360

Procured under Contract No. DAAA09-76-C-6058

This technical manual is an authentication of the manufacturer's commercial literature and does not conform with the format and content specified in AR 310-3, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.



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## SHIPPING LIST

| ITEM NO | DESCRIPTION                                                        | QUANTITY |
|---------|--------------------------------------------------------------------|----------|
| 82E000  | CLEANER-TESTER                                                     | 1        |
| 6       | DUST HOPPER DRAIN PLUG                                             | 1*       |
| 7       | CLEANING CHAMBER DRAIN PLUG                                        | 1*       |
| 8       | ABRASIVE RUBBER NOZZLE                                             | 1*       |
| 16      | RUBBER CLEANING ADAPTER 10mm                                       | 1        |
| 16      | RUBBER CLEANING ADAPTER 18mm                                       | 1        |
| 16      | RUBBER CLEANING ADAPTER 7/8"                                       | 1        |
| 38      | 2-WIRE GROUND ADAPTER                                              | 1        |
| 40      | TESTER GAGE                                                        | 1        |
| 50      | STEEL TESTING ADAPTER 10mm                                         | 1        |
| 50      | STEEL TESTING ADAPTER 18mm                                         | 1        |
| 57      | SHIELDED PLUG ADAPTER                                              | 1        |
| 58      | SPARK PLUG TRAY                                                    | 1        |
| 59      | ABRASIVE (1 BAG CHARGE) (1 FOR INSTALLATION)<br>(1 * FOR RECHARGE) | 2        |
| 60      | OPERATION & MAINTENANCE INSTRUCTION MANUAL                         | 2        |

\*Spare parts to be retained for use when unit is recharged.

INSTRUCTIONS FOR REQUISITIONING PARTS

NOT IDENTIFIED BY NSN

When requisitioning parts not identified by National Stock Number, it is mandatory that the following information be furnished the supply officer.

- 1 - Manufacturer's Federal Supply Code Number - 44678
- 2 - Manufacturer's Part Number exactly as listed herein.
- 3 - Nomenclature exactly as listed herein, including dimensions, if necessary.
- 4 - Manufacturer's Model Number - #82
- 5 - Manufacturer's Serial Number (End Item)
- 6 - Any other information such as Type, Frame Number, and Electrical Characteristics, if applicable.
- 7 - If DD Form 1348 is used, fill in all blocks except 4, 5, 6, and Remarks field in accordance with AR 725-50.

Complete Form as Follows:

(a) In blocks 4, 5, 6, list manufacturer's Federal Supply Code Number - 44678 followed by a colon and manufacturer's Part Number for the repair part.

(b) Complete Remarks field as follows:  
Noun : (nomenclature of repair part)  
For: NSN: 4910-00-261-5868  
Manufacturer: Banner Metals  
Stroudsburg, PA 18360

Model: 82  
Serial: (of end item)

Any other pertinent information such as Frame Number, Type. Dimensions, etc.

## SPECIFICATIONS

14½" High x 14½" Wide x 11" Deep  
22 Lbs including accessories  
115 Volt — 60 HZ — with ground  
120-150 P S I Compressed Air

## INSTALLATION

1. Install abrasive shield as per instructions attached to shield.
2. Screw the tester gauge into the 45° angle fitting (on the top right of the unit) Use 2 wrenches — one to hold the gauge 45° casting and one to tighten the gauge.
3. Remove steel hold-down ring and rubber cleaning adopter. See Fig. #1 — (twist steel hold-down in key slots to release). Pour one full bag of abrasive compound directly into the cleaner. Re-install rubber cleaning adapter and steel hold-down ring.
4. A. Place the 3 rubber cleaning adopters in the 3 big holes in the rear top of the unit.  
B. Place the 2 steel testing adapters in the 2 holes to the rear of the power switch.  
C. Place the shielded plug adapter in the hole behind the hi-tension clip.
5. Uncoil power cord, bring out rear of cabinet and connect to 3-wire 115 volt — 60 HZ power source. If 3-wire receptacle is not available, use 2-wire adapter — Item #38 supplied.

**CAUTION:** Secure spade tongue of 2-wire adapter to center screw of receptacle cover.

6. Attach compressed air hose to quick disconnect fitting (which is attached to water trap) in rear of unit.

**CAUTION:** Do not connect to air supply that is capable of exceeding 185#. If pressure in excess of 185# is available, install a regulator to reduce air pressure to maximum of 170#.

7. Unit may be permanently mounted to work bench or cleaner stand. 4-5/16" diameter holes are provided in base of unit for mounting.
8. Cleaner is now ready for operation.

## IMPORTANT

This unit is equipped with a manual water trap. The water trap must be checked periodically — depending upon use of the cleaner and air compressors condition to ENSURE the trap does not over fill.

When the water level reaches the internal filter element, the knurled fitting located at the bottom of the plastic bowl should be loosened to discharge accumulated water. Be sure to retighten this knurled fitting after each exhaust of accumulated water.

## OPERATING THE CLEANER

1. Select the proper rubber cleaner adapter (10mm; 14mm; 18mm or 7/8") and secure in place with steel holddown ring.
2. Insert electrode end of spark plug into rubber cleaning adapter. Pull cleaner valve lever — (left rear of unit) forward to position marked Abrasive Blast Wobble the top of the plug in a complete circle for 3 or 4 seconds (See Fig. #1.).
3. Continue wobbling action and push the cleaner valve toward the rear of the unit — position marked Air Blast. This air blast Will remove abrasive particles from the spark plug.
4. Remove and inspect the spark plug. If the cleaning is unsatisfactory, repeat the cleaning cycle.
5. Open the electrode gap slightly and vigorously file electrode sparking surfaces with a point file.
6. Set the gap in the cleaned plug to the recommended setting for the engine.

**CAUTION:** Carefully inspect cleaned and gapped plug to ensure no particles of abrasive material remain trapped in the plug that can loosen during use and cause damage to the cylinder walls.

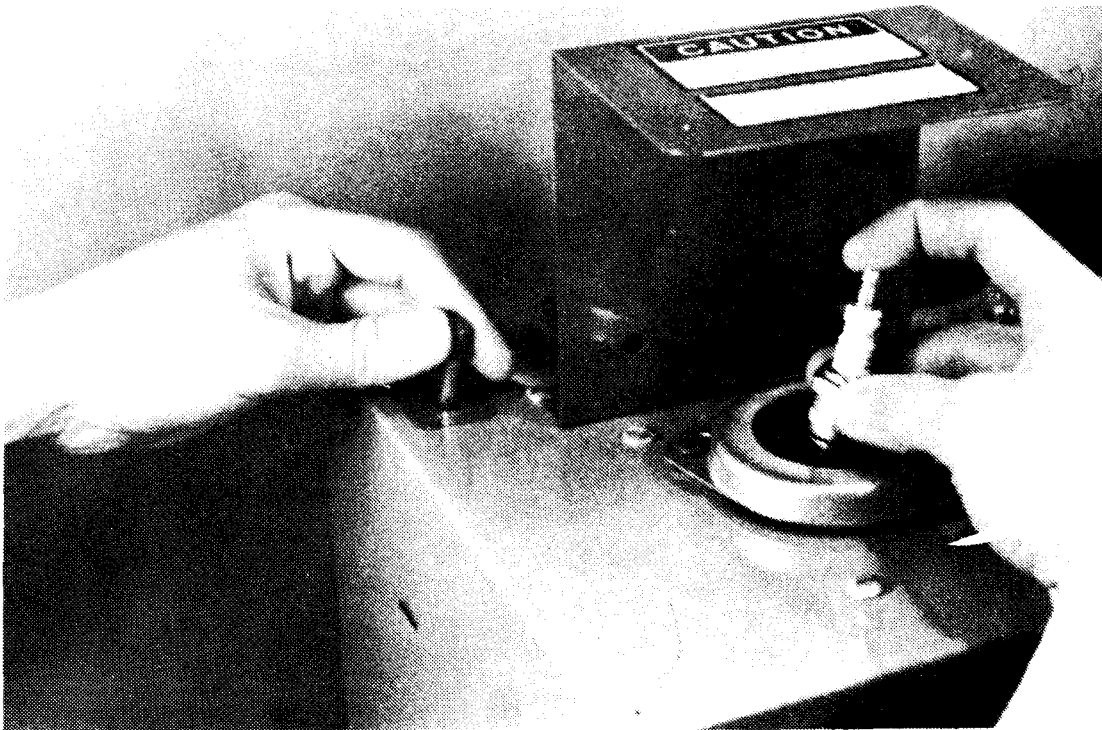


FIG. 1



## OPERATING THE TESTER

1. Select and install the proper size steel testing adapter into the compression chamber — located near the right front of the unit. The steel adapter should be installed finger tight.
2. Screw the cleaned plug with gasket into the adapter which has been installed in the compression chamber finger tight.

NOTE: 7/8" spark plugs screw directly into the compression chamber with no adapter.

**IMPORTANT:** Air leakage at the adapter or spark plug threads is required, as it helps exhaust ionized air from the compression chamber and facilitates steady control of air pressure. Installing adapter or spark plug with a wrench to eliminate air leakage is not recommended as false sparking results.

3. Connect the high voltage clip to the spark plug.
4. Move the tester gage dial (outer ring) so the plug gap arrow is aligned with setting of the gap of plug being tested (See Fig. #2 — Assume 0.035" Gap.).
5. Press switch button and raise air pressure by opening the black air valve (located on the top right front corner of unit) until the spark goes out.

**NOTE:** With low pressure and a small spark plug gap, the plug may continue to spark. This is acceptable.

6. While continuing to press the switch button, rotate the air valve to reduce pressure until the spark becomes steady. Observe the section of the tester gage dial that the gage pointer is now indicating. This reading is the sparking efficiency of the plug being tested.
7. When the pointer is in the green or to the right of the green, the plug is good. With the pointer in the yellow, the plug is questionable. Any readings of the dial pointer in the red indicate a bad plug and the plug should be replaced.

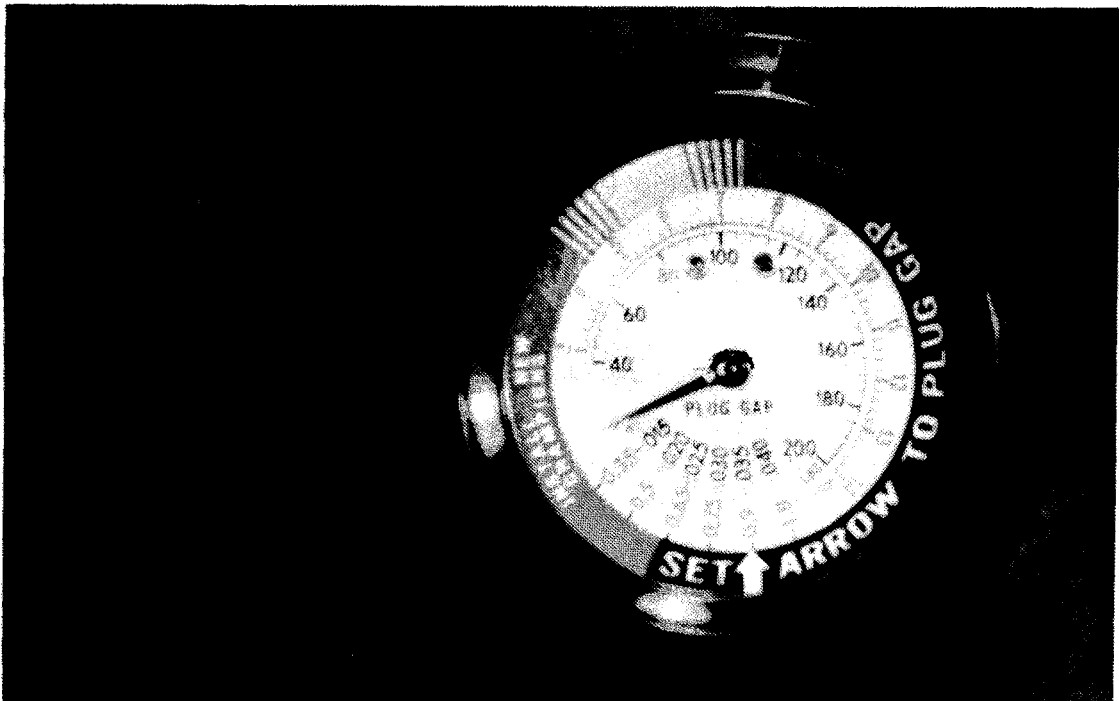


FIG. 2

## MAINTENANCE

1. AFTER OPERATION:
  - A. Brush or blow away loose abrasive compound which may remain on unit.
  - B. Slip high voltage cable into top of cabinet.
  - C. Check manual water trap to insure water level is not above filter element. If water is evident in the bowl, it should be drained.
  
2. AFTER CLEANING 300-400 SPARK PLUGS (3-4 SECONDS BLAST OF EACH PLUG):
  - A. Remove dust cap from bottom of cleaning chamber and drain dust into a tray. Tap the dust hopper and outer bag to help get as much dust out of the cleaning chamber as possible. Replace the dust cap. Be sure dust cap snaps into hole and is fully seated.
  - B. Remove steel **holddown** ring and rubber adapter from cleaning chamber
  - C. Lift out and **discard** abrasive rubber nozzle located in center of cleaning chamber approximately 1- $\frac{1}{2}$  deep,
  - D. Install new abrasive rubber nozzle. Be sure it is fully seated on cleaning casting,
  - E. Add **one** full bag of new abrasive compound — pour directly into cleaning chamber.
  - F. Replace rubber adapter and steel **holddown** ring.
  
3. AFTER CLEANING 800-1,000 SPARK PLUGS:
  - A. Disconnect air line and power cord.
  - B. Disconnect 2 air lines to the cleaning chamber,
  - C. Remove the steel **holddown** ring and rubber adapter,
  - D. Remove 3 screws connecting cleaning chamber to unit top,
  - E. Remove entire cleaning chamber from unit.
  - F. Remove lower bag clamp,
  - G. Fold back outside bag.
  - H. Remove cleaning chamber drain plug.
  - I. Shake chamber vigorously and blow off with air hose until inner bag and inside of outer bag is relatively clean.
  - J. Reassemble and reinstall in unit.
  - K. Lift out and discard abrasive rubber nozzle (See 2C.)
  - L. Install new abrasive rubber nozzle (See 2D.).
  - M. Add **one** full bag of new abrasive (See 2E.).
  - N. Replace rubber adapter and steel **holddown** ring.
  - O.. Connect air line and power cord.

## TROUBLESHOOTING

| MALFUNCTION                                                            | CAUSE AND CORRECTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. <b>No CLEANING ACTION</b></p>                                    | <p>A. Check water trap - - - drain if full,<br/>           B. Lack of abrasive - - - recharge unit as described in maintenance procedure #2.<br/>           C. Moisture in abrasive - - - follow maintenance procedure #3. Dry bag before reinstalling.</p>                                                                                                                                                                                                                                                                                                                                                                             |
| <p>2. <b>POOR CLEANING ACTION</b></p>                                  | <p>A. Low air pressure - - - adjust pressure.<br/>           B. Contaminated abrasive - - - recharge unit as described in maintenance procedure #2.<br/>           C. Moisture in abrasive - - - see C above.<br/>           D. Worn abrasive rubber nozzle - - replace as instructed in maintenance procedures #2B, C, D and F.<br/>           E. Worn steel nozzle jet - - - follow maintenance procedures #2B and C. Unscrew and replace steel jet (Item #9) Then reassemble per #2D and F.</p>                                                                                                                                      |
| <p>3. <b>AIR-ABRASIVE VALVES STICKING</b></p>                          | <p>A. Abrasive or dirt between valve plunger, packing and packing nuts - - - disassemble and clean all parts. Reassemble and reinstall. See illustration of valve assembly Fig. #5.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>4. <b>NO HIGH VOLTAGE AT TESTER OR LOW OR HIGH VOLTAGE</b></p>      | <p>A. Unit not plugged into 110 volt power line - - - plug in unit.<br/>           B. No power at receptacle - - - check power source.<br/>           C. Low voltage - - - to increase voltage loosen lock nut on side of high voltage power supply, then turn adjusting nut clockwise until a new J-8 spark plug, gapped at 0.025" will quench out at 140 P.S.I. Tighten lock nut after adjustment,<br/>           D. High voltage - - - to decrease voltage turn adjusting nut counterclockwise using same procedure outlined in C above.<br/>           E. If above adjustments fail high voltage power supply must be replaced.</p> |
| <p>5. <b>LOSS OF AIR CONTROL OF SPARK PLUG COMPRESSION CHAMBER</b></p> | <p>A. Allow leakage of air from plug or adapter.<br/>           B. Abrasive or dirt in valve - - - disassemble, clean ports and reassemble. See illustration of chamber and valve assembly Fig#16.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                  |

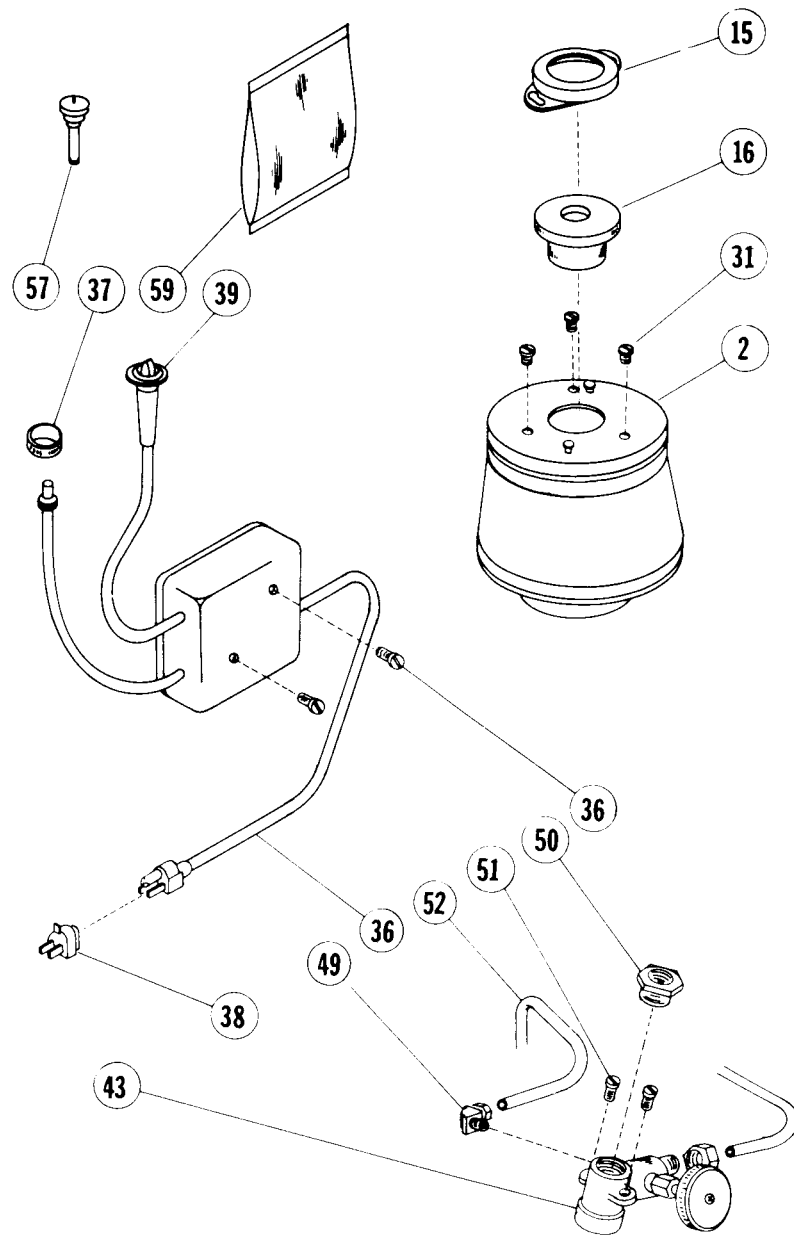
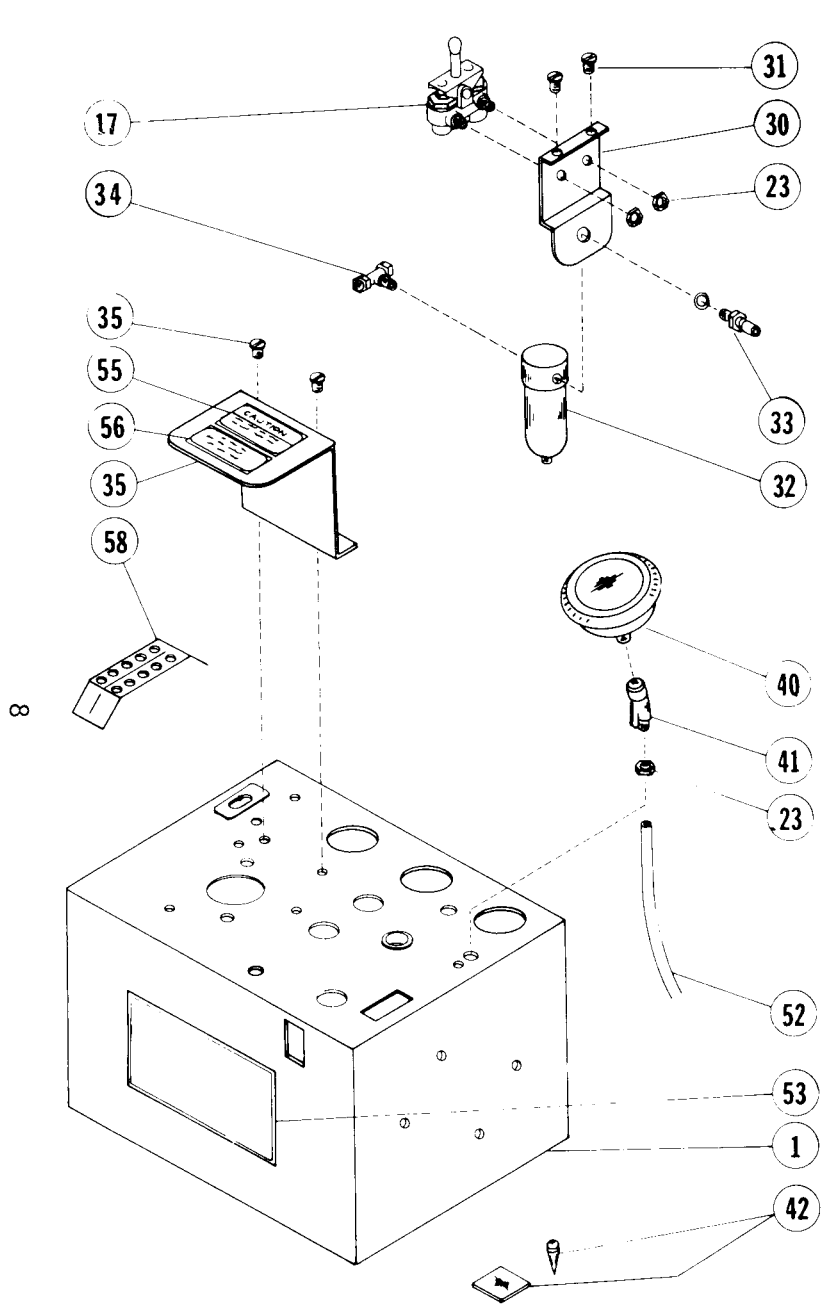


FIG. 3

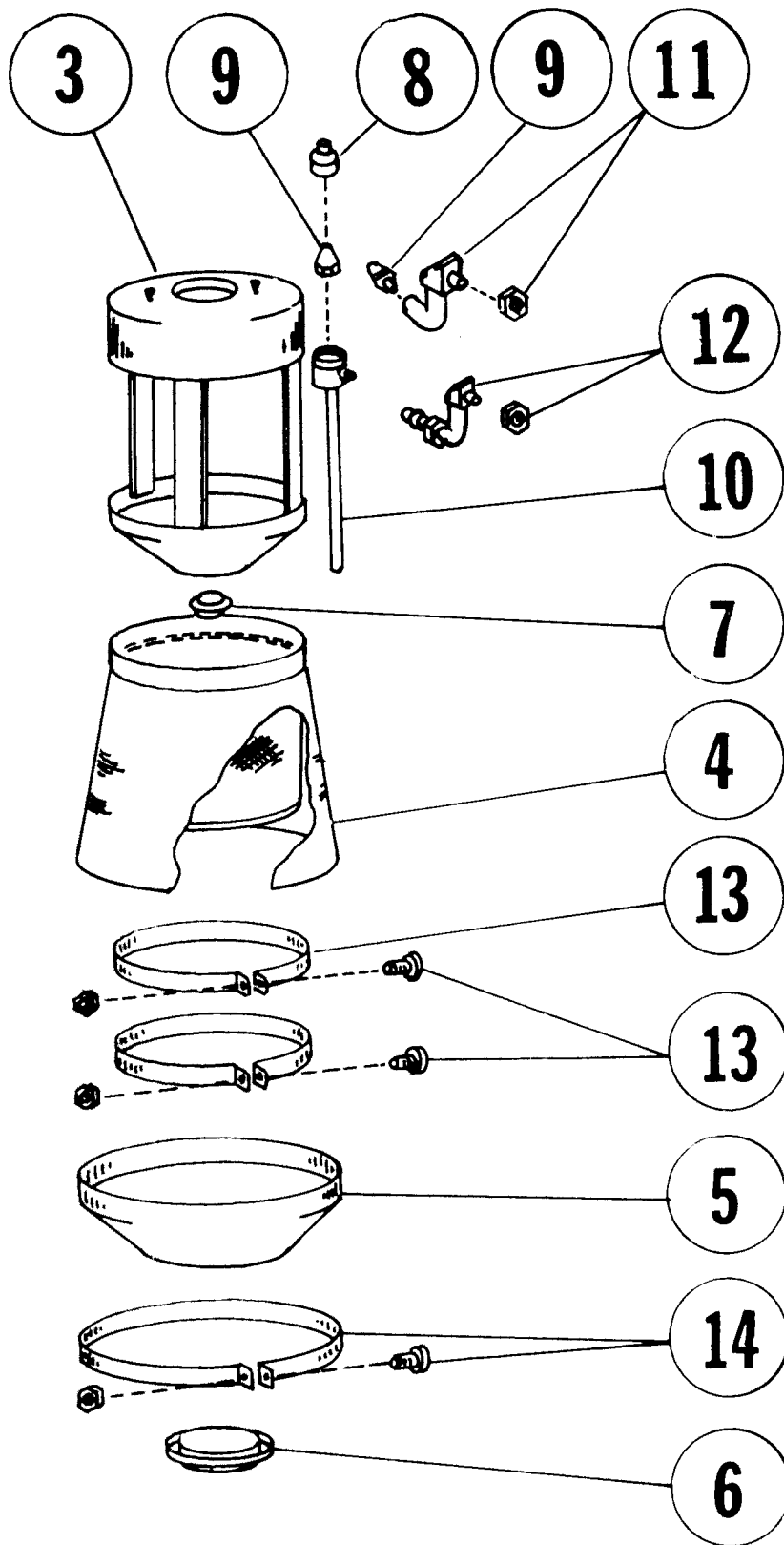


FIG. 4

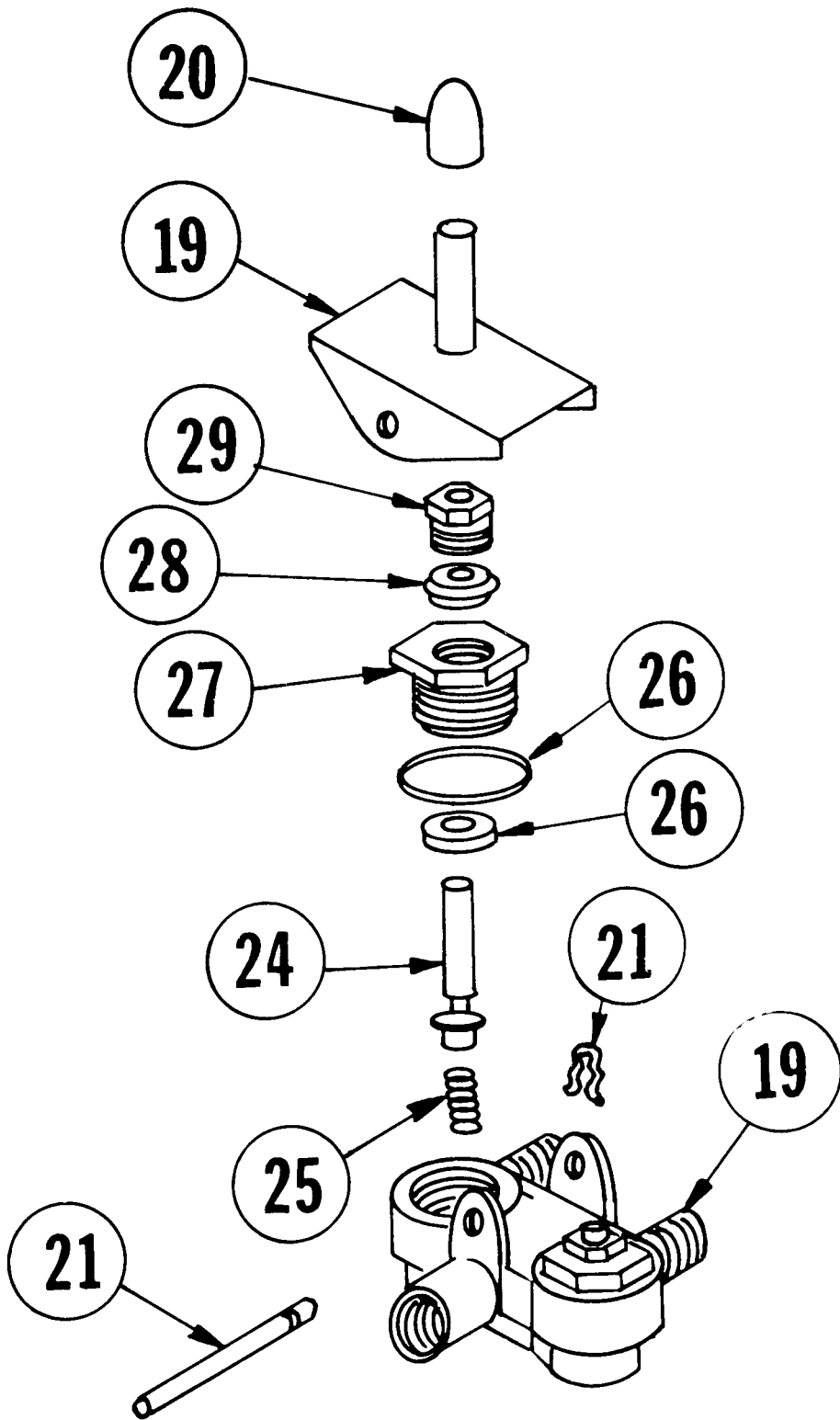


FIG. 5

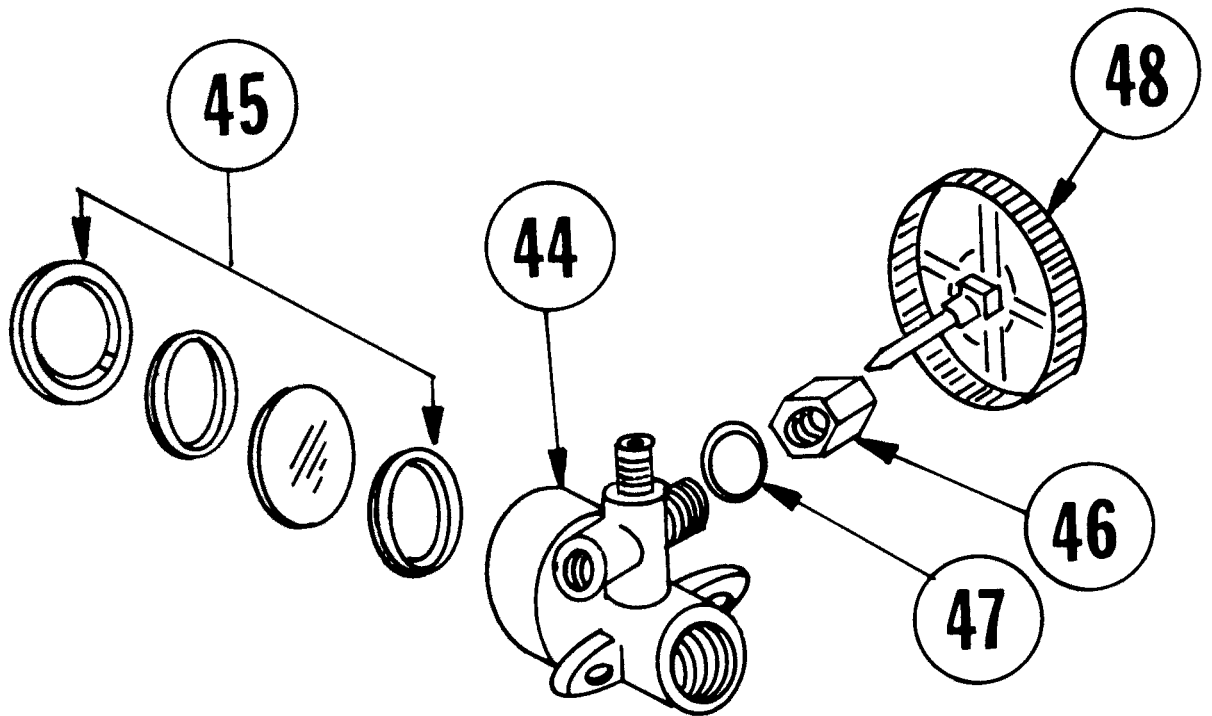


FIG. 6

## REPLACEMENT PARTS LIST

| ITEM NO. | PART NAME & ORDERING DESCRIPTION                         | PART NO.  |
|----------|----------------------------------------------------------|-----------|
| 1.       | CABINET WITH DECALS                                      | 82-1      |
| 2.       | CLEANING CHAMBER ASSEMBLY                                | 82-2      |
| 3.       | CLEANING CHAMBER FRAME                                   | 82-3      |
| 4.       | CLEANING CHAMBER DOUBLE BAG                              | 82-4      |
| 5.       | CLEANING CHAMBER DUST HOPPER                             | 82-5      |
| 6.       | DUST HOPPER DRAIN PLUG                                   | 82-6      |
| 7.       | CLEANING CHAMBER DRAIN PLUG                              | 82-7      |
| 8.       | ABRASIVE RUBBER NOZZLE                                   | 82-8      |
| 9.       | ABRASIVE OR AIR STEEL JET                                | 82-9      |
| 10.      | ABRASIVE PICK UP CASTING ASSEMBLY                        | 82-10     |
| 11.      | AIR BLAST TUBE ASSEMBLY/NUTS                             | 82-11     |
| 12.      | ABRASIVE TUBE ASSEMBLY /NUTS                             | 82-12     |
| 13.      | FILTER BAG CLAMP/BOLT/NUT                                | 82-13     |
| 14.      | DUST BAG CLAMP/BOLT/NUT                                  | 82-14     |
| 15.      | STEEL HOLDDOWN RING                                      | 82-15     |
| 16.      | RUBBER CLEANING ADAPTER 10MM                             | 82-16-10  |
| 16.      | RUBBER CLEANING ADAPTER 14MM                             | 82-16-14  |
| 16.      | RUBBER CLEANING ADAPTER 18MM                             | 82-16-18  |
| 16.      | RUBBER CLEANING ADAPTER 7/8 IN.                          | 82-16-7/8 |
| 17.      | AIR-ABRASIVE VALVE ASSEMBLY                              | 82-17     |
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| 19.      | VALVE LEVER                                              | 82-19     |
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| 21.      | VALVE PIVOT SHAFT AND RETAINER                           | 82-21     |
| 22.      | VALVE ELBOW                                              | 82-22     |
| 23.      | VALVE AND GAGE CASTING RETAINING NUT                     | 82-23     |
| 24.      | VALVE PLUNGER                                            | 82-24     |
| 25.      | VALVE SPRING                                             | 82-25     |
| 26.      | VALVE GASKET & WASHER                                    | 82-26     |
| 27.      | VALVE SEAT NUT                                           | 82-27     |
| 28.      | VALVE PACKING                                            | 82-28     |
| 29.      | VALVE PACKING NUT                                        | 82-29     |
| 30.      | VALVE MOUNTING BRACKET                                   | 82-30     |
| 31.      | VALVE MOUNTING BRACKET & ABRASIVE CLEANING CHAMBER SCREW | 82-31     |



| ITEM NO. | PART NAME & ORDERING DESCRIPTION                                                                                                                                                                                       | PART NO. |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 32       | MANUAL WATER TRAP                                                                                                                                                                                                      | 82-32    |
| 33       | QUICK DISCONNECT AND WASHER                                                                                                                                                                                            | 82-33    |
| 34       | WATER TRAP T FITTING                                                                                                                                                                                                   | 82-34    |
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| 50       | STEEL TESTING ADAPTER 14mm                                                                                                                                                                                             | 82-50-14 |
| 50       | STEEL TESTING ADAPTER 18mm                                                                                                                                                                                             | 82-50-18 |
| 51       | COMPRESSION CHAMBER SCREWS                                                                                                                                                                                             | 82-51    |
| 52       | PLASTIC HOSE REPAIR KIT, CONSISTING OF<br>1 LENGTH OF HOSE - 2 COMPRESSION NUTS<br>2 COMPRESSION FERRULES AND 2 INTERNAL SLEEVES<br>NOTE: ITEM #52 WILL MAKE ANY 1 NEW CONNECTION<br>BY CUTTING TUBING TO PROPER SIZE. | 82-52    |
| 53       | UNIT DECAL                                                                                                                                                                                                             | 82-53    |
| 54       | ABRASIVE AIR - DECAL                                                                                                                                                                                                   | 82-54    |
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| 57       | SHIELDED PLUG ADAPTER                                                                                                                                                                                                  | 82-57    |
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| 59       | ABRASIVE - (1 BAG CHARGE)                                                                                                                                                                                              | 82-59    |
| 60       | OPERATION AND MAINTENANCE INSTRUCTION MANUAL                                                                                                                                                                           | 82-60    |

WHEN ORDERING REPLACEMENT PARTS (SEE FIG. 4.) ORDER "NSN 4910-00-261-5868 - CLEANER & TESTER, SPARK PLUG - ITEM NO. AND PART NO. COMPLETE "PART NAME AND ORDERING DESCRIPTION" AS SPECIFIED ABOVE AND QUANTITY REQUIRED.



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