

TM 9-4910-436-10

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S MANUAL

**GRINDING KIT, VALVE SEAT,
ELECTRIC, CONCENTRIC DRIVE, 7500 RPM RATED NO LOAD SPEED,
115-VOLT, AC/DC, SHIELDED TO PREVENT RADIO INTERFERENCE
(ALBERTSON AND CO. MODEL 1712-S) (4910-473-6437)**



HEADQUARTERS, DEPARTMENT OF THE ARMY
16 DECEMBER 1964

TM 9-4910-436-10

Change No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 20 February 1973

**Operator's Manual
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ELECTRIC, CONCENTRIC DRIVE, 7500 RPM
RATED NO LOAD SPEED, 115-VOLT,
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This change is current as of 13 November 1972.

TM 9-4910-436-10, 16 December 1964, is changed as follows:

1. This change identifies the type of catalog maintenance action taken in connection with the updating of previously published data.
2. This change is separated by additions, deletions, and changes, and is a list of items added, deleted, and/or changed since the last previously published data.
3. All Federal stock numbers and reference numbers, additions, deletions, and changes should be made to the indexes.

4. Parts Included With End Item.

Parts included with end item and considered a component or part of the item configuration, are listed on the following table. The part numbers listed are for (Albertson and Co. Model 1712-S).

Part	Part No
ADAPTER, CONNECTOR: plastic dielectric, 2 fl parallel male contacts and grounding lead w/term, one end. 2 fl parallel and 1 U female contact other end, ac/dc, 125-V, 15 amp (74545:5273L)	74545:5273L
CASE, CARRYING GRINDING KIT: INDICATOR DIAL: 1-11/16 rd dial face, graduations 0 to 100 in. 0.001 in increments, range 0 to 0.125 in	00988:1757-SP 00988:266
NIB, DIAMOND, WHEEL, DRESS-ING: 1-1/8 lg o/a, 5/8 dia knurled end, 5/16-24 NF thd	00988:23174
PILOT, VALVE SEAT REFACING expanding type, 0.375 in dia upper end	
1/4 size, 1 1/4 lg lower end, 2-3/8 lg upper end	00988:EP-250
9/32 size, 2 3/8 lg lower end, 2-3/8 lg upper end	00988:EP-281
5/16 size, 2-7/8 lg lower end, 2-5/8 lg upper end	00988:EP-312
11/32 size, 2-7/8 lg lower end, 1-7/8 lg upper end	00988: EP-343
3/8 size, lg lower end, 3 lg upper end	00988:EP-375
13/32 size, 3-1/4 lower end, 3 lg upper end	00988:EP-406
7/16 size, 3-1/2 lg lower end, 3 lg upper end	00988:EP-437
1/2 size, 3 1/2 lg lower end, 3 lg upper end	00988:EP-500
9/16 size, 3 1/2 lg lower end, 3 lg upper end	00988:EP-562
5/8 size, 3 1/2 lg lower end, 2-7/8 lg upper end	00988:EP-625
PILOT, VALVE SEAT GRINDING: solid type, 1-1/32 size, 1-1/2 lg lower end, 3 lg upper end	00988: SP103125
SHAFT ASSEMBLY, METAL: coupling, flex. 1/4 shk to fit 1/4 in. drill and 5/8 hex plug to fit stone sleeve, socket	00988:22916FSDS
SLEEVE, STONE HOLDING: spline socket, ball brg, 11/16-16 thd for No. 2 hole stones	00988:1702-BBS
WHEEL, ABRASIVE: valve seat grinding	
15 deg angle, 1 1/2 od, for hard S and stellite	07249:14107
15 deg angle, 1-5/8 od, for hard S and stellite	07429:14108
15 deg angle, 1-3/4 od, for hard S and stellite	07429:14109
15 deg angle, 2 od, for hard S and stellite	07429:14111
15 deg angle, 2-1/4 od, for S and stellite	07429:14113

Part	Part No.
WHEEL, ABRASIVE: valve seat grinding - Continued	
15 deg angle, 2-1/2 od, for hard S and stellite	07429:14114
15 deg angle, 2-3/4 od, for hard S and stellite	07429:14271
15 deg angle, 3 od, for hard S and stellite	07429:14273
30 deg angle, 1-1/2 od, for CI	07429:14198
30 deg angle, 1-1/2 od, for fin.	07429:14370
30 deg angle, 1-1/2 od, for hard S and stellite	07429:14219
30 deg angle, 1-5/8 od, for CI	07429:14199
30 deg angle, 1-5/8 od, for fin.	07429:14371
30 deg angle, 1-5/8 od for hard S and stellite	07429:14287
30 deg angle, 1-3/4 od, for CI	07429:14090
30 deg angle, 1-3/4 od for fin.	07429:14372
30 deg angle, 1-3/4 od, for hard S and stellite	07429:14105
30 deg angle, 2 od, for CI	07429:14091
30 deg angle, 2 od, for fin	07429:14374
30 deg angle, 2 od, for hard S and stellite	07429:14106
30 deg angle, 2-1/4 od, for CI	07429:14279
30 deg angle, 2-1/4 od, for fin.	07429:14376
30 deg angle, 2-1/4 od, for hard S and stellite	07429:14290
45 deg angle, 1-1/4 od, for CI (07429:14216)	07429:14216
45 deg angle, 1-1/4 od, for fin.	07429:14414
45 deg angle, 1-1/4 od, for hard S and stellite	07429:14217
45 deg angle, 1-1/4 od, for CI (tapd to 3/4 in.)	07429:27117
45 deg angle, 1-1/4 od, for fin. (tapd to 3/4 in.)	07429:27118
45 deg angle, 1-1/4 od, for hard S and stellite (tapd to 3/4 in)	07424:27116
45 deg angle, 1-3/8 od, for CI	07429:18541
45 deg angle, 1-3/8 od, for fin	07429:18542
45 deg angle, 1-3/8 od, for hard S and stellite	07429:18540
45 deg angle, 1-1/2 od, for CI	07429:14084
45 deg angle, 1-1/2 od, for fin.	07429:14382
45 deg angle, 1-1/2 od, for hard S and stellite	07429:14056
45 deg angle, 1-5/8 od, for CI	07429:14063
45 deg angle, 1-5/8 od, for fin.	07429:14383
45 deg angle, 1-5/8 od, for hard S and stellite	07429:14100
45 deg angle, 1-3/4 od, for CI	07429:14085
45 deg angle, 1-3/4 od, for fin.	07429:14384
45 deg angle, 1-3/4 od, for hard S and stellite	07429:14049
45 deg angle, 2 od, for CI	07429:14064
45 deg angle, 2 od, for fin.	07429:14386
45 deg angle, 2 od, for hard S and stellite	07429:14102

Part	Part No.
WHEEL, ABRASIVE: valve seat grinding — Continued	
45 deg angle, 2-1/4 od, for CI	07429:14088
45 deg angle, 2-1/4 od, for fin	07429:14388
45 deg angle, 2-1/4 od, for hard S and stellite	07429:14104
45 deg angle, 2-1/2 od, for CI	07429:14089
45 deg angle, 2-1/2 od, for fin.	07429:14389
45 deg angle, 2-1/2 od, for hard S and stellite	07429:14050
45 deg angle, 2-3/4 of, for CI	07429:14153

Part	Part No.
WHEEL, ABRASIVE: valve seat grinding — Continued	
45 deg angle, 2-3/4 od, for fin.	07429:14391
45 deg angle, 2-3/4 od, for hard S and stellite	07429:14200
45 deg angle, 3 od, for CI	07429:14154
45 deg angle, 3 od, for fin.	07429:14393
45 deg angle, 3 od, for hard S and stellite	07429:14243
WRENCH, PILOT INSERTING AND REMOVING: 3/16 shk, 3 lg o/a	00988:PW-187

Pages 15 through 18, Section II, APPENDIX, is rescinded in its entirety.

By Order of the Secretary of the Army

CREIGHTON W. ABRAMS

*General, United States Army
Chief of Staff*

Official:

VERNE L. BOWERS

*Major General, United States Army
The Adjutant General*

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MAAG Cambodia (2)
Units org under fol TOE:

(2 copies each)	
5-117	10-349
5-237	10-427
5-278	10-445
5-279	10-448
7	11-15
9-7	11-17
9-26	11-128
9-27	11-155
9-65	11-157
9-66	11-158
9-127	17
9-197	29-51
9-217	29-55
9-237	29-56
9-357	29-57
9-500 (CA,CC,CD)	
10-348	

NG: State AG (3)

UASR: Units same as Army, except allowance is on (1) copy for each unit.

For explanation of abbreviations used, see AR 310-50.

Valve Seat Grinding Instructions

To properly grind valve seats it must be understood that two factors are to be taken into consideration: correct driver speed and the correct grade grinding wheel for driver speed and material to be ground.

Below is chart showing Sioux Drivers by catalog number and allowable diameter wheels for each driver to allow for grinding not over approximately 6500 surface feet per minute.

SPECIFICATIONS ON VALVE GRINDING DRIVERS



SK-Type Grinding Wheel - made up to 1 1/2" Diameter

Unit No.	No. Load Speed	Angle of Drive*	Diameter Capacity
1700	12,000	Straight	Wheels Up to 2"
1705	8,000	Straight	Wheels Up to 3"
1710	12,000	15°	Wheels Up to 2"
1712	8,000	15°	Wheels Up to 3"
1770	4,000	Straight	Wheels, Up to 6 1/4"
1770A	6,000	Straight	Wheels Up to 4 1/4"

*Degrees Given Are from Horizontal
Grinding Wheels Not to be Operated Above 6500 S.F.P.M.

GRINDING VALVE SEATS

1. See that valve guides are clean. Use suitable guide cleaner or reamer for this purpose.

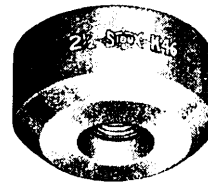
2. Select pilot of correct size for guide hole. Place a drop of oil on pilot stem before inserting. Top of pilot should be of length to allow a minimum of 2 1/2 inches to fit into holder.

SIoux Tapered Pilots are very accurate and are made up to .004 oversize. They also serve as plug guages for checking the wear in guides. If the .004 oversize pilot is loose, then new guides should be installed.

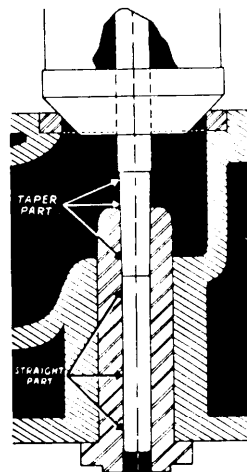
Sioux Tapered Solid Pilots are the most accurate centering device made. Often for ease in handling, customers prefer Expanding Pilots. Sioux Expanding Pilots, while very good, are not as accurate as the Solid Tapered Pilots, and should not be used when extreme accuracy is desired or required.

3. The seat must be clean and dry to prevent carbon from clogging the grinding wheel as this will slow up the grinding and require unnecessary dressing.

Wipe with a clean, dry cloth. Use a piece of abrasive cloth under one side of the wheel and turn the holder around several turns by hand and clean the carbon off the seats thoroughly.



K-Type Grinding Wheel- UP to 6 1/4" Diameter



By selecting largest Sioux Tapered Pilot which will enter valve guide, straight part aligns pilot correctly with center line of valve guide, assuring perfect accuracy.

4. Select grinding wheel of proper size and type.

FOR STEEL use a "K" roughing wheel for fast cutting and a "K" finishing wheel for finishing.

FOR CAST IRON MOTOR BLOCK SEATS use the "K" finishing wheel only, a roughing wheel is not needed.

Be sure grinding wheel is properly dressed. See Paragraph Nos. 12 and 13.

5. Screw wheel on holder.

In case of large wheels with 1" smooth center holes these may be used with regular No. 1703-BB Holder by using No. 1703-7 Flange. (Fig. 1)

INO. 3 hole grinding wheels may be used with No. 1702-BB Holder by using our No. 47 Reducing Bushing. (Fig 2 and 3.)

6. Be sure top of pilot has a drop of oil on it to eliminate friction.

Place holder over pilot. On large valves above 2 1/2" in diameter, the use of lifting springs is recommended. (Fig. 4.)

7. We suggest covering the top of motor with a cloth to prevent the grinding dust from getting into the motor.

8. A safety guard easily improvised from section of radiator hose, with oil applied on inside surface aids in catching abrasive and at the same time acts as safety guard. (Fig. 5)

Do not get oil on grinding wheel.

9. Select driver of recommended speed for the size of grinding wheel (page 1).

10. Insert driver spindle in holder. (Fig. 7.)

11. No pressure is required when grinding. Do not slow down the driver. Support the weight and let it run at high speed.

NOTICE: When grinding, sway the top of the driver gently from side to side (about 1/4" off center to each side), and note the "Dual Action" cutting ability, grinding speed and finish. Do not use pressure when grinding—let the wheel do the cutting.

Some valve seat material will grind slower than others. Frequent dressing of the wheels is essential for fast, accurate grinding, particularly on valve seats that are very hard and tough to grind.

12. Cars with rear cylinder against the dash often present a problem. To overcome this trouble use Short Holders (No. 1672-BB) and Short Pilots. You must also have No. 1718-C Short Pilot for dressing tool. See Set No. 1763-BB in catalog as auxiliary set.

No. 1710 Drivers with serial numbers over 600,000 have a 15° angle and with Short Holders and Pilots should get into the closest places. Some mechanics put a dent in cowl, or slide engine forward to overcome this trouble when an emergency arises,

Fig. 1

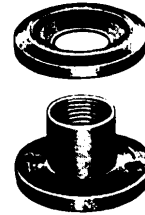


Fig. 2

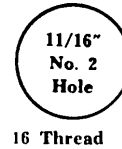


Fig. 3

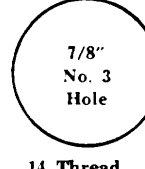
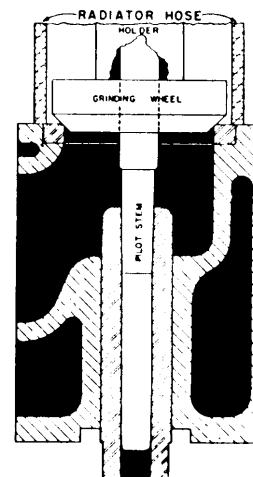


Fig. 4



Place the lifting spring on pilot and bring the wheel up speed before grinding.

Fig. 5



Many of these cars have engine set so close to fire wall that even with short pilots, short holder and our latest 15 degree, No. 1710 Driver, there is still not sufficient clearance to grind the last valve seat.

Dress off face of grinding wheel. This will lower 1/8 of an inch so enough additional clearance will be given that the job can be performed. (Fig. 6)

GRINDING STELLITE VALVE SEATS--do not confuse grinding Stellite with other kinds of valve seats. As the grinding wheels dull and will not cut after about one minute of actual grinding time. Therefore, the wheel should be dressed frequently. For faster grinding on hard seats, more the diamond across the wheel faster than usual and dress the wheel rough and sharp for maximum cutting. It usually requires about four (4) dressings of the roughing wheel to grind the seat inside of .001 and the finishing wheel should be dressed once for each seat.

Use "K" Grinding Wheel suffixed by WS which are the sharpest and best cutting wheels for Stellite. Much time can be saved if the operator knows just how long to grind before dressing the wheel. Grind about one full minute of continuous grinding, then dress the wheel, and keep on with this system until the seat is trued up, then use the finishing wheel which should be dressed once for each Stellite seat.

The average time is ten minutes, or one hour for all six Stellite exhaust seats. There will be no spark when grinding Stellite.

Your customer should be charged more for grinding Stellite Seats. There are many kinds of steel. A grinding wheel that grinds one material at a given speed perfectly may, not perform as well on other materials.

13. Wheel Dressing No. 1713B and 1719 (see paragraph 15 for No. 1772 Heavy Duty Dresser).

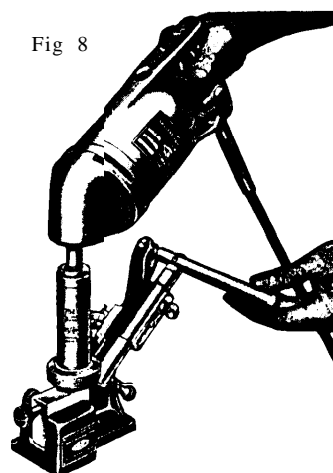
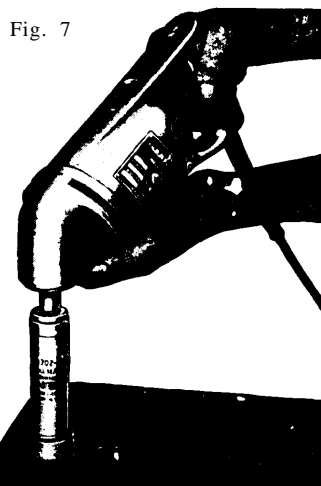
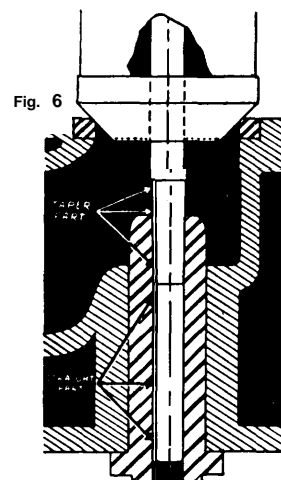
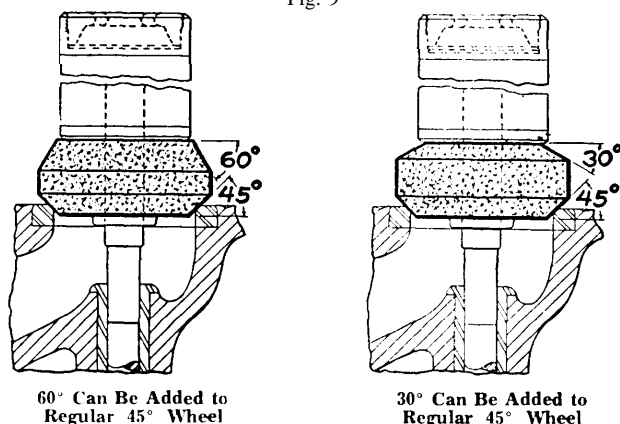
Set degree mark on dressing tool at desired angle.

Ball Bearing Holder or Sleeve Bearing Holder. Put a little very light oil on the dressing pilot to prevent sticking and eliminate friction. The adjusting block and pilot which raise and lower the grinding wheel are adjusted until the wheel just touches the diamond, holder and grinding wheel are then revolved with the high speed driver. Hold the driver straight as possible, Take light cuts with the diamond and move the diamond steadily across the wheel. The Diamond Holder is threaded for light cut adjustments. (Fig. 8)

Grinding wheels should be properly dressed. "Important"--Do not get oil on the grinding wheels, they must be kept clean to obtain the best results for fast grinding, accuracy, and finish.

For emergency cases the wheels can also be dressed down on the diameter. (Fig. 9)

NOTE: No. 1751--No. 1 Hole Holder for very small valve requires 1718-H Dressing Pilot.



14. **The correct method of using "Sioux Valve Seat Indicator".** Adjust the indicator over the pilot with sufficient pressure to move the gauge hand about half a turn. (Fig. 10.)

Set the dial at zero and rotate the "Valve Seat Indicator" slowly.

15. **Special Instructions for No. 1772 Dressing Tool.** (Fig 11 and 12.)

A-Set Pilot height to approximately 1 1/8" ("A" on sketch) above shoulder by adjusting screw "B".

B-Place holder with proper diameter grinding wheel on pilot.

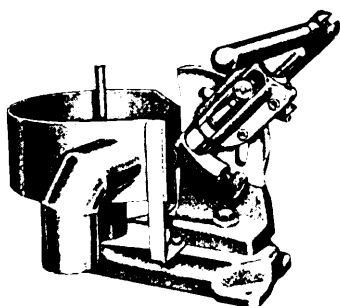
C-Place dressing tool in or out, according to diameter of grinding wheel used, by screw "C"

D-Place driver in fork.

F-Adjust column height by set screw "D" so that the weight of the driver in the dressing position will be carried by the Hexagon spindle resting in the grinding wheel holder.

F-Adjust for position so (enter line of hexagon spindle is in line with center line of holder, by screws "D" and "E".

16. **No. 1719 Dressing Tool is similar to No. 1772** so far as dressing of wheel.



No. 1719

Heavily built for extreme accuracy and ideal for production service, Capacity up to 6 In. Designed with complete adjustments for dressing ALL SIZES of Sioux valve seat grinding wheels, including angles from zero to 90° with degree synchronizing adjustments for perfectly accurate finish on valve seats, Equipped with Hex Diamond.

Fig. 10

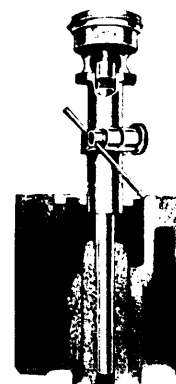


Fig. 11

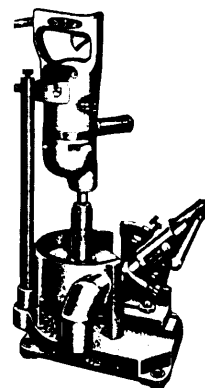
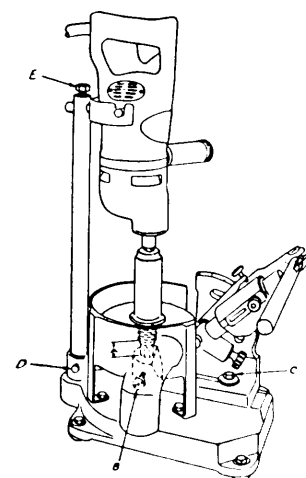
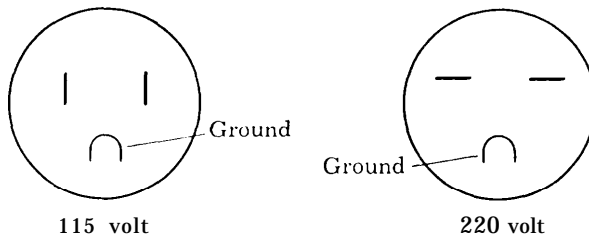


Fig. 12



General Information, Instruction and Care

PLUGS ON ELECTRIC TOOLS



115 Volt and 220 Volt Plugs Are Different

Since January 1, 1955, all electric tools shipped by us, in order to comply with the National

EQUIPPED with three prong plugs.

Adaptors which should be grounded to outlet are supplied with each electric tool so units may fit old style outlets.

The 115 Volt plug will fit present outlets with the exception of ground prong.

FOR YOUR PROTECTION AN ELECTRIC TOOL SHOULD ALWAYS BE GROUNDED IN ORDER TO PROTECT THE OPERATOR AGAINST ELECTRIC SHOCK. DO NOT USE IN WET PLACES.

The green color conductor is the ground wire and is attached to the frame inside the tool, and extends through the side of the adaptor plug on models prior to 1955. To ground the tool, this "green" ground wire must be connected to a permanent ground such as a grounded supply system, a water pipe or conduct which is properly grounded.

EXTENSION CORD

To avoid low voltage use No. 1254—25-ft. Heavy Duty No. 16 wire Extension Cord.

Never use a light, long extension cord, as the drop in voltage will affect the operation of the tool, and may cause motor failure.

MOTOR

Universal type motors will operate only on the voltage for which they are designed, as shown on the name plate. A 115 volt Universal motor will operate on either A.C. or D.C. 115 volt current, 60 cycle or less. Use unit of correct voltage for power supply.

Motors are air-cooled. Keep ventilating system clear, dust and dirt should be removed from the tool by blowing out with compressed air, applied through the ventilation slots on the brush end of the motor, with the tool running. Do not use air with excessive moisture. Under no conditions, close air vents.

OVERLOADING

Do not overload electric tools. A margin of safety is built into the tools to insure efficient operation and long life at rated capacity, and to take care of accidental or emergency overloads. Continuous overloading will result in serious and expensive damage.

Avoid turning the tool on or off under load, as this may cause serious damage to the switch.

LUBRICATION

All closed type grease-sealed ball bearings are "permanently lubricated" and have sufficient lubricant packed in them at the factory to last the life of the bearing. Never wash a sealed bearing in solvent.

All tools are properly lubricated before leaving the factory, and under normal, regular use this lubrication will last until the tool requires servicing, at which time the old grease must be washed from gear case, gears and open bearings with gasoline or kerosene before refilling with fresh lubricant.

Never fill gear case more than one-half full; too much grease is as bad as too little. Grease expands when warm, and the excess will be forced through the bearings into the motor, damaging the windings and clogging the ventilation slots. Use only the quantity and type specified.

Tools used constantly on production or other heavy-duty jobs will require periodic inspection and relubrication at intervals, depending on the use of the tool.

Long life depends upon good lubrication. Tools out of service for long periods should be cleaned and lubricated before being put to work.

Parts List for No. 1712 & 1712-S **Sioux Heavy Duty Driver**

For Serial Number 25001 and Up

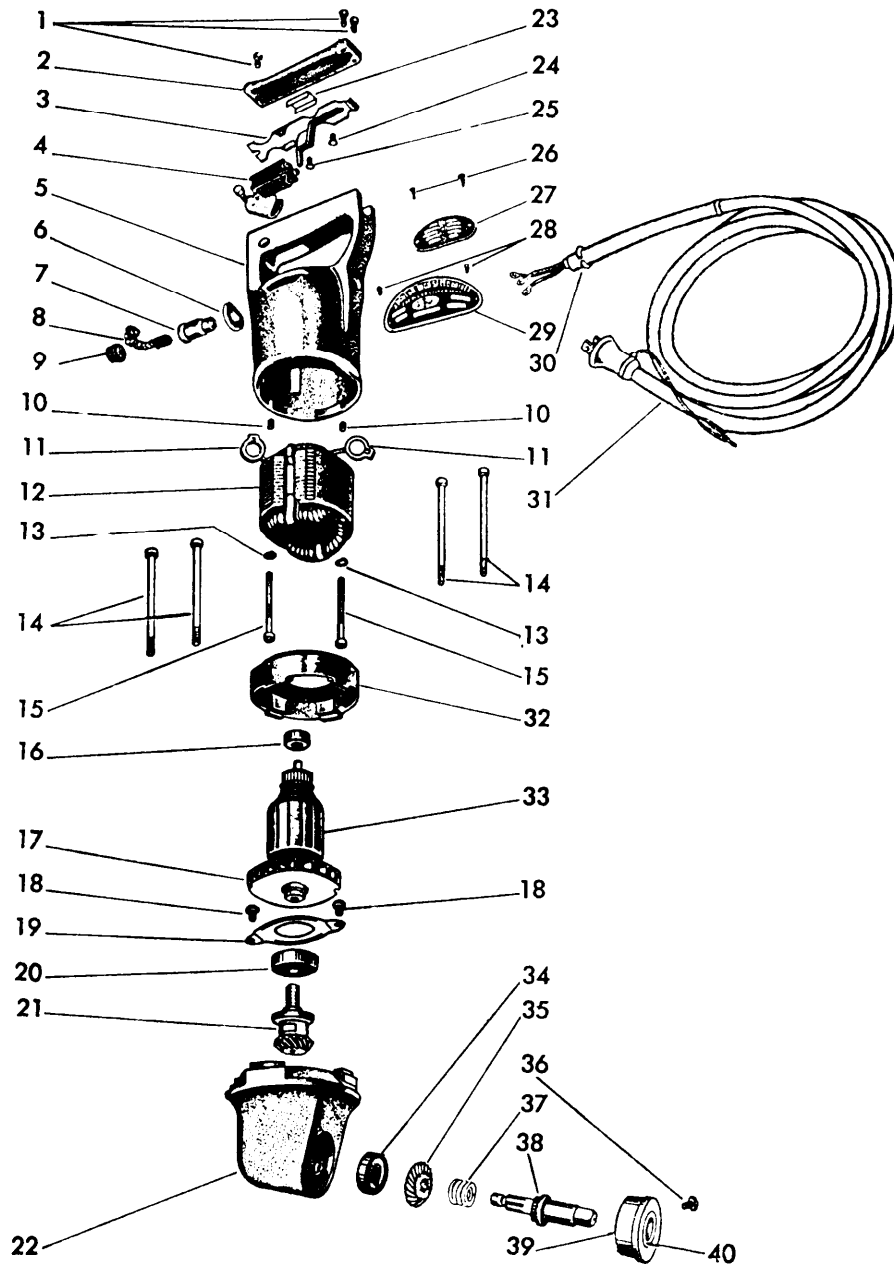


Figure 13.

Parts List for No. 1712 & 1712-S **Sioux Heavy Duty Driver**

For Serial Number 25001 and Up

Part No.	Name	Part No.	Name
1 06577	Screw—#8 (3)	26 06093	Screw—#4 (4)
2 12007	Cover—Handle	27 23000	Cover—Inspection (2)
3 23276	Bracket—Switch	28 09954	Screw—#0 (2)
4 18152	Switch	29 20057	Plate—Name (1712-S)
5 12102	Housing	20231	Plate—Name (1712)
6 14602	Washer—Insulation (2)	30 21456	Ring—Clinch
7 18051	Holder—Brush (2)	31 18573	Cord—Electric, with Terminals
8 18004	Brush—Motor (Pair)	14266	Protector—Cord
9 18101	Cap—Brush Holder (2)	18713	Plug—Attachment
10 07000	Screw—#10 (2)	32 12063	Extension—Housing
11 21329	Brush Holder Spring (2)	33 16520	Armature—With Fan
12 17013	Field—Motor with Brush Holder Rings	16774	Armature—With Fan and Bearings
34228	Spacer—Field (2)	34 10113	Bearing—Ball
13 09724	Washer—Lock #10 (2)	35 19705	Assembly—Pinion & Gear (Ser. 25001 to 32891)
14 07126	Screw—#10 (4)	19058	Gear—Spiral Bevel (Ser. 32901 & up)
15 07137	Screw—#10 (2)	36 08279	Screw—1/4"
16 10106	Bearing—Ball	37 21214	Spring—Tension
17 21586	Fan	38 22540	Spindle—Tool (1712)
18 07204	Screw—#10 (2)	22916	Spindle—Tool (1712-S)
19 25027	Plate—Bearing Lock	39 23259	Bearing Support—Complete (1712)
20 10127	Bearing—Ball	23694	Bearing Support—Complete (1712-S)
21 19705	Assembly—Pinion & Gear (Ser. 25001 to 32891)	40 10362	Bearing—Tool Spindle (1712)
19607	Pinion—Complete	10388	Bearing—Tool Spindle (1712-S)
24440	Slinger—Grease	18756	Adaptor
22 12002	Case—Gear		
23 14821	Strip—Insulation		
24 06224	Screw—#6		
25 06076	Screw—#4		

Figure 13 -- Continued.

**Parts Price List for Nos. 1713A & 1713B
Sioux DRESSING TOOL**

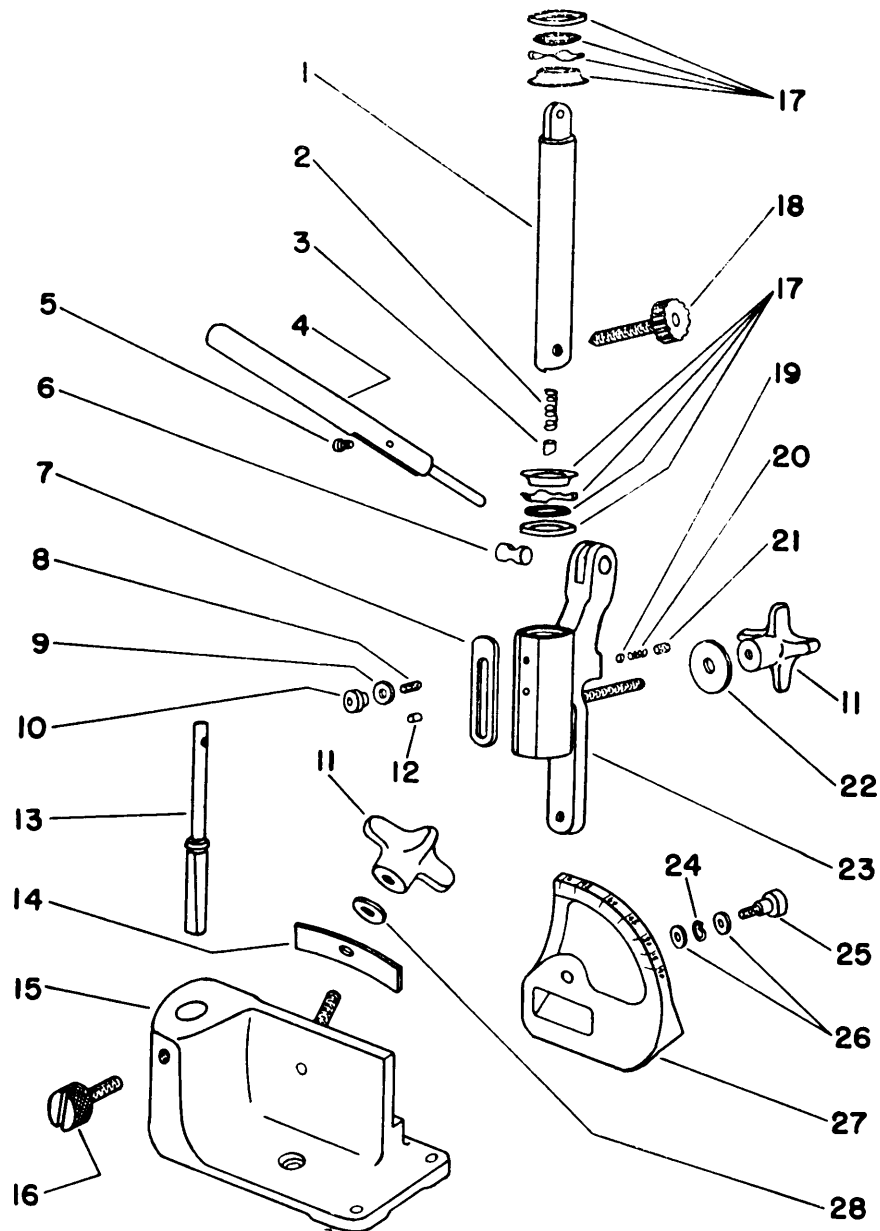


Figure 14.

SIOUX DRESSING TOOL

	Part No.	Name	Price Each
1	24647	Bar—Slide	\$2.60
2	21280	Spring—Tension .....	.15
3	13092	Slug—Brass .....	.35
4	23435	Handle—Dressing	1.80
5	24651	Screw—Handle .....	.20
6	24650	Pin—Swivel .....	.45
7	25634	Stop—Depth Adjustment .....	.35
8	24926	Stud .....	.15
9	25069	Washer .....	.05
10	24917	Nut—Knurled .....	.35
11	11351	Knob (2) .....	.70
12	24925	Pin—Guide .....	.20
13	27506	Pilot—Dressing	2.50
14	21368	Spring—Leaf .....	.15
15	33311	Base (1713A)	5.05
	33708	Base (1713B)	5.35
16	24931	Screw—Lock .....	.85
17	30258	Seal—Oil (2) .....	.95
18	23174	Diamond—Dressing	8.00
19	13052	Slug—Brass .....	.05
20	21324	Spring .....	.05
21	08021	Screw— $\frac{1}{4}$" .....	.15
22	25958	Washer .....	.10
23	33310	Ass'm.—Slide Casting	7.50
24	09770	Washer—Lock $\frac{5}{16}$" .....	.05
25	08103	Screw—Pilot .....	.25
26	25549	Washer (2) .....	.05
27	11343	Quadrant (1713A)	4.20
	11367	Quadrant (1713B)	5.00
28	25127	Washer .....	.05
	20241	Plate—Name (1713A) .....	.55
	20285	Plate—Name (1713B) .....	.55
	09954	Screw—Drive (2) .....	.05

Figure 14 - Continued.

MOTOR BRUSHES

Brushes should be inspected frequently, kept free from dirt and dust, and should always operate freely in their guides without sticking and with proper spring tension. Worn brushes should be immediately replaced. Do not allow the brushes to wear shorter than 1/4 inch, as they may turn in the brush holder and ruin the commutator.

Always inspect the commutator when installing new brushes and be sure to use the correct brush for each tool.

FAILURE TO OPERATE

May be due to any of the following causes:

1. Supply line dead-check for blown fuses, or broken cord.
2. Receptacle and plug not making good contact-check for bent prongs and loose connections.
3. Brushes must be in contact with commutator-check for dirt or dust between commutator and brushes.
4. If after checking as above, unit does not operate properly, send to nearest authorized service station or to factory for repairs.

Don't drag a portable electric unit around by the cable. Keep cable off the floor and out of oil and grease, which ruin insulation. When not in use, hang with cable coiled loosely.

Almost as much equipment is damaged out of service as in use. Have spot to store your unit and see that it is kept there when not working.

Treat an overheating electric unit like a man with a fever. Don't work it until you find out what's wrong. Overheating may indicate low voltage, or overloading. Be sure your power source conforms to power requirements shown on tool.

BALL BEARING GRINDING WHEEL HOLDERS -- No. 1702BB-S SPLINE SOCKET

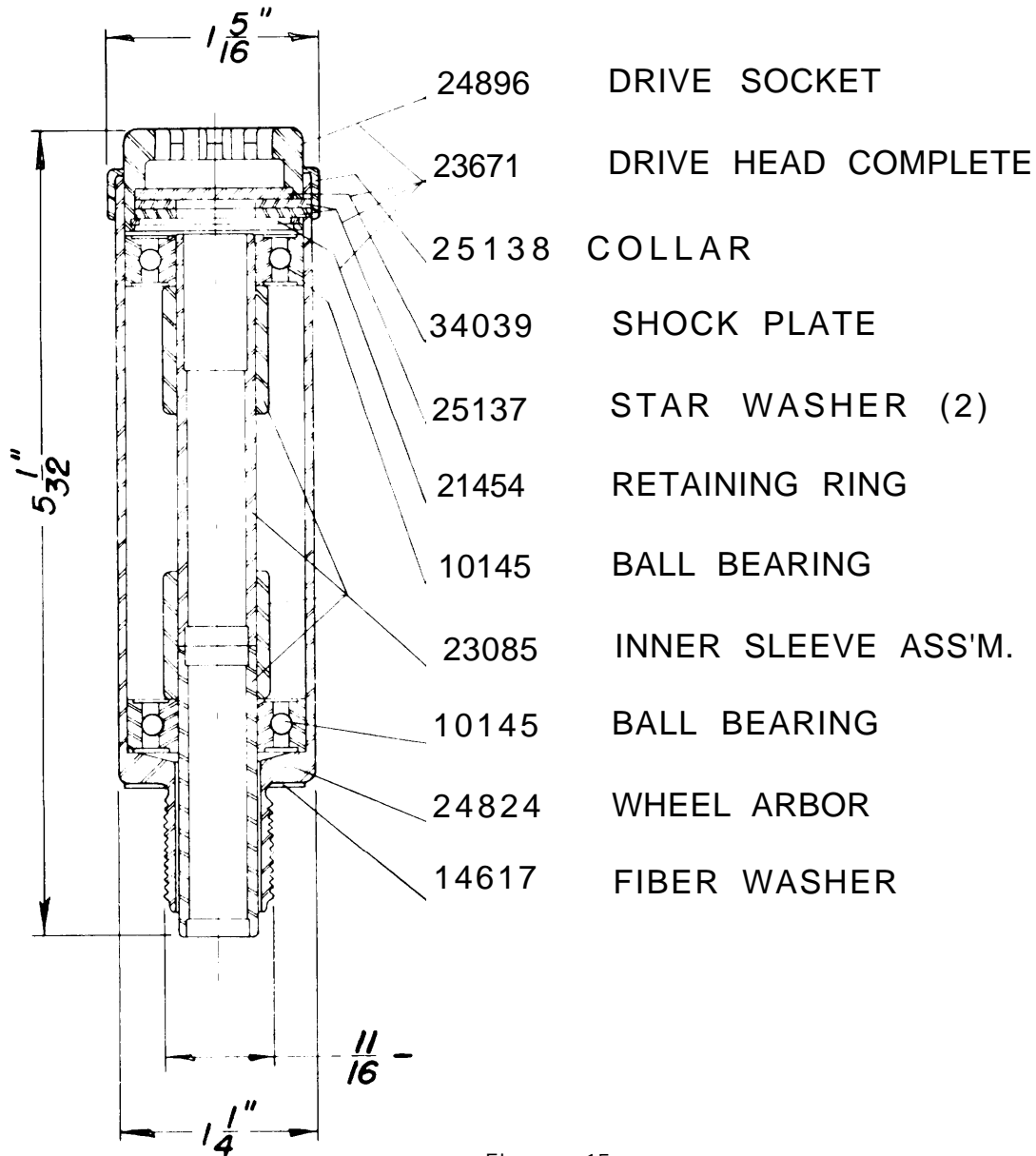


Figure 15.

APPENDIX

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

1. General

This appendix is a list of basic issue items. It is composed of those items which make up the major end item of equipment and the operator's tools and equipment that are issued with the equipment and are required for stockage.

2. Requisition Notes

a. Repair Part Identified by Federal Stock Number.

- (1) If the item requisitioned is not furnished, or if other action is necessary, the nature of the action taken by the commodity command will be indicated by standard symbols on prescribed forms.
- (2) When requisitioning an item, the requesting agency will order the *listed item*. However, the commodity command will take necessary action to issue the exhaust stock item until stock is exhausted, whether it be an individual item, kit, set, or assembly.
- (3) Requisition for replacement of items that are the responsibility of commodity commands will be submitted to the commodity command indicated in column 1a, Materiel Code Number.

b. Part to Which FSN Has Not Been Assigned. When requisitioning a C source (local procurement) item identified only by a manufacturer's part number, it is mandatory that the following information be furnished the supply officer:

- (1) Manufacturer's code number (5 digit number preceding the colon in the descriptive column).
- (2) Manufacturer's part number (the number, and sometimes letters, fol-

lowing the colon, (1) above). Dashes, commas, or other marks must be included exactly as listed.

- (3) Nomenclature exactly as listed herein, including dimensions if necessary.
- (4) Name of manufacturer of end item (from cover of TM or manufacturer's name plate).
- (5) Federal stock number of end item (from TM).
- (6) Manufacturer's model number (from TM or name/data plate, preferably name/data plate).
- (7) Manufacturer's serial number (from name/data plate).
- (8) Any other information such as type, frame number, and electrical characteristics, if applicable.
- (9) 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, and 6, list manufacturer's code, and manufacturer's part number (as listed in description column).
 - (b) In Remarks field, list noun name (repair part), end item application (FSN of end item), manufacturer, model number (end item), serial number (end item), and any other pertinent information such as frame number, type, etc.

3. Explanation of Columns

a. Source, Maintenance, and Recoverability Code (Col. 1).

- (1) *Materiel numerical codes* (col. 1a). This column indicates the responsible commodity command for the materiel. The commodity commands responsible for supply of items in this list are:

<i>Code</i>	<i>Type materiel</i>
5	Engineer Materiel
9	Ordnance Materiel
10	Quartermaster Materiel

- (2) *Source* (col. 1b). This column indicates the selection status and source for the listed item. Source code used in this list is:

<i>Code</i>	<i>Explanation</i>
C	Obtain through local procurement. If not obtainable from local procurement, requisition through normal supply channels with a supporting statement of nonavailability from local procurement.

- (3) *Maintenance level* (col. 1c). This column indicates the category of maintenance authorized to install the listed item. Maintenance level code used in this list is:

<i>Code</i>	<i>Explanation</i>
0	Organizational maintenance

- (4) *Recoverability* (col. 1d). This column indicates whether unserviceable items should be returned for recovery or salvage. When no code is indicated, the item will be considered expendable. Recoverability code used in this list is:

<i>Code</i>	<i>Explanation</i>
R	Items which are economically repairable at direct and general support maintenance activities and are normally furnished by supply on an exchange basis.

b. *Federal Stock Number* (Col. 2). This column indicates the Federal stock number which has been assigned by the Cataloging Division, Defense Logistics Services Center.

c. *Description* (Col. 3). This column indicates the Federal item name (shown in capital letters) and any additional description required for supply operations. The manufacturer's code and part number are also included for reference.

<i>Code</i>	<i>Explanation</i>
00988:	Albertson and Company, Inc.
07429:	Black and Decker Mfg. Company
74546 :	Harvey Hubbell, Inc.

d. *Unit of issue* (Col. 4). This column indicates the quantity to be requisitioned.

e. *Quantity Authorized* (Col. 5). This column indicates the quantity of the listed item authorized for stockage to constitute the prescribed load.

4. Abbreviations.

ac	alternating current
amp	ampere(s)
brg	bearing
CI	cast iron
dc	direct current
deg	degree(s)
dia	diameter
fin.	finish(ing)
fl	flat
flex.	flexible
h	high (height)
hex	hexagon(al)
hdl	handle
in.	inch(es)
lg	long (length)
mtl	metal
NF	American National Fine Thread
No.	number(s)
o/a	overall
od	outside diameter
rd	round
rpm	revolutions per minute
S	steel
shk	shank
tapd	tapered
thd	thread(s)
v	volt(s)
w	wide (width)
w/	with

5. Suggestions and Recommendations

The direct reporting by the individual user, of errors, omissions, and recommendations for improving this manual, is authorized and encouraged. DA Form 2028 (Recommended Changes to DA Publications) will be used for reporting these improvements. This form will be completed using pencil, pen, or typewriter. DA Form 2028 will be completed by the individual using the manual and forwarded direct to: Commanding General, Headquarters, U.S. Army Weapons Command, ATTN: AMSWE-SMM-P, Rock Island Arsenal, Rock Island, 111. 61202.

Section II. BASIC ISSUE ITEMS LIST

(1) Source maintenance, and recoverability			(2)	(8)	(5)	(6) Illus- tration		
(a) Material code	(b) Source	(c) Maintenance level	Federal stock No.	Description	Unit of issue	(a) Figure No.	(b) Item No.	
9	----	----	4910-473-6437	MAJOR COMBINATION The following item is to be requisitioned for initial issue only. GRINDING KIT, VALVE SEAT, ELECTRICAL: concentric drive, 7500 rpm rated no load speed, 115-v, ac/dc, shielded to prevent radio interference (00988:1712-S) . COMPONENTS OF MAJOR COMBINATION None authorized. REPAIR PARTS NIB, DIAMOND, WHEEL DRESSING: 1 7/8 lg o/a, 5/8 dia knurled end, 5/16-24 NF thd (00988:23174). SPARE PARTS BRUSH, ELECTRICAL CONTACT: carb w/spring (00988: 292-2). TOOLS AND EQUIPMENT FOR: GRINDING KIT, VALVE SEAT, ELECTRICAL (00988:1712-S)				
9	C	0		ADAPTER, CONNECTOR: plastic dielectric, 2 fl parallel male contacts and grounding lead w/term one end, 2 fl parallel and i U female contacts other end, ac/dc, 125-v, 15 amp (74545: 5273L) .	1	1	16	14
9	C	0		CASE, CARRYING, GRINDING KIT : mtl, 14 1/2 lg, 11 1/4 w, 16 1/2 h, top locking storage compratment w/mtl locking clips, 1 door and 2 draws, mtl rack for pilots (00988:1757-SP).	2	2	16	16
5	C	0	5935-545-3886	INDICATOR, DIAL: 1 11/16 rd dial face, graduations 0 to 100 in 0.001 in. increments, range 0 to 0.125 in. (00988:266).	1	1	16	17
9	C	0		NIB, DIAMOND, WHEEL DRESSING: 1 7/8 lg o/a, 5/8 dia knurled end, 5/16-24 NF thd (00988 :23174).	1	1	16	14
9	C	0		PILOT, VALVE SEAT REFACING ; expanding type, 0.375 in. dia upper end. 1/4 size, 1 1/4 lg lower end, 2 3/8 lg upper end (00988: EP-250).	1	1	16	12
9	C	0		9/32 size, 2 3/8 lg lower end, 2 3/8 lg upper end (00988:EP-281).	1	1	16	11
9	C	0		A size, 2 7/8 lg lower end, 2 5/8 lg upper end (00988:EP-312).	1	2	16	9

(1) Source maintenance, and recoverability code				(2)	(3)	(4)	(5)	(6) Illus- tration	
(a) Material code	(b) Source	(c) Maintenance level	(d) Recoverability	Federal stock No.	Description	Unit of issue	Quantity authorized	(a) Figure No.	(b) Item No.
9	c	o		-----	PILOT, VALVE SEAT REFACING— Continued 11/32 size, 2 7/8 lg lower end, 1 7/8 lg upper end (00988:EP-343).	1	2	16	8
9	c	0		-----	3/8 size, lg lower end, 3 lg upper end (00988 : EP-375) .	1	2	16	7
9	c	0		-----	13/32 size, 3 1/4 lg lower end, 3 lg upper end (00988:EP-406).	1	1	16	6
9	c	0		-----	7/16 size, 3 1/2 lg lower end, 3 lg upper end (00988:EP-437).	1	1	16	5
9	c	0		-----	1/2 size, 3 1/2 lg lower end, 3 lg upper end (00988:EP-500).	1	1	16	4
9	c	0		-----	9/16 size, 3 1/2 lg lower end, 3 lg upper end (00988:EP-562).	1	1	16	3
9	c	0		-----	5/8 size, 3 1/2 lg lower end, 2 7/8 lg upper end (00988 :EP-625) .	1	1	16	2
9	c	0		-----	PILOT, VALVE SEAT GRINDING: solid type, 1 1/32 size, 1 1/2 lg lower end, 3 lg upper end (00988 :SP103125).	1	1	16	1
9	c	0		-----	SHAFT ASSEMBLY, METAL: coupling, flex., 1/4 shk to fit 1/4 in. drill and 5/8 hex plug to fit stone sleeve socket (00988: 22916FSDS).	1	1	16	10
9	c	0		-----	SLEEVE, STONE HOLDING: spline socket, ball brg, 11/16-16 thd for No. 2 hole stones (00988:1702-BBS).	1	1	16	13
9	c	0		-----	WHEEL, ABRASIVE: valve seat grind- ing, 15 deg angle, 1 1/2 od for hard S and stellite (07429 :14107).	1	1	17	36
9	c	0		4910-775-6477	15 deg angle, 1 5/8 od, for hard S and stellite (07429 :14108).	1	1	17	37
9	c	0		4910-221-3724	15 deg angle, 1 3/4 od, for hard S and stellite (07429 :14109).	1	1	17	38
9	c	0		4910-228-9840	15 deg angle, 2 od, for hard S and stellite (07429 :14111).	1	1	17	39
9	c	0		4910-228-9841	15 deg angle, 2 1/4 od, for S and stellite (07429:14113).	1	1	17	40
9	c	0		4910-228-9832	15 deg angle, 2 1/2 od, for hard S and stellite (07429:14114).	1	1	17	41
9	c	0		4910-228-9833	15 deg angle, 2% od, for hard S and stellite (07429:14271).	1	1	17	42
9	c	0		4910-228-9834	15 deg angle, 3 od, for hard S and stellite (07429 :14273).	1	1	17	43
9	c	0		4910-228-9835	30 deg angle, 1 1/2 od, for CI (07429: 14198).	1	1	17	56
9	c	0		4910-369-4748	30 deg angle, 1% od, for fin. (07429: 14370).	1	1	17	53
9	c	0		4910-369-4750	30 deg angle, 1 1/2 od, for hard S and stellite (07429:14219).	1	1	17	48
9	c	0		4910-713-9836					

(1) Source maintenance and recoverability code				(2)	(8)	(4)	(5)	(6) Illustration	
(a) Material code	(b) Source	(c) Maintenance level		Federal stock No.	Description	Unit of issue	Quantity authorized	(a) Figure No.	(b) Item No.
					WHEEL, ABRASIVE—Continued				
9	C	O		4910-369-4754	30 deg angle, 1 5/8 od, for CI (07429:14199).	1	1	17	55
9	C	O		4910-369-4755	30 deg angle, 1 5/8 od, for fin. (07429:14371).	1	1	17	52
9	C	O		4910-369-4756	30 deg angle, 1 5/8 od, for hard S and stellite (07429:14287).	1	1	17	47
10	P1	O		5130-230-7520	30 deg angle, 1 5/8 od, for CI (07429:14090).	1	1	17	54
9	c	O		4910-369-4764	30 deg angle, 1 3/4 od, for fin. (07429:14372).	1	1	17	51
9	c	O		4910-369-4763	30 deg angle, 1 3/4 od, for hard S and stellite (07429:14105).	1	1	17	46
9	c	O		4910-369-4774	30 deg angle, 2 od, for CI (07429:14091).	1	1	17	34
9	c	O		4910-369-4775	30 deg angle, 2 od, for fin. (07429:14374).	1	1	17	50
9	c	O		4910-369-4776	30 deg angle, 2 od, for hard S and stellite (07429:14106).	1	1	17	45
9	c	O		4910-422-8927	30 deg angle, 2 1/4 od, for CI (07429:14279).	1	1	17	35
9	c	O		4910-369-4781	30 deg angle, 2 1/4 od, for fin. (07429:14376).	1	1	17	49
9	c	O		4910-369-4782	30 deg angle, 2 1/4 od, for hard S and stellite (07429:14290).	1	1	17	44
9	c	O		4910-369-4807	45 deg angle, 1 1/4 od, for CI (07429:14216).	1	1	17	10
9	c	O		4910-W9-4808	45 deg angle, 1 1/4 od, for fin. (07429:14414).	1	1	17	13
9	c	O		4910-369-4809	45 deg angle, 1 1/4 od, for hard S and and stellite (07429:14217).	1	2	17	32
10	c	O		5130-474-8907	45 deg angle, 1 1/4 od, for CI (tapd to 3/4 in.) (07429:27117).	1	1	17	12
10	c	O		5130-474-8906	45 deg angle, 1 1/4 od, for fin. (tapd to 3/4 in.) (07429:27118).	1	1	17	33
10	c	O		5130-474-8906	45 deg angle, 1 1/4 od, for hard S and stellite (tapd to 3/4 in.) (07429:27116).	1	2	17	11
9	c	O		4910-369-4813	45 deg angle, 1 3/4 od, for CI (07429:18541).	1	1	17	9
9	c	O		4910-392-2941	45 deg angle, 1 3/8 od, for fin. (07429:18542).	1	1	17	14
9	c	O		4910-369-4814	45 deg angle, 1 3/8 od, for hard S and stellite (07429:18540).	1	1	17	31
9	c	O		4910-369-4818	45 deg angle, 1 1/2 od, for CI (07429:14084).	1	1	17	8
9	c	O		4910-228-2075	45 deg angle, 1 1/2 od, for fin. (07429:14382).	1	1	17	15
10	c	O		5130-230-7514	45 deg angle, 1 1/2 od, for hard S and stellite (07429:14056).	1	1	17	30

(1) Source maintenance and recoverability code				(2)	(3)	(4)	(5)	(6) Illus- tration	
(a) Material code	(b) Source	(c) Maintenance level	(d) Recoverability	Federal stock No.	Description	Unit of issue	Quantity authorized	(a) Figure No.	(b) Item No.
9	C	O	-----	4910-369-4824	WHEEL, ABRASIVE—Continued 45 deg angle, 1 5/8 od, for CI (07429: 14063).	1	2	17	7
9	C	O	-----	4910-369-4826	45 deg angle, 1 5/8 od, for fin. (07429: 14383).	1	1	17	16
9	C	O	-----	4910-369-4828	45 deg angle, 1 5/8 od, for hard S and stellite (07429:14100).	1	1	17	29
9	C	O	-----	4910-369-4830	46 deg angle, 1 3/4 od, for CI (07429: 14085).	1	1	17	6
9	C	O	-----	4910-369-4832	45 deg angle, 1 3/4 od, for fin. (07429: 14384).	1	1	17	17
9	C	O	-----	4910-228-2060	45 deg angle, 1 3/4 od, for hard S and stellite (07429:14049).	1	1	17	28
9	C	O	-----	4910-369-4844	45 deg angle, 2 od, for CI (07429: 14064).	1	1	17	5
9	C	O	-----	4910-369-4845	45 deg angle, 2 od, for fin. (07429: 14386).	1	1	17	18
9	C	O	-----	4910-369-4846	45 deg angle, 2 od, for hard S and stellite (07429:14102).	1	1	17	27
9	C	O	-----	4910-369-4851	45 deg angle, 2 1/4 od, for CI (07429: 14088).	1	1	17	4
9	C	O	-----	4910-369-4852	45 deg angle, 2 1/4 od, for fin. (07429: 14388).	1	1	17	19
10	C	O	-----	6130-230-4117	45 deg angle, 2 1/4 od, for hard S and stellite (07429:14104).	1	1	17	26
9	C	O	-----	4910-392-2942	45 deg angle, 2 1/2 od, for CI (07429: 14089).	1	1	17	3
9	C	O	-----	4910-369-4860	45 deg angle, 2 1/2 od, for fin. (07429: 14389).	1	1	17	20
10	C	O	-----	5130-230-7513	45 deg angle, 2 1/2 od, for hard S and stellite (07429:14050).	1	1	17	25
9	C	O	-----	4910-228-2050	45 deg angle, 2 3/4 od, for CI (07429: 14153).	1	1	17	2
9	C	O	-----	4910-369-4867	45 deg angle, 2 3/4 od, for fin. (07429: 14391).	1	1	17	21
9	C	O	-----	5130-230-7500	45 deg angle, 2 3/4 od, for hard S and stellite (07429:14200).	1	1	17	24
9	C	O	-----	4910-369-4872	45 deg angle, 3 od, for CI (07429: 14154).	1	1	17	1
9	C	O	-----	4910-369-4874	45 deg angle, 3 od, for fin. (07429: 14393).	1	1	17	22
9	C	O	-----	4910-369-4876	45 deg angle, 3 od, for hard S and stellite (07429:14243).	1	1	17	23
10	C	O	-----	-----	WRENCH, PILOT INSERTING AND REMOVING: 3/16 shk, 3 lg o/a (00988: PW-187).	1	1	16	15

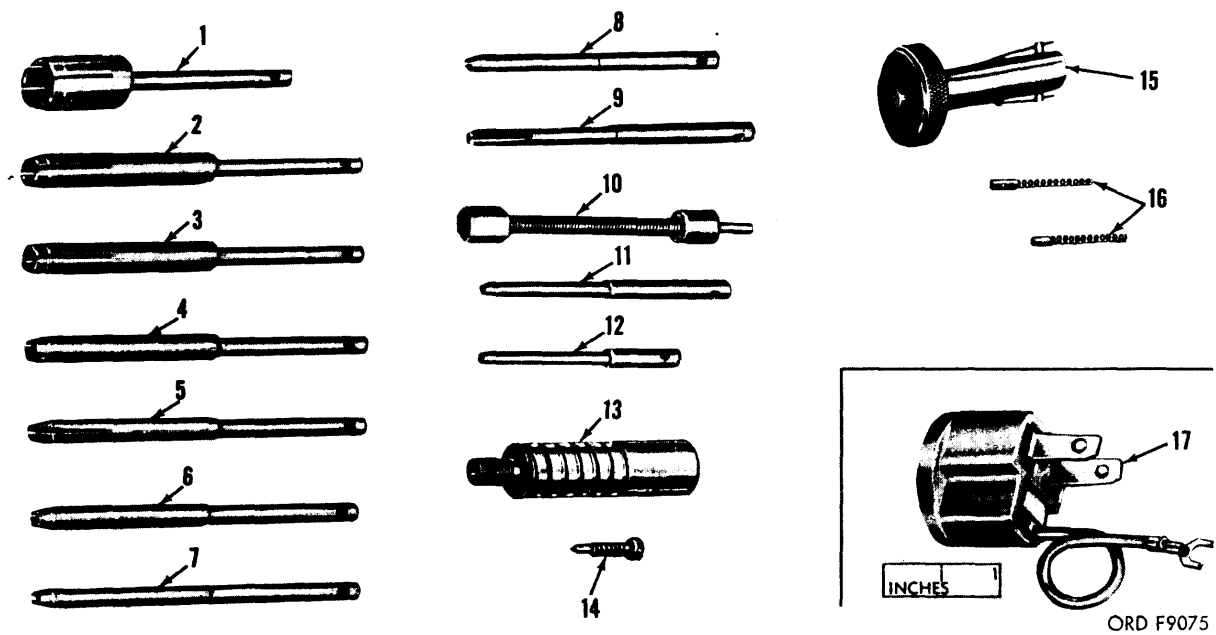


Figure 16. Tools and equipment

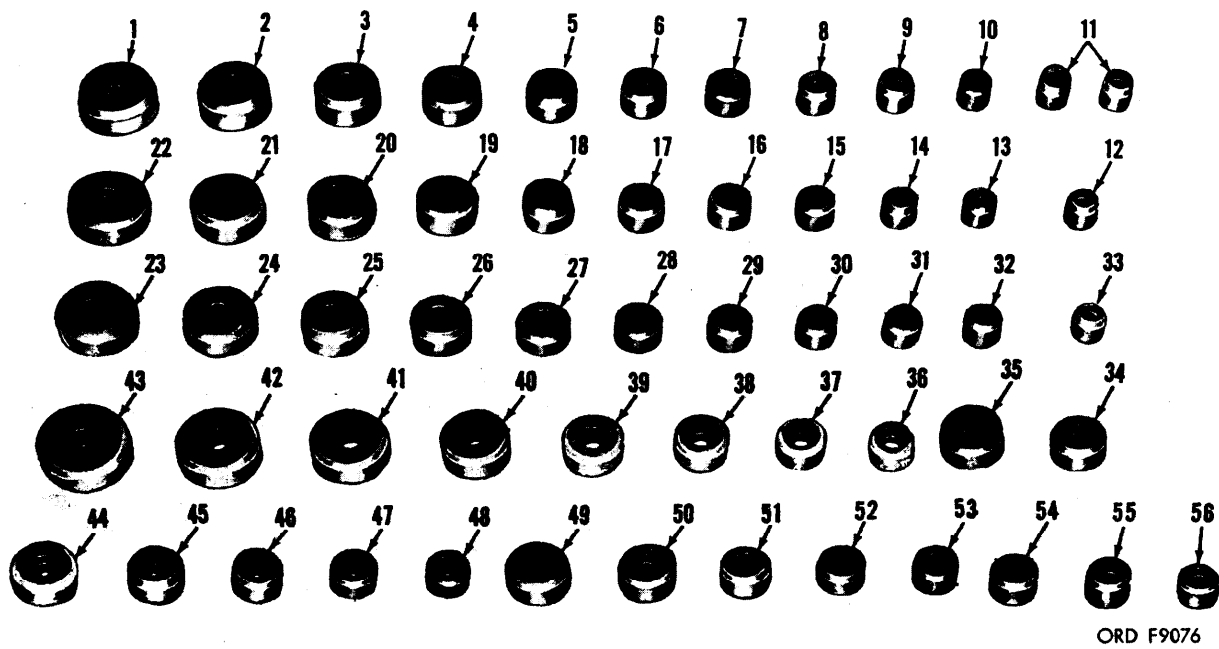


Figure 17. Abrasive wheels.

HEADQUARTERS
DEPARTMENT OF THE ARMY
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9-127	11-158
9-197	17
9-217	29-51
9-237	29-55
9-357	29-56
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NG: State AG (8).

USAR: Units-same as active Army except allowance is one copy for each unit.

For explanation of abbreviations used, see AR 320-50.

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P.S.--IF YOUR OUTFIT WANTS TO KNOW ABOUT YOUR
RECOMMENDATION MAKE A CARBON COPY OF THIS
AND GIVE IT TO YOUR HEADQUARTERS.

The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
 1 decimeter = 10 centimeters = 3.94 inches
 1 meter = 10 decimeters = 39.37 inches
 1 dekameter = 10 meters = 32.8 feet
 1 hectometer = 10 dekameters = 328.08 feet
 1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
 1 decigram = 10 centigrams = 1.54 grains
 1 gram = 10 decigrams = .035 ounce
 1 dekagram = 10 grams = .35 ounce
 1 hectogram = 10 dekagrams = 3.52 ounces
 1 kilogram = 10 hectograms = 2.2 pounds
 1 quintal = 100 kilograms = 220.46 pounds
 1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
 1 deciliter = 10 centiliters = 3.38 fl. ounces
 1 liter = 10 deciliters = 33.81 fl. ounces
 1 dekaliter = 10 liters = 2.64 gallons
 1 hectoliter = 10 dekaliters = 26.42 gallons
 1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
 1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
 1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
 1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
 1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
 1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
 1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
 1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	To	Multiply by	To change	To	Multiply by
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29.573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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