400
Tractor

Service Manual

5692

Reprinted

CASE

SECTION

A

Service Shop Profit Through Seasonal Tune Up

●

Procedure for Using a Tune Up Tester on Case 400 Series Distributor Ignition Engines

●

Test Procedure for Starting Circuit and Charging Circuit

●

Spark Plugs and Distributor

"400" Series Case Tractors and Engine Power Units

TABLE OF CONTENTS

I

SERVICE SHOP PROFIT THROUGH SEASONAL TUNE UP

Introduction

With the addition of the 400 Series Tractor to the Case Line, Case Dealers are in a position to expand their Service Shop Profits to the greatest heights ever, because:

☆ The Quality and Size of the CASE 400 make it a volume item.

☆ The special training of Dealer Service Personnel, Special Service Tools and the restricted distribution of the Dealer Service Manual will make Case Service exclusive.

☆ The exclusive sales of Genuine Case Parts.

Let s capitalize on these exclusives by performing:

Seasonal Tune Ups

Tractor Overhaul

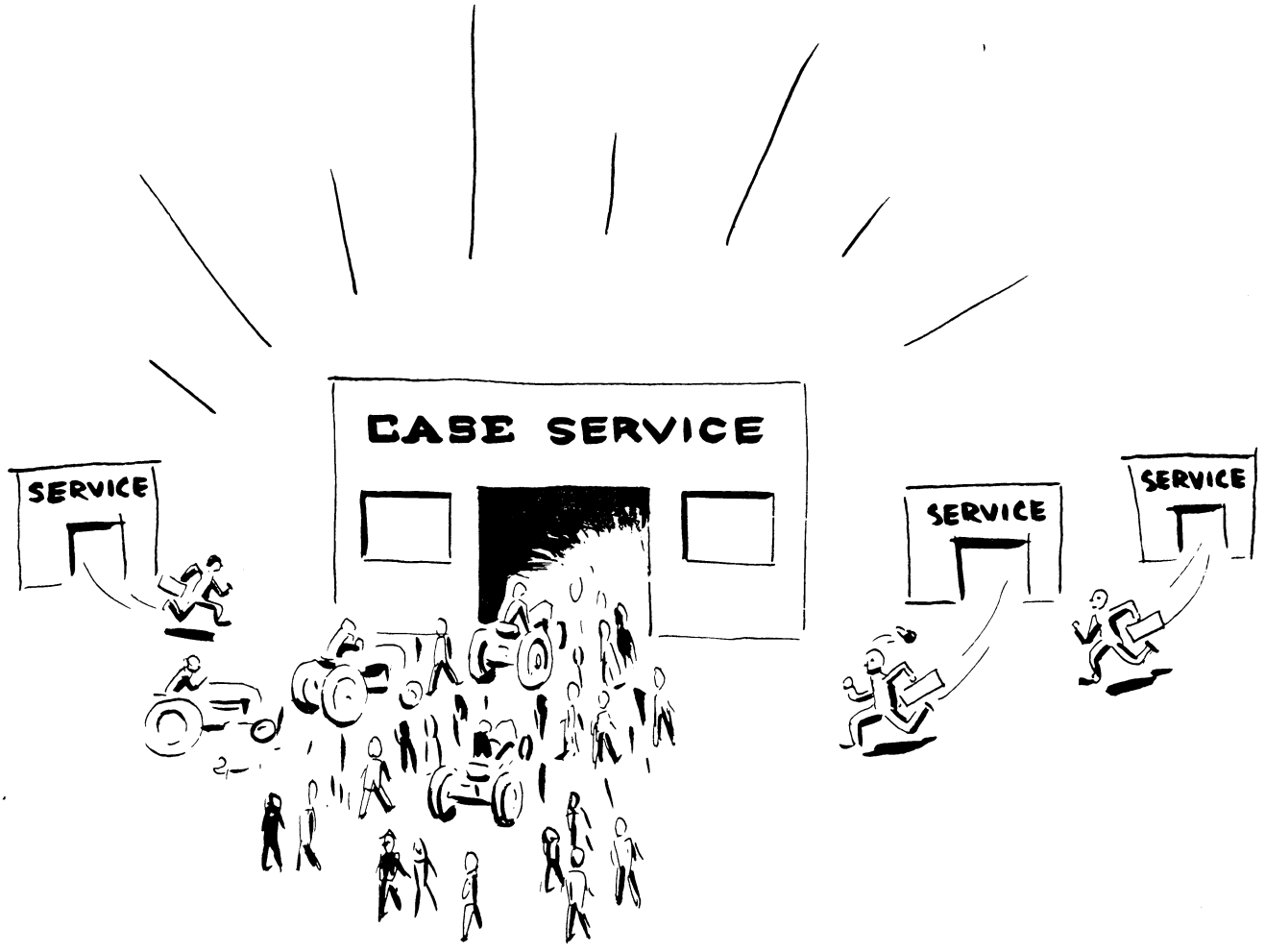
Field Service

And Keep the Service Shop Busy the year round.

The Busy Shop is the One that Makes Profit.

Idle Shop Space, Unused Equipment, and Idle Mechanics Cost You Money.

By scheduling the Tune Up before the spring rush and the fall harvest, Overhauls for the winter months and the Field Service filling in during the summer and harvest months your Service Shop will be busy the year around.



The busy shop offers steady employment and attracts the best mechanics.

In setting up a tune up program, there are four points that should be very carefully considered.

I The type of service you want to sell the customer in the Tune Up.

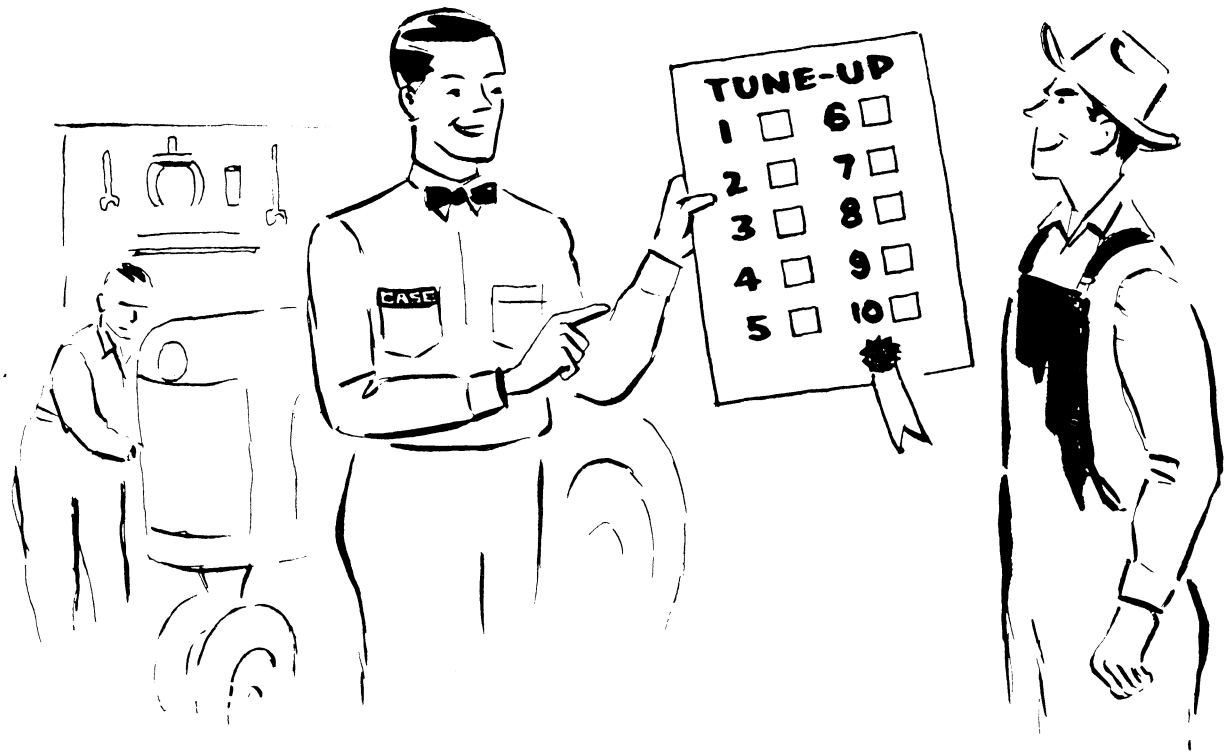
II The tools and equipment needed to perform the Tune Up.

III The price that should be charged for the Tune Up.

IV Combine the excellent service, equipment, qualified personnel, and attractive price into a package that will stimulate the customer's interest.

I SELL THE TUNE UP AS INSURANCE AGAINST COSTLY BREAKDOWNS

In analyzing the type of service that should be sold — keep in mind that when the customer spends his money on a Tune Up he wants a job that will keep his tractor running the entire season with normal maintenance and care.



When a customer's tractor is "laid up", time is money to him — Sell Your Tune Up As An Insurance Against Costly Breakdowns during the season.

10 POINT 400 SERIES TRACTOR TUNE UP

.....Hours (Record Hour Meter Reading)

1. Steam Clean

Steam clean the tractor. Lightly steam clean for Tune Up — it is a labor saver and a customer "pleaser" — gives the job a "finished" look.

2. Belts

Check the condition and tension of the:

a. Fan and Generator Belt.

b. Power Steering Belt.

Replace these belts if appreciably worn or cracked.

3. Fuel System

A-**Diesel Tractor**

1. Clean the fuel tank breather, strainer and water trap.
2. Inspect the interior of the fuel tank. Clean — if gum and varnish are present.
3. Clean the first stage filter.
4. Renew the second stage filter.
5. Check the final stage filter as described in Section H.
6. Check fuel lines for leakage.

B-**LP Gas Tractor**

1. Check the liquid fuel filter. A sure sign of a clogged filter is frost forming on the outside of the filter body. If the filter is extremely clogged — remove and clean. Refer to the LPG Operator's Instruction Manual for removing and cleaning instructions.
2. Check the fuel regulator for frost. If frost appears on any portion of the regulator, it is an indication of insufficient coolant circulation.
3. Check all fuel lines for leakage. If frost appears whenever the engine is not running, it is an indication of leakage.

C-**Gasoline and Low Cost Fuel**

1. Clean fuel tank strainer and screen.
2. Inspect the interior of the fuel tank (s). Clean off gum or varnish if it is present.
3. Check all fuel lines for leakage.

4. Charging Circuit

Test the charging circuit, Generator and Voltage Regulator for resistance worn parts, etc. with an accurate Tester (Refer to Section A, Part III of this Manual). Clean or replace the necessary parts, then retest to check your work.

5. Battery and Starting Motor

Battery Checks —

Specific gravity with a hydrometer, capacity (Load) with a battery starter tester, Refer to Page A-30.

Starting Motor Checks —

Cranking voltage test to give a quick over-all test of starting system. Refer to Page A-30. Starter Cable and Switch Tests. Refer to Page A-30.

Starter Ground Circuit Test for sluggish starting.

Refer to Page A-30.

Starting Motor Amperage Draw Test. Refer to Page A-30 Solenoid Switch Circuit Resistance Test.

6. Engine Tune Up

A-**Diesel Engine**

1. Check the no load full governed engine speed. Refer to Section I of this manual for adjustment instructions.
2. Check the engine idle speed.
3. If there is no complaint concerning power or engine operation, it is not necessary to check compression or injectors.
   Note: If the engine is lacking in power is, hard starting, or smokes, check the cylinder compression, fuel injectors and Powrcels.

B-Distributor Ignition Engine

1. Test the charging circuit
   Battery
   Generator and Voltage Regulator
   Cables
   for resistance, worn parts, etc. with an accurate tester. (Refer to Section A, Part III of this manual.)

   Clean or replace the necessary parts — then re-test to check your work.

2. Test the Ignition System —
   Cranking Voltage
   Distributor (Points, condenser, spark advance Coil)
   Spark Plugs and Timing
   Engine Speed (Full Governed and Idle at No Load).

   — with an accurate Tune Up Tester (Refer to Section A, Part II of this manual.)

   Clean or replace the necessary parts — then re-test to check your work.

3. Adjust the carburetor —
   Idling Speed Adjustment
   Idling Mixture Adjustment
   Load Adjustment

   If the engine does not respond to these carburetor adjustments, it will be necessary to remove the carburetor, disassemble and clean.

C-Magneto Ignition Engine

1. Check the no load full governed engine speed. (Refer to Section M of this manual for adjustment instructions.)
2. Check the engine idle speed.
3. Perform the following checks on the magneto:
   Check the operation of the Impulse Coupling
   Check the Intensity of the Ignition Spark (Ability to jump a gap)
   Check the Magneto Timing with the engine
   Inspect the Distributor Cap for cracks and check carbon brushes.
   Clean the Distributor Disc
   Check the Breaker Points and Cam
   (Refer to Form 5656, Dealer's Service Manual — Case 41 Magneto for all magneto service information.)

4. Adjust the carburetor
   Idling Speed Adjustment
   Idling Mixture Adjustment
   Load Adjustment
   If the engine does not respond to these carburetor adjustments the carburetor may have to be removed, disassembled and cleaned. Replace any worn parts.

7. Instruments and Lighting System

a. Check the operation of all of the instruments.

b. Check the lighting system. Replace any inoperative bulbs or units.

8. Traction Clutch Adjustment

Check operation of the clutch and adjust if necessary.

9. Brakes

a. Check brake pedal free movement and adjust if necessary.

b. Remove the brake covers and visually check the condition of the linings on the disc. Replace the linings or disc assemblies complete if they are worn close to the rivets.

10. Tires

a. Check the condition of the rear tires. Make recommendations to the customer concerning rear wheel weights, if tire tread wear is abnormal.

b. If tires are damaged, quote the customer a price on new tires or tire repair.

III

SPECIAL SERVICE TOOL ITEMS THAT CAN BE PURCHASED THROUGH YOUR LOCAL TOOL SUPPLIER

OWATONNA SERVICE TOOLS

Basic Owatonna Service Tool Set

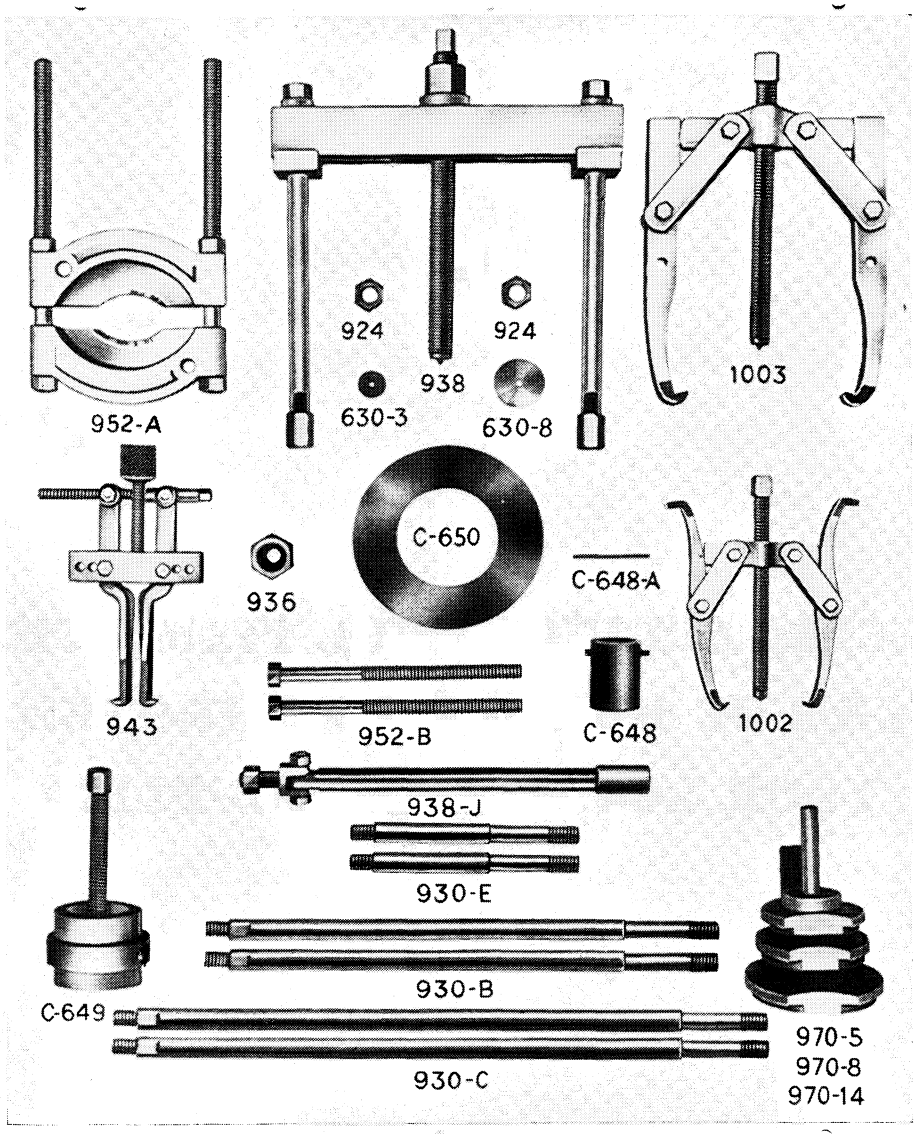


Figure B-32. Basic Owatonna Service Tool Set

Figure B-32 illustrates the basic Owatonna Service Tool Set that is required to service **ALL** CASE Tractors and Engines.

Special Owatonna Service Tools

In addition to the basic Owatonna Service Tool Set, there are special tools available for specific jobs.

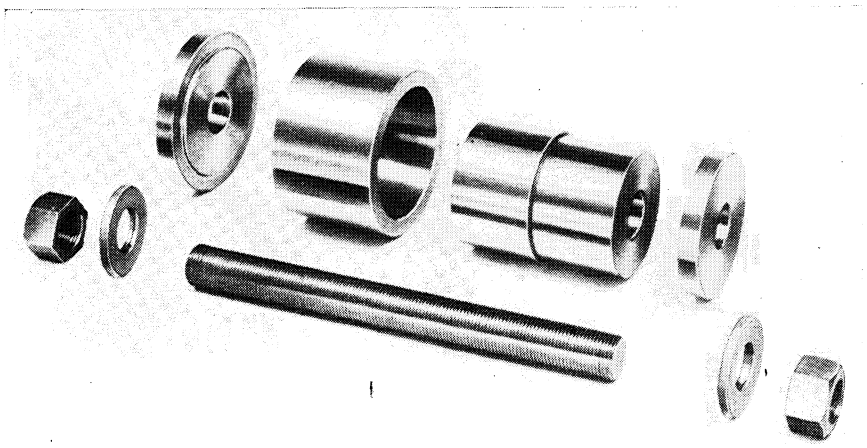


Figure B-33. Camshaft Bushing Puller

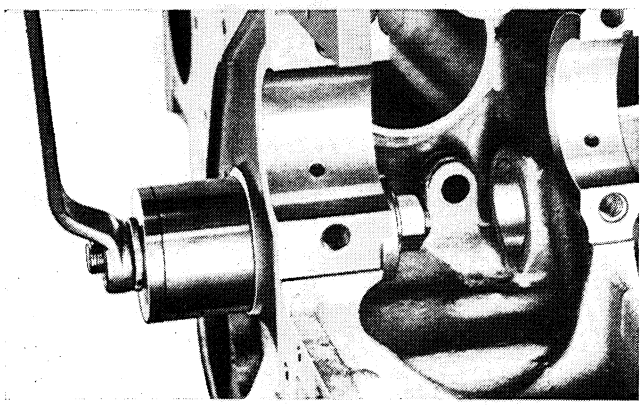


Figure B-34. Removing a Camshaft Bushing

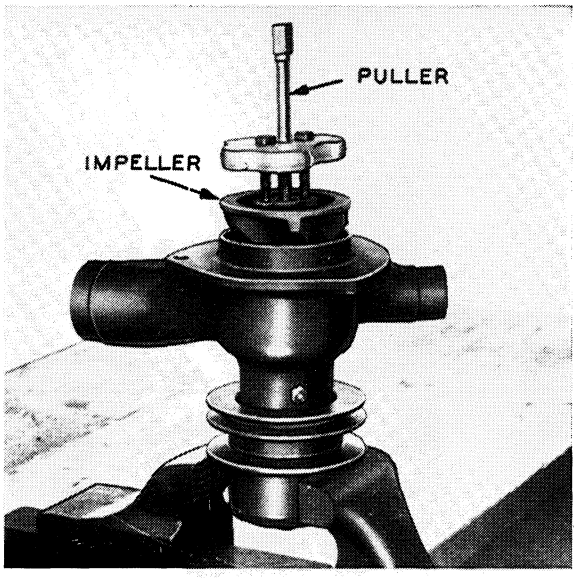


Figure B-35. Using No. 915 Puller to remove the water pump Impeller

The Special No. C654 Camshaft Bushing Puller illustrated in Figures B-33 and B-34 must be used to remove and install the Fine Precision Camshaft Bushings in the cylinder block.

The OTC No. 915 Puller illustrated in Figure B-35 can be used to remove the Water Pump Impeller.

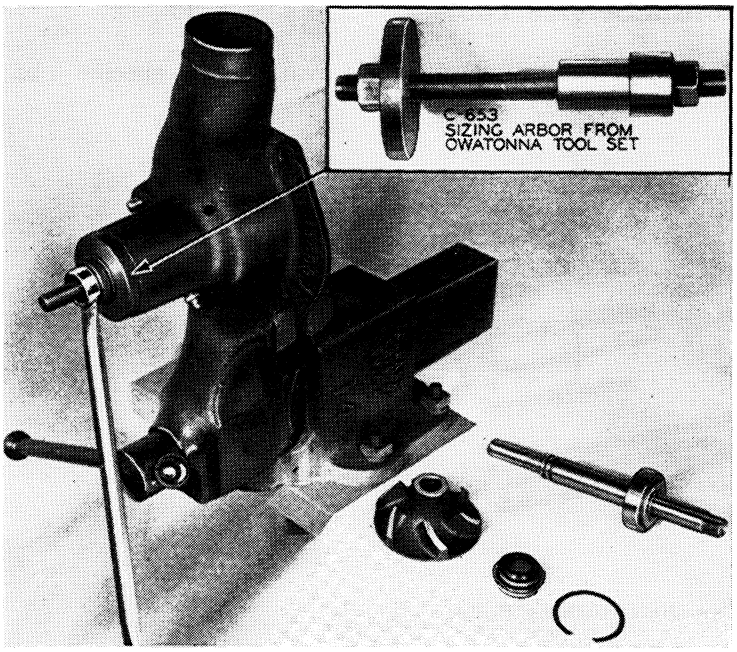


Figure B-36. Water Pump and Bushing Sizing Arbor

Another special tools required to service the Water Pump is No. C-653 Water Pump and Bushing Sizing Arbor shown in Figure B-36.

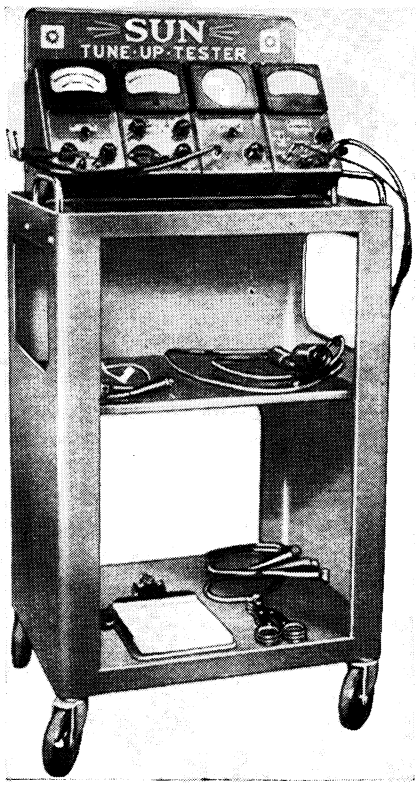


Figure B-38. Sun Model TUT Tune-Up Tester

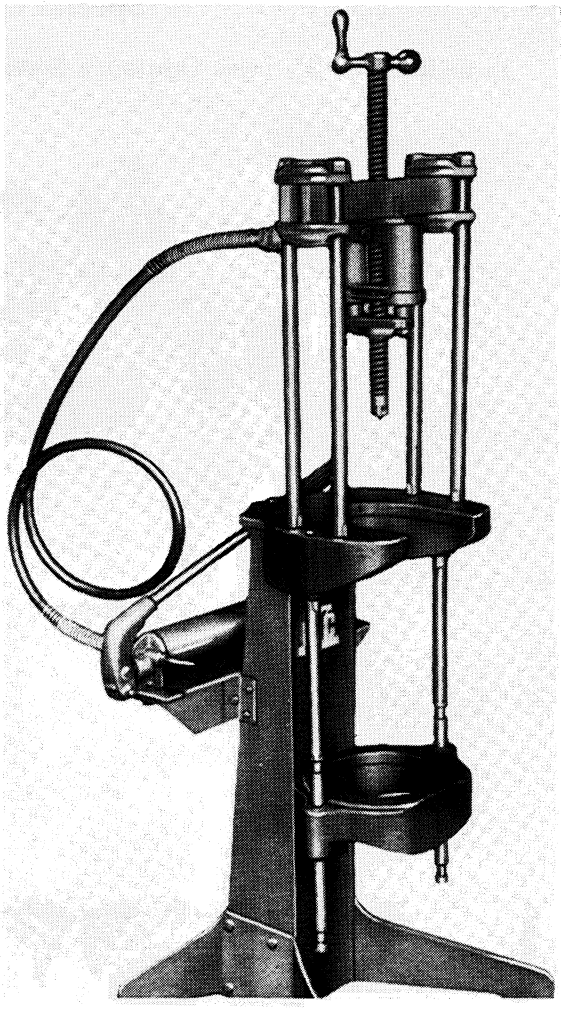


Figure B-37

An open throat pedestal press, similar to the Owatonna No. Y102-A shown in Figure B-35 is a necessity in the properly tooled service shop. Many of the instructions throughout this manual are made with the assumption that the dealer has such a device for pressing bearings and bushings in place.

ELECTRICAL TESTING EQUIPMENT

Sun Tune-Up Tester

With the increase of electrical equipment on modern Tractors, such as the Case 400 Series, dealers should consider using some type electrical testing equipment.

Figure B-38 illustrates the Sun Tune-Up Tester Model TUT designed for both 6 volt and 12 volt battery ignition, generator and starting motor work.

Testing and diagnosis equipment similar to that shown above will pay good dividends on the investment required if the dealer specializes in this type of repair and tune-up service.

VALVE AND CYLINDER HEAD SERVICE TOOLS

Valve Refacer and Valve Seat Grinder

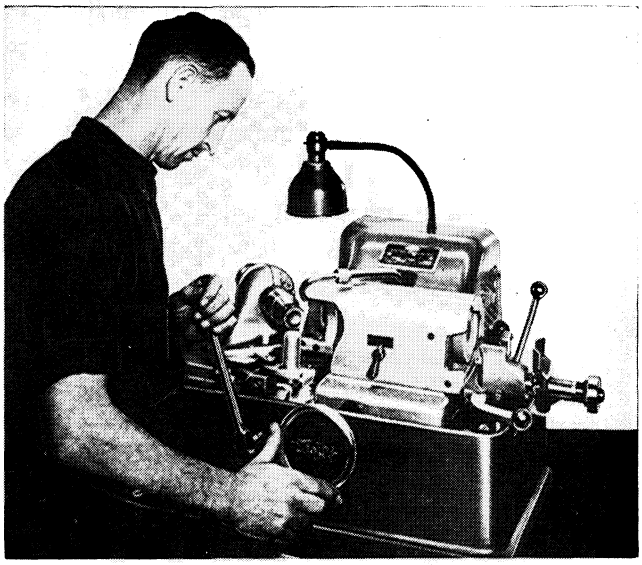


Figure B-39. Valve Refacer

A modern, precision, wet type valve refacer similar to the one illustrated in Figure B-39 is vital to valve service.

A precision power type seat grinder equivalent to the one shown in Figure B-40 must be used to service the valve seats in "400" Series Engine cylinder heads. Hand grinding equipment can not be used.

Purchase this equipment from a reputable distributor that handles nationally recognized lines of tools.

Figure B-39 illustrates a Sioux Number 645A Wet Type Valve Refacer.

Figure B-40 illustrates a Sioux Number 1710 Angular High Speed Driver for grinding valve seats.

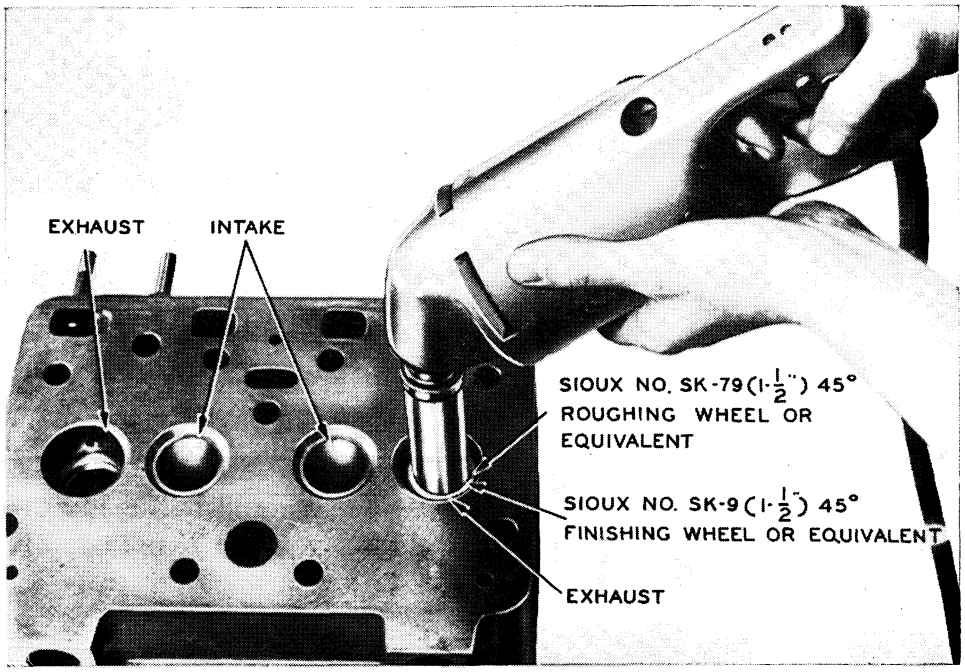


Figure B-40. Valve Seat Grinder

Approved Grinding Wheels For Spark Ignition Cylinder Heads

Intake and Exhaust Valve Faces (All types)	Sioux Tool No. 78-E—Grinding Wheel or equivalent
Exhaust Valve Seat Insert	Sioux Tool No. SK83—1⅝ Inch 45 Degree Roughing Wheel or Equivalent.
	Sioux Tool No. SK13—1⅝ Inch 45 Degree Finishing Wheel or Equivalent.
Intake Valve Seat	Sioux Tool No. K17—1¾ Inch 45 Degree Finishing Wheel or Equivalent.
Exhaust Valve Seat Insert Narrowing Wheel (Top Cut)	Sioux Tool No. K487—1¾ Inch 30 Degree Grinding Wheel or Equivalent.
Exhaust Valve Seat Insert Narrowing Wheel (Bottom Cut)	Sioux Tool No. K679—1½ Inch 60 Degree Grinding Wheel or Equivalent.

Approved Grinding Wheels For Diesel Cylinder Heads

Intake and Exhaust Valve Refacer (All Types)	Sioux Number 78-E Grinding Wheel or equivalent. (**NOTE:** This wheel is standard equipment with Sioux Valve Refacers.)
Exhaust Valve Seat Insert	Sioux Number SK-79 (1½ Inch) 45 Degree Roughing Wheel or Equivalent.
	Sioux Number SK-9 (1½ Inch) 45 Degree Finishing Wheel or Equivalent.
Intake Valve Seat	Sioux Number K-13 (1⅝ Inch) 45 Degree Finishing Wheel or Equivalent.
Exhaust Valve Seat Insert Narrowing Wheels	
a. Top Cut	Sioux Number SK-479 (1½ Inch) 30 Degree Grinding Wheel or Equivalent.
b. Bottom Cut	Sioux Number K-675 (1⅜ Inch) 60 Degree Grinding Wheel or Equivalent.

"Sioux" brand tools are manufactured by Albertson and Co., Sioux City, Iowa and can be purchased through your local tool supply house handling this brand.

Valve Seat Grinder Pilots

Both Intake and Exhaust Valve Seats.....

Sioux Number TS-405 — 13/32 Inch, Less .001 Inch Special Pilot or Equivalent.

Sioux Number TS-406 — 13/32 Inch Special Pilot or Equivalent.

Sioux No. TS-407 — 13/32 Inch, Plus .001 Inch Special Pilot or Equivalent.

NOTE: These Grinder Pilots make excellent gauges for checking inside diameter of valve guides.

Valve Guide Reamer

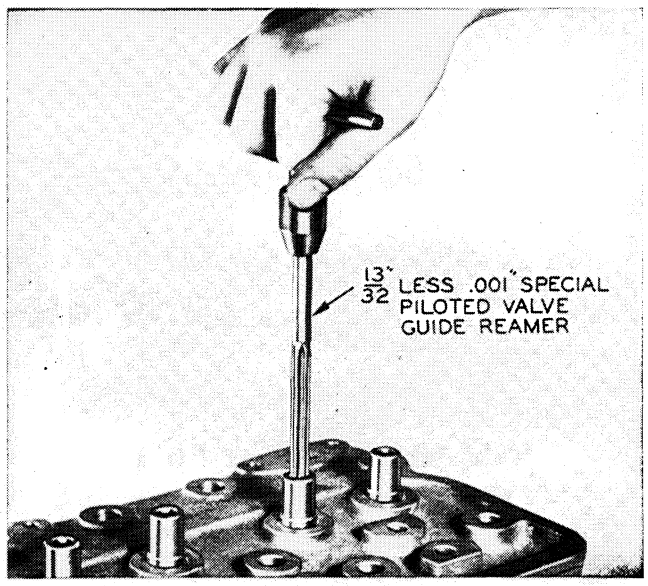


Figure B-41

Both Intake and Exhaust Valve Guides (For cleaning guide without changing size of hole.)..

Sioux No. GS-405 — 13/32 Inch Less .001 Inch (10 inches long) Special Guide Reamer or Equivalent.

Reamer for Installing Oversize Valve Push Rod Lifters

When .010 inch oversize valve push rod lifters are to be installed, the bore in the block must be reamed out to .8215 — .8225 inch.

Consult your local tool supply house to obtain a .8225 inch reamer.

Power Driven Wire Brushes

Power driven fine wire brushes should be used to clean valves and to clean the cylinder head, both internally and externally. These brushes may be purchased through your local tool supply house in both the wheel type and the end type for cleaning hard-to-reach places, such as recesses, combustion chambers, etc.

The brushes are usually used with a ¼ inch electric drill.

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Power Driven Valve Guide Cleaner

A power driven valve guide cleaner, equivalent to the one illustrated in Figure B-42, should be used to remove all loose carbon from the guide prior to using the reamer.

Use with a ¼ inch Electric Drill.

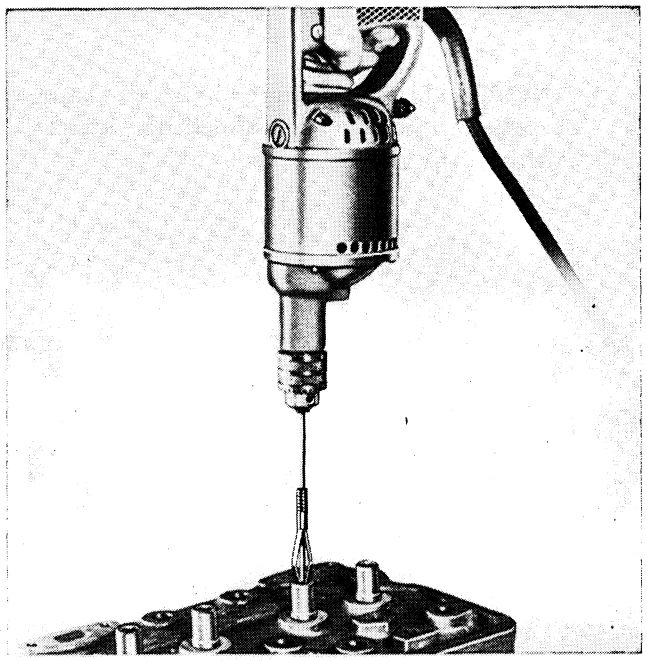

Figure B-42

Exhaust Valve Seat Puller

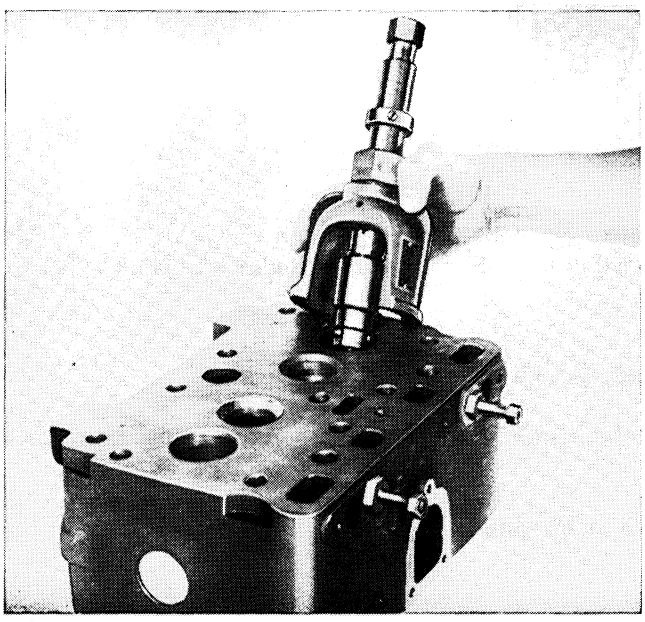

Figure B-43

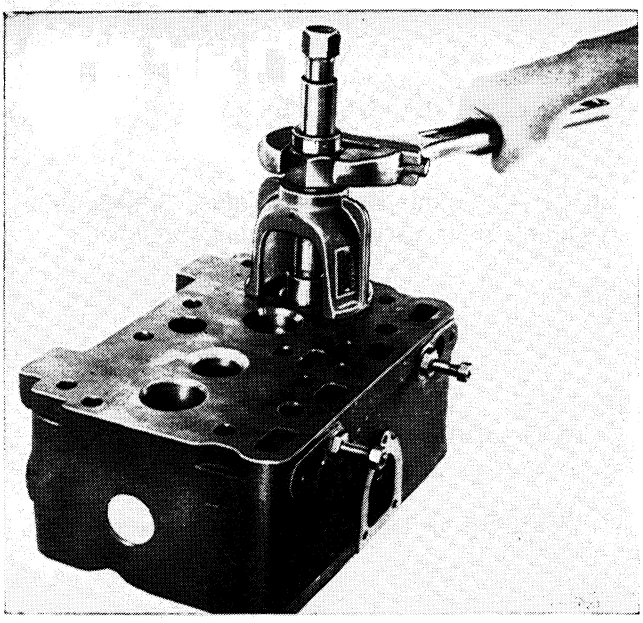

Figure B-44

Figures B-43 and B-44 illustrate the Bishman Number 810 Valve Seat Puller Set that is approved for pulling exhaust valve seat inserts. This puller set is manufactured by the Bishman Mfg. Co., Osseo, Minnesota and can be ordered directly from their factory, or purchased from any tool distributor handling the Bishman line.