Model 420
Gasoline Crawler

Service Manual

9-70121

Reprinted

CASE

CASE TERRATRAC CRAWLER TRACTOR MODEL 420 GASOLINE

Property of

NAME _____

COMPANY _____

REGISTERED NO. _____

Published by

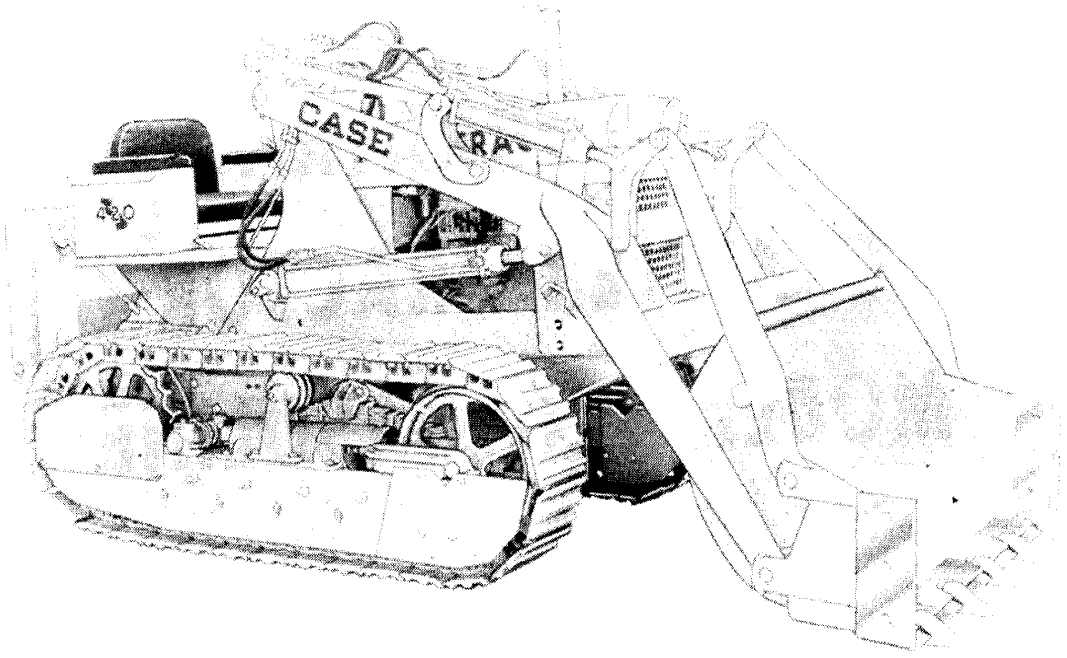
The Industrial Service Department

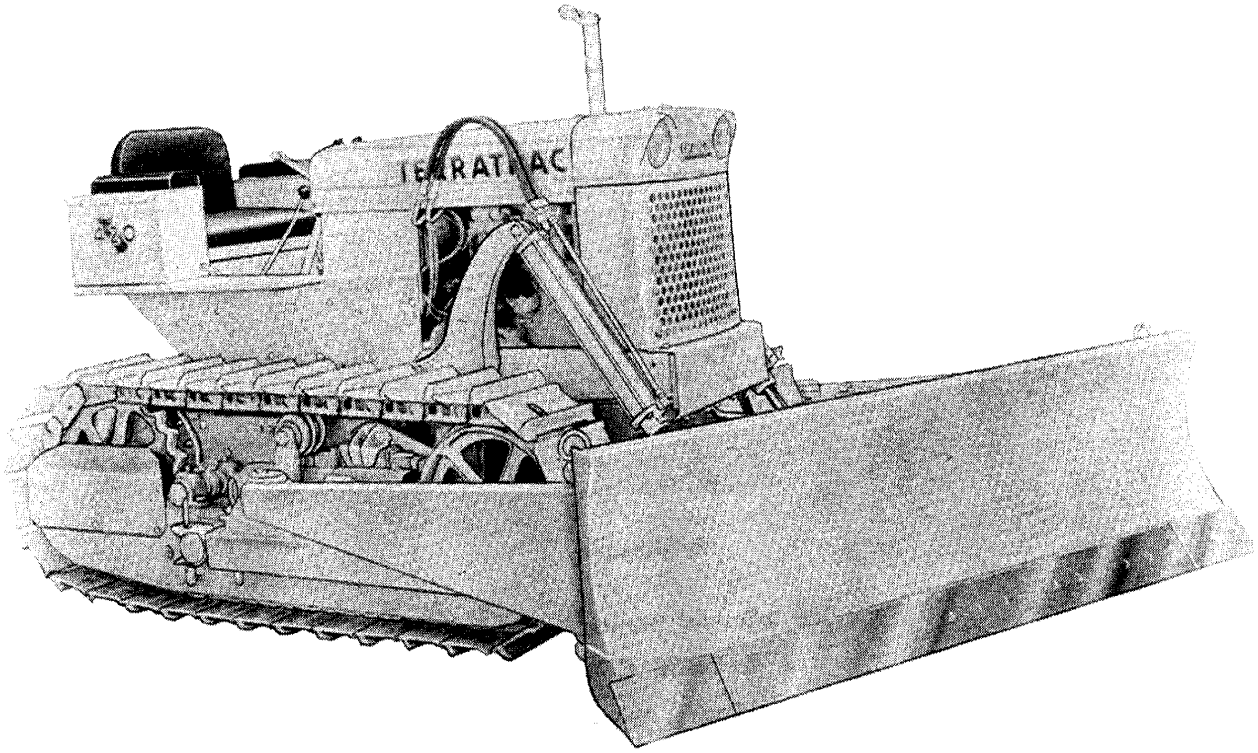
CASE CORPORATION

Racine, Wisconsin

FORM NO. 9-70121

October 1959


CASE



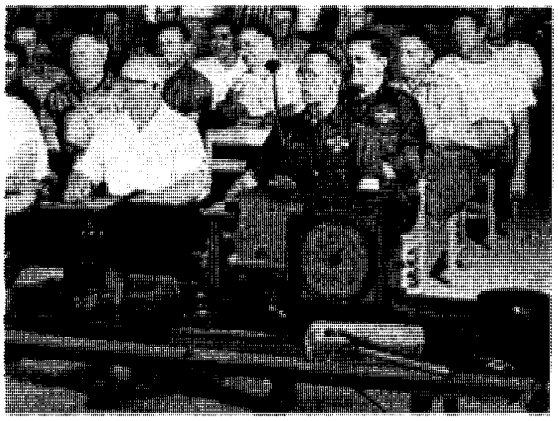
FOREWORD

It is the policy of the J. I. Case Co. to build machines with long and useful life expectency. The reputation of this company and its products are dependent upon the diligent and conscientious maintenance given these products by the field service people.

Thousands of satisfied users have proven the design and quality of the J.I. Case products. In the final analysis it will be the field service personnel that will write the final chapter to the success story.

The J.I. Case Co. recognizes the importance of the thoroughly trained technician. No longer is the mechanic considered as a "grease monkey" or the "necessary evil". To help the service man gain his rightful place as a Professional, the company has inaugurated a "Mobile Training Program". This program has been highly successful and very fruitful. The J.I. Case Co. now is planning even greater and more far reaching programs to futher this endeavor.

Service Representatives for the J,I. Case Co. and its Dealers Servicemen are located all over the world, and they represent the finest in Service Personnel. This Service Manual has been written as a reference guide, and is dedicated to those that service, maintain and teach the J.I. Case Industrial Equipment.

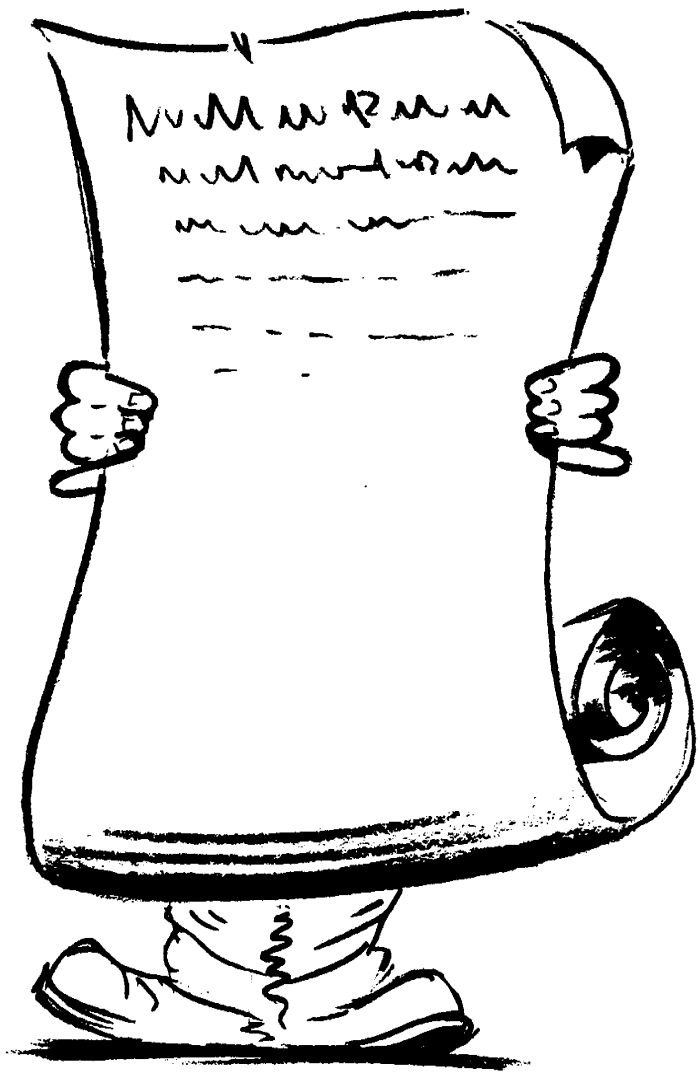


The Mobile Training Unit is another service made available to the Case Dealers. Each dealer should be sure to take advantage of the training program offered by these Mobile units. Watch for it when it comes to your territory, and be sure to attend.

TABLE OF CONTENTS

GENERAL SPECIFICATIONS

I



GENERAL SPECIFICATIONS

GROUP I

SECTION A - MODEL 420 SPECIFICATIONS

CAPACITIES (U. S.)

Fuel Tank	10 Gallons
Cooling	12 Quarts
Transmission-Differential	7 1/2 Quarts
Final Drive (each)	2-1/2 Pints
Crankcase	5-1/2 Quarts
with filter	6 Quarts
Air Cleaner	1 Pint
Hydraulic System	6 Gallons

TRACTOR

Engine, Case Gasoline	148 Cu. In.
Gross Engine Flywheel HP	42
Drawbar HP	30
Electrical System	12 Volts
Cooling Fan Diameter (Suction and Pusher)	16 Inches
Radiator	Tube and Fin Construction Pressurized with 4 lb. Cap
Clutch	Heavy-Duty, Dry-Type Single Disc Foot Operated
Transmission:	Spur Gear, Manual Shift
No. Speed Forward	3
No. Speed Reverse	1
Battery:	12 Volt Positive Grounding
Number	1
Capacity	50 Amp. Hr.
Generator: Make	Auto - Lite and Delco Remy
Capacity	20 Amperes

DIMENSIONS AND WEIGHTS

Length, Overall Without Drawbar	101 In.
Height	56 In.
Gauge	48 In.
Width, Overall	60 1/2 In.
Ground Clearance Without Drawbar	14-1/4 In.
Ground Clearance Under Drawbar	11-1/4 In.
Drawbar Height	12 In.
Drawbar Movement, Lateral	19-1/2 In.

Track Shoe Width, Standard	11 In.
Track Shoe Width, Maximum	20 In.
Number of Track Links Per Side	31
Length of Track on Ground	57 In.
Sprocket Teeth	23
Ground Area Contact	1,254 Sq. In.
Height of Grouser	1-1/2 In.
Track Pin Diameter	1-In.
Track Bushing Diameter	1-1/2 In.
Track Bolt Diameter	3/8 In.
Track Rollers, No. Per Side	4
Track Roller Diameter (Flange)	7-1/2 In.
Support Rollers, No. Per Side	1
Weight (Standard Basic) Shipping	4,850 Lbs.
Track Roller Diameter (Hub)	6-1/4 In.

ENGINE

Case Gasoline, 148 Cu. In.

Number of Cylinders	4
Bore	3-3/8 In.
Stroke	4-1/8 In.
Firing Order	1-3-4-2
Compression Ratio	7·1 to 1
Valve Tappet Clearance	014 In. (Cold)
Governed RPM (Full Load)	1850
(No Load)	2000
Idle Speed RPM	500

PERFORMANCE DATA

Forward:	Speeds	Gear Ratio
First	1.74	13.20 to 1
Second	2.75	8.34 to 1
Third	4.52	5.08 to 1
Reverse	2.01	11.42 to 1

Drawbar Pull (In pounds)

First	5815
Second	3863
Third	2203

SECTION B - 420 LOADER SPECIFICATIONS

Bucket Capacity	5/8 Cu. Yd.
Digging Depth Below Ground 3° Angle	10-1/2 In.
Grading Angle	Up to 130°
Bucket Rollback at Ground Level	26°

Dump Clearance	102 In.
Dump Reach at Maximum Lift	27-7/8 In.
At 7 Foot Dump	34-7/8 In.
Lifting Time From Ground Level to Max. Lift	6-1/2 Sec.
Dumping Time	1-1/4 Sec.
Lowering Time	6 Sec.
Width of Bucket	62-5/8 In.
Tractor Width	60-1/2 In.
Overall Height	63-1/2 In.
Overall Length	146 In.
Weight With Counterweight	40 Lbs.
Lift Capacity Fully Raised	2600 Lbs.
Dump Cylinder Size	12-1/4"
Lift Cylinder Size	3-1/2" x 27-1/4"
Pump Capacity at Rated RPM	19 Gal./Min.
Width of Loader Bucket	62-5/8 In.

SECTION C - LOADER - BACKHOE SPECIFICATIONS

BACKHOE OPERATING DATE

Reach From Axle	218 In.
Reach From Pivot	194 In.
Max. Digging Depth	144 In.
Max. Dump Reach	118 In.
Clearance, Full Lift, Bucket Tucked	126 In.
Clearance, Full Lift, Bucket Extended	180 In.
Height Overall, Full Lift, Bucket Extended	186 In.
Swing Arc, Uninterupted	180°
Stabilizer Spread, Ground Level	72 In.
Vertical Cut on Max. Grade of	10°

BUCKET OPERATING DATA

Bucket Capacity	3/4 Cu. Yd.
Rated Capacity, Full Lift	2600 Lbs.
Rollback at Ground Level	26°
Dump Angle, Full Lift	47°
Grading Angle	103°
Lifting Time, Ground Level to Max. Height	6-1/2 Sec.
Dumping Time	1-1/4 Sec.
Lowering Time	6 Sec.

DIMENSIONS AND WEIGHT

Width of Loader Bucket	62-5/8 In.
Width of Tractor	60-1/2 In.
Width, Overall, Travel Position	73 In.

Height, Overall, Travel Position . . . . . 121 In.
Length, Overall, Travel Position. . . . . 204-1/2 In.
Ground Clearance . . . . . 10 In.
Weight (approx.) . . . . . 11,673 Lbs.

HYDRAULIC SYSTEM

Backhoe Cylinders, Double-acting; Chrome-Plated Rods:
Boom . (1) 3-1/2"x35",1-3/4" Rod ; After S/N 3009833, 4"x35",1-3/4" Rod.
Crowd . . . . . (1) 4" x 26-1/8",2" Rod.
Bucket . . . . . (1) 3-1/2" x 27-1/4",1-3/4" Rod.
Swing . . . . . (2) 2-1/2" x 16-1/2",1-1/4 Rod.
Stabilizers . . . . . (2) 3" x 9", 1-1/2 Rod.
Loader Cylinders, Double-Acting; Chrome-Plated Rods:
Lift . . . . . (2) 3-1/2" x 27-1/4",1-3/4"Rod.
Bucket . . . . . (2) 2-1/3" x 13", 1-1/4"Rod.
Pump Capacity at 2000 RPM . . . . . 19 Gal/Min.
Hydraulic Capacity, With Filter . . . . . 24 Quarts.

SECTION D - DOZER SPECIFICATIONS

TILT-CROWN DOZER

Moldboard Width . . . . . 76 In.
Moldboard Height . . . . . 25 In.
Lift Above Ground . . . . . 22 In.
Drop Below Ground . . . . . 10 In.
Hydraulic Lift Cylinders . . . . . 2-1/2" x 19-1/8"
Hydraulic Tilt Cylinders . . . . . 2-1/2" x 4-3/4"
Pump Capacity At 2000 RPM . . . . . 15 Gal/Min.
Moldboard Crown Adjustment . . . . . 11 In.
Moldboard Pitch Adjustment . . . . . 10^{o}
Weight . . . . . 6025 Lbs.

ANGLE DOZER

Moldboard Width . . . . . 92 In.
Moldboard Length . . . . . 25 In.
Lift Above Ground . . . . . 23-1/4 In.
Drop Below Ground . . . . . 10-3/4 In.
Hydraulic Lift Cylinders . . . . . 2-1/2" x 19-1/8"
Hydraulic Angle Cylinders . . . . . 3-1/3" x 9-5/8"
Pump Capacity At 2000 RPM . . . . . 15 Gal/Min.
Moldboard Angle Adjustment . . . . . 25^{o}
Moldboard Crown Adjustment . . . . . 11^{o}
Overall Length (Blade Straight). . . . . 127 In.
Weight . . . . . 6350 Lbs.

When a nut is tightened on a bolt or a stud, a clamping action is set up between the nut and the component parts. Actually as a nut is tightened, the bolt or stud is stretched or elongated slightly. This stretching action of the bolt or stud maintains the clamping force on the component parts being held together.

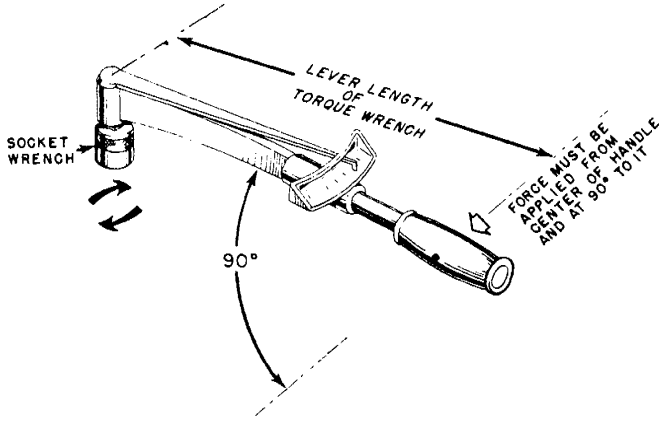


Figure 1 - Torque Wrench

Your torque wrench will register in "foot - pounds" of torque tightness. Be sure to use the recommended torque tightness shown in this Service Manual, for each specific assembly procedure. Unless otherwise stated in the applicable section in this manual, bolts are to be tightened as follows:

BOLT TORQUE CHART

NC (National Course) Thread Size	Torque (Ft. Lbs.)
1/4-20 NC	9-11
5/16-18 NC	17-21
3/8-16 NC	35-40
7/16-14 NC	60-65
1/2-13 NC	90-100
9/16-12 NC	120-130
5/8-11 NC	180-190
3/4-10 NC	310-320
7/8-9 NC	535-545
1-8 NC	755-765
1-1/8-7 NC	1070-1130
1-1/4-7 NC	1470-1530
1-3/8-6 NC	1920-1980
1-1/2-6 NC	2450-2550

NF (National Fine) Thread Size	Torque (Ft. Lbs.)
1/4-28 NF	10-12
5/16-24 NF	19-24
3/8-24 NF	45-50
7/16-20 NF	70-80
1/2-20 NF	100-110
9/16-18 NF	140-150
5/8-18 NF	220-230
3/4-16 NF	380-390
7/8-14 NF	620-630
1-14 NF	890-940
1-1/8-12 NF	1300-1350
1-1/4-12 NF	1750-1850
1-3/8-12 NF	2350-2450
1-1/2-12 NF	3000-3100

In order to properly control this stretch and not build up excessive pressure (which can snap a bolt in two) the torque wrench should be used. However, in order to obtain fairly accurate torque wrench tightness, several factors must be understood. Failure to consider the following conditions will prevent an accurate torque wrench reading

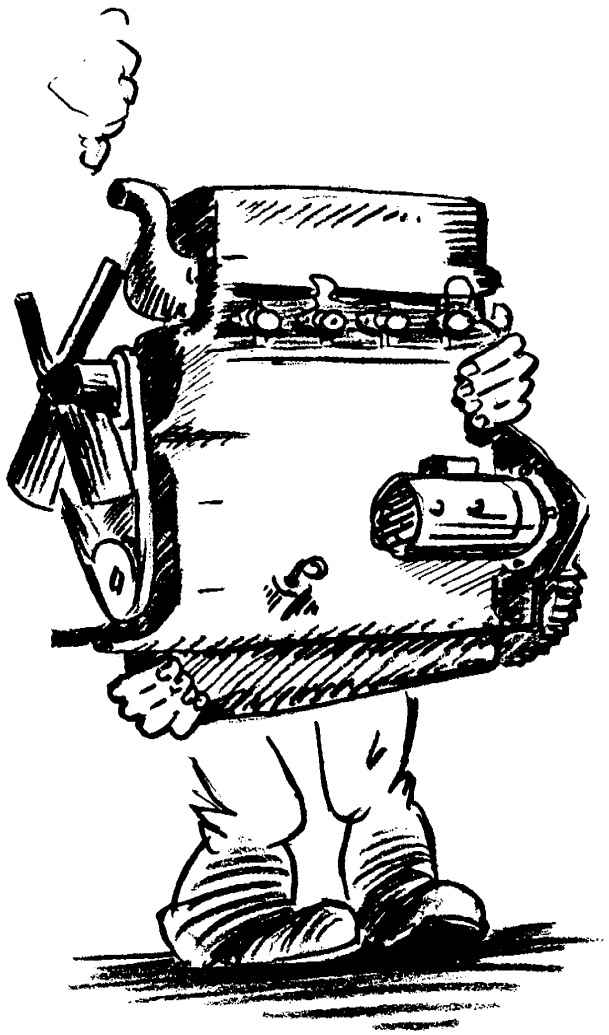
1. Be sure to lubricate the threads of the bolt before the nut is installed.

2. Use the exact type of washer, under the nut, as indicated.

3. Be sure to pull the torque wrench handle with a steady even pull, exerted at right angles to the wrench handle, when the dial is being read. (DO NOT USE AN EXTENSION ON THE HANDLE AS IT WILL CAUSE THE DIAL READING TO BE INACCURATE.)

ENGINE

II



GROUP II - THE GASOLINE ENGINE

GROUP II

SECTION A - CYLINDER HEAD ASSEMBLY

GENERAL

Cylinder head is of the valve in head construction, containing the valve operating mechanism, intake and exhaust ports, and combustion chamber. Four passages extending through the head are provided for cooling purposes.

Individual rocker arms on the rocker shaft are secured by three mounting brackets. The rocker arms are operated by push rods and cam followers from the cam shaft. Figure 1.

Oil is supplied by a drilled oil passage leading from the center main bearing through the block and head to the rocker shaft and rocker arms.

The complete rocker arm shaft assembly can be removed from the cylinder head by removing the three capscrews, and removing the nuts from the studs releasing the rocker shaft brackets. Figure 2.

To prevent separation of parts when the complete rocker arm assembly is removed or installed, a simple holder can be used. This tool can easily be fashioned from a piece of flat steel. Figure 3.

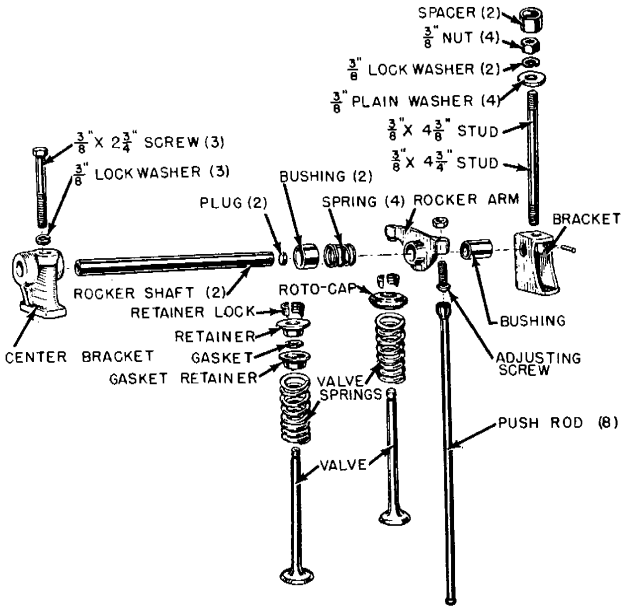


Figure 1 - Valve Action

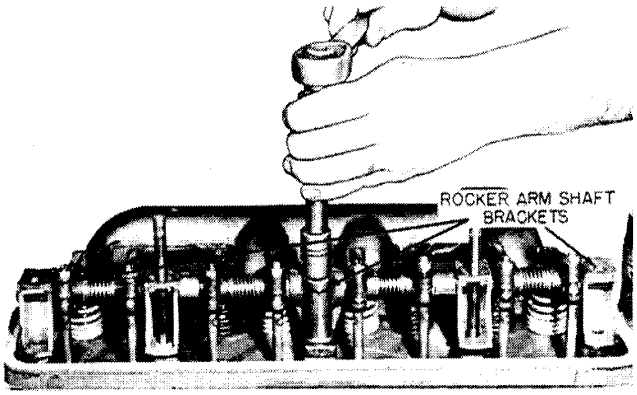


Figure 2 - Removing Rocker Arm

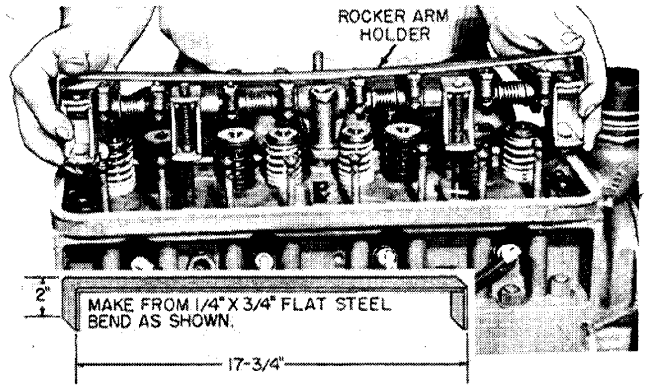


Figure 3 - Using Rocker Arm Holder