

# **Model 420 Gasoline Crawler**

## **Service Manual**

**9-70121**

**Reprinted**

**CASE**



# **CASE TERRATRAC CRAWLER TRACTOR MODEL 420 GASOLINE**

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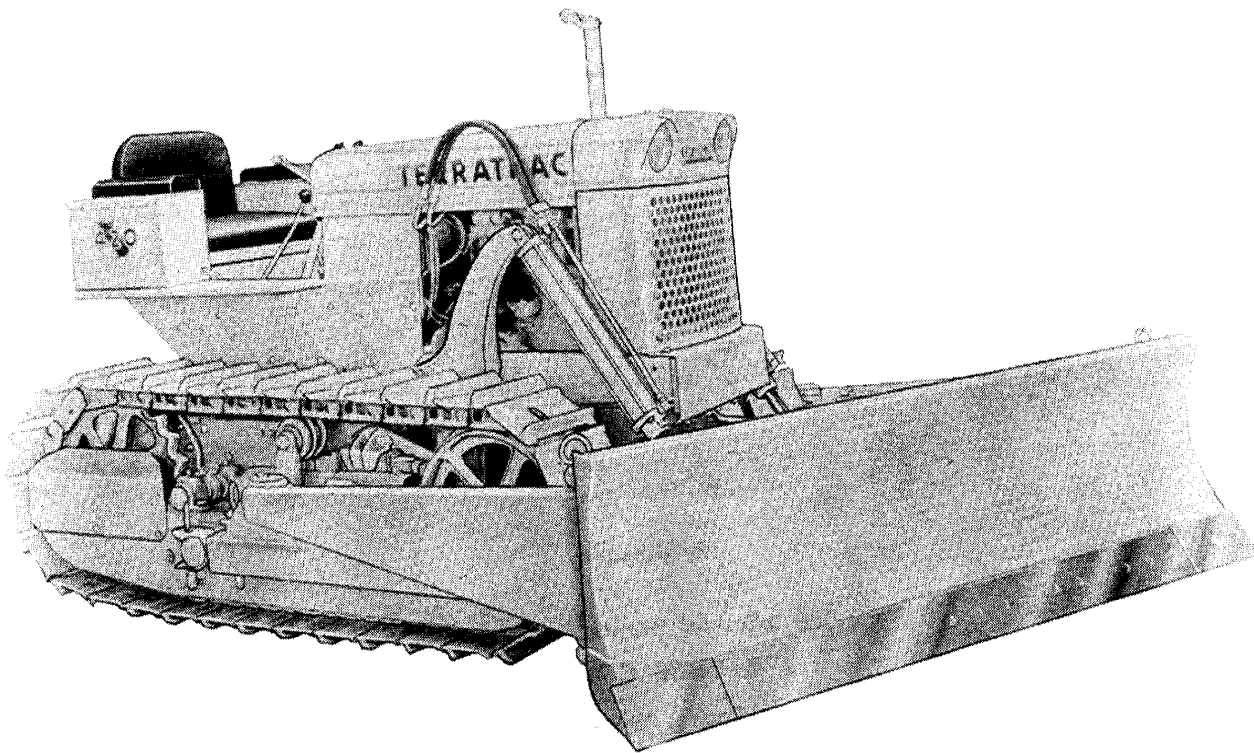
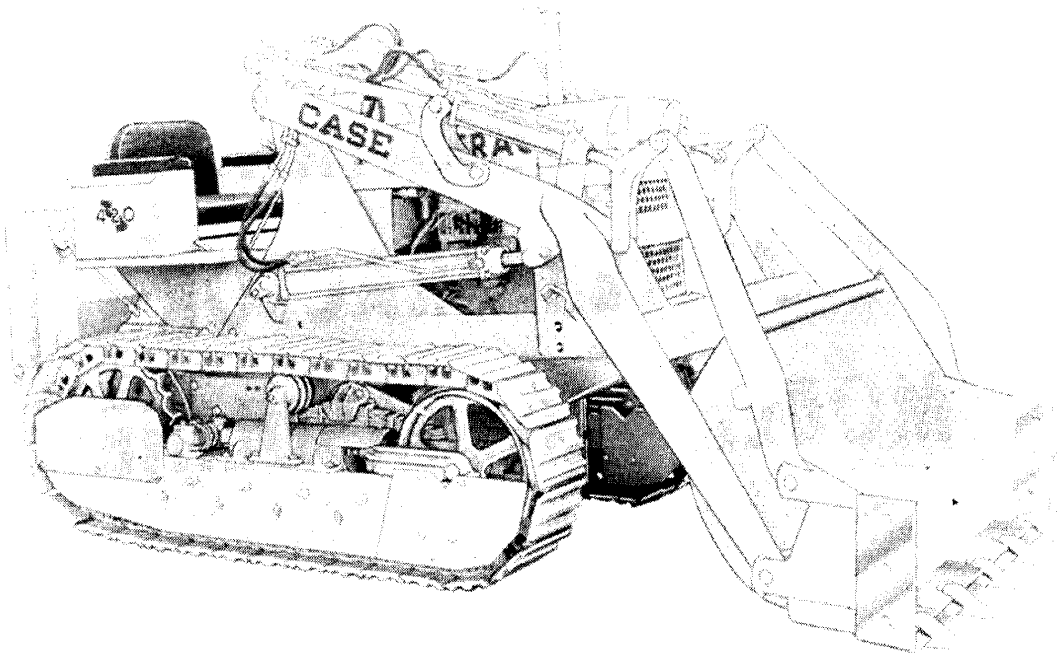
The Industrial Service Department

CASE CORPORATION

Racine, Wisconsin

FORM NO. 9-70121

October 1959



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## FOREWORD

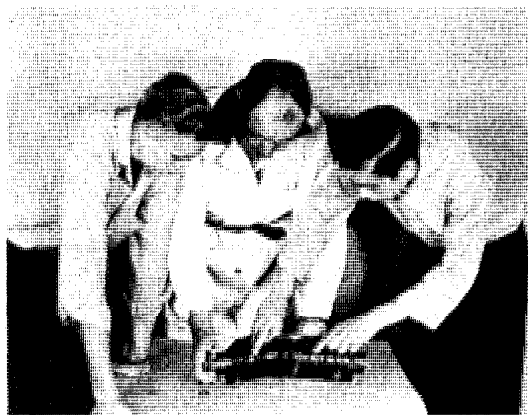
It is the policy of the J. I. Case Co. to build machines with long and useful life expectancy. The reputation of this company and its products are dependent upon the diligent and conscientious maintenance given these products by the field service people.

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 further 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 J. I. CASE MOBILE TRAINING PROGRAM



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.

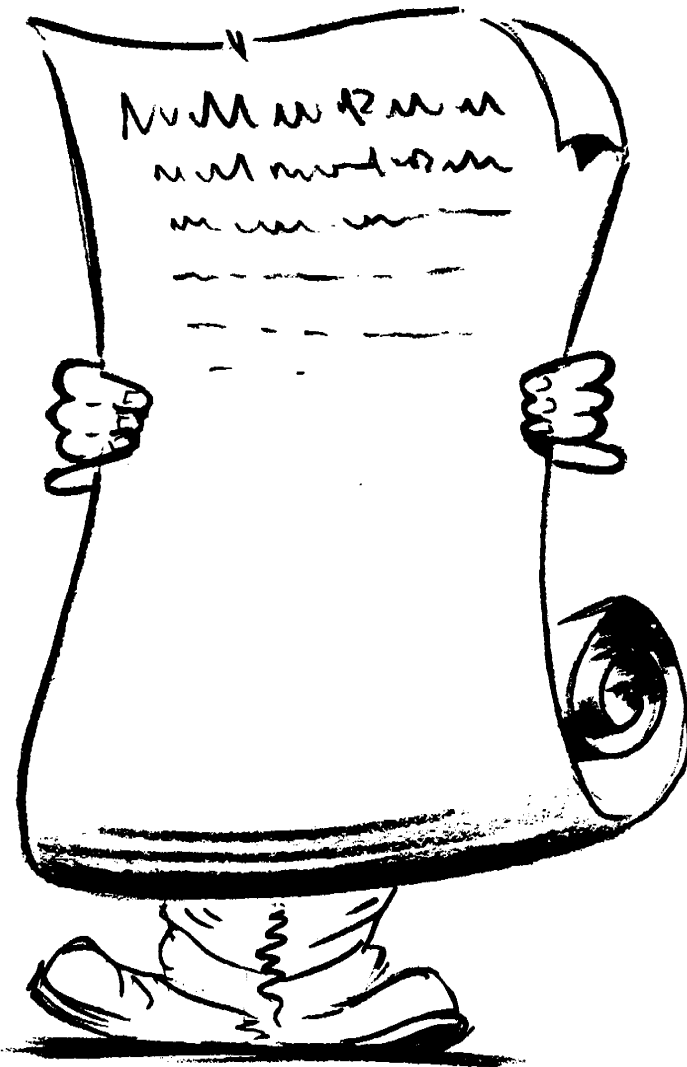
# **TABLE OF CONTENTS**

<b>GENERAL SPECIFICATIONS . . . . .</b>	<b>I</b>
<b>ENGINE . . . . .</b>	<b>II</b>
<b>FUEL SYSTEM . . . . .</b>	<b>III</b>
<b>CLUTCH . . . . .</b>	<b>IV</b>
<b>TRANSMISSION - DIFFERENTIAL . . . . .</b>	<b>V</b>
<b>FINAL DRIVE SYSTEM . . . . .</b>	<b>VI</b>
<b>TRACK SYSTEM . . . . .</b>	<b>VII</b>
<b>ELECTRICAL SYSTEM . . . . .</b>	<b>VIII</b>
<b>HYDRAULIC SYSTEM . . . . .</b>	<b>IX</b>





# GENERAL SPECIFICATIONS





# 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, Uninterrupted . . . . .	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°  
 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°  
 Moldboard Crown Adjustment . . . . . 11°  
 Overall Length (Blade Straight). . . . . 127 In.  
 Weight . . . . . 6350 Lbs.

## SECTION E - TORQUE SPECIFICATIONS

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.

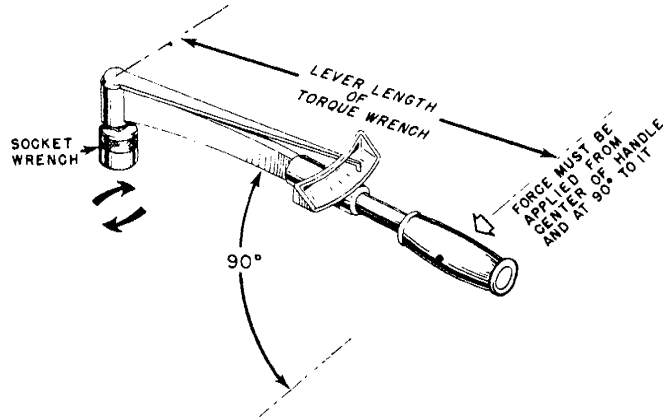


Figure 1 - Torque Wrench

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

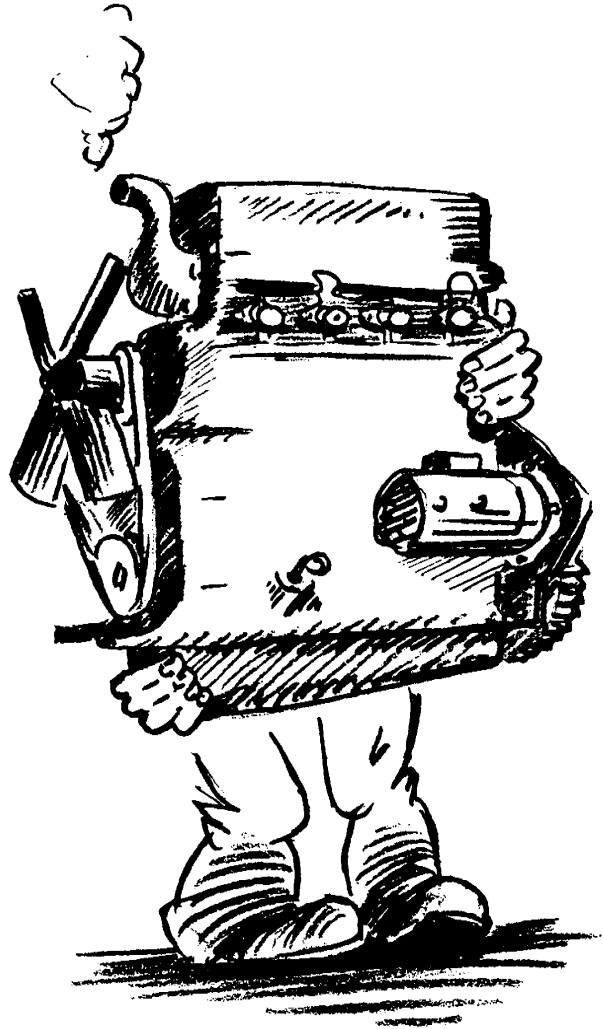
NC (National Course) Thread	NF (National Fine) Thread
Size                      Torque (Ft. Lbs.)	Size                      Torque (Ft. Lbs.)
1/4-20 NC . . . . . 9-11	1/4-28 NF . . . . . 10-12
5/16-18 NC . . . . . 17-21	5/16-24 NF . . . . . 19-24
3/8-16 NC . . . . . 35-40	3/8-24 NF . . . . . 45-50
7/16-14 NC . . . . . 60-65	7/16-20 NF . . . . . 70-80
1/2-13 NC . . . . . 90-100	1/2-20 NF . . . . . 100-110
9/16-12 NC . . . . . 120-130	9/16-18 NF . . . . . 140-150
5/8-11 NC . . . . . 180-190	5/8-18 NF . . . . . 220-230
3/4-10 NC . . . . . 310-320	3/4-16 NF . . . . . 380-390
7/8-9 NC . . . . . 535-545	7/8-14 NF . . . . . 620-630
1-8 NC . . . . . 755-765	1-14 NF . . . . . 890-940
1-1/8-7 NC . . . . . 1070-1130	1-1/8-12 NF . . . . . 1300-1350
1-1/4-7 NC . . . . . 1470-1530	1-1/4-12 NF . . . . . 1750-1850
1-3/8-6 NC . . . . . 1920-1980	1-3/8-12 NF . . . . . 2350-2450
1-1/2-6 NC . . . . . 2450-2550	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



## GROUP II - THE GASOLINE ENGINE

	<u>PAGE</u>
SECTION A - CYLINDER HEAD ASSEMBLY . . . . .	II - 1
Inspection and Repair of Rocker Arm Assembly . . . . .	II - 2
Stripping and Removing Head Assembly . . . . .	II - 3
Checking Compression . . . . .	II - 4
Removing and Inspecting Valves . . . . .	II - 5
Valve Springs . . . . .	II - 10
Installing Cylinder Head . . . . .	II - 12
Valve Rotors . . . . .	II - 14
SECTION B - TIMING GEAR COVER . . . . .	II - 14
Removing Timing Gear Cover . . . . .	II - 14
Removing Governor Lever and Arm Assembly . . . . .	II - 15
Removing Flyweight Governor . . . . .	II - 16
Installing Flyweight Governor . . . . .	II - 16
Replacing Timing Gear Cover . . . . .	II - 17
SECTION C - LUBRICATING SYSTEM . . . . .	II - 18
Oil Pump . . . . .	II - 19
Installing Filter Base . . . . .	II - 22
Changing Filter Element . . . . .	II - 23
SECTION D - CAMSHAFT. . . . .	II - 24
Removing Camshaft Gear . . . . .	II - 24
Removing Camshaft . . . . .	II - 24
Installing Bushings . . . . .	II - 25
Installing Camshaft . . . . .	II - 26
Installing Camshaft Gear . . . . .	II - 26
SECTION E - CRANKSHAFT . . . . .	II - 27
Removing Crankshaft . . . . .	II - 28
Inspecting Crankshaft . . . . .	II - 29
Installing Crankshaft . . . . .	II - 29
Installing Crankshaft Rear on Seal and Retainer . . . . .	II - 30
SECTION F - CRANKSHAFT BEARINGS . . . . .	II - 32
Removing Liners . . . . .	II - 33
Inspection . . . . .	II - 33
Undersize Liners . . . . .	II - 34

Out-of-Round . . . . .	.II- 35
Installing Main Bearing Liners and Caps. . . . .	.II- 35
Tightening Main Bearing Cap . . . . .	.II- 37
Connecting Rod Bearings . . . . .	.II- 37
Inspecting Bearings . . . . .	.II- 39
 SECTION G - PISTON AND ROD ASSEMBLY . . . . .	 .II- 40
Removing . . . . .	.II- 40
Inspecting Pistons . . . . .	.II- 40
Installing Rings . . . . .	.II- 41
Installing Piston Replacement Piston Rings . . . . .	.II- 42
Installing Piston Pin Bushing . . . . .	.II- 45
Installing Piston Pin . . . . .	.II- 46
 SECTION H - PISTON SLEEVES . . . . .	 .II- 46
Removing Sleeves . . . . .	.II- 46
Installing Sleeves . . . . .	.II- 46
 SECTION I - WATER PUMP AND COOLING SYSTEM . . . . .	 .II- 47
Removing Water Pump. . . . .	.II- 48
Disassembly Water Pump . . . . .	.II- 48
Inspection of Pump . . . . .	.II- 49
Assembling Water Pump . . . . .	.II- 50
Cleaning Cooling System . . . . .	.II- 50
Radiator . . . . .	.II- 51
Pressure Radiator Cap . . . . .	.II- 51
Fan Belt Adjustment . . . . .	.II- 52
Replacing Thermostat . . . . .	.II- 52
Testing Thermostat . . . . .	.II- 53
Radiator Anti-Freeze . . . . .	.II- 53
 SECTION J - GENERAL SPECIFICATIONS . . . . .	 .II- 54
 SECTION K - SERVICE HINTS . . . . .	 .II- 59
Engine Will Not Start . . . . .	.II- 59
Engine Backfires . . . . .	.II- 61
Engine Misfires . . . . .	.II- 63
Ignition System . . . . .	.II- 67
Engine Lacks Power . . . . .	.II- 68
Engine Overheats . . . . .	.II- 69
Excessive Fuel Consumption. . . . .	.II- 70
Excessive Oil Consumption . . . . .	.II- 71
Low Oil Pressure. . . . .	.II- 71
Oil Leakage . . . . .	.II- 73



# 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.

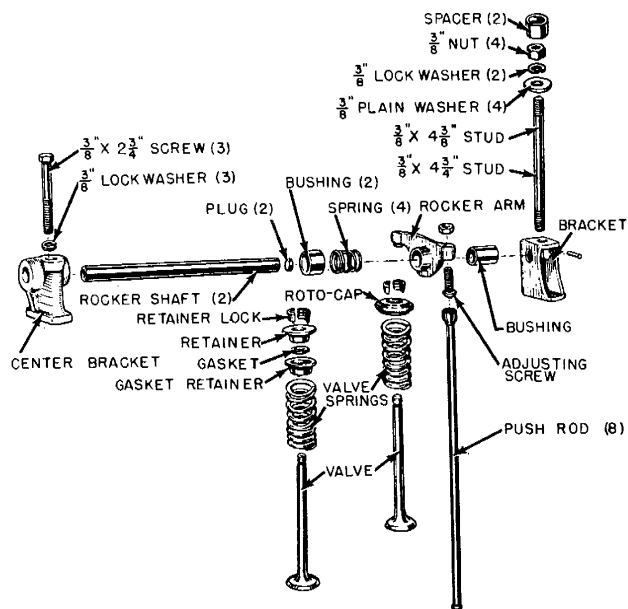


Figure 1 - Valve Action

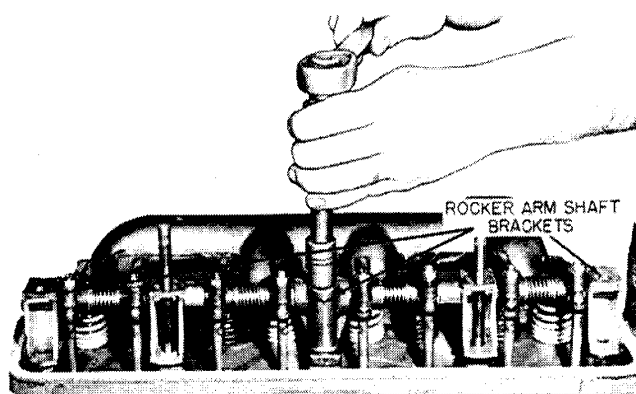


Figure 2 - Removing Rocker Arm

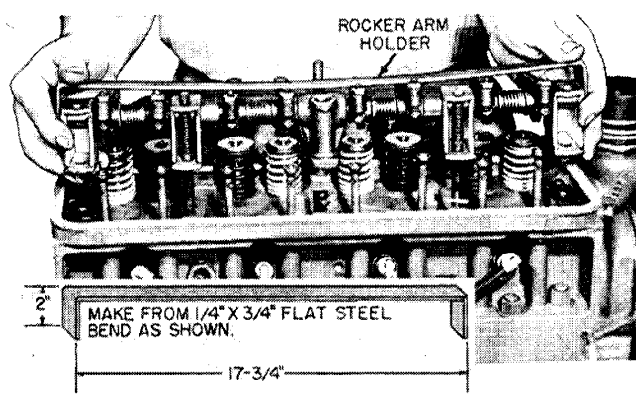


Figure 3 - Using Rocker Arm Holder