

# SHOP MANUAL

# FORD

## MODEL NAA

The model NAA Ford tractor was introduced during the 50th year of the Ford Motor Company, so is generally referred to as the "Golden Jubilee" model. The hood emblem of model NAA tractors manufactured in 1953 bear the legend "GOLDEN JUBILEE;" the legend being eliminated from the hood emblem of NAA tractors manufactured in 1954.

Tractor Serial Number is stamped on transmission housing to rear of starting motor except on early production units (prior to tractor Serial Number 22239) which have the tractor Serial Number stamped on right side of engine block. Ford tractors have no separate engine Serial number.

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# CONDENSED SERVICE DATA

## GENERAL

Engine Make .....	Own
Cylinders .....	4
Bore — Inches .....	3.44
Stroke — Inches .....	3.60
Displacement — Cubic Inches .....	134.0
Compression Ratio .....	6.6
Pistons Removed From .....	Above
Main Bearings, Number of .....	3
Main Bearings Adjustable? .....	No
Rod Bearings Adjustable? .....	No
Cylinder Sleeves .....	Dry
Cylinder Sleeve Material .....	Cast Iron
Generator and Starter Make .....	Own
Forward Speeds .....	4*
*With Sherman Transmission .....	12

## TUNE-UP

Firing Order .....	1-2-4-3
Valve Tappet Gap—Inlet and Exhaust .....	0.015H
Valve Face Angle—Degrees .....	44
Valve Seat Angle—Degrees .....	45
Exhaust Valve Rotators? .....	Free Spin
Ignition Distributor Make .....	Own
Ignition Timing—Static .....	8° BTDC
Ignition Timing—Advanced .....	31° BTDC @ 2000 RPM
Ignition Breaker Contact Gap .....	0.025
Timing Mark Location .....	Flywheel
Distributor Advance Curve .....	See Paragraph 53
Spark Plug Make .....	Autolite
Spark Plug Thread Size .....	14mm.
Spark Plug Model .....	AL7T
Spark Plug Electrode Gap .....	0.025-0.028
Carburetor Make .....	Marvel-Schebler

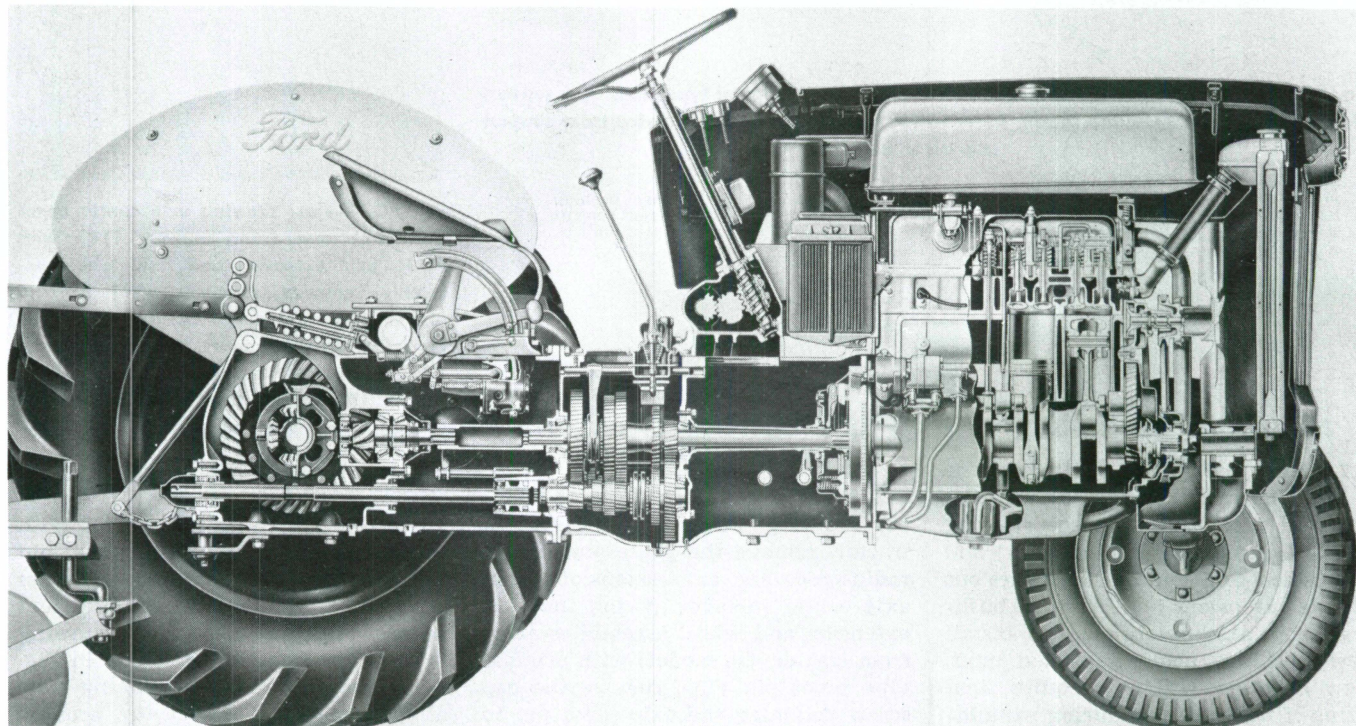
## TUNE UP (Continued)

Carburetor Model .....	TSX-428
Carburetor Float Setting—Inches .....	1/4
Engine Low Idle RPM .....	450
Engine High Idle RPM .....	2200
Belt Pulley RPM @ 2000 Engine RPM .....	1358
Belt Pulley RPM @ 2200 Engine RPM .....	1494
PTO RPM @ 2200 Engine RPM .....	800

## SIZES - CAPACITIES - CLEARANCES

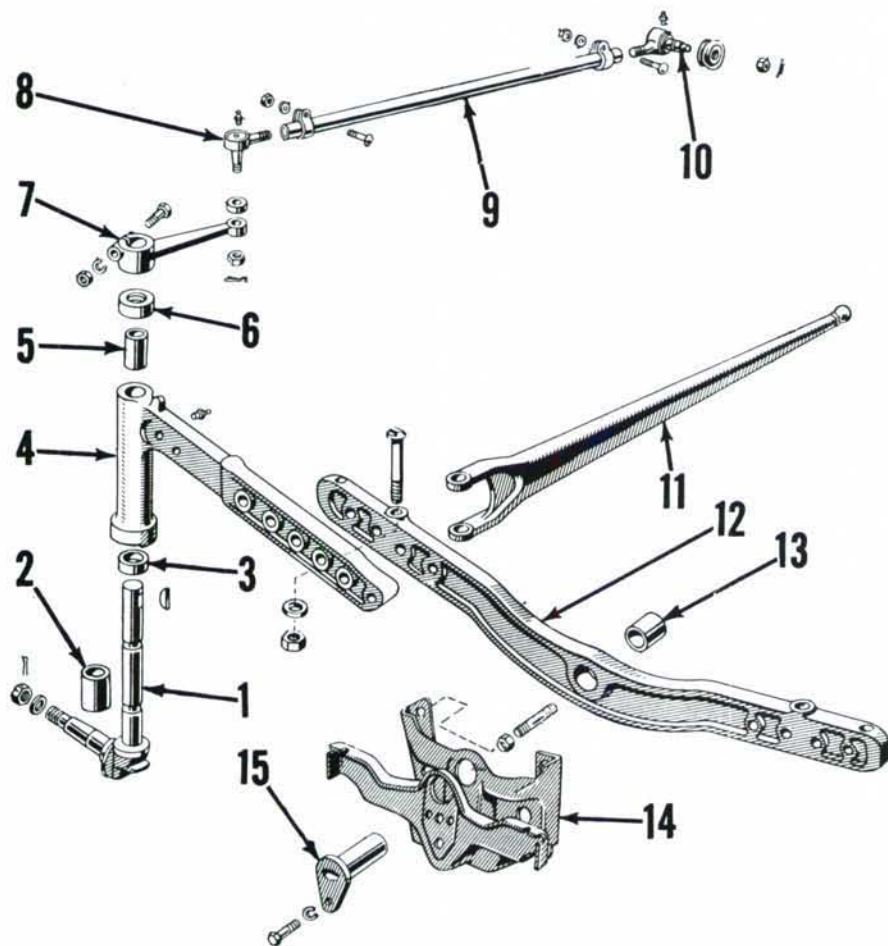
(Clearances in Thousandths)

Crankshaft Journal Diameter .....	2.4974-2.4982
Crankpin Diameter .....	2.2978-2.2986
Main Bearings Running Clearance .....	0.7-2.3
Rod Bearings Running Clearance .....	0.4-2.0
Crankshaft End Play .....	2-6
Camshaft Journal Diameter .....	1.925-1.926
Camshaft Bearing Clearance .....	1.5-3.5
Camshaft End Play .....	3-7
Piston Skirt Clearance .....	See Paragraph 29
Piston Pin Diameter .....	0.9120-0.9123
Pin Clearance in Rod and Piston .....	0.1-0.3
Rocker Arm Shaft Diameter .....	0.780-0.781
Rocker Arm Running Clearance .....	2-4
Cam Follower (Tappet) Clearance .....	0.5-2.1
Valve Stem Diameter—Intake .....	0.3415-0.3425
Valve Stem Diameter—Exhaust .....	0.3405-0.3415
Cooling System—Quarts .....	15
Crankcase Oil—Quarts (Includes Filter) .....	5
Transmission Oil—Quarts .....	6
Differential Oil—Quarts .....	8
Hydraulic System—Quarts .....	8
Steering Gear—Quarts .....	0.5
Belt Pulley Housing—Quarts .....	0.5



Sectional View of NAA Tractor

# FRONT SYSTEM AND STEERING



**Fig. FO1—Exploded view of front axle and related parts. Original type front axle support (14) and pivot pin (15) are shown. Refer to Fig. FO2 for later style service front support and pivot pin.**

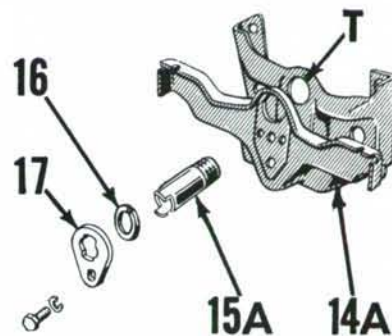
- |                     |                  |                   |                   |
|---------------------|------------------|-------------------|-------------------|
| 1. Spindle assembly | 5. Upper bushing | 9. Tie rod sleeve | 13. Pivot bushing |
| 2. Lower bushing    | 6. Dust seal     | 10. Tie rod end   | 14. Front support |
| 3. Thrust bearing   | 7. Steering arm  | 11. Radius rod    | 15. Pivot pin     |
| 4. Axle extension   | 8. Tie rod end   | 12. Center axle   |                   |

### SPINDLE BUSHINGS

1. Refer to Fig. FO1. To renew the spindle bushings (2 and 5), support front of tractor, disconnect steering arms (7) from wheel spindles (1) and slide wheel and spindle assemblies out of axle extensions (4). Drive old bushings from axle extensions and install new bushings using a piloted drift. New bushings will not require final sizing if not distorted during installation. Renew thrust bearings (3) if rough or worn.

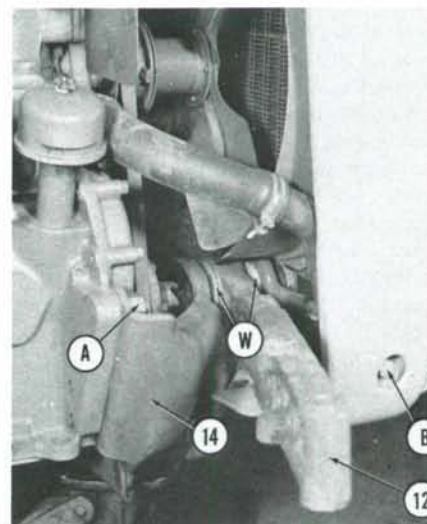
### AXLE CENTER MEMBER AND PIVOT PIN BUSHING

2. To remove the axle center member (12—Fig. FO1), support front of tractor, remove the grille and unbolt radius rods and axle extensions from axle center member. Swing the axle extension and wheel assemblies away from tractor. On models with original type pivot pin (15), remove the cap screw retaining the axle pivot pin to the front support and using a slide hammer as shown in Fig. FO4, re-



**Fig. FO2—Service installed front support has threads (T) for threaded front axle pivot pin (15A).**

- |                    |                    |
|--------------------|--------------------|
| 14A. Front support | 16. Snap ring      |
| 15A. Pivot pin     | 17. Locking flange |



**Fig. FO3—View showing axle center member (12) and front support (14) with R. H. axle extension and front wheel assembly removed. Washers (W) are no longer used and may be discarded when servicing front support. Four stud nuts (A) retain front support to engine. Cap screws (B) attach front end of hood to front support.**

move the pivot pin. On models with service installed threaded pivot pin (15A—Fig. FO2), remove the cap screw and locking flange (17) and unscrew the threaded pin by turning it counter-clockwise as shown in Fig. FO5. Loosen radiator retaining nuts at bottom if necessary to provide clearance and withdraw axle center member from either side of tractor.

**DRAG LINKS & TOE-IN**

4. Drag link ends are of the non-adjustable automotive type. The procedure for renewing the drag link ends is evident. Vary the length of each drag link an equal amount to provide a front wheel toe-in of 1/4-inch.

**FRONT SPLIT**

5. Removing the front axle and support assembly in one unit is a job required to prepare for removal of engine from tractor. Proceed as follows:

Drain cooling system, and if engine is to be disassembled, drain engine oil pan. Remove air cleaner screen and funnel from left hood side panel. Remove grille and unbolt front end of hood from front support. Detach hood side panels from hood rear center panels. Unhook head light wire and remove hood from tractor.

Support front end of tractor under front end of transmission. Remove front support to engine stud nuts. Disconnect drag links and radius rods at rear, then roll front support and axle assembly forward out of way.

Reverse removal procedures to reinstall. Tighten front support to engine stud nuts to a torque of 135-150 Ft.-Lbs.

**FRONT SUPPORT**

3. To remove the front support, first remove the grille and unbolt radiator from front support. Place floor jack under engine, then remove axle pivot pin as in paragraph 2. Remove the retaining stud nuts, pry front support forward to clear studs, then remove front support from below. Lower hood side panels will spring out far enough to clear lower part of radiator when moving front support forward. It may be necessary to loosen drag links if pivot thrust washers are installed.

When installing, tighten the retaining stud nuts to a torque of 135-150 Ft.-Lbs.

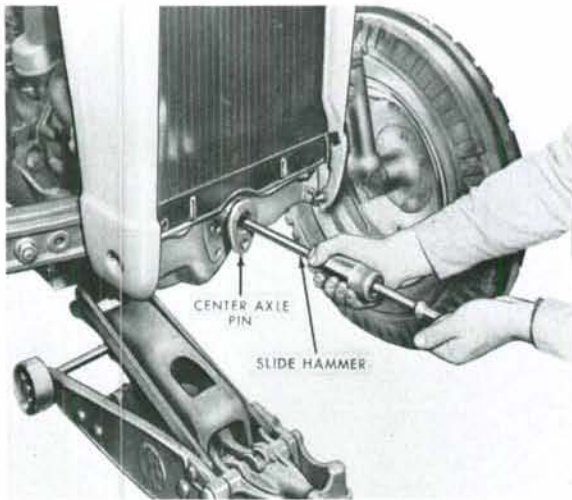


Fig. FO4 — Removing original type non-threaded front axle pivot pin using a slide hammer arrangement.

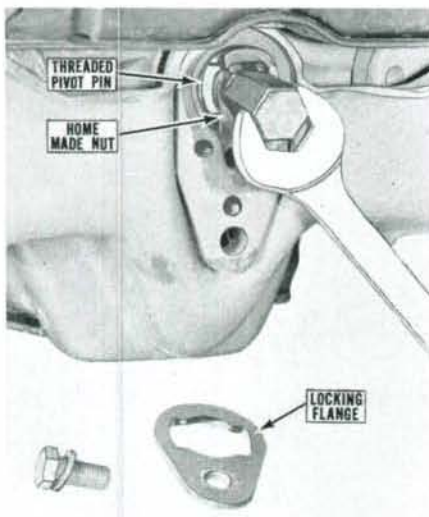


Fig. FO5—Removing threaded service type front axle pivot pin with home made nut. Nut is made by welding lugs on hex bar. Bar should fit inside diameter of pivot pin and lugs be shaped to engage notches in end of pin.

The axle pivot pin bushing (13—Fig. FO1) can be renewed at this time. Make certain that the front axle pivot pin fits freely in bushing before reinstalling axle center member. Thrust washers (W—Fig. FO3) originally installed on front axle pivot pin are no longer used and may be discarded.

On threaded type front axle pivot pin, install snap ring (16—Fig. FO2) on pivot pin and thread pin into front support until snap ring contacts front support firmly, then back-out pin until lugs on pin will engage slots in locking flange (17). Secure locking flange with cap screw and lock washer.

Fig. FO6—Adjustment of steering gear wormshaft bearings is controlled by shims (3). Backlash of each sector gear is controlled by a screw (2) on each side of housing.

