



# FORD TRACTOR

**SERVICE**

**SPECIFICATIONS**

# Foreword

This booklet presents, in convenient form, the specifications required to perform most of the maintenance operations on the Ford Tractors.

The information contained here is the same as that in the Ford Tractor Shop Manual, SE 8175, except for revisions due to engineering changes.

All dimensions given throughout this booklet will be given in inches unless otherwise stated.

The specifications contained in this booklet were in effect at the time the book was approved for printing. The Tractor and Implement Division of the Ford Motor Company reserves the right to discontinue models at any time, or change specifications or design, without notice and without incurring obligation.

Service Department  
Tractor and Implement Division  
Ford Motor Company

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# FIRST TRACTOR PRODUCED IN EACH YEAR SERIAL NUMBERS

YEAR	9N	2N	8N	NAA	600-900	501-4040
1939	1					
40	10234					
41	45976					
42	88888	99003				
43		105375				
44		126538				
45		169982				
46		198731				
47		258504	1			
48			37908			
49			141370			
50			245637			
51			343593			
52			442035	1		
53				2380		
54				77475	1	
55					10615	
56					77271	
57					116368	1001
58						11997
59						58312
60						105943
61						131427

## ENGINES

There are four different engines used in the 601 through the 4040 Series Ford Tractors. The gasoline and the LP-Gas engines used in all Ford Tractors are basically the same, with the exception of carburetion, therefore, all specifications listed under gasoline engines will also apply for the LP-Gas engines. All dimensions given throughout this booklet will be given in inches unless otherwise stated.

GENERAL	TYPE			
	134 Cubic Inch Gasoline	172 Cubic Inch Gasoline	144 Cubic Inch Diesel	172 Cubic Inch Diesel
Valve Arrangement	Overhead	Overhead	Overhead	Overhead
*Horsepower (brake)	48.4 @ 2200 rpm	62.6 @ 2200 rpm	42.7 @ 2200 rpm	56.3 @ 2200 rpm
Bore	3.44	3.90	3.56	3.90
Stroke	3.6	3.6	3.6	3.6
Compression at Sea Level	205 psi @ 1000 rpm		483 psi @ 1000 rpm	554 psi @ 1000 rpm
Firing Order	1-2-4-3			
Compression Ratio	7.5: 1		16.8: 1	
*Torque Ft. Lbs. at rpm	126.8 @ 1600 rpm		111.3 @ 1400 rpm	140.4 @ 1400 rpm
* Less Air Cleaner, Fan, and Muffler				
PISTONS	Autothermic Cam Ground		Solid Trunk Cam Ground	
Fitting New Piston in New Bore (Inch Gauge Thickness, @ Lbs. Pull)	0.0015 @ 5 - 10		0.005 @ 5-18	0.005 @ 5-10

Fitting Used Piston in New Bore (Inch Gauge Thickness, @ Lbs. Pull)	0.002 @ 5 - 10		0.006 @ 5-18	0.006 @ 5-10
Fitting Used Piston in Used Bore (Inch Gauge Thickness, @ Lbs. Pull)	0.003 @ 5 - 10		0.007 @ 5-18	0.007 @ 5-10
Oversize Pistons Available	0.020 - 0.030 - 0.040			
<b>PISTON RINGS</b>	<b>Side Clearance</b>			
Top Ring	$\frac{0.002}{0.0035}$		$\frac{0.004}{0.006}$	$\frac{0.0035}{0.005}$
Second Ring	$\frac{0.0015}{0.003}$	$\frac{0.002}{0.0035}$	$\frac{0.002}{0.004}$	$\frac{0.004}{0.0055}$
Third Compression Ring			$\frac{0.002}{0.004}$	$\frac{0.004}{0.0055}$
Oil Ring	$\frac{0.0015}{0.003}$	$\frac{0.002}{0.0035}$	Both Oil Rings $\frac{0.0015}{0.003}$	
<b>PISTON PINS</b>				
Diameter	$\frac{0.9121}{0.9123}$		$\frac{1.1240}{1.1243}$	$\frac{1.249}{1.2493}$
Length	$\frac{2.837}{2.092}$	$\frac{3.220}{3.232}$	$\frac{2.930}{2.942}$	$\frac{3.220}{3.232}$
Clearance in Rod	$\frac{0.0001}{0.0003}$	$\frac{0.0002}{0.0008}$	$\frac{0.0004}{0.0007}$	
Clearance in Piston	$\frac{0.0001}{0.0003}$	$\frac{0.0002}{0.0008}$	$\frac{0.0004}{0.0007}$	

# ENGINES contd.

## CONNECTING ROD ALIGNMENT

## CRANKSHAFT JOURNAL DIAMETERS - ALL ENGINES

Engine	Max. Bend	Max. Twist	Bushing I. D.	Crankpin	Main Journal
All Gasoline	0.0005	0.0015	$\frac{0.9122}{0.9125}$	$\frac{2.2988}{2.2978}$	$\frac{2.4974}{2.4988}$
144 cu. in Diesel	0.0005	0.0015	$\frac{1.1247}{1.1250}$		
172 cu. in. Diesel	0.0005	0.0015	$\frac{1.2490}{1.2493}$		

## CONNECTING ROD BEARINGS - ALL ENGINES

Bearing Oil Clearance	Connecting Rod Side Clearance	Undersize Bearings Available
$\frac{0.0004}{0.002}$	$\frac{0.003}{0.009}$	0.001 - 0.002 0.010 - 0.020

## MAIN BEARINGS - ALL ENGINES

Bearing Oil Clearance	Crankshaft End Play	Undersize Bearings Available
$\frac{0.0007}{0.0023}$	$\frac{0.002}{0.006}$	0.001 - 0.002 0.010 - 0.020

## CAMSHAFT - ALL ENGINES

Gear Lash	End Play	Journal Diameter	Oil Clearance
$\frac{0.002}{0.006}$	$\frac{0.003}{0.007}$	$\frac{1.925}{1.926}$	$\frac{0.0015}{0.0035}$

## VALVES

Engine	Face Angle	Stem Diameter	Stem-to-Guide Clearance	Valve Lash	Cap-to-Stem End Clearance
All Engines	46 Degrees	$\frac{0.3405}{0.3415}$	$\frac{0.001}{0.002}$	$\frac{0.014}{0.016}$	$\frac{0.002}{0.004}$

# ENGINES contd.

## VALVES contd.

Engine	Face Angle	Stem Diameter	Stem-to-Guide Clearance	Valve Lash	Cap-to-Stem End Clearance
All Gasoline	46 Degrees	$\frac{0.3415}{0.3425}$	$\frac{0.001}{0.002}$	$\frac{0.014}{0.016}$	Intake – No Cap
All Diesel	46 Degrees	$\frac{0.3416}{0.3423}$	$\frac{0.001}{0.002}$	$\frac{0.014}{0.016}$	Intake – No Cap

## VALVE SEATS – ALL ENGINES

Valve	Seat Angle	Seat Runout	Removable	Seat Width
Intake	45 Degrees	0.002	No	0.060-0.080
Exhaust	45 Degrees	0.002	Insert	0.090-0.110

## VALVE GUIDES – ALL ENGINES

Inside Diameter	Guide-to-Valve Stem Clearance	Removable
$\frac{0.3436}{0.3444}$	$\frac{0.001}{0.002}$	Yes

## VALVE TIMING AND LIFT – ALL ENGINES

Valve Lash for Timing	Intake		Exhaust		Valve Lift	
	Opens	Closes	Opens	Closes	Intake	Exhaust
0.015 (Hot)	Before T.D.C. 15°	After B.D.C. 35°	Before B.D.C. 41°	After T.D.C. 15°	0.3553	0.3370

## VALVE SPRINGS – ALL ENGINES

Test Length	Pounds Pressure	Dampening Coils
1.821	Closed - 54-62 Lbs.	Installed Down
1.505	Open - 124-140 Lbs.	

## VALVE TAPPETS – ALL ENGINES

Bore Clearance	Tappet Diameter
$\frac{0.0005}{0.0021}$	$\frac{0.4989}{0.4995}$



# ENGINES contd.

## OIL PUMP ASSEMBLY - ALL ENGINES

Drive Shaft-to-Body Clearance	Driven Gear-to-Pin Clearance	Gear-to-Pump Body Side Clear.	Relief Valve Spring Tension
$\frac{0.0015}{0.0029}$	$\frac{0.001}{0.002}$	0.005 Max.	9.8 lbs. $\pm$ 4 oz. at 1.56"

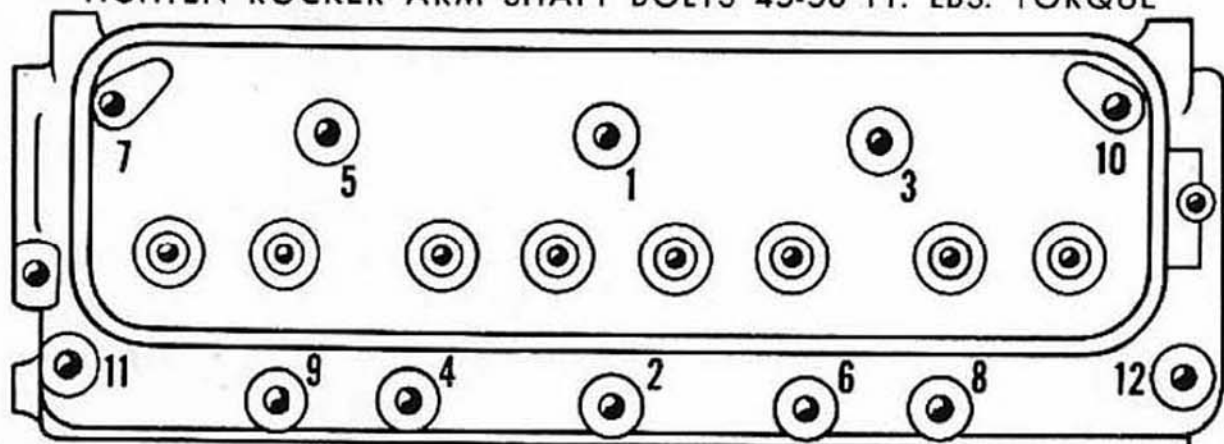
## CYLINDER SLEEVE BORE DIAMETER TAPER AND MICRO FINISH

Engine	Micro Finish	Sleeves	Taper	Out-of-Round	Diameter
134 Cu. In.	25 - 35	Yes	0.001 in 6 Inches	0.0005	$\frac{3.4368}{3.4388}$
144 Cu. In.	25 - 35	No	0.001 in 6 Inches	0.0005	No Sleeve
172 Cu. In.	25 - 35	Yes	0.001 in 6 Inches	0.0005	$\frac{3.8998}{3.9018}$

## ROCKER SHAFT AND SUPPORTS

Journal Diameter	Support I.D.	Material
$\frac{0.780}{0.781}$	$\frac{0.783}{0.785}$	Aluminum
$\frac{0.780}{0.781}$	$\frac{0.783}{0.785}$	Cast Iron Rear Support Diesel Only

TIGHTEN ROCKER ARM SHAFT BOLTS 45-50 FT. LBS. TORQUE

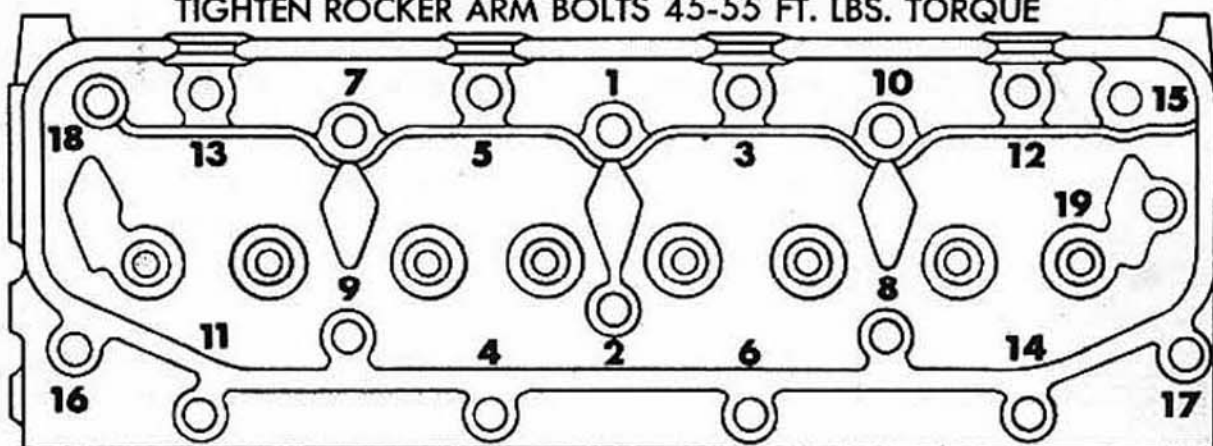


TIGHTEN CYLINDER HEAD BOLTS 65-70 FT. LBS. TORQUE

**T-240**

# ENGINES contd.

TIGHTEN ROCKER ARM BOLTS 45-55 FT. LBS. TORQUE



TIGHTEN CYLINDER HEAD BOLTS 100-105 FT. LBS. TORQUE

**T-241**

## TORQUE LIMITS

## FOOT POUNDS

Valve Rocker Arm Cover . . . . .	1-1/4 - 2 in. lbs.
Cylinder Head Bolts . . . . .	65-70 (Gasoline) 100-105 (Diesel)
Valve Rocker Arm Support to Cylinder Head . . . . .	45-55
Valve Push Rod Chamber Cover . . . . .	20-30 in. lbs.
Fuel Injectors to Cylinder Head . . . . .	15-18
Bleed Back Line to Fuel Injectors . . . . .	6-9
Manifolds to Cylinder Block . . . . .	40-50
Water Outlet Elbow . . . . .	8-10
Water Pump to Cylinder Block . . . . .	10-15
Camshaft Thrust Plate to Cylinder Block . . . . .	12-16
Cylinder Front Cover . . . . .	10-15
Main Bearing Cap Bolts . . . . .	100-105
Connecting Rod Nuts . . . . .	45-50
Connecting Rod Pal Nuts . . . . .	3-4
Flywheel to Crankshaft . . . . .	75-85
Crankshaft Pulley to Crankshaft . . . . .	100-110
Oil Pump to Cylinder Block . . . . .	30-35
Oil Tubes to Oil Pump Cover Plate . . . . .	10-15
Oil Pan to Cylinder Block . . . . .	12-15
Model 501 Only . . . . .	20-25
Hydraulic Pump Gear Cover to Cylinder Block . . . . .	18-21

# IGNITION SYSTEM contd.

## COIL

Primary Ohms Resistance  
1.06 - 1.17 at 75° F.

Secondary Ohms Resistance  
3800 - 4300 at 75° F.

## MANIFOLD VACUUM IN. H.G. AT SEA LEVEL

RPM  
450

No Load  
18 in.

## CONDENSER

Capacity	Minimum Insulation Resistance	Power Factor	Oil Tight At
21 - 25 MFD	5 megohms	0.6% at 60 Cycles 70° - 75° F.	240° F.

## IGNITION TIMING CHART

Model	Initial Timing	Maximum Advance	Degrees Dwell
8N	4° BTDC @ 0 - 400 rpm	18° @ 2000 rpm	27° - 31°
NAA	8° BTDC @ 0 - 450 rpm	31° @ 2000 rpm	27° - 31°
600 and 700	8° BTDC @ 0 - 400 rpm	22° @ 2000 rpm	27° - 31°
600 and 700 (LP-Gas)	11° BTDC @ 0 - 400 rpm	22° @ 2000 rpm	27° - 31°
800 and 900 (Gasoline)	5° BTDC @ 0 - 450 rpm	22° @ 2000 rpm	27° - 31°
800 and 900 (LP-Gas)	8° BTDC @ 0 - 450 rpm	22° @ 2000 rpm	27° - 31°
501, 601, 701 and 2000	4° BTDC @ 0 - 475 rpm	24° @ 2200 rpm	27° - 31°
801, 901, 1801, 4000 and 4040	5° BTDC @ 0 - 475 rpm	28° @ 2200 rpm	27° - 31°

# GASOLINE FUEL SYSTEM

## CARBURETOR

Part Number and Model Application	Idle Jet Part No.	Idle Jet Size	Main Metering Jet Size	Float Setting
EAE-9510-C 8N and NAA	9N9596	$\frac{0.025}{0.026}$	No. 49 Drill	1/4" from Gasket to nearest edge of float
EAE-9510-D	9N9596	$\frac{0.025}{0.026}$	No. 49 Drill	1/4" from Gasket to nearest edge of float
EAF-9510-G 800 and 900	9N9596	$\frac{0.025}{0.026}$	No. 49 Drill	1/4" from Gasket to nearest edge of float
310015 801 and 901	9N9596	$\frac{0.025}{0.026}$	0.081" Drill	1/4" from Gasket to nearest edge of float
312954 501, 601, 701 and 2000	9N9596	$\frac{0.025}{0.026}$	No. 49 Drill	1/4" from Gasket to nearest edge of float
312955 801, 901, 1801, and 4040	9N9596	$\frac{0.025}{0.026}$	0.081" Drill	1/4" from Gasket to nearest edge of float

## FUEL TANK

Capacity	Series 501 through 601	Series 701 through 4040
Full	13 Gallons	17 Gallons

## TORQUE LIMITS:

Throttle Body to Fuel Bowl .....36 In. Lbs.  
Manifold to Cylinder Block...40-50 Ft. Lbs.

# DIESEL FUEL SYSTEM

## FUEL

Diesel Type	Cetane Rating (Minimum)	Range for Recommended Use
No. II	45	Above 20° F.
No. I	50	Below 20° F.

## FUEL INJECTION PUMP

Type

Distributor Type

## FUEL INJECTORS

Type

Simms NL-141, 4 Orifices 0.27 MM Diameter, 150° Spray Angle

Number of Injectors

4

## FUEL TANK

Capacity

Series 600 and 601

Series 701 through 4040

Full

13 Gallons

17 Gallons

## DIESEL INJECTION PUMP TIMING CHART

Model	Initial Timing	No. 1 Cylinder	Fuel Injection Pump
601, 701 and 2000	20° BTDC Timing Mark on flywheel	On Compression Stroke	Timing Marks Aligned
801, 901, 1801 4000 and 4040	18° BTDC Timing Mark on flywheel	On Compression Stroke	Timing Marks Aligned
Fordson Prior to Serial No. 1308977	Pointer on front cover in alignment with mark on crankshaft pulley (29° BTDC)	On Compression Stroke	Timing Marks Aligned
Fordson, Serial Nos. 1308978 through 1425096	26° BTDC Timing Mark on flywheel	On Compression Stroke	Timing Marks Aligned
Fordson, Serial Nos. 1425097 through 1481090	19° BTDC Timing Mark on flywheel	On Compression Stroke	Timing Marks Aligned
Fordson, Serial No. 1481091 and up.	23° BTDC Timing Mark on flywheel	On Compression Stroke	Timing Marks Aligned
Dexta	SPILL mark on flywheel in alignment with notch in clutch housing	On Compression Stroke	Timing Marks Aligned

# L-P GAS FUEL SYSTEM

## CARBURETOR

Type	Idle Jet Size
Without Regulator - early model	None
With Regulator - late model	$\frac{0.175}{0.176}$

## FUEL TANK

Liquid Fill. . . . .	24 gallons
80% Fill. . . . .	19.2 gallons
Working Pressure . . . . .	312 psi
Shell Thickness . . . . .	0.1875
Diameter. . . . .	.16

## VAPORIZER

Type	Operating Pressure
With Regulator - early model . . . . .	10 psi
Without Regulator - late model . . . . .	10 psi

# COOLING SYSTEM

## RADIATOR

Models	Free Flow When Full	Maximum Internal Pressure
All	19½ gpm	14 psi
System Capacity	Pressure Cap Relief Valve Opens	Pressure Valve Opens
15 qts.	.5-1.0 psi	3½-4½ psi

## WATER PUMP

Models	Rear Plate Impeller Clearance	Flow gpm	Belt Deflection
All	0.015-0.025	16 at 1400 rpm	¼ @ 15 lbs.

# COOLING SYSTEM contd.

## THERMOSTAT

Models	Type	Temperature	Full Open
All Except Diesel	Bi-metal cartridge	157°-162° F.	177°-182° F.
Diesel Only	Bi-metal cartridge	178°-182° F.	202° F.

## CLUTCH

### CLUTCH DISC

Diameter	Transmission	Single Clutch	Double Clutch	Used For
9	4 Speed	Yes	No	Trans.
10	5 Speed	Yes	No	Trans.
9	5 Speed	No	Yes	Trans.
9	5 Speed	No	Yes	P.T.O

### DOUBLE CLUTCH

Type	Spring Part No.	Spring Pressure	Free Length	Pedal Free Travel	Transmission Used
Not Ventilated	NDA-7572-A	103±5 @ 1.671	2.767	¾-1	5 Speed
Ventilated	311342	119±5 @ 1.671	2.663	¾-1	5 Speed

### SINGLE CLUTCH\*

Diameter	Type of Transmission	Pedal Free Travel
10	5 Speed	¾ to 1
9	4 Speed	¾ to 1

\*Sold as a complete assembly only.

## TRANSMISSIONS

### FOUR SPEED

Gear Ratios		Reverse . . . . .	10.50-1
1st. . . . .	11-1	<b>Preload</b>	
2nd. . . . .	9.06-1	Countershaft . . . . .	15-30 in. lbs.
3rd. . . . .	6.22-1	Mainshaft . . . . .	20-35 in. lbs.
4th. . . . .	2.98-1	Oil Capacity	6U.S. Quarts

# TRANSMISSIONS contd.

## SHERMAN STEP-UP AND STEP-DOWN

### Gear Ratios

Step-Down 1st. . . . .	16.5-1
Step-Down 2nd. . . . .	13.7-1
Standard 1st. . . . .	11-1
Step-Down 3rd. . . . .	9.3-1
Standard 2nd. . . . .	9.06-1
Step-Up 1st. . . . .	7.2-1
Standard 3rd. . . . .	6.22-1
Step-Up 2nd. . . . .	5.9-1
Step-Down 4th. . . . .	4.4-1
Step-Up 3rd. . . . .	4.1-1
Standard 4th. . . . .	2.98-1
Step-Up 4th. . . . .	1.9-1
Step-Down Reverse . . . . .	15.7-1
Standard Reverse. . . . .	10.50-1
Step-Up Reverse . . . . .	6.9-1

### Oil Capacity

Initial Fill . . . . . 1 U.S. Quart

## SHERMAN REVERSING

### Gear Ratios

Direct . . . . . 1-1

### Oil Capacity

Initial Fill . . . . . 1 U.S. Quart

## FIVE SPEED

### Gear Ratios

1st. . . . .	17.55-1
2nd. . . . .	11.04-1
3rd. . . . .	8.31-1
4th. . . . .	6.02-1
5th . . . . .	3.38-1
Reverse . . . . .	10.29-1

### Preload—Single Clutch

Countershaft. . . . . 7-10 lbs.\*

Mainshaft. . . . . 10.12 lbs.\*\*

### Preload—Double Clutch

Countershaft. . . . . 7-10 lbs.\*

Mainshaft. . . . . 8-10 lbs.\*\*

\*Cord wrapped on countershaft final drive.

\*\*Cord wrapped on main cluster gear (between gears).

Oil Capacity . . . . . 8 U.S. Quarts

## SELECT-O-SPEED

### GENERAL

### End Play

Front Transmission . . . 0.005-0.015

Rear Transmission . . . 0.005-0.015

Planet Pinion Gears. . . 0.008-0.025

### Preload

### P.T.O. Shaft

Bearings. . . . . 18-25 lbs. pull

### Servo Bore Diameter

Servo #1 . . . . . 1.999-2.001

Servo #2 . . . . . 2.125-2.127

Servo #3 . . . . . 3.000-3.002

### Planet Gear Bore Diameter

A,B,C. . . . . 0.8063-0.8068

D. . . . . 1.1062-1.1067

### Planet Gear Shaft Diameter

A,B,C, . . . . . 0.5557-0.5560

D. . . . . 0.7930-0.7934

### Band Adjustments

Band #1 . . . . . One Turn

Band #2 . . . . .  $\frac{3}{4}$  Turn

Band #3 . . . . .  $\frac{3}{4}$  Turn

### Thrust Washers

Standard. . . . . 0.061-0.063

Selective—Front . . . . 0.062-0.122

Selective—Rear . . . . . 0.092-0.152

(Selective Washers are available in increments of 0.010)

## HYDRAULIC SYSTEM

### Reservoir

Fluid Specification. . . . . M2C41

Hydraulic Fluid

Location. . . . . Transmission Case

Capacity. . . . . 11.5 Quarts



# TRANSMISSIONS contd.

## HYDRAULIC SYSTEM

Contd.

### Pump

Type . . . . . Roller Vane  
 Capacity . . . . . 10 gpm @ 2000 rpm  
 and 200 psi (175° F.)

### Control Valve Body

#### Valve Spool

Diameters . . . . . 0.3738-0.3742

Bore Diameters . . . . . 0.3751-0.3758

#### Trunnion Diameter

-Left . . . . . 0.4350-0.4355

#### Trunnion Diameter

-Right . . . . . 0.437-0.443

#### Valve Body

Flatness . . . . . 0.0003 T.I.R.

### Valve Spring Free Lengths

Feathering Valves (2) . . . . . 1.110-1.130

Detent (1) . . . . . 0.98 Approximately

#### Spool Return

(6) . . . . . 1.240 Approximately

#### System Relief

(1) . . . . . 2.02 Approximately

Regulating (2) . . . . . 2.02 Approximately

Lubrication (1) . . . . . 1.450 Approximately

### Hydraulic Pressure @ 800 Engine

rpm and 120° F. Fluid Temp.

System Relief . . . . . 180 psi ± 10 psi

#### Regulating (Partial

Feather) . . . . . 150 psi ± 5 psi

#### Lubrication (At Rear

Support) . . . . . 2 psi Minimum

## TORQUE LIMITING CLUTCH

### Belleville Spring

-Thickness . . . . . 0.084-0.086

### Belleville Spring-Dish

(Free) . . . . . 0.195-0.205

### Drive Plate with Lining

Thickness . . . . . 0.333-0.347

Flywheel Depth . . . . . 2.026-2.032

### Pressure Plate

Thickness . . . . . 0.278-0.282

## BUSHING DIAMETERS

"A" Sun Gear . . . . . 1.249-1.250

Clutch #1 Housing . . . . . 2.2178-2.2188

"C" Carrier-Front . . . . . 3.0615-3.0625

"C" Carrier-Rear . . . . . 1.374-1.375

"D" Sun Gear . . . . . 0.999-1.000

Rear Support . . . . . 1.749-1.750

### P.T.O. Driven Gear

-Front . . . . . 1.874-1.875

### P.T.O. Driven Gear

-Rear . . . . . 1.624-1.625

## OUTPUT SHAFT SPEEDS @

1750 ENGINE RPM

Speed	Output Shaft rpm
R2 . . . . .	-202
R1 . . . . .	-137
N . . . . .	(Slight Creep Possible)
1 . . . . .	46
2 . . . . .	65
3 . . . . .	68
4 . . . . .	97
5 . . . . .	155
6 . . . . .	200
7 . . . . .	230
8 . . . . .	295
9 . . . . .	478
10 . . . . .	709

## TORQUE SPECIFICATIONS

Torque In  
Ft. Lbs.

Valve Body Mounting Bolts . . . . .	5-8
P.T.O. Bearing Retainer Bolts . . . . .	12-15
Pump Mounting Bolts . . . . .	15-18
Adapter Plate Nuts . . . . .	25-30
Distributor Attaching Bolts . . . . .	20-25
Rear Support Mounting Bolts . . . . .	35-40
Interlock Cover Attaching Bolts . . . . .	35-40
Servo #1 Cover Attaching Bolt . . . . .	20-25
Servo Actuating Lever Pin Nuts . . . . .	100-120
Lever Pin Retainer Bolt . . . . .	90-110
P.T.O. Hydraulic Fluid Line Fitting to Distributor . . . . .	10-12
Torque Limiting Clutch Mounting Bolts . . . . .	25-30
Transmission Cover Attaching Bolts . . . . .	18-23

# REAR AXLE

## PRELOAD AND END PLAY

Description	All Purpose	Row Crop	Cord Location
Pinion with new bearings	16-21 lbs.	16-21 lbs.	Pinion shaft
used bearings	8-10 lbs.	8-10 lbs.	Pinion shaft
Final drive upper shaft	—	7-21 lbs.*	Ground part of shaft
lower shaft	—	2-5 lbs.*	Wheel Bolt Circle
Axle Shaft end play	<u>0.002</u> 0.016	—	—

\*Use small figures for used ("broken in") assemblies

## NUT AND BOLT TORQUES—FT. LBS.

Description	All Purpose	Row Crop
Axle Shaft retainer or final drive nuts	130-150	160-175
Thrust block bolts	25-30	25-30
Lower link shaft nut (inside)	150	150
Axle to center housing studs	40-45	40-45
Axle to center housing nuts	55-65	55-65
After Serial #106387	65-70	65-70
Equipped with $\frac{1}{16}$ " nuts	130-150	—
Drive gear bolts	90-110	90-110
Differential case (both type bolts)	90-100	90-100
Pinion retainer bolts	80-100	80-100
Final drive housing studs	—	40-45
Upper shaft retainer bolts	—	60-70
Brake backing plate nuts	—	130-150
Lower shaft rear retainer bolts	—	60-70
Lower shaft rear bearing nut	—	200
Bottom cover bolts	—	20-25
Relief valve plate bolts	35-45	35-45
Center housing to transmission (nuts & bolts)	40-50	40-50
P.T.O. Shifter plate, or Select-O-Speed traction coupler plate	40-55	40-55

## POWER TAKE-OFF

### PRELOADS

Description	Preload	Taken at
P.T.O. Conversion Assemblies	5-15 lbs.*	Splined end of shaft
Belt Pulley Pulley Shaft	2-3 lbs.*	Cord on 9" Pulley
Total	3-5 lbs.*	Cord on 9" Pulley

\*Use the small figures for "broken in" assemblies.

### NUT AND BOLT TORQUE

Description	Ft. Lbs
P.T.O. Cover Bolts	35-40
Shift Lever Studs	40-45
Shift Cover Nuts	45
P.T.O. Conversion Cover Bolts	40-50
Conversion to Center Housing Bolts	40-50
Belt Pulley Assembly to Center Housing Bolts	35-40

# POWER TAKE - OFF contd.

## SHIMS AND GASKETS

Description	Thickness
P.T.O. Conversion Cover Shims	0.003, 0.005, 0.012,
Belt Pulley Cover Gasket	0.008 to 0.023

## STEERING

### ALL PURPOSE TRACTORS

**Pump—Used in early model "All Purpose" Tractors**

Capacity . . . . .	6.50 gpm @ 3000 rpm and 100 psi
Type . . . . .	Sleeve
Drive . . . . .	Belt
Maximum Operating Pressure . . . . .	700-800 psi
<b>Cylinder</b>	
Type . . . . .	Double Acting
<b>Torque Limits</b>	<b>Ft. lbs.</b>
Sector Shaft Cover Bolts . . . . .	25-30
Adapter to Steering Gear Housing . . . . .	20-25
Steering Gear Housing to Transmission . . . . .	60-70
Steering Shaft Cover and Valve Housing Assemblies to Adapter . . . . .	20
Sleeve Type Pump End Cap and Bearing Cap to Pump Body Bolts . . . . .	15-20

### ROW CROP TRACTORS

<b>Pump</b>	
Capacity . . . . .	1.5 gpm @ 900 rpm and 600 psi
Type . . . . .	Rotor
Drive . . . . .	Belt
Maximum Operating Pressure . . . . .	1100 psi
<b>Cylinder</b>	
Type . . . . .	Double Acting
<b>Torque Limits</b>	<b>Ft. lbs.</b>
Pump Flow Control Valve Fitting . . . . .	40-45
Pump Cover to Pump Body Bolts . . . . .	20-30

Belt Adjusting Bracket to Pump Body Stud Nuts . . . . .	25-30
Pump Pulley Retainer Bolt . . . . .	18-20
Belt Adjusting Bracket to Pump Support Bolts . . . . .	25-30
Hose to Pump Pressure Fitting Valve Assembly to Power Cylinder Retaining Bolts . . . . .	35-50
Cylinder Rod Retainer Nut . . . . .	20-25
Cylinder Rod Support Bracket to Side Rail Bolts (3) . . . . .	135-150

### SERIES 1801 AND 4040 TRACTORS

<b>Pump</b>	
Capacity . . . . .	7.5 gpm @ 1250 engine rpm and 1200 psi
Type . . . . .	Roller Vane
Drive . . . . .	Belt, 2:1 ratio with engine rpm
Max. Operating Pressure . . . . .	1550 psi
<b>Cylinder</b>	
Type . . . . .	Integral with valve, 11.6" stroke
<b>Steering Gear</b>	
Steering Housing Actuator Adjustment . . . . .	25 to 30 lbs. pull at Steering Wheel
<b>Torque Limits</b>	<b>Ft. lbs.</b>
Pump Flow Control Valve Fitting . . . . .	30-35
Pump Cover to Pump Body Bolts . . . . .	20-25
Pump Reservoir Retainer Stud . . . . .	30-35
Pump Pulley Retaining Bolt . . . . .	15-20
Power Cylinder Piston Rod Guide Assembly . . . . .	200-230

## FORD TRACTOR MAXIMUM P.T.O. HORSEPOWER

Model	P.T.O. Speed @ High Idle No Load Engine RPM	P.T.O. Speed @ Rated Engine RPM	Horsepower
9N	809	727 @ 2000	23.6
8N (Prior to 1949)	809	727 @ 2000	23.6
8N (After 1949)	809	727 @ 2000	26.2
8NAN - Distillate	809	727 @ 2000	21.9
NAA	809	727 @ 2000	31.1
640 - Gas	809	727 @ 2000	31.0
640 - LP-Gas	809	727 @ 2000	28.4
660 - Gas	755	685 @ 2200	34.2
740 - Gas	809	727 @ 2000	31.6
850 - LP-Gas	755	685 @ 2200	39.5
860 - Gas	755	685 @ 2200	45.4
960 - Gas	755	685 @ 2200	46.3
621, 631, 641, 741 - Gas	809	727 @ 2000	33.6
651, 661 - Gas	755	685 @ 2200	35.8
821, 841, 941 - Gas	809	727 @ 2000	44.7
851, 861, 951, 961 - Gas	755	685 @ 2200	48.4
541D, 641D, 741D - Diesel	811	727 @ 2000	31.8
821, D841D, 941D - Diesel	811	727 @ 2000	39.9
851D, 861D, 951D, 961D - Diesel	757	685 @ 2200	42.0
841L - LP-Gas	809	727 @ 2000	42.0

### SELECT-O-SPEED TRACTORS

671, 771 - Gas	763	693 @ 2200	34.3
*681 - Gas	763 or 1402	693 or 1272 @ 2200	34.3
671D, 771D - Diesel	765	693 @ 2200	31.6
*681D - Diesel	765 or 1404	693 or 1272 @ 2200	31.6
671L, 771L - LP-Gas	763	693 @ 2200	32.6
*681L - LP-Gas	763 or 1402	693 or 1272 @ 2200	32.6
871, 971 - Gas	763	693 @ 2200	46.2
*881, 981 - Gas	763 or 1402	693 or 1272 @ 2200	46.2
871D, 971D - Diesel	765	693 @ 2200	41.4
*881D, 981D - Diesel	765 or 1404	693 or 1272 @ 2200	41.4
871L, 971L - LP-Gas	763	693 @ 2200	43.6
*881L, 981L - LP-Gas	763 or 1402	693 or 1272 @ 2200	43.6

\*The alternate, higher P. T. O. speeds shown for all 681, 881 and 981 Model Tractors are achieved by positioning the P. T. O. shift lever in the rearward position to obtain the 1000 rpm range.

### FORDSON TRACTORS

Fordson Major - Diesel	-----	545 or 723 @ 1600	38.5
Fordson Power Major - Diesel	659	573 @ 1700	47.7
Fordson Dexta - Diesel	777	691 @ 2000	31.4

**IMPORTANT:** It should be remembered that both altitude and temperature will affect maximum horsepower output. For example, at 1000 feet above sea level, a tractor will produce only approximately 96.5% as much power as it would at sea level; at 5000 feet, tractor horsepower output drops to approximately 83.3% of its sea level potential.

We also suggest that a temperature correction factor of 1% reduction in horsepower for every 10 degrees above 60 degrees Fahrenheit be used when measuring horsepower output.

# FRONT AXLE TORQUE CHART

## ALL PURPOSE FRONT AXLE

Identification	Ft.-Lbs.
Radius Rod to Center Axle Nut . . . . .	75-135
Radius Rod Cap to Transmission Nut . . . . .	45-50
Axle Half to Center Axle Nut. . . . .	135-150
Center Axle Pin . . . . .	200
Support to Engine Nut . . . . .	135-150
Spindle Arm to Spindle Nut. . . . .	60-70

## FRONT END OPTIONS

Spindle to Pinion Shaft Bolt (Late Model Pedestal Mounting bolts) . . .	135-150
Row Crop Axle Support to Pedestal Bolt . . . . .	150-180
Row Crop Steering Arm to Pinion Shaft Bolt . . . . .	150-180

## ROW CROP PEDESTAL

Sector Shaft Cap to Pedestal Bolt . . . . .	35-40
Pedestal to Side Rail Nut. . . . .	150-180
Steering Arm to Sector Shaft Nut. . . . .	160-180
Pedestal Cover to Pedestal Bolt . . . . .	25-30

## ROW CROP WIDE ADJUSTABLE

Radius Rod to Center Axle Nut . . . . .	75-135
Axle Pin Lock Nut. . . . .	50-55
Axle Half to Center Axle Nut . . . . .	220-250
Tie Rod to Spindle Arm Nut. . . . .	90-130
Tie Rod Sleeve Clamp Nut. . . . .	35-30

## SERIES 1801 and 4040 TRACTORS

Tie Rod to End Assembly Clamp Bolt. . . . .	50-60
Tie Rod to Steering Arm Nut. . . . .	150-170
Tie Rod Clamp Nut. . . . .	50-60
Steering Arm to Spindle Bolt . . . . .	120-160
Axle Pin Lock Nut . . . . .	150
Spindle Pin Lock Nut. . . . .	25-30

# WHEELS AND TIRES

## REAR WHEEL CHART

RIM SIZE	RIM PART NO.	DISC PART NO.	SERIES APPLICATION	REMARKS
8x42	310715	NCA-1122-A	700,701,900,901	High Clearance Tractors
9x28	NCA-1020-C	NCA-1122-A	600 thru 801	
9x38	313559	313555	700,701,900,901	High Clearance Tractors
10x28	NCA-1020-B	NCA-1122-A	600 thru 1801	
10x28	NCA-1020-B	312223	800,801,1801	Available only as production option
11x28	NDB-1020-B	NDB-1122-B	600 thru 901	Power adjusted wheels standard on 900-901, optional on 600 thru 801*
11x38	313953	313555	700,701,900,901	High Clearance Tractors
12x24	311724	311701	600,601,800 801,1801	
12x28	313197	NCA-1122-A	800,801,1801	

\*With spacer.

## FORD TRACTOR WHEEL WEIGHTS

Ford Tractor Wheel Weights	Series 600-601		800-801		700-701	900-901
	Farm Use	Indust. Use	Farm Use	Indust. Use	Std. Wheels	Pow. Adj. Wheels
<b>FRONT (Per Tractor Set)</b> Wheel Weights-Inside mounted Two per wheel-50 lbs. each Total-200 lbs.	X	X	X	X	*	*
<b>REAR (Per Tractor Set)</b> Regular Duty Weights Two Mounting Discs-34 lbs. each Segments-(24) 30 lbs. each Bolts-12 lbs. Total-800 lbs.	X	X			X	X
*Heavy Duty Weights Two Mounting Discs-34 lbs. each Segments-(24) 45 lbs. each Bolts-12 lbs. Total-1160 lbs.				X		

\*Use Front Weight Box on Single and Dual Wheel Row Crop-Box weighs 130 lbs.  
Six Segments-48 lbs. each-Total 420 lbs. with weight box attaching bolts.

### LIQUID WEIGHT CHART

Tire Size	Gals. of H <sub>2</sub> O	Lbs. of CA.CL <sub>2</sub>	Total Wgt.
<b>FRONT</b>			
9:00 x 10-	9	45	120
5:50 x 16-	4.5	22.5	60
6:00 x 16-	5.2	26	69
6:50 x 16-	5.9	29.5	79
7:50 x 16-	9	45	120
<b>REAR</b>			
10:00 x 28-	24	122	324
10:00 x 38-	31	157	416
11:00 x 28-	32	160	426
12:00 x 28-	39	197	525
12:00 x 38-	51	257	685
13:00 x 24-	44	219	584
13:00 x 28-	49	246	648
13:60 x 28-	39	197	525
14:90 x 24-	44	219	584
14:90 x 28-	49	246	648

### INFLATION CHART

Tire Size	Inflation Pressure	Max. Lbs. Tire Load Per Wheel
<b>REAR:</b>		
10:00 x 28 4-ply	16	1860
10:00 x 38 4-ply	16	2155
11:00 x 28 4-ply	14	2070
12:00 x 28 4-ply	14	2430

Tire Size	Inflation Pressure	Max. Lbs. Tire Load Per Wheel
<b>REAR:</b>		
12:00 x 38 4-ply	14	2420
12:40 x 28 4-ply	14	2070
13:00 x 24 4-ply	14	2470
13:60 x 28 4-ply	14	2430
14:00 x 24 4-ply	16	3560
14:90 x 24 4-ply	18	3125
14:90 x 28 4-ply	14	2630
<b>FRONT:</b>		
5:50 x 16 4-ply	28	1060
6:00 x 16 4-ply	20	755
6:50 x 16 6-ply	28	1050
7:50 x 16 8-ply	44	2390
9:00 x 16 8-ply	49	1620

#### Tread Width

Series 601 and 801 front tire width  
52-76 inches  
\*Series 601 and 801 rear tread width  
52-76 inches  
Series 701 rear tread width  
56-84 inches\*  
Series 901 rear tread width  
56-84 inches\*\*

\*Bolting disc to alternate rim flanges,  
reversing rim and reversing disc.

\*\*Power Adjusted Wheels-discs  
reversed.

# HYDRAULIC SYSTEM

## General

Capacity . . . . . 8 U.S. Quarts  
 Type . . . . . Live Action  
 Maximum Pressure . . . . . 2000 lbs. psi  
 Control . . . . . Implement position or constant draft

## Vane Type Pump—

Model 600, 700, 800 and 900

Drive . . . . . Gear  
 Capacity . . . . . 4 to 4.8 gpm at 0 psi at 2000 rpm (engine)

## Vane Type Pump—NAA

Drive . . . . . Gear  
 Capacity (Hy-Trol in "Fast" position) . . . . . 4.8 gpm at 0  
 psi at 2000 rpm (engine)  
 Capacity (Hy-Trol in "Slow" position) . . . . . 1.25 gpm at  
 100 psi at 2000 rpm (engine)

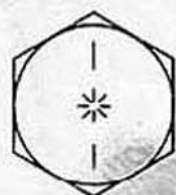
## Piston Pump

Drive . . . . . Gear  
 Capacity . . . . . 4 gpm at 0 psi at 2000 rpm (engine)

# MAINTENANCE

MAINTENANCE GUIDE	Each 10hrs.	Each 100hrs	Each 200hrs	Each 400hrs	Each 600hrs
Check for Oil Leaks		X			
Fuel Filter (Drain)			X		
Diesel Fuel Filter (Replace)				X	
Diesel Fuel Injectors (Clean and Test)					X
Check Coolant Level	X				
Check Fan Belt and Power Steering Belt Adjustment		X			
Check and Adjust Brakes			X		
Check Tire Pressure	X				
Check Electrolyte Level in Battery	X				
Check Clutch Pedal Free Travel			X		
Adjust Transmission Bands (Select-O-Speed)					X
Check Headlamps and Taillamp Operation			X		
Tighten all Electrical Connections					X
Perform Minor Tune-Up					X
Perform Major Tune-Up			*		
Replace Select-O-Speed Transmis- sion Filter					X
Check for Correct Wheel Bearing Adjustment			X		
Check Wheel Lug Nuts for Tightness			X		
Check Gauges for Proper Operation			X		
*Every 1, 200 Hours					

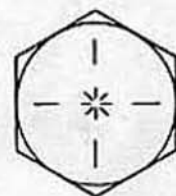
# MARKINGS ON HEX HEAD BOLTS TO CONFORM TO SAE STANDARDS



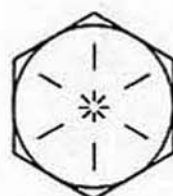
2 LINES 180° APART  
 FORD SPEC M-3500-C  
 SAE 1038, 1040, 1042, 1043  
**GRADE #3 STEEL NO  
 HEAT TREAT**  
 ROCKWELL "B" 95-104



3 LINES 120° APART  
 FORD SPEC M-3500-E  
 COURSE GRAIN SAE 1038,  
 1040, 1042, 1043  
**GRADE #5 STEEL  
 HEAT TREATED**  
 ROCKWELL "C" 19-30 OVER  
 3/4" DIA  
 ROCKWELL "C" 23-30 3/4"  
 & UNDER



4 LINES 90° APART  
 FORD SPEC M-3500-F  
 SAE 1041  
**GRADE #6 STEEL  
 HEAT TREATED**  
 ROCKWELL "C" 30-36 5/8"  
 & UNDER  
 ROCKWELL "C" 28-36 OVER  
 5/8" DIA



6 LINES 60° APART  
 FORD SPEC M-3500-G  
 ALLOY STEEL SAE 5135  
 5140  
**GRADE #8 STEEL  
 HEAT TREATED**  
 ROCKWELL "C" 32-38 ALL SIZES

GRADE #1 NO MARKING FORD SPEC M-3500-H  
 GRADE #2 NO MARKING FORD SPEC M-3500-A

NO SAE GRADE FOR FORD SPEC'S ▲ M-3500-B & § M-3500-D

☼ BOLT HEADS SHOULD ALSO BE MARKED TO IDENTIFY THE MANUFACTURER  
 ▲ ROCKWELL "B" 85-97      § ROCKWELL "B" 96-104

## DECIMAL EQUIVALENTS

1/64 - .15625	11/64 - .171875	13/32 - .40625	23/32 - .71875
1/32 - .03125	3/16 - .1875	7/16 - .4375	3/4 - .750
3/64 - .046875	13/64 - .203125	15/32 - .46875	25/32 - .78125
1/16 - .0625	7/32 - .21875	1/2 - .500	13/16 - .8125
5/64 - .078125	15/64 - .234375	17/32 - .53125	27/32 - .84375
3/32 - .09375	1/4 - .250	9/16 - .5625	7/8 - .875
7/64 - .109375	9/32 - .28125	19/32 - .59375	29/32 - .90625
1/8 - .125	5/16 - .3125	5/8 - .625	15/16 - .9375
9/64 - .140625	11/32 - .34375	21/32 - .65625	31/32 - .96875
5/32 - .15625	3/8 - .375	11/16 - .6875	1 inch - 1.000

### NC OR US STANDARD SCREW THREAD AND DRILL CHART

Size of Tap Threads per Tap Drill Size

	Inch	
1/4	20	7 or .201"
5/16	18	F or .257"
3/8	16	5/16
7/16	14	U or .368
1/2	13	27/64
9/16	12	31/64
5/8	11	17/32
11/16	11	19/32
3/4	10	21/32
13/16	10	23/32
7/8	9	49/64
15/16	9	53/64
1	8	7/8

### NF OR SAE SCREW THREAD AND DRILL CHART

Size of Tap Threads per Tap Drill Size

	Inch	
1/4	28	3 or .213"
5/16	24	1 or .272"
3/8	24	Q or .332"
7/16	20	23/64
1/2	20	29/64
9/16	18	33/64
5/8	18	37/64
11/16	16	5/8
3/4	16	11/16
7/8	14	13/16
1	14	15/16



