

Manuals+

[Q & A](#) | [Deep Search](#) | [Upload](#)

[manuals.plus](#) /

› [Ferguson](#) /

› [Ferguson Shop Manual: Models TE20, TO20, TO30 \(I & T Shop Service\)](#)

Ferguson TE20, TO20, TO30

Ferguson Shop Manual: Models TE20, TO20, TO30

I & T Shop Service

INTRODUCTION

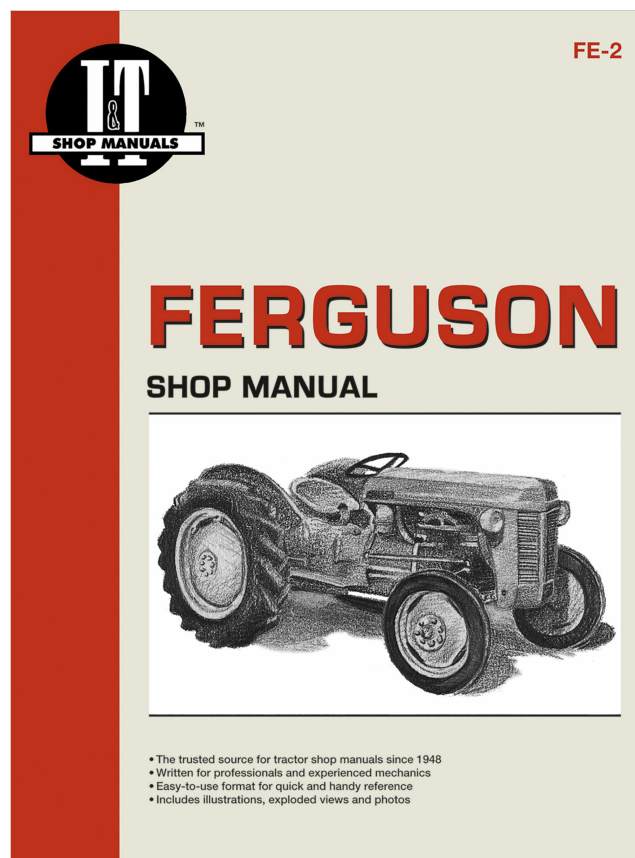


Figure 1: Manual Cover. This is the front cover of the Ferguson Shop Manual, indicating its scope for models TE20, TO20, and TO30.

This manual provides comprehensive service and repair information for Ferguson tractor models TE20, TO20, and TO30. It is designed to assist owners and mechanics in performing maintenance, troubleshooting, and repair procedures to ensure the proper operation and longevity of these tractors. The content includes detailed instructions, diagrams, and specifications.

HOW TO USE THIS MANUAL

To effectively use this shop manual, locate the relevant section for the component or system you are working on. Each section provides step-by-step instructions, often accompanied by illustrations, to guide you through disassembly, inspection, repair, and reassembly processes. Always refer to the safety guidelines before beginning any work.

SHOP MANUAL FERGUSON

Models TE20, TO20 and TO30

Tractor serial number stamped on instrument panel name plate.

Engine serial number stamped on engine name plate which is located on distributor side of engine.

INDEX (By Starting Paragraph)

BELT PULLEY.....	105A	ENGINE continued		HYDRAULIC SYSTEM	
BRAKES		Ignition timing.....	60-61	Adjustment.....	120-123
Adjustment.....	100-101	Main Bearings.....	25A	Interchangeability.....	119-119A
R&R and overhaul.....	102	Oil filter.....	30	Lift cover.....	129-130C
CARBURETOR.....	40	Oil pump.....	29	Pump.....	125-128G
CLUTCH		Pistons.....	22	Troubleshooting.....	124A-124D
Interchangeability.....	70	Piston pins.....	23	Work cylinder.....	130A
Overhaul.....	74	Piston & rod removal.....	21	IGNITION SYSTEM	
Pedal adjustment.....	71	Piston rings.....	22	TE20.....	60
Remove & reinstall.....	73	Rear oil seal.....	26	TO20-TO30.....	61
COOLING SYSTEM		Rocker arms.....	16	POWER TAKE-OFF.....	110-111
Fan.....	57	Tappets.....	15	REAR AXLE	
Pump.....	57	Timing gear cover.....	18	Bearing, renewal.....	96
Radiator.....	55	Timing gears.....	19	Lubrication.....	96
Thermostat.....	56	Valve guides.....	13	Seals, renewal.....	96
DIFFERENTIAL		Valves & valve seats.....	12	Shaft, R&R.....	95
Overhaul.....	91	Valve springs.....	14	STEERING GEAR	
Remove & reinstall.....	90	Valve timing.....	17	Adjustment.....	4-5
ELECTRICAL		FINAL DRIVE		Overhaul.....	7
Distributor.....	60-61	Bevel gears.....	92A-93	Remove & reinstall.....	6
Generator.....	65-66	Differential overhaul.....	91	TRANSMISSION	
Generator regulator.....	65-66	Differential R&R.....	90	Assembly R&R.....	81
Starting motor.....	67	Wheel axle shaft bearings adjust.....	94	Basic procedure.....	80-80D
ENGINE		Wheel axle shaft bearings renew.....	96	Bevel pinion.....	92A
Assembly R&R.....	10	Wheel axle shaft & housing R&R.....	97	Clutch shaft.....	82
Cam followers.....	15	Wheel axle shaft oil seal renew.....	96	Countershaft.....	85
Camshaft.....	20	Wheel axle shaft R&R.....	95	Interchangeability.....	79
Connecting rods & bearings.....	24	FRONT SYSTEM		Main drive gear & shaft.....	82
Crankshaft & bearings.....	25A-25B	Axle main member.....	1	Main shaft.....	84
Crankshaft oil seals.....	18, 26	Axle pivot pin & bushing.....	2	Reverse gear.....	86
Cylinder head.....	11	Steering gear adjust.....	4-5	Shifter rails and forks.....	83A
Cylinder sleeves.....	22	Steering gear R&R.....	6	TORQUE RECOMMENDATIONS.....	
Flywheel R&R.....	27	Steering spindles.....	3End of Manual	
Flywheel timing marks.....	28	GOVERNOR			
Front oil seal.....	18	Adjustment, minor.....	50		
		Adjustment, major.....	50A		
		R&R and overhaul.....	51		

Figure 2: Manual Index Page. This page provides an overview of the manual's structure, listing major sections and their

The manual is organized by major tractor systems. For example, if you need to work on the engine, refer to the "ENGINE" section. Similarly, for electrical issues, consult the "ELECTRICAL" section. The index (Figure 2) serves as a quick guide to navigate the manual's contents.

MAINTENANCE PROCEDURES

Regular maintenance is crucial for the reliable operation of your Ferguson tractor. This section outlines common maintenance tasks and provides detailed instructions for each.

Engine Maintenance

- **Ignition Timing:** Refer to page 60-61 for adjustment procedures.
- **Main Bearings:** Instructions for service and replacement are on page 100-101.
- **Oil Filter:** Replacement guidelines are on page 30.
- **Oil Pump:** Service and repair details on page 29.
- **Pistons:** Removal and installation procedures on page 22.
- **Cylinder Head:** Service and repair on page 18.

Clutch System

- **Interchangeability:** Information on compatible parts on page 70.
- **Overhaul:** Complete overhaul instructions on page 74.
- **Pedal Adjustment:** Guidelines for proper pedal adjustment on page 71.

Cooling System

- **Fan:** Service and inspection on page 57.
- **Pump:** Maintenance and repair on page 55.
- **Radiator:** Cleaning and repair on page 56.
- **Thermostat:** Testing and replacement on page 57.

REPAIR PROCEDURES

This section covers detailed repair instructions for various tractor components, including complex assemblies like the transmission and differential.

Transmission Repair

Detailed instructions for disassembling, inspecting, and reassembling the transmission are provided. This includes information on gears, shafts, and bearings.

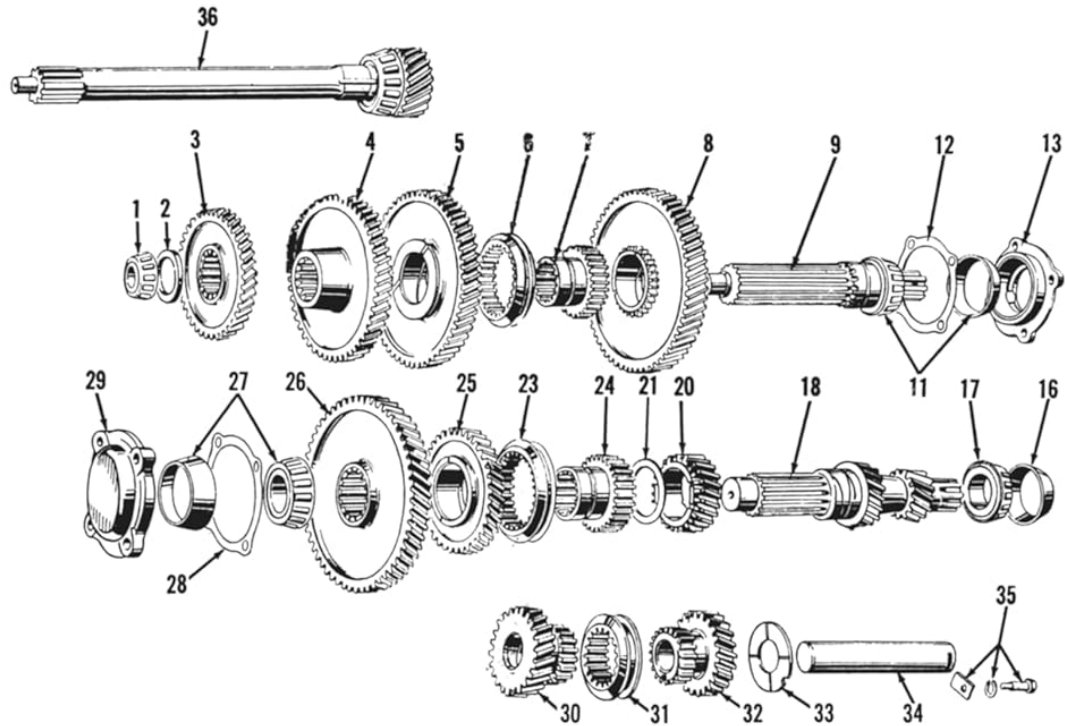


Fig. F34—TE20 transmission shafts, gears, and components. Gears (8 & 20) rotate on bronze bushings.

- | | | | | |
|---|----------------------------|------------------------|------------------------------|---|
| 1. Bearing cone, main drive shaft pilot | 9. Main shaft | 26. Countershaft gear | 31. Sliding reverse coupling | 35. Reverse shaft lock plate |
| 2. Thrust washer | 12. Shims | 27. Gasket | 32. Reverse idler | 36. Main drive gear & shaft (clutch or input) |
| 3. 4th gear | 13. Bearing carrier | 28. Bearing carrier | 33. Thrust washer | |
| 4. 3rd gear | 18. Countershaft | 29. Bearing carrier | 34. Reverse gear shaft | |
| 5. 2nd gear | 20. Countershaft 3rd gear | 30. Reverse drive gear | | |
| 6. Sliding coupling | 21. Thrust washer (bronze) | | | |
| 7. Coupling connector | 23. Countershaft coupling | | | |
| 8. 1st gear | 24. Coupling connector | | | |
| | 25. Countershaft 4th gear | | | |

for a cast iron housing; then, remove a .002-.003 shim to obtain the desired preload.

86. REVERSE GEAR AND SHAFT. First step in overhauling this assembly is to remove the transmission main shaft and countershaft as outlined in paragraphs 84 and 85. Remove reverse shaft positioning lock and cap screw (35—Fig. F33 or F34). Withdraw shaft (34) rearward and remove gears and thrust washer through top of housing. The reverse drive gear (30) and idler gear (32) rotate on bronze bushings. Worn bushings are serviced by renewing the gear and bushing as an assembly.

Reinstall the bronze thrust washer (33) with the grooved side facing the reverse idler gear (32). Install shifter collar (31) with side marked "F" facing the reverse drive gear (30) or front of tractor. Reinstall reverse shaft positioning lock and cap screw.

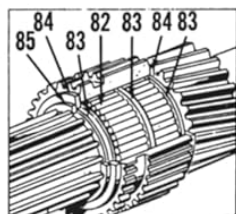
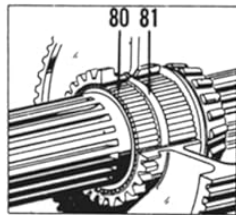


Fig. F35—Models TO20, and TO30 main shaft first gear and countershaft third gear needle bearings installation. Similar gears in model TE20 rotate on bronze bushings.

- | | |
|---|---|
| 80. 1st gear needle bearings (each row contains 52 rollers) | 82. 3rd gear needle bearings (each row contains 38 rollers) |
| 81. Spacer (steel) | 83. Spacer (steel) |
| | 84. Washer (bronze) |
| | 85. Snap ring |

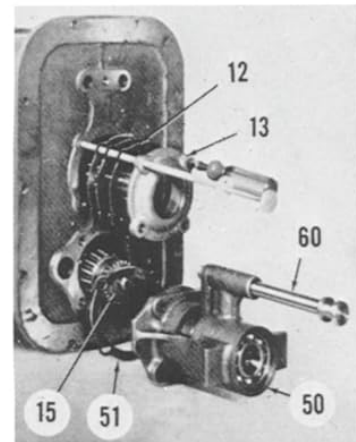


Fig. F36—Rear face of TO transmission housing showing shims (12) for adjusting the main shaft bearings and shims (51) for adjusting the countershaft bearings.

- | | |
|---------------------|----------------------|
| 12. Shims | 50. Bearing support |
| 13. Bearing carrier | 51. Shims |
| 16. PTO clutch hub | 60. PTO shifter rail |

Figure 3: TE20 Transmission Components. This diagram illustrates the exploded view of the TE20 transmission, showing individual gears, shafts, and other components for assembly and repair.

Figure 3 provides an exploded view of the TE20 transmission, which is essential for understanding the arrangement of its internal components. Refer to paragraphs 85-86 for specific instructions on reverse gear and countershaft overhaul.

Differential and Hydraulic System Repair

This section details the repair of the differential gear unit and the hydraulic system, including the pump and related components.

FERGUSON

Paragraphs 91-92A

91. **OVERHAUL.** To disassemble differential unit, first place correlation marks on both halves of the differential case to insure correct reassem-

bly. Remove the eight retaining bolts and separate the case. Differential pinions (10), spider (13) and side gears (9) can now be removed. Recommend-

ed backlash of 0.003-0.008 between the differential pinions and the side gears is controlled by the copper plated steel side gear thrust washers (6) and/or the pinion thrust washers (11).

If differential case (carrier) bearing cups require renewal, it is advisable to first remove the wheel axle shafts from their sleeve assemblies to obtain clearance for a puller.

On TE20, and TO20, and some TO30 models the bevel ring gear is riveted to the two-piece differential case. On other TO30 models, special heat treated bolts and nuts instead of rivets are being supplied for attaching the ring gear to the case on all models. Tighten bolts to 83-88 Ft.-Lbs. torque. Check trueness of ring gear back face by mounting the unit in a lathe. Total runout should not exceed 0.002.

Tooth contact (mesh pattern) and backlash positions of the crown-shaved main drive bevel gears are fixed and non-adjustable. Neither the pinion nor ring gear are furnished separately, but only as a matched set.

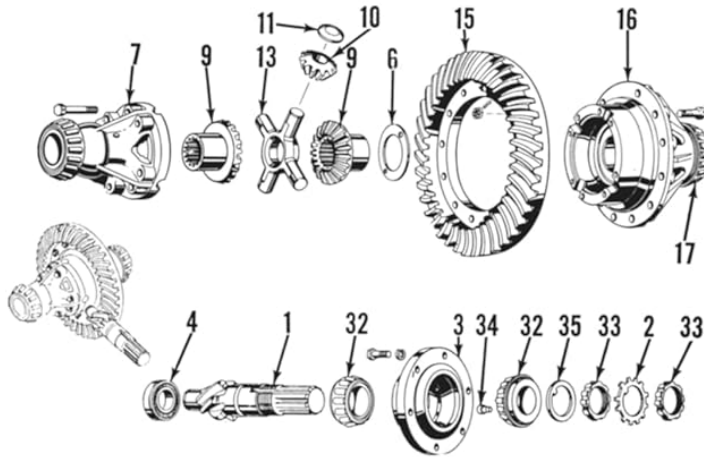


Fig. F39—TO30 differential, main drive bevel pinion and ring gear and components. Special heat-treated bolts for attaching the bevel ring gear to the differential case instead of rivets are being supplied for service. TE20 and TO20 are similar.

- | | | |
|--|-----------------------------------|-----------------------------------|
| 1. Bevel pinion | 7. Differential case (right half) | 16. Differential case (left half) |
| 2. Pinion bearing adjusting nut washer | 9. Differential side gear | 17. Differential carrier bearing |
| 3. Bearing sleeve (carrier) | 10. Differential pinion | 32. Pinion bearing |
| 4. Pinion pilot bearing | 11. Pinion thrust washer | 33. Adjusting nut |
| 6. Side gear thrust washer | 13. Differential spider | 34. Lock pin |
| | | 35. Thrust washer |

MAIN DRIVE BEVEL GEARS

Pinion and ring gear are available only as matched pairs. The TE20 and TO20 pinion and ring gear as well as their components are interchangeable; whereas, the TO30 pinion and ring gear are slightly larger in size. Neither the mesh position nor the backlash of the bevel gears is adjustable.

92A. **BEVEL PINION.** The straddle mounted, main drive spiral bevel pinion (1—Fig. F37 or F41) may be removed and bearings (32) may be overhauled without disturbing the main drive bevel ring gear and differential unit.

To remove the bevel pinion from the tractor first drain the transmission and rear axle center housings. Separate the rear axle center housing from the transmission as follows: Disconnect the brake rods. Remove the two platforms, one from each side of the transmission case, and exhaust pipe and muffler. Remove power take-off shaft by removing four retaining cap screws from rear face of the rear axle center housing and withdrawing assembly rearward. Support transmission case and rear axle center housing separately and remove the bolts which attach these assemblies. Roll rear axle center housing rearward until the sleeve connecting the transmission main shaft

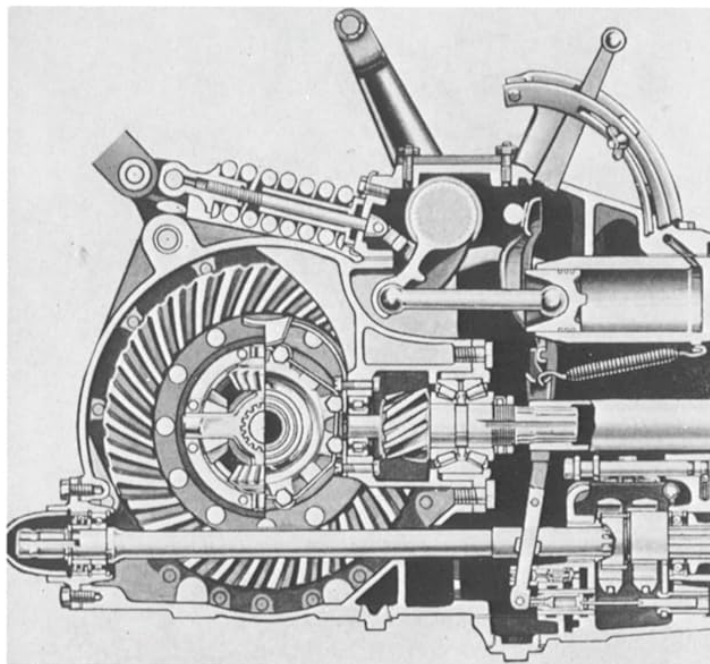


Fig. F40—Model TO30 differential, main drive bevel ring gear and pinion, hydraulic lift pump, lift (rock shaft) cover, and power take-off shaft assemblies are located in the rear axle center housing—right sectional view. TE20 and TO20 are similar.

Figure 4: Differential and Hydraulic Pump Assembly. This illustration shows the main drive bevel gear, differential unit, and hydraulic pump assembly, crucial for repairs on TO20 and TO30 models.

Figure 4 displays the main drive bevel gear, differential unit, and hydraulic pump assembly. Paragraphs 91-92A provide instructions for disassembling the differential unit and repairing the hydraulic system, including the removal of the pump and related components.

SPECIFICATIONS

This section provides key publication details for the Ferguson Shop Manual.

Publisher	Haynes Manuals N. America, Inc.
Publication Date	May 24, 2000
Edition	Illustrated
Language	English
Print Length	32 pages
ISBN-10	0872881180
ISBN-13	978-0872881181
Item Weight	2.4 ounces
Dimensions	8.13 x 0.11 x 10.88 inches



FERGUSON

FE-2

Models TE-20, TO-20, TO-30

Includes wiring diagrams for all models.

OTHER FERGUSON AND MASSEY-FERGUSON SHOP MANUALS AVAILABLE

Models MF303, MHF303, MH333, MF404, MHF404, MF406, MH444, MF1001	MF-10
Models TO35, TO35 Diesel, F40, MH50, MHF202, MF35, MF35 Diesel,	
MF50, MF202, MF204	MF-14
Models MF25, MF130	MF-25
Models MF135, MF150, MF165	MF-27
Model MF285	MF-36
Models MF670, MF690, MF698	MF-41
Models MF230, MF235, MF240, MF245, MF250	MF-42
Models MF255, MF265, MF270, MF275, MF290	MF-43
Models MF3505, MF3525, MF3545	MF-44
Models MF362, MF365, MF375, MF383, MF390, MF390T, MF398	MF-45
Models MF340, MF350, MF355, MF360, MF399	MF-46
Models MF1010, MF1020	MF-47

Models MF65	
Models MF85, MF88, MF Super 90, MF Super 90WR	
Models MF1100, MF1130	
Models MF1150	
Models MF1105, MF1135, MF1155	
Models MF1080, MF1085	MF-201

Models MF175, MF180	
Models MF205, MF210, MF220	
Models MF2675, MF2705	
Models MF2745, MF2775, MF2805	MF-202

MASSEY-HARRIS SHOP MANUALS AVAILABLE

Models 20, 22, 30, 44 (4-cyl. Diesel & Non-Diesel), 44 (6-cyl. Non-Diesel),	
55 (Serial No. up to 10,000), 55 Diesel, 81, 82, 101, 101 Super, 102 Jr., 102 Sr.,	
201, 202, 203, Pony	MH-2
Model 21 (Colt), 23 (Mustang), 33, 44 Special, 55 (Serial No. 10,001 & Up), 555	MH-5A
Model 16 Pacer	MH-6A



Figure 5: Manual Dimensions. This image displays the physical dimensions of the shop manual, indicating its height and width for reference.

SUPPORT AND ADDITIONAL RESOURCES

For further assistance or inquiries regarding this shop manual, please contact the publisher, Haynes Manuals N. America, Inc. Additional resources for Ferguson tractor maintenance and repair may be available through

authorized dealers or online communities dedicated to vintage tractor restoration.

Publisher: Haynes Manuals N. America, Inc.

For general information about I & T Shop Service manuals, you may visit relevant automotive or agricultural repair manual retailers.