

# Information and Instructions

This individual shop manual is one unit of a series on wheel type tractors. Contained in it are the necessary specifications and the brief but terse procedural data needed by a mechanic when repairing a tractor on which he has had no previous actual experience.

The material is arranged in a systematic order beginning with an index which is followed immediately by a Table of Condensed Service Specifications. These specifications include dimensions, fits, clearances and timing instructions. Next in order of arrangement is the procedures paragraphs.

In the procedures paragraphs, the order of presentation starts with the front axle system and steering and proceeding toward the rear axle. The last paragraphs are devoted to the power take-off and power lift systems. Interpersed where needed are additional tabular specifications pertaining to wear limits, torquing, etc.

## HOW TO USE THE INDEX

Suppose you want to know the procedure for R&R (remove and reinstall) of the engine camshaft. Your first step is to look in the index under the main heading of ENGINE until you find the entry "Camshaft." Now read to the right where under the column covering the tractor you are repairing, you will find a number which indicates the beginning paragraph pertaining to the camshaft. To locate this wanted paragraph in the manual, turn the pages until the running index appearing on the top outside corner of each page contains the number you are seeking. In this paragraph you will find the information concerning the removal of the camshaft.

# INDEX (By Starting Paragraph)

	Non-Diesel Series 300 & 350	Non-Diesel Series 300U & 350U	Diesel Series 350D	Diesel Series 350DU	Non-Diesel Series 400 & 450	Diesel Series 400D & 450D	Non-Diesel Series W400 & W450	Diesel Series W400D & W450D
<b>BELT PULLEY</b> .....	202	.....	202	.....	202	202	202	202
<b>BRAKES</b> .....	200	200	200	200	200	200	200	200
<b>CARBURETOR (Not LP-Gas)</b> .....	68	68	.....	.....	68	71	68	71
<b>CARBURETOR (LP-Gas)</b> .....	72	72	.....	.....	72	.....	72	.....
<b>CLUTCH, ENGINE</b> .....	139	139	139	139	139	139	139	139
<b>COOLING SYSTEM</b>								
Fan .....	128	128	128	128	128	128	128	128
Radiator .....	125	126	125	126	125	125	126	126
Water Pump .....	129	129	131A	131A	129	129	129	129
<b>DIESEL FUEL SYSTEM</b>								
Air Restriction Valve.....	.....	.....	113	113	.....	.....	.....	.....
Energy Cells .....	.....	.....	103N	103N	.....	.....	.....	.....
Filters and Bleeding.....	.....	.....	99A	99A	.....	97	.....	97
Injection Pump .....	.....	.....	110A	110A	.....	105	.....	105
Nozzles .....	.....	.....	103D	103D	.....	100	.....	100
Precombustion Chambers .....	.....	.....	.....	.....	.....	104	.....	104
Quick Checks .....	.....	.....	96A	96A	.....	96A	.....	96A
Trouble Shooting .....	.....	.....	.....	.....	.....	96	.....	96
<b>DIFFERENTIAL</b> .....	188	188	188	188	188	188	188	188
<b>ENGINE</b>								
Cam Followers .....	39	39	39A	39A	39	39	39	39
Camshaft .....	51	51	52A	52A	51	51	51	51
Connecting Rods and Bearings.....	62A	62A	62	62	62A	62A	62A	62A
Crankshaft .....	63A	63A	63	63	63A	63A	63A	63A
Cylinder Head .....	31	31A	32B	32C	31	32	31A	32A
Engine Removal .....	28	30	30A	30	28	28	29	29
Flywheel .....	65	65	65	65	65	65	65	65
Ignition Timing .....	133	133	.....	.....	133	133	133	133
Injection Timing .....	.....	.....	110A	110A	.....	105	.....	105
Main Bearings .....	63A	63A	63	63	63A	63A	63A	63A
Oil Pump .....	66A	66A	66	66	66A	66A	66A	66A
Pistons and Rings.....	54	54	60A	60A	54	58	54	58
Piston Pins .....	61A	61A	61	61	61A	61A	61A	61A
Piston Removal .....	53	53	53	53	53	53	53	53
Rear Oil Seal.....	64	64	64	64	64	64	64	64
Rocker Arms .....	40	40	39B	39B	40	40	40	40
Timing Gear Cover.....	45	47	47A	47	45	45	46	46
Timing Gears .....	48	48	50A	50A	48	48	48	48
Valves and Seats.....	33	33	36A	36A	34	35	34	35
Valve Guides and Springs.....	37	37	36C	36C	37	37	37	37
Valve Timing .....	44	44	44	44	44	44	44	44
<b>FINAL DRIVE</b>								
Axle Shafts .....	191	191	191	191	191	191	191	191
Bull Gears .....	190	190	190	190	190	190	190	190
Bull Pinions .....	189	189	189	189	189	189	189	189
<b>FRONT SYSTEM</b>								
Axle Main Member.....	3	4	3	4	3	3	3	3
Steering Knuckles .....	6	6	6	6	6	6	6	6
Tie Rods and Drag Link.....	5	5	5	5	5	5	5	5
Tricycle Type .....	1	.....	1	.....	1	1	.....	.....
<b>GOVERNOR</b> .....	123	123	110C	110C	123	110	123	110
<b>HYDRAULIC SYSTEM</b>								
Control Valves .....	224	224	224	224	224	224	224	224
Lubrication .....	220	220	220	220	220	220	220	220
Pump .....	223	223	223	223	223	223	223	223
Regulator and Safety Valve.....	225	225	225	225	225	225	225	225
Testing .....	221	221	221	221	221	221	221	221
Trouble Shooting .....	222	222	222	222	222	222	222	222
<b>POWER STEERING SYSTEM</b>								
Cylinder .....	.....	21	.....	21	.....	.....	22	22
Flow Control and Relief Valve.....	17	17	17	17	17	17	17, 17B	17, 17B
Lubrication and Bleeding.....	15	15	15	15	15	15	15	15
Motor .....	23	.....	23	.....	23	23	.....	.....
Pump .....	18	18	18	18	18	18	18, 18A	18, 18A
Steering Gear .....	24	25	24	25	24	24	24	24
Steering Valves .....	23	19	23	19	23	23	20	20
<b>PTO (Non-Continuous)</b> .....	206	206	206	206	206	206	206	206
<b>PTO (Independent Type)</b>								
Drive Shaft .....	214	214	214	214	214	214	214	214
Driven Shaft .....	213	213	213	213	213	213	213	213
Extension Shaft .....	212	212	212	212	212	212	212	212
Overhaul Rear Unit.....	210	210	210	210	210	210	210	210
Reactor Bands .....	208	208	208	208	208	208	208	208
<b>REAR AXLE</b> .....	191	191	191	191	191	191	191	191
<b>STEERING GEAR (Manual)</b> .....	7	13	7	13	7	7	9	9
<b>TORQUE AMPLIFIER</b>								
Clutch Adjustment .....	157	156, 156A	157	156A	157	157	157	157
Clutch Overhaul .....	159	159	159	159	159	159	159	159
Planetary Unit .....	160	160	160	160	160	160	160	160
<b>TRANSMISSION OVERHAUL</b> .....	175	175	175	175	175	175	175	175