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. Interspersed 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)

Models 362, 365, 375, 383, 390, 390T and 398

BRAKES

Adjustment –			
Models Before Serial Number V39466			189
Models After Serial Number V39465 .			190
Disc Brake Assembly		•	195
Fluid and Bleeding			191
Master Cylinders			192
Slave Cylinders –			
Models Before Serial Number V39466			193
Models After Serial Number V39465 .			194

CLUTCH (ENGINE)

Clutch Assembly –							
Dual Clutch							94
Split Torque Clutch						÷	96
Clutch Linkage Adjustment	÷		,				92
Engine/Transmission Split .							

DIESEL FUEL SYSTEM

Filters	. 72
E IT I II E	83
Fuel Injection Pump	
Fuel Lift Pump	
Injection Pump Drive Gear	
Injection Pump	. 86
Injector Nozzles	. 75

ELECTRICAL SYSTEM

Alternator and Regulato	or								88
Circuit Description									90
Starter				¥			2		89
Wiring Diagrams									

ENGINE

Cam Followers							40
Camshaft							52
Connecting Rods and Bearings							56
Cooling System							66
Crankshaft and Bearings							57
Crankshaft Rear Oil Seal			*				61
Cylinder Head							36
Engine Balancer							58
Flywheel							62
Front End/Engine Split							34
Oil Pan							63
Oil Pressure Relief Valve							65
Oil Pump							64
Piston Pins							55
Pistons, Rings and Sleeves		÷		4			54
R & R Engine							35
Rocker Arms							41

Models 362, 365, 375, 383,

390, 390T and 398

ENGINE (Cont.)	ľ
----------------	---

Rod and Piston U	r	it	s						÷					53
Timing Gear Cove														
Timing Gear Hou	s	in	g											51
Timing Gears .								÷	÷					45
Valve Clearance					,	4		÷						42
Valve Guides .														
Valve Springs .														
Valve Timing .							÷							43
Valves and Seats														

FRONT AXLE SYSTEM

(Two-Wheel-Drive Models) Front Axle Assembly and Steering Linkage 1

FRONT-WHEEL DRIVE

(Four-	Wheel-	Drive	Mod	els)
--------	--------	-------	-----	------

Differential –				
Except "Hydralock"				13
"Hydralock"				15
Drive Shaft		÷		. 9
Front Drive Axle				10
Planetary Assembly				
Steering Knuckle Housing and Wheel Hub	+			12
Track Rod and Toe-in			÷	. 8
Tractor Split –				
With Cab				18
Without Cab				
Transfer Gearbox –				
Except Twelve-Speed Shuttle				19
With Twelve-Speed Shuttle Transmission				

HYDRAULIC SYSTEM

Auxiliary Hydraulic Pu	m	р										226
Auxiliary Remote Contr	ol	1	/al	v	es	÷						230
Auxiliary System Press	ur	e										227
Hydraulic Lift Pump .									,			223
Lift Cover												
Reservoir and Filters .											+	208
Selector Valve		ų,					+	÷				220
Tests and Adjustments	÷							;	÷			210
Troubleshooting												

INDEPENDENT

POWER TAKE-OFF

Hydraulic Pressure Tests					206
Left Side Cover and Control Valve .			.,		203
Operation		5		 	201
Output Shaft					202
Pto Clutch, Brake and Control Valve					204

Models 362, 365, 375, 383, 390, 390T and 398

LIVE POWER TAKE-OFF

Engagement Coupling							
and Ground Speed Gears					-	ű,	198
Output Shaft, Seal and Rear Bearing	1	1	i.e	÷		ş	197
Pto Front Drive Shafts and Gears .	4						199

MAIN DRIVE BEVEL DRIVE GEARS AND DIFFERENTIAL

Differential and Bevel R	in	g	Ge	ea	r	*	×		+		176
Differential Lock											
Main Drive Bevel Gears	٠.				2		ų.	 -		2	181

REAR AXLE AND FINAL DRIVE

Drive Axle	2	2	\sim	\mathbf{r}					2	\mathbb{R}^{2}		÷	188
Planetary Assembly			à	ŝ.		ŝ	÷	ŝ				÷	184
Rear Axle Assembly		÷											183

STEERING SYSTEM

Filter and Bleeding				*1		3				-	2	22
Power Cylinder –												
Four-Wheel-Drive Models	÷		æ		2	×	12		4		83	32
Two-Wheel-Drive Models	12				÷	2	÷.	3	-	i.		31
Pump -												
With Separate Pump			121	į.	2					-	2	27
With Tandem Pump	2			÷.				ç,				29
Steering Control Valve	į.			ŝ	÷						÷	33
System Pressure -												
With Separate Steering Pu	ın	ıp										24
With Tandem Pump												25
Troubleshooting					*:							23

TRANSMISSION

(Eight-Speed Standard)

Countershaft (Layshaft) and Gears	. 109
Lubrication	
Mainshaft (Output Shaft) and Gears	
Planetary Unit	
Pto Input Shaft and Retainer Housing	. 105
Pto Lower Shaft Front Bearing and Retainer	
Reverse Idler Gear and Shaft	
Shifter Rails and Forks	. 103
Top Cover and Shift Levers	. 102
Tractor Rear Split -	
With Cab	. 100
Without Cab	. 99
Transmission Input Shaft	. 107
Transmission Removal	. 101

TRANSMISSION

(Eight-Speed Synchromesh)

Countershaft (Layshaft) and Gears	2			4		121
Lubrication	-					111
Mainshaft (Output Shaft) and Gears .		÷	÷		1	120
Planetary Unit						
Pto Input Shaft and Retainer Housing	•	÷				117

Models 362, 365, 375, 383, 390, 390T and 398

TRANSMISSION

(Eight-Speed Synchromesh) (Cont.)

Pto Lower Shaft Front Be	ar	ir	ıg	a	n	d	Re	eta	aiı	ne	r	118
Reverse Idler Gear and Sl	na	ft										122
Shifter Rails and Forks .												
Top Cover		*	÷	÷		÷				ł		114
Tractor Rear Split	94 (÷	•				ş			ł		112
Transmission Input Shaft										1	Ļ	119
Transmission Removal .				÷	÷		,			ł		113

TRANSMISSION

(Twelve-Speed Synchromesh)

Countershaft (Layshaft) and Gears	133
Lubrication	
Mainshaft (Output Shaft) and Gears	132
Planetary Unit	128
Pto Input Shaft and Retainer Housing	
Pto Lower Shaft Front Bearing and Retainer	130
Reverse Idler Gear and Shaft	134
Shifter Rails and Forks	127
Top Cover	126
Tractor Rear Split	124
Transmission Input Shaft	131
Transmission Removal	125

TRANSMISSION (Twelve-Speed Multi-Power)

Countershaft (Layshaft) and Gears			145
Lubrication			135
Mainshaft (Output Shaft) and Gears			144
Planetary Unit			140
Pto Input Shaft and Retainer Housin			141
Pto Lower Shaft Front Bearing and R			142
Reverse Idler Gear and Shaft			146
Shifter Rails and Forks			139
Top Cover			138
Tractor Rear Split			136
Transmission Input Shaft and			
Multi-power Clutch	 		143
Transmission Removal			

TRANSMISSION (Eight-Speed Shuttle)

Countershaft (Layshaft) and Gears		157
Lubrication		
Mainshaft (Output Shaft) and Gears		
Planetary Unit		
Pto Input Shaft and Retainer Housing		
Pto Lower Shaft Front Bearing and Retaine		
Reverse Idler Gear and Shaft		
Shifter Rails and Forks		
Top Cover		
Tractor Rear Split	<u>.</u>	148
Transmission Removal		149
Transmission Input Shaft		155

Models 362, 365, 375, 383, 390, 390T and 398

TRANSMISSION (Twelve-Speed Shuttle)

Forward/Reverse Shift Control Linkage	164
Lubrication	159
Main Gear Shift Lever and Selector Shaft	163
Main Transmission Countershaft	
(Layshaft) and Gears	174
Main Transmission Input Shaft	172
Main Transmission Shift Rails and Forks	165
Main Transmission Upper Shaft and Gears	173
Pto Input Shaft and Retainer Housing	170
Pto Lower Shaft Front Bearing and Retainer .	171
Range Change Lower Shaft	168

	390, 390T and 398
TRANSMISSION	
(Twelve-Speed Shuttle) (Cont	.t.)
Range Change Unit Upper Shaft	t 166
Range Change Upper Shaft Bear	ring Preload . 167
Range Selector Cam	169
Reverse Idler Gear and Shaft .	175
Top Cover	
Tractor Rear Split	160
Transmission Removal	
TURBOCHARGER (390T and	l 398 Models)

Models

362, 365, 375, 383,

Operation													69
Service .		4			÷	4						÷	70

DUAL DIMENSIONS

This service manual provides specifications in both U.S. Customary and Metric (SI) systems of measurement. The first specification is given in the measuring system perceived by us to be the preferred system when servicing a particular component, while the second specification (given in parenthesis) is the converted measurement. For instance, a specification of 0.011 inch (0.28 mm) would indicate that we feel the preferred measurement in this instance is the U.S. Customary system of measurement and the Metric equivalent of 0.011 inch is 0.28 mm.

CONDENSED SERVICE DATA

	362	365	Models 375	383-390	390T-398
GENERAL					
Engine Make			Perkins		
Model		—A4.236—		- A4.248S	AT4.236
Build Code	LD31234	LD31190	LD31140	LF31141	LJ31142
Number of Cylinders			4		
Bore				- 101 mm	98.4 mm
		(3.875 in.)		(3.975 in.)	(3.875 in.)
Stroke	4	1 - 103 (00- 00- 00)	—127 mm—		
			(5.0 in.)		
Displacement		3.86 L		- 4.07 L	3.86 L
		(236 cid)		(248 cid)	(236 cid)
Compression Ratio	16:1			A=	15.5:1
		10	<u> </u>		
Firing Order			1-0-4-2		