Information and Instructions

This shop manual contains several sections each covering a specific group of wheel type tractors. The Tab Index on the preceding page can be used to locate the section pertaining to each group of tractors. Each section contains 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.

Within each section, 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.

INTERNATIONAL HARVESTER

SERIES 100-130-140-200-230-240-404-2404

Series 100, 130 and 140 are available with either an adjustable or a non-adjustable front axle. Series 100, 130 and 140 Hi-Clearance are available with an adjustable type front axle only. Series 200, 230, 240 and 404 Farmall are available with single or dual wheel tricycle front system as well as an adjustable type front axle. The 240 International is available only with an adjustable front axle. The 404 and 2404 International is available with an adjustable type front axle as well as a heavy duty fixed tread type front axle.

Engine serial number is stamped on right side of crankcase and the serial number prefix is C-123 for all models except the 404 and 2404 which is C-135.

Tractor serial number is stamped on a plate and on series 100, 130 and 140, the plate is attached on left side of clutch housing. On series 200, 230, 240, 404 and 2404, plate is attached on right side of clutch housing.

Suffix letters of the serial number indicate the following:

- **A-Distillate burning attachment**
- **B**—Kerosene burning attachment
- C—L. P. Gas burning attachment (Engine)
- D-5000 ft. high altitude attachment
- E-8000 ft. high altitude attachment
- J-Rockford clutch

- **T-Cotton picker mounting attachment**
- U—High altitude attachment
- V-Exhaust valve rotator attachment
- W-Forward and reverse drive attachment
- X-High speed low and reverse attachment
- DD-High speed 3rd gear attachment

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	Series 100	Series 200	Series		Series 100	Series 200	Series
	130 140	230 240	404 2404		130 140	230 240	404 2404
BELT PULLEY	113	113	114	FINAL DRIVE			
BRAKES	109	111	111	Axle Shafts	105	108	108
CARBURETOR	46	46	46	Bull Gears	105	107	107
CLUTCH				Bull Pinions	104	106	106
Adjust	76	76	76	FRONT SYSTEM			
Clutch shaf	82	82, 83	84	Axle Main Membear	3	3	3
Overhaul	79	79	79	Steering Knuckles	5	5	5
Release Bearing		80	80	Tie Rods and Drag Link	4	4	4
Remove and Reinstall	77	77	77	Tricycle Type		1	1
		,,	, ,	GOVERNOR	56	56	56
COOLING SYSTEM				HYDRAULIC SYSTEM			
Fan	60	60		Adjustment	121	121, 132	143
Radiator	58	58	58	Cylinder and Valves Unit	124	124, 130	
Water Pump	61,62	62	63	Lubrication and Bleeding	119	119, 126	140
DIFFERENTIAL	102	103	103	Operating Pressure	120	120, 127	142A
ENGINE				Pump	122	122, 129	148A
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Camshaft	35	35	35	Testing	120	120, 127	
Connecting Rods & Bearings	41	41	41	Trouble Shooting	120	120, 128	142
Crankshaft	42	42	42	POWER STEERING			
Cylinder Head	26	26	26	Lubrication and Bleeding		12	12
Engine Removal	25	25	25	Operating Pressure		13	14
Flywheel	44	44	44	Power Unit		16	16
Ignition Timing	65	65	65	Pump		19	19
Main Bearings	42	42	42	Rotary Valve			18
Oil Pump	45	45	45	POWER TAKE-OFF	113	113	117
Pistons and Rings	37	37	37				
Piston Pins	40	40	40	REAR AXLE	105	108	108
Piston Removal	36	36	36	STEERING GEAR			
Rear Oil Seal	43	43	43	Remove and Reinstall	6	8, 10	8, 10
Rocker Arms	30	30	30	Overhaul	7	9, 11	9, 11
Timing Gear Cover	33	33	33	TRANSMISSION			
Timing Gears	34	34	34	Countershaft	88	96	96
Valves and Seats	27	27	27	Reverse Idler	89	97	97
Valve Guides and Springs	28	28	28	Shifter Rails and Forks	86	94	94
Valve Timing	32	32	32	Spline Shaft	87	95	95

INTERNATIONAL HARVESTER

SERIES B-275-B-414-354-364-384-424-444-2424-2444

All tractors are powered by four cylinder, four cycle engines. The Series B-275 tractors are equipped with a 144 cubic inch displacement diesel engine while the Series B-414 is available with either a 154 cubic inch displacement diesel engine or a 144 cubic inch displacement gasoline engine. Series 364 and 384 have a diesel 154 cubic inch displacement engine. Series 354 has a 144 cubic inch displacement engine in both diesel and gasoline models. Series 424 and 2424 are available with either a 154 cubic inch displacement gasoline engine. Series 444 and 2444 are available with either a 154 cubic inch displacement diesel engine or a 153 cubic inch displacement gasoline engine. A dual range transmission is standard equipment on all tractors and provides eight forward and two reverse speeds. In addition, the Series B-414, 364, 384, 424, 444, 2424 and 2444 tractors have available a forward and reverse transmission designed to work in conjunction with the main tractor transmission.

Engine serial number is stamped on a pad on right side of engine crankcase. Tractor serial number is stamped on a name plate on the right side of the clutch housing.

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	Series B-275, B-414, 354, 364, 384 Diesel	Series B-414, 354 Non-Diesel	Series 424, 444, 2424, 2444 Diesel	Series 424, 444, 2424, 2444 Non-Diesel
ALTERNATOR, GENERATOR AND				
REGULATOR	135	135	138	138
BELT PULLEY	190	190	190	190
BRAKES	179	179	179	179
CARBURETOR	••••	123	••••	125
Adjustment	144	144	150	150
Remove and Reinstall	145	145	151	151
COOLING SYSTEM				
Radiator	129	129	130	130
Thermostat	131	131	131	131
Water Pump	132	132	133	134
DIESEL FUEL SYSTEM				
Bleeding	91	••••	91	••••
Injection Nozzles	92	••••	92	••••
Injection Pump Timing	103, 104	••••	104	••••
Quick Checks	90	••••	90	••••
DIFFERENTIAL	173	173	173	173
ELECTRICAL SYSTEM	135	135	138	138
ENGINE	200	200	100	200
Cam Followers	52	52	52	52
Camshaft and Bearings	66	66	66	67
Connecting Rods and Bearings	77	77	77	78
Crankshaft	79	79	79	81
Cylinder Head		41	43	45
Cylinder Sleeves	69	69	69	
Engine Removal	35	36	37	38
Flywheel	84	84	84	84
Ignition Timing	••••	136, 137	••••	142
Main Bearings	 79	79	 79	81
Oil Pump	85	85	85	85
Pistons and Rings	69	69	69	72
Piston Pins	74	74	74	74
Piston Removal	68	68	68	68
Rear Oil Seal	82	82	82	83
Rocker Arms	53	53	53	53
Timing Gear Cover	56	57	58	59
Timing Gears	60	60	60	
Timing Gears				64
Valve Cuides	47	47	47	47
Valve Springs	48	49	48	50 51
Valve Springs	51	51	51	51

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, , , , , , , , , , , , , , , , , , ,	Series B-275, B-414, 354, 364, 384 Diesel	Series B-414, 354 Non-Diesel	Series 424, 444, 2424, 2444 Diesel	Series 424, 444, 2424, 2444 Non-Diesel
FINAL DRIVE				
Axle Shaft	176	176	176	176
Bull Gears		177	177	177
Bull Pinions	178	178	178	178
FRONT SYSTEM				
Axle Main Member	1	1	2	2
Steering Knuckles	3	3	4	4
Tie-Rod, Drag Link and Toe-In		5	5	5
GOVERNOR (DIESEL)				
Pneumatic	105	••••	••••	••••
Mechanical	106	••••	106	••••
GOVERNOR (NON-DIESEL)		86	••••	88
HYDRAULIC LIFT SYSTEM				
Control Valve	201, 206	206	206	206
Lubrication and Bleeding	192	192	192	192
Pump	197, 198	198	198	200
Reservoir and Components	207, 209	209	209	209
Testing		196	196	196
Troubleshooting		194	194	194
POWER STEERING	100, 104	104	101	101
Control Valve	24	24	32	32
Flow Divider Valve		33	34	34
			30	30
Hand Pump		 17		
Relief Valve		24	 28	 28
Steering Cylinder			182	182
POWER TAKE-OFF	•	182, 187	176	176
REAR AXLE	176	176	170	170
REVERSING TRANSMISSION	1.07	1.07	1.07	167
R&R and Overhaul	167	167	167	107
STEERING GEAR	C	C		
Adjustment		6	4 4	11
Overhaul	8, 9	8, 9	11	11
TRANSMISSION	4.0	4.0	4.05	105
Countershaft		165	165	165
Input Shaft		161	161	161
Reverse Idler	166	166	166	166
Shifter Rails and Forks	158	158	158	158
Spline Shaft		163	163	163
Top Cover	158, 159	159	159	159

CONDENSED SERVICE DATA

		Series 424,			
	Series	2424, 444, 2444, B-414,	Series	Series	Series 444, 2444
	B-275, 354 Diesel	364, 384 Diesel	B-414, 354 Non-Diesel	424, 2424 Non-Diesel	Non-Diesel
GENERAL	Dieser	Dieser	TOM Dieser	11011 2510501	210301
Engine Make	Own	0wn	Own	Own	Own
Number of Cylinders	4	4	4	4	4
Bore—Inches	3-3/8	$3^{1/2}$	3-3/8	3-3/8	3-3/8
Stroke—Inches	4	4	4	4-1/16	$4^{1}/_{4}$
Displacement—Cubic Inches	144	154	144	146	153
Compression Ratio	19.3:1 (B-275)	23:1	6.3:1	7.6:1	7.7:1
•	20.1:1 (354)				
Compression Pressure at 200 rpm					
Cranking Speed	330-335	445-470	80-105	180	180
Cylinder Sleeves Wet or Dry?	Wet	Wet	Wet	None	None
Forward Speeds—Number of	8	8	8	8	8
Main Bearings—Number of	5	5	5	3	3
Alternator, Generator and					
Regulator Make	Lucas	Delco-Remy (1)	Lucas	Delco-Remy	Delco-Remy
Starter Make	Lucas	Delco-Remy (1)	Lucas	Delco-Remy	Delco-Remy
Distributor Make	••••	••••	Lucas (2)	IH	IH
(1) B-414, 364 and 384 Lucas. (2) 354	Delco-Remy.				

INTERNATIONAL HARVESTER

SERIES 330-340-504-2504

Engine serial number is stamped on left side of engine crankcase. Engine serial number will be preceded by engine model number. Suffix letters to engine serial number are as follows:

U. High Altitude Engine

V. Exhaust Valve Rotators

Tractor serial number is stamped on name plate attached to right side of clutch housing. Suffix letters to tractor serial numbers indicate following attachments:

- J. Rockford Clutch
- P. Independent PTO Drive
- R. "Torque Amplifier" With Provision for Transmission Driven PTO
- S. "Torque Amplifier" With Provision for Independent PTO
- T. Cotton Picker Mounting Attachment (Low Drum)

- U. High-Altitude
- V. Exhaust Valve Rotators
- W. Forward and Reverse Drive
- X. High Speed Low and Reverse
- Y. Hydraulic Power Supply (12 gpm pump)
- Z. Hydraulic Power Supply (17 gpm pump)
- FF. Hydraulic Power Supply (4.5 gpm pump)
- GG. Hydraulic Power Supply (7.0 gpm pump)

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			Series	FINAL DRIVE CONT.			
	Series	Series	504.	Bull Pinions	162	162	162
	330	340	2504	Wheel Axle Shaft	164	164	164
BELT PULLEY		167	167	FRONT SYSTEM	101	101	101
BRAKES		165	165	Axle Main Member	3	3	3
CARBURETOR (Gas)		120	120	Steering Knuckles	10	10	10
CARBURETOR (LP-Gas)			119A	Tie Rods and Drag Links	7	7	7
		100		Tricycle Type		í	í
CLUTCH, ENGINE	. 133	133	133	GOVERNOR (NON-DIESEL)		116A	116A
COOLING SYSTEM				HYDRAULIC SYSTEM	11011	11011	11011
Radiator		117	117	Control Valves	199	199	230
Water Pump	. 118	118	118	Lubrication	184	185	210
DIESEL FUEL SYSTEM				Pump	192	192	220
Injection Pump and Drive		113	113	Regulator & Safety Valve	201	201	
Nozzles		107	107	System Adjustments		201	214
System Checks		99	99	Testing	187	187	213
DIFFERENTIAL	. 132	132	132	Trouble Shooting	191	191	212
DIRECTION REVERSER		146	146	POWER STEERING SYSTEM	101	101	212
ENGINE				Cylinder	37	37	37A
Balancer		90	90	Flow Control & Relief Valve	27	27	29]
Cam Followers		52, 75	52, 75	Lubrication and Bleeding	25	25	26A, 26B
Camshaft		58, 85	58, 85	Power Unit		34	34
Connecting Rod & Bearings		64, 92	64, 92	Pump		30	30
Crankshaft		66, 93	66, 93	Rotary Valve			35A
Cylinder Head		49, 72	49, 72	Steering Gear	39	38, 39	38
Engine Removal		47, 70	47A, 48,	Steering Valves	35	35	
2		2.7,70	70A, 71	Testing			29C
Flywheel	. 68	68, 96	68, 96	Trouble Shooting			26C
Ignition Timing		129	129	Pilot Valve			46A
Main Bearings		66, 93	66, 93	Hand Pump			45
Oil Pump		69, 97	69, 97	POWER TAKE-CFF			
Oil Cooler			98A	Adjustments			
Piston & Rings		60, 88	62A, 88	(Clutch Type)	171	171	171
Piston Pins		63, 89	63, 89	(Planetary Type)	170	170	
Rear Oil Seal		67, 95	67, 95	Overhaul			
Rocker Arms		53, 76	53, 76	(Clutch Type)	179	179	179
Timing Gear Cover		56, 80	56, 80	(Planetary Type)	174	174	
Timing Gears		57, 81	57, 81	STEERING, MANUAL	13	12	12
Valves and Seats		50, 73	50, 73	TORQUE AMPLIFIER		· -	
Valve Guides & Springs		51, 74	51, 74	Clutch Adjustment	141	141	141
Valve Timing		55, 79	55, 79	Clutch Overhaul	144	144	144
FINAL DRIVE	-		•	Planetary Unit	145	145	145
Bull Gears	. 163	163	163	TRANSMISSION OVERHAUL	151	151	151
2011 GOOLD	. 100						

INTERNATIONAL HARVESTER

SERIES 274 – 284

Engine serial number is stamped on right side of engine crankcase on diesel series and on left side of engine crankcase on nondiesel series. Tractor serial number is stamped on name plate attached to right side of clutch housing of all series.

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	274 Diesel	284 Non-Diesel	284 Diesel
BRAKES			
Bleed	154	154	154
Parking Brake	158	158	158
Pedal Adjustment	153	153	153
R&R and Overhaul	155, 157	155, 157	155,157
CARBURETOR (Gasoline)		88	
,			
CLUTCH, ENGINE	121	121	121
COOLING SYSTEM			
Fan	110	109	110
Radiator	108	108	108
Water Pump	113	112	113
DIESEL FUEL SYSTEM			
Filters and Bleeding	91	••••	91
Injection Pump and Drive	93		93
Injection Pump Timing	93	••••	93
Nozzles	96		96
DIFFERENTIAL	138	138	138
DIFFERENTIAL	158	138	158
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Standard Ignition		118	*****
Starting Motor	117	117	117
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	274 Diesel	284 Non-Diesel	284 Diesel
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Cam Followers	65	44	65
Camshaft	76	50	76
Connecting Rods & Bearings	80	54	80
Crankshaft	81	55	81
Crankshaft Oil Seals	82	56	82 69
Cylinder Head Cylinder Sleeves	62 78	$\begin{array}{c} 41 \\ 52 \end{array}$	62 78
Engine Removal	61	40	61
Flywheel	84	57	84
Injection Timing	71, 93	••••	71, 93
Main Bearings	81	55 50	81
Oil Pump	85 78	58 52	85 78
Pistons & Rings Piston Pins	79	52 53	78 79
Piston Removal	77	51	77
Rocker Arms	67	46	67
Timing Gear Cover	69	48	69
Timing Gears	70	49	70
Valves and Seats	63	$\begin{array}{c} 42 \\ 43 \end{array}$	63
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,g			
FINAL DRIVE			
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Planet Assembly	1.40	$147 \\ 143$	$\frac{147}{142}$
Wheel Axle Shaft	$\frac{148}{150}$	143	143 143
Wilcel Hale Shalt	100	140	140
FRONT SYSTEM			
All-Wheel Drive	••••	••••	6
Axle Center Member	$\frac{1}{4}$	2 5	2
Steering Knuckles Tie Rods	$\frac{4}{3}$	ე ვ	5 3
Tie 100ds	O	. •	· ·
GOVERNOR (Non-Diesel)	••••	104	
HYDRAULIC SYSTEM			
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Flow Divider	••••	37	37
Lubrication & Bleeding	•••••	$\begin{array}{c} 26 \\ 27 \end{array}$	$\begin{array}{c} 26 \\ 27 \end{array}$
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~			
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