#### 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.

#### **SHOP MANUAL**

# INTERNATIONAL HARVESTER

SERIES 544-656-666-686-Hydro 70-Hydro 86

Engine serial number is stamped on left side of engine crankcase on all models except ones equipped with D239 or D310 diesel engines. On models equipped with D239 or D310 diesel engines, engine serial number is stamped on right side of engine crankcase.

Tractor serial number is stamped on name plate attached to right side of clutch housing or hydrostatic drive housing.

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Pressure, Check and Adjustment R&R and Overhaul	299	299	299	299
	300	300	300	300
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Standard Ignition	223	••••	223		••••
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Crankshaft	58	139	58	139	140
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Cylinder Sleeves	55	131	55	131	132
Engine Removal	38	70	<b>3</b> 8	70	70
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Injection Timing	****	188	••••	188	186
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Oil Pump	66	153	66	153	154
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Piston Pins	56 50	133	<b>5</b> 6	133	133
Piston Removal	52	127	52 42	127	128
Rocker Arms	43	90	43	90	92
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Timing Gears	47	110	47	110	114
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Bull Pinions	291	291	291	291	291
Wheel Axle Shaft	293	293	293	293	293
FRONT SYSTEM					
Axle Main Member	3	3	3	3	3
Steering Knuckles	10	10	10	10	10
Tie Rods	9	9	9	9	9
Tricycle Type	1	1	1	1	1

	666, 686 Non-Diesel	666, Early 686 Diesel	Hydro 70, Hydro 86 Non-Diesel	Hydro 70, Early Hydro 86 Diesel	Late 686, Hydro 86 Diesel
GOVERNOR (Non-Diesel)	. 205	••••	205	••••	••••
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Cylinder and Valve Unit		308	308	308	308
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Test and Adjust	. 302	302	302	302	302
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R&R and Overhaul		262	262	262	262
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POWER STEERING SYSTEM					
Cylinder		34	34	34	34
Flow Divider		33	33	33	33
Hand Pump		27	27	27	27
Lubrication and Bleeding		12	12	12	12
Oil Cooler		37	37	37	37
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(Standard 5-Speed)	. 240	240	••••	••••	240
<u>-</u>					

### **CONDENSED SERVICE DATA**

	544 Non-Diesel	544 Diesel	656 Non-Diesel	656 Diesel
GENERAL				
Engine Model	C200	D239	C263	D282
Number of Cylinders	4	4	6	6
Bore-Inches	3.812	3.875	3.563	3.687
Stroke—Inches	4.390	5.062	4.390	4.390
Displacement—Cubic Inches	200	239	263	282
Pistons Removed From	Top	Top	Тор	Top
Main Bearings, Number of	3	5	4	4
Main and Rod Bearings, Adjustable?	No	No	No	No
Cylinder Sleeves	••••	$\mathbf{Wet}$	$\mathbf{Dry}$	$\mathbf{Dry}$

# SHOP MANUAL INTERNATIONAL HARVESTER

SERIES 684-784-884-Hydro 84

Engine serial number is stamped on right side of engine crankcase on all models. Tractor serial number is stamped on plate attached to right rear side of front axle support.

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	684 Diesel	784 Diesel	Hydro 84 Diesel	884 Diesel
BRAKES	404		404	
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Pedal Adjustment	$\frac{120}{122}$	$\begin{array}{c} 120 \\ 122 \end{array}$	$\frac{120}{122}$	$\frac{120}{122}$
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CLUTCH, ENGINE				
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GOOT ING GUGETING				
COOLING SYSTEM	C.E	C.E.	C.E.	C.E
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Water Pump	66	66	66	66
water rump	00	00	00	00
DIESEL FUEL SYSTEM				
Ether Starting Aid	63	63	63	63
Filter and Bleeding	$\frac{54}{2}$	$\frac{54}{55}$	54	54
Injection Pump	55 53	55 50	55	55
Injection Pump Timing	56 60	56 60	56 CO	56 60
Nozzles	60	60	60	60
DIFFERENTIAL	110	110	110	110
ELECTRICAL SYSTEM				
Alternator and Regulator	67	67	67	67
Starting Motor	69	69	69	69
ENGINE				
Balancer	48	48	48	48
Cam Followers	30	30	30	30
Camshaft	38	38	38	38
Connecting Rods & Brgs	43	43	43	43
Crankshaft	44	44	44	44
Crankshaft Oil Seals	45, 46	45, 46	45, 46	45, 46
Cylinder Head	26	26	26	26
Cylinder Sleeves	41	41	41	41
Engine Removal	25	25	25	25
Flywheel	47	47	47	47
Injection Timing	56	56	56	56
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Pistons & Rings            Piston Pins	42	$\frac{41}{42}$	42	42
Piston Removal	40	40	40	40
Rocker Arms	31	31	31	31
Timing Gear Cover	33	33	33	33
Timing Gears	34	34	34	34
Valves and Seats	28	28	28	28
Valve Guides & Springs	29	29	29	29
Valve Timing	32	32	32	32

	684 Diesel	784 Diesel	Hydro 84 Diesel	884 Diesel
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Steering Knuckles	3	3	3	3
Tie Rods	2	2	2	2
HYDRAULIC SYSTEM				
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Cylinder and Valve Unit	138	138	138	138
Pump	141	141	141	141
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Troubleshooting	••••	•••••	00	••••
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Lubrication & Bleeding	12	12	12	12
Oil Cooler	24	24 13	24 13	24 13
Flow & Pressure Tests	13 17	15 17	17	17
PumpSteering Control Valve	$\frac{17}{21}$	21	21	21
Steering Relief Valve	15	15	15	15
20001 mg 200002 Y 000 Y				
POWER TAKE-OFF	100	100	100	100
Linkage Adjustment	126	126	126	$     \begin{array}{r}       126 \\       127     \end{array} $
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Linkage Adjustment	82	82	83	82
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TDANGMICCION CDEED				
TRANSMISSION, SPEED Linkage Adjustment	77	77		77
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#### SHOP MANUAL

# INTERNATIONAL HARVESTER

#### **SERIES**

HYDRO 100-HYDRO 186-1466-1468-1486-1566-1568-1586

Engine serial number is stamped on left side of engine crankcase on all series except 1468 and 1568 equipped with the DV550B diesel engine. Engine serial number is stamped on right side of engine crankcase on the DV550B engine. Engine serial number will be preceded by engine model number.

Tractor serial number is stamped on name plate attached to left side of clutch housing or hydrostatic drive housing on all tractors except Hydro 186, 1486 and 1586 which locate the name plate on the right side of the rear frame.

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COOLING SYSTEM								
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Radiator	106	106	106	145	106	106	145	106
Water Pump	108	108	108	147	108	108	147	108
DIESEL FUEL SYSTEM								
Ether Starting Aid	100	100	100	143A	100	100	143A	100
Filters and Bleeding	92	92	92	135	92	92	135	92
Injection Pump and Drive	94	94	94	137	94	94	137	94
Injection Pump Timing	95	95	95	139	95	95	139	95
Nozzles	97	97	97	141	97	97	141	97
DIESEL TURBOCHARGER	••••	••••	101	••••	101	101	••••	101
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ELECTRICAL SYSTEM								
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Starting Motor	153	153	153	153	153	153	153	153
ENGINE								
Cam Followers	66	66	66	114	66	66	114	66
Camshaft	77	77	77	121	77	77	121	77
Connecting Rods & Bearings Cooling Tubes, Water Directors	82	82	82	126	82	82	126	82
and Nozzle Sleeves	63	63	63		63	63		63
Crankshaft	83	83	83	127	83	83	127	83
Crankshaft Oil Seals	84	84	84	128	84	84	128	84
Cylinder Head	62	62	62	111	62	62	111	62
Cylinder Sleeves	80	80	80	••••	80	80	••••	80
Engine Removal	61	61A	61	110	61A	61	110	61A
Flywheel	86	86	86	130	86	86	130	86
Injection Timing	95	95	95	139	95	95	139	95
Main Bearings	83	83	83	127	83	83	127	83
Oil Coole	90	90	90	133	90	90	133	90
Oil Pump	87 80	87 80	87 80	131 124	87 80	87 80	131 124	87 80
Pistons & Rings	ου	00	ου	144	00	ρυ	124	00

	Hydro 100 Diesel	Hydro 186 Diesel	1466 Diesel	1468 Diesel	1486 Diesel	1566 Diesel	1568 Diesel	1586 Diesel
ENGINE (Cont. )								
Piston Pins	81	81	81	125	81	81	125	81
Piston Removal	79	79	79	123	79	79	123	79
Rocker Arms	68	68	68	116	68	68	116	68
Timing Gear Cover	72	72	72	119	72	72	119	72
Timing Gears	73	73	73	120	73	73	120	73
Valves & Seats	64	64	64	112	64	64	112	64
Valve Guides & Springs	65	65	65	113	65	65	113	65
Valve Timing	71	71	71	120	71	71	120	71
FINAL DRIVE								
Bull Gears	247, 248	247, 248	247	247	247	••••	••••	••••
Bull Pinions		247, 248	247	247	247		••••	
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Remove and Reinstall	243	246	243	243	246	245	245	246
Wheel Axle Shaft		247, 248	247	247	247	251	251	251
FRONT SYSTEM	•	•						
All-Wheel Drive	9	9	9	••••	9	••••	••••	
Axle Center Member	2, 3	2, 3	$\overset{\circ}{2}$	2	$\overset{\circ}{2}$	2	2	$\frac{\dots}{2}$
Steering Knuckles	6	6	$\overline{6}$	$\overline{6}$	$\bar{6}$	6	6	$\overline{6}$
Tie Rods	5	5	5	5	5	5	5	5
Tricycle Type	1	i	ĺ		1			
	_	_		*****	_			
HYDRAULIC SYSTEM Auxiliary Valves	308	310	308	308	310	308	308	310
	314	314	314	314	314	314	314	314
Hydraulic Seat Lift Unit, R&R & Overhaul	286	288	286	286	288	286	286	288
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Adjustments	197	199	••••	••••	••••	••••	••••	••••
Lubrication and Filter	232	232	••••	••••	••••	••••	••••	••••
Pressure Checks	204	209	••••	•••••	••••	••••	••••	••••
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Troubleshooting	190	190	••••	•••••	••••	••••	••••	••••
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Flow Divider	37, 51	37, 51	36, 50	36, 50	36, 50		36, 50	36, 50
Hand Pump	46	46	46	46	46	46	46	46
Lubrication & Bleeding	28	28	28	28	28	28	28	28
Oil Cooler		58	57	57	57	57	57	57
Operational Tests		32	32	32	32	32	32	32
Pump	40	40	40	40	40	40	40	40
DTO								
PTO Pressure Check & Adjustment	260	260	260	260	260	261	261	261
R&R and Overhaul		262	262	262	262	262	$\begin{array}{c} 201 \\ 262 \end{array}$	$\frac{261}{262}$
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