TABLE OF CONTENTS970-1070 TRACTORS

SERIES 10	SECTION	DESCRIPTION	
10	1010	General Specifications - 970 Tractors	
	1010	General Specifications - 1070 Tractors	
	1012	Lubrication - 970 Tractors (Prior to SN8770001)	
	1012	Lubrication - 970 Tractors (Starting with SN8770001)	
	1013	Lubrication - 1070 Tractors	
	1021	Detailed Specifications - 451BD Engine	
	1022	Detailed Specifications - 401BD Engine	
	1030	Fuel System - Diesel	
	1041	Hydraulic System	
	1051	Steering System	
	1061	Power Train	
	1071	Brake System	
20		ENGINES - GASOLINE	
	2008	Cylinder Head and Valves	9-78843
	2009	Engine Block Assembly	
	26	Governor	9-79411
		ENGINES - DIESEL	
	2001	Engine Diagnosis	9-7636 5
	2002	Engine Tune-Up	
	2015	Cylinder Head, Valve Train and Camshaft	9-76166
	2025	Cylinder Block, Sleeves, Pistons and Rods	9-76176
	2032	Splitting Tractor between Engine and Torque Tube	
	2035	Crankshaft, Main Bearings, Flywheel and Oil Seals	
	2046	Lubrication System, Oil Pump and Oil Flow Diagrams	
	2055	Cooling System	9-76337
	• •	ENGINES - GASOLINE & DIESEL	
	24	Air Intake System	
••	2290	Reconditioning Engine Cylinder Block	8-21170
30		FUEL SYSTEM	0 70 404
	35	Carburetor	9-79491
	3010	Diesel Fuel System and Filters	
	3012	Robert Bosch Fuel Injection Pumps	
	3013 3015	Roosa Master Fuel Injectors	
	3015	Repairing Polyethylene Fuel Tanks	
40	3016	Repairing Cast Nylon Fuel Tanks	9-19133
40	4010	Hydraulic Oil Filters	9-79113
	4010	Dual Hydraulic Pump	
	4014	Dual Remote Valve	
	44	Flow Divider - PTO Control Valve	
	45	Draft-O-System	9-79123
	4019	Break-Away Couplings and Portable Cylinders	
50		STEERING	• • • • • •
	5010	Steering Column and Pump-Valve (Starting w/ SN8693001)	9-74269
	5010	Steering Column and Hand Pump (Prior to SN8693001)	9-78853
	53	Steering Control Valve	
	54	Hydrostatic Steering Actuator	
	5015	Steering Axles	
		• ···	

Printed in U.S.A. Revised April, 1979



TABLE OF CONTENTS970-1070 TRACTORS

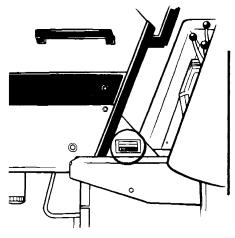
	SECTION	DESCRIPTION	FORM
60		POWER TRAIN	NUMBER
	6001	Trouble Shooting RPS-34 Power Shift	
	62	RPS-34 Power Shift(Prior to SN8772549)	
	6130	RPS-34 Power Shift (Starting w/SN8772549)	
	64	Single Reduction Final Drive and Transmission	
	66	14" & 15" Traction Clutches and Pedals - Mechanical Shift	
	6020	Torque Limiter Clutch(Starting w/SN8725656)	
	6045	Hydraulic PTO	9-79173
70		BRAKES	
	72	Brake Master Cylinders and Pedals	
	73	Power Assist Brake Unit and Pedals	
	7012	Power Assist Brake Valve with Adjustable Relief Valve	
	7012	Differential and Parking Brake	9-78903
80		ELECTRICAL	
	8010	Tractor Wiring Diagram - Spark Igntion (Prior to SN8753831)	
	8010	Tractor Wiring Diagram - Diesel (Prior to SN8753831)	
	8010	Tractor Wiring Diagram - (Starting W/SN8753831)	
	8011	Cab Wiring Diagram (Starting W/SN7814176)	9-77698
	8011	Cab Wiring Diagram (Prior to SN7814176)	
	8012	Starting or Cranking Motors	
	8013	Battery Servicing and Testing	
	8014	Prestolite Alternator Systems	
	8114	Delco-Remy Alternator Systems	9-78976
	8115	Delco-Remy Alternator System	
	83	Distributor Ignition Systems	9-74625
90	00.	ACCESSORIES	0 750/5
	92a	Cab Sealing and Recirculation	
	9005	Trouble Shooting - Air Conditioning System	
	9015	Gauging and Testing - Air Conditioning System	9-78995
	9025	Compressor Isolation, Removal, Installation and Evacuation	0 70046
	0025	System Discharging, Evacuation and Charging	
	9035 9050	Servicing Air Conditioning Components	
100	9050	Seat Adjustments (Swivel and Non Swivel)	9-79755
100	101	Hydraulic Testing, Steering - Power Brakes	9-79821
	111	Hydraulic Testing, Power Shift, Remotes and PTO	
	141		
	141	Hydraulic System Dual Pump - Flow Divider Valve	
	141		
	141	Dual Remote System	
	141	Draft-O-Matic System Power Steering - Power Brakes	9-79042
	161	Power Shift Transmission	
	161	Hydraulic PTO	
	19010	Air Conditioning System	
	10010		9-10010

Section 1010

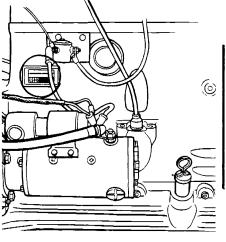
GENERAL SPECIFICATIONS

970 TRACTOR

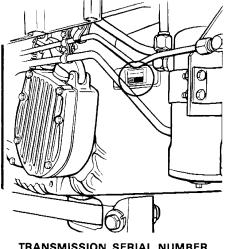
SERIAL NUMBERS



TRACTOR MODEL AND SERIAL NUMBER



ENGINE SERIAL NUMBER



TRANSMISSION SERIAL NUMBER

DIESEL ENGINE

General

(Prior to Tractor SN 8675001)

Type 6 Cylinder, 4 Stroke Cycle, Valve-in-Head
Firing Order 1-5-3-6-2-4
Bore 4-1/8 Inches (104.7mm)
Stroke 5 Inches (127mm)
Piston Displacement 401 Cubic Inches (6 571.2cm ³)
Compression Ratio 16.5 to 1
Cylinder Sleeves Removable Wet Type
No Load Governed Speed 2040 RPM
Rated Engine Speed 1900 RPM
Engine Idling Speed 725 RPM
*Valve Tappet Clearance (Exhaust) (Hot) .020 Inches (0.508mm)
(Cold) .025 Inches (0.635mm) (Intake) (Hot and Cold) .015 Inches (0.381mm)

*Hot Settings Are Made After the Engine Has Operated at Thermostat Controlled Temperature For At Least Fifteen Minutes.

(Starting w/Tractor SN 8675001)

Type	6 Cylinder, 4 Stroke Cycle, Valve-in-Head.
Firing Order	1-5-3-6-2-4
Bore	4-1/8 Inches (104.7mm)
Stroke	5 Inches (127mm)

Piston Displacement	- 401 Cubic Inches (6 571.2cm ³)
Compression Ratio	16.5 to 1
Cylinder Sleeve	Removable Wet Type
No Load Governed Speed	2140 to 2180 RPM
Rated Engine Speed	2000 RPM
Engine Idling Speed	700 to 750 RPM
*Valve Tappet Clearance (Exhaust)	(Hot) .020 Inch (0.508mm) (Cold) .025 Inch (0.635mm)
(Intake) (Hot	and Cold) .015 Inch (0.381mm)

*Hot Settings Are Made After The Engine Has Operated At Thermostat Controlled Temperature For At Least Fifteen Minutes.

Piston and Connecting Rods

Rings per piston	3
Number of Compression Rings	2
Number of Oil Rings	1
Type Pins	Full Floating Type
Type Bearing	Back, Copper-Lead or Aluminum Alloy Liners

Main Bearings

Number of Bearings	7
Type Bearings	Back, Copper-Lead or Aluminum Alloy Liners.

Engine Lubricating System

Oil Pressure	45 to 60 PSI (310 to 414 kPa) with Engine Warm and Operating at Rated Engine Speed.
Type System	Pressure and Spray Circulation
Oil Pump	Gear Type
Oil Filter	Full Flow Spin on Type

Fuel System

Fuel Injection Pump Robert Bosch, Type PES (Multiple Plunger).	
Pump Timing: Prior to Tractor SN8675001 29 Degrees Before Top Dead Center (Port Closing)	
Starting with Tractor SN8675001 30 Degrees Before Top Dead Center (Port Closing)	

Fuel System (Continued)

Fuel Injectors	Pencil Type
Opening Pressure: Prior to Engine SN2504029	2800 PSI (19 305 kPa)
Starting with Engine SN2504029	3200 PSI (22 063 kPa)
Fuel Transfer Pump	Plunger Type, Integral Part of Injection Pump.
Governor	Variable Speed, Fly-Weight Centrifugal Type; Integral Parts of Injection Pump.
1st Stage fuel filter	Full Flow Spin on Type
2nd Stage fuel filter	Full Flow Spin on Type
Fuel Tank Water Trap and Drain	Located in Base of Fuel Tank
Fuel Tank Capacity	50 U.S. Gallons (189.3 litres)
Fuel Level Gauge	Electric, Located on Instrument Panel.
Hand Primer Pump	Located on Top of the Fuel Transfer Pump
Preliminary Fuel Filter	Located at the Bottom of the Fuel Transfer Pump.
Fuel Tank Filter	Located in Fuel Shut-off Valve in Base of Fuel Tank.

SPARK IGNITION ENGINES

General

(Prior to Tractor SN 8675001)

Type 6 Cylinder, 4 Stroke Cycle, Valve-in-Head
Firing Order 1-5-3-6-2-4
Bore 4 Inches (101.6mm)
Stroke 5 Inches (127mm)
Compression Ratio 7.5 to 1
Piston Displacement 377 Cubic Inches (6 178cm ³)
No Load Governed Speed 2040 RPM
Rated Engine Speed 1900 RPM
Engine Idling Speed 600 RPM
*Valve Tappet Clearance (Intake) (Hot and Cold) .015 Inches (0.381mm) (Exhaust) (Hot) .020 Inches (0.508mm) (Cold) .025 Inches (0.635mm)
Exhaust Valve Rotators Positive Type
Hist Settings And Made After the Engine Has Operated at Thermostat Controlled Temperature

*Hot Settings Are Made After the Engine Has Operated at Thermostat Controlled Temperature For At Least Fifteen Minutes.

(Starting w/Tractor SN 8675001)

Type 6 Cylinder, 4 Stroke Cycle, Valve-in-Head.
Firing Order 1-5-3-6-2-4
Bore 4 Inches (101.6mm)
Stroke 5 Inches (127mm)
Compression Ratio 7.5 to 1
Piston Displacement 377 Cubic Inches (6178cm ³)
Governed Speed
No Load Governed Speed 2180 RPM
Rated Engine Speed 2000 RPM
Engine Idling Speed 600 RPM
*Valve Tappet Clearance (Intake) (Hot and Cold) .015 Inches (0.381mm)
(Exhaust) (Hot) .020 Inches (0.508mm)
(Cold) .025 Inches (0.635mm)
Exhaust Valve Rotators Positive Type
*Hot Settings Are Made After The Engine Has Operated At Thermostat Controlled Temperatqre For At Least Fifteen Minutes.

Piston and Connecting Rods

Rings per Piston	4
Number of Compression Rings	
Number of Oil Rings	1
Type Pin	Full Floating Type
Type Bearings	Replaceable, Precision Steel Back, Copper-Lead or Aluminum Alloy Liners.

Main Bearings

Number of Bearings	7
Type Bearings	Replaceable, Precision Steel Back, Copper-Lead
	or Aluminum Alloy Liners.

Engine Lubricating System

Oil Pressure 45 to 55 PSI	(310 to 379 kPa) Engine Warm and Operating at Full Governed RPM.
Type System	Pressure Spray Circulation
Oil Pump	Gear Type
Oil Filter	Full Flow, Spin on Type

Fuel System

Fuel Tank Capacity 50 U.S. Gallons (189.3 litres)
Carburetor (Zenith) (W/solenoid) 1-1/2 Inch SAE Flange (38mm).
Fuel Pump and Screen A.C. Vacuum Type, Camshaft Actuated.
Fuel Pump Operating Pressure at 1200 RPM
(20.7 to 34.5 kPa).

Distributor Ignition

Contact Point Gap	.020 Inches (0.508mm)
Dwell Angle	39º
Spark Plugs	Prestolite 18 8
Plug Gap	.025 Inches (0.635mm)
Thread	18 MM
Shank Length	1/2 Inch (12.7mm)

Engine Timing

Static Timing	TDC
Running Timing	Engine Running at Rated Engine Speed: 27 ^o BTDC

GENERAL SPECIFICATIONS

Cooling System

Capacity	38 U.S. Quarts (36 litres)
Type of System	By-Pass Type: Forced Circulation, (Impeller Type Pump).
Radiator	Heavy Duty Fin and Tube Type
Thermostat	Starts to Open at Approximately 175°F. (79°C.) Fully Open at 202°F. (94°C.)
Pressure Cap Required	or 10 PSI Non-Vented (68.9 kPa)

Electrical System

Type of System ------ 12 Volt Negative Ground Batteries ------ (2) 12 Volt Batteries Connected in parallel. (Spark Ignition) - Group Size 27H, Rated at 1.255 to 1.265 Specific Gravity, Discharge Rate 300 Amps at 0°F., Voltage drops to 8.7 after 10 seconds, Voltage drops to 1.0 volts per cell after 3-1/2 minutes.

Electrical System (Continued)

(Diesel) -	Group Size 30H, Rated at 1.255 to 1.265 Specific Gravity. Discharge Rate 300 Amps at 0° F. Voltage drops to 9.2 after 10 sec- onds. Voltage drops 1.0 Volts per cell after 4 min.
Alternator	12 Volt 55 Amp Output
Voltage Regulator 12 Volt,	Solid State, Internal Component of Alternator
Starter Motor	12 Volt with Solenoid Switch
Head Lights (2)	12 Volt, 40/40 Watt Sealed High-Low Beam
Front Flood Lights	12 Volt, 35 Watt, Sealed Beam
Rear Flood Light	12 Volt, 60 Watt, Sealed Beam
Flasher Lights (2) w/Directional Turn Signals	12 Volt, Amber Lens
Rear Tail Light	12 Volt, 60 Watt Sealed Beam Combination Tail and Flood Lamp.
Circuit Breaker System over load check connected in parallel, 80 AM	P rating - 60 AMP. Min. Continuous capacity.
Lights Circuit Breaker	40 Amp., Located on Light Switch
Parking Brake Warning Light	12 Volt, Red Flasher Type
Parking Brake	

Type -----Cable Actuated by Orscheln Type Handle - Adjustable from Operator's Seat.

Hydraulic Brakes

Type ----- Hydraulic Actuated, Self-Adjusting Disc Type Differential Brakes.

Hydraulic Power Assist Brakes

Type ----- Hydraulic, Power Assisted, Self-Adjusting Disc Type Differential Brakes.

Mechanical Transmission

Type 2	2 Speed Gear Range With a 4 Speed Gear Section.
Gear Selection	8 Speeds Forward - 2 Speeds Reverse.
Shifting Mechanical Wi	ith Plunger Type Locks and Tube Type Interlocks.

Power Shift Transmission

Type	3 Speed Compound Planetary With Hydraulically Actuated Clutches and a 4 Speed Gear Range Section.
Gear Selection	12 Speeds Forward and 3 Speeds Reverse
	Hydraulic Power Shifting Controlled By a Lever on rators Console. 4 Speed Range Controlled By a Mechanical Shifter From a Lever On Operator's Console.

Power Take-Off

Type Clutch Hydraulically Operated
Rotation Clockwise
Spline Size
Engine Speed 2000 RPM 540 or 1000 RPM Shaft Speed

Beit Pulley

Method of Engagement	PTO Control Lever
Pulley Diameter	10.5 in. (266.7mm)
Pulley Face Width	7.25 in. (184.2mm)
Ratio Engine RPM:	
(540 PTO)	1.716 to 1
(1000 PTO)	1.722 to 1
1 RPM of Belt Pulley 2.75 feet	(8.4m) Per Minute Belt Travel.

Draft-O-Matic System

Type of Sensing Lower Link
Type Control Hand Lever
Type Valve 3 Positions - Raise - Hold - Lower
Type Draft Arms Swinging, with Manual Float Adjustment
Type Hitch 3 Point Category II Convertible Hitch Coupler (Available) Category III-II

Hydrostatic Power Steering

Pump Type Large Volume	, Spur Gear, Continuous Running.
Pump Capacity at 2000 Engine RPM	8 GPM (30.3 l/mn)
	nd Bi-Directional Gerotor Metering Actuated By the Steering Wheel.
Actuating Cylinders 2 Wa	ay Cylinders Are Integral Part of Steering Gear Mechanism.

Drawbar

Standard or Yoke Type	Full Swing Roller Mounted. Will
	Accommodate a 1-1/4 Inch (31.8mm) Dia. Pin

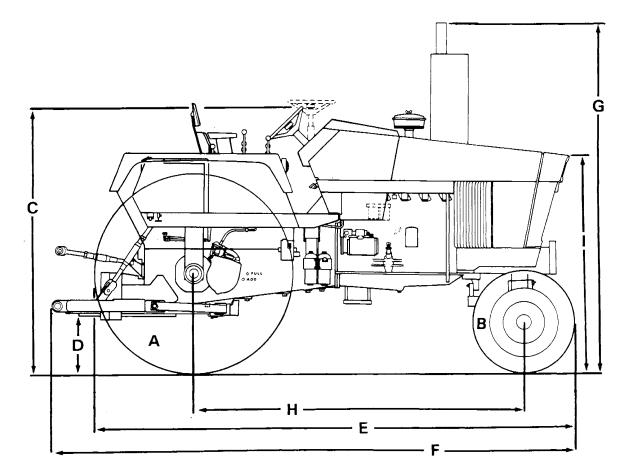
Remote Hydraulic System

Pump	Large Volume, Spur Gear, Continuous Running.
Type Valve	Dual Valve - Individual Hand Lever Control
Portable Cylinder Coupling	ASAE R366 Standard Quick Detachable Break-Away Type
Pump Capacity at 2000 Engine RPM	16 GPM (60.6 l/mn)
Relief Valve Pressure	1700 to 1900 PSI (11 721 to 13 100 kPa)
Portable Cylinders	Case Cylinders Available

OPERATOR'S CAB

The Case Operator's Cab is equipped with Built-in Rollover Protection as specified in ASAE Standard S336.1, SAE Standards J168a, and OSHA Regulations 1928.53 and 1926.1002, Approval Number CAR317.

APPROXIMATE OVERALL MEASUREMENTS



A	18.4-34R1					
В	10.00-16F2					
С	85 in. (2 159mm)					
D	15 in. (381mm)					
E	157 in. (3 988mm)					

F	172 in. (4 369mm)
G	110 in. (2 794mm)
н	109 in. (2 769mm)
I	70 in. (1 778mm)

Height Over Cab ------ 113 Inches (2 870mm)

APPROXIMATE WEIGHT

TIRE AND WHEEL EQUIPMENT

Front

TIRE SIZE	TIRE PLY	RIM SIZE	TREAD TYPE	DUAL	ADJ.	TIRE PRESSURE
10.00-16	6	W8L-16	F2		Х	28 PSI (198 kPa)
11.00-16	6	W8L-16	F2		X	36 PSI (248 kPa)

Rear

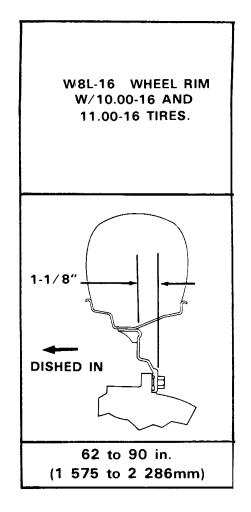
TIRE SIZE	TIRE PLY	RIM SIZE	TREAD TYPE	DUAL	ADJ.	TIRE PRESSURE
16.9-38	8	W14-38	R1		X	24 PSI (166 kPa)
18.4-34	6	W16L-34	R1 & R2	X	X	16 PSI (110 kPa)
18.4-38	6	W16L-38	R1 & R2	X	Х	16 PSI (110 kPa)
18.4-38	8	W16L-38	R1	X	X	20 PSI (138 kPa)
20.8-34	6	W18L-34	R1	X	X	16 PSI (110 kPa)
20.8-34	8	W18L-34	R1	Х	X	18 PSI (124 kPa)
23.1-30	8	DW20-30	R1 & R2		X	16 PSI (110 kPa)

NOTE: Keep tires inflated to recommended pressures. Check pressures at least every 50 hours of operation or once a week, whichever occurs first. DO NOT reduce rear tire pressure to increase traction. When plowing, increase furrow wheel tire pressure 4 PSI (27.6 kPa).

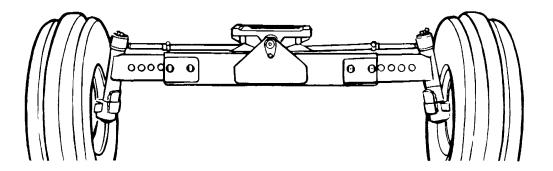
IMPORTANT: Do not attempt to remove, repair or install a tractor tire on a rim. Take the tire and rim to an experienced and properly equipped tire shop where special safety equipment is available.

FRONT WHEEL TREAD SPACING

(With Wheels Dished In Only)



WIDE ADJ. AXLE SPACING (1 TO 8 SETTINGS)



NOTE: Axle spacings listed above are from the narrow setting, in increments of 4 in. (101.6 mm) to the wide setting. When tightening the front wheel bolts, torque 5/8 in. dia. bolts 115 to 130 ft. lbs. (156 to 176 Nm) and 9/16 in. dia. bolts 85 to 100 ft. lbs. (115 to 136 Nm).

POWER SHIFT REAR WHEEL TREAD SPACING

		86 INCH (2 184mm) REAR AXLE	96 INCH (2 438mm) REAR AXLE	118 INCH (2 997mm) REAR AXLE
ET G	Α		64 INCH (1 626mm)	64 INCH (1 626mm)
F.	В	64 INCH (1 626mm)	68 INCH (1 727mm)	68 INCH (1 727mm)
E H D	С	68 INCH (1 727mm)	72 INCH (1 829mm)	72 INCH (1 829mm)
	D	72 INCH (1 829mm)	76 INCH (1 930mm)	76 INCH (1 930mm)
	E	76 INCH (1 930mm)	80 INCH (2 032mm)	80 INCH (2 032mm)
HUB OR WHEEL MOVED IN	F	80 INCH (2 032mm)	84 INCH (2 134mm)	84 INCH (2 134mm)
ON AXLE	G	84 INCH (2 134mm)	88 INCH (2 235mm)	88 INCH (2 235mm)
R P	н	84 INCH (2 134mm)	96 INCH (2 438mm)	116 INCH (2 946mm)
	J	88 INCH (2 235mm)	100 INCH (2 540mm)	120 INCH (3 048mm)
	к	92 INCH (2 337mm)	104 INCH (2 642mm)	124 INCH (3 150mm)
T T T T T	L	96 INCH (2 438mm)	108 INCH (2 743mm)	128 INCH (3 251mm)
	Μ	100 INCH (2 540mm)	112 INCH (2 845mm)	132 INCH (3 353mm)
HUB OR WHEEL MOVED OUT	N	104 INCH (1 642mm)	116 INCH (2 946mm)	136 INCH (3 454mm)
ON AXLE	Р	108 INCH (2 743mm)	120 INCH (3 048mm)	140 INCH (3 556mm)

NOTE: Each shifting position hole allows a 2 inch (50.8mm) individual wheel adjustment. Dimensions given in inches and millimeters.

Thanks for your reading.

Please click here to download complete manual instantly.

And can also choose other manuals.

Feel free --->write to me with any questions. Our service email: manuals007@hotmail.com