
70/70A SERIES REPAIR MANUAL

COMPLETE CONTENTS

SECTION 00 - GENERAL INFORMATION	2
SECTION 10 - ENGINE	2
SECTION 21 - TRANSMISSION	7
SECTION 23 - DRIVE LINES	12
SECTION 25 - FRONT MECHANICAL DRIVE	12
SECTION 27 - REAR DRIVE AXLE	15
SECTION 31 - POWER TAKE-OFF	16
SECTION 33 - BRAKES AND CONTROLS	17
SECTION 35 - HYDRAULIC SYSTEMS	20
SECTION 41 - STEERING	29
SECTION 44 - TWO-WHEEL DRIVE AXLE AND WHEELS	30
SECTION 50 - CLIMATE CONTROL	32
SECTION 55 - ELECTRICAL SYSTEMS	33
SECTION 90 - PLATFORM, CAB, AND BODYWORK	40

The following pages are the collation of the contents pages from each section and chapter of the 70/70A Series Repair manual.

The sections used through out all New Holland product Repair manuals may not be used for each product. Each Repair manual will be made up of one or several books. Each book will be labeled as to which sections are in the overall Repair manual and which sections are in each book.

The sections listed above are the sections utilized for the 70/70A Series Tractors.

SECTION 00 - GENERAL INFORMATION

BOOK 1 - 87018723

Chapter 1 - General Information

CONTENTS

Section	Description	Page
00 000	Forward	2
	Precautionary Statements	3
	Safety Precautions	4
	Health and Safety Precautions	7
	Tractor Identification	14
	Service Techniques	21
	Sealer Specifications	23
	Hardware Torque Values	23
	Lubrication	26
	Recommended Lubricants and Coolants	26

SECTION 10 - ENGINE

BOOK 1 - 87018723

Chapter 1 - Engine and Lubrication System

CONTENTS

Section	Description	Page
10 000	Specifications	3
	Torque Values	12
	Grease and Sealants	14
	Special Tools	15
	Description of Operation	16
	Cylinder Head Assembly	22
	Camshaft Assembly	22
	Crankshaft Assembly	22
	Connecting Rods	22
	Pistons	22
	Manifolds	22
	Cylinder Block Assembly	22
	Timing Gears	22

SECTION 10 - ENGINE

BOOK 1 - 87018723

Chapter 1 - Engine and Lubrication System (Continued)

CONTENTS

Section	Description	Page
	Engine Lubrication	23
	Troubleshooting	27
	Disassembly and Repair	30
	Cylinder Head	30
	Cylinder Head Reassembly	42
	Additional Information	45
	Crankcase Front Cassette Seal	47
	Parts Affected	47
	Additional Information	47
	Removal of Old Style Seal and Installation of the New Cassette Seal	47
	Front Cassette Seal Removal	53
	Engine Front Cover and Timing Gear	58
	Oil Pan	60
	Connecting Rods, Bearings, Pistons and Rings	61
	Cylinder Block Overhaul	64
	Piston Assembly Installation	69
	Main Bearings, Flywheel and Crankshaft	70
	Rear Cover Plate	72
	Oil Pump	75
	Oil Filter Support Assembly	77
	Crankshaft	78
	Camshaft	82
	Engine Timing Gears	84
	Engine Compression Test	85
	Test Procedure	85
	Test Reading	85
	Test Conclusion	85

SECTION 10 - ENGINE

BOOK 1 - 87018723

Chapter 2 - Cooling System

CONTENTS

Section	Description	Page
10 000	Specifications	2
	Description of Operation	4
	Cooling System	4
	Troubleshooting	6
	Disassembly and Repair	7
	Radiator	7
	Thermostat	9
	Temperature Warning Sender	10
	Fan Blade	10
	Viscous Clutch Assembly	10
	Fan Belt Tensioner	11
	Idler Pulley	11
	Water Pump	12

SECTION 10 - ENGINE

BOOK 1 - 87018723

Chapter 3 - Induction System

CONTENTS

Section	Description	Page
10 000	Specifications	2
	Description of Operation	4
	Air Cleaner	4
	Turbocharger	6
	Intercooler	9
	Troubleshooting	10
	Intercooler Leak Test	12
	Disassembly and Repair	13
	Air Cleaner	13
	Turbocharger	15
	Intercooler	21

SECTION 10 - ENGINE

BOOK 1 - 87018723

Chapter 4 - Fuel System

CONTENTS

Section	Description	Page
10 000	Specifications	3
	Fuel System Torque Chart	4
	Special Tools	4
	Description of Operation	5
	Testing and Diagnosis	19
	Low Pressure Fuel System	20
	Fuel Tank Valves	20
	Filter Inlet and Outlet Pressure Tests	20
	High Pressure Fuel System	25
	Injection Timing Check	25
	Fuel Injector Nozzle Check	28
	Injector Assembly Bench Testing	28
	Preliminary Setup Procedure	29
	Perform Opening Pressure Test	29
	Perform Nozzle Seat Leakage Test	30
	Perform Chatter and Spray Pattern Test	31
	Surging	31
	Fuel Shutoff Diagnosis	32
	Shutoff Solenoid Specifications	32
	Preliminary Checks	32
	Checking Electrical Feed	32
	Adjustments	34
	Bleeding the Fuel System	34
	Adjustment of Foot and Hand Throttle Cables	35
	Adjustment of High Idle Speed	35
	Adjustment of Low Idle and Antisurge	36
	Removal and Installation	37
	Fuel Lift Pump	37
	Fuel Shutoff Solenoid	38
	Fuel Injection Pump	39
	Fuel Injection Lines	47
	Low-pressure Fuel Injection Lines	47
	High-pressure Fuel Lines	48

SECTION 10 - ENGINE

BOOK 1 - 87018723

Chapter 4 - Fuel System (Continued)

CONTENTS

Injector Leak-off Line	50
Fuel Filter	51
Fuel Filter Manifold	52
Injection Nozzles	53

SECTION 10 - ENGINE

BOOK 1 - 87018723

Chapter 5 - Engine Removal

CONTENTS

Section	Description	Page
10 000	Specifications	2
	Description of Operation	3
	Disassembly and Repair	4
	Engine Removal	4
	Engine Installation	8

SECTION 10 - ENGINE

BOOK 1 - 87018723

Chapter 6 - Fuel Tank Removal

CONTENTS

Section	Description	Page
10 000	Specifications	2
	Description of Operation	3
	Disassembly and Repair	4
	Lower Tank Removal	4
	Lower Tank Installation	5
	Top Tank Removal	6
	Top Tank Installation	6

SECTION 21 - TRANSMISSION

BOOK 1 - 87018723

Chapter 1 - Operation and Overview

CONTENTS

Section	Description	Page
21 000	Specifications	2
	Powershift Transmission	2
	Gear Ratios	2
	Ground Speed	3
	Electrical System	5
	Description of Operation	6
	Transmission Housing	7
	Powershift Transmission Controls	8
	Digital Display	8
	Inching Pedal	9
	Starting the Engine and Moving Forward	10
	Starting the Engine and Moving in Reverse	11
	Shuttle Operations	12
	Speed Matching	13
	Auto Shift	14
	Creeper Gears (optional)	15
	Programmable Upshift - Downshift	15
	Transmission Components	17
	Clutches	17
	Speed Clutches	17
	Directional Clutches	21
	Clutch Engagement	22
	Troubleshooting and Diagnosis	33

SECTION 21 - TRANSMISSION

BOOK 1 - 87018723

Chapter 2 - Separating the Engine and Front Axle from the Transmission

CONTENTS

Section	Description	Page
21 000	Specifications	2
	Special Tools	2
	Description of Operation	3
	Disassembly and Repair	4
	Engine and Side Rail Separation from the Transmission	4
	Four-wheel Drive Shaft Removal (if equipped)	8
	Engine and Side Rail Reassembly	10

SECTION 21 - TRANSMISSION

BOOK 1 - 87018723

Chapter 3 - Separating the Rear Axle from the Transmission

CONTENTS

Section	Description	Page
21 000	Specifications	2
	Special Tools	2
	Description of Operation	3
	Disassembly and Repair	4
	Rear Axle to Transmission Separation	4
	Reassembly	8
	Minimum Hardware Tightening Torques	9

SECTION 21 - TRANSMISSION

BOOK 1 - 87018723

Chapter 4 - Mechanical System

CONTENTS

Section	Description	Page
21 000	Specifications	2
	Torque Specifications	3
	Special Tools	4
	Description of Operation	5
	Troubleshooting and Diagnosis	6
	Disassembly and Repair	7
	Removal and Disassembly	7
	Rear Housing and Directional Clutches - Removal	8
	Front Housing and Speed Clutches - Removal	12
	Main Input Gear Assembly - Removal	14
	Speed Clutches - Disassembly	16
	Speed Clutches - Inspection	21
	Directional Clutches - Disassembly	23
	Directional Clutches - Inspection and Overhaul	26
	Speed/Directional Clutch - Reassembly	27
	Main Input Gear and Oil Seal - Disassembly Inspection, Overhaul and Reassemble	29
	Two Gear Clusters in Front and Rear Housing - Disassembly, Inspection and Reassembly	30
	Front and Rear Housings and Center Section - Inspection and Overhaul	30
	Torque Limiting Clutch and Sprung Damper Hub Drive Assembly - Removal, Inspection and Replacement	32
	Reassembly	33
	Speed Clutches and Front Housing	33
	Directional Clutches and Rear Housing	34
	Transmission Shimming	36
	Front Housing Shimming	36
	Rear Housing Shimming	37
	Shimming the Output Shaft	38
	Creeper Gear	39
	Creeper Gear Repair	41
	Installation	44

SECTION 21 - TRANSMISSION

BOOK 1 - 87018723

Chapter 5 - Hydraulic System

CONTENTS

Section	Description	Page
21 000	Specifications	3
	Low-pressure Hydraulic System	3
	Special Tools	4
	Description of Operation	5
	Regulator Valve Operation	7
	Clutch Valve Operation	7
	Modulator Valve Operation	8
	Electro-hydraulic Pilot Line	9
	Troubleshooting and Diagnosis	10
	70/70A Series Transmission Test Sheet	11
	Electrical/Electronic System Checks	11
	Hydraulic System Checks	13
	Clutch Apply Pressure Chart	14
	Pressure Testing and Adjustments	15
	Clutch Apply Circuit Pressure Testing	17
	Transmission Pressure Checklist	19
	Transmission Programming	21
	Programming the Programmable Upshift, Downshift	21
	Programming Reverse Gear Ratios	23
	Transmission Calibration	25
	Check Powershift Transmission Clutch Calibration	25
	Calibration Review	26
	Calibrate F1 Directional Clutch	26
	Calibrate F2 Directional Clutch	27
	Calibrate Reverse Directional Clutch	27
	Exit Calibration Mode	28

SECTION 21 - TRANSMISSION

BOOK 1 - 87018723

Chapter 6 - Electrical System

CONTENTS

Section	Description	Page
21 000	Specifications	2
	Electrical System	2
	Description of Operation	3
	Clutch Apply Circuits	4
	Modulation Solenoids	4
	Shift Control Lever	5
	Inching Pedal	6
	Speed Sensors	6, 10
	Display Module	6
	Troubleshooting and Diagnosis	7
	Transmission Solenoid and Pressure Testing	8
	Disassembly and Repair	9
	Control Valve Solenoids	9
	Chassis Control Module	11
	Inching Pedal Switches	12
	Transmission Shift Control	14
	Calibration of Shift Constant	28
	Disassembly and Repair	31
	Removal and Disassembly	31
	Removal of the Complete Valve Assembly from the Tractor	31
	Disassembly	33
	Solenoid and Valve Assembly	34
	Speed and Directional Clutch Circuit Valves	34
	Modulator Valves	35
	Regulator Valve	37
	Lubrication and Cooling Circuit Relief Valve	39
	Removal	39
	Installation	39
	Inspection	40
	Reassembly	40
	Installation	41

SECTION 23 - DRIVE LINES

BOOK 2 - 87018724

Chapter 1 - Four-wheel Drive Clutch

CONTENTS

Section	Description	Page
23 202	Description of Operation	2
	70 Series FWD Electronic Control Operation	4
	70A Series FWD Electronic Control Operation	5
	Engaging and Disengaging Four Wheel Drive	5
	FWD Operating Precautions	5
	Disassembly and Repair	8
	Removal	8
	Disassembly	12
	Inspection	13
	Reassembly	15
	Installation	18
	Pressure Testing	23

SECTION 25 - FRONT MECHANICAL DRIVE

BOOK 2 - 87018724

Chapter 1 - Four-Wheel Drive Dana Axle

CONTENTS

Section	Description	Page
25 000	Specifications	2
	Special Tools	4
25 100	Description of Operation	6
	Troubleshooting	15
41 106	Adjustments	16
41 106	Wheel Toe-in	16
25 108	FWD Steering Stop	17
25 108	Hub Bearing Preload Adjustment	18
25 102	Check for Correct Pinion to Ring Gear Tooth Contact	21
25 102	Wrong Tooth Contact Pattern	21
25 108	Swivel Pin Bearing Adjustment	23
25 104	FWD Ratios	23

SECTION 25 - FRONT MECHANICAL DRIVE

BOOK 2 - 87018724

Chapter 1 - Four-Wheel Drive Dana Axle (Continued)

CONTENTS

Section	Description	Page
25 104	FWD Tire vs Gear Ratios	24
	Four Wheel Drive Lead Factor	28
	Front Axle Serviceability	30
00 400	Lubrication	30
	Disassembly and Repair	35
25 100	Front Axle	35
41 216	Steering Cylinders	38
25 108	Planetary Reduction	40
25 108	Hub	44
25 108	Swivel Housing	47
25 108	Center Housing Swivel Bearing	50
25 108	Drive Shaft	51
25 108	Outer Yoke	54
25 102	Differential	56
25 102	Crown Wheel to Backlash Adjustment	69

SECTION 25 - FRONT MECHANICAL DRIVE

BOOK 2 - 87018724

Chapter 2 - Dana Supersteer™ Linkage

CONTENTS

Section	Description	Page
25 100	Description of Operation	2
25 100	Supersteer Linkage Removal	3
25 100	Removal of Rear Support Assembly and Spherical Ball Bushing	5
41 106	Supersteer Linkage Adjustment	9

SECTION 25 - FRONT MECHANICAL DRIVE

BOOK 2 - 87018724

Chapter 3 - Four Wheel Drive Carraro Axle

CONTENTS

Section	Description	Page
	Specifications	2
	Special Tools	3
	General Information	7
	Front Axle Differential Line	8
	Overall Dimensions	11
	General Checks Prior to Disassembly	16
	Disassembly Operations	17
25 100	Front Axle Removal/Installation	17
41 216	Steering Cylinders Group Disassembly	17
41 216	Steering Cylinders Group Assembly	23
25 310	Final Drive Removal	25
25 108	Wheel Hub Disassembly	27
25 108	Wheel Hub Assembly	29
25 108	Swivel Housing Removal	32
25 100	Swivel Housing Assembly	33
25 100	Axle Housing Swivel Bearing	34
25 102	Differential Support Group Disassembly	36
25 102	Differential Support Group Assembly	38
25 102	Input Flange End Play Adjustment	39
25 102	Limited Slip Differential Removal	40
25 102	Limited Slip Pinion Disassembly	41
25 104	Limited Slip Differential Disassembly	43
25 104	Limited Slip Differential Assembly	45
25 102	Lockable Differential Removal	48
25 102	Lockable Pinion Disassembly	50
25 104	Lockable Differential Disassembly	52
25 104	Lockable Differential Assembly	54
25 102	Adjustment - Pinion Shaft	57
25 104	Differential - Adjustments	61
25 102	Pinion to Ring Gear Tooth Contact Adjustment	64
	Wrong Tooth Contact Pattern	64
25 108	Swivel Housing Bearing Adjustment	66
41 106	Standard Steer/Toe-In Adjustment	67
41 106	Supersteer Linkage Adjustment	68
25 108	Potentiometer Removal	70
25 108	Potentiometer Installation	70
25 108	Potentiometer Calibration	72
	Mode 12: Tractor Features Configuration	72
	Mode 13: Steering Angle Sensor Operation/Calibration	73
	New Parameter Code	74
	New Fault Codes	77
	Testing After Assembly	78
	Troubleshooting	79

SECTION 27 - REAR DRIVE AXLE

BOOK 2 - 87018724

Chapter 1 - Rear Axle Assembly

CONTENTS

Section	Description	Page
27 000	Specifications	2
	Special Tools	3
	Description of Operation	10
	Differential Carrier	12
	Final Reduction Drive	13
	Differential Lock Mechanical Operation	14
	70 Series Differential Lock Control System Operation	15
	70A Series Differential Lock Control System Operation	16
	Differential Lock Electrical Circuit Operation	17
	Differential Lock Hydraulic Circuit Operation	19
	Front Axle Differential Line	19
	Troubleshooting	21
	Adjustments	30
	Disassembly and Repair	51
27 100	Axle Assembly	51
27 120	Axle Housing	64
27 120	Planetary Overhaul	85
	Axle Seal	91
	Top Cover	93
27 106	Differential Assembly	95
27 106	Pinion Assembly	112
27 110	Differential Lock Solenoid	125
	Pressure Testing	127
	Circuit Pressure Test	129

SECTION 31 - POWER TAKE-OFF

BOOK 3 - 87018725

Chapter 1 - Mechanical System

CONTENTS

Section	Description	Page
31 000	Specifications	2
	Special Tools	3
	Description of Operation	4
	Introduction	4
	Power Flow - All Models	5
	Engaging and Disengaging the PTO	7
	Troubleshooting and Diagnosis	8
	Disassembly and Repair	9
	PTO Assembly - Removal and Installation	9
	Upper PTO Input Shaft - Removal and Installation	15
	PTO Output Shaft and Driven Gear - Overhaul	30
	PTO Clutch Assembly - Overhaul	39

SECTION 31 - POWER TAKE-OFF

BOOK 3 - 87018725

Chapter 2 - Electro-hydraulic System

CONTENTS

Section	Description	Page
31 000	Specifications	2
	Special Tools	3
	Description of Operation	4
	Introduction	4
	Engaging and Disengaging the PTO	5
	PTO Hydraulic System Operation	6
	PTO Control Valve Operation	8
	Lubrication Oil	12
	PTO Electrical System Operation	14
	Troubleshooting	22

SECTION 31 - POWER TAKE-OFF

BOOK 3 - 87018725

Chapter 2 - Electro-hydraulic System (Continued)

CONTENTS

Section	Description	Page
	PTO will not Engage	23
	PTO will not Disengage	25
	PTO Clutch Slips Under Load	30
	PTO Shaft Continually Turns Slowly with Engine Running when PTO is Turned Off	32
	PTO Retaining Ring is Difficult to Replace	33
	Adjustments	34
	PTO Clutch Brake Band	34
	Disassembly and Repair	35
	PTO Solenoid	35
	PTO Control Valve Assembly	38
	PTO System Pressure Testing	44
	Introduction	44
	Pre-test Preparation	44
	Pilot Oil Circuit Pressure Test	45
	Clutch Apply Circuit Pressure Test	46
	PTO Lubrication Circuit Pressure Test	47

SECTION 33 - BRAKES AND CONTROLS

BOOK 3 - 87018725

Chapter 1 - Power Brakes

CONTENTS

Section	Description	Page
33 202	Specifications	2
	Description of Operation	4
	Boosters	7
	Master Cylinders	11
	Rear Axle Brake Assemblies	15
	Four Wheel Braking	17
	Troubleshooting	18

SECTION 33 - BRAKES AND CONTROLS

BOOK 3 - 87018725

Chapter 1 - Power Brakes (Continued)

CONTENTS

Section	Description	Page
	Adjustments	21
	Bleeding the Brakes	21
	Brake Pedal Adjustment	25
	Brake Switch Adjustment	25
	Disassembly and Repair	26
	Power Brake Valve - Overhaul	26
	Inspection	33
	Reassembly	34
	Installation of the Brake Lube Kit	39
	Rear Axle Brakes - Overhaul	44
	Hydraulic Trailer Brake	SEE SECTION 35

SECTION 33 - BRAKES AND CONTROLS

BOOK 3 - 87018725

Chapter 2 - Parking Brake

CONTENTS

Section	Description	Page
33 110	Specifications	2
	Special Tools	2
	Description of Operation	3
	Adjustments	4
	Adjust the Park Brake	4
	Troubleshooting	5
	Disassembly and Repair	6
	Parking Brake - Overhaul	6

SECTION 33 - BRAKES AND CONTROLS

BOOK 3 - 87018725

Chapter 3 - Trailer Air Brakes (Not Used in North America)

CONTENTS

Section	Description	Page
33 000	Specifications	2
	Torque Specifications	3
	Safety	7
	General Air Brake Safety	7
	General Maintenance Instructions	7
	Description of Operation	8
	System Operation	9
	Air Compressor	10
	Unloader Valve	10
	Reservoir Tank	14
	Right Hand Brake Lamp Switch	14
	Solenoid Valve	14
	Dual Control Valve	15
	Single Control Valve	20
	Air Pressure Switch	24
	Trailer Brake Solenoid Power	24
	Disassembly and Repair	25
	Air Compressor	25
	Air Compressor Lubrication Supply Line	29
	Air Compressor Lubrication Return Line	29
	Air Pressure Supply Line	32
	Unloader/Valve Silencer	33
	Reservoir	34
	Pressure Switch	34
	Single Control Valve	35
	Dual Control Valve	38
	Solenoid Control Valve	39
	Coupler Connectors	41
	Adjustments	42
	Adjusting the Air Brake Parking Brake	42
	System Testing	44
	Troubleshooting - Air Brake System	47
	Towed Vehicle	51
	Troubleshooting - Towed Vehicle	52

SECTION 33 - BRAKES AND CONTROLS

BOOK 3 - 87018725

Chapter 4 - Trailer Air Brake Electrical System (Not Used in North America)

CONTENTS

Section	Description	Page
33 000	Description of Operation	2
	Trailer Brake light	2
	Low Pressure Alarm	2
	Air Pressure Switch Power	3
	Harness Removal and Installation	4
	Cab Trailer Wiring Harness	4
	Rear Trailer Harness	8
	Troubleshooting	11

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 1 - Introduction

CONTENTS

Section	Description	Page
35 000	Specifications	2
	Description of Operation	4
	Introduction	4
	Closed Center Load Sensing (CCLS) Pump and Remote Valve System	5
	Standard Flow Hydraulic System	13
	Megaflow Hydraulic System	15
	Variable Displacement Pump	16
	Priority Flow Divider	16
	Remote Control Valves	17
	Standard Flow Tractors	17
	Megaflow Tractor	17
	Low-pressure Return Circuit	18

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 2 - Low-Pressure System

CONTENTS

Section	Description	Page
35 000	Specifications	2
	Description of Operation	3
	Hydraulic Pump Drive Assembly	3
	Tandem Gear Pump Assembly	4
	Tandem Gear Pump Fluid Supply	6
	Oil Filters	7
	Oil Reservoir	7
	Oil Cooler and Bypass Valve	8
	Low-Pressure Control Hydraulic Schematic	11
35 260	Removal and Disassembly	12
27 170	Hydraulic Pump Inlet Screen	12
27 170	Charge Pressure Regulator Valve	12
21 102	Filters	14
21 102	Filter Head	15
21 136	Cooler Bypass Valve	16
10 408	Hydraulic Oil Cooler	19
33 202	Accumulator	21
	Hydraulic Pump Driven Gear Case	22
	Repairing the Pump Drive Gear Case Bearings	23

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 3 - Tandem Gear Pump

CONTENTS

Section	Description	Page
35 000	Specifications	2
	Special Tools	2
	Description of Operation	3
	Operation	4
35 105	Disassembly and Repair	5
	Removal	5
	Disassembly	7
	Inspection of Parts	12
	Assembly	16
	Performance Testing	21
	Installation	22

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 4 - Axial Piston Pump

CONTENTS

Section	Description	Page
35 000	Specifications	2
	Special Tools	2
	Description of Operation	3
35 106	Disassembly and Repair	16
	Removal	16
	Tools Required	17
	Disassembly	17
	Input Shaft Seal Replacement	17
	Seal Installation	18
	Compensator Valve Disassembly	20
	Main Pump Disassembly	24

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 4 - Axial Piston Pump (Continued)

CONTENTS

Section	Description	Page
	Swash Plate Removal	28
	Input Shaft	31
	Pump Reassembly	34
	Rotating Group Assembly	37
	Flow and Pressure Compensator Valves	41
	Pump Installation	43

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 5 - Flow Divider

CONTENTS

Section	Description	Page
35 000	Specifications	2
	Description of Operation	3
	Priority Flow Divider	3
41 200	Disassembly and Repair	6
	Removal	6
	Teardown	7
	Assembly	8

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 6 - 70 Series Remote Valves

CONTENTS

Section	Description	Page
35 000	Specifications	2
	Special Tools	2
	Description of Operation	3
	Remote Valve Assembly	3
	Remote Valve Section (Series Logic)	9
	Remote Valve Section (Parallel Logic)	15
	Control Cables	21
	Return Tube	22
	Primary and Secondary Shuttles	22
	Order of Priority Operation	28

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 7 - 70A Series Electro-Hydraulic Remote Valves

CONTENTS

Section	Description	Page
35 000	Specifications	2
	Electro Hydraulic Remote Valves	3
	Control Switches	3
	Flow Control Adjustment	4
	Description of Operation	4
	Flow Control Operation	9
	Order of Priority Operation	14

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 8 - Remote Valve Couplers

CONTENTS

Section	Description	Page
35 000	Specifications	2
	Coupler Mounting Block and Coupler Repair (70 Series BSN D408953)	3
	Coupler Mounting Block and Coupler Repair (70 Series ASN D408952)	9

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 9 - Remote Valve Removal and Repair

CONTENTS

Section	Description	Page
35 000	Removal	2
	Remote Valve Removal	2
	Removing Individual Valve Assemblies	6
	Valve Reassembly	11
35 204	Teardown and Reassembly	16
	Individual Valve Section Disassembly	16
	Valve Section Overhaul (70 Series)	19
	Detent Release Overhaul (70 Series)	22

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 10 - Three-Point Hitch

CONTENTS

Section	Description	Page
35 000	Specifications	1
	Description of Operation	2
	Three-Point Hitch	2
	Three-Point Hitch External Linkage Components	15
	Quick Hitch	19
	Troubleshooting	20
	Disassembly and Repair	24
	Rockshaft Removal	24
	Seal and Bushing Replacement	26
	Rockshaft Installation	27
	Lift Cylinder Removal	29

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 11 - Power-Beyond Applicators

CONTENTS

Section	Description	Page
	Special Tools	2
35 204	Power-Beyond Applications	3

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 12 - Hydraulic Brake System

CONTENTS

Section	Description	Page
35 000	Closed Center Load Sensing (CCLS) Hydraulic Brake System	4
35 000	Operation of the European Trailer Brake System	4
	Operation of the 10 Bar (147 PSI) Trailer Brake System (Italian Market Only)	6
	Trailer Brake Valve Pilot Head Operation	9
	Trailer Brake Valve Operation	10
	Trailer Brake Valve	18
	Specifications	18
	Torques	18
	Special Tools	18
	Description	18
	Trailer Brake Valve Removal	19
	Trailer Brake Valve Disassembly	20
	Inspection and Repair	23
	Re-Assembly and Installation	23
	Bleeding the Brakes	24
	Bleeding Rear Axle Brakes	24
	Trailer Brake Valve Bleed Screws	25
	Trailer Brake Pressure Test	25

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 13 - Pressure and Flow Testing

CONTENTS

Section	Description	Page
35 000	Specifications	2
	Special Tools	4
	Description of Operation	5
35 105	Low-pressure System Testing	6
	Testing Low-pressure System	6
35 106	High-pressure System Testing	9
	Axial Piston Pump	9
	Steering Flow Divider Relief Pressure	14
	Steering Flow Divider Flow Test	15
	Remote Valve	16
	Detent Release Operation	17
	Timed Detent Release Operation	18
	Three-point Hitch	19
	Three-point Hitch and Remote Valve Troubleshooting Aid Tool	24

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 14 - EHR Calibration, Diagnostics and Hydraulic System Troubleshooting

CONTENTS

Section	Description	Page
35 000	Calibration of the Electro-hydraulic Control System (EHR)	2
	Functions of the PDT	2
	Set Up	3
	Start Calibration	7
	Set Defaults	8
	Deadband	9
	Calibration of the Pod Levers	10

SECTION 35 - HYDRAULIC SYSTEMS

BOOK 4 - 87018726

Chapter 14 - EHR Calibration, Diagnostics and Hydraulic System Troubleshooting

CONTENTS

Section	Description	Page
	Set Currents	13
	Setting the Flow Control Potentiometer	17
	Changing the Lever Deadband	18
	Diagnostics of the Electro-hydraulic Remote Valve Control System	19
	Solenoid Errors	19
	Lever Errors	20
	System Errors	20
	Other Screens	21
	Troubleshooting Electro-hydraulic Self Test	22
	Troubleshooting Hydraulic System	23
	Hydraulic System Quick Checks	28

SECTION 41 - STEERING

BOOK 5 - 87018727

Chapter 1 - Hydrostatic Steering

CONTENTS

Section	Description	Page
41 000	Specifications	2
	Minimum Hardware Tightening Torques	3
	Description of Operation	5
	Steering System Control Valve	7
	Steering Control Valve Types	11
	Steering Cylinders	12
	Troubleshooting	13
	Removal and Disassembly	18
	Steering Control Valve	18
	Parts Inspection	23
	Assembling the Steering Control Unit	24
	Installing the Steering Control Valve	29

SECTION 44 - TWO-WHEEL DRIVE AXLE AND WHEELS

BOOK 5 - 87018727

Chapter 1 - Two-wheel Drive Front Axle

CONTENTS

Section	Description	Page
44 000	Specifications	2
	Special Tools	2
	Description of Operation	3
	Two-wheel Drive Front Axle	3
	Troubleshooting	6
	Adjustments	7
	Front Wheel Track Spacing	7
	2WD Axle Adjustment	9
	Front Wheel Position	10
	Front Wheel Toe-in	11
	Disassembly and Repair	13
	Axle Removal	13
	Axle Installation	17
	Axle Center Beam Bushing Replacement	21
	Axle Extension Installation	21
	Spindle Removal and Disassembly	21
	Axle Extension/Spindle Bushing Replacement	22
	Spindle Reassembly	22
	Front Wheel Bearing	23
	Steering Cylinder	25
	Center Steering Arm	30
	Steering Rod	32

SECTION 44 - TWO-WHEEL DRIVE AXLE AND WHEELS

BOOK 5 - 87018727

Chapter 2 - Four Wheel Drive (FWD) Front Axle Track Spacing

CONTENTS

Section	Description	Page
44 520	Specifications	2
	Four Wheel Drive (FWD) Front Axle Track Spacing	3
	Four Wheel Drive Track Adjustment	3
	Front Wheel Positions	4

SECTION 44 - TWO-WHEEL DRIVE AXLE AND WHEELS

BOOK 5 - 87018727

Chapter 3 - Rear Wheel Track Spacing

CONTENTS

Section	Description	Page
44 000	Specifications	2
	Special Tools	2
	Rear Wheel Track Spacing	3
	Introduction	3
	Model 8670/8670A Tractors	5
	Model 8770/8770A, 8870/8870A and 8970/8970A Tractors	6
	Rear Wheel Track Adjustment	7
	Adjusting Rear Wheels	8
	Dual Rear Wheels	10

SECTION 44 - TWO-WHEEL DRIVE AXLE AND WHEELS

BOOK 5 - 87018727

Chapter 4 - Rear Wheel Removal/Replacement

CONTENTS

Section	Description	Page
44 520	Specifications	2
	Special Tools	2
	Description of Operation	3
	Disassembly and Repair	3
	Removal	3
	Installation	5

SECTION 50 - CLIMATE CONTROL

BOOK 5 - 87018727

Chapter 1 - Climate Control Systems

CONTENTS

Section	Description	Page
50 000	Introduction	2
	Specifications	3
	Tightening Torques	5
	Description of Operation	6
	Air Conditioning System Components	10
	Troubleshooting and Servicing Air Conditioning System	25
	Primary Troubleshooting and Testing	27
	Diagnosis Chart	28
	A/C System Performance Test and Diagnosis Chart	37
50 000	Component Removal and Installation	54

SECTION 55 - ELECTRICAL SYSTEMS

BOOK 6 - 87018728

Chapter 1 - Electronic Instrument Cluster (EIC) and System Overview

CONTENTS

Section	Description	Page
55 418	Specifications	3
	Description of Operation	4
	Main Distribution Panel	7
	Service Diagnostics	9
	Electronic Instrument Cluster (EIC)	11
	Central LCDs	12
	Tractor Performance Monitor	12
	Automatic Engine Shutdown	13
	70 Series Indicator, Warning Lamps and Audible Alarm	14
	70A Series Indicator, Warning Lamps and Audible Alarm	15
	Air Filter Restriction	17
	Differential Lock	17
	Cold Start Assist (Ether)	18
	Cold Start Assist (air inlet)	18
	Coolant Level Low	19
	Alternator Charge Indicator	19
	Intercooler Overheated	20
	Transmission Pressure Low	20
	Transmission, Rear Axle/Hydraulic Oil Temperature	20
	Hydraulic/Transmission Filters Restricted	21
	PTO Engaged	22
	Programmable Up Shift	22
	Programmable Down Shift	22
	70 Series FWD On	23
	FWD Auto	23
	70A Series FWD On	23
	FWD Auto	23
	Four Wheel Drive (FWD) Switch (if equipped)	23

SECTION 55 - ELECTRICAL SYSTEMS

BOOK 6 - 87018728

Chapter 1 - Electronic Instrument Cluster (EIC) and System Overview (Continued)

CONTENTS

Section	Description	Page
	Headlight High Beam	24
	System Status	24
	Parking Brake	24
	Bar Graph Displays (LCD)	25
	Stop and Audible Alarm Conditions	26
	Central Display (LCD)	29
	Lower Selectable Display	31
	Electronic Instrument Cluster - Tractor Performance Monitor (TPM)	33
	Automatic Display Information	34
	Selectable Display Information	35
	EIC Lighting Display	39
	Troubleshooting and Diagnostics	40
	EIC Harness Tool	41
	MODE 1, Operator Calibrations	41
	MODE 2, View Stored Fault Codes	50
	MODE 3, All Module Input Parameters	53
	MODE 4, EIC Output Diagnostics	56
	MODE 5, RHC Output Diagnostics	57
	MODE 6, EDC Output Diagnostics	58
	MODE 7, ETC Output Diagnostics	59
	MODE 8, EIC Full Display Test	60
	MODE 9, Hardware/Software Revision Level	61
	MODE 10, Transmission Calibration Review and Programming	63
	MODE 11, 3-Point Hitch and EDC Calibration	66
	MODE 12, Tractor Features Configuration	69
	MODE 13, Steering Angle Sensor Operation/Calibration (70A Series)	72

SECTION 55 - ELECTRICAL SYSTEMS

BOOK 6 - 87018728

Chapter 2 - Fault Codes and Diagnostics

CONTENTS

Section	Description	Page
55 000	Description of Operation	2
	70/70A Series Diagnostics Procedure Overview and Checklist	2
	System Grounds	3
	70 Series Electrical System Grounds	4
	Troubleshooting Checklist	5
	Special Tool for Testing Electrical Systems	7
	Electrical Test Procedures #1 through #4	8
	Fault Codes F001 to F099, 3-Point Hitch/EDC	14
	Fault Codes F100 to F199, Right-hand Controls	88
	Fault Codes F200 to F299, EIC Module	112
	Fault Codes F300 to F399, ETC Transmission Control	134
	Fault Codes F400 to F499, Engine Control	292

SECTION 55 - ELECTRICAL SYSTEMS

BOOK 7 - 87018729

Chapter 3 - Starting System

CONTENTS

Section	Description	Page
55 201	Specifications	2
	Description of Operation	3
	Introduction	3
	Batteries	4
	Cold Start System - Ether Operation (BSN D414644)	5
	Ether Cold Start Circuit Troubleshooting	7
	Cold Start System - Air inlet Heater (ASN D414643)	8
	Air Inlet Heater Troubleshooting	12
	Fuel Stop Solenoid and Override System	13
	Shutdown Override	14
	Troubleshooting the Cranking Circuit	15
	Disassembly and Repair	18

SECTION 55 - ELECTRICAL SYSTEMS

BOOK 7 - 87018729

Chapter 3 - Starting System (Continued)

CONTENTS

Section	Description	Page
	Cleaning	22
	Armature Servicing	23
	Field Coil Checks	24
	Field Coil Removal	24
	Solenoid Checks	25
	Three-Terminal Solenoid	26
	Reassembly	27
	Lubrication	27
	Plnion Clearance	28

SECTION 55 - ELECTRICAL SYSTEMS

BOOK 7 - 87018729

Chapter 4 - Charging System

CONTENTS

Section	Description	Page
55 301	Specifications	2
	Torque Specifications	3
	Description of Operation	4
	Introduction	4
	Features	4
	Operating Principles	5
	Troubleshooting and Diagnosis	6
	Disassembly and Repair	13
	Unit Repair	13
	Disassembly and Bench Checks	14
	Generator Assembly	19

SECTION 55 - ELECTRICAL SYSTEMS

BOOK 7 - 87018729

Chapter 5 - LIGHTING, AUXILIARY POWER AND RADIOS

CONTENTS

Section	Description	Page
55 404	Specifications	3
	Description of Operation	5
	Controls	5
	Multi-function Switch	6
	Hazard Warning Lights	6
	Light Operation	7
	Work Lights	8
	Auxiliary Power	10
	Auxiliary Control Mounting Locations	11
	Auxiliary Control Cable Routing	11
	Radio Installation	12
	Troubleshooting	13
	Fuse and Relay Identification	15
	Circuit Diagrams	16
	Brake Lights	17
	Head Lights	19
	Hazard Warning Lights	21
	70 Series Turn Signals	23
	70A Series Turn Signals	25
	Taillights	26
	Work Lights	27
	Work Lights #1	28
	Work Lights #2	29
	Work Lights #3	30
	Work Lights #4	31
	Interior Lights	32
	Auxiliary Power Sockets	33
	70 Series Seven-pin Trailer Connector	34
	70A Series Seven-pin Trailer Connector	35
	Disassembly and Repair	36
	Replace Headlight Assembly Bulbs	36

SECTION 55 - ELECTRICAL SYSTEMS

BOOK 7 - 87018729

Chapter 5 - LIGHTING, AUXILIARY POWER AND RADIOS (Continued)

CONTENTS

Section	Description	Page
	Replace Work Sealed Beam Units	36
	Replace Roof Mounted Turn Signal Bulbs	37
	Replace the Fender Mounted Turn Signal and Stop Light/Parking Light Bulbs	37
	Electronic Instrument Cluster (EIC) Bulb Replacement	38
	Harness Repair	39
	Connector Repair and Replacement	39
	Main Harness Routing	39

SECTION 55 - ELECTRICAL SYSTEMS

BOOK 7 - 87018729

Chapter 6 - Wiring Diagrams

CONTENTS

Section	Description	Page
55 100	Description of Operation	1
	Harness and Connectors	2
	Wiring Diagram Index and Key	16
	Wiring Diagram Circuit Explanation	18
	Glossary of Terms/Abbreviations	19
	Component Index	20
	Naso Schematic (North American Version)	22
	Iso Schematic (European Version)	43

SECTION 55 - ELECTRICAL SYSTEMS

BOOK 7 - 87018729

Chapter 7 - Electro-Hydraulic Remote Valve Control System

CONTENTS

Section	Description	Page
55 301	System Description	2
	Electrical Operation	2
	Electro-hydraulic Remote Valve Switch Control Pod Locations	3
	The Switch Control Pod Components	3
	Remote Valve Solenoid Connections	4
	Programmable Controller Location	4
	Switch Valve Color-coding	5
	Electro-hydraulic Control Switch Function Positions	6
	Electro-hydraulic Flow Control Knob	7
	Manual Programmable Operation Switch	7
	Electro-hydraulic Remote Valve Engagement Switch	7
	Fuse Panel Location	8
	Fuse Panel Access	8
	Fuse Location	9
	Control Relays	10
	Main Fuse Panel Location	11
	Main Fuse Panel Access	11
	Main Fuses	12
	Manual Operation	12
	Programmable Mode	14
	Flow Control	17
	Continuity Test - Short to Ground	18
	EHR Electrical Test Procedures	18
	Continuity Test - Check for Open Circuits	19
	Voltage Measurement or Short to Positive Supply Volts	21
	Removal of the Electro-hydraulic Remote Control Valve Switch Pod Assembly	23
	Reassemble of the Electro-hydraulic Remote Control Valve Switch Pod Assembly	25
	Removal of the Electro-hydraulic Remote Control Valve Programmable Controller	25
	Installation of the Electro-hydraulic Remote Control Valve Programmable Controller	25

SECTION 90 - PLATFORM, CAB, AND BODYWORK

BOOK 7 - 87018729

Chapter 1 - Cab Components

CONTENTS

Section	Description	Page
90 000	Description	2
	Disassembly and Assembly	3
90 160	Headliner	3
90 160	Cab Trim	6
90 124	Seat	8
90 154	Door Removal	28
90 156	Rear Window	29
90 110	Instrument Cluster	30
41 204	Steering Column	30
35 204	Right-hand Console	34
	Procedures For Right-hand Console Upgrade	37

SECTION 90 - PLATFORM, CAB, AND BODYWORK

BOOK 7 - 87018729

Chapter 2 - Engine Hood Removal

CONTENTS

Section	Description	Page
90 100	Specifications	2
	Description of Operation	3
	Disassembly and Repair	4
	Hood	4
	Hood and Upper Engine Frame	9

SECTION 90 - PLATFORM, CAB, AND BODYWORK

BOOK 7 - 87018729

Chapter 3 - Cab Removal

CONTENTS

Section	Description	Page
90 150	Specifications	2
	Special Tools	2
	Description of Operation	3
	Disassembly and Repair	4
	Cab Removal	4
	Cab Installation	10



SECTION 00 - GENERAL INFORMATION

Chapter 1 - General Information

CONTENTS

Section	Description	Page
00 000	Forward	2
	Precautionary Statements	3
	Safety Precautions	4
	Health and Safety Precautions	7
	Tractor Identification	14
	Service Techniques	21
	Sealer Specifications	23
	Hardware Torque Values	23
	Lubrication	26
	Recommended Lubricants and Coolants	26

FOREWORD

Appropriate service methods and correct repair procedures are essential for the safe, reliable operation of all equipment, as well as the personal safety of the individual performing the repair.

This Service Manual provides troubleshooting, overhaul, and pressure-testing instructions using recommended procedures and equipment. Following these instructions will ensure the safe, efficient, and timely completion of the service or repair.

There are numerous variations in procedures, techniques, tools, and parts for servicing machines, as well as in the skill of the individual doing the work. This manual cannot possibly anticipate all such variations and provide advice or cautions as to each. Accordingly, anyone who departs from the instructions provided in this manual must first establish that their personal safety, the safety of others, and the integrity of the machine will not be compromised by the choice of methods, tools or parts.

The manual is divided into sections which are subdivided into chapters. Each chapter contains information on general operating principles, detailed inspection, overhaul and, where applicable, specific troubleshooting, special tools, and specifications.

Any reference in this manual to right, left, rear, front, top, or bottom is as viewed from the operator's seat, looking forward.

All data and illustrations in this manual are subject to variations in build specification. This information was correct at the time of issue, but New Holland policy is one of continuous improvement, and the right to change specifications, equipment, or design at any time, without notice, is reserved.

PRECAUTIONARY STATEMENTS

PERSONAL SAFETY

Throughout this manual and on machine decals, you will find precautionary statements (“**CAUTION**”, “**WARNING**”, and “**DANGER**”) followed by specific instructions. These precautions are intended for the personal safety of you and those working with you. Please take the time to read them.

CAUTION

The word “**CAUTION**” is used where a safe behavioral practice according to operating and maintenance instructions and common safety practices will protect the operator and others from accident involvement.

WARNING

The word “**WARNING**” denotes a potential or hidden hazard which has a potential for serious injury. It is used to warn operators and others to exercise every appropriate means to avoid a surprise involvement with machinery.

DANGER

The word “**DANGER**” denotes a forbidden practice in connection with a serious hazard.

FAILURE TO FOLLOW THE “**CAUTION**”, “**WARNING**”, AND “**DANGER**” INSTRUCTIONS MAY RESULT IN SERIOUS BODILY INJURY OR DEATH.

MACHINE SAFETY

Additional precautionary statements (“**ATTENTION**” and “**IMPORTANT**”) are followed by specific instructions. These statements are intended for machine safety.

ATTENTION: *The word “**ATTENTION**” is used to warn the operator of potential machine damage if a certain procedure is not followed.*

IMPORTANT: *The word “**IMPORTANT**” is used to inform the reader of something he needs to know to prevent minor machine damage if a certain procedure is not followed.*

SAFETY PRECAUTIONS

Practically all service work involves the need to drive the tractor. The operator's manual, supplied with each tractor, contains detailed safety precautions relating to driving, operating, and servicing that tractor. These precautions are as applicable to the service technician as they are to the operator and should be read, understood and practiced by all personnel.

Prior to undertaking any maintenance, repair, overhaul, dismantling or reassembly operations, whether within a workshop facility or in the field, consideration should be given to factors that may have an effect upon safety, not only upon the mechanic carrying out the work, but also upon bystanders.

PERSONAL CONSIDERATIONS

The wrong clothes or carelessness in dress can cause accidents. Check to see that you are suitable clothed.

Some jobs require special protective equipment.

Skin Protection

Used motor oil may cause skin cancer. Follow work practices that minimize the amount of skin exposed and length of time used oil stays on your skin.

Eye Protection

The smallest eye injury may cause loss of vision. Injury can be avoided by wearing eye protection when engaged in chiselling, grinding, discing, welding, and painting.

Breathing Protection

Fumes, dust, and paint spray are unpleasant and harmful. These can be avoided by wearing respiratory protection.

Hearing Protection

Loud noise may damage your hearing, and the greater the exposure the worse the damage. If the noise is excessive, wear ear protection.

Lifting Protection

Avoid injury by correctly handling components. Make sure you are capable of lifting the object. If in doubt get help.

Hand Protection

It is advisable to use a protective cream before work to prevent irritation and skin contamination. After work clean your hands with soap and water. Solvents such as mineral spirit and kerosene may harm the skin.

Foot Protection

Substantial or protective footwear with reinforced toe caps will protect your feet from falling objects. Additionally, oil-resistant soles will help to avoid slipping.

Special Clothing

For certain work it may be necessary to wear flame or acid-resistant clothing.

EQUIPMENT CONSIDERATIONS

Machine Guards

Before using any machine, check to ensure that the machine guards are in position and serviceable. These guards not only prevent parts of the body or clothing coming in contact with the moving parts of the machine, but also ward off objects that might fly off the machine and cause injury.

Lifting Devices

Always ensure that lifting equipment, such as chains, slings, lifting brackets, hooks and eyes, are thoroughly checked before use. If in doubt, select stronger equipment than is necessary.

Never stand under a suspended load or raised implement.

Compressed Air

The pressure from a compressed-air line often exceeds 690 bar (100 PSI). It is perfectly safe if used correctly. Any misuse may cause injury.

Never use compressed air to blow dust, filing, and dirt away from your work area unless the correct type of nozzle is fitted.

Compressed air is not a cleaning agent; it will only move dust from one place to another. Look around before using an air hose as bystanders may get grit into their eyes, ears, or skin.

Hand Tools

Many cuts, abrasions and injuries are caused by defective tools. Never use the wrong tool for the job, as this generally leads either to some injury or to a poor job.

When removing or replacing hardened pins, use a copper or brass drift rather than a hammer.

For dismantling, overhaul, and assembly of major and sub-components, always use the Special Service Tools recommended. These will reduce the work effort, labor time, and the repair cost.

Electricity

Electricity has become so familiar in day to day usage, that its potentially dangerous properties are often overlooked. Misuse of electrical equipment can endanger life.

Before using any electrical equipment - particularly portable appliances - make a visual check to make sure that the wiring is not worn or frayed and that the plugs and sockets are intact. Make sure you know where the nearest isolating switch for your equipment is located.

GENERAL CONSIDERATIONS

Solvents

Use cleaning fluids and solvents that are known to be safe. Certain types of fluids can cause damage to components, such as seals, and can cause skin irritation. Solvents should be checked that they are suitable not only for the cleaning of components and individual parts, but also that they do not affect the personal safety of the user.

Housekeeping

Many injuries result from tripping over or slipping on objects or material left lying around by a careless worker. Prevent these accidents from occurring. If you notice a hazard, don't ignore it - remove it.

A clean, hazard-free place of work improves the surroundings and daily environment for everybody.

Fire

Fire has no respect for persons or property. The destruction that a fire can cause is not always fully realized. Everyone must be constantly on guard.

Extinguish matches, cigars, and cigarettes before throwing them away.

Work cleanly, disposing of waste material into proper containers.

Locate the fire extinguishers and find out how to operate them.

Do not panic - warn those near and raise the alarm.

Do not allow or use an open flame near the tractor fuel tank, battery, or component parts.

First Aid

In the type of work that mechanics are engaged in, dirt, grease, and fine dusts settle upon the skin and clothing. If a cut, abrasion or burn is disregarded it may become infected within a short time. Seek medical aid immediately.

Cleanliness

Cleanliness of the tractor hydraulic system is essential for optimum performance. When carrying out service and repairs, plug all hose ends and component connections to prevent dirt entry.

Clean the exterior of all components before carrying out any form of repair. Dirt and abrasive dust can reduce the efficiency and working life of a component and lead to costly replacement. Use of a high-pressure washer or steam cleaner is recommended.

OPERATIONAL CONSIDERATIONS

Stop the engine, if at all possible, before performing any service.

Place a warning sign on tractors which, due to service or overhaul, would be dangerous to start. Disconnect the battery leads if leaving such a unit unattended.

Do not attempt to start the engine while standing beside the tractor or attempt to bypass the safety start switch.

Avoid prolonged running of the engine in a closed building or in an area with inadequate ventilation as exhaust fumes are highly toxic.

Always turn the radiator cap to the first stop to allow pressure in the system to dissipate when the coolant is hot.

Never work beneath a tractor which is on soft ground. Always take the unit to an area which has a hard working surface, preferably concrete.

If it is found necessary to raise the tractor for ease of servicing or repair, make sure that safe and stable supports are installed beneath axle housings, casings, etc., before starting work.

Certain repair or overhaul procedures may necessitate separating the tractor, either at the engine/transmission or transmission/rear axle location. These operations are simplified by the use of the Tractor Splitting Stands. Should this equipment not be available, every consideration must be given to stability, balance and weight of the components, especially if a cab is installed.

Use footsteps or working platforms when servicing those areas of a tractor that are not within easy reach.

Before loosening any hoses or tubes connecting implements to remote control valves, etc., switch off the engine, remove all pressure in the lines by operating levers several times. This will remove the danger of personal injury by oil pressure.

Prior to pressure testing, make sure all hoses and connectors of the tractor and the test equipment are in good condition and tightly sealed. Pressure readings must be taken with the gauges specified. The correct procedure should be rigidly observed to prevent damage to the system or the equipment, and to eliminate the possibility of personal injury.

—————  **WARNING**  —————

Escaping hydraulic/diesel fluid under pressure can penetrate the skin causing serious injury.

Do not use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks.

Stop the engine and relieve pressure before connecting or disconnecting lines.

Tighten all connections before starting the engine or pressurizing lines.

If any fluid is injected into the skin, obtain medical attention immediately or gangrene may result.

Use “position control” when equipment or implements are required to be attached to the hydraulic linkage either for testing purposes or for transportation.

Always lower equipment to the ground when leaving the tractor.

If high lift attachments are installed on a tractor, beware of overhead power, electric or telephone cables when traveling. Drop the attachment near to ground level to increase stability and minimize risks.

Do not park or attempt to service a tractor on an incline. If unavoidable, take extra care and block all wheels.

Observe recommended precautions as indicated in this Service Manual when dismantling the air-conditioning system as escaping refrigerant can cause frostbite.

Prior to removing wheels and tires from a tractor, check to determine whether additional ballast (liquid or weights) has been added. Seek assistance and use suitable equipment to support the weight of the wheel assembly.

When inflating tires, beware of over inflation - constantly check the pressure. Overinflation can cause tires to burst and result in personal injury.

HEALTH AND SAFETY PRECAUTIONS

Many of the procedures associated with vehicle maintenance and repair involve physical hazards or other risks to health. This section lists, alphabetically, some of these hazardous operations, materials and equipment associated with them. The precautions necessary to avoid these hazards are identified.

The list is not inclusive; all operations, procedures, and handling of materials should be carried out with health and safety in mind.

ACIDS AND ALKALIS (See Battery Acids, i.e., Caustic Soda, Sulfuric Acid)

Used in batteries and cleaning materials.

Irritating and corrosive to the skin, eyes, nose and throat. Causes burns.

Avoid splashes to the skin, eyes, and clothing. Wear suitable protective gloves and goggles. Can destroy ordinary protective clothing. Do not breathe mists.

Ensure access to water and soap is readily available for splashing accidents.

ADHESIVES AND SEALERS (See Fire)

—————  **CAUTION**  —————
HIGHLY FLAMMABLE, COMBUSTIBLE.

Generally should be stored in "NO SMOKING" areas; cleanliness and tidiness while in use should be observed, i.e., from applications where possible, disposable paper should be dispensed to cover benches. Containers, including secondary containers, should be labeled.

Solvent-Based Adhesives/Sealers (See Solvents)

Follow manufacturer's Instructions

Water-Based Adhesives/Sealers

Those based on polymer emulsions and rubber lattices may contain small amounts of volatile toxic and harmful chemicals.

Skin and eye contact should be avoided, and adequate ventilation provided during use.

Follow manufacturer's Instructions

Resin-Based Adhesive/Sealers (i.e., Epoxide and Formaldehyde Resin Based)

Mixing should only be carried out in well-ventilated areas as harmful or toxic volatile chemicals may be released.

Skin contact with uncured resins and hardeners can result in irritation, dermatitis, and absorption of toxic, or harmful chemicals through the skin. Splashes can damage the eyes.

Provide adequate ventilation; avoid skin and eye contact. Follow manufacturer's instructions.

Anaerobic, Cyanoacrylate and other Acrylic Adhesives

Many are irritating, sensitizing, or harmful to the skin. Some are eye irritants.

Skin and eye contact should be avoided and the manufacturer's instructions followed.

Cyanoacrylate adhesives (super-glues) must not contact the skin or eyes. If skin or eye tissue is bonded, cover with a clean moist pad and get medical attention. Do not attempt to pull tissue apart. Use in well-ventilated areas as vapors can cause irritation of the nose and eyes.


For two-part systems: See Resin-Based Adhesive/Sealers

Isocyanate (Polyurethane) Adhesive/Sealers (See Resin-Based Adhesives)

Individuals suffering from asthma or respiratory allergies should not work with, or near, these materials as sensitivity reactions can occur.

Any spraying should preferably be carried out in exhaust ventilated booths removing vapors and spray droplets from the breathing zone. Individuals working with spray applications should wear supplied air respirators.

ANTIFREEZE (See Fire, Solvents, i.e., Isopropanol, Ethylene Glycol, Methanol)

—————  **CAUTION**  —————
HIGHLY FLAMMABLE, COMBUSTIBLE.

Used in vehicle coolant systems, brake air pressure systems, and windshield washing solutions.

Vapors given off from coolant antifreeze (Glycol) arise only when heated.

Antifreeze may be absorbed through the skin in toxic or harmful quantities. Swallowed antifreeze is fatal if not treated; medical attention must be sought immediately.

BATTERY ACIDS (See Acids and Alkalis)

Gases released during charging are explosive. Never use an open flame or allow sparks near charging or recently charged batteries.

BRAKE AND CLUTCH LININGS AND PADS (See Legal Aspects)

These items may contain asbestos which, if inhaled, may cause lung damage and, in some cases, cancer.

The normal handling and fitting of these items should not cause any hazard, but any drilling, grinding, or filling of friction materials may produce asbestos dust and should only be carried out under strictly controlled conditions.

The dust in brake drums, etc., contains very little asbestos, but care should be taken to avoid inhalation of this dust during servicing of brakes and clutches. The use of drum cleaning units, vacuum cleaning, or damp wiping is preferred to the use of air jets for "blowing-out."

The dust should be collected in a sealed plastic bag and disposed appropriately, according to local laws and regulations.

BRAZING (See Welding)

CHEMICAL MATERIALS - GENERAL (See Legal Aspects)

Chemical materials such as solvents, sealers, adhesives, paints, resin foams, battery acids, antifreeze, oils, and grease should always be used with caution, stored and handled with care. They may be toxic, harmful, corrosive, irritating, or highly flammable, causing hazardous fumes and dusts.

The effects of excessive exposure to chemicals may be immediate or delayed, briefly experienced or permanent, cumulative, superficial, life threatening, or may reduce life expectancy.

CLUTCH LININGS AND PADS (See Brake and Clutch Linings and Pads)

CORROSION PROTECTION MATERIALS (See Solvents, Fire)

—————  **CAUTION**  —————
HIGHLY FLAMMABLE, COMBUSTIBLE.

These materials are varied; the manufacturer's instructions should be followed. They may contain solvents, resins, and petroleum products. Skin and eye contact should be avoided. They should only be sprayed in conditions of adequate ventilation, and not in confined spaces.

CUTTING (See Welding)

DEWAXING (See Solvents and Fuels - Kerosene)

DO'S

Do remove chemical materials from the skin and clothing as soon as practicable. Change heavily soiled clothing and have it cleaned.

Do carefully read and observe hazard and precaution warnings given on material containers (labels) and in any accompanying leaflets, poster or other instructions. Material health and safety data sheets can be obtained from manufacturers.

Do organize work practices by wearing protective clothing and safety devices to avoid contact with chemical materials; breathing vapors, aerosols, dusts, and fumes; inadequate container labeling; or fire and explosion hazards.

Do wash before job breaks, before eating, smoking, drinking, or using toilet facilities when handling chemical materials.

Do keep work areas clean, uncluttered, and free of spills.

Do store according to national and local regulations.

Do keep chemical materials out of reach of children.

DON'TS

Do not mix chemical materials except under the manufacturer's instructions; some chemicals can form other toxic or harmful chemicals, releasing toxic or harmful fumes, or be explosive when mixed together.

Do not spray chemical materials, particularly those based on solvents, in confined spaces, i.e., when people are inside a vehicle.

Do not apply heat or flame to chemical materials, except under the manufacturer's instructions. Some are highly flammable, and some may release toxic or harmful fumes.

Do not leave containers open. Escaping fumes can build up to toxic, harmful, or explosive concentrations. Some fumes are heavier than air and will accumulate in confined areas, pits, etc.

Do not transfer chemical materials to unlabeled containers.

Do not clean hands or clothing with chemical materials. Chemicals, particularly solvents and fuels, will dry the skin, and may cause irritation with dermatitis. Some can be absorbed through the skin in toxic or harmful quantities.

Do not use emptied containers for other materials, except when they have been cleaned under supervised conditions.

Do not sniff or smell chemical materials. Brief exposure to high concentrations of fumes can be harmful or toxic.

DUSTS

Powder or dusts may be an irritant, harmful or toxic. Avoid breathing dusts from powdery chemical materials, or those arising from dry abrasion operations. Wear respiratory protection if ventilation is inadequate.

ELECTRIC SHOCK

Electric shocks can result from the use of faulty electrical equipment or from the misuse of equipment even in good condition.

Ensure electrical equipment is maintained in good condition and frequently tested.

Ensure flexes, cables, plugs and sockets are not frayed, kinked, cut, cracked, or otherwise damaged.

Ensure electric equipment is protected by the correct rated fuse.

Never use electrical equipment or any other equipment which is in any way faulty. The results could be fatal.

Use reduced voltage equipment for inspection and working lights, where possible.

Ensure the cables of mobile electrical equipment cannot get trapped and damaged, such as in a vehicle hoist.

In Cases of Electrocution:

- Switch off electricity before approaching victim.
- If this is not possible, push or drag the victim from the source of electricity using dry non-conductive material.
- Commence resuscitation if trained to do so.
- **SUMMON MEDICAL ASSISTANCE IMMEDIATELY**

EXHAUST FUMES

These contain asphyxiating, harmful and toxic chemicals, and particles such as carbon oxides, nitrogen oxides, aldehydes, lead, and aromatic hydrocarbons. Engines should only run under conditions of adequate extraction, or general ventilation, not in confined spaces.

Diesel Engine

Soot, discomfort, and irritation usually give adequate warning signs of hazardous fume concentration.

FIBER INSULATION (See Dusts)

Used in noise and sound insulation.

The fibrous nature of surfaces and cut edge can cause skin irritation. This is usually a physical, not a chemical effect.

Precautions should be taken to avoid excessive skin contact through careful organization of work practices and the use of gloves.

FIRE (See Welding, Foams, Legal Aspects)

Many of the materials found on, or associated with, the repair of vehicles are highly flammable. Some release toxic or harmful fumes if burned.

Observe strict fire safety when storing and handling flammable materials or solvents, particularly near electrical equipment or welding processes.

Before using electrical or welding equipment, be sure there is no fire hazard present.

Have a suitable fire extinguisher available when using welding or heating equipment.

FIRST AID

Apart from meeting any legal requirements, it is desirable for someone in the workshop to be trained in first aid procedures.

Splashes in the eye should be flushed with clean water for at least ten minutes.

Soiled skin should be washed with soap and water.

Inhalation affected individuals should be removed to fresh air immediately.

If chemicals are swallowed, consult a doctor immediately with (label) information on material used.

Do not induce vomiting, unless indicated by manufacturer.

FOAMS - POLYURETHANE (See Fire)

Used in sound and noise insulation. Cured foams are used in seat and trim cushioning.

Follow manufacturer's instructions.

Unreacted components are irritating and may be harmful to the skin and eyes. Wear gloves and goggles.

Individuals with chronic respiratory diseases, asthma, bronchial medical problems, or histories of allergic diseases should not work with or near uncured materials.

The component's vapors and spray mists can cause direct irritation and/or sensitivity reactions and may be toxic or harmful.

Vapors and spray mists must not be breathed. These materials must be applied with adequate ventilation and respiratory protection. Do not remove respirator immediately after spraying, wait until vapor/mists have cleared.

Burning of the uncured components and the cured foams can generate toxic and harmful fumes.

Smoking, open flames, or the use of electrical equipment should not be allowed during foaming operations until vapors/mists have completely cleared. Any heat cutting of cured foams or partially cured foams should be conducted with extraction ventilation (see Legal Aspects).

FUELS (See Fire, Legal Aspects, Chemicals - General, Solvents)

Used as fuels and cleaning agents.

Gasoline (Petrol)

—————  **CAUTION**  —————
HIGHLY FLAMMABLE, COMBUSTIBLE.

Swallowing can result in mouth and throat irritation; absorption from the stomach can result in drowsiness and unconsciousness. Small amounts can be fatal to children. Aspiration of liquid into the lungs, i.e., through vomiting, is a very serious hazard.

Prolonged or repeated contact with gasoline dries the skin and causes irritation and/or dermatitis. Liquid in the eye causes severe pain.

Motor gasoline may contain high quantities of benzene which is toxic upon inhalation; the concentrations of gasoline vapors must be kept very low. High concentrations will cause eye, nose and throat irritation, nausea, headache, depression and symptoms of drunkenness. Very high concentrations will result in rapid loss of consciousness.

Ensure there is adequate ventilation when handling and using gasoline. Great care must be taken to avoid the serious consequences of inhalation in the event of vapor buildup arising from spillages in confined spaces.

Special precautions apply to cleaning and maintenance operations on gasoline storage tanks.

Gasoline should not be used as a cleaning agent. It must not be siphoned by mouth.

Kerosene (Paraffin)



Used also as heating fuel, solvent, and cleaning agent.

—————  **CAUTION**  —————
FLAMMABLE

Irritation of the mouth and throat may result from swallowing. The main hazard from swallowing arises if liquid aspiration into the lungs occurs. Liquid contact dries the skin and can cause irritation and/or dermatitis. Splashes in the eye may be slightly irritating.

In normal circumstances, the low volatility does not give rise to harmful vapors. Exposure to mists and vapors from kerosene at elevated temperatures should be avoided (mists may arise in dewaxing). Avoid skin and eye contact; be sure there is adequate ventilation.

Diesel Fuel (Gas-Oil) (See Fuels -Kerosene)

—————  **CAUTION**  —————

COMBUSTIBLE

Gross or prolonged skin contact with high boiling gas oils may cause serious skin disorders, including skin cancer.

GAS CYLINDERS (See Fire)

Gases such as oxygen, acetylene, carbon dioxide, argon, and propane are normally stored in cylinders at pressures of up to 137.8 bar (2000 PSI). Great care should be taken in handling these cylinders to avoid mechanical damage to them or the valve gear attached. The contents of each cylinder should be clearly identified by appropriate markings.

Cylinders should be stored in well-ventilated enclosures and protected from ice, snow, or direct sunlight. Fuel gases, i.e., acetylene and propane, should not be stored in close proximity to oxygen cylinders.

Care should be exercised to prevent leaks from gas cylinders and lines and to avoid sources of ignition.

Only trained personnel should undertake work involving gas cylinders.

GASES (See Gas Cylinder)

GAS SHIELDING WELDING (See Welding)

GAS WELDING (See Welding)

GENERAL WORKSHOP TOOLS AND EQUIPMENT

It is essential that all tools and equipment are maintained in good condition and the correct safety equipment used where required.

Never use tools or equipment for any purpose other than for which they were designed.

Never overload equipment such as hoists, jacks, axle and chassis stands, or lifting slings. Damage caused by overloading is not always immediately apparent and may result in a fatal failure the next time the equipment is used.

Do not use damaged, defective tools or equipment, particularly high-speed equipment such as grinding wheels. A damaged grinding wheel can disintegrate without warning causing serious injury.

Wear suitable eye protection when using grinding, chiseling, or sandblasting equipment.

Wear a suitable breathing mask when using sandblasting equipment, working with asbestos based materials, or using spraying equipment.

GLUES (See Adhesive and Sealers)

HIGH-PRESSURE AIR, LUBRICATION AND OIL TEST EQUIPMENT (See Lubricants and Greases)

Always keep high-pressure equipment in good condition and regularly maintained, particularly joint and unions.

Never direct a high-pressure nozzle at the skin, as the fluid may penetrate to the underlying tissue and can cause serious injury.

LEGAL ASPECTS

Many laws and regulations make requirements relating to health and safety in the use of materials and equipment in workshops.

Workshops should be familiar, in detail, with these laws and regulations.

LUBRICANTS AND GREASES

Avoid all prolonged and repeated contact with mineral oils, especially used oils. Gross and prolonged skin contact with used oils contaminated during service, i.e., routine service change sump oils, are more irritating and more likely to cause serious effects, including skin cancer.

Wash skin thoroughly after work involving oil. Proprietary hand cleaners may be of value provided they can be removed from the skin with water. Do not use petrol, paraffin, or other solvents to remove oil from the skin.

Lubricants and greases may be slightly irritating to the eyes.

Repeated or prolonged skin contact should be avoided by wearing protective clothing, if necessary. Particular care should be taken with used oils and greases containing lead. Do not allow work clothing to be contaminated with oil. Dry clean or launder such clothing at regular intervals. Discard oil-soaked shoes.

Do not use previously used engine oils as lubricants or for any application where major skin contact is likely to occur. Used oils may only be disposed of in accordance with local regulations.

NOISE INSULATION MATERIAL (See Foams, Fiber Insulation)

PAINTS (See Solvents and Chemical Materials - General)

—————  **CAUTION**  —————
HIGHLY FLAMMABLE

Paints can contain harmful or toxic pigments, driers, and other components, as well as solvents. Spraying should only be carried out with adequate ventilation.

Two-part or catalyzed paints can also contain harmful and toxic unreacted resins and resin-hardening agents. The manufacturer's instructions should be followed and the section on resin-based adhesives, isocyanate containing adhesive and foams should be consulted.

Spraying should preferably be carried out in exhausted ventilated booths, removing vapor and spray mists from the breathing zone. Individuals working in booths should wear respiratory protection. Those doing small-scale repair work in the open shop should wear supplied air respirators.

PAINT THINNERS (See Solvents)

PRESSURIZED EQUIPMENT (See High-Pressure Air, Lubrication and Oil Test Equipment)

RESISTANCE WELDING (See Welding)

SEALERS (See Adhesives and Sealers)

SOLDER (See Welding)

Solders are mixtures of metals in which the melting point of the mixture is below that of constituent metals (normally lead and tin). Solder application does not normally give rise to toxic lead fumes, provided a gas/air flame is used. Oxyacetylene flames should not be used, as they are much hotter and will cause lead fumes to be released.

Some fumes may be produced by the application of any flame to surfaces coated with grease, etc., and inhalation of these should be avoided.

Removal of excess solder should be undertaken with care to ensure fine lead dust is not produced, which can cause toxic effects if inhaled. Respiratory protection may be necessary.

Solder spillage and filing should be collected and removed promptly to prevent general air contamination by lead.

High standards of personal hygiene are necessary in order to avoid ingestion of lead or inhalation of solder dust from clothing.

SOLVENTS (See Chemical Materials - General, Fuels [Kerosene], Fire)

Acetone, White spirit, Toluene, Xylene, Trichlorethane.

Used in cleaning materials, dewaxing, paints, plastics, resins, thinners, etc.

—————  **CAUTION**  —————
HIGHLY FLAMMABLE

Skin contact will degrease the skin and may result in irritation and/or dermatitis following repeated or prolonged contact. Some can be absorbed through the skin in toxic or harmful quantities.

Splashes in the eye may cause severe irritation and could lead to loss of vision.

Brief exposure to high concentrations of vapors or mists will cause eye and throat irritation, drowsiness, dizziness, headaches and, in the worst circumstances, unconsciousness.

Repeated or prolonged exposures to excessive, but lower concentrations of vapors or mists, for which there might not be adequate warning indications, can cause more serious toxic or harmful effects. Aspiration into the lungs, i.e., through vomiting, is the most serious consequence.

Avoid splashes to the skin, eyes, and clothing. Wear protective gloves, goggles, and clothing if necessary.

Ensure good ventilation when in use, avoid breathing fumes, vapors, and spray mists. Keep containers tightly sealed. Do not use in confined spaces.

When the spraying material contains solvents, e.g., paints, adhesives, and coatings, use extraction ventilation or personal respiratory protection in the absence of adequate general ventilation.

Do not apply heat or flame, except under specific and detailed manufacturer's instructions.

SOUND INSULATION (See Fiber Insulation, Foams)

SPOT WELDING (See Welding)

SUSPENDED LOADS

There is always a danger when loads are lifted or suspended. Never work under an unsupported, suspended, or raised load, e.g., jacked-up vehicle, suspended engine, etc.

Always ensure lifting equipment such as jacks, hoists, axle stands, slings, etc., are adequate and suitable for the job, in good condition, and regularly maintained.

Never improvise lifting tackle.

UNDER SEAL (See Corrosion Protection)

WELDING (See Fire, Electric Shock, Gas Cylinders)

Welding processes include Resistance Welding (Spot Welding), Arc Welding, and Gas Welding.

Resistance Welding

This process may cause particles of molten metal to be emitted at high velocity; the eyes and skin must be protected.

Arc Welding

This process emits a high level of ultraviolet radiation which may cause eye and skin burns to the welder and to other persons nearby. Gas-shielded welding processes are particularly hazardous in this respect. Personal protection must be worn and screens used to shield other people.

Metal spatter will also occur; appropriate eye and skin protection is necessary.

The heat of the welding arc will produce fumes and gases from the metals being welded and from any

applied coatings or contamination of the surfaces being worked on. These gases and fumes may be toxic; inhalation should always be avoided. The use of extraction ventilation to remove the fumes from the working area may be necessary, particularly in cases where the general ventilation is poor, or where considerable welding work is anticipated. In extreme cases where adequate ventilation cannot be provided, supplied air respirators may be necessary.

Gas Welding

Oxyacetylene torches may be used for welding and cutting; special care must be taken to prevent leakage of these gases, subsequently reducing the risk of fire and explosion.

The process will produce metal spatter; eye and skin protection is necessary.

The flame is bright and eye protection should be used, but the ultraviolet emission is much less than that from arc welding, and lighter filters may be used.

The process itself produces few toxic fumes, but such fumes and gases may be produced from coatings on the work, particularly during cutting away of damaged parts. Inhalation of the fumes should be avoided.

In brazing, toxic fumes may be released from the metals in the brazing rod. A severe hazard may arise if brazing rods containing cadmium are used. In this event, particular care must be taken to avoid inhalation of fumes; an expert's advice may be required.

SPECIAL PRECAUTIONS MUST BE TAKEN BEFORE ANY WELDING OR CUTTING TAKES PLACE ON VESSELS WHICH HAVE CONTAINED COMBUSTIBLE MATERIALS, I.E., "BOILING" OR "STEAMING OUT" THE INSIDE OF FUEL TANKS.

WHITE SPIRIT (See Solvents)

TRACTOR IDENTIFICATION

TRACTOR IDENTIFICATION DATA

The tractor and major components are identified using serial numbers and/or manufacturing codes. The following provides the locations of the identification data.

NOTE: Tractor identification data must be supplied when requesting parts or service.

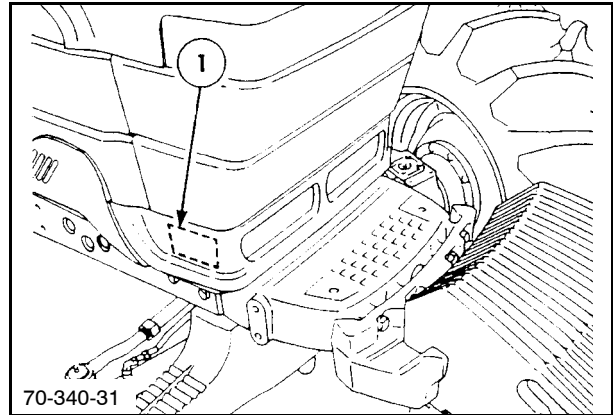
Identification data is needed to aid in identifying the tractor if it is ever stolen.

VEHICLE IDENTIFICATION PLATE

The vehicle identification plate on the 70 Series, is located inside the right front lower side panel of the hood at 1.

The vehicle identification plate on the 70A Series, is located inside the upper right side panel of the hood at 2.

Owners should record the information on the sample ID plate.



1

The ID plate is stamped with the following information:

TRACTOR NUMBER - Serial number prefixed by the letter "D."

MODEL - Production model code.

UNIT - Production unit date code.*

ENGINE - Serial number.

TRANSMISSION - Serial number.

REAR AXLE - Rear axle serial number.

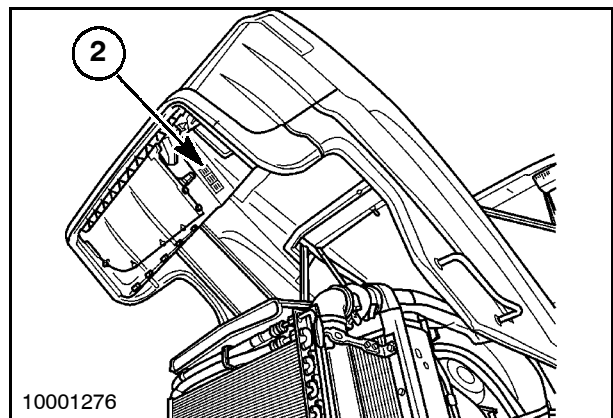
FRONT AXLE - Serial number.

HYDRAULIC PUMP - Serial number.

HYDRAULIC LIFT - Blank

FWD FACTOR - Four-wheel-drive factor.

SPECIAL ORDER - Blank



2

NEW HOLLAND		
TRACTOR NUMBER	MODEL	UNIT
ENGINE	TRANSMISSION	REAR AXLE
FRONT AXLE	HYDRAULIC PUMP	HYDRAULIC LIFT
	FWD-FACTOR	SPECIAL ORDER

FORD NEW HOLLAND CANADA LTD.
VERSATILE FARM EQUIPMENT OPERATIONS

MADE IN CANADA
70-340-2193

3

***KEY TO PRODUCTION DATE CODES:**

The unit heading on the ID plate represents the production date of the tractor.

Two types of production date codes are used. One style starts with a numeral (example 4A03B) while the second style starts with a letter (example A0314).

The following examples explain each code. Refer to the style code used on the tractor being worked on.

Example of Production Unit Code 4A03B:

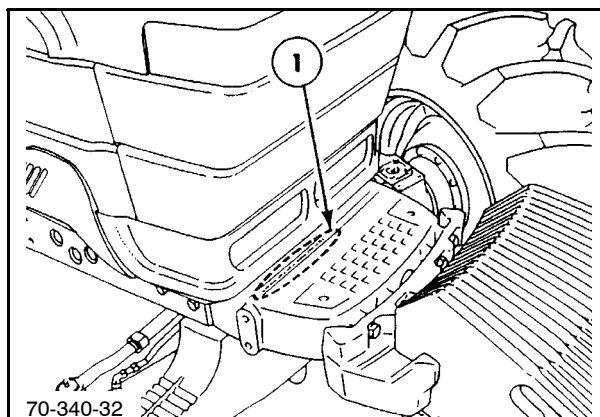
- 4 = Year of production**
(4 = 1994, 5 = 1995)
- A = Month of year**
(A = January, B = February, ... H = August,
J = September, ... M = December)
NOTE: "I" is not used.
- 03 = Day of month**
(03 = third, 04 = fourth, ... 31 = thirty-first)
- B = Shift**
(A = night, B = day, C = afternoon)

Example of Production Unit Code A0314:

- A = Month of year**
(A = January, B = February, ... H = August,
J = September, ... M = December)
NOTE: "I" is not used.
- 03 = Day of month**
(03 = third, 04 = fourth, ... 31 = thirty-first)
- 1 = Shift**
(1 = day, 2 = afternoon, 3 = night)
- 4 = Year of production**
(4 = 1994, 5 = 1995)

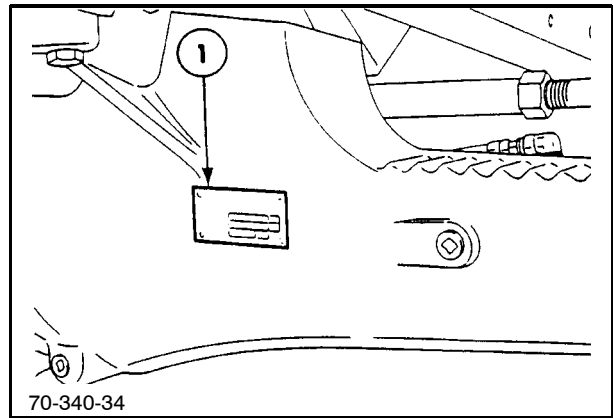
TRACTOR IDENTIFICATION STAMPING

The serial number and identification information, 1, is stamped on the top of the front support.



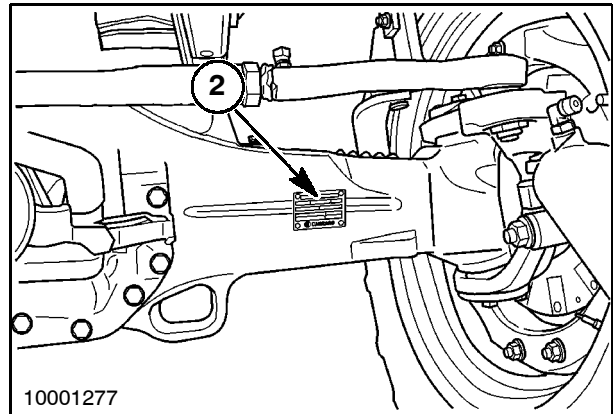
FOUR WHEEL DRIVE (FWD) FRONT AXLE IDENTIFICATION

The serial number and axle type for the 70 Series is on the plate, 1, located on the front of the axle housing.



5

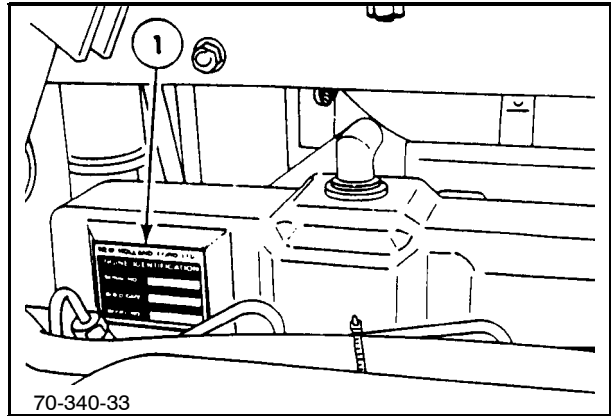
The serial number and axle type for the 70A Series is on the plate located on the right rear of the axle housing, 2.



6

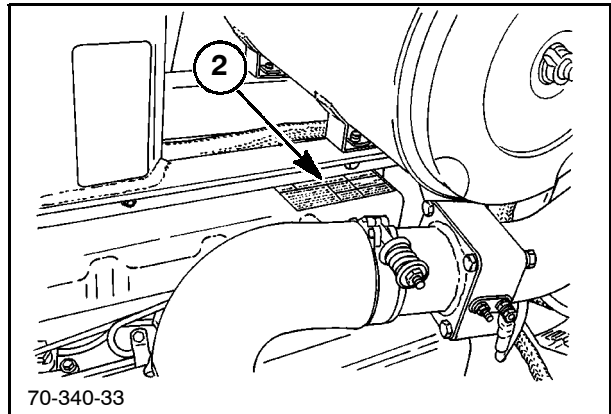
ENGINE IDENTIFICATION

The engine identification information for the 70 Series, is located on a tag, 1, on the right side of the engine rocker cover.



7

The engine identification information for the 70A Series, is located on a tag, 2, on the top front of the engine rocker cover.



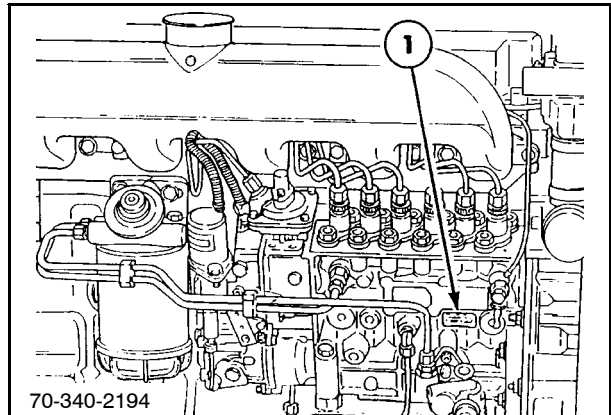
8

FUEL INJECTION PUMP IDENTIFICATION

NOTE: 70 Series art shown in Figure 9.

The serial number and pump information are on the plate, 1, on the pump.

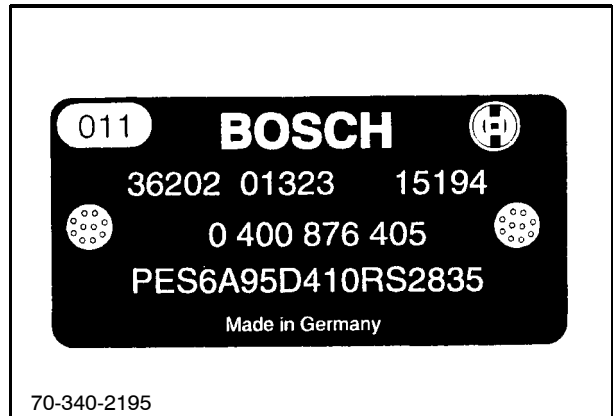
NOTE: The plate location differs slightly for all the models.



9

The following is a key to the identification plate:

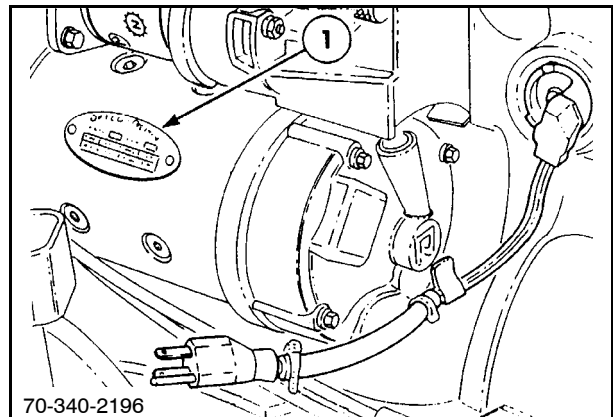
- 011 = Factory code (Germany)
 - 36202 01323 15194 = Serial number
 - 0400876405 = Supplier order number
 - PES6A95D410RS2835 = Alphanumeric production designation
- PE = Inline injection pump with camshaft
 S = Flange-mounted
 6 = Number of cylinders
 A = Size pump (A - 8670 and 8770, P - 8870 and 8970)
- 95 = Plunger diameter in 1/10 mm (915 mm)
- D = Pump model ("D" is the latest version of "A" size pumps)
- 410 = Number code for location of feed pump and governor
- R = Rotation of pump as seen from drive end (right hand = clockwise)
- S2835 = Application number (indicates what model New Holland tractor this is used on)



10

STARTER MOTOR IDENTIFICATION

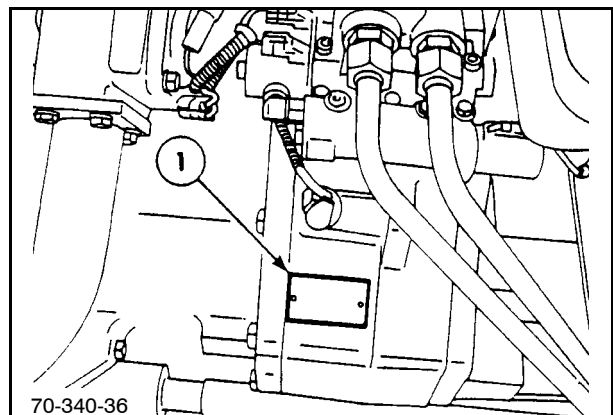
The serial number and starter information are on the plate, 1, on the starter housing.



11

TRANSMISSION IDENTIFICATION

The serial number and type are located on the plate, 1, on the lower right side of the transmission.



12

This as a preview PDF file from best-manuals.com



Download full PDF manual at best-manuals.com