



Repair Manual - MXU Series Tractors

6-66172-01-2004 (Includes 6-66170 & 6-66171)

CONTENTS - VOLUME 1

GENERAL

SECTION 00

General Information

Chapter 1

Section	Description	Page
00 000	General Instructions	2
	Health and Safety	5
	Ecology and the Environment	13
	Product Identification	14
	International Symbols	17
	General Dimensions	18
	Vehicle Weights	22
	Capacities	24
	General Hardware Tightening Torques	25

SEPARATING THE TRACTOR

SECTION 01

Separating front axle and front support from the engine

Chapter 1

Section	Description	Page
	Torque Values	2
	Special Tools	2
10 001	Separating Front Axle and Front Support from the Engine	3
10 001	Installing Front Axle and Front Support to the Engine	9
	Front Axle to Front Support Shim Calculation	14

Separating Engine and Front Support from the Transmission Chapter 2

Section	Description	Page
	Torque Values	2
	Special Tools	2
	Separating Engine and Front Support from the Transmission	4
	Installing Engine and Front Support to the Transmission	11

Contents Continued:

Separating Transmission, Engine and Front Support from the Rear Axle

Chapter 3

Section	Description	Page
	Torque Values	2
	Special Tools	2
	Separating Transmission, Engine and Front Support from the Rear Axle	3
	Installing Transmission, Engine and Front Support to the Rear Axle	8

Engine Removal

Chapter 4

Section	Description	Page
	Torque Values	2
	Special Tools	2
	Engine Removal	3
	Engine Installation	12

Transmission Removal

Chapter 5

Section	Description	Page
	Torque Values	2
	Special Tools	2
	Transmission Removal	4
	Transmission Installation	7

Cab Removal

Chapter 6

Section	Description	Page
	Torque Values (Tractors with Cab Suspension)	2
	Torque Values (Tractors with Standard Cab)	3
	Special Tools	3
90 150	Cab Removal	4
90 150	Cab Installation	13

ENGINE

SECTION 10

Engine - 4 Cylinder Electronic

Chapter 1

Section	Description	Page
10 000	General specifications	2
	Assembly Clearances - Data	4
	Torque wrench settings	7
	Tools	12
	Cooling system	14
	Lubrication system	15
	Lubrication system components	16
	Engine overhaul	17

Contents Continued:

Bushings	29
Assembly on the workbench	30
Fitting engine components	35
Checks, dimensions and repairs (cylinder liner block)	51
Checks, dimensions and repairs – crankshaft, bearings	53
Timing system	57
Bushings	58
Checks, dimensions and repairs – pistons	59
Connecting rod – piston assembly	68
Valves	69
Valve guides	70
Valve seats	71
Valve springs	72
Fitting the cylinder head	73
Fuel supply gear pump	75
CP3 high–pressure pump	76
Rail (pressure accumulator)	81
Pressure relief valve	82
Flow limiters	83
Electro–injector	84
Pressure limiter for fuel return	85

Engine - 6 Cylinder Electronic

Chapter 2

Section	Description	Page
10 000	General specifications	2
	Assembly Clearances – Data	4
	Torque wrench settings	7
	Tools	12
	Cooling system	14
	Lubrication system	15
	Camshaft timing operations	16
	Fitting the cylinder head	17
	Cylinder block repairs	18
	Crankshaft	20
	Timing system	23
	Bushings	24
	Checks, dimensions – connecting rod–piston assembly	25
	Valves	27
	Valve guides	27
	Valve seats	27
	Spindle – Rocker arms	29

Contents Continued:

Rail (pressure accumulator)	30
-----------------------------------	----

Engine - 4 Cylinder Mechanical

Chapter 3

Section	Description	Page
	General specifications	2
	Torque wrench settings	7
	Tools	10
	Cooling system	12
	Lubrication system	13
	Lubrication system components	14
	Engine overhaul with rotary mechanical pump	15
	Disassembly at the bench	16
	Assembly at the bench	29
	Checks and measurements	50
	Crankshaft	52
	Timing system	57
	Bushings	58
	Checks, dimensions and repairs – connecting rod/piston assembly	59
	Cylinder head	68
	Valves	70
	Valve guides	71
	Valve seats	71
	Valve springs	73
	Fitting the cylinder head	73
	Spindle – Rocker arms	74

Engine - 6 Cylinder Mechanical

Chapter 4

Section	Description	Page
	General specifications	2
	Assembly Clearances – Data	4
	Torque wrench settings	7
	Tools	10
	Cooling system	12
	Lubrication system	13
	Camshaft timing operations	14
	Fitting the cylinder head	15
	Cylinder block repairs	16
	Crankshaft	18
	Timing system	21
	Bushings	21
	Checks, dimensions – connecting rod–piston assembly	22

Contents Continued:

Valves	25
Valve guides	25
Valve seats	25
Spindle - Rocker arms	26
Rotary fuel pump disassembly, assembly and timing procedure	28

Cooling

Chapter 5

Section	Description	Page
	Specifications	2
	Torque Values	2
	Description and Operation	3
	Troubleshooting	7
	Cooling System Drain	8
	Cooling System Refill	9
10 406	Radiator Removal	9
10 406	Radiator Installation	12
	Radiator Inspection and Repair	14
10 402	Thermostat Removal - Engines with Common Rail Fuel Injection	14
10 402	Thermostat Installation - Engines with Common Rail Fuel Injection	15
10 402	Thermostat Removal - Engines with Mechanical Fuel Injection	16
10 402	Thermostat Installation - Engines with Mechanical Fuel Injection	17
	Thermostat Inspection	18
	Coolant Temperature Sensor Removal - Engines with Common Rail Fuel Injection	19
	Coolant Temperature Sensor Installation - Engines with Common Rail Fuel Injection ..	19
	Coolant Temperature Sender Removal - Engines with Mechanical Fuel Injection	19
	Coolant Temperature Sender Installation - Engines with Mechanical Fuel Injection	19
10 414	Viscous Fan Assembly Removal	20
10 414	Viscous Fan Assembly Installation	21
	Fan Blade Removal	22
	Fan Blade Installation	22
	Fan Belt Removal	22
	Fan Belt Installation	22
10 414	Spring-loaded Automatic Fan Belt Tensioner Removal	22
10 414	Spring-loaded Automatic Fan Belt Tensioner Installation	23
	Fan Belt Tensioner Inspection and Repair	23
10 402	Coolant Pump Removal	23
10 402	Coolant Pump Installation	23

Contents Continued:

Fuel Tank Removal

Chapter 6

Section	Description	Page
10 216	Fuel Tank Removal	2
10 216	Fuel Tank Installation	3

CLUTCHES

SECTION 18

Clutches

Chapter 1

Section	Description	Page
18 000	Specifications, Tightening Torques and Special Tools	1
	Fault Finding	2
	Description and Operation	4
18 110	Clutch Overhaul - Removal	5
	Clutch Inspection and Repair	5
	Hydraulic Release Bearing / Slave Cylinder Assembly Overhaul.	6

TRANSMISSION SYSTEM

SECTION 21

16 x 16 Transmission

Chapter 1

Section	Description	Page
	Specifications	2
	Torque Values	3
	Special Tools	7
	Description And Operation	9
	Fault Finding Diagrams	41
	Transmission Disassembly/Assembly Information	50
	Transmission Disassembly	52
	Front Section Removal	53
	Middle Section Removal	57
	Rear Section Removal	59
	Front Section Disassembly/Assembly	62
	Middle Section Disassembly/Assembly	77
	Rear Section Disassembly/Assembly	85
	Transmission Top Cover Overhaul	105
	Transmission Control Valve Overhaul	107
	Synchroniser Inspection	111
	Transmission Housing Transfer Tubes Removal/Installation	112
	Transmission Assembly	113
	Forward/Reverse Synchroniser End-Float Adjustment	117
	Adjustment of Forward/Reverse and Main (1-4/5-8) Synchronisers	122
	High/Low Range Cable adjustment	123

Contents Continued:

Adjustment of the High/Low Synchroniser 124
24 x 24 Transmission **Chapter 2**

Section	Description	Page
21 000	Specifications	2
	Torque Values	4
	Special Tools	6
	Description And Operation	8
	Fault Finding	33
	C1/C2 Clutch Housing Removal	36
	C1/C2 Clutch Housing Disassembly	38
	C1/C2 Clutch Components Inspection	46
	C1/C2 Clutch Housing Assembly	46
	C1/C2 Clutch Plate Set Adjustment	54
	C1 Clutch Cluster Gear Shaft End Float Adjustment	55
	C1/C2 Clutch Housing Installation	57
	Lubrication Oil Control Valve Disassembly/assembly	60
	Transmission Disassembly	61
	Front Section Removal	63
	Rear Section Removal	64
	Middle Section Removal	66
	Transmission Component Disassembly/Assembly	68
	Front Section	72
	Rear Section	73
	Middle Section	76
	Transmission Assembly	81
	Middle Section Installation	81
	Rear Section Installation	83
	Front Section Installation	85
	Output Shaft End Float Adjustments	89
	Gearshift Cable Adjustments	91

12 x 12 Transmission

Chapter 3

Section	Description	Page
21 100	Specifications	2
	Torque Values	3
	Special Tools	5
	Description And Operation	7
	Fault Finding	19
	Transmission Disassembly	21
	Front Section Removal	24
	Rear Section Removal	25
	Middle Section Removal	27
	Transmission Component Disassembly/Assembly	29
	Front Section	32
	Rear Section	34
	Middle Section	37
	Transmission Assembly	42
	Middle Section Instillation	42
	Rear Section Instillation	44
	Front Section Instillation	46
	Output Shaft End Float Adjustment	51
	Gearshift Cable Adjustments	53

Reduction Units

Chapter 4

Section	Description	Page
21 000	Specifications	2
	Sectional Views	2
	Description and Operation	4
	Fault Finding	7
	Refer to the rear axle section for the removal of creeper components	

DRIVE LINES

SECTION 23

Drive Lines

Chapter 1

Section	Description	Page
23 000	Specifications	2
	Torque Values	3
	Special Tools	4
	Description and Operation	5
	Fault Finding	12
23 101	Standard Front Axle Four Wheel Driveshaft Removal	13
23 101	Standard Front Axle Four Wheel Driveshaft Installation	15

Contents Continued:

23 202	Four Wheel Drive Clutch Removal	17
23 202	Four Wheel Drive Multi-Wet Plate Clutch Disassembly	20
23 202	Four Wheel Drive Multi-Wet Plate Clutch Assembly/Adjustments	23
23 202	Four Wheel Drive Dog Clutch Disassembly	28
23 202	Four Wheel Drive Dog Clutch Assembly	30
23 202	Four Wheel Drive Clutch Installation	31
	Four Wheel Driveshaft Oil Supply Manifold Removal	34
	Four Wheel Driveshaft Oil Supply Manifold Installation	35

MECHANICAL FRONT AXLE

SECTION 25

Mechanical Front Axle

Chapter 1

Section	Description	Page
25 000	Specifications	2
	Torque Values	4
	Special Tools	6
	Sectional Views	9
	Description and Operation	10
	Troubleshooting	12
25 100	Standard Axle Removal	13
25 100	Standard Axle Installation	16
	Hub Cassette Seal Removal / Installation	19
	Front Axle Overhaul - All Options	23
	Multi-Wet Plate Clutch Differential Lock - Disassembly	29
	Multi-Wet Plate Clutch Differential Lock - Assembly	33
	Crown Wheel / Differential - Disassembly - Multi-Wet Plate Clutch Differential Lock	35
	Crown Wheel / Differential - Assembly / Adjustments Multi-Wet Plate Clutch Differential Lock	38
	Dog Clutch Differential Lock - Disassembly / Assembly	43
	Crown Wheel / Differential - Disassembly / Assembly - Dog Clutch Differential Lock	45
	Pinion Shaft Removal - Standard Front Axle	47
	Pinion Shaft Installation / Adjustments - Standard Front Axle	49
	Pinion Shaft Removal - Suspended Front Axle	56
	Pinion Shaft Installation / Adjustments - Suspended Front Axle	58
	Crown Wheel Adjustments - Multi-Wet Plate Clutch Differential Lock	64
	Differential Bearing Preload - Multi-Wet Plate Clutch Differential Lock	65
	Crown Wheel Adjustments - Dog Clutch Differential Lock	67
	Differential Bearing Preload - Dog Clutch Differential Lock	69
	Axle Assembly - All Options	70
	Swivel Pin & Potentiometer - Removal / Installation	71
	Stub Axle Adjustments	72

Contents Continued:

Checking the Alignment of Steering & Drive Wheels 74

Refer to Brake Section Of Repair Manual For Overhaul Of Front Axle Brakes Where Fitted

Front Axle Suspension

Chapter 2

Section	Description	Page
25 000	Specifications	2
	Tightening Torques	2
	Description and Operation	3
	System Schematics	8
	Suspended Front Axle Calibration Procedure	17
	Fault Code Listing	20
	Suspension Control Valve Assembly-Removal	22
	Suspension Control Valve Assembly-Overhaul	22

MECHANICAL REAR WHEEL DRIVE (Rear Axle)

SECTION 27

Mechanical Rear Wheel Drive

Chapter 1

Section	Description	Page
27 000	Specifications	1
	Torque Values	3
	Special Tools	6
	Sectional Views	9
	Description and Operation	12
	Troubleshooting	15
	Rear Axle Disassembly	18
	Rear Axle Assembly / Adjustments	29
 Rear Pinion and Crown Wheel Adjustments	32
 Hydraulic Pump Idler Gear Bearing Adjustment	44
	Hydraulic Differential Lock Control Unit (Multi-Wet plate clutch) Inspection	50
	Hydraulic Differential Lock Control Unit (Multi-Wet plate clutch) Disassembly	50
	Hydraulic Differential Lock Control Unit (Multi-Wet plate clutch) Assembly/Adjustments	54
	Final Drive Case (Left or Right Hand) Removal	60
	Final Drive Case (Left or Right Hand) Installation	63
Drive Wheel Shaft Removal/Installation	66	
Planetary Gear Set Removal/Installation	69	

50 Km/h Drive (17th Gear)

Chapter 2

Section	Description	Page
27 000	Specifications	2
	Torque Values	3
	Special Tools	4

Contents Continued:

Sectional Views	5
Description And Operation	7
Fault Finding	10
50 Km/h Clutch (17th Gear) Removal	11
50 Km/h Clutch (17th Gear) Disassembly	17
50 Km/h Clutch (17th Gear) Assembly	20
50 Km/h Clutch (17th Gear) Installation	23
50 Km/h Solenoid Valve Block Removal	29
50 Km/h Solenoid Valve Block Disassembly/Assembly	30
50 Km/h Solenoid Valve Block Installation	30

CONTENTS - VOLUME 2

POWER TAKE-OFF

SECTION 31

Shiftable Rear Power Take-Off

Chapter 1

Section	Description	Page
31 000	Specifications	2
	Special Tools	3
	540/750/1000 RPM PTO Sectional View and Torque Values	4
	540/1000 RPM PTO Sectional Views and Tightening Values	5
	Description and Operation	6
	Fault Finding	20
	Power Take-Off (PTO) Removal	21
	Power Take-Off (PTO) Installation	23
	Power Take-Off (PTO) 540/750/1000 RPM Disassembly	25
	Power Take-Off (PTO) 540/750/1000 RPM Assembly	33

Ground Speed Power Take-Off (PTO)

Chapter 2

Section	Description	Page
31 000	Specifications	2
	Description and Operation	3
	Fault Finding	7
	Ground Speed PTO Selector Cable Adjustment	8
	Ground Speed PTO Switch Adjustment	8
	PTO Clutch Oil Supply Cut-Off Valve Adjustment	8
	Refer to the rear axle section for the removal of ground speed PTO components ...	

BRAKES

SECTION 33

Tractor Brakes

Chapter 1

Section	Description	Page
33 000	Specifications	2
	Special Tools	3
	Torque Values	4
	Sectional Views	5
	Description and Operation	7
	Fault Finding	14
33 202	Rear Service Brake Piston (Left or Right Hand) Removal	16
	Rear Service Brake Inspection	17
33 202	Rear Service Brake Piston (Left or Right Hand) Installation	18
	Front Service Brake Valve Removal	20
	Front Service Brake Valve Installation	22
33 204	Front Service Brake (Left or Right Hand) Disassembly	24
33 204	Front Service Brake (Left or Right Hand) Assembly	29
33 202	Hydraulic Brake Master Cylinder Removal (All Models)	34
33 202	Hydraulic Brake Master Cylinder Installation (All Models)	36
33 202	Hydraulic Brake System Air Bleeding	38
	Brake Pedal Switch Removal	42
	Brake Pedal Switch Installation	43
	Brake Pedal Switch Adjustment	45
	Brake Pedal Linkage Adjustment	45
33 110	Parking Brake Removal	45
33 110	Parking Brake Disassembly	46
33 110	Parking Brake Assembly	47
33 110	Parking Brake Installation	49

Air Trailer Brakes

Chapter 2

Section	Description	Page
33 000	Specifications	1
	Tightening Torques	2
	Description and Operation	3
	Fault Finding	13
33 000	Removal and Installation	15
33 000	Overhaul	21
	Pressure Testing	31

HYDRAULIC SYSTEMS

SECTION 35

Introduction and Hydraulic Circuits

Chapter 1

Section	Description	Page
35 000	Introduction and Circuit Identification	2
	Variable Displacement Pump High Pressure Hydraulic Circuits	7
	Fixed Displacement Pump High Pressure Hydraulic Circuit	23
	Low Pressure Hydraulic Circuits	
	Tractors with 16 x 16 Transmission	28
	Tractors with 24 x 24 Transmission	37
	Tractors with 12 x 12 Transmission	43
	General Hydraulic Fault Finding	47
	Initial Fault Finding Check	47
	Transmission Low Pressure Warning Light 'ON'	51
	Charge Pressure Light	51
	Intake Filter Restriction Warning Light	51
	Power Steering	52
	Trailer Brakes	52
	Hydraulic Lift	53
	Remote Control Valves	54

Variable Flow Hydraulic Pump Assembly

Chapter 2

Section	Description	Page
35 000	Specifications	2
	Tightening Torques	3
	Description and Operation	4
	Hydraulic Circuit Operation	12
	Generating Low Pressure Standby	14
	Regulating Low Pressure Standby	16
	High Pressure Circuit High Demand	18
	High Pressure Circuit Low Demand	20
	Limiting Maximum System Pressure	22
	Low Pressure Regulating valve operation	24
	Fault Finding	27
	Initial Fault Finding Check	27
	Transmission Low Pressure Warning Light 'ON'	28
	Charge Pressure Light	29
	Intake Filter Restriction Warning Light	29
	Power Steering	30
	Trailer Brakes	30

Contents Continued:

	Hydraulic Lift	31
	Remote Control Valves	32
	Pump Pressure and Flow Testing	34
35 106	Overhaul	35
	Steering Pump Overhaul	36
	Pressure and Flow Compensating Valve	38
	Pump Removal and Installation	40
	Charge Pump Overhaul	44
	Variable Flow Piston Pump Overhaul	46

Hydraulic Lift Assembly with Electronic Draft Control

Chapter 3

Section	Description	Page
	
35 000	Specifications	2
	Special Tools	2
	Tightening Torques	3
	Description and Operation	4
	Principal of Draft Control	4
	Components	7
	Operator Controls	9
	Operation of Draft Control	13
	Hydraulic Operation of Lift Control Valve	16
	Electronic Draft Control Calibration	26
	Electronic Draft Control Error Codes	27
	Overhaul	
35 138	Electronic Draft Control Valve – Removal	29
35 138	Electronic Draft Control Valve – Installation	30
35 138	Disassembly	31
35 130	Load Sensing Pin Replacement	36

Mechanical Rear Hydraulic Lift

Chapter 4

Section	Description	Page
	Specifications	2
	Torque Values	5
	Special Tools	7
	Description and Operation	8
	Troubleshooting	18
35 110 30	Mechanical Rear Hydraulic Lift Removal	20
35 110 30	Mechanical Rear Hydraulic Lift Installation	23
	Mechanical Rear Hydraulic Lift Disassembly	26
	Mechanical Rear Hydraulic Lift Assembly	30
	Mechanical Rear Hydraulic Lift Adjustments	36
	Mechanical Rear Hydraulic Lift External Cable Adjustments	42

Contents Continued:

Lift-O-Matic Upper Stroke Height Limit Adjuster	45
Mechanical Rear Hydraulic Lift Control Valve Disassembly	46
Mechanical Rear Hydraulic Lift Control Valve Assembly	51

Fixed Displacement Gear Pump

Chapter 5

Section	Description	Page
35 000	Specifications	1
	Torque Values	2
	Description and Operation	3
	Troubleshooting	See Chapter 9
	Hydraulic Lift System Oil Pump Removal	5
	Hydraulic Lift System Oil Pump Installation	9
	Steering / Low Pressure Oil Pump Removal	12
	Steering / Low Pressure Oil Pump Installation	14
	Hydraulic Lift System Oil Pump Disassembly / Assembly	16
	Steering / Low Pressure Oil Pump Disassembly / Assembly	18
	Hydraulic Oil Pump Inspection	20

Trailer Brake Auxiliary Valves

Chapter 6

Section	Description	Page
35 000	Specifications	2
	Torques	2
	Description and Operation	3
33 220	Italian Trailer Brakes	10
	Trailer Brake Valve Removal	21
	Trailer Brake Valve Installation	22
	Italian Trailer Brake Solenoid Valve Block Removal	23
	Italian Trailer Brake Solenoid Valve Block Installation	23

Mechanical Remote Control Valves

Chapter 7

Section	Description	Page
	Special Tools	2
	Specifications	2
	Torque Values	2
	Fault Finding	3
	Description and Operation - Mechanical Remote Control Valves	4
	Oil Flow In Neutral	10
	Oil Flow in Raising (Cylinder Extend)	12
	Oil Flow in Lowering (Cylinder Retract)	14
	Oil Flow in Float	16
	Operation of Detent Pressure Regulating Valve	18

Contents Continued:

Operation of Two or More Control Valves Simultaneously	21
Remote Control Valve Removal	23
Remote Control Valve Installation	26
Remote Control Valve Cable Adjustment	29
Remote Control Valve Disassembly	30
Remote Control Valve Assembly	36

Electronic Remote Control Valves

Chapter 8

Section	Description	Page
35 000	Special Tools	2
	Specifications	2
	Tightening Torques	2
	Fault Finding	3
	Electro-Hydraulic Remote Valve Fault Code list	4
	Description and Operation - Electro-Hydraulic Remote Valves	7
	Re-Calibrating Remote Valve Levers	23
	Oil Flow In Neutral	25
	Oil Flow in Raising (Cylinder Extend)	27
	Oil Flow in Lowering (Cylinder Retract)	29
	Oil Flow in Float	31
	Operation of Two or More Control Valves Simultaneously	33
	Overhaul - Electro-Hydraulic Remote Valves	35
	Electro-Hydraulic Remote Valves Number Programming	36
	Electro-Hydraulic Remote Valves Removal and Installation	38
	Electro-Hydraulic Remote Valve Disassembly	39

Hydraulic Pressure Testing

Chapter 9

Section	Description	Page
35 000	Introduction	3
	Special Tools	4
	Specifications	5
	Initial Fault Finding	7
	Transmission / Steering Low Pressure Warning Symbol / Light - Displayed (Variable Displacement Closed Centre Systems)	8
	Transmission Low Pressure Warning Symbol / Light - Displayed (Fixed Displacement Closed Centre Systems)	10
	Charge Pressure Warning Symbol / Light - Displayed (Variable Displacement Closed Centre Systems)	12
	Intake Oil Filter Warning Symbol / Light On	14
	Power Steering Not Working or Working Incorrectly	16
	Trailer Brakes Not Working	16
	Electronic Draft Control Not Working Correctly	17
	Pump Pressure and Flow Testing	19
	Low Pressure Standby	19
	High Pressure Standby	20
	Charge Pressure Test	21
	Variable Flow Piston Pump Flow Test	22
	Hydraulic Oil Pump Air Ingress Test	22
	Lift Ram Pressure Test	24
	Steering / Low Pressure Hydraulic Pump Test	25
	Steering Test	25
	Steering Circuit Pressure Test	25
	Steering Relief Valve Pressure Test	26
	Low Pressure System Test	27
	Low Pressure Component Tests	28
	50 Kph Clutch Pressure Test	30
	Low Pressure Component Leak Test (Variable Displacement Closed Centre Systems) .	31
	Fixed Displacement Pump - Lift Pressure Regulating Valve	32
	16 x 16 Transmission Pressure Testing	33
	24 x 24 Transmission Pressure Testing	41
	Cooler By-pass Valve - Lubrication Pressure	46
	Trailer Brake Testing and Troubleshooting	46
	Trailer Braking System Pressure Test (All Models)	46
	Trailer Brake System Leak Test (All Models)	47
	Trailer Brake Valve Electro-Hydraulic Operation Diagram (Italy Only)	48
	Trailer Brake Disengagement Pressure Test (Italy Only)	49
	Parking Brake Engagement Test (Italy Only)	50
	Trailer Brake Circuit Safety Switch Test (Italy Only)	50

Contents Continued:

External Lift Rams

Chapter 10

Section	Description	Page
35 000	Specifications	2
	Sectional Views	2
	Description and Operation	4
35 116	Removal	4
	Disassembly	5
	Reassembly	6
	Installation	6

Front Loader

Chapter 11

Section	Description	Page
35 000	Specifications, Tightening Torques and Special Tools	1
	Installation Instructions	12
	Hydraulics – Operation	25
	Electrical Wiring Diagrams	63
	Loader and Hydraulic System Overhaul	71
	Faultfinding	82

Mid Mount Remote Valves

Chapter 12

Section	Description	Page
	Specifications	2
	Torque Values	3
	Description and Operation	4
	Mid Mount Valve Removal	12
	Mid Mount Valve Disassembly	12
	Mid Mount Valve Overhaul	13
	Mid Mount Valve Installation	16
	Third Mid Mount Valve	17
	Description and Operation	17
	Removal	19
	Disassembly	19
	Re-assembly	20

Hydraulic Front Lift and Power Take-Off (PTO)

Chapter 13

Section	Description	Page
35 000	Specifications	2
	Torque Values	2
	Special Tools	6
	Sectional Views	7
	Description and Operation	9
	Fault Finding	13
	Hydraulic Front Lift Removal	14
	Hydraulic Front Lift Disassembly	16
	Hydraulic Front Lift Assembly	17
	Hydraulic Front Lift Installation	19
	Hydraulic Front Lift Ram Removal	20
	Hydraulic Front Lift Ram Installation	22
	Front PTO Control Housing Removal	24
	Front PTO Control Housing Disassembly	29
	Front PTO Control Housing Assembly	32
	Front PTO Control Housing Installation	35
	Front PTO Clutch Removal	38
	Front PTO Clutch Disassembly	39
	Front PTO Clutch Assembly	42
	Front PTO Clutch Installation	46
	Front PTO Reduction Gearbox Removal	47
	Front PTO Reduction Gearbox Disassembly	49
	Front PTO Reduction Gearbox Assembly	51
Front PTO Reduction Gearbox Installation	54	

STEERING SYSTEMS

SECTION 41

Hydrostatic Steering Systems

Chapter 1

Section	Description	Page
41 000	Specifications	2
	Tightening Torques	3
	Special Tools	4
	Description and Operation	5
	Fault Finding	9
	System Testing	10
	41 204	Steering Motor - Removal and Installation
	Steering Motor Overhaul	16
	Steering Column - Removal and installation	23
41 216	Two Wheel Drive Steering Cylinder - Removal and Installation	25
	Two Wheel Drive Steering Cylinder - Overhaul	26
	Four Wheel Drive Steering Cylinder - Removal and Installation	27
	Four Wheel Drive Steering Cylinder - Overhaul	28

Contents Continued:

FRONT AXLE AND WHEELS

SECTION 44

2 Wheel Drive Front Axle

Chapter 1

Section	Description	Page
44 000	Specifications	2
	Tightening Torques	3
	Special Tools	4
	Troubleshooting	4
	Description and Operation	5
	Sectional Views	6
44 101	Front Axle	7
	Removal	7
	Installation	9
	Front Wheel Hub	11
	Removal	11
	Overhaul	12
	Installation	12
	Spindle Assembly	13
	Removal	13
	Overhaul	14
	Installation	15
44511	Front Wheel Settings	16
	Wheel Camber Tests	16
	Track Width Adjustment	16
	Axle Centre Beam and Front Support	17
	Removal	17
	Overhaul	17
	Installation	18
44 511	Front Wheel Toe-in	19

CONTENTS - VOLUME 3

AUXILIARY UNITS

SECTION 50

Air Conditioning

Chapter 1

Section	Description	Page
50 000	Specifications	2
	Tightening Torques	2
	Special Tools	2
	Safety Precautions	2
	Description and Operation	4
	Fault Finding and System Testing	15
	Leak Testing, Charging, Discharging and System Flushing	32
50 200	Component Overhaul (excluding compressor)	37
	Compressor Removal and Installation	44
50 200	Compressor Overhaul	44

ELECTRICAL SYSTEM

SECTION 55

Electrical Introduction

Chapter 1

Section	Description	Page
55 100	Specifications	1
	Electrical System and Fuses Description	2
	Fuses and Relays	5
	Controllers	17
	Diagnostic Connectors	19
	System Precautions For Battery Charging and Welding	20
	Temporary Wiring Repair	21
	System Diagrams	23

Electronic Instrument Cluster

Chapter 2

Section	Description	Page
55 000	Introduction	2
	Senders, Sensors & Switches	10
	Error Codes	22
	Enhanced Keypad and Performance Monitor	28
	Programming the Displays	32

Contents Continued:

Starting System

Chapter 3

Section	Description	Page
55 000	Specifications	1
	Tightening Torques	1
	Description and Operation	2
	Fault Finding	5
	System Testing	7
55 201	Removal and Installation	8
	Overhaul	9
	Bench Tests	11

Charging System

Chapter 4

Section	Description	Page
55 000	Specifications	1
	Tightening Torques	1
	Description and Operation	2
	Fault Finding	5
55 301	Removal, Installation and Overhaul	11

Battery

Chapter 5

Section	Description	Page
55 000	Specifications	1
	Description and Operation	1
55 300	Removal and Installation	2
	Battery Maintenance and Testing	3
	Battery Charging	4
	Common Causes of Battery Failure	6

CONTENTS - VOLUME 4

Wiring Diagrams

Chapter 6

Description	Page
Wiring diagram circuit descriptions (All Models)	1
How to use the linear wiring diagrams	2
Symbols	3
Component identification and wiring diagram location key	4
Wiring Diagrams:	
16x16 Transmission, W/Cab, W/Electronic Engine	14
16x16 Transmission, W/Cab, W/Mechanical Engine	72
24x24 Transmission, W/Cab, W/Electronic Engine	130
24x24 Transmission, W/Cab, W/Mechanical Engine	188
16x16 Transmission, L/Cab, W/Electronic Engine	246
16x16 Transmission, L/Cab, W/Mechanical Engine	304
24x24 Transmission, L/Cab, W/Electronic Engine	362
24x24 Transmission, L/Cab, W/Mechanical Engine	420
12x12 Transmission, W/Cab, W/Mechanical Engine	478
12x12 Transmission, L/Cab, W/Mechanical Engine	536
16x16 Transmission, W/Cab, W/Electronic Engine, W/EHR's	594
Wire identification key	653

Connectors and Harnesses

Chapter 7

Section	Description	Page
55 000	Wiring Harnesses	2
	Main Connectors	3
	Wire Identification and colour coding	4
	Lighting Harness	5
	Front Main 4 Cylinder Mechanical (Engine) Harness	9
	Front Main 6 Cylinder Electronic (Engine) Harness	15
	Front Electrical (Engine) Harness (with Electronic engine only)	21
	Rear Main 16x16 (Transmission) Harness,	26
	Rear Main 24x24 (Transmission) Harness,	35
	Cab Main 16x16 / 24x24 Harness	43
	Cab Switch Panel Harness (16x16 and 24x24)	61
	Cab Switch Panel Harness (12x12)	65
	Electronic Remotes Harness	69
	Fender Harness	74
	Cab Roof Harness	78
	Cab Main 12x12 Harness	86
	Rear Main 12x12 (Transmission) Harness,	97
	Less Cab Main 16x16 & 24x24 Harness	102
	Less Cab Main 12x12 Harness	117

Calibration Procedures

Chapter 8

Section	Description	Page
55 100	Set Up Procedures	1
	Calibration Error Codes ('U' Codes)	3
	16x16 Transmission - Clutch and Synchroniser Calibration	5
	16x16 Transmission - Manual Adjustment of C3/C4 Clutches	9
	24x24 Transmission - Clutch and Synchroniser Calibration	11
	Electronic Draft Control - Calibration of Lift Lever/Arm Potentiometers	14
	Electronic Draft Control - Calibration of EDC Valve Solenoids	16
	Ground Speed Display Calibration	18
	Suspended Front Axle Calibration	22
	Electro-Hydraulic Remote Valve Lever Calibration	24
	Electro-Hydraulic Remote Valve Renumbering procedure	26
	P.T.O. Torque Sensor Calibration	28
	P.T.O. Clutch Calibration	30
	Steering Angle Calibration	32

Fault Codes

Chapter 9

Section	Description	Page
55 000	Introduction	2
	Special Tools	3
	Wiring Harness Repairs	3
	Digital Multi-Meter - Basic Operation	6
	Electrical Test Procedures	9
	Circuit Components - Basic Description	12
	Controller Area Network (CAN) System	22
	Fault Code Displays	23
	H-Menu Diagnostic Mode	24
	Fault Code Lists	25
	Fault Code Charts	
	U-Codes	45
	0001-1000 (General Fault Codes)	59
	1001-2000 (Electronic Draft Control)	73
	2001-3000 (Transmission)	207

Contents Continued:

CONTENTS - VOLUME 5

Section	Description	Page
	3001-4000 (Engine)	423
	5001-6000 (Rear Power Take-off)	763
	6001-7000 (Four Wheel Drive)	813
	7001-8000 (Differential Lock)	829
	8001-9000 (Front Power Take-off)	855
	9001-10000 (Front HPL)	877
	10001-11000 (Front Axle Suspension)	885
	14001-15000 (Analog Digital Instrument Cluster)	909

Diagnostic 'H' Routines

Chapter 10

Section	Description	Page
55 000	Introduction	2
	HA/HB Controller	9
	DA/DB Controller	33
	JA Controller	77

SECTION 00 – GENERAL**Chapter 1 – General Information****CONTENT**

Section	Description	Page
00 000	General Instructions	2
	Health and Safety	5
	Ecology and the Environment	13
	Product Identification	14
	International Symbols	17
	General Dimensions	18
	Vehicle Weights	22
	Capacities	24
	General Hardware Tightening Torques	25

GENERAL INSTRUCTIONS

IMPORTANT NOTICE

All maintenance and repair operations described in this manual should be carried out exclusively by authorised workshops. All instructions should be carefully observed and special equipment where indicated should be used. Anyone who carries out service operations described without carefully observing these instructions will be directly responsible for any damage caused.

NOTES FOR EQUIPMENT

Equipment shown in this manual is:

- designed expressly for use on these tractors;
- necessary to make a reliable repair;
- accurately built and strictly tested to offer efficient and long-lasting working life.

NOTICES

The words “front”, “rear”, “right hand”, and “left hand” refer to the different parts as seen from the operator’s seat oriented to the normal direction of movement of the tractor.

SAFETY RULES

PAY ATTENTION TO THIS SYMBOL



This warning symbol points out important messages involving personal safety. Carefully read the safety rules contained herein and follow advised precautions to avoid potential hazards and safeguard your safety.

In this manual you will find this symbol together with the following key-words:

WARNING – *it gives warning about improper repair operations and potential consequences affecting the service technician’s personal safety.*

DANGER – *it gives specific warning about potential dangers for personal safety of the operator or other persons directly or indirectly involved in the operation.*



TO PREVENT ACCIDENTS

Most accidents and personal injuries taking place in workshops are due from non-observance of some essential rules and safety precautions.

The possibility that an accident might occur with any type of machines should not be disregarded, no matter how well the machine in question was designed and built.

A wise and careful service technician is the best precautions against accidents.

Careful observance of this basic precaution would be enough to avoid many severe accidents.

————— **DANGER** —————

Never carry out any cleaning, lubrication or maintenance operations when the engine is running.

SAFETY RULES

Generalities

- Carefully follow specified repair and maintenance procedures.
- Do not wear rings, wristwatches, jewels, unbuttoned or flapping clothing such as ties, torn clothes, scarves, open jackets or shirts with open zips which could get caught on moving parts. Use approved safety clothing such as anti-slipping footwear, gloves, safety goggles, helmets, etc.
- Wear safety glasses with side guards when cleaning parts using compressed air.
- Damaged or frayed wires and chains are unreliable. Do not use them for lifting or towing.
- Wear suitable protection such as approved eye protection, helmets, special clothing, gloves and footwear whenever welding. All persons standing in the vicinity of the welding process should wear approved eye protection. **NEVER LOOK AT THE WELDING ARC IF YOUR EYES ARE NOT SUITABLY PROTECTED.**
- Never carry out any repair on the machine if someone is sitting on the operator's seat, except if they are qualified operators assisting in the operation to be carried out.
- Never operate the machine or use attachments from a place other than sitting at the operator's seat or at the side of the machine when operating the fender switches.
- Never carry out any operation on the machine when the engine is running, except when specifically indicated. Stop the engine and ensure that all pressure is relieved from hydraulic circuits before removing caps, covers, valves, etc.
- All repair and maintenance operations should be carried out with the greatest care and attention.
- Disconnect the batteries and label all controls to warn that the tractor is being serviced. Block the machine and all equipment which should be raised.
- Never check or fill fuel tanks or batteries, nor use starting liquid if you are smoking or near open flames as such fluids are flammable.
- The fuel filling gun should always remain in contact with the filler neck. Maintain this contact until the fuel stops flowing into the tank to avoid possible sparks due to static electricity build-up.
- To transfer a failed tractor, use a trailer or a low loading platform trolley if available.
- To load and unload the machine from the transportation means, select a flat area providing a firm support to the trailer or truck wheels. Firmly tie the machine to the truck or trailer platform and block wheels as required by the transporter.
- Always use lifting equipment of appropriate capacity to lift or move heavy components.
- Chains should always be safely fastened. Ensure that fastening device is strong enough to hold the load foreseen. No persons should stand near the fastening point.
- The working area should be always kept CLEAN and DRY. Immediately clean any spillage of water or oil.
- Never use gasoline, diesel oil or other flammable liquids as cleaning agents. Use non-flammable non-toxic proprietary solvents.
- Do not pile up grease or oil soaked rags, as they constitute a great fire hazard. Always place them into a metal container.

START UP

- Never run the engine in confined spaces which are not equipped with adequate ventilation for exhaust gas extraction.
- Never bring your head, body, arms, legs, feet, hands, fingers near fans or rotating belts.

ENGINE

- Always loosen the radiator cap very slowly before removing it to allow pressure in the system to dissipate. Coolant should be topped up only when the engine is stopped.
- Do not fill up fuel tank when the engine is running.
- Never adjust the fuel injection pump when the tractor is moving.
- Never lubricate the tractor when the engine is running.

ELECTRICAL SYSTEMS

- If it is necessary to use auxiliary batteries, cables must be connected at both sides as follows: (+) to (+) and (-) to (-). Avoid short-circuiting the terminals. **GAS RELEASED FROM BATTERIES IS HIGHLY FLAMMABLE.** During charging, leave the battery compartment uncovered to improve ventilation. Avoid sparks or flames near the battery area. Do no smoke.
- Do not charge batteries in confined spaces.
- Always disconnect the batteries before performing any type of service on the electrical system.

HYDRAULIC SYSTEMS

- Some fluid coming out from a very small port can be almost invisible and be strong enough to penetrate the skin. For this reason, **NEVER USE YOUR HANDS TO CHECK FOR LEAKS**, but use a piece of cardboard or a piece of wood for this purpose. If any fluid is injected into the skin, seek medical aid immediately. Lack of immediate

medical attention may result in serious infections or dermatitis.

- Always take system pressure readings using the appropriate gauges.

WHEELS AND TYRES

- Check that the tyres are correctly inflated at the pressure specified by the manufacturer. Periodically check for possible damage to the rims and tyres.
- Stay at the tyre side when inflating.
- Check the pressure only when the tractor is unloaded and tyres are cold to avoid wrong readings due to over-pressure.
- Never cut, nor weld a rim with the inflated tyre assembled.
- To remove the wheels, block both front and rear tractor wheels. Raise the tractor and install safe and stable supports under the tractor in accordance with regulations in force.
- Deflate the tyre before removing any object caught into the tyre tread.
- Never inflate tyres using flammable gases as they may originate explosions and cause injuries to bystanders.

REMOVAL AND INSTALLATION

- Lift and handle all heavy components using lifting equipment of adequate capacity. Ensure that parts are supported by appropriate slings and hooks. Use lifting eyes provided to this purpose. Take care of the persons near the loads to be lifted.

HEALTH AND SAFETY

CONTENT

Section	Description	Page
	HEALTH AND SAFETY PRECAUTIONS	4
	ACIDS AND ALKALIS	6
	ADHESIVES AND SEALERS – see Fire	6
	ANTIFREEZE – see Fire, Solvents e.g. Isopropanol, Ethylene Glycol, Methanol.	6
	ARC WELDING – see Welding.	6
	BATTERY ACIDS – see Acids and Alkalis.	6
	BRAKE AND CLUTCH FLUIDS (Polyalkylene Glycols) – see Fire.	7
	BRAZING – see Welding.	7
	CHEMICAL MATERIALS – GENERAL – see Legal Aspects.	7
	DO'S	7
	DO NOTS	7
	CORROSION PROTECTION MATERIALS – see Solvents, Fire.	7
	DUSTS	8
	ELECTRIC SHOCK	8
	EXHAUST FUMES	8
	FIBRE INSULATION – see Dusts.	8
	FIRE – see Welding, Foams, Legal Aspects.	8
	FIRST AID	8
	FOAMS – Polyurethane – see Fire.	8
	FUELS – see Fire, Legal Aspects, Chemicals – General, Solvents.	9
	GAS CYLINDERS – see Fire.	9
	GENERAL WORKSHOP TOOLS AND EQUIPMENT	10
	LEGAL ASPECTS	10
	LUBRICANTS AND GREASES	10
	PAINTS – see Solvents and Chemical Materials – General.	11
	SOLDER – see Welding.	11
	SOLVENTS – see Chemical Materials – General Fuels (Kerosene), Fire.	11
	SUSPENDED LOADS	12
	WELDING – see Fire, Electric Shock, Gas Cylinders.	12

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 and the materials and equipment associated with

them. The precautions necessary to avoid these hazards are identified.

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

Please click here and go
back to our website.

BUY NOW

**Then Instant Download the
Complete Manual.**

Thank you very much!