



Maintenance Manual



WP2300 Series

Overview of Revisions:

Page 3

Rev.1 04/00 General corrections and additions to the text.
Reference to authorised service personnel added.

Page intentionally left blank



TABLE OF CONTENT

Page intentionally left blank

Table of Content

ITD – INTRODUCTION	PAGE	SER-NR. CUT	REV.
Safety Symbols used in the Manual	3		Rev.1 04/00
General Maintenance and Repair Safety Notes	3		
Maintenance and Repair	3		Rev.1 04/00
Before Leaving the Truck	4		
Before Carrying out Work on the Truck	4		
Before Operating the Truck.....	4		
Warnings and Labels on the Truck.....	4		
General	7		
Operating Instructions	7		
Service Training	7		
Ordering Spare Parts	7		
Using the Manual	7		
Model-Number	8		
M1 – LUBRICATION AND ADJUSTMENT	PAGE	SER-NR. CUT	REV.
Component Access	11		
Jacking up the Truck	11		
Lifting by Crane	11		
Lifting by Truck	12		
Components	13		
Maintenance	16		
Recommended Lubricants and Oils	16		
Lubricants	16		
Cold Store Trucks	16		
Truck Decommissioning	16		
Restoring the Truck to Service	16		
Check and Maintenance Schedule	18		
Safety Reverse Switch – Functional Test	20		
Grease items and grease intervals	28		
Castors	30		
Torques	31		
M2 – HYDRAULICS	PAGE	SER-NR. CUT	REV.
Hydraulic Symbols	35		
Hydraulic System	39		
Operation	39		
Removing the Hydraulic Unit	40		
Replacing the Hydraulic Pump	41		
Removal	41		
Installation	41		
Commissioning and Bleeding the System	41		
Filters	43		
Replacing the Pressure Filter	43		
Replacing the Suction and Return Filters	43		
Oil Change	43		
Replacing the Safety Valve	44		
Safety Valve Setting	44		
Safety Valve Test and Setting	44		
M3 – DRIVE UNIT	PAGE	SER-NR. CUT	REV.
Gear Unit	47		
Drive Unit, General	48		
Removing the Drive Unit	48		

M3 – DRIVE UNIT	PAGE	SER-NR. CUT	REV.
Traction Motor Removal	48		
Dismantling the Motor	49		
Assembling the Motor	49		
Traction Motor Assembly	51		
Gear Unit Disassembly	52		
General	52		
Preparation	52		
Draining the oil	52		
Removing the drive unit	52		
Dismantling the gear unit lid	52		
Dismantling the gear unit	53		
Gear Unit Assembly	53		
Installing the gear unit lid	55		
Adding Oil	55		
Installing the drive unit	55		
M4 – ELECTRICS	PAGE	SER-NR. CUT	REV.
Electrics - General	59		
Wire Colour Codes	59		
Abbreviations	60		
Electrical Symbols	62		
Electrical Components	63		
Transmitter (POT, FS, RS)	63		
Fast / Slow Travel Switch (HSS)	63		
Reverse Safety Switch (SAS)	63		
Brake Switch (BRS)	63		
Override Switch (ORS)	63		
Raise / Lower Switch (RAS, LOS)	64		
Limit Switch (LMS)	64		
Horn Switch (HNS)	64		
Key Switch (KYS)	64		
Emergency Disconnect	64		
Fuses (FU)	64		
OPTION Thermal Switch (THS)	65		
Battery	67		
General	67		
Replacing the battery	67		
Battery Discharge Indicator (BDI)	67		
General	67		
Battery Discharge Indicator Setting (BDI)	68		
Calibration	68		
SEM0 Traction Controller	67		
General	67		
Precautionary Measures	67		
Operational Features	67		
Speed Control	67		
Reduced Speed Ranges	67		
Downhill Speed Control	67		
Regenerative Braking	67		
Anti - Roll Down Function	67		
Hourmeter	68		
Self Test	68		
Monitored Circuits	68		
Protective Devices	68		
Polarity Protection	68		
Wiring Errors	68		
Temperature	68		
Start Sequence	68		

M4 – ELECTRICS	PAGE	SER-NR. CUT	REV.
Safety Class	68		
Maintenance	69		
Replacing the SEM0 Traction Controller.....	70		
Parameter Setting			
after Replacing the Traction Controller	70		
Preparatory Measures	70		
Setting	70		
Status LED	72		
Programmer	73		
General	73		
Operating SEM0 Controller Menu	74		
General	74		
Operating Menu - Overview	75		
Menu Functions	75		
PARAMETER CHANGE	75		
Settings and Alarms	76		
TESTER Menu	77		
ALARMS Menu	78		
PROGRAM VACC Menu	79		
Calibrating the Traction Pod Potentiometer,			
PROGRAM VACC menu	81		
Preparatory Measures	81		
Calibration	81		
CONFIG Menu	82		
SET MODEL	82		
SET OPTIONS	82		
Adjustments	82		
Traction Controller Safety Test	83		
Battery	85		
General	85		
Replacing the battery	85		
Battery Discharge Indicator (BDI)	85		
General	85		
Battery Discharge Indicator Setting (BDI)	86		
Calibration	86		
On Board Charger	87		
General	87		
Battery Charging Phases	87		
Special Charging Phases	87		
Charging Errors	88		
Green LED is not lit	88		
Green LED flashing	88		
Important Technical Data	89		
Replacing the Charger	89		
Removal / Installation	89		
Electric Motors	91		
General Maintenance Instructions	91		
Preparation	91		
Important Maintenance Instructions	91		
Traction Motor Maintenance	92		
Access to Brushes	92		
Maintenance	92		
Armature	92		
Bearings	92		
Pump Motor Maintenance	93		
Access to brushes	93		
Maintenance	93		
Armature	93		

TABLE OF CONTENT



M5 – BRAKE	PAGE	SER-NR. CUT	REV.
Brake	97		
Operation	97		
Removal	97		
Assembly	99		
Air Gap Setting	99		
Brake Moment Setting	99		
Testing the Brakes	99		
M6 – STEERING	PAGE	SER-NR. CUT	REV.
Live Ring Bearing	103		
Disassembly	103		
Installation	103		
Multitask Handle - Springs for Return Function	104		
Adjustment	104		
Removal	104		
Assembly	104		
Tiller Handle	105		
Main Components	105		
Tiller Handle Component Removal / Installation	106		
Tiller Handle Shells	106		
Removing the Upper and Lower Shells	106		
Fitting the Upper and Lower Shells	107		
Switch Unit	108		
Removal	108		
Switch Unit Installation	108		
"Fast/Slow" Toggle Switch	109		
Removal	109		
Installation	109		
Hydraulic Board	109		
Removal	109		
Installation	109		
Potentiometer	110		
Removal	110		
Installation	110		
Safety Reverse Switch	111		
Removal	111		
Installation	111		
Horn Switch	112		
Removal	112		
Installation	112		
Handle	113		
Removal	113		
Installation	113		
M7 – LIFTING MECHANISM	PAGE	SER-NR. CUT	REV.
Lift Linkage	117		
Fork Height Setting	117		
M8 – CYLINDERS	PAGE	SER-NR. CUT	REV.
Lift Cylinders	121		
Operation	121		
Removal	121		
Inspection	123		
Replacing the Piston Seal	123		

DIA – ELECTRICAL DIAGRAMS	PAGE	SER-NR. CUT	REV.
Overall Wiring Diagram, Standard Version	127		
Overall Wiring Diagram with Options	128		
Wire harness overview, all versions	129		

HYD – HYDRAULIC SCHEMATIC	PAGE	SER-NR. CUT	REV.
Hydraulic Schematic	133		

Page intentionally left blank



SAFETY

Page intentionally left blank

Safety Symbols used in the Manual

To help guide you through the manual and to highlight particular danger areas, we have used graphic illustrations:

DANGER



This symbol indicates life-threatening risks

- Failure to comply with this notice may result in severe or fatal injuries to yourself or other people.

WARNING



This symbol indicates the risk of serious injury and/or serious material damage.

- Failure to comply with this notice may result in severe injuries to yourself or other people and/or serious material damage.

CAUTION



This symbol indicates the risk of minor injury and/or minor material damage.

- Failure to comply with this notice may result in minor injuries to yourself or other people and/or minor material damage.

INFORMATION



Contains additional information with supplementary notes and hints.

OPTION



These items relate to optional features not supplied with the standard version.

General Maintenance and Repair Safety Notes

DANGER



Read the safety notices in the truck Maintenance and Operator's Manuals.

- Failure to do so could result in severe or fatal injuries to maintenance personnel and/or other persons.

Motorised vehicles can be dangerous if maintenance and service are neglected. For this reason maintenance and inspections must be carried out at regular short intervals by trained personnel working to approved company guidelines.

DANGER



Follow all national/local safety regulations applicable for maintenance work, e.g. for work on higher levels.

- Failure to do so could result in severe or fatal injuries to maintenance personnel and/or other persons.

Maintenance and Repair

1. Maintenance work must only be carried out in accordance with the test and maintenance program contained in the present Maintenance Manual and any applicable service notices.
2. Only qualified and authorised personnel may carry out work on the truck.
3. Always keep fire extinguishers in good working condition. Do not approach fluid levels or leaks with a naked flame.
4. To clean, use a non flammable, non combustible cleaning solution which is groundwater-neutral. Only carry out cleaning with an oil separator. Protect the electrical system from dampness.
5. Keep the service area clean, dry and well-ventilated.
6. Do not allow oil to penetrate the ground or enter the draining system. Used oil must be recycled. Oil filters and desiccants must be treated as special waste products. Relevant applicable regulations must be followed.
7. Neutralise and thoroughly rinse any spilled battery fluid immediately.

BUY NOW

**Then Instant Download
the Complete Manual**

Thank you very much!