CROWN



Service Manual

Wartungshandbuch
Manuel de maintenance

WP2000S Series

MidWestTech | Crown WP2000S Electric Pallet Jack Service Manual | Publication 812535-...

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Table of Content

MA – SAFETY	PAGE	SER-NR. CUT	REV.
Safety Symbols used in the Manual	**M/P-MA-0000-001**		
General Maintenance and Repair Safety Notes	**M/P-MA-0000-001**		
- Maintenance and Repair	M/P-MA-0000-002		
- Before Leaving the Truck	M/P-MA-0000-002		
- Before Carrying out Work on the Truck	M/P-MA-0000-002		
- Before Operating the Truck	M/P-MA-0000-002		
Warnings and Labels on the Truck	**M/P-MA-0000-002**		

ITD – INTRODUCTION	PAGE	SER-NR. CUT	REV.
General	**M/P-ITD-1720-501**		
- Operating instruction	M/P-ITD-1720-501		
- Service training	M/P-ITD-1720-501		
- Replacement parts orders	M/P-ITD-1720-501		
- Structure of the Manual	M/P-ITD-1720-501		
- Page Numbers	M/P-ITD-1720-502		
Truck Data Numbering Sheet	**M/P-ITD-1720-504**		

M1 – LUBRICATION AND ADJUSTMENT	PAGE	SER-NR. CUT	REV.
Component Access	**M-1.0-1720-001**		
Jacking up the Truck	**M-1.0-1720-001**		
Lifting by Crane	**M-1.0-1720-001**		
Lifting by Truck	**M-1.0-1720-002**		**Rev.1 09/00**
Components	**M-1.0-1720-003**		**Rev.1 09/00**
Maintenance	**M-1.1-1720-004**		
- Driver Participation	M-1.1-1720-001		
- Daily Maintenance Log	M-1.1-1720-001		
- Recommended Lubricants and Oils	M-1.1-1720-001		
- Lubricants	M-1.1-1720-001		
- Cold Store Trucks	M-1.1-1720-001		
- Check and Maintenance Schedule	M-1.2-1720-001		
- Safety Reverse Switch - Functional Test	M-1.2-1720-003		Rev.1 09/00
- Grease items and grease intervals	M-1.2-1720-010		Rev.1 09/00
Adjustment of castor- and drivewheel pressure	**M-1.5-1720-501**		
Torques	**M-1.9-0000-001**		

M2 – HYDRAULICS	PAGE	SER-NR. CUT	REV.
Hydraulic Symbols	**M-2.0-0000-001**		
Hydraulic System	**M-2.1-1720-001**		
- Removal	M-2.2-1720-001		
- Hydraulikpump	M-2.3-1720-001		
- Filter	M-2.3-1720-002		
- Pressure Filter	M-2.3-1720-002		
- Suction and Return Filters	M-2.3-1720-002		
- Oil Change	M-2.3-1720-002		
- Commissioning	M-2.3-1720-002		

M3 – DRIVE UNIT	PAGE	SER-NR. CUT	REV.
Gear Unit	**M-3.1-1720-501**		
- Removal	M-3.1-1720-501		
- Repair	M-3.1-1720-501		
- Disassembly/Assembly	M-3.1-1720-503		
- Installation	M-3.1-1720-505		

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M4 – ELECTRICS	PAGE	SER-NR. CUT	REV.
Electrics - General	**M-4.0-0000-001**		
- Wire Colour Codes	M-4.0-0000-001		
- Abbreviations	M-4.0-0000-002		
- Electrical Symbols	M-4.0-0000-004		
Electrical Components	**M-4.2-1720-500**		
- Transmitter (POT, FS, RS)	M-4.2-1720-500		
- Fast / Slow Travel Switch (HSS)	M-4.2-1720-500		
- Reverse Safety Switch (SAS)	M-4.2-1720-500		
- Brake Switch (BRS)	M-4.2-1720-500		
- Override Switch (ORS)	M-4.2-1720-503		
- Lift / Lower Switch (RAS, LOS)	M-4.2-1720-503		
- Limit Switch (LMS)	M-4.2-1720-503		
- Horn Switch (HNS)	M-4.2-1720-503		
- Key Switch (KYS)	M-4.2-1720-503		
- Emergency Disconnect	M-4.2-1720-503		
- Fuses (FU)	M-4.2-1720-503		
- Temperature Switch (THS) (Freezer/Corrosion Truck only)	M-4.2-1720-503		
SEM 1 Traction Controller	**M-4.3-1720-001**		
General	M-4.3-1720-001		
- Precautionary Measures	M-4.3-1720-001		
Operational Features	M-4.3-1720-001		
- Speed Control	M-4.3-1720-001		
- Reduced Speed Ranges	M-4.3-1720-001		
- Downhill Speed Control	M-4.3-1720-001		
- Regenerative Braking	M-4.3-1720-001		
- Anti-Roll-Down-Function	M-4.3-1720-001		
- Hourmeter	M-4.3-1720-002		
- Self Test	M-4.3-1720-002		
- Monitored Circuits	M-4.3-1720-002		
Protective Devices	M-4.3-1720-003		
- Polarity Protection	M-4.3-1720-003		
- Wiring Errors	M-4.3-1720-003		
- Temperature	M-4.3-1720-003		
- Start Sequence	M-4.3-1720-003		
- Protective Class	M-4.3-1720-003		
Maintenance	M-4.3-1720-003		
Controller connections SEM-1	M-4.3-1720-004		
- Pin Layout SEM-1	M-4.3-1720-005		
- Status-LED	M-4.3-1720-006		
Programmer	**M-4.4-1720-001**		
General	M-4.4-1720-001		
Operating Menu Controller SEM-1	M-4.4-1720-002		
- Operating Menu - Overview	M-4.4-1720-003		
- Menu Functions	M-4.4-1720-004		
Settings and Alarms	M-4.5-1720-001		
- Menue PARAMETER CHANGE	M-4.5-1720-001		
- Menue TESTER	M-4.5-1720-004		
- Menue ALARMS	M-4.5-1720-006		
- Menue PROGRAM VACC	M-4.5-1720-008		
- Menü CONFIG	M-4.5-1720-009		
Traction Controller Safety Test	**M-4.20-1720-001**		
Battery	**M-4.25-1720-001**		
Function	M-4.25-1720-001		
Reading the Electrolyte Level	M-4.25-1720-001		
Replacing the Battery	M-4.25-1720-001		
Removing the Battery	M-4.25-1720-001		
Charging the Battery	M-4.25-1720-002		

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Battery Discharge Indicator (BDI) **M-4.25-1720-002**
- General M-4.25-1720-002
- Adjusting the Battery Discharge Indicator M-4.25-1720-002

Traction / Pump Motor Maintenance **M-4.35-1720-001**
- Access M-4.35-1720-001
-Maintenance M-4.35-1720-001

M5 – BRAKE PAGE SER-NR. CUT REV.

Brake **M-5.0-1720-501**
- Function M-5.0-1720-501
- Removal M-5.0-1720-501
- Assembly M-5.0-1720-502
- Air Gap Setting M-5.0-1720-502
- Brake Moment Setting M-5.0-1720-503
- Testing the Brake M-5.0-1720-503

M6 – STEERING PAGE SER-NR. CUT REV.

Multitask Handle - Springs for Return Function **M-6.1-1720-501**
- Adjustment M-6.1-1720-501
- Removal M-6.1-1720-501
- Assembly M-6.1-1720-501

M7 – LIFTING MECHANISM PAGE SER-NR. CUT REV.

Lift Linkage **M-7.0-1720-501**
- Fork Height Setting M-7.0-1720-002

M8 – CYLINDERS PAGE SER-NR. CUT REV.

Lift Cylinders **M-8.1-1720-501**
- Operation M-8.1-1720-501
- Removal M-8.1-1720-501
- Inspection M-8.1-1720-503
- Replacing the Piston Seal M-8.1-1720-503

DIA – ELECTRICAL DIAGRAMS PAGE SER-NR. CUT REV.

Standard Version **M/P-DIA-1720-001**
- Schematic Diagram M/P-DIA-1720-001
- Traction Controller M/P-DIA-1720-002
- Power Unit Circuit M/P-DIA-1720-004
- Control Handle Circuit M/P-DIA-1720-005
- Walkie- / Rider Circuit M/P-DIA-1720-006
- Power Cables M/P-DIA-1720-007
- Main Harness M/P-DIA-1720-008
- Tiller Harness M/P-DIA-1720-009

Freezer- / Corrosion Trucks **M/P-DIA-1720-010**
- Schematic Diagram M/P-DIA-1720-010
- Traction Controller M/P-DIA-1720-011
- Power Unit Circuit M/P-DIA-1720-013
- Control Handle Circuit M/P-DIA-1720-014
- Walkie- / Rider Circuit M/P-DIA-1720-015
- Tiller Harness M/P-DIA-1720-016

HYD – HYDRAULIC SCHEMATIC PAGE SER-NR. CUT REV.

Hydraulic Schematic M-HYD-1720-501

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SEM 1 Traction Controller

DANGER

Jack up the truck before carrying out repair work or troubleshooting the electrical system.

General

The programmable ZAPI SEM Zero impulse controller provides effective control over the driving behaviour of the truck.

The truck is powered by a separate excited motor (SEM). This version has two variables for governing the motor output: field and armature current.

Precautionary Measures

- Do not attach the controller to a battery with a different rated voltage to that of the controller (24 - 36 VDC).
  A higher battery voltage may destroy the MOSFETs, while a lower power supply will result in system failure.
- Only operate the controller with special traction batteries. Do not connect to a rectifier or mains components.
- When commissioning jack up the truck to prevent it from starting suddenly if there is a wiring error.
- When the key switch has been turned off the filter capacitors in the controller remain charged for a few minutes. If work is performed on the controller during this time it must be disconnected from the battery (disconnect battery). Finally, to discharge the capacitors short-circuit the positive and negative terminals of the power part together over a resistance (10 - 100 Ohm, min. 5 W) for a few seconds.

Operational Features

Speed Control

Stepless, handset programmable speed control in both directions.

Reduced Speed Range

Two travel speed ranges can be chosen using the rabbit/ turtle toggle switch HSS in the multitask handle. Reduced speeds can be programmed between 30 % and 100 % of normal travel speed by using the handset.

Downhill Speed Control

When travelling downhill the controller monitors and compares the motor anchor current with the drive signal from the traction potentiometer. When the motor anchor current decreases, electrical braking with energy retention is introduced.

Regenerative Braking

Three forms of regenerative braking are available:

- Deceleration braking by setting the travel switch to an smaller value, but still > 0, without changing the drive direction.
- Inversion braking (quick inversion): travel switch set in opposite direction.
- Release braking: travel switch set to neutral.

Anti - Roll Down Function

This function prevents the truck from accidentally rolling down a slope. When the key switch is on the controller monitors anchor current of the traction motor. If the truck starts to roll down the slope without a travel comand, the controller detects the change in the achor current and braking is automatically activated. After this, the monitoring cycle starts over again.

Such, if the brake is not applied manually, the truck will therefore move down the slope very slowly.

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Battery

General

The condition of the battery considerably affects the output and behaviour of the truck. Proper maintenance enhances the performance and service life of the battery.

Only service the battery in accordance with the manufacturer's instructions.

The respective manufacturer's maintenance manual is provided with all batteries supplied by Crown.

Operation

During discharge the battery connector is connected to the truck circuit. During charging, it is connected to the charger.

Make sure that the battery connector is not disconnected when the truck is in use and that there is a fixed connection between the connector halves during truck operation and when the battery is being charged. A poor connection will cause the contacts to burn and damage the operation and charging capacity of the battery.

Reading the Electrolyte Level

Check the electrolyte level on the surface of the battery fluid before adding destilled water.

The electrolyte density is the most reliable indicator of the battery's condition. When checking it, make sure that sufficient electrolyte is suctionned into the glass tube so that the floating body can swim freely when the acid tester is held vertically.

To compensate for loss of electrolyte use destilled water only. Replenish at regular intervals irrespective of the ambient temperature (see maintenance schedule in Section M1.2).

The battery plates must be covered. Never overfill the battery as wet and dirty cell lids lead to leak current and can thus reduce battery power. Overfilling can also lead to corrosion of the battery terminals and damage to the battery housing.

Excessive loss of electrolyte indicates a faulty battery. e.g. due to over-charging, total discharge, leak current from individual battery cells etc.

Replacing the Battery

WARNING

Only use batteries which comply with the dimension, weight and capacity requirements for this truck.

- *An incorrect battery can damage the truck.*
- *Incorrect weight and dimensions alter the truck centre of gravity. This can result in accidents and will invalidate the warranty.*

To replace the battery use either a battery trolley or a crane with sufficient capacity.

Removing the Battery

- Apply the handbrake.
  The multitask handle is vertical.
- Switch off the truck and remove the key.
- Open the battery compartment lid (see Fig. M1461).
- Remove the battery connection and put the battery cable in a safe place.
- Securely fit the appropriate lifting equipment.
- Using an appropriate lifting mechanism lift the battery out of the truck and rest it securely.
- Install the charged battery in the reverse order.

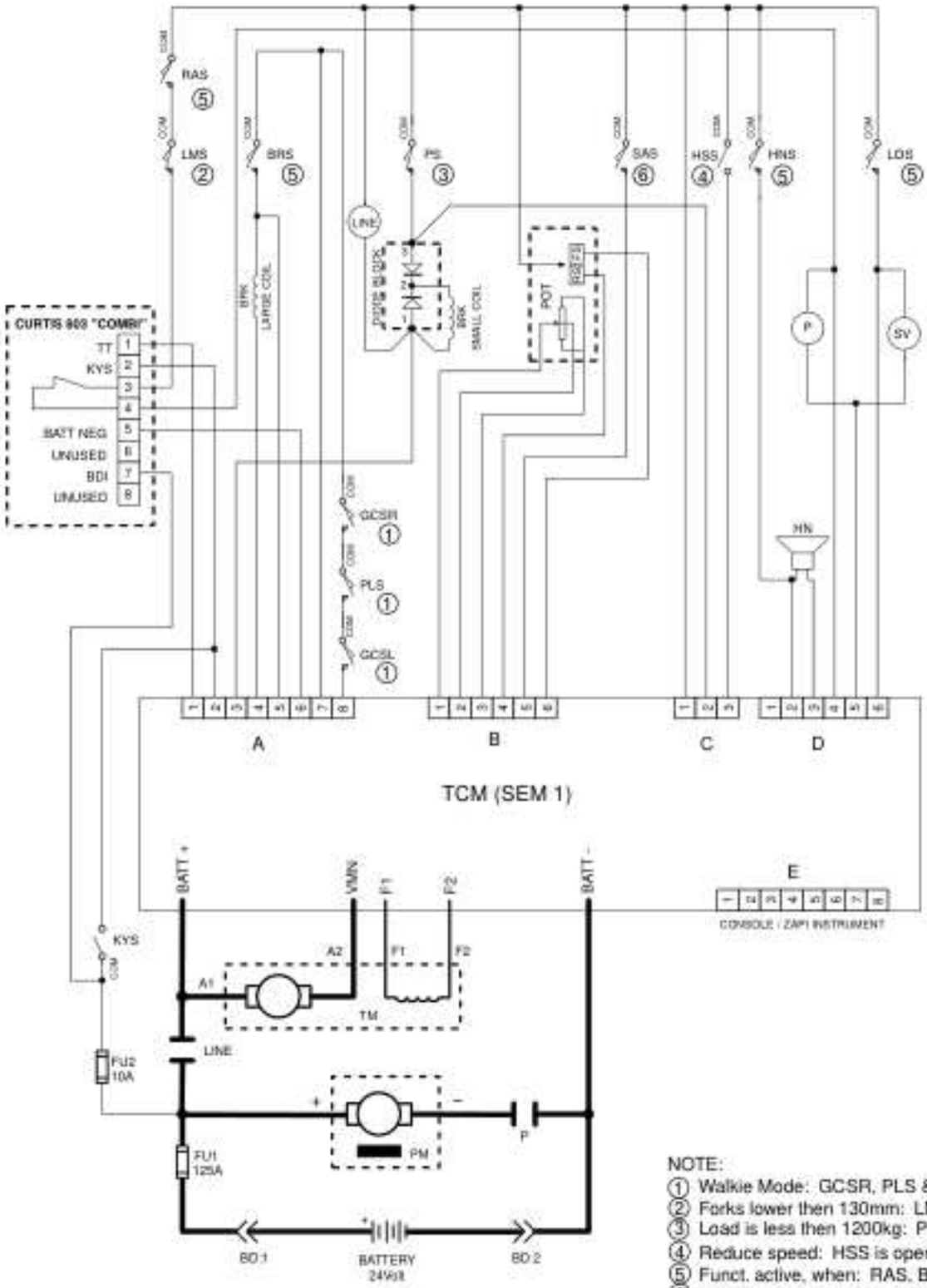


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WP 2000-S STANDARD
SCHEMATIC DIAGRAM



NOTE:
① Walkie Mode: GCSR, PLS & GCSL open.
② Forks lower then 130mm: LMS closed.
③ Load is less then 1200kg: PS closed. 2/3 brake.
④ Reduce speed: HSS is open.
⑤ Funct. active, when: RAS, BRS, HNS or LOS closed.
⑥ Wired to normally closed, held open

M1595

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