## **CNOWN**

## **Maintenance Manual**



Rev. B • Printed in Germany Order Number: 812520-006

## CROWN





### **Table of Content**

MA – SAFETY	PAGE	SER-NR. C	CUT I	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				
Before Carrying out Work on the Truck	4			
Before Operating the Truck	4			
Warnings and Labels on the Truck	4			
ITD – INTRODUCTION	PAGE	SER-NR. C	CUT I	REV.
General				
Operating Instructions				
Service Training				
Ordering Spare Parts				
Using the Manual				
Model-Number	8			
M1 - LUBRICATION AND ADJUSTMENT	PAGE	SER-NR. C	CUT I	REV.
Jacking up the Truck				
Lifting the Truck with a Crane				
Towing the Truck				
De-commissioning				
Re-commissioning				
Component Access				
Models				
Maintenance				
Check and Maintenance Schedule				
Recommended Lubricants and Oils				
Lubricants				
Cold Store Trucks				
Torques				
·				
	PAGE	SER-NR. C	CUT I	REV.
Hydraulic Symbols	35			
Hydraulic System	39			
Operation				
GPC2020/2040/2040S				
Platform Lift				
Fork High Lift				
Platform Lift and Fork High Lift				
Hydraulic Unit Removal				
Replacing the Hydraulic Pump				
Removal				
Installation				
Replacing the Hydraulic Filter				
Replacing the Suction Filter				
Replacing the Oil				
Start-Up				
Checking the Valve Settings				
Checking the Non-Return Valve				
Checking the Safety Valve				
Adjusting the Safety Valve	40			



M3 – DRIVE UNIT	PAGE	SER-NR.	CUT	REV.
Drive Unit	-			
General	51			
Environmental Protection	51			
Drive Wheel	51			
Removal	51			
Assembly	. 51			
Drive Unit Removal				
Drive Unit Assembly				
Transmission				
Transmission Removal	52			
Transmission Assembly	52			
Transmission Repairs				
Disassembly				
Assembly				
Bevel Wheel Set Adjustment				
Oil Change				
Live Ring Bearing				
Removal				
Assembly				
7 locomby				
M4 – ELECTRICS	PAGE	SER-NR.	CUT	REV.
Electrics - General				
Wire Colour Codes	-			
Abbreviations				
Electrical Symbols				
Electrical Components				
Transmitter (POT, FS, RS)				
Brake Switch (BRS)				
Lift/Lower switches (RAS, LOS)				
Lift limiting switch (LMS)				
Horn Switch (HNS)				
Key Switch (KYS)				
Emergency Disconnect (EDS)				
Fuses (FU)				
Walk along switch (WAS)				
GPC2020				
GPC2040	67			
Programmer	. 68			
General	68			
Connection	68			
Key Description	68			
Display				
SCROLL DISPLAY	68			
CHANGE SETTING	68			
MORE INFO	69			
PROGRAM	70			
TEST	70			
DIAGNOSTIC	70			
Key Combinations	70			
SPECIAL DIAGNOSTIC mode				
SPECIAL PROGRAM mode	71			
Deleting the Error History	71			
Copying (Cloning) Controller Settings				
Resetting to Original Settings				
Programmer Self-Test				
Traction Controller Removal / Installation				
Removal				
Installation				





M4 – ELECTRICS	PAGE	SER-NR. CUT	REV
Controller Test	73		
Traction Controller 1207 and 1214 Settings	74		
Fault Recovery (including recovery from disable)			
Test Procedure			
Pulse Monitor Trip - Test (PMT)			
Equipment			
Test Procedure			
PMT- Test Wiring Diagram			
1207 and 1214 Traction Controllers			
General	81		
Operating Features	81		
Functions			
Key Switch	82		
Autotest (Watchdog, internal and external)			
Current Limit			
Overvoltage	82		
Overtemperature			
Performance Reduction at Low Voltage			
Error Detection			
Error Listing			
Error Reset			
Maintenance	84		
1207 Control Line Connections	85		
Power Line Connections	85		
1214 Control Line Connections			
Power Line Connections			
1207 Control Panel	87		
Setting Potentiometers	87		
Programmer Connection			
Status LED			
Diagnostics with Status LED	87		
Connection side of			
Controller 1214	88		
Programmer connector	88		
Status LED			
LED Diagnostics	88		
Status LED			
Status LED	90		
DACI-EL Steering Control System	92		
Electrical Connections			
Performance Connections	92		
Control Section Connections	92		
Steering Control System Error Codes	92		
Steering Control System Error Codes	93		
Steering Control System Error Codes			
Steering Control System Error Codes	95		
Steering Control System Error Codes	96		
Steering Control System Removal / Installation			
Removal	96		
Installation	96		
Distributor Boards	98		
General			
Board 804247-001	99		
Board 804247-002	99		
Board 804247-003	99		
Jumper Arrangement and Usage	100		
Platform Lift and Combination	101		



M4 – ELECTRICS	PAGE	SER-NR. CUT	REV.
Electrical Steering Option	102		
Board 808 191 Contact Arrangement	102		
Board 808 191 Contact Arrangment			
Board 808 197			
Contactors	105		
Inspection	105		
Contacts			
Coils	105		
Springs	105		
GPC2020 Travel Contactor Repairs			
Disassembly			
Assembly			
GPC2040 and GPC2040S Travel Contactor Repairs			
Disassembly			
Assembly			
M-5 – BRAKE	PAGE	SER-NR. CUT	REV.
Brake	111		
Operational Description	111		
GPC 2020 Brake System			
GPC 2040 Brake System			
Removal			
Preparation			
Maintenance and Repairs			
Installation			
Air Gap Setting			
Brake Moment Setting			
GPC 2020, Single Stage Brake			
GPC 2040, Twin Stage Brake			
GPC 2020 1.6 t, Brake Default Setting			
GPC 2040 Standard 2.0 t, Brake Default Setting			
GPC 2040 High Lift and Twin Lift 1.0 t, Brake Default		115	
Brake Test	-		
Braking Distance Setting			
GPC 2020 Standard 1.6 t			
Braking Distance with Max. Load			
Braking Distance with Truck Unladen			
GPC 2040 Standard 2.0 t			
Braking Distance with Max. Load			
Braking Distance with Truck Unladen			
GPC 2040 High Lift and Twin Lift 1.0 t			
Braking Distance with Max. Load			
Braking Distance with Truck Unladen			
Testing the Load-Dependent Pressure Switch (GPC 2040		117	
M6 - STEERING	PAGE	SER-NR. CUT	REV.
Steering Drive System	_		
Steering Drive Removal			
Repairing the Steering Drive			
Removing the Motor from the Transmission			
Replacing the Motor Bearings			
Repairing the Steering Transmission			
Steering			
Tiller			
Tiller and Recuperating Spring Removal	-		
(All Models)	126		
Tiller Adjustment			
Forward Travel Setting for Mechanical Steering			
. c	<del>_ v</del>		



M6 – STEERING	PAGE	SER-NR. CUT	REV.
Forward Travel Setting for Electrical Steering	129		
Steering Chain			
Chain Tension Adjustment	130		
M7 – LIFTING MECHANISM	PAGE	SER-NR. CUT	REV.
Lifting Mechanism	133		
Lifting mechanism adjustment			
Lift Stop Setting			
Lift Chains			
General	135		
Inspection	135		
Cleaning	135		
Wear	135		
Freedom of Movement	136		
Chain Tension	136		
Chain Anchor and Pulleys	136		
Worn or Missing Plates	136		
Protruding or Turned Chain Pins	136		
Corrosion	137		
Chain Lateral Wear	137		
Uneven Chain Tension	137		
Misalignment of Lift Components	137		
Lift Chain Lubrication	138		
Fork Tine Test	139		
General	139		
Fork Identification	139		
Repairs	139		
Crack Inspection	139		
Fork Blade Warping	140		
Verticality Test	140		
Measuring the Fork Tip Width	141		
Fork Tine Height Difference			
Fork Stop	141		
Wear	142		
M8 - CYLINDERS	PAGE	SER-NR. CUT	REV.
Cylinders	145		
General			
Plunger Cylinders (single-acting)	145		
Piston Cylinder (Double-Acting Cylinder)	146		
Single-Acting Cylinder	147		
Double-Acting Cylinder	147		
Cylinder	148		
General	148		
Cylinder Removal	148		
Replacing the Rod Seal			
Platform Lift Cylinder	149		
Free Lift Cylinder			
Free Lift Cylinder for Platform Lift and Combination	151		
DIA – ELECTRICAL DIAGRAMS	PAGE	SER-NR. CUT	REV.
Control Circuit 2020	155		
Driver Board 2020	156		
Traction Controller 2020	157		
Brake and BDI 2020			
Tiller and Pedestrian Function 2020			
Power Lead 2020			
Overview 2040	161		



DIA ·	– ELECTRICAL DIAGRAMS	PAGE	SER-NR.	CUT	REV.
	Driver Board 2040	162			
	Driver Board 2040/Platform Lift	163			
	Traction Controller 2040	164			
	Brake and Brake Switch 2040	165			
	Lift/Lower and Limit Switch 2040	166			
	Tiller: BDI and Pedestrian Function 2040	167			
	Power Lead 2040	168			
	Overview 2040S	169			
	Steering Motor Controller 2040S	170			
	Steering Sensor Encoder 2040S	171			
	PCB Connection Lead 2040S				
	Steering Feedback POT 2040S	173			
	Backrest Control Cable 2040S	174			
	Tiller Lead 2040S	175			
	Tiller Head Cable 2040S	176			
	Power Lead 2040S	177			
	Power Lead 2040S	178			
HYD	- HYDRAULIC SCHEMATIC	PAGE	SER-NR.	CUT	REV.
	2020/2040/2040S	181			
	Platform Lift	182			
	Fork Lift	183			
	Platform/ Fork Lift	184			

# CROWN

## **SAFETY**





## 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

- 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.
- Always keep fire extinguishers in good working condition. Do not approach fluid levels or leaks with a naked flame.
- 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.
- Keep the service area clean, dry and well-ventilated.
- 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.
- Neutralise and thoroughly rinse any spilled battery fluid immediately.



- 8. Keep the truck clean. This will facilitate the location of loose or faulty components.
- Make sure that capacity and data plates, warnings and labels are legible at all times.
- Alterations or modifications by the owner or operator are not permitted without the express written authorisation from Crown.
- 11. Only use original Crown spare parts to ensure the reliability, safety and suitability of the Crown truck.

#### **Before Leaving the Truck**

- Stop the truck.
- Lower the fork carriage fully.
- Apply the parking brake.
- Turn off the travel switch and remove the key.
- Block all wheels when parking on an uneven surface.

#### **Before Carrying out Work on the Truck**

- Raise the truck to free the drive wheel. Press the emergency Stop button and disconnect the battery.
- Prevent the truck from rolling away.
- Before carrying out work on the hoist frame, the lift mast or on the fork carriage: Block these parts according to maintenance instructions in order to prevent them from dropping.
- Only carry out operational testing when there is sufficient room to manoeuvre, to avoid the risk of injury to yourself and others.

#### **Before Operating the Truck**

- Check the safety devices.
- Get into the driver's seat.
- Check the operation of the lifting device, travel direction switch, speed control, steering, warning devices and brakes.

#### Warnings and Labels on the Truck

During regular maintenance check that the warnings and labels on the truck are complete and legible.

- Clean any illegible labels.
- Replace any faulty or missing labels.

The order and meaning of the warnings and labels on the truck are described in section 10.9 of the parts manual.

# CNOUN

## INTRODUCTION





#### General

The present manual is designed for Customer Service engineers who wish to familiarise themselves with the maintenance work required for the various truck components.

It also contains troubleshooting sections which can be used to identify and remedy truck faults.

#### INFORMATION



This book is not an operating manual. It is designed solely for specialist personnel who have been trained and authorised to carry out the work described in the manual.

This manual therefore contains fewer and less detailed warnings than the Operator's Manual, as the latter is aimed at persons who have very little or no prior experience at all.

#### **Operating Instructions**

This manual contains no operating instructions. An operating instructions manual is supplied with the vehicle. Additional copies can be ordered as required.

With the help of this manual you and your personnel will be able to ensure the long service life, operational safety and error free functioning of your CROWN vehicle.

#### Service Training

CROWN offers the appropriate vehicle related training for service personnel. Details on this training can be obtained from CROWN on request.

#### **Ordering Spare Parts**

The maintenance manual does not cover spare parts. These are listed in a separate manual.

Spare parts can be ordered by quoting:

- The truck specification number
- The truck model number
- The truck serial number

This information can be found on the truck's data plate. Only if this information is provided can the order be processed quickly, correctly and reliably.

Please refer to the Technical Specifications Sheet for the utilisable loads, technical data and dimensions for this

series. Brochures can be obtained from your CROWN dealer or from the following address:

CROWN Gabelstapler GmbH Moosacher Str. 52 80809 Munich GERMANY

Tel.: +49 (0)89 / 93 002 -0 Fax: +49 (0)89 / 93 002 -175 oder 133

#### **Using the Manual**

The manual is divided into sections. The following table shows how the manual is structured.

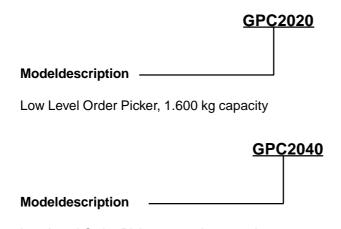
Sections Maintenance				
Section	Description			
IDX	Table of Content			
MA	Safety			
MS-ITD	Introduction			
MS-1	Lubrication and Adjustment			
MS-2	Hydraulics			
MS-3	Drive Unit			
MS-4	Electrical			
MS-5	Brake			
MS-6	Steering			
MS-7	Mast /Lifting Mechanism			
MS-8	Cylinder			
DIA	Electrical Diagrams			
HYD	Hydraulic Schematic			

A01M-gb



#### **Model-Number**

This manual describes the maintenance and repairs for the following truck versions:



Low Level Order Picker, 2.000 kg capacity

		<b>GPC2040S</b>	
Modeldescription			J

Rider Pallet Truck with Steering Wheel, 2.000 kg capacity



## LUBRICATION AND ADJUSTMENT



## **BUY NOW**

Then Instant Download the Complete Manual Thank you very much!