

OPERATOR'S MANUAL

MODELS 1F1/1F2

Platinum II Series Cushion & Pneumatic Tire
Engine Powered/LPG, Gasoline, Dual Fuel, Diesel & Carburetor
3,000-8,000 lb. Capacities



OPERATOR

Reliability.

It's the defining trait of our company and our forklifts.

UniCarriers' roots extend back over 100 years, and over that time, strong, reliable performance has always been the hallmark of our organization, our people and our equipment.

Today, our unrivaled reliability continues to provide UniCarriers' customers with a competitive edge. And together, we move the merchandise that moves world commerce with greater efficiency, economy and reliability.

When it comes to providing forklifts that make a difference for our customers and theirs...

We Never Quit.



UNICARRIERS AMERICAS OPERATOR'S MANUAL

MODEL 1F1/1F2 SERIES



WARNING

- **This Original Instructions (Operator's) Manual contains important safety information and must be made available to the operator.**
- **Keep this manual on the lift truck at all times.**
- **Do not operate the lift truck unless you have reviewed and fully understand the Operator's Manual. Failure to follow all of the instructions in this manual could be a violation of the Occupational Safety and Health Act.**
- **Do not operate this lift truck unless you are trained and authorized by your employer. Improper operation may result in a serious or fatal injury to yourself or others.**
- **On December 1st, 1998 the Occupational Safety and Health Administration (OSHA) adopted a new and stringent Powered Industrial Truck Operator Training rule 29 CFR 1910.178(1). Based on the Industrial Truck Standards Development Foundation (ITSDF) B56 current standard, Operator Training is now explained in detail. The employer shall ensure that operators of powered industrial trucks are competent and trained in the safe and proper operation of powered industrial trucks. This training will include formal training, practical demonstrations and an on-site evaluation.**

OSHA also requires a proper pre-shift inspection, and any repair required shall be performed by a person trained and authorized to repair lift trucks.

As the employer you should be familiar with the rules of 29 CFR 1910.178(1) as well as ANSI/ITSDF B56.1 for the user. You should also be aware of any state OSHA rules that may differ from the federal rules.

THE FOLLOWING WARNING IS PROVIDED PURSUANT TO CALIFORNIA HEALTH & SAFETY CODE SECTIONS 25249.5 ET. SEQ.

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.



WARNING

California Proposition 65

This product contains and emits chemicals known to the State of California to cause cancer, birth defects and other reproduction harm.



WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.



WARNING

AN IMPORTANT MESSAGE FOR THE OPERATOR (FOR NORTH AMERICA)

- Do not operate this lift truck unless you are trained and authorized by your employer. Improper operation may result in a serious or fatal injury to yourself or others. Make sure that you read and fully understand the Operator's Manual supplied with this lift truck. Failure to follow all instructions in this manual could be a violation of the Occupational Safety and Health Act.

DISCLOSURE OF REGULATION APPLICABILITY FOR CALIFORNIA CUSTOMERS ONLY

- To owner/operators of UniCarriers lift trucks in California:
ARB Regulation 2449(d)(3) June 2008: Starting June 15, 2008 the California Air Resources Board (CARB) placed a limit in idling time for in use off road diesel powered equipment. "When operated in California, any off road diesel vehicle may be subject to the California Air Resources Board In-Use Off-Road Vehicle Regulation. It therefore could be subject to retrofit or accelerated turnover requirements to reduce emissions of air pollutants". For more information, please visit the CARB website at www.arb.ca.gov. At a minimum you should review the following section: 2449(d)(3), 2449(i), 2449(h)(8).

A WORD TO OPERATORS

This Original Instructions (Operator's) Manual describes operating procedures, daily checks and simple maintenance for safe usage of your UniCarriers lift truck. We urge you to read this manual carefully to familiarize yourself with the safety instructions before operating a UniCarriers lift truck. An operator of any lift truck should maintain safety as the number one priority at all times. In addition, we strongly recommend that you obtain and read the Industrial Truck Standards Development Foundation (ANSI/ITSDF) B56.1 Manual entitled "Safety Standard for Low Lift and High Lift Trucks" before operating any lift truck. These instructions will not only reduce mechanical issues with a lift truck, but may also save a life.

Contact your Local Authorized Dealer to keep your lift truck in peak operating performance. If you encounter any problems with a UniCarriers lift truck, contact your Local Authorized Dealer and request a complete checkup. The dealership will ensure that your lift truck is serviced in accordance with the latest factory approved methods.

This manual is not a training manual, it is a guide to help trained and authorized operators safely operate this lift truck. Please consult your employer for proper training on the appropriate use of this lift truck while performing your job. Illustrations in this manual will show the operator the correct procedures for checking, starting, operating and stopping this lift truck. Please contact your Local Authorized Dealer for information about Operator Training packages.

OSHA 1910.178 requires that only trained and authorized operators use powered industrial trucks.

All information, specifications and illustrations in this manual are based on the latest data obtainable at the time of publication. UniCarriers Americas Corporation, hereafter referred to as UCA, reserves the right to make changes or improvements at any time without notice.

This Original Instructions (Operator's) Manual has been prepared on the assumption that your lift truck is fully equipped (including all optional equipment). Thus, if you have any questions regarding equipment, please contact your Local Authorized Dealer.

©2017 UniCarriers Americas Corporation
240 N. Prospect Street
Marengo, IL 60152 USA

LIFT TRUCK MODIFICATIONS

Unauthorized lift truck modification is not permitted.

Per OSHA 1910.178, no modifications or alterations to a powered industrial truck, which may affect capacity, stability or safe operation of the lift truck shall be made without the prior written approval of UniCarriers Americas Corporation [UCA], its authorized representative or a successor thereof.

After receiving the approval of UniCarriers Americas Corporation, its authorized representative or a successor thereof, the data and capacity plate, decals, tags, operation and maintenance manuals shall also be changed appropriately.

Only in the event that UniCarriers Americas Corporation is no longer in business and there is no successor to the business, the user may arrange for a modification or alteration to a powered industrial forklift, provided however, that the user shall:

- a. Arrange for the modification or alteration to be designed, tested and implemented by an engineer(s) expert in industrial forklifts for their safety;
- b. Maintain a permanent record of the design, test(s) and implementation of the modification or alteration;
- c. Approve and make appropriate changes to the data and capacity plate(s), decals, tags, and operation and maintenance manuals;
- d. Affix a permanent and readily visible label to the lift truck stating the manner in which the lift truck has been modified or altered together with the date of the modification or alteration, and the name and address of the organization that performed the modification or alteration.

TABLE OF CONTENTS

SUBJECT	PAGE
Warnings	1
A Word to Operators	3
Lift Truck Modifications	4
Table of Contents	5
Introduction	10
Maintenance and Servicing	10
Daily Inspection	10
Planned Maintenance	10
How to Use this Manual.....	11
Safety Rules and Practices	11
Operating Controls and Functions	11
Operating the Lift Truck	11
General Care and Maintenance	11
Options	11
Specifications	11
Safety Signs and Safety Messages	12
Warning Symbols and Levels.....	12
Warning Levels	12
Safety Rules and Practices	13
Operator Qualifications	13
Safety Guards	13
Personal Protective Equipment for Operating Lift Truck.....	14
Daily Inspection	14
Operator Responsibility	15
General	15
No Riders	17
Traveling	18
Loading	20
Dockboards (Bridge Plates), Trucks and Railroad Cars	21
Surface and Capacity	22
Fuel Handling	23
Installation of Attachments.....	24
ANSI/ITSDF Standards for Lift Truck Clamp Attachments	24
In Case of Tip-Over	24
Transporting Lift Truck	25
Approach Angle, Departure Angle and Gangway	25
Hoisting (Lifting) up the Lift Truck	26
Function Tests	27
Traction Bar	27
Position of Data and Capacity Plates and Decals.....	28
Data and Capacity Plates and Decals	30
Data Plate	30
Alternate Capacity Plates	30
Identification Numbers.....	31
Caution Drive Decal (In Case of Tip-Over Decal)	32
Warning Drive Decal (Trained and Authorized).....	32
Pinch Point Decal	33
Caution Fork Decal.....	33
Vaporizer Drain Valve Warning Decal (Option From 2018) ..	33
Caution Drive Decal (Operation).....	34
Radiator Warning Decal.....	34
Cooling Fan Warning Decal	34
Adj LPG Warning Decal	35
LPG Latch Warning Decal	35

TABLE OF CONTENTS

SUBJECT	PAGE
LPG Fuel Warning Decal.....	35
Operating Controls and Functions	36
Applications	36
Application for UniCarriers Lift Trucks	36
Prohibited Applications for UniCarriers Lift Trucks	36
Main Components	37
Meters, Indicators and Lamps	38
LCD	38
Operation Buttons	38
Multipurpose Warning Light.....	39
Malfunction Indicator Light-Engine Check Warning.....	39
Glow Pilot Light.....	39
Oil Pressure Warning Light	39
Charge Warning Light.....	39
Parking Brake Warning Light	39
Seat Belt Warning Light.....	39
Meter Display	40
Changing Meter Display	40
Clock	41
Setting the Time.....	41
Date.....	42
Setting the Date	42
Hour Meter.....	43
Water Temperature Gauge.....	43
Fuel Gauge.....	44
Transmission Position.....	44
Malfunction and Warning Indications	45
Mast Interlock Warning.....	45
LPG Level Warning/LPG Rack Lock Warning	46
Torque Converter Fluid Temp Warning	46
Radiator Level Warning	46
Air Cleaner Warning.....	46
Fuel Filter Warning.....	46
Service Reminder Display.....	47
Displays when Malfunction Occurs	47
Driver Recognition Mode	48
LPG Remaining Time Management	49
Switches	52
Horn Button	52
Rear Right Grip with Horn Button	52
Ignition Switch.....	53
Lighting Switch and Turn Signal Switch	54
Lighting Switch.....	54
Turn Signal Switch.....	54
Fuel Change Switch	54
Seat Belt Interlock or Shutdown Indicator (Red-Option).....	55
Maximum Speed Change Switch (Option)	55
Throttle Sensitivity Adjust Switch (Option)	56
Transmission Shift (SmoothShift) Indicator (Green-Option) ..	56
Operating Controls	57
Selector Lever	57
Parking Brake Lever	58
Inching Brake Pedal	59
Brake Pedal	59

Accelerator Pedal.....	60	Suspension Seat Operator's Weight Adjustment.....	79
Cargo-Handling Control Levers	60	Forward and Backward Control Lever	79
Twin Control Lever Type	61	Backrest Inclination Adjustment.....	79
Single Control Lever Type.....	61	Lumbar Adjustment.....	80
Joystick Control Lever (Option).....	62	Swivel Seat	80
Tilt Horizontal Switch (Option).....	64	Seat Belt	80
ANSI/ITSDF Standards For Lift Truck Clamp Attachments .	65	Seat Belt Interlock Options	82
Operating the Lift Truck	66	Top Panel	83
Inspection before Operating	66	Open Operation	83
Lift Truck Operating Precautions.....	66	Close Operation	84
Precautions for Cold and Hot Weather	66	Tilt Steering Wheel.....	84
In Cold Weather	66	Service Release Latch	84
In Hot Weather	66	Radiator Cover	85
Operational Procedures.....	67	Rearview Mirror (Option)	85
Gasoline and LPG Lift Truck Starting	67	LPG Cylinder (Tank) Holder	86
Fuel-Change Switch	69	Open Procedure.....	86
To Change from LPG to Gasoline Operation.....	70	Close Procedure	86
To Change from Gasoline to LPG Operation.....	70	General Care and Maintenance	87
Diesel Lift Truck Starting	71	Wet Cell Battery Care and Maintenance	87
Procedure for Jump Starting EFI Engines	73	Battery Fluid Level.....	88
Automatic Transmission.....	75	Refilling Battery Fluid	88
Loading	77	Battery Specific Gravity	89
Transporting Loads.....	77	Daily Inspection	89
Unloading	77	Operator's Daily Checklist (Sample)	91
Climbing	77	Maintenance and Inspection	92
Stopping and Parking the Lift Truck	78	Fuel Recommendation	92
Forks.....	78	Engine Oil Level.....	93
Seat Adjustment.....	79	Refilling Engine Oil	93

TABLE OF CONTENTS

SUBJECT	PAGE
Engine Coolant Level.....	94
Refilling Engine Coolant	94
Cooling System Bleeding Instructions.....	95
Brake Fluid Level.....	96
Refilling Brake Fluid	96
Automatic Transmission Fluid Level	97
Refilling Automatic Transmission Fluid	97
Hydraulic Oil Level.....	98
Refilling Hydraulic Oil	98
Steering Wheel Play	98
Wheel and Tire	99
Tire Replacement	101
Front (Drive) Tire	102
Rear (Steer) Tire	103
Checking Mast	106
Checking Lift Chain	106
Fork Inspection	107
Fork Repair	107
Checking Horn	108
Checking Lights	108
Checking Cargo-Handling Control Lever(s).....	108
Checking Brake Pedal.....	108
Pedal Free Play	108
Checking Parking Brake Lever	108
Checking Top Panel Lock.....	108
Fuses	108
Checking Air Cleaner.....	109
Fuel Tank Cleaning: Drain Plug	109
Checking Fan Belt.....	109
Fuel Filter.....	109
Air Purge	110
Draining of Tar from the Vaporizer	111
Precautions for Using LPG	112
Recommended LPG Fuel Type.....	112
Cylinder (Tank) Size	113
LPG Cylinder (Tank) Replacement	114
Swing-out Type Cylinder (Tank) Mount.....	114
Removing Cylinder (Tank) Swing-Out Type	114
Installing Cylinder (Tank) Swing-Out Type.....	115
Removing Cylinder (Tank) Swing-Down Type	116
Installing Cylinder (Tank) Swing-Down Type	116
Removing Cylinder (Tank) Fixed Type.....	117
Installing Cylinder (Tank) Fixed Type.....	117
Refilling LPG Cylinders (Tanks).....	117
Periodic Maintenance and Lubrication Schedule	118
Periodic Maintenance and Lubrication Schedule for Emission Control System	124
Lubrication Chart.....	127
Recommended Lubricants	128
Recommended SAE Viscosity Chart.....	128
Putting Lift Truck in Storage.....	129
Daily Storage.....	129
Storage Over a Long Period of Time	129
Pre-Storage Servicing	129

Servicing the Lift Truck in Storage.....	129
Post-Storage Servicing.....	129
Options	131
Side Shift.....	131
Sling Poing for Hook-On Type Side Shift.....	131
Overview of Side Shift	132
Main Terms used in this Section	133
Safety Rules and Practices.....	133
Operation of the Control Lever for the Side Shift.....	135
Side Shift Operation	136
Daily Checks and Simple Maintenance	137
Specifications	138
Model Variation (Long Model Code) Breakdown	138
Main Truck.....	139
Mast.....	169
Fuel and Oil Capacity.....	199
Engine	200
Engine Oil Capacity	200
Noise Level.....	201
Index	202
Warranty Certificate K21/K25 Engines (2016)	206
Warranty Certificate K21/K25 Engines (2017)	207
Warranty Certificate K21/K25 Engines (2018)	208
Warranty Certificate CARB Diesel Engines	209
Warranty Certificate Diesel EPA Engines	210

INTRODUCTION

UniCarriers lift trucks meet all applicable requirements of ITSDF B56.1 at the time of manufacture. UCA will not assume, and expressly disclaims, any liability for injuries or damage arising from or caused by the removal, disconnection or disengagement of any part from any of its lift trucks. UCA recommends that all replacement parts be of OEM (Original Equipment Manufacture) origin.

UCA would like to take this opportunity to thank you for purchasing our product. Your UniCarriers lift truck was carefully designed and manufactured to ensure maximum reliability, ease of service and reasonable cost for our customers. The purpose of this guide is to introduce and familiarize you, the operator, with the controls and features of this lift truck.

This manual will help you learn how to operate your lift truck. This manual describes the controls, their function and some special features which may be installed on this lift truck. UniCarriers lift trucks are built to work hard but not for misuse and/or abuse.

MAINTENANCE AND SERVICING

UniCarriers lift trucks are built to be dependable, but as with any lift truck, they are only as efficient as the operator and the persons responsible for maintaining them. It is essential to keep your lift truck in good operating condition by following a recommended maintenance schedule. A damaged lift truck is a potential source of danger to the operator, and to other personnel around it.

DAILY INSPECTION

OSHA 1910.178 requires a daily or per shift inspection. Before operating a lift truck it should always be inspected by the operator. This procedure is detailed in the “Daily Inspection” (refer to page 89) and the “Operator’s Daily Checklist Sample” (refer to page 91).

PLANNED MAINTENANCE

A Periodic Planned Maintenance program is used in addition to the daily inspection of the lift truck and is performed by a trained and authorized mechanic. Planned Maintenance (PM) provides the opportunity to do a thorough inspection of the operating system and safety condition of your lift truck. This can reduce unscheduled downtime by doing necessary adjustments and repairs. Our dealers are ready to help you with a Planned Maintenance Program by trained service personnel (refer to page 118).

HOW TO USE THIS MANUAL

Included in this manual are the essentials of safe lift truck operation, truck features and functions and explanation of how to maintain your lift truck. This manual is organized as follows:

SAFETY RULES AND PRACTICES

Safety rules and major operating hazards you could encounter while operating a lift truck.

OPERATING CONTROLS AND FUNCTIONS

Description of each major component of this lift truck and how the instruments, gauges, and controls operate.

OPERATING THE LIFT TRUCK

Details of safe and efficient operating procedures.

GENERAL CARE AND MAINTENANCE

Care and planned maintenance of the battery, lift truck, forks and side shift.

OPTIONS

Side shift overview, safety rules, operation, daily checks and simple maintenance.

SPECIFICATIONS

Truck and mast specifications.

The operating instructions in this guide do not replace any other rules or laws of safety that are used in or required by federal, state, local agencies or your own operational area. The operating practices listed do not follow any order of importance but are all to be learned and used in your daily operation. Make sure that your lift truck is correctly equipped for use in your work area according to these rules or laws.

There may be certain hazards that may not or cannot be avoided solely by mechanical means in the everyday use of lift trucks. Only the intelligence, good judgement and care of the operator, along with proper planned maintenance, will help assure that the lift truck operates correctly. It is important to have only trained, reliable personnel operating lift trucks. Operate your lift truck safely; careful driving is your responsibility. Drive defensively and think about the safety of people who are working nearby. Know your lift truck's capabilities and limitations.

UCA recommends that this Operator's Manual be kept with the lift truck at all times or in a location easily accessed by the operator. If a replacement manual is needed, please contact your Local Authorized Dealer and a replacement will be sent for a nominal fee.

SAFETY SIGNS AND SAFETY MESSAGES

Safety signs and Safety messages are placed in this manual and on the lift truck to provide instruction and identify specific areas where potential hazards exist and special precautions should be taken. Know and understand the meaning of these instructions, signs and messages. Damage to the lift truck, death or serious injury to you or other persons may result if these messages are not followed. If warning decals are damaged, they must be replaced.

WARNING SYMBOLS AND LEVELS

Always follow the warnings in this Operator's Manual and any located on the lift truck to help avoid accidents and/or injuries from occurring.

WARNING LEVELS

The following safety signs are used in this manual to emphasize important and critical instructions. They are used to alert you to potential personal injury hazards. Obey all safety messages that follow these safety signs to avoid possible injury or death.

Be sure to read these precautionary instructions and all safety related decals installed on your lift truck before you operate it.



DANGER

- Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

- Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

- Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

SAFETY RULES AND PRACTICES

OPERATOR QUALIFICATIONS



WARNING

- Operator must be trained, evaluated and authorized to drive the lift truck and must understand safety techniques and rules for lift truck operation.
- Under OSHA regulations in the U.S., all operators must be formally trained and tested. These tests must be about basic lift truck knowledge and in the operators' work environment. Refer to OSHA regulations or you may also contact the Industrial Truck Standards Development Foundation (ANSI/ITSDF) 1750 K Street NW, Suite 460, Washington, DC 20006 and request a copy of B56.1 Safety Standard for Power Industrial Trucks "Section for the User".

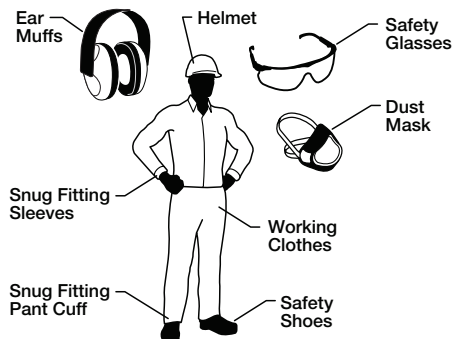
SAFETY GUARDS



WARNING

- An overhead guard is intended to offer protection from falling objects but cannot protect against every possible impact. Therefore, it should not be considered a substitute for good judgement and care in loading, handling, storage, etc.
- Do not remove overhead guard or backrest unless specifically authorized per ANSI/ITSDF B56.1 Section 4.5.1.

PERSONAL PROTECTIVE EQUIPMENT FOR OPERATING LIFT TRUCK



WARNING

- For operation of the lift truck, the protective equipment for the operator shall be dependent upon the conditions of use and the applicable provisions of the local laws and regulations.
- The working clothes worn by the operator shall be such that sleeves and cuffs fit snugly so as to prevent them from getting caught on lift truck levers, etc. Personal Protective Equipment such as safety glasses, earmuffs, dust mask, helmet (hard hat) and safety shoes should also be worn, as required by the work environment, employer or local and state regulations.

DAILY INSPECTION



WARNING

- OSHA 1910.178 requires a daily or per shift inspection. Inspect the lift truck before operating. Do not operate the lift truck if it is in need of repair. If it is in need of repair, tag the lift truck, remove the key (if equipped) and report the condition to the proper authority. Do not attempt repair unless you are trained and authorized to perform repairs (refer to "Daily Inspection" on page 89 and "Operator's Daily Checklist Sample" on page 91).

OPERATOR RESPONSIBILITY



WARNING

- Safe operation is the responsibility of the operator.
- The operator shall develop safe working habits and also be aware of hazardous conditions in order to protect himself, other personnel, the truck, and material being handled.
- The operator shall be familiar with the operation and function of all controls and instruments before undertaking to operate the lift truck.
- Before operating any lift truck, operators shall have read and be familiar with the operator's manual for the particular lift truck being operated and they shall also abide by the safety rules and practices.
- Before operating any lift truck, the operator shall be familiar with unusual operating conditions that may require additional safety precautions or special operating instructions.

GENERAL



WARNING

- Use 3-point contact when mounting or dismounting a lift truck when the operator's compartment floor height is 300 mm or higher. Maintain contact with one hand and two feet or two hands and one foot at all times. Keep hands free of items (i.e. food, beverage, tools).
- Before operation, make sure that the top panel latch is in the locked position and that the seat belt is secure.



WARNING

- Do not allow anyone to stand or pass under the elevated portion of any lift truck, whether empty or loaded.
- Before starting to operate the lift truck conduct daily inspection.
- Do not start or operate the lift truck, any of its functions or attachments, from any place other than from the normal operator's position.



WARNING

- **Keep hands, feet and other parts of your body inside the operator's compartment. Do not put any part of the body outside the operator compartment of the lift truck.**
- **Never put any part of the body into the mast structure or between the mast and the lift truck.**
- **Never put any part of the body within the reach mechanism of the lift truck or other attachments.**
- **Understand lift truck limitations and operate the truck in a safe manner so as not to cause injury to personnel. Safeguard pedestrians at all times.**
 - a. Do not drive a lift truck up to anyone standing in front of an object.
 - b. Ensure that personnel stand clear of the rear swing area before conducting turning maneuvers.
 - c. Exercise particular care at cross aisles, doorways, and other locations where pedestrians may step into the path of travel of the lift truck.



WARNING

- **A lift truck is unattended when the operator is more than 8 m (25 ft) from the truck which remains in view, or whenever the operator leaves the truck and it is not within view.**
- **Before leaving the operator's position:**
 - a. Bring lift truck to a complete stop.
 - b. Place selector lever in neutral.
 - c. Apply the parking brake.
 - d. Lower load-engaging means fully.
 - e. Turn the ignition switch off.
 - f. If unit is unattended remove the key, if equipped.
- **Maintain a safe distance from the edge of ramps, platforms, and other similar working surfaces. Do not move railroad cars with a lift truck.**
- **When lift trucks are driven on and off highway trucks or trailers, the brakes on the highway trucks or trailers shall be applied, and wheel chocks or other positive mechanical means shall be used to prevent unintentional movement.**
- **Whenever lift trucks are driven on and off semitrailers not coupled to a tractor, supports may be needed to prevent upending or corner dipping.**
- **Provision shall be made to prevent railroad cars from being moved during loading and unloading. Wheel stops, hand brakes, or other recognized positive means shall be used to prevent movement of railroad cars during loading and unloading.**

WARNING

- Care shall be taken not to contact overhead installations such as lights, wiring, pipes, sprinkler systems, etc.



- A load backrest extension shall be used when necessary to guard against a load, or part of it, from falling toward the operator.
- In areas classified as hazardous, use only lift trucks approved for use in those areas.
- Report all accidents involving personnel, building structures, and equipment to the supervisor or as directed.
- Do not block access to fire aisles, stairways, or fire equipment.

NO RIDERS



WARNING

- Do not sit on the forks or get under the forks or operator's platform at anytime whether empty or loaded.
- Do not permit riders on any part of the lift truck at any time. The operator is the only one who should be on the lift truck.

TRAVELING



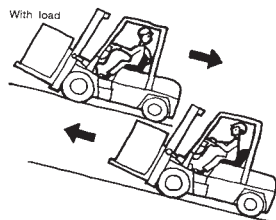
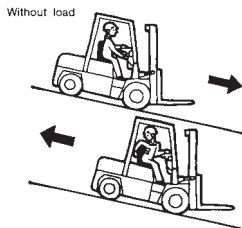
WARNING

- Observe all traffic regulations including authorized plant speed limits. Under normal traffic conditions, keep to the right. Maintain a safe distance, based on speed of travel, from the lift truck ahead; and keep the lift truck under control at all times.
- Yield the right of way to pedestrians and emergency vehicles such as ambulances and fire trucks.
- Do not pass another lift truck traveling in the same direction at intersections, blind spots, or at other dangerous locations.
- Slow down and sound the audible warning device(s) at cross aisles and other locations where vision is obstructed.
- Cross railroad tracks at an angle wherever possible. Do not park closer than 2 m (6 ft) to the nearest rail of a railroad track.
- Keep a clear view of the path of travel and observe for other traffic, personnel, and safe clearances.
- If the load being carried obstructs forward view, travel in the opposite direction.



WARNING

- When descending a grade, stopping distance will be greater than on-level operation. Methods shall be provided to allow for this condition. Some methods are: reduce speed, limit loads, allow adequate clear space at the bottom of grade, etc.



! WARNING

- **Ascend or descend grades slowly, and with caution.**
 - When ascending or descending grades, loaded lift trucks shall be driven with the load upgrade.
 - Unloaded lift trucks should be operated on all grades with the load-engaging means downgrade.
 - On all grades the load and load-engaging means shall be tilted back, if applicable, and raised only as far as necessary to clear the road surface.



- Avoid turning, if possible, and use extreme caution on grades, ramps, or inclines; normally travel straight up and down.

! WARNING

- Under all travel conditions, operate the lift truck at a speed that will permit it to be brought to a stop in a safe manner.
- Travel with load-engaging means or load at lowered height except during stacking operation.



- **Make starts, stops, turns, or direction reversals in a smooth manner so as not to cause unsafe conditions.**
- **Do not indulge in stunt driving or horseplay.**
- **Slow down for wet and slippery floors.**



WARNING

- Before driving over a dockboard or bridge plate, be sure that it is properly secured. Drive carefully and slowly across the dockboard or bridge plate, and never exceed its rated capacity.
- Do not drive lift trucks onto any elevator unless specifically authorized to do so. Do not exceed the capacity of the elevator. Approach elevators slowly, and then enter squarely after the elevator car is properly leveled. Once on the elevator, neutralize the controls, shut off power, and set brakes. It is advisable that all other personnel leave the elevator before the lift truck is allowed to enter or leave.
- Avoid running over loose objects on the driving surface.
- When negotiating turns, reduce speed to a safe level consistent with the operating environment. Make the turns smoothly. Except when maneuvering at a very low speed, turn the steering control at a moderate, even rate.

LOADING



WARNING

- Handle only stable and safely arranged loads.
 - a. When handling off-center loads that cannot be centered, operate with extra caution.



- b. Handle only loads within the capacity of the lift truck.
- c. Handle loads exceeding the dimensions used to establish lift truck capacity with extra caution. Stability and maneuverability may be adversely affected.
- d. Handle loads only with the load engaging means and do not transport loads or miscellaneous items within the operator's compartment or other areas of the lift truck.

WARNING

- When attachments are used, extra care shall be taken in securing, manipulating, positioning, and transporting the load. Operate lift trucks equipped with attachments as partially loaded lift trucks when not handling a load.
- Completely engage the load with the load-engaging means. Fork length should be at least two-thirds of load length. Where tilt is provided, carefully tilt the load backward to stabilize the load. Caution should be used in tilting backward with high or segmented loads.
- Use extreme care when tilting load forward or backward, particularly when high tiering. Do not tilt forward with the load-engaging means elevated except to pick up or deposit a load over a rack or stack. Use only enough backward tilt to stabilize the load when picking up or depositing a load in a rack or from a stack.

DOCKBOARDS (BRIDGE PLATES), TRUCKS AND RAILROAD CARS



WARNING

- Portable and powered dockboards shall be marked conspicuously (in plain sight) with their carrying capacity. The carrying capacity indicated shall not be exceeded.
- Portable dockboards shall be secured in position, either by being anchored or by being equipped with devices that will prevent unexpected movement.
- Handholds or other effective means shall be provided on portable dockboards to permit safe handling. When possible, fork loops or lugs shall be provided for handling by lift trucks.



WARNING

- All types of dockboards shall have a high friction surface designed to reduce the possibility of employees or lift trucks slipping and shall be designed and maintained so that one end will have a substantial contact with the dock (or loading platform) and the other end with the transport vehicle to prevent the dockboard from rocking or sliding.
- When lift trucks are driven on and off highway trucks or trailers, the brakes on the highway trucks or trailers shall be applied, and wheel chocks or other positive mechanical means shall be used to prevent unintentional movement of highway trucks and trailers.
- Provision shall be made to prevent railroad cars from being moved during loading and unloading. Wheel stops, hand brakes, or other recognized positive means shall be used to prevent movement during loading and unloading.
- Whenever lift trucks are driven on and off semitrailers not coupled to a tractor, supports may be needed to prevent upending or corner dipping.
- Maintain a safe distance from the edge of ramps, platforms, or other similar working surfaces.
- Do not move railroad cars or trailers with a lift truck unless the truck is properly designed and equipped for that operation.

SURFACE AND CAPACITY



WARNING

- The Cushion Tire model lift trucks must be used on only smooth, solid floor conditions. The following conditions should be avoided at all times.
 - » Sand
 - » Gravel
 - » Oil
 - » Ice
 - » Mud
 - » Unstable surfaces
- Operating the lift truck on these surfaces may cause dangerous conditions for the operator, other personnel and equipment.

FUEL HANDLING



WARNING

- Fuel is highly flammable. It must be handled with the utmost care, in accordance with the safe handling requirements of fuels and applicable safety provisions of the local laws and regulations.
- When filling the tank with fuel, when filling or changing the LPG Cylinder (tank) or recharging the battery, place the lift truck only in a designated area with good ventilation. Keep away from arcs, sparks, flames or lit cigarettes. Lower forks completely, turn off the ignition switch and remove the key, if equipped.



WARNING

- Do not breath exhaust gasses: they contain colorless and odorless carbon monoxide. Carbon monoxide is a dangerous gas and can cause unconsciousness or death.
- Do not run the lift truck in closed spaces or poorly ventilated areas.

INSTALLATION OF ATTACHMENTS

WARNING

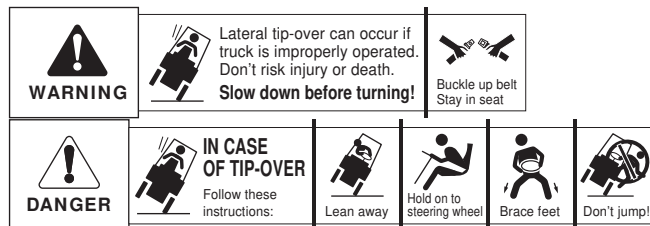
- This lift truck has been designed for attachments (refer to "Lift Truck Modifications" on page 4).
- Before installing hook-on attachments, be sure to read the installation manual issued by the attachment manufacturer to assure correct and proper installation. Contact your Local Authorized Dealer for a revised data plate.

ANSI/ITSDF STANDARDS FOR LIFT TRUCK CLAMP ATTACHMENTS

WARNING

- The ANSI/ITSDF Standards regarding lift truck mounted clamp attachments took effect for lift trucks shipped on or after October 7, 2010. This current standard affects lift trucks equipped with a load bearing clamp (paper roll clamp, carton clamp, etc.) and requires the operator to perform two distinct motions before opening (releasing) the clamp. For example, the operator must press a button and then move a lever to release the load (refer to page 65).
- ANSI B56.1 Section 7.25 "Load-Handling Controls" can be reviewed by visiting the ITSDF website at www.itsdf.org

IN CASE OF TIP-OVER



WARNING

1. The following precautions should be closely observed to ensure safe operation of the lift truck as well as to prevent personal injury.
2. Slow down before turning.
3. Always make sure your seat belt is securely fastened, and stay seated while driving.

DANGER

In case of tip-over the operator should:

4. Stay inside the lift truck if it starts to tip or falls off a dock or ramp.
5. Lean away from the point of impact.
6. Hold on firmly to the steering wheel with both hands.
7. Brace your feet and keep yourself in side the operator compartment.
8. Do not jump outside of the lift truck.

TRANSPORTING LIFT TRUCK



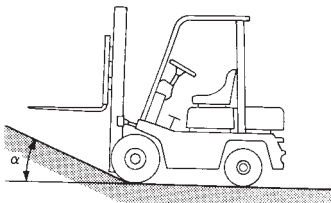
WARNING

1. Tilt the mast back to the maximum without load.
2. Check the approach and departure angles to make sure the underside of the lift truck does not come into contact with the load carrying platform or the ground.
3. When using a load bridge, make sure the planks are capable of withstanding the deadweight of the lift truck.
4. When winching the lift truck onto a load carrying platform, be sure to attach the cable to the traction bar (refer to page 27). Do not ride on the lift truck while it is being winched.
5. Be sure to use lashing points and firmly secure the lift truck to the load carrying platform.
6. When hoisting (lifting) up the lift truck, be sure to use the lifting points (refer to page 26).
7. Apply the parking brake, turn off the ignition switch and remove the key, if equipped.
8. Make sure the battery connector is disconnected.

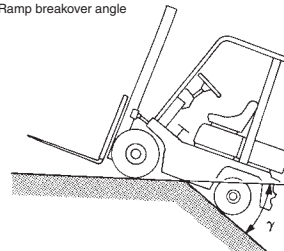
APPROACH ANGLE, DEPARTURE ANGLE AND GANGWAY

Refer to "Grade Clearance" on Main Truck Specifications.

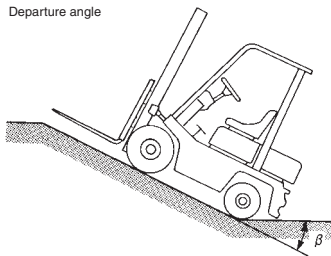
Approach angle



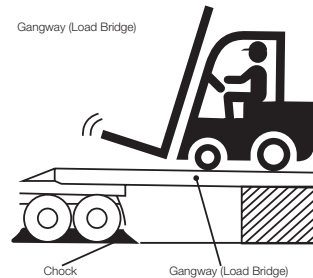
Ramp breakover angle



Departure angle



Gangway (Load Bridge)



HOISTING (LIFTING) UP THE LIFT TRUCK

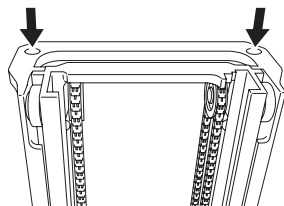


WARNING

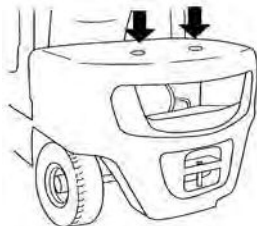
- Only use this method as a last resort to move the lift truck. If the normal application requires repeated lifting, a permanent lifting device/platform will be needed. You can contact your Local Authorized Dealer to get the axle truck weights.

When lifting the entire lift truck, secure cables/wire ropes to holes on both sides of the outer mast cross beam and to the holes on the counterweight, and then utilize a lifting device.

Front Side

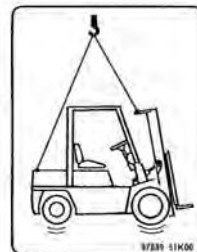
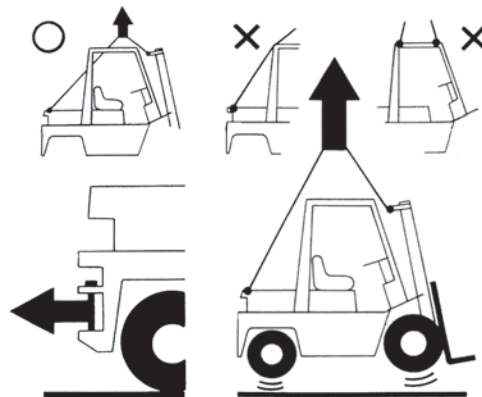


Rear Side



WARNING

- Make sure that the cables/wire ropes do not interfere with the overhead guard while lifting the lift truck.
- Make sure that cables/wire ropes and the lifting device are strong enough to support the lift truck safely, as the lift truck is extremely heavy.
- Do not use the overhead guard to lift up the truck.
- Never get under the lift truck while lifting it.



FUNCTION TESTS

The functional tests are carried out to check whether the lift truck functions correctly after it has been transported (over land or water), or after it has been taken out of storage. The tests cover the following items, but since exclusive tools and equipment are required for Items 1 and 2, request that your Local Authorized Dealer perform the tests.

Items:

1. Those that are indicated in "Daily Inspection" (refer to page 89).
2. Dynamic tests

Mobility (traveling and maneuvering) test

Make sure the lift truck moves in the direction specified by the selector lever, and the lift truck operates correctly when the parking brake lever is set (locked) or released. Also check to see that the steering feels normal and that it operates satisfactorily.

Elevate and lower test load.

Stacking test

Raise the test load to the maximum height of the mast and lower at maximum speed, stopping the descent several times, to see that it stops smoothly.

Lowering speed test

Make sure the maximum lowering speed does not exceed 2.0 ft/s (0.6 m/s) (by measuring the speed).

3. Test for holding load
Check the rate at which the mast lowers naturally [3.94 in (100 mm)/10 min max]. Check the rate at which the tilt cylinder tilts forwards naturally (5 degrees/10 min max).
4. Test for all inhibitor functions, if equipped
 - Seat Belt
 - Seat Switch
 - Interlock Systems
 - Shutdown Systems

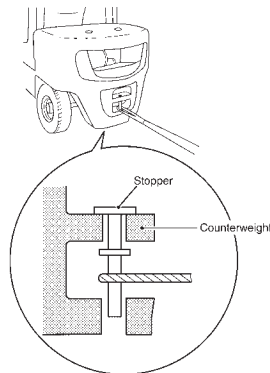
TRACTION BAR

The traction bar should be used only for pulling the lift truck out of ditches or muddy roads.



WARNING

- **Do not use the traction bar for heavy towing, such as: lift trucks, trolleys, industrial machinery, etc.**
- **The traction bar is used to pull the lift truck out of ditches with a tow car. Avoid using the lift truck to tow objects.**
- **Also use the traction bar to anchor the lift truck when loaded on a carrier.**
- **Always ensure that the traction bar is fully inserted until the stopper touches against the counterweight. This will reduce the possibility of the bar slipping.**
- **Be sure towing device is not damaged and has sufficient strength to pull the lift truck.**
- **Always gently draw towing device so as not to cause any shock, abrupt movements which could cause the traction bar to shift, bend or be damaged.**
- **If the towing device slips, pulls out or becomes damaged, immediately stop the towing operation and replace damaged parts or discontinue that type of operation.**





WARNING

- It is not recommended to use another lift truck to tow or push a disabled lift truck.
- In case the lift truck must be towed for repair, the ignition switch must be turned off.
- Attach towing device to only the traction bar, do not attach it to the load carrying device (mast or carriage).
- Release the parking brake.
- If at all possible raise the load carrying device just off the floor (ground).

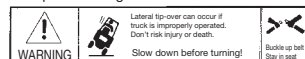
POSITION OF DATA AND CAPACITY PLATES AND DECALS



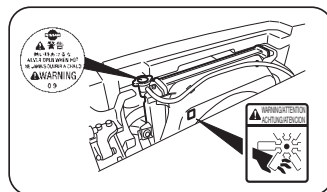
WARNING

- When data and capacity plates or warning and caution decals are damaged such that they cannot be read or have peeled off, they should be immediately replaced with new ones to ensure that they are continually maintained in a legible condition. The plates and decals are available from your Local Authorized Dealer.
- The warning and caution decals are affixed to the designated locations of the lift truck as shown in the figure on page 29. Before operating the lift truck, be sure to take note of the details given in the decals so as to ensure proper and safe operation.

Except for EU region



For EU region



UNICARRIERS AMERICAS CORPORATION				
SERIAL NO. 1				
MODEL	1	TYPE	2	3
SERIAL NO.	4	YEAR	5	6
WEIGHT	7	MAST	8	9
ATTACHMENT	10			

ALTERNATE CAPACITY PLATE				
SERIAL NO.	1	TYPE	2	3
SERIAL NO.	4	YEAR	5	6
WEIGHT	7	MAST	8	9
ATTACHMENT	10			

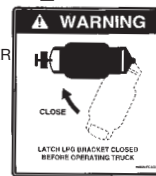
ALTERNATE CAPACITY PLATE				
SERIAL NO.	1	TYPE	2	3
SERIAL NO.	4	YEAR	5	6
WEIGHT	7	MAST	8	9
ATTACHMENT	10			

ALL OTHER MODELS

P1F1/
P1F2



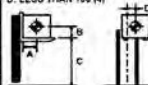
(Except for EU region)
1F2 MODELS ONLY



DATA AND CAPACITY PLATES AND DECALS

Know your lift truck. The data plate indicates all necessary information regarding the type of attachments, lifting capacity, etc. Always check the lift truck's data plate and understand areas 1 through 10 as indicated below.

DATA PLATE

UNICARRIERS AMERICAS CORPORATION MARENGO, IL U.S.A.			
MODEL	1		
SERIAL NO.	2		
TYPE	3		
TIRE	4		
MAST	5		
ATTACHMENT	6		
			
UNIT OF MEASURE: kg (lbs) / mm (in)			
	A/B-LOAD CENTER	C-FORK HEIGHT	CAPACITY
	8	9	10
TRUCK WEIGHT $\pm 5\%$			
7			
AS SHIPPED FROM THE FACTORY THIS TRUCK CONFORMS TO ANSI / ITSEF B56.1			
FW02C			

1. Model: Long Model Code
2. Serial Number: Lift Truck Serial Number
3. Type: EFI "G", "LP", "G/LP", "D" / Carburetor: Blank
4. Tire: Tire Type
5. Mast: Mast Model
6. Attachment: Attachment Type
7. Truck Weight
8. Load Center
9. Fork Height
10. Capacity: Lifting Capacity

Actual Capacity will vary with lift truck configuration and load center. Mast configuration will determine the maximum lifting distance. These values are stamped on the data plate.



WARNING

- Do not exceed the actual capacity of the lift truck. Note the specifications of the lift truck you are using and operate it accordingly.

ALTERNATE CAPACITY PLATES

ALTERNATE CAPACITY PLATE			
SERIAL NO.	1		
ATTACHMENT	2		
UNIT OF MEASURE kg (lbs) / mm (in)	A/B-LOAD CENTER	C-FORK HEIGHT	CAPACITY
TRUCK WEIGHT $\pm 5\%$	4	5	6
3			
UNICARRIERS AMERICAS CORPORATION MARENGO, IL U.S.A. FW02A			

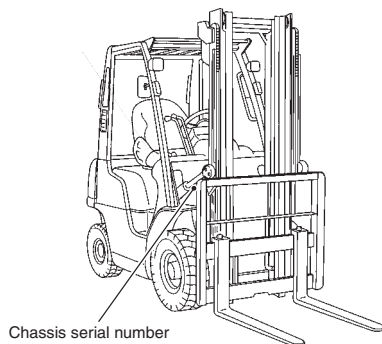
1. Serial Number: Lift Truck Serial Number
2. Attachment: Attachment Description
3. Truck Weight
4. Load Center
5. Fork Height
6. Capacity: Lifting Capacity

Knowing the model and serial number for this lift truck is very helpful whenever ordering repair parts. For any further information and specifications on this lift truck or any other, contact your Local Authorized Dealer.

ALTERNATE CAPACITY PLATE			
SERIAL NO.	1		
ATTACHMENT	2		
TRUCK WT. $\pm 5\%$	A/B-LOAD CENTER	C-FORK HEIGHT	CAPACITY
3	4	5	6
ATTACHMENT	TRUCK WT. $\pm 5\%$	A/B-LOAD CENTER	C-FORK HEIGHT
			CAPACITY
ATTACHMENT	TRUCK WT. $\pm 5\%$	A/B-LOAD CENTER	C-FORK HEIGHT
			CAPACITY
ATTACHMENT	TRUCK WT. $\pm 5\%$	A/B-LOAD CENTER	C-FORK HEIGHT
			CAPACITY
ATTACHMENT	TRUCK WT. $\pm 5\%$	A/B-LOAD CENTER	C-FORK HEIGHT
			CAPACITY
ATTACHMENT	TRUCK WT. $\pm 5\%$	A/B-LOAD CENTER	C-FORK HEIGHT
			CAPACITY
Unicarrers Americas Corporation MARENGO, IL U.S.A. FW02C			

IDENTIFICATION NUMBERS

The serial number of the lift truck is stamped on the front panel.

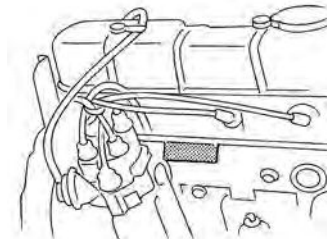


Lift Truck Serial Number

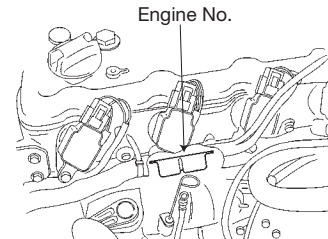
AP1F1	-	9T2XXXX	P1F2	-	9H2XXXX
AP1F2	-	9U2XXXX	U1F2	-	9J2XXXX
CP1F1	-	9N2XXXX	UG1F2	-	9L2XXXX
CP1F2	-	9W2XXXX	UJ1F2	-	9V2XXXX
CU1F2	-	9Q2XXXX	Y1F2	-	9K2XXXX
CUG1F2	-	9R2XXXX	YG1F2	-	9M2XXXX
P1F1	-	9G2XXXX			

The engine serial number is stamped as shown below.

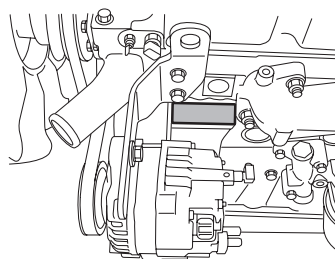
Gasoline Engine K21/K25, GK21/GK25 Carburetor



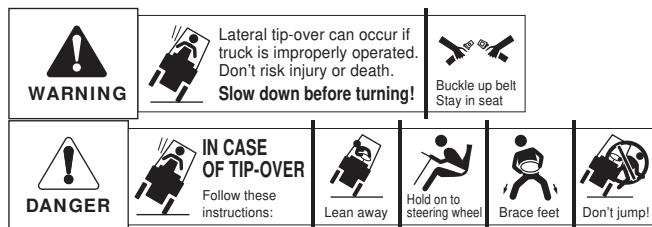
Gasoline Engine K21/K25, GK21/GK25 EFI



Diesel Engine QD32



CAUTION DRIVE DECAL (IN CASE OF TIP-OVER DECAL)



WARNING

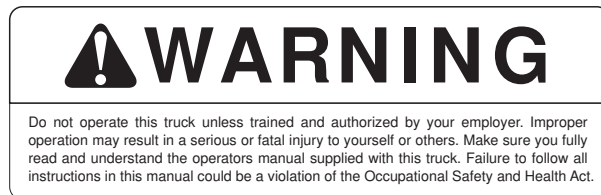
1. The following precautions should be closely observed to ensure safe operation of the lift truck as well as to prevent personal injury.
2. Slow down before turning.
3. Always make sure your seat belt is securely fastened, and stay seated while driving.

DANGER

In case of tip-over the operator should:

4. Stay inside the lift truck if it starts to tip or falls off a dock or ramp.
5. Lean away from the point of impact.
6. Hold on firmly to the steering wheel with both hands.
7. Brace your feet and keep yourself in side the operator compartment.
8. Do not jump outside of the lift truck.

WARNING DRIVE DECAL (TRAINED AND AUTHORIZED)



WARNING

- **Operator must be trained and authorized to drive the lift truck, and must understand safety techniques and rules for the lift truck operation.**
- **Make sure that you read and fully understand the Operator's Manual supplied with this lift truck. Failure to follow all instructions in this manual could be a violation of the Occupational Safety and Health Act.**

PINCH POINT DECAL



WARNING

- This decal instructs the operator to keep fingers away. Do not reach into the mast area. Personal injury may occur if any part of your body is between the moving and fixed sections of the mast. Keep fingers away from LPG bracket locking device.

CAUTION FORK DECAL

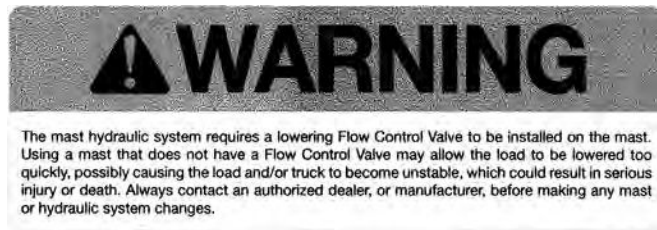


WARNING

Do not stand on or underneath forks.

- Riding on the forks is strictly prohibited. Furthermore, do not stand immediately underneath the forks. Otherwise, serious accidents can occur if the forks should move abruptly and the load placed on the forks unexpectedly falls down.

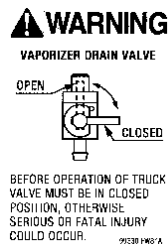
MAST WARNING DECAL



WARNING

- This label indicates the warning of not having a Flow Control Valve installed on the Mast.

VAPORIZER DRAIN VALVE WARNING DECAL (OPTION FROM 2018)



WARNING

This Warning Decal is located under the top panel.

- This valve must be in the closed position before starting the lift truck, otherwise serious or fatal injury could occur.

CAUTION DRIVE DECAL (OPERATION)

WARNING

SERIOUS OR FATAL INJURY MAY RESULT TO YOURSELF OR OTHERS IF NOT FOLLOWED

- This lift truck should not be operated by anyone who is not authorized and properly trained.
- Read the Operators Manual and all warnings carefully, and make yourself familiar with your lift truck. Operator's Manual is supplied with this truck or available from our forklift truck dealers.
- Inspect and check your lift truck daily before and after use. Do not operate faulty or damaged lift trucks.
- Repair work should be done by authorized and trained persons only.
- To protect from falling objects, make sure that the Overhead Guard and Load Backrest Extension are correctly mounted and in good condition.
- Before starting engine, always set forward/reverse lever in neutral, with hand brake on.
- Drive carefully, keeping forks and attachments as low as possible & fully tilted back - Never Forward.
- Keep a careful lookout for people, obstructions and the path of travel. Watch clearance, especially overhead and tail swing.
- Yield right of way to pedestrians.
- Do not stick hands, feet and other parts of your body outside the Operators compartment.
- Drive forward when you are climbing a slope with a load. Drive in reverse when you are descending with loads. Do not turn while on a slope.
- Slow down before turning. Avoid any sudden start, stop or turning. Lateral tipover can occur if truck is improperly operated.
- Do not load lift truck over capacity limit designated on the load chart. Do not lift unstable loads.
- Do not use this truck to elevate people UNLESS the user strictly complies with all provisions of ANSI B56.1. Do not transport people.
- Before you get off lift truck, make sure the hand brake is set, lower forks or attachments, put forward/reverse lever in neutral position and turn off key switch. Do not park on a slope.
- Do not breathe exhaust gases: they contain colorless and odorless carbon monoxide. Carbon monoxide is a dangerous gas and can cause unconsciousness or death.
- Do not run the engine in closed spaces or poorly ventilated rooms such as garage or refrigerator, etc.

90000 PWSLA

WARNING

Operation precautions

- This label contains instructions on how to operate the lift truck safely and avoid accidents. Therefore, be sure to take careful note of the instructions before operating the lift truck.

RADIATOR WARNING DECAL



WARNING

- Never remove the radiator cap when the engine is hot. Serious burns could be caused by high-pressure fluid escaping from the radiator.

COOLING FAN WARNING DECAL



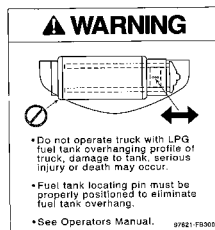
WARNING

- Never touch the cooling fan while it is turning.

Touching the cooling fan while it is turning may result in injury to your fingers, and in the worst case, may sever the fingers.



ADJ LPG WARNING DECAL



! WARNING

- Do not operate the lift truck with the LPG cylinder (tank) overhanging the profile of the lift truck, damage to the cylinder (tank), serious injury or death may occur.
- LPG cylinder (tank) locating pin must be properly positioned to eliminate cylinder (tank) overhang.

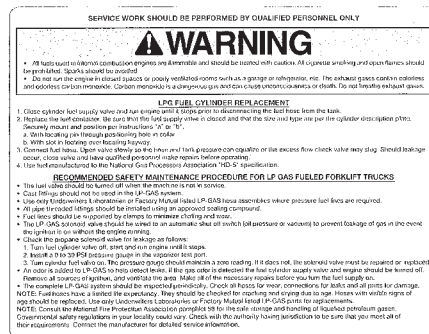
LPG LATCH WARNING DECAL

! WARNING

- Ensure that the LPG bracket latch is closed before operating the lift truck. If the LPG bracket is not latched the engine can not be started.



LPG FUEL WARNING DECAL



! WARNING

- Precautions concerning handling of the LPG Fuel Cylinder.

This decal lists precautions concerning the handling of the LPG Cylinder (tank). If LP gas leaks, it may result in fire or a serious accident. Be sure to read and understand these precautions before handling the LPG Cylinder (tank).

OPERATING CONTROLS AND FUNCTIONS

APPLICATIONS

This lift truck is operated in a sitting position. The truck is available in different fork lengths and lifting heights. Refer to the lift truck's data plate for this information.

Travel and lifting speeds are transistor controlled by engine rpm's (speed) to provide smooth operations. Different speeds can be set by a trained service technician.

APPLICATION FOR UNICARRIERS LIFT TRUCKS

UniCarriers lift trucks are solely designed and manufactured to handle goods. The lift truck should only be fitted with the appropriate accessories relevant to the application.

PROHIBITED APPLICATIONS FOR UNICARRIERS LIFT TRUCKS

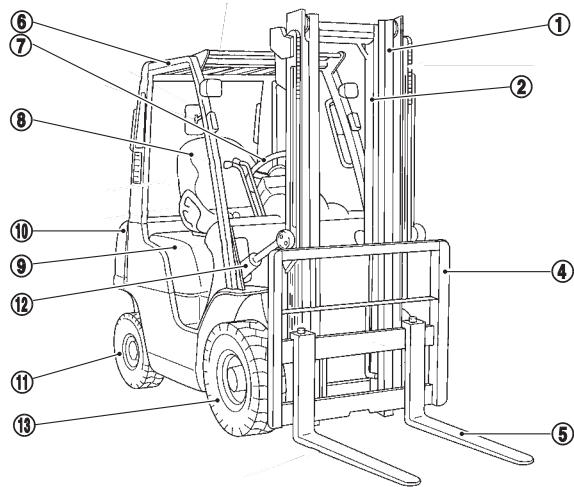
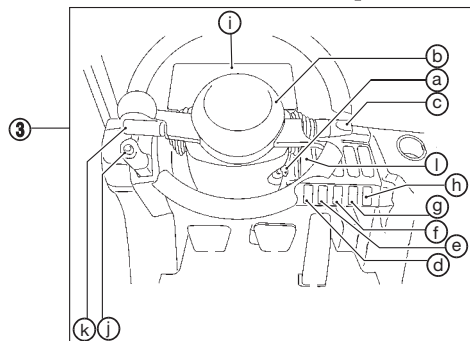
It is not permitted to use these lift trucks for other purposes including the following:



WARNING

- **Do not operate in areas that contain gases which can cause fire or explosions**
- **Do not use as a towing truck for trailers**
- **Not to be used for pushing applications**
- **Do not tow other lift trucks**
- **Do not transport or lift passengers**
- **Cushion Tire Models: Do not drive on any non-paved areas (refer to page 22)**

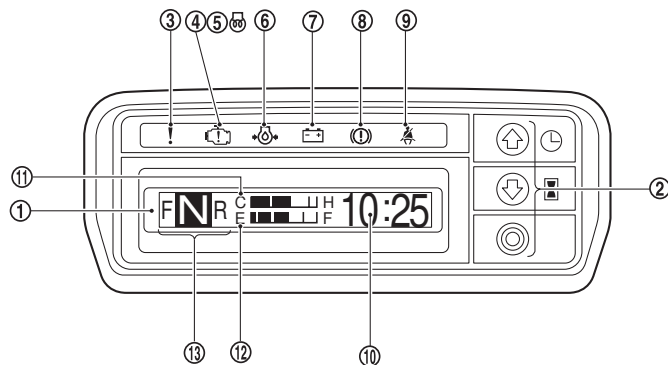
MAIN COMPONENTS



1. **Mast Upright:** The mast upright is the lifting device for the forks. The lifting is done through hydraulic lift cylinders and chains.
2. **Lift Cylinders:** The cylinders are used to lift the forks up and down.
3. **Operator Compartment:** This compartment houses the (a) ignition switch, (b) horn button, (c) lighting and turn signal switch, (d) fuel-change switch (Dual Fuel forklift), (e) seat belt interlock or shutdown indicator (red-option), (f) maximum speed change switch (option), (g) throttle sensitivity adjust switch (option), (h) transmission shift (SmoothShift) indicator (green-option), (i) meter panel, (j) parking brake lever, (k) selector lever and (l) cargo-handling lever(s).
4. **Backrest:** Portion of the carriage and forks serving to restrain the load when the load is tilted rearward or upward.
5. **Forks:** Their widths can be easily adjusted to fit differing pallets or loads.
6. **Overhead Guard:** Intended to offer protection from falling objects, but cannot protect against every possible impact.
7. **Steering Wheel:** Steer's the lift truck in the direction of travel.
8. **Seat:** Full suspension seat with operator restraint system, weight, forward/backward, inclination and lumbar adjustments.
9. **Top Panel**
10. **Counterweight:** To balance the lift truck.
11. **Rear (Steer) Tire**
12. **Tilt Cylinder:** Used to vary the degree of the forks and load backrest.
13. **Front (Drive) Tire**

METERS, INDICATORS AND LAMPS

The operator compartment contains the main functional controls to operate the lift truck in a safe and controlled manner. The meter panel consists of three sections: Warning Lights, LCD (Liquid Crystal Display) monitor and operation buttons.



1. LCD (Liquid Crystal Display)
2. Operation Buttons
3. Multipurpose Warning Light
4. Malfunction Indicator Light-Engine Check Warning (not used on Diesel or Carburetor lift trucks)
5. Glow Plug Indicator Light (Diesel lift trucks)
6. Oil Pressure Warning Light
7. Charge Warning Light
8. Parking Brake Warning Light
9. Seat Belt Warning Light

10. Meter Display (see note below)
11. Water Temperature Gauge
12. Fuel Gauge (not applicable)
13. Transmission Position

METER DISPLAY NOTE:

- In place of the time, the date or hour meter may be displayed.
- While driving, this display changes to the speedometer when the vehicle speed is approximately 4.0 km/h (2.5 mph) or higher.
- This display also indicates the inspection/service timing (if programmed), malfunctions and warnings.
- The display time and date will be reset if the battery cable is disconnected or the battery is replaced. If the display has been reset, set the time and date again.

NOTE TO THE OPERATOR:

EFI lift trucks have a creep home feature that will reduce engine RPMs if the coolant temperature remains near the "H" position, transmission oil temperature is high or engine oil pressure is low. This indicates that the lift truck should be serviced by your Local Authorized Dealer.

1. LCD

When the ignition switch is in the ON position, backlighting makes the displays clearly visible to the lift truck operator. It displays normal operation, malfunction and adjustment data.

2. OPERATION BUTTONS

Use these buttons to change the display, make settings and enter passwords.

3. ! MULTIPURPOSE WARNING LIGHT

This warning illuminates when one of the LCD warning symbols illuminates. It also illuminates when the water temperature is high or the fuel level is low. If this light illuminates during operation, stop operation immediately and report it to the proper authority to take necessary measures.

4. MALFUNCTION INDICATOR LIGHT-ENGINE CHECK WARNING (NOT USED ON DIESEL OR CARBURETOR LIFT TRUCKS)

This warning illuminates when there is a malfunction with an engine sensor or air-fuel ratio control, or other engine emission control issues.



CAUTION

- The MIL (Malfunction Indicator Light-Engine Check Warning) will illuminate when emission-related parts such as sensors and/or engine emission control parts malfunction.
- A failure code will be displayed at the same time on the LCD in the meter panel. If Engine Check Warning Light illuminates during operation, stop operation immediately and report it to the proper authority to take necessary measures or contact your Local Authorized Dealer.

5. GLOW PILOT LIGHT (DIESEL FORKLIFTS)

This indicator illuminates when the ignition switch is turned on and turns off when the glow plug preheating is completed (Engine is ready to start).



CAUTION

- If the light remains illuminated after the glow plugs are preheated, this indicates a malfunction in the glow system. Have the system checked by your Local Authorized Dealer.

6. OIL PRESSURE WARNING LIGHT

This warning illuminates when the oil pressure is low.



CAUTION

- If the light illuminates under ordinary operating conditions, stop the engine immediately and check the engine lubrication system.

7. CHARGE WARNING LIGHT

This warning illuminates when there is a malfunction with the charge system.



CAUTION

- If the light illuminates or flickers occasionally during normal operating conditions, the alternator and electrical system should be checked.

8. PARKING BRAKE WARNING LIGHT

This warning illuminates when the parking brake lever is engaged or when the brake fluid is low.

NOTE:

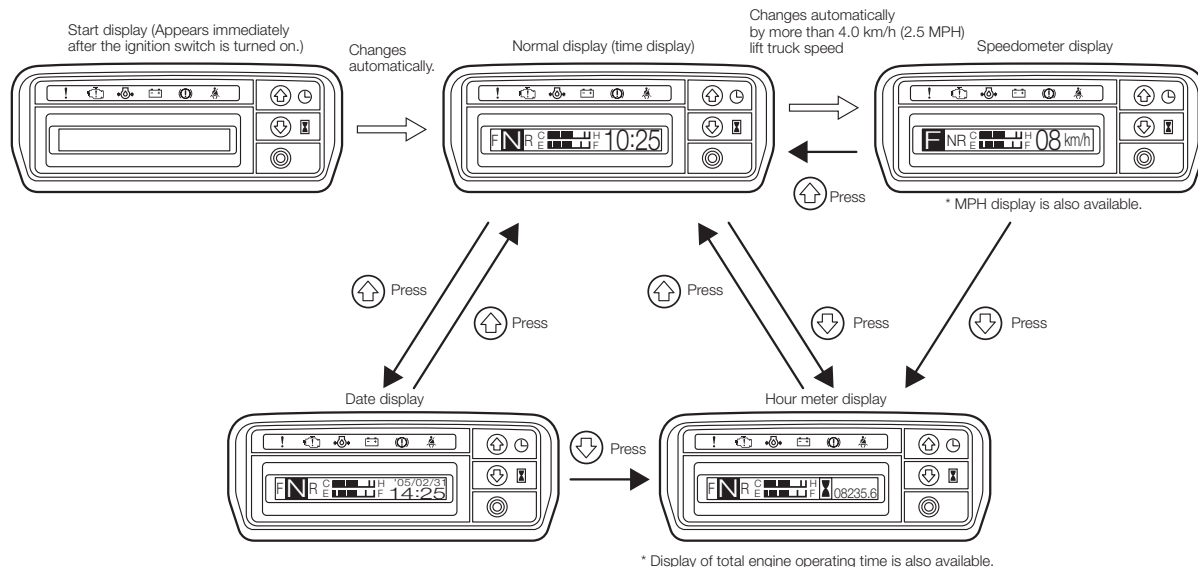
Anytime this warning is illuminated, the transmission can not shift into forward or reverse. When the selector lever is in the "F" or "R" position and the parking brake is on, the display blinks. Release the parking brake and shift the selector lever to neutral (N) position and then shift it again to forward (F) or reverse (R) in order to drive.

9. SEAT BELT WARNING LIGHT

This warning illuminates when the seat belt is not fastened. Refer to page 82 for Seat Belt Interlock Option description.

10. METER DISPLAY

Changing Meter Display

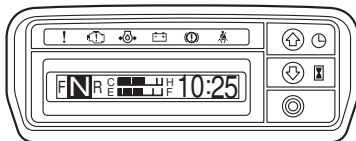


NOTE:
The display time and date will be reset if the battery cable is disconnected or the battery is replaced.
If the display has been reset, set the time and date again.

For the changes marked with an (*), contact your Local Authorized Dealer.

METER DISPLAY NOTE:

- The display time and date will be reset if the battery cable is disconnected or the battery is replaced. If the display has been reset, set the time and date again.

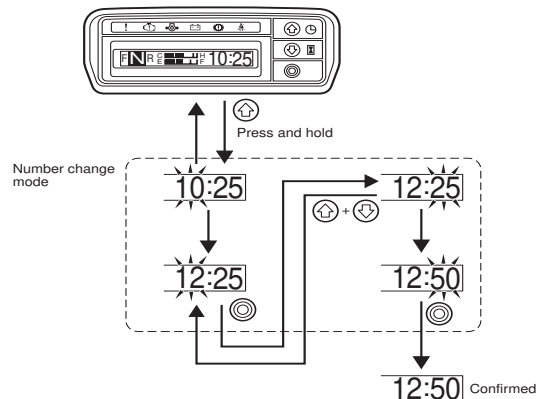


Clock

When the ignition switch is turned ON, the start display appears, followed by the normal display (clock).

Press the  button to change the display to the date or press the  button to change the display to the hour meter.

Setting the Time



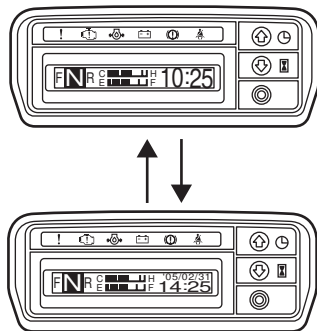
Press the  button to change from hours→minutes→confirmed.

Press both the  and  buttons at the same time to return to the previous display.

Press the  button to change the number up.

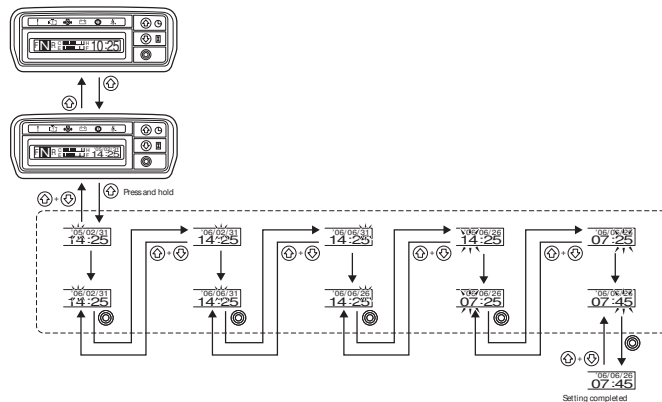
Press the  button to change the number down.

Date



Press the button on the normal display (clock) to change from the time display to the date display. Press the button again to return to the normal display.

Setting the Date



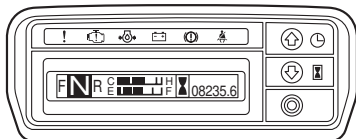
Press the button to change the setting item from year→month→day→hour→minute→confirmed.

Press both the and buttons at the same time to return to the previous setting item.

Press the button to change the number up.

Press the button to change the number down.

The buttons can be used to change from the normal display (clock) to the hour meter display.



The hour meter ordinarily displays the total ignition time that the ignition is on, however it is possible to change the display to the total engine operating time. To change the hour meter totaling pattern contact your Local Authorized Dealer.

Multipurpose warning lamp

Fuel gauge

Water temp. gauge

Indicates the current water temperature in levels 0 - 4. When level 2 is indicated, the coolant temperature is correct. When the indication reaches level 4, the display begins to blink, and the multipurpose warning light illuminates to inform the operator of the high water temperature.

Temp.	Indication	Level
High	C      + 	Level 4
	C      H	Level 3
	C      H	Level 2
	C      H	Level 1
	C      H	Level 0
Low		



CAUTION

- If level 4 is indicated, stop the lift truck and allow the engine to cool while idling. After the engine has sufficiently cooled down, turn the engine off and check the coolant level and fan belt deflection.

NOTE TO THE OPERATOR:

EFI lift trucks have a creep home feature that will reduce engine RPMs if the coolant temperature remains near the "H" position. This indicates that the lift truck should be serviced by your Local Authorized Dealer.

12. FUEL GAUGE

Indicates the current fuel level in levels 0 - 5. When level 5 is indicated, the fuel tank is full. When the indication reaches level 0, the display begins to blink, and the multipurpose warning light illuminates to inform the operator of the nearly empty fuel tank. Add fuel immediately.

Fuel	Indication	Level
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">Full</div> <div style="flex-grow: 1; border-left: 1px solid black; position: relative;"> <div style="position: absolute; top: 0; bottom: 0; left: 0; right: 0; border-left: 1px solid black;"></div> <div style="position: absolute; top: 0; bottom: 0; left: 0; right: 0; border-left: 1px solid black;"></div> <div style="position: absolute; top: 0; bottom: 0; left: 0; right: 0; border-left: 1px solid black;"></div> <div style="position: absolute; top: 0; bottom: 0; left: 0; right: 0; border-left: 1px solid black;"></div> <div style="position: absolute; top: 0; bottom: 0; left: 0; right: 0; border-left: 1px solid black;"></div> </div> </div>	E ■■■■ F	Level 5
	E ■■■■ F	Level 4
	E ■■■■ F	Level 3
	E ■■■■ F	Level 2
	E ■■■■ F	Level 1
Empty	 E ■■■■ F + 	Level 0

NOTE:

- If the lift truck is Dual Fuel, the fuel meter will not work when the lift truck is operated with LPG.
- When operating the lift truck with LPG, check from time to time to be sure that the LPG level warning light is not lit and that the LPG level alarm is not on.
- To check the remaining amount of LPG, use the fuel gauge on the LPG Cylinder (tank).
- When operating the lift truck with LPG, if the LPG Cylinder (tank) fuel is too low the lift truck will not start

13. TRANSMISSION POSITION



When the transmission position indicator displays the "F" position and the transmission has shifted, the display appears as shown here.



When the transmission position indicator displays the "N" position and the transmission has shifted, the display appears as shown here.



When the transmission position indicator displays the "R" position and the transmission has shifted, the display appears as shown here.



When the selector lever is in the "F" or "R" position and the operator is not seated on the operator's seat for three (3) seconds, the transmission will shift to neutral when 1) the parking brake is engaged or 2) the truck speed is below 3 km/h (1.8 mph) and the display blink as shown here.

The truck may also be equipped with a Seat Belt Interlock option which may shift the transmission into neutral if the seat belt is not latched. Refer to page 82 for Seat Belt Interlock options.

Sit on the operator's seat, latch the seat belt and shift the selector lever to the neutral (N) position. Disengage the parking brake if engaged, and then shift the selector lever again to forward (F) or reverse (R) in order to drive.

When there is an error in the selector lever signal, the display blinks. Contact your Local Authorized Dealer for inspection.

NOTE:

If the parking brake (P) warning light is illuminated, the transmission can not shift into forward or reverse. When the selector lever is in the "F" or "R" position and the parking brake is on, the display blinks. Release the parking brake and shift the selector lever to neutral (N) position and then shift it again to forward (F) or reverse (R) in order to drive.

For Manual Shift 2-Speed Automatic Transmission

1FNR

When the manual shift 2-speed automatic transmission lever is in the "1F" position, the displays appears as shown here.

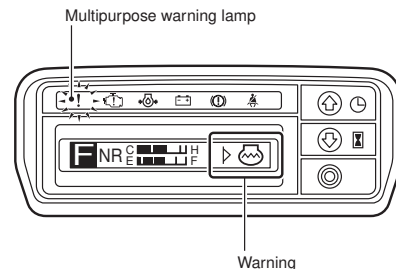
2FNR

When the manual shift 2-speed automatic transmission lever is in the "2F" position, the displays appears as shown here.

NOTE:

UniCarriers does not recommend starting the lift truck from the second speed position.

MALFUNCTION AND WARNING INDICATIONS



When a warning occurs, a warning symbol and the multipurpose warning light illuminate. Following is an explanation of the meaning and method of correction when a warning symbol illuminates.



MAST INTERLOCK WARNING

This warning illuminates when the ignition switch is turned on and the operator is not seated on the seat or the operator leaves the seat for three (3) seconds or more. Loading operation is prohibited at this time. Loading becomes possible when the operator is seated on the seat.

NOTE:

Refer to page 82 for Seat belt Interlock options.

LPG LEVEL WARNING/LPG RACK LOCK WARNING (LPG AND DUAL FUEL LIFT TRUCKS)

This warning illuminates when the LPG level is low. Replace the LPG Cylinder (tank) before it runs out. This warning also illuminates when the LPG rack is not securely set (in this case the warning buzzer will also sound). The engine's starter will not operate unless these conditions are met.



CAUTION

- **The LPG Cylinder (tank) is out of or nearly out of fuel. Have the LPG Cylinder (tank) replaced immediately.**
- **For LPG Cylinder (tank) mount bracket and low LPG fuel: the light is illuminated when the ignition switch is turned on. If the light remains on and the warning buzzer sounds with the ignition switch turned on or after the engine is started, the LPG Cylinder (tank) mounting bracket (either swing out or swing down type) is not securely latched (refer to page 86). Turn the engine off, apply the parking brake and then check that the cylinder (tank) mounting bracket is latched correctly.**



TORQUE CONVERTER FLUID TEMP WARNING

This warning illuminates when the transmission fluid temperature is high. If this warning symbol illuminates, move the lift truck to a safe location and allow it idle in order to lower the fluid temperature. When the fluid temperature has returned to normal, the warning turns off.

NOTE:

- EFI lift trucks have a creep home feature that will reduce engine RPMs if the transmission oil temperature is high.

- Check the level of automatic transmission fluid (refer to page 97).
- If the warning light illuminates even though the transmission fluid is at normal level, contact your Local Authorized Dealer for inspection.



RADIATOR LEVEL WARNING

This warning illuminates when the engine coolant level is low, add coolant (refer to page 95).



CAUTION

- **Continuing to drive while the light is illuminated may lead to overheating of the engine.**



AIR CLEANER WARNING

This warning illuminates when the air cleaner has become clogged. If the warning symbol illuminates, promptly clean or replace the air cleaner.



FUEL FILTER WARNING (DIESEL FORKLIFTS)

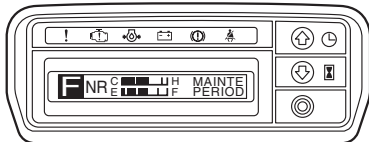
This warning illuminates when the fuel filter has become full with water. If this warning symbol illuminates, promptly drain the water from the fuel filter (refer to page 109).



CAUTION

- **Continuing to drive while the light is illuminated may lead to a reduction in the engine output or engine damage.**

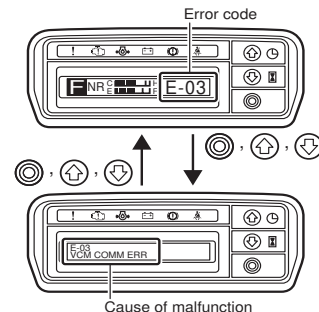
SERVICE REMINDER DISPLAY



When the time for regular service inspection (planned maintenance) approaches, this warning illuminates for fifteen (15) seconds after ignition switch is turned on. This does not affect driving.

When the display shown above appears, contact your Local Authorized Dealer. It is recommended that regular inspection be performed.

DISPLAYS WHEN MALFUNCTION OCCURS



When a controller malfunction occurs, an error code is displayed.

Press any operation button while the error code is displayed in order to display the cause of the malfunction.

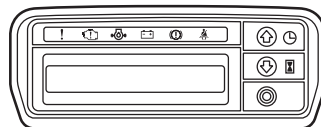
If any error code (sample above) appears contact your Local Authorized Dealer.

DRIVER RECOGNITION MODE

Registering a password can restrict the drivers of the lift truck.

You can register a password for up to 5 people (A to E).

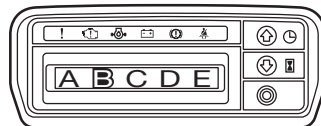
Contact your Local Authorized Dealer for information about the registration of the password.



When the ignition switch is off



When the ignition switch is on



Select the alphabet letter (A, B, C, D, E) for the password that was registered by the user. Use the  and  buttons.



 Select



Enter the password.

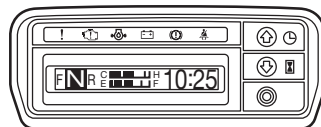
Press the  button to change the number up.

Press the  button to change the number down.

Press the  button to confirm the number for each digit.



 If the correct password was not entered

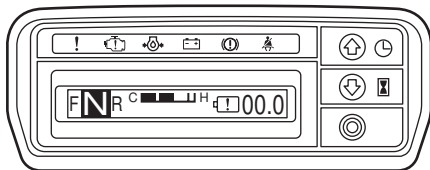


Normal display (clock display)
Normal operation is possible.



If the wrong password is entered 3 times, "PASS ERROR" is displayed and operation of the lift truck is disabled.
Turn the ignition switch off, then on again and enter the correct password.

LPG REMAINING TIME MANAGEMENT



This function is not part of the LPG Level Warning/LPG Rack Lock Warning system.

With this function the operator sets the time interval between LPG Cylinder (tank) replacements. Then, when the time reaches zero (0), this function illuminates the LPG level warning symbol and the multipurpose warning light to warn the operator of the need to replace the LPG Cylinder (tank). For the method used to change the LPG level warning pattern to the method above, contact your Local Authorized Dealer.

LPG remaining time management is recommended for the following types of situations:

- The timing for replacement of the LPG Cylinder (tank) is predetermined.
- The LPG level warning appears too early or too late on the lift truck.



CAUTION

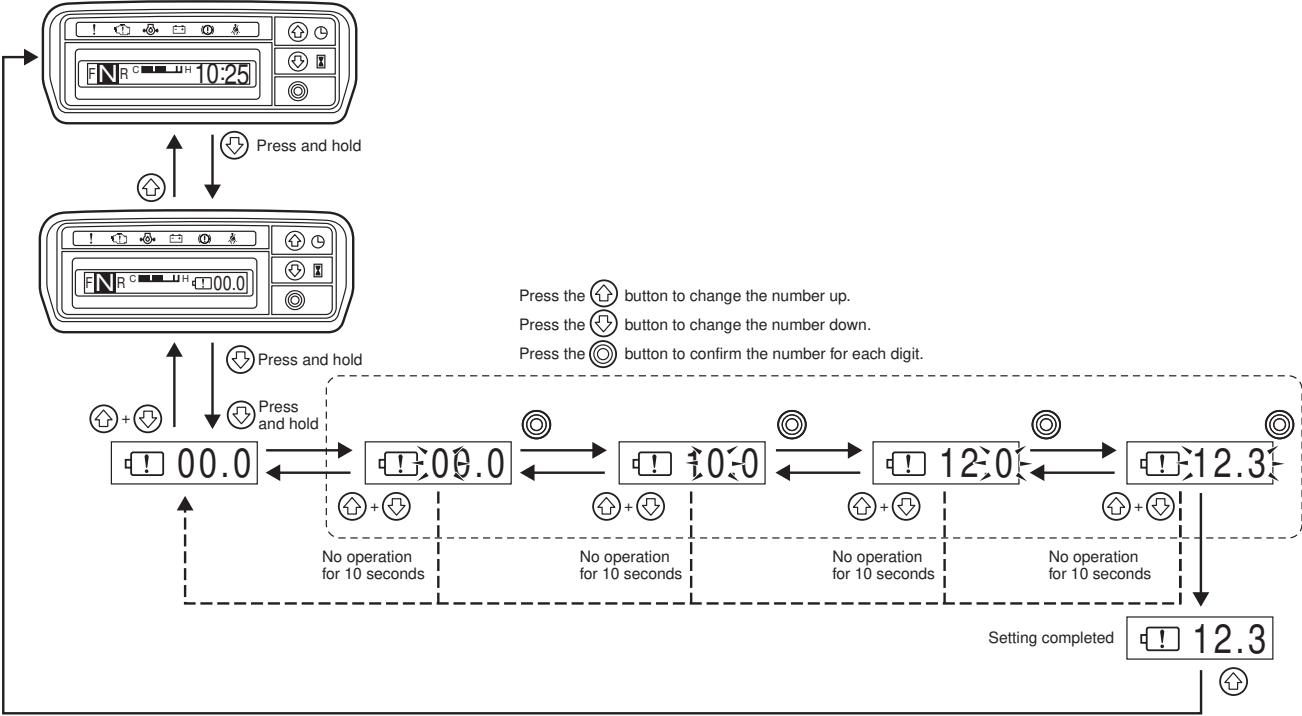
- Set a time that leaves a sufficient amount of leeway.
- After replacing the LPG Cylinder (tank), be sure to set the time setting again. Otherwise, the time setting continues after LPG Cylinder (tank) replacement, and this may result in the LPG level warning symbol turning on at an unintended time.
- When operating a dual fuel lift truck using gasoline after using LPG without the time setting, be careful that the time setting continues to count the time.

LPG Remaining Time Setting

- When the time setting is set to 00.0 , the meter panel shows the LPG level warning
- When the time setting is reset, move the setting display by pushing ,  and  while the LPG level warning is displayed. After resetting the setting time, the LPG level warning turns off.

Following is an explanation of how to set the time setting for the first time.

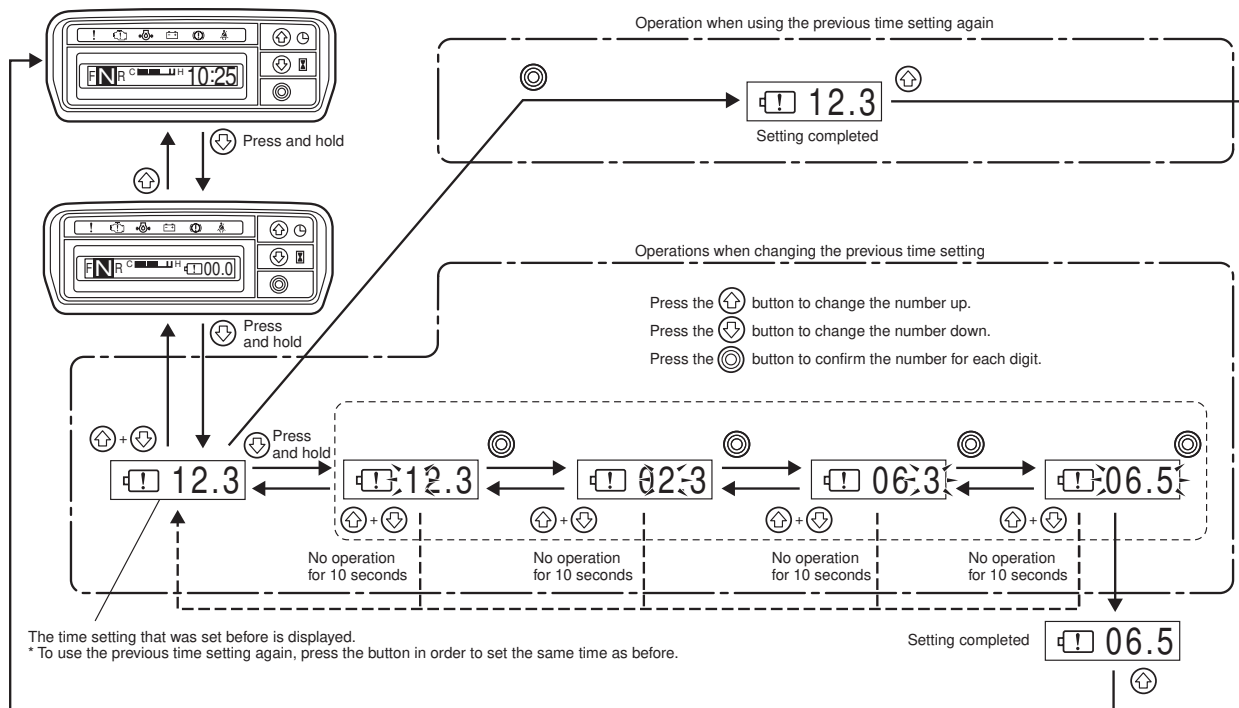
Example: Setting the time to 12.3 hours



Following is an explanation of how to set the time setting for the second and later times.

Example 1: Changing the time from 12.3 hours (previous setting) to 6.5 hours

Example 12: Using the same 12.3 hours setting (previous setting) again



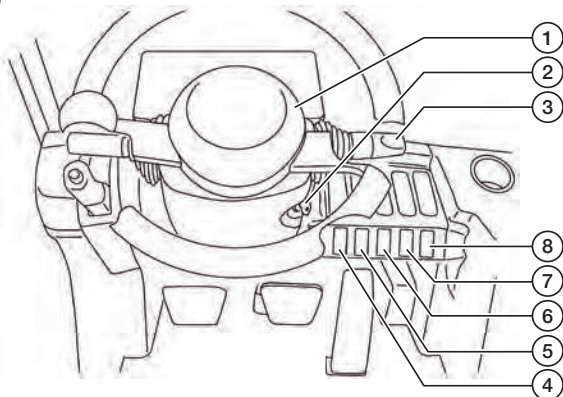
SWITCHES

1. Horn button
2. Ignition switch
3. Lighting switch and Turn signal switch

NOTE:

For forklifts with the optional joystick control, this switch is located on the left side.

4. Fuel change switch (Dual Fuel lift trucks)
5. Seat belt interlock or Shutdown indicator (red - option) (see page 55)
6. Maximum speed change switch (option) (see page 55)
7. Throttle sensitivity adjust switch (option) (see page 56)
8. Transmission shift (SmoothShift) indicator (green - option) (see page 56)



HORN BUTTON

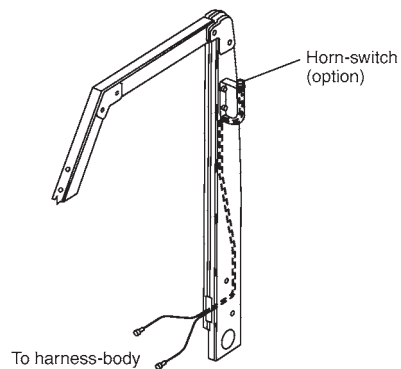
Pushing the button in the center of the steering wheel will sound the horn, regardless of ignition switch position.

NOTE:

For forklifts with the optional joystick control, there is also a horn button located on the joystick control.

REAR RIGHT GRIP WITH HORN BUTTON

This button allows you to honk the horn from the grip on the rear right pillar.



IGNITION SWITCH

Turn the key or lever (option) on the ignition switch to start or stop the engine.

OFF Position

When the ignition switch is in this position, all electric circuits are open but the following can be turned on and off.

- Lamps by operating the lighting switch
- Rear operating lights
- Braking lights by application of the brake

ON Position

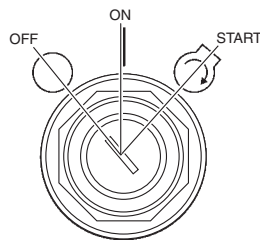
This is the position of the ignition switch when the engine is running. When the ignition switch is in this position, all electric circuits are energized.

START Position

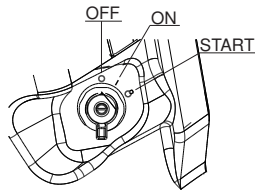
To start the engine, shift the selector lever to the neutral position, turn the ignition switch to the ON position, for diesel lift trucks wait for the glow plug light to turn off, and then to the START position. Once engine has started let go of the ignition switch and it will automatically return to the ON position.

Gasoline and LPG Lift Trucks

Do not operate the starter for more than ten (10) consecutive seconds. If the engine does not start wait for at least ten (10) seconds and then try again.



Keyless Ignition



Diesel Lift Trucks

Do not operate the starter for more than thirty (30) consecutive seconds. If the engine does not start wait for at least thirty (30) seconds and then try again, starting with preheating.



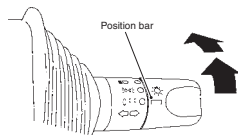
CAUTION

- If you leave the ignition switch in the ON position while the engine is stopped, the battery may run down and this may make it impossible to start the engine. To avoid this situation, always return the ignition switch to the OFF position after stopping the engine.
- During operation, the ignition switch is in the ON position. Never turn it to the OFF or START position during operation.
- Do not operate the starter for a long time when starting the engine.
- If the engine does not start even though you operate the starter repeatedly, return the ignition switch to the OFF position, if operating on LPG close the discharge valve, and contact your Local Authorized Dealer.
- If the lift truck is equipped with the Seat Belt Interlock option, it will not start if the seat belt is not fastened (seat belt interlock/shutdown indicator light will illuminate red). Refer to page 82 for Seat Belt Interlock options.

LIGHTING SWITCH AND TURN SIGNAL SWITCH

Lighting Switch

To turn on one of the lamps in the table, turn this switch to align the position bar (→) on the switch knob with the corresponding mark on the switch main unit.



Switch mark	Head lamp	Tail lamp
OFF	OFF	OFF
☞☞☞	OFF	ON
☞☞☞☞	ON	ON



CAUTION

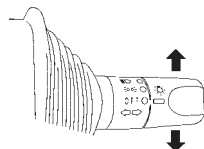
- Do not touch the head lamp lens when the head lamp is lit or immediately after the head lamp is turned off, because it is very hot.

NOTE:

- You can turn on and off lamps by turning the lighting switch, regardless of the position of the ignition switch.
- Do not forget to turn off all lamps when leaving the lift truck, or else the battery may run down.

Turn Signal Switch

Push the switch lever forward (up) when turning left, and pull it backward (down) when turning right. The appropriate turn signal will blink. Upon completion of the turn, be sure to return the lever to its original position.



FUEL CHANGE SWITCH (DUAL FUEL LIFT TRUCKS)

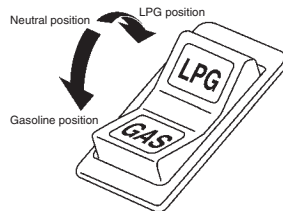
This switch is used to switch fuel from LPG to gasoline or vice versa.

LPG Position: Press to this position to use LPG.

Neutral Position: Press to this position to exhaust fuel from the fuel pipe.

Gasoline Position: Press to this position to use gasoline.

The light on the fuel selection you pressed illuminates, indicating the fuel that is currently selected.



WARNING

- Do not manipulate the LPG cylinder charge valve or plug, otherwise the LPG may leak out into the atmosphere.

NOTE:

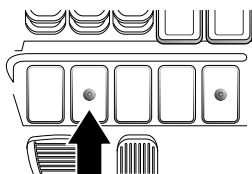
- Do not use the fuel-change switch to change fuels when the engine is running. Change fuels only after the engine has completely stopped.
- To switch from one fuel to the other, strictly follow the specified procedure after warming up the engine (refer to pages 67-72).
- Operate the lift truck with gasoline for 30 minutes or several miles (kilometers) at least once every two weeks, this will prevent gasoline deterioration.
- The engine does not start when the fuel change switch is in the neutral position. Do not forget to press the fuel choice before starting the engine.

SEAT BELT INTERLOCK OR SHUTDOWN INDICATOR (RED - OPTION)

This option is an interlock system that will not let you start the lift truck without the operator being in the seat with the seat belt fastened.

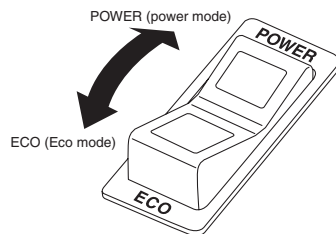
If you should for any reason unlatch the seat belt or lift yourself off the seat for more than three (3) seconds you will activate a shut down cycle, the shutdown indicator will flash red, the meter panel will display "AUTO STOP", and will stop flashing when the cycle is completed. The lift truck will then shutdown the engine. You will have to return the ignition switch to the OFF position and restart the lift truck once you have returned to the seat and fastened the seat belt.

When the cycle has started and the red light is flashing, the transmission will shift to neutral and the hydraulic function will be shut off. These functions will return to normal operating condition as stated above. Refer to page 82 for Seat Belt Interlock options.



MAXIMUM SPEED CHANGE SWITCH (OPTION)

This switch is an optional setting switch for electronic control gasoline, LPG and dual fuel lift trucks. It allows you to switch the maximum speed between high speed mode (H) and low speed mode (L). Press the H side of the switch if there is no need to limit the maximum speed to a low level, or press the L side to limit the maximum speed to a low level.



The light on the side you pressed illuminates, indicating the speed mode that is currently selected.

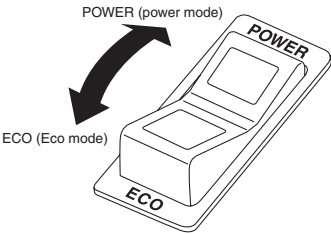


WARNING

- **Do not change the maximum speed when the lift truck is traveling. Doing so could cause the load to shift.**
- **Only your Local Authorized Dealer is allowed to change the running speed settings. So, if necessary, ask them to perform this change.**

THROTTLE SENSITIVITY ADJUST SWITCH (OPTION)

This switch is an optional setting switch for electronic control gasoline, LPG and dual fuel lift trucks. It allows you to switch the starting acceleration between power mode and economy mode. Press the POWER side of the switch to accelerate the lift truck at a normal rate, or press the ECO (economy) side to accelerate the lift truck slowly.



The light on the side you depressed illuminates, indicating the mode that is currently selected. You can switch from one mode to the other as described below.

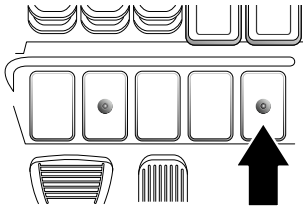
Switching operation	During driving	During a halt and ignition switch OFF
From POWER to ECO	Not possible	Possible
From ECO to POWER	Not possible	Possible

NOTE:

Switching from the ECO mode to the POWER mode can only be done by turning the ignition switch to the OFF position.

TRANSMISSION SHIFT (SMOOTHSHIFT) INDICATOR (GREEN - OPTION)

The transmission will not shift direction at high travel speeds or engine RPM's. When the indicator light turns off, the engine RPM will be reduced, the transmission will stay engaged, and the engine now acts as an engine brake to slow down the lift truck. Or, the operator may also use the service brakes. When travel speed has been reduced and your foot removed from the accelerator pedal or brake is applied the indicator light illuminates (green), and the transmission shifts. Depress the accelerator pedal to pick up speed in the new direction.



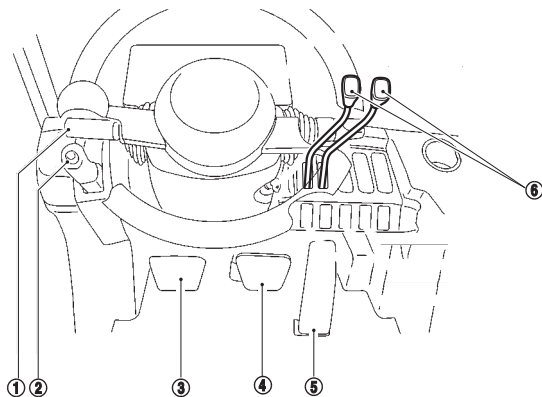
OPERATING CONTROLS

1. Selector lever

NOTE:

For forklifts with the optional joystick control, this switch is located on the left side.

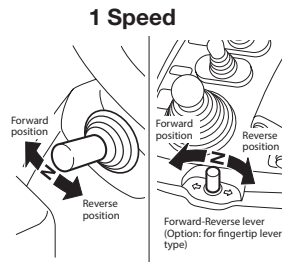
2. Parking brake lever
3. Inching brake pedal
4. Brake pedal
5. Accelerator pedal
6. Cargo-handling control lever(s)



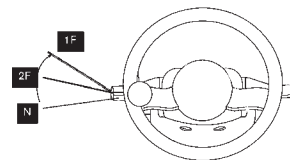
SELECTOR LEVER

This lever is used to change the driving direction of the lift truck (forward or reverse). Push the lever forward (up) away from you to drive forward (forks leading), or pull the lever backward (down) towards you to drive backward (forks trailing). The neutral position is at the midpoint.

The same operating method applies to the optional fingertip control.



2 Speed



If the lift truck is equipped with the Transmission Shift (SmoothShift) interlock option, the transmission will not shift direction at high travel speeds or engine RPM's. Remove your foot from the accelerator pedal or apply brakes and shift when the transmission shift (SmoothShift) indicator illuminates (green). Refer to page 56.

NOTE:

- The engine cannot be started when the selector lever is in any position other than the neutral position.
- The transmission will shift to neutral if the operator leaves the seat with the ignition switch on.
- If the parking brake (P) warning light is illuminated, the transmission can not shift into forward or reverse. When the selector lever is in the "F" or "R" position and the parking brake is on, the display blinks. Release the parking brake and shift the selector lever to the neutral (N) position and then shift it again to forward (F) or reverse (R) in order to drive.



CAUTION

- Always depress the brake pedal before operating the selector lever.
- Before the lift truck comes to a full stop, do not change the driving direction by operating the lever. Doing so applies excessive force to the drive system and may cause it to break down. Moreover, a rapid change of the driving direction may cause cargos to fall down or make it difficult for the operator to maintain a correct driving posture.
- When stopping the lift truck temporarily with the selector lever left in the neutral position, be sure to set the parking brake lever to prevent the lift truck from moving unexpectedly.



WARNING

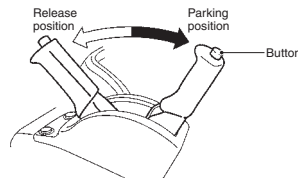
- The selector lever should always be in the neutral position (not the forward or reverse position) before the ignition switch is moved to the ON position.
- Always return the selector lever to the neutral position at the completion of lift truck operation.

NOTE:

On lift trucks equipped with a back-up buzzer (standard in North America), the buzzer will sound whenever the transmission is in the reverse position.

PARKING BRAKE LEVER

To set the parking brake, fully pull the lever towards you. To release the parking brake, push down the button on top of the lever and then push the lever forward. Before leaving the lift truck, be sure to apply the parking brake securely.



When parking the lift truck on a slope, fully pull the lever towards you and set a chock behind each wheel.

NOTE:

The transmission will not shift to forward (F) or reverse (R) while the parking brake is engaged (set). To resume operation, sit on the operator's seat, fasten the seat belt and then shift the selector lever to the neutral (N) position. Release the parking brake and then shift the selector lever to forward (F) or reverse (R).



WARNING

- Always depress the brake or inching pedal before releasing the parking brake to avoid movement of the lift truck before selecting a direction of travel.

NOTE:

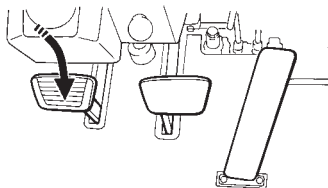
To remind the operator to apply the parking brake, an alarm will sound if:

- The operator leaves the operator's seat without applying the parking brake while the ignition switch is in the ON position.
- The operator turns off the ignition switch without applying the parking brake, regardless of whether the operator is sitting in the operator's seat.

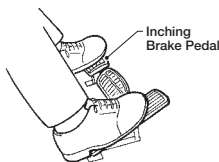
INCHING BRAKE PEDAL

The inching brake pedal allows you to finely adjust the forward and reverse driving speed.

The transmission internal clutch begins to slip when you slightly depress this pedal, and the internal clutch is completely disengaged and the brakes are applied when you further depress the pedal, in which case the inching brake pedal acts in the same ways as a brake pedal.



1. Fully depress the inching brake pedal.
2. Move the selector lever to the forward or reverse position.
3. Depress the accelerator pedal little by little while gradually releasing the inching brake pedal. The lift truck will move bit by bit.



! WARNING

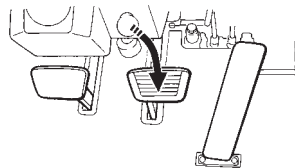
- **When the inching brake pedal is fully depressed the service brake will be applied. However the inching brake pedal should not be used as the method for stopping the lift truck. In normal traveling operations, the inching brake pedal should only be used during loading or unloading, which requires short, controlled movement of the lift truck.**

! WARNING

- **During deceleration on any grade, only use the brake pedal or increase or decrease the speed by using the accelerator pedal. Do not use or depress the inching brake pedal because this will put the transmission in the neutral mode.**
- **Do not leave your foot on the inching brake pedal when driving the lift truck.**
- **Doing so may cause the clutch to slip and prevent engine braking from taking effect. Moreover, it could cause the brake to fail because of overheating. Also, doing so may cause the hydraulic clutch in the transmission to slip and give off a large amount of heat, causing the clutch to overheat, wear down in a short time or seize up in the worst case.**

BRAKE PEDAL

This pedal allows you to bring the lift truck to a stop or slow it down.

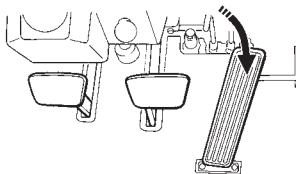


! WARNING

- **Do not brake the lift truck hard. Doing so may cause the lift truck to become unbalanced and result in a serious accident.**
- **Adjust the braking effort according to the cargo weight.**
- **Do not rest your foot on the brake pedal during driving. Doing so may cause the brakes to fail because of overheating. Also, it hastens the wearing away of the brake pad.**

ACCELERATOR PEDAL

This pedal allows you to adjust the engine speed (RPM's). The engine speed changes according to the degree to which the accelerator pedal is depressed.



WARNING

- Do not depress the accelerator pedal quickly. Depress it slowly to prevent a sudden or rapid start, which could cause the cargo to shift or fall off the forks.
- To prevent sudden movement, always operate the accelerator pedal after the ignition switch has been turned on and the selector lever has been shifted.
- Do not release parking brake unless operator is in seat as lift truck may roll.

CARGO-HANDLING CONTROL LEVERS

There are three (3) cargo-handling control lever types. One type uses the twin control lever, another type uses the single control lever, and the last is the optional joystick type.

Note the cargo-handling control lever type on the lift truck you are using and operate the lever or levers appropriately.



WARNING

- Always sit in the operator's seat with the seat belt fastened when operating any lever.

- Operating the control lever without properly sitting in the operator's seat with the seat belt fastened causes the loading interlock warning light to blink and the loading mechanism to be inactive.
- Before operating the lever, make certain that the surrounding area is clear and it is safe to proceed.
- If the engine is stopped, operation of the lever to the downside or lowering direction may cause the fork and mast to go down due to its own weight or the cargo that may be on the forks. This may result in serious damage or injury.
- Always avoid any abrupt or sudden lever operation that may cause loads to shift or fall off forks and cause the lift truck to become unbalanced and tip over.

NOTE:

The cargo-handling control levers are enabled to operate the cargo-handling system only when the operator is **seated** with the seat belt fastened and the ignition switch ON.

Refer to page 82 for Seat Belt Interlock options regarding the cargo-handling system.



CAUTION

- The attachment may move due to its own weight when the third or forth cargo-handling control lever is operated with the ignition switch in the OFF position.

Twin Control Lever Type

This method uses two levers: a lift lever for moving the fork up and down and a tilt lever for tilting the mast forward and backward:

- **Lift lever:**

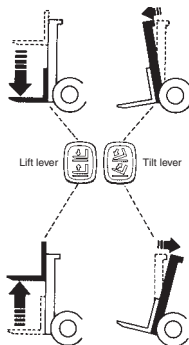
Lift: Pull the lever to the operator side.

Lower: Push the lever forward.

- **Tilt lever:**

Forward: Push the lever forward.

Backward: Pull the lever to the operator side.



WARNING

- **Do not perform forward tilt while the lift truck is traveling. It may cause loads to shift or drop and also may cause the lift truck to become unstable and tip over.**
- **Do not perform forward tilt while lifting loads in any position. It may cause loads to shift or drop and also may cause the lift truck to become unstable and tip over.**

Speed Control:

Control of lifting speed: The speed can be changed by controlling the tilt angle of the lever and by how much the operator depresses the accelerator pedal.

Control of lowering speed: The speed can be changed only by controlling the tilt angle of the lever, do not depress the accelerator pedal.

Control of forward and backward tilting speeds: For both forward and backward tilts, the speed can be changed by controlling the tilt angle of the lever and by how much the operator depresses the accelerator pedal.

Single Control Lever Type

This method performs up and down movements of fork and forward and backward tilts of mast using a single lever:

- **Lift:**

Diagonally pull the lever to the left side of operator.

- **Lower:**

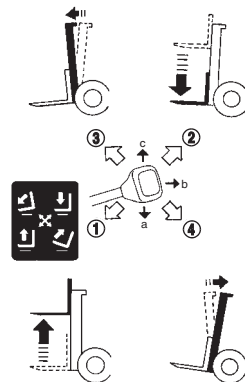
Push the lever in the right forward direction.

- **Forward:**

Push the lever in the left forward direction.

- **Backward:**

Diagonally pull the lever to the right side of operator.



Simultaneous operations are also allowed by combining up and down movements and forward and backward tilts.

This may be done by moving the lever into the a, b or c position.

- **Backward tilt while lifting:**

Pull the lever to the center of operator side.

- **Backward tilt while lowering:**

Turn over the lever to the right side of center.

- **Forward tilt while lowering:**

Push the lever in the center forward direction.



WARNING

- **Do not perform forward tilt while the lift truck is traveling. It may cause loads to shift or drop and also may cause the lift truck to become unstable and tip over.**
- **Do not perform forward tilt while lifting loads in any position. It may cause loads to shift or drop and also may cause the lift truck to become unstable and tip over.**

Speed Control:

Control of lifting, forward and backward tilting speeds: The speed can be changed by controlling the tilt angle of the lever and by how much the operator depresses the accelerator pedal.

Control of lowering speed: The speed can be changed only by controlling the tilt angle of the lever, do not depress the accelerator pedal.

Joystick Control Lever (Option - 2 & 2.5 Ton Only)

The joystick lever is electronically controlled. The cargo handling operation can be performed only when the ignition switch is ON.



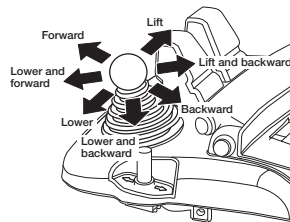
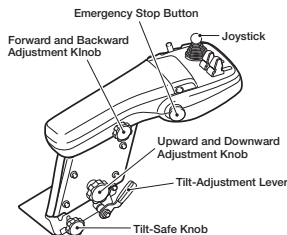
WARNING

- **Do not perform forward tilt while the lift truck is traveling. It may cause loads to shift or drop and also may cause the lift truck to become unstable and tip over.**
- **Do not perform forward tilt while lifting loads in any position. It may cause loads to shift or drop and also may cause the lift truck to become unstable and tip over.**

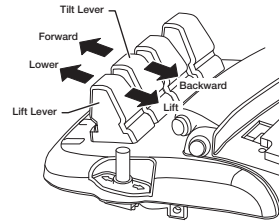
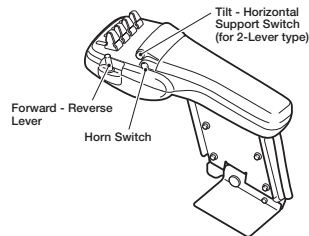
NOTE:

- Before the ignition switch is turned ON, make sure that the joystick lever is set to the neutral position. If the lever is placed in any position other than the neutral position, cargo handling or fork operation cannot be performed.
- When the ignition switch is turned OFF, the forks do not lower even under its own weight.
- The joystick lever is used to tilt the mast forward or backward and to lift or lower the forks. Cargo handling speed (lift, lower, forward and backward) can be adjusted by the distance that the lever is moved.
- For detailed joystick lever operation, refer to illustrations at right.

1 Lever Type



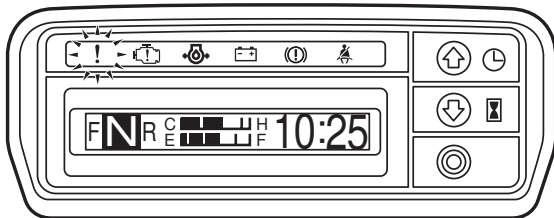
2 Lever Type



Speed Control:

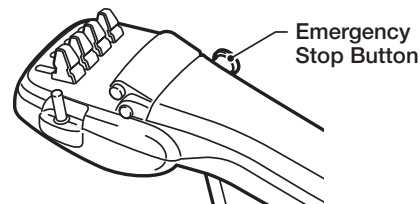
Control of lifting and lowering speeds: For both lifting and lowering, the speed can be changed by controlling the tilt angle of the lever.

Control of forward and backward tilting speeds: For both forward and backward tilts, the speed can be changed by controlling the tilt angle of the lever.



WARNING

- The warning mark ! and a malfunction message will appear on the meter when the joystick control system malfunctions. When this occurs, immediately stop cargo handling operations and have the lift truck checked and repaired by your Local Authorized Dealer.



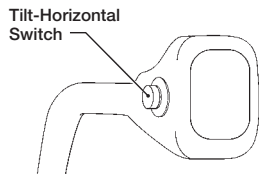
WARNING

- If an erroneous cargo handling operation is noticed regardless of the joystick lever position, press the emergency stop button on the console box, stop cargo handling operations immediately and have the lift truck checked and repaired by your Local Authorized Dealer. To release the emergency stop button, turn it in the direction indicated by the arrow.

Tilt-Horizontal Switch (Option)

When forward tilt is performed with the mast tilted backward, the forward tilt operation can automatically be stopped in the position where the fork is leveled.

Performing forward tilt while pressing the tilt-horizontal switch moves the mast as shown in the following list, depending on the loading condition.



Loading condition	Forward tilt operation of mast
Without load	Automatically stops in the horizontal fork position.
With load	<ul style="list-style-type: none">• No automatic forward stop to horizontal• No movement when turning on the tilt-horizontal switch

With load: Turning on the tilt-horizontal switch during operation will not automatically stop tilting in the horizontal direction (no movement).

NOTE:

- In case of twin lever method, the tilt-horizontal switch is attached to the tilt lever.
- The tilt-horizontal switch is kept ON while pressed and turned OFF when released.
- Unless the tilt-horizontal switch is pressed, normal forward and backward tilt operations are performed.



CAUTION

- **The horizontal fork position allowing automatic stops requires a position parallel to the road surface. Do not use this function if the road surface is not level.**

ANSI/ITSDF STANDARDS FOR LIFT TRUCK CLAMP ATTACHMENTS

The ANSI/ITSDF Standards regarding lift trucks mounted clamp attachments took effect for lift trucks shipped on or after October 7, 2010. This current standard affects lift trucks equipped with a load bearing clamp (paper roll clamp, carton clamp, etc.) and requires the operator to perform two distinct motions before opening (releasing) the clamp. For example, the operator must press a button and then move a lever to release the load. ANSI B56.1 Section 7.25 "Load-Handling Controls" can be reviewed by visiting the ITSDF website at www.itsdf.org.

Clamp Release - System Operation:

The clamp will close or clamp the load by operating the auxiliary hydraulic lever without pushing the switch.

The operator must press the clamp switch, prior to operating the auxiliary hydraulic lever, to open the clamp (even while not clamping the load).



OPERATING THE LIFT TRUCK

The following are the recommended procedures that should be followed before and while operating a UniCarriers lift truck.

Since the Occupational Safety and Health Act (OSHA) 29CFR1910.178(l) requires that “**only trained and authorized operators shall be permitted to operate a powered industrial truck**”, it is the owner/end user’s responsibility to comply. The following is intended as a guide in training operators in safe lift truck operation; it is not a training manual nor is it intended to preclude good judgment and common sense.

For a complete listing of what should be covered in a training program, obtain a copy of ANSI/ITSDF B56.1 Safety Standard for Low Lift and High Lift Trucks.(www.itsdf.org).

INSPECTION BEFORE OPERATING

The OSHA regulation requires the operator to make a complete check of the lift truck at the beginning of **each shift** or **work period**. Ensure that all of the Daily Inspection checks (refer to page 89, also refer to page 91 for Sample Operator’s Daily Checklist) have been made before operating the lift truck.

LIFT TRUCK OPERATING PRECAUTIONS

1. **Malfunction Displays:** If any error code appears on the meter display contact your Local Authorized Dealer.
2. **Warning buzzer:** This buzzer warns the operator by a continuous sound that the operating procedures (start safety system operating) and the dismounting procedures have not been followed.

PRECAUTIONS FOR COLD AND HOT WEATHER

IN COLD WEATHER

- Oil and Grease
Use engine oil and grease that are suitable for the ambient temperature (refer to page 128).
- Coolant
When coolant might freeze at a low ambient temperature, drain out the coolant completely (refer to page 95). In such cold weather a recommended 50/50 mix of antifreeze solution only should be put into the cooling system (refer to page 95).

IN HOT WEATHER

- Oil
Engine oil should be changed to summer type oil (refer to page 128).
- Coolant
Because the engine is more likely to overheat in hot weather, the lift truck should be parked in a shaded area. Overheating sometimes is caused by old, worn or cracked hoses, connections, loosened radiator cap, or old, worn or cracked fan belt. Carefully check the cooling system to maintain the best cooling effect.
- Battery
Because the battery electrolyte evaporates in hot weather, it is necessary to refill the battery with distilled water (refer to page 88).

OPERATIONAL PROCEDURES

There are certain hazards that cannot be avoided solely by mechanical means in the everyday use of lift trucks. Only the intelligence, good sense, and care of the operator, along with proper maintenance, will assure that the lift trucks are operated properly. It is important to have trained, reliable personnel operating your lift trucks. If, at any time, the operator finds that the lift truck is not performing properly, discontinue operation of the lift truck and report the condition to your supervisor for correction.

When operating the lift truck under severe climatic conditions make sure that the lift truck is manufactured and approved as conforming to the local specifications, laws and regulations.

Conditions such as:

- high temperature
- high altitudes
- in cold storage
- when handling explosives and combustibles
- in areas where the lift truck is apt to cause radio interference

Proper operation of this lift truck is the mast should be tilted back and the forks should be raised approximately 200 mm (8 in) above the ground. Steering the lift truck is easier with the forks leading. Always look in the direction of travel.

Operate the lift truck from the operator's position after assuring operation will not endanger the operator or any other person. Do not operate a lift truck in hazardous areas. Make sure that the forks and/or load have clearance to lower and do not "hang-up".



WARNING

- **Do not turn the ignition switch ON unless the selector lever is in neutral.**

GASOLINE AND LPG LIFT TRUCK STARTING (INCLUDING DUAL FUEL)



WARNING

- **Do not breathe exhaust gases, they contain colorless and odorless carbon monoxide. Carbon monoxide is a dangerous gas and can cause unconsciousness or death.**
- **Do not run the engine in closed spaces or poorly ventilated rooms such as a garage or refrigerator, etc.**
- **Inspect the condition of the LPG hose connections and check for gas leaks from LPG hoses and pipes before starting the engine.**
- **In the event of a LPG leak or some other malfunctions, close the discharge valve immediately. Have the LPG system checked by your Local Authorized Dealer.**
- **Ensure that the LPG cylinder (tank) bracket is in place and latched.**

NOTE:

This lift truck if equipped with an interlock system that will not let you start the lift truck without the operator being in the seat with the seat belt fastened.

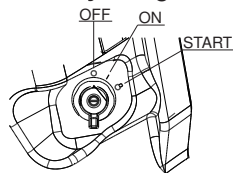
Follow the procedure outlined below to start the engine.

Dual fuel lift trucks have a fuel change switch. Use this switch to select the desired fuel (refer to page 69). In cold weather if using LPG you have to first start the engine using gasoline. After the engine is warmed up you must stop the engine before switching to LPG (refer to pages 69-71).

1. If using LPG, slowly open the discharge valve on the LPG Cylinder (tank) to start the engine.
2. Ensure that the LPG Cylinder (tank) has a sufficient amount of fuel and that the LPG Cylinder (tank) bracket is fully latched. The engine's starter will not operate unless these conditions are met.
3. Ensure that the parking brake is set and the selector lever is in neutral. Depress the inching brake pedal as far as it can go.
4. Do not place your foot on the accelerator pedal. Turn the ignition switch to the START position to start the engine.



Keyless Ignition



NOTE:

- For lift trucks that use Driver Recognition codes, the engine will start without the code being entered but the transmission and hydraulic operation will be locked out until the correct code is entered.

- If the engine fails to start within ten (10) seconds, release the ignition switch and wait for ten (10) seconds before attempting to start the engine.
 - Refer to page 82 for Seat Belt Starter Interlock option.
5. After starting the engine give it time to warm up. Allow it to idle for approximately one (1) minute.

NOTE:

- The engine is cold immediately after starting. Do not intermittently race the engine or run the engine at high speeds immediately after starting.
 - Do not move the ignition switch to the START position when the engine is running. Damage to the starter motor will result.
 - After operation, always close the LPG discharge valve on the LPG Cylinder (tank) after shutting the engine off.
 - When using Dual Fuel lift trucks, if after operation the truck is not used for several hours or more, or during cold weather seasons, park the lift truck with the fuel-change switch positioned on the gasoline side. This will make it easier to start the engine the next time.
6. Make sure that the meter panel is on and that there is no warning light illuminated or a malfunction displayed.
 7. Check horn operation. If it does not work do not operate the lift truck. Always sound horn at blind corners and intersections before proceeding to travel.



WARNING

- **Always be sure that all body parts are kept within the operator's compartment.**

8. Check the lift/lower/tilt functions. Report any malfunctions.



WARNING

- **Always perform operational checks in a clear area.**
9. Once the forks are lowered, place the Selector Lever in the desired direction of travel. The mast should be tilted back and the forks should be raised approximately 200 mm (8 in) above the ground.



WARNING

- **Avoid quick steering or acceleration as this may cause an accident, which could result in serious injury or death.**
 - **Because the movement of a lift truck is different from that of a passenger car, in case of taking a turn, sufficiently lower the speed and look around.**
 - **Do not make a turn with the forks lifted high or at a high speed. It may cause a serious accident: for example, the lift truck becomes unbalanced and tips over.**
 - **When starting on slopes, be sure to apply the parking brake to hold the lift truck and then start, even if the slopes are gentle.**
 - **The lift truck will creep when or if the accelerator pedal is fully released.**
10. Check the steering function during travel testing. The smaller the radius of a turn to be made, the lower the speed of the lift truck should be. When making a sharp turn, always drive the lift truck at a low speed.

FUEL-CHANGE SWITCH (DUAL FUEL LIFT TRUCKS)



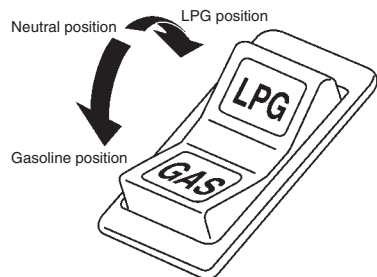
WARNING

- **Do not operate (turn on or open) the LPG cylinder (tank) change (refill) valve. Opening the valve may cause LPG to leak into the atmosphere and could cause a dangerous fire hazard.**

NOTE:

- Change over the fuel-change switch position according to the operating procedures on the following page. Otherwise, a mixture of LPG and gasoline will result in a poorly operating engine.
- When driving a Dual Fuel lift truck using LPG during the cold weather season, first start the engine using gasoline and then change over to LPG with the switch after warming up the engine.
- Do not use the fuel-change switch to change fuels when the engine is running. Change fuels only after the engine has completely stopped.
- Operate the lift truck with gasoline for 30 minutes or several miles (kilometers) at least once every two weeks, this will prevent gasoline deterioration.
- Do not change fuels immediately after starting the engine. Allow the engine to warm up before changing fuels.

- With the fuel-change switch set in the neutral position the engine cannot be started. Before starting the engine always change the switch to LPG or GAS.



TO CHANGE FROM LPG TO GASOLINE OPERATION:

1. Press the fuel-change switch from the LPG to the neutral position.
2. Shut off the discharge valve on the LPG cylinder.
3. Let the engine run at an idle until it stops.
4. After the engine has completely stopped, move the fuel-change switch to the GAS position. Restart the engine.



CAUTION

- **Directly changing over LPG to GAS without the fuel-change switch first being positioned to neutral cause the remaining LPG and gasoline to be mixed, resulting in a poorly operating engine. Before changing over the switch position, always exhaust the remaining LPG by setting the switch to the neutral position.**

TO CHANGE FROM GASOLINE TO LPG OPERATION:

1. Press the fuel-change switch from the GAS to the neutral position.
2. Slightly depress the accelerator pedal and hold it to allow the engine to race. Continue pressing the accelerator pedal until the engine stops.
3. After the engine has completely stopped, open the discharge valve on the LPG cylinder and move the fuel-change switch to the LPG position. Restart the engine.



CAUTION

- **Directly changing over GAS to LPG without the fuel-change switch first being positioned to neutral cause the remaining gasoline and LPG to be mixed, resulting in a poorly operating engine. Before changing over the switch position, always exhaust the remaining fuel (gasoline) by setting the switch to the neutral position.**

Carefully follow the procedures below when turning the engine off after LPG operation.

1. Move the fuel-change switch to the neutral position and let the engine idle until it completely stops. This ensures that all of the remaining LPG has been used.
2. After engine stops turn the ignition switch to the OFF position.

3. After completion of operation completely close the discharge valve.

NOTE:

After operation, if the lift truck is not used for several hours or more, or during cold weather seasons, park the lift truck with the fuel-change switch positioned on the gasoline side. This helps to start the engine more easily the next time.

4. Check the engine for LPG leakage (refer to page 125).



WARNING

- **In the event of a LPG leakage or some other malfunction, close the discharge valve immediately. Have the LPG system checked by your Local Authorized Dealer.**

DIESEL LIFT TRUCK STARTING



WARNING

- **Do not breathe exhaust gases, they contain a mixture of gases and particles. This exhaust may cause respiratory irritation and other health issues.**
- **Do not run the engine in closed spaces or poorly ventilated rooms such as a garage or refrigerator, etc.**

Follow the procedure outlined below to start the engine.

1. Ensure that the parking brake is set and the selector lever is in neutral. Depress the inching brake pedal as far as it can go.
2. Turn the ignition switch to the ON position, the glow pilot light on the meter panel will illuminate indicating that the engine preheating has started.

3. Keep the ignition switch in the ON position until the glow pilot light turns off. This indicates that preheating is complete.

NOTE:

Engine preheating is controlled automatically corresponding to the engine coolant temperature, atmospheric air temperature, etc., and the glow pilot light turns off when the engine is preheated to the specified temperature.

4. When the glow pilot light has turned off, turn the ignition switch to the START position while fully depressing the accelerator pedal, until the engine starts.

NOTE:

Do not operate the starter for more than thirty (30) consecutive seconds. If the engine fails to start after even after operating the starter 3 times for approximately five (5) seconds, turn the ignition switch to the OFF position and wait for thirty (30) seconds before attempting to start the engine. Subsequently, try to start it again from the preheating process.

5. After the engine has started, release the accelerator pedal gradually and perform warm-up engine, approximately five (5) minutes.

NOTE:

- When restarting, return the ignition switch to the OFF position and then turn it to the START position.
- Regardless of the atmospheric temperature, always perform warm-up for approximately five (5) minutes.
- Failure to properly warm-up the engine can cause degradation and shortened life of engine.

- When it is not necessary to preheat the engine because of high engine coolant temperature immediately after it stops or for some other reason, the engine can be started by turning the ignition switch to the START position before the glow plug indicator light turns off.
 - If the glow pilot light is not illuminated, malfunction may exist. Contact your Local Authorized Dealer to inspect the lift truck.
6. Make sure that the meter panel is on and that there is no warning light illuminated or a malfunction displayed.
 7. Check horn operation; if it does not work do not operate the truck. Always sound horn at blind corners and intersections before proceeding to travel.



WARNING

- **Always be sure that all body parts are kept within the operator's compartment.**
8. Check the lift/lower/tilt functions. Report any malfunctions.



WARNING

- **Always perform operational checks in a clear area.**
9. Once the forks are lowered, place the selector lever in the desired direction of travel. The mast should be tilted back and the forks should be raised approximately 200 mm (8 in) above the ground.



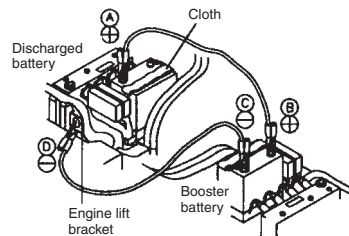
WARNING

- **Avoid quick steering or acceleration as this may cause an accident, which could result in serious injury or death.**
 - **Because the movement of a lift truck is different from that of a passenger car, in case of taking a turn, sufficiently lower the speed and look around.**
 - **Do not make a turn with the forks lifted high or at a high speed. It may cause a serious accident: for example, the lift truck becomes unbalanced and tips over.**
10. Check the steering function during travel testing. The smaller the radius of a turn to be made, the lower the speed of the lift truck should be. When making a sharp turn, always drive the lift truck at a low speed.

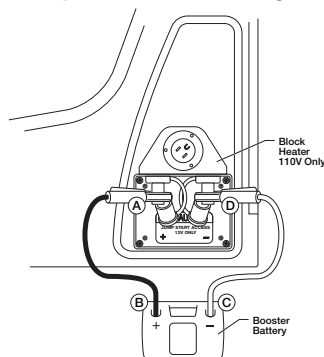
PROCEDURE FOR JUMP STARTING EFI ENGINES

WARNING

- Always follow the instructions below. Failure to do so could result in damage to the charging system and cause personal injury.
1. If the booster battery is in another forklift, position the two forklifts to bring their batteries near each other. **Do not allow the two forklifts to touch.**
 2. Apply the parking brake. Shift the transmission into the neutral position. Switch off all unnecessary electrical systems (lights, etc.).
 3. Remove the vent caps on the battery (if so equipped). Cover the battery with an old cloth to reduce explosion hazard.
 4. Connect jumper cables in the sequence illustrated below (A, B, C, D).



Optional External Plug



CAUTION

- Always connect battery positive (+) to positive (+) post and battery negative (-) to negative (-) post in the jump start access box.
 - Never use a booster battery or source of greater voltage, or it could damage engine electrical components.
 - Make sure that the jumper cables do not touch moving parts in the engine compartment and that the cable clamps do not contact any other metal on either of the two lift trucks.
5. Start the engine of the booster lift truck and let it run for a few minutes.
 6. Keep the engine speed of the booster lift truck at about 2,000 rpm and start the engine of the lift truck being jump started.



CAUTION

- Do not keep the starter motor engaged for more than ten (10) seconds. If the engine does not start right away, release the ignition switch and wait ten (10) seconds before trying again.
7. After starting the engine, carefully disconnect the negative cable and then the positive cable.
 8. Replace the vent caps (if so equipped). Be sure to dispose of the cloth used to cover the vent holes as it may be contaminated with corrosive acid.
 9. To start the engine with a booster battery, the following warnings must be followed.



WARNING

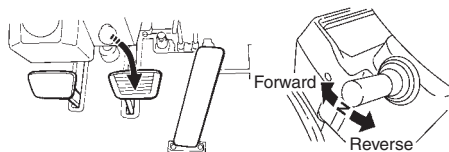
- If done incorrectly, jump starting can lead to a battery explosion, resulting in severe injury or death. It could also damage your lift truck. Explosive hydrogen gas is always present in the vicinity of the battery. Keep all sparks and flames away from the battery.
- Do not allow battery fluid to come into contact with eyes, skin, clothing or painted surfaces. Battery fluid is a corrosive sulfuric acid solution that can cause severe burns. If the fluid comes into contact with anything, immediately flush the contacted area with water.
- Keep the battery out of reach of children.
- The booster battery must be rated at 12 volts. Use of an improperly rated battery can damage the lift truck.
- Whenever working on or near a battery, always wear suitable eye protectors (for example, goggles or industrial safety glasses) and remove rings, metal bands or any other jewelry.
- Do not lean over the battery when jump starting.
- Do not attempt to start a frozen battery. It could explode and cause serious injury.
- Keep hands and other objects away from cooling fan.

Optional Block Heater Plug

110 Volt Only (refer to page 73)

- This plug is for the block heater and should only be connected to 110 volt power.
- Do not use block heater in ambient temperatures above 32°F (0°C).
- Always disconnect block heater before starting the engine.

AUTOMATIC TRANSMISSION



WARNING

- The lift truck will creep any time the forward or reverse direction is selected and the brake or inching pedal is not depressed.
- The parking brake must be set anytime the operator leaves the seat because the transmission will go into neutral and the lift truck may roll.



CAUTION

- While the lift truck is moving, do not change the direction of travel, this may cause damage to the transmission or cause the load to shift.

Starting the lift truck from the stopped condition:

1. When the selector lever is in the neutral position:
 - The lift truck will not move even if the accelerator pedal is depressed.
2. When the selector lever is in the F or R position:
 - The lift truck will move (creep) in the direction of the selector lever position, the brake or inching pedal must be depressed to keep the lift truck stationary.

NOTE:

If the parking brake (P) warning light is illuminated, the transmission can not shift into forward or reverse. When the selector lever is in the "F" or "R" position and the parking brake is on, the display blinks. Release the parking brake and shift the selector lever to the neutral (N) position and then shift it again to forward (F) or reverse (R) in order to drive. Refer to page 82 for Seat Belt Shift Interlock option.

While driving the lift truck:

3. When the selector lever is in the neutral position:
 - The lever is in the neutral position independent of the lift truck speed.

4. When the selector lever is in the F or R position:
 - The lift truck continues accelerating by depressing the accelerator pedal.
 - When the accelerator pedal is released, the transmission will stay engaged and slow down as the engine now acts as an engine brake.
 - If the lift truck is equipped with Transmission Shift (Smoothshift), the transmission will not shift direction at high travel speeds or engine RPM's. When the indicator light turns off, the engine RPM will be reduced, the transmission will stay engaged, and the engine now acts as an engine brake to slow down the lift truck. Or, the operator may also use the service brake. When travel speed has been reduced and your foot removed from the accelerator pedal or the service brake is applied the indicator light illuminates (green), and the transmission shifts. Depress the accelerator pedal to pick up speed in the new direction.
 - If the lift truck is equipped with Travel Speed Control, the truck reverse travel speed will be reduced to 3 mph when the forks are less than five (5) inches off the ground.
5. Inhibitor function:
 - When the selector lever is in the F or R position, it is not possible to start the engine. The lever must be in the neutral position to start the engine.
6. Precautions:
 - When starting on slopes, be sure to apply the parking brake to hold the lift truck and then start, even if the slopes are gentle.
 - Avoid rapid acceleration to keep load from shifting.

- The lift truck will move (creep) in the direction of the selector lever position, the brake or inching pedal must be depressed to keep the lift truck stationary.

2-Speed Transmission

For forward 2-speed manual shift transmission:

- Always manually shift to low speed gear when starting from stopped position.

Dash Display 

- After the lift truck has started moving you can manually shift to second speed.

Dash Display 

- To stay in low speed gear, manually shift to 1F position.

Dash Display 

UniCarriers does not recommend starting the lift truck from the second speed position.

LOADING

Adjust distance between the forks so that they are at or near the same distance to the centerline of the lift truck. The wider the interval between forks, the better the balance. Be sure to apply the fork lock pin's (refer to page 78) after setting the forks.

Approach slowly, straight toward the load, and stop just in front of it. Adjust mast to a vertical position, matching the height of the forks to the position of the pallet. Advance slowly and completely insert forks beneath the load. Set the selector lever to the Neutral position and apply the parking brake. Then raise the load. Confirm that the load is stable and tilt it backward. Release the parking brake and back up the lift truck slowly.

TRANSPORTING LOADS

When transporting loads, the lift truck should be driven carefully at a slow speed with the load kept low and tilted back. When the load is big enough to block forward visibility, drive the lift truck backward. Follow the safety rules.

UNLOADING

Slowly approach the unloading site and stop facing straight ahead. Move the selector lever into the Neutral position and apply the parking brake. After adjusting the mast to the vertical position, raise the load a little above the stack on which it is to be placed. Release the parking brake and advance slowly into the proper position for stowing. Apply the parking brake and place the selector lever in the Neutral position.

Slowly lower the forks to set down the load. After moving the selector lever to the Reverse position, release the parking brake and back up the lift truck until the forks separate completely from the load.

CLIMBING

For safety reasons, when driving a loaded lift truck up a steep grade, it must be driven forward with the load in front; park on a downgrade, backward with the load behind.

To make a standing start on an incline and stopping on a slope, manipulate the accelerator and brake pedals as required.

For stopping, the brake pedal should be used at all times.

STOPPING AND PARKING THE LIFT TRUCK

1. Park the lift truck in designated parking areas only.
2. Make sure the lift truck does not block fire aisles, fire equipment, stairways or walkways.
3. Stop the lift truck by removing your foot from the accelerator pedal and step on the brake pedal.



WARNING

- **Do no make sudden stops as the lift truck will pitch forward and drop load.**
4. Set the parking brake lever.
 5. Place the selector lever in the Neutral position.
 6. Adjust mast to vertical position and lower forks fully.
 7. Turn ignition switch to OFF position and remove the key, if equipped.
 8. If operating on LPG, close the LPG Cylinder (tank) discharge valve.

NOTE:

If the operator leaves the operator's seat without setting the parking brake lever, the warning buzzer alerts the operator.

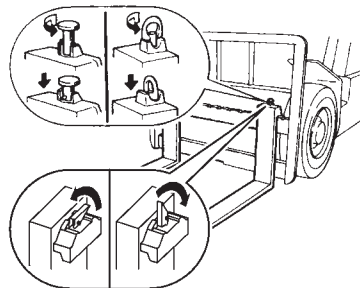


WARNING

- **To prevent unauthorized use, always remove the key, if equipped, from the ignition switch when left unattended. A lift truck is unattended when the operator is more than 8 m (25 ft) from the lift truck which remains in view, or whenever the operator leaves the truck and it is not within view.**

FORKS

The fork-to-fork distance can be properly adjusted by unlocking the lock pins on the forks. These pins are unlocked by pulling them up and turning them 90° in either direction. Forks must be equally located from the center of the lift truck. After correct fork-to-fork distance is obtained, secure the forks with the lock pins. Do not use fork lock pins on lift trucks with an optional fork positioner attachment.



CAUTION

- **Various kinds of forks are available depending on the lifting capacity. Select proper forks so that the specifications stamped on the upper or side face of them will meet the lifting capacity of your lift truck. Do not use forks below the lifting capacity of your lift truck.**



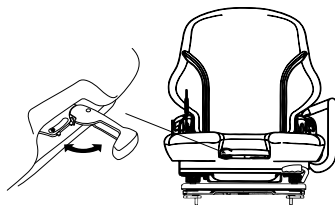
WARNING

- **Forks should be inspected daily for any damage, bending or other abnormal conditions. Report any conditions to your supervisor.**
- **ANSI/ITSDF and OSHA require that forks be replaced if worn more than 10% of the starting thickness, this should be checked during normal P.M. or at minimum, yearly by your Local Authorized Dealer.**

SEAT ADJUSTMENT

SUSPENSION SEAT OPERATOR'S WEIGHT ADJUSTMENT

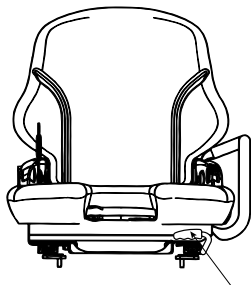
To adjust the suspension seat to the operator's weight pull out the handle and then pump it up or down.



FORWARD AND BACKWARD CONTROL LEVER

The forward and backward control lever is located on the front left side of the seat when sitting in the operating position facing the mast.

To adjust the seat position, pull up and hold while sliding the seat to the desired position. Release the lever to lock into position.

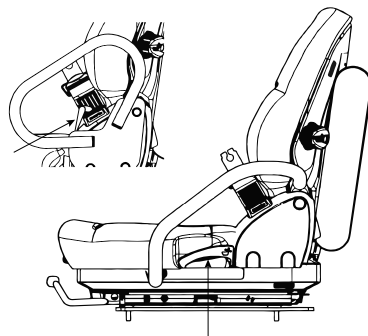


WARNING

- Before adjusting the seat turn the ignition switch to the off position and apply the parking brake.
- Adjusting the seat while the lift truck is in motion can cause loss of control.

BACKREST INCLINATION ADJUSTMENT

To adjust the backrest to the desired angle pull up and hold the lever or strap on the left side of the seat. Release the lever or strap to lock the backrest into position.



NOTE:

When opening the top panel you may need to tilt the backrest forward depending on the situation.

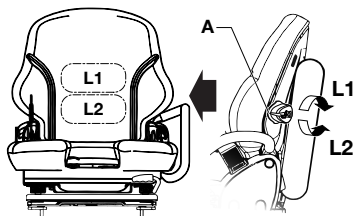


WARNING

- If adjusting the angle of the backrest when not in the operator's seat hold the backrest by hand and do not make hasty or rough adjustments as this may cause an injury, for instance the back of the seat may bump against the operator's face and body, or the operator's finger may get caught between the backrest and the grip.

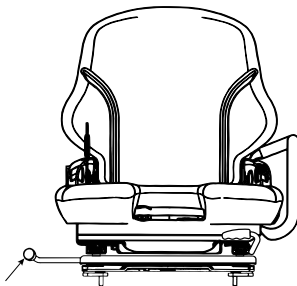
LUMBAR ADJUSTMENT

To expand the upper lumbar turn the knob clockwise (refer to L1 position). To expand the lower lumbar turn the knob counter-clockwise (refer to L2 position). If the knob is in the center position (refer to A position) both the upper and lower lumbar supports are in the neutral position.



SWIVEL SEAT

To swivel the seat (will only swivel 20° to right or left) lift and hold the seat swivel handle located on the right side of the seat and turn in the most comfortable direction for the best view in direction of travel. Release the handle to lock into position.

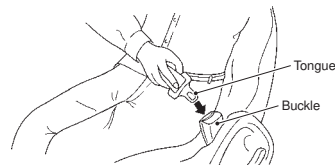


WARNING

- Before adjusting the seat turn the ignition switch to the off position and apply the parking brake.
- Adjusting the seat while the lift truck is in motion can cause loss of control.

SEAT BELT

1. Holding the tongue pull out the seat belt gently.
2. Wrap the lower part of the hipbone with the seat belt as tight as possible.



NOTE:

If the seat belt cannot be pulled out because it is locked, loosen it once and pull it out once more.

3. Being careful not to twist the seat belt, insert the tongue into the buckle until it "clicks". If the lift truck is equipped with the Seat Belt Interlock option, the seat belt must be fastened to start the lift truck (refer to page 82).

For unfastening the seat belt, press the button on the buckle and pull the tongue out of it. While lightly holding the tongue, let the seat belt be rewound gently.

NOTE:

When unfastening the seat belt, be sure to hold the tongue because the tongue may be pulled rapidly together with the seat belt.



WARNING

- Periodically check to see that the seat belt and metal components, such as buckles, tongues, retractors, flexible wires and anchors, work properly. If loose parts, deterioration, cuts or other damage is found, the entire seat belt assembly should be replaced.
 - Tightly wrap the seat belt around the hipbone as low as possible. If the seat belt comes off the hipbone and it wraps around the abdomen, it may cause an injury because strong pressure is applied onto the abdomen.
 - Do not fasten the seat belt if it is twisted. If it is twisted, it may cause an injury because the twisted belt cannot disperse on impact.
 - Do not adjust the seat belt to be loose such as slackening it intentionally by use of a clip. If the seat belt is fastened loosely, it cannot perform correctly.
 - Do not excessively tilt back the backrest, otherwise the seat belt may not perform correctly.
 - Do not put any foreign substance into the buckle or retractor, otherwise its (performance cannot be demonstrated) because it cannot be fastened normally.
 - It is recommended that the seat belt be used by pregnant women and injured persons, consult with you doctor for specific recommendations beforehand because her/his abdomen is pressed by the seat belt.
 - A seat belt that was once impacted, damaged or broken in part may not perform correctly. Replace it with a new one by contacting your Local Authorized Dealer.
- For cleaning the seat belt, use a neutral detergent or lukewarm water. After cleaning, dry it completely before use. Be sure not to use an organic solvent such as benzine or gasoline, otherwise the seat belt deteriorates in its performance and may not function as designed.

SEAT BELT INTERLOCK OPTIONS

The lift truck may be equipped with one of four options which requires the operator to be seated with the seat belt fastened prior to primary functionality being enabled.

Option 1 - Seat Belt / Transmission and Mast Interlock

If the seat belt is not fastened, the transmission will return to neutral and the hydraulic functions will be locked out.

NOTE:

Contact your supervisor to see if your lift truck is equipped with this option.

Option 2 - Seat Belt / Transmission, Mast and Engine Starter Interlock

The engine starter cannot be engaged without the seat belt fastened.

NOTE:

Refer to page 55 for engine restarting instructions.

Option 3 - Seat Belt / Transmission and Mast Interlock with Engine Shutdown

If the seat belt is unfastened with the engine running, a shutdown timer will activate a warning to the operator. After thirty (30) seconds, if the seat belt is still unfastened, the engine will shut down.

NOTE:

Refer to page 55 for engine restarting instructions.

Option 4 - Seat Belt / Transmission, Mast and Engine Starter Interlock with Engine Shutdown

If the seat belt is unfastened the engine starter cannot be engaged, or if the engine is running, a shutdown timer will activate a warning to the operator. After thirty (30) seconds, if the seat belt is still unfastened, the engine will shut down.

NOTE:

Refer to page 55 for engine restarting instructions.

TOP PANEL



WARNING

- **Do not open the top panel (hood) with the engine running. Do not place hands near the cooling fan because it rotates at a high speed and may cause injury. When starting the engine, check the top panel (hood) to make sure that it is locked.**

The lift truck is provided with a top panel lock to ensure that the engine hood cannot be opened unless the lock is released.

The top panel opens towards the rear of the lift truck and is retained by a gas stay.

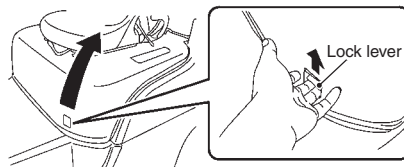
OPEN OPERATION

1. Tilt the steering wheel all the way forward and upward. Use the service release latch lever (yellow) (refer to page 84).
2. For LPG and Dual Fuel lift trucks with swing out or swing down LPG Cylinder (tank) mounting, you must swing out the LPG Cylinder (tank) before opening the top panel (refer to page 86).

For lift trucks equipped with the optional joystick, before the top panel is opened you must tilt the joystick control unit.

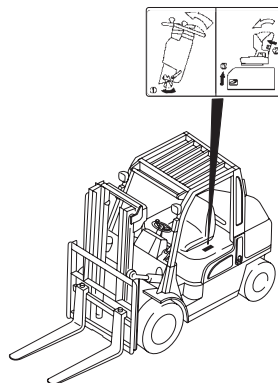
3. Pull the lever on the left side of the operator's seat upward to tilt the backrest forward.

4. Pull up on the lock lever in the front left side of the top panel to unlock it while pressing down, then lift the panel rearward.



NOTE:

For opening, refer to the top panel open procedure label on the body.



CLOSE OPERATION

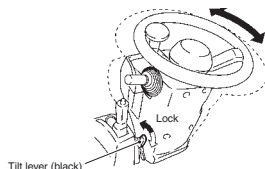
1. Make sure the steering wheel is tilted upward.
2. Since there is reaction of the gas stay, press down on the front top portion of the hood (top panel) until it is securely locked in place.
3. Raise the backrest of the operator's seat up to the original position.
4. Pull the steering wheel toward the operator's side to the limit so that it is locked.

WARNING

- To avoid pinching your fingers, always press down on the top of the hood (top panel).
- Make sure the top panel is securely locked.

TILT STEERING WHEEL

The position of the steering wheel can be adjusted. To adjust, push down on the tilt lever (black) located on the left side of the steering column, and move the wheel to the desired position. After selecting the wheel position, pull up the lever fully to lock.



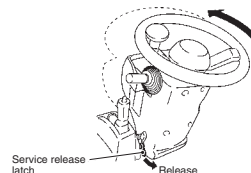
WARNING

- Before adjusting the steering wheel, turn the ignition switch off and set the parking brake.
- Be sure to adjust the steering wheel position while the lift truck is stationary.
- After adjustment, force the steering wheel upward or downward to assure it is locked securely.

SERVICE RELEASE LATCH

Press the steering wheel forward while depressing the service release latch (yellow) on the left side under the steering wheel, and the steering wheel tilts forward.

For returning the steering wheel to the original position, pull it toward the operator's seat to the limit. The service release latch returns to the original position and the steering wheel is locked automatically.



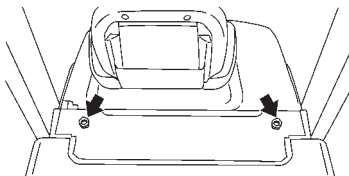
WARNING

- Before starting the engine, make sure that the steering wheel is returned to the original locked position.
- Do not operate the lift truck with the steering wheel in the service release position. Doing so could result in an accident.

RADIATOR COVER

The radiator cover can be removed with the top panel closed.

For inspection of the radiator or replenishment of the engine coolant, loosen the right and left bolts by hand.



WARNING

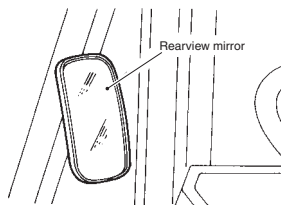
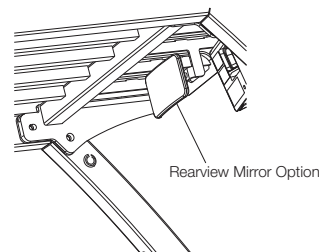
- **Do not remove the radiator cover while the engine is running. Always turn the ignition switch off when cover is to be removed for any reason to reduce possible personal injury from rotating parts.**

NOTE:

- Be absolutely sure to hand tighten the bolts when reinstalling the radiator cover.
- Refer to page 94 for information on the engine coolant level check procedure.

REARVIEW MIRROR (OPTION)

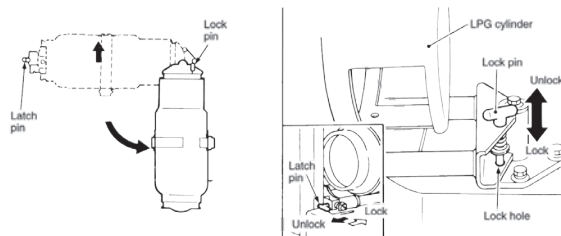
Adjust the rearview mirror(s) by hand so that you ensure the best view to the rear.



WARNING

- **Never use only the rearview mirror(s) for operating the lift truck in reverse due to limited visibility. Always turn and look in the direction of travel before proceeding.**

LPG CYLINDER (TANK) HOLDER



OPEN PROCEDURE

1. Pull out the latch pin to unlock the LPG Cylinder (tank) holder.
2. Slowly open the cylinder (tank) holder 90° until the lock pin is in the lock pin hole.

WARNING

- When the latch pin is pulled out from the cylinder (tank) holder, the weight of the holder and the LPG Cylinder (tank) cause the holder to drop naturally, possibly resulting in unexpected injury.
 - When swinging the cylinder (tank) holder, be sure to support the cylinder (tank) until the swing is completed. If you release the cylinder (tank) before it is locked in position, it may move in the opposite direction, or it may swing rapidly causing unexpected injury.
 - Before opening the top panel, make sure that the lock pin is properly inserted into the lock pin hole.
3. Perform the top panel opening operation (refer to page 83).

CLOSE PROCEDURE

Before closing the LPG Cylinder (tank) holder, make sure that the top panel is properly closed (refer to page 84).

1. Pull the lock pin up to unlock the LPG Cylinder (tank) holder. Slowly close the LPG Cylinder (tank) holder and make sure that the latch pin is in the locked position.

WARNING

- If the latch pin is not locked securely, there is the danger that the cylinder (tank) holder may move unexpectedly, causing unexpected injury.
2. While seated in the operator's seat with the seat belt fastened, turn the ignition switch to the ON position.
 3. Check to make sure that the cylinder (tank) lock indicator light is off.
 4. If the light is illuminated, turn the ignition switch to the OFF position and check that the swing mount is secured and locked. If it is check to see if the switch is damaged.

NOTE:

The engine will not start if the cylinder (tank) holder is not in the locked position.

WARNING

- Only authorized UCA service technicians should perform repair and/or make adjustments to the cylinder (tank) switch or latch.
- Refer to pages 112-117 for additional information on the LPG system.

GENERAL CARE AND MAINTENANCE

WET CELL BATTERY CARE AND MAINTENANCE

The following is general information regarding the best methods for using and maintaining the battery and it not intended to address details regarding every manufacture of batteries/chargers. The specific battery or charger manufacturer should always be contacted to ensure their recommended procedures and operation methods of the equipment are followed.

Refer to the appropriate manuals attached to the battery for information about how to handle and maintain the battery. Proper care and servicing of the battery is vital to ensure satisfactory operation and life of your forklift. Battery acid is extremely corrosive and should be washed off the unit if any spills occur.



CAUTION

- **Do not allow the alkaline solution to fall in the battery cell, this will result in a dead or weak battery.**
- **Check with Local and State Regulations on storing, charging and cleaning of corrosive materials. There may be conditions locally which will not allow you to simply wash off acid spills.**



WARNING

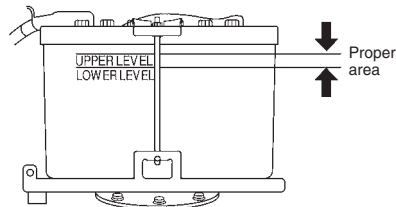
- **Only trained and authorized personnel should conduct maintenance or servicing of this lift truck and its battery.**
- **Always turn the ignition switch to the OFF position and disconnect the battery before doing any servicing of the battery.**
- **Always wear personal protective equipment (PPE), i.e. safety goggles, rubber gloves and boots, when servicing the battery. Battery acid will cause severe burn or injury.**
- **The battery generates highly explosive hydrogen gas. A short circuit resulting in sparks or even a lit cigarette in the vicinity of the battery can cause a serious explosion. Do not permit smoking, open flames or sparks near the battery or battery maintenance area.**
- **Battery fluid contains highly corrosive sulfuric acid. If acid contacts skin or clothing, flush the area immediately with large amounts of clean fresh water. If acid enters the eyes, immediately wash out eyes with large amounts of clean fresh water and contact a physician. If acid is accidentally swallowed, immediately contact a physician.**
- **If a large quantity of battery fluid is spilled, neutralize it with an equivalent quantity of basic neutralizing agent (baking soda, calcium hydroxide, or sodium carbonate). Wash away the resulting solution with large quantities of clean fresh water. Always follow any and all local, state and federal regulations for hazardous material spills.**



WARNING

- Do not place tools or other metallic objects on the top surface of the battery where they may come in contact with the battery terminals and cause an electrical short. This electrical short may cause sparking. The sparking may ignite the hydrogen gas escaping from the battery resulting in a serious explosion. It may cause some nearby object to burn.
- Battery fluid exhaustion (gases) creates the danger of explosion. Replenish the battery fluid frequently to maintain the specified fluid level. If the fluid level is low, replenish it with distilled water to the specified level.
- Do not attempt to recharge a frozen battery; this may cause it to rupture or explode.
- Cleaning the battery upper surface and connections with certain types of dry cloth or laying a dust cover or vinyl sheet across these areas may create a static electricity charge that can lead to dangerous sparking. An explosion can result. Do not use dust covers or vinyl sheets to protect the battery. If you are cleaning battery surfaces, use a slightly damp cloth.

BATTERY FLUID LEVEL



Check the battery fluid level once a week to prevent the battery from running short of the electrolyte.

REFILLING BATTERY FLUID

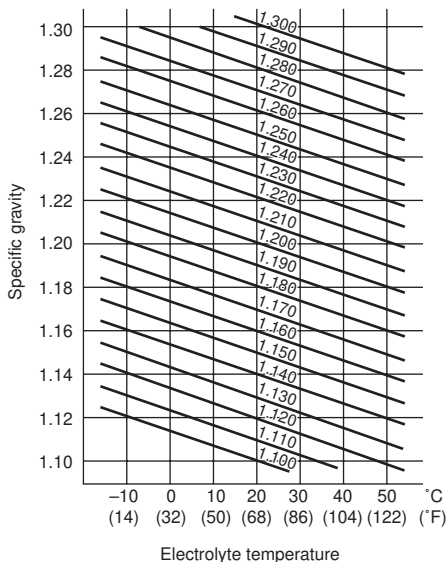
Open the top panel (refer to page 83), remove the battery vent caps and inspect the electrolyte level in each cell.

If the electrolyte level is insufficient, carefully refill the battery cells with distilled water only until the fluid level reaches the "Upper Level" so as not to contaminate the fluid with dust or foreign substances.

At the same time, visually inspect the battery body for cracks or damage. If there is any damage, immediately replace the battery with a new one.

After refilling the battery with distilled water, tighten the respective caps tightly. If battery fluid spills out, wash it away with water and wipe down the wet surface.

BATTERY SPECIFIC GRAVITY



The battery should not be left in the discharged state. When battery performance becomes questionable, check the specific gravity of the electrolyte, terminals of battery and alternator.

The normal specific gravity is 1.260 as corrected at 20°C (68°F). It changes to about 0.0007 for every 1°C (1.8°F). If the specific gravity of the electrolyte does not indicate the correct value, charge the battery soon.

DAILY INSPECTION

To maintain your lift truck in proper condition and ready for safe operation, be sure to perform the daily checks indicated below. If you note any malfunction notify your Local Authorized Dealer.

1. Check battery fluid level.
2. Check brake fluid level and for leaks.
3. Check hydraulic oil level and for oil line leaks.
4. Check engine oil level.
5. Check engine coolant level and check cooling system for leaks.
6. Check transmission oil level and for leaks.
7. Check the fuel line (hoses, pipes, connections) for leaks. Also check the fuel tank drain plug for leaks.
8. Check the water separator of the fuel filter. If necessary, drain the water from the separator (Diesel lift trucks).
9. Check the radiator core for clogging.
 - If there is dirt or dust on the radiator core, the engine may overheat. Clean the radiator core with compressed air or steam so as not to deform the core fins.
10. Check the color of the exhaust gas after the engine is warmed up.
 - "Colorless or light blue" exhaust represents complete combustion.
 - "Black" exhaust represents incomplete combustion and "White" exhaust shows burning of engine oil.



WARNING

- **Exhaust gas contains harmful substances, therefore sufficient ventilation must be secured in case you have to start it in an enclosed area.**
- **This exhaust gas check must be conducted in an open area.**

11. Check for full motion and proper function of all the steering and travel controls.
12. Check steering wheel play.
13. Check that all guards, horn, lights, limit switches, warning and safety devices, indicators, etc. are functional.
14. Check the condition of tires and wheels. Check for looseness, wear or damage of wheel nuts and bolts.
 - Remove objects that are embedded in the tread.
 - Check for damage and friction of wheels and for bends and cracks in the rim.
15. Check operation of hydraulic control valve.
16. Check mast operation for the following items:
 - Smooth lifting and lowering
 - Smooth roller rotation
 - Wear or damage to chains
 - Wear or damage on mast rail
 - Lift bracket and forks for bends or damage
17. Conduct an operational check, including braking functions.
18. Check seat belt interlock option/seat switch lock out system by starting the lift truck and then raise off the seat. In three (3) seconds the hydraulic indicator light should light up.
19. Check seat belt and top panel lock.
20. Check the backrest and overhead guard for proper installation and function.
21. Check forks and frame for cracks, breaks, bend and wear.
22. Check the fork latches.
23. Check the safety start system operation.
24. Check additional options, i.e. attachments or special equipment as specified by the manufacturer or employer.

25. Check and verify capacity plates and decals are legible, if not replace.



WARNING

- **Do not open the top panel with the engine running. Do not place hands near the cooling fan because it rotates at a high speed and may cause injury. When opening the hood, be sure to turn off the engine. When starting the engine, check the hood to make sure it is locked.**
- **If the lift truck is found to be in need of repair or in any way unsafe, contributes to an unsafe condition, or becomes unsafe in any way during operation, the matter shall be reported immediately to your designated authority, and the lift truck shall not be operated until it has been restored to safe operating condition.**
- **Do not make repairs or adjustments unless specifically authorized to do so.**
- **Be certain that your lift truck is the correct UL safety rating type for the area in which you are working. The proper type designation for the lift truck is on the data plate. In areas classified as hazardous, use only lift trucks approved for use in those areas. All hazardous areas should have classified markings. If you are unsure of the classification of the area you wish to enter, ask your designated authority before entering.**

OPERATOR'S DAILY CHECKLIST (SAMPLE)



WARNING

- Carry out the daily checks as per "Daily Inspection" in this Operator's Manual on page 73 and the applicable provisions of laws and regulations of your country (In U.S. OSHA 29CFR1910.178).

I.T.A. Class IV and V Operator's Daily Checklist and Safety Inspection (sample)

Check each of the following items before the start of each shift. Notify your supervisor and/or maintenance department if there are any problems with the lift truck.

DO NOT OPERATE A LIFT TRUCK WITH ANY MALFUNCTION.

LIFT TRUCK DETAILS:

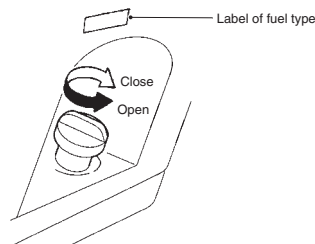
GAS LPG DUAL FUEL DIESEL Serial/Lift Truck Number: _____ Hour Meter Reading: _____ Date of Inspection: _____ Operator: _____ Supervisor's OK: _____
Please review the list below and mark each item accordingly. Please provide any additional explanation as necessary.

#	OK	NG	Visual Check Items	#	OK	NG	Operational Check Items
01			Forks: bent, worn, fork stops, pin/latch locks	18			Horn Operation: working
02			Load Backrest: bent, cracked, loose, missing	19			Service Brake: linkage, loose/binding, stops OK, grab
03			Tires/Wheels: wear, damage, nuts tight or missing	20			Parking Brake: loose/binding, operation, adjustment
04			Battery Connectors: cracked, loose, missing	21			Seat Brake (if equipped): loose/binding, operational adjustment
05			Hydraulic Oil: level, dirty, leaks	22			Engine: runs rough, noisy, leaks
06			Covers/Panels/Sheet Metal: damage, missing	23			Mast: smooth lifting/lowering, smooth roller rotation, wear or damage to chains or mast rails
07			Overhead Guard: bent, cracked, loose, missing	24			Tilt: loose/binding, excessive drift, "chatters", leaks
08			Battery: connections loose, state of charge, electrolyte level	25			Carriage and Attachments: operation, leaks, mounting, damage
09			Warning Decals/Operator's Manual: missing, unreadable	26			Control levers: loose/binding, free return to neutral position
10			Data Plate/Capacity Plate: incorrect: unreadable, missing	27			Directional Control: loose/binding, find neutral position OK
11			Operator Restraint (if equipped): damage, mounting, operation, oily, dirty	28			Drive Axle: noise, leaks
12			Gauges/Instruments: damage, operation	29			Steering: loose/binding, leaks, operation
13			Brakes: linkage loose, reservoir fluid level, leaks	30			Warning Lights (if equipped): mounting, operation
14			Carriage and Attachments: damage, mounting, operation, leaks	31			Back-Up Alarm (if equipped): mounting, operation
15			Head/Tail/Working Lights: damage, mounting, operation	32			Head/Tail/Working Lights: mounting, operation
16			Radiator: fluid level, dirty, leaks, condition of hoses and core	33			
17			Engine Oil: level, dirty, leaks	34			
18			Fuel: level, dirty, leaks	35			

Additional explanation of problems marked above: _____

MAINTENANCE AND INSPECTION

FUEL RECOMMENDATION



WARNING

- **Be sure to stop the engine before refilling with fuel.**
- **Make sure that there is not fire or flammable objects in the vicinity of the engine. Use only unleaded fuel in the fuel tank of gasoline engine equipped lift trucks and only diesel fuel in the tank of diesel engine equipped lift trucks.**

The fuel inlet is located on the body on the left rear side.

When refilling the fuel, check the indication label and do not use the wrong fuel by mistake. Turn the fuel cap counterclockwise to remove it.

If the fuel cap has the optional lock and key, insert the key into the keyhole on the fuel cap and turn the key clockwise for locking or turn it counterclockwise to unlock.

After refilling, be sure to turn the fuel cap clockwise until it clicks twice or more.

Gasoline to be used

- Except Germany: Regular (Unleaded)
- Germany: Normal gasoline leaded DIN 51 600 or normal unleaded DIN 51 607.



CAUTION

- **Be careful not to allow water or debris to enter the fuel tank during refilling, as it may cause damage to the EFI fuel system components.**
- **Do not use fuel that has been stored for a long time. Such fuel may adversely affect engine performance or shorten its service life, because of possible contaminants in the fuel.**
- **If the fuel spills out of the fuel inlet, wipe it off immediately and completely clean the area by the inlet.**

Diesel Engine Forklift

The diesel engine is designed to run only on diesel fuel with at least a minimum of 42 cetane rating.

LPG Fueling

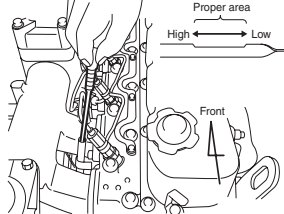
Refer to pages 112-117.

ENGINE OIL LEVEL

K21/ K25, GK21/GK25



QD32



To check the oil level, pull out the level gauge, wipe it clean and reinsert; remove it again to read the oil level.

The level should be in the proper area.

After checking the oil level, be sure to return the oil level gauge to the original position.

For diesel engines, the level gauge is located on the left side of the engine.



CAUTION

- **Do not run the engine when the engine oil level is lower than the minimum indicator (low) mark, as the engine could be damaged or seize up. If the engine oil level is lower than the minimum indicator (low) mark, add engine oil through the oil inlet until the oil level reaches the specified amount.**

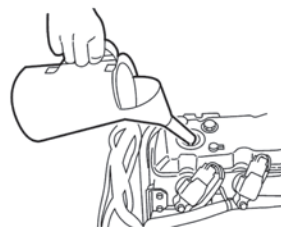
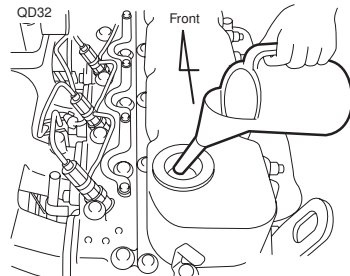
NOTE:

When checking the engine oil, be sure to do it on a level surface, before starting the engine and at least five (5) minutes after the engine is stopped.

REFILLING ENGINE OIL

1. For refilling the engine oil tank with engine oil, remove the oil filler cap and slowly pour genuine OEM motor oil into the tank while checking the oil level with the oil level gauge until the oil reaches the specified oil level.

K21/ K25, GK21/GK25

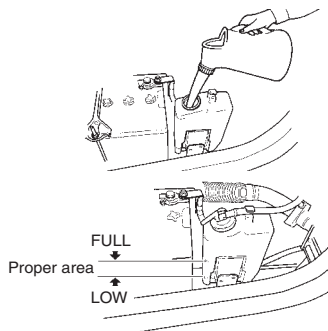


CAUTION

- **Carefully pour engine oil into the oil filler so as not to contaminate with dust and foreign substances. If the oil spills, immediately wipe it off.**
 - **Make sure that the oil filler cap is tightened. If the oil filler cap is not properly tightened, engine problems may result.**
2. Five (5) minutes after refilling the engine oil, check if the oil level is between the upper limit (H) and lower limit (L) indicator marks with the oil level gauge.
 3. Restore the oil filler cap and oil level gauge to their respective original positions.

ENGINE COOLANT LEVEL

Visually check the amount of coolant in the reservoir tank when the engine is cold. If the coolant level is below the "MIN" level, remove the reservoir tank filler cap and add coolant until the "MAX" level is reached. If the reservoir is empty, check the coolant level in the radiator. If there is insufficient coolant in the radiator, pour coolant into the radiator up to the cap and also pour it into the reservoir tank up to the "MAX" level.



If it becomes necessary to repeatedly add coolant, your cooling system should be inspected by your Local Authorized Dealer.

WARNING

- **Never remove the radiator cap when the engine is hot. Serious burns could be caused by high-pressure fluid escaping from the radiator.**
- **Wrap a thick cloth around the cap and carefully remove the cap by turning it a quarter turn to allow built-up pressure to escape. When all hissing, steam and liquid stops, slowly turn the cap all the way off.**

REFILLING ENGINE COOLANT

1. Remove the reservoir tank filler cap and add coolant until the "MAX" level is reached (refer to page 95 for proper mixing ratio).
2. If the reservoir tank is empty, refill the radiator and the reservoir tank with the coolant at the same time. For refilling coolant in the radiator, remove the radiator cover first and then slowly turn the radiator cap while wrapping it with a cloth. After removing the radiator cap fill the radiator with coolant.
3. After refilling the coolant, tighten the reservoir tank filler cap and the radiator cap.



WARNING

- **To avoid being scalded, do not attempt to change the coolant when the engine is hot.**



CAUTION

- **The Blue Extended Life Coolant/Antifreeze can degrade the coated surface. If it adheres to the coated surface, wash the coolant away with water.**
- **Be sure to use Blue Extended Life Coolant/Antifreeze. The cooling performance and anticorrosive treatment cannot be assured if another coolant is used.**
- **Do not refill the coolant above the "MAX" level of the tank. If it exceeds this level, it may spill out as the engine is warmed up. Carefully refill as not to contaminate it with foreign substances.**

COOLING SYSTEM BLEEDING INSTRUCTIONS

Antifreeze

Applicable Engine	Capacity ℓ (US gal, Imp gal)	LLC Density
K21, GK21	8.7 (2-1/4, 1-7/8)	Standard Specification: 30% (approx. -15°C (5°F) of freeze temperature) For Cold Areas: 50% (approx. -35°C (-31°F) of freeze temperature)
K25, GK25	7.9 (2-1/8, 1-3/4)	
QD32	10.2 (2-3/4, 2-1/4)	



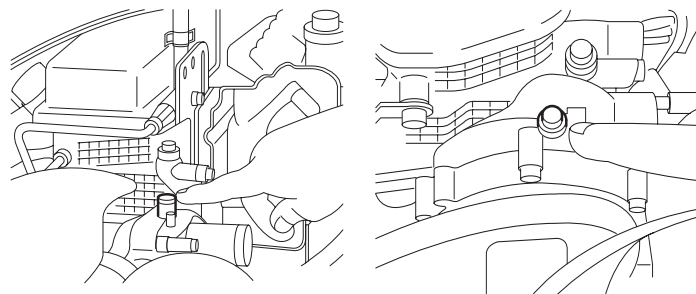
WARNING

- **Never remove the radiator cap when the engine is hot. Serious burns could be caused by high-pressure fluid or steam escaping from the radiator.**
- **Always ensure that the coolant is cooled down sufficiently before removing the radiator cap. When opening the cap, wrap the cap with a shop cloth and turn the cap slowly to release the internal pressure.**

NOTE:

- Use only Blue Extended Life Coolant/Antifreeze with the proper mixture ratio for the working environment that the lift truck will be used in.
- Engine coolant must be disposed of properly. Check all local, state and federal regulations. Remove the radiator cover and open the engine hood.

1. Remove the radiator cover and open the engine hood. Remove the radiator cap.
2. Place an appropriate size container under the radiator. Open the drain cock of the radiator and extract the coolant.
3. If changing engine coolant flush the cooling system.
4. After draining all of the coolant, securely close the drain cock.
5. Prepare coolant mixture (refer to antifreeze chart at left).
6. With the radiator cap removed, locate the engine coolant system bleeder screw. The bleeder screw location varies depending on the model of engine. This screw will either be located in the thermostat housing or on the top of the water pump. Refer to the illustrations below for the location of the screw.

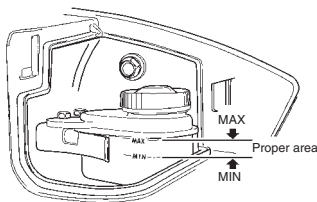


7. Completely remove the bleeder screw, pay close attention to the sealing washer so that it does not fall off the screw as it is being removed.

8. Add the recommended engine coolant mixture into the radiator, when the coolant comes out of the bleeder hole with no air bubbles install the bleeder screw and tighten to 6.3 - 8.0 N·m (55.7 - 75.8 in/lb) of torque.
9. Also add coolant to the reservoir tank up to the "MAX" line.
10. With the radiator cap removed, start the engine and accelerate above idle RPM to purge the air out of the LP vaporizer. Continue to operate the engine until the thermostat opens and you can visually see the coolant moving in the radiator.
11. After engine cools down top off the coolant (approximately 25 mm (1 in) from the top of the radiator) in the radiator after all the air has been purged.
12. Securely attach the radiator cap.
13. Turn off the engine.
14. Close the engine hood and install the radiator cover.
15. Start the engine, check for leaks and ensure that the engine temperature stays within the operating range. If the lift truck starts to overheat, there is still air in the cooling system. Repeat steps 5 through 15.

BRAKE FLUID LEVEL

Check the brake fluid level in the brake fluid reservoir tank under the floor is within the proper range. The tank is located inside the lid on the left side of the instrument panel. If the level is lower than the "MIN" level, refill the reservoir tank. At the same time, examine the outside and periphery of the reservoir tank for brake fluid leak or stain.



WARNING

- If brake fluid is unusually low, a leak or stain is detected, immediately report it to the appropriate personnel or contact your Local Authorized Dealer. Do not operate the lift truck until it has been repaired.

REFILLING BRAKE FLUID

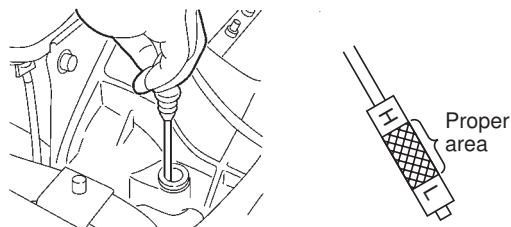
Turn the brake reservoir tank cap counterclockwise to remove it. Gently pour the brake fluid into the tank until the fluid level reaches the "MAX" level (refer to page 128).



CAUTION

- Carefully add brake fluid so as not to mix dust and foreign substances in the fluid.
- Do not use any brake fluid other than those specified by the OEM or an aged brake fluid, it may cause not only deterioration in the performance of the lift truck but could result in an accident.
- Be careful not to spill the brake fluid to the coated surface, it will vitiate (damage) the coated surface. If fluid comes into contact with a coated surface, immediately wipe it out so that no liquid remains.

AUTOMATIC TRANSMISSION FLUID LEVEL



1. Stop the engine after idling for about ten (10) minutes.
2. Open the top panel and check for leakage. Pull out the level gauge and wipe down the tip of the gauge with a clean cloth.
3. Insert the level gauge to the limit and gently pull it out again.
4. Make sure that the fluid adhered to the tip of the gauge is not extremely worn, discolored or contaminated by foreign substances. Also check if the fluid level is within the proper range.
5. If fluid is insufficient, refill with the specified fluid so that the level gauge reads the proper range.



CAUTION

- **Do not operate the lift truck with insufficient automatic transmission fluid, because the truck transmission could stop operating.**
- **If the transmission fluid is extremely worn, discolored or contains foreign substances, immediately report it the proper authority or contact your Local Authorized Dealer.**

REFILLING AUTOMATIC TRANSMISSION FLUID

Automatic transmission fluid can be added through the level gauge hole. Checking the fluid level with the level gauge, pour OEM fluid into the level gauge hole until the fluid level is in the proper range (refer to page 128).



CAUTION

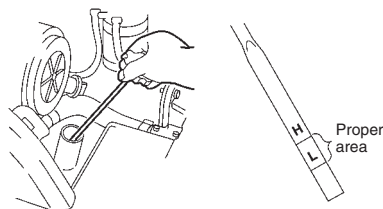
- **Carefully add transmission fluid so as not to mix dust and foreign substances in the fluid.**
- **Do not use any automatic transmission fluid other than those specified by the OEM, it may cause a malfunction in the torque converter. Not only deterioration in the performance of the lift truck but could result in an accident.**

HYDRAULIC OIL LEVEL

1. Check the oil level in the hydraulic oil tank.

NOTE:

For correctly checking the hydraulic oil level, park the lift truck on level ground and stand the mast vertically with the forks lowered to their lowest limit beforehand.



2. Visually check for oil leakage.
3. Remove the hydraulic oil filler cap located on the right side of the operator's seat.
4. Wipe down the level gauge with a clean cloth and reinsert the level gauge into the hydraulic oil filler and pull it out again.
5. Make sure that the fluid level is within the proper range.
6. If fluid is insufficient, refill with the specified fluid so that the level gauge reads the proper range.

REFILLING HYDRAULIC OIL

Remove the hydraulic oil filler cap. While checking the hydraulic oil level with the level gauge, pour the specified hydraulic oil into the oil filler until the oil level is in the proper area (refer to page 128).

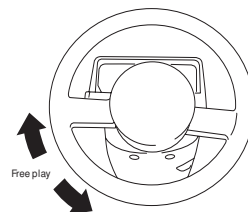


CAUTION

- **Do not use any hydraulic oil other than those specified by the OEM, otherwise it may cause not only deterioration in the performance of the lift truck but could result in an accident.**
- **Carefully add the hydraulic oil so as not to mix dust and foreign substances in the oil.**

STEERING WHEEL PLAY

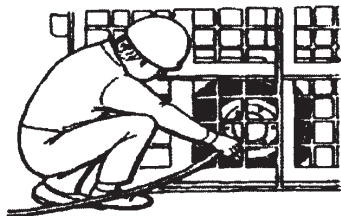
Turn the steering wheel to the left and right. A play in the circumference of less than 30 mm (1.18 in) at idling is normal.



WARNING

- **If there is excessive play or looseness, have the steering wheel adjusted by your Local Authorized Dealer.**

WHEEL AND TIRE



WARNING

- If the tire pressure is not correct it can affect the stability of the lift truck, potentially resulting in a tip-over. It can also cause rupturing, premature tire wear or explosive separation of the multi-piece rim set.
- When checking the tire pressure, do not face the tire side to avoid a danger because the tire pressure is very high.

- OSHA safety procedures must always be followed. Refer to OSHA 1910.177.
- Only properly trained personnel should replace pneumatic tires on multi-piece rim sets.
- Always use correct procedures when servicing or replacing pneumatic tires on multi-piece rim sets.
- When inflating or deflating tires, a suitable safety cage or barrier shall be used.
- Failure to use proper procedures can cause explosive separation of tire and rim set, death or serious injury could result.
- If any of these warning are not adhered to it could result in death or serious injury.
- Tires used on lift trucks manufactured in Japan and the U.S. are different. Do not mix different sizes or tire types, as this could affect stability.

NOTE:

There is a pneumatic type cushion tire without inner tube (so-called tubeless tire, solid pneumatic or non-puncture tire) supplied. Such tire has no need for tire pressure check.

Maintain the correct tire pressures by checking frequently with an accurate tire gauge. Inflate tires to the correct pressure as necessary.

Tire pressure (pneumatic and compact pneumatic models only):

Unit: psi (kgf/cm², kPa)

Model	Front Tire (Drive)	Tire Pressure
1F1 (Pneumatic)	6.50-10/10PR	102 (7.0, 700)
1F2 2.0-2.5 Ton (Pneumatic)	7.00-12/12PR	102 (7.0, 700)
1F2 2.8-3.0 Ton (Pneumatic)	28x9-15/12PR	102 (7.0, 700)
1F2 3.5 Ton (Pneumatic)	250-15/16PR	102 (7.0, 700)
1F1 (Compact Pneumatic)	6.00-9/12PR	145 (10.0, 1000)
1F2 (Compact Pneumatic)	21x8-9/14PR	128 (9.0, 900)

Model	Rear Tire (Steer)	Tire Pressure
1F1 (Pneumatic)	5.00-8/8PR	102 (7.0, 700)
1F2 2.0-2.5 Ton (Pneumatic)	6.00-9/10PR	102 (7.0, 700)
1F2 2.8-3.0 Ton (Pneumatic)	6.50-10/10PR	102 (7.0, 700)
1F2 3.5 Ton (Pneumatic)	6.50-10/12PR	128 (9.0, 900)
1F1 (Compact Pneumatic)	5.00-8/8PR	102 (7.0, 700)
1F2 (Compact Pneumatic)	18x7-8/14PR	128 (9.0, 900)

Model	Type	Tire Size	Tire Load Capacity
1F1 (Cushion)	Front (Drive)	18-6-12.12	Standard
	Rear (Steer)	14-5-10	*HiLoad
1F2 2.0-2.5 Ton (Cushion)	Front (Drive)	21-7-15	Standard
	Rear (Steer)	16.25-6-11.25	Standard
1F2 2.8-3.3 Ton (Cushion)	Front (Drive)	28x9-15	Standard
	Rear (Steer)	16.25-6-11.25	*HiLoad
1F2 3.0 Ton (Cushion)	Front (Drive)	22-8-16	Standard
	Rear (Steer)	18-6-12.12	*HiLoad
1F2 3.5-3.6 Ton (Cushion)	Front (Drive)	22-9-16	Standard
	Rear (Steer)	18-6-12.12	*HiLoad



WARNING

- *Only use the OEM recommended HiLoad steer tire as listed in the parts catalog. This will reduce the possibility of premature wear to the tire, wheel hug and/or steer linkage. This may affect the overall stability both while traveling and during load handling, which could cause a tip-over or loss of load condition.

TIRE REPLACEMENT



WARNING

- Do not remove the wheels unless you are familiar with the procedure. For wheel replacement, contact your Local Authorized Dealer.
- Do not get under or on the lift truck when it is supported only by a jack. Doing so could lead to a serious accident, including death in the case the jack comes off accidentally.
- Use a jack with a capacity of 4.0 tons or more.

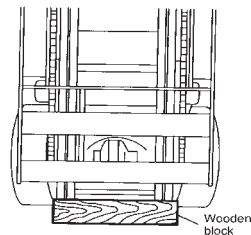


CAUTION

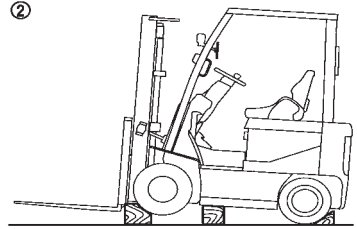
- Always park the lift truck on a flat, level and solid surface.
- Unload cargo from the lift truck.
- Do not turn the ignition switch to the ON or OFF position, or operate control levers from any position other than the operator's seat.
- Keep the parking brake on.
- Make sure the selector lever is in the neutral position.
- Check the lift truck and its surroundings for safety.
- Chock wheels that are not being changed.

- Use hardwood blocks that do not slip easily and are strong enough to withstand the lift truck weight. Do not use broken or cracked blocks or metal blocks that slip easily.
- Use wood blocks of the following size:
Height: Allows the block to tightly fit between the backward tilted mast and the road surface.
Width: 50 to 100 mm (1.97 to 3.94 in) larger than the longitudinal length of the mast rail.
Length: 20 to 40 mm (0.79 to 1.57 in) larger than the width of the outside mast.
- To prevent the lift truck from inclining, do not place wood blocks of different heights under the right and left mast.

①



②



NOTE:

There are two types of wheel nut wrenches: a wheel nut wrench for the front (drive) wheels and a spanner wrench to remove the wheel retainer nut for the rear (steer) wheels.

Front (Drive) Tire:

1. Place the lift truck on a level and solid surface.
2. Start the engine and raise the carriage about 250 mm (9.84 in).
3. Place chocks behind the rear wheels to prevent movement of the lift truck.
4. Loosen the wheel nuts one or two turns each by turning the counterclockwise.
5. Tilt the mast fully backward, place a wooden block under each side of the outer mast.
6. Tilt the mast forward until the front tires are raised from the surface.



WARNING

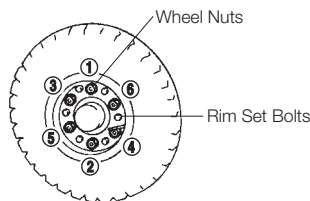
- Do not operate the control lever quickly. Doing so may cause the mast on wood blocks on the ground to become unstable.
 - Stop jacking up the lift truck when the tires are slightly raised off the ground. Jacking up the lift truck excessively high could cause it to roll over.
 - If the front wheels are lifted for a long time by means of the mast, the mast may incline backward by itself. To prevent this, be sure to insert wood blocks under each side of the frame with no space left between them.
 - Do not remove the wheel nuts until the front tires are raised off the ground.
7. Support the lift truck by putting additional wood blocks under each side of the front-end of the frame as shown at left. Stop the engine.
 8. Remove the wheel nuts and replace the front tire.



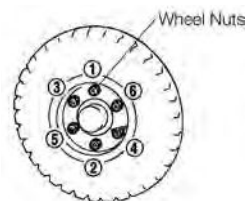
CAUTION

- When removing the tire from the wheel rim, do not remove the rim set bolts and wheel nuts before releasing the air (pneumatic model only).
 - Never get under the lift truck while it is supported only by the wood blocks.
9. Reinstall the wheel nuts and temporarily tighten them in the sequence as shown.

Pneumatic Tire



Cushion Tire



CAUTION

- Each wheel nut has a conical bearing surface and each hole in the rim is countersunk so that they can fit with each other. After attaching all wheel nuts, make sure each nut tightly fits with the countersunk hole. If wheel nuts are attached in the wrong direction, they will loosen easily and might cause bolts to break and the wheel to come off.



CAUTION

- **For replacement of the double tires, do not install the tires in the incorrect direction of the inner and outer rim. The inner rim has a conical bearing surface on one side and the outer rim has it on both sides. If the double tires are installed in the incorrect direction or the wheel nuts are attached in the wrong direction, the nuts may loosen easily and may cause bolts to break and the wheel to come off.**

10. Start the engine and remove the wood blocks from the underside of the frame.
11. Lower the lift truck slowly by tilting the mast fully backward. Remove the wood blocks from under the mast and remove the chocks.
12. Tighten the wheel nuts to the specified torque in a crisscross fashion (refer to page 105).
13. **Pneumatic:** Adjust the tire pressure to the value specified (refer to page 100.)
14. After replacing a tire, drive the lift truck and check the tightening torque of each wheel nut again.

Rear (Steer) Tire:



WARNING

- **Do not remove the wheels unless you are familiar with the procedure. For wheel replacement, contact your Local Authorized Dealer.**

NOTE:

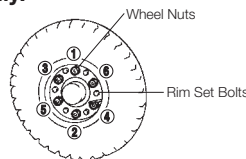
To replace a cushion (press-on) tire, contact properly trained personnel, your Local Authorized Dealer.

1. Place the lift truck on a level and solid surface.
2. Apply the parking brake and place chocks behind the front wheels to prevent movement of the lift truck.
3. Place the jack under the side frame of the lift truck. Jack the truck until the rear tire is raised just off the floor. Place a wooden block under the truck side frame for additional support.



WARNING

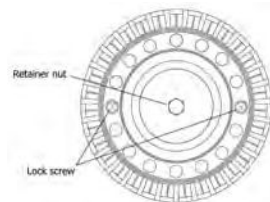
- **Do not get under or ride on the lift truck when it is jacked up. Doing so could lead to a serious accident, including death in the case the jack comes off accidentally.**
 - **Use a jack with a capacity of 4.0 tons or more.**
4. **Pneumatic:** Loosen the wheel nuts one or two turns each by turning it counterclockwise.



WARNING

- **Do not remove wheel nuts until the rear tires are raised off the ground.**

4. **Cushion:** Loosen the retainer nut one or two turns each by turning it counterclockwise.



WARNING

- **Do not remove retainer nut until the rear tires are raised off the ground.**
5. Jack up the lift truck slowly until the rear tires clear the ground. Support the truck by putting wood blocks under each side of the rear end of the frame as shown on page 101.

WARNING

- **Stop jacking up the lift truck when the tires are slightly raised off the ground. Jacking up the lift truck excessively high could cause it to roll over.**
- **Use a jack with a capacity of 4.0 tons or more.**
- **Use hardwood blocks that do not slip easily and are strong enough to withstand the lift truck weight. Do not use broken or cracked blocks or metal blocks that slip easily.**

6. **Pneumatic:** Remove the wheel nuts and the rear tire. Install replacement tire.

6. **Cushion:** Remove the retainer nut and the rear tire. Install replacement tire.

WARNING

- **Pneumatic: When removing the tire from the wheel rim, do not remove the rim set bolts and nuts before releasing the air.**
 - **Never get under the lift truck while it is supported only by the wood blocks.**
7. **Pneumatic:** Reinstall the wheel nuts and temporarily tighten in the sequence shown on page 103.
7. **Cushion:** Reinstall the retainer nut and tighten (refer to chart on page 105).
8. Remove the wood blocks and lower the lift truck slowly until the rear tires touch the ground. Remove chocks and jack.
9. **Pneumatic:** Tighten the wheel nuts to the specified torque in a crisscross fashion (refer to page 105).
10. **Pneumatic:** Adjust the tire pressure to the value specified (refer to page 100).
11. After replacing a tire, drive the lift truck and check the tightening torque of each wheel nut again.

Tightening torque:

Unit: ft-lb (N-m)

Model			P1F1	P1F2			A1F1	A1F2
				2.0-2.5 ton	2.8-3.0 ton	3.5 ton		
Front (Drive)	Single tire		123 - 166 (167 - 226)	181 - 217 (245 - 294)	325 - 434 (441 - 588)	325 - 434 (441 - 588)	123 - 166 (167 - 226)	145 - 181 (196 - 245)
	Double tire	Standard	123 - 166 (167 - 226) *4	 398 - 506 (539 - 686) *1	 398 - 506 (539 - 686) *1	 398 - 506 (539 - 686) *1		
			123 - 165 (167 - 226) *5	434 - 542 (588 - 735) *2	434 - 543 (588 - 735) *2	434 - 542 (588 - 735) *2		
		Special	 123 - 166 (167 - 226) *1	 398 - 506 (539 - 686) *1)	 398 - 506 (539 - 686) *1	 398 - 506 (539 - 686) *1		
			58 - 72 (78.4 - 98) *3	434 - 542 (588 - 735) *2	434 - 542 (588 - 735) *2	434 - 542 (588 - 735) *2		
			123 - 166 (167 - 226) *2	--	--	--		
	Rear (Steer)		123 - 166 (167 - 226)	123 - 166 (167 - 226)	123 - 166 (167 - 226)	155 - 189 (210 - 257)	123 - 166 (167 - 226)	100 - 114 (135 - 155)

 : Bolt : Nut

*1: Inner Wheel

*2: Outer Wheel Nut

*3: Hub Nut (Outer Hub)

*4: Wheel Nut

*5: Wheel Composite Nut

Model	C1F1	C1F2	CG1F2
Front (Drive)	123 - 166 (167 - 226)	145 - 181 (197 - 245)	181 - 217 (245 - 294)
Rear (Steer)	Hub is maintained by wheel bearing nut and rolling torque as noted in Service Manual Section SA.		

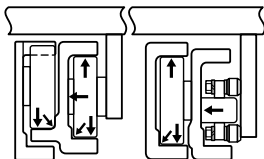
CHECKING MAST

Check the mast to ensure that:

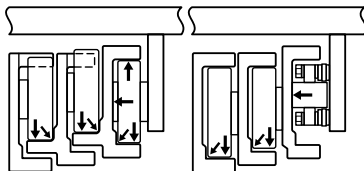
- No oil leakage occurs at or around the lift and tilt cylinders.
- Check rollers for proper rotation.
- Check the chain anchors and pins.

Lubricate the points shown periodically in accordance with the Periodic Maintenance and Lubrication Schedule (refer to page 118) and the Lubrication Chart (refer to page 124). Apply a coat of grease to the thrust metals and liner.

2 Stage Mast

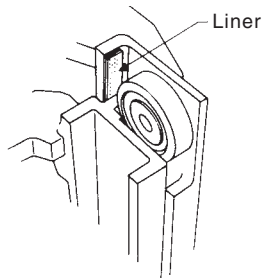


3 Stage Mast



NOTE:

- The lubrication interval will vary with working conditions. During months in which working conditions are severe, it will be necessary to grease the parts frequently.
- When the lift truck is operated, apply a coat of grease to the contact surface of the lift roller and inner mast or outer mast.



CHECKING LIFT CHAIN



WARNING

- Use extreme care when checking lift chain tension.**

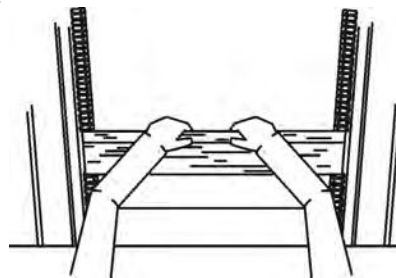
Check the chains for cracks or broken links and pins.

Check lift chain tension periodically. Lift up the forks slightly and depress the midpoint of the lift chain with a board.

Deflection:

25 - 35 mm (0.98 - 1.38 in)

If the deflection is not within the specifications, have the chain adjusted by your Local Authorized Dealer.



FORK INSPECTION

Ensure the forks are secured in their proper position and they are not damaged.



WARNING

- **Forks in use shall be inspected at intervals of not more than 12 months (for single shift operations) or whenever any damage or permanent deformation is detected. Severe applications will require more frequent inspection. (see ANSI/ITSDF B56.1 Section 6.2.8 for inspection and repair of forks in service on lift trucks.)**
- **Individual Load Rating of Forks. When forks are used in pairs (the normal arrangement), the rated capacity of each fork shall be at least half of the manufacturer's rated capacity of the truck, and at the rated load center distance shown of the truck's data plate.**
- **Fork inspection shall be carried out carefully by trained personnel with the aim of detecting any damage, failure, deformation, etc., which might impair safe use. Any fork that shows such damage shall be withdrawn from service, and shall not be return to service unless it has been satisfactorily repaired in accordance with the current ANSI/ITSDF B56.1-2012 standards.**

FORK REPAIR

Repair - Only the manufacturer of the fork or an expert of equal competence shall decide if a fork may be repaired for continued use, and the repairs shall only be carried out by such parties. It is not recommended that surface cracks or wear be repaired by welding. When repairs necessitating resetting are required, the fork shall subsequently be subjected to an appropriate heat treatment, as necessary.

CHECKING HORN

Check the horn for proper operation.

CHECKING LIGHTS

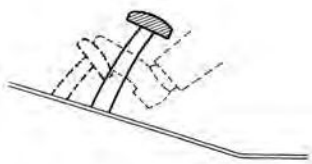
Make sure that lights illuminate when switches are placed into the ON position.

CHECKING CARGO-HANDLING CONTROL LEVER(S)

Check the cargo-handling control lever(s) for proper operation. Ensure that the forks lift, lower, and tilt forward and backward properly.

CHECKING BRAKE PEDAL

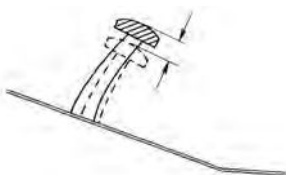
When the brake pedal is fully depressed, the distance between the upper surface of the pedal pad and floor board should be (h) = 60 mm (2.36 in) or more.



When this distance approaches the prescribed limit value, have the brake adjusted by your Local Authorized Dealer.

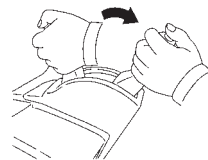
PEDAL FREE PLAY

The standard free play of the pedals is 1 - 3 mm (0.04 - 0.12 in).



CHECKING PARKING BRAKE LEVER

Make sure the parking brake works properly when pulled and then returns to its original (release) position.



Pulling force at gripping position is 116 - 160 N (12 - 16 kg, 26 - 36 lb).

CHECKING TOP PANEL LOCK

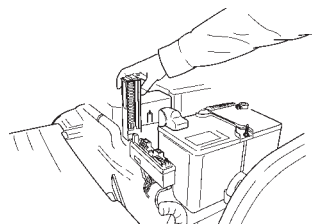
The lock prevents not only the top panel from lifting when brakes are applied abruptly, but also prevents the battery from being thrown out of the compartment if the lift truck should suddenly overturn. Make sure the top panel lock is properly engaged without looseness or damage.

FUSES



WARNING

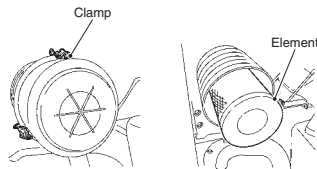
- Remove all jewelry.
- Make sure the ignition switch is in the OFF position before changing any components or disconnecting any wiring.



The fuse box is installed in front of the battery under the top panel. Remove the fuse box cover and visually check if the fuse is blown. Before replacing any malfunctioning fuse, check and correct the cause of the malfunction. Use a fuse of equal specified rating which is clearly shown on the label.

CHECKING AIR CLEANER

Remove the three clamps securing the air cleaner case and take the element out carefully. Clean the element by tapping it by hand or blow compressed air to it from the inside. After cleaning, visually check the element and replace if it is still dirty.



CAUTION

- **When cleaning the air cleaner element, always wear a dust mask and dustproof glasses. OSHA requires that air nozzles be used to reduce pressure to NO MORE than 206 kPa (2.06 bar, 2.1 kg/cm², 30 psi).**

FUEL TANK CLEANING: DRAIN PLUG

Remove the drain plug before washing the inside of the fuel tank. To do this, turn the drain plug counterclockwise.

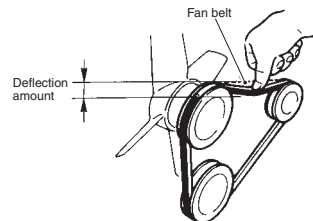
When removing the drain plug, be careful not to lose the packing. Before installing the drain plug be sure to install the packing.

Tightening torque:

25 - 39 N.m (2.6 - 3.9 kg-m, 18 - 28 ft/lb)

CHECKING FAN BELT

Check the belt deflection by applying moderate thumb pressure at a point midway between the pulleys. If necessary, adjust the belt deflection.



Fan belt deflection:

11 - 13 mm (0.43 - 0.51 in)



WARNING

- **Be sure that the engine is not running and the parking brake is applied.**
- **Keep hands clean.**

FUEL FILTER (DRAINING WATER FROM WATER SEPARATOR DIESEL LIFT TRUCKS)

If the fuel filter warning light illuminates while the engine is running, drain any water that is in the fuel filter. Proceed as follows:



WARNING

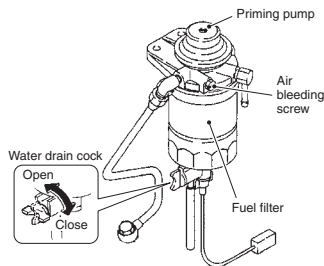
- **Never allow open flames, smoking or other sources of ignition in the area of fuel filter.**
- **Fuel leaks may cause fire. Make sure that fuel does not leak during inspection or replacement.**



CAUTION

- **Parts may remain very hot immediately after the engine has stopped. Wear protective gloves and perform the operation carefully so as not to touch possible hot parts around the water drain cock.**
- **Fuel may spout out along with water being drained. If fuel splashes over parts, wipe it off completely.**
- **If operation is continued for a long time while the sediment chamber (fuel filter) level warning light is illuminated, the fuel injection pump might seize up.**

1. Open the top panel (refer to page 83).
2. Place a container under the fuel filter.
3. Put a container under the water drain cock and loosen the water drain cock 4 to 5 turns to drain the water.
4. After the water has been completely drained, tighten the drain cock.
5. Perform air purge operation (at right).



AIR PURGE (DIESEL LIFT TRUCKS)



WARNING

- **Never allow open flames, smoking or other sources of ignition in the operation area.**



CAUTION

- **Do not remove the screw completely, otherwise a large amount of fuel may spout out.**
- **Fuel may spout out from the air purge screw hole during air purge. Be sure to block the hole with a cotton cloth or a similar item to prevent fuel from splashing over surrounding parts.**
- **If fuel spills during replenishment, be sure to wipe it off.**

NOTE:

Air purge operation for diesel engine lift trucks is not normally necessary. If it becomes necessary follow the procedure below.

When refilling an empty fuel tank and/or draining water from the water separator, purge the air out of the fuel system.

1. Loosen the air purge screw at the upper part of the fuel filter.
2. Move the priming pump up and down until no further air-bleed comes out of the air purge screw.
3. Tighten the air purge screw.

DRAINING OF TAR FROM THE VAPORIZER



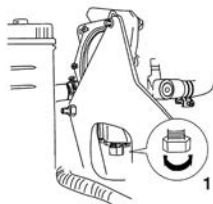
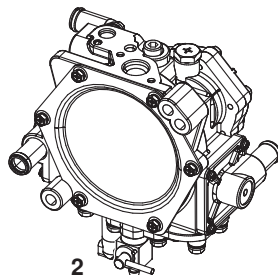
CAUTION

- **This should only be done by a trained and authorized person.**

The vaporizer is an apparatus used during LPG operation to control and reduce fuel pressure within the LPG cylinder and regulate vaporization. The vaporization process produces tar (sticky liquid) which accumulates in the vaporizer.

When or if tar accumulation becomes excessive, emission levels and idling speed adjustment could be adversely affected. Tar must be purged from the vaporizer at least once a month.

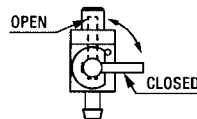
1. The tar purging procedure should be performed when the engine is at the operating temperature (warm).
2. Shut off (close) the LPG Cylinder (tank) discharge valve and then idle until engine stops.
3. Turn the ignition switch to the OFF position and remove the key, if equipped.
4. Get off the lift truck to open the top panel (refer to page 83).
5. Put a cloth for collecting tar under the bolt type outlet or the optional vaporizer drain valve.



6. For the bolt type, slowly remove the plug. For the optional drain valve, open the vaporizer drain valve lever.
7. Tar will drip, when it stops fix the bolt or close the vaporizer drain valve lever, the procedure is complete.
8. If tar adheres to the body or surrounding areas, completely wipe it off.
9. Close the top panel (refer to page 84).

! WARNING

VAPORIZER DRAIN VALVE



BEFORE OPERATION OF TRUCK VALVE MUST BE IN CLOSED POSITION, OTHERWISE SERIOUS OR FATAL INJURY COULD OCCUR.

99330 FMB1A



WARNING

- **Do not touch the vaporizer or its surrounding parts at high temperature, as it may cause burns. Whenever operating the purge bolt (1) or drain valve lever (2), always wear protective gloves.**

NOTE:

- If you removed the battery to gain access to the drain, it is necessary to do an "Idle Air Volume Relearn" (refer to VC Section in the Chassis Service Manual).
- UCA recommends a complete tear down, inspection and resealing of the vaporizer before 6,000 hours or 30 months of operation, whichever comes first. This maintenance is necessary for all units even if the recommended HD5 grade is being used. The conditions in your area and the quality of the LPG may dictate a more stringent maintenance schedule.

PRECAUTIONS FOR USING LPG



WARNING

- **LPG IS HEAVIER THAN AIR.** It will settle on your clothes and the surface around you, displacing oxygen necessary for breathing.
- **Open flames can cause flash fires.**
- **Check all connections for damage or leaks.** If the lift truck will not start after you change cylinders, have an authorized, qualified mechanic check it.

When changing LPG (liquefied petroleum gas) Cylinders (tanks), follow the basic rules below.

- Never allow open flames or other sources of ignition in the area.
- Wear protective equipment (i.e. safety glasses, gloves, etc.).

- Change only in well ventilated areas.
- Do not use or park near fire.
- Do not expose directly to the sun for extended periods of time.
- Inspect equipment pipe connections for gas leaks at mating sections.
- Only a person who is familiar with replacing LPG Cylinders (tanks) should replace them.
- LPG is heavier than air.



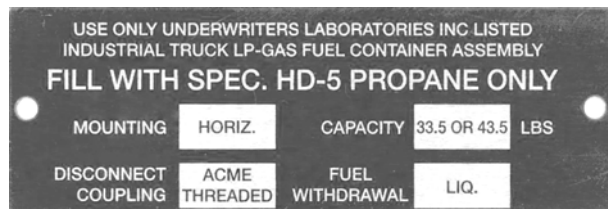
WARNING

- **Internal combustion lift trucks are not recommended for use in enclosed or confined spaces because of the possible build up of carbon monoxide gases, which are colorless and odorless, and could cause unconsciousness and/or death.**

RECOMMENDED LPG FUEL TYPE

UCA recommends the use of the HD5 LPG. Use of any other grade may cause the following: increased emissions, increased maintenance and decreased performance.

UCA does not recommend any fuel system additives or cleaners.



CYLINDER (TANK) SIZE

	Vehicle Classification	Weight Filled	Weight Empty	Diameter	Length
Cylinder Size	1 ton series	38 lb	33 lb	12 in	27-1/4 in
	2 - 3 ton series	38 lb	33 lb	12 in	27-1/4 in
Optional	Pneumatic 2.5 ton and up	70 lb	43 lb	12 in	33-5/16 in
	Cushion 2.8 ton and up	70 lb	43 lb	12 in	33-5/16 in

Aluminum cylinder only, steel cylinders sizes may vary.

LPG CYLINDER (TANK) REPLACEMENT

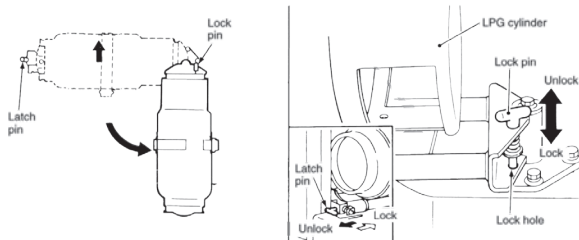
WARNING

- **Replace the cylinder (tank) in a well ventilated area.**
- **While replacing the cylinder (tank), never use or get close to fire.**
- **Use LPG Cylinders (tanks) with the capacity shown in the table above.**
- **Always wear PPE when replacing cylinder (tank).**

The cylinder (tank) is installed on the lift truck with the discharge valve on the right side when viewed from the rear of the lift truck. The high pressure hose is connected to the discharge valve with a threaded screw type connector.

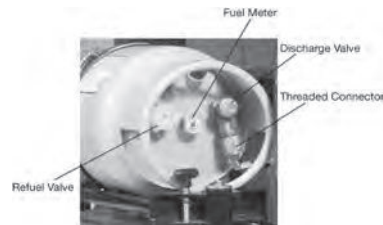
Swing-Out Type Cylinder (Tank) Mount

During lift truck service procedures requiring opening of the top panel, the LPG Cylinder (tank) mount must first be moved to prevent it from interfering with the operator's seat. Follow the procedure outlined to replace the LPG Cylinder (tank) on swing-out type cylinder mount equipped lift trucks.



Removing Cylinder (Tank) Swing-Out Type

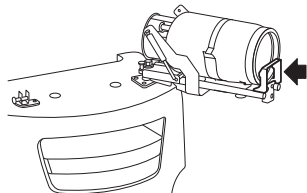
1. Place the fuel-change switch in the LPG position.
2. Turn the discharge valve, located on the right side when viewed from the rear of the lift truck, slowly to the right (clockwise) to fully close the valve.
3. Allow the engine to run until it stops naturally (fuel exhausted). Turn the ignition switch to the OFF position.
4. Restart lift truck to ensure all fuel is exhausted.
5. Slowly turn the high pressure hose threaded connector counterclockwise until it is disconnected from the discharge valve.



WARNING

- **Listen for leaks and for the smell of LP.**

6. Pull the latch pin out to unlock the LPG Cylinder (tank) holder.
7. Slowly open the cylinder (tank) holder 90° until the lock pin is in the lock pin hole.





WARNING

- **Do not attempt to replace the LPG Cylinder (tank) with the holder in the open position. Replace the LPG Cylinder (tank) only with the holder locked in place.**
8. Pull down on the strap latch and open fully to release the cylinder (tank).
 9. Securely grasp the cylinder (tank) with both hands and lift the cylinder (tank) up to remove it from the holder and gently place on the ground.



WARNING

- **When the latch pin is pulled out from the cylinder (tank) holder, the weight of the holder and the LPG Cylinder (tank) cause the holder to drop naturally, possibly resulting in unexpected injury.**
- **When swinging the cylinder (tank) holder, be sure to support the cylinder (tank) until the swing is completed. If you release the cylinder (tank) before it is locked in position, it may move in the opposite direction, or it may swing rapidly causing unexpected injury.**
- **When handling the LPG Cylinder (tank), be sure to grasp it at the top and bottom. If you grasp any other part of the cylinder (tank), there is the danger that your hands may be caught between the cylinder (tank) and the holder.**

Installing Cylinder (Tank) Swing-Out Type

1. Turn the LPG Cylinder (tank) so that the side with the locator hole for the locator pin on the bracket are lined up. Securely grasp the cylinder (tank) with both hands and lift the cylinder (tank) up and place on holder.



WARNING

- **Do not place your feet directly below the LPG Cylinder (tank). The cylinder (tank) is heavy and there is the danger of injury if it falls. When handling the LPG Cylinder (tank), be sure to grasp it at the top and bottom. If you grasp any other part of the cylinder (tank), there is the danger that your hands may be caught between the cylinder (tank) and the holder.**
2. Hook the strap latch to secure the cylinder (tank) in place.



WARNING

- **Check that the LPG Cylinder (tank) is securely clamped in place. Check that there is no looseness in the cylinder (tank) or strap.**
 - **If the cylinder (tank) is not securely fastened, the cylinder (tank) may fall, causing unexpected injury.**
3. Connect the high pressure hose threaded connector, turn clockwise until tight.



WARNING

- **Connect the high pressure hose to the cylinder (tank) taking care not to twist the hose.**

- Slowly open the discharge valve by turning counterclockwise. If opened to fast the LP flow will stop. To correct, close the valve and wait five (5) seconds, then slowly open again.



WARNING

- **Listen for leaks and for the smell of LP.**
 - **Inspect pipe connector for gas leakage with soapy water.**
- Pull the lock pin up to release the LPG Cylinder (tank) holder. Slowly close the LPG Cylinder (tank) holder and make sure that the latch pin is in the locked position.



WARNING

- **If the latch pin is not locked securely, there is the danger that the cylinder (tank) holder may move unexpectedly, causing unexpected injury.**
- While seated in the operator's seat, turn the ignition switch to the ON position.
 - Check to make sure that the cylinder (tank) lock indicator light is off.
 - If the light is illuminated, turn the ignition switch to the OFF position and check that the swing mount is secured and locked. If it is check to see if the switch is damaged.

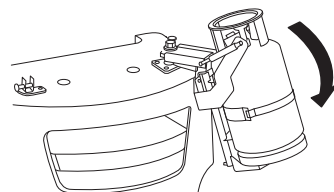


WARNING

- **Only authorized UCA service technicians should perform repair and/or make adjustments to the switch or latch.**

Removing Cylinder (Tank) Swing-Down Type

- Follow steps 1 through 7 in removing cylinder swing-out type (refer to page 114).
- While supporting the bottom of the LPG cylinder, slowly push the holder down towards the ground until the cylinder holder stops.
- While firmly supporting the cylinder by pressing it into the holder, pull right on the strap latch and open fully to release the cylinder.
- Follow step 9 in removing cylinder swing-out type (refer to page 115).



Installing Cylinder (Tank) Swing-Down Type

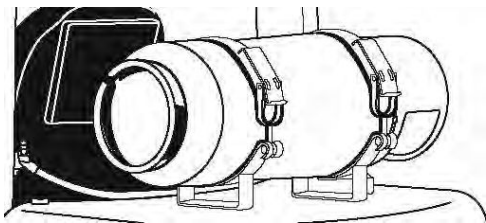
- Turn the LPG cylinder so that the side with the locator hole for the locator pin on the bracket are lined up. Securely grasp the cylinder tank with both hands and lift the cylinder up and place on holder.



WARNING

- **Do not place your feet directly below the LPG cylinder. The cylinder is heavy and there is the danger of injury if it falls. When handling the LPG cylinder, be sure to grasp it at the top and bottom. If you grasp any other part of the cylinder, there is the danger that your hands may be caught between the cylinder and the holder.**
- **The LPG cylinder will not stay in the holder on its own. Continue to press it securely in the holder until the strap latch has been fastened.**

2. Follow steps 2 through 4 in installing cylinder swing-out type (refer to page 115-116).
3. While supporting the bottom of the LPG cylinder, slowly push the holder up until it is in a horizontal position.
4. Follow step 5 through 8 in installing cylinder swing-out type (refer to page 116).
5. Ensure hose is in clip and attached to radiator cover.



Removing Cylinder (Tank) Fixed Type

Follow steps 1 through 5, 8 & 9 in removing cylinder swing-out type (refer to pages 114-115).

Installing Cylinder (Tank) Fixed Type

Follow steps 1 through 4 and 6 through 8 in installing cylinder swing-out type (refer to pages 115-116).

REFILLING LPG CYLINDERS (TANKS)



WARNING

- **Only a trained and authorized person should refill LPG Cylinders (tanks).**
- **Do not refill cylinders (tanks) while mounted on a lift truck.**
- **Make sure that you know and understand the proper procedure for filling a LPG Cylinder (tank).**
- **Know all local fire codes.**
- **If you have any questions about refilling LPG Cylinders (tanks), please ask your supervisor.**
- **If problems with filling occur, call your LPG supplier.**

The weight scale method to fill the cylinder (tank) is highly recommended to protect the environment and to reduce fire hazards. This method will reduce overfilling and the discharge of LPG into the environment.

- Store full and empty cylinders (tanks) according to local fire codes.
- When filling LPG Cylinder (tank), always observe the local laws and regulations.

PERIODIC MAINTENANCE AND LUBRICATION SCHEDULE

Before delivery of your new lift truck, your dealer provides a pre-delivery inspection and adjustment service specified by the factory and designed to ensure satisfactory performance.

The following tables list the servicing required to keep your lift truck operating in good mechanical condition. The lift truck should be attended to as indicated, preferably by your Local Authorized Dealer.



WARNING

- **When it is necessary to check with the lift truck running, raise the drive wheels.**
- **Follow any lock out/tag out policies that your employer may have.**

NOTE:

- Periodic maintenance should be performed after specified intervals have elapsed in months or hours, whichever comes first.
- Under dusty, dirty or heavy operation, more frequent maintenance is necessary. All items listed must be maintained in order to meet and keep control systems operating at designed level. Failure to maintain the systems could compromise the warranty.
- The inspection/service intervals shown are based on the assumption that the lift truck is operated in a clean and dry environment for 200 hours or less in a month. When determining the inspection/service intervals, take into account the actual working conditions of the lift truck.

Inspection Items		Interval														How to check
		Months	1	2	3	4	5	6	7	8	9	10	11	12		
		Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24		
Electric system	Battery: mounting, level and specific gravity		I	I	I	I	I	I	I	I	I	I	I	I	Visual/Test	
	Harness and connectors		I		I			I			I			I	Visual	
	Fuses		If Necessary												Visual	
	Relays		I		I			I			I			I	Visual	
	Switches		I		I			I			I			I	Test	
	Lights (all)		I		I			I			I			I	Test	
	Horn/Buzzer		I		I			I			I			I	Test	
	Gauge and indicators		I		I			I			I			I	Test	
	Bulbs		If Necessary												Visual	
Differential	Oil level		I											I	Visual	
	Differential oil replacement							R						R	Replace	
Automatic Transmission	Fluid level		I	I	I	I	I	I	I	I	I	I	I	I	Visual	
	Fluid replacement							R						R	Replace	
	Line pressure		If Necessary												Test	
	Stall speed		If Necessary												Test	

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

Inspection items			Interval												How to check	
			Months	1	2	3	4	5	6	7	8	9	10	11		12
			Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22		24
Chassis and body maintenance	Front axle	Wheel bearing for looseness		I											I	Test/Adjust
		Wheel bearing grease (repack)													R	Replace
	Rear axle	Wheel bearing for looseness		I	I	I	I	I	I	I	I	I	I	I	I	Test/Adjust
		Steer axle adjustment		If Necessary												Adjust
		Wheel play		I	I	I	I	I	I	I	I	I	I	I	I	Test
		Wheel bearing grease (repack)													R	Replace
		Kingpin		L		L			L			L			L	Grease
	Wheels	Wheel nuts		I	I	I	I	I	I	I	I	I	I	I	I	Test/Torque
		Rim, side rings and wheel disc damage		I					I						I	Visual
		Tire: pressure, wear, damage and foreign materials		I	I	I	I	I	I	I	I	I	I	I	I	Visual/Test

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

			Inspection items	Interval												How to check	
				Months	1	2	3	4	5	6	7	8	9	10	11		12
				Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22		24
Chassis and body maintenance	Steering system	Wheel operation effort		I	I	I	I	I	I	I	I	I	I	I	I	Test	
		Steering fluid pressure		If Necessary												Test	
		Steering wheel (movement and play)		I	I	I	I	I	I	I	I	I	I	I	I	Test	
	Brake system	Function of brake system		I	I	I	I	I	I	I	I	I	I	I	I	Test	
		Brake fluid level		I	I	I	I	I	I	I	I	I	I	I	R	Replace	
		Brake pedal		I	I	I	I	I	I	I	I	I	I	I	I	Test/Adjust	
		Brake lining wear													I	Visual	
		Shoe clearance adjustment													A	Adjust	
		Brake tubes and hoses (mounting, cracks, etc.)		I		I			I			I			I	Visual	
		Hand brake		I											I	Test/Adjust	
		Inching brake pedal		I	I	I	I	I	I	I	I	I	I	I	I	Test/Adjust	

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

Inspection items			Interval												How to Check	
			Months	1	2	3	4	5	6	7	8	9	10	11		12
			Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22		24
Chassis and body maintenance	Hydraulic system	Hydraulic pressure		If Necessary											Test	
		Hydraulic oil level		I		I			I			I			I	Visual
		Hydraulic oil replacement													R	Replace
		Micron oil filter		R					R						R	Replace
		Suction filter													C	Clean
		Movement and connection of levers		I		I			I			I			I	Test
		Hydraulic hoses and tubes (cracks, damage and fittings)		I		I			I			I			I	Visual
		Lift and tilt cylinder mounting and operation		I	I	I	I	I	I	I	I	I	I	I	I	Visual
		Tilt cylinder pin		L		L			L			L			L	Grease
		Leakage (valve, cylinder and orbitol)		I		I			I			I			I	Visual

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

Inspection items		Interval													How to Check
		Months	1	2	3	4	5	6	7	8	9	10	11	12	
		Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24	
Chassis and body maintenance	Mast	Function of mast	I	I	I	I	I	I	I	I	I	I	I	I	Test
		Mast system (damage/cracks/wear)	I		I			I			I			I	Visual
		Clearance of each stage		If Necessary											Measure
		Mast rail	L		L			L			L			L	Grease
		Mast/carriage rollers		If Necessary											Visual/Test
		Back up metals	L		L			L			L			L	Grease
		Thrust metals	L		L			L			L			L	Grease
		Lift chains wear/tension	I	I	I	I	I	I	I	I	I	I	I	I	Visual/Adjust
		Attachments mounting	I		I			I			I			I	Visual
		Attachments	L		L			L			L			L	Grease
		Lift chains	L		L			L			L			L	Lubricate
		Hose pulley's	I		I			I			I			I	Visual/Test
		Mast support	L		L			L			L			L	Grease
		Forks (wear/damage/cracks)	I	I	I	I	I	I	I	I	I	I	I	I	Visual
		Carriage height	I					I						I	Test/Adjust

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

PERIODIC MAINTENANCE AND LUBRICATION SCHEDULE FOR EMISSION CONTROL SYSTEM

Before delivery of your new lift truck, your dealer provides a pre-delivery inspection and adjustment service specified by the factory and designed to ensure satisfactory performance.

The following tables list the servicing required to keep your lift truck operating in good mechanical condition. The lift truck should be attended to as indicated, preferably by your Local Authorized Dealer.



WARNING

- **When it is necessary to check with the lift truck running, raise the drive wheels.**
- **Follow any lock out/tag out policies that your employer may have.**



CAUTION

For Lift Trucks in the U.S.A. and Canada:

- **Do not tamper with, destroy, remove or alter EPA/CARB label or valve (rocker) cover in anyway. Doing so could violate EPA/CARB regulations and possibly void the warranty on your lift truck.**
- **Valve (rocker) cover may be removed for maintenance checks but the original cover must be installed as soon as maintenance checks are completed.**
- **You must notify your Local Authorized Dealer if either the valve (rocker) cover or label is damaged and needs to be replaced.**

NOTE:

- Periodic maintenance should be performed after specified intervals have elapsed in months or hours, whichever comes first.
- Under dusty, dirty or heavy operation, more frequent maintenance is necessary. All items listed must be maintained in order to meet and keep control systems operating at designed level. Failure to maintain the systems could compromise the warranty.
- The inspection/service intervals shown are based on the assumption that the lift truck is operated for 2,400 hours or less in a year. When determining the inspection/service intervals, take into account the actual working conditions of the lift truck.
- All items listed on the following pages must be maintained in order to meet and keep emission control systems operating at design levels. Failure to maintain the systems could compromise the warranty.

Inspection items			Interval														How to Check
			Months	1	2	3	4	5	6	7	8	9	10	11	12	18	
			Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24	36	
K21/K25, GK21/GK25 Engine	Engine Compartment Maintenance (except LPG Fuel System)	Intake and exhaust valve clearance (operating temp)		A		A			A			A			A	A	Test/Adjust
		Drive belt tension		I	I	I	I	I	I	I	I	I	I	I	I	I	Visual
		Engine oil		R	R			R			R			R		R	Replace
		Oil filter		R	R			R			R			R		R	Replace
		Engine Coolant (LLC)														R	Replace
		Air cleaner element		I	I	I	I	I	R	I	I	I	I	I	R	R	Visual/Replace
		Spark plugs		I	I	I	I	I	I	I	I	I	I	I	I	R	Visual
		PCV valve							R						R	R	Replace
	Engine Compartment Maintenance (LPG Fuel System)	Piping or pipe connector portion for gas leakage and damage		I	I	I	I	I	I	I	I	I	I	I	I	I	Visual
		Tar in vaporizer		D	D	D	D	D	D	D	D	D	D	D	D	D	Drain
		LPG fuel filters				C			C			C			R	C	Visual/Replace
		Injection screen				C			C			C			C	C	Visual
		Check LPG cylinder holder for looseness or damage		I	I	I	I	I	I	I	I	I	I	I	I	I	Visual

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

NOTE:

- When the LPG cylinder is replaced, inspect pipe connectors for gas leakage with soapy water.
- UCA recommends a complete tear down, inspection and resealing of the vaporizer before 6,000 hours or 30 months of operation, whichever occurs first. This maintenance is necessary for all lift trucks even if the recommended HD5 grade is being used. The conditions in your area and the quality of the LPG may dictate a more stringent maintenance schedule.

Inspection items			Interval														How to Check
			Months	1	2	3	4	5	6	7	8	9	10	11	12	18	
			Hundreds of hours	2	4	6	8	10	12	14	16	18	20	22	24	36	
QD32 Engine	Engine Compartment Maintenance	Intake & exhaust valve clearance (operating temp)		A		A			A			A			A	A	Adjust
		Drive belt tension		I	I	I	I	I	I	I	I	I	I	I	I	I	Visual
		Engine oil		R		R		R			R		R		R	R	Replace
		Oil filter		R		R		R			R		R		R	R	Replace
		Engine Coolant (LLC)													R		Replace
		Air cleaner element		I	I	R	I	I	R	I	I	R	I	I	R	R	Visual/ Replace
		Water Separator		D		D			D			D			R	D	Drain
		Engine idle rpm		A	A	A	A	A	A	A	A	A	A	A	A	A	Adjust
		Nozzle							I						I	I	Visual

Abbreviations: I = Inspect (correct or replace if necessary), D: Drain, R: Replacement, A: Adjustment, C: Clean, T: Retighten, L: Lubricate/Grease

NOTE:

- If engine power decreases, black exhaust smoke is emitted or engine noise increases before the maintenance period comes, check and, if necessary, adjust the fuel injection nozzle starting pressure and the fuel spray pattern.

LUBRICATION CHART

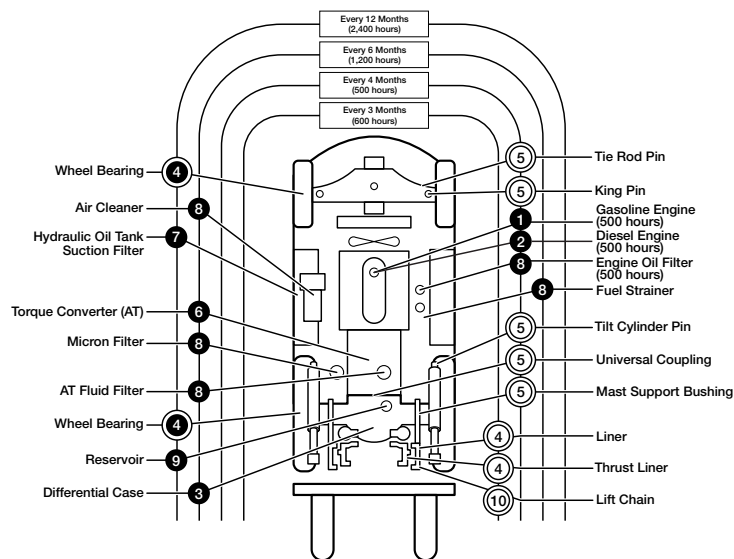
Item	Suitable Oil	
	Below 16°C (60°F)	Above 16°C (60°F)
① Gasoline Engine Oil	Refer to Page 128	
② Diesel Engine Oil	Refer to Page 128	
③ Gear Oil	Refer to Page 128	
④ W.B. Grease	NLGI No. 2	
⑤ Chassis Grease	NLGI No. 1	
⑥ A/T Fluid	Dexron 3 or M2C-33E-F	
⑦ Hydraulic Oil	I.S.O. VG32	
⑧ Replace or Clean Element		
⑨ Brake Fluid	Dot 3 (F.M.V.S.S. No. 116)	
⑩ Lift Chain	Refer to Page 128	

○ Lubricate/Inspect

(⊙ stands for "Lubricate at symmetrical positions)

● Change

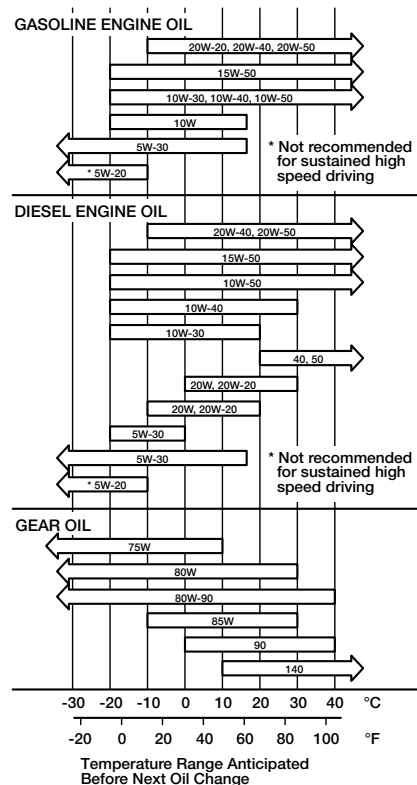
(⊙ stands for "Change at symmetrical positions)



RECOMMENDED LUBRICANTS

System/Component		Oil and Grease	Remarks
Engine Oil	Gasoline	API SJ or SL	Refer to Recommended SAE Viscosity Chart
	Diesel	API CF	
Gear Oil	Differential	API GL-4 or 5	
Grease	Chassis	N.L.G.I. 1	Lithium soap base
	Wheel bearing	N.L.G.I. 2	
	Mast and chain guide bar	N.L.G.I. 2	
Power Steering Oil		Hydraulic oil I.S.O. VG32	—
Hydraulic Oil			Wear-proof oil
Automatic transmission		Type DEXRON 3 or M2C-33E or F	—
Brake Fluid		DOT 3 (F.M.V.S.S. No. 116)	—
Antifreeze		Blue Extended Life Antifreeze/ Coolant	Permanent antifreeze (Ethylene glycol base)
Lift Chain		Sprayon LU202 Moly Chain Lubricant	—

RECOMMENDED SAE VISCOSITY CHART



PUTTING LIFT TRUCK IN STORAGE

Putting the lift truck in storage includes both storing the truck at the end of each working day or storing the truck over a long period of time.

Be sure to observe the precautions for lift truck storage.

DAILY STORAGE

At the end of the working day, check the lift truck for oil leakage and other malfunctions. Always park it in the designated location. Put chocks under the tires to prevent the lift truck from moving by itself.

Keep the body and areas surrounding the operator's seat clean. Make it a habit to always keep the lift truck clean.



WARNING

- **As soon as a malfunction is detected, immediately report it to the appropriate personnel or contact your Local Authorized Dealer for repair. Do not operate the lift truck until the malfunctions is repaired.**

STORAGE OVER A LONG PERIOD OF TIME

When the operation of the lift truck is completely suspended for a given period of time, take the following measures and store the lift truck in a dry area.

NOTE:

- When the lift truck cannot be stored indoors, park it on level ground. Cover the lift truck with a waterproof sheet or protective cover.
- When storing for a long period of time, be sure to consult your Local Authorized Dealer.

PRE-STORAGE SERVICING

1. Lubricate the lift truck (refer to page 127). Change the oil and coat all exposed areas of hydraulic cylinders with corrosion resistant grease.
2. Fill the radiator with antifreeze to prevent the engine from freezing.
3. In order to protect the inner walls of the cylinders against corrosion, remove the spark plugs from gasoline engines or injection nozzles from diesel engines and spray a small amount of oil into the cylinders. Then turn the motor over several times with the starter so that oil is distributed throughout the cylinders. Finally, re-install the spark plugs or injection nozzles.
4. Remove the battery and charge it. Store the battery indoors in a low fire-risk area.
5. When storing gasoline engine lift trucks (including LPG/Dual Fuel) for a long period of time, idle the engine until all the gasoline is used up. Otherwise, the remaining gasoline will decompose and turn into a rubbery substance, making it very difficult to start the engine.

SERVICING THE LIFT TRUCK IN STORAGE

1. Periodically check the specific gravity and level the battery fluid. Charge and replenish as necessary.
2. Check various sections of the lift truck for stains or corrosion. Clean such areas and coat with a corrosion preventive agent.

POST-STORAGE SERVICING

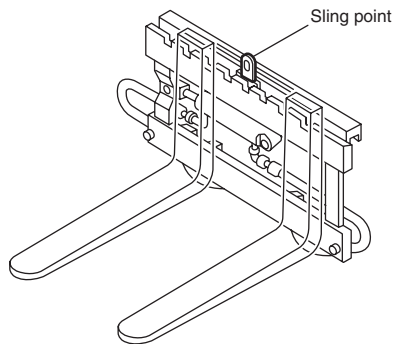
1. Wipe anticorrosive grease off the exposed areas of the hydraulic cylinders.
2. Check lubrication of all sections of the lift truck and cooling water level. If there are impurities or the level is low, change the coolant or refill to the prescribed level.

3. Check the battery specific gravity. Fully charge the battery. Be sure to completely charge the battery before putting it back on the lift truck. When connecting the battery cables, make sure that the positive and negative terminals are connected correctly.
4. If stored for more than 12 months lubricate the inner walls of the cylinders, remove the spark plugs from gasoline engines or injection nozzles from diesel engines and spray a small amount of oil into the cylinders. Then turn the motor over several times with the starter so that oil is distributed throughout the cylinders. Finally, re-install the spark plugs or injection nozzles.
5. As soon as the engine is started, make sure that the oil pressure warning light turns off. Continue to warm up the engine so that the various sections of the engine are worked in.
6. Perform Daily Inspection (refer to page 89).
7. Perform Function Tests (refer to page 27).

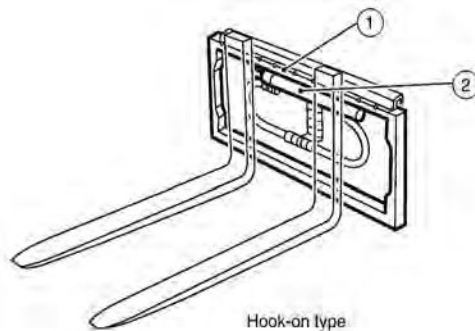
OPTIONS

SIDE SHIFT

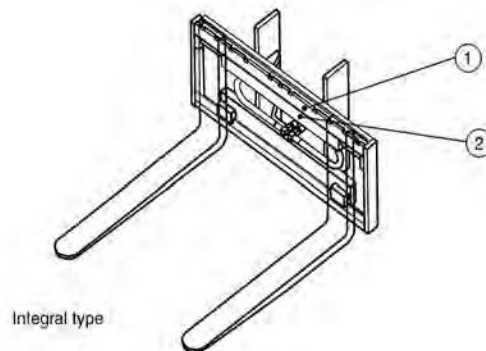
SLING POINT FOR HOOK-ON TYPE SIDE SHIFT



This illustration shows the sling point of the hook-on type side shift attachment which is used for installation and removal.



OVERVIEW OF SIDE SHIFT



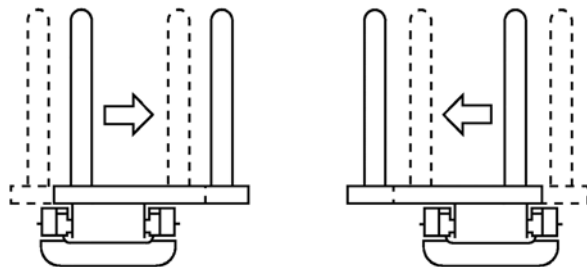
1. Shift finger bar.
2. Side shift cylinder.

This section describes only the handling of loads using the side shift option. Before using the side shift, be sure to read this section thoroughly and understand it. For handling (safety, operations, inspection) of the lift truck, refer to the applicable sections of this manual.

Since the shift finger bar (on which the forks and the backrest are mounted) can be shifted to the right and left only by operating the lever from the operator's seat, you can accurately insert the fork under pallets or stack loads correctly at targeted positions.

The following is the standard amount of side shift.

Model Variation	Side Shift Distance
1F1/1F2 series	Each to right/left 100 mm (3.94 in)



Shift to right.

Shift to left.

MAIN TERMS USED IN THIS SECTION

Shift: To move the forks or load to the right or the left.

Side Shift Stroke: The maximum distance the forks or load can travel to the right or the left.

Shift Finger Bar: An oblong board on which the forks and the backrest are mounted. This shift finger bar shifts (moves) to the right and left.

Attachment: Equipment or parts to be added or replaced with the loading/unloading devices to perform a variety of loading and unloading.

SAFETY RULES AND PRACTICES



WARNING

- Do not make sudden and quick shifts with the forks loaded or raised.



If you make sudden shifts with the forks loaded, there is a risk of a load collapse. This can cause the lift truck to become unstable and possibly tip over.



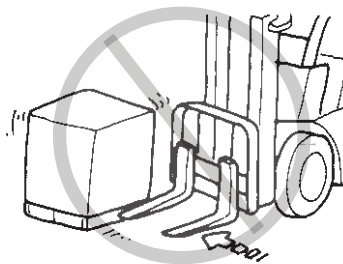
WARNING

- Only operate the side shift when entering or placing a load to correct position before lowering.
- Never operate side shift during travel.
- Never operate side shift during lifting or lowering.



WARNING

- Do not use the shift function to push or pull loads or pallets.



If you use the side shift to push or pull loads, the equipment can be overstrained, resulting in a malfunction. In addition, there are risks of damaging loads or injuring people. Never push or pull loads with the side shift.



WARNING

- Do not shift when the forks are in contact with the floor or on a table.

If you do so, it can result in a malfunction of the equipment or a load collapse. Do not shift when the forks are in contact with the ground.



WARNING

- Do not travel with unstable or unsecured loads.



Do not travel with loads shifted to one side.

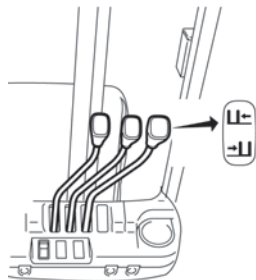
When loads are shifted (off centered) they will be less stable. This could cause the load to shift or fall off the lift truck.

It also could cause the lift truck to become unstable and tip over.

OPERATION OF THE CONTROL LEVER FOR THE SIDE SHIFT

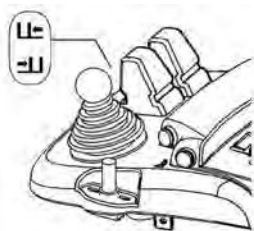
A lift truck attached with a side shift has a control lever to operate the side shift, in addition to the control levers for standard operations.

MANUAL HYDRAULIC CONTROL

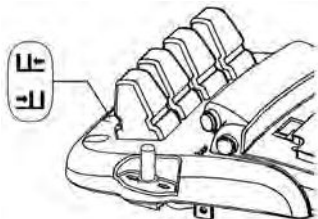


FINGERTIP CONTROL

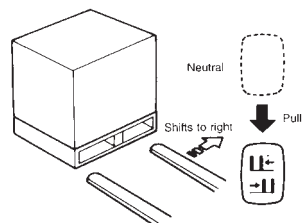
1 Lever Type



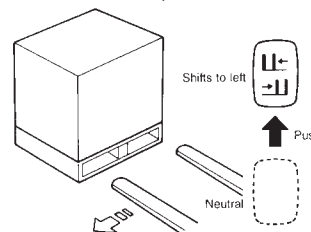
2 Lever Type



When the lever is pulled toward the operator, the shift finger bar (with forks mounted) shifts (moves) to the right.



When the lever is pushed forward, the shift finger bar (with forks mounted) shifts (moves) to the left.



CAUTION

- Do not move the levers suddenly and quickly. There is a risk of a load collapse.

NOTE:

The shifting speed changes depending on the amount the lever is moved forward or backward.

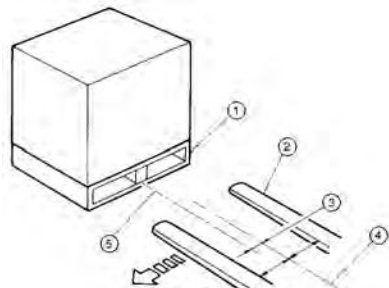


WARNING

- When you operate your side shift, make sure to raise the forks approximately 100 - 200 mm (3.94 - 7.87 in) from the ground before operation. If you shift with the forks while they are in contact with the ground, the side shift forks or load could get caught and damage the lift truck or load.

SIDE SHIFT OPERATION

1. Pallet
2. Fork
3. Deviation
4. Center of forks
5. Center of pallet



This section describes the operation of your side shift.

Always keep the side shift finger bar in the neutral position except during load handling.

Adjust the forks as far apart as possible in order to minimize the deviation.

For basic operations, refer to the instructions in "Loading and Unloading" previously in this manual.

If the forks deviate either to the right or the left, operate the side shift lever and shift (move) the forks until the center of the pallet matches the center of the interval between the forks.



CAUTION

- Do not shift the forks while the forks are inserted into the pallet. This could cause the load to shift if the pallet is pushed.
- If it is not possible for the forks to be centered under the load even with them shifted as far as possible, back the lift truck out and try to center the forks under the load. Always ensure loads are centered and secure before lifting or traveling.



WARNING

- Do not shift while traveling with loads.

STACKING



WARNING

- Do not operate the side shift when loads are lifted until load is in position to be placed. Doing so could cause loads to shift or the lift truck to possibly tip over.
- Do not operate the side shift lever and the lift lever quickly. It is dangerous if a load collapse occurs.

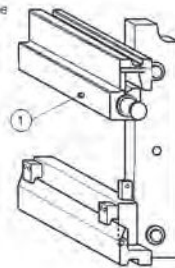
DAILY CHECKS AND SIMPLE MAINTENANCE



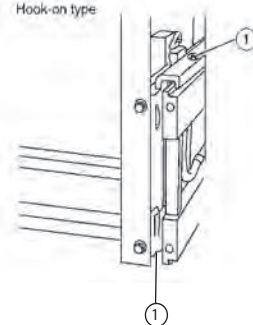
WARNING

- If any abnormality is noted in the daily checks, immediately report it to the appropriate personnel or contact your Local Authorized Dealer for repair. Do not operate the lift truck until the malfunctions is repaired.
 - To assure safe operation and maintain the side shift in proper functional condition, be sure to perform the daily checks below in addition to the "Daily Checks" outlined previously in this manual.
1. Check that any problems noted the previous day have been completely repaired.
 2. Check all parts of the hydraulic piping and the cylinder of the side for oil leaks and looseness.
 3. Check that the side shift is not damaged or deformed.
 4. Check visually the jaw installation bolt on the finger bar for looseness.
 5. Operate the side shift several times to check that it operates smoothly without abnormal noise. Also check that the side shift lever operates smoothly without rattling.

Integral type



Hook-on type



1. Integral type: Grease nipple (1 each on right and left)

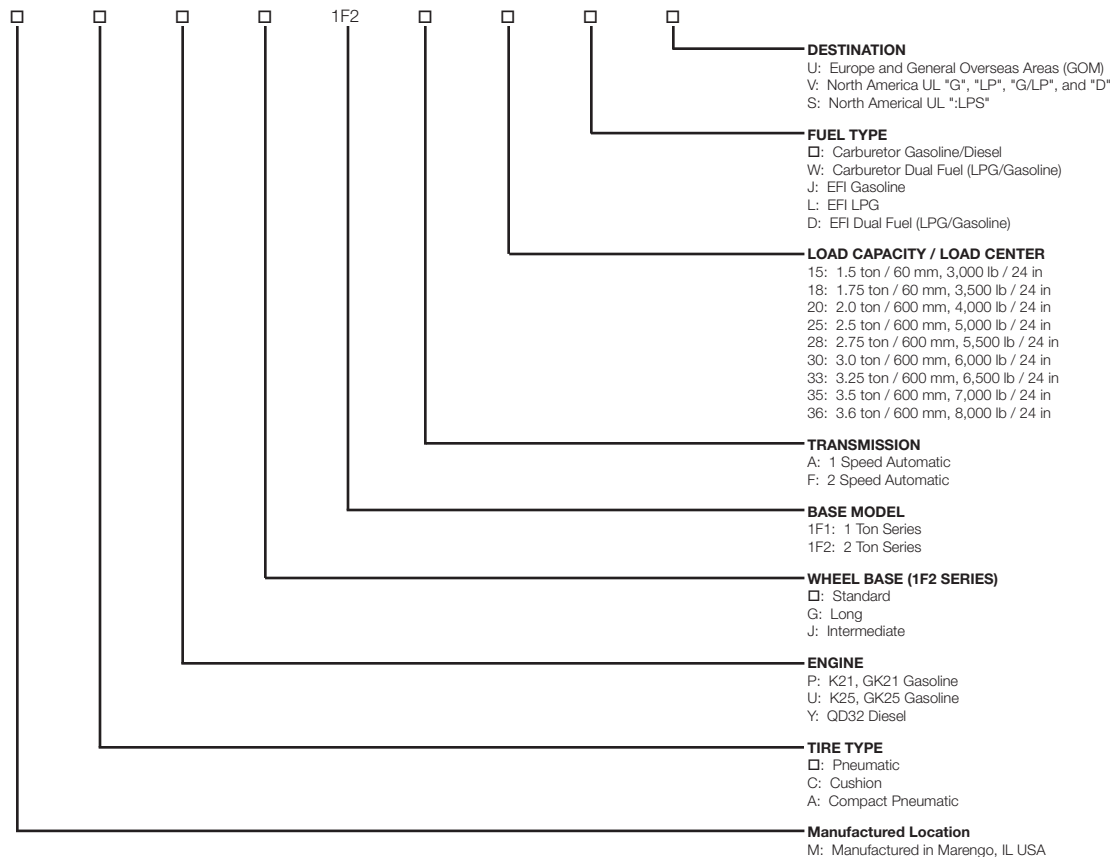
Hook-on type: Grease nipple (1 each on right and left / top and bottom)

NOTE:

Apply chassis grease once a week (or every 50 hours) to the grease nipples in the sleeve of the shift finger bar.

SPECIFICATIONS

MODEL VARIATION (LONG MODEL CODE) BREAKDOWN



MAIN TRUCK - 1F1 (PNEUMATIC) BASED ON 2W330 MAST, 1070MM FORKS AND MINIMUM BATTERY SPECIFICATIONS

Item			Model code				
			1F1				
			MP1F1A15JV/ LV/DV	MP1F1A18JV/ LV/DV	MP1F1A20JV/ LV/DV	MP1F1A15U/WU	MP1F1A18U/WU
Rated Load Capacity		lb (kg)	Refer to Truck Data Plate				
Load center		in (mm)	24 (600)				
Overall Length (to face of forks)		in (mm)	89.0 (2260)	90.2 (2290)	91.3 (2320)	89.0 (2260)	90.2 (2290)
Overall Width (standard tires)		in (mm)	41.9 (1065)				
Wheelbase		in (mm)	55.1 (1400)				
Front Overhang		in (mm)	15.7 (400)				
Rear Overhang		in (mm)	18.1 (460)	19.3 (490)	20.5 (520)	18.1 (460)	19.3 (490)
Tread - Center of Tire (standard tires)	Front	in (mm)	35.0 (890)				
	Rear	in (mm)	35.4 (900)				
Minimum Turning Radius	Outside	in (mm)	76.2 (1935)	77.6 (1970)	79.1 (2010)	76.2 (1935)	77.6 (1970)
Minimum Right Angle Stack	Add load length & clearance	in (mm)	91.9 (2335)	93.3 (2370)	94.9 (2410)	91.9 (2335)	93.3 (2370)
Fork Length (standard)		in (mm)	42.0 (1070)				
Fork Width x Thickness		in (mm)	1.5 x 4 (40 x 100)				
Ground Clearance	Under Mast	in (mm)	4.5 (115)				
	Under Power Unit	in (mm)	5.3 (135)				
	Under Frame, center of wheelbase	in (mm)	5.9 (150)				
Gradeability Maximum	Full Load	%	31.0	38.0	33.0	35.0	31.0
	Empty	%	28.0	24.0	21.0	Not Available	

Model code			1F1				
			MP1F1A15JV/ LV/DV	MP1F1A18JV/ LV/DV	MP1F1A20JV/ LV/DV	MP1F1A15U/WU	MP1F1A18U/WU
Item							
Grade Clearance	Approach Angle		%	37.0			
	Ramp Breakover Angle		%	49.0			
	Departure Angle		%	39.0	37.0	35.0	39.0 37.0
Lifting Speed	2W	Full Load	fpm (mm/sec)	122.0 (620)			112.2 (570)
		Empty	fpm (mm/sec)	127.9 (650)			
	2F	Full Load	fpm (mm/sec)	108.2 (550)			110.2 (560)
		Empty	fpm (mm/sec)	116.1 (590)			124.0 (630)
	3F	Full Load	fpm (mm/sec)	110.2 (560)			
		Empty	fpm (mm/sec)	127.7 (650)			126.0 (640)
	3V	Full Load	fpm (mm/sec)	110.2 (560)			104.3 (530)
		Empty	fpm (mm/sec)	116.1 (590)			118.1 (600)
Lowering Speed	2W	Full Load	fpm (mm/sec)	98.4 (500)			
		Empty	fpm (mm/sec)	98.4 (500)			
	2F	Full Load	fpm (mm/sec)	94.5 (480)			82.7 (420)
		Empty	fpm (mm/sec)	61.0 (310)			90.6 (460)
	3F	Full Load	fpm (mm/sec)	94.5 (480)			
		Empty	fpm (mm/sec)	80.1 (405)			86.6 (440)
	3V	Full Load	fpm (mm/sec)	94.5 (480)			67.1 (340)
		Empty	fpm (mm/sec)	72.8 (370)			70.9 (360)

Model code			1F1				
			MP1F1A15JV/ LV/DV	MP1F1A18JV/ LV/DV	MP1F1A20JV/ LV/DV	MP1F1A15U/WU	MP1F1A18U/WU
Item							
Maximum Travel Speed	Forward	mph (km/h)	11.5 (18.5)				
	Reverse	mph (km/h)	11.5 (18.5)				
Drawbar Pull Maximum	Full Load	lb (kg / N)	3705 (1680 / 16450)			3912 (1774 / 17400)	3889 (1764 / 17300)
Truck Weight		lb (kg)	Refer to Truck Data Plate				
Engine	Model		K21, GK21				
	Classification		EFI			Carburetor	
	Rated Output - SAE Gross	hp (kW) @ rpm	55 (41) @ 2700			46 (34) @ 2200	
	Rated Torque - SAE Gross	ft-lb (Nm) @ rpm	111.4 (151) @ 2000			116.5 (158) @ 1600	
	Displacement	cu in (cm³)	126 (2065)				
Transmission	Type		Automatic				
	Number Speeds - fwd/rev		1/1				

MAIN TRUCK - 1F2 (PNEUMATIC) BASED ON 2W330 MAST, 1070MM FORKS AND MINIMUM BATTERY SPECIFICATIONS

Item			Model code				
			1F2				
			MP1F2A20JV/ LV/DV	MU1F2A20JV/ LV/DV	MY1F2A20V/U	MP1F2A20U/WU	MU1F2A20U/WU
Rated Load Capacity		lb (kg)	Refer to Truck Data Plate				
Load center		in (mm)	24 (600)				
Overall Length (to face of forks)		in (mm)	96.9 (2460)				
Overall Width (standard tires)		in (mm)	45.3 (1150)				
Wheelbase		in (mm)	63.0 (1600)				
Front Overhang		in (mm)	17.5 (445)				
Rear Overhang		in (mm)	16.3 (415)				
Tread - Center of Tire (standard tires)	Front	in (mm)	37.8 (960)				
	Rear	in (mm)	38.4 (975)				
Minimum Turning Radius	Outside	in (mm)	83.5 (2120)				
Minimum Right Angle Stack	Add load length & clearance	in (mm)	101.0 (2565)				
Fork Length (standard)		in (mm)	42.0 (1070)				
Fork Width x Thickness		in (mm)	1.5 x 4 (40 x 100)				
Ground Clearance	Under Mast	in (mm)	4.5 (115)				
	Under Power Unit	in (mm)	5.3 (135)				
	Under Frame, center of wheelbase	in (mm)	6.1 (155)				
Gradeability Maximum	Full Load	%	31.0	39.0	36.0	26.0	34.0
	Empty	%	28.0			Not Available	

Model code				1F2				
				MP1F2A20JV/ LV/DV	MU1F2A20JV/ LV/DV	MY1F2A20V/U	MP1F2A20U/WU	MU1F2A20U/WU
Item								
Grade Clearance		Approach Angle	%	32.0				
		Ramp Breakover Angle	%	44.0				
		Departure Angle	%	45.0				
Lifting Speed	2W	Full Load	fpm (mm/sec)	118.1 (600)	129.9 (660)	127.9 (650)	104.3 (530)	108.3 (550)
		Empty	fpm (mm/sec)	127.9 (650)	137.8 (700)		135.8 (690)	127.9 (650)
	2F	Full Load	fpm (mm/sec)	110.2 (560)	122.0 (620)	120.0 (610)	106.3 (540)	112.2 (570)
		Empty	fpm (mm/sec)	122.0 (620)	131.9 (670)	129.9 (660)	120.0 (610)	129.9 (660)
	3F	Full Load	fpm (mm/sec)	110.2 (560)	120.0 (610)	118.1 (600)	104.3 (530)	110.2 (560)
		Empty	fpm (mm/sec)	126.0 (640)	136.4 (695)		118.1 (600)	127.9 (650)
	3V	Full Load	fpm (mm/sec)	110.2 (560)	120.0 (610)	118.1 (600)	98.4 (500)	104.3 (530)
		Empty	fpm (mm/sec)	120.0 (610)	129.9 (660)		110.2 (560)	122.0 (620)
Lowering Speed	2W	Full Load	fpm (mm/sec)	98.4 (500)				
		Empty	fpm (mm/sec)	98.4 (500)				
	2F	Full Load	fpm (mm/sec)	94.5 (480)			74.8 (380)	
		Empty	fpm (mm/sec)	59.0 (300)			92.5 (470)	
	3F	Full Load	fpm (mm/sec)	94.5 (480)				
		Empty	fpm (mm/sec)	68.1 (345)			80.7 (410)	
	3V	Full Load	fpm (mm/sec)	94.5 (480)			55.1 (280)	
		Empty	fpm (mm/sec)	64.9 (330)				

Model code			1F2				
			MP1F2A20JV/ LV/DV	MU1F2A20JV/ LV/DV	MY1F2A20V/U	MP1F2A20U/WU	MU1F2A20U/WU
Item							
Maximum Travel Speed	Forward	mph (km/h)	11.8 (19.0)			11.2 (18.0)	
	Reverse	mph (km/h)	11.8 (19.0)			11.2 (18.0)	
Drawbar Pull Maximum	Full Load	lb (kg / N)	3880 (1760 / 17250)	4189 (1900 / 18650)	4542 (2060 / 20200)	3957 (1795 / 17600)	4696 (2130 / 20900)
Truck Weight		lb (kg)	Refer to Truck Data Plate				
Engine	Model		K21, GK21	K25, GK25	QD32	K21, GK21	K25, GK25
	Classification		EFI		V = EFI U = Carburetor	Carburetor	
	Rated Output - SAE Gross	hp (kW) @ rpm	55 (41) @ 2700	62.9 (46.9) @ 2700	55 (41) @ 2000	46 (34) @ 2200	53.6 (40) @ 2200
	Rated Torque - SAE Gross	ft-lb (Nm) @ rpm	111.4 (151) @ 2000	138.7 (188) @ 1600	143.8 (195) @ 1800	116.5 (158) @ 1600	137.2 (186) @ 1600
	Displacement	cu in (cm ³)	126 (2065)	151.8 (2488)	192.4 (3153)	126 (2065)	151.8 (2488)
Transmission	Type		Automatic				
	Number Speeds - fwd/rev		1/1				

Model code			1F2				
			MP1F2A25JV/ LV/DV	MU1F2A25JV/ LV/DV	MY1F2A25V/U	MP1F2A25U/WU	MU1F2A25U/WU
Item							
Rated Load Capacity		lb (kg)	Refer to Truck Data Plate				
Load center		in (mm)	24 (600)				
Overall Length (to face of forks)		in (mm)	99.0 (2515)				
Overall Width (standard tires)		in (mm)	45.3 (1150)				
Wheelbase		in (mm)	63.0 (1600)				
Front Overhang		in (mm)	17.5 (445)				
Rear Overhang		in (mm)	18.5 (470)				
Tread - Center of Tire (standard tires)	Front	in (mm)	37.8 (960)				
	Rear	in (mm)	38.4 (975)				
Minimum Turning Radius	Outside	in (mm)	85.8 (2180)				
Minimum Right Angle Stack	Add load length & clearance	in (mm)	103.3 (2625)				
Fork Length (standard)		in (mm)	42.0 (1070)				
Fork Width x Thickness		in (mm)	1.5 x 4 (40 x 100)				
Ground Clearance	Under Mast	in (mm)	4.5 (115)				
	Under Power Unit	in (mm)	5.3 (135)				
	Under Frame, center of wheelbase	in (mm)	6.1 (155)				
Gradeability Maximum	Full Load	%	27.0	33.0	31.0	21.0	28.0
	Empty	%	24.0			Not Available	

Model code				1F2				
				MP1F2A25JV/ LV/DV	MU1F2A25JV/ LV/DV	MY1F2A25V/U	MP1F2A25U/WU	MU1F2A25U/WU
Item								
Grade Clearance		Approach Angle	%	32.0				
		Ramp Breakover Angle	%	44.0				
		Departure Angle	%	37.0				
Lifting Speed	2W	Full Load	fpm (mm/sec)	118.1 (600)	129.9 (660)	127.9 (650)	104.3 (530)	108.3 (550)
		Empty	fpm (mm/sec)	127.9 (650)	137.8 (700)		135.8 (690)	127.9 (650)
	2F	Full Load	fpm (mm/sec)	110.2 (560)	122.0 (620)	120.0 (610)	106.3 (540)	112.2 (570)
		Empty	fpm (mm/sec)	122.0 (620)	131.9 (670)	129.9 (660)	120.0 (610)	129.9 (660)
	3F	Full Load	fpm (mm/sec)	110.2 (560)	120.0 (610)	118.1 (600)	104.3 (530)	110.2 (560)
		Empty	fpm (mm/sec)	126.0 (640)	136.4 (695)	134.3 (680)	118.1 (600)	127.9 (650)
	3V	Full Load	fpm (mm/sec)	110.2 (560)	120.0 (610)	118.1 (600)	98.4 (500)	104.3 (530)
		Empty	fpm (mm/sec)	120.0 (610)	129.9 (660)	127.9 (650)	110.2 (560)	122.0 (620)
Lowering Speed	2W	Full Load	fpm (mm/sec)	98.4 (500)				
		Empty	fpm (mm/sec)	98.4 (500)				
	2F	Full Load	fpm (mm/sec)	94.5 (480)			74.8 (380)	
		Empty	fpm (mm/sec)	59.0 (300)			92.5 (470)	
	3F	Full Load	fpm (mm/sec)	94.5 (480)				
		Empty	fpm (mm/sec)	68.1 (345)			80.7 (410)	
	3V	Full Load	fpm (mm/sec)	94.5 (480)			55.1 (280)	
		Empty	fpm (mm/sec)	64.9 (330)				

Model code			1F2				
			MP1F2A25JV/ LV/DV	MU1F2A25JV/ LV/DV	MY1F2A25V/U	MP1F2A25U/WU	MU1F2A25U/WU
Item							
Maximum Travel Speed	Forward	mph (km/h)	11.8 (19.0)			11.2 (18.0)	
	Reverse	mph (km/h)	11.8 (19.0)			11.2 (18.0)	
Drawbar Pull Maximum	Full Load	lb (kg / N)	3880 (1760 / 17250)	4189 (1900 / 18650)	4542 (2060 / 20200)	3913 (1775 / 17400)	4652 (2110 / 20700)
Truck Weight		lb (kg)	Refer to Truck Data Plate				
Engine	Model		K21, GK21	K25, GK25	QD32	K21, GK21	K25, GK25
	Classification		EFI		V = EFI U = Carburetor	Carburetor	
	Rated Output - SAE Gross	hp (kW) @ rpm	55 (41) @ 2700	62.9 (46.9) @ 2700	55 (41) @ 2000	46 (34) @ 2200	53.6 (40) @ 2200
	Rated Torque - SAE Gross	ft-lb (Nm) @ rpm	111.4 (151) @ 2000	138.7 (188) @ 1600	143.8 (195) @ 1800	116.5 (158) @ 1600	137.2 (186) @ 1600
	Displacement	cu in (cm ³)	126 (2065)	151.8 (2488)	192.4 (3153)	126 (2065)	151.8 (2488)
Transmission	Type		Automatic				
	Number Speeds - fwd/rev		1/1				

Model code			1F2			
			MUJ1F2A28JV/LV/DV	MUG1F2A30JV/LV/DV	MYG1F2A30V/U	MUG1F2A30U/WU
Item						
Rated Load Capacity		lb (kg)	Refer to Truck Data Plate			
Load center		in (mm)	24 (600)			
Overall Length (to face of forks)		in (mm)	102.8 (2610)	105.5 (2680)		
Overall Width (standard tires)		in (mm)	49.2 (1250)			
Wheelbase		in (mm)	63.8 (1620)	66.9 (1700)		
Front Overhang		in (mm)	18.5 (470)	18.9 (480)		
Rear Overhang		in (mm)	20.5 (520)	19.7 (500)		
Tread - Center of Tire (standard tires)	Front	in (mm)	40.6 (1030)			
	Rear	in (mm)	38.6 (980)			
Minimum Turning Radius	Outside	in (mm)	88.2 (2240)	90.6 (2300)		
Minimum Right Angle Stack	Add load length & clearance	in (mm)	106.7 (2710)	109.5 (2780)		
Fork Length (standard)		in (mm)	42.0 (1070)			
Fork Width x Thickness		in (mm)	1.5 x 4 (40 x 100)	2 x 5 (50 x 125)		
Ground Clearance	Under Mast	in (mm)	5.7 (145)			
	Under Power Unit	in (mm)	6.5 (165)			
	Under Frame, center of wheelbase	in (mm)	7.3 (185)			
Gradeability Maximum	Full Load	%	30.0	28.0	26.0	22.0
	Empty	%	25.0	24.0	25.0	Not Available

Model code			1F2			
			MUJ1F2A28JV/LV/DV	MUG1F2A30JV/LV/DV	MYG1F2A30V/U	MUG1F2A30U/WU
Item						
Grade Clearance	Approach Angle	%	41.0			
	Ramp Breakover Angle	%	52.0	49.0		
	Departure Angle	%	42.0	43.0		
Lifting Speed	2W	Full Load	fpm (mm/sec)	104.3 (530)	106.3 (540)	86.6 (440)
		Empty	fpm (mm/sec)	114.1 (580)		102.4 (520)
	2F	Full Load	fpm (mm/sec)	102.3 (520)	104.3 (530)	86.6 (440)
		Empty	fpm (mm/sec)	112.2 (570)		100.4 (510)
	3F	Full Load	fpm (mm/sec)	100.4 (510)	102.3 (520)	84.7 (430)
		Empty	fpm (mm/sec)	110.2 (560)		100.4 (510)
	3V	Full Load	fpm (mm/sec)	100.4 (510)	102.3 (520)	80.7 (410)
		Empty	fpm (mm/sec)	110.2 (560)		94.5 (480)
Lowering Speed	2W	Full Load	fpm (mm/sec)	98.4 (500)		
		Empty	fpm (mm/sec)	98.4 (500)		
	2F	Full Load	fpm (mm/sec)	92.5 (470)		65.0 (330)
		Empty	fpm (mm/sec)	63.0 (320)		94.5 (480)
	3F	Full Load	fpm (mm/sec)	92.5 (470)		
		Empty	fpm (mm/sec)	70.8 (360)		72.8 (370)
	3V	Full Load	fpm (mm/sec)	92.5 (470)		43.3 (220)
		Empty	fpm (mm/sec)	70.8 (360)		51.2 (260)

Model code			1F2			
			MUJ1F2A28JV/LV/DV	MUG1F2A30JV/LV/DV	MYG1F2A30V/U	MUG1F2A30U/WU
Item						
Maximum Travel Speed	Forward	mph (km/h)	11.8 (19.0)		11.5 (18.5)	11.2 (18.0)
	Reverse	mph (km/h)	11.8 (19.0)		11.5 (18.5)	11.2 (18.0)
Drawbar Pull Maximum	Full Load	lb (kg / N)	4189 (1900 / 18650)		4321 (1960 / 19221)	4608 (2090 / 20496)
Truck Weight		lb (kg)	Refer to Truck Data Plate			
Engine	Model		K25, GK25		QD32	K25, GK25
	Classification		EFI		V = EFI U = Carburetor	Carburetor
	Rated Output - SAE Gross	hp (kW) @ rpm	62.9 (46.9) @ 2700		55 (41) @ 2000	53.6 (40) @ 2200
	Rated Torque - SAE Gross	ft-lb (Nm) @ rpm	138.7 (188) @ 1600		143.8 (195) @ 1800	137.2 (186) @ 1600
	Displacement	cu in (cm ³)	151.8 (2488)		192.4 (3153)	151.8 (2488)
Transmission	Type		Automatic			
	Number Speeds - fwd/rev		1/1			

Model code			1F2		
			MUG1F2A35JV/LV/DV	MYG1F2A35V/U	MUG1F2A35U/WU
Item					
Rated Load Capacity		lb (kg)	Refer to Truck Data Plate		
Load center		in (mm)	24 (600)		
Overall Length (to face of forks)		in (mm)	108.5 (2755)		
Overall Width (standard tires)		in (mm)	50.4 (1280)		
Wheelbase		in (mm)	66.9 (1700)		
Front Overhang		in (mm)	19.3 (490)		
Rear Overhang		in (mm)	22.2 (565)		
Tread - Center of Tire (standard tires)	Front	in (mm)	41.7 (1060)		
	Rear	in (mm)	38.6 (980)		
Minimum Turning Radius	Outside	in (mm)	94.1 (2390)		
Minimum Right Angle Stack	Add load length & clearance	in (mm)	113.4 (2880)		
Fork Length (standard)		in (mm)	42.0 (1070)		
Fork Width x Thickness		in (mm)	2 x 5 (50 x 125)		
Ground Clearance	Under Mast	in (mm)	5.9 (150)		
	Under Power Unit	in (mm)	6.7 (170)		
	Under Frame, center of wheelbase	in (mm)	7.5 (190)		
Gradeability Maximum	Full Load	%	23.0	21.0	19.0
	Empty	%	22.0	22.0	Not Available

Model code			1F2		
			MUG1F2A35JV/LV/DV	MYG1F2A35V/U	MUG1F2A35U/WU
Item					
Grade Clearance		Approach Angle	%	51.0	
		Ramp Breakover Angle	%	51.0	
		Departure Angle	%	39.0	
Lifting Speed	2W	Full Load	fpm (mm/sec)	88.6 (450)	
		Empty	fpm (mm/sec)	92.5 (470)	94.5 (480)
	2F	Full Load	fpm (mm/sec)	82.7 (420)	80.7 (410)
		Empty	fpm (mm/sec)	86.6 (440)	88.6 (450)
	3F	Full Load	fpm (mm/sec)	82.7 (420)	80.7 (410)
		Empty	fpm (mm/sec)	86.6 (440)	88.6 (450)
	3V	Full Load	fpm (mm/sec)	82.7 (420)	80.7 (410)
		Empty	fpm (mm/sec)	86.6 (440)	88.6 (450)
Lowering Speed	2W	Full Load	fpm (mm/sec)	82.7 (420)	
		Empty	fpm (mm/sec)	70.8 (360)	
	2F	Full Load	fpm (mm/sec)	76.8 (390)	51.2 (260)
		Empty	fpm (mm/sec)	59.0 (300)	74.8 (380)
	3F	Full Load	fpm (mm/sec)	76.8 (390)	
		Empty	fpm (mm/sec)	59.0 (300)	55.1 (280)
	3V	Full Load	fpm (mm/sec)	76.8 (390)	37.4 (190)
		Empty	fpm (mm/sec)	59.0 (300)	43.3 (220)

Model code			1F2		
			MUG1F2A35JV/LV/DV	MYG1F2A35V/U	MUG1F2A35U/WU
Item					
Maximum Travel Speed	Forward	mph (km/h)	11.5 (18.5)		11.2 (18.0)
	Reverse	mph (km/h)	11.5 (18.5)		11.2 (18.0)
Drawbar Pull Maximum	Full Load	lb (kg / N)	4034 (1830 / 17950)	4056 (1840 / 18050)	4497 (2040 / 20005)
Truck Weight		lb (kg)	Refer to Truck Data Plate		
Engine	Model		K25, GK25	QD32	K25, GK25
	Classification		EFI	V = EFI U = Carburetor	Carburetor
	Rated Output - SAE Gross	hp (kW) @ rpm	62.9 (46.9) @ 2700	55 (41) @ 2000	53.6 (40) @ 2200
	Rated Torque - SAE Gross	ft-lb (Nm) @ rpm	138.7 (188) @ 1600	143.8 (195) @ 1800	137.2 (186) @ 1600
	Displacement	cu in (cm ³)	151.8 (2488)	192.4 (3153)	151.8 (2488)
Transmission	Type		Automatic		
	Number Speeds - fwd/rev		1/1		

MAIN TRUCK - 1F1 (CUSHION) BASED ON 2W330 MAST, 1070MM FORKS AND MINIMUM BATTERY SPECIFICATIONS

Model code			1F1		
			MCP1F1A15LV/DV	MCP1F1A18LV/DV	MCP1F1A20LV/DV
Item					
Rated Load Capacity		lb (kg)	Refer to Truck Data Plate		
Load center		in (mm)	24 (600)		
Overall Length (to face of forks)		in (mm)	81.9 (2080)	83.1 (2110)	84.4 (2145)
Overall Width (standard tires)		in (mm)	38.2 (970)		
Wheelbase		in (mm)	46.9 (1190)		
Front Overhang		in (mm)	15.4 (390)		
Rear Overhang		in (mm)	19.7 (500)	20.9 (530)	22.2 (565)
Tread - Center of Tire (standard tires)	Front	in (mm)	32.3 (820)		
	Rear	in (mm)	32.3 (820)		
Minimum Turning Radius	Outside	in (mm)	68.3 (1735)	69.5 (1765)	70.9 (1800)
Minimum Right Angle Stack	Add load length & clearance	in (mm)	83.7 (2125)	84.9 (2155)	86.3 (2190)
Fork Length (standard)		in (mm)	42.0 (1070)		
Fork Width x Thickness		in (mm)	1.5 x 4 (40 x 100)		
Ground Clearance	Under Mast	in (mm)	3.0 (75)		
	Under Power Unit	in (mm)	2.6 (65)		
	Under Frame, center of wheelbase	in (mm)	4.3 (110)		
Gradeability Maximum	Full Load	%	38.0		
	Empty	%	20.0	18.0	16.0

Model code				1F1		
				MCP1F1A15LV/DV	MCP1F1A18LV/DV	MCP1F1A20LV/DV
Item						
Grade Clearance	Approach Angle		%	26.0		
	Ramp Breakover Angle		%	43.0		
	Departure Angle		%	35.0	30.0	28.0
Lifting Speed	2W	Full Load	fpm (mm/sec)	122.0 (620)		
		Empty	fpm (mm/sec)	127.9 (650)		
	2F	Full Load	fpm (mm/sec)	108.2 (550)		
		Empty	fpm (mm/sec)	112.2 (590)		
	3F	Full Load	fpm (mm/sec)	110.2 (560)		
		Empty	fpm (mm/sec)	127.7 (650)		
	3V	Full Load	fpm (mm/sec)	110.2 (560)		
		Empty	fpm (mm/sec)	116.1 (590)		
Lowering Speed	2W	Full Load	fpm (mm/sec)	98.4 (500)		
		Empty	fpm (mm/sec)	98.4 (500)		
	2F	Full Load	fpm (mm/sec)	94.5 (480)		
		Empty	fpm (mm/sec)	61.0 (310)		
	3F	Full Load	fpm (mm/sec)	94.5 (480)		
		Empty	fpm (mm/sec)	67.1 (340)		
	3V	Full Load	fpm (mm/sec)	94.5 (480)		
		Empty	fpm (mm/sec)	61.0 (310)		

Model code			1F1		
			MCP1F1A15LV/DV	MCP1F1A18LV/DV	MCP1F1A20LV/DV
Item					
Maximum Travel Speed	Forward	mph (km/h)	10.9 (17.5)		
	Reverse	mph (km/h)	10.9 (17.5)		
Drawbar Pull Maximum	Full Load	lb (kg / N)	3417 (1550 / 15200)		
Truck Weight		lb (kg)	Refer to Truck Data Plate		
Engine	Model		K21, GK21		
	Classification		EFI		
	Rated Output - SAE Gross	hp (kW) @ rpm	55 (41) @ 2700		
	Rated Torque - SAE Gross	ft-lb (Nm) @ rpm	111.4 (151) @ 2000		
	Displacement	cu in (cm³)	126 (2065)		
Transmission	Type		Automatic		
	Number Speeds - fwd/rev		1/1		

MAIN TRUCK - 1F2 (CUSHION) BASED ON 2W330 MAST, 1070MM FORKS AND MINIMUM BATTERY SPECIFICATIONS

Item			Model code	1F2				
				MCP1F2A20JV/LV/ DV	MCU1F2A20LV/DV	MCP1F2A25JV/LV/ DV	MCU1F2A25LV/DV	
Rated Load Capacity		lb (kg)	Refer to Truck Data Plate					
Load center		in (mm)	24 (600)					
Overall Length (to face of forks)		in (mm)	89.0 (2260)			91.3 (2320)		
Overall Width (standard tires)		in (mm)	42.1 (1070)					
Wheelbase		in (mm)	55.1 (1400)					
Front Overhang		in (mm)	16.1 (410)					
Rear Overhang		in (mm)	17.7 (450)			20.1 (510)		
Tread - Center of Tire (standard tires)	Front	in (mm)	35.0 (890)					
	Rear	in (mm)	35.0 (890)					
Minimum Turning Radius	Outside	in (mm)	76.0 (1930)			78.3 (1990)		
Minimum Right Angle Stack	Add load length & clearance	in (mm)	92.1 (2340)			94.4 (2400)		
Fork Length (standard)		in (mm)	42.0 (1070)					
Fork Width x Thickness		in (mm)	1.5 x 4 (40 x 100)					
Ground Clearance	Under Mast	in (mm)	3.1 (80)					
	Under Power Unit	in (mm)	4.1 (105)					
	Under Frame, center of wheelbase	in (mm)	5.5 (140)					
Gradeability Maximum	Full Load	%	33.0	39.0	28.0	33.0		
	Empty	%	21.0			16.0		

Model code				1F2			
				MCP1F2A20JV/LV/ DV	MCU1F2A20LV/DV	MCP1F2A25JV/LV/ DV	MCU1F2A25LV/DV
Item							
Grade Clearance		Approach Angle	%	29.0		26.0	
		Ramp Breakover Angle	%	42.0			
		Departure Angle	%	34.0		30.0	
Lifting Speed	2W	Full Load	fpm (mm/sec)	122.0 (620)	129.9 (660)	118.1 (600)	129.9 (660)
		Empty	fpm (mm/sec)	127.9 (650)	137.8 (700)	127.9 (650)	137.8 (700)
	2F	Full Load	fpm (mm/sec)	108.2 (550)	122.0 (620)	110.2 (560)	122.0 (620)
		Empty	fpm (mm/sec)	116.1 (590)	131.9 (670)	122.0 (620)	131.9 (670)
	3F	Full Load	fpm (mm/sec)	110.2 (560)	120.0 (610)	110.2 (560)	120.0 (610)
		Empty	fpm (mm/sec)	121.9 (620)	136.4 (695)	126.0 (640)	136.4 (695)
	3V	Full Load	fpm (mm/sec)	110.2 (560)	120.0 (610)	110.2 (560)	120.0 (610)
		Empty	fpm (mm/sec)	116.1 (590)	129.9 (660)	120.0 (610)	129.9 (660)
Lowering Speed	2W	Full Load	fpm (mm/sec)	98.4 (500)			
		Empty	fpm (mm/sec)	98.4 (500)			
	2F	Full Load	fpm (mm/sec)	94.5 (480)			
		Empty	fpm (mm/sec)	61.0 (310)	59.0 (300)		
	3F	Full Load	fpm (mm/sec)	94.5 (480)			
		Empty	fpm (mm/sec)	68.1 (350)			
	3V	Full Load	fpm (mm/sec)	94.5 (480)			
		Empty	fpm (mm/sec)	64.9 (330)			

Model code			1F2			
			MCP1F2A20JV/LV/ DV	MCU1F2A20LV/DV	MCP1F2A25JV/LV/ DV	MCU1F2A25LV/DV
Item						
Maximum Travel Speed	Forward	mph (km/h)	10.6 (17)			
	Reverse	mph (km/h)	10.6 (17)			
Drawbar Pull Maximum	Full Load	lb (kg / N)	3638 (1650 / 16180)	4189 (1900 / 18635)	3638 (1650 / 16180)	4189 (1900 / 18635)
Truck Weight		lb (kg)	Refer to Truck Data Plate			
Engine	Model		K21, GK21	K25, GK25	K21, GK21	K25, GK25
	Classification		EFI			
	Rated Output - SAE Gross	hp (kW) @ rpm	55 (41) @ 2700	62.9 (46.9) @ 2700	55 (41) @ 2700	62.9 (46.9) @ 2700
	Rated Torque - SAE Gross	ft-lb (Nm) @ rpm	111.4 (151) @ 2000	138.7 (188) @ 1600	111.4 (151) @ 2000	138.7 (188) @ 1600
	Displacement	cu in (cm ³)	126 (2065)	151.8 (2488)	126 (2065)	151.8 (2488)
Transmission	Type		Automatic			
	Number Speeds - fwd/rev		1/1			

MAIN TRUCK - 1F2 (CUSHION) BASED ON 2H330 MAST, 1070MM FORKS AND MINIMUM BATTERY SPECIFICATIONS

Model code			1F2			
			MCP1F2A28JV/LV/ DV	MCU1F2A28LV/DV	MCU1F2A30LV/DV	MCUG1F2F30LV/DV
Item						
Rated Load Capacity		lb (kg)	Refer to Truck Data Plate			
Load center		in (mm)	24 (600)			
Overall Length (to face of forks)		in (mm)	93.9 (2385)		95.3 (2420)	96.5 (2450)
Overall Width (standard tires)		in (mm)	43.1 (1095)			43.9 (1115)
Wheelbase		in (mm)	55.1 (1400)			59.1 (1500)
Front Overhang		in (mm)	17.3 (440)		17.7 (450)	17.1 (435)
Rear Overhang		in (mm)	21.5 (545)		22.4 (570)	20.1 (510)
Tread - Center of Tire (standard tires)	Front	in (mm)	35.8 (910)			
	Rear	in (mm)	35.0 (890)			36.6 (930)
Minimum Turning Radius	Outside	in (mm)	79.5 (2020)		80.7 (2050)	80.9 (2055)
Minimum Right Angle Stack	Add load length & clearance	in (mm)	96.8 (2460)		98.4 (2500)	98.0 (2490)
Fork Length (standard)		in (mm)	42.0 (1070)			
Fork Width x Thickness		in (mm)	1.5 x 4 (40 x 100)		2 x 5 (50 x 125)	
Ground Clearance	Under Mast	in (mm)	2.8 (70)			3.1 (80)
	Under Power Unit	in (mm)	3.5 (90)			3.7 (95)
	Under Frame, center of wheelbase	in (mm)	5.5 (140)			5.7 (145)
Gradeability Maximum	Full Load	%	27.0	32.0	28.0	44.0
	Empty	%	16.0		16.0	18.0

Model code				1F2			
				MCP1F2A28JV/LV/ DV	MCU1F2A28LV/DV		MCU1F2A30LV/DV
Item							
Grade Clearance		Approach Angle	%	26.0			24.0
		Ramp Breakover Angle	%	42.0			44.0
		Departure Angle	%	28.0		27.0	35.0
Lifting Speed	2H	Full Load	fpm (mm/sec)	94.5 (480)	104.3 (530)		
		Empty	fpm (mm/sec)	102.4 (520)	110.2 (560)		
	2F	Full Load	fpm (mm/sec)	92.5 (470)	102.4 (520)		
		Empty	fpm (mm/sec)	100.4 (510)	112.2 (570)		
	3F	Full Load	fpm (mm/sec)	90.6 (460)	100.4 (510)		
		Empty	fpm (mm/sec)	98.4 (500)	110.2 (560)		
	3V	Full Load	fpm (mm/sec)	90.6 (460)	100.4 (510)		
		Empty	fpm (mm/sec)	98.4 (500)	110.2 (560)		
Lowering Speed	2H	Full Load	fpm (mm/sec)	98.4 (500)			
		Empty	fpm (mm/sec)	98.4 (500)			
	2F	Full Load	fpm (mm/sec)	92.5 (470)			
		Empty	fpm (mm/sec)	63.0 (320)			
	3F	Full Load	fpm (mm/sec)	92.5 (470)			
		Empty	fpm (mm/sec)	70.9 (360)			
	3V	Full Load	fpm (mm/sec)	92.5 (470)			
		Empty	fpm (mm/sec)	70.9 (360)			

Model code			1F2			
			MCP1F2A28JV/LV/ DV	MCU1F2A28LV/DV	MCU1F2A30LV/DV	MCUG1F2F30LV/DV
Item						
Maximum Travel Speed	Forward	mph (km/h)	10.6 (17)			1ST: 6.2 (10) 2ND: 11.5 (18.5)
	Reverse	mph (km/h)	10.6 (17)			9.9 (16)
Drawbar Pull Maximum	Full Load	lb (kg / N)	3638 (1650 / 16180)	4189 (1900 / 18635)		3009 (1365 / 13385)
Truck Weight		lb (kg)	Refer to Truck Data Plate			
Engine	Model		K21, GK21	K25, GK25		
	Classification		EFI			
	Rated Output - SAE Gross	hp (kW) @ rpm	55 (41) @ 2700	62.9 (46.9) @ 2700		
	Rated Torque - SAE Gross	ft-lb (Nm) @ rpm	111.4 (151) @ 2000	138.7 (188) @ 1600		
	Displacement	cu in (cm³)	126 (2065)	151.8 (2488)		
Transmission	Type		Automatic			
	Number Speeds - fwd/rev		1/1			2/1

<div> <div></div> <div>Model code</div> <div>Item</div> </div>			1F2			
			MCU1F2A33LV/DV	MCUG1F2F35LV/DV	MCUG1F2F36LV/DV	MCUG1F2F36LV/DV Boxcar
Rated Load Capacity		lb (kg)	Refer to Truck Data Plate			
Load center		in (mm)	24 (600)			
Overall Length (to face of forks)		in (mm)	96.3 (2445)	98.2 (2495)	100.0 (2540)	94.4 (2400)
Overall Width (standard tires)		in (mm)	43.9 (1115)	45.9 (1165)		
Wheelbase		in (mm)	55.1 (1400)	59.1 (1500)		
Front Overhang		in (mm)	17.7 (450)	17.9 (455)		
Rear Overhang		in (mm)	23.4 (595)	21.3 (540)	23.0 (585)	17.5 (445)
Tread - Center of Tire (standard tires)	Front	in (mm)	35.8 (910)	37.0 (940)		
	Rear	in (mm)	35.0 (890)	36.6 (930)		
Minimum Turning Radius	Outside	in (mm)	81.5 (2070)	82.5 (2095)	83.9 (2130)	79.9 (2030)
Minimum Right Angle Stack	Add load length & clearance	in (mm)	99.2 (2520)	100.4 (2550)	101.8 (2585)	97.8 (2485)
Fork Length (standard)		in (mm)	42.0 (1070)			
Fork Width x Thickness		in (mm)	2 x 5 (50 x 125)			
Ground Clearance	Under Mast	in (mm)	2.8 (70)	3.1 (80)		
	Under Power Unit	in (mm)	3.5 (90)	3.7 (95)		
	Under Frame, center of wheelbase	in (mm)	5.5 (140)	5.7 (145)		
Gradeability Maximum	Full Load	%	24.0	38.0	34.0	
	Empty	%	16.0	18.0	15.0	

Model code				1F2					
				MCU1F2A33LV/DV		MCUG1F2F35LV/DV		MCUG1F2F36LV/DV	
Item									
Grade Clearance		Approach Angle	%	26.0		24.0			
		Ramp Breakover Angle	%	42.0		44.0			
		Departure Angle	%	26.0		32.0		41.0	
Lifting Speed		2H	Full Load	fpm (mm/sec)	88.6 (450)				
			Empty	fpm (mm/sec)	92.5 (470)				
		2F	Full Load	fpm (mm/sec)	82.7 (420)				
			Empty	fpm (mm/sec)	86.6 (440)				
		3F	Full Load	fpm (mm/sec)	82.7 (420)				
			Empty	fpm (mm/sec)	86.6 (440)				
		3V	Full Load	fpm (mm/sec)	82.7 (420)				
			Empty	fpm (mm/sec)	86.6 (440)				
Lowering Speed		2H	Full Load	fpm (mm/sec)	82.7 (420)				
			Empty	fpm (mm/sec)	70.9 (360)				
		2F	Full Load	fpm (mm/sec)	76.8 (390)				
			Empty	fpm (mm/sec)	59.1 (300)				
		3F	Full Load	fpm (mm/sec)	76.8 (390)				
			Empty	fpm (mm/sec)	59.1 (300)				
		3V	Full Load	fpm (mm/sec)	76.8 (390)				
			Empty	fpm (mm/sec)	59.1 (300)				

Model code			1F2			
			MCU1F2A33LV/DV	MCUG1F2F35LV/DV	MCUG1F2F36LV/DV	MCUG1F2F36LV/DV Boxcar
Item						
Maximum Travel Speed	Forward	mph (km/h)	10.6 (17)	1ST: 6.2 (10) 2ND: 11.5 (18.5)		
	Reverse	mph (km/h)	10.6 (17)	9.9 (16)		
Drawbar Pull Maximum	Full Load	lb (kg / N)	4189 (1900 / 18635)	6228 (2825 / 27705)		
Truck Weight		lb (kg)	Refer to Truck Data Plate			
Engine	Model		K25, GK25			
	Classification		EFI			
	Rated Output - SAE Gross	hp (kW) @ rpm	62.9 (46.9) @ 2700			
	Rated Torque - SAE Gross	ft-lb (Nm) @ rpm	138.7 (188) @ 1600			
	Displacement	cu in (cm³)	151.8 (2488)			
Transmission	Type		Automatic			
	Number Speeds - fwd/rev		1/1	2/1		

MAIN TRUCK - 1F1/1F2 (COMPACT PNEUMATIC) BASED ON 2W330 MAST, 1070MM FORKS AND MINIMUM BATTERY SPECIFICATIONS

Model code			1F1/1F2		
			MAP1F1A15LV/DV	MAP1F1A18LV/DV	MAP1F2A25LV/DV
Item					
Rated Load Capacity		lb (kg)	Refer to Truck Data Plate		
Load center		in (mm)	24 (600)		
Overall Length (to face of forks)		in (mm)	83.9 (2130)	85.0 (2160)	92.9 (2360)
Overall Width (standard tires)		in (mm)	40.7 (1035)		46.3 (1175)
Wheelbase		in (mm)	50.8 (1290)		59.1 (1500)
Front Overhang		in (mm)	15.4 (390)		16.1 (410)
Rear Overhang		in (mm)	17.7 (450)	18.9 (480)	17.7 (450)
Tread - Center of Tire (standard tires)	Front	in (mm)	34.3 (870)		38.4 (975)
	Rear	in (mm)	34.8 (885)		36.6 (930)
Minimum Turning Radius	Outside	in (mm)	72.6 (1845)	73.8 (1875)	80.7 (2050)
Minimum Right Angle Stack	Add load length & clearance	in (mm)	88.0 (2235)	89.2 (2265)	96.8 (2460)
Fork Length (standard)		in (mm)	42.0 (1070)		
Fork Width x Thickness		in (mm)	1.5 x 4 (40 x 100)		
Ground Clearance	Under Mast	in (mm)	3.9 (100)		2.8 (70)
	Under Power Unit	in (mm)	3.7 (95)		
	Under Frame, center of wheelbase	in (mm)	5.5 (140)		5.1 (130)
Gradeability Maximum	Full Load	%	34.0	40.0	28.0
	Empty	%	28.0	26.0	21.0

Model code			1F1/1F2		
			MAP1F1A15LV/DV	MAP1F1A18LV/DV	MAP1F2A25LV/DV
Item					
Grade Clearance	Approach Angle	%	36.0		25.0
	Ramp Breakover Angle	%	51.0		39.0
	Departure Angle	%	42.0	40.0	
Lifting Speed	2W	Full Load	fpm (mm/sec)	122.0 (620)	
		Empty	fpm (mm/sec)	127.9 (650)	
	2F	Full Load	fpm (mm/sec)	108.2 (550)	
		Empty	fpm (mm/sec)	112.2 (590)	
	3F	Full Load	fpm (mm/sec)	110.2 (560)	
		Empty	fpm (mm/sec)	127.7 (650)	121.9 (620)
	3V	Full Load	fpm (mm/sec)	110.2 (560)	
		Empty	fpm (mm/sec)	116.1 (590)	
Lowering Speed	2W	Full Load	fpm (mm/sec)	98.4 (500)	
		Empty	fpm (mm/sec)	98.4 (500)	
	2F	Full Load	fpm (mm/sec)	94.5 (480)	
		Empty	fpm (mm/sec)	61.0 (310)	
	3F	Full Load	fpm (mm/sec)	94.5 (480)	
		Empty	fpm (mm/sec)	67.1 (340)	64.1 (325)
	3V	Full Load	fpm (mm/sec)	94.5 (480)	
		Empty	fpm (mm/sec)	61.0 (310)	

Model code			1F1/1F2		
			MAP1F1A15LV/DV	MAP1F1A18LV/DV	MAP1F2A25LV/DV
Item					
Maximum Travel Speed	Forward	mph (km/h)	10.6 (17)		
	Reverse	mph (km/h)	10.6 (17)		
Drawbar Pull Maximum	Full Load	lb (kg / N)	3748 (1700 / 16670)		
Truck Weight		lb (kg)	Refer to Truck Data Plate		
Engine	Model		K21, GK21		
	Classification		EFI		
	Rated Output - SAE Gross	hp (kW) @ rpm	55 (41) @ 2700		
	Rated Torque - SAE Gross	ft-lb (Nm) @ rpm	111.4 (151) @ 2000		
	Displacement	cu in (cm ³)	126 (2065)		
Transmission	Type		Automatic		
	Number Speeds - fwd/rev		1/1		

MAST - 1F1 (PNEUMATIC)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2W)	2W270	106 (2700)	6.2 (155)	6/12	83.3 (2115)	72.6 (1845)	155.7 (3955)	130.0 (3303)
	2W300	118 (3000)	6.2 (155)	6/12	83.3 (2115)	78.5 (1995)	167.5 (4255)	141.8 (3603)
	2W330	130 (3300)	6.2 (155)	6/12	83.3 (2115)	84.4 (2145)	179.3 (4555)	153.6 (3903)
	2W350	138 (3500)	6.2 (155)	6/12	83.3 (2115)	89.8 (2285)	187.2 (4755)	161.5 (4103)
	2W370	146 (3700)	6.2 (155)	6/12	83.3 (2115)	94.7 (2405)	195.1 (4955)	169.4 (4303)
	2W400	157 (4000)	6.2 (155)	6/6	83.3 (2115)	102.2 (2600)	206.9 (5255)	181.2 (4603)
	2W450	177 (4500)	6.2 (155)	6/6	83.3 (2115)	112.0 (2845)	226.6 (5755)	200.9 (5103)
	2W500	197 (5000)	6.2 (155)	6/6	83.3 (2115)	121.9 (3100)	246.3 (6255)	220.6 (5603)
TWO STAGE (Full Free 2F)	2F300	118 (3000)	53.6 (1360)	6/12	83.3 (2115)	78.5 (1995)	Not Available	
	2F330	130 (3300)	59.5 (1510)	6/12	83.3 (2115)	84.4 (2145)	Not Available	
	2F350	138 (3500)	64.8 (1645)	6/12	83.3 (2115)	89.8 (2285)	Not Available	
	2F370	146 (3700)	69.8 (1770)	6/12	83.3 (2115)	94.7 (2405)	Not Available	
	2F400	157 (4000)	77.2 (1960)	6/6	83.3 (2115)	102.2 (2600)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	47.0 (1190)	6/6	83.3 (2115)	72.6 (1845)	Not Available	
	3F430	169 (4300)	52.9 (1340)	6/6	83.3 (2115)	78.5 (1995)	Not Available	
	3F475	187 (4750)	58.8 (1490)	6/6	83.3 (2115)	84.4 (2145)	Not Available	
	3F515	203 (5150)	64.1 (1625)	6/6	83.3 (2115)	89.8 (2285)	Not Available	
	3F550	217 (5500)	69.0 (1750)	6/6	83.3 (2115)	94.7 (2405)	Not Available	
	3F600	236 (6000)	76.5 (1940)	6/6	83.3 (2115)	102.2 (2600)	Not Available	
	3F650	256 (6500)	86.3 (2190)	6/6	83.3 (2115)	112.0 (2845)	Not Available	
	3F700	276 (7000)	96.2 (2440)	6/6	83.3 (2115)	121.9 (3100)	Not Available	
THREE STAGE (Optiview 3V)	3V360	142 (3600)	48.4 (1225)	6/6	83.3 (2115)	72.6 (1845)	Not Available	
	3V405	159 (4050)	54.3 (1375)	6/6	83.3 (2115)	78.5 (1995)	Not Available	
	3V450	177 (4500)	60.2 (1525)	6/6	83.3 (2115)	84.4 (2145)	Not Available	
	3V490	193 (4900)	65.5 (1660)	6/6	83.3 (2115)	89.8 (2285)	Not Available	
	3V525	207 (5250)	70.4 (1785)	6/6	83.3 (2115)	94.7 (2405)	Not Available	
	3V575	226 (5750)	77.9 (1975)	6/6	83.3 (2115)	102.2 (2600)	Not Available	
	3V633	249 (6330)	87.8 (2230)	6/6	83.3 (2115)	112.0 (2845)	Not Available	
	3V688	271 (6880)	97.6 (2475)	6/6	83.3 (2115)	121.9 (3100)	Not Available	

MAST - 1F2 2.0 - 2.5 TON (PNEUMATIC)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2W)	2W270	106 (2700)	6.1 (155)	6/12	83.5 (2120)	72.6 (1845)	155.7 (3955)	130.6 (3319)
	2W300	118 (3000)	6.1 (155)	6/12	83.5 (2120)	78.5 (1995)	167.5 (4255)	142.5 (3619)
	2W330	130 (3300)	6.1 (155)	6/12	83.5 (2120)	84.4 (2145)	179.3 (4555)	154.3 (3919)
	2W350	138 (3500)	6.1 (155)	6/12	83.5 (2120)	89.8 (2285)	187.2 (4755)	162.1 (4119)
	2W370	146 (3700)	6.1 (155)	6/12	83.5 (2120)	94.7 (2405)	195.1 (4955)	170.0 (4319)
	2W400	157 (4000)	6.1 (155)	6/6	83.5 (2120)	102.2 (2600)	206.9 (5255)	181.8 (4619)
	2W450	177 (4500)	6.1 (155)	6/6	83.5 (2120)	112.0 (2845)	226.6 (5755)	201.5 (5119)
	2W500	197 (5000)	6.1 (155)	6/6	83.5 (2120)	121.9 (3100)	246.3 (6255)	221.2 (5619)
TWO STAGE (Full Free 2F)	2F300	118 (3000)	53.5 (1355)	6/12	83.5 (2120)	78.5 (1995)	Not Available	
	2F330	130 (3300)	59.4 (1505)	6/12	83.5 (2120)	84.4 (2145)	Not Available	
	2F350	138 (3500)	64.7 (1640)	6/12	83.5 (2120)	89.8 (2285)	Not Available	
	2F370	146 (3700)	69.6 (1765)	6/12	83.5 (2120)	94.7 (2405)	Not Available	
	2F400	157 (4000)	77.1 (1955)	6/6	83.5 (2120)	102.2 (2600)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	47.2 (1195)	6/6	83.5 (2120)	72.6 (1845)	Not Available	
	3F430	169 (4300)	53.1 (1345)	6/6	83.5 (2120)	78.5 (1995)	Not Available	
	3F475	187 (4750)	59.0 (1495)	6/6	83.5 (2120)	84.4 (2145)	Not Available	
	3F515	203 (5150)	64.3 (1630)	6/6	83.5 (2120)	89.8 (2285)	Not Available	
	3F550	217 (5500)	69.2 (1755)	6/6	83.5 (2120)	94.7 (2405)	Not Available	
	3F600	236 (6000)	76.7 (1945)	6/6	83.5 (2120)	102.2 (2600)	Not Available	
	3F650	256 (6500)	86.5 (2195)	6/6	83.5 (2120)	112.0 (2845)	Not Available	
	3F700	276 (7000)	96.4 (2445)	6/6	83.5 (2120)	121.9 (3100)	Not Available	
THREE STAGE (Optiview 3V)	3V360	142 (3600)	47.2 (1195)	6/6	83.5 (2120)	72.8 (1850)	Not Available	
	3V405	159 (4050)	53.1 (1345)	6/6	83.5 (2120)	78.7 (2000)	Not Available	
	3V450	177 (4500)	59.0 (1495)	6/6	83.5 (2120)	84.6 (2150)	Not Available	
	3V490	193 (4900)	64.3 (1630)	6/6	83.5 (2120)	90.0 (2290)	Not Available	
	3V525	207 (5250)	69.2 (1755)	6/6	83.5 (2120)	94.9 (2410)	Not Available	
	3V575	226 (5750)	76.7 (1945)	6/6	83.5 (2120)	102.4 (2605)	Not Available	
	3V633	249 (6330)	86.5 (2195)	6/6	83.5 (2120)	112.2 (2850)	Not Available	
	3V688	271 (6880)	96.4 (2445)	6/6	83.5 (2120)	122.0 (3100)	Not Available	

MAST - 1F2 2.8 TON (PNEUMATIC)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2W)	2W270	106 (2700)	6.1 (150)	6/12	84.6 (2150)	73.8 (1875)	155.7 (3955)	130.6 (3319)
	2W300	118 (3000)	6.1 (150)	6/12	84.6 (2150)	79.7 (2025)	167.5 (4255)	142.5 (3619)
	2W330	130 (3300)	6.1 (150)	6/12	84.6 (2150)	85.6 (2175)	179.3 (4555)	154.3 (3919)
	2W350	138 (3500)	6.1 (150)	6/12	84.6 (2150)	90.9 (2310)	187.2 (4755)	162.1 (4119)
	2W370	146 (3700)	6.1 (150)	6/12	84.6 (2150)	95.9 (2440)	195.1 (4955)	170.0 (4319)
	2W400	157 (4000)	6.1 (150)	6/6	84.6 (2150)	103.3 (2625)	206.9 (5255)	181.8 (4619)
	2W450	177 (4500)	6.1 (150)	6/6	84.6 (2150)	113.2 (2875)	226.6 (5755)	201.5 (5119)
	2W500	197 (5000)	6.1 (150)	6/6	84.6 (2150)	123.0 (3125)	246.3 (6255)	221.2 (5619)
TWO STAGE (Full Free 2F)	2F300	118 (3000)	53.8 (1365)	6/12	84.6 (2150)	79.7 (2025)	Not Available	
	2F330	130 (3300)	59.7 (1515)	6/12	84.6 (2150)	85.6 (2175)	Not Available	
	2F350	138 (3500)	65.1 (1650)	6/12	84.6 (2150)	90.9 (2310)	Not Available	
	2F370	146 (3700)	70.0 (1775)	6/12	84.6 (2150)	95.9 (2440)	Not Available	
	2F400	157 (4000)	77.5 (1965)	6/6	84.6 (2150)	103.3 (2625)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	55.7 (1410)	6/6	84.6 (2150)	79.7 (2025)	Not Available	
	3F430	169 (4300)	61.6 (1560)	6/6	84.6 (2150)	85.6 (2175)	Not Available	
	3F475	187 (4750)	66.9 (1695)	6/6	84.6 (2150)	90.9 (2310)	Not Available	
	3F515	203 (5150)	71.8 (1820)	6/6	84.6 (2150)	95.9 (2440)	Not Available	
	3F550	217 (5500)	79.3 (2010)	6/6	84.6 (2150)	103.3 (2625)	Not Available	
	3F600	236 (6000)	89.1 (2260)	6/6	84.6 (2150)	113.2 (2875)	Not Available	
	3F650	256 (6500)	99.0 (2510)	6/6	84.6 (2150)	123.0 (3125)	Not Available	
	3F700	276 (7000)	108.8 (2760)	6/6	84.6 (2150)	132.9 (3380)	Not Available	
THREE STAGE (Optiview 3V)	3V385	152 (3850)	55.7 (1410)	6/6	84.6 (2150)	79.7 (2025)	Not Available	
	3V430	169 (4300)	61.6 (1560)	6/6	84.6 (2150)	85.6 (2175)	Not Available	
	3V470	185 (4700)	66.9 (1695)	6/6	84.6 (2150)	90.9 (2310)	Not Available	
	3V505	199 (5050)	71.8 (1820)	6/6	84.6 (2150)	95.9 (2440)	Not Available	
	3V555	219 (5550)	79.3 (2010)	6/6	84.6 (2150)	103.3 (2625)	Not Available	
	3V600	236 (6000)	89.1 (2260)	6/6	84.6 (2150)	113.2 (2875)	Not Available	
	3V650	256 (6500)	99.0 (2510)	6/6	84.6 (2150)	123.0 (3125)	Not Available	
	3V700	276 (7000)	108.8 (2760)	6/6	84.6 (2150)	132.9 (3380)	Not Available	

MAST - 1F2 3.0 TON (PNEUMATIC)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2W)	2W270	106 (2700)	6.5 (165)	6/12	84.6 (2150)	73.8 (1875)	155.8 (3958)	130.6 (3319)
	2W300	118 (3000)	6.5 (165)	6/12	84.6 (2150)	79.7 (2028)	167.6 (4258)	142.4 (3617)
	2W330	130 (3300)	6.5 (165)	6/12	84.6 (2150)	85.6 (2175)	179.4 (4558)	154.2 (3917)
	2W350	138 (3500)	6.5 (165)	6/12	84.6 (2150)	90.9 (2310)	187.3 (4758)	162.1 (4117)
	2W370	146 (3700)	6.5 (165)	6/12	84.6 (2150)	95.9 (2440)	195.2 (4958)	169.9 (4317)
	2W400	157 (4000)	6.5 (165)	6/6	84.6 (2150)	103.3 (2625)	207.0 (5258)	181.8 (4617)
	2W450	177 (4500)	6.5 (165)	6/6	84.6 (2150)	113.2 (2880)	226.7 (5758)	201.4 (5117)
	2W500	197 (5000)	6.5 (165)	6/6	84.6 (2150)	123.0 (3125)	246.4 (6258)	221.1 (5617)
TWO STAGE (Full Free 2F)	2F300	118 (3000)	53.4 (1355)	6/12	84.6 (2150)	79.7 (2025)	Not Available	
	2F330	130 (3300)	59.3 (1505)	6/12	84.6 (2150)	85.6 (2175)	Not Available	
	2F350	138 (3500)	64.6 (1635)	6/12	84.6 (2150)	90.9 (2310)	Not Available	
	2F370	146 (3700)	70.0 (1775)	6/12	84.6 (2150)	95.9 (2440)	Not Available	
	2F400	157 (4000)	77.0 (1955)	6/6	84.6 (2150)	103.3 (2625)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	54.8 (1390)	6/6	84.6 (2150)	79.7 (2028)	Not Available	
	3F430	169 (4300)	60.7 (1540)	6/6	84.6 (2150)	85.6 (2175)	Not Available	
	3F475	187 (4750)	66.0 (1675)	6/6	84.6 (2150)	90.9 (2310)	Not Available	
	3F515	203 (5150)	70.9 (1800)	6/6	84.6 (2150)	95.9 (2440)	Not Available	
	3F550	217 (5500)	78.4 (1990)	6/6	84.6 (2150)	103.3 (2625)	Not Available	
	3F600	236 (6000)	88.2 (2240)	6/6	84.6 (2150)	113.2 (2880)	Not Available	
	3F650	256 (6500)	98.1 (2490)	6/6	84.6 (2150)	123.0 (3125)	Not Available	
	3F700	276 (7000)	107.9 (2740)	6/6	84.6 (2150)	132.9 (3380)	Not Available	
THREE STAGE (Optiview 3V)	3V385	152 (3850)	54.8 (1390)	6/6	84.6 (2150)	79.7 (2028)	Not Available	
	3V430	169 (4300)	60.7 (1540)	6/6	84.6 (2150)	85.6 (2175)	Not Available	
	3V470	185 (4700)	66.0 (1675)	6/6	84.6 (2150)	90.9 (2310)	Not Available	
	3V505	199 (5050)	70.9 (1800)	6/6	84.6 (2150)	95.9 (2440)	Not Available	
	3V555	219 (5550)	78.4 (1990)	6/6	84.6 (2150)	103.3 (2625)	Not Available	
	3V600	236 (6000)	88.2 (2240)	6/6	84.6 (2150)	113.2 (2880)	Not Available	
	3V650	256 (6500)	98.1 (2490)	6/6	84.6 (2150)	123.0 (3125)	Not Available	
	3V700	276 (7000)	107.9 (2740)	6/6	84.6 (2150)	132.9 (3380)	Not Available	

MAST - 1F2 3.5 TON (PNEUMATIC)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2W)	2W300	118 (3000)	6.5 (165)	6/12	84.8 (2155)	85.8 (2180)	167.6 (4258)	147.3 (3742)
	2W330	130 (3300)	6.5 (165)	6/12	84.8 (2155)	91.1 (2315)	179.4 (4558)	159.1 (4042)
	2W350	138 (3500)	6.5 (165)	6/12	84.8 (2155)	96.1 (2445)	187.3 (4758)	167.0 (4242)
	2W370	146 (3700)	6.5 (165)	6/12	84.8 (2155)	103.5 (2630)	195.2 (4958)	174.9 (4442)
	2W400	157 (4000)	6.5 (165)	6/6	84.8 (2155)	113.4 (2885)	207.0 (5258)	186.7 (4742)
	2W450	177 (4500)	6.5 (165)	6/6	84.8 (2155)	123.2 (3130)	226.7 (5758)	206.4 (5242)
	2W500	197 (5000)	6.5 (165)	6/6	84.8 (2155)	133.1 (3385)	246.4 (6258)	226.1 (5742)
TWO STAGE (Full Free 2F)	2F300	118 (3000)	57.0 (1445)	6/12	84.8 (2155)	85.8 (2180)	Not Available	
	2F330	130 (3300)	62.0 (1570)	6/12	84.8 (2155)	91.1 (2315)	Not Available	
	2F350	138 (3500)	67.0 (1700)	6/12	84.8 (2155)	96.1 (2445)	Not Available	
	2F370	146 (3700)	74.0 (1875)	6/12	84.8 (2155)	103.5 (2630)	Not Available	
	2F400	157 (4000)	84.0 (2130)	6/6	84.8 (2155)	113.4 (2885)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F355	140 (3550)	43.5 (1100)	6/6	84.8 (2155)	74.2 (1885)	Not Available	
	3F400	157 (4000)	49.4 (1250)	6/6	84.8 (2155)	80.1 (2035)	Not Available	
	3F445	175 (4450)	55.4 (1405)	6/6	84.8 (2155)	86.0 (2185)	Not Available	
	3F485	191 (4850)	60.7 (1540)	6/6	84.8 (2155)	91.3 (2320)	Not Available	
	3F520	205 (5200)	65.6 (1665)	6/6	84.8 (2155)	96.3 (2450)	Not Available	
	3F570	224 (5700)	73.1 (1855)	6/6	84.8 (2155)	103.7 (2635)	Not Available	
	3F620	244 (6200)	82.9 (2105)	6/6	84.8 (2155)	113.6 (2890)	Not Available	
	3F670	264 (6700)	92.8 (2355)	6/6	84.8 (2155)	123.4 (3135)	Not Available	
THREE STAGE (Optiview 3V)	3V385	152 (3850)	49.4 (1250)	6/6	84.8 (2155)	80.1 (2035)	Not Available	
	3V430	169 (4300)	55.4 (1405)	6/6	84.8 (2155)	86.0 (2185)	Not Available	
	3V470	185 (4700)	60.7 (1540)	6/6	84.8 (2155)	91.3 (2320)	Not Available	
	3V505	199 (5050)	65.6 (1665)	6/6	84.8 (2155)	96.3 (2450)	Not Available	
	3V555	219 (5550)	73.1 (1855)	6/6	84.8 (2155)	103.7 (2635)	Not Available	
	3V600	236 (6000)	82.9 (2105)	6/6	84.8 (2155)	113.6 (2890)	Not Available	
	3V650	256 (6500)	92.8 (2355)	6/6	84.8 (2155)	123.4 (3135)	Not Available	
	3V700	276 (7000)	102.6 (2605)	6/6	84.8 (2155)	133.3 (3390)	Not Available	

MAST - 1F1 (CUSHION)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2W)	2W203T	80 (2030)	4.0 (100)	10/5	81.1 (2060)	62.1 (1580)	Not Available	
	2W270	106 (2700)	4.0 (100)	5/5	81.1 (2060)	71.1 (1810)	155.7 (3955)	130.0 (3303)
	2W300	118 (3000)	4.0 (100)	5/10	81.1 (2060)	77.0 (1960)	167.5 (4255)	141.8 (3603)
	2W330	130 (3300)	4.0 (100)	5/10	81.1 (2060)	82.9 (2110)	179.3 (4555)	153.6 (3903)
	2W350	138 (3500)	4.0 (100)	5/10	81.1 (2060)	88.2 (2245)	187.2 (4755)	161.5 (4103)
	2W370	146 (3700)	4.0 (100)	5/10	81.1 (2060)	93.1 (2365)	195.1 (4955)	169.4 (4303)
	2W400	157 (4000)	4.0 (100)	5/10	81.1 (2060)	100.6 (2560)	206.9 (5255)	181.2 (4603)
	2W450	177 (4500)	4.0 (100)	5/5	81.1 (2060)	110.5 (2810)	226.6 (5755)	200.9 (5103)
	2W500	197 (5000)	4.0 (100)	5/5	81.1 (2060)	120.3 (3060)	246.3 (6255)	220.6 (5603)
TWO STAGE (Full Free 2F)	2F270	105.5 (2700)	47.4 (1200)	5/10	81.1 (2060)	72.0 (1830)	Not Available	
	2F300	117.5 (3000)	53.4 (1355)	5/10	81.1 (2060)	78.0 (1985)	Not Available	
	2F330	129.5 (3300)	59.4 (1505)	5/10	81.1 (2060)	84.0 (2135)	Not Available	
	2F350	137.5 (3500)	63.4 (1610)	5/10	81.1 (2060)	88.0 (2235)	Not Available	
	2F370	145.5 (3700)	67.4 (1710)	5/10	81.1 (2060)	92.0 (2340)	Not Available	
	2F400	157.5 (4000)	73.4 (1860)	5/10	81.1 (2060)	98.0 (2490)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	46.9 (1190)	5/5	81.1 (2060)	71.1 (1810)	Not Available	
	3F430	169 (4300)	52.8 (1340)	5/5	81.1 (2060)	77.0 (1960)	Not Available	
	3F475	187 (4750)	58.7 (1490)	5/5	81.1 (2060)	82.9 (2110)	Not Available	
	3F515	203 (5150)	64.0 (1625)	5/5	81.1 (2060)	88.2 (2245)	Not Available	
	3F550	217 (5500)	68.9 (1750)	5/5	81.1 (2060)	93.1 (2365)	Not Available	
	3F600	236 (6000)	76.4 (1940)	5/5	81.1 (2060)	100.6 (2560)	Not Available	
	3F650	256 (6500)	86.2 (2185)	5/5	81.1 (2060)	110.5 (2810)	Not Available	
THREE STAGE (Optiview 3V)	3V360	142 (3600)	47.6 (1205)	5/5	81.1 (2060)	71.1 (1810)	Not Available	
	3V405	159 (4050)	53.5 (1355)	5/5	81.1 (2060)	77.0 (1960)	Not Available	
	3V450	177 (4500)	59.4 (1505)	5/5	81.1 (2060)	82.9 (2110)	Not Available	
	3V490	193 (4900)	64.8 (1645)	5/5	81.1 (2060)	88.2 (2245)	Not Available	
	3V525	207 (5250)	69.7 (1770)	5/5	81.1 (2060)	93.1 (2365)	Not Available	
	3V575	226 (5750)	77.2 (1960)	5/5	81.1 (2060)	100.6 (2560)	Not Available	
	3V633	249 (6330)	87.0 (2205)	5/5	81.1 (2060)	110.5 (2810)	Not Available	

MAST - 1F2 2.0 - 2.5 TON (CUSION)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2W)	2W203T	80 (2030)	4.0 (100)	10/5	82.1 (2085)	62.1 (1580)	Not Available	
	2W270	106 (2700)	4.2 (105)	5/5	82.1 (2085)	71.3 (1815)	155.7 (3955)	130.0 (3303)
	2W300	118 (3000)	4.2 (105)	5/5	82.1 (2085)	77.2 (1965)	167.5 (4255)	141.8 (3603)
	2W330	130 (3300)	4.2 (105)	5/10	82.1 (2085)	83.1 (2115)	179.3 (4555)	153.6 (3903)
	2W350	138 (3500)	4.2 (105)	5/10	82.1 (2085)	88.4 (2250)	187.2 (4755)	161.5 (4103)
	2W370	146 (3700)	4.2 (105)	5/5	82.1 (2085)	93.3 (2370)	195.1 (4955)	169.4 (4303)
	2W400	157 (4000)	4.2 (105)	5/10	82.1 (2085)	100.8 (2565)	206.9 (5255)	181.2 (4603)
	2W450	177 (4500)	4.2 (105)	5/5	82.1 (2085)	110.6 (2810)	226.6 (5755)	200.9 (5103)
	2W500	197 (5000)	4.2 (105)	5/5	82.1 (2085)	120.5 (3065)	246.3 (6255)	220.6 (5603)
TWO STAGE (Full Free 2F)	2F270	105.5 (2700)	47.4 (1200)	5/10	82.1 (2085)	72.0 (1830)	Not Available	
	2F300	117.5 (3000)	53.4 (1355)	5/10	82.1 (2085)	78.0 (1985)	Not Available	
	2F330	129.5 (3300)	59.4 (1505)	5/10	82.1 (2085)	84.0 (2135)	Not Available	
	2F350	137.5 (3500)	63.4 (1610)	5/10	82.1 (2085)	88.0 (2235)	Not Available	
	2F370	145.5 (3700)	67.4 (1710)	5/10	82.1 (2085)	92.0 (2340)	Not Available	
	2F400	157.5 (4000)	73.4 (1860)	5/10	82.1 (2085)	98.0 (2490)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	46.9 (1190)	5/5	82.1 (2085)	71.3 (1815)	Not Available	
	3F430	169 (4300)	52.8 (1340)	5/5	82.1 (2085)	77.2 (1965)	Not Available	
	3F475	187 (4750)	58.7 (1490)	5/5	82.1 (2085)	83.1 (2115)	Not Available	
	3F515	203 (5150)	64.0 (1625)	5/5	82.1 (2085)	88.4 (2250)	Not Available	
	3F550	217 (5500)	68.9 (1750)	5/5	82.1 (2085)	93.3 (2370)	Not Available	
	3F600	236 (6000)	76.4 (1940)	5/5	82.1 (2085)	100.8 (2565)	Not Available	
	3F650	256 (6500)	86.2 (2185)	5/5	82.1 (2085)	110.6 (2810)	Not Available	
	3F700	276 (7000)	96.1 (2440)	5/5	82.1 (2085)	120.5 (3065)	Not Available	
THREE STAGE (Optiview 3V)	3V360	142 (3600)	47.8 (1210)	5/5	82.1 (2085)	71.3 (1815)	Not Available	
	3V405	159 (4050)	53.7 (1360)	5/5	82.1 (2085)	77.2 (1965)	Not Available	
	3V450	177 (4500)	59.6 (1510)	5/5	82.1 (2085)	83.1 (2115)	Not Available	
	3V490	193 (4900)	64.9 (1645)	5/5	82.1 (2085)	88.4 (2250)	Not Available	
	3V525	207 (5250)	69.8 (1770)	5/5	82.1 (2085)	93.3 (2370)	Not Available	
	3V575	226 (5750)	77.3 (1960)	5/5	82.1 (2085)	100.8 (2565)	Not Available	
	3V633	249 (6330)	87.2 (2210)	5/5	82.1 (2085)	110.6 (2810)	Not Available	
	3V688	271 (6880)	97.0 (2460)	5/5	82.1 (2085)	120.5 (3065)	Not Available	

MAST - 1F2 2.8 TON (CUSHION)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2H)	2H270	106 (2700)	6.7 (170)	5/10	82.1 (2085)	70.9 (1805)	Not Available	
	2H300	118 (3000)	6.7 (170)	5/10	82.1 (2085)	76.8 (1955)	Not Available	
	2H330	130 (3300)	6.7 (170)	5/10	82.1 (2085)	82.7 (2105)	Not Available	
	2H350	138 (3500)	6.7 (170)	5/10	82.1 (2085)	88.0 (2235)	Not Available	
	2H370	146 (3700)	10.2 (255)	5/10	82.1 (2085)	92.9 (2360)	Not Available	
	2H400	157 (4000)	10.2 (255)	5/10	82.1 (2085)	100.4 (2550)	Not Available	
	2H450	177 (4500)	10.2 (255)	5/5	82.1 (2085)	110.2 (2800)	Not Available	
	2H500	197 (5000)	10.2 (255)	5/5	82.1 (2085)	120.1 (3055)	Not Available	
TWO STAGE (Full Free 2F)	2F270	105.5 (2700)	45.3 (1150)	5/10	82.1 (2085)	71.7 (1825)	Not Available	
	2F300	117.5 (3000)	51.3 (1300)	5/10	82.1 (2085)	77.7 (1975)	Not Available	
	2F330	129.5 (3300)	57.3 (1455)	5/10	82.1 (2085)	83.7 (2130)	Not Available	
	2F350	137.5 (3500)	61.3 (1555)	5/10	82.1 (2085)	87.7 (2230)	Not Available	
	2F370	145.5 (3700)	65.3 (1655)	5/10	82.1 (2085)	91.7 (2330)	Not Available	
	2F400	157.5 (4000)	71.3 (1810)	5/10	82.1 (2085)	97.7 (2485)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	56.1 (1420)	5/5	82.1 (2085)	76.7 (1950)	Not Available	
	3F430	169 (4300)	62.0 (1570)	5/5	82.1 (2085)	82.6 (2100)	Not Available	
	3F475	187 (4750)	67.3 (1705)	5/5	82.1 (2085)	87.9 (2235)	Not Available	
	3F515	203 (5150)	72.2 (1830)	5/5	82.1 (2085)	92.8 (2360)	Not Available	
	3F550	217 (5500)	79.7 (2020)	5/5	82.1 (2085)	100.3 (2550)	Not Available	
	3F600	236 (6000)	89.6 (2275)	5/5	82.1 (2085)	110.1 (2800)	Not Available	
	3F650	256 (6500)	99.4 (2520)	5/5	82.1 (2085)	120.0 (3050)	Not Available	
	3F700	276 (7000)	109.3 (2775)	5/5	82.1 (2085)	129.8 (3300)	Not Available	
THREE STAGE (Optiview 3V)	3V385	152 (3850)	49.4 (1250)	5/5	82.1 (2085)	76.9 (1955)	Not Available	
	3V430	169 (4300)	55.3 (1400)	5/5	82.1 (2085)	82.8 (2105)	Not Available	
	3V470	185 (4700)	61.2 (1550)	5/5	82.1 (2085)	88.1 (2240)	Not Available	
	3V505	199 (5050)	66.5 (1685)	5/5	82.1 (2085)	93.0 (2365)	Not Available	
	3V555	219 (5550)	71.5 (1815)	5/5	82.1 (2085)	100.5 (2555)	Not Available	
	3V600	236 (6000)	78.9 (2000)	5/5	82.1 (2085)	110.3 (2805)	Not Available	
	3V650	256 (6500)	88.8 (2255)	5/5	82.1 (2085)	120.2 (3055)	Not Available	
	3V700	276 (7000)	98.6 (2500)	5/5	82.1 (2085)	130.0 (3305)	Not Available	

MAST - 1F2 3.0 TON STANDARD WHEELBASE (CUSHION)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2H)	2H270	106 (2700)	7.1 (180)	5/10	82.1 (2085)	70.9 (1805)	Not Available	
	2H300	118 (3000)	7.1 (180)	5/10	82.1 (2085)	76.8 (1955)	Not Available	
	2H330	130 (3300)	7.1 (180)	5/10	82.1 (2085)	82.7 (2105)	Not Available	
	2H350	138 (3500)	7.1 (180)	5/10	82.1 (2085)	88.0 (2235)	Not Available	
	2H370	146 (3700)	10.6 (265)	5/10	82.1 (2085)	92.9 (2360)	Not Available	
	2H400	157 (4000)	10.6 (265)	5/10	82.1 (2085)	100.4 (2550)	Not Available	
	2H450	177 (4500)	10.6 (265)	5/5	82.1 (2085)	110.2 (2800)	Not Available	
	2H500	197 (5000)	10.6 (265)	5/5	82.1 (2085)	120.1 (3055)	Not Available	
TWO STAGE (Full Free 2F)	2F270	105.5 (2700)	45.7 (1160)	5/10	82.1 (2085)	71.7 (1825)	Not Available	
	2F300	117.5 (3000)	51.7 (1310)	5/10	82.1 (2085)	77.7 (1975)	Not Available	
	2F330	129.5 (3300)	57.7 (1465)	5/10	82.1 (2085)	83.7 (2130)	Not Available	
	2F350	137.5 (3500)	61.7 (1565)	5/10	82.1 (2085)	87.7 (2230)	Not Available	
	2F370	145.5 (3700)	65.7 (1665)	5/10	82.1 (2085)	91.7 (2330)	Not Available	
	2F400	157.5 (4000)	71.7 (1820)	5/10	82.1 (2085)	97.7 (2485)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	56.1 (1420)	5/5	82.1 (2085)	76.7 (1950)	Not Available	
	3F430	169 (4300)	62.0 (1570)	5/5	82.1 (2085)	82.6 (2100)	Not Available	
	3F475	187 (4750)	67.3 (1705)	5/5	82.1 (2085)	87.9 (2235)	Not Available	
	3F515	203 (5150)	72.2 (1830)	5/5	82.1 (2085)	92.8 (2360)	Not Available	
	3F550	217 (5500)	79.7 (2020)	5/5	82.1 (2085)	100.3 (2550)	Not Available	
	3F600	236 (6000)	89.6 (2275)	5/5	82.1 (2085)	110.1 (2800)	Not Available	
	3F650	256 (6500)	99.4 (2520)	5/5	82.1 (2085)	120.0 (3050)	Not Available	
	3F700	276 (7000)	109.3 (2775)	5/5	82.1 (2085)	129.8 (3300)	Not Available	
THREE STAGE (Optiview 3V)	3V385	152 (3850)	49.4 (1250)	5/5	82.1 (2085)	76.9 (1955)	Not Available	
	3V430	169 (4300)	55.3 (1400)	5/5	82.1 (2085)	82.8 (2105)	Not Available	
	3V470	187 (4750)	61.2 (1550)	5/5	82.1 (2085)	88.1 (2240)	Not Available	
	3V505	203 (5150)	66.5 (1685)	5/5	82.1 (2085)	93.0 (2365)	Not Available	
	3V555	217 (5500)	71.5 (1815)	5/5	82.1 (2085)	100.5 (2555)	Not Available	
	3V600	236 (6000)	78.9 (2000)	5/5	82.1 (2085)	110.3 (2805)	Not Available	
	3V650	256 (6500)	88.8 (2255)	5/5	82.1 (2085)	120.2 (3055)	Not Available	
	3V700	276 (7000)	98.6 (2500)	5/5	82.1 (2085)	130.0 (3305)	Not Available	

MAST - 1F2 3.0 TON LONG WHEELBASE (CUSHION)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2H)	2H270	106 (2700)	7.1 (180)	5/10	82.1 (2085)	71.3 (1815)	Not Available	
	2H300	118 (3000)	7.1 (180)	5/10	82.1 (2085)	77.2 (1965)	Not Available	
	2H330	130 (3300)	7.1 (180)	5/10	82.1 (2085)	83.1 (2115)	Not Available	
	2H350	138 (3500)	7.1 (180)	5/10	82.1 (2085)	88.4 (2250)	Not Available	
	2H370	146 (3700)	10.6 (265)	5/10	82.1 (2085)	93.3 (2370)	Not Available	
	2H400	157 (4000)	10.6 (265)	5/10	82.1 (2085)	100.8 (2560)	Not Available	
	2H450	177 (4500)	10.6 (265)	5/5	82.1 (2085)	110.6 (2810)	Not Available	
	2H500	197 (5000)	10.6 (265)	5/5	82.1 (2085)	120.5 (3065)	Not Available	
TWO STAGE (Full Free 2F)	2F270	105.5 (2700)	45.7 (1160)	5/10	82.1 (2085)	72.0 (1830)	Not Available	
	2F300	117.5 (3000)	51.7 (1310)	5/10	82.1 (2085)	78.0 (1985)	Not Available	
	2F330	129.5 (3300)	57.7 (1465)	5/10	82.1 (2085)	84.0 (2135)	Not Available	
	2F350	137.5 (3500)	61.7 (1565)	5/10	82.1 (2085)	88.0 (2235)	Not Available	
	2F370	145.5 (3700)	65.7 (1665)	5/10	82.1 (2085)	92.0 (2340)	Not Available	
	2F400	157.5 (4000)	71.7 (1820)	5/10	82.1 (2085)	98.0 (2490)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	56.1 (1420)	5/5	82.1 (2085)	77.2 (1965)	Not Available	
	3F430	169 (4300)	62.0 (1570)	5/5	82.1 (2085)	83.1 (2115)	Not Available	
	3F475	187 (4750)	67.3 (1705)	5/5	82.1 (2085)	88.4 (2250)	Not Available	
	3F515	203 (5150)	72.2 (1830)	5/5	82.1 (2085)	93.3 (2370)	Not Available	
	3F550	217 (5500)	79.7 (2020)	5/5	82.1 (2085)	100.8 (2560)	Not Available	
	3F600	236 (6000)	89.6 (2275)	5/5	82.1 (2085)	110.6 (2810)	Not Available	
	3F650	256 (6500)	99.4 (2520)	5/5	82.1 (2085)	120.5 (3065)	Not Available	
	3F700	276 (7000)	109.3 (2775)	5/5	82.1 (2085)	130.3 (3310)	Not Available	
THREE STAGE (Optiview 3V)	3V385	152 (3850)	49.4 (1250)	5/5	82.1 (2085)	77.2 (1965)	Not Available	
	3V430	169 (4300)	55.3 (1400)	5/5	82.1 (2085)	83.1 (2115)	Not Available	
	3V470	187 (4750)	61.2 (1550)	5/5	82.1 (2085)	88.4 (2250)	Not Available	
	3V505	203 (5150)	66.5 (1685)	5/5	82.1 (2085)	93.3 (2370)	Not Available	
	3V555	217 (5500)	71.5 (1815)	5/5	82.1 (2085)	100.8 (2560)	Not Available	
	3V600	236 (6000)	78.9 (2000)	5/5	82.1 (2085)	110.6 (2810)	Not Available	
	3V650	256 (6500)	88.8 (2255)	5/5	82.1 (2085)	120.5 (3065)	Not Available	
	3V700	276 (7000)	98.6 (2500)	5/5	82.1 (2085)	130.3 (3310)	Not Available	

MAST - 1F2 3.3 TON (CUSHION)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2H)	2H280	110 (2800)	7.1 (180)	5/10	82.1 (2085)	76.8 (1955)	Not Available	
	2H310	122 (3100)	7.1 (180)	5/10	82.1 (2085)	82.7 (2105)	Not Available	
	2H350	138 (3500)	10.6 (265)	5/10	82.1 (2085)	92.9 (2360)	Not Available	
	2H380	150 (3800)	10.6 (265)	5/10	82.1 (2085)	100.4 (2550)	Not Available	
	2H430	169 (4300)	10.6 (265)	5/5	82.1 (2085)	110.2 (2800)	Not Available	
TWO STAGE (Full Free 2F)	2F280	110 (2800)	50.0 (1270)	5/10	82.1 (2085)	76.9 (1955)	Not Available	
	2F310	122 (3100)	55.9 (1415)	5/10	82.1 (2085)	82.8 (2105)	Not Available	
	2F350	138 (3500)	66.1 (1675)	5/10	82.1 (2085)	93.0 (2365)	Not Available	
	2F380	150 (3800)	73.6 (1865)	5/10	82.1 (2085)	100.5 (2555)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F355	140 (3550)	45.1 (1145)	5/5	82.1 (2085)	70.9 (1805)	Not Available	
	3F400	157 (4000)	51.0 (1295)	5/5	82.1 (2085)	76.9 (1955)	Not Available	
	3F445	175 (4450)	56.9 (1445)	5/5	82.1 (2085)	82.8 (2105)	Not Available	
	3F485	191 (4850)	62.2 (1575)	5/5	82.1 (2085)	88.1 (2240)	Not Available	
	3F520	205 (5200)	67.1 (1700)	5/5	82.1 (2085)	93.0 (2365)	Not Available	
	3F570	224 (5700)	74.6 (1890)	5/5	82.1 (2085)	100.5 (2555)	Not Available	
	3F620	244 (6200)	84.4 (2140)	5/5	82.1 (2085)	110.3 (2805)	Not Available	
	3F670	264 (6700)	94.3 (2395)	5/5	82.1 (2085)	120.2 (3055)	Not Available	
THREE STAGE (Optview 3V)	3V385	152 (3850)	45.7 (1160)	5/5	82.1 (2085)	76.9 (1955)	Not Available	
	3V430	169 (4300)	51.6 (1310)	5/5	82.1 (2085)	82.8 (2105)	Not Available	
	3V470	185 (4700)	57.5 (1460)	5/5	82.1 (2085)	88.1 (2240)	Not Available	
	3V505	199 (5050)	62.8 (1595)	5/5	82.1 (2085)	93.0 (2365)	Not Available	
	3V555	219 (5550)	67.7 (1715)	5/5	82.1 (2085)	100.5 (2555)	Not Available	
	3V600	236 (6000)	75.2 (1910)	5/5	82.1 (2085)	110.3 (2805)	Not Available	
	3V650	256 (6500)	85.0 (2155)	5/5	82.1 (2085)	120.2 (3055)	Not Available	
	3V700	276 (7000)	94.9 (2410)	5/5	82.1 (2085)	130.0 (3305)	Not Available	

MAST - 1F2 3.5 - 3.6 TON (CUSHION)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2H)	2H280	110 (2800)	7.1 (180)	5/10	82.1 (2085)	77.2 (1965)	Not Available	
	2H310	122 (3100)	7.1 (180)	5/10	82.1 (2085)	83.1 (2115)	Not Available	
	2H350	138 (3500)	10.6 (265)	5/10	82.1 (2085)	93.3 (2370)	Not Available	
	2H380	150 (3800)	10.6 (265)	5/10	82.1 (2085)	100.8 (2560)	Not Available	
	2H430	169 (4300)	10.6 (265)	5/5	82.1 (2085)	110.6 (2810)	Not Available	
TWO STAGE (Full Free 2F)	2F280	110 (2800)	50.0 (1270)	5/10	82.1 (2085)	77.2 (1965)	Not Available	
	2F310	122 (3100)	55.9 (1415)	5/10	82.1 (2085)	83.1 (2115)	Not Available	
	2F350	138 (3500)	66.1 (1675)	5/10	82.1 (2085)	93.3 (2370)	Not Available	
	2F380	150 (3800)	73.6 (1865)	5/10	82.1 (2085)	100.8 (2560)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F355	140 (3550)	45.1 (1145)	5/5	82.1 (2085)	71.3 (1815)	Not Available	
	3F400	157 (4000)	51.0 (1295)	5/5	82.1 (2085)	77.2 (1965)	Not Available	
	3F445	175 (4450)	56.9 (1445)	5/5	82.1 (2085)	83.1 (2115)	Not Available	
	3F485	191 (4850)	62.2 (1575)	5/5	82.1 (2085)	88.4 (2250)	Not Available	
	3F520	205 (5200)	67.1 (1700)	5/5	82.1 (2085)	93.3 (2370)	Not Available	
	3F570	224 (5700)	74.6 (1890)	5/5	82.1 (2085)	100.8 (2560)	Not Available	
	3F620	244 (6200)	84.4 (2140)	5/5	82.1 (2085)	110.6 (2810)	Not Available	
	3F670	264 (6700)	94.3 (2395)	5/5	82.1 (2085)	120.5 (3065)	Not Available	
THREE STAGE (Optview 3V)	3V385	152 (3850)	45.7 (1160)	5/5	82.1 (2085)	77.2 (1965)	Not Available	
	3V430	169 (4300)	51.6 (1310)	5/5	82.1 (2085)	83.1 (2115)	Not Available	
	3V470	185 (4700)	57.5 (1460)	5/5	82.1 (2085)	88.4 (2250)	Not Available	
	3V505	199 (5050)	62.8 (1595)	5/5	82.1 (2085)	93.3 (2370)	Not Available	
	3V555	219 (5550)	67.7 (1715)	5/5	82.1 (2085)	100.8 (2560)	Not Available	
	3V600	236 (6000)	75.2 (1910)	5/5	82.1 (2085)	110.6 (2810)	Not Available	
	3V650	256 (6500)	85.0 (2155)	5/5	82.1 (2085)	120.5 (3065)	Not Available	
	3V700	276 (7000)	94.9 (2410)	5/5	82.1 (2085)	130.3 (3310)	Not Available	

MAST - 1F1 1.5 TON (COMPACT PNEUMATIC)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2W)	2W270	106 (2700)	6.2 (155)	5/5	83.0 (2110)	72.5 (1845)	155.7 (3955)	130.0 (3303)
	2W300	118 (3000)	6.2 (155)	5/10	83.0 (2110)	78.4 (1995)	167.5 (4255)	141.8 (3603)
	2W330	130 (3300)	6.2 (155)	5/10	83.0 (2110)	84.3 (2145)	179.3 (4555)	153.6 (3903)
	2W350	138 (3500)	6.2 (155)	5/10	83.0 (2110)	89.6 (2275)	187.2 (4755)	161.5 (4103)
	2W370	146 (3700)	6.2 (155)	5/10	83.0 (2110)	94.5 (2400)	195.1 (4955)	169.4 (4303)
	2W400	157 (4000)	6.2 (155)	5/10	83.0 (2110)	102.0 (2595)	206.9 (5255)	181.2 (4603)
	2W450	177 (4500)	6.2 (155)	5/5	83.0 (2110)	111.9 (2845)	226.6 (5755)	200.9 (5103)
	2W500	197 (5000)	6.2 (155)	5/5	83.0 (2110)	121.7 (3095)	246.3 (6255)	220.6 (5603)
TWO STAGE (Full Free 2F)	2F270	105.5 (2700)	47.4 (1200)	5/10	83.0 (2110)	74.0 (1880)	Not Available	
	2F300	117.5 (3000)	53.4 (1355)	5/10	83.0 (2110)	80.0 (2035)	Not Available	
	2F330	129.5 (3300)	59.4 (1505)	5/10	83.0 (2110)	86.0 (2185)	Not Available	
	2F350	137.5 (3500)	63.4 (1610)	5/10	83.0 (2110)	90.0 (2290)	Not Available	
	2F370	145.5 (3700)	67.4 (1710)	5/10	83.0 (2110)	94.0 (2390)	Not Available	
	2F400	157.5 (4000)	73.4 (1860)	5/10	83.0 (2110)	100.0 (2540)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	46.8 (1185)	5/5	83.0 (2110)	72.5 (1845)	Not Available	
	3F430	169 (4300)	52.7 (1335)	5/5	83.0 (2110)	78.4 (1995)	Not Available	
	3F475	187 (4750)	58.6 (1485)	5/5	83.0 (2110)	84.3 (2145)	Not Available	
	3F515	203 (5150)	63.9 (1620)	5/5	83.0 (2110)	89.6 (2275)	Not Available	
	3F550	217 (5500)	68.9 (1750)	5/5	83.0 (2110)	94.5 (2400)	Not Available	
	3F600	236 (6000)	76.3 (1935)	5/5	83.0 (2110)	102.0 (2595)	Not Available	
	3F650	256 (6500)	86.2 (2185)	5/5	83.0 (2110)	111.9 (2845)	Not Available	
THREE STAGE (Optiview 3V)	3V360	142 (3600)	47.6 (1205)	5/5	83.0 (2110)	72.5 (1845)	Not Available	
	3V405	159 (4050)	53.5 (1355)	5/5	83.0 (2110)	78.4 (1995)	Not Available	
	3V450	177 (4500)	59.4 (1505)	5/5	83.0 (2110)	84.3 (2145)	Not Available	
	3V490	193 (4900)	64.8 (1645)	5/5	83.0 (2110)	89.6 (2275)	Not Available	
	3V525	207 (5250)	59.7 (1515)	5/5	83.0 (2110)	94.5 (2400)	Not Available	
	3V575	226 (5750)	77.2 (1960)	5/5	83.0 (2110)	102.0 (2595)	Not Available	
	3V633	249 (6330)	87.0 (2205)	5/5	83.0 (2110)	111.9 (2845)	Not Available	

MAST - 1F1 1.8 TON (COMPACT PNEUMATIC)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2W)	2W270	106 (2700)	6.2 (155)	5/5	82.7 (2100)	72.5 (1845)	155.7 (3955)	130.0 (3303)
	2W300	118 (3000)	6.2 (155)	5/10	82.7 (2100)	78.4 (1995)	167.5 (4255)	141.8 (3603)
	2W330	130 (3300)	6.2 (155)	5/10	82.7 (2100)	84.3 (2145)	179.3 (4555)	153.6 (3903)
	2W350	138 (3500)	6.2 (155)	5/10	82.7 (2100)	89.6 (2275)	187.2 (4755)	161.5 (4103)
	2W370	146 (3700)	6.2 (155)	5/10	82.7 (2100)	94.5 (2400)	195.1 (4955)	169.4 (4303)
	2W400	157 (4000)	6.2 (155)	5/10	82.7 (2100)	102.0 (2595)	206.9 (5255)	181.2 (4603)
	2W450	177 (4500)	6.2 (155)	5/5	82.7 (2100)	111.9 (2845)	226.6 (5755)	200.9 (5103)
	2W500	197 (5000)	6.2 (155)	5/5	82.7 (2100)	121.7 (3095)	246.3 (6255)	220.6 (5603)
TWO STAGE (Full Free 2F)	2F270	105.5 (2700)	47.4 (1200)	5/10	82.7 (2100)	74.0 (1880)	Not Available	
	2F300	117.5 (3000)	53.4 (1355)	5/10	82.7 (2100)	80.0 (2035)	Not Available	
	2F330	129.5 (3300)	59.4 (1505)	5/10	82.7 (2100)	86.0 (2185)	Not Available	
	2F350	137.5 (3500)	63.4 (1610)	5/10	82.7 (2100)	90.0 (2290)	Not Available	
	2F370	145.5 (3700)	67.4 (1710)	5/10	82.7 (2100)	94.0 (2390)	Not Available	
	2F400	157.5 (4000)	73.4 (1860)	5/10	82.7 (2100)	100.0 (2540)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	46.8 (1185)	5/5	82.7 (2100)	72.5 (1845)	Not Available	
	3F430	169 (4300)	52.7 (1335)	5/5	82.7 (2100)	78.4 (1995)	Not Available	
	3F475	187 (4750)	58.6 (1485)	5/5	82.7 (2100)	84.3 (2145)	Not Available	
	3F515	203 (5150)	63.9 (1620)	5/5	82.7 (2100)	89.6 (2275)	Not Available	
	3F550	217 (5500)	68.9 (1750)	5/5	82.7 (2100)	94.5 (2400)	Not Available	
	3F600	236 (6000)	76.3 (1935)	5/5	82.7 (2100)	102.0 (2595)	Not Available	
	3F650	256 (6500)	86.2 (2185)	5/5	82.7 (2100)	111.9 (2845)	Not Available	
THREE STAGE (Optview 3V)	3V360	142 (3600)	47.6 (1205)	5/5	82.7 (2100)	72.5 (1845)	Not Available	
	3V405	159 (4050)	53.5 (1355)	5/5	82.7 (2100)	78.4 (1995)	Not Available	
	3V450	177 (4500)	59.4 (1505)	5/5	82.7 (2100)	84.3 (2145)	Not Available	
	3V490	193 (4900)	64.8 (1645)	5/5	82.7 (2100)	89.6 (2275)	Not Available	
	3V525	207 (5250)	59.7 (1515)	5/5	82.7 (2100)	94.5 (2400)	Not Available	
	3V575	226 (5750)	77.2 (1960)	5/5	82.7 (2100)	102.0 (2595)	Not Available	
	3V633	249 (6330)	87.0 (2205)	5/5	82.7 (2100)	111.9 (2845)	Not Available	

MAST - 1F2 (COMPACT PNEUMATIC)

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
TWO STAGE (Wide View 2W)	2W270	106 (2700)	4.2 (105)	5/10	82.3 (2090)	70.9 (1800)	155.7 (3955)	130.0 (3303)
	2W300	118 (3000)	4.2 (105)	5/10	82.3 (2090)	76.9 (1955)	167.5 (4255)	141.8 (3603)
	2W330	130 (3300)	4.2 (105)	5/10	82.3 (2090)	82.8 (2105)	179.3 (4555)	153.6 (3903)
	2W350	138 (3500)	4.2 (105)	5/10	82.3 (2090)	88.1 (2240)	187.2 (4755)	161.5 (4103)
	2W370	146 (3700)	4.2 (105)	5/10	82.3 (2090)	93.0 (2365)	195.1 (4955)	169.4 (4303)
	2W400	157 (4000)	4.2 (105)	5/10	82.3 (2090)	100.5 (2555)	206.9 (5255)	181.2 (4603)
	2W450	177 (4500)	4.2 (105)	5/5	82.3 (2090)	110.3 (2805)	226.6 (5755)	200.9 (5103)
	2W500	197 (5000)	4.2 (105)	5/5	82.3 (2090)	120.2 (3055)	246.3 (6255)	220.6 (5603)
TWO STAGE (Full Free 2F)	2F270	105.5 (2700)	47.4 (1200)	5/10	82.3 (2090)	74.0 (1880)	Not Available	
	2F300	117.5 (3000)	53.4 (1355)	5/10	82.3 (2090)	80.0 (2035)	Not Available	
	2F330	129.5 (3300)	59.4 (1505)	5/10	82.3 (2090)	86.0 (2190)	Not Available	
	2F350	137.5 (3500)	63.4 (1610)	5/10	82.3 (2090)	90.0 (2290)	Not Available	
	2F370	145.5 (3700)	67.4 (1710)	5/10	82.3 (2090)	94.0 (2390)	Not Available	
	2F400	157.5 (4000)	73.4 (1860)	5/10	82.3 (2090)	100.0 (2540)	Not Available	

Mast Name		Maximum Fork Height in (mm)	Free Lift without Backrest in (mm)	Tilt Angle Forward/Backward	Overall Height			
					Lowered Mast Position in (mm)		Extended Mast Position in (mm)	
					Top of OHG	Mast (OHL)	With Backrest	Without Backrest
THREE STAGE (Full Free 3F)	3F385	152 (3850)	46.9 (1190)	5/5	82.3 (2090)	71.3 (1815)	Not Available	
	3F430	169 (4300)	52.8 (1340)	5/5	82.3 (2090)	77.2 (1965)	Not Available	
	3F475	187 (4750)	58.7 (1490)	5/5	82.3 (2090)	83.1 (2115)	Not Available	
	3F515	203 (5150)	64.0 (1625)	5/5	82.3 (2090)	88.4 (2245)	Not Available	
	3F550	217 (5500)	68.9 (1750)	5/5	82.3 (2090)	93.3 (2370)	Not Available	
	3F600	236 (6000)	76.4 (1940)	5/5	82.3 (2090)	100.8 (2560)	Not Available	
	3F650	256 (6500)	86.2 (2185)	5/5	82.3 (2090)	110.6 (2810)	Not Available	
	3F700	276 (7000)	96.1 (2440)	5/5	82.3 (2090)	120.5 (3065)	Not Available	
THREE STAGE (Optiview 3V)	3V360	142 (3600)	47.8 (1210)	5/5	82.3 (2090)	71.3 (1815)	Not Available	
	3V405	159 (4050)	53.7 (1360)	5/5	82.3 (2090)	77.2 (1965)	Not Available	
	3V450	177 (4500)	59.6 (1510)	5/5	82.3 (2090)	83.1 (2115)	Not Available	
	3V490	193 (4900)	64.9 (1645)	5/5	82.3 (2090)	88.4 (2245)	Not Available	
	3V525	207 (5250)	69.8 (1770)	5/5	82.3 (2090)	93.3 (2370)	Not Available	
	3V575	226 (5750)	77.3 (1960)	5/5	82.3 (2090)	100.8 (2560)	Not Available	
	3V633	249 (6330)	87.2 (2210)	5/5	82.3 (2090)	110.6 (2810)	Not Available	
	3V688	271 (6880)	97.0 (2460)	5/5	82.3 (2090)	120.5 (3065)	Not Available	

FUEL AND OIL CAPACITY

Model	A1F1	P1F1	A1F2	P1F2 2.0-2.5 ton	P1F2 2.8-3.5 ton
Fuel Tank ℓ (US gal, Imp gal)	42.3 (11-1/8, 9-1/4)	44.6 (11-3/4, 9-3/4)	58.0 (15-3/8, 12-3/4)	63.4 (16-3/4, 14)	66.5 (17-5/8, 14-5/8)
Hydraulic Oil Tank ℓ (US gal, Imp gal)	28.2 (7-1/2, 6-1/4)	30.0 (7-7/8, 6-5/8)	39.2 (10-3/8, 8-5/8)	44.6 (11-3/4, 9-7/8)	49.1 (13, 10-3/4)
Transmission Oil ℓ (US qt, Imp qt)	8.0 (8-1/2, 7)	10.4 (11, 9-1/8)	8.0 (8-1/2, 7)	10.4 (11, 9-1/8)	10.4 (11, 9-1/8)
Differential Oil ℓ (US qt, Imp qt)	2.9 (3-1/8, 2-1/2)	5.2 (5-1/2, 4-1/2)	3.2 (3-3/8, 2-7/8)	6.3 (6-5/8, 5-1/2)	9.0 (9-1/2, 8)

Model	C1F1	C1F2 2.0-2.5 ton	C1F2 2.8-3.6 ton
Fuel Tank ℓ (US gal, Imp gal)	39.7 (10-1/2, 8-3/4)	48.2 (12-3/4, 10-5/8)	57.4 (15-1/8, 12-5/8)
Hydraulic Oil Tank ℓ (US gal, Imp gal)	26.0 (6-7/8, 5-3/4)	38.0 (10, 8-3/8)	45.0 (11-7/8, 9-7/8)
Transmission Oil 1 Speed ℓ (US qt, Imp qt)	8.0 (8-1/2, 7)	8.0 (8-1/2, 7)	10.0 (10-5/8, 8-3/4)
Transmission Oil 2 Speed ℓ (US qt, Imp qt)	--	--	10.0 (10-5/8, 8-3/4)
Differential Oil ℓ (US qt, Imp qt)	2.9 (3-1/8, 2-1/2)	3.2 (3-3/8, 2-7/8)	3.5 (3-3/4, 3)

ENGINE

Model	K21, GK21	K25, GK25	QD32
Type	Gasoline		Diesel
Cylinder Arrangement	4-cylinder, in-line		
Valve Mechanism	Overhead valve type		
Bore x Stroke mm (in)	89.0 x 83.0 (3.504 x 3.268)	89.0 x 100.0 (3.504 x 3.937)	99.2 x 102.0 (3.9 x 4.0)
Total Displacement cm ³ (cu in)	2065 (126.01)	2488 (151.82)	3153 (192.40)
Compression Ratio	8.7		22.0
Firing Order	1-3-4-2		

ENGINE OIL CAPACITY

Model	K21, GK21	K25, GK25	QD32
Engine Oil (with oil filter) ℓ (US gal, Imp gal)	3.8 (1, 7/8)		7.2 (1-7/8, 1-5/8)

NOISE LEVEL

The values are the A-weighted sound pressure level at the operator's position, L_{PAZ} and the uncertainty value, K_{PZ} according to EN12053:2001.

Item	
L_{PAZ}	Does not exceed 82 dB (A)
K_{PZ}	4 dB (A)

The whole body vibration $\bar{a}_{w,z}$ according to EN13059:2002.

Vibration emission value: 1.0 m/s²

Uncertainty: 0.3 m/s²

NOTE:

Higher or lower noises can occur due to other noise sources and individual conditions such as operation mode, environment, tires, or floor.

INDEX

A

A Word to Operators	3
Accelerator Pedal	60
Adj LPG Warning Decal	35
Air Cleaner Warning	46
Air Purge	110
Alternate Capacity Plates.....	30
ANSI/ITSDF Standards for Lift Truck Clamp Attachments	24, 65
Application for UniCarriers Lift Trucks.....	36
Applications	36
Approach Angle, Departure Angle and Gangway.....	25
Automatic Transmission.....	75
Automatic Transmission Fluid Level.....	97

B

Backrest Inclination Adjustment.....	79
Battery Fluid Level	88
Battery Specific Gravity.....	89
Brake Fluid Level	96
Brake Pedal.....	59

C

Cargo-Handling Control Levers.....	60
Caution Drive Decal (In Case of Tip-Over Decal).....	32
Caution Drive Decal (Operation)	34
Caution Fork Decal	33
Change from Gasoline to LPG Operation...	70
Change from LPG to Gasoline Operation...	70

Changing Meter Display.....	40
Charge Warning Light	39
Checking Air Cleaner	109
Checking Brake Pedal	108
Checking Cargo-Handling Control Lever(s)	108
Checking Fan Belt	109
Checking Horn	108
Checking Lift Chain	106
Checking Lights.....	108
Checking Mast	106
Checking Parking Brake Lever.....	108
Checking Top Panel Lock	108
Climbing	77
Clock.....	41
Close Operation (Top Panel)	84
Close Procedure (LPG Cylinder (Tank) Holder)	86
Cooling Fan Warning Decal.....	34
Cooling System Bleeding Instructions.....	95
Cylinder (Tank) Size.....	113

D

Daily Checks and Simple Maintenance (Side Shift).....	137
Daily Inspection	10, 14, 89
Daily Storage	129
Data and Capacity Plates and Decals	30
Data Plate.....	30
Date	42

Diesel Lift Truck Starting	71
Displays when Malfunction Occurs	47
Dockboards (Bridge Plates), Trucks and Railroad Cars.....	21
Draining of Tar from Vaporizer	111
Driver Recognition Mode	48

E

Engine	200
Engine Coolant Level.....	94
Engine Oil Capacity	200
Engine Oil Level.....	93

F

Fork Inspection.....	107
Fork Repair.....	107
Forks	78
Forward and Backward Control Lever.....	79
Front (Drive) Tire	102
Fuel and Oil Capacity.....	199
Fuel Change Switch.....	54, 69
Fuel Filter.....	109
Fuel Filter Warning	46
Fuel Gauge.....	44
Fuel Handling	23
Fuel Recommendation.....	92
Fuel Tank Cleaning: Drain Plug.....	109
Function Tests	27
Fuses	108

G	
Gasoline and LPG Lift Truck Starting	67
General.....	15
General Care and Maintenance	11, 87
Glow Pilot Light39	

H	
Hoisting (Lifting) up the Lift Truck	26
Horn Button	52
Hour Meter	43
How to Use this Manual.....	11
Hydraulic Oil Level	98

I	
Identification Numbers.....	31
Ignition Switch	53
In Case of Tip-Over	24
In Cold Weather.....	66
In Hot Weather	66
Inching Brake Pedal.....	59
Index	202
Inspection before Operating.....	66
Installing Cylinder (Tank) Fixed Type	117
Installing Cylinder (Tank) Swing-Down Type	116
Installing Cylinder (Tank) Swing-Out Type.	115
Installation of Attachments.....	24
Introduction	10

J	
Joystick Control Lever (Option)	62

L	
LCD.....	38
Lift Truck Modifications	4
Lift Truck Operating Precautions	66
Lighting Switch.....	54
Lighting Switch and Turn Signal Switch	54
Loading	20, 77
LPG Cylinder (Tank) Holder	86
LPG Cylinder (Tank) Replacement.....	114
LPG Fuel Warning Decal.....	35
LPG Latch Warning Decal.....	35
LPG Level Warning/LPG Rack Lock Warning.....	46
LPG Lift Truck Starting.....	67
LPG Remaining Time Management	49
Lubrication Chart.....	127
Lumbar Adjustment	80

M	
Main Components	37
Main Terms used in this Section (Side Shift).....	133
Main Truck Specifications	139
Maintenance and Inspection	92
Maintenance and Servicing.....	10
Malfunction and Warning Indications.....	45
Malfunction Indicator Light-Engine Check Warning.....	39
Mast Specifications	169
Mast Interlock Warning	45

Maximum Speed Change Switch (Option)	55
Meter Display	40
Meters, Indicators and Lamps	38
Model Variation (Long Model Code) Breakdown.....	138
Multipurpose Warning Light.....	39

N	
No Riders	17
Noise Level.....	201

O	
Oil Pressure Warning Light.....	39
Open Operation (Top Panel).....	83
Open Procedure (LPG Cylinder (Tank) Holder)	86
Operating Controls	57
Operating Controls and Functions	11, 36
Operating the Lift Truck	11, 66
Operation Buttons	38
Operation of the Control Lever for Side Shift.....	135
Operational Procedures	67
Operator Qualifications	13
Operator Responsibility.....	15
Operator's Daily Checklist (Sample)	91
Options	11, 131
Overview of Side Shift.....	132

INDEX

P

Parking Brake Lever	58
Parking Brake Warning Light	39
Pedal Free Play.....	108
Periodic Maintenance and Lubrication Schedule	118
Periodic Maintenance and Lubrication Schedule for Emission Control System.....	124
Personal Protective Equipment for Operating Lift Truck	14
Pinch Point Decal	33
Planned Maintenance	10
Position of Data and Capacity Plates and Decals	28
Post-Storage Servicing	129
Precautions for Cold and Hot Weather.....	66
Precautions for Using LPG.....	112
Pre-Storage Servicing.....	129
Procedure for Jump Starting EFI Engines...	73
Prohibited Applications for UniCarriers Lift Trucks.....	36
Putting Lift Truck in Storage.....	129

R

Radiator Cover	85
Radiator Level Warning.....	46
Radiator Warning Decal	34
Rear Right Grip with Horn Button	52

Rear (Steer) Tire.....	103
Rearview Mirror (Option)	85
Recommended LPG Fuel Type	112
Recommended Lubricants	128
Recommended SAE Viscosity Chart	128
Refilling Automatic Transmission Fluid.....	97
Refilling Battery Fluid	88
Refilling Brake Fluid	96
Refilling Engine Coolant	94
Refilling Engine Oil	93
Refilling Hydraulic Oil	98
Refilling LPG Cylinders (Tanks)	117
Removing Cylinder (Tank) Fixed Type	117
Removing Cylinder (Tank) Swing-Down Type	116
Removing Cylinder (Tank) Swing-Out Type	114

S

Safety Guards.....	13
Safety Rules and Practices	11, 13
Safety Rules and Practices (Side Shift).....	133
Safety Signs and Safety Messages	12
Seat Adjustment	79
Seat Belt	80
Seat Belt Interlock Options	82
Seat Belt Interlock or Shutdown Indicator (Red-Option)	55
Seat Belt Warning Light	39
Selector Lever	57

Service Release Latch	84
Service Reminder Display	47
Setting the Date.....	42
Setting the Time	41
Servicing the Lift Truck in Storage.....	129
Side Shift.....	131
Side Shift Operation.....	136
Single Control Lever Type	61
Sling Point for Hook-On Type Side Shift...	131
Specifications	11, 138
Steering Wheel Play.....	98
Stopping and Parking the Lift Truck	78
Storage Over a Long Period of Time.....	129
Surface and Capacity	22
Suspension Seat Operator's Weight Adjustment	79
Swing-Out Type Cylinder (Tank) Mount	114
Switches	52
Swivel Seat.....	80

T

Table of Contents	5
Tilt Horizontal Switch (Option)	64
Tilt Steering Wheel.....	84
Tire Replacement	101
Throttle Sensitivity Adjust Switch (Option) ..	56
Top Panel	83
Torque Converter Fluid Temp Warning	46
Traction Bar	27

Transmission Position	44
Transmission Shift (SmoothShift)	
Indicator (Green-Option)	56
Transporting Lift Truck	25
Transporting Loads.....	77
Traveling	18
Turn Signal Switch.....	54
Twin Control Lever Type.....	61

U

Unloading	77
-----------------	----

V

Vaporizer Drain Valve Warning Decal	
(Option From 2018)	33

W

Warning Drive Decal (Trained and	
Authorized)	32
Warning Levels	12
Warning Symbols and Levels.....	12
Warnings	1
Warranty Certificates (Engines).....	206
Water Temperature Gauge.....	43
Wet Cell Battery Care and Maintenance.....	87
Wheel and Tire	99



UniCarriers Americas Corporation

UniCarriers Americas Corporation Global Component Technologies Corporation

CALI FORNI A AND U.S. FEDERAL EMISSION CONTROL WARRANTY STATEMENT

The following statement is required to be provided by regulations of the California Air Resources Board and US Environmental Protection Agency.

Note: This "Emission Warranty Statement" is in addition to the "Limited Warranty" statement provided with the subject forklift truck supplied by UniCarriers Americas Corporation ("UCA") and engine supplied by Global Component Technologies Corporation ("GCT").

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board ("ARB") and US Environmental Protection Agency ("EPA") are pleased to explain the emission control system warranty on your 2016 engine. New off-road large spark-ignition (LSI) engines must be designed, built and equipped to meet nationwide stringent anti-smog standards.

UCA must warrant the emission control system on your engine for the periods of time listed below, provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the carburetor, regulator or fuel-injection system, ignition system, engine computer unit (ECM), catalytic converter and air induction system. Also included may be sensors, hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, an Authorized UCA Dealer will repair your LSI engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE

The 2016 off-road large spark-ignition engines are warranted for the time periods as listed below. If any emission-related part on your engine is defective, the part will be repaired or replaced by an Authorized UCA Dealer.

OWNER'S WARRANTY RESPONSIBILITIES

As the off-road LSI engine owner, you are responsible for the performance of the required maintenance listed in your operator's manual. UCA recommends that you retain receipts covering maintenance on your off-road engine, but UCA cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the off-road large spark-ignition engine owner, you should however be aware that UCA may deny you warranty coverage if your off-road large spark-ignition engine or a part thereof has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Your engine is designed to operate on gasoline or LPG fuel. Use of any other fuel may result in your engine no longer operating in compliance with the emissions requirements.

You are responsible for initiating the warranty process. The ARB and US EPA suggests that you present your off-road large spark-ignition engine to an Authorized UCA Dealer as soon as a problem exists. The warranty repairs should be completed by the Dealer as expeditiously as possible.

UniCarriers Americas Corporation 240 N. Prospect Street, Marengo, IL 60152

OWNER'S WARRANTY RESPONSIBILITIES (cont'd)

If you have any questions regarding your warranty rights and responsibilities, you should contact the following:

UCA's Customer Quality Department at 1-815-568-0061

EMISSION CONTROL WARRANTY COVERAGES

The warranty coverage's stated below are in months and hours from the date of the first use by the original purchaser from an Authorized UCA Dealer, whichever occurs first, UCA warrants the following emission-related parts.

Emission Control Warranty

- 36 months or 2,500 hours (General Parts)
- Oxygen sensor
 - PCV valve
 - Water temperature sensor
 - Gasoline injector
 - LPG injector
 - LPG pressure sensor
 - LPG solenoid
 - Mass air flow sensor
 - Throttle chamber
 - Ignition coil
 - Crankshaft position sensor
 - Camshaft position sensor
 - Spark plugs
 - Exhaust tube from manifold to catalytic converter
 - Gasoline fuel hose
 - Gasoline fuel cap
 - Absolute pressure sensor

Emission Control Warranty

- 36 months or 4,000 hours (Power Train Parts)
- Intake manifold
 - Exhaust manifold

Long-Term Emission Control Warranty

- 60 months or 3,500 hours (General Parts)
- ECM
 - Catalytic converter
 - Vaporizer

EXCLUSIONS AND LIMITATIONS

The warranties contained herein shall not apply to or include any of the following:

1. Repair or replacement required as a result of: accident; misuse or neglect; lack of reasonable and proper maintenance; repairs improperly performed or replacements improperly installed; use of replacement parts or accessories not conforming to UCA's specifications which adversely affect performance and/or durability; alterations or modifications not recommended or approved in writing by UCA.
2. Normal replacement of service items
3. Normal maintenance services (such as engine tune-ups, fuel system cleaning, linkage adjustments, and lubrication services)

UCA 2016 K21-K25 WARSTAT (01/2016)



UniCarriers Americas Corporation

UniCarriers Americas Corporation Global Component Technologies Corporation

CALI FORNI A AND U.S. FEDERAL EMISSION CONTROL WARRANTY STATEMENT

The following statement is required to be provided by regulations of the California Air Resources Board and US Environmental Protection Agency.

Note: This "Emission Warranty Statement" is in addition to the "Limited Warranty" statement provided with the subject forklift truck supplied by UniCarriers Americas Corporation ("UCA") and engine supplied by Global Component Technologies Corporation ("GCT").

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board ("ARB") and US Environmental Protection Agency ("EPA") are pleased to explain the emission control system warranty on your 2017 engine. New off-road large spark-ignition (LSI) engines must be designed, built and equipped to meet nationwide stringent anti-smog standards.

UCA must warrant the emission control system on your engine for the periods of time listed below, provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the carburetor, regulator or fuel-injection system, ignition system, engine computer unit (ECM), catalytic converter and air induction system. Also included may be sensors, hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, an Authorized UCA Dealer will repair your LSI engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE

The 2017 off-road large spark-ignition engines are warranted for the time periods as listed below. If any emission-related part on your engine is defective, the part will be repaired or replaced by an Authorized UCA Dealer.

OWNER'S WARRANTY RESPONSIBILITIES

As the off-road LSI engine owner, you are responsible for the performance of the required maintenance listed in your operator's manual. UCA recommends that you retain receipts covering maintenance on your off-road engine, but UCA cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the off-road large spark-ignition engine owner, you should however be aware that UCA may deny you warranty coverage if your off-road large spark-ignition engine or a part thereof has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Your engine is designed to operate on gasoline or LPG fuel. Use of any other fuel may result in your engine no longer operating in compliance with the emissions requirements.

You are responsible for initiating the warranty process. The ARB and US EPA suggests that you present your off-road large spark-ignition engine to an Authorized UCA Dealer as soon as a problem exists. The warranty repairs should be completed by the Dealer as expeditiously as possible.

UniCarriers Americas Corporation 240 N. Prospect Street, Marengo, IL 60152

OWNER'S WARRANTY RESPONSIBILITIES (cont'd)

If you have any questions regarding your warranty rights and responsibilities, you should contact the following:

UCA's Customer Quality Department at 1-815-568-0061

EMISSION CONTROL WARRANTY COVERAGES

The warranty coverage's stated below are in months and hours from the date of the first use by the original purchaser from an Authorized UCA Dealer, whichever occurs first, UCA warrants the following emission-related parts.

Emission Control Warranty

- 36 months or 2,500 hours (General Parts)
- Oxygen sensor
 - PCV valve
 - Water temperature sensor
 - Gasoline injector
 - LPG injector
 - LPG pressure sensor
 - LPG solenoid
 - Mass air flow sensor
 - Throttle chamber
 - Ignition coil
 - Crankshaft position sensor
 - Camshaft position sensor
 - Spark plugs
 - Exhaust tube from manifold to catalytic converter
 - Gasoline fuel hose
 - Gasoline fuel cap
 - Absolute pressure sensor

Emission Control Warranty

- 36 months or 4,000 hours (Power Train Parts)
- Intake manifold
 - Exhaust manifold

Long-Term Emission Control Warranty

- 60 months or 3,500 hours (General Parts)
- ECM
 - Catalytic converter
 - Vaporizer

EXCLUSIONS AND LIMITATIONS

The warranties contained herein shall not apply to or include any of the following:

1. Repair or replacement required as a result of: accident; misuse or neglect; lack of reasonable and proper maintenance; repairs improperly performed or replacements improperly installed; use of replacement parts or accessories not conforming to UCA's specifications which adversely affect performance and/or durability; alterations or modifications not recommended or approved in writing by UCA.
2. Normal replacement of service items
3. Normal maintenance services (such as engine tune-ups, fuel system cleaning, linkage adjustments, and lubrication services)

UCA 2017 K21-K25 WARSTAT (01/2017)



UniCarriers Americas Corporation

UniCarriers Americas Corporation Global Component Technologies Corporation

CALI FORNI A AND U.S. FEDERAL EMISSION CONTROL WARRANTY STATEMENT

The following statement is required to be provided by regulations of the California Air Resources Board and US Environmental Protection Agency.

Note: This "Emission Warranty Statement" is in addition to the "Limited Warranty" statement provided with the subject forklift truck supplied by UniCarriers Americas Corporation ("UCA") and engine supplied by Global Component Technologies Corporation ("GCT").

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board ("ARB") and US Environmental Protection Agency ("EPA") are pleased to explain the emission control system warranty on your 2018 engine. New off-road large spark-ignition (LSI) engines must be designed, built and equipped to meet nationwide stringent anti-smog standards.

UCA must warrant the emission control system on your engine for the periods of time listed below, provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the carburetor, regulator or fuel-injection system, ignition system, engine computer unit (ECM), catalytic converter and air induction system. Also included may be sensors, hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, an Authorized UCA Dealer will repair your LSI engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE

The 2018 off-road large spark-ignition engines are warranted for the time periods as listed below. If any emission-related part on your engine is defective, the part will be repaired or replaced by an Authorized UCA Dealer.

OWNER'S WARRANTY RESPONSIBILITIES

As the off-road LSI engine owner, you are responsible for the performance of the required maintenance listed in your operator's manual. UCA recommends that you retain receipts covering maintenance on your off-road engine, but UCA cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the off-road large spark-ignition engine owner, you should however be aware that UCA may deny you warranty coverage if your off-road large spark-ignition engine or a part thereof has failed due to abuse, neglect, improper maintenance or unapproved modifications.

Your engine is designed to operate on gasoline or LPG fuel. Use of any other fuel may result in your engine no longer operating in compliance with the emissions requirements.

You are responsible for initiating the warranty process. The ARB and US EPA suggests that you present your off-road large spark-ignition engine to an Authorized UCA Dealer as soon as a problem exists. The warranty repairs should be completed by the Dealer as expeditiously as possible.

UniCarriers Americas Corporation 240 N. Prospect Street, Marengo, IL 60152

OWNER'S WARRANTY RESPONSIBILITIES (cont'd)

If you have any questions regarding your warranty rights and responsibilities, you should contact the following:

UCA's Customer Quality Department at 1-815-568-0061

EMISSION CONTROL WARRANTY COVERAGES

The warranty coverage's stated below are in months and hours from the date of the first use by the original purchaser from an Authorized UCA Dealer, whichever occurs first, UCA warrants the following emission-related parts.

Emission Control Warranty

- 36 months or 2,500 hours (General Parts)
 - Oxygen sensor
 - PCV valve
 - Water temperature sensor
 - Gasoline injector
 - LPG injector
 - LPG pressure sensor
 - LPG solenoid
 - Mass air flow sensor
 - Throttle chamber
 - Ignition coil
 - Crankshaft position sensor
 - Camshaft position sensor
 - Spark plugs
 - Exhaust tube from manifold to catalytic converter
 - Gasoline fuel hose
 - Gasoline fuel cap
 - Absolute pressure sensor

Emission Control Warranty

- 36 months or 4,000 hours (Power Train Parts)
 - Intake manifold
 - Exhaust manifold

Long-Term Emission Control Warranty

- 60 months or 3,500 hours (General Parts)
 - ECM
 - Catalytic converter
 - Vaporizer

EXCLUSIONS AND LIMITATIONS

The warranties contained herein shall not apply to or include any of the following:

- Repair or replacement required as a result of: accident; misuse or neglect; lack of reasonable and proper maintenance; repairs improperly performed or replacements improperly installed; use of replacement parts or accessories not conforming to UCA's specifications which adversely affect performance and/or durability; alterations or modifications not recommended or approved in writing by UCA.
- Normal replacement of service items
- Normal maintenance services (such as engine tune-ups, fuel system cleaning, linkage adjustments, and lubrication services)

UCA 2018 K21/K25/GK21/GK25 WARSTADT (01/2018)



UniCarriers Americas Corporation Global Component Technologies Corporation

CALIFORNIA EMISSION CONTROL WARRANTY STATEMENT

The following statement is required to be provided by regulations of the California Air Resources Board.

Note: This "Emission Warranty Statement" is in addition to the "Limited Warranty" statement provided with the subject forklift truck supplied by UniCarriers Americas Corporation ("UCA") and engine supplied by Global Component Technologies Corporation ("GCT").

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board is pleased to explain the emission control system warranty on your 2000 and later model year engine. In California, new off-road compression-ignition (CI) engines must be designed, built and equipped to meet the State's stringent anti-smog standards. UCA must warrant the emission control system on your engine for the periods of time listed below, provided there has been no abuse, neglect or improper maintenance of your engine.

Your emission control system may include parts such as the fuel-injection system and the air induction system. Also included may be hoses, belts, connectors and other emission-related assemblies.

Where a warrantable condition exists, an Authorized UCA Dealer will repair your off-road CI engine at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE

The 2000 and later model year off-road CI engines are warranted for five years or 3,000 hours, whichever occurs first. If any emission-related part on your engine is defective, the part will be repaired or replaced by an Authorized UCA Dealer.

OWNER'S WARRANTY RESPONSIBILITIES

As the off-road CI engine owner, you are responsible for the performance of the required maintenance listed in your operator's manual. UCA recommends that you retain receipts covering maintenance on your off-road CI engine, but UCA cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the off-road CI engine owner, you should however be aware that UCA may deny you warranty coverage if your off-road CI engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

OWNER'S WARRANTY RESPONSIBILITIES (cont'd)

Your engine is designed to operate on diesel fuel only. Use of any other fuel may result in your engine no longer operating in compliance with California's emissions requirements.

You are responsible for initiating the warranty process. The ARB suggests that you present your off-road CI engine to an Authorized UCA Dealer as soon as a problem exists. The warranty repairs should be completed by the Dealer as expeditiously as possible.

If you have any questions regarding your warranty rights and responsibilities, you should contact the following:

UCA's Customer Quality Department at 1-815-568-0061

EMISSION CONTROL WARRANTY - 5 YEARS or 3,000 HOURS

For the first 3,000 operating hours or for a period of five years from the date of the first use by the original purchaser from an Authorized UCA Dealer, whichever occurs first, UCA warrants the following emission-related parts.

- Fuel injection system
- PCV Valve
- Intake manifold
- Exhaust manifold
- Miscellaneous hoses, clamps, connectors and sealing devices used in the above system

EXCLUSIONS AND LIMITATIONS

The warranties contained herein shall not apply to or include any of the following:

1. Repair or replacement required as a result of: accident; misuse or neglect; lack of reasonable and proper maintenance; repairs improperly performed or replacements improperly installed; use of replacement parts or accessories not conforming to UCA's specifications which adversely affect performance and/or durability; alterations or modifications not recommended or approved in writing by UCA.
2. Normal replacement of service items
3. Normal maintenance services (such as engine tune-ups, fuel system cleaning, linkage adjustments, and lubrication services)

UniCarriers Americas Corporation 240 N. Prospect Street, Marengo, IL 60152

UCA CARB DIESEL WARSTAT (01/2016)



UniCarriers Americas Corporation
Global Component Technologies Corporation
DI ESEL ENGINE EMISSION CONTROL SYSTEMS WARRANTY STATEMENT

Note: This "Emission Warranty Statement" is in addition to the "Limited Warranty" statement provided with the subject forklift truck supplied by UniCarriers Americas Corporation ("UCA") and engine supplied by Global Component Technologies Corporation ("GCT").

WHAT IS COVERED

UCA warrants to the ultimate purchaser and each subsequent purchaser that the diesel engine installed in your industrial truck is designed, built, and equipped so as to conform at the time of sale with the emission regulation of the U.S. EPA applicable at the time of manufacture.

This warranty covers the following emission related parts and components:

- Fuel Injection System
- PCV Valve
- Intake Manifold
- Exhaust Manifold
- Miscellaneous hoses, clamps, connectors and sealing devices used in the above system.

Exceptions to this warranty are listed below under the caption "WHAT IS NOT COVERED".

WARRANTY PERIOD

The engine covered by this warranty is free from defects in materials and workmanship which cause such emission related parts to fail to conform with applicable emission regulations of the U.S. EPA for a period of 3,000 hours of operation or five years of use, whichever first occurs. This warranty begins on the date the UCA industrial truck is delivered to the ultimate purchaser or the date that it is first put into service, whichever is earlier.

WHAT IS NOT COVERED

This warranty does not cover:

1. Failures caused by the following:
 - Failure to perform or properly perform required emission control maintenance as described in your Operator's Manual and/or Service Manual.
 - Misuse, accident, or modification.
 - Improper adjustment or installation of parts during the performance of maintenance services.
 - Tampering with or disconnecting any parts affecting emissions.
 - Use of fuel not recommended for the engine or contaminated fuel.

WHAT IS NOT COVERED (cont'd)

2. Damage resulting from acts of God or other events beyond the control of UCA.
3. Normal maintenance, service and parts replacement of expendable maintenance items such as filters, hoses, lubricants, thermostats and coolant as described in the Operator's Manual and/or Service Manual.
4. Use of parts not equivalent in quality or design to parts supplied by UCA.
5. Incidental or consequential damages such as loss of use of the industrial truck, lodging bills, machinery rentals, other travel costs, inconvenience or commercial loss.
6. Any UCA industrial truck on which the operating hour meter has been disconnected or altered or the operating hours therein has been altered so that the actual operating hours cannot readily be determined.
7. Any UCA industrial truck sold or operated outside the United States.

WHAT YOU MUST DO

1. Properly operate your industrial truck and engine and perform the required maintenance and care as outlined in your Operator's Manual and/or Service Manual. Damage to your non-road engine caused by improper operation or failure to perform required maintenance is not covered by warranty. UCA recommends that you keep receipts and maintenance records in case questions arise concerning maintenance. A warranty claim will not be denied solely because the owner has no record that the required maintenance has been performed, however, UCA may deny warranty coverage if the owner(s) failure to perform required maintenance results in a failure of a warranted part.
2. To obtain warranty service, contact an Authorized UCA Dealer during regular business hours at your expense. In case of an emergency, and/or where authorized factory service is not available, contact the following:
UCA's Customer Quality Department at 1-815-568-0061

WHAT UCA WILL DO

Warranty repairs will be made at no charge for parts and/or labor. Any replacement parts will consist of new or remanufactured parts, at UCA's discretion.

UniCarriers Americas Corporation 240 N. Prospect Street, Marengo, IL 60152

UCA DIESEL EPA WARSTAT (01/2016)

UNICARRIERS GENUINE PARTS

Always use UniCarriers Genuine Parts

At first glance, it's hard to tell one part from another. The truth is, all replacement parts aren't created equal. UniCarriers Genuine Parts satisfy the same technical specifications (engine performance, sound quality, reliability, etc.) as the original parts fitted on the vehicle, providing **original equipment performance, durability and reliability.** **This way you can ensure that your UniCarriers industrial truck will always perform at its best.** This is one of the many things that make UniCarriers Genuine Forklift Parts the best choice to help maintain the value of your UniCarriers industrial truck.

So make sure, next time your truck needs service:

DemandTheBrand®



DISPOSAL OF PARTS AND MATERIALS



WARNING

- Used parts and materials such as lubricants, oils, paint, rags, battery fluid and batteries shall be disposed of as per the applicable provisions of the laws and regulations of your country, state or local regulations.
- Also consult your Local Authorized Dealer.



UniCarriers Americas Corporation

**©UniCarriers Americas Corporation
240 N. Prospect Street, Marengo, IL 60152 USA
Tel: +1-815-568-0061 Fax: +1-815-568-0179
www.unicarriersamericas.com**

UniCarriers® is a registered trademark of UniCarriers Corporation