OPERATOR MANUAL

Moffett Truck Mounted Forklift Equipped with Static Mast

NX SERIES

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MOFFETT

ORIGINAL INSTRUCTIONS

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C. MACHINE WITH 4-WAY STEERING

Moffett shall at all times have the right to:

- install, maintain and dismantle automated remote diagnostics system or similar sensor-based system (the "System") in and from the Equipment; and
- access, send, receive, collect, store and use any and all information and data gathered or created by such System including but not limited to information concerning operation, operating environment, movement, condition, logon, location and similar information relating to the Equipment (the "Information").

The Customer shall not in any way remove or alter the System, nor interfere with the use of the System or the Information. The System and the Information and all their further developments shall at all times be and remain the exclusive property of Moffett without granting any right or license to the customer.

DISCLAIMER NOTICE

Cargotec Ireland Limited is pleased to provide you with this moving mast Operator Manual. You should find in this Manual all of the basic information needed to operate your new Moffett Truck Mounted unit safely and efficiently. Cargotec Ireland Limited also wants to advise you of the following:

1. Cargotec Ireland Limited warrants that the information contained in this Manual is accurate as of the date it was sent to you. We reserve the right to modify the equipment, the Manual, or both, without notice. The information and recommendations contained in this publication have been compiled from sources believed to be reliable. To the extent that matters discussed herein state opinions, they represent the best current opinion on the subject available to Cargotec Ireland Limited No warranty, guarantee, or representation is made by Cargotec Ireland Limited as to the correctness or sufficiency of any opinion contained in this publication, and we cannot assume responsibility in connection herewith. You should not assume that all acceptable safety measures are contained in this publication, or that other or additional measures may not be required under particular or exceptional conditions or circumstances.

2. Cargotec Ireland Limited does not warrant, and specifically disclaims, that following the recommendations contained in the Manual will necessarily prevent accidents or injuries. It has been our experience that adequate operator training, in addition to complete familiarity with the Manual, is essential to the safe and efficient operation of the Moffett Truck Mounted Forklift equipment. Under applicable OSHA regulations, the employer is responsible for training all operators of powered industrial equipment such as the Moffett Truck Mounted Forklift.

3.

1. SAFETY CHECKLIST

Safety Notices

In this operator manual and on the machine there are safety notices and decals. Each of these has a signal word that indicates the outcome of the hazardous situation if the safety instructions are not followed. The decals on the machine also have a specific color to help identify the hazard level. The signal words and colors along with the outcome of the hazardous situation can be seen below:

(DANGER - RED) INDICATES AN IMMEDIATE HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, **WILL** RESULT IN DEATH OR SERIOUS INJURY.

(WARNING - ORANGE) INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH IF NOT AVOIDED, **COULD** RESULT IN DEATH OR SERIOUS INJURY.

(CAUTION - YELLOW) INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, **MAY** RESULT IN MINOR OR MODERATE INJURY.

(INSTRUCTIONS - GREEN) INDICATES THE INFORMATION IS FOR INSTRUCTION ONLY.

Study this operator manual before starting the machine. You must understand and follow the instructions in this operator manual. You must observe all relevant laws and regulations. If you are unsure about anything, ask your Moffett Truck mounted Forklift Distributor or supervisor. **Do not guess,** because if you are incorrect you or others could be killed or seriously injured.

Note: You must be a trained Moffett Truck Mounted Forklift operator to use this machine.

1. SAFETY CHECKLIST

Introduction to General Safety

This section of the operator manual is intended to REMIND the operator of basic safety requirements when operating industrial machinery. It is not a complete list of hazards that may exist when operating or maintaining the Moffett Truck mounted Forklift. It is also not intended to be used for training purposes.

Specific hazards relating to maintenance instructions and operating procedures are detailed in the relevant sections of this operator manual.

Remember Safety First – Yours and Other Peoples

All industrial equipment can be hazardous. When a machine is properly operated and maintained, it is a safe machine to work with**.** But when it is carelessly operated or poorly maintained it can become a danger to you (the operator) and to others.

In this operator manual and on the machine you will find warning messages. Read and understand them. They tell you of potential hazards and how to avoid them. If you do not fully understand the warning messages, ask your supervisor or Moffett Truck mounted Forklift Distributor to explain them.

Safety is not just a matter of responding to the warnings. All the time you are working on or with the machine you must be thinking what hazards there might be and how to avoid them.

Do not work with the machine until you are sure you can control it. Do not start any job until you are sure that you and those around you will be safe. If you are unsure of anything, about the machine or the job, ask someone who knows. Do not assume anything.

1. SAFETY CHECKLIST

Operational Safety

DANGER:

Operator Manual. To use the Moffett Truck mounted Forklift efficiently and safely you must have read and understand the operator manual, be familiar with the machine and be trained and authorized to use it.

DANGER:

Forks. Do not permit personnel to stand on or ride on the forks.

DANGER:

Capacity. Never exceed the forklift's rated capacity or the machine may become unstable.

DANGER:

Power Lines. Never approach power lines with any part of the forklift as electrocution could result.

DANGER:

Rollover. Any machine that is used to lift and move loads may tip over if not operated correctly. No matter how experienced the operator is, accidents can still happen if the operator does not remain vigilant. Always be aware of the potential danger involved when using the Moffett Truck mounted Forklift. Be aware of what action you MUST take if the machine starts to tip or roll over.

DANGER:

Inclines. Never travel across inclines. Travelling across an incline with or without a load greatly increases the possibility of a tip over.

DANGER:

Stabilizers. Never raise the stabilizers when the reach device is extended with a load on.

Operational Safety (continued)

WARNING:

Decals. If you need eye-glasses for reading, make sure you wear them when reading the safety decals. Decals are strategically placed around the machine to remind you of possible hazards. Do not over-stretch or place yourself in dangerous positions to read the decals. If any decals get damaged or removed, contact your supervisor and have them replaced.

WARNING:

Decals. Decals on the machine warn you of particular hazards. Each decal is attached close to a part of the machine where there is a possible hazard. Read and make sure you understand the safety messages before you work with or around any part of the machine. Keep all decals clean and readable. Replace lost or damaged decals. The decals and their attachment points are shown in this manual. Each decal has a part number printed beside it. Use this number to order a new decal from your Moffett Truck mounted Forklift Distributor.

WARNING:

Hydraulic Pressure. The hydraulic tank is pressurized and hydraulic oil may be hot. To avoid injury and spillage when removing the cap, stop the engine and remove the cap very slowly.

WARNING:

Vapors. Hot coolant, steam and vapors can severely burn. Stop the engine and allow it to cool before removing the radiator cap. When removing the radiator cap, turn it very slowly to allow the pressure to release.

WARNING:

Controls. If the forward/reverse pedal does not return to the neutral position, do NOT use the machine and contact your supervisor.

WARNING:

Telescopic Legs. The telescopic legs should only be retracted when necessary for truck mounting the machine for transport and should be extended fully before attempting to operate the machine.

Operational Safety (continued)

WARNING:

Engine. Never climb aboard or dismount from the machine with the engine running.

WARNING:

Operator Manual. Operating or maintaining the machine without studying this operator manual can cause accidents. Read the safety instructions before operating this machine. If you do not understand anything, ask your Moffett Truck mounted Forklift Distributor or supervisor to explain it. Keep this operator manual clean and in good condition. Do not operate the machine without an operator manual in the operator's compartment, or if there is anything on the machine you do not understand.

WARNING:

Care and Alertness. All the time you are working with or on the machine, take care and stay alert. Always be careful. Always be aware of potential hazards.

WARNING:

Alcohol and Drugs. It is extremely dangerous to operate machinery when under the influence of alcohol or drugs. Do not consume alcoholic drinks or take drugs before or while operating the machine or attachments. Be aware of medicines which can cause drowsiness.

WARNING:

Working Environment: Remember that rain, snow, ice, mud, loose gravel and uneven or soft ground could change the operating capabilities and could cause you to lose control or cause the forklift to tip over.

WARNING:

Seatbelt. The operator's compartment is designed to give you protection in an accident. If you do not wear your seatbelt you could be thrown out of the machine. You must wear a seatbelt when using the machine. Fasten the seatbelt before starting the machine.

Operational Safety (continued)

WARNING:

Machine Condition. A defective machine can cause accidents. Do not operate a machine which is defective or has missing parts. Make sure the maintenance procedures in this operator manual are completed before using the machine.

WARNING:

Visibility. Accidents can be caused by working in poor visibility. Use the work lights on the machine to improve visibility. Do not operate the machine if you cannot see properly.

WARNING:

Practice. Do not perform unfamiliar operations without first practicing them. Practice away from the work site on a clear area. Keep other people away. Do not perform new operations until you can do them safely.

WARNING:

Controls. Do not control the machine from outside the operator's compartment. Operate the control levers only when you are correctly seated inside the operator's compartment with the seatbelt fastened.

WARNING:

Passengers. Passengers in or on the machine can cause accidents. The Moffett Truck mounted Forklift is a one person machine. Do not carry passengers.

WARNING:

Clothing. Loose clothing can get caught in the machinery. Wear protective clothing to suit the job. Examples of protective clothing are; a hard hat, safety shoes, safety glasses, a well-fitting overall, ear protectors and industrial gloves. Keep cuffs fastened. Do not wear a neck tie or scarf. Keep long hair restrained.

Operational Safety (continued)

WARNING:

Safety. Always wear your seatbelt when driving the Moffett Truck mounted Forklift. The forklift may tip over if operated incorrectly. In the event of a tip over, it is best to be held securely in the seat. The seat and seatbelt will help to keep you safely within the operator's compartment. In the event of a tip over, DO NOT JUMP, grip the steering wheel, brace your feet and lean away from the direction of tip-over and stay within the operator's compartment.

WARNING:

Seatbelt. If the seatbelt does not 'lock' when fastened do not drive the machine. The seatbelt assembly must be replaced immediately.

WARNING:

Engine Damage. Do not use starting fluid or spray as these are highly flammable, corrosive and cause engine damage.

WARNING:

Battery Isolator Switch. Do not activate the battery isolator switch when the engine is running as this could damage your engine.

WARNING:

Procedure. Never leave the operator's seat without first:

- Facing the machine uphill and turning the rear wheel sideways if stopped on an incline.
- Engaging the park brake.
- Lowering the forks to the ground.
- Placing all controls in the neutral position.
- Stopping the engine.
- Removing the key.

WARNING:

Loose Articles. Do not leave loose articles in the operator's compartment. Loose articles can fall and strike you, or roll on the floor. You could be knocked unconscious, or the controls could get jammed. If that happens you could lose control of the machine.

Operational Safety (continued)

WARNING:

Stabilizers. When placing a load, always place the load on a firm and level surface. The stabilizers must always be fully lowered before attempting to extend the reach device. When lifting a load, the stabilizers must be fully lowered and raised only when the reach device is fully retracted. When travelling without a load, the reach device should be retracted fully.

WARNING:

Loading. Before attempting to load a truck or trailer, chock the wheels of the truck/trailer to prevent it moving. Always lower the stabilizers fully before attempting to pick-up a load from a truck or trailer.

WARNING:

Stabilizers. When lowering the stabilisers, make certain the ground is sufficiently firm to support the stabilizers. On loose or uneven soil, it may be necessary to place flat wooden or metal supports beneath the stabilizers.

CAUTION:

Warning Lights. If at any point during the operation of the Moffett Truck mounted Forklift one or more of the dash panel warning lights are lit, the forklift must be stopped immediately and the engine shut off. Serious engine damage could occur if the forklift is operated with any of the warning lights on.

CAUTION:

Regulations. Obey all laws, work site and local regulations which affect you and your machine.

CAUTION:

Hydraulic Function. Never continue to operate a hydraulic function lever after the function has reached the end of its travel.

CAUTION:

Diff-Lock. Use the diff-lock only while travelling in a straight line.

Operational Safety (continued)

CAUTION:

Safe Operation. If something comes loose, breaks or fails to operate:

- Stop.
- Apply the park brake.
- Shut down the engine.
- Get it repaired.

CAUTION:

Wide Loads. When carrying wide or tall loads your visibility may be blocked by the load. It may be safer to travel in reverse when moving with such loads. You may require a signal person or "spotter" to guide you. If the street lights are blocked by the load, the work lights must be used to improve visibility and ensure you are seen by other road users.

Transport Safety

DANGER:

Transport. A Cargotec Ireland approved mounting kit must be fitted to your vehicle for transporting the Moffett Truck mounted Forklift. Contact your Moffett Truck mounted Forklift distributor for further details of approved mounting kits.

DANGER:

Telescopic Legs. If your machine is equipped with telescopic legs, make sure the legs are extended before attempting to operate the machine. The legs should only be retracted when mounting the machine for transport.

DANGER:

Transport. Do not attempt to transport the Moffett Truck mounted Forklift on a truck or trailer that is not equipped with a mounting kit designed and installed to Moffett Truck mounted Forklift specifications.
When carrying a Moffett Truck mounted Forklift, make certain that your vehicle complies with the relevant national and local laws and regulations regarding maximum vehicle weight, axle loading, overall vehicle length and overhang.

WARNING:

Transport. Do not attempt to transport the Moffett Truck mounted Forklift unless you have read the mounting section of the manual very carefully!

CAUTION:

Electrical Connector. It is important to ensure the electrical (Suzie socket) connector is fitted correctly and that the lights on the rear of the Moffett Truck mounted Forklift are functioning properly.

Transport Safety (continued)

CAUTION:

Hydraulic Pressure. It is essential to keep the machine pressurized down onto the mounting kit. The safety chains do not carry the weight of the machine.

CAUTION:

Rear Under-Run Bar. The rear under-run bar must be folded back out to full length and the locking pin and lynch pin fitted when the forklift is not being transported or removed for the purposes of loading or unloading.

CAUTION:

Mounting. When truck mounting do not use the reach device. Mount the machine as outlined in the normal mounting procedure as explained in section 5.

Maintenance Safety

WARNING:

Seatbelt. Failure to properly inspect and maintain the seatbelt can lead to a seatbelt failure in the event of an accident.
Any time the Moffett Truck mounted Forklift is being operated and is involved in an accident; the whole seatbelt assembly must be replaced. This is to ensure that if any unseen damage has occurred it is replaced.
If the seatbelt is worn or damaged it must be replaced.
The seatbelt must be inspected in detail at least once a year and more often if exposed to harsh conditions.
If replacement of any part of the seatbelt is required then the entire assembly must be replaced (retractor and buckle) with Cargotec Ireland recommended items from a service provider.

WARNING:

Compressed Air. When using compressed air ensure that relevant personal protection equipment/safety equipment is used at all times. Adhere to all company/manufacturer safety information and guidelines.

WARNING:

Compressed Air. Using compressed air can be dangerous. Obey all statutory notices and apply all relevant health and safety regulations.

WARNING:

Procedure. If you are unsure how to follow any procedure in this manual, we strongly recommend that you seek the help of a competent mechanic.

WARNING:

Electric Shock. Keep all metal straps and fasteners from clothes or jewellery clear of the positive (+) battery terminal. Such items can cause a short between the battery terminal and nearby metal framework. If this happens you could get burned.

WARNING:

Raised Attachments. Raised attachments can fall and injure you. Do not walk or work under raised attachments unless they are safely blocked.

Maintenance Safety (continued)

WARNING:

Raised Machine. NEVER position yourself or any part of your body under a raised machine which is not properly supported. If the machine moves unexpectedly you could become trapped.

WARNING:

Soft Ground. A machine can sink into soft ground. Never work under a machine on soft ground.

WARNING:

Lifting Equipment. If you are using lifting equipment to lift or repair your machine, make sure that the lifting equipment is in good condition. Make sure that lifting tackle complies with all local regulations and is suitable for the job. Make sure that lifting equipment is strong enough for the job.

WARNING:

Repairs. Do not try to do any repairs or any other type of maintenance work you do not understand. Moffett Forklift Engineers have been trained in all aspects of the Forklift.

WARNING:

Hydraulic Fluid. Fine jets of hydraulic fluid at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic fluid leaks. Do not put your face close to suspected leaks. Hold a piece of cardboard close to the suspected leaks and then inspect the cardboard for signs of hydraulic fluid. If hydraulic fluid penetrates your skin, seek medical attention immediately.

WARNING:

Hydraulic Pressure. Hydraulic fluid at pressure can cause injury. Release hydraulic pressure before connecting or disconnecting couplings; lower the payload to the ground, stop the engine, then operate the hydraulic controls a few more times to vent residual hydraulic pressure from the system.

Maintenance Safety (continued)

WARNING:

Hydraulic Hoses. Damaged hydraulic hoses can cause accidents. Inspect the hoses regularly for:

- Damaged end fittings
- Chafed outer covers
- Ballooned outer covers
- Kinked or crushed hoses
- Embedded or armoring in outer covers
- Displaced end fittings.

WARNING:

Metal Splinters. When driving pins in or out there could be some flying metal splinters. Use a soft faced hammer or drift to remove and fit metal pins. Always wear safety glasses.

WARNING:

O-Rings, Seals and Gaskets. Badly fitted, damaged or rotted O-rings, seals and gaskets can cause leakages and possible accidents. Renew whenever disturbed, unless otherwise instructed. Do not use Trichloroethane or paint thinners near O-rings and seals.

WARNING:

Electrical Circuits. Understand the electrical circuit before connecting or disconnecting an electrical component. A wrong connection can cause injury and/or damage.

Do not disconnect the battery when the machine is running otherwise the electrical circuits may be damaged.

WARNING:

Communications. Bad communications can cause accidents. If two or more people are working on a machine, make sure each knows what the others are doing. Before starting the engine make sure others are clear of the danger areas; examples of the danger areas are: the rotating blades and belt on the engine, the attachments and linkages, and anywhere beneath or behind the machine.

Maintenance Safety (continued)

CAUTION:

Maintenance. The maintenance section of this manual outlines the recommended preventative maintenance schedule. Always adhere to the recommended operating and maintenance procedures. Only trained, authorized and experienced personnel should be allowed to operate the Moffett Truck mounted Forklift. Service personnel should read and study this manual, the service manual, the preventative maintenance manual and parts manual in order to gain a thorough understanding of the unit prior to making any repairs. Exercise all necessary safety precautions when performing maintenance covered in the preventative maintenance manual. Ensure that the engine is switched off, the battery is disconnected and the engine and exhaust are cool.

CAUTION:

Temperature. Always turn off the engine and allow it to cool before checking:

- Engine coolant level
- Engine oil level
- Hydraulic oil level

CAUTION:

Booster Supply. The booster supply should not be more than 12 volts. Using a higher voltage supply will damage your machines electrical system. Do not connect two batteries together to give 24 volts. This could burn out the induction manifold heater and damage the starter motor.

CAUTION:

Cleaning. Cleaning metal parts with incorrect solvents can cause corrosion. Use only recommended cleaning agents and solvents.

CAUTION:

Machine Modifications. This machine is manufactured in compliance with legislative and other requirements. It should not be altered in any way which could affect or invalidate any of the requirements. For advice contact your Moffett Truck mounted Forklift Distributor.

Maintenance Safety (continued)

CAUTION:

Welding. Before carrying out any welding on the machine, disconnect the battery and alternator to protect the circuits and components.
The battery must still be disconnected even if a battery isolator is fitted.
Make sure the welding path is kept as short as possible. This prevents high currents being induced into the machine frame or wiring harness.

2. INTRODUCTION

About this Operator Manual

Machine Models
This operator manual provides information for the static mast range of Moffett Truck mounted Forklifts.

Using this Operator Manual
The illustrations in the operator manual are for guidance only. Where machines differ, the text and/or illustration will specify.

This operator manual is arranged to give a good understanding of the machine and its safe operation. It also contains maintenance information and specification data. Read this operator manual from front to back before using the machine for the first time. Particular attention must be given to all the safety aspects of operating and maintaining the machine.

General warnings in this chapter are repeated throughout the manual as well as specific warnings. Read all the safety statements regularly, so you don't forget them. Remember that the best operators are the safest operators.

Finally, treat this operator manual as part of the machine. Keep it clean and in good condition and ensure it is always located in the operator manual box.

If there is anything you are unsure about ask your supervisor or Moffett Truck mounted Forklift Distributor. Do not guess, you or others could be killed or seriously injured.

The manufacture's policy is one of continuous improvement. The right to change the specification of the machine without notice is reserved.
No responsibility will be accepted for discrepancies which may occur between the specifications of the machine and the descriptions contained in this publication.

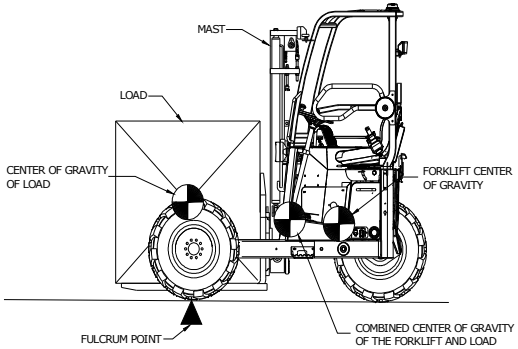
Using the Machine
This operator manual is intended to familiarize you on the machine, its controls and its safe operation. It is not intended or suitable for use as a training manual for an inexperienced operator.

DANGER:
Operator Manual. To use the Moffett Truck mounted Forklift efficiently and safely you must have read and understand the operator manual, be familiar with the machine and be trained and authorized to use it.

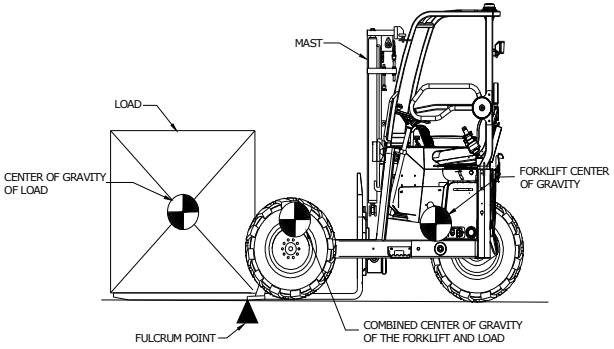
The Moffett Truck Mounted Forklift

Machine Description
The Moffett Truck mounted Forklift is a three wheeled, non-counterbalanced forklift capable of being transported on the rear of a truck or trailer. Its short turning radius and rear wheel steer make it extremely maneuverable in confined spaces. The forklift is equipped with forks that can move in and out on a pantograph scissor reach device. The mast is fitted with double acting lift cylinders which means a load can be lifted on the forks by the full bore side of the cylinders but also that the machine can be lifted for truck mounting using the rod side of the cylinders.

Concept
Unlike a conventional forklift the Moffett Truck mounted Forklift does not have a counterweight at the rear; instead it uses its own weight to counter the load. Normally the front fulcrum for the machine is located under the front tire. By lowering the stabilizers this fulcrum is moved forward and with the forks extended this allows the forklifts weight to counter the capacity to be lifted. Once the load has been picked up, the forks are retracted; bringing the load into the frame of the forklift. At this stage the stabilizers can be raised and the machine can travel with the load.



STABILISERS RAISED

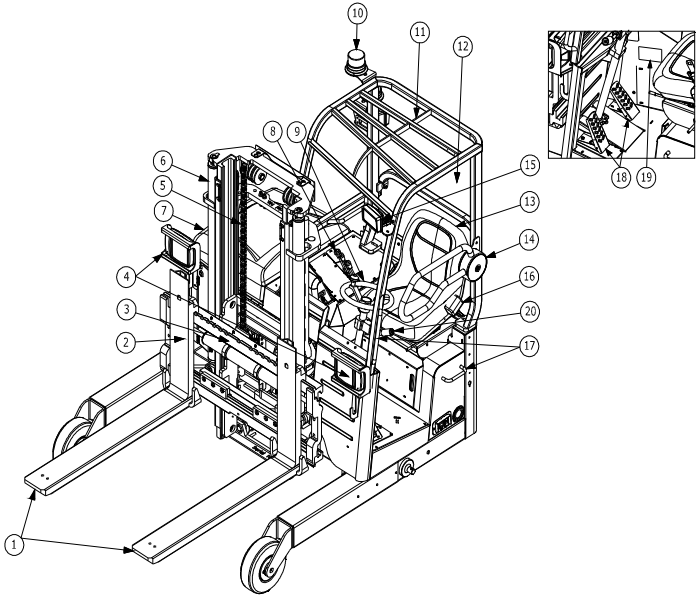


STABILISERS LOWERED

Major Components

M36

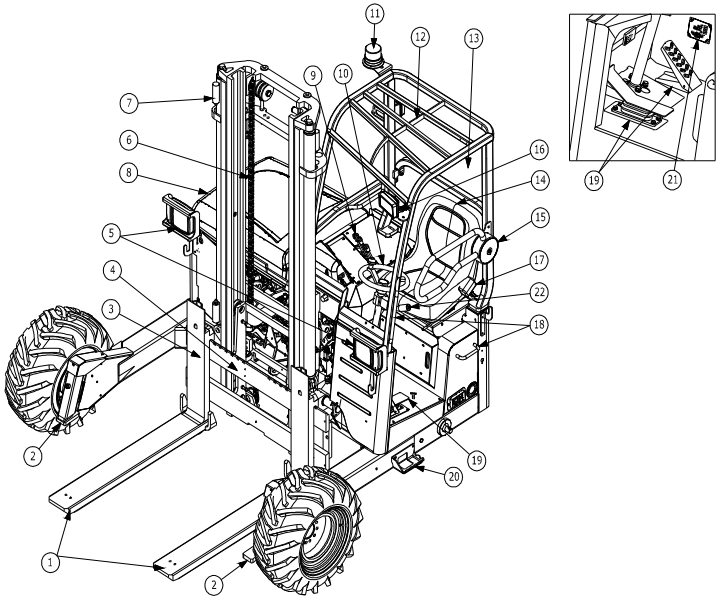
1. Reach Forks
2. Fork Face
3. Fork Carriage
4. Road Lights
5. Lift Chains
6. Mast
7. Hood/Bonnet
8. Hydraulic Controls
9. Steering Wheel
10. Beacon
11. Overhead Guard
12. Operator's Compartment
13. Seat
14. Side Guard
15. Work Light
16. Seatbelt
17. Grab Handles
18. Foot Pedals
19. Serial plate
20. Forward/Reverse Lever (Option)



Major Components (continued)

M45P

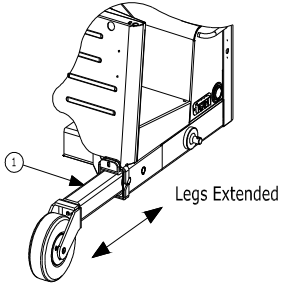
1. Reach Forks
2. Stabilizers
3. Fork Face
4. Fork Carriage
5. Road Lights
6. Lift Chains
7. Mast
8. Hood/Bonnet
9. Hydraulic Controls
10. Steering Wheel
11. Beacon
12. Overhead Guard
13. Operator's Compartment
14. Seat
15. Side Guard
16. Work Light
17. Seatbelt
18. Grab Handles
19. Foot Pedals
20. Step
21. Serial plate
22. Forward/Reverse Lever (Option)

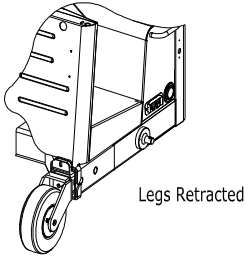


Major Components (continued)

Telescopic Legs

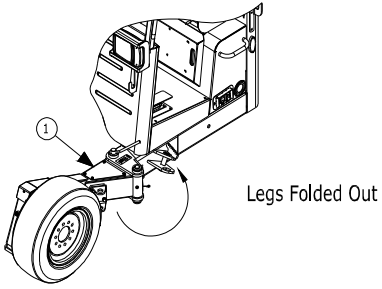
1. Telescopic Legs

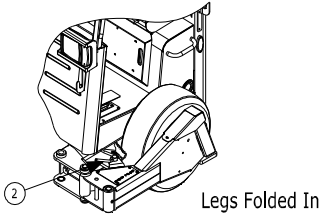




Folding Legs

1. Folding Legs
2. Folding Legs Locking Pin





Identifying Your Machine

Serial Plate: This is located in the operator's compartment and it gives the following information:

Type: This is the machine model. i.e. M36 (example below).

Serial No: This is a unique number given to all machines.

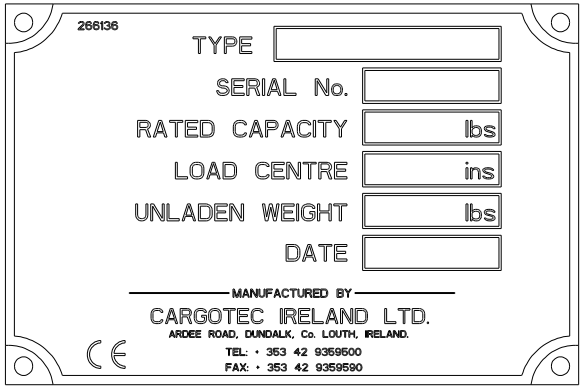
Q 24 054 4
Q Year of manufacture
24 Week number
054 Sequential number
4 Machine model

Rated Capacity: The rated lifting capacity of the machine.

Load center: Load center of rated capacity

Unladen weight: The gross weight of the machine.

Date: The date of manufacture of the machine



Safety Decals

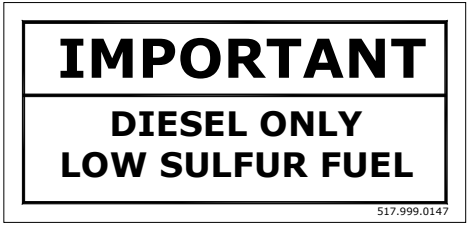
WARNING:

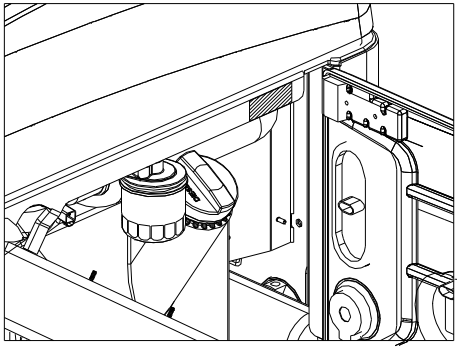
Decals. If you need eye-glasses for reading, make sure you wear them when reading the safety decals. Decals are strategically placed around the machine to remind you of possible hazards. Do not over-stretch or place yourself in dangerous positions to read the decals. If any decals get damaged or removed, contact your supervisor and have them replaced.

WARNING:

Decals. Decals on the machine warn you of particular hazards. Each decal is attached close to a part of the machine where there is a possible hazard. Read and make sure you understand the safety messages before you work with or around any part of the machine. Keep all decals clean and readable. Replace lost or damaged decals. The decals and their attachment points are shown in this manual. Each decal has a part number printed beside it. Use this number to order a new decal from your Moffett Truck mounted Forklift Distributor.

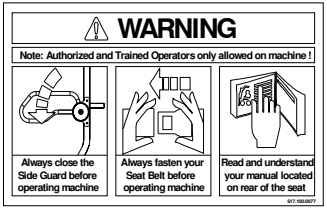
Part Number 517.999.0147



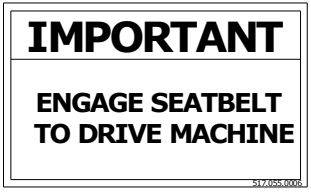


Safety Decals (continued)

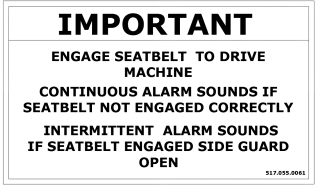
Part Number 517.100.0077



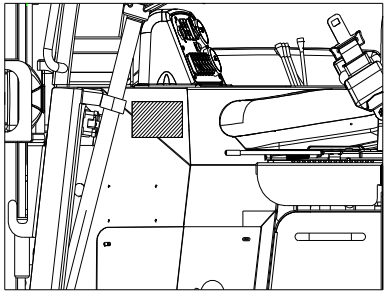
Part Number 517.055.0006

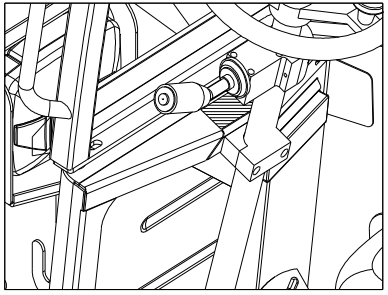


(Seat Presence Optional 517.055.0061)



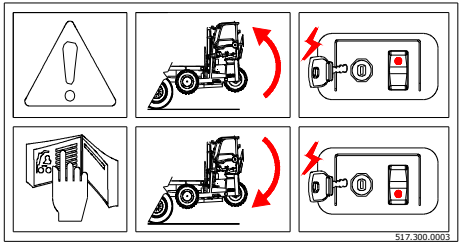
Note: The machine is fitted with an interlocking seatbelt. The machine will not drive unless the seatbelt is engaged. If seat presence is fitted an alarm will sound if correct sequence is not followed.





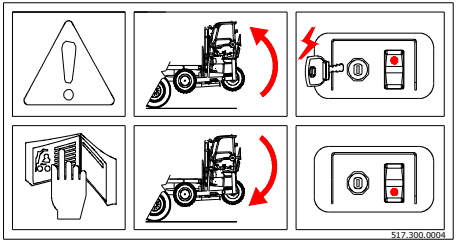
Safety Decals (continued)

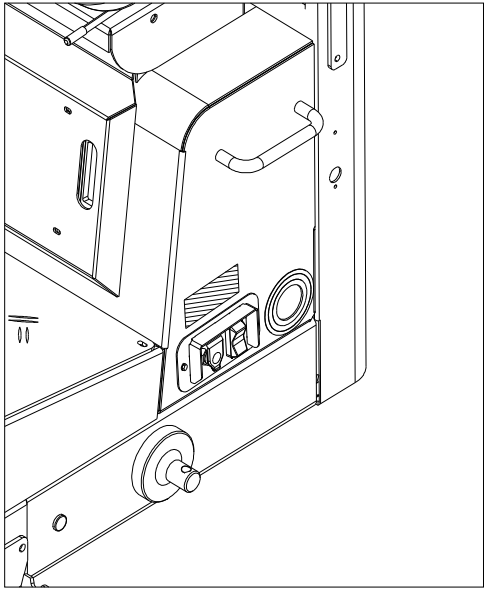
Part Number 517.300.0003



Or

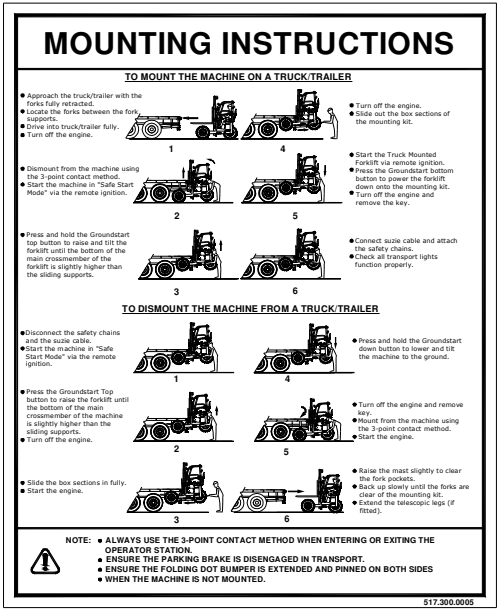
Part Number 517.300.0004

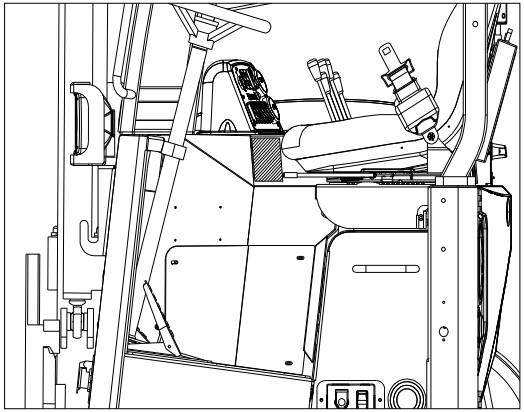




Safety Decals (continued)

Part Number 517.300.0005



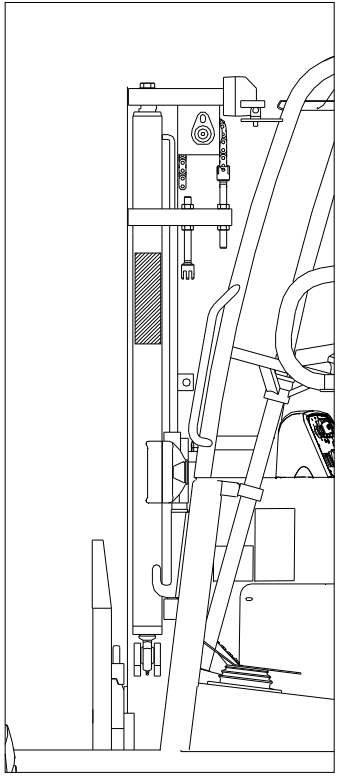


Safety Decals (continued)

DANGER:

Forks. Do not permit personnel to stand on or ride on the forks.

Part Number ENG002



Safety Decals (continued)

Part Number 517.130.0003

INSTRUCTIONS

DO NOT OPERATE THIS MACHINE UNLESS:

- You have read and understand the safety and operating instructions contained in the operator manual and viewed the Truck-Mounted Forklift Operator Training Video.
- You have been trained in the safe operation of the Truck-Mounted Forklift.
- You have checked your machine and all functions are operating correctly.

WHEN TRAVELLING WITHOUT A LOAD:

- Keep the mast fully forward and the forks as low as possible.
- Keep the reach device retracted and as low as possible.

WHEN TRAVELLING WITH A LOAD:

- Keep the reach device fully retracted and the load as low as possible.
- Make all turning manoeuvers slowly and carefully. Do not stop suddenly.
- Travel with the load side-shifted to the center position.

WHEN TRAVELLING ON INCLINES:

- Travel directly up or down, do not travel across an incline.
- Keep the forks facing uphill at all times.
- Engage the diff-lock if operating on slippery slopes.
- Keep the load as low as possible. Do not elevate the load.

WHEN LIFTING A LOAD:

- Check that the stabilizers are fully lowered on a firm and stable surface.
- Do not raise the stabilizers unless the reach device is fully retracted.

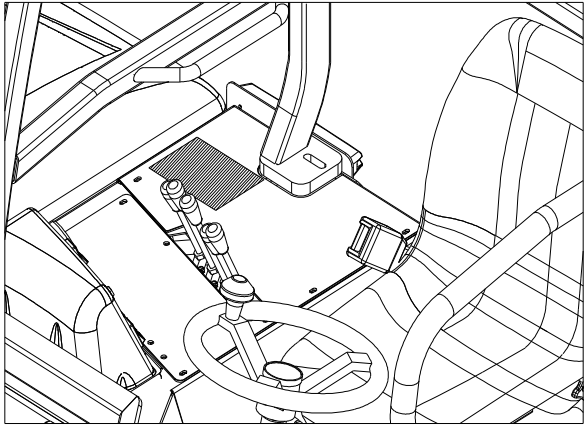
WHEN PLACING A LOAD:

- Do not extend the reach device forward unless the stabilizers are fully lowered on a firm and stable surface.

WHEN MOUNTING FOR TRANSPORT:

- Check that the forks are fully engaged in the mounting kit before raising the forklift.
- Centre the fork carriage using the side-shift function before raising the forklift.

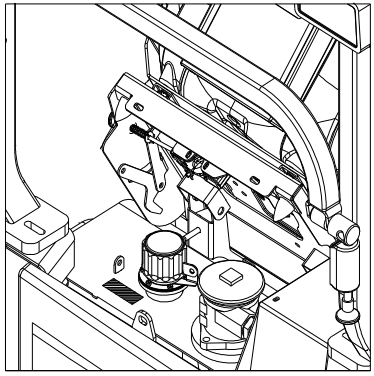
517.130.0003

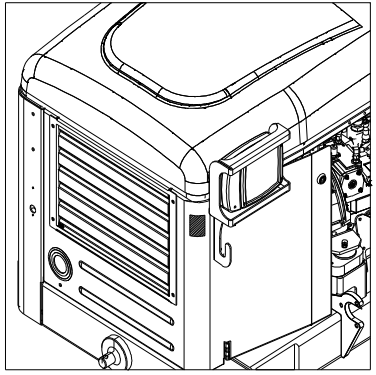


Safety Decals (continued)

Part Number 517.100.0141

Part Number ENG019



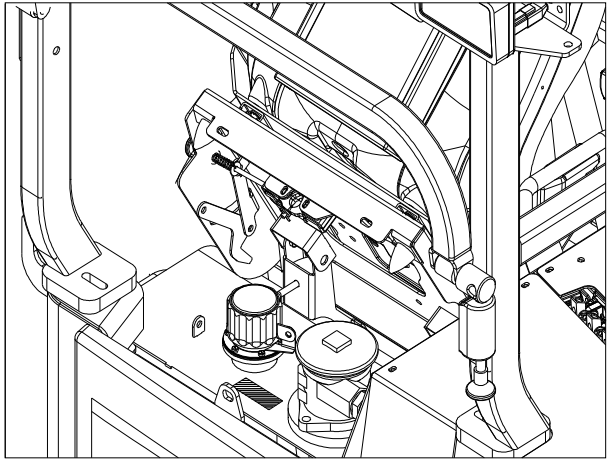


Safety Decals (continued)

Part Number ENG003

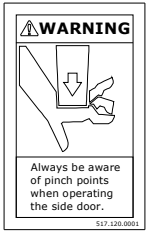
WARNING:

Hydraulic Pressure. The hydraulic tank is pressurized and hydraulic oil may be hot. To avoid injury and spillage when removing the cap, stop the engine and remove the cap very slowly.

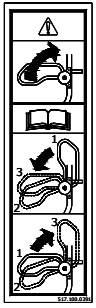


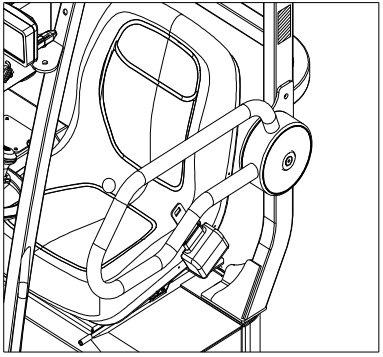
Safety Decals (continued)

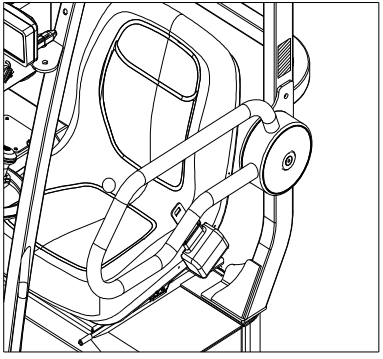
Part Number 517.120.0001



Part Number 517.100.0391

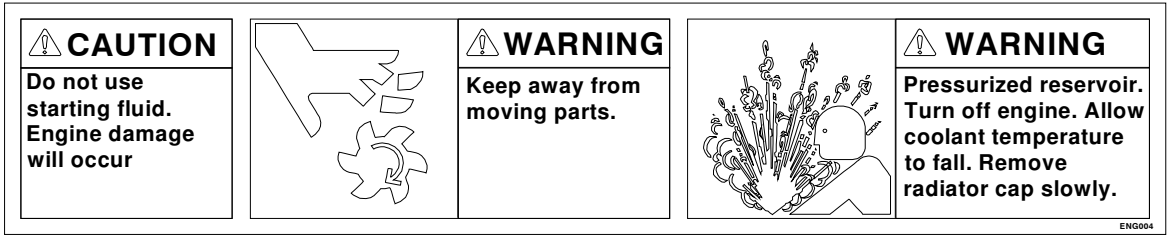






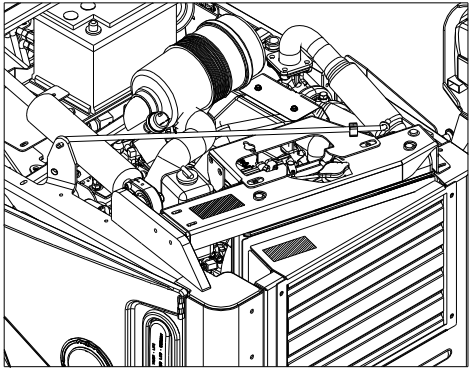
Safety Decals (continued)

Part Number ENG004



WARNING:

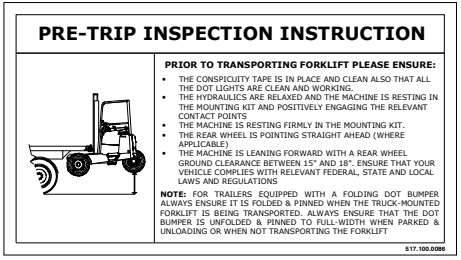
Vapors. Hot coolant, steam and vapors can severely burn. Stop the engine and allow it to cool before removing the radiator cap. When removing the radiator cap, turn it very slowly to allow the pressure to release.

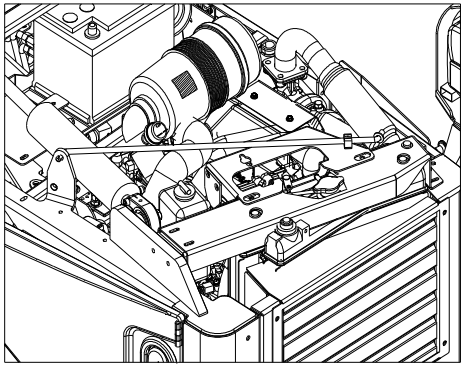


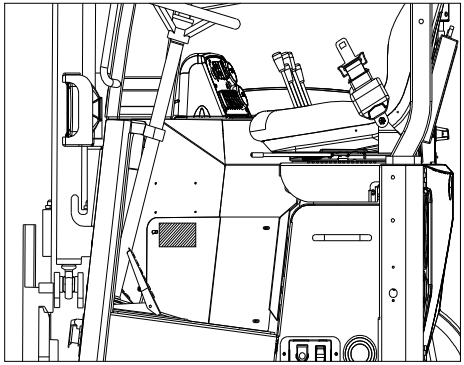
Safety Decals (continued)

Part Number 517.130.0078

Part Number 517.100.0086

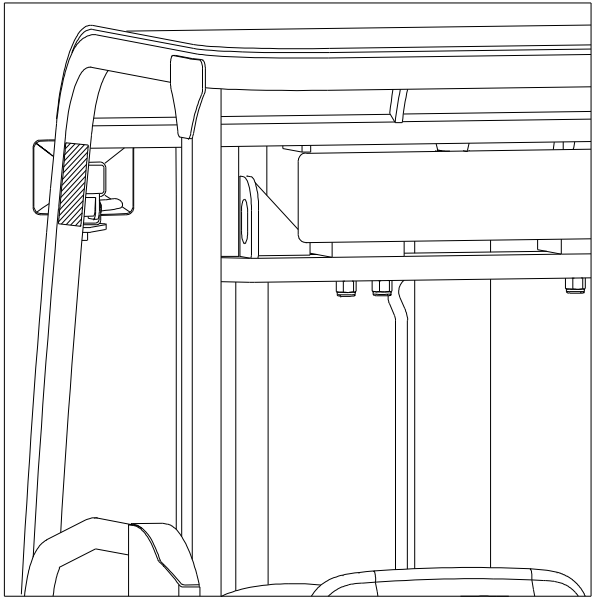






Safety Decals (continued)

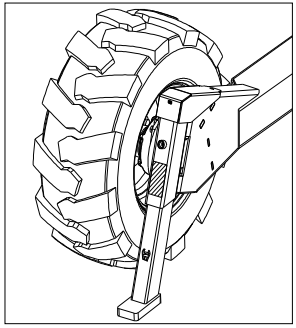
Part Number ENG010

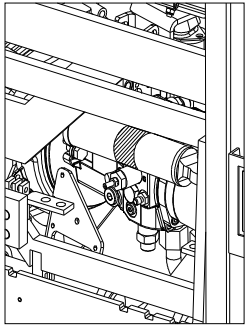


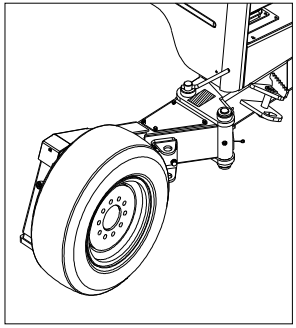
Safety Decals (continued)

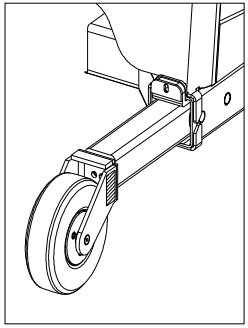
Part Number ENG011

Note: Location of pinch point decals; EUR011 on stabilizers, side-shift cylinder, telescopic legs and folding legs.



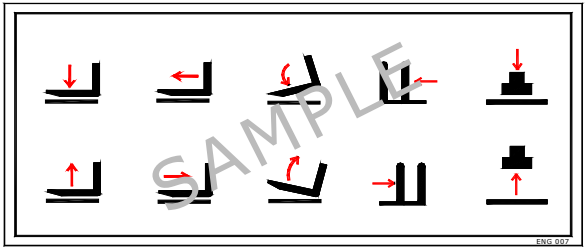




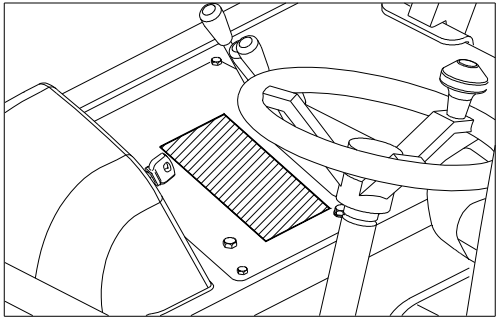


Safety Decals (continued)

Part Number ENG007

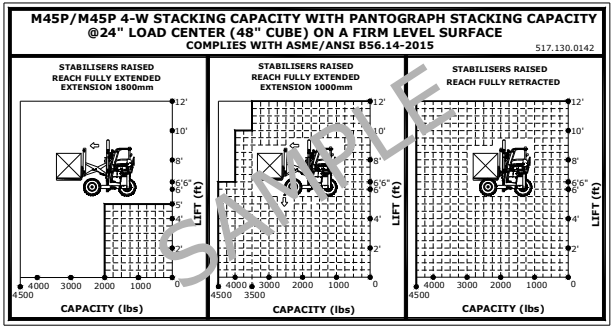


Note: The valve bank and load chart decals in this section are only examples and may differ from those found on your machine.

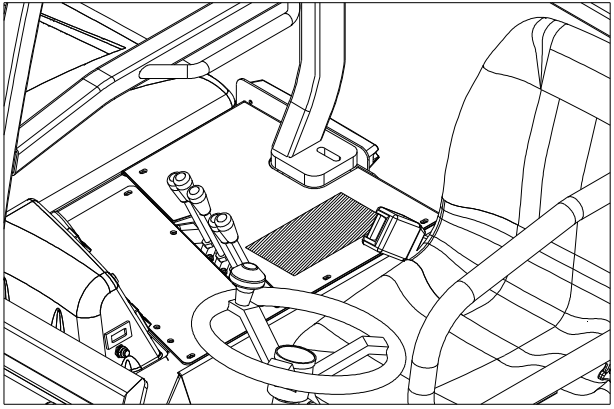


Safety Decals (continued)

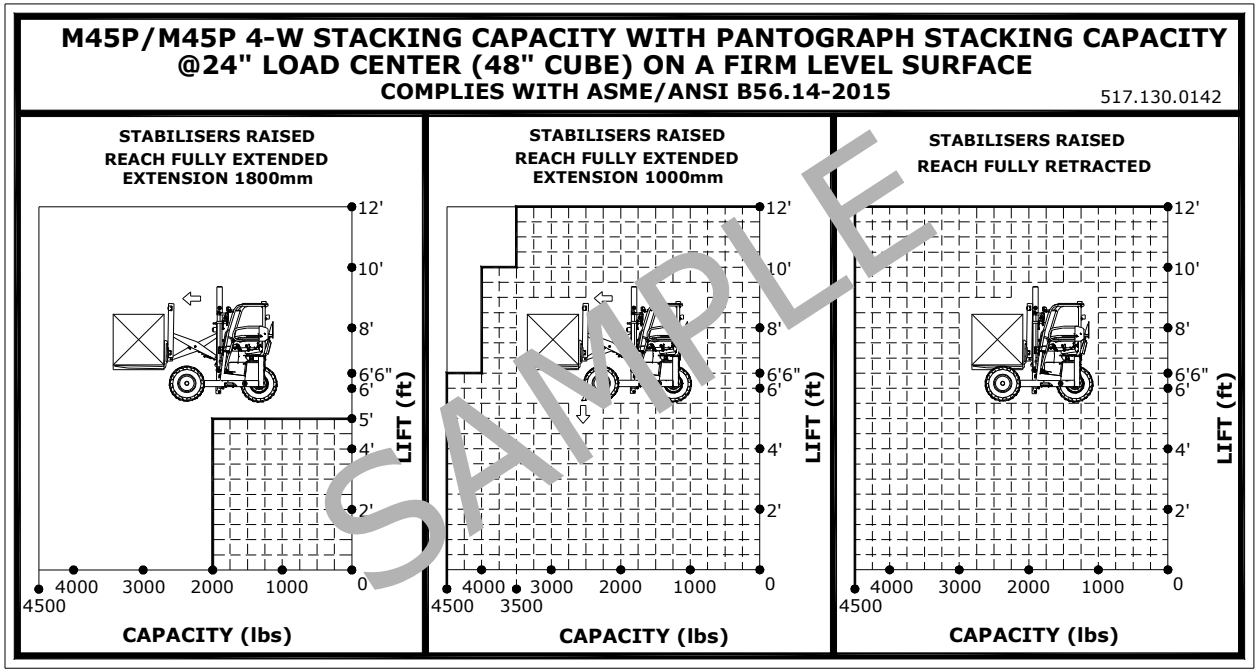
Part Number 517.130.0142



Note: When replacing decals always ensure the correct part numbers are supplied.



Safety Decals (continued)



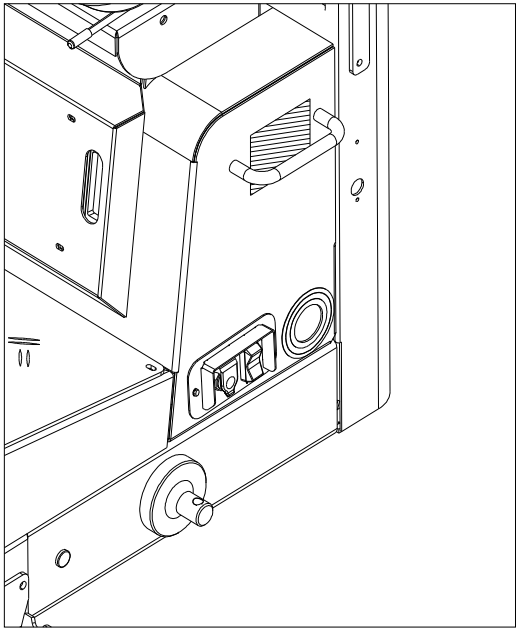
Safety Decals (Continued)

Part Number 517.999.0300

⚠ WARNING

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.



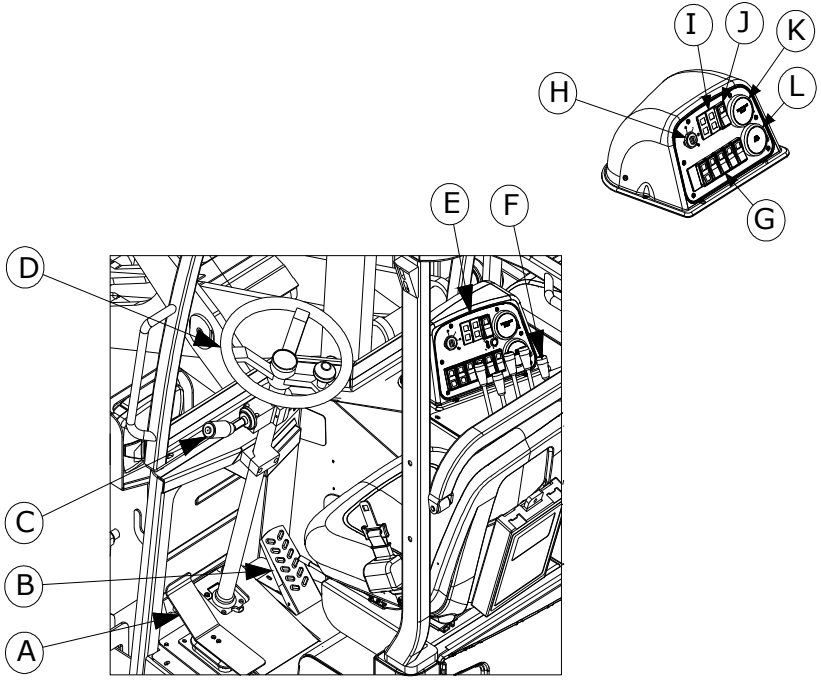
Instruments and Controls

The Moffett Truck mounted Forklift is provided with a set of controls to enable you to operate the machine safely and efficiently.

The instruments and controls are in the following groups:

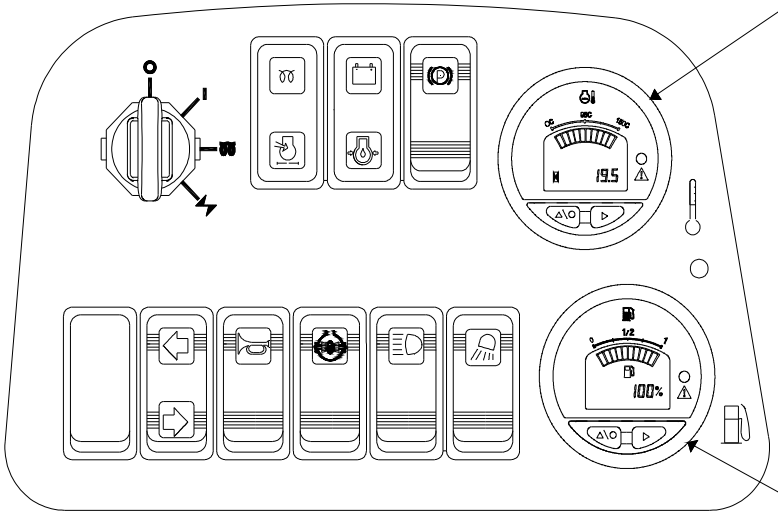
A Forward/Reverse Pedal (Inching Pedal)
B Throttle
C Forward/Reverse Lever (Option)
D Steering Wheel
E Dash Panel
F Hydraulic Controls
G Switches
H Ignition Switch
I Warning Lights
J Park Brake
K Temperature Gauge
L Fuel Gauge

Note: The forward/reverse lever (item C) is an optional component, when it is fitted the forward/reverse pedal (item A) is replaced with an inching pedal.



Instruments and Controls (continued)

Standard



Note: For 4-Way dash configuration, see section C3.

Instruments and Controls (continued)

Ignition Switch / Pre Heater
When turned clockwise, the ignition switch sends electrical power to the engine starter motor and glow plugs, thus starting the machine. When the key is turned to the preheat position, the preheat light should come on and go out after several seconds.

Work Lights
Work lights should be used on site when visibility is poor. They may also be used to improve visibility if the road lights are blocked while carrying a load.

Road Lights
Road lights should be used when travelling on a public road.

Note: Dip beam should always be used when approaching other users of the road.

Flashing Beacon
The Moffett Truck mounted Forklift is fitted with a flashing beacon. The beacon is activated when the ignition is turned to the ON position or switched to ON with the beacon button (MMS). If the beacon fails to work, do not operate the machine. Contact your supervisor.

Hazard Lights
The hazard lights are used to warn other drivers if your vehicle must be stopped where it might be a traffic hazard.

4-Way
When activated this turns the machine into 4-Way mode. Pressing the button again returns the machine to 2-Way.

Diff-Lock
When activated this transfers equal flow to all 3 wheels to improve traction.

Horn
The horn is used to alert people of your manoeuvres.

Park Brake
The park brake should be engaged when the forklift is parked. It should **NOT** be engaged when the forklift is in transport on the rear of a truck or trailer.

Note: If the seatbelt is not connected the park brake is automatically applied. Ensure that the seatbelt is applied when truck mounting.

Instruments and Controls (continued)

Indicators
The indicator switch is located on the dash panel. Pushing the top of the switch activates the left indicators, pushing the bottom of the switch activates the right indicators. Always turn off the indicators once you have finished a manoeuvre.

Hour Meter
Indicates the engines operating hours.

Water Gauge
The water gauge is used to display the operating temperature of the engine.

Fuel Gauge
The fuel gauge indicates the amount of fuel in the fuel tank.

Air Filter Blockage Light
The air filter blockage light indicates if there is a blockage in the air filter. When this light is illuminated the Moffett Truck mounted Forklift should be stopped immediately and the engine switched off. The air filter should be checked as per the maintenance section of this manual and cleaned if necessary.

Battery Light
The battery light indicates if there is no battery charge. This lights up when the ignition is switched to the preheat position and should go out when the machine is started.

Engine Oil Pressure Light
The engine oil pressure light indicates if the engine oil pressure is low. This lights up when the ignition is switched to the preheat position and should go out when the machine is started. If this light is illuminated during the operation of the Moffett Truck mounted Forklift, the forklift should be stopped immediately and the engine switched off. The engine oil level should be checked as per the maintenance section of this manual and refilled if necessary. If needed take the forklift out of operation and have it repaired.

Engine Temperature Light
The engine temperature light indicates if the engine temperature is too hot. When this light is illuminated the Moffett Truck mounted Forklift should be stopped immediately and the engine switched off. The engine should be allowed to cool before checking the engine coolant level as per the maintenance section of this manual. The engine coolant should be refilled if necessary. If needed take the forklift out of operation and have it repaired.

Instruments and Controls (continued)

CAUTION:

Warning Lights. If at any point during the operation of the Moffett Truck mounted Forklift one or more of the dash panel warning lights are lit, the forklift must be stopped immediately and the engine shut off. Serious engine damage could occur if the forklift is operated with any of the warning lights on.

Transmission Controls

The machine can be fitted with the following drive control options:

1. **Anti-Stall Pump** – Control comprises: Hydraulic foot operated forward/reverse pedal, foot operated accelerator pedal.

2. **Automotive Pump** – Control comprises: Column shift forward/reverse lever, foot operated inching/brake pedal, foot operated accelerator pedal.

Transmission Controls (continued)

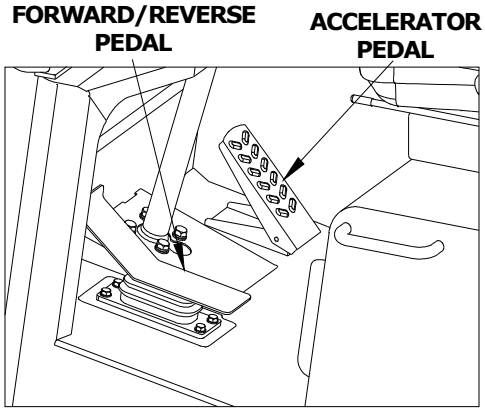
1. Anti-Stall Pump – Hydraulic Foot-Pedal Control
With foot-pedal control, the Moffett Truck mounted Forklift is equipped with two foot pedals. The right pedal is the accelerator pedal which controls the engine RPM (speed). The left pedal is the hydraulic pedal which controls the forward and reverse movement.

Accelerator Pedal – Engine RPM
This pedal is pressed down to increase engine RPM. It should be used to keep the engine at a constant RPM and should not be used to adjust the travel speed of the machine. The engine RPM also affects the speed of the hydraulic functions.

WARNING:

Controls. If the forward/reverse pedal does not return to the neutral position, do NOT use the machine and contact your supervisor.

Forward/Reverse Pedal – Travelling Speed
This pedal controls the forward and reverse movement of the machine. The machine will not move if you do not press the hydraulic pedal. Depress the pedal (toe) forward to move the machine forward. Depress the pedal (heel) back to move the machine in reverse.
By returning the pedal to the mid-point (neutral) the machine will stop. This pedal is also used to control the speed of the machines movement. The further the pedal is pressed in either direction, the faster the machine will travel. When travelling on gradients or on rough terrain, forward/reverse pedal movement should be reduced and engine RPM increased.



Transmission Controls (continued)

The anti-stall hydrostatic drive pump greatly enhances smooth, slow travel which is important when operating with large or long loads.

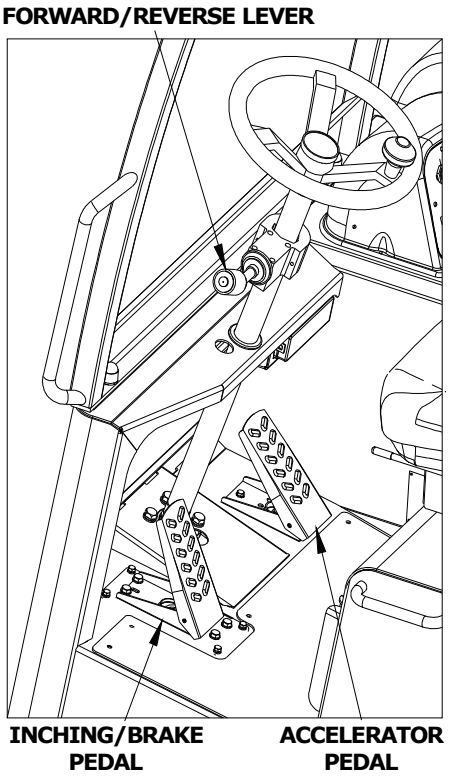
When driving; the operator controls the speed and torque using the accelerator pedal only, while keeping the forward/reverse pedal fully depressed in the direction of travel.
This capability is due to the pump being able to sense the engine load and self-adjust to the conditions accordingly (similar to an automatic transmission in an automobile where you do not need to shift up or down).

Transmission Controls (continued)

2. Automotive Pump – Column Shift Control.
With automotive control the Moffett Truck mounted Forklift is equipped with two foot pedals and a column mounted forward/reverse hand lever. The right pedal is the accelerator pedal which controls both engine RPM and speed of travel. The left pedal is the inching/brake pedal which is used to stop the machine or move the machine slowly.

Note: The engine will not start unless the forward/reverse lever is in the neutral position while turning the key.

The accelerator pedal is used to control both engine RPM and speed of travel of the machine. The accelerator pedal regulates RPM but will not move the machine until the forward/reverse hand lever is activated.



Transmission Controls (continued)

Operation

TO MOVE THE MACHINE FORWARD – Move the forward/reverse lever to the forward position and depress the accelerator pedal – the machine will move forward.

TO MOVE THE MACHINE BACKWARD – Move the forward/reverse lever to the backwards position and depress the accelerator pedal – the machine will move backwards.

TO STOP THE MACHINE – Release the accelerator pedal and the machine will stop. Alternatively, depressing the inching/brake pedal fully will stop the machine more quickly.

Note: The higher the engine speed the faster the machine will travel. When climbing a gradient or hill, the operator should keep the accelerator pedal depressed because the speed of the machine will reduce as the gradient increases.
The engine will not start unless the forward/reverse lever is in the neutral position while turning the key. The machine will not drive unless the interlocking seatbelt is connected.

Transmission Controls (continued)

Inching/Brake Pedal

This pedal has two functions;

1. Brake pedal – to stop the machine quickly.
2. Inching pedal – to allow small controlled movements of the machine regardless of how high the engine speed is.

The inching/brake pedal allows the operator to control the travel speed of the Moffett Truck mounted Forklift while keeping engine speed up to raise and tilt the mast. The operator should keep the forklift RPM high to raise the mast quickly.

To stop the forward movement of the Moffett Truck mounted Forklift while maintaining high engine RPM, depress the inching/brake pedal fully and the machine will stop moving. By releasing the inching/brake pedal slightly, the machine will move slowly. To stop its movement depress the pedal fully again. By gradually releasing the inching/brake pedal, the machine will gradually increase its travel speed.

Because of its ability to stop the machine, the inching/brake pedal can be used as a brake pedal. By fully depressing the inching/brake pedal the machine will stop, irrespective of the engine speed.

This pedal is also referred to as a creeper/brake pedal for its ability to move the machine slowly even with high engine RPM. This permits the precise, controlled creeping movements necessary when lifting or placing a load.

Hydraulic Levers

3 Wheel Drive
The Moffett Truck mounted Forklift is equipped with hydraulic levers to control movement of the mast, forks and stabilizers. STUDY THE VALVE BANK DECAL FOR YOUR MOFFETT TRUCK MOUNTED FORKLIFT BEFORE OPERATING THE MACHINE. UNDERSTAND THE FUNCTION OF THE HYDRAULIC LEVERS FULLY BEFORE OPERATING THE MACHINE.

A. **Forks – Raise and Lower:** This lever raises and lowers the forks. Forward movement of the lever will lower the forks down. Backward movement of the lever will raise the forks up.

B. **Reach Device – Extend and Retract:** This lever moves the reach device forwards and backwards. Forward movement of the lever extends the reach device forward, away from the operator (out). Backward movement of the lever retracts the reach device back towards the operator (in). When placing a load, the reach device should be extended only when the stabilizers are fully lowered.

C. **Tilt – Forward and Back:** This lever tilts the mast forwards and backwards. Forward movement of the lever tilts the mast forward (forks down). Backward movement of the lever tilts the mast rearward (forks up). Loads should normally be transported with the mast tilted back.

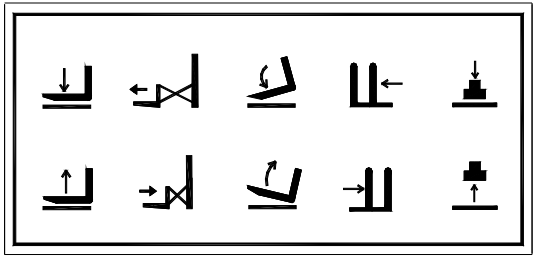
D. **Side-Shift – Left and Right:** This lever moves the mast to the right or left. Forward movement of the lever shifts the mast to the left. Backward movement of the lever shifts the mast to the right.

E. **Stabilizers – Lower and Raise:** This lever raises and lowers the stabilizing legs. When placing a load, the stabilizers must always be fully lowered before moving the reach device forward. Forward movement of the lever will lower the stabilizers down. Backwards movement of the lever raises the stabilizers up. When lifting a load, never raise the stabilizers until the reach device is fully retracted.

Note: If during the lifting operation the stabilizers start to slip the load must be lowered immediately and a smaller load center lifted or improved ground conditions found.

Hydraulic Levers (continued)

Note: When the ground is not firm enough to support the stabilizers extra support plates must be used of sufficient size and strength to ensure they do not sink, bend or buckle during operation. A second person may be required to check the support plates. If at any time the stabilizers or pads show signs of sinking, the procedure must be stopped immediately, the reach device fully retracted and an alternative location found. If in doubt prior to or during an operation on loose, uneven or soft surfaces, stop. Always consider safety first.



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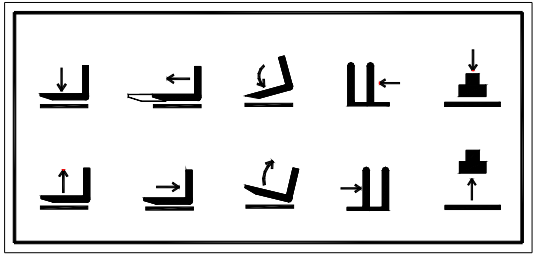


Hydraulic Levers (continued)

1 Wheel Drive with Telescopic Legs
The Moffett Truck mounted Forklift is equipped with hydraulic levers to control movement of the mast, forks and stabilizers. STUDY THE VALVE BANK DECAL FOR YOUR MOFFETT TRUCK MOUNTED FORKLIFT BEFORE OPERATING THE MACHINE. UNDERSTAND THE FUNCTION OF THE HYDRAULIC LEVERS FULLY BEFORE OPERATING THE MACHINE.

A. **Forks – Raise and Lower:** This lever raises and lowers the forks. Forward movement of the lever will lower the forks down. Backward movement of the lever will raise the forks up.

B. **Reach Device – Extend and Retract:** This lever moves the reach device forwards and backwards. Forward movement of the lever extends the reach device forward, away from the operator (out). Backward movement of the lever retracts the reach device back towards the operator (in).

C. **Tilt – Forward and Back:** This lever tilts the mast forwards and backwards. Forward movement of the lever tilts the mast forward (forks down). Backward movement of the lever tilts the mast rearward (forks up). Loads should normally be transported with the mast tilted back.

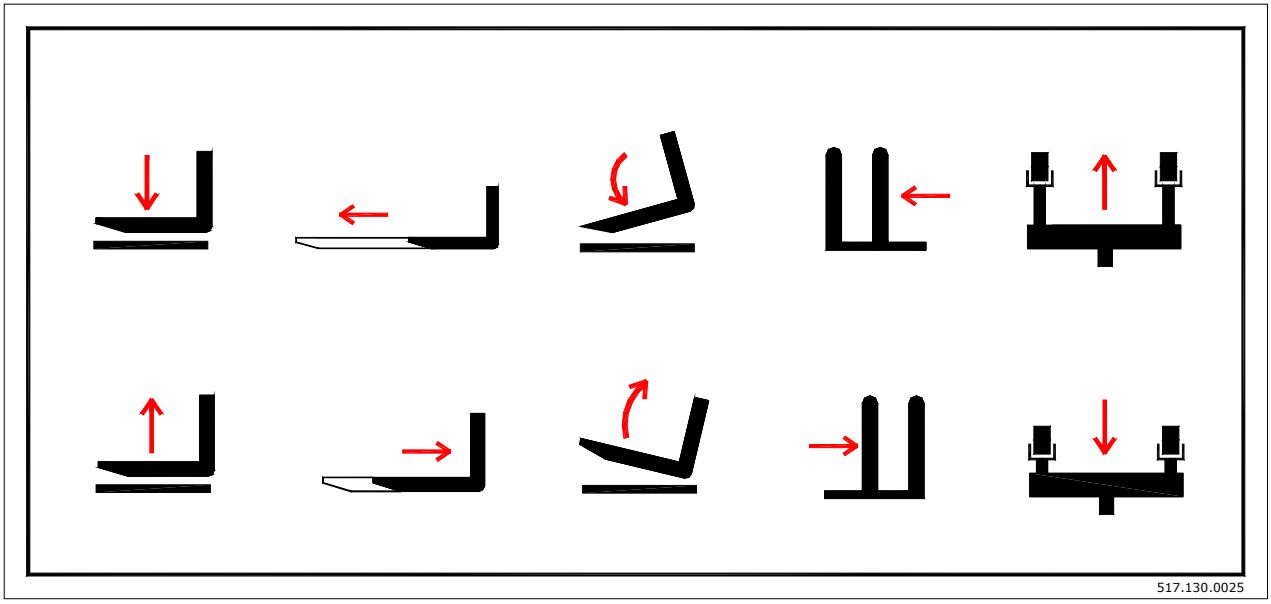
D. **Side-Shift – Left and Right:** This lever moves the mast to the right or left. Forward movement of the lever shifts the mast to the left. Backward movement of the lever shifts the mast to the right.

E. **Telescopic Legs – Extend and Retract:** This lever extends or retracts the telescopic legs. Forward movement of the lever extends the legs outwards (out). Backward movement of the lever retracts the telescopic legs back towards the operator (in).

WARNING:

Telescopic Legs. The telescopic legs should only be retracted when necessary for truck mounting the machine for transport and should be extended fully before attempting to operate the machine.

Hydraulic Levers (continued)



A B C D E

3. CENTER OF GRAVITY

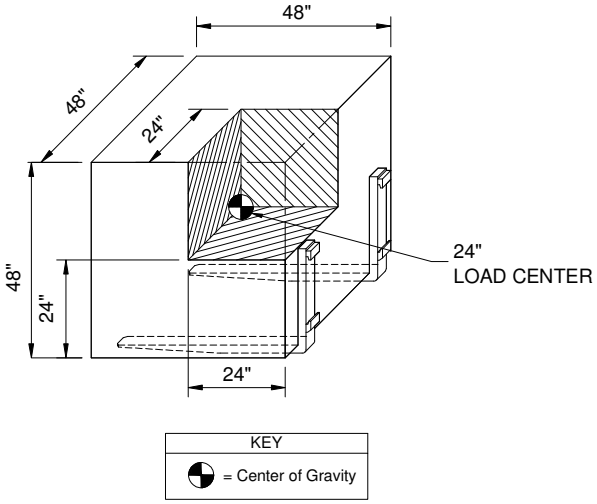
Basic Principles

Make the right start – know the load capacities of your Moffett Truck mounted Forklift. The rated capacity of the machine is the weight that the machine is capable of lifting under safe operating conditions. Remember that the type of terrain or ground conditions can reduce the amount you should lift.

The shape of the load will also affect the lift capacity of the machine. Inspect the load you intend to lift. Make sure that you know the weight of the load. If the weight is not marked or shown on the load, check the weight of the load with your supervisor or have it weighed. If it is too heavy, split the load and restack it. It is common for a large capacity conventional forklift to be used when loading trucks or trailers in a yard. Do not expect the Moffett Truck mounted Forklift to lift the load just because a conventional yard forklift initially loaded it.

Remember that if attachments are used other than the standard forks which are normally furnished with the Moffett Truck mounted Forklift; such attachments will reduce the lifting capacity and affect other machine handling characteristics.

With the Moffett Truck mounted Forklift, the rated capacity is based on a cube measuring 48" in all three dimensions with the center of gravity in the center of this cube. This is known as a 24" load center. If the dimensions of the load increase or the position of the center of gravity or load moves forward, the lifting capacity of the machine will be reduced.



Sample Load Chart

Refer to the load chart in the operator's compartment of your machine. Study it carefully and make sure you understand it before attempting to operate the Moffett Truck mounted Forklift. Remember that the weight to be lifted and the height it is lifted to must not exceed the rated capacity of your machine.

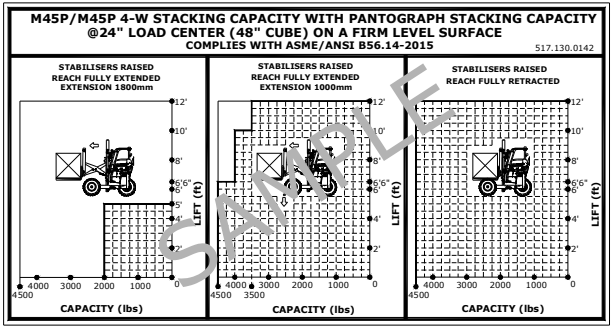
The load capacity chart relating to your particular model gives details of what your machine can lift with a 24" load center under the following conditions:

A. Stabilizers raised and reach device fully extended forward.
B. Stabilizers fully lowered and reach device fully extended forward.
C. Stabilizers raised and reach device fully retracted backwards.

The following sample load capacity chart illustrates the rated stacking capacity of a M45 Moffett Truck mounted Forklift equipped with reach forks.

DANGER:

Capacity. Never exceed the forklift's rated capacity or the machine may become unstable.



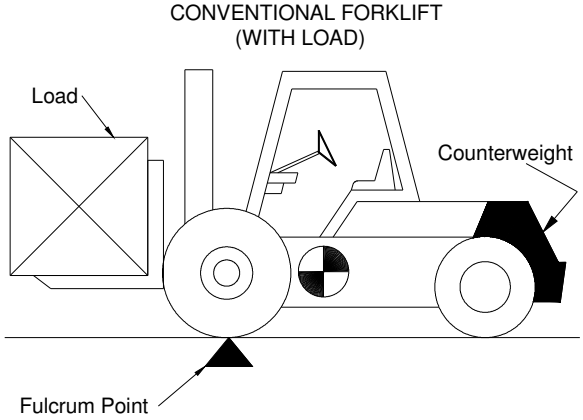
Note:

1. The load capacity may vary depending on the attachments used. Consult the load chart on your machine for actual rated capacity.
2. Other Moffett Forklift models have different load capacities. Refer to the load capacity chart on your machine.
3. If the existing load capacity chart becomes damaged, lost or illegible, replace the load capacity chart. Load capacity charts are available from your dealer.

Comparison between a Conventional Forklift and a Moffett Truck mounted Forklift

Conventional Forklift
A conventional forklift is designed to lift and carry the load in front of the wheels. The load remains in this position during transit. The conventional forklift is able to lift the load in this position because it has a large rear-mounted counterweight to counterbalance the load.
A conventional forklift is known as a counterbalanced forklift.

With a conventional counterbalanced forklift, the position of the load remains stationary relative to the front wheels. The forks do not move forward and backward like a Moffett Truck mounted Forklift. The front wheels of a conventional counterbalanced forklift are the points of pivot known as the fulcrum point.
If the load exceeds the rated capacity of the forklift, the weight of the load may overcome the counterbalance effect and cause the load and the forklift to tip forward.



Comparison between a Conventional Forklift and a Moffett Truck mounted Forklift

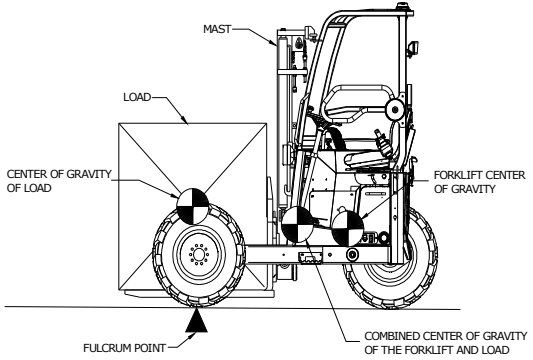
Moffett Truck mounted Forklift

An important feature of the Moffett Truck mounted Forklift is that it is light enough to be transported on the rear of the truck or trailer. Unlike a conventional forklift, it does not have a rear-mounted counterweight. The Moffett Truck mounted Forklift has a reach device and hydraulic stabilizers. With the stabilizers raised the fulcrum point is at the front wheel.

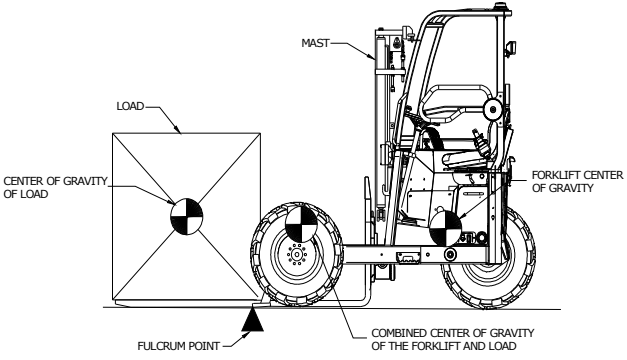
When the stabilizers are fully lowered, the fulcrum point moves forward to the point of contact between the stabilizers and the ground.

This action increases the counterbalance effect and enables the Moffett Truck mounted Forklift to lift the rated capacity with the reach device in the forward position without the need for a large counterweight.

When placing a load, the stabilizers must always be fully lowered before the reach device is extended. When lifting a load, the stabilizers must be fully lowered and raised only after the reach device is retracted fully. When carrying a load, the reach device must always be retracted fully.



STABILISERS RAISED



STABILISERS LOWERED

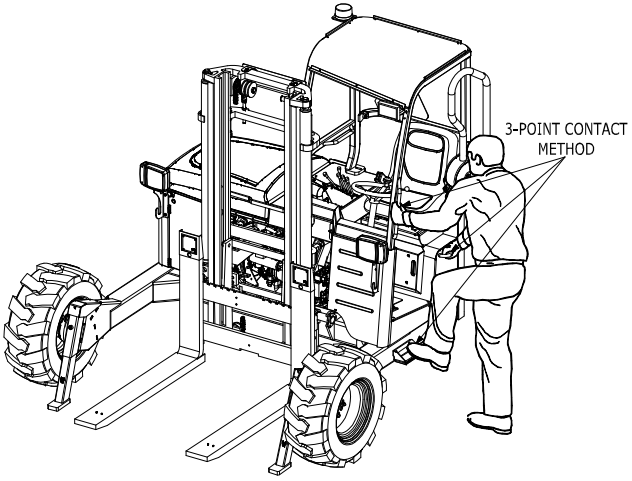
Using the Machine

Before Using the Machine
Before you begin to operate the Moffett Truck mounted Forklift you must have read and understand and follow all the information in this manual, be familiar with the machine and be trained and authorized to use it. Each day you operate the machine; complete all of the daily inspection checks as detailed in the MAINTENANCE section of this operator manual.

Entering the Operator's Compartment
Always climb aboard the vehicle properly. Use the "three point contact" method and face the machine when you climb aboard or dismount the Moffett Truck mounted Forklift. "Three point contact" means that 3 out of 4 arms and legs are in contact with the machine at all times during mount and dismount. Clean your shoes and wipe your hands before climbing on. Use the grab-handles and step when climbing on or off. Do not use the side guard as a grab-handle. Make sure the side guard is secured before mounting or dismounting. Never climb aboard or dismount when the engine is running or when the machine is moving. Never use the control levers or the steering wheel as a hand-hold when climbing on or off the Moffett Truck mounted Forklift.

WARNING:

Engine. Never climb aboard or dismount from the machine with the engine running.



Using the Machine (continued)

DANGER:

Power Lines. Never approach power lines with any part of the forklift as electrocution could result.

WARNING:

Operator Manual. Operating or maintaining the machine without studying this operator manual can cause accidents. Read the safety instructions before operating this machine. If you do not understand anything, ask your Moffett Truck mounted Forklift Distributor or supervisor to explain it. Keep this operator manual clean and in good condition. Do not operate the machine without an operator manual in the operator's compartment, or if there is anything on the machine you do not understand.

WARNING:

Care and Alertness. All the time you are working with or on the machine, take care and stay alert. Always be careful. Always be aware of potential hazards.

WARNING:

Alcohol and Drugs. It is extremely dangerous to operate machinery when under the influence of alcohol or drugs. Do not consume alcoholic drinks or take drugs before or while operating the machine or attachments. Be aware of medicines which can cause drowsiness.

WARNING:

Working Environment: Remember that rain, snow, ice, mud, loose gravel and uneven or soft ground could change the operating capabilities and could cause you to lose control or cause the forklift to tip over.

WARNING:

Seatbelt. The operator's compartment is designed to give you protection in an accident. If you do not wear your seatbelt you could be thrown out of the machine. You must wear a seatbelt when using the machine. Fasten the seatbelt before starting the machine.

Using the Machine (continued)

WARNING:

Machine Condition. A defective machine can cause accidents. Do not operate a machine which is defective or has missing parts. Make sure the maintenance procedures in this operator manual are completed before using the machine.

WARNING:

Visibility. Accidents can be caused by working in poor visibility. Use the work lights on the machine to improve visibility. Do not operate the machine if you cannot see properly.

WARNING:

Practice. Do not perform unfamiliar operations without first practicing them. Practice away from the work site on a clear area. Keep other people away. Do not perform new operations until you can do them safely.

WARNING:

Controls. You or others can be killed or seriously injured if you control the machine from outside the operator's compartment. Operate the control levers only when you are correctly seated inside the operator's compartment with the seatbelt fastened.

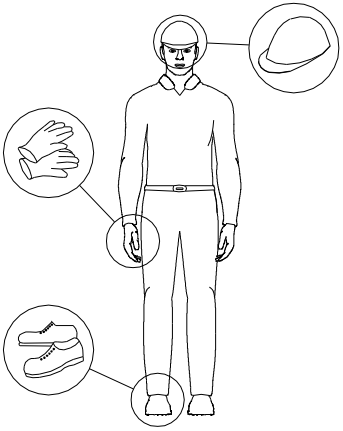
WARNING:

Passengers. Passengers in or on the machine can cause accidents. The Moffett Truck mounted Forklift is a one person machine. Do not carry passengers.

Using the Machine (continued)

WARNING:

Clothing. Loose clothing can get caught in the machinery. Wear protective clothing to suit the job. Examples of protective clothing are; a hard hat, safety shoes, safety glasses, a well-fitting overall, ear protectors and industrial gloves. Keep cuffs fastened. Do not wear a neck tie or scarf. Keep long hair restrained.



CAUTION:

Regulations. Obey all laws, work site and local regulations which affect you and your machine.

CAUTION:

Hydraulic Function. Never continue to operate a hydraulic function lever after the function has reached the end of its travel.

Overhead Guard

The overhead guard is designed to give you protection in an accident. You must always wear your seatbelt and close the side guard or you could be thrown about inside the operator's compartment, or thrown out of the machine and crushed. Always fasten the seatbelt and close the side guard before starting the machine.

If the machine is involved in an accident, hold onto the steering wheel tightly, brace your feet and lean away from the impact. When the machine comes to a rest, switch the starter key to the OFF position, unfasten the seatbelt and exit the machine.

Never carry out any unauthorized alterations to the overhead guard, e.g. lowering the roof height, drilling or welding on brackets for a fire extinguisher, radio aerial or other equipment, without first having discussed the alteration with the engineering personnel at Cargotec Ireland's engineering department.

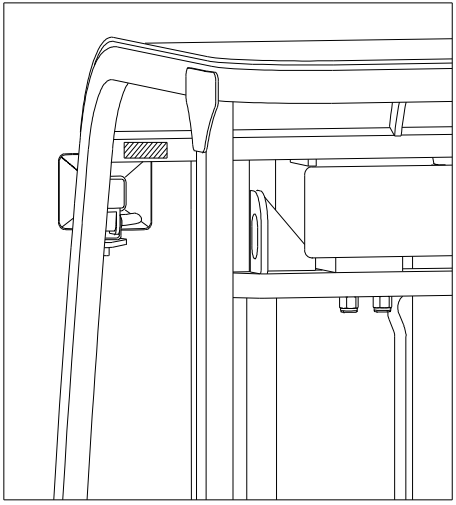
Any modification can adversely affect the structural integrity of the overhead guard and could cause the overhead guard to fail in the event of an accident.

Location of Overhead Guard Conformity Plate

Part No. 517.056.0001

This Overhead Guard Conforms To the ROPS & FOPS Requirements of ISO 6055 & ASME/ANSI B56.6

517.056.0001

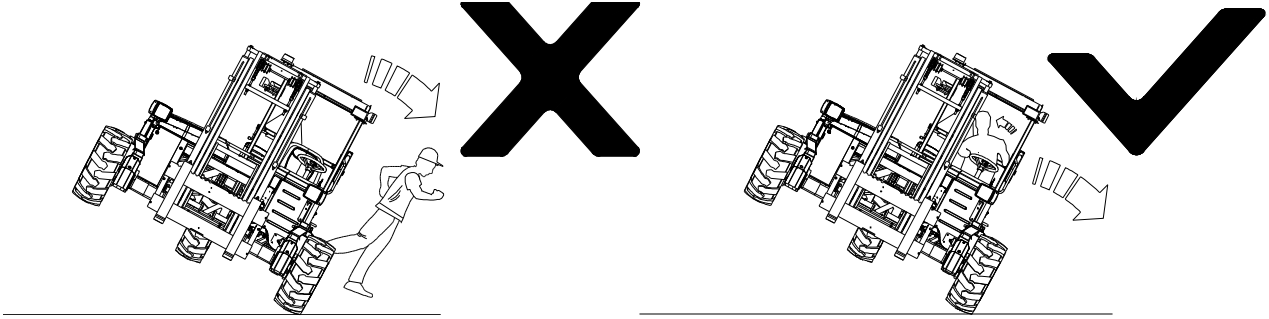


Rollover

DANGER:

Rollover. Any machine that is used to lift and move loads may tip over if not operated correctly. No matter how experienced the operator is, accidents can still happen if the operator does not remain vigilant. Always be aware of the potential danger involved when using the Moffett Truck mounted Forklift. Be aware of what action you MUST take if the machine starts to tip or roll over.

DO NOT ATTEMPT TO JUMP OUT – STAY IN THE MACHINE
HOLD TIGHTLY ONTO THE STEERING WHEEL – BRACE YOUR FEET
AND LEAN AWAY FROM THE IMPACT



WHEN THE MACHINE HAS COME TO REST – EXIT VIA THE SAFEST ROUTE

Using the Machine

Adjusting the Seat
The operator's seat can be adjusted for your comfort. A correctly adjusted seat will reduce operator fatigue. Position the seat so that you can comfortably reach the machine controls. Make sure that you can depress the foot controls fully with you back against the seat back.

Fasten the seatbelt and close the side guard before operating the Moffett Truck mounted Forklift.

WARNING:

Safety. Always wear your seatbelt when driving the Moffett Truck mounted Forklift. The forklift may tip over if operated incorrectly. In the event of a tip over, it is best to be held securely in the seat. The seat and seatbelt will help to keep you safely within the operator's compartment. In the event of a tip over, DO NOT JUMP, grip the steering wheel, brace your feet and lean away from the direction of tip-over and stay within the operator's compartment.

Seatbelt and Side Door Alarm (If fitted)
The seatbelt system now has an additional alarm option to improve operator safety. The machine has always been fitted with a seatbelt interlock which stops the machine from driving unless the seatbelt is connected and this has not changed. However, the machine is now fitted with an alarm which triggers if the seatbelt and side door are not engaged correctly.

Note: The alarm only sounds when the ignition switch is turned on however if the seatbelt is engaged correctly and the side door is down before the ignition is turned on no alarm will sound.

The Continuous alarm is linked to the Seatbelt and will sound if:

- Seatbelt is not connected when the operator is sitting in the seat.
- Seatbelt is engaged and nobody is in the seat
- Seatbelt is already engaged when the operator sits down on the seat.
- Seatbelt is engaged correctly then removed while driving the machine.
- If the operator leaves the seat for more than 3 seconds with seatbelt engaged (Note: short bounces off seat with seatbelt engaged will not trigger the alarm)

The Intermittent alarm is linked to the side door and will sound if:

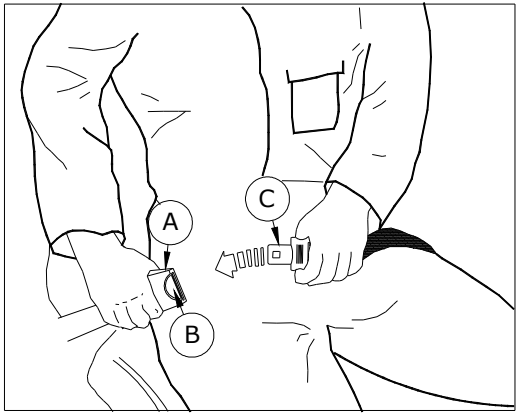
- Operator does not close the side door and the seatbelt is engaged.
- Side door is opened while driving the machine and the seatbelt is engaged.

Note: The continuous seatbelt alarm overrides the intermittent side door alarm so when the seatbelt is not connected the continuous alarm will sound but this will change to intermittent after the seatbelt is engaged.

WARNING:

Seatbelt. If the seatbelt does not 'lock' when fastened do not drive the machine. The seatbelt assembly must be replaced immediately.

1. Sit correctly in the seat. Make sure the seatbelt is not twisted. Push the male end **C** into the buckle **A** until it latches.
2. Make sure the seatbelt is across your hips and not over your stomach.
3. Press button **B** to release the seatbelt.



Note: The forklift will not drive unless the seatbelt is connected across the operator's hips.

Starting the Engine

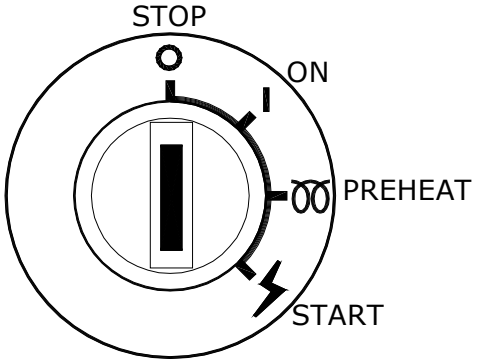
Start Safely
Adjust the seat, fasten the seatbelt and close the side guard. Ensure all operating controls including the forward/reverse lever or pedal and hydraulic levers are in the neutral position before starting. Use the engine heater to preheat the engine. Alert all people in the area before starting the machine. When starting your equipment in an enclosed space, make sure that there is adequate ventilation.

WARNING:

Engine Damage. Do not use starting fluid or spray as these are highly flammable, corrosive and cause engine damage.

Insert the key in the ignition. Turn the key clockwise to the preheat position and hold for approximately 6 seconds or until the preheat light goes out. Depress the accelerator pedal half way and turn the key until the starter engages and the engine starts. Do not engage the starter for any more than 10 seconds. Release the key and it automatically returns to the on position. If the engine fails to start, turn off the key for 30 seconds and repeat the starting procedure.

Note: If the engine does not catch or start at 10 seconds after the starter switch is set at the "STARTING" position, wait for another 30 seconds and then begin the engine starting sequence again. Do not allow the starter motor to run continuously for more than 20 seconds. If the engine is cranked excessively the starter motor may overheat.



After starting, check that all red instrument panel warnings lights have gone out and that all gauges are functioning properly. If all red warning lights have not gone out or illuminate during operation, stop the engine immediately. Do not attempt to operate the Moffett Truck mounted Forklift with a warning light on as serious damage could occur to the engine.

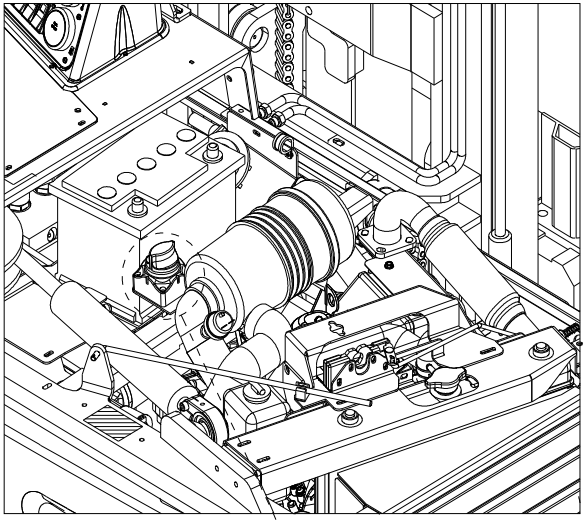
Battery Isolator Switch

Some Moffett Truck mounted Forklifts are fitted with a battery isolator switch. The battery isolator switch prevents the forklift battery from being drained when the machine is idle for long periods of time. This ensures there is always sufficient power in the battery to start the machine.

Ensure the battery isolator switch is set to the on position before attempting to start the Moffett Truck mounted Forklift, the engine will not start if the battery isolator switch is active. If your Moffett-Truck Mounted Forklift is to be left for a period of one week or more the battery isolator switch should be switched off.

WARNING:

Battery Isolator Switch. Do not activate the battery isolator switch when the engine is running as this could damage your engine.



Driving Techniques

Note: Before driving the machine, read this manual thoroughly and carry out a pre-trip inspection.

Driving Forward
When driving a loaded machine forward always accelerate smoothly and slowly. If you accelerate quickly or with jerky movements, the load could fall or the machine may become unstable. Keep the forks retracted and the load as low as possible. Always drive the machine slowly to avoid the risk of having to brake sharply. Always make sure your route is clear of obstructions and take care to avoid endangering pedestrians.

Reversing
When reversing, turn your head to face the direction of travel or get the assistance of a reliable person to guide you. Always make sure your route is clear of obstructions and take care to avoid endangering pedestrians. Always ensure the reverse beeper is functioning correctly and can be heard clearly by people around the machine.

Turning
The machine may become unstable if you turn too quickly or too sharply. Always turn slowly and smoothly. If you turn too quickly or too sharply the load could fall off or the machine could become unstable. Keep the load as low as possible.

The Moffett Truck mounted Forklift steers from the rear and can turn on a very tight radius. Tail swing and fork swing must be considered when turning. Always turn slowly and check for clearances at the fork tips and both rear corners of the forklift. When the machine turns, it rotates around either the right front or the left front wheel depending on the direction of the turn. Therefore, the operator must be aware of the unequal turning arcs relative to the offset seating position. When travelling empty with the reach device extended, fork swing is greatly increased.

Driving Techniques (continued)

Parking
Always park the Moffett Truck Mounted Forklift in a designated safe area. Apply the park brake. Lower the forks fully to the ground. Neutralize all controls. Switch off the ignition and remove the key. Chock the wheels if the vehicle is on uneven ground.
If parking on an incline, point the machine uphill, chock the front wheels and turn the rear wheel across the incline.

Note: For machines equipped with a brake on the rear hub, it is recommended that the stabilizers are lowered when parking the machine on an incline.

Park Brake Test
As part of the daily checks it is important to ensure that the machines park brake is working correctly. To check this, place rated load on the forks and drive the forklift on to a 15% incline. Apply the parking brake and set the forward/reverse pedal in the neutral position. The forklift should not move. Ensure no personnel are near the machine while carrying out this test.

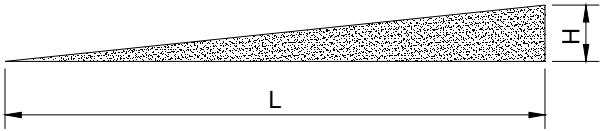
Note: IF A FAULT IS DETECTED DURING THE PARK BRAKE TEST, TAKE THE FORKLIFT OUT OF SERVICE, NOTIFY YOUR SUPERVISOR AND HAVE IT INSPECTED AND REPAIRED.

Operating On Inclines
The Moffett Truck Mounted Forklift is intended for use on firm, flat and stable surfaces. AVOID slopes and uneven or unstable surfaces where possible. However, when a job site conditions involves slopes, inclines or rough terrain, you must take additional care when operating the machine.

Grades
The grade of an incline is measured as the number of feet a surface rises or falls over a horizontal distance and is expressed as a percentage.

In the example shown below, the incline rises a height H over a horizontal distance L. This results in the incline having a grade of (H/L) * 100%.

INCLINE GRADE = (H/L) * 100%



Note: Ground conditions and terrain may affect the forklifts ability to operate on these inclines.

Driving Techniques (continued)

DANGER:

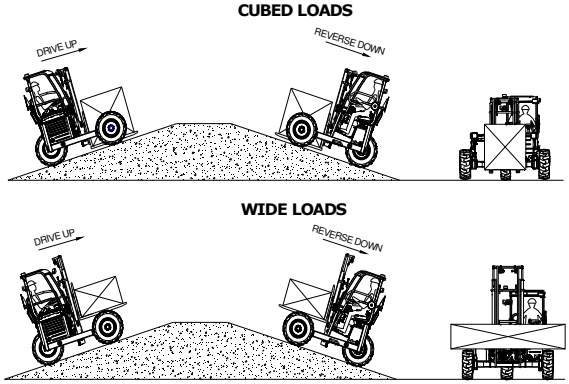
Inclines. Never travel across inclines. Travelling across an incline with or without a load greatly increases the possibility of a tip over.

- Do not travel across an incline.
- ALWAYS APPROACH AN INCLINE STRAIGHT ON AND TRAVEL UP AND DOWN THE INCLINE.
- Keep the forks pointed uphill.
- Always travel in reverse when descending an incline.
- Do not turn on an incline.
- Never stop or start suddenly.
- Operate all controls smoothly.
- Watch out for potholes or other obstacles that could affect the stability of the machine.
- Drive slowly over rough terrain.
- Where necessary, engage the diff-lock and travel slowly for additional traction.
- Do not attempt to reverse down an incline that you think you would have difficulty driving up.

Driving Techniques (continued)

Operating With a Load

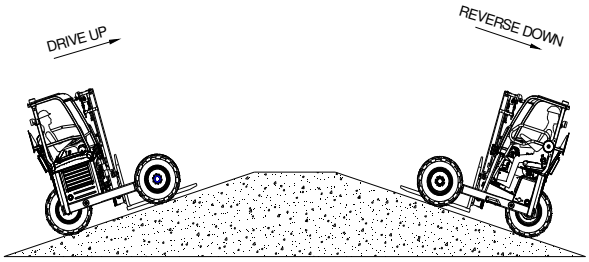
- Travel with the load and forks facing uphill.
- Never travel across a slope.
- Make allowances for a reduction in both stability and lift capacity when operating on inclines.
- Always travel with a cubed load within the frame.
- Always take great care when transporting wide loads on any incline. Carry the load as low as possible above the frame of the machine.
- Keep the reach device fully retracted.



Operating Without a Load

- Point the forks uphill on an incline.
- Keep the forks as low as possible.
- Remember that your safety is most important and should not be compromised. You are the operator and you are in control of your safety. Do not take any chances!

Always wear your seatbelt when driving the Moffett Truck mounted Forklift. The machine may tip over if operated incorrectly. In the event of a tip over, it is best to be held securely in the seat to protect you from the risk of serious injury or death.



Driving Techniques (continued)

WARNING:

Safety. Always wear your seatbelt when driving the Moffett Truck mounted Forklift. The forklift may tip over if operated incorrectly. In the event of a tip over, it is best to be held securely in the seat. The seat and seatbelt will help to keep you safely within the operator's compartment. In the event of a tip over, DO NOT JUMP, grip the steering wheel, brace your feet and lean away from the direction of tip-over and stay within the operator's compartment.

Rules for Driving on Public Roads

If the Moffett Truck Mounted Forklift is to be driven on public roads, be certain that all laws and regulations are obeyed. Make sure all operating and directional signal lights are functioning and visible.

When travelling on public roads or streets, obey all local traffic movement regulations.

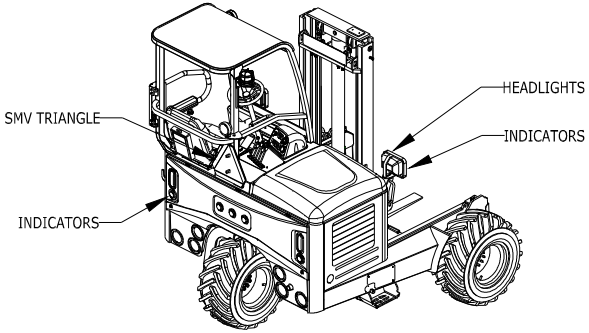
Approach intersections with caution, observe speed and traffic control signs. Do not speed. Avoid panic stops and sharp turns.

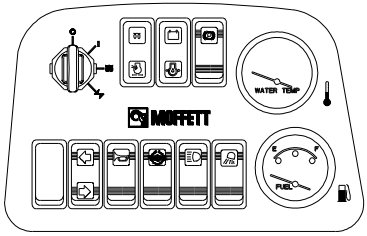
Slow Moving Vehicles

The machine is fitted with a slow moving vehicles triangle as shown, which is folded over so that it cannot be seen when truck mounted. Once the machine has been dismounted from the truck or trailer the slow moving vehicles triangle should be folded out and locked in place so that it clearly visible to all other road users. Once the delivery is complete and the Moffett is again mounted on the rear of the truck/trailer the slow moving vehicles triangle must be folded away so as not to confuse other drivers.

Road Lights
When the Moffett is on the road with the slow moving vehicles triangle folded out it is classed as a separate vehicle and not part of the truck or trailer, for this reason it must have its own set of road lights and indicators.
The road lights must be used when working during the hours of darkness and the indicators should be used the same as when operating any other road going vehicle to inform other road users of your intention to turn a corner. The lights are activated by the switches on the dash panel as shown:

Front and rear work lights; stop light, instrument lights, and front and rear turn signals with hazard flasher. Lighting is in accordance with SAE J99.





LEFT INDICATOR RIGHT INDICATOR

ROAD LIGHTS

Diff-Lock

Operation of Diff-Lock
Under normal driving conditions the Moffett Truck mounted Forklift operates in all-wheel drive. However, in the event of one or more wheels losing grip the machine may lose traction, stop or skid. By engaging the diff-lock you will get equal positive drive to all three wheels.

To avoid damage to the hydraulic system:
- Do not engage the diff-lock when the machine is moving.
- Do not use the diff-lock where traction is good.
- Do not use the diff-lock when turning corners.

When to Use Diff-Lock
- If one or more wheels lose traction while travelling through soft or slippery ground conditions.
- To maintain traction while travelling on slopes or inclines.
- To improve braking and traction when reversing downhill.

CAUTION:

Diff-Lock. Use the diff-lock only while travelling in a straight line.

How to Activate the Diff-Lock

1. Foot-Pedal Control
a) Return the forward/reverse pedal to the neutral position to stop the machine.
b) Check to see that the rear wheel is in the straight-ahead position.
c) Engage the diff-lock switch.
d) Increase the engine revs.
e) Depress the forward/reverse pedal lightly in the required direction.
f) Do not overload the engine.
g) The diff-lock may be released while the machine is in motion.

2. Automotive Type Control
a) Release the accelerator pedal to stop the machine.
b) Check to see that the rear wheel is in the straight-ahead position.
c) Engage the diff-lock switch.
d) Select forward or reverse.
e) Increase the engine RPM to move the machine.
f) Drive the machine slowly while the diff-lock is engaged.
g) The diff-lock may be released while the machine is in motion.

Stopping Procedure

When stopping the machine follow the sequence below:

- Lower the forks to the ground. Tilt the fork carriage so the tips of the forks touch the ground.
- Neutralize all hand control levers and pedals.
- Engage the park brake.
- Switch off the ignition and remove the key.
- Release the seatbelt.
- Open the side guard.
- Dismount using the 3-point contact method.

WARNING:

Controls. If the forward/reverse pedal does not return to the neutral position, do NOT use the machine and contact your supervisor.

WARNING:

Procedure. Never leave the operator's seat without first:

- Facing the machine uphill and turning the rear wheel sideways if stopped on an incline.
- Engaging the park brake.
- Lowering the forks to the ground.
- Placing all controls in the neutral position.
- Stopping the engine.
- Removing the key.

Loose Articles

Remove or secure all loose articles in the operator's compartment such as lunch boxes, tools etc.

WARNING:

Loose Articles. Do not leave loose articles in the operator's compartment. Loose articles can fall and strike you, or roll on the floor. You could be knocked unconscious, or the controls could get jammed. If that happens you could lose control of the machine.

CAUTION:

Safe Operation. If something comes loose, breaks or fails to operate:

- Stop.
- Apply the park brake.
- Shut down the engine.
- Get it repaired.

Basic Load Techniques

Travelling Without a Load

- Keep the reach device retracted and as low as possible.

Travelling With a Load

- Keep the reach device fully retracted when travelling.
- Lower the stabilizers fully before extending the reach device to place a load.
- When lifting a load, keep the stabilizers fully lowered until the reach device is fully retracted.
- Keep the load as low as possible.

Using Stabilizers

WARNING:

Stabilizers. When placing a load, always place the load on a firm and level surface. The stabilizers must always be fully lowered before attempting to extend the reach device. When lifting a load, the stabilizers must be fully lowered and raised only when the reach device is fully retracted. When travelling without a load, the reach device should be retracted fully.

DANGER:

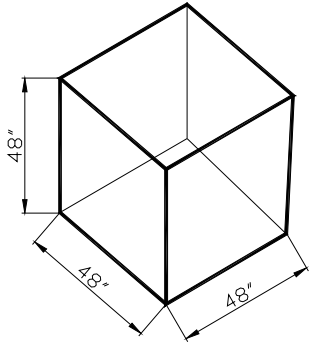
Stabilizers. Never raise the stabilizers when the reach device is extended with a load on.

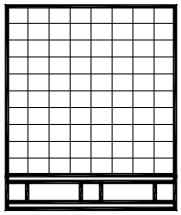
Note: When the ground is not firm enough to support the stabilizers extra support plates must be used of sufficient size and strength to ensure they do not sink, bend or buckle during operation. A second person may be required to check the support plates. If at any time the stabilizers or pads show signs of sinking, the procedure must be stopped immediately, the reach device fully retracted and an alternative location found. If in doubt prior to or during an operation on loose, uneven or soft surfaces, stop. Always consider safety first.

Lifting and Placing Loads

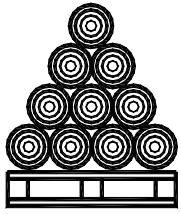
Cubed Loads
A cubed load is one that fits between the front wheels and the frame of the machine. To achieve maximum machine and load stability, the load should be carried with the reach device retracted and as low as possible between the frame of the machine at all times. Common types of cubed load would be bricks, blocks, bagged goods or turf grass.

Note: Make sure the load to be lifted is stable and secure. Check the weight and load center of the load to be lifted. If the weight is not marked or shown on the load, check the weight of the load with your supervisor or have it weighed. If it is too heavy, split the load and restack it.

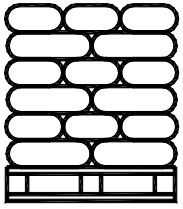




BRICK/STONE



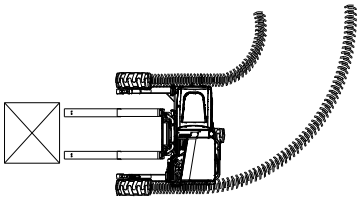
TURF GRASS



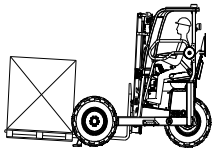
BAGGED GOODS

Lifting and Placing Loads (continued)

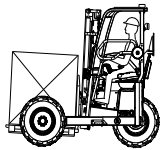
Lifting a Cubed Load from Ground Level



1. Align the forks to suit the load.
2. Approach the load squarely and drive slowly forward until the forks are fully engaged.
3. Check that the surface is strong enough to support the stabilizers. If not, place a metal or wooden support underneath which is strong enough to support the stabilizers.



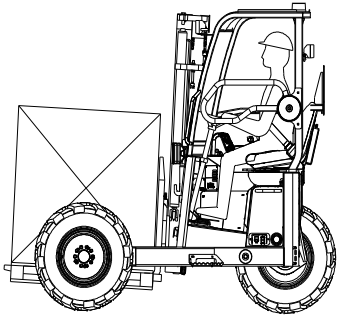
4. Lower the stabilizers fully.
5. Tilt the mast rearwards slightly to secure the load.
6. Raise the forks to lift the load.



7. Side-shift the mast to the center position if necessary.
8. Retract the reach device fully.
9. Raise the stabilizers fully.
10. Slowly drive away looking in the direction of travel, keeping the load as low as possible.

Lifting and Placing Loads (continued)

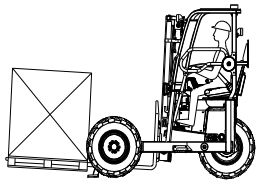
Travelling with a Cubed Load

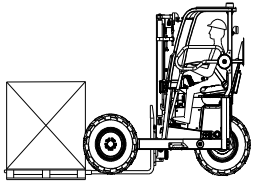


1. Carry the load as low as possible between the frame of the machine.
2. Keep the reach device retracted fully.
3. Tilt the mast back.
4. Do not side-shift the load while travelling or turning.
5. Use caution when starting or stopping. Drive slowly and avoid sudden movements.
6. Always look in the direction of travel.

Lifting and Placing Loads (continued)

Placing a Cubed Load at Ground Level





1. Check the area and be certain that the load can be safely placed.
2. Approach the placement area squarely.
3. Check that the surface is strong enough to support the stabilisers. If not, place a metal or wooden support underneath which is strong enough to support the stabilisers.
4. Lower the stabilisers fully.
5. Extend the reach device fully.
6. Lower the forks to the ground.

7. Tilt the mast forward slightly to deposit the load.
8. Raise the stabilisers fully.
9. Back up carefully until the forks are clear of the load.
10. Retract the forks fully.
11. Slowly drive away, looking in the direction of travel.

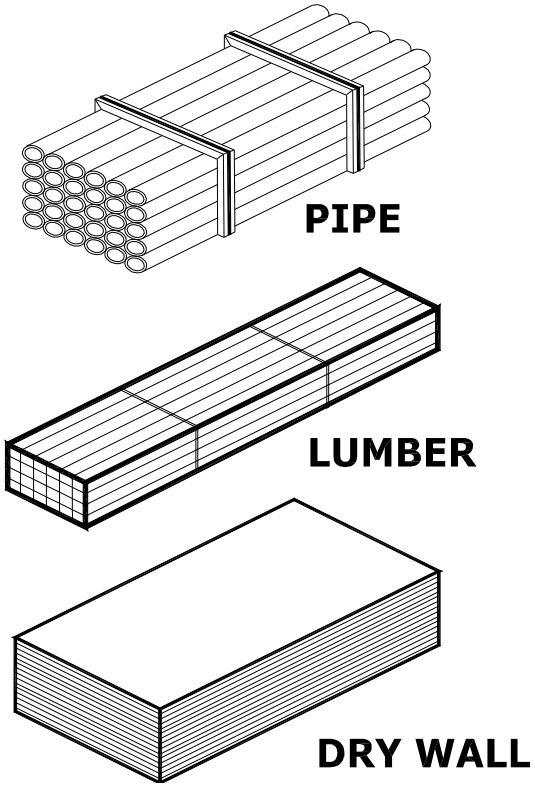
Lifting and Placing Loads (continued)

Wide Loads
A wide load is a load that will not fit between front wheels and frame of the forklift. Common types of wide load are piping or timber products.

Note: Make sure the load to be lifted is stable and secure. Check the weight and load center of the load to be lifted. If the weight is not marked or shown on the load, check the weight of the load with your supervisor or have it weighed. If it is too heavy, split the load and restack it.

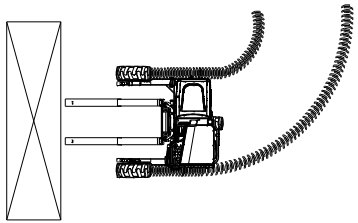
CAUTION:

Wide Loads. When carrying wide or tall loads your visibility may be blocked by the load. It may be safer to travel in reverse when moving with such loads. You may require a signal person or "spotter" to guide you. If the street lights are blocked by the load, the work lights must be used to improve visibility and ensure you are seen by other road users.

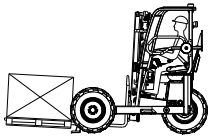


Lifting and Placing Loads (continued)

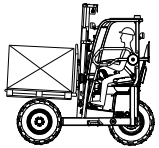
Lifting a Wide Load



1. Approach the load to be lifted.
2. Extend the reach device fully.
3. Align the forks to suit the load.
4. Approach the load squarely until the forks are fully engaged.



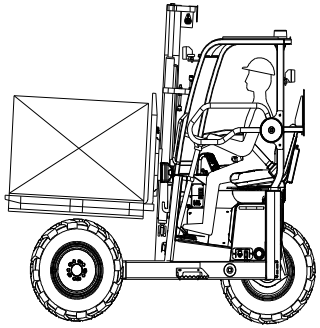
5. Check that the surface is strong enough to support the stabilizers. If not, place a metal or wooden support underneath which is strong enough to support the stabilisers.
6. Lower the stabilizers fully.
7. Tilt the mast rearwards to secure the load.
8. Raise the load to clear the ground.



9. Raise the load to clear the frame and wheels of the forklift.
10. Side-shift the mast to the center position if necessary.
11. Retract the reach device fully to bring the load above the front wheels.
12. Raise the stabilizers fully.
13. Slowly drive away looking in the direction of travel, keeping the load as low as possible.

Lifting and Placing Loads (continued)

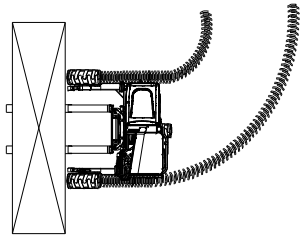
Travelling with a Wide Load

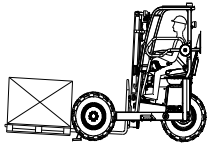


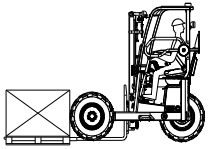
1. Carry the load as low as possible above the frame of the machine.
2. Keep the reach device retracted fully.
3. Tilt the mast back.
4. Do not side-shift the load while travelling or turning.
5. Use caution when starting or stopping. Drive slowly and avoid sudden movements.
6. Always look in the direction of travel.

Lifting and Placing Loads (continued)

Placing a Wide Load







1. Check that the area is clear of debris.
2. Approach the placement area squarely.
3. Stop and side-shift the load if necessary to align it with the final resting position.
4. Check that the surface is strong enough to support the stabilizers. If not, place a metal or wooden support underneath, strong enough to support them.

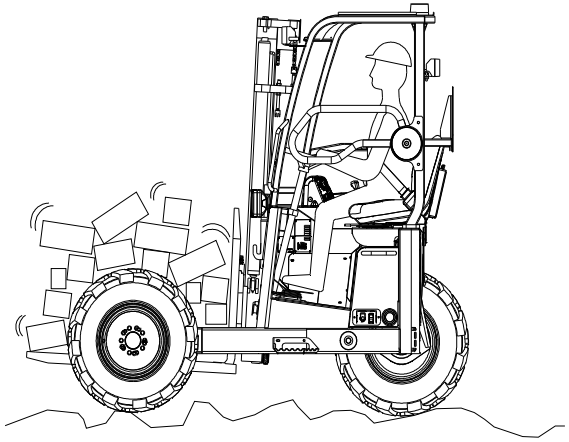
5. Lower the stabilizers fully.
6. Extend the reach device fully to clear the frame and wheels of the machine.
7. Lower the forks to the ground.

8. Tilt the mast forward slightly to deposit the load.
9. Raise the stabilizers fully.
10. Back up carefully.
11. Slowly drive away looking in the direction of travel, keeping the reach device retracted fully.

Lifting and Placing Loads (continued)

Non Palletized or Loose Loads

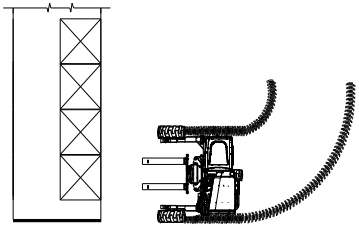
- Use skids when necessary to allow insertion of the forks beneath the load.
- Do not allow the skids to interfere with the fork placement.
- Secure loose loads to prevent them from falling or shifting.
- Consult your supervisor before attempting to secure a loose load.
- Never attempt to handle a load which has been poorly wrapped or banded as it could injure you or others working around you.
- Follow the same procedure for handling cubed or wide loads when lifting or placing non-palletized or loose loads.

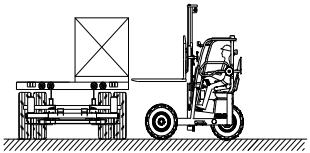


Lifting and Placing Loads (continued)

Loads above Ground Level
These techniques apply to:
- Stacking one load on top of another.
- Loading a truck or trailer.
- Unloading a truck or trailer.

Picking Up a Load above Ground Level (E.g. Unloading a Trailer)

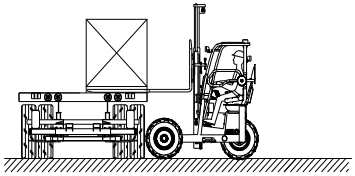




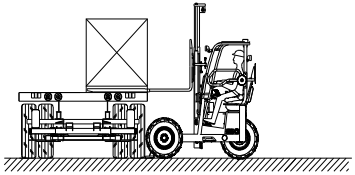
1. Check the weight and load center of the load to be lifted. If the weight is not marked or shown on the load, check the weight of the load with your supervisor or have it weighed. If it is too heavy, split the load and restack it.

2. Adjust the fork height to suit the load.
3. Centre the forks and approach the load squarely.

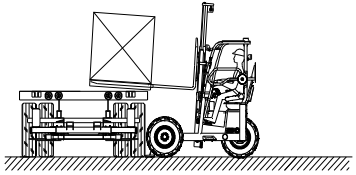
Lifting and Placing Loads (continued)



4. Extend the reach device until the forks are fully engaged.
5. Do not touch the pick–up area with the mast.
6. Side-shift the mast to center the load on the forks.

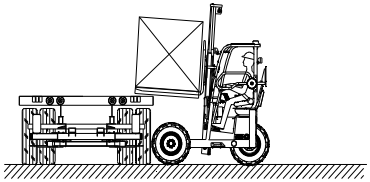


7. Check that the surface is strong enough to support the stabilizers. If not, place a metal or wooden support underneath, strong enough to support them.
8. Lower the stabilizers fully.

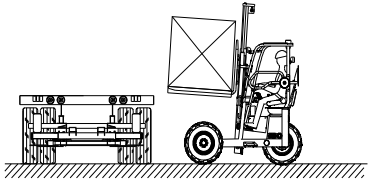


9. If it is not possible to engage the forks fully, follow the procedure outlined in the section titled Double Forking until the forks are fully engaged.
10. Raise the forks to lift the load clear of the pick-up area.
11. Tilt the mast rearwards to make the load more stable.
12. If necessary, raise the load to clear the frame of the machine.

Lifting and Placing Loads (continued)



13. Retract the reach device fully.
14. Raise the stabilizers fully.



15. Check behind and back up slightly to clear the pick-up area.
16. Never man oeuvre or turn with a raised load.

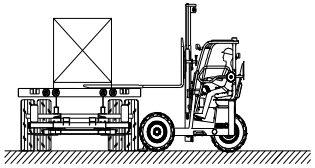
17. Lower the load as close to the ground as possible.
18. Slowly drive away, looking in the direction of travel.

Lifting and Placing Loads (continued)

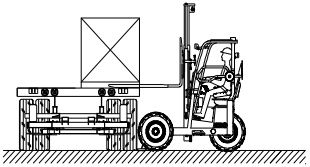
Double Forking

If it is not possible to engage the forks fully when lifting the load from a truck or trailer, it will be necessary to move the load to the edge of the body of the vehicle before picking it up. This is known as Double Forking. Remember that the lift capacity of the machine is reduced if the forks are not fully engaged.

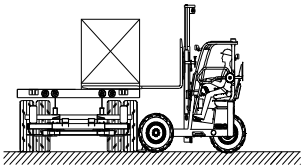
To Double Fork the Load



1. Raise the load slightly and retract the reach device sufficiently to bring the load out to the edge of the vehicle body.



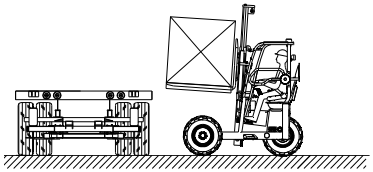
2. Lower the load back on to the vehicle body and fully engage the forks by moving the reach device forward again.



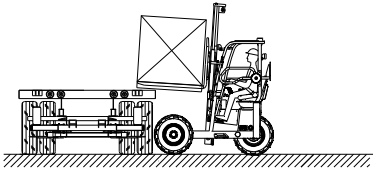
3. The load is now ready to be lifted.

Lifting and Placing Loads (continued)

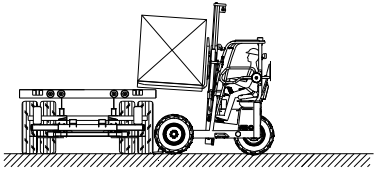
Placing or Stacking a Load above Ground Level



1. Approach the landing area squarely and with care.
2. Side-shift the load if necessary.
3. Raise the load above the level of the landing area or trailer.

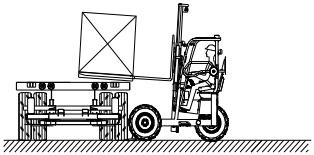


4. Drive forward carefully and make certain that the front of the machine does not hit the landing area or trailer.

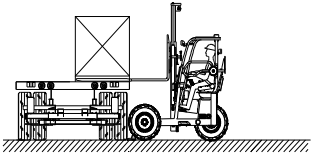


5. Check that the surface is strong enough to support the stabilizers.
6. Lower the stabilizers fully.

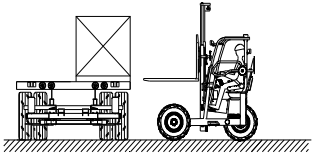
Lifting and Placing Loads (continued)



7. Extend the reach device fully until the load is directly above the landing area or trailer.
8. Lower the load carefully.



9. Tilt the mast forward to position the load and place it on the resting area.
10. Retract the reach device.
11. Raise the stabilizers slowly.



12. Back up cautiously to clear the load and landing area.
13. Lower the forks as low as possible to the ground.

14. Slowly drive away, looking in the direction of travel.

Lifting and Placing Loads (continued)

WARNING:

Loading. Before attempting to load a truck or trailer, chock the wheels of the truck/trailer to prevent it moving. Always lower the stabilizers fully before attempting to pick-up a load from a truck or trailer.

WARNING:

Stabilizers. When lowering the stabilizers, make certain the ground is sufficiently firm to support the stabilizers. On loose or uneven soil, it may be necessary to place flat wooden or metal supports beneath the stabilizers.

Additional Precautions when Placing a Load above Ground Level

- Where visibility is restricted, use a signal person.
- Make certain that the landing area is of sufficient strength to carry the load.
- Check that the landing area is level and clear of debris.
- Never side-shift with a raised load. The stability of the Moffett Truck mounted Forklift will be compromised and the machine may tip over.
- Always move controls in a smooth, steady manner. Do not force a hydraulic cylinder to the end of its stroke as the resulting jolt could spill the load.
- Under no circumstances should a load be placed on or lifted from a scaffold platform.

5. MOUNTING PROCEDURES

Introduction

The Moffett Truck Mounted Forklift is designed to be transported on the rear of a truck or trailer.
The mounting procedure shown in this manual is for a conventional mounting kit. Also shown in this manual are the mounting procedures for machines equipped with the optional Ground Mount system.
If your Moffett Truck mounted Forklift is being mounted using a mounting kit other than the one shown here, please contact your Moffett Truck mounted Forklift dealer for the correct procedure to follow when mounting.
Most Moffett mounting kits can be modified to accept different truck mounted forklifts from the range of machines. Contact your Moffett distributor for more details.

DANGER:

Transport. A Cargotec Ireland approved mounting kit must be fitted to your vehicle for transporting the Moffett Truck Mounted Forklift. Contact your Moffett Truck Mounted Forklift distributor for further details of approved mounting kits.

Based on the specification of your machine, there are two possible Ground Assist systems used that help the operator mount/dismount the machine more safely and efficiently

Ground Start – Aids Mounting and Dismounting
The Ground Start system enables the operator to start Truck Mounted Forklift via a remote ignition located on the side of the machine; this is known as "Safe Start" mode. When in "Safe Start" mode, by pressing the top of the Ground Start button, enables the forklift to be raised sufficiently to clear the sliding boxes and by pressing the bottom of the Ground Start button to power down the forklift down onto the sliding boxes and lock in position.

Ground Mount (Optional)
The Ground Mount system is an option that includes the function of Ground Start, but also enables the Truck Mounted Forklift to be mounted by using a four button remote control. This extra functionality allows the forklift to be raised and lowered, and also the reach device to be extended/retracted meaning that the operator never needs to enter the operator's compartment during the mounting/dismounting procedure. This function can only be used when the Truck Mounted Forklift is in "Safe Start" mode.

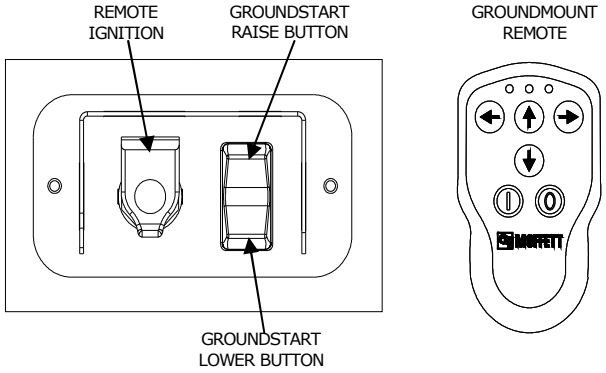
Safe Start Mode

To use the Ground Start or Ground Mount system, the Truck Mounted Forklift must be started in "Safe Start" mode. To enter "Safe Start" mode the operator must start the Truck Mounted Forklift from the remote ignition located on the side of the machine.

When in "Safe Start" mode, the back-up alarm will sound and the park brake is also applied which ensures the forward/reverse pedal is isolated preventing the drive circuit from being used.

WARNING:

Safety. Do not attempt to enter the operators compartment when the truck Mounted Forklift is in Safe Start mode.



Note: If for any reason the Ground Assist systems should not function correctly, it is still possible to mount/dismount the Moffett Truck Mounted Forklift manually by climbing aboard and operating the hydraulic levers as required.

5. MOUNTING PROCEDURES

Sliding Box Kit

Introduction

This section of the manual explains the mounting and dismounting procedures for a Sliding Box Kit equipped with a Ground Start system.
If your Moffett Truck mounted Forklift is being mounted using a mounting kit other than the one shown here, please contact your Moffett Truck mounted Forklift dealer for the correct procedure to follow when mounting.

DANGER:

Transport. A Cargotec Ireland approved mounting kit must be fitted to your vehicle for transporting the Moffett Truck Mounted Forklift. Contact your Moffett Truck Mounted Forklift distributor for further details of approved mounting kits.

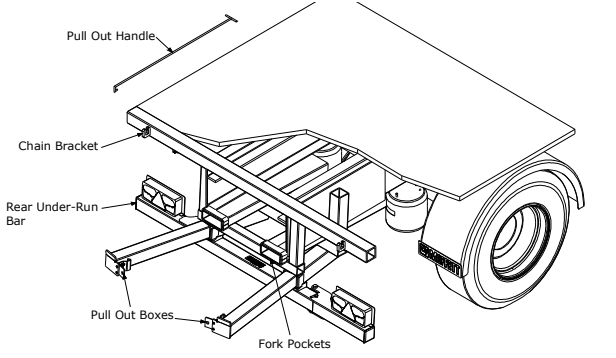
During transport the weight of the Moffett Truck mounted Forklift rests on the sliding boxes of the mounting kit. The machine is pressurised down onto the mounting kit and the safety chains do not carry the weight of the machine. The stop lights and directional signal lights of the truck or trailer are connected to the Moffett Truck mounted Forklift by means of an electrical cable (wiring pigtail).

WARNING:

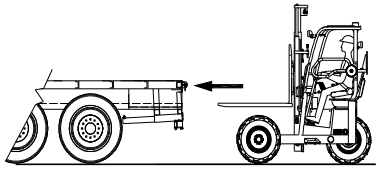
Transport. Do not attempt to transport the Moffett Truck mounted Forklift unless you have read the mounting section of the manual very carefully!

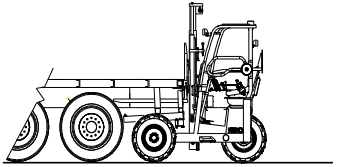
Most Moffett mounting kits can be modified to accept different truck mounted forklifts from the Moffett range of machines. Contact your Moffett distributor for more details.

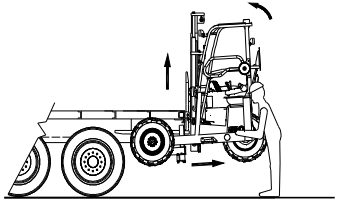
Note: When the Moffett Truck mounted Forklift is not on the mounting kit, the rear under-run protection bar **MUST** be folded out and pinned at all times ensuring the lights are visible at all times.



Mounting Procedure - Groundstart





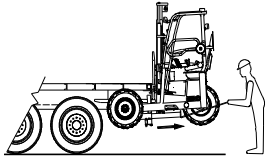


1. Fold in the ends of the rear bumper and pin in position on both sides.
2. Adjust the forks equally on the fork carriage to align them with the fork guides and ensure they are positively locked in place on the fork rail.
3. Carefully retract the telescopic legs. (If fitted)
4. Raise the forks to align them for entry between the fork guides.

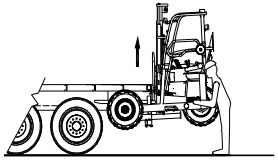
5. Drive slowly forward until the forks are fully engaged in the fork pockets.
6. On machines with folding legs extend the reach device enough to allow the wheels to clear the back of the truck/trailer. Raise the wheels to clear the ground, fold the legs to the mounting position (driver's side allowing access to ground start system). Retract the reach device.
7. Turn off the engine and remove the key.
8. Remove the seatbelt.
9. Open the side guard
10. Dismount using the three point contact method.
11. Pin folding legs in place to secure

12. Start the Truck Mounted Forklift in "Safe Start" via the remote ignition.
13. With the engine running and backup alarm audible the Groundstart buttons are now live.
14. Press and hold the Groundstart top button to raise and tilt the forklift until the bottom of the main crossmember of the forklift is slightly higher than the sliding supports.
15. Turn off the engine

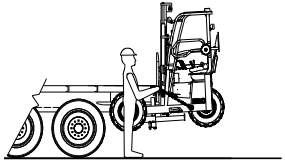
Mounting Procedure – Groundstart (continued)



16. Slide out the box sections of the mounting kit.



17. Start the Truck Mounted Forklift via remote ignition.
18. Press the Groundstart bottom button to power the forklift down onto the mounting kit
19. Turn off the engine and remove the key



20. Attach both transport chains securely to the rear of the truck or trailer and put the lock pins in place.
21. Connect the Suzie cable and check that all lights are functioning properly.
22. Tilt up driver's seat.
23. Fold up rear overhead guard bar and lock into position.

Mounting Procedure (continued)

CAUTION:

Electrical Connector. It is important to ensure the pigtail (Suzie socket) connector is fitted correctly and that the lights on the rear of the Moffett Truck mounted Forklift are functioning properly.

CAUTION:

Hydraulic Pressure. It is essential to keep the machine pressurised down onto the mounting kit. The safety chains do not carry the weight of the machine.

Note: Always ensure the park brake is off when mounting or dismounting the machine. Always wear your seatbelt, failure to do so will cause the park brake to automatically engage and make mounting difficult.

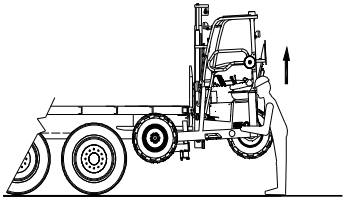
Note: Always remember:

- To lower the forklift you must raise the mast.
- To raise the forklift you must lower the mast.
- To tilt the forklift up you must tilt the mast back.
- To tilt the forklift down you must tilt the mast forward.

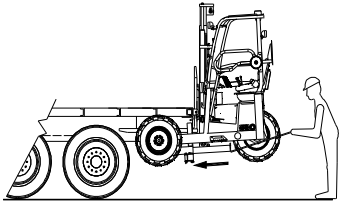
CAUTION:

Rear Under-Run Bar. The rear under-run bar must be folded back out to full length and the locking pin and lynch pin fitted when the forklift is not being transported or removed for the purposes of loading or unloading.

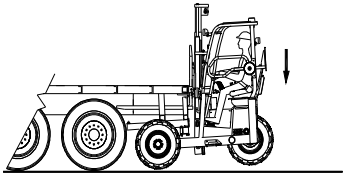
Dismounting Procedure – Groundstart



1. Disconnect the electrical cable and store in a safe place.
2. Start the Truck Mounted Forklift via remote ignition.
3. Press and hold the ground start top button to raise the forklift until the bottom of the main crossmember of the machine is slightly higher than the sliding supports.
4. Turn off the engine.

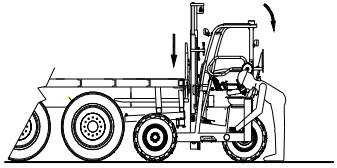


5. Slide the box sections in fully.
6. Remove both slackened transport chains from the rear of the truck or trailer and place them in the hooks provided.
7. Replace the pins and locks in the chain brackets.
8. Press the Groundstart bottom button to lower the forklift to the ground.

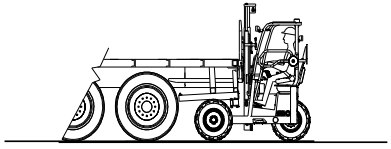


9. Machines with folding legs
10. Climb aboard the forklift using the 3-point contact method.
11. Close the side guard fully.
12. Fasten the seatbelt.
13. Start the engine.
14. Extend the forks to allow the wheels to clear the truck/trailer, fold the legs out and pin to secure.
15. Turn off the engine.

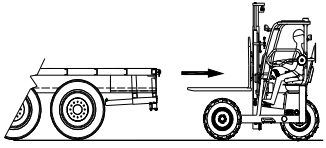
Dismounting Procedure - Groundstart (continued)



16. Dismount the forklift using the 3-point contact method.
17. Press the Groundstart bottom button to lower the forklift to the ground.



18. Climb aboard the forklift using the 3-point contact method
19. Close the side guard fully.
20. Fasten the seatbelt.
21. Start the engine.
22. Raise the mast slightly to clear the fork pockets.
23. Ensure the rear wheel is pointing straight ahead.



24. Back up slowly until the forks are fully clear of the front and rear guides.
25. Extend the telescopic legs (if fitted)
26. Lower the forks as low as possible and drive off, looking in the direction of travel.
27. The folding rear under-run bar should be extended and pinned on both sides.
28. Before load handling it may be necessary to adjust the forks to suit the load or pallet.

Dismounting Procedure - Groundstart (continued)

Note: Always ensure that all local and national laws are obeyed at all times. Make sure all operating and directional signal lights are functioning and visible. The rear under-run bar must be locked at full length when the forklift is not being transported.

Note: Always ensure the park brake is off when mounting or dismounting the machine. Always wear your seatbelt, failure to do so will cause the park brake to automatically engage.

DANGER:

Telescopic Legs. If your machine is equipped with telescopic legs, make sure the legs are extended before attempting to operate the machine. The legs should only be retracted when mounting the machine for transport.

Ground Mount Procedures

Introduction to Ground Mount System

The **Ground Mount** system enables the operator to mount and dismount the TMFL without having to climb on or off the machine when it is mounted at height.

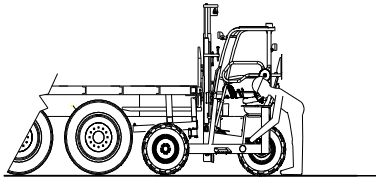
The system allows the operator to control a number of machine functions via a remote control handset.

The engine on the machine is used in "safe start" mode to create a low flow hydraulic feed which in turn is diverted to control the necessary hydraulic functions.

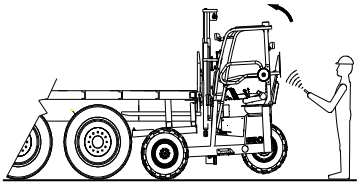
WARNING:

Working area. Due to the remote nature of this system extreme care must be used when starting the engine remotely and when operating the system to ensure that the machine and the area around the machine are clear of personnel

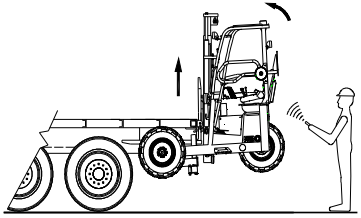
Note: If the machine is fitted with Ground Mount, always use the Lower N' Go or Ground Start functions for removing or tensioning the transport chains during the mounting or dismounting procedure.



Start the Engine



Raise the Machine



Engage the Mounting Kit

System Components

Handset
Each Ground Mount system is supplied with a handset which is used to activate the remote functions. The handset comprises a keypad with 6 buttons which are programmed to activate various functions on the Ground Mount system.

Receiver
The system uses a receiver box which is mounted in the rear of the machine. This box contains the switching relays and the antenna for the handset signal.

Hydraulics
The system uses hydraulic cartridge valves built into the valve bank which are solenoid operated. These valves are operated by the relays in the receiver box which in turn are activated by the handset.

Note: A spare handset should be supplied with all machines (marked "SPARE") if additional handsets are required for any reason they can be ordered and very simply programmed to match the receiver on the system.

Function of the System

The following is an overview of how to use the Ground Mount System.

Start Up – Safe Start Mode
The remote Ground Mount System is automatically activated once the Truck Mounted Forklift has been started with the remote ignition, this is known as "Safe Start" mode. The backup alarm is on during remote use and the park brake is also applied which ensures the forward/reverse pedal is isolated preventing the drive circuit from being used.

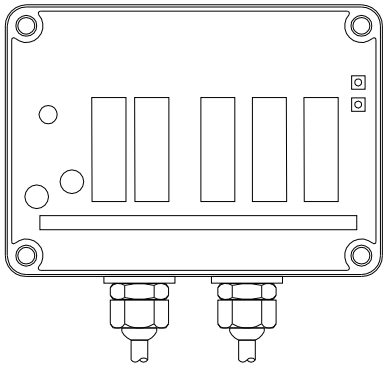
Programming Handset

If a replacement handset need to be programmed to the receiver then the following procedure needs to be followed:

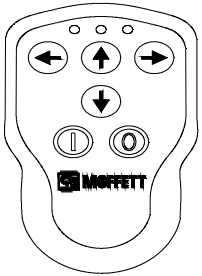
1. Turn on the new handset.
2. When the new handset is within 1metre of the machines receiver, turn the machines ignition onto the Accessories function.
3. Then Press and hold down Buttons ← and → for 5 seconds on the handset.
4. The new handset will now be stored on the receiver, and the old one 'pushed out' and will no longer be able to operate the receiver.

Note: The Handset sends a signal to the receiver to activate the remote functions on the machine. If problems are encountered then the handset batteries may need replacing (2x 1.5V Size AAA batteries).

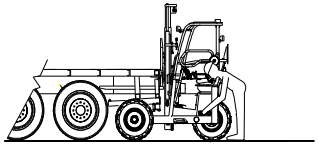
Receiver Unit

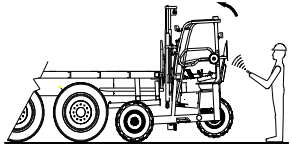


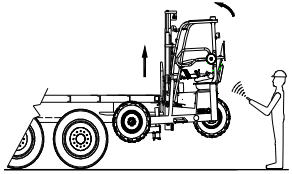
Handset



Ground Mount Handset Functions







Note: Arrows refer to the movement of the Truck Mounted Forklift.

Ground Mount Handset button functions are as follows:

Button "Out" ➡ Carriage Out – Extends the carriage to move the machine away from the truck or trailer.

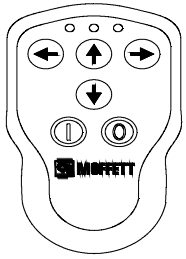
Button "Down" ⬇ Lower & Tilt – Lowers the machine and tilts backwards towards the ground.

Button "In" ⬅ Carriage In – Retracts the carriage to move the machine towards the truck or trailer.

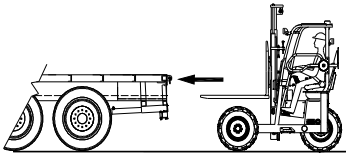
Button "Up" ⬆ Lift & Tilt – Raises the machine and tilts forward towards the truck or trailer.

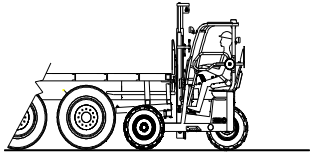
Button **I** Power ON.

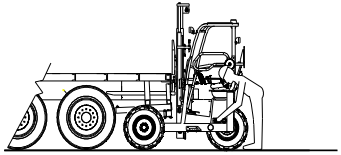
Button **O** Power OFF.



Mounting Procedure – Ground Mount





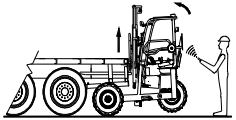


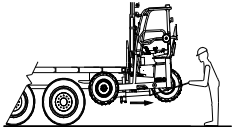
1. On trailers, the folding ICC bumper should be folded in and pinned on both sides.
2. Approach the rear of the truck or trailer slowly and squarely. Extend the mast fully and center the side-shift
3. Adjust the forks equally on the fork carriage to align them with the fork guides and ensure they are positively locked in place on the forkrail.
4. Raise the forks to align them for entry between the fork guides or below the fork bar.
5. Drive slowly forward until the forks are fully engaged between the front and rear fork supports in the mounting kit.
6. Turn the steering wheel to ensure the rear wheel is in the straight ahead position
7. Turn the engine off and remove the key.
8. Dismount using the three point contact method.

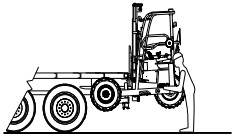
Note: Before using the Ground Mount remote system ensure the machine and the area around machine are clear of personnel.
Always double check all around your machine before starting the engine as you may not be able to see both sides from the remote engine start location next to the machine at ground level.

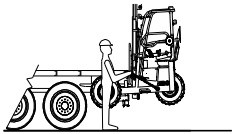
9. Stand on the ground next to the operator's compartment with the Remote Handset and start the Truck Mounted Forklift in "Safe Start" via the remote ignition.

Mounting Procedure – Ground Mount (continued)









10. With the engine running and the backup alarm audible, the buttons on the handset are now live.
11. Press and hold the "Up button" on the handset, to raise and tilt the forklift until the bottom of the main crossmember of the forklift is slightly higher than that the sliding supports.

12. Turn off the remote ignition.

13. Slide out the box section of the mounting kit.

14. Start the Truck Mounted Forklift via the remote ignition.
15. Press the Groundstart bottom button to power the forklift down onto the mounting kit.
16. Attach both transport chains securely to the rear of the truck or trailer and put the lock pins in place.
17. Connect the Suzie cable and check that all lights are functioning properly.

Mounting Procedure – Ground Mount (continued)

CAUTION:

Electrical Connector. It is important to ensure the electrical (electrical pigtail) connector is fitted correctly and that the lights on the rear of the Moffett Truck Mounted Forklift are functioning properly.

CAUTION:

Hydraulic Pressure. It is important to release the hydraulic pressure so that the weight of the Moffett Truck Mounted Forklift is carried by the mounting kit and transport chains and NOT by the mast. Otherwise damage will result from the forklift's weight resting on the mast.

CAUTION:

Rear Bumper. The rear bumper must be folded back out to full length and the locking pin and lynch pin fitted when the forklift is not being transported or removed for the purposes of loading or unloading.

CAUTION:

Working area. It is important to ensure the machine and the areas around the machine are clear of personnel before starting the engine or using the remote control mounting system.

Note: Always ensure the park brake is off when mounting or dismounting the machine. Always wear your seatbelt, failure to do so will cause the park brake to automatically engage and make mounting difficult.

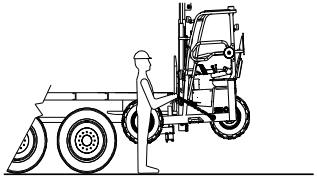
Note: Always remember:

- To lower the forklift you must raise the mast.
- To raise the forklift you must lower the mast.
- To tilt the forklift up you must tilt the mast back.
- To tilt the forklift down you must tilt the mast forward.

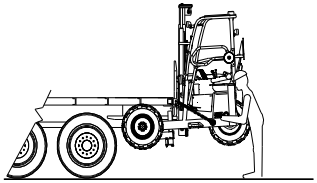
Note: Ensure that your vehicle complies with relevant federal, state and local laws and regulations.

Note: When the Truck Mounted Forklift has been started with the remote ignition, this is known as "Safe Start" mode. The backup alarm is on during remote use and the park brake is also applied which ensures the forward/reverse pedal is isolated preventing the drive circuit from being used.

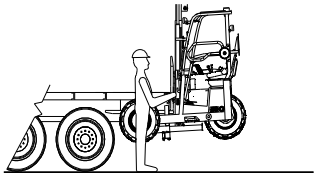
Dismounting Procedure – Ground Mount



1. Disconnect the electrical cable and store in a safe place.

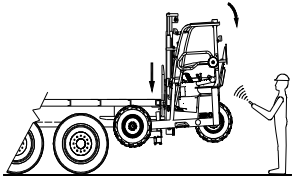


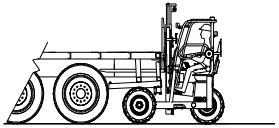
2. Start the Truck Mounted Forklift via the remote Ignition. The machine is now in "Safe Start" mode. Press and hold the top of the Ground Start button to activate the lift function. Observe that the forklift rises on the mounting kit and the chains become slack.

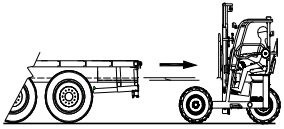


3. Remove both slackened transport chains from the rear of the truck or trailer and place them in the hooks provided.
4. Replace the pins and locks in the chain brackets

Dismounting Procedure – Ground Mount (continued)







Note: Before using the Ground Mount remote system ensure the machine and the area around machine are clear of personnel.
Always double check all around your machine before starting the engine as you may not be able to see both sides from the remote engine start location next to the machine at ground level.

5. Press and hold button the "Down button" to lower and tilt the machine until all wheels are on the ground.
6. Turn off the remote ignition and remove the key.

7. Open the side guard fully and climb aboard the forklift using the 3-point contact method.
8. Close the side guard fully and fasten the seatbelt.
9. Start the engine using the key.
10. Raise the mast slightly to pressurize the mast lift cylinder and to clear the fork brace. (This may take several seconds.)
11. Ensure the rear wheel is pointing straight ahead.

12. Check for pedestrians then back up slowly until the forks are fully clear of the front and rear guides.
13. Lower the forks as low as possible, keep the mast extended fully and drive off, looking in the direction of travel.
14. On trailers, the folding ICC bumper should be extended and pinned on both sides.
15. Before load handling it may be necessary to adjust the forks to suit the load or pallet.

Dismounting Procedure – Ground Mount (continued)

Note: Always ensure that all local and national laws are obeyed at all times. Make sure all operating and directional signal lights are functioning and visible. The rear bumper must be locked at full length when the forklift is not being transported.

Note: Always ensure the park brake is off when mounting or dismounting the machine. Always wear your seatbelt, failure to do so will cause the park brake to automatically engage.

Note: When the Truck Mounted Forklift has been started with the remote ignition, this is known as "Safe Start" mode. The backup alarm is on during remote use and the park brake is also applied which ensures the forward/reverse pedal is isolated preventing the drive circuit from being used.

Rules for Safe Transportation

When transporting the forklift on a truck or trailer, know the overall height to avoid coming in contact with overhead obstructions such as bridges, power lines etc.

DANGER:

Transport. Do not attempt to transport the Moffett Truck Mounted Forklift on a truck or trailer that is not equipped with a mounting kit designed and installed to Moffett Truck Mounted Forklift specifications.
When carrying a Moffett Truck Mounted Forklift, make certain that your vehicle complies with the relevant national and local laws and regulations regarding maximum vehicle weight, axle loading, overall vehicle length and overhang.

Note: Before mounting your machine on a truck or trailer ensure all relevant calculations have been carried out by an approved Moffett Truck Mounted Forklift Distributor.
Ensure an approved Moffett mounting kit is fitted to the truck or trailer and that it is suitable to mount the particular Moffett Truck Mounted Forklift.
All Moffett mounting kits must only be fitted by approved personnel.

Daily Maintenance

Before you begin your work-day, take time to check your machine and make certain that all its systems are in good operational condition.

- Check the engine oil level. Add oil if required (see section Engine Oil).
- Check the hydraulic oil level sight glass. The oil level must be between the red line (minimum) and the black line (maximum) when all hydraulic cylinders are in the closed position. Top up if necessary (see section Hydraulic Fluid).
- Check the fuel level and top up if necessary.
- Lift the engine cover and check the engine coolant level on the expansion bottle. Fill to the proper level if necessary. The proper coolant level is just below the radiator cap. Do not remove the radiator cap when the engine is hot. Escaping steam could cause severe burning (see section Engine Coolant).
- Check all hydraulic hoses and connections for wear or leaks.
- Check for broken, missing or damaged parts.
- Check the forks, mast and lift chains.
- Check the wheels for any damage or for missing or loose wheel nuts.
- Check the tires for cuts, bulges, tread depth and proper inflation pressure.
- Stroke all cylinders fully in and out and check for leaks. If the machine is parked up for a long period of time, ensure all cylinders are fully stroked on a regular basis.
- Check all lubrication and grease points as per the grease point charts. All grease points should be lubricated/greased at least once per week.
- If any parts are not ok contact your supervisor and do not use the forklift until it is properly repaired.

If operating in a dusty or sandy environment;

- Clean the engine air filter element and replace if necessary.
- Clean all dust etc. from between the radiator fins. Remove the filter mesh from the radiator and/or oil cooler where fitted and clean thoroughly. Where necessary, remove the radiator for proper cleaning.

CAUTION:

Temperature. Always turn off the engine and allow it to cool before checking:

- Engine coolant level
- Engine oil level
- Hydraulic oil level

Daily Maintenance (continued)

 **WARNING**:

Hydraulic Pressure. The hydraulic tank is pressurized and hydraulic oil may be hot. To avoid injury and spillage when removing the cap, stop the engine and remove the cap very slowly.

6. MAINTENANCE

Daily Pre-Shift Inspection Checklist

Visual Checks
The Moffett Truck mounted Forklift must be parked on a firm level surface in a SAFE ZONE with the keys removed and the park brake engaged. Starting at the operator's station, walk around the forklift and complete the following visual checks.
If defects are identified during the pre-shift visual inspection, notify your supervisor immediately.

1. **Decals –** Inspect all decals and the data plate. There should be no missing, damaged or faded decals on the forklift.
2. **Seat** – The seat must not be loose. The vinyl should not be torn. Inspect the seat to ensure the seat cushions and frame are secure. Inspect the seat to ensure the seat slides are functional, and check the latch mechanism for excessive play.
3. **Seatbelt** – The seatbelt should extend smoothly and retract fully. The seatbelt must not be frayed or worn. The latch must be fully functional.
4. **Steering Wheel** – The steering wheel should be free of cracks or damage. The steering knob should have no excess wear.
5. **Side Guard/Latch/Hinges** – The side guard should not have any cracks or bends. It must open and close smoothly. It must positively latch when closed. Under no circumstances should the side guard be removed.
6. **Overhead Guard** – The overhead guard must not be distorted, cracked or modified by drilling or welding.
7. **Operator Manual/Manual Box** - The Moffett Operator Manual must be kept in the manual box at all times.
8. **Hydraulic Level Oil Sight Gauge** - Check the hydraulic fluid level with all cylinders in the CLOSED position. Ensure that the maximum amount of oil is in the hydraulic tank. If it is below the minimum, it must be topped off ONLY with the proper hydraulic fluid. If top-off is required, remove the hydraulic cap slowly and carefully as the hydraulic tank is pressurized. If the hydraulic fluid is discolored, the hydraulic oil system should be inspected.
9. **Fuel Level** – Check the fuel level and top off if necessary. Do not overfill tank. Ensure that the seal on the inside of the fuel cap is not damaged.
10. **Valve Levers –** The valve levers should be clean and clear of debris.

Daily Pre-Shift Inspection Checklist (continued)

11. **Left Tilt Cylinder** - Check for leaks at the fittings and gland (where the cylinder rod extends and retracts). Check for scratches and nicks on the cylinder rod. Check the mounts for cracks on either end of the cylinder. Check for missing or loose bolts on the cylinder retaining pins at either end of the cylinder.
12. **Left Front Tire and Wheel** - Look for debris, mud, or binding behind and around the wheel. Ensure that there are no missing or loose wheel nuts. There should be no chunks, cuts, or excessive wear on the tire. Check the tire for proper inflation in accordance with the manufacturer's recommended tire pressure. Any tire with the body ply cords visible, or showing any signs of cuts, bulges or other signs of damage, should be replaced immediately. Look for bent or corroded rims.
13. **Side-Shift Cylinder** - Check for leaks at the fittings and gland (where the cylinder rod extends and retracts). Check for scratches and nicks on the cylinder rod. Check the mounts for cracks on either end of the cylinder. Check for missing or loose bolts on the cylinder retaining pins at either end of the cylinder.
14. **Left Side-Shift Pin** - Check for missing or loose bolts on either end.
15. **Left Stabilizer** - Check for damage and bends. Ensure the wear pads are intact. Adjust with shims if necessary.
16. **Left Fork** – Inspect the lock pins to ensure that they are functional and making positive engagement in the fork board. Check the top and bottom fork carriage mountings on the fork for cracks and wear. Check the fork for bends, cracks and surface wear horizontally (along the blade), vertically (along the shank), and at the heel. Ensure both forks are in the same level plane.
17. **Mast** - Check that the mast is not bent or has any debris on it. Check the bolts on the base of the mast cylinder for tightness.
18. **Mast Chains** – Check all mast chains. All chains should be lubricated. There should be no seized links or rotated connecting pins over the entire length of the chains. When the chains are without tension, ensure that they have equal slack, and that the slack is not excessive.
19. **Load Backrest (if fitted)** - The load backrest should not be bent or loose.
20. **Mast Lift Cylinder and Mounts** - Check for leaks at the fittings and gland (where the cylinder rod extends and retracts). Check for scratches and nicks on the cylinder rod. Check the mounts for cracks on either end of the cylinder. Check for missing or loose bolts on the cylinder retaining pins at either end of the cylinder.
21. **Hydraulic Hoses and Connections** - Observe any leaks or loose fittings. Look for oil spots on the ground where the forklift has been parked and on the frame of the forklift for the source of a leak.

Daily Pre-Shift Inspection Checklist (continued)

22. **Right Fork** – Inspect the lock pins to ensure that they are functional and making positive engagement in the fork board. Check the top and bottom fork carriage mountings on the fork for cracks and wear. Check the fork for bends, cracks and surface wear horizontally (along the blade), vertically (along the shank), and at the heel. Ensure both forks are in the same level plane.
23. **Right Side-Shift Pin** - Check for missing or loose bolts on either end.
24. **Right Stabilizer** - Check for damage and bends. Ensure the wear pads are intact. Adjust with shims if necessary.
25. **Right Front Tire and Wheel** - Look for debris, mud, or binding behind and around the wheel. Ensure that there are no missing or loose wheel nuts. There should be no chunks, cuts, or excessive wear on the tire. Check the tire for proper inflation in accordance with the manufacturer's recommended tire pressure. Any tire with the body ply cords visible, or showing any signs of cuts, bulges or other signs of damage, should be replaced immediately. Look for bent or corroded rims.
26. **Right Tilt Cylinder** - Check for leaks at the fittings and gland (where the cylinder rod extends and retracts). Check for scratches and nicks on the cylinder rod. Check the mounts for cracks on either end of the cylinder. Check for missing or loose bolts on the cylinder retaining pins at either end of the cylinder.
27. **Hood** – The top hood should have no broken latches or hinges.
28. **Engine Oil –** Remove the dipstick and clean with a cloth or paper. Reinsert it fully. Remove the dipstick again and observe the location of the oil mark. It should be between the minimum and maximum marks. If the oil mark is below the minimum level, it must be topped off. If the engine oil needs frequent topping off, the engine should be inspected for damage or leaks.
29. **Coolant –** The coolant should be no more than 25mm below the neck of the radiator. Do not attempt to remove the radiator cap if the engine is hot.
30. **Rear Steering Cylinder** - Check for leaks at the fittings and gland (where the cylinder rod extends and retracts). Check for scratches and nicks on the cylinder rod. Check the mounts for cracks on either end of the cylinder. Check for missing or loose bolts on the cylinder retaining pins at either end of the cylinder.

Daily Pre-Shift Inspection Checklist (continued)

31. **Rear Tire and Wheel** - Look for debris, mud, or binding behind and around the wheel. Ensure that there are no missing or loose wheel nuts. There should be no chunks, cuts, or excessive wear on the tire. Check the tire for proper inflation in accordance with the manufacturer's recommended tire pressure. Any tire with the body ply cords visible, or showing any signs of cuts, bulges or other signs of damage, should be replaced immediately. Look for bent or corroded rims.
32. **Rear Doors** – The rear doors should have no broken latches or hinges.

NOTE: IF DEFECTS ARE IDENTIFIED DURING THE PRE-SHIFT VISUAL INSPECTION, NOTIFY YOUR SUPERVISOR IMMEDIATELY.

Daily Pre-Shift Inspection Checklist (continued)

Operational Checks
Operational inspections are done by starting the engine, operating all controls, and test driving the Moffett Truck mounted Forklift. Never start the Moffett Truck mounted Forklift to perform the operational inspections if the visual inspection indicates an immediate safety hazard. Constantly monitor the gauges, listening for unusual noises, loose parts, fluid leaks, and unusual conditions. If a problem is suspected, take the forklift out of service and have it inspected and repaired.

1. **Noises/Emissions** – Listen for unusual noises and observe engine emissions at all times when operating the Moffett Truck mounted Forklift. If you suspect an engine or hydraulic problem during start up immediately shut down the forklift and contact your supervisor.
2. **Side Guard** – The side guard should open and close smoothly and should positively latch when in both the opened and closed positions. Check for cracks or excessive play in the side guard.
3. **Gauges and Indicators** – The engine oil light and the battery light should illuminate when the ignition is turned on. Both lights should extinguish when the engine is started. The preheat indicator (if equipped) should illuminate when preheating and go out after the engine is started. As the forklift is operated the temperature gauge should rise to the safe operating temperature. If the operating temperature reaches the upper end of the gauge, this indicates a problem and the forklift must be shut down. If the Moffett Truck mounted Forklift is difficult to start, have your supervisor arrange for an inspection of the glow plugs and starting system. If the lights do not go out after start up, or illuminate during the operation of the Moffett Truck Mounted Forklift, immediately shut down the forklift and report the situation to your supervisor. The air filter indicator should not be illuminated.

Daily Pre-Shift Inspection Checklist (continued)

4. **Pedals** – There are two pedals that need to be inspected – the accelerator pedal and the forward/reverse or inching/brake pedal.
   - **Accelerator Pedal** – Depress the accelerator pedal slowly and then return it to neutral. The engine should run smoothly. It should accelerate and decelerate to idle.
   - **(Anti-stall Drive) Forward/Reverse Pedal** – Fully depress the directional control pedal forward, and accelerate gently to test forward drive. Then fully depress the direction control pedal rearward and accelerate gently to test rearward drive. When you release the forward/reverse pedal, it should return to neutral and the forklift should come to an immediate stop.
   - **(Automotive) Forward/Reverse Lever and Inching/Brake Pedal** – Move the forward/reverse lever to the forward position and depress the accelerator pedal slowly. The forklift should respond accordingly. Depress the inching/brake pedal slowly to gradually bring the machine to a halt. Move the forward/reverse lever to the backwards position and depress the accelerator pedal slowly. The forklift should respond accordingly. Depress the inching/brake pedal slowly to gradually bring the machine to a halt.
5. **Seatbelt** – With the parking brake in the OFF position and the seatbelt unfastened the Moffett Truck mounted Forklift should not be able to drive in either the forward or reverse direction. With the parking brake in the OFF position and the seatbelt fastened ensure the machine will drive in both the forward and rearward direction.
6. **Seat Presence** (if fitted) - The seat presence alarm must be operational. The seat presence alarm should never be disconnected.

Daily Pre-Shift Inspection Checklist (continued)

7. **Valve Levers** - Cycle all controls fully and ensure that there is no free play in the valve levers. Look for jerking movement and listen for unusual noises. Never extend your head, arms or body into the mast or fork carriage. All levers should return to the center position (neutral) when released. Test the following levers with the forks low to the ground.
   - **Mast** – Ensure that the mast raises and lowers fully and smoothly. Lateral movement is an indication that the wear pads need adjusting or that there may be a broken roller.
   - **Reach Device** – Ensure that the reach device moves forward and backward fully and smoothly. There should be no binding or jerking.
   - **Tilt** – Tilt the mast fully forward and rearward. There should be no binding or jerking.
   - **Side-Shift** – Side-shift the mast fully left and fully right. There should be no binding or jerking.
   - **Stabilizers** – Ensure the stabilizers lower and raise fully.
8. **Park Brake** – Switch on the parking brake and attempt to drive forward and reverse. If the parking brake is functioning properly the Moffett Truck mounted Forklift should not move. It is also necessary to carry out a park brake test.
9. **Steering Response** – Drive the forklift making a complete left turn and a complete right turn. The steering should be responsive. There should be no excessive free play, jerking, binding, or unusual noises.
10. **Diff-Lock** – Engage the diff-lock and attempt to drive forward and reverse. There should be a noticeable drag on the engine to indicate that the diff-lock is functioning.
11. **Back-up Alarm** – The back-up alarm must be operational. The back-up alarm should NEVER be disconnected.
12. **Horn** – The horn should be operational. Do not operate the forklift if the horn does not work.
13. **Work Lights** – All the work lights should be operational.
14. **Road Lights –** All the road lights, flashers and turn signals should be operational.
15. **Strobe** – The strobe should be operational when the ignition is switched to the ON position.

NOTE: IF DEFECTS ARE IDENTIFIED DURING THE PRE-SHIFT OPERATIONAL CHECK, TAKE THE FORKLIFT OUT OF SERVICE, NOTIFY YOUR SUPERVISOR AND HAVE IT INSPECTED AND REPAIRED.

Daily Pre-Shift Inspection Checklist (continued)

Transport Checks
Transport inspections are done by inspecting the mounting kit and then mounting the Moffett Truck mounted Forklift onto a truck or trailer before making deliveries. Never attempt to mount the forklift to perform the transport inspections if the visual or operational inspections indicate immediate safety hazards. If a problem is suspected with the mounting kit or forklift, take the either the mounting kit or forklift out of service and have it inspected and repaired.

1. **Mounting Kit** – Check the mounting kit and chain hanger brackets for cracks and bends.
2. **Pins and Locks** – Ensure that the transport pins on either side are not worn and that both flip locks are working.
3. **Transport Chains** – Check for damaged or dislodged pins on the end shackles at either end of both chains. The bolts and lock nuts that retain the transport chains on either side of the Moffett Truck mounted Forklift should be in place. Mount the forklift on the rear of the truck or trailer. If any unusual noises, jerking, or binding are noticed, immediately lower the forklift to the ground and have it inspected by a forklift technician.
4. **Angle of Forklift to Ground and Ground Clearance (when mounted)** – The rear wheel should be 3° higher than the front wheels when mounted except when mounted in a top mount kit.
5. **Rear Lights (when mounted)** – All rear lights should be working:
   - Side marker (left and right) - 2
   - Turn - 2
   - Reverse - 1
   - Rear marker/brake - 2
   - Fog - 1
6. **Conspicuity Tape (when mounted)** – The conspicuity tape should be clean and intact. Ensure the conspicuity tape obeys all local and national legislation for the vehicle.

NOTE: IF DEFECTS ARE IDENTIFIED DURING THE PRE-SHIFT TRANSPORT CHECK, TAKE THE KIT OR FORKLIFT OUT OF SERVICE, NOTIFY YOUR SUPERVISOR AND HAVE IT INSPECTED AND REPAIRED.

Interlocking Seatbelt

Inspect the seatbelt regularly to check for damage and to make sure it functions properly mechanically and electrically.

WARNING:

Seatbelt. Failure to properly inspect and maintain the seatbelt can lead to a seatbelt failure in the event of an accident.
Any time the Moffett Truck mounted Forklift is being operated and is involved in an accident; the whole seatbelt assembly must be replaced. This is to ensure that if any unseen damage has occurred it is replaced.
If the seatbelt is worn or damaged it must be replaced.
The seatbelt must be inspected in detail at least once a year and more often if exposed to harsh conditions.
If replacement of any part of the seatbelt is required then the entire assembly must be replaced (retractor and buckle) with Cargotec Ireland recommended items from a service provider.

Inspection
The following guidelines detail how to inspect the seatbelt fitted to a Moffett Truck mounted Forklift:

1. **Webbing** - To check the webbing, pull the seatbelt completely out of the retractor and inspect the full length for deterioration. The seatbelt must be replaced if it has any signs of nicks, cuts or holes, is frayed or fluffed at the edges, shows excessive fading due to UV exposure, if the webbing is packed with dirt or if the stitching is frayed, insecure, incomplete or repaired.

2. **Buckle Operation** - Check the buckle for damage and check the latch for correct operation. Determine if the latch plate is excessively worn or deformed. Establish if the buckle is damaged or the casing is broken. Check the security and operation of the seatbelt by connecting the buckle and tongue and then trying to pull them apart. While pulling the buckle and tongue press the release button to ensure correct release. Make sure the button does not stick after release.

3. **Retractor** - Fully extend the webbing to determine if the retractor spools in and out correctly. All webbing must retract back fully into the retractor. When the webbing is quickly pulled from the retractor the belt should lock automatically.

Interlocking Seatbelt (continued)

4. **Connection to Forklift** - The seatbelt anchorage points should be checked to ensure all bolts are tight. Check the mounting plates are OK and in the case of the flexible cable type seatbelt, ensure that the cable is not broken or frayed.

5. **Electrical Connection** - The seatbelt is fitted with an electrical connection and wired to the machine. Check that the wire is not cut, pinched or damaged in any way and ensure when the seatbelt is disconnected that the machine will not drive.

If the inspection finds any damage, wear, or malfunction of the seatbelt, the complete unit must be replaced with Cargotec Ireland recommended equipment. The seatbelt fitted has been designed and tested specifically for the Moffett Truck mounted Forklift. Care must be taken when replacing parts to ensure that they are fitted correctly to maintain the integrity and function of the seatbelt system.

Note: The seatbelt must only be cleaned with warm soapy water; do not use chemical cleaners, bleach or dies. Contamination with fuel, grease or acid will damage the seatbelt. Do not make any modifications or additions to the seatbelt.

Service

In order to carry out a service/inspection of your Moffett Truck mounted Forklift it is important that the vehicle is first thoroughly cleaned. While doing so, please note the following points.

- Ensure that the engine is shut down prior to washing.
- Do not wash directly onto any bearings.
- Do not wash directly onto the mast chains, the mast chains must be cleaned using a kerosene-based cleaning agent and a brush. It is very important to remove all traces of the cleaning agent using an airline to blow dry the chains.
- Lubricate the chains immediately after cleaning.
- Take care when washing close to electrical connections.

WARNING:

Compressed Air. When using compressed air ensure that relevant personal protection equipment/safety equipment is used at all times. Adhere to all company/manufacturer safety information and guidelines.

Note: In regions that have extreme temperature changes, it may be necessary to change the hydraulic oil and engine oil to meet the ambient operating temperature as outlined in the fluid specification chart. Also in accordance with the operator manual, the air filter must be cleaned / changed more frequently if operated in dusty or sandy environment.

Note: In some cases your Moffett Truck mounted Forklift may not have enough running hours required for carrying out a routine service as indicated in the intervals in this manual, (i.e. the Moffett Truck mounted Forklift may only have 40 running hours in a 12 month period).
Cargotec Ireland recommends in these cases that the Moffett Truck mounted Forklift is inspected at least quarterly in each year. The type of service carried out depends on the environment that the machine is working in. It is very important to note that even though the Moffett Truck mounted Forklift may not be operated regularly it is carried on the rear of a truck/trailer and is subject to the harsh environment of driving on roads/motorways, i.e. road salt, rain, snow etc. If you require any additional service information and/or clarification of the above please contact your nearest Moffett Truck mounted Forklift service partner/dealer or Cargotec Ireland directly.

Service (continued)

In order to attain the full benefit and service from your Moffett Truck mounted Forklift, it is important that the following service information/service guidelines are fully adhered to at all times. Cargotec Ireland recommends servicing take place at the following intervals:

1. First service at 50hrs.
2. Next Service at 200 hours or 1 year and every subsequent 200 hour or 1 year intervals (200hrs, 400hrs, 600hrs, 800hrs / 1 year, 2 years, 3 years etc.).
3. Additional items required at 1000 hrs. or 2/3 years (Refer to table 2 for information, items marked with an * every 2 years and items marked with an ** every 3 years).

Table 2 shows all the items/operations that require attention/inspection at each service. Each operation has a code indicating the type of action required. Table 1 shows the codes and there relevant terminology.

Note: As well as these service items it is recommended that you carry out a through daily maintenance as outlined in this section.

CAUTION:

Maintenance. The maintenance section of this manual outlines the recommended preventative maintenance schedule. Always adhere to the recommended operating and maintenance procedures. Only trained, authorized and experienced personnel should be allowed to operate the Moffett Truck mounted Forklift. Service personnel should read and study this manual, the service manual, the preventative maintenance manual and parts manual in order to gain a thorough understanding of the unit prior to making any repairs. Exercise all necessary safety precautions when performing maintenance covered in the preventative maintenance manual. Ensure that the engine is switched off, the battery is disconnected and the engine and exhaust are cool.

Service (continued)

Table 1

Code	Operation
CH	Change
CK	Check
G	Grease
CL	Clean
A	Adjust

Table 2

Operation	First Service at 50 Hours	Next Service at 200 Hours or 1 Year and Every Additional 200 Hours or 1 Year	Additional Items Required at 1000 Hour or 2* Years/ 1000 Hours or 3** Years
Change the engine oil and the oil filter element	CH	CH	
Change the engine air filter element	CK	CH	
Change the inline and the main fuel element	CH	CH	
Change the hydraulic filter element – Naturally Aspirated Engines			CH*
Change the hydraulic in-tank filter elements –Naturally Aspirated Engines			CH*
Change the hydraulic oil – Naturally Aspirated Engines			CH*
Change the hydraulic filter element – Turbo Engines			CH**
Change the hydraulic in-tank filter elements – Turbo Engines			CH**
Change the hydraulic oil – Turbo Engines			CH**
Check/replenish the coolant	CK	CK	

Service (continued)

Operation	First Service at 50 Hours	Next Service at 200 Hours or 1 Year and Every Additional 200 Hours or 1 Year	Additional Items Required at 1000 Hour or 2* Years/ 1000 Hours or 3** Years
Check all bolts/nuts/fittings for tightness	CK/A	CK/A	
Check the fan belt tension	CK/A	CK/A	
Carry out electrical operational checks	CK	CK	
Carry out hydraulic operational checks	CK	CK	
Adjust and lubricate the lift chains	CK/A	CK/A	
Grease all moving parts manually at specific grease points	G	G	
Check all the wheel nuts for tightness (see Wheel Nut Specification Chart)	CK/A	CK/A	
Check all the mast/carriage bearings for operation/wear	CK/A	CK/A	
Check the rear arm bearings/bushings for operation/wear	CK/A	CK/A	
Check the condition of the tires/rims	CK	CK	
Check for play in the mast sections/carriage section	CK	CK	
Check the mast lift chains for wear/missing parts/elongation	CK/CH	CK/CH	
Check/inspect the condition of the forks	CK	CK	
Check/inspect condition of the seat/seatbelt/overhead guard/side guard	CK	CK	
Check/inspect the machine for all safety/functional decals	CK	CK	
Check the oil cooler operation (if fitted)	CK	CK	
Test drive the machine with/without weight	CK	CK	

Service (continued)

Operation	First Service at 50 Hours	Next Service at 200 Hours or 1 Year and Every Additional 200 Hours or 1 Year	Additional Items Required at 1000 Hour or 2* Years/ 1000 Hours or 3** Years
Check transport lights on the Moffett Truck mounted Forklift with parent truck/trailer	CK	CK	
Inspect the stabilizing chains for wear/missing/broken parts	CK	CK	
Check the engine idling speed	CK/A	CK/A	
Check/adjust the valve clearance on engine			CK/A*
Remove the radiator and clean all dust etc. from between the fins			CK/CL*
Check the electrical connections for corrosion	CK/CL/G	CK/CL/G	
Check the exhaust system	CK	CK	
Check the operation of the warning lights/gauges/horn	CK	CK	

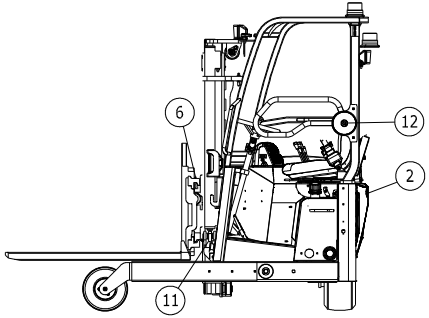
Grease Point Chart

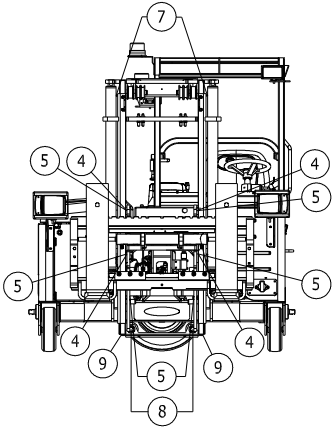
M36

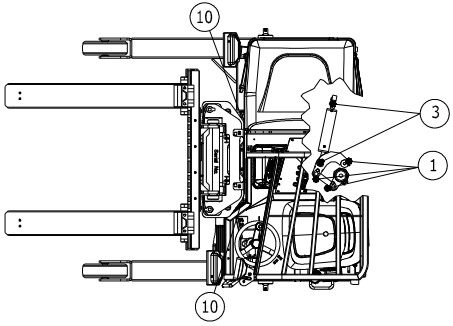
Note: Before greasing any points on the machine remove any old hardened grease that may prevent the flow of lubricant. Each item should be moved after the initial application of grease and greased again to ensure complete lubrication at each point.

ITEM	DESCRIPTION	No. OF POINTS	PAGE NUMBER
1	Steering Linkage	3	134
2	Spindle Housing	1	134
3	Steering Cylinder	2	134
4	Fork Carriage	4	135
5	Wide Side-Shift Fork Carriage	6	136
6	Side-Shift Upper Rail	4	137
7	Top Chain Rollers	2	138
8	Bottom Chain Rollers	2	138
9	Mast Pin	6	139
10	Tilt Cylinders	4	140
11	Lift Cylinders	2	141
12	Rotating Side Guard	1	142

Grease Point Chart (continued)

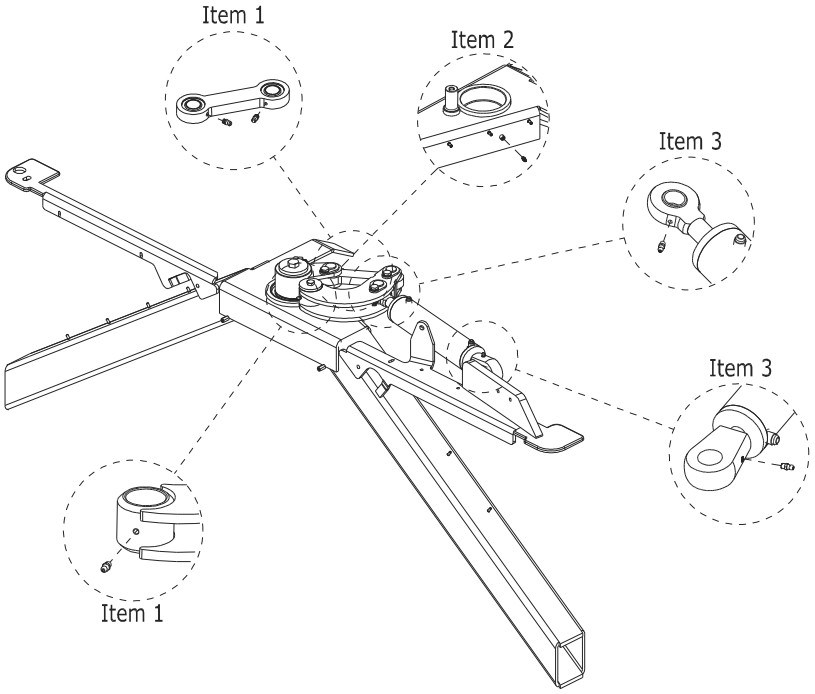






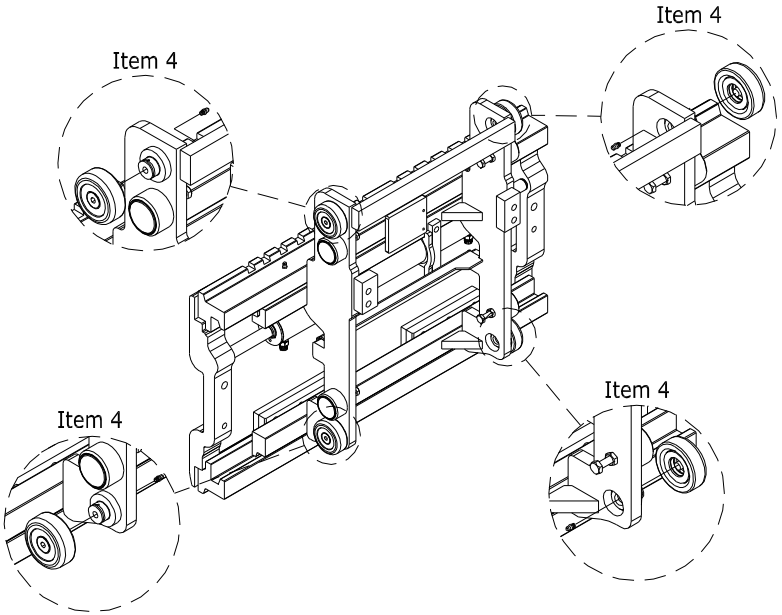
Grease Point Chart (continued)

Steering Linkage, Spindle Housing and Steering Cylinder Grease Points



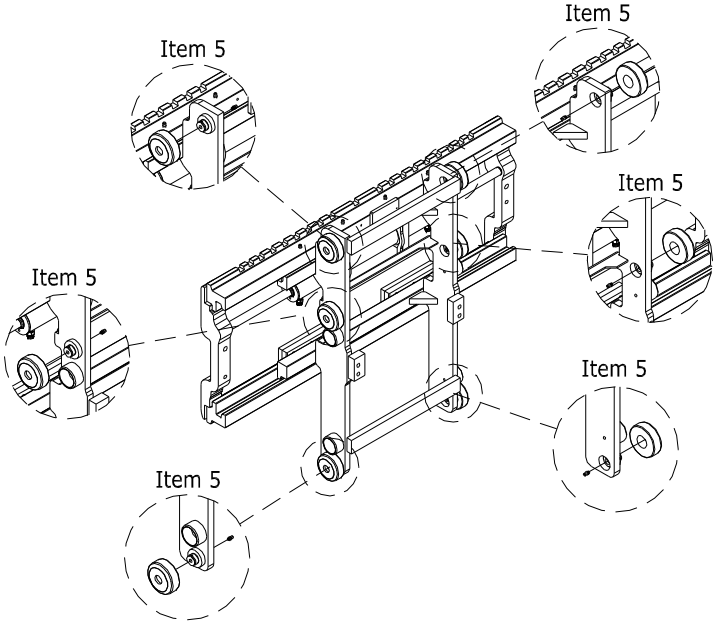
Grease Point Chart (continued)

Fork Carriage Grease Points



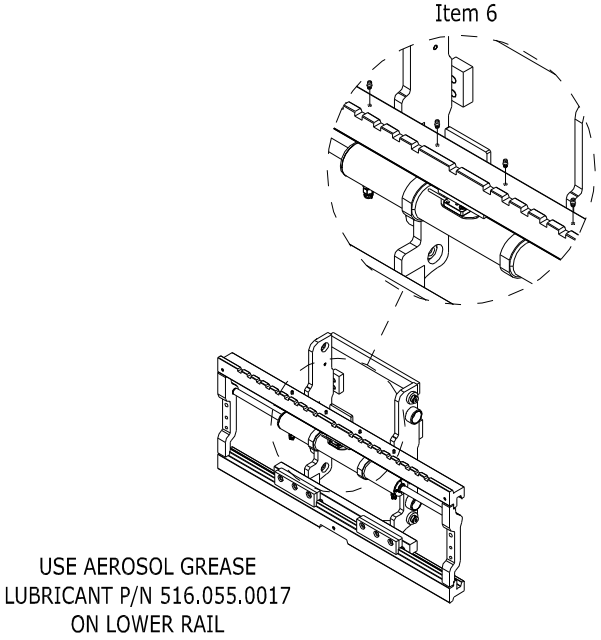
Grease Point Chart (continued)

Wide Side-Shift Fork Carriage Grease Points



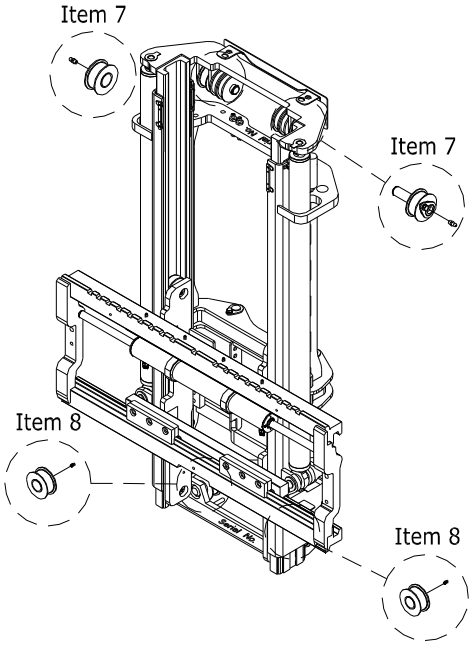
Grease Point Chart (continued)

Side-Shift Upper Rail Grease Points



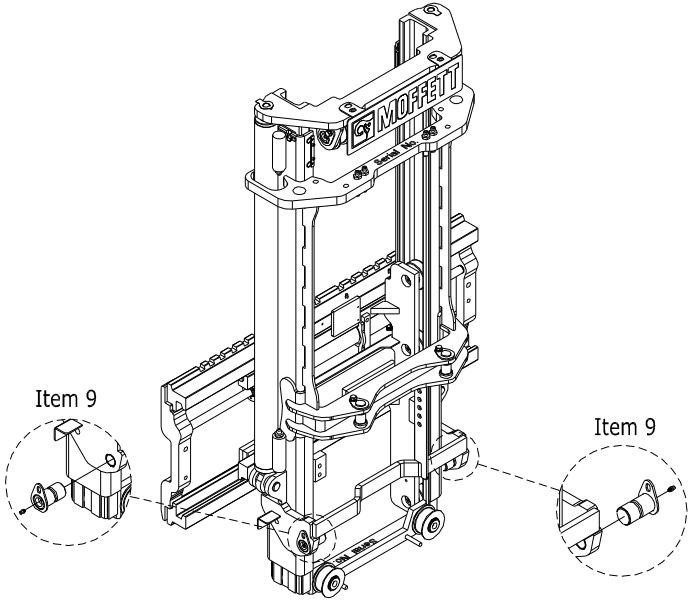
Grease Point Chart (continued)

Chain Roller Grease Points



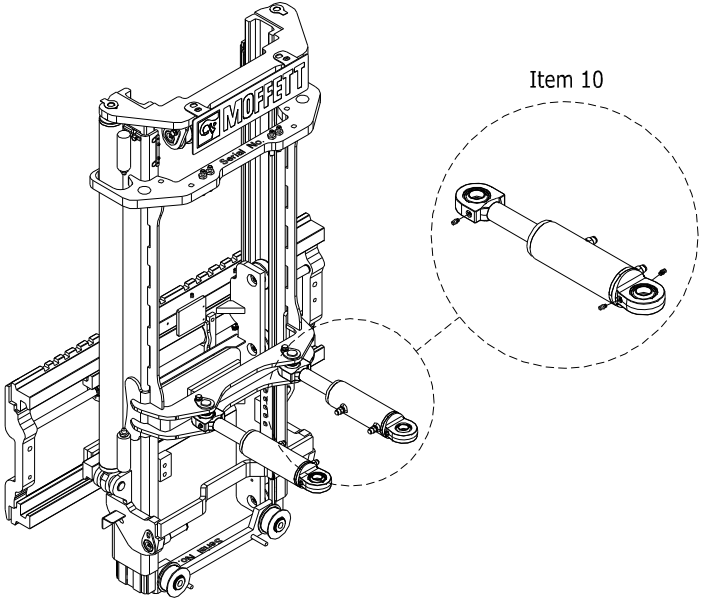
Grease Point Chart (continued)

Mast Pin Grease Points



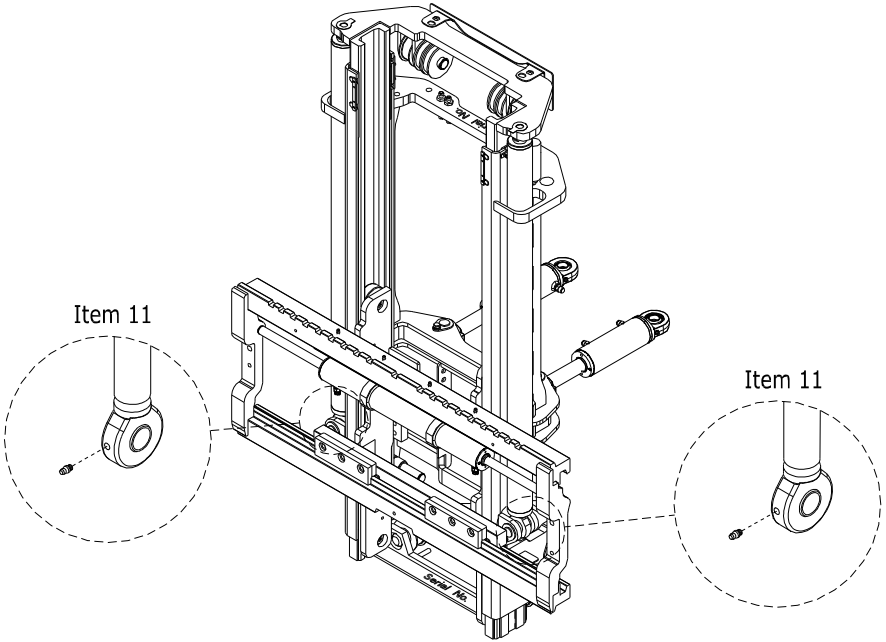
Grease Point Chart (continued)

Tilt Cylinder Grease Points



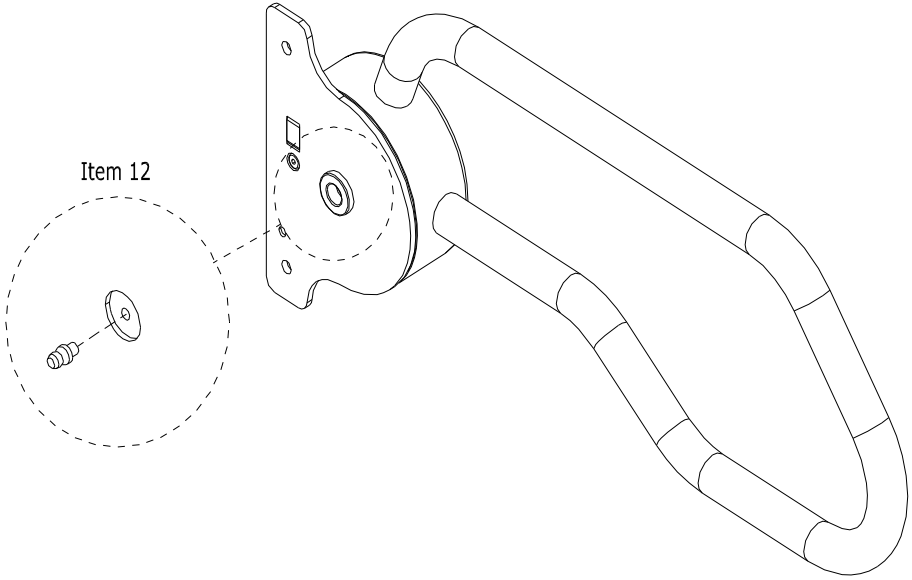
Grease Point Chart (continued)

Lift Cylinder Grease Points



Grease Point Chart (continued)

Side Guard Grease Points



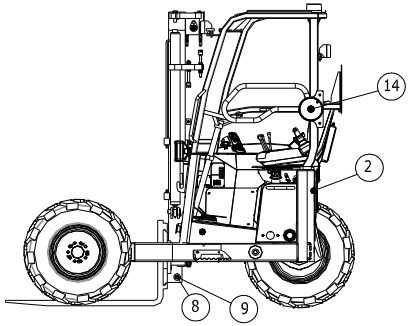
Grease Point Chart (continued)

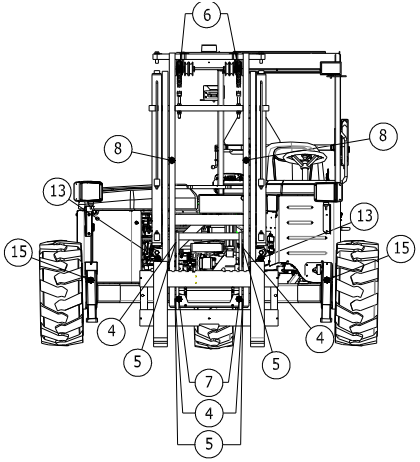
M45P

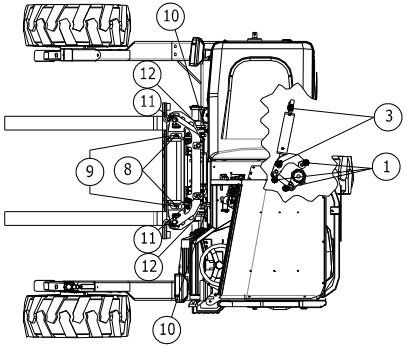
Note: Before greasing any points on the machine remove any old hardened grease that may prevent the flow of lubricant. Each item should be moved after the initial application of grease and greased again to ensure complete lubrication at each point.

ITEM	DESCRIPTION	No. OF POINTS	PAGE NUMBER
1	Steering Linkage	3	145
2	Spindle Housing	1	145
3	Steering Cylinder	2	145
4	Fork Carriage FEM 2	4	146
5	Fork Carriage FEM 3	6	147
6	Top Chain Rollers	2	148
7	Bottom Chain Rollers	2	148
8	2T Mast Section	6	149
9	2.5T Mast Section	4	150
10	Tilt Cylinder	4	151
11	Side-Shift Cylinder	2	152
12	Side-Shift Bushing	2	153
13	Lift Cylinders	2	154
14	Rotating Side Guard	1	155
15	Stabilizers	2	156
16	Wheel Motors	2	157

Grease Point Chart (continued)

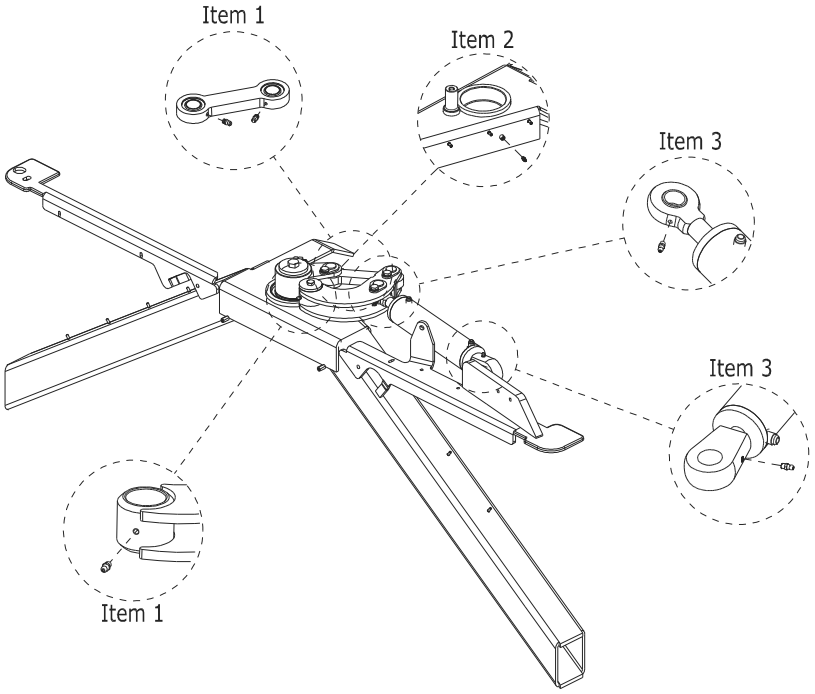






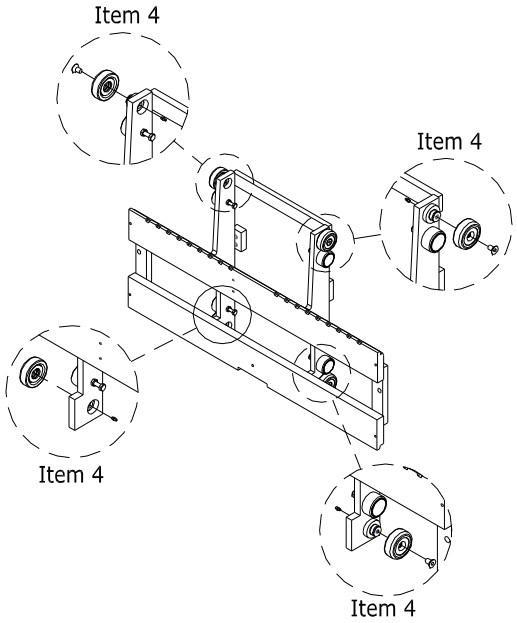
Grease Point Chart (continued)

Steering Linkage, Spindle Housing and Steering Cylinder Grease Points



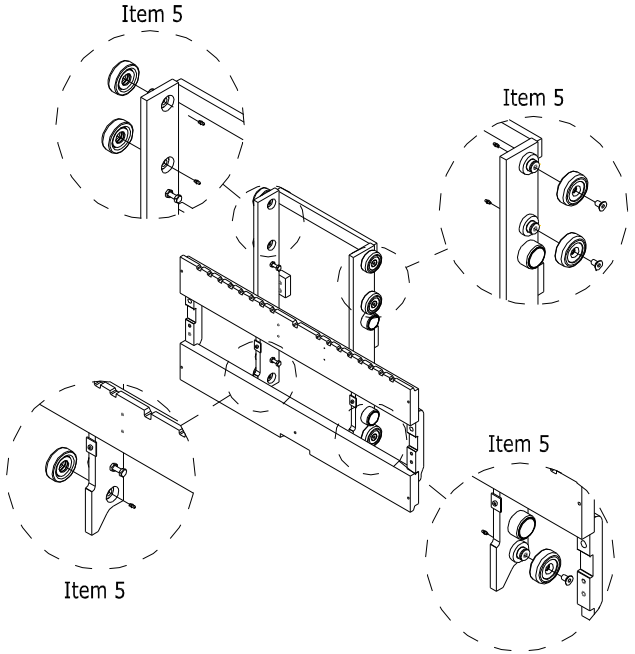
Grease Point Chart (continued)

FEM2 Fork Carriage Grease Points



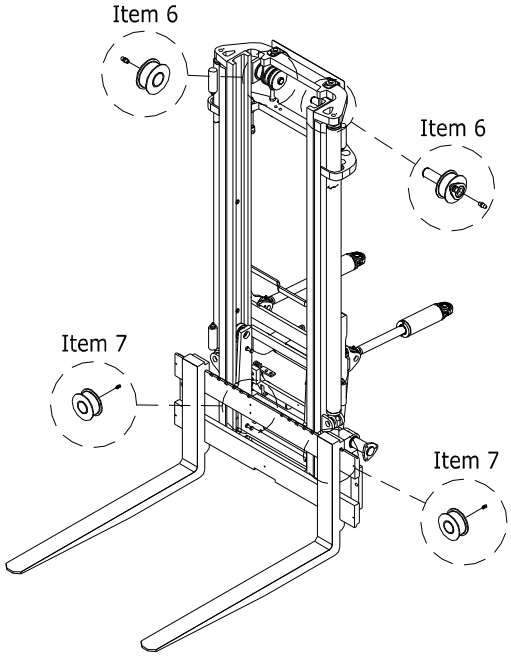
Grease Point Chart (continued)

FEM3 Fork Carriage Grease Points



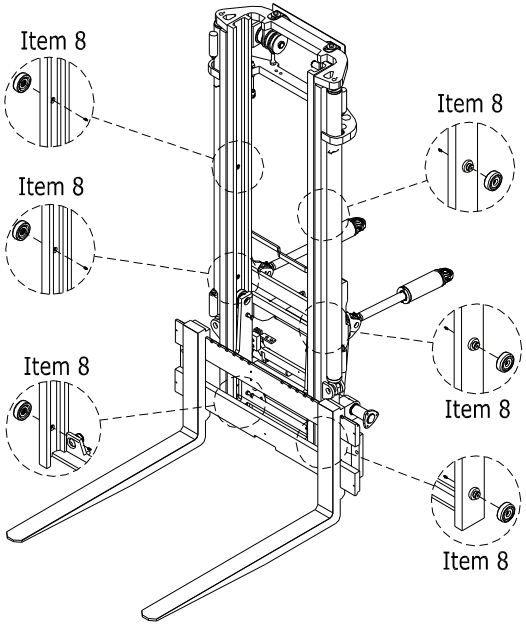
Grease Point Chart (continued)

Chain Roller Grease Points



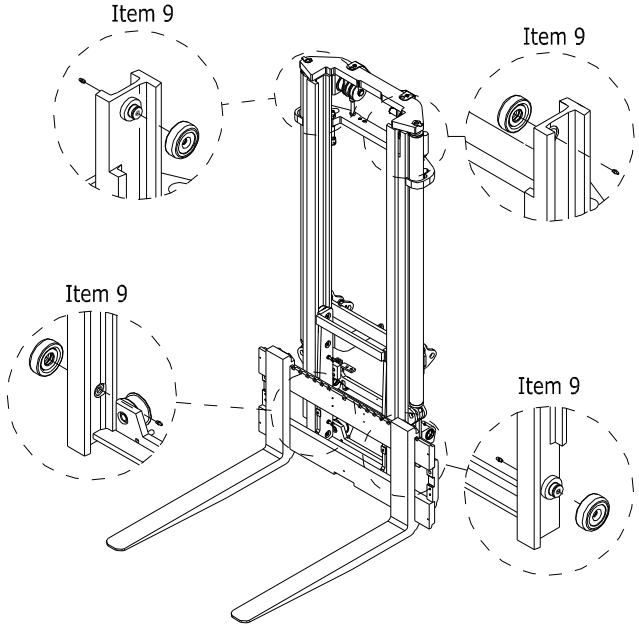
Grease Point Chart (continued)

2T Mast Section Grease Points



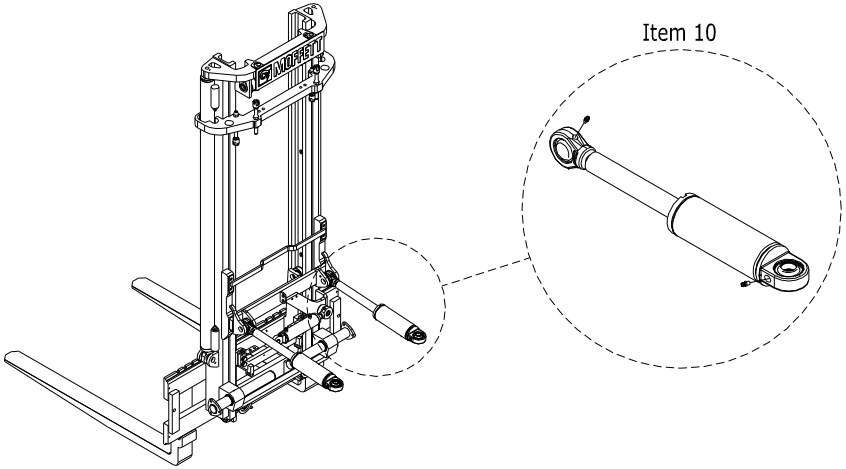
Grease Point Chart (continued)

2.5T Mast Section Grease Points



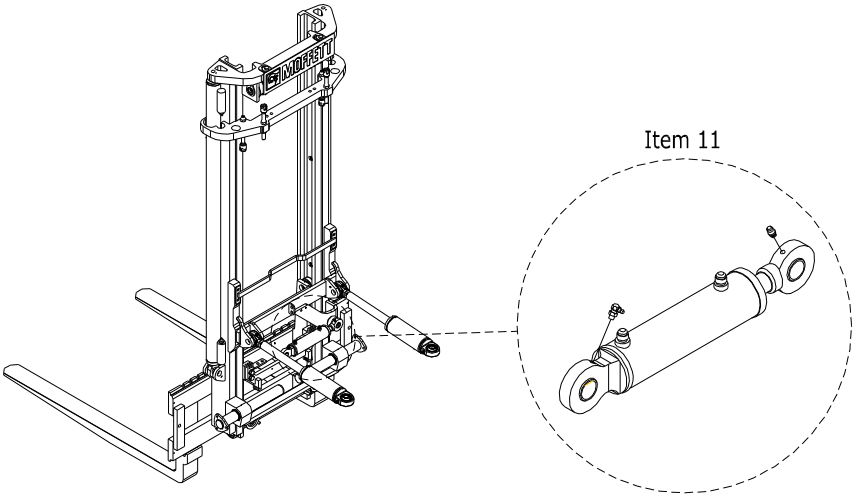
Grease Point Chart (continued)

Tilt Cylinder Grease Points



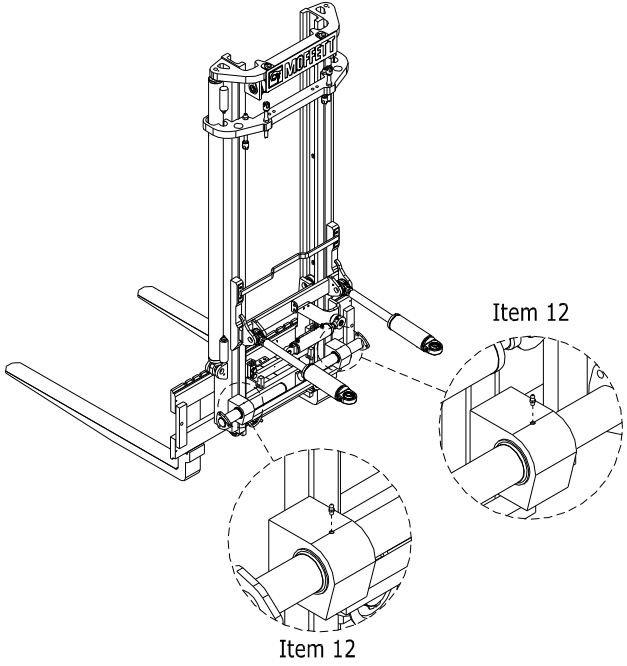
Grease Point Chart (continued)

Side-Shift Cylinder Grease Points



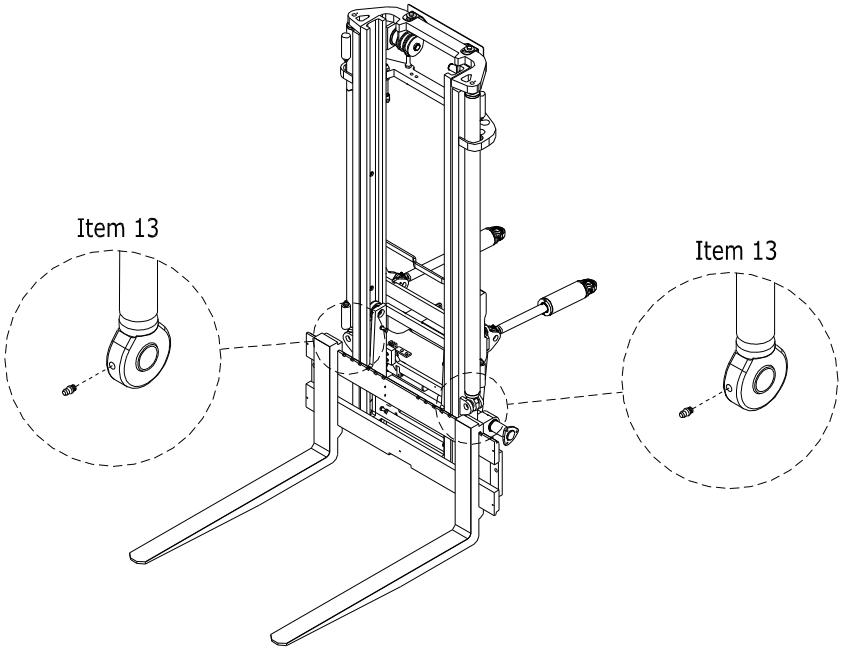
Grease Point Chart (continued)

Side-Shift Bushing Grease Points



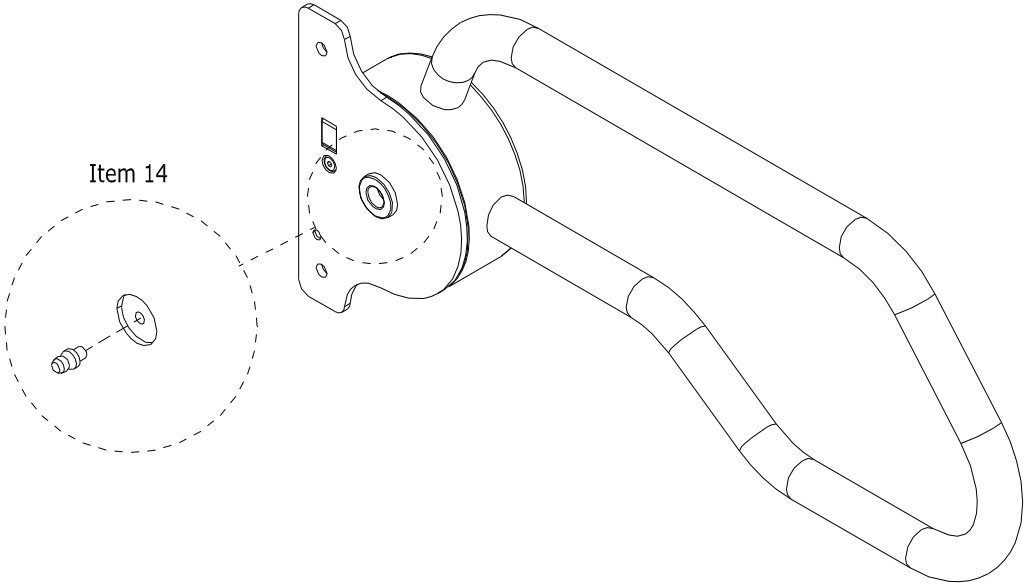
Grease Point Chart (continued)

Lift Cylinder Grease Points



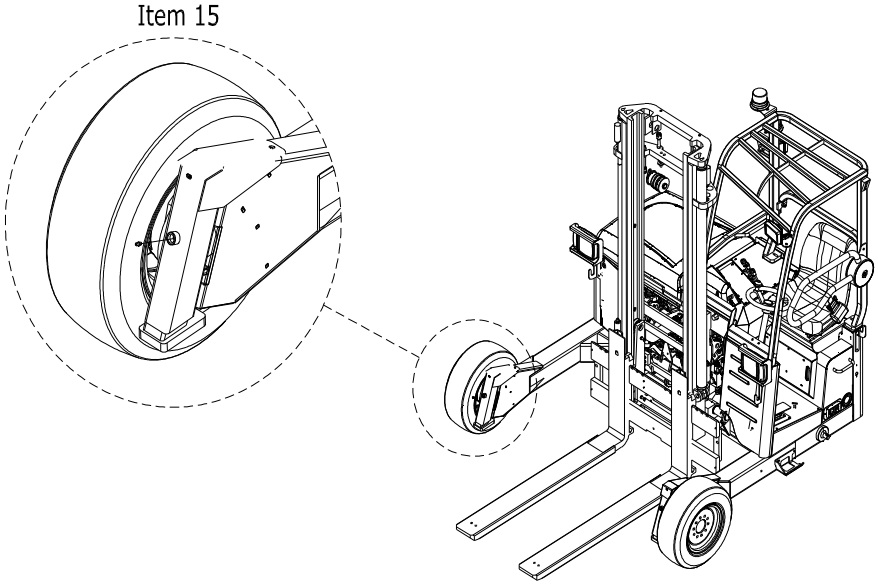
Grease Point Chart (continued)

Side Guard Grease Points



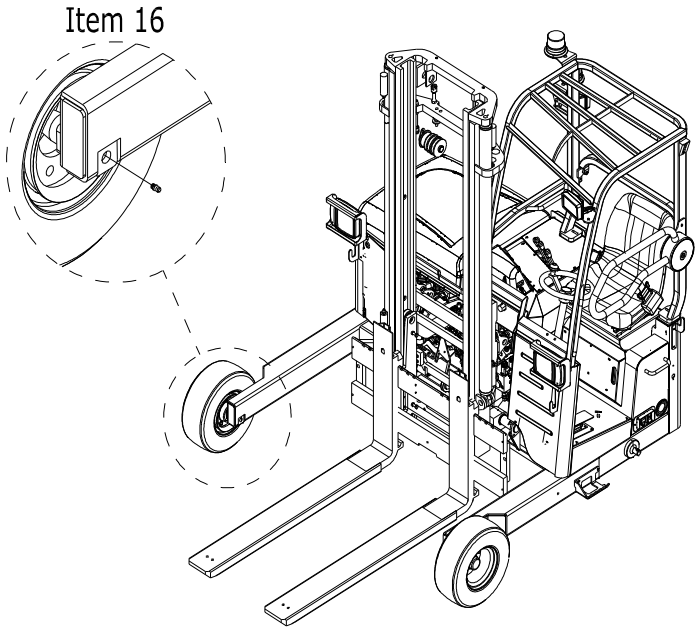
Grease Point Chart (continued)

Stabilizer Grease Points



Grease Point Chart (continued)

Wheel Motor Grease Points



Engine Oil

The engine oil should be MIL-L2104C or have the properties of API classification grades or higher. Change the type of engine oil according to the ambient temperature.
When using oil of different brands from the previous one, be sure to drain all the previous oil before adding the new engine oil.

AMBIENT TEMPERATURE	OIL SPECIFICATION		
Above 25°C (77°F)	SAE30	Or	SAE 10W-30 SAE 10W-40
0 to 25°C (32 to 77°F)	SAE20	Or	SAE 10W-30 SAE 10W-40
Below 0°C (32°F)	SAE10W	Or	SAE 10W-30 SAE 10W-40

Engine Coolant

A mix of 50% permanent type antifreeze and 50% distilled water should be used to fill the cooling system. The coolant mix inhibits corrosion and gives the system protection down to a freezing point of -37°C (-34°F). A good quality coolant with a specific gravity of 1.080 at 15.5°C (60°F) should be used. The antifreeze should comply with one of the following specifications:

SAE J1034
BS 6580: 1985
MIL – A – 11755D
MIL – A - 461 53/B

Coolant concentration (freeze protection) and condition (rust inhibitors) will deteriorate over time. Test the coolant using a hydrometer for freeze protection and inspect the cooling system for contamination at least once per year or at each service, whichever occurs first.

Test and Inspect the Coolant	
Condition	**Action**
Freeze point too low (coolant concentration too high)	Add the correct amount of distilled water to adjust the freeze point to -37°C (-34°F)
Freeze point too high (coolant concentration too low)	Drain and replace with the proper coolant
Contamination in the cooling system	Drain and replace with the proper coolant
Coolant is two years old	Drain and replace with the proper coolant

Engine Fuel Specification

Use a No.2-D grade of diesel fuel oil according to ASTM D975. This is a distillate fuel oil of lower volatility for engines in industrial and heavy mobile service (SAE J313 Jun87). Be sure to use a strainer when filling the fuel tank, as dirt or sand in the fuel may cause trouble in the fuel injection pump. Always use diesel fuel. You are required not to use alternative fuel because its quality is unknown or it may be inferior in quality. Kerosene which is very low in cetane rating, adversely affects the engine. Diesel fuel differs in grades depending on the temperature. Refer to the following tables for specific minimum and maximum fuel properties.

Flash Point °C (°F)	Water and Sediment Volume %	Carbon Residue on 10% Residium %	Ash weight %
Min	Max	Max	Max
52 (125)	0.05	0.35	0.01

Distillation Temperature °C (°F) 90% Point		Viscosity Kinermatic cSt or mm 2/5 at 40°C (104°F)		Viscosity Saybolt SUS At 37.8°C (100°F)		Sulphur Weight %	Copper Strip Corrosion	Cetane Number
Min	Max	Min	Max	Min	Max	Max	Max	Min
282 (540)	338 (640)	1.9	4.1	32.6	40.1	0.50	No.3	40

Hydraulic Fluid

Oils conforming to the International Standard I.S.O. 6743-4HV VG grade with improved viscosity/temperature characteristics should be used. (Some countries may still use DIN 51524 PART 3). The hydraulic oil used in the Moffett Truck mounted Forklift must have the correct temperature range for the ambient temperature in which the machine is being operated. If the operating temperature is outside the range of the oil supplied with the Moffett Truck Mounted Forklift, the oil should be replaced with the correct grade. Some examples of commercially available oils are listed below. Make sure the correct type is used in the relevant ambient environment.

Note: The sequence in which the brand names are listed does not signify any grading as to their quality or preference.

AMBIENT TEMPERATURE	Low Range -20°C to 25°C -4°F to 77°F	Standard Range -10°C to 35°C 14°F to 95°F	High Range 0°C to 45°C 32°F to 113°F
Castrol: Hypsin	AWH 32	AWH 46	AWH 68
BP: Bartran	HV 32	HV 46	HV 68
Esso: Univis	N 32	N 46	N 68
Mobil:	13 M	15 M	16 M
Shell: Tellus Oil	T 32	T 46	T 68
Texaco:	HDZ 32	HDZ 46	HDZ 68

Cleaning Mast Chains Using Steam Jet Equipment

Recommended Jet Equipment Cleaning Method for Leaf Chain

The following method is recommended for when the use of jet equipment cannot be avoided in leaf chain and forklift chain maintenance:

1. **Cleaning** - Clean the leaf chain using steam or hot water only. Absolutely no additives should be used.
2. **Compressed Air** - Immediately after cleaning the leaf chain, all water should be removed both from the surface and from inside the chain joints using high pressure compressed air. The articulating links of the chain should be moved several times during this process.
3. **Re-lubricating** – Make sure that the chain is slack and then spray with a preservative and lubricant. Articulate the chain several times so that the lubricant penetrates the chain joint.
4. **Products to be used** – The following characteristics are recommended for forklift truck leaf chain lubrication:

- Satisfactory corrosion protection and lubrication
- Ability to penetrate through / under water
- Continuously viscous after application
- Good adhesion properties
- Layer thickness and protective film able to withstand later aggression (rain / hail etc.)

Chain Lubricant Specification

The lubricant oil's viscosity should be chosen so that it will remain fluid at all occurring ambient temperatures. Under normal temperature conditions, lubricating oils with a viscosity from SAE 20 to SAE 40 (0.07 to 3.1in^2/s at 104°F) are suitable. The following are examples of commercially available chain lubricating products.

1. Molykote MKLN.
2. Klubber Stroctovis BHD75.
3. Fuchs Stabylan G100.

Grease Specification

The recommended grease for all moving parts is Lithium EP2 or a grease of equivalent specification. This is particularly important for all bearings and rollers.

Note: When carrying out maintenance/service work always use kluberpaste® on pins, bearing stubs, 4-Way swivels, steering collars etc. Refer to the service manual for further details.

Tire Inflation

See the chart for the recommended tire inflation pressures used by the Moffett Truck mounted Forklift.
It is recommended that the tread depth should never fall below 20% of the original tread depth.

WARNING:

Compressed Air. Using compressed air can be dangerous. Obey all statutory notices and apply all relevant health and safety regulations.

Wheel Nut Torque		
Model	**Torque**	**Wheel Nut Part Number**
M36/M45P	184lb.ft	503.055.0345

Note: Changes in the tire ply will affect the inflation pressure. Always check the max inflation pressure indicated on the tire.

Rear Tire Specification			
Type	**Ply**	**PSI**	**Bar**
21x8-9	14	132	9
23x8.5-12	12	100	7
27x12-10	14	102	7
26x12-12	8	46	3.5
10x16.5-15	10	75	5.2
29x12.5-15	8	45	3

Front Tire Specification			
Type	**Ply**	**PSI**	**Bar**
18x7-8	14	132	9
21x8-9	14	132	9
23x8.5-12	12	100	7
26x12-12	8	46	3.5
27x12-10	14	102	7
10x16.5-15	10	75	5.2
29x12.5-15	8	45	3

4-Way Rear Tire Specification			
Type	**Ply**	**PSI**	**Bar**
21x8-9	14	132	9
23x8.5-12	12	100	7
26x12-12	8	46	3.5
27x12-10	14	102	7
10x16.5-15	10	75	5.2
29x12.5-15	8	45	3

Tire Inflation (continued)

4-Way Front Tire Specification			
Type	**Ply**	**PSI**	**Bar**
21x8-9	14	132	9
23x8.5-12	12	100	7
26x12-12	8	46	3.5
27x12-10	14	102	7
10x16.5-15	10	75	5.2
29x12.5-15	8	45	3

Noise and Vibration Data – Naturally Aspirated Engine

Noise Data
Noise (In accordance with EN12053)
The figures below are a combination of the values for the operating modes "DRIVE", "LIFT" and "IDLE" weighted with a proportion factor and is made in accordance with EN12053, 1997

1. Sound Power Level	99 LWA dB
2. Sound Pressure Level	86 LPA dB

The figure below is a guaranteed sound power level to ISO4871, 1996

3. Guaranteed Sound Power Level	104 LWA dB

Vibration Data
Vibration (In accordance with EN13059)
Weighted rms Acceleration Whole Body Vibration (ft/s^2) 5.35

Note: Please be aware that the vibration levels may vary from those shown depending on the specification of the machine.

Noise and Vibration Data – Turbo Engine

Noise Data
Noise (In accordance with EN12053)
The figures below are a combination of the values for the operating modes "DRIVE", "LIFT" and "IDLE" weighted with a proportion factor and is made in accordance with EN12053, 1997

1.	Sound Power Level	102 LWA dB
2.	Sound Pressure Level	86 LPA dB

The figure below is a guaranteed sound power level to ISO4871, 1996

3.	Guaranteed Sound Power Level	107 LWA dB

Vibration Data
Vibration (In accordance with EN13059)
Weighted rms Acceleration Whole Body Vibration (ft/s^2) 6.43

Note: Please be aware that the vibration levels may vary from those shown depending on the specification of the machine.

Jump Starting

Safety

WARNING

Procedure. If you are unsure how to follow this procedure, we strongly recommend that you seek the help of a competent mechanic.

Batteries contain sulphuric acid which is poisonous and corrosive. Wear protective safety glasses when jump starting and avoid spilling acid on your skin, clothing or the vehicle.

Do not try to charge a frozen battery. If you try to charge a frozen battery or jump start and run the engine, the battery could explode.

Do not use the battery if the electrolyte is frozen. To prevent the battery electrolyte from freezing, keep the battery at full charge.

Do not smoke when checking the battery electrolyte levels. Batteries give off a flammable gas that can explode. When starting another machine, make sure the two machines do not touch as this could cause sparks. Sparks could ignite the battery gas. If this happens the battery could explode.

Even with the starter switch set to the off position some circuits will still be energized when the external power supply is connected. Ensure all machine switches are set to the off position before connecting the external power supply.

Only use jump start cables that are in good condition with securely attached connectors.

Connect both ends of one jump start cable before connecting the other cable.

CAUTION:

Booster Supply. The booster supply should not be more than 12 volts. Using a higher voltage supply will damage your machines electrical system. Do not connect two batteries together to give 24 volts. This could burn out the induction manifold heater and damage the starter motor.

WARNING:

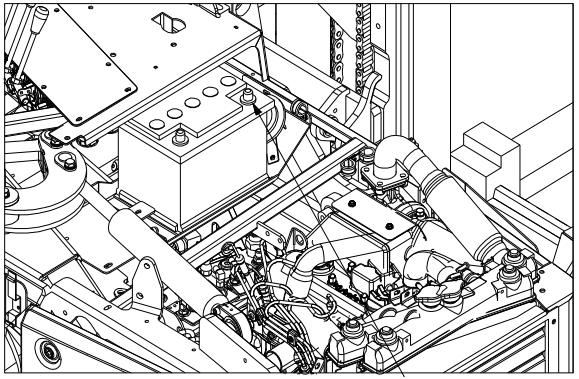
Electric Shock. Keep all metal straps and fasteners from clothes or jewellery clear of the positive (+) battery terminal. Such items can cause a short between the battery terminal and nearby metal framework. If this happens you could get burned.

Jump Starting (continued)

Procedure

Note: Your machine has a 12 volt starting system. The negative terminal (-) is connected to the engine cylinder block.

A) Make sure that the park brake is engaged and the forward / reverse pedal or lever is in neutral.
B) Ensure all switches are set to the off position.
C) Connect the positive (+) cable to the positive (+) terminal on the battery. Connect the other end of this cable to the positive (+) terminal on the booster supply.
D) Connect the negative (-) cable to a ground point on the machine.
E) Connect the other end of the negative (-) cable to the negative (-) terminal on the booster supply.
F) Start the engine. (Refer to Starting the Engine)
G) Disconnect the negative (-) boosters cable from the forklift, and then disconnect it from the booster supply. Disconnect the positive (+) terminal from the forklift battery, and then disconnect it from the booster supply.



M36/M45 POSITIVE (+) BATTERY TERMINAL

Using Other Attachments

The Moffett Truck Mounted Forklift is available with a range of attachments fitted from the factory. The general rule is that any attachment used on this forklift must be intended for the function of lifting only. This forklift is not designed to PULL, TOW or DRAG other objects. DO NOT use attachments that perform these functions with this forklift.

All Moffett machines supplied with attachments have special capacity charts taking into account any additional attachment weight and lost load centre and how this affects the stability and capacity of the machine. Third party suppliers may not supply this information with their attachments and so only approved attachments must be fitted to the Moffett Truck Mounted Forklift.

Cargotec Ireland makes no representations or warranties, express or implied as to the design, manufacture or fitness for use with this forklift of any third party source attachments.

This forklift is not intended to be used and should not be used with any attachment that would alter the centre of gravity stability of this forklift. Cargotec Ireland assumes no liability for any third party attachment that would alter the centre of gravity stability.

If in doubt contact your local Moffett dealer for advice.

9. CERTIFICATE OF CONFORMITY

Certificate of Conformity

The Moffett Truck Mounted Forklift is supplied with a certificate of conformity. This document certifies the directives that the Moffett Truck Mounted Forklift is in compliance with.

Naturally Aspirated Engine

CARGOTEC

MANUFACTURER'S CERTIFICATE OF CONFORMITY IN RESPECT OF SELF-PROPELLED FORKLIFT TRUCKS

Cargotec Ireland Ltd.
Ardee Road, Dundalk, Co. Louth, Ireland

I hereby certify that the self-propelled static mast forklift truck:

Type:	M36/M45 Range
Serial Number:	xxxxxxx
Measured sound power level:	99 dB Lwa
Guaranteed sound power level:	104 dB Lwa
Year of Manufacture:	xxxx

Conforms in all respects to the requirements of:

- Council Directive 2006/42/EC & 98/37/EC of 22nd June 1998 on the approximation of the Laws of the Member States relating to machinery - The Machinery Directive (formerly Directive 89/392/EEC amended by 91/368/EEC, 93/44/EEC and 93/68/EEC)
- Directive on Electromagnetic Compatibility (EMC) 89/336/CEE as amended by EC Directive 92/31/EEC. BS EN 12895:2000 - Industrial Trucks EMC
- BS EN 1726-1:1999 Safety of Industrial Trucks
- Directive ASME / ANSI B56.1-1998 Safety standard for low lift and high lift trucks.

Date:

_____
Engineering Director

9. CERTIFICATE OF CONFORMITY

Turbo Engine

CARGOTEC

MANUFACTURER'S CERTIFICATE OF CONFORMITY IN RESPECT OF SELF-PROPELLED FORKLIFT TRUCKS

Cargotec Ireland Ltd.
Ardee Road, Dundalk, Co. Louth, Ireland

I hereby certify that the self-propelled static mast forklift truck:

Type:	M36/M45 Range
Serial Number:	xxxxxxx
Measured sound power level:	102 dB Lwa
Guaranteed sound power level:	107 dB Lwa
Year of Manufacture:	xxxx

Conforms in all respects to the requirements of:

- Council Directive 2006/42/EC & 98/37/EC of 22nd June 1998 on the approximation of the Laws of the Member States relating to machinery - The Machinery Directive (formerly Directive 89/392/EEC amended by 91/368/EEC, 93/44/EEC and 93/68/EEC)

- Directive on Electromagnetic Compatibility (EMC) 89/336/CEE as amended by EC Directive 92/31/EEC. BS EN 12895:2000 - Industrial Trucks EMC

- BS EN 1726-1:1999 Safety of Industrial Trucks

- Directive ASME / ANSI B56.1-1998 Safety standard for low lift and high lift trucks.

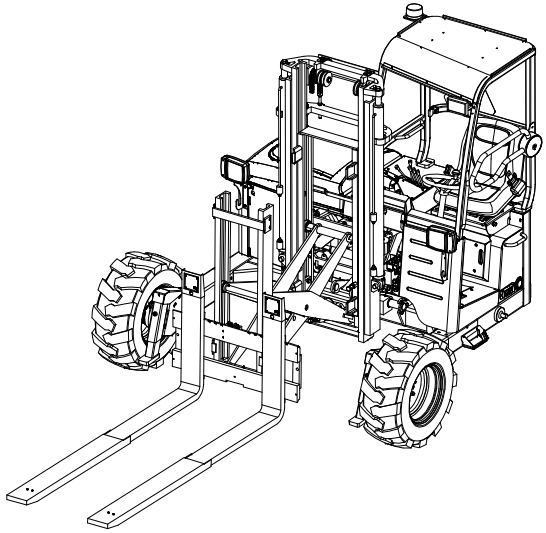
Date:

_____
Engineering Director

Operator Manual

The Moffett Truck Mounted Forklift with Pantograph and Telescopic Forks

Note: This section of the manual describes the additional operating instructions for the Moffett Truck Mounted Forklift Pantograph Reach Device unit and should only be used as a supplement to the operator manual.



Delivering **Confidence**

B1. SAFETY CHECKLIST – PANTOGRAPH AND TELESCOPIC FORKS

Pantograph Safety

Note: The additional safety checklist in this section is specific to pantograph and telescopic forks. This should be used in conjunction with the safety checklist for the standard machine as outlined at the start of this manual.

WARNING:

Pantograph. Do not lift the load more than 100mm clear of the bed while the pantograph is extended.

WARNING:

Capacity. Do not exceed the capacity shown on the load chart for pantograph and telescopic forks.

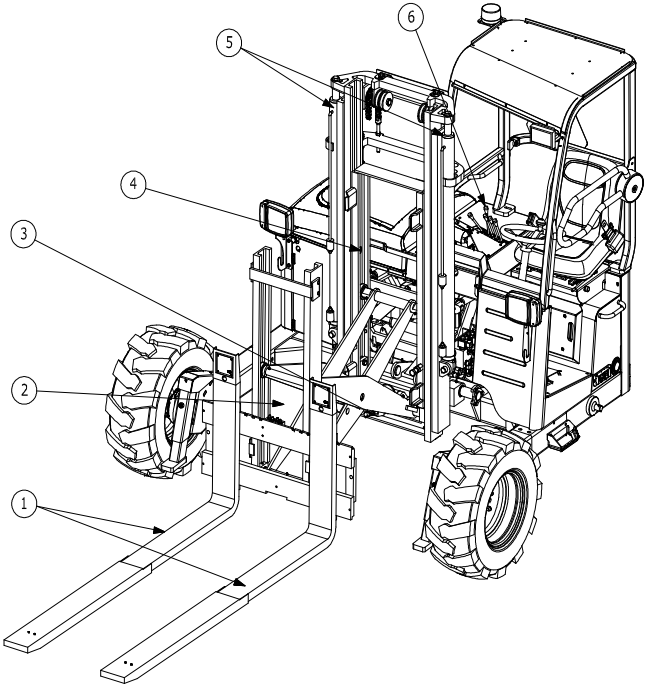
CAUTION:

Truck Mounting. Never truck mount with the pantograph or telescopic forks extended. Always truck mount with the pantograph and telescopic forks retracted as outlined in the normal mounting procedure.

B2. INTRODUCTION – PANTOGRAPH AND TELESCOPIC FORKS

Major Components

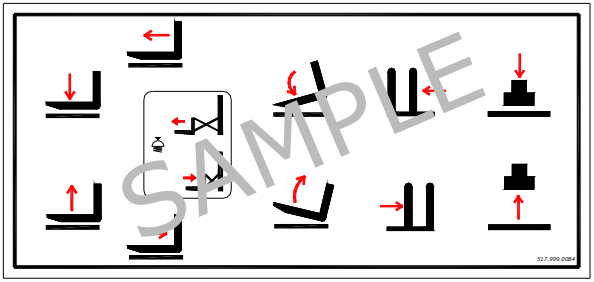
1. Telescopic Forks
2. Pantograph Device
3. Scissor Cylinder
4. Pantograph Mast
5. Lift Rams x2
6. Hydraulic Controls

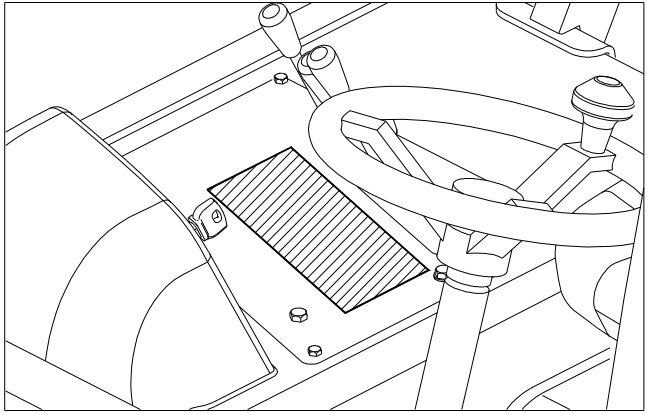


Safety Decals

Note: The additional safety decals listed in this section are specific to pantograph and telescopic forks and should be used in conjunction with the safety decals on the standard machine.

Part Number 517.999.0084



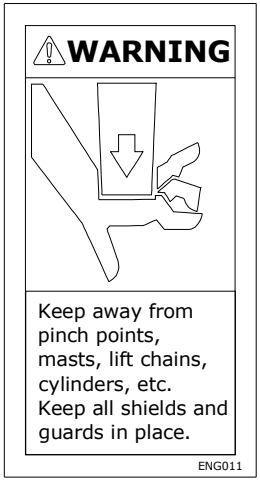


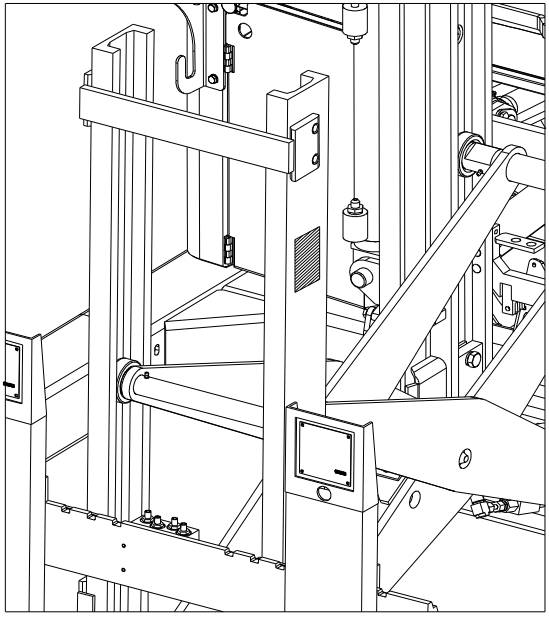
Note: The valve bank and load chart decals in this section are only examples and may differ from those found on your machine.

Safety Decals (continued)

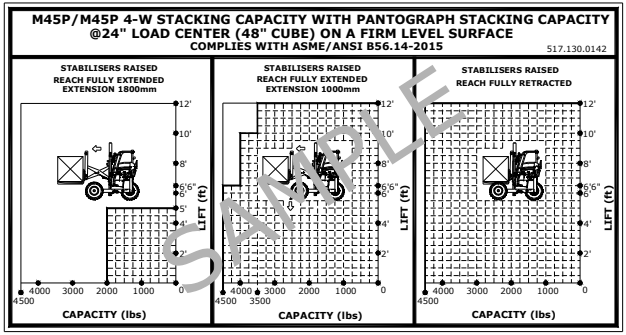
Note: There are additional ENG011 decals on right hand side that are not shown here.

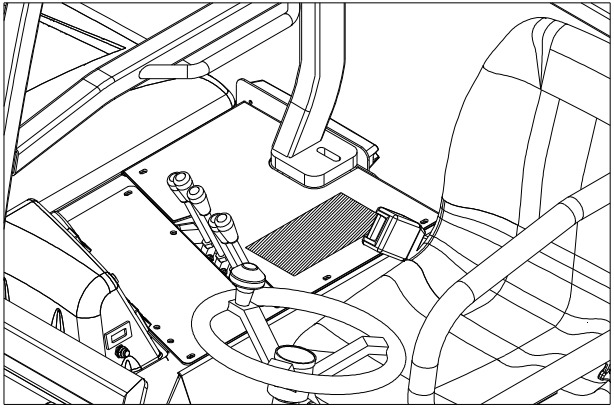
Part No. ENG011



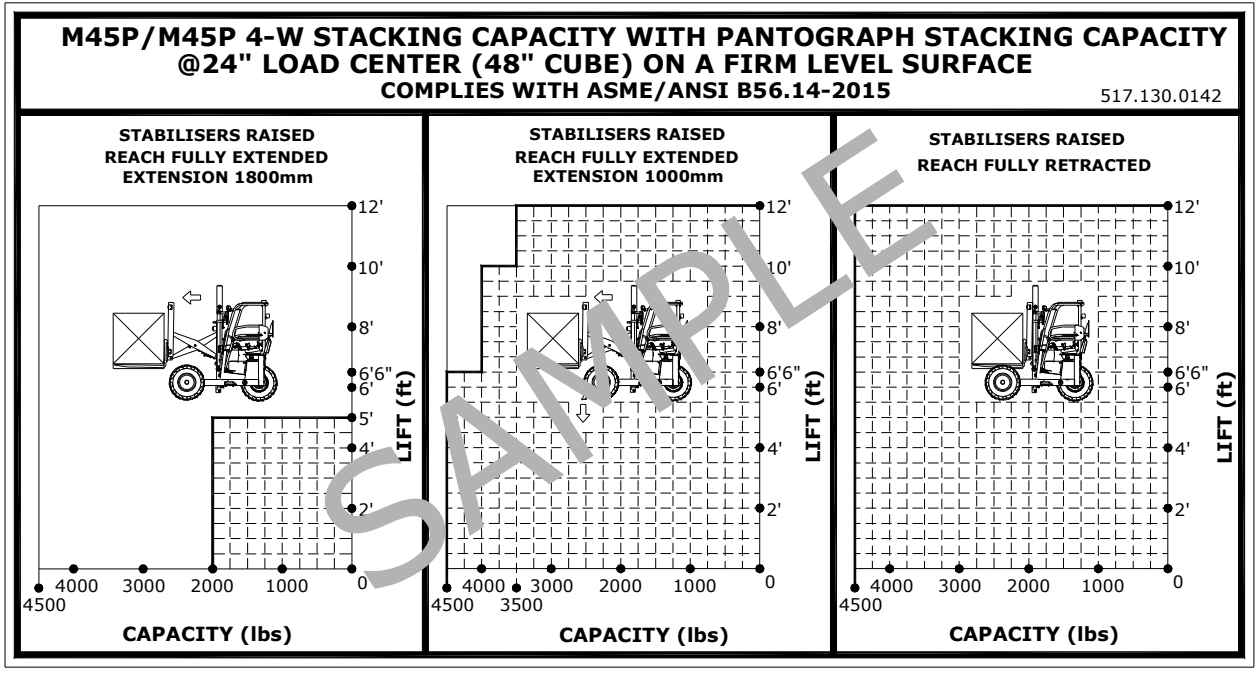


Safety Decals (continued)





Safety Decals (continued)



B2. INTRODUCTION – PANTOGRAPH AND TELESCOPIC FORKS

Hydraulic Levers

The pantograph and telescopic forks machine is equipped with a dual function lever. The function of this lever is outlined below and on the valve bank decal. STUDY THE VALVE BANK DECAL FOR YOUR MOFFETT TRUCK MOUNTED FORKLIFT BEFORE OPERATING THE MACHINE. UNDERSTAND THE FUNCTION OF THE HYDRAULIC LEVERS FULLY BEFORE OPERATING THE MACHINE.

A. Forks – Raise and Lower: This lever raises and lowers the forks. Forward movement of the lever will lower the forks down. Backward movement of the lever will raise the forks up.

B. Pantograph or Telescopic Forks: This lever is fitted with a button which gives the lever two functions B1 and B2.

B1. Pantograph – Extend and Retract Without the red button pressed (off), this lever moves the pantograph forwards and backwards. Forward movement of the lever extends the pantograph forward, away from the operator (out). Backward movement of the lever retracts the pantograph back towards the operator (in). When placing a load, the pantograph should be extended only when the stabilizers are fully lowered.

B2. Telescopic Forks – Extend and Retract: With the red button pressed (on) pushing the lever forward will extend the telescopic forks (out). Pressing the button (on) and pulling the lever backwards will retract the telescopic forks (in).

C. Tilt – Forward and Back: This lever tilts the mast forwards and backwards. Forward movement of the lever tilts the mast forward (forks down). Backward movement of the lever tilts the mast rearward (forks up). Loads should normally be transported with the mast tilted back.

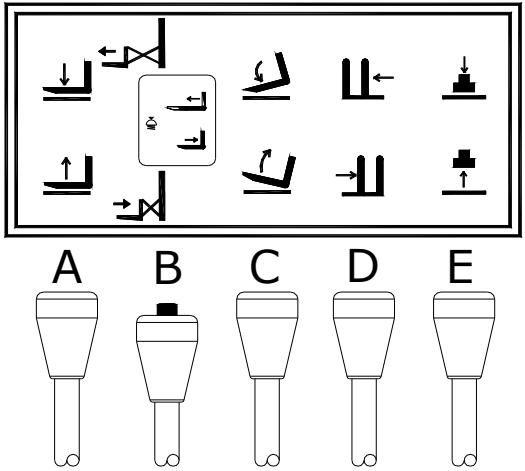
D. Side-Shift – Left and Right: This lever moves the mast to the right or left. Forward movement of the lever shifts the mast to the left. Backward movement of the lever shifts the mast to the right.

E. Stabilizers – Lower and Raise: This lever raises and lowers the stabilizing legs. When placing a load, the stabilizers must always be fully lowered before moving the reach device forward. Forward movement of the lever will lower the stabilizers down. Backwards movement of the lever raises the stabilizers up. When lifting a load, never raise the stabilizers until the reach device is fully retracted.

Hydraulic Levers (continued)

Note: When the ground is not firm enough to support the stabilizers extra support plates must be used of sufficient size and strength to ensure they do not sink, bend or buckle during operation. A second person may be required to check the support plates. If at any time the stabilizers or pads show signs of sinking, the procedure must be stopped immediately, the reach device fully retracted and an alternative location found. If in doubt prior to or during an operation on loose, uneven or soft surfaces, stop. Always consider safety first.

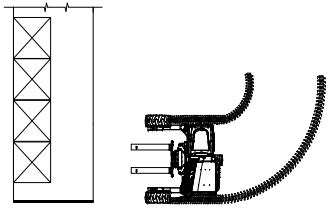
Note: If during the lifting operation the stabilizers start to slip the load must be lowered immediately and a smaller load – load center lifted or improved ground conditions found.



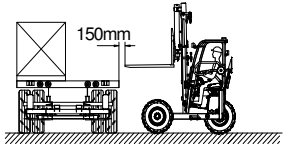
B3. OPERATING PROCEDURES – PANTOGRAPH AND TELESCOPIC FORKS

Operating Pantograph and Telescopic Forks

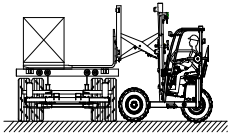
Note: These procedures are in addition to the operating procedures outlined for the standard machine in Section 4 of this manual.



1. Align the forklift and the forks with the center of the load.
2. Approach at 90 degrees to the truck/trailer bed with the forks as low as possible.

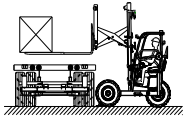


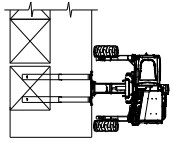
3. Drive forward slowly until the front of the forks is approximately 150mm from the truck or trailer bed.
4. Tilt the mast forward to the vertical position and raise the forks to bed height.
5. Drive forward as far as possible without the mast making contact with the bed.
6. Do not contact the tires or any part of the truck or trailer with the stabilizers.

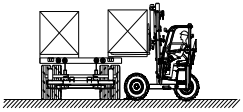


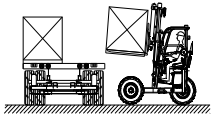
7. Extend the pantograph fully to engage the pallet.
8. When the pantograph is fully extended. Press the micro switch on top of the lever and push the lever forward to extend the telescopic forks to fully engage the pallet.

Operating Pantograph and Telescopic Forks (continued)









9. Ensure the surface is firm and level and then LOWER the stabilizers fully.
10. Never lower the stabilizers near the edge of a curb because they may slip off the edge or the edge may break away.
11. Raise the load slowly just enough to clear the bed.

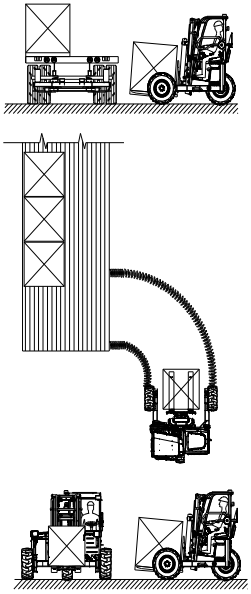
WARNING:

Pantograph. Do not lift the load more than 100mm clear of the bed while the pantograph is extended.

12. Side-shift enough to clear the adjacent pallet or headboard.
13. Retract the telescopic forks fully.
14. Double fork if necessary to ensure load is in contact with fork face.
15. Tilt the mast rearward enough to stabilize the load.
16. Retract the pantograph fully.

17. Raise the stabilizers fully.

Operating Pantograph and Telescopic Forks (continued)



18. Ensure the rear wheel is pointing straight ahead.
19. Reverse straight back to clear the truck or trailer bed (looking in the direction of travel).
20. Lower the load to a level just above the frame.
21. Side-shift the mast to the center position.
22. Lower the load as low as possible within the frame.

23. Turn the forklift in the intended direction of travel.

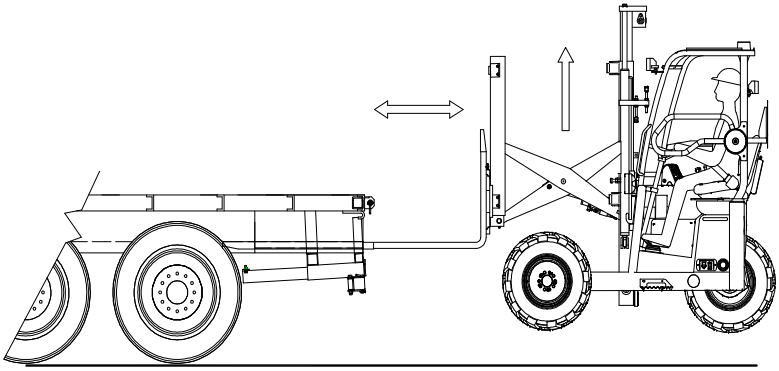
24. Slowly drive away, looking in the direction of travel.

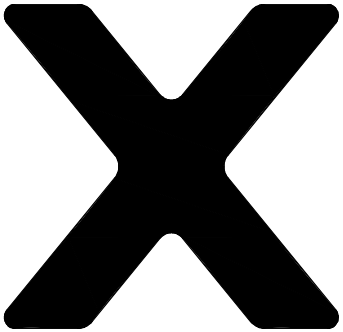
B4. MOUNTING PROCEDURES – PANTOGRAPH AND TELESCOPIC FORKS

Mounting Procedure

Mount as per the standard machine (See section 5)

NEVER MOUNT THE MACHINE USING THE PANTOGRAPH, ALWAYS ENSURE THE PANTOGRAPH IS FULLY RETRACTED.





B5. MAINTENANCE – PANTOGRAPH AND TELESCOPIC FORKS

Daily Pre-Shift Inspection Checklist

Note: The additional checks listed in this section are specific to lift assist and pantograph and should be used in conjunction with the daily pre-shift inspection checklist on the standard machine, for this refer to section 6 in this operator manual.

Visual Checks
The Moffett Truck Mounted Forklift must be parked on a firm level surface in a SAFE ZONE with the keys removed and the park brake engaged. Starting at the operator's station, walk around the forklift and complete the following visual checks.
If defects are identified during the pre-shift visual inspection, notify your supervisor immediately.

1. **Pantograph Scissor Assembly** – Check for damage and bends. Check the center pin for wear and cracks.
2. **Pantograph Cylinder** – Check for leaks at the fittings and gland (where the cylinder rod extends and retracts). Check for scratches and nicks on the cylinder rod. Check the mounts for cracks on either end of the cylinder. Check for missing or loose bolts on the cylinder retaining pins at either end of the cylinder.

NOTE: IF DEFECTS ARE IDENTIFIED DURING THE PRE-SHIFT VISUAL INSPECTION, NOTIFY YOUR SUPERVISOR IMMEDIATELY.

Daily Pre-Shift Inspection Checklist (continued)

Operational Checks
Operational inspections are done by starting the engine, operating all controls, and test driving the Moffett Truck Mounted Forklift. Never start the Moffett Truck Mounted Forklift to perform the operational inspections if the visual inspection indicates an immediate safety hazard. Constantly monitor the gauges, listening for unusual noises, loose parts, fluid leaks and unusual conditions. If a problem is suspected, take the forklift out of service and have it inspected and repaired.

1. **Pantograph –** Ensure the pantograph extends and retracts smoothly.

NOTE: IF DEFECTS ARE IDENTIFIED DURING THE PRE-SHIFT OPERATIONAL CHECK, TAKE THE FORKLIFT OUT OF SERVICE, NOTIFY YOUR SUPERVISOR AND HAVE IT INSPECTED AND REPAIRED.

B5. MAINTENANCE – PANTOGRAPH AND TELESCOPIC FORKS

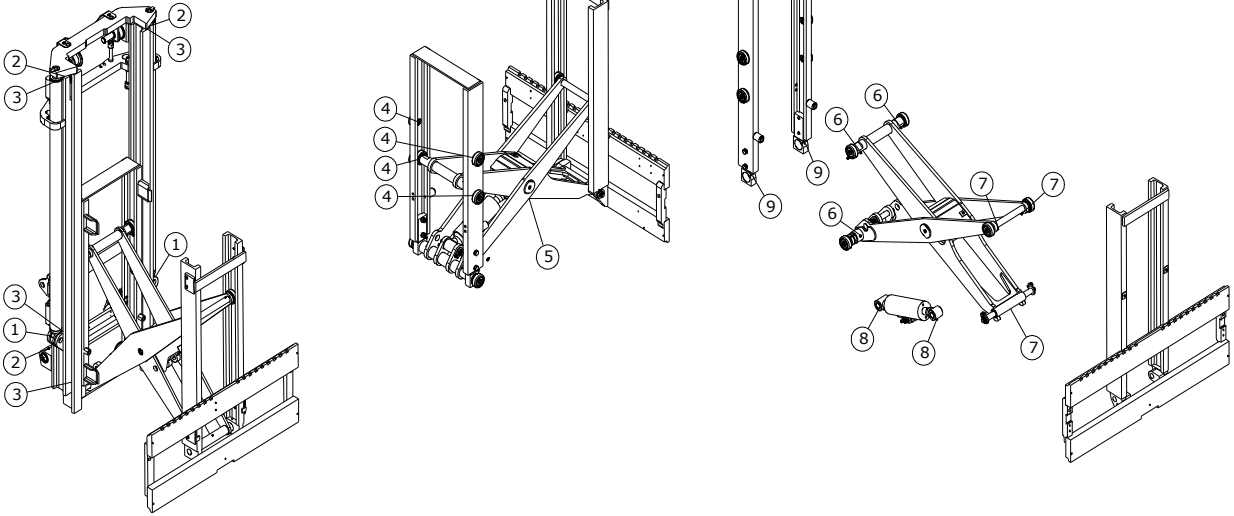
Grease Points

Note: Before greasing any points on the machine remove any hardened grease that may prevent the flow of lubricant. Each item should be moved after the initial application of grease and greased again to ensure complete lubrication at each point.

Note. The lubrication/ grease points listed in this section are specific to pantograph and teleforks. Refer to section 6 of this operator manual for the standard grease points on the machine**.**

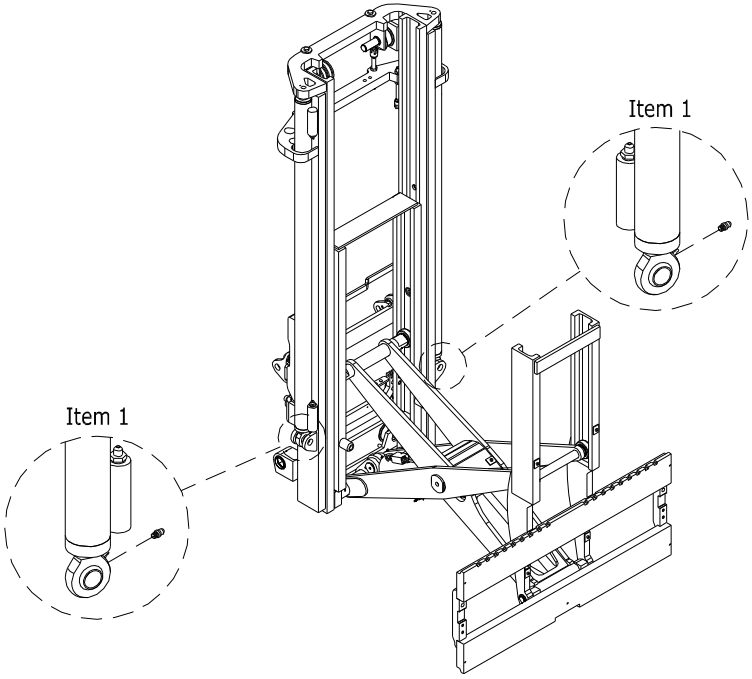
ITEM	DESCRIPTION	No. OF POINTS	PAGE NUMBER
1	Lift Cylinders	2	190
2	Mast Outer Section	4	191
3	Mast Inner Section	6	192
4	Pantograph Mast	4	193
5	Scissor Middle Section	1	194
6	Scissor Rear Section	4	195
7	Scissor Front Section	3	196
8	Pantograph Cylinder Pins	2	197
9	Bearing Bracket	2	198
10	Telescopic Forks	2	199

Grease Points (continued)



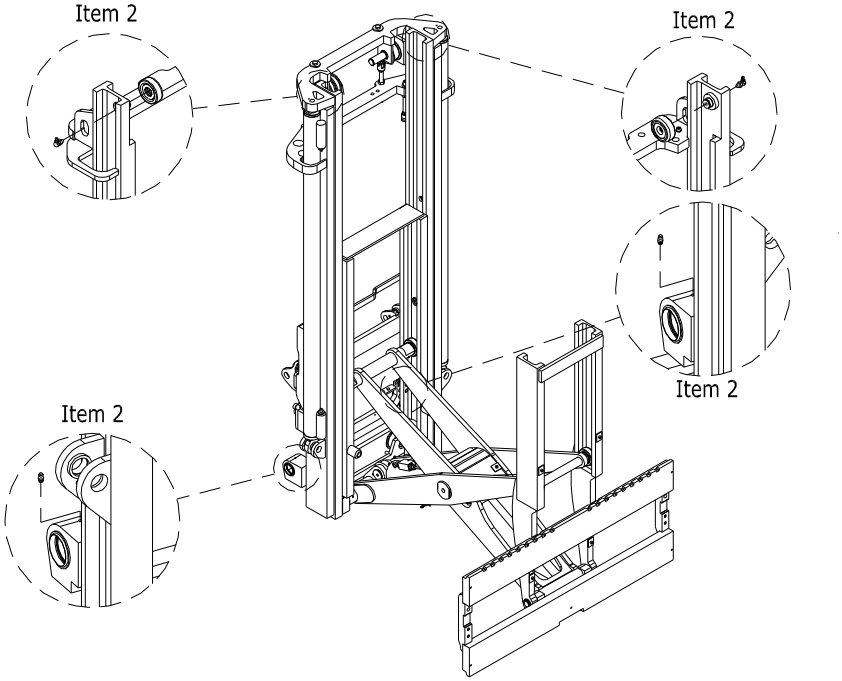
Grease Points (continued)

Lift Cylinder Grease Points



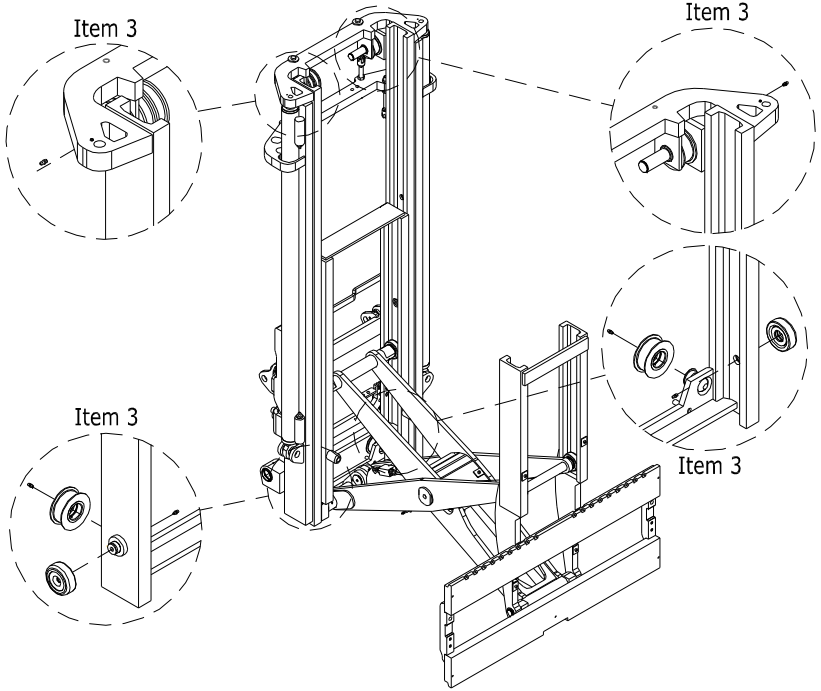
Grease Points (continued)

Mast Outer Section Grease Points



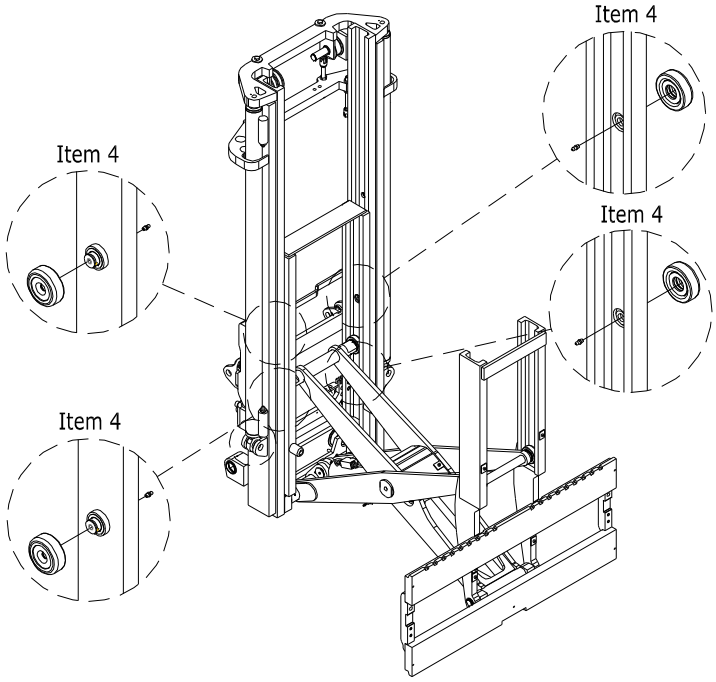
Grease Points (continued)

Mast Inner Section Grease Points



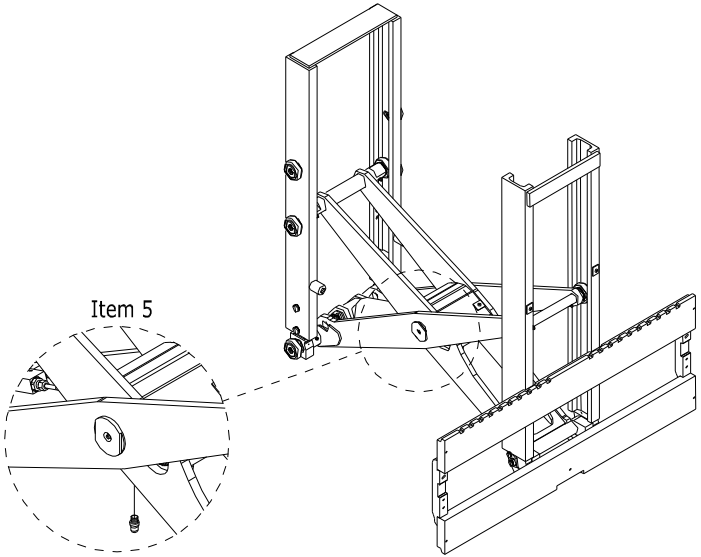
Grease Points (continued)

Pantograph Mast Section Grease Points



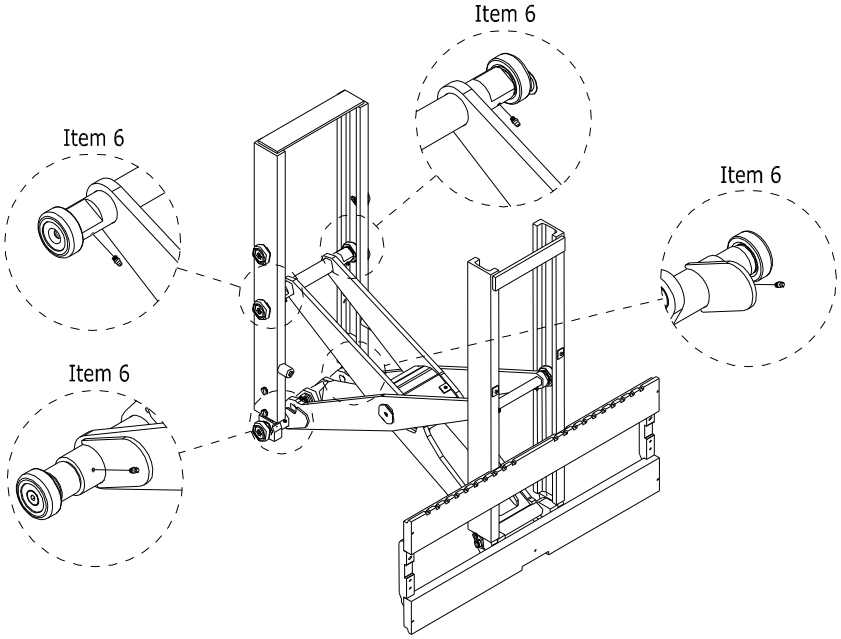
Grease Points (continued)

Pantograph Arm Middle Section Grease Points



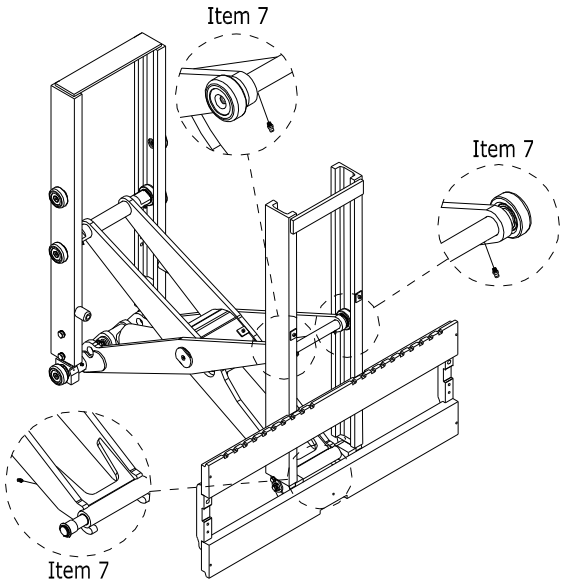
Grease Points (continued)

Pantograph Arm Rear Section Grease Points



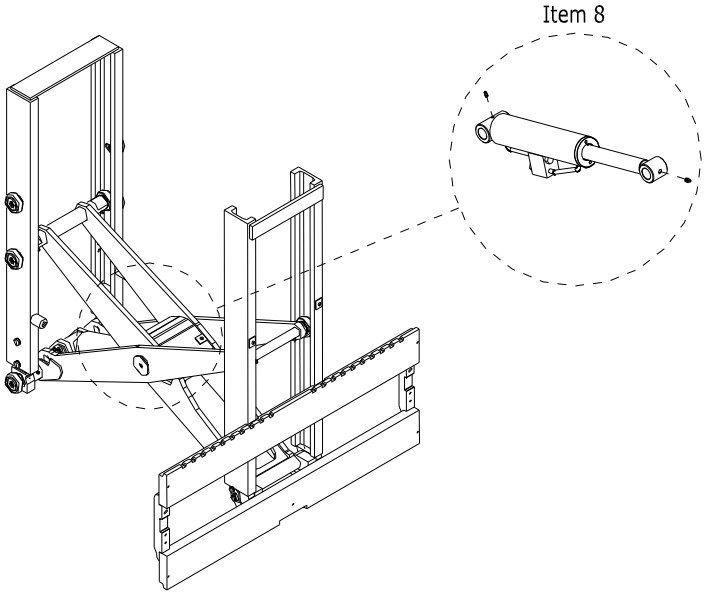
Grease Points (continued)

Pantograph Arm Front Section Grease Points



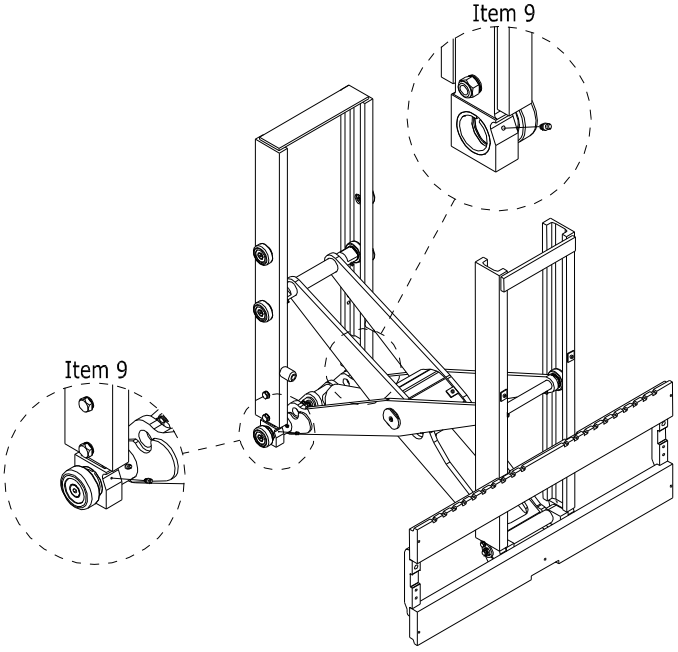
Grease Points (continued)

Pantograph Cylinder Grease Points



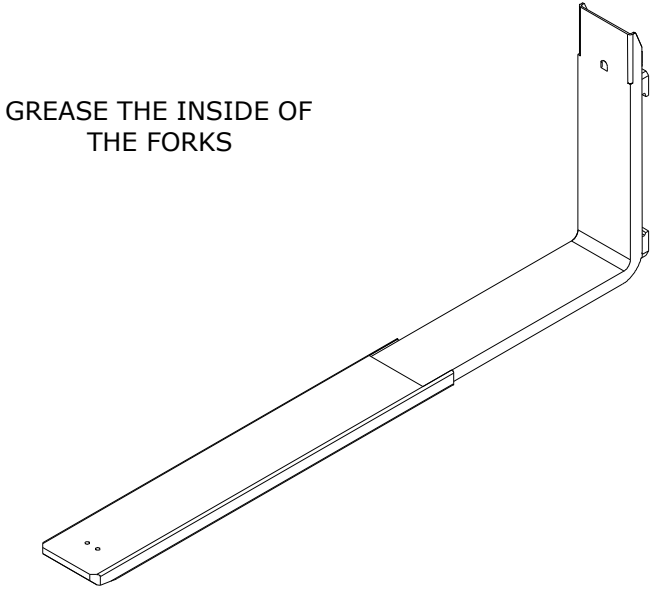
Grease Points (continued)

Bearing Bracket Grease Points



Grease Points (continued)

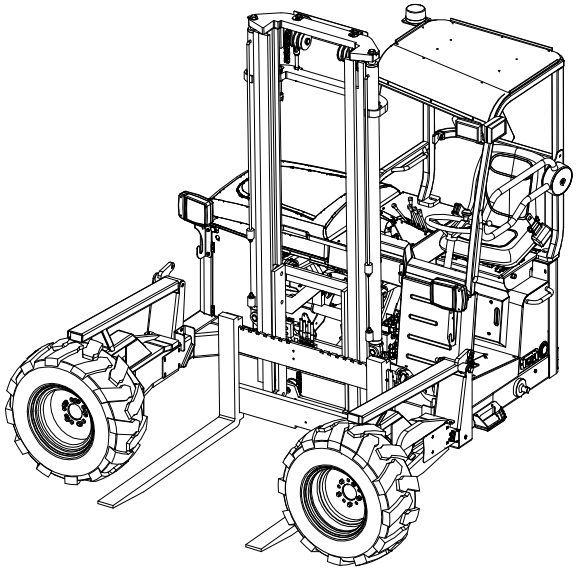
Telescopic Forks Grease Points



Operator Manual

The Moffett Truck Mounted Forklift 4-Way Machine

Note: This section of the manual describes the additional operating instructions for the Moffett Truck Mounted Forklift 4-Way unit and should only be used as a supplement to the operator manual.

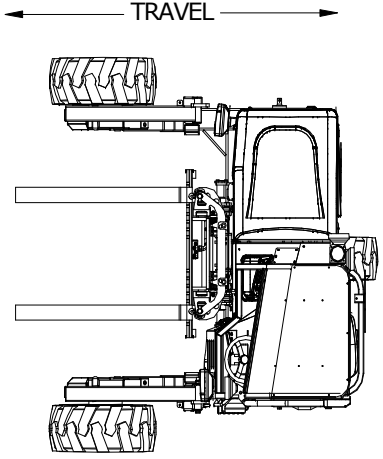


Delivering **Confidence**

Overview of 4-Way Steering System

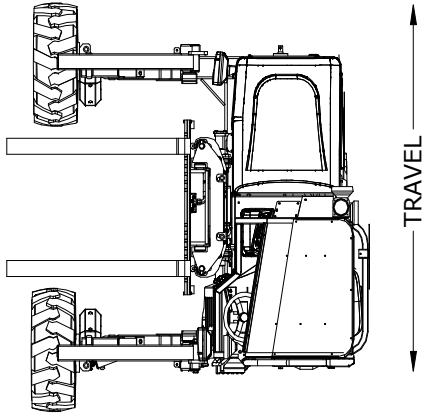
In addition to conventional travel of forward and backward (2-Way Mode - front wheels locked straight ahead and rear wheel steering) this machine is also fitted with two front steering cylinders.

These front steering cylinders enable the machine to travel sideways (4-Way mode - rear wheel locked to 90° and front wheels steering). When the machine is in 4-Way mode the front steering cylinders are connected in series. The larger right hand cylinder bore side feeds into the left hand cylinder rod side when steering to straight ahead and vice versa when turning to 90°.



FORWARD MODE OF OPERATION

2-WAY MODE



LATERAL MODE OF OPERATION

4-WAY MODE

4-Way Safety

Note: The additional safety checklist in this section is specific to 4-Way. This should be used in conjunction with the safety checklist for the standard machine as outlined at the start of this manual.

DANGER:

Load. Do not lift the load above an object or person when travelling in 4-Way mode. Always carry the load as low as possible on the forks and load supports.

DANGER:

Inclines. Travelling across an incline with or without a load greatly increases the possibility of a tip over.

WARNING:

No Load. Never travel in 4-Way mode without a load on the forks. NEVER change modes when the machine is moving. Always change to normal 2-Way mode when travelling with no load and ensure the reach device is fully retracted.

WARNING:

Using 4-Way. On 4-Way Models:

- Change into and out of 4-Way mode on a firm level surface only.
- Never travel in 4-Way mode without a load.
- Never change modes while the machine is moving.
- Always apply the park brake before changing steering modes.

WARNING:

Travelling On Inclines. When on an incline, the combined center of gravity moves downhill. In 4-Way mode the combined center of gravity will be closer to the edge of the stability triangle and stability is reduced.

WARNING:

Load. Never travel in the lateral mode with an elevated load. Always keep the load as low as possible.

WARNING:

Using This Manual. This section of the manual describes additional operating instructions for the Moffett Truck Mounted Forklift 4-Way unit and should only be used as a supplement to the operator manual.

4-Way Safety (continued)

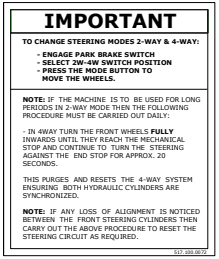
CAUTION:

Operating the Machine. Do not extend the reach device when travelling in 4-Way mode.
Do not select the 4-Way mode when the reach device is extended.
Always ensure the forks are central and either fully down or above the frame prior to changing into 4-Way.

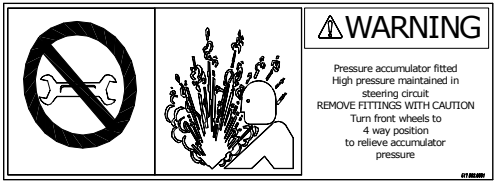
Safety Decals

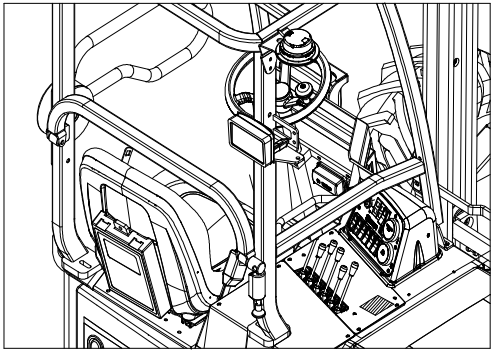
Note: The additional safety decals listed in this section are specific to 4-Way and should be used in conjunction with the safety decals on the standard machine.

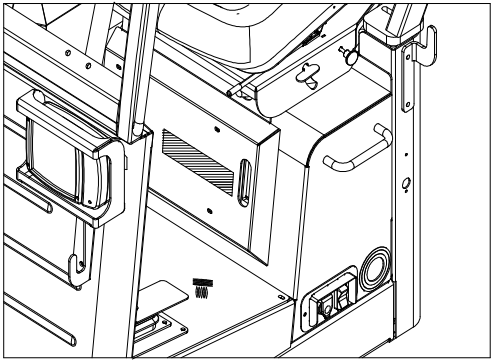
Part Number 517.100.0072



Part Number 517.062.0001

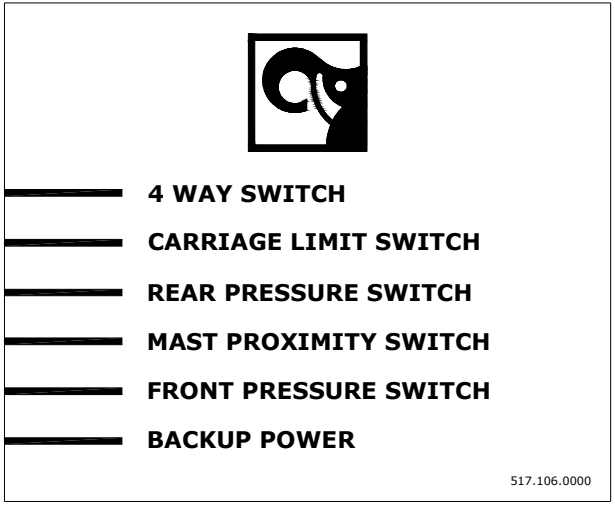




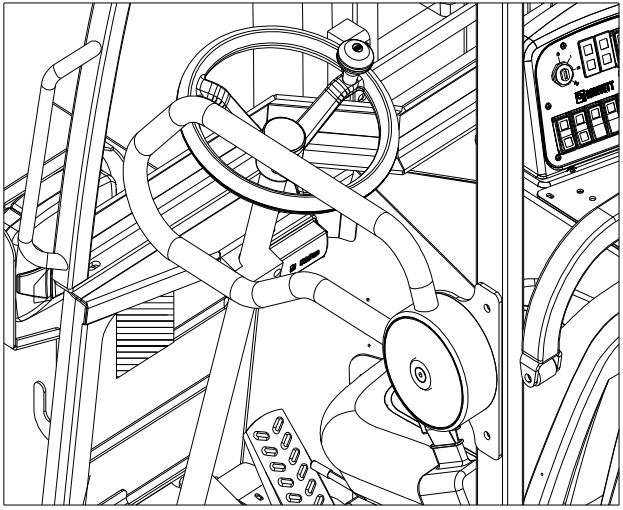


Safety Decals (continued)

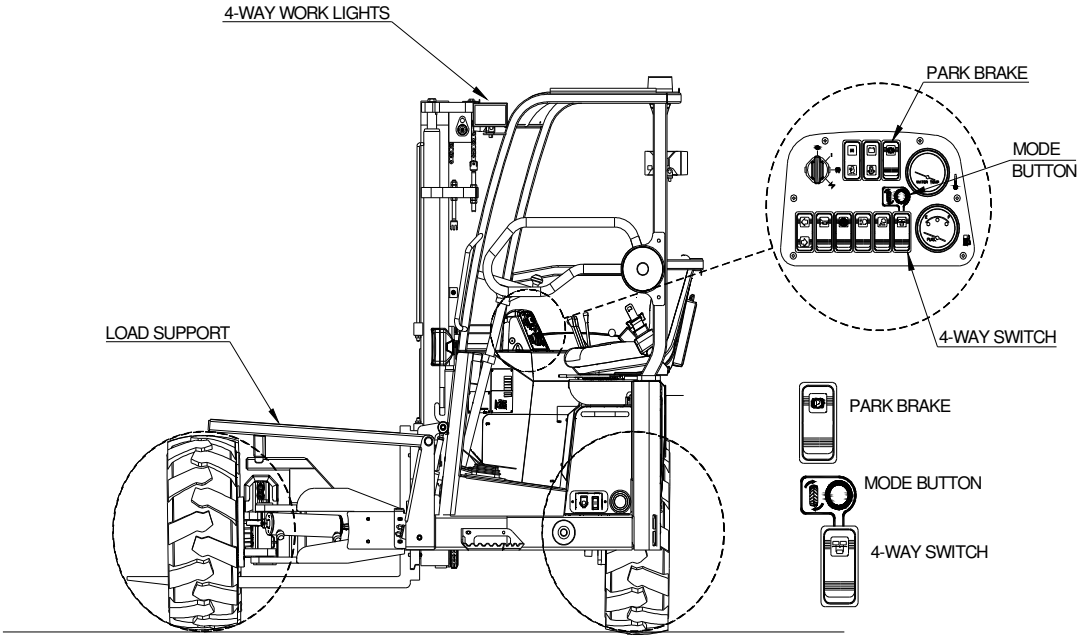
Part Number 517.106.0000



Note: The status of the 4-Way system as well as simple fault finding can be determined by the color of the LED's on the control module.

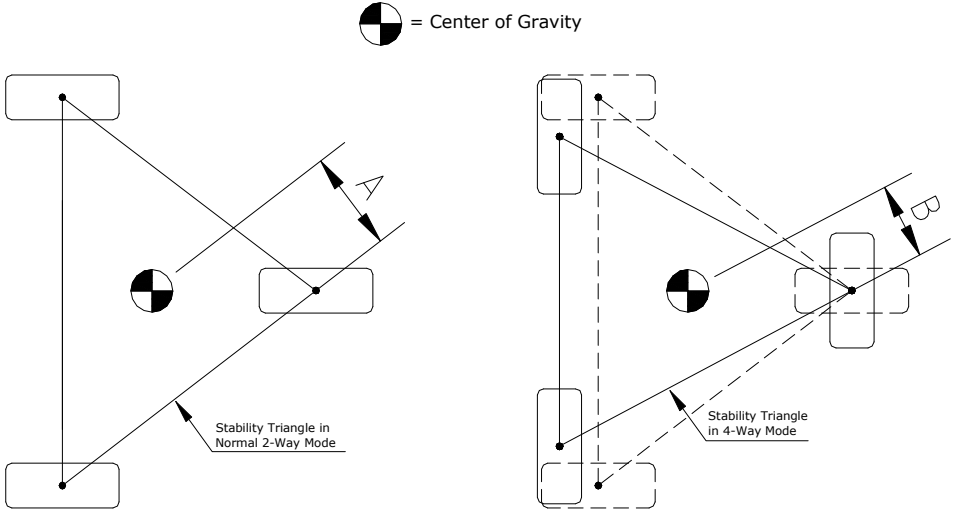


Instruments and Controls



Stability Triangle

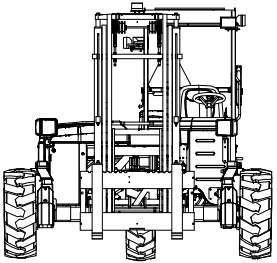
The stability of this machine is greatly reduced in lateral 4-Way mode. As per the diagram below, when the front wheels are turned into 4-Way mode, the stability triangle is reduced. This means that the centre of gravity has less distance to travel before it leaves the stability triangle and the machine could become unstable. Dimensions A and B in the diagram below, show how the lateral stability is reduced when in 4-Way mode.



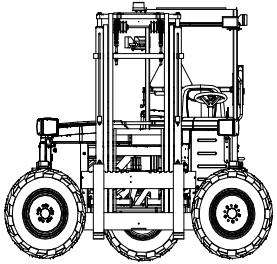
Normal 2-Way Mode

4-Way Mode

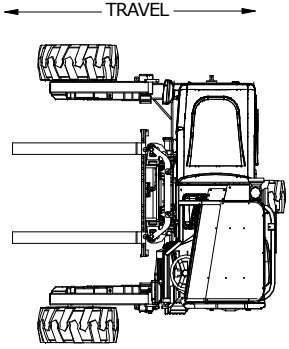
Operating Procedures



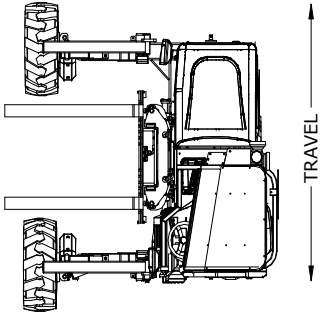
NORMAL 2-WAY MODE



LATERAL 4-WAY MODE



FORWARD MODE OF OPERATION



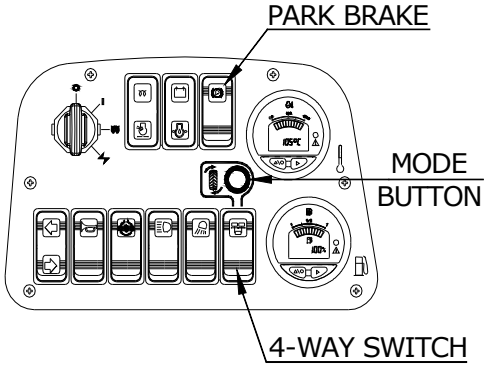
LATERAL MODE OF OPERATION

Changing Steering Modes

Machines can be changed from 2-Way to 4-Way steering mode by following the sequence detailed in this section of the operator manual. The machine can be changed semi automatically using the mode button or manually using the steering wheel.

Standard

Mode Button Operation



Note: The mode button will only work if the machine is stationary and the park brake is applied as the park brake interlocks the function of the mode button.

A1. Changing from 2-Way to 4-Way

1. Ensure the machine is stationary on level ground.
2. Ensure the reach device is fully retracted and the forks are on the ground.
3. Apply the electric park brake.
4. Change the 4-Way switch to the 4-Way position.
5. Push the red MODE button until the rear wheel moves to the 90° position.
6. The system will automatically change oil to the front wheels.
7. Continue to press the red MODE button until the front wheels are at 90°.
8. Release the park brake.
9. The machine is now in 4-Way Mode.

A2. Changing from 4-Way to 2-Way

1. Ensure the machine is stationary on level ground.
2. Ensure the reach device is fully retracted and the forks are on the ground.
3. Apply the electric park brake.
4. Change the 4-Way switch to the 2-Way position.
5. Push the red MODE button until the front wheels come to the straight ahead position.
6. The system will automatically change oil to the rear wheel.
7. Continue to push the red MODE button until the rear wheel is in the straight ahead position.
8. Release the park brake.
9. The machine is now in 2-Way Mode.

Changing Steering Modes (continued)

Manual Operation

B1. Changing from 2-Way to 4-Way

1. Ensure the machine is stationary on level ground.
2. Ensure the reach device is fully retracted and the forks are on the ground.
3. Apply the electric park brake.
4. Steer the rear wheel to the 90° position using the steering wheel.
5. Change the 4-Way switch to the 4-Way position.
6. Steer the front wheels to 90° using the steering wheel.
7. Release the park brake.
8. The machine is now in 4-Way Mode.

B2. Changing from 4-Way to 2-Way

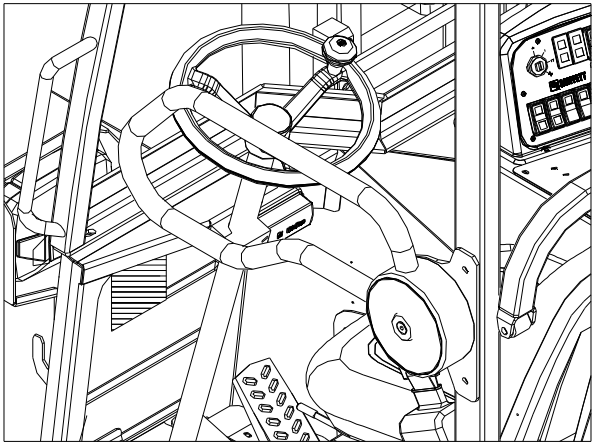
1. Ensure the machine is stationary on level ground.
2. Ensure the reach device is fully retracted and the forks are on the ground.
3. Apply the electric park brake.
4. Steer the front wheels to the straight ahead position using the steering wheel.
5. Change the 4-Way switch to the 2-Way position.
6. Steer the rear wheel to the straight ahead position using the steering wheel.
7. Release the park brake.
8. The machine is now in 2-Way Mode.

Note: Always change steering modes using minimum engine revs, this ensures the pressures raised in the rear steering ram are kept to a minimum.
If changing steering modes in extremely deep mud or severe ground conditions, higher than normal steering pressures could be generated in the steering lines. These higher pressures may trigger the pressure switches in the automatic system before the steering wheels have fully reached their stops. If this occurs, change back to the previous steering mode and manually steer the wheels fully to the stops before switching to the desired steering mode. If the rear arm will not steer manually then the ground conditions are too severe to change steering modes. The operator needs to find improved ground conditions before changing steering modes.
If the machine is used in very cold conditions always ensure that the machine is warmed up fully before attempting to change steering modes as the cold oil will also create higher than normal steering pressures.

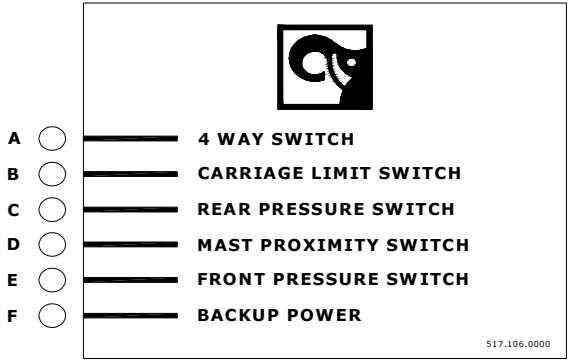
Instruments and Controls

The relays which control the functions of the 4-Way steering system are also linked to 6 LED's which can be seen on the control module located under the font lip of the pedal enclosure.

The function and color of these LED's is outlined in this section of the operator manual and they can be used to check the status of the 4-Way system as well as simple fault finding.



Control Module LED Decal

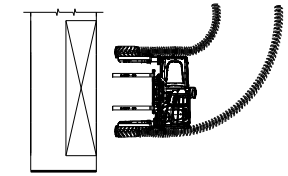


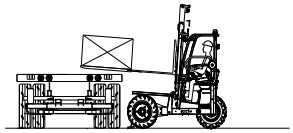
LED Function and Color

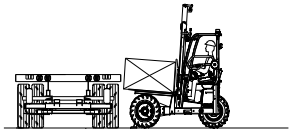
A - Green if the 4-Way switch is in the 4-Way position.
B - Green if the mast is back ready for mode change.
C - Green if the rear pressure switch is activated.
D - Green if the mast height is below the height limit.
E - Green if the front pressure switch is activated.
F - Green if the power is ON to the control module.

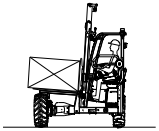
If any of the LED's do not light up green as outlined above then refer to Section C8. Special Procedures.

Lifting a Wide Load







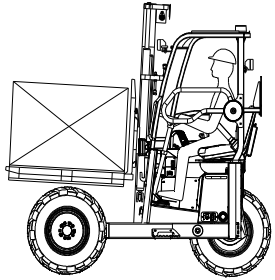


1. Approach the trailer in 2-Way mode.
2. Make sure the load to be lifted is stable and secure.
3. Check the weight and load center of the load to be lifted. If the weight is not marked or shown on the load, check the weight with your supervisor or have it weighed. If it is too heavy, split the load and restack it.
4. Centre the forks as wide as possible to suit the load.

5. Extend the reach device fully.
6. Fold down the load supports.
7. Align the forks with the centre of the load, approach it squarely and drive into the load until the forks are fully engaged.
8. Check that the ground surface is strong enough to support the stabilizers.
9. Lower the stabilizers fully.
10. Raise the load to clear the truck / trailer bed.
11. Tilt the mast rearward to secure the load.
12. Side-shift the mast to the center position.
13. Retract the reach device fully to bring the load above the front wheels.
14. Raise the stabilizers fully

15. Back away slowly to ensure the load clears the truck / trailer bed.
16. Apply the park brake.
17. Lower the load onto the load rests, keeping the forks in contact with the bottom of the load.
18. Ensure the machine is on a firm level surface.
19. Change the machine into 4-Way mode.
20. Disengage the park brake. The machine can now be driven in 4-Way mode.
21. Slowly drive away, looking in the direction of travel.

Travelling with a Wide Load

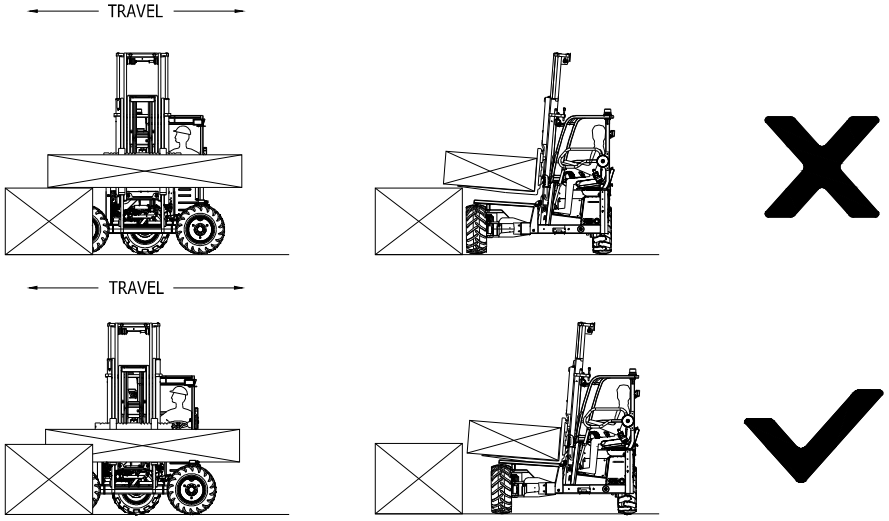


1. Carry the load as low as possible above the frame of the machine.
2. Keep the reach device retracted fully.
3. Tilt the mast back.
4. Do not side-shift the load while travelling or turning.
5. Use caution when starting or stopping. Drive slowly and avoid sudden movements.
6. Always look in the direction of travel.

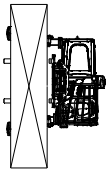
Travelling with a Wide Load (continued)

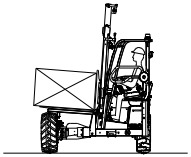
DANGER:

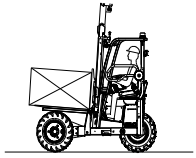
Load. Do not lift the load above an object or person when travelling in 4-Way mode. Always carry the load as low as possible on the forks and load supports.

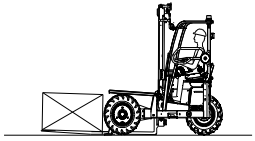


Placing a Wide Load









WARNING:

No Load. Never travel in 4-Way mode without a load on the forks. NEVER change modes when the machine is moving. Always change to normal 2-Way mode when travelling with no load and ensure the reach device is fully retracted.

1. Ensure the placement area is a firm level surface.
2. Check that the area is clear of debris.
3. Approach the placement area squarely.
4. Apply the park brake.
5. Raise the load until it clears the load rests.
6. Change to 2-Way Mode.
7. Check that the ground surface is strong enough to support the stabilizers.
8. Lower the stabilizers fully.
9. Extend the reach device fully to clear the frame, wheels and load rests.
10. Lower the forks to the ground to deposit the load
11. Tilt the mast forward slightly to deposit the load.
12. Raise the stabilizers fully.
13. Disengage the park brake.
14. Check that the rear wheel is in the straight ahead position.
15. Back up carefully.
16. Slowly drive away looking in the direction of travel, keeping the reach device fully retracted.

Operating on Inclines and Unusual Ground Surfaces

DANGER:

Inclines. Travelling across an incline with or without a load greatly increases the possibility of a tip over.

- Do not travel in 4-Way mode without a load.
- Do not travel across an incline in 4-Way mode.
- Always approach an incline to the left and travel up and down the incline. Drive up an incline to the left. Drive down an incline to the right.
- Keep the operator's compartment facing uphill.
- Do not turn on an incline
- Never stop or start suddenly.
- Operate all controls smoothly.
- Watch out for potholes or other obstacles that could affect the stability of the machine.
- Drive slowly over rough terrain.
- Where necessary, engage the diff-lock and travel slowly for additional traction.
- Always take great care when transporting wide loads on any incline. Carry the load on the load supports keeping the forks in contact with the bottom of the load.
- Make allowances for the reduction in both stability and lift capacity when operating on inclines.
- Remember that a machine in 4-Way mode is less stable than in normal mode.
- Do not attempt to drive up or down an incline in 4-Way mode just because you have driven up or reversed down it in normal mode.
- Only use 4-Way mode when it is not otherwise possible to carry a wide load.

Operating on Inclines and Unusual Ground Surfaces (continued)

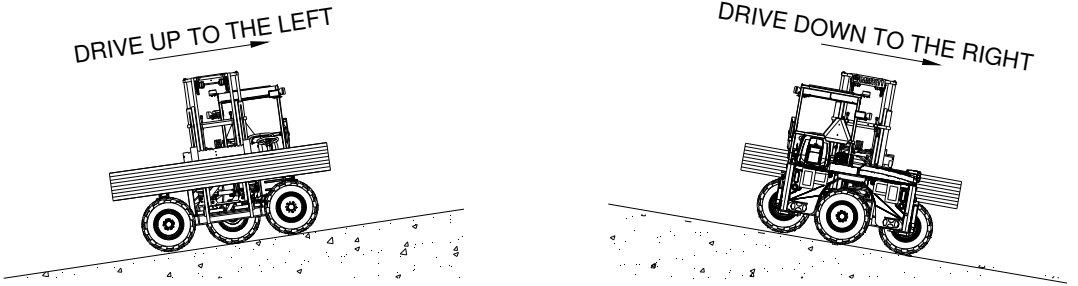
WARNING:

Using 4-Way. On 4-Way Models:

- Change into and out of 4-Way mode on a firm level surface only.
- Never travel in 4-Way mode without a load.
- Never change modes while the machine is moving.
- Always apply the park brake before changing steering modes.

WARNING:

Travelling On Inclines. When on an incline, the combined center of gravity moves downhill. In 4-Way mode the combined center of gravity will be closer to the edge of the stability triangle and stability is reduced.

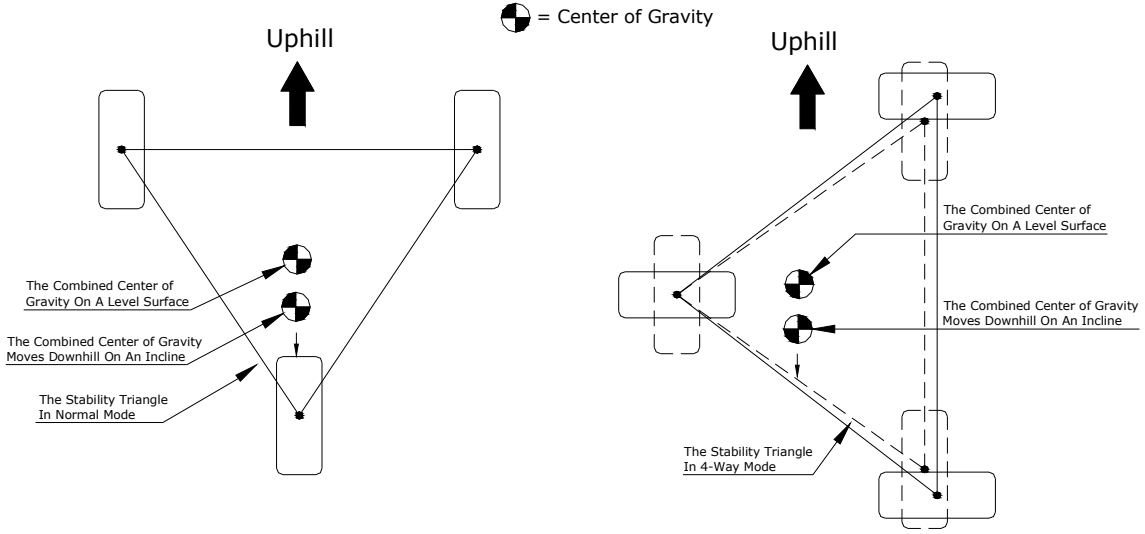


4-Way Mode - Forks Fully Retracted - With Load

**(Maximum Gradability = 15%
In 4-Way Mode)**

Operating on Inclines and Unusual Ground Surfaces (continued)

Note: When travelling on an incline the combined center of gravity moves downhill. In 4-Way mode the combined center of gravity will be much closer to the edge of the stability triangle as the machine is travelling sideways. This means the stability of the machine will be reduced.



Normal (2-Way) Mode

4-Way Mode

Load Supports

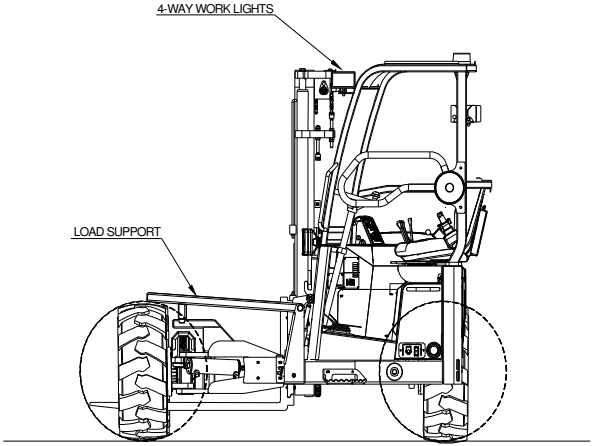
The 4-Way machine is fitted with load supports, these are used in conjunction with wide loads to minimize load deflection and increase load stability.

WARNING:

Load. Never travel in the lateral mode with an elevated load. Always keep the load as low as possible.

Never travel in Lateral (4-Way) mode with no load on the forklift.

Note: Always fold up the load supports before transporting the machine.



C5. OPERATING PROCEDURES – 4-WAY STEERING

Points to Remember

Ensure you are on a firm and level surface before engaging 4-Way mode.

Only use 4-Way mode where it is not possible to otherwise carry a wide load.

Never travel in 4-Way mode without a load.

Always carry the load on the forks AND the load supports.

Never start or stop suddenly. Operate all controls smoothly.

Watch out for potholes or other obstacles which could affect the stability of the forklift.

Drive slowly over rough terrain.

Where necessary, engage the diff-lock and travel slowly for additional traction.

Never travel in 4-Way mode with an elevated load, always keep the load as low as possible.

Never turn on an incline.

Always keep the operator's compartment facing uphill when travelling on inclines.

Do not attempt to drive up or down an incline in 4-Way mode just because you have driven up or reversed down it previously in normal mode.

Always return to the normal mode (2-Way) before placing a load.

Before Selecting 4-Way Mode

1. Ensure the machine is stationary.
2. Ensure the reach device is fully retracted.
3. Ensure the stabilizers are fully raised.
4. Ensure the load is above the height of the wheels.

While in 4-Way Mode

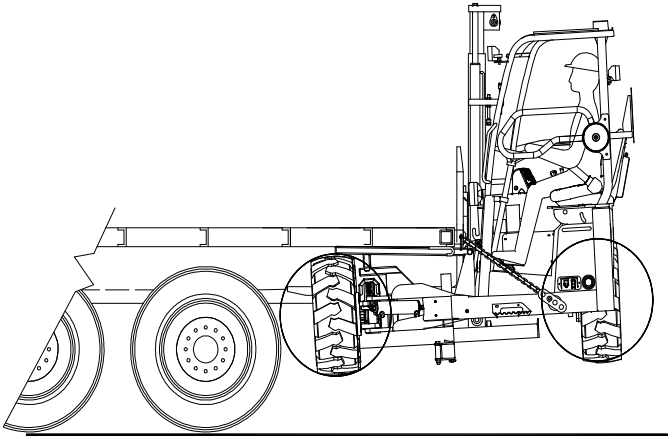
1. Do not extend the reach device.
2. Do not use the stabilizing legs.
3. Transport the load as low as possible above the wheels.
4. Drive the machine slowly and as smoothly as possible.
5. The light on the 4-Way switch signifies that you are in 4-Way mode, as well as the 4-Way work lights and beeper being activated.

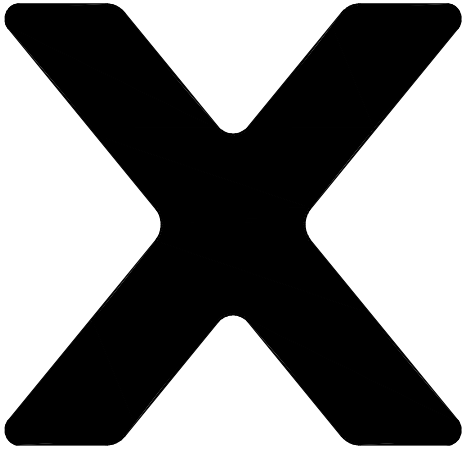
C6. MOUNTING PROCEDURE – 4-WAY STEERING

Mounting Procedure

Mount as per the standard machine (See section 5)

Note: During the truck mounting/dismounting sequence, never engage 4-Way mode as serious damage will occur to the mounting kit and the machine.





Daily Maintenance

In addition to the daily maintenance inspection that is listed in the standard operator manual, some additional daily checks should be carried out on the 4-Way machine.

Before you begin your work day take time to check your machine and make certain that the front steer system is in good operational condition.

Please carry out the following procedure:

- On the series steer circuit, turn the wheels fully inwards to the 4-Way position until they reach the mechanical stop.
- Continue to turn the steering against the end stop for approximately 20 seconds.

This purges and resets the 4-Way system ensuring both hydraulic cylinders are synchronized.

Note: If the machine is to be used continuously, then carry out the above sequence at one hour intervals of operation.

Alternatively if any loss of alignment is noticed between the front two steering cylinders, carry out the above procedure to reset the steering circuit.

C7. MAINTENANCE – 4-WAY STEERING

Daily Pre-Shift Inspection Checklist

Note: The additional checks listed in this section are specific to 4-Way and should be used in conjunction with the daily pre-shift inspection checklist on the standard machine. For this refer to section 6 in this operator manual.

Visual Checks
The Moffett Truck Mounted Forklift must be parked on a firm level surface in a SAFE ZONE with the keys removed and the park brake engaged. Starting at the operator's station, walk around the forklift and complete the following visual checks.
If defects are identified during the pre-shift visual inspection, notify your supervisor immediately.

1. **Left Load Support** – Ensure that the load support folds up and down smoothly. It should latch or lock positively when folded up.
2. **Left Load Support Cylinder** – Check for leaks at the fittings and glands (where the cylinder rod extends and retracts). Check for scratches and nicks on the rod. Check the mounts for cracks on either end of the cylinder. Check for missing or loose bolts on the cylinder retaining pins at either end of the cylinder.
3. **Left Steering Cylinder** – Check for leaks at the fittings and glands (where the cylinder rod extends and retracts). Check for scratches and nicks on the rod. Check the mounts for cracks on either end of the cylinder. Check for missing or loose bolts on the cylinder retaining pins at either end of the cylinder.
4. **Right Load Support** – Ensure that the load support folds up and down smoothly. It should latch or lock positively when folded up.
5. **Right Load Support Cylinder** – Check for leaks at the fittings and glands (where the cylinder rod extends and retracts). Check for scratches and nicks on the rod. Check the mounts for cracks on either end of the cylinder. Check for missing or loose bolts on the cylinder retaining pins at either end of the cylinder.

Daily Pre-Shift Inspection Checklist (continued)

6. **Right Steering Cylinder** – Check for leaks at the fittings and glands (where the cylinder rod extends and retracts). Check for scratches and nicks on the rod. Check the mounts for cracks on either end of the cylinder. Check for missing or loose bolts on the cylinder retaining pins at either end of the cylinder.

NOTE: IF DEFECTS ARE IDENTIFIED DURING THE PRE-SHIFT VISUAL INSPECTION, NOTIFY YOUR SUPERVISOR IMMEDIATELY.

Daily Pre-Shift Inspection Checklist (continued)

Operational Checks
Operational inspections are done by starting the engine, operating all controls, and test driving the Moffett Truck Mounted Forklift. Never start the Moffett Truck Mounted Forklift to perform the operational inspections if the visual inspection indicates an immediate safety hazard. Constantly monitor the gauges, listening for unusual noises, loose parts, fluid leaks and unusual conditions. If a problem is suspected, take the forklift out of service and have it inspected and repaired.

1. **Engage Lateral Mode** – Ensure the front and rear wheels turn smoothly into the lateral travel position.
2. **Lateral Drive Test** – Drive slowly and cautiously a few feet right and left to ensure the machine moves and stops smoothly. Ensure the machine can only operate in lateral mode when the mast carriage is fully retracted.
3. **Disengage Lateral Mode** – Ensure the front and rear wheels turn smoothly into the normal travel position.

NOTE: IF DEFECTS ARE IDENTIFIED DURING THE PRE-SHIFT OPERATIONAL CHECK, TAKE THE FORKLIFT OUT OF SERVICE, NOTIFY YOUR SUPERVISOR AND HAVE IT INSPECTED AND REPAIRED.

C7. MAINTENANCE – 4-WAY STEERING

Grease Points

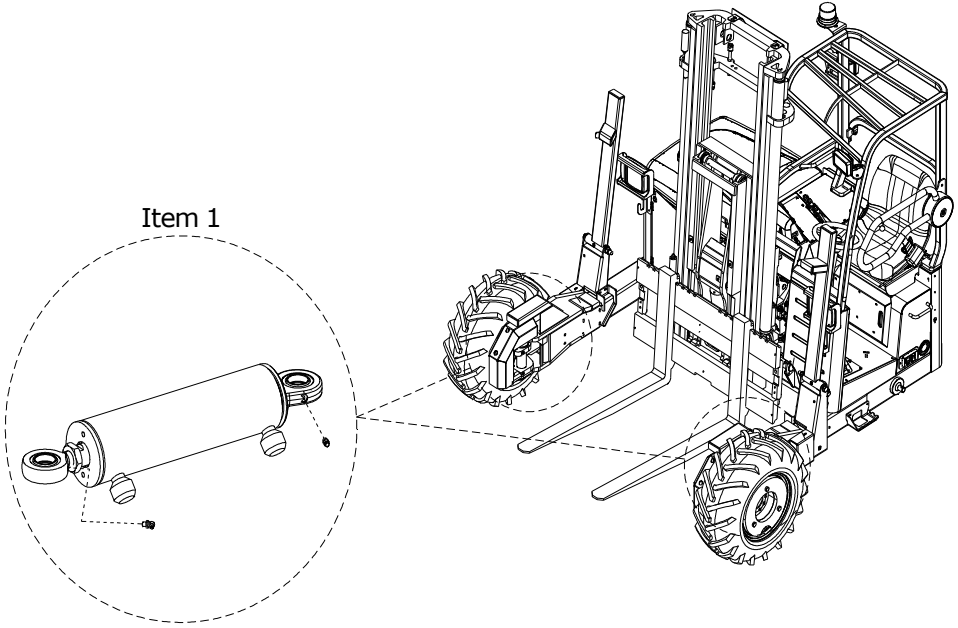
Note: Before greasing any points on the machine remove any hardened grease that may prevent the flow of lubricant. Each item should be moved after the initial application of grease and greased again to ensure complete lubrication at each point.

Note. The lubrication/ grease points listed in this section are specific to 4-Way. Refer to section 6 of this operator manual for the standard grease points on the machine**.**

ITEM	DESCRIPTION	No. OF POINTS	PAGE NUMBER
1	Front steering cylinders	4	228
2	Front steering swivels	4	229
3	Stabilizers	2	230
4	Load supports	2	231
5	Load support cylinders	2	232

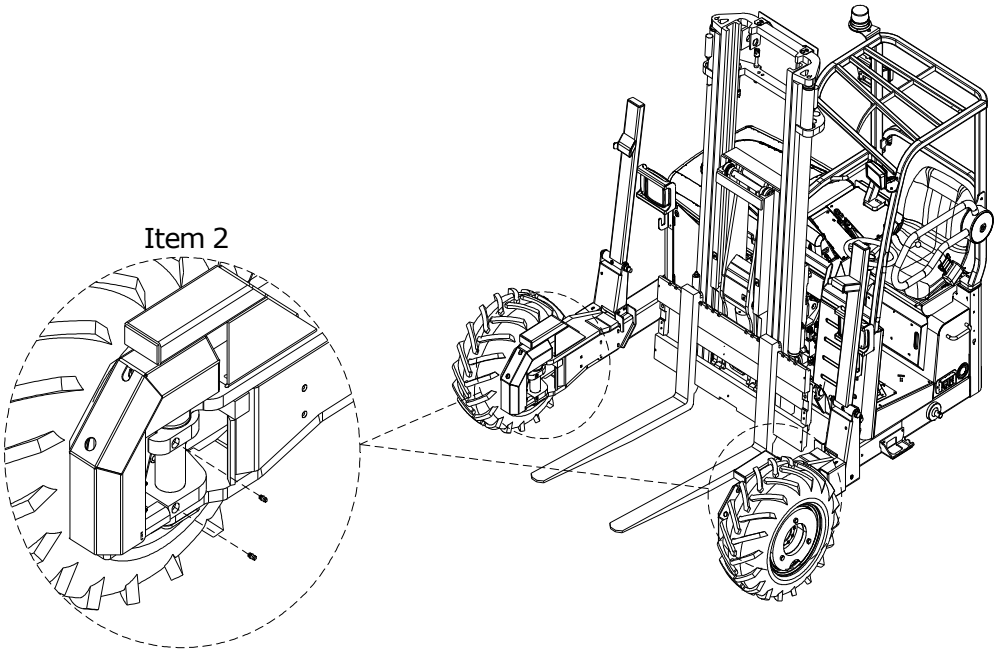
Grease Points (continued)

Front Steering Cylinder Grease Points



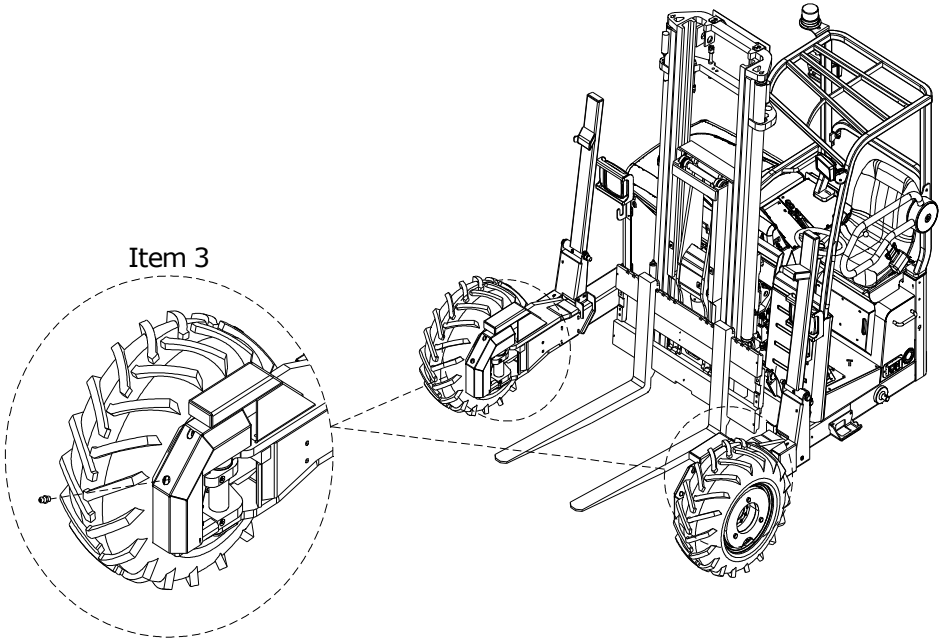
Grease Points (continued)

Front Steering Swivel Grease Points



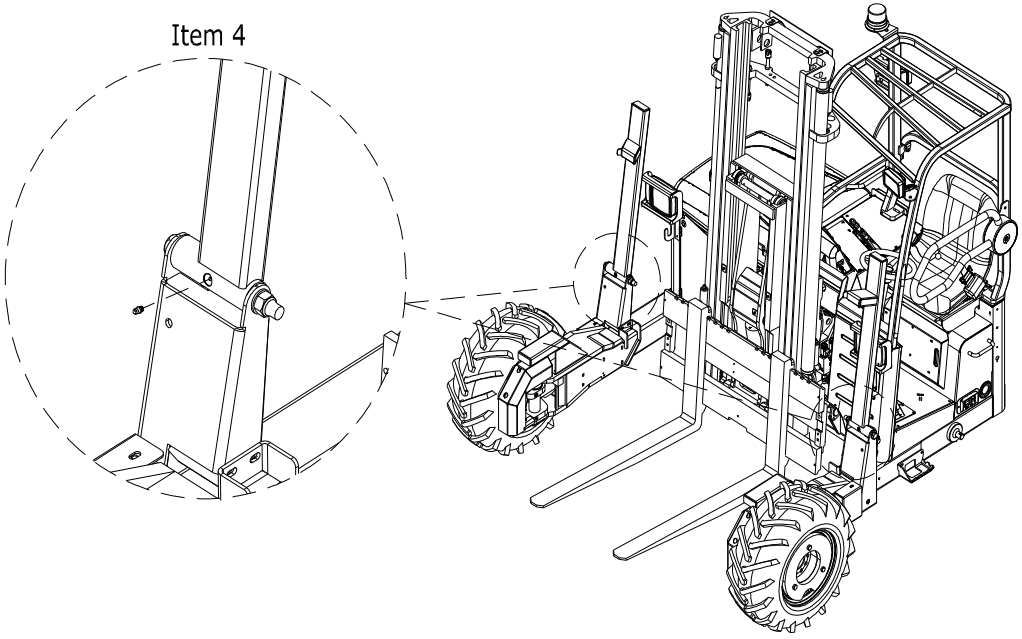
Grease Points (continued)

Stabilizer Grease Points



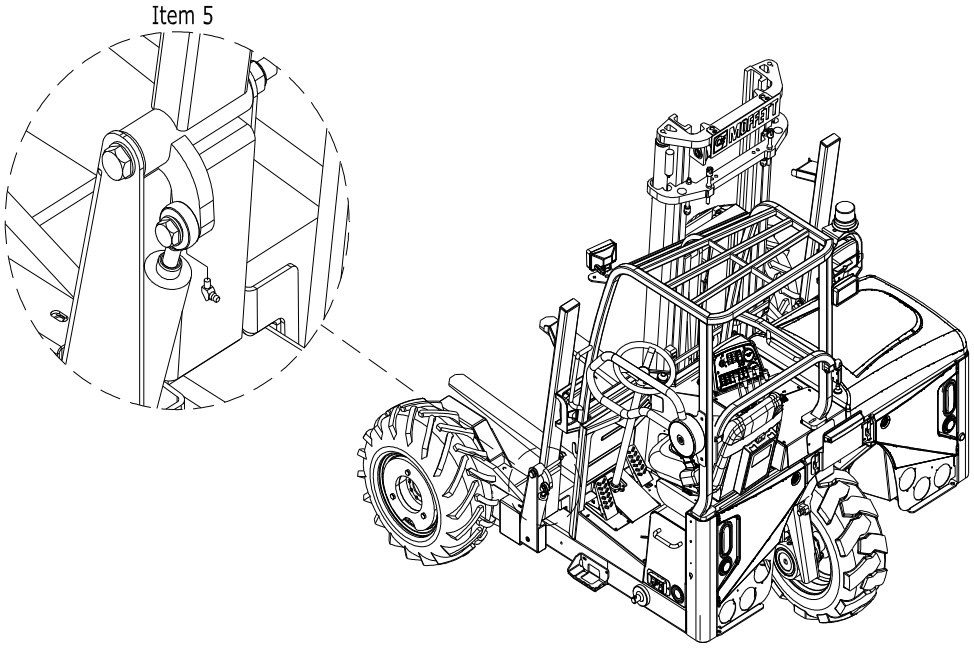
Grease Points (continued)

Load Support Grease Points



Grease Points (continued)

Load Support Cylinder Grease Points

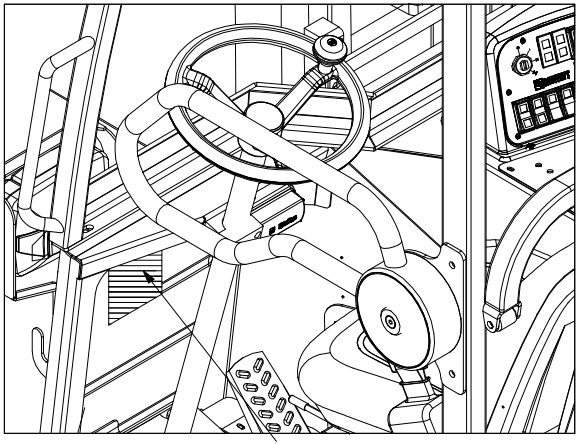


4-Way Override Procedure

In the event of a 4-Way system failure, a backup procedure is available on your machine to allow you to continue to operate the 4-way function manually until the machine can be serviced.

Standard
First check that all the 4-Way LED's on the control module are working as they should. If they are all OK then check the 4-Way fuse has not blown. If this is intact then the following procedure can be carried out.

1. Remove the 4-Way controller from the inside of the pedal enclosure as shown.
2. Take the 4-Way override connector, this is tie wrapped to the wiring loom behind the steering column.
3. Plug the 4-Way override connector into the wiring loom at the same location the 4-Way controller has been removed from. The override connector is color coded (black) to connect into branch eight of the wiring loom.
4. The 4-Way function can now be operated manually as described in the operating procedures.



4-Way Control Module

⚠ Warning

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

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