

Operation & Maintenance Manual

LIFT TRUCKS

GC15S-5, GC18S-5, GC20SC-5

 **WARNING**

Do not start, operate or service this machine unless you have read and understood these instructions and received proper training.

Unsafe or improper use of the machine may cause serious injury or death.

Operators and maintenance personnel must read this manual and receive training before operating or maintaining the machine.

This manual should be kept with the machine for reference and periodically reviewed by the machine operator and by all personnel who will come into contact with it.

The following warning is provided pursuant to California Health & Safety Code Sections 25247.5 et, seq,

 **WARNING**

California Proposition 65

Engine Exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

WASH HANDS AFTER HANDLING.

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Foreword

Literature Information

This manual should be stored in the operator's compartment in the literature holder or seat back literature storage area.

This manual contains safety, operation, transportation, lubrication and maintenance information.

Some photographs or illustrations in this publication show details or attachments that can be different from your lift truck. Guards and covers might have been removed for illustrative purposes.

Continuing improvement and advancement of product design might have caused changes to your lift trucks which are not included in this publication. Read, study and keep this manual with the lift truck.

Whenever a question arises regarding your lift truck, or this publication, please consult your DOOSAN dealer for the latest available information.

Safety

The Safety Section lists basic safety precautions. In addition, this section identifies the text and locations of warning signs and labels used on the lift truck. Read and understand the basic precautions listed in the Safety Section before operating or performing lubrication, maintenance and repair on this lift truck.

Operator Restraint System (If Equipped)

This manual contains safety, operation and maintenance information for the DOOSAN operator restraint system. Read, study and keep it handy.

WARNING

Your DOOSAN truck comes equipped with an operator restraint system. Should it become necessary to replace the seat for any reason, it should only be replaced with another DOOSAN operator restraint system.

Photographs or illustrations guide the operator through correct procedures of checking, operation and maintenance of the DOOSAN operator restraint system.

SAFE and EFFICIENT OPERATION of a lift truck depends to a great extent on the skill and alertness on the part of the operator. To develop this skill the operator should read and understand the Safe Driving Practices contained in this manual.

Forklift trucks seldom tipover, but in the rare event they do, the operator may be pinned to the ground by the lift truck or the overhead guard. This could result in serious injury or death.

Operator training and safety awareness is an effective way to prevent accidents, but accidents can still happen. The DOOSAN operator restraint system can minimize injuries. The DOOSAN operator restraint system keeps the operator substantially within the confines of the operator's compartment and the overhead guard.

This manual contains information necessary for Safe Operation. Before operating a lift truck make sure that the necessary instructions are available and understood.

Operation

The Operation Section is a reference for the new operator and a refresher for the experienced one. This section includes a discussion of gauges, switches, lift truck controls, attachment controls, transportation and towing information.

Photographs and illustrations guide the operator through correct procedures of checking, starting, operating and stopping the lift truck.

Operating techniques outlined in this publication are basic. Skill and techniques develop as the operator gains knowledge of the lift truck and its capabilities.

Maintenance

The Maintenance Section is a guide to equipment care. The illustrated, step-by-step instructions are grouped by servicing intervals. Items without specific intervals are listed under "When Required" topics. Items in the "Maintenance Intervals" chart are referenced to detailed instructions that follow.

Maintenance Intervals

Use the service hour meter to determine servicing intervals. Calendar intervals shown (daily, weekly, monthly, etc.) can be used instead of service hour meter intervals if they provide more convenient servicing schedules and approximate the indicated service hour meter reading. Recommended service should always be performed at the interval that occurs first.

Under extremely severe, dusty or wet operating conditions, more frequent lubrication than is specified in the "Maintenance Intervals" chart might be necessary.

Perform service on items at multiples of the original requirement. For example, at "Every 500 Service Hours or 3 Months", also service those items listed under "Every 250 Service Hours or Monthly" and "Every 10 Service Hours or Daily".

Environment Management

Note that DOOSAN Infracore VEHICLE B.G. is ISO 14001 certified which is harmonized with ISO 9001. Periodic ENVIRONMENTAL AUDITS & ENVIRONMENTAL PERFORMANCE EVALUATIONS have been made by internal and external inspection entities. LIFE-CYCLE ANALYSIS has also been made through out the total product life.

ENVIRONMENT MANAGEMENT SYSTEM includes DESIGN FOR ENVIRONMENT from the initial stage of the design.

ENVIRONMENT MANAGEMENT SYSTEM considers environmental laws & regulations, reduction or elimination of resource consumption as well as environmental emission or pollution from industrial activities, energy saving, environment-friendly product design (lower noise, vibration, emission, smoke, heavy metal free, ozone depleting substance free, etc.), recycling, material cost reduction, and even environmentally oriented education for the employee.

Important Safety Information

Most accidents involving product operation, maintenance and repair are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs. A person must be alert to potential hazards, and use common sense. Persons must also have the necessary training, skills and tools before attempting to perform these functions.

Improper operation, lubrication, maintenance or repair of this product can be dangerous and could result in injury or death.

Do not operate or perform any lubrication, maintenance or repair on this product, until you have read and understood the operation, lubrication, maintenance and repair information.

Safety precautions and warnings are provided in this manual and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or other persons.

The hazards are identified by the "Safety Alert Symbol" and followed by a "Signal Word" such as "WARNING" as shown below.



The meaning of this safety alert symbol is as follows:

Attention! Become Alert! Your Safety is involved.

The message that appears under the warning, explaining the hazard, can be either written or pictorially presented.

Operations that may cause product damage are identified by NOTICE labels on the product and in this publication.

DOOSAN cannot anticipate every possible circumstance that might involve a potential hazard, and common sense is always required. The warnings in this publication and on the product are therefore not all inclusive. Before any tool, procedure, work method or operating technique not specifically recommended by DOOSAN is used, you must be sure that it is safe for you and others. You should also ensure that the product will not be damaged or made unsafe by the operation, lubrication, maintenance or repair procedures you choose.

The information, specifications, and illustration in this publication are on the basis of information available at the time it was written. The specifications, torques, pressures, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service given to the product. Obtain the complete and most current information before starting any job. DOOSAN dealers have the most current information available.

Safety

The safety rules and regulations in this section are representative of some, but not all rules and regulations noted under the Occupational Safety and Health Act (OSHA) and are paraphrased without representation that the OSHA rules and regulations have been reproduced verbatim.

Please refer to 1910. 178 in Federal Register Vol. 37, No. 202, the National Fire Protection Association No. 505 (NFPA), American National Standard, ANSI B56. 1 Safety Standard for Low lift and High Lift Trucks and subsequent revisions for a complete list of OSHA rules and regulations as to the safe operation of powered industrial lift trucks. Since regulations vary from country to country outside in U.S.A., operate this lift truck in accordance with local regulations.

DOOSAN lift trucks are manufactured according to the regulations and standards laid down in EU Machinery Directive 98/37/EC and EMC directive 89/336/EC. Please refer to the Directives 89/655/EC and 89/391/EC and its amendments for the safe use of DOOSAN lift trucks.

The most effective method of preventing serious injury or death to the lift truck operator or others is for the lift truck operator to be familiar with the proper operation of the lift truck, to be alert and to avoid actions or conditions which can result in an accident.

Do not operate a lift truck if in need of repair, defective or in any way unsafe. Report all defects and unsafe conditions immediately. Do not attempt any adjustments or repairs unless trained and authorized to do so.

Warning Signs and Labels

Warning Signs and Labels

There are several specific safety signs on your lift truck. Their exact location and description of the hazard are reviewed in this section. Please take the time to familiarize yourself with these safety signs.

Make sure that you can read all safety signs. Clean or replace these if you cannot read the words or see the pictures. When cleaning the labels use a cloth, water and soap. Do not use solvent, gasoline, etc.

You must replace a label if it is damaged, missing or cannot be read. If a label is on a part that is replaced, make sure a new label is installed on the replaced part. See your dealer for new labels.

Training Required To Operate or Service Warning



Located on the right of the steering wheel.

WARNING

Improper operation or maintenance could result in injury or death. Do not operate or work on the lift truck unless you are properly trained. Read and understand the Operation and Maintenance Manual. Additional manuals are available from DOOSAN LIFT TRUCK dealers.

General Warnings to Operator



Located on the right side of the operator's seat.

WARNING

Only trained and authorized personnel may operate this machine. For safe operation, read and follow the operation and maintenance Manual furnished with this lift truck and observe the following warnings:

1. Before starting machine. Check all controls and warning devices for proper operation.
 2. Refer to machine identification plate for allowable machine capacity. Do not overload. Operate machines equipped with attachments as partially loaded machines when not handling a load.
 3. Put directional control or shift lever in neutral before "ON - OFF" switch is turned on.
 4. Start, turn and brake smoothly. Slow down for turns, slippery or uneven surfaces. Extremely poor surfaces should be repaired. Avoid running over loose objects or holes in the roadway surfaces. Use extreme caution when turning on inclines.
 5. Travel with load as low as possible and tilted back. If load interferes with visibility, travel with load trailing.
 6. On grade operations travel with load up grade.
 7. Watch out for pedestrians and obstructions. Check overhead clearances.
 8. Do not permit riders on forks or machine at any time.
 9. Do not allow anyone to stand or pass under the elevated portion of any machine.
 10. Be sure operating surface can safely support machine.
 11. Operate machine and attachments only from operator's position.
 12. Do not handle unstable or loosely stacked loads.
 13. Use minimum tilt when picking up or depositing a load.
 14. Use extreme care when handling long, high, or wide loads.
 15. Forks should be completely under load and spread apart as far as load permits.
 16. Machine should be equipped with overhead guard or equivalent protection. Where load requires it, use load backrest extension. Use extreme caution if operating without these devices.
 17. Parking - Lower lifting mechanism to floor. Put directional control or shift lever in neutral. Set parking/secondary brake. Turn "ON - OFF" switch off. Chock wheels if machine is on incline. Disconnect battery when storing electric machines.
 18. Observe safety rules when handling fuel for engine powered machine and when changing batteries for electric machines.
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Pressure Warning

⚠ WARNING

Contents under pressure may be hot. Allow to cool before opening.



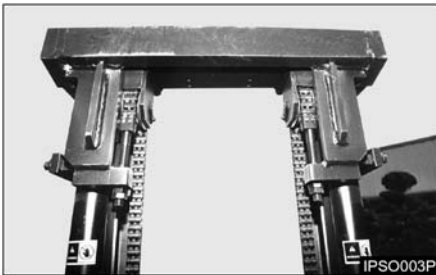
Located on the radiator top tank by the radiator cap.

Hand Placement Warning

⚠ WARNING



No hands. Do not place hands in this area. Do not touch, lean on, or reach through the mast or permit others to do so.

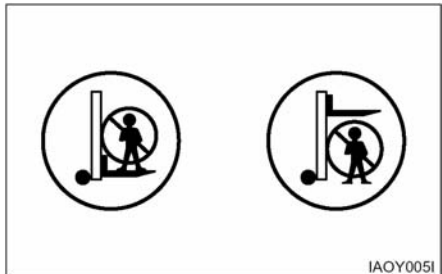


Located on the mast.

No Standing On Forks Warning, No Standing Under Forks Warning

⚠ WARNING

Do not stand or ride on the forks. Do not stand or ride on a load or pallet on the forks. Do not stand or walk under the forks.



Located on the lift cylinder.

Load Backrest Must Be In Place Warning

⚠ WARNING

Operation without this device in place may be hazardous.



Located on the load backrest.

Overhead Guard Must Be In Place Warning

WARNING

Operation without this device in place may be hazardous. This guard conforms to A.N.S.I. B56.1 and F.E.M. Section 4.

This design has been tested with an impact of appropriate value.



Located on the Overhead Guard.

No Riders Warning

WARNING

To avoid personal injury, allow no riders. A lift truck is designed for only one operator and no riders.



Located beside the operator's station.

Moving Fan Warning

WARNING

To avoid personal injury, stay clear of moving fan.



Located inside the engine compartment cover.

Packing brake



Pull the lever **BACK** to engage the parking brake.



Push the lever **FORWARD** to release the parking brake.