



OPERATOR MANUAL FOR MACHINES EQUIPED WITH SAS™ GRAPPLE FORKS



TO THE OWNERS, MANAGERS, AND OPERATORS OF LOADERS AND FORK LIFTS EQUIPPED WITH SAS FORKS™

Safety is of the utmost importance in the workplace. Observing safety guidelines, equipment capacities and using common sense will provide a work environment that is safe and efficient for employees, management and customers. This operator manual has been assembled and sent to help you and your operators to move products quickly and safely. It is important that you and your operators read and understand the information included here in.

A key element in safely moving vehicles with SAS FORKS™ is that all necessary people are trained, including:

- Machine Operators.
- Personnel working in the area of the operation of a machine equipped with SAS FORKS™
- Other individuals that Owners or Management of your company feel need to be trained.

Prior to using SAS FORKS™, ensure that all personnel that will use and/or work in the area of the SAS FORKS™ read the following:

- Machine Manufacturer's Operator Manual
- Operator Manual For Machines Equipped With SAS FORKS™ (*This Manual*)
- Identification Plate on the SAS FORKS™

We recommend that Management complete the following items prior to using SAS FORKS™ :

- Conduct a meeting with all personnel and an Experienced Machine Operator to review, discuss and answer questions regarding safety, capacities, limitations, and proper operational procedures.
- Provide a written test to such personnel, testing their knowledge and understanding of the safe operation of this equipment and the use of SAS FORKS™.
- Obtain a signature from each person acknowledging such training & file in their personnel file.

Daily workplace and operational safety is the responsibility of the Owners, Managers, and Operators.

- Knowledgeable & routine supervisory duties to ensure that safe operating practices are followed.
- Regular maintenance and inspection of the equipment, with documentation of such.
- Periodic meetings, reviewing operating guidelines, signed by all of the attending personnel.

The proceeding outline, and the following information laid out in this Operator Manual for SAS FORKS™ is intended to be a guide only, and is not meant to encompass all issues that may need to be addressed for your particular type of business operation.

If you should encounter any additional information that would be helpful to us, or others, please contact us.

Thank you for your business,

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GRAPPLE FORKS OPERATING PRECAUTIONS

DAILY PRE-OPERATION INSPECTION AND GREASING:

Secure the machine:

- Park the equipment on firm level ground.
- Lower the forks to the ground. Position forks flat on the ground.
- Lower the grapple to the lowest resting position.
- Set the parking brake, and/or block the wheels on the equipment.
- Turn off the engine.
- Move the hydraulic control levers for the lift, tilt, and grapple, back and forth to relieve any built up pressure in the system.

Put on appropriate Personal Protective Equipment (PPE):

- At a minimum, wear safety glasses. Your worksite may require additional PPE, such as steel toe shoes, hard hat, leather gloves, etc., observe your workplace rules.

Observe these safety precautions:

- **Never** attempt to grease the fork pins when the machine is running, you could be crushed in the operating linkage
- **Never** attempt to grease the fork pins when the forks are lifted up off the ground, you could be crushed if the forks would drop to the ground.

Conduct a thorough pre-operation inspection of the forks while greasing the pins and joints.

- See separate suggested pre-operation inspection list in this manual.
- Grease all pins and rotating points daily, prior to use. To be sure grease is being fully applied into the joint, grease should be pumped into the grease zerk until it squirts out around the pin and rotating point.

GRAPPLE OPERATION:

- Prior to lifting the load, determine if the overall weight, load center and size of the load, is within the forks and machine's capacity.
- **Never** operate the GRAPPLE when people are within 30 feet. Something could malfunction, causing a projectile to injure someone too close.
- Approach the load, so that the heaviest portion of the load will be directly against the fork carriage. Slowly slide the forks under the load, centering the load on the forks from right to left. Sliding the forks fully under the load, until the load comes in contact with the carriage.
- **Lower the grapple arm to secure the load.** Pick up the load on the forks evenly.
- Tip the blades back about 15°, to prevent the load from sliding off the end of the forks.
- Drive the loader at a reasonable speed to prevent bouncing or jarring of the load.
- Do not tip the forks forward and depend on the grapple to hold the load secure on the forks. The intent of the grapple to secure the load on the forks in tandem with the forks being rolled back 15°. A load falling, will damage the load, and could cause serious injury or even death.



DAILY PRE-OPERATION INSPECTION

Daily, pre-operation inspection is recommended to help the operator safely use SAS FORKS™. The list below is a general summary. This is not meant to be an exhaustive list of items to inspect. Refer to the machine manufacturer's operator manual for additional items that may need to be inspected prior to machine operation. It is the responsibility of the Owners and Operators to ensure safe operation of equipment in the field. Any unsafe items should be professionally repaired prior to operation of machine. This pre-operation inspection should be done on level ground, with the parking brake on.

1) CHECK YOUR MACHINE TIRES.

Inspect each tire for cracks, cuts and the proper uniform pressure.
Correct air pressure as needed. A flat or low tire is not safe.
Do not operate the machine if tires have cracks or cuts that are deep.

2) CHECK YOUR HYDRAULIC FITTINGS AND HOSES.

Inspect each hydraulic fitting & hose to ensure it is not worn, kinked, cracked, swelling, or leaking.
Have any damaged part(s) replaced immediately.
Do not operate the machine if damage is found.

3) GREASE AND INSPECT ALL THE LINKAGE PINS.

Inspect each linkage pin to ensure properly fastened and the condition.
Grease each linkage pin and joint to ensure smooth operation and to reduce wear.
Do not operate machine if linkage pin or retaining plate of bolt is worn, loose or missing.

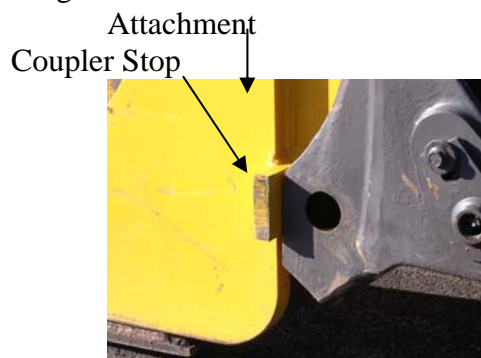
4) VERIFY THAT THE QUICK COUPLER PINS ARE FULLY ENGAGED AND LOCKED

Prior to using SAS FORKS, SAS GRAPPLE FORKS, or any attachment with a quick coupler system, you must verify both coupler pins are fully engaged through the forks. Failure to do so will cause damage to the coupler stops, damage your coupler, and risk injury or death to workers and the operator, if the attachment falls off during use, which is very dangerous.

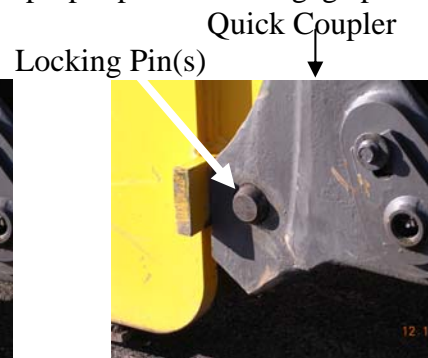
Most wheel loaders have a locking switch in the cab. Move it to the proper position to engage pins.



(sample switch)



(forks & coupler NOT locked)



(coupler pin engaged locking forks & coupler)

5) SLOWLY RUN THROUGH LIFT.

Verify smooth and proper operation of lift arms and grapple prior to use.



GENERAL FORKS OPERATING PRECAUTIONS

WHEEL LOADERS: REMOVE “LOCK POSITION”, “DETENT”, & “AUTOMATIC DUMP”

Remove the lock position, detent control, and auto dump features on the up and down levers. These features were originally intended for wheel loaders moving gravel in buckets and dumping it into trucks. These controls, if left operable on your machine, could cause accidents by raising or lowering the load instantly. These are not desirable features with using forks to handle loads.

LIFT CAPACITY

- Observe the most restrictive weight capacity provided by the equipment manufacturer, in the manufacturer’s operator manual, on the cab id plate, and on the identification plate of your SAS FORKS™. Attempting to lift loads in excess of the lowest rated capacity will result in an unsafe condition. Damage may occur to the equipment, forks, or even cause loss of steering control, and tip over the loader/forklift.

LIFT HEIGHTS

- Observe the most restrictive lift height provided by the equipment manufacturer, posted on the original cab plate, in the manufacturer’s operator manual, and/or on the forks identification plate.
- Lift height limitations are in place to protect the operator, and to ensure stability of the equipment. In wheel loaders equipped with ‘dirt digger linkages’, the load may suddenly dump without any control or warning, if the maximum lift height is exceeded. (Some machine’s max. lift height are 8’)
- **Never** raise the forks to the maximum lifting height and point the fork blades in the air. You could hit a power line and be electrocuted.

TURNING WHILE CARRYING A LOAD

- During transport of a load, keep the load close to the ground, (ie: 2 feet or less) On articulated equipment, such as a wheel loader, it is not safe to turn (*articulate*) if the load is more than 2 feet above the ground.
- The best way to lift loads at heights above 2 feet, is to position your equipment, with the wheels, either straight in line, or turned less than 5°. Then lift, and place the load without turning the machine.
- **Never** articulate a wheel loader more than 5 degrees right or left with the load at a height of more than 2 feet above ground. The wheel loader could tip over.

WARNING SOUNDS

- Sound horn when approaching blind areas, like around corners of buildings or garage. This is necessary to alert other people who may not be able to see that you are approaching.
- Your wheel loader/forklift must be fitted with a safety beep to sound when backing (reverse) to warn people. If safety beeper is inoperable, it must be immediately fixed prior to further use of the loader/forklift.

PEOPLE / PEDESTRIANS / WORKERS

- At all times you must be aware of the location of all people in the vicinity of your equipment and the load you are transporting. You are responsible to maintain a safe operating distance from them. A minimum recommended distance that all people must stay clear is 30 feet.
- **Never** lift a load and let someone walk or work under the forks. Anything could happen and the load may drop crushing anyone under the load, causing severe injury or death.

GENERAL USE

- **Never** put the tips of the forks on the ground and raise the front wheels of the forklift/wheel loader off the ground. The forks may break and/or the forklift/wheel loader may tip over.
- **Never** operate equipment without correct tire pressure in all tires. A soft tire could cause the unit to tip over
- Always park equipment with the forks lowered flat to ground, & grapple lowered to resting closed position.



SAFETY

Buyer accepts the responsibility to (1) Ensure that all personnel that will use and/or work in the area of the purchased product will read the safety ID plate and the Operator Manual For Machines Equipped With SAS FORKS™ and the Machine Manufacturer’s Operators Manual, prior to use; and (2) Ensure that all personnel follow the safety guidelines outlined on these materials.
 S.A.S. OF LUXEMBURG, LTD. IS NOT RESPONSIBLE FOR SAFETY IN THE FIELD.

GOALS OF THE S.A.S. OF LUXEMBURG, LTD. LIMITED WARRANTY PROCEDURE

- ASSURE MINIMUM CUSTOMER DOWNTIME by resolving the problem correctly on a timely basis.
- ASSURE END-USER CONFIDENCE while maintaining an equitable Warranty expense for both your company and SAS.
- PRODUCT IMPROVEMENT. We have an engineering staff ready to assist you. Call us at 1-877-SAS-FORK (1-877-727-3675)
 Please call SAS before attempting any repair, modification, or questionable job applications.

LIMITED WARRANTY FOR SAS FORKS™

For products that S.A.S. of Luxemburg, Ltd. (SAS) manufactures, SAS warrants that such products conform to all specifications for materials and workmanship for the period of time indicated below, after delivery, when used in compliance with the SAS FORKS™ Operator Manual.

DEFECTS IN WORKMANSHIP & MATERIAL SPECIFICATIONS

<u>PRODUCT TYPE</u>	<u>LIMITED WARRANTY PERIOD</u>	<u>ITEM COVERED</u>
STANDARD HEAVY DUTY 15’ SAS FORKS™	1 YEARS FROM ORIGINAL SHIP DATE	CARRAIGE UNIT
STANDARD HEAVY DUTY 15’ BLADES	3 YEARS FROM ORIGINAL SHIP DATE	FORK BLADE
ALL OTHER SAS FORKS™ (listed below)	1 YEAR FROM ORIGINAL SHIP DATE	CARRAIGE UNIT
MEDIUM DUTY SHORT SAS FORKS™, HEAVY DUTY SHORT CRUSHING SAS FORKS™, THE CLAW™, SAS RAKE FORK, MEDIUM DUTY LONG SAS FORKS™, EXTRA HEAVY DUTY LONG SAS FORKS™ , LIGHT DUTY LONG TUBULAR.		
BLADES FOR ABOVE LISTED SAS FORKS™	1 YEAR FROM ORIGINAL SHIP DATE	FORK BLADE
FORGED FORKS	1 YEAR FROM ORIGINAL SHIP DATE	CARRIAGE UNIT
FORGED FORK BLADES	None, Not a SAS manufactured component.	NA
SAS FORKS™ BUMPERS	None	NA
SKID PLATES	None	NA
OTHER PRODUCTS NOT LISTED	None, unless specified on face of original invoice	NA

SAS does not warrant the products that it does not manufacture. Rather, all warranties, if any, for these products are supplied by the manufacture. SELLER EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

CALL FOR WARRANTY CONSIDERATION: To be considered for warranty repairs or replacement buyer must notify SAS of any warranty claim within 10 days after such claim arises, and prior to expiration of the warranty period and prior to the performance of any repairs being done, otherwise buyer waives all rights to such claim.

- Obtain the serial number off the forks and call SAS at 1-877-SAS-FORK. Clearly describe the problem and the operation that was taking place when it occurred.
- Buyer is to return defective assembly, freight prepaid, or photographic evidence clearly showing the problem area and details of failure to SAS for review. When necessary, a factory representative may evaluate the problem in the field.

WHAT SAS WILL DO: SAS will examine the defective product, and the details of the failure. If SAS determines that the failure of materials or workmanship was proven to be within the terms of this limited warranty, SAS will, at it’s option, repair or replace, FOB the factory, in Luxemburg, WI, USA, the defective product. If the product cannot be returned to the factory, SAS may approve field repair of defective product. SAS will approve an appropriate amount of hours and cost for the repair before authorizing repairs to begin. No provisions will be made for incidental damages, mileage, travel time, overtime, downtime, or special freight charges.

FORK BLADE LIMITED WARRANTY

● **BENT** FORK BLADES are a condition of operation error and are NOT a warranted condition. If you do bend a blade, call 1-877-SAS-FORK and a factory representative will assist you in the procedure for straightening the bent blade. The blades, under most circumstances, can be straightened.

● **BROKEN/CRACKED** FORK BLADES must meet the following specifications to qualify for a broken blade replacement:

1) The tips of the blade must measure at least 90% of the original thickness at the originally designed length.

● The STANDARD 15' HEAVY DUTY FORK BLADES are designed and shipped from the factory at one and one-half (1 ½") inches thick and one hundred and ninety two (192") inches long.

● ALL OTHER BLADES ARE CUSTOM DESIGNED; Consult SAS for original fork blade design specifications.

2) The blades must not have been welded or ground in any manner other than for welding of factory approved skid pads.

3) The blades must not have an upward deflection of more than 1" per 10' as measured from the tip. *

4) The blades must not be cracked from the bottom, or the crack must not originate from the bottom.*

*Both of the above conditions are caused from repeated down pressure. This is not a warrantable condition. See page 5 and 8

5) Refer to the 'conditions that will void your warranty'

If the blade(s) break and the blades meet these conditions, the factory will ship you freight collect a new replacement blade at no charge.

BLADE WEAR

CARRIAGE UNIT LIMITED WARRANTY

● **UPPER CARRIAGE UNIT FIT AND CONSTRUCTION:** We guarantee our SAS FORKS™ to fit your machine as designed to match the specifications you provided.

This is warranted against cracks in material, weldments, and factory machined areas.

● **WEAR OF BASE PLATE LOWER CARRIAGE,** which is structural material, voids the warranty. This is caused from not maintaining skid plates under the carriage. See page 6.

● **BROKEN/CRACKED LOWER CARRIAGE:**

Cracking or breaking of the carriage unit from the bottom voids the warranty. This is caused from improper operation. Usually caused by repeated down pressure and wheelies. This is not a warrantable condition. See pages 5 and 8.

CONDITIONS THAT WILL VOID YOUR WARRANTY: Failures, which in our determination were the result of:

- Improper installation.
- Misapplication - See SAS FORKS™ Operator Manual.
- Misuse or Improper operation – See SAS FORKS™ Operator Manual.
- Exceeding the weight and/or lift limitation posted on the Identification Plate attached the SAS FORKS™.
- Negligence or Failure to perform routine inspection and/or maintenance as outlined in the SAS FORKS™ Operator Manual.
- Unauthorized modification, welding, burning, grinding, installation of non-factory skid plates, etc. (other than specifically allowed in the SAS FORKS™ Operator Manual or as provided in a written authorization directly from SAS factory Engineers.).
- Continued use after a malfunction of the hydraulic system in the forklift or loader.
- Accidental damage.

LIMITED WARRANTY REMEDIES: Buyer must notify SAS of any warranty claim within 10 days after such claim arises; otherwise buyer waves all rights to such claim. Unless agreed otherwise in writing. Buyer's sole remedy for breach of warranty is, at seller's option, the repair of the defect, or the providing of a replacement part F.O.B. seller's office. Seller will not be responsible for costs of dismantling or reassembling the product. Further, seller will not be liable for any direct, indirect, consequential, incidental, or special damages arising out of a breach of warranty. These remedies are exclusive, and all other warranty remedies are excluded.

PROPRIETARY RIGHTS: All designs and other proprietary rights provided by SAS to Buyer are to remain the property of SAS, and Buyer shall honor all proprietary legends. Buyer agrees not to copy the design of S.A.S.™ Forks.

LIMITATION OF LIABILITY: The seller's price is based on the enforceability of this limitation of liability, and the buyer understands that the price would be substantially higher without this limitation. Seller shall have no liability to buyer for lost profits or for special, consequential, exemplary, or incidental damages of any kind, whether arising in contract, tort, product-liability, or otherwise, even if advised of the potential damages in advance.

- In no event shall seller be liable to buyer for any damages whatsoever in excess of the contract price.
- In the event that any warranty or warranty remedy fails of its essential purpose, or is held to be invalid or unenforceable for any reason, in consideration of the other provisions of this agreement, the parties understand and agree that all limitations of liability under this provision will nevertheless remain in effect.

SEVERABILITY: Any legally unenforceable provision may be severed from this agreement, and the remaining terms and conditions will be enforced as a whole.

SAS NETWORK/procedures/forks/operator safety manuals/operator grapple sas fork safety manual/07 SAFETY WARRANTYpg2.doc 9/13/2007 DMS

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1-877-SAS-FORK