



15.5' Includes 10' to 18'

SAS FORKS™

OPERATOR MANUAL

FOR SAFELY LIFTING & MOVING SALVAGE CARS & LIGHT TRUCKS FROM THE FRONT.



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Serial Number: When contacting SAS FORKS provide Serial Number. Stamped in two places	
•Stamped in steel, on left side of the carriage, just above welded SAS logo.	1 S
•Stamped in aluminum ID plate on the left side of the carriage.	

LIMITED INTENDED USE OF THIS EQUIPMENT:

15' (10'-18' LONG) SAS FORKS when properly installed and safely used by the operator, are intended to lift and move salvage cars and light trucks. SAS FORKS are not intended to lift any people and is not intended to be used with any device or object for that purpose. SAS FORKS are not intended to lift any object overhead of any people. This SAS FORKS attachment is considered a non-OEM attachment and has not been approved by any specific wheel loader, forklift or machine manufacturer. Prior to installation or use, customer is responsible to read machine manufacturer's manual and warranty documents, if any, and identify any impact installation and use of this attachment may have on the wheel loader's warranty. Read this manual completely before installation or use.



INTRODUCTION LETTER (Page 3) SAS™ FORKS

TO THE OWNERS, MANAGERS, AND OPERATORS OF LOADERS EQUIPPED WITH SASTM 15' FORKS

Safety is the most important issue 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. It is important that you and your operators read and understand the information included in this manual. A key element to safe operation of this equipment is that all personnel are properly trained. Personnel recommended to receive training: Operators and all others working in area where equipment will be utilized

Safety warnings are highlighted through out this manual. Understanding the significance of these symbols is important. The following is a definition of each symbol you will encounter in this manual.



Caution symbol is intended to draw your attention to important safety information, hazard or precaution.



Danger Symbol indicates a hazardous situation that if not avoided will result in serious injury or death



Warning Symbol indicates a hazardous situation that if not avoided could result in serious injury or death



Caution Symbol indicates a hazardous situation that if not avoided could result in minor injury or potential property damage



Notice Symbol indicates worst credible severity of harm is property damage.

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

Thank you for your business,

SAS LLC. S.A.S. OF LUXEMBURG, LLC. 133 Center Dr Hwy 54 · PO Box 260 LUXEMBURG, WI 54217 USA Phone: 1-920-845-2198

Email: buyit@sasforks.com

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GENERAL SAFETY PRECAUTIONS SAS™ FORKS

(Page 4)

Operation of equipment should only be performed by qualified and trained individuals. All persons operating or working in the area of operation should read this manual and a copy of this manual should be kept with the equipment.

To be considered qualified you must:

- •Understand the written instructions supplied by the manufacturer of this device, the manufacturer of the wheel loader, all company rules and any applicable OSHA regulations
- •Completed training including actual operation of the device
- •Know and follow the safety rules and regulations of the jobsite.
- •Know and follow all guidelines outlined in this manual



Operation of equipment by un-qualified or un-trained individuals can result in serious injury or death. Verify all operators have received proper training on operation of this equipment.



Operation of equipment under the influence of illegal, prescribed or over the counter drugs can result in potential injury or property damage. Consult your physician before operation of this equipment while on medication.



Inspect the device and perform all preventative maintenance before operation at the start of every shift. Failure to perform inspections or proper maintenance can result in equipment failure resulting in serious injury or property damage.



Read operators manual and follow all safety procedures for the equipment this device is attached to. Failure to follow Manufacturers recommendations can result in serious injury and property damage or death.

AWARNING

This equipment has numerous moving components. Do not wear loose fitting clothing, rings, jewelry or other items that may become entangled in the device. Be aware of resulting pinch points and keep clear during operation, inspection and maintenance. Pinch points exist between the coupler and forks, coupler and wheel loader, failure to keep clear while in operation can result in serious injury or death.



Do not exceed posted weight limits on equipment or loader. Exceeding rated load limits will result in equipment damage, serious injury or death.



INSTALLATION GUIDELINES SAS™ FORKS

(Page 5)

Installation of SAS FORKSTM should be completed by a professional knowledgeable on your machine. SAS FORKSTM were made specifically to fit attachment of your machine. Contact your wheel loader or forklift manufacturer, as you deem necessary, depending on applicable rules or regulations, to obtain guidance or approval as may be required prior to installation of this attachment. Avoid pinch points during installation as you may be injured. Improper installation may cause damage to loader. These forks have not been authorized by any machine OEM, and installation may impact or void machine's warranty, change handling dynamics and lift capacity.

WHEEL LOADER RECOMMENDATIONS:

REMOVE YOUR "AUTOMATIC DUMP" FEATURE ON YOUR BUCKET LEVER.

The automatic dump feature was originally intended for loaders moving gravel in buckets and subsequently dumping it into trucks. This is not a desired feature when moving vehicles with SAS FORKSTM. Have this automatic dump mechanism removed if your machine has one.

REMOVE YOUR "LOCK POSITION" AND "DETENT' CONTROLS

Remove the lock position and detent controls on the up and down levers. These controls, if left operable on your machine, could cause accidents by raising or lowering the load without the operator being aware that the lever is engaged.

DIRECT PIN MOUNT TYPE SAS FORKS:

- Park wheel loader on firm level ground, Set parking brake Set attachment flat on ground
- Turn off wheel loader engine Depressurize the wheel loader's hydraulic system to release any residual pressure and resulting tension on the wheel loader arms.

Failure to properly release residual hydraulic system

WARNING pressure may result in stored energy and undesired or unexpected movement of wheel loader arms when pins are removed.

•Grease holes using a brush. Do not insert finger into pin hole opening, as there is a risk of a pinch point and finger being severed.• Align holes on SAS Fork carriage with wheel loader arm holes. • Grease pins • Insert pins & secure properly.• Start wheel loader and slowly move attachment, while carefully watching for interference points. If any are found, "stops" may need to be installed. Contact SAS Forks to discuss.

QUICK COUPLER MOUNT TYPE SAS FORKS:

• Align SAS Forks squarely to coupler & engage locking pins. Engage locking pins prior to use. **Failure to properly engage upper shaft & secure coupler locking pins will result in damage** to forks and coupler, and **forks may fall off**, **drop load**, risking damage to the load and injury or death to anyone in the area.



Properly engaged upper shaft and Lower locking pin shown extended though forks & coupler.





PRE-OPERATION INSPECTION (Page 6) 15.5' SAS™ FORKS

<u>Pre-operation inspection at beginning of each shift</u> is recommended for safe use SAS FORKSTM. Items listed below is a general summary with sample checklist on following page. Recommend to photocopy checklist and keep on clip board in cab of machine for daily use. As checklist pages are filled, keep copies (or digitally scan) for evidence of regularly completed pre-operation inspections.

This list is not meant to be an exhaustive list of items to inspect. Refer to machine manufacturer's operator manual for specifications and additional items that 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. Failure to follow these safety guidelines & machine's original equipment manufacturer's (of wheel loader or forklift) instructions can result in serious injury or death.



Prior to completing inspection, park machine on solid level surface, set parking brake, lower forks to ground, and turn engine off. Failure to secure machine (wheel loader or forklift) while inspecting can result in serious injury or death.

1) INSPECT WHEEL LOADER PER MANUFACTURERS RECOMMENDATIONS

Inspect items such as, but not limited to; tire pressure, wheel bolts, lift arm pins, cylinders, hoses. 2) 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.

3) FORKS SECURED PROPERLY

Quick coupler mounted units must be aligned uniformly and fastened securely with both locking pins fully engaged. Direct pin mounted forks must have all

pins properly in place & secured.

4) INSPECT SÁS FORKS

Read safety I.D. plate on left side of carriage **Bumpers** to prevent damage to front of cars

Carriage & fork frame for cracking or damage.

Do not use forks if damage is found.

Welds retaining blades into carriage. Welds should be smooth, no cracks. Do not use forks if weld shows signs of cracking. See "<u>Blade Weld Inspection</u>".



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Fork blade tips for upward bending. Blade tips should be level to each other +/ - ½". Blade tips that are not level with each other will make it difficult to slide under vehicles, and cause premature wear on lower blade. See "<u>Blade Straight Edge Inspection</u>".

Skids plates under tips & carriage. If less than 1/8" thick, replace. Failure to maintain skid plates will cause blades to wear and become thin and short. Thin blades are prone to bend and are unable to lift cars and trucks properly. See "Skid Plate Inspection".

Order bumpers, blades or skid plates at SAS FORKS. Email: parts@sasforks.com



Failure to inspect welds, blades, skid plates or pins on a daily basis can result in catastrophic failure resulting in property damage, serious injury or death. Be certain to inspect your equipment on a daily basis.



SAMPLE PRE-OPERATION INSPECTION (PAGE 7)

SAS™ 15.5' FORKS

| Hour
Meter | Engine Off & Keys Out | Parking Brake Set | Engine Oil Level | Hydraulic Fluid Level | Antifreeze Level | Fan / Alternator Belts | Fuel System Leaks
 | Tire Condition | Tire Pressure | Tire Lug Bolts Tight | Hydraulic Hoses | Lift Arms / Chains
 | Grease Lifting Pins | Forks Secure | Forks Free of cracks | Fork tip & carriage skid plate: | Seat Belt Operation

 | Fire Ext. Charged
 | Parking Brake | Dash Warning Lights | Fuel Level | Engine - No Noises | Horn
 | Lift operation | Steering System | Brake System | Reverse Warning |
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> Inspection Required at start of each shift.

> Responsible Person: First employee to use this piece of equipment on each shift, each day.

> If you find any safety problems fix them immediately or tag and lock out this unit so no one uses it.

> Notify your supervisor about any problems and arrange for immdiate service.

> Any repairs made, corrective action, or problems fixed should be attached to this sheet for proof of safe operating condition

> When done using loader/forklift, do NOT obstruct exit. set parking brake, lower forks with tips on ground, shut off lights.

> When this page is full, turn page into office for filing request a blank form.

> Office / Supervisor: Keep this completed sheet and associated records of repairs on file.



OPERATION GUIDELINES: ELECTRIC VEHICLES (Page 8) **15.5' SAS™ FORKS**

ELECTRIC – HIGH VOLTAGE BATTERY EQUIPPED VEHICLES POSE SPECIAL HAZARDS

WARNING Any damage to high voltage batteries, either from accident or mishandling could cause a risk of fire, electrocution, property damage and serious injury. Practice safe moving & storage of electric vehicles.

Per U.S. Dept. of Transportation National Highway Traffic Safety Administration; **"There is potential for delayed fire with damaged lithium-ion batteries."** Source: Interim Guidance for Electric and Hybrid-Electric Vehicles Equipped With High Voltage Batteries. https://www.nhtsa.gov/sites/nhtsa.gov/files/interimguide electrichybridvehicles 012012 v3.pdf

DEVELOP SAFE VEHICLE LIFTING AND MOVING PLAN FOR ELECTRIC VEHICLES:

- a. Review all materials within this SAS Forks operator manual & actually follow safest practices.
- b. A knowledgeable person should assess vehicle and determine if safety precautions such as having a qualified person disconnect 12 volt battery and remove high voltage disconnect is prudent safety precaution for your facility.
- c. Read and be up to date on notices, warnings and procedures that may be issued or updated from time to time from electric vehicle and battery manufacturers, and regulating authorities.
 Sample resources (not all inclusive):<u>www.nhtsa.gov</u>; <u>www.safercar.gov</u>; <u>www.ems.gov</u>; <u>www.evsafetytraining.org</u> <u>https://www.nhtsa.gov/sites/nhtsa.gov/files/interimguide_electrichybridvehicles_012012_v3.pdf</u>

VARIABLES IMPACTING SAFE LIFTING & MOVING ELECTRIC VEHICLES (not all inclusive)

- d. Introduction by new manufacturers and new models, with structural design differences.
- e. Existing vehicle condition, type of vehicle damage.
- f. Consider variables lifting operations to identify and use best method to reduce risks.
- g. Sharp tipped forks could easily penetrate battery enclosures posing great fire or explosion risk.

VEHICLE DESIGN CONSIDERATIONS: Historical Internal Combustion Engine (ICE) and ELECTRIC vehicle design would lead to the opportunity to complete safe lifting with SAS Forks, specifically;

h. Vehicle manufacturers engineer undersides of vehicles components to withstand random impacts of potential debris on roadways at highway speeds, without damage or impact to components such as fuel tanks and high voltage battery enclosures.

Per a National Fire Protection Association video for tow operators;

"The high voltage battery is protected by the vehicle's structure or often enclosed in a metal case." Source: Electric & Hybrid Vehicles: Prepare to Respond - Tow Operator Edition - Section 1 – Introduction – video: (@ 3:54) https://www.nfpa.org/Training-and-Events/By-topic/Alternative-Fuel-Vehicle-Safety-Training/Tow-operator-training

- i. Vehicle manufacturers engineer front and rear suspension crossmembers which are somewhat lower to ground than fuel tanks, high voltage batteries & associated high voltage wires.
- j. Vehicle manufacturers engineer side rocker panel structure which are somewhat lower to ground than fuel tanks, high voltage batteries, and associated high voltage wires.

If electing to lift & move ELECTRIC vehicles with SAS Forks take into consideration foregoing, also:

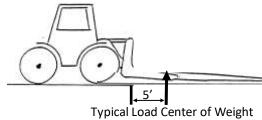
- k. Ensure forks do not contact battery, will not lift on battery or battery enclosure.
- 1. Lower forks near ground to ensure forks do not contact vehicle structure or battery enclosure.
- m. After forks are fully extended under vehicle, ensure forks only will contact heavy suspension cross member structure, then slowly lift vehicle.
- n. Slowly transport vehicle to avoid vehicle moving or shifting on forks.
- o. Slowly lower vehicle. Be sure forks are on ground, and not in contact with battery enclosure or lower structure when setting and backing out of vehicle.
- p. After electric vehicle is placed, perform visual inspect to ensure no battery damage has occurred.

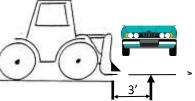


OPERATION GUIDELINES (Page 9) 15.5' SAS™ FORKS

1) LIFT CAPACITY: See lift capacities specified on identification plate attached to your FORKS

GENERAL LIFTING CAPACITY OF MACHINES WITH SAS FORKS™									
Vehicle Lifting	Position	Front to Rear		Broadside					
Machine Spec	ifications	Lift Capacity		Lift Capacity					
		With 15' SAS F	ORKS™	With 6' & 7'	Load Center # feet from carriage @ 3 feet @ 3 feet @ 3 feet				
Machine	Curb Weight	Lifting Ca-	Load Center	Lifting Ca-	Load Center				
Rating	of Machine	pacity	# feet from	pacity	# feet from				
			carriage		carriage				
2 yard	< 15,000 lbs	2,000 lbs	@ 5 feet	4000 lbs.	@ 3 feet				
2 ½ yard	> 20,000 lbs	3,000 lbs	@ 5 feet	5500 lbs.	@ 3 feet				
2 ¾ yard	> 25,000 lbs	4,000 lbs	@ 5 feet	6500 lbs.	@ 3 feet				
3 yard	> 30,000 lbs	5,000 lbs	@ 5 feet	7500 lbs.	@ 3 feet				
3 ½ yard	> 33,000 lbs	6,000 lbs	@ 5 feet	8500 lbs.	@ 3 feet				



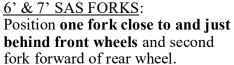


Typical Load Center of Weight

15' SAS FORKS:

6,000 lbs

Lift with engine close to wheel loader and fork carriage.



1998 Chev Truck K3500 4wd Crew Cab

Sample Vehicle Weights NOTICE: 2,500 lbs 2000 Toyota Corolla ICE ELECTRIC VEHICLES 3,000 lbs ICE 1998 Chev Lumina (EV) will have different 3,854 lbs EV 2022 Kia Niro EV 4 door SUV load centers than traditional ICE 1998 Chev Truck C1500 2wd Std Cab 4.000 lbs Internal Combustion Engine 4,250 lbs ΕV 2022 Tesla Model 3 EV 4 door sedan (ICE) vehicles. Thus heavier machines with appropriate 4,888 lbs EV 2022 VW ID4 EV 4 door SUV load capacities may be ICE 5,000 lbs 1998 Chev Truck K1500 4wd Ext. Cab required.

ICE

AWARNING Dismantled vehicles, which have the engine and transmission removed have Different load centers than vehicles that are complete *with* engines and transmissions. Verify load is evenly balanced and does not exceed load rating before lifting. Failure to maintain a balanced load can result in the load falling from forks resulting in serious injury or death. Check that load is solid and stable on forks before lifting or moving load and monitor during transport.



OPERATION GUIDELINES cont. (Page 10) 15.5' SAS™ FORKS

<u>15' SAS FORKS</u>TM: Typical 'Loader Center' on vehicles when picking them up front to rear, is in dash (cowl) area. (5 feet from the front bumper). Always lift vehicles with engine nearest carriage.

<u>6' SAS FORKS</u>TM: Typical 'Loader Center' on vehicles when broad siding them is centerline of vehicle. To pick up safely, position one fork just behind the front wheels and position second blade a bit forward of rear wheel.

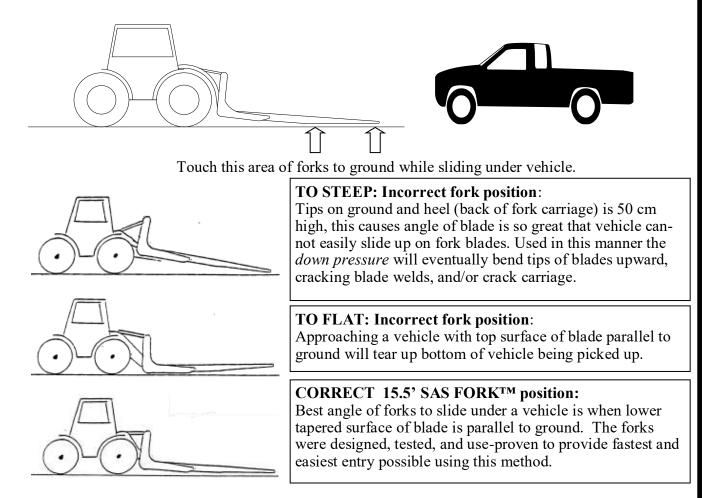


Be careful to lift the load slowly to be sure it is balanced properly before moving. Unbalanced load can shift and fall off forks resulting serious injury or death. Be certain load is balanced before lifting load.

Keep load low to ground and monitor stability during transport.

2) ENTRY UNDER A VEHICLE:

Correct: Position tapered portion of fork blade parallel to ground and slide fork blade under vehicle.

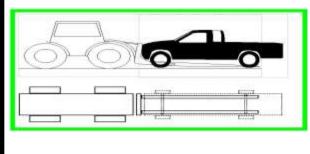


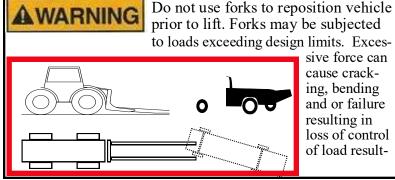


OPERATION GUIDELINES cont. (Page 11) 15.5' SAS™ FORKS

3) FORK POSITION PRIOR TO LIFT

CORRECT: Forks fully under car, engine close to carriage, allowing both forks to equally lift the weight.





sive force can cause cracking, bending and or failure resulting in loss of control of load result-

4) MAXIMUM LIFT HEIGHTS

Some machines (loaders / fork lifts / fork trucks / etc.) have height lifting limitations. The identification plate on your SAS FORKSTM specifies the maximum height a load may be lifted safely with SAS FORKSTM. (Typical maximum lift height is 8')

Load Height limitations can usually be found:

•On the SAS FORKS[™] identification plate

·In your machine manufacturer's operator manual

·Call S.A.S. of Luxemburg, LLC. and ask for Engineering assistance.

If your loader has an automatic lift detent, remove it or lock it out.

5) VEHICLES SHOULD BE PICKED UP WITH THE ENGINE CLOSE TO THE LOADER



Lifting a vehicle with engine away from loader is not recommended. Lifting load with weight at ends of forks can result in loader tipping over, or losing steering control if back tires of loader lift off ground. Failure to properly balance load can result in serious injury or death. Always carry load with weight close to wheel loader with forks tipped back at 5° angle for best stability.

6) WINTERTIME OPERATION

If the vehicles are frozen to the ground-approach the vehicle straight on, allowing your SAS FORKSTM to slide under vehicle. With the forks positioned as previously described in *(Entry under a vehicle)*. Allowing the wedge shape design to "pop" the vehicle out of the ground. This will allow the forward motion of the loader to loosen a frozen vehicle from the ground. Do not articulate or attempt to lift the unit until the vehicle is loose from ground. Articulating or lifting prior to freeing the vehicle out could bend your fork blades.

7) BLOW HORN TO WARN OTHERS



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 you, that you are approaching. Remember, you have 15' of steel in front of you. Failure to sound horn at blind intersections can result in serious injury or death. Always slow down and sound horn at blind corner intersections.



OPERATION GUIDELINES cont. (Page 12) 15.5' SAS™ FORKS

8) TURNING WHILE CARRYING A LOAD

While carrying a load on forks, keep it low to ground. It is not safe to turn (*articulate*) if load is more than 2 feet above the ground. When there is a need to raise a load in excess of 2 feet (60 cm), be sure that the turn is not in excess of 5° to the right or left. The best way to lift loads at heights above 2 feet is to "line up" with the truck/trailer/semi/etc. <u>before</u> raising load. When machine is lined up straight on with truck/trailer/semi/etc. then lift load and place it without turning machine.



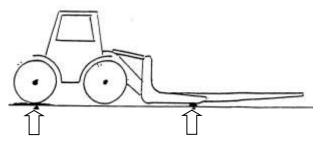
Do not turn *(articulate)* with a load in excess of 2 feet (60 cm) above the ground. Turning sharp with load elevated can result in vehicle falling from forks resulting in serious injury or death.

9) MOVING FORKS FROM SIDE TO SIDE WHILE FORKS ARE UNDER A VEHICLE



Do not move the forks from side to side (*articulate*) when under a vehicle unless you are sure your forks are free. If the forks are bound up, locked in an "A" frame, or, caught in a leaf spring, etc. and you articulate; you could bend the tips of the fork blades.

IF YOU GET "WRAPPED UP" UNDER A CAR OR TRUCK, DO THE FOLLOWING:



- A) Place forward surface of carriage flat on ground. Keep fork blades close to ground under vehicle.
- B) Raise front wheels of loader off ground, ever so little, using carriage skid plates (not tips of blades).
- C) Next, articulate right or left. Front tires will move to right or left.
- D) Let wheels down in new position and back out.
- E) Repeat, if necessary, until you get "unwrapped" or aligned in a manner to back out.

WARNING

Never travel empty with forks parallel to ground. Traveling with forks parallel to ground can result in sudden stop if fork tips contact ground while moving. Sudden stop can result in serious injury or equipment damage. Always travel with your forks positioned at 30 degrees upward with the carriage about 2 feet off the ground.



OPERATION GUIDELINES cont. (Page 13) SAS™ FORKS

10. PEOPLE AND PEDESTRIANS: At all times maintain a safe operating distance from people. A minimum recommended distance to keep people clear from wheel loader, (forklift), forks, and load is 30 feet (9 Meters).



Failure keep pedestrians clear of work area can result in serious injury or death. Verify area is clear before operation of equipment.

<u>11. BACKING SAFETY WARNING:</u>

When backing up (reverse) with the loader/fork lift, a safety beep shall sound to warn all people that you are backing up. If this safety beep is found inoperable at any time, it must be immediately fixed prior to



further use of loader. Failure to maintain warning device can result in serious injury or death. Always check operation of warning device at start of each shift.

12. DRIVING SPEED AND BOUNCE:

Always drive wheel loader (forklift) at slow speed. Speeds that are too fast may cause machine to start bouncing. Bouncing is dangerous condition & could result in (car) cargo shifting & falling off forks.



Failure to maintain safe speed can cause loss of control &/or load falling off forks resulting in property damage, serious injury or death. Operate slow safe speed based on conditions.

13. GREASE & MAINTENANCE PRECAUTIONS:

Maintenance should be performed by properly training individuals. Never attempt to grease fork pins when machine is running or when forks are raised above ground. Performing maintenance or repairs with equip-



ment running or while forks are elevated can result in serious injury or death. Only perform work on equipment with machine off & forks are on ground.

14. KEEP PEOPLE CLEAR OF LIFTED LOADS:



SAS FORKS are not intended to lift people. It is never safe to lift any object on SAS FORKS and walk under or work under forks or load.

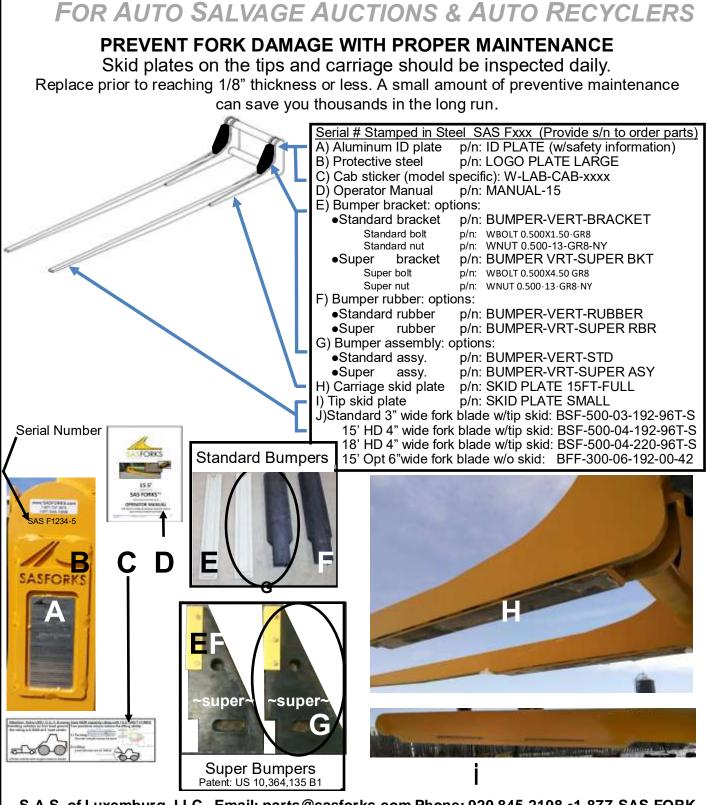
Never lift a load and allow a person walk under forks.

Failure to stay out from under a raised load or to prevent others from going under a load can result in serious injury or death. Require all persons stay clear of lifted loads for safety. Best practice is to make sure load is securely on the ground before allowing anyone near load or forks. Always lower forks completely to the ground before performing any inspections, greasing, maintenance or other work.



REPLACEMENT PARTS 15.5' SAS FORKS

PARTS (Page 14)



S.A.S. of Luxemburg, LLC. Email: parts@sasforks.com Phone: 920-845-2198 •1-877-SAS-FORK



SKID PLATE INSPECTION (Page 15) 15.5' SAS™ FORKS

MAXIMIZE SAS FORKSTM LIFE WITH SKID PLATE MAINTENANCE

When new, the SAS FORKSTM include skid plates on the underside of the carriage. Periodic inspection is needed. Order replacement skid plates from S.A.S. of Luxemburg, LLC. when they are worn thin (about 1/8").



<u>Tip skid plates:</u> 3" & 4" wide vertical SAS FORKS tine tips have **small tip skid plates.** Inspect daily. If worn to less than 1/8", install new skid plates. Do not operate forks without tip skid plates. This will result in premature wear of tips, thinning, weakening, and shortening of blades.

Carriage Skid Plates: Are included on SAS FORKS carriages with 3", 4", and 6" wide blades.



Failure to keep skid plates on the carriage will result in <u>structural</u> damage to the carriage and could result in tearing out one or both blades and necessitating the purchase of a new carriage or equipment failure resulting in serious injury or death.

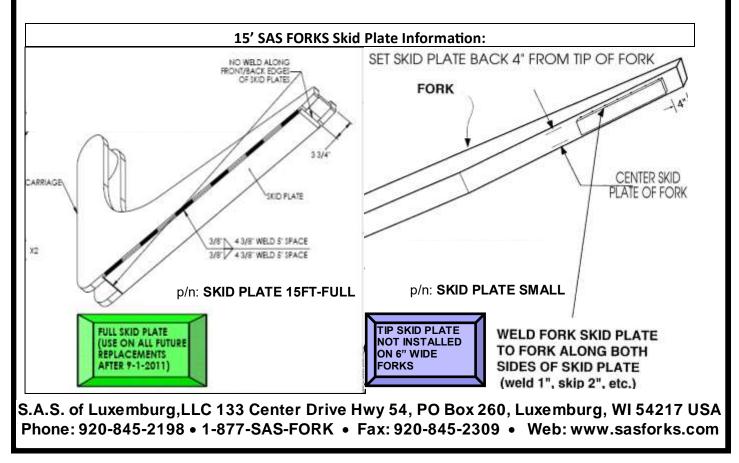


DO NOT MAKE UNAUTHORIZED WELDS TO SAS FORKSTM

Do not weld on the forks except as shown in this diagram. Welding on forks can weaken material resulting in catastrophic failure leading to serious injury or death.

If you need to make any other repairs on the forks, contact the factory SAS FORKS

Phone: 920-845-2198 Fax: 920-845-2309 Email: parts@sasforks.com





BLADE WELD INSPECTION (Page 16) 15.5' SAS™ FORKS

15.5' SAS FORK™ BLADE WELD INSPECTION

ONLY for 3" & 4" wide SAS FORKS between 10' to 18'

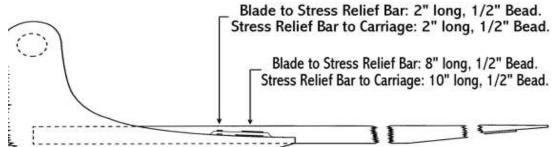
<u>3" Vertical type 15.5' SAS FORKS</u>

CHECK WELDS ATTACHING BLADES TO CARRIAGE.

There are a series of welds attaching each blade to the carriage (see diagram below). Each weld should be smooth with no cracks.



Do not operate machine if a weld is showing any signs of cracking. Operation of machine with cracked welds can result in serious injury or death. Never operate equipment exhibiting cracks, always notify supervisor of any unsafe conditions.



•Cause of cracks: The operator is repeatedly forcing the <u>tips</u> of the fork blades onto the ground. This is referred to as *down pressure*. Extreme *down pressure* may lift the front tires of the loader off the ground. Repeated or extreme *down pressure* will eventually bend the tips of the blades up, crack the blade welds, crack the blades from the bottom up, and/or crack the tip of the carriage. The welds are designed to serve two purposes: 1) To hold the blades in place. 2) To provide a visual sign of operator error (ie: repeated *down pressure*). Typical machine curb weight is 30,000 lbs. When you multiply it by a factor of the length of the forks, the net effect is that the operator is putting pressure upwards of 25,000 lbs. on the tips of the forks! They are only designed to lift about 5,000 lbs. (depending on exact ID plate rating). **To prevent a crack from occurring:** When lowering the SAS FORKSTM to the ground, just touch the blades on the ground, as shown on section labeled (*Entry Under a Vehicle*). Do not force the tips of the fork blades onto the ground.

DO NOT MAKE UNAUTHORIZED WELDS TO SAS FORKS[™] Welding on forks can result in reduced lifting capacity & potential failure resulting serious injury or death. Contact SAS before performing any welding on this equipment.

WARNING

Do not weld anywhere on the fork blades except as specifically shown for skid plates and blades in this manual. Never weld across fork blades for any reason.

Do not use any skid plates on these forks except SAS FORKS[™] factory original skid plates. Use of alternate materials voids blades warranty. For question about welding anything on SAS FORKS[™], call SAS FORKS at 920-845-2198.



BLADE WELD INSPECTION (Page 17) 15.5' SAS™ FORKS

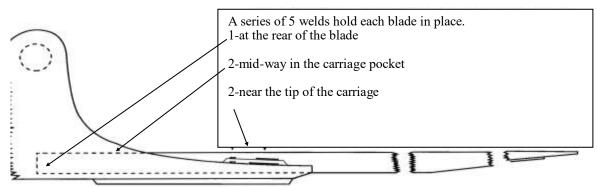
15' SAS FORKTM BLADE WELD INSPECTION

ONLY for 6" wide SAS FORKS between 10' to 18'

<u>6" Flat Type 15.5' SAS FORKS</u>

CHECK WELDS ATTACHING BLADES TO CARRIAGE.

A series of welds attach each blade to carriage. Each weld should be smooth with no cracks.





Do not operate machine if a weld is showing any signs of cracking. Operation of machine with cracked welds can result in serious injury or death.

Never operate equipment exhibiting cracks, always notify your immediate supervisor of any unsafe conditions

•Cause of cracks: The operator is repeatedly forcing the <u>tips</u> of the fork blades onto the ground. This is referred to as *down pressure*. Extreme *down pressure* may lift the front tires of the loader off the ground. Repeated or extreme *down pressure* will eventually bend the tips of the blades up, crack the blade welds, crack the blades from the bottom up, and/or crack the tip of the carriage. The welds are designed to serve two purposes: 1) To hold the blades in place. 2) To provide a visual sign of operator error (ie: repeated *down pressure*). Typical machine curb weight is 30,000 lbs. When you multiply it by a factor of the length of the forks, the net effect is that the operator is putting pressure upwards of 25,000 lbs. on the tips of the forks! They are only designed to lift about 5,000 lbs. (depending on exact ID plate rating).

•**To prevent a crack from occurring:** When lowering the SAS FORKSTM to the ground, just touch the blades on the ground, as shown on section labeled (*Entry Under a Vehicle*). Do not force the tips of the fork blades onto the ground.

<u>DO NOT MAKE UNAUTHORIZED WELDS TO SAS FORKS™</u> Welding on forks can result in reduced lifting capacity and potential failure resulting serious injury or death. Contact SAS FORKS before welding on these forks.



Do not weld anywhere on fork blades except as specifically shown for skid plates and blades in this manual. Never weld across the fork blades for any reason.

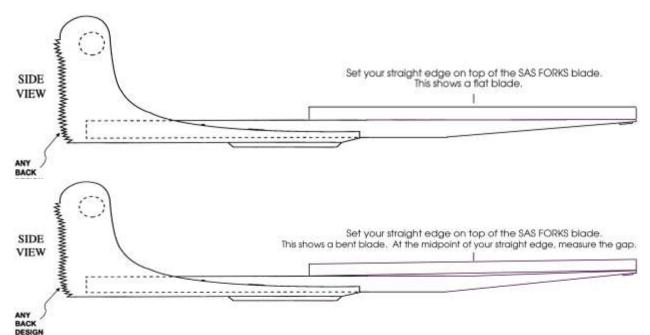
Do not use any skid plates on these forks except SAS FORKS[™] factory original skid plates. Use of alternate materials voids blades warranty. If you have a question about welding anything on or to the SAS FORKS[™], please call S.A.S. of Luxemburg, LLC. at 920-845-2198



CHECK THE TIPS OF THE FORKS FOR UPWARD BENDING OR DEFLECTION.

•Inspection Technique: Visually inspect flatness of each fork blade with a straight edge.

A good straight edge is a rectangular piece of aluminum tubing 1" x 3" x 10' long. Starting at the tip of the fork blade, lay your 10' straight edge on the blade <u>as shown below</u> When the forks are shipped from the factory the top of the blade is straight. If there is a gap between the center of the straight edge and the blade, this shows the blade deflection (upward bending). To gauge this bending, measure this gap at the center of the straight edge. Measure the distance between the straight edge and the blade. If management does this each week with the machine operator, you will be able to quickly ascertain if he/she is operating the machine properly.



•Cause: Repeated or extreme *down pressure*. The operator is repeatedly forcing <u>tips</u> of fork blades onto ground. This is referred to as *down pressure*. Repeated or extreme *down pressure* may lift front tires of loader off ground and cause tips to bend or crack.

Typical machine curb weight is 30,000 lbs. Multiply it by a factor of fork length, the net effect is that operator is putting pressure upwards of 25,000 lbs. on tips of forks! The forks are only designed to lift about 5,000 lbs. (depending on exact ID plate rating).

•**To prevent tips from bending up:** When lowering the SAS FORKSTM to the ground, just touch the blades on the ground, as shown on page 10 *Entry Under a Vehicle*. Do not force the tips of the fork blades onto the ground.

NOTICE

•To repair a bent blade: Call SAS FORKS obtain advice. 920-845-2198



LIMITED WARRANTY 15.5' SAS™ FORKS

(Page 19)

<u>SAFETY</u>

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

GOALS OF THE S.A.S. OF LUXEMBURG, LLC. 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 FORKSTM

For products that S.A.S. of Luxemburg, LLC. (SAS, also herein referred to as Seller) 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 FORKSTM Operator Manual.

PRODUCT TYPE STANDARD HEA VY DUTY 15.5' SAS FORKS™ STANDARD 3" wide x 5" thick x 15.5' BLADES	LIMITED WARRANTY PERIOD 1 YEARS FROM ORIGINAL SHIP DATE 3 YEARS FROM ORIGINAL SHIP DATE	<u>ITEM COVERED</u> CARRIAGE UNIT FORK BLADE
ALL OTHER SAS FORKS™ (listed below) ADJUSTABLE, CRUSHING™, CAR BODY, SCORPION™ & CLAW ENGINE PULLERS LONG SAS FORKS (6" & 4" WIDE) RAKE FORKS OR GRAPPLE FORKS	1 YEAR FROM ORIGINAL SHIP DATE	CARRIAGE UNIT
FORGED OR ALLOY 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.

<u>CALL FOR WARRANTY CONSIDERATION</u>: 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. Contact SAS: SAS Local: 920-845-2198 SAS Fax: 920-845-2309 SAS Email: sales@sasforks.com

• 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.



LIMITED WARRANTY 15.5' SAS™ FORKS

FORK BLADE LIMITED WARRANTY ONLY ON STANDARD 3" WIDE X 5" TALL X 192" LONG SAS FORKS

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 determining if the blade can be straightened and if 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 3" wide x 5" thick x 15.5' HEAVY DUTY FORK BLADES are designed and shipped from the factory at one and one-half (1 1/2") 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 pages 6, 7, & 10.

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.

CARRIAGE UNIT LIMITED WARRANTY

·UPPER CARRIAGE UNIT FIT AND CONSTRUCTION: We guarantee our SAS FORKS™ to fit your machine as designed.

This is warranted against cracks in material, weldments, and factory machined areas. •<u>WEAR</u> OF BASE PLATE LOWER CARRIAGE, which is structural material, voids the warranty. This is caused from not maintaining skid plates under the carriage. See manual for details of miss-use and proper use.

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 manual for details of miss-use and proper use.

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 FORKSTM 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, the correction of service, or the providing of a replacement part F.O.B. Seller's office. Seller will not be responsible for costs of travel, mileage, shipping, hauling, 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, or, use of the purchased product(s). THESE REMEDIES ARE EXCLUSIVE, AND ALL

OTHER WARRANTY REMEDIES ARE EXCLUDED. Prior to any repairs be performed, written Pre-Authorization is Required. For any repairs that the Buyer or a 3rd party desires to have covered under the terms of this limited warranty, Buyer must receive written authorization in advance from the Seller in the form of a written Limited Warranty Authorization Purchase Order. Such will itemize the work to be done and the agreed cost of such, without any allowance for travel or mileage expenses. No other expenses will be reimbursed.

PROPRIETARY RIGHTS: All designs and other proprietary rights provided by Seller to Buyer are to remain the property of Seller, and Buyer shall honor all proprietary legends. Buyer agrees not to copy, or hire a 3rd party to copy the design, style, or likeness, in part or whole of any SAS product. Buyer, buyer's agents or employees may provide feedback to Seller with respect to Sellers products or services and Seller may use feedback for any purpose without obligation of any kind. To the extent a license is required under Buyer's intellectual property rights to make use of feedback, Buyer hereby grant Seller an irrevocable, non-exclusive, perpetual, royalty free license to use the feedback in connection with Seller's business, including enhancement of the products and services. If Buyer requests Seller to make a custom product, Buyer will hold Seller harmless from and against any claims of potential patent infringement.

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.

S.A.S. of Luxemburg, LLC 133 Center Drive Hwy 54, PO Box 260, Luxemburg, WI 54217 USA Phone: 920-845-2198 • 1-877-SAS-FORK • Fax: 920-845-2309 • Web: www.sasforks.com

(Page 20)



SAMPLE TEST 15.5' SAS™ FORKS

NAME: _____

DATE:

1) What steps must be completed during the **Pre-Operation Inspection**, prior to starting the loader?

2) How long do you need to let the loader warm up prior to using it? ______

3) Before engaging the transmission in gear, what are three important things you must do?

SAS FORKS[™] OPERATING PRECAUTIONS:

4) When turning, you must be careful because SAS FORKS[™] are _____ feet long. Forks and vehicle on forks swing way out in front of you. Adequate _____ is necessary to avoid hitting other vehicles.

5) What is a safe distance to maintain between an operating loader and nearby pedestrians and Why?

6) What type of safety device is engaged when gear shift is placed in reverse and why is it important?

7) Moving electric vehicles (EV) pose special hazards related to fire, electrocution and heavier weight. What are preparations that can be done to prepare and perform a safe move of an EV?

•Note: This page can be photocopied for use with your machine operator training for SAS FORKS[™]. Test Page 1 of 2



SAMPLE TEST 15.5' SAS™ FORKS

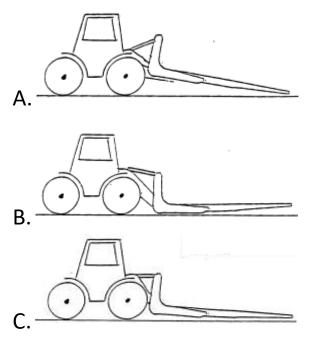
8) What speed is safe to drive the loader in the yard and Why?

9) How can you prevent a vehicle from tipping or falling off the forks?

10) When you are done using the loader, prior to shutting the engine off, you should:

OPERATING GUIDELINES FOR SAS FORKS™

11) Which picture below correctly shows the position the forks should be placed in when sliding the forks under a vehicle to load it on the forks? $\Box A$, $\Box B$, $\Box C$



•Note: This page can be photocopied for use with your machine operator training for SAS FORKS[™]. Test Page 2 of 2



ANSWER PAGE 1 15.5' SAS™ FORKS

NAME:ANSWER PAGE DATE:
1) What steps must be completed during the Pre-Operation Inspection , prior to starting the loader? Check the oil level
Check engine coolant level
Check your machine tires
Check your hydraulic fittings and hoses (fluid level)
Grease and inspect all the linkage pins
Check the welds attaching the blades to the carriage
Check the tips of the forks for upward bending
Check the skid plates on the bottom of the SAS Forks TM
2) How long do you need to let the loader warm up prior to using it?5 Minutes
3) Before engaging the transmission in gear, what are three important things you must do? Visually check all around the loader to be sure all people are clear
Disengage the parking brake
Lift the forks off the ground

SAS FORKS[™] OPERATING PRECAUTIONS:

4) When turning, be careful because SAS FORKSTM are <u>15</u> feet long. The forks and vehicle on the forks swing way out in front of you. Adequate <u>clearance</u> is necessary to avoid hitting other vehicles.

5) What is a safe distance to maintain between an operating loader and nearby pedestrians and Why? <u>30 feet clearance around loader and vehicle load</u>. Important for everyone's safety because forks are 15 feet long and vehicle swings when loader is turned; 30 feet provides a safe clearance in case a vehicle would fall off forks, that it doesn't hit people.

6) What type of safety device is engaged when the gear shift is placed in reverse and why is it important? <u>A backup warning beeper</u>. This should sound automatically when backing up to warn people that the loader is backing up so they can get out of the way.

7) Moving electric vehicles (EV) pose special hazards related to fire, electrocution and heavier weight. What are preparations that can be done to prepare and perform a safe move of an EV? First, have a knowledgeable, authorized person inspect car for battery or high voltage wire damage. Determine if EV needs to be quarantined away from buildings and vehicle if fire hazard exists. Determine if EV needs 12 volt and high voltage battery disconnected. If approaching with forks, be sure forks are touching ground and will not impact battery housing. Lift only with forks contacting suspension and frame structure, not battery or battery housing. Lifting gently and more slowly to be sure EV does not shift while moving with forks. Set slowly, with forks on ground and not touching car, slowly back out of EV. After move, inspect EV to be sure no battery damage has occurred.



ANSWER PAGE 2 15.5' SAS™ FORKS

8) What speed is safe to drive the loader in the yard and Why?	
A safe speed is reasonable for the conditions;	
Bumps in the road: slow enough that the vehicle is not bouncing or jarring on the forks	
Weather: Also consideration for the weather; rain, ice and snow make the road surface slippery for the loader and	
the blades slippery for the vehicle being hauled on the forks.	
9) How can you prevent a vehicle from tipping or falling off the forks? Pick up the vehicle on the forks evenly, centering the load from right to left.	
Tip the blades back about 5°. This will prevent the vehicle from falling off the end of the forks.	
Drive the loader at a reasonable (slow) speed to prevent bouncing or jarring of the vehicle on the	
forks, from bumps in the road.	
10) When you are done using the loader, prior to shutting the engine off, you should:	
Park the loader in the designated parking place.	
Put the gear shift in neutral	
Set the parking brake	
Lower the forks to the ground	
Let the engine idle for 2 minutes prior to shutting down	
OPERATING GUIDELINES FOR SAS FORKS™	
11) Which picture below correctly shows the position the forks should be placed in when sliding the forks under a	
vehicle to load it on the forks? \Box A, \Box B, X C	
A.	
$(\cdot) \cup (\cdot) \setminus \{$	
B.	
D.	
C. "C" is correct answer	
•Note: This page can be photocopied for use with your machine operator training for SAS FORKS™.	
Page 2	
SAS of Luxemburg LLC 133 Center Drive Hwy 54 PO Box 260 Luxemburg WI 54217 USA	



OPERATOR TRAINING DOCUMENTATION FORM 15.5' SAS™ FORKS

(Please print name of employee / operator below)	THE SAFE WAY IS THE BEST WAY
I,, have read, understand, and will carefully follow the guidelines set forth in the following literature:	
Machine Manufacturer's Operator Manual Operator Manual For Machines Equipped With SAS FORKS TM Identification Plate on the SAS FORKS TM	
 I further understand that this machine can cause serious injury or d I agree to safely operate this machine and SAS FORKSTM. If I have any questions regarding safe operation or maintenance of Management prior to operating the equipment. I understand that I may be terminated for misconduct if I fail to foll lished safety and working procedures. 	the equipment, I shall ask
	Date Completed
1.Read: Machine Manufacturer's Operator Manual	//
Identify Machine: Make Model	
2.Read: 15' SAS FORKS Operator Manual	//
3.Read: Identification Plate on the SAS FORKS TM	//
4. Review above procedures with Manager/Trainer	//
5. Complete a written test on operation of loader and precautions	//
6.Test shall be reviewed by Manager/Trainer with Employee	//
7.Watch demonstration from an experienced operator	//
8.Complete supervised loader operation to demonstrate competence	//
<u>Training Completion Certification</u> : The Employee / Operator, listed below, these procedures for the machine and SAS FORKS TM , and is responsible to here are followed on a daily basis. This employee, as evidenced by the signs strated competence in safe operation and use of machine and SAS FORKS a ate the loader as necessary to safely complete work assignments.	see that the policies outlined atures below, has demon- nd is now qualified to oper-
EMPLOYEE / OPERATOR: MANAGER / T	RAINER REVIEW:
(PRINT NAME OF TRAINEE) (PRINT	NAME OF TRAINER)
	/ /
(SIGNATURE) (SIGNATURE)	

•File completed and signed form, along with a completed written test in the employee's personnel file. •Note: This page can be photocopied for use with your machine operator training.