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236490

SQUARE SHOOTER®

OPERATOR'S MANUAL

SS-624
SS-636
SS-836
SS-842
SS-1048

TEREX HANDLERS
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SECTION 1

GENERAL SAFETY

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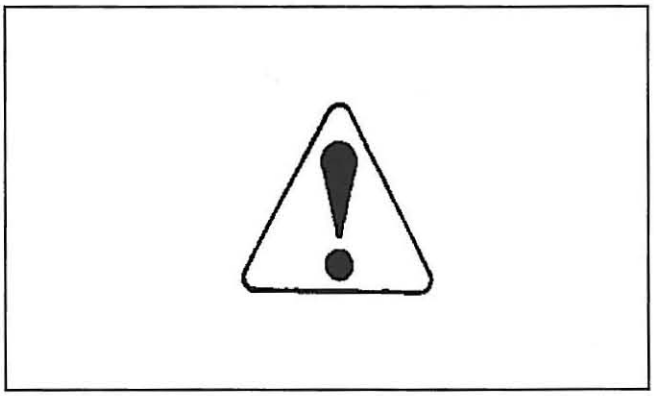
GENERAL SAFETY PROCEDURES

SAFETY ALERT SYMBOL

Stop and take time to read ALL safety alert messages. Follow all safety messages to avoid personal injury and/or death.



⚠ WARNING

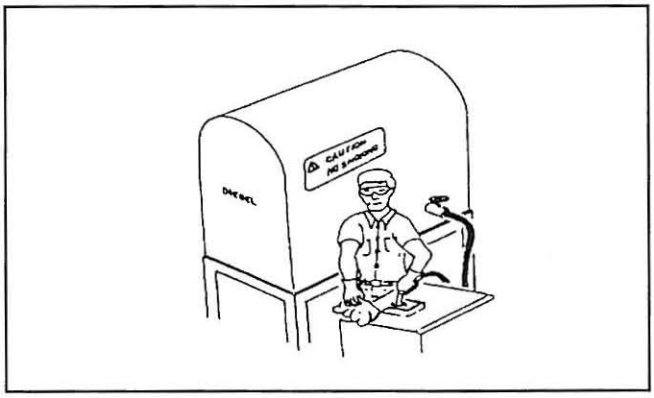
Always wear eye protection and personal safety equipment.

THE OPERATOR

The operator must be fully trained and qualified to operate this machine.

Before start-up or machine operation, the operator must learn the *location* and *purpose* of the:

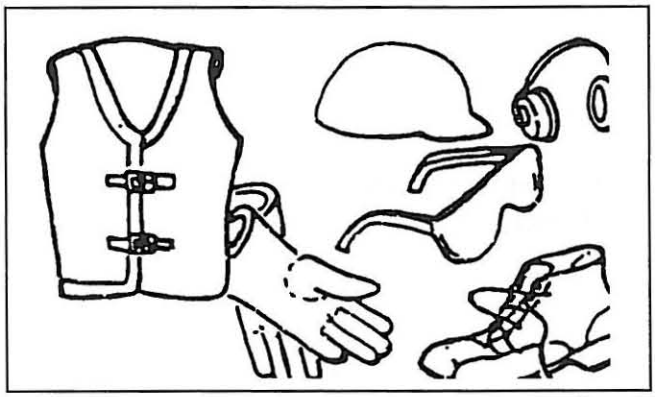
1. controls
2. instruments
3. indicator lights
4. safety and instruction labels



ACCIDENT PREVENTION

Use protective clothing and safety equipment. Always use approved safety equipment such as: gloves, safety boots, safety hard hats/ goggles and ear protection when necessary.

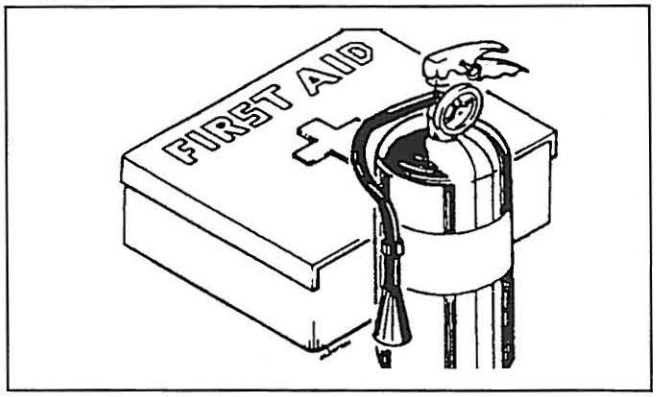
Wear protective clothing that is snug and belted where required.



FIRE PREVENTION/FIRST AID

Install a first-aid kit and fire extinguisher in the operators cab.

KEEP THE FIRST-AID KIT and **FIRE EXTINGUISHER** properly maintained. Follow instructions provided with the first-aid kit and fire extinguisher.



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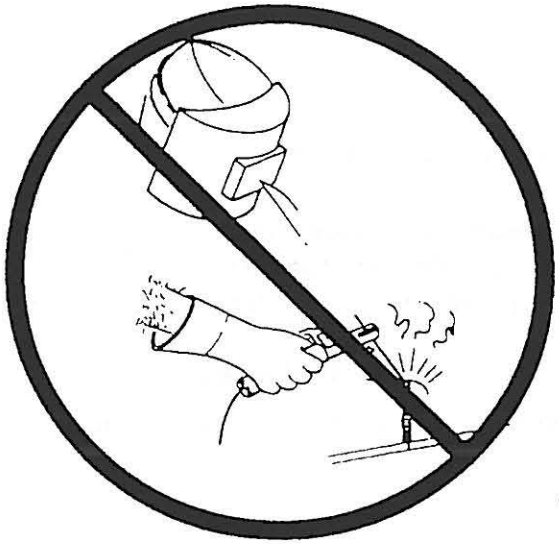
GENERAL SAFETY PROCEDURES

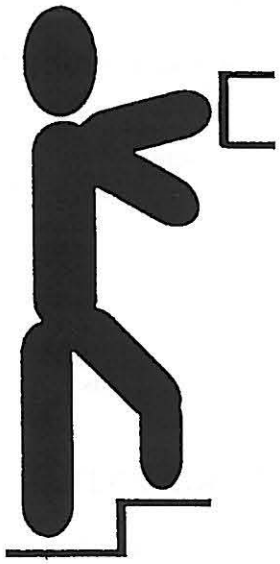
WELDING PRECAUTIONS



⚠CAUTION

Any unauthorized welding can cause structural failure or possible personal injury. **DO NOT** weld on any structural member. All unauthorized welding will void the warranty.

HAND HOLDS AND STEPS



⚠CAUTION

Slips and falls can cause serious personal injury.

When getting on and off machine, always maintain a three point contact with the steps and handrails while facing the machine.

DO NOT use steering wheel or any controls as handrails.

NEVER jump on or off the machine.

Be careful of slippery conditions on platforms, steps and handrails when getting on and off the machine.

Always shut off engine and set parking brake **BEFORE** leaving the operator's station.

REFUELING

⚠WARNING

Fires can cause death or severe personal injury.

Handle fuel with care; it is highly flammable. **DO NOT** refuel the machine while smoking or when near open flame or sparks.

Always stop engine before refueling machine. Fill fuel tank outdoors.

Prevent fires by keeping machine clean of trash, grease and debris. Always clean up spilled fuel.

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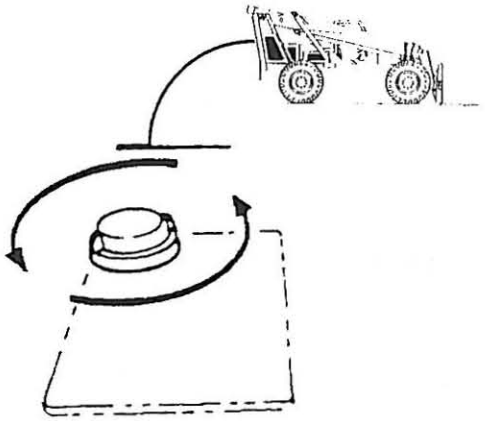
GENERAL SAFETY PROCEDURES

HYDRAULIC SAFETY



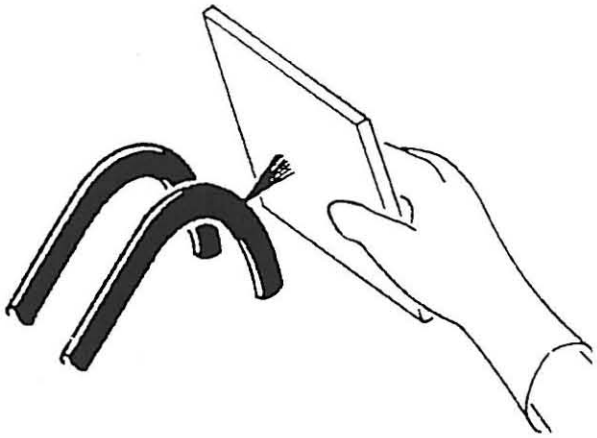
⚠CAUTION

Hot hydraulic oil can cause severe burns. **DO NOT** work on the hydraulic system if oil temperature exceeds 120° F (49°C).

Before **ANYONE** works on the hydraulic system:

1. Lower forks to the ground.
2. Engage parking brake.
3. Shutdown engine.
4. Clean area around oil reservoir cap.
5. Loosen oil reservoir cap.
6. Remove key from starter switch.

FLUIDS UNDER PRESSURE



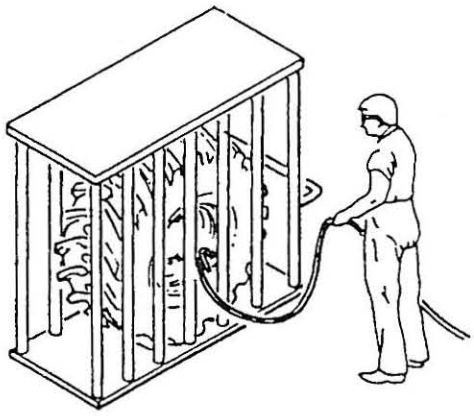
⚠CAUTION

Escaping fluid under pressure can penetrate the skin and cause serious personal injury.

Use a piece of cardboard or paper to search for leaks. **DO NOT** use hands. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, ensure that all connections are tight. **DO NOT** apply pressure to a damaged line, hose or fitting.

If injured by escaping fluid, see a doctor at once. Proper medical treatment must be administered immediately. A serious infection or reaction can result without proper medical treatment.

SERVICE TIRES SAFELY



An improperly mounted over-pressurized tire can result in tire explosion causing possible personal injury. An inflation cage or other safety device must be used during tire inflation.

DO NOT attempt to mount a tire unless you have the proper equipment and experience to perform the job. Have it done by your SQUARE SHOOTER® dealer or qualified repair service.

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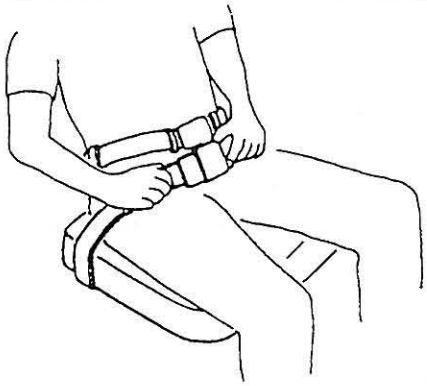
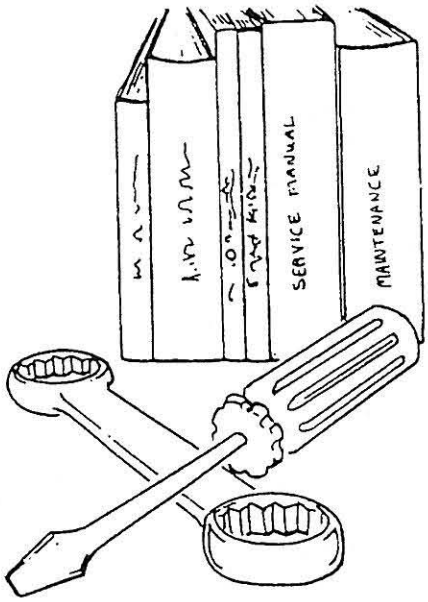
GENERAL SAFETY PROCEDURES



USE SEAT BELT

Always wear seat belt while operating the SQUARE SHOOTER® to reduce the risk of personal injury.

PRACTICE SAFE MAINTENANCE



Unauthorized modifications to machine may impair the safety, machine function and/or affect machine life.

ALWAYS use a safety support or brace when working on, under or around the SQUARE SHOOTER or forks.

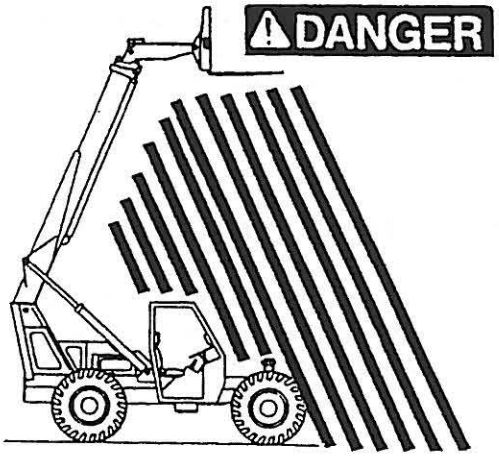
DO NOT adjust or oil machine while it is in motion.

SHUT OFF engine and remove key when working on machine unless maintenance instructions require engine running (see Maintenance Procedures section 4).

REPLACE any shields or guards removed for servicing.

NEVER use the SQUARE SHOOTER as a platform for lifting personnel.

BOOM SAFETY



DO NOT enter DANGER AREA under or around boom when the forks are off the ground while engine is running. (See diagram to the right detailing danger area.)

Serious personal injury could result if boom should unexpectedly drop.

Before **ANY** work is performed in the DANGER AREA the boom must be **COMPLETELY** lowered and the forks must be resting on the ground.

Remove key from start switch to prevent accidental starting.

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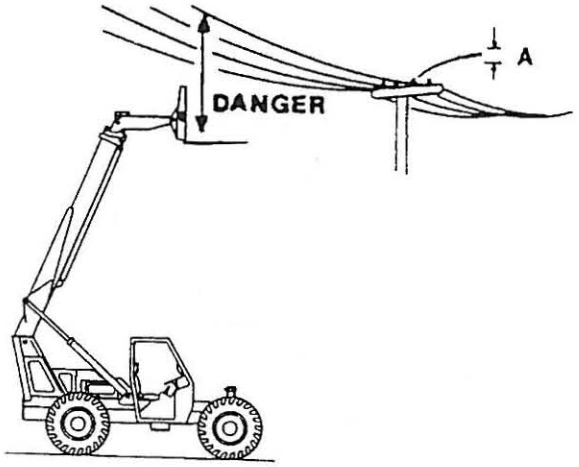
GENERAL SAFETY PROCEDURES

AVOID ELECTRICAL POWER LINES



⚠ DANGER

Serious injury or death can result from contact with electrical lines. NEVER move any part of the machine or load within 10 feet (3m) plus twice the line insulator (A) length of an electric line.

EXAMPLE: If the line insulator (A) is 6 in. (152 mm), then twice the length is 12 in. (305mm). Therefore, any part of the machine or load should not be within 11 feet (3.4m) of the electric line.

⚠ WARNING

Always remain completely inside cab enclosure while operating the machine.

⚠ WARNING

Never operate this machine under the influence of drugs and /or alcohol.

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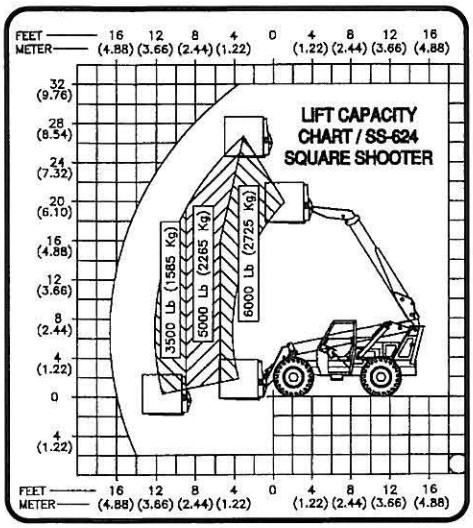
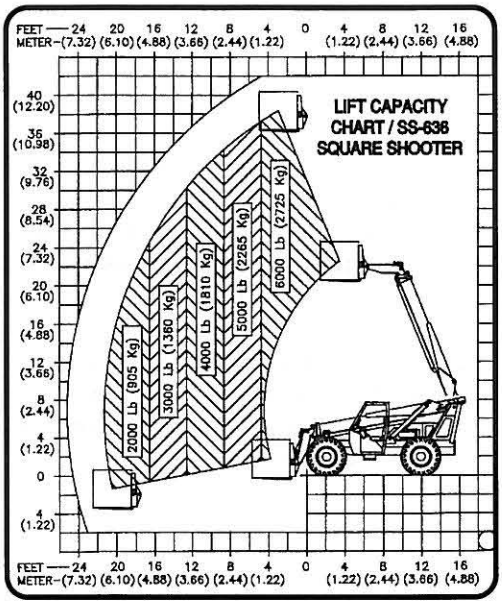
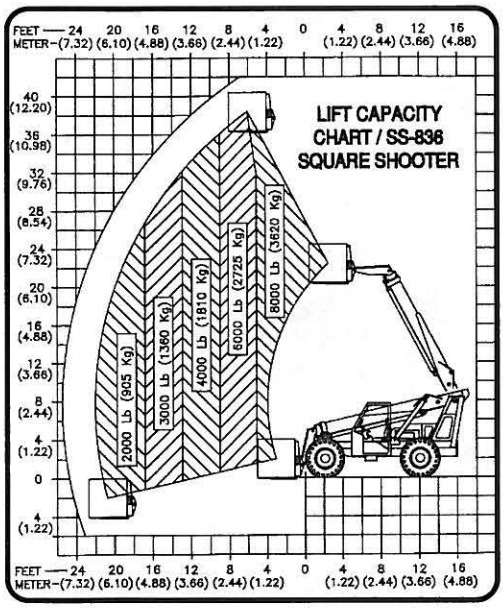
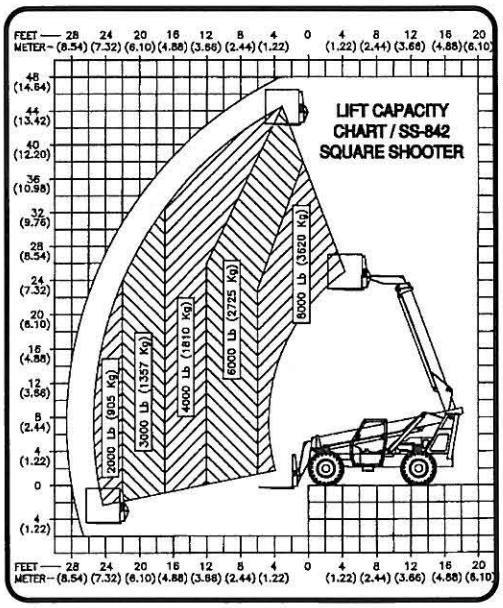
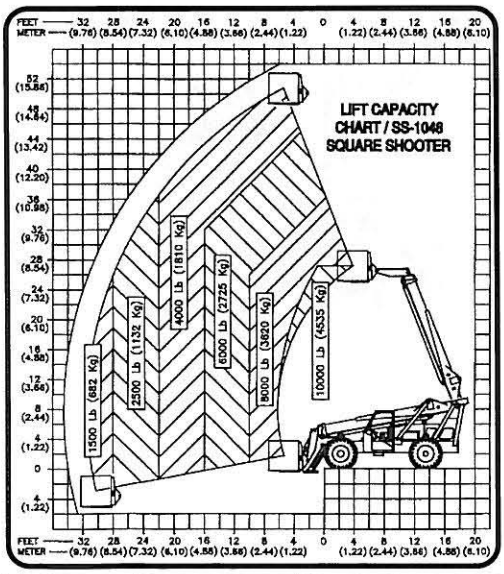
PROPER LOAD CHART USE











The load chart shows how high up and how far in front of the tires various loads can be safely picked and placed with a properly maintained and operated machine. To use the load chart the operator must know the weight of the load and how far "out " and "up" it has to be placed. If the load is heavier than stated on the load chart, three options can be used.

1. Move the machine closer to the load so that the weight of the load will fall within the load chart specifications.
2. Divide the load into smaller pieces so that each piece falls into load chart specifications.

⚠ WARNING

3. Get a larger machine that can handle the load within specifications. NEVER raise a load and drive to position it. This can cause the machine to turnover. When placing a load, always move the machine with the load and the boom horizontal or lower. When the machine is as close as possible to where the load needs to be placed, set the parking brake, raise the load, then place the load into position.

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SAFETY DECAL

⚠ WARNING

⚠ YOUR SAFETY AND THE SAFETY OF THOSE AROUND YOU DEPENDS UPON YOUR USING CARE AND JUDGEMENT IN THE OPERATION OF THIS EQUIPMENT. KNOW THE POSITIONS AND FUNCTIONS OF ALL CONTROLS BEFORE ATTEMPTING TO OPERATE. ALL EQUIPMENT HAS LIMITATIONS. UNDERSTAND THE SPEED, BRAKING, STEERING, AND LOAD CHARACTERISTICS OF THE MACHINE BEFORE STARTING TO OPERATE. READ THE OPERATORS' MANUAL AND ASK QUESTIONS OF YOUR SUPERVISOR UNTILL YOU KNOW THE LIMITATIONS.

⚠ DO NOT OPERATE SQUARE SHOOTER TRACTOR WHILE PEOPLE AND PROPERTY ARE WITHIN A 50 FOOT (15.24 M) MINIMUM RADIUS. FALLING OBJECTS FROM THE FORKS OR ATTACHMENT CAN CAUSE SERIOUS INJURY OR PROPERTY DAMAGE. THIS 50 FOOT (15.24 M) MINIMUM RADIUS SHOULD BE USED AS A GUIDELINE AND SHOULD BE ENLARGED IF WARRANTED BY WORKING CONDITIONS.

⚠ ALWAYS REMAIN COMPLETELY WITHIN CANOPY ENCLOSURE WHILE OPERATING MACHINE. FALLING DEBRIS CAN CAUSE SERIOUS PERSONAL INJURY.

⚠ NEVER EXTEND A LOAD BEYOND THE LOAD CHART BAND. MACHINE TURN OVER, COMPONENT DAMAGE, INJURY OR DEATH COULD OCCUR.

⚠ ABSOLUTELY NO RIDERS ON MACHINE OR ATTACHMENT.

⚠ NEVER LOWER A MAXIMUM LOAD BEFORE RETRACTING IT. MACHINE TURN OVER, COMPONENT DAMAGE, INJURY OR DEATH COULD OCCUR.

⚠ ALWAYS WEAR THE SEAT BELT WHEN OPERATING THE MACHINE.

⚠ ALWAYS INSPECT THE MACHINE DAILY. CHECK FOR MISSING GUARDS AND SCREENS, LOOSE BOLTS, OR ANYTHING OUT OF THE ORDINARY. REPAIR AND/OR REPLACE IMMEDIATELY. FAILURE TO DO SO CAN CAUSE INJURY OR DEATH.

⚠ DO NOT TRAVEL ON TERRAIN OR IN DANGEROUS AREAS THAT COULD CAUSE THE MACHINE TO TIP OVER.

⚠ CARRY A LOAD SO THAT YOU HAVE MAXIMUM MACHINE STABILITY.

⚠ ALWAYS LEVEL THE MACHINE AS INDICATED ON THE GAUGE BEFORE RAISING THE BOOM. RAISING THE BOOM WITH AN UNLEVEL MACHINE MAY CAUSE THE MACHINE TO OVERTURN CAUSING INJURY OR DEATH.

⚠ USE SWAY CONTROL TO LEVEL THE MACHINE WHEN THE BOOM POSITION IS HORIZONTAL OR LOWER. USING THE SWAY CONTROL WHEN THE BOOM IS HIGHER THAN THE HORIZONTAL POSITION MAY CAUSE THE MACHINE TO OVERTURN CAUSING INJURY OR DEATH.

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NOTES

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SECTION 2

CONTROLS AND INSTRUMENTS

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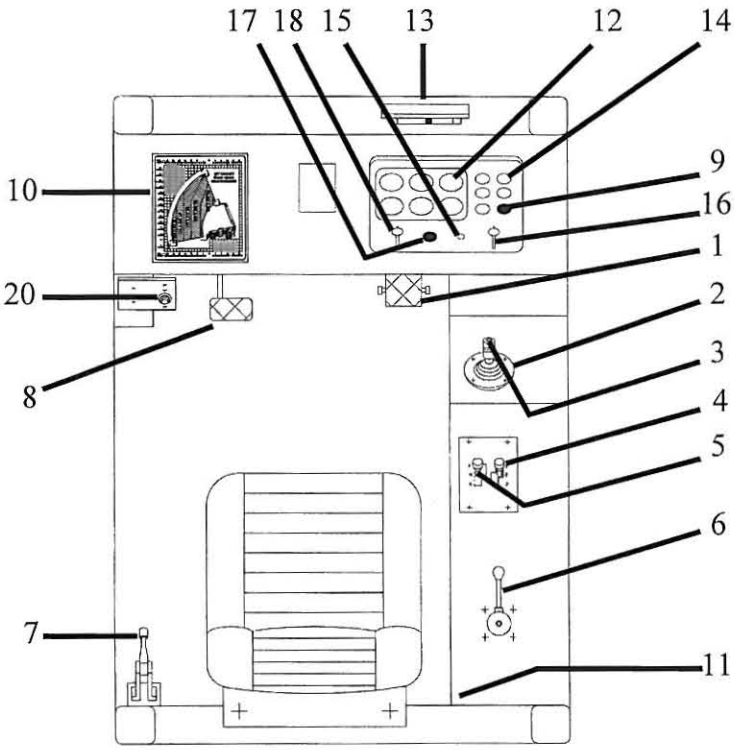
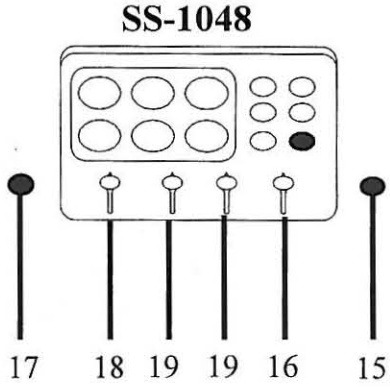
CAB ENCLOSURE





1. Accelerator Pedal
2. Joystick Controller
3. Square Shoot Activator Button (Opt)
4. Gear Selector
5. Forward/Reverse Selector
6. Steering Selector
7. Parking Brake
8. Service Brake
9. Parking Brake Warning Light
10. Load Chart
11. Warning Decal
12. Gauges
13. Machine Level Gauge
14. Fuse Holders
15. Headlight Switch (Opt)
16. Frame Sway Controller
17. Pump Destroke Button
18. Fork Frame Sway Controller (Opt)
19. Stabilizer Switches (SS-1048)
20. Differential Lock (SS-1048,SS-842)

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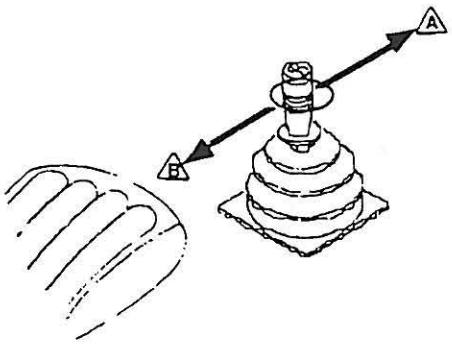
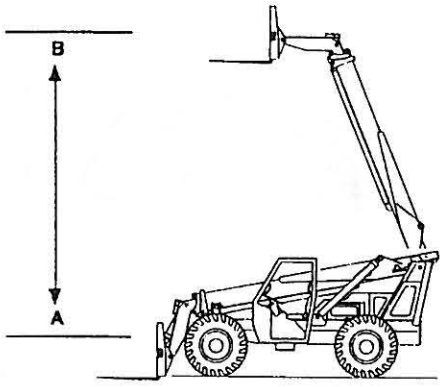
JOYSTICK CONTROL FUNCTIONS

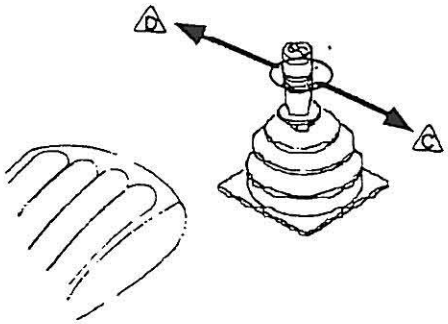
Use the joystick control lever to operate boom and forks as follows:

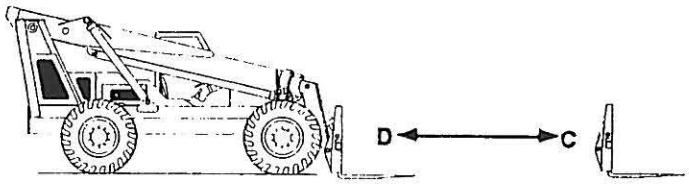




A - Boom Down

B - Boom Up





C - Boom Out

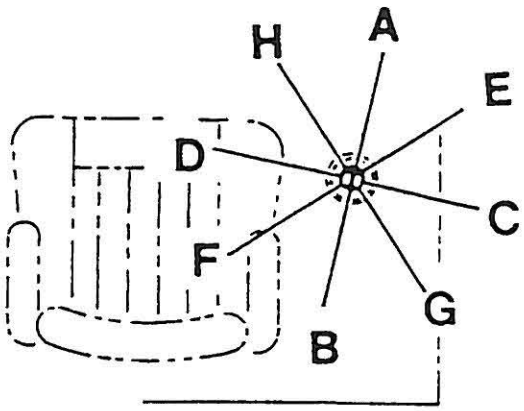
D - Boom In

E - Boom Down and Out

F- Boom Up and In

G - Boom Up and Out

H - Boom Down and In



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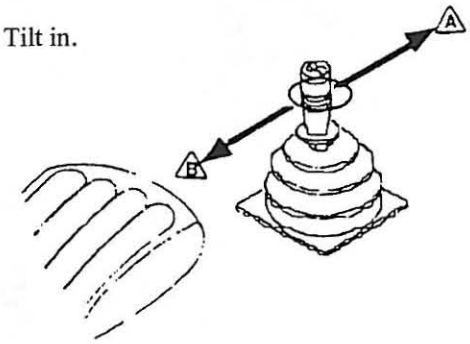
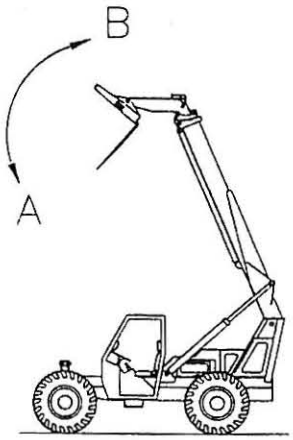
JOYSTICK CONTROL FUNCTIONS (WITH BUTTON PUSHED)

With button on top of joystick depressed the movement of the joystick changes functions to the following:

A- Tilt out.

B- Tilt in.

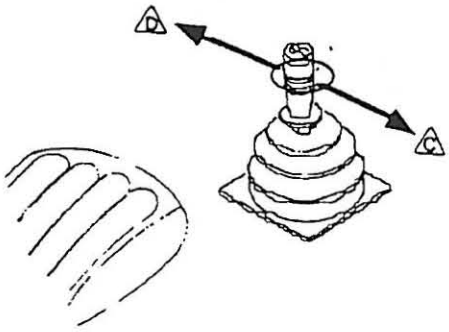


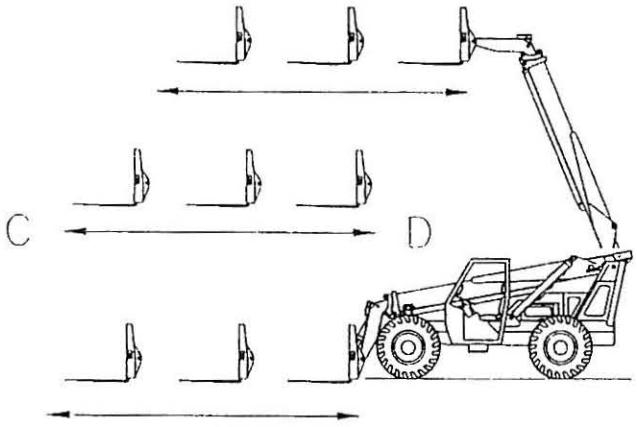


C - (Optional) Square Shoot Out

D- (Optional) Square Shoot In

.





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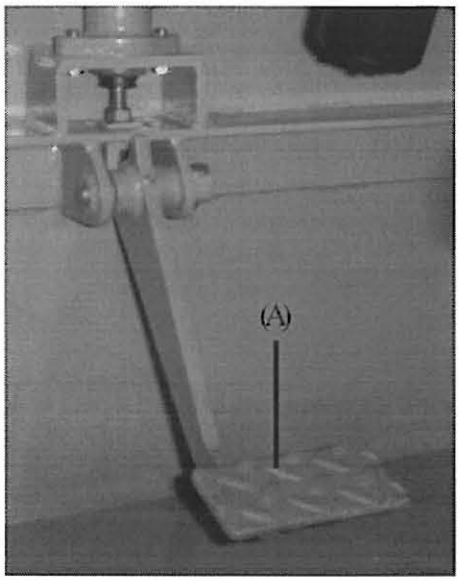
BRAKES

The brake pedal is the operator control for the service brakes. Pushing pedal (A) activates service brakes on all four wheels.

The brake should be applied during normal operation to stop machine movement.

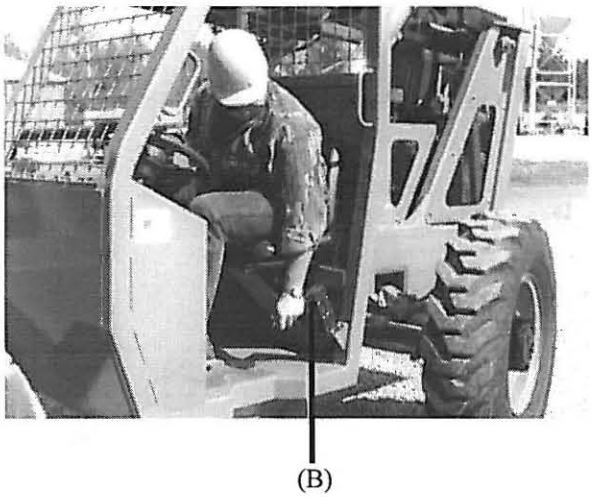


On machines equipped with rear-lock cylinders models (SS-1048 and SS-842) the service brakes will activate the cylinders into the lockup mode.

⚠ WARNING

Failure to set parking brake before leaving machine may result in unintended machine movement and possible injury, death, and/or damage to machine or property.

The parking brake (B) should be engaged anytime the operator gets off the machine. To engage, lift handle straight up until it "locks" over center.



⚠ CAUTION

Always disengage parking brake before attempting to move machine. To disengage push handle (B) down until it is completely collapsed. Failure to disengage parking brake during operation can cause parking brake failure. Heat build up from an engaged parking brake may cause a fire.

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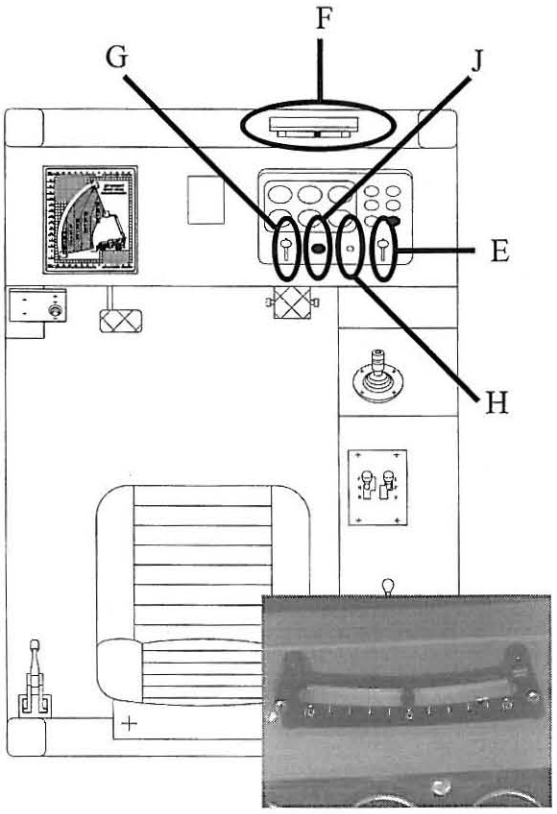
DASH PANEL



⚠ WARNING

Always ensure that machine level indicator is at zero (O) before raising the boom. Raising boom with a unlevel machine may cause the machine to overturn, resulting in injury or death.

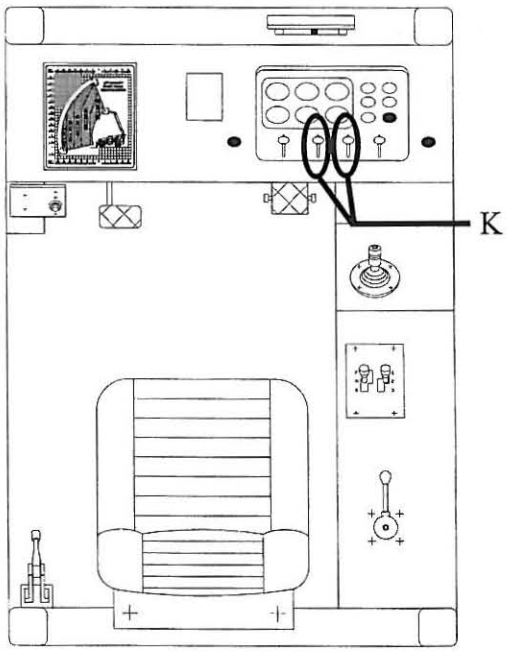
⚠ WARNING

Use frame sway control to level machine only when the boom position is horizontal or lower. Using frame sway control when boom is higher than a horizontal position may cause machine to overturn, resulting in injury or death.

1. FRAME SWAY CONTROL
The frame sway control (E) is located on the dash panel. The frame sway control is used in conjunction with the machine level indicator (F) mounted on top of the dash panel. The sway control lever is either moved to the left or right depending on the particular requirement.

2. ROTATING FORK FRAME CONTROL
The rotating fork frame control (G) located on the dash panel allows the operator to position forks for insertion or removal from pallet.

NOTE: The rotating fork frame is an option. If your machine is not equipped with a rotating fork frame, no control will be mounted on the dash panel.



3. HEADLIGHT SWITCH
The head light switch (H) is located on the dash panel. This is a push/pull type switch.

NOTE: Head lights are optional. If your machine is not equipped with headlights, no switch will be mounted on the dash panel.

3. PUMP DESTROKE CONTROL
The pump destroke button (J) is located on the dash panel.

4. FRONT STABILIZER CONTROL
The front stabilizer switches (K) are located on the dash panel just to the left of the frame sway control switch.

NOTE: The front stabilizer switches are standard equipment on the SS-1048.

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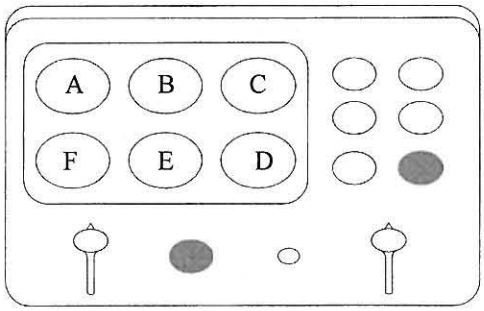
GAUGES

The following gauges are used to monitor the machine:



A - Fuel Level

B - Oil Temperature, Powershift Transmission

C - Oil Pressure, Powershift Transmission

D - Voltmeter

E - Water Temperature, Engine

F - Oil Pressure, Engine

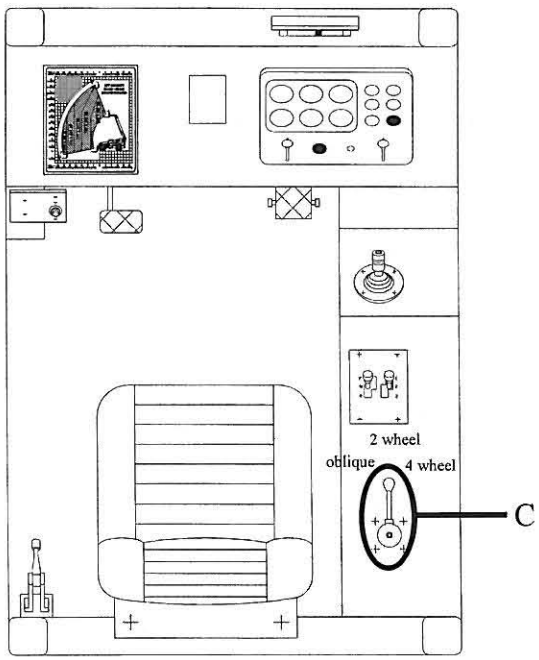
STEERING

⚠CAUTION

Before changing steering selections, make sure all four wheels are in line. Failure to align wheels to proper settings before changing steering positions may cause haphazard steering. This may result in injury to personnel and/or damage to machine or property.

In addition to the steering wheel, located directly in front of the operator, the SQUARE SHOOTER® has another steering control, the steering selector valve.

The Steering Selector valve (C) is a three-position valve. The positions of the valve have detents for accurate shifting. The three positions are: 4-wheel, 2-wheel , and oblique. Valve positions are selected and function as follows:



4-WHEEL is selected when valve is in far right position. In 4-wheel mode rear tires follow the same track as front tires.

2-WHEEL is selected when valve is in center position. In 2-wheel mode only front wheels turn.

OBLIQUE is selected when valve is in far left position. In oblique, also known as "crab" steering, all four wheels turn in the same direction.

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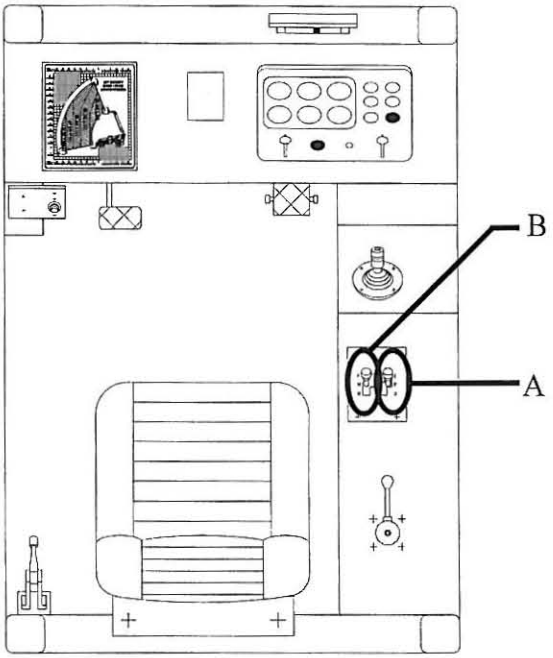
TRANSMISSION

1. TRANSMISSION RANGE CONTROL

The transmission range control (A) has three selections, first, second and third. First is low speed, high torque. Second is medium speed, medium torque. Third is high speed, low torque. This allows operator to select speed and torque range most suited for the job being performed.

2. FORWARD/REVERSE SELECTOR VALVE

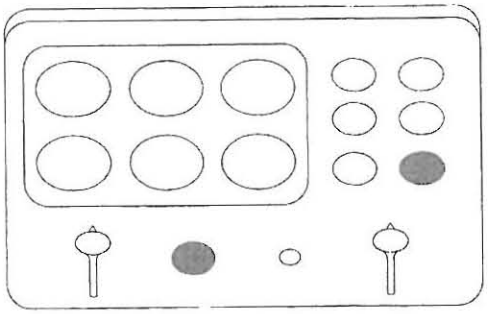
The forward and reverse selection control (B) has three positions: F (Forward), N (Neutral), and R (Reverse). Because the machine is equipped with a neutral start switch, this lever must be in the neutral position before starting the machine.



HYDRAULIC PUMP

⚠ DANGER

Depressing pump destroke button while operating the SQUARE SHOOTER® will cause an immediate loss of hydraulic power, possibly creating a very dangerous situation. Hydraulic functions that will be affected are: STEERING, FORK TILT, LIFT, BOOM EXTENDED, and RETRACT, SWAY and ALL HYDRAULIC OPTIONS. None of these functions will operate as long as the button is depressed. Brakes will continue to function if accumulator backup has a sufficient gas charge.



The pump destroke button will be the black push button switch located on dash panel.

NOTE: On machines equipped with front stabilizers the button will be located directly to the left of the dash panel.

For example, when starting machine for the first time on a 30° day, depress pump destroke button while starting engine. Continue to depress button for 15 to 20 seconds after engine starts.Once engine is running smoothly, release button and the hydraulic pump will engage. Depressing pump destroke button will not be required for all other starts of the day, unless engine has been allowed to cool completely.

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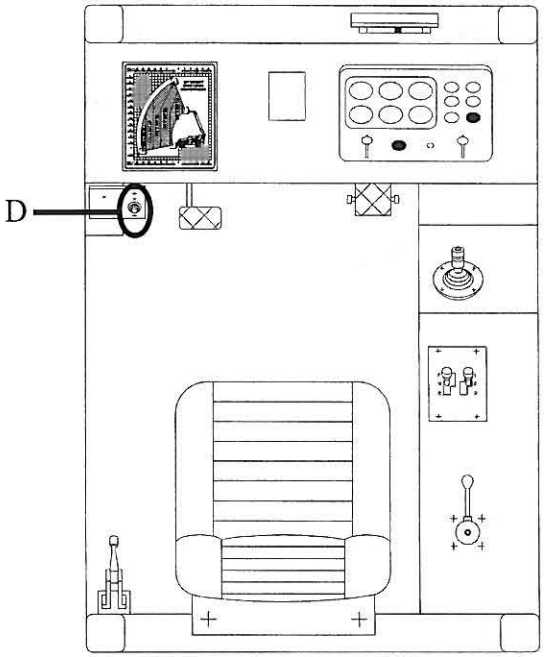
DIFFERENTIAL LOCK

IMPORTANT Before engaging the front axle differential lock, make sure the wheels come to a complete stop. Failure to do so will result in premature wear of internal components.



Models SS-1048 & SS-842 are equipped with a front axle differential lock and push button (D). This foot operated push button is located directly to the left of the service brake pedal.

Depressing and holding the differential lock push button (D) locks the front axle into a positive traction mode.

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NOTES

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SECTION 3

OPERATION

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OPERATION AND SAFETY GUIDELINES

⚠ WARNING

Your safety and the safety of those around you depends upon your using care and judgement in the operation of this equipment. Know the positions and functions of all controls before attempting to operate. All equipment has limitations. Understand the speed, braking, steering, stability, and load chart characteristics of the machine before operating. Read the Operator's Manual and ask questions of your supervisor until you know machine limitations. It is very important to read, fully understand, and follow these operation and safety guidelines.

1. **DO NOT** operate SQUARE SHOOTER® tractor while people and /or property are within a 50 foot (15.24 m) minimum radius. Falling objects from the forks or attachment can cause property damage and/or serious personal injury. This 50 foot (15.24 m) minimum radius should be used only as a guideline. Enlarge minimum working area if warranted by working conditions.
2. **ALWAYS** remain completely within the cab enclosure while operating machine. Falling debris can cause serious personal injury or death.
3. **NEVER** extend a load beyond the load chart band. Machine turn over, component damage, injury or death could occur.
4. **ABSOLUTELY NO RIDERS SHOULD BE ALLOWED ON MACHINE OR ATTACHMENTS.**
5. **NEVER** lower a maximum load before retracting it. Machine turn over, component damage, injury or death could occur.
6. **INSPECT** and clear working area of any obstructions (rocks, fence, wire, etc.) that could cause machine damage. If obstructions cannot be cleared, mark obstructions with a stake or other marker that will be clearly visible to the operator.
7. **DO NOT** check engine coolant level if engine has recently been run. Injury could occur from escaping hot pressurized coolant.
8. **ALWAYS** wear seat belt when operating machine.
9. **ALWAYS** inspect the machine daily. Check for leaks, worn hoses, loose belts, or anything out of the ordinary. Repair and/or replace any worn , damaged or leaking parts immediately. Failure to do so can cause injury or death.
10. **CHECK** to be sure that all guards and screens are secure and in the proper place.
11. **CHECK** to be sure that all safety devices are functioning properly: parking brake, service brake,level gauge,neutral start safety switch,back alarm,horn, and always make sure mirror is adjusted properly.
12. **DO NOT** travel on terrain or in dangerous areas that could cause machine to tip over.
13. **DO NOT** attempt to start engine by towing or pushing. Damage to the powershift transmission could result.
14. **CARRY A LOAD** so that you have maximum machine stability and visibilty is not obstructed.
15. **ALWAYS** level machine as indicated on the machine level indicator; before raising boom. Raising the boom with an unlevel machine may cause machine to overturn causing injury or death.
16. **USE** frame sway control to level the machine only when the boom position is horizontal or lower. Using the frame sway control when the boom is higher then a horizontal position may cause the machine to overturn causing injury or death.
17. **DO NOT** depress the pump destroke button while operating the machine. This button should be used **only** during cold start-ups. Depressing the button while operating a SQUARE SHOOTER will cause an immediate loss of hydraulic power that will affect steering, fork tilt, lift, boom extend and retract, sway and all other hydraulic functions. Brakes will continue to function if accumulator backup has a sufficient gas charge.

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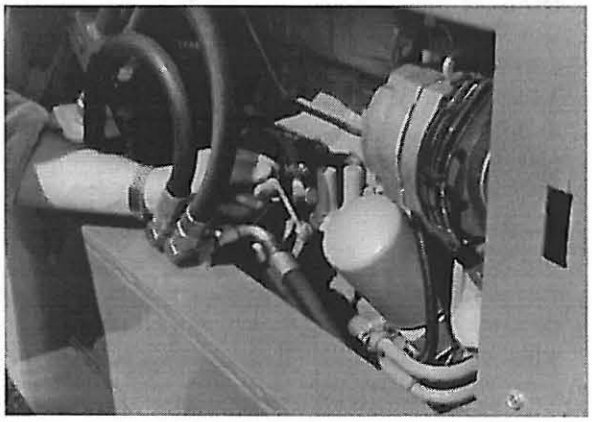
BEFORE STARTING THE ENGINE

The following procedures should be performed before starting the engine.

⚠ WARNING

Do not perform any procedures in this section, " BEFORE STARTING THE ENGINE" , unless machine is off and engine is cool. Failure to do so may result in serious injury, death or damage to equipment.

1. Walk around machine and check for any parts that are missing, worn, damaged or leaking. Repair and/ or replace damaged parts.



2. Check engine oil level. If low, add 15w40 motor oil that is API code CD/SC, or seasonal weight recommendation. Contact your SQUARE SHOOTER® dealer for more information.

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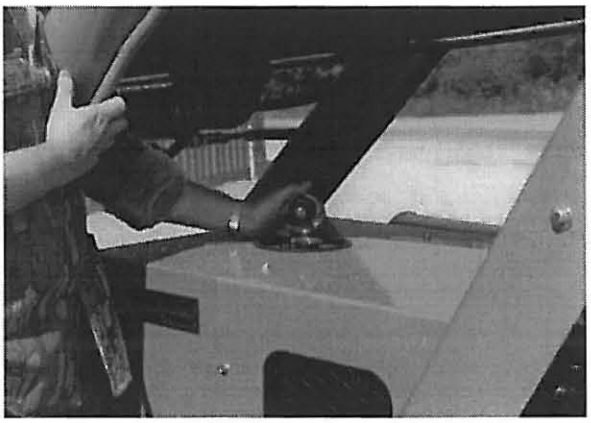
BEFORE STARTING THE ENGINE

⚠ WARNING

Do not check coolant level if engine has recently been run. Injury may occur from hot escaping pressurized coolant.



3. With engine cool, check engine coolant level.

   When checking coolant level, coolant should be visible in top tank of radiator. If coolant is not visible add a 50/50 mixture of water and glycol- based anti freeze/coolant.

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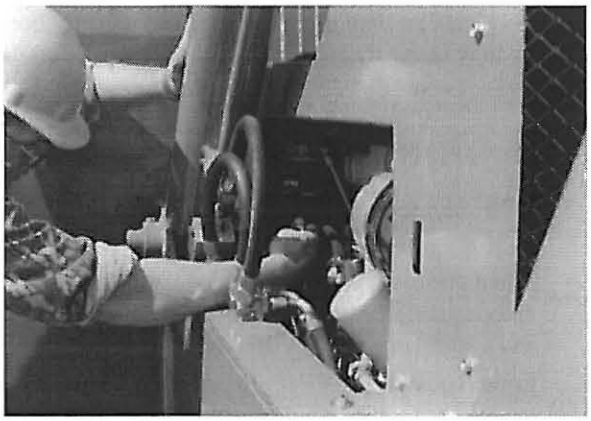
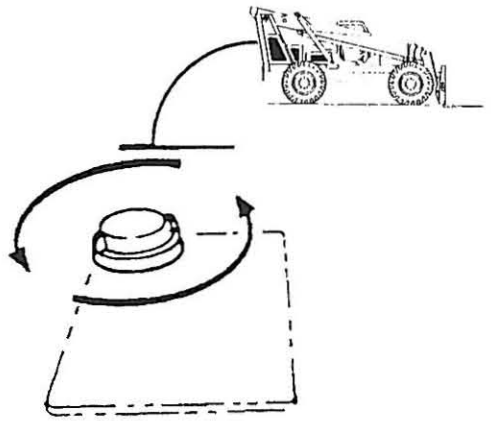
BEFORE STARTING THE ENGINE

4. Open water drain plug. Place empty container under drain plug located at bottom of fuel filter. If water is present, leave plug open until fuel starts to flow out of plug. Close drain plug. Clean up any fuel on the machine or the ground. Dispose of properly.



5. Check hydraulic oil level sight gauge. With boom down and retracted and SQUARE SHOOTER® level, the sight gauge should read 1/2 full. If hydraulic oil level is low, fill hydraulic reservoir with Amoco 1000 or equivalent tractor fluid. Hydraulic reservoir fill is located directly below main pivot of boom.



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BEFORE STARTING THE ENGINE

6. Remove back cover from air cleaner. Remove and inspect air cleaner. Thoroughly clean inside of the canister. Replace filter on if required.

NOTE: Two filters required on turbo- charged machines.

7. Grease the following components daily:
   A. Both axle pivots - plumbed out to the side of the machine.
   B. Both ends of the lift cylinders.
   C. The fork frame mounting pin.
   D. Both ends of the fork tilt cylinders.

SEE LUBE CHART ON PAGES 4-12&13

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STARTING THE ENGINE

⚠ DANGER

Any problems discovered in steps 1 thru 8 should be documented and corrected before this SQUARE SHOOTER® is operated.

⚠ DANGER

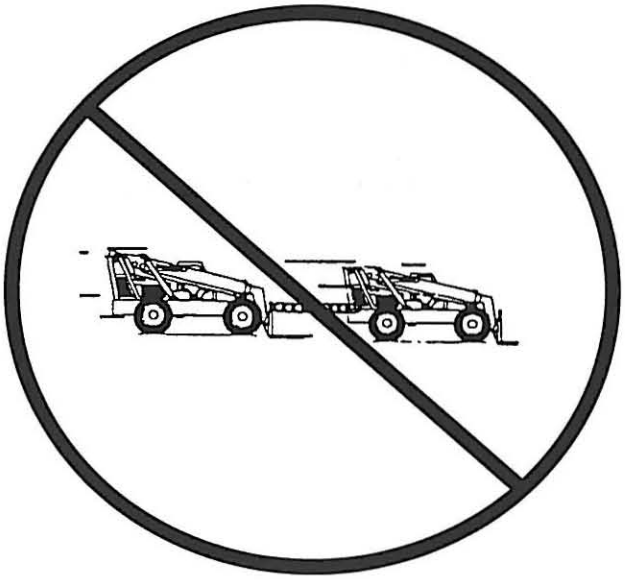
If machine should start with transmission control lever in gear, stop operation at once. Property damage, serious injury or death may occur to material and personnel around machine at time of engine start. Have a qualified service technician repair machine.

1. Place transmission control lever in neutral. SQUARE SHOOTERS are equipped with a neutral start safety switch to prevent engine from starting with transmission in gear.

2. Insert ignition key in ignition switch. Rotate clockwise until engine starts. Release key when engine starts.

⚠ CAUTION

If engine fails to start within 30 seconds release key ,wait at least 2 minutes to allow starter motor to cool before trying again. If engine fails to start after four attempts,trouble shoot and correct problem. For more information on trouble-shooting contact your local SQUARE SHOOTER dealer.



DO NOT turn key in ignition while engine is running. This may cause damage to starting motor.

⚠ CAUTION

Attempting to start engine by towing or pushing machine will result in damage to powershift transmission and will not start engine! It also is a unsafe practice that could cause personnel injury.

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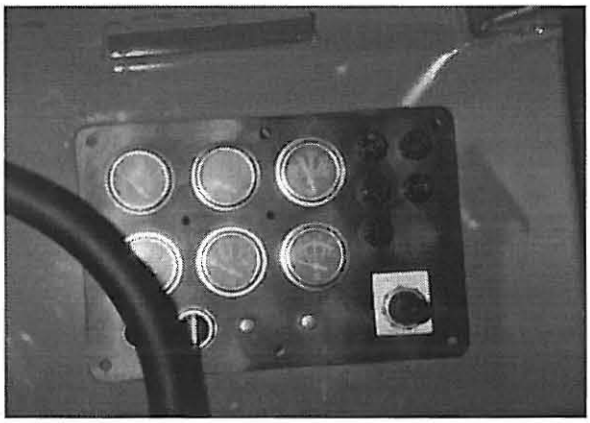
BEFORE OPERATING THE SQUARE SHOOTER®

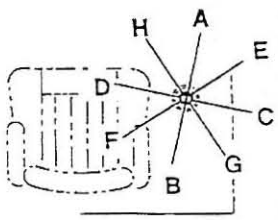
1. Check dash-mounted gauges for logical readings. For example, on a cold start-up with engine at low idle, readings should be as follows:
   - Engine oil pressure, 40 PSI or more
   - Voltmeter, 12 volts or more
   - Transmission oil pressure, 180 PSI or more
   - Fuel tank, at least 1/2 full



2. Operate joystick controller momentarily in all directions. Refer to listings and associated drawings on this page to determine direction of movement:

   . Joystick forward, in position A, lowers boom
   . Joystick backward, in position B, raises boom
   . Joystick right, in position C, extends boom
   . Joystick left, in position D, retracts boom
   . Joystick in position E, lowers and extends boom
   . Joystick in position F, raises and retracts boom
   . Joystick in position G, raises and extends boom
   . Joystick in position H, lowers and retracts boom

STANDARD JOYSTICK FUNCTIONS



A - Boom Down
B - Boom Up
C - Boom Out
D - Boom In
E - Boom Down and Out
F - Boom Up and In
G - Boom Up and Out
H - Boom Down and In

The following movements can only be accomplished with the joystick controller button depressed. This button is located on the top of the joystick controller.

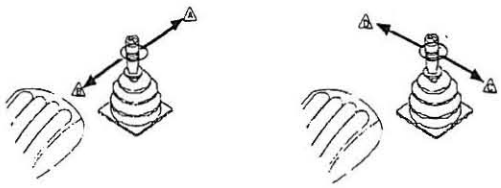
. Button depressed with joystick in position A tilts the fork frame forward.

. Button depressed with joystick in position B tilts the fork frame back.

. Button depressed with joystick in position C Square Shoots out (optional feature; n/a SS-624)

. Button depressed with joystick in position D Square Shoots in (optional feature; n/a SS-624)

BUTTON DEPRESS JOYSTICK FUNCTIONS



A. Tilt Out
B. Tilt In
C. Square Shoot Out
D. Square Shoot In

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BEFORE OPERATING THE SQUARE SHOOTER®

3. Operate frame sway control momentarily. The black ball in level indicator moves in same direction as sway control lever. The SQUARE SHOOTER® tilts in the same direction as the sway control. For example, moving sway control to the left tilts machine to the left. Moving sway control to the right tilts machine to the right.

4. Check steering operation by turning steering wheel approximately one-quarter turn in each direction. If front and rear tires are not aligned properly, move steering selector valve to "2-wheel" position. Bring front tires into alignment with rear tires. Place steering selector valve back into "4-wheel" position.

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BEFORE OPERATING THE SQUARE SHOOTER®

⚠ CAUTION

Operating SQUARE SHOOTER with parking brake engaged can cause brake failure. Heat build up from brake being engaged can cause a fire.

⚠ DANGER

If machine does not stop immediately when brake pedal is applied, do not use SQUARE SHOOTER. Correct braking problem before using this machine. Failure to follow this procedure may result in serious injury and/or death.

5. Release mechanical parking brake.

6. Activate transmission. As soon as machine starts to move, apply service brake pedal. The machine should stop immediately.

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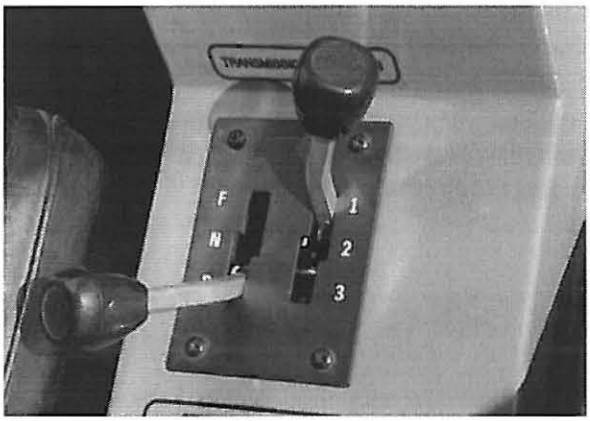
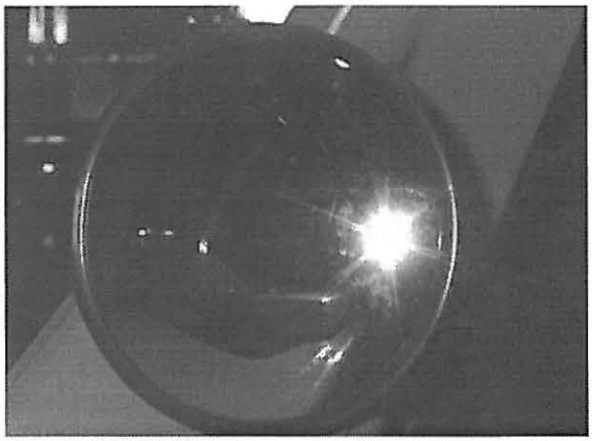
BEFORE OPERATING THE SQUARE SHOOTER®

⚠ DANGER

Never operate the machine with a faulty backup alarm. Doing so may result in serious injury and/or death.



7. Place transmission control in reverse. The backup alarm should sound. If it does not sound, have the backup alarm repaired immediately. When machine starts to roll, APPLY service brakes. The machine motion and backup alarm should stop when brake pedal is depressed. This action verifies that transmission clutch cutoff is working properly.



8. Check rear view mirror. When properly adjusted, the top half of right rear tire should fill glass.

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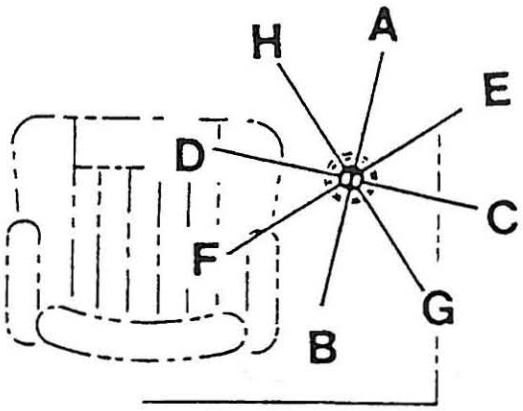
OPERATING THE 4-WAY CONTROLLER

Two factors in the performance of the 4 way controller are engine RPM and oil flow.



All SQUARE SHOOTER® models will perform load chart capacities at engine idle. Engine rpm may be raised to increase speed of hydraulic function.

Higher engine rpm is recommended to enhance performance of the optional SQUARE SHOOT(Level Traverse) function.(Button Pushed)

By moving the 4 way controller gradually to full open, smooth and controlled functions will result.

Quick and sharp movement of 4- way controller will result in jerky and uncontrolled functions.

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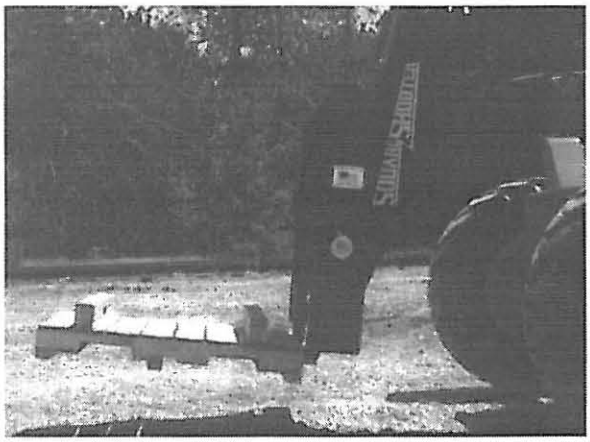
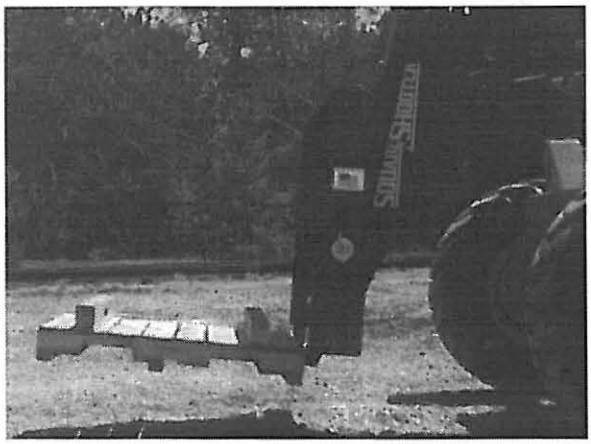
The forks should be tipped back slightly during transportation to ensure stability of load.



⚠ WARNING

Transporting a load with the boom above horizontal could cause a roll over hazard.

The load should be kept as low to the ground as possible without lifting the boom above horizontal.



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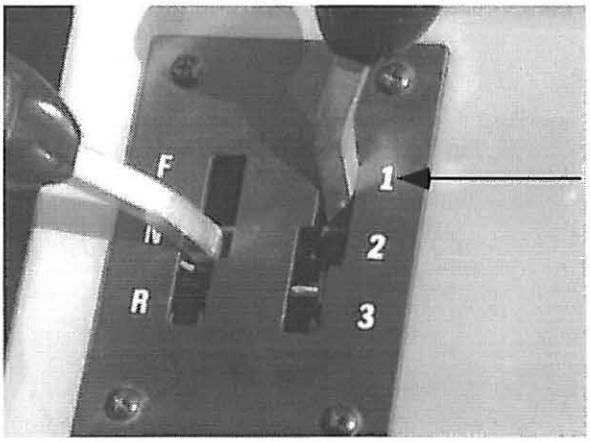
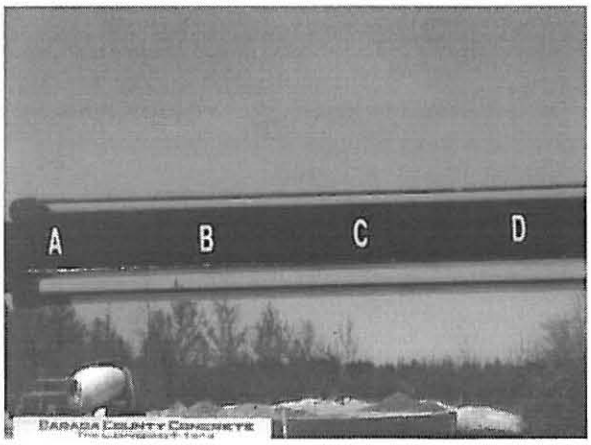
TRANSPORTING A LOAD

⚠ WARNING

Slower speeds should be used whenever transporting a load. Failure to do so can result in damage to load, machine, and bystanders.



Always keep boom retracted as far as load will allow to ensure greater stability. By using the letters on the boom side the operator can judge how far the boom may be extended with that particular load.



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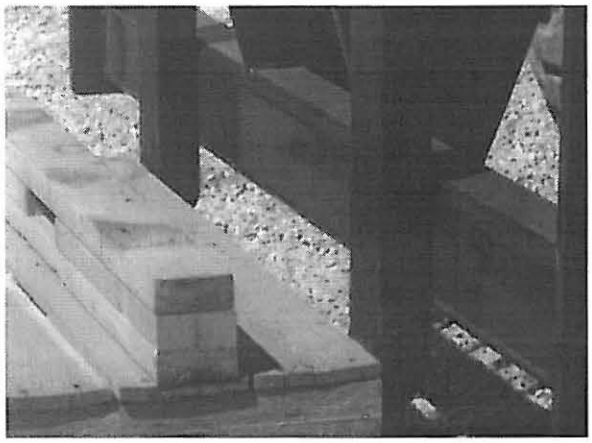
LIFTING A LOAD

Always place load in center of the fork frame and completely against the back. By doing so greater stability of the load will result.



IMPORTANT Never attempt to use the forks and/ or attachments for prying wedged or frozen loads free. Damage to load, pallet and/or machine could result.

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PLACING OF A LOAD

⚠ DANGER

Always apply parking brake before lifting and /or placing a load. Failure to do so could allow machine to roll causing a roll over hazard which could result in injury or death.

On models equipped with front stabilizers, arms should be lowered until weight is supported by arms before placing a load. Front stabilizers are standard on model (SS - 1048) .

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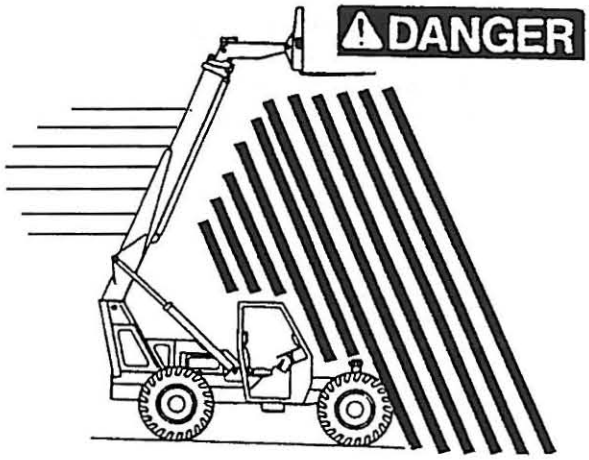
PLACING A LOAD

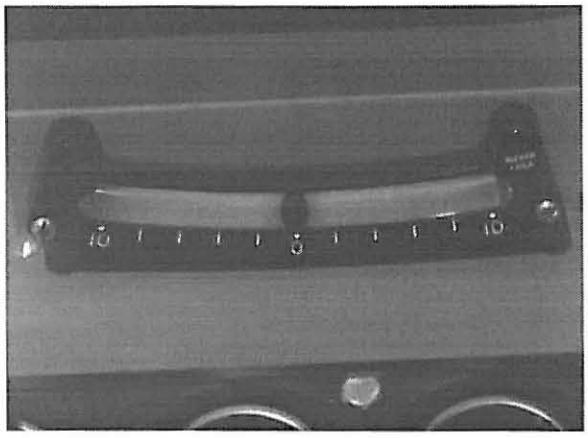
⚠ WARNING

Do not sway machine with boom above the horizontal position. By doing so could cause a roll over hazard that may result in injury or death.



Before placing a load, the frame level should be adjusted at this point. This can be done by the use of the switch labeled SWAY CONTROL located on the dash panel.

Adjust until level gauge indicator ball is located on the (0) mark.



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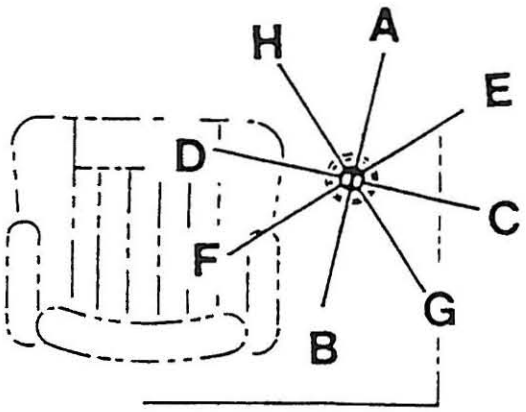
PLACING A LOAD

On models equipped with rear lockup cylinders (SS-1048 and SS-842) depress and hold service brake pedal throughout entire placement procedure. Cylinders become locked when service brakes are applied.

Gradually move 4-way controller towards position (B) to lift load vertically. Hold until required height has been reached.



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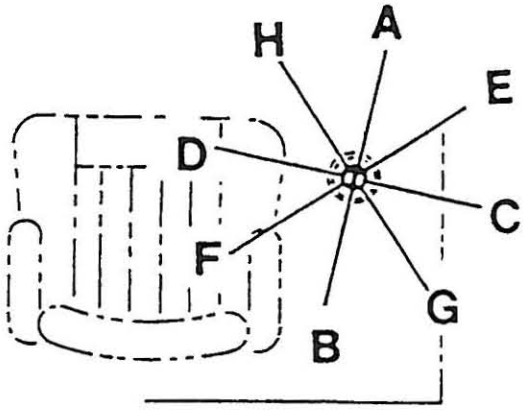
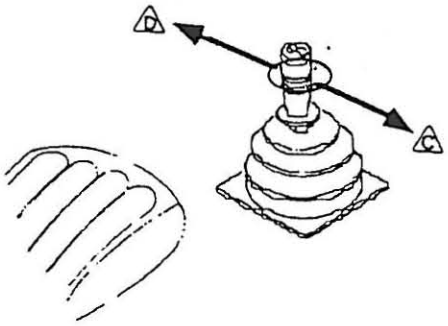
PLACING A LOAD

Gradually move 4-way controller towards position (E) to bring boom DOWN and OUT into final position. Lower load until weight is completely off forks.



On machines equipped with the optional SQUARE SHOOT feature move 4-way controller toward position (C) to bring load into final position.



NOTE: The button has to be pushed to activate the SQUARE SHOOT function.

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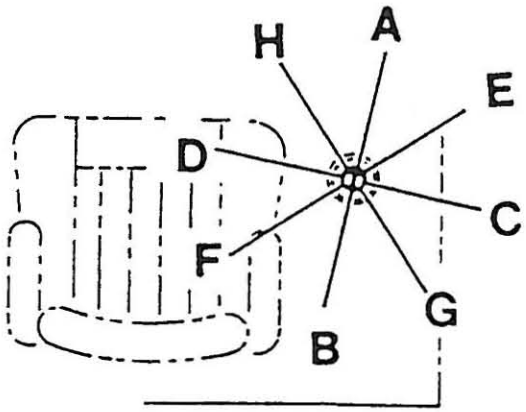
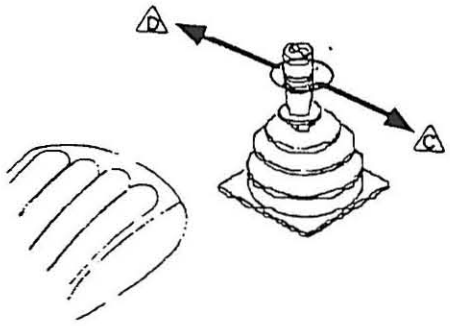
RETRACTING FROM A LOAD

Gradually move 4-way controller towards position (F) to bring the boom UP and IN. This will bring the forks out of load. Once forks are clear of load the boom can be lowered.



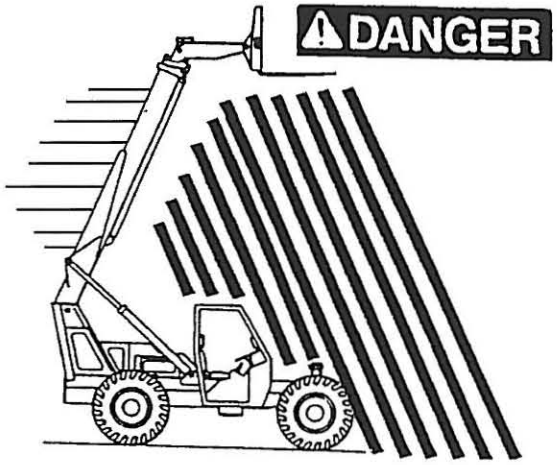
On machines equipped with the optional SQUARE SHOOT function move the 4-way controller towards position (D) to retract forks from load. Once forks are clear of load the boom may be lowered.

NOTE: The button has to be pushed to activate the SQUARE SHOOT function.



⚠ DANGER

Do not operate machine with the boom above the horizontal position.



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NOTES

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SECTION 4

MAINTENANCE PROCEDURES

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GENERAL SAFETY PRACTICES

BEFORE SERVICING

Read entire Maintenance Procedure Section.

Familiarize yourself with all safety precautions listed in section 1.

Pay close attention to all safety alert symbols.

Be sure you understand the procedures detailed in this section.

Wear protective equipment.

Remove rings and jewelry.

Move machine to a safe level work place.

Lower boom and support all raised equipment.

Shut down machine.

Remove key from ignition.

Be careful with fuels and lubricants so as not to spill.

Do not fuel tank while engine is running or hot. Doing so could cause a fire and/or a explosion.

Do not smoke while refueling or working with fuel to avoid a fire and/or an explosion.

IMPORTANT! Always clean up spilled fuel and/or lubricants to avoid polluting the earth.

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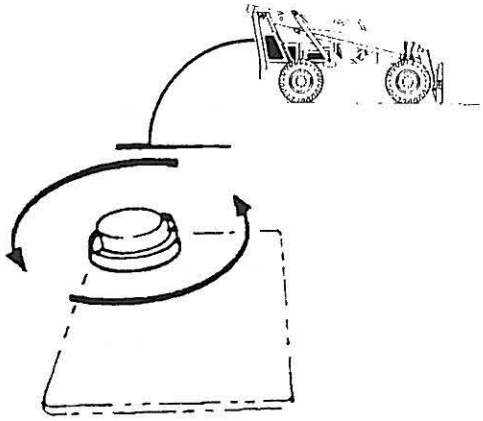
GENERAL SAFETY PRACTICES

HYDRAULIC SAFETY



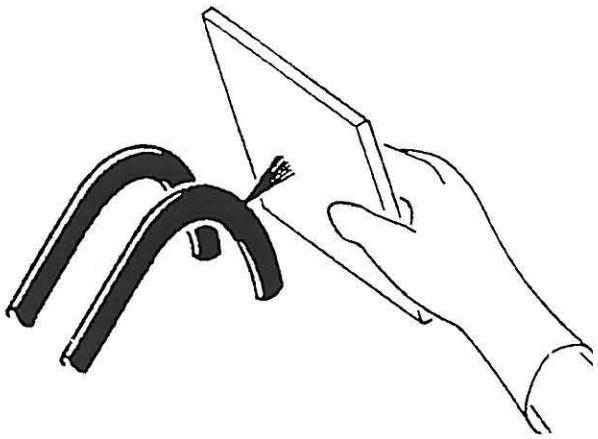
⚠ WARNING

Hot hydraulic oil can cause severe burns. **DO NOT** work on the hydraulic system if oil temperature exceeds 120 F° (49 C°).

Before **ANYONE** works on the hydraulic system:

1. Lower forks to the ground.
2. Engage parking brake.
3. Shut down engine.
4. Clean area around reservoir cap.
5. Loosen reservoir cap.
6. Remove key from starter switch.

FLUID UNDER PRESSURE



⚠ WARNING

Escaping fluid under pressure can penetrate the skin and cause serious personal injury.

Use a piece of cardboard or paper to search for leaks. **DO NOT** use hands! Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, ensure that all connections are tight. **DO NOT** apply pressure to a damaged line, hose or fitting.

If injured by escaping fluid, see a doctor at once. Proper medical treatment must be administered immediately. A serious infection or reaction can result without proper medical treatment.

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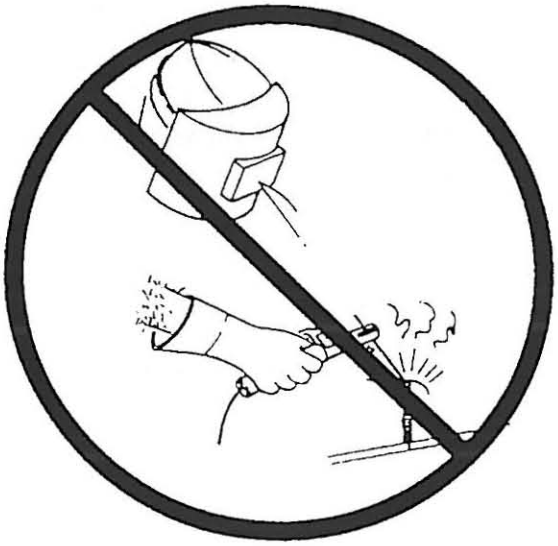
GENERAL SAFETY PRACTICES

WELDING PRECAUTIONS



⚠ WARNING

DO NOT weld on any structural member. Any unauthorized welding can cause structural failure or possible personal injury. All unauthorized welding or repair procedures will void the warranty.

Before performing any **authorized** welding, be sure to disconnect positive lead from battery. Properly attach ground cable of welder to frame member that is being welded. Failure to do so can cause electrical system damage.

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WEEKLY (OR 50 HOURS) MAINTENANCE

1. Perform "BEFORE STARTING THE ENGINE" maintenance and checks, as listed beginning on page 3-3 of this manual.

2. Perform "BEFORE OPERATING THE SQUARE SHOOTER®" checks as listed beginning on page 3-8 of this manual.

3. Remove and inspect air cleaner according to the following procedure:

   A Remove and clean cup assembly.

   B. Check the condition of the air cleaner element. Clean or replace as needed. Refer to Engine Manual for more detailed instructions.

   C. Replace cup assembly.

   D. Check air cleaner hose connections between air cleaner housing and the engine intake manifold for damage or leaks.

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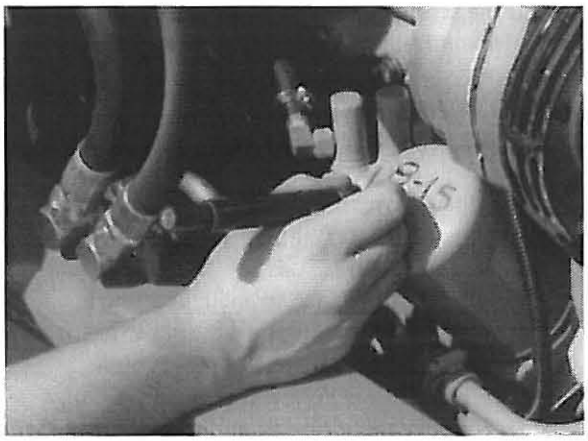
WEEKLY (OR 50 HOURS) MAINTENANCE

4. The average engine oil change interval is 250 hours of operation. If that interval is up, change engine oil and oil filter. Mark the date and engine's hours on the new oil filter. See engine manual for oil change details.

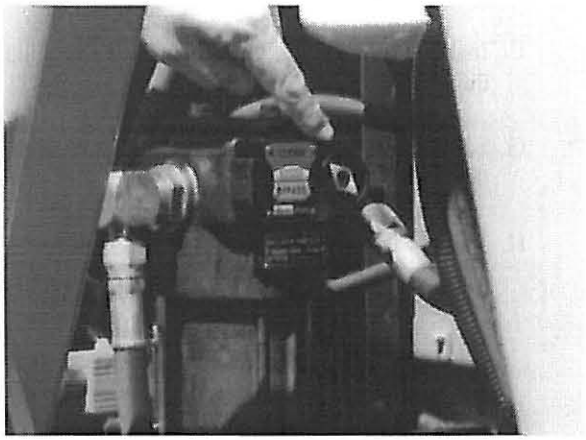


NOTE: Engine manual available from SQUARE SHOOTER dealer.

5. Check the Hydraulic Pressure Filter element. This filter has a service indicator built into the manifold.

⚠ WARNING

Do not operate steering to rear axle (4-wheel or oblique) during this test as tire movement may create a crush hazard for the personnel observing the pressure filters service indicator.



To test the filter element, the steering selector valve must be in the 2-wheel position and there must be a flow of oil through it. The steering circuit is the largest user of oil that this filter serves.

With the engine at about half RPM, operate the steering rapidly back and forth while someone observes the pressure filter's service indicator.

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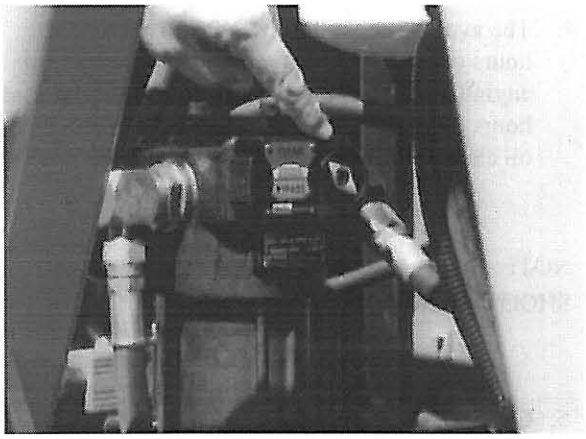
WEEKLY (OR 50 HOURS) MAINTENANCE

If the service indicator recommends changing the filter element follow the procedure listed below:



A. Shut off the engine and remove the key from the switch.

B. Open the reservoir fill cap to vent the tank's internal pressure (5 to 10 PSI).

C. Using a 1-3/8 inch wrench, unscrew the bowl from the head assembly. Remove the paper element from the head assembly by pulling down on it.

D. Remove the o-ring from the bowl lip and wipe the bowl clean.

E. Install a new 10 micron paper element into the head assembly of the pressure filter.

F. Install a new O-ring into the groove in the lip of the bowl.

G. Screw the bowl back into the head assembly of the pressure filter.

H. Tighten the bowl to 30 ft. lbs. of torque and wipe dry.

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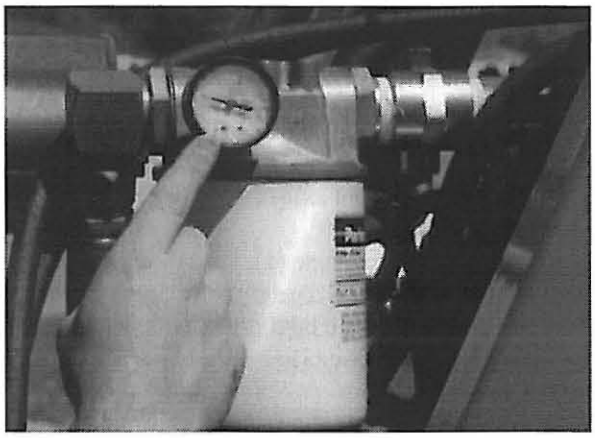
WEEKLY (OR 50 HOURS) MAINTENANCE

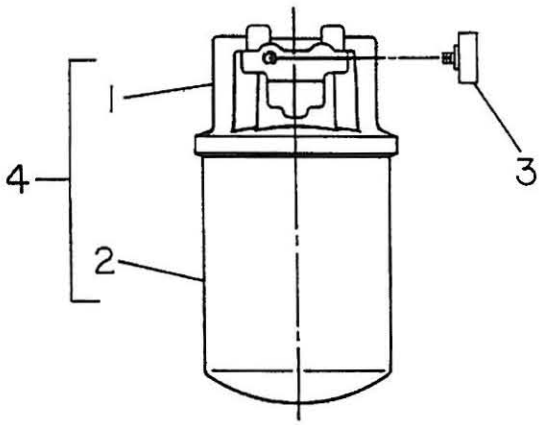
6. Check the hydraulic return filter element.
   The filter has a service indicator built into the body. It is mounted on the forward surface of the hydraulic oil reservoir, left side, near the top and has an aluminum body with a white spin on element.

   The at rest reading should read between 0 and 7 PSI as the machine has a pressurized reservoir.

   To test the hydraulic return filter the hydraulic fluid must be at least 40°degrees F and the engine must be running. If these conditions exist, have one person operate the boom up at full engine RPM to create flow through the filter. While this is being done have another person observe the filter pressure gauge.

   The gauge should read less than 15 PSI (bypass) during the flow test, if gauge reads more than 15 PSI the spin on element should be changed according to the following procedures.





A. Lower oil level in reservoir by extending the boom fully at ground level and tilting fork frame fully down.

B. Sway the machine fully to the right, shut off engine and remove key from start switch. Do not restart the engine until filter element change is complete.

C. Open hydraulic oil reservoir fill cap to vent pressure. Steps (A) (B) and (C) are performed to prevent oil from being dumped on personnel when this change is performed.

D. Remove the spin-on element Item 2 from the head assembly Item 1of the return filter.

E. Remove rubber seal ring from head assembly of return filter.

F. Install new rubber seal ring in the head assembly of return filter.

G. Wipe a film of oil around outer lip of new spin-on element and install it on return filter head assembly(Item 1). Hand tighten spin on element (Item 2) and wipe it dry.

H. Close hydraulic oil reservoir fill cap.

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WEEKLY (OR 50 HOURS) MAINTENANCE

7. Perform weekly greasing on components using a premium multi purpose grease as listed below. Refer to lube chart on pages 4-12&13 for component location. Clean all grease fittings before greasing.

A. Head and base ends of sway cylinders (4).

B. Slip yoke on front axle (1).

C. Slip yoke on rear axle (1).

D. Universal joints on both driveshafts, with the exception of joint by the parking brake disc (3).

E. Axle trunnion (steering) bearings, front and rear (8).

F. Both ends of all four steering cylinders (8).

G. Tie rod ends on both axles (4).

H. Brake pedal pivot (1).

I. Accelerator pedal pivot (3).

J. Upper slide on lift copy assembly (2) Optional on all models except SS-624.

K. Lower slide on lift copy assembly. (1) Optional on all models except SS-624.

L. The boom's rear pivot (2).

M. Two chain sheaves on front of middle boom tube. Fittings in the end of roller shaft (2) (NOTE: SS-836 only.)

N. Extend the boom fully. The large and middle boom tubes each have four grease fittings on the side plates. (NOTE: The SS-624 is a two-section boom, therefore only the large boom will have these grease fittings.) Put four pumps of grease into each fitting. This smears grease on the sides of the internal load rollers and lubes inside of the boom tubes where rub occurs. Models SS-1048, SS-842, SS-836 & SS-636 have eight grease fittings.The SS-624 will have four.

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WEEKLY (OR 50 HOURS) MAINTENANCE

⚠ DANGER

SQUARE SHOOTER® FORKLIFTS ARE BALLASTED WITH WEIGHTED TIRES. LOSS OF BALLAST CAN EFFECT MACHINE STABILITY AND CAN CAUSE A ROLL OVER HAZARD RESULTING IN DAMAGE, INJURY OR DEATH

8. Check tires for chloride and inflation pressure.

A. With valve stem at its highest point, push deflator point of valve core for about a full second. There should be a solid stream of chloride solution and no air. If air is present,tire is under-filled with chloride solution. Replace the lost chloride solution to a level of one inch above the steel wheel. Also if steel wheel is not kept submerged in chloride solution, it will rust causing early failure. Proper chloride solution is 150 lbs. of calcium chloride to 50 gallons of water.

NOTE: The SS-624 is the only SQUARE SHOOTER tractor without weighted tires.

B. Use only a corrosion proof tire gauge to check tire pressure. Tires should be inflated to 70 PSI.

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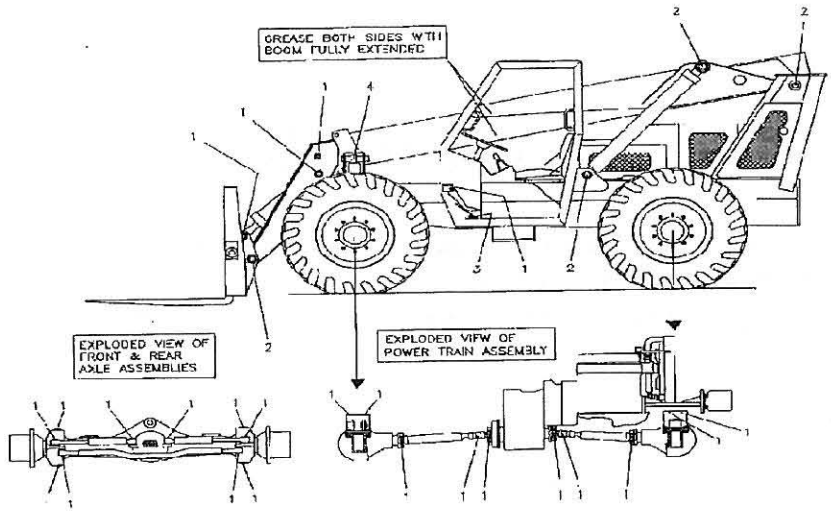
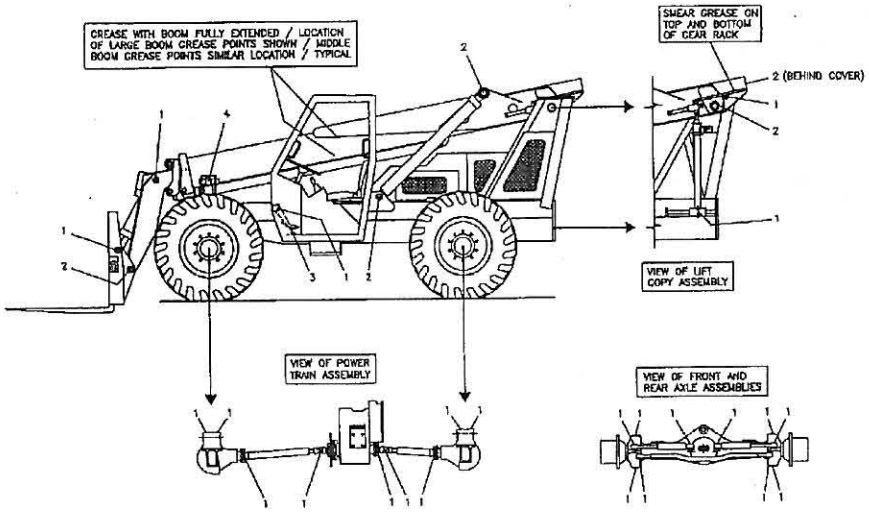
LUBE CHARTS

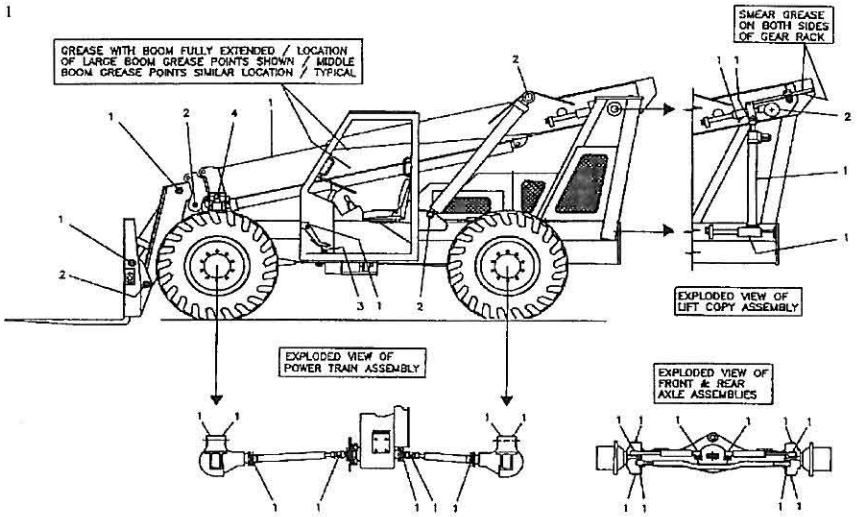
SS-624



SS-636



SS-836



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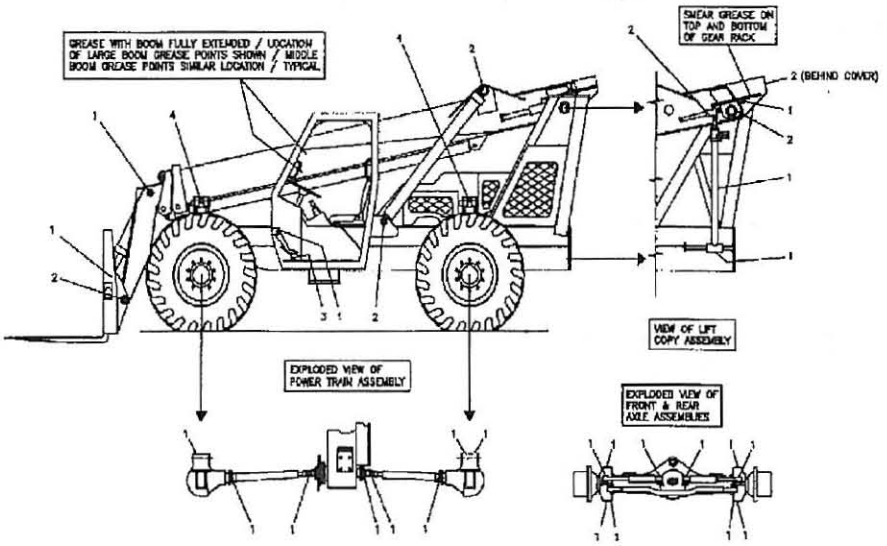
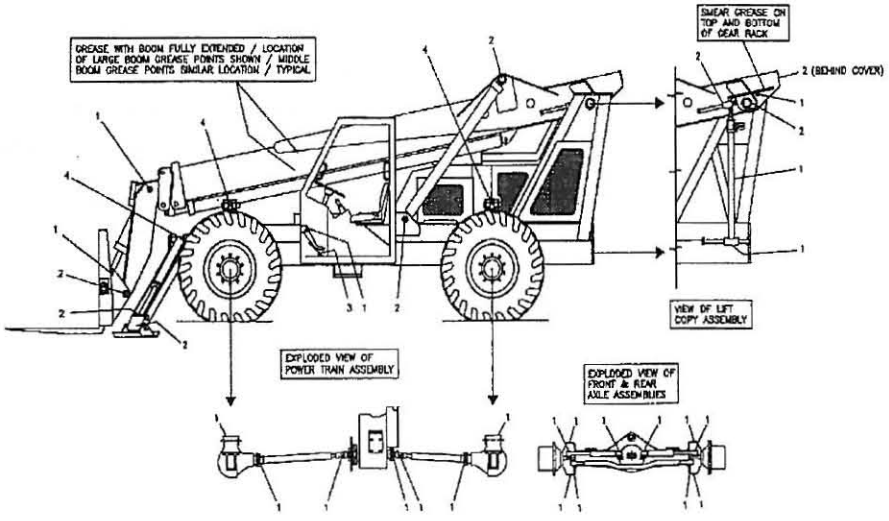
LUBE CHARTS

SS-842



SS-1048



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SIX MONTH (OR 1,000 HOURS) MAINTENANCE

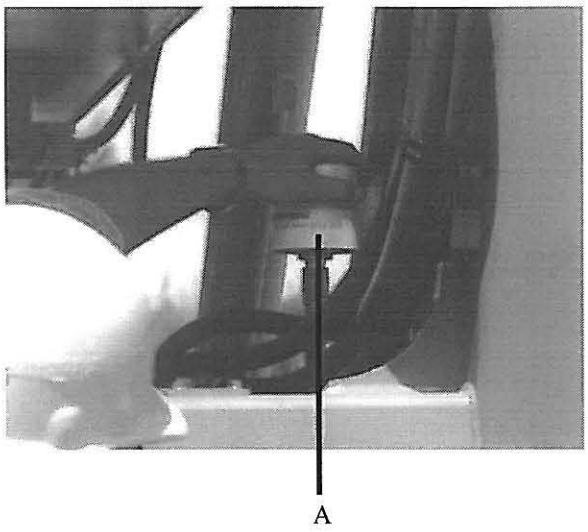
1. Perform "BEFORE STARTING THE ENGINE" maintenance and checks, as listed beginning on page 3-3 of this manual.

2. Perform "BEFORE OPERATING THE SQUARE SHOOTER®" checks, as listed beginning on page 3-8 of this manual.

3. Perform "ONCE A WEEK (OR 50 HOURS) MAINTENANCE" procedures, as listed beginning on page 4-5 of this manual.

4. Change engine fuel filter according to John Deere® specifications. For more information contact your local SQUARE SHOOTER or John Deere dealer.

5. Change hydraulic oil reservoir breather element. (A) This spin-on type filter is located on the top surface of the oil reservoir. HAND TIGHTEN ONLY!!



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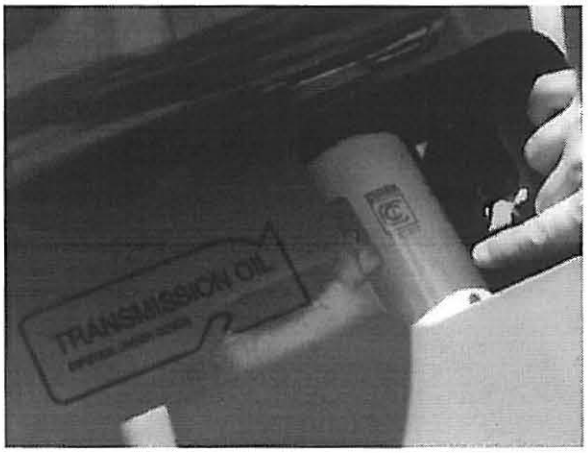
SIX MONTH (OR 1,000 HOURS) MAINTENANCE

6. Change transmission oil filter. To change transmission oil filter use the following procedure:



A. Using a 1/2 inch wrench, remove two 5/16 inch bolts that secure the access cover.

B. Wipe the filter clean. Rotate counterclockwise and remove. Clean sealing face of filter mount, as needed.

C. Smear a drop of oil around rubber seal ring of new filter. Install filter hand tight.

D. Before replacing access cover, run engine long enough to check transmission oil level. Oil level dipstick is next to oil filter. Add oil as needed. Use Amoco 1000, or equivalent.

E. Replace access cover and two 5/16" bolts. Secure bolts.

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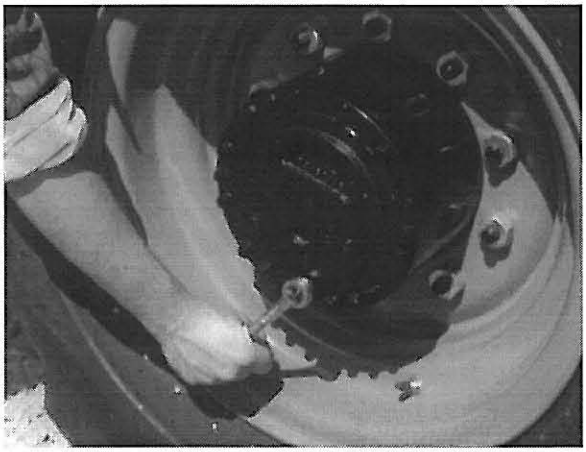
SIX MONTH (OR 1,000 HOURS) MAINTENANCE

7. Change oil in all four (4) planetary brakepack ends. This fluid gradually becomes contaminated from the wearing action of the brakes. Refill these axle ends with an SAE 90 weight oil that is® EP rated at GL-5. Refer to SQUARE SHOOTER dealer for recommended axle end oil. Fill to the 1/8" NPT plug at center of planetary end.



8. Check lube level in center differentials of both axles. To check lube level use the following procedures:

A. Remove the plug. Fluid level should be at the lower lip of the plug hole.

B. Refill with a quality SAE 90 weight fluid.

C. Replace the plug.

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SIX MONTH (OR 1,000 HOURS) MAINTENANCE

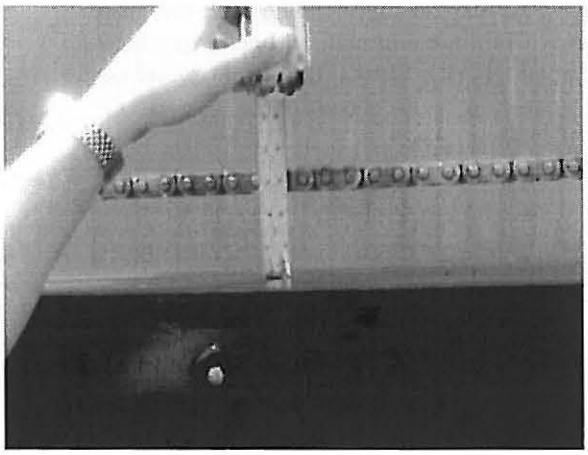
9. Re-torque bearings in boom pivot. See SERVICE NOTES for "The Boom Pivot's Two Adjustments".

NOTE: This step is applicable to Model SS-836 only.

10. Check boom extension and retraction chains for slack. For particular Model requirements refer to the following pages.

    Model SS-1048 see page 4-19
    Model SS-842 see page 4-20
    Model SS-836 see page 4-21
    Model SS-636 see page 4-22

    NOTE: Model SS-624 does not use extension and retraction chains.



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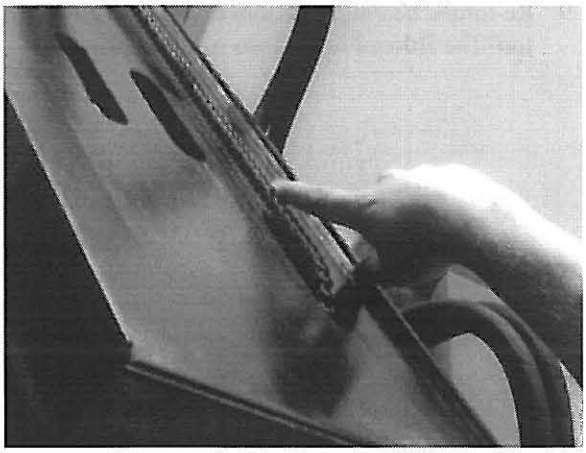
SIX MONTH (OR 1,000 HOURS) MAINTENANCE

11. Visually check SQUARE SHOOT drive chain for proper tension. Follow the procedure outlined in SQUARE SHOOTER® SERVICE NOTES, "Proper Tensioning of the SQUARE SHOOT Drive Chain".



Check and adjust engine valve clearance. For more information contact your local SQUARE SHOOTER or John Deere® dealer.

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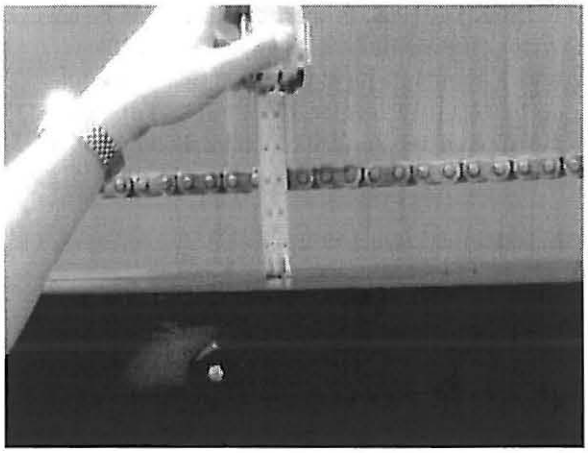
SIX MONTH (OR 1,000 HOURS) MAINTENANCE

ADJUSTING EXTENSION-RETRACTION CHAINS, SS-1048

CHECK POINTS: Proper adjustment can be checked with a tape measure. Extend boom fully, then retract about one inch. On either side of the booms middle section estimate center. Place one end of tape measure on the top surface of boom directly above estimated center.



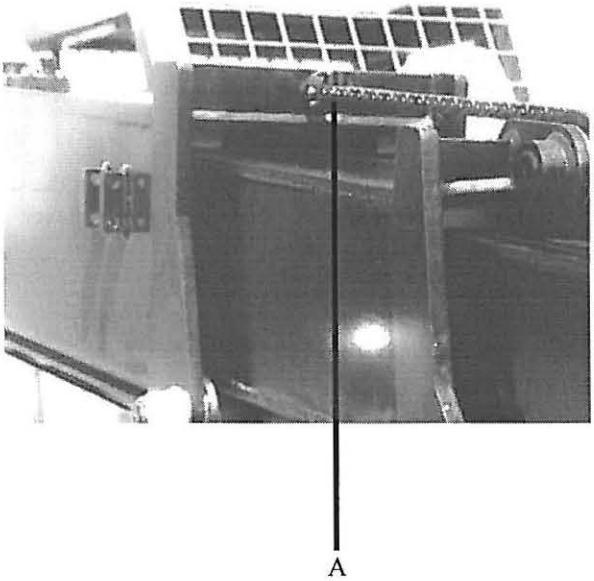
TOLERANCE: Measurement from top surface of boom to lowest part of extension chain should be no less than 2- 3/8 inches.

TO ADJUST: If the measurement is less than 2- 3/8 inches, tighten chain anchor (A), which is located on the top, front of the large boom tube as follows:

A. Tighten an adjustable wrench across the flat part of the chain just ahead of the chain anchor.

B. With a 1-7/16 inch wrench tighten the one inch nut to collapse the springs. Continue to tighten until chain is in tolerance.

C. With a feeler gauge check the gap between the spring coils should be no less than .030. Coils should never be collapsed completely.



NOTE. There are two chains on the SS-1048. Both chains should have the same measurement.

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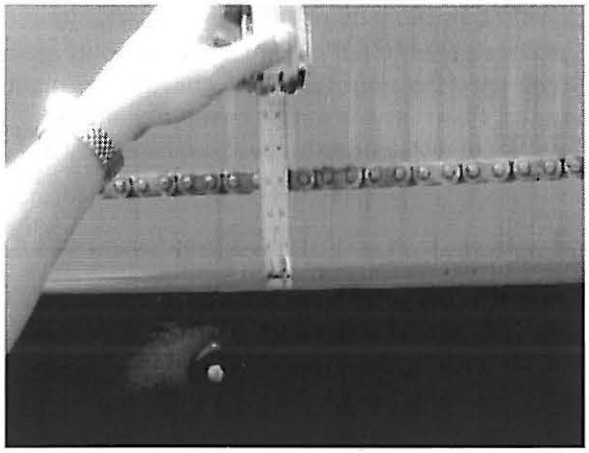
SIX MONTH (OR 1,000 HOURS) MAINTENANCE

ADJUSTING EXTENSION-RETRACTION CHAINS, SS-842

CHECK POINTS: Proper adjustment can be checked with a tape measure. Extend boom fully, then retract about one inch. On either side of middle section estimate center. Place one end of tape measure on top surface of boom directly above estimated center.



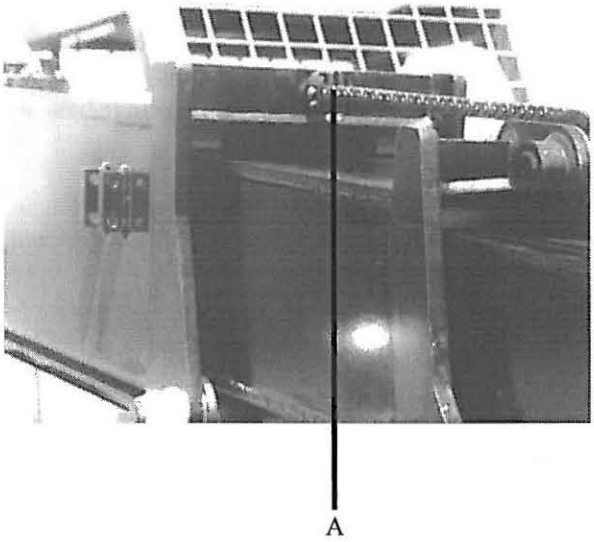
TOLERANCE: Measurement from top surface of boom to lowest part of extension chain should be no less than 2-3/8 inches.

TO ADJUST: If the measurement is less than 2-3/8 inches, tighten chain anchor (A), which is located on the top, front of the large boom tube as follows:

A. Tighten an adjustable wrench across the flat part of the chain just ahead of the chain anchor.

B. With a 1-7/16 inch wrench tighten the one inch nut to collapse the springs. Continue to tighten until chain is in tolerance.

C. With a feeler gauge check the gap between the spring should be no less than .030.. Coils should never be collapsed completely.



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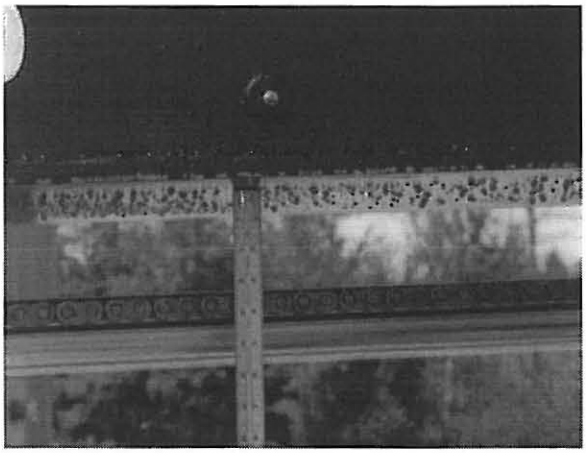
SIX MONTH (OR 1,000 HOURS) MAINTENANCE

ADJUSTING EXTENSION-RETRACTION CHAINS, SS-836



CHECK POINTS: Proper adjustment can be checked with a tape measure. Extend boom fully, then retract about one inch. On either side of middle section estimate center. Place one end of tape measure on bottom surface of boom directly below estimated center.

TOLERANCE: Distance from bottom surface of boom to lowest part of both extension chains should be no more than 4 inches.

FIRST ADJUSTMENT: If the tolerance is more than 4 inches, go to the underside front of the large boom tube to the two extension chain anchors.

A. Tighten an adjustable wrench across the flat part of the chain.

B. Using a 1-7/16 inch wrench tighten the nut until the 4 inch tolerance is achieved. Repeat the procedure on the other chain.

NOTE: Both chains on the SS-836 are located on the bottom of the large section, and should have the same measurement.

SECOND ADJUSTMENT: If the measurement is still more than 4 inches, you will have to adjust thecompression spring. This spring is located on the front top area of the large boom tube. The gap between the majority of the spring coils should be no less than .030. Measure gap with a feeler gauge. To collapse the coils down to .030 gap, place a 1- 7/16 inch wrench on both nuts on the adjuster shaft and tighten until coil gap is correct.

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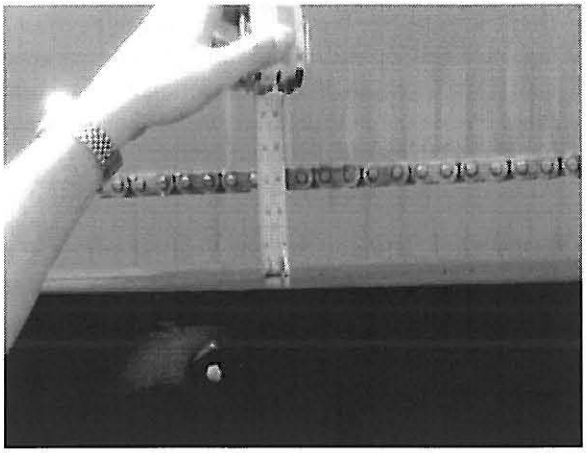
SIX MONTH (OR 1,000 HOURS) MAINTENANCE

ADJUSTING OF THE EXTENSION-RETRACTION CHAINS, SS-636

CHECK POINTS: Proper adjustment can be checked with a tape measure. Extend boom fully, then retract about one inch. On either side of middle section estimate the center. Place one end of tape measure on top surface of boom directly above estimated center.



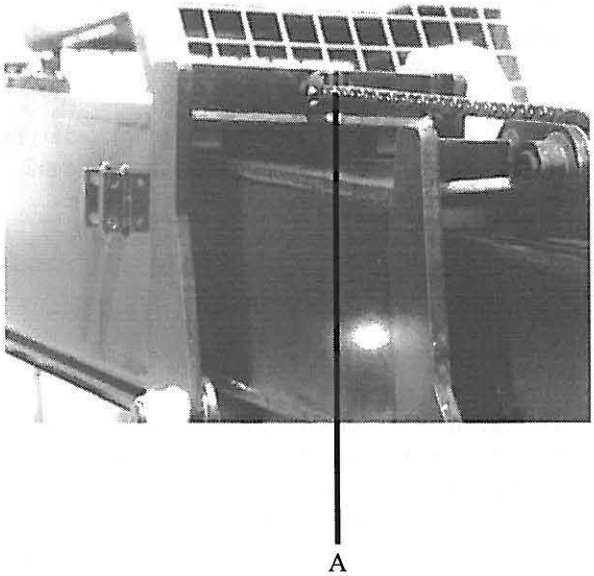
TOLERANCE: Measurement from top surface of boom to lowest part of extension chain should be no less than 2- 3/8 inches.

TO ADJUST: If the measurement is less than 2-3/8 inches, tighten chain anchor (A), which is located on the top, front of the large boom tube as follows:

A. Tighten an adjustable wrench across the flat part of the chain just ahead of the chain anchor.

B. With a 1-7/16 inch wrench tighten the one inch nut to collapse the springs. Continue to tighten until chain is in tolerance.

C. With a feeler gauge check the gap between the spring should be no less than .030. Coils should never be collapsed completely.



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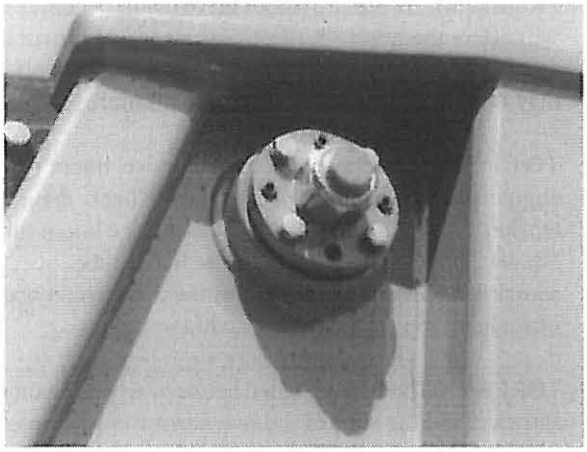
SIX MONTH (or 1,000 HOURS) MAINTENANCE

ADJUSTMENT OF BOOM PIVOT (SS-836 ONLY)

LOCATION: Top central area of the frame's rear towers, both left and right sides.



SEQUENCE: Two adjustments are required on the boom pivot: preload and boom centering. Bearing preload must be done first.

PRELOAD: Place fork frame about 4 feet in front of machine and lower to the ground. This relieves the load on boom pivot.

A. On each side of machine, back out eight 1/2 NF x 2 inch capscrews and four 1/2 NF x 1 inch set-screws about 1/2 inch.

B. The 1- 1/2 inch diameter tie bolt has a nut on each end. While holding one nut, tighten other nut to 500 ft. lbs.

C. Raise and lower boom once to seat bearings. Again, tighten the 1- 1/2 inch tie bolt nuts to 500 ft.lbs.

CENTERING: A. Tighten four set-screws on the side of the frame in which the boom needs to be moved ,to approximately 10 ft. lbs.

B. Tighten all eight 1/2 NF x 2 inch capscrews to 65 ft. lbs.

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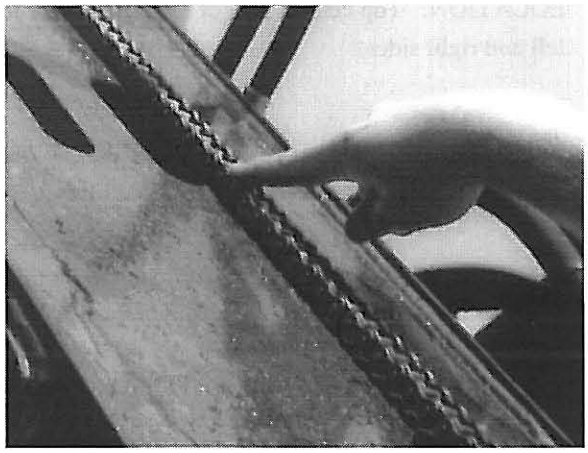
SIX MONTH (OR 1,000 HOURS) MAINTENANCE

PROPER TENSION OF OPTIONAL SQUARE SHOOT DRIVE CHAIN, MODEL SS-836



PROBLEM: If Square Shoot drive chain becomes loose it will affect the onset speed of Square Shoot function after button is pushed. If chain becomes extremely loose it may double up and cause drive chain failure.

TO CHECK: Collapse boom, then raise boom fully. Stop engine and move to rear of machine. Check drive chain tension visually. On top rear of the large boom tube, the Square Shoot drive chain exits the boom tube, over a sprocket . This sprocket elevates the drive chain about 1/8 inch above top surface of large boom tube.

TOLERANCE: The distance between where chain exits sprocket and the start of the two narrow cutout holes in the boom top is 14 inches. The drive chain should be tightened enough so it does not touch boom between the sprocket and the start of the two narrow cutout holes.

TOOLS: 9/16 inch wrench, 15/16 crowsfoot, ratchet, 12 inch extension, 15/16 inch wrench, small grinder, small hammer, small punch and safety glasses. Remove the rear boom cover by removing the two 3/8 inch bolts. Adjust tension using the following procedure:

TO ADJUST: A. The three-piece chain adjuster assembly is located under and forward of sprocket. The forward end is pinned to middle boom and rearward end to drive chain. The boom anchor end has a stiff coil spring inside that is attached to a 5/8 NF diameter threaded rod. A 5/8 NF nut is brazed onto rod with 2 -5/8 inches of thread rearward of the nut. This nut is the tension adjust nut. A second 5/8 NF nut is used as a jam nut on the threaded rod. One end of drive chain anchor threads onto the 5/8 NF threaded rod and the other end pins onto drive chain.

B. Use the 15/16 inch crowsfoot, 12 inch extension and ratchet to crack loose the 5/8 NF jam nut. The jam is the one closest to you.

C. To tighten or adjust nut, rotate the forward nut counter-clockwise until there is a minimum 1/4 inch to a maximum 1 inch gap. The gap is the amount you have collapsed the spring in the chain anchor. Tighten the jam nut and replace rear boom cover. If chain is still loose, proceed to step D.

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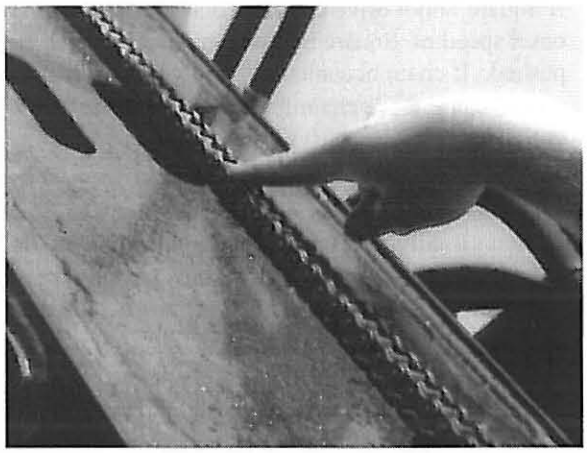
SIX MONTH (OR 1,000 HOURS) MAINTENANCE

PROPER TENSIONING OF OPTIONAL SQUARE SHOOT DRIVE CHAIN, SS-836

If boom adjuster ran out of travel before the 1/4 inch minimum gap was achieved a link must be removed from drive chain.



Remove drive chain anchor from boom anchor. Leave chain anchor on chain and let chain hang over sprocket.

⚠ CAUTION

Always wear safety glasses to protect your eyes from debris from grinding.

D. Wearing safety glasses, pull down on chain anchor to tighten chain. Use grinder to grind off two rivet heads on first chain side link up from chain anchor.

E. Use a small hammer and punch to remove link from chain.

F. Remove master link from chain anchor. Discard removed chain link and reinstall chain anchor to the shortened drive chain with master link. See remove a link procedure on next page.

G. Install chain anchor to boom anchor and adjust chain tension as detailed in step (C) on previous page. Re-install rear boom cover.

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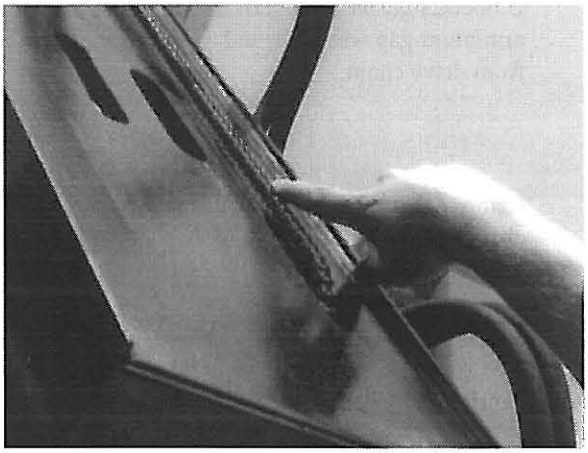
SIX MONTH (OR 1,000) HOUR MAINTENANCE

PROPER TENSIONING OF OPTIONAL SQUARE SHOOT DRIVE CHAIN MODELS SS-1048, SS-842 AND SS-636



If Square Shoot drive chain becomes loose it will affect onset speed of Square Shoot feature after button is pushed. If chain becomes extremely loose it may double up and cause drive chain failure.

TO CHECK: Collapse boom, then raise boom fully. Stop engine and move to rear of machine. Check drive chain tension visually. On top rear of large boom tube, the Square Shoot drive chain exits boom tube over a sprocket and continues forward to another sprocket where it enters large boom.

TOLERANCE: The drive chain should never be slack enough to touch top of large boom

TO ADJUST: Place boom in horizontal position. Loosen four bolts holding idler sprocket mount to top front of large boom. Insert a small pinch bar into hole just to rear of mount and pry mount while tightening four bolts. If there is still inadequate adjustment available, anchor can be turned around. A link can be removed if there is still to much chain. To do so use the following procedure.

⚠ CAUTION

Always wear safety glasses to protect your eyes from debris from grinding.

TO REMOVE A LINK: A. Loosen the four bolts holding idler sprocket mount to boom.

B. Remove rear boom cover.

C. Just inside the boom notice where the drive chain is attached to rear of middle boom by means of a master link. Disconnect link and pull chain out of large boom .

D. Wearing safety glasses, grip last link in chain with a pair of locking pliers. Grind heads off the first two rivets ahead of last link.

E. With a small punch and hammer, knock out the two link pins that were just ground off. Discard removed link.

F. Reattach drive chain to rear of middle boom with master link. Re-install rear boom cover.

G. Adjust chain as outlined above, under TO ADJUST.

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YEARLY (OR 2,000 HOURS) MAINTENANCE

1. Perform "BEFORE STARTING THE ENGINE" maintenance and checks as listed beginning on page 3-3 of this manual.

2. Perform "BEFORE OPERATING THE SQUARE SHOOTER® " checks as listed beginning on page 3-8 of this manual.

3. Perform " ONCE A WEEK (OR 50 HOURS) MAINTENANCE" procedures as listed beginning on page 4-5 of this manual.

4. Perform "SIX MONTH (OR 1,000 HOURS) MAINTENANCE" procedures as listed beginning on page 4-12 of this manual.

5. Drain, flush and refill the engine coolant system. For more information contact your local SQUARE SHOOTER or John Deere® dealer.

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HYDRAULIC SYSTEM CONTAMINATION

A hydraulic system will fail if there is contamination in the system. ALWAYS keep the hydraulic system clean.

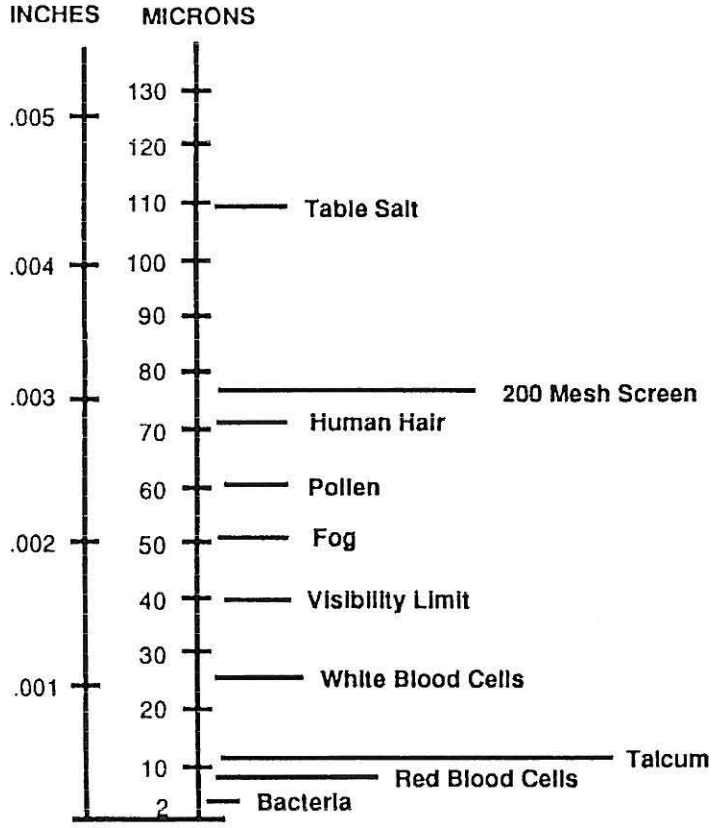
Clearances in hydraulic components may be extremely close. Many systems have clearances less than 0.0001 inch. Problems arise when abrasive particles enter the space between moving parts and hone surfaces to greater clearances. Increased clearance has the direct effect of decreasing efficiency of pumps, motors and cylinders. The damage that occurs not only wastes horsepower, it also generates system damaging heat.

THE MICRON

Contaminant particle size is measured by micron ratings. A micron is a unit of length to one-millionth of a meter (0.000039 in.), for example, 25 microns is approximately 0.001 inch.

Contamination is very often the cause of hydraulic system failure. That is why it is absolutely necessary to follow proper maintenance procedures to keep the hydraulic system clean.

The figure below is a comparison of various known sizes of different particles.



IMPORTANT! USE factory approved filters only!
KEEP hydraulic system CLEAN for long life.

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NOTES

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SECTION 5

MATERIAL SAFETY DATA SHEETS

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SECTION 5- MATERIAL SAFETY DATA SHEETS

MATERIAL SAFETY DATA SHEETS

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The Federal Occupational, Safety and Health Administration (OSHA) Standard 29 ctr 1910.1200, and in some cases state and local Right-To-Know laws, may require specific MSDS be available to employees prior to operating this equipment. This may include information on substances contained in the equipment such as antifreeze, brake fluid, battery acid and hydraulic fluid.

TEREX HANDLERS will provide, at no cost, Material Safety Data Sheets which are applicable to the SQUARE SHOOTER® brand product line. Simply request them from your local SQUARE SHOOTER dealer or contact us at:

TEREX HANDLERS
P.O. Box 248
Baraga, MI 49908-0248
http://www.sqshooter.com
E-mail: bpi@up.net

To ensure a prompt response, please be sure to include your return address and zip code, along with the machine model and serial number.

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The following warning is required on all off road equipment operating in the State of California. If you are operating a SQUARE SHOOTER®in the State of California and do not see the approved warning label, please contact us for a replacement at no charge. Our address is:

TEREX HANDLERS
P.O. Box 248
Baraga, MI 49908-0248
http://www.sqshooter.com
E-mail: bpi@up.net

CALIFORNIA
Proposition 65 Warning

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

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