# Gleaner®

## A65 / A75
## ROTARY COMBINE

# SERVICE MANUAL
## 79027302 A Rev.

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# Gleaner®

## A65 / A75
## Combine

# SERVICE MANUAL
## 79027302 A Rev.

# 01 - General Information

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**NOTES**

# SAFETY

## SAFETY ALERT SYMBOL

**FIG. 1:** This is the safety alert symbol. This symbol stands for ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! Look for this symbol, both in this manual and on safety decals on the combine. This symbol will direct you to information that includes your personal safety and the personal safety of others.

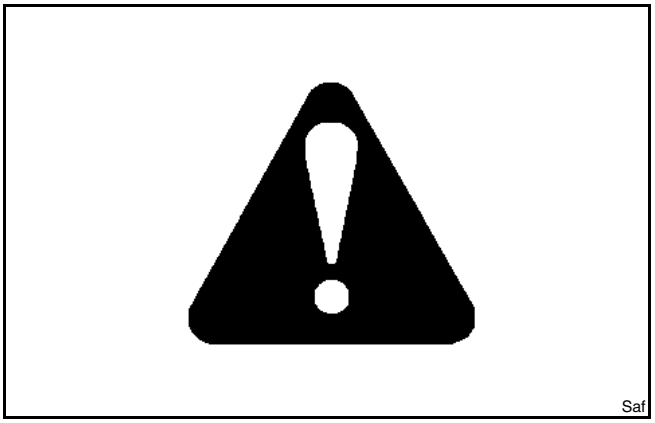


**FIG. 1**

## SIGNAL WORDS

**FIG. 2:** The words **DANGER, WARNING, or CAUTION** are used with the safety alert symbol. Learn to know these safety alert symbols, and follow the given recommendations, precautions, and safe procedures.

**DANGER: Indicates an immediate hazardous situation that, if not avoided, will result in DEATH OR VERY SERIOUS INJURY.**

**WARNING: Indicates a potentially hazardous situation that, if not avoided, can result in DEATH OR SERIOUS INJURY.**

**CAUTION: Indicates a potentially hazardous situation that, if not avoided, can result in a MINOR INJURY.**


**FIG. 2**

Replace any **DANGER, WARNING, CAUTION,** or instruction decal that can not be read or is missing. The location and part number of these decals is shown later in this section of the manual.

*IMPORTANT: The word IMPORTANT is used to show special instructions or procedures which, if not followed can result in damage to, or destruction of the machine, process, or the surroundings.*

*NOTE: The word NOTE is used to indicate points of special interest for more efficient and easier repair or operation.*

**FIG. 3:** Read and understand this manual and the manual for all attachments before operating the combine.

Learn how to operate the combine and how to use the controls properly.

Do not operate the combine without instruction and training.

For your personal safety and the personal safety of others, follow all safety precautions and instructions found in the manual and on decals fastened to the combine and the attachments.

Personal injury or death can result if these precautions are not followed.

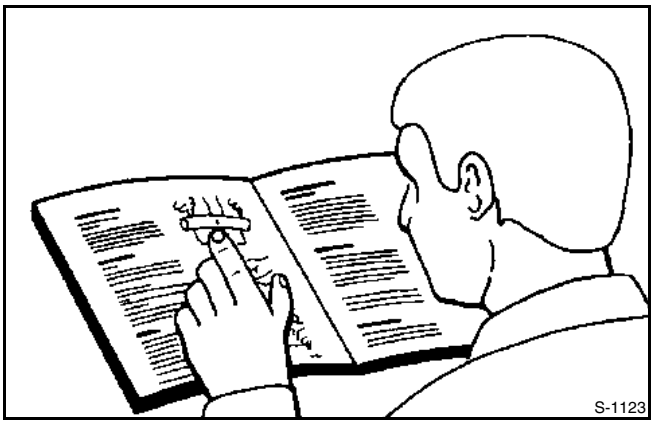


**FIG. 3**

**FIG. 4:** Be prepared for an emergency. Always carry one or more suitable fire extinguishers - ABC rating, dry chemical, 2.2 kg (5 lb). Check fire extinguishers regularly to make sure extinguishers are properly charged and in operating condition.

Mounting a fire extinguisher near the cab and a fire extinguisher near the engine compartment is a recommendation.

To reduce the risk of fire, frequently remove crop material from the combine and engine platform and check for components becoming too hot.

Keep a first aid kit close for treatment of minor cuts and scratches.

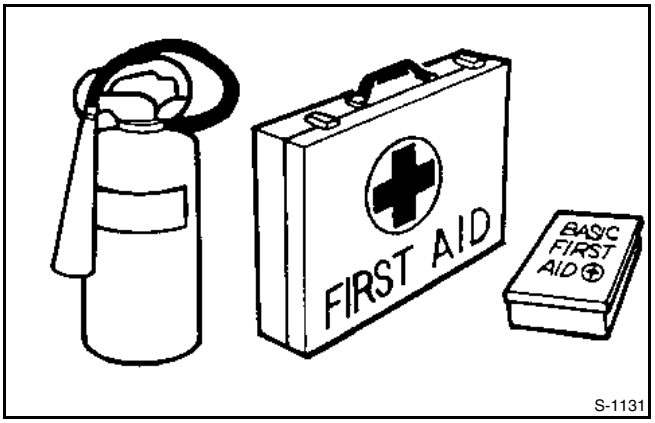


**FIG. 4**

**FIG. 5:** Wear close fitting clothing and personal protection equipment correct for operating or doing lubrication and maintenance on the combine. Tie up long hair to prevent the hair from becoming entangled in the moving parts.

**WARNING: An operator must not use alcohol or drugs which can affect alertness or coordination. An operator taking prescription or over the counter drugs needs medical advice on whether or not the operator can properly operate machines.**

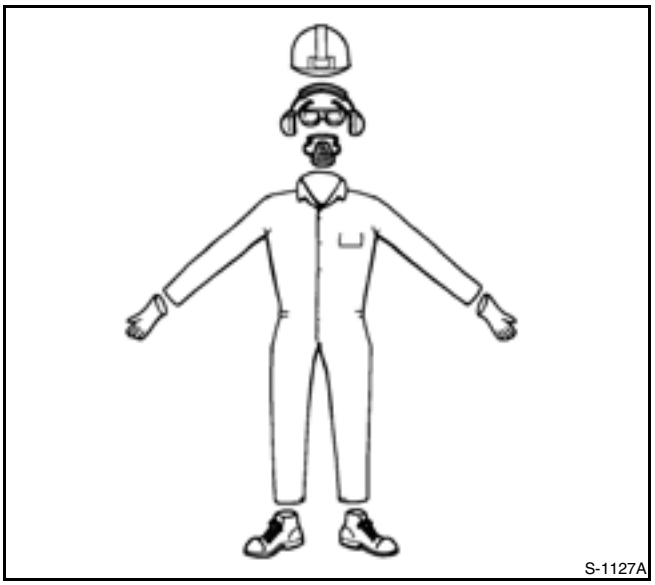


**FIG. 5**

**FIG. 6:** Face the ladder and use the handrails when getting on or off the combine.


**FIG. 6**

**FIG. 7:** Never operate the engine in a closed building unless exhaust is vented outside.

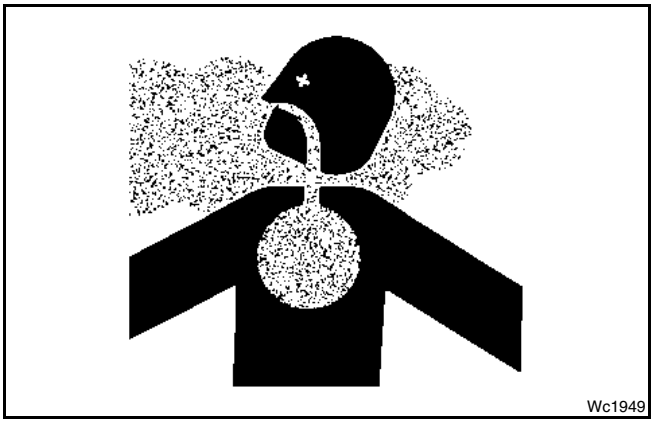


**FIG. 7**

**FIG. 8:** Make sure that all shields, guards, and access doors are in location and properly closed before starting the engine.

Start the engine from the operator seat only. Be sure that the transmission is in neutral and the header, separator, and unloader clutches are disengaged.

Be sure that every person is clear of the combine before starting the engine.

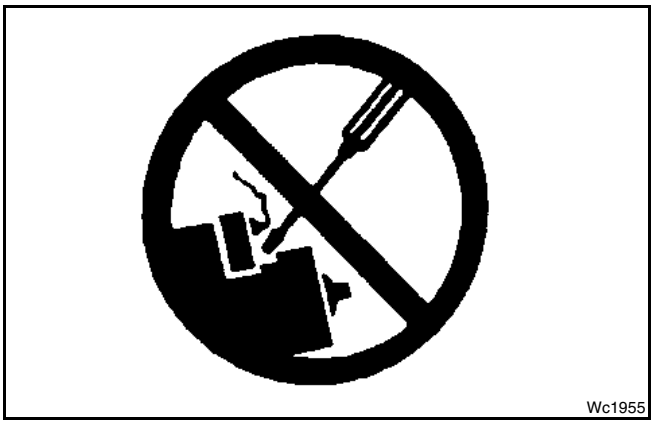


**FIG. 8**

**FIG. 9:** Always wear the seat belt when the combine is moving. If another person is riding in the instructor seat that person must wear the seat belt. Seat belts must be worn fitted snugly around the hips and not twisted.

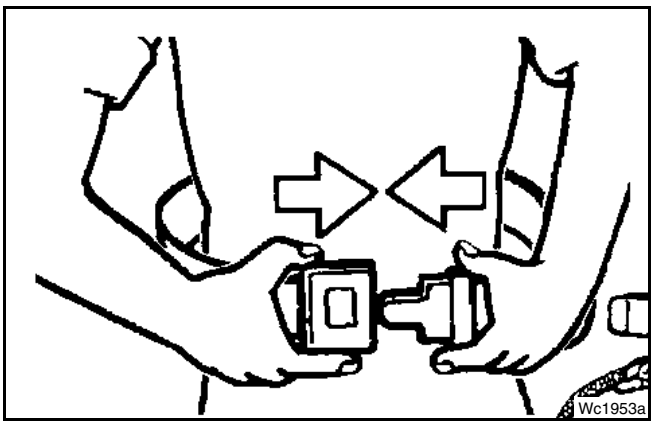


**FIG. 9**

**FIG. 10:** Never permit any person to be on any part of the combine or the attachments except in the operator seat or the instructor seat when the engine is running.

Do not get on or off the combine while the combine is moving.

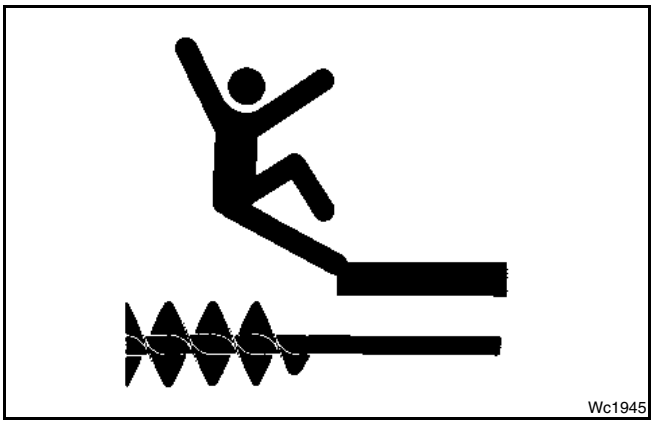


**FIG. 10**

**FIG. 11:** Prevent contact with electrical power lines. Always put the grain tank unloader tube in the transport position and lower radio antenna before moving the combine near electrical wires. Contact with electrical power lines can cause electrical shock, very serious injury, or death.

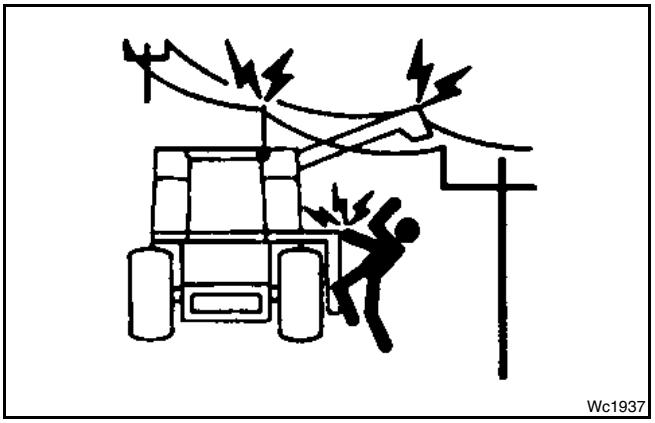


**FIG. 11**

**FIG. 12:** Use extra caution and reduce speed when operating on hill sides, near ditches or embankments especially with a full grain tank to prevent an over turn of the combine. Travel speed must be such that the machine has complete control and stability at all times. Shift to a lower gear before going down a steep hill.

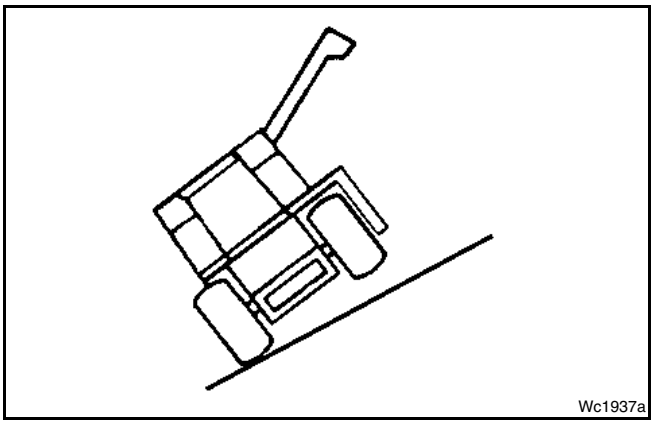


**FIG. 12**

**FIG. 13:** Always turn off the engine, shift the transmission to neutral, set parking brake, and remove the start key before leaving the operator seat or before permitting a person to inspect, clean, lubricate, adjust, or repair any part of the combine or the attachments. Unless specifically given instruction different in this manual. Never leave the operator seat as long as the engine is operating.

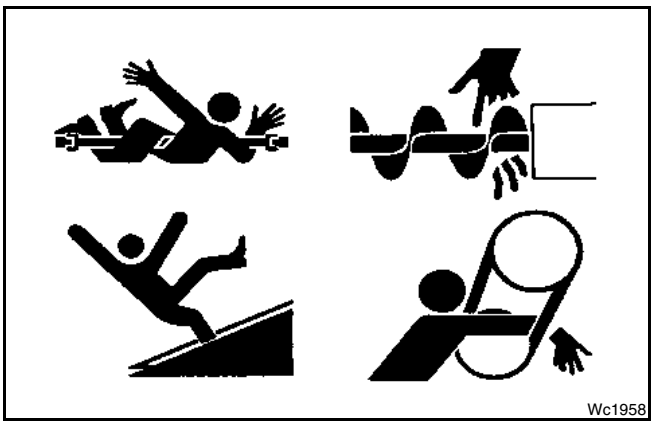


**FIG. 13**

**FIG. 14:** Never work under the header or feeder house, unless the stop is properly engaged on the header lift cylinder, the engine is stopped, the parking brake is set, and the start key is removed from the start switch.

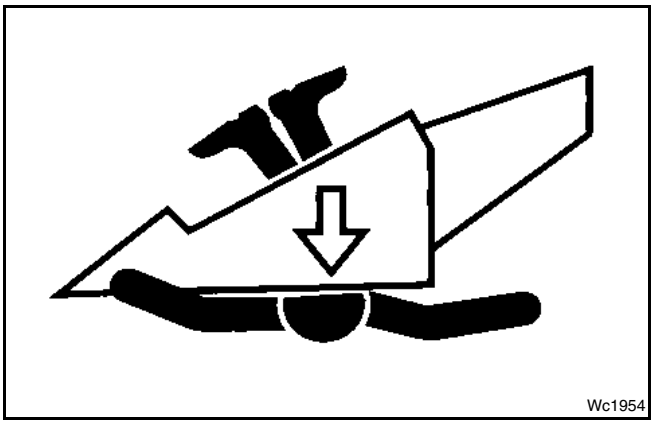


**FIG. 14**

**FIG. 15:** Fluid under high pressure can be almost invisible but can go into the skin causing serious injury.

See a doctor immediately if you sustain an injury from escaping fluids. Fluid injected into the skin must be surgically removed within a few hours or gangrene can result.

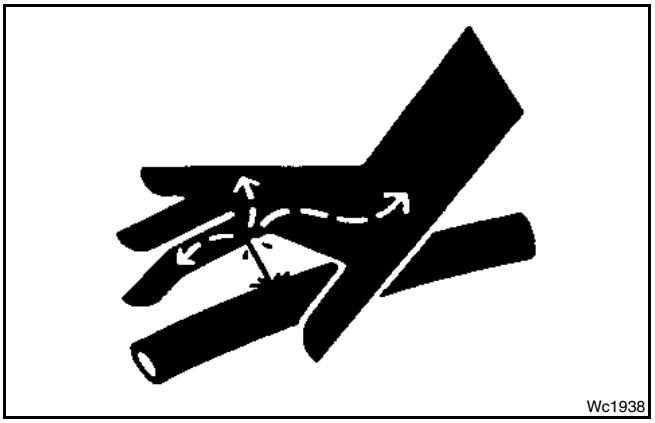


**FIG. 15**

**FIG. 16:** Use a piece of cardboard or wood to search for possible leaks. Never use your hands.

Relieve pressure from the hydraulic and fuel injection systems by lowering raised equipment, shutting off accumulator valve, and turning off the engine before loosening any part of the systems. Tighten all connections securely before applying pressure.

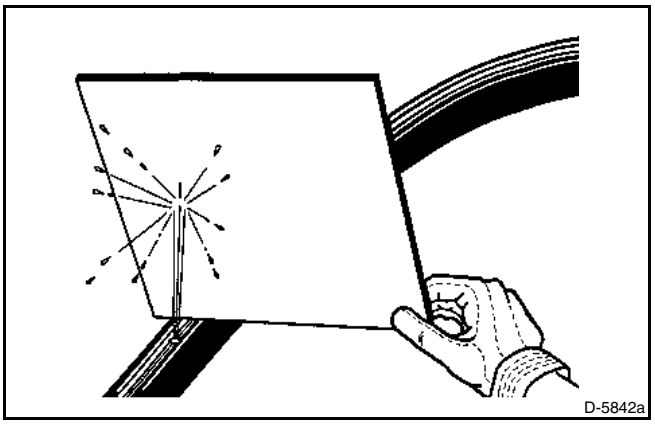


**FIG. 16**

**FIG. 17:** The surfaces in and around the engine compartment will be hot if the engine has been running, even for a short time.

Always permit parts that contain hot fluid to cool before handling or disconnecting.

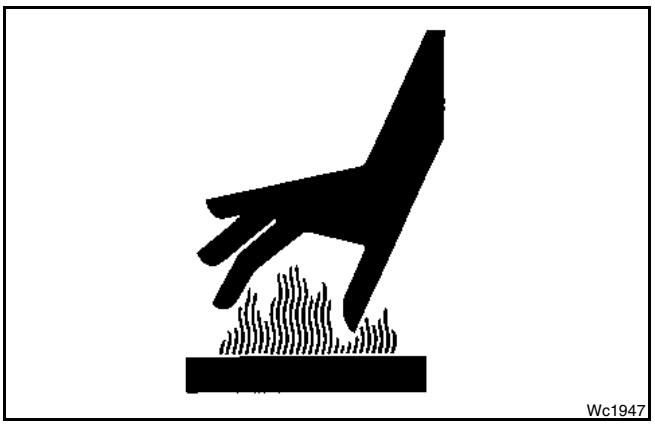


**FIG. 17**

**FIG. 18:** Do not remove radiator cap if engine is hot. Only remove the cap when the cap is cool enough to touch with bare hands. Loosen cap slowly to first notch to relieve pressure, then remove cap.

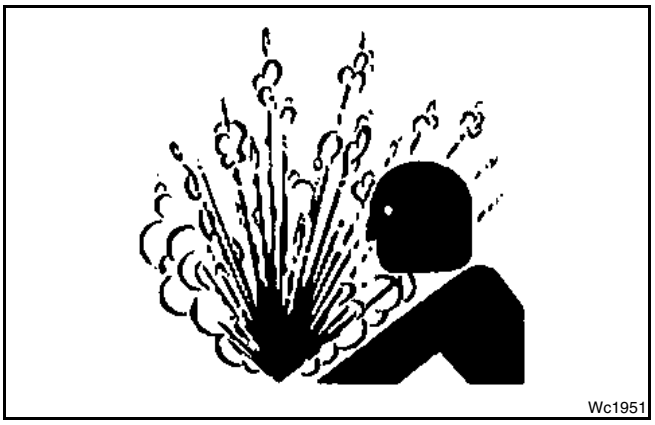


**FIG. 18**

**FIG. 19:** Remove any spilled oil, antifreeze, or fuel immediately from operator ladder and platform and other access areas.

Keep all access areas clean and free of obstructions.


**FIG. 19**

**FIG. 20:** Never permit any flame cutting, welding, or arc welding to be done on or near the sound proofing upholstery used in the cab. This material is flame resistant to normal exposure to cigarettes or other smoking material. But will ignite and sustain combustion when exposed to the heat of gas or electrical welding. The build up of chaff and crop debris in the engine compartment, on the engine, and near moving parts is a fire hazard. Check and clean these areas frequently.

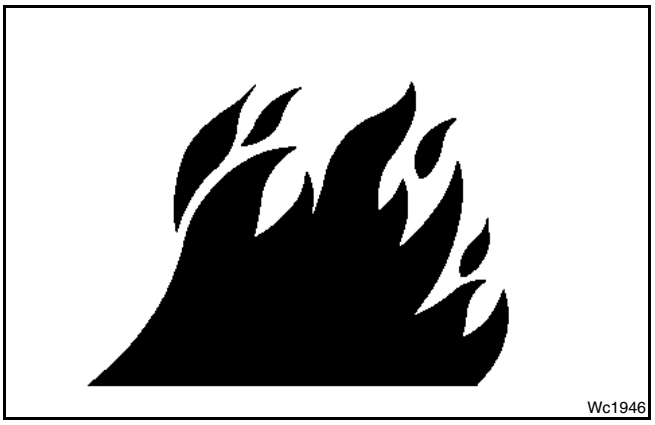


**FIG. 20**

**FIG. 21:** Always stop the combine engine before fueling. Do not smoke while fueling.

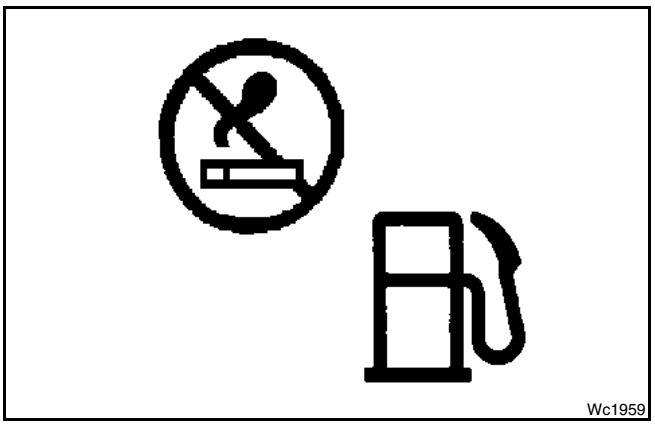


**FIG. 21**

**FIG. 22:** Electrical storage batteries give off highly flammable hydrogen gas. Keep smoking material, open flame, or electrical sparks away from the battery. Do not lay tools or other conductive materials on the battery.

Be careful when connecting booster cables to combine batteries. Electrical component damage or battery explosion can result if booster cables are not installed correctly.

Do not charge a frozen battery as the battery can explode. Warm battery to 16 degree C (60 degree F).

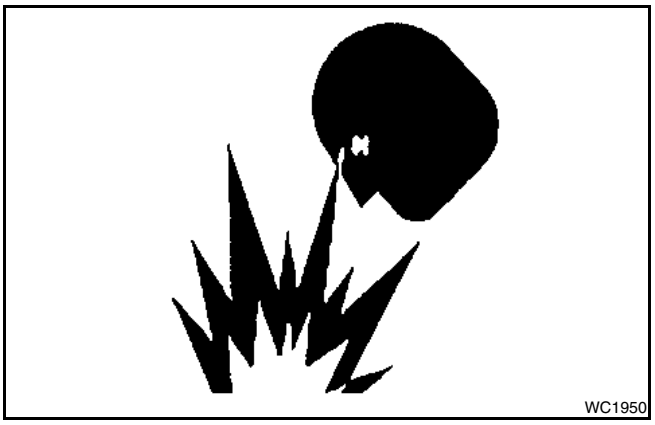


**FIG. 22**

**FIG. 23:** Fluid in electrical storage batteries contains sulfuric acid. Avoid all contact of fluid with eyes, skin, or clothing. If contact does occur, flush off immediately with large amounts of water.

**WARNING: In order to provide a better view, certain photographs and illustrations in this manual may show an assembly with the shield removed. Do not operate combine unless all shields are in place. Replace shields immediately upon completion of inspection, repairs, cleaning or adjustments and before operation begins or resumes.**

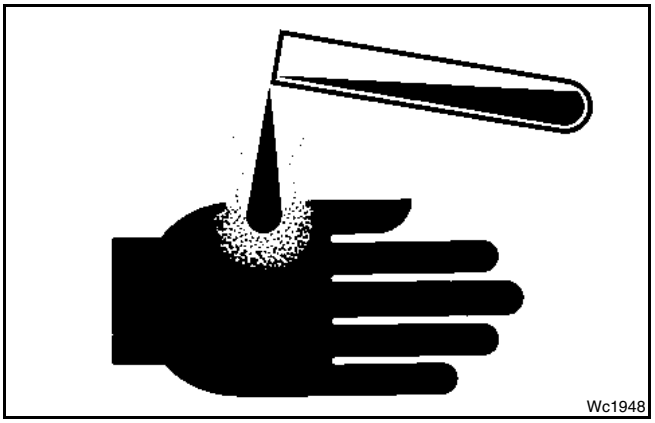


**FIG. 23**

## SAFETY SIGNS

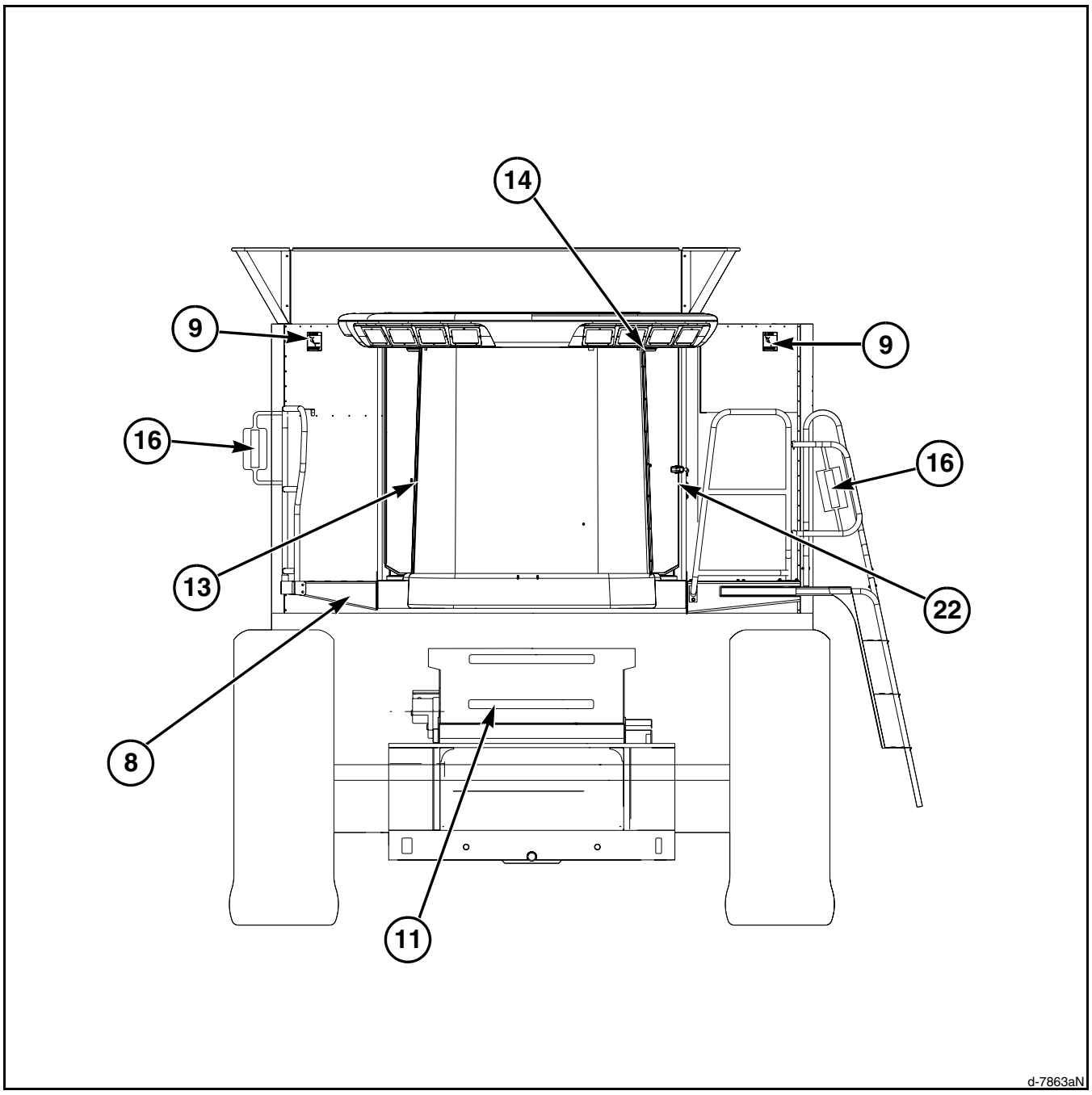


**FIG. 24**

**FIG. 24:** Safety sign locations, Front View.

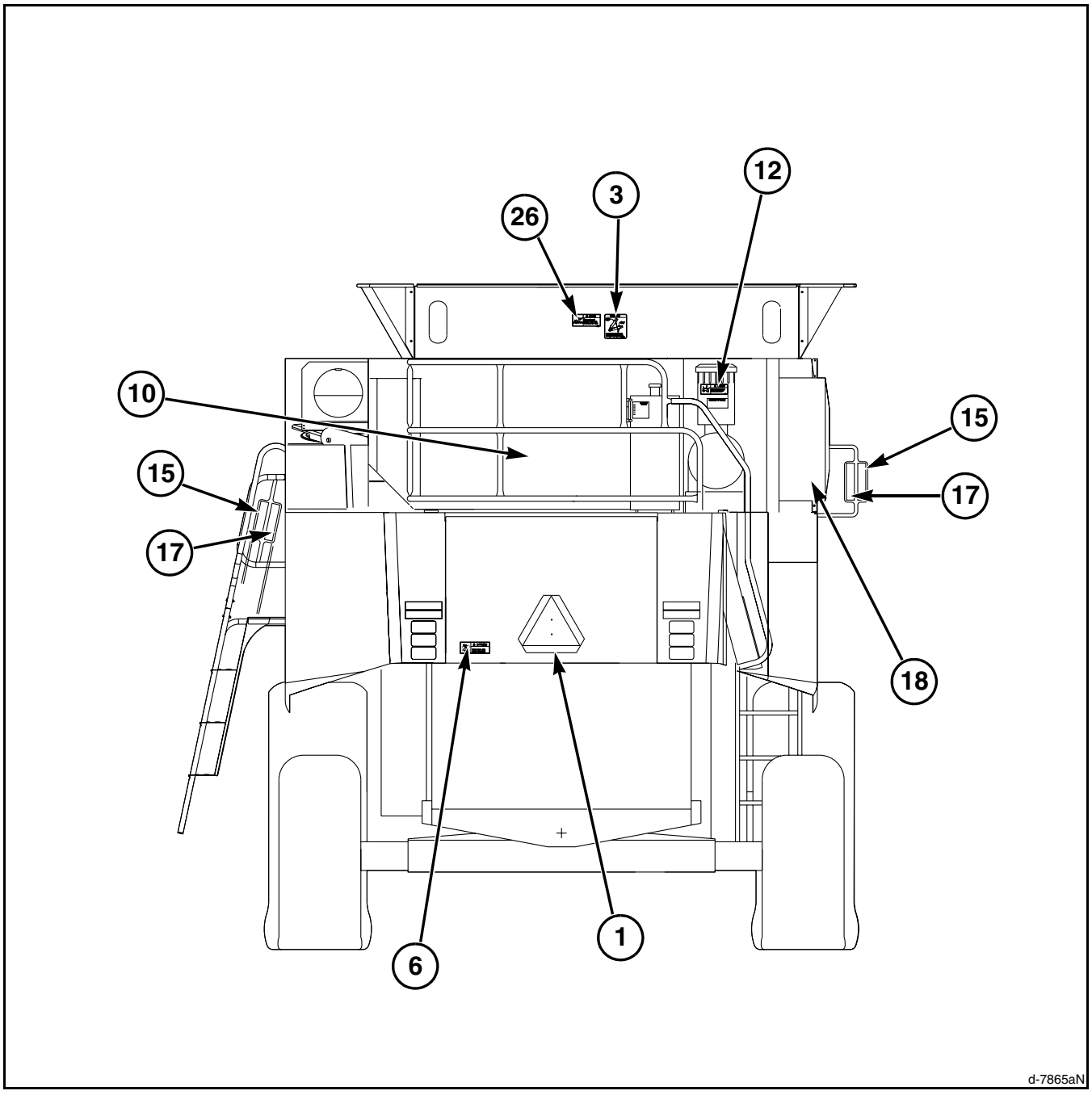


**FIG. 25**
**FIG. 25:** Safety sign locations, Rear View.

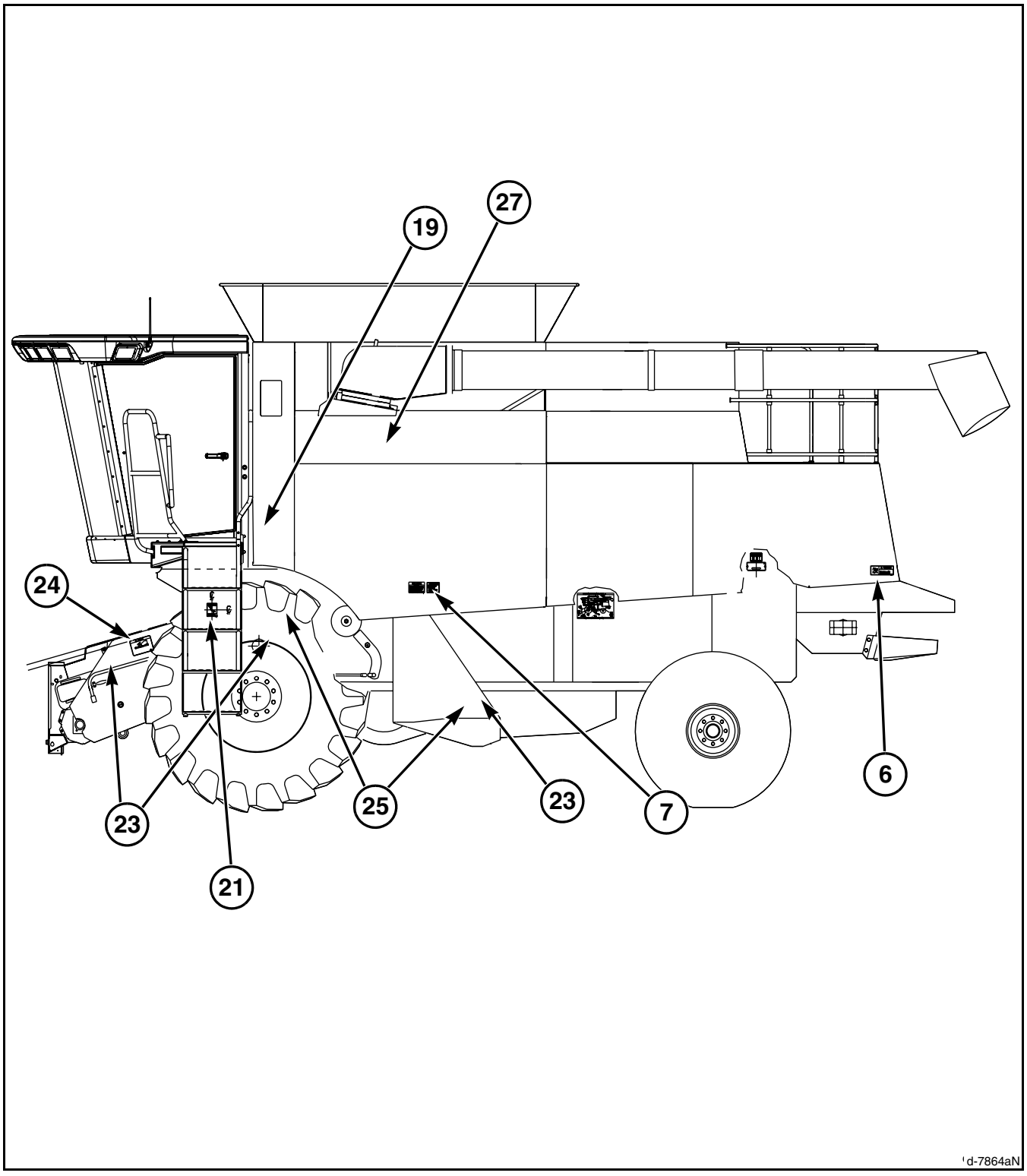


**FIG. 26**
**FIG. 26:** Safety sign locations, Left Side View.

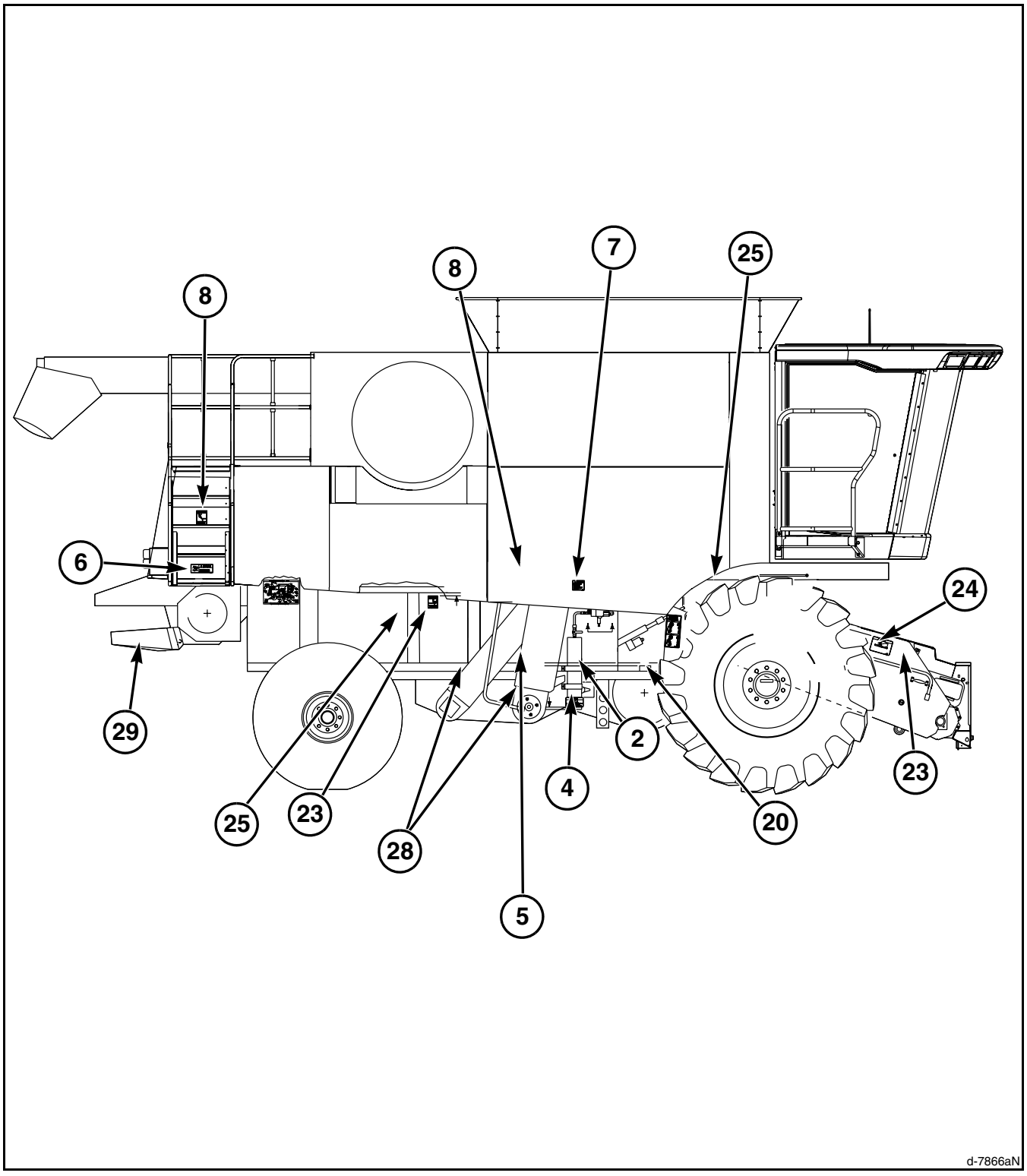


**FIG. 27**
**FIG. 27:** Safety sign locations, Right Side View.

| Item | Part Number | Description | Quantity |
|---|---|---|---|
| 1 | 7020589 | SMV Emblem | 1 |
| 2 | 71348560 | Accumulator | 1 |
| 3 | 71368074 | Bin Loader | 1 |
| 4 | 71371720 | Ram Stop | 1 |
| 5 | 71379126 | Fluid Pressure | 1 |
| 6 | 71379127 | Stand Clear | 3 |
| 7 | 71379128 | Shields in Place | 2 |
| 8 | 71379129 | Falling off | 3 |
| 9 | 71379130 | Grain Tank | 2 |
| 10 | 71379132 | Belt, Fan Hot | 2 |
| 11 | 71379134 | Hands out | 2 |
| 12 | 71387749 | Starting Fluid | 1 |
| 13 | 71389158 | Emergency Exit | 1 |
| 14 | 71395762 | Operation | 1 |
| 15 | 700717402 | Red Reflector | 4 |
| 16 | 700717403 | Amber Reflector | 2 |
| 17 | 700717404 | Orange Fluorescent | 4 |
| 18 | 700720605 | Radiator Cap | 1 |
| 19 | 700728751 | Tire Usage | 1 |
| 20 | 700720727 | Belt/Chain | 1 |
| 21 | 700721781 | Keep Off | 1 |
| 22 | 700725670 | Instructor Seat | 1 |
| 23 | 111091W1 | Shield Missing | 5 |
| 24 | 111095W1 | Header Falling | 4 |
| 25 | 111670W1 | Belt/Chain | 3 |
| 26 | 111736W2 | Stop Engine | 1 |
| 27 | 111741W1 | Cleanout | 1 |
| 28 | 111743W1 | Hands Away | 2 |
| 29 | 111737W1 | Stop Engine (One on each side of chopper, if equipped) | 2 |

**FIG. 28:** Safety sign (1).

Slow Moving Vehicle Emblem.

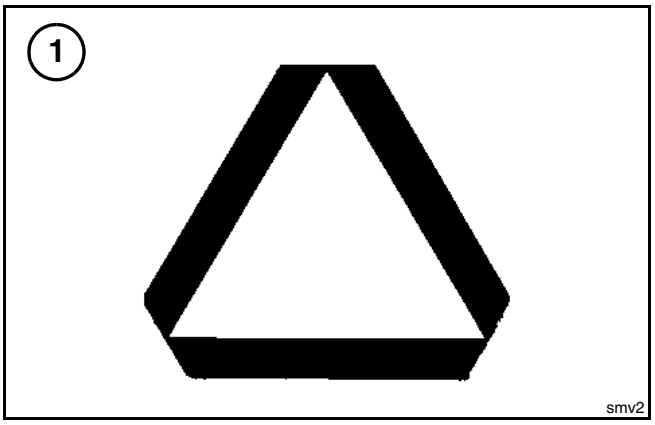


**FIG. 28**

**FIG. 29:** Safety sign (2).

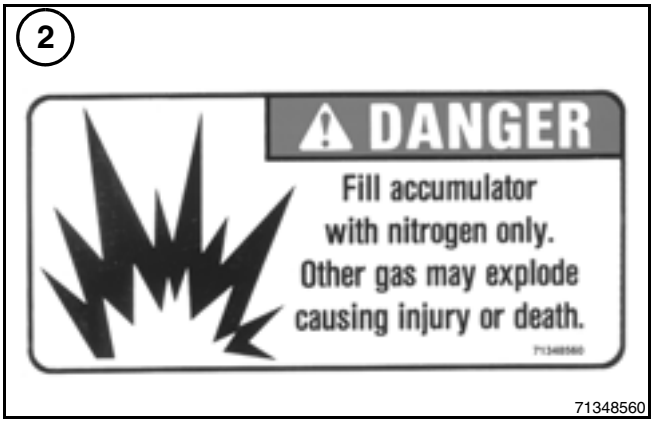


**FIG. 29**

**FIG. 30:** Important (3).

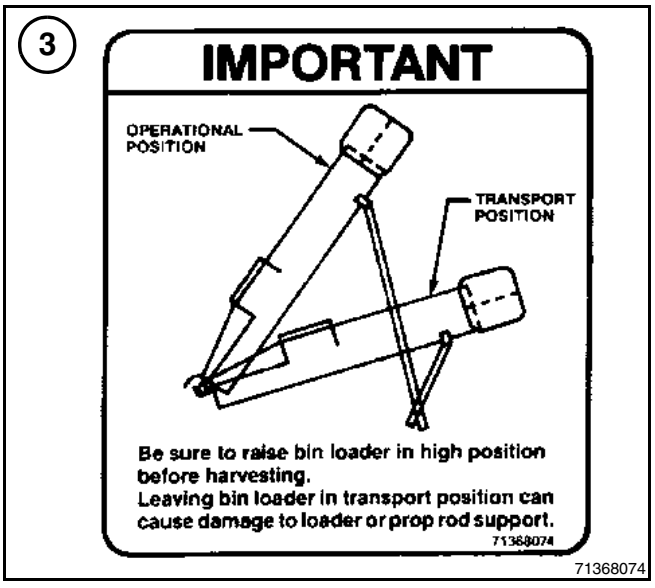


**FIG. 30**

**FIG. 31:** Safety sign (4).


**FIG. 31**

**FIG. 32:** Safety sign (5).


**FIG. 32**

**FIG. 33:** Safety sign (6).


**FIG. 33**

**FIG. 34:** Safety sign (7).

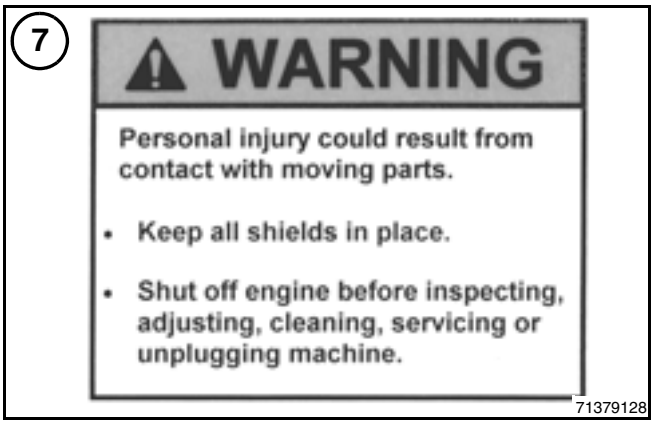


**FIG. 34**

**FIG. 35:** Safety sign (8).


**FIG. 35**

**FIG. 36:** Safety sign (9).


**FIG. 36**

**FIG. 37:** Safety sign (10).

1 - Rear Engine Cover

1 - Under Side of Engine Cover

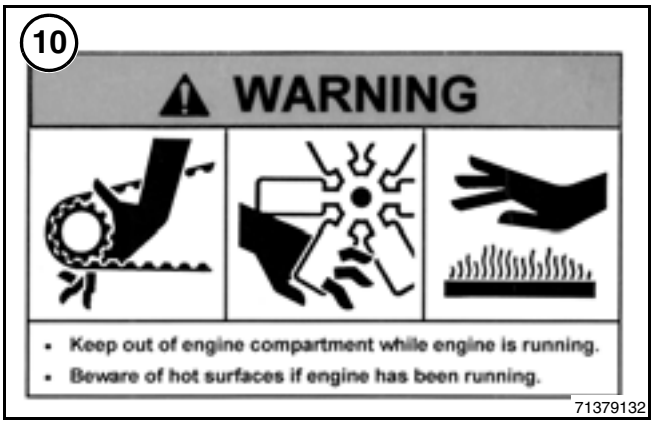


**FIG. 37**

**FIG. 38:** Safety sign (11).

One used on each access panel on feeder house.

On fan shroud.


**FIG. 38**

**FIG. 39:** Safety sign (12).


**FIG. 39**

**FIG. 40:** Safety sign (13).

Emergency Exit. Pull pin and push window open.


**FIG. 40**

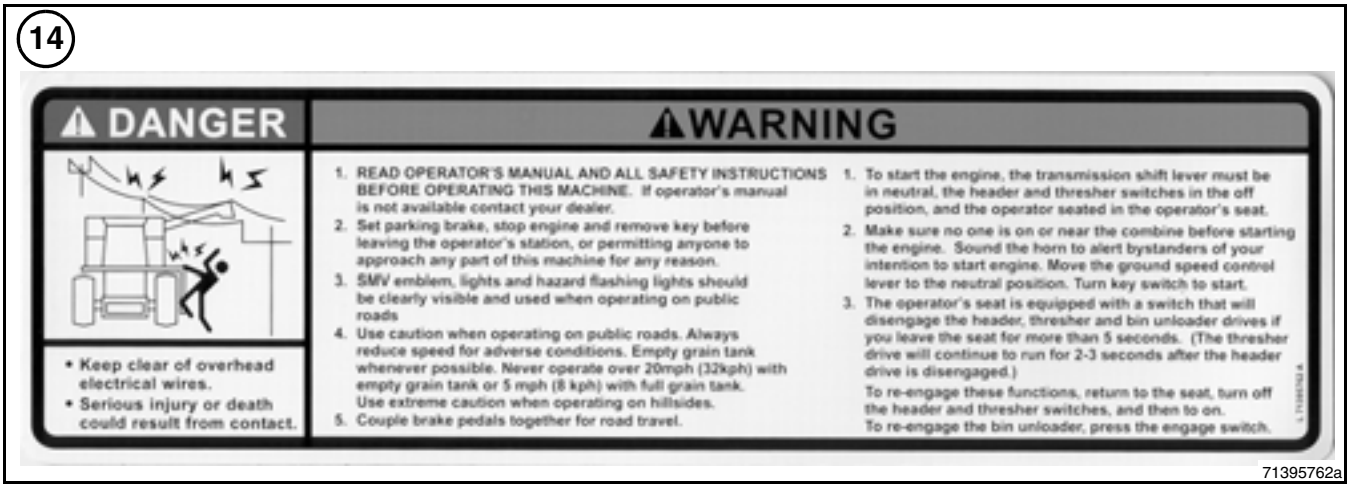


**FIG. 41**

**FIG. 41:** Safety sign (14).

**FIG. 42:** Red Reflector (15).

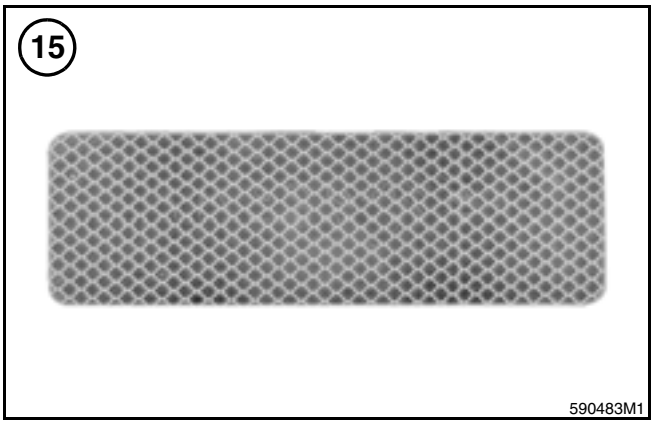


**FIG. 42**

**FIG. 43:** Amber Reflector (16).

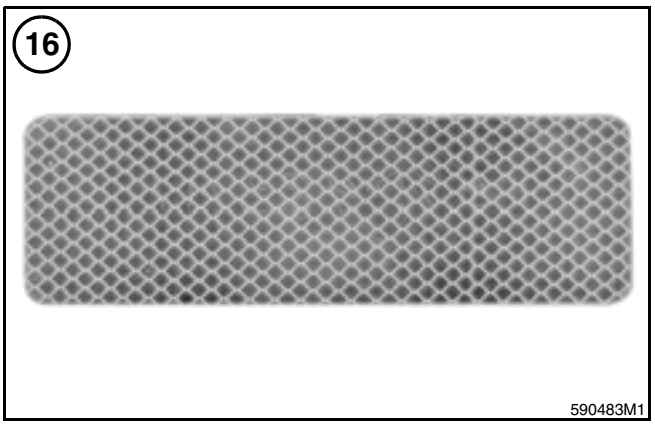


**FIG. 43**

**FIG. 44:** Orange Fluorescent (17).

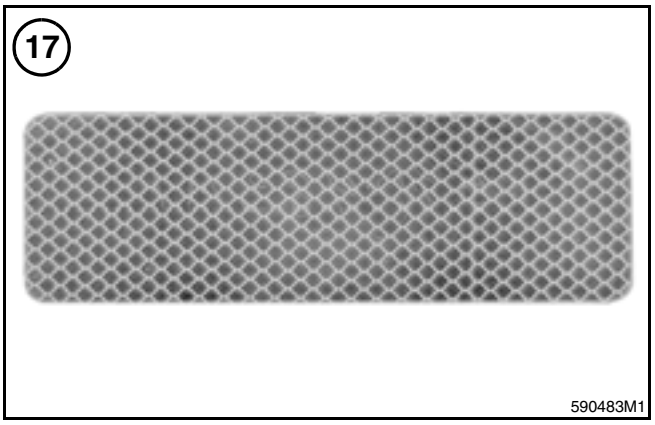


**FIG. 44**

**FIG. 45:** Safety sign (18).

On top of radiator.

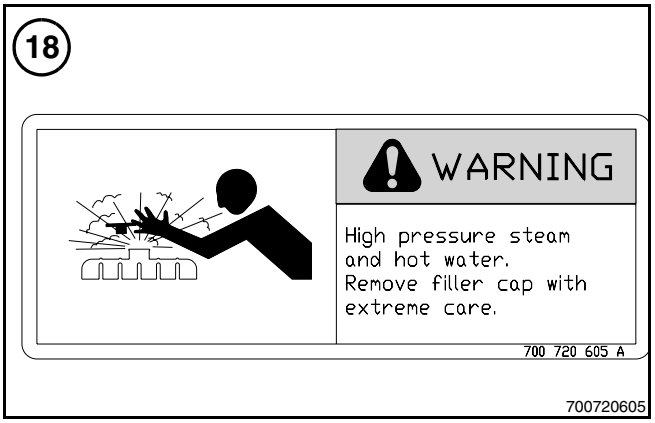


**FIG. 45**

**FIG. 46:** Safety sign (19).

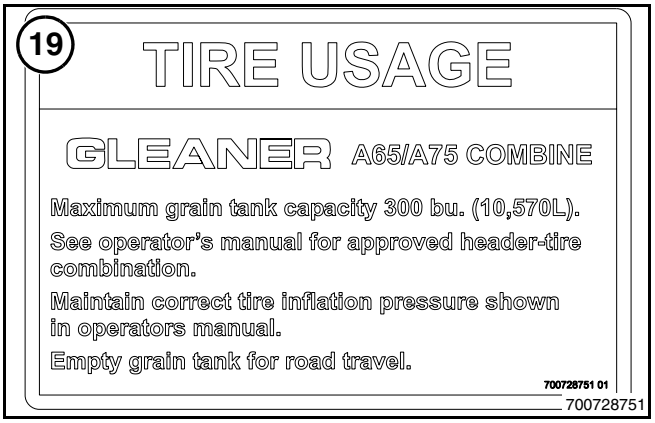


**FIG. 46**

**FIG. 47:** Safety sign (20).

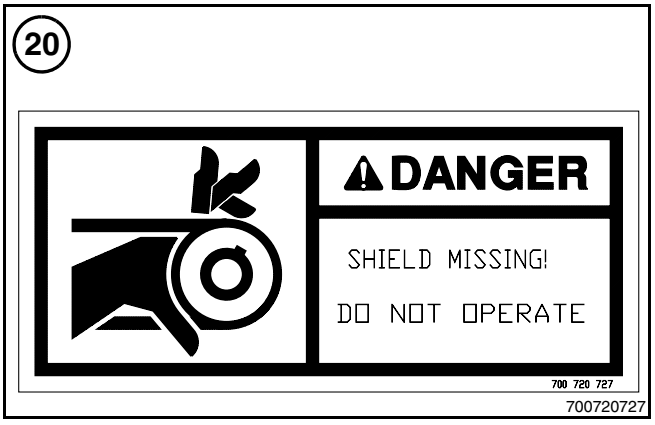


**FIG. 47**

**FIG. 48:** Safety sign (21).


**FIG. 48**

**FIG. 49:** Safety sign (22).


**FIG. 49**

**FIG. 50:** Safety sign (23)

Behind Grain Elevator Drive Shield.

Behind left-hand Feeder House Shield.

Behind Lower Mud Shield.


**FIG. 50**

**FIG. 51:** Safety sign (24).

One on right-hand feeder shield.

One on right-hand feeder side.


**FIG. 51**

**FIG. 52:** Safety sign (25.

Right-hand mud shield.

Left-hand mud shield.

Rear Grain Elevator Drive Shield.

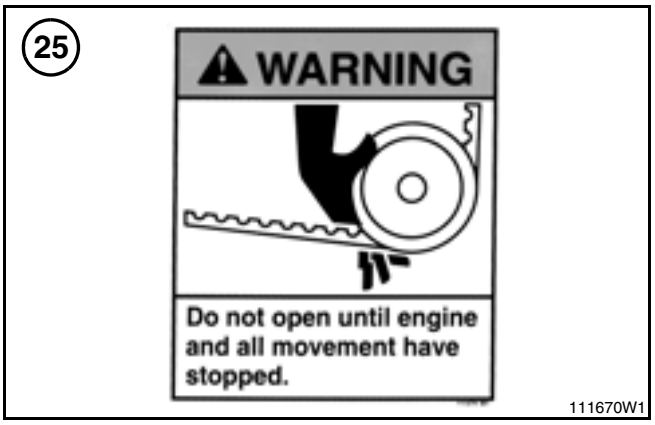


**FIG. 52**

**FIG. 53:** Safety sign (26).

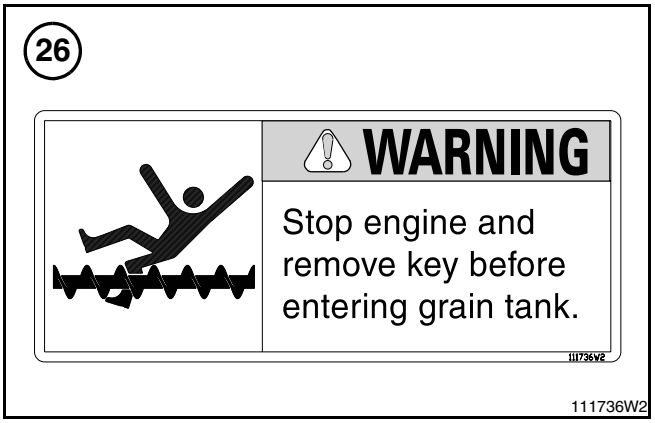


**FIG. 53**

**FIG. 54:** Safety sign (27).


**FIG. 54**

**FIG. 55:** Safety sign (28).


**FIG. 55**

**FIG. 56:** Safety sign (29).


**FIG. 56**


**FIG. 57**

**FIG. 57:** Combine front view.


**FIG. 58**

**FIG. 58:** Combine rear view.


**FIG. 59**

**FIG. 59:** Combine left side view.


**FIG. 60**

**FIG. 60:** Combine right side view.

## TRANSPORT LATCHES AND SHIELD LATCHES

**FIG. 61:** The transport latches (1) must be engaged when transporting combine.

To open shield, pull shield latch down and pull out on shield.

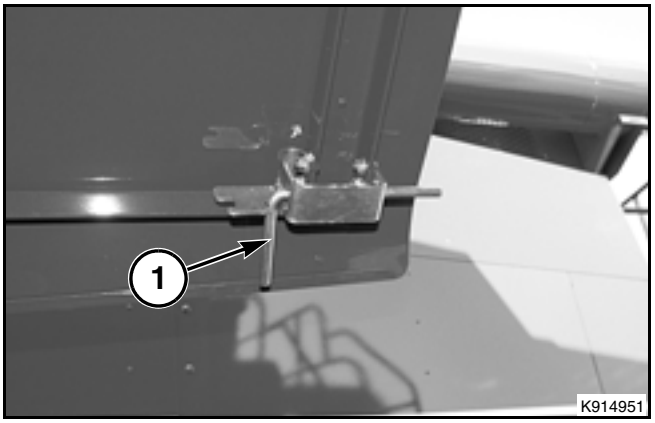


**FIG. 61**

**FIG. 62:** Transport latches (1) and shield latches (2) are located behind shields in location shown.

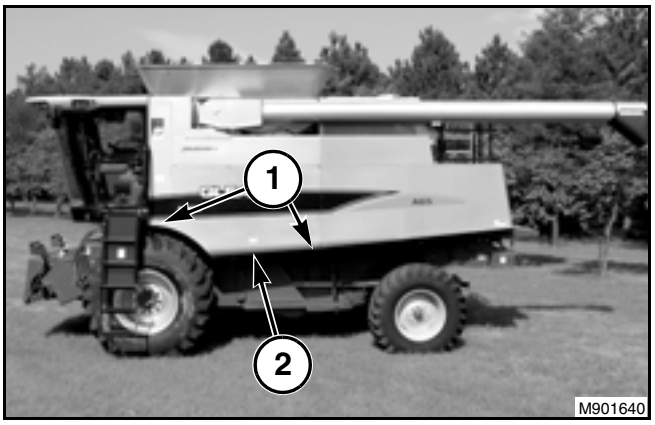


**FIG. 62**

**FIG. 63:** Transport latches (1) and shield latches (2) are located behind shields in location shown.

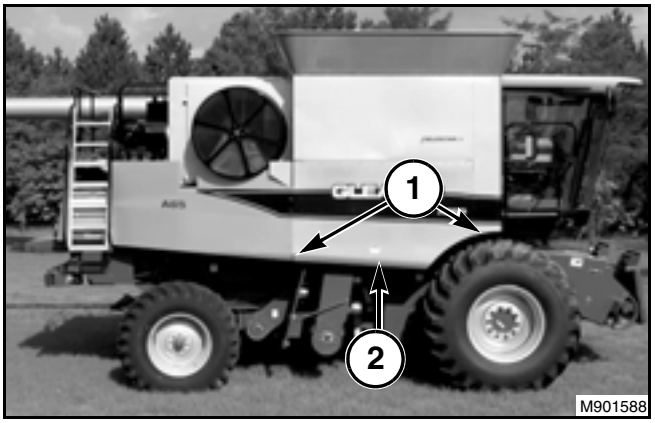


**FIG. 63**

## HEADER LIFT CYLINDER STOP

A header lift cylinder stop is supplied on the left-hand header lift hydraulic cylinder.

**FIG. 64:** Header lift cylinder stop (1) in the disengaged position.

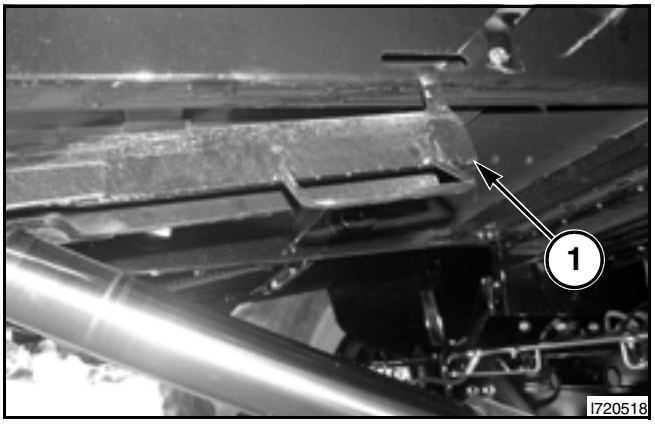


**FIG. 64**

**FIG. 65:** Header lift cylinder stop (1) in the engaged position.

Properly engage the header lift cylinder stop as shown before going under the header or feeder house for any reason.

To engage the header lift cylinder stop:

1. Raise the feeder house until the cylinder rod is fully extended to permit the header lift cylinder stop to engage.
2. Release the hook and lower the header lift cylinder stop onto the cylinder rod.
3. Lower feeder house until the header lift cylinder stop contacts the end of the cylinder.

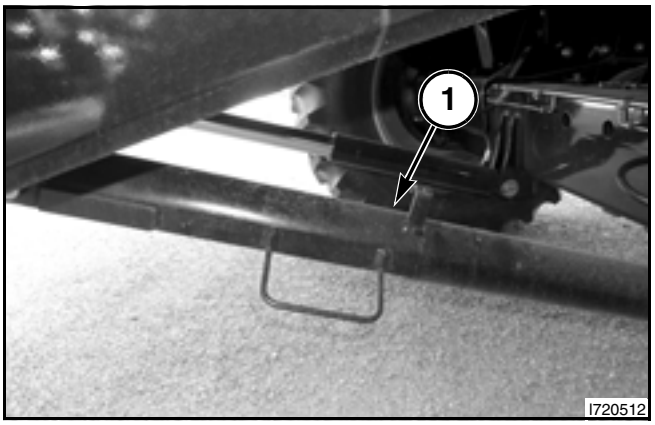


**FIG. 65**

## REAR HOOK

**FIG. 66:** The rear hook (1) is located in the center of the combine on the rear axle.

Use the rear hook (1) as a point on the combine to fasten a suitable chain to aid in pulling the combine out of the mud when the combine is stuck and not able to drive out.

- Do not go past the breaking strength of the chain.
- Do not use ropes or tow straps.
- Do not use the hook to pull a trailer.
- Do not use the hook to transport the combine on the road.

**WARNING: Do not use a rope or strap to pull the combine out of the mud. Energy stored in these devices can cause serious personal injury if the device should break.**

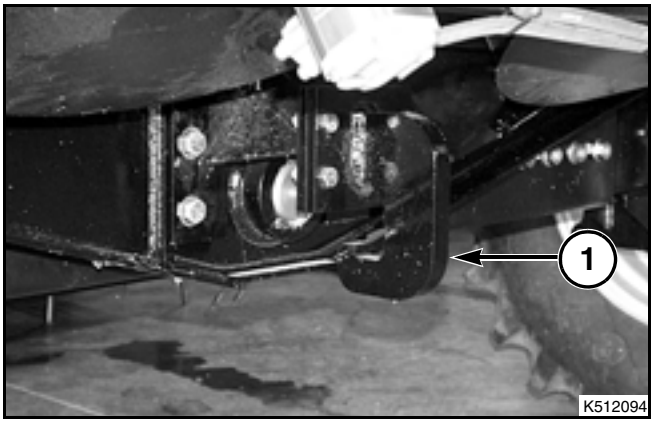


**FIG. 66**

## TRAVEL ON PUBLIC ROADS

**FIG. 67:** See your local law enforcement agency for local regulations about the movement of farm equipment on public roads.

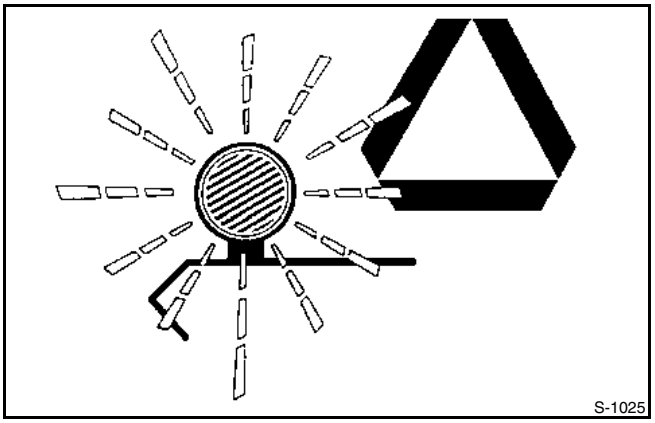


**FIG. 67**

- Use head lights, flashing warning lights, tail lights, and turn signals day and night unless not permitted by local law. Make sure lights, reflectors, and SMV emblem are installed, in good condition, and wiped clean.
- Check to make sure all combine road lights (especially the amber flashers and red tail lights) are working.
- Lock brake pedals together with the locking strap so that both front wheel brakes will be applied at the same time.
- Empty the grain bin.
- Position unloading auger tube in the folded (transport) position.
- Remove the header if possible. If the header is to remain on the combine during transport, position header so the operator can see as good as possible. Make sure the header has enough ground and road clearance.

*IMPORTANT: Do not carry the header at a height of more than approximately 610 mm (24 in) off of the ground or road surface.*

- Open the hydraulic accumulator valve before transporting the combine. This will reduce header movement and combine loping when moving on rough roads.

**CAUTION: Maintain proper tire pressure at all times to make sure of stability during road travel.**

- Measure the overall width and height of the combine. These measurements are important when transporting along narrow roads and where under passes can be found.
- Be aware of the other vehicles on the road. Keep well over to your side of the road, and pull over when possible, to let faster vehicles pass.
- Adjust travel speed to keep control at all times. Never permit combine to coast down hills.
- Reduce speed of combine by slowly pulling hydrostatic control lever to neutral, before applying the brakes. Do not apply the brakes quickly, especially if the combine is equipped with a large header, since weight movement (during rapid braking) can cause the rear wheels to come off the ground and result in loss of steering control.
- When taking the combine to a complete stop, slowly move the hydrostatic control lever to the neutral position, and apply the brakes (if necessary).

- Make all turns slowly. The combine is steered by the rear wheels and can loose control if turned quickly at transport speeds. This condition will be seen more when a large header is installed on the combine.
- Remember steering to the right moves the rear of the combine to the left.

  Steering to the left moves the rear of the combine to the right.
- If the engine is not running, the steering will become manual and be very difficult to handle. Difficult steering also can result in loss of control.
- Drive component damage can result from towing.

**CAUTION: Do not tow the combine on a public road.**

**NOTES**

# GENERAL INFORMATION

## HOW A COMBINE WORKS

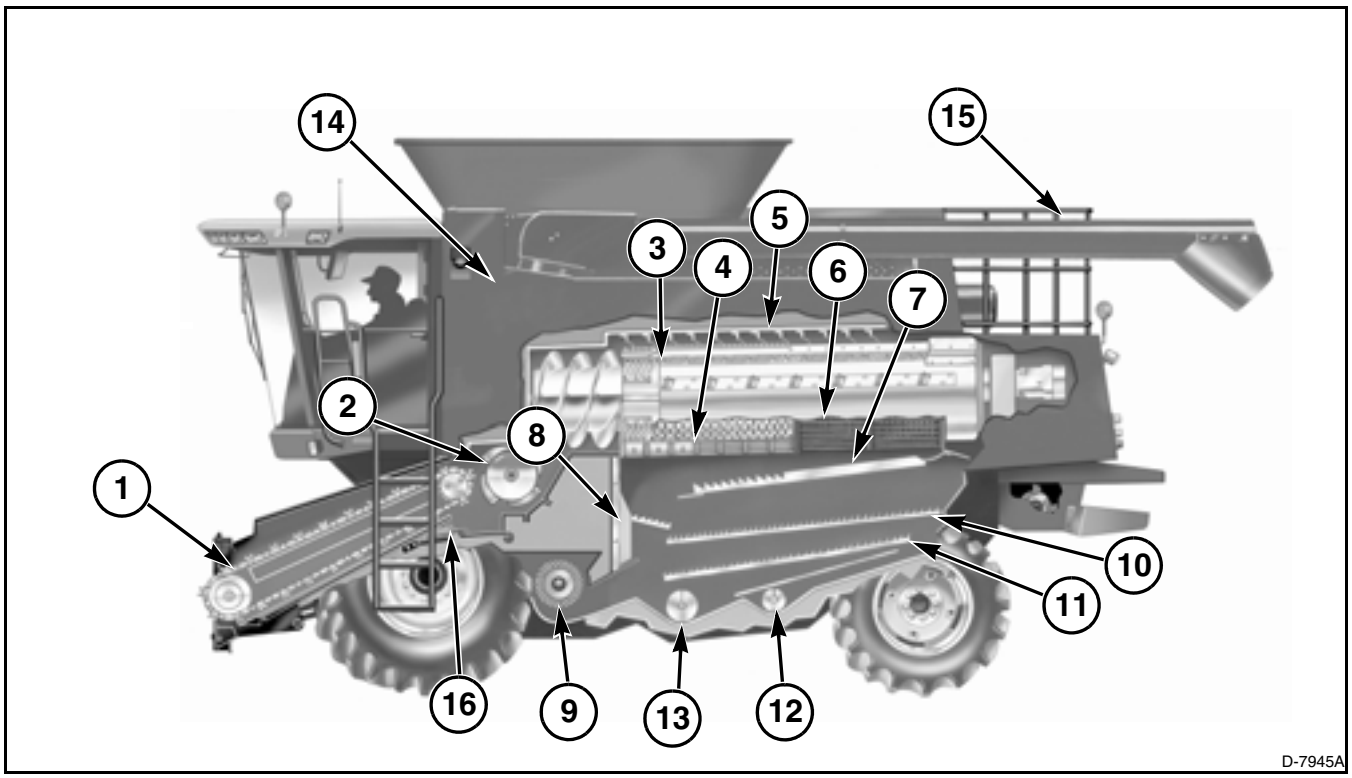


**FIG. 68**

**FIG. 68:** Four functions are done in the overall harvesting operation of a combine. These are:

- Cutting and Feeding
- Threshing
- Separating
- Cleaning

### Cutting and Feeding

The crop is gathered by a header which is supported by the feeder housing.

The grain header uses a reel to direct the crop into the header auger after the crop is cut by the knife and the header auger moves the crop into the feeder (1).

When a pickup header is used, the crop, already cut and laying in a swath, is lifted by a pickup and fed to the header auger where the retractable fingers move the crop into the feeder.

The feeder elevator transports the crop to the front of the accelerator beater (2) which moves the crop to the rotor inlet area and the rotor (3). The feed beater also guides rocks and other foreign objects into the stone trap (16) located forward and below the beater.

## Threshing and Separating

The rotor does four functions as the crop moves in a rotary motion from the front to the rear:

- Intake
- Threshing
- Separating
- Discharge

The auger flighting in the intake area starts the crop on a spiral route around the rotor and moves the crop to the threshing area.

Threshing and first separation are done in the threshing zone as a result of the relationship between the rotating cylinder bars and the stationary open grate concave (4). Contact with the helical guide vanes (5) causes the material to move rearward and in a circular route, letting the material to pass over the concave several times.

The remaining separation occurs in the separating section. Centrifugal force carries the grain and chaff through the grate (6) while the straw moves rearward in the rotor cage. Again, the spiral motion of the crop lets the crop pass over the separating grates several times.

Cylinder bars on the rotating rotor hold the crop against the grates until the crop reaches the end and then paddles bat the material into a discharge chute where the crop is moved to a straw spreader, chopper, or discharged directly to the ground.

Grain, chaff, and any heads not threshed which went through the separator grates are carried to the cleaning shoe by the separator return pan (7).

## Cleaning

The material is moved from the front of the separator return pan onto a short cascade pan (8) which in turn moves the mixture across a fingered comb and into the front of the chaffer sieve.

The cleaning fan (9) supplies air to keep the chaff in suspension during the cleaning operation in the shoe.

The air blast passing through the turning adjustable chaffer (10) separates and blows the chaff out of the combine. The grain and tailings drop through to the cleaning sieve.

The adjustable cleaning sieve (11) does the final cleaning. The clean grain falls through the sieve into the clean grain auger. The tailings, chaff, and other material continue to the end of the sieve and into the return auger (12) to be threshed again.

The grain elevator paddle chain moves the clean grain from the clean grain auger (13) to the grain tank filling auger and into the grain tank (14). The return elevator carries the tailings back to the rotor intake for threshing and separating.

The grain in the grain tank is unloaded into a truck or trailer through the turret type unloading auger (15).

## COMBINE IDENTIFICATION

The combine is identified by serial numbers which are important for service and repair parts.

*NOTE: References to left-hand and right-hand, used in this manual, refer to position when seated in operator seat and facing forward*

### Machine Serial Number

**FIG. 69:** The machine serial number plate is located on the combine left hand side frame at the rear corner.

Consecutive serial numbers starting with 87101 indicate an A65.

Consecutive serial numbers starting with 36101 indicate an A75.

Model Year

- HR - 2006
- HS - 2007
- HT - 2008


**FIG. 69**

**FIG. 70:** Machine Serial Number

(1) Model

(2) Serial Number

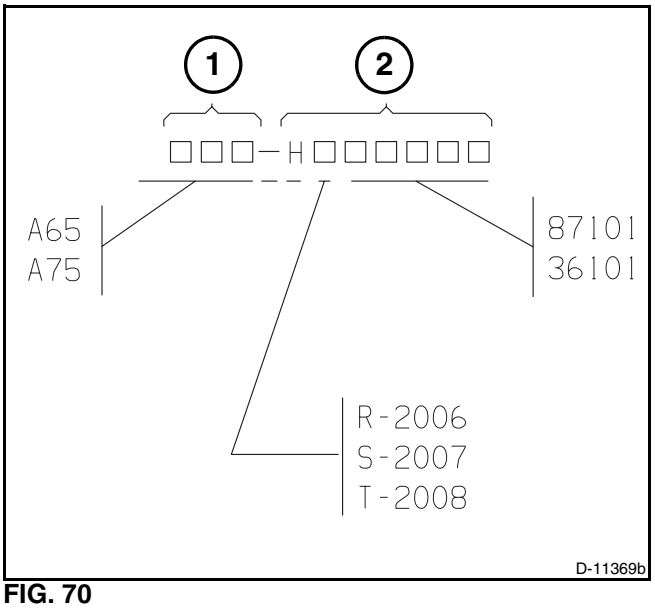


**FIG. 70**

### Engine Serial Number

**FIG. 71:** The engine serial number is located on the engine serial number plate (1). The serial number plate is located on the left rear of the engine block near the starter.

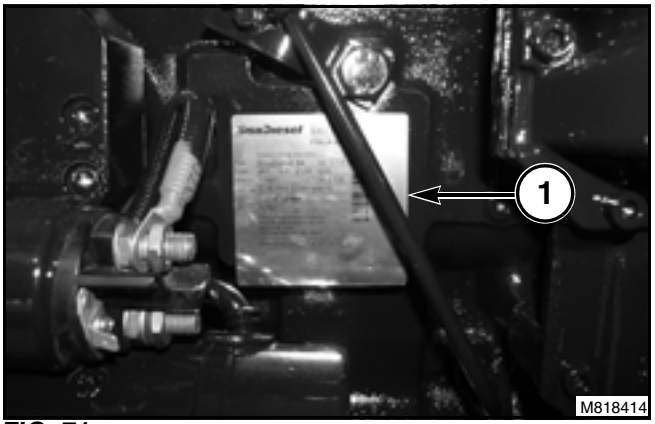


**FIG. 71**

## Fuel Injection Pump Dataplate

**FIG. 72:** The fuel injection pump dataplate (1) is located on the back of the injection pump.

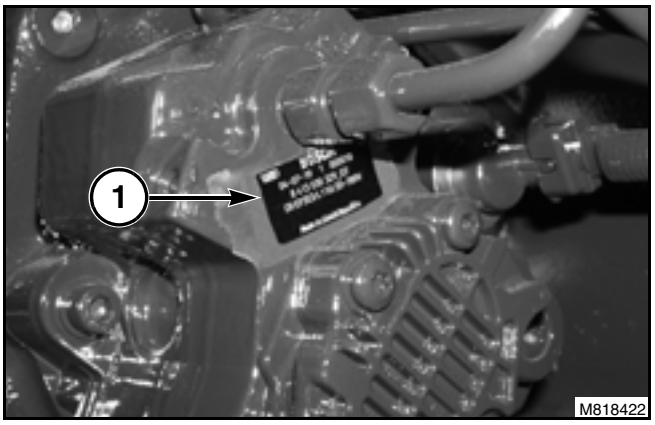


**FIG. 72**

## ECM Dataplate

**FIG. 73:** The Electronic Control Module (ECM) dataplate (1) shows important information about the ECM and how the ECM is programmed. The dataplate is located on the ECM right of the ECM connectors under a protective cover.

The following information is found on the ECM dataplate:

- ECM part number (PN)
- ECM serial number (SN)
- ECM date code (DC)
- Engine serial number (ESN)
- ECM code showing the software number that indicates how the ECM is programmed.

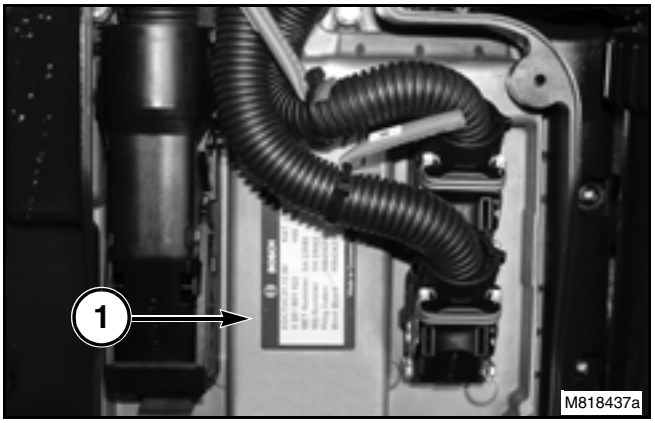


**FIG. 73**

## Transmission Serial Number

**FIG. 74:** The transmission serial number is stamped on the serial number plate that is fastened to the left hand side of the transmission housing at location (1).

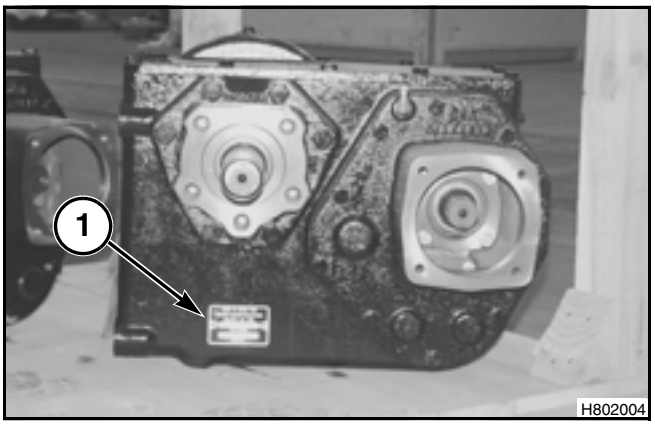


**FIG. 74**

## Final Drive Serial Number

**FIG. 75:** The final drive serial number is stamped on the plate that is fastened on the inner half of the final drive housing at location (1).

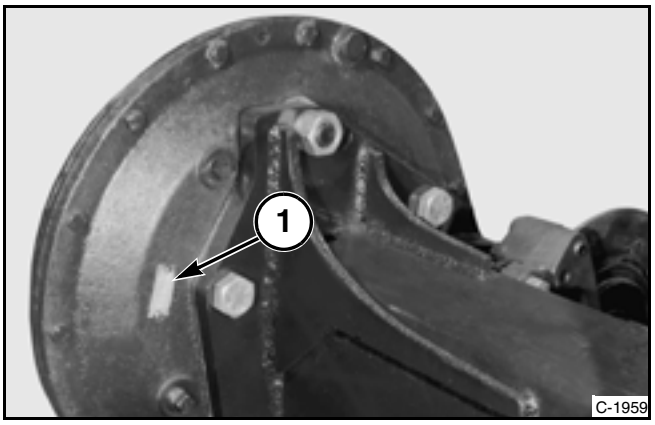


**FIG. 75**

## HEADERS

The combine is equipped with a quick attach feeder for fast and easy hook up of headers. The quick attach characteristics permits for easier service, transport, and storage of both the header and the combine.

The combine can be equipped with the following type of headers:

- Rigid Grain Headers
- Flexible Cutterbar Headers
- Pickup Headers
- Corn Headers
- Stripper Headers
- Draper Headers

*NOTE: Refer to the operator manual, supplied with the header, for installation and operation information.*

## LUBRICATION AND MAINTENANCE

For efficient and low cost operation of any machine proper lubrication and maintenance is needed. Follow the instructions in this section of the manual (and on the lubrication decals and charts located on the right and left side frames of the machine) to make sure the combine is lubricated at regular service intervals.

*NOTE: Refer to the combine Operator's manual for lubrication and maintenance instructions for the particular year model combine.*

**CAUTION: Always raise the header and engage the header lift cylinder stop, lower the reel, turn off the engine, and remove the ignition key before performing any lubrication or maintenance functions on the combine.**

## LUBRICANTS

Use quality oils and greases and be sure to use the proper lubricant for the job. The lubricants and quantities can be found in the Specification section.

## SERVICE PROCEDURES

Keep lubricants in clean and closed containers. Clean funnels, measures, and other handling equipment before and after use. Clean fittings, plug openings, and other lubrication points before servicing. Inspect and clean plugs and other fittings before installing.

## SERVICE PERIODS

Frequency of lubrication, as shown in Lubrication and Maintenance charts, are according to normal operating conditions. If the combine is being operated in bad weather or dusty conditions, lubricate more frequently. Change engine oil filter at every oil change.

*NOTE: Monitor the engine hour meter to be sure that all maintenance intervals are met.*

## LUBRICATION AND MAINTENANCE

| New Machine Lubrication and Maintenance | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Engine Air Cleaner | Check and tighten all connections | |
| Drive Chains and belts | Check tension and alignment | Refer to the adjustment section. |
| Brake Fluid Level | Check fluid level, with combine parked on level ground, and fill if necessary | Fluid level to be 6 mm (1/4 in) from top. Use SAE J-1703d heavy duty brake fluid or DOT 3. |
| Bolts (fastening wheels, final drives, front and rear axles, feeder elevator brackets, straw chopper hammers and beater bearing housings) | Check torque | Refer to the correct sections of manual. |
| Rear (steering) wheels | Check toe in | Set toe in to 6 mm (0.25 in). |
| Feeder Reverser | Check fluid level | Recommended change period - Initial fill only. |

| Lubrication and Maintenance | | |
|---|---|---|
| **10 Hour or Daily Lubrication** | | |
| **Component** | **Action Required** | **General Information** |
| Cleaning Fan Drive Pulley (Sliding Half) | Lubricate - 1 fitting | 1 fitting at inner pulley hub. |
| Variable Speed Corn Header Drive Sheave, if equipped | Lubricate 2 fittings | 2 fittings located on right-hand side of feeder house on the variable speed driven sheave. |
| Drive Chains | Oil drive chains (oil more frequently when operating in extremely dusty conditions) | Refer to Roller Chains in this section. |
| Feeder House Pivot Bushing | Lubricate - 2 fittings | 1 fitting each side at top of feeder house. |

| 10 Hour or Daily Maintenance | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Air Conditioning Condenser | Check coil for chaff and dust accumulation. Clean as necessary | Condenser located in front of radiator. |
| Drive Chains and Belts | Perform a general inspection of all drive chains and belts. | Refer to this section. |
| Engine Compartment | Check for accumulation of chaff, leaves, trash, etc. Clean as necessary | Chaff, leaves and trash, which are permitted to accumulate can be a fire hazard. |
| Radiator Coolant | Check level of coolant in radiator coolant recovery tank, with combine parked on level ground, and add coolant if necessary | Use solution of 50% water and 50% diesel type low silicant antifreeze. Do not use Organic Acid type antifreeze. |
| Radiator Core and Rotary Screen Air Intake | Check to make sure the screen and radiator core are clear of chaff and dust | Check twice daily in extremely dusty conditions. Check that screen is free to turn before starting engine. |
| Separator Pan (Operating in mud or snow conditions) | Check for deposits of material | Clean as necessary through side access doors. |

| 10 Hour or Daily Maintenance | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Hydrostatic Rotor / Propulsion Pump Drive Belt | Check tension and adjust as required. | Especially important when operating on hilly terrain for engine braking assistance. |
| Wheel Lug Nuts and Bolts | Check torque every 10 hours or until the lug nuts and bolts remain tight | |
| Engine Oil Level | Check oil level and fill if necessary. | |
| Hydraulic Reservoir Oil Level | Check hydraulic oil level. | |
| Transverse Fan | Check for accumulation of dirt and trash | |
| Engine Air Intake Screen and Aspirated Pre-cleaner | Check clamps on ends of aspirated tube. | |
| Shoe Grain Pan | Check for accumulation of material. | |

| 50 Hour or Weekly Lubrication | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Pitman Drive Idler | Lubricate - 1 fitting | 1 fitting at pivot. |
| Clean Grain Elevator Drive Idler | Lubricate - 1 fitting | 1 fitting at pivot. |
| Rear Axle (Standard) | Lubricate - 9 fittings | Center pivot - 1 fitting.<br>King pins - 2 fittings.<br>Tie rod sockets - 2 fittings. |
| Rear Axle (with Rear Wheel Assist) | Lubricate -11 fittings | Center pivot - 1 fitting.<br>King pins - 8 fittings.<br>Tie rod sockets - 2 fittings. |
| Front Rotor Bearing | Lubricate sparingly | 1 fitting below return elevator head. |
| Rotor Gearbox Shaft Spline | Lubricate 1 fitting | Remote fitting on battery tray on left-hand side of machine. |
| Unloader Drive Idler | Lubricate - 1 fitting | 1 fitting at front left side bank. |
| Front Beater Drive Idler | Lubricate - 1 fitting | 1 fitting at front left side bank. |
| Main Countershaft Drive Idler | Lubricate - 1 fitting | 1 fitting at rear left side bank. |
| Rotor / Propulsion Pump Drive Idler | Lubricate - 1 fitting | 1 fitting at rear left side bank. |
| Propulsion Pump Drive Idler - Class VII Only | Lubricate - 1 fitting | 1 fitting at rear left side bank. |
| Feeder Elevator Drive Idler | Lubricate - 1 fitting | 1 fitting at pivot. |
| Cleaning Fan Drive Idler | Lubricate - 1 fitting | 1 fitting at pivot. |
| Return Elevator Countershaft Drive Idler | Lubricate - 1 fitting | 1 fitting at pivot. |
| Straw Chopper / Spreader Primary Drive Idler | Lubricate - 1 fitting | 1 fitting at pivot. |

| 50 Hour or Weekly Lubrication | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Straw Chopper / Spreader Secondary Drive Idler | Lubricate - 1 fitting | 1 fitting at pivot. |
| Unloader Swivel | Lubricate - 5 fittings | 5 fittings located at base of unloader. |
| Pivot Drive Idler Hub | Lubricate - 1 fitting | 1 fitting on left side of feeder housing. |

| 50 Hour or Weekly Maintenance | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Air Cleaner (Engine) | Check hose connections for correct torque. | Clean or replace main element when indicated by monitor light. |
| Air Conditioner - Compressor Clutch Belt Evaporator Coil | Check tension, inspect and clean evaporator filter and coil if necessary. | Adjust as required. |
| Batteries | Clean off top of batteries and check for tight cable connections | Located at left hand side frame. |
| Cab Recirculation Filter | Remove grille and clean | Located inside cab under right hand console. |
| Concave | Check positioning and leveling of concave | |
| Cab Air Filter | Remove element from air conditioning unit and clean | Will require more frequent cleaning in extremely dusty conditions. |
| Shaker Shoe Chaffer and Sieve | Remove any accumulated straw, cobs, etc. | Check chaffer and sieve retaining bolts |
| Drive Chains and Belts | Check tension. Replace or adjust as necessary | |
| Elevators Clean Grain and Returns | Check tension of conveyor chains | |
| Engine Belts | Check tension and adjust | |
| Engine Speed | Check speed | Use digital tachometer in cab for routine check. |
| Feeder Chain | Check tension of conveyor chain | Do not over tension. |
| Hydrostatic Oil Cooler | Check core for chaff and fiber. Clean as required. | |

| 50 Hour or Weekly Maintenance | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Hydraulic Reservoir Filler Cap | Remove and clean | Use kerosene or suitable solvent. |
| Hydraulic System | Check for leaks | |
| Hydrostatic Rotor / Propulsion Pump Drive Belt | Check tension and adjust | |
| Hydrostatic Propulsion Drive Pump Control | Check adjustment | |
| Main Countershaft Drive Belt | Check tension and adjust | |
| Straw Chopper or Spreader Drive | Check belt tension and adjust | |
| Tire Pressure | Check and inflate as needed | |
| Unloader Drive Belt | Check disengagement and adjust belt guides as necessary | |
| Primary Engine Fuel Filter | Drain any water from fuel filter | Put a container under filter to catch any fluids before opening drain valve. |
| Linkages and Clevises | Oil lightly | |
| Air Conditioning Air Filter and Secondary Filter | Remove element from top of cab and A/C unit on bottom of cab and clean | |
| Engine Oil and Filter (Change after the first 50 hours, and every 250 hours thereafter.) | Drain crankcase, install new filters. Fill crankcase to correct level with new oil. | |
| Hydrostatic Oil Filter (Change after the first 50 hours of operation and every 250 hours thereafter.) | Replace filter elements. | |

| 100 Hour Lubrication | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Rotary Screen Drive Idler | Lubricate 1 fitting. | Fitting inside rotary screen. |
| Axle Couplers | Lubricate - 4 fittings | 1 fitting on each inner and outer coupler, both sides. |
| Lateral Tilt Pivot Pin, if equipped | Lubricate - 1 fitting. | 1 fitting on at bottom center of lateral tilt frame. |
| Lateral Tilt Rollers, if equipped | Lubricate - 2 fittings. | 1 fitting on each end of lateral tilt frame. |
| Return Elevator Drive Sheave and Slip Clutch | Lubricate - 3 fittings | 3 fittings, below grain tank on right-hand side. |

| 100 Hour Maintenance | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Wheel Lug Nuts and Bolts | Check torque. | |

| 250 Hour Maintenance | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Engine Oil and Oil Filter (Change after first 50 hours and every 250 hours after that). | Drain crankcase, install new filters. Fill crankcase to correct level with new oil. | Clearly indicate that the engine oil has been drained and the combine engine can NOT be started. |
| Transmission Housing | Check oil level and fill if necessary. Check breather. | |
| Final drive Housings | Check oil level and fill if necessary. Check breather. | |
| Hydrostatic Oil Filter (Change after the first 50 hours and every 250 hours after that). | Replace filter element. | |
| Centrifugal Engine Oil Filter | Change canister in the centrifugal oil filter. | |

| 500 Hours or Once a Season Lubrication | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Shaker Shoe Shaft Bearings | Lubricate - 2 fittings | 1 fitting at each side of combine. |
| Transmission Shift Linkage | Lubricate - 1 fitting | 1 fitting on right-hand side of transmission |
| Brake Shaft Bearings | Lubricate - 2 fittings | 2 fittings located under cab. |

| 500 Hours or Once a Season Maintenance | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Engine Air Cleaner Elements | Replace inner and outer air cleaner elements. | Replace elements annually or when indicated by monitor. Outer element can be cleaned. |
| Engine Fuel Filter | Remove and discard filters.<br>Install new filter. | Do Not Fill filter with fuel. |
| Inline fuel filter | Remove strainer and clean when replacing engine fuel filters. | Filter is located near right-hand side of fuel tank. |
| Brake Fluid | Check fluid level in auxiliary reservoir and fill as necessary. | Fluid level to be 6 mm (0.25 in) from top. Use SAE J-1703d or DOT 3 Heavy Duty brake fluid. |
| Straw Chopper | Check knife wear and replace if necessary<br>Install new blades 180 degrees from each other. | Replace hammers in sets of two to maintain chopper rotor balance. |
| Cleaning Fan Housing | Clean accumulated trash from top of housing. | |
| General | Inspect combine for worn, damaged, or broken parts. Torque all bolts. | |
| Roller Chains | Remove all chains. Clean, lubricate, drain and install. | Clean in solvent to remove dirt. Soak in engine oil and permit to drain. |
| Rotor Gearbox | Change Oil. | |
| Transmission Housing | Drain gearbox, flush, and fill to correct level with clean oil. | |

| 500 Hours or Once a Season Maintenance | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Final Drive Housings | Drain gear box, flush, and fill to correct level with clean oil. | |
| Hydraulic Oil System | Drain oil, replace filter elements, and breather. Clean metal suction screen in reservoir and fill to correct level with clean oil. | |
| Hydraulic Reservoir Strainer | Drain reservoir, remove strainer, and clean when replacing oil. | |

| 1000 Hour Maintenance | | |
|---|---|---|
| **Component** | **Action Required** | **General Information** |
| Engine Valves | Check and adjust clearances | See engine Operation and Maintenance manual for specifications. |
| Engine Fan Belt, Tensioner and Pulleys | Check belt for damage. Check tensioner and fan pulley bearings for excessive movement and smooth operation | |
| Radiator | Replace coolant and flush system | See Engine Operation and Maintenance manual for correct coolant mixture. |
| Rear Wheel Bearings (Standard Rear Axle) | Remove hubs, clean, and check bearings. Pack bearings before assembly. | |

## LUBRICATION DETAILS

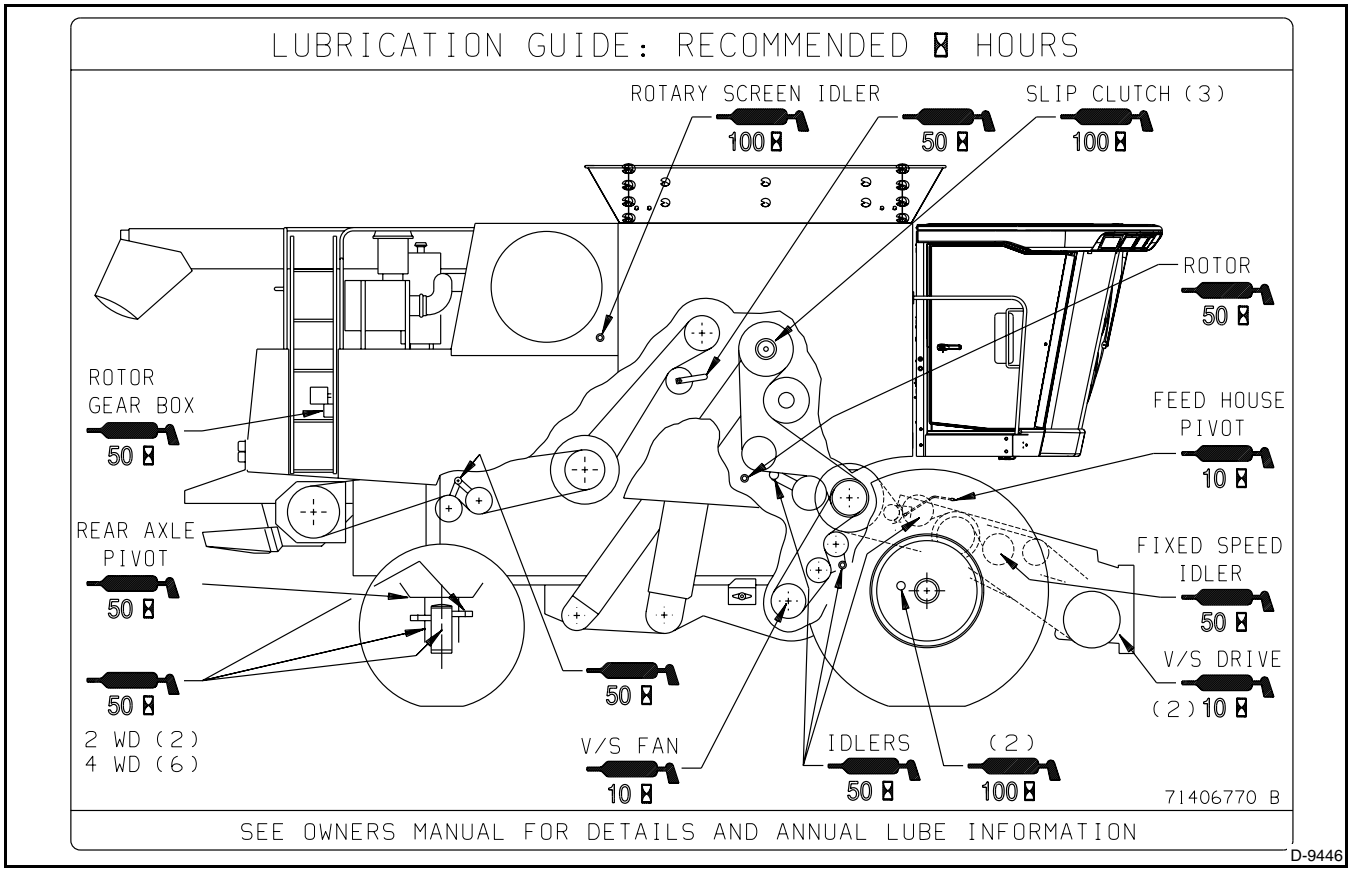


**FIG. 76**

**FIG. 76:** For efficient and low cost operation of any machine proper lubrication and maintenance is needed at the correct intervals. Follow the instructions in this manual and on the lubrication charts, located on the right, and left sides of the machine for correct lubrication.

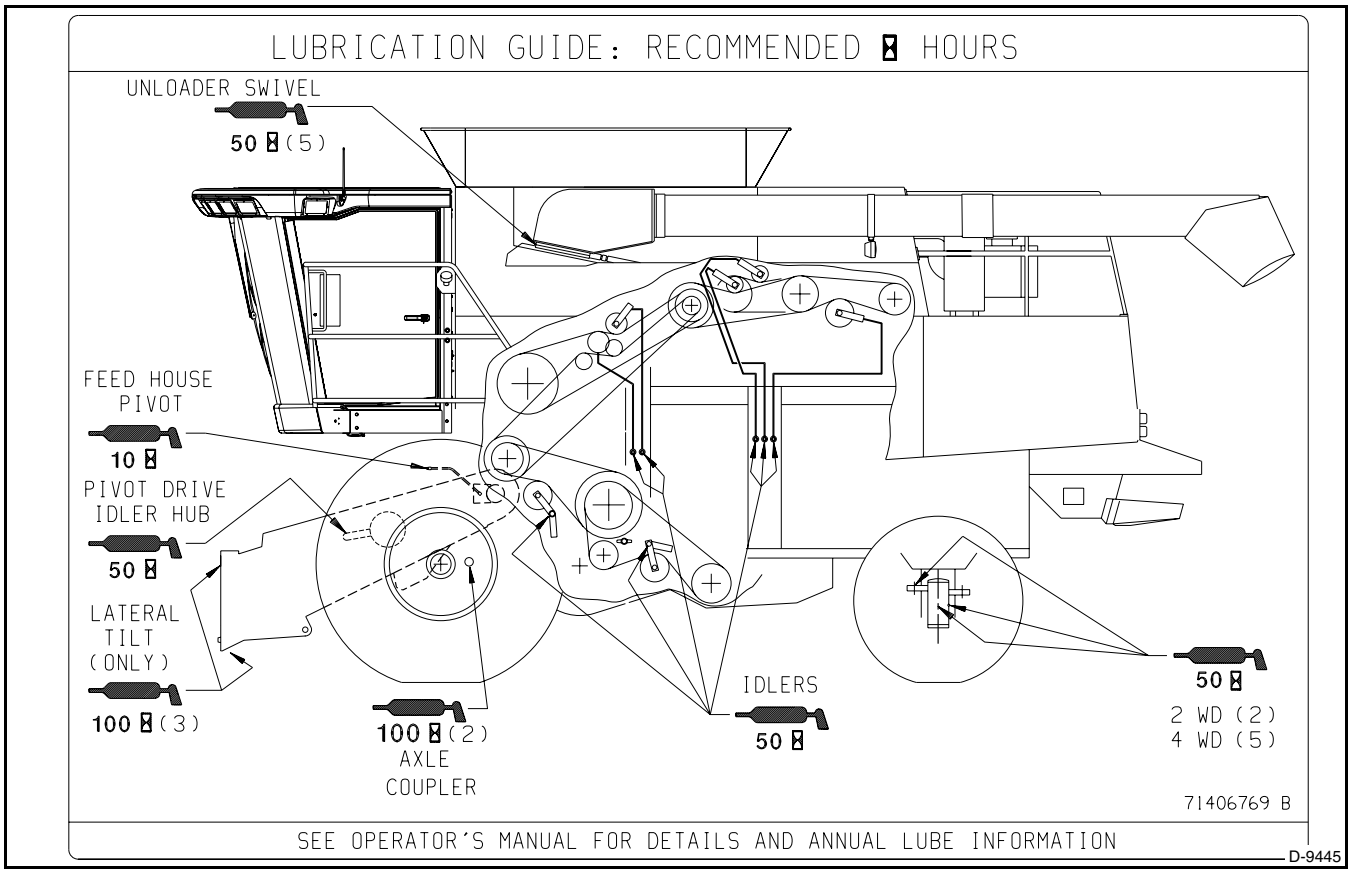


**FIG. 77**

**FIG. 77:** For efficient and low cost operation of any machine proper lubrication and maintenance is needed at the correct intervals. Follow the instructions in this manual and on the lubrication charts, located on the right, and left sides of the machine for correct lubrication.

## Front of Combine

**FIG. 78:** Main drive axle outer coupler (1) right-hand shown, left hand opposite. One fitting each coupler, lubricate every 100 hours.

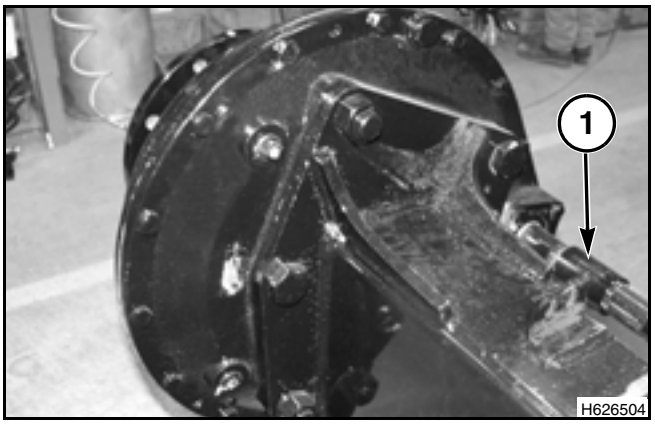


**FIG. 78**

**FIG. 79:** Front axle, inner driveshaft couplings.

One fitting (1) each side of transmission - (100 hours).

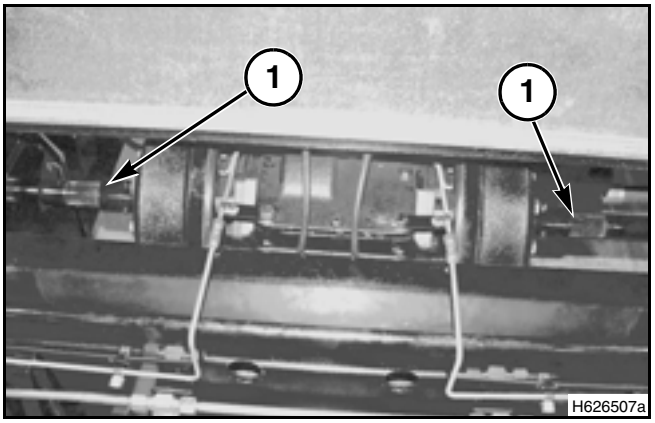


**FIG. 79**

**FIG. 80:** Feeder house pivot.

Two fittings (1),one each side - (10 hours or daily).

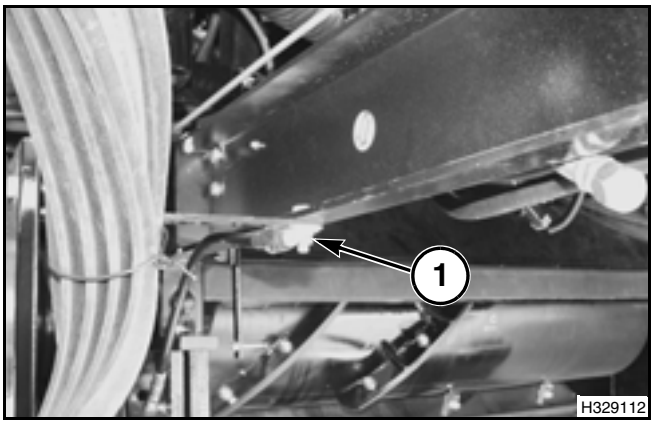


**FIG. 80**

**FIG. 81:** Front of feeder house, lateral tilt (if equipped).

Lateral tilt bearings - 2 fittings (1) - (100 hours).

Lateral tilt pivot pin - 1 fitting (2) - (100 hours).

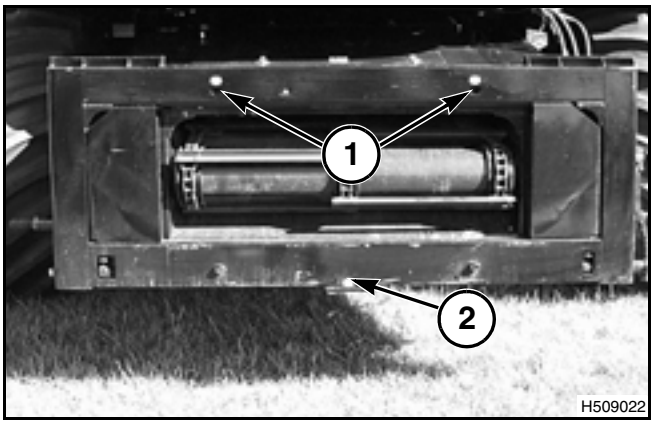


**FIG. 81**

**FIG. 82:** Right-hand side of feeder house.

Variable speed corn header drive sheave (if equipped).

Two fittings (1) - (10 hours or daily).

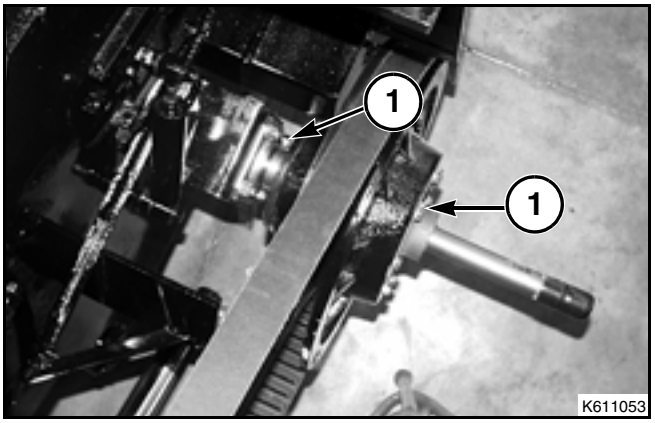


**FIG. 82**

**FIG. 83:** Left-hand side of feeder house.

Pivot drive idler hub - 1 fitting (1) - (50 hours or weekly).

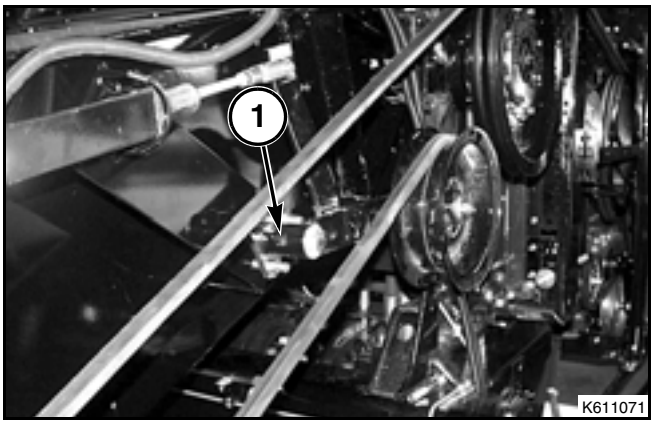


**FIG. 83**

**FIG. 84:** Right-hand side of feeder house.

Fixed speed header drive idler fitting (1) - (50 hours or weekly).

*NOTE: The fixed speed driven sheave (2) is lubricated from the factory and does not require any additional lubrication.*

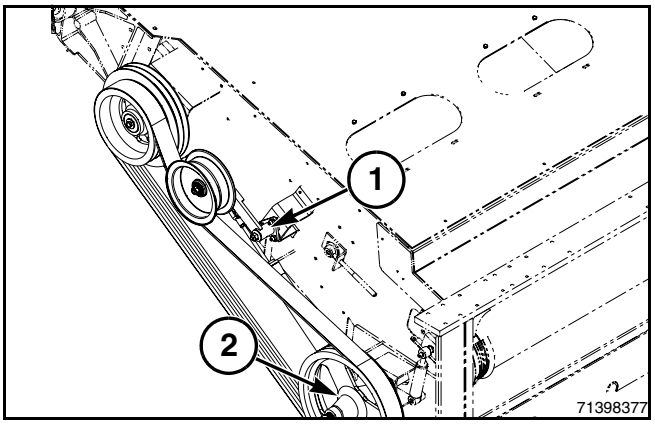


**FIG. 84**

**FIG. 85:** Under front of cab, brake pedals.

Two fittings (1) - (500 hours).

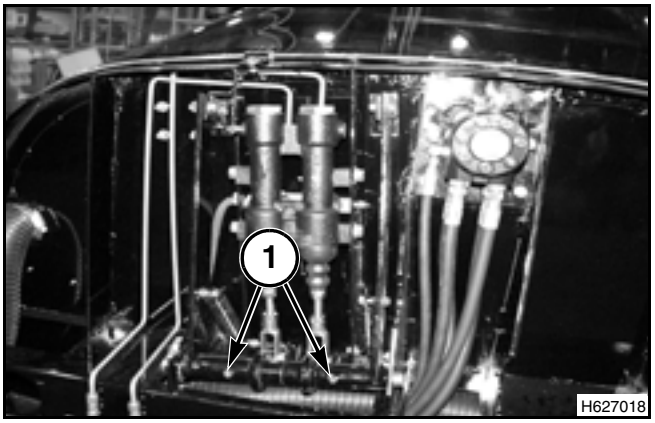


**FIG. 85**

## Left-hand Side

**FIG. 86:** Behind front axle.

Pitman Drive Idler Pivot (1) - (50 hours or weekly).

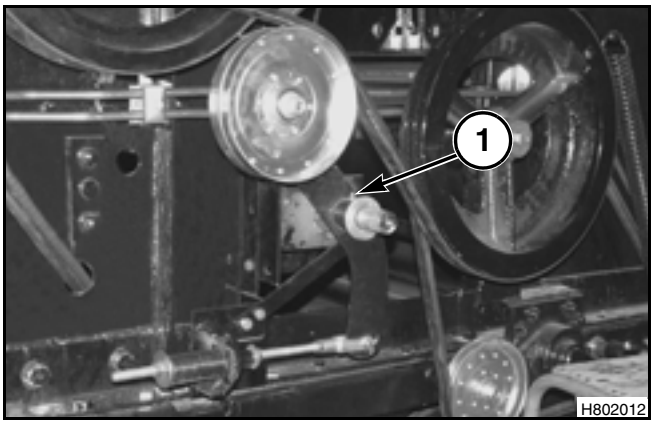


**FIG. 86**

**FIG. 87:** Above cleaning fan.

Shaker Shoe Shaft left-hand bearing (1) - (500 hours).

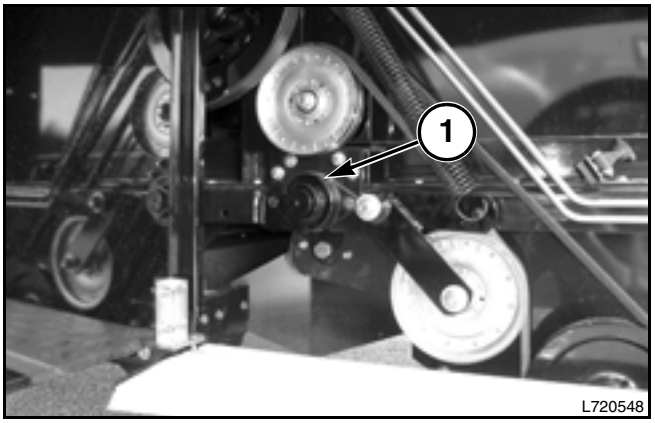


**FIG. 87**

**FIG. 88:** Behind cleaning fan.

Grain Elevator Drive Idler Pivot (1) - (50 hours or weekly).

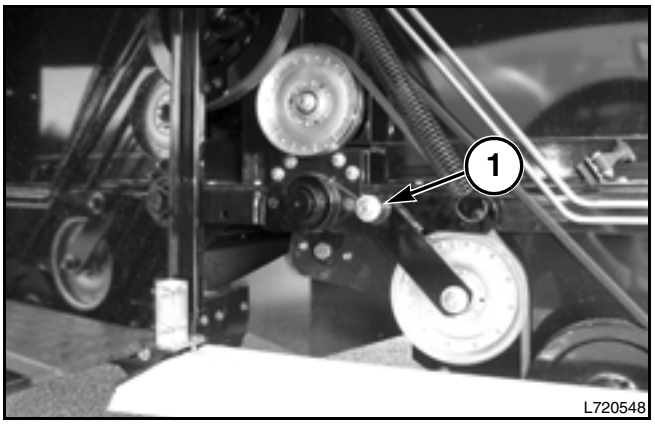


**FIG. 88**

**FIG. 89:** Front left side grease bank.

Unloader Drive Idler (1) - (50 hours or weekly).

Front Beater Drive Idler (2) - (50 hours or weekly).

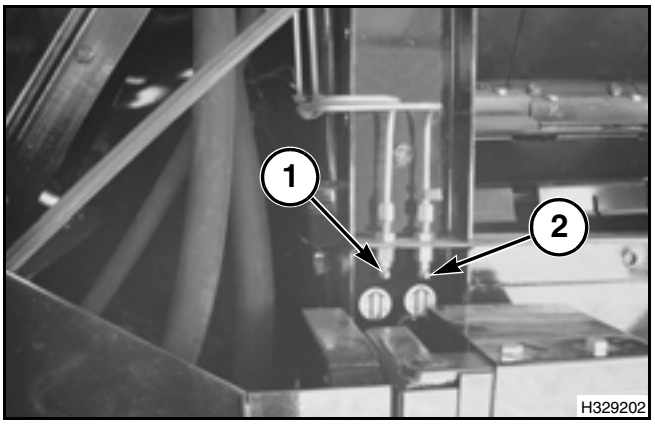


**FIG. 89**

**FIG. 90:** Rear left side grease bank.

Main Countershaft Drive Idler (1) (50 hours or weekly).

Rotor / Propulsion Pump Drive Idler (2) (50 hours or weekly).

Propulsion Pump Drive Idler (3) (50 hours or weekly) A75 combine only.

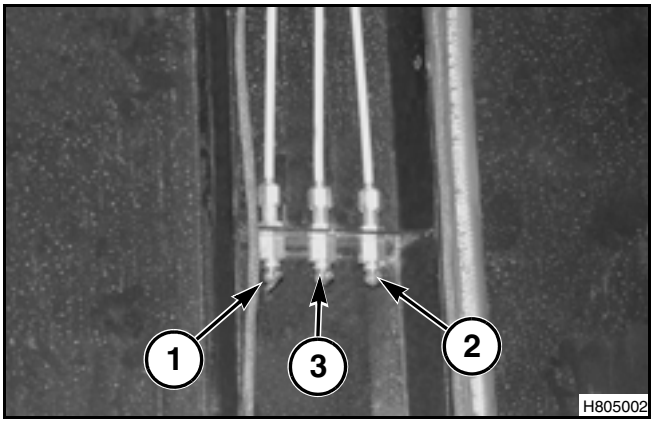


**FIG. 90**

**FIG. 91:** Left-hand side of combine at base of unloader.

Unloader swivel fittings (1), five fittings - (50 hours or weekly).

*NOTE: Swing auger out to access all grease fittings.*

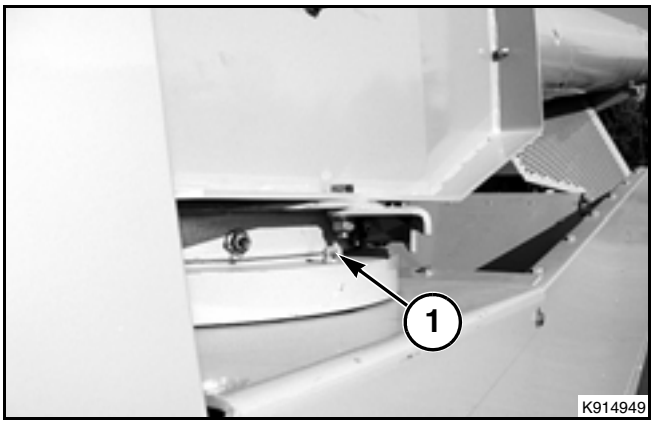


**FIG. 91**

**FIG. 92:** Left-hand side of combine under battery tray.

Rotor gear box remote fitting (1) - (50 hours or weekly).

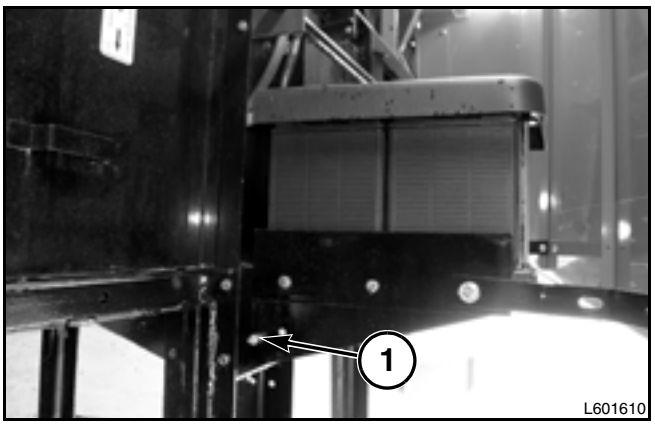


**FIG. 92**

## Right-hand Side

**FIG. 93:** Transmission shift linkage (1).

One fitting (500 hours).

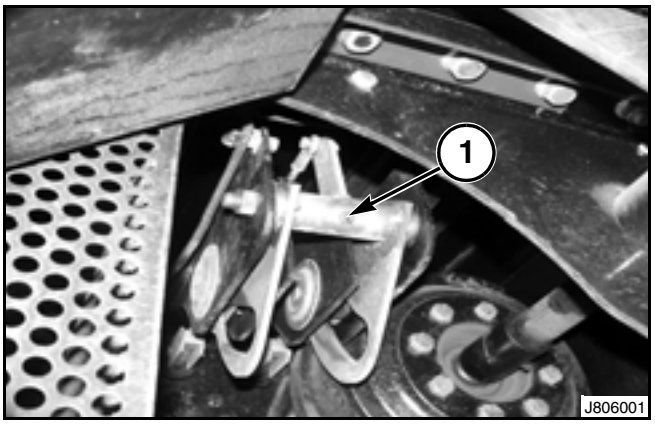


**FIG. 93**

**FIG. 94:** Behind front axle.

Cleaning Fan Drive Idler Pivot (1) - (50 hours or weekly).

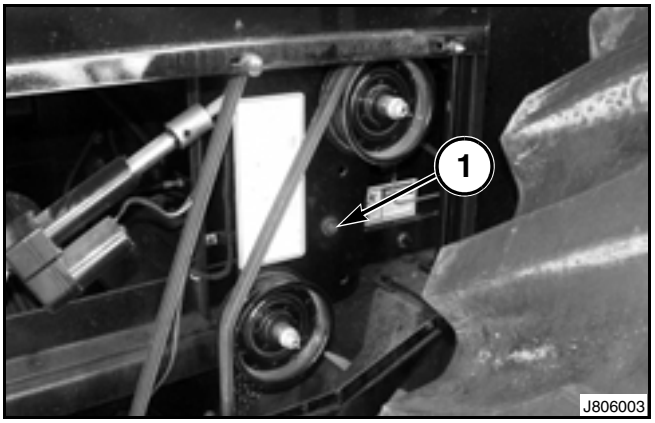


**FIG. 94**

**FIG. 95:** Below grain tank.

Return Elevator Drive Idler Pivot (1) (50 hours or weekly).

Front Rotor Bearing (2). Grease sparingly at 50 hours, or weekly, intervals.

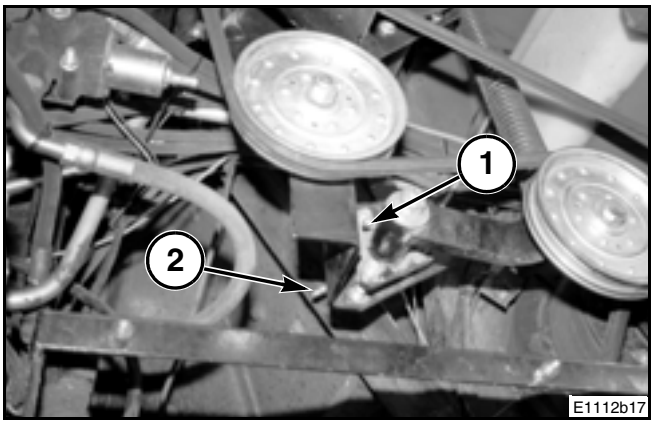


**FIG. 95**

**FIG. 96:** Below grain tank.

Return elevator drive slip clutch, two fittings (1) - (100 hours).

Return elevator conveyor drive sheave fitting (2) - (100 hours).

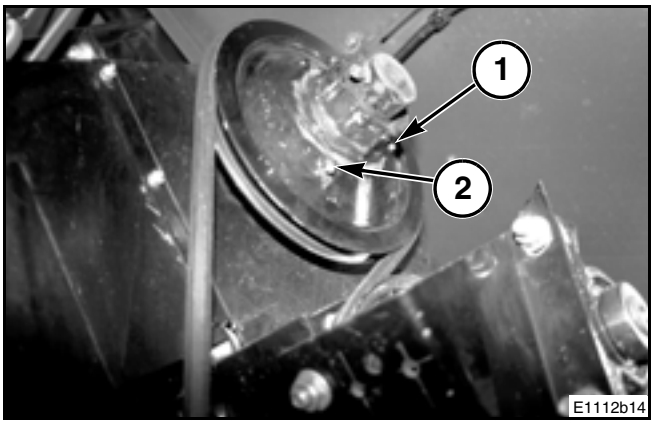


**FIG. 96**

**FIG. 97:** Behind cleaning fan.

Shaker Shoe Shaft Right Bearing (1) (500 hours).

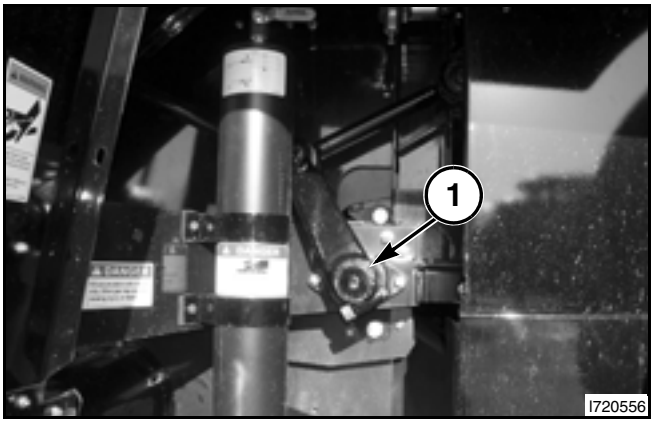


**FIG. 97**

**FIG. 98:** On cleaning fan shaft.

Cleaning Fan Driven Pulley Inner Sliding Sheave Hub (1) - (10 hours or daily). Do not get grease on belt.

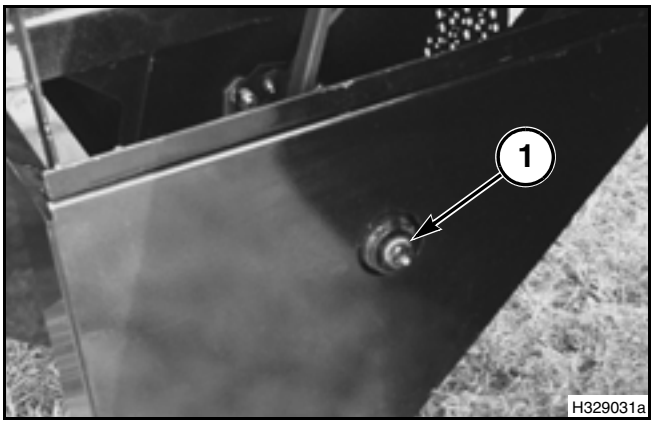


**FIG. 98**

**FIG. 99:** Above return elevator.

Straw Chopper / Spreader Primary Drive Idler Pivot (1) - (50 hours or weekly).

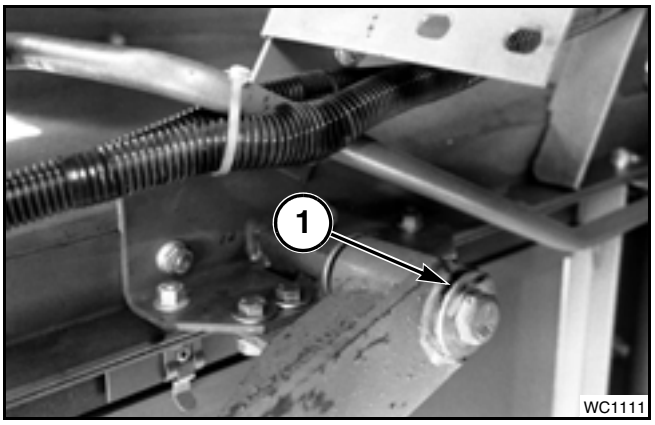


**FIG. 99**

**FIG. 100:** Behind return elevator.

Straw Chopper / Spreader Secondary Drive Idler Pivot (1) (50 hours or weekly).


**FIG. 100**

**FIG. 101:** Behind rotary screen.

Rotary screen drive idler pivot (1) (100 hours).

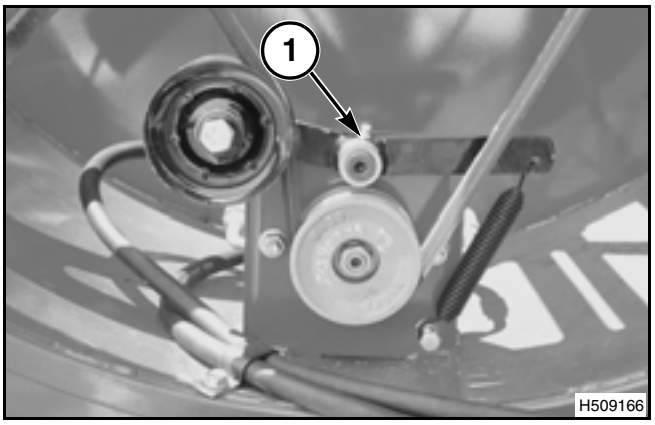


**FIG. 101**

## Rear Axle

**FIG. 102:** Center support.

Center Pivot (1) (50 hours or weekly).

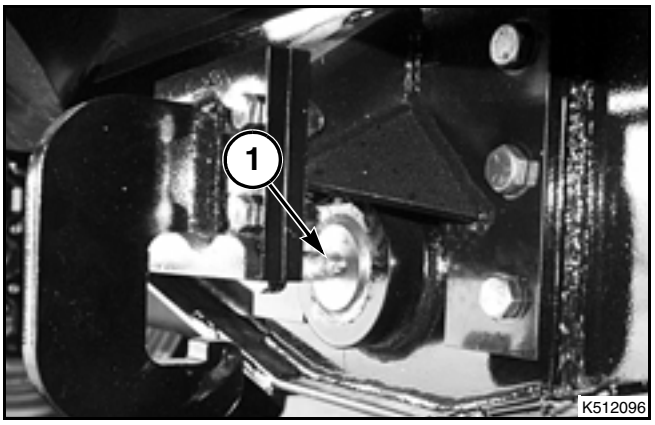


**FIG. 102**

**FIG. 103:** Rear (Standard) Axle

King Pins (1) two fittings, one each side (50 hours or weekly).

Steering rod (2), two fittings, one each side (50 hours or weekly).

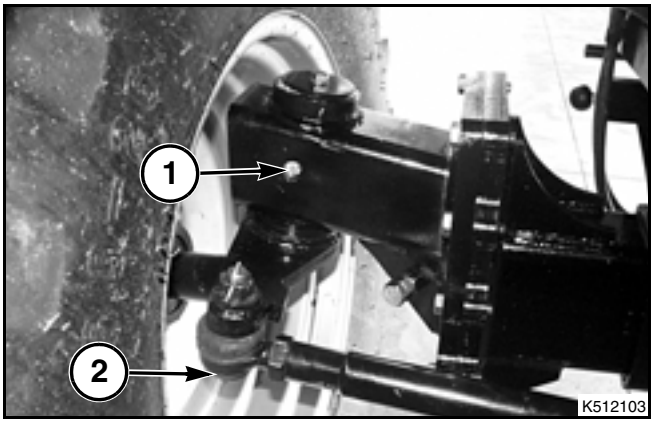


**FIG. 103**

**FIG. 104:** Rear axle - Rear Wheel Assist Axle

King Pins (1) eight fittings, four each side (50 hours or weekly).

Tie rod Sockets (2) two fittings, one each side (50 hours or weekly).

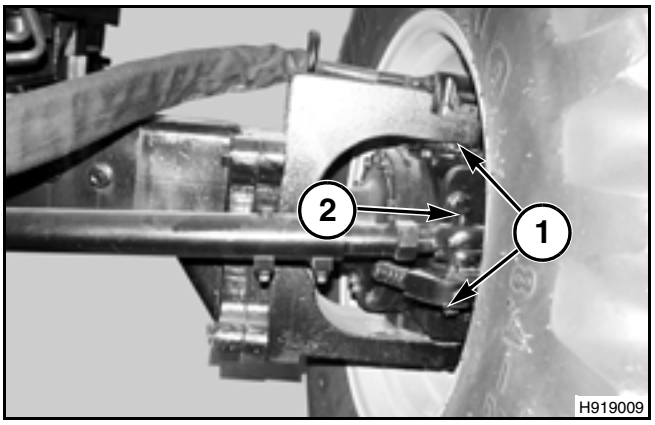


**FIG. 104**

## ENGINE

### Type of Engine Oil

Lubricating oils must meet the standards for a turbocharged after cooled engine. The use of quality lubricating oils along with oil and filter changes at the correct times will maintain engine durability and performance standards.

Use only AGCO approved oil or oil to American Petroleum Institute (API) performance classification of CI - 4.

A limit of 1% by weight sulfated ash content is recommended to control oil consumption and valve and piston deposits. Sulfated ash content must never be greater than 1.85% by weight.

*IMPORTANT: Non-detergent or straight mineral type motor oils must not be used.*

### Viscosity

**FIG. 105:** Use a multiple viscosity 15W-40 heavy duty engine oil under most harvesting conditions. 10W-30 low viscosity oil can be used to help starting and provide start up lubrication at ambient temperatures below -5 degrees C (23 degrees F). Continued use of low viscosity oils can decrease engine life.

Check engine oil level after every 10 hours of operation.

(A) - SAE 10W-30

(B) - SAE 15W-40

(C) - Ambient Air Temperature

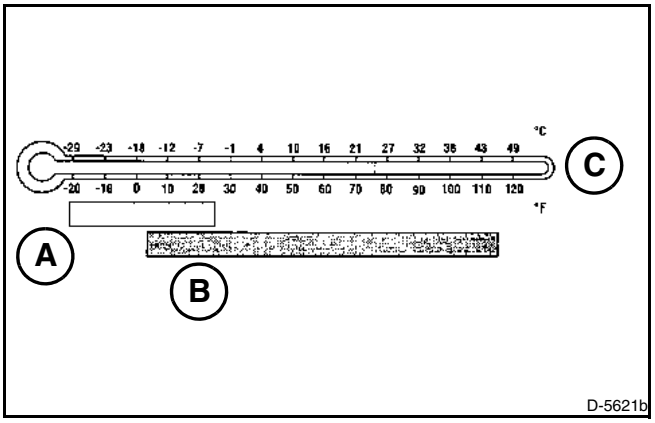


**FIG. 105**

### Recommended Oil Change Period

Engine Oil and Oil Filter - Change after the first 50 hours of operation and every 250 hours of operation

*NOTE: In geographical locations where available engine oils do not meet recommended specifications, increase frequency of Oil & Filter change to 125 hours of operation.*

### Oil Additives

Quality oils contain the necessary additives to provide enough lubrication and long engine life. The use of performance additives is not recommended.

## Checking Oil Level

**FIG. 106:** The dipstick (1) is located next to the engine oil filter (2).

With the combine sitting on level ground, check oil level every 10 hours of operation and add oil if necessary to keep the correct level on the dipstick (1).

Check oil level before starting engine. If engine has been in operation, permit enough time for oil to drain into pan before checking oil level.

*NOTE: Insert dipstick securely.*

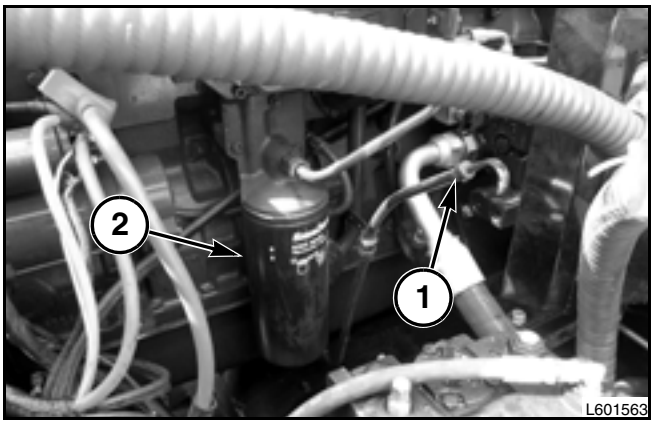


**FIG. 106**

## Changing Engine Oil and Filter

**FIG. 107:** Engine oil drain hose (1) is located at the left-hand rear of combine just in front of the rear axle.

Heavy loads and extremely dirty conditions require more frequent changes. While engine is warm, remove drain hose plug and drain crankcase. Replace drain hose plug.

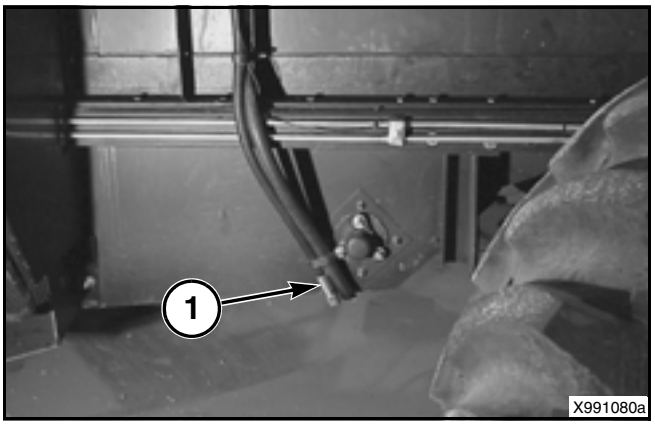


**FIG. 107**

**FIG. 108:** Replace oil filter (1) every oil change. Clean around filter head (2), remove the filter element and discard. Check that threaded adapter is secure in filter head and clean gasket surface in head.

Prime the new element with clean engine lubricating oil by pouring oil slowly into the main threaded orifice, permitting time for oil to fill bowl through filter element.

Using clean engine lubricating oil, lightly oil top seal of replacement element.

Screw replacement element into filter head until element seal just touches head and then tighten by hand one half to one full turn.

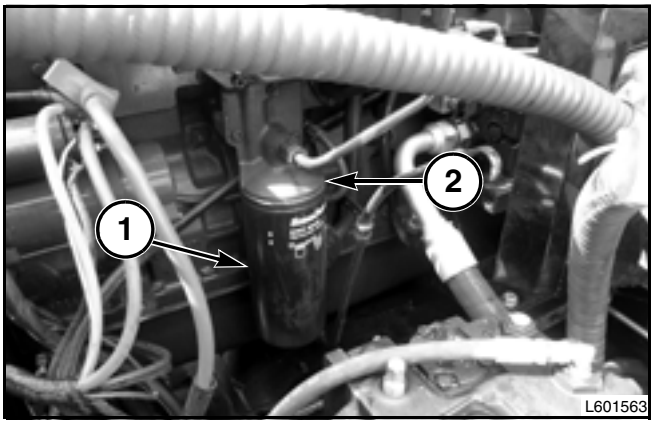


**FIG. 108**

**FIG. 109:** Remove the filler cap (1) and fill crankcase through filler cap hole in valve cover to the correct level with the correct oil. Run engine and check for leaks. DO NOT run engine above idle speed until oil pressure has built up.

Check oil level after running engine and add as required to reach the correct level.

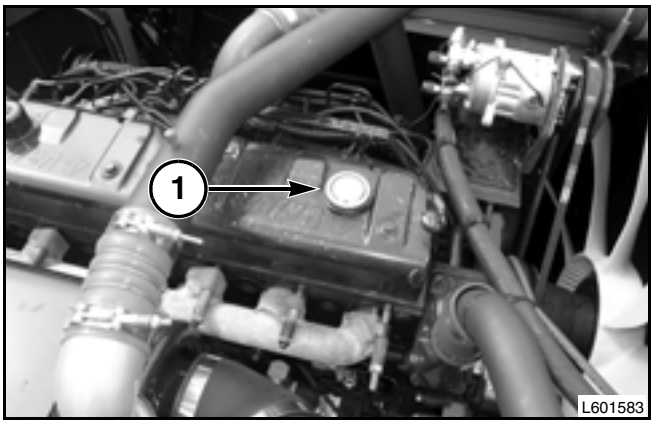


**FIG. 109**

## Centrifugal Oil Filter

**FIG. 110:** Replace the centrifugal oil filter canister (1) every 250 hours.

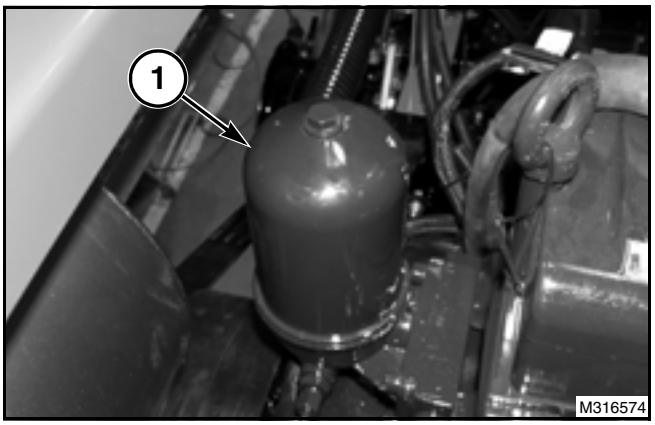


**FIG. 110**

**FIG. 111:** Remove the centrifugal oil filter cover (1) from the top of the centrifugal oil filter assembly to replace canister (2).

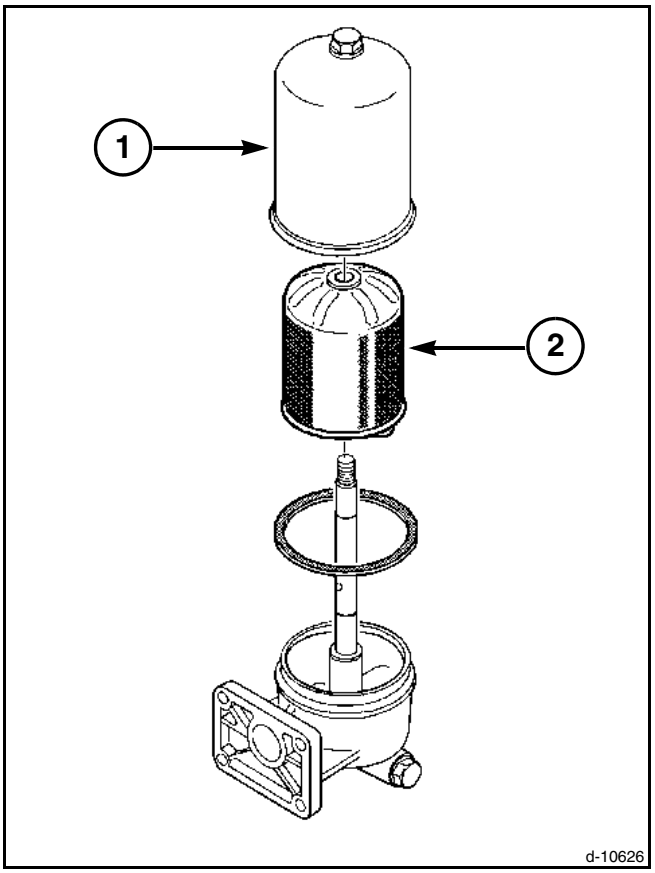


**FIG. 111**

## ROTOR GEARBOX

**FIG. 112:** The rotor gearbox (1) is located at the rear of the combine.

Every 500 hours or yearly, change gearbox oil.

Drain oil using plug (2).

Check oil level using plug (3).

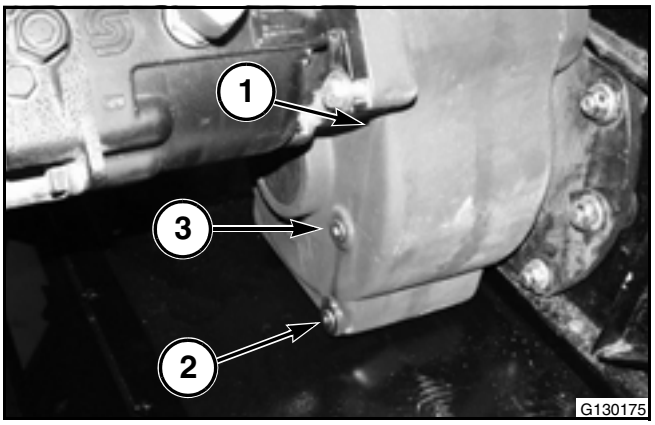


**FIG. 112**

## TRANSMISSION

### Checking and Changing Lubricant

**FIG. 113:** Check the oil level in the transmission housing and check breather every 250 hours. Clean the dirt from around the oil fill plug and remove the plug (1) to check the oil level. The level must be up to the bottom of the oil level plug hole.

The transmission has a screen and a magnet to trap metal particles. Drain transmission, disassemble and clean screen and magnet every 500 hours or once each season.

Remove the bottom screen and position out of the way. Loosen both ends of the oil suction line and remove from the drain plug. Remove the bolt and retaining clip and then pull the drain plug and screen straight out.

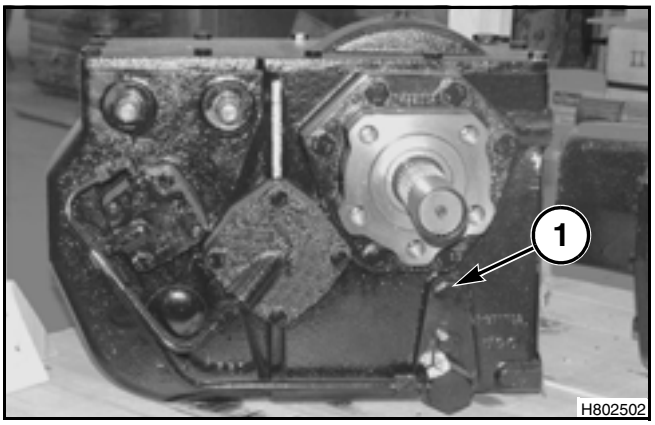


**FIG. 113**

**FIG. 114:** Remove the screen from the plug and remove the magnet from inside the plug. Completely clean the screen, magnet, and inside of the drain plug with a suitable solvent and dry with compressed air.

*NOTE: Put a layer of transmission fluid on the O-ring and smooth sealing surface of the drain plug. Then carefully insert into the transmission drain hole. To prevent damaging the O-ring, hold the retaining clip in the slot in the drain plug to keep from pushing the plug and screen assembly too far into the transmission.*

Install the bolt in the retaining clip and tighten. Install the oil suction line. Fill the transmission until the level is up to the fill plug hole. Install the plug and check for oil leaks.

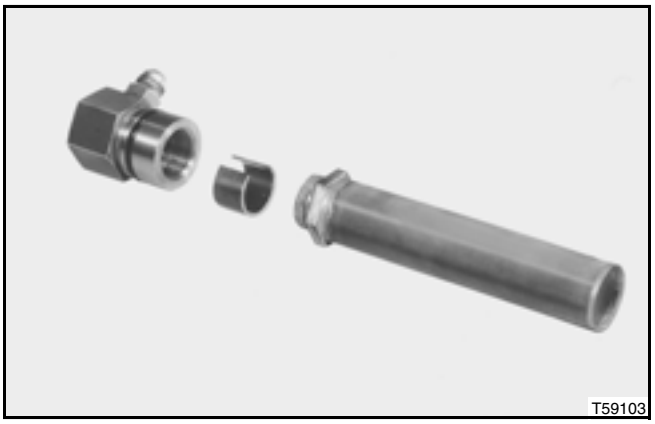


**FIG. 114**

## BRAKES

### Master Cylinder Oil Reservoir

**FIG. 115:** Check fluid level every 500 hours or once a season and fill as necessary. Check the level of fluid in the reservoir (1).

*NOTE: If brake pedal action is soft when pedal is applied, bleed the brake lines.*

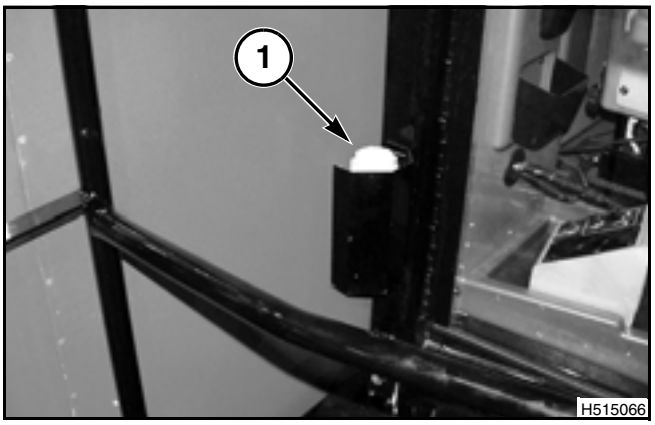


**FIG. 115**

## FINAL DRIVE

The combine is equipped with a heavy duty front axle.

### Without Risers

**FIG. 116:** Left-hand final drive housing shown, right-hand opposite.

Keep oil level within 12.0 mm (0.472 in) of the bottom of the oil level plug (1) in both final drive housings.

Check the oil level and breather every 250 hours of operation.

Change the oil every 500 hours or once a season.

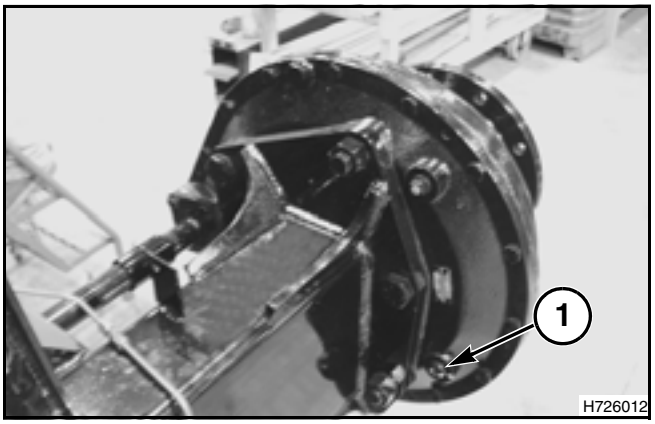


**FIG. 116**

### With Risers

**FIG. 117:** Right-hand final drive housing shown, left-hand opposite.

Keep oil level within 12.0 mm (0.472 in) of the top edge of the cap (1) in both final drive housings.

Check the oil level and breather every 250 hours of operation.

Change the oil every 500 hours or once a season.

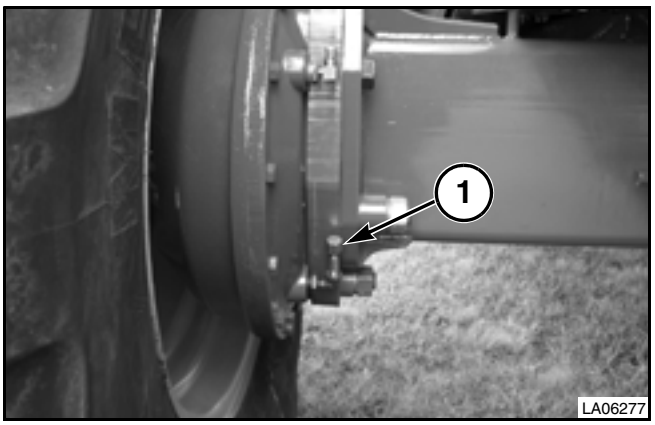


**FIG. 117**

## TIRES AND WHEELS

### Tire Pressure

Tire pressures for both front and rear tires must be checked every 50 hours of operation or weekly. See the Specifications section for the correct tire pressures.

*NOTE: The combine is sent from the factory with tires over inflated. Pressures must be checked and adjusted before operating the combine in the field.*

*NOTE: Combines can be sent with special 16.9 x 34 shipping tires and wheels for clearance requirements. Do not install the header, or move the base combine on these shipping tires more than necessary to unload the combine from the truck.*

After the combine is unloaded, replace the shipping tires and wheels with the operating tires and wheels ordered with the combine.

### Removing Wheel from Combine and Removing Tire.

- Park the combine on level ground with the brakes locked and the combine blocked securely during wheel removal.
- When removing a drive wheel, secure the wheel with a tire dolly or hoist before removing the wheel retaining nuts or capscrews.
- Do not unseat the beads of an inflated tire. Deflate the tire completely before servicing.
- Do not inflate a tire that has been run flat or very under inflated without removing and checking for tire and rim damage.
- Do not remove or install the tire on the rim without the proper tools. Do not hit the tire or rim with a hammer.

## Tire Mounting

| Precaution | Reason for Precaution |
|---|---|
| Never mount a damaged tire. | The tire structure can be weak to the point at which the tire will not hold up to the stresses of inflation and operation. The tire will fail with explosive force. |
| Always inspect the well, bead seat areas, flanges, and rim to be sure the surfaces are clean and smooth. Remove any rust, corrosion, or old rubber with a chisel or wire brush. | Failure to provide clean, smooth rim surfaces can cause the bead to catch on well of rim and break with explosive force when inflated. |
| Apply lubricant (thin vegetable oil, soap solution, or approved tire mounting rubber lubricant) to the inside and outside surfaces of both beads. Apply lubricant to flanges and bead seat areas of the rim. | Failure to provide proper lubricant can cause the bead to catch on the edge of the bead seat and break with explosive force when inflated. Lubrication is required for proper position of the tube for the tube to extend properly. |
| Check to be sure the tire is centered on the rim before inflating. | Failure to center the tire on the rim can cause the bead to catch on the edge of the bead seat and break with explosive force when inflated. |
| Always use an extension hose with a clip on chuck and extension gauge when inflating. | Extension equipment permits the operator to stand clear of the assembly during inflation. If the assembly fails for any reason, the operator will be away from the explosive force. |
| Never use pressure above 241 kPa (35 psi) (283 kPa (41 psi) for 800/65 R32 tires) to seat the tire beads. If the beads have not seated by the time the pressure reaches this pressure, remove the valve core, deflate the assembly, completely replace the valve core, position the tire on the rim, lubricate the tire beads, and the rim bead seats. Inflate the tire. | Use of inflation pressure above 241 kPa (35 psi) (283 kPa (41 psi) for 800/65 R32 tires) to seat the beads can cause the assembly to fail with explosive force. Be sure the rim diameter is exactly the same tire diameter being used. |

## Wheel Installation

The discs are offset in the wheel rim.

**FIG. 118:** To set the front wheels out in field position, mount the wheel with larger offset to the outside.

To set the front wheels in for field position, locate with smaller offset to the outside.

**CAUTION: When removing wheels, lift Combine using a jack able to support the weight of the combine, and block securely using solid blocks or steel supports. DO NOT use concrete blocks to support combine.**

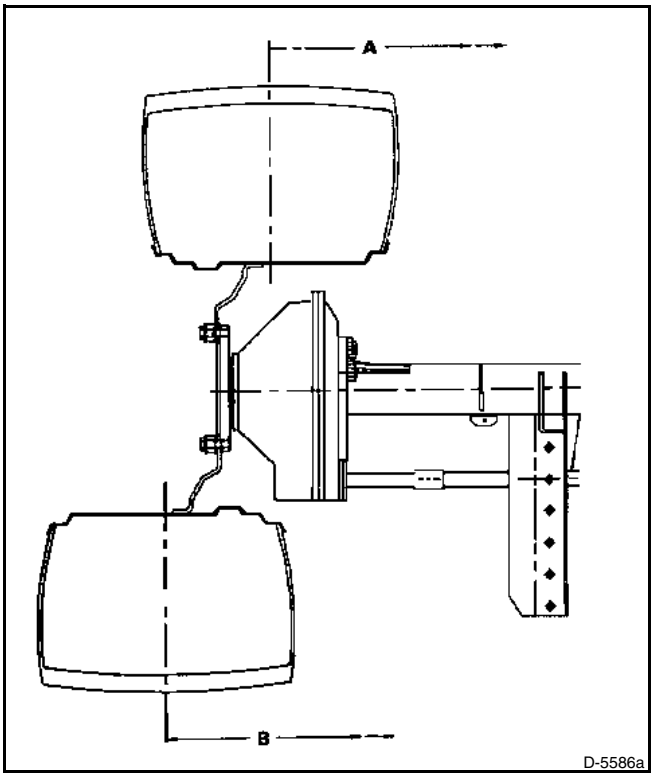


**FIG. 118**

**FIG. 119:** The drive wheels can be reversed for a wider wheel tread if necessary. When reversing the wheels make sure that there is enough clearance between the valve stem and the final drive housing to prevent the valve stems from being damaged.

If there is not enough clearance, or operating in conditions where the ground is too soft, remove the two plugs that were sent in the Instruction Group envelope under the instructor seat. Inflate a tire slightly over the normal pressure and remove the valve stem. Quickly insert and tighten the plug (1) instead of the stem. Repeat the procedure on the other wheel.

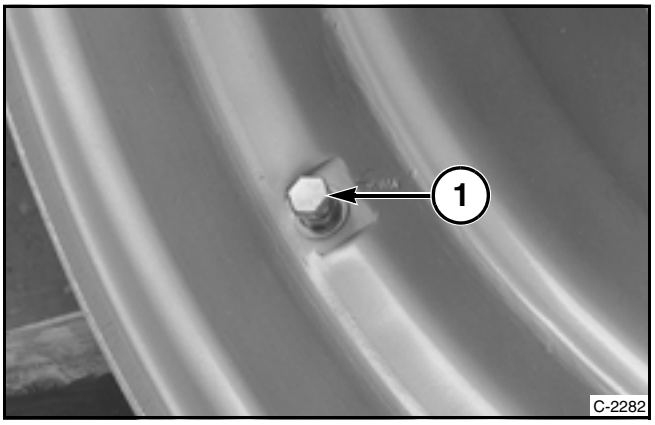


**FIG. 119**

## Wheel Bolt Torque

After operating for one hour, check the torque on all the lug nuts and bolts. Again at ten hours of operation, check to make sure the nuts and bolts have held the correct torque specification. After the first ten hours, check the lug nuts and bolts every 100 hours of operation.

See the Specifications section for the correct wheel torque.

## Maintenance of Tires

To reduce the amount of wear, and extend the life of the tires, the tires must be kept at the correct pressures and checked at regular intervals.

When the combine is going to be out of use for an extended period, or is being stored, block both sides of the axles to take weight off the tires.

If oils or solvents are spilled on a tire, clean immediately. Never park or stop the combine with tires standing in an area of oil.

If possible, park the combine where the tires will be kept from direct sun. This is important if the combine is parked for extended periods, or is being stored.

If mounting tubeless tires, make sure the flange and bead area of the tire and rim are free from dirt, rust, or old rubber. The rim must be smooth and clean. Any areas of rust must be cleaned and painted with a rust preventing type paint.

**WARNING: Failure to follow correct procedures when mounting a tire on a wheel or rim can cause tire to EXPLODE which can result in serious injury or death. DO NOT mount a tire unless you have the proper equipment and experience to complete the job. A qualified tire repair service has the proper equipment.**

**Never exceed 241 kPa (35 psi) or the maximum inflation pressures specified by tire manufacturers for mounting tires. Inflation beyond this maximum pressure can break the bead, or even the rim, with dangerous explosive force. If both beads are not seated when maximum recommended pressure is reached, deflate, reposition tire, lubricate bead, and inflate tire.**

## DRIVE BELTS

### Banded Drive Belt

**FIG. 120:** A banded drive belt is made of two or more V-belts (of a standard cross section size) banded together at the top with a tie band (1). The seperate V-belts and the tie band are vulcanized together to form a multiple strand banded belt.

The cross section and spacing of the seperate strands are such that the banded belt operates on standard sheaves.

The tie band clears the top of the sheaves so that each belt strand has full wedging capacity in the sheave grooves, just as a single belt. The banded belt operates at the same tension as seperate matched belts on an regular multiple strand V-belt drive.

Most V-belt drives operate without any problem, requiring only regular maintenance. There are times where forces acting on the drive can cause seperate belts to whip, turn over, or come off the sheaves. The banded belt was designed to correct these belt stability problems which are most frequently caused by intermittent or shock loading of the drive.

Banded belts have standard dimensions and cross section sizes and are made to order, with the number of strands being determined by the power needs of the drive. Spacing between the strands of the belt are the same as the Rubber Manufacturers Association (RMA) standard spacing for multiple groove sheaves.

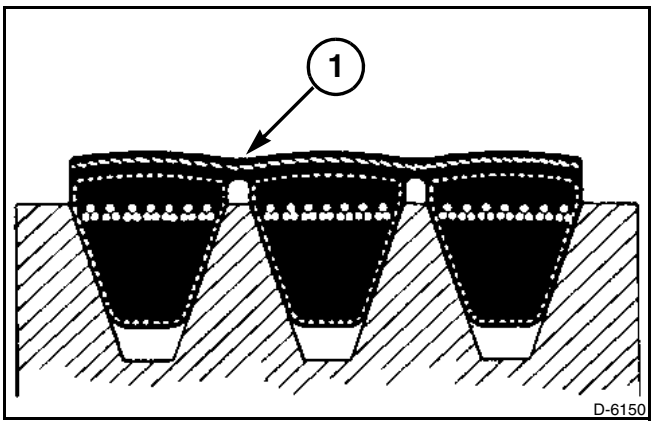


**FIG. 120**

## Maintenance of Belts

**FIG. 121:** Cross sections of some of the belts used on the combine are shown.

A drive inspection must be done every one to two weeks.

Check belts frequently for excessive wear, tearing, breaking, increasing, and unraveling.

Belt tensions are controlled with spring loaded idlers on most drives on the combine. Over tightening puts too much strain on the belt and too much loading on the shafts and bearings.

Look and listen for any not normal vibration or sound while watching the drive in operation. A drive kept in good condition will operate smoothly with little noise.

Inspect guards for looseness or damage. Keep all guards free from debris, dust, or grime deposit on either the inside or the outside of the guard. Deposits of material on guards operate as insulation causing drives to run hotter.

Belts that are running hot, running in a hot environment, or from slipping will harden and form cracks from the bottom of the belt up.

An internal temperature increase of 10 degrees C (18 degrees F) can cut belt life in half.

Inspect for oil or grease leaking on the drive. This can indicate over lubricated bearings or a fluid leak. If this material gets on rubber belts, the belts can increase in size and become distorted, causing an early belt failure.

Belts must be replaced if there are signs of cracking, fraying, or not normal wear.

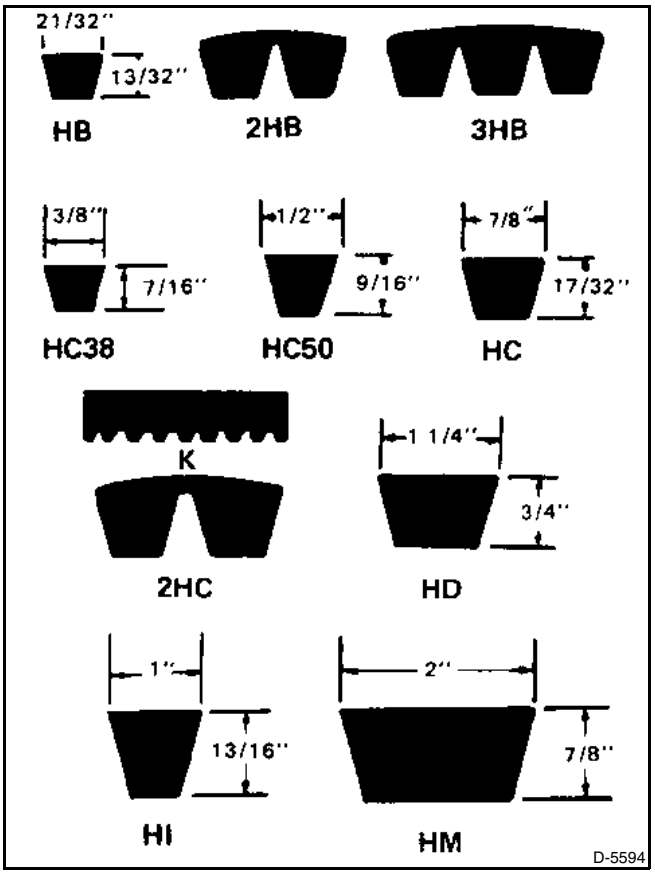


**FIG. 121**

## Belt Changing Guides

### Removal

**FIG. 122:** Before Removing or Installing any drive belts.

Lower the header to the ground.

Remove the starter key.

Engage the parking brake.

Disconnect the battery at battery switch.

Raise or remove shields or guards and locate the guards away from the drive so that the guards do not cause problems with working on the drive.

Loosen tensioner until the belt is slack and can be removed without prying. Never pry off a belt, as the sheave can be damaged. Prying off belts also adds risk of injury.

Inspect the old belt for any not normal wear. Excessive or not normal wear can indicate problems with the drive or past maintenance procedures. Refer to the Belt Problem and Wear Guide.

Inspect the sheaves for not normal or excessive wear, damage, distortion, and pitting. If surfaces show pitting or excessive wear, the sheave must be replaced.

Check the sheaves for deposits of dirt and dust in the bottom of the grooves. Clean sheaves with a damp cloth. Do not sand or scrape the grooves to remove debris.

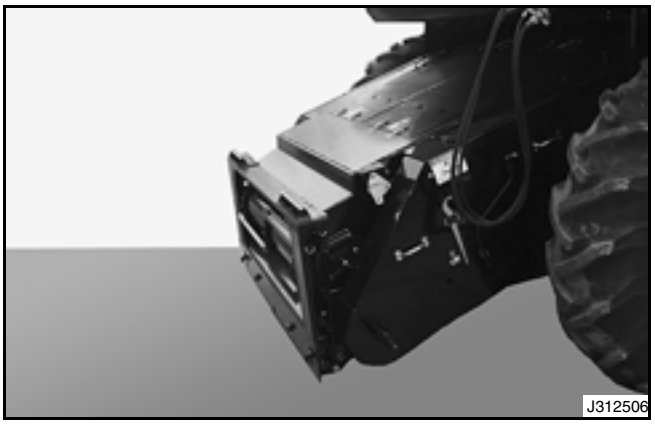


**FIG. 122**

### Installation

Check the sheave alignment. For long belt life the sheaves must be aligned properly.

**FIG. 123:** Order a new belt by the part number, not by measuring the old belt.

Time must be taken to make sure the selection of the proper size belts for the different sheaves is correct.

(A) Indicates the wrong belt installed.

(B) Indicates the correct belt installed.

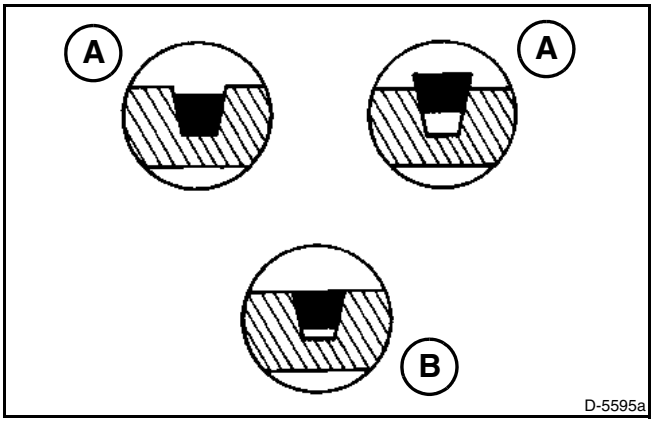


**FIG. 123**

**FIG. 124:** Replace all belts on multiple belt drives. Never replace a single belt or part of a multiple belt drive. If a new belt is used with old belts, the load will not be divided evenly between the belts. Mixing new and old belts can lead to early belt failure and not even sheave wear.

(A) Indicates a new belt position.

(B) Indicates a used belt position.

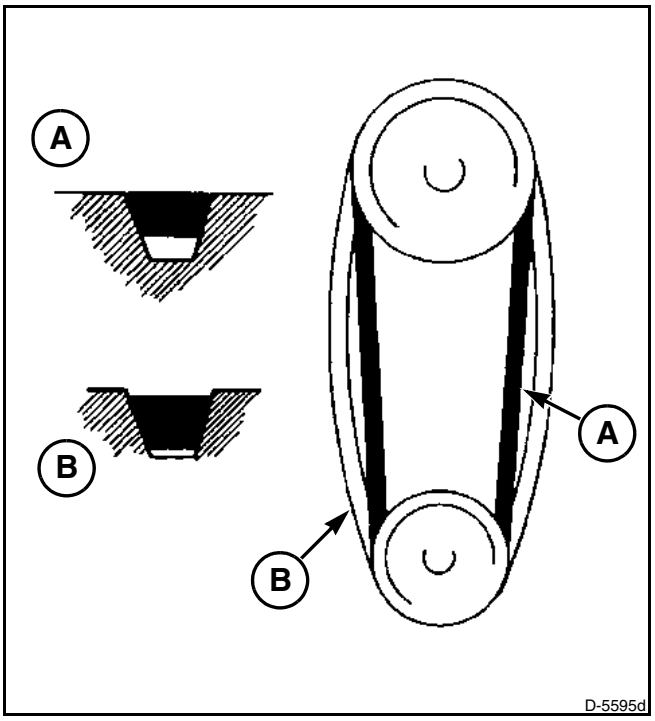


**FIG. 124**

**FIG. 125:** When replacing a belt, never force a belt over the rim of a pulley. Do not pry or use force to install the belt (A). This can break the cords in the belt. Loosen all the tensioners before installing the new belt. If the belt still can not be easily installed, run the belt over the rim while rotating the pulley (B).

Tension the belts making sure the belts are at the correct tension. More belts are damaged by not enough tension than by too much tension. But, do not over tension the belt as this damages the belt tensile members and puts an additional load on the shafts and bearings.

Rotate the belt drive three revolutions. Check the belt tension and adjust as necessary.

Check the drive alignment and adjust as necessary.

Install the guards or shields.

Start the drive, looking and listening for any not normal noise or vibration. If possible, stop the drive and check the bearings and sheaves for excessive heat. If the bearings and sheaves are too hot the belt tension can be too high or the bearings are not properly lubricated or failing. Temperature can be checked with an infrared pyrometer.

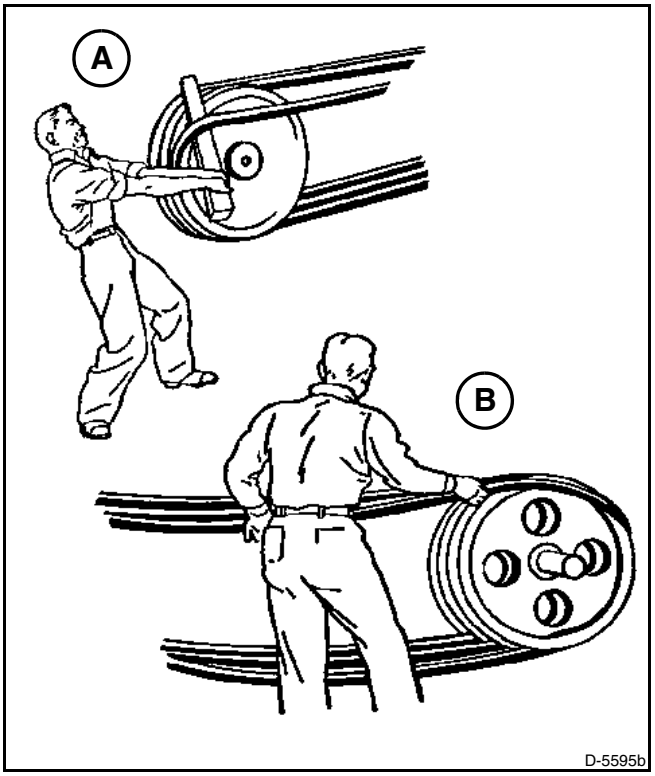


**FIG. 125**

## Belt Sheave Alignment

**FIG. 126:** Check the sheave and shaft alignment. Running the belts with the sheaves out of alignment will cause severe side wear.

Not aligned belt drives will be noisier than properly aligned drives since interference is at the belts enter point into the sheave.

To check the alignment use a long straight edge (1) made of wood, metal, or any rigid material. Line the straight edge along the outside face of both sheaves. If the drive is properly aligned, the straight edge will contact each sheave evenly. The straight edge must touch the two outer edges of each sheave for a total of four points of contact.

Shafts not in alignment (C) will show up as a gap (2) between the outside face of the sheave and the straight edge.

Check for tilting or shafts not aligned by using a bubble level. For proper alignment, the bubble must be in the same position as measured on each shaft.

Not aligned correctly Parallel (A).

Not aligned correctly Angular (B).

Rotate the drive and look for excessive sheave movement. If excessive sheave movement is seen inspect sheave and shaft. If no problem can be seen, remove and install sheave. Not correctly mounted sheaves or out of round sheaves are some times the root of vibration or more severe problems. A dial indicator can be used to measure side to side sheave movement or diameter vibration by holding the dial indicator up to the sheave sidewall or top of the belt inside the pulley groove.

*IMPORTANT: Always turn off the machine before using the dial indicator. Rotate the drive by hand to make your measurements.*

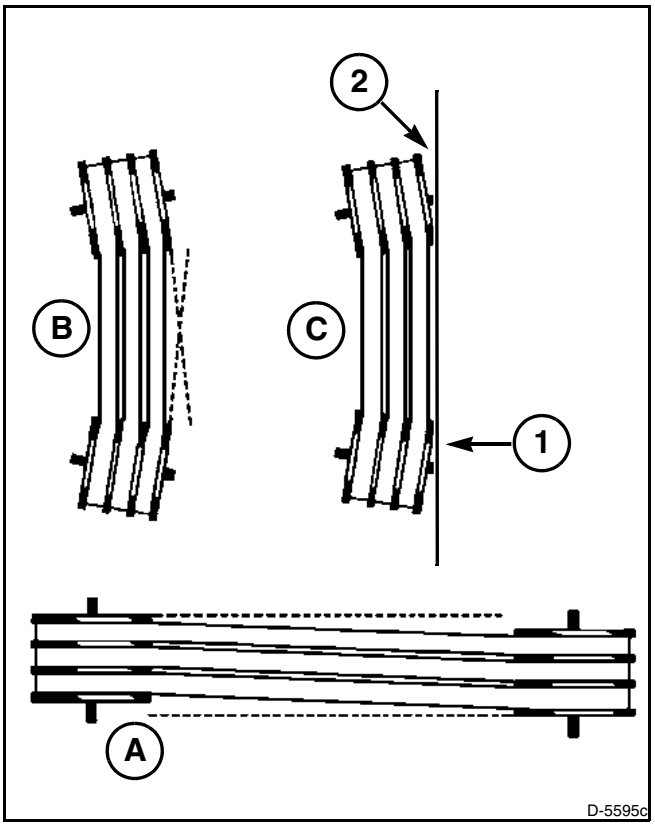


**FIG. 126**

## Belt Run In Procedure

A run in procedure is needed for all belt drives so that the best belt life can be reached.

A run in procedure is made of starting the drive and operating the drive under full load for up to 24 hours. After the belts have run-in, stop the drive and check the belt tension.

Running the belts under full load for an extended period of time will seat the belts into the sheave grooves.

Belt tension will drop after the first run-in and seating procedure. This is normal. Adjust the belt tension as necessary.

Since tension in belts will drop after the first run-in and seating procedure, failure to check and tension the belt will result in low belt tension and belt slippage. This slippage will result in early belt failure.

## Belt Troubleshooting

When troubleshooting a belt drive problem, stand back and watch the drive while the drive is in operation and when drive is not. Is there a warm rubber smell? Is the belt moving around the drive in a normal way? Are there chirping, squealing, or grinding noises? Is there a deposit of dust or debris under the drive which will cause problems with the belts?

When the belt drive makes excessive noise, the belt is frequently blamed. To find the problem spray the belt with soapy water while the drive is running. If the noise goes away, or decreases, the belt is part of the problem. If the noise is still present, the problem can be caused by other drive components.

*NOTE: Do not use belt conditioner or dressing on the belts.*

Not correctly tightened belt drives can make noise.

## Belt Problem and Wear Guide

The following charts show some of the more common types of drive belt failures and possible causes for each failure.

When problem solving a drive belt failure, determine which problem or SYMPTOM / OBSERVATION shows the failure that is occurring. Then find the POSSIBLE CAUSES and take action as shown under the CORRECTIONS / REMEDY column.

**TABLE 1 Short Belt Life and Early Belt Failure**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Rapid belt failure, when no reason can be seen. | Belt tensile member broken or damaged from not correct installation. | Properly install a new original equipment belt and adjust belt tension and idler spring. |
| | Worn driver or driven sheave grooves (check with groove gauge). | Replace worn sheaves.<br>Properly install a new original equipment belt and adjust belt tension and idler spring. |
| | Driver or driven sheave center distances vary during operation. | Check for failed bearings and loose bearing housing mounting hardware and repair as required.<br>Properly install a new original equipment belt and adjust belt tension and idler spring. |

**TABLE 2 Belt Extended Beyond Idler or Sheave Take Up**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Idler spring can not be adjusted to properly tension drive belt. | Belt extended and worn. | Properly install a new original equipment belt and adjust belt tension and idler spring. |
| | Belt tensile member broken. | Properly install a new original equipment belt and adjust belt tension and idler spring. |
| | Belt over loaded. | Reduce load on belt.<br>Properly install a new original equipment belt and adjust belt tension and idler spring. |
| Belt strands not equal. | Sheaves not aligned (not equal work done by each belt strand). | Align the sheaves.<br>Properly install a new original equipment belt and adjust the belt tension and idler spring. |
| | Belt tensile members broken or damaged from not correct installation. | Properly install a new original equipment belt and adjust the belt tension and idler spring. |
| | Trash or debris fell into the sheave grooves. | Clean trash or debris from the sheave grooves.<br>Correct the cause of trash or debris entering the sheave grooves and make sure all the protective shields are installed.<br>Properly install a new original equipment belt and adjust the belt tension and idler spring. |
| | Belt strand lengths not matched. | Properly install a new original equipment belt and adjust the belt tension and idler spring. |

**TABLE 3 Belt Turns Over in Sheaves**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Belt turns over in sheaves and runs or can turn over and come off sheaves when no reason can be seen. | Excessive lateral belt movement. | Properly adjust belt tension. |
| | Trash or debris fell into sheave grooves. | Clean trash and debris from sheave grooves.<br>Correct the cause of trash and debris entering the grooves.<br>Make sure all protective shields are installed. |
| | Sheaves not aligned. | Align driver, driven, and idler sheaves.<br>Check alignment with drive loaded and unloaded.<br>Properly adjust belt tension. |
| | Worn sheave grooves (check with groove gauge). | Replace worn sheaves.<br>Properly install a new original equipment belt and adjust belt tension and idler spring. |
| | Belt tensile members broken or damaged from not correct installation (belt forced onto sheaves). | Properly install a new original equipment belt and adjust belt tension and idler spring. |
| | Intermittent or shock loading of drive belt. | Correct the cause of intermittent and shock loading of drive belt. |
| | Belt strand lengths are not equal (multiple strand or power band belts). | Properly install a new original equipment belts and adjust belt tension and idler spring. |

**TABLE 4 Drive Belt Makes Noise**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Belt makes noise. | Belt slippage. | Properly adjust belt tension. |
| | Belt or sheaves contaminated with oil, grease, or chemicals. | Repair cause of oil, grease, or chemicals.<br>Clean belt and sheave grooves with a degreasing solvent that is not flammable or toxic, then wash the belts with a soap and water solution.<br>Properly adjust belt tension. |
| Belt makes a slapping sound. | Belt tension too loose. | Properly adjust belt tension. |
| | Belt strand lengths are not equal. | Properly install a new original equipment belt and adjust the belt tension and idler spring. |
| | Driver and driven sheaves not aligned. | Align sheaves and check alignment with sheaves loaded and unloaded.<br>Properly adjust belt tension. |
| | Idler sheave not aligned. | Align sheaves and check alignment with sheaves loaded and unloaded.<br>Properly adjust belt tension. |
| Belt makes a rubbing sound. | Belt rubbing on some obstruction. | Remove obstruction and align drive to give needed clearance. |
| Belt makes an not normal or loud noise. | Belt profile does not equal sheave groove profile. | Replace worn sheaves.<br>Properly install a new original equipment belt and adjust the belt tension and idler spring. |
| | Worn sheave grooves (check with groove gauge). | Replace worn sheaves.<br>Properly install a new original equipment belt and adjust the belt tension and idler spring. |
| | Trash or debris fell into sheave grooves. | Clean trash and debris from the sheave grooves.<br>Correct the cause of trash and debris entering the sheave grooves and make sure all the protective shields are installed. |
| Drive makes a grinding sound. | Damaged or failed shaft bearings. | Replace damaged or failed bearings as required. |

**TABLE 5 Not Correct Driven Shaft Speed**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Rotation burns on the sides of the belt. | Belt tension too loose causing belt slippage. | Properly install a new original equipment belt and adjust the belt tension and idler spring. |
| | Belt or sheaves contaminated with oil, grease, and chemicals. | Repair cause of oil, grease, and chemicals.<br>Clean belt and sheave grooves with a degreasing solvent that is not flammable or toxic.<br>Wash with a mild soap and water solution.<br>Properly adjust belt tension. |

**TABLE 6 Hot Shaft or Idler Sheave Bearings**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Driver and driven shaft support bearings or idler sheave bearings run hot. | Drive belt adjusted too tight or over tightened. | Properly adjust belt tension. |
| | Drive belt under tightened and slipping causing heat. | Properly adjust belt tension. |
| | Worn sheave grooves (check with groove gauge) causing belts to bottom in sheave grooves and not send power unless over tightened. | Replace worn sheaves.<br>Properly install a new original equipment belt and adjust the belt tension and idler spring. |
| | Failed bearings or poor bearing maintenance. | Replaced failed bearings.<br>Follow the bearing maintenance and lubrication schedule recommendations. |

**TABLE 7 Belt Broken**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Belt pulled apart. | Belt over loaded. | Reduce the load on belt.<br>Determine the cause of over loading.<br>Properly install a new original equipment belt and adjust the belt tension and idler spring. |
| | Shock loading of belt from not equal feeding. | Correct cause of not even feeding and shock loading.<br>Properly install a new original equipment belt and adjust the belt tension and idler spring. |
| | Belt came off sheaves and became tangled in machine. | Check sheave alignment.<br>Check for trash and debris in sheave grooves.<br>Properly install a new original equipment belt and adjust the belt tension and idler spring. |
| | Trash and debris has fallen into the sheave grooves. | Clean trash and debris from sheave grooves.<br>Correct the cause of trash and debris entering the sheave grooves and make sure all the protective shields are installed.<br>Follow the bearing maintenance and lubrication schedule recommendations. |
| | Belt rolled or forced onto sheaves breaking belt tensile member. | Properly install a new original equipment belt and adjust the belt tension and idler spring. |

**TABLE 8 Belt Side Walls / Bottom Burned**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Sides and bottom of belt burned. | Belt slippage when machine engages. | Properly install a new belt and adjust belt tension.<br>Engage machine properly. |
| | Belt over loaded. | Reduce load on belt.<br>Correct the cause of over loading.<br>Properly install a new belt and adjust belt tension. |
| | Worn sheave grooves (check with groove gauge). | Replace worn sheaves.<br>Properly install a new belt and adjust belt tension. |
| Rotation burns on side walls of belt in a separated area. | Belt slippage because of not enough belt tension. | Properly install a new belt and adjust belt tension. |
| | Belt over loaded. | Reduce load on belt.<br>Correct cause of over loading.<br>Properly install a new belt and adjust belt tension. |

**TABLE 9 Belt Side Walls Flaking, Soft, Sticky, or Swollen**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Belt cover has flaked off and side walls are soft and sticky. Low adhesion between belt cover plies. Belt cross section is swollen. | Belt or sheaves contaminated with oil, grease, or chemicals. | Repair cause of oil, grease, or chemicals.<br>Clean sheave grooves with a degreasing solvent that is not flammable or toxic, then wash the grooves with a mild soap and water solution.<br>Properly install a new belt and adjust belt tension. |
| Decreased performance of belt rubber compounds. | Use of belt dressing. | Do not use belt dressing.<br>Clean sheave grooves with a degreasing solvent that is not flammable or toxic, then wash the sheave grooves with a mild soap and water solution.<br>Properly install a new belt and adjust belt tension. |

**TABLE 10 Belt Side Walls Dry and Bottom Breaking**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Belt side walls dry and bottom of belt cracking. | Constant belt slippage causing heat and gradually making belt under cords hard. | Properly install a new belt and adjust belt tension. |
| | Not correct storage of repair or extra belts. | Store belts unwound from pegs in a cool and dry location, away from excessive heat or direct sun light. |

**TABLE 11 Belt Bottom Cut**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Belt operates over the edge of the sheaves and cuts bottom surface. | Sheaves not aligned. | Align sheaves.<br>Adjust tension.<br>Check alignment with drive loaded and unloaded. |
| | Trash and debris in sheave grooves. | Clean trash and debris from sheave grooves.<br>Correct the cause of trash and debris entering sheave grooves and make sure all the protective shields are installed. |
| | Belt forced over edge of sheaves during installation without relieving idler tension. | Back off idler tension when installing belt. |

**TABLE 12 Belt Comes Off Drive Sheaves**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Belt comes off sheaves when no reason can easily be seen. | Sheaves not aligned. | Align sheaves.<br>Adjust tension.<br>Check alignment with drive loaded and unloaded. |
| | Trash and debris in sheave grooves. | Clean trash and debris from sheave grooves.<br>Correct the cause of trash and debris entering sheave grooves and make sure all the protective shields are installed. |

**TABLE 13 Sheaves Worn or Damaged**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Sheave grooves worn (check with groove gauge). | Excessive belt tension. | Replace worn sheaves.<br>Properly install new belt and adjust tension. |
| | Contamination of sheave grooves with damaging trash or debris. | Replace worn sheaves.<br>Correct the cause or source of damaging trash or debris entering sheave grooves.<br>Make sure all protective shields are installed.<br>Properly install new belt and adjust tension. |
| Sheaves damaged or broken. | Belt forced onto sheaves. | Replace damaged or broken sheaves.<br>Back off tension when installing belt. |
| | Trash or debris fell into sheave grooves. | Replace worn sheaves.<br>Correct the cause of damaging trash or debris entering sheave grooves.<br>Make sure all protective shields are installed.<br>Properly install new belt and adjust tension. |
| | Not correct method used to install sheave. | Used correct method to install sheave. |

**TABLE 14 Belt Moves and Vibrates**

| Symptom / Observation | Possible Causes | Corrections / Remedy |
|---|---|---|
| Belt moves too much and laterally. | Belt tension too loose. | Properly adjust belt tension. |
| | Sheaves not aligned. | Align sheaves.<br>Adjust belt tension. |
| | Belt strands not extended equally. | Properly install a new original equipment belt and adjust belt tensioner. |
| Belt vibrates. | Excessive radial or lateral run out of sheaves. | Replace sheaves with defects. |
| | Loose drive components. | Tighten loose drive components. |
| | Belt profile does not equal sheave groove profile. | Properly install a new original equipment belt and adjust belt tensioner. |